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

Actuarial Valuation Report
as of January 1, 2016





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May 31, 2016

The 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 an actuarial valuation of the Public School Retirement System of the School District of Kansas City, Missouri as of January 1, 2016. The major findings of the valuation are contained in this report, including the actuarial required contribution rate for the 2016 plan year. The actuarial methods are the same as were used in the prior valuation, but there was one change to the actuarial assumptions. The mortality tables used in the valuation are tied to tables published by the Internal Revenue Service which are updated annually to reflect one additional year of mortality improvement. The use of these updated IRS mortality tables for valuation dates in 2016, which are reflected in this valuation, increased the liabilities and costs of the System. There were also two changes in the plan provisions which were first reflected in this valuation and impacted the liabilities. The first was an increase to the member and employer contribution rates for 2016 from 8.5% to 9.0% due to the Board's action last year. The second reflects the updated early retirement factors adopted by the Board in June, 2015 at the recommendation of the System's actuary.

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 for the last valuation. 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.

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.

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Actuarial computations presented in this report are for purposes of determining the actuarial contribution rates for funding the System. The calculations in the enclosed report 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 Standard No. 67 are provided in a separate report.

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. The Board of Trustees has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in Appendix C.

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 'Brent A. Banister'.

Brent A. Banister, PhD, FSA, EA, FCA, MAAA
Chief Pension Actuary



SECTION I: EXECUTIVE SUMMARY

This report presents the results of the January 1, 2016 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 required to fund the System and evaluate the sufficiency of the current contribution rate;
- disclose certain asset and liability measurements as of the valuation date;
- monitor any deviation between actual plan experience and experience projected by the actuarial assumptions; and
- analyze and report on any significant trends in assets, liabilities, and contributions over the past several years.

There has been no change in the actuarial methods from the last valuation. However, the mortality tables used in the valuation are tied to tables published by the Internal Revenue Service for use by corporate pension plans and are updated annually to reflect one additional year of mortality improvement. The 2016 updated mortality tables, which were used in this valuation, increased the actuarial accrued liability by \$1.2 million. In addition, there were two changes to the plan provisions reflected in this valuation. The Board's action to increase the member and employer contribution rates for 2016 from 8.5% to 9.0%, effective January 1, 2016 is first reflected in this valuation. In addition, the updated early retirement factors adopted by the Board in June, 2015 are also reflected. Both of these changes had a small impact on the actuarial liability of the System.

The data provided for the valuation for inactive vested members was expanded for this valuation and, as a result, monthly benefit amounts were directly calculated and valued for these members. In prior valuations, the liability for such members was indirectly valued by setting the liability equal to 1.5 times the member's account balance. The change in the valuation methodology for inactive vested members had a small impact on the valuation results, producing a slightly lower liability for these members.

The actuarial valuation results provide a "snapshot" view of the System's financial condition on January 1, 2016. The valuation results reflect net unfavorable experience for the past plan year as demonstrated by an unfunded actuarial accrued liability that was higher than expected based on the actuarial assumptions used in the January 1, 2015 actuarial valuation. Unfavorable experience on the actuarial value of assets resulted in an actuarial loss of \$22.3 million and experience on liabilities resulted in a gain of \$2.3 million for an overall actuarial loss of \$20.0 million. As a result of this experience and the changes discussed earlier, the System's unfunded actuarial accrued liability increased from \$179.2 million in the January 1, 2015 valuation to \$200.6 million in the January 1, 2016 valuation. A detailed analysis of the change in the unfunded actuarial accrued liability is shown on page 4.

The System uses an asset smoothing method in the valuation process. As a result, the System's funded status and the actuarial contribution rate are based on the actuarial (smoothed) value of assets – not the market value. The rate of return on the market value of assets was -1.8%, but due to the asset smoothing process the return on the actuarial value of assets was 4.8%. Because the investment return on the actuarial value of assets was lower than the actuarial assumed rate of return (8.0%), an actuarial loss on assets occurred. Due to the low return on the market value of assets in 2015, the deferred asset loss increased from \$13.9 million in the January 1, 2015 valuation to \$58.5 million in the January 1, 2016 valuation. Actual returns over the next few years will determine if, and when, the \$58.5 million of deferred investment loss is recognized.



SECTION I: EXECUTIVE SUMMARY

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

ASSETS

As of January 1, 2016, the System had total assets of \$636.1 million when measured on a market value basis. This was a decrease of \$62.4 million from the January 1, 2015 figure of \$698.5 million. The market value of assets is not used directly in the calculation of the System’s funded status and the actuarial contribution rate. An asset valuation method, which smoothes the effect of market fluctuations, is used to determine the value of assets used in the valuation, called the “actuarial value of assets”. Gains and losses, determined as the difference between the actual and expected value of assets (calculated using the actuarial assumed rate of 8.0%), 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 actuarial value of assets was 4.8%, less than the assumed rate of return of 8.0%. As of January 1, 2016, the actuarial value of assets exceeds the market value of assets by \$58.5 million.

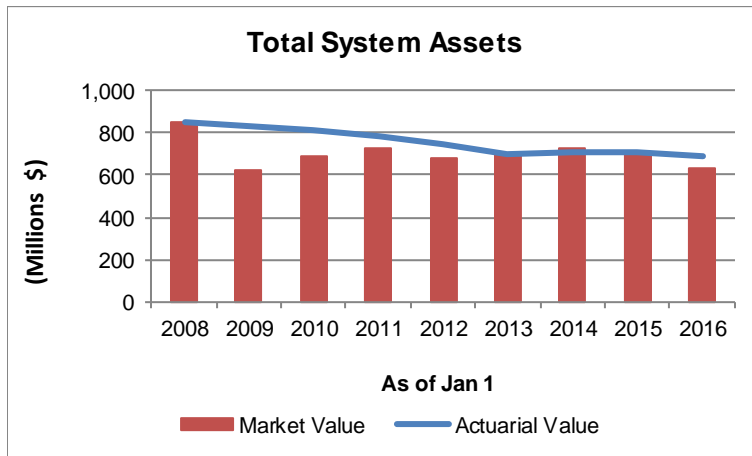
The components of the change in the market and actuarial value of assets for the System (in millions) are set forth below:

	Market Value (\$M)	Actuarial Value (\$M)
Assets, January 1, 2015	\$698.5	\$712.4
- Employers and Member Contributions	29.1	29.1
- Benefit Payments and Refunds	(79.6)	(79.6)
- Investment, Depreciation and Administrative Expenses	(6.4)	(6.4)
- Investment Income	(5.5)	39.1
Assets, January 1, 2016	\$636.1	\$694.6
Estimated Rate of Return	(1.8%)	4.8%

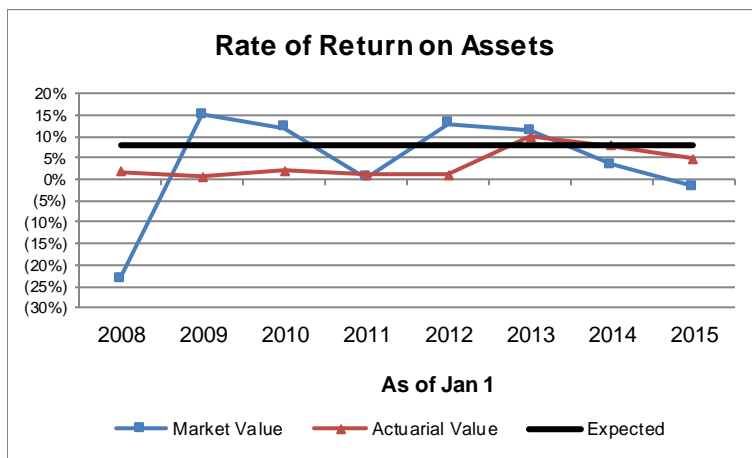
The unrecognized investment loss represents about 9% of the market value of assets. Unless offset by future investment gains or other favorable experience, the recognition of the \$58.5 million loss will flow through the asset smoothing method and negatively impact the funded ratio and actuarial contribution rate in future years. If the deferred loss was recognized immediately in the actuarial value of assets, the funded percentage would decrease from 78% to 71% and the actuarial contribution rate for the System would increase from 11.2% to 14.1% of payroll.



SECTION I: EXECUTIVE SUMMARY



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



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

LIABILITIES

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

The Actuarial Accrued Liability and Unfunded Actuarial Accrued Liability for the System as of January 1, 2016 are:

Actuarial Accrued Liability	\$895,230,295
Actuarial Value of Assets	<u>694,641,248</u>
Unfunded Actuarial Accrued Liability	\$200,589,047



SECTION I: EXECUTIVE SUMMARY

The existence of an unfunded actuarial accrued liability means that the System has actuarial assets below the target amount for an ongoing plan. Consequently, contributions in excess of the normal cost will be needed in order for the System to reach fully funded status, assuming all assumptions are met. 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. 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 9 of this report.

Between January 1, 2015 and January 1, 2016, the change in the unfunded actuarial accrued liability for the System was as follows (in millions):

	(\$ Millions)	
Unfunded Actuarial Accrued Liability, January 1, 2015	\$	179.2
- Expected decrease from amortization method		(1.6)
- Actual versus actuarial contributions		4.4
- Investment experience		22.3
- Liability experience		(2.3)
- Updated mortality assumption		1.2
- Reflect new early retirement factors		(0.1)
- New valuation method for inactive vested benefits		(0.4)
- Other experience		(2.1)
Unfunded Actuarial Accrued Liability, January 1, 2016	\$	200.6

The experience loss for the 2015 plan year of \$20.0 million reflects the combined impact of an actuarial loss of \$22.3 million on System assets (actuarial value), and an actuarial gain of \$2.3 million on System liabilities. The largest source of gain on the liability experience was due to salary increases that were lower than expected based on the actuarial assumptions.

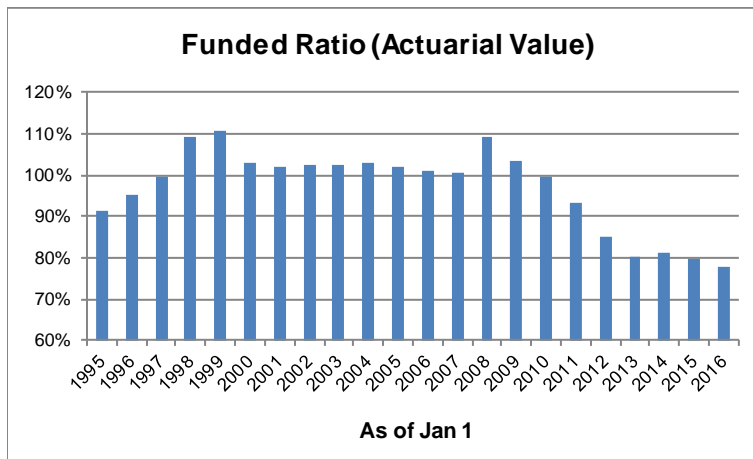
Based on our discussions with the System's staff, additional data was added to the 2016 valuation data file so that benefit amounts for inactive vested members could be better estimated and valued directly. Prior to these data improvements, the liability for inactive vested members was valued as 1.5 times their employee contribution account balance. Implementing the improved methodology for estimating terminated vested liability resulted in a \$0.4 million decrease in the actuarial accrued liability. Also, the Board adopted updated early retirement factors in June, 2015, which were reflected in this valuation. Both of these changes had a small impact on the System's liabilities.

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

	1/1/2012	1/1/2013	1/1/2014	1/1/2015	1/1/2016
Actuarial Accrued Liability (\$M)	\$874.3	\$868.7	\$875.5	\$891.5	\$895.2
Actuarial Value of Assets (\$M)	\$742.3	\$697.0	\$710.8	\$712.4	\$694.6
Funded Ratio (Actuarial Value)	84.9%	80.2%	81.2%	79.9%	77.6%
Market Value of Assets (\$M)	\$681.9	\$703.0	\$726.6	\$698.5	\$636.1
Funded Ratio (Market Value)	78.0%	80.9%	83.0%	78.4%	71.1%



The System's funded ratio has been very strong (near or above 100%) until the last several years when the recognition of the market downturn of 2008 has been fully reflected. Future investment experience will be the largest driver of the System's funded ratio in future years. However, contributions at the full actuarial contribution rate will also be important to the System's long-term funding.

As mentioned earlier in this report, due to the asset smoothing method there is currently a \$58.5 million difference between the actuarial value and the market value of assets. To the extent there is not favorable investment experience to offset the deferred loss, the \$58.5 million deferred loss will be recognized in future years and the System's funded status will decline. The System's funded status will continue to be heavily dependent on future investment experience.

CONTRIBUTION RATES

Generally, contributions to the System consist of:

- A "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, 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.

As of January 1, 2016, the actuarial accrued liability exceeds the actuarial value of assets so an unfunded actuarial accrued liability (UAAL) exists. When amortized over a rolling 30-year period, as a level dollar amount, the resulting contribution is 9.95% of pay. The System's actuarial contribution rate is the sum of the normal cost and the UAAL amortization contribution or 20.18% of pay (10.23% normal cost plus 9.95% UAAL contribution). Given a current contribution rate of 18.00% of pay (9.00% each for employee and employer), the resulting contribution shortfall as of January 1, 2016 is 2.18%. However, this measurement is of limited value in assessing the adequacy of the current contribution rate and the



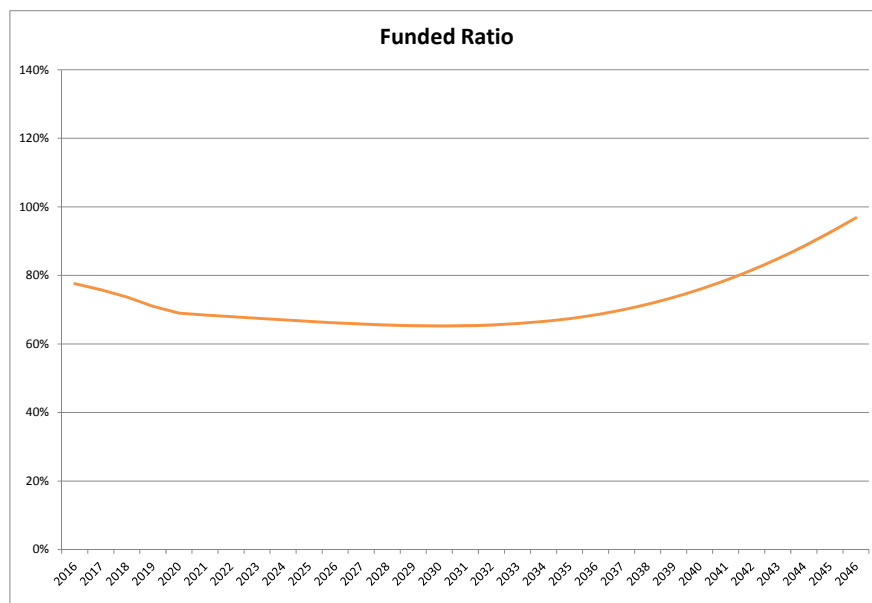
SECTION I: EXECUTIVE SUMMARY

long term funding health of the System. All of the measurements in the valuation are based on the snapshot at January 1, 2016 so they don't reflect changes that will occur in future years.

As mentioned earlier, the System is funded with a fixed contribution rate of 18% of payroll. In the current valuation, 10.23% is needed to fund the normal cost for current active members and the remainder, 7.77% of payroll, is available to finance the UAAL. However, over time these amounts will change as explained in the following items:

- (1) A different benefit structure, with a lower normal cost rate, applies to members hired after January 1, 2014. Therefore, over time as current members in Plan B leave and are replaced by new hires in Plan C, the normal cost rate is expected to decline. As a result, the portion of the total contribution rate available to pay off the UAAL is expected to increase each year in the future until all active members in the valuation are covered by Plan C. This increasing payment stream for the UAAL will improve the System's funded status over the next 30 years.
- (2) Covered payroll is expected to increase over time which is not anticipated in the calculation of the UAAL amortization payment of 9.95% in the actuarial required contribution rate in this valuation. If the increasing payroll was anticipated in calculating the UAAL payment, the amortization payment would be lower than 9.95% and the contribution rate shortfall would be smaller.

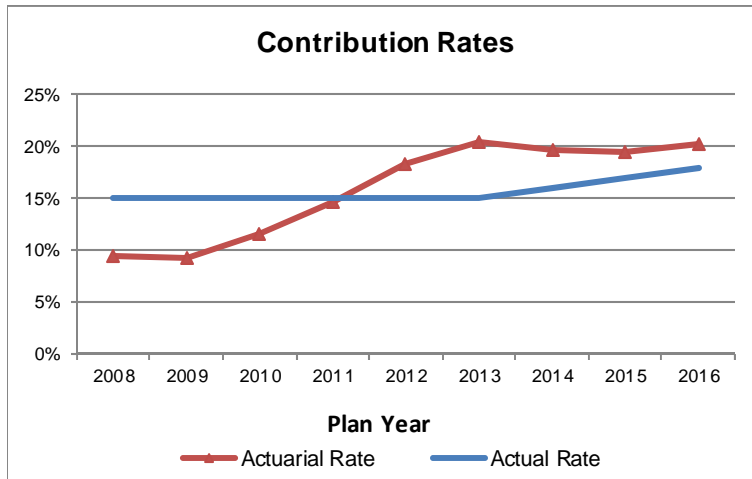
As a result, it is impossible to estimate the long-term funding progress of the System without performing an open group projection of future valuation results. Such modeling was prepared in connection with the 2016 valuation. The following graph reflects the projected funded ratio in future years based on the current fixed contribution rate of 18% of payroll (9% employer and 9% employee). Please note that these projections assume that all actuarial assumptions are met in all future years, including an 8% return on the market value of assets. To the extent actual experience is different than that assumed, the actual funded ratio of the System will vary from these projections, perhaps significantly.





SECTION I: EXECUTIVE SUMMARY

A summary of the System's recent contribution rates is shown below:



The actuarial contribution rate has increased dramatically in recent years 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.

COMMENTS

Under legislation passed in 2013, the Board may adjust the member and employer contribution rate each year by no more than 0.5% each. The contribution rate can fluctuate between 7.5% and 9.0%. The Board increased the contribution rate for both members and employers to 9.0% of pay, effective January 1, 2016. The higher contribution rate will reduce the shortfall between the actuarial contribution rate and the actual contribution rate and improve the System's funding over the long term. As a result of the higher employee and employer contribution rate, the System's funding shortfall decreased from 2.56% of pay in last year's valuation to 2.18% of pay in the current valuation despite an increase in the actuarial required contribution rate.

In addition, legislation in 2013 modified the set of plan provisions applicable for members hired after December 31, 2013, referred to as Plan C. The key differences between Plan B and Plan C are a lower benefit multiplier (1.75% instead of 2.00%) and different requirements for unreduced benefits (age 62 or Rule of 80 rather than age 60 or Rule of 75). As of January 1, 2016, there are 1,080 active Plan C members in the System out of a total of 3,574, about 30%. As discussed earlier, the impact of the new benefit structure on the System's funding will evolve gradually over time as current members (covered by Plan B) leave covered employment and are replaced with new members who are covered by Plan C.

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 negative return on the market value of assets in 2015, the System experienced an actuarial loss on assets of \$22.3 million. This loss was partially offset by a gain on liabilities of \$2.3 million. The net impact of the asset and the liability experience was an actuarial loss of \$20.0 million.

The System's actuarial required contribution rate increased from 19.56% in the January 1, 2015 valuation to 20.18% in this valuation. The actuarial required contribution rate to be paid by the System has been, and will continue to be, heavily impacted by investment returns from year to year. Despite the use of an asset smoothing method, actual returns that are significantly different from the 8.00% assumption will create volatility in the System's actuarial required contribution rate.



SECTION I: EXECUTIVE SUMMARY

The deferred investment loss (actuarial value less market value of assets) is \$58.5 million, about 9% of market value. Absent investment gains in future years, the deferred investment loss of \$58.5 million will eventually be reflected in the actuarial value of assets. While the use of an asset smoothing method is a common procedure for public retirement systems, it is important to identify the potential impact of the deferred investment experience. This is accomplished by comparing the key valuation results from the January 1, 2016 actuarial valuation using both the actuarial and market value of assets.

	Using Actuarial Value of Assets	Using Market Value of Assets
Actuarial Accrued Liability	\$895,230,295	\$895,230,295
Asset Value	<u>\$694,641,248</u>	<u>\$636,109,506</u>
Unfunded Actuarial Accrued Liability	\$200,589,047	\$259,120,789
Funded Ratio	77.6%	71.1%
Normal Cost Rate	10.23%	10.23%
UAAL Contribution Rate*	<u>9.95%</u>	<u>12.86%</u>
Total Contribution Rate	20.18%	23.09%
Employee Contribution Rate	(9.00%)	(9.00%)
Employer Contribution Rate	<u>(9.00%)</u>	<u>(9.00%)</u>
Contribution Shortfall	2.18%	5.09%

* Calculated as a level dollar payment. The UAAL contribution rate, as a percent of payroll, is expected to decrease over the remainder of the amortization period as covered payroll increases.



SECTION I: EXECUTIVE SUMMARY

Summary of Principal Valuation Results

	1/1/2016 Valuation	1/1/2015 Valuation	% Change
1. PARTICIPANT DATA			
Number of:			
Active Members			
- Plan B	2,494	2,919	(14.56%)
- Plan C	1,080	574	88.15%
Total	<u>3,574</u>	<u>3,493</u>	2.32%
Retirees, Disableds, and Beneficiaries	4,049	4,011	0.95%
Inactive Members*	<u>2,740</u>	<u>2,600</u>	5.38%
Total Members	10,363	10,104	2.56%
Projected Annual Salaries of Active Members	\$ 179,013,516	\$ 170,845,124	4.78%
Annual Retirement Payments for Retirees, Disableds, and Beneficiaries	\$ 76,786,236	\$ 75,736,524	1.39%
2. ASSETS AND LIABILITIES			
a. Market Value of Assets	\$ 636,109,506	\$ 698,523,480	(8.94%)
b. Actuarial Value of Assets	694,641,248	712,390,611	(2.49%)
c. Total Actuarial Accrued Liability	895,230,295	891,543,036	0.41%
d. Unfunded Actuarial Accrued Liability [c - b]	\$ 200,589,047	\$ 179,152,425	11.97%
e. Funded Ratio (Actuarial Value of Assets) [b / c]	77.59%	79.91%	(2.90%)
f. Funded Ratio (Market Value of Assets) [a / c]	71.06%	78.35%	(9.30%)
g. Projected Benefit Obligation	\$ 889,456,919	\$ 885,297,319	0.47%
3. CONTRIBUTION RATES AS A PERCENT OF PAYROLL			
Normal Cost	10.23%	10.25%	(0.20%)
Amortization of Unfunded Actuarial Accrued Liability	<u>9.95%</u>	<u>9.31%</u>	6.87%
Actuarial Required Contribution Rate	20.18%	19.56%	3.17%
Member Contribution Rate	(9.00%)	(8.50%)	5.88%
Employer Contribution Rate	<u>(9.00%)</u>	<u>(8.50%)</u>	5.88%
Contribution Rate Shortfall	2.18%	2.56%	(14.84%)
Contribution Shortfall	\$ 3,902,495	\$ 4,376,071	(10.82%)

*Includes former participants entitled to either a refund of contributions or a deferred annuity.



SECTION II: SCOPE OF THE REPORT

This report presents the actuarial valuation of the Public School Retirement System of the School District of Kansas City, Missouri as of January 1, 2016. This valuation was prepared at the request of the System's Board of Trustees. The report is based on plan provisions and actuarial assumptions that are unchanged from last year, except for the update of the mortality table for one additional year of mortality improvement, an increase in the contribution rate from 8.5% to 9.0% of payroll, and updated early retirement factors.

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.

This report includes several appendices:

- Appendix A Schedules of valuation data classified by various categories of members.
- Appendix B A summary of the current benefit structure, as determined by the provisions of governing law on the valuation date.
- Appendix C A summary of the actuarial methods and assumptions used to estimate liabilities and determine contribution rates.
- Appendix D A glossary of actuarial terms.



SECTION III: ASSETS

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 for this valuation is January 1, 2016. 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, 2016, the market value of assets for the System was \$636.1 million. Table 1 summarizes the market value of assets by asset category. Table 2 is a comparison, at market values, of System assets as of January 1, 2016, and January 1, 2015, in total.

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, 2016.



SECTION III: ASSETS

TABLE 1

**Net Assets at Market Value
as of January 1, 2016**

INVESTMENTS, AT MARKET VALUE	
Cash and short term investments	\$ 14,266,375
Commingled domestic fixed income	61,809,810
High yield fixed income	14,919,095
Global fixed income	27,554,505
Domestic equity	141,293,930
International equity	148,205,278
Pooled real estate funds	71,749,420
Alternative equity fund	94,206,030
Private equity	30,226,368
Commodities	17,823,497
Total Investments, at Market Value	\$ 622,054,308
RECEIVABLES	
Plan member contributions	\$ 720,848
Employer contributions	9,757,475
Securities sold	1,189,058
Accrued interest and dividends	507,828
Total Receivables	\$ 12,175,209
OTHER ASSETS	
Cash	\$ 2,469,527
Fixed assets	103,742
Other assets	36,491
Total Other Assets	\$ 2,609,760
TOTAL ASSETS	\$ 636,839,277
LIABILITIES	
Due to broker for securities purchased	\$ 30,751
Accounts payable	583,179
Accrued payroll expenses	115,841
Total Liabilities	\$ 729,771
NET ASSETS AVAILABLE FOR BENEFITS	\$ 636,109,506

Note: Based on unaudited asset information.



SECTION III: ASSETS

TABLE 2

Statement of Changes in Net Assets as of January 1, 2016

ADDITIONS TO NET ASSETS

Contributions	
Employers	\$ 14,499,260
Plan members	14,645,901
Total Contributions	\$ 29,145,161
Investment Income	
Net appreciation (depreciation) in fair value of investments	\$ (12,410,080)
Interest/Dividends	6,874,192
Other income	0
Investment income before expenses	\$ (5,535,888)
Less: investment expenses	4,489,630
Total investment income	\$ (10,025,518)
TOTAL ADDITIONS TO NET ASSETS	\$ 19,119,643

DEDUCTIONS FROM NET ASSETS

Benefits paid directly to participants	\$ 76,235,124
Refunds of contributions	3,399,065
Depreciation expense	250,979
Administrative expenses	1,648,449
TOTAL DEDUCTION FROM ASSETS	\$ 81,533,617

NET INCREASE (DECREASE) \$ (62,413,974)

NET ASSETS AVAILABLE FOR BENEFITS

Beginning of year	\$ 698,523,480
End of year	\$ 636,109,506

Note: Based on unaudited asset information.



SECTION III: ASSETS

TABLE 3

**Development of Actuarial Value of Assets
as of January 1, 2016**

	2016
1. Deferral of Investment Return for 2015	
a. Market Value, January 1, 2015	\$ 698,523,480
b. Contributions for 2015	29,145,161
c. Benefit Payments for 2015	79,634,189
d. Actual Investment Return, Net of All Expenses	\$ (11,924,946)
e. Expected Return Rate	8.00%
f. Expected Return - Weighted for Timing* (a. x e.) + [(b. - c.) x (((1 + e.) ⁵) - 1)]	\$ 53,901,169
g. Investment Gain/(Loss) for the Year (d. - f.)	\$ (65,826,115)
h. Deferred Investment Return (g. x 80%)	\$ (52,660,892)
2. Actuarial Value, January 1, 2016	
a. Market Value, January 1, 2016	\$ 636,109,506
b. Total Deferred Investment Gain/(Loss)	(58,531,742)
c. Actuarial Value, January 1, 2016 (a. - b.)	\$ 694,641,248
d. Ratio of Actuarial Value of Assets to Market Value of Assets	109.2%
e. Approximate Actuarial Value Rate of Return for 2015, Net of All Expenses	4.8%

* 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
12/31/2011	\$(52,649,069)	\$(42,119,256)	\$(10,529,813)	\$ 0
12/31/2012	22,460,154	13,476,093	4,492,031	4,492,030
12/31/2013	22,436,893	8,974,758	4,487,379	8,974,756
12/31/2014	(32,229,392)	(6,445,878)	(6,445,878)	(19,337,636)
12/31/2015	(65,826,115)	0	(13,165,223)	(52,660,892)
Total	\$(105,807,529)	\$(26,114,283)	\$(21,161,504)	\$(58,531,742)



SECTION IV: SYSTEM LIABILITIES

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, 2016. In this section, the discussion will focus on the commitments of the System, which are referred to as its liabilities.

Table 4 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 4 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, 2016.

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 5 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 6 develops the experience gain/(loss) for the year ended December 31, 2015.

Table 7 shows the actuarial balance sheet.

PENSION BENEFIT OBLIGATION

Table 8 shows the System’s liability on a Pension Benefit Obligation (PBO) basis.



SECTION IV: SYSTEM LIABILITIES

TABLE 4

**Present Value of Future Benefits
as of January 1, 2016**

1. Active Members		
a. Retirement Benefits	\$	272,007,258
b. Disability Benefits		8,612,312
c. Death Benefits		6,669,797
d. Withdrawal Benefits		37,664,558
e. Subtotal	\$	<u>324,953,925</u>
2. Benefit Recipients		
a. Retiree Benefits	\$	621,537,483
b. Survivor Benefits		17,882,401
c. Disability Benefits		8,717,076
d. Subtotal	\$	<u>648,136,960</u>
3. Inactive Members		
a. Vested Retirement Benefits	\$	21,964,223
b. Non-vested Account Balance		7,194,183
c. Subtotal	\$	<u>29,158,406</u>
4. Total	\$	1,002,249,291
(1e. + 2d. + 3c.)		



SECTION IV: SYSTEM LIABILITIES

TABLE 5

**Actuarial Accrued Liability
as of January 1, 2016**

1. Present Value of Future Benefits (PVFB)	\$ 1,002,249,291
2. Present Value of Future Normal Costs (PVFNC)	
a. Retirement benefits	\$ 58,628,579
b. Disability benefits	3,475,072
c. Death benefits	2,819,714
d. Withdrawal benefits	42,095,631
e. Total	\$ <u>107,018,996</u>
3. Actuarial Accrued Liability (AAL) (1. - 2e.)	\$ 895,230,295
4. Actuarial Value of Assets (AVA)	\$ 694,641,248
5. Unfunded Actuarial Accrued Liability (UAAL) (3. - 4.)	\$ 200,589,047
6. Funded Ratio (AVA / AAL) (4. / 3.)	77.6%



SECTION IV: SYSTEM LIABILITIES

TABLE 6

Actuarial Gain/(Loss) for 2015

Liabilities

1. Actuarial accrued liability as of January 1, 2015	\$	891,543,036
2. Normal cost for 2015		15,453,542
3. Interest at 8.00% on (1) and (2) to December 31, 2015		72,559,726
4. Benefit payments during 2015		(79,634,189)
5. Interest on benefit payments		(3,124,088)
6. Updated mortality assumption		1,174,108
7. Revised early retirement factors		(59,327)
8. Additional terminated vested benefit data		(410,382)
9. Expected actuarial accrued liability as of December 31, 2015	\$	<u>897,502,426</u>
10. Actuarial accrued liability as of December 31, 2015		895,230,295
11. Actuarial gain / (loss) on actuarial accrued liability (9. – 10.)	\$	2,272,131

Assets

12. Actuarial value of assets as of January 1, 2015	\$	712,390,611
13. Contributions during 2015		29,145,161
14. Benefit payments during 2015		(79,634,189)
15. Interest on items (12), (13) and (14)		55,010,540
16. Expected actuarial value of assets as of December 31, 2015	\$	<u>716,912,123</u>
17. Actuarial value of assets as of December 31, 2015		694,641,248
18. Actuarial gain / (loss) on actuarial assets (17. – 16.)	\$	(22,270,875)
19. Total actuarial gain / (loss) (11. + 18.)	\$	(19,998,744)



SECTION IV: SYSTEM LIABILITIES

TABLE 7

Actuarial Balance Sheet

Assets

Current assets (actuarial value)	\$ 694,641,248
Present value of future normal costs	107,018,996
Present value of future contributions to fund unfunded actuarial accrued liability	<u>200,589,047</u>
Total Assets	\$ <u>1,002,249,291</u>

Liabilities

Present value of future retirement benefits for:	
Active employees	\$ 324,953,925
Members currently receiving a benefit	648,136,960
Terminated vested members	21,964,223
Inactive employees due refunds	<u>7,194,183</u>
Total Liabilities	\$ <u>1,002,249,291</u>



SECTION IV: SYSTEM LIABILITIES

TABLE 8

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 B for additional details.

Projected Benefit Obligation	<u>January 1, 2016</u>	<u>January 1, 2015</u>
1. Retired members and beneficiaries currently receiving benefits and terminated members not yet receiving benefits	\$ 677,295,366	\$ 674,794,654
2. Current active participants		
a. Accumulated member contributions, including interest	101,173,695	98,966,336
b. Employer-financed vested benefits	<u>110,987,858</u>	<u>111,536,329</u>
Total Projected Benefit Obligation (PBO)	\$ 889,456,919	\$ 885,297,319
Projected Benefit Obligation funded status		
1. Actuarial Value of Assets (AVA)	\$ 694,641,248	\$ 712,390,611
a. Unfunded Projected Benefit Obligation	194,815,671	172,906,708
b. Funding Ratio (AVA / PBO)	78%	80%
2. Market Value of Assets (MVA)	\$ 636,109,506	\$ 698,523,480
a. Unfunded Projected Benefit Obligation	253,347,413	186,773,839
b. Funding Ratio (MVA / PBO)	72%	79%



SECTION V: EMPLOYER CONTRIBUTIONS

The previous two sections were devoted to a discussion of the assets and liabilities of the System. A comparison of Tables 3 and 4 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 Board of Trustees may adjust both the employee and employer contribution rates, but not by more than 0.50% per year. The minimum contribution rate is 7.50% and the maximum is 9.00%. In general, contributions are computed in accordance with a level percent-of-payroll funding objective. In this context, the term “contribution rate” means the percentage, which is applied to a particular active member payroll to determine the actual employer contribution amount (i.e., in dollars) for the group.

As of January 1, 2016, the valuation assets were less than the actuarial accrued liability so an unfunded actuarial accrued liability exists. The System’s funding policy is to amortize the UAAL, as a level dollar amount, over a rolling 30-year period.

CONTRIBUTION RATE SUMMARY

Table 9 develops the normal cost rate for the System. In Table 10, the amortization payment related to the unfunded actuarial accrued liability, as of January 1, 2016, is developed, as well as the contribution rate for the System.

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



SECTION V: EMPLOYER CONTRIBUTIONS

TABLE 9

Normal Cost Rate

1. Normal Cost	
a. Retirement Benefits	5.88%
b. Disability Benefits	0.32%
c. Death Benefits	0.29%
d. Termination Benefits	3.74%
e. Total	<u>10.23%</u>
2. Normal Cost as a Percentage of Pay	10.23%
3. Employee Contribution Rate for 2016	9.00%
4. Employer Normal Cost Rate (2. - 3.)	1.23%



SECTION V: EMPLOYER CONTRIBUTIONS

TABLE 10

**Development of
2016 Actuarial Required Contribution (ARC)**

1. Unfunded Actuarial Accrued Liability (UAAL)	\$	200,589,047
2. 30-Year Amortization Factor, End of Year*		11.25778
3. UAAL Contribution Amount (1. / 2.)	\$	17,817,816
4. Total Expected Payroll for 2016	\$	179,013,516
5. UAAL Contribution as a Percent of Payroll (3. / 4.)		9.95%
6. Employer Normal Cost Rate		1.23%
7. Actuarial Required Employer Contribution Rate (5. + 6.)		11.18%
8. Employer Contribution Rate		9.00%
9. Contribution Shortfall (7. - 8.)		2.18%

* Reflects level dollar amortization method.



SECTION VI: OTHER INFORMATION

The actuarial accrued liability is a measure intended to help the reader assess (i) a retirement system's funded status on a going concern basis and (ii) progress being made toward accumulating the assets needed to pay benefits as due. Allocation of the actuarial present value of projected benefits between past and future service was based on service using the Entry Age Normal actuarial cost method. Assumptions, including projected pay increases, were the same as used to determine the System's level percent of payroll annual required contribution between entry age and assumed exit age. Entry age was established by subtracting credited service from current age on the valuation date. The actuarial assumptions used in determining the actuarial accrued liability can be found in Appendix C.

In the past, Governmental Accounting Standards Board (GASB) Statements No. 25, *Financial Reporting for Defined Benefit Pension Plans*, and Statement No. 27, *Accounting for Pensions by State and Local Governmental Employers*, applied to the preparation of financial reports of pension plans for state and local governments.

GASB 67, which was first effective for fiscal year end 2014, replaced GASB 25 and represents a significant departure from the requirements of that older statement. GASB 25 was issued as a “funding friendly” statement that required pension plans to report items consistent with the results of the plan’s actuarial valuations, as long as those valuations met certain parameters. GASB 67 basically separates accounting from funding by creating disclosure and reporting requirements that may or may not be consistent with the basis used for funding the System. A separate report that contains all of the information and exhibits of an actuarial nature that are necessary for the System’s financial reporting under GASB 67 has been prepared.

GASB 68 replaced GASB 27 and also represents a significant departure from the requirements of the prior statement. GASB 27 required employers providing benefits through pension plans to report items consistent with the results of the plan’s actuarial valuations as long as those valuations met certain parameters. GASB 68 creates disclosure and reporting requirements that may or may not be consistent with the basis used to fund the Plan. GASB 68 was first effective for the fiscal year ending in 2015 for the employers who participate in the Public School Retirement System of the School District of Kansas City, Missouri.



SECTION VI: OTHER INFORMATION

TABLE 11

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]
1/1/1995	\$ 353,329,957	\$ 386,874,780	\$ 33,544,823	91.3%	\$ 185,374,096	18.1%
1/1/1996	389,103,803	409,428,594	20,324,791	95.0%	171,262,008	11.9%
1/1/1997	428,419,710	429,517,108	1,097,398	99.7%	161,802,480	0.7%
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%

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



SECTION VI: OTHER INFORMATION

TABLE 12

Historical Contribution Rates

Actuarial Valuation Date	Actuarial Contribution Rate	Actual Contribution Rate	Contribution Shortfall/(Margin)
1/1/2005	14.02%	15.00%	(0.98%)
1/1/2006	13.78%	15.00%	(1.22%)
1/1/2007	13.28%	15.00%	(1.72%)
1/1/2008	9.39%	15.00%	(5.61%)
1/1/2009	9.35%	15.00%	(5.65%)
1/1/2010	11.50%	15.00%	(3.50%)
1/1/2011	14.64%	15.00%	(0.36%)
1/1/2012	18.30%	15.00%	3.30%
1/1/2013	20.52%	15.00%	5.52%
1/1/2014	19.68%	16.00%	3.68%
1/1/2015	19.56%	17.00%	2.56%
1/1/2016	20.18%	18.00%	2.18%

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

Summary of Actuarial Methods and Assumptions

Valuation Date	January 1, 2016
Actuarial Cost Method	Entry Age Normal
Amortization Method	Level Dollar, open
Remaining Amortization Period	30 years
Asset Valuation Method	5-Year Smoothed Market Value
Actuarial Assumptions:	
Investment Rate of Return*	8.00%
Projected Salary Increases*	5.00%
No future COLAs	

*Includes Inflation at 3.00%



SECTION VI: OTHER INFORMATION

TABLE 13

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 is indicative of the system following the discipline of level percent of compensation funding.

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)
1987	\$ 54,703,473	\$ 60,096,766	\$ 45,027,324	\$ 157,538,001	100%	100%	95%
1988	60,631,019	68,133,929	45,164,333	172,932,203	100%	100%	98%
1989	68,032,000	72,476,675	50,436,314	192,074,767	100%	100%	102%
1990	77,843,936	79,855,895	52,384,902	220,844,765	100%	100%	121%
1991	86,392,672	77,212,948	62,859,420	241,369,537	100%	100%	124%
1992	91,688,784	101,408,720	69,055,820	278,065,508	100%	100%	123%
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%

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



APPENDIX A: SUMMARY OF MEMBERSHIP DATA

MEMBER CENSUS INFORMATION

A. ACTIVE MEMBERS	January 1, 2016	January 1, 2015	% Change
1. Number of Active Members			
(a) Plan B	2,494	2,919	(14.6%)
(b) Plan C	1,080	574	88.2%
(c) Total	<u>3,574</u>	<u>3,493</u>	2.3%
2. Active Member Averages			
(a) Age	44.0	44.4	(0.9%)
(b) Service	8.1	8.3	(2.4%)
(c) Expected Annual Pay	\$ 50,088	\$ 48,911	2.4%
B. TERMINATED VESTED MEMBERS			
1. Number of Terminated Vested Members	461	476	(3.2%)
2. Terminated Vested Members Averages			
(a) Age	50.5	50.2	0.6%
(b) Account Balance	\$ 32,324	\$ 32,315	0.0%
(c) Estimated Monthly Benefit	\$ 689	\$ N/A	N/A
C. TERMINATED NON-VESTED MEMBERS			
1. Number of Terminated Non-Vested Members	2,279	2,124	7.3%
2. Terminated Non-Vested Members Averages			
(a) Age	44.3	44.3	0.0%
(b) Account Balance	\$ 3,157	\$ 3,118	1.3%
D. RETIREES, DISABLEDS, AND BENEFICIARIES			
1. Number of Members			
(a) Retired	3,749	3,715	0.9%
(b) Disabled	94	94	0.0%
(c) Beneficiaries	206	202	2.0%
(e) Total	<u>4,049</u>	<u>4,011</u>	0.9%
2. Average Age			
(a) Retired	72.0	71.8	0.3%
(b) Disabled	66.7	65.7	1.5%
(c) Beneficiaries	74.6	74.4	0.3%
(e) Total	<u>72.0</u>	<u>71.7</u>	0.4%
3. Average Monthly Benefit			
(a) Retired	\$ 1,622	\$ 1,615	0.4%
(b) Disabled	1,016	1,016	0.0%
(c) Beneficiaries	1,072	1,067	0.5%
(e) Total	<u>\$ 1,580</u>	<u>\$ 1,574</u>	0.4%



APPENDIX A: SUMMARY OF MEMBERSHIP DATA

MEMBER DATA RECONCILIATION

January 1, 2015 to January 1, 2016

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

	Active Members	Retirees	Beneficiaries	Disabled	Terminated Vested	Non-vested with Balance	Total
Total as of January 1, 2015	3,493	3,715	202	94	476	2,124	10,104
New Entrants	625	0	15	0	0	78	718
Rehires/Transfers	38	0	0	0	(13)	(25)	0
Retirements	(115)	145	0	0	(30)	0	0
Disablingments	0	0	0	0	0	0	0
Deaths	(2)	(111)	(11)	0	0	0	(124)
Vested Terminations	(52)	0	0	0	52	0	0
Non-vested Terminations	(243)	0	0	0	0	243	0
Refunds Paid	(161)	0	0	0	(25)	(140)	(326)
Payments Ended	0	0	0	0	0	0	0
Data Adjustments	(9)	0	0	0	1	(1)	(9)
Total as of January 1, 2016	3,574	3,749	206	94	461	2,279	10,363



APPENDIX A: SUMMARY OF MEMBERSHIP DATA

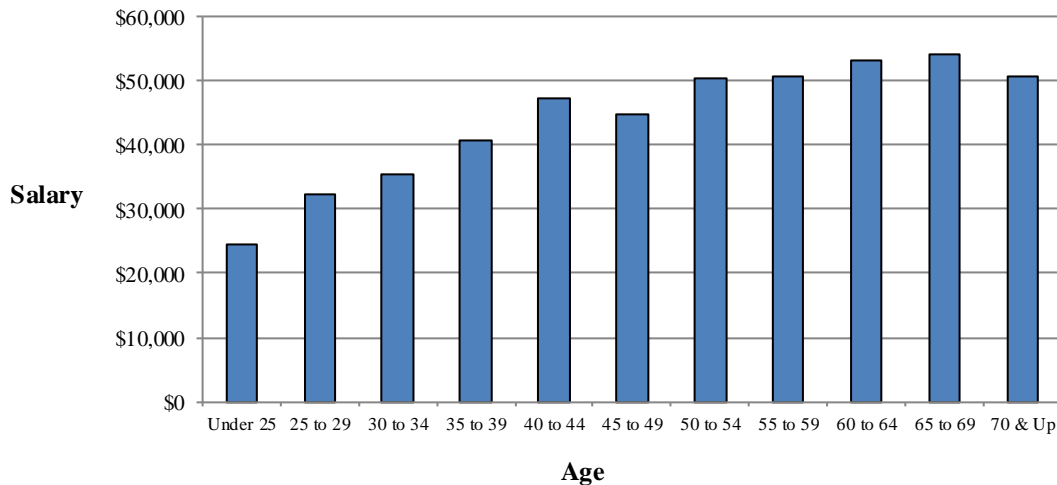
**SUMMARY OF ACTIVE MEMBERS
as of January 1, 2016**

Total – All Plans

Age	Number			2015 Reported Compensation*		
	Male	Female	Total	Male	Female	Total
Under 25	39	173	212	\$ 1,034,988	\$ 4,181,331	\$ 5,216,319
25 to 29	133	370	503	4,194,124	12,110,547	16,304,671
30 to 34	116	292	408	4,261,422	10,166,976	14,428,398
35 to 39	111	289	400	4,791,581	11,454,567	16,246,148
40 to 44	95	231	326	4,816,832	10,611,519	15,428,351
45 to 49	117	265	382	5,571,722	11,544,243	17,115,965
50 to 54	128	294	422	6,438,560	14,865,928	21,304,488
55 to 59	117	320	437	6,130,635	15,952,224	22,082,859
60 to 64	99	264	363	6,003,894	13,235,664	19,239,558
65 to 69	28	73	101	1,418,661	4,051,601	5,470,262
70 & Up	6	14	20	283,427	726,784	1,010,211
Total	989	2,585	3,574	\$44,945,846	\$108,901,384	\$153,847,230

* Partial year pay amounts have not been annualized.

Average Salary by Age





APPENDIX A: SUMMARY OF MEMBERSHIP DATA

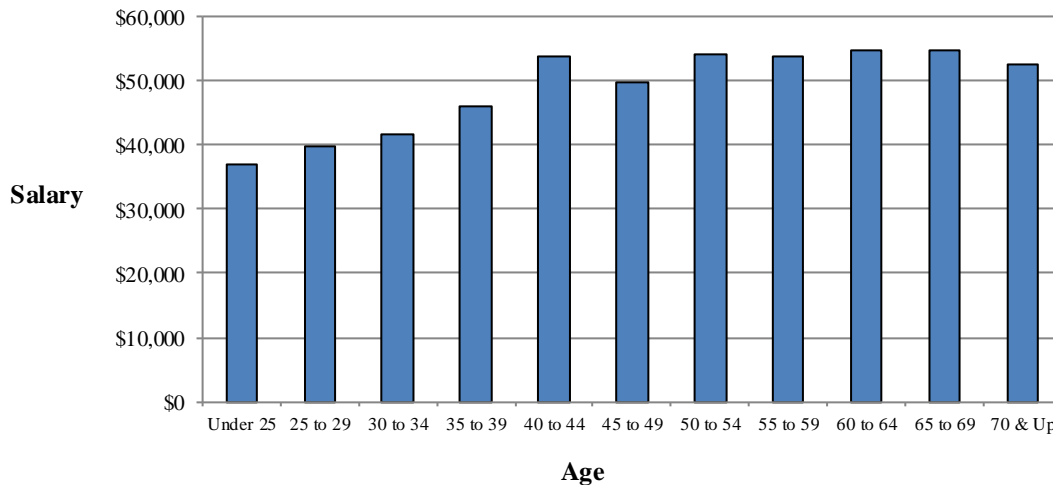
**SUMMARY OF ACTIVE MEMBERS
as of January 1, 2016**

Total – Plan B

Age	Number			2015 Reported Compensation*		
	Male	Female	Total	Male	Female	Total
Under 25	7	28	35	\$ 289,066	\$ 1,006,504	\$ 1,295,570
25 to 29	66	177	243	2,566,773	7,120,144	9,686,917
30 to 34	64	166	230	2,713,551	6,853,827	9,567,378
35 to 39	72	211	283	3,608,483	9,376,821	12,985,304
40 to 44	62	169	231	3,768,901	8,651,448	12,420,349
45 to 49	94	190	284	4,722,800	9,384,077	14,106,877
50 to 54	110	257	367	6,033,717	13,771,764	19,805,481
55 to 59	99	281	380	5,677,446	14,721,070	20,398,516
60 to 64	87	241	328	5,418,730	12,510,270	17,929,000
65 to 69	25	70	95	1,336,548	3,865,811	5,202,359
70 & Up	6	12	18	283,427	659,887	943,314
Total	692	1,802	2,494	\$36,419,442	\$87,921,623	\$124,341,065

* Partial year pay amounts have not been annualized.

Average Salary by Age





APPENDIX A: SUMMARY OF MEMBERSHIP DATA

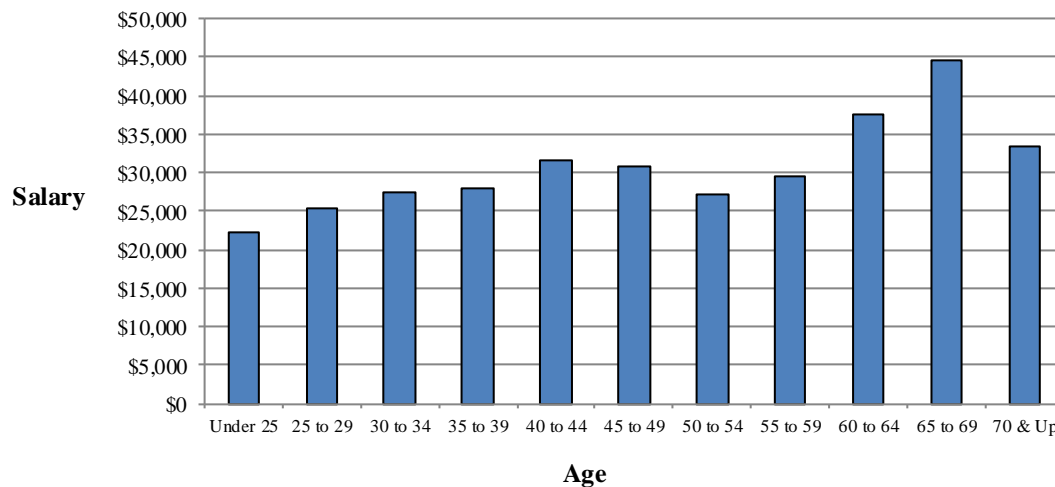
**SUMMARY OF ACTIVE MEMBERS
as of January 1, 2016**

Total – Plan C

Age	Number			2015 Reported Compensation*		
	Male	Female	Total	Male	Female	Total
Under 25	32	145	177	\$ 745,922	\$ 3,174,827	\$ 3,920,749
25 to 29	67	193	260	1,627,351	4,990,403	6,617,754
30 to 34	52	126	178	1,547,871	3,313,149	4,861,020
35 to 39	39	78	117	1,183,098	2,077,746	3,260,844
40 to 44	33	62	95	1,047,931	1,960,071	3,008,002
45 to 49	23	75	98	848,922	2,160,166	3,009,088
50 to 54	18	37	55	404,843	1,094,164	1,499,007
55 to 59	18	39	57	453,189	1,231,154	1,684,343
60 to 64	12	23	35	585,164	725,394	1,310,558
65 to 69	3	3	6	82,113	185,790	267,903
70 & Up	0	2	2	0	66,897	66,897
Total	297	783	1,080	\$8,526,404	\$20,979,761	\$29,506,165

* Partial year pay amounts have not been annualized.

Average Salary by Age





APPENDIX A: SUMMARY OF MEMBERSHIP DATA

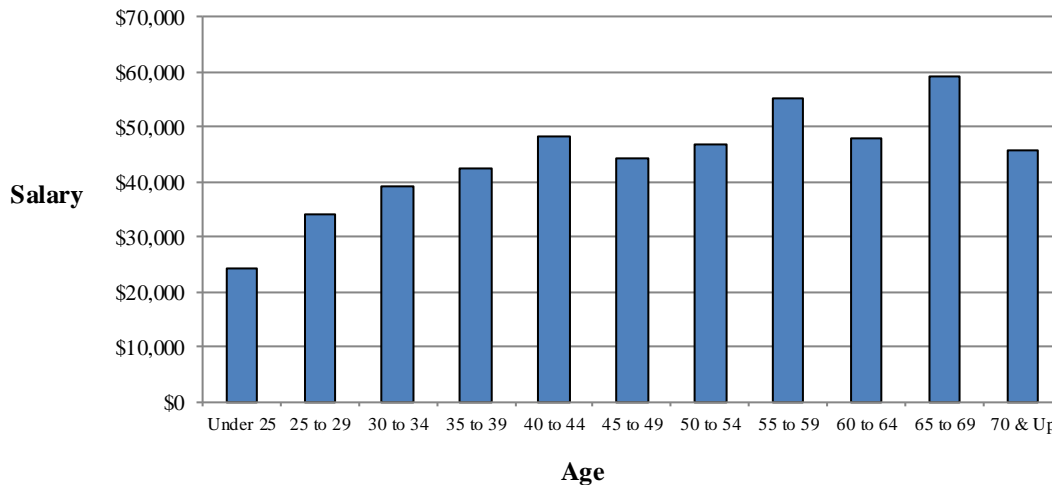
**SUMMARY OF ACTIVE MEMBERS
as of January 1, 2016**

Charter Schools – All Plans

Age	Number			2015 Reported Compensation*		
	Male	Female	Total	Male	Female	Total
Under 25	21	93	114	\$ 524,117	\$ 2,241,968	\$ 2,766,085
25 to 29	76	230	306	2,502,306	7,907,766	10,410,072
30 to 34	65	160	225	2,662,649	6,107,254	8,769,903
35 to 39	47	129	176	1,937,211	5,517,181	7,454,392
40 to 44	49	86	135	2,477,482	4,014,808	6,492,290
45 to 49	34	86	120	1,624,273	3,663,865	5,288,138
50 to 54	38	56	94	1,848,108	2,549,219	4,397,327
55 to 59	31	44	75	1,715,559	2,423,474	4,139,033
60 to 64	22	49	71	1,110,855	2,277,277	3,388,132
65 to 69	4	13	17	191,426	810,714	1,002,140
70 & Up	2	1	3	125,018	11,660	136,678
Total	389	947	1,336	\$16,719,004	\$37,525,186	\$54,244,190

* Partial year pay amounts have not been annualized.

Average Salary by Age





APPENDIX A: SUMMARY OF MEMBERSHIP DATA

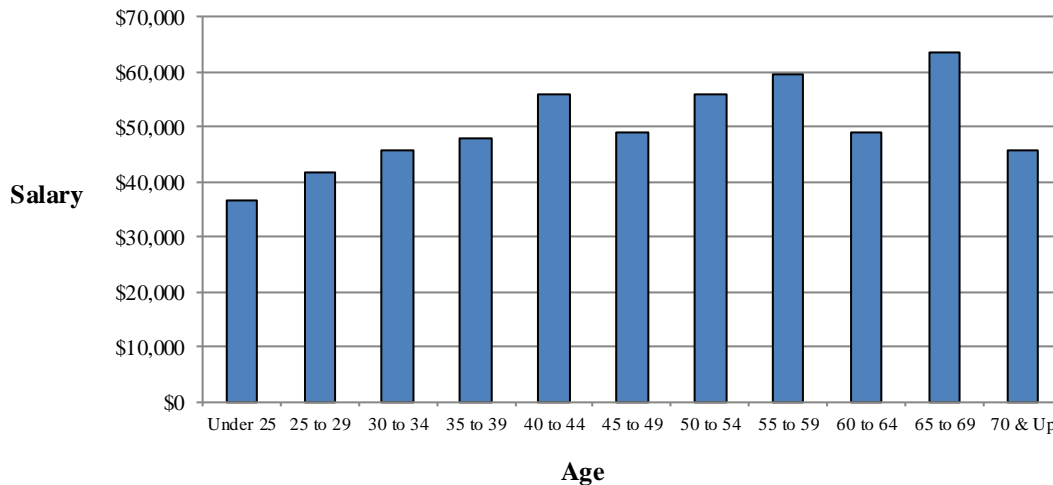
**SUMMARY OF ACTIVE MEMBERS
as of January 1, 2016**

Charter Schools – Plan B

Age	Number			2015 Reported Compensation*		
	Male	Female	Total	Male	Female	Total
Under 25	2	15	17	\$ 85,343	\$ 534,298	\$ 619,641
25 to 29	39	114	153	1,597,226	4,769,627	6,366,853
30 to 34	36	94	130	1,605,228	4,319,142	5,924,370
35 to 39	29	93	122	1,381,738	4,467,003	5,848,741
40 to 44	32	60	92	1,946,713	3,194,499	5,141,212
45 to 49	24	59	83	1,253,352	2,801,047	4,054,399
50 to 54	26	40	66	1,548,452	2,140,736	3,689,188
55 to 59	25	35	60	1,569,979	2,003,503	3,573,482
60 to 64	17	44	61	880,224	2,108,983	2,989,207
65 to 69	2	11	13	135,233	690,668	825,901
70 & Up	2	1	3	125,018	11,660	136,678
Total	234	566	800	\$12,128,506	\$27,041,166	\$39,169,672

* Partial year pay amounts have not been annualized.

Average Salary by Age





APPENDIX A: SUMMARY OF MEMBERSHIP DATA

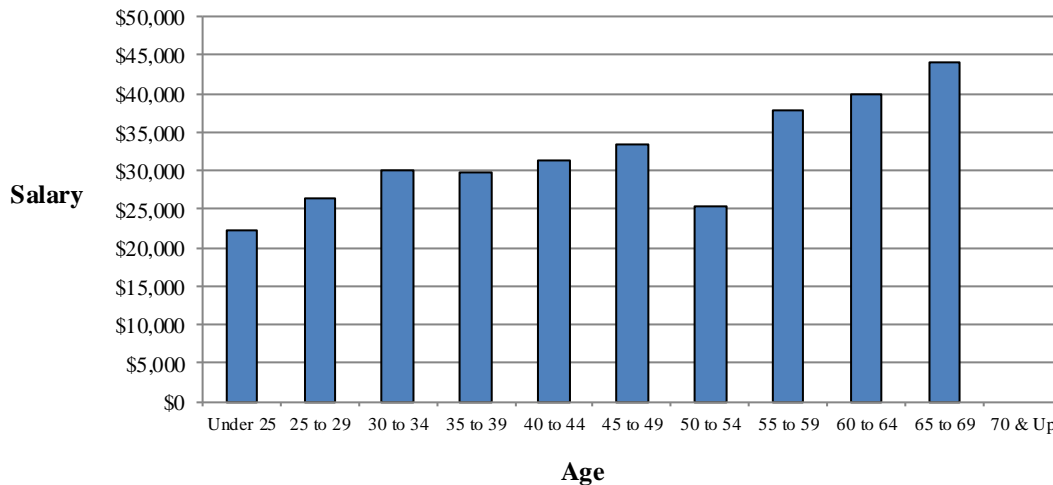
**SUMMARY OF ACTIVE MEMBERS
as of January 1, 2016**

Charter Schools – Plan C

Age	Number			2015 Reported Compensation*		
	Male	Female	Total	Male	Female	Total
Under 25	19	78	97	\$ 438,774	\$ 1,707,670	\$ 2,146,444
25 to 29	37	116	153	905,080	3,138,139	4,043,219
30 to 34	29	66	95	1,057,421	1,788,112	2,845,533
35 to 39	18	36	54	555,473	1,050,178	1,605,651
40 to 44	17	26	43	530,769	820,309	1,351,078
45 to 49	10	27	37	370,921	862,818	1,233,739
50 to 54	12	16	28	299,656	408,483	708,139
55 to 59	6	9	15	145,580	419,971	565,551
60 to 64	5	5	10	230,631	168,294	398,925
65 to 69	2	2	4	56,193	120,046	176,239
70 & Up	0	0	0	0	0	0
Total	155	381	536	\$4,590,498	\$10,484,020	\$15,074,518

* Partial year pay amounts have not been annualized.

Average Salary by Age





APPENDIX A: SUMMARY OF MEMBERSHIP DATA

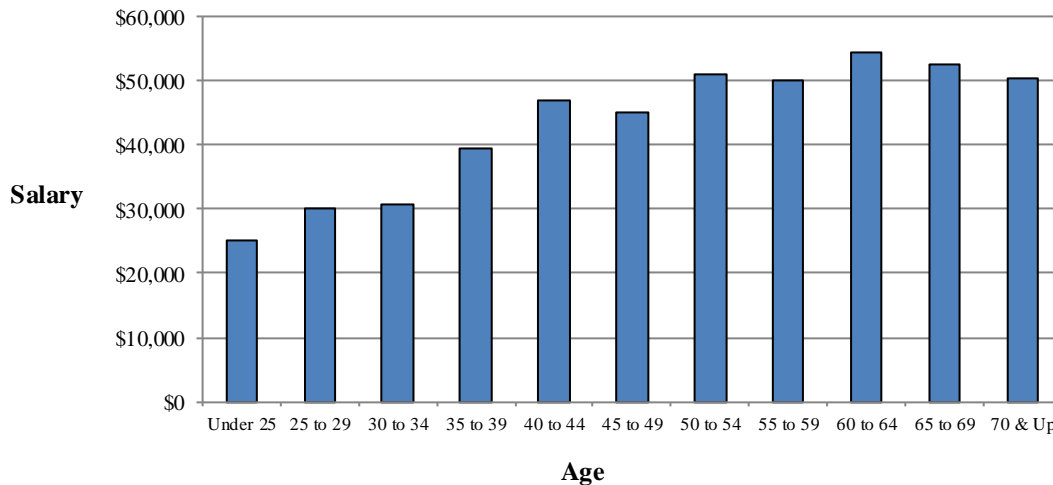
**SUMMARY OF ACTIVE MEMBERS
as of January 1, 2016**

School District & Retirement System – All Plans

Age	Number			2015 Reported Compensation*		
	Male	Female	Total	Male	Female	Total
Under 25	18	80	98	\$ 510,871	\$ 1,939,363	\$ 2,450,234
25 to 29	54	131	185	1,581,817	3,959,483	5,541,300
30 to 34	46	122	168	1,466,079	3,702,784	5,168,863
35 to 39	60	150	210	2,692,796	5,566,972	8,259,768
40 to 44	41	135	176	2,069,423	6,206,123	8,275,546
45 to 49	76	169	245	3,600,136	7,475,496	11,075,632
50 to 54	84	223	307	4,201,542	11,488,786	15,690,328
55 to 59	75	264	339	3,945,745	12,965,180	16,910,925
60 to 64	68	207	275	4,341,095	10,605,866	14,946,961
65 to 69	22	54	76	1,124,055	2,874,926	3,998,981
70 & Up	4	12	16	158,409	649,224	807,633
Total	548	1,547	2,095	\$25,691,968	\$67,434,203	\$93,126,171

* Partial year pay amounts have not been annualized.

Average Salary by Age





APPENDIX A: SUMMARY OF MEMBERSHIP DATA

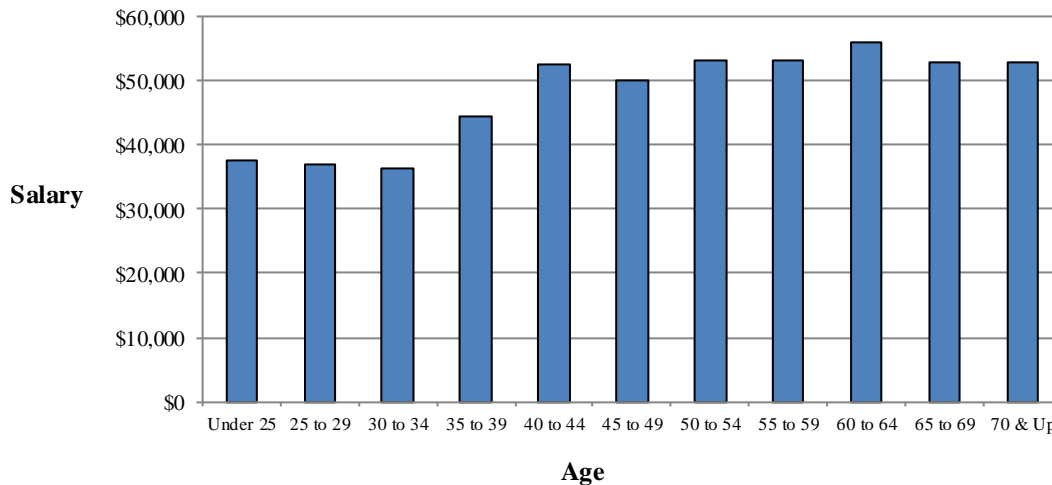
**SUMMARY OF ACTIVE MEMBERS
as of January 1, 2016**

School District & Retirement System – Plan B

Age	Number			2015 Reported Compensation*		
	Male	Female	Total	Male	Female	Total
Under 25	5	13	18	\$ 203,723	\$ 472,206	\$ 675,929
25 to 29	25	60	85	892,537	2,255,870	3,148,407
30 to 34	26	66	92	1,024,967	2,309,111	3,334,078
35 to 39	39	111	150	2,065,171	4,598,636	6,663,807
40 to 44	25	104	129	1,552,261	5,219,363	6,771,624
45 to 49	63	125	188	3,122,135	6,296,561	9,418,696
50 to 54	78	204	282	4,096,355	10,867,331	14,963,686
55 to 59	63	234	297	3,638,136	12,153,997	15,792,133
60 to 64	62	190	252	4,011,756	10,081,277	14,093,033
65 to 69	21	53	74	1,098,135	2,809,182	3,907,317
70 & Up	4	10	14	158,409	582,327	740,736
Total	411	1,170	1,581	\$21,863,585	\$57,645,861	\$79,509,446

* Partial year pay amounts have not been annualized.

Average Salary by Age





APPENDIX A: SUMMARY OF MEMBERSHIP DATA

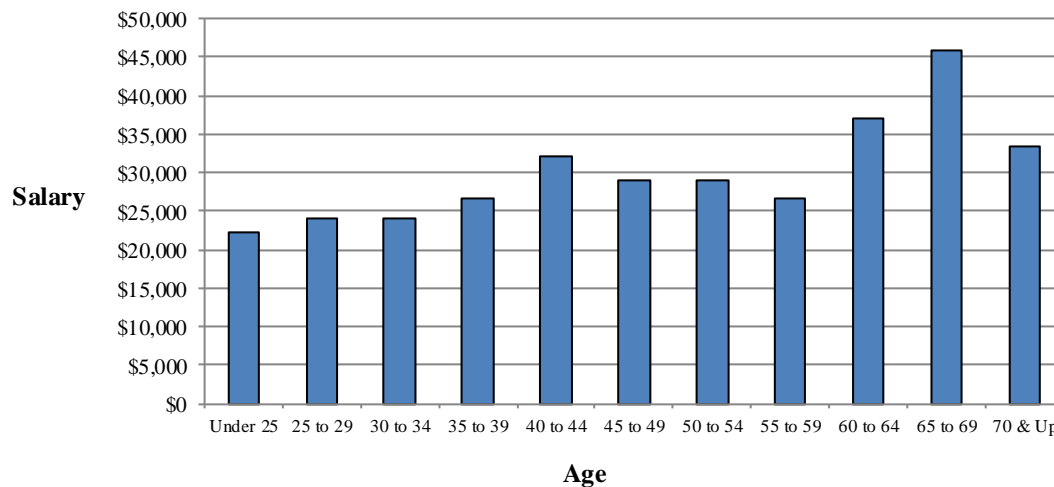
**SUMMARY OF ACTIVE MEMBERS
as of January 1, 2016**

School District & Retirement System – Plan C

Age	Number			2015 Reported Compensation*		
	Male	Female	Total	Male	Female	Total
Under 25	13	67	80	\$ 307,148	\$ 1,467,157	\$ 1,774,305
25 to 29	29	71	100	689,280	1,703,613	2,392,893
30 to 34	20	56	76	441,112	1,393,673	1,834,785
35 to 39	21	39	60	627,625	968,336	1,595,961
40 to 44	16	31	47	517,162	986,760	1,503,922
45 to 49	13	44	57	478,001	1,178,935	1,656,936
50 to 54	6	19	25	105,187	621,455	726,642
55 to 59	12	30	42	307,609	811,183	1,118,792
60 to 64	6	17	23	329,339	524,589	853,928
65 to 69	1	1	2	25,920	65,744	91,664
70 & Up	0	2	2	0	66,897	66,897
Total	137	377	514	\$3,828,383	\$9,788,342	\$13,616,725

* Partial year pay amounts have not been annualized.

Average Salary by Age





APPENDIX A: SUMMARY OF MEMBERSHIP DATA

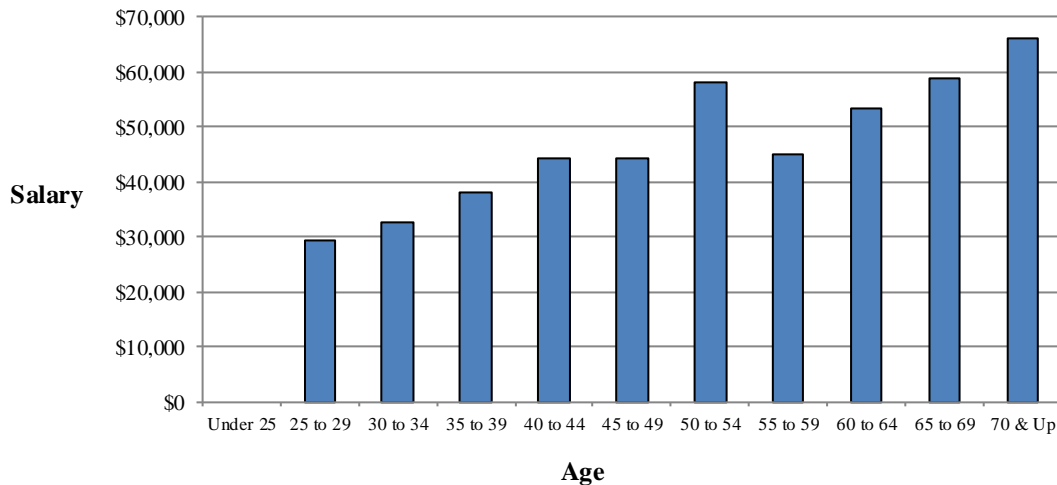
**SUMMARY OF ACTIVE MEMBERS
as of January 1, 2016**

Library – All Plans

Age	Number			2015 Reported Compensation*		
	Male	Female	Total	Male	Female	Total
Under 25	0	0	0	\$ 0	\$ 0	\$ 0
25 to 29	3	9	12	110,001	243,298	353,299
30 to 34	5	10	15	132,694	356,938	489,632
35 to 39	4	10	14	161,574	370,414	531,988
40 to 44	5	10	15	269,927	390,588	660,515
45 to 49	7	10	17	347,313	404,882	752,195
50 to 54	6	15	21	388,910	827,923	1,216,833
55 to 59	11	12	23	469,331	563,570	1,032,901
60 to 64	9	8	17	551,944	352,521	904,465
65 to 69	2	6	8	103,180	365,961	469,141
70 & Up	0	1	1	0	65,900	65,900
Total	52	91	143	\$2,534,874	\$3,941,995	\$6,476,869

* Partial year pay amounts have not been annualized.

Average Salary by Age





APPENDIX A: SUMMARY OF MEMBERSHIP DATA

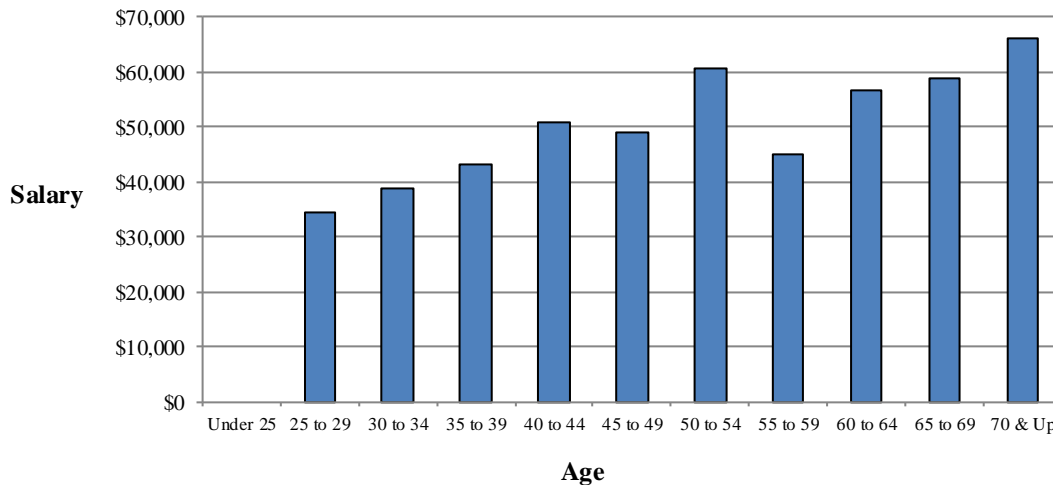
**SUMMARY OF ACTIVE MEMBERS
as of January 1, 2016**

Library – Plan B

Age	Number			2015 Reported Compensation*		
	Male	Female	Total	Male	Female	Total
Under 25	0	0	0	\$ 0	\$ 0	\$ 0
25 to 29	2	3	5	77,010	94,647	171,657
30 to 34	2	6	8	83,356	225,574	308,930
35 to 39	4	7	11	161,574	311,182	472,756
40 to 44	5	5	10	269,927	237,586	507,513
45 to 49	7	6	13	347,313	286,469	633,782
50 to 54	6	13	19	388,910	763,697	1,152,607
55 to 59	11	12	23	469,331	563,570	1,032,901
60 to 64	8	7	15	526,750	320,010	846,760
65 to 69	2	6	8	103,180	365,961	469,141
70 & Up	0	1	1	0	65,900	65,900
Total	47	66	113	\$2,427,351	\$3,234,596	\$5,661,947

* 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, 2016

Library – Plan C

Age	Number			2015 Reported Compensation*		
	Male	Female	Total	Male	Female	Total
Under 25	0	0	0	\$ 0	\$ 0	\$ 0
25 to 29	1	6	7	32,991	148,651	181,642
30 to 34	3	4	7	49,338	131,364	180,702
35 to 39	0	3	3	0	59,232	59,232
40 to 44	0	5	5	0	153,002	153,002
45 to 49	0	4	4	0	118,413	118,413
50 to 54	0	2	2	0	64,226	64,226
55 to 59	0	0	0	0	0	0
60 to 64	1	1	2	25,194	32,511	57,705
65 to 69	0	0	0	0	0	0
70 & Up	0	0	0	0	0	0
Total	5	25	30	\$ 107,523	\$ 707,399	\$ 814,922

* Partial year pay amounts have not been annualized.





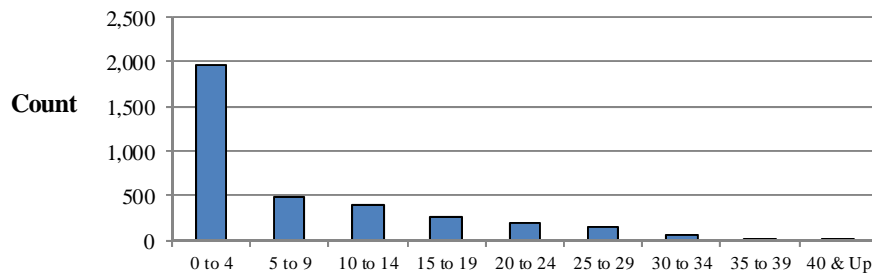
APPENDIX A: SUMMARY OF MEMBERSHIP DATA

**DISTRIBUTION OF ACTIVE MEMBERS
as of January 1, 2016**

Total – All Plans

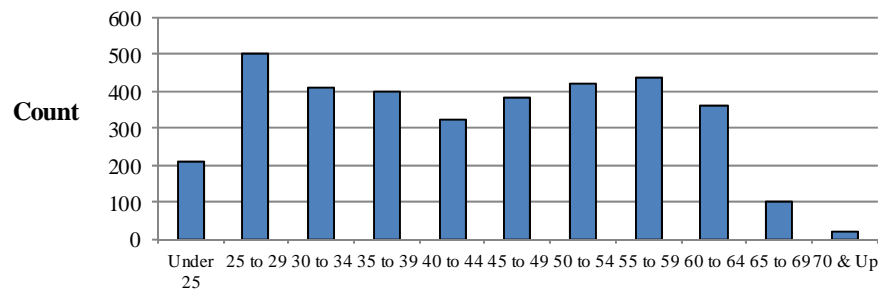
Age	Years of Service									Total
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	
Under 25	212	0	0	0	0	0	0	0	0	212
25 to 29	473	30	0	0	0	0	0	0	0	503
30 to 34	317	71	20	0	0	0	0	0	0	408
35 to 39	247	75	67	11	0	0	0	0	0	400
40 to 44	168	54	48	49	7	0	0	0	0	326
45 to 49	183	58	37	46	36	20	2	0	0	382
50 to 54	122	62	75	51	49	53	9	1	0	422
55 to 59	132	59	69	51	48	46	23	8	1	437
60 to 64	94	55	71	41	49	29	13	8	3	363
65 to 69	18	12	16	16	13	9	6	3	8	101
70 & Up	3	4	4	4	2	0	0	0	3	20
Total	1,969	480	407	269	204	157	53	20	15	3,574

Service Distribution



Service

Age Distribution



Age



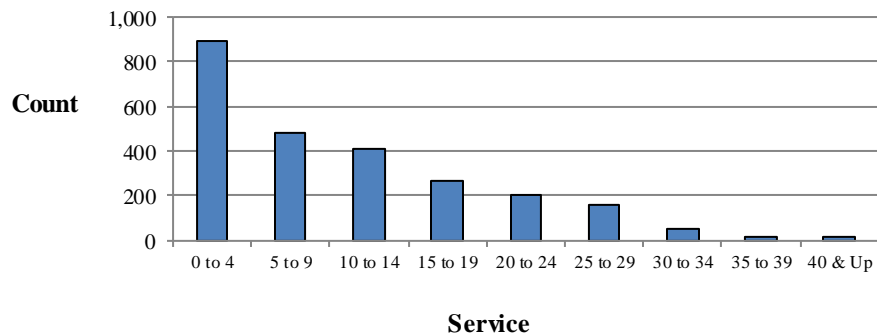
APPENDIX A: SUMMARY OF MEMBERSHIP DATA

**DISTRIBUTION OF ACTIVE MEMBERS
as of January 1, 2016**

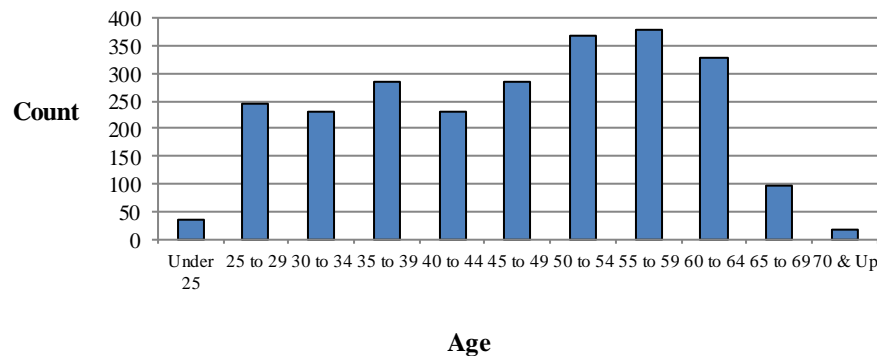
Total – Plan B

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	35	0	0	0	0	0	0	0	0	35
25 to 29	213	30	0	0	0	0	0	0	0	243
30 to 34	139	71	20	0	0	0	0	0	0	230
35 to 39	130	75	67	11	0	0	0	0	0	283
40 to 44	73	54	48	49	7	0	0	0	0	231
45 to 49	85	58	37	46	36	20	2	0	0	284
50 to 54	67	62	75	51	49	53	9	1	0	367
55 to 59	75	59	69	51	48	46	23	8	1	380
60 to 64	59	55	71	41	49	29	13	8	3	328
65 to 69	12	12	16	16	13	9	6	3	8	95
70 & Up	1	4	4	4	2	0	0	0	3	18
Total	889	480	407	269	204	157	53	20	15	2,494

Service Distribution



Age Distribution





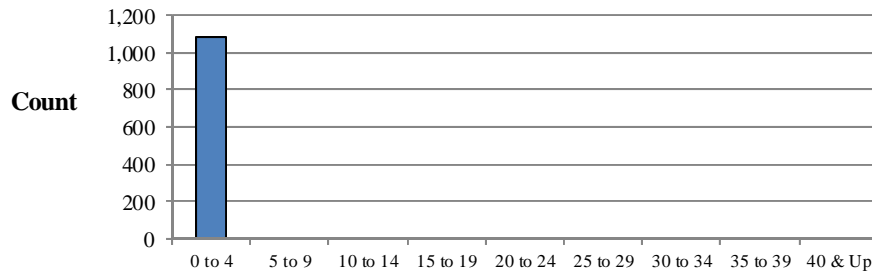
APPENDIX A: SUMMARY OF MEMBERSHIP DATA

**DISTRIBUTION OF ACTIVE MEMBERS
as of January 1, 2016**

Total – Plan C

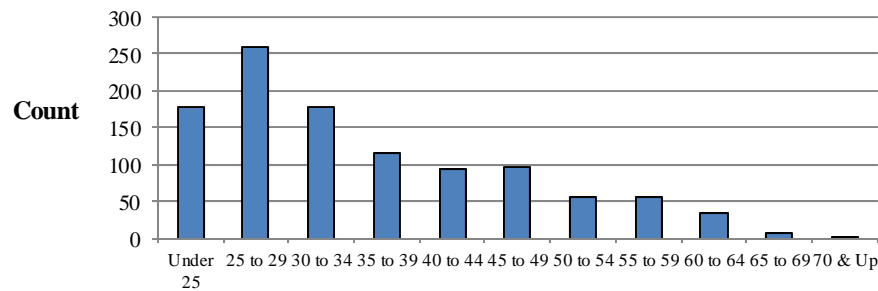
Age	Years of Service									Total
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	
Under 25	177	0	0	0	0	0	0	0	0	177
25 to 29	260	0	0	0	0	0	0	0	0	260
30 to 34	178	0	0	0	0	0	0	0	0	178
35 to 39	117	0	0	0	0	0	0	0	0	117
40 to 44	95	0	0	0	0	0	0	0	0	95
45 to 49	98	0	0	0	0	0	0	0	0	98
50 to 54	55	0	0	0	0	0	0	0	0	55
55 to 59	57	0	0	0	0	0	0	0	0	57
60 to 64	35	0	0	0	0	0	0	0	0	35
65 to 69	6	0	0	0	0	0	0	0	0	6
70 & Up	2	0	0	0	0	0	0	0	0	2
Total	1,080	0	0	0	0	0	0	0	0	1,080

Service Distribution



Service

Age Distribution



Age



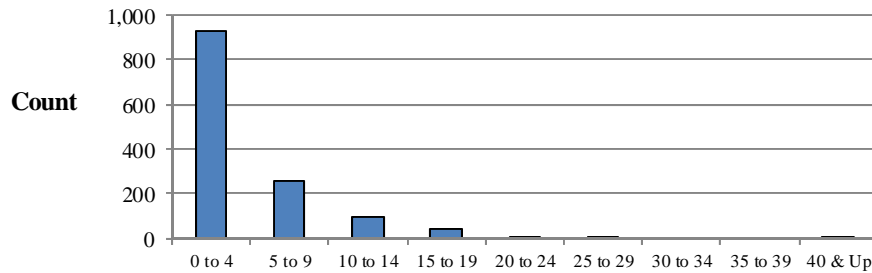
APPENDIX A: SUMMARY OF MEMBERSHIP DATA

**DISTRIBUTION OF ACTIVE MEMBERS
as of January 1, 2016**

Charter Schools – All Plans

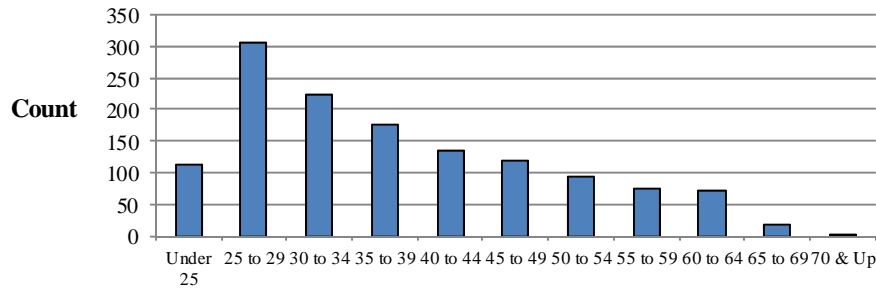
Age	Years of Service									Total
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	
Under 25	114	0	0	0	0	0	0	0	0	114
25 to 29	284	22	0	0	0	0	0	0	0	306
30 to 34	165	52	8	0	0	0	0	0	0	225
35 to 39	113	40	22	1	0	0	0	0	0	176
40 to 44	72	33	17	13	0	0	0	0	0	135
45 to 49	68	33	7	10	2	0	0	0	0	120
50 to 54	46	26	16	5	0	1	0	0	0	94
55 to 59	36	22	10	4	1	2	0	0	0	75
60 to 64	26	24	11	6	4	0	0	0	0	71
65 to 69	7	5	2	2	0	0	0	0	1	17
70 & Up	1	1	1	0	0	0	0	0	0	3
Total	932	258	94	41	7	3	0	0	1	1,336

Service Distribution



Service

Age Distribution



Age



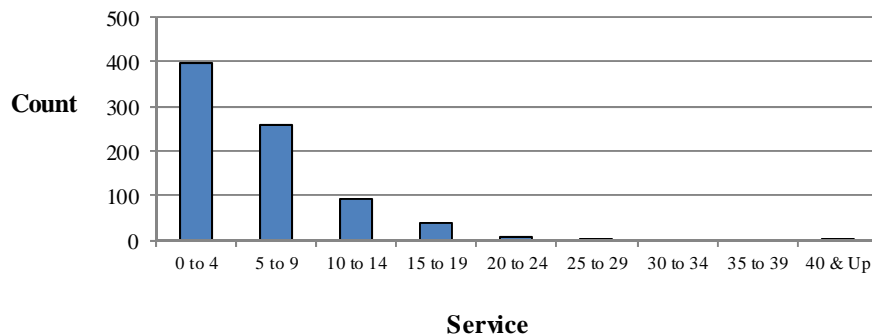
APPENDIX A: SUMMARY OF MEMBERSHIP DATA

**DISTRIBUTION OF ACTIVE MEMBERS
as of January 1, 2016**

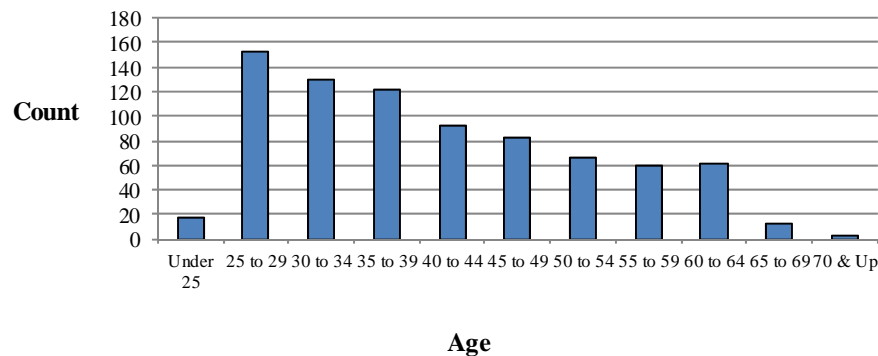
Charter Schools – Plan B

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	17	0	0	0	0	0	0	0	0	17
25 to 29	131	22	0	0	0	0	0	0	0	153
30 to 34	70	52	8	0	0	0	0	0	0	130
35 to 39	59	40	22	1	0	0	0	0	0	122
40 to 44	29	33	17	13	0	0	0	0	0	92
45 to 49	31	33	7	10	2	0	0	0	0	83
50 to 54	18	26	16	5	0	1	0	0	0	66
55 to 59	21	22	10	4	1	2	0	0	0	60
60 to 64	16	24	11	6	4	0	0	0	0	61
65 to 69	3	5	2	2	0	0	0	0	1	13
70 & Up	1	1	1	0	0	0	0	0	0	3
Total	396	258	94	41	7	3	0	0	1	800

Service Distribution



Age Distribution





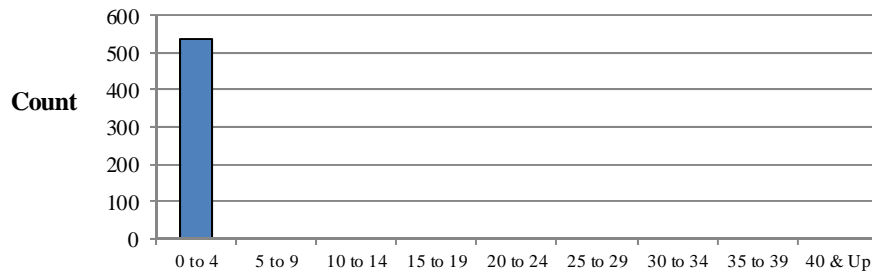
APPENDIX A: SUMMARY OF MEMBERSHIP DATA

**DISTRIBUTION OF ACTIVE MEMBERS
as of January 1, 2016**

Charter Schools – Plan C

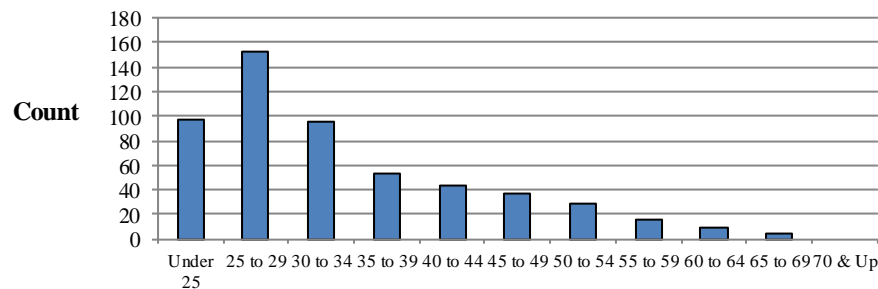
Age	Years of Service									Total
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	
Under 25	97	0	0	0	0	0	0	0	0	97
25 to 29	153	0	0	0	0	0	0	0	0	153
30 to 34	95	0	0	0	0	0	0	0	0	95
35 to 39	54	0	0	0	0	0	0	0	0	54
40 to 44	43	0	0	0	0	0	0	0	0	43
45 to 49	37	0	0	0	0	0	0	0	0	37
50 to 54	28	0	0	0	0	0	0	0	0	28
55 to 59	15	0	0	0	0	0	0	0	0	15
60 to 64	10	0	0	0	0	0	0	0	0	10
65 to 69	4	0	0	0	0	0	0	0	0	4
70 & Up	0	0	0	0	0	0	0	0	0	0
Total	536	0	0	0	0	0	0	0	0	536

Service Distribution



Service

Age Distribution



Age



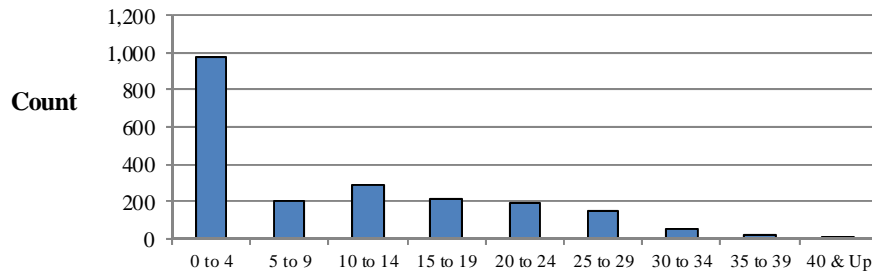
APPENDIX A: SUMMARY OF MEMBERSHIP DATA

**DISTRIBUTION OF ACTIVE MEMBERS
as of January 1, 2016**

School District & Retirement System – All Plans

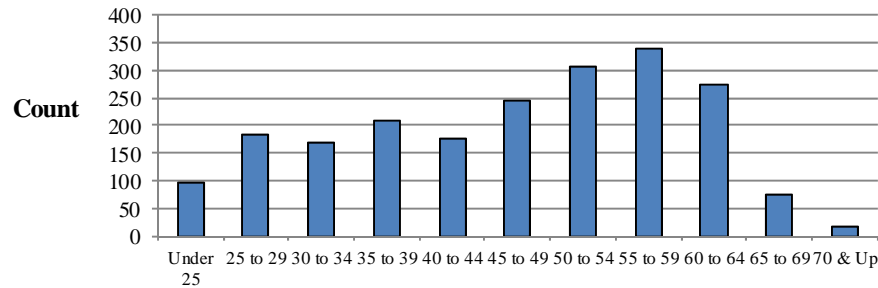
Age	Years of Service									Total
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	
Under 25	98	0	0	0	0	0	0	0	0	98
25 to 29	177	8	0	0	0	0	0	0	0	185
30 to 34	139	18	11	0	0	0	0	0	0	168
35 to 39	127	31	43	9	0	0	0	0	0	210
40 to 44	85	18	31	35	7	0	0	0	0	176
45 to 49	107	22	27	34	34	20	1	0	0	245
50 to 54	72	30	53	45	47	51	9	0	0	307
55 to 59	95	33	54	42	44	42	21	7	1	339
60 to 64	64	29	55	33	43	28	13	8	2	275
65 to 69	11	7	13	13	12	9	5	2	4	76
70 & Up	2	3	3	4	2	0	0	0	2	16
Total	977	199	290	215	189	150	49	17	9	2,095

Service Distribution



Service

Age Distribution



Age



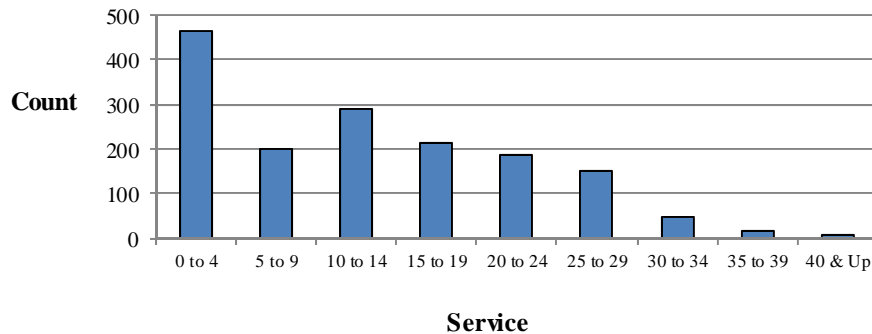
APPENDIX A: SUMMARY OF MEMBERSHIP DATA

**DISTRIBUTION OF ACTIVE MEMBERS
as of January 1, 2016**

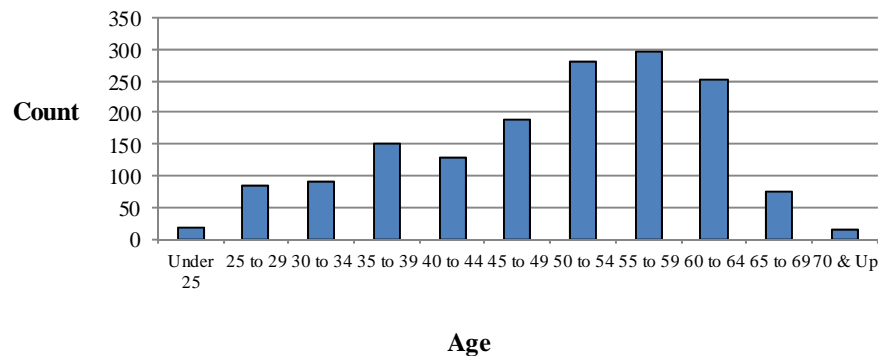
School District & Retirement System – Plan B

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	18	0	0	0	0	0	0	0	0	18
25 to 29	77	8	0	0	0	0	0	0	0	85
30 to 34	63	18	11	0	0	0	0	0	0	92
35 to 39	67	31	43	9	0	0	0	0	0	150
40 to 44	38	18	31	35	7	0	0	0	0	129
45 to 49	50	22	27	34	34	20	1	0	0	188
50 to 54	47	30	53	45	47	51	9	0	0	282
55 to 59	53	33	54	42	44	42	21	7	1	297
60 to 64	41	29	55	33	43	28	13	8	2	252
65 to 69	9	7	13	13	12	9	5	2	4	74
70 & Up	0	3	3	4	2	0	0	0	2	14
Total	463	199	290	215	189	150	49	17	9	1,581

Service Distribution



Age Distribution





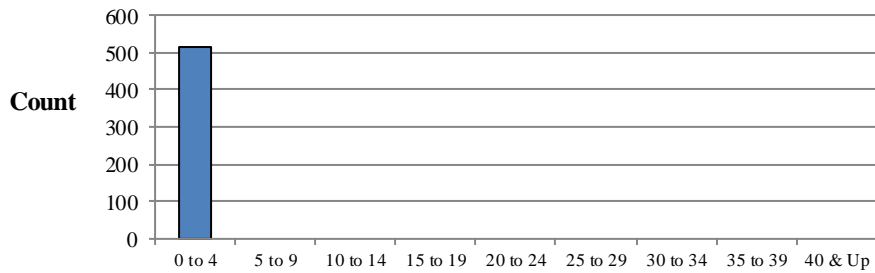
APPENDIX A: SUMMARY OF MEMBERSHIP DATA

**DISTRIBUTION OF ACTIVE MEMBERS
as of January 1, 2016**

School District & Retirement System – Plan C

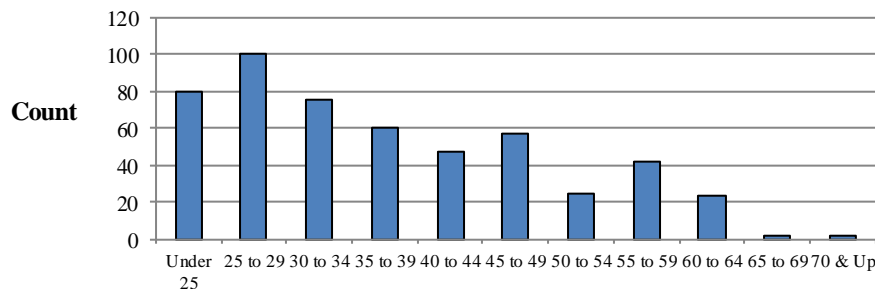
Age	Years of Service									Total
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	
Under 25	80	0	0	0	0	0	0	0	0	80
25 to 29	100	0	0	0	0	0	0	0	0	100
30 to 34	76	0	0	0	0	0	0	0	0	76
35 to 39	60	0	0	0	0	0	0	0	0	60
40 to 44	47	0	0	0	0	0	0	0	0	47
45 to 49	57	0	0	0	0	0	0	0	0	57
50 to 54	25	0	0	0	0	0	0	0	0	25
55 to 59	42	0	0	0	0	0	0	0	0	42
60 to 64	23	0	0	0	0	0	0	0	0	23
65 to 69	2	0	0	0	0	0	0	0	0	2
70 & Up	2	0	0	0	0	0	0	0	0	2
Total	514	0	0	0	0	0	0	0	0	514

Service Distribution



Service

Age Distribution



Age



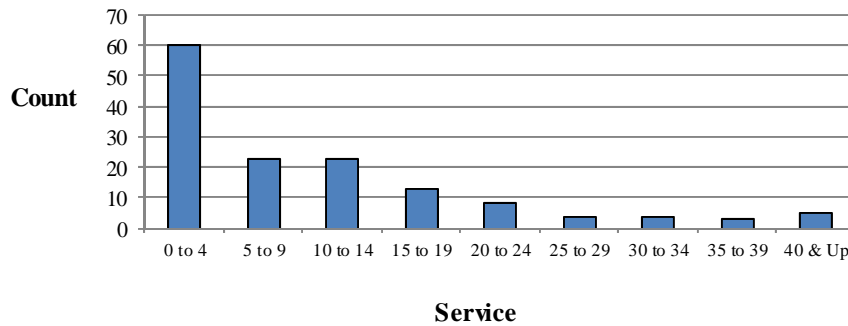
APPENDIX A: SUMMARY OF MEMBERSHIP DATA

**DISTRIBUTION OF ACTIVE MEMBERS
as of January 1, 2016**

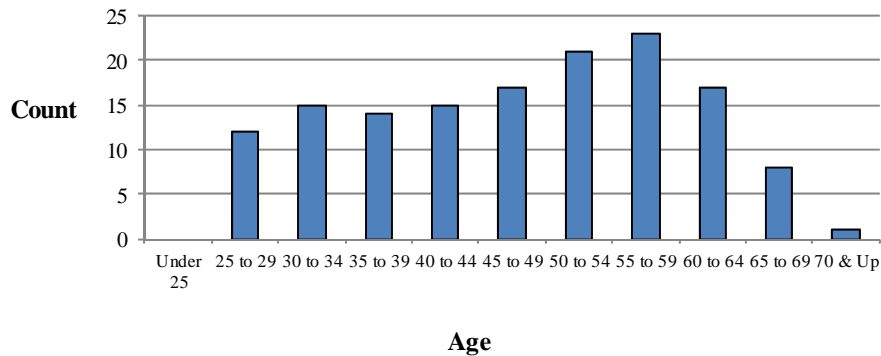
Library – All Plans

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	0	0	0	0	0	0	0	0	0	0
25 to 29	12	0	0	0	0	0	0	0	0	12
30 to 34	13	1	1	0	0	0	0	0	0	15
35 to 39	7	4	2	1	0	0	0	0	0	14
40 to 44	11	3	0	1	0	0	0	0	0	15
45 to 49	8	3	3	2	0	0	1	0	0	17
50 to 54	4	6	6	1	2	1	0	1	0	21
55 to 59	1	4	5	5	3	2	2	1	0	23
60 to 64	4	2	5	2	2	1	0	0	1	17
65 to 69	0	0	1	1	1	0	1	1	3	8
70 & Up	0	0	0	0	0	0	0	0	1	1
Total	60	23	23	13	8	4	4	3	5	143

Service Distribution



Age Distribution





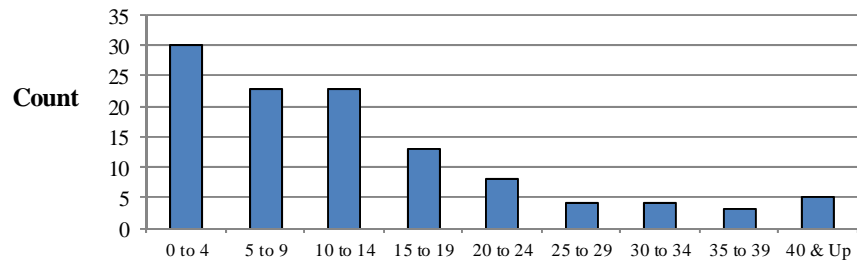
APPENDIX A: SUMMARY OF MEMBERSHIP DATA

**DISTRIBUTION OF ACTIVE MEMBERS
as of January 1, 2016**

Library – Plan B

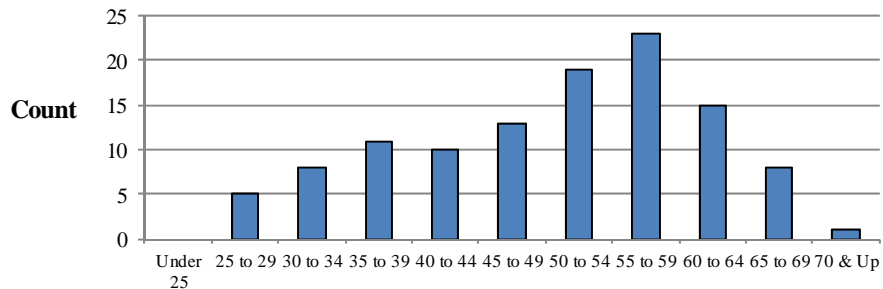
Age	Years of Service									Total
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	
Under 25	0	0	0	0	0	0	0	0	0	0
25 to 29	5	0	0	0	0	0	0	0	0	5
30 to 34	6	1	1	0	0	0	0	0	0	8
35 to 39	4	4	2	1	0	0	0	0	0	11
40 to 44	6	3	0	1	0	0	0	0	0	10
45 to 49	4	3	3	2	0	0	1	0	0	13
50 to 54	2	6	6	1	2	1	0	1	0	19
55 to 59	1	4	5	5	3	2	2	1	0	23
60 to 64	2	2	5	2	2	1	0	0	1	15
65 to 69	0	0	1	1	1	0	1	1	3	8
70 & Up	0	0	0	0	0	0	0	0	1	1
Total	30	23	23	13	8	4	4	3	5	113

Service Distribution



Service

Age Distribution



Age



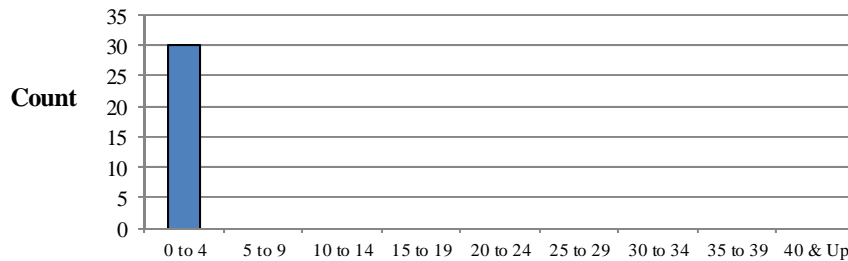
APPENDIX A: SUMMARY OF MEMBERSHIP DATA

**DISTRIBUTION OF ACTIVE MEMBERS
as of January 1, 2016**

Library – Plan C

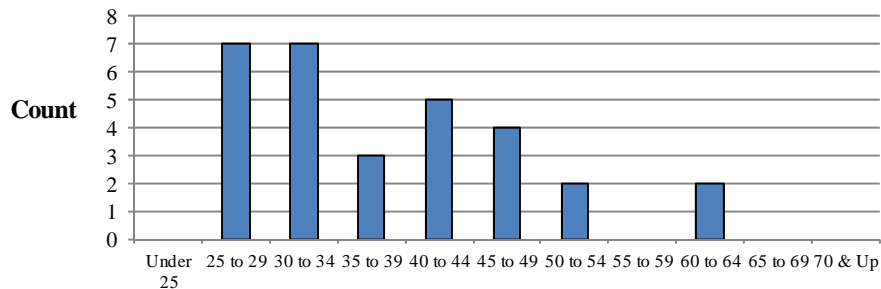
Age	Years of Service									Total
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	
Under 25	0	0	0	0	0	0	0	0	0	0
25 to 29	7	0	0	0	0	0	0	0	0	7
30 to 34	7	0	0	0	0	0	0	0	0	7
35 to 39	3	0	0	0	0	0	0	0	0	3
40 to 44	5	0	0	0	0	0	0	0	0	5
45 to 49	4	0	0	0	0	0	0	0	0	4
50 to 54	2	0	0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

Service Distribution



Service

Age Distribution



Age

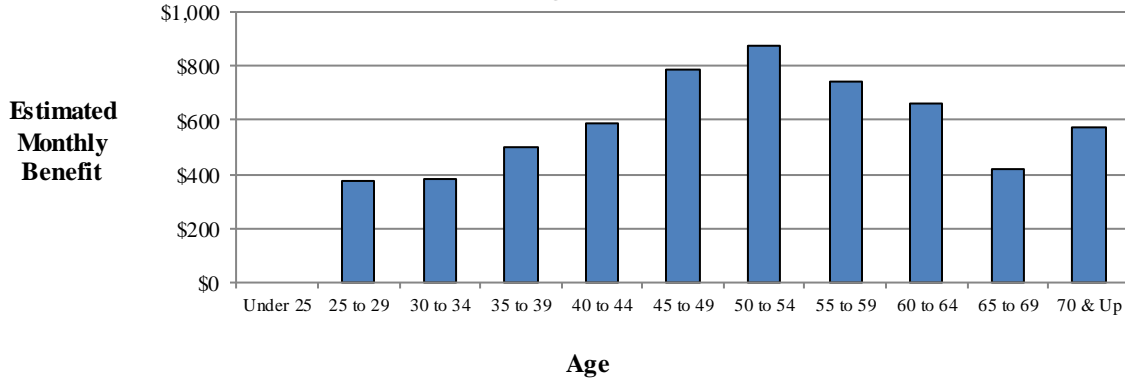


APPENDIX A: SUMMARY OF MEMBERSHIP DATA

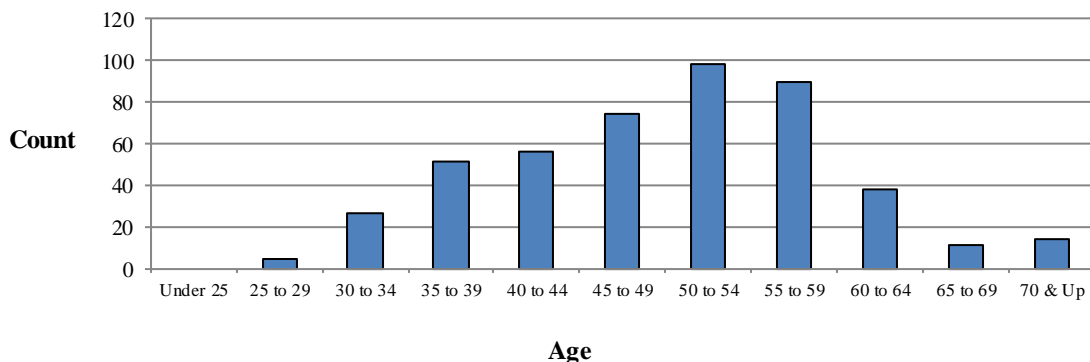
**SUMMARY OF TERMINATED VESTED MEMBERS
as of January 1, 2016**

Age	Number			Estimated Monthly Benefit		
	Male	Female	Total	Male	Female	Total
Under 25	0	0	0	\$ 0	\$ 0	\$ 0
25 to 29	0	4	4	0	1,488	1,488
30 to 34	4	22	26	1,375	8,488	9,863
35 to 39	15	36	51	7,485	17,991	25,476
40 to 44	13	43	56	8,260	24,656	32,916
45 to 49	18	56	74	12,130	46,177	58,307
50 to 54	34	64	98	34,912	50,720	85,632
55 to 59	23	66	89	13,909	52,032	65,941
60 to 64	7	31	38	4,188	21,035	25,223
65 to 69	4	7	11	2,035	2,552	4,587
70 & Up	6	8	14	5,917	2,125	8,042
Total	124	337	461	\$90,211	\$227,264	\$317,475

Average Benefit



Age Distribution

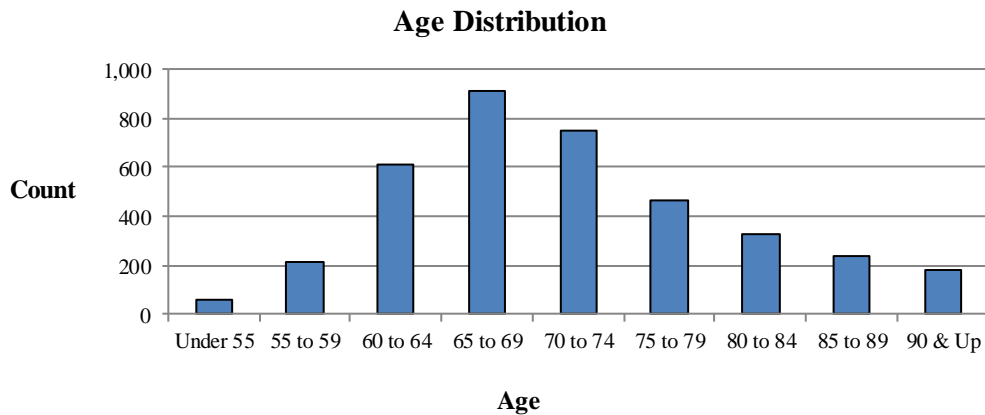
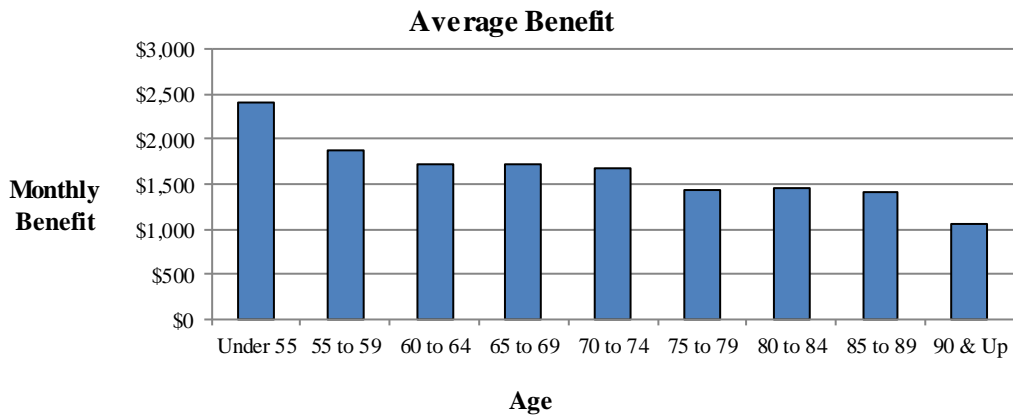




APPENDIX A: SUMMARY OF MEMBERSHIP DATA

**SUMMARY OF RETIRED MEMBERS
as of January 1, 2016**

Age	Number			Monthly Benefit		
	Male	Female	Total	Male	Female	Total
Under 55	18	41	59	\$ 39,509	\$ 101,807	\$ 141,316
55 to 59	66	150	216	119,413	283,362	402,775
60 to 64	154	454	608	236,904	805,304	1,042,208
65 to 69	249	664	913	384,094	1,187,334	1,571,428
70 to 74	177	575	752	260,182	1,006,240	1,266,422
75 to 79	126	335	461	209,250	451,756	661,006
80 to 84	83	242	325	140,295	332,213	472,508
85 to 89	53	182	235	86,392	246,082	332,474
90 & Up	34	146	180	41,921	150,410	192,331
Total	960	2,789	3,749	\$ 1,517,960	\$ 4,564,508	\$ 6,082,468

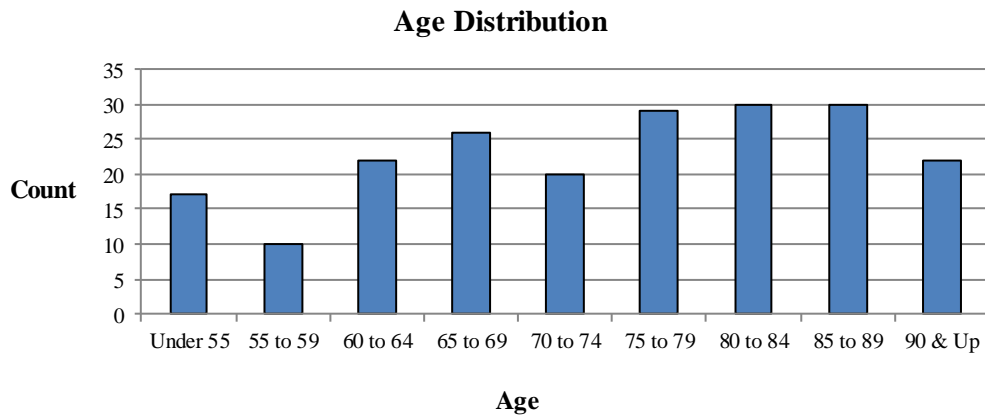
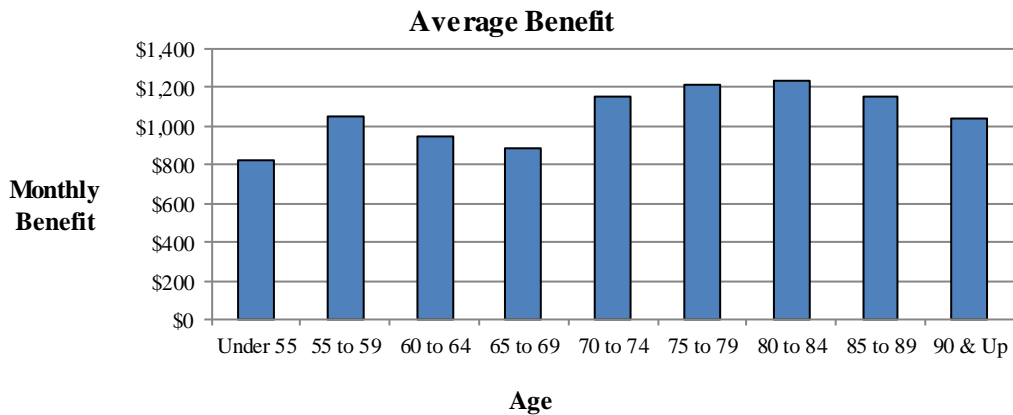




APPENDIX A: SUMMARY OF MEMBERSHIP DATA

SUMMARY OF BENEFICIARIES
as of January 1, 2016

Age	Number			Monthly Benefit		
	Male	Female	Total	Male	Female	Total
Under 55	9	8	17	\$ 6,912	\$ 7,108	\$ 14,020
55 to 59	8	2	10	9,239	1,296	10,535
60 to 64	21	1	22	19,049	1,691	20,740
65 to 69	17	9	26	13,515	9,522	23,037
70 to 74	14	6	20	16,862	6,237	23,099
75 to 79	22	7	29	26,941	8,227	35,168
80 to 84	27	3	30	33,339	3,675	37,014
85 to 89	25	5	30	28,164	6,353	34,517
90 & Up	21	1	22	22,511	248	22,759
Total	164	42	206	\$ 176,532	\$ 44,357	\$ 220,889

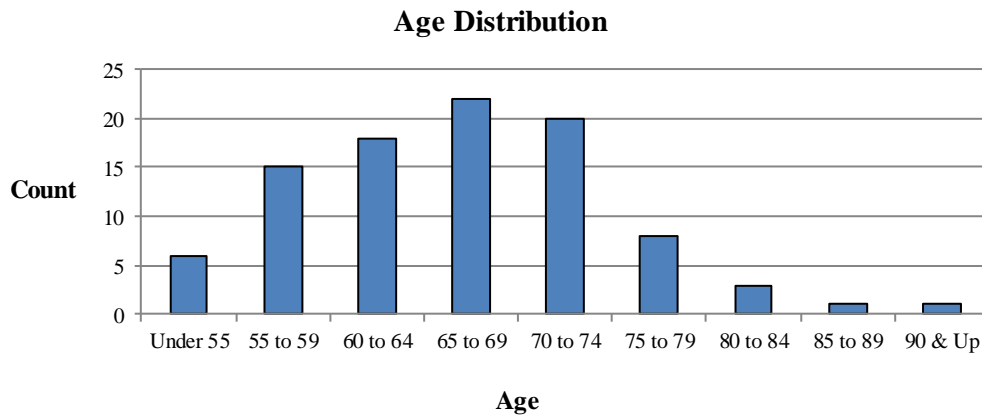
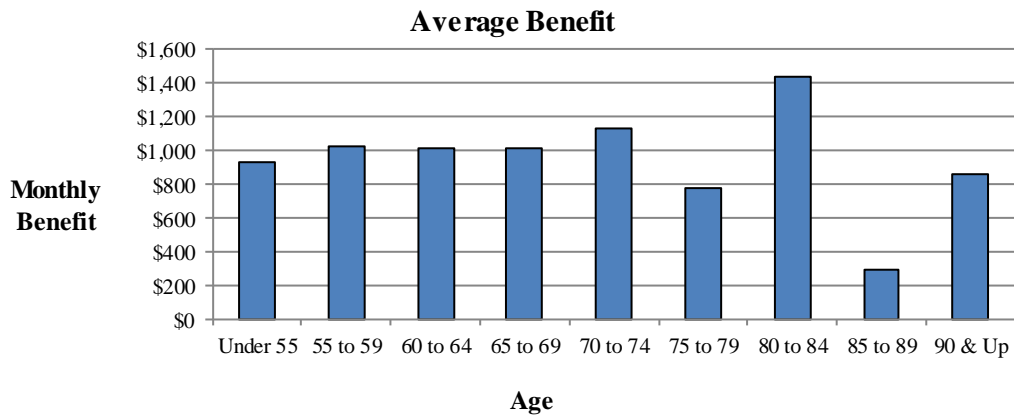




APPENDIX A: SUMMARY OF MEMBERSHIP DATA

**SUMMARY OF DISABLED MEMBERS
as of January 1, 2016**

Age	Number			Monthly Benefit		
	Male	Female	Total	Male	Female	Total
Under 55	3	3	6	\$ 2,849	\$ 2,724	\$ 5,573
55 to 59	3	12	15	1,812	13,466	15,278
60 to 64	4	14	18	4,938	13,248	18,186
65 to 69	7	15	22	6,538	15,774	22,312
70 to 74	5	15	20	5,211	17,288	22,499
75 to 79	1	7	8	704	5,501	6,205
80 to 84	0	3	3	0	4,291	4,291
85 to 89	0	1	1	0	297	297
90 & Up	0	1	1	0	855	855
Total	23	71	94	\$ 22,052	\$ 73,444	\$ 95,496





APPENDIX B: SUMMARY OF BENEFIT PROVISIONS

Summary of Plan Provisions

Effective Date

January 1, 1944, most recently amended in 2013.

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 library district or the retirement system and employees of charter schools become participants 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 participant 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 maximum retirement benefit is 60% of Average final compensation, which will be reached upon attainment of 30 years of service.

Annual compensation

A participant's annual compensation level will be the regular compensation shown on the 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: Participants 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.



APPENDIX B: SUMMARY OF BENEFIT PROVISIONS

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

Benefit

Plan B: The normal retirement benefit payable monthly equals one twelfth of 2.00% (1.75% for participants who retired prior to June 30, 1999) of the participant's average final compensation multiplied by years of creditable service, subject to a maximum of 60% of average final compensation. Any participant 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 participant'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 participant'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 participant 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. Any participant 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 full year of creditable service in excess of 10 years, or its actuarial equivalent if an option was elected. Beneficiaries of deceased participants who elected an option and who retired with at least 10 years of creditable service receive the actuarial equivalent of the minimum benefit. If a participant's accumulated contributions provide more than the participant's retirement benefit (under the actuarial assumptions adopted by the Board of Trustees), the participant's benefit will be increased by this excess.

Early retirement

Eligibility

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

Benefit

Plan B: A participant 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	0.91042
58	0.82985
57	0.75727
56	0.69175
55	0.63251



APPENDIX B: SUMMARY OF BENEFIT PROVISIONS

Plan C: A participant 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	0.90799
60	0.82558
59	0.75162
58	0.68511
57	0.62518
56	0.57109
55	0.52219

Disability retirement

Eligibility

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

Vested termination benefits

Eligibility

A participant who has at least five years of creditable service earns a vested interest in his or her accrued benefit, provided the participant 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 B: SUMMARY OF BENEFIT PROVISIONS

Non-vested benefits

Benefit

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

Death Benefit

Prior to retirement

For a participant who dies before retirement, the participant's designated beneficiary is entitled to receive a monthly retirement benefit if (a) the participant was an active employee, or (b) the participant was a terminated vested member who met the age requirements for either normal or early retirement. The participant's designated beneficiary has the option of selecting a monthly benefit under Option 1 with immediate commencement, or receiving a refund of contributions accumulated with interest.

For a terminated vested participant who dies before retirement and has not met the age requirements for retirement, the participant's accumulated contributions with interest will be paid to the participant's designated beneficiary.

The designated beneficiary is the participant's spouse, dependent child or dependent parent. If the deceased participant was an actively contributing member and the beneficiary elects Option 1, such benefit shall be calculated as if the deceased participant had at least ten years of creditable service at the time of death. If the beneficiary is a child, the benefit is only payable until age nineteen.

Postretirement

The optional form of benefit payment selected will determine what, if any, benefits are payable upon death after retirement. Participants are guaranteed to receive at least their accumulated contributions at retirement, if they die before electing an option.

Normal form of benefit payments

The normal form of benefit payment is the normal retirement benefit amount paid monthly for the life of the participant. If the participant 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

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



APPENDIX B: SUMMARY OF BENEFIT PROVISIONS

Option 1

Option 1 provides a reduced retirement benefit that will continue on to a designated beneficiary. Upon a retiree's death, the retiree's designated beneficiary will receive for life, the same level of monthly retirement benefit. In the event the retiree's designated beneficiary 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 beneficiary. Upon a retiree's death, the retiree's designated beneficiary 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 beneficiary 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 beneficiary. The Board makes its determination as follows:

1. The actuary recommends to the Board what portion of the investment return is available for increases and the amount available to be paid on the first day of the 14th month following the end of the valuation year. The actuary's recommendation is subject to the following safeguards:
 - a. The System's funded ratio as of the January 1st of the preceding year of the proposed increase must be at least 100% after adjusting for the effect of proposed increase. The funded ratio is the ratio of assets to the pension benefit obligation.
 - b. The actuarially required contribution rate, after adjusting for the effect of the proposed increase, may not exceed the statutory contribution rate.
 - c. The actuary must certify that the proposed increase will not impair the actuarial soundness of the System.



APPENDIX B: SUMMARY OF BENEFIT PROVISIONS

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 participant.

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 member 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 participants 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 January 1, 2016, participants contribute 9.00%
- Effective January 1, 2015, participants contributed 8.50%
- Effective January 1, 2014, participants contributed 8.00%
- Effective January 1, 1999, participants contributed 7.50%
- Prior to January 1, 1999, participants contributed 5.90%
- Prior to 1990, participants contributed 5.00% of earnable annual compensation plus 2.00% of earnable compensation in excess of \$6,500, the contribution earning base.

Employer contributions

The employers of participants contribute at the fixed rate of covered compensation as follows;

- 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.



APPENDIX B: SUMMARY OF BENEFIT PROVISIONS

Changes from the Prior Valuation

Legislation passed in the 2013 session allows the Board to adjust the contribution rate annually in 0.50% increments to as much as 9.00% for both employers and members. The Board adopted a contribution rate of 9.00% each (employer and member) beginning January 1, 2016.

New early retirement factors were adopted by the Board in June 2015 to replace the prior factors, which were based upon outdated assumptions. The new factors are being used for the first time in the January 1, 2016 valuation report.



APPENDIX C: ACTUARIAL COST METHOD AND ASSUMPTIONS

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). The unfunded actuarial accrued liability/(surplus) is financed as a level dollar amount over an open 30-year period.

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 pay increases to members
- (iii) Rates of mortality among members, retirees and beneficiaries
- (iv) Rates of withdrawal of active members
- (v) Rates of disability among active members
- (vi) The age patterns of actual retirements



APPENDIX C: ACTUARIAL COST METHOD AND ASSUMPTIONS

In making a valuation, the monetary effect of each assumption is calculated for as long as a presently covered person survives – a period of time which can be as long as a century.

Actual experience of the System will not coincide exactly with assumed experience. Each valuation provides a complete recalculation of assumed future experience and takes into account all past differences between assumed and actual experiences. The result is a continual series of adjustments (usually small) to the computed contribution rate.

From time to time, one or more of the assumptions are modified to reflect experience trends (but not random or temporary year-to-year fluctuations).

Long-term Rate of Return: (net of administrative expenses): 8.00% per year, compounded annually (3.00% long-term price inflation and a 5.00% real rate of return).

Interest Crediting Rate on Member Accounts: 5.00% per year.

Salary Increase Rates: 5.00% per year.

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

And Beneficiaries: IRS Prescribed Static Table: RP-2000 Healthy Annuitant Table projected 7 years from valuation date using Scale AA

Disabled Retirees: RP-2000 Disabled Table for Males and Females

Active Members: IRS Prescribed Static Table: RP-2000 Healthy Non-Annuitant Table projected 15 years from valuation date using Scale AA



APPENDIX C: ACTUARIAL COST METHOD AND ASSUMPTIONS

Rates of Retirement: These rates are used to measure the probability of eligible members retiring under the regular retirement provisions.

Retirements occur at rates based on the actual experience of the retirement system. The age-related rates used are shown in the below table. However, 20% of participants are assumed to retire in their first year of eligibility for normal retirement. 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	
Age	Rate
45-59	5%
60	12
61	12
62	25
63	15
64	20
65	35
66-69	25
70	100

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

Rates of Separation from Active Membership: This assumption measures the probabilities of a member terminating employment. The rates do not apply to members who are eligible to retire.

Sample Ages	Years of Service	Probability of Terminating During Year
ALL	1	27.00%
	2	24.00
	3	21.00
	4	18.00
	5	15.00
	6	13.00
	7	11.00
	8	9.00
25	Over 8	12.20
30		9.20
35		7.10
40		5.60
45		4.70
50		4.20
55		3.80
60		3.80

After 8 years of service, termination rates vary by age, however, not all ages are shown above.



APPENDIX C: ACTUARIAL COST METHOD AND ASSUMPTIONS

Forfeiture of Vested Benefits: Participants terminating in vested status are given the option of taking a refund of their accumulated participant 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: This assumption measures the probabilities of a member becoming disabled.

Sample Ages	% of Active Members Becoming Disabled During Next Year
25	0.05%
30	0.10
35	0.10
40	0.10
45	0.15
50	0.25
55	0.40
60	0.50

Disability probabilities vary by age, however, not all ages are shown above.

Administrative Expenses: Assumed to be paid from investment earnings.

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 participants 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.

Other: The turnover decrement does not operate during retirement eligibility.

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.



APPENDIX C: ACTUARIAL COST METHOD AND ASSUMPTIONS

CHANGES FROM THE PRIOR VALUATION

The mortality table for non-disabled members, the IRS Static Mortality Table mandated for use by private pension plans, was updated to the applicable table for 2016. This uses a separate table for pre-commencement and post-commencement.



APPENDIX D: GLOSSARY OF TERMS

Actuarial Accrued Liability	The difference between the actuarial present value of system benefits and the actuarial present value of future normal costs. Also referred to as “accrued liability” or “actuarial accrued liability”.
Actuarial Assumptions	Estimates of future experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and salary increases. Decrement assumptions (rates of mortality, disability, turnover and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (salary increases and investment income) consist of an underlying rate in an inflation-free environment plus a provision for a long-term average rate of inflation.
Accrued Service	Service credited under the system which was rendered before the date of the actuarial valuation.
Actuarial Equivalent	A single amount or series of amounts of equal actuarial value to another single amount or series of amounts, computed on the basis of appropriate assumptions.
Actuarial Cost Method	A mathematical budgeting procedure for allocating the dollar amount of the actuarial present value of retirement system benefit between future normal cost and actuarial accrued liability; sometimes referred to as the “actuarial funding method”.
Experience Gain (Loss)	The difference between actual experience and actuarial assumptions anticipated experience during the period between two actuarial valuation dates.
Actuarial Present Value	The amount of funds currently required to provide a payment or series of payments in the future. It is determined by discounting future payments at predetermined rates of interest and by probabilities of payment.
Amortization	Paying off an interest-discounted amount with periodic payments of interest and principal, as opposed to paying off with a lump sum payment.
Normal Cost	The actuarial present value of retirement system benefits allocated to the current year by the actuarial cost method.
Unfunded Actuarial Accrued Liability	<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> <p>The existence of unfunded actuarial accrued liability is not in itself bad, any more than a mortgage on a house is bad. Unfunded actuarial accrued liability does not represent a debt that is payable today. What is important is the ability to amortize the unfunded actuarial accrued liability and the trend in its amount.</p>