



**Cavanaugh Macdonald**  
CONSULTING, LLC

*The experience and dedication you deserve*

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

Actuarial Valuation Report  
as of January 1, 2022





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# Cavanaugh Macdonald

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May 19, 2022

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, 2022. 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 ending June 30, 2024. 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.

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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.

We note that as we prepare this report, the world is still recovering from the Covid-19 pandemic. Although we have some information available related to the impact of Covid, but do not believe there is sufficient data yet to warrant the modification of any of our assumptions which are set for the long-term. We will continue to monitor the situation and advise the Board in the future of any adjustments we believe would be appropriate.

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 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,

A handwritten signature in blue ink that reads 'Patrice Beckham'.

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

A handwritten signature in blue ink that reads 'Bryan K. Hoge'.

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



## SECTION I: EXECUTIVE SUMMARY

This report presents the results of the January 1, 2022 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, 2022 actuarial valuation are used to set the employer contribution rate for July 1, 2023 through June 30, 2024. A summary of the calculation of the employer contribution rate, effective July 1, 2023, is shown below.

<b>Employer Contribution Rate Beginning July 1, 2023</b>	
1. Actuarial Contribution Rate	18.40%
2. Member Contribution Rate	<u>(9.00%)</u>
3. Employer Actuarial Contribution Rate	9.40%
4. Funded Ratio on Valuation Date	69.36%
5. Minimum Employer Contribution Rate [If (4) < 100%, then 12.00%]	12.00%
6. Employer Contribution Rate Effective July 1, 2023 to June 30, 2024 [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, 2022, which reflects net favorable experience for the past plan year as demonstrated by an unfunded actuarial accrued liability that was lower than expected. The net experience on liabilities resulted in a gain of \$11.7 million. There was also favorable experience on the actuarial value of assets resulting in an actuarial gain of \$22.8 million so the combined impact of asset and liability experience was an actuarial gain of \$34.5 million. The System’s unfunded actuarial accrued liability decreased from \$334.4 million in the January 1, 2021 valuation to \$305.8 million in the January 1, 2022 valuation. A detailed analysis of the change in the unfunded actuarial accrued liability is shown on page 5.



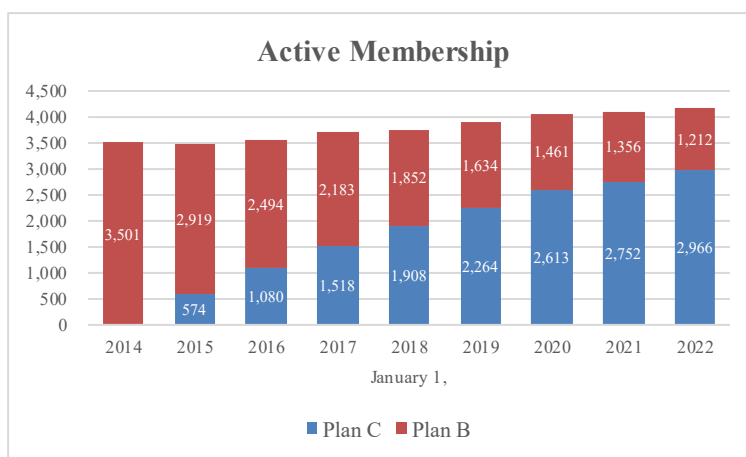
## SECTION I: EXECUTIVE SUMMARY

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

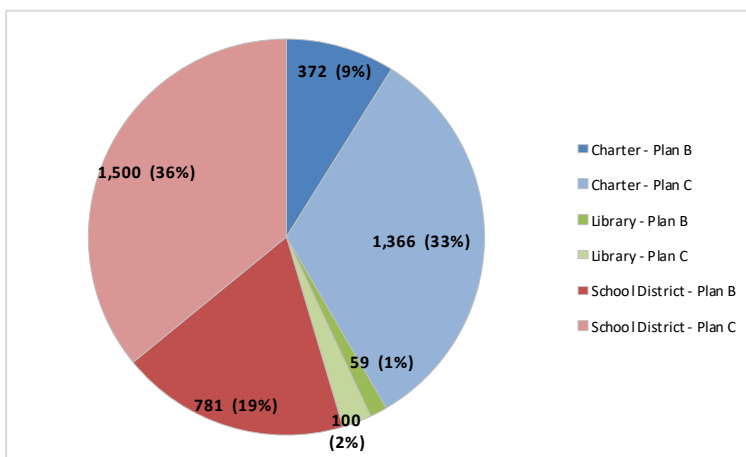
### MEMBERSHIP

The size of the active membership increased about 1.7%, from 4,108 in the 2021 valuation to 4,178 in the current valuation. Growth in the active membership is a positive factor for the System’s funding as it results in 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 2,752 last year (about 67%) to 2,966 in the 2022 valuation (about 71%). The following graphs 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:





## SECTION I: EXECUTIVE SUMMARY

Group	Count	Average Reported Salary	Average Age	Average Service
KC School District	2,281	\$49,242	45.8	8.6
Charter Schools	1,738	\$45,768	39.2	5.3
Library	159	\$53,495	45.4	8.5
Total	4,178	\$47,959	43.0	7.2

Total covered payroll (on which contributions are expected to be paid) increased by 2.83% from the prior valuation (the assumption was 2.85% for 2021). When the actual increase in covered payroll is less than expected, it increases the UAAL contribution rate for the current valuation since the UAAL payment is divided by smaller payroll than expected. Because actual experience was very close to the expected experience, there was no impact on the actuarial contribution rate.

The number of total terminated members (vested and non-vested) decreased slightly from the 2021 valuation, while the number of vested members increased 9%. This was due to the large decrease in the number of non-vested members. The number of members in-pay status remained steady, decreasing slightly from 4,099 in the 2021 valuation to 4,094 in the 2022 valuation.

### ASSETS

As of January 1, 2022, the System had total assets of \$753.5 million when measured on a market value basis, an increase of over \$59 million from the January 1, 2021 value of \$694.2 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 14.8%, but due to the use of an asset smoothing method the return on the actuarial value of assets was 10.8%. Because the investment return on the actuarial value of assets was higher than the actuarial assumed rate of return (7.25%), an actuarial gain on assets occurred. Due to the favorable investment experience during 2021, along with the scheduled recognition of the deferred investment experience in the actuarial value of assets, the net deferred asset gain of \$31.0 million in the January 1, 2021 valuation has increased to a net deferred asset gain of \$61.2 million in the January 1, 2022 valuation.

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

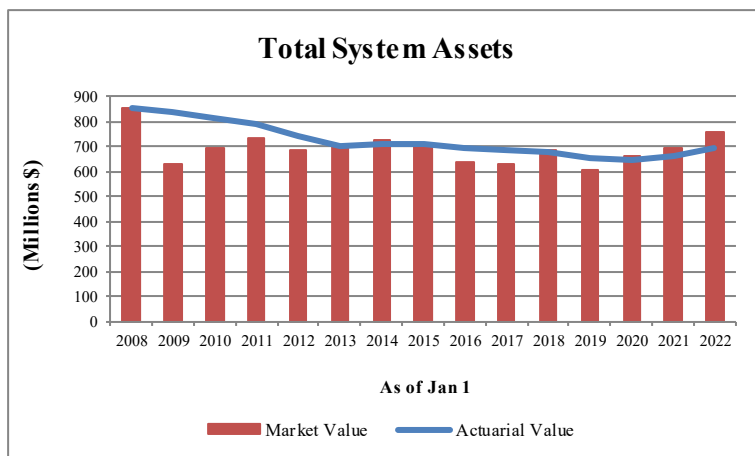
	Market Value (\$M)	Actuarial Value (\$M)
Assets, January 1, 2021	\$694.2	\$663.2
- Employers and Member Contributions	46.9	46.9
- Benefit Payments and Refunds	(85.6)	(85.6)
- Administrative Expenses	(1.6)	(1.6)
- Net Investment Income	99.6	69.4
Assets, January 1, 2022	\$753.5	\$692.3
Estimated Rate of Return	14.8%	10.8%



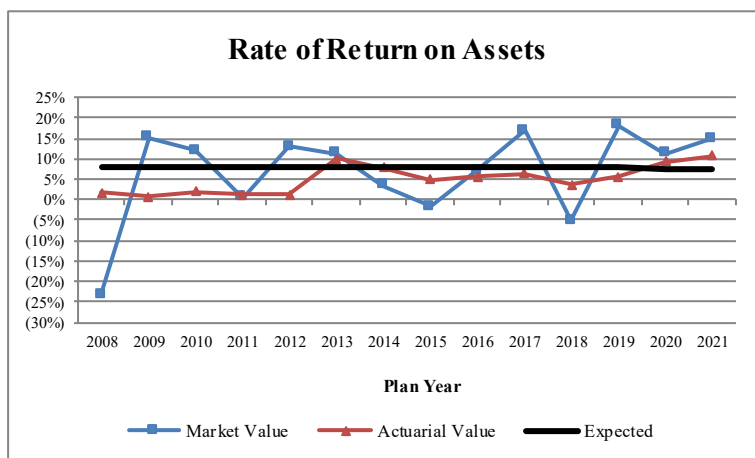


## SECTION I: EXECUTIVE SUMMARY

The market value of assets is about 8.8% higher than the actuarial value of assets indicating a net unrecognized asset gain exists. Unless offset by future investment losses or other unfavorable actuarial experience, the recognition of the \$61.2 million net deferred gain will flow through the asset smoothing method over the next four years and positively impact the funded ratio and actuarial contribution rate. If the net deferred gain was recognized immediately in the actuarial value of assets, the funded percentage would increase from 69% to 75% and the actuarial contribution rate for the System would decrease from 18.40% to 16.32% 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.





## SECTION I: EXECUTIVE SUMMARY

The Actuarial Accrued Liability and Unfunded Actuarial Accrued Liability for the System as of January 1, 2022 are:

Actuarial Accrued Liability	\$998,058,955
Actuarial Value of Assets	<u>692,264,054</u>
Unfunded Actuarial Accrued Liability	\$305,794,901

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, 2021 and January 1, 2022, the change in the unfunded actuarial accrued liability for the System was as follows (in millions):

	(\$ Millions)	
<b>Unfunded Actuarial Accrued Liability, January 1, 2021</b>	\$	334.4
- Expected increase from amortization method		2.3
- Actual versus actuarial contributions		(0.5)
- Investment experience		(22.8)
- Liability experience		(11.7)
- Updated mortality assumption		4.1
- Other experience		0.0
<b>Unfunded Actuarial Accrued Liability, January 1, 2022</b>	\$	305.8

The experience gain for the 2021 plan year of \$34.5 million reflects the combined impact of an actuarial gain of \$11.7 million on System liabilities and an actuarial gain of \$22.8 million on System assets (actuarial value). The largest sources of the experience gain on the liabilities were from salary increases that were lower than expected based on the actuarial assumptions and more deaths than expected.

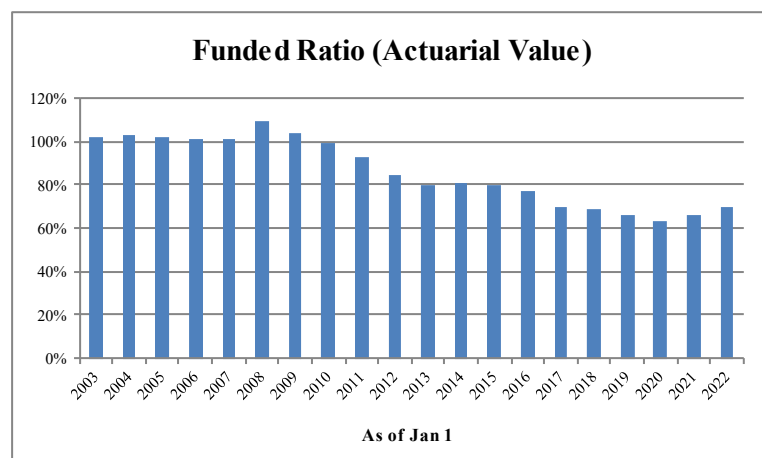
Analysis of the unfunded actuarial accrued liability strictly as a dollar amount can be misleading. Another way to evaluate the unfunded actuarial accrued liability and the progress made in its funding is to track the funded status, the ratio of the actuarial value of assets to the actuarial accrued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



## SECTION I: EXECUTIVE SUMMARY

	1/1/2018	1/1/2019	1/1/2020*	1/1/2021*	1/1/2022
Actuarial Accrued Liability (\$M)	\$980.4	\$988.2	\$1,020.1	\$997.6	\$998.1
Actuarial Value of Assets (\$M)	\$678.3	\$654.3	\$645.4	\$663.2	\$692.3
Funded Ratio (Actuarial Value)	69.2%	66.2%	63.3%	66.5%	69.4%
Market Value of Assets (\$M)	\$685.8	\$602.8	\$662.1	\$694.2	\$753.5
Funded Ratio (Market Value)	70.0%	61.0%	64.9%	69.6%	75.5%

\*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 \$61.2 million difference between the market value and the actuarial value of assets. To the extent there is not unfavorable investment experience to offset the net deferred investment gain of \$61.2 million, it will be recognized in future years and the System's funded status will improve. The System's funded status will continue to be heavily dependent on future investment experience.

### **CONTRIBUTION RATES**

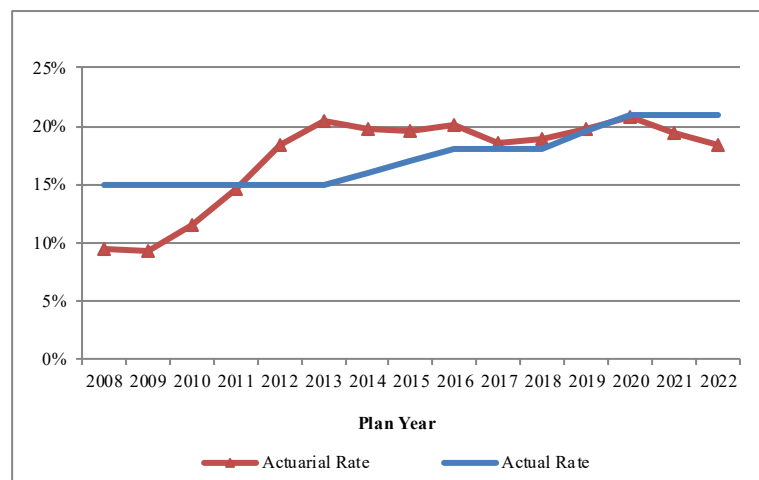
Contributions to the System consist of:

- 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.



## SECTION I: EXECUTIVE SUMMARY

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 has been reduced due to 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, 2022, the actuarial accrued liability exceeds the actuarial value of assets, so an unfunded actuarial accrued liability (UAAL) exists. The “legacy UAAL”, the January 1, 2017 UAAL, is amortized over a closed 30-year period and 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. The resulting UAAL contribution rate is 8.10% of pay. The System’s actuarial contribution rate is the sum of the normal cost, the administrative expense cost, and the UAAL amortization contribution or 18.40% of pay (9.60% normal cost plus 0.70% administrative expense plus 8.10% UAAL contribution).

The various factors contributing to the change in the actuarial contribution rate from the January 1, 2021 valuation to the January 1, 2022 valuation are shown in the following table:

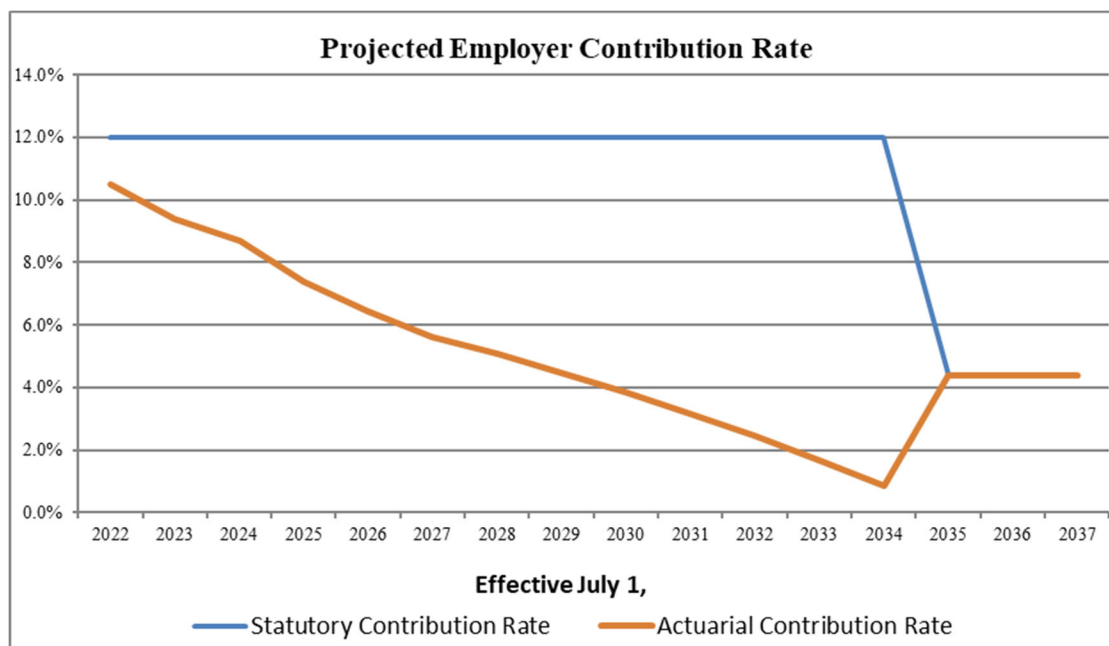
Total Actuarial Contribution Rate	
As of January 1, 2021	19.49%
- Change in normal cost rate	(0.05%)
- Change in administrative expense rate	(0.01%)
- Actual versus actuarial contributions	(0.02%)
- Payroll growth greater than expected	0.00%
- Investment experience	(0.77%)
- Liability experience	(0.40%)
- Updated mortality assumption	0.16%
- Other experience	0.00%
As of January 1, 2022	18.40%



## SECTION I: EXECUTIVE SUMMARY

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, 9.60% is needed to fund the normal cost for current active members and 0.70% is needed to fund the administrative expenses, for a total ongoing cost of 10.30% of payroll. The remainder, 10.70% 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 that assumed, the actual valuation results of the System will vary from these projections, perhaps significantly.



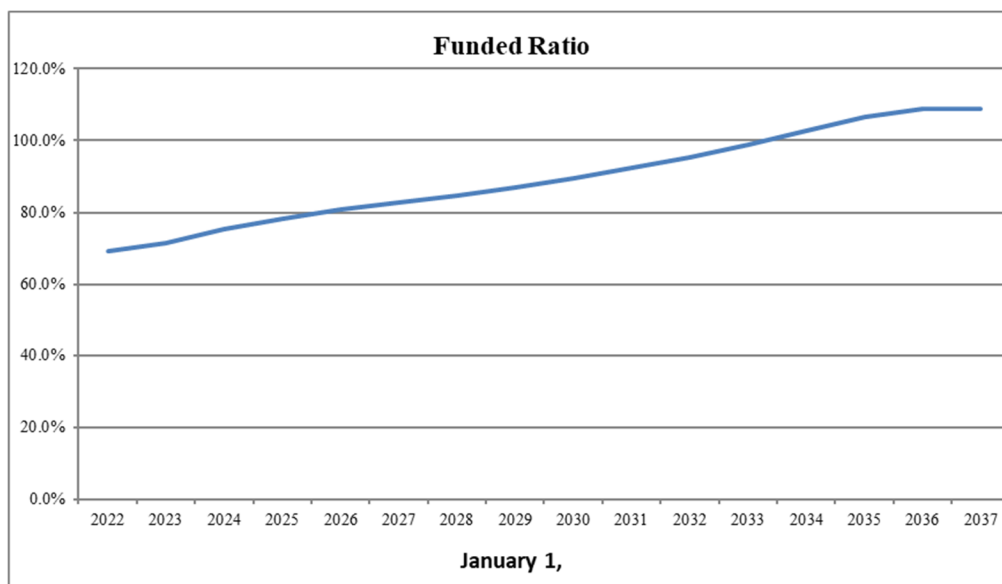
As the current deferred investment experience is recognized in the future, the actuarial employer contribution rate decreases, but under statutory provisions the employer contribution rate remains at a minimum of 12.00% until the System reaches full funding. When that occurs, the statutory contribution rate drops significantly. By contributing more than the actuarial contribution rate, the System is funded more rapidly, assuming all assumptions are met. Actual investment experience will impact the date the System reaches full funding. However, with the amount of deferred gains and the use of an asset smoothing method the employer contribution rate is unlikely to change in the next few years absent



## SECTION I: EXECUTIVE SUMMARY

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extremely negative conditions. For example, a negative 15% return in 2022 is still not expected to increase the employer contribution rate above the current 12%.



The funded ratio is expected to steadily improve and reach 100% in 2034 (12 years), well ahead of the UAAL amortization schedule. This is due to the combined impact of (i) recognizing deferred asset gains over the next four years and (ii) making contributions above the actuarial required contribution amount (i.e., contribution surpluses). 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% and stabilize contribution rates.

### COMMENTS

The System's actuarial required contribution rate decreased from 19.49% in the January 1, 2021 valuation to 18.40% in the January 1, 2022 valuation. The major driver of the 2022 valuation results was the actual return of 14.8% on the market value of assets in 2021. Due to the favorable investment experience during 2021 the net deferred investment gain of \$31.0 million in the January 1, 2021 valuation increased to a net deferred investment gain of \$61.2 million in the January 1, 2022 valuation. To the extent there is not unfavorable investment experience in the future to offset the net deferred investment gain of \$61.2 million, it will be recognized in the next four years and the System's funded status will improve.

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 favorable investment experience during 2021, the System experienced an actuarial gain on assets of \$22.8 million. In addition to the favorable experience on the actuarial value of assets, there was a net gain on liabilities of \$11.7 million. The combined impact of the asset and the liability experience was an actuarial gain of \$34.5 million.

The net deferred investment gain (market value greater than actuarial value of assets) is \$61.2 million, about 8.8% of market value. Absent investment losses in future years, this net deferred investment gain will eventually be reflected in the actuarial value of assets. While the use of an asset smoothing method is



## SECTION I: EXECUTIVE SUMMARY

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, 2022 actuarial valuation using both the actuarial and market value of assets.

	Using Actuarial Value of Assets	Using Market Value of Assets
Actuarial Accrued Liability	\$998,058,955	\$998,058,955
Asset Value	<u>692,264,054</u>	<u>753,497,392</u>
Unfunded Actuarial Accrued Liability	\$305,794,901	\$244,561,563
Funded Ratio	69.4%	75.5%
Normal Cost Rate	9.60%	9.60%
Administrative Expenses	0.70%	0.70%
UAAL Contribution Rate	<u>8.10%</u>	<u>6.02%</u>
Total Contribution Rate	18.40%	16.32%
Employee Contribution Rate	(9.00%)	(9.00%)
Employer Contribution Rate	<u>(12.00%)</u>	<u>(12.00%)</u>
Contribution Shortfall/(Margin)	(2.60%)	(4.68%)

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.



## SECTION I: EXECUTIVE SUMMARY

### Summary of Principal Valuation Results

	1/1/2022 Valuation	1/1/2021 Valuation	% Change
<b>1. PARTICIPANT DATA</b>			
Number of:			
Active Members			
- Plan B	1,212	1,356	(10.6%)
- Plan C	2,966	2,752	7.8%
Total	4,178	4,108	1.7%
Retirees, Disableds, and Beneficiaries	4,094	4,099	(0.1%)
Terminated Members			
- Vested Members	568	521	9.0%
- Non-Vested Members	2,532	2,590	(2.2%)
Total	3,100	3,111	(0.4%)
Total Members	11,372	11,318	0.5%
Projected Annual Salaries of Active Members	\$ 234,540,261	\$ 228,084,635	2.8%
Annual Retirement Payments for Retirees, Disableds, and Beneficiaries	\$ 80,559,540	\$ 80,238,408	0.4%
<b>2. ASSETS AND LIABILITIES</b>			
a. Market Value of Assets	\$ 753,497,392	\$ 694,237,740	8.5%
b. Actuarial Value of Assets	692,264,054	663,210,594	4.4%
c. Total Actuarial Accrued Liability	998,058,955	997,587,405	0.0%
d. Unfunded Actuarial Accrued Liability [c - b]	\$ 305,794,901	\$ 334,376,811	(8.5%)
e. Funded Ratio (Actuarial Value of Assets) [b / c]	69.36%	66.48%	4.3%
f. Funded Ratio (Market Value of Assets) [a / c]	75.50%	69.59%	8.5%
g. Projected Benefit Obligation	\$ 971,648,477	\$ 972,625,564	(0.1%)
<b>3. CONTRIBUTION RATES AS A PERCENT OF PAYROLL</b>			
Normal Cost	9.60%	9.63%	(0.3%)
Administrative Expense	0.70%	0.71%	(1.4%)
Amortization of Unfunded Actuarial Accrued Liability	8.10%	9.15%	(11.5%)
Actuarial Required Contribution Rate	18.40%	19.49%	(5.6%)
Member Contribution Rate	(9.00%)	(9.00%)	0.0%
Employer Contribution Rate	(12.00%)	(12.00%)	0.0%
Contribution Rate Shortfall/(Margin)	(2.60%)	(1.51%)	72.2%

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





## SECTION II: SCOPE OF THE REPORT

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This report presents the actuarial valuation of the Public School Retirement System of the School District of Kansas City, Missouri as of January 1, 2022. 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, 2022.

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 3 describes the assets and investment experience of the System. Sections 4 and 5 describe how the obligations of the System are to be met under the actuarial cost method in use. Section 6 includes additional information regarding the System's funding history. Section 7 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.



### **SECTION III: ASSETS**

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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, 2022, the market value of assets for the System was \$753.5 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, 2021 and January 1, 2022.

#### **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, 2022. 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, 2022**

<b>INVESTMENTS, AT MARKET VALUE</b>	
Cash and short term investments	\$ 10,861,862
Commingled domestic fixed income	73,227,604
High yield fixed income	18,383,331
Global fixed income	35,795,370
Domestic equity	176,019,874
International equity	161,523,565
Pooled real estate funds	68,591,401
Alternative equity fund	136,946,907
Private equity	68,226,250
Commodities	0
Total Investments, at Market Value	\$ 749,576,164
<b>RECEIVABLES</b>	
Plan member contributions	\$ 832,191
Employer contributions	1,815,528
Securities sold	0
Accrued interest and dividends	451,463
Total Receivables	\$ 3,099,182
<b>OTHER ASSETS</b>	
Cash	\$ 1,581,584
Fixed assets	1,295
Other assets	82,972
Total Other Assets	\$ 1,665,851
<b>TOTAL ASSETS</b>	\$ 754,341,197
<b>LIABILITIES</b>	
Due to broker for securities purchased	\$ 91,318
Accounts payable	613,303
Accrued payroll expenses	139,184
Total Liabilities	\$ 843,805
<b>NET ASSETS AVAILABLE FOR BENEFITS</b>	\$ 753,497,392

Note: Based on unaudited asset information.



TABLE 2

Statement of Changes in Net Assets as of January 1, 2022

ADDITIONS TO NET ASSETS

Contributions	
Plan members	\$ 20,141,089
Employers	26,717,489
Total Contributions	\$ 46,858,578
Investment Income	
Net appreciation (depreciation) in fair value of investments	\$ 104,109,713
Interest/Dividends	5,500,666
Other income	0
Investment income before expenses	\$ 109,610,379
Less: investment expenses	(9,971,142)
Net investment income	\$ 99,639,237
 TOTAL ADDITIONS TO NET ASSETS	 \$ 146,497,815

DEDUCTIONS FROM NET ASSETS

Benefits paid directly to participants	\$ 80,337,163
Refunds of contributions	5,250,026
Depreciation expense	5,562
Administrative expenses	1,645,412
TOTAL DEDUCTION FROM ASSETS	\$ 87,238,163

NET INCREASE (DECREASE) \$ 59,259,652

NET ASSETS AVAILABLE FOR BENEFITS

Beginning of year	\$ 694,237,740
End of year	\$ 753,497,392

Note: Based on unaudited asset information.



TABLE 3

**Development of Actuarial Value of Assets  
as of January 1, 2022**

1. Deferral of Investment Return for 2021	
a. Market Value, January 1, 2021	\$ 694,237,740
b. Contributions for 2021	46,858,578
c. Benefit Payments and Administrative Expenses for 2021	87,232,601
d. Expected Rate of Return During 2021	7.25%
e. Expected Return - Weighted for Timing*	\$ 48,894,285
(a. x d.) + [(b. - c.) x (((1 + d.) <sup>5</sup> ) - 1)]	
f. Actual Investment Return, Net of Investment Expenses	\$ 99,639,237
g. Investment Gain/(Loss) for the Year	\$ 50,744,952
(f. - e.)	
h. Deferred Investment Return	\$ 40,595,962
(g. x 80%)	
2. Actuarial Value, January 1, 2022	
a. Market Value, January 1, 2022	\$ 753,497,392
b. Total Deferred Investment Gain/(Loss)	61,233,338
c. Actuarial Value, January 1, 2022	\$ 692,264,054
(a. - b.)	
d. Ratio of Actuarial Value of Assets to Market Value of Assets	91.9%
e. Approximate Actuarial Value Rate of Return for 2021, Net of Investment Expenses	10.8%

\* 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
12/31/2017	\$ 55,114,812	\$ 44,091,848	\$ 11,022,964	\$ 0
12/31/2018	(86,082,027)	(51,649,215)	(17,216,405)	(17,216,407)
12/31/2019	59,479,255	23,791,702	11,895,851	23,791,702
12/31/2020	23,436,801	4,687,360	4,687,360	14,062,081
12/31/2021	50,744,952	0	10,148,990	40,595,962
<b>Total</b>	<b>\$ 102,693,793</b>	<b>\$ 20,921,695</b>	<b>\$ 20,538,760</b>	<b>\$ 61,233,338</b>



**SECTION III: ASSETS**

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**TABLE 4**

**Schedule of Deferred Actuarial Value of Assets Experience**

<b>Plan Year Ended</b>	<b>Gain/(Loss) Deferred to Future Years</b>	<b>Gain/(Loss) to be Recognized in Plan Year Ending</b>			
		<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>
12/31/2018	(\$17,216,407)	(17,216,407)			
12/31/2019	23,791,702	11,895,851	11,895,851		
12/31/2020	14,062,081	4,687,360	4,687,360	4,687,361	
12/31/2021	40,595,962	10,148,990	10,148,990	10,148,990	10,148,992
<b>Total</b>	<b>\$61,233,338</b>	<b>\$9,515,794</b>	<b>\$26,732,201</b>	<b>\$14,836,351</b>	<b>\$10,148,992</b>



## **SECTION IV: SYSTEM LIABILITIES**

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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, 2022. 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, 2022.

### **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, 2021.

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, 2022**

1. Active Members	
a. Retirement Benefits	\$ 345,774,107
b. Death Benefits	7,771,993
c. Withdrawal Benefits	56,603,814
d. Subtotal	\$ <u>410,149,914</u>
2. Benefit Recipients	
a. Retiree Benefits	\$ 664,439,969
b. Survivor Benefits	23,205,854
c. Disability Benefits	6,303,569
d. Subtotal	\$ <u>693,949,392</u>
3. Inactive Members	
a. Vested Retirement Benefits	\$ 24,340,878
b. Non-vested Account Balance	11,214,192
c. Subtotal	\$ <u>35,555,070</u>
4. Total (1d. + 2d. + 3c.)	\$ 1,139,654,376



**TABLE 6**

**Actuarial Accrued Liability  
as of January 1, 2022**

1. Present Value of Future Benefits (PVFB)	\$ 1,139,654,376
2. Present Value of Future Normal Costs (PVFNC)	
a. Retirement benefits	\$ 79,526,067
b. Death benefits	3,768,382
c. Withdrawal benefits	58,300,972
d. Total	\$ <u>141,595,421</u>
3. Actuarial Accrued Liability (AAL) (1. - 2d.)	\$ 998,058,955
4. Actuarial Value of Assets (AVA)	\$ 692,264,054
5. Unfunded Actuarial Accrued Liability (UAAL) (3. - 4.)	\$ 305,794,901
6. Funded Ratio (AVA / AAL) (4. / 3.)	69.4%



TABLE 7

Actuarial (Gain)/Loss for 2021

**Liabilities**

1. Actuarial accrued liability as of January 1, 2021	\$	997,587,405
2. Normal cost for 2021, including new hires		22,799,532
3. Benefit payments during 2021		(85,587,189)
4. Interest at 7.25% on (1), (2) and (3) to December 31, 2021		70,929,800
5. Updated mortality assumption		4,070,252
6. Expected actuarial accrued liability as of December 31, 2021	\$	<u>1,009,799,800</u>
7. Actuarial accrued liability as of December 31, 2021		998,058,955
8. Actuarial (gain) / loss on actuarial accrued liability (7. - 6.)	\$	(11,740,845)

**Assets**

9. Actuarial value of assets as of January 1, 2021	\$	663,210,594
10. Contributions during 2021		46,858,578
11. Benefit payments and administrative expenses during 2021		(87,232,601)
12. Interest at 7.25% on (10), (11) and (12) to December 31, 2021		46,644,817
13. Expected actuarial value of assets as of December 31, 2021	\$	<u>669,481,388</u>
14. Actuarial value of assets as of December 31, 2021		692,264,054
15. Actuarial (gain) / loss on actuarial assets (13. - 14.)	\$	(22,782,666)
16. Total actuarial (gain) / loss (8. + 15.)	\$	(34,523,511)



TABLE 8

(Gain)/Loss Analysis by Source

The System experienced a net actuarial gain on liabilities of about \$11.7 million during the plan year ended December 31, 2021. The major components of the actuarial experience are shown below:

Retirement	\$	604,000
Termination		772,000
Disability		0
Mortality		(5,680,000)
Salary		(6,603,000)
Miscellaneous		(834,000)
Total Liability (Gain)/Loss	\$	(11,741,000)
Asset (Gain)/Loss	\$	(22,783,000)
Net Actuarial (Gain)/Loss	\$	(34,524,000)

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 \$11.7 million, about 1.2% of actuarial accrued liability. The largest source of favorable experience was a gain of \$6.6 million due to salary increases that were lower than expected based on the actuarial assumptions.

Another significant component of the experience for the year ending December 31, 2021 was the investment experience. Due to the current year's scheduled recognition of prior investment experience and the favorable investment experience during 2021, there was a gain on the actuarial value of assets of \$22.8 million. As of January 1, 2022, there is a net deferred investment gain of \$61.2 million. Absent unfavorable investment experience, the net deferred gain will flow through the valuation over the next few years and decrease both the UAAL and the actuarial contribution rate.



**TABLE 9**

**Actuarial Balance Sheet**

<u>Assets</u>	
Current assets (actuarial value)	\$ 692,264,054
Present value of future normal costs	141,595,421
Present value of future contributions to fund unfunded actuarial accrued liability	<u>305,794,901</u>
<b>Total Assets</b>	<b>\$ <u><u>1,139,654,376</u></u></b>
 <u>Liabilities</u>	
Present value of future retirement benefits for:	
Active employees	\$ 410,149,914
Members currently receiving a benefit	693,949,392
Terminated vested members	24,340,878
Inactive employees due refunds	<u>11,214,192</u>
<b>Total Liabilities</b>	<b>\$ <u><u>1,139,654,376</u></u></b>



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. 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	<u>January 1, 2022</u>	<u>January 1, 2021</u>
1. Retired members and beneficiaries currently receiving benefits and terminated members not yet receiving benefits	\$ 729,504,462	\$ 730,344,984
2. Current active participants		
a. Accumulated member contributions, including interest	123,670,335	121,889,145
b. Employer-financed vested benefits	<u>118,473,680</u>	<u>120,391,435</u>
Total Projected Benefit Obligation (PBO)	\$ 971,648,477	\$ 972,625,564
Projected Benefit Obligation funded status		
1. Actuarial Value of Assets (AVA)	\$ 692,264,054	\$ 663,210,594
a. Unfunded Projected Benefit Obligation	279,384,423	309,414,970
b. Funding Ratio (AVA / PBO)	71%	68%
2. Market Value of Assets (MVA)	\$ 753,497,392	\$ 694,237,740
a. Unfunded Projected Benefit Obligation	218,151,085	278,387,824
b. Funding Ratio (MVA / PBO)	78%	71%



## **SECTION V: EMPLOYER CONTRIBUTIONS**

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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, 2022, 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, 2022 actuarial valuation, will be used to determine the employer contribution rate for the year beginning July 1, 2023. 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 a closed 20-year period.

### **CONTRIBUTION RATE SUMMARY**

Table 11 develops the normal cost rate for the System. Table 12 projects the unfunded actuarial accrued liability to July 1, 2023. In Table 13, the amortization payment related to the unfunded actuarial accrued liability as of July 1, 2023 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	\$ 11,607,061
b. Disability Benefits	0
c. Death Benefits	564,650
d. Termination Benefits	<u>7,786,025</u>
e. Total	\$ 19,957,736
2. Expected Payroll for Current Actives	\$ 207,926,579
3. Normal Cost Rate for 2022	9.60%



**SECTION V: EMPLOYER CONTRIBUTIONS**

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**TABLE 12**

**Projected Unfunded Actuarial Accrued Liability  
at July 1, 2023**

1. Unfunded Actuarial Accrued Liability at January 1, 2022	\$	305,794,901
2. Total Contribution Rate for Year Ending June 30, 2022		21.00%
3. Normal Cost Rate		9.60%
4. Administrative Expense Rate		<u>0.70%</u>
5. Contribution Rate Applied to UAAL for 2022		10.70%
[(2) - (3) - (4)]		
6. Expected Payroll for January to June, 2022	\$	117,270,131
7. Expected UAAL Contribution	\$	12,547,904
[(5) * (6)]		
8. Projected UAAL at July 1, 2022	\$	303,916,618
[(1) * 1.0725 <sup>-5</sup> - (7) * 1.0725 <sup>-25</sup> ]		
9. Total Contribution Rate for Year Ending June 30, 2023		21.00%
10. Normal Cost Rate		9.60%
11. Administrative Expense Rate		<u>0.70%</u>
12. Contribution Rate Applied to UAAL for Year Ending June 30, 2023		10.70%
[(9) - (10) - (11)]		
13. Expected Payroll for Year Ending June 30, 2023	\$	237,882,461
14. Expected UAAL Contribution	\$	25,453,423
[(12) * (13)]		
15. Projected UAAL at July 1, 2023	\$	299,590,607
[(8) * 1.0725 - (14) * 1.0725 <sup>-5</sup> ]		



SECTION V: EMPLOYER CONTRIBUTIONS

TABLE 13

Amortization of the Unfunded Actuarial Accrued Liability

Amortization Bases	Original Amount	Remaining Payments	Projected Balance as of July 1, 2023	Annual Contribution*
2017 UAAL Base	\$ 297,102,390	25	\$ 313,040,678	\$ 20,489,842
2018 Experience Base	1,054,285	16	1,022,767	88,968
2019 Experience Base	28,100,770	17	27,571,375	2,299,562
2020 Assumption Change	23,365,556	18	23,110,172	1,854,220
2020 Experience Base	14,051,512	18	13,897,930	1,115,086
2021 Assumption Change	(26,519,293)	19	(26,385,265)	(2,042,545)
2021 Experience Base	(18,210,267)	19	(18,118,233)	(1,402,575)
2022 Experience Base	(34,548,817)	20	(34,548,817)	(2,587,251)
<b>Total</b>			<b>\$ 299,590,607</b>	<b>\$ 19,815,307</b>

\* Contribution amount reflects mid-year timing.

1. Total UAAL Amortization Payments	\$ 19,815,307
2. Projected Payroll for Plan Year Ending June 30, 2024	\$ 244,662,111
3. UAAL Amortization Payment Rate	8.10%



**SECTION V: EMPLOYER CONTRIBUTIONS**

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**TABLE 14**

**Development of the Actuarial Contribution Rate**

The contribution rate developed in this exhibit is based on the Funding Policy, the January 1, 2022 actuarial valuation and applies to the year beginning July 1, 2023 and ending June 30, 2024.

1. Normal Cost Rate (See Table 10)	9.60%
2. Administrative Expense Load	0.70%
3. UAAL Contribution Rate (See Table 12)	<u>8.10%</u>
4. Actuarial Recommended Contribution Rate (1) + (2) + (3)	18.40%
5. Funded Ratio as of January 1, 2022	69.36%
6. Member Contribution Rate Effective July 1, 2022	9.00%
7. Employer Contribution Rate Effective July 1, 2022	12.00%
8. Member Contribution Rate Effective July 1, 2023*	9.00%
9. Employer Contribution Rate Effective July 1, 2023**	12.00%
10. Contribution Shortfall/(Margin) (4) - (8) - (9)	(2.60%)

\* 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%.



## **SECTION VI: HISTORICAL FUNDING AND OTHER INFORMATION**

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### **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.



**SECTION VI: HISTORICAL FUNDING AND OTHER INFORMATION**

**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]
1/1/1998	\$ 482,599,919	\$ 442,614,693	\$ (39,985,225)	102.3%	\$ 168,328,728	(23.8%)
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%

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



**SECTION VI: HISTORICAL FUNDING AND OTHER INFORMATION**

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**TABLE 16**

**Historical Contribution Rates**

<b>Actuarial Valuation Date</b>	<b>Actuarial Contribution Rate</b>	<b>Actual Contribution Rate</b>	<b>Contribution Shortfall/(Margin)</b>
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%)

*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.*



**SECTION VI: HISTORICAL FUNDING AND OTHER INFORMATION**

**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)
1993	\$ 98,482,791	\$ 102,336,338	\$ 61,479,865	\$ 307,050,085	100%	100%	173%
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%

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





**SECTION VI: HISTORICAL FUNDING AND OTHER INFORMATION**

**TABLE 18**

**Schedule of Changes in Plan Fiduciary Net Position**

<b>Fiscal Year</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>
<b>Additions:</b>										
Member Contributions	11,577,924	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
City Contributions	11,370,252	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
Net Investment Income	76,761,126	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
<b>Total Additions to Plan Net Positions</b>	<b>\$99,709,302</b>	<b>\$103,003,048</b>	<b>\$52,582,741</b>	<b>\$19,119,643</b>	<b>\$77,146,289</b>	<b>\$137,658,627</b>	<b>\$1,896,085</b>	<b>\$146,047,213</b>	<b>\$118,567,164</b>	<b>\$146,497,815</b>
<b>Deductions:</b>										
Benefits	72,426,711	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
Refunds	4,386,983	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
Depreciation Expense	522,930	524,163	528,860	250,979	92,179	15,855	17,150	11,020	9,830	5,562
Administrative	1,336,764	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
<b>Total Deductions from Plan Net Position</b>	<b>78,673,388</b>	<b>79,416,268</b>	<b>80,612,562</b>	<b>81,533,617</b>	<b>81,813,182</b>	<b>83,299,242</b>	<b>84,935,604</b>	<b>86,723,852</b>	<b>86,415,264</b>	<b>87,238,163</b>
<b>Change in Net Position</b>	<b>\$21,035,914</b>	<b>\$23,586,780</b>	<b>(\$28,029,821)</b>	<b>(\$62,413,974)</b>	<b>(\$4,666,893)</b>	<b>\$54,359,385</b>	<b>(\$83,039,519)</b>	<b>\$59,323,361</b>	<b>\$32,151,900</b>	<b>\$59,259,652</b>



## SECTION VII: RISK CONSIDERATIONS

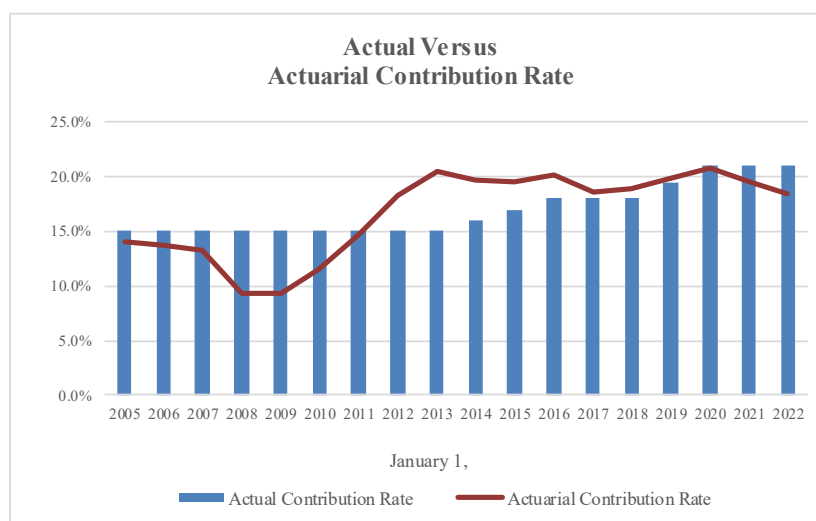
Actuarial Standards of Practice are issued by the Actuarial Standards Board and are binding on credentialed actuaries practicing in the United States. These standards generally identify what the actuary should consider, document and disclose when performing an actuarial assignment. In September, 2017, 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).

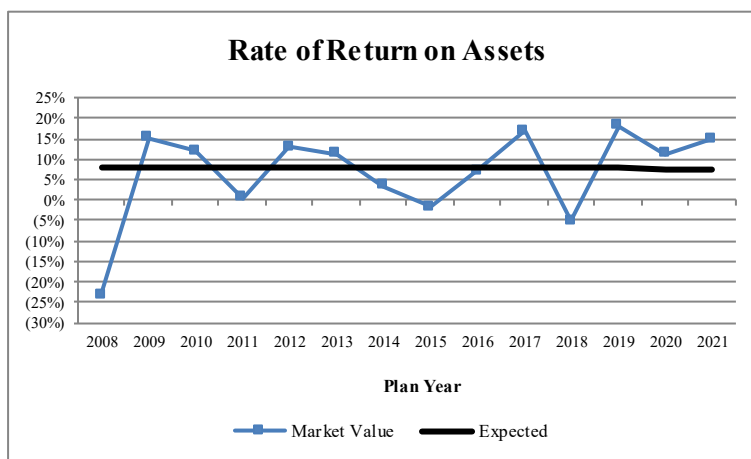
There is a direct correlation between healthy, well-funded plans and consistent contributions equal to the full actuarial contribution rate each year. For many years, the Public School Retirement System of the School District of Kansas City, Missouri was funded by fixed contribution rates for both the 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 had been 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.





## SECTION VII: RISK CONSIDERATIONS

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, 2022 valuation, the asset volatility ratio was 3.21. 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 \$90 million and a change of 2.88% 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	3.21	3.21
3. Asset Gain/Loss as a Percent of Payroll [(1) - 7.25%] * (2)	39%	39%
4. Ultimate Impact on Contribution Rate	-2.88%	2.88%



## SECTION VII: RISK CONSIDERATIONS

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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.



**SECTION VII: RISK CONSIDERATIONS**

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**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.

<u>Valuation Date</u>	<u>Market Value of Assets</u>	<u>Covered Payroll</u>	<u>Asset Volatility Ratio</u>	<u>Increase in ACR with a Return 12% Lower than Assumed*</u>
1/1/2008	\$853,722,741	\$202,311,837	4.22	3.79%
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%

\* 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, 2022 are 321% of payroll so underperforming the investment return assumption by 12% (i.e., earn -4.75% for one year) is equivalent to 38.5% 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.



**SECTION VII: RISK CONSIDERATIONS**

**TABLE 20**

**HISTORICAL MEMBERSHIP**

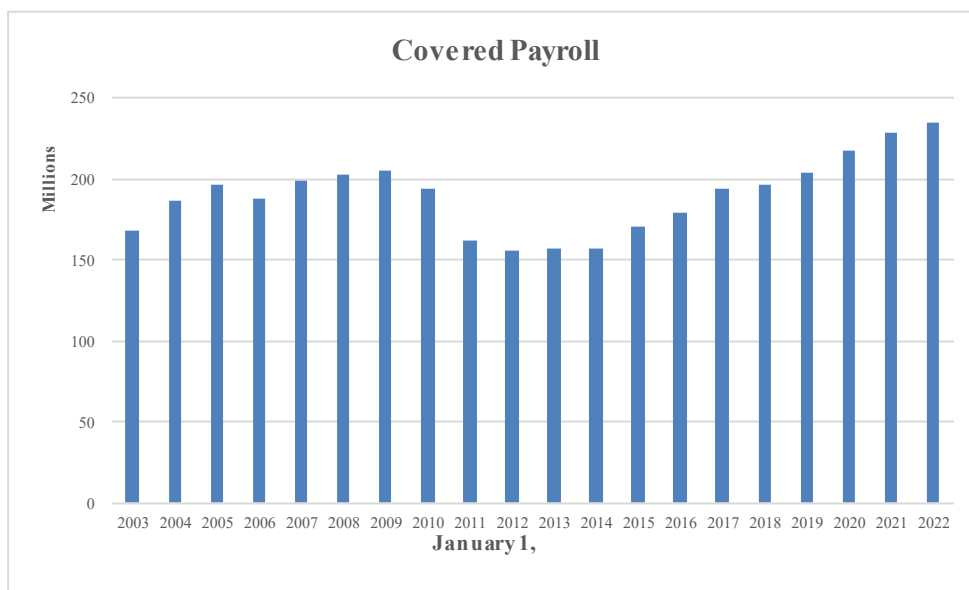
Member and employer contributions to the System are made based on covered payroll. In addition, the payment on the unfunded actuarial accrued liability is calculated anticipating covered payroll increases each year in the future. To the extent actual payroll does not meet the assumed rate of increase (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.

Actuarial Valuation Date	Number of Active Members				Covered Payroll	Number of Retired Members	Active/ Retired
	Charter Schools	School District	Library	Total			
1/1/2003				4,891	168,391,474	3,058	1.60
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

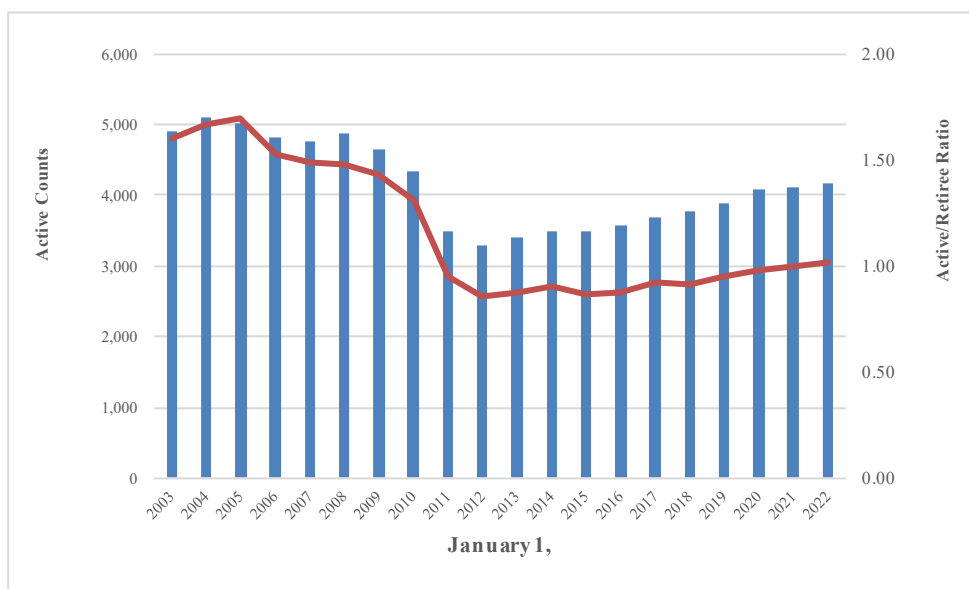
This table shows the change in active membership among the participating employers over the last 20 years. Charter Schools has become a much larger portion of the total active membership. To the extent the demographic behavior of Charter School members is different than other KCPSRS members, the actuarial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



## SECTION VII: RISK CONSIDERATIONS



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.





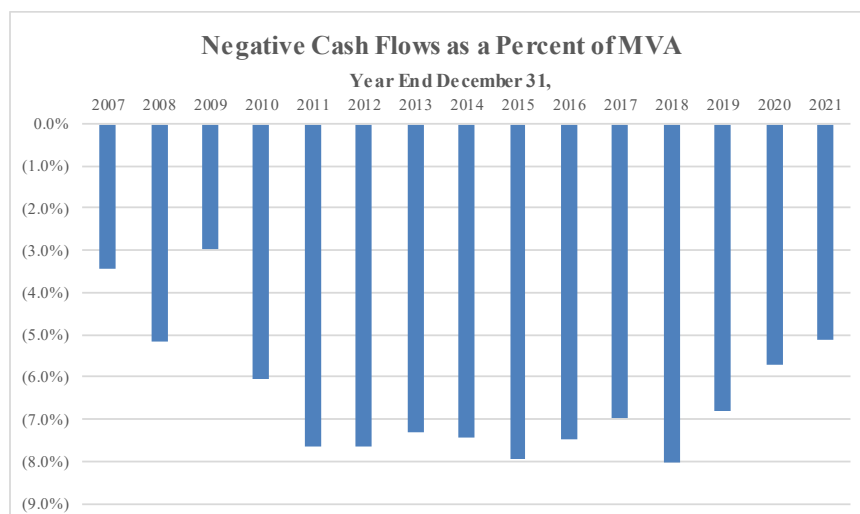
**SECTION VII: RISK CONSIDERATIONS**

**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.

<u>Fiscal Year End</u>	<u>Market Value of Assets (MVA)</u>	<u>Contributions</u>	<u>Benefit Payments</u>	<u>Net Cash Flow</u>	<u>Net Cash Flow as a Percent of MVA</u>
12/31/07	\$853,722,741	\$30,420,687	\$59,789,249	(\$29,368,562)	(3.44%)
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%)







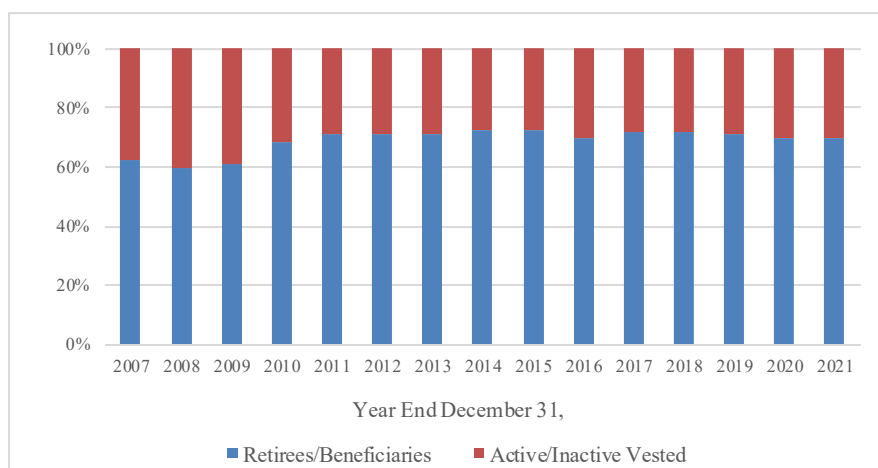
**SECTION VII: RISK CONSIDERATIONS**

**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.

<u>Fiscal Year End</u>	<u>Retiree Liability</u> (a)	<u>Total Actuarial Accrued Liability</u> (b)	<u>Retiree Percentage</u> (a) / (b)	<u>Covered Payroll</u> (c)	<u>Ratio</u> (b) / (c)
12/31/07	\$484,041,632	\$781,284,025	62.0%	\$202,311,837	3.86
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





SECTION VII: RISK CONSIDERATIONS

TABLE 23

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

This exhibit compares the key January 1, 2022 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.

Table with 6 columns: Investment Return Assumption, 6.75%, 7.00%, 7.25%, 7.50%, 7.75%. Rows include Contributions (Total Normal Cost, Administrative Expenses, Amortization of UAAL, Actuarial Required Contribution, Member Contribution, Employer Contribution), Contribution Rate Shortfall/(Margin), Actuarial Accrued Liability, Actuarial Value of Assets, Unfunded Actuarial Accrued Liability, and Funded Ratio.

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

**APPENDIX A: SUMMARY OF MEMBERSHIP DATA****MEMBER CENSUS INFORMATION**

<b>A. ACTIVE MEMBERS</b>	<b>January 1, 2022</b>	<b>January 1, 2021</b>	<b>% Change</b>
1. Number of Active Members			
(a) Plan B	1,212	1,356	(10.6%)
(b) Plan C	2,966	2,752	7.8%
(c) Total	<u>4,178</u>	<u>4,108</u>	1.7%
2. Active Member Averages			
(a) Age	43.0	42.8	0.5%
(b) Service	7.2	7.4	(2.7%)
(c) Expected Annual Pay	\$ 56,137	\$ 55,522	1.1%
<b>B. TERMINATED VESTED MEMBERS</b>			
1. Number of Terminated Vested Members	568	521	9.0%
2. Terminated Vested Members Averages			
(a) Age	45.9	47.3	(3.0%)
(b) Estimated Monthly Benefit	\$ 651	\$ 640	1.7%
<b>C. TERMINATED NON-VESTED MEMBERS</b>			
1. Number of Terminated Non-Vested Members	2,532	2,590	(2.2%)
2. Terminated Non-Vested Members Averages			
(a) Age	43.1	43.3	(0.5%)
(b) Account Balance	\$ 4,429	\$ 4,227	4.8%
<b>D. RETIREES, DISABLEDS, AND BENEFICIARIES</b>			
1. Number of Members			
(a) Retired	3,795	3,798	(0.1%)
(b) Disabled	67	70	(4.3%)
(c) Beneficiaries	232	231	0.4%
(e) Total	<u>4,094</u>	<u>4,099</u>	(0.1%)
2. Average Age			
(a) Retired	73.5	73.2	0.4%
(b) Disabled	70.5	69.3	1.7%
(c) Beneficiaries	74.8	74.8	0.0%
(e) Total	<u>73.5</u>	<u>73.2</u>	0.4%
3. Average Monthly Benefit			
(a) Retired	\$ 1,682	\$ 1,673	0.5%
(b) Disabled	1,017	1,011	0.6%
(c) Beneficiaries	1,152	1,150	0.2%
(e) Total	<u>\$ 1,641</u>	<u>\$ 1,632</u>	0.6%



**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**MEMBER DATA RECONCILIATION**

January 1, 2021 to January 1, 2022

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.

	<b>Active Members</b>	<b>Terminated Vested</b>	<b>Non-vested with Balance</b>	<b>Retirees</b>	<b>Beneficiaries*</b>	<b>Disabled</b>	<b>Total</b>
Total as of January 1, 2021	4,108	521	2,590	3,798	231	70	11,318
New Entrants	754	0	99	0	19	0	872
Rehires/Transfers	41	(12)	(29)	0	0	0	0
Retirements	(109)	(29)	0	138	0	0	0
Disablements	0	0	0	0	0	0	0
Deaths	(7)	(6)	0	(141)	(15)	(3)	(172)
Vested Terminations	(114)	114	0	0	0	0	0
Non-vested Terminations	(303)	0	303	0	0	0	0
Refunds Paid	(190)	(21)	(429)	0	(3)	0	(643)
Payments Ended	0	0	0	0	0	0	0
Data Adjustments	(2)	1	(2)	0	0	0	(3)
Total as of January 1, 2022	4,178	568	2,532	3,795	232	67	11,372

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



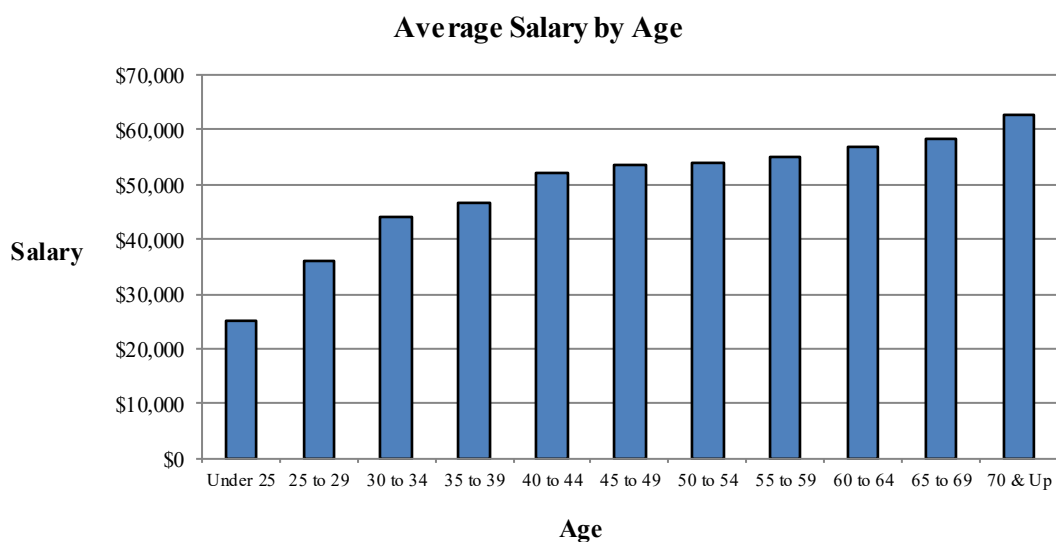
**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**SUMMARY OF ACTIVE MEMBERS**  
as of January 1, 2022

Total – All Plans

Age	Number			2021 Reported Compensation*		
	Male	Female	Total	Male	Female	Total
Under 25	58	168	226	\$ 1,370,529	\$ 4,278,683	\$ 5,649,212
25 to 29	125	420	545	4,289,938	15,298,431	19,588,369
30 to 34	160	480	640	6,977,502	21,320,042	28,297,544
35 to 39	155	357	512	7,445,407	16,350,059	23,795,466
40 to 44	126	350	476	7,088,211	17,788,540	24,876,751
45 to 49	119	330	449	7,270,989	16,706,806	23,977,795
50 to 54	116	300	416	6,473,675	15,990,730	22,464,405
55 to 59	111	290	401	6,646,531	15,401,896	22,048,427
60 to 64	94	235	329	5,379,159	13,367,912	18,747,071
65 to 69	42	98	140	2,433,493	5,729,511	8,163,004
70 & Up	12	32	44	879,080	1,883,751	2,762,831
<b>Total</b>	<b>1,118</b>	<b>3,060</b>	<b>4,178</b>	<b>\$56,254,514</b>	<b>\$144,116,361</b>	<b>\$200,370,875</b>

\* Partial year pay amounts have not been annualized.





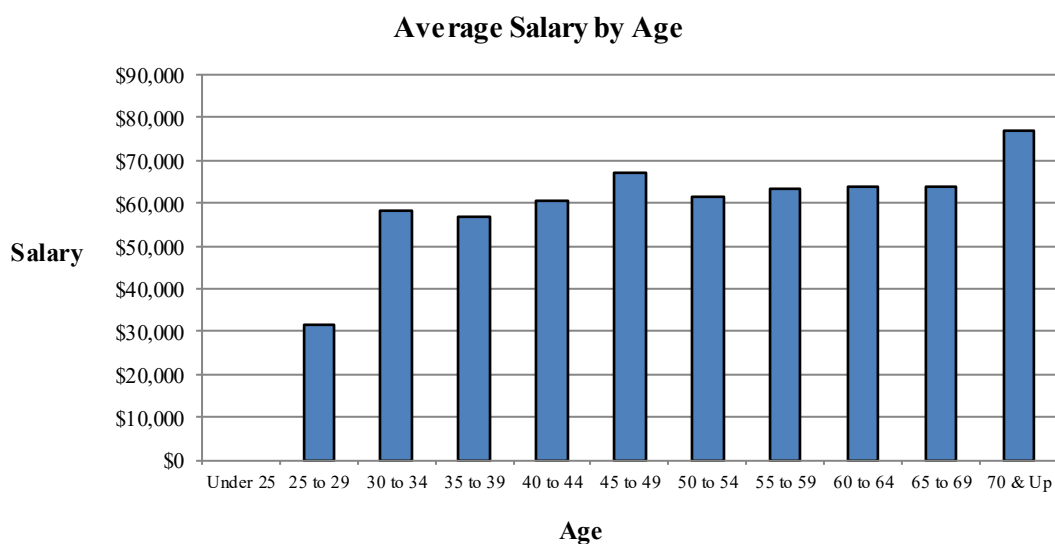
**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**SUMMARY OF ACTIVE MEMBERS**  
as of January 1, 2022

Total – Plan B

Age	Number			2021 Reported Compensation*		
	Male	Female	Total	Male	Female	Total
Under 25	0	0	0	\$ 0	\$ 0	\$ 0
25 to 29	0	1	1	0	31,376	31,376
30 to 34	26	77	103	1,518,497	4,465,903	5,984,400
35 to 39	34	81	115	2,014,307	4,503,725	6,518,032
40 to 44	39	123	162	2,687,660	7,158,866	9,846,526
45 to 49	34	113	147	2,449,584	7,426,864	9,876,448
50 to 54	47	125	172	2,874,460	7,735,793	10,610,253
55 to 59	63	153	216	4,268,967	9,372,855	13,641,822
60 to 64	48	135	183	3,283,571	8,389,377	11,672,948
65 to 69	26	64	90	1,664,866	4,090,290	5,755,156
70 & Up	6	17	23	513,337	1,251,503	1,764,840
<b>Total</b>	<b>323</b>	<b>889</b>	<b>1,212</b>	<b>\$21,275,249</b>	<b>\$54,426,552</b>	<b>\$75,701,801</b>

\* Partial year pay amounts have not been annualized.





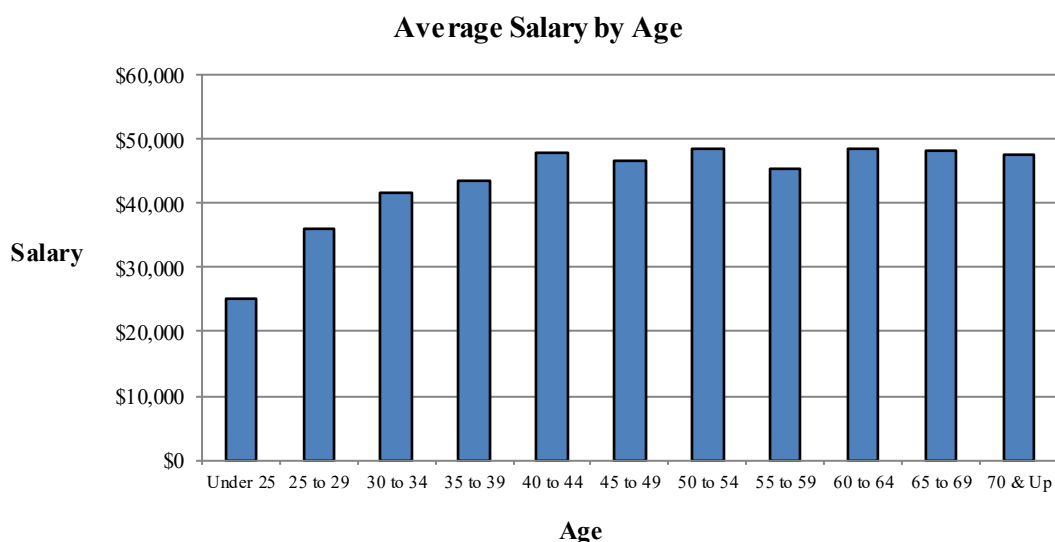
**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**SUMMARY OF ACTIVE MEMBERS**  
as of January 1, 2022

Total – Plan C

Age	Number			2021 Reported Compensation*		
	Male	Female	Total	Male	Female	Total
Under 25	58	168	226	\$ 1,370,529	\$ 4,278,683	\$ 5,649,212
25 to 29	125	419	544	4,289,938	15,267,055	19,556,993
30 to 34	134	403	537	5,459,005	16,854,139	22,313,144
35 to 39	121	276	397	5,431,100	11,846,334	17,277,434
40 to 44	87	227	314	4,400,551	10,629,674	15,030,225
45 to 49	85	217	302	4,821,405	9,279,942	14,101,347
50 to 54	69	175	244	3,599,215	8,254,937	11,854,152
55 to 59	48	137	185	2,377,564	6,029,041	8,406,605
60 to 64	46	100	146	2,095,588	4,978,535	7,074,123
65 to 69	16	34	50	768,627	1,639,221	2,407,848
70 & Up	6	15	21	365,743	632,248	997,991
<b>Total</b>	<b>795</b>	<b>2,171</b>	<b>2,966</b>	<b>\$34,979,265</b>	<b>\$89,689,809</b>	<b>\$124,669,074</b>

\* Partial year pay amounts have not been annualized.





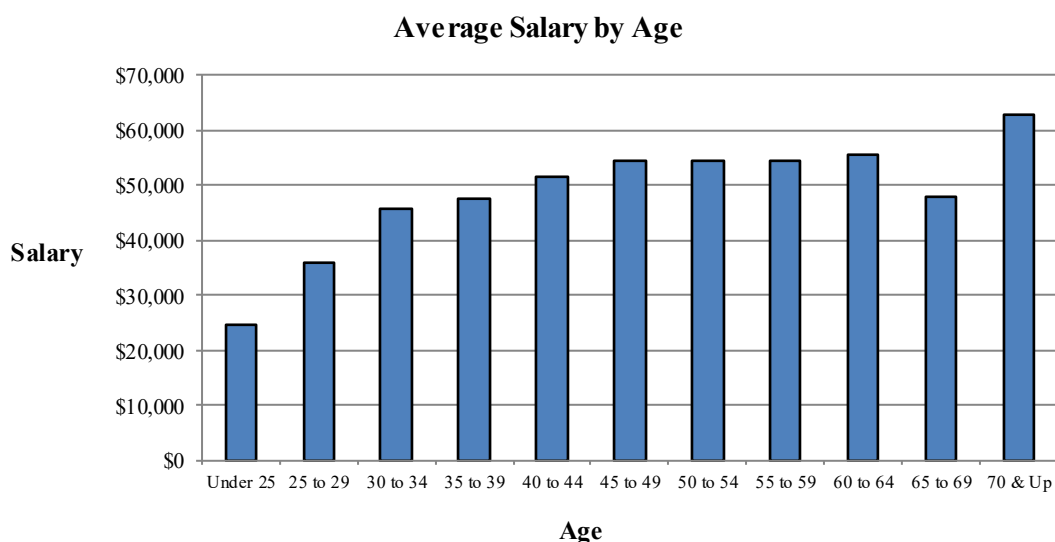
**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**SUMMARY OF ACTIVE MEMBERS**  
as of January 1, 2022

Charter Schools – All Plans

Age	Number			2021 Reported Compensation*		
	Male	Female	Total	Male	Female	Total
Under 25	27	105	132	\$ 614,964	\$ 2,606,958	\$ 3,221,922
25 to 29	60	238	298	2,114,114	8,541,421	10,655,535
30 to 34	80	286	366	3,484,921	13,173,860	16,658,781
35 to 39	67	172	239	3,221,934	8,157,953	11,379,887
40 to 44	46	138	184	2,488,887	6,996,340	9,485,227
45 to 49	48	127	175	2,873,314	6,653,796	9,527,110
50 to 54	41	95	136	2,421,059	4,964,203	7,385,262
55 to 59	40	60	100	2,597,849	2,823,066	5,420,915
60 to 64	19	45	64	1,049,369	2,495,277	3,544,646
65 to 69	10	23	33	414,128	1,162,634	1,576,762
70 & Up	3	8	11	232,373	456,166	688,539
<b>Total</b>	<b>441</b>	<b>1,297</b>	<b>1,738</b>	<b>\$21,512,912</b>	<b>\$58,031,674</b>	<b>\$79,544,586</b>

\* Partial year pay amounts have not been annualized.







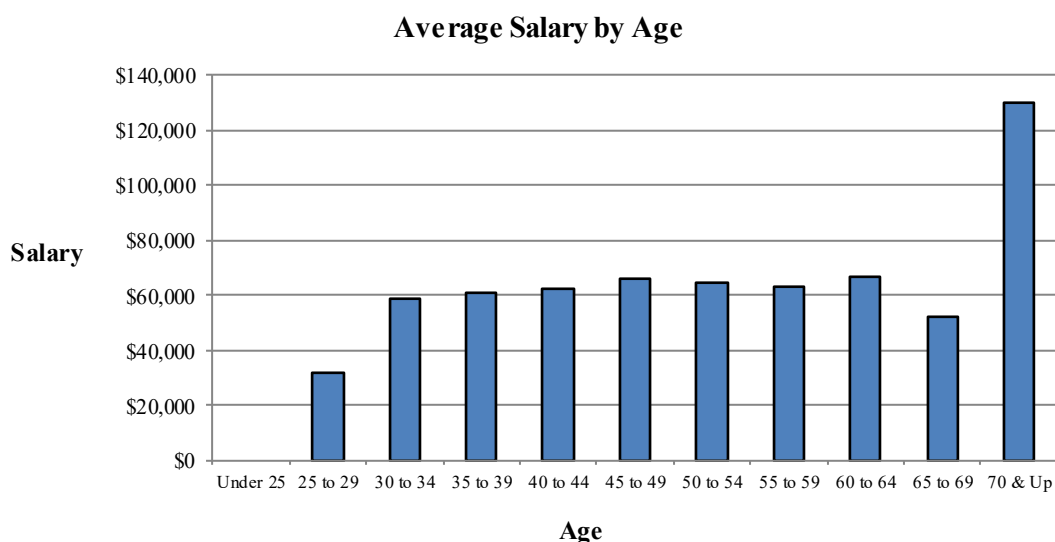
**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**SUMMARY OF ACTIVE MEMBERS**  
as of January 1, 2022

Charter Schools – Plan B

Age	Number			2021 Reported Compensation*		
	Male	Female	Total	Male	Female	Total
Under 25	0	0	0	\$ 0	\$ 0	\$ 0
25 to 29	0	1	1	0	31,376	31,376
30 to 34	13	54	67	765,438	3,184,215	3,949,653
35 to 39	15	50	65	917,765	3,047,112	3,964,877
40 to 44	8	46	54	541,702	2,810,734	3,352,436
45 to 49	19	40	59	1,281,279	2,623,924	3,905,203
50 to 54	12	32	44	795,333	2,042,422	2,837,755
55 to 59	19	20	39	1,344,920	1,103,993	2,448,913
60 to 64	9	14	23	618,198	907,916	1,526,114
65 to 69	4	14	18	186,602	744,257	930,859
70 & Up	0	2	2	0	259,371	259,371
<b>Total</b>	<b>99</b>	<b>273</b>	<b>372</b>	<b>\$6,451,237</b>	<b>\$16,755,320</b>	<b>\$23,206,557</b>

\* Partial year pay amounts have not been annualized.





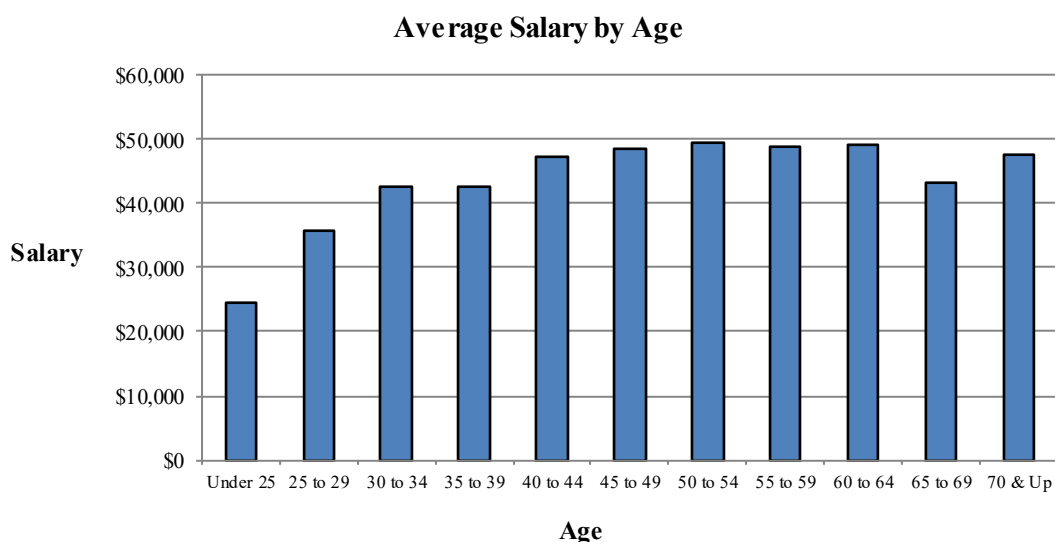
**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**SUMMARY OF ACTIVE MEMBERS**  
as of January 1, 2022

Charter Schools – Plan C

Age	Number			2021 Reported Compensation*		
	Male	Female	Total	Male	Female	Total
Under 25	27	105	132	\$ 614,964	\$ 2,606,958	\$ 3,221,922
25 to 29	60	237	297	2,114,114	8,510,045	10,624,159
30 to 34	67	232	299	2,719,483	9,989,645	12,709,128
35 to 39	52	122	174	2,304,169	5,110,841	7,415,010
40 to 44	38	92	130	1,947,185	4,185,606	6,132,791
45 to 49	29	87	116	1,592,035	4,029,872	5,621,907
50 to 54	29	63	92	1,625,726	2,921,781	4,547,507
55 to 59	21	40	61	1,252,929	1,719,073	2,972,002
60 to 64	10	31	41	431,171	1,587,361	2,018,532
65 to 69	6	9	15	227,526	418,377	645,903
70 & Up	3	6	9	232,373	196,795	429,168
<b>Total</b>	<b>342</b>	<b>1,024</b>	<b>1,366</b>	<b>\$15,061,675</b>	<b>\$41,276,354</b>	<b>\$56,338,029</b>

\* Partial year pay amounts have not been annualized.





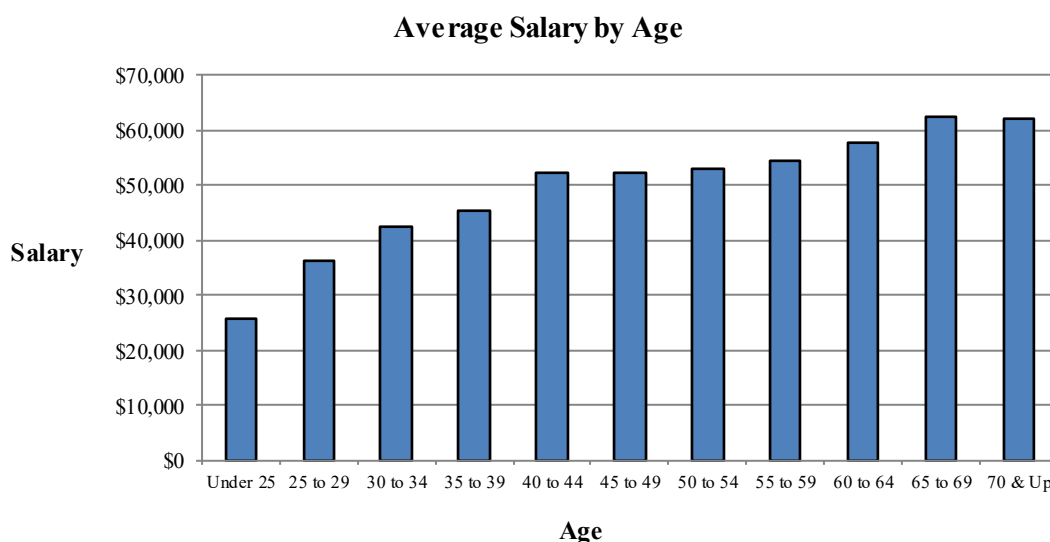
**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**SUMMARY OF ACTIVE MEMBERS**  
as of January 1, 2022

School District & Retirement System – All Plans

Age	Number			2021 Reported Compensation*		
	Male	Female	Total	Male	Female	Total
Under 25	29	62	91	\$ 688,324	\$ 1,659,085	\$ 2,347,409
25 to 29	64	166	230	2,169,318	6,193,664	8,362,982
30 to 34	75	182	257	3,280,352	7,586,478	10,866,830
35 to 39	81	171	252	3,939,727	7,510,077	11,449,804
40 to 44	71	199	270	4,158,911	9,955,910	14,114,821
45 to 49	64	189	253	3,945,174	9,304,695	13,249,869
50 to 54	69	193	262	3,570,714	10,284,687	13,855,401
55 to 59	66	216	282	3,704,962	11,626,986	15,331,948
60 to 64	69	181	250	3,997,878	10,389,023	14,386,901
65 to 69	29	73	102	1,886,560	4,480,813	6,367,373
70 & Up	9	23	32	646,707	1,340,473	1,987,180
<b>Total</b>	<b>626</b>	<b>1,655</b>	<b>2,281</b>	<b>\$31,988,627</b>	<b>\$80,331,891</b>	<b>\$112,320,518</b>

\* Partial year pay amounts have not been annualized.





**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**SUMMARY OF ACTIVE MEMBERS  
as of January 1, 2022**

School District & Retirement System – Plan B

Age	Number			2021 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	13	23	36	753,059	1,281,688	2,034,747
35 to 39	18	29	47	1,041,733	1,362,625	2,404,358
40 to 44	27	71	98	1,940,548	3,992,523	5,933,071
45 to 49	13	69	82	1,010,312	4,523,626	5,533,938
50 to 54	31	89	120	1,859,025	5,439,443	7,298,468
55 to 59	40	122	162	2,619,039	7,489,663	10,108,702
60 to 64	33	114	147	2,333,461	7,062,707	9,396,168
65 to 69	19	50	69	1,345,459	3,346,033	4,691,492
70 & Up	6	14	20	513,337	905,020	1,418,357
<b>Total</b>	<b>200</b>	<b>581</b>	<b>781</b>	<b>\$13,415,973</b>	<b>\$35,403,328</b>	<b>\$48,819,301</b>

\* Partial year pay amounts have not been annualized.





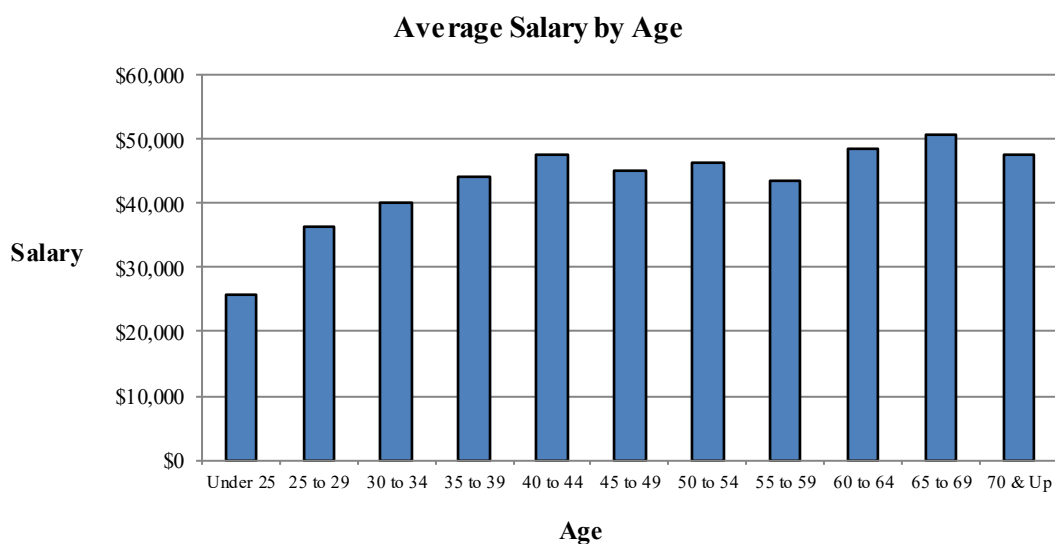
**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**SUMMARY OF ACTIVE MEMBERS**  
as of January 1, 2022

School District & Retirement System – Plan C

Age	Number			2021 Reported Compensation*		
	Male	Female	Total	Male	Female	Total
Under 25	29	62	91	\$ 688,324	\$ 1,659,085	\$ 2,347,409
25 to 29	64	166	230	2,169,318	6,193,664	8,362,982
30 to 34	62	159	221	2,527,293	6,304,790	8,832,083
35 to 39	63	142	205	2,897,994	6,147,452	9,045,446
40 to 44	44	128	172	2,218,363	5,963,387	8,181,750
45 to 49	51	120	171	2,934,862	4,781,069	7,715,931
50 to 54	38	104	142	1,711,689	4,845,244	6,556,933
55 to 59	26	94	120	1,085,923	4,137,323	5,223,246
60 to 64	36	67	103	1,664,417	3,326,316	4,990,733
65 to 69	10	23	33	541,101	1,134,780	1,675,881
70 & Up	3	9	12	133,370	435,453	568,823
<b>Total</b>	<b>426</b>	<b>1,074</b>	<b>1,500</b>	<b>\$18,572,654</b>	<b>\$44,928,563</b>	<b>\$63,501,217</b>

\* Partial year pay amounts have not been annualized.





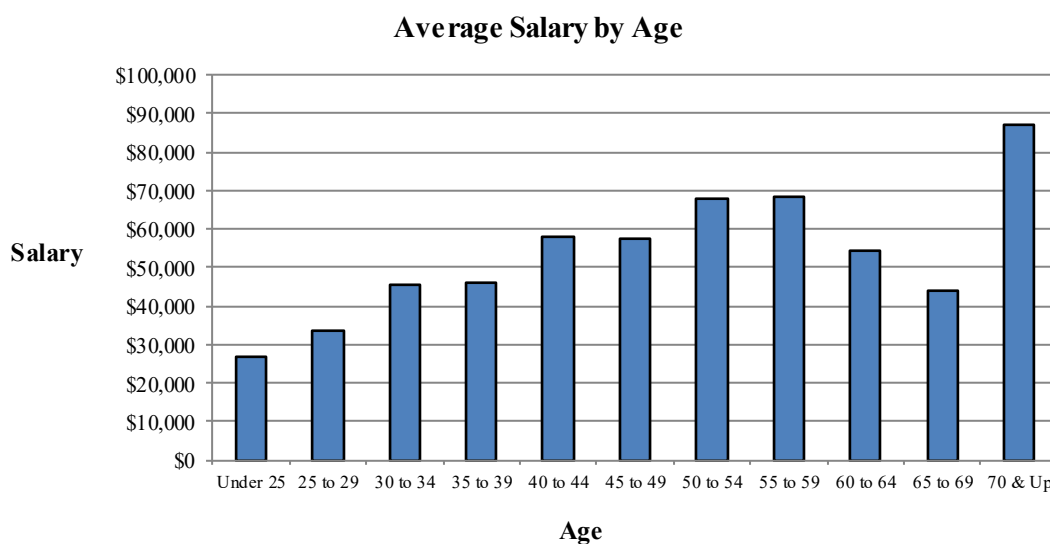
**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**SUMMARY OF ACTIVE MEMBERS**  
as of January 1, 2022

Library – All Plans

Age	Number			2021 Reported Compensation*		
	Male	Female	Total	Male	Female	Total
Under 25	2	1	3	\$ 67,241	\$ 12,640	\$ 79,881
25 to 29	1	16	17	6,506	563,346	569,852
30 to 34	5	12	17	212,229	559,704	771,933
35 to 39	7	14	21	283,746	682,029	965,775
40 to 44	9	13	22	440,413	836,290	1,276,703
45 to 49	7	14	21	452,501	748,315	1,200,816
50 to 54	6	12	18	481,902	741,840	1,223,742
55 to 59	5	14	19	343,720	951,844	1,295,564
60 to 64	6	9	15	331,912	483,612	815,524
65 to 69	3	2	5	132,805	86,064	218,869
70 & Up	0	1	1	0	87,112	87,112
<b>Total</b>	<b>51</b>	<b>108</b>	<b>159</b>	<b>\$2,752,975</b>	<b>\$5,752,796</b>	<b>\$8,505,771</b>

\* Partial year pay amounts have not been annualized.





**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

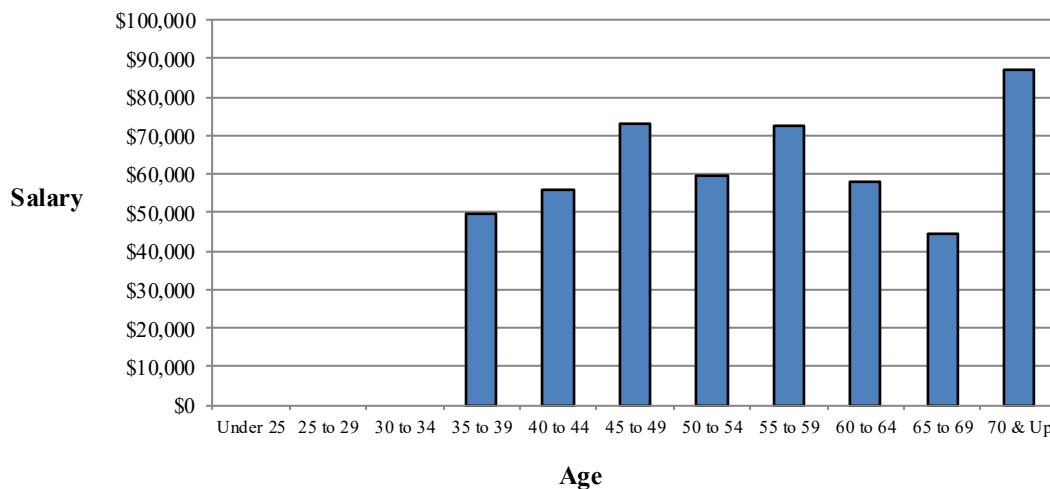
**SUMMARY OF ACTIVE MEMBERS**  
as of January 1, 2022

Library – Plan B

Age	Number			2021 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	2	3	54,809	93,988	148,797
40 to 44	4	6	10	205,410	355,609	561,019
45 to 49	2	4	6	157,993	279,314	437,307
50 to 54	4	4	8	220,102	253,928	474,030
55 to 59	4	11	15	305,008	779,199	1,084,207
60 to 64	6	7	13	331,912	418,754	750,666
65 to 69	3	0	3	132,805	0	132,805
70 & Up	0	1	1	0	87,112	87,112
<b>Total</b>	<b>24</b>	<b>35</b>	<b>59</b>	<b>\$1,408,039</b>	<b>\$2,267,904</b>	<b>\$3,675,943</b>

\* Partial year pay amounts have not been annualized.

**Average Salary by Age**





**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**SUMMARY OF ACTIVE MEMBERS**  
as of January 1, 2022

Library – Plan C

Age	Number			2021 Reported Compensation*		
	Male	Female	Total	Male	Female	Total
Under 25	2	1	3	\$ 67,241	\$ 12,640	\$ 79,881
25 to 29	1	16	17	6,506	563,346	569,852
30 to 34	5	12	17	212,229	559,704	771,933
35 to 39	6	12	18	228,937	588,041	816,978
40 to 44	5	7	12	235,003	480,681	715,684
45 to 49	5	10	15	294,508	469,001	763,509
50 to 54	2	8	10	261,800	487,912	749,712
55 to 59	1	3	4	38,712	172,645	211,357
60 to 64	0	2	2	0	64,858	64,858
65 to 69	0	2	2	0	86,064	86,064
70 & Up	0	0	0	0	0	0
<b>Total</b>	<b>27</b>	<b>73</b>	<b>100</b>	<b>\$ 1,344,936</b>	<b>\$3,484,892</b>	<b>\$4,829,828</b>

\* Partial year pay amounts have not been annualized.







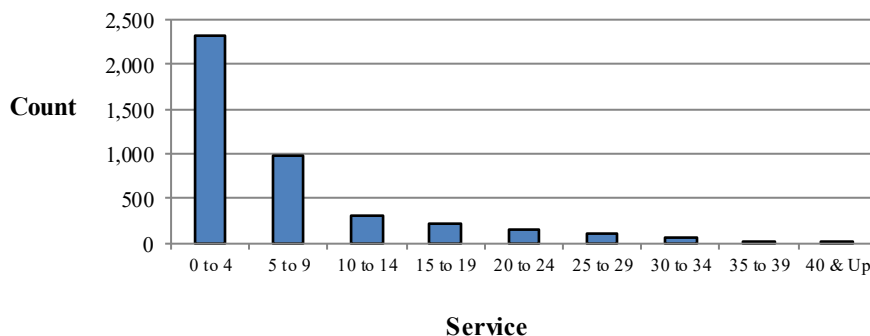
**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**DISTRIBUTION OF ACTIVE MEMBERS  
as of January 1, 2022**

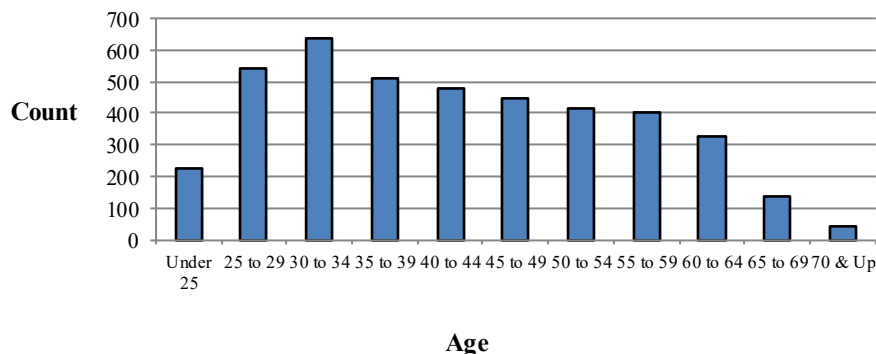
Total – All Plans

Age	Years of Service									Total
	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	
Under 25	226	0	0	0	0	0	0	0	0	226
25 to 29	474	71	0	0	0	0	0	0	0	545
30 to 34	381	234	25	0	0	0	0	0	0	640
35 to 39	291	155	59	6	1	0	0	0	0	512
40 to 44	240	122	47	51	16	0	0	0	0	476
45 to 49	222	110	40	29	40	8	0	0	0	449
50 to 54	176	101	39	32	32	29	6	1	0	416
55 to 59	134	84	42	44	42	25	24	5	1	401
60 to 64	108	66	36	38	19	29	19	13	1	329
65 to 69	45	28	19	14	11	4	9	4	6	140
70 & Up	17	7	3	6	1	3	2	2	3	44
<b>Total</b>	<b>2,314</b>	<b>978</b>	<b>310</b>	<b>220</b>	<b>162</b>	<b>98</b>	<b>60</b>	<b>25</b>	<b>11</b>	<b>4,178</b>

**Service Distribution**



**Age Distribution**





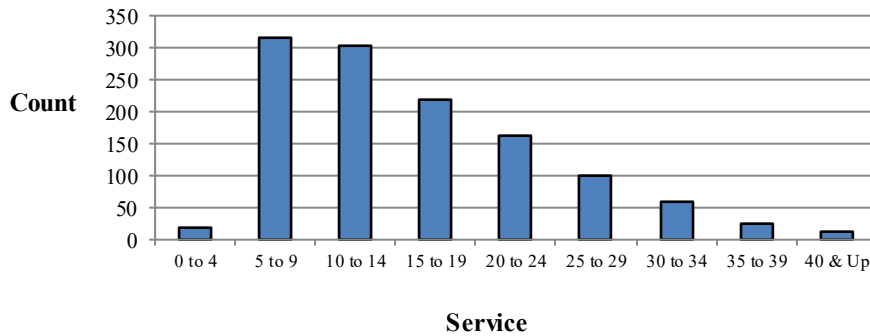
**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**DISTRIBUTION OF ACTIVE MEMBERS  
as of January 1, 2022**

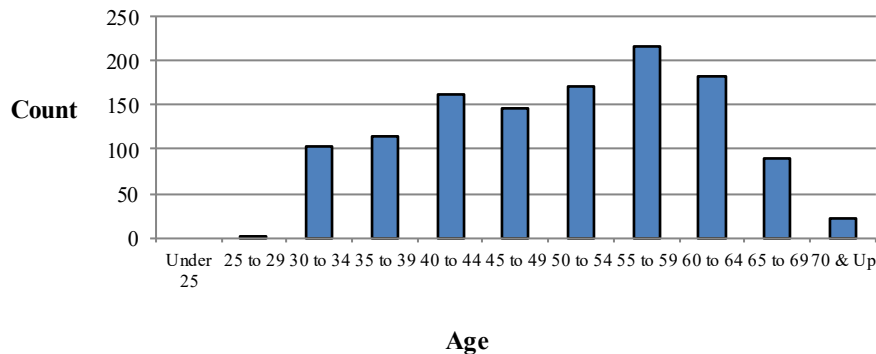
Total – Plan B

Age	Years of Service									Total
	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	
Under 25	0	0	0	0	0	0	0	0	0	0
25 to 29	0	1	0	0	0	0	0	0	0	1
30 to 34	0	80	23	0	0	0	0	0	0	103
35 to 39	0	51	57	6	1	0	0	0	0	115
40 to 44	0	48	47	51	16	0	0	0	0	162
45 to 49	0	30	40	29	40	8	0	0	0	147
50 to 54	0	34	38	32	32	29	6	1	0	172
55 to 59	3	31	41	44	42	25	24	5	1	216
60 to 64	5	24	35	38	19	29	19	13	1	183
65 to 69	6	17	19	14	11	4	9	4	6	90
70 & Up	3	0	3	6	1	3	2	2	3	23
<b>Total</b>	<b>17</b>	<b>316</b>	<b>303</b>	<b>220</b>	<b>162</b>	<b>98</b>	<b>60</b>	<b>25</b>	<b>11</b>	<b>1,212</b>

**Service Distribution**



**Age Distribution**





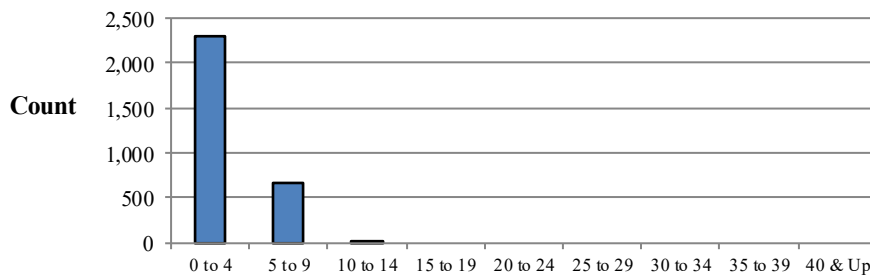
**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**DISTRIBUTION OF ACTIVE MEMBERS  
as of January 1, 2022**

Total – Plan C

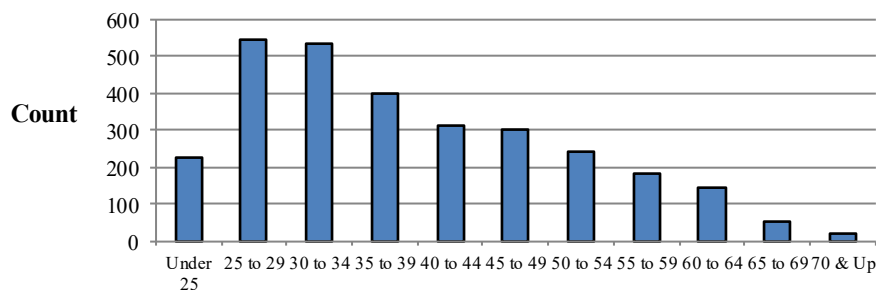
Age	Years of Service									Total
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	
Under 25	226	0	0	0	0	0	0	0	0	226
25 to 29	474	70	0	0	0	0	0	0	0	544
30 to 34	381	154	2	0	0	0	0	0	0	537
35 to 39	291	104	2	0	0	0	0	0	0	397
40 to 44	240	74	0	0	0	0	0	0	0	314
45 to 49	222	80	0	0	0	0	0	0	0	302
50 to 54	176	67	1	0	0	0	0	0	0	244
55 to 59	131	53	1	0	0	0	0	0	0	185
60 to 64	103	42	1	0	0	0	0	0	0	146
65 to 69	39	11	0	0	0	0	0	0	0	50
70 & Up	14	7	0	0	0	0	0	0	0	21
<b>Total</b>	<b>2,297</b>	<b>662</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2,966</b>

**Service Distribution**



**Service**

**Age Distribution**



**Age**



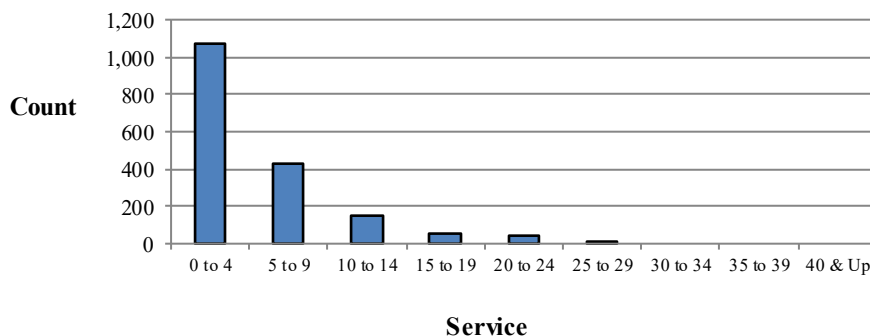
**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**DISTRIBUTION OF ACTIVE MEMBERS**  
as of January 1, 2022

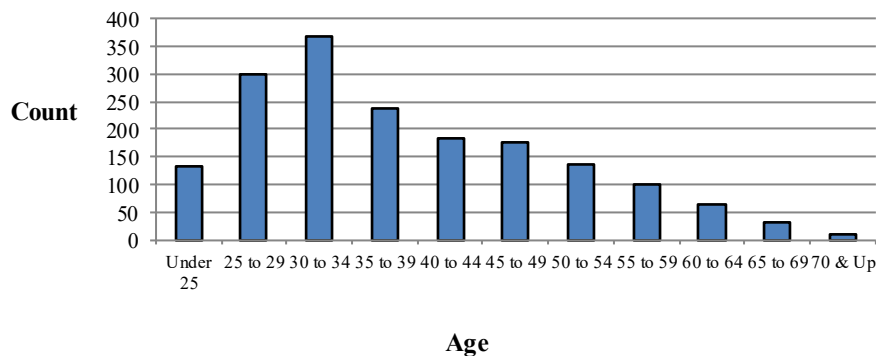
Charter Schools – All Plans

Age	Years of Service									Total
	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	
Under 25	132	0	0	0	0	0	0	0	0	132
25 to 29	256	42	0	0	0	0	0	0	0	298
30 to 34	202	144	20	0	0	0	0	0	0	366
35 to 39	128	68	39	3	1	0	0	0	0	239
40 to 44	97	49	21	15	2	0	0	0	0	184
45 to 49	84	46	21	10	14	0	0	0	0	175
50 to 54	74	29	15	7	10	1	0	0	0	136
55 to 59	48	23	14	10	5	0	0	0	0	100
60 to 64	31	17	10	6	0	0	0	0	0	64
65 to 69	17	6	6	2	2	0	0	0	0	33
70 & Up	5	4	1	0	1	0	0	0	0	11
<b>Total</b>	<b>1,074</b>	<b>428</b>	<b>147</b>	<b>53</b>	<b>35</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,738</b>

**Service Distribution**



**Age Distribution**





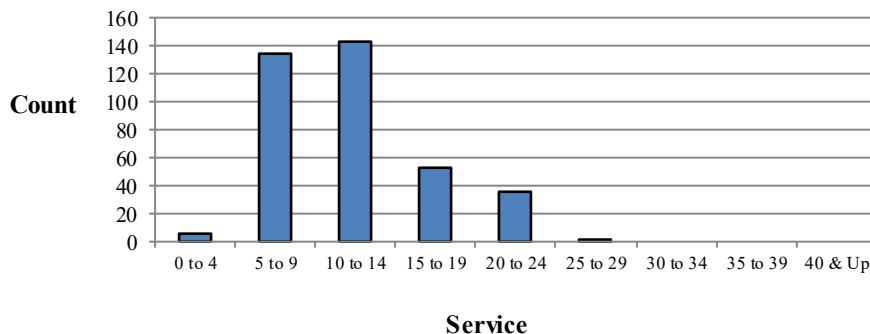
**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**DISTRIBUTION OF ACTIVE MEMBERS  
as of January 1, 2022**

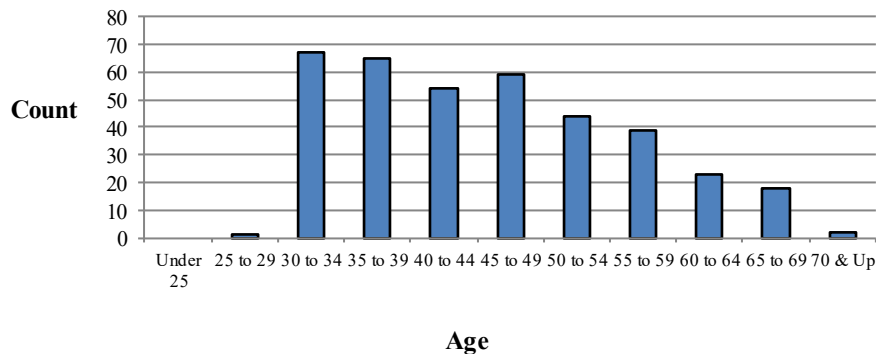
Charter Schools – Plan B

Age	Years of Service									Total
	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	
Under 25	0	0	0	0	0	0	0	0	0	0
25 to 29	0	1	0	0	0	0	0	0	0	1
30 to 34	0	49	18	0	0	0	0	0	0	67
35 to 39	0	24	37	3	1	0	0	0	0	65
40 to 44	0	16	21	15	2	0	0	0	0	54
45 to 49	0	14	21	10	14	0	0	0	0	59
50 to 54	0	11	15	7	10	1	0	0	0	44
55 to 59	2	8	14	10	5	0	0	0	0	39
60 to 64	1	6	10	6	0	0	0	0	0	23
65 to 69	3	5	6	2	2	0	0	0	0	18
70 & Up	0	0	1	0	1	0	0	0	0	2
<b>Total</b>	<b>6</b>	<b>134</b>	<b>143</b>	<b>53</b>	<b>35</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>372</b>

**Service Distribution**



**Age Distribution**





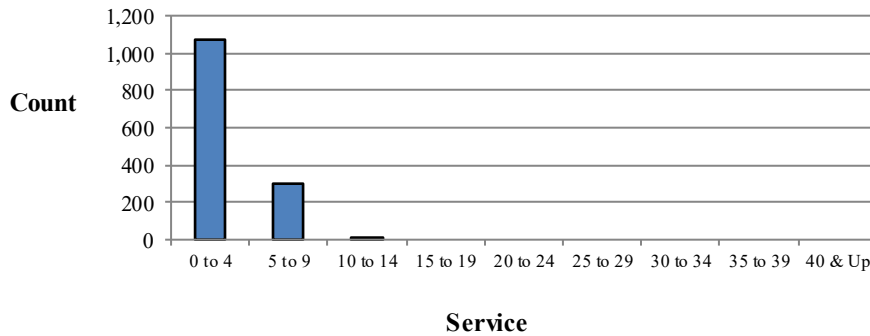
**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**DISTRIBUTION OF ACTIVE MEMBERS  
as of January 1, 2022**

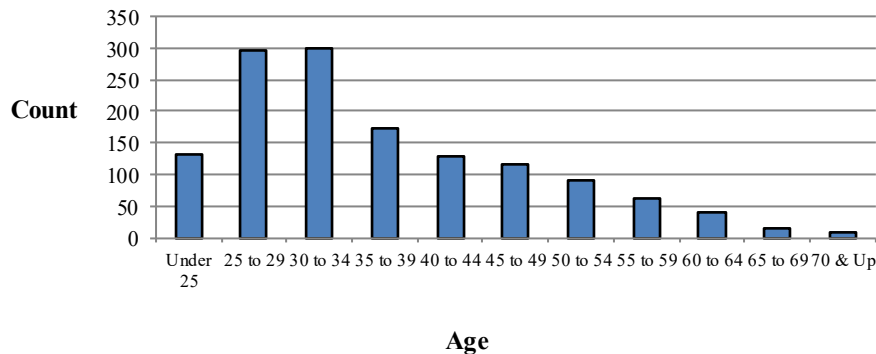
Charter Schools – Plan C

Age	Years of Service									Total
	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	
Under 25	132	0	0	0	0	0	0	0	0	132
25 to 29	256	41	0	0	0	0	0	0	0	297
30 to 34	202	95	2	0	0	0	0	0	0	299
35 to 39	128	44	2	0	0	0	0	0	0	174
40 to 44	97	33	0	0	0	0	0	0	0	130
45 to 49	84	32	0	0	0	0	0	0	0	116
50 to 54	74	18	0	0	0	0	0	0	0	92
55 to 59	46	15	0	0	0	0	0	0	0	61
60 to 64	30	11	0	0	0	0	0	0	0	41
65 to 69	14	1	0	0	0	0	0	0	0	15
70 & Up	5	4	0	0	0	0	0	0	0	9
<b>Total</b>	<b>1,068</b>	<b>294</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,366</b>

**Service Distribution**



**Age Distribution**





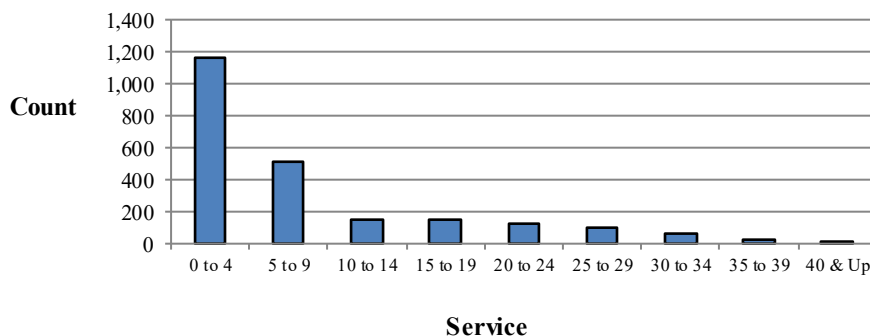
**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**DISTRIBUTION OF ACTIVE MEMBERS  
as of January 1, 2022**

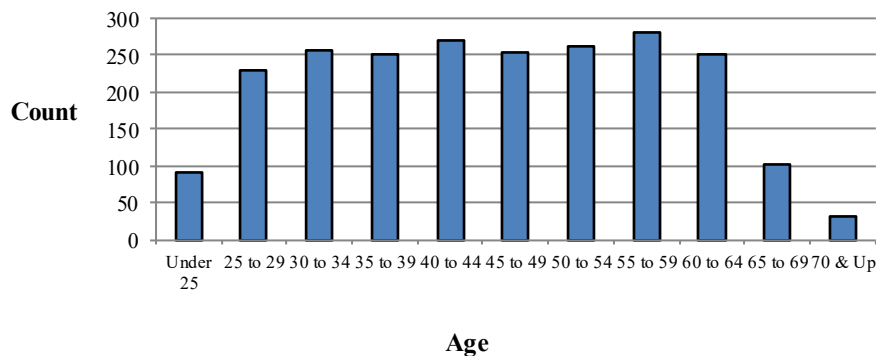
School District & Retirement System – All Plans

Age	Years of Service									Total
	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	
Under 25	91	0	0	0	0	0	0	0	0	91
25 to 29	201	29	0	0	0	0	0	0	0	230
30 to 34	165	87	5	0	0	0	0	0	0	257
35 to 39	152	79	18	3	0	0	0	0	0	252
40 to 44	132	69	23	34	12	0	0	0	0	270
45 to 49	129	55	18	18	25	8	0	0	0	253
50 to 54	95	67	22	23	20	28	6	1	0	262
55 to 59	84	58	26	25	37	24	23	5	0	282
60 to 64	75	49	25	25	18	27	18	12	1	250
65 to 69	27	20	13	11	8	4	9	4	6	102
70 & Up	12	3	2	6	0	3	2	2	2	32
<b>Total</b>	<b>1,163</b>	<b>516</b>	<b>152</b>	<b>145</b>	<b>120</b>	<b>94</b>	<b>58</b>	<b>24</b>	<b>9</b>	<b>2,281</b>

**Service Distribution**



**Age Distribution**





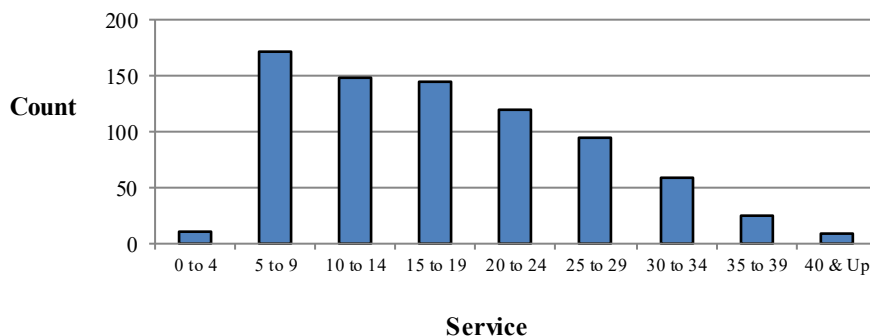
**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**DISTRIBUTION OF ACTIVE MEMBERS  
as of January 1, 2022**

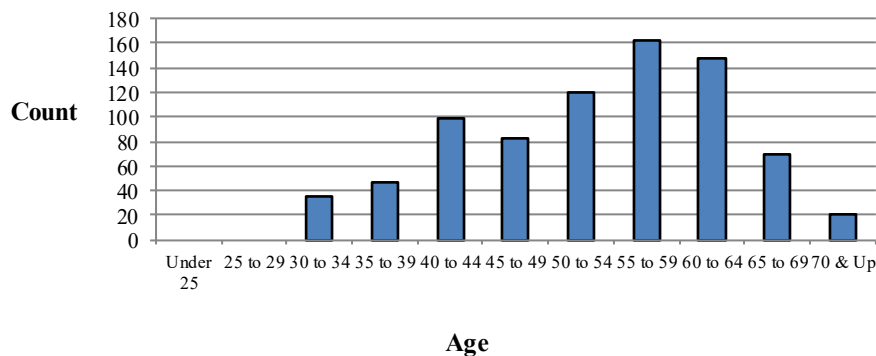
School District & Retirement System – Plan B

Age	Years of Service									Total
	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	
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	31	5	0	0	0	0	0	0	36
35 to 39	0	26	18	3	0	0	0	0	0	47
40 to 44	0	29	23	34	12	0	0	0	0	98
45 to 49	0	13	18	18	25	8	0	0	0	82
50 to 54	0	21	21	23	20	28	6	1	0	120
55 to 59	1	22	25	25	37	24	23	5	0	162
60 to 64	4	18	24	25	18	27	18	12	1	147
65 to 69	3	11	13	11	8	4	9	4	6	69
70 & Up	3	0	2	6	0	3	2	2	2	20
<b>Total</b>	<b>11</b>	<b>171</b>	<b>149</b>	<b>145</b>	<b>120</b>	<b>94</b>	<b>58</b>	<b>24</b>	<b>9</b>	<b>781</b>

**Service Distribution**



**Age Distribution**







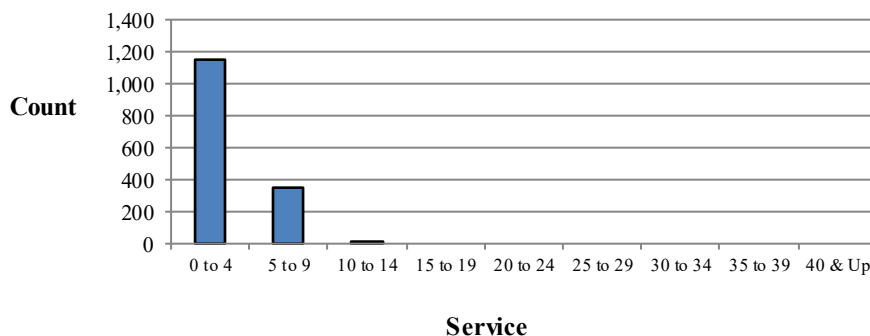
**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**DISTRIBUTION OF ACTIVE MEMBERS  
as of January 1, 2022**

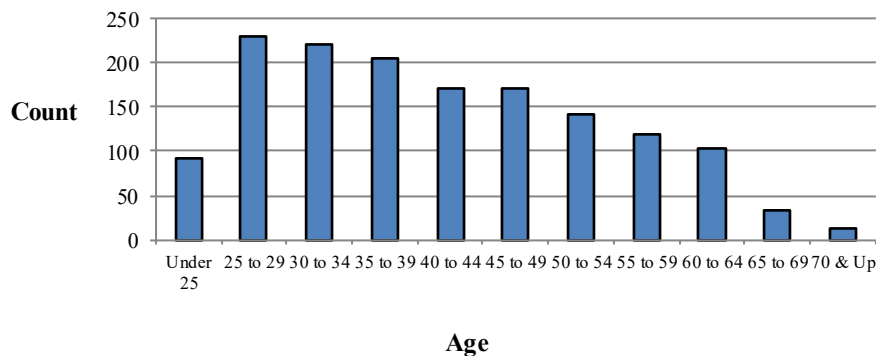
School District & Retirement System – Plan C

Age	Years of Service									Total
	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	
Under 25	91	0	0	0	0	0	0	0	0	91
25 to 29	201	29	0	0	0	0	0	0	0	230
30 to 34	165	56	0	0	0	0	0	0	0	221
35 to 39	152	53	0	0	0	0	0	0	0	205
40 to 44	132	40	0	0	0	0	0	0	0	172
45 to 49	129	42	0	0	0	0	0	0	0	171
50 to 54	95	46	1	0	0	0	0	0	0	142
55 to 59	83	36	1	0	0	0	0	0	0	120
60 to 64	71	31	1	0	0	0	0	0	0	103
65 to 69	24	9	0	0	0	0	0	0	0	33
70 & Up	9	3	0	0	0	0	0	0	0	12
<b>Total</b>	<b>1,152</b>	<b>345</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,500</b>

**Service Distribution**



**Age Distribution**





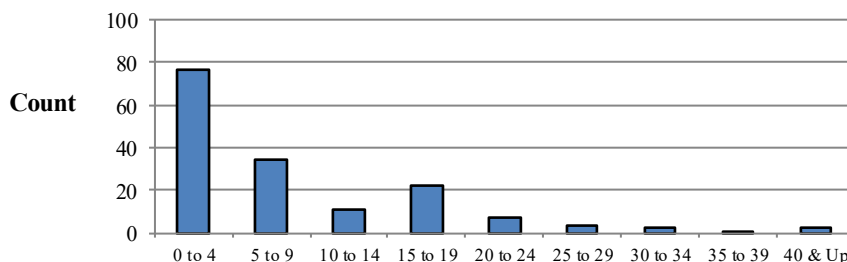
**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**DISTRIBUTION OF ACTIVE MEMBERS**  
as of January 1, 2022

Library – All Plans

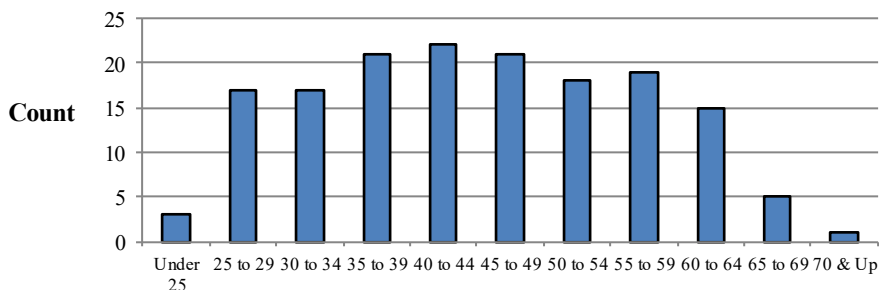
Age	Years of Service									Total
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	
Under 25	3	0	0	0	0	0	0	0	0	3
25 to 29	17	0	0	0	0	0	0	0	0	17
30 to 34	14	3	0	0	0	0	0	0	0	17
35 to 39	11	8	2	0	0	0	0	0	0	21
40 to 44	11	4	3	2	2	0	0	0	0	22
45 to 49	9	9	1	1	1	0	0	0	0	21
50 to 54	7	5	2	2	2	0	0	0	0	18
55 to 59	2	3	2	9	0	1	1	0	1	19
60 to 64	2	0	1	7	1	2	1	1	0	15
65 to 69	1	2	0	1	1	0	0	0	0	5
70 & Up	0	0	0	0	0	0	0	0	1	1
<b>Total</b>	<b>77</b>	<b>34</b>	<b>11</b>	<b>22</b>	<b>7</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>159</b>

**Service Distribution**



**Service**

**Age Distribution**



**Age**



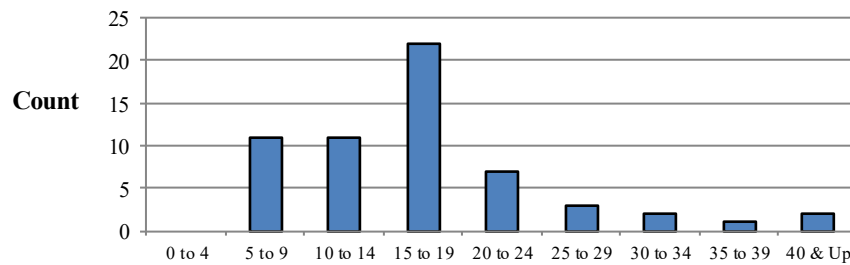
**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**DISTRIBUTION OF ACTIVE MEMBERS**  
as of January 1, 2022

Library – Plan B

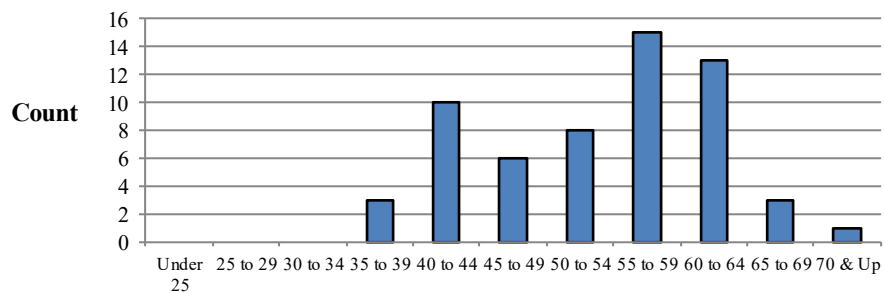
Age	Years of Service									Total
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	
Under 25	0	0	0	0	0	0	0	0	0	0
25 to 29	0	0	0	0	0	0	0	0	0	0
30 to 34	0	0	0	0	0	0	0	0	0	0
35 to 39	0	1	2	0	0	0	0	0	0	3
40 to 44	0	3	3	2	2	0	0	0	0	10
45 to 49	0	3	1	1	1	0	0	0	0	6
50 to 54	0	2	2	2	2	0	0	0	0	8
55 to 59	0	1	2	9	0	1	1	0	1	15
60 to 64	0	0	1	7	1	2	1	1	0	13
65 to 69	0	1	0	1	1	0	0	0	0	3
70 & Up	0	0	0	0	0	0	0	0	1	1
<b>Total</b>	<b>0</b>	<b>11</b>	<b>11</b>	<b>22</b>	<b>7</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>59</b>

**Service Distribution**



**Service**

**Age Distribution**



**Age**



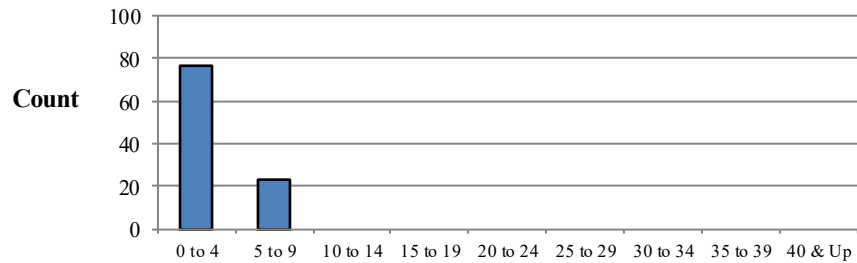
**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**DISTRIBUTION OF ACTIVE MEMBERS**  
as of January 1, 2022

Library – Plan C

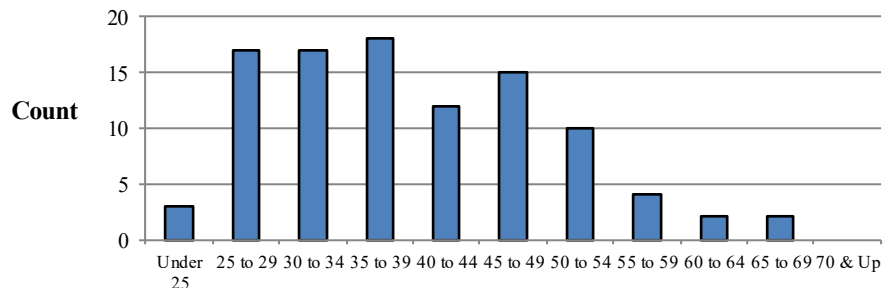
Age	Years of Service									Total
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	
Under 25	3	0	0	0	0	0	0	0	0	3
25 to 29	17	0	0	0	0	0	0	0	0	17
30 to 34	14	3	0	0	0	0	0	0	0	17
35 to 39	11	7	0	0	0	0	0	0	0	18
40 to 44	11	1	0	0	0	0	0	0	0	12
45 to 49	9	6	0	0	0	0	0	0	0	15
50 to 54	7	3	0	0	0	0	0	0	0	10
55 to 59	2	2	0	0	0	0	0	0	0	4
60 to 64	2	0	0	0	0	0	0	0	0	2
65 to 69	1	1	0	0	0	0	0	0	0	2
70 & Up	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>77</b>	<b>23</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>100</b>

**Service Distribution**



**Service**

**Age Distribution**



**Age**

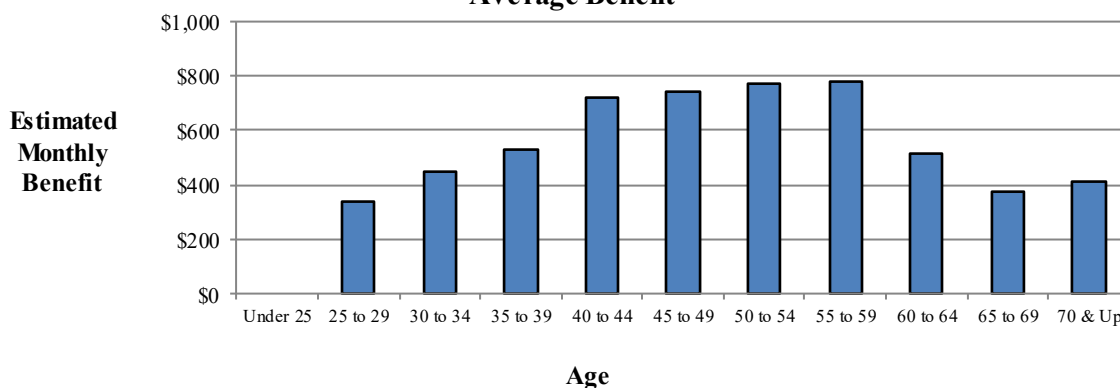


**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

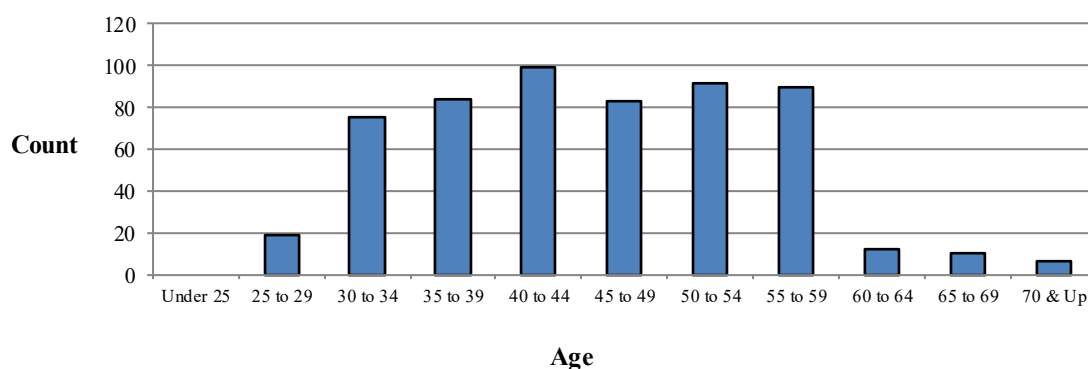
**SUMMARY OF TERMINATED VESTED MEMBERS**  
as of January 1, 2022

Age	Number			Estimated Monthly Benefit		
	Male	Female	Total	Male	Female	Total
Under 25	0	0	0	\$ 0	\$ 0	\$ 0
25 to 29	2	17	19	643	5,778	6,421
30 to 34	14	61	75	6,892	26,964	33,856
35 to 39	16	68	84	8,395	35,880	44,275
40 to 44	29	70	99	24,272	47,260	71,532
45 to 49	19	64	83	15,181	46,657	61,838
50 to 54	28	63	91	18,873	51,389	70,262
55 to 59	29	60	89	25,613	43,851	69,464
60 to 64	3	9	12	1,425	4,762	6,187
65 to 69	3	7	10	1,232	2,491	3,723
70 & Up	2	4	6	1,304	1,178	2,482
<b>Total</b>	<b>145</b>	<b>423</b>	<b>568</b>	<b>\$103,830</b>	<b>\$266,210</b>	<b>\$370,040</b>

**Average Benefit**



**Age Distribution**





**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**SCHEDULE OF RETIREES, DISABLEDS, AND BENEFICIARIES  
BY BENEFIT TYPE  
as of January 1, 2022**

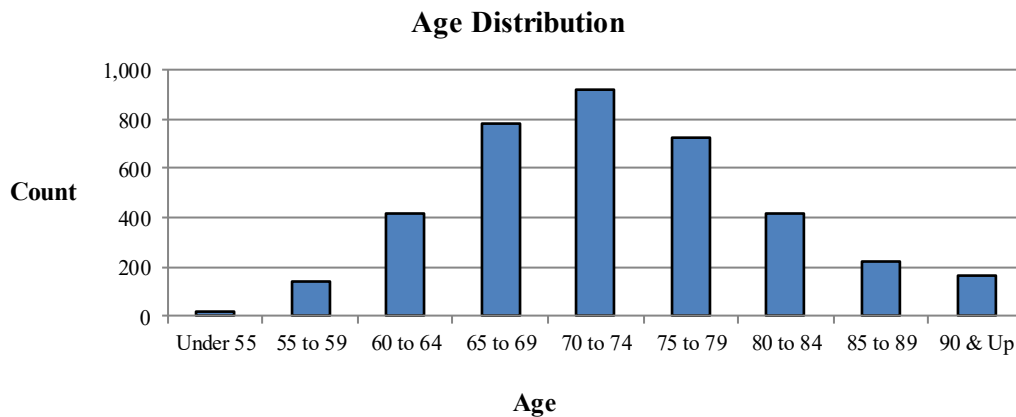
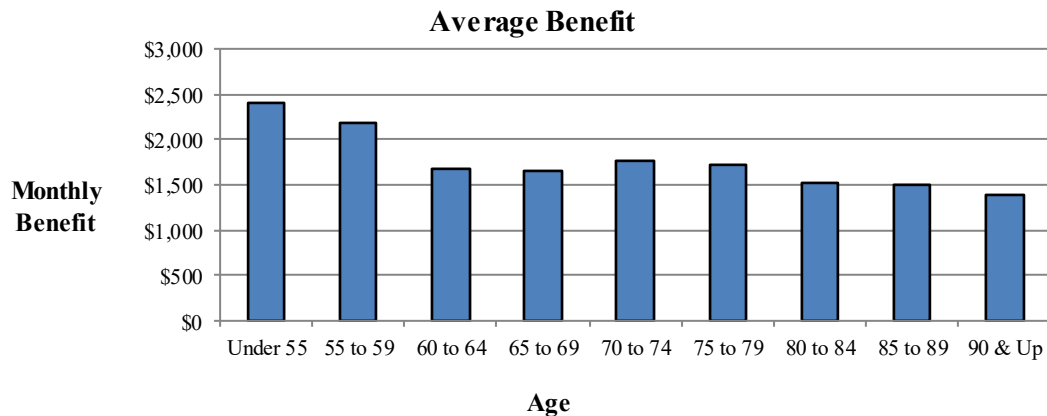
Amount of Monthly Benefits	Total Monthly Benefits	Total Number of Recipients	Type of Benefit			
			Retired	Surviving Spouses	Surviving Children	Disability
\$1 to 500	198,325	586	526	49	1	10
501 to 1,000	627,120	845	755	61	3	26
1,001 to 1,500	796,598	642	560	56	4	22
1,501 to 2,000	928,545	530	496	27	2	5
2,001 to 2,500	1,311,606	582	565	12	1	4
2,501 to 3,000	1,273,980	468	457	11	-	-
3,001 to 3,500	811,821	251	250	1	-	-
3,501 to 4,000	397,405	107	104	3	-	-
4,001 to 4,500	235,094	56	55	1	-	-
4,501 to 5,000	79,531	17	17	-	-	-
Over 5,000	53,270	10	10	-	-	-



**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**SUMMARY OF ALL RETIRED MEMBERS  
as of January 1, 2022**

Age	Number			Monthly Benefit		
	Male	Female	Total	Male	Female	Total
Under 55	5	11	16	\$ 12,166	\$ 26,394	\$ 38,560
55 to 59	48	92	140	99,662	205,618	305,280
60 to 64	122	298	420	204,277	499,711	703,988
65 to 69	185	593	778	276,726	1,005,079	1,281,805
70 to 74	234	689	923	362,416	1,257,763	1,620,179
75 to 79	173	552	725	263,807	988,859	1,252,666
80 to 84	109	304	413	176,432	449,608	626,040
85 to 89	57	162	219	103,732	224,848	328,580
90 & Up	32	129	161	50,163	175,122	225,285
<b>Total</b>	<b>965</b>	<b>2,830</b>	<b>3,795</b>	<b>\$ 1,549,381</b>	<b>\$ 4,833,002</b>	<b>\$ 6,382,383</b>



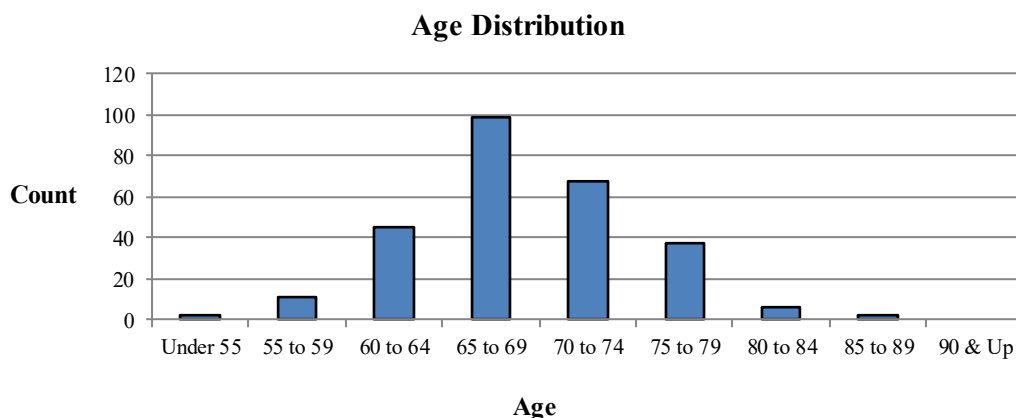
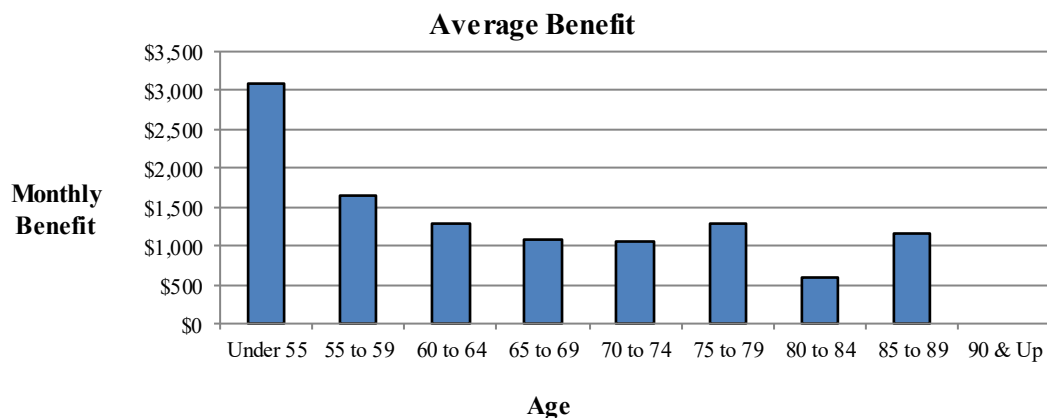


**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**SUMMARY OF RETIRED MEMBERS**  
as of January 1, 2022

Charter Schools  
(Last employer prior to retirement)

Age	Number			Monthly Benefit		
	Male	Female	Total	Male	Female	Total
Under 55	1	1	2	\$ 3,648	\$ 2,528	\$ 6,176
55 to 59	1	10	11	616	17,399	18,015
60 to 64	12	33	45	23,332	34,400	57,732
65 to 69	30	69	99	30,524	77,552	108,076
70 to 74	17	50	67	14,592	56,006	70,598
75 to 79	12	25	37	11,181	36,964	48,145
80 to 84	3	3	6	1,740	1,790	3,530
85 to 89	1	1	2	436	1,885	2,321
90 & Up	0	0	0	0	0	0
<b>Total</b>	<b>77</b>	<b>192</b>	<b>269</b>	<b>\$ 86,069</b>	<b>\$ 228,524</b>	<b>\$ 314,593</b>





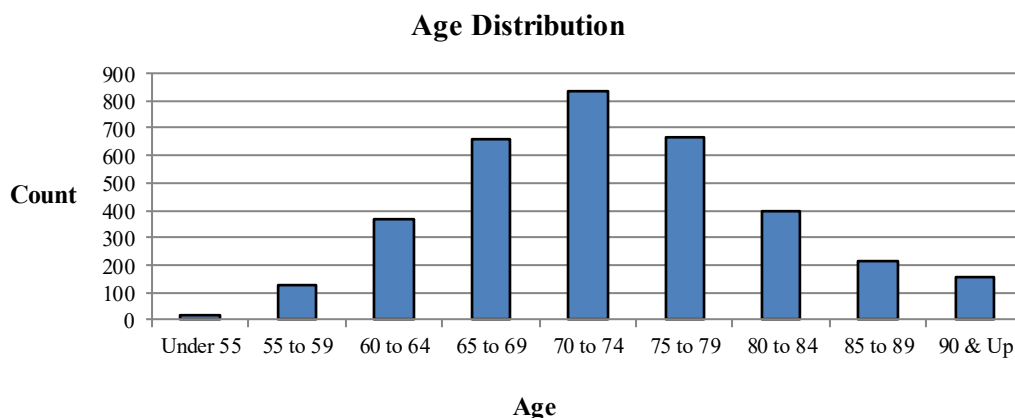
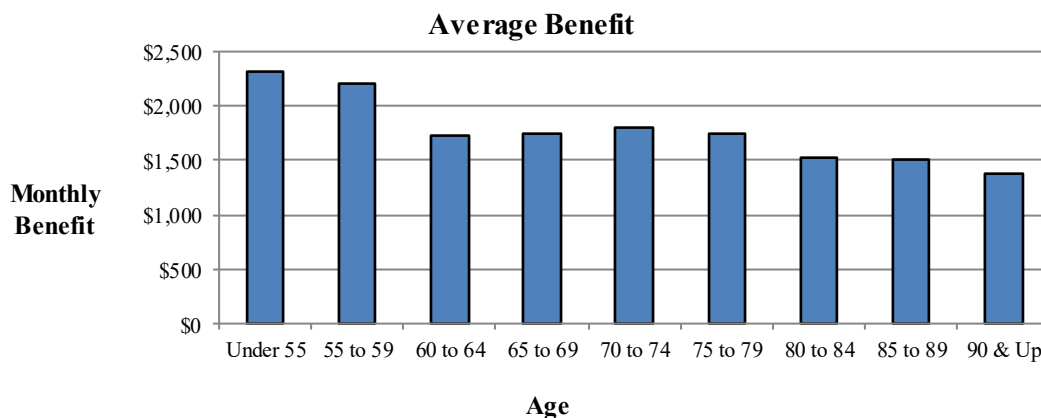


**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**SUMMARY OF RETIRED MEMBERS**  
as of January 1, 2022

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

Age	Number			Monthly Benefit		
	Male	Female	Total	Male	Female	Total
Under 55	4	10	14	\$ 8,518	\$ 23,866	\$ 32,384
55 to 59	45	80	125	93,991	181,157	275,148
60 to 64	104	260	364	172,937	456,056	628,993
65 to 69	147	509	656	234,970	906,992	1,141,962
70 to 74	212	626	838	336,607	1,173,009	1,509,616
75 to 79	158	508	666	246,558	917,090	1,163,648
80 to 84	106	294	400	174,692	437,603	612,295
85 to 89	55	158	213	102,220	219,712	321,932
90 & Up	31	123	154	49,673	163,615	213,288
<b>Total</b>	<b>862</b>	<b>2,568</b>	<b>3,430</b>	<b>\$ 1,420,166</b>	<b>\$ 4,479,100</b>	<b>\$ 5,899,266</b>



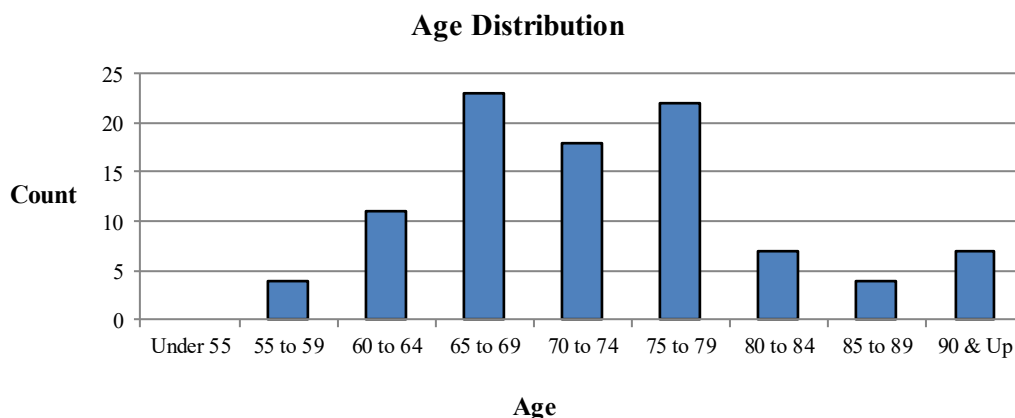
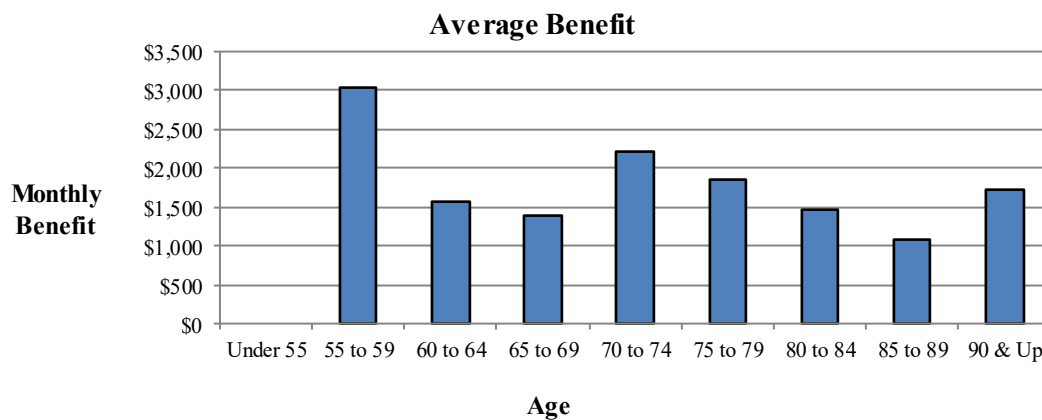


**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**SUMMARY OF RETIRED MEMBERS**  
as of January 1, 2022

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	2	2	4	5,055	7,062	12,117
60 to 64	6	5	11	8,008	9,255	17,263
65 to 69	8	15	23	11,232	20,535	31,767
70 to 74	5	13	18	11,217	28,748	39,965
75 to 79	3	19	22	6,068	34,805	40,873
80 to 84	0	7	7	0	10,215	10,215
85 to 89	1	3	4	1,076	3,251	4,327
90 & Up	1	6	7	490	11,507	11,997
<b>Total</b>	<b>26</b>	<b>70</b>	<b>96</b>	<b>\$ 43,146</b>	<b>\$ 125,378</b>	<b>\$ 168,524</b>



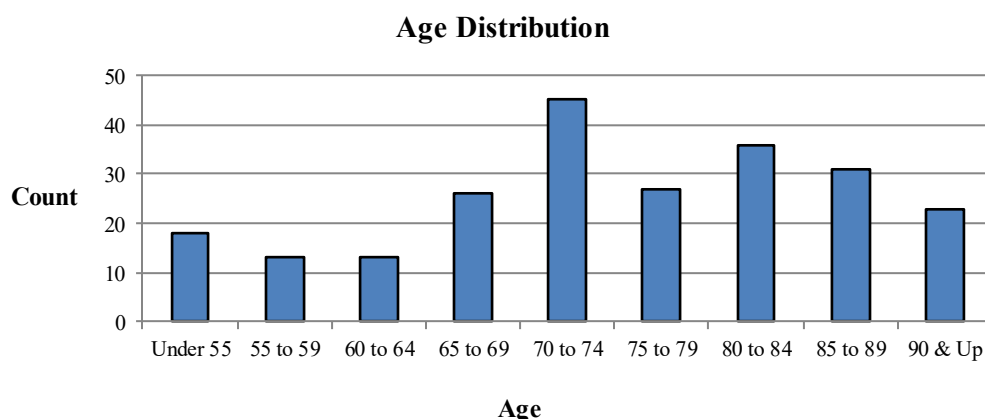
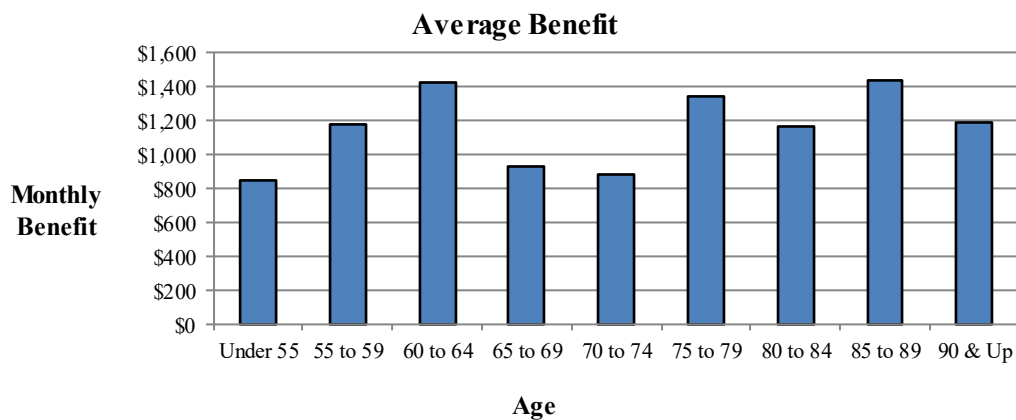


**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**SUMMARY OF BENEFICIARIES\***  
as of January 1, 2022

Age	Number			Monthly Benefit		
	Male	Female	Total	Male	Female	Total
Under 55	9	9	18	\$ 7,244	\$ 7,953	\$ 15,197
55 to 59	7	6	13	6,050	9,175	15,225
60 to 64	4	9	13	6,144	12,419	18,563
65 to 69	4	22	26	3,614	20,445	24,059
70 to 74	11	34	45	8,071	31,765	39,836
75 to 79	12	15	27	10,402	25,825	36,227
80 to 84	7	29	36	7,587	34,456	42,043
85 to 89	7	24	31	9,737	34,578	44,315
90 & Up	6	17	23	5,933	21,344	27,277
<b>Total</b>	<b>67</b>	<b>165</b>	<b>232</b>	<b>\$ 64,782</b>	<b>\$ 197,960</b>	<b>\$ 262,742</b>

\* Includes 4 beneficiaries who were owed a single lump sum payment and were not paid prior to the valuation date.

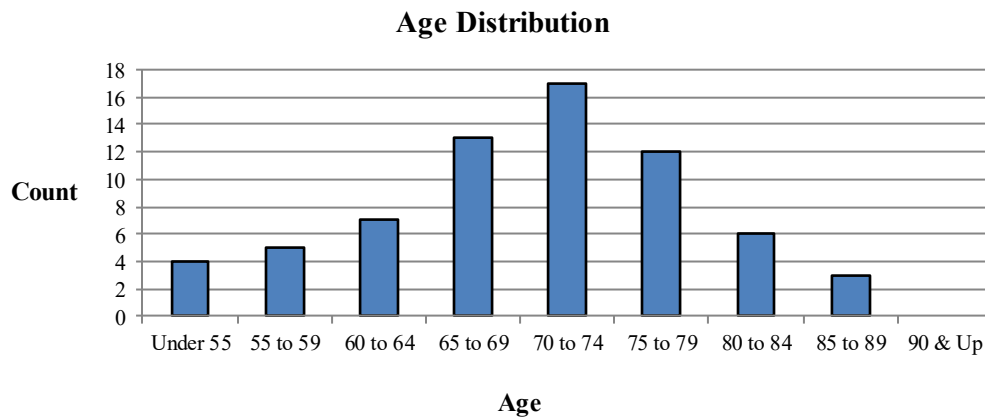
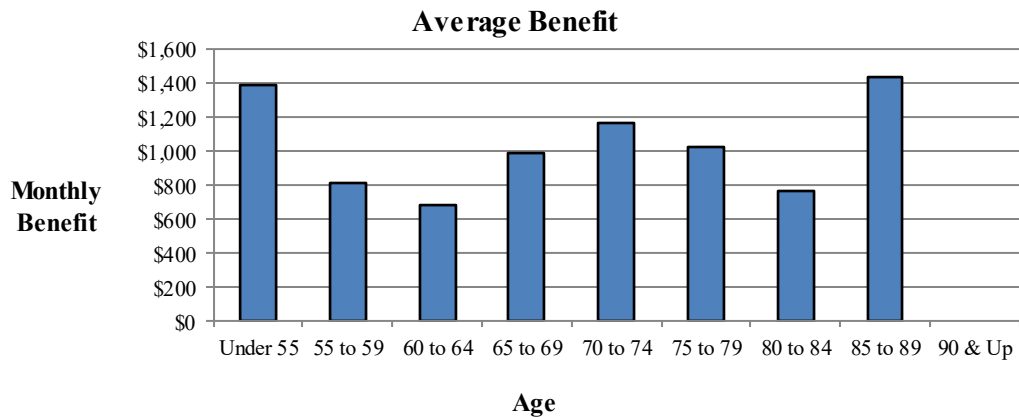




**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**SUMMARY OF DISABLED MEMBERS**  
as of January 1, 2022

Age	Number			Monthly Benefit		
	Male	Female	Total	Male	Female	Total
Under 55	0	4	4	\$ 0	\$ 5,550	\$ 5,550
55 to 59	3	2	5	2,849	1,229	4,078
60 to 64	2	5	7	1,224	3,596	4,820
65 to 69	4	9	13	3,392	9,388	12,780
70 to 74	6	11	17	6,045	13,662	19,707
75 to 79	1	11	12	518	11,822	12,340
80 to 84	0	6	6	0	4,602	4,602
85 to 89	0	3	3	0	4,293	4,293
90 & Up	0	0	0	0	0	0
<b>Total</b>	<b>16</b>	<b>51</b>	<b>67</b>	<b>\$ 14,028</b>	<b>\$ 54,142</b>	<b>\$ 68,170</b>





**APPENDIX B: HISTORICAL MEMBERSHIP DATA**

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**HISTORICAL MEMBERSHIP PROFILE**  
as of January 1

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



**APPENDIX B: HISTORICAL MEMBERSHIP DATA**

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**HISTORICAL ACTIVE MEMBER DATA**

<b>Valuation January 1</b>	<b>Active Members</b>	<b>Annual Payroll</b>	<b>Annual Average Pay</b>	<b>% Increase in Average Pay</b>
2013	3,396	\$157,303,005	\$46,320	(2.42%)
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%



**APPENDIX B: HISTORICAL MEMBERSHIP DATA**

**AVERAGE MONTHLY BENEFIT AMOUNTS FOR NEW RETIREES**

Members Retiring During	Years of Credited Service							All Members
	<5	5-10	10-15	15-20	20-25	25-30	30+	
<b>Fiscal Year Ending 01/01/2014</b>								
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
<b>Fiscal Year Ending 01/01/2015</b>								
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
<b>Fiscal Year Ending 01/01/2016</b>								
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
<b>Fiscal Year Ending 01/01/2017</b>								
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
<b>Fiscal Year Ending 01/01/2018</b>								
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
<b>Fiscal Year Ending 01/01/2019</b>								
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
<b>Fiscal Year Ending 01/01/2020</b>								
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
<b>Fiscal Year Ending 01/01/2021</b>								
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
<b>Fiscal Year Ending 01/01/2022</b>								
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



**APPENDIX B: HISTORICAL MEMBERSHIP DATA**

**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		
2012	138	\$1,939,048	108	\$1,485,934	3,859	\$72,356,163		\$18,750
2013	148	2,480,646	95	1,690,031	3,885	73,146,778	1.09%	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





## APPENDIX C: SUMMARY OF BENEFIT PROVISIONS

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### 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.



## APPENDIX C: SUMMARY OF BENEFIT PROVISIONS

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### 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



## APPENDIX C: SUMMARY OF BENEFIT PROVISIONS

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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.



## APPENDIX C: SUMMARY OF BENEFIT PROVISIONS

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### 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:



## APPENDIX C: SUMMARY OF BENEFIT PROVISIONS

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### 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 14<sup>th</sup> 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 1<sup>st</sup> 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.



## APPENDIX C: SUMMARY OF BENEFIT PROVISIONS

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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%.



## APPENDIX C: SUMMARY OF BENEFIT PROVISIONS

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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.



## **APPENDIX D: ACTUARIAL COST METHOD AND ASSUMPTIONS**

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### **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.





## **APPENDIX D: ACTUARIAL COST METHOD AND ASSUMPTIONS**

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### **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



## APPENDIX D: ACTUARIAL COST METHOD AND ASSUMPTIONS

**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.

Years	Rates by Service			
	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.



## APPENDIX D: ACTUARIAL COST METHOD AND ASSUMPTIONS

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**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.



## APPENDIX D: ACTUARIAL COST METHOD AND ASSUMPTIONS

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**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.



## APPENDIX E: GLOSSARY OF TERMS

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<b>Actuarial Accrued Liability</b>	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”.
<b>Actuarial Assumptions</b>	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.
<b>Accrued Service</b>	Service credited under the system which was rendered before the date of the actuarial valuation.
<b>Actuarial Equivalent</b>	A single amount or series of amounts of equal actuarial value to another single amount or series of amounts, computed on the basis of appropriate assumptions.
<b>Actuarial Cost Method</b>	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”.
<b>Experience Gain (Loss)</b>	The difference between actual experience and actuarial assumptions anticipated experience during the period between two actuarial valuation dates.
<b>Actuarial Present Value</b>	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.
<b>Amortization</b>	Paying off an interest-discounted amount with periodic payments of interest and principal, as opposed to paying off with a lump sum payment.
<b>Normal Cost</b>	The actuarial present value of retirement system benefits allocated to the current year by the actuarial cost method.
<b>Unfunded Actuarial Accrued Liability</b>	<p>The difference between actuarial accrued liability and the valuation assets.</p> <p>Most retirement systems have unfunded actuarial accrued liability. They arise each time new benefits are added and each time an actuarial loss is realized.</p>