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**Report on the Annual Basic Benefits Valuation of the
School Employees Retirement System of Ohio**

Prepared as of June 30, 2022





Cavanaugh Macdonald

CONSULTING, LLC

The experience and dedication you deserve

November 7, 2022

Board of Trustees
School Employees Retirement System of Ohio
300 East Broad Street, Suite 100
Columbus, OH 43215-3746

Dear Members of the Board:

Presented in this report are the results of the annual actuarial valuation of the basic benefits provided under the School Employees Retirement System of Ohio (SERS) as of June 30, 2022. The purpose of the valuation was to measure the System's funding progress and to calculate the actuarially determined employer contribution rates for the fiscal year beginning July 1, 2022.

The valuation is based upon data, furnished by the SERS staff, concerning active, inactive and retiree members along with pertinent financial information. The complete cooperation of the SERS staff in furnishing materials requested is hereby acknowledged with appreciation.

In order to prepare the results in this report we have utilized appropriate actuarial models that were developed for this purpose. These models use assumptions about future contingent events along with recognized actuarial approaches to develop the needed results.

Future actuarial results may differ significantly from the current results presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. Since the potential impact of such factors is outside the scope of a normal annual actuarial valuation, an analysis of the range of results is not presented herein.

The undersigned are members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Respectfully submitted,

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**REPORT ON THE ANNUAL VALUATION OF THE
SCHOOL EMPLOYEES RETIREMENT SYSTEM OF OHIO**

PREPARED AS OF JUNE 30, 2022

EXECUTIVE SUMMARY

The School Employees Retirement System of Ohio (SERS or System) is a defined benefit public pension fund that provides pensions and access to health care coverage for retired school employees who are covered in nonteaching positions. This includes bus drivers, custodians, treasurers, business officials, administrative assistants, food service providers, and educational aides. This report presents the results of the June 30, 2022, actuarial funding valuation of the System. The primary purposes of performing the actuarial funding valuation are to:

- determine the sufficiency of the Statutory Contribution Rate as set forth in the Ohio statutes;
- determine the experience of the System since the last valuation date;
- disclose asset and liability measures as of the valuation date; and
- analyze and report on trends in System contributions, assets, and liabilities over the past several years.

The actuarial valuation results provide a “snapshot” view of the System’s financial condition on June 30, 2022. Actuarial gains and losses result when the actual experience of the plan (such as asset return, pay increases, turnover, deaths, etc.) is different from that expected by the actuarial assumptions. The System’s unfunded actuarial accrued liability (UAAL) was expected to be \$5,386.0 million as of June 30, 2022, taking into account contributions from the employers and members of \$900.1 million. The actual UAAL is \$5,484.5 million. The net increase of \$98.5 million is attributable to liability and investment gains and losses which are detailed in Section V. The remaining amortization period of the UAAL is 22 years as of June 30, 2022.

The valuation is based on a set of actuarial assumptions which were adopted by the Board based on the five-year experience study for the period ending June 30, 2020. These assumptions are presented in Schedule C.



A summary of the key results from the June 30, 2022 actuarial valuation is shown below. Further detail on the valuation results can be found in the following sections of this Executive Summary.

	June 30, 2022 Valuation Results	June 30, 2021 Valuation Results
Actuarially Determined Contribution Rate	11.22%	12.50%
Employer Contribution Rate	14.00%	14.00%
Sufficiency/(Deficiency)	2.78%	1.50%
Remaining Amortization Period	22	23
Unfunded Actuarial Accrued Liability (\$M)	\$5,484.5	\$5,498.1
Basic Benefit Funded Ratio (Actuarial Assets)	75.48%	74.46%

The funded ratio of the basic benefits is 75.48%. Since this is greater than 70%, per the Board-adopted funding policy, the basic benefits may receive an employer contribution between 13.50% and 14.00% of compensation for FY2023. The Health Care Fund may receive an employer contribution of up to 0.50%. Based on a Board Resolution dated September 15, 2022, the valuation assumes an allocation of the entire 14.00% to the basic benefits and 0.00% allocated to health care consistent with SERS' funding policy. The funding policy requires at least 13.50% of the employers' contributions be allocated to SERS' basic benefits when the funded ratio is 70% but less than 80%, with the remainder (if any) allocated to health care.

Under Ohio Revised Code 3309.374(B), on September 15, 2022, the Board granted an annual cost-of-living-adjustment of 2.5% for eligible SERS members for the 2023 calendar year. This has been included in the valuation for funding purposes.

EXPERIENCE FOR THE LAST PLAN YEAR

Numerous factors contributed to the change in the System's assets, liabilities, and actuarial contribution rate between June 30, 2021 and June 30, 2022. The components are examined in the following discussion. Since the most recent experience study was completed, we note that inflation has been significantly higher than assumed. Inflation is a component of several assumptions so the effects of higher inflation as a component of one assumption may be partially offset by the effect of higher inflation in another. We do not want to give too much credibility to recent experience, but we cannot ignore that current rates of inflation are the highest in the past 40 years. We will continue to monitor inflation in subsequent valuations to assess the reasonableness of the assumed inflation used in the valuation.

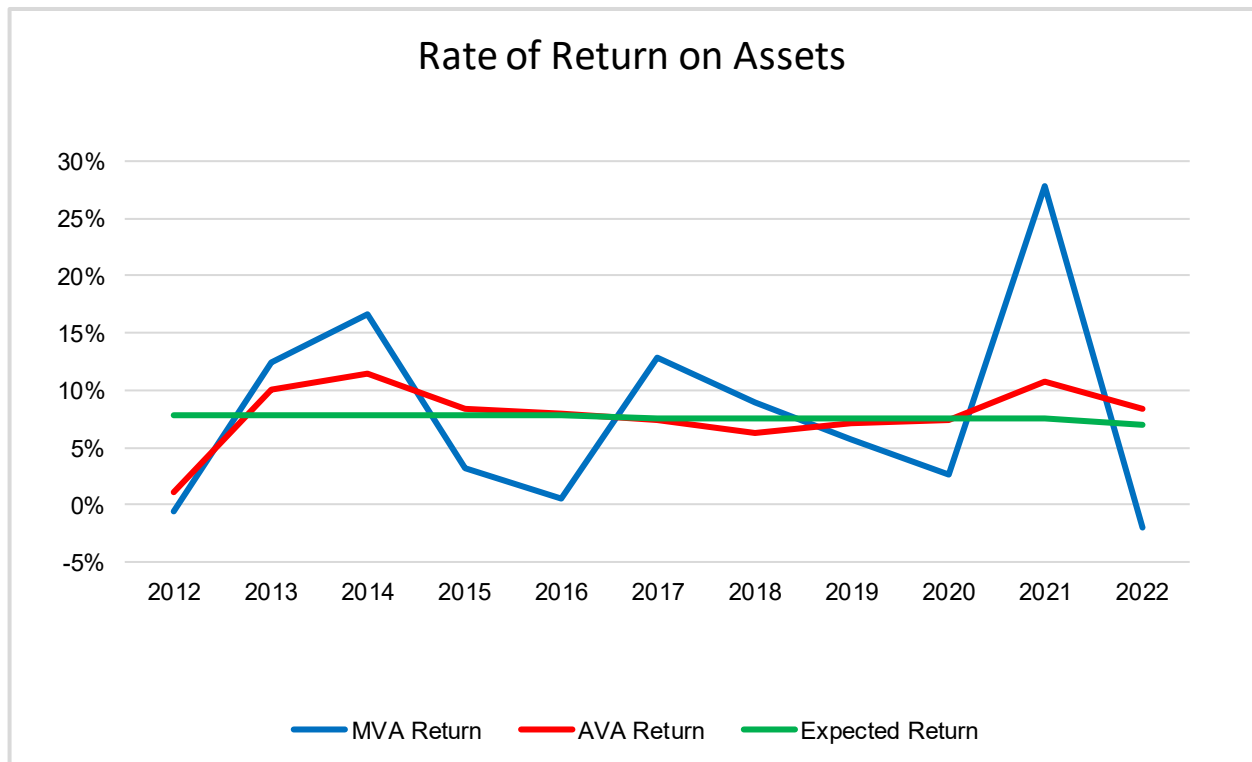
ASSETS

As of June 30, 2022, SERS' basic benefits had net assets of \$16,962,691,005, when measured on a market value basis. This was a decrease of \$877,355,983 from the previous year. The market value of assets is not used directly in the calculation of the unfunded actuarial accrued liability and the actuarially determined contribution. The asset valuation smoothing method, which recognizes the annual unexpected portion of market value investment returns over a four-year period, attempts to reduce the effect of market volatility. The resulting amount is called the "actuarial value of assets" and is utilized to determine the actuarial valuation results. In this year's valuation, the actuarial value of assets as of June 30, 2022, was \$16,886,972,559, an increase of \$855,359,767 from the value in the prior year. The components of change in the asset values are shown in the table below.



	Actuarial Value	Market Value
Net Assets, June 30, 2021	\$ 16,031,612,792	\$ 17,840,046,988
- Employer and Member Contributions	+ 900,194,639	+ 900,194,639
- Benefit Payments	- 1,417,613,777	- 1,417,613,777
- Investment Gains	+ 1,372,778,905	+ (359,936,845)
Net Assets, June 30, 2022	16,886,972,559	16,962,691,005

The estimated investment return on the market value of assets for FY2022 was (2.04)%. Due to the investment experience gain for FY 2021, the resulting return on the smoothed actuarial value of assets was 8.31%. The return on the funds supporting Basic Benefits was 8.70%. As this rate of return was greater than the assumed rate of 7.00%, there was an actuarial investment experience gain of \$268.6 million. The return on the Health Care Fund is (1.82)%. Please see Section III, Schedule B, and Schedule F of this report for more detailed information on the market and actuarial value of assets.



Market value returns have been very volatile. As can be seen in this graph, the return on actuarial assets is much smoother than the return on market value. The asset smoothing method impacts only the timing of when the actual market experience is recognized in the valuation process. The remaining deferred investment experience net gain of \$76 million will be absorbed in future years.

LIABILITIES

The actuarial accrued liability is the portion of the present value of future benefits allocated to service performed up to the valuation date. The difference between this liability and the actuarial value of assets is called the unfunded actuarial accrued liability (UAAL). The dollar amount of unfunded actuarial accrued liability is reduced if the contributions to the System exceed the normal cost for the year, plus interest on the prior year's UAAL.



The unfunded actuarial accrued liability is shown as of June 30, 2022 in the following table:

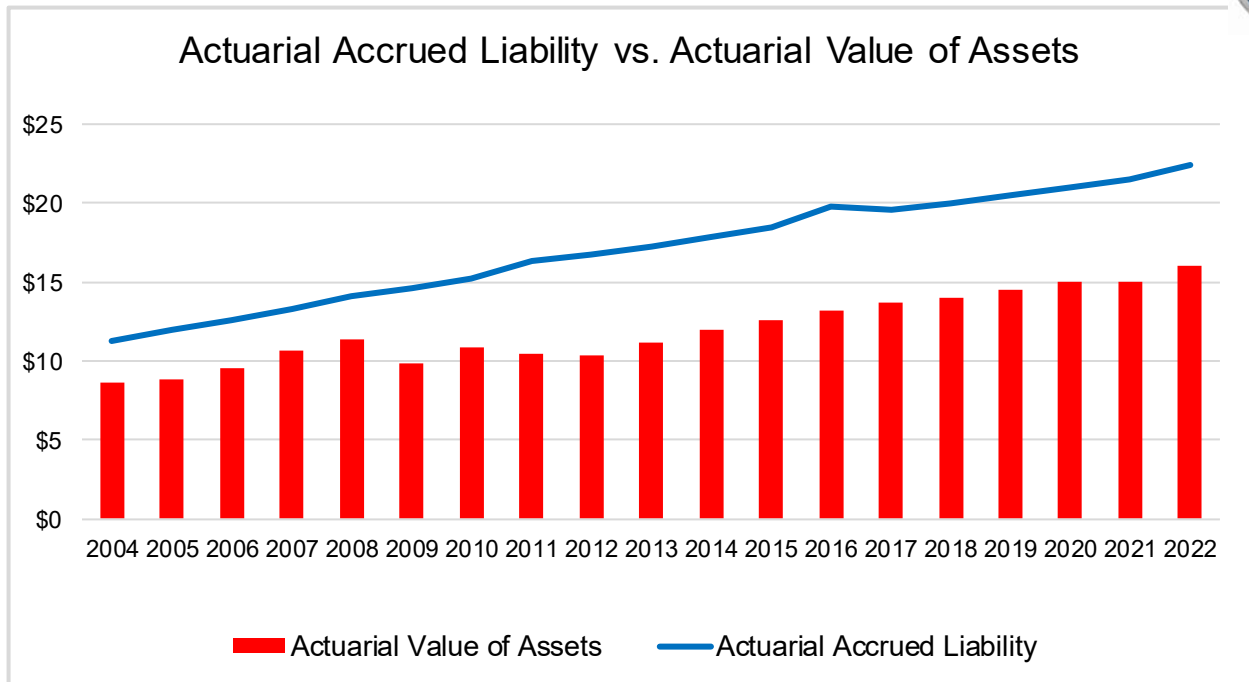
	Actuarial Value of Assets	Market Value of Assets
Actuarial Accrued Liability	\$22,371,468,812	\$22,371,468,812
Value of Assets	\$16,886,972,559	\$16,962,691,005
Unfunded Actuarial Accrued Liability*	\$5,484,496,253	\$5,408,777,807
Funded Ratio	75.48%	75.82%

* See Appendix B of the report for the detailed development of the unfunded actuarial accrued liability.

Changes in the UAAL occur for various reasons. The net decrease in the UAAL from June 30, 2021, to June 30, 2022, was \$13,647,959. The components of this net change are shown in the table below:

Unfunded Actuarial Accrued Liability, June 30, 2021		
(\$ Millions)		\$5,498.1
Expected increase due to amortization method	(\$112.1)	
Investment experience	(\$268.6)	
Liability experience	\$330.1	
Assumption Changes	\$37.0	
Total		(\$13.6)
Unfunded Actuarial Accrued Liability, June 30, 2022		\$5,484.5

As shown above, various components impacted the UAAL. Actuarial gains (losses) result from actual experience that is more (less) favorable than anticipated based on the actuarial assumptions. The amounts are measured as the difference between the expected unfunded actuarial accrued liability and the actual unfunded actuarial accrued liability net of any impact due to changes in actuarial assumptions and methods or benefit provisions. Overall, the System experienced a net decrease to the UAAL of \$13.6 million. The net UAAL decrease is comprised primarily of experience and investment gains; the largest sources of liability losses were due to retirement experience, termination experience and salary experience. Finally, there was an additional increase in the UAAL due to recognition of the 2.50% cost-of-living adjustment granted by the Board for all eligible SERS members for calendar year 2023.

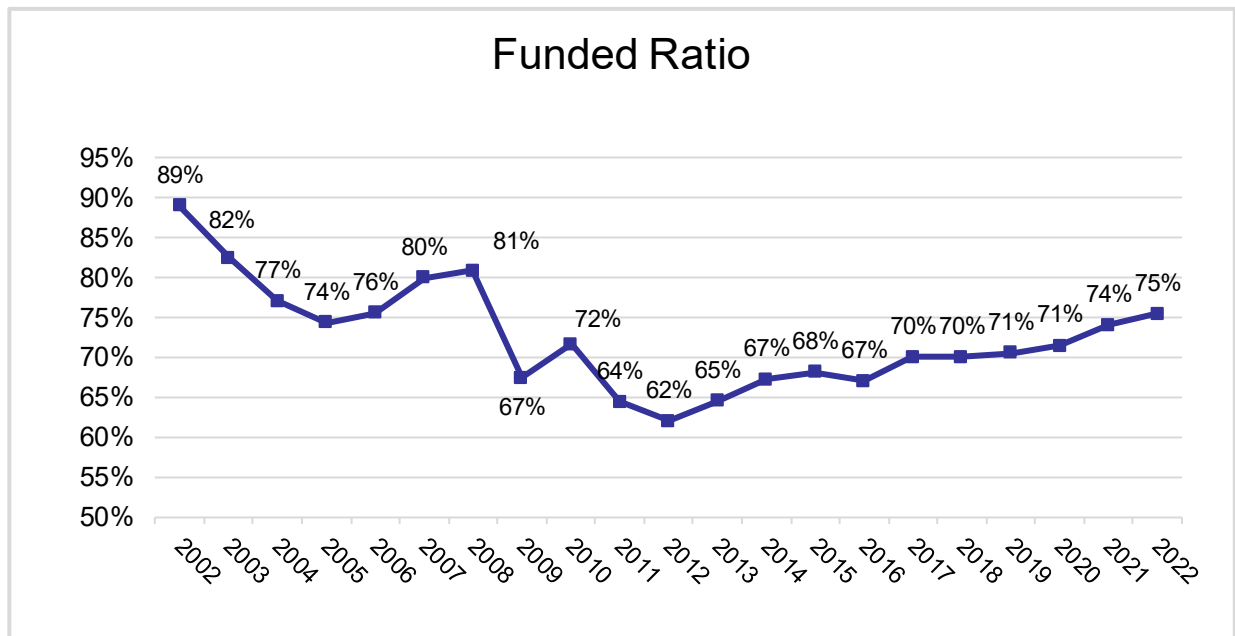


Since June 30, 2004, the actuarial accrued liability has been higher than the actuarial value of assets. Investment experience below the assumed rate of return was the primary source of the increased difference between the actuarial accrued liability and actuarial assets. SERS implemented pension reform to improve the System’s funding progress. In addition, the Board adopted a new funding policy that will allocate a higher portion of the employer contribution toward the basic benefits until the fund achieves a funded status of 90%. An evaluation of the unfunded actuarial accrued liability on a pure dollar basis may not provide a complete analysis since only the difference between the assets and liabilities (which are both very large numbers) is reflected. Another way to evaluate the unfunded actuarial accrued liability and the progress made in its funding is to track the funded ratio, the ratio of the actuarial value of assets to the actuarial accrued liability.

	6/30/18	6/30/19	6/30/20	6/30/21	6/30/22
Funded Ratio	70.07%	70.51%	71.49%	74.46%	75.48%
Unfunded Actuarial Accrued Liability (\$M)	\$ 5,985.5	\$ 6,054.2	\$ 5,997.1	\$ 5,498.1	\$5,484.5



The longer-term historical funded ratio information is shown in the chart below.



Investment returns are the primary source of decreases in the funded ratio as can be seen during the 2002-2003 “tech bubble” recession and the “great” recession of 2008-2009. Board actions which led to legislation to modify the Plan in combination with improved experience of the System are attributable to the improved funded ratio since 2016.

CONTRIBUTION RATE

Under the Entry Age Normal cost method, the actuarial contribution rate consists of two components:

- a "normal cost" for the portion of projected liabilities allocated by the actuarial cost method to service of members during the year following the valuation date which is funded by both member and employer contributions, and
- an "unfunded actuarial accrued liability contribution" for the excess of the portion of projected liabilities allocated to service-to-date over the actuarial value of assets.



See Section VI of the report for the detailed development of these contribution rates which are summarized in the following table:

Contribution Rates	June 30, 2022	June 30, 2021
1. Employer Portion of Normal Cost Rate	0.81%	1.26%
2. UAAL Contribution Rate	10.41%	11.24%
3. Total Actuarial Determined Contribution Rate (1) + (2)	11.22%	12.50%
4. Funded Ratio	75.48%	74.46%
5. Total Employer Contribution Rate	14.00%	14.00%
6. Amount Allocated to Basic Benefits	14.00%	14.00%

As discussed earlier, SERS' basic benefits includes retirement, disability and survivor benefits, along with Medicare Part B reimbursements and lump sum retiree death benefits. SERS also provides access to health care coverage for retiree members. The Health Care Fund is partially supported by employer contributions that are not required for actuarially funding basic benefits. The funding policy is expected to accelerate the pace at which SERS' basic benefits will achieve a funded ratio equal to 90%.



**REPORT ON THE ANNUAL VALUATION OF THE
SCHOOL EMPLOYEES RETIREMENT SYSTEM OF OHIO**

PREPARED AS OF JUNE 30, 2022

SECTION I – SUMMARY OF PRINCIPAL RESULTS

1. This report, prepared as of June 30, 2022, presents the results of the annual actuarial valuation of the basic benefits provided under the System, including pension, Medicare Part B reimbursement and post-retirement death benefits. For convenience of reference, the principal results of the valuation and a comparison with the preceding year's results are summarized in the following table.

SUMMARY OF PRINCIPAL RESULTS

	June 30, 2022	June 30, 2021
Active members included in valuation		
Number	155,063	146,646
Annual Compensation*	\$3,994,657,693	\$3,622,097,199
Retirees		
Number	81,151	80,721
Annual allowances	\$1,295,438,626	\$1,254,934,762
Deferred Vesteds		
Number	6,118	5,972
Annual deferred allowances	\$41,365,993	\$38,777,532
Assets (net of Health Care Assets)		
Market related actuarial value	\$16,886,972,559	\$16,031,612,792
Market value	\$16,962,691,005	\$17,840,046,988
Unfunded Accrued Liability	\$5,484,496,253	\$5,498,144,212
Funded Ratio (AVA/AAL)		
All Basic Benefits	75.48%	74.46%
Pension Benefits	75.71%	74.80%
Medicare Part B	63.21%	56.94%
Post-retirement Death Benefits	71.68%	67.71%
Actuarially Determined Contribution Rate		
Normal	0.81%	1.26%
Accrued liability	<u>10.41%</u>	<u>11.24%</u>
Total	11.22%	12.50%
Funding Policy Contribution Rate	14.00%	14.00%
Accrued liability amortization period (years)	22	23

* The annual compensation as of June 30, 2021 reflect imputed salaries.



2. The statute sets a contribution cap of 24% of payroll: 14% from employers and 10% from employees. Employer contributions in excess of those required to support the basic benefits may be allocated to retiree health care funding. If the funded ratio is less than 70%, the entire 14% employers' contribution shall be allocated to SERS' basic benefits. If the funded ratio is 70% but less than 80%, at least 13.50% of the employers' contribution shall be allocated to SERS' basic benefits, with the remainder (if any) allocated to the Health Care Fund. If the funded ratio is 80% but less than 90%, at least 13.25% of the employers' contribution shall be allocated to SERS' basic benefits, with the remainder (if any) allocated to the Health Care Fund. If the funded ratio is 90% or greater, the Health Care Fund may receive any portion of the employers' contribution that is not needed to fund SERS' basic benefits.
3. The valuation balance sheet showing the results of the valuation is given in Schedule A.
4. Comments on the valuation results are given in Section IV, comments on the experience and the sources of actuarial gains and losses during the valuation year are given in Section V, and the rates of contribution payable by employers are given in Section VI.
5. Schedule B of this report presents the development of the actuarial value of assets. Schedule C details the actuarial assumptions and methods employed. Schedule D gives a summary of the benefit and contribution provisions of the plan.



SECTION II – MEMBERSHIP DATA

Data regarding the membership of the System for use as a basis for the valuation was furnished by the System’s staff. The following tables summarize the membership of the system as of June 30, 2022, upon which the valuation was based. Detailed tabulations of the data are given in Schedule E.

Active Members

Number	Payroll	Group Averages		
		Salary	Age	Service
155,063	\$3,994,657,693	\$25,762	47.2	7.6

The total number of active members includes 43,724 vested members and 111,339 non-vested members. Those who reached 25 years of service on or before August 1, 2017 were eligible to retire under the previous age and service credit eligibility requirements.

The following table shows a six-year schedule of active member valuation data.

SCHEDULE OF SERS ACTIVE MEMBER VALUATION DATA

Valuation Date	Number	Annual Payroll	Annual Average Pay	% Increase in Average Pay
6/30/2017	157,981	\$3,302,805,662	\$20,906	(11.2)%
6/30/2018	158,343	3,332,395,171	21,045	0.7
6/30/2019	159,363	3,462,524,396	21,727	3.2
6/30/2020	156,579	3,477,578,726	22,210	2.2
6/30/2021	146,646	3,622,097,199 *	24,700	11.2
6/30/2022	155,063	3,994,657,693	25,762	4.3

* Effective June 30, 2021, the annual compensation reflects imputed salaries.



The following table shows the number and annual retirement allowances payable to retiree members and their beneficiaries on the roll of the Retirement System as of the valuation date as well as certain group averages.

Retiree Lives

Type of Benefit Payment	Number	Annual Benefits	Group Averages	
			Benefit	Age
Retirees and Beneficiaries	72,330	\$1,169,392,175	\$16,167	75.2
Disability	4,656	85,499,173	18,363	67.0
Survivors	4,165	40,547,278	9,735	72.5
Total in SERS	81,151	\$1,295,438,626	\$15,963	74.6

This valuation also includes 276,880 inactive members eligible for a contribution refund only (including 259,359 members reported separately who had completed one or more years of service before terminating). Their contributions totaled \$247,134,048 as of June 30, 2022. There were also 6,118 terminated vested members with annual deferred pension benefits of \$41,365,993. Included in the “Retiree” numbers in the above table are 12,670 reemployed retirees with account balances of \$131,843,689 (including employer contributions and interest), 856 reemployed retirees receiving only an annuity from their contributions and their employers’ matching contributions, and 1,026 reemployed retirees receiving such annuities in addition to their regular pension benefits. The sum of the annuity payments attributable to these reemployed retirees is \$8,349,862.



SECTION III – ASSETS

1. As of June 30, 2022, the total market value of assets amounted to \$17,574,265,414. All figures include the combined Pension Trust Fund, Medicare B Fund, Death Benefit Fund, and Health Care Fund, but exclude the QEBA Fund. The return on the combined funds including the Health Care Fund is (2.04)%. The return on the funds supporting Basic Benefits is (2.05)%. The return on the Health Care Fund is (1.82)%.

Asset Summary Based on Market Value		
(1)	Assets at June 30, 2021	\$ 18,440,377,176
(2)	Contributions and Misc. Revenue	1,051,344,069
(3)	Investment Gain (Loss)	(371,045,165)
(4)	Benefit Payments	(1,546,410,666)
(5)	Assets at June 30, 2022 (1) + (2) + (3) + (4)	\$ 17,574,265,414
(6)	Annualized Rate of Return*	(2.04) %

2. The four-year smoothed market related actuarial value of assets used for the current valuation was \$17,498,546,968. Schedule B shows the development of the actuarial value of assets as of June 30, 2022. Again all figures include the combined Pension Trust Fund, Medicare B Fund, Death Benefit Fund, and Health Care Fund, but exclude the QEBA Fund. The return on the combined funds including the Health Care Fund is 8.31%. The return on the funds supporting Basic Benefits is 8.70%. The return on the Health Care Fund is (1.82)%.

Asset Summary Based on Actuarial Value		
(1)	Assets at June 30, 2021	\$ 16,631,942,980
(2)	Contributions and Misc. Revenue	1,051,344,069
(3)	Investment Gain (Loss)	1,361,670,585
(4)	Benefit Payments	(1,546,410,666)
(5)	Assets at June 30, 2022 Before Application of Corridor (1) + (2) + (3) + (4)	\$ 17,498,546,968
(6)	Annualized Rate of Return*	8.31 %

*Based on the approximation formula: $I / [0.5 \times (A + B - I)]$, where

- I = Investment Gain (Loss)
- A = Beginning of year asset value
- B = End of year asset value



SECTION IV - COMMENTS ON VALUATION

Schedule A of this report contains the valuation balance sheet which shows the present and prospective assets and liabilities of the System as of June 30, 2022.

1. The total retirement benefit valuation balance sheet shows that the System has total future retirement benefit liabilities of \$26,077,955,316, of which \$13,266,785,507 is for the future benefits payable for present retiree members and beneficiaries of deceased members; \$769,819,680 is for the future benefits payable for present inactive members; and \$12,041,350,129 is for the future benefits payable for present active members. Against these retirement benefit liabilities, the System has a total present actuarial value of assets of \$16,886,972,559 as of June 30, 2022. The difference of \$9,190,982,757 between the total liabilities and the total present actuarial value of assets represents the present value of contributions to be made in the future for retirement benefits. Of this amount, \$3,486,942,734 is the present value of future contributions expected to be made by members, and the balance of \$5,704,040,023 represents the present value of future contributions payable by the employers.
2. The employers' contributions to the System on account of retirement benefits consist of normal contributions, accrued liability contributions and contributions for administrative expenses. The valuation indicates that employer normal contributions at the rate of 0.52% of payroll for basic pension benefits, 0.02% of payroll for post-retirement death benefits, and 0.27% of payroll for Medicare Part B benefits are required to provide the benefits of the System for the average member of SERS. Prospective employer normal contributions on account of retirement benefits at the above rates have a present value of \$219,543,770.
3. For pension benefits, it is recommended that the unfunded accrued liability contribution rate payable by the employers on account of retirement benefits be set at 10.12% of payroll. For post-retirement death benefits, it is recommended that the unfunded accrued liability contribution rate payable by the employers on account of retirement benefits be set at 0.02% of payroll. Finally, for Medicare Part B benefits, it is recommended that the unfunded accrued liability contribution rate payable by the employers on account of retirement benefits be set at 0.27% of payroll. These rates are sufficient to amortize the unfunded accrued liability of \$5,484,496,253 over 22 years based on the assumption that the aggregate payroll for SERS members will increase by 1.75% each year.
4. The present value of the total future contributions to be made by the employers for basic benefits is the sum of the future employer normal contributions and the unfunded accrued liability contributions and equals \$5,704,040,023.



SECTION V – DERIVATION OF EXPERIENCE GAINS AND LOSSES

Actual experience will never (except by coincidence) match exactly with assumed experience. It is assumed that gains and losses will be in balance over a period of years, but sizable year-to-year fluctuations are common. Detail on the derivation of the experience gain (loss) for the year ended June 30, 2022, is shown below in \$ millions.

Experience (Gain/Loss)

Total Basic Benefits June 30:		2022	2021	2020	2019	2018	2017
(1)	UAAL from last valuation	\$ 5,498.1	5,997.1	6,054.2	5,985.5	5,875.3	6,591.1
(2)	Normal cost from last valuation	406.2	347.6	344.1	330.6	342.4	312.5
(3)	Contributions	900.1	830.6	843.9	809.9	759.9	804.4
(4)	Interest accrual: [(1) + (2) - (3)*.5] x .07	381.8	444.8	448.3	443.3	437.8	487.6
(5)	Expected UAAL before changes: (1) + (2) - (3) + (4)	\$ 5,386.0	5,958.9	6,002.7	5,949.5	5,895.6	6,586.8
(6)	Change due to plan amendments	0.0	0.0	0.0	0.0	357.6	998.5
(7)	Change due to new actuarial assumption or methods	(37.0)	(126.5)	0.0	0.0	0.0	0.0
(8)	Expected UAAL after changes: (5) - (6) - (7)	\$ 5,423.0	6,085.4	6,002.7	5,949.5	5,538.0	5,588.3
(9)	Actual UAAL from this valuation	\$ 5,484.5	5,498.1	5,997.1	6,054.2	5,985.5	5,875.3
(10)	Total Gain/(Loss): (8) - (9)	\$ (61.5)	587.3	5.6	(104.7)	(447.4)	(287.0)
(11)	Investment Gain/(Loss):	\$ 268.6	431.3	7.1	(44.1)	(161.1)	(12.2)
(12)	Non-Investment Gain/(Loss)	\$ (330.1)	155.8	(1.5)	(60.6)	(286.3)	(274.8)

Pension June 30:		2022	2021	2020	2019	2018	2017
(1)	UAAL from last valuation	\$ 5,316.4	5,789.8	5,822.7	5,735.1	5,611.3	6,315.7
(2)	Normal cost from last valuation	395.0	338.8	335.4	322.1	334.1	305.6
(3)	Contributions	871.7	803.0	814.0	780.6	731.8	778.7
(4)	Interest accrual: [(1) + (2) - (3)*.5] x .07	369.3	429.6	431.4	425.0	418.5	467.4
(5)	Expected UAAL before changes: (1) + (2) - (3) + (4)	\$ 5,209.0	5,755.2	5,775.5	5,701.6	5,632.1	6,310.0
(6)	Change due to plan amendments	0.0	0.0	0.0	0.0	357.6	998.5
(7)	Change due to new actuarial assumption or methods	(37.0)	(120.9)	0.0	0.0	0.0	0.0
(8)	Expected UAAL after changes: (5) - (6) - (7)	\$ 5,246.0	5,876.1	5,775.5	5,701.6	5,274.5	5,311.5
(9)	Actual UAAL from this valuation	\$ 5,329.7	5,316.4	5,789.8	5,822.7	5,735.1	5,611.3
(10)	Total Gain/(Loss): (8) - (9)	\$ (83.7)	559.7	(14.3)	(121.1)	(460.6)	(299.8)
(11)	Investment Gain/(Loss):	\$ 264.7	425.4	6.4	(44.1)	(159.0)	(12.3)
(12)	Non-Investment Gain/(Loss)	\$ (348.4)	134.3	(20.7)	(77.0)	(301.6)	(287.5)



SECTION V – DERIVATION OF EXPERIENCE GAINS AND LOSSES
(\$ Millions)

Medicare Part B June 30:		2022	2021	2020	2019	2018	2017
(1)	UAAL from last valuation	\$ 168.5	194.0	217.4	235.4	249.1	259.7
(2)	Normal cost from last valuation	10.5	8.3	8.2	8.0	7.8	6.4
(3)	Contributions	26.2	26.3	28.3	27.3	26.3	24.1
(4)	Interest accrual: [(1) + (2) - (3)*.5] x .07	11.6	14.1	15.8	17.2	18.3	19.0
(5)	Expected UAAL before changes: (1) + (2) - (3) + (4)	\$ 164.4	190.1	213.1	233.3	248.9	261.0
(6)	Change due to plan amendments	0.0	0.0	0.0	0.0	0.0	0.0
(7)	Change due to new actuarial assumption or methods	0.0	(4.5)	0.0	0.0	0.0	0.0
(8)	Expected UAAL after changes: (5) - (6) - (7)	\$ 164.4	194.6	213.1	233.3	248.9	261.0
(9)	Actual UAAL from this valuation	\$ 143.1	168.5	194.0	217.4	235.4	249.1
(10)	Total Gain/(Loss): (8) - (9)	\$ 21.3	26.1	19.1	15.9	13.5	11.9
(11)	Investment Gain/(Loss):	\$ 3.5	5.2	0.7	0.1	(1.9)	0.1
(12)	Non-Investment Gain/(Loss)	\$ 17.8	20.9	18.4	15.8	15.4	11.8

Post-Retirement Death Benefits June 30:		2022	2021	2020	2019	2018	2017
(1)	UAAL from last valuation	\$ 13.2	13.3	14.1	15.0	14.9	15.7
(2)	Normal cost from last valuation	0.7	0.5	0.5	0.5	0.5	0.5
(3)	Contributions	2.2	1.4	1.5	2.0	1.8	1.6
(4)	Interest accrual: [(1) + (2) - (3)*.5] x .07	0.9	1.0	1.0	1.1	1.1	1.2
(5)	Expected UAAL before changes: (1) + (2) - (3) + (4)	\$ 12.6	13.4	14.1	14.6	14.7	15.8
(6)	Change due to plan amendments	0.0	0.0	0.0	0.0	0.0	0.0
(7)	Change due to new actuarial assumption or methods	0.0	(1.1)	0.0	0.0	0.0	0.0
(8)	Expected UAAL after changes: (5) - (6) - (7)	\$ 12.6	14.5	14.1	14.6	14.7	15.8
(9)	Actual UAAL from this valuation	\$ 11.7	13.2	13.3	14.1	15.0	14.9
(10)	Total Gain/(Loss): (8) - (9)	\$ 0.9	1.3	0.8	0.5	(0.3)	0.9
(11)	Investment Gain/(Loss):	\$ 0.4	0.7	0.0	(0.1)	(0.2)	0.0
(12)	Non-Investment Gain/(Loss)	\$ 0.5	0.6	0.8	0.6	(0.1)	0.9



ANALYSIS OF FINANCIAL EXPERIENCE

Gains and (Losses) in Accrued Liabilities Resulting from Difference Between Assumed Experience and Actual Experience (\$ Millions)

Type of Activity	Pension	Medicare Part B	Post- Retirement Death Benefit	Total Basic Benefits
Age & Service Retirements. If members retire at older ages, there is a gain. If younger ages, a loss.	\$ (69.6)	\$ 2.7	\$ 1.1	\$ (65.8)
Disability Retirements. If disability claims are less than assumed, there is a gain. If more claims, a loss.	(6.3)	(0.1)	0.0	(6.4)
Pre-Retirement Death Benefits. If survivor claims are less than assumed, there is a gain. If more claims, there is a loss.	(6.6)	(0.4)	0.0	(7.0)
Withdrawal From Employment. If more liabilities are released by withdrawals than assumed, there is a gain. If smaller releases, a loss.	(46.9)	3.2	0.2	(43.5)
Pay Increases. If there are smaller pay increases than assumed, there is a gain. If greater increases, a loss.	(212.3)	0.0	0.0	(212.3)
New Members. Additional accrued liability attributable to members who entered the plan since the last valuation.	(50.7)	(1.8)	(0.1)	(52.6)
Investment Income. If there is a greater investment income than assumed, there is a gain. If less income, a loss.	264.7	3.5	0.4	268.6
Death After Retirement. If retired members live longer than assumed, there is a loss. If not as long, a gain.	67.3	16.1	(0.7)	82.7
Other. Miscellaneous gains and losses resulting from changes in valuation software, data adjustments, timing of financial transactions, etc.	(23.3)	(1.9)	0.0	(25.2)
Gain (or Loss) During Year From Financial Experience	\$ (83.7)	\$ 21.3	\$ 0.9	\$ (61.5)
Non-Recurring Items. Adjustments for plan amendments, assumption changes and method changes	(37.0)	0.0	0.0	(37.0)
Composite Gain (or Loss) During Year	\$ (120.7)	\$ 21.3	\$ 0.9	\$ (98.5)



SECTION VI – ACTUARIALLY DETERMINED CONTRIBUTION RATES

The valuation balance sheet gives the basis for determining the percentage rates for contributions to be made by employers to the Retirement System. The following table shows the rates of contribution payable by employers.

Actuarially Determined Contribution Rates

Contribution for	Pension	Post-Retirement Death Benefit	Medicare Part B	Total Basic Benefits
A. Normal Cost:				
(1) Service retirement benefits	7.25%			
(2) Disability benefits	0.88			
(3) Survivor benefits	0.34			
(4) Refunds	2.05			
(5) Total	10.52%	0.02%	0.27%	10.81%
B. Member Contributions	10.00%	0.00%	0.00%	10.00%
C. Employer Normal Cost: [A(5) - B]	0.52%	0.02%	0.27%	0.81%
D. Unfunded Actuarial Accrued Liability Contributions	10.12%	0.02%	0.27%	10.41%
E. Total Recommended Employer Contribution Rate:[C+D]	10.64%	0.04%	0.54%	11.22%

The statute sets a contribution cap of 24% of payroll: 14% from employers and 10% from employees. Employer contributions in excess of those required to support the basic benefits may be allocated to retiree health care funding. If the funded ratio is less than 70%, all 14% of the employers' contribution shall be allocated to SERS' basic benefits. If the funded ratio is 70% but less than 80%, at least 13.50% of the employers' contribution shall be allocated to SERS' basic benefits, with the remainder (if any) allocated to the Health Care Fund. If the funded ratio is 80% but less than 90%, at least 13.25% of the employers' contribution shall be allocated to SERS' basic benefits, with the remainder (if any) allocated to the Health Care Fund. If the funded ratio is 90% or greater, the Health Care Fund may receive any portion of the employers' contribution that is not needed to fund SERS' basic benefits. Based on a Board Resolution dated September 15, 2022, the entire 14% of the employers' contribution will be allocated to SERS' basic benefits.



SECTION VII – SCHEDULE OF FUNDING PROGRESS
(\$ Millions)

Actuarial Valuation Date	Value of Plan Assets (a)	Actuarial Accrued Liability (AAL) Entry Age (b)	Unfunded AAL (UAAL) (b - a)	Funded Ratio (a / b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll (b - a) / (c)
Pension Benefits						
6/30/2017	\$ 13,537	\$ 19,148	\$ 5,611	70.7%	\$ 3,303	169.9%
6/30/2018	13,824	19,559	5,735	70.7	3,332	172.1
6/30/2019	14,267	20,090	5,823	71.0	3,463	168.1
6/30/2020	14,811	20,601	5,790	71.9	3,478	166.5
6/30/2021	15,781	21,097	5,316	74.8	3,622	146.8
6/30/2022	16,611	21,941	5,330	75.7	3,995	133.4
Medicare Part B						
6/30/2017	\$ 153	\$ 402	\$ 249	38.0%	\$ 3,303	7.5%
6/30/2018	164	400	236	41.1	3,332	7.1
6/30/2019	180	397	217	45.3	3,463	6.3
6/30/2020	199	393	194	50.6	3,478	5.6
6/30/2021	223	391	169	57.0	3,622	4.6
6/30/2022	246	389	143	63.2	3,995	3.6
Post-Retirement Death Benefits						
6/30/2017	\$ 23	\$ 38	\$ 15	60.5%	\$ 3,303	0.5%
6/30/2018	24	39	15	61.5	3,332	0.5
6/30/2019	26	40	14	65.0	3,463	0.4
6/30/2020	27	40	13	67.5	3,478	0.4
6/30/2021	28	41	13	68.3	3,622	0.4
6/30/2022	30	41	11	73.2	3,995	0.3



SECTION VIII – RISK CONSIDERATIONS

A typical retirement plan faces many different risks, but the greatest risk is the inability to make benefit payments when due. If plan assets are depleted, benefits may not be paid which could create legal and litigation risk or the plan could become “pay as you go”. The term “risk” is most commonly associated with an outcome with undesirable results. However, in the actuarial world, risk can be translated as uncertainty. The actuarial valuation process uses many actuarial assumptions to project how future contributions and investment returns will meet the cash flow needs for future benefit payments. Of course, we know that actual experience will not unfold exactly as anticipated by the assumptions and that uncertainty, whether favorable or unfavorable, creates risk. ASOP 51 defines risk as the potential of actual future measurements to deviate from expected results due to actual experience that is different than the actuarial assumptions.

The various risk factors for a given plan can have a significant impact – positive or negative – on the actuarial projection of liability and contribution rates.

There are a number of risks inherent in the funding of a defined benefit plan. These include:

- economic risks, such as investment return and price inflation;
- demographic risks such as mortality, payroll growth, aging population including impact of baby boomers, and retirement ages;
- contribution risk, i.e., the potential for contribution rates to be too high for the plan sponsor/employer to pay and
- external risks such as the regulatory and political environment.

There is a direct correlation between healthy, well-funded retirement plans and consistent contributions equal to the full actuarial contribution rate each year. The System is primarily funded by member and employer contributions to the trust fund, together with the earnings on these accumulated contributions. These contributions fund benefit accruals for current active members and administrative expenses. The remainder of the contributions amortizes the unfunded actuarial accrued liability. The contribution rates are set by state statute and are intended to provide the needed amounts to fund the system over time. The purpose of the valuation is to determine if the fixed employer and member contributions remain sufficient to fund the Plan. Due to the fixed nature of the contributions actuarial gains and losses are reflected in the amortization period. Generally, the largest source of actuarial gains and losses are caused by investment volatility. In addition, the unfunded liability is amortized as a level percentage of pay assuming payroll will grow by 1.75% per year. A key risk factor to the System’s funding is that over time, the Statutory Contribution Rates will be insufficient to accumulate enough funds, with investment income, to fund the promised benefits. The funding insufficiency can be caused by amortization periods that are too long or by payroll not growing at the assumed rate.

The other significant risk factor for the System is investment return because of the volatility of returns and the size of plan assets compared to payroll. A perusal of historical returns over 10-20 years reveals that the actual return each year is rarely close to the average return for the same period. This is to be expected, given the underlying capital market assumptions and the System’s asset allocation. To the extent market rates of interest affect the expected return on assets, there is a risk of change to the discount rate which determines the present value of liabilities and actuarial valuation results.



A key demographic risk for the Retirement System is improvements in mortality (longevity) greater than anticipated. Mortality risk arises because there is unexpected mortality improvement, perhaps from a significant medical breakthrough that could quickly increase liabilities. While this is an exposure to risk, it represents a small probability.

The following exhibits summarize some historical information that helps indicate how certain key risk metrics have changed over time. Many are due to the maturing of the retirement system.

**Historical Asset Volatility Ratios
(in 1,000's)**

As a retirement system matures, the size of the market value of assets increases relative to the covered payroll of active members, on which the System is funded. The size of the plan assets relative to covered payroll, sometimes referred to as the asset volatility ratio, is an important indicator of the contribution risk for the System. The higher this ratio, the more sensitive a plan's contribution rate is to investment return volatility. In other words, it will be harder to recover from investment losses with increased contributions.

Fiscal Year End	Market Value of Assets (\$ Millions)	Covered Payroll (\$ Millions)	Asset Volatility Ratio
6/30/2009	\$8,134	\$2,787	2.92
6/30/2010	9,072	2,843	3.19
6/30/2011	10,619	2,852	3.72
6/30/2012	10,332	2,788	3.71
6/30/2013	11,300	2,747	4.11
6/30/2014	12,821	2,759	4.65
6/30/2015	12,797	2,845	4.50
6/30/2016	12,452	2,932	4.25
6/30/2017	13,614	3,303	4.12
6/30/2018	14,271	3,332	4.28
6/30/2019	14,544	3,463	4.20
6/30/2020	14,420	3,478	4.15
6/30/2021	17,840	3,622	4.93
6/30/2022	16,963	3,995	4.25

The assets at June 30, 2022 are 425% of payroll, so underperforming the investment return assumption by 1.00% (i.e., earn 6.00% for one year) is equivalent to 4.25% of payroll. While the actual impact in the first year is mitigated by the asset smoothing method and amortization of the UAL, this illustrates the risk associated with volatile investment returns.



Historical Cash Flows

Plans with negative cash flows will experience increased sensitivity to investment return volatility. Cash flows, for this purpose, are measured as contributions less benefit payments and administrative expenses. If the System has negative cash flows and then experiences returns below the assumed rate, there are fewer assets to be reinvested to earn the higher returns that typically follow. While any negative cash flow will produce such a result, it is typically a negative cash flow of more than 5% of MVA that may cause significant concerns. The System has negative cash flows which range from 3% to 4% for the prior five years, so there is no immediate concern.

Fiscal Year End	Market Value of Assets (\$ Millions)	Contributions (\$ Millions)	Benefit Payments & Expenses (\$ Millions)	Net Cash Flow (\$ Millions)	Net Cash Flow as % of Market Value
6/30/2009	\$8,134	\$587	\$779	(\$192)	(2.36%)
6/30/2010	9,072	704	822	(118)	(1.30)
6/30/2011	10,619	682	880	(197)	(1.86)
6/30/2012	10,332	697	946	(249)	(2.41)
6/30/2013	11,300	695	1,020	(325)	(2.88)
6/30/2014	12,821	701	1,069	(368)	(2.87)
6/30/2015	12,797	702	1,156	(455)	(3.56)
6/30/2016	12,452	751	1,203	(452)	(3.63)
6/30/2017	13,614	804	1,256	(451)	(3.31)
6/30/2018	14,271	760	1,335	(575)	(4.03)
6/30/2019	14,544	810	1,368	(558)	(3.84)
6/30/2020	14,420	844	1,354	(510)	(3.54)
6/30/2021	17,840	831	1,387	(556)	(3.12)
6/30/2022	16,963	900	1,439	(539)	(3.18)



Liability Maturity Measurement

Most public sector retirement systems have been in operation for many years. As a result, they have aging plan populations, and in some cases declining active populations, resulting in an increasing ratio of retirees to active members and a growing percentage of retiree liability. The retirement of the remaining baby boomers over the next decade is expected to further exacerbate the aging of the retirement system population. With more of the total liability residing with retirees, investment volatility has a greater impact on the funding of the system since it is more difficult to restore the system financially after losses occur when there is comparatively less payroll over which to spread costs. Below are two tables which demonstrate the ratio of the System's retiree liability compared to the total accrued liability and the ratio of the number of retirees and beneficiaries to the number of active members.

Fiscal Year End	Retiree Liability (\$ Millions)	Total Actuarial Liability (\$ Millions)	Retiree Percentage
6/30/2009	\$7,592	\$14,582	0.52
6/30/2010	7,942	15,222	0.52
6/30/2011	8,605	16,325	0.53
6/30/2012	9,250	16,755	0.55
6/30/2013	9,793	17,247	0.57
6/30/2014	10,437	17,882	0.58
6/30/2015	11,047	18,503	0.60
6/30/2016	11,702	19,771	0.59
6/30/2017	11,679	19,588	0.60
6/30/2018	12,399	19,998	0.62
6/30/2019	12,629	20,527	0.62
6/30/2020	12,949	21,034	0.62
6/30/2021	13,346	21,530	0.62
6/30/2022	13,658	22,371	0.61



Historical Member Statistics

Fiscal Year End	Active Count	Retiree Count	Active to Retiree Ratio
6/30/2009	125,465	65,757	1.91
6/30/2010	126,015	66,127	1.91
6/30/2011	125,337	67,221	1.86
6/30/2012	121,811	69,038	1.76
6/30/2013	121,642	70,771	1.72
6/30/2014	121,251	72,605	1.67
6/30/2015	122,855	74,372	1.65
6/30/2016	124,540	76,280	1.63
6/30/2017*	157,981	79,157	2.00
6/30/2018	158,343	81,332	1.95
6/30/2019	159,363	81,024	1.97
6/30/2020	156,579	80,851	1.94
6/30/2021	146,646	80,721	1.82
6/30/2022	155,063	81,151	1.91

*Effective in FY2017, the active member headcount reflects an increase of members who have been re-categorized from inactive to active status.



SCHEDULE A

Valuation Balance Sheet and Solvency Test

The following valuation balance sheet shows the assets and liabilities of the retirement system as of the current valuation date of June 30, 2022, and, for comparison purposes, as of the immediately preceding valuation date of June 30, 2021. The items shown in the balance sheet are present values actuarially determined as of the relevant valuation date.

VALUATION BALANCE SHEET SHOWING THE ASSETS AND LIABILITIES OF THE SCHOOL EMPLOYEES RETIREMENT SYSTEM OF OHIO

	June 30, 2022	June 30, 2021
ASSETS		
Current actuarial value of assets	\$ 16,886,972,559	\$ 16,031,612,792
Prospective contributions		
Member contributions	\$ 3,486,942,734	\$ 3,207,536,291
Employer normal contributions	219,543,770	326,395,435
Unfunded accrued liability contributions	<u>5,484,496,253</u>	<u>5,498,144,212</u>
Total prospective contributions	<u>\$ 9,190,982,757</u>	<u>\$ 9,032,075,938</u>
Total assets	<u>\$ 26,077,955,316</u>	<u>\$ 25,063,688,730</u>
LIABILITIES		
Present value of benefits payable on account of present retired members and beneficiaries	\$ 13,266,785,507	\$ 12,985,430,420
Present value of benefits payable on account of active members	12,041,350,129	11,359,283,752
Present value of benefits payable on account of inactive and deferred vested members	<u>769,819,680</u>	<u>718,974,558</u>
Total liabilities	<u>\$ 26,077,955,316</u>	<u>\$ 25,063,688,730</u>



The following table provides the solvency test for SERS members. The table allocates the valuation assets of the System to its liabilities based on an order of precedence. The highest order of precedence is active member contributions. The second highest order of precedence are members in pay status, and vested and non-vested terminated members. The lowest order of precedence is the employer financed portion of active member accrued benefits. The liabilities are determined using the System's assumed rate of return.

Solvency Test
(\$ Millions)

Valuation Date	Aggregate Accrued Liabilities For				Portion of Accrued Liabilities Covered by Reported Asset		
	(1) Active Member Contributions	(2) Retired Members & Beneficiaries	(3) Active Members (Employer Financed Portion)	Actuarial Value of Assets	(1)	(2)	(3)
Pension Benefits							
6/30/2017	\$ 3,010	\$ 11,690	\$ 4,448	\$ 13,537	100.0%	90.0%	0.0%
6/30/2018	2,733	12,427	4,399	13,824	100.0	89.2	0.0
6/30/2019	2,842	12,666	4,582	14,268	100.0	90.2	0.0
6/30/2020	2,934	13,009	4,658	14,811	100.0	91.3	0.0
6/30/2021	2,986	13,434	4,677	15,781	100.0	95.2	0.0
6/30/2022	3,040	13,773	5,128	16,611	100.0	98.5	0.0
Medicare Part B							
6/30/2017	\$ 0	\$ 251	\$ 151	\$ 153	100.0%	61.0%	0.0%
6/30/2018	0	251	149	164	100.0	65.3	0.0
6/30/2019	0	244	153	180	100.0	73.8	0.0
6/30/2020	0	236	157	199	100.0	84.3	0.0
6/30/2021	0	238	154	223	100.0	93.7	0.0
6/30/2022	0	231	158	246	100.0	100.0	9.5
Post-Retirement Death Benefits							
6/30/2017	\$ 0	\$ 30	\$ 8	\$ 23	100.0%	76.7%	0.0%
6/30/2018	0	31	8	24	100.0	77.4	0.0
6/30/2019	0	31	8	25	100.0	80.6	0.0
6/30/2020	0	31	8	27	100.0	87.1	0.0
6/30/2021	0	33	7	28	100.0	84.8	0.0
6/30/2022	0	33	8	30	100.0	90.9	0.0



SCHEDULE B
Development of Actuarial Value of Assets

Valuation date June 30:	2021	2022	2023	2024	2025
A. Actuarial Value Beginning of Year	\$ 15,519,346,628	\$ 16,631,942,980			
B. Market Value End of Year	18,440,377,176	17,574,265,414			
C. Market Value Beginning of Year	14,902,210,105	18,440,377,176			
D. Cash Flow					
D1. Contributions	\$ 884,166,838	\$ 953,961,187			
D2. Other Revenue	84,050,104	97,382,882			
D3. Benefit Payments	(1,497,119,145)	(1,538,412,277)			
D4. Net Transfers	<u>(5,424,513)</u>	<u>(7,998,389)</u>			
D5. Net	\$ (534,326,716)	\$ (495,066,597)			
E. Investment Income					
E1. Market Total: B.-C.-D5.	\$ 4,072,493,787	\$ (371,045,165)			
E2. Assumed Rate (Net of Expenses)	7.50%	7.00%			
E3. Amount for Immediate Recognition	1,097,628,506	1,273,499,071			
E4. Amount for Phased-In Recognition	2,974,865,281	(1,644,544,236)			
F. Phased-In Recognition of Investment Income					
F1. Current Year: 0.25 * E4.	\$ 743,716,320	\$ (411,136,059)	\$ 0	\$ 0	\$ 0
F2. First Prior Year	(178,306,015)	743,716,320	(411,136,059)	0	0
F3. Second Prior Year	(66,102,732)	(178,306,015)	743,716,320	(411,136,059)	0
F4. Third Prior Year	49,986,989	(66,102,732)	(178,306,015)	743,716,320	(411,136,059)
F5. Total Recognized Investment Gain/(Loss)	\$ 549,294,562	\$ 88,171,514	\$ 154,274,246	\$ 332,580,261	\$ (411,136,059)
G. Preliminary Actuarial Value End of Year:					
A.+D5.+E3.+F5.	\$ 16,631,942,980	\$ 17,498,546,968			
H. Corridor					
H1. 80% of Market Value	\$ 14,752,301,741	\$ 14,059,412,331			
H2. 120% of Market Value	\$ 22,128,452,611	\$ 21,089,118,497			
I. Actuarial Value End of Year:					
G. Not Less than H1. or Not Greater than H2.	\$ 16,631,942,980	\$ 17,498,546,968			
J. Difference Between Market & Actuarial Values	\$ 1,808,434,196	\$ 75,718,446	\$ (78,555,799)	\$ (411,136,059)	\$ 0
K. Health Care Valuation Assets	\$ 600,330,188	\$ 611,574,409			
L. Basic Benefits Valuation Assets (G. - K.)	\$ 16,031,612,792	\$ 16,886,972,559			

The Actuarial Valuation of Assets recognizes assumed investment income (line E3) fully each year. Differences between actual and assumed investment income (line E4) are phased in over a closed four-year period. During periods when investment performance exceeds the assumed rate, Actuarial Value of Assets will tend to be less than market value. During periods when investment performance is less than the assumed rate, Actuarial Value of Assets will tend to be greater than market value. If assumed rates are exactly realized for four consecutive years, actuarial value will become equal to market value.



SCHEDULE C

STATEMENT OF ACTUARIAL ASSUMPTIONS AND METHODS

The assumptions and methods used in the valuation were based on the actuarial experience study for the five-year period ending June 30, 2020, adopted by the Board on April 15, 2021.

INTEREST RATE: 7.00% per annum, compounded annually (net after all System expenses).

SEPARATIONS FROM ACTIVE SERVICE: Representative values of the assumed rates of separation from active service are as follows:

Service	Annual Rates of Withdrawal
0	40.00%
1	19.00
2	11.00
3	9.00
4	8.00
5	6.50
10	3.50
15	2.25

Age	Annual Rates of			
	Death *		Disability	
	Male	Female	Male	Female
20	.041%	.013%	.020%	.010%
25	.041	.012	.039	.010
30	.052	.019	.071	.028
35	.068	.030	.127	.059
40	.096	.047	.214	.106
45	.143	.072	.313	.180
50	.218	.107	.414	.300
55	.320	.157	.530	.450
60	.466	.238	.590	.450
65	.682	.380	.533	.300
70	1.025	.627	.300	.200
74	1.461	.937	.300	.200

* Pre-retirement mortality is based on the PUB-2010 General Amount Weighted Below Median Employee Mortality Table with fully generational projection using the MP-2020 projection scale. The above rates represent the base rates used.



Annual Rates of								
Age	Retirement Eligible prior to 8/1/17				Retirement Eligible after 8/1/17			
	Reduced	Reduced (55/25)	First Eligible Unreduced	Subsequent Unreduced	Reduced	Reduced (60/25)	First Eligible Unreduced	Subsequent Unreduced
50			21%	19%				
55		10%	27%	19%				
57		10%	27%	19%			30%	19%
60	43%	15%	27%	19%		6%	30%	19%
62	43%	15%	27%	19%	5%	6%	30%	19%
65			50%	33%	15%	17%	30%	19%
68			50%	33%			30%	18%
70			50%	33%			30%	18%
75			100%	100%			100%	100%

SALARY INCREASES: Representative values of the assumed annual rates of salary increases are as follows:

Service	Annual Rates of		
	Merit & Seniority (A)	Base (Economy) (B)	Increase Next Year $(1+(A))*(1+(B))$
0	10.00%	3.25%	13.58%
1	3.00	3.25	6.35
2	1.75	3.25	5.06
3	1.25	3.25	4.54
4	1.00	3.25	4.28
5-9	0.75	3.25	4.02
10-15	0.50	3.25	3.77
16-17	0.25	3.25	3.51
18 & over	0.00	3.25	3.25

PAYROLL GROWTH: 1.75% per annum, compounded annually.

PRICE INFLATION: 2.40% per annum, compounded annually.

ANNUAL COLA: Increase of 2.00% of initial retirement allowance on anniversary of retirement date. On and after April 1, 2018, COLAs for future retirees will be delayed for until the fourth anniversary of benefit commencement.

DEATH AFTER RETIREMENT: These assumptions are used to measure the probabilities of each benefit payment being made after retirement.

SERVICE RETIREMENT: PUB-2010 General Employee Amount Weighted Below Median Healthy Retiree mortality table projected to 2017 with ages set forward 1 year and adjusted 94.20% for males and set forward 2 years and adjusted 81.35% for females. Future improvement in mortality rates is reflected by applying the MP-2020 projection scale generationally.



DISABLED RETIREMENT: PUB-2010 General Disabled Retiree mortality table projected to 2017 with ages set forward 5 years and adjusted 103.3% for males and set forward 3 years and adjusted 106.8% for females. Future improvement in mortality rates is reflected by applying the MP-2020 projection scale generationally.

CONTINGENT SURVIVOR: PUB-2010 General Amount Weighted Below Median Contingent Survivor mortality table projected to 2017 with ages set forward 1 year and adjusted 105.5% for males and adjusted 122.5% for females. Future improvement in mortality rates is reflected by applying the MP-2020 projection scale generationally.

MARRIAGE ASSUMPTION: 80% married with the husband three years older than his wife.

VALUATION METHOD: Entry age normal cost method. Entry age is established on an individual basis.

ASSET VALUATION METHOD: Actuarial value, as developed in Schedule A. The actuarial value of assets recognizes a portion of the difference between the market value of assets and the expected market value of assets, based on the assumed valuation rate of return. The amount recognized each year is 25% of the difference between market value and expected market value. The actuarial value of assets cannot be less than 80% or more than 120% of market value.

FUNDING POLICY: If the funded ratio is less than 70%, the entire 14% employers' contribution shall be allocated to SERS' basic benefits. If the funded ratio is 70% but less than 80%, at least 13.50% of the employers' contribution shall be allocated to SERS' basic benefits, with the remainder (if any) allocated to the Health Care Fund. If the funded ratio is 80% but less than 90%, at least 13.25% of the employers' contribution shall be allocated to SERS' basic benefits, with the remainder (if any) allocated to the Health Care Fund. If the funded ratio is 90% or greater, the Health Care Fund may receive any portion of the employers' contribution that is not needed to fund SERS' basic benefits.



SCHEDULE D

SCHOOL EMPLOYEES RETIREMENT SYSTEM OF OHIO Summary of Benefit and Contribution Provisions

Contributions for Basic Benefits	Members contribute 10% of pay and employers contribute 14% of pay. Employer contributions not required to finance basic benefits may be allocated to the health care fund.
Final Average Salary	Average annual salary over the member's three highest years of service.
Normal Retirement	
Condition for Retirement	
<i>Retire before August 1, 2017 or have 25 years of service or more on or before August 1, 2017</i>	Attainment of age 65 with at least 5 years of creditable service, or completion of 30 years of creditable service, regardless of age.
<i>Members attaining 25 years of service after August 1, 2017</i>	Attainment of age 67 with at least 10 years of creditable service, or attainment of age 57 with at least 30 years of creditable service. Buy-up option was available.
Amount of Allowance	The annual retirement allowance payable shall not be greater than 100% of final average salary, and is the greater of: <ol style="list-style-type: none">1. Money Purchase - the greater of: The sum of:<ol style="list-style-type: none">a. An annuity based on the value of the member's accumulated contributions at retirementb. A pension equal to the annuityc. For members who have 10 or more years of service credit prior to 10/1/1956, an annual benefit of \$180.2. Defined Benefit - the greater of: The sum of:<ol style="list-style-type: none">a. 2.2% of final average salary multiplied by the member's years of service up to 30,b. 2.5% of final average salary multiplied by the member's years of service in excess of 30,or:<ol style="list-style-type: none">c. \$86 multiplied by the years of service.



Early Retirement

Condition for Early Retirement

Retire before August 1, 2017 or have 25 years of service or more on or before August 1, 2017

Not eligible for unreduced service retirement but has attained age 55 with at least 25 years of service, or age 60 with 5 years of service.

Members attaining 25 years of service after August 1, 2017

Attainment of age 62 with at least 10 years of creditable service, or attainment of age 60 with at least 25 years of creditable service.

Amount of Allowance

Retire before August 1, 2017 or have 25 years of service or more on or before August 1, 2017

Normal retirement allowance accrued to the date of early retirement. The Defined Benefit amount determined above is adjusted by the following percentages based on attained age or years of service:

<u>Attained Age</u>	<u>Years of Ohio Service Credit</u>	<u>Percentage</u>
58	25	75%
59	26	80
60	27	85
61		88
	28	90
62		91
63		94
	29	95
64		97

Members attaining 25 years of service after August 1, 2017

Actuarial equivalent of the normal retirement allowance accrued to the date of early retirement. The Defined Benefit amount determined above is actuarially adjusted for the years before age 65 (age 67 if after August 1, 2017) or 30 years of service, whichever is shorter, but in no event is the adjusted benefit less than the following percentages of the Defined Benefit amount based on years of service:

<u>Years of Ohio Service Credit</u>	<u>Percentage</u>
25	75%
26	80
27	85
28	90
29	95

Disability Retirement

Condition for Retirement

An allowance is paid upon becoming permanently disabled after completion of at least 5 years of total service credit.

Amount of Allowance

1. For those who were active members prior to July 29, 1992 and did not elect the benefit structure outlined below, an allowance based on service to date of disablement, plus, if the age at disablement is less than 60, continuous



service to age 60. The allowance is computed in the same manner as the defined benefit service retirement allowance, subject to a minimum of 30% of FAS and a maximum of 75% of FAS. It is payable for life, unless terminated.

2. For those who became active members after July 28, 1992, and for those who were active members prior to July 29, 1992 who so elected, an allowance equal to the greater of (i) 45% of FAS, or (ii) the lesser of 60% of FAS, or the allowance computed in the same manner as the defined benefit service retirement allowance. The allowance will continue until:
 - a. The date the member is granted a service retirement benefit, or
 - b. The date the allowance is terminated, or
 - c. The later of the date the member attains age 65 or the date the disability allowance has been paid for the minimum duration in accordance with the following schedule:

<u>Age at Disability</u>	<u>Minimum Duration In Months</u>
60 and earlier	60
61	60
62	48
63	48
64	36
65	36
66	24
67	24
68	24
69 and older	12

Death Benefits Prior to Retirement

Death While Eligible to Retire

If a member dies in service after becoming eligible to retire with a service allowance and leaves a surviving spouse or other sole dependent beneficiary, the survivor may elect to receive the same amount that would have been paid had the member retired the last day of the month of death and elected the 100% joint and survivor form of payment.

Survivor (Death-in-Service) Allowances

Condition for Benefit

Upon the death of a member with at least 1.5 years of Ohio service credit and with at least 0.25 year of Ohio contributing service credit within 2.5 years prior to the date of death, the survivor allowances are payable as follows:

1. **Qualified Spouse:** A monthly allowance commencing at age 62, except that the benefit is payable immediately if: (1) the qualified deceased member had 10 or more years of Ohio service credit; or (2) is caring for a surviving child, or (3) is incompetent.
2. **Qualified Child:** For allowances that commenced before January 7, 2013, an allowance is payable to a deceased



member's qualified child who is under age 18 and never been married, under age 22 and in school, or adjudged incompetent prior to the member's death and the child attaining age 18 or age 22 if attending school. For allowances that commence on or after January 7, 2013, an allowance is payable to a deceased member's qualified child who is under age 19 and never been married or adjudged incompetent prior to the member's death and the child attaining age 19.

3. **Qualified Parent's Allowance:** A monthly allowance is payable to a dependent parent age 65 or more.

Amount of Allowances

Except when survived by a qualified child(ren), upon the death of a member prior to retirement, the accumulated contributions of the member without interest is payable. Alternatively, the beneficiary may elect the following amounts, payable monthly while eligible:

<u>Number of Qualified Survivors</u>	<u>Annual Benefit as Percent of Member's FAS</u>	<u>Minimum Monthly Allowance</u>
1	25%	\$96
2	40	186
3	50	236
4	55	236
5 or more	60	236

If the deceased member had attained at least 20 years of service, the total benefits payable to all qualified survivors are not less than:

<u>Years of Service</u>	<u>Annual Benefit as Percent of Member's FAS</u>
20	29%
21	33
22	37
23	41
24	45
25	48
26	51
27	54
28	57
29 or more	60

Termination Benefits

Refund of Members' Accumulated Contributions

In the event a member leaves service before any monthly benefits are payable on his/her behalf, the member's accumulated contributions, without interest, may be refunded.

Deferred Benefits

Members who retire prior to August 1, 2017 must have at least 5 years of service credit and those members who retire on and after August 1, 2017 must have at least 10 years of service credit and are eligible to draw the benefit the first of the month following their 62nd birthday.



Normal Form of Benefit

Single Life Annuity

Optional Forms of Benefit

A member upon retirement may elect to receive an allowance in one of the following forms that are computed to be actuarially equivalent to the applicable retirement allowance:

Upon the death of a retiree, 50%, 100%, or some other percentage of his/her reduced retirement allowance shall be continued throughout the life of, and paid to, a designated beneficiary.

A reduced retirement allowance shall be continued throughout the life of the pensioner, but with further payment to the pensioner, his/her beneficiary or estate for a specified number of years certain.

A member can select a partial lump sum option at retirement. Under this option, the partial lump sum shall not be less than 6 times and not more than 36 times the unreduced monthly benefit, and the monthly benefit will be actuarially reduced. In addition, the monthly benefit payable cannot be less than 50% of the unreduced amount.

Post-Retirement Death Benefit

Regardless of the form of benefit selected, a lump sum benefit of \$1,000 is paid at the death of the retiree.

Post-Retirement Increases

Pre 1/1/2018: On each anniversary of the initial date of retirement, the allowances of all retirees and survivors are increased by 3% of the base benefit.

On and after 1/1/2018: On each anniversary of the initial retirement, the allowance of all retirees and survivors may be increased by the annual rate of increase in the CPI-W measured as of the June preceding the beginning of the applicable calendar year. The annual rate of increase shall not be less than 0% nor greater than 2.5%. COLAs shall be suspended for calendar years 2018, 2019, and 2020.

On and after 4/1/2018: COLAs for future retirees will be delayed until the fourth anniversary of benefit commencement.

Medicare Part B

Each recipient of a service retirement benefit, a disability benefit, or a survivor benefit who was credited with at least 10 years of service and has paid Medicare Part B premiums and has chosen the health care option, is reimbursed \$45.50 per month for premiums. The reimbursement will continue to the spouse upon the death of the retiree in cases where the retiree elected a Joint and Survivor payment form.



Reemployed Retirants

Eligibility Effective	July 1, 1991, service retirees of SERS, or service or disability retirees of one of the other four Ohio retirement systems who are employed in a SERS-covered position are required to contribute to a money purchase annuity, a type of defined contribution plan.
Amount of Allowance	Upon termination of employment, a reemployed retirant who has attained age 65 is eligible to receive an annuity based on the amount of his/her accumulated contributions, and an equal amount of employer contributions, plus interest to the effective date of retirement. Effective July 1, 2006 the amount of employer contributions will be determined by the Board. Interest is granted on the reemployed retirant's prior fiscal year account balance, calculated using a rate determined by the SERS Board, compounded annually. The benefit is payable as a lump sum or as an annuity if the amount of such annuity is at least \$25. Upon termination of employment, a reemployed retirant who has not attained age 65 may request a lump sum refund of his/her own contributions; there is no payment of employer contributions or interest.
Benefits Payable Upon Death	<p>If a reemployed retirant dies while employed, a lump sum payment of the monthly annuity, discounted to the present value using the current actuarial assumption rate of interest, will be paid to his/her beneficiary.</p> <p>If a reemployed retirant dies while receiving a monthly annuity, a lump sum payment will be made to a beneficiary in an amount equal to the excess, if any, of the lump sum payment the reemployed retirant would have received at the effective date of retirement over the sum of the annuity payments received by the reemployed retirant to the date of death.</p>
Member Contributions	Each reemployed retirant is required to contribute 10% of his/her pay by payroll deductions.
Employer Contributions	Employer contributions are expressed as percents of member covered payroll. Employers are required to contribute 14% of payroll.
Other Benefits	Reemployed retirants of SERS are not eligible to receive any of the other benefits provided to SERS members.
Member Contributions	10% of salary.



SCHEDULE E

DETAILED TABULATIONS OF THE DATA

**Schedule of Retiree Members Added to and Removed From Rolls
Last Six Fiscal Years**

Year Ending June 30:	2017	2018	2019	2020	2021	2022
<u>Number of Retiree Members</u>						
Beginning of Year	76,280	79,157	81,332	81,024	80,851	80,721
Added	5,499	5,339	3,055	2,902	3,928	3,867
Removed	2,622	3,164	3,363	3,075	4,058	3,437
End of Year	79,157	81,332	81,024	80,851	80,721	81,151
<u>Annual Retirement Allowances</u>						
Beginning of Year	\$ 1,083,621,579	\$ 1,162,015,515	\$ 1,211,935,636	\$ 1,218,955,506	\$ 1,234,342,326	\$ 1,254,934,762
Added	70,973,748	74,311,354	56,557,169	52,895,232	70,415,860	67,062,445
Removed	(7,420,188)	24,391,233	49,537,299	37,508,412	49,823,424	26,558,581
End of Year	\$ 1,162,015,515	\$ 1,211,935,636	\$ 1,218,955,506	\$ 1,234,342,326	\$ 1,254,934,762	\$ 1,295,438,626
% Increase in Allowances	7.23%	4.30%	0.58%	1.26%	1.67%	3.23%
Average Annual Allowance	\$ 14,680	\$ 14,901	\$ 15,044	\$ 15,267	\$ 15,547	\$ 15,963



**Schedule of Retiree Members Receiving a Medicare Part B Reimbursement
Added to and Removed from Rolls
Last Three Fiscal Years**

Year Ending June 30:	2020	2021	2022
<u>Number of Retiree Members</u>			
Beginning of Year	43,534	42,464	41,360
Added	2,257	1,996	2,057
Removed	3,327	3,100	2,826
End of Year	42,464	41,360	40,591
<u>Annual Retirement Allowances</u>			
Beginning of Year	\$ 23,769,564	\$23,185,344	\$22,582,560
Added	1,232,322	1,089,816	1,123,122
Removed	1,816,542	1,692,600	1,542,996
End of Year	\$ 23,185,344	\$22,582,560	\$22,162,686
% Increase in Allowances	(2.46)%	(2.60)%	(1.86)%
Average Annual Allowance	\$ 546	\$ 546	\$ 546



**Annuity and Pension Reserve Fund
Retiree Information as of June 30, 2022
Tabulated by Type of Benefit**

Amount of Monthly Benefit	Total	Service	Disability	Survivor
\$ 1 - \$ 250	9,304	8,623	23	658
251 - 500	10,852	9,580	245	1,027
501 - 750	10,698	9,374	521	803
751 - 1,000	9,629	8,252	770	607
1,001 - 1,500	14,435	12,667	1,204	564
1,501 - 2,000	9,125	8,105	789	231
Over 2,000	<u>17,108</u>	<u>15,729</u>	<u>1,104</u>	<u>275</u>
	81,151	72,330	4,656	4,165

Average Monthly Benefit	\$ 1,347	\$ 1,530	\$ 811
Average Age	75.2	67.0	72.5

The 72,330 service retirees shown in the table above are comprised of 66,781 service retirees and 5,549 beneficiaries of deceased retirees. Excluded from the 66,781 service retirees are 856 reemployed retirees who are receiving a pension-only benefit resulting from the annuitization of the contributions accumulated during active membership.



**Annuity and Pension Reserve Fund
Retiree Information as of June 30, 2022
Tabulated by Attained Ages**

Attained Age	Retirement		Disability Retirement		Total	
	Number	Annual Benefits	Number	Annual Benefits	Number	Annual Benefits
Under 45	48	\$ 367,113	42	\$ 609,264	90	\$ 976,377
45-49	39	\$ 635,678	95	\$ 1,412,779	134	\$ 2,048,456
50-54	219	\$ 7,380,834	273	\$ 4,723,881	492	\$ 12,104,715
55-59	1,105	\$ 39,193,181	652	\$ 11,705,448	1,757	\$ 50,898,629
60-64	5,142	\$ 124,013,570	1243	\$ 23,648,095	6,385	\$ 147,661,665
65-69	15,806	\$ 262,601,686	758	\$ 17,217,980	16,564	\$ 279,819,667
70-74	16,393	\$ 268,579,309	590	\$ 12,388,208	16,983	\$ 280,967,517
75-79	12,977	\$ 199,803,518	459	\$ 7,537,664	13,436	\$ 207,341,182
80-84	9,815	\$ 138,461,809	299	\$ 3,997,526	10,114	\$ 142,459,334
85-89	6,477	\$ 81,230,658	178	\$ 1,746,534	6,655	\$ 82,977,192
90 & Over	4,309	\$ 43,260,689	67	\$ 511,795	4,376	\$ 43,772,484
Totals	72,330	\$ 1,165,528,044	4,656	\$ 85,499,173	76,986	\$ 1,251,027,217

The 72,330 service retirees shown in the table above are comprised of 71,474 unique service retirees, and 856 unique reemployed retirees. The reemployed retirees included in the tabulation above are those who are receiving a pension-only benefit resulting from the annuitization of the contributions accumulated during active membership.



**Annuity and Pension Reserve Fund
Survivors of Annuitants Information as of June 30, 2022
Tabulated by Attained Ages**

Attained Age	Life Annuities		Periods Certain		Total	
	Number	Annual Benefits	Number	Annual Benefits	Number	Annual Benefits
Under 45	48	\$ 367,113	0	\$ -	48	\$ 367,113
45-49	28	\$ 216,905	0	\$ -	28	\$ 216,905
50-54	47	\$ 371,239	0	\$ -	47	\$ 371,239
55-59	79	\$ 963,231	0	\$ -	79	\$ 963,231
60-64	191	\$ 2,574,319	0	\$ -	191	\$ 2,574,319
65-69	424	\$ 5,973,085	3	\$ 41,924	427	\$ 6,015,009
70-74	717	\$ 8,814,669	10	\$ 104,137	727	\$ 8,918,806
75-79	955	\$ 10,711,169	9	\$ 108,445	964	\$ 10,819,614
80-84	1,128	\$ 11,253,717	2	\$ 28,063	1,130	\$ 11,281,780
85-89	1,040	\$ 9,391,702	0	\$ -	1,040	\$ 9,391,702
90 & Over	868	\$ 6,688,257	0	\$ -	868	\$ 6,688,257
Totals	5,525	\$ 57,325,406	24	\$ 282,569	5,549	\$ 57,607,975



**All Benefit Recipients
Male and Female Demographic Breakdown
June 30, 2022**

Attained Age	Number of		Total Number
	Males	Females	
Under 20	22	36	58
20-24	2	2	4
25-29	3	3	6
30-34	6	17	23
35-39	13	22	35
40-44	30	41	71
45-49	54	122	176
50-54	221	373	594
55-59	766	1,192	1,958
60-64	2,103	4,739	6,842
65-69	4,391	12,896	17,287
70-74	4,774	12,927	17,701
75-79	3,696	10,410	14,106
80-84	2,651	7,990	10,641
85-89	1,601	5,414	7,015
90-94	726	2,785	3,511
95-99	160	825	985
100	6	48	54
101	2	39	41
102	2	16	18
103	1	12	13
104	0	3	3
105 & Over	1	8	9
Total	21,231	59,920	81,151



Survivor Benefit Fund
Survivors of Deceased Active Members Information as of June 30, 2022
Tabulated by Attained Ages

Attained Age	Number	Annual Benefits
Under 45	107	\$ 1,216,116
45-49	42	\$ 562,439
50-54	102	\$ 1,424,846
55-59	201	\$ 2,581,201
60-64	457	\$ 4,917,204
65-69	723	\$ 7,321,743
70-74	718	\$ 7,494,989
75-79	670	\$ 6,275,021
80-84	527	\$ 4,474,464
85-89	360	\$ 2,696,376
90 & Over	258	\$ 1,582,877
Totals	4,165	\$ 40,547,276



**Total Active Members as of June 30, 2022
Tabulated by Attained Ages and Years of Service**

Attained Age	Years of Service to Valuation Date							Totals
	0-4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30+	
Under 20	2,804							2,804
Avg Pay	\$11,088							\$11,088
20-24	9,629	94						9,723
Avg Pay	\$12,984	\$31,584						\$13,164
25-29	9,617	1,142	26					10,785
Avg Pay	\$16,270	\$33,323	\$43,478					\$18,141
30-34	8,827	2,293	368	39				11,527
Avg Pay	\$17,326	\$35,293	\$46,235	\$52,499				\$21,942
35-39	9,424	3,111	780	343	39			13,697
Avg Pay	\$17,839	\$34,305	\$46,705	\$54,939	\$61,129			\$24,275
40-44	10,078	4,287	1,284	746	425	29		16,849
Avg Pay	\$16,865	\$31,925	\$42,655	\$52,878	\$57,588	\$69,085		\$25,374
45-49	8,780	4,505	1,754	1,133	819	264	11	17,266
Avg Pay	\$16,140	\$30,797	\$37,258	\$45,982	\$55,557	\$57,234	\$59,779	\$26,594
50-54	7,893	4,503	2,707	2,139	1,769	685	177	19,873
Avg Pay	\$17,147	\$31,511	\$34,485	\$39,734	\$47,094	\$59,253	\$61,873	\$29,710
55-59	6,027	3,585	2,567	2,926	3,346	1,520	513	20,484
Avg Pay	\$16,963	\$31,313	\$34,194	\$36,941	\$41,130	\$47,611	\$56,046	\$31,688
60-64	4,739	2,803	1,995	2,452	3,695	2,302	934	18,920
Avg Pay	\$15,494	\$29,954	\$33,933	\$36,446	\$38,823	\$41,770	\$49,504	\$31,728
65-69	2,960	1,341	779	746	1,126	844	729	8,525
Avg Pay	\$12,263	\$25,326	\$31,184	\$36,967	\$40,268	\$41,028	\$44,367	\$27,501
70 & over	2,098	803	405	283	271	223	527	4,610
Avg Pay	\$9,904	\$19,727	\$26,066	\$29,057	\$33,745	\$38,798	\$38,366	\$20,263
Totals	82,876	28,467	12,665	10,807	11,490	5,867	2,891	155,063
Avg Pay	\$15,848	\$31,341	\$36,192	\$39,852	\$42,753	\$45,936	\$48,136	\$25,761

Averages:

Age: 47.2

Service: 7.6

Annual Pay: \$25,761



**Male Active Members as of June 30, 2022
Tabulated by Attained Ages and Years of Service**

Attained Age	Years of Service to Valuation Date							Totals
	0-4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30+	
Under 20	1,462							1,462
Avg Pay	\$11,509							\$11,509
20-24	3,971	39						4,010
Avg Pay	\$13,898	\$36,657						\$13,374
25-29	3,922	531	16					4,469
Avg Pay	\$16,266	\$38,848	\$46,319					\$19,056
30-34	3,118	836	186	27				4,167
Avg Pay	\$17,917	\$41,335	\$52,726	\$57,160				\$24,423
35-39	2,775	894	357	202	24			4,252
Avg Pay	\$18,743	\$44,147	\$52,761	\$60,013	\$68,317			\$29,181
40-44	3,137	979	409	315	215	13		5,068
Avg Pay	\$17,217	\$42,942	\$56,990	\$65,389	\$69,301	\$79,552		\$30,760
45-49	3,140	949	410	270	277	131	6	5,183
Avg Pay	\$14,491	\$40,412	\$50,670	\$63,018	\$72,735	\$63,436	\$62,415	\$29,032
50-54	3,003	1,065	504	376	359	270	86	5,663
Avg Pay	\$15,952	\$39,018	\$47,453	\$59,248	\$67,631	\$74,020	\$69,421	\$32,825
55-59	2,384	1,040	545	460	460	300	203	5,392
Avg Pay	\$17,410	\$37,637	\$47,386	\$55,117	\$60,193	\$67,934	\$64,118	\$35,777
60-64	1,973	975	590	505	515	283	245	5,086
Avg Pay	\$16,794	\$35,338	\$42,146	\$50,217	\$56,973	\$61,658	\$66,841	\$35,584
65-69	1,243	604	330	215	221	113	139	2,865
Avg Pay	\$13,515	\$28,343	\$35,872	\$45,898	\$52,112	\$58,718	\$59,707	\$28,648
70 & over	992	424	215	114	69	44	49	1,907
Avg Pay	\$10,533	\$22,561	\$28,591	\$32,989	\$40,834	\$48,900	\$49,533	\$19,569
Totals	31,120	8,336	3,562	2,484	2,140	1,154	728	49,524
Avg Pay	\$15,842	\$38,195	\$46,620	\$55,514	\$61,837	\$65,811	\$63,823	\$27,665

Averages:

Age: 45.6
 Service: 5.9
 Annual Pay: \$27,665

**Female Active Members as of June 30, 2022
Tabulated by Attained Ages and Years of Service**



Attained Age	Years of Service to Valuation Date							Totals
	0-4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30+	
Under 20 Avg Pay	1,342 \$10,643							1,342 \$10,643
20-24 Avg Pay	5,658 \$12,350	55 \$26,524						5,713 \$12,486
25-29 Avg Pay	5,695 \$16,277	611 \$28,557	10 \$39,037					6,316 \$17,501
30-34 Avg Pay	5,709 \$17,005	1,457 \$31,840	182 \$39,667	12 \$42,222				7,360 \$20,543
35-39 Avg Pay	6,649 \$17,459	2,217 \$30,339	423 \$41,638	141 \$47,790	15 \$49,791			9,445 \$22,069
40-44 Avg Pay	6,941 \$16,704	3,308 \$28,660	875 \$35,970	431 \$43,783	210 \$45,690	16 \$60,645		11,781 \$23,059
45-49 Avg Pay	5,640 \$17,056	3,556 \$28,223	1,344 \$33,163	863 \$40,649	542 \$46,802	133 \$51,195	5 \$56,706	12,083 \$25,546
50-54 Avg Pay	4,890 \$17,882	3,438 \$29,179	2,203 \$31,507	1,763 \$35,561	1,410 \$41,856	415 \$49,690	91 \$54,813	14,210 \$28,465
55-59 Avg Pay	3,643 \$16,676	2,545 \$28,730	2,022 \$30,631	2,466 \$33,536	2,886 \$38,071	1,220 \$42,603	310 \$50,790	15,092 \$30,221
60-64 Avg Pay	2,766 \$14,574	1,828 \$27,092	1,405 \$30,488	1,947 \$32,867	3,180 \$35,865	2,019 \$38,959	689 \$43,342	13,834 \$30,305
65-69 Avg Pay	1,717 \$11,365	737 \$22,875	449 \$27,762	531 \$33,353	905 \$37,362	731 \$38,272	590 \$40,739	5,660 \$26,921
70 & over Avg Pay	1,106 \$9,348	379 \$16,588	190 \$23,248	169 \$26,422	202 \$31,318	179 \$36,301	478 \$37,194	2,703 \$20,759
Totals Avg Pay	51,756 \$15,854	20,131 \$28,505	9,103 \$32,114	8,323 \$35,174	9,350 \$38,373	4,713 \$41,059	2,163 \$42,854	105,539 \$24,867

Averages:

Age: 47.9
 Service: 8.4
 Annual Pay: \$24,867



**Active Members as of June 30, 2022
Tabulated by Annual Pay**

Annual Pay	Number of Active Members			Portion of Total Number	
	Men	Women	Totals	Group	Cumulative
Less than \$1,000	1,853	2,957	4,810	3.1%	3.1%
\$1,000 - 1,999	2,232	2,811	5,043	3.3%	6.4%
2,000 - 2,999	2,987	2,952	5,939	3.8%	10.2%
3,000 - 3,999	2,999	2,823	5,822	3.8%	13.9%
4,000 - 4,999	2,572	2,449	5,021	3.2%	17.2%
5,000 - 5,999	1,936	2,335	4,271	2.8%	19.9%
6,000 - 6,999	1,515	2,305	3,820	2.5%	22.4%
7,000 - 7,999	1,206	2,296	3,502	2.3%	24.7%
8,000 - 8,999	1,032	2,197	3,229	2.1%	26.7%
9,000 - 9,999	827	2,156	2,983	1.9%	28.7%
10,000 - 11,999	1,537	4,461	5,998	3.9%	32.5%
12,000 - 13,999	1,367	4,844	6,211	4.0%	36.5%
14,000 - 15,999	1,312	5,216	6,528	4.2%	40.7%
16,000 - 17,999	1,353	5,445	6,798	4.4%	45.1%
18,000 - 19,999	1,355	5,740	7,095	4.6%	49.7%
20,000 - 24,999	3,255	14,635	17,890	11.5%	61.2%
25,000 - 29,999	2,538	11,116	13,654	8.8%	70.0%
30,000 - 35,999	2,674	8,613	11,287	7.3%	77.3%
36,000 - 39,999	1,990	4,314	6,304	4.1%	81.4%
40,000 - 49,999	4,710	7,526	12,236	7.9%	89.3%
50,000 - 59,999	3,331	3,995	7,326	4.7%	94.0%
60,000 and over	4,943	4,353	9,296	6.0%	100.0%
Totals	49,524	105,539	155,063		



SCHEDULE F

GAIN/LOSS ANALYSIS DETAILS

COMMENTS

Regular actuarial valuations measure the Retirement System's present financial position and contributions adequacy by calculating and financing the liabilities created by the present benefit program. This process involves discounting to present values the future benefit payments on behalf of present active and Retiree members and their survivors. However, valuations do not produce information regarding the amount of increases or decreases in unfunded actuarial accrued liabilities (UAAL) -- gain/loss analyses do.

The overall gain/loss to the Retirement System is the difference between the actual UAAL and the expected UAAL. A gain/loss analysis shows the breakdown of the overall system gain/loss by economic and non-economic risk areas. The economic risk areas are investment return and pay increases. The non-economic risk areas are service retirement, disability retirement, death in active service, termination (vested and non-vested), retiree mortality, and new members. Gains and losses resulting from data adjustments, timing of financial transactions, etc. are included separately as a miscellaneous item.

It is expected that actual experience will not coincide with assumed experience. It is assumed that gains and losses will be in balance over a period of years, but sizable year-to-year fluctuations are common. Changes in actuarial assumptions should be made for risk areas when the differences between actual and expected experience are consistently sizable over a period of years. Differences over a relatively short period of time may or may not be indicative of long-term trends, which are the basis of actuarial assumptions.

The actuarial assumptions used in this analysis were adopted by the Board in April 15, 2021.



School Employees Retirement System of Ohio
Experience Gains and Losses By Risk Area
Comparative Schedule
(\$ Millions)

Year Ending June 30	Gain (Loss) by Risk Area									\$	% of AAL
	Economic		Non-Economic								
	Pay Increases	Investment	Age & Service Retirement	Disability	Death In Service	Withdrawal	New Members	Retiree Mortality	Other ⁺		
2013	219.2	241.0	(121.9)	(53.6)	0.0	61.1	(35.1)	2.9	1.9	315.5	1.8
2014	103.4	403.3	(122.6)	(56.0)	0.1	48.3	(28.2)	3.1	(2.1)	349.3	2.0
2015	53.3	62.1	(123.0)	(53.1)	0.0	65.1	(47.7)	55.8	(0.2)	12.3	0.1
2016	70.0	50.6	(140.9)	(50.6)	(28.5)	30.4	(44.0)	113.9	(0.6)	0.3	0.0
2017	(69.2)	(12.0)	(211.8)	(37.7)	(0.6)	21.9	(48.1)	97.3	(26.8)	(287.0)	(1.5)
2018	85.2	(161.1)	(209.7)	(14.7)	(6.6)	(124.5)	(35.7)	15.0	4.7	(447.4)	(2.2)
2019	20.3	(44.1)	7.8	(9.5)	(4.0)	(106.3)	(22.4)	(24.9)	78.4	(104.7)	(0.5)
2020	136.2	7.1	(94.0)	(3.1)	(5.4)	(104.2)	(22.2)	28.9	62.3	5.6	0.0
2021	136.7	431.3	(96.2)	(5.0)	(4.7)	(107.5)	(16.6)	59.8	189.3	587.1	2.7
2022	(212.3)	268.6	0.0	(6.4)	(7.0)	(43.5)	(52.6)	82.7	(25.2)	4.3	0.0

⁺ Includes effect of changes in data, timing of financial transactions, etc.



The market related actuarial value of assets is based on a four-year average of adjusted market value returns. The difference between the actual returns at market value for the year and expected returns is determined. Twenty-five percent (25%) of that difference is added to the expected value along with corresponding amounts from each of the prior three years.

The actuarial value of assets for the basic benefits as of June 30, 2022, was \$16,886,972,559. The value for the previous year was \$16,031,612,792.

School Employees Retirement System of Ohio Development of Gain (Loss) for Basic Benefits From Investment Return For the Year Ended June 30, 2022 (\$ Millions)		<u>\$ Millions</u>
1.	Actuarial value of assets as of June 30, 2021	\$ 16,031.6
2.	Actuarial value of assets as of June 30, 2022	
	a. Actual	16,887.0
	b. If 7.00% assumed investment return were achieved for all phased-in years recognized in the asset method	16,618.4
3.	Gain (Loss): 2a minus 2b	<u>\$ 268.6</u>



**Pay Increases During the FY2022 Valuation Year
To Members Active at Beginning and End of Year**

Central Age Group Beginning of Year	Number	Pay Increases	
		Actual	Expected
Under 25	7,389	(11.40)%	10.60%
25	6,901	1.67	7.03
30	8,084	4.90	6.09
35	10,833	6.42	5.57
40	13,351	6.19	5.20
45	15,102	5.94	4.73
50	17,137	6.58	4.38
55	18,847	6.20	4.04
60	14,886	6.24	3.92
65 & Over	8,161	6.87	4.17
Total	120,691	5.49	4.88



**Members Who Became Age & Service Retirees During the FY2022 Valuation Year
(Retirement With Allowance Beginning Immediately)**

Attained Age	Years of Service to Valuation Date							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30 plus	
Under 50	0	0	0	0	0	0	10	10
50	0	0	0	0	0	0	8	8
51	0	0	0	0	0	0	12	12
52	0	0	0	0	0	0	13	13
53	0	0	0	0	0	0	14	14
54	0	0	0	0	0	0	13	13
55	0	0	0	0	0	1	19	20
56	0	0	0	0	0	2	18	20
57	0	0	0	0	0	0	39	39
58	0	0	0	0	0	2	44	46
59	0	0	0	0	0	2	36	38
60	0	0	0	1	2	76	42	121
61	0	0	0	0	0	56	48	104
62	0	0	52	73	125	55	47	352
63	0	0	24	28	53	67	50	222
64	0	0	30	31	38	40	64	203
65	0	2	58	63	108	84	130	445
66	0	0	36	37	52	39	69	233
67	0	0	43	43	96	53	55	290
68	0	0	28	16	23	35	39	141
69	0	0	15	16	21	13	27	92
70 & Over	0	2	91	73	64	68	163	461
Totals	0	4	377	381	582	593	960	2,897

	Years of Service to Valuation Date							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30 plus	
Avg. Monthly Benefit	\$ 0	\$ 295	\$ 524	\$ 807	\$ 1,091	\$ 1,502	\$ 2,656	\$ 1,581
Avg. FAS	\$ 0	\$ 18,527	\$ 29,980	\$ 32,986	\$ 34,730	\$ 36,638	\$ 46,838	\$ 38,250
Number of Retirees	0	4	377	381	582	593	960	2,897

Average Age: 65.2
Average Service: 24.8



**Members Who Died in the FY2022 Valuation Year
With a Death-in-Service Allowance Payable**

Central Age Group Beginning of Year	Number
Under 25	0
25	0
30	2
35	0
40	6
45	3
50	10
55	10
60	19
65	22
70 & Over	15
Total	87

Average Age: 59.5
Average Service: 16.4



**Members Who Died in the FY2022 Valuation Year
and Received a Refund of Contributions**

Central Age Group Beginning of Year	Number
Under 25	0
25	0
30	2
35	0
40	2
45	0
50	3
55	3
60	2
65	7
70 & Over	7
Total	26

Average Age: 59.7
Average Service: 5.4



**Members Who Became Disability Retirees
During the FY2022 Valuation Year**

Central Age Group Beginning of Year	Number
Under 25	0
25	0
30	0
35	4
40	7
45	11
50	33
55	63
60	76
65	36
70 & Over	2
Total	232

Average Age: 56.3
Average Service: 17.7
Average FAS: \$34,437



**Members Receiving a Refund of Contributions
or Becoming Inactive Without a Refund in
the FY2022 Valuation Year
(Non-vested Terminations)**

Central Age Group Beginning of Year	Number
Under 25	2,183
25	3,109
30	2,027
35	1,678
40	1,730
45	1,678
50	1,612
55	1,217
60	891
65	521
70 & Over	358
Total	17,004

Average Age: 38.0
Average Service: 1.5



**Members Who Became Inactive
in the FY2022 Valuation Year
with a Deferred Allowance
(Vested Terminations)**

Central Age Group Beginning of Year	Number
Under 25	0
25	0
30	2
35	16
40	37
45	73
50	123
55	210
60	254
65	83
70 & Over	18
Total	816

Average Age: 55.3
Average Service: 15.9



SCHEDULE G

GLOSSARY

Actuarial Accrued Liability. The difference between (i) the actuarial present value of future plan benefits, and (ii) the actuarial present value of future normal cost. Sometimes referred to as "accrued liability" or "past service liability".

Accrued Service. The service credited under the plan which was rendered before the date of the actuarial valuation.

Actuarial Assumptions. Estimates of future plan experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and salary increases. Decrement assumptions (rates of mortality, disability, turnover and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (salary increases and investment income) consist of an underlying rate in an inflation-free environment plus a provision for a long-term average rate of inflation.

Actuarial Cost Method. A mathematical budgeting procedure for allocating the dollar amount of the "actuarial present value of future plan benefits" between the actuarial present value of future normal cost and the actuarial accrued liability. Sometimes referred to as the "actuarial funding method".

Actuarial Equivalent. A series of payments is called an actuarial equivalent of another series of payments if the two series have the same actuarial present value.

Actuarial Present Value. The amount of funds presently required to provide a payment or series of payments in the future. It is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Amortization. Paying off an interest-bearing liability by means of periodic payments of interest and principal, as opposed to paying it off with a lump sum payment.

Experience Gain (Loss). A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions during the period between two actuarial valuation dates, in accordance with the actuarial cost method being used.

Normal Cost. The annual cost assigned, under the actuarial funding method, to current and subsequent plan years. Sometimes referred to as "current service cost". Any payment toward the unfunded actuarial accrued liability is not part of the normal cost.

Plan Termination Liability. The actuarial present value of future plan benefits based on the assumption that there will be no further accruals for future service and salary. The termination liability will generally be less than the liabilities computed on a "going concern" basis and is not normally determined in a routine actuarial valuation.

Reserve Account. An account used to indicate that funds have been set aside for a specific purpose and are not generally available for other uses.

Unfunded Actuarial Accrued Liability. The difference between the actuarial accrued liability and valuation assets. Sometimes referred to as "unfunded accrued liability".

Valuation Assets. The value of current plan assets recognized for valuation purposes. Generally based on book value plus a portion of unrealized appreciation or depreciation.



APPENDIX A
ACTUARIAL ACCRUED LIABILITIES
AS OF JUNE 30, 2022

Present Value of:	Pension Benefits	Medicare Part B	Post-Retirement Death Benefit	Total Basic Benefits
Future benefits to present retirees and survivors	\$13,025,447,789	\$209,633,866	\$31,703,852	\$13,266,785,507
Benefits and refunds to present inactive members	747,231,253	21,444,734	1,143,693	769,819,680
Allowances to present active members				
Service	7,572,081,193	141,850,108	7,846,080	7,721,777,381
Disability	277,718,558	3,970,254	351,184	282,039,996
Survivor benefits	175,915,692	3,039,315	0	178,955,007
Withdrawal	<u>142,659,299</u>	<u>9,012,218</u>	<u>419,724</u>	<u>152,091,241</u>
Total Active AAL	8,168,374,742	157,871,895	8,616,988	8,334,863,625
Total AAL	<u>\$21,941,053,784</u>	<u>\$388,950,495</u>	<u>\$41,464,533</u>	<u>\$22,371,468,812</u>



APPENDIX B

**BREAKDOWN OF TOTAL AND ACCRUED LIABILITIES
AS OF JUNE 30, 2022**

	Total Liability	Accrued Liability
Active Members		
Retirement	\$10,051,836,184	\$7,572,081,193
Death	285,611,221	175,915,692
Disability	590,047,057	277,718,558
Termination	863,192,009	142,659,299
Medicare Part B	237,396,013	157,871,895
Death after Retirement	<u>13,267,645</u>	<u>8,616,988</u>
Total	\$12,041,350,129	\$8,334,863,625
Retirees		
Retirement/Survivor/Disability	\$13,025,447,789	\$13,025,447,789
Medicare Part B	209,633,866	209,633,866
Death after Retirement	<u>31,703,852</u>	<u>31,703,852</u>
Total	\$13,266,785,507	\$13,266,785,507
Deferred Vested Members	390,841,943	390,841,943
Inactive Members	<u>378,977,737</u>	<u>378,977,737</u>
Total Actuarial Values	\$26,077,955,316	\$22,371,468,812
Actuarial Value of Assets		<u>16,886,972,559</u>
Unfunded Actuarial Accrued Liability		\$5,484,496,253



APPENDIX C

**COMPARATIVE SCHEDULE
AS OF JUNE 30, 2022**

Valuation Date June 30	Active Members				Retired Lives				Accrued Liability	Valuation Assets	UAAL
					Number		Annual Benefits				
	Payroll	Average Salary		Retired	Active / Retired	\$ Millions	% of Payroll				
	Number	\$ Millions	\$					% Increase	\$ Millions	% of Payroll	
2013	121,642	2,747	22,581	(1.3)	70,771	1.7	898.3	32.7	17,247	11,126	6,121
2014	121,251	2,759	22,757	0.8	72,605	1.7	958.5	34.7	17,882	12,030	5,851
2015	122,855	2,845	23,161	1.8	74,372	1.7	1,020.4	35.9	18,503	12,602	5,902
2016	124,540	2,932	23,545	1.7	76,280	1.6	1,083.6	37.0	19,771	13,180	6,591
2017	157,981	3,303	20,906	(11.2)	79,157	2.0	1,162.0	35.2	19,588	13,713	5,875
2018	158,343	3,332	21,045	0.7	81,332	1.9	1,211.9	36.4	19,998	14,012	5,986
2019	159,363	3,463	21,727	3.2	81,024	2.0	1,219.0	35.2	20,527	14,473	6,054
2020	156,579	3,478	22,210	2.2	80,851	1.9	1,234.3	35.5	21,034	15,037	5,997
2021	146,646	3,622	24,700	11.2	80,721	1.8	1,254.9	34.6	21,530	16,032	5,498
2022	155,063	3,995	25,762	4.3	81,151	1.9	1,295.4	32.4	22,371	16,887	5,484