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The Public School Retirement System of The School District of Kansas City, Missouri

Actuarial Valuation Report
as of January 1, 2023

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December 12, 2023

Board of Trustees
Public School Retirement System of the
School District of Kansas City, Missouri
3100 Broadway, Suite 1211
Kansas City, MO 64111

Dear Members of the Board:

In accordance with your request, we have completed the annual actuarial valuation of the Public School Retirement System of the School District of Kansas City, Missouri as of January 1, 2023. The major findings of the valuation are contained in this report, including the actuarial contribution rate which is used to set the statutory contribution rates for the 12-month period beginning July 1, 2024 and ending June 30, 2025. There were no changes to the plan provisions or actuarial assumptions and methods since the prior valuation.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, plan provisions, member data, and financial information. We found this information to be reasonably consistent and comparable with information provided for prior valuations. The valuation results depend on the integrity of the data provided. If any of this information is inaccurate or incomplete, our valuation results may be different and our calculations may need to be revised.

We further certify that all costs, liabilities, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer our best estimate of anticipated experience affecting the System. Nevertheless, the emerging costs will vary from those presented in this report to the extent actual experience differs from that projected by the actuarial assumptions. The Board of Trustees has the final decision regarding the selection of assumptions and adopted the set of assumptions reflected in Appendix D of this report. In our opinion, the set of assumptions and methods used for funding purposes in this report meet the parameters set by applicable Actuarial Standards of Practice.

In order to prepare the results in this report, we have utilized actuarial models that were developed to measure liabilities and develop actuarial costs. These models include tools that we have produced and tested, along with commercially available valuation software that we have reviewed to confirm the appropriateness and accuracy of the output. In utilizing these models, we develop and use input parameters and assumptions about future contingent events along with recognized actuarial approaches to develop the needed results. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period); and changes in plan provisions or applicable law. Due to the limited scope of our assignment, we did not perform an analysis of the potential range of future measurements.

Actuarial computations presented in this report are for purposes of determining the actuarial contribution rates for funding the System and have been made on a basis consistent with our understanding of the System's funding requirements and goals. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes. For example, actuarial computations for purposes of fulfilling financial accounting requirements for the System under Governmental Accounting Standards No. 67 and No. 68 are provided in separate reports.

The consultants who worked on this assignment are pension actuaries. CMC's advice is not intended to be a substitute for qualified legal or accounting counsel.

This is to certify that the independent consulting actuaries, signing below, are members of the American Academy of Actuaries and have experience in performing valuations for public retirement plans, that the valuation was prepared in accordance with standards of practice prescribed by the Actuarial Standards Board, and that the actuarial calculations were performed by qualified actuaries in accordance with accepted actuarial procedures, based on the current provisions of the retirement plan and on actuarial assumptions that are internally consistent and reasonably based on the actual experience of the System.

We respectfully submit the following report and look forward to discussing it with you.

Sincerely,

Patrice A. Beckham, FSA, EA, FCA, MAAA
Consulting Actuary

Bryan K. Hoge, FSA, EA, FCA, MAAA
Consulting Actuary

SECTION I: EXECUTIVE SUMMARY

This report presents the results of the January 1, 2023 actuarial valuation of the Public School Retirement System of the School District of Kansas City, Missouri (System). The primary purposes of performing a valuation are to:

- estimate the liabilities for future benefits expected to be paid by the System;
- determine the actuarial contribution rate based on the System's funding policy and determine the contribution rates, effective July 1 of the calendar year following the valuation date;
- disclose certain asset and liability measurements as of the valuation date;
- assess and disclose the key risks associated with funding the System;
- monitor any deviation between actual plan experience and experience anticipated by the actuarial assumptions; and
- analyze and report on any significant trends in assets, liabilities, and contributions over the past several years.

Effective July 1, 2021, the employer contribution rate is the greater of (1) the actuarial contribution rate, as determined in the valuation prepared in the prior calendar year, less the member contribution rate, or (2) 12.00% of pay, until the System is fully funded. More detail on the contribution policy can be found in Appendix C of this report. The results of the January 1, 2023 actuarial valuation are used to set the employer contribution rate for July 1, 2024 through June 30, 2025. A summary of the calculation of the employer contribution rate, effective July 1, 2024, is shown below. The employer contribution rate has remained at 12.00% since it was set at that rate, effective January 1, 2020.

Employer Contribution Rate Beginning July 1, 2024	
1. Actuarial Contribution Rate	18.25%
2. Member Contribution Rate	(9.00%)
3. Employer Actuarial Contribution Rate	9.25%
4. Funded Ratio on Valuation Date	68.45%
5. Minimum Employer Contribution Rate [If (4) < 100%, then 12.00%]	12.00%
6. Employer Contribution Rate Effective July 1, 2024 to June 30, 2025 [Maximum of (3) and (5)]	12.00%

Prior to July 1, 2021, the System was funded with fixed employee and employer contribution rates. The change to determine the employer contribution rate based on the actuarial contribution rate is expected to improve the funded status of the System over time and provide a more sustainable path toward full funding.

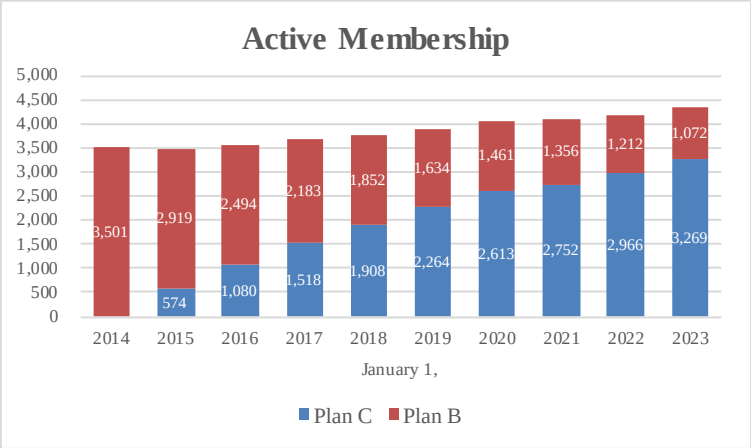
The actuarial valuation results provide a "snapshot" view of the System's financial condition on January 1, 2023, which reflects net unfavorable experience for the past plan year as demonstrated by an unfunded actuarial accrued liability that was higher than expected. The net experience on liabilities resulted in a gain of $1.5 million. There was unfavorable experience on the actuarial value of assets resulting in an actuarial loss of $13.2 million, so the net impact of asset and liability experience was an actuarial loss of $11.7 million. The System's unfunded actuarial accrued liability increased from $305.8 million in the January 1, 2022 valuation to $317.7 million in the January 1, 2023 valuation. A detailed analysis of the change in the unfunded actuarial accrued liability is shown on page 5.

In the following pages, changes in the membership, assets, liabilities, and contributions of the System over the last year are discussed in more detail.

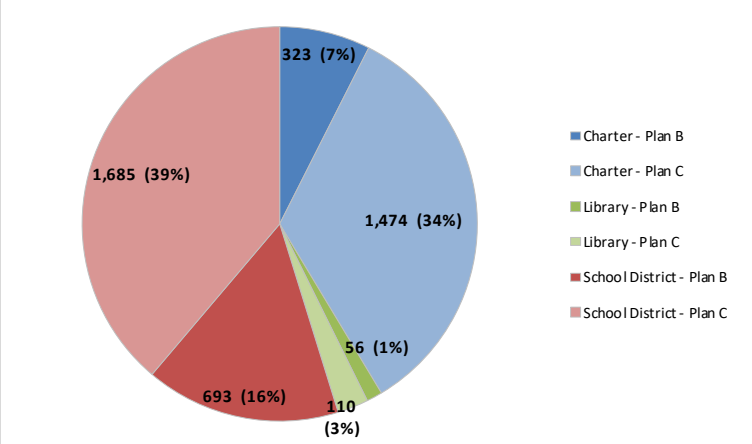
MEMBERSHIP

The size of the active membership increased about 3.9%, from 4,178 in the 2022 valuation to 4,341 in the current valuation. Growth in the active membership is a positive factor for the System's funding as it results in higher covered payroll and, therefore, higher contributions.

There are different benefit provisions applicable to the current active members. The number of actives covered by Plan C, which was effective for members hired on and after January 1, 2014, increased from 2,966 last year (about 71%) to 3,269 in the 2023 valuation (about 75%). The increase in Plan C members tends to lower the actuarial contribution rate as the benefit structure in Plan C has a lower cost. The following graph shows the historical number of active members, split between Plan B and Plan C.



The System covers employees of the Kansas City School District, the Kansas City Library and Charter Schools in Kansas City. The current allocation of active membership among these groups, by Plan, is shown below:



Group	Count	Average Reported Salary	Average Age	Average Service
KC School District	2,378	$48,849	45.9	8.1
Charter Schools	1,797	$46,897	39.2	5.2
Library	166	$54,242	45.3	8.7
Total	4,341	$48,247	43.1	6.9

Total projected covered payroll (on which contributions will be paid) increased by 7.5% from the prior valuation (the assumption was 2.85% for 2022) due to the increase in the active membership and salary increases in 2022. When the actual increase in covered payroll is more than expected, it reduces the UAAL contribution rate in the current actuarial valuation since the UAAL payment is divided by higher covered payroll than expected based on the actuarial assumptions.

The number of total terminated members (vested and non-vested) increased by 8.1% from the 2022 valuation. The number of in-pay members remained steady, decreasing slightly from 4,094 in the 2022 valuation to 4,086 in the 2023 valuation.

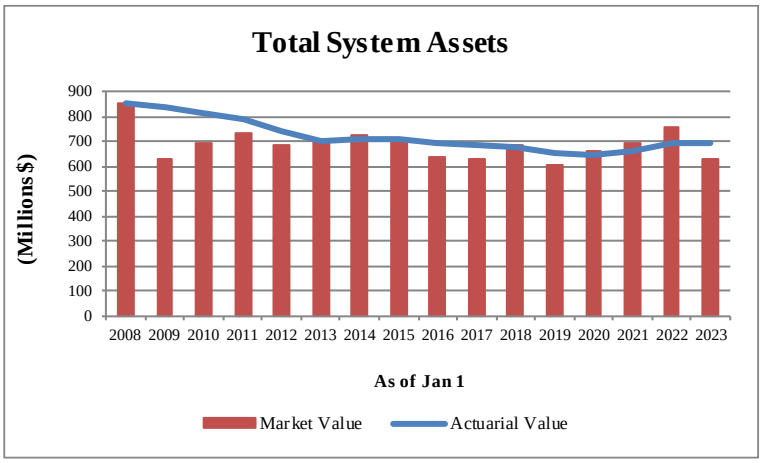
ASSETS

As of January 1, 2023, the System had total assets of $632.1 million when measured on a market value basis, a decrease of over $121 million from the January 1, 2022 value of $753.5 million. The market value of assets is not used directly in the calculation of the System's funded status and the actuarial contribution rate. An asset valuation method, which smoothes the effect of market fluctuations, is used to determine the value of assets used in the valuation, called the "actuarial value of assets". Gains and losses, determined as the difference between the actual and expected value of assets, are recognized equally over a five-year period. See Table 3 for a detailed development of the actuarial value of assets. The rate of return on the market value of assets was -11.3%, but due to the use of an asset smoothing method the return on the actuarial value of assets was 5.3%. Because the investment return on the actuarial value of assets was lower than the actuarial assumed rate of return (7.25%), an actuarial loss on assets occurred. Due to the unfavorable investment experience during 2022, along with the scheduled recognition of the deferred investment experience in the actuarial value of assets, the net deferred asset gain of $61.2 million in the January 1, 2022 valuation is now a net deferred asset loss of $57.0 million in the January 1, 2023 valuation.

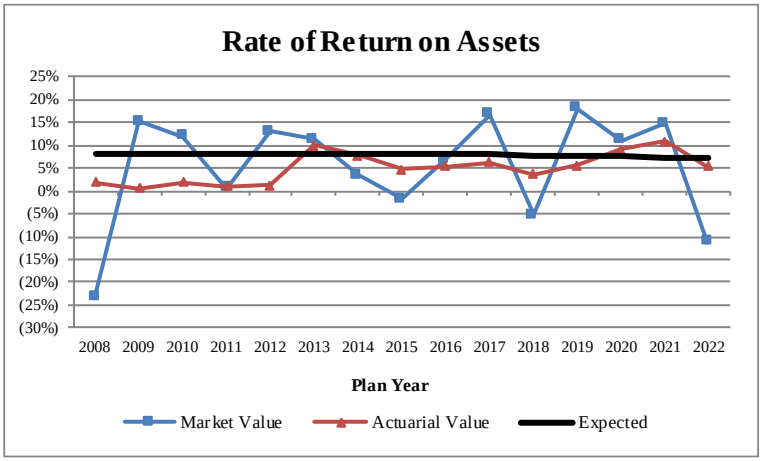
The components of the change in the market and actuarial value of assets for the System (in millions) are set forth below:

	Market Value ($M)	Actuarial Value ($M)
Assets, January 1, 2022	$753.5	$692.3
- Employers and Member Contributions	49.4	49.4
- Benefit Payments and Refunds	(86.4)	(86.4)
- Administrative Expenses	(1.7)	(1.7)
- Net Investment Income	(82.7)	35.5
Assets, January 1, 2023	$632.1	$689.1
Estimated Rate of Return	(11.3%)	5.3%

The market value of assets is about 8.3% lower than the actuarial value of assets indicating a net unrecognized asset loss exists. Unless offset by future investment gains or other favorable actuarial experience, the recognition of the $57.0 million net deferred loss will flow through the asset smoothing method over the next four years and negatively impact the funded ratio and actuarial contribution rate. If the net deferred loss was recognized immediately in the actuarial value of assets, the funded percentage would decrease from 68% to 63% and the actuarial contribution rate for the System would increase from 18.25% to 20.05% of payroll.



The actuarial value of assets has been equal to or greater than the market value of assets over most of this period. However, over the longer term we expect the actuarial value of assets to be both higher and lower than the market value of assets.



The rate of return on the actuarial value of assets has been less volatile than the market value return, which is the main reason for using an asset smoothing method.

LIABILITIES

The actuarial accrued liability is that portion of the present value of future benefits that will not be paid by future employer normal costs or member contributions. The difference between this liability and asset values at the same date is referred to as the unfunded actuarial accrued liability (UAAL). The unfunded actuarial accrued liability will be reduced if the employer's contributions exceed the employer's normal cost for the year, after allowing for interest earned on the previous balance of the unfunded actuarial accrued liability. Benefit improvements, experience gains and losses, and changes in actuarial assumptions and procedures will also impact the total actuarial accrued liability and the unfunded portion thereof.

The Actuarial Accrued Liability and Unfunded Actuarial Accrued Liability for the System as of January 1, 2023 are:

Actuarial Accrued Liability	$1,006,764,612
Actuarial Value of Assets	689,114,479
Unfunded Actuarial Accrued Liability	$317,650,133

The existence of an unfunded actuarial accrued liability means that the System's assets on an actuarial basis are below the target amount for an ongoing plan using the actuarial cost method and actuarial assumptions in place. Consequently, contributions in excess of the normal cost will be needed in order for the System to reach fully funded status, if all assumptions are met in the future. Because the actuarial accrued liability includes projections of future salary increases and years of service, this measure does not provide a reliable indication of the level of funding relative to actual benefits earned to date. In addition, note that if the market value of assets were used instead of the actuarial value of assets, the amount of UAAL would be different. This information is shown on page 10 of this report.

Between January 1, 2022 and January 1, 2023, the change in the unfunded actuarial accrued liability for the System was as follows (in millions):

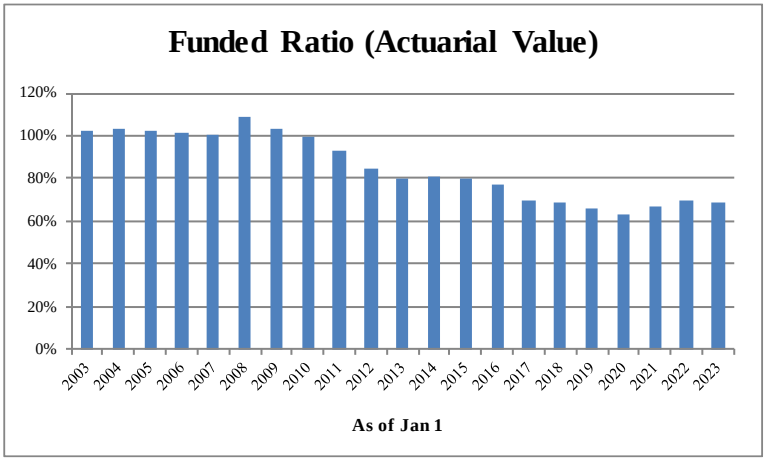
	($ Millions)
Unfunded Actuarial Accrued Liability, January 1, 2022	$ 305.8
- Expected increase from amortization method	0.5
- Actual versus actuarial contributions	(2.1)
- Investment experience	13.2
- Liability experience	(1.5)
- Updated mortality assumption	1.7
- Other experience	0.1
Unfunded Actuarial Accrued Liability, January 1, 2023	$ 317.7

The experience loss for the 2022 plan year of $11.7 million reflects the net impact of an actuarial gain of $1.5 million on System liabilities and an actuarial loss of $13.2 million on System assets (actuarial value). The largest sources of liability experience were an actuarial gain from more deaths than expected and actuarial losses from salary increases that were higher than expected and more retirements than expected, based on the actuarial assumptions.

Analysis of the unfunded actuarial accrued liability strictly as a dollar amount can be misleading. Another way to evaluate the unfunded actuarial accrued liability and the progress made in its funding is to track the funded status, the ratio of the actuarial value of assets to the actuarial accrued liability. This information for recent years is shown in the following table (in millions). Longer term historical information is shown in the graph following the chart:

	1/1/2019	1/1/2020*	1/1/2021*	1/1/2022	1/1/2023
Actuarial Accrued Liability ($M)	$988.2	$1,020.1	$997.6	$998.1	$1,006.8
Actuarial Value of Assets ($M)	$654.3	$645.4	$663.2	$692.3	$689.1
Funded Ratio (Actuarial Value)	66.2%	63.3%	66.5%	69.4%	68.5%
Market Value of Assets ($M)	$602.8	$662.1	$694.2	$753.5	$632.1
Funded Ratio (Market Value)	61.0%	64.9%	69.6%	75.5%	62.8%

*Results reflects the impact of changes to the actuarial assumptions, including a decrease in the investment return assumption from 7.75% to 7.50% in 2020 and from 7.50% to 7.25% in 2021.



The System's funded ratio was very strong (around 100%) in the early part of the period. Funded ratios declined from 2009 to 2013 as the market downturn of 2008 was fully reflected in the smoothing method. Actual investment experience will continue to be the largest driver of the System's funded ratio in future years. However, changes to the contribution rates, beginning in 2019, are expected to improve the System's long-term funding.

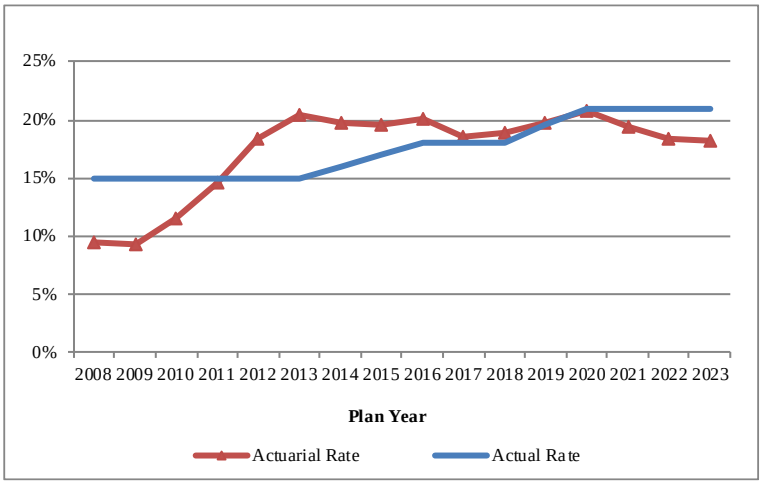
As mentioned earlier in this report, due to the asset smoothing method there is currently a $57.0 million difference between the market value and the actuarial value of assets. To the extent there is not favorable investment experience to offset the net deferred investment loss of $57.0 million, it will be recognized in future years and the System's funded status will decrease. The System's funded status will continue to be heavily dependent on future investment experience.

CONTRIBUTION RATES

Contributions to the System consist of:

- The "normal cost" for the portion of projected liabilities allocated to service of members during the year following the valuation date by the actuarial cost method;
- An "administrative expense" component for the expenses expected to be paid from the trust for the year; 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.

Over the last decade, the System's total contribution rates have increased to address higher funding needs:



The actuarial contribution rate increased dramatically from 2009 to 2013 due to the recognition of the large asset loss from 2008 in the asset smoothing method. The contribution shortfall was reduced with increases in the member and employer contribution rates. Based on legislation passed in 2018, the employer contribution rate increased to 12% on January 1, 2020. Effective July 1, 2021, the employer contribution rate is based on the valuation results.

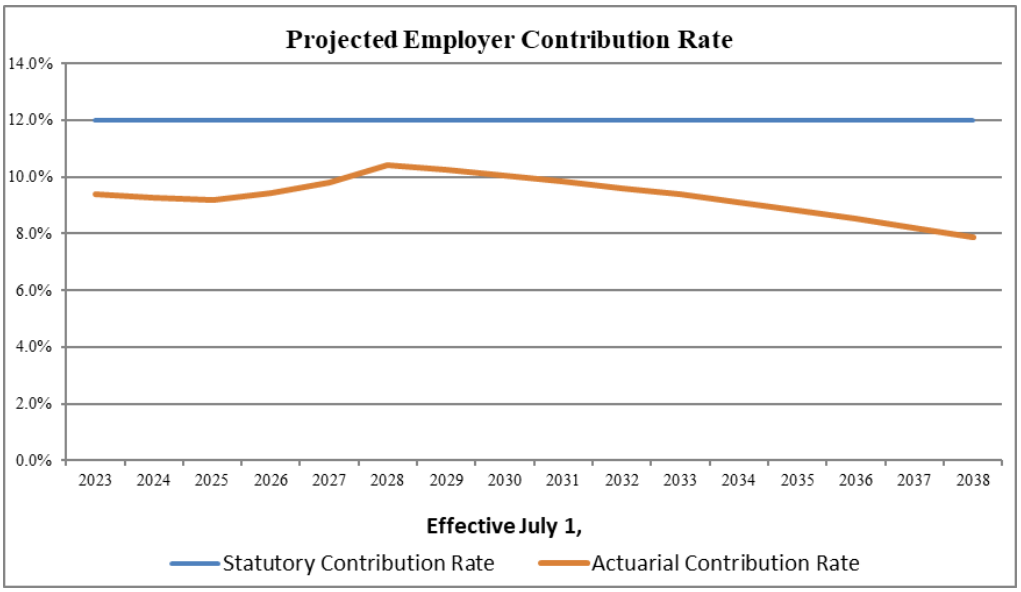
As of January 1, 2023, the actuarial accrued liability exceeds the actuarial value of assets, so an unfunded actuarial accrued liability (UAAL) exists. The "legacy UAAL", the amount in the January 1, 2017 valuation, is amortized over a closed 30-year period (24 years remaining). Subsequent pieces of UAAL, determined each year in the valuation process, are amortized over separate, closed 20-year periods. The amortization payments on each of the UAAL bases are determined as a level percentage of payroll so the dollar amount of UAAL contributions increase each year. The resulting UAAL contribution rate in this valuation is 8.00% of payroll. The System's actuarial contribution rate is the sum of the normal cost, the administrative expense cost, and the UAAL amortization contribution or 18.25% of payroll (9.57% normal cost plus 0.68% administrative expense plus 8.00% UAAL contribution).

The various factors contributing to the change in the actuarial contribution rate from the January 1, 2022 valuation to the January 1, 2023 valuation are shown in the following table:

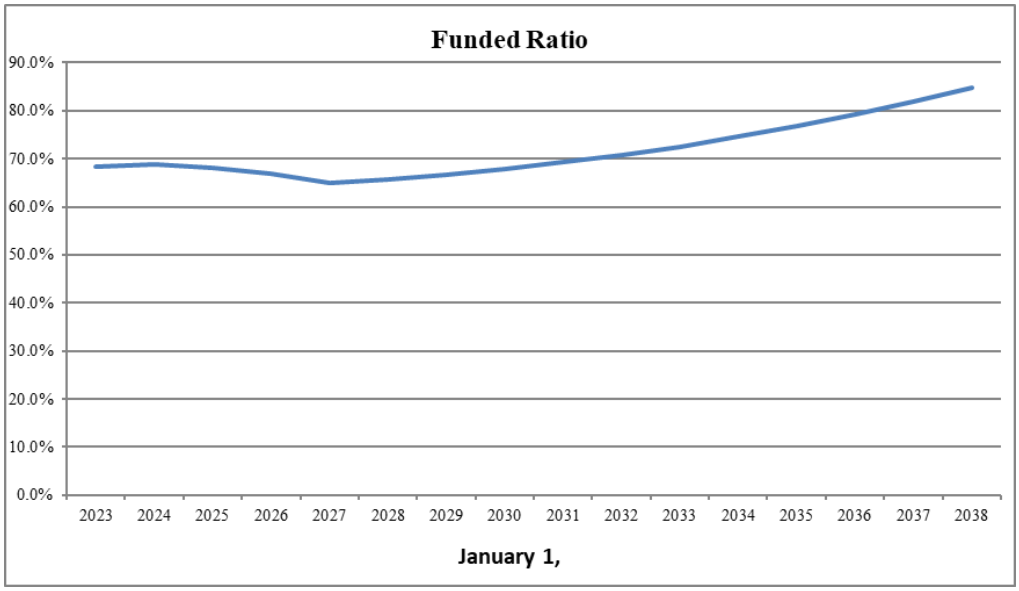
Total Actuarial Contribution Rate	
As of January 1, 2022	18.40%
- Change in normal cost rate	(0.03%)
- Change in administrative expense rate	(0.02%)
- Actual versus actuarial contributions	(0.07%)
- Payroll growth greater than expected	(0.36%)
- Investment experience	0.42%
- Liability experience	(0.05%)
- Updated mortality assumption	0.05%
- Other experience	(0.09%)
As of January 1, 2023	18.25%

In 2018, the Missouri General Assembly passed legislation that increased the employer contribution rate from 9.00% to 10.50% of pay, effective January 1, 2019, and 12.00% of pay, effective January 1, 2020. Effective July 1, 2021, the employer contribution rate is the greater of (1) the actuarial required contribution rate less the member contribution rate, determined in the actuarial valuation in the prior calendar year or (2) 12.00% of pay, until the System is fully funded. Once the System is fully funded, the employer contribution rate may increase or decrease in subsequent years, depending on the valuation results, and the employee contribution rate may decrease from 9.00% depending on valuation results. However, such changes are subject to statutory limitations. These legislative changes to the determination of the employer contribution rate represent a significant step in strengthening the long-term funding of the System and providing a sustainable path to full funding.

The current contribution rate is 21.00% of pay (9.00% for employee and 12.00% employer). In the current valuation, 9.57% is needed to fund the normal cost for current active members and 0.68% is needed to fund the administrative expenses, for a total ongoing cost of 10.25% of payroll. The remainder, 10.75% of payroll, is available to fund the UAAL. The following graphs reflect the projected employer contribution rate and funded ratio, assuming all assumptions are met in the future, including a 7.25% return on the market value of assets each year. To the extent actual experience is different than assumed, the actual valuation results of the System will vary from these projections, perhaps significantly.



As the deferred investment experience in the current valuation is recognized over the next four years, the actuarial employer contribution rate increases. Under statutory provisions, the employer contribution rate remains at a minimum of 12.00% until the System reaches full funding. By contributing more than the actuarial employer contribution rate, the System is funded more rapidly, assuming all assumptions are met. Actual investment experience will heavily impact the date the System actually reaches full funding. However, with the use of an asset smoothing method and the current contribution rate above the actuarial contribution rate, the employer contribution rate is likely to remain 12.00% for the next few years absent negative asset returns. For example, a negative 1% return in 2023 followed by returns of 7.25% in all future years is projected to ultimately increase the employer contribution rate above the current 12.00% after all the deferred investment experience has been recognized.



The funded ratio is expected to decline initially and then steadily improve and reach 100% in 2043 (20 years), which is ahead of the UAAL amortization schedule. This is due to the combined impact of (i) recognizing deferred asset experience over the next four years and (ii) making contributions above the actuarial contribution rate. The contributions above the actuarial contribution rate are an intentional feature of the System's current funding policy, which is designed to more rapidly move the System's funding status to 100% as well as stabilize contribution rates.

COMMENTS

The System's actuarial required contribution rate decreased from 18.40% in the January 1, 2022 valuation to 18.25% in the January 1, 2023 valuation. The major driver of the 2023 valuation results was the actual return of -11.3% on the market value of assets in 2022. Due to the unfavorable investment experience during 2022, the net deferred investment gain of $61.2 million in the January 1, 2022 valuation is now a net deferred investment loss of $57.0 million in the January 1, 2023 valuation. To the extent there is not favorable investment experience in the future to offset the net deferred investment loss of $57.0 million, it will be recognized in the next four years and the System's funded status will decrease.

The System does not use the actual market value of assets in developing the actuarial contribution rate but utilizes an asset valuation method to smooth out the peaks and valleys in investment returns from year to year. Due to the current year's scheduled recognition of prior investment experience and the unfavorable investment experience during 2022, the System experienced an actuarial loss on assets of $13.2 million. In addition to the unfavorable experience on the actuarial value of assets, there was a net gain on liabilities of $1.5 million. The net impact of the asset and the liability experience was an actuarial loss of $11.7 million.

The net deferred investment loss (actuarial value greater than market value of assets) is $57.0 million, about 9.0% of market value. Absent investment gains in future years, this net deferred investment loss will eventually be reflected in the actuarial value of assets. While the use of an asset smoothing method is a common procedure for public retirement systems, it is important to identify the potential impact of the deferred investment experience. This is accomplished by comparing the key valuation results from the January 1, 2023 actuarial valuation using both the actuarial and market value of assets.

	Using Actuarial Value of Assets	Using Market Value of Assets
Actuarial Accrued Liability	$1,006,764,612	$1,006,764,612
Asset Value	689,114,479	632,091,137
Unfunded Actuarial Accrued Liability	$317,650,133	$374,673,475
Funded Ratio	68.5%	62.8%
Normal Cost Rate	9.57%	9.57%
Administrative Expenses	0.68%	0.68%
UAAL Contribution Rate	8.00%	9.80%
Total Contribution Rate	18.25%	20.05%
Employee Contribution Rate	(9.00%)	(9.00%)
Employer Contribution Rate	(12.00%)	(12.00%)
Contribution Shortfall/(Margin)	(2.75%)	(0.95%)

The actuarial required contribution rate has been, and will continue to be, heavily impacted by actual investment returns from year to year. Despite the use of an asset smoothing method, actual returns that are significantly different from the 7.25% assumption will create volatility in the System's actuarial required contribution rate, although the statutory provisions regarding changes in the actual employer contribution rate should help to mitigate some of the volatility.

A typical retirement plan faces many different risks. 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. Actuarial Standard of Practice Number 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. Risk evaluation is an important part of managing a defined benefit plan. Please see Section VII of this report for an in-depth discussion of the specific risks facing the Public School Retirement System of the School District of Kansas City, Missouri.

Summary of Principal Valuation Results

	1/1/2023 Valuation	1/1/2022 Valuation	% Change
1. PARTICIPANT DATA			
Number of:			
Active Members			
- Plan B	1,072	1,212	(11.6%)
- Plan C	3,269	2,966	10.2%
Total	4,341	4,178	3.9%
Retirees, Disableds, and Beneficiaries	4,086	4,094	(0.2%)
Terminated Members			
- Vested Members	673	568	18.5%
- Non-Vested Members	2,678	2,532	5.8%
Total	3,351	3,100	8.1%
Total Members	11,778	11,372	3.6%
Projected Annual Salaries of Active Members	$ 252,084,684	$ 234,540,261	7.5%
Annual Retirement Payments for Retirees, Disableds, and Beneficiaries	$ 80,799,072	$ 80,559,540	0.3%
2. ASSETS AND LIABILITIES			
a. Market Value of Assets	$ 632,091,137	$ 753,497,392	(16.1%)
b. Actuarial Value of Assets	689,114,479	692,264,054	(0.5%)
c. Total Actuarial Accrued Liability	1,006,764,612	998,058,955	0.9%
d. Unfunded Actuarial Accrued Liability [c - b]	$ 317,650,133	$ 305,794,901	3.9%
e. Funded Ratio (Actuarial Value of Assets) [b / c]	68.45%	69.36%	(1.3%)
f. Funded Ratio (Market Value of Assets) [a / c]	62.78%	75.50%	(16.8%)
g. Projected Benefit Obligation	$ 978,732,289	$ 971,648,477	0.7%
3. CONTRIBUTION RATES AS A PERCENT OF PAYROLL			
Normal Cost	9.57%	9.60%	(0.3%)
Administrative Expense	0.68%	0.70%	(2.9%)
Amortization of Unfunded Actuarial Accrued Liability	8.00%	8.10%	(1.2%)
Actuarial Required Contribution Rate	18.25%	18.40%	(0.8%)
Member Contribution Rate	(9.00%)	(9.00%)	0.0%
Employer Contribution Rate	(12.00%)	(12.00%)	0.0%
Contribution Rate Shortfall/(Margin)	(2.75%)	(2.60%)	5.8%

*Contribution rates are effective July 1 of the following fiscal year.

SECTION II: SCOPE OF THE REPORT

This report presents the actuarial valuation of the Public School Retirement System of the School District of Kansas City, Missouri as of January 1, 2023. This valuation was prepared at the request of the System's Board of Trustees. The report is based on the plan provisions, actuarial assumptions and actuarial methods in effect as of January 1, 2023.

Please pay particular attention to our cover letter, where the guidelines employed in the preparation of this report are outlined. We also comment on the sources and reliability of both the data and the actuarial assumptions upon which our findings are based. Those comments are the basis for our certification that this report is complete and accurate to the best of our knowledge and belief.

A summary of the findings resulting from this valuation is presented in the previous section. Section III describes the assets and investment experience of the System. Sections IV and V describe how the obligations of the System are to be met under the actuarial cost method in use. Section VI includes additional information regarding the System's funding history. Section VII includes a number of risks for the System to consider.

This report includes several appendices:

- Appendix A Schedules of valuation data classified by various categories of members.
- Appendix B Schedules of historical valuation data measurements utilized in the System's annual financial report.
- Appendix C A summary of the current benefit structure, as determined by the provisions of governing law on the valuation date.
- Appendix D A summary of the actuarial methods and assumptions used to estimate liabilities and determine contribution rates.
- Appendix E A glossary of actuarial terms.

In many respects, an actuarial valuation can be thought of as an inventory process. The inventory is taken as of the actuarial valuation date, which is January 1 of each year. On that date, the assets available for the payment of benefits are appraised. The assets are compared with the liabilities of the System. The actuarial process then leads to a method of determining the contributions needed by members and the employer in the future to balance the System assets and liabilities.

MARKET VALUE OF ASSETS

The current market value represents the "snapshot" or "cash-out" value of System assets as of the valuation date. In addition, the market value of assets provides a basis for measuring investment performance over time. On January 1, 2023, the market value of assets for the System was $632.1 million. Table 1 summarizes the market value of assets by asset category. Table 2 summarizes the changes in the market value of assets between January 1, 2022 and January 1, 2023.

ACTUARIAL VALUE OF ASSETS

Neither the market value of assets, representing a "cash-out" value of System assets, nor the book values of assets, representing the cost of investments, may be the best measure of the System's ongoing ability to meet its obligations.

To arrive at a suitable value for the actuarial valuation, a technique for determining the actuarial value of assets is used which dampens swings in the market value while still indirectly recognizing market values. This methodology smoothes the difference between the actual return and the expected return (based on the actuarial assumption) on the market value of assets equally over a five-year period. Table 3 shows the development of the actuarial value of assets (AVA) as of January 1, 2023. Table 4 shows the schedule of deferred experience to be recognized in the actuarial value of assets in future years.

TABLE 1

Net Assets at Fair (Market) Value as of January 1, 2023

INVESTMENTS, AT MARKET VALUE		
Cash and short term investments	$	5,989,727
Commingled domestic fixed income		61,175,875
High yield fixed income		16,119,408
Global fixed income		28,519,301
Domestic equity		132,670,959
International equity		132,794,614
Pooled real estate funds		68,745,550
Alternative equity fund		108,441,319
Private equity		71,839,889
Commodities		0
Total Investments, at Market Value	$	626,296,642
RECEIVABLES		
Plan member contributions	$	727,202
Employer contributions		1,714,630
Securities sold		0
Accrued interest and dividends		1,274,826
Total Receivables	$	3,716,658
OTHER ASSETS		
Cash	$	2,482,743
Fixed assets		85,800
Other assets		81,559
Total Other Assets	$	2,650,102
TOTAL ASSETS	$	632,663,402
LIABILITIES		
Due to broker for securities purchased	$	40,863
Accounts payable		483,590
Accrued payroll expenses		47,812
Total Liabilities	$	572,265
NET ASSETS AVAILABLE FOR BENEFITS	$	632,091,137

Note: Based on unaudited asset information.

TABLE 2

Statement of Changes in Net Assets as of January 1, 2023

ADDITIONS TO NET ASSETS		
Contributions		
Plan members	$	21,204,065
Employers		28,210,227
Total Contributions	$	49,414,292
Investment Income		
Net appreciation (depreciation) in fair value of investments	$	(83,956,633)
Interest/Dividends		8,180,545
Other income		0
Investment income before expenses	$	(75,776,088)
Less: investment expenses		(6,900,520)
Net investment income	$	(82,676,608)
TOTAL ADDITIONS TO NET ASSETS	$	(33,262,316)
DEDUCTIONS FROM NET ASSETS		
Benefits paid directly to participants	$	80,409,066
Refunds of contributions		6,008,392
Other		9,097
Administrative expenses		1,717,384
TOTAL DEDUCTION FROM ASSETS	$	88,143,939
NET INCREASE (DECREASE)	$	(121,406,255)
NET ASSETS AVAILABLE FOR BENEFITS		
Beginning of year	$	753,497,392
End of year	$	632,091,137

Note: Based on unaudited asset information.

TABLE 3

Development of Actuarial Value of Assets as of January 1, 2023

1. Deferral of Investment Return for 2022		
a. Market Value, January 1, 2022	$	753,497,392
b. Contributions for 2022		49,414,292
c. Benefit Payments and Administrative Expenses for 2022		88,134,842
d. Expected Rate of Return During 2022		7.25%
e. Expected Return - Weighted for Timing* (a. x d.) + [(b. - c.) x (((1 + d.)$^{.5}$) - 1)]	$	53,249,499
f. Actual Investment Return, Net of Investment Expenses	$	(82,676,608)
g. Investment Gain/(Loss) for the Year (f. - e.)	$	(135,926,107)
h. Deferred Investment Return (g. x 80%)	$	(108,740,886)
2. Actuarial Value, January 1, 2023		
a. Market Value, January 1, 2023	$	632,091,137
b. Total Deferred Investment Gain/(Loss)		(57,023,342)
c. Actuarial Value, January 1, 2023 (a. - b.)	$	689,114,479
d. Ratio of Actuarial Value of Assets to Market Value of Assets		109.0%
e. Approximate Actuarial Value Rate of Return for 2022, Net of Investment Expenses		5.3%

* Contributions and benefit payments are assumed to occur mid-year.

The table below shows the development of gain/(loss) to be recognized in the current year.

Plan Year Ended	Asset Gain/(Loss)	Gain/(Loss) Recognized in Prior Years	Gain/(Loss) Recognized This Year	Gain/(Loss) Deferred to Future Years
12/31/2018	$(86,082,027)	$(68,865,620)	$(17,216,407)	$ 0
12/31/2019	59,479,255	35,687,553	11,895,851	11,895,851
12/31/2020	23,436,801	9,374,720	4,687,360	9,374,721
12/31/2021	50,744,952	10,148,990	10,148,990	30,446,972
12/31/2022	(135,926,107)	0	(27,185,221)	(108,740,886)
Total	$(88,347,126)	$(13,654,357)	$(17,669,427)	$(57,023,342)

TABLE 4

Schedule of Deferred Actuarial Value of Assets Experience

Plan Year Ended	Gain/(Loss) Deferred to Future Years	Gain/(Loss) to be Recognized in Plan Year Ending			
		2023	2024	2025	2026
12/31/2019	$11,895,851	11,895,851			
12/31/2020	9,374,721	4,687,360	4,687,361		
12/31/2021	30,446,972	10,148,990	10,148,990	10,148,992	
12/31/2022	(108,740,886)	(27,185,221)	(27,185,221)	(27,185,221)	(27,185,223)
Total	($57,023,342)	($453,020)	($12,348,870)	($17,036,229)	($27,185,223)

In the previous section, an actuarial valuation was compared with an inventory process, and an analysis was given of the inventory of assets of the System as of the valuation date, January 1, 2023. In this section, the discussion will focus on the commitments of the System, which are referred to as its liabilities.

Table 5 contains an analysis of the actuarial present value of all future benefits (PVFB) for contributing members, inactive members, retirees and their beneficiaries. The liabilities summarized in Table 5 include the actuarial present value of all future benefits expected to be paid with respect to each member. For an active member, this value includes the measurement of both benefits already earned and future benefits to be earned. For all members, active and retired, the value extends over benefits earnable and payable for the rest of their lives and for the lives of the surviving beneficiaries.

All liabilities reflect the benefit provisions in place as of January 1, 2023.

ACTUARIAL ACCRUED LIABILITY

A fundamental principle in financing the liabilities of a prefunded retirement program is that the cost of its benefits should be related to the period in which benefits are earned, rather than to the period of benefit distribution. An actuarial cost method is a mathematical technique that allocates the present value of future benefits into annual costs. In order to do this allocation, it is necessary for the funding method to "breakdown" the present value of future benefits into two components:

1. that which is attributable to the past, and

2. that which is attributable to the future.

Actuarial terminology calls the part attributable to the past the "past service liability" or the "actuarial accrued liability". The portion allocated to the future is known as the present value of future normal costs, with the specific piece of it allocated to the current year being called the "normal cost". Table 6 contains the calculation of actuarial accrued liability to the System. The Entry Age Normal actuarial cost method is used to develop the actuarial accrued liability.

Table 7 develops the experience gain/(loss) for the year ended December 31, 2022.

Table 8 shows the liability gain/(loss) by source.

Table 9 shows the actuarial balance sheet.

PENSION BENEFIT OBLIGATION

Table 10 shows the System's liability on a Pension Benefit Obligation (PBO) basis.

TABLE 5

Present Value of Future Benefits as of January 1, 2023

1. Active Members		
a. Retirement Benefits	$	357,230,799
b. Death Benefits		8,088,236
c. Withdrawal Benefits		59,736,303
d. Subtotal	$	425,055,338
2. Benefit Recipients		
a. Retiree Benefits	$	661,345,493
b. Survivor Benefits		23,476,015
c. Disability Benefits		6,035,671
d. Subtotal	$	690,857,179
3. Inactive Members		
a. Vested Retirement Benefits	$	29,247,983
b. Non-vested Account Balance		12,188,736
c. Subtotal	$	41,436,719
4. Total (1d. + 2d. + 3c.)	$	1,157,349,236

TABLE 6

Actuarial Accrued Liability as of January 1, 2023

1. Present Value of Future Benefits (PVFB)	$	1,157,349,236
2. Present Value of Future Normal Costs (PVFNC)		
a. Retirement benefits	$	85,258,420
b. Death benefits		4,025,221
c. Withdrawal benefits		61,300,983
d. Total	$	150,584,624
3. Actuarial Accrued Liability (AAL) (1. - 2d.)	$	1,006,764,612
4. Actuarial Value of Assets (AVA)	$	689,114,479
5. Unfunded Actuarial Accrued Liability (UAAL) (3. - 4.)	$	317,650,133
6. Funded Ratio (AVA / AAL) (4. / 3.)		68.4%

TABLE 7

Actuarial (Gain)/Loss for 2022

Liabilities			
1.	Actuarial accrued liability as of January 1, 2022	$	998,058,955
2.	Normal cost for 2022, including new hires		23,909,620
3.	Benefit payments during 2022		(86,417,458)
4.	Interest at 7.25% on (1), (2) and (3) to December 31, 2022		71,014,898
5.	Updated mortality assumption		1,698,926
6.	Expected actuarial accrued liability as of December 31, 2022	$	1,008,264,941
7.	Actuarial accrued liability as of December 31, 2022		1,006,764,612
8.	Actuarial (gain) / loss on actuarial accrued liability (7. - 6.)	$	(1,500,329)
Assets			
9.	Actuarial value of assets as of January 1, 2022	$	692,264,054
10.	Contributions during 2022		49,414,292
11.	Benefit payments and administrative expenses during 2022		(88,134,842)
12.	Interest at 7.25% on (8), (9) and (10) to December 31, 2022		48,810,082
13.	Expected actuarial value of assets as of December 31, 2022	$	702,353,586
14.	Actuarial value of assets as of December 31, 2022		689,114,479
15.	Actuarial (gain) / loss on actuarial assets (13. – 14.)	$	13,239,107
16.	Total actuarial (gain) / loss (8. + 15.)	$	11,738,778

TABLE 8

(Gain)/Loss Analysis by Source

The System experienced a net actuarial gain on liabilities of about $1.5 million during the plan year ended December 31, 2022. The major components of the actuarial experience are shown below:

Retirement	$	885,000
Termination		89,000
Disability		(33,000)
Mortality		(2,578,000)
Salary		1,533,000
Miscellaneous		(1,396,000)
Total Liability (Gain)/Loss	$	(1,500,000)
Asset (Gain)/Loss	$	13,239,000
Net Actuarial (Gain)/Loss	$	11,739,000

Comments

The purpose of conducting an actuarial valuation of a retirement system is to determine the costs and liabilities for the benefits under the system, to determine the annual level of contribution required to support these benefits and, finally, to analyze the system's overall experience as it compares with the actuarial assumptions used in the valuation. The costs and liabilities of a retirement system reported in the valuation depend not only upon the level of benefits provided, but also upon factors such as investment return on invested funds, mortality rates for active and retired members, withdrawal rates among active members, rates at which salaries increase, and rates of retirement for ages at which members retire. The actuarial assumptions employed as to these and other contingencies in the current valuation are set forth in Appendix D of this report.

Net demographic actuarial experience for the year was a gain of $1.5 million, about 0.15% of actuarial accrued liability. The largest source of experience was a gain of $2.6 million due to more deaths than expected based on the actuarial assumptions.

Another significant component of the experience for the year ending December 31, 2022 was the investment experience. Due to the current year's scheduled recognition of prior investment experience and the unfavorable investment experience during 2022, there was a loss on the actuarial value of assets of $13.2 million. As of January 1, 2023, there is a net deferred investment loss of $57.0 million. Absent favorable investment experience, the net deferred loss will flow through the valuation over the next few years and increase both the UAAL and the actuarial contribution rate.

TABLE 9

Actuarial Balance Sheet

Assets

Current assets (actuarial value)	$	689,114,479
Present value of future normal costs		150,584,624
Present value of future contributions to fund unfunded actuarial accrued liability		317,650,133
Total Assets	$	1,157,349,236

Liabilities

Present value of future retirement benefits for:		
Active employees	$	425,055,338
Members currently receiving a benefit		690,857,179
Terminated vested members		29,247,983
Inactive employees due refunds		12,188,736
Total Liabilities	$	1,157,349,236

TABLE 10

Pension Benefit Obligation Funded Status

The Pension Benefit Obligation (PBO) is statutorily required to be used in the determination of whether a cost-of-living allowance can be granted to retirees. PBO is a different actuarial cost method than is used for funding purposes, which is Entry Age Normal (EAN). Instead of spreading costs evenly over a member's working lifetime, as with EAN, PBO accounts for benefits as they are accrued, while also reflecting future expected pay increases. If the funded ratio, after reflecting the effect of the proposed increase, exceeds 100%, and other safeguards are met, a cost-of-living allowance may be provided. See Appendix C for additional details.

Projected Benefit Obligation		January 1, 2023	January 1, 2022
1.	Retired members and beneficiaries currently receiving benefits and terminated members not yet receiving benefits	$ 732,293,898	$ 729,504,462
2.	Current active participants		
a.	Accumulated member contributions, including interest	125,148,669	123,670,335
b.	Employer-financed vested benefits	121,289,722	118,473,680
Total Projected Benefit Obligation (PBO)		$ 978,732,289	$ 971,648,477
Projected Benefit Obligation funded status			
1.	Actuarial Value of Assets (AVA)	$ 689,114,479	$ 692,264,054
a.	Unfunded Projected Benefit Obligation	289,617,810	279,384,423
b.	Funding Ratio (AVA / PBO)	70%	71%
2.	Market Value of Assets (MVA)	$ 632,091,137	$ 753,497,392
a.	Unfunded Projected Benefit Obligation	346,641,152	218,151,085
b.	Funding Ratio (MVA / PBO)	65%	78%

The previous two sections were devoted to a discussion of the assets and liabilities of the System. A comparison of Tables 3 and 5 indicates that current assets fall short of meeting the present value of future benefits (total liability). This is expected, except for a completely closed fund, where no further contributions are anticipated. In an active open system, there will almost always be a difference between the actuarial value of assets and total liabilities. This deficiency has to be made up by future contributions and investment returns. An actuarial valuation sets out a schedule of future contributions that will deal with this deficiency in an orderly fashion.

The method used to determine the incidence of the contributions in various years is called the actuarial cost method. Under an actuarial cost method, the contributions required to meet the difference between current assets and current liabilities are allocated each year between two elements: (1) the normal cost rate and (2) the unfunded actuarial accrued liability contribution rate.

The term "fully funded" is often applied to a system in which contributions at the normal cost rate are sufficient to pay for the benefits of existing employees as well as for those of new employees. More often than not, systems are not fully funded, either because of past benefit improvements that have not been completely funded or because of actuarial deficiencies that have occurred because experience has not been as favorable as anticipated. Under these circumstances, an unfunded actuarial accrued liability (UAAL) exists. Likewise, when the actuarial value of assets is greater than the actuarial accrued liability, a surplus exists.

DESCRIPTION OF CONTRIBUTION RATE COMPONENTS

The Entry Age Normal (EAN) actuarial cost method is used for the valuation. Under this method, the normal cost for each year from entry age to assumed exit age is a constant percentage of the member's year by year projected compensation. The portion of the present value of future benefits not provided by the present value of future normal costs is the actuarial accrued liability. The unfunded actuarial accrued liability represents the difference between the actuarial accrued liability and the actuarial value of assets as of the valuation date. The unfunded actuarial accrued liability is calculated each year and reflects experience gains/(losses).

The calculation of the employer contribution rate is outlined in Appendix C.

As of January 1, 2023, the valuation assets were less than the actuarial accrued liability, so an unfunded actuarial accrued liability exists. The actuarial contribution rate, based on the January 1, 2023 actuarial valuation, will be used to determine the employer contribution rate for the year beginning July 1, 2024. The System's funding policy is to amortize the UAAL, as a level percent of pay amount, using a "layered" approach with the legacy UAAL amortized over a closed 30-year period commencing January 1, 2017 and new bases over closed 20-year periods.

CONTRIBUTION RATE SUMMARY

Table 11 develops the normal cost rate for the System. Table 12 projects the unfunded actuarial accrued liability to July 1, 2024. In Table 13, the amortization payment related to the unfunded actuarial accrued liability as of July 1, 2024 is developed. In Table 14, the actuarial contribution rate for the System is calculated.

The actuarial contribution rate shown in this report is based on the actuarial assumptions and cost methods described in Appendix D.

TABLE 11

Normal Cost Rate

1. Normal Cost		
a. Retirement Benefits	$	12,542,977
b. Death Benefits		609,909
c. Termination Benefits		8,217,204
d. Total	$	21,370,090
2. Expected Payroll for Current Actives	$	223,263,837
3. Normal Cost Rate for 2023		9.57%

TABLE 12

Projected Unfunded Actuarial Accrued Liability at July 1, 2024

1. Unfunded Actuarial Accrued Liability at January 1, 2023	$	317,650,133
2. Total Contribution Rate for Year Ending June 30, 2023		21.00%
3. Normal Cost Rate		9.57%
4. Administrative Expense Rate		0.68%
5. Contribution Rate Applied to UAAL for 2023 [(2) - (3) - (4)]		10.75%
6. Expected Payroll for January to June, 2023	$	126,042,342
7. Expected UAAL Contribution [(5) * (6)]	$	13,549,552
8. Projected UAAL at July 1, 2023 [(1) * $1.0725^{.5}$ - (7) * $1.0725^{.25}$]	$	315,174,754
9. Total Contribution Rate for Year Ending June 30, 2024		21.00%
10. Normal Cost Rate		9.57%
11. Administrative Expense Rate		0.68%
12. Contribution Rate Applied to UAAL for Year Ending June 30, 2024 [(9) - (10) - (11)]		10.75%
13. Expected Payroll for Year Ending June 30, 2024	$	255,676,891
14. Expected UAAL Contribution [(12) * (13)]	$	27,485,266
15. Projected UAAL at July 1, 2024 [(8) * 1.0725 - (14) * $1.0725^{.5}$]	$	309,560,749

TABLE 13

Amortization of the Unfunded Actuarial Accrued Liability

Amortization Bases	Original Amount	Remaining Payments	Projected Balance as of July 1, 2024	Annual Contribution*
2017 UAAL Base	$ 297,102,390	24	$ 314,516,524	$ 21,073,802
2018 Experience Base	1,054,285	15	1,004,781	91,504
2019 Experience Base	28,100,770	16	27,188,837	2,365,100
2020 Assumption Change	23,365,556	17	22,865,400	1,907,065
2020 Experience Base	14,051,512	17	13,750,729	1,146,866
2021 Assumption Change	(26,519,293)	18	(26,182,905)	(2,100,758)
2021 Experience Base	(18,210,267)	18	(17,979,276)	(1,442,548)
2022 Experience Base	(34,548,817)	19	(34,374,208)	(2,660,988)
2023 Experience Base	8,770,867	20	8,770,867	656,822
Total			**$ 309,560,749**	**$ 21,036,865**

* Contribution amount reflects mid-year timing.

1. Total UAAL Amortization Payments	$ 21,036,865
2. Projected Payroll for Plan Year Ending June 30, 2025	$ 262,963,682
3. UAAL Amortization Payment Rate	8.00%

TABLE 14

Development of the Actuarial Contribution Rate

The contribution rate developed in this exhibit is based on the Funding Policy, the January 1, 2023 actuarial valuation and applies to the year beginning July 1, 2024 and ending June 30, 2025.

1. Normal Cost Rate (See Table 10)	9.57%
2. Administrative Expense Load	0.68%
3. UAAL Contribution Rate (See Table 12)	8.00%
4. Actuarial Recommended Contribution Rate (1) + (2) + (3)	18.25%
5. Funded Ratio as of January 1, 2023	68.45%
6. Member Contribution Rate Effective July 1, 2023	9.00%
7. Employer Contribution Rate Effective July 1, 2023	12.00%
8. Member Contribution Rate Effective July 1, 2024*	9.00%
9. Employer Contribution Rate Effective July 1, 2024**	12.00%
10. Contribution Shortfall/(Margin) (4) - (8) - (9)	(2.75%)

* If the System is at least 100% funded as of the current valuation, then the members contribute the lesser of (a) 9.00% or (b) one-half of the actuarial recommended contribution rate. If the System is less than 100% funded, then the members contribute 9.00%.

** The employer contribution rate is the greater of (1) the employer share of the actuarial contribution rate, or (2) 12.00% of pay, until the system is fully funded.

Once the System is fully funded, the member and employer contribution rates may increase or decrease in subsequent years, but they may not increase by more than 1.00% or decrease by more than 0.50% from the rate in effect for the previous year. An exception to the limitation on the magnitude of contribution rate increases and decreases exists only when the system is fully funded and the total actuarial required contribution rate for employer and employee rate falls below 18.00%.

HISTORICAL FUNDING AND OTHER INFORMATION

In this section, we provide some historical information regarding the funding progress of the System. These exhibits retain some of the information that used to be required for accounting purposes and are included because they help explain the System's funding history.

TABLE 15

Schedule of Funding Progress

Analysis of the dollar amounts of actuarial value of assets, actuarial accrued liability, or unfunded actuarial accrued liability in isolation can be misleading. Expressing the actuarial value of assets as a percentage of the actuarial accrued liability provides one indication of the System's funded status on an on-going concern basis. Analysis of this percentage over time indicates whether the System is becoming financially stronger or weaker. Generally, the greater this percentage, the stronger the System's funding. The unfunded actuarial accrued liability and annual covered payroll are both affected by inflation. Expressing the unfunded actuarial accrued liability as a percentage of covered payroll approximately adjusts for the effects of inflation and aids analysis of the progress being made in accumulating sufficient assets to pay benefits when due. Generally, the smaller this percentage, the stronger the System's funding.

Actuarial Valuation Date	Actuarial Value of Assets (AVA) (a)	Actuarial Accrued Liabilities (AAL) (b)	Unfunded AAL (UAAL) (b - a)	Funded Ratio (a / b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll [(b - a) / c]
1/1/1999	624,225,667	564,056,509	(60,169,158)	110.7%	153,733,920	(39.1%)
1/1/2000	660,830,255	640,614,688	(20,215,567)	103.2%	151,091,616	(13.4%)
1/1/2001	696,071,310	682,531,577	(13,539,734)	102.0%	165,795,367	(8.2%)
1/1/2002	718,703,692	701,725,938	(16,977,755)	102.4%	171,523,233	(9.9%)
1/1/2003	717,681,067	701,114,370	(16,566,697)	102.4%	168,391,474	(9.8%)
1/1/2004	738,612,110	716,126,707	(22,485,404)	103.1%	186,528,530	(12.1%)
1/1/2005	763,684,602	747,711,194	(15,973,408)	102.1%	195,866,663	(8.2%)
1/1/2006	788,788,666	780,663,389	(8,125,277)	101.0%	187,445,140	(4.3%)
1/1/2007	824,302,795	818,027,315	(6,275,480)	100.8%	199,221,110	(3.2%)
1/1/2008	854,123,580	781,284,025	(72,839,554)	109.3%	202,311,837	(36.0%)
1/1/2009	832,609,879	804,623,080	(27,986,799)	103.5%	205,326,108	(13.6%)
1/1/2010	814,536,473	819,534,391	4,997,918	99.4%	194,474,437	2.6%
1/1/2011	786,297,998	844,232,490	57,934,492	93.1%	162,417,257	35.7%
1/1/2012	742,279,611	874,286,498	132,006,887	84.9%	155,893,016	84.7%
1/1/2013	697,028,072	868,663,383	171,635,311	80.2%	157,303,005	109.1%
1/1/2014	710,828,744	875,451,114	164,622,370	81.2%	157,014,537	104.8%
1/1/2015	712,390,611	891,543,036	179,152,425	79.9%	170,845,124	104.9%
1/1/2016	694,641,248	895,230,295	200,589,047	77.6%	179,013,516	112.1%
1/1/2017	684,412,437	981,514,827	297,102,390	69.7%	194,132,739	153.0%
1/1/2018	678,288,805	980,436,626	302,147,821	69.2%	196,277,971	153.9%
1/1/2019	654,259,324	988,234,763	333,975,439	66.2%	203,310,599	164.3%
1/1/2020	645,373,172	1,020,121,813	374,748,641	63.3%	217,255,306	172.5%
1/1/2021	663,210,594	997,587,405	334,376,811	66.5%	228,084,635	146.6%
1/1/2022	692,264,054	998,058,955	305,794,901	69.4%	234,540,261	130.4%
1/1/2023	689,114,479	1,006,764,612	317,650,133	68.4%	252,084,684	126.0%

Note: Years prior to 1/1/2014 were provided by prior Actuary

TABLE 16

Historical Contribution Rates

Actuarial Valuation Date	Actuarial Contribution Rate	Actual Contribution Rate	Contribution Shortfall/(Margin)
1/1/2005	14.02%	15.00%	(0.98%)
1/1/2006	13.78%	15.00%	(1.22%)
1/1/2007	13.28%	15.00%	(1.72%)
1/1/2008	9.39%	15.00%	(5.61%)
1/1/2009	9.35%	15.00%	(5.65%)
1/1/2010	11.50%	15.00%	(3.50%)
1/1/2011	14.64%	15.00%	(0.36%)
1/1/2012	18.30%	15.00%	3.30%
1/1/2013	20.52%	15.00%	5.52%
1/1/2014	19.68%	16.00%	3.68%
1/1/2015	19.56%	17.00%	2.56%
1/1/2016	20.18%	18.00%	2.18%
1/1/2017	18.61%	18.00%	0.61%
1/1/2018	18.82%	18.00%	0.82%
1/1/2019	19.82%	19.50%	0.32%
1/1/2020	20.80%	21.00%	(0.20%)
1/1/2021	19.49%	21.00%	(1.51%)
1/1/2022	18.40%	21.00%	(2.60%)
1/1/2023	18.25%	21.00%	(2.75%)

Note: Years prior to 1/1/2014 were provided by prior Actuary.
For valuations 1/1/2020 and after, contribution rates are effective July 1 of the following year.

TABLE 17

Solvency Test

In a system that has been following the discipline of level percent of payroll financing, the liabilities for active participant accumulated contributions (liability 1) and the liabilities for future benefits to retirees, beneficiaries, and inactive participants (liability 2) will be fully covered by assets if all assumptions are met. In addition, the liabilities for service already rendered by active participants (liability 3) are normally partially covered by the remainder of the present assets. Generally, if the system has been using level percent of payroll financing, the funded portion of liability 3 will increase over time. The schedule below illustrates the history of the liabilities of the system and their relative funded status.

Valuation Date January 1,	Active Participants' Accumulated Contributions (1)	Retirees, Beneficiaries and Inactive Participants (2)	Active Participants (Employer Financed) (3)	Valuation Assets	Percent Covered By Valuation Assets (1)	(2)	(3)
1994	$ 99,547,061	$ 123,475,760	$ 121,674,513	$ 336,466,320	100%	100%	93%
1995	110,658,079	144,027,489	124,562,502	353,451,344	100%	100%	79%
1996	108,123,636	177,617,507	117,169,151	389,103,803	100%	100%	88%
1997	104,554,877	231,762,583	91,329,968	428,419,710	100%	100%	101%
1998	115,847,655	228,328,855	108,592,620	482,599,919	100%	100%	127%
1999	117,478,379	274,442,924	172,607,724	624,225,667	100%	100%	135%
2000	113,334,820	343,382,932	184,049,309	660,830,255	100%	100%	111%
2001	115,781,706	389,055,603	184,779,937	696,071,310	100%	100%	103%
2002	119,968,776	406,094,033	187,309,245	718,703,692	100%	100%	103%
2003	112,468,027	435,548,298	165,766,206	717,681,067	100%	100%	102%
2004	125,754,562	430,145,689	179,264,397	738,612,110	100%	100%	102%
2005	127,221,118	431,366,177	201,836,083	763,684,602	100%	100%	102%
2006	133,811,729	477,844,206	177,531,611	788,788,666	100%	100%	100%
2007	136,978,872	498,841,373	187,966,845	824,302,795	100%	100%	100%
2008	140,844,707	492,273,102	156,840,245	854,123,580	100%	100%	141%
2009	140,096,771	503,450,518	161,075,791	832,609,879	100%	100%	117%
2010	139,860,248	524,692,426	154,981,717	814,536,473	100%	100%	97%
2011	110,538,745	611,806,997	121,886,748	786,297,998	100%	100%	52%
2012	99,513,420	654,828,752	119,944,326	742,279,611	100%	98%	0%
2013	100,767,726	653,949,421	113,946,236	697,028,072	100%	91%	0%
2014	98,272,633	660,003,861	117,174,620	710,828,744	100%	93%	0%
2015	98,966,336	674,794,654	117,782,046	712,390,611	100%	91%	0%
2016	101,173,695	677,295,366	116,761,234	694,641,248	100%	88%	0%
2017	105,887,868	717,052,296	158,574,663	684,412,437	100%	81%	0%
2018	103,069,314	739,004,732	138,362,580	678,288,805	100%	78%	0%
2019	106,618,062	744,459,772	137,156,929	654,259,324	100%	74%	0%
2020	112,913,289	759,819,775	147,388,749	645,373,172	100%	70%	0%
2021	121,889,145	730,344,984	145,353,276	663,210,594	100%	74%	0%
2022	123,670,335	729,504,462	144,884,158	692,264,054	100%	78%	0%
2023	125,148,669	732,293,898	149,322,045	689,114,479	100%	77%	0%

Note: Years prior to 1/1/2014 were provided by prior Actuary.

TABLE 18

Schedule of Changes in Plan Fiduciary Net Position

Fiscal Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Additions:										
Member Contributions	12,310,320	13,358,180	14,645,901	16,280,327	16,964,351	17,619,145	18,524,657	19,531,341	20,141,089	21,204,065
City Contributions	12,093,945	13,288,142	14,499,260	16,528,188	16,926,562	17,527,854	21,488,838	25,771,854	26,717,489	28,210,227
Net Investment Income	78,598,783	25,936,419	(10,025,518)	44,337,774	103,767,714	(33,250,914)	106,033,718	73,263,969	99,639,237	(82,676,608)
Total Additions to Plan Net Positions	$103,003,048	$52,582,741	$19,119,643	$77,146,289	$137,658,627	$1,896,085	$146,047,213	$118,567,164	$146,497,815	($33,262,316)
Deductions:										
Benefits	73,844,481	75,298,737	76,235,124	76,898,255	78,181,575	79,333,689	80,228,574	80,473,732	80,337,163	80,409,066
Refunds	3,567,693	3,236,645	3,399,065	3,270,723	3,581,147	4,084,837	4,937,877	4,316,797	5,250,026	6,008,392
Depreciation Expense	524,163	528,860	250,979	92,179	15,855	17,150	11,020	9,830	5,562	9,097
Administrative	1,479,931	1,548,320	1,648,449	1,552,025	1,520,665	1,499,928	1,546,381	1,614,905	1,645,412	1,717,384
Total Deductions from Plan Net Position	79,416,268	80,612,562	81,533,617	81,813,182	83,299,242	84,935,604	86,723,852	86,415,264	87,238,163	88,143,939
Change in Net Position	$23,586,780	($28,029,821)	($62,413,974)	($4,666,893)	$54,359,385	($83,039,519)	$59,323,361	$32,151,900	$59,259,652	($121,406,255)

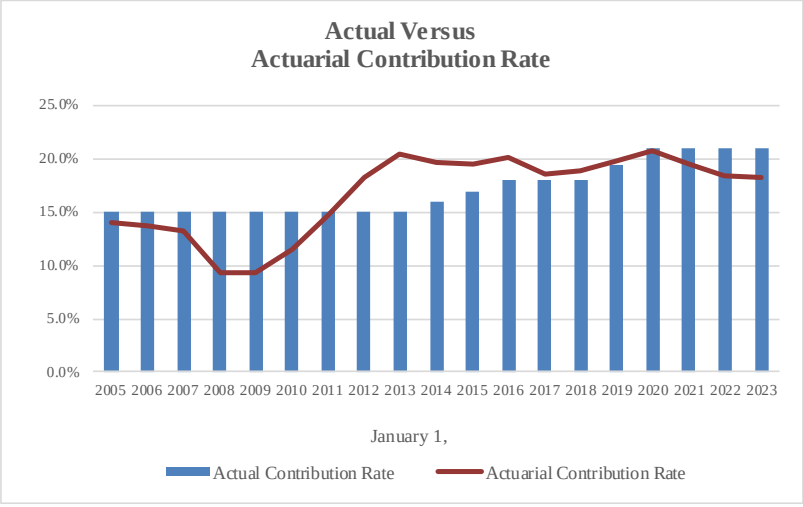
Actuarial Standards of Practice are issued by the Actuarial Standards Board and are binding on credentialed actuaries practicing in the United States. These standards generally identify what the actuary should consider, document and disclose when performing an actuarial assignment. In September, 2017, Actuarial Standard of Practice Number 51, *Assessment and Disclosure of Risk in Measuring Pension Obligations*, (ASOP 51) was issued as final with application to measurement dates on or after November 1, 2018. This ASOP, which applies to funding valuations, actuarial projections, and actuarial cost studies of proposed plan changes, was first applicable for the January 1, 2019 actuarial valuation for the Public School Retirement System of Kansas City, Missouri (System).

While actuarial assumptions allow for a projection of how future contributions and investment returns will meet the cash flow needs for future benefit payments, actual experience will not unfold exactly as anticipated by the assumptions. In this section, we discuss some of the risk factors that can have a significant impact – positive or negative – on the actuarial projection of liability and contribution rates.

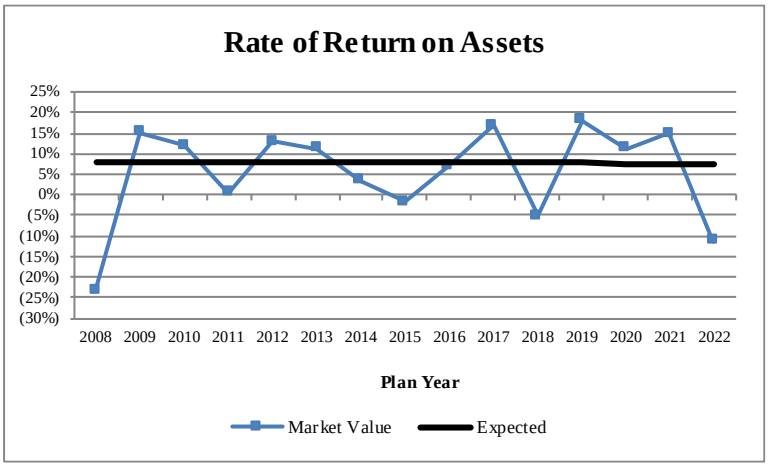
There are a number of risks inherent in the funding of a defined benefit plan. These include:

- economic risks, such as investment return and inflation;
- demographic risks such as mortality, payroll growth, aging population including the impact of baby boomers, and retirement ages;
- contribution risk; and
- external risks such as the regulatory and political environment (not required to be addressed under ASOP 51).

There is a direct correlation between healthy, well-funded plans and consistent contributions equal to the full actuarial contribution rate each year. For many years, the Public School Retirement System of the School District of Kansas City, Missouri was funded by fixed contribution rates for both the member and the employers. While this approach worked well for many years, the investment experience during the Great Recession created a significant unfunded actuarial accrued liability. Around the same time, the active membership of the System declined by nearly 30% (dropping from 4,862 in 2008 to 3,493 in 2015). As the following graph shows, less than the full actuarial contribution rate was contributed to the System between 2012 and 2019, despite increases in the contribution rate for both members and employers. However, in 2018 the Missouri General Assembly passed legislation that changed the contribution policy for funding the System. Under the new policy, employers must contribute the greater of (i) their share of the actuarial contribution rate and (ii) 12.0% of pay, until the System is fully funded.



The most significant risk factor is investment return because of the volatility of the returns and the size of plan assets compared to payroll (see Table 19). A perusal of historical rates over 10-20 years reveals that the actual return each year is rarely close to the average return for the same period. This is an expected result given the underlying capital market assumptions and the asset allocation. However, the valuation is a measurement based on a single investment return, usually around the median of the distribution of returns. The magnitude of variations in investment returns and the short timeframe in which they occur makes the management of this risk very challenging.



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/volatility 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 because of the magnitude of the increase. In the January 1, 2023 valuation, the asset volatility ratio was 2.51. Given the standard deviation of the portfolio, around 12%, the rate of return in any given year is expected to be within one standard deviation of the expected return (higher or lower) roughly two-thirds of the time. That means there is a one in three chance the return will be at least one standard deviation (12%) from the expected return. To put that in context, a return 12% different than the expected return of 7.25% translates to about $76 million and a change of 2.26% in the contribution rate (without reflecting asset smoothing). The distribution of returns would indicate that such an event would be expected to happen once every three years (half higher than 19.25% and half lower than -4.75%). While the asset smoothing method would spread the increase in the contribution rate over five years, the ultimate impact would be as shown in the table below:

	One Standard Deviation	
	Above 7.25%	Below 7.25%
1. Rate of Return	19.25%	-4.75%
2. Ratio of Assets to Payroll	2.51	2.51
3. Asset Gain/Loss as a Percent of Payroll [(1) - 7.25%] * (2)	30%	30%
4. Ultimate Impact on Contribution Rate	-2.26%	2.26%

A key demographic risk for all retirement systems, including KCPSRS, is improvements in mortality (longevity) greater than anticipated. While the mortality assumption used in the valuation reflects some improvement in mortality experience and this assumption is evaluated and refined in each experience study, the risk arises because there is a possibility of some sudden shift, perhaps from a significant medical breakthrough that could quickly increase liabilities. Likewise, there is some possibility of a significant public health crisis that could result in a significant number of additional deaths in a short time period, as experienced with the COVID-19 pandemic. This type of event could also be significant, but would be more easily absorbed. While either of these events could happen, it represents a small probability and thus represents much less risk than the volatility associated with investment returns.

Finally, the unfunded actuarial accrued liability is amortized as a level percentage of payroll. The underlying assumption used in developing the payment schedule assumes an increasing payroll over time which is dependent on a stable employment level, i.e., active member count remains the same. We would note that the active population declined significantly for about a decade from a high of 5,090 in 2004 to 3,493 in 2015. Since then, the active population has steadily increased (see Table 20). When payroll does not grow as expected, the UAAL contribution rate will be higher than expected even if the dollar amount of the payment is the same as scheduled.

As plan demographics change over time, along with the funded status, the risk factors may also change. The following exhibits summarize certain historical information that provide an indication as to how key risk metrics have changed over time.

TABLE 19

HISTORICAL ASSET VOLATILITY RATIO

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.

Valuation Date	Market Value of Assets	Covered Payroll	Asset Volatility Ratio	Increase in ACR with a Return 12% Lower than Assumed*
1/1/2009	$624,647,065	$205,326,108	3.04	2.73%
1/1/2010	693,934,794	194,474,437	3.57	3.21%
1/1/2011	730,278,733	162,417,257	4.50	4.04%
1/1/2012	681,930,607	155,893,016	4.37	3.93%
1/1/2013	702,966,521	157,303,005	4.47	4.02%
1/1/2014	726,553,301	157,014,537	4.63	4.16%
1/1/2015	698,523,480	170,845,124	4.09	3.68%
1/1/2016	636,109,506	179,013,516	3.55	3.19%
1/1/2017	631,442,613	194,132,739	3.25	2.92%
1/1/2018	685,801,998	196,277,971	3.49	3.14%
1/1/2019	602,762,479	203,310,599	2.96	2.66%
1/1/2020	662,085,840	217,255,306	3.05	2.74%
1/1/2021	694,237,740	228,084,635	3.04	2.73%
1/1/2022	753,497,392	234,540,261	3.21	2.88%
1/1/2023	632,091,137	252,084,684	2.51	2.26%

* The impact of asset smoothing is not reflected in the impact on the Actuarial Contribution Rate (ACR). Current year assumptions are used for all years shown.

The assets as of January 1, 2023 are 251% of payroll, so underperforming the investment return assumption by 12% (i.e., earn -4.75% for one year) is equivalent to 30.1% of payroll. While the actual impact in the first year is mitigated by the asset smoothing method and amortization of the UAAL, this illustrates the risk associated with volatile investment returns.

TABLE 20

HISTORICAL MEMBERSHIP

Member and employer contributions to the System are made based on covered payroll. In addition, the payment on the unfunded actuarial accrued liability is calculated anticipating covered payroll increases each year in the future. To the extent actual payroll does not meet the assumed rate of increase (currently 2.85%), a higher rate of pay is necessary to collect the same dollar amount of payment on the unfunded actuarial accrued liability. A reduction in the number of active members usually results in a decline in the dollar amount of covered payroll, as can be seen in the table below. From 2004 to 2012, the number of active members declined significantly which creates challenges for funding the System, but since 2012 we have seen the number of active members steadily increase.

	Number of Active Members						
Actuarial Valuation Date	Charter Schools	School District	Library	Total	Covered Payroll	Number of Retired Members	Active/ Retired
1/1/2004				5,090	$186,528,530	3,042	1.67
1/1/2005	539	4,336	130	5,005	195,866,663	2,951	1.70
1/1/2006	462	4,228	118	4,808	187,445,140	3,140	1.53
1/1/2007	588	4,030	139	4,757	199,221,110	3,198	1.49
1/1/2008	784	3,937	141	4,862	202,311,837	3,283	1.48
1/1/2009	820	3,680	148	4,648	205,326,108	3,247	1.43
1/1/2010	973	3,222	141	4,336	194,474,437	3,317	1.31
1/1/2011	1,061	2,296	133	3,490	162,417,257	3,670	0.95
1/1/2012	1,133	2,022	129	3,284	155,893,016	3,829	0.86
1/1/2013	1,108	2,152	136	3,396	157,303,005	3,859	0.88
1/1/2014	1,147	2,215	139	3,501	157,014,537	3,885	0.90
1/1/2015	1,245	2,112	136	3,493	170,845,124	4,011	0.87
1/1/2016	1,336	2,095	143	3,574	179,013,516	4,049	0.88
1/1/2017	1,481	2,076	144	3,701	194,132,739	4,032	0.92
1/1/2018	1,555	2,065	140	3,760	196,277,971	4,112	0.91
1/1/2019	1,586	2,172	140	3,898	203,310,599	4,113	0.95
1/1/2020	1,640	2,285	149	4,074	217,255,306	4,145	0.98
1/1/2021	1,650	2,306	152	4,108	228,084,635	4,099	1.00
1/1/2022	1,738	2,281	159	4,178	234,540,261	4,094	1.02
1/1/2023	1,797	2,378	166	4,341	252,084,684	4,086	1.06

This table shows the change in active membership among the participating employers over the last 20 years. Charter Schools have become a much larger portion of the total active membership. To the extent the demographic behavior of Charter School members is different than other KCPSRS members, the actuarial assumptions will need to be modified or actuarial gains/losses are likely to be created each year.

From 2004 to 2012, the System experienced a significant decline in the number of active members, as shown in the graph below. As a result, the covered payroll of the membership declined for a period and the ratio of actives to retirees declined significantly. This had significant impact on the System's funding as the contributions were fixed for most of the period and, therefore, did not respond to the impact of the investment losses from calendar year 2008. As a result, the funded ratio of the System declined rather dramatically. The size of the active membership has stabilized in recent years and has actually grown since 2012. In addition, the contribution rates have increased and moved to an actuarial-based contribution rate effective July 1, 2021. This addressed a significant risk factor for the System that prior to the change.

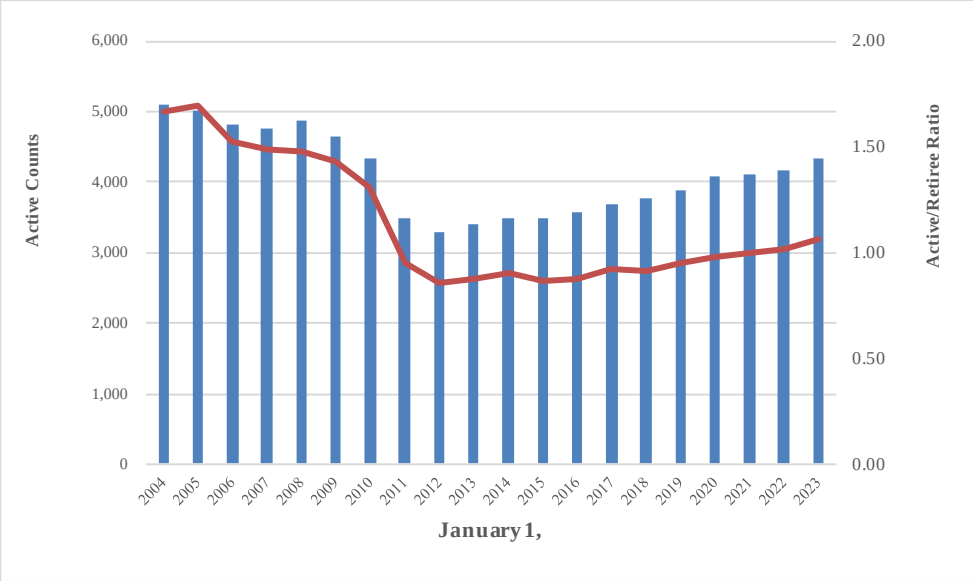


TABLE 21

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. 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. Negative cash flows can also impact the system's asset allocation and is a consideration in setting the investment policy of the system. KCPSRS has higher negative cash flows than many public retirement systems and so this metric should be closely monitored as it is by KCPSRS' investment consultant. The higher the net cash flow is as a percent of the market value of assets, the greater the risk to the system's funding.

Fiscal Year End	Market Value of Assets (MVA)	Contributions	Benefit Payments	Net Cash Flow	Net Cash Flow as a Percent of MVA
12/31/08	$624,647,065	$31,501,230	$63,870,255	($32,369,025)	(5.18%)
12/31/09	693,934,794	42,652,068	63,243,063	(20,590,995)	(2.97%)
12/31/10	730,278,733	27,094,752	71,323,384	(44,228,632)	(6.06%)
12/31/11	681,930,607	24,054,927	76,133,226	(52,078,299)	(7.64%)
12/31/12	702,966,521	22,948,176	76,813,694	(53,865,518)	(7.66%)
12/31/13	726,553,301	24,404,265	77,412,174	(53,007,909)	(7.30%)
12/31/14	698,523,480	26,646,322	78,535,383	(51,889,061)	(7.43%)
12/31/15	636,109,506	29,145,161	79,634,189	(50,489,028)	(7.94%)
12/31/16	631,442,613	32,808,515	80,168,978	(47,360,463)	(7.50%)
12/31/17	685,801,998	33,890,913	81,762,722	(47,871,809)	(6.98%)
12/31/18	602,762,479	35,146,999	83,418,526	(48,271,527)	(8.01%)
12/31/19	662,085,840	40,013,495	85,166,451	(45,152,956)	(6.82%)
12/31/20	694,237,740	45,303,195	84,790,529	(39,487,334)	(5.69%)
12/31/21	753,497,392	46,858,578	85,587,189	(38,728,611)	(5.14%)
12/31/22	632,091,137	49,414,292	86,417,458	(37,003,166)	(5.85%)

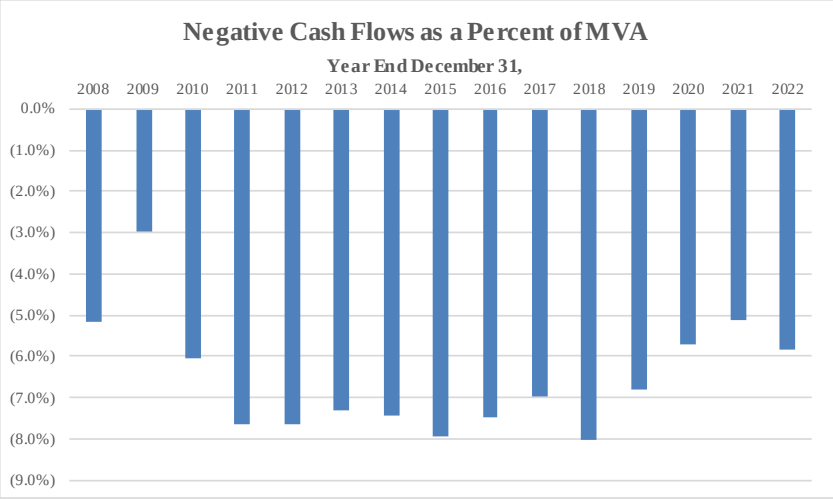


TABLE 22

LIABILITY MATURITY MEASUREMENTS

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 continued retirement of the baby boomers 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 the cost.

Fiscal Year End	Retiree Liability (a)	Total Actuarial Accrued Liability (b)	Retiree Percentage (a) / (b)	Covered Payroll (c)	Ratio (b) / (c)
12/31/08	$477,828,410	$804,623,080	59.4%	$205,326,108	3.92
12/31/09	498,921,369	819,534,391	60.9%	194,474,437	4.21
12/31/10	580,324,640	844,232,490	68.7%	162,417,257	5.20
12/31/11	622,135,967	874,286,498	71.2%	155,893,016	5.61
12/31/12	620,358,237	868,663,383	71.4%	157,303,005	5.52
12/31/13	621,249,525	875,451,114	71.0%	157,014,537	5.58
12/31/14	645,100,053	891,543,036	72.4%	170,845,124	5.22
12/31/15	648,136,960	895,230,295	72.4%	179,013,516	5.00
12/31/16	684,767,536	981,514,827	69.8%	194,132,739	5.06
12/31/17	704,534,913	980,436,626	71.9%	196,277,971	5.00
12/31/18	710,111,431	988,234,763	71.9%	203,310,599	4.86
12/31/19	725,892,076	1,020,121,813	71.2%	217,255,306	4.70
12/31/20	695,451,559	997,587,405	69.7%	228,084,635	4.37
12/31/21	693,949,392	998,058,955	69.5%	234,540,261	4.26
12/31/22	690,857,179	1,006,764,612	68.6%	252,084,684	3.99

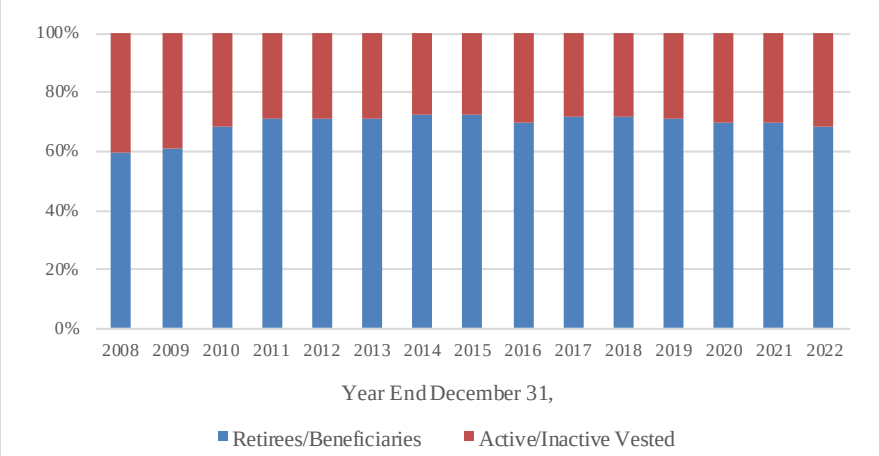


TABLE 23

COMPARISON OF VALUATION RESULTS UNDER ALTERNATE INVESTMENT RETURN ASSUMPTIONS
($ in thousands)

This exhibit compares the key January 1, 2023 valuation results under five (5) different investment return assumptions to illustrate the impact of different assumptions on the funding of the System. Note that only the investment return assumption is changed, as identified in the heading below. All other assumptions are unchanged for purposes of this analysis.

Investment Return Assumption	**6.75%**	**7.00%**	**7.25%**	**7.50%**	**7.75%**
Contributions					
Total Normal Cost	10.35%	9.95%	9.57%	9.22%	8.90%
Administrative Expenses	0.68%	0.68%	0.68%	0.68%	0.68%
Amortization of UAAL	9.14%	8.57%	8.00%	7.43%	6.86%
Actuarial Required Contribution	20.17%	19.20%	18.25%	17.33%	16.44%
Member Contribution	(9.00%)	(9.00%)	(9.00%)	(9.00%)	(9.00%)
Employer Contribution	(12.00%)	(12.00%)	(12.00%)	(12.00%)	(12.00%)
Contribution Rate Shortfall/(Margin)	(0.83%)	(1.80%)	(2.75%)	(3.67%)	(4.56%)
Actuarial Accrued Liability	$1,056,011	$1,030,845	$1,006,765	$983,711	$961,630
Actuarial Value of Assets	689,114	689,114	689,114	689,114	689,114
Unfunded Actuarial Accrued Liability	$366,896	$341,731	$317,650	$294,597	$272,516
Funded Ratio	65.3%	66.8%	68.4%	70.1%	71.7%

Note: All other assumptions are unchanged for purposes of this sensitivity analysis. Numbers may not add due to rounding.

MEMBER CENSUS INFORMATION

A. ACTIVE MEMBERS	January 1, 2023	January 1, 2022	% Change
1. Number of Active Members			
(a) Plan B	1,072	1,212	(11.6%)
(b) Plan C	3,269	2,966	10.2%
(c) Total	4,341	4,178	3.9%
2. Active Member Averages			
(a) Age	43.1	43.0	0.2%
(b) Service	6.9	7.2	(4.2%)
(c) Expected Annual Pay	$ 58,071	$ 56,137	3.4%
B. TERMINATED VESTED MEMBERS			
1. Number of Terminated Vested Members	673	568	18.5%
2. Terminated Vested Members Averages			
(a) Age	45.1	45.9	(1.7%)
(b) Estimated Monthly Benefit	$ 680	$ 651	4.5%
C. TERMINATED NON-VESTED MEMBERS			
1. Number of Terminated Non-Vested Members	2,678	2,532	5.8%
2. Terminated Non-Vested Members Averages			
(a) Age	43.2	43.1	0.2%
(b) Account Balance	$ 4,551	$ 4,429	2.8%
D. RETIREES, DISABLEDS, AND BENEFICIARIES			
1. Number of Members			
(a) Retired	3,780	3,795	(0.4%)
(b) Disabled	64	67	(4.5%)
(c) Beneficiaries	242	232	4.3%
(e) Total	4,086	4,094	(0.2%)
2. Average Age			
(a) Retired	73.9	73.5	0.5%
(b) Disabled	71.2	70.5	1.0%
(c) Beneficiaries	75.3	74.8	0.7%
(e) Total	73.9	73.5	0.5%
3. Average Monthly Benefit			
(a) Retired	$ 1,693	$ 1,682	0.7%
(b) Disabled	1,036	1,017	1.9%
(c) Beneficiaries	1,119	1,152	(2.9%)
(e) Total	$ 1,649	$ 1,641	0.5%

MEMBER DATA RECONCILIATION

January 1, 2022 to January 1, 2023

The number of members included in the valuation, as summarized in the table below, is in accordance with the data submitted by the System for members as of the valuation date.

	Active Members	Terminated Vested	Non-vested with Balance	Retirees	Beneficiaries*	Disabled	Total
Total as of January 1, 2022	4,178	568	2,532	3,795	232	67	11,372
New Entrants	934	0	113	0	20	0	1,067
Rehires/Transfers	43	(11)	(32)	0	0	0	0
Retirements	(89)	(24)	0	113	0	0	0
Disablements	0	0	0	0	0	0	0
Deaths	(5)	(4)	0	(127)	(7)	(4)	(147)
Vested Terminations	(164)	164	0	0	0	0	0
Non-vested Terminations	(332)	0	332	0	0	0	0
Refunds Paid	(220)	(20)	(267)	0	(3)	0	(510)
Payments Ended	0	0	0	0	0	0	0
Data Adjustments	(4)	0	0	(1)	0	1	(4)
Total as of January 1, 2023	4,341	673	2,678	3,780	242	64	11,778

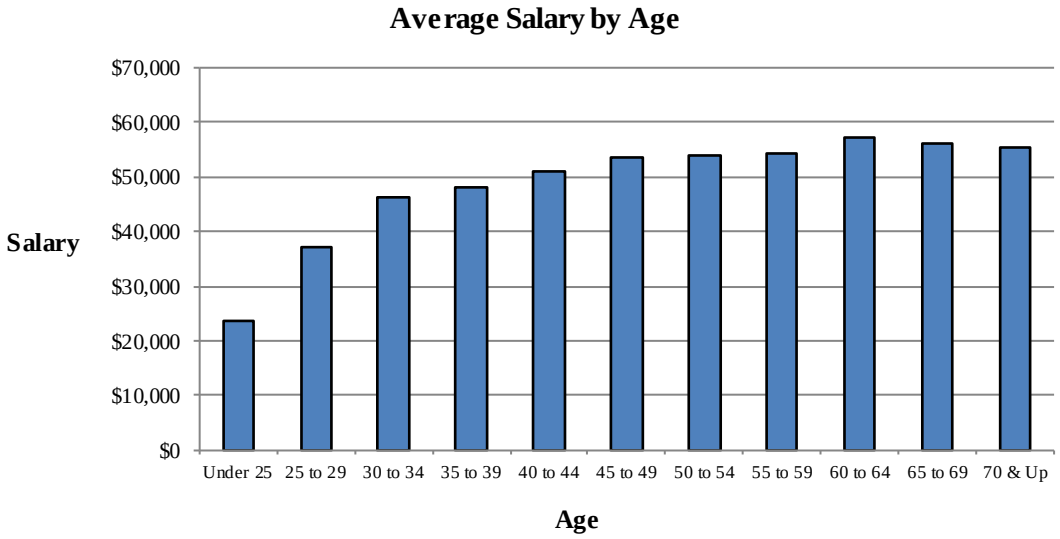
* Includes beneficiaries who were owed a single lump sum payment and were not paid prior to the valuation date.

SUMMARY OF ACTIVE MEMBERS
as of January 1, 2023

Total – All Plans

	Number			2022 Reported Compensation*		
Age	Male	Female	Total	Male	Female	Total
Under 25	67	185	252	$ 1,602,562	$ 4,362,423	$ 5,964,985
25 to 29	132	421	553	4,594,688	16,036,799	20,631,487
30 to 34	165	461	626	7,385,629	21,460,532	28,846,161
35 to 39	168	371	539	8,125,560	17,853,387	25,978,947
40 to 44	147	374	521	7,895,352	18,747,315	26,642,667
45 to 49	118	334	452	7,142,681	17,126,532	24,269,213
50 to 54	108	343	451	6,280,087	18,054,694	24,334,781
55 to 59	106	298	404	6,002,921	15,917,078	21,919,999
60 to 64	102	236	338	6,131,492	13,269,219	19,400,711
65 to 69	44	112	156	2,568,258	6,169,323	8,737,581
70 & Up	13	36	49	888,117	1,826,390	2,714,507
Total	1,170	3,171	4,341	$58,617,347	$150,823,692	$209,441,039

* Partial year pay amounts have not been annualized.

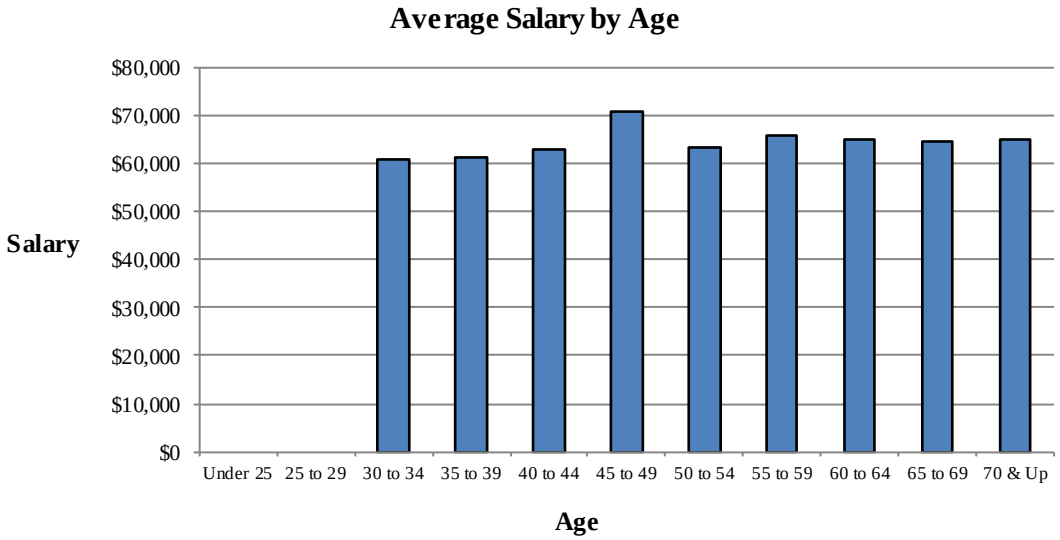


SUMMARY OF ACTIVE MEMBERS
as of January 1, 2023

Total – Plan B

Age	Number			2022 Reported Compensation*		
	Male	Female	Total	Male	Female	Total
Under 25	0	0	0	$ 0	$ 0	$ 0
25 to 29	0	0	0	0	0	0
30 to 34	21	62	83	1,330,026	3,731,998	5,062,024
35 to 39	27	70	97	1,704,099	4,252,942	5,957,041
40 to 44	36	108	144	2,408,386	6,681,871	9,090,257
45 to 49	35	96	131	2,830,358	6,455,680	9,286,038
50 to 54	35	116	151	2,198,513	7,357,133	9,555,646
55 to 59	49	134	183	3,431,351	8,605,396	12,036,747
60 to 64	50	125	175	3,437,081	7,928,339	11,365,420
65 to 69	24	59	83	1,646,091	3,711,486	5,357,577
70 & Up	6	19	25	456,691	1,174,484	1,631,175
Total	283	789	1,072	$19,442,596	$49,899,329	$69,341,925

* Partial year pay amounts have not been annualized.

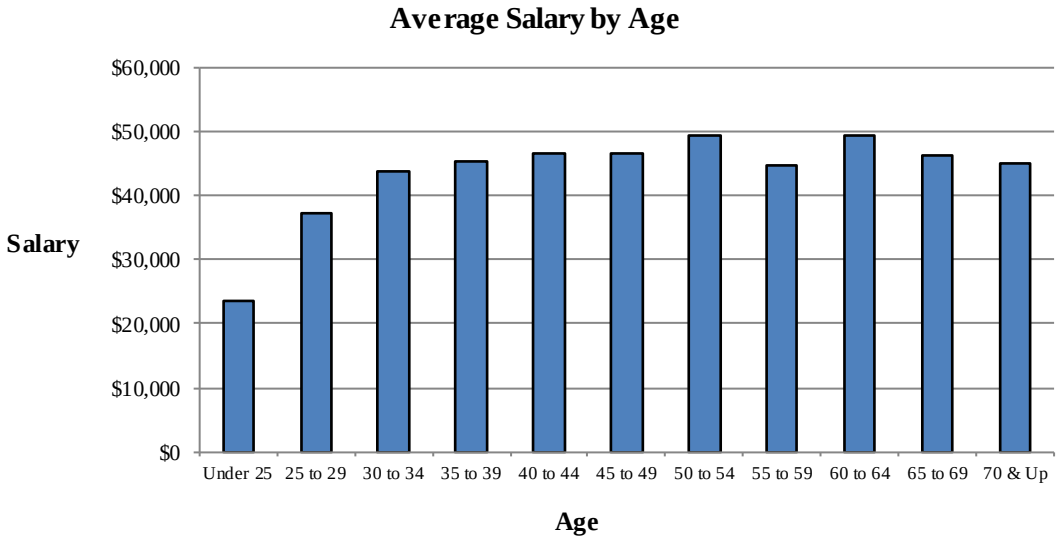


SUMMARY OF ACTIVE MEMBERS
as of January 1, 2023

Total – Plan C

	Number			2022 Reported Compensation*		
Age	Male	Female	Total	Male	Female	Total
Under 25	67	185	252	$ 1,602,562	$ 4,362,423	$ 5,964,985
25 to 29	132	421	553	4,594,688	16,036,799	20,631,487
30 to 34	144	399	543	6,055,603	17,728,534	23,784,137
35 to 39	141	301	442	6,421,461	13,600,445	20,021,906
40 to 44	111	266	377	5,486,966	12,065,444	17,552,410
45 to 49	83	238	321	4,312,323	10,670,852	14,983,175
50 to 54	73	227	300	4,081,574	10,697,561	14,779,135
55 to 59	57	164	221	2,571,570	7,311,682	9,883,252
60 to 64	52	111	163	2,694,411	5,340,880	8,035,291
65 to 69	20	53	73	922,167	2,457,837	3,380,004
70 & Up	7	17	24	431,426	651,906	1,083,332
Total	887	2,382	3,269	$39,174,751	$100,924,363	$140,099,114

* Partial year pay amounts have not been annualized.

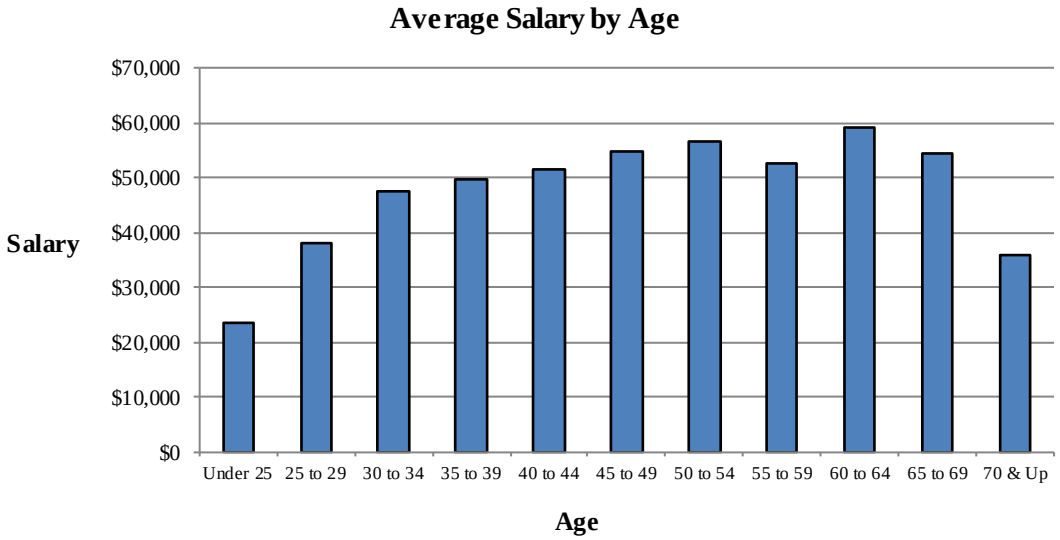


SUMMARY OF ACTIVE MEMBERS
as of January 1, 2023

Charter Schools – All Plans

	Number			2022 Reported Compensation*		
Age	Male	Female	Total	Male	Female	Total
Under 25	34	110	144	$ 844,333	$ 2,543,672	$ 3,388,005
25 to 29	69	238	307	2,398,152	9,312,581	11,710,733
30 to 34	79	263	342	3,604,065	12,591,451	16,195,516
35 to 39	73	188	261	3,641,383	9,318,108	12,959,491
40 to 44	61	162	223	3,273,419	8,241,045	11,514,464
45 to 49	53	112	165	2,886,815	6,130,027	9,016,842
50 to 54	43	101	144	2,701,009	5,434,936	8,135,945
55 to 59	33	67	100	2,074,552	3,196,589	5,271,141
60 to 64	22	41	63	1,335,269	2,377,195	3,712,464
65 to 69	12	23	35	790,808	1,110,080	1,900,888
70 & Up	3	10	13	116,302	351,404	467,706
Total	482	1,315	1,797	$23,666,107	$60,607,088	$84,273,195

* Partial year pay amounts have not been annualized.

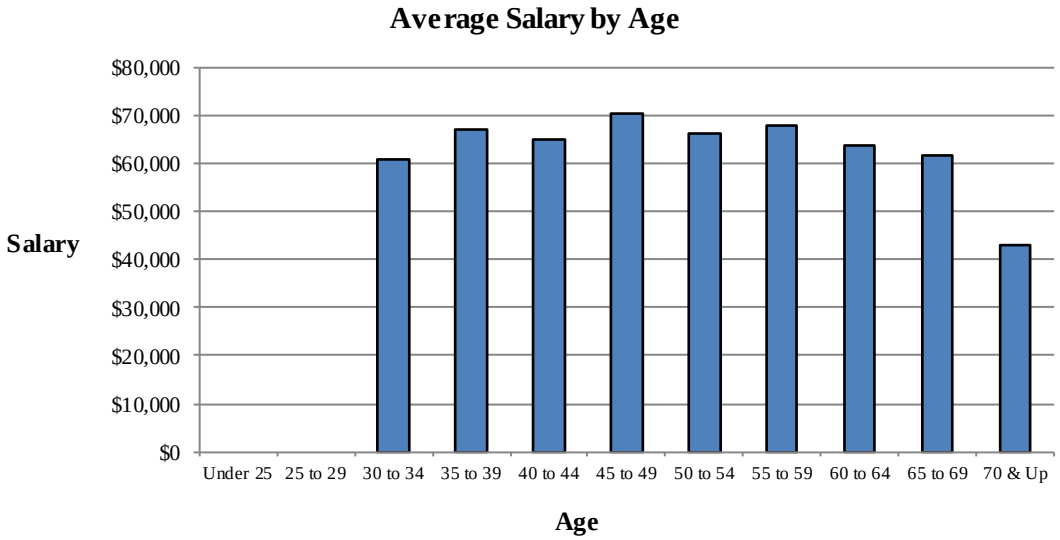


SUMMARY OF ACTIVE MEMBERS
as of January 1, 2023

Charter Schools – Plan B

	Number			2022 Reported Compensation*		
Age	Male	Female	Total	Male	Female	Total
Under 25	0	0	0	$ 0	$ 0	$ 0
25 to 29	0	0	0	0	0	0
30 to 34	9	42	51	580,478	2,533,320	3,113,798
35 to 39	11	46	57	735,673	3,094,247	3,829,920
40 to 44	9	42	51	579,209	2,740,246	3,319,455
45 to 49	16	31	47	1,222,836	2,081,066	3,303,902
50 to 54	15	25	40	963,825	1,694,908	2,658,733
55 to 59	13	21	34	1,025,019	1,283,357	2,308,376
60 to 64	10	12	22	616,643	783,717	1,400,360
65 to 69	6	11	17	472,121	578,626	1,050,747
70 & Up	0	4	4	0	172,108	172,108
Total	89	234	323	$6,195,804	$14,961,595	$21,157,399

* Partial year pay amounts have not been annualized.

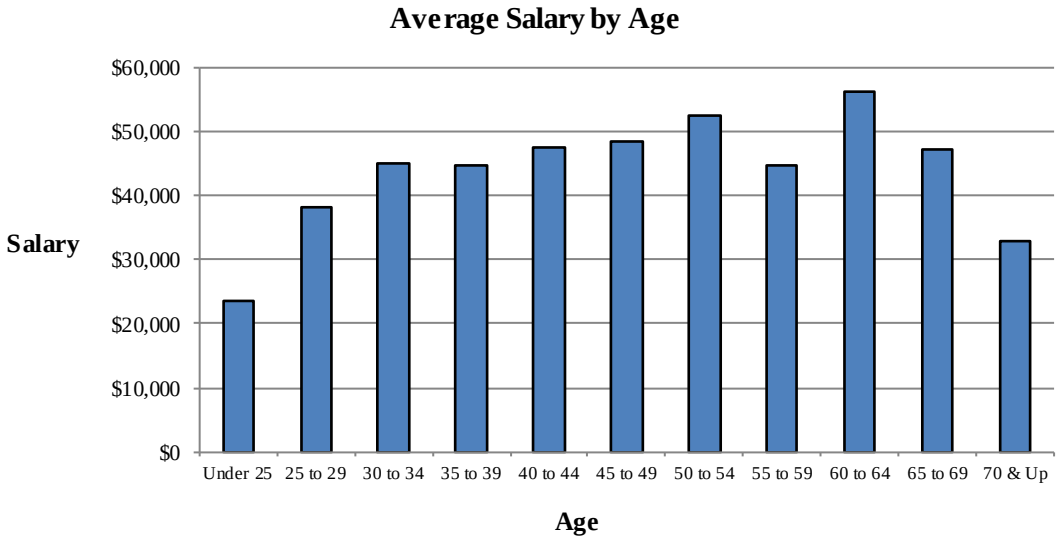


SUMMARY OF ACTIVE MEMBERS
as of January 1, 2023

Charter Schools – Plan C

	Number			2022 Reported Compensation*		
Age	Male	Female	Total	Male	Female	Total
Under 25	34	110	144	$ 844,333	$ 2,543,672	$ 3,388,005
25 to 29	69	238	307	2,398,152	9,312,581	11,710,733
30 to 34	70	221	291	3,023,587	10,058,131	13,081,718
35 to 39	62	142	204	2,905,710	6,223,861	9,129,571
40 to 44	52	120	172	2,694,210	5,500,799	8,195,009
45 to 49	37	81	118	1,663,979	4,048,961	5,712,940
50 to 54	28	76	104	1,737,184	3,740,028	5,477,212
55 to 59	20	46	66	1,049,533	1,913,232	2,962,765
60 to 64	12	29	41	718,626	1,593,478	2,312,104
65 to 69	6	12	18	318,687	531,454	850,141
70 & Up	3	6	9	116,302	179,296	295,598
Total	393	1,081	1,474	$17,470,303	$45,645,493	$63,115,796

* Partial year pay amounts have not been annualized.

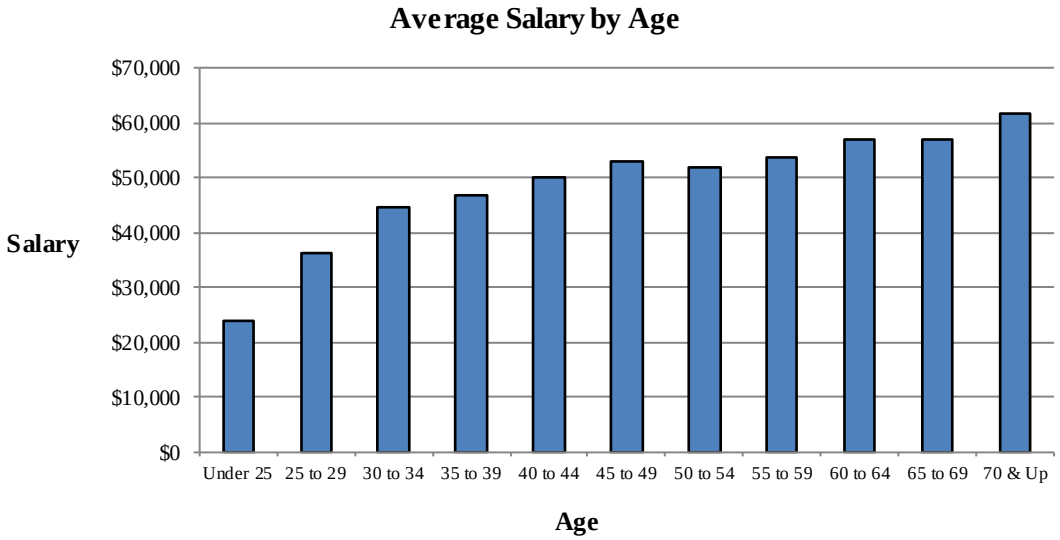


SUMMARY OF ACTIVE MEMBERS
as of January 1, 2023

School District & Retirement System – All Plans

	Number			2022 Reported Compensation*		
Age	Male	Female	Total	Male	Female	Total
Under 25	30	72	102	$ 657,419	$ 1,793,641	$ 2,451,060
25 to 29	57	173	230	2,031,230	6,329,957	8,361,187
30 to 34	82	186	268	3,632,912	8,299,056	11,931,968
35 to 39	85	169	254	4,043,509	7,850,415	11,893,924
40 to 44	81	198	279	4,364,161	9,631,637	13,995,798
45 to 49	56	206	262	3,688,758	10,146,940	13,835,698
50 to 54	59	229	288	3,087,670	11,862,284	14,949,954
55 to 59	69	222	291	3,649,626	11,960,630	15,610,256
60 to 64	74	182	256	4,407,824	10,124,440	14,532,264
65 to 69	29	84	113	1,633,860	4,810,060	6,443,920
70 & Up	10	25	35	771,815	1,385,886	2,157,701
Total	632	1,746	2,378	$31,968,784	$84,194,946	$116,163,730

* Partial year pay amounts have not been annualized.

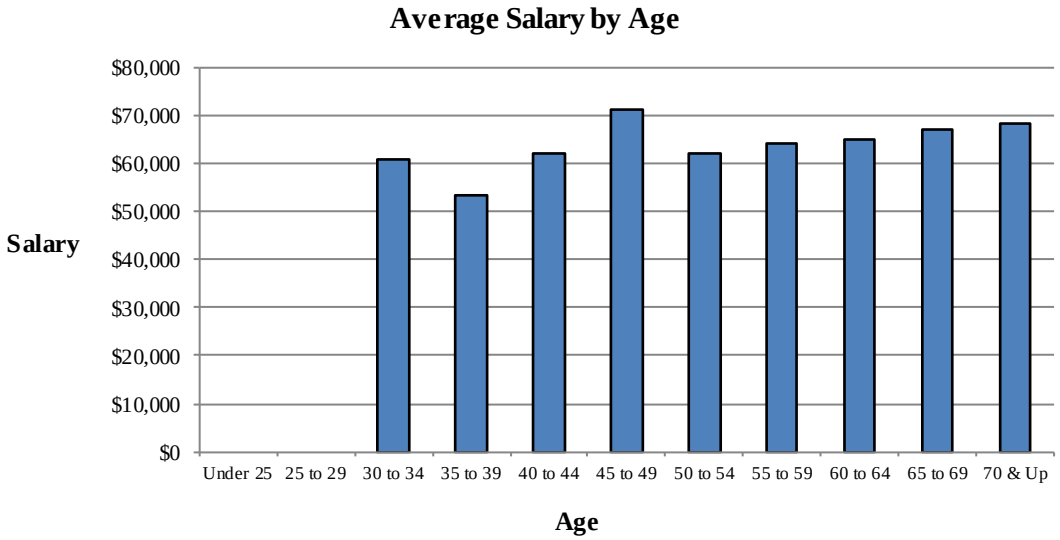


SUMMARY OF ACTIVE MEMBERS
as of January 1, 2023

School District & Retirement System – Plan B

	Number			2022 Reported Compensation*		
Age	Male	Female	Total	Male	Female	Total
Under 25	0	0	0	$ 0	$ 0	$ 0
25 to 29	0	0	0	0	0	0
30 to 34	12	20	32	749,548	1,198,678	1,948,226
35 to 39	15	23	38	909,594	1,116,040	2,025,634
40 to 44	25	62	87	1,707,988	3,702,279	5,410,267
45 to 49	15	62	77	1,342,675	4,136,952	5,479,627
50 to 54	16	85	101	1,001,829	5,270,993	6,272,822
55 to 59	33	108	141	2,167,904	6,864,390	9,032,294
60 to 64	34	104	138	2,432,039	6,517,690	8,949,729
65 to 69	15	44	59	1,030,380	2,938,749	3,969,129
70 & Up	6	14	20	456,691	913,276	1,369,967
Total	171	522	693	$11,798,648	$32,659,047	$44,457,695

* Partial year pay amounts have not been annualized.

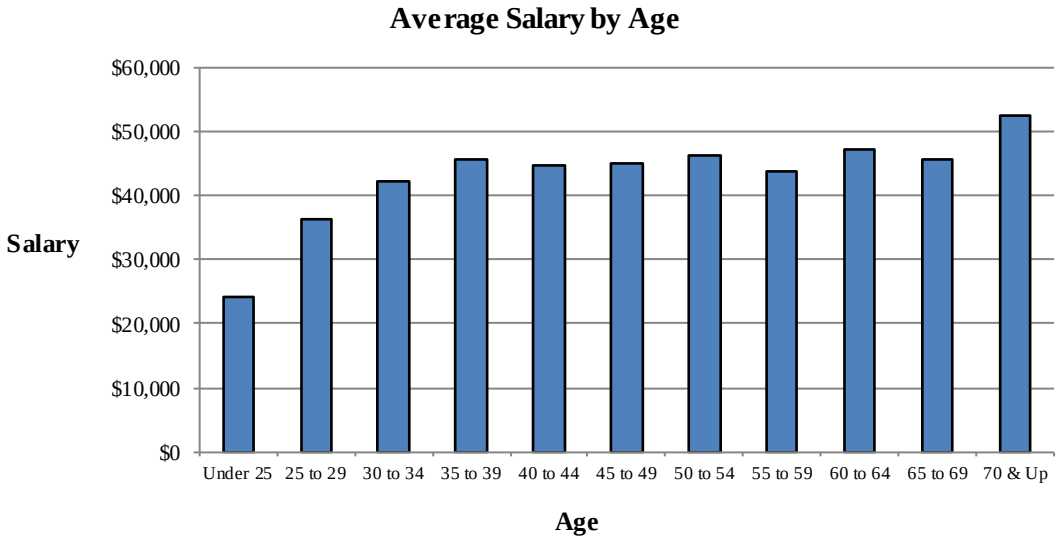


SUMMARY OF ACTIVE MEMBERS
as of January 1, 2023

School District & Retirement System – Plan C

	Number			2022 Reported Compensation*		
Age	Male	Female	Total	Male	Female	Total
Under 25	30	72	102	$ 657,419	$ 1,793,641	$ 2,451,060
25 to 29	57	173	230	2,031,230	6,329,957	8,361,187
30 to 34	70	166	236	2,883,364	7,100,378	9,983,742
35 to 39	70	146	216	3,133,915	6,734,375	9,868,290
40 to 44	56	136	192	2,656,173	5,929,358	8,585,531
45 to 49	41	144	185	2,346,083	6,009,988	8,356,071
50 to 54	43	144	187	2,085,841	6,591,291	8,677,132
55 to 59	36	114	150	1,481,722	5,096,240	6,577,962
60 to 64	40	78	118	1,975,785	3,606,750	5,582,535
65 to 69	14	40	54	603,480	1,871,311	2,474,791
70 & Up	4	11	15	315,124	472,610	787,734
Total	461	1,224	1,685	$20,170,136	$51,535,899	$71,706,035

* Partial year pay amounts have not been annualized.

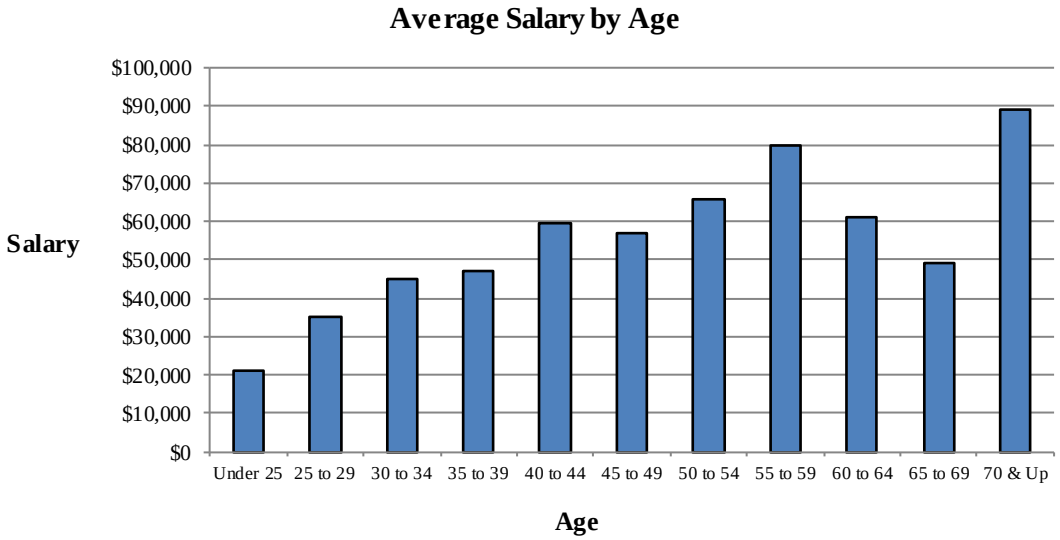


SUMMARY OF ACTIVE MEMBERS
as of January 1, 2023

Library – All Plans

	Number			2022 Reported Compensation*		
Age	Male	Female	Total	Male	Female	Total
Under 25	3	3	6	$ 100,810	$ 25,110	$ 125,920
25 to 29	6	10	16	165,306	394,261	559,567
30 to 34	4	12	16	148,652	570,025	718,677
35 to 39	10	14	24	440,668	684,864	1,125,532
40 to 44	5	14	19	257,772	874,633	1,132,405
45 to 49	9	16	25	567,108	849,565	1,416,673
50 to 54	6	13	19	491,408	757,474	1,248,882
55 to 59	4	9	13	278,743	759,859	1,038,602
60 to 64	6	13	19	388,399	767,584	1,155,983
65 to 69	3	5	8	143,590	249,183	392,773
70 & Up	0	1	1	0	89,100	89,100
Total	56	110	166	$2,982,456	$6,021,658	$9,004,114

* Partial year pay amounts have not been annualized.

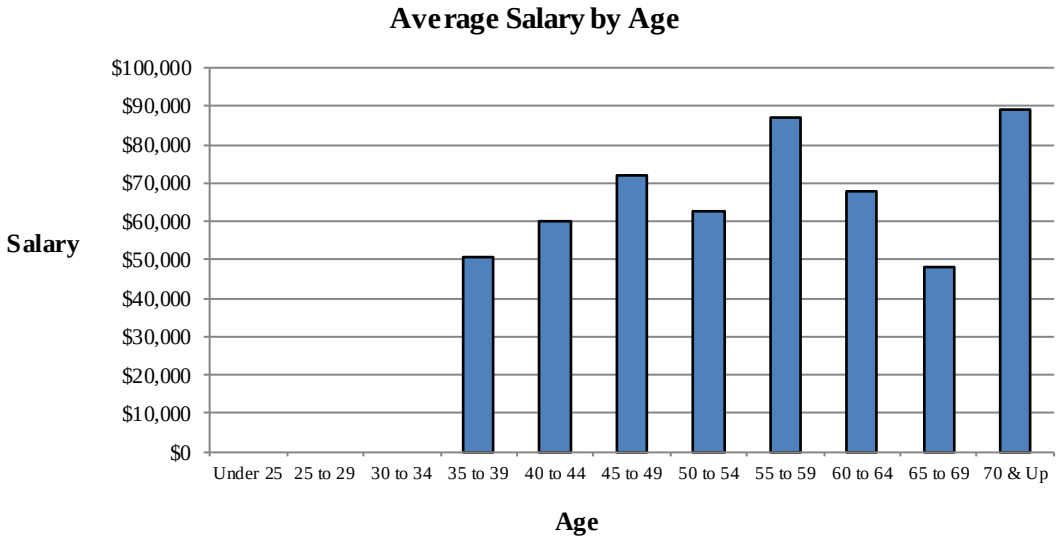


SUMMARY OF ACTIVE MEMBERS
as of January 1, 2023

Library – Plan B

Age	Number			2022 Reported Compensation*		
	Male	Female	Total	Male	Female	Total
Under 25	0	0	0	$ 0	$ 0	$ 0
25 to 29	0	0	0	0	0	0
30 to 34	0	0	0	0	0	0
35 to 39	1	1	2	58,832	42,655	101,487
40 to 44	2	4	6	121,189	239,346	360,535
45 to 49	4	3	7	264,847	237,662	502,509
50 to 54	4	6	10	232,859	391,232	624,091
55 to 59	3	5	8	238,428	457,649	696,077
60 to 64	6	9	15	388,399	626,932	1,015,331
65 to 69	3	4	7	143,590	194,111	337,701
70 & Up	0	1	1	0	89,100	89,100
Total	23	33	56	$1,448,144	$2,278,687	$3,726,831

* Partial year pay amounts have not been annualized.

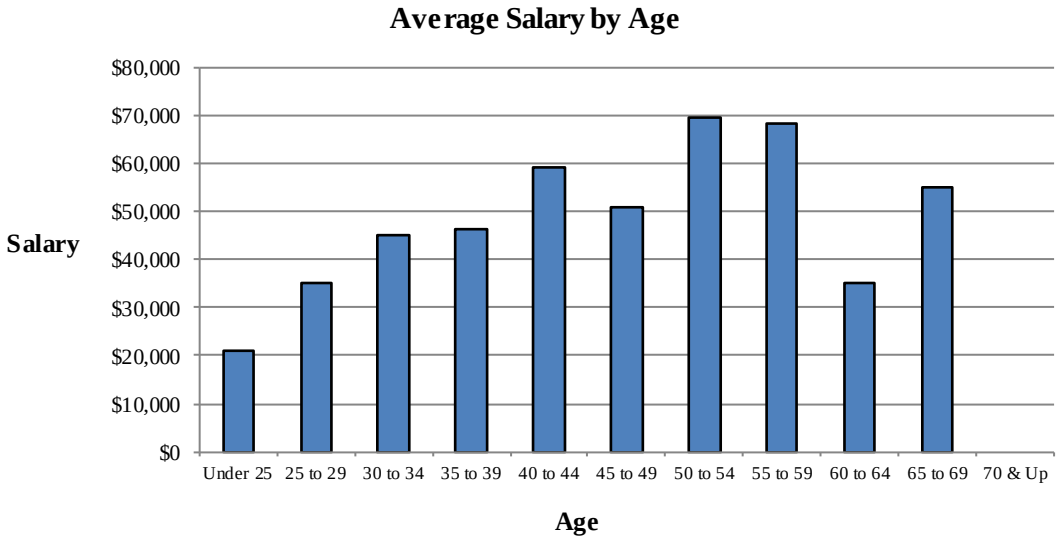


SUMMARY OF ACTIVE MEMBERS
as of January 1, 2023

Library – Plan C

Age	Number			2022 Reported Compensation*		
	Male	Female	Total	Male	Female	Total
Under 25	3	3	6	$ 100,810	$ 25,110	$ 125,920
25 to 29	6	10	16	165,306	394,261	559,567
30 to 34	4	12	16	148,652	570,025	718,677
35 to 39	9	13	22	381,836	642,209	1,024,045
40 to 44	3	10	13	136,583	635,287	771,870
45 to 49	5	13	18	302,261	611,903	914,164
50 to 54	2	7	9	258,549	366,242	624,791
55 to 59	1	4	5	40,315	302,210	342,525
60 to 64	0	4	4	0	140,652	140,652
65 to 69	0	1	1	0	55,072	55,072
70 & Up	0	0	0	0	0	0
Total	33	77	110	$ 1,534,312	$3,742,971	$5,277,283

* Partial year pay amounts have not been annualized.

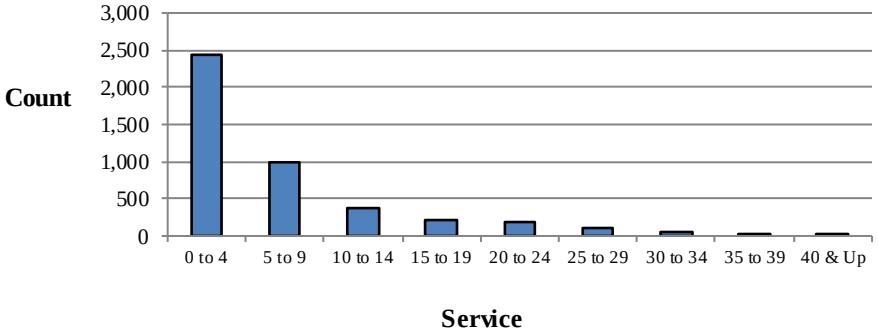


DISTRIBUTION OF ACTIVE MEMBERS
as of January 1, 2023

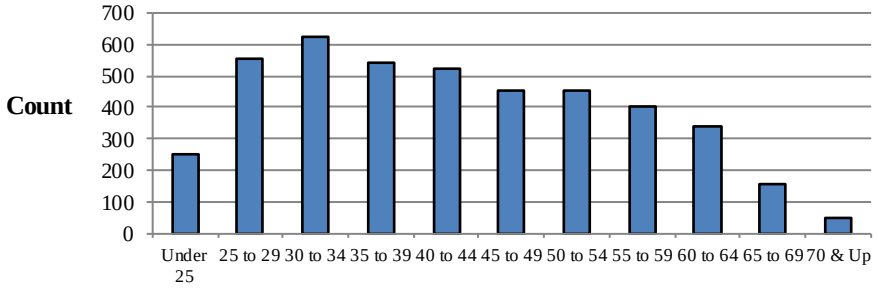
Total – All Plans

	Years of Service									
Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	Total
Under 25	251	1	0	0	0	0	0	0	0	252
25 to 29	482	71	0	0	0	0	0	0	0	553
30 to 34	365	224	37	0	0	0	0	0	0	626
35 to 39	303	160	68	8	0	0	0	0	0	539
40 to 44	276	117	67	42	19	0	0	0	0	521
45 to 49	219	112	45	27	43	6	0	0	0	452
50 to 54	204	105	41	37	36	24	4	0	0	451
55 to 59	154	77	50	32	39	29	20	3	0	404
60 to 64	109	71	42	34	23	27	15	15	2	338
65 to 69	49	33	20	18	14	5	9	4	4	156
70 & Up	19	9	3	7	2	2	1	1	5	49
Total	2,431	980	373	205	176	93	49	23	11	4,341

Service Distribution



Age Distribution

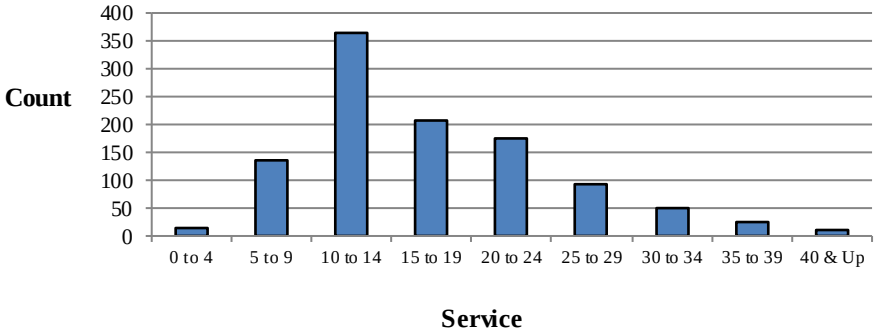


DISTRIBUTION OF ACTIVE MEMBERS
as of January 1, 2023

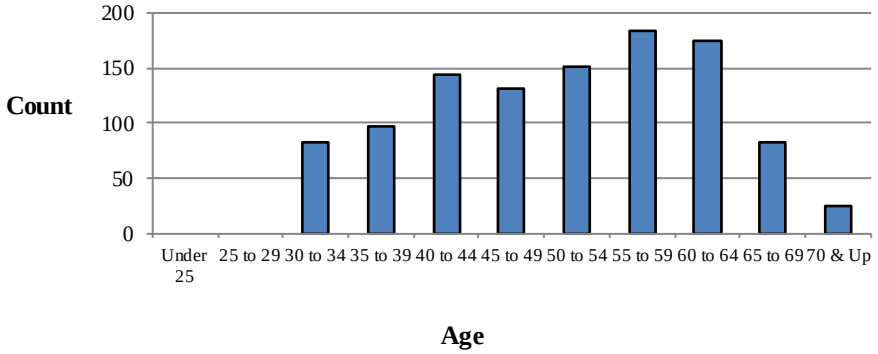
Total – Plan B

	Years of Service									
Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	Total
Under 25	0	0	0	0	0	0	0	0	0	0
25 to 29	0	0	0	0	0	0	0	0	0	0
30 to 34	0	47	36	0	0	0	0	0	0	83
35 to 39	0	23	66	8	0	0	0	0	0	97
40 to 44	0	16	67	42	19	0	0	0	0	144
45 to 49	0	11	44	27	43	6	0	0	0	131
50 to 54	0	11	39	37	36	24	4	0	0	151
55 to 59	2	9	49	32	39	29	20	3	0	183
60 to 64	4	14	41	34	23	27	15	15	2	175
65 to 69	5	5	19	18	14	5	9	4	4	83
70 & Up	4	0	3	7	2	2	1	1	5	25
Total	15	136	364	205	176	93	49	23	11	1,072

Service Distribution



Age Distribution

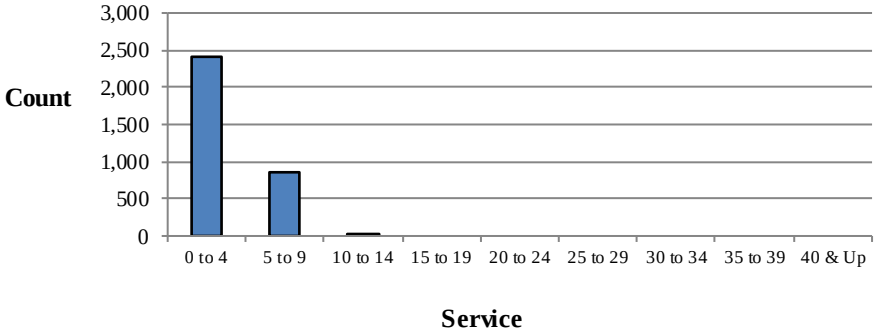


DISTRIBUTION OF ACTIVE MEMBERS
as of January 1, 2023

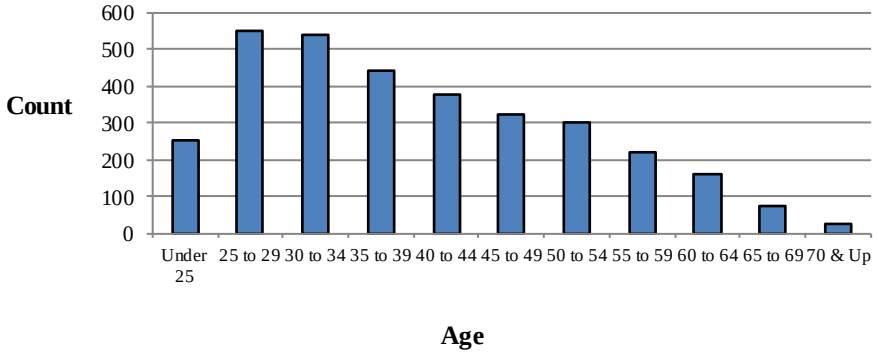
Total – Plan C

	Years of Service									
Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	Total
Under 25	251	1	0	0	0	0	0	0	0	252
25 to 29	482	71	0	0	0	0	0	0	0	553
30 to 34	365	177	1	0	0	0	0	0	0	543
35 to 39	303	137	2	0	0	0	0	0	0	442
40 to 44	276	101	0	0	0	0	0	0	0	377
45 to 49	219	101	1	0	0	0	0	0	0	321
50 to 54	204	94	2	0	0	0	0	0	0	300
55 to 59	152	68	1	0	0	0	0	0	0	221
60 to 64	105	57	1	0	0	0	0	0	0	163
65 to 69	44	28	1	0	0	0	0	0	0	73
70 & Up	15	9	0	0	0	0	0	0	0	24
Total	2,416	844	9	0	0	0	0	0	0	3,269

Service Distribution



Age Distribution

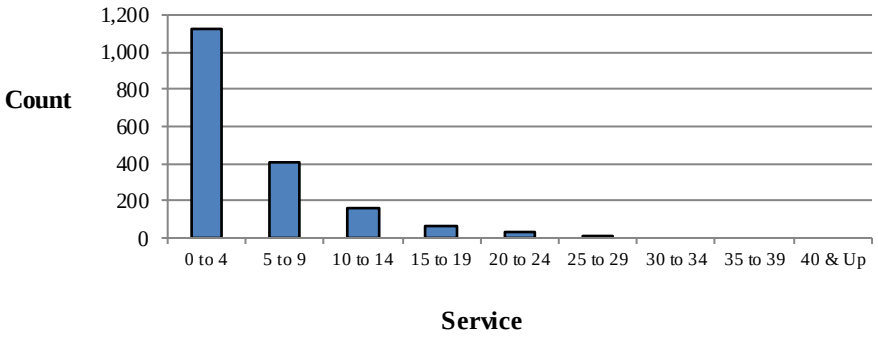


DISTRIBUTION OF ACTIVE MEMBERS
as of January 1, 2023

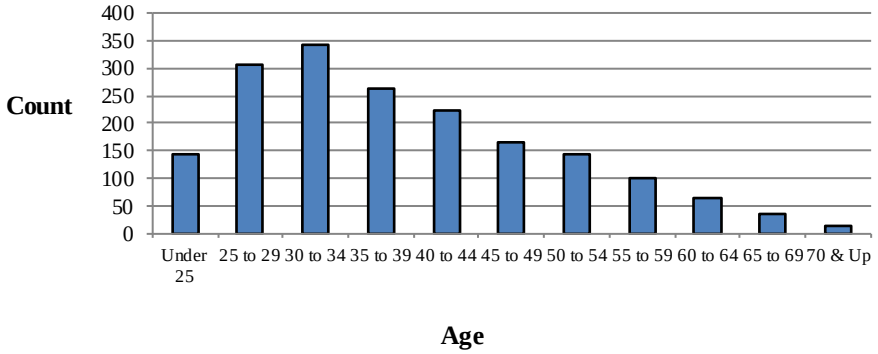
Charter Schools – All Plans

	Years of Service									
Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	Total
Under 25	144	0	0	0	0	0	0	0	0	144
25 to 29	267	40	0	0	0	0	0	0	0	307
30 to 34	185	129	28	0	0	0	0	0	0	342
35 to 39	142	77	36	6	0	0	0	0	0	261
40 to 44	128	51	28	13	3	0	0	0	0	223
45 to 49	80	43	18	10	13	1	0	0	0	165
50 to 54	79	29	13	11	11	1	0	0	0	144
55 to 59	53	14	15	13	5	0	0	0	0	100
60 to 64	29	16	13	4	1	0	0	0	0	63
65 to 69	16	6	6	6	1	0	0	0	0	35
70 & Up	7	4	0	2	0	0	0	0	0	13
Total	1,130	409	157	65	34	2	0	0	0	1,797

Service Distribution



Age Distribution

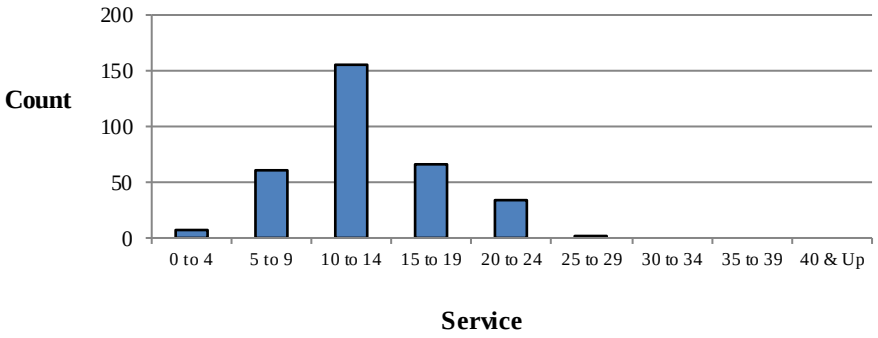


DISTRIBUTION OF ACTIVE MEMBERS
as of January 1, 2023

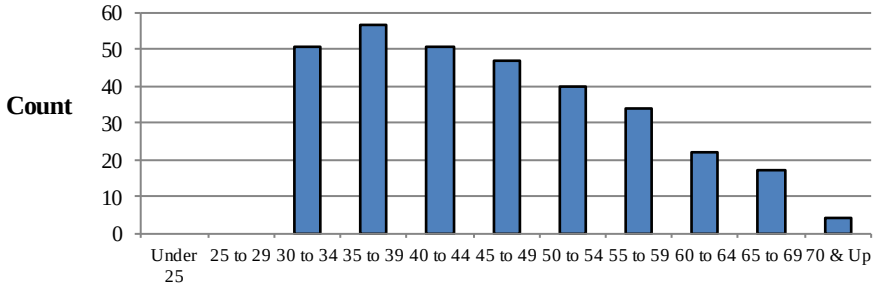
Charter Schools – Plan B

	Years of Service									
Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	Total
Under 25	0	0	0	0	0	0	0	0	0	0
25 to 29	0	0	0	0	0	0	0	0	0	0
30 to 34	0	24	27	0	0	0	0	0	0	51
35 to 39	0	16	35	6	0	0	0	0	0	57
40 to 44	0	7	28	13	3	0	0	0	0	51
45 to 49	0	5	18	10	13	1	0	0	0	47
50 to 54	0	4	13	11	11	1	0	0	0	40
55 to 59	1	0	15	13	5	0	0	0	0	34
60 to 64	1	3	13	4	1	0	0	0	0	22
65 to 69	3	1	6	6	1	0	0	0	0	17
70 & Up	2	0	0	2	0	0	0	0	0	4
Total	7	60	155	65	34	2	0	0	0	323

Service Distribution



Age Distribution

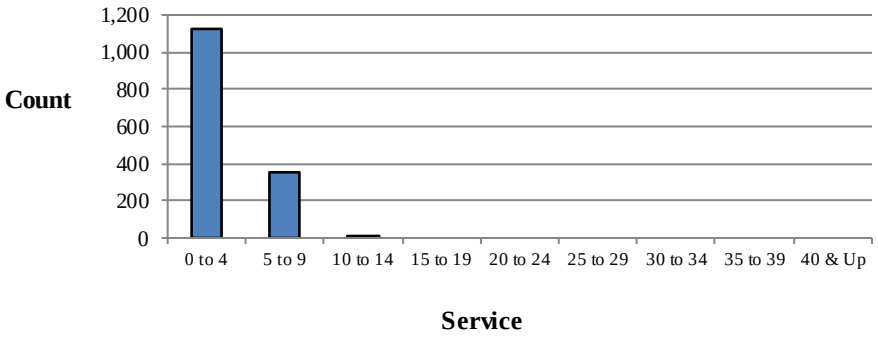


DISTRIBUTION OF ACTIVE MEMBERS
as of January 1, 2023

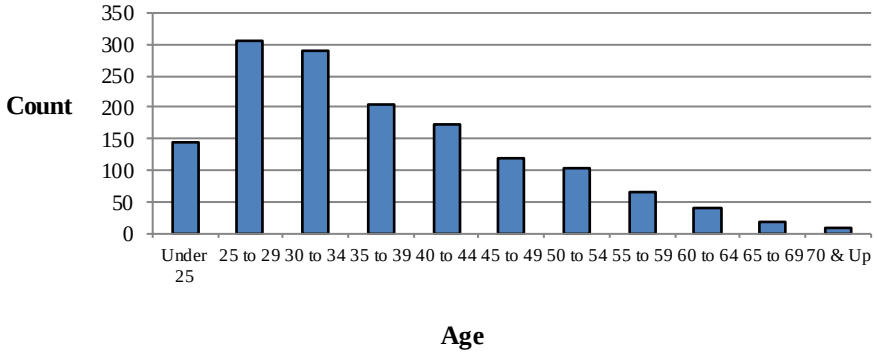
Charter Schools – Plan C

	Years of Service									
Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	Total
Under 25	144	0	0	0	0	0	0	0	0	144
25 to 29	267	40	0	0	0	0	0	0	0	307
30 to 34	185	105	1	0	0	0	0	0	0	291
35 to 39	142	61	1	0	0	0	0	0	0	204
40 to 44	128	44	0	0	0	0	0	0	0	172
45 to 49	80	38	0	0	0	0	0	0	0	118
50 to 54	79	25	0	0	0	0	0	0	0	104
55 to 59	52	14	0	0	0	0	0	0	0	66
60 to 64	28	13	0	0	0	0	0	0	0	41
65 to 69	13	5	0	0	0	0	0	0	0	18
70 & Up	5	4	0	0	0	0	0	0	0	9
Total	1,123	349	2	0	0	0	0	0	0	1,474

Service Distribution



Age Distribution

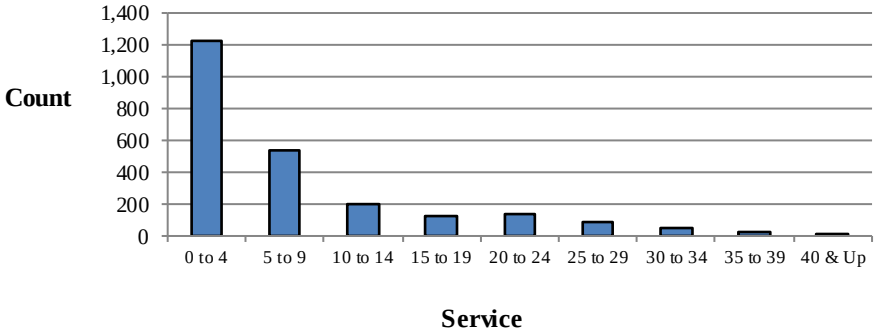


DISTRIBUTION OF ACTIVE MEMBERS
as of January 1, 2023

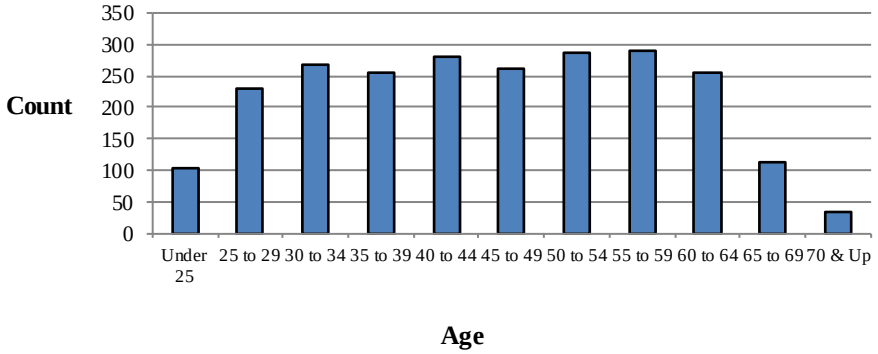
School District & Retirement System – All Plans

	Years of Service									
Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	Total
Under 25	101	1	0	0	0	0	0	0	0	102
25 to 29	201	29	0	0	0	0	0	0	0	230
30 to 34	167	92	9	0	0	0	0	0	0	268
35 to 39	146	76	30	2	0	0	0	0	0	254
40 to 44	140	60	36	27	16	0	0	0	0	279
45 to 49	126	64	24	15	28	5	0	0	0	262
50 to 54	120	72	24	23	22	23	4	0	0	288
55 to 59	99	60	34	14	34	28	19	3	0	291
60 to 64	77	54	26	24	21	24	15	14	1	256
65 to 69	32	26	14	9	11	5	8	4	4	113
70 & Up	12	5	3	5	2	2	1	1	4	35
Total	1,221	539	200	119	134	87	47	22	9	2,378

Service Distribution



Age Distribution

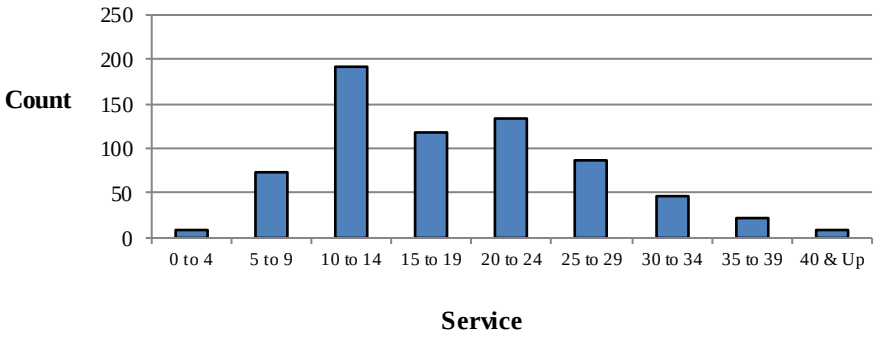


DISTRIBUTION OF ACTIVE MEMBERS
as of January 1, 2023

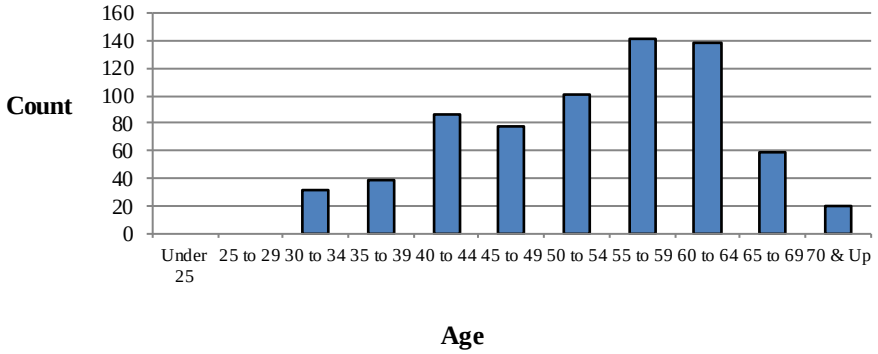
School District & Retirement System – Plan B

	Years of Service									
Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	Total
Under 25	0	0	0	0	0	0	0	0	0	0
25 to 29	0	0	0	0	0	0	0	0	0	0
30 to 34	0	23	9	0	0	0	0	0	0	32
35 to 39	0	7	29	2	0	0	0	0	0	38
40 to 44	0	8	36	27	16	0	0	0	0	87
45 to 49	0	6	23	15	28	5	0	0	0	77
50 to 54	0	7	22	23	22	23	4	0	0	101
55 to 59	1	9	33	14	34	28	19	3	0	141
60 to 64	3	11	25	24	21	24	15	14	1	138
65 to 69	2	3	13	9	11	5	8	4	4	59
70 & Up	2	0	3	5	2	2	1	1	4	20
Total	8	74	193	119	134	87	47	22	9	693

Service Distribution



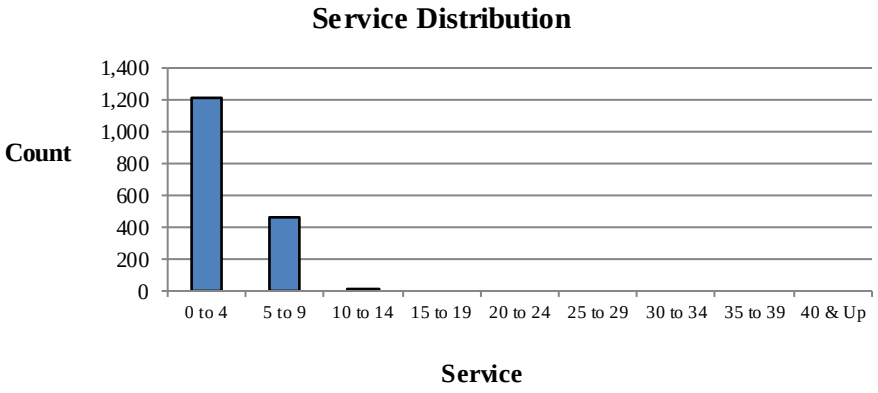
Age Distribution

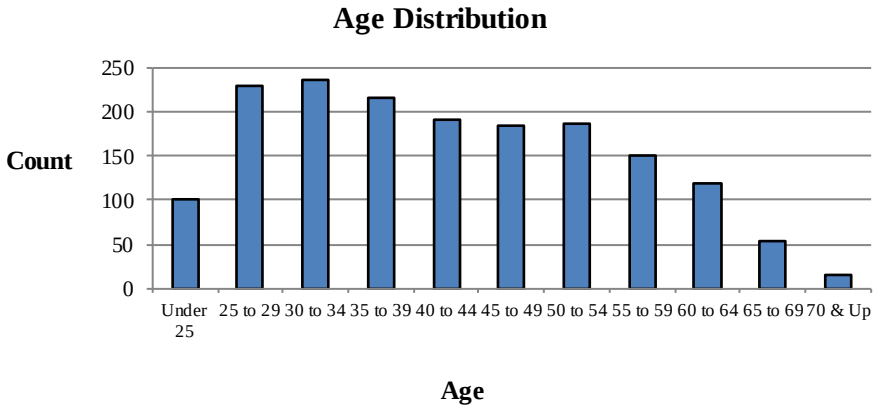


DISTRIBUTION OF ACTIVE MEMBERS
as of January 1, 2023

School District & Retirement System – Plan C

	Years of Service									
Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	Total
Under 25	101	1	0	0	0	0	0	0	0	102
25 to 29	201	29	0	0	0	0	0	0	0	230
30 to 34	167	69	0	0	0	0	0	0	0	236
35 to 39	146	69	1	0	0	0	0	0	0	216
40 to 44	140	52	0	0	0	0	0	0	0	192
45 to 49	126	58	1	0	0	0	0	0	0	185
50 to 54	120	65	2	0	0	0	0	0	0	187
55 to 59	98	51	1	0	0	0	0	0	0	150
60 to 64	74	43	1	0	0	0	0	0	0	118
65 to 69	30	23	1	0	0	0	0	0	0	54
70 & Up	10	5	0	0	0	0	0	0	0	15
Total	1,213	465	7	0	0	0	0	0	0	1,685



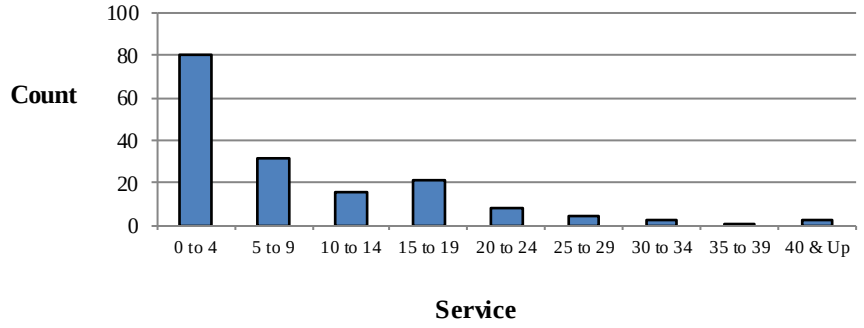


DISTRIBUTION OF ACTIVE MEMBERS
as of January 1, 2023

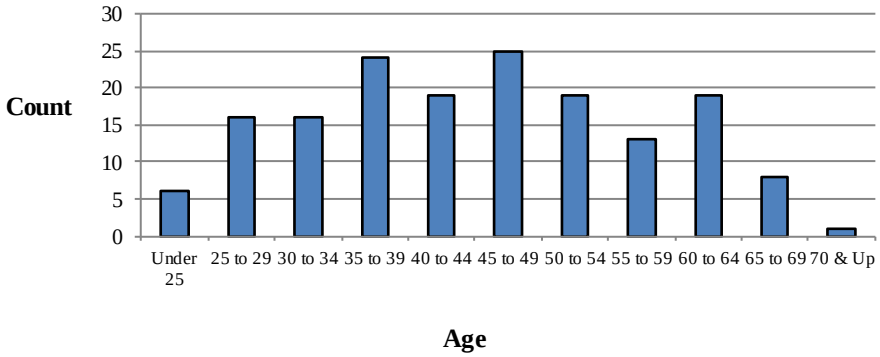
Library – All Plans

	Years of Service									
Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	Total
Under 25	6	0	0	0	0	0	0	0	0	6
25 to 29	14	2	0	0	0	0	0	0	0	16
30 to 34	13	3	0	0	0	0	0	0	0	16
35 to 39	15	7	2	0	0	0	0	0	0	24
40 to 44	8	6	3	2	0	0	0	0	0	19
45 to 49	13	5	3	2	2	0	0	0	0	25
50 to 54	5	4	4	3	3	0	0	0	0	19
55 to 59	2	3	1	5	0	1	1	0	0	13
60 to 64	3	1	3	6	1	3	0	1	1	19
65 to 69	1	1	0	3	2	0	1	0	0	8
70 & Up	0	0	0	0	0	0	0	0	1	1
Total	80	32	16	21	8	4	2	1	2	166

Service Distribution



Age Distribution

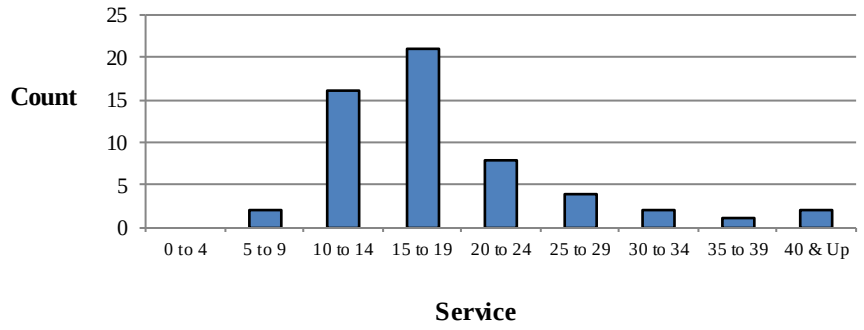


DISTRIBUTION OF ACTIVE MEMBERS
as of January 1, 2023

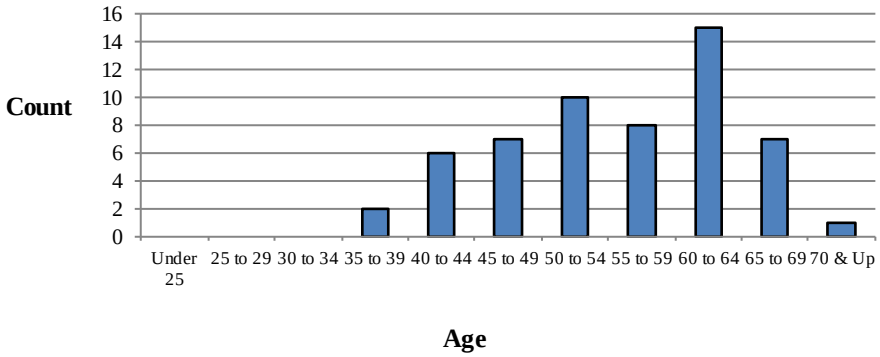
Library – Plan B

	Years of Service									
Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	Total
Under 25	0	0	0	0	0	0	0	0	0	0
25 to 29	0	0	0	0	0	0	0	0	0	0
30 to 34	0	0	0	0	0	0	0	0	0	0
35 to 39	0	0	2	0	0	0	0	0	0	2
40 to 44	0	1	3	2	0	0	0	0	0	6
45 to 49	0	0	3	2	2	0	0	0	0	7
50 to 54	0	0	4	3	3	0	0	0	0	10
55 to 59	0	0	1	5	0	1	1	0	0	8
60 to 64	0	0	3	6	1	3	0	1	1	15
65 to 69	0	1	0	3	2	0	1	0	0	7
70 & Up	0	0	0	0	0	0	0	0	1	1
Total	0	2	16	21	8	4	2	1	2	56

Service Distribution



Age Distribution

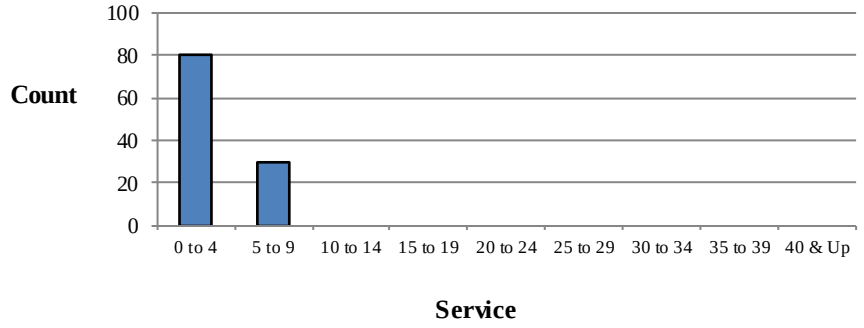


DISTRIBUTION OF ACTIVE MEMBERS
as of January 1, 2023

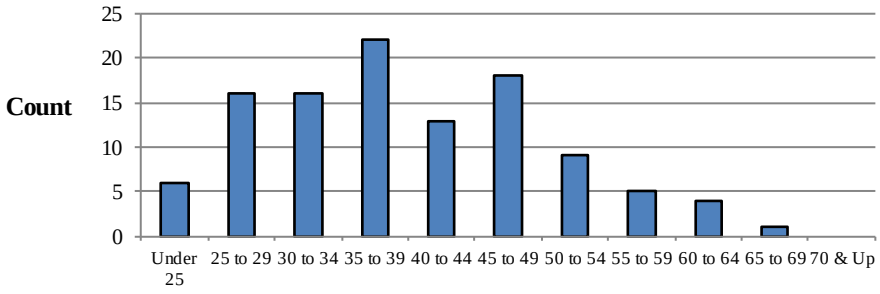
Library – Plan C

	Years of Service									
Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	Total
Under 25	6	0	0	0	0	0	0	0	0	6
25 to 29	14	2	0	0	0	0	0	0	0	16
30 to 34	13	3	0	0	0	0	0	0	0	16
35 to 39	15	7	0	0	0	0	0	0	0	22
40 to 44	8	5	0	0	0	0	0	0	0	13
45 to 49	13	5	0	0	0	0	0	0	0	18
50 to 54	5	4	0	0	0	0	0	0	0	9
55 to 59	2	3	0	0	0	0	0	0	0	5
60 to 64	3	1	0	0	0	0	0	0	0	4
65 to 69	1	0	0	0	0	0	0	0	0	1
70 & Up	0	0	0	0	0	0	0	0	0	0
Total	80	30	0	0	0	0	0	0	0	110

Service Distribution

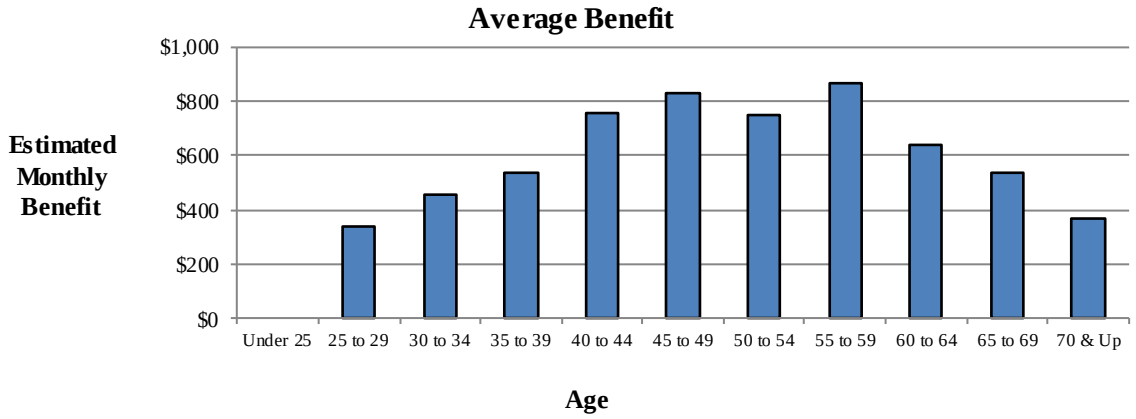


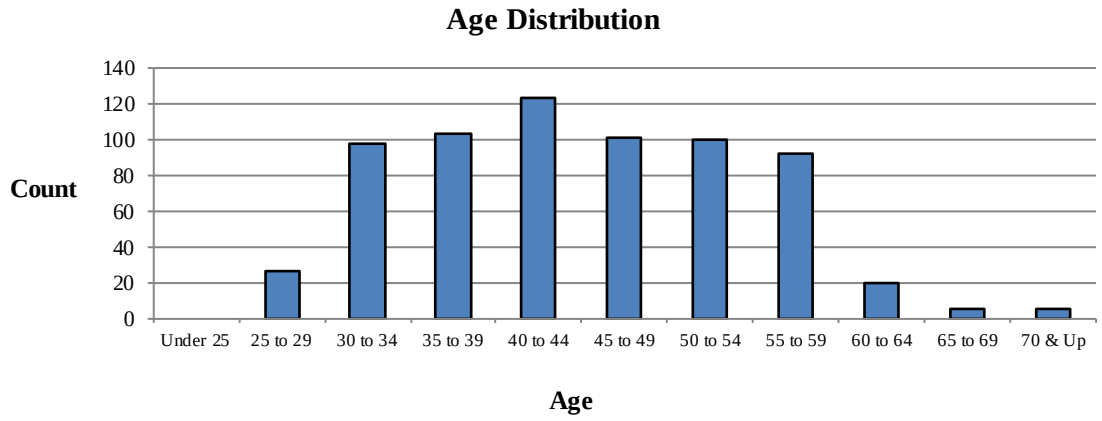
Age Distribution



SUMMARY OF TERMINATED VESTED MEMBERS
as of January 1, 2023

Age	Number			Estimated Monthly Benefit		
	Male	Female	Total	Male	Female	Total
Under 25	0	0	0	$ 0	$ 0	$ 0
25 to 29	2	24	26	694	8,094	8,788
30 to 34	14	84	98	5,783	39,131	44,914
35 to 39	23	80	103	13,924	41,423	55,347
40 to 44	37	86	123	29,650	63,781	93,431
45 to 49	25	76	101	20,804	62,738	83,542
50 to 54	30	70	100	20,997	53,823	74,820
55 to 59	28	64	92	23,255	56,249	79,504
60 to 64	6	14	20	3,490	9,268	12,758
65 to 69	2	3	5	699	2,004	2,703
70 & Up	2	3	5	1,304	530	1,834
Total	169	504	673	$120,600	$337,041	$457,641





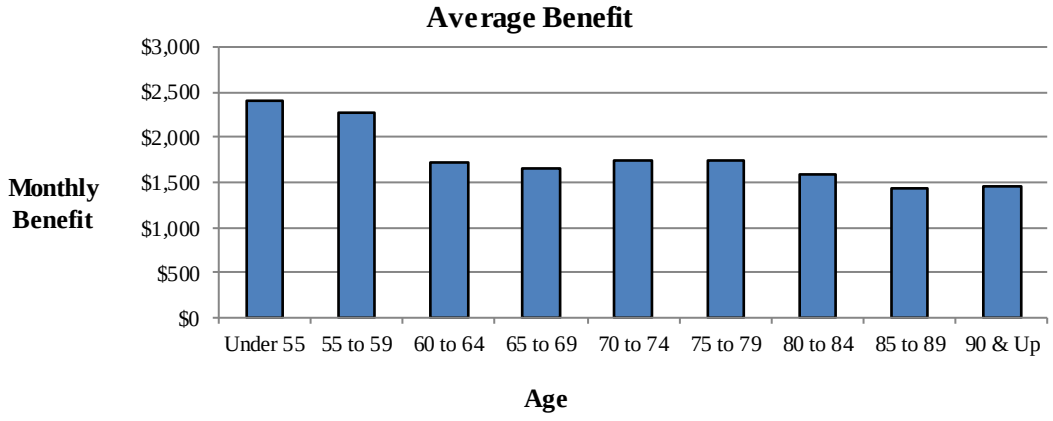
SCHEDULE OF RETIREES, DISABLEDS, AND BENEFICIARIES BY BENEFIT TYPE

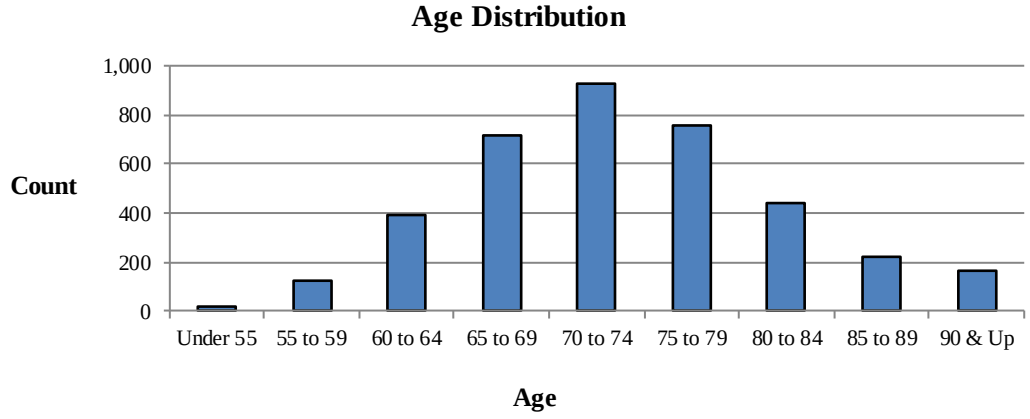
as of January 1, 2023

Amount of Monthly Benefits	Total Monthly Benefits	Total Number of Recipients	Type of Benefit			
			Retired	Surviving Spouses	Surviving Children	Disability
$1 to 500	199,101	583	517	54	2	10
501 to 1,000	618,046	834	745	63	3	23
1,001 to 1,500	800,197	646	563	58	4	21
1,501 to 2,000	927,215	530	493	29	2	6
2,001 to 2,500	1,308,211	580	562	13	1	4
2,501 to 3,000	1,243,504	457	448	9	-	-
3,001 to 3,500	817,094	253	252	1	-	-
3,501 to 4,000	424,469	114	112	2	-	-
4,001 to 4,500	256,188	61	60	1	-	-
4,501 to 5,000	88,842	19	19	-	-	-
Over 5,000	50,389	9	9	-	-	-

SUMMARY OF ALL RETIRED MEMBERS
as of January 1, 2023

Age	Number			Monthly Benefit		
	Male	Female	Total	Male	Female	Total
Under 55	5	11	16	$ 14,016	$ 24,312	$ 38,328
55 to 59	42	80	122	94,204	183,414	277,618
60 to 64	118	278	396	198,975	485,764	684,739
65 to 69	180	540	720	273,333	911,589	1,184,922
70 to 74	233	696	929	362,191	1,249,266	1,611,457
75 to 79	185	576	761	282,333	1,044,841	1,327,174
80 to 84	112	331	443	178,000	527,569	705,569
85 to 89	58	167	225	96,135	228,180	324,315
90 & Up	29	139	168	48,681	196,772	245,453
Total	962	2,818	3,780	$ 1,547,868	$ 4,851,707	$ 6,399,575



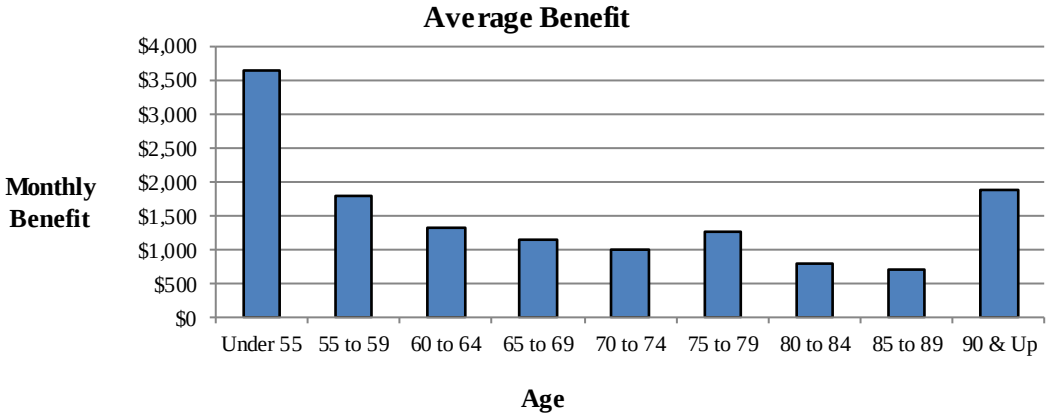


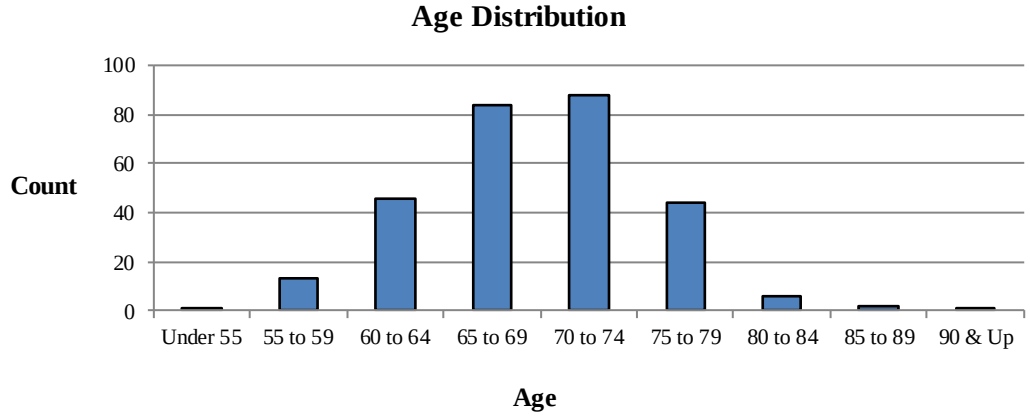
SUMMARY OF RETIRED MEMBERS

as of January 1, 2023

Charter Schools
(Last employer prior to retirement)

Age	Number			Monthly Benefit		
	Male	Female	Total	Male	Female	Total
Under 55	1	0	1	$ 3,648	$ 0	$ 3,648
55 to 59	2	11	13	3,860	19,432	23,292
60 to 64	13	33	46	21,961	39,185	61,146
65 to 69	24	60	84	27,857	68,839	96,696
70 to 74	24	64	88	19,483	67,901	87,384
75 to 79	14	30	44	14,728	41,556	56,284
80 to 84	3	3	6	1,175	3,539	4,714
85 to 89	1	1	2	436	980	1,416
90 & Up	0	1	1	0	1,885	1,885
Total	82	203	285	$ 93,148	$ 243,317	$ 336,465



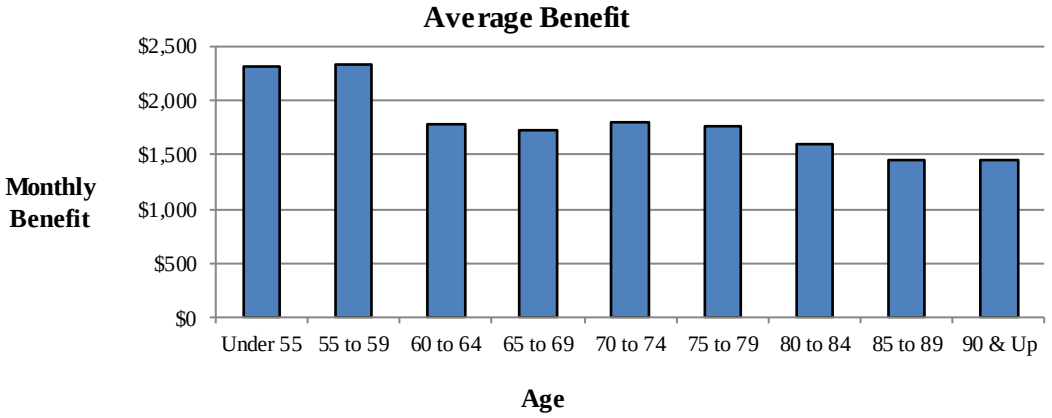


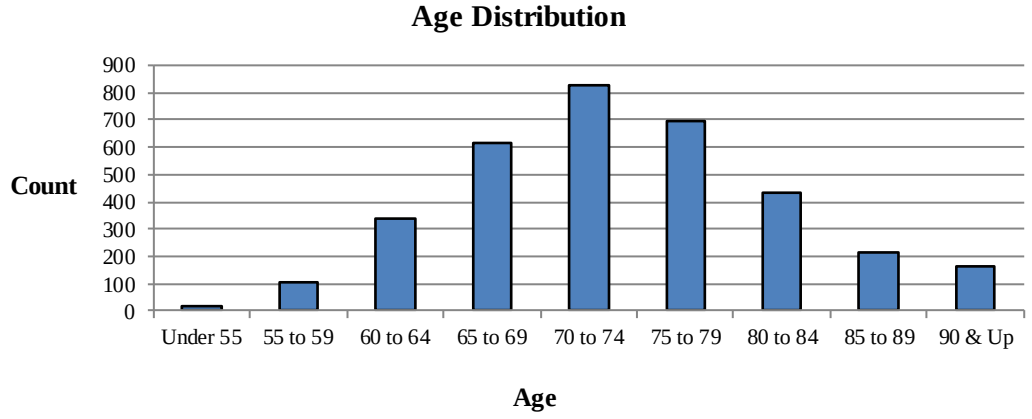
SUMMARY OF RETIRED MEMBERS

as of January 1, 2023

School District & Retirement System
(Last employer prior to retirement)

Age	Number			Monthly Benefit		
	Male	Female	Total	Male	Female	Total
Under 55	4	11	15	$ 10,368	$ 24,312	$ 34,680
55 to 59	39	68	107	87,273	161,396	248,669
60 to 64	99	241	340	167,660	436,884	604,544
65 to 69	148	464	612	235,393	820,603	1,055,996
70 to 74	204	620	824	332,094	1,154,636	1,486,730
75 to 79	167	527	694	258,219	968,811	1,227,030
80 to 84	109	321	430	176,825	513,998	690,823
85 to 89	56	161	217	94,624	221,226	315,850
90 & Up	29	133	162	48,681	185,561	234,242
Total	855	2,546	3,401	$ 1,411,137	$ 4,487,427	$ 5,898,564

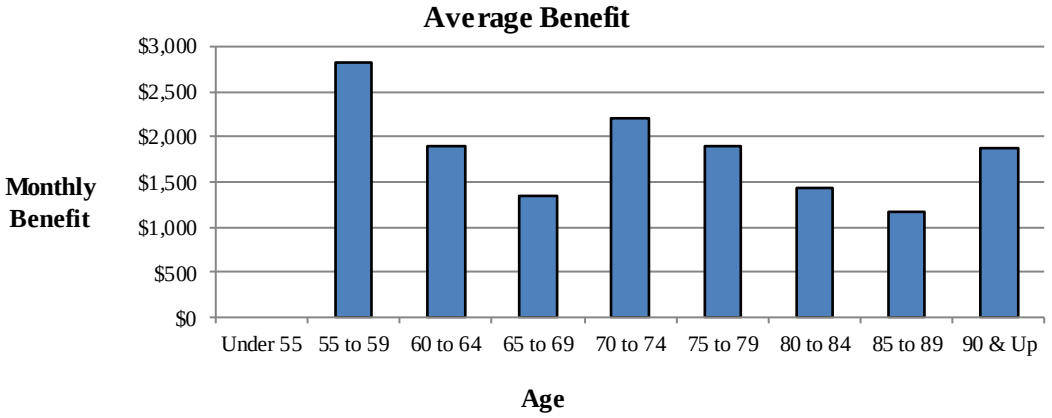


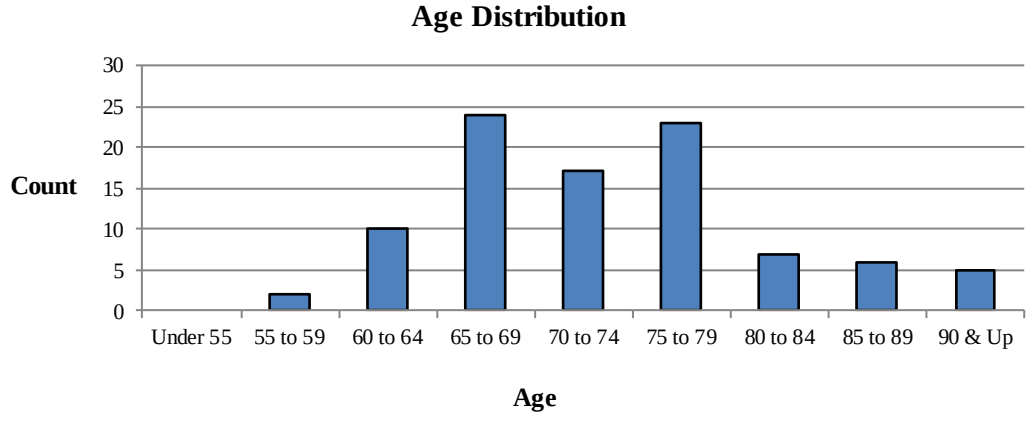


SUMMARY OF RETIRED MEMBERS
as of January 1, 2023

Library
(Last employer prior to retirement)

Age	Number			Monthly Benefit		
	Male	Female	Total	Male	Female	Total
Under 55	0	0	0	$ 0	$ 0	$ 0
55 to 59	1	1	2	3,071	2,586	5,657
60 to 64	6	4	10	9,354	9,695	19,049
65 to 69	8	16	24	10,083	22,147	32,230
70 to 74	5	12	17	10,614	26,729	37,343
75 to 79	4	19	23	9,386	34,474	43,860
80 to 84	0	7	7	0	10,032	10,032
85 to 89	1	5	6	1,075	5,974	7,049
90 & Up	0	5	5	0	9,326	9,326
Total	25	69	94	$ 43,583	$ 120,963	$ 164,546

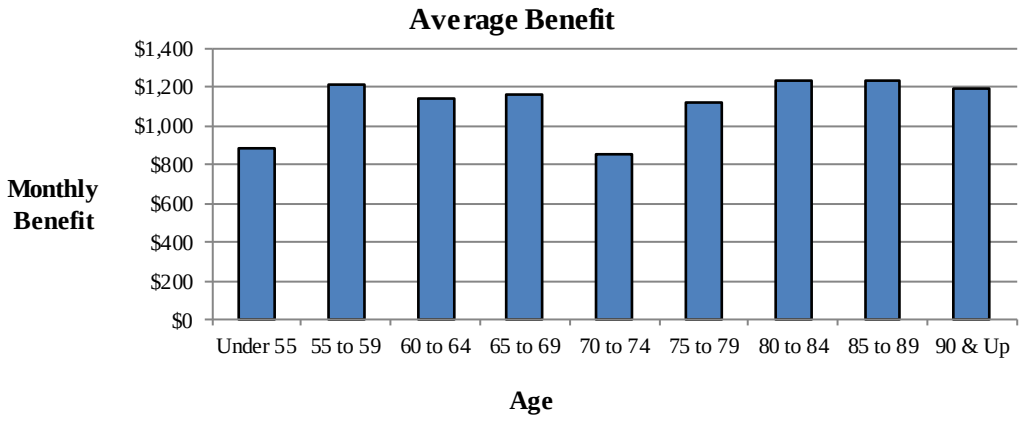


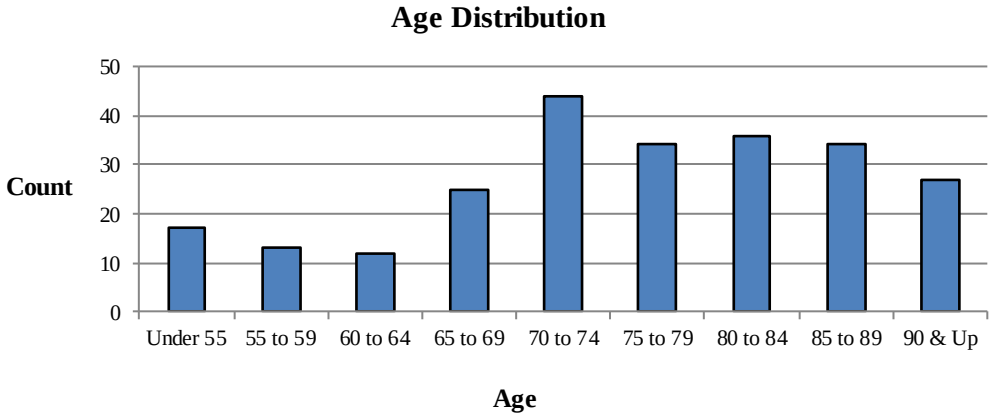


SUMMARY OF BENEFICIARIES
as of January 1, 2023

Age	Number*			Monthly Benefit		
	Male	Female	Total	Male	Female	Total
Under 55	6	11	17	$ 5,354	$ 9,705	$ 15,059
55 to 59	7	6	13	6,908	8,840	15,748
60 to 64	5	7	12	3,267	10,381	13,648
65 to 69	3	22	25	6,037	23,113	29,150
70 to 74	10	34	44	8,454	28,939	37,393
75 to 79	12	22	34	9,744	28,437	38,181
80 to 84	8	28	36	8,548	35,738	44,286
85 to 89	9	25	34	11,718	30,093	41,811
90 & Up	6	21	27	5,933	26,168	32,101
Total	66	176	242	$ 65,963	$ 201,414	$ 267,377

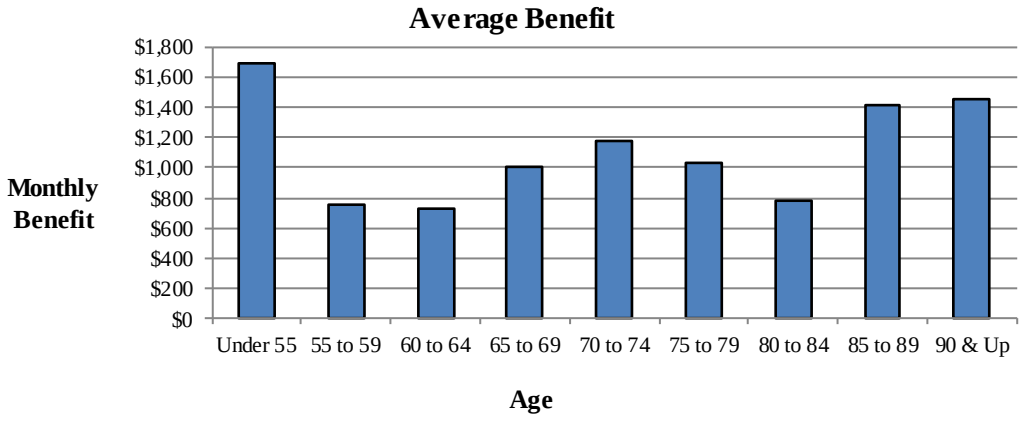
* Includes 3 beneficiaries who were owed a single lump sum payment and were not paid prior to the valuation date.

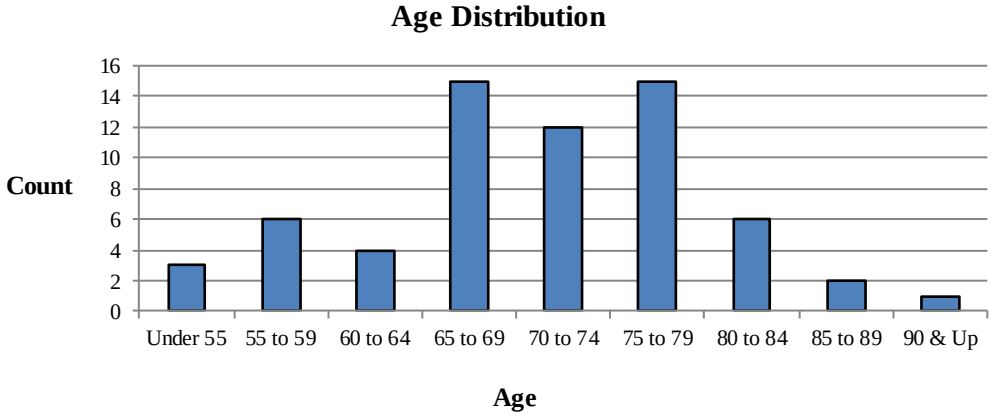




SUMMARY OF DISABLED MEMBERS
as of January 1, 2023

Age	Number			Monthly Benefit		
	Male	Female	Total	Male	Female	Total
Under 55	0	3	3	$ 0	$ 5,097	$ 5,097
55 to 59	3	3	6	2,849	1,682	4,531
60 to 64	1	3	4	859	2,057	2,916
65 to 69	5	10	15	3,757	11,360	15,117
70 to 74	3	9	12	2,718	11,461	14,179
75 to 79	4	11	15	3,845	11,620	15,465
80 to 84	0	6	6	0	4,706	4,706
85 to 89	0	2	2	0	2,842	2,842
90 & Up	0	1	1	0	1,451	1,451
Total	16	48	64	$ 14,028	$ 52,276	$ 66,304





HISTORICAL MEMBERSHIP PROFILE

as of January 1

	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Active Members	4,341	4,178	4,108	4,074	3,898	3,760	3,701	3,574	3,493	3,501
Average Age	43.1	43.0	42.8	42.7	42.7	42.8	43.5	44.0	44.4	44.5
Average Years of Service	6.9	7.2	7.4	7.1	7.2	7.5	8.1	8.1	8.3	8.5
Inactive Vested	673	568	521	529	531	522	490	461	476	560
Average Age	45.1	45.9	47.3	47.8	48.6	49.8	50.5	50.5	50.2	51.6
Average Estimated Monthly Benefit	$680	$651	$640	$650	$647	$678	$671	$689		
Retirees, Disabled and Survivors	4,086	4,094	4,099	4,145	4,113	4,112	4,032	4,049	4,011	3,885
Average Age	73.9	73.5	73.2	72.9	72.5	72.3	72.2	72.0	71.7	71.7
Average Monthly Benefit	$1,649	$1,641	$1,632	$1,631	$1,625	$1,607	$1,589	$1,580	$1,574	$1,569

HISTORICAL ACTIVE MEMBER DATA

Valuation January 1	Active Members	Annual Payroll	Annual Average Pay	% Increase in Average Pay
2014	3,501	$157,014,537	$44,848	(3.18%)
2015	3,493	170,845,124	48,911	9.06%
2016	3,574	179,013,516	50,088	2.41%
2017	3,701	194,132,739	52,454	4.72%
2018	3,760	196,277,971	52,202	(0.48%)
2019	3,898	203,310,599	52,158	(0.08%)
2020	4,074	217,255,306	53,327	2.24%
2021	4,108	228,084,635	55,522	4.12%
2022	4,178	234,540,261	56,137	1.11%
2023	4,341	252,084,684	58,071	3.45%

AVERAGE MONTHLY BENEFIT AMOUNTS FOR NEW RETIREES

	Years of Credited Service							All
Members Retiring During	<5	5-10	10-15	15-20	20-25	25-30	30+	Members
Fiscal Year Ending 01/01/2014								
Average monthly benefit	$1,669	$566	$827	$1,428	$2,091	$2,218	$2,662	$1,399
Number of retirees	5	32	28	19	22	22	6	134
Fiscal Year Ending 01/01/2015								
Average monthly benefit	$343	$563	$879	$1,656	$2,120	$2,591	$2,985	$1,516
Number of retirees	3	37	44	25	36	25	10	180
Fiscal Year Ending 01/01/2016								
Average monthly benefit	$436	$625	$977	$1,403	$2,174	$2,678	$3,414	$1,579
Number of retirees	9	23	39	17	21	27	9	145
Fiscal Year Ending 01/01/2017								
Average monthly benefit	$478	$493	$1,019	$1,415	$2,036	$2,568	$2,740	$1,570
Number of retirees	4	26	24	17	22	24	12	129
Fiscal Year Ending 01/01/2018								
Average monthly benefit	$549	$611	$935	$1,490	$2,435	$2,786	$3,087	$1,792
Number of retirees	11	32	31	30	33	35	24	196
Fiscal Year Ending 01/01/2019								
Average monthly benefit	$730	$701	$961	$1,818	$2,245	$2,643	$2,928	$1,684
Number of retirees	2	35	22	27	16	18	18	138
Fiscal Year Ending 01/01/2020								
Average monthly benefit	$465	$680	$928	$1,640	$2,253	$3,469	$2,787	$1,569
Number of retirees	6	38	24	22	15	18	8	131
Fiscal Year Ending 01/01/2021								
Average monthly benefit	$396	$515	$1,082	$1,466	$1,742	$2,944	$2,939	$1,508
Number of retirees	1	19	20	30	17	8	10	105
Fiscal Year Ending 01/01/2022								
Average monthly benefit	$495	$676	$1,124	$1,628	$2,055	$2,794	$3,326	$1,649
Number of retirees	8	37	17	29	13	14	20	138
Fiscal Year Ending 01/01/2023								
Average monthly benefit	$394	$696	$1,130	$1,688	$2,548	$3,227	$3,525	$1,868
Number of retirees	4	26	21	18	14	14	16	113

RETIREES AND BENEFICIARIES ADDED TO AND REMOVED FROM ROLLS

Year Ended December 31	Added to Rolls		Removed from Rolls		Rolls End of Year		% Increase in Annual Benefits	Average Annual Benefits
	Number	Annual Benefits	Number	Annual Benefits	Number	Annual Benefits		
2013	148	$2,480,646	95	$1,690,031	3,885	$73,146,778		$18,828
2014	257	4,763,445	131	2,173,699	4,011	75,736,524	3.54%	18,882
2015	159	2,949,800	122	1,900,088	4,049	76,786,236	1.39%	18,964
2016	151	2,791,834	167	2,697,334	4,032	76,880,736	0.12%	19,068
2017	215	4,456,931	135	2,040,515	4,112	79,297,152	3.14%	19,284
2018	153	2,992,593	152	2,161,017	4,113	80,128,728	1.05%	19,482
2019	155	2,832,629	123	1,866,173	4,145	81,095,184	1.21%	19,565
2020	120	2,115,087	166	2,971,863	4,099	80,238,408	-1.06%	19,575
2021	153	2,936,961	158	2,615,829	4,094	80,559,540	0.40%	19,677
2022	131	2,730,477	139	2,490,945	4,086	80,799,072	0.30%	19,775

Summary of Plan Provisions

Effective Date

January 1, 1944, most recently amended in 2018.

Plan Type

Plan B applies to anyone who retires on or after June 30, 1999 and was hired prior to January 1, 2014. Plan C applies to members hired on or after January 1, 2014. All members with Plan A benefits have terminated or retired.

Eligibility for coverage

All regular, full-time employees of the School District of Kansas City, Missouri, the Kansas City, Missouri Public Library District, the Retirement System, and the Charter Schools located within the boundaries of the Kansas City School District become members as a condition of employment. Regular employment means working at least five hours per day, five days per week, nine months per year. Temporary and part-time employees are excluded.

Service

Creditable service is member service, which is service for which required contributions have been made. There is no cap on creditable service. Prior to 1990, creditable service could not exceed 35 years. The Plan B maximum retirement benefit is 60% of Average final compensation, which will be reached upon attainment of 30 years of service. The Plan C maximum retirement benefit is 60% of Average final compensation, which will be reached upon attainment of 34.25 years of service.

Annual compensation

A member's annual compensation level will be the regular compensation shown on the employer's salary and wage schedules, excluding extra pay, overtime pay, or any pay not on the schedule.

Average final compensation

The average final compensation is the highest average annual compensation paid during any four consecutive years of service.

Normal retirement

Eligibility

Plan B: Members may retire after (a) the completion of five years of creditable service and the attainment of age 60, or (b) having a total of at least 75 credits, with each year of creditable service and year of age, both prorated for fractional years, equal to one credit.

Plan C: Members may retire after (a) the completion of five years of creditable service and the attainment of age 62, or (b) having a total of at least 80 credits, with each year of creditable service and year of age, both prorated for fractional years, equal to one credit.

Benefit

Plan B: The normal retirement benefit payable monthly equals one twelfth of 2.00% (1.75% for members who retired prior to June 30, 1999) of the member's average final compensation multiplied by years of creditable service, subject to a maximum of 60% of average final compensation. Any member whose years of creditable service exceed 34.25 years on August 28, 1993 shall have a maximum greater than 60%, which shall be equal to 1.75% times the member's years of creditable service on August 28, 1993.

Plan C: The normal retirement benefit payable monthly equals one twelfth of 1.75% of the member's average final compensation multiplied by years of creditable service, subject to a maximum of 60% of average final compensation.

Minimum benefit

Effective January 1, 1996, any member with at least 10 years of creditable service, but less than 20 years, is entitled to a minimum benefit of $150 per month, plus $15 for each year of creditable service in excess of 10 years, or the actuarial equivalent if an option was elected. Any member with at least 20 years of creditable service at retirement is entitled to a minimum benefit of $300 per month, or the actuarial equivalent of $300 if an option was elected. Beneficiaries of deceased members who retired with at least 10 years of creditable service and elected one of the optional plans for payment of benefits may receive the actuarial equivalent of the minimum benefit available for the option chosen.

Early retirement

Eligibility

Members may retire at any time after the completion of five years of creditable service and the attainment of age 55.

Benefit

Plan B: A member eligible for early retirement will receive a reduced benefit, with the reduction based on the number of months preceding eligibility for a normal retirement benefit. The reduction factors are as follows:

Age	Reduction Factor
59	0.91653
58	0.84084
57	0.77211
56	0.70959
55	0.65264

Plan C: A member eligible for early retirement will receive a reduced benefit, with the reduction based on the number of months preceding eligibility for a normal retirement benefit. The reduction factors are as follows:

Age	Reduction Factor
61	0.91450
60	0.83727
59	0.76738
58	0.70402
57	0.64647
56	0.59412
55	0.54644

Disability retirement

Eligibility

A member with at least five years of creditable service who is certified to be totally incapacitated for performance of duty by the Medical Board is eligible for a disability retirement.

Benefit

A disabled vested member will receive a benefit, calculated as for normal retirement, based on creditable service and average final compensation at actual disability retirement date, or the minimum disability benefit whichever is greater. The minimum disability retirement benefit will be the lesser of (a) 25% of the member's average final compensation, or (b) the member's service retirement benefit calculated on the member's average final compensation and the maximum number of years of creditable service the member would have earned had the member remained an employee until age 60. Disability benefits are payable immediately.

Vested termination benefits

Eligibility

A member who has at least five years of creditable service earns a vested interest in his or her accrued benefit, provided the member leaves his or her contributions in the System.

Benefit

The vested benefit is calculated as a normal retirement benefit based on service and average final compensation at date of termination and is payable at minimum normal retirement date.

Non-vested benefits

Benefit

If the member's termination is for reasons other than death or retirement and if the member has not met the vesting or retirement requirements, the member's contributions with interest will be refunded.

Death Benefit

Prior to retirement

For a member who dies before retirement and was either an active employee or an inactive vested member who met the other requirements (age or points) for either normal or early retirement, the member's designated beneficiary is entitled to receive either (a) the member's accumulated contributions and interest, or if the designated beneficiary is the member's spouse, dependent child or dependent parent, (b) a monthly retirement benefit calculated under Option 1 as if the deceased member had at least ten years of creditable service at time of death. If the beneficiary is a child, the optional monthly benefit is payable until the beneficiary reaches age nineteen.

For an inactive vested member who dies before retirement and has not met the other (age or points) requirements for retirement, the member's accumulated contributions and interest will be payable to the member's designated beneficiary.

All members are guaranteed to have their designated beneficiaries receive at least their accumulated contributions and interest, upon the member's death.

Postretirement

The benefit payment option selected by the retiree will determine what, if any, benefits are payable upon death after retirement.

Normal form of benefit payments

The normal form of benefit payment is the normal retirement benefit amount paid monthly for the life of the member. If the member should die before receiving payments totaling the amount of their contributions to the plan, the designated beneficiary shall receive a lump sum payment of the remaining amount.

Optional forms of benefit payments

Members may elect from the following optional forms of benefit payment:

Option 1

Option 1 provides a reduced retirement benefit that will continue on to a designated survivor. Upon a retiree's death, the retiree's designated survivor will receive for life, the same level of monthly retirement benefit. In the event the retiree's designated survivor predeceases the retiree, the retiree's monthly retirement benefit will be adjusted to the amount that would have been paid in the normal form of payment.

Option 2

Option 2 provides a reduced retirement benefit that will continue on to a designated survivor. Upon a retiree's death, the retiree's designated survivor will receive for life, a monthly benefit equal to one-half of the retiree's monthly retirement benefit. In the event the retiree's designated survivor predeceases the retiree, the retiree's monthly retirement benefit will be adjusted to the amount that would have been paid in the normal form of payment.

Option 3

Option 3 provides that upon a retiree's death, no benefits are payable to the retiree's estate or any beneficiary. Retirement benefits payable under this option will be actuarially increased from the normal form.

Each of the above options produces benefits which are actuarially equivalent to the normal form of benefit which is a monthly annuity payable for the lifetime of the retiree.

Cost-of-living allowances

The Board of Trustees shall determine annually whether or not the system can provide an increase in benefits for those retirees who, as of the January 1 preceding the date of such increase, have been retired at least one year. Any such increase also applies to optional retirement allowances paid to a retiree's survivor. The Board makes its determination as follows:

1. The actuary recommends to the Board what portion of the investment return is available for increases and the amount available to be paid on the first day of the 14th month following the end of the valuation year. The actuary's recommendation is subject to the following safeguards:

    a. The System's funded ratio as of the January 1st of the preceding year of the proposed increase must be at least 100% after adjusting for the effect of proposed increase. The funded ratio is the ratio of assets to the pension benefit obligation.

    b. The actuarially required contribution rate, after adjusting for the effect of the proposed increase, may not exceed the statutory contribution rate.

    c. The actuary must certify that the proposed increase will not impair the actuarial soundness of the System.

2. The Board reviews the actuary's recommendation and shall, in their discretion, determine if an increase may be granted. In accordance with Board policy, if an increase is permissible, the amount of the increase will be equal to the lesser of 3% or the percentage increase in the CPI for the preceding year, subject to a cumulative increase of 100% subsequent to December 31, 2000.

3. This provision does not guarantee an annual increase to any retired member.

Administration of the retirement system

The Board of Trustees is responsible for the general administration and proper operation of the retirement system. The Board consists of 12 members – four members appointed by the Board of Education, one member appointed by the Board of Trustees of the library district, four members elected by and from the active and terminated vested members of the retirement system, two members elected by and from the retirees of the retirement system, and the Superintendent of Schools of the School District of Kansas City, Missouri. Administrative expenses are paid out of the general reserve fund.

Employee contributions

Contributions for Employees are as follows;

- Effective July 1, 2021, if the System is at least 100% funded, as determined in the valuation prepared for the prior calendar year, the members contribute the lesser of (a) 9.00% or (b) one-half of the actuarial required contribution rate. If the System is less than 100% funded, the members contribute 9.00%.
- Effective January 1, 2016, members contribute 9.00%.
- Effective January 1, 2015, members contributed 8.50%.
- Effective January 1, 2014, members contributed 8.00%.
- Effective January 1, 1999, members contributed 7.50%.
- Prior to January 1, 1999, members contributed 5.90%.
- Prior to 1990, members contributed 5.00% of earnable annual compensation plus 2.00% of earnable compensation in excess of $6,500, the contribution earning base.

Employer contributions

Effective July 1, 2021 and for each subsequent twelve-month period beginning July 1 of each year, the employer contribution rate shall be the greater of (1) the actuarial required contribution rate, as determined in the valuation prepared for the prior calendar year, less the member contribution rate, or (2) 12.00% of pay, until the system is fully funded. Once the System is fully funded, the employer contribution rate may increase or decrease in subsequent years, depending on the actuarial contribution rate developed in the annual actuarial valuation and the applicable employee contribution rate. Effective July 1, 2021, the employer contribution rate shall not increase by more than 1.00% or decrease by more than 0.50% from the corresponding rate in effect immediately before such increase or decrease. An exception to the limitation on the magnitude of employer rate increases and decreases exists only when the system is fully funded and the total actuarial required contribution rate for employer and employee rate falls below 18%.

Prior to July 1, 2021, the employers of members contribute at the fixed rate of covered compensation as follows;

- Effective January 1, 2020, 12.00%.
- Effective January 1, 2019, 10.50%.
- Effective January 1, 2016, 9.00%.
- Effective January 1, 2015, 8.50%.
- Effective January 1, 2014, 8.00%.
- Effective January 1, 1999, 7.50%.
- Effective July 1, 1996, 5.99%.
- Effective July 1, 1995, 3.99%.
- Effective July 1, 1993, 1.99%.
- Prior to July 1, 1993, employer contributions were actuarially determined.

Changes from the Prior Valuation

None.

ACTUARIAL COST METHOD

The actuarial cost method is a procedure for allocating the actuarial present value of pension benefits and expenses to time periods. The method used for the valuation is known as the Entry Age Normal actuarial cost method, and have the following characteristics:

(i) The annual normal costs for each individual active member are sufficient to accumulate the value of the member's pension at time of retirement.

(ii) Each annual normal cost is a constant percentage of the member's year-by-year projected covered compensation.

The Entry Age Normal actuarial cost method allocates the actuarial present value of each member's projected benefits on a level basis over the member's assumed pensionable compensation rates between the entry age of the member and the assumed exit ages.

The portion of the actuarial present value allocated to the valuation year is called the normal cost. The portion of the actuarial present value not provided for by the actuarial present value of future normal costs is called actuarial accrued liability. Deducting actuarial assets from the actuarial accrued liability determines the unfunded actuarial accrued liability or (surplus). Effective with the January 1, 2017 valuation, the existing UAAL on that date is amortized over a closed 30-year period and subsequent pieces of UAAL, arising from actuarial gains and losses each year, will be amortized over a closed 20-year period. The amortization payments on each of the UAAL bases will be determined on a level percentage of payroll basis.

For contribution rates beginning July 1, 2021 and later, there is a 18-month lag between the valuation date in which the employer contribution rates are determined and the effective date of those contribution rates. Therefore, the unfunded actuarial accrued liability is projected from the valuation date to July 1 of the year in which the contribution rate will apply based on the scheduled statutory contribution rates and expected payroll in the intervening years to better approximate the UAAL at that point in time.

CALCULATION OF THE ACTUARIAL VALUE OF ASSETS

The actuarial value of assets is based on a five-year smoothing method and is determined by spreading the effect of each year's investment return in excess of or below the expected return. The Market Value of assets on the valuation date is reduced by the sum of the following:

I. 80% of the return to be spread during the first year preceding the valuation date,
II. 60% of the return to be spread during the second year preceding the valuation date,
III. 40% of the return to be spread during the third year preceding the valuation date, and
IV. 20% of the return to be spread during the fourth year preceding the valuation date.

ACTUARIAL ASSUMPTIONS

System contribution requirements and actuarial present values are calculated by applying assumptions to the benefit provisions and membership information of the System, using the actuarial cost method.

The principal areas of risk which require assumptions about future activities of the System are:

(i) Long-term rates of investment return to be generated by the assets of the System

(ii) Patterns of salary increases to members

(iii) Rates of mortality among active members, retirees and beneficiaries

(iv) Rates of termination of active members

(v) The age patterns of actual retirements

Investment Return Assumption: (net of investment expenses): 7.25% per year, compounded annually (2.25% long-term price inflation and a 5.00% real rate of return).

Price Inflation: 2.25%

General Wage Growth (Wage Inflation): 2.85%

Payroll Growth Assumption: 2.85% per year.

Interest Crediting Rate on Member Accounts: 2.50% per year.

Salary Increase Rates: Rates vary by years of service.

	Rates by Service			
Years	Inflation	Productivity	Merit	Total
<1	2.25%	0.60%	6.65%	9.50%
1	2.25	0.60	4.65	7.50
2	2.25	0.60	3.65	6.50
3	2.25	0.60	2.65	5.50
4	2.25	0.60	2.40	5.25
5	2.25	0.60	2.15	5.00
6	2.25	0.60	1.90	4.75
7	2.25	0.60	1.80	4.65
8 – 19	2.25	0.60	1.65	4.50
20 – 25	2.25	0.60	1.15	4.00
26+	2.25	0.60	1.00	3.85

Mortality Table: This assumption is used to measure the probabilities of members dying and the probabilities of each pension payment being made after retirement.

Healthy Retirees: Pub-2010 General Members (Below Median) Retiree Mortality Table with a one-year age setback for males and a one-year age set-forward for females, projected 7 years from valuation date using most recent MP-Scale.

Beneficiaries: Pub-2010 General Members (Below Median) Contingent Survivor Mortality Table with a one-year age setback for males and a one-year age set-forward for females, projected 7 years from valuation date using most recent MP-Scale.

Disabled Retirees: Pub-2010 Non-Safety Disabled Retiree Mortality Table with a one-year age setback for males and a one-year age set-forward for females.

Active Members: Pub-2010 General Members (Below Median) Employee Mortality Table with a one-year age setback for males and a one-year age set-forward for females, projected 15 years from valuation date using most recent MP-Scale.

Rates of Retirement: These rates are used to measure the probability of eligible members retiring under the regular retirement provisions. The age-related rates used are shown in the tables below.

The first year of normal retirement eligibility is the earlier of age 60 and 5 years of creditable service or 75 credits for Plan B members, and the earlier of age 62 and 5 years of creditable service or 80 credits for Plan C members.

Retirement Rates When Eligible for Unreduced Benefits		
Age	First Eligible Rate	Ultimate Rate
45 – 52	12%	12%
53 – 54	15	12
55	20	12
56 – 61	15	12
62	15	20
63	30	20
64	20	20
65	20	28
66 – 74	30	28
75	100	100

Retirement Rates When Eligible for Reduced Benefits	
Age	Rate
55 – 59	5%

Terminated vested members are assumed to begin receiving their benefits upon reaching age 60 if they participated in Plan B, and age 62 if they participated in Plan C.

Rates of Separation from Active Membership: This assumption measures the probability of a member terminating employment. The rates do not apply to members who are eligible to retire. Rates vary by service. Sample rates are as follows:

Years	Rate
<1	26.0%
1	25.0
5	14.0
10	8.5
15	4.5
20	2.5
25+	1.0

Forfeiture of Vested Benefits: Members terminating in vested status are given the option of taking a refund of their accumulated member contributions (and thereby forfeiting the employer-provided benefit) or deferring their vested benefit. Active members who terminate in the future with a vested benefit are assumed to take a deferred vested annuity, unless a refund of contributions and interest is greater than the actuarial present value of their vested deferred benefit.

Rates of Disability: None.

Active Member Group Size: Assumed to remain constant.

Future Benefit Increases or Additional Benefits: When funding is adequate, the Board may authorize cost of living adjustments (COLAs), as noted in the summary of plan provisions. In the past, the Board has also sometimes granted an additional monthly payment to retirees (13th check.) This valuation assumes that no future COLAs and no future 13th checks will be awarded.

MISCELLANEOUS AND TECHNICAL ASSUMPTIONS

Marriage Assumption: All members are assumed to be married for purposes of death benefits. In each case, the male was assumed to be 4 years older than the female.

Decrement Timing: Decrements of all types are assumed to occur mid-year.

Administrative Expense: The actuarial contribution rate includes an explicit component for administrative expenses, based on the actual administrative expenses for the prior year.

Missing Gender: Records that are missing a gender are assumed to be female if the record belongs to a member, and male if the record belongs to a beneficiary.

CHANGES FROM THE PRIOR VALUATION

There have been no changes to the System's actuarial methods or assumptions since the prior valuation.

Actuarial Accrued Liability	The difference between the actuarial present value of system benefits and the actuarial present value of future normal costs. Also referred to as "accrued liability" or "actuarial accrued liability".
Actuarial Assumptions	Estimates of future 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.
Accrued Service	Service credited under the system which was rendered before the date of the actuarial valuation.
Actuarial Equivalent	A single amount or series of amounts of equal actuarial value to another singe amount or series of amounts, computed on the basis of appropriate assumptions.
Actuarial Cost Method	A mathematical budgeting procedure for allocating the dollar amount of the actuarial present value of retirement system benefit between future normal cost and actuarial accrued liability; sometimes referred to as the "actuarial funding method".
Experience Gain (Loss)	The difference between actual experience and actuarial assumptions anticipated experience during the period between two actuarial valuation dates.
Actuarial Present Value	The amount of funds currently required to provide a payment or series of payments in the future. It is determined by discounting future payments at predetermined rates of interest and by probabilities of payment.
Amortization	Paying off an interest-discounted amount with periodic payments of interest and principal, as opposed to paying off with a lump sum payment.
Normal Cost	The actuarial present value of retirement system benefits allocated to the current year by the actuarial cost method.
Unfunded Actuarial Accrued Liability	The difference between actuarial accrued liability and the valuation assets. Most retirement systems have unfunded actuarial accrued liability. They arise each time new benefits are added and each time an actuarial loss is realized.