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Police Retirement System of Kansas City, Missouri

*Actuarial Valuation Report
as of April 30, 2015*





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September 10, 2015

The Board of Trustees
Police Retirement System of Kansas City, Missouri
9701 Marion Park Drive B
Kansas City, MO 64137

Dear Members of the Board:

At your request, we have performed the annual actuarial valuation of the Police Retirement System of Kansas City, Missouri as of April 30, 2015 for the purpose of determining the actuarial contribution for the fiscal year ending in 2017. The major findings of the valuation are contained in this report, which reflects the benefit provisions in effect as of April 30, 2015. There were no changes in the benefit provisions or actuarial assumptions and methods since the prior valuation.

In preparing this report, we relied, without audit, on information (some oral and some written) 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 reported in prior years. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete, our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer our best estimate of anticipated experience affecting the System.

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; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provision or applicable law. Due to the limited scope of our assignment, we did not perform an analysis of the potential range of future measurements. While we find the actuarial assumptions to be reasonable, the Board of Trustees has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in Appendix C.

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Actuarial computations presented in this report are for purposes of determining the recommended funding amounts for 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. Actuarial computations presented in this report under GASB Statement No. 27 are for purposes of fulfilling the City's financial accounting requirements. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes. For example, actuarial computations for purposes of fulfilling financial accounting requirements for the System under Governmental Accounting Standard No. 67 are provided in a separate report.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

We would like to express our appreciation to the System's staff, who gave substantial assistance in supplying the data on which this report is based.

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

Respectfully submitted,

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

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

A handwritten signature in blue ink that reads 'Brent A. Banister'.

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



SECTION 1 – BOARD SUMMARY

OVERVIEW

This report presents the results of the April 30, 2015 actuarial valuation of the Police Retirement System of Kansas City, Missouri. The primary purposes of performing a valuation are to:

- Determine the employer contribution required to fund the System on an actuarial basis,
- Disclose asset and liability measures as of the valuation date,
- Determine the experience of the System since the last valuation date, and
- Analyze and report on trends in System contributions, assets, and liabilities over the past several years.

There were no changes in the benefit provisions or actuarial assumptions and methods from those used in the prior valuation.

The valuation results provide a “snapshot” view of the System’s financial condition on April 30, 2015. The unfunded actuarial accrued liability (UAAL) increased from the last valuation by \$1 million from \$233 million in last year’s valuation to \$234 million in the current valuation. The investment return on the market value of assets was 6.2%. After applying the asset smoothing method, the return on the actuarial value of assets was 6.1%, which is lower than the assumed rate of return of 7.5%. As a result, there was an experience loss on assets. Net demographic experience resulted in a gain of \$15.5 million, primarily due to salary increases that were lower than expected based on the actuarial assumptions. A detailed analysis of the change in the UAAL from April 30, 2014 to April 30, 2015 is shown on page 3.

MEMBERSHIP

The 2013 session of the Missouri General Assembly passed legislation that modified the benefit provisions for members hired on or after August 28, 2013 (called Tier II). As a result, the normal cost rate for this group of members is lower than the normal cost rate for members hired before that date. As of April 30, 2015, there were 99 members in Tier II out of a total of 1,397 active members (about 7% of total actives). The Tier II portion of total estimated payroll was slightly lower at 5% of total payroll. Over time, as the pre-August 2013 members retire or leave covered employment and are replaced by members covered by the post-August 2013 benefit structure, the normal cost rate for the System is expected to decline. However, it will likely take ten to fifteen years before a noticeable difference is observed in the valuation results.

The number of active members in the 2015 valuation was 1,397 compared to 1,408 in the 2014 valuation, a decrease of 0.8%. When the number of active members declines, the actuarial contribution rate is negatively impacted. While the normal cost rate is unaffected, the contribution rate for the amortization of the unfunded actuarial accrued liability (UAAL) assumes that covered payroll will increase 3.75% each year. A decline in the number of active members usually results in the amount of covered payroll for that year not meeting the assumed increase of 3.75%. As a result, the amortization payment is divided by a smaller payroll amount and the UAAL contribution rate increases.



SECTION 1 – BOARD SUMMARY

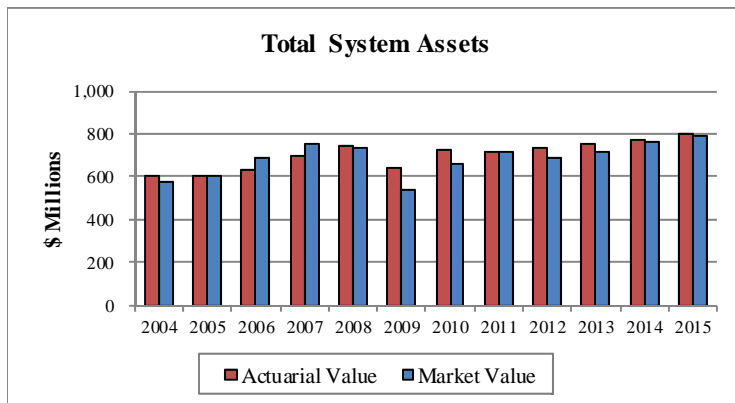
ASSETS

As of April 30, 2015, the System had total assets, when measured on a market value basis, of \$794 million. This was an increase of \$31 million from the April 30, 2014 figure of \$763 million. The market value of assets is not used directly in the calculation of 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.” The current smoothing method recognizes the difference between the actual and expected return on the market value of assets evenly over a five-year period. The method was implemented by setting the actuarial value of assets equal to the market value of assets at April 30, 2011. As a result, this smoothing mechanism has only been applied for four years in developing the actuarial value of assets in this valuation.

A summary of the asset experience follows:

	Market Value (\$M)	Actuarial Value (\$M)
Assets, April 30, 2014	\$763.1	\$773.3
· City and Member Contributions	39.8	39.8
· Benefit Payments and Refunds	(55.4)	(55.4)
· Administrative Expenses	(0.5)	(0.5)
· Investment Income (net of expenses)	46.9	46.5
Assets, April 30, 2015	\$793.9	\$803.7

The annualized dollar-weighted rate of return, measured on the actuarial value of assets, was 6.1% and, measured on the market value of assets, was 6.2%. The return on the actuarial value of assets of less than 7.5%, the assumed rate of return for FY 2015, resulted in an actuarial loss to the system of about \$10.9 million, which increased the unfunded actuarial accrued liability. Historical asset information is shown in the following two graphs:

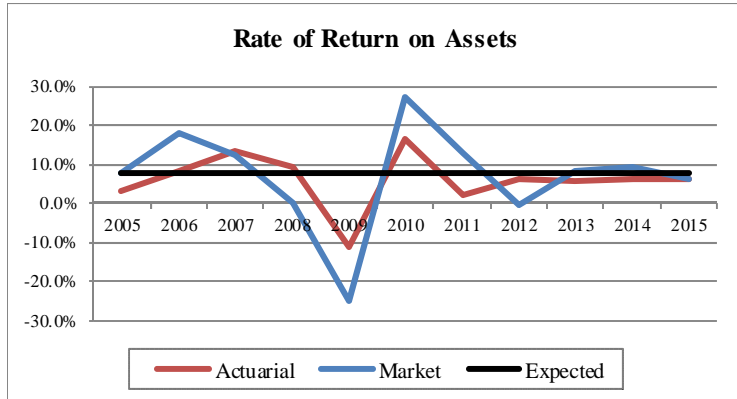


The actuarial value of assets has been both above and below the market value during this period. This is to be expected when using an asset smoothing method.

Note: Results for years before 2011 were prepared by the prior actuary.



SECTION 1 – BOARD SUMMARY



Rates of return on the market value of assets have been very volatile. The return on actuarial value of assets has lagged the assumed rate of return in the last decade.

Note: Results for years before 2011 were prepared by the prior actuary.

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 the asset value at the same date is referred to as the unfunded actuarial accrued liability (UAAL) if the actuarial accrued liability exceeds the asset value. 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 on the previous balance of the unfunded actuarial accrued liability. Benefit improvements, experience gains and losses, and changes in actuarial assumptions and methods 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 April 30, 2015 are:

Actuarial Accrued Liability	\$1,037,256,917
Actuarial Value of Assets	(803,672,621)
Unfunded Actuarial Accrued Liability	\$ 233,584,296

Between April 30, 2014 and April 30, 2015, the change in the unfunded actuarial accrued liability for the System was as follows (in millions):

	\$ millions
UAAL, April 30, 2014	232.9
<ul style="list-style-type: none"> ● effect of contributions less than actuarial rate ● expected change due to amortization method ● loss from investment return on actuarial assets ● demographic experience¹ ● all other experience 	0.0 4.4 10.9 (15.5) 0.9
UAAL, April 30, 2015	233.6

¹ Liability gain is 1.49% of total actuarial liability



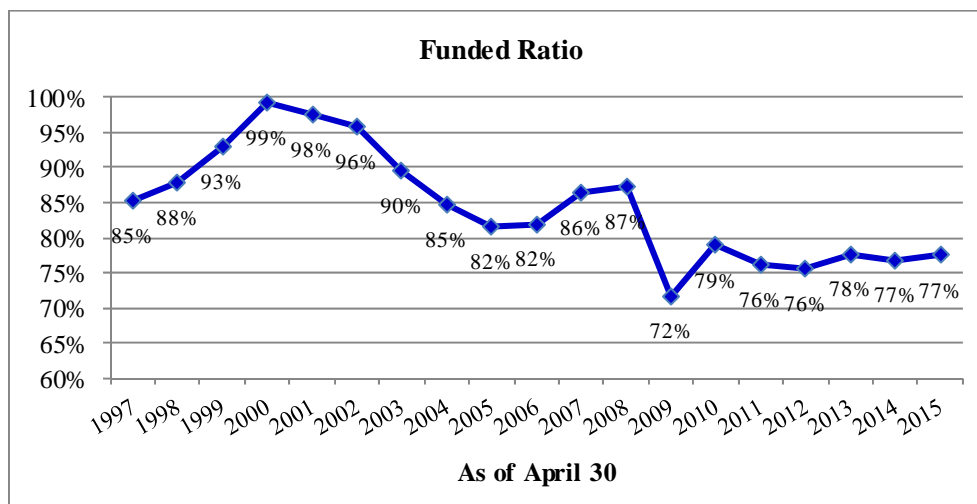
SECTION 1 – BOARD SUMMARY

The net experience for the plan year was a gain of \$4.6 million, the combined result of an actuarial loss of \$10.9 million on System assets (actuarial value) and a liability gain of \$15.5 million. The liability gain was primarily the result of salaries that were lower than expected, based on the assumptions.

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

	4/30/2011	4/30/2012	4/30/2013	4/30/2014	4/30/2015
Actuarial Value of Assets (\$M)	\$715.8	\$734.4	\$749.6	\$773.3	\$803.7
Actuarial Accrued Liability (\$M)	\$940.6	\$972.1	\$964.3	\$1,006.2	\$1,037.3
Funded Ratio (Assets/Liability)	76%	76%	78%	77%	77%

The following graph illustrates the funded ratio over the last 18 years. The funded ratio was near 100% in the early years of the period, but has declined and stabilized around 75% due to benefit changes, assumption changes, and actual experience that was less favorable than expected based on the actuarial assumptions.



The decline in the funded ratio over the last 15 years is a reflection of actual contributions significantly below the actuarial contribution, coupled with investment returns that were lower than the actuarial assumed rate. The System's funded status will continue to be heavily dependent on investment returns in the future as well as the City's contribution policy. Plan changes passed by the 2013 Missouri General Assembly, which included changes to both the benefit structure and the contributions, are expected to improve the System's funded status over the long-term. While these changes have improved the outlook for the long-term financial health of the System, the actual investment returns will continue to be a critical factor in the health of the System over time.



SECTION 1 – BOARD SUMMARY

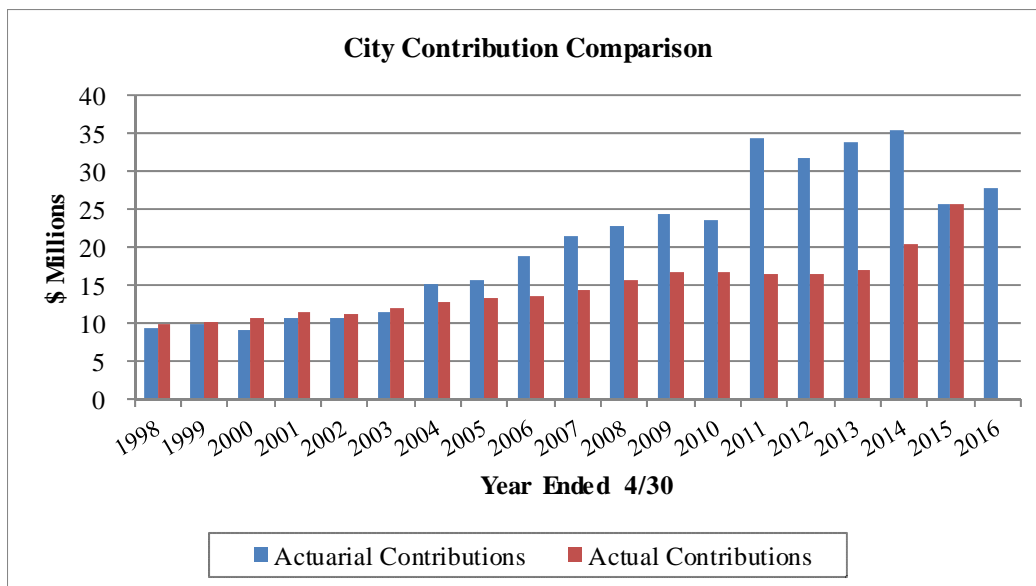
CONTRIBUTION RATES

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,
- An “unfunded actuarial accrued liability or (surplus) contribution” for the excess of the portion of projected liabilities allocated to service to date over the actuarial value of assets.

Contribution rates are computed with the objective of developing costs that are level as a percentage of covered payroll. The actuarial contribution rate for fiscal year end 2017 is computed based on the April 30, 2015 actuarial valuation. The actuarial contribution rate equals the System’s normal cost, budgeted expenses and an amortization payment on the unfunded actuarial accrued liability. The City’s actuarial contribution rate for FY 2017 is 27.71% of payroll. Of this amount, the City’s normal cost rate is 14.65% and the UAAL payment is 13.06%.

The following graph shows the actuarial contributions for the City compared to the amount actually contributed by the City in each year. With the legislative changes in 2013, the City has begun to contribute the full actuarial contribution. However, the amortization payment on the UAAL is calculated using an open 30 year period (reset to 30 in every future valuation). Under this funding policy, the System’s funded ratio is expected to slowly improve from its current level, but is not expected to reach full funding at a specific date as it would with a closed amortization period. The Board has discussed alternatives to the current funding policy in the past, but may want to revisit the amortization of the UAAL again to evaluate whether its use is consistent with the Board’s funding goals.





SECTION 1 – BOARD SUMMARY

COMMENTS

As of April 30, 2015, the actuarial accrued liability was \$1,037 million and the actuarial value of assets was \$804 million, resulting in an unfunded actuarial accrued liability (UAAL) of \$234 million and a funded ratio of 77%. The funded ratio has held steady at 77% since last year's valuation and the UAAL increased by only \$1 million as a result of actual experience during FY 2015.

Retirement plans use several mechanisms to create stability in the contribution rates. These mechanisms include an asset smoothing method, which smoothes out the peaks and valleys of investment returns, and amortization of actuarial gains or losses, including investment experience, over a number of years. The System utilizes an asset smoothing method that recognizes the difference between actual and expected return on the market value of assets evenly over a five-year period. The return on the market value of assets was 6.2%, but due to the asset smoothing method only part of the FY 2015 investment experience is recognized in the current valuation. As a result, the return on the actuarial value of assets was 6.1%, which resulted in an increase in the UAAL since it was less than the assumed rate of return of 7.5%. There was an actuarial gain from demographic experience that was more favorable than expected, based on the actuarial assumptions, largely due to salary increases that were lower than expected.

The long-term financial health of this retirement system is heavily dependent on two key items: (1) investment returns and (2) contributions to the System. Over the last ten years, investment returns have been lower than the assumed rate of return and the actual contributions to the System have been below the actuarial contributions. Effective September 1, 2013, the City began to contribute the full dollar amount of the Actuarial Required Contribution as it is shown on Table 11. As a result, City contributions to the System are higher and the System's funding status over the long-term is expected to improve. However, it is important to note that the current funding policy will not fully fund the System over the next 30 years. We recommend the Board continue to evaluate the current funding policy to ensure it will meet their long term funding goals.

Based on the Board's policy, an *ad hoc* Cost of Living Adjustment (COLA) may be granted if the definition of "actuarial soundness," which requires at least one of the three following conditions, is met:

- 1) The plan's funded ratio (actuarial value of assets/actuarial accrued liability), rounded to the nearest whole percentage, is 75% or greater.
- 2) For each of the three most recently completed plan years, the plan has received a combination of employer and employee contributions that in total are, rounded to the nearest whole percentage, 90% or greater of the plan's total Actuarial Required Contributions.
- 3) For at least three out of the last five completed plan years, the plan has received employer contributions that equal or exceed the plan's Actuarial Required Contribution Amount.

Based upon the results of the April 30, 2015 valuation (which indicate the funded ratio exceeds 75%) and the Board's policy, an *ad hoc* COLA may be granted. However, the Board may want to take into consideration that the funded ratio is only slightly over 75% and asset returns in the short-term (the next 5 to 10 years) are expected to be lower than the assumed rate of return of 7.50%. If this occurs, it would cause the funded ratio to decline, perhaps significantly.



SECTION 1 – BOARD SUMMARY

We have not reviewed any legal aspects related to granting the ad hoc COLA. We are not attorneys and cannot give legal advice on such issues. We suggest that you review this policy with your legal counsel.

We conclude this Board Summary with the following exhibit which compares the principal results of the current and prior actuarial valuation.



SECTION 1 – BOARD SUMMARY

SUMMARY OF PRINCIPAL RESULTS

	4/30/2015 Valuation	4/30/2014 Valuation	% Change
1. MEMBER DATA			
Number of:			
Active members			
- Tier 1	1,298	1,341	(3.2%)
- Tier 2	99	67	47.8%
- Total	<u>1,397</u>	<u>1,408</u>	(0.8%)
Retired Members and Beneficiaries	1,252	1,243	0.7%
Inactive Vested Members	<u>20</u>	<u>18</u>	11.1%
Total Members	2,669	2,669	0.0%
Annual Projected Salaries of Active Members	\$ 97,103,400	\$ 96,150,178	1.0%
Annual Retirement Payments for Retired Members and Beneficiaries*	\$ 48,530,087	\$ 46,645,436	4.0%
*Does not include supplemental benefits			
2. ASSETS AND LIABILITIES			
Total Actuarial Accrued Liability	\$1,037,256,917	\$1,006,243,143	3.1%
Market Value of Assets	793,880,318	763,076,453	4.0%
Actuarial Value of Assets	803,672,621	773,338,034	3.9%
Unfunded Actuarial Accrued Liability	\$ 233,584,296	\$ 232,905,109	0.3%
Funded Ratio (Actuarial Value)	77%	77%	0.0%
Funded Ratio (Market Value)	77%	76%	1.3%
3. EMPLOYER CONTRIBUTION RATES AS A PERCENT OF PAYROLL			
Normal Cost	26.20%	25.75%	1.7%
Member Financed	(11.55%)	(11.55%)	0.0%
Employer Normal Cost	<u>14.65%</u>	<u>14.20%</u>	3.2%
Amortization of Unfunded Actuarial Accrued Liability	<u>13.06%</u>	<u>13.13%</u>	(0.5%)
Employer Contribution Rate	27.71%	27.33%	1.4%
4. EMPLOYER CONTRIBUTION FOR FOLLOWING FISCAL YEAR			
	\$ 27,916,378	\$ 27,263,263	2.4%



SECTION 2 – SCOPE OF THE REPORT

This report, prepared at the request of the System’s Board of Trustees, presents the results of the actuarial valuation of the Police Retirement System of Kansas City, Missouri as of April 30, 2015. There were no changes to the benefit structure that impacted the valuation results or the actuarial assumptions and methods 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, which result 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 other historical information.

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 April 30, 2015.
- 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 3 - 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 April 30, 2015. On that date, the assets available for the payment of benefits are appraised. The assets are compared with the liabilities of the System (the present value of future expected benefit payments), which are generally in excess of assets. 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 from time to time. Table 1 is a comparison, at market values, of System assets as of April 30, 2015, and April 30, 2014, in total and by investment category. Table 2 summarizes the change in the market value of assets from April 30, 2014 to April 30, 2015.

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 of assets 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. Under the current asset smoothing methodology, the difference between the actual and assumed investment return on the market value of assets is recognized evenly over a five-year period. The method was implemented by resetting the actuarial value of assets at April 30, 2011 equal to the market value of assets.



SECTION 3 - ASSETS

TABLE 1
POLICE RETIREMENT SYSTEM OF KANSAS CITY, MISSOURI
STATEMENT OF NET PLAN ASSETS AT MARKET VALUE

	Market Value	
	April 30, 2015	April 30, 2014
Cash & Equivalents	\$13,116,828	\$75,692,472
Receivables	4,120,910	3,744,529
Stocks:		
Common & Preferred Corporate	159,736,089	67,172,368
World Equities	112,391,932	208,326,036
Foreign	79,086,064	69,295,068
Bonds:		
U.S. Government	100,098,186	79,360,268
Corporate	93,438,429	110,011,110
Exchange traded fixed income funds	0	0
Asset Backed Securities	11,292,879	12,969,974
Real Estate	88,661,249	42,530,929
Commodities, including futures account	0	33,123,814
Partnerships and Hedge Funds	134,500,568	65,113,512
Building and Other Property Used in Plan Operations	2,016	4,163
Total Assets	\$796,445,150	\$767,344,243
Accounts Payable	(2,564,832)	(4,267,790)
Net Assets Available for Benefits	\$793,880,318	\$763,076,453



SECTION 3 - ASSETS

TABLE 2

POLICE RETIREMENT SYSTEM OF KANSAS CITY, MISSOURI

STATEMENT OF CHANGES IN NET ASSETS
DURING YEAR ENDED APRIL 30, 2015

(Market Value)

1. Market Value of Assets as of April 30, 2014	\$	763,076,453
2. Contributions:		
a. Members	\$	10,597,160
b. City		25,739,061
c. City Supplemental Benefit		3,194,200
d. Miscellaneous		277,761
e. Total	\$	39,808,182
[2a] + [2b] + [2c] + [2d]		
3. Investment Income		
a. Interest and Dividends	\$	13,088,759
b. Net Securities Lending Income		126,375
c. Investment Expenses		(4,348,377)
d. Net Appreciation (Depreciation) in Fair Value		38,084,337
e. Net Investment Income (Loss)	\$	46,951,094
[3a] + [3b] + [3c] + [3d]		
4. Deductions		
a. Refunds of Member Contributions	\$	399,052
b. Benefits Paid:		
(1) Retirement Benefits		50,096,423
(2) City-paid Supplemental Benefit		3,194,200
(3) Death Benefits		25,000
(4) Partial Lump Sums		1,690,994
c. Administrative Expenses		549,742
d. Total	\$	55,955,411
[4a] + [4b] + [4c]		
5. Net Change	\$	30,803,865
[2e] + [3e] - [4d]		
6. Market Value of Assets as of April 30, 2015	\$	793,880,318
[1] + [5]		



SECTION 3 - ASSETS

TABLE 3
POLICE RETIREMENT SYSTEM OF KANSAS CITY, MISSOURI
DEVELOPMENT OF ACTUARIAL VALUE OF ASSETS

Under the current asset smoothing method, the difference between the actual and assumed investment return on the market value of assets is recognized evenly over a five-year period. The method was implemented by resetting the actuarial value of assets at April 30, 2011 equal to the market value of assets.

	Plan Year End			
	4/30/2012	4/30/2013	4/30/2014	4/30/2015
1. Market Value of Assets, Beginning of Year	\$ 715,764,084	\$ 687,870,657	\$ 717,317,928	\$ 763,076,453
2. Contributions During Year	25,370,816	26,277,110	32,440,600	39,808,182
3. Benefits and Expenses During Year	49,679,973	52,371,938	53,525,039	55,955,411
4. Expected Net Investment Income	54,547,313	52,317,669	53,022,472	56,636,160
5. Expected Value of Assets, End of Year	746,002,240	714,093,498	749,255,961	803,565,384
6. Market Value of Assets, End of Year	687,870,657	717,317,928	763,076,453	793,880,318
7. Excess/(Shortfall) of Net Investment Income	\$ (58,131,583)	\$ 3,224,430	\$ 13,820,492	\$ (9,685,066)



SECTION 3 - ASSETS

**TABLE 3
(continued)**

POLICE RETIREMENT SYSTEM OF KANSAS CITY, MISSOURI

1. Excess/(Shortfall) of Investment Income	
a. Year ending 4/30/2015	\$ (9,685,066)
b. Year ending 4/30/2014	13,820,492
c. Year ending 4/30/2013	3,224,430
d. Year ending 4/30/2012	(58,131,583)
e. Total	\$ (50,771,727)
2. Deferral of Excess/(Shortfall) of Investment Income	
a. Year ending 4/30/2015 (80%)	\$ (7,748,053)
b. Year ending 4/30/2014 (60%)	8,292,295
c. Year ending 4/30/2013 (40%)	1,289,772
d. Year ending 4/30/2012 (20%)	(11,626,317)
e. Total	\$ (9,792,303)
3. Market Value End of Year	793,880,318
4. Actuarial Value End of year (3) - (2e)	803,672,621
5. Ratio of Actuarial Value to Market Value	101.2%
6. Difference Between Actuarial & Market Value	\$ 9,792,303
7. Rate of Return on Actuarial Value of Assets	6.1%
8. Rate of Return on Market Value of Assets	6.2%



SECTION 4 – 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, April 30, 2015. In this section, the discussion will focus on the commitments (future benefit payments) 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 April 30, 2015, with one exception. When certain criteria for the funded ratio and actual contributions are met, the Board has discretion to grant a COLA (it is not part of the statutory benefit structure). Even though the COLA is not guaranteed to be paid, the liabilities reflect a 2.5% annual cost of living adjustment for all future years as it better reflects the long term liabilities.

Actuarial Accrued Liability

A fundamental principle in financing the liabilities of a 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 for the System. The Entry Age Normal actuarial cost method is used to develop the actuarial accrued liability.



SECTION 4 – SYSTEM LIABILITIES

TABLE 4
POLICE RETIREMENT SYSTEM OF KANSAS CITY, MISSOURI
PRESENT VALUE OF FUTURE BENEFITS (PVFB)
AS OF APRIL 30, 2015

1. Active employees		
a. Retirement Benefit	\$	574,543,760
b. Pre-Retirement Death Benefit		5,984,200
c. Withdrawal Benefit		7,318,145
d. Disability Benefit		70,860,125
e. Supplemental Benefit		19,199,990
f. Total	\$	<u>677,906,220</u>
2. Inactive Vested Members		
a. Retirement Benefit	\$	5,294,975
b. Supplemental Benefit		397,227
c. Total	\$	<u>5,692,202</u>
3. In Pay Members		
a. Retirees	\$	417,141,543
b. Disabled Members		83,023,123
c. Beneficiaries		53,604,323
d. Supplemental Benefit		31,985,605
e. Total	\$	<u>585,754,594</u>
4. Total Present Value of Future Benefits		
[1f] + [2c] + [3e]	\$	1,269,353,016



SECTION 4 – SYSTEM LIABILITIES

TABLE 5

POLICE RETIREMENT SYSTEM OF KANSAS CITY, MISSOURI

**ACTUARIAL ACCRUED LIABILITY
AS OF APRIL 30, 2015**

1. Active employees	
a. Present Value of Future Benefits	\$ 677,906,220
b. Present Value of Future Normal Costs	232,096,099
c. Actuarial Accrued Liability [1a] - [1b]	\$ 445,810,121
2. Inactive Vested Members	\$ 5,692,202
3. In Pay Members	
a. Retirees	\$ 417,141,543
b. Disabled Members	83,023,123
c. Beneficiaries	53,604,323
d. Supplemental Benefit	31,985,605
e. Total	\$ 585,754,594
4. Total Actuarial Accrued Liability	\$ 1,037,256,917
[1c] + [2] + [3e]	



SECTION 4 – SYSTEM LIABILITIES

TABLE 6

POLICE RETIREMENT SYSTEM OF KANSAS CITY, MISSOURI
DERIVATION OF SYSTEM EXPERIENCE GAIN/(LOSS)

Liabilities

1. Actuarial liability as of May 1, 2014	\$ 1,006,243,143
2. Normal cost for year	23,391,747
3. Assumed investment return on (1) & (2)	77,222,617
4. Benefit payments during FYE 2015, excluding supplemental benefits	52,211,469
5. Interest on benefit payments	1,922,534
6. Expected actuarial liability as of April 30, 2015 (1) + (2) + (3) - (4) - (5)	\$ 1,052,723,504
7. Actuarial liability as of April 30, 2015	\$ 1,037,256,917

Assets

8. Actuarial value of assets as of May 1, 2014	\$ 773,338,034
9. Actual contributions	39,808,182
10. Benefit payments and expenses during FYE 2015	55,955,411
11. Interest on items (8), (9) and (10)	57,405,778
12. Expected actuarial value of assets as of April 30, 2015 (8) + (9) - (10) + (11)	\$ 814,596,583
13. Actual actuarial value of assets as of April 30, 2015	\$ 803,672,621

Gain / (Loss)

14. Expected unfunded actuarial liability / (surplus) (6) – (12)	\$ 238,126,921
15. Actual unfunded actuarial liability / (surplus) (7) – (13)	\$ 233,584,296
16. Actuarial Gain / (Loss) (14) – (15)	\$ 4,542,625
17. Actuarial Gain / (Loss) on Actuarial Assets (13) – (12)	\$ (10,923,962)
18. Actuarial Gain / (Loss) on Actuarial Liability (6) – (7)	\$ 15,466,587



SECTION 4 – SYSTEM LIABILITIES

TABLE 7

**POLICE RETIREMENT SYSTEM OF KANSAS CITY, MISSOURI
ACTUARIAL GAIN/(LOSS) ANALYSIS BY SOURCE**

Source of Gain/(Loss)	Gain/(Loss) (\$M)*
Retiree Mortality	(0.9)
Withdrawal	0.5
Retirement	3.6
Death	0.6
Disability	(2.0)
Salary	12.9
New actives	(0.2)
COLA Experience	0.0
Other	1.1
	<hr/>
Total Liability Gain/(Loss)	15.5
Asset Gain/(Loss)	(10.9)
Total Gain/(Loss)	4.5

Note: Numbers may not add due to rounding



SECTION 4 – SYSTEM LIABILITIES

TABLE 8

POLICE RETIREMENT SYSTEM OF KANSAS CITY, MISSOURI

PROJECTED BENEFIT PAYMENTS

The chart below shows estimated benefits expected to be paid over the next twenty years, based on the assumptions used in this valuation. The "Actives" column shows benefits expected to be paid to members currently active on April 30, 2015. The "Retirees" column shows benefits expected to be paid to all other members. This includes those who, as of April 30, 2015, are receiving benefit payments or who are inactive vested and are entitled to a benefit in the future. No future members are reflected.

Retirement, Survivor, Withdrawal and Supplemental Benefits

Year Ending April 30	Actives	Retirees	Total
2016	\$ 2,850,000	\$ 51,481,000	\$ 54,331,000
2017	5,498,000	51,680,000	57,178,000
2018	8,216,000	51,776,000	59,992,000
2019	11,161,000	51,774,000	62,935,000
2020	14,164,000	51,762,000	65,926,000
2021	17,630,000	51,694,000	69,324,000
2022	21,341,000	51,446,000	72,787,000
2023	25,440,000	51,207,000	76,647,000
2024	29,823,000	50,727,000	80,550,000
2025	34,468,000	50,225,000	84,693,000
2026	39,369,000	49,588,000	88,957,000
2027	44,335,000	48,905,000	93,240,000
2028	49,364,000	48,119,000	97,483,000
2029	54,666,000	47,206,000	101,872,000
2030	60,293,000	46,186,000	106,479,000
2031	66,011,000	45,071,000	111,082,000
2032	71,524,000	43,838,000	115,362,000
2033	77,478,000	42,520,000	119,998,000
2034	83,122,000	41,125,000	124,247,000
2035	88,732,000	39,658,000	128,390,000



SECTION 5 – 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 in all but a completely closed fund, where no further contributions are anticipated. In an active 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 that 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/ (surplus) 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.

In general, contributions are computed in accordance with a level percent-of-payroll funding objective. The contribution rate based on the April 30, 2015 actuarial valuation will be used to determine the actuarial required employer contribution rate to the Police Retirement System of Kansas City, Missouri for fiscal year end 2017. 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 April 30, 2015, the actuarial accrued liability was greater than the valuation assets so an unfunded actuarial accrued liability (UAAL) exists. The Board elected to amortize the UAAL as a level percent of payroll over an open 30 year period beginning on the valuation date. Active member payroll is assumed to increase 3.75% per year.



SECTION 5 – EMPLOYER CONTRIBUTIONS

Contribution Rate Summary

In Table 9 the amortization payment related to the unfunded actuarial accrued liability, as of April 30, 2015, is developed. Table 10 develops the actuarial contribution rate for the System. A historical summary of the actual and actuarial contribution rates for the City is shown in Table 11.

The contribution rates shown in this report are based on the actuarial assumptions and cost methods described in Appendix C.



SECTION 5 – EMPLOYER CONTRIBUTIONS

TABLE 9

POLICE RETIREMENT SYSTEM OF KANSAS CITY, MISSOURI

DEVELOPMENT OF UAAL CONTRIBUTION RATE

1. Actuarial Accrued Liability as of April 30, 2015	\$ 1,037,256,917
2. Actuarial Value of Assets	\$ 803,672,621
3. Unfunded Actuarial Accrued Liability as of April 30, 2015	\$ 233,584,296
4. Total Contribution Rate for FYE 2016*	38.88%
5. Normal Cost Rate	26.20%
6. Contribution Rate Applied to Fund the UAAL for FYE 2016 (4) - (5)	12.68%
7. Expected Payroll for FYE 2016	\$ 97,103,400
8. Projected UAAL on April 30, 2016 [(3) * 1.075] - [(6) * (7) * 1.075 ⁻⁵]	\$ 238,337,028
9. Amortization Factor (30 Year Open/Level % of Pay)	18.7865
10. UAAL Contribution Adjusted to Mid-year of FYE 2017 [(8) / (9)] * 1.075 ⁻⁵	\$ 13,153,759
11. Expected Payroll for FYE 2017	\$ 100,744,778
12. UAAL Contribution Rate for FYE 2017 (10) / (11)	\$ 13.06%

* Reflects member contributions of 11.55% and City contributions of 27.33%



SECTION 5 – EMPLOYER CONTRIBUTIONS

TABLE 10
POLICE RETIREMENT SYSTEM OF KANSAS CITY, MISSOURI
EMPLOYER CONTRIBUTION RATES

	Valuation Date*	
	4/30/2015	4/30/2014
Normal Cost		
Service pensions	19.29%	19.10%
Pre-retirement death pensions	0.50%	0.50%
Disability pensions	4.28%	4.06%
Termination benefits	1.20%	1.15%
Supplemental retirement benefit	0.53%	0.54%
Administrative expenses	0.40%	0.40%
Total Normal Cost	26.20%	25.75%
Total UAAL Amortization payment	13.06%	13.13%
Total Actuarial Contribution Rate	39.26%	38.88%
Member Portion	11.55%	11.55%
City Portion	27.71%	27.33%

* The valuation results are used to determine the employer contribution rate for the fiscal year ending two years later.



SECTION 5 – EMPLOYER CONTRIBUTIONS

TABLE 11
POLICE RETIREMENT SYSTEM OF KANSAS CITY, MISSOURI
COMPUTED AND ACTUAL CITY CONTRIBUTIONS COMPARATIVE STATEMENT

Fiscal Year Beginning <u>May 1</u>	Valuation Date <u>April 30</u>	Projected Annual Payroll	As a % of Projected Pay		\$ Contributions		
			Annual Required Contribution	Reported FY City Contribution	Annual Required Contribution	Projected FY City Contribution	Actual Dollar Contribution
1998	1998	\$49,872,090	19.81 %	20.60 %	9,880,286	10,273,651	\$10,318,583
1999	1999	51,963,858	17.65	20.60	9,172,029	10,704,555	10,789,963
2000	2000	57,791,028	18.66	20.60	10,785,784	11,904,952	11,392,871
2001	2001	57,505,238	18.85	19.70	10,837,294	11,328,532	11,312,754
2002	2002	59,228,848	19.55	19.70	11,579,240	11,668,083	12,017,801
2003 *	2003	65,234,614	23.14	19.70	15,095,290	12,851,219	12,817,176
2004	2003	68,170,172	23.14	19.70	15,774,578	13,429,524	13,297,605
2005	2004	72,325,478	26.26	19.70	18,992,671	14,248,119	13,729,225
2006	2005	73,794,574	29.06	19.70	21,444,703	14,537,531	14,526,734
2007	2006	78,446,156	29.00	19.70	22,749,385	15,453,893	15,747,111
2008	2007	83,716,533	29.04	19.70	24,311,281	16,492,157	16,700,688
2009	2008	90,168,869	26.22	19.70	23,642,278	17,763,267	16,645,229
2010	2009	93,479,787	36.76	19.70	34,363,170	18,415,518	16,532,015
2011	2010	94,094,251	33.75	19.70	31,756,810	18,536,567	16,476,608
2012 *	2011	91,982,770	36.79	19.70	33,840,461	18,120,606	16,933,694
2013	2012	91,396,005	38.85 **	19.70 **	35,507,348	18,005,013	20,528,569
2014 *#	2013	94,109,913	27.35	27.35	25,739,061	25,739,061	25,739,061
2015	2014	99,755,810	27.33	27.33	27,263,263	27,263,263	
2016	2015	100,744,778	27.71		27,916,378		

* After changes in actuarial assumptions or methods.

** Effective September 1, 2013, the actuarial contribution rate was revised to 36.58% and the City began contributing the full employer actuarial contribution rate of 25.03%.

After changes in benefits

Note: For years prior to 2011, information is shown from the prior actuary's report.



SECTION 6 – OTHER INFORMATION

The actuarial accrued liability is a measure intended to help the reader assess (i) a retirement plan's funded status on a going concern basis and (ii) progress being made toward accumulating the assets needed to pay benefits as due. Allocation of the actuarial present value of projected benefits between past and future service was based on service using the Entry Age Normal actuarial cost method. Assumptions, including projected pay increases, were the same as used to determine the System's level percent of payroll annual required contribution between entry age and assumed exit age. Entry age was established by subtracting credited service from current age on the valuation date. The Entry Age Normal actuarial liability was determined as part of an actuarial valuation of the System as of April 30, 2015. The actuarial assumptions used in determining the actuarial liability can be found in Appendix C.

In the past, Governmental Accounting Standards Board (GASB) Statements No. 25, *Financial Reporting for Defined Benefit Pension Plans*, and Statement No. 27, *Accounting for Pensions by State and Local Governmental Employers*, applied to the preparation of financial reports of pension plans for state and local governments. GASB 27 still applies to the City's financial reporting for fiscal year 2015.

GASB 67, which is effective for the plan year end 2015, replaced GASB 25. A separate report that contains all of the information and exhibits of an actuarial nature that are necessary for the System's financial reporting under GASB 67 has been prepared. GASB 68 will replace GASB 27 for fiscal year end 2016 and a separate report will be prepared to meet the City's financial reporting requirements under that statement.

Some of the information previously reported under GASB 25 is valuable in assessing the financial health and past funding history of the System. Consequently, those exhibits have been retained in this section of the funding valuation.



SECTION 6 – OTHER INFORMATION

TABLE 12

**POLICE RETIREMENT SYSTEM OF KANSAS CITY, MISSOURI
SUMMARY OF ACTUARIAL METHODS AND ASSUMPTIONS**

Valuation Date	April 30, 2015
Actuarial cost method	Entry Age Normal
Amortization method for unfunded actuarial accrued liability	Level percent open
Amortization period	30 years
Asset valuation method	5-year smoothing of actual versus expected return on market value
Actuarial assumptions:	
Investment rate of return	7.5%, net of investment expenses
Projected salary increases including wage inflation at 3.75%	3.75% to 8.75%
Cost-of-living adjustments	2.5% simple

Membership of the plan consisted of the following at April 30, 2015, the date of the latest actuarial valuation:

Retirees and beneficiaries receiving benefits	1,252
Inactive vested members entitled to but not yet receiving benefits	20
Active plan members	<u>1,397</u>
Total	2,669



SECTION 6 – OTHER INFORMATION

TABLE 13
POLICE RETIREMENT SYSTEM OF KANSAS CITY, MISSOURI
SCHEDULE OF FUNDING PROGRESS

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (UAAL) (b) - (a)	Funded Ratio (a) / (b)	Active Member Covered Payroll** (c)	UAAL as a Percentage of Active Member Covered Payroll [(b) - (a)] / (c)
4/30/1998	\$433,090,523	\$493,183,065	\$60,092,542	88%	\$49,872,090	120%
4/30/1999	484,396,958	521,600,003	37,203,045	93%	51,963,858	72%
4/30/2000	584,514,972	589,566,248	5,051,276	99%	57,791,028	9%
4/30/2001	600,051,893	615,291,156	15,239,263	98%	57,505,238	27%
4/30/2002	620,948,986	648,632,789	27,683,803	96%	56,678,323	49%
4/30/2003 *	611,246,928	682,690,968	71,444,040	90%	62,425,468	114%
4/30/2004	603,418,620	712,273,616	108,854,996	85%	66,230,606	164%
4/30/2005	604,560,607	741,001,020	136,440,413	82%	67,575,902	202%
4/30/2006	635,621,582	775,271,985	139,650,403	82%	71,835,495	194%
4/30/2007	698,078,688	807,902,176	109,823,488	86%	80,111,515	137%
4/30/2008	742,060,223	850,763,745	108,703,522	87%	86,700,836	125%
4/30/2009	641,176,940	893,559,090	252,382,150	72%	89,884,411	281%
4/30/2010	722,464,003	915,463,037	192,999,034	79%	90,475,241	213%
4/30/2011 *	715,764,084	940,609,092	224,845,008	76%	88,444,971	254%
4/30/2012	734,375,923	972,127,874	237,751,951	76%	87,880,774	271%
4/30/2013 **	749,617,334	964,302,215	214,684,881	78%	90,708,350	237%
4/30/2014	773,338,034	1,006,243,143	232,905,109	77%	96,150,178	242%
4/30/2015	803,672,621	1,037,256,917	233,584,296	77%	97,103,400	241%

* After changes in actuarial assumptions or methods.

** For valuation years 2001 and prior, and 2007 and later, valuation payroll includes projected increases for year following valuation. For valuation years 2002 through 2006, valuation payroll is payroll reported in data after annualization of pays for new hires.

After change in benefit provisions

Note: Results for years prior to 2011 were taken from the prior actuary's report.

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 a 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 plan'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 plan's funding.



SECTION 6 – OTHER INFORMATION

TABLE 14
POLICE RETIREMENT SYSTEM OF KANSAS CITY, MISSOURI
SCHEDULE OF EMPLOYER CONTRIBUTIONS

Fiscal Year Ending April 30	Annual Required Contribution	Percent Contributed	Contribution Shortfall/(Excess)
1998	\$ 9,355,956	107%	\$ (622,506)
1999	9,880,286	104%	(438,297)
2000	9,172,029	118%	(1,617,934)
2001	10,785,784	106%	(607,087)
2002	10,837,294	104%	(475,460)
2003	11,579,240	104%	(438,561)
2004	15,095,290	85%	2,278,114
2005	15,774,578	84%	2,476,973
2006	18,992,671	72%	5,263,446
2007	21,444,703	68%	6,917,969
2008	22,749,385	69%	7,002,274
2009	24,311,281	69%	7,610,593
2010	23,642,278	70%	6,997,049
2011	34,363,170	48%	17,831,155
2012	31,756,810	52%	15,280,202
2013	33,840,461	50%	16,906,767
2014	35,507,348	58%	14,978,779
2015	25,739,061	100%	0

Note: For years prior to 2011, information shown is from the prior actuary's report



SECTION 6 – OTHER INFORMATION

TABLE 15

**POLICE RETIREMENT SYSTEM OF KANSAS CITY, MISSOURI
DEVELOPMENT OF ANNUAL PENSION COST AND NET PENSION OBLIGATION
UNDER GASB STATEMENT NUMBER 27**

Fiscal Year End	Annual Required Contribution (ARC) (a)	Interest on NPO (b)	ARC Adjustment (c)	Annual Pension Cost (APC) (d) = (a) + (b) - (c)	Annual Actual Contribution (e)	Change in NPO (f) = (d) - (e)	Net Pension Obligation (NPO) at End of Year (g) = sum of (f)
2000	\$9,172,029	(\$878,811)	(\$657,096)	\$8,950,314	\$10,789,963	(\$1,839,649)	(\$13,179,147)
2001	10,785,784	(1,021,384)	(763,699)	10,528,099	11,392,871	(864,772)	(14,043,919)
2002	10,837,294	(1,088,404)	(813,810)	10,562,700	11,312,754	(750,054)	(14,793,973)
2003	11,579,240	(1,146,533)	(889,665)	11,322,372	12,017,801	(695,429)	(15,489,402)
2004	15,095,290	(1,200,429)	(931,486)	14,826,347	12,817,176	2,009,171	(13,480,231)
2005	15,774,578	(1,044,718)	(810,661)	15,540,521	13,297,605	2,242,916	(11,237,315)
2006	18,992,671	(870,892)	(675,778)	18,797,557	13,729,225	5,068,332	(6,168,983)
2007	21,444,703	(478,096)	(370,984)	21,337,591	14,526,734	6,810,857	641,874
2008	22,749,385	49,745	38,609	22,760,521	15,747,111	7,013,410	7,655,284
2009	24,311,281	593,285	460,473	24,444,093	16,700,688	7,743,405	15,398,689
2010	23,642,278	1,193,398	971,445	23,864,231	16,645,229	7,219,002	22,617,691
2011	34,363,170	1,752,871	1,426,865	34,689,176	16,532,015	18,157,161	40,774,852
2012	31,756,810	3,160,051	2,572,332	32,344,529	16,476,608	15,867,921	56,642,773
2013	33,840,461	4,389,815	3,573,380	34,656,896	16,933,694	17,723,202	74,365,975
2014	35,507,348	5,577,448	4,689,885	36,394,911	20,528,569	15,866,342	90,232,317
2015	25,739,061	6,767,424	4,979,911	27,526,574	25,739,061	1,787,513	92,019,830
2016	27,263,263	6,901,487	5,078,564	29,086,186			

Note: Results for years prior to FY 2012 were prepared by the prior actuary



SECTION 6 – OTHER INFORMATION

TABLE 16
POLICE RETIREMENT SYSTEM OF KANSAS CITY, MISSOURI
SOLVENCY TEST

Valuation Date	Entry Age Actuarial Accrued Liabilities			Valuation Assets	Portion of Actuarial Accrued Liabilities Covered by Reported Assets					
	(1)	(2)	(3)		(1)	(2)		(3)		
	Active Member Contributions	Retirees and Beneficiaries	Active Members (Employer Financed Portion)			%	%	%	%	
April 30										
2003 *	\$46,015,271	\$436,805,624	\$199,870,073	\$611,246,928	100	%	100	%	64	%
2004	50,340,747	448,521,694	213,411,175	603,418,620	100		100		49	
2005	55,220,395	460,235,649	225,544,976	604,560,607	100		100		40	
2006	59,717,930	476,677,326	238,876,729	635,621,582	100		100		42	
2007	64,314,276	487,633,976	255,953,924	698,078,688	100		100		57	
2008	70,012,081	511,571,757	269,179,907	742,060,223	100		100		60	
2009	76,321,890	521,607,916	295,629,284	641,176,940	100		100		15	
2010	81,310,956	526,521,860	307,630,221	722,464,003	100		100		37	
2011 *	86,306,128	537,670,377	316,632,587	715,764,084	100		100		29	
2012	91,427,576	551,677,775	329,022,523	734,375,923	100		100		28	
2013 *#	93,709,417	554,078,691	316,514,107	749,617,334	100		100		32	
2014	100,221,012	568,199,815	337,822,316	773,338,034	100		100		31	
2015	106,540,143	585,754,594	344,962,180	803,672,621	100		100		32	

* After changes in actuarial assumptions or methods

After benefit changes

Note: Results for years before 2011 were prepared by the prior actuary



APPENDIX A – SUMMARY OF MEMBERSHIP DATA

MEMBER DATA RECONCILIATION

April 30, 2014 to April 30, 2015

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 Participants	Retirees	Disableds	Beneficiaries	Inactive Vested	Total
Members as of 04/30/2014	1,408	830	170	243	18	2,669
New Members	36	0	0	0	0	36
Rehires	1	0	0	0	0	1
Terminations						
Refunded	(15)	0	0	0	0	(15)
Inactive Vested	(2)	0	0	0	2	0
Retirements						
Service	(22)	22	0	0	0	0
Disability	(9)	0	9	0	0	0
Deaths						
Cashed Out/Payments Ended	0	0	0	(4)	0	(4)
With Beneficiary	0	(14)	(3)	17	0	0
Without Beneficiary	0	(8)	0	(10)	0	(18)
Data Adjustments	0	0	0	0	0	0
Members as of 04/30/2015	1,397	830	176	246	20	2,669



APPENDIX A – SUMMARY OF MEMBERSHIP DATA (CONTINUED)

**POLICE RETIREMENT SYSTEM OF KANSAS CITY, MISSOURI
SUMMARY OF ACTIVE MEMBERS
as of April 30, 2015**

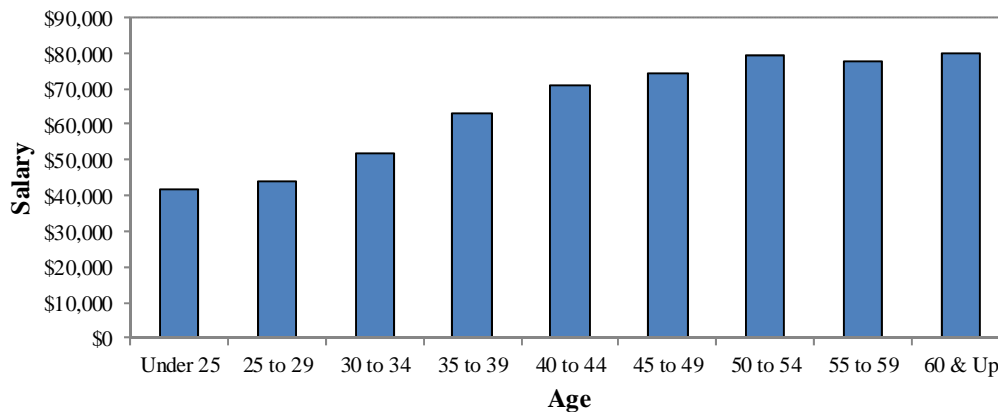
Total

Age	Number			Annual Reported Compensation*		
	Male	Female	Total	Male	Female	Total**
Under 25	21	5	26	\$ 871,048	\$ 210,034	\$ 1,081,082
25 to 29	92	19	111	4,071,000	818,285	4,889,285
30 to 34	183	32	215	9,548,445	1,632,243	11,180,689
35 to 39	217	32	249	13,723,780	1,913,460	15,637,240
40 to 44	265	47	312	18,807,489	3,354,824	22,162,313
45 to 49	239	30	269	17,834,215	2,134,292	19,968,507
50 to 54	130	20	150	10,270,122	1,598,574	11,868,696
55 to 59	37	10	47	2,796,341	842,263	3,638,604
60 & Up	17	1	18	1,369,188	69,273	1,438,461
Total**	1,201	196	1,397	\$ 79,291,627	\$ 12,573,249	\$ 91,864,876

* Compensation reported in the valuation data for the prior plan year with annualization of pay for new hires.

** Numbers may not add due to rounding

Average Salary by Age



Average age: 40.8
Average service: 13.9
Average salary: \$65,759



APPENDIX A – SUMMARY OF MEMBERSHIP DATA (CONTINUED)

**POLICE RETIREMENT SYSTEM OF KANSAS CITY, MISSOURI
SUMMARY OF ACTIVE MEMBERS
as of April 30, 2015**

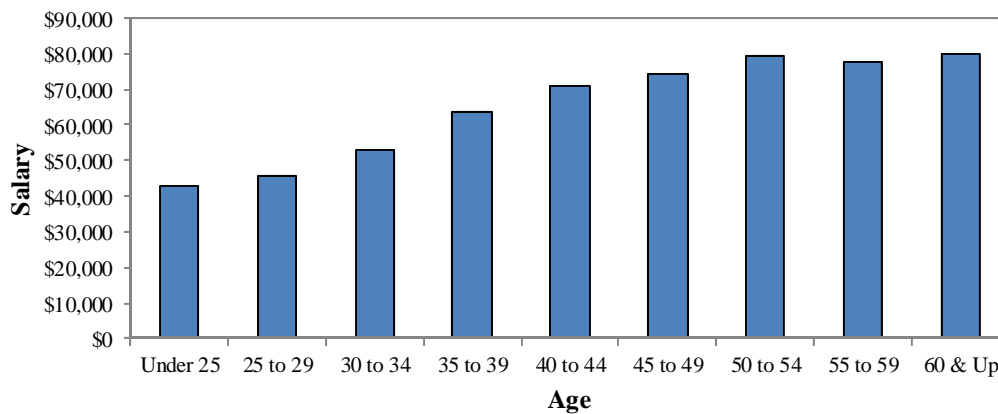
Tier I

Age	Number			Annual Reported Compensation*		
	Male	Female	Total	Male	Female	Total**
Under 25	2	1	3	\$ 85,629	\$ 42,815	\$ 128,444
25 to 29	61	9	70	2,784,241	401,836	3,186,077
30 to 34	167	27	194	8,856,741	1,423,941	10,280,682
35 to 39	209	29	238	13,391,214	1,786,466	15,177,680
40 to 44	263	47	310	18,719,563	3,354,824	22,074,387
45 to 49	239	29	268	17,834,215	2,092,663	19,926,878
50 to 54	130	20	150	10,270,122	1,598,574	11,868,696
55 to 59	37	10	47	2,796,341	842,263	3,638,604
60 & Up	17	1	18	1,369,188	69,273	1,438,461
Total**	1,125	173	1,298	\$ 76,107,253	\$ 11,612,655	\$ 87,719,908

* Compensation reported in the valuation data for the prior plan year with annualization of pay for new hires.

** Numbers may not add due to rounding

Average Salary by Age



Average age: 41.7
 Average service: 14.9
 Average salary: \$67,581



APPENDIX A – SUMMARY OF MEMBERSHIP DATA (CONTINUED)

**POLICE RETIREMENT SYSTEM OF KANSAS CITY, MISSOURI
SUMMARY OF ACTIVE MEMBERS
as of April 30, 2015**

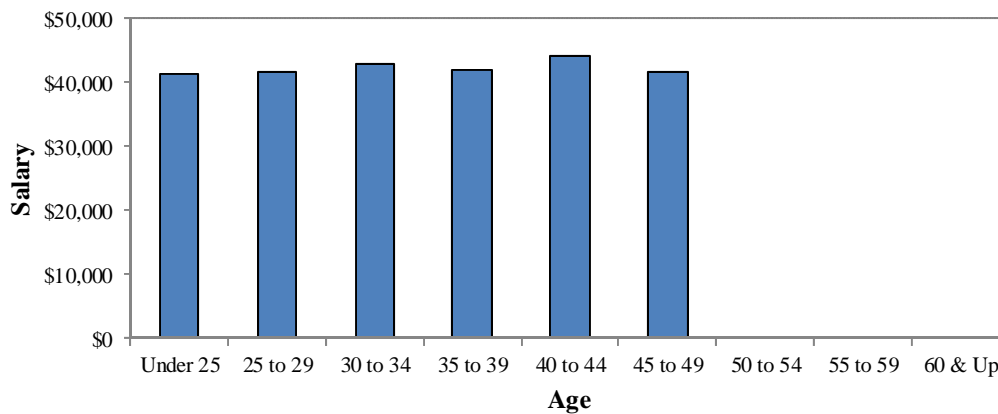
Tier II

Age	Number			Annual Reported Compensation*		
	Male	Female	Total	Male	Female	Total**
Under 25	19	4	23	\$ 785,419	\$ 167,219	\$ 952,638
25 to 29	31	10	41	1,286,759	416,449	1,703,208
30 to 34	16	5	21	691,704	208,303	900,007
35 to 39	8	3	11	332,566	126,994	459,560
40 to 44	2	0	2	87,926	0	87,926
45 to 49	0	1	1	0	41,629	41,629
50 to 54	0	0	0	0	0	0
55 to 59	0	0	0	0	0	0
60 & Up	0	0	0	0	0	0
Total**	76	23	99	\$ 3,184,374	\$ 960,594	\$ 4,144,968

* Compensation reported in the valuation data for the prior plan year with annualization of pay for new hires.

** Numbers may not add due to rounding

Average Salary by Age



Average age: 28.6
Average service: 1.0
Average salary: \$41,868



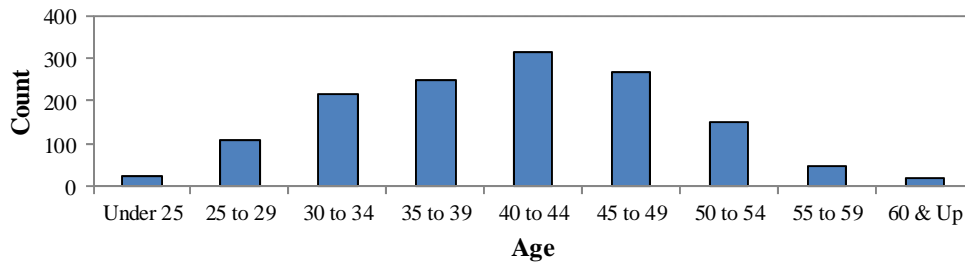
APPENDIX A – SUMMARY OF MEMBERSHIP DATA (CONTINUED)

**POLICE RETIREMENT SYSTEM OF KANSAS CITY, MISSOURI
DISTRIBUTION OF ACTIVE MEMBERS
as of April 30, 2015**

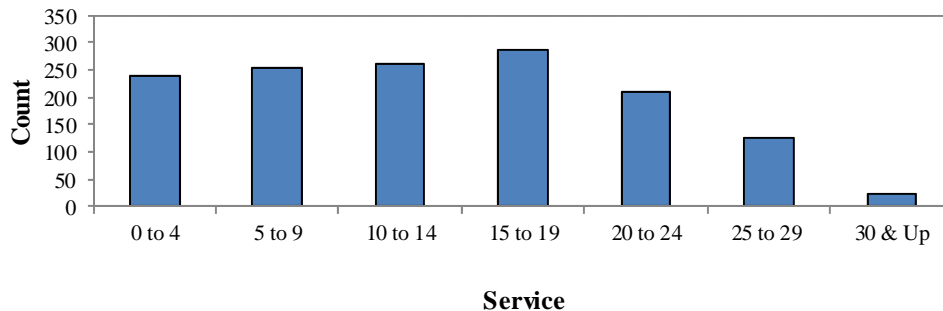
Total

Age	Years of Service							Total
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Up	
Under 25	26	0	0	0	0	0	0	26
25 to 29	96	15	0	0	0	0	0	111
30 to 34	65	128	22	0	0	0	0	215
35 to 39	30	65	133	21	0	0	0	249
40 to 44	12	28	74	157	41	0	0	312
45 to 49	9	10	24	79	124	23	0	269
50 to 54	0	6	8	24	36	68	8	150
55 to 59	0	0	1	4	9	23	10	47
60 & Up	0	1	0	1	1	10	5	18
Total	238	253	262	286	211	124	23	1,397

Age Distribution



Service Distribution





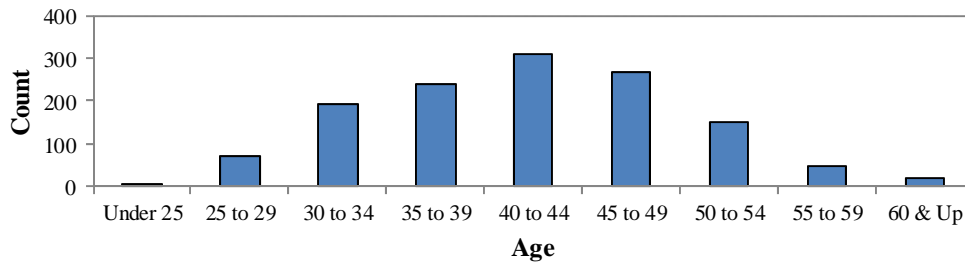
APPENDIX A – SUMMARY OF MEMBERSHIP DATA (CONTINUED)

**POLICE RETIREMENT SYSTEM OF KANSAS CITY, MISSOURI
DISTRIBUTION OF ACTIVE MEMBERS
as of April 30, 2015**

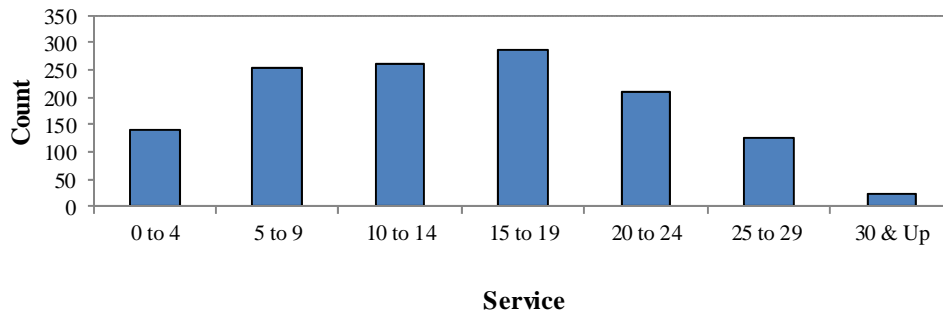
Tier I

Age	Years of Service							Total
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Up	
Under 25	3	0	0	0	0	0	0	3
25 to 29	55	15	0	0	0	0	0	70
30 to 34	45	127	22	0	0	0	0	194
35 to 39	19	65	133	21	0	0	0	238
40 to 44	10	28	74	157	41	0	0	310
45 to 49	8	10	24	79	124	23	0	268
50 to 54	0	6	8	24	36	68	8	150
55 to 59	0	0	1	4	9	23	10	47
60 & Up	0	1	0	1	1	10	5	18
Total	140	252	262	286	211	124	23	1,298

Age Distribution



Service Distribution





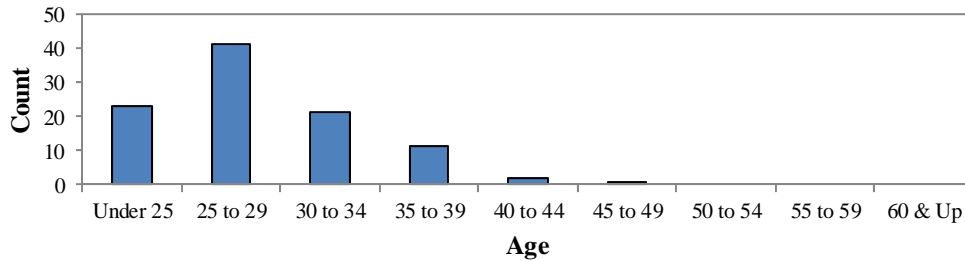
APPENDIX A – SUMMARY OF MEMBERSHIP DATA (CONTINUED)

**POLICE RETIREMENT SYSTEM OF KANSAS CITY, MISSOURI
DISTRIBUTION OF ACTIVE MEMBERS
as of April 30, 2015**

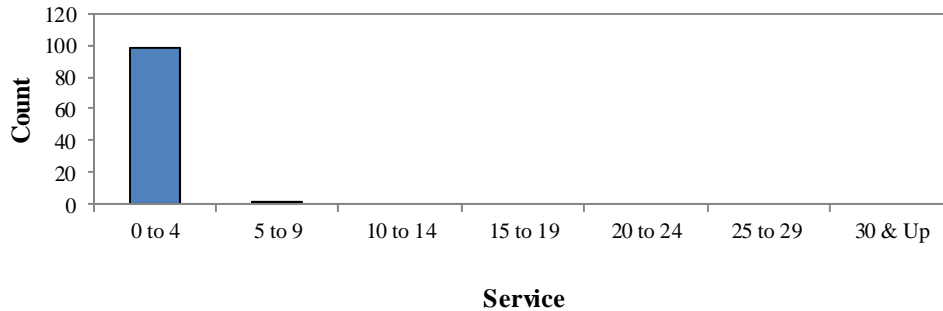
Tier II

Age	Years of Service							Total
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Up	
Under 25	23	0	0	0	0	0	0	23
25 to 29	41	0	0	0	0	0	0	41
30 to 34	20	1	0	0	0	0	0	21
35 to 39	11	0	0	0	0	0	0	11
40 to 44	2	0	0	0	0	0	0	2
45 to 49	1	0	0	0	0	0	0	1
50 to 54	0	0	0	0	0	0	0	0
55 to 59	0	0	0	0	0	0	0	0
60 & Up	0	0	0	0	0	0	0	0
Total	98	1	0	0	0	0	0	99

Age Distribution



Service Distribution





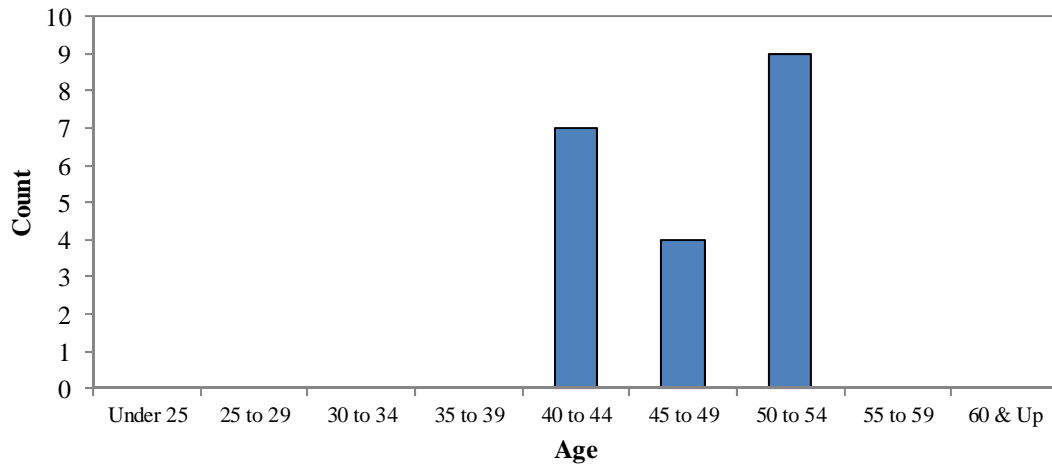
APPENDIX A – SUMMARY OF MEMBERSHIP DATA (CONTINUED)

**POLICE RETIREMENT SYSTEM OF KANSAS CITY, MISSOURI
SUMMARY OF INACTIVE VESTED MEMBERS
as of April 30, 2015**

Age	Number			Current Monthly Benefit at Retirement*		
	Male	Female	Total	Male	Female	Total**
Under 25	0	0	0	\$ 0	\$ 0	\$ 0
25 to 29	0	0	0	0	0	0
30 to 34	0	0	0	0	0	0
35 to 39	0	0	0	0	0	0
40 to 44	6	1	7	13,546	2,434	15,980
45 to 49	3	1	4	8,303	2,244	10,547
50 to 54	6	3	9	14,518	6,556	21,074
55 to 59	0	0	0	0	0	0
60 & Up	0	0	0	0	0	0
Total**	15	5	20	\$ 36,367	\$ 11,234	\$ 47,601

*Does not include supplemental benefits
** Numbers may not add due to rounding

Age Distribution





APPENDIX A – SUMMARY OF MEMBERSHIP DATA (CONTINUED)

**POLICE RETIREMENT SYSTEM OF KANSAS CITY, MISSOURI
SUMMARY OF RETIRED MEMBERS
as of April 30, 2015**

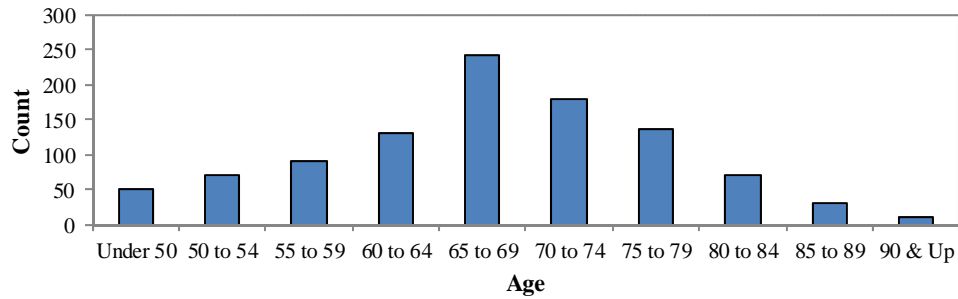
Healthy & Disabled Retirees

Age	Number			Monthly Benefit*		
	Male	Female	Total	Male	Female	Total**
Under 50	36	13	49	\$ 139,271	\$ 49,644	\$ 188,915
50 to 54	62	9	71	253,350	33,743	287,093
55 to 59	68	21	89	292,206	81,314	373,520
60 to 64	101	29	130	420,609	109,005	529,614
65 to 69	228	13	241	821,328	51,493	872,821
70 to 74	176	2	178	587,885	8,482	596,367
75 to 79	135	1	136	418,003	2,873	420,876
80 to 84	71	0	71	193,142	0	193,142
85 to 89	31	0	31	77,498	0	77,498
90 & Up	9	1	10	13,782	1,525	15,307
Total**	917	89	1,006	\$ 3,217,074	\$ 338,078	\$ 3,555,152

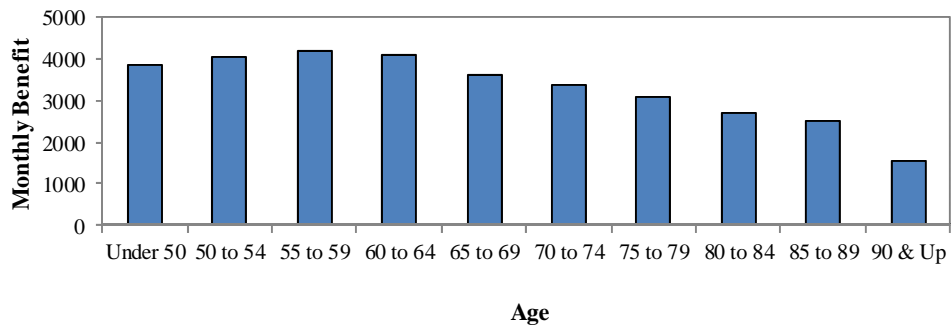
*Does not include supplemental benefits

** Numbers may not add due to rounding

Age Distribution



Average Benefit





APPENDIX A – SUMMARY OF MEMBERSHIP DATA (CONTINUED)

**POLICE RETIREMENT SYSTEM OF KANSAS CITY, MISSOURI
SUMMARY OF RETIRED MEMBERS
as of April 30, 2015**

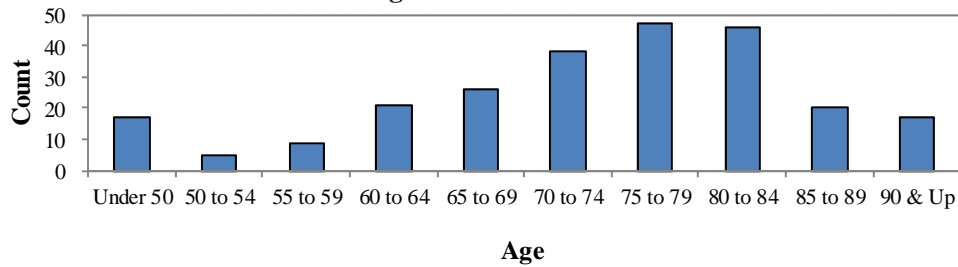
Beneficiaries

Age	Number			Monthly Benefit*		
	Male	Female	Total	Male	Female	Total**
Under 50	5	12	17	\$ 3,873	\$ 14,432	\$ 18,304
50 to 54	0	5	5	0	14,830	14,830
55 to 59	2	7	9	1,954	21,774	23,728
60 to 64	0	21	21	0	50,579	50,579
65 to 69	1	25	26	1,615	54,559	56,174
70 to 74	0	38	38	0	91,756	91,756
75 to 79	0	47	47	0	101,297	101,297
80 to 84	0	46	46	0	80,549	80,549
85 to 89	0	20	20	0	31,824	31,824
90 & Up	0	17	17	0	19,983	19,983
Total**	8	238	246	\$ 7,442	\$ 481,581	\$ 489,022

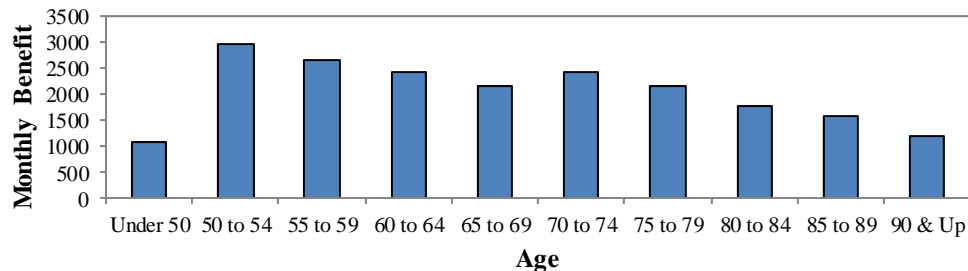
*Does not include supplemental benefits

** Numbers may not add due to rounding

Age Distribution



Average Benefit





APPENDIX A – SUMMARY OF MEMBERSHIP DATA (CONTINUED)

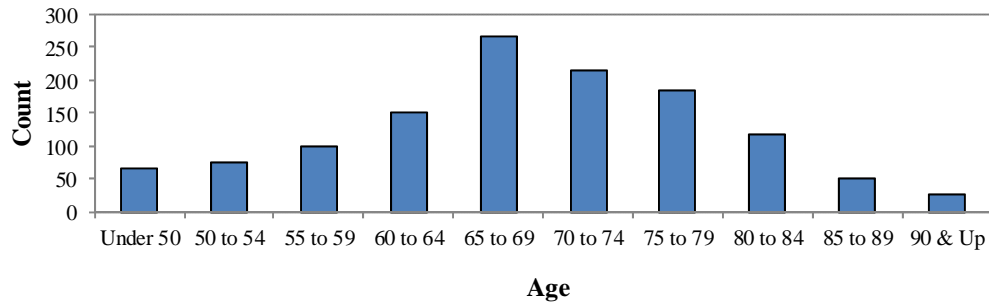
**POLICE RETIREMENT SYSTEM OF KANSAS CITY, MISSOURI
SUMMARY OF RETIRED MEMBERS
as of April 30, 2015**

Combined Retirees & Beneficiaries

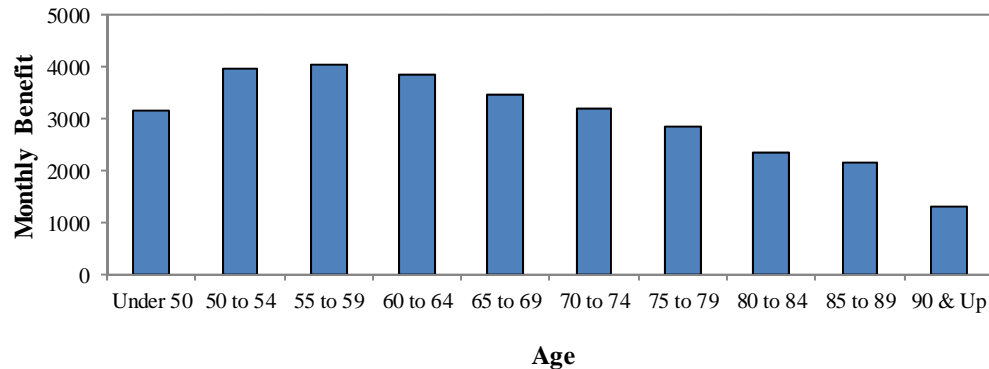
Age	Number			Monthly Benefit*		
	Male	Female	Total	Male	Female	Total**
Under 50	41	25	66	\$ 143,144	\$ 64,076	\$ 207,219
50 to 54	62	14	76	253,350	48,573	301,923
55 to 59	70	28	98	294,160	103,087	397,248
60 to 64	101	50	151	420,609	159,583	580,192
65 to 69	229	38	267	822,943	106,052	928,994
70 to 74	176	40	216	587,885	100,237	688,123
75 to 79	135	48	183	418,003	104,169	522,172
80 to 84	71	46	117	193,142	80,549	273,691
85 to 89	31	20	51	77,498	31,824	109,322
90 & Up	9	18	27	13,782	21,508	35,290
Total**	925	327	1,252	\$ 3,224,515	\$ 819,659	\$ 4,044,174

*Does not include supplemental benefits
** Numbers may not add due to rounding

Age Distribution



Average Benefit





APPENDIX B – SUMMARY OF BENEFIT PROVISIONS

POLICE RETIREMENT SYSTEM OF KANSAS CITY, MISSOURI

SUMMARY OF BENEFIT PROVISIONS

Membership

All police officers who serve as law enforcement officers for compensation become members as a condition of employment.

Tier I member – A person who became a member prior to August 28, 2013 and remains a member on August 28, 2013.

Tier II member – A person who became a member on or after August 28, 2013.

Service Retirement

Eligibility –

Tier I member – 25 years of service, without regard to age, or at age 60 with at least 10 years of service.

Tier II member – 27 years of service, without regard to age, or at age 60 with at least 15 years of service.

All members must retire at the completion of 35 years of service, or at age 65, whichever occurs first.

Amount of Pension – For a member retiring prior to August 28, 2000, benefit equal to 2% of Final Compensation multiplied by years of creditable service, subject to a maximum benefit of 60% of Final Compensation.

For a member retiring on or after August 28, 2000 and before August 28, 2013, benefit equal to 2.5% of Final Compensation multiplied by years of creditable service, subject to a maximum benefit of 75% of Final Compensation.

For a member retiring on or after August 28, 2013, benefit equal to 2.5% of Final Compensation multiplied by years of creditable service subject to a maximum benefit of 80% of Final Compensation. After members attain 32 years of creditable service, they will no longer contribute to the Plan and their benefit amount will be frozen.

Final Compensation –

Tier I member – Average annual compensation during the two years of service with the highest salary, whether consecutive or otherwise, or during the entire period of service if less than two years.

Tier II member – Average annual compensation during the three years of service with the highest salary, whether consecutive or otherwise, or during the entire period of service if less than three years.

Deferred Retirement (Vested Termination)

Eligibility – 15 years of creditable service.

Tier I member – Benefit begins at age 55.

Tier II member – Benefit begins at age 60.

Amount of Pension – Computed as service retirement but based on service, Final Compensation and benefit formula in effect at termination of employment. Benefits are unreduced.

Duty Disability

Eligibility – A member in active service who has become permanently unable to perform the full and unrestricted duties of a police officer, as determined by the Board of Police Commissioners, as the exclusive result of an accident or disease occurring in the line of duty.



APPENDIX B – SUMMARY OF BENEFIT PROVISIONS (CONTINUED)

Amount of Pension – For a member retiring on or after August 28, 2001 and before August 28, 2013, benefit equal to 75% of Final Compensation payable for life or as long as the permanent disability continues.

For a member retiring on or after August 28, 2013, benefit equal to 80% of Final Compensation payable for life or as long as the permanent disability continues.

Duty disability benefits may be subject to offset or reduction by amounts paid or payable under any Workers' Compensation law. A disability retiree who is not age 60 may be required by the Retirement Board to undergo continuing eligibility reviews once every three years which may include a medical re-examination.

Non-duty Disability

Eligibility – A member in active service, with a minimum of 10 years of service, who has become permanently unable to perform the full and unrestricted duties of a police officer as determined by the Board of Police Commissioners. Disability is not exclusively caused by the actual performance of official duties.

Amount of pension – 2.5% of Final Compensation multiplied by years of creditable service payable for life or as long as the permanent disability continues.

A disability retiree who is not age 60 may be required by the Retirement Board to undergo continuing eligibility reviews once every three years which may include a medical re-examination.

Death in Service – Duty or Non-duty

Eligibility – Benefit payable to a surviving spouse, if any, upon the death of an active member. Benefit payable for the life of the surviving spouse. If there is no surviving spouse, benefit payable to an eligible child or children in equal shares until age 18. No service requirement.

Amount of Pension – 40% of Final Compensation payable to surviving spouse for life.

Child Benefit - \$600 annually for each child under the age of 18, if any, until the child reaches age 18 or age 21 if a full time student. A child who is mentally or physically incapacitated from wage earning at the time of a member's death shall qualify, without regard to age, for life or so long as the incapacity existing at time of member's death continues.

Funeral Benefit - \$1,000 payable upon the death of an active member.

Line of Duty Death

Eligibility – Benefit payable to a surviving spouse. If no surviving spouse, benefit payable to children under age 21 or children over age 21 if mentally or physically incapacitated from wage earning, in equal shares. Death resulting from performance of official duties; no service requirement.

Amount of Benefit – In addition to benefits payable under Death in Service shown above, a lump sum of \$50,000.

Death After Retirement

Eligibility – Benefit payable to an eligible surviving spouse, if any, upon the death of a retired member. Benefit payable for the life of the surviving spouse. If there is no surviving spouse, benefit payable to an eligible child or children in equal shares until age 18.



APPENDIX B – SUMMARY OF BENEFIT PROVISIONS (CONTINUED)

Amount of Pension –

Tier I member – Benefit equal to 80% of the straight life pension the deceased member was receiving at time of death.

Tier II member – Benefit equal to 50% of the straight life pension the deceased member was receiving at time of death. In lieu of the 50% surviving spouse benefit, a Tier II member may elect, at the time of retirement, a reduced actuarially equivalent annuity of either a 75% or 100% surviving spouse benefit.

Funeral Benefit - \$1,000 payable upon the death of a retired member.

Non-Vested Termination

Eligibility – Termination of employment and no pension is or will become payable.

Amount of Benefit – Refund of member's contributions without interest.

Minimum Pension Benefit

Eligibility – Any member who retired entitled to a pension benefit and who either has at least 25 years of creditable service or is retired as a result of an injury or illness. A surviving spouse qualifies for the minimum monthly benefit if the member had at least 25 years of creditable service, died in service, or was retired as a result of an injury or illness.

Amount of Benefit – Minimum monthly benefit of not less than \$600 in combined pension benefit and cost-of-living adjustments. The minimum monthly pension benefit is in addition to the Supplemental Retirement Benefit.

Post-Retirement Benefit Increases

Eligibility –

Tier I members and surviving spouses – Member's pension must have commenced by December 31 of prior calendar year.

Tier II members and surviving spouses – Service retirements generally eligible in the year following the year in which member would have attained thirty-two years of service. Duty Disability retirements eligible in year following retirement. Non-duty Disability retirements eligible earlier of year following fifth year after retirement or year following the year in which they would have attained thirty-two years of service. Surviving spouses of retired members eligible at same time member would have been if living.

Amount of Benefit – May receive an annual cost-of-living adjustment in an amount not to exceed 3% of their respective base pension. Base pension is the pension computed under the provisions of the law at the date of retirement, without regard to cost-of-living adjustments. The COLA adjustment is normally effective with the May 31st benefit payment.

Statutes require that the Retirement Board must act upon the advice of a qualified actuary when granting cost of living adjustments. The liabilities in this report assume a 2.5% ad hoc COLA will be granted in each future year.

Member Contributions

10.55% of base pay thru August 31, 2013. Effective September 1, 2013, 11.55% of base pay. No contributions are required for members that remain in active service after completion of 32 years of creditable service.



APPENDIX B – SUMMARY OF BENEFIT PROVISIONS (CONTINUED)

Supplemental Retirement Benefit

Tier I member – Current and future retired and disabled members and their surviving spouses are eligible to receive \$420 per month in addition to pension benefits. The City will reimburse the System \$200, so the System is liable for \$220 per month.

Tier II member – Current and future retired and disabled members and their surviving spouses are eligible to receive \$200 per month in addition to pension benefits. The City will reimburse the System \$200, so the System is not liable for this benefit.

Optional Form of Benefit Payment

Tier I member – Member retiring with at least 26 or more years of service may elect to take a portion of their lifetime benefit as a lump-sum distribution (PLOP).

Tier II member – Member retiring with at least 28 or more years of service may elect to take a portion of their lifetime benefit as a lump-sum distribution (PLOP).

Members electing PLOP will receive an actuarially reduced monthly benefit for their lifetime.



APPENDIX C – ACTUARIAL COST METHODS AND ASSUMPTIONS

POLICE RETIREMENT SYSTEM OF KANSAS CITY, MISSOURI

ACTUARIAL COST METHOD AND ASSUMPTIONS

Actuarial Cost Method

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

- (i) The annual normal costs for each individual active member are sufficient to accumulate the value of the member's pension at time of retirement.
- (ii) Each annual normal cost is a constant percentage of the member's year-by-year projected covered compensation.

The Entry Age Normal actuarial cost method allocates the actuarial present value of each member's projected benefits on a level basis over the member's assumed pensionable compensation rates between the entry age of the member and the assumed exit ages. The portion of the actuarial present value allocated to the valuation year is called the normal cost. The portion of the actuarial present value not provided for by the actuarial present value of future normal costs is called actuarial accrued liability. Deducting actuarial assets from the actuarial accrued liability determines the unfunded actuarial accrued liability or (surplus). The UAAL is amortized over an open 30 year period.

Asset Valuation Method

The Board adopted a new asset smoothing method effective with the April 30, 2011 valuation. Under the new methodology, the difference between the actual and assumed investment return on the market value of assets is recognized evenly over a five-year period. No corridor is used with the new method. The change to a new asset smoothing method was implemented by resetting the actuarial value of assets at April 30, 2011 equal to the market value of assets.

Actuarial Assumptions

Valuations beginning with the April 30, 2013 actuarial valuation include assumptions and methods resulting from the experience study covering the 5-year period from May 1, 2007 to April 30, 2012.



APPENDIX C – ACTUARIAL COST METHODS AND ASSUMPTIONS (CONTINUED)

Investment return: 7.5% per year, net of investment expenses, compounded annually.

Pay increase assumption: Rates for sample years of service are shown below.

<u>Years of Service</u>	<u>Annual Rate of Pay Increase</u>		
	<u>General Wage Growth</u>	<u>Merit and Longevity</u>	<u>Total</u>
0	3.75%	5.00%	8.75%
1	3.75%	5.00%	8.75%
2	3.75%	5.00%	8.75%
3	3.75%	5.00%	8.75%
4	3.75%	5.00%	8.75%
5	3.75%	5.00%	8.75%
10	3.75%	2.00%	5.75%
15	3.75%	0.00%	3.75%
20	3.75%	0.00%	3.75%

Price inflation: 3.0% per year, compounded annually.

Active member payroll growth: 3.75% per year, compounded annually.

Mortality Tables:

Healthy Retirees: RP-2000 Healthy Annuitant Table using Scale AA to model future mortality improvement.

Disabled Retirees: RP-2000 Healthy Annuitant Table set forward 5 years using Scale AA to model future mortality improvement.

Actives: RP-2000 Employee Table using Scale AA to model future mortality improvement.

Rates of termination from active membership:

% of Active Members Terminating Within Next Year	
<u>Sample Ages</u>	<u>All Members</u>
25	5.51%
30	3.61%
35	2.21%
40	1.25%
45	0.25%
50	0.00%

The rates do not apply to members eligible to retire and do not include separation on account of death or disability. All vested members are assumed to leave their contribution with the System and receive a deferred benefit.



APPENDIX C – ACTUARIAL COST METHODS AND ASSUMPTIONS (CONTINUED)

Rates of Disability:

<u>Sample Ages</u>	<u>% of Active Members Becoming Disabled Within Next Year</u>	
	<u>Male</u>	<u>Female</u>
30	0.062%	0.134%
35	0.312%	0.672%
40	0.416%	0.896%
45	0.437%	0.941%
50	0.759%	1.635%
55	1.456%	3.136%
60	2.579%	5.555%

55% of disabilities are assumed to be duty related

Rates of Retirement:

<u>Active Members Retiring Within Next Year</u>	
<u>Years of Service</u>	<u>Percent Retiring</u>
25	25%
26	25%
27	20%
28	20%
29	20%
30	15%
31	15%
32	35%
33	30%
34	30%
35	100%

100% of Tier 1 active members are assumed to retire at age 60, if they have 10 years of service.

100% of Tier 2 active members are assumed to retire at age 65, if they have 10 years of service.

Inactive vested members are assumed to retire at age 55 for Tier I and age 60 for Tier II.



APPENDIX C – ACTUARIAL COST METHODS AND ASSUMPTIONS (CONTINUED)

Miscellaneous and Technical Assumptions

<i>Marriage Assumption:</i>	85% of males and 55% of females are assumed to be married for purposes of death-in-service benefits and death-after-retirement benefits. Males are assumed to be 3 years older than their spouses. Actual reported data is utilized for retirees and beneficiaries.
<i>Pay Increase Timing:</i>	Assumed to occur at the start of the fiscal year.
<i>Pay Annualization:</i>	Reported pays for members with less than 1 year of service were annualized for valuation purposes.
<i>Decrement Timing:</i>	Decrements of all types are assumed to occur mid-year.
<i>Eligibility Testing:</i>	Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year at the start of the year in which the decrement is assumed to occur.
<i>Benefit Service:</i>	Service calculated to the nearest month, as of the decrement date, is used to determine the amount of benefit payable.
<i>Child Beneficiaries:</i>	None assumed.
<i>Other:</i>	Turnover decrement does not operate during retirement eligibility.
<i>Form of Payment:</i>	The assumed normal form of payment for Tier I is an 80% joint and survivor annuity (50% joint and survivor for Tier II), if married. Otherwise, a single life annuity.
<i>Administrative Expense:</i>	0.40% of payroll each year. Administrative expenses beyond this allocation and all investment expenses are assumed to be funded by investment return in excess of the actuarial assumed rate of return.
<i>Valuation of Supplemental Benefits:</i>	The net Supplemental Benefit of \$220 per month for Tier I members only (\$420 less City paid portion of \$200) was valued in the valuation.
<i>Cost of Living Adjustment:</i>	It was assumed that the Retirement Board will grant, on average, a 2.5% cost of living adjustment.



GLOSSARY OF TERMS

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