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

Actuarial Valuation Report
as of January 1, 2017

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Cavanaugh Macdonald
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May 30, 2017

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, 2017. The major findings of the valuation are contained in this report, including the actuarial required contribution rate for the 2017 plan year. As a result of the most recent experience study dated October 3, 2016, there have been changes to both the actuarial assumptions and actuarial methods since the prior valuation. No changes have been made to the plan provisions.

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.

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 Standards No. 67 and No. 68 are provided in separate reports.

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

This is to certify that the independent consulting actuaries 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,

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

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

SECTION I: EXECUTIVE SUMMARY

This report presents the results of the January 1, 2017 actuarial valuation of the Public School Retirement System of the School District of Kansas City, Missouri (System). The primary purposes of performing a valuation are to:

- estimate the liabilities for future benefits expected to be paid by the System;
- determine the actuarial contribution rate based on the Board's funding policy and evaluate the sufficiency of the current contribution rates;
- disclose certain asset and liability measurements as of the valuation date;
- monitor any deviation between actual plan experience and experience anticipated by the actuarial assumptions; and
- analyze and report on any significant trends in assets, liabilities, and contributions over the past several years.

There have been no changes to the plan provisions since the last valuation. However, there were several changes to the System's actuarial assumptions and methods as a result of a comprehensive Experience Study performed for the System and adopted by the Board of Trustees late in 2016. The most significant changes are outlined below:

- The investment return assumption was lowered from 8.00% to 7.75%.
- The inflation assumption was lowered from 3.00% to 2.75%.
- The assumed interest rate credited on employee account balances was lowered from 5.00% to 3.25%.
- The general wage increase assumption was set at 3.50%.
- The payroll growth assumption was set at 3.00%.
- The mortality assumption was changed to the RP-2014 Blue Collar Mortality Table, with a one-year age setback for females, no adjustment for males. Mortality improvements are projected 7 years from the valuation date for retirees and beneficiaries and 15 years for actives, using Scale MP-2016.
- Retirement rates were modified to partially reflect observed experience.
- Termination rates were changed to be pure service-based rates.
- Disability rates were reduced by 50%.
- The amortization of the UAAL was changed to a "layered" approach with new pieces of UAAL amortized over a closed 20-year period beginning on the valuation date. The UAAL as of January 1, 2017 is being amortized over a closed 30-year period. Amortization payments are determined under the level percent of payroll method.

The impact of these changes on the January 1, 2017 valuation results is summarized in the following table (dollars shown in millions):

	Old Assumptions and Methods	New Assumptions and Methods	Difference
Actuarial Accrued Liability (AAL)	$905.5	$981.5	$76.0
Actuarial Value of Assets (AVA)	684.4	684.4	0.0
Unfunded AAL (UAAL)	$221.1	$297.1	$76.0
Normal Cost Rate	10.14%	9.16%	(0.98%)
UAAL Rate	10.12%	9.45%	(0.67%)
Recommended Contribution Rate	20.26%	18.61%	(1.65%)

The actuarial valuation results provide a "snapshot" view of the System's financial condition on January 1, 2017. 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, 2016 actuarial valuation. Unfavorable experience on the actuarial value of assets resulted in an actuarial loss of $16.6 million and experience on liabilities resulted in a loss of $4.5 million for a total actuarial loss of $21.1 million. As a result of this experience and the assumption changes discussed earlier, the System's unfunded actuarial accrued liability increased from $200.6 million in the January 1, 2016 valuation to $297.1 million in the January 1, 2017 valuation. A detailed analysis of the change in the unfunded actuarial accrued liability is shown on page 4.

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

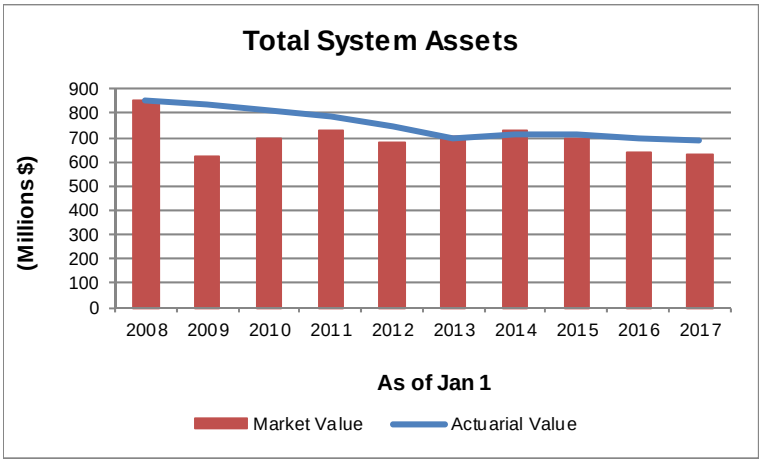
ASSETS

As of January 1, 2017, the System had total assets of $631.4 million when measured on a market value basis. This was a decrease of $4.7 million from the January 1, 2016 figure of $636.1 million. The market value of assets is not used directly in the calculation of the System's funded status and the actuarial contribution rate. An asset valuation method, which smoothes the effect of market fluctuations, is used to determine the value of assets used in the valuation, called the "actuarial value of assets". Gains and losses, determined as the difference between the actual and expected value of assets, are recognized equally over a five-year period. See Table 3 for a detailed development of the actuarial value of assets. The rate of return on the market value of assets was about 7.0%, but due to the asset smoothing process the return on the actuarial value of assets was 5.5%. Because the investment return on the actuarial value of assets was lower than the actuarial assumed rate of return for 2016 (8.0%), an actuarial loss on assets occurred. Due to the recognition of deferred losses on the actuarial value of assets, the deferred asset loss decreased from $58.5 million in the January 1, 2016 valuation to $53.0 million in the January 1, 2017 valuation. Actual returns over the next few years will determine if, and when, the $53.0 million of deferred investment loss is recognized.

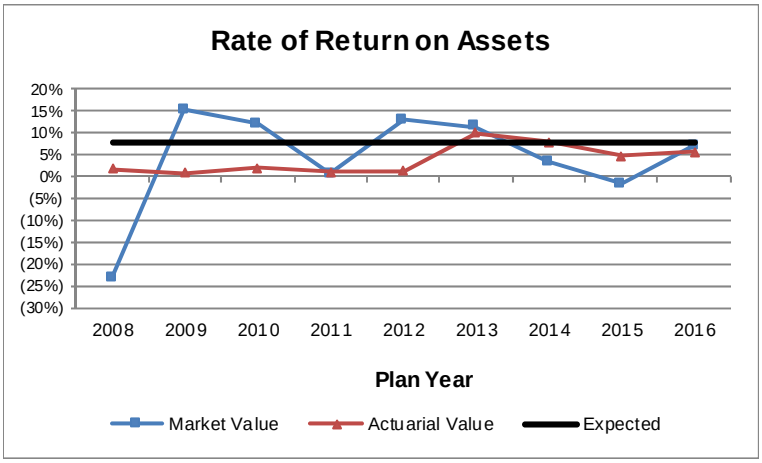
The components of the change in the market and actuarial value of assets for the System (in millions) are set forth below:

	Market Value ($M)	Actuarial Value ($M)
Assets, January 1, 2016	$636.1	$694.6
- Employers and Member Contributions	32.8	32.8
- Benefit Payments and Refunds	(80.2)	(80.2)
- Investment, Depreciation and Administrative Expenses	(5.6)	(5.6)
- Investment Income	48.3	42.8
Assets, January 1, 2017	$631.4	$684.4
Estimated Rate of Return	7.0%	5.5%

The unrecognized investment loss represents about 8% of the market value of assets. Unless offset by future investment gains or other favorable experience, the recognition of the $53.0 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 70% to 64% and the actuarial contribution rate for the System would increase from 9.6% to 11.3% of payroll.



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



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

LIABILITIES

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

The Actuarial Accrued Liability and Unfunded Actuarial Accrued Liability for the System as of January 1, 2017 are:

Actuarial Accrued Liability	$981,514,827
Actuarial Value of Assets	684,412,437
Unfunded Actuarial Accrued Liability	$297,102,390

The existence of an unfunded actuarial accrued liability means that the System has actuarial assets below the target amount for an ongoing plan using the actuarial cost method. 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 in the future. Because the actuarial accrued liability includes projections of future salary increases and years of service, this measure does not provide a reliable indication of the level of funding relative to actual benefits earned to date. In addition, note that if the market value of assets were used instead of the actuarial value of assets, the amount of UAAL would be different. This information is shown on page 8 of this report.

Between January 1, 2016 and January 1, 2017, the change in the unfunded actuarial accrued liability for the System was as follows (in millions):

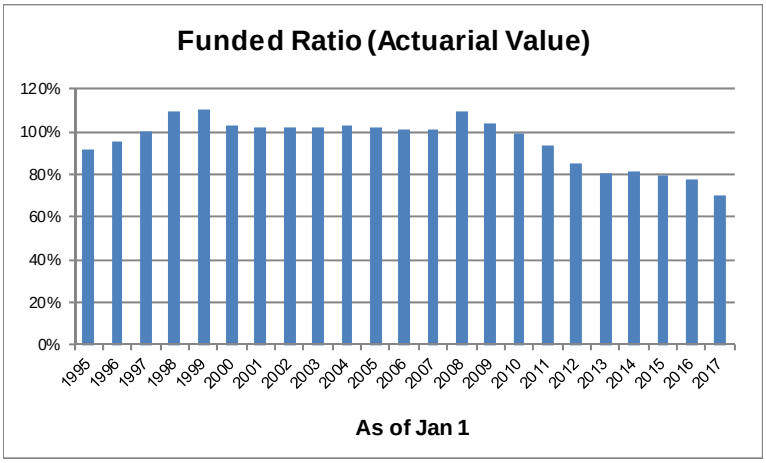
	($ Millions)
Unfunded Actuarial Accrued Liability, January 1, 2016	$ 200.6
- Expected decrease from amortization method	(1.8)
- Actual versus actuarial contributions	3.9
- Investment experience	16.6
- Liability experience	4.5
- Assumption Changes	76.0
- Other experience	(2.7)
Unfunded Actuarial Accrued Liability, January 1, 2017	$ 297.1

The experience loss for the 2016 plan year of $21.1 million reflects the combined impact of an actuarial loss of $16.6 million on System assets (actuarial value), and an actuarial loss of $4.5 million on System liabilities. The largest source of loss on the liability experience was salary increases that were larger than expected, based on the actuarial assumptions.

As a result of the most recent experience study, several changes have been made to the actuarial assumptions and methods since the prior valuation. Implementing the new set of actuarial assumptions increased the actuarial accrued liability by $79.5 million.

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:

	1/1/2013	1/1/2014	1/1/2015	1/1/2016	1/1/2017
Actuarial Accrued Liability ($M)	$868.7	$875.5	$891.5	$895.2	$981.5
Actuarial Value of Assets ($M)	$697.0	$710.8	$712.4	$694.6	$684.4
Funded Ratio (Actuarial Value)	80.2%	81.2%	79.9%	77.6%	69.7%
Market Value of Assets ($M)	$703.0	$726.6	$698.5	$636.1	$631.4
Funded Ratio (Market Value)	80.9%	83.0%	78.4%	71.1%	64.3%



The System's funded ratio was very strong (near or above 100%) until recent 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 $53.0 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 $53.0 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.

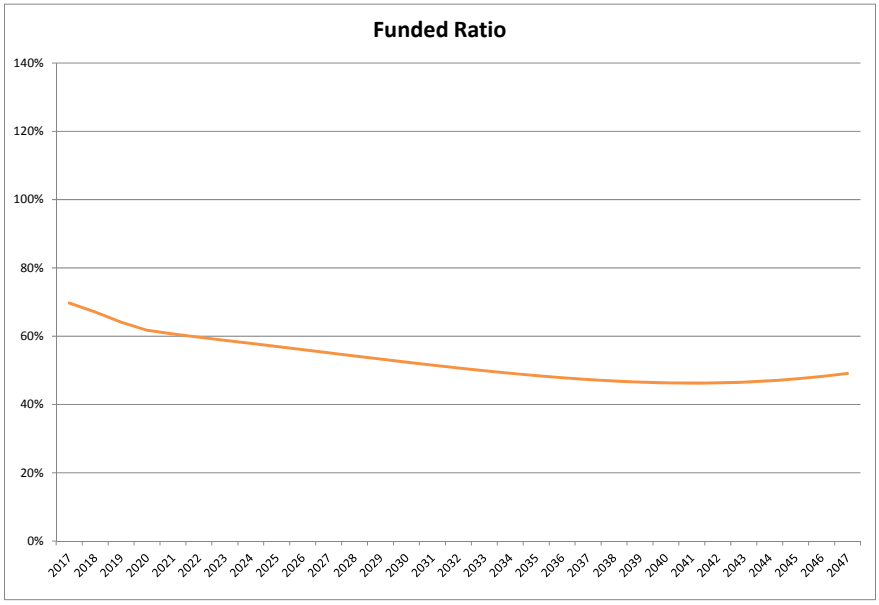
As of January 1, 2017, the actuarial accrued liability exceeds the actuarial value of assets so an unfunded actuarial accrued liability (UAAL) exists. Effective with the January 1, 2017 valuation, the existing UAAL is amortized over a closed 30-year period and subsequent pieces of UAAL, determined each year in the valuation process, are amortized over a separate, closed 20-year period. The amortization payments on each of the UAAL bases are determined as a level percentage of payroll. The resulting UAAL contribution rate is 9.45% of pay.

The System's actuarial contribution rate is the sum of the normal cost and the UAAL amortization contribution or 18.61% of pay (9.16% normal cost plus 9.45% UAAL contribution). Given the current contribution rate of 18.00% of pay (9.00% each for employee and employer), the resulting contribution shortfall as of January 1, 2017 is 0.61% which translates to about $1.2 million. However, this measurement is of limited value in assessing the adequacy of the current contribution rate over the long-term in meeting the funding requirements of the System.

As mentioned earlier, the System is funded with a fixed contribution rate of 18.00% of payroll. In the current valuation, 9.16% is needed to fund the normal cost for current active members and the remainder, 8.84% of payroll, is available to finance the UAAL. However, as Plan B members leave employment over time and are replaced by new hires in Plan C, the normal cost rate is expected to decline. As a result, the

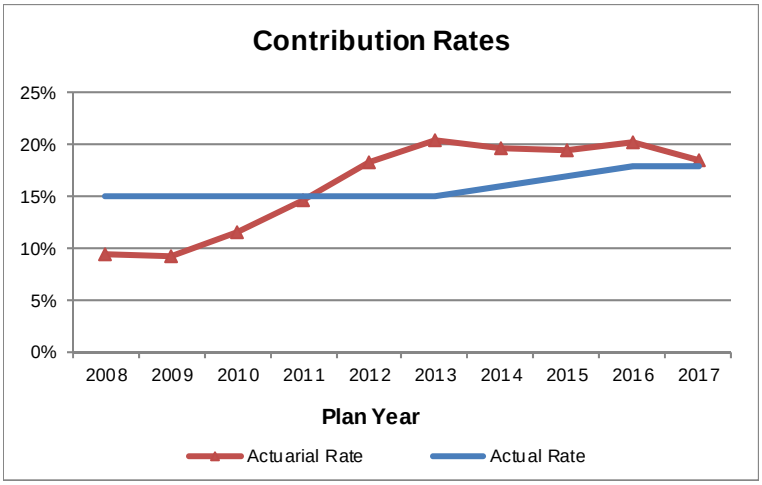
portion of the total contribution rate available to pay off the UAAL is expected to increase each year in the future until all active members in the valuation are covered by Plan C.

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 2017 valuation. The following graph reflects the projected funded ratio in future years based on the current fixed contribution rate of 18.00% of payroll (9.00% employer and 9.00% employee). Please note that these projections assume that all actuarial assumptions are met in all future years, including a 7.75% 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.



The declining funded ratio shown in the graph above indicates that a serious situation exists that should be studied so appropriate modifications might be made. Those could include changes to the benefit structure or increases in the employee and/or employer contribution rates. Absent action, we would expect the System's funded status to deteriorate rather significantly over time which has significant implications for the System. We urge the Board to continue to study the System's long-term funding and find a viable solution.

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

Legislation passed 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 more stringent requirements for unreduced benefits (age 62 or Rule of 80 rather than age 60 or Rule of 75). As of January 1, 2017, there are 1,518 active Plan C members in the System out of a total of 3,701, about 40%. 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.

As mentioned earlier, there were several changes to the System's actuarial assumptions and methods as a result of the Experience Study performed for the System late in 2016. The Board of Trustees adopted the recommendations, which increased the unfunded actuarial accrued liability by $76 million. The key change from a cost impact was lowering the investment return from 8.0% to 7.75%.

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. Based on the market value return in 2016 and the current year's recognition of prior investment experience, the System experienced an actuarial loss on assets of $16.6 million. There was also a net loss on liabilities of $4.5 million. The combined impact of the asset and the liability experience was an actuarial loss of $21.1 million.

The System's actuarial required contribution rate decreased from 20.18% in the January 1, 2016 valuation to 18.61% in this valuation, largely due to a change to the level-percent of payroll method of determining the UAAL contribution. 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 7.75% assumption will create volatility in the System's actuarial required contribution rate.

The deferred investment loss (actuarial value less market value of assets) is $53.0 million, about 8% of market value. Absent investment gains in future years, this deferred investment loss will eventually be reflected in the actuarial value of assets. While the use of an asset smoothing method is a common procedure for public retirement systems, it is important to identify the potential impact of the deferred investment experience. This is accomplished by comparing the key valuation results from the January 1, 2017 actuarial valuation using both the actuarial and market value of assets.

	Using Actuarial Value of Assets	Using Market Value of Assets
Actuarial Accrued Liability	$981,514,827	$981,514,827
Asset Value	$684,412,437	$631,442,613
Unfunded Actuarial Accrued Liability	$297,102,390	$350,072,214
Funded Ratio	69.7%	64.3%
Normal Cost Rate	9.16%	9.16%
UAAL Contribution Rate	9.45%	11.13%
Total Contribution Rate	18.61%	20.29%
Employee Contribution Rate	(9.00%)	(9.00%)
Employer Contribution Rate	(9.00%)	(9.00%)
Contribution Shortfall	0.61%	2.29%

Summary of Principal Valuation Results

	1/1/2017 Valuation	1/1/2016 Valuation	% Change
1. PARTICIPANT DATA			
Number of:			
Active Members			
- Plan B	2,183	2,494	(12.47%)
- Plan C	1,518	1,080	40.56%
Total	3,701	3,574	3.55%
Retirees, Disableds, and Beneficiaries	4,032	4,049	(0.42%)
Inactive Members*	2,788	2,740	1.75%
Total Members	10,521	10,363	1.52%
Projected Annual Salaries of Active Members	$ 194,132,739	$ 179,013,516	8.45%
Annual Retirement Payments for Retirees, Disableds, and Beneficiaries	$ 76,880,736	$ 76,786,236	0.12%
2. ASSETS AND LIABILITIES			
a. Market Value of Assets	$ 631,442,613	$ 636,109,506	(0.73%)
b. Actuarial Value of Assets	684,412,437	694,641,248	(1.47%)
c. Total Actuarial Accrued Liability	981,514,827	895,230,295	9.64%
d. Unfunded Actuarial Accrued Liability [c - b]	$ 297,102,390	$ 200,589,047	48.11%
e. Funded Ratio (Actuarial Value of Assets) [b / c]	69.73%	77.59%	(10.13%)
f. Funded Ratio (Market Value of Assets) [a / c]	64.33%	71.06%	(9.47%)
g. Projected Benefit Obligation	$ 956,558,273	$ 889,456,919	7.54%
3. CONTRIBUTION RATES AS A PERCENT OF PAYROLL			
Normal Cost	9.16%	10.23%	(10.46%)
Amortization of Unfunded Actuarial Accrued Liability	9.45%	9.95%	(5.03%)
Actuarial Required Contribution Rate	18.61%	20.18%	(7.78%)
Member Contribution Rate	(9.00%)	(9.00%)	0.00%
Employer Contribution Rate	(9.00%)	(9.00%)	0.00%
Contribution Rate Shortfall	0.61%	2.18%	(72.02%)
Contribution Shortfall	$ 1,184,210	$ 3,902,495	(69.66%)

*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, 2017. This valuation was prepared at the request of the System's Board of Trustees. The report is based on the plan provisions, actuarial assumptions and actuarial methods in effect as of January 1, 2017. As a result of the most recent experience study, several changes have been made to the actuarial assumptions and methods since the prior valuation. The plan provisions remain unchanged from the prior valuation.

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, 2017. 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, 2017, the market value of assets for the System was $631.4 million. Table 1 summarizes the market value of assets by asset category. Table 2 summarizes the changes in the market value of assets between January 1, 2016 and January 1, 2017.

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, 2017.

TABLE 1

Net Assets at Market Value as of January 1, 2017

INVESTMENTS, AT MARKET VALUE		
Cash and short term investments	$	13,832,993
Commingled domestic fixed income		52,860,342
High yield fixed income		16,474,561
Global fixed income		28,214,068
Domestic equity		145,024,310
International equity		151,657,182
Pooled real estate funds		70,742,809
Alternative equity fund		91,321,786
Private equity		27,812,474
Commodities		20,192,658
Total Investments, at Market Value	$	618,133,183
RECEIVABLES		
Plan member contributions	$	697,036
Employer contributions		10,562,880
Securities sold		364,670
Accrued interest and dividends		444,517
Total Receivables	$	12,069,103
OTHER ASSETS		
Cash	$	2,401,367
Fixed assets		54,238
Other assets		45,865
Total Other Assets	$	2,501,470
TOTAL ASSETS	$	632,703,756
LIABILITIES		
Due to broker for securities purchased	$	538,494
Accounts payable		590,186
Accrued payroll expenses		132,463
Total Liabilities	$	1,261,143
NET ASSETS AVAILABLE FOR BENEFITS	$	631,442,613

Note: Based on unaudited asset information.

TABLE 2

Statement of Changes in Net Assets as of January 1, 2017

ADDITIONS TO NET ASSETS		
Contributions		
Plan members	$	16,280,327
Employers		16,528,188
Total Contributions	$	32,808,515
Investment Income		
Net appreciation (depreciation) in fair value of investments	$	42,374,383
Interest/Dividends		5,945,024
Other income		0
Investment income before expenses	$	48,319,407
Less: investment expenses		(3,981,633)
Total investment income	$	44,337,774
TOTAL ADDITIONS TO NET ASSETS	$	77,146,289
DEDUCTIONS FROM NET ASSETS		
Benefits paid directly to participants	$	76,898,255
Refunds of contributions		3,270,723
Depreciation expense		92,179
Administrative expenses		1,552,025
TOTAL DEDUCTION FROM ASSETS	$	81,813,182
NET INCREASE (DECREASE)	$	(4,666,893)
NET ASSETS AVAILABLE FOR BENEFITS		
Beginning of year	$	636,109,506
End of year	$	631,442,613

Note: Based on unaudited asset information.

TABLE 3

Development of Actuarial Value of Assets as of January 1, 2017

1. Deferral of Investment Return for 2016		
a. Market Value, January 1, 2016	$	636,109,506
b. Contributions for 2016		32,808,515
c. Benefit Payments for 2016		80,168,978
d. Actual Investment Return, Net of All Expenses	$	42,693,570
e. Expected Return Rate		8.00%
f. Expected Return - Weighted for Timing* (a. x e.) + [(b. - c.) x (((1 + e.)$^{.5}$) - 1)]	$	49,030,787
g. Investment Gain/(Loss) for the Year (d. - f.)	$	(6,337,217)
h. Deferred Investment Return (g. x 80%)	$	(5,069,774)
2. Actuarial Value, January 1, 2017		
a. Market Value, January 1, 2017	$	631,442,613
b. Total Deferred Investment Gain/(Loss)		(52,969,824)
c. Actuarial Value, January 1, 2017 (a. - b.)	$	684,412,437
d. Ratio of Actuarial Value of Assets to Market Value of Assets		108.4%
e. Approximate Actuarial Value Rate of Return for 2016, Net of All Expenses		5.5%

* 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
12/31/2012	$ 22,460,154	$ 17,968,124	$ 4,492,030	$ 0
12/31/2013	22,436,893	13,462,137	4,487,379	4,487,377
12/31/2014	(32,229,392)	(12,891,756)	(6,445,878)	(12,891,758)
12/31/2015	(65,826,115)	(13,165,223)	(13,165,223)	(39,495,669)
12/31/2016	(6,337,217)	0	(1,267,443)	(5,069,774)
Total	$(59,495,677)	$ 5,373,282	$(11,899,135)	$(52,969,824)

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, 2017. 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, 2017.

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, 2016.

Table 7 shows the actuarial balance sheet.

PENSION BENEFIT OBLIGATION

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

TABLE 4

Present Value of Future Benefits as of January 1, 2017

1. Active Members		
a. Retirement Benefits	$	312,359,499
b. Disability Benefits		4,479,580
c. Death Benefits		7,140,348
d. Withdrawal Benefits		39,680,511
e. Subtotal	$	363,659,938
2. Benefit Recipients		
a. Retiree Benefits	$	655,816,610
b. Survivor Benefits		20,131,083
c. Disability Benefits		8,819,843
d. Subtotal	$	684,767,536
3. Inactive Members		
a. Vested Retirement Benefits	$	24,429,639
b. Non-vested Account Balance		7,855,121
c. Subtotal	$	32,284,760
4. Total (1e. + 2d. + 3c.)	$	1,080,712,234

TABLE 5

Actuarial Accrued Liability as of January 1, 2017

1. Present Value of Future Benefits (PVFB)	$	1,080,712,234
2. Present Value of Future Normal Costs (PVFNC)		
a. Retirement benefits	$	51,901,856
b. Disability benefits		1,469,380
c. Death benefits		2,633,702
d. Withdrawal benefits		43,192,469
e. Total	$	99,197,407
3. Actuarial Accrued Liability (AAL) (1. - 2e.)	$	981,514,827
4. Actuarial Value of Assets (AVA)	$	684,412,437
5. Unfunded Actuarial Accrued Liability (UAAL) (3. - 4.)	$	297,102,390
6. Funded Ratio (AVA / AAL) (4. / 3.)		69.7%

TABLE 6

Actuarial Gain/(Loss) for 2016

Liabilities			
1.	Actuarial accrued liability as of January 1, 2016	$	895,230,295
2.	Normal cost for 2016		16,123,384
3.	Interest at 8.00% on (1) and (2) to December 31, 2016		72,908,294
4.	Benefit payments during 2016		(80,168,978)
5.	Interest on benefit payments		(3,145,068)
6.	Assumption changes		79,525,403
7.	Updated mortality assumption		(3,512,478)
8.	Expected actuarial accrued liability as of December 31, 2016	$	976,960,852
9.	Actuarial accrued liability as of December 31, 2016		981,514,827
10.	Actuarial gain / (loss) on actuarial accrued liability (8. – 9.)	$	(4,553,975)
Assets			
11.	Actuarial value of assets as of January 1, 2016	$	694,641,248
12.	Contributions during 2016		32,808,515
13.	Benefit payments during 2016		(80,168,978)
14.	Interest on items (11), (12) and (13)		53,713,326
15.	Expected actuarial value of assets as of December 31, 2016	$	700,994,111
16.	Actuarial value of assets as of December 31, 2016		684,412,437
17.	Actuarial gain / (loss) on actuarial assets (16. – 15.)	$	(16,581,674)
18.	Total actuarial gain / (loss) (10. + 17.)	$	(21,135,649)

TABLE 7

Actuarial Balance Sheet

Assets

Current assets (actuarial value)	$	684,412,437
Present value of future normal costs		99,197,407
Present value of future contributions to fund unfunded actuarial accrued liability		297,102,390
Total Assets	$	1,080,712,234

Liabilities

Present value of future retirement benefits for:		
Active employees	$	363,659,938
Members currently receiving a benefit		684,767,536
Terminated vested members		24,429,639
Inactive employees due refunds		7,855,121
Total Liabilities	$	1,080,712,234

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		January 1, 2017	January 1, 2016
1.	Retired members and beneficiaries currently receiving benefits and terminated members not yet receiving benefits	$ 717,052,296	$ 677,295,366
2.	Current active participants		
a.	Accumulated member contributions, including interest	105,887,868	101,173,695
b.	Employer-financed vested benefits	133,618,109	110,987,858
Total Projected Benefit Obligation (PBO)		$ 956,558,273	$ 889,456,919
Projected Benefit Obligation funded status			
1.	Actuarial Value of Assets (AVA)	$ 684,412,437	$ 694,641,248
a.	Unfunded Projected Benefit Obligation	272,145,836	194,815,671
b.	Funding Ratio (AVA / PBO)	72%	78%
2.	Market Value of Assets (MVA)	$ 631,442,613	$ 636,109,506
a.	Unfunded Projected Benefit Obligation	325,115,660	253,347,413
b.	Funding Ratio (MVA / PBO)	66%	72%

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, 2017, 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 percent of pay amount, using a "layered" approach with the legacy UAAL amortized over a closed 30-yeaer period commencing January 1, 2017 and new bases over a closed 20-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, 2017, is developed. In Table 11, the contribution rate for the System is calculated.

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

TABLE 9

Normal Cost Rate

1. Normal Cost		
a. Retirement Benefits	$	8,422,202
b. Disability Benefits		222,640
c. Death Benefits		456,425
d. Termination Benefits		6,514,908
e. Total	$	15,616,175
2. Expected Payroll for Current Actives	$	170,496,024
3. Normal Cost Rate for 2017		9.16%

TABLE 10

Amortization of the Unfunded Actuarial Accrued Liability

Amortization Bases	Original Amount	1/1/2017 Remaining Payments	Date of Last Payment	Outstanding Balance as of Jan. 1, 2017	Annual Contribution*
2017 UAAL Base	$ 297,102,390	30	1/1/2046	$ 297,102,390	$ 18,336,989
Total				**$ 297,102,390**	**$ 18,336,989**

* Contribution amount reflects mid-year timing.

1. Total UAAL Amortization Payments	$ 18,336,989
2. Projected Payroll for plan year ending December 31, 2017	$ 194,132,739
3. UAAL Amortization Payment Rate	9.45%

TABLE 11

Development of
2017 Actuarial Required Contribution (ARC)

1. Normal Cost Rate (See Table 9)	9.16%
2. UAAL Contribution Rate (See Table 10)	9.45%
3. Actuarial Recommended Contribution Rate (1) + (2)	18.61%
4. Statutory Contribution Rate:	
(a) Member	9.00%
(b) Employer	9.00%
(c) Total	18.00%
5. Contribution Shortfall (3) - (4c)	0.61%

HISTORICAL FUNDING AND OTHER INFORMATION

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

TABLE 12

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%
1/1/2017	684,412,437	981,514,827	297,102,390	69.7%	194,132,739	153.0%

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

TABLE 13

Historical Contribution Rates

Actuarial Valuation Date	Actuarial Contribution Rate	Actual Contribution Rate	Contribution Shortfall/(Margin)
1/1/2005	14.02%	15.00%	(0.98%)
1/1/2006	13.78%	15.00%	(1.22%)
1/1/2007	13.28%	15.00%	(1.72%)
1/1/2008	9.39%	15.00%	(5.61%)
1/1/2009	9.35%	15.00%	(5.65%)
1/1/2010	11.50%	15.00%	(3.50%)
1/1/2011	14.64%	15.00%	(0.36%)
1/1/2012	18.30%	15.00%	3.30%
1/1/2013	20.52%	15.00%	5.52%
1/1/2014	19.68%	16.00%	3.68%
1/1/2015	19.56%	17.00%	2.56%
1/1/2016	20.18%	18.00%	2.18%
1/1/2017	18.61%	18.00%	0.61%

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

Summary of Actuarial Methods and Assumptions

Valuation Date	January 1, 2017
Actuarial Cost Method	Entry Age Normal
Amortization Method	Level Percent of Pay, layered
Remaining Amortization Period	30 years
Asset Valuation Method	5-Year Smoothed Market Value
Actuarial Assumptions:	
Investment Rate of Return*	7.75%
Projected Salary Increases*	5.00%
No future COLAs	

*Includes Inflation at 2.75%

TABLE 14

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)
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%
2017	105,887,868	717,052,296	158,574,663	684,412,437	100%	81%	0%

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

RISK CONSIDERATIONS

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

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

- economic risks, such as investment return and inflation;
- demographic risks such as mortality, payroll growth, aging population including impact of baby boomers, and retirement ages;
- contribution risk; and
- external risks such as the regulatory and political environment.

The most significant risk factor is investment return because of the volatility of returns and the size of plan assets compared to payroll (see Exhibit 15). A perusal of historical rates over 10-20 years reveals that the actual return each year is rarely close to the average return for the same period. This is an expected result given the underlying capital market assumptions and the asset allocation. However, the valuation is a measurement based on a single investment return. The magnitude of variations in investment returns and the short timeframe in which they occur makes the management of this risk very challenging. In order to manage risk, it is first necessary to measure it which is the purpose of this section of the report.

A key demographic risk for all retirement systems, including KCPSRS, is improvements in mortality (longevity) greater than anticipated. While the actuarial assumptions reflect small, continuous improvements in mortality experience and these assumptions are refined every experience study, the risk arises because there is a possibility of some sudden shift, perhaps from a significant medical breakthrough that could quickly increase liabilities, Likewise, there is some possibility of a significant public health crisis that could result in a significant number of additional deaths in a short time period, would also be significant, although more easily absorbed.

Finally, the projections for funding anticipate a stable employment level, i.e., active member count remains the same. A significant change in the number of active members could have an adverse impact on the System's funding status.

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

EXHIBIT 15

HISTORICAL LEVERAGE RATIO

The size of the plan assets relative to covered payroll, sometimes referred to as a leverage ratio, is an important risk indicator. The higher this ratio is, the more sensitive a plan is to investment return volatility. In the January 1, 2017 valuation, the asset leverage ratio was 3.25. So, for example, if the actual return on the market value of assets was 10% lower than expected, it would translate into 32.5% of payroll. This ratio tends to grow over time as plans become better funded, so this is an important metric to monitor over time.

Fiscal Year End	Market Value of Assets	Covered Payroll	Leverage Ratio
12/31/07	$853,722,741	$202,311,837	4.22
12/31/08	624,647,065	205,326,108	3.04
12/31/09	693,934,794	194,474,437	3.57
12/31/10	730,278,733	162,417,257	4.50
12/31/11	681,930,607	155,893,016	4.37
12/31/12	702,966,521	157,303,005	4.47
12/31/13	726,553,301	157,014,537	4.63
12/31/14	698,523,480	170,845,124	4.09
12/31/15	636,109,506	179,013,516	3.55
12/31/16	631,442,613	194,132,739	3.25

EXHIBIT 16

COVERED PAYROLL VOLATILITY

Actuarial Valuation Date	Number of Active Members	Covered Payroll
1/1/2000	4,666	$151,091,616
1/1/2001	5,012	165,795,367
1/1/2002	5,014	171,523,233
1/1/2003	4,891	168,391,474
1/1/2004	5,090	186,528,530
1/1/2005	5,005	195,866,663
1/1/2006	4,808	187,445,140
1/1/2007	4,757	199,221,110
1/1/2008	4,862	202,311,837
1/1/2009	4,648	205,326,108
1/1/2010	4,336	194,474,437
1/1/2011	3,490	162,417,257
1/1/2012	3,284	155,893,016
1/1/2013	3,396	157,303,005
1/1/2014	3,501	157,014,537
1/1/2015	3,493	170,845,124
1/1/2016	3,574	179,013,516
1/1/2017	3,701	194,132,739

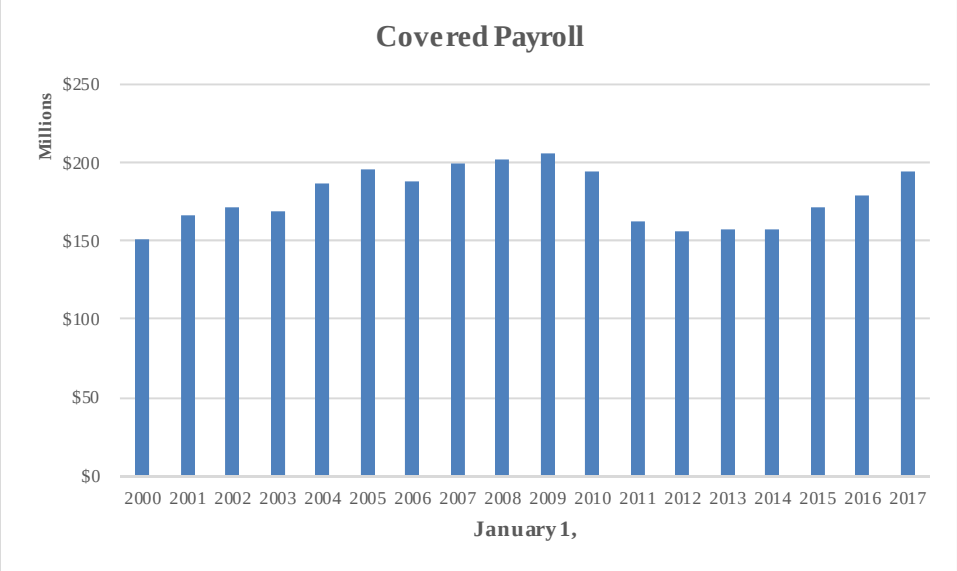


EXHIBIT 17

HISTORICAL CASH FLOWS

It is very common for mature plans to have negative cash flows (benefit payments exceed contributions). This is a key metric because plans with negative cash flow experience increased sensitivity to investment return volatility. If the System has negative cash flows and actual investment experience is below the assumed rate of return, there are fewer assets to be reinvested to earn the higher returns that typically follow periods of low returns. Negative cash flows can also impact the system's asset allocation and is a consideration in setting the investment policy of the system. The higher the net cash flow is as a percent of the market value of assets, the greater the risk to the system's funding.

Fiscal Year End	Market Value of Assets (MVA)	Contributions	Benefit Payments and Expenses	Net Cash Flow	Net Cash Flow as a Percent of MVA
12/31/07	$853,722,741	$30,420,687	$64,467,437	($34,046,750)	(3.99%)
12/31/08	624,647,065	31,501,230	67,592,066	(36,090,836)	(5.78%)
12/31/09	693,934,794	42,652,068	66,609,290	(23,957,222)	(3.45%)
12/31/10	730,278,733	27,094,752	75,322,662	(48,227,910)	(6.60%)
12/31/11	681,930,607	24,054,927	79,925,242	(55,870,315)	(8.19%)
12/31/12	702,966,521	22,948,176	80,819,536	(57,871,360)	(8.23%)
12/31/13	726,553,301	24,404,265	83,867,077	(59,462,812)	(8.18%)
12/31/14	698,523,480	26,646,322	85,398,587	(58,752,265)	(8.41%)
12/31/15	636,109,506	29,145,161	86,023,247	(56,878,086)	(8.94%)
12/31/16	631,442,613	32,808,515	85,794,815	(52,986,300)	(8.39%)

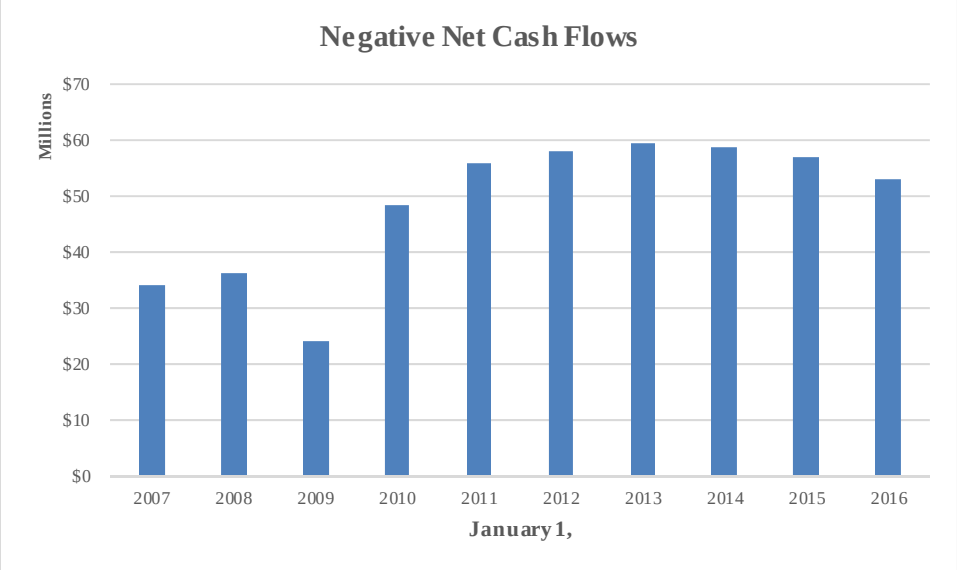


EXHIBIT 18

LIABILITY MATURITY MEASUREMENTS

Most public sector retirement systems have been in operation for many years. As a result, they have aging plan populations indicated by an increasing ratio of retirees to active members and a growing percentage of retiree liability. The retirement of the baby boomers over the next 10-15 years is expected to further exacerbate the aging of the retirement system population. With more of the total liability residing with retirees, investment volatility has a greater impact on the funding of the system since it is more difficult to restore the system financially after losses occur when there is comparatively less payroll over which to spread the cost.

The retirement system is also growing larger with respect to the sponsoring entities, as can be seen by the ratio of actuarial liability to payroll.

Projections provide the most effective way of analyzing the impact of these changes on future funding measures, but studying several key metrics from the valuation can also provide some valuable insight.

Fiscal Year End	Retiree Liability (a)	Total Actuarial Liability (b)	Retiree Percentage (a) / (b)	Covered Payroll (c)	Ratio (b) / (c)
12/31/07	$484,041,632	$781,284,025	62.0%	$202,311,837	3.86
12/31/08	477,828,410	804,623,080	59.4%	205,326,108	3.92
12/31/09	498,921,369	819,534,391	60.9%	194,474,437	4.21
12/31/10	580,324,640	844,232,490	68.7%	162,417,257	5.20
12/31/11	622,135,967	874,286,498	71.2%	155,893,016	5.61
12/31/12	620,358,237	868,663,383	71.4%	157,303,005	5.52
12/31/13	621,249,525	875,451,114	71.0%	157,014,537	5.58
12/31/14	645,100,053	891,543,036	72.4%	170,845,124	5.22
12/31/15	648,136,960	895,230,295	72.4%	179,013,516	5.00
12/31/16	684,767,536	981,514,827	69.8%	194,132,739	5.06

MEMBER CENSUS INFORMATION

A. ACTIVE MEMBERS	January 1, 2017	January 1, 2016	% Change
1. Number of Active Members			
(a) Plan B	2,183	2,494	(12.5%)
(b) Plan C	1,518	1,080	40.6%
(c) Total	3,701	3,574	3.6%
2. Active Member Averages			
(a) Age	43.5	44.0	(1.1%)
(b) Service	8.1	8.1	0.0%
(c) Expected Annual Pay	$ 52,454	$ 50,088	4.7%
B. TERMINATED VESTED MEMBERS			
1. Number of Terminated Vested Members	490	461	6.3%
2. Terminated Vested Members Averages			
(a) Age	50.5	50.5	0.0%
(b) Estimated Monthly Benefit	$ 671	$ 689	(2.6%)
C. TERMINATED NON-VESTED MEMBERS			
1. Number of Terminated Non-Vested Members	2,298	2,279	0.8%
2. Terminated Non-Vested Members Averages			
(a) Age	44.0	44.3	(0.7%)
(b) Account Balance	$ 3,418	$ 3,157	8.3%
D. RETIREES, DISABLEDS, AND BENEFICIARIES			
1. Number of Members			
(a) Retired	3,732	3,749	(0.5%)
(b) Disabled	89	94	(5.3%)
(c) Beneficiaries	211	206	2.4%
(e) Total	4,032	4,049	(0.4%)
2. Average Age			
(a) Retired	72.2	72.0	0.3%
(b) Disabled	67.1	66.7	0.6%
(c) Beneficiaries	74.6	74.6	0.0%
(e) Total	72.2	72.0	0.3%
3. Average Monthly Benefit			
(a) Retired	$ 1,630	$ 1,622	0.5%
(b) Disabled	1,002	1,016	(1.4%)
(c) Beneficiaries	1,105	1,072	3.1%
(e) Total	$ 1,589	$ 1,580	0.6%

MEMBER DATA RECONCILIATION

January 1, 2016 to January 1, 2017

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, 2016	3,574	3,749	206	94	461	2,279	10,363
New Entrants	673	0	21	0	0	68	762
Rehires/Transfers	46	0	0	0	(11)	(35)	0
Retirements	(106)	129	0	0	(23)	0	0
Disablements	(1)	0	0	1	0	0	0
Deaths	(3)	(145)	(15)	(6)	0	0	(169)
Vested Terminations	(80)	0	0	0	80	0	0
Non-vested Terminations	(212)	0	0	0	0	212	0
Refunds Paid	(181)	0	(1)	0	(18)	(225)	(425)
Payments Ended	0	0	0	0	0	0	0
Data Adjustments	(9)	(1)	0	0	1	(1)	(10)
Total as of January 1, 2017	3,701	3,732	211	89	490	2,298	10,521

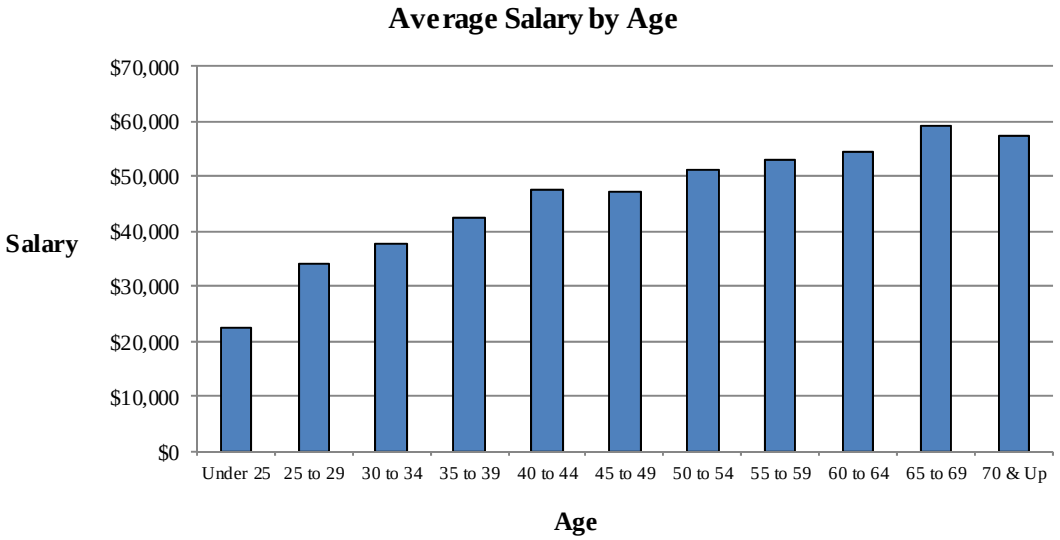
SUMMARY OF ACTIVE MEMBERS

as of January 1, 2017

Total – All Plans

	Number			2016 Reported Compensation*		
Age	Male	Female	Total	Male	Female	Total
Under 25	39	175	214	$ 781,531	$ 4,008,074	$ 4,789,605
25 to 29	133	419	552	4,558,205	14,173,427	18,731,632
30 to 34	122	314	436	4,551,547	11,813,457	16,365,004
35 to 39	114	317	431	5,315,769	12,985,105	18,300,874
40 to 44	109	255	364	5,552,286	11,784,671	17,336,957
45 to 49	111	260	371	5,495,769	11,969,944	17,465,713
50 to 54	129	288	417	6,806,408	14,433,719	21,240,127
55 to 59	122	315	437	6,884,080	16,254,997	23,139,077
60 to 64	81	250	331	4,669,169	13,366,681	18,035,850
65 to 69	34	92	126	2,164,565	5,287,543	7,452,108
70 & Up	6	16	22	278,180	983,611	1,261,791
Total	1,000	2,701	3,701	$47,057,509	$117,061,229	$164,118,738

* Partial year pay amounts have not been annualized.

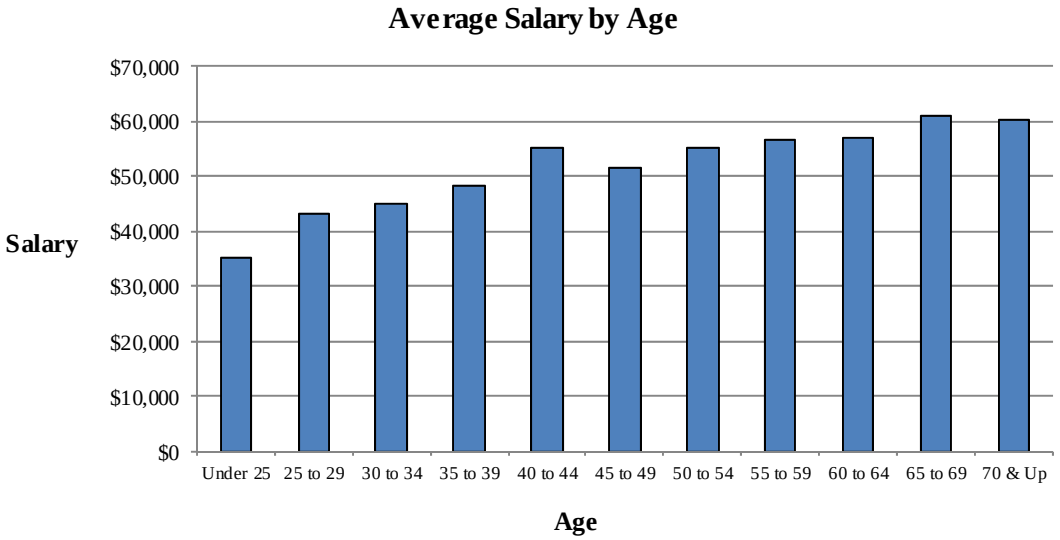


SUMMARY OF ACTIVE MEMBERS
as of January 1, 2017

Total – Plan B

	Number			2016 Reported Compensation*		
Age	Male	Female	Total	Male	Female	Total
Under 25	0	3	3	$ 0	$ 105,631	$ 105,631
25 to 29	50	135	185	2,151,165	5,836,806	7,987,971
30 to 34	51	134	185	2,270,240	6,014,552	8,284,792
35 to 39	68	192	260	3,715,602	8,774,724	12,490,326
40 to 44	58	154	212	3,398,154	8,303,905	11,702,059
45 to 49	73	172	245	3,875,105	8,775,478	12,650,583
50 to 54	103	219	322	5,798,588	11,991,045	17,789,633
55 to 59	98	254	352	5,988,086	13,926,573	19,914,659
60 to 64	66	218	284	4,060,313	12,078,862	16,139,175
65 to 69	30	85	115	1,983,676	5,017,005	7,000,681
70 & Up	5	15	20	246,980	956,429	1,203,409
Total	602	1,581	2,183	$33,487,909	$81,781,010	$115,268,919

* Partial year pay amounts have not been annualized.

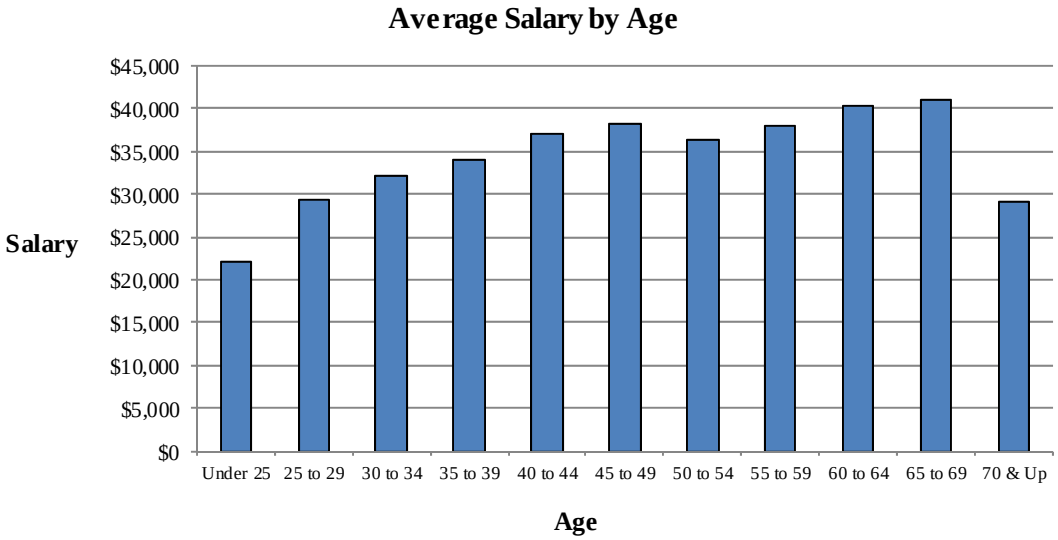


SUMMARY OF ACTIVE MEMBERS
as of January 1, 2017

Total – Plan C

	Number			2016 Reported Compensation*		
Age	Male	Female	Total	Male	Female	Total
Under 25	39	172	211	$ 781,531	$ 3,902,443	$ 4,683,974
25 to 29	83	284	367	2,407,040	8,336,621	10,743,661
30 to 34	71	180	251	2,281,307	5,798,905	8,080,212
35 to 39	46	125	171	1,600,167	4,210,381	5,810,548
40 to 44	51	101	152	2,154,132	3,480,766	5,634,898
45 to 49	38	88	126	1,620,664	3,194,466	4,815,130
50 to 54	26	69	95	1,007,820	2,442,674	3,450,494
55 to 59	24	61	85	895,994	2,328,424	3,224,418
60 to 64	15	32	47	608,856	1,287,819	1,896,675
65 to 69	4	7	11	180,889	270,538	451,427
70 & Up	1	1	2	31,200	27,182	58,382
Total	398	1,120	1,518	$13,569,600	$35,280,219	$48,849,819

* Partial year pay amounts have not been annualized.



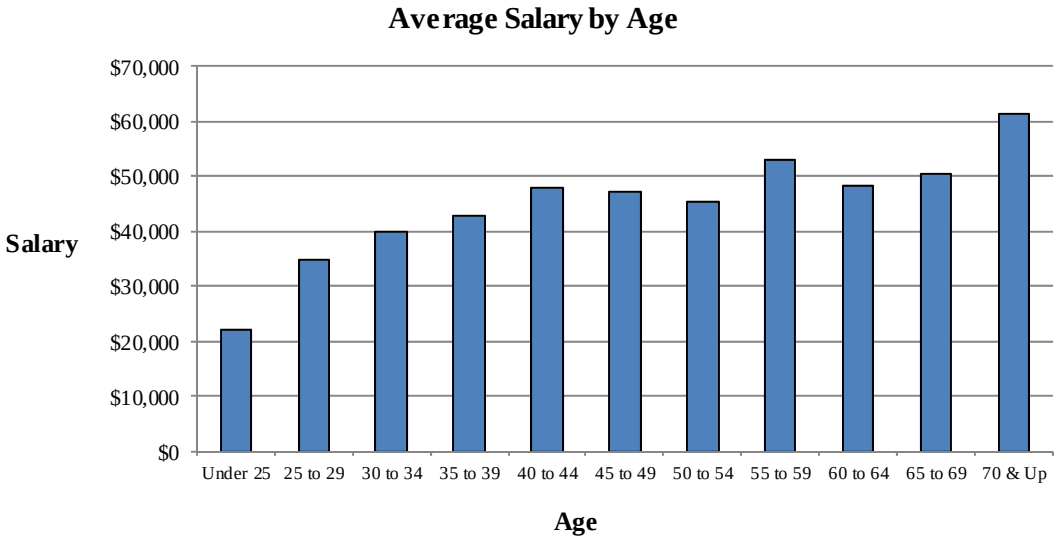
SUMMARY OF ACTIVE MEMBERS

as of January 1, 2017

Charter Schools – All Plans

	Number			2016 Reported Compensation*		
Age	Male	Female	Total	Male	Female	Total
Under 25	19	105	124	$ 314,649	$ 2,430,376	$ 2,745,025
25 to 29	73	254	327	2,575,957	8,795,501	11,371,458
30 to 34	69	184	253	2,699,789	7,392,194	10,091,983
35 to 39	48	156	204	2,157,528	6,559,664	8,717,192
40 to 44	53	114	167	2,734,410	5,272,395	8,006,805
45 to 49	37	84	121	1,989,333	3,708,202	5,697,535
50 to 54	42	60	102	2,157,020	2,450,710	4,607,730
55 to 59	28	57	85	1,762,144	2,742,238	4,504,382
60 to 64	22	53	75	1,049,942	2,555,676	3,605,618
65 to 69	8	12	20	345,541	662,205	1,007,746
70 & Up	2	1	3	115,011	68,723	183,734
Total	401	1,080	1,481	$17,901,324	$42,637,884	$60,539,208

* Partial year pay amounts have not been annualized.



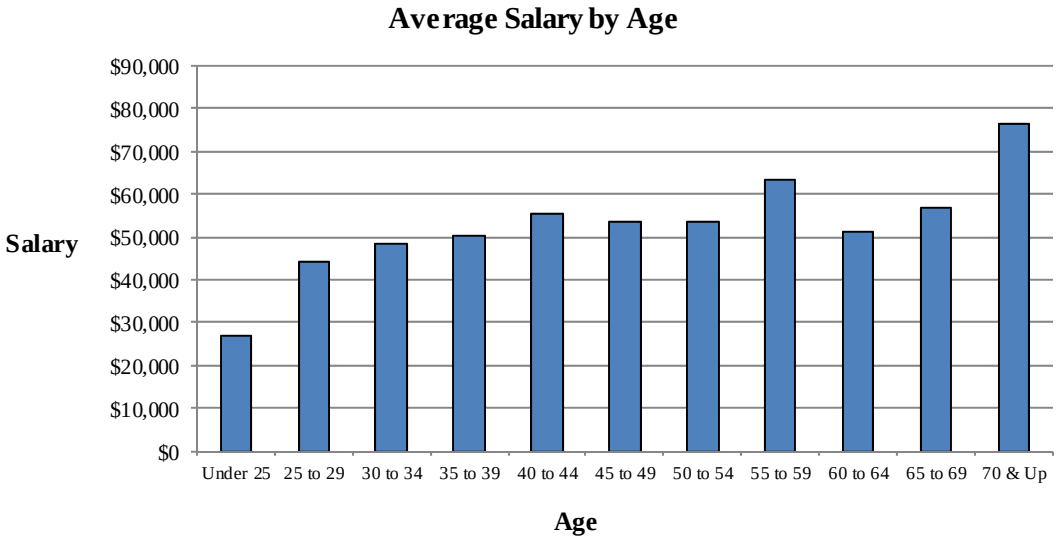
SUMMARY OF ACTIVE MEMBERS

as of January 1, 2017

Charter Schools – Plan B

	Number			2016 Reported Compensation*		
Age	Male	Female	Total	Male	Female	Total
Under 25	0	2	2	$ 0	$ 53,830	$ 53,830
25 to 29	27	90	117	1,183,039	4,012,603	5,195,642
30 to 34	29	84	113	1,345,409	4,101,177	5,446,586
35 to 39	25	88	113	1,313,652	4,362,286	5,675,938
40 to 44	29	65	94	1,684,693	3,522,541	5,207,234
45 to 49	23	51	74	1,355,269	2,602,801	3,958,070
50 to 54	24	31	55	1,461,597	1,487,341	2,948,938
55 to 59	19	32	51	1,374,699	1,854,087	3,228,786
60 to 64	15	44	59	775,191	2,249,461	3,024,652
65 to 69	4	8	12	164,652	515,418	680,070
70 & Up	1	1	2	83,811	68,723	152,534
Total	196	496	692	$10,742,012	$24,830,268	$35,572,280

* Partial year pay amounts have not been annualized.

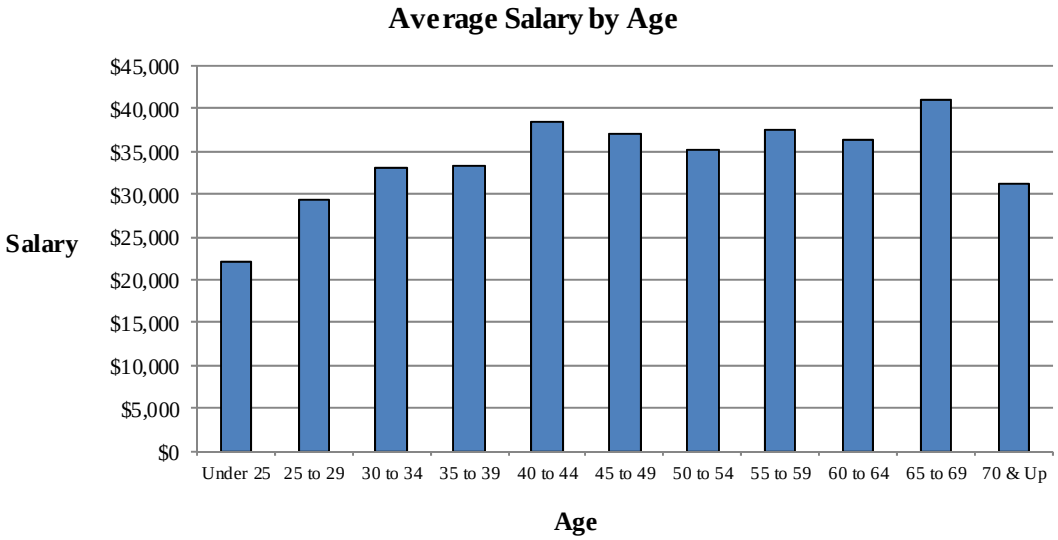


SUMMARY OF ACTIVE MEMBERS
as of January 1, 2017

Charter Schools – Plan C

	Number			2016 Reported Compensation*		
Age	Male	Female	Total	Male	Female	Total
Under 25	19	103	122	$ 314,649	$ 2,376,546	$ 2,691,195
25 to 29	46	164	210	1,392,918	4,782,898	6,175,816
30 to 34	40	100	140	1,354,380	3,291,017	4,645,397
35 to 39	23	68	91	843,876	2,197,378	3,041,254
40 to 44	24	49	73	1,049,717	1,749,854	2,799,571
45 to 49	14	33	47	634,064	1,105,401	1,739,465
50 to 54	18	29	47	695,423	963,369	1,658,792
55 to 59	9	25	34	387,445	888,151	1,275,596
60 to 64	7	9	16	274,751	306,215	580,966
65 to 69	4	4	8	180,889	146,787	327,676
70 & Up	1	0	1	31,200	0	31,200
Total	205	584	789	$7,159,312	$17,807,616	$24,966,928

* Partial year pay amounts have not been annualized.

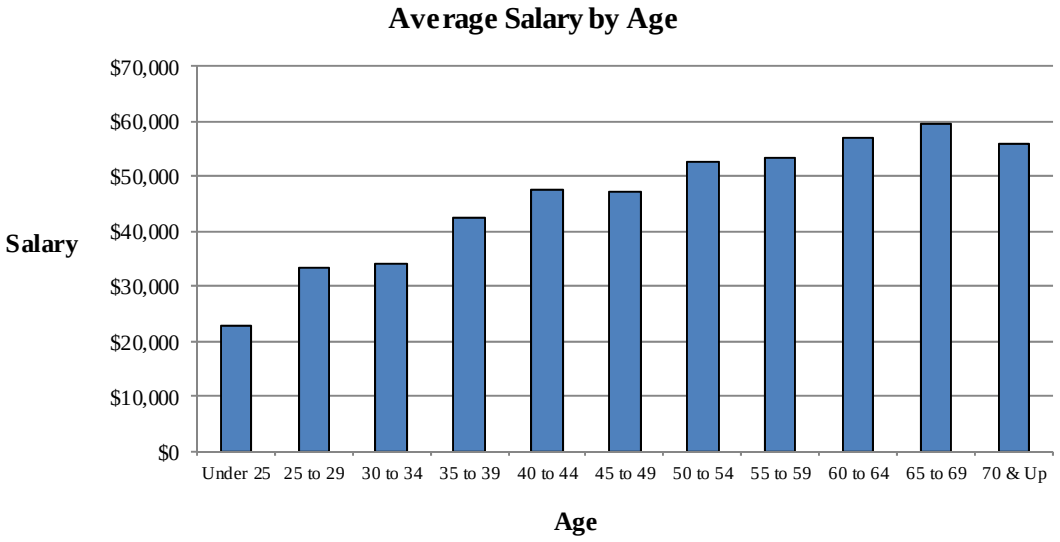


SUMMARY OF ACTIVE MEMBERS
as of January 1, 2017

School District & Retirement System – All Plans

	Number			2016 Reported Compensation*		
Age	Male	Female	Total	Male	Female	Total
Under 25	19	70	89	$ 448,034	$ 1,577,698	$ 2,025,732
25 to 29	57	157	214	1,902,688	5,186,932	7,089,620
30 to 34	46	116	162	1,583,654	3,937,622	5,521,276
35 to 39	62	148	210	2,983,787	5,945,105	8,928,892
40 to 44	50	132	182	2,495,335	6,128,319	8,623,654
45 to 49	68	166	234	3,227,129	7,766,351	10,993,480
50 to 54	82	213	295	4,337,251	11,143,977	15,481,228
55 to 59	84	247	331	4,651,260	12,968,271	17,619,531
60 to 64	51	191	242	3,268,418	10,485,338	13,753,756
65 to 69	24	77	101	1,575,127	4,438,480	6,013,607
70 & Up	4	12	16	163,169	733,038	896,207
Total	547	1,529	2,076	$26,635,852	$70,311,131	$96,946,983

* Partial year pay amounts have not been annualized.

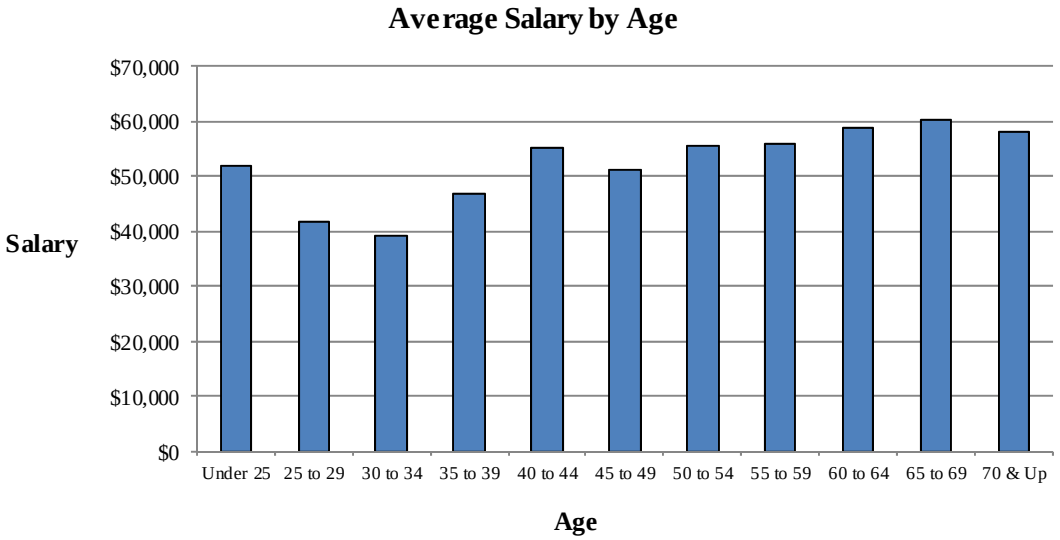


SUMMARY OF ACTIVE MEMBERS
as of January 1, 2017

School District & Retirement System – Plan B

	Number			2016 Reported Compensation*		
Age	Male	Female	Total	Male	Female	Total
Under 25	0	1	1	$ 0	$ 51,801	$ 51,801
25 to 29	22	43	65	930,484	1,767,720	2,698,204
30 to 34	20	46	66	834,685	1,747,285	2,581,970
35 to 39	39	95	134	2,227,496	4,042,548	6,270,044
40 to 44	24	84	108	1,432,444	4,534,600	5,967,044
45 to 49	44	116	160	2,240,529	5,940,111	8,180,640
50 to 54	74	176	250	4,024,854	9,799,809	13,824,663
55 to 59	69	211	280	4,142,711	11,527,998	15,670,709
60 to 64	44	168	212	2,959,779	9,503,734	12,463,513
65 to 69	24	74	98	1,575,127	4,314,729	5,889,856
70 & Up	4	11	15	163,169	705,856	869,025
Total	364	1,025	1,389	$20,531,278	$53,936,191	$74,467,469

* Partial year pay amounts have not been annualized.

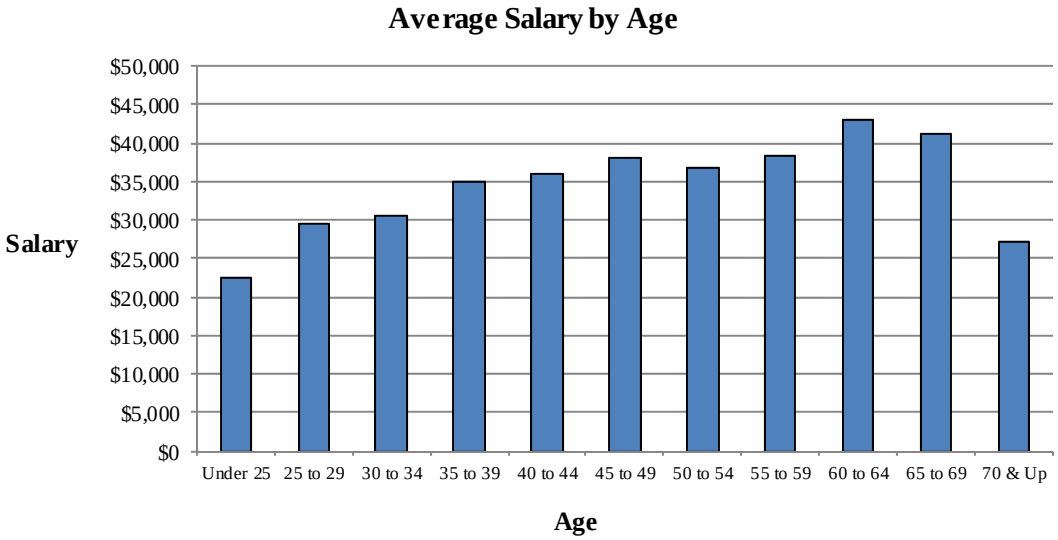


SUMMARY OF ACTIVE MEMBERS
as of January 1, 2017

School District & Retirement System – Plan C

	Number			2016 Reported Compensation*		
Age	Male	Female	Total	Male	Female	Total
Under 25	19	69	88	$ 448,034	$ 1,525,897	$ 1,973,931
25 to 29	35	114	149	972,204	3,419,212	4,391,416
30 to 34	26	70	96	748,969	2,190,337	2,939,306
35 to 39	23	53	76	756,291	1,902,557	2,658,848
40 to 44	26	48	74	1,062,891	1,593,719	2,656,610
45 to 49	24	50	74	986,600	1,826,240	2,812,840
50 to 54	8	37	45	312,397	1,344,168	1,656,565
55 to 59	15	36	51	508,549	1,440,273	1,948,822
60 to 64	7	23	30	308,639	981,604	1,290,243
65 to 69	0	3	3	0	123,751	123,751
70 & Up	0	1	1	0	27,182	27,182
Total	183	504	687	$6,104,574	$16,374,940	$22,479,514

* Partial year pay amounts have not been annualized.

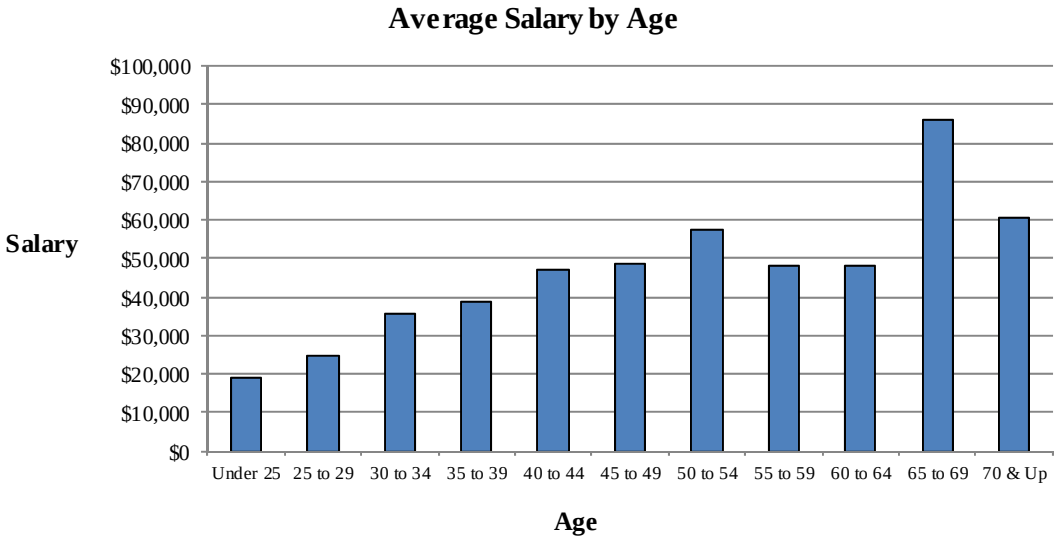


SUMMARY OF ACTIVE MEMBERS
as of January 1, 2017

Library – All Plans

	Number			2016 Reported Compensation*		
Age	Male	Female	Total	Male	Female	Total
Under 25	1	0	1	$ 18,848	$ 0	$ 18,848
25 to 29	3	8	11	79,560	190,994	270,554
30 to 34	7	14	21	268,104	483,641	751,745
35 to 39	4	13	17	174,454	480,336	654,790
40 to 44	6	9	15	322,541	383,957	706,498
45 to 49	6	10	16	279,307	495,391	774,698
50 to 54	5	15	20	312,137	839,032	1,151,169
55 to 59	10	11	21	470,676	544,488	1,015,164
60 to 64	8	6	14	350,809	325,667	676,476
65 to 69	2	3	5	243,897	186,858	430,755
70 & Up	0	3	3	0	181,850	181,850
Total	52	92	144	$2,520,333	$4,112,214	$6,632,547

* Partial year pay amounts have not been annualized.



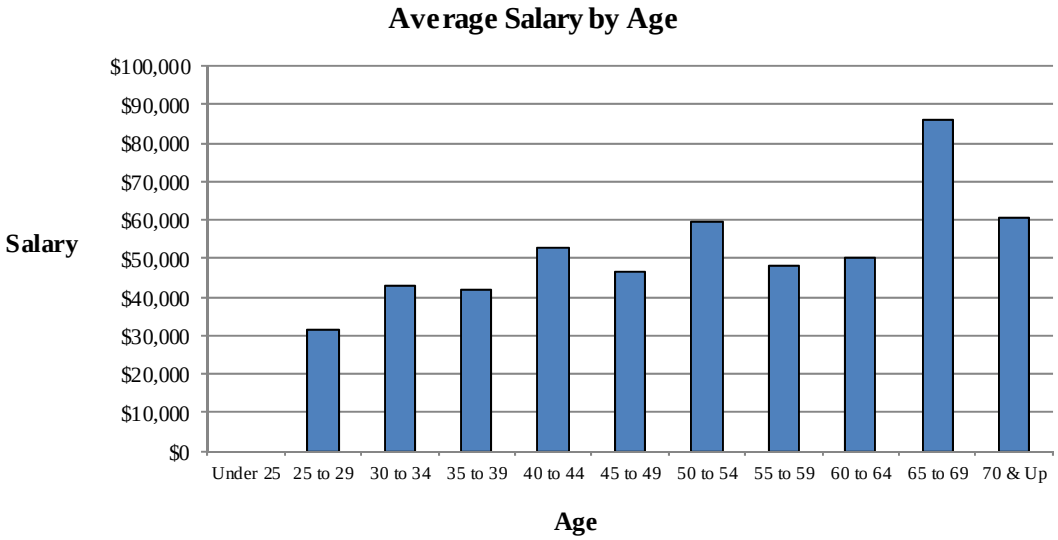
SUMMARY OF ACTIVE MEMBERS

as of January 1, 2017

Library – Plan B

	Number			2016 Reported Compensation*		
Age	Male	Female	Total	Male	Female	Total
Under 25	0	0	0	$ 0	$ 0	$ 0
25 to 29	1	2	3	37,642	56,483	94,125
30 to 34	2	4	6	90,146	166,090	256,236
35 to 39	4	9	13	174,454	369,890	544,344
40 to 44	5	5	10	281,017	246,764	527,781
45 to 49	6	5	11	279,307	232,566	511,873
50 to 54	5	12	17	312,137	703,895	1,016,032
55 to 59	10	11	21	470,676	544,488	1,015,164
60 to 64	7	6	13	325,343	325,667	651,010
65 to 69	2	3	5	243,897	186,858	430,755
70 & Up	0	3	3	0	181,850	181,850
Total	42	60	102	$2,214,619	$3,014,551	$5,229,170

* Partial year pay amounts have not been annualized.

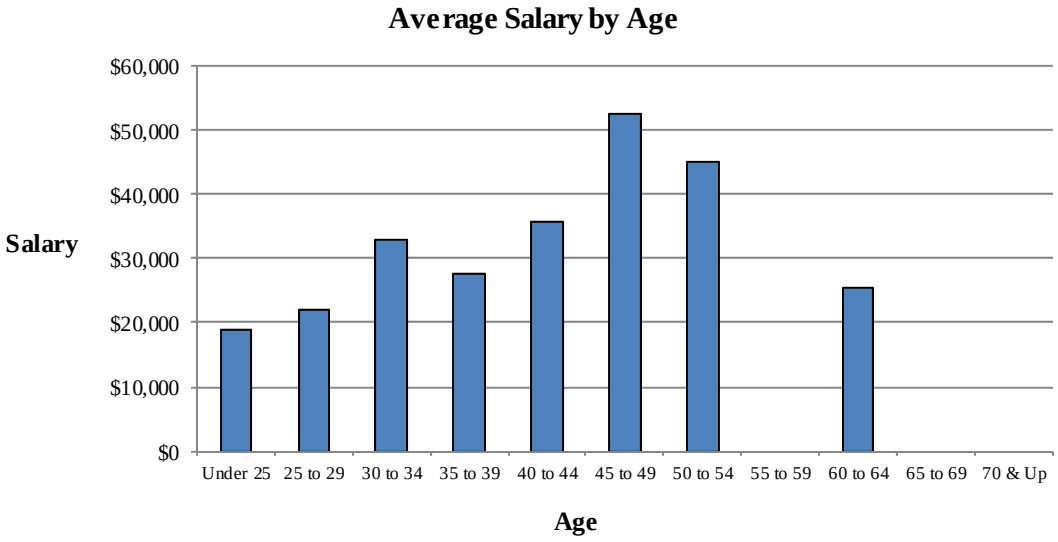


SUMMARY OF ACTIVE MEMBERS
as of January 1, 2017

Library – Plan C

Age	Number			2016 Reported Compensation*		
	Male	Female	Total	Male	Female	Total
Under 25	1	0	1	$ 18,848	$ 0	$ 18,848
25 to 29	2	6	8	41,918	134,511	176,429
30 to 34	5	10	15	177,958	317,551	495,509
35 to 39	0	4	4	0	110,446	110,446
40 to 44	1	4	5	41,524	137,193	178,717
45 to 49	0	5	5	0	262,825	262,825
50 to 54	0	3	3	0	135,137	135,137
55 to 59	0	0	0	0	0	0
60 to 64	1	0	1	25,466	0	25,466
65 to 69	0	0	0	0	0	0
70 & Up	0	0	0	0	0	0
Total	10	32	42	$ 305,714	$1,097,663	$1,403,377

* Partial year pay amounts have not been annualized.

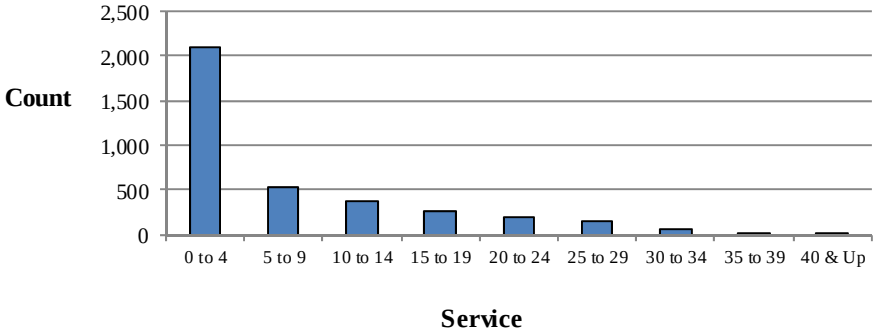


DISTRIBUTION OF ACTIVE MEMBERS
as of January 1, 2017

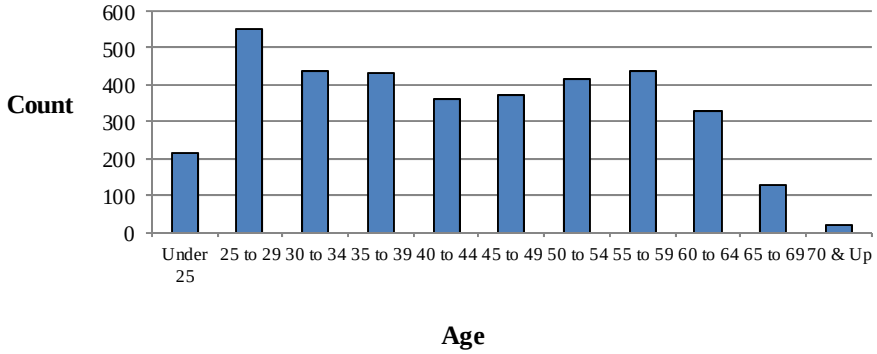
Total – All Plans

	Years of Service									
Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	Total
Under 25	214	0	0	0	0	0	0	0	0	214
25 to 29	510	42	0	0	0	0	0	0	0	552
30 to 34	332	95	8	1	0	0	0	0	0	436
35 to 39	266	78	70	17	0	0	0	0	0	431
40 to 44	202	63	43	47	9	0	0	0	0	364
45 to 49	184	59	39	38	41	9	1	0	0	371
50 to 54	143	55	61	58	46	45	8	1	0	417
55 to 59	131	64	70	40	53	45	27	5	2	437
60 to 64	89	49	64	41	29	31	16	10	2	331
65 to 69	21	15	17	20	18	20	8	1	6	126
70 & Up	2	2	5	4	2	1	0	2	4	22
Total	2,094	522	377	266	198	151	60	19	14	3,701

Service Distribution



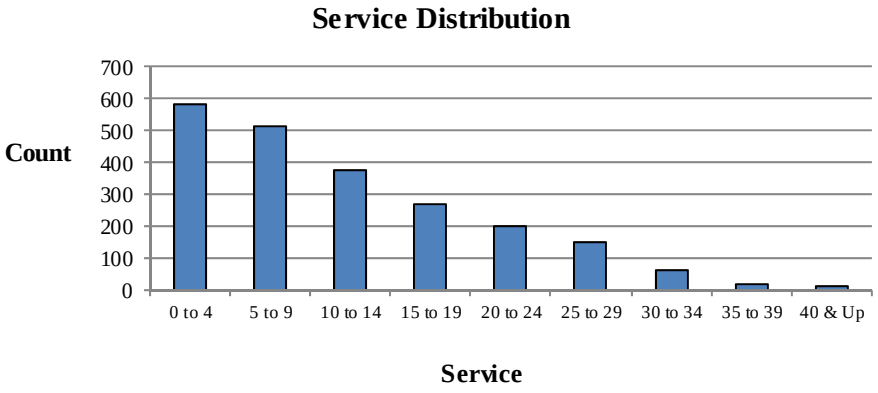
Age Distribution

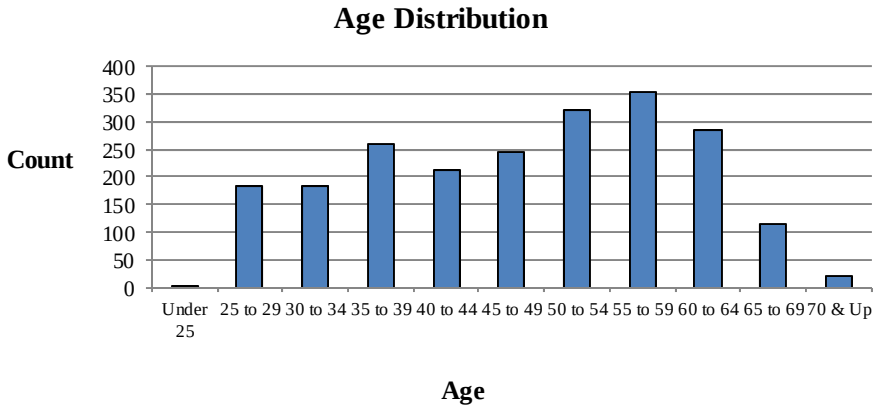


DISTRIBUTION OF ACTIVE MEMBERS
as of January 1, 2017

Total – Plan B

	Years of Service									
Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	Total
Under 25	3	0	0	0	0	0	0	0	0	3
25 to 29	144	41	0	0	0	0	0	0	0	185
30 to 34	85	91	8	1	0	0	0	0	0	185
35 to 39	95	78	70	17	0	0	0	0	0	260
40 to 44	51	62	43	47	9	0	0	0	0	212
45 to 49	58	59	39	38	41	9	1	0	0	245
50 to 54	48	55	61	58	46	45	8	1	0	322
55 to 59	48	62	70	40	53	45	27	5	2	352
60 to 64	42	49	64	41	29	31	16	10	2	284
65 to 69	10	15	17	20	18	20	8	1	6	115
70 & Up	0	2	5	4	2	1	0	2	4	20
Total	584	514	377	266	198	151	60	19	14	2,183



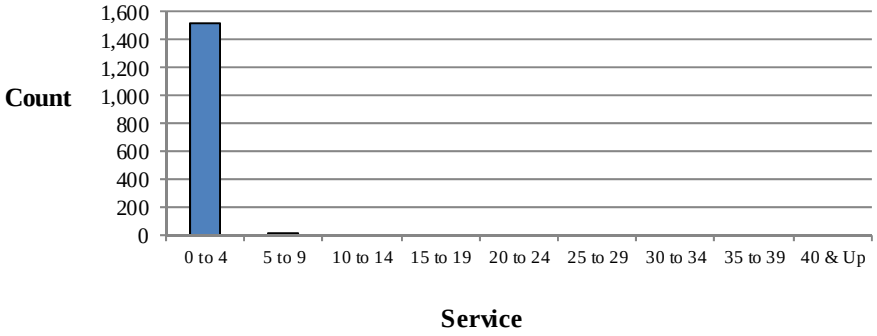


DISTRIBUTION OF ACTIVE MEMBERS
as of January 1, 2017

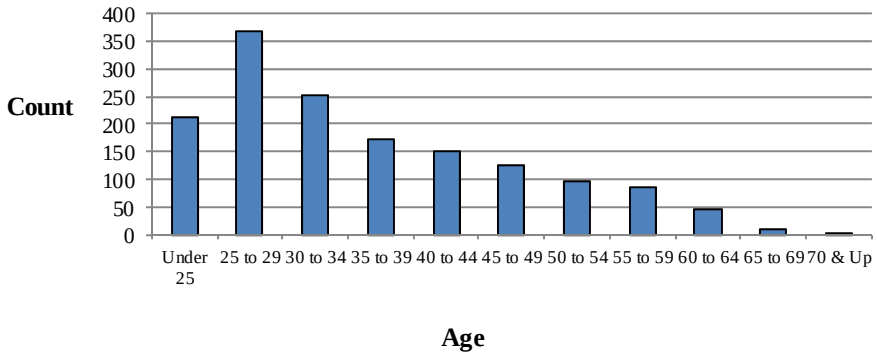
Total – Plan C

	Years of Service									
Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	Total
Under 25	211	0	0	0	0	0	0	0	0	211
25 to 29	366	1	0	0	0	0	0	0	0	367
30 to 34	247	4	0	0	0	0	0	0	0	251
35 to 39	171	0	0	0	0	0	0	0	0	171
40 to 44	151	1	0	0	0	0	0	0	0	152
45 to 49	126	0	0	0	0	0	0	0	0	126
50 to 54	95	0	0	0	0	0	0	0	0	95
55 to 59	83	2	0	0	0	0	0	0	0	85
60 to 64	47	0	0	0	0	0	0	0	0	47
65 to 69	11	0	0	0	0	0	0	0	0	11
70 & Up	2	0	0	0	0	0	0	0	0	2
Total	1,510	8	0	0	0	0	0	0	0	1,518

Service Distribution



Age Distribution

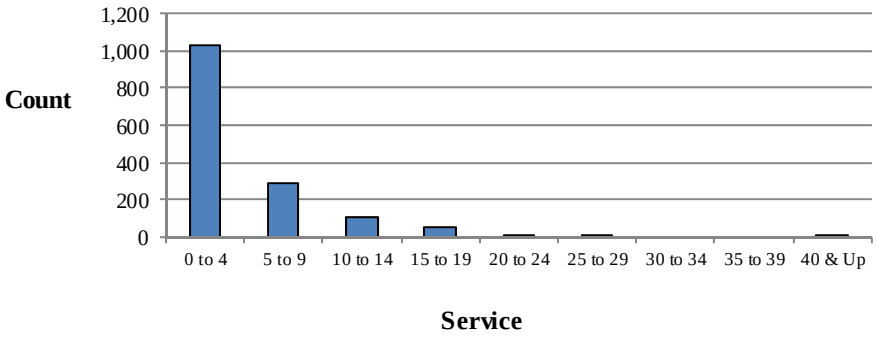


DISTRIBUTION OF ACTIVE MEMBERS
as of January 1, 2017

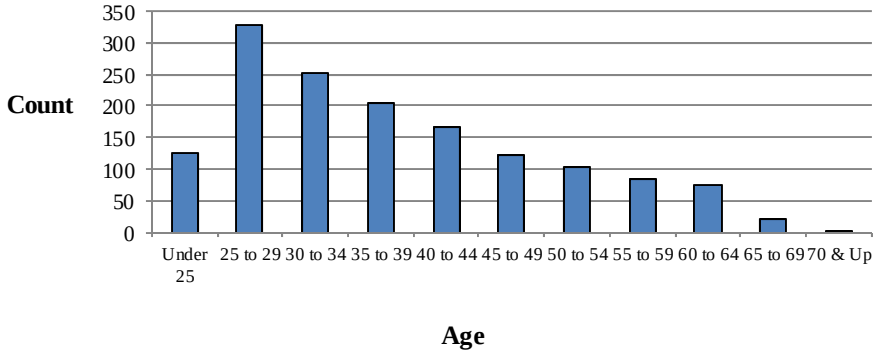
Charter Schools – All Plans

	Years of Service									
Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	Total
Under 25	124	0	0	0	0	0	0	0	0	124
25 to 29	293	34	0	0	0	0	0	0	0	327
30 to 34	178	69	5	1	0	0	0	0	0	253
35 to 39	133	47	23	1	0	0	0	0	0	204
40 to 44	93	37	20	17	0	0	0	0	0	167
45 to 49	69	31	8	10	3	0	0	0	0	121
50 to 54	57	23	15	7	0	0	0	0	0	102
55 to 59	46	21	14	2	2	0	0	0	0	85
60 to 64	27	21	17	6	3	1	0	0	0	75
65 to 69	11	3	3	2	0	0	0	0	1	20
70 & Up	1	1	1	0	0	0	0	0	0	3
Total	1,032	287	106	46	8	1	0	0	1	1,481

Service Distribution



Age Distribution

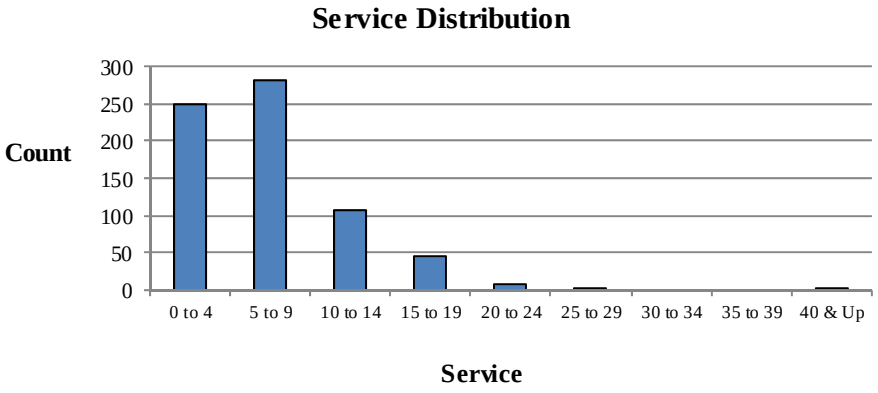


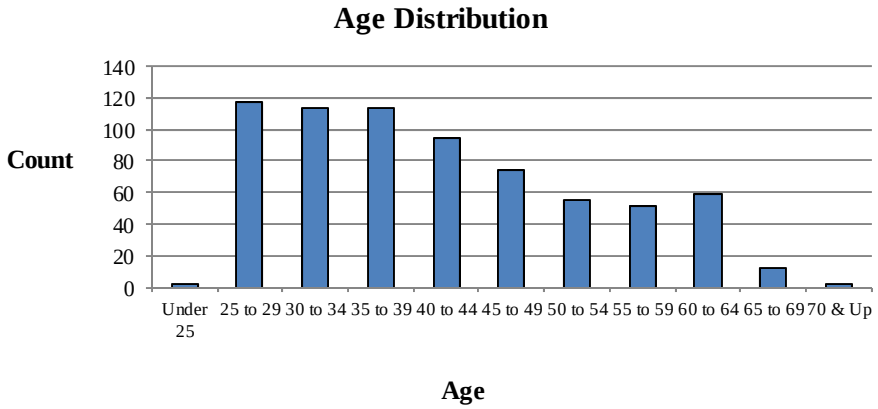
DISTRIBUTION OF ACTIVE MEMBERS

as of January 1, 2017

Charter Schools – Plan B

	Years of Service									
Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	Total
Under 25	2	0	0	0	0	0	0	0	0	2
25 to 29	84	33	0	0	0	0	0	0	0	117
30 to 34	41	66	5	1	0	0	0	0	0	113
35 to 39	42	47	23	1	0	0	0	0	0	113
40 to 44	21	36	20	17	0	0	0	0	0	94
45 to 49	22	31	8	10	3	0	0	0	0	74
50 to 54	10	23	15	7	0	0	0	0	0	55
55 to 59	13	20	14	2	2	0	0	0	0	51
60 to 64	11	21	17	6	3	1	0	0	0	59
65 to 69	3	3	3	2	0	0	0	0	1	12
70 & Up	0	1	1	0	0	0	0	0	0	2
Total	249	281	106	46	8	1	0	0	1	692

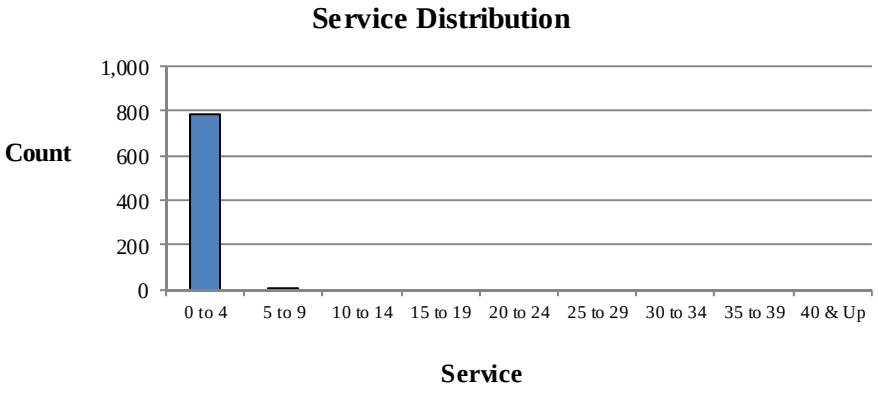


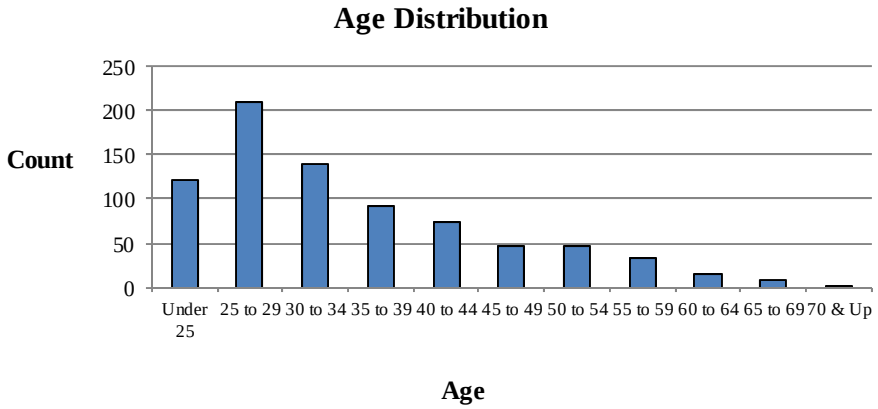


DISTRIBUTION OF ACTIVE MEMBERS
as of January 1, 2017

Charter Schools – Plan C

	Years of Service									
Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	Total
Under 25	122	0	0	0	0	0	0	0	0	122
25 to 29	209	1	0	0	0	0	0	0	0	210
30 to 34	137	3	0	0	0	0	0	0	0	140
35 to 39	91	0	0	0	0	0	0	0	0	91
40 to 44	72	1	0	0	0	0	0	0	0	73
45 to 49	47	0	0	0	0	0	0	0	0	47
50 to 54	47	0	0	0	0	0	0	0	0	47
55 to 59	33	1	0	0	0	0	0	0	0	34
60 to 64	16	0	0	0	0	0	0	0	0	16
65 to 69	8	0	0	0	0	0	0	0	0	8
70 & Up	1	0	0	0	0	0	0	0	0	1
Total	783	6	0	0	0	0	0	0	0	789



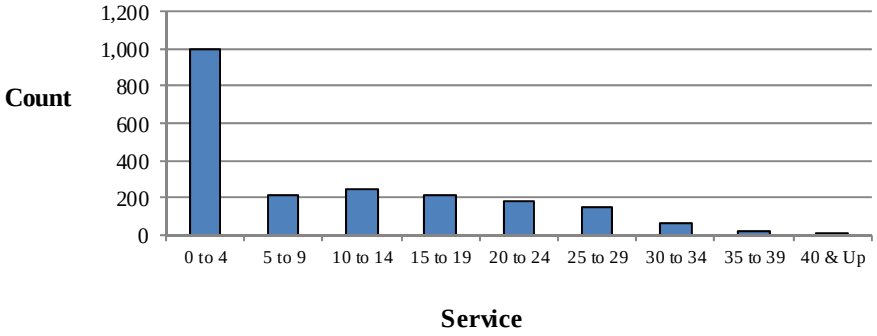


DISTRIBUTION OF ACTIVE MEMBERS
as of January 1, 2017

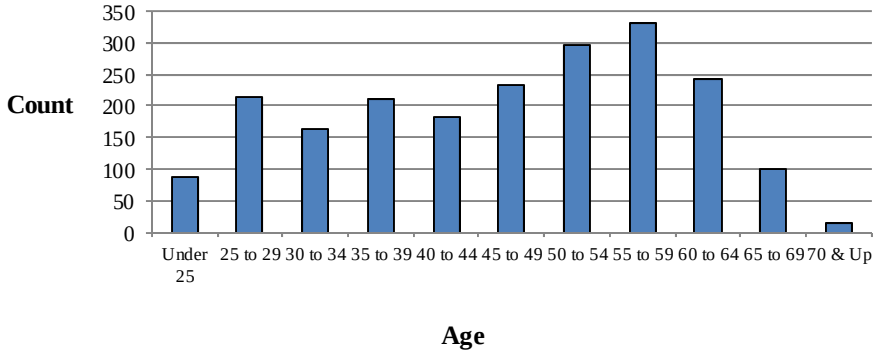
School District & Retirement System – All Plans

	Years of Service									
Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	Total
Under 25	89	0	0	0	0	0	0	0	0	89
25 to 29	206	8	0	0	0	0	0	0	0	214
30 to 34	137	22	3	0	0	0	0	0	0	162
35 to 39	125	26	45	14	0	0	0	0	0	210
40 to 44	100	22	22	29	9	0	0	0	0	182
45 to 49	106	26	28	26	38	9	1	0	0	234
50 to 54	82	30	37	50	44	44	8	0	0	295
55 to 59	85	41	48	36	47	43	25	4	2	331
60 to 64	59	27	43	31	24	30	16	10	2	242
65 to 69	10	12	12	17	17	20	8	1	4	101
70 & Up	1	1	4	4	2	1	0	1	2	16
Total	1,000	215	242	207	181	147	58	16	10	2,076

Service Distribution



Age Distribution

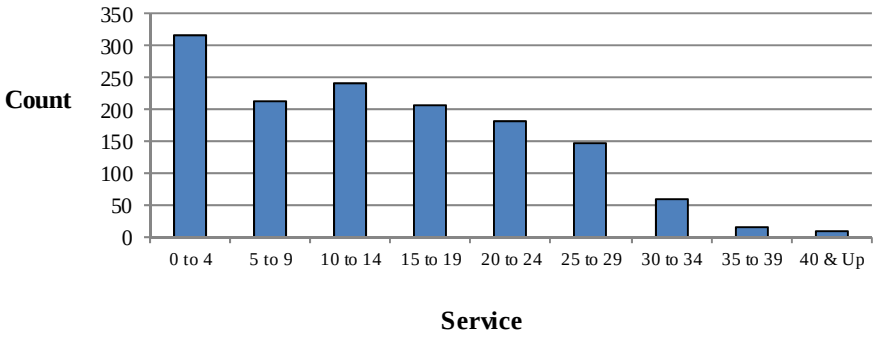


DISTRIBUTION OF ACTIVE MEMBERS
as of January 1, 2017

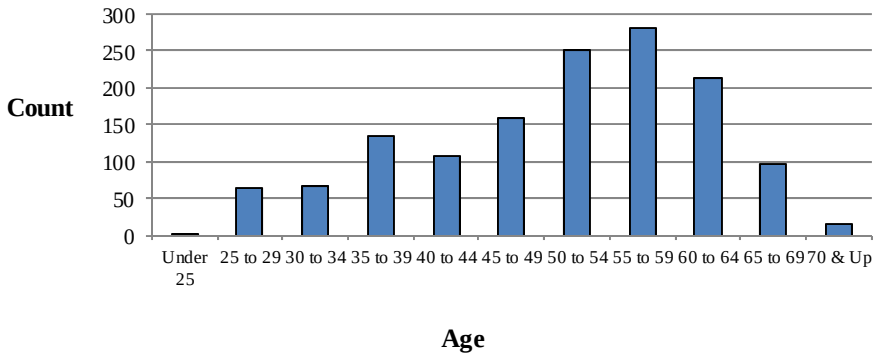
School District & Retirement System – Plan B

	Years of Service									
Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	Total
Under 25	1	0	0	0	0	0	0	0	0	1
25 to 29	57	8	0	0	0	0	0	0	0	65
30 to 34	42	21	3	0	0	0	0	0	0	66
35 to 39	49	26	45	14	0	0	0	0	0	134
40 to 44	26	22	22	29	9	0	0	0	0	108
45 to 49	32	26	28	26	38	9	1	0	0	160
50 to 54	37	30	37	50	44	44	8	0	0	250
55 to 59	35	40	48	36	47	43	25	4	2	280
60 to 64	29	27	43	31	24	30	16	10	2	212
65 to 69	7	12	12	17	17	20	8	1	4	98
70 & Up	0	1	4	4	2	1	0	1	2	15
Total	315	213	242	207	181	147	58	16	10	1,389

Service Distribution



Age Distribution

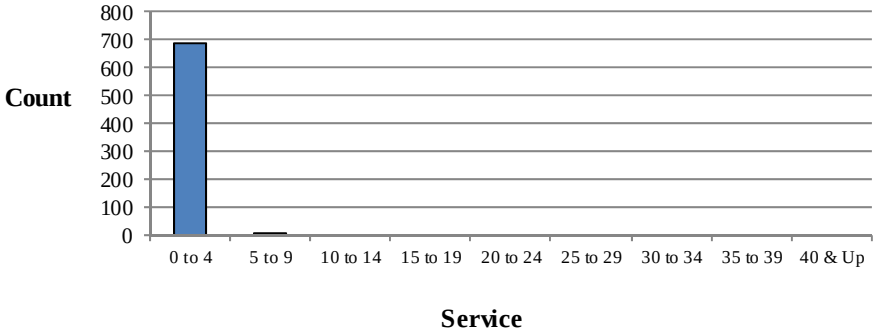


DISTRIBUTION OF ACTIVE MEMBERS
as of January 1, 2017

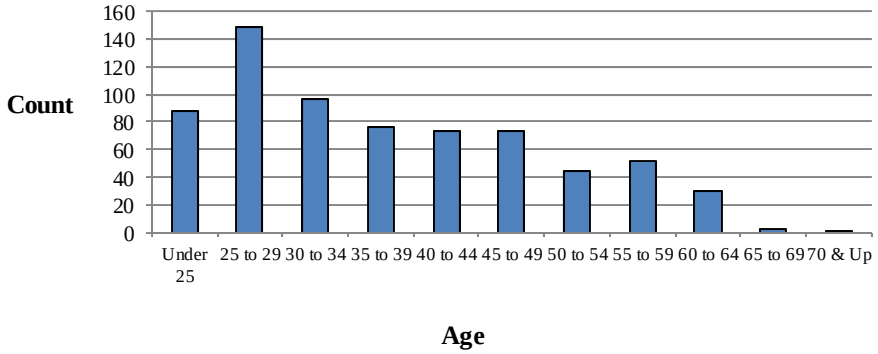
School District & Retirement System – Plan C

	Years of Service									
Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	Total
Under 25	88	0	0	0	0	0	0	0	0	88
25 to 29	149	0	0	0	0	0	0	0	0	149
30 to 34	95	1	0	0	0	0	0	0	0	96
35 to 39	76	0	0	0	0	0	0	0	0	76
40 to 44	74	0	0	0	0	0	0	0	0	74
45 to 49	74	0	0	0	0	0	0	0	0	74
50 to 54	45	0	0	0	0	0	0	0	0	45
55 to 59	50	1	0	0	0	0	0	0	0	51
60 to 64	30	0	0	0	0	0	0	0	0	30
65 to 69	3	0	0	0	0	0	0	0	0	3
70 & Up	1	0	0	0	0	0	0	0	0	1
Total	685	2	0	0	0	0	0	0	0	687

Service Distribution



Age Distribution

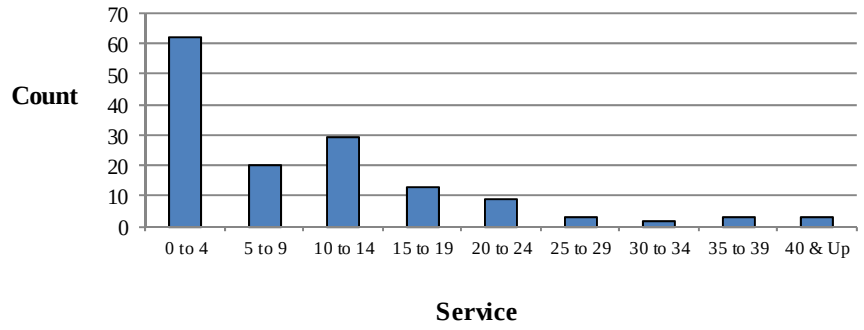


DISTRIBUTION OF ACTIVE MEMBERS
as of January 1, 2017

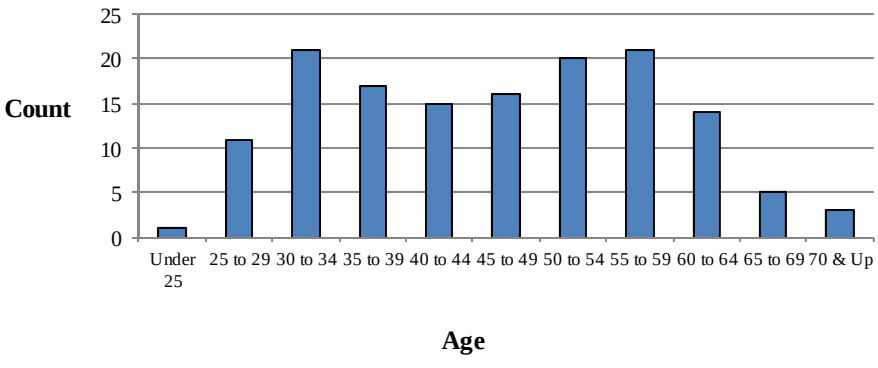
Library – All Plans

	Years of Service									
Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	Total
Under 25	1	0	0	0	0	0	0	0	0	1
25 to 29	11	0	0	0	0	0	0	0	0	11
30 to 34	17	4	0	0	0	0	0	0	0	21
35 to 39	8	5	2	2	0	0	0	0	0	17
40 to 44	9	4	1	1	0	0	0	0	0	15
45 to 49	9	2	3	2	0	0	0	0	0	16
50 to 54	4	2	9	1	2	1	0	1	0	20
55 to 59	0	2	8	2	4	2	2	1	0	21
60 to 64	3	1	4	4	2	0	0	0	0	14
65 to 69	0	0	2	1	1	0	0	0	1	5
70 & Up	0	0	0	0	0	0	0	1	2	3
Total	62	20	29	13	9	3	2	3	3	144

Service Distribution



Age Distribution

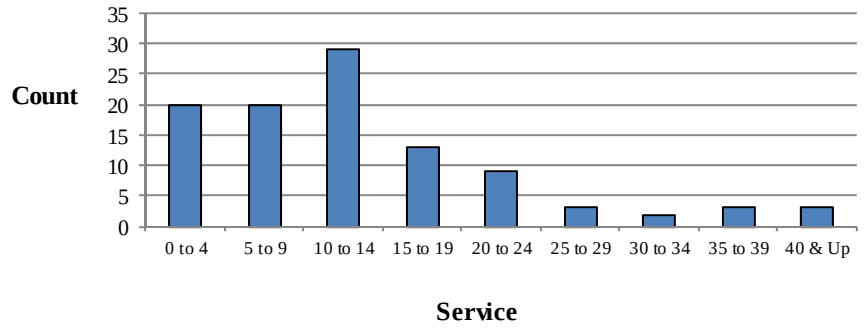


DISTRIBUTION OF ACTIVE MEMBERS
as of January 1, 2017

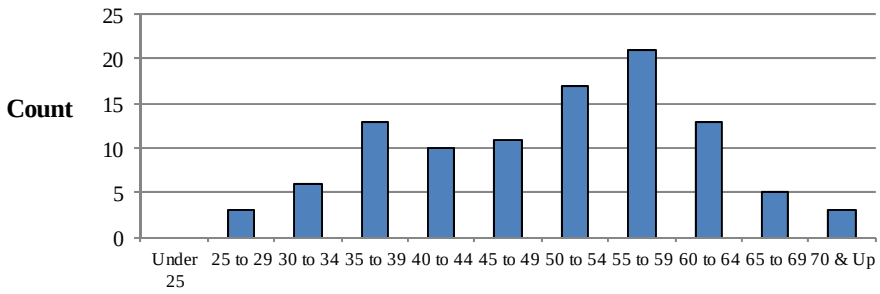
Library – Plan B

	Years of Service									
Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	Total
Under 25	0	0	0	0	0	0	0	0	0	0
25 to 29	3	0	0	0	0	0	0	0	0	3
30 to 34	2	4	0	0	0	0	0	0	0	6
35 to 39	4	5	2	2	0	0	0	0	0	13
40 to 44	4	4	1	1	0	0	0	0	0	10
45 to 49	4	2	3	2	0	0	0	0	0	11
50 to 54	1	2	9	1	2	1	0	1	0	17
55 to 59	0	2	8	2	4	2	2	1	0	21
60 to 64	2	1	4	4	2	0	0	0	0	13
65 to 69	0	0	2	1	1	0	0	0	1	5
70 & Up	0	0	0	0	0	0	0	1	2	3
Total	20	20	29	13	9	3	2	3	3	102

Service Distribution



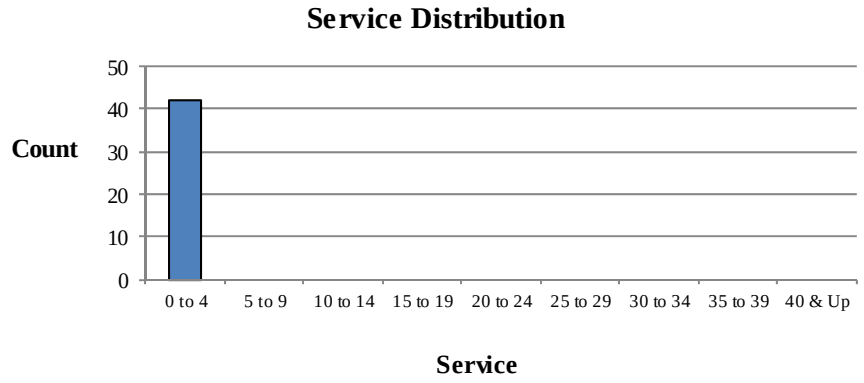
Age Distribution

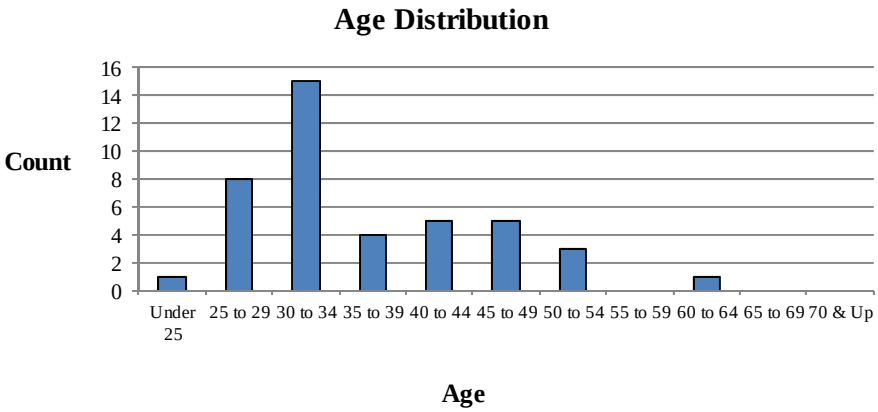


DISTRIBUTION OF ACTIVE MEMBERS
as of January 1, 2017

Library – Plan C

	Years of Service									
Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	Total
Under 25	1	0	0	0	0	0	0	0	0	1
25 to 29	8	0	0	0	0	0	0	0	0	8
30 to 34	15	0	0	0	0	0	0	0	0	15
35 to 39	4	0	0	0	0	0	0	0	0	4
40 to 44	5	0	0	0	0	0	0	0	0	5
45 to 49	5	0	0	0	0	0	0	0	0	5
50 to 54	3	0	0	0	0	0	0	0	0	3
55 to 59	0	0	0	0	0	0	0	0	0	0
60 to 64	1	0	0	0	0	0	0	0	0	1
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	42	0	0	0	0	0	0	0	0	42

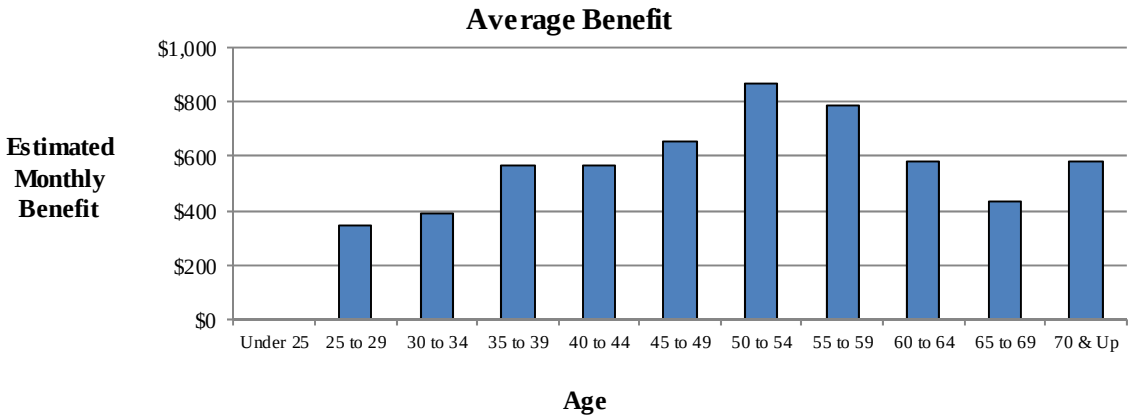


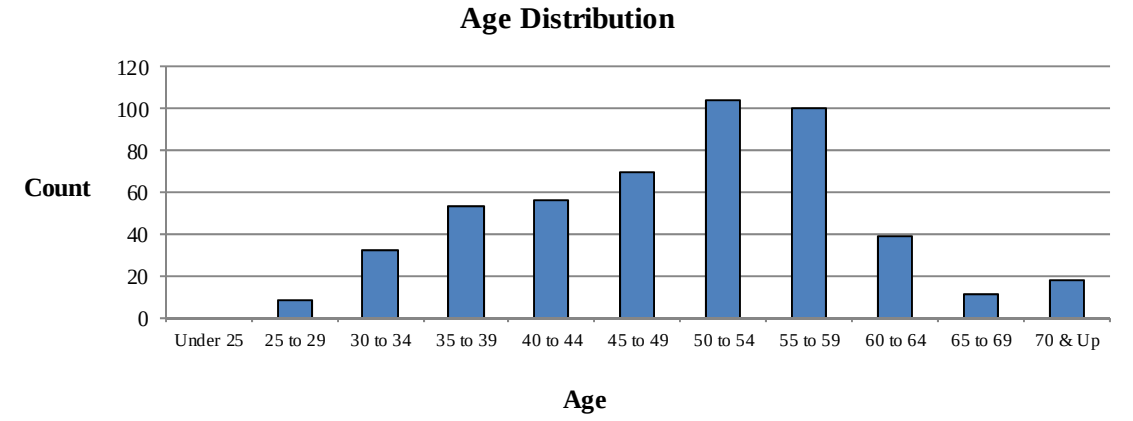


SUMMARY OF TERMINATED VESTED MEMBERS

as of January 1, 2017

Age	Number			Estimated Monthly Benefit		
	Male	Female	Total	Male	Female	Total
Under 25	0	0	0	$ 0	$ 0	$ 0
25 to 29	2	6	8	680	2,066	2,746
30 to 34	6	26	32	2,673	9,806	12,479
35 to 39	19	34	53	11,136	18,958	30,094
40 to 44	10	46	56	5,290	26,439	31,729
45 to 49	18	51	69	10,229	35,015	45,244
50 to 54	38	66	104	37,208	52,697	89,905
55 to 59	28	72	100	19,744	59,067	78,811
60 to 64	6	33	39	2,957	19,656	22,613
65 to 69	4	7	11	1,374	3,406	4,780
70 & Up	9	9	18	7,646	2,840	10,486
Total	140	350	490	$98,937	$229,950	$328,887

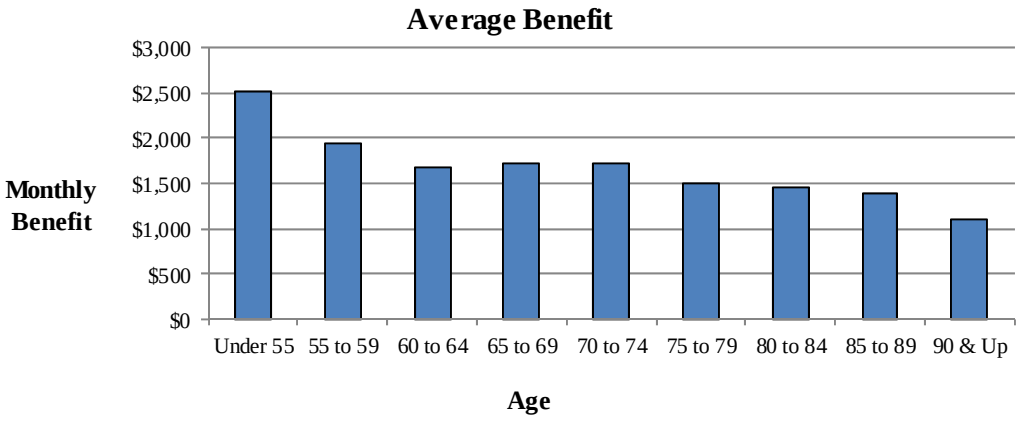


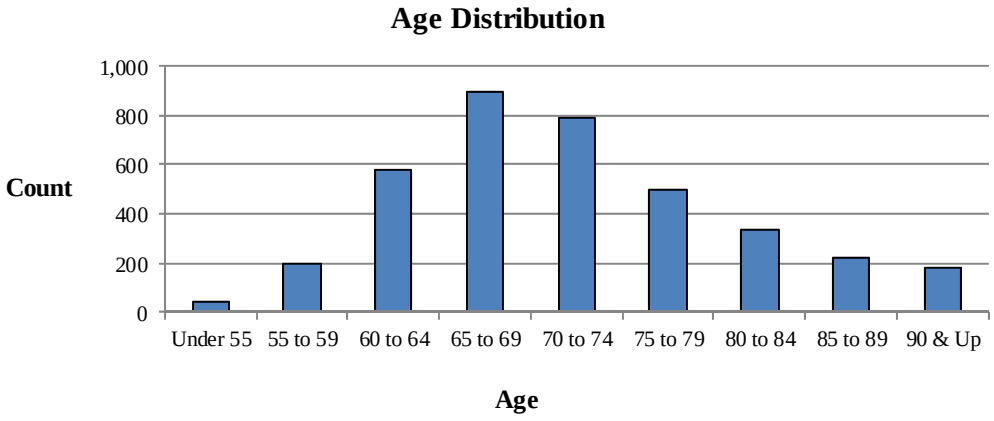


SUMMARY OF RETIRED MEMBERS

as of January 1, 2017

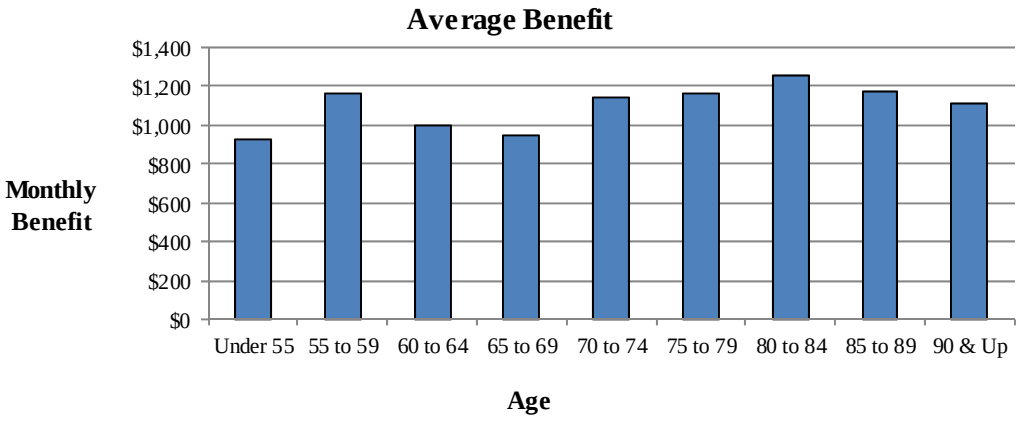
Age	Number			Monthly Benefit		
	Male	Female	Total	Male	Female	Total
Under 55	15	32	47	$ 36,387	$ 81,330	$ 117,717
55 to 59	60	138	198	110,880	272,519	383,399
60 to 64	149	426	575	225,831	739,240	965,071
65 to 69	235	659	894	359,048	1,172,268	1,531,316
70 to 74	184	603	787	281,767	1,070,323	1,352,090
75 to 79	137	358	495	214,446	523,188	737,634
80 to 84	88	247	335	154,678	337,070	491,748
85 to 89	48	171	219	78,182	227,332	305,514
90 & Up	35	147	182	46,430	153,420	199,850
Total	951	2,781	3,732	$ 1,507,649	$ 4,576,690	$ 6,084,339

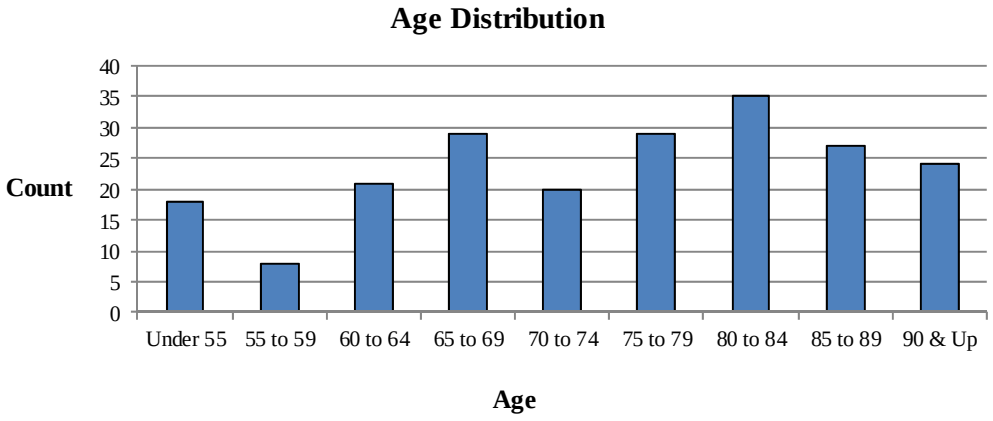




SUMMARY OF BENEFICIARIES
as of January 1, 2017

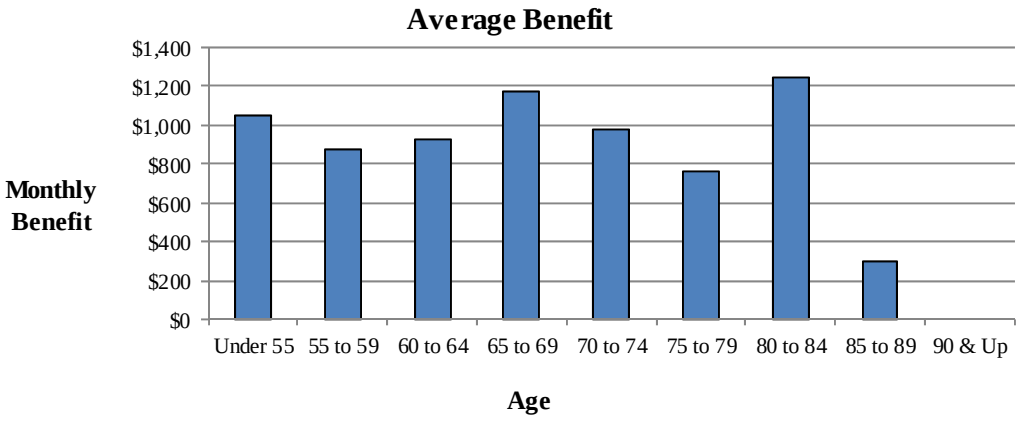
Age	Number			Monthly Benefit		
	Male	Female	Total	Male	Female	Total
Under 55	9	9	18	$ 6,912	$ 9,773	$ 16,685
55 to 59	6	2	8	7,969	1,296	9,265
60 to 64	21	0	21	21,032	0	21,032
65 to 69	23	6	29	18,982	8,489	27,471
70 to 74	9	11	20	13,086	9,668	22,754
75 to 79	24	5	29	27,953	5,693	33,646
80 to 84	30	5	35	37,823	6,210	44,033
85 to 89	22	5	27	24,505	7,173	31,678
90 & Up	22	2	24	24,594	2,025	26,619
Total	166	45	211	$ 182,856	$ 50,327	$ 233,183

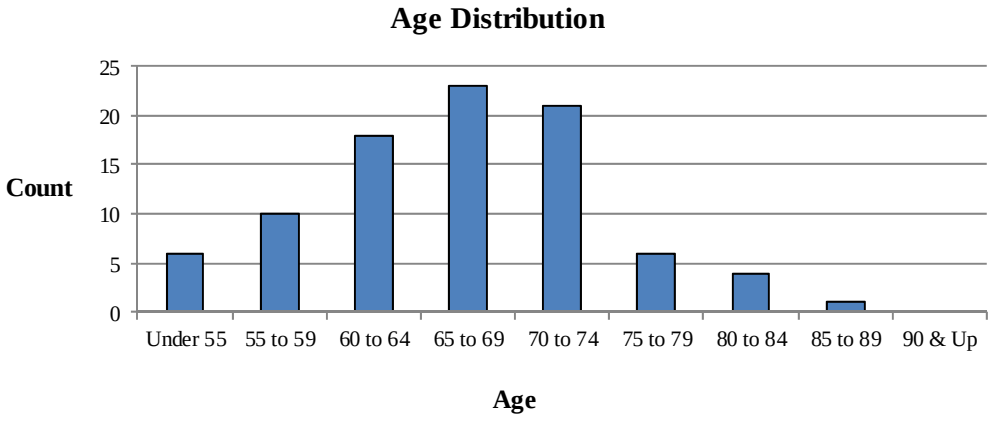




SUMMARY OF DISABLED MEMBERS
as of January 1, 2017

Age	Number			Monthly Benefit		
	Male	Female	Total	Male	Female	Total
Under 55	3	3	6	$ 2,849	$ 3,466	$ 6,315
55 to 59	2	8	10	1,220	7,497	8,717
60 to 64	4	14	18	3,392	13,274	16,666
65 to 69	7	16	23	8,183	18,802	26,985
70 to 74	6	15	21	5,705	14,924	20,629
75 to 79	0	6	6	0	4,602	4,602
80 to 84	1	3	4	704	4,291	4,995
85 to 89	0	1	1	0	297	297
90 & Up	0	0	0	0	0	0
Total	23	66	89	$ 22,053	$ 67,153	$ 89,206





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, 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 Plan B maximum retirement benefit is 60% of Average final compensation, which will be reached upon attainment of 30 years of service. The Plan C maximum retirement benefit is 60% of Average final compensation, which will be reached upon attainment of 34.25 years of service.

Annual compensation

A 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.

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

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.

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 in 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:

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.

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.

Changes from the Prior Valuation

There have been no changes to the plan provisions from the prior valuation.

ACTUARIAL COST METHOD

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

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

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

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

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

CALCULATION OF THE ACTUARIAL VALUE OF ASSETS

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

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

ACTUARIAL ASSUMPTIONS

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

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

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

(ii) Patterns of 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): 7.75% per year, compounded annually (2.75% long-term price inflation and a 5.00% real rate of return).

Price Inflation: 2.75%

General Wage Growth (Wage Inflation): 3.50%

Payroll Growth Assumption: 3.00% per year

Interest Crediting Rate on Member Accounts: 3.25% 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:	RP-2014 Healthy Annuitant Blue Collar Table with a one-year setback for females, projected 7 years from valuation date using Scale MP-2016
Disabled Retirees:	RP-2014 Disabled Table for Males and Females
Active Members:	RP-2014 Healthy Non-Annuitant Blue Collar Table with a one-year setback for females, projected 15 years from valuation date using Scale MP-2016

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

Retirement Rates When Eligible for Unreduced Benefits		
Age	First Eligible Rate	Ultimate Rate
45 – 54	10%	12%
55 – 61	20	12
62	30	25
63	20	15
64	30	15
65 – 69	30	25
70 – 74	50	40
75	100	100

Retirement Rates When Eligible for Reduced Benefits	
Age	Rate
55 – 59	8%

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. Rates vary by service. Sample rates are as follows:

Years	Rate
<1	27%
1	25
5	17
10	8
15+	3

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	0.025%
30	0.050
35	0.050
40	0.050
45	0.075
50	0.125
55	0.200
60	0.250

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

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.

CHANGES FROM THE PRIOR VALUATION

There were several changes to the System's actuarial assumptions and methods as a result of a comprehensive Experience Study performed for the System and presented to the Board of Trustees at their October 3, 2016 meeting. The most significant changes are outlined below:

- The investment return assumption was lowered from 8.00% to 7.75%.
- The inflation assumption was lowered from 3.00% to 2.75%.
- The assumed interest rate credited on employee accounts was lowered from 5.00% to 3.25%.
- The general wage increase assumption was set at 3.50%.
- The payroll growth assumption was set at 3.00%.
- The mortality assumption has been changed to the RP-2014 Blue Collar Mortality Table, with a one-year age setback for females. Mortality improvements are projected 7 years from the valuation date for retirees and beneficiaries, and 15 years for actives, using Scale MP-2016.
- Retirement rates were modified to partially reflect observed experience.
- Termination rates were changed to be purely service-based rates.
- Disability rates were reduced by 50%.
- The amortization of the UAAL was changed to a "layered" approach with new pieces of UAAL amortized over a closed 20-year period beginning on the valuation date. The UAAL as of January 1, 2017 is being amortized over a closed 30-year period.

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