



June 30, 2021 Actuarial Valuation Report

for the

New York City Board of Education Retirement System

New York City
Office of the Actuary



OFFICE OF THE ACTUARY

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> MAREK TYSZKIEWICZ CHIEF ACTUARY

November 6, 2023

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

Re: June 30, 2021 Actuarial Valuation Report (Report)

Dear Trustees:

This Report presents the results of the June 30, 2021 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, 2021 valuation, forms the basis for determining the statutorily required contribution (Statutory Contribution) of \$233,546,202 for Fiscal Year 2023 (i.e., for the period beginning July 1, 2022 and ending June 30, 2023). 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, 2020 actuarial valuation are shown in this Report for comparative purposes. Other historical information that the Actuary believes useful is also included.

The June 30, 2021 and June 30, 2020 actuarial valuations are based upon census data as of those dates submitted by the Plan's administrative staff and the employers' payroll service providers. Financial information as of June 30, 2021 and June 30, 2020 was provided by BERS and the Office of the Comptroller.

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. This valuation reflects the enactment of Chapter 56 of the Laws of 2022 which reduces the Tier 6 vesting requirement from ten years to five years. All other benefits under the Plan are unchanged from the prior valuation. Continued compliance has been presumed for the Older Workers Benefit Protection Act (OWBPA).

A summary of the actuarial assumptions and methods 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.

This Report does not present Governmental Accounting Standards Board (GASB) results. The Office of the Actuary publishes the Fiscal Year 2023 GASB67 and GASB68 results under separate cover. Reports published by the Office of the Actuary are available on the website www.nyc.gov/actuary.

Note that this valuation does not reflect unknown potential future claims from Gulino vs. Department of Education, 96 Civ. 8414(KMW).

The undersigned actuaries are Associates of the Society of Actuaries and Members of the American Academy of Actuaries. In addition, Dolores Capone is also an Enrolled Actuary under the Employee Retirement Income Security Act of 1974. 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,

Marek Tyszkiewicz, ASA, MAAA

Chief Actuary

Dolores Capone, ASA, EA, MAAA Assistant Deputy Chief Actuary

MT/eh

cc: Michael Hunter, ASA, EA - New York City Office of the Actuary
Crage Lu, ASA - New York City Office of the Actuary
Sanford Rich - New York City Board of Education Retirement System

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SECTION I - EXECUTIVE SUMMARY

This Report presents the results of the June 30, 2021 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 2023 (i.e., July 1, 2022 to June 30, 2023),
- 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, 2021 actuarial valuation and, for comparative purposes, the June 30, 2020 actuarial valuation.

NEW YORK CITY BOARD OF EDUCATION RETIREMENT SYSTEM SUMMARY OF VALUATION RESULTS Valuation Date June 30, 2021 June 30, 2020 Fiscal Year 2023 2022 **Funded Status** 1. Accrued Liability \$ 5,880,070,849 5,620,896,681 5,471,199,526 5,121,314,995 2. Actuarial Value of Assets (AVA)¹ 3. Unfunded Accrued Liability (AVA Basis) (1. - 2.) \$ 408,871,323 499,581,686 4. Market Value of Assets (MVA) 7,044,240,000 5,182,890,000 5. Unfunded Accrued Liability (MVA Basis) (1. - 4.) (1,164,169,151) 438,006,681 6. Funded Ratio (MVA Basis) (4. / 1.) 119.8% 92.2% Contribution 1. Normal Cost 166,665,135 163,549,437 2. Unfunded Accrued Liability 38.058.209 73.429.613 3. Administrative Expenses 28,822,858 25,424,795 4. Late Contribution Interest 5. Actuarial Contribution (1. + 2. + 3. + 4.) 233.546.202 262.404.099 6. Statutory Contribution 233.546.202 262,404,099 **Participant Data** 1. Active Members a. Number 27,556 28,183 b. Annual Salary² \$ 1,484,264,302 1,476,597,629 c. Average Salary 53,864 52,393 2. Terminated Nonvested Members 8,922 8,816 3. Deferred Vested Members 1,972 1,972 4. Retirees and Beneficiaries a. Number 19,448 19,120 b. Total Annual Benefits 292,603,477 281,560,960 c. Average Benefit 15,045 14,726

¹ AVA as of June 30, 2020 includes receivable contributions of \$199,867,478; AVA as of June 30, 2021 does not include receivable contributions.

² Includes the impact of recent labor contract settlements and certain non-union salary increases with retroactive effective dates, if any, that are not yet reflected in the census data.

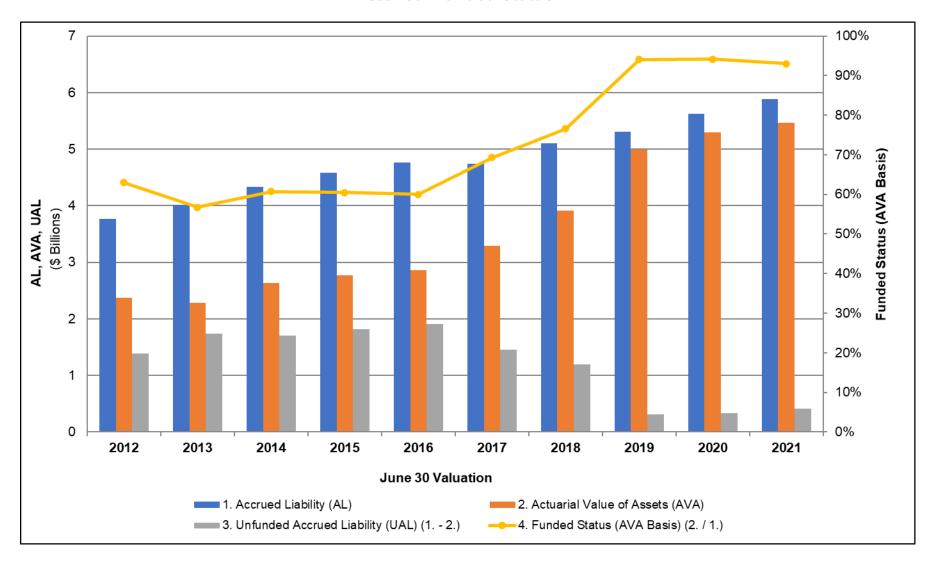
Table I-2 Actuarial Liabilities

NEW YORK CITY BOARD OF EDUCATION RETIREMENT SYSTEM ACTUARIAL LIABILITIES BY STATUS

Valuation Date	,	June 30, 2021	J	une 30, 2020
Fiscal Year		2023	2022	
Accrued Liability 1. Active Members 2. Terminated Nonvested Members 3. Deferred Vested Members 4. Retirees and Beneficiaries 5. Accrued Liability (1. to 4.) 6. WTC Reserve ¹ 7. Total Accrued Liability (AL) (5. + 6.)	\$ \$	2,767,005,501 36,029,961 122,910,697 2,953,124,690 5,879,070,849 1,000,000 5,880,070,849	\$ \$ \$ \$	2,636,191,682 37,253,555 110,450,387 2,836,001,057 5,619,896,681 1,000,000 5,620,896,681
Present Value of Benefits 1. Active Members 2. Terminated Nonvested Members 3. Deferred Vested Members 4. Retirees and Beneficiaries 5. Present Value of Benefits (1. to 4.) 6. WTC Reserve ¹ 7. Total Present Value of Benefits (5. + 6.)	\$ 	4,488,170,440 36,029,961 122,910,697 2,953,124,690 7,600,235,788 1,000,000 7,601,235,788	\$ \$	4,354,749,366 37,253,555 110,450,387 2,836,001,057 7,338,454,365 1,000,000 7,339,454,365

¹ Reserve for adverse WTC experience.

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 asset smoothing method is used to determine the Actuarial Value of Assets (AVA) of the Plan.

The Actuary reset the AVA to the MVA as of June 30, 2011 and as of June 30, 2019. Beginning with the June 30, 2020 actuarial valuation, the asset smoothing method recognizes investment returns greater or less than expected over a period of five years, phasing these gains and losses into the AVA at a rate of 20% per year.

The expected investment return is derived using the Actuarial Interest Rate of 7%, beginning-of-fiscal-year MVA, and net cash flows which are assumed to occur midyear.

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

Table II-1
Statement of Plan Net Assets

(\$ Thousands)				
	June 30, 2021	June 30, 2020		
ASSETS				
Cash	\$ 12,920	\$ 977		
Receivables				
Investment Securities Sold	\$ 232,846	\$ 116,436		
Member Loans	47,251	48,751		
Accrued Interest and Dividends	23,673	15,279		
Other	412	14,724		
Fixed return funds				
Short-Term Investments				
Commercial Paper	\$ 135,880	\$ 29,179		
Short-term Investment Fund	86,487	73,082		
U.S. Treasury Bills	0	0		
Discount Notes	121,533	149,094		
Debt Securities	2,565,100	1,941,029		
Equity Securities	4,436,044	2,723,900		
Alternative Investments	1,423,257	976,076		
Collective Trust Funds				
Fixed Income	512	119,264		
Domestic Equity	90,709	51,279		
International Equity	1,964	776,286		
Mortgage Debt Security	23,482	22,965		
Treasury Inflation Protected Securities	0	0		
Promissory Notes	0	0		
Collateral From Securities Lending	790,811	451,742		
Variable return funds				
Short-Term Investments	549	484		
Debt Securities	1,809	1,250		
Equities	71,531	51,826		
Collateral From Securities Lending	3,431	345		
Other Assets	464,473	242,160		
TOTAL ASSETS	\$ 10,534,674	\$ 7,806,128		
LIABILITIES				
Accounts Payable	\$ 78,462	\$ 32,441		
Payable for Investment Securities Purchased	436,597	166,434		
Accrued Benefits Payable	13,150	12,884		
TDA Program's interest in the fixed return fund	2,167,983	1,959,392		
Security Lending	794,242	452,087		
TOTAL LIABILITIES	\$ 3,490,434	\$ 2,623,238		
PLAN ASSETS HELD IN TRUST FOR PENSION BENEFITS	\$ 7,044,240	\$ 5,182,890		
I LAN ACCE TO TILLED IN TINGS I FOR FENGION BENEFITS	Ψ 1,044,240	Ψ 3,102,030		

Table II-2
Statement of Changes in Plan Net Assets

(\$ Thousands)				
	Ju	ne 30, 2021	Jui	ne 30, 2020
ADDITIONS				
Contributions				
Member Contributions	\$	48,125	\$	49,766
Employer Contributions		182,983		257,503
Total Contributions	\$	231,108	\$	307,269
Investment Income (Loss)				
Interest Income	\$	95,613	\$	81,870
Dividend Income		82,601		79,419
Net Appreciation (Depreciation) in Fair Value	<u></u>	1,753,472	<u></u>	235,683
Total Investment Income (Loss)	\$	1,931,686	\$	396,972
Less Investment Expenses		42,955		32,677
Net Income (Loss)	\$	1,888,731	\$	364,295
Securities Lending Transactions				
Securities Lending Income	\$	1,140	\$	1,608
Securities Lending Fees		(120)		(136)
Net Securities Lending Income (Loss)	\$	1,020	\$	1,472
Net Investment Income (Loss)	\$	1,889,751	\$	365,767
Other				
Payments to Other Retirement Systems &				
Other Revenues/Expenses	\$	239,808	\$	(7,975)
TDA Program's Interest Income in the				,
Fixed Return Fund	\$	(171,806)	\$	(155,749)
TOTAL ADDITIONS	\$	2,188,861	\$	509,312
DEDUCTIONS				
Benefit Payments and Withdrawals	\$	302,336	\$	296,047
Administrative Expenses		25,175		22,207
TOTAL DEDUCTIONS	\$	327,511	\$	318,254
NET INCREASE (DECREASE) IN PLAN NET ASSETS	\$	1,861,350	\$	191,058
PLAN NET ASSETS HELD IN TRUST FOR PENSION BENEFITS				
Beginning of Year	\$	5,182,890	\$	4,991,832
End of Year	\$	7,044,240	\$	5,182,890

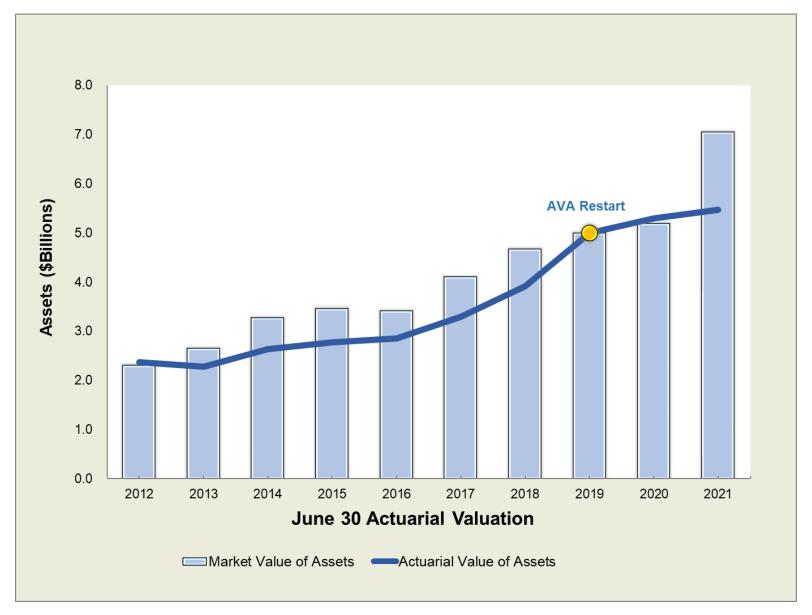
Table II-3

Development of Actuarial Value of Assets

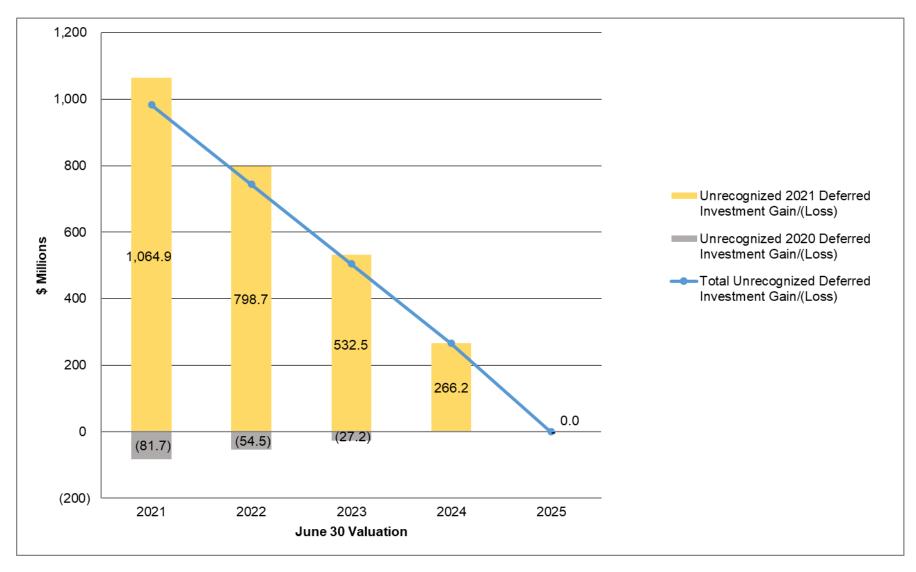
(\$ Thousands)					
Valuation Date	Jui	ne 30, 2021	Ju	ne 30, 2020	
A. M. J. (174) - (5%) 15 - 1 A					
1. Market Value of Fixed Fund Assets		5 400 004	•	4 007 005	
a. Beginning of Year (BOY)	\$	5,129,204	\$	4,937,065	
b. End of Year (EOY)	\$	6,970,173	\$	5,129,204	
2. Contributions		40.40=	•	40.700	
a. Employee	\$	48,125	\$	49,766	
b. Employer		<u>182,983</u>	_	<u>257,503</u>	
c. Total Contributions	\$	231,108	\$	307,269	
3. Net Investment Income					
a. Investment Income	\$	1,738,075	\$	241,492	
b. Investment Expenses		<u>(42,875)</u>		(32,624)	
c. Total Net Investment Income	\$	1,695,200	\$	208,868	
Benefit Payments and Other Cash Flow	\$	(85,339)	\$	(323,998)	
5. Net Cash Flow (2.c. + 4.)	\$	145,769	\$	(16,729)	
6. Expected Investment Return	\$	364,060	\$	345,019	
7. Unexpected Investment Return (UIR) (3.c 6.)	\$	1,331,140	\$	(136,151)	
8. Preliminary Fixed AVA					
a. Preliminary Fixed AVA @ BOY	\$	5,238,125	\$	4,937,065	
b. Net Cash Flow (5.)		145,769		(16,729)	
c. Expected Investment Return (6.)		364,060		345,019	
d. Phase in of UIR					
20% of UIR for prior year	\$	266,228	\$	(27,230)	
20% of UIR for second prior year		(27,230)		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	\$	238,998	\$	(27,230)	
e. Lower Corridor Bound (80% of 1.b.)		5,576,139		4,103,364	
f. Upper Corridor Bound (120% of 1.b.)		8,364,207		6,155,044	
g. Preliminary Fixed AVA (a. through d., bounded by e. and f.)		5,986,952		5,238,125	
9. Market Value of Variable Fund Assets	\$	74,067	\$	53,686	
10. Amounts due (To)/From TDA ¹	\$	(589,819)		(170,496)	
11. AVA (8.g. + 9. + 10.)	\$	5,471,200	\$	5,121,315	

 $^{^{\}rm 1}$ Amount shown as of June 30, 2020 includes adjustment of \$199,867,478 for receivable contributions.

Graph II-4
Historical Market and Actuarial Value of Assets



Graph II-5
Future Recognition of Unexpected Investment Return



SECTION III - CONTRIBUTION DEVELOPMENT AND HISTORY

Table III-1 Statutory Contributions

Table III-1 shows the components of the Fiscal Year 2023 and the Fiscal Year 2022 Statutory Contributions.

COMPONENTS OF CURRENT AND PRIOR FISCAL YEAR STATUTORY CONTRIBUTIONS							
Valuation Date	,	June 30, 2021		June 30, 2020			
Fiscal Year		2023 2					
Normal Cost Unfunded Accrued Liability Amortization ¹ Administrative Expenses	\$	166,665,135 38,058,209 28,822,858	\$	163,549,437 73,429,613 25,424,795			
Late Contribution Interest Total Contribution to the New York City Board of Education Retirement System	\$	233,546,202	\$ \$	254			

¹ See Table III-2 for additional details.

Table III-2 Schedule of Unfunded Accrued Liability Bases

The Initial Unfunded Accrued Liability (UAL) established with the 6/30/2010 valuation is being amortized as a level percent of pay (with payments increasing by 3% per year) over a 22-year period.

Increments to the UAL established after June 30, 2010 are amortized as level dollars over the following periods:

- 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, 2021.

NEW YORK CITY BOARD OF EDUCATION RETIREMENT SYSTEM SCHEDULE OF UNFUNDED ACCRUED LIABILITY BASES							
Amortization Base	Date Established	Original \$ Amount	Amortization Years	Payments Remaining	Amortization \$ Payment		
Initial UAL	6/30/10	1,312,067,636	22	11	136,455,502		
(Gain)/Loss	6/30/11	(182,268,307)	15	5	(21,558,572)		
(Gain)/Loss	6/30/12	36,911,124	15	6	4,365,823		
(Gain)/Loss	6/30/13	325,722,811	15	7	38,526,274		
(Gain)/Loss	6/30/14	84,146,947	15	8	9,952,844		
Assumption Change ¹	6/30/14	165,544,370	20	13	16,568,028		
Method Change ²	6/30/14	(275,445,000)	20	13	(27,567,113)		
(Gain)/Loss	6/30/15	128,325,391	15	9	15,178,241		
(Gain)/Loss	6/30/16	108,322,889	15	10	12,812,358		
(Gain)/Loss	6/30/17	(333,814,462)	15	11	(39,483,349)		
Assumption Change ³	6/30/17	(222,122,082)	20	16	(22,230,444)		
Method Change ³	6/30/17	109,985,516	20	16	11,007,581		
(Gain)/Loss	6/30/18	(66,597,775)	15	12	(7,877,140)		
Method Change ⁴	6/30/18	(112,583,000)	20	17	(11,267,543)		
(Gain)/Loss	6/30/19	(326,361,725)	15	13	(38,601,844)		
Assumption Change ⁵	6/30/19	(22,538,024)	20	18	(2,255,653)		
Method Change ⁵	6/30/19	(486,896,000)	20	18	(48,729,573)		
(Gain)/Loss	6/30/20	105,240,334	15	14	12,447,756		
Method Change ⁶	6/30/20	356,463,914	20	19	35,675,656		
Plan Change ⁷	6/30/20	18,363,811	7	6	3,985,213		
(Gain)/Loss	6/30/21	(351,811,429)	15	14	(41,612,018)		
Plan Change ⁸	6/30/21	17,400,840	13	12	2,266,182		
TOTAL					38,058,209		

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

 $^{^{2}}$ AVA 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).

 $^{^{8}}$ Chapter 56 of the Laws of 2022

Graph III-3
Remaining UAL Amortizations as of June 30, 2021

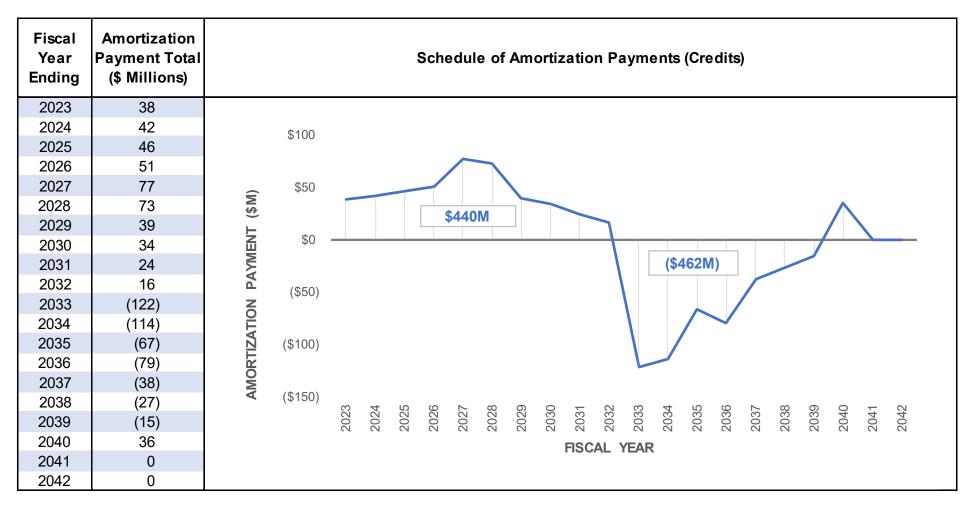


Table III-4
Reconciliation of Outstanding UAL Bases

Cost Component	Date Established	Original Amount	Amort Years	Outstanding Balance 6/30/2021	FY 2022 Payment on 12/31/2021	Outstanding Balance 6/30/2022	FY 2023 Payment on 12/31/2022	Additional Payments
Initial UAL	06/30/10	\$ 1,312,067,636	22	\$ 1,172,922,519	\$ 132,481,070	\$ 1,117,987,611	\$ 136,455,502	9
(Gain)/Loss	06/30/11	(182,268,307)	15	(91,435,881)	(21,558,572)	(75,536,032)	(21,558,572)	3
(Gain)/Loss	06/30/12	36,911,124	15	21,525,894	4,365,823	18,516,664	4,365,823	4
(Gain)/Loss	06/30/13	325,722,811	15	214,773,356	38,526,274	189,955,603	38,526,274	5
(Gain)/Loss	06/30/14	84,146,947	15	61,476,320	9,952,844	55,484,361	9,952,844	6
Assumption Change	06/30/14	165,544,370	20	143,234,263	16,568,028	136,122,560	16,568,028	11
Method Change	06/30/14	(275,445,000)	20	(238,323,789)	(27,567,113)	(226,490,811)	(27,567,113)	11
(Gain)/Loss	06/30/15	128,325,391	15	102,292,365	15,178,241	93,752,336	15,178,241	7
(Gain)/Loss	06/30/16	108,322,889	15	93,084,976	12,812,358	86,347,718	12,812,358	8
(Gain)/Loss	06/30/17	(333,814,462)	15	(306,260,061)	(39,483,349)	(286,856,371)	(39,483,349)	9
Assumption Change	06/30/17	(222,122,082)	20	(217,228,988)	(22,230,444)	(209,439,667)	(22,230,444)	14
Method Change	06/30/17	109,985,516	20	107,562,663	11,007,581	103,705,719	11,007,581	14
(Gain)/Loss	06/30/18	(66,597,775)	15	(64,718,413)	(7,877,140)	(61,100,525)	(7,877,140)	10
Method Change	06/30/18	(112,583,000)	20	(113,792,676)	(11,267,543)	(110,102,926)	(11,267,543)	15
(Gain)/Loss	06/30/19	(326,361,725)	15	(333,721,481)	(38,601,844)	(317,151,927)	(38,601,844)	11
Assumption Change	06/30/19	(22,538,024)	20	(23,470,518)	(2,255,653)	(22,780,189)	(2,255,653)	16
Method Change	06/30/19	(486,896,000)	20	(507,040,969)	(48,729,573)	(492,127,575)	(48,729,573)	16
(Gain)/Loss	06/30/20	105,240,334	15	112,607,158	12,447,756	107,613,600	12,447,756	12
Method Change	06/30/20	356,463,914	20	381,416,388	35,675,656	371,212,350	35,675,656	17
Plan Change	06/30/20	18,363,811	7	19,649,278	3,985,213	16,902,391	3,985,213	4
Admin Expenses	06/30/20	22,971,100	2	24,579,077	25,424,795	0	0	0
Interest on Late Contributions	06/30/20	0	2	0	254	0	0	0
Normal Cost	07/01/20	147,765,615	2	158,109,209	163,549,437	0	0	0
(Gain)/Loss	06/30/21	(351,811,429)	15	(351,811,429)	0	(376,438,229)	(41,612,018)	13
Plan Change	06/30/21	17,400,840	13	17,400,840	0	18,618,899	2,266,182	11
Admin Expenses	06/30/21	26,041,222	2	26,041,222	0	27,864,109	28,822,858	0
Normal Cost	07/01/21	150,580,623	2	0	0	161,121,267	166,665,135	0
TOTAL				\$ 408,871,323	\$ 262,404,099	\$ 327,180,936	\$ 233,546,202	

Payment for amortization bases, normal costs and adminstrative expenses are deferred 1.5 years to the middle of the fiscal year under the One-Year Lag Methodology. The number of amortization payments is one less than the number of years amortized. Required contributions are the sum of all cost components after interest adjustments due to the lag.

Table III-4
Reconciliation of Outstanding UAL Bases (cont'd)

Total of Cost Components Summarized by Type	Outstanding Balance 6/30/2021	FY 2022 Payment on 12/31/2021	Outstanding Balance 6/30/2022	FY 2023 Payment on 12/31/2022
Initial UAL	\$ 1,172,922,519	\$ 132,481,070	\$ 1,117,987,611	\$ 136,455,502
Method Changes	(370,178,383)	(40,880,992)	(353,803,243)	(40,880,992)
Assumption Changes	(97,465,243)	(7,918,069)	(96,097,296)	(7,918,069)
Plan Changes	37,050,118	3,985,213	35,521,290	6,251,395
(Gain)/Loss	(542,187,196)	(14,237,609)	(565,412,802)	(55,849,627)
Normal Cost	158,109,209	163,549,437	161,121,267	166,665,135
Admin Expenses	50,620,299	25,424,795	27,864,109	28,822,858
Interest on Late Contributions	0	0	0	0
TOTAL	\$ 408,871,323	\$ 262,403,845	\$ 327,180,936	\$ 233,546,202

	6/30/2021
(A) Actuarial Accrued Liability	\$ 5,880,070,849
(B) Actuarial Value of Assets	5,471,199,526
(C) Unfunded Accrued Liabilities (A) - (B)	\$ 408,871,323

	FY 2023
Normal Cost	\$ 166,665,135
UAL Payment	38,058,209
Admin Expenses	28,822,858
Total	\$ 233,546,202

Table III-5 Actuarial and Statutory Contribution History

Table III-5 compares the Statutory Contributions to the Actuarial Contributions for Fiscal Years 2014 through 2023.

	(\$ Tho	ousands)			
Fiscal Year Ended June 30	Actuarial Contribution Certified	Contribution Contribution			
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%		
2023	233,546	233,546	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 2014 through 2023.

CITY RATES (\$ Thousands)								
Fiscal Year Ended June 30	Actuarial Contribution	Salary ¹ at Beginning of Fiscal Year	City Rate					
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%					
2023	233,546	1,457,420	16.0%					

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, 2021							
Fiscal Year								
Obligor	Department of Education	NYC School Construction Authority	Renaissance Charter School	KIPP Charter School	Total			
Contribution 1. Normal Cost 2. Amortization of Unfunded Accrued Liability 3. Administrative Expenses 4. Actuarial Contribution (1. + 2. + 3.) 5. Statutory Contribution	\$ 159,238,462 38,677,852 27,217,053 \$ 225,133,367 \$ 225,133,367	\$ 7,369,961 (647,577) 1,595,812 \$ 8,318,196 \$ 8,318,196	\$ 56,712 19,272 9,993 \$ 85,977 \$ 85,977	\$ 0 8,662 0 \$ 8,662 \$ 8,662	\$ 166,665,135 38,058,209 28,822,858 \$ 233,546,202 \$ 233,546,202			

Table IV-2
Accrued Liabilities by Obligor

NEW YORK CITY BOARD OF EDUCATION RETIREMENT SYSTEM

SUMMARY OF LIABILITY BY STATUS AND OBLIGOR

Valuation Date					Ju	ıne 30, 2021			June 30, 2021						
Fiscal Year		2023													
Obligor		Department of Education		NYC School Construction Authority		Renaissance Charter School	K	IPP Charter School		Total					
Accrued Liability															
1. Active Members	\$	2,595,397,789	\$	170,448,880	\$	1,158,832	\$	0	\$	2,767,005,501					
2. Terminated Nonvested Members	'	35,383,695		574,279	ļ .	0		71,987		36,029,961					
3. Deferred Vested Members		117,227,530		5,618,970		30,149		34,048		122,910,697					
4. Retirees and Beneficiaries	l	2,834,118,702		118,315,369	_	690,619		0		2,953,124,690					
5. Accrued Liability SubTotal (1. to 4.)	\$	5,582,127,716	\$	294,957,498	\$	1,879,600	\$	106,035	\$	5,879,070,849					
6. WTC Reserve	l	981,688		18,312	l	0		0		1,000,000					
7. Total Accrued Liability (AL) (5. + 6.)	\$	5,583,109,404	\$	294,975,810	\$	1,879,600	\$	106,035	\$	5,880,070,849					
Present Value of Benefits															
1. Active Members	\$	4,232,394,780	\$	254,071,539	\$	1,704,121	\$	0	\$	4,488,170,440					
2. Terminated Nonvested Members		35,383,695		574,279		0		71,987		36,029,961					
3. Deferred Vested Members		117,227,530		5,618,970		30,149		34,048		122,910,697					
4. Retirees and Beneficiaries	_	2,834,118,702		118,315,369	_	690,619	_	0	_	2,953,124,690					
Present Value of Benefits (1. to 4.) WTC Reserve	\$	7,219,124,707	\$	378,580,157	\$	2,424,889	\$	106,035	\$	7,600,235,788					
** ** ** ***	-	981,688		18,312	_	0 404 600		100.005	_	1,000,000					
7. Total Present Value of Benefits (5. + 6.)	\$	7,220,106,395	\$	378,598,469	\$	2,424,889	\$	106,035	\$	7,601,235,788					

Table IV-3
Participant Data by Obligor

NEW YORK CITY BOARD OF EDUCATION RETIREMENT SYSTEM

PARTICIPANT DATA BY OBLIGOR

Valuation Date	June 30, 2021								
Fiscal Year	2023								
Obligor	Department of Education		NYC School Construction Authority		denaissance parter School	K	IPP Charter School		Total
Participant Data 1. Active Members a. Number b. Annual Salary c. Average Salary 2. Terminated Nonvested Members	\$ 26,809 1,401,571,582 52,280 8,863	\$	735 82,178,049 111,807 53	\$	12 514,671 42,889 1	\$	0 0 0 5	\$	27,556 1,484,264,302 53,864 8,922
Deferred Vested Members Retirees and Beneficiaries a. Number b. Total Annual Benefits	\$ 1,927 19,112 280,911,492	\$	332 11,628,789	\$	1 4 63,195	\$	0 0	\$	1,972 19,448 292,603,477
c. Average Annual Benefit	\$ 14,698	\$	35,026	\$	15,799	\$	0	\$	15,045

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

EXPERIENCE (GAIN) / LOSS as of June 30, 2021 (\$ Thousands)

			Fixed	١	/ariable		Total
1. Exp	ected Accrued Liability (AL)		I IX CU		anable		TULAT
	. AL at June 30, 2020	\$	5,604,296	\$	16,601	\$	5,620,897
	. Total Normal Cost and Administrative Expenses at June 30, 2020	*	218.627	*	0	·	218,627
С	Interest on 1.a. and 1.b. to June 30, 2021		407.605		20,570		428,175
d	Fiscal Year 2021 Benefit Payments with Interest to June 30, 2021		(310,331)		(2,785)		(313,116
е	e. Expected AL at June 30, 2021	\$	5,920,197	\$	34,386	\$	5,954,583
2. Actı	ual AL at June 30, 2021	\$	5,847,730	\$	20,308	\$	5,868,038
В. Ехр	ected Actuarial Asset Value (AVA)						
а	. AVA at June 30, 2020	\$	4,867,762	\$	53,686	\$	4,921,448
b	. Interest on 3.a. to June 30, 2021		340,743		23,166		363,909
С	. Total Contributions Paid in Fiscal Year 2021		231,108		0		231,108
d	I. Interest on 3.c. to June 30, 2021		7,952		0		7,95
е	Fiscal Year 2021 Benefit Payments with Interest to June 30, 2021	<u> </u>	(310,331)		(2,785)	_	(313,11
f.	Expected AVA at June 30, 2021	\$	5,137,234	\$	74,067	\$	5,211,30
. Actı	ual AVA at June 30, 2021	\$	5,402,500	\$	74,067	\$	5,476,56
. Lial	bility (Gain) / Loss (2 1.e.)	\$	(72,467)	\$	(14,078)	\$	(86,54
i. Asse	et (Gain) / Loss (3.f 4.)	\$	(265,266)	\$	-	\$	(265,26
'. Tota	al Actuarial (Gain) / Loss (5. + 6.)	\$	(337,733)	\$	(14,078)	\$	(351,81

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 Valuation Date	(1) Actuarial Value of Assets (AVA)	(2) Accrued Liability (AL)	(3) Unfunded AL (UAL) (2) - (1)	(4) Funded Ratio (1) / (2)	(5) Covered Payroll ¹	(6) UAL as a % of Covered Payroll (3) / (5)
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%
2021	5,471,200	5,880,071	408,871	93.0%	1,484,264	27.5%

¹ 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

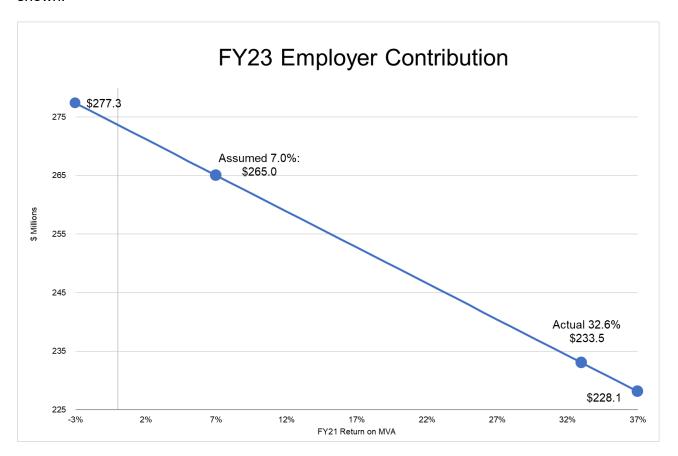
The funded status of BERS depends highly on the realization of the actuarial assumptions used, certain demographic characteristics of the Plan, and other factors. Risks faced by the Plan are described in this Section and have been separated into high, medium, and other risk categories.

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. For BERS this assumed investment return is 7%.

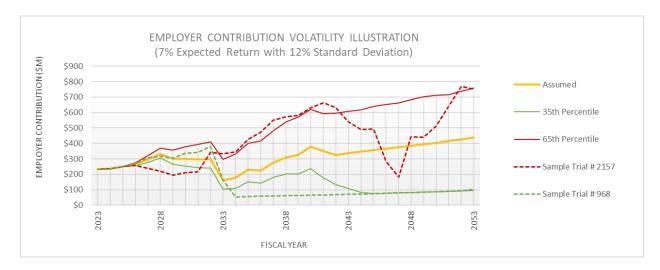
The graph below illustrates the potential FY23 employer contributions for a range of investment return outcomes if returns had differed from the assumed rate of return (i.e., from -3% to 37%). In addition, the actual investment return and employer contribution are shown.



Investment Risk: The Risk of Volatile Realized Returns

Even when long-term investment returns meet actuarial assumptions, investment volatility can contribute substantially to contribution and funded status volatility. The following charts illustrate the impact of investment return volatility on employer contributions and funded ratios based on 5,000 30-year investment return trials. Each stochastic investment return within each 30-year trial was generated from a normal distribution with an expected return of 7% and a standard deviation of 12%. Note that individual asset classes within the portfolio were NOT separately modeled and no attempt was made to rebalance the asset classes during the 30-year trials. The actual investment return for the next valuation year was known prior to the publication of this report and was also incorporated into this projection.

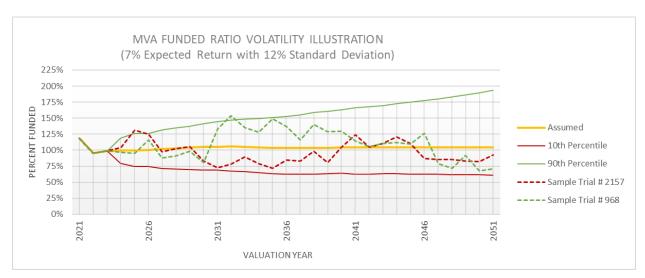
The yellow line in the charts show the results if investment returns were exactly 7% as expected. The two solid lines show results for the indicated percentile range and together frame a range of results based on all 5,000 trials. The two dashed lines illustrate sample results from among the 5,000 trials.



Please note how in the two sample trials above (the dotted lines), the actual employer contribution fluctuates above and below the assumed contribution rate due to investment return volatility.

The impact on the funded status for these two trials can also be seen below, where for example, the green dotted line exceeds 70% funding at the end of the 30-year period (below) with a corresponding employer contribution approaching \$100M (above). The converse is shown in the red dotted line where at the end of the 30-year period, the employer contribution rate approaches \$800M (above) with a corresponding funded ratio of 93% (below).

On average, the 5,000 trials result in the yellow assumed line with a funded status of 100% achieved around the fiscal year ending in 2025.

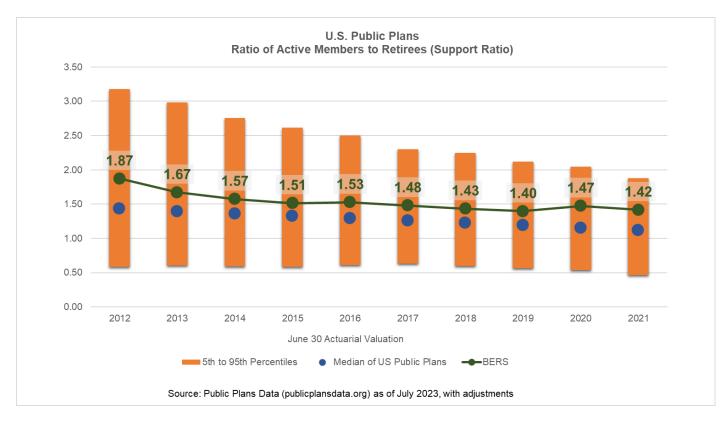


Medium Risk Types

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.

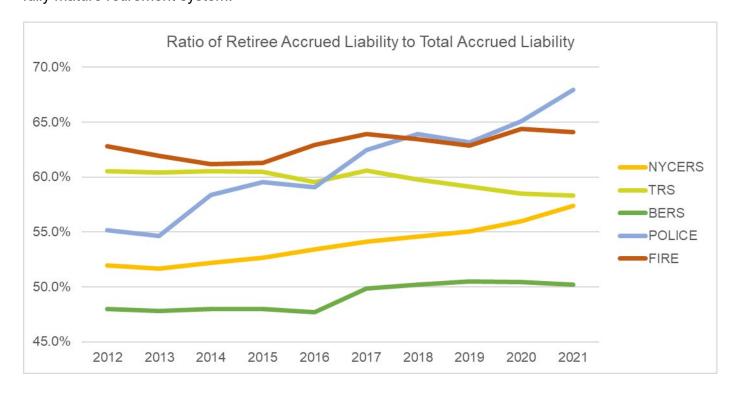


The chart above shows U.S. public pension plan Support Ratios in comparison to the Plan's. The median Support Ratio amongst US public pensions has declined from 1.43 in the 2012 valuation year to 1.12 in the 2021 valuation year. Over that same period, the Plan's Support Ratio declined from 1.87 to 1.42, meaning fewer active workers exist to support guaranteed pensioner payments.

Because the Plan's Support Ratio is above the median in recent years, 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.

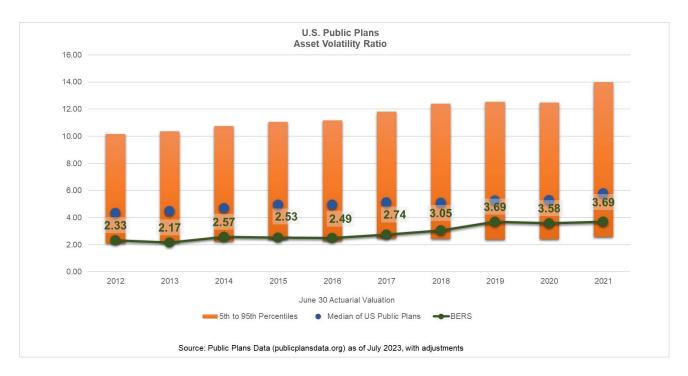


Asset Volatility Ratio

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.

lew York City Employees' Retirement System (NYCERS): Teachers' Retirem

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 RE	SYSTEM
Valuation Date	June 30, 2021
Results at 7.0%	
1. Accrued Liability	\$ 5,880,070,849
2. Actuarial Value of Assets (AVA)	 5,471,199,526
3. Unfunded Accrued Liability (1 2.)	\$ 408,871,323
4. Normal Cost	\$ 166,665,135
Results at 6.0%	
1. Accrued Liability	\$ 6,565,943,894
2. Actuarial Value of Assets (AVA) ¹	 5,471,199,526
3. Unfunded Accrued Liability (1 2.)	\$ 1,094,744,368
4. Normal Cost	\$ 256,804,845
Sensitivity Analysis for 1.0% Reduction in Interest Rate	
Increase in Accrued Liability	11.7%
2. Increase in Unfunded Accrued Liability	167.7%
3. Increase in Normal Cost	54.1%

¹ Disregarding the impact on amounts due to and from the TDA 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 such 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 benefits 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." 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 U.S. 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 FY2022, NYC settled 12,188 claims and lawsuits for \$1.5 billion. On occasion, these settlements involve NYCRS. The 1996 case *Gulino v. Board of Education* awards damages to plaintiffs that in some cases include counterfactual service and salary in NYCRS. It remains a continuing risk that

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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 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.

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.

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 the statute may take place that can 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. 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, 2021 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	1.05 /0	30
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	4.83%	30
plan		
Chapter 504 55/27 plan	1.85%	All years

Tier 6: Members of the 63/5 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.

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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. <u>Transferred Service</u>: Service earned as a member of another public retirement system in the City or State of New York.
- 5. <u>Military Service</u>: 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 benefit are summarized in the table below:

Tier	Plan Description	Minimum	Minimum
		Age	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 63/5 Plan	63	5
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. <u>Less than 20 years of Credited Service</u>: 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 63/5 Plan:

- Less than 20 years of Credited Service: 1/60 times FAS times Credited Service;
- ii. <u>20 or more years of Credited Service</u>: 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

 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	Minimum
		Age	Service
4	Basic 62/5 plan	55	5
4	Chapter 504 55/27 plan	55	5
6	Basic 63/5 plan	55	5

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 63/5 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)

- 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

- 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 Benefits

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 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 3 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 5 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 5 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
1st year after retirement	50%
2 nd year after retirement	25%
3 rd year or later after	10% times the benefit in effect at
retirement	age 60 or at retirement if earlier

c. Form of Payment: Lump sum.

L. Vested Benefit After Termination

1. Eligibility

- a. All Tier 4 plans: 5 years of Credited Service.
- b. Tier 6 plans: 5 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 highest 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 5 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 is 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 (IRC) on the exclusion for elective deferrals described in §402(g)(3), and the dollar limitation under §414(v)(2)(B)(i) of the IRC 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. Others

Continued compliance has been presumed under the OWBPA.

SECTION IX – CHAPTER AMENDMENTS

The June 30, 2021 actuarial valuation results reflect the following Chapter amendments from the prior five years.

- Chapter 56 of the Laws of 2022 (Chapter 56/22) reduces the Tier 6 vesting requirement from 10 years to 5 years and allows for retirement with 5 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 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.
- 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 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 783 of the Laws of 2022 (Chapter 783/22) extends the deadline for the COVID-19 Accidental Death Benefits from December 31, 2022 to December 31, 2024.
- Chapter 266 of the Laws of 2018 (Chapter 266/18) extends the deadline for filing a Notice of Participation in the World Trade Center Rescue, Recovery, and Cleanup Operations to September 11, 2022.

SECTION X – SUBSEQUENT EVENTS

The following legislation was adopted after the June 30, 2021 valuation date and could have an impact on future years' valuations:

- Chapter 561 of the Laws of 2022 (Chapter 561/22), enacted September 9, 2022, extends the deadline for filing a Notice of Participation in the World Trade Center Rescue, Recovery, and Cleanup Operations from September 11, 2022 to September 11, 2026.
- Chapter 585 of the Laws of 2022 (Chapter 585/22), enacted on November 10, 2022, expands the qualifications for military service buybacks.
- Chapter 775 of the Laws of 2022 (Chapter 775/22), enacted on December 23, 2022, increased the asset allocation limits for "Basket Clause" investments from 25% to 35%.

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, an actuarial valuation and projection software program developed by Winklevoss Technologies. 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 and additionally typically biennially by outside actuarial auditors hired by the New York City Comptroller.

There were no changes in actuarial assumptions and methods compared to the June 30, 2020 valuation.

Table XI-1 Active Retirement Rates

NEW YORK CITY BOARD OF EDUCATION RETIREMENT SYSTEM

PROBABILITIES OF SERVICE RETIREMENT

	Reduced Service Retirement	uced vice Probabilities For Members Not Elect an Improved Re		Service Not Elect an Improved Retirement		robabilities For Members Who Did lot Elect an Improved Retirement Elected an Improved Re	
Age		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+	N/A	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	7.70%	5.00%
3	6.70%	4.70%
4	6.20%	4.70%
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 D				l Disability
Age	Males	Females	Males	Females
45	0.000/	0.000/	0.0000/	0.0050/
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%
		0.20%		
24	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%
+08	N/A	N/A	N/A	N/A

Table XI-4 Active Mortality Rates

NEW YORK CITY BOARD OF EDUCATION RETIREMENT SYSTEM PROBABILITIES OF ACTIVE MEMBER MORTALITY

	Ordinary	/ Death	
Age	Males	Females	Accidental Death
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%
	0.048%		
33		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%
73 74	0.820%	0.500%	0.000%
75 70	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+	N/A	N/A	N/A

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	0.031376	0.0191%	78	3.8175%	2.5551%	
26	0.0342%	0.0204%	79	4.2104%	2.8024%	
27	0.0354%	0.0204%		4.6069%	3.0489%	
			80			
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%	0.6395%	118	50.0000%	50.0000%	
66 67	1.4252%	0.7529%	119	50.0000%	50.0000%	
67	1.5432%	0.8397%	120	100.0000%	100.0000%	
				<u> </u>		

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		0.7023%	73		
	0.7745%			3.5688%	2.9757%
21	0.8177%	0.7766%	74	3.7535%	3.1493%
22	0.8636%	0.8321%	75 70	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%
			93		
40 41	1.4914%	1.3831% 1.3968%		17.1548%	15.8488%
	1.5215%		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%
01	2.734070	2.010070	I '20	100.000070	100.0000 /0

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%	0.0032%	69	1.9386%	1.4332%
17	0.0191%	0.0122%	70	2.0542%	1.5007%
18	0.0222%	0.0122%	71	2.2359%	1.6745%
19	0.0222 %	0.0143%	72	2.4230%	1.8463%
20	0.0240%	0.0145%	73	2.6165%	2.0157%
21	0.0268%	0.0153%	73 74	2.8157%	2.1838%
22	0.0284%	0.0161%	75 75	3.0220%	2.1636%
23	0.0284%	0.0171%	75 76	3.4928%	2.6652%
			76		
24	0.0315%	0.0183%		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 61	1.0919%	0.7631%	113 114	50.0000%	50.0000%
61 62	1.1835%	0.8329%		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 Increase ¹
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 are used as follows:

	Adjustme	nt 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 actuarial valuation, the AAVM recognizes investment returns greater or less than expected over a period of five years.

In accordance with this AAVM, any investment return over or under the expected 7% return on the MVA is phased into the AVA over a five-year period at 20% per year.

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

Beginning with the June 30, 2020 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 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): The One-Year Lag Methodology uses a June 30, XX valuation date to determine the Fiscal Year XX+2 employer contributions as follows:

a. Normal Cost

The normal cost as of July 1, XX (calculated in the June 30, XX valuation) is rolled forward with the assumed AIR of 7.0% to the mid-point of Fiscal Year XX+2 (i.e., December 31, XX+1).

b. Administrative Expenses

A reimbursement for administrative expenses deducted from plan assets during the year ending June 30, XX is rolled forward with the assumed AIR of 7.0% to the mid-point of Fiscal Year XX+2.

c. UAL Payments

New amortization bases for gains and losses, method and assumption changes, and any benefit improvements are established each year XX such that the UAL as of June 30, XX is equal to the sum of the:

- 1) Outstanding prior amortization bases;
- 2) Unpaid prior year normal cost with interest;
- 3) Unreimbursed administrative expenses with interest, and
- 4) New amortization bases.

The UAL payment is the sum of the payments on the amortization bases scheduled for Fiscal Year XX+2.

- 13. **Excess Benefit Plan**: The valuation excludes 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 8.25% return on the TDA Fixed Fund for non-UFT members.

15. Additional Assumptions used for the TDA fixed fund:

- 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, 2021 and June 30, 2020 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, 2021 and June 30, 2020.

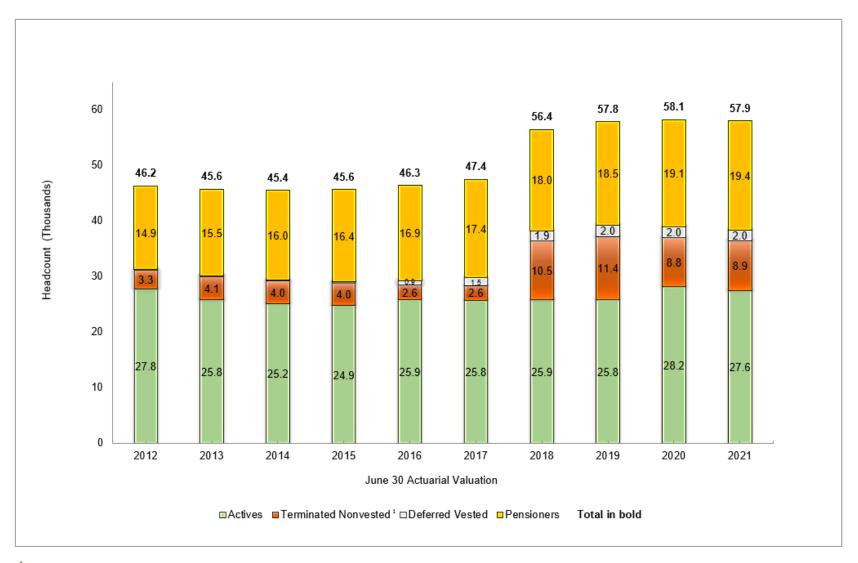
Beginning at June 30, 2020, BERS members who are no longer on payroll but not otherwise classified, have been classified as Active, Terminated Nonvested, or Deferred Vested members using actuarial judgment and consideration of available data, including leave of absence data when available.

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													
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9) Pensioners	(10)				
Status	Active Members	Terminated Nonvested	Deferred Vested	Service Pension	Ordinary Disability	Accidental Disability	Accidental Death	Other Beneficiary	Subtotal (4) to (8)	Grand Total (1) + (2) + (3) + (9)				
Number at June 30, 2020	28,183	8,816	1,972	16,691	1,157	226	3	1,043	19,120	58,091				
New Entrants / Pick-ups	1,204	17	1	0	0	0	0	0	0	1,222				
Rehires	76	(63)	(13)	0	0	0	0	0	0	0				
Non-Vested Termination not cashed out	(636)	733	(97)	0	0	0	0	0	0	0				
Non-Vested Termination / Cashout	(18)	(544)	(52)	0	0	0	0	0	0	(614)				
Vested Termination	(237)	(13)	250	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)	(68)	(18)	(8)	0	0	0	0	0	0	(94)				
Service Retirement	(919)	(4)	(81)	1,004	0	0	0	0	1,004	0				
Ordinary Disability Retirement	(28)	0	0	0	28	0	0	0	28	0				
Accidental Disability Retirement	0	(2)	0	0	0	2	0	0	2	0				
Death with Beneficiary	0	0	0	(100)	(5)	(1)	0	106	0	0				
Death without Beneficiary	0	0	0	(610)	(39)	(5)	0	(86)	(740)	(740)				
Net Adjustment for Pensioners	0	0	0	8	0	1	7	17	33	33				
Data Correction	0	0	0	0	0	0	0	0	0	0				
Net Change	(627)	106	0	302	(16)	(3)	8	37	328	(193)				
Number at June 30, 2021	27,556	8,922	1,972	16,993	1,141	223	11	1,080	19,448	57,898				

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, 2021 AND THE JUNE 30, 2020 ACTUARIAL VALUATIONS

		June 30, 2021	June 30, 2020
Number			
Males		7,130	7,235
Females		20,426	20,948
Total		27,556	 28,183
Annual Salary ¹			
Males	 \$	521,529,362	\$ 513,816,357
Females		962,734,940	962,781,272
Total	\$	1,484,264,302	\$ 1,476,597,629
Average Salary ¹			
Males	\$	73,146	\$ 71,018
Females		47,133	45,961
Total Average	\$	53,864	\$ 52,393
Average Age			
Males		49.3	48.8
Females		51.8	51.5
Total Average		51.1	50.8
Average Past Service			
Males		9.9	9.5
Females		9.2	8.9
Total Average		9.4	9.1

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

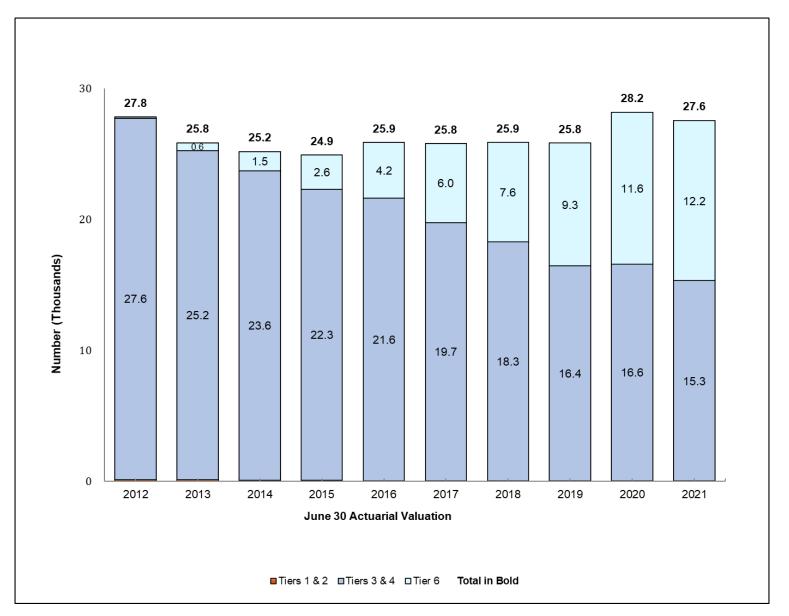


Table XII-5
Schedule of Active Member Salary Data

June 30 Actuarial Valuation	Number	Annual Salary	Average Annual Salary	Percentage Increase/ (Decrease) In Avg. Salary
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%
2021	27,556	1,484,264,302	53,864	2.8%

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, 2021

				N	lale Total					
AGE \ SVC	UNDER 5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & UP	ALL YEARS
NUMBER:										
UNDER 20	0	0	0	0	0	0	0	0	0	0
20 TO 24	54	0	0	0	0	0	0	0	0	54
25 TO 29	254	7	0	0	0	0	0	0	0	261
30 TO 34	440	134	18	0	0	0	0	0	0	592
35 TO 39	429	242	69	11	0	0	0	0	0	751
40 TO 44	373	248	136	66	17	0	0	0	0	840
45 TO 49	294	222	204	148	56	6	0	0	0	930
50 TO 54	303	231	156	206	108	47	6	0	0	1,057
55 TO 59	306	237	170	179	126	79	43	9	0	1,149
60 TO 64	183	188	123	112	104	81	77	19	5	892
65 TO 69	70	93	75	57	36	31	24	9	9	404
70 & UP	31	48	34	28	28	12	6	5	8	200
TOTAL	2,737	1,650	985	807	475	256	156	42	22	7,130
	, ·	,								,
SALARIES (IN	THOUSANDS).	:								
UNDER 20	0	0	0	0	0	0	0	0	0	0
20 TO 24	1,877	0	0	0	0	0	0	0	0	1,877
25 TO 29	11,694	390	0	0	0	0	0	0	0	12,084
30 TO 34	25,523	8,656	1,256	0	0	0	0	0	0	35,436
35 TO 39	27,665	16,972	4,853	993	0	0	0	0	0	50,484
40 TO 44	25,001	17,319	11,512	6,539	1,408	0	0	0	0	61,780
45 TO 49	20,304	14,928	17,638	15,371	5,177	722	0	0	0	74,141
50 TO 54	19,551	14,298	13,165	22,907	10,294	4,304	465	0	0	84,985
55 TO 59	18,625	14,403	13,269	18,306	12,380	7,954	4,409	763	0	90,110
60 TO 64	9,943	10,321	8,864	10,201	9,929	7,366	8,066	2,101	561	67,351
65 TO 69	4,102	5,678	5,062	5,226	3,461	3,008	2,241	874	1,045	30,696
70 & UP	1,111	2,076	2,047	1,695	2,424	1,174	588	571	901	12,586
TOTAL 1	165,396	105,042	77,668	81,238	45,073	24,528	15,770	4,309	2,507	521,529
AVERAGE SAL	ARIES: 2									
UNDER 20	0	0	0	0	0	0	0	0	0	0
20 TO 24	34,755	0	0	0	0	0	0	0	0	34,755
25 TO 29	46,041	55,679	0	0	0	0	0	0	0	46,299
30 TO 34	58,007	64,601	69,799	0	0	0	0	0	0	59,858
35 TO 39	64,487	70,132	70,339	90,284	0	0	0	0	0	67,222
40 TO 44	67,026	69,834	84,648	99,083	82,840	0	0	0	0	73,547
45 TO 49	69,061	67,244	86,462	103,860	92,443	120,331	0	0	0	79,721
50 TO 54	64,526	61,898	84,393	111,200	95,317	91,578	77,455	0	0	80,402
55 TO 59	60,866	60,773	78,052	102,266	98,254	100,687	102,542	84,832	0	78,424
60 TO 64	54,332	54,899	72,067	91,078	95,471	90,942	102,342	110,559	112,193	75,506
65 TO 69	58,598	61,052	67,493	91,676	96,133	97,034	93,385	97,088	116,125	75,981
70 & UP	35,840	43,250	60,208	60,546	86,557	97,799	98,060	114,131	112,564	62,931
TOTAL	60,430	63,662	78,850	100,667	94,890	95,814	101,087	102,585	113,936	73,146

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, 2021 (cont'd)

UNDER 5 5-9 10-14 15-19 20-24 25-29 30-34 35-39 40 & UP ALL YEARS 0 56 56 532 14 0 0 0 0 0 0 0 0 0 0 56 56 532 14 0 0 0 0 0 0 0 0 546 956 253 5 0 0 0 0 0 0 1,214 922 476 138 12 0 0 0 0 0 1,214 922 476 138 12 0 0 0 0 0 1,548 1,144 1 0 0 0 0 1,548 1,548 1,548 1,548
56 0 0 0 0 0 0 0 0 56 532 14 0 0 0 0 0 0 0 0 546 956 253 5 0 0 0 0 0 0 0 0 1,214 922 476 138 12 0 0 0 0 0 0 0 1,548 1,079 559 362 135 15 1 0 0 0 0 2,151 1,086 615 370 265 107 5 0 0 0 2,448 1,128 890 514 356 163 54 17 0 0 3,122 921 1,053 750 579 293 94 54 23 1 3,768 616 795 667 596 367 129 53 <
56 0 0 0 0 0 0 0 0 56 532 14 0 0 0 0 0 0 0 0 546 956 253 5 0 0 0 0 0 0 0 0 1,214 922 476 138 12 0 0 0 0 0 0 0 1,548 1,079 559 362 135 15 1 0 0 0 0 2,151 1,086 615 370 265 107 5 0 0 0 2,448 1,128 890 514 356 163 54 17 0 0 3,122 921 1,053 750 579 293 94 54 23 1 3,768 616 795 667 596 367 129 53 <
532 14 0 0 0 0 0 0 0 546 956 253 5 0 0 0 0 0 0 0 0 1,214 922 476 138 12 0 0 0 0 0 0 0 1,548 1,079 559 362 135 15 1 0 0 0 2,151 1,086 615 370 265 107 5 0 0 0 2,448 1,128 890 514 356 163 54 17 0 0 3,122 921 1,053 750 579 293 94 54 23 1 3,768 616 795 667 596 367 129 53 44 9 3,276 212 351 349 287 201 82 22 13
956 253 5 0 0 0 0 0 0 0 1,214 922 476 138 12 0 0 0 0 0 0 1,548 1,079 559 362 135 15 1 0 0 0 2,151 1,086 615 370 265 107 5 0 0 0 2,448 1,128 890 514 356 163 54 17 0 0 3,122 921 1,053 750 579 293 94 54 23 1 3,768 616 795 667 596 367 129 53 44 9 3,276 212 351 349 287 201 82 22 13 8 1,525 78 161 158 189 98 46 24 11 7 772
922 476 138 12 0 0 0 0 0 0 1,548 1,079 559 362 135 15 1 0 0 0 0 2,151 1,086 615 370 265 107 5 0 0 0 2,448 1,128 890 514 356 163 54 17 0 0 3,122 921 1,053 750 579 293 94 54 23 1 3,768 616 795 667 596 367 129 53 44 9 3,276 212 351 349 287 201 82 22 13 8 1,525 78 161 158 189 98 46 24 11 7 772
1,079 559 362 135 15 1 0 0 0 2,151 1,086 615 370 265 107 5 0 0 0 0 2,448 1,128 890 514 356 163 54 17 0 0 3,122 921 1,053 750 579 293 94 54 23 1 3,768 616 795 667 596 367 129 53 44 9 3,276 212 351 349 287 201 82 22 13 8 1,525 78 161 158 189 98 46 24 11 7 772
1,086 615 370 265 107 5 0 0 0 2,448 1,128 890 514 356 163 54 17 0 0 3,122 921 1,053 750 579 293 94 54 23 1 3,768 616 795 667 596 367 129 53 44 9 3,276 212 351 349 287 201 82 22 13 8 1,525 78 161 158 189 98 46 24 11 7 772
1,128 890 514 356 163 54 17 0 0 3,122 921 1,053 750 579 293 94 54 23 1 3,768 616 795 667 596 367 129 53 44 9 3,276 212 351 349 287 201 82 22 13 8 1,525 78 161 158 189 98 46 24 11 7 772
921 1,053 750 579 293 94 54 23 1 3,768 616 795 667 596 367 129 53 44 9 3,276 212 351 349 287 201 82 22 13 8 1,525 78 161 158 189 98 46 24 11 7 772
616 795 667 596 367 129 53 44 9 3,276 212 351 349 287 201 82 22 13 8 1,525 78 161 158 189 98 46 24 11 7 772
212 351 349 287 201 82 22 13 8 1,525 78 161 158 189 98 46 24 11 7 772
78 161 158 189 98 46 24 11 7 772
<u>7,586 5,167 3,313 2,419 1,244 411 170 91 25 20,426</u>
I THOUSANDS):
0 0 0 0 0 0 0 0 0
1,711 0 0 0 0 0 0 0 0 1,711
27,401 671 0 0 0 0 0 0 0 28,072
56,404 18,440 420 0 0 0 0 0 0 75,265
45,390 33,036 10,836 863 0 0 0 0 0 90,124
43,434 35,345 28,530 11,888 1,218 104 0 0 0 120,519
40,495 30,641 24,725 22,136 8,958 477 0 0 0 127,432
36,358 36,410 27,335 21,905 11,663 4,339 1,408 0 0 139,417
29,516 38,350 29,897 28,491 16,298 7,015 4,527 2,141 58 156,292
20,002 27,545 27,395 26,357 19,790 7,300 4,336 3,485 689 136,901
6,626 11,272 13,093 12,341 9,615 4,460 1,534 1,026 763 60,731
1,906 4,262 4,628 7,110 3,805 2,157 1,426 491 486 26,270
309,243 235,974 166,859 131,091 71,348 25,852 13,231 7,143 1,996 962,735
ALARIES: ² 0 0 0 0 0 0 0 0 0 0
30,546 0 0 0 0 0 0 0 0 30,546
51,506 47,914 0 0 0 0 0 0 0 51,414
59,000 72,887 83,980 0 0 0 0 0 0 61,997
49,230 69,403 78,520 71,899 0 0 0 0 0 58,220
49,254 63,230 78,813 88,058 81,211 103,948 0 0 56,029
37,288 49,823 66,825 83,531 83,720 95,441 0 0 0 52,055
32,233 40,910 53,181 61,531 71,550 80,346 82,830 0 0 44,656
32,233 40,910 33,161 01,331 71,330 60,340 62,630 0 0 44,630 32,047 36,420 39,863 49,207 55,625 74,632 83,826 93,072 57,696 41,479
32,471 34,648 41,073 44,224 53,924 56,591 81,814 79,206 76,550 41,789
31,253 32,115 37,517 43,001 47,837 54,388 69,717 78,952 95,426 39,824
24,437 26,474 29,291 37,617 38,826 46,881 59,432 44,632 69,365 34,029
40,765 45,669 50,365 54,192 57,353 62,900 77,829 78,495 79,824 47,133

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

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, 2021 (cont'd)

_					Total					
AGE \ SVC	UNDER 5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & UP	ALL YEARS
NUMBER:										
UNDER 20	0	0	0	0	0	0	0	0	0	0
20 TO 24	110	0	0	0	0	0	0	0	0	110
25 TO 29	786	21	0	0	0	0	0	0	0	807
30 TO 34	1,396	387	23	0	0	0	0	0	0	1,806
35 TO 39	1,351	718	207	23	0	0	0	0	0	2,299
40 TO 44	1,452	807	498	201	32	1	0	0	0	2,991
45 TO 49	1,380	837	574	413	163	11	0	0	0	3,378
50 TO 54	1,431	1,121	670	562	271	101	23	0	0	4,179
55 TO 59	1,227	1,290	920	758	419	173	97	32	1	4,917
60 TO 64	799	983	790	708	471	210	130	63	14	4,168
65 TO 69	282	444	424	344	237	113	46	22	17	1,929
70 & UP	109	209	192	217	126	58	30	16	15	972
TOTAL	10,323	6,817	4,298	3,226	1,719	667	326	133	47	27,556
SALARIES (IN	THOUSANDS)									
UNDER 20	0	0	0	0	0	0	0	0	0	0
20 TO 24	3,587	0	0	0	0	0	0	0	0	3,587
25 TO 29	39,096	1,061	0	0	0	0	0	0	0	40,156
30 TO 34	81,927	27,097	1,676	0	0	0	0	0	0	110,701
35 TO 39	73,055	50,008	15,689	1,856	0	0	0	0	0	140,608
40 TO 44	68,435	52,664	40,042	18,427	2,626	104	0	0	0	182,299
45 TO 49	60,799	45,569	42,363	37,507	14,135	1,199	0	0	0	201,572
50 TO 54	55,910	50,708	40,500	44,812	21,957	8,643	1,873	0	0	224,403
55 TO 59	48,141	52,754	43,166	46,796	28,678	14,970	8,936	2,904	58	246,402
60 TO 64	29,945	37,866	36,260	36,558	29,719	14,666	12,402	5,586	1,250	204,252
65 TO 69	10,728	16,950	18,155	17,567	13,076	7,468	3,775	1,900	1,809	91,427
70 & UP	3,017	6,338	6,675	8,805	6,229	3,330	2,015	1,062	1,386	38,856
TOTAL 1	474,638	341,015	244,527	212,329	116,420	50,380	29,001	11,452	4,502	1,484,264
		341,013	244,321	212,323	110,420	30,300	23,001	11,432	4,302	1,404,204
AVERAGE SAL						•	•			_
UNDER 20	0	0	0	0	0	0	0	0	0	0
20 TO 24	32,612	0	0	0	0	0	0	0	0	32,612
25 TO 29	49,740	50,502	0	0	0	0	0	0	0	49,760
30 TO 34	58,687	70,018	72,882	0	0	0	0	0	0	61,296
35 TO 39	54,075	69,649	75,793	80,692	0	0	0	0	0	61,161
40 TO 44	47,131	65,259	80,406	91,678	82,077	103,948	0	0	0	60,949
45 TO 49	44,057	54,444	73,804	90,816	86,717	109,017	0	0	0	59,672
50 TO 54	39,070	45,235	60,448	79,737	81,022	85,573	81,428	0	0	53,698
55 TO 59	39,234	40,894	46,919	61,737	68,444	86,530	92,123	90,754	57,696	50,112
60 TO 64	37,478	38,521	45,898	51,636	63,098	69,840	95,400	88,662	89,280	49,005
65 TO 69	38,041	38,176	42,819	51,066	55,173	66,088	82,066	86,371	106,384	47,396
70 & UP	27,680	30,327	34,766	40,576	49,433	57,416	67,157	66,351	92,404	39,976
TOTAL	45,979	50,024	56,893	65,818	67,726	75,532	88,959	86,102	95,792	53,864

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

Total may not add up due to rounding.

² Average based on unrounded salary.

Table XII-7 Detailed Reconciliation of Active Membership

		тот	AL ACTIVE MEMB	ERS AS OF J	UNE 30, 202	1	TOTAL ACTIVE MEMBERS AS OF JUNE 30, 2020					
TIER	GENDER	NUMBER	SALARY	AVG SAL	AVG AGE	AVG SVC	NUMBER	SALARY	AVG SAL	AVG AGE	AVG SVC	
1	M	5	554,935	110,987	74.0	36.3	5	565,014	113,003	73.0	35.3	
1	F	10	650,944	65,094	75.8	32.6	11	691,197	62,836	75.4	28.9	
		15	1,205,879	80,392	75.2	33.8	16	1,256,211	78,513	74.6	30.9	
2	M	2	363,598	181,799	70.0	18.5	5	597,709	119,542	67.8	16.9	
2	F	4	81,551	20,388	73.8	18.4	5	184,991	36,998	72.2	20.3	
		6	445,149	74,191	72.5	18.5	10	782,700	78,270	70.0	18.6	
4	M	3,827	305,369,226	79,793	53.6	15.5	4,086	314,049,281	76,860	53.0	14.6	
4	F	11,479	560,334,249	48,814	56.3	13.9	12,478	584,921,680	46,876	55.7	13.1	
		15,306	865,703,475	56,560	55.6	14.3	16,564	898,970,961	54,273	55.1	13.5	
6	M	3,296	215,241,604	65,304	44.3	3.4	3,139	198,604,353	63,270	43.4	2.8	
6	F	8,933	401,668,196	44,965	45.9	3.2	8,454	376,983,405	44,592	45.2	2.7	
		12,229	616,909,799	50,446	45.5	3.3	11,593	575,587,757	49,650	44.7	2.7	
ALL		27,556	1,484,264,302	53,864	51.1	9.4	28,183	1,476,597,629	52,393	50.8	9.1	

		JUNE 30, 20	21 MEMBERS ALSO	PRESENT AS	OF JUNE 30), 2020	JUNE 30, 20	20 MEMBERS ALS	O PRESENT AS	OF JUNE 30), 2021
1	М	5	554,935	110,987	74.0	36.3	5	565,014	113,003	73.0	35.3
1	F	10	650,944	65,094	75.8	32.6	10	668,393	66,839	74.8	29.6
		15	1,205,879	80,392	75.2	33.8	15	1,233,407	82,227	74.2	31.5
2	М	2	363,598	181,799	70.0	18.5	2	363,598	181,799	69.0	16.5
2	F	4	81,551	20,388	73.8	18.4	4	100,576	25,144	72.8	21.7
		6	445,149	74,191	72.5	18.5	6	464,174	77,362	71.5	19.9
4	М	3,795	303,341,733	79,932	53.6	15.6	3,795	296,268,821	78,068	52.6	14.5
4	F	11,413	557,251,049	48,826	56.3	13.9	11,413	545,681,549	47,812	55.3	13.0
		15,208	860,592,782	56,588	55.6	14.3	15,208	841,950,369	55,362	54.6	13.4
6	М	2,944	197,522,592	67,093	44.6	3.7	2,944	191,017,834	64,884	43.6	2.8
6	F	8,037	370,764,022	46,132	46.3	3.5	8,037	361,882,334	45,027	45.3	2.7
		10,981	568,286,614	51,752	45.9	3.6	10,981	552,900,167	50,351	44.9	2.7
ALL		26,210	1,430,530,423	54,580	51.6	9.8	26,210	1,396,548,117	53,283	50.6	8.9

			ADDITIONS DUF	RING THE YEAR	R ¹	SEPARATIONS FROM MEMBERSHIP DURING THE YEAR ¹					
1	М	0	0	0	0.0	0.0	0	0	0	0.0	0.0
1	F	0	0	0	0.0	0.0	1	22,804	22,804	81.0	22.0
		0	0	0	0.0	0.0	1	22,804	22,804	81.0	22.0
2	М	0	0	0	0.0	0.0	3	234,111	78,037	67.0	17.1
2	F	0	0	0	0.0	0.0	1	84,415	84,415	70.0	15.1
		0	0	0	0.0	0.0	4	318,527	79,632	67.8	16.6
4	М	32	2,027,492	63,359	52.2	9.6	291	17,780,461	61,101	57.8	16.0
4	F	66	3,083,200	46,715	50.7	6.4	1,065	39,240,131	36,845	60.5	14.7
		98	5,110,693	52,150	51.2	7.5	1,356	57,020,592	42,051	59.9	15.0
6	М	352	17,719,012	50,338	41.2	0.4	195	7,586,519	38,905	39.9	2.1
6	F	896	30,904,174	34,491	42.4	0.5	417	15,101,071	36,214	43.5	2.2
		1,248	48,623,186	38,961	42.1	0.5	612	22,687,590	37,071	42.3	2.2
ALL		1,346	53,733,878	39,921	42.7	1.0	1,973	80,049,512	40,572	54.5	11.0

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, 2020 and are no longer members on June 30, 2021. Members are included as separations and additions if the tier or gender has changed.

Table XII-8
Distribution of Pension Benefits as of June 30, 2021

	MALE				FEMALE		TOTAL			
AGE	NUMBER	BENEFITS	AVERAGE	NUMBER	BENEFITS	AVERAGE	NUMBER	BENEFITS	AVERAGE	
0=D, #0= D=T#										
SERVICE RETII		•					•			
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	2	127,247	63,623	0	0	0	2	127,247	63,623	
55 TO 59	81	2,516,427	31,067	225	2,825,991	12,560	306	5,342,417	17,459	
60 TO 64	337	11,739,506	34,835	1,200	15,504,784	12,921	1,537	27,244,290	17,726	
65 TO 69	686	23,323,075	33,999	2,757	36,773,450	13,338	3,443	60,096,525	17,455	
70 TO 74	730	21,772,817	29,826	3,136	37,466,812	11,947	3,866	59,239,630	15,323	
75 TO 79	568	16,758,787	29,505	2,611	30,030,842	11,502	3,179	46,789,629	14,718	
80 TO 84	401	12,046,523	30,041	1,791	17,646,284	9,853	2,192	29,692,807	13,546	
85 TO 89	237	6,737,232	28,427	1,083	10,127,986	9,352	1,320	16,865,219	12,777	
90 & UP	169	4,563,147	27,001	979	8,763,502	8,951	1,148	13,326,650	11,609	
TOTAL	3,211	99,584,760	31,014	13,782	159,139,652	11,547	16,993	258,724,413	15,225	
ORDINARY DIS	ARII ITV:									
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	1	28,251	28,251	1	28,251	28,251	
45 TO 49	7	106,322	15,189	8	100,708	12,588	15	207,030	13,802	
50 TO 54	9	150,805	16,756	26	434,173	16,699	35	584,978	16,714	
55 TO 59	30	550,480	18,349	104	1,348,521	12,967	134	1,899,001	14,172	
60 TO 64	49	931,838	19,017	186	2,170,818	11,671	235	3,102,656	13,203	
65 TO 69	52	911,099	17,521	203	2,271,737	11,191	255	3,182,836	12,482	
70 TO 74	44	792,484	18,011	176	1,876,454	10,662	220	2,668,938	12,132	
75 TO 79	27	442,228	16,379	121	1,235,794	10,213	148	1,678,021	11,338	
80 TO 84	14	189,974	13,570	63	597,483	9,484	77	787,457	10,227	
85 TO 89	2	43,160	21,580	9	78,973	8,775	11	122,134	11,103	
90 & UP	4	69,300	17,325	6	49,232	8,205	10	118,532	11,853	
TOTAL	238	4,187,688	17,595	903	10,192,146	11,287	1,141	14,379,834	12,603	
ACCIDENTAL D	ISABII ITY									
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	ő	0	0	0	
40 TO 44	0	0	0	1	23,879	23,879	1	23,879	23,879	
45 TO 49	1	11,956	11,956	2	20,742	10,371	3	32,698	10,899	
50 TO 54	1	10,250	10,250	4	39,284	9,821	5	49,534	9,907	
55 TO 59	7	158,610	22,659	14	147,873	10,562	21	306,483	14,594	
60 TO 64	11	280,554	25,505	30	280,655	9,355	41	561,209	13,688	
65 TO 69	8	128,861	16,108	43	515,280	11,983	51	644,141	12,630	
70 TO 74	o 7	110,021	15,717	43 36	369,755	10,271	43	479,776	11,158	
70 TO 74 75 TO 79						·				
	6	120,175 168,506	20,029	19	154,737	8,144	25 19	274,912 275,226	10,996	
80 TO 84 85 TO 89	5	25,273	33,701 25,273	13	106,720 58,981	8,209	18	275,226 84,254	15,290	
	1			8		7,373	9		9,362	
90 & UP	2	76,009	38,005	4	36,589	9,147	6	112,598	18,766	
TOTAL	49	1,090,215	22,249	174	1,754,495	10,083	223	2,844,709	12,757	

Table XII-8
Distribution of Pension Benefits as of June 30, 2021 (cont'd)

-		MALE			FEMALE		TOTAL			
AGE	NUMBER	BENEFITS	AVERAGE	NUMBER	BENEFITS	AVERAGE	NUMBER	BENEFITS	AVERAGE	
ACCIDENTAL	DE 4 T. I.									
ACCIDENTAL D		0.440	2 222	4	4.470	4 470	•	40.040	2.540	
UNDER 30	2	6,443	3,222	1	4,176	4,176	3	10,619	3,540	
30 TO 34	0	0	0 540	0	0	0 540	0	0	0	
35 TO 39	1	9,540	9,540	1	9,540	9,540	2	19,080	9,540	
40 TO 44	0	0	0 000	0	0	0	0	0	0	
45 TO 49	1	3,222	3,222	0	0	0	1	3,222	3,222	
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	2	8,521	4,260	1	51,707	51,707	3	60,228	20,076	
65 TO 69	1	17,226	17,226	0	0	0	1	17,226	17,226	
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 TOTAL	0 8	45,348	5, 669	0 3	65,423	21, 808	0 11	0 110,772	10,070	
TOTAL		45,346	5,009	3	65,423	21,808	11	110,772	10,070	
OTHER BENEF	ICIARIES:									
UNDER 30	3	20,778	6,926	1	3,717	3,717	4	24,495	6,124	
30 TO 34	7	41,422	5,917	3	38,421	12,807	10	79,843	7,984	
35 TO 39	10	209,446	20,945	5	42,717	8,543	15	252,163	16,811	
40 TO 44	3	37.676	12,559	20	228,529	11,426	23	266,205	11,574	
45 TO 49	7	63,071	9,010	15	132,185	8,812	22	195,256	8,875	
50 TO 54	11	113,606	10,328	45	283,931	6,310	56	397,537	7,099	
55 TO 59	20	182,108	9,105	43	272,973	6,348	63	455,082	7,224	
60 TO 64	30	312,402	10,413	55	567,881	10,325	85	880,283	10,356	
65 TO 69	33	498,726	15,113	62	805,966	12,999	95	1,304,692	13,734	
70 TO 74	52	947,018	18,212	71	1,175,089	16,551	123	2,122,107	17,253	
75 TO 79	72	1,419,435	19,714	74	1,131,675	15,293	146	2,551,109	17,473	
80 TO 84	58	1,050,486	18,112	101	2,166,788	21,453	159	3,217,274	20,234	
85 TO 89	43	668,130	15,538	102	2,022,427	19,828	145	2,690,558	18,556	
90 & UP	36	557,698	15,492	98	1,549,447	15,811	134	2,107,145	15,725	
TOTAL	385	6,122,003	15,901	695	10,421,746	14,995	1,080	16,543,749	15,318	
-										
ALL PENSIONE										
UNDER 30	5	27,221	5,444	2	7,893	3,947	7	35,114	5,016	
30 TO 34	7	41,422	5,917	3	38,421	12,807	10	79,843	7,984	
35 TO 39	11	218,986	19,908	6	52,257	8,710	17	271,243	15,955	
40 TO 44	3	37,676	12,559	22	280,659	12,757	25	318,335	12,733	
45 TO 49	16	184,570	11,536	25	253,635	10,145	41	438,206	10,688	
50 TO 54	23	401,907	17,474	75	757,388	10,099	98	1,159,296	11,830	
55 TO 59	138	3,407,625	24,693	386	4,595,358	11,905	524	8,002,983	15,273	
60 TO 64	429	13,272,820	30,939	1,472	18,575,845	12,619	1,901	31,848,666	16,754	
65 TO 69	780	24,878,987	31,896	3,065	40,366,434	13,170	3,845	65,245,421	16,969	
70 TO 74	833	23,622,340	28,358	3,419	40,888,111	11,959	4,252	64,510,451	15,172	
75 TO 79	673	18,740,625	27,846	2,825	32,553,047	11,523	3,498	51,293,672	14,664	
80 TO 84	478	13,455,488	28,150	1,968	20,517,276	10,425	2,446	33,972,764	13,889	
85 TO 89	284	7,474,193	26,318	1,202	12,288,368	10,223	1,486	19,762,560	13,299	
90 & UP	211	5,266,154	24,958	1,087	10,398,770	9,566	1,298	15,664,924	12,069	
TOTAL	3,891	111,030,014	28,535	15,557	181,573,462	11,671	19,448	292,603,477	15,045	

Graph XII-9
Pensioner Average Benefits

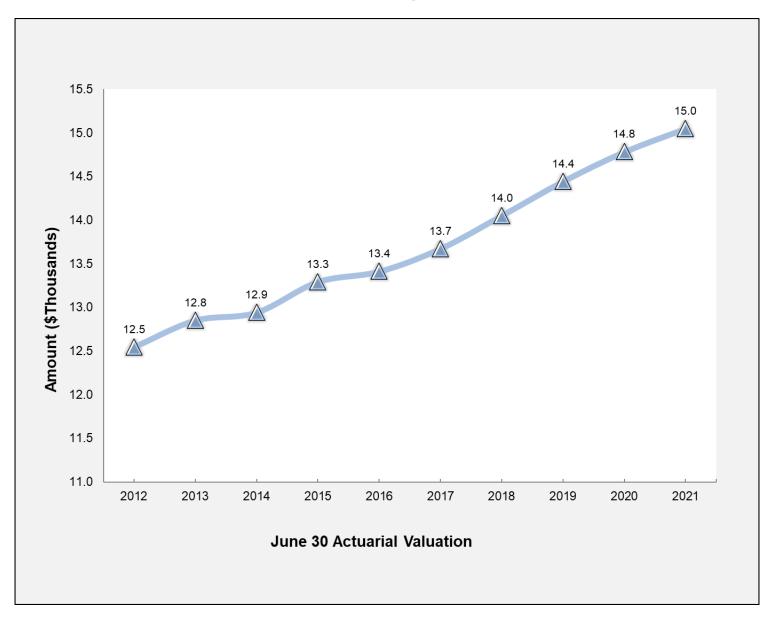


Table XII-10
Reconciliation of Pensioner and Beneficiary Data

	Added to Rolls		Remove	d from Rolls	End of	Year Rolls		
June 30 Actuarial Valuation	Number	Annual Allowances ¹	Number	Annual Allowances	Number	Annual Allowances ²	% Increase in Annual Allowances	Average Annual Allowances
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	23,003,553	708	8,604,426	19,120	281,560,960	5.4%	14,726
2021	1,066	18,952,419	738	7,909,902	19,448	292,603,477	3.9%	15,045

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

² Allowances shown are those used in the actuarial valuation as of the Year End date and are not adjusted for anticipated changes due to the finalization of benefit calculations or contract settlements

APPENDIX: ACRONYMS AND ABBREVIATIONS

Revised 2021 Actuarial Assumptions and Methods proposed by the Actuary and

A&M adopted by the Board of Trustees during Fiscal Year 2021

2019 A&M Actuarial Assumptions and Methods proposed by the Actuary and

adopted by the Board of Trustees during Fiscal Year 2019

AAVM Actuarial Asset Valuation Method

ACCNY 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

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

WTC World Trade Center