



**City of Kansas City
Missouri Employees'
Retirement System**

**Actuarial Valuation
as of May 1, 2022**

**Produced by Cheiron
September 2022**

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September 12, 2022

Board of Pension Trustees
City of Kansas City, Missouri Employees' Retirement System
12th Floor, City Hall
414 East 12th Street
Kansas City, Missouri 64106

Dear Members of the Board:

At your request, we have conducted an actuarial valuation of the City of Kansas City, Missouri Employees' Retirement System ("ERS", "the System") as of May 1, 2022. The valuation is organized as follows:

- In Section I, **Board Summary**, we describe the purpose of an actuarial valuation and summarize the key results found in this valuation.
- In Section II, **Disclosures Related to Risk**, we identify and assess the primary risks to the System in accordance with Actuarial Standard of Practice No. 51.
- The **Main Body** of the report presents details on the System's:
 - Section III - Assets
 - Section IV - Liabilities
 - Section V - Contributions
 - Section VI - Financial Statement Information
- In the **Appendices**, we conclude our report with detailed information describing the System's membership (Appendix A), actuarial assumptions and methods employed (Appendix B), a summary of pertinent plan provisions (Appendix C), and a glossary of terms (Appendix D).

The purpose of this report is to present the annual actuarial valuation of the City of Kansas City, Missouri Employees' Retirement System. This report is for the use of the Employees' Retirement Board and its auditors in preparing financial reports in accordance with applicable law and accounting requirements.

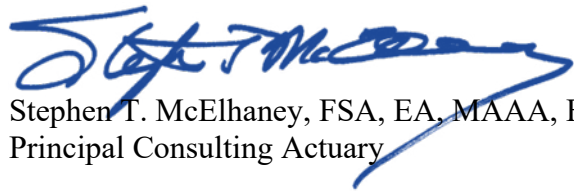
In preparing our report, we relied on information (some oral and some written) supplied by ERS' staff. This information includes, but is not limited to, the plan provisions, employee data, and unaudited financial information. We performed an informal examination of the obvious characteristics of the data for reasonableness and consistency in accordance with Actuarial Standard of Practice No. 23.

Future results may differ significantly from the current results presented in this report due to such factors as the following: plan experience differing from that anticipated by the assumptions; changes in assumptions; and changes in plan provisions or applicable law.

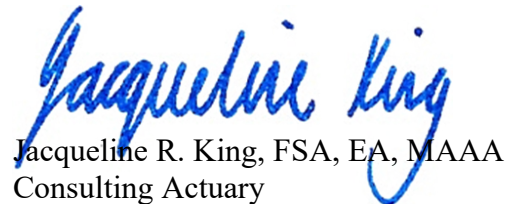
This report and its contents have been prepared in accordance with generally recognized and accepted actuarial principles and practices and our understanding of the Code of Professional Conduct and applicable Actuarial Standards of Practice set out by the Actuarial Standards Board as well as applicable laws and regulations. Furthermore, as credentialed actuaries, we meet the Qualification Standards of the American Academy of Actuaries to render the opinions contained in this report. This report does not address any contractual or legal issues. We are not attorneys, and our firm does not provide any legal services or advice.

This report was prepared for the Employees' Retirement System for the purposes described herein and for the use by the Plan auditor in completing an audit related to the matters herein. Other users of this valuation report are not intended users as defined in the Actuarial Standards of Practice, and Cheiron assumes no duty or liability to any other user.

Sincerely,
Cheiron



Stephen T. McElhaney, FSA, EA, MAAA, FCA
Principal Consulting Actuary



Jacqueline R. King, FSA, EA, MAAA
Consulting Actuary

**CITY OF KANSAS CITY, MISSOURI EMPLOYEES' RETIREMENT SYSTEM
MAY 1, 2022 ACTUARIAL VALUATION REPORT**

SECTION I – BOARD SUMMARY

Cheiron has performed the actuarial valuation of the City of Kansas City, Missouri Employee's Retirement System (ERS) as of May 1, 2022. The primary purpose of the actuarial valuation and this report is to measure, describe, and identify as of the valuation date:

- The financial condition of the System,
- Past and expected trends in the financial progress of the System,
- The primary risks to the System,
- The City's Actuarially Determined Contribution for fiscal year ending 2024, and
- Information required for the System's financial statement.

In the balance of this Board Summary, we present (A) the basis upon which this year's valuation was completed, (B) the key findings of this valuation including a summary of all key financial results, (C) an examination of the historical trends, and (D) the projected financial outlook for the System.

A. Valuation Basis

Effective with this valuation, the unamortized unfunded actuarial liability arising from periods prior to May 1, 2018 has been combined into a single amortization base and is amortized to April 30, 2038, as a level percent of pay. Changes in unfunded actuarial liability due to actuarial gains and losses and changes in actuarial assumptions after May 1, 2018 continue to be amortized over layered 20-year periods, as a level percent of pay. There have been no changes in actuarial assumptions and plan provisions since the May 1, 2021 valuation. The data, methods, assumptions, and plan provisions that serve as the basis for this valuation are all summarized in the appendices.

B. Key Findings of this Valuation

The key results of the May 1, 2022 actuarial valuation are as follows:

- We have calculated the City's contribution rate on two bases:
 - The actuarially determined City contribution rate under the Board's funding policy would have increased from 17.72% as of May 1, 2021 to 19.85% as of May 1, 2022 if there had been no method changes. However, after reflecting the new amortization periods, the actuarially determined employer contribution rate as of May 1, 2022, to be used for fiscal year ending 2024, is 19.73%. The actual rate that the City is scheduled to contribute for the current year is 17.72% of payroll, which is the actuarially determined Board contribution rate for the prior year. The increase in the contribution rate of 2.01% of payroll was caused in part by actuarial losses on both assets and liabilities (see comments on next page) and in part by a reduction in covered payroll of 6.9% which results in the amortization payments toward the unfunded actuarial liability to be expressed as a percentage of a lower payroll base.

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- Under the City ordinance, the City's contribution rate for the year beginning May 1, 2023, would be based upon a 30-year open amortization for the entire amount of unfunded actuarial liability. This rate is 15.83% as of May 1, 2022.
- The ERS's unfunded actuarial liability increased from \$207 million on May 1, 2021 to \$228 million on May 1, 2022.
- The ERS's funding ratio, the ratio of the actuarial value of assets over the actuarial liability, decreased from 85.9% as of May 1, 2021 to 84.7% as of May 1, 2022.
- The primary factor in the increase of the Plan's unfunded actuarial liability was an overall actuarial loss of \$24.8 million.
 - During the year ended April 30, 2022, the ERS's assets earned -5.20% on a market value basis. The return on the actuarial asset value was 5.58% (as compared to 7.00% assumed). This resulted in an actuarial loss on investments of \$17.5 million. In addition, the Plan also experienced a gain of \$1.6 million due to the difference between actual contributions and the actuarially determined contribution as a result of differences between actual and expected covered plan payroll and timing differences.
 - On the liability side, the ERS experienced an actuarial loss of \$8.9 million, mostly due to more retirements than expected.
- Effective May 1, 2022, the unamortized unfunded actuarial liability arising from periods prior to May 1, 2018 is amortized to April 30, 2038. Changes in unfunded actuarial liability from gains and losses and changes in actuarial assumptions occurring after May 1, 2018 continue to be amortized over layered 20 year periods.

This report does not include disclosures required by GASB Statements No. 67 and 68. Statement No. 67 was effective for the plan year ending April 30, 2015. Statement No. 68 was effective for the employer fiscal year ending April 30, 2016. Please refer to the separate report issued by Cheiron for accounting and financial disclosure information under GASB Statements No. 67 and No. 68.

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The following Table I-1 summarizes the key results of the valuation with respect to the ERS's membership, assets and liabilities, and contributions. The results are presented and compared for both the current and prior plan year.

Table I-1			
City of Kansas City, Missouri Employees' Retirement System			
Summary of Principal Plan Results			
Valuation as of:	May 1, 2021	May 1, 2022	% Change
<u>Participant Counts</u>			
Active Participants	3,006	2,775	(7.7%)
Disabled Participants	6	6	0.0%
Retirees and Beneficiaries	2,650	2,794	5.4%
Terminated Vested Participants	206	205	(0.5%)
Inactive Participants	644	875	35.9%
Total	6,512	6,655	2.2%
Annual Salaries of Active Members	\$ 165,299,880	\$ 153,876,546	(6.9%)
Annual Retirement Allowances for Retired Members and Beneficiaries*	\$ 76,981,608	\$ 84,189,125	9.4%
<u>Assets and Liabilities</u>			
Actuarial Liability (AL)	\$ 1,463,461,775	\$ 1,492,408,005	2.0%
Actuarial Value of Assets (AVA)	1,256,511,707	1,264,096,598	0.6%
Unfunded Actuarial Liability (UAL)	\$ 206,950,068	\$ 228,311,407	10.3%
Funded Ratio (AVA)	85.9%	84.7%	
Funded Ratio (MVA)	91.6%	81.2%	
Present Value of Accrued Benefits (PVAB)	\$ 1,360,886,777	\$ 1,398,292,053	2.7%
Market Value of Assets (MVA)	1,340,662,410	1,211,678,726	(9.6%)
Unfunded/(Surplus) PVAB	\$ 20,224,367	\$ 186,613,327	
Accrued Benefit Funding Ratio	98.5%	86.7%	
<u>Contributions as a Percentage of Payroll</u>			
<u>under Board's Funding Policy **</u>			
	Fiscal Year 2023	Fiscal Year 2024	
Normal Cost Rate	7.09%	6.97%	
Administrative Expense Rate	0.30%	0.30%	
Unfunded Actuarial Liability Rate	10.33%	12.46%	
Total Actuarially Determined City Contribution Rate	17.72%	19.73%	
Actuarially Determined Contribution (GASB)	\$29,291,139	\$30,359,843	3.6%

* The annual retirement allowances do not include the health subsidy benefits

** Fiscal Year 2024 contribution rate and ADC reflect the amortization period updates effective May 1, 2022

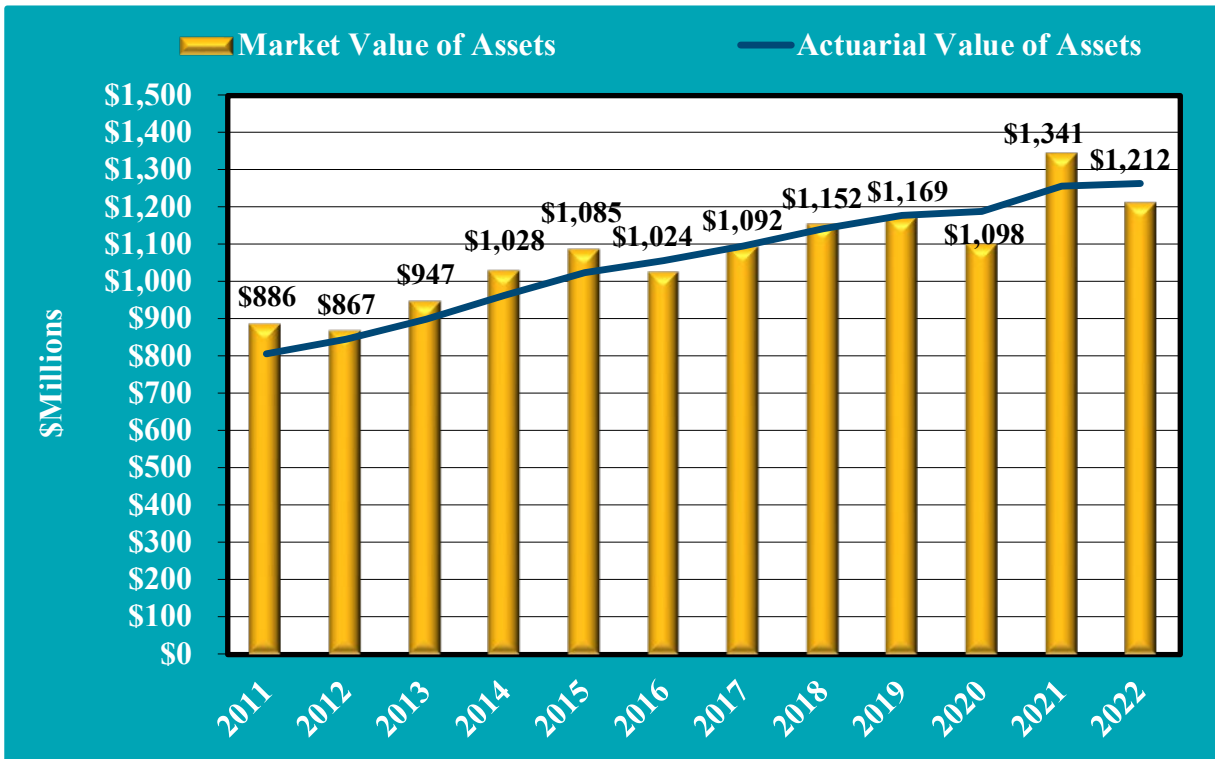
SECTION I – BOARD SUMMARY

C. Historical Trends

Despite the fact that for most retirement systems, the greatest attention is given to the current valuation results and in particular the size of the current unfunded actuarial liability and the City's contribution, it is important to remember that each valuation is merely a snapshot in the long-term progress of a pension fund. It is more important to judge a current year's valuation result relative to historical trends, as well as trends expected into the future. Significant prior volatility is exhibited within these trend charts. This volatility helps to illustrate the risks to the System which are discussed more fully in Section II of this report.

System Assets

The chart below shows the market value of assets and the actuarial value of assets over the last 12 years. The numbers above the bars represent the value (in millions) of the market value of assets.



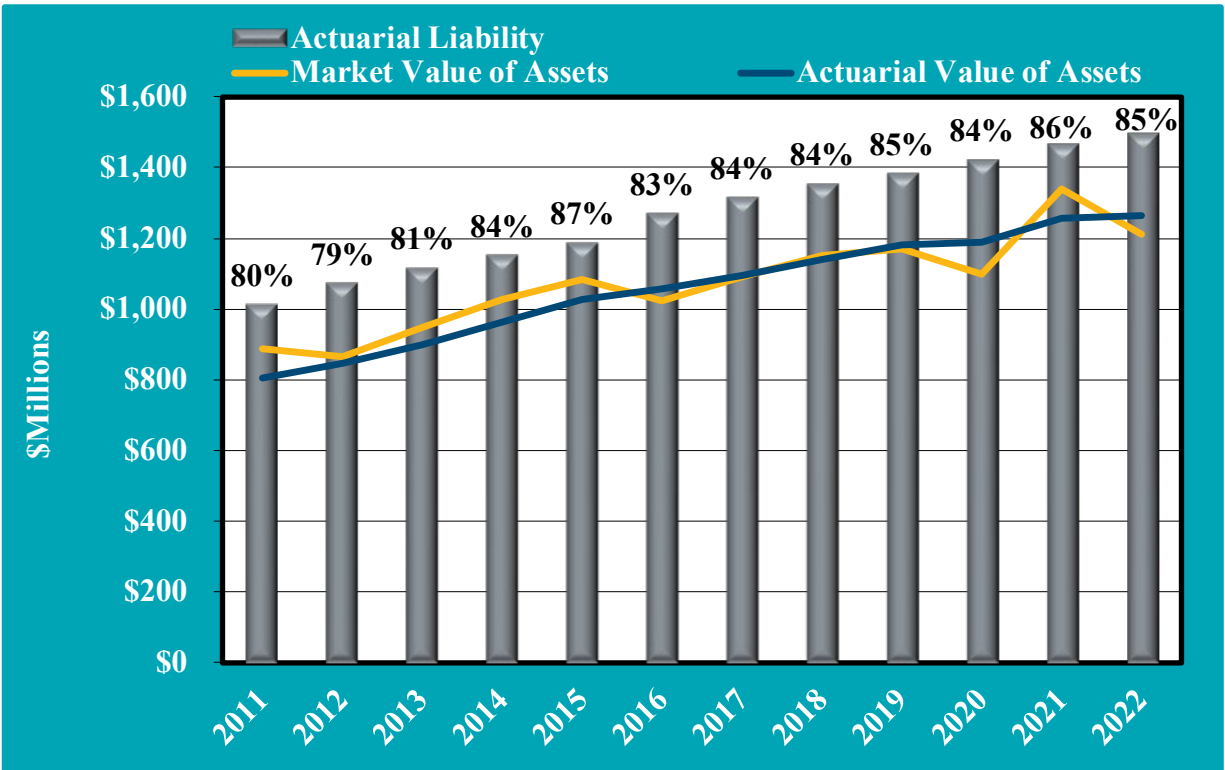
There was a market value of assets loss on investments in 2022, returning -5.20%, decreasing from \$1,341 million to \$1,212 million. With the asset smoothing method in place, the actuarial value of assets has tracked a slightly smoother path through the volatility of the market value of assets. As can be seen in the graph, the actuarial value of assets increased from 2021 to 2022, returning 5.58%, which is less than the assumed earnings of 7.00%.

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Assets and Liabilities

The chart below compares the market value of assets, the actuarial value of assets, and the actuarial liabilities, as well as the funded ratio (actuarial value of assets / actuarial liability). This chart shows that ERS's Funding Ratio has increased over time. The large 2016 decrease was a result of the changes to actuarial assumptions.



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Contribution Rates

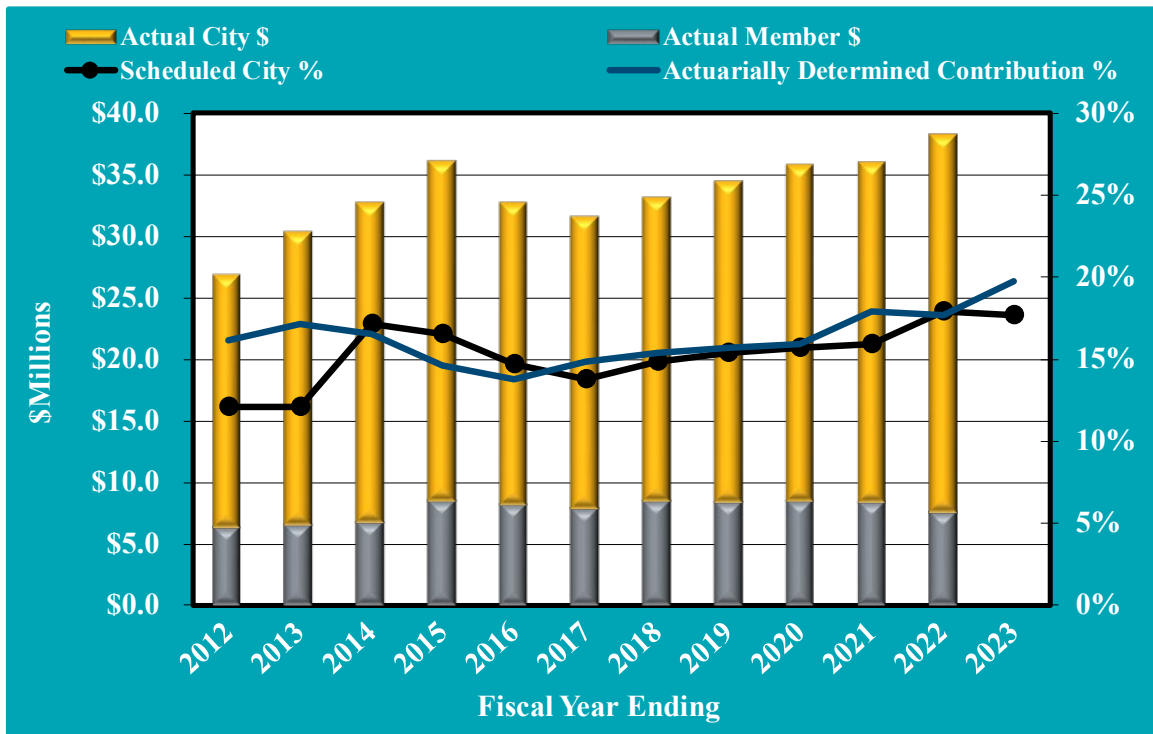
The stacked bars in this graph show the dollar amount of contributions made by the City and the members (depicted on the left-hand scale) since fiscal year ending 2012. The blue line shows the City's actuarially determined contribution rate under the Board's funding policy as a percent of payroll (depicted on the right-hand scale). The black line shows the scheduled City contribution rate as a percent of payroll (depicted on the right-hand scale).

The member contribution rate is set by City law at 4% (more than 4% for certain MAST employees) of payroll prior to April 20, 2014, and 5% (more than 5% for certain MAST employees) of payroll effective April 20, 2014.

The scheduled contribution rate is as follows:

- For fiscal years ending from 2012 through 2013, the scheduled City contribution rate was 9.50% of payroll plus 2.53% of payroll for the retirement window offered in 2003 (paid annually through April 30, 2013) for General Employees, and 19.50% of payroll for Judges and Elected Officials.
- For fiscal years ending 2014 and later, the scheduled City contribution rate is set as the actuarially determined contribution rate, determined under the Board's funding policy, in the prior year's actuarial valuation.

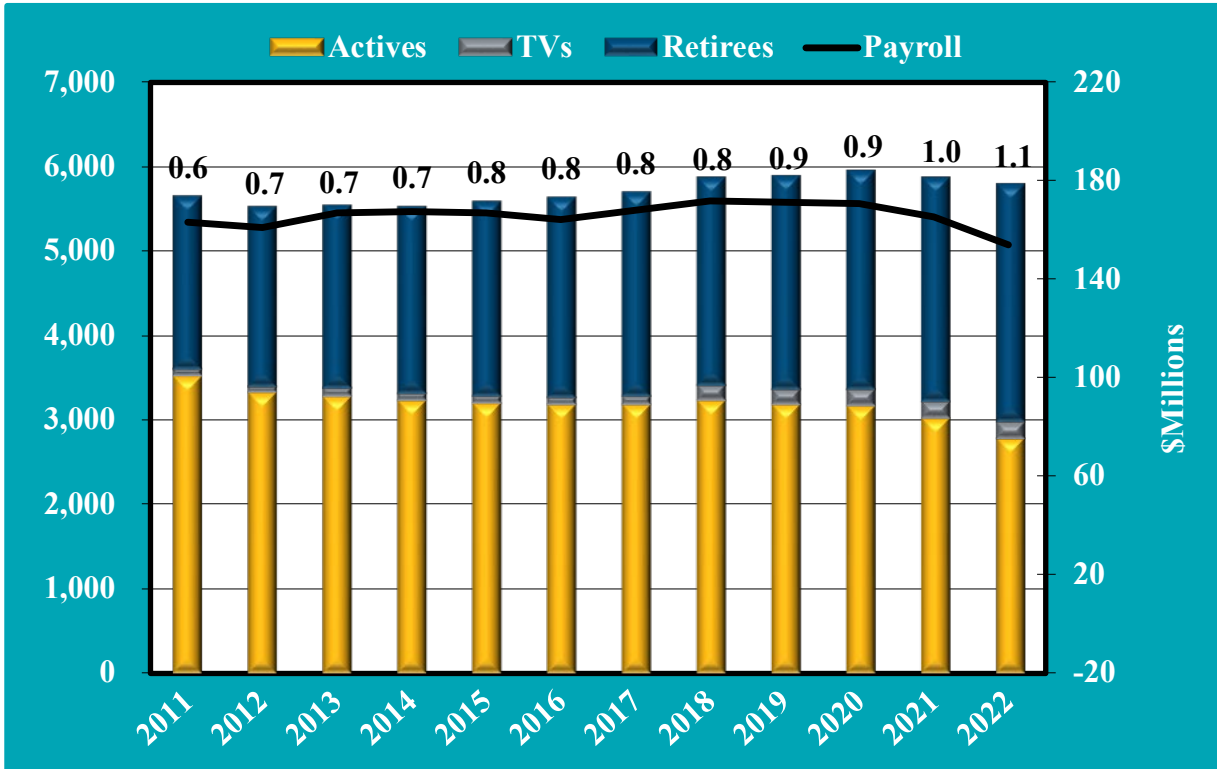
The actuarially determined contribution rate under the Board's funding policy increased from 17.72% of payroll in 2021 to 19.73% of payroll in 2022 reflecting plan experience. For the fiscal year ending 2023, the City is contributing 17.72% of payroll.



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Participant Trends



The above chart provides a measure for the maturity in the Plan, by comparing the ratio of inactive members (retirees and terminated-vesteds) to active members. The ratio of inactive members to active members has increased over the last 12 years. The ERS's inactive-to-active ratio was 0.6 in 2011, and there are 1.1 inactives supported by each active member today. The black line shows the total active participating payroll for each valuation year (depicted on the right-hand scale).

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D. Future Expected Financial Trends

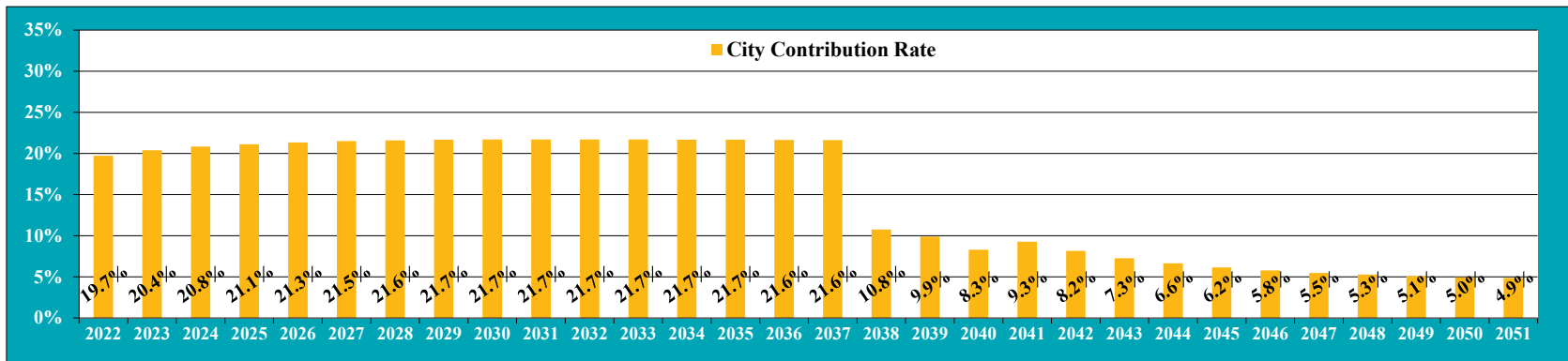
The analysis of projected financial trends is perhaps the most important component of this valuation. In this section, we present the implications of the May 1, 2022 valuation results in terms of (1) the projected City’s contributions and (2) projected System’s funded status (ratio of assets over liabilities). For each projection set, we assume three different future investment return scenarios: baseline returns of 7.00%, optimistic returns of 8.50%, and pessimistic returns of 5.50%. The projections also assume that all other assumptions in the valuation are met, that the total active member payroll grows at 2.75% per year, and that the City makes contributions equal to the prior year’s actuarially determined contribution rate under the Board’s funding policy. The differences in projected contribution levels and funded ratios under each of the scenarios help to illustrate the investment risk faced by ERS.

1. Contribution Rate Projections (Board Funding Policy)

The first set of charts shows the expected City contribution rate. The years shown in the charts are plan years beginning May 1.

Baseline Returns of 7.00%

Assuming that the fund earns the assumed investment rate of 7.00% on a market value basis and that the City continues to contribute the current scheduled contribution rate equal to the prior year’s actuarially determined contribution rate, the contribution rate will fluctuate as the various amortization bases become fully amortized. The large decrease in the rate in 2038 reflects the full amortization of the unfunded actuarial liability bases established prior to 2019.

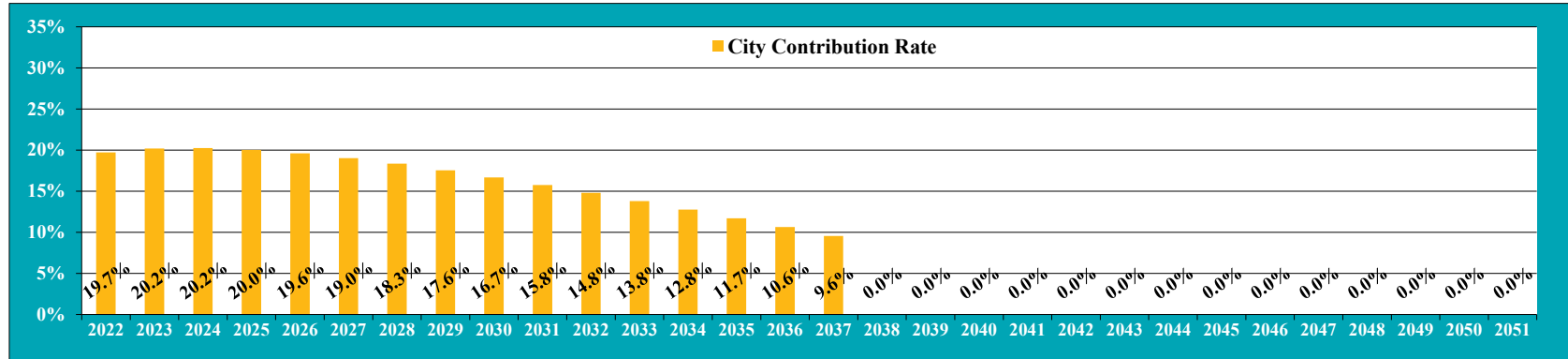


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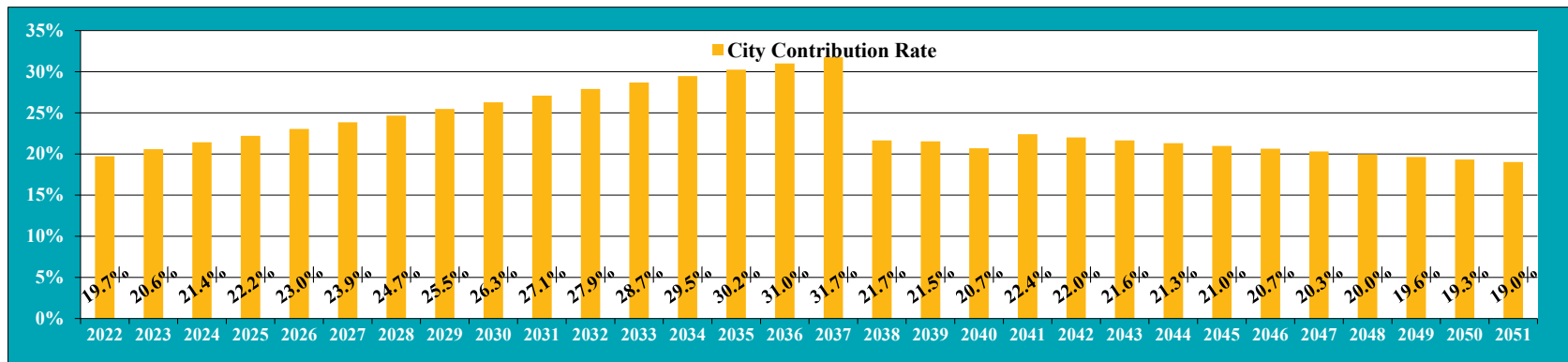
Optimistic Returns of 8.5%

If the fund earns 1.50% more than the assumed rate, all of the future contribution rates will be lower than if the fund earns the assumed rate of 8.5% and would become zero for 2038 and later.



Pessimistic Returns of 5.5%

If the fund earns 1.50% less than the assumed rate, the future contribution rates will be considerably greater than if the fund earns the assumed rate of 7.50%.



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The following table shows the corresponding contribution dollar amounts of the percentages in the prior three charts.

City of Kansas City, Missouri Employees' Retirement System Projection Based on April 30, 2022 Actuarial Valuation Current Amortization Schedule Discount Rate of 7.00% Amounts in thousands					
Valuation as of April 30,	Dollar Amount of ADC at Various Investment Returns				
	7.00%	8.50%	5.50%		
2022	\$ 30,360	\$ 30,360	\$ 30,360		
2023	32,238	31,906	32,554		
2024	33,823	32,881	34,766		
2025	35,254	33,418	37,074		
2026	36,601	33,617	39,500		
2027	37,872	33,537	42,031		
2028	39,095	33,210	44,672		
2029	40,300	32,653	47,407		
2030	41,465	31,888	50,259		
2031	42,625	30,957	53,233		
2032	43,798	29,851	56,291		
2033	44,981	28,598	59,498		
2034	46,176	27,190	62,775		
2035	47,424	25,639	66,187		
2036	48,660	23,936	69,717		
2037	49,952	22,075	73,368		
2038	24,202	-	50,091		
2039	24,014	-	52,445		
2040	20,812	-	51,906		
2041	23,884	-	57,713		
2042	21,576	-	58,241		
2043	19,775	-	58,809		
2044	18,558	-	59,560		
2045	17,690	-	60,250		
2046	17,055	-	60,934		
2047	16,645	-	61,548		
2048	16,418	-	62,213		
2049	16,293	-	62,867		
2050	16,313	-	63,543		
2051	16,424	-	64,243		
2052	16,563	-	64,968		

Projections assume a constant population and no actuarial gains and losses



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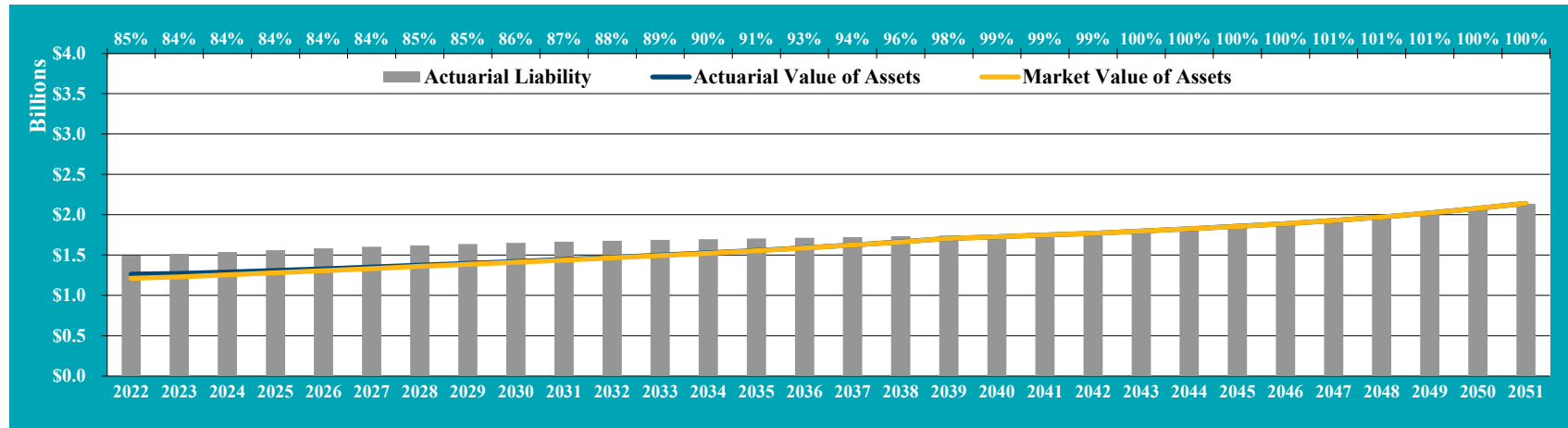
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2. Asset and Liability Projections (Board Funding Policy)

The next set of projections compare the market value of assets (gold line) and the actuarial or smoothed value of assets (blue line) to ERS’s actuarial liabilities (gray bars). The top of each chart also portrays the System’s funded ratio (ratio of actuarial value of assets to actuarial liabilities). The years shown in the chart are plan years beginning May 1.

Baseline Returns of 7.00%

Assuming that the fund earns the assumed investment rate of 7.00% and that the City continues to contribute the current scheduled contribution rate equal to the prior year’s actuarially determined contribution rate, the funded ratio will increase gradually over the next 30 years reaching 100% by the end of the projection.

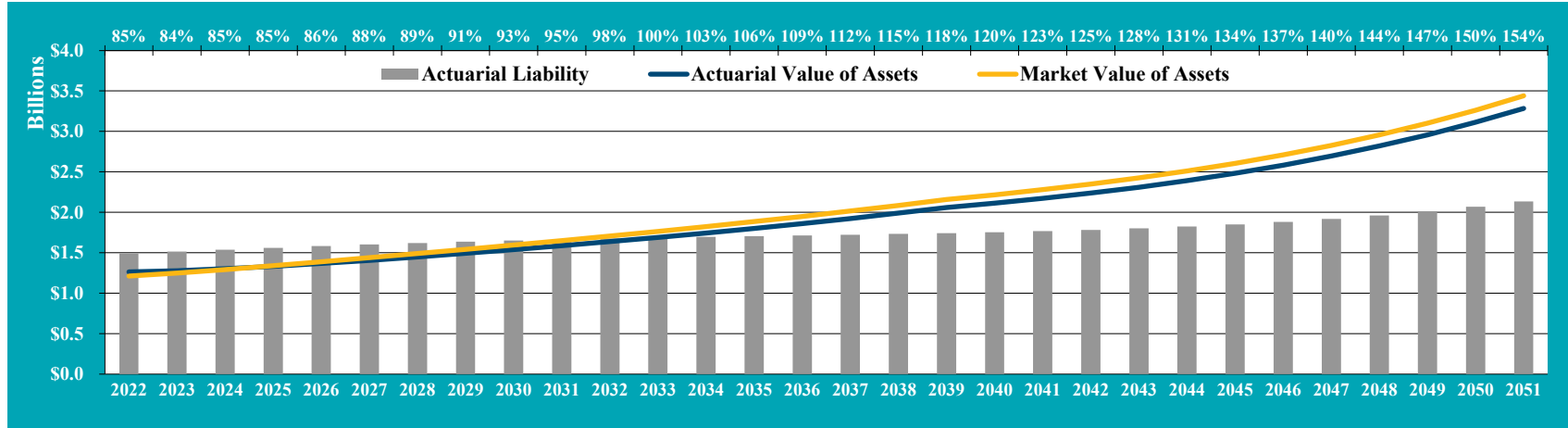


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Optimistic Returns of 8.5%

If the fund earns 1.50% more than the assumed rate of return, the funded ratio will increase to 154% over the next 30 years.

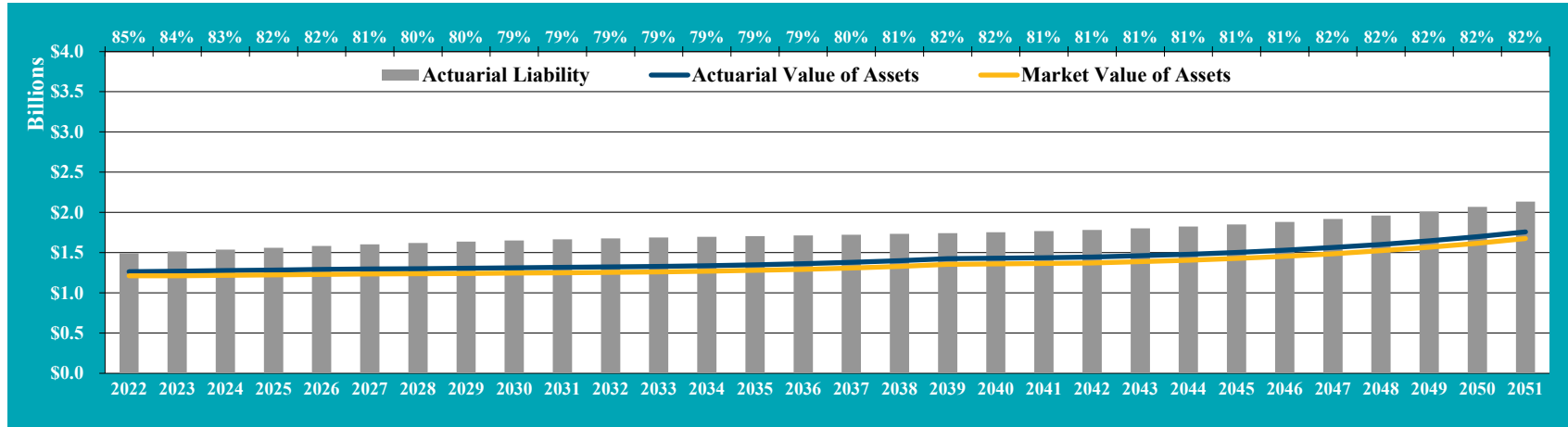


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Pessimistic Returns of 5.50%

If the fund earns 1.50% less than the assumed rate of return, the funded ratio will decrease gradually to 82% over the next 30 years, assuming the higher contribution amounts are made.



3. 30 Year Projections Based on City Ordinance:

The charts on the following two pages show 30-year cost projections from 2022 under two amortization policies: (1) 30-year open amortization which is the method in the current City ordinance and (2) 30-year closed amortization from May 1, 2014 for comparison purposes. For the purpose of these projections, it has been assumed that the active population remains constant and the fund earns the assumed return of 7.00% per year on market value.

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30-Year Open Amortization Method:

City of Kansas City, Missouri Employees' Retirement System Projection Based on April 30, 2022 Actuarial Valuation 30-Year Open Amortization Interest at 7.00% Amounts in thousands														
Valuation as of April 30, (1)	Employer Contribution Rate (2)	Member Contribution Rate (3)	Compensation at Valuation (4)	Employer Contribution (5)	Actuarial Liability (AL) (6)	Actuarial Value of Assets (AVA) (7)	Unfunded AL (8)	UAL Amortization Payment Rate (9)	Normal Cost Rate (10)	Administrative Expense Rate (11)	Employer ADC (12)	Dollar Amount of ADC (13)	Funded Ratio Using AVA (14)	
2022	17.72%	5.01%	\$ 153,877	\$ 27,267	\$ 1,492,408	\$ 1,264,097	\$ 228,311	8.56%	6.97%	0.30%	15.83%	\$ 24,359	84.7%	
2023	15.83%	5.01%	\$ 158,108	\$ 25,029	\$ 1,514,247	\$ 1,272,564	\$ 241,684	8.82%	6.83%	0.30%	15.95%	\$ 25,218	84.0%	
2024	15.95%	5.01%	\$ 162,456	\$ 25,912	\$ 1,538,811	\$ 1,283,179	\$ 255,632	9.08%	6.71%	0.30%	16.09%	\$ 26,139	83.4%	
2025	16.09%	5.01%	\$ 166,924	\$ 26,858	\$ 1,561,852	\$ 1,294,324	\$ 267,528	9.25%	6.58%	0.30%	16.13%	\$ 26,925	82.9%	
2026	16.13%	5.01%	\$ 171,514	\$ 27,665	\$ 1,583,319	\$ 1,305,712	\$ 277,607	9.34%	6.47%	0.30%	16.11%	\$ 27,631	82.5%	
2027	16.11%	5.01%	\$ 176,231	\$ 28,391	\$ 1,603,047	\$ 1,316,800	\$ 286,248	9.37%	6.36%	0.30%	16.03%	\$ 28,250	82.1%	
2028	16.03%	5.01%	\$ 181,077	\$ 29,027	\$ 1,621,173	\$ 1,327,446	\$ 293,727	9.36%	6.26%	0.30%	15.92%	\$ 28,827	81.9%	
2029	15.92%	5.00%	\$ 186,057	\$ 29,620	\$ 1,637,589	\$ 1,337,289	\$ 300,300	9.31%	6.17%	0.30%	15.78%	\$ 29,360	81.7%	
2030	15.78%	5.00%	\$ 191,173	\$ 30,167	\$ 1,652,329	\$ 1,346,189	\$ 306,140	9.24%	6.08%	0.30%	15.62%	\$ 29,861	81.5%	
2031	15.62%	5.00%	\$ 196,430	\$ 30,682	\$ 1,665,568	\$ 1,354,168	\$ 311,400	9.15%	6.00%	0.30%	15.45%	\$ 30,349	81.3%	
2032	15.45%	5.00%	\$ 201,832	\$ 31,183	\$ 1,677,462	\$ 1,361,257	\$ 316,205	9.04%	5.93%	0.30%	15.27%	\$ 30,820	81.1%	
2033	15.27%	5.00%	\$ 207,383	\$ 31,667	\$ 1,688,264	\$ 1,367,613	\$ 320,651	8.92%	5.87%	0.30%	15.09%	\$ 31,294	81.0%	
2034	15.09%	5.00%	\$ 213,086	\$ 32,155	\$ 1,697,997	\$ 1,373,180	\$ 324,817	8.80%	5.81%	0.30%	14.91%	\$ 31,771	80.9%	
2035	14.91%	5.00%	\$ 218,946	\$ 32,645	\$ 1,706,943	\$ 1,378,183	\$ 328,760	8.66%	5.76%	0.30%	14.72%	\$ 32,229	80.7%	
2036	14.72%	5.00%	\$ 224,967	\$ 33,115	\$ 1,715,491	\$ 1,382,965	\$ 332,526	8.53%	5.71%	0.30%	14.54%	\$ 32,710	80.6%	
2037	14.54%	5.00%	\$ 231,153	\$ 33,610	\$ 1,724,115	\$ 1,387,934	\$ 336,180	8.39%	5.67%	0.30%	14.36%	\$ 33,194	80.5%	
2038	14.36%	5.00%	\$ 237,510	\$ 34,106	\$ 1,733,200	\$ 1,393,461	\$ 339,739	8.25%	5.63%	0.30%	14.18%	\$ 33,679	80.4%	
2039	14.18%	5.00%	\$ 244,041	\$ 34,605	\$ 1,743,134	\$ 1,399,898	\$ 343,236	8.12%	5.60%	0.30%	14.02%	\$ 34,215	80.3%	
2040	14.02%	5.00%	\$ 250,753	\$ 35,156	\$ 1,754,459	\$ 1,407,756	\$ 346,703	7.98%	5.58%	0.30%	13.86%	\$ 34,754	80.2%	
2041	13.86%	5.00%	\$ 257,648	\$ 35,710	\$ 1,767,636	\$ 1,417,518	\$ 350,118	7.84%	5.55%	0.30%	13.69%	\$ 35,272	80.2%	
2042	13.69%	5.00%	\$ 264,734	\$ 36,242	\$ 1,783,194	\$ 1,429,690	\$ 353,504	7.71%	5.53%	0.30%	13.54%	\$ 35,845	80.2%	
2043	13.54%	5.00%	\$ 272,014	\$ 36,831	\$ 1,801,746	\$ 1,444,836	\$ 356,910	7.57%	5.52%	0.30%	13.39%	\$ 36,423	80.2%	
2044	13.39%	5.00%	\$ 279,494	\$ 37,424	\$ 1,823,983	\$ 1,463,675	\$ 360,308	7.44%	5.51%	0.30%	13.25%	\$ 37,033	80.2%	
2045	13.25%	5.00%	\$ 287,180	\$ 38,051	\$ 1,850,331	\$ 1,486,615	\$ 363,716	7.31%	5.50%	0.30%	13.11%	\$ 37,649	80.3%	
2046	13.11%	5.00%	\$ 295,078	\$ 38,685	\$ 1,881,523	\$ 1,514,400	\$ 367,123	7.18%	5.49%	0.30%	12.97%	\$ 38,272	80.5%	
2047	12.97%	5.00%	\$ 303,192	\$ 39,324	\$ 1,918,252	\$ 1,547,708	\$ 370,543	7.05%	5.48%	0.30%	12.83%	\$ 38,900	80.7%	
2048	12.83%	5.00%	\$ 311,530	\$ 39,969	\$ 1,961,219	\$ 1,587,227	\$ 373,992	6.93%	5.48%	0.30%	12.71%	\$ 39,595	80.9%	
2049	12.71%	5.00%	\$ 320,097	\$ 40,684	\$ 2,011,023	\$ 1,633,538	\$ 377,485	6.81%	5.47%	0.30%	12.58%	\$ 40,268	81.2%	
2050	12.58%	5.00%	\$ 328,900	\$ 41,376	\$ 2,068,496	\$ 1,687,525	\$ 380,971	6.68%	5.47%	0.30%	12.45%	\$ 40,948	81.6%	
2051	12.45%	5.00%	\$ 337,945	\$ 42,074	\$ 2,134,338	\$ 1,749,844	\$ 384,494	6.57%	5.47%	0.30%	12.34%	\$ 41,702	82.0%	
2052	12.34%	5.00%	\$ 347,238	\$ 42,849	\$ 2,209,296	\$ 1,821,230	\$ 388,066	6.45%	5.46%	0.30%	12.21%	\$ 42,398	82.4%	

Projections assume a constant population and no actuarial gains and losses



**CITY OF KANSAS CITY, MISSOURI EMPLOYEES' RETIREMENT SYSTEM
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SECTION I – BOARD SUMMARY

30-Year Closed Amortization Method (closed period starting at May 1,2014):

City of Kansas City, Missouri Employees' Retirement System Projection Based on April 30, 2022 Actuarial Valuation 30-Year Closed Amortization from May 1, 2014 Interest at 7.00% Amounts in thousands														
Valuation as of April 30, (1)	Employer Contribution Rate (2)	Member Contribution Rate (3)	Compensation at Valuation (4)	Employer Contribution (5)	Actuarial Liability (AL) (6)	Actuarial Value of Assets (AVA) (7)	Unfunded AL (8)	UAL Amortization Payment Rate (9)	Normal Cost Rate (10)	Administrative Expense Rate (11)	Employer ADC (12)	Dollar Amount of ADC (13)	Funded Ratio Using AVA (14)	
2022	17.72%	5.01%	\$ 153,877	\$ 27,267	\$ 1,492,408	\$ 1,264,097	\$ 228,311	10.21%	6.97%	0.30%	17.48%	\$ 26,898	84.7%	
2023	17.48%	5.01%	\$ 158,108	\$ 27,637	\$ 1,514,247	\$ 1,272,564	\$ 241,684	10.83%	6.83%	0.30%	17.96%	\$ 28,396	84.0%	
2024	17.96%	5.01%	\$ 162,456	\$ 29,177	\$ 1,538,811	\$ 1,285,878	\$ 252,933	11.38%	6.71%	0.30%	18.39%	\$ 29,876	83.6%	
2025	18.39%	5.01%	\$ 166,924	\$ 30,697	\$ 1,561,852	\$ 1,300,589	\$ 261,263	11.83%	6.58%	0.30%	18.71%	\$ 31,231	83.3%	
2026	18.71%	5.01%	\$ 171,514	\$ 32,090	\$ 1,583,319	\$ 1,316,387	\$ 266,932	12.20%	6.47%	0.30%	18.97%	\$ 32,536	83.1%	
2027	18.97%	5.01%	\$ 176,231	\$ 33,431	\$ 1,603,047	\$ 1,332,799	\$ 270,248	12.50%	6.36%	0.30%	19.16%	\$ 33,766	83.1%	
2028	19.16%	5.01%	\$ 181,077	\$ 34,694	\$ 1,621,173	\$ 1,349,779	\$ 271,394	12.75%	6.26%	0.30%	19.31%	\$ 34,966	83.3%	
2029	19.31%	5.00%	\$ 186,057	\$ 35,928	\$ 1,637,589	\$ 1,367,049	\$ 270,540	12.96%	6.17%	0.30%	19.43%	\$ 36,151	83.5%	
2030	19.43%	5.00%	\$ 191,173	\$ 37,145	\$ 1,652,329	\$ 1,384,556	\$ 267,773	13.13%	6.08%	0.30%	19.51%	\$ 37,298	83.8%	
2031	19.51%	5.00%	\$ 196,430	\$ 38,324	\$ 1,665,568	\$ 1,402,438	\$ 263,130	13.28%	6.00%	0.30%	19.58%	\$ 38,461	84.2%	
2032	19.58%	5.00%	\$ 201,832	\$ 39,519	\$ 1,677,462	\$ 1,420,810	\$ 256,652	13.40%	5.93%	0.30%	19.63%	\$ 39,620	84.7%	
2033	19.63%	5.00%	\$ 207,383	\$ 40,709	\$ 1,688,264	\$ 1,439,957	\$ 248,306	13.51%	5.87%	0.30%	19.68%	\$ 40,813	85.3%	
2034	19.68%	5.00%	\$ 213,086	\$ 41,935	\$ 1,697,997	\$ 1,459,942	\$ 238,056	13.61%	5.81%	0.30%	19.72%	\$ 42,021	86.0%	
2035	19.72%	5.00%	\$ 218,946	\$ 43,176	\$ 1,706,943	\$ 1,481,135	\$ 225,808	13.70%	5.76%	0.30%	19.76%	\$ 43,264	86.8%	
2036	19.76%	5.00%	\$ 224,967	\$ 44,453	\$ 1,715,491	\$ 1,504,017	\$ 211,474	13.78%	5.71%	0.30%	19.79%	\$ 44,521	87.7%	
2037	19.79%	5.00%	\$ 231,153	\$ 45,745	\$ 1,724,115	\$ 1,529,189	\$ 194,926	13.86%	5.67%	0.30%	19.83%	\$ 45,838	88.7%	
2038	19.83%	5.00%	\$ 237,510	\$ 47,098	\$ 1,733,200	\$ 1,557,156	\$ 176,044	13.94%	5.63%	0.30%	19.87%	\$ 47,193	89.8%	
2039	19.87%	5.00%	\$ 244,041	\$ 48,491	\$ 1,743,134	\$ 1,588,491	\$ 154,643	14.02%	5.60%	0.30%	19.92%	\$ 48,613	91.1%	
2040	19.92%	5.00%	\$ 250,753	\$ 49,950	\$ 1,754,459	\$ 1,623,914	\$ 130,545	14.12%	5.58%	0.30%	20.00%	\$ 50,151	92.6%	
2041	20.00%	5.00%	\$ 257,648	\$ 51,530	\$ 1,767,636	\$ 1,664,111	\$ 103,525	14.25%	5.55%	0.30%	20.10%	\$ 51,787	94.1%	
2042	20.10%	5.00%	\$ 264,734	\$ 53,211	\$ 1,783,194	\$ 1,709,908	\$ 73,286	14.43%	5.53%	0.30%	20.26%	\$ 53,635	95.9%	
2043	20.26%	5.00%	\$ 272,014	\$ 55,110	\$ 1,801,746	\$ 1,762,223	\$ 39,523	14.85%	5.52%	0.30%	20.67%	\$ 56,225	97.8%	
2044	20.67%	5.00%	\$ 279,494	\$ 57,771	\$ 1,823,983	\$ 1,822,187	\$ 1,796	0.66%	5.51%	0.30%	6.47%	\$ 18,083	99.9%	
2045	6.47%	5.00%	\$ 287,180	\$ 18,581	\$ 1,850,331	\$ 1,891,270	\$ (40,939)	-14.57%	5.50%	0.30%	0.00%	\$ -	102.2%	
2046	0.00%	5.00%	\$ 295,078	\$ -	\$ 1,881,523	\$ 1,927,241	\$ (45,718)	-15.84%	5.49%	0.30%	0.00%	\$ -	102.4%	
2047	0.00%	5.00%	\$ 303,192	\$ -	\$ 1,918,252	\$ 1,949,432	\$ (31,180)	-10.51%	5.48%	0.30%	0.00%	\$ -	101.6%	
2048	0.00%	5.00%	\$ 311,530	\$ -	\$ 1,961,219	\$ 1,976,394	\$ (15,175)	-4.98%	5.48%	0.30%	0.80%	\$ 2,492	100.8%	
2049	0.80%	5.00%	\$ 320,097	\$ 2,561	\$ 2,011,023	\$ 2,008,603	\$ 2,420	0.77%	5.47%	0.30%	6.54%	\$ 20,934	99.9%	
2050	6.54%	5.00%	\$ 328,900	\$ 21,510	\$ 2,068,496	\$ 2,049,408	\$ 19,088	5.93%	5.47%	0.30%	11.70%	\$ 38,481	99.1%	
2051	11.70%	5.00%	\$ 337,945	\$ 39,540	\$ 2,134,338	\$ 2,116,510	\$ 17,828	5.39%	5.47%	0.30%	11.16%	\$ 37,715	99.2%	
2052	11.16%	5.00%	\$ 347,238	\$ 38,752	\$ 2,209,296	\$ 2,210,941	\$ (1,645)	-0.48%	5.46%	0.30%	5.28%	\$ 18,334	100.1%	

Projections assume a constant population and no actuarial gains and losses



SECTION II – DISCLOSURES RELATED TO RISK

Actuarial valuations are based on a set of assumptions about future economic and demographic experience. These assumptions represent a reasonable estimate of future experience, but actual future experience will undoubtedly be different and may be significantly different. This section of the report is intended to identify the primary risks to ERS, provide some background information about those risks, and provide an assessment of those risks. Some of the charts within this section compare measures calculated for ERS to plans within the Public Plans Database. Information regarding this data can be found at <https://publicplansdata.org/>.

Identification of Risks

The fundamental risk to ERS is that the contributions needed to pay the benefits become unaffordable. While there are a number of factors that could lead to contribution amounts becoming unaffordable, we believe the primary risks are:

- Investment risk,
- Interest rate risk,
- Longevity and other demographic risks, and
- Assumption change risk.

Other risks that we have not identified may also turn out to be important.

Assessing Costs and Risks

Assessing the contribution risk, however, is complex because there is no bright line of what is unaffordable and the contribution amounts themselves are affected not just by the experience of ERS, but also by the interaction of that experience and decisions by the Board related to assumptions, asset smoothing methods, and amortization periods.

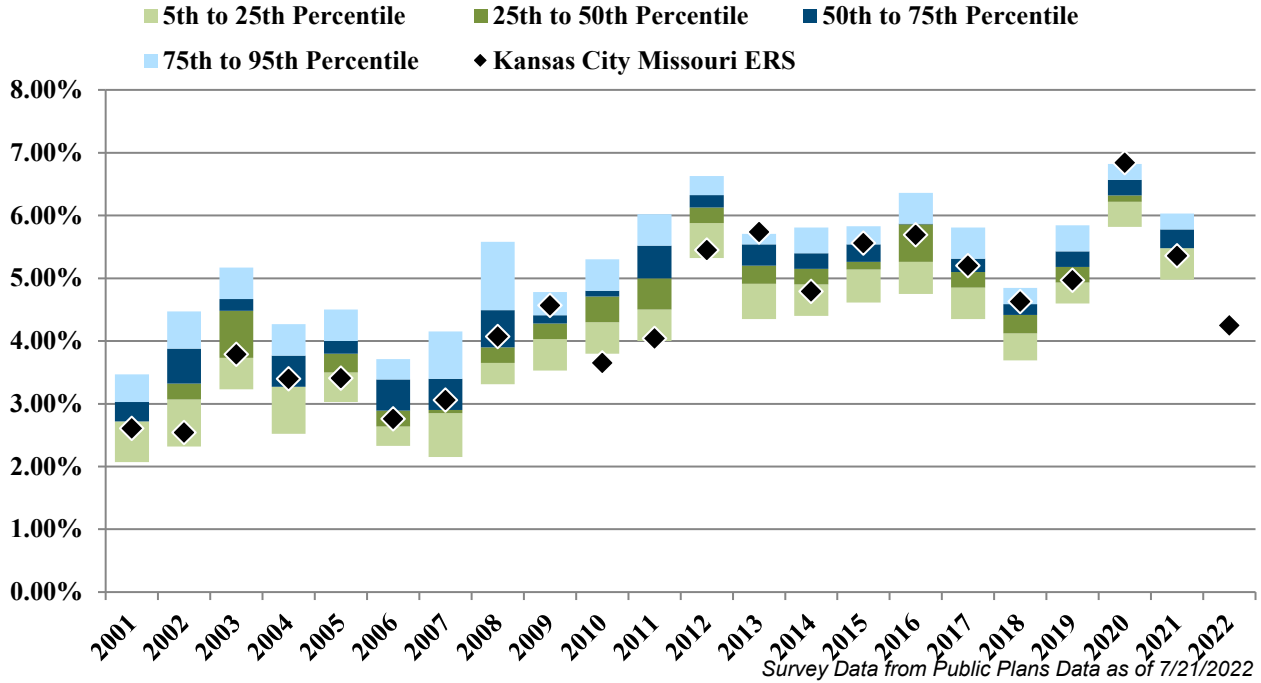
Investment Risk is the potential for investment returns to be different than expected. Lower investment returns than anticipated will increase the unfunded actuarial liability necessitating higher contributions in the future unless there are other gains that offset these investment losses. The potential volatility of future investment returns is determined by ERS's asset allocation and the affordability of the investment risk is determined by the amount of assets invested relative to the size of the plan sponsor or other contribution base. The chart on page 18 shows the effect that investment volatility has had on changes in the UAL, as the AVA Investment (G)/L.

Interest rate risk is the potential for interest rates to be different than expected. For public plans, short term fluctuations in interest rates have little or no effect as the plan's liability is usually measured based on the expected return on assets. Longer-term trends in interest rates however can have a powerful effect. The amount of a plan's investment risk can be defined as the risk premium. The risk premium is the excess of the plan's assumed interest rate over a risk-free interest rate. The chart below shows the historical risk premium taken by plan sponsors (defined as the excess of a plan's interest rate over a 10-year Treasury security). As interest rates have declined, plans faced a choice: maintain the same level of risk and reduce the expected rate of return; maintain the same expected rate of return and take on more investment risk; or some combination of the two strategies. Over time, the risk premium for ERS has increased both in absolute terms, although it has decreased over the last two years as the yields on Treasury rates have increased.

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SECTION II – DISCLOSURES RELATED TO RISK

Expected Risk Premium (Distribution)



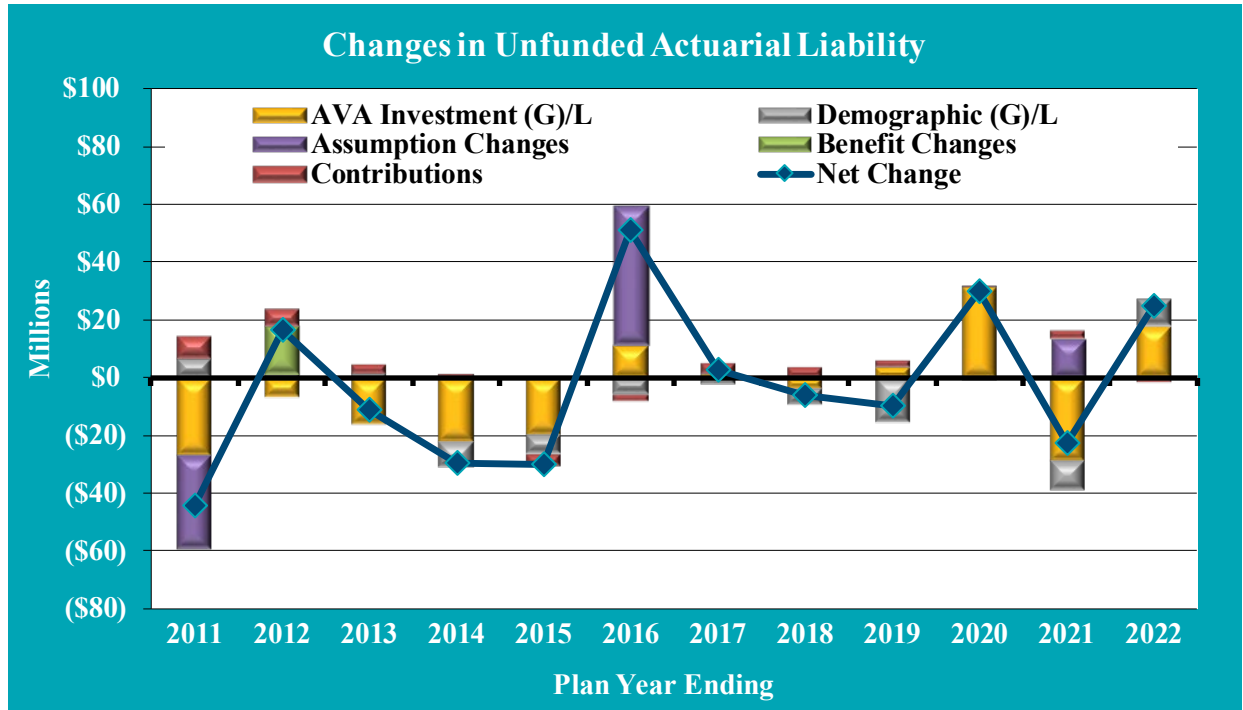
Longevity and other demographic risks are the potential for mortality or other demographic experience to be different than expected. Generally, longevity and other demographic risks emerge slowly over time and are often dwarfed by other changes, particularly those due to investment returns. The next chart shows the demographic gains and losses over the last ten years compared to the total change in the UAL for each year. Note that the Demographic (G)/L is relatively small compared to other sources.

Assumption change risk is the potential for the economic and work environment to change such that future valuation assumptions are different than the current assumptions. For example, declines in interest rates over the last three decades resulted in higher investment returns for fixed-income investments but lower expected future returns necessitating either a change in investment policy, a reduction in the discount rate, or some combination of the two. Assumption change risk is an extension of the other risks identified, but rather than capturing the risk as it is experienced, it captures the cost of recognizing a change in environment when the current assumption is no longer reasonable.

As shown in the next chart, changes in assumptions over the years have sometimes increased and sometimes decreased the UAL. It is important to note that these changes simply reflect revisions to estimates of future plan experience and ultimately costs will be determined by actual plan experience. The most recent assumption change increase in the UAL was primarily due to lowering the discount rate. With the continued low-interest rate environment, we are continuing to see investment consultants reduce their capital market assumptions. As a result, future expectations of investment returns may continue to decline necessitating further reductions in the discount rate and resulting increases in the UAL.

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SECTION II – DISCLOSURES RELATED TO RISK



Plan Maturity Measures

The future financial condition of a mature pension plan is more sensitive to each of the risks identified above than a less mature plan. Before assessing each of these risks, it is important to understand the maturity of ERS compared to other plans and how maturity has changed over time.

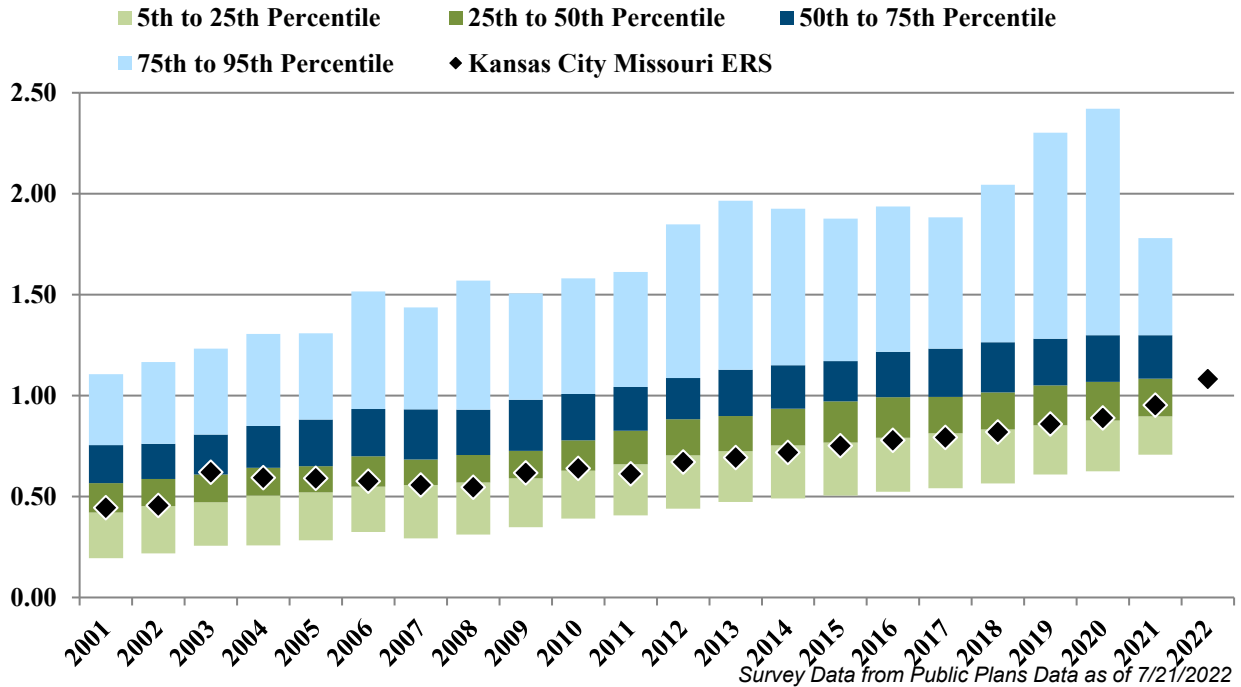
Plan maturity can be measured in a variety of ways, but they all get at one basic dynamic - the larger the plan is compared to the contribution or revenue base that supports it; the more sensitive the plan will be to risk. The following measures have been selected as the most important in understanding the primary risks identified for the plan.

Support Ratio (Inactives per Active)

One simple measure of plan maturity is the ratio of the number of inactive members (those receiving benefits or entitled to a deferred benefit) to the number of active members. The revenue base supporting the plan is usually proportional to the number of active members, so a relatively high number of inactives compared to actives indicate a larger plan relative to its revenue base as well. Details regarding the ERS support ratio are shown in the chart on page 7.

SECTION II – DISCLOSURES RELATED TO RISK

Support Ratio



The charts above show the distribution from the 5th percentile to the 95th percentile of support ratios for the plans in the Public Plan Database. The black diamond shows how the ERS plan compares to the plans in the Public Plans Database. From 2011 through 2020, ERS was in the lower quartile of plans in the Public Plans Database. However, the ERS support ratio has increased the last two years, with a significant increase for 2022 increasing the exposure of ERS to investment risks. The current support ratio is close to the median support ratio in 2021.

Leverage Ratios

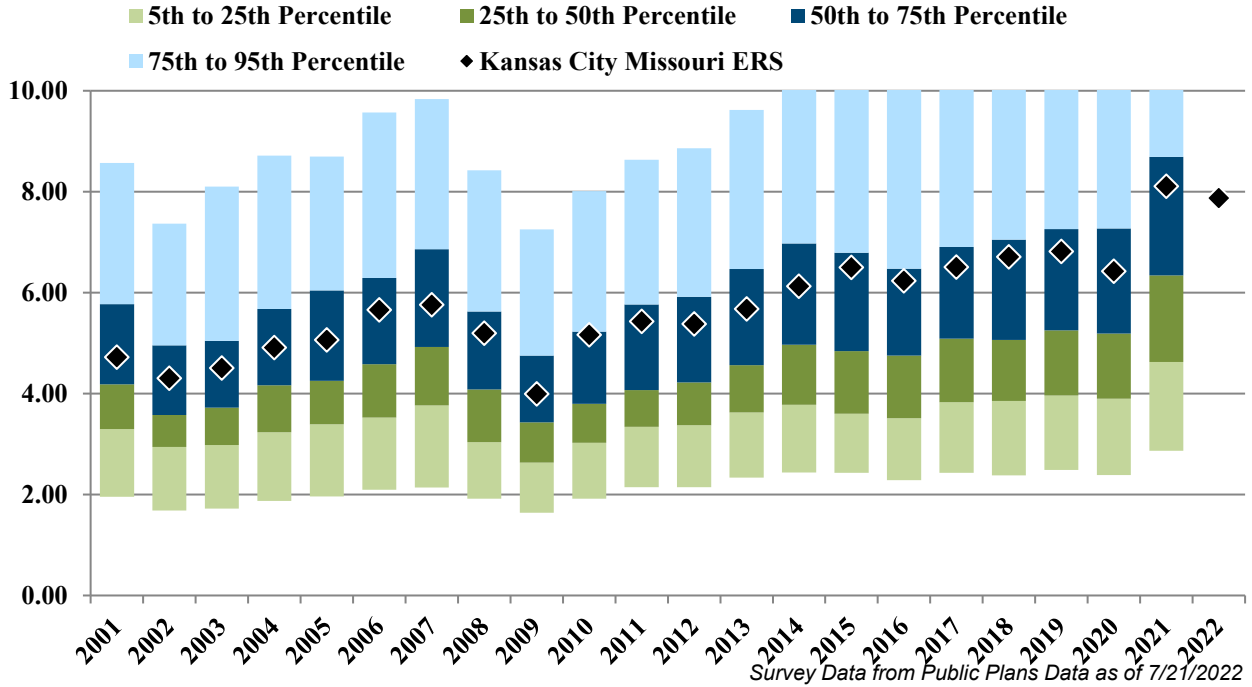
Leverage or volatility ratios measure the size of the plan compared to its revenue base more directly. An asset leverage ratio of 6.5, for example, means that if ERS experiences a 10% loss on assets compared to the expected return, the loss would be equivalent to 65% of payroll. The same investment loss for a plan with an asset leverage ratio of 10.0 would be equivalent to 100% of payroll.

As ERS becomes better funded, the asset leverage ratio will increase, and if it was 100% funded, the leverage ratio would equal the Actuarial Liability (AL) leverage ratio. The AL leverage ratio also indicates how sensitive ERS is to experience gains and losses or assumption changes. For example, an assumption change that increases the AL by 5% would add a liability equivalent to about 40% of payroll if the AL leverage ratio is 8.0.

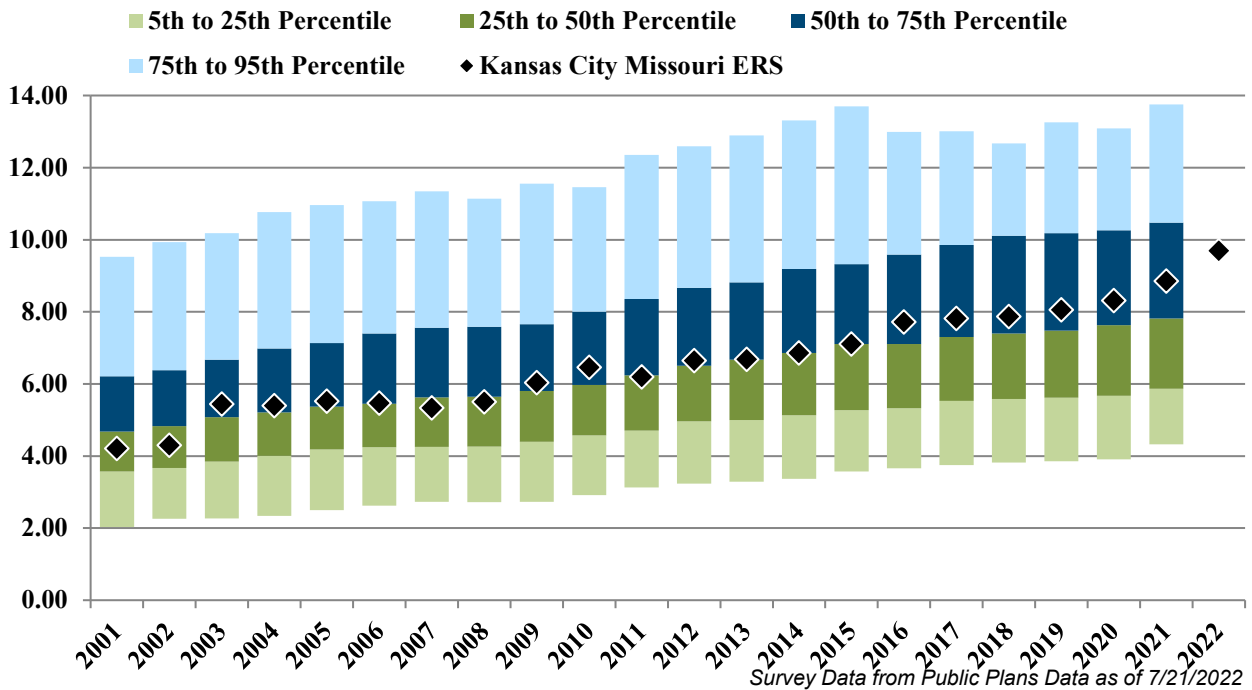
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SECTION II – DISCLOSURES RELATED TO RISK

Asset Leverage Ratio



Liability Leverage Ratio



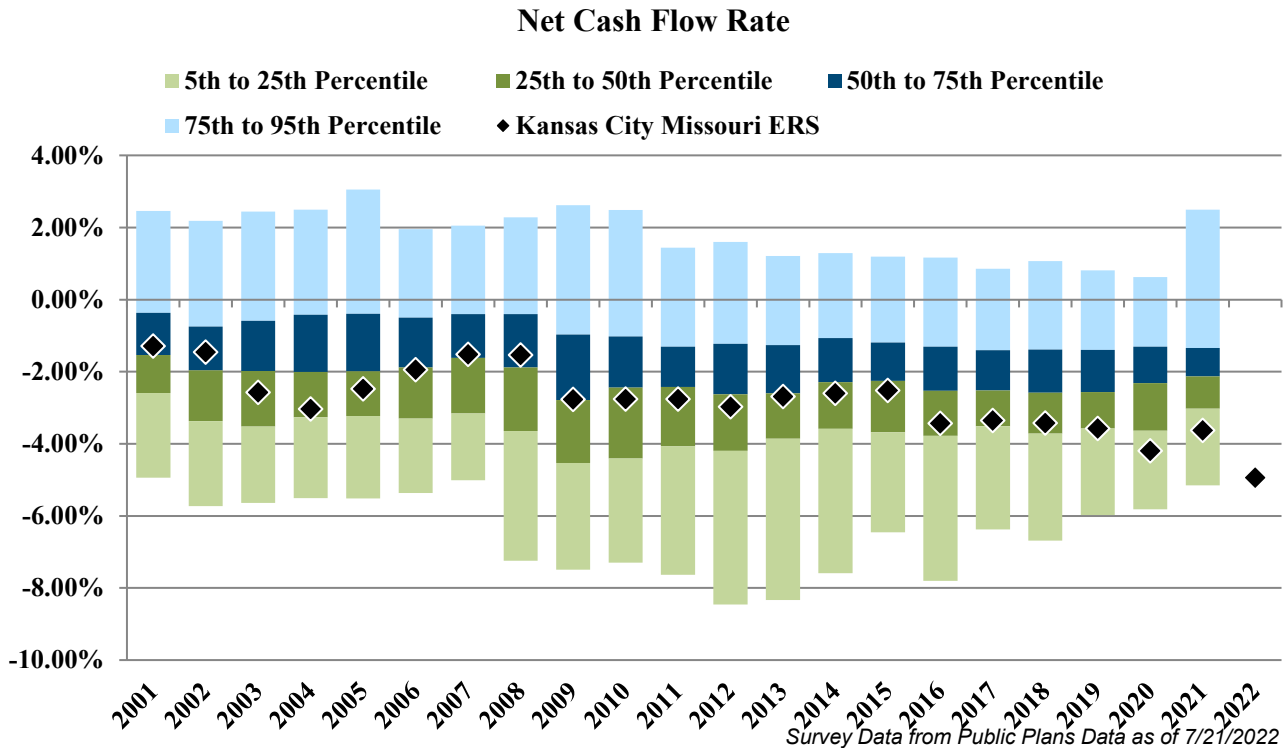
The charts above show the distribution from the 5th percentile to the 95th percentile of Market Value of Assets and Actuarial Liability leverage ratios for the plans in the Public Plan Database. The black diamond shows how the ERS plan compares to the plans in the Public Plans Database. The decrease in

SECTION II – DISCLOSURES RELATED TO RISK

the Asset Leverage Ratio in 2022 is due to a decrease in the market value of assets. The increase in the Liability Leverage Ratio in 2022 is due to a decrease in the covered plan payroll.

Net Cash Flow

The net cash flow of the Plan as a percentage of the beginning of year assets indicates the sensitivity of the Plan to short-term investment returns. Net cash flow is equal to contributions less benefit payments and administrative expenses. Mature plans can have large amounts of benefit payments compared to contributions, particularly if they are well funded. Investment losses in the short-term are compounded by the net withdrawal from the Plan leaving a smaller asset base to try to recover from the investment losses. Large negative cash flows can also create liquidity issues.



The chart above again shows the distribution from the 5th percentile to the 95th percentile of Net Cash Flow for the plans in the Public Plan Database. In this case, a lower number (larger negative value) means the Plan is more mature financially and is more susceptible to the impact of volatility on the asset returns. The black diamond shows how the ERS plan compares to the plans in the Public Plans Database, which is generally below the median.

Stochastic Projections

If experience has taught us anything, it is that there is a significant level of uncertainty in projections of the future. The largest source of uncertainty is the projection of investment returns. In order to better understand the potential impact of investment returns on the Plan, we have included a stochastic projection of future actuarially determined contributions in this section of the report. The stochastic projections assume a standard deviation of 10.54% (based on the plan’s investment consultant’s (RVK)

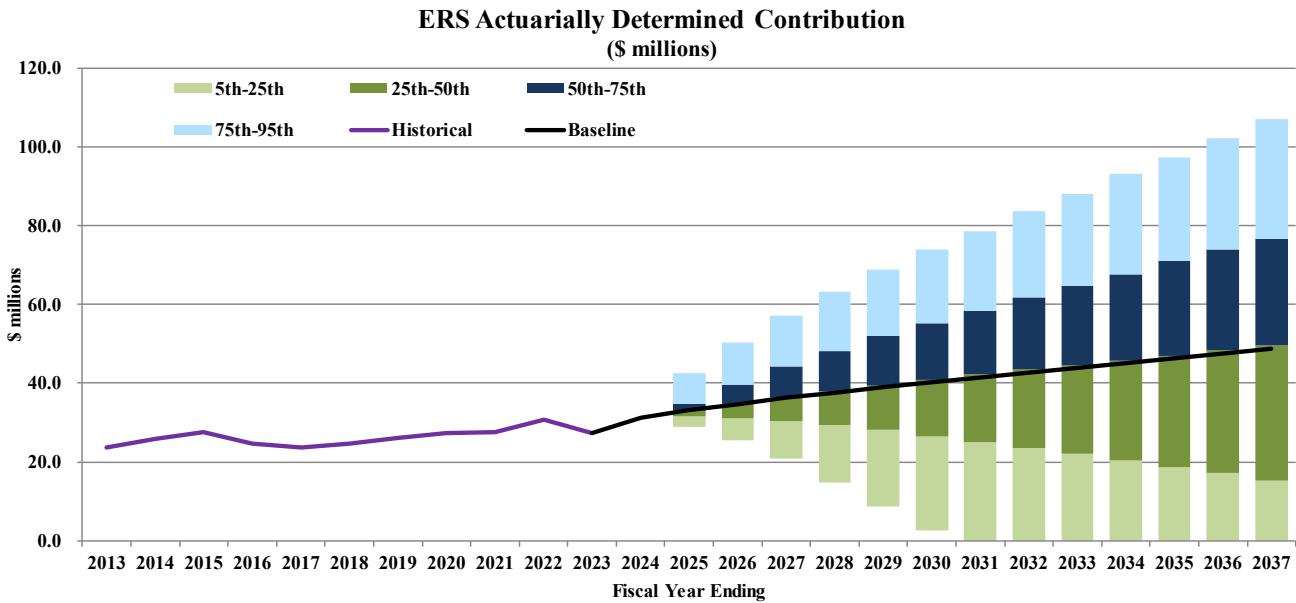


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SECTION II – DISCLOSURES RELATED TO RISK

capital market assumptions for the Plan’s target investment portfolio) and a compounded return of 7.00%. Each projection contains 10,000 trials that are 15 years in length.

The following chart shows the historical and stochastic projection of contribution amounts for ERS. The purple line represents the amounts paid historically, and the black line shows the projected contribution amount for each year if all assumptions are met. The colored ranges represent different percentiles of the 10,000 trials. This range is intended to convey the degree of uncertainty in the projections future contribution amounts based on future investment returns.



The chart shows a wide range of potential contributions depending on future investment returns. The range between the 5th and 95th percentile produced from the 2037 valuation is from a contribution of \$0 million to a contribution of nearly \$107 million. This range is largely driven by the volatility (standard deviation) of the investment portfolio of 10.54%. It should be noted that if we used RVK’s median expected return of 6.13% based on their capital market assumptions, rather than the plan assumption of 7.00%, each of these contribution ranges would be considerably higher.

More Detailed Assessment

Risk is a complex topic and the analysis above was limited by the scope of our assignment. We have not performed a more detailed assessment; however, we believe such an assessment would enhance the ERS’ understanding of these risks significantly, enabling more informed judgments about how to manage these risks.

One type of more detailed assessment would be an asset liability study. An asset liability study was performed for ERS in 2017. Unless the Board feels that the risk environment has changed substantially in the last three years, a further analysis may not be warranted at this time.

**CITY OF KANSAS CITY, MISSOURI EMPLOYEES' RETIREMENT SYSTEM
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SECTION III – ASSETS

Pension plan assets play a key role in the financial operation of the System and in the decisions the Trustees may make with respect to future deployment of those assets. The level of assets, the allocation of assets among asset classes, and the methodology used to measure assets will likely impact benefit levels, City contributions, and the ultimate security of participants' benefits.

In this section, we present detailed information on the System assets including:

- **Disclosure** of the System assets as of April 30, 2021 and April 30, 2022;
- Statement of the **changes** in market values during the year;
- Development of the **Actuarial Value of Assets**;
- An assessment of **investment performance**; and
- A projection of the System's expected **cash flows** for the next 10 years.

Disclosure

There are two types of asset values disclosed in this valuation, the market value of assets and the actuarial value of assets. The market value represents a “snap-shot” or “cash-out” value which provides the principal basis for measuring financial performance from one year to the next. Market values, however, can fluctuate widely with corresponding swings in the marketplace. As a result, market values are usually not as suitable for year-to-year budgeting as are the actuarial value of assets that reflect the smoothing of annual investment returns.

Table III-1 below discloses and compares each asset value as of April 30, 2021 and 2022.

Table III-1			
Statement of Assets at Market Value as of April 30,			
Assets	2021	2022	% Change
Cash	\$ 54,512,080	\$ 29,416,051	(46.04%)
Stock and Collective Trusts	1,293,499,714	1,196,352,102	(7.51%)
Accounts Receivable	30,137,949	1,981,658	(93.42%)
Interest and Dividends	1,993,065	826,430	(58.53%)
Contributions Receivable	747,416	709,858	(5.03%)
Expenses	(1,246,262)	(1,173,445)	(5.84%)
Purchase of Investments	(38,981,552)	(16,433,928)	(57.84%)
Market Value of Assets	\$ 1,340,662,410	\$ 1,211,678,726	(9.62%)

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SECTION III – ASSETS

Changes in Market Value

Table III-2 below shows the components of change between the market value of assets as of April 30, 2021 and April 30, 2022.

Table III-2	
Changes in Market Values	
Value of Assets – April 30, 2021	\$ 1,340,662,410
<u>Additions</u>	
Member Contributions	\$ 7,708,274
Employer Contributions	30,638,396
Interest and Dividends	21,749,627
Investment Return	(85,188,168)
Total Additions	\$ (25,091,871)
<u>Deductions</u>	
Benefit Payments	\$ (98,688,146)
Investment Expenses	(4,739,057)
Administrative Expenses	(464,610)
Total Deductions	\$ (103,891,813)
Value of Assets – April 30, 2022	\$ 1,211,678,726

**CITY OF KANSAS CITY, MISSOURI EMPLOYEES' RETIREMENT SYSTEM
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SECTION III – ASSETS

Actuarial Value of Assets

The next table, Table III-3, shows how the actuarial value of assets is developed.

Asset values are gradually adjusted toward market value by adding 25% of the difference between the market value and expected actuarial asset value to the expected actuarial asset value. The expected actuarial asset value is the actuarial asset value at the beginning of the year plus contributions, less benefit payments, all with interest at the assumed net rate of investment return on an actuarial basis. If the actuarial value of assets is less than 85% or more than 110% of the market value, an adjustment is made to the actuarial value to bring the value within this corridor.

Table III-3 Development of Actuarial Value of Assets	
1. Actuarial Value of Assets at May 1, 2021	\$ 1,256,511,707
2. Contributions	38,346,670
3. Benefit Payments and Administrative Expenses	(99,152,756)
4. Expected Return	85,863,601
5. Expected Actuarial Value at End of Year = (1) + (2) + (3) + (4)	1,281,569,222
6. Actual Market Value of Assets at April 30, 2022	1,211,678,726
7. Excess of (6) over (5)	(69,890,496)
8. Adjustment toward market value: 25% of (7)	(17,472,624)
9. Adjustment to be within 85%/110% corridor	0
10. Actuarial Value of Assets at May 1, 2022 = (5) + (8) + (9)	\$ 1,264,096,598

**CITY OF KANSAS CITY, MISSOURI EMPLOYEES' RETIREMENT SYSTEM
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SECTION III – ASSETS

Investment Performance

The market value of assets (MVA) returned -5.20% during the plan year ending and April 30, 2022, which is more than the assumed 7.00% return. A return of 5.58% was experienced on the actuarial value of assets (AVA). Below, we show additional historical returns.

Table III-4 Historical Asset Returns			
Fiscal Year Ending April 30,	Return on Market Value	Return on Actuarial Value	Assumed Return
2013	12.39%	9.38%	7.50%
2014	11.44%	9.96%	7.50%
2015	8.33%	9.58%	7.50%
2016	(2.47%)	6.44%	7.50%
2017	10.47%	7.39%	7.50%
2018	9.21%	7.84%	7.50%
2019	5.26%	7.20%	7.50%
2020	(2.21%)	4.86%	7.50%
2021	27.15%	9.91%	7.50%
2022	(5.20%)	5.58%	7.00%
5-Year Average	6.26%	7.06%	
10-Year Average	7.07%	7.80%	

**CITY OF KANSAS CITY, MISSOURI EMPLOYEES' RETIREMENT SYSTEM
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SECTION III – ASSETS

Projection of System's Future Cash Flows

Table III-5 Projection of System's Expected Cash Flows (\$ thousands)			
Year Beginning May 1,	Benefits and Expenses	Total Contributions*	Net Cash Flow
2022	\$ (98,779)	\$ 34,976	\$ (63,803)
2023	(97,924)	39,114	(58,810)
2024	(101,379)	41,261	(60,118)
2025	(104,790)	43,112	(61,678)
2026	(108,271)	44,811	(63,460)
2027	(111,519)	46,430	(65,089)
2028	(114,784)	47,977	(66,807)
2029	(117,920)	49,482	(68,438)
2030	(120,788)	50,975	(69,813)
2031	(123,426)	52,435	(70,991)

* *Expected contributions include City contributions and Member contributions. City contributions are projected under the Board's funding policy assuming future market value returns of 7.0% as shown in the table on page 10.*

SECTION IV – LIABILITIES

In this section, we present detailed information on the System liabilities including:

- **Disclosure** of the ERS liabilities as of May 1, 2021 and May 1, 2022, and
- Statement of **changes** in these liabilities during the year.

Disclosure

Several types of liabilities are calculated and presented in this report. Each type is distinguished by the people ultimately using the figures and the purpose for which they are using them.

- **Present Value of Future Benefits:** Used for measuring all future ERS obligations, represents the amount of money needed today to fund all benefits of the ERS both earned as of the valuation date and those to be earned in the future by current plan participants, under the current plan provisions.
- **Actuarial Liability:** Used for funding calculations, this liability is calculated taking the present value of benefits and subtracting the present value of future member contributions and future employer normal costs under an acceptable actuarial funding method. This method is referred to as the **Entry Age Normal** funding method.
- **Present Value of Accrued Benefits:** Used for communicating the current level of liabilities, this liability represents the total amount of money needed today to fund the current accrued obligations of ERS, assuming no future accruals of benefits.

None of these liabilities are appropriate for measuring the cost of settlement of plan liabilities either by the purchase of annuities or payment of lump sums.

Table IV-1, which follows, discloses each of these liabilities for the current and prior valuations. With respect to each disclosure, a subtraction of the appropriate value of plan assets yields, for each respective type, a **net surplus**, or an **unfunded liability**.

**CITY OF KANSAS CITY, MISSOURI EMPLOYEES' RETIREMENT SYSTEM
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SECTION IV – LIABILITIES

Table IV-1		
Liabilities/Net (Surplus)/Unfunded		
	May 1, 2021	May 1, 2022
<u>Present Value of Future Benefits</u>		
Active Participant Benefits	\$ 650,192,912	\$ 578,494,601
Retiree and Inactive Benefits	944,074,816	1,036,107,562
Present Value of Future Benefits (PVB)	\$ 1,594,267,728	\$ 1,614,602,163
<u>Actuarial Liability</u>		
Present Value of Future Benefits (PVB)	\$ 1,594,267,728	\$ 1,614,602,163
Present Value of Future Normal Costs (PVFNC)	130,805,953	122,194,158
Actuarial Liability (AAL = PVB – PVFNC)	1,463,461,775	1,492,408,005
Actuarial Value of Assets (AVA)	1,256,511,707	1,264,096,598
Net (Surplus)/Unfunded (AL – AVA)	\$ 206,950,068	\$ 228,311,407
<u>Present Value of Accrued Benefits</u>		
Present Value of Future Benefits (PVB)	\$ 1,594,267,728	\$ 1,614,602,163
Present Value of Future Benefit Accruals (PVFBA)	233,380,951	216,310,110
Present Value of Accrued Benefits (PVAB = PVB – PVFBA)	1,360,886,777	1,398,292,053
Market Value of Assets (MVA)	1,340,662,410	1,211,678,726
Net Unfunded/(Surplus)	\$ 20,224,367	\$ 186,613,327

**CITY OF KANSAS CITY, MISSOURI EMPLOYEES' RETIREMENT SYSTEM
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SECTION IV – LIABILITIES

Changes in Liabilities

Each of the Liabilities disclosed in the prior table are expected to change at each valuation. The components of that change, depending upon which liability is analyzed, can include:

- New hires since the last valuation
- Benefits accrued since the last valuation
- System amendments increasing benefits
- Passage of time which adds interest to the prior liability
- Benefits paid to retirees since the last valuation
- Participants retiring, terminating, or dying at rates different than expected
- A change in actuarial or investment assumptions
- A change in the actuarial funding method

Unfunded liabilities will change because of all the above, and also due to changes in plan assets resulting from:

- Employer contributions different than expected
- Investment earnings different than expected
- A change in the method used to measure plan assets

In each valuation, we report on those elements of change which are of particular significance, potentially affecting the long-term financial outlook of ERS. Below, we present key changes in liabilities since the last valuation.

In the table that follows, we show the components of change in the actuarial liability between May 1, 2021 and May 1, 2022.

Table IV-2	
	Actuarial Liability
Liabilities May 1, 2021	\$ 1,463,461,775
Liabilities May 1, 2022	1,492,408,005
Liability Increase/(Decrease)	28,946,230
Change Due to:	
Plan Amendments	\$ 0
Assumption Changes	0
Actuarial (Gain)/Loss	8,895,152
Benefits Accumulated and Other Sources	20,051,078
Total Change	\$ 28,946,230

**CITY OF KANSAS CITY, MISSOURI EMPLOYEES' RETIREMENT SYSTEM
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SECTION IV – LIABILITIES

In addition, we breakdown the change in actuarial liability further by showing the total actuarial (gain)/loss by source, as shown in Table IV-3 below.

Table IV-3 (Gain)/Loss by Source as of May 1, 2022	
Turnover	\$ (3,303,000)
Retirement	13,115,000
Pre-retirement mortality	374,000
Post-retirement mortality	(4,186,000)
Salary increase more/(less) than expected for continuing actives	(3,419,000)
New entrants	3,287,000
Data Composition & Miscellaneous changes	3,027,000
Total (Gain)/Loss	\$ 8,895,000

Table IV-4 Historical Liability (Gains)/Losses (\$ Millions)					
Change due to:	2018	2019	2020	2021	2022
Turnover	\$ 1.2	\$ 1.4	\$ 0.2	\$ 1.7	\$ (3.3)
Retirement	(0.8)	(2.0)	1.5	1.6	13.1
Pre-retirement mortality	(0.3)	(0.1)	0.7	(0.7)	0.4
Post-retirement mortality	(6.6)	(2.9)	(2.8)	(3.5)	(4.2)
Salary change	(5.4)	(5.6)	(4.3)	(7.3)	(3.4)
New entrants	5.1	3.6	3.7	2.5	3.3
Miscellaneous	0.8	(9.8)	(0.1)	(4.8)	3.0
Total (Gain)/Loss	\$ (6.0)	\$ (15.4)	\$ (1.1)	\$ (10.5)	\$ 8.9

There has been a net gain on liabilities in four of the five years of this period. Most sources show small fluctuation between gains or losses as we would expect. One exception is new entrants which are expected to create a small loss each year. During this period salary change has been a consistent gain reflecting an economic period in which salaries have increased less than expected. The large loss in the most recent year was primarily driven by a larger than expected number of retirements.

**CITY OF KANSAS CITY, MISSOURI EMPLOYEES' RETIREMENT SYSTEM
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SECTION V – CONTRIBUTIONS

In the process of evaluating the financial condition of any pension plan, the actuary analyzes the assets and liabilities to determine what level (if any) of contributions is needed to properly maintain the funding status of ERS. Typically, the actuarial process will use a funding method that will result in a pattern of contributions that are both stable and predictable.

For this ERS, the funding method employed is the **Entry Age Actuarial Cost Method**. Under this method, there are three primary components to the total actuarially determined contribution: the **normal cost rate** (employee and employer), the **administrative expense rate**, and the **unfunded actuarial liability rate** (UAL rate). The normal cost rate is determined by taking the value, as of entry age into the System, of each member's projected future benefits. This value is then divided by the value, also at entry age, of each member's expected future salary. The normal cost rate is multiplied by current salary to determine each member's normal cost rate. Finally, the total normal cost rate is reduced by the member contribution rate to produce the employer normal cost rate. The difference between the Entry Age Normal actuarial liability and the actuarial value of assets is the unfunded actuarial liability.

Contributions are calculated on two bases:

- Under the Board's policy for calculating the Actuarially Determined Contribution, the unfunded actuarial liability is amortized under a layered approach over a 20-year period as a level percent of pay for all years except with respect to the unamortized UAL arising from periods prior to May 1, 2018 which is amortized to April 30, 2038. All future gains or losses to the unfunded actuarial liability will establish new 20-year amortization periods. Payroll is expected to increase 2.75% per year.
- Under the City ordinance, the City's contributions would be based on a 30-year open amortization as a percentage of pay of the entire unfunded actuarial liability. Note that this amortization method is expected to never fully fund the unfunded actuarial liability and would also result in the UAL increasing each year.

**CITY OF KANSAS CITY, MISSOURI EMPLOYEES' RETIREMENT SYSTEM
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SECTION V – CONTRIBUTIONS

Table V-1 below presents and compares the employer contribution rates for ERS for this valuation and the prior one using both the Actuarially Determined Contribution under the current Board funding policy and the City ordinance, using a 30-year open amortization method.

Table V-1		
Employer Contribution Rate		
	May 1, 2021	May 1, 2022*
	Fiscal Year 2023	Fiscal Year 2024
<u>Actuarially Determined Contribution</u>		
Entry Age Normal Cost Rate	7.09%	6.97%
Administrative Expense Rate	0.30%	0.30%
Amortization Payment	10.33%	12.46%
Actuarially Determined Contribution	17.72%	19.73%
<u>City Ordinance</u>		
Entry Age Normal Cost Rate	7.09%	6.97%
Administrative Expense Rate	0.30%	0.30%
Amortization Payment	7.22%	8.56%
Actuarially Determined Contribution	14.61%	15.83%

** Actuarially Determined Contribution rate reflects the amortization period updates effective May 1, 2022*

**CITY OF KANSAS CITY, MISSOURI EMPLOYEES' RETIREMENT SYSTEM
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SECTION V – CONTRIBUTIONS

Table V-2 below presents the May 1, 2022 employer contribution rates for ERS split between the General Employees and the Judges and Elected Officials. The employer contribution rate is based on the amortization schedule shown in Table V-3. The employer contribution rates are then compared to what the City is expected to contribute for the current plan year. The current expected City contribution rate for all employees for the year ending April 30, 2023 is 17.72% of payroll.

Table V -2 Development of Plan Contribution Rate as of May 1, 2022			
	General Employees	Judges and Elected Officials	Total
1. Normal Cost (Monthly):			
a. Total Normal Cost	11.97%	16.41%	11.98%
b. Administrative Expense	0.30%	0.30%	0.30%
c. Expected Members Contribution	<u>5.01%</u>	<u>5.00%</u>	<u>5.01%</u>
d. Employer Paid Normal Cost (a) + (b) - (c)	7.26%	11.71%	7.27%
2. Amortization of Unfunded Liability			
a. Actuarial Liability	\$ 1,477,189,959	\$15,218,046	\$1,492,408,005
b. Actuarial Value of Assets*	<u>1,251,206,638</u>	<u>12,889,960</u>	<u>\$1,264,096,598</u>
c. Unfunded Liability (a) - (b)	225,983,321	2,328,086	228,311,407
d. Amortization of Unfunded Liability	12.37%	42.34%	12.46%
3. Actuarially Determined Employer Contribution Rate for fiscal year ending April 30, 2024**	19.63%	54.05%	19.73%
4. Scheduled City Contributions for fiscal year ending April 30, 2023***	17.72%	17.72%	17.72%

* Allocated in proportion to the Actuarial Liability

** Total payroll is \$153,876,546, and the actuarially determined contribution for plan year ending April 30, 2024 is \$30,359,843 based on the total employer actuarially determined contribution rate. The payroll for the judges and elected officials is \$461,871, and the actuarially determined contribution for this group for the plan year ending April 30, 2024 is \$249,642

*** The scheduled contribution is based upon the prior year's actuarially determined employer contribution rate for all employees.

**CITY OF KANSAS CITY, MISSOURI EMPLOYEES' RETIREMENT SYSTEM
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SECTION V – CONTRIBUTIONS

Under the Board funding policy, for purposes of calculating the Actuarially Determined Contribution under GASB, the Unfunded Actuarial Liability is amortized in accordance with the schedule below:

Unamortized UAL arising from periods prior to May 1, 2018	Amortized to April 30, 2038
Changes to the UAL on and after May 1, 2019	20 years

Amortization payments as of May 1, 2022 are shown in the table below.

Table V-3 Unfunded Actuarial Liability Amortization Schedule							
Item	Date Created	Initial Years	Initial Balance	Remaining Years	Outstanding Balance	Amortization Payment	Amortization Factor
Combined pre-2019 (Gain)/Loss*	5/1/2018	20	\$ 190,952,487	16	\$ 205,992,731	\$ 17,526,609	11.753
2019 (Gain)/Loss*	5/1/2019	20	\$ (9,650,311)	17	\$ (9,532,067)	\$ (777,198)	12.265
2020 (Gain)/Loss*	5/1/2020	20	\$ 29,795,894	18	\$ 29,560,221	\$ 2,317,382	12.756
2021 (Gain)/Loss*	5/1/2020	20	\$ (35,994,574)	19	\$ (35,759,882)	\$ (2,703,437)	13.228
2021 Assumption Change	5/1/2021	20	\$ 13,379,850	19	\$ 13,292,610	\$ 1,004,918	13.228
2022 (Gain)/Loss*	5/1/2022	20	\$ 24,757,794	20	\$ 24,757,794	\$ 1,809,712	13.681
Total					\$ 228,311,407	\$ 19,177,986	

* Includes differences between the Actuarially Determined Contribution and the actual contributions made.

Under the City ordinance, amortization payments are calculated using a 30-year open amortization method. The amortization payment as of May 1, 2022 is shown in the table below.

Table V-4 Unfunded Actuarial Liability Amortization Schedule			
UAL	Remaining Years*	Amortization Payment	Amortization Factor
\$228,311,407	30	\$13,174,632	17.330

*30-year open amortization

**CITY OF KANSAS CITY, MISSOURI EMPLOYEES' RETIREMENT SYSTEM
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SECTION VI – FINANCIAL STATEMENT INFORMATION

The Government Finance Officers Association (GFOA) maintains a checklist of items to be included in a public retirement system's Annual Comprehensive Financial Report in order to receive recognition for excellence in financial reporting. Although the Kansas City Employees' Retirement System does not issue an Annual Comprehensive Financial Report under GFOA guidelines, we have included certain schedules in this section for possible inclusion within the System's audited financial statements.

Tables VI-1 through VI-5 are exhibits that could be used with the Annual Comprehensive Financial Report. Table VI-1 is the Note to Required Supplementary Information, Table VI-2 is a history of gains and losses in actuarial liability, Table VI-3 is the Schedule of Funded Liabilities by Type which shows the portion of actuarial liability covered by assets, Table VI-4 shows historical Actuarially Determined Contribution information, compared to what the City actually contributed, and Table VI-5 is the Schedule of Funding Progress.

**CITY OF KANSAS CITY, MISSOURI EMPLOYEES' RETIREMENT SYSTEM
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SECTION VI – FINANCIAL STATEMENT INFORMATION

**Table VI-1
NOTE TO REQUIRED SUPPLEMENTARY INFORMATION**

The information presented in the required supplementary schedules was determined as part of the actuarial valuation at the date indicated. Additional information as of the latest actuarial valuation follows.

Valuation date	May 1, 2022
Actuarial cost method	Entry age
Amortization method	20-year layered amortization, level percent of pay*
Remaining amortization period for the UAL	Weighted average of 16.3 years
Asset valuation method	Four year smoothing using Expected Value Method
Actuarial assumptions:	
Investment rate of return	7.00%
Projected salary increases	Ranges from 5.0% to 2.75%
Inflation	2.5%
Cost-of-living adjustments	3.00% simple for Tier 1 1.90% simple deferred to age 62 for Tier 2

The actuarial assumptions used have been based upon recommendations by the actuary and adopted by the ERS's Board of Trustees. The most recent actuarial experience study was performed for the period May 1, 2015 through April 30, 2020.

The rate of employer actuarially determined contributions to the ERS is composed of the normal cost, expected administrative expenses, and an amortization of the unfunded actuarial liability. The normal cost is a level percent of payroll cost which, along with member contributions, will pay for projected benefits at retirement for the average plan participant. The actuarial liability is that portion of the present value of projected benefits that will not be paid by future employer normal costs or member contributions. The difference between this liability and the actuarial value of assets as of the same date is the unfunded actuarial liability.

* For all years except changes prior to the unfunded actuarial liability prior to May 1, 2019, which are amortized to April 30, 2038

**CITY OF KANSAS CITY, MISSOURI EMPLOYEES' RETIREMENT SYSTEM
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SECTION VI – FINANCIAL STATEMENT INFORMATION

Table VI-2

ANALYSIS OF FINANCIAL EXPERIENCE

**Gain and Loss in Unfunded Actuarial Liability During Years Ended April 30
Resulting from Differences Between Assumed Experience and Actual Experience**

*Gain (or Loss) for Year ending April 30,
(expressed in thousands)*

Type of Activity	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Investment Income*	\$ 12,225	\$ 20,897	\$ 23,876	\$ (8,394)	\$ (5,088)	\$ 274	\$ (5,718)	\$ (30,943)	\$ 25,499	\$ (15,863)
Combined Liability Experience	(1,130)	8,868	6,077	5,670	2,292	5,950	15,368	1,148	10,496	(8,895)
Gain/(or Loss) during Year from Financial Experience	\$ 11,095	\$ 29,765	\$ 29,953	\$ (2,724)	\$ (2,796)	\$ 6,224	\$ 9,650	\$ (29,795)	\$ 35,995	\$ (24,758)
Non-Recurring Gain/(or Loss) Items	0	(253)	0	(48,301)	0	0	0	0	(13,380)	0
Composite Gain/(or Loss) during Year	\$ 11,095	\$ 29,512	\$ 29,953	\$ (51,025)	\$ (2,796)	\$ 6,224	\$ 9,650	\$ (29,795)	\$ 22,615	\$ (24,758)

* Investment experience includes differences in actual and recommended contributions

**CITY OF KANSAS CITY, MISSOURI EMPLOYEES' RETIREMENT SYSTEM
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SECTION VI – FINANCIAL STATEMENT INFORMATION

Table VI-3							
SCHEDULE OF FUNDED LIABILITIES BY TYPE							
Aggregate Actuarial Liabilities for							
<i>(expressed in thousands)</i>							
Valuation Date May 1	Active Member Contributions (1)	Retirees & Beneficiaries (2)	Active Member	Actuarial	Portion of Actuarial Liabilities		
			Employer Financed Contributions (3)	Value of Reported Assets	Covered by Reported Assets (1)	(2)	(3)
2013	\$90,514	\$603,734	\$420,917	\$900,062	100%	100%	49%
2014	\$92,849	\$630,056	\$426,979	\$962,152	100%	100%	56%
2015	\$96,110	\$669,335	\$420,299	\$1,026,046	100%	100%	62%
2016	\$100,307	\$730,541	\$437,311	\$1,055,814	100%	100%	51%
2017	\$102,889	\$763,850	\$445,416	\$1,095,866	100%	100%	51%
2018	\$106,012	\$799,461	\$446,090	\$1,140,816	100%	100%	53%
2019	\$108,953	\$833,947	\$437,902	\$1,179,563	100%	100%	54%
2020	\$109,496	\$883,850	\$426,903	\$1,189,659	100%	100%	46%
2021	\$108,328	\$944,075	\$411,059	\$1,256,512	100%	100%	50%
2022	\$96,499	\$1,036,108	\$359,801	\$1,264,097	100%	100%	37%

**CITY OF KANSAS CITY, MISSOURI EMPLOYEES' RETIREMENT SYSTEM
MAY 1, 2022 ACTUARIAL VALUATION REPORT**

SECTION VI – FINANCIAL STATEMENT INFORMATION

Table VI-4 Schedule of City Contributions				
Plan Year Ended April 30	Actuarially Determined Contributions		Actual Contributions	Percentage Contributed
2014	\$27,568,194	*	\$25,987,662	94.27%
2015	\$27,568,194	**	\$27,569,434	100.00%
2016	\$24,540,893	**	\$24,577,647	100.15%
2017	\$23,042,413	**	\$23,701,217	102.86%
2018	\$24,390,835	**	\$24,530,445	100.57%
2019	\$25,842,898	**	\$26,032,072	100.73%
2020	\$26,920,726	**	\$27,256,034	101.25%
2021	\$27,333,291	**	\$27,524,702	100.70%
2022	\$30,664,813	**	\$30,638,396	99.91%
2023	\$29,291,139	**	--	--

**The actuarially determined contribution for the plan years ended April 30, 2014 is based on the actuarially computed contribution for the valuation year.*

***For plan years ended April 30, 2015 and later, the actuarially determined contribution is based on the calculation for the prior valuation year using estimated valuation payroll. The actuarially computed contribution for the current valuation year is described in Section V, Table V-2.*

**CITY OF KANSAS CITY, MISSOURI EMPLOYEES' RETIREMENT SYSTEM
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SECTION VI – FINANCIAL STATEMENT INFORMATION

**Table VI-5
Schedule of Funding Progress**

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Liability (b)	Unfunded Actuarial Liability (b) - (a)	Funded Ratio (a) / (b)	Covered Payroll (c)	UAL as a Percentage of Covered Payroll* [(b) - (a)] / (c)
5/1/2013	\$900,061,516	\$1,115,165,108	\$215,103,592	80.71%	\$166,877,688	128.90%
5/1/2014	\$962,152,010	\$1,149,883,725	\$187,731,715	83.67%	\$167,629,048	111.99%
5/1/2015	\$1,026,045,837	\$1,185,743,686	\$159,697,849	86.53%	\$166,853,097	95.71%
5/1/2016	\$1,055,813,977	\$1,268,159,303	\$212,345,326	83.26%	\$164,248,048	129.28%
5/1/2017	\$1,095,866,148	\$1,312,154,844	\$216,288,696	83.52%	\$167,811,028	128.89%
5/1/2018	\$1,140,815,771	\$1,351,562,621	\$210,746,850	84.41%	\$171,688,301	122.75%
5/1/2019	\$1,179,563,067	\$1,380,802,520	\$201,239,453	85.43%	\$171,476,103	117.36%
5/1/2020	\$1,189,659,030	\$1,420,248,655	\$230,589,625	83.76%	\$170,834,611	134.98%
5/1/2021	\$1,256,511,707	\$1,463,461,775	\$206,950,068	85.86%	\$165,299,880	125.20%
5/1/2022	\$1,264,096,598	\$1,492,408,005	\$228,311,407	84.70%	\$153,876,546	148.37%

* Not less than zero

**CITY OF KANSAS CITY, MISSOURI EMPLOYEES' RETIREMENT SYSTEM
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APPENDIX A – MEMBERSHIP INFORMATION

City of Kansas City, Missouri Employees' Retirement System			
Active Member Data			
	May 1, 2021	May 1, 2022	% Change
<u>Total</u>			
Count	3,006	2,775	-7.68%
Average Current Age	47.31	47.07	-0.51%
Average Service	11.83	11.30	-4.48%
Average Valuation Pay	\$ 54,990	\$ 55,451	0.84%
Annual Compensation	\$ 165,299,880	\$ 153,876,546	-6.91%
<u>General Members</u>			
Count	3,003	2,772	-7.69%
Average Current Age	47.30	47.06	-0.51%
Average Service	11.82	11.29	-4.48%
Average Valuation Pay	\$ 54,891	\$ 55,344	0.83%
Annual Compensation	\$ 164,838,009	\$ 153,414,675	-6.93%
<u>Judges</u>			
Count	3	3	0.00%
Average Current Age	53.45	54.45	1.87%
Average Service	16.97	17.97	5.89%
Average Valuation Pay	\$ 153,957	\$ 153,957	0.00%
Annual Compensation	\$ 461,871	\$ 461,871	0.00%

**CITY OF KANSAS CITY, MISSOURI EMPLOYEES' RETIREMENT SYSTEM
MAY 1, 2022 ACTUARIAL VALUATION REPORT**

APPENDIX A – MEMBERSHIP INFORMATION

Kansas City Employees' Retirement System			
Table of Plan Coverage			
	May 1, 2021	May 1, 2022	% change
Active Members in Valuation			
<u>Tier 1</u>			
Number	1,707	1,437	-15.82%
Average Age	52.56	52.53	-0.05%
Average Service	18.53	18.80	1.46%
Total Payroll	\$ 107,243,445	\$ 91,086,096	-15.07%
Average Anticipated Payroll	\$ 62,826	\$ 63,386	0.89%
Account Balance	\$ 99,306,492	\$ 86,091,615	-13.31%
Eligible to Retire on:			
Normal Pension	113	77	-31.86%
Optional Pension	404	340	-15.84%
Early Pension	226	195	-13.72%
Deferred Pension	<u>964</u>	<u>825</u>	-14.42%
Total Active Vested Members	1,707	1,437	-15.82%
<u>Tier 2</u>			
Number	1,299	1,338	3.00%
Average Age	40.41	41.20	1.95%
Average Service	3.02	3.24	7.28%
Total Payroll	\$ 58,056,434	\$ 62,790,450	8.15%
Average Anticipated Payroll	\$ 44,693	\$ 46,929	5.00%
Account Balance	\$ 9,021,347	\$ 10,407,271	15.36%
Eligible to Retire on:			
Normal Pension	0	0	N/A
Optional Pension	0	0	N/A
Early Pension	0	1	N/A
Deferred Pension	<u>0</u>	<u>0</u>	N/A
Total Active Vested Members	0	1	N/A
<u>Total</u>			
Number	3,006	2,775	-7.68%
Average Age	47.31	47.07	-0.51%
Average Service	11.83	11.30	-4.48%
Total Payroll	\$ 165,299,880	\$ 153,876,546	-6.91%
Average Anticipated Payroll	\$ 54,990	\$ 55,451	0.84%
Account Balance	\$ 108,327,838	\$ 96,498,886	-10.92%
Eligible to Retire on:			
Normal Pension	113	77	-31.86%
Optional Pension	404	340	-15.84%
Early Pension	226	195	-13.72%
Deferred Pension	<u>964</u>	<u>826</u>	-14.32%
Total Active Vested Members	1,707	1,438	-15.76%

**CITY OF KANSAS CITY, MISSOURI EMPLOYEES' RETIREMENT SYSTEM
MAY 1, 2022 ACTUARIAL VALUATION REPORT**

APPENDIX A – MEMBERSHIP INFORMATION

Kansas City Employees' Retirement System Table of Plan Coverage (cont.)			
	May 1, 2021	May 1, 2022	% change
Vested Terminated Members	206	205	-0.49%
Deaths During the Plan Year	129	123	-4.65%
Pensioners:			
Number in Pay Status			
Retirees	2,252	2,387	5.99%
Disabled Retirees	<u>6</u>	<u>6</u>	0.00%
Total	2,258	2,393	5.98%
Average Age	70.75	70.63	-0.17%
Average Monthly Benefit**	\$ 2,593	\$ 2,676	3.19%
Beneficiaries in Pay Status*	398	407	2.26%
Members Due Refunds	644	875	35.87%

* Widows and QDROs

** The monthly benefit does not include the health insurance subsidy benefits

**CITY OF KANSAS CITY, MISSOURI EMPLOYEES' RETIREMENT SYSTEM
MAY 1, 2022 ACTUARIAL VALUATION REPORT**

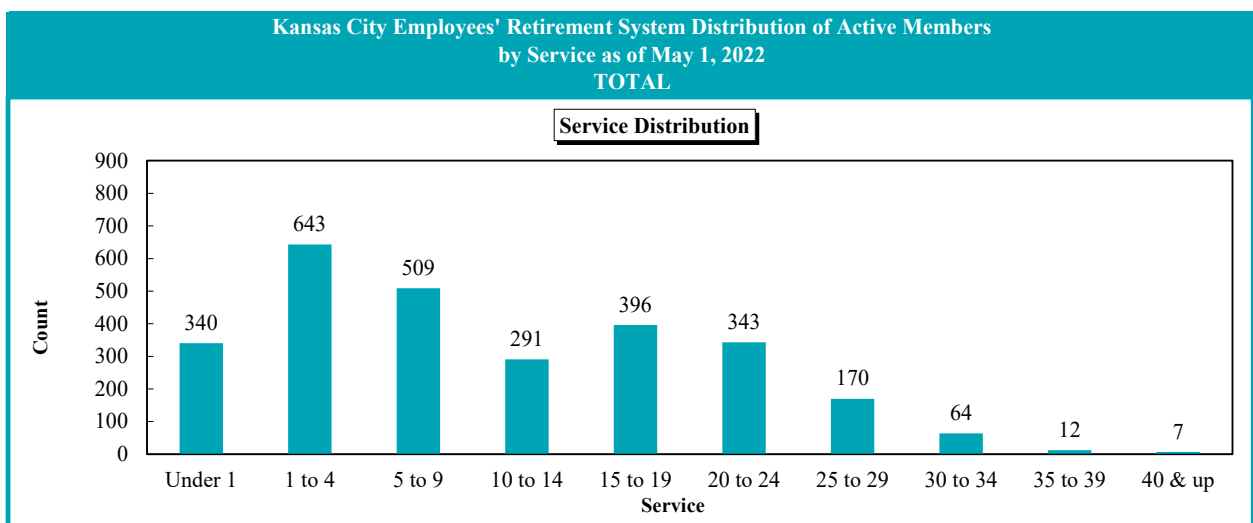
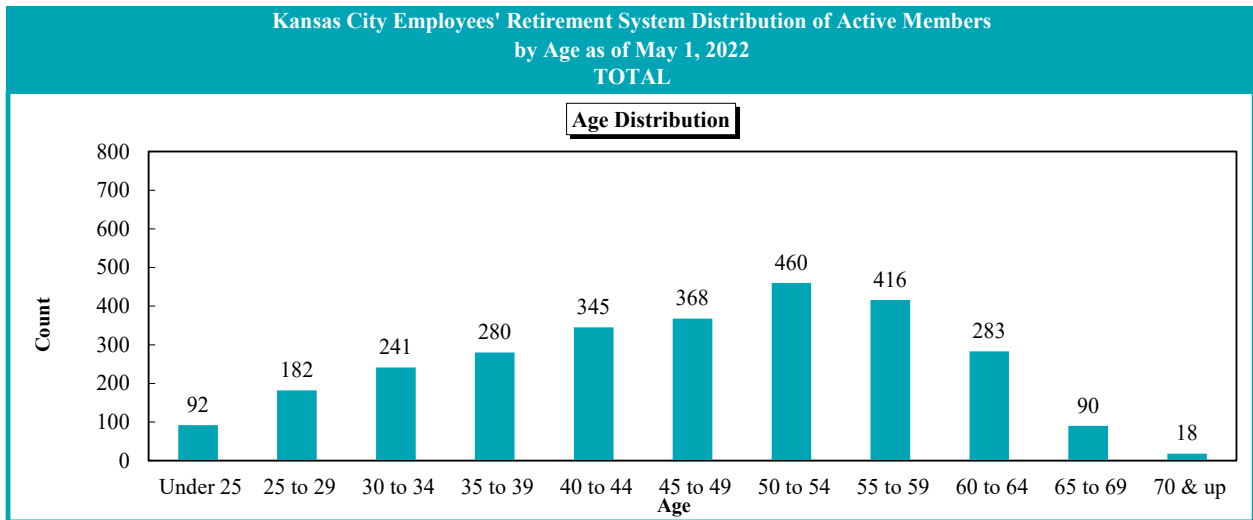
APPENDIX A – MEMBERSHIP INFORMATION

City of Kansas City, Missouri Employees' Retirement System			
Table of Plan Coverage (cont.)			
	May 1, 2021	May 1, 2022	% Change
<u>Active Members in Valuation</u>			
Count			
Males	1,902	1,755	-7.73%
Females	<u>1,104</u>	<u>1,020</u>	-7.61%
Total	3,006	2,775	-7.68%
Average Current Age			
Males	47.31	47.02	-0.61%
Females	<u>47.31</u>	<u>47.14</u>	-0.36%
Total	47.31	47.07	-0.51%
Average Service			
Males	11.87	11.38	-4.13%
Females	<u>11.75</u>	<u>11.16</u>	-5.02%
Total	11.83	11.30	-4.48%
<u>Vested Terminated Members</u>			
Count			
Males	120	118	-1.67%
Females	<u>86</u>	<u>87</u>	1.16%
Total	206	205	-0.49%
Average Current Age			
Males	50.11	50.81	1.40%
Females	<u>50.24</u>	<u>50.38</u>	0.28%
Total	50.16	50.63	0.94%
<u>Pensioners</u>			
Count			
Males	1,465	1,541	5.19%
Females	<u>793</u>	<u>852</u>	7.44%
Total	2,258	2,393	5.98%
Average Current Age			
Males	70.83	70.74	-0.12%
Females	<u>70.59</u>	<u>70.42</u>	-0.24%
Total	70.75	70.63	-0.17%

**CITY OF KANSAS CITY, MISSOURI EMPLOYEES' RETIREMENT SYSTEM
MAY 1, 2022 ACTUARIAL VALUATION REPORT**

APPENDIX A – MEMBERSHIP INFORMATION

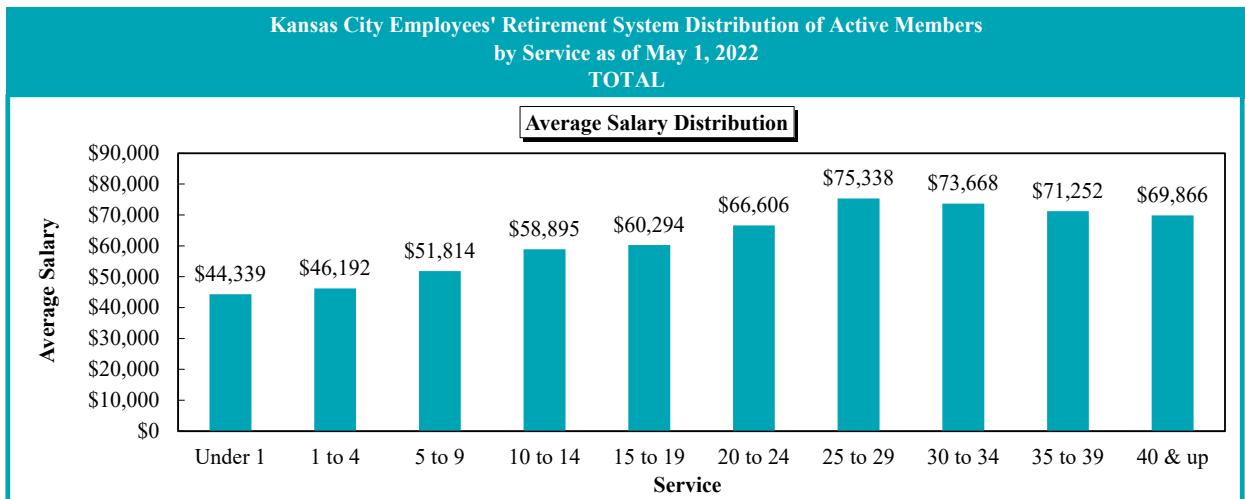
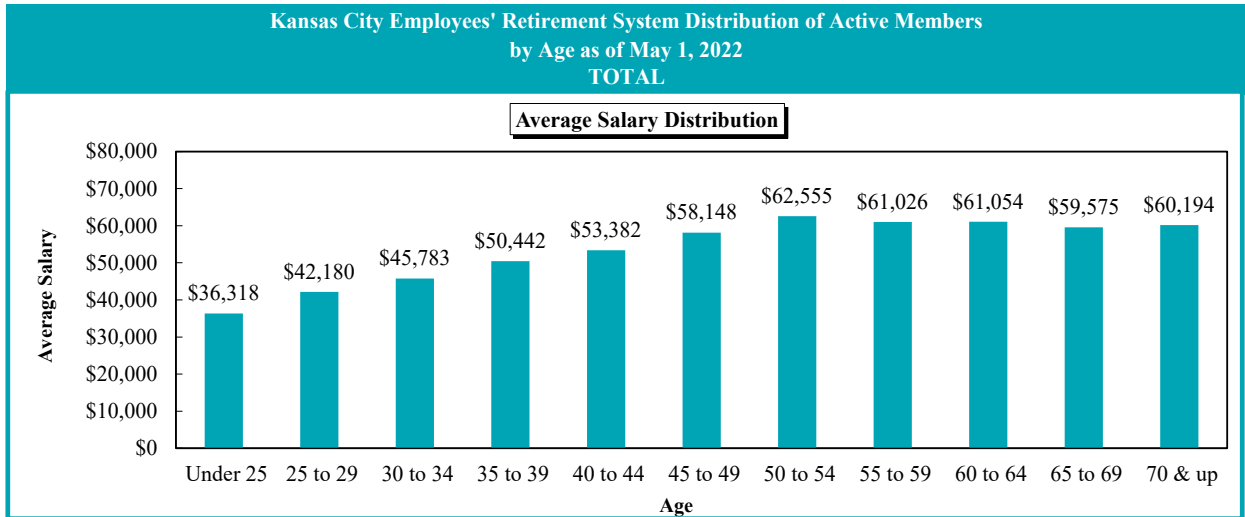
Kansas City Employees' Retirement System Distribution of Active Members by Age and Service as of May 1, 2022											
TOTAL											
COUNTS BY AGE/SERVICE											
Age	Service										Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	
Under 25	55	37	0	0	0	0	0	0	0	0	92
25 to 29	65	95	22	0	0	0	0	0	0	0	182
30 to 34	49	102	74	15	1	0	0	0	0	0	241
35 to 39	36	94	78	42	29	1	0	0	0	0	280
40 to 44	44	80	78	55	62	25	1	0	0	0	345
45 to 49	30	71	68	44	75	68	12	0	0	0	368
50 to 54	24	67	63	52	80	103	62	9	0	0	460
55 to 59	20	56	50	51	72	84	52	27	4	0	416
60 to 64	15	27	55	24	56	43	34	20	4	5	283
65 to 69	2	12	18	6	17	15	8	8	4	0	90
70 & up	0	2	3	2	4	4	1	0	0	2	18
Total	340	643	509	291	396	343	170	64	12	7	2,775



**CITY OF KANSAS CITY, MISSOURI EMPLOYEES' RETIREMENT SYSTEM
MAY 1, 2022 ACTUARIAL VALUATION REPORT**

APPENDIX A – MEMBERSHIP INFORMATION

Kansas City Employees' Retirement System Distribution of Active Members by Age and Service as of May 1, 2022											
TOTAL											
AVERAGE SALARY BY AGE/SERVICE											
Age	Service										Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	
Under 25	\$ 37,630	\$ 34,368	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 36,318
25 to 29	42,012	41,645	44,985	-	-	-	-	-	-	-	42,180
30 to 34	43,562	45,446	47,237	48,281	44,004	-	-	-	-	-	45,783
35 to 39	44,838	49,244	51,301	54,821	52,710	48,156	-	-	-	-	50,442
40 to 44	46,478	44,918	54,446	60,644	59,972	57,085	50,556	-	-	-	53,382
45 to 49	44,336	52,956	53,163	63,641	62,520	63,361	74,649	-	-	-	58,148
50 to 54	55,207	44,824	50,730	66,322	62,680	69,741	78,243	83,737	-	-	62,555
55 to 59	49,957	44,611	54,069	57,137	56,758	70,989	77,494	69,759	77,295	-	61,026
60 to 64	45,442	61,653	54,934	50,918	64,642	57,417	71,674	77,042	61,203	75,454	61,054
65 to 69	72,564	47,060	52,082	50,168	57,558	73,559	61,712	67,099	75,258	-	59,575
70 & up	-	62,442	55,472	45,132	49,308	85,791	49,740	-	-	55,896	60,194
Total	\$ 44,339	\$ 46,192	\$ 51,814	\$ 58,895	\$ 60,294	\$ 66,606	\$ 75,338	\$ 73,668	\$ 71,252	\$ 69,866	\$ 55,451

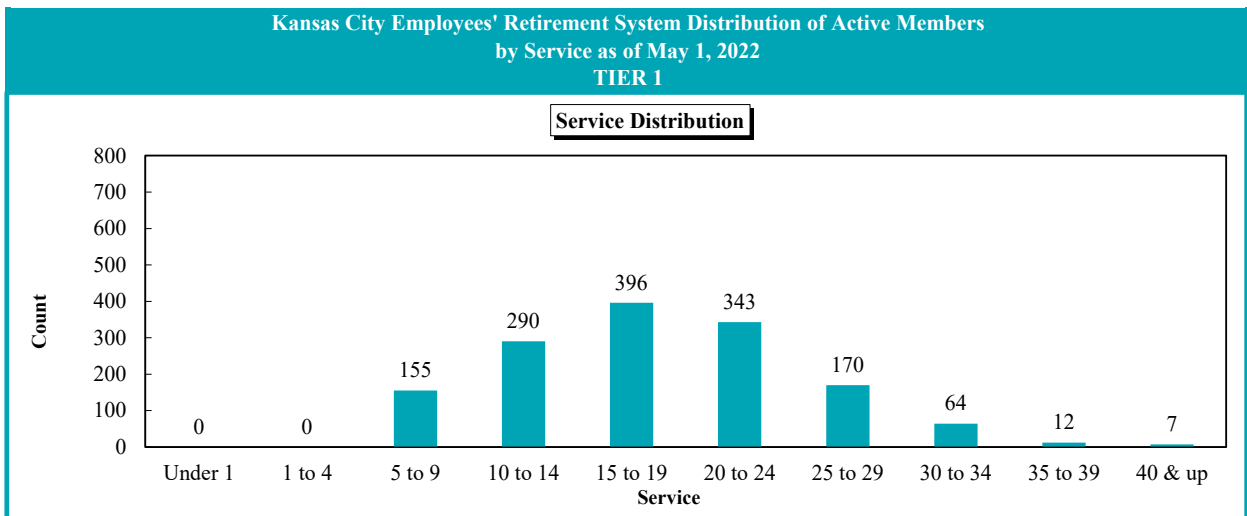
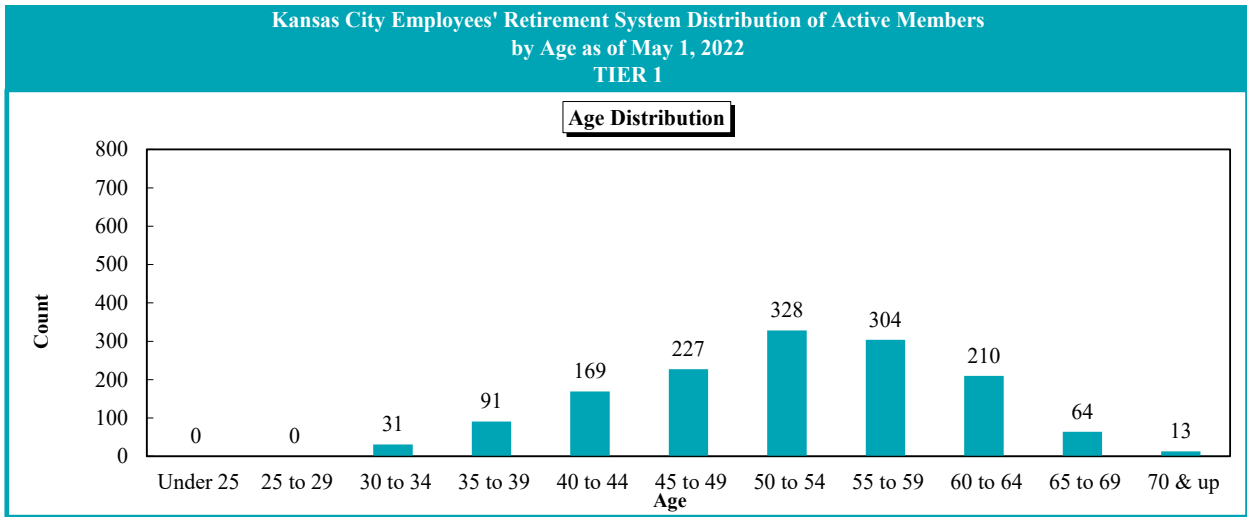


**CITY OF KANSAS CITY, MISSOURI EMPLOYEES' RETIREMENT SYSTEM
MAY 1, 2022 ACTUARIAL VALUATION REPORT**

APPENDIX A – MEMBERSHIP INFORMATION

**Kansas City Employees' Retirement System Distribution of Active Members
by Age and Service as of May 1, 2022
TIER 1
COUNTS BY AGE/SERVICE**

Age	Service										Total	
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up		
Under 25	0	0	0	0	0	0	0	0	0	0	0	0
25 to 29	0	0	0	0	0	0	0	0	0	0	0	0
30 to 34	0	0	15	15	1	0	0	0	0	0	0	31
35 to 39	0	0	19	42	29	1	0	0	0	0	0	91
40 to 44	0	0	26	55	62	25	1	0	0	0	0	169
45 to 49	0	0	28	44	75	68	12	0	0	0	0	227
50 to 54	0	0	22	52	80	103	62	9	0	0	0	328
55 to 59	0	0	15	50	72	84	52	27	4	0	0	304
60 to 64	0	0	24	24	56	43	34	20	4	5	0	210
65 to 69	0	0	6	6	17	15	8	8	4	0	0	64
70 & up	0	0	0	2	4	4	1	0	0	2	0	13
Total	0	0	155	290	396	343	170	64	12	7	0	1,437

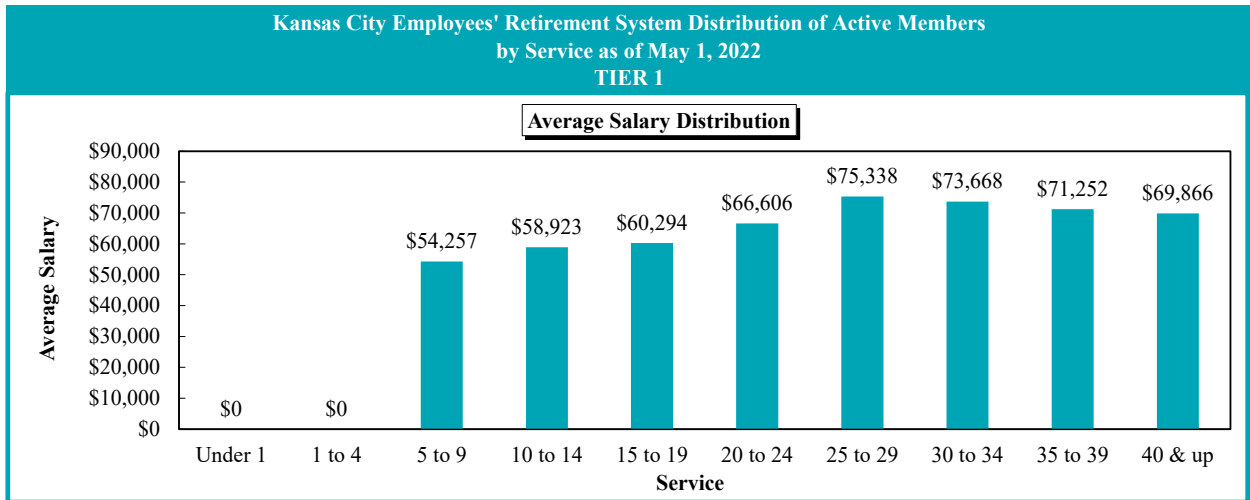
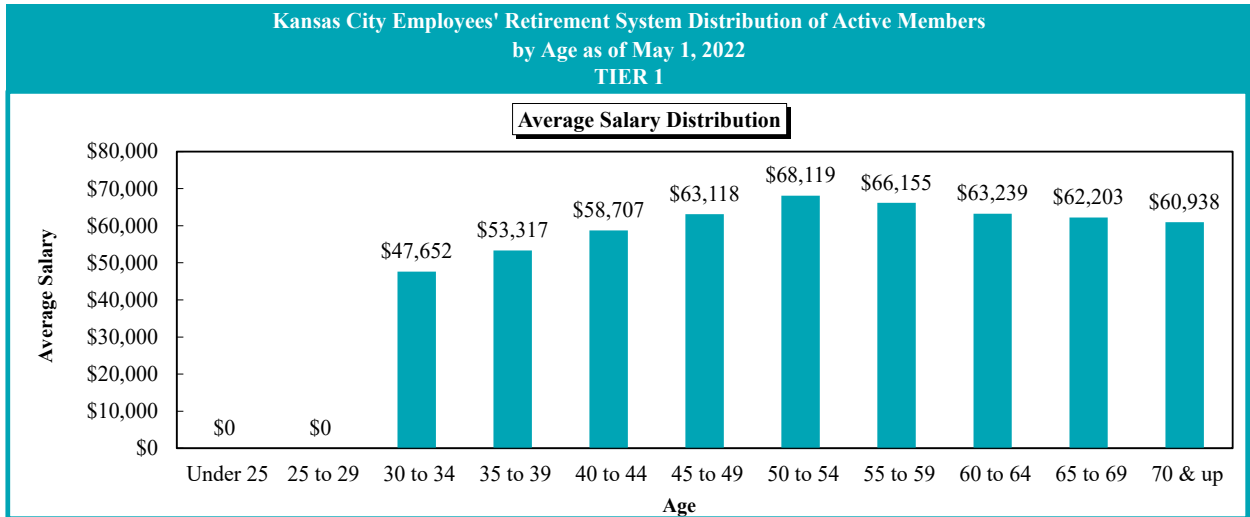


**CITY OF KANSAS CITY, MISSOURI EMPLOYEES' RETIREMENT SYSTEM
MAY 1, 2022 ACTUARIAL VALUATION REPORT**

APPENDIX A – MEMBERSHIP INFORMATION

**Kansas City Employees' Retirement System Distribution of Active Members
by Age and Service as of May 1, 2022**
TIER 1
AVERAGE SALARY BY AGE/SERVICE

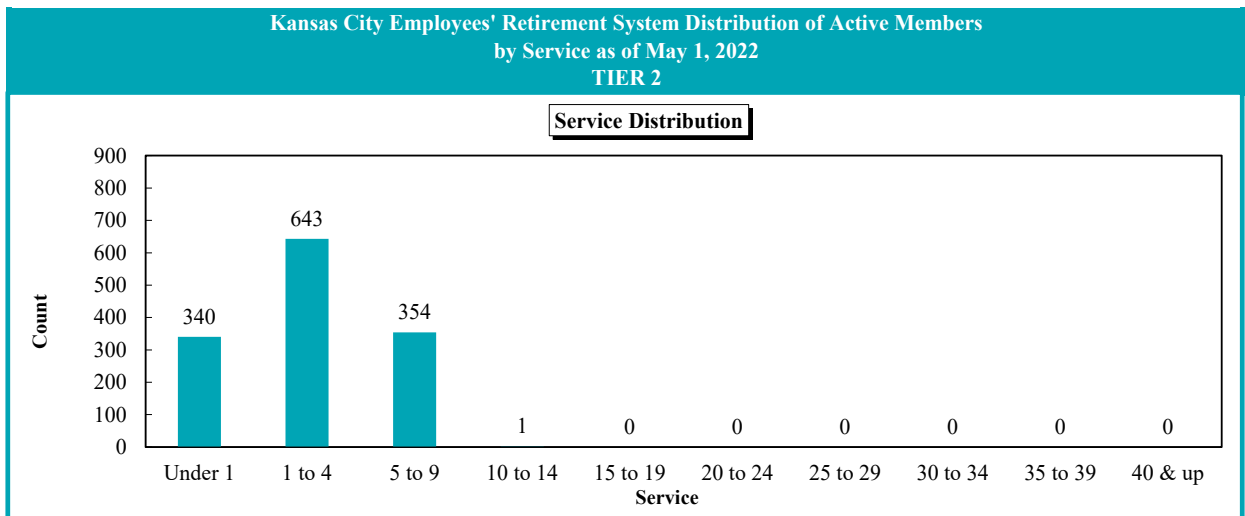
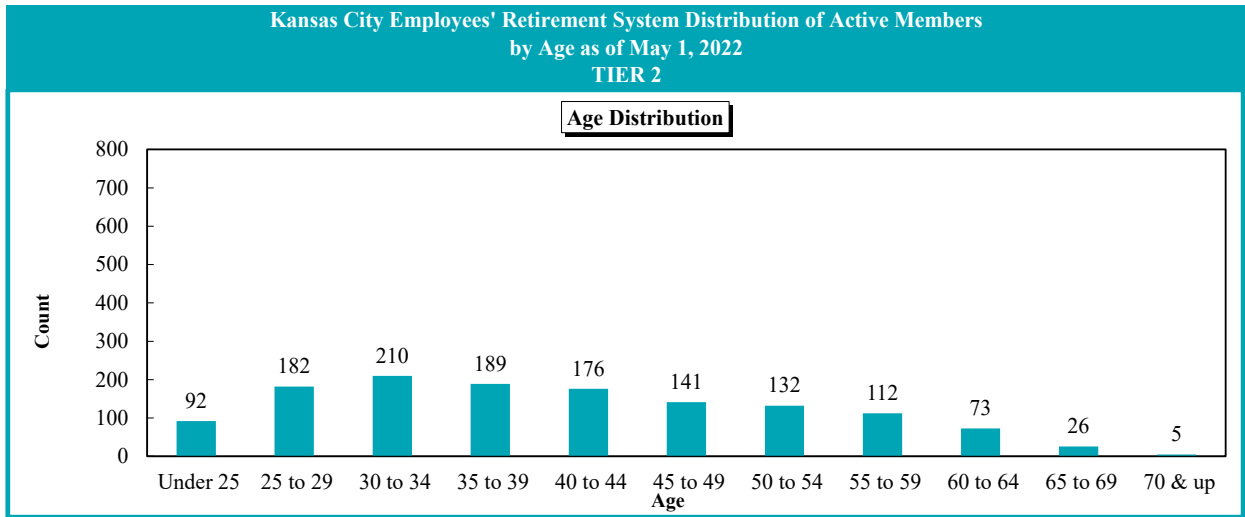
Age	Service											Total		
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up				
Under 25	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
25 to 29	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30 to 34	-	-	47,265	48,281	44,004	-	-	-	-	-	-	-	-	47,652
35 to 39	-	-	51,192	54,821	52,710	48,156	-	-	-	-	-	-	-	53,317
40 to 44	-	-	53,466	60,644	59,972	57,085	50,556	-	-	-	-	-	-	58,707
45 to 49	-	-	58,369	63,641	62,520	63,361	74,649	-	-	-	-	-	-	63,118
50 to 54	-	-	49,630	66,322	62,680	69,741	78,243	83,737	-	-	-	-	-	68,119
55 to 59	-	-	65,057	57,265	56,758	70,989	77,494	69,759	77,295	-	-	-	-	66,155
60 to 64	-	-	57,062	50,918	64,643	57,417	71,674	77,042	61,203	75,454	-	-	-	63,239
65 to 69	-	-	44,434	50,168	57,558	73,559	61,712	67,099	75,258	-	-	-	-	62,203
70 & up	-	-	-	45,132	49,308	85,791	49,740	-	-	55,896	-	-	-	60,938
Total	\$ -	\$ -	\$ 54,257	\$ 58,923	\$ 60,294	\$ 66,606	\$ 75,338	\$ 73,668	\$ 71,252	\$ 69,866	\$ -	\$ -	\$ -	\$ 63,386



**CITY OF KANSAS CITY, MISSOURI EMPLOYEES' RETIREMENT SYSTEM
MAY 1, 2022 ACTUARIAL VALUATION REPORT**

APPENDIX A – MEMBERSHIP INFORMATION

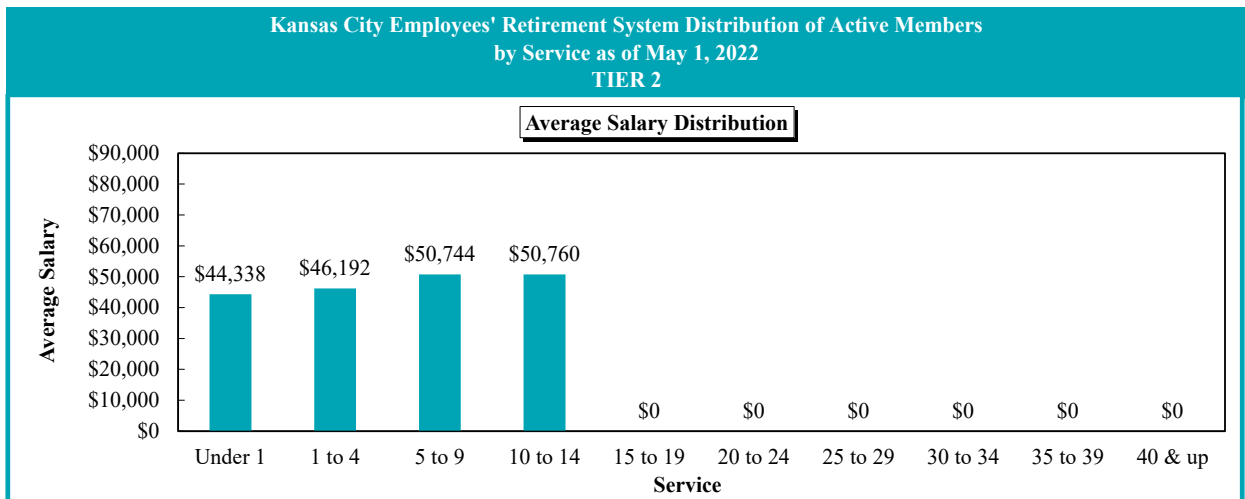
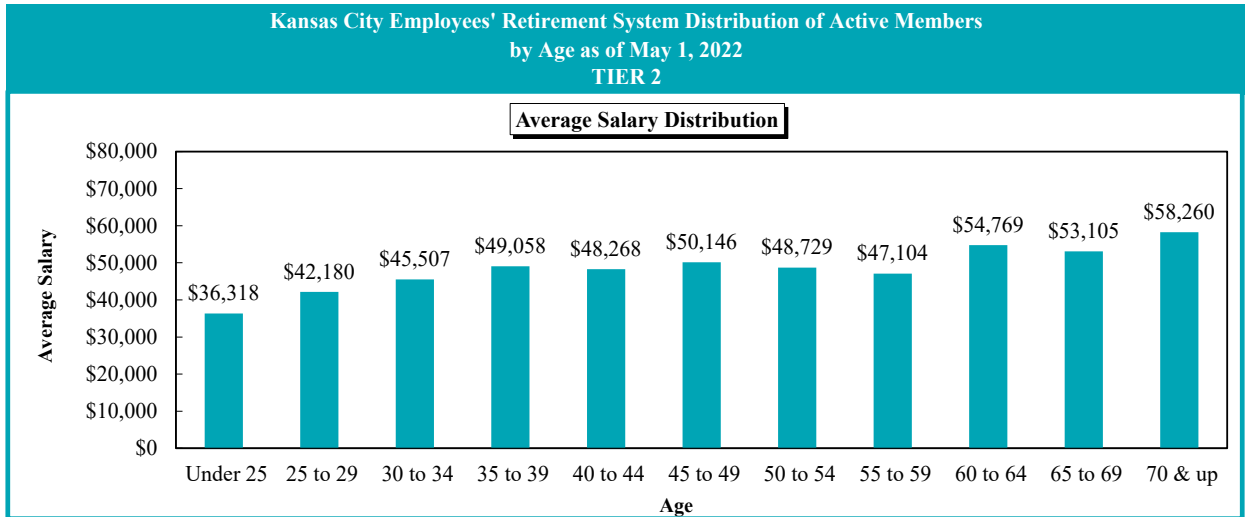
Kansas City Employees' Retirement System Distribution of Active Members by Age and Service as of May 1, 2022 TIER 2 COUNTS BY AGE/SERVICE Service											
Age	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	Total
Under 25	55	37	0	0	0	0	0	0	0	0	92
25 to 29	65	95	22	0	0	0	0	0	0	0	182
30 to 34	49	102	59	0	0	0	0	0	0	0	210
35 to 39	36	94	59	0	0	0	0	0	0	0	189
40 to 44	44	80	52	0	0	0	0	0	0	0	176
45 to 49	30	71	40	0	0	0	0	0	0	0	141
50 to 54	24	67	41	0	0	0	0	0	0	0	132
55 to 59	20	56	35	1	0	0	0	0	0	0	112
60 to 64	15	27	31	0	0	0	0	0	0	0	73
65 to 69	2	12	12	0	0	0	0	0	0	0	26
70 & up	0	2	3	0	0	0	0	0	0	0	5
Total	340	643	354	1	0	0	0	0	0	0	1,338



**CITY OF KANSAS CITY, MISSOURI EMPLOYEES' RETIREMENT SYSTEM
MAY 1, 2022 ACTUARIAL VALUATION REPORT**

APPENDIX A – MEMBERSHIP INFORMATION

Kansas City Employees' Retirement System Distribution of Active Members by Age and Service as of May 1, 2022 TIER 2 AVERAGE SALARY BY AGE/SERVICE												
Age	Service										Total	
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up		
Under 25	\$ 37,630	\$ 34,368	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 36,318	
25 to 29	42,012	41,645	44,985	-	-	-	-	-	-	-	42,180	
30 to 34	43,562	45,446	47,230	-	-	-	-	-	-	-	45,507	
35 to 39	44,838	49,244	51,336	-	-	-	-	-	-	-	49,058	
40 to 44	46,478	44,918	54,936	-	-	-	-	-	-	-	48,268	
45 to 49	44,336	52,956	49,518	-	-	-	-	-	-	-	50,146	
50 to 54	55,207	44,824	51,320	-	-	-	-	-	-	-	48,729	
55 to 59	49,957	44,611	49,359	50,760	-	-	-	-	-	-	47,104	
60 to 64	45,442	61,653	53,287	-	-	-	-	-	-	-	54,769	
65 to 69	72,564	47,060	55,906	-	-	-	-	-	-	-	53,105	
70 & up	-	62,442	55,472	-	-	-	-	-	-	-	58,260	
Total	\$ 44,338	\$ 46,192	\$ 50,744	\$ 50,760	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 46,929	



**CITY OF KANSAS CITY, MISSOURI EMPLOYEES' RETIREMENT SYSTEM
MAY 1, 2022 ACTUARIAL VALUATION REPORT**

APPENDIX A – MEMBERSHIP INFORMATION

Kansas City Employees' Retirement System Pensions in Payment Status by Type and Monthly Amount as of May 1, 2022								
Monthly Amount	Total	Normal	Early	Optional	Vested	Disability	QDROs	Widows
Total	2,800	382	213	1,515	277	6	34	373
Under \$500	188	20	37	0	42	0	14	75
\$500-\$1,000	407	67	76	59	104	0	7	94
\$1,000-\$1,500	348	58	47	114	61	4	3	61
\$1,500-\$2,000	335	50	29	171	36	2	4	43
\$2,000-\$2,500	327	49	12	218	18	0	3	27
\$2,500-\$3,000	295	35	6	223	6	0	2	23
\$3,000-\$3,500	261	20	2	207	8	0	0	24
\$3,500-\$4,000	155	13	1	132	1	0	0	8
\$4,000-\$4,500	131	21	2	103	1	0	0	4
\$4,500-\$5,000	108	15	0	88	0	0	1	4
\$5,000-\$5,500	78	13	1	62	0	0	0	2
\$5,500-\$6,000	43	7	0	35	0	0	0	1
\$6,000-\$6,500	33	4	0	26	0	0	0	3
\$6,500-\$7,000	22	2	0	18	0	0	0	2
\$7,000 & over	69	8	0	59	0	0	0	2

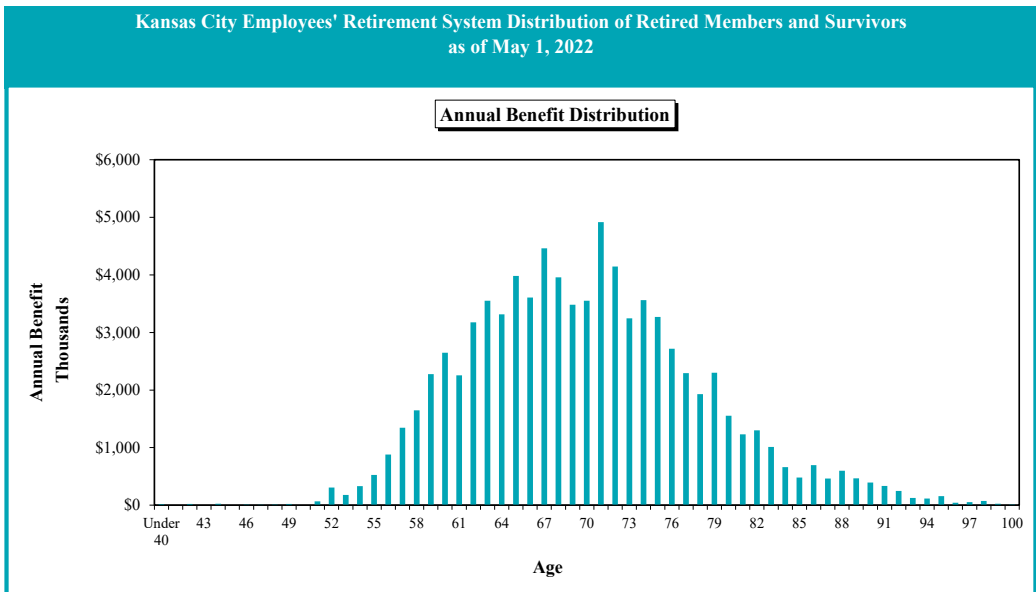
During the year ended April 30, 2022 there were 267 new pensions awarded (61 Normal, 6 Early, 148 Optional, 10 Vested, 0 Disability, 4 QDROs, and 38 Widows)

**CITY OF KANSAS CITY, MISSOURI EMPLOYEES' RETIREMENT SYSTEM
MAY 1, 2022 ACTUARIAL VALUATION REPORT**

APPENDIX A – MEMBERSHIP INFORMATION

Kansas City Employees' Retirement System Distribution of Retired Members and Survivors as of May 1, 2022								
Age	Count	Annual Benefit*	Age	Count	Annual Benefit*	Age	Count	Annual Benefit*
<25	0	\$0	57	39	\$1,345,017	89	25	\$465,730
25	0	0	58	54	1,647,435	90	18	395,021
26	0	0	59	69	2,277,734	91	27	335,369
27	0	0	60	79	2,648,237	92	17	246,302
28	0	0	61	70	2,254,606	93	6	126,263
29	0	0	62	104	3,174,827	94	6	117,347
30	0	0	63	109	3,549,762	95	13	156,722
31	0	0	64	109	3,316,083	96	5	41,793
32	0	0	65	127	3,982,875	97	4	52,969
33	0	0	66	121	3,606,269	98	4	75,186
34	0	0	67	139	4,462,228	99	2	24,100
35	0	0	68	123	3,957,506	100	3	10,042
36	0	0	69	114	3,480,117	101	0	0
37	0	0	70	124	3,550,221	102	0	0
38	0	0	71	146	4,916,087	103	0	0
39	0	0	72	126	4,144,140	104	0	0
40	1	19,683	73	110	3,244,004	105	0	0
41	0	0	74	109	3,561,416	106	0	0
42	1	23,184	75	97	3,267,843	107	0	0
43	0	0	76	74	2,716,873	108	0	0
44	1	25,890	77	76	2,293,407	109	0	0
45	0	0	78	68	1,928,977	110	0	0
46	1	10,394	79	78	2,300,833	111	0	0
47	1	9,641	80	51	1,553,923	112	0	0
48	1	10,569	81	44	1,230,668	113	0	0
49	1	21,539	82	53	1,299,455	114	0	0
50	0	0	83	41	1,013,465	115	0	0
51	2	67,044	84	30	662,830	116	0	0
52	8	307,346	85	26	482,274	117	0	0
53	4	178,984	86	30	695,615	118	0	0
54	8	330,654	87	22	461,608	119	0	0
55	17	527,413	88	28	598,263	120	0	0
56	28	881,460						
Totals							2,794	\$84,085,243

* The annual benefit does not include the subsidy benefits

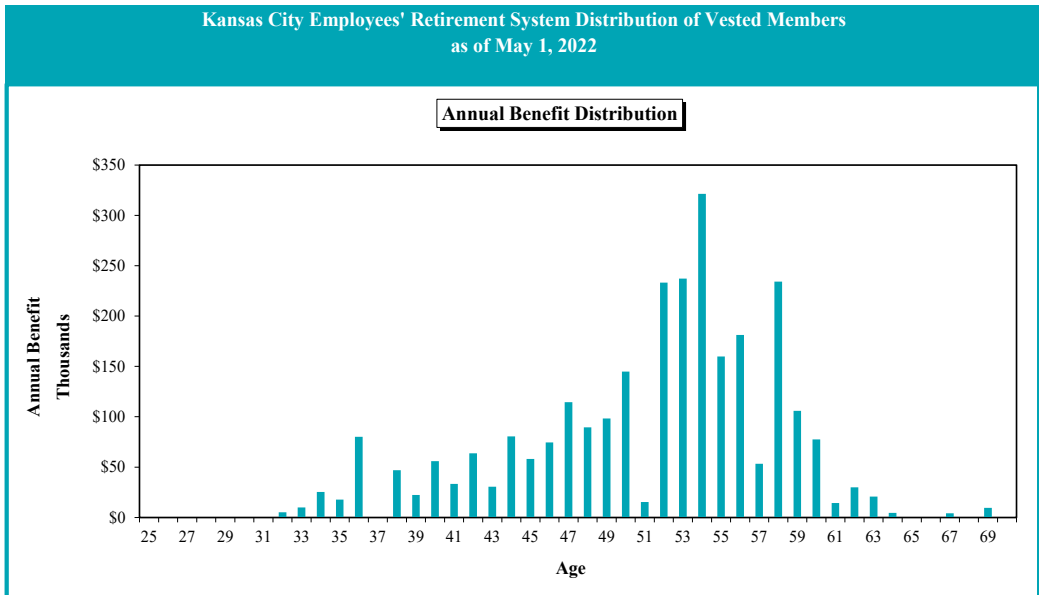


**CITY OF KANSAS CITY, MISSOURI EMPLOYEES' RETIREMENT SYSTEM
MAY 1, 2022 ACTUARIAL VALUATION REPORT**

APPENDIX A – MEMBERSHIP INFORMATION

Kansas City Employees' Retirement System Distribution of Vested Members as of May 1, 2022											
Age	Count	Annual Unreduced Benefit*	Age	Count	Annual Unreduced Benefit*	Age	Count	Annual Unreduced Benefit*	Age	Count	Annual Unreduced Benefit*
<25	0	\$0	57	6	\$53,322	89	0	\$0			
25	0	0	58	10	234,199	90	0	0			
26	0	0	59	8	105,969	91	0	0			
27	0	0	60	9	77,471	92	0	0			
28	0	0	61	2	14,293	93	0	0			
29	0	0	62	3	29,970	94	0	0			
30	0	0	63	4	20,643	95	0	0			
31	0	0	64	1	4,508	96	0	0			
32	1	5,109	65	0	0	97	0	0			
33	1	9,927	66	0	0	98	0	0			
34	4	25,380	67	1	4,068	99	0	0			
35	2	17,673	68	0	0	100	0	0			
36	8	80,143	69	1	9,626	101	0	0			
37	0	0	70	0	0	102	0	0			
38	5	46,873	71	0	0	103	0	0			
39	3	22,324	72	0	0	104	0	0			
40	5	55,897	73	0	0	105	0	0			
41	5	33,418	74	0	0	106	0	0			
42	8	63,676	75	0	0	107	0	0			
43	4	30,572	76	0	0	108	0	0			
44	7	80,581	77	0	0	109	0	0			
45	5	58,173	78	0	0	110	0	0			
46	5	74,401	79	0	0	111	0	0			
47	10	114,465	80	0	0	112	0	0			
48	9	89,404	81	0	0	113	0	0			
49	6	98,231	82	0	0	114	0	0			
50	10	144,842	83	0	0	115	0	0			
51	1	15,373	84	0	0	116	0	0			
52	10	233,263	85	0	0	117	0	0			
53	11	237,274	86	0	0	118	0	0			
54	19	321,300	87	0	0	119	0	0			
55	10	159,903	88	0	0	120	0	0			
56	11	181,144									
							Totals	205	\$2,753,415		

* The annual benefit does not include the subsidy benefits



**CITY OF KANSAS CITY, MISSOURI EMPLOYEES' RETIREMENT SYSTEM
MAY 1, 2022 ACTUARIAL VALUATION REPORT**

APPENDIX A – MEMBERSHIP INFORMATION

Kansas City Employees' Retirement System Distribution of Disabled Members as of May 1, 2022								
Age	Count	Annual Benefit*	Age	Count	Annual Benefit*	Age	Count	Annual Benefit*
<25	0	\$0	57	0	\$0	89	0	\$0
25	0	0	58	0	0	90	1	15,437
26	0	0	59	0	0	91	0	0
27	0	0	60	0	0	92	0	0
28	0	0	61	0	0	93	0	0
29	0	0	62	0	0	94	0	0
30	0	0	63	0	0	95	0	0
31	0	0	64	0	0	96	0	0
32	0	0	65	0	0	97	0	0
33	0	0	66	0	0	98	0	0
34	0	0	67	0	0	99	0	0
35	0	0	68	0	0	100	0	0
36	0	0	69	0	0	101	0	0
37	0	0	70	0	0	102	0	0
38	0	0	71	0	0	103	0	0
39	0	0	72	0	0	104	0	0
40	0	0	73	2	35,067	105	0	0
41	0	0	74	0	0	106	0	0
42	0	0	75	1	17,217	107	0	0
43	0	0	76	0	0	108	0	0
44	0	0	77	1	18,601	109	0	0
45	0	0	78	0	0	110	0	0
46	0	0	79	0	0	111	0	0
47	0	0	80	1	17,561	112	0	0
48	0	0	81	0	0	113	0	0
49	0	0	82	0	0	114	0	0
50	0	0	83	0	0	115	0	0
51	0	0	84	0	0	116	0	0
52	0	0	85	0	0	117	0	0
53	0	0	86	0	0	118	0	0
54	0	0	87	0	0	119	0	0
55	0	0	88	0	0	120	0	0
56	0	0						
Totals							6	\$103,883

* The annual benefit does not include the subsidy benefits



**CITY OF KANSAS CITY, MISSOURI EMPLOYEES' RETIREMENT SYSTEM
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APPENDIX A – MEMBERSHIP INFORMATION

Kansas City Employees' Retirement System Change in Plan Membership							
Tier 1							
	Actives	Vested Terminations	Refund Due	Disabilities	Retirees	Beneficiaries*	Total
May 1, 2021	1,707	206	68	6	2,252	398	4,637
New Entrants	0	0	0	0	0	0	0
Rehires	2	(2)	0	0	0	0	0
Vested Terminations	(12)	13	(1)	0	0	0	0
Terminated with Refund Due	(22)	0	22	0	0	0	0
Return of Contributions	(25)	(8)	(9)	0	0	0	(42)
Disabilities	0	0	0	0	0	0	0
Retirements	(211)	(11)	0	0	222	0	0
Benefits Suspended	0	0	0	0	0	(1)	(1)
Deaths	0	(1)	0	0	(90)	(32)	(123)
New Survivor	0	0	0	0	0	39	39
Miscellaneous Adjustments	(2)	8	10	0	3	3	22
May 1, 2022	1,437	205	90	6	2,387	407	4,532
Tier 2							
	Actives	Vested Terminations	Refund Due	Disabilities	Retirees	Beneficiaries*	Total
May 1, 2021	1,299	0	576	0	0	0	1,875
New Entrants	334	0	89	0	0	0	423
Rehires	13	0	(13)	0	0	0	0
Vested Terminations	0	0	0	0	0	0	0
Terminated with Refund Due	(164)	0	164	0	0	0	0
Return of Contributions	(144)	0	(31)	0	0	0	(175)
Disabilities	0	0	0	0	0	0	0
Retirements	0	0	0	0	0	0	0
Benefits Suspended	0	0	0	0	0	0	0
Deaths	0	0	0	0	0	0	0
New Survivor	0	0	0	0	0	0	0
Miscellaneous Adjustments	0	0	0	0	0	0	0
May 1, 2022	1,338	0	785	0	0	0	2,123
Total							
	Actives	Vested Terminations	Refund Due	Disabilities	Retirees	Beneficiaries*	Total
May 1, 2021	3,006	206	644	6	2,252	398	6,512
New Entrants	334	0	89	0	0	0	423
Rehires	15	(2)	(13)	0	0	0	0
Vested Terminations	(12)	13	(1)	0	0	0	0
Terminated with Refund Due	(186)	0	186	0	0	0	0
Return of Contributions	(169)	(8)	(40)	0	0	0	(217)
Disabilities	0	0	0	0	0	0	0
Retirements	(211)	(11)	0	0	222	0	0
Benefits Suspended	0	0	0	0	0	(1)	(1)
Deaths	0	(1)	0	0	(90)	(32)	(123)
New Survivor	0	0	0	0	0	39	39
Miscellaneous Adjustments	(2)	8	10	0	3	3	22
May 1, 2022	2,775	205	875	6	2,387	407	6,655

* Widows & QDROs

CITY OF KANSAS CITY, MISSOURI EMPLOYEES' RETIREMENT SYSTEM
MAY 1, 2022 ACTUARIAL VALUATION REPORT

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

A. Actuarial Assumptions

1. Net Investment Return

7.00% per annum, including inflation of 2.50% and net of investment fees.

2. Mortality Rates

Non-annuitant mortality: 2010 Public General Amount-Weighted Mortality Table for Healthy Employees projected using Scale MP-2020 on a generational basis.

Healthy annuitant mortality: 2010 Public General Amount-Weighted Below-Median Mortality Table for Healthy Retirees (multiplied by 1.051 for males and 1.131 for females), projected using Scale MP-2020 on a generational basis.

Disabled annuitant mortality: 2010 Public General Amount-Weighted Mortality Table for Disabled Retirees projected using Scale MP-2020 on a generational basis.

**CITY OF KANSAS CITY, MISSOURI EMPLOYEES' RETIREMENT SYSTEM
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APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

3. Termination Rates before Retirement

Sample Withdrawal Rates*		
Age	General Employees**	Judges
20	17%	0
25	17	0
30	8	0
35	7	0
40	5	0
45	4	0
50	4	0
55	4	0
60	4	0
65	4	0
70	0	0

* Withdrawal rates end upon first assumed retirement age.

** Select rates for first five years of service for General Employees

Select Period	
Years of Service	Rate
0 – 1	20.0%
1 – 2	15.0%
2 – 3	14.0%
3 – 4	11.0%
4 – 5	9.0%

**CITY OF KANSAS CITY, MISSOURI EMPLOYEES' RETIREMENT SYSTEM
MAY 1, 2022 ACTUARIAL VALUATION REPORT**

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

4. Retirement Rates

Age	General Employees			Judges and Elected Officials
	Age Plus Service Less than 80/85* Points	Age Plus Service Equal to 80/85* Points	Age Plus Service Greater than 80/85* Points	
Under 55	0.0%	12.5%	12.5%	0.0%
55	5.0	12.5	12.5	0.0
56	5.0	12.5	12.5	0.0
57	5.0	12.5	12.5	0.0
58	5.0	12.5	12.5	0.0
59	12.5	12.5	12.5	0.0
60	12.5	12.5	12.5	10.0
61	12.5	25.0	20.0	10.0
62	12.5	25.0	20.0	10.0
63	12.5	25.0	20.0	10.0
64	12.5	25.0	20.0	10.0
65	25.0	25.0	25.0	50.0
66	25.0	25.0	30.0	50.0
67	25.0	25.0	30.0	50.0
68	25.0	25.0	30.0	50.0
69	25.0	25.0	30.0	50.0
70	100.0	100.0	100.0	100.0

* 80 points for Tier 1 members and 85 points for Tier 2 members.

5. Retirement Age for Inactive Vested Members

57 if years of service is greater than or equal to 10, and 62 if years of service is less than 10.

6. Percent Married

70% for males and 40% for females in active status.

7. Age of Spouse

Male participants are three-years older than their spouses and female participants are one-years younger than their spouses.

8. Joint and Survivor Election Assumption

95% for married males and 75% for married females in active status.

**CITY OF KANSAS CITY, MISSOURI EMPLOYEES' RETIREMENT SYSTEM
MAY 1, 2022 ACTUARIAL VALUATION REPORT**

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

9. Sick Leave and Vacation Service Conversion

No additional service granted.

10. Administrative Expenses

0.30% of payroll is added to the normal cost of the system for expected administrative expenses.

11. Salary Increases

Inflation: 2.50%
Real Wage Growth: 0.25%

In addition to the wage inflation (inflation + real wage growth) shown above, the following merit component is added based on an individual member's years of service.

Service	General Employees	Judges and Elected Officials
0	2.250%	0.000%
1	2.143	0.000
2	2.036	0.000
3	1.929	0.000
4	1.821	0.000
5	1.714	0.000
6	1.607	0.000
7	1.500	0.000
8	1.393	0.000
9	1.286	0.000
10	1.179	0.000
11	1.071	0.000
12	0.964	0.000
13	0.857	0.000
14	0.750	0.000
15	0.643	0.000
16	0.536	0.000
17	0.429	0.000
18	0.321	0.000
19	0.214	0.000
20	0.107	0.000
21 and up	0.000	0.000

**CITY OF KANSAS CITY, MISSOURI EMPLOYEES' RETIREMENT SYSTEM
MAY 1, 2022 ACTUARIAL VALUATION REPORT**

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

12. Interest on Employee Contributions

5.00% per year, compounded annually.

13. Cost-of-Living Adjustments for Tier 2 Members

1.90%, payable at age 62.

It is assumed that the funded ratio will equal or exceed 80% at the time that such adjustments would be applied.

14. Unknown Data for Members

Same as those exhibited by Members with similar known characteristics. If not specified, Members are assumed to be male.

15. Changes since Last Valuation

None.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

B. Rationale for Assumptions

1. Economic Assumptions

The investment return assumption of 7.00% was selected based on an analysis that included (a) capital market assumptions provided by the investment consultant, (b) the asset allocation of the fund, and (c) investment return assumptions of other public retirement systems.

The inflation assumption of 2.5% was selected based on an analysis that included (a) input from the investment consultant, (b) historical inflation as measured by the Consumer Price Index, and (c) implied inflation in long-term government bonds.

The long-term wage growth assumption of 2.75% was based on the inflation assumption of 2.5% plus a real wage growth assumption of 0.25%, which was derived from an analysis of historical increases in Social Security Average earnings.

2. Demographic Assumptions

The demographic assumptions are based on the most recent experience study covering the period 2015-2020.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

C. Disclosures Regarding Models Used

In accordance with Actuarial Standard of Practice No. 56 (Modeling), the following disclosures are made:

a. Valuation Software

Cheiron utilizes ProVal, an actuarial valuation software program leased from Winklevoss Technologies (WinTech), to calculate liabilities and projected benefit payments. We have relied on WinTech as the developer of ProVal. We have reviewed ProVal and have a basic understanding of it and have used ProVal in accordance with its original intended purpose. We have not identified any material inconsistencies in assumptions or output of ProVal that would affect this actuarial valuation.

b. Projections

This report includes projections of future contributions, assets, and funded status for the purpose of assisting the Board of Trustees with the management of the Fund. We have used Cheiron's R-Scan model to develop these projections. The model is also used to stress test the impact of volatile asset returns over the projection period.

Experience in the model may be varied to illustrate the sensitivity of potential experience compared to a particular assumption. Because the model does not automatically capture how changes in one variable affect all other variables, some scenarios may not be consistent.

The R-Scan projection uses projected benefit payments for current members but does not include projected benefit payments for new members. This limitation is not material for the next 20 years, but longer projection periods should be viewed with caution.

The R-Scan projection uses standard roll-forward techniques that implicitly assume a stable active population. Changes in the demographic characteristics of the active population will lead to different results.

The stochastic projections of investment returns are based on an assumption that each future year's investment return is independent from all other years and is identically distributed according to a lognormal distribution. This assumption may result in an unrealistically wide range of compound investment returns over longer periods of time.

The standard deviation used in the stochastic projection of investment returns was provided by the investment consultant.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

D. Actuarial Methods

1. Actuarial Value of Assets

Asset values are gradually adjusted toward market value by adding 25% of the difference between the market value and expected actuarial asset value to the expected actuarial asset value. The expected actuarial asset value is the actuarial asset value at the beginning of the year plus contributions, less benefit payments, and administrative expenses, all with interest at the assumed net rate of investment return on an actuarial basis. If the actuarial value of assets is less than 85% or more than 110% of the market value, an adjustment is made to the actuarial value to bring the value within this corridor.

2. Actuarial Cost Method

Entry Age Normal Actuarial Cost Method: Entry age is the age at the time the participant commenced employment. Normal cost and actuarial liability are calculated on an individual basis and are allocated by salary, with normal cost determined as if the current benefit accrual rate had always been in effect.

3. Amortization of Unfunded Actuarial Liability/Surplus

- i. Board Funding Policy: 20-year layered amortization method; level percent of pay for all years except with respect to the unamortized unfunded actuarial liability arising from periods prior to May 1, 2018 which is amortized to April 30, 2038. Under the layered approach, all future changes to the unfunded actuarial liability will establish new 20-year amortization periods. Payroll is expected to increase 2.75% per year.
- ii. City Contribution Policy: Under the Ordinance, the City's contribution will be based on an open 30-year amortization period, level percent of pay. This amortization method is expected to never fully fund the unfunded actuarial liability.

4. Changes since Last Valuation

Effective May 1, 2022, the unamortized unfunded actuarial liability arising from periods prior to May 1, 2018 is amortized to April 30, 2038.

**CITY OF KANSAS CITY, MISSOURI EMPLOYEES' RETIREMENT SYSTEM
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**APPENDIX C – SUMMARY OF PLAN PROVISIONS
TIER 1**

1. Plan Year

May 1 through April 30.

2. Membership

All full-time permanent employees hired prior to April 20, 2014 in the classified and unclassified services shall become members as a condition of employment. Employees of any administrative board or board of control as organized and existing under general laws of Missouri and as defined in Revised Statutes of Missouri, Section 95.540, whose governing body has elected membership, shall become members. Unless otherwise provided, no members of the Council, including the Mayor, who commence a term of office after April 30, 2011 shall participate in this Plan for any service after April 30, 2011. However, members of the Council, including the Mayor, elected on March 27, 2007 for a term beginning May 1, 2007 and also elected on March 22, 2011 for a term beginning May 1, 2011 are members of this Plan as long as they are continuously a member of the Council, including the Mayor. Membership shall begin on the first day of employment.

3. Credited Service

Total creditable service is defined as the sum of the number of years of membership service and prior service.

Membership Service: Years and full calendar months of employment while a contributing member of this System.

Prior Service: Years and full calendar months of employment preceding December 21, 1962, if continuous with membership service.

**CITY OF KANSAS CITY, MISSOURI EMPLOYEES' RETIREMENT SYSTEM
MAY 1, 2022 ACTUARIAL VALUATION REPORT**

**APPENDIX C – SUMMARY OF PLAN PROVISIONS
TIER 1**

MAST employees are credited with service after April 25, 2010, plus a fraction of their service earned prior to April 25, 2010. This Fraction is based on their age and service as of April 25, 2010 as shown in the following table:

Sum of Age and Prior Service as of 4/25/10 Less Adjustment for Prior Retirement Benefit	Percent of Prior Service Credit
Over 80	100%
74 to 79	90
68 to 73	80
62 to 67	70
56 to 61	60
50 to 55	50
44 to 49	40
38 to 43	30
32 to 37	20
26 to 31	10
20 to 25	5

4. Normal Retirement

Age Requirement: General Employees: 65
Judges and Elected Officials: Later of age 60 or expiration of term of office.

Service Requirement: General Employees: 5 years of creditable service.
Judges and Elected Officials: One elective term.

Amount: General Employees:
If unmarried or married and not electing a joint & survivor benefit at the time of retirement, 2.22% of final average compensation multiplied by years and months of creditable service.

If married and electing a joint & survivor benefit at date of retirement, 2.00% of final average compensation multiplied by years and months of creditable service.

Minimum benefit: \$400 per month if retirement with at least 10 years of creditable service.

Maximum benefit: 70% of final average compensation.

CITY OF KANSAS CITY, MISSOURI EMPLOYEES' RETIREMENT SYSTEM
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APPENDIX C – SUMMARY OF PLAN PROVISIONS
TIER 1

Judges and Elected Officials:

2.22% of average monthly compensation received by then serving Judges and Elected Officials of the same office during the 24 months preceding the beginning of the annuity multiplied by years and months of creditable service.

Maximum benefit: 70% of the existing salary for then serving Judges and Elected Officials of the same office.

A member retiring with a normal, optional, service, or early retirement benefit may elect to withdraw all or a portion of member accumulated contributions and interest and receive a reduced annuity.

Final average compensation is defined as the monthly average of the two highest years of compensation in the last ten years (for Elected Officials, last 24 months for then serving elected official of the same office). Compensation does not include bonus, overtime, expense allowance, or other extraordinary compensation.

5. Optional Retirement

Age/Service Requirement: 60 and 10 years of creditable service, or the sum of age and service equals 80, if earlier.

Amount: Same as normal retirement.

6. Early Retirement

Age/Service Requirement: General Employees: 60 and 5 years of creditable service, or 55 and 10 years of creditable service.

Judges and Elected Officials: 55 and 10 years of creditable service.

Amount: Accrued benefit reduced by ½ of 1% per month if age less than 60 or, if service is less than ten, ½ of 1% per month if age less than 65.

7. Disability Benefit

Disability benefits are provided through a separate long-term disability program, effective June 1, 1996.

APPENDIX C – SUMMARY OF PLAN PROVISIONS
TIER 1

8. Vesting

Age Requirement: None

Service Requirement: Five years of service.

Amount: Accrued benefit payable at age 60, or payable at age 65 if service less than 10.

9. Withdrawal (Refund) Benefit

Age Requirement: None

Service Requirement: Less than five years of service.

Amount: An employee terminating before becoming eligible for a deferred pension or choosing not to elect a deferred benefit, will receive a return of contributions with interest.

10. Pre-Retirement Death Benefit

Service less than five years

Age Requirement: None

Service Requirement: Less than five years.

Amount: Lump sum equal to the member's accumulated contributions and interest shall be paid to the surviving spouse or, if no surviving spouse, to the designated beneficiary, or, if none, to the member's estate.

Service of five or more years but less than 20 years:

Age Requirement: None

Service Requirement: Five or more years of service but less than 20 years.

Amount: The surviving spouse may elect, in lieu of the lump sum settlement above, an annuity equal to 50% of the member's accrued annuity at the time of death. The effective date of this annuity shall be the later of the first day of the month following the member's death or

**APPENDIX C – SUMMARY OF PLAN PROVISIONS
TIER 1**

attainment of what would have been the member's early retirement date. The annuity is reduced for early retirement if paid at the member's early retirement date.

Service of 20 or more years of service:

Age Requirement: None

Service Requirement: 20 or more years of service.

Amount: The surviving spouse may elect, in lieu of the settlements above, an annuity equal to 100% of the member's accrued annuity at the time of death, actuarially reduced for 100% joint and survivor coverage. The effective date of this annuity shall be the first day of the month following the member's death.

11. Post-Retirement Death Benefit

Age Requirement: None

Service Requirement: None

Amount: The surviving spouse shall receive an annuity equal to 50% of the member's accrued annuity, or, if the member elected the actuarially equivalent 100% joint and survivor annuity, this annuity shall continue to be paid to the surviving spouse. Either annuity is payable until the death of the spouse.

12. Minimum Surviving Spouses' Pension

A minimum benefit of \$200 per month is paid to surviving spouses of members with 10 or more years of creditable service.

13. Health Insurance Subsidy

A monthly health insurance subsidy of \$200 is paid to all current and future pensioners. Benefits are payable for the lifetime of the member and are not subject to an annual cost-of-living adjustment.

14. Cost-of-Living Adjustment (COLA)

An increase of 3.00% of the original pension will be made annually. Members must retire on or before January 1 in order to receive a COLA in the following year.

**CITY OF KANSAS CITY, MISSOURI EMPLOYEES' RETIREMENT SYSTEM
MAY 1, 2022 ACTUARIAL VALUATION REPORT**

**APPENDIX C – SUMMARY OF PLAN PROVISIONS
TIER 1**

15. Contributions

- a. Member
 - 5.00% of salary for non-MAST employees.
 - Between 5.00% and 7.00% for MAST employees based on their age and service as of April 25, 2010, (see the following table).
 - The City “picks up” these employee contributions.
- b. City
 - For the year beginning May 1, 2022, the City is contributing 17.72% of payroll, which is the actuarially determined Board contribution rate for the prior year. Future City contributions will be determined through the City’s budgeting process.

The contribution rate for MAST employees is based upon the following table:

Sum of Age and Prior Service as of 4/25/10 Less Adjustment for Prior Retirement Benefit	Contribution Rate
Over 80	7.0%
74 to 79	6.0%
68 to 73	5.8%
62 to 67	5.6%
56 to 61	5.4%
50 to 55	5.2%
44 to 49	5.1%
38 to 43	5.0%
32 to 37	5.0%
26 to 31	5.0%
20 to 25	5.0%

16. Interest on Employee Contributions

As determined by the Board of Trustees.

17. Changes since Last Valuation

None

CITY OF KANSAS CITY, MISSOURI EMPLOYEES' RETIREMENT SYSTEM
MAY 1, 2022 ACTUARIAL VALUATION REPORT

APPENDIX C – SUMMARY OF PLAN PROVISIONS
TIER 2

1. Plan Year

May 1 through April 30.

2. Membership

All full-time permanent employees hired on or after April 20, 2014 in the classified and unclassified services shall become members as a condition of employment.

3. Credited Service

Total creditable service is defined as the sum of the number of years of membership service and prior service.

Membership Service: Years and full calendar months of employment while a contributing member of this System.

4. Normal Retirement

Age Requirement: 67

Service Requirement: 10 years of creditable service.

Amount: 1.75% of final average compensation multiplied by years and months of creditable service.

Minimum benefit: \$400 per month if retirement with at least 10 years of creditable service.

Maximum benefit: 70% of final average compensation.

A member retiring with a normal, optional, service, or early retirement benefit may elect to withdraw all or a portion of member accumulated contributions and interest and receive a reduced annuity.

Final average compensation is defined as the monthly average of the three highest years of compensation in the last 10 years. Compensation does not include bonus, overtime, expense allowance, or other extraordinary compensation.

CITY OF KANSAS CITY, MISSOURI EMPLOYEES' RETIREMENT SYSTEM
MAY 1, 2022 ACTUARIAL VALUATION REPORT

APPENDIX C – SUMMARY OF PLAN PROVISIONS
TIER 2

5. Optional Retirement

Age/Service Requirement: The earlier of age 62 and 10 years of creditable service, or the sum of age and service equals 85.

Amount: Same as normal retirement.

6. Early Retirement

Age/Service Requirement: 57 and 10 years of creditable service.

Amount: Accrued benefit reduced by $\frac{1}{2}$ if 1% per month of age less than 62.

7. Disability Benefit

Disability benefits are provided through a separate long-term disability program.

8. Vesting

Age Requirement: None

Service Requirement: Ten years of service

Amount: Accrued benefit payable at age 62

9. Withdrawal (Refund) Benefit

Age Requirement: None

Service Requirement: Less than ten years of service

Amount: An employee terminating before becoming eligible for a deferred pension or choosing not to elect a deferred benefit, will receive a return of contributions with interest.

10. Pre-Retirement Death Benefit

Service less than ten years

Age Requirement: None

Service Requirement: Less than ten years

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APPENDIX C – SUMMARY OF PLAN PROVISIONS
TIER 2

Amount: Lump sum equal to the member's accumulated contributions and interest shall be paid to the surviving spouse or, if no surviving spouse, to the designated beneficiary, or, if none, to the member's estate.

Service of ten or more years but less than 20 years:

Age Requirement: None

Service Requirement: Ten or more years of service but less than 20 years.

Amount: The surviving spouse may elect, in lieu of the lump sum settlement above, an annuity equal to 50% of the member's accrued annuity at the time of death. The effective date of this annuity shall be the later of the first day of the month following the member's death or attainment of what would have been the member's early retirement date. The annuity is reduced for early retirement if paid at the member's early retirement date.

Service of 20 or more years of service:

Age Requirement: None

Service Requirement: 20 or more years of service.

Amount: The surviving spouse may elect, in lieu of the settlements above, an annuity equal to 100% of the member's accrued annuity at the time of death, actuarially reduced for 100% joint and survivor coverage. The effective date of this annuity shall be the first day of the month following the member's death.

11. Post-Retirement Death Benefit

Age Requirement: None

Service Requirement: None

Amount: The surviving spouse shall receive an annuity equal to 50% of the member's accrued annuity, or, if the member elected the actuarially equivalent 100% joint and survivor annuity, this annuity shall continue to be paid to the surviving spouse. Either annuity is payable until the death of the spouse.

APPENDIX C – SUMMARY OF PLAN PROVISIONS
TIER 2

12. Minimum Surviving Spouses' Pension

A minimum benefit of \$200 per month is paid to surviving spouses of members with 10 or more years of creditable service.

13. Health Insurance Subsidy

A monthly health insurance subsidy of \$200 is paid to all current and future pensioners. Benefits are payable for the lifetime of the member and are not subject to an annual cost-of-living adjustment.

14. Cost-of-Living Adjustment (COLA)

COLA will only be payable if the prior year's funding ratio is greater than or equal to 80% and will be equal to the percentage increase in the consumer price index, up to a maximum of 2.50%, payable at age 62. Members must retire on or before January 1, in order to receive a COLA in the next year.

15. Contributions

- a. Member
 - 5.00% of salary.
 - The City "picks up" these employee contributions.
- b. City
 - For the year beginning May 1, 2022, the City is contributing 17.72% of payroll, which is the actuarially determined Board contribution rate for the prior year. Future City contributions will be determined through the City's budgeting process.

16. Interest on Employee Contributions

As determined by the Board of Trustees.

17. Changes since Last Valuation

None

APPENDIX D – GLOSSARY OF TERMS

1. Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as mortality, withdrawal, disability, and retirement; changes in compensation; inflation; rates of investment earnings, and asset appreciation or depreciation; and other relevant items.

2. Actuarial Cost Method

A procedure for determining the Actuarial Present Value of pension plan benefits and expenses and for developing an allocation of such value to each year of service, usually in the form of a Normal Cost and an Actuarial Liability.

3. Actuarial Gain/(Loss)

A measure of the difference between actual experience and that expected based upon a set of Actuarial Assumptions during the period between two Actuarial Valuation dates, as determined in accordance with a particular Actuarial Cost Method.

4. Actuarial Liability

The portion of the Actuarial Present Value of Projected Benefits which will not be paid by future Normal Costs. It represents the value of the past Normal Costs with interest to the valuation date.

5. Actuarial Present Value (Present Value)

The value as of a given date of a future amount or series of payments. The Actuarial Present Value discounts the payments to the given date at the assumed investment return and includes the probability of the payment being made. As a simple example: assume you owe \$100 to a friend one year from now. Also, assume there is a 1% probability of your friend dying over the next year, in which case you won't be obligated to pay him. If the assumed investment return is 10%, the actuarial present value is:

$$\frac{\text{Amount}}{\text{Probability of Payment}} \times \frac{1}{(1+\text{Investment Return})} = \text{Present Value}$$

$$\$100 \times \frac{1}{(1 - .01)} \times \frac{1}{(1+.1)} = \$90$$

6. Actuarial Valuation

The determination, as of a specified date, of the Normal Cost, Actuarial Liability, Actuarial Value of Assets, and related Actuarial Present Values for a pension plan.

APPENDIX D – GLOSSARY OF TERMS

7. Actuarial Value of Assets

The value of cash, investments, and other property belonging to a pension plan as used by the actuary for the purpose of an Actuarial Valuation. The purpose of an Actuarial Value of Assets is to smooth out fluctuations in market values. This way long-term costs are not distorted by short-term fluctuations in the market.

8. Actuarially Equivalent

Of equal Actuarial Present Value, determined as of a given date with each value based on the same set of Actuarial Assumptions.

9. Amortization Payment

The portion of the pension plan contribution is designed to pay interest and principal on the Unfunded Actuarial Liability in order to pay for that liability in a given number of years.

10. Entry Age Normal Actuarial Cost Method

A method under which the Actuarial Present Value of the Projected Benefits of each individual included in an Actuarial Valuation is allocated on a level basis over the earnings of the individual between entry age and assumed exit ages.

11. Funded Percentage

The ratio of the Actuarial Value of Assets to the Actuarial Liabilities.

12. Investment Return Assumption

The assumed interest rate used for projecting dollar related values in the future.

13. Mortality Table

A set of percentages that estimate the probability of death at a particular point in time. Typically, the rates are annual and based on age and sex.

14. Normal Cost

That portion of the Actuarial Present Value of pension plan benefits and expenses, which is allocated to a valuation year by the Actuarial Cost Method.

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APPENDIX D – GLOSSARY OF TERMS

15. Projected Benefits

Those pension plan benefit amounts which are expected to be paid in the future under a particular set of Actuarial Assumptions, taking into account such items as the effect of advancement in age and increases in future compensation and service credits.

16. Unfunded Actuarial Liability

The excess of the Actuarial Liability over the Actuarial Value of Assets.



Classic Values, Innovative Advice