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KPERS

Kansas Public Employees Retirement System

Valuation Report as of December 31, 2020

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Appendices

July 12, 2021

Board of Trustees
Kansas Public Employees Retirement System
611 S. Kansas Ave., Suite 100
Topeka, KS 66603

Dear Members of the Board:

At your request, we have performed an actuarial valuation of the Kansas Public Employees Retirement System (KPERS) as of December 31, 2020 for the purpose of determining contribution rates for FY 2024 for the State and Schools (July 1, 2023 to June 30, 2024) and FY 2023 for Local employers (calendar year 2023). The major findings of the valuation are contained in this report, which reflects the plan provisions in place on December 31, 2020 and any legislative changes from the 2021 Session. Several bills impacting KPERS were passed by the 2021 Legislature and signed by the Governor. There were two changes to the benefit provisions for the Kansas Police and Firemen's Retirement System. Under prior law, there was no difference in the benefit structure for service-connected and non-service-connected disability benefits. House Bill 2063 provides a different survivor benefit for disabled members who pass away prior to retirement eligibility due to service-connected causes. House Bill 2064 allows Kansas Highway Patrol and Kansas Bureau of Investigation members who initially elect to participate in the Deferred Retirement Option Program (DROP) for less than the maximum five year period to extend their DROP period up to the maximum of five years. House Bill 2405 authorizes the state of Kansas to issue bonds with net proceeds of $500 million to fund a portion of the School unfunded actuarial liability, assuming certain criteria are met. As a result, the State/School contribution rates for FY 2022 and FY 2023 were recertified in Senate Bill 159. These changes and their impact on the valuation results are discussed in further detail in the Executive Summary of this report. Finally, House Bill 2243 changed the timing for the actuarial experience study from every three years to four years. It also gives the KPERS Board of Trustees discretion to vary the timing of the experience study from three to five years, as they deem appropriate from a fiduciary standpoint. This change had no impact on the valuation results.

The last experience study was completed during 2019 and the KPERS Board adopted a new set of actuarial assumptions at their January 17, 2020 meeting. All of the recommended changes to the demographic assumptions were adopted, but the recommended economic assumptions were not adopted. The economic assumptions used in the December 31, 2018 valuation remain in place. Based on the data presented in the experience study report, it is our professional opinion that the set of economic assumptions used in this valuation does not represent reasonable expectations of future experience and, therefore, is not compliant with Actuarial Standard of Practice Number 27.

In preparing our report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, statutory provisions, member data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete, our results may be different and our calculations may need to be revised.

We certify that all costs, liabilities, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer our best estimate of anticipated experience affecting the System with the exception of the set of economic assumptions. Nevertheless, the emerging costs will vary from those presented in this report to the extent actual experience differs from that projected by the actuarial assumptions. The Board of Trustees has the final decision regarding the appropriateness of the assumptions and adopted the set of assumptions in Appendix C.

In order to prepare the results in this report, we have utilized appropriate actuarial models that were developed for this purpose. These models use assumptions about future contingent events along with recognized actuarial approaches to develop the needed results. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. Due to the limited scope of our assignment, we did not perform a thorough analysis of the potential range of future measurements.

The actuarial computations presented in this report are for purposes of determining the actuarial recommended and statutory funding amounts for the System. Actuarial computations for purposes of fulfilling financial accounting requirements for the System under Governmental Accounting Standard Number 67 and computations for financial reporting by employers under Governmental Accounting Standard Number 68 are provided in separate reports. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. Determinations for other purposes may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

As we prepare this report, the world is in the process of recovering from a major pandemic. We have considered available information, but do not believe there is sufficient data yet to warrant the modification of any of our long-term assumptions at this time. We will continue to monitor the situation and advise the Board in the future of any adjustments we believe would be appropriate.

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

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

We would like to express our appreciation to KPERS Executive Director, Alan Conroy, and to members of his staff, who gave substantial assistance in supplying the data on which this report is based.

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

Sincerely,

Patrice Beckham

Brent A. Banister

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

Brent A. Banister Ph.D., FSA, EA, MAAA, FCA
Chief Actuary

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OVERVIEW

The Kansas Public Employees Retirement System is an umbrella organization which administers the following three statewide pension groups: the Kansas Public Employees Retirement System (KPERS), the Kansas Police and Firemen's Retirement System (KP&F) and the Kansas Retirement System for Judges (Judges). This report presents the results of the December 31, 2020 actuarial valuations for each of the groups.

The primary purposes of performing actuarial valuations are to:

- determine the employer contribution rates required to fund each group on an actuarial basis,
- determine the statutory employer contribution rates for each group,
- disclose asset and liability measures as of the valuation date,
- evaluate and disclose key risks to funding the System pursuant to Actuarial Standard of Practice Number 51,
- compare the actual experience since the last valuation date to that expected, and
- analyze and report on trends in contributions, assets, and liabilities over the past several years.

There were several bills passed by the 2021 Legislature and signed into law by the Governor that impact KPERS including:

(1) House Bill 2405 (HB 2405) provided for net proceeds of up to $500 million from bonds issued by the state of Kansas to be deposited into the KPERS trust fund for the School group, subject to certain criteria. The bonds must be issued at an interest rate no greater than 4.3% and approved by the State Finance Council (approval received on June 24, 2021). Due to the passage of HB 2405, Senate Bill 159, which was the 2021 legislative session's omnibus budget bill, included a provision to reduce the previously certified State/School employer contribution rate from 14.09% to 13.33% for FY 2022 and from 13.86% to 13.11% for FY 2023. The bonds have not yet been issued, but the expected bond proceeds of $500 million are reflected in the projected unfunded actuarial liability as of July 1, 2023 and the corresponding UAL contribution rate.

(2) Under prior law, there was no difference in the benefit structure for service-connected and non-service-connected disability benefits. If a Tier 2 disabled member died prior to reaching their earliest retirement age, the death benefit was a lump sum benefit equal to 50% of the member's final average salary and a monthly benefit of 50% of the member's disability benefit. Under House Bill 2063, a different benefit for disabled members who pass away prior to retirement eligibility is provided if the disability was service-connected:
   - A monthly benefit of 50% of the member's final average salary at disability plus 10% for each dependent child up to a 75% maximum; or
   - If there are no dependent children, the retirement benefit the member would have received if the member had retired on the date of death.

   This change increased the KP&F unfunded actuarial liability by about $100,000 and increased the KP&F contribution rate by 0.04% of payroll.

(3) House Bill 2064 allows Kansas Highway Patrol and Kansas Bureau of Investigation members who initially elect to participate in the Deferred Retirement Option Program (DROP) for less than the maximum five years to later extend their DROP period up to the maximum of five years. This change, which potentially impacts future DROP election periods, did not impact the December 31, 2020 valuation results. If such elections occur in the future, they will be reflected in the next valuation.

(4) House Bill 2243 changed the timing for the actuarial experience study from every three years to four years. It also gives the KPERS Board of Trustees discretion to vary the timing of the experience study from three to five years, as they deem appropriate from a fiduciary standpoint. This change in House Bill 2243 had no impact on the December 31, 2020 valuation.

Experience Impacting the December 31, 2020 Valuation

The valuation results provide a "snapshot" view of the System's financial condition on December 31, 2020. The net change in the unfunded actuarial liability for the total System was a decrease of $519 million due to multiple factors including:

- The net rate of return on the market value of assets in 2020 was 11.1%, as reported by KPERS. However, due to the use of an asset smoothing method, the net rate of return on the actuarial value of assets for 2020 was 9.3%, which was higher than the assumed return of 7.75%. As a result of the favorable investment experience during 2020, the net deferred investment gain of $568 million in the prior valuation increased to $930 million in the current valuation (about 4% of market value).

- Liability experience for calendar year varied by group. State/School and Judges had a net liability gain (lower liabilities than expected) while the experience of the Local group and KP&F reflected a net actuarial loss (higher liabilities than expected). In aggregate, the valuation results reflect a net liability loss of $42 million for the year, about 0.13% of the actuarial liability. The largest component of the liability loss was higher salaries than expected.

- KPERS 3 (Cash Balance members) refers to non-correction members who either began their participation or were rehired on or after January 1, 2015. KPERS 3 members receive guaranteed interest credits of 4.0% on their account balances, but additional interest credits may be granted depending on actual investment returns. The additional interest credits, referred to as "dividends", are equal to 75% of the five-year average net compound rate of return, as determined by the Board for the preceding calendar year and the prior four calendar years on the market value of assets, that is above 6.0%. The dividend for 2020 was dependent on the net rate of return on the market value of assets for calendar years 2016 through 2020. The average annualized net return for the five-year period was 9.3% so the statutory formula provided for a dividend of 2.475% for 2020. Dividend credits are expected to be paid periodically so they are included in the assumed total interest crediting rate of 6.25%. Because the 2020 dividend was greater than the assumption of 2.25%, it created a small actuarial loss that was part of the net liability experience.

- Employer contributions for the State/School group during 2020 were $8 million less than the full actuarial contribution rate. For the first time since 1994, the State/School statutory contribution rate for FY 2021 was equal to the full actuarial employer contribution rate. However, since the fiscal year for the State/School group begins July 1, employer contributions for calendar year 2020 were still slightly less than the full actuarial contribution amount due to the difference in the statutory and actuarial rate from January 1, 2020 to June 30, 2020. After many years of actual employer contributions substantially below the actuarial contributions, this is a key factor in improving the System's funding.

As a result of all experience in 2020, the unfunded actuarial liability decreased by $519 million from $9.007 billion to $8.488 billion. A detailed analysis of the components of the change in the unfunded actuarial liability from December 31, 2019 to December 31, 2020 can be found on page 10.

Summary Results

In KPERS, the State, School and Local employer contribution rates certified by the Board may not increase over the prior year by more than the statutory cap. The statutory cap has changed over time, but the current cap is 1.20%. Also, while separate valuations are performed for the State and School groups, the statutory contribution rate for the two groups is determined using their combined valuation results. Due to the statutory cap, the employer contribution rate was below the actuarial contribution for many years. However, the statutory State/School employer contribution rate has been equal to the actuarial required contribution rate since the December 31, 2017 valuation (FY 2021 contribution rates). By statute, if the actuarial required contribution (ARC) for the State alone is less than the statutory contribution rate when the two groups are combined (as it is in this valuation), the excess of the statutory contribution rate over the actuarial required contribution rate for the State alone is allocated to the School to improve the funding of that group.

A summary of actuarial and statutory employer contribution rates for the Retirement System (excluding the statutory contribution for the Death and Disability Program) for this valuation and the prior valuation follows. The December 31, 2020 actuarial valuation is used to set the employer contribution rate for FY 2024 for the State/School, State KP&F and Judges groups and calendar year 2023 for the Local and Local KP&F groups.

	December 31, 2020 Valuation		
System	**Actuarial**	**Statutory**	**Difference**
State[1]	9.38%	12.57%	(3.19%)
School[1]	13.38%	12.57%	0.81%
State/School[1]	12.57%	12.57%	0.00%
Local[1]	8.43%	8.43%	0.00%
Police & Fire - Uniform Rates[2]	22.86%	22.86%	0.00%
Judges	16.48%	16.48%	0.00%

	December 31, 2019 Valuation		
System	**Actuarial**	**Statutory**	**Difference**
State[1]	10.08%	13.11%	(3.03%)
School[1]	13.88%	13.11%	0.77%
State/School[1]	13.11%	13.11%	0.00%
Local[1]	8.90%	8.90%	0.00%
Police & Fire - Uniform Rates[2]	22.99%	22.99%	0.00%
Judges	17.77%	17.77%	0.00%

[1] By statute, rates are allowed to increase by a maximum of 1.20%, plus the cost of any benefit enhancements. The December 31, 2020 valuation sets the employer contribution rate for FY 2024 for the State and School group and calendar year 2023 for the Local group. An additional contribution of 0.60% applies to the School group in FY 2024 due to contribution reductions in FY 2017 and FY 2019 (see table on next page).

[2] For KP&F, the statutory contribution rate is equal to the "Uniform" rate. The rate shown is for both State and Local employers. The uniform rate does not include the payment required to amortize the unfunded past service liability determined separately for each employer (Table 15).

Based on the results of this valuation, the statutory contribution rates for the State, State/School and Local groups continue to be at the actuarial required contribution rate. Due to the statutory cap for the KPERS group, the statutory contribution rate for the State/School group was less than the actuarial required contribution rate (ARC) for more than 20 years. In the December 31, 2017 actuarial valuation (which set the FY 2021 contribution rates), the State/School group reached the ARC date (statutory contribution rate equal to the actuarial contribution rate) at a contribution rate of 14.23%. This is an important milestone for the State/School group and will serve to reduce the unfunded actuarial liability and improve the funded ratio of the State/School group in the future.

Legislation passed in the 2017 session provided for the payment of the delayed contributions for the School group from FY 2017 and FY 2019 in level annual installments over 20-year periods commencing in FY 2018 and FY 2020, respectively. These installment payments are determined as an additional contribution rate for the School group and are added to the regular statutory contribution rate determined for the State/School group. The additional annual contribution for the $64 million delayed School contributions from fiscal year 2017 is $6.4 million which is 0.16% for FY 2022, 0.15% for FY 2023, and 0.15% for FY 2024. The additional annual contribution for the scheduled $194 million delayed School contributions from fiscal year 2019 is $19.4 million which is 0.48% for FY 2022, 0.46% for FY 2023 and 0.45% for FY 2024. The total statutory contribution rates for the School group for FY 2021 through FY 2023 are shown in the following table:

	FY 2022	FY 2023	FY 2024
Regular Statutory State/School Contribution Rate	13.33%	13.11%	12.57%
Contribution for FY 2017 Contribution Reduction	0.16%	0.15%	0.15%
Contribution for FY 2019 Contribution Reduction	0.48%	0.46%	0.45%
Total School Contribution Rate	13.97%	13.72%	13.17%

As noted in the Certification Letter, Cavanaugh Macdonald Consulting (CMC) recommended changes to the set of economic assumptions, based on the data and analysis in the experience study prepared during 2019. Our recommendations for the economic assumptions were not adopted by the KPERS Board. Instead, they elected to continue the use of the economic assumptions from the December 31, 2018 valuation which include an inflation assumption of 2.75%, general wage increase of 3.50% and an investment return assumption of 7.75%. Based on the data presented in the experience study report, it is our professional opinion that the set of economic assumptions used in this valuation is not reasonable, as defined in Actuarial Standard of Practice Number 27. Furthermore, the shortfall between the expected return for the KPERS' portfolio and the current assumption of 7.75% has increased since the experience study was performed. Further discussion with the Board is recommended before the next valuation is completed in 2022.

The economic assumptions, and the investment return assumption in particular, have a powerful impact on the liabilities and costs of the System. Therefore, it is important for the Board and other interested parties to be aware of the potential impact of using a different set of economic assumptions. The following table illustrates the impact of a different set of economic assumptions on the valuation results. For purposes of this illustration, the set of economic assumptions includes an investment return assumption of 7.00%, an inflation assumption of 2.50%, a general wage inflation assumption of 3.00% and a payroll growth assumption of 2.50%. These assumptions reflect the median economic assumptions used by other large public retirement systems. While we believe this set of economic assumptions complies with ASOP 27, it is only being used for illustrative purposes. Our ultimate recommendation regarding the appropriate set of economic assumptions for KPERS will be dependent on the data and analysis performed when a review of the current economic assumptions is performed.

	Unfunded Actuarial Liability ($Millions)		Funded Ratio		Employer Contribution Rate	
	Current	Alternative	Current	Alternative	Current	Alternative
State/School	$6,143	$7,684	71%	66%	12.57%	15.74%
Local	$1,417	$1,857	76%	71%	8.43%	10.82%
KPF	$917	$1,205	75%	70%	22.86%	28.19%
Judges	$6.5	$19.1	97%	91%	16.48%	23.06%

Note: increase in UAL from different assumptions is amortized over 25 years.

EXPERIENCE - ALL SYSTEMS COMBINED

December 31, 2019 – December 31, 2020

In many respects, an actuarial valuation can be thought of as an inventory process. The inventory is taken as of the actuarial valuation date, which for this valuation is December 31, 2020. On that date, the assets available for the payment of benefits are appraised. The assets are compared with the liabilities of the System, which are generally in excess of assets. The actuarial process leads to a method of determining the contributions needed by members and employers in the future to balance the System assets and liabilities.

Changes in both the System's membership, assets and liabilities impacted the change in the actuarial contribution rates between the December 31, 2019 and December 31, 2020 actuarial valuations. On the following pages, each component is examined.

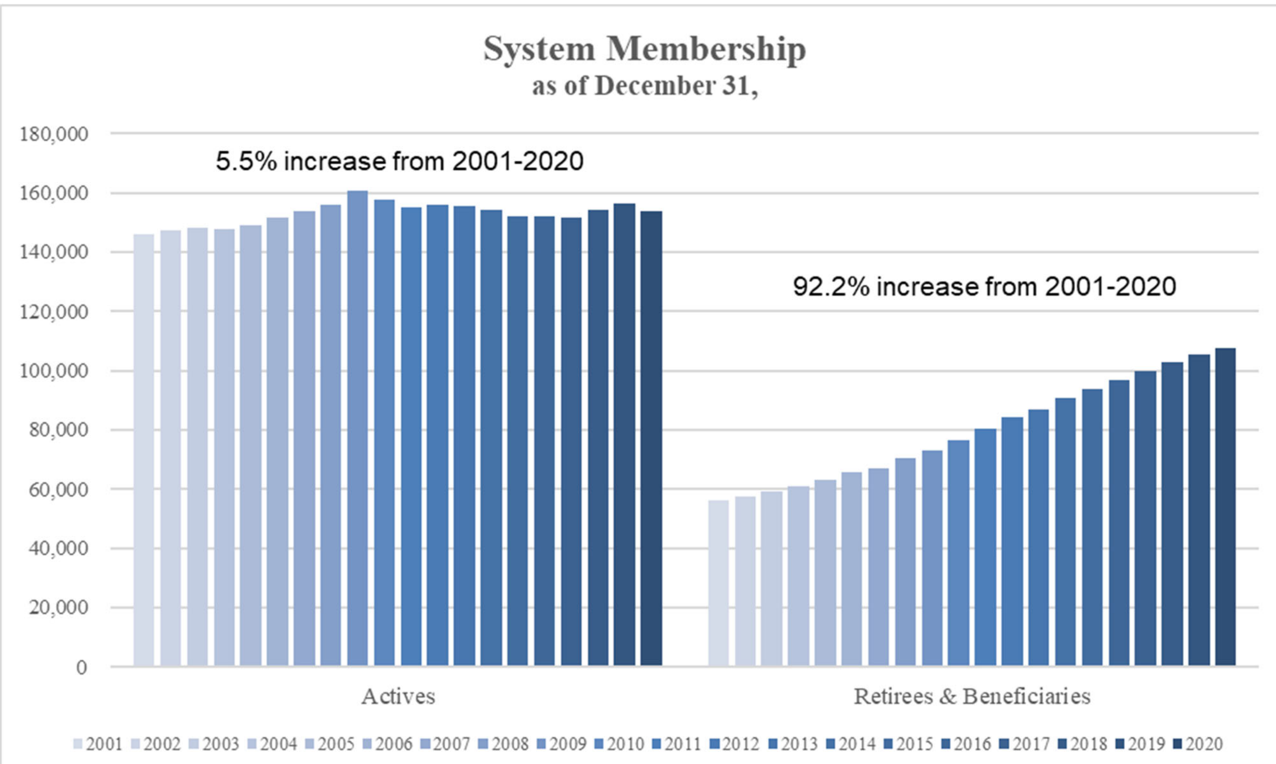
MEMBERSHIP

The following table contains a summary of the changes in the active membership between the December 31, 2019 and December 31, 2020 actuarial valuations.

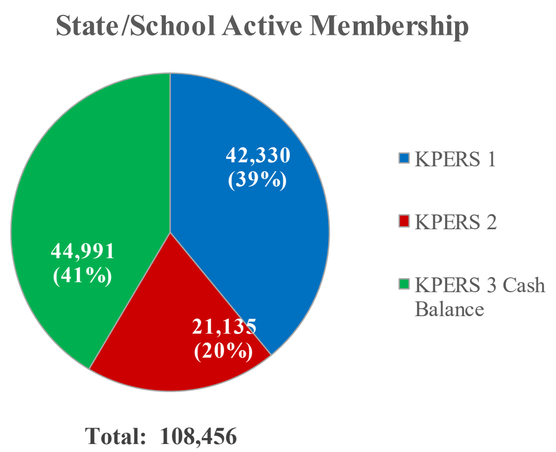
	State	School	Local	KP&F	Judges	Total
12/31/2019 (Starting count)	21,239	88,953	38,007	7,797	257	156,253
New actives	2,322	9,264	4,859	734	14	17,193
Non-vested Terminations	(903)	(4,608)	(2,225)	(333)	0	(8,069)
Elected Refund	(455)	(937)	(963)	(93)	0	(2,448)
Vested Terminations	(499)	(2,314)	(1,139)	(34)	0	(3,986)
Total Withdrawals	(1,857)	(7,859)	(4,327)	(460)	0	(14,503)
Deaths	(65)	(112)	(60)	(6)	0	(243)
Disabilities	(29)	(51)	(28)	(17)	0	(125)
Retirements	(817)	(2,481)	(1,078)	(213)	(27)	(4,616)
Other/Transfer	3	(54)	51	0	0	0
12/31/2020 (Ending count)	20,796	87,660	37,424	7,835	244	153,959

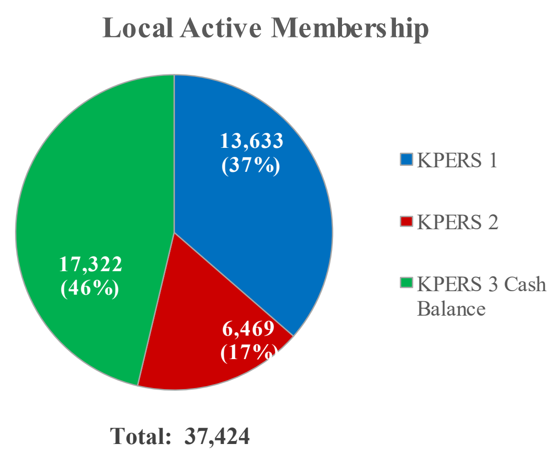
As can be seen from the table, in total KPERS experienced a net decrease in the number of active members with the largest decrease occurring in the School group. As the following graph shows, active membership growth has been relatively stagnant overall for the past decade, with the active membership peaking in the December 31, 2009 valuation. While this pattern of low (or at times negative) active member growth has not been unusual in the public sector, a declining active membership has an adverse impact on the actuarial contribution rate. In general, fewer active members result in total active member payroll that does not increase as expected (3% per year). When this occurs, contribution dollars into the System for that plan year are lower so the unfunded actuarial liability does not decrease as scheduled. In addition, the unfunded actuarial liability contribution rate increases because the dollar amount of the amortization payment is divided by a smaller amount of payroll.

The following graph shows the number of active members and retirees and beneficiaries in the last 20 valuations. The number of retirees and beneficiaries has grown significantly more than active members over this period.



KPERS currently has three different benefit structures. The most recent tier, KPERS 3 (Cash Balance members), covers non-corrections members who either began their participation or were rehired on or after January 1, 2015. KPERS 2 includes members who either began their participation or were rehired on or after July 1, 2009, but before January 1, 2015. Of the 145,880 active KPERS members, 27,604 (about 19%) are KPERS 2 members and 62,313 (about 43%) are KPERS 3 members as of the valuation date. For the first time, KPERS 3 members represent the largest group of active members. The split of KPERS members in the State/School group and Local group, by benefit tier, is shown in the following charts.





Because KPERS 3 is a relatively new group, the members are younger and have lower years of service. Therefore, KPERS 3 members' liability is relatively small so the valuation results are more significantly affected by members of KPERS 1 and KPERS 2. As time passes and more active members are in KPERS 3, the cash balance benefit structure will have an increasing impact on the overall valuation results. One aspect of this change is that total valuation results are expected to have less volatility since KPERS 3 has certain risk sharing features built into the interest crediting rate on account balances. For example, lower actual investment returns will translate into lower dividends, smaller account balances and, therefore, smaller benefit amounts, mitigating the growth in the KPERS 3 actuarial liability.

ASSETS

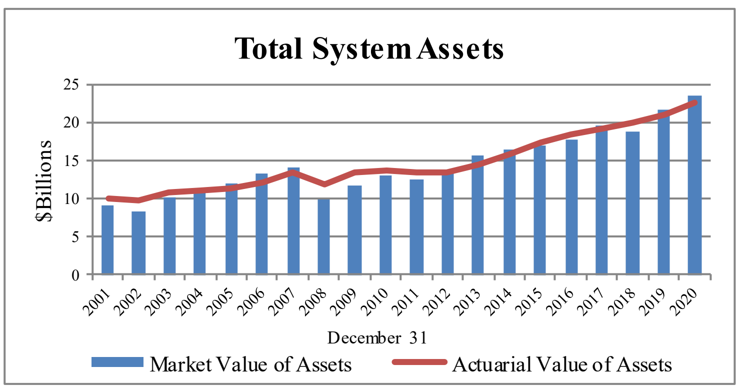
As of December 31, 2020, the System had total funds of $23.4 billion on a market value basis, excluding assets held for the Group Insurance and Optional Life reserves. This was an increase of $1.8 billion from the December 31, 2019 fund balance.

Due to the volatility in the market value of assets, it is not used directly in the calculation of contribution rates. An asset valuation method is used to smooth the effect of market fluctuations. The smoothing method calculates the difference between the actual dollar amount of investment return and the expected return (using the assumed rate of return) on the market value of assets each year. The dollar amount of the difference is recognized equally over a five-year period (20% per year). See Tables 3A through 3F and 4 for the detailed development of the actuarial value of assets as of December 31, 2020 for each group.

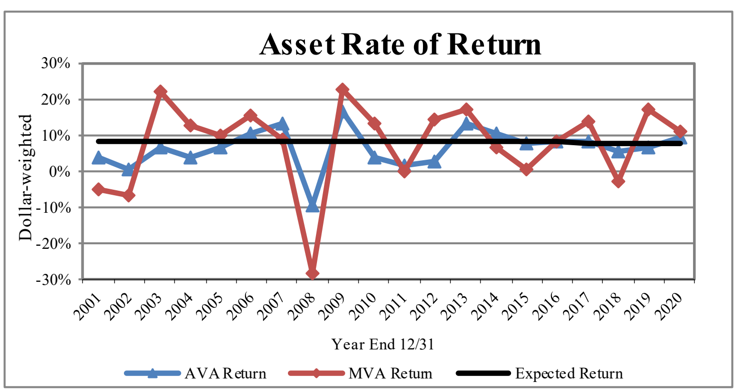
The components of the change in the total market value and actuarial value of assets for the Retirement System (in millions) are set forth in the following table.

	Market Value $ (millions)	Actuarial Value $ (millions)
Assets, December 31, 2019	$21,543	$20,976
- Employer and Member Statutory Contributions	1,478	1,478
- Additional Contributions	0	0
- Benefit Payments	(1,954)	(1,954)
- Investment Income, Net of Expenses	2,286	1,922
Assets, December 31, 2020	$23,353	$22,422
Net Rate of Return	+11.1%	+9.3%

Due to the use of an asset smoothing method, there is a net deferred investment gain of $930 million that has not yet been recognized, i.e. the market value of assets is greater than the actuarial value. This deferred investment gain will be recognized in the actuarial value of assets over the next four years but may be offset by actual investment experience if it is less favorable than assumed.



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



The net rate of return on the actuarial (smoothed) value of assets has been less volatile than the market value return. The deferred investment gain in this valuation will be reflected in the actuarial value of assets in the next few years, absent future unfavorable investment experience.

LIABILITIES

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

The unfunded actuarial liability by group is summarized below (in millions):

	State	School	Local	KP&F	Judges	Total*
Actuarial Liability	$4,675	$16,385	$5,928	$3,722	$201	$30,910
Actuarial Value of Assets	3,789	11,127	4,509	2,803	194	22,422
Unfunded Actuarial Liability*	$886	$5,257	$1,420	$919	$6	$8,488
Funded Ratio	81.0%	67.9%	76.1%	75.3%	96.8%	72.5%

* May not add due to rounding.

See Table 6 for the detailed development of the actuarial liability by group. The calculation of the unfunded actuarial liability by group is shown in Table 10.

The unfunded actuarial liability is amortized using a "layered" approach. The legacy unfunded actuarial liability is the amount of unfunded actuarial liability in the December 31, 2015 valuation, projected to June 30, 2018 for State/School and Judges and December 31, 2017 for Local and KP&F to reflect the lag between the valuation date and the fiscal year to which the contribution rates set in the valuation apply. This initial or legacy unfunded actuarial liability amortization base continues to be amortized over the original amortization period, which was set at 40 years beginning July 1, 1993 (12 years remain as of December 31, 2020). As the remaining period for that base has decreased over time, the portion of the payment that is applied to the principal of the outstanding balance increases. This was a key factor in the decrease in the unfunded actuarial liability from the prior valuation, as shown in the table on the following page. The change in the unfunded actuarial liability, resulting from the assumption changes reflected in the 2016 and 2019 valuations, was amortized over a closed 25-year period. Changes in the unfunded actuarial liability that result from actuarial experience each year (gains and losses) are amortized over a closed 20-year period that begins with the fiscal year in which the contribution rates will apply.

Prior to the December 31, 2017 valuation (which set the contribution rates for fiscal year 2021), the statutory contribution rate for the State/School group was less than the actuarial contribution rate. The difference in the statutory and actuarial contribution rates since the 1994 valuation resulted in annual increases in the unfunded actuarial liability for that group (see graph on page 20). The contribution shortfall was the largest single factor in the increase in the amount of the unfunded actuarial liability over the last 25 years. Now that the full actuarial contribution rate is being contributed for all groups, the UAL is expected to decrease absent other factors such as actual experience different than expected based on the actuarial assumptions (on both assets and liabilities), changes in actuarial assumptions, procedures, methods, and changes in benefit provisions.

The actual experience measured in this valuation is that which occurred during the prior plan year (calendar year 2020). For State, Local and KP&F, the valuation results reflect a net liability loss for the year (which increases the unfunded actuarial liability), largely due to salary increases that were higher than expected. In contrast, there was a small net liability gain for School and Judges during 2020 from mortality experience, i.e., more deaths than expected. In aggregate, the net liability loss for the entire System was $42 million, about 0.13% of the actuarial liability. In addition, the System experienced a return of 9.3% on the actuarial value of assets, which is above than the assumed return of 7.75%, resulting in an experience gain of $316 million. Therefore, the net result of combined experience (asset and liability) in 2020 for all groups was an experience gain for the total System of $274 million.

Between December 31, 2019 and December 31, 2020 the change in the unfunded actuarial liability for the System, as a whole, was as follows (in millions):

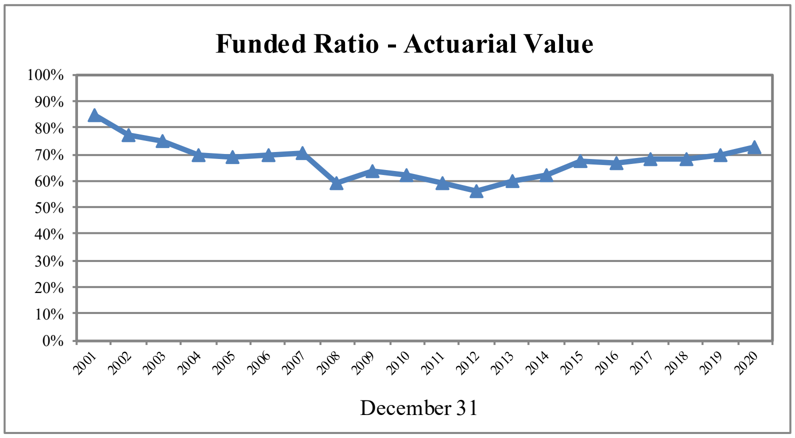
	$ millions
Unfunded Actuarial Liability, December 31, 2019	$ 9,007
• effect of contribution cap	8
• expected decrease due to amortization method	(225)
• (gain)/loss from investment return on actuarial assets	(316)
• demographic experience[1]	42
• all other experience	(28)
Unfunded Actuarial Liability, December 31, 2020[2]	$ 8,488

[1]Liability loss is about 0.13% of total actuarial liability.
[2]May not add due to rounding.

A detailed summary of the change in the unfunded actuarial liability by group is shown on page 22.

An evaluation of the unfunded actuarial liability on a pure dollar basis may not provide a complete analysis since only the difference between the assets and liabilities (which are both very large numbers) is reflected. Another way to evaluate the unfunded actuarial liability and the progress made in its funding is to track the funded status, the ratio of the actuarial value of assets to the actuarial liability. The funded ratio does not necessarily indicate whether or not additional funding is needed, nor does it indicate whether or not the plan could settle all liabilities with current assets. The funded status information for the total System is shown in the following table (in millions).

	12/31/15	12/31/16	12/31/17	12/31/18	12/31/19	12/31/20
Using Actuarial Value of Assets:						
Funded Ratio (AVA/AL)	67%	67%	68%	68%	70%	73%
Unfunded Actuarial Liability (AL-AVA)	$8,539	$9,061	$8,907	$9,202	$9,007	$8,488
Using Market Value of Assets:						
Funded Ratio (MVA/AL)	65%	65%	70%	64%	72%	76%
Unfunded Actuarial Liability (AL-MVA)	$9,055	$9,627	$8,569	$10,430	$8,439	$7,558



Changes in actuarial assumptions and methods, coupled with investment returns below the assumed rate and contributions below the actuarial rate significantly reduced the funded ratio over much of this period. The funded ratio is expected to increase steadily in the future assuming assumptions are met and scheduled contributions are made.

Given the current funded status of the System, the deferred investment experience, the amortization method and amortization periods, and the scheduled employer contribution rates, the dollar amount of the unfunded actuarial liability for the entire System is expected to decrease over the next few years as the unrecognized investment experience flows through the asset smoothing method. Over the longer term, the funded ratio is expected to improve, but will continue to be heavily dependent on actual investment returns in the future.

CONTRIBUTION RATES

The funding objective of the System is to establish contribution rates that over time will remain relatively level as a percentage of payroll, and to pay off the unfunded actuarial liability in a reasonable timeframe.

Generally, the actuarial contribution rates to the various Systems consist of:

- a "normal cost" for the portion of projected liabilities allocated by the actuarial cost method to service of members during the year following the valuation date and an expense load for administrative expenses for the year,
- an "unfunded actuarial liability contribution" for the excess of the portion of projected liabilities allocated to service to date over the actuarial value of assets.

There is also a statutory contribution rate that is used to finance the Death and Disability Program. Contributions for the Death and Disability Program are deposited in a separate trust fund from which benefits are paid. A separate actuarial analysis and report is prepared for the Death and Disability Program on June 30 of each year, so the death and disability contribution rate is not reflected in this report.

In KPERS, State, School and Local employers do not necessarily contribute the full actuarial contribution rate. Based on legislation passed in 1993, the employer contribution rates certified by the Board may not increase by more than the statutory cap. The statutory cap, which has been changed by the Legislature periodically, is 1.20% for all three groups. In 2021, HB 2405 authorized the Kansas Development Finance Authority to issue bonds with net proceeds of $500 million to improve the funding of the School group, subject to certain criteria. The bonds have not yet been issued, but are expected to be later this summer so the receipt of the proceeds is reflected in the projected UAL at July 1, 2023 and, therefore, the UAL contribution rate. In addition, the previously certified State/School employer contribution rate were changed by the legislature from 14.09% to 13.33% for FY 2022 and from 13.86% to 13.11% for FY 2023.

The results of the December 31, 2020 valuation are used to set employer contribution rates for fiscal year 2024 for the State and School (July 1, 2023 to June 30, 2024) and fiscal year 2023 for Local employers (calendar year 2023). The unfunded actuarial liability is amortized as a level-percentage of payroll for all groups except the Judges where a level-dollar payment is used. The payroll growth assumption is 3.00%, so the dollar amount of the annual amortization payments will increase 3.00% each year. As a result, if total payroll grows 3.00% per year, as assumed, the amortization payment will remain level as a percentage of total payroll. However, if actual payroll growth is less than 3.00%, the unfunded actuarial liability contribution rate will increase.

A summary of the actuarial and statutory employer contribution rates for the System is shown below:

	December 31, 2020 Valuation		
System	**Actuarial**	**Statutory**	**Difference**
State[1]	9.38%	12.57%	(3.19%)
School[1]	13.38%	12.57%	0.81%
State/School[1]	12.57%	12.57%	0.00%
Local[1]	8.43%	8.43%	0.00%
Police & Fire - Uniform Rates[2]	22.86%	22.86%	0.00%
Judges	16.48%	16.48%	0.00%

[1] By statute, rates are allowed to increase by a maximum of 1.20%, plus the cost of any benefit enhancements. The December 31, 2020 valuation sets the employer contribution rate for FY 2024 for the State and School group and calendar year 2023 for the Local group. An additional contribution of 0.60% applies to the School group in FY 2024 due to contribution reductions in FY 2017 and FY 2019.

[2] For KP&F, the statutory contribution rate is equal to the "Uniform" rate. The rate shown is for both State and Local employers. The uniform rate does not include the payment required to amortize the unfunded past service liability determined separately for each employer (Table 15).

As mentioned earlier, due to statutory caps the full actuarial contribution rate is not necessarily contributed for all KPERS groups. The State and Local groups reached the actuarial required contribution (ARC) date (the year in which the statutory contribution rate is equal to or greater than the ARC rate) in the 2010 and 2012 valuations, respectively, and remain at the ARC rate in this valuation. However, due to the lag between the valuation date and the applicable fiscal year for the contribution rate, the State group did not actually contribute the full ARC until FY 2014 and the Local group until CY 2015. Based on the current valuation, there is a difference (shortfall) between the actuarial and statutory contribution rates of 0.81% for the School group. However, the statutory contribution rate is set for the combined State/School group and the ARC date occurred in FY 2021 at a rate of 14.23% of pay, based on the December 31, 2017 valuation. The statutory and actuarial required contribution rates have remained equal since then, including in the current valuation.

Separate employer contribution rates are calculated for two subgroups of the State: Correctional Employee Groups with a normal retirement age of 55 (C55) and a normal retirement age of 60 (C60). The contribution rates are calculated by increasing the state statutory contribution rate by the difference in the normal cost rate for the C55 and C60 groups over the normal cost rate for regular state members, but not to exceed the statutory cap on contribution increases. The higher contribution rates are intended to finance the earlier normal retirement age. However, 2015 SB 228 reset the statutory employer contribution rates for FY 2016 and FY 2017 for the Correctional Employee groups to be the same as the employer contribution rate for the State/School group (10.91% and 10.81% respectively), eliminating the intended rate differential for a time. The resulting contribution rates for the Correctional Employee Groups for FY 2024 are shown in the following table.

Corrections Group	Statutory Rate
Retirement Age 55:	12.99%
Retirement Age 60:	13.73%

The change in the employer actuarial contribution rate from December 31, 2019 to December 31, 2020 and the primary components thereof are shown in the table on page 23. The employer contribution rates decreased from those in the December 31, 2019 valuation for all groups, primarily due to favorable investment experience during 2020.

COMMENTS

Like most public retirement systems, KPERS uses an asset smoothing method to average investment experience above and below the assumed net rate of return (7.75%). Under the asset smoothing method, the difference between the dollar amount of the actual and assumed investment experience is recognized equally over a five-year period. While the return on the market value of assets for 2020 was 11.1%, only a portion of the favorable experience is recognized in the current valuation. Due to the asset smoothing method, the return on the actuarial value of assets in 2020 was 9.3%. This generated an experience gain on assets because the actual return was above the assumed return of 7.75%. As of the valuation date, the market value of assets exceeds the actuarial value of assets by about 4.1% or $930 million. This deferred experience will flow through the asset smoothing method in the next four years and be recognized in the valuation process. However, it may be offset if future investment experience is below the 7.75% assumed rate of return. As the deferred investment experience is recognized, the funded ratio can be expected to increase and the actuarial contribution rate to decrease.

While the use of an asset smoothing method is a common procedure used by public retirement systems, it is important to identify the potential impact of the deferred (unrecognized) investment experience. This is particularly important when there are significant deferred investment losses, but it is also useful to consider the impact on the key actuarial measurements if the deferred investment gains are recognized. To illustrate the impact of the deferred investment experience, the key valuation results are shown in the following table for the State/School and KPF groups using both the actuarial value of assets and the pure market value. The impact would be similar for the other groups.

	December 31, 2020			
	State/School		KP&F	
	Actuarial	Market	Actuarial	Market
Actuarial Liability	$21,060	$21,060	$3,722	$3,722
Asset Value	14,916	15,533	2,803	2,918
Unfunded Actuarial Liability*	$ 6,143	$ 5,527	$ 919	$ 803
Funded Ratio	71%	74%	75%	78%
Contribution Rate:				
Normal Cost Rate	7.74%	7.74%	15.02%	15.02%
UAL Payment	10.83%	9.77%	14.99%	13.28%
Actuarial Contribution Rate	18.57%	17.51%	30.01%	28.30%
Employee Rate	6.00%	6.00%	7.15%	7.15%
Employer Rate	12.57%	11.51%	22.86%	21.15%

* May not add due to rounding

Future investment experience will impact the extent to which the deferred investment experience (which is currently a net gain) will be recognized. The ultimate impact of the deferred experience on the employer contribution rate would be similar to the column shown above based on the market value of assets, if all actuarial assumptions are met including the 7.75% return in future years. Also, please refer to the graphs later in this section that show the projected contribution rates assuming a 7.75% net rate of return in all future years.

The triennial experience study was performed during 2019 and the Board adopted changes to the demographic assumptions at the January 17, 2020 meeting. Although Cavanaugh Macdonald Consulting recommended changes to the economic assumptions, they were not adopted by the KPERS Board after discussion and consideration. Instead, the Board elected to continue the use of the economic assumptions used in the December 31, 2018 valuation which include an inflation assumption of 2.75%, general wage increase of 3.50% and an investment return assumption of 7.75%. Based on the data presented in the experience study report, it is our professional opinion that the set of economic assumptions used in this valuation are not reasonable, as defined in Actuarial Standard of Practice Number 27. Furthermore, the difference between the expected return for the KPERS' portfolio and the current assumption of 7.75% has increased since the experience study was performed. Further discussion with the Board is recommended before the next valuation is completed in 2022.

Legislative History

Over the last two decades, a comprehensive plan has been developed to address the long-term funding of KPERS and significant changes have occurred. HB 2014, which was passed by the 2003 Legislature, increased the statutory cap on the State/School employer contribution rate from 0.20% to 0.40% in FY 2006, 0.50% in FY 2007 and 0.60% in FY 2008 and beyond. It also authorized the issuance of up to $500 million in pension obligation bonds (POBs). The POBs were sold and proceeds of $440.2 million were received on March 10, 2004. The debt service payments on the bonds are paid by the State in addition to the regular KPERS employer contribution rate.

The 2004 Legislature passed SB 520, which continued to address issues related to the long-term funding of the System. It gave the KPERS Board of Trustees the authority to establish the actuarial cost method and amortization method/period. With this authority, the Board changed both the actuarial cost method and the asset valuation method with the December 31, 2003 actuarial valuation. SB 520 also increased the statutory cap for Local employers from 0.15% to 0.40% in FY 2006, 0.50% in FY 2007 and 0.60% in FY 2008 and beyond.

The 2007 Legislature passed SB 362 which created a new benefit structure for members first employed on or after July 1, 2009 (KPERS 2). The change was made partially due to long term funding considerations, but also in response to demographic changes in the membership.

The 2011 Legislature passed Senate Substitute for House Bill 2194 (Sub HB 2194). The intent of this law was to strengthen KPERS' long-term funding and improve the sustainability of the system. The bill contained significant changes for both KPERS employers and current and future members. In addition, Sub HB 2194 established a 13 member KPERS Study Commission to study alternative plan designs during the last half of 2011 and make a recommendation for KPERS plan design that would provide for the long term sustainability of the System. The Commission report was due to the Legislature by January 6, 2012. Sub HB 2194 required that the report recommendations be voted on by the 2012 Legislature for the other provisions of Senate Substitute for HB 2194 to become effective. The 2012 Legislature did not move the

Study Commission recommendation forward, but some of the other provisions were included in the bill that was ultimately passed in 2012, Senate Sub for House Bill 2333.

The 2012 Legislature passed Sub House Bill 2333, affecting new hires, current members and employers. The changes were made to improve KPERS' long term sustainability. The basic provisions of Sub House Bill 2333, as amended by House Bill 2213 in 2013, included:

- ✓ Increased the statutory cap on employer contribution rates to 0.9% in FY 2014, 1.0% in FY 2015, 1.1% in FY 2016 and 1.2% in FY 2017 and beyond.
- ✓ Contingent upon IRS approval, established an election by KPERS 1 members between different contribution rate and benefit levels. The legislation provided that, if the IRS rejected or did not take action to approve the election, KPERS 1 members would default to an increase in their employee contributions to 5% of compensation effective January 1, 2014, and 6% effective January 1, 2015, with an increase in the benefit multiplier to 1.85% beginning January 1, 2014, for future years of service only. Subsequently, the IRS issued a private letter ruling stating that the election granted to KPERS 1 members under 2012 HB 2333 was impermissible.
- ✓ For KPERS 2 members retiring after July 1, 2012, the cost of living adjustment (COLA) was eliminated, but members received a 1.85% multiplier for all years of service.
- ✓ Created a Cash Balance Plan for new hires beginning January 1, 2015. A cash balance plan is a type of defined benefit plan that includes some elements of a defined contribution plan and shares risk between the employer and employee. Each member has a hypothetical account that is credited with employee contributions, employer pay credits and interest credits. At retirement, the account balance is annuitized to create a guaranteed monthly benefit payable for the member's lifetime. Up to 30% of the account value at retirement may be paid as a lump sum.
- ✓ Beginning in FY 2014, provided for the state to make additional contributions to help pay down KPERS' unfunded actuarial liability until the State/School group reaches a funded ratio of at least 80%. The revenue was to come from the Expanded Lottery Act Revenues Fund (ELARF). However, for FY 2014 through 2017, the ELARF funds were appropriated as a partial funding source to meet the statutory contribution requirements for the School group rather than contributed in addition to the statutory contributions. Therefore, no additional funding of the unfunded actuarial liability has occurred. As a result, projections assume there will not be any additional payments to the unfunded actuarial liability from the ELARF funds.
- ✓ If the State of Kansas sells surplus real estate, 80% of the proceeds is to be used to pay down KPERS' unfunded actuarial liability until the System reaches an 80% funded ratio. However, 2016 SB 249 suspended this provision with respect to any sales of surplus real estate during FY 2017.

The 2014 Legislature passed HB 2533 which made changes to the KPERS 3 benefit structure, generally decreasing the portion of the benefit that is guaranteed, thereby increasing the risk-sharing portion of the benefit. The changes in House Bill 2533 were designed to further improve KPERS long term funding and to better manage investment risk.

The 2015 Legislature passed SB 4 which revised the State/School employer contribution rate from 11.27% to 8.65% for the last half of FY 2015 to correspond with the Governor's allotment. In addition, 2015 SB 228 provided for bonds to be issued to improve the funded status of the State/School group and also reduced the previously certified employer contribution rates for FY 2016 and 2017. The following provisions were included in SB 228:

- Net proceeds of up to $1.0 billion from bonds issued by the state of Kansas were to be deposited into the KPERS trust fund for the State/School group, subject to certain criteria. The bonds had to be issued at an interest rate no greater than 5.0% and approved by the State Finance Council (approval received July 2, 2015).

- Revised the previously certified State/School employer contribution rate from 12.37% to 10.91% for fiscal year 2016 and from 13.57% to 10.81% for fiscal year 2017. The statutory cap of 1.2% per year still applied to employer contribution rates in fiscal year 2018 and beyond.

The 2015 Legislature also passed House Bill 2095 that contained changes to the working after retirement provisions and implemented a pilot program in KP&F for a Deferred Option Retirement Plan for the Kansas Highway Patrol. Neither of these provisions had a significant impact on the long term funding of the System.

The 2016 Legislature passed House Sub for SB 168 which revised the rules pertaining to working after retirement. The bill also made technical and clarifying amendments to statutes related to death and disability contributions, KPERS 3 members, and the Deferred Retirement Option Program (DROP) for certain members of KP&F. None of these provisions had an impact on the December 31, 2015 valuation results. The 2016 Legislature also passed House Sub for SB 161 which provided for the delay of up to $100 million in State and School contributions for fiscal year 2016. House Sub for SB 249 provided that the delayed contributions would be repaid in full, with interest at 8%, by June 30, 2018. The Governor used this allotment authority to delay payments of $97.4 million for the State/School group and KP&F State contributions during the final quarter of FY 2016. However, S Sub for Sub HB 2052, passed in the 2017 session, provided that the repayment of these contributions would not be paid (subsequent legislation passed by the 2019 Legislature repaid these delayed contributions).

The 2017 Legislature passed several bills that impacted the provisions and funding of KPERS:

- Senate Substitute for Substitute HB 2052 (S Sub for Sub HB 2052) provided that a portion of the contributions for the School group for FY 2017 would be delayed so the total State/School contribution was $64.13 million less than the scheduled statutory contributions. The delayed employer contributions for fiscal year 2017 are repaid in level-dollar annual installments of $6.4 million over twenty years beginning in fiscal year 2018. These payments are determined as a contribution rate for School employers to be paid in addition to the statutory State/School contribution rate. Further, S Sub for Sub HB 2052 provided that the repayment of the contribution reduction from FY 2016 with interest ($115 million), scheduled in FY 2018, would not be paid (subsequent legislation passed by the 2019 Legislature repaid these delayed contributions).
- Senate Substitute for HB 2002 contained KPERS funding provisions for FY 2018 and FY 2019, including the following:
    - **FY 2018**: The contribution for the State/School group for fiscal year 2018 was made at the scheduled statutory rate of 12.01%. In addition, the first installment of $6.4 million on the 20-year amortization of the delayed contributions for FY 2017 was included.
    - **FY 2019**: A portion of the employer contributions for School employers within the State/School group for fiscal year 2019 were delayed so the total employer contribution was $420 million, including the second installment of $6.4 million on the delayed contribution for FY 2017. This resulted in an expected delay of $194 million to be repaid by the School group, as a level dollar amount over 20 years beginning in FY 2020.
    - **FY 2020**: The current statutory cap of 1.2% per year applied in determining the statutory contribution rate for the State/School group for FY 2020. The certified statutory rate from FY 2019 of 13.21%, without inclusion of the $6.4 million amortization of the delayed contributions in FY 2017 and $19.4 million amortization of the delayed contributions in FY 2019, was increased by 1.2%, resulting in a statutory contribution rate for FY 2020 of 14.41%. The current statutory cap of 1.2% per year applies for all subsequent years.

- SB 205 changed the duty-related death benefit for KP&F members to the greater of 50% of Final Average Salary and the member's accrued retirement benefit under the 100% joint and survivor option, payable to the member's spouse. Including any benefits that may be due to child beneficiaries, the total monthly benefits may not exceed 90% of the member's Final Average Salary. Prior to this this bill, the duty-related death benefit for a KP&F member was 50% of Final Average Salary, and the maximum available to the family was 75% of the member's Final Average Salary.

- House Substitute for SB 21 included changes to the working after retirement rules for members who retire on or after January 1, 2018. The key provisions of the bill were to lengthen the waiting period for KPERS members to return to work from 60 days to 180 days for members who retire before attaining age 62, remove the earnings limitation for all retirees, and establish a single employer contribution schedule for all retirees.

The 2018 Legislature passed House Substitute for Senate Bill 109 that provided for the following additional funding to the KPERS School group:

- An additional payment of $82 million in July 2018 (received by KPERS).
- A contingent additional payment of up to $56 million to be paid in FY 2018, if actual FY 2018 receipts exceed the consensus revenue estimates (full amount received in June, 2018).
- A contingent additional payment of up to $56 million to be paid in FY 2019, if actual FY 2019 receipts exceed the consensus revenue estimates (this payment was changed by the 2019 Legislature to a transfer of $51 million in FY 2020 which was received by KPERS on July 1, 2019).

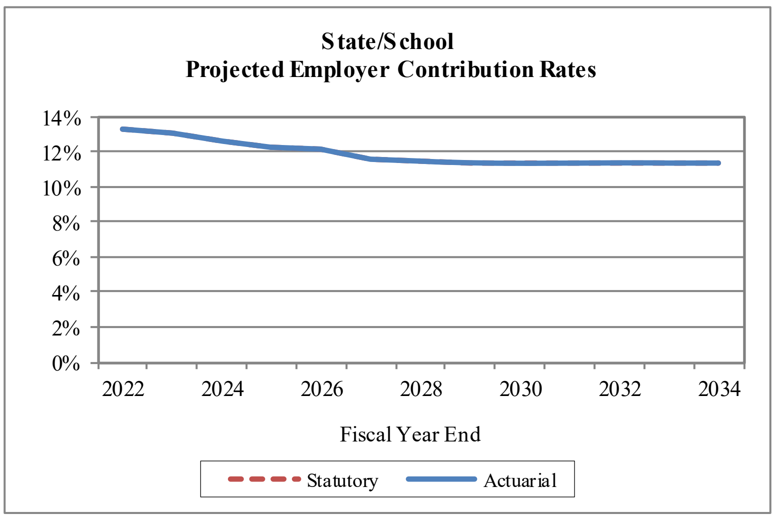
The 2019 Legislature passed two pieces of legislation that impacted the contributions to KPERS. Senate Bill 9 provided for a transfer of $115 million from the State General Fund to KPERS in March, 2019. This payment covered the $97 million in missed KPERS School contributions for FY 2016 plus interest. The additional contribution lowered the State/School actuarial contribution rate by 0.29%. The 2019 Legislature also passed House Substitute for Senate Bill 25. This legislation repealed the actions of the 2018 Legislature which provided for a contingent payment of up to $56 million in FY 2019, if actual FY 2019 receipts exceeded the consensus revenue estimates. Instead, this legislation directly transferred $51 million to the KPERS Trust Fund in FY 2020 (received by KPERS on July 1, 2019). The net reduction of $5 million did not have a significant impact on the valuation results.

The 2021 Legislature passed HB 2405, which provided for bonds to be issued to improve the funded status of the School group. As a result, net proceeds of up to $500 million from bonds issued by the state of Kansas are to be deposited into the KPERS trust fund for the School group, subject to certain criteria. The bonds must be issued at an interest rate no greater than 4.3% and approved by the State Finance Council. Due to the passage of HB 2405, SB 159, which was the 2021 legislative session's omnibus budget bill, included a provision to reduce the previously certified State/School employer contribution rates from 14.09% to 13.33% for FY 2022 and from 13.86% to 13.11% for FY 2023.

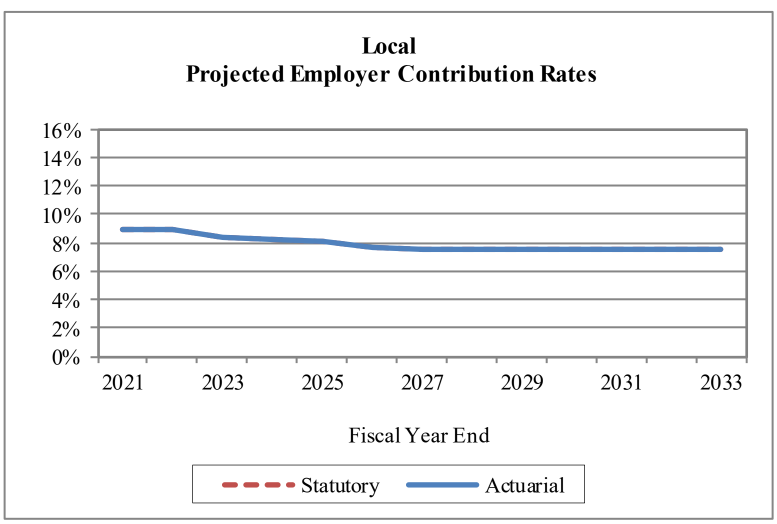
The legacy unfunded actuarial liability is amortized over a closed period ending in 2033 (12 years remaining as of this valuation date). Increases in the unfunded actuarial liability resulting from the assumption changes adopted in the December 31, 2016 and December 31, 2019 valuations are amortized over a closed 25 year period, while other actuarial experience bases (gains/losses) are amortized over closed 20 year periods. While all of the groups (State/School, Local, KP&F, and Judges) are projected to reach a funded ratio of 100%, the actual funding progress will be heavily dependent on the actual investment experience of the System in future years, the continuation of the current statutory funding policy for the State/School group, and actual contributions at the statutory rate. Any material extension of the amortization periods will delay funding progress by reducing contributions in the short term and increasing them over the long term.

The following graphs show the preliminary projected employer contribution rates assuming all actuarial assumptions are met in the future, including a 7.75% net rate of return on the market value of assets in all years, and that the current statutory funding policy for the State/School group (including the amortization policy) continues and contributions are made as scheduled. Note that we have not reflected any possible impact of the global pandemic upon either investment return or mortality experience because the significance of these impacts, if any, cannot be reasonably assessed at this time.

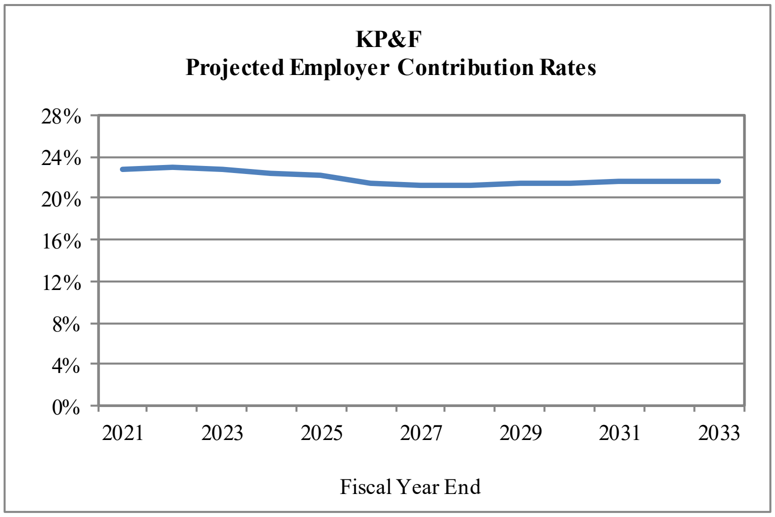
Note that although separate valuations are performed for the State and School groups, the statutory contribution rate for the two is determined using the combined valuation results for the two groups. Contributions which result from the excess of the statutory contribution rate over the actuarial required contribution rate for the State are allocated to the School to improve the funding of that group.



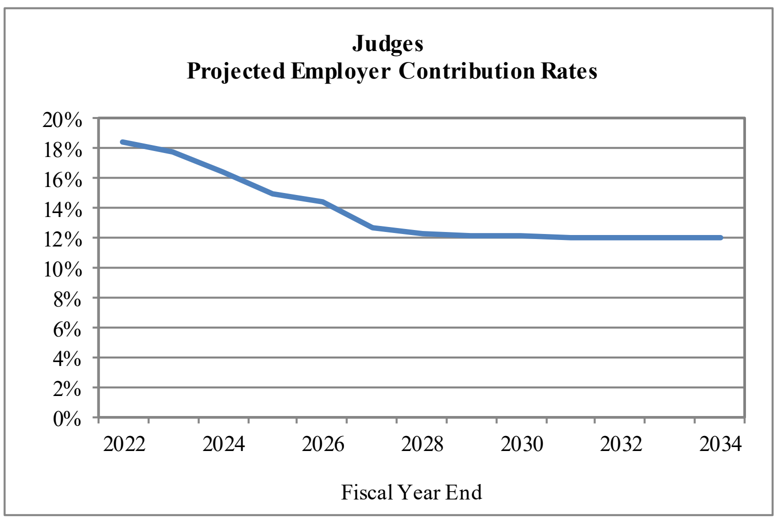
Based on the December 31, 2017 valuation results, the actuarial required contribution (ARC) date for the State/School group occurred in FY 2021 at an ARC rate of 14.23%. Given the deferred investment experience, it decreases to around 11.4% and then holds steady at that level. During the entire projection period, the statutory rate is expected to be equal to the ARC rate. Actual experience in future years, particularly investment returns, will significantly impact future actuarial and statutory rates.



The Local group reached the ARC date in the 2012 valuation at an ARC rate of 9.48%, which has decreased and is now 8.43% in the 2020 valuation. The projected contribution rate is expected to decrease to around 7.5% over the long term. Actual experience in future years, particularly investment returns, will significantly impact future actuarial and statutory rates.



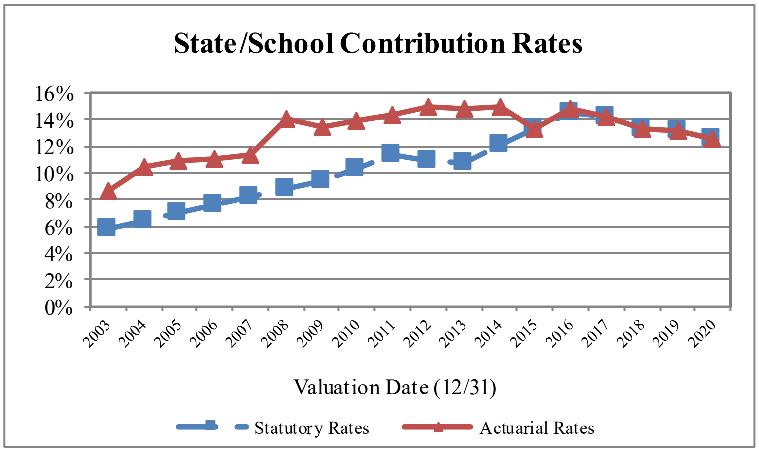
The projected employer contribution rate for KP&F is expected to remain steady around 22% after the deferred investment experience has been recognized through the asset smoothing method. However, actual experience in future years, particularly investment returns, will significantly impact future contribution rates.



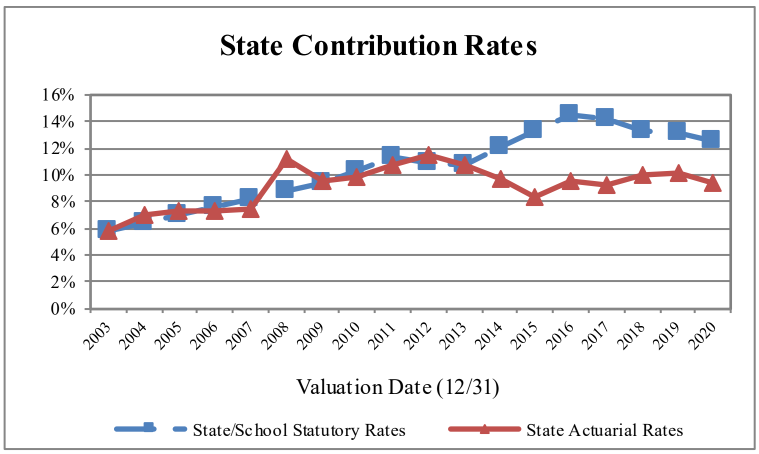
The projected employer contribution rate for Judges is expected to decrease as the deferred investment experience is recognized through the asset smoothing method and the system moves toward full funding. Actual experience in future years, particularly investment returns, will significantly impact future employer contribution rates.

Historical contribution rates for each group are shown on the following pages. Please note that prior to the December 31, 2003 valuation, one contribution rate was developed for the State and School together as one group. Legislation passed in 2004 split the actuarial valuations into two separate groups, although the statutory contribution rate has still been determined on a combined basis. By statute, any excess of the statutory contribution over the actuarial required contribution for the State is allocated to the School group.

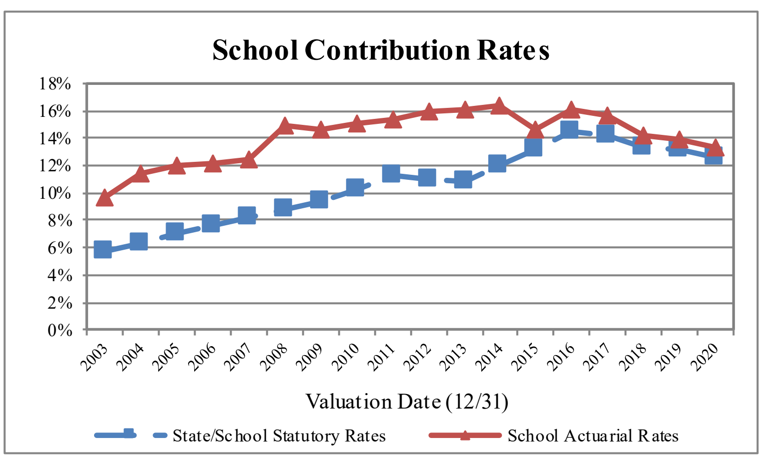
Significant changes to funding methods occurred in 2003, and the System received bond proceeds in 2004, 2015 and expected in 2021. Actuarial assumptions were changed in the 2004, 2007, 2010, 2013, 2016 and 2019 valuations. These changes impact the comparability of contribution rates between various valuation dates.



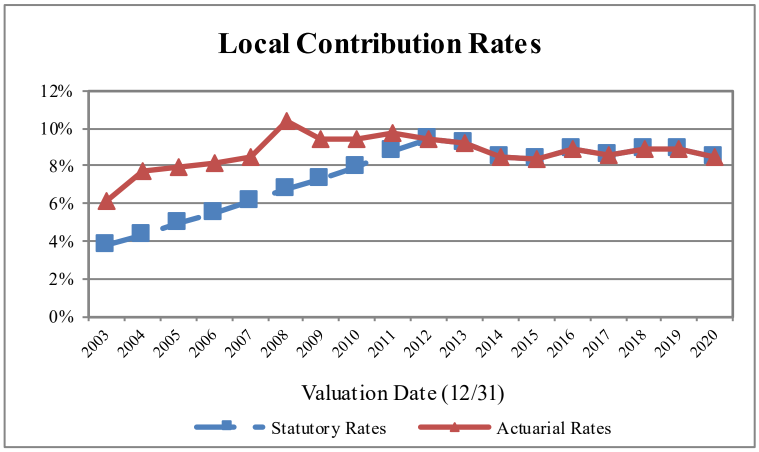
Numerous factors have contributed to the increase in the ARC rate for the State/School group over much of this period including investment experience, changes in actuarial assumptions, and contributions significantly below the actuarial rate. Due to favorable investment experience during 2020, the ARC rate decreased to 12.57%.



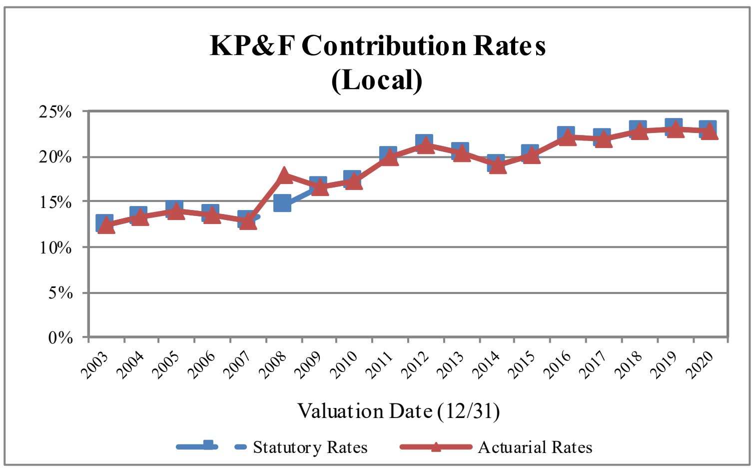
The split of the State group into a separate group with the 2003 valuation, coupled with the bond issue, lowered the State ARC rate. The State reached the full ARC rate in the 2010 valuation and has remained at ARC except for the recertification of the statutory contribution rate for FY 2017 from 12.37% to 10.91%. In this valuation, the State's ARC rate decreased to 9.38%, due to favorable investment experience during 2020.



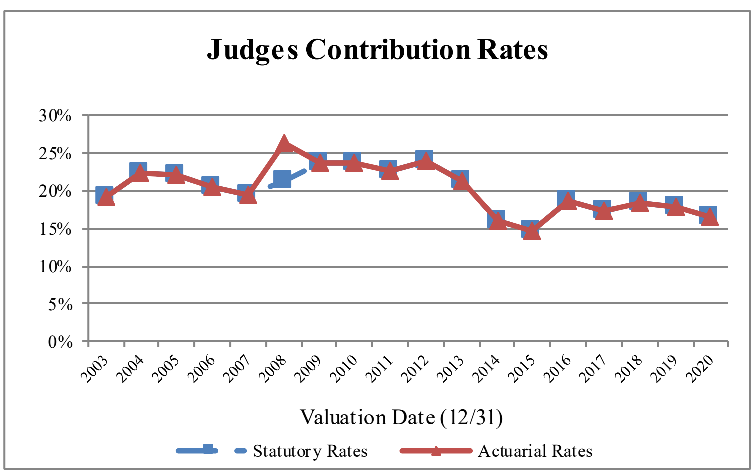
Due to investment experience, changes in actuarial assumptions, and the magnitude of the difference between the actuarial and statutory contribution rates, the ARC rate increased during the early part of this period. Increases to the statutory contribution rate and contribution sharing from the State group has helped to stabilize the ARC rate.



The Local contribution rate has also been impacted by changes in actuarial assumptions and methods as well as investment performance. With the significant changes in 2012 Sub House Bill 2333 and favorable investment returns, the statutory contribution rate was equal to the ARC rate in the 2012 valuation. In this valuation, the Local group's ARC rate decreased to 8.43%, due to favorable investment experience during 2020.



Investment experience in 2008, 2011, and 2018 resulted in higher contribution rates in the latter part of the period. The assumption changes reflected in the 2016 valuation also increased the contribution rate. Favorable investment experience during 2020 resulted in a small decrease in the ARC rate for the KP&F System.



Investment experience in 2008 and 2011 resulted in higher contribution rates in the middle of the period. The assumption changes reflected in the 2016 valuation increased the contribution rate, but assumption changes in the 2019 valuation deceased the contribution rate. Favorable investment experience during 2020 contributed to a decrease in the ARC rate for the Judges System.

SUMMARY OF CHANGE IN UNFUNDED ACTUARIAL LIABILITY BY SYSTEM DECEMBER 31, 2020 VALUATION

($ millions)

	State	School	State/School	Local	KP&F	Judges	Total
UAL in 12/31/2019 Valuation Report	$962.3	$5,582.7	$6,545.0	$1,502.1	$949.4	$10.3	$9,006.8
· Effect of contribution cap	0.0	8.2	8.2	0.0	0.0	0.0	8.2
· Expected decrease due to UAL amortization	(14.7)	(153.5)	(168.2)	(41.3)	(14.6)	(0.5)	(224.6)
· Actual vs. expected experience							
Investment return	(57.1)	(151.4)	(208.5)	(66.7)	(37.9)	(2.5)	(315.5)
Demographic experience	4.4	(12.9)	(8.5)	26.4	24.3	(0.5)	41.6
All other experience	(8.8)	(15.8)	(24.6)	(0.9)	(2.7)	(0.3)	(28.5)
· Change in actuarial assumptions/methods	0.0	0.0	0.0	0.0	0.0	0.0	0.0
· Benefit Changes	0.0	0.0	0.0	0.0	0.1	0.0	0.1
UAL in 12/31/2020 Valuation Report	$886.1	$5,257.3	$6,143.4	$1,419.6	$918.6	$6.5	$8,488.0

Note: Numbers may not add due to rounding.

SUMMARY OF
CHANGES IN EMPLOYER ACTUARIAL CONTRIBUTION RATE
BY SYSTEM
AS OF DECEMBER 31, 2020

Percentage of Payroll	State	School	State/School	Local	KP&F[1]	Judges
Actuarial Contribution Rate in 12/31/2019 Valuation[2]	10.08%	13.88%	13.11%	8.90%	22.99%	17.77%
Change Due to Amortization of UAL						
· effect of contribution cap	0.00	0.01	0.01	0.00	0.00	0.00
· UAL amortization	0.00	0.00	0.00	0.00	0.00	(0.09)
· investment experience	(0.45)	(0.30)	(0.33)	(0.27)	(0.52)	(0.95)
· liability experience	0.03	(0.03)	(0.01)	0.11	0.33	(0.19)
· all other experience	(0.19)	(0.12)	(0.15)	(0.14)	(0.12)	(0.13)
· payroll growth	0.11	0.09	0.10	0.00	0.02	0.00
· assumptions/methods	0.00	0.00	0.00	0.00	0.00	0.00
· benefit changes	0.00	0.00	0.00	0.00	0.01	0.00
Change in Employer Normal Cost Rate						
· benefit changes	0.00	0.00	0.00	0.00	0.03	0.00
· assumptions/methods	0.00	0.00	0.00	0.00	0.00	0.00
· all other experience	(0.20)	(0.15)	(0.16)	(0.17)	0.12	0.07
Actuarial Contribution Rate in 12/31/2020 Valuation	9.38%	13.38%	12.57%	8.43%	22.86%	16.48%

[1] Contribution rate for Local employers only.

[2] 12/31/2019 contribution rates have been revised as a result of SB 159.

SUMMARY OF HISTORICAL CHANGES IN TOTAL SYSTEM UNFUNDED ACTUARIAL LIABILITY as of DECEMBER 31, 2020 VALUATION

	As Reported on Valuation Date							
%(millions)	6/30/94	6/30/95	6/30/96	6/30/97	6/30/98	6/30/99	6/30/00	12/31/00
Actual Experience vs. Assumed								
• Investment	$(102)	$(143)	$(280)	$(323)	$(413)	$(369)	$(441)	$(23)
• Other	320	72	136	157	104	46	99	84
Assumption Changes	0	(96)	0	0	350	0	0	(206)
Changes in Data/Procedures	244	0	0	0	0	21	71	145**
Change in Cost Method	0	0	0	0	0	0	0	0
Effect of Contribution Cap/Lag	*	95	70	63	54	78	66	60
Amortization Method	*	47	38	35	32	30	22	12
Change in Benefit Provisions	75	0	0	0	88	0	19	0
Change in Actuarial Firm/Software	0	0	0	0	0	0	0	0
Bond Issue	0	0	0	0	0	0	0	0
Non-Collectible Pension Contributions	0	0	0	0	0	0	0	0
Additional Contributions	0	0	0	0	0	0	0	0
Total	$537	$(25)	$(36)	$(68)	$215	$(194)	$(164)	$72

* Not calculated for this year.
** Reflects the impact of re-establishing the KP&F Supplemental Actuarial Liability at December 31, 2002. The additional unfunded actuarial liability as of December 31, 2000 for the State/School and Local groups not recognized in the prior valuation due to the phase-in of the change in actuarial procedures is included.

Unfunded actuarial liability 6/30/93: $ 968 million
Unfunded actuarial liability 12/31/20: $ 8,488 million

SUMMARY OF HISTORICAL CHANGES IN TOTAL SYSTEM UNFUNDED ACTUARIAL LIABILITY as of DECEMBER 31, 2020 VALUATION (continued)

	As Reported on Valuation Date							
%(millions)	12/31/01	12/31/02	12/31/03	12/31/04	12/31/05	12/31/06	12/31/07	12/31/08
Actual Experience vs. Assumed								
• Investment	$350	$644	$140	$456	$167	$(293)	$(626)	$2,332
• Other	(9)	68	(32)	16	(84)	140	99	78
Assumption Changes	0	0	0	437	(5)	0	384	0
Changes in Data/Procedures	5	177**	(286)***	0	0	0	0	0
Change in Cost Method	0	0	1,147	0	0	0	0	0
Effect of Contribution Cap/Lag	115	143	178	179	247	258	251	246
Amortization Method	14	21	47	68	84	83	78	71
Change in Benefit Provisions	0	37	3	1	0	24	2	0
Change in Actuarial Firm/Software	0	0	0	0	0	0	0	0
Bond Issue	0	(41)	(440)	0	0	0	0	0
Non-Collectible Pension Contributions	0	0	0	0	0	0	0	0
Additional Contributions	0	0	0	0	0	0	0	0
Total	$475	$1,049	$757	$1,157	$409	$212	$188	$2,727

** Reflects the impact of re-establishing the KP&F Supplemental Actuarial Liability at December 31, 2002. The additional unfunded actuarial liability as of December 31, 2000 for the State/School and Local groups not recognized in the prior valuation due to the phase-in of the change in actuarial procedures is included.
*** Change in asset valuation method.

Unfunded actuarial liability 6/30/93: $ 968 million
Unfunded actuarial liability 12/31/20: $ 8,488 million

SUMMARY OF HISTORICAL CHANGES IN TOTAL SYSTEM UNFUNDED ACTUARIAL LIABILITY as of DECEMBER 31, 2020 VALUATION (continued)

$(millions)	As Reported on Valuation Date							
	12/31/09	12/31/10	12/31/11	12/31/12	12/31/13	12/31/14	12/31/15	12/31/16
Actual Experience vs. Assumed								
• Investment	$(1,011)	$560	$852	$732	$(653)	$(368)	$52	$(59)
• Other	(70)	(334)	(190)	(78)	(125)	(78)	(130)	(144)
Assumption Changes	0	0	(64)	0	0	(50)	0	593
Changes in Data/Procedures	0	0	0	0	0	0	0	0
Change in Cost Method	0	0	0	0	0	0	0	0
Effect of Contribution Cap/Lag	383	320	289	303	246	178	160	70
Amortization Method	96	68	62	49	46	18	(11)	(38)
Change in Benefit Provisions	0	0	15	19	0	1	0	1
Change in Actuarial Firm/Software	0	(27)	0	0	0	0	0	0
Bond Issue	0	0	0	0	0	0	(1,000)	0
Non-Collectible Pension Contributions	0	0	0	0	0	0	0	99
Additional Contribution	0	0	0	0	0	0	0	0
Total	$(602)	$587	$964	$1,025	$(487)	$(298)	$(929)	$522

Unfunded actuarial liability 6/30/93: $ 968 million
Unfunded actuarial liability 12/31/20: $ 8,488 million

SUMMARY OF HISTORICAL CHANGES IN TOTAL SYSTEM UNFUNDED ACTUARIAL LIABILITY as of DECEMBER 31, 2020 VALUATION (continued)

$(millions)	As Reported on Valuation Date				
	12/31/17	12/31/18	12/31/19	12/31/20	Total
Actual Experience vs. Assumed					
• Investment	$(117)	$476	$210	$(316)	$1,434
• Other	(50)	69	32	14	210
Assumption Changes	0	0	(51)	0	1,292
Changes in Data/Procedures	0	0	(60)	0	317
Change in Cost Method	0	0	0	0	1,147
Effect of Contribution Cap/Lag	149	64	18	8	4,291
Amortization Method	(136)	(171)	(169)	(225)	271
Change in Benefit Provisions	0	0	0	0	285
Change in Actuarial Firm/Software	0	0	0	0	(27)
Bond Issue	0	0	0	0	(1,481)
Non-Collectible Pension Contributions	0	0	0	0	99
Additional Contributions	0	(143)	(175)	0	(318)
Total	$(154)	$295	$(195)	$(519)	$7,520

Unfunded actuarial liability 6/30/93: $ 968 million
Unfunded actuarial liability 12/31/20: $ 8,488 million

Note: Although a total column is shown, the amounts in each year are not additive because they are calculated on each valuation date and, therefore, represent values at different points in time.

SUMMARY OF PRINCIPAL RESULTS

KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
(STATE)

		12/31/2020 Valuation		12/31/2019 Valuation	% Change
1. PARTICIPANT DATA					
Number of:					
Active Members		20,796		21,239	(2.1%)
Retired Members and Beneficiaries		21,006		20,844	0.8%
Inactive Members		9,767		9,573	2.0%
Total Members		51,569		51,656	(0.2%)
Projected Annual Salaries of Active Members	$	1,010,938,843	$	995,918,683	1.5%
Annual Retirement Payments for Retired Members and Beneficiaries	$	316,931,099	$	307,303,369	3.1%
2. ASSETS AND LIABILITIES					
a. Total Actuarial Liability	$	4,675,069,483	$	4,603,839,926	1.5%
b. Assets for Valuation Purposes	$	3,788,989,089	$	3,641,509,766	4.0%
c. Unfunded Actuarial Liability (a) - (b)	$	886,080,394	$	962,330,160	(7.9%)
d. Funded Ratio (b) / (a)		81.0%		79.1%	2.4%
e. Market Value of Assets	$	3,950,313,620	$	3,743,398,257	5.5%
f. Funded Ratio on Market Value (e) / (a)		84.5%		81.3%	3.9%
3. EMPLOYER CONTRIBUTION RATES AS A PERCENT OF PAYROLL					
Normal Cost					
Total		7.39%		7.59%	
Member		6.00%		6.00%	
Employer		1.39%		1.59%	
Amortization of Unfunded Actuarial Liability		7.99%		8.49%	
Actuarial Contribution Rate		9.38%		10.08%	
Statutory Employer Contribution Rate*		12.57%		13.11%	

* The rate in this valuation may not exceed last year's rate by more than the statutory rate increase limit of 1.20% for FY 2017 and later. This rate excludes the contribution rate for the Death and Disability Program. Any excess of the statutory over actuarial contribution rates applied to actual State payroll is deposited to the School assets. The rate set in the December 31, 2019 valuation was recertified from 13.86% to 31.11%.

SUMMARY OF PRINCIPAL RESULTS

KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
(SCHOOL)

		12/31/2020 Valuation		12/31/2019 Valuation	% Change
1. PARTICIPANT DATA					
Number of:					
Active Members		87,660		88,953	(1.5%)
Retired Members and Beneficiaries		57,933		56,616	2.3%
Inactive Members		33,215		32,413	2.5%
Total Members		178,808		177,982	0.5%
Projected Annual Salaries of Active Members	$	3,994,624,047	$	3,910,350,769	2.2%
Annual Retirement Payments for Retired Members and Beneficiaries	$	936,499,764	$	899,162,177	4.2%
2. ASSETS AND LIABILITIES					
a. Total Actuarial Liability	$	16,384,616,149	$	15,900,876,965	3.0%
b. Assets for Valuation Purposes	$	11,127,320,391	$	10,318,132,870	7.8%
c. Unfunded Actuarial Liability (a) - (b)	$	5,257,295,758	$	5,582,744,095	(5.8%)
d. Funded Ratio (b) / (a)		67.9%		64.9%	4.6%
e. Market Value of Assets	$	11,582,439,853	$	10,590,524,379	9.4%
f. Funded Ratio on Market Value (e) / (a)		70.7%		66.6%	6.2%
3. EMPLOYER CONTRIBUTION RATES AS A PERCENT OF PAYROLL					
Normal Cost					
Total		7.83%		7.98%	
Member		6.00%		6.00%	
Employer		1.83%		1.98%	
Amortization of Unfunded Actuarial Liability		11.55%		11.90%	
Actuarial Contribution Rate		13.38%		13.88%	
Statutory Employer Contribution Rate*		12.57%		13.11%	

* The rate in this valuation may not exceed last year's rate by more than the statutory rate increase limit of 1.20% for FY 2017 and later. This rate excludes the contribution rate for the Death and Disability Program. An additional contribution rate of 0.64% applies for FY 2022, 0.61% for FY 2023 and 0.60% for FY 2024. The rate set in the December 31, 2019 valuation was recertified from 13.86% to 31.11%.

SUMMARY OF PRINCIPAL RESULTS

KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
(STATE/SCHOOL)

		12/31/2020 Valuation		12/31/2019 Valuation	% Change
1. PARTICIPANT DATA					
Number of:					
Active Members		108,456		110,192	(1.6%)
Retired Members and Beneficiaries		78,939		77,460	1.9%
Inactive Members		42,982		41,986	2.4%
Total Members		230,377		229,638	0.3%
Projected Annual Salaries of Active Members	$	5,005,562,890	$	4,906,269,452	2.0%
Annual Retirement Payments for Retired Members and Beneficiaries	$	1,253,430,863	$	1,206,465,546	3.9%
2. ASSETS AND LIABILITIES					
a. Total Actuarial Liability	$	21,059,685,632	$	20,504,716,891	2.7%
b. Assets for Valuation Purposes	$	14,916,309,480	$	13,959,642,636	6.9%
c. Unfunded Actuarial Liability (a) - (b)	$	6,143,376,152	$	6,545,074,255	(6.1%)
d. Funded Ratio (b) / (a)		70.8%		68.1%	4.0%
e. Market Value of Assets	$	15,532,753,473	$	14,333,922,636	8.4%
f. Funded Ratio on Market Value (e) / (a)		73.8%		69.9%	5.6%
3. EMPLOYER CONTRIBUTION RATES AS A PERCENT OF PAYROLL					
Normal Cost					
Total		7.74%		7.90%	
Member		6.00%		6.00%	
Employer		1.74%		1.90%	
Amortization of Unfunded Actuarial Liability		10.83%		11.21%	
Actuarial Contribution Rate		12.57%		13.11%	
Statutory Employer Contribution Rate*		12.57%		13.11%	

* The rate in this valuation may not exceed last year's rate by more than the statutory rate increase limit of 1.20% for FY 2017 and later. This rate excludes the contribution rate for the Death and Disability Program. For the School group only, an additional contribution rate of 0.64% applies for FY 2022, 0.61% for FY 2023 and 0.60% for FY 2024. The rate set in the December 31, 2019 valuation was recertified from 13.86% to 31.11%.

SUMMARY OF PRINCIPAL RESULTS

KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM (LOCAL)

		12/31/2020 Valuation		12/31/2019 Valuation	% Change
1. PARTICIPANT DATA					
Number of:					
Active Members		37,424		38,007	(1.5%)
Retired Members and Beneficiaries		22,702		22,099	2.7%
Inactive Members		19,795		19,410	2.0%
Total Members		79,921		79,516	0.5%
Projected Annual Salaries of Active Members	$	1,901,233,030	$	1,846,129,228	3.0%
Annual Retirement Payments for Retired Members and Beneficiaries	$	304,535,627	$	286,232,067	6.4%
2. ASSETS AND LIABILITIES					
a. Total Actuarial Liability	$	5,928,449,959	$	5,704,514,304	3.9%
b. Assets for Valuation Purposes	$	4,508,889,608	$	4,202,428,554	7.3%
c. Unfunded Actuarial Liability (a) - (b)	$	1,419,560,351	$	1,502,085,750	(5.5%)
d. Funded Ratio (b) / (a)		76.1%		73.7%	3.3%
e. Market Value of Assets	$	4,699,700,683	$	4,323,027,610	8.7%
f. Funded Ratio on Market Value (e) / (a)		79.3%		75.8%	4.6%
3. EMPLOYER CONTRIBUTION RATES AS A PERCENT OF PAYROLL					
Normal Cost					
Total		7.26%		7.43%	
Member		6.00%		6.00%	
Employer		1.26%		1.43%	
Amortization of Unfunded Actuarial Liability		7.17%		7.47%	
Actuarial Contribution Rate		8.43%		8.90%	
Statutory Employer Contribution Rate*		8.43%		8.90%	

* The Statutory Employer Contribution Rate in this valuation may not exceed last year's rate by more than the statutory rate increase limit of 1.20% for FY 2017 and later. This rate excludes the contribution rate for the Death and Disability Program.

SUMMARY OF PRINCIPAL RESULTS

KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
(TOTAL KPERS)

		12/31/2020 Valuation	12/31/2019 Valuation	% Change
1.	**PARTICIPANT DATA**			
	Number of:			
	Active Members	145,880	148,199	(1.6%)
	Retired Members and Beneficiaries	101,641	99,559	2.1%
	Inactive Members	62,777	61,396	2.2%
	Total Members	310,298	309,154	0.4%
	Projected Annual Salaries of Active Members	$ 6,906,795,920	$ 6,752,398,680	2.3%
	Annual Retirement Payments for Retired Members and Beneficiaries	$ 1,557,966,490	$ 1,492,697,613	4.4%
2.	**ASSETS AND LIABILITIES**			
	a. Total Actuarial Liability	$ 26,988,135,591	$ 26,209,231,195	3.0%
	b. Assets for Valuation Purposes	$ 19,425,199,088	$ 18,162,071,190	7.0%
	c. Unfunded Actuarial Liability (a) - (b)	$ 7,562,936,503	$ 8,047,160,005	(6.0%)
	d. Funded Ratio (b) / (a)	72.0%	69.3%	3.9%
	e. Market Value of Assets	$ 20,232,454,156	$ 18,656,950,246	8.4%
	f. Funded Ratio on Market Value (e) / (a)	75.0%	71.2%	5.3%

SUMMARY OF PRINCIPAL RESULTS

KANSAS POLICE AND FIREMEN'S RETIREMENT SYSTEM

		12/31/2020 Valuation		12/31/2019 Valuation	% Change
1. PARTICIPANT DATA					
Number of:					
Active Members		7,835		7,797	0.5%
Retired Members and Beneficiaries		5,890		5,763	2.2%
Inactive Members		2,007		1,852	8.4%
Total Members		15,732		15,412	2.1%
Projected Annual Salaries of Active Members	$	570,630,955	$	554,539,001	2.9%
Annual Retirement Payments for Retired Members and Beneficiaries	$	210,666,075	$	201,954,477	4.3%
2. ASSETS AND LIABILITIES					
a. Total Actuarial Liability	$	3,721,643,474	$	3,577,512,085	4.0%
b. Assets for Valuation Purposes	$	2,803,042,592	$	2,628,140,348	6.7%
c. Unfunded Actuarial Liability (a) - (b)	$	918,600,882	$	949,371,737	(3.2%)
d. Funded Ratio (b) / (a)		75.3%		73.5%	2.4%
e. Market Value of Assets	$	2,918,249,554	$	2,696,650,789	8.2%
f. Funded Ratio on Market Value (e) / (a)		78.4%		75.4%	4.0%
3. EMPLOYER CONTRIBUTION RATES AS A PERCENT OF PAYROLL					
Normal Cost					
Total		15.02%		14.87%	
Member		7.15%		7.15%	
Employer		7.87%		7.72%	
Amortization of Unfunded Actuarial and Supplemental Liability		14.99%		15.27%	
Actuarial Contribution Rate (Local Employers)		22.86%		22.99%	
Statutory Employer Contribution Rate*		22.86%		22.99%	

* The Statutory Employer Contribution Rate is equal to the Actuarial Rate. This is referred to as the "Uniform" rate, and varies for State and Local employers. The total contribution is equal to the appropriate uniform rate plus the payment required to amortize any unfunded past service liability, determined separately for each employer.

SUMMARY OF PRINCIPAL RESULTS

KANSAS RETIREMENT SYSTEM FOR JUDGES

		12/31/2020 Valuation		12/31/2019 Valuation	% Change
1. PARTICIPANT DATA					
Number of:					
Active Members		244		257	(5.1%)
Retired Members and Beneficiaries		319		298	7.0%
Inactive Members		9		9	0.0%
Total Members		572		564	1.4%
Projected Annual Salaries of Active Members	$	28,471,730	$	29,066,581	(2.0%)
Annual Retirement Payments for Retired Members and Beneficiaries	$	13,783,400	$	12,807,544	7.6%
2. ASSETS AND LIABILITIES					
a. Total Actuarial Liability	$	200,523,122	$	195,593,331	2.5%
b. Assets for Valuation Purposes	$	194,057,436	$	185,323,804	4.7%
c. Unfunded Actuarial Liability (a) - (b)	$	6,465,686	$	10,269,527	(37.0%)
d. Funded Ratio (b) / (a)		96.8%		94.7%	2.2%
e. Market Value of Assets	$	201,931,613	$	189,825,166	6.4%
f. Funded Ratio on Market Value (e) / (a)		100.7%		97.1%	3.7%
3. EMPLOYER CONTRIBUTION RATES AS A PERCENT OF PAYROLL					
Normal Cost					
Total		20.32%		20.25%	
Member		5.63%		5.63%	
Employer		14.69%		14.62%	
Amortization of Unfunded Actuarial and Supplemental Liability		1.79%		3.15%	
Actuarial Contribution Rate		16.48%		17.77%	
Statutory Employer Contribution Rate*		16.48%		17.77%	

* Statutory Employer Contribution Rate is equal to the Actuarial Rate. This rate excludes the contribution for the Death and Disability Program.

SUMMARY OF PRINCIPAL RESULTS

ALL SYSTEMS COMBINED

		12/31/2020 Valuation		12/31/2019 Valuation	% Change
1. PARTICIPANT DATA					
Number of:					
Active Members		153,959		156,253	(1.5%)
Retired Members and Beneficiaries		107,850		105,620	2.1%
Inactive Members		64,793		63,257	2.4%
Total Members		326,602		325,130	0.5%
Projected Annual Salaries of Active Members	$	7,505,898,605	$	7,336,004,262	2.3%
Annual Retirement Payments for Retired Members and Beneficiaries	$	1,782,415,965	$	1,707,459,634	4.4%
2. ASSETS AND LIABILITIES					
a. Total Actuarial Liability	$	30,910,302,187	$	29,982,336,611	3.1%
b. Assets for Valuation Purposes	$	22,422,299,116	$	20,975,535,342	6.9%
c. Unfunded Actuarial Liability (a) - (b)	$	8,488,003,071	$	9,006,801,269	(5.8%)
d. Funded Ratio (b) / (a)		72.5%		70.0%	3.6%
e. Market Value of Assets	$	23,352,635,323	$	21,543,426,201	8.4%
f. Funded Ratio on Market Value (e) / (a)		75.5%		71.9%	5.0%

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SECTION 2 – SCOPE OF THE REPORT

This report presents the actuarial valuation of the Kansas Public Employees Retirement System (KPERS) as of December 31, 2020. This valuation was prepared at the request of the System's Board of Trustees.

The reader is encouraged to review the actuarial certification letter, where the guidelines employed in the preparation of this report are outlined. Also included in this letter are comments on the sources and reliability of both the data and the actuarial assumptions upon which our findings are based. Those comments are the basis for our certification that this report is complete and accurate to the best of our knowledge and belief.

A summary of the findings resulting from this valuation is presented in the previous section. Section 3 describes the assets and investment experience of the System. Sections 4 and 5 describe how the obligations of the System are to be met under the actuarial cost method in use. Section 6 provides other historical information about the System. Section 7 discusses risks, related to funding, for the System to consider.

This report includes several appendices:

- Appendix A Schedules of valuation data classified by various categories of members.
- Appendix B A summary of the current benefit structure, as determined by the provisions of governing law on December 31, 2020, as amended by legislation in the 2021 Session.
- Appendix C A summary of the actuarial methods and assumptions used to estimate liabilities and determine contribution rates.
- Appendix D A glossary of actuarial terms.

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Market Value of Assets

The current market value represents the "snapshot" or "cash-out" value of System assets as of the valuation date. In addition, the market value of assets provides a basis for measuring investment performance from time to time. At December 31, 2020, the market value of assets for the Retirement System was $23.353 billion. Table 1 shows the market value of assets as of December 31, 2020 in total and by investment category. Table 2 summarizes the change in the market value of assets, from December 31, 2019 to December 31, 2020, by group.

Actuarial Value of Assets

Neither the market value of assets, representing a "cash-out" value of System assets, nor the book value of assets, representing the cost of investments, may be the best measure of the System's ongoing ability to meet its obligations.

To arrive at a suitable value for the actuarial valuation, a technique for determining the actuarial value of assets is used which dampens swings in the market value while still indirectly recognizing market values. The current asset smoothing method was implemented with the December 31, 2003 actuarial valuation.

Under the asset smoothing method, the difference between the actual return and the expected return (based on the actuarial assumed rate of return) on the market value of assets is calculated each year and recognized equally over a five-year period.

Tables 3A through 3F and Table 4 show the development of the actuarial value of assets (AVA) as of December 31, 2020.

TABLE 1
ANALYSIS OF NET ASSETS AT MARKET VALUE

		December 31, 2020		
		Amount ($ Millions)	% of Total	
Cash & Equivalents	$	549	2.4	%
Alternative Investments		1,891	8.1	
Real Estate		2,574	11.0	
Fixed Income		6,187	26.4	
Domestic Equity		6,832	29.3	
International Equity		5,320	22.8	
Net Assets	$	23,353	100.0	%

Allocation of Net Assets on December 31, 2020:

State	$	3,950
School		11,582
Local		4,700
KP&F		2,918
Judges		202
Total Net Assets*	$	23,353

* May not add due to rounding

TABLE 2
SUMMARY OF CHANGES IN TOTAL SYSTEM ASSETS
DURING PERIOD ENDED DECEMBER 31, 2020

(Market Value)

	State	School	State/School	Local
Market Value of Assets as of January 1, 2020	$ 3,743,398,257	$ 10,590,524,379	$ 14,333,922,636	$ 4,323,027,610
Contributions:				
Employee	60,655,868	235,346,571	296,002,439	113,972,552
Employee service purchases	589,821	2,526,720	3,116,541	894,066
Statutory Employer	102,372,113	615,419,023	717,791,136	163,248,582
Additional Employer	0	0	0	0
Miscellaneous	35,912	9,508,680	9,544,592	350,708
Total Contributions	163,653,714	862,800,994	1,026,454,708	278,465,908
Total Investment Income	394,158,801	1,135,467,767	1,529,626,568	462,230,220
Total Income	557,812,515	1,998,268,761	2,556,081,276	740,696,128
Less Benefits:				
Annuity Retirement Benefits	(312,529,293)	(921,114,985)	(1,233,644,278)	(295,848,974)
Partial Lump Sum Benefits	(18,379,678)	(52,558,393)	(70,938,071)	(28,146,383)
Retirant Dividends	(91,243)	(190,589)	(281,832)	(55,356)
Withdrawals	(14,493,171)	(19,376,119)	(33,869,290)	(34,157,643)
Death Benefits	(2,998,333)	(6,183,778)	(9,182,111)	(2,993,845)
Total Benefits	(348,491,718)	(999,423,864)	(1,347,915,582)	(361,202,201)
Administrative Expenses	(2,405,434)	(6,929,423)	(9,334,857)	(2,820,854)
Net Increase in Assets	206,915,363	991,915,474	1,198,830,837	376,673,073
Market Value of Assets as of December 31, 2020	$ 3,950,313,620	$ 11,582,439,853	$ 15,532,753,473	$ 4,699,700,683

TABLE 2 (cont.)
SUMMARY OF CHANGES IN TOTAL SYSTEM ASSETS
DURING PERIOD ENDED DECEMBER 31, 2020

(Market Value)

	KPERS	KP&F	Judges	Total
Market Value of Assets as of January 1, 2020	$ 18,656,950,246	$ 2,696,650,789	$ 189,825,166	$ 21,543,426,201
Contributions:				
Employee	409,974,991	40,191,088	1,575,588	451,741,667
Employee service purchases	4,010,607	899,002	14,849	4,924,458
Statutory Employer	881,039,718	124,736,378	5,217,626	1,010,993,722
Additional Employer	0	0	0	0
Miscellaneous	9,895,300	217,189	1,400	10,113,889
Total Contributions	1,304,920,616	166,043,657	6,809,463	1,477,773,736
Total Investment Income	1,991,856,788	287,653,466	20,070,228	2,299,580,482
Total Income	3,296,777,404	453,697,123	26,879,691	3,777,354,218
Less Benefits:				
Annuity Retirement Benefits	(1,529,493,252)	(207,887,061)	(13,069,413)	(1,750,449,726)
Partial Lump Sum Benefits	(99,084,454)	(14,909,968)	(1,551,983)	(115,546,405)
Retirant Dividends	(337,188)	(562,966)	(9,424)	(909,578)
Withdrawals	(68,026,933)	(6,488,254)	0	(74,515,187)
Death Benefits	(12,175,956)	(403,874)	(19,941)	(12,599,771)
Total Benefits	(1,709,117,783)	(230,252,123)	(14,650,761)	(1,954,020,667)
Administrative Expenses	(12,155,711)	(1,846,235)	(122,483)	(14,124,429)
Net Increase in Assets	1,575,503,910	221,598,765	12,106,447	1,809,209,122
Market Value of Assets as of December 31, 2020	$ 20,232,454,156	$ 2,918,249,554	$ 201,931,613	$ 23,352,635,323

TABLE 3A
CALCULATION OF EXCESS (SHORTFALL) INVESTMENT INCOME FOR ACTUARIAL VALUE OF NET ASSETS
State

		Plan Year End			
		12/31/2017	12/31/2018	12/31/2019	12/31/2020
1.	Market Value of Assets, beginning of year	$ 3,354,619,933	$ 3,653,660,034	$ 3,371,313,965	$ 3,743,398,257
2.	Contributions during year	155,642,178	149,037,254	158,463,697	163,653,714
3.	Benefits paid during year	(318,261,310)	(327,306,703)	(340,586,368)	(348,491,718)
4.	Administrative expenses paid during year	(2,183,431)	(2,391,057)	(2,637,861)	(2,405,434)
5.	Expected investment income	253,716,102	276,288,680	254,250,948	282,993,063
6.	Expected Value of Assets, end of year	3,443,533,472	3,749,288,208	3,440,804,381	3,839,147,882
7.	Market Value of Assets, end of year	3,653,660,034	3,371,313,965	3,743,398,257	3,950,313,620
8.	Excess (shortfall) of net investment income	$ 210,126,562	$ (377,974,243)	$ 302,593,876	$ 111,165,738

TABLE 3B
CALCULATION OF EXCESS (SHORTFALL) INVESTMENT INCOME FOR ACTUARIAL VALUE OF NET ASSETS
School

		Plan Year End			
		12/31/2017	12/31/2018	12/31/2019	12/31/2020
1.	Market Value of Assets, beginning of year	$ 8,444,384,754	$ 9,335,940,612	$ 9,015,296,513	$ 10,590,524,379
2.	Contributions during year	644,270,462	875,578,047	1,021,365,536	862,800,994
3.	Benefits paid during year	(898,475,592)	(925,448,228)	(959,770,909)	(999,423,864)
4.	Administrative expenses paid during year	(5,418,910)	(6,220,763)	(7,204,447)	(6,929,423)
5.	Expected investment income	644,567,102	721,402,429	700,753,774	815,306,780
6.	Expected Value of Assets, end of year	8,829,327,816	10,001,252,097	9,770,440,467	11,262,278,866
7.	Market Value of Assets, end of year	9,335,940,612	9,015,296,513	10,590,524,379	11,582,439,853
8.	Excess (shortfall) of net investment income	$ 506,612,796	$ (985,955,584)	$ 820,083,912	$ 320,160,987

TABLE 3C
CALCULATION OF EXCESS (SHORTFALL) INVESTMENT INCOME FOR ACTUARIAL VALUE OF NET ASSETS
State/School

	Plan Year End			
	12/31/2017	12/31/2018	12/31/2019	12/31/2020
1. Market Value of Assets, beginning of year	$ 11,799,004,687	$ 12,989,600,646	$ 12,386,610,478	$ 14,333,922,636
2. Contributions during year	799,912,640	1,024,615,301	1,179,829,233	1,026,454,708
3. Benefits paid during year	(1,216,736,902)	(1,252,754,931)	(1,300,357,277)	(1,347,915,582)
4. Administrative expenses paid during year	(7,602,341)	(8,611,820)	(9,842,308)	(9,334,857)
5. Expected investment income	898,283,204	997,691,109	955,004,722	1,098,299,843
6. Expected Value of Assets, end of year	12,272,861,288	13,750,540,305	13,211,244,848	15,101,426,748
7. Market Value of Assets, end of year	12,989,600,646	12,386,610,478	14,333,922,636	15,532,753,473
8. Excess (shortfall) of net investment income	$ 716,739,358	$ (1,363,929,827)	$ 1,122,677,788	$ 431,326,725

TABLE 3D
CALCULATION OF EXCESS (SHORTFALL) INVESTMENT INCOME FOR ACTUARIAL VALUE OF NET ASSETS
Local

		Plan Year End			
		12/31/2017	12/31/2018	12/31/2019	12/31/2020
1.	Market Value of Assets, beginning of year	$ 3,469,920,041	$ 3,920,141,884	$ 3,752,043,860	$ 4,323,027,610
2.	Contributions during year	256,527,900	264,639,299	282,775,216	278,465,908
3.	Benefits paid during year	(296,109,951)	(319,763,099)	(341,067,119)	(361,202,201)
4.	Administrative expenses paid during year	(2,316,542)	(2,595,471)	(2,995,166)	(2,820,854)
5.	Expected investment income	267,325,526	301,616,107	288,452,837	331,781,160
6.	Expected Value of Assets, end of year	3,695,346,974	4,164,038,720	3,979,209,628	4,569,251,623
7.	Market Value of Assets, end of year	3,920,141,884	3,752,043,860	4,323,027,610	4,699,700,683
8.	Excess (shortfall) of net investment income	$ 224,794,910	$ (411,994,860)	$ 343,817,982	$ 130,449,060

TABLE 3E
CALCULATION OF EXCESS (SHORTFALL) INVESTMENT INCOME FOR ACTUARIAL VALUE OF NET ASSETS
KP&F

		Plan Year End			
		12/31/2017	12/31/2018	12/31/2019	12/31/2020
1.	Market Value of Assets, beginning of year	$ 2,256,070,037	$ 2,495,082,288	$ 2,361,673,707	$ 2,696,650,789
2.	Contributions during year	134,862,351	146,568,251	162,824,345	166,043,657
3.	Benefits paid during year	(194,826,032)	(208,000,052)	(222,025,854)	(230,252,123)
4.	Administrative expenses paid during year	(1,414,015)	(1,653,595)	(1,876,174)	(1,846,235)
5.	Expected investment income	172,511,420	190,969,931	180,707,113	206,478,576
6.	Expected Value of Assets, end of year	2,367,203,761	2,622,966,823	2,481,303,137	2,837,074,664
7.	Market Value of Assets, end of year	2,495,082,288	2,361,673,707	2,696,650,789	2,918,249,554
8.	Excess (shortfall) of net investment income	$ 127,878,527	$ (261,293,116)	$ 215,347,652	$ 81,174,890

TABLE 3F
CALCULATION OF EXCESS (SHORTFALL) INVESTMENT INCOME FOR ACTUARIAL VALUE OF NET ASSETS
Judges

		Plan Year End			
		12/31/2017	12/31/2018	12/31/2019	12/31/2020
1.	Market Value of Assets, beginning of year	$ 165,322,736	$ 180,462,402	$ 169,210,144	$ 189,825,166
2.	Contributions during year	6,708,292	6,102,283	6,401,381	6,809,463
3.	Benefits paid during year	(12,587,218)	(12,155,548)	(13,766,149)	(14,650,761)
4.	Administrative expenses paid during year	(99,408)	(119,442)	(133,176)	(122,483)
5.	Expected investment income	12,585,174	13,751,107	12,828,662	14,408,612
6.	Expected Value of Assets, end of year	171,929,576	188,040,802	174,540,862	196,269,997
7.	Market Value of Assets, end of year	180,462,402	169,210,144	189,825,166	201,931,613
8.	Excess (shortfall) of net investment income	$ 8,532,826	$ (18,830,658)	$ 15,284,304	$ 5,661,616

TABLE 4
DEVELOPMENT OF ACTUARIAL VALUE OF NET ASSETS

		State	School	State/School	Local	Total KPERS
1.	Excess (shortfall) of investment income					
	a. Year ending 12/31/20	$ 111,165,738	$ 320,160,987	$ 431,326,725	$ 130,449,060	$ 561,775,785
	b. Year ending 12/31/19	302,593,876	820,083,912	1,122,677,788	343,817,982	1,466,495,770
	c. Year ending 12/31/18	(377,974,243)	(985,955,584)	(1,363,929,827)	(411,994,860)	(1,775,924,687)
	d. Year ending 12/31/17	210,126,562	506,612,796	716,739,358	224,794,910	941,534,268
	e. Total	$ 245,911,933	$ 660,902,111	$ 906,814,044	$ 287,067,092	$ 1,193,881,136
2.	Deferral of excess (shortfall) of investment income					
	a. Year ending 12/31/20 (80%)	88,932,590	256,128,790	345,061,380	104,359,248	449,420,628
	b. Year ending 12/31/19 (60%)	181,556,326	492,050,347	673,606,673	206,290,789	879,897,462
	c. Year ending 12/31/18 (40%)	(151,189,697)	(394,382,234)	(545,571,931)	(164,797,944)	(710,369,875)
	d. Year ending 12/31/17 (20%)	42,025,312	101,322,559	143,347,871	44,958,982	188,306,853
	e. Total	$ 161,324,531	$ 455,119,462	$ 616,443,993	$ 190,811,075	$ 807,255,068
3.	Market Value of Assets, end of year	$ 3,950,313,620	$ 11,582,439,853	$ 15,532,753,473	$ 4,699,700,683	$ 20,232,454,156
4.	Actuarial Value of Assets, end of year (3) - (2e)	$ 3,788,989,089	$ 11,127,320,391	$ 14,916,309,480	$ 4,508,889,608	$ 19,425,199,088
5.	Actuarial Value divided by market value (4)/(3)	95.9%	96.1%	96.0%	95.9%	96.0%

TABLE 4 (cont.)
DEVELOPMENT OF ACTUARIAL VALUE OF NET ASSETS

	Total KPERS	KP&F	Judges	Total
1. Excess (shortfall) of investment income				
a. Year ending 12/31/20	$ 561,775,785	$ 81,174,890	$ 5,661,616	$ 648,612,291
b. Year ending 12/31/19	1,466,495,770	215,347,652	15,284,304	1,697,127,726
c. Year ending 12/31/18	(1,775,924,687)	(261,293,116)	(18,830,658)	(2,056,048,461)
d. Year ending 12/31/17	941,534,268	127,878,527	8,532,826	1,077,945,621
e. Total	$ 1,193,881,136	$ 163,107,953	$ 10,648,088	$ 1,367,637,177
2. Deferral of excess (shortfall) of investment income				
a. Year ending 12/31/20 (80%)	449,420,628	64,939,912	4,529,293	518,889,833
b. Year ending 12/31/19 (60%)	879,897,462	129,208,591	9,170,582	1,018,276,635
c. Year ending 12/31/18 (40%)	(710,369,875)	(104,517,246)	(7,532,263)	(822,419,384)
d. Year ending 12/31/17 (20%)	188,306,853	25,575,705	1,706,565	215,589,123
e. Total	$ 807,255,068	$ 115,206,962	$ 7,874,177	$ 930,336,207
3. Market Value of Assets, end of year	$ 20,232,454,156	$ 2,918,249,554	$ 201,931,613	$ 23,352,635,323
4. Actuarial Value of Assets, end of year (3) - (2e)	$ 19,425,199,088	$ 2,803,042,592	$ 194,057,436	$ 22,422,299,116
5. Actuarial Value divided by Market Value (4)/(3)	96.0%	96.1%	96.1%	96.0%

In the previous section, an actuarial valuation was compared with an inventory process, and an analysis was given of the inventory of assets of the System as of the valuation date, December 31, 2020. In this section, the discussion will focus on the commitments of the System, which are referred to as its liabilities.

Table 5 contains an analysis of the actuarial present value of all future benefits (PVFB) for contributing members, inactive members, retirees and their beneficiaries. The analysis is provided for each group.

The liabilities summarized in Table 5 include the actuarial present value of all future benefits expected to be paid with respect to each member. For an active member, this value includes measures of both benefits already earned and future benefits expected to be earned. For all members, active and retired, the value extends over benefits earnable and payable for the rest of their lives and, if an optional benefit is chosen, for the lives of the surviving beneficiaries.

The actuarial assumptions used to determine liabilities are based on the results of the last Triennial Experience Study. This set of assumptions, as shown in Appendix C, was adopted by the Board in January 2020. Although Cavanaugh Macdonald Consulting recommended changes to the economic assumptions, they were not adopted by the KPERS Board. After discussion and consideration, the Board elected to continue the use of the economic assumptions used in the December 31, 2018 valuation which include an inflation assumption of 2.75%, general wage increase of 3.50% and an investment return assumption of 7.75%. Based on the data presented in the experience study report, it is our professional opinion that the set of economic assumptions used in this valuation are not reasonable, as defined in Actuarial Standard of Practice Number 27, and therefore, are not compliance with actuarial standards. Alternate valuation results, using a set of economic assumptions that we believe complies with actuarial standards, are included in the Executive Summary of this report.

The liabilities reflect the benefit structure in place as of December 31, 2020, as amended by any legislation in the 2021 Session.

Actuarial Liabilities

A fundamental principle in financing the liabilities of a retirement program is that the cost of its benefits should be related to the period in which benefits are earned, rather than to the period of benefit distribution. An actuarial cost method is a mathematical technique that allocates the present value of future benefits into annual costs. In order to do this allocation, it is necessary for the funding method to "breakdown" the present value of future benefits into two components:

(1) that attributable to the past and
(2) that attributable to the future.

Actuarial terminology calls the part attributable to the past the "past service liability" or the "actuarial liability". The portion allocated to the future is known as the present value of future normal costs, with the specific piece of it allocated to the current year being called the "normal cost". Table 6 contains the calculation of actuarial liabilities for all groups.

TABLE 5
KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
PRESENT VALUE OF FUTURE BENEFITS (PVFB)
AS OF DECEMBER 31, 2020

	State	School	State/School	Local
1. Active employees				
a. Retirement Benefits	$ 1,884,619,272	$ 8,865,595,413	$ 10,750,214,685	$ 3,277,283,989
b. Pre-Retirement Death Benefits	38,458,180	80,049,809	118,507,989	72,776,302
c. Termination Benefits	162,000,833	585,109,649	747,110,482	325,362,340
d. Disability Benefits	45,757,378	116,872,041	162,629,419	59,051,503
e. Total	2,130,835,663	9,647,626,912	11,778,462,575	3,734,474,134
2. Inactive Vested Members	180,753,289	475,353,257	656,106,546	300,893,993
3. Inactive Nonvested Members	13,439,243	37,084,393	50,523,636	33,754,416
4. Disabled Members	51,556,508	63,537,859	115,094,367	44,419,414
5. Retirees	2,648,956,071	8,429,779,700	11,078,735,771	2,625,875,204
6. Beneficiaries	141,388,990	229,567,493	370,956,483	137,341,360
7. Unclaimed Account Reserve	668,200	1,331,800	2,000,000	500,000
8. Total PVFB	$ 5,167,597,964	$ 18,884,281,414	$ 24,051,879,378	$ 6,877,258,521

TABLE 5 (cont.)
KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
PRESENT VALUE OF FUTURE BENEFITS (PVFB)
AS OF DECEMBER 31, 2020

	Total KPERS	KP&F	Judges	Total
1. Active employees				
a. Retirement Benefits	$ 14,027,498,674	$ 1,910,698,458	$ 108,719,621	$ 16,046,916,753
b. Pre-Retirement Death Benefits	191,284,291	27,385,086	1,503,941	220,173,318
c. Termination Benefits	1,072,472,822	70,195,582	0	1,142,668,404
d. Disability Benefits	221,680,922	195,904,462	0	417,585,384
e. Total	15,512,936,709	2,204,183,588	110,223,562	17,827,343,859
2. Inactive Vested Members	957,000,539	45,463,790	1,751,700	1,004,216,029
3. Inactive Nonvested Members	84,278,052	26,689,635	0	110,967,687
4. Disabled Members	159,513,781	111,202,946	0	270,716,727
5. Retirees	13,704,610,975	1,896,882,732	110,898,203	15,712,391,910
6. Beneficiaries	508,297,843	156,525,832	16,397,638	681,221,313
7. Unclaimed Account Reserve	2,500,000	0	0	2,500,000
8. Total PVFB	$ 30,929,137,899	$ 4,440,948,523	$ 239,271,103	$ 35,609,357,525

TABLE 6
KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
ACTUARIAL LIABILITIES
AS OF DECEMBER 31, 2020

	State	School	State/School	Local
1. Present Value of Future Benefits	$ 5,167,597,964	$ 18,884,281,414	$ 24,051,879,378	$ 6,877,258,521
2. Present Value of Future Normal Costs for Active Members				
a. Retirement Benefits	$ 296,216,987	$ 1,822,740,437	$ 2,118,957,424	$ 568,677,347
b. Pre-Retirement Death Benefits	9,586,630	25,601,276	35,187,906	20,259,215
c. Termination Benefits	169,361,872	608,482,429	777,844,301	339,319,096
d. Disability Benefits	17,362,992	42,841,123	60,204,115	20,552,904
e. Total	492,528,481	2,499,665,265	2,992,193,746	948,808,562
3. Total Actuarial Liability (1) - (2e)	$ 4,675,069,483	$ 16,384,616,149	$ 21,059,685,632	$ 5,928,449,959

TABLE 6 (cont.)
KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
ACTUARIAL LIABILITIES
AS OF DECEMBER 31, 2020

	Total KPERS	KP&F	Judges	Total
1. Present Value of Future Benefits	$ 30,929,137,899	$ 4,440,948,523	$ 239,271,103	$ 35,609,357,525
2. Present Value of Future Normal Costs for Active Members				
a. Retirement Benefits	$ 2,687,634,771	$ 511,674,278	$ 38,062,990	$ 3,237,372,039
b. Pre-Retirement Death Benefits	55,447,121	15,891,029	684,991	72,023,141
c. Termination Benefits	1,117,163,397	77,755,730	0	1,194,919,127
d. Disability Benefits	80,757,019	113,984,012	0	194,741,031
e. Total	3,941,002,308	719,305,049	38,747,981	4,699,055,338
3. Total Actuarial Liability (1) - (2e)	$ 26,988,135,591	$ 3,721,643,474	$ 200,523,122	$ 30,910,302,187

TABLE 7
KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
ACTUARIAL BALANCE SHEET
AS OF DECEMBER 31, 2020

	State	School	State/School	Local
ASSETS				
Actuarial Value of Assets	$ 3,788,989,089	$ 11,127,320,391	$ 14,916,309,480	$ 4,508,889,608
Present Value of Future Normal Costs	492,528,481	2,499,665,265	2,992,193,746	948,808,562
Unfunded Actuarial Liability	886,080,394	5,257,295,758	6,143,376,152	1,419,560,351
Total Net Assets	$ 5,167,597,964	$ 18,884,281,414	$ 24,051,879,378	$ 6,877,258,521
LIABILITIES				
Present Value of Future Benefits				
Active employees	$ 2,130,835,663	$ 9,647,626,912	$ 11,778,462,575	$ 3,734,474,134
Inactive Members *	194,860,732	513,769,450	708,630,182	335,148,409
In-pay Members	2,841,901,569	8,722,885,052	11,564,786,621	2,807,635,978
Total Liabilities	$ 5,167,597,964	$ 18,884,281,414	$ 24,051,879,378	$ 6,877,258,521

*Includes Unclaimed Account Reserves

TABLE 7 (cont.)
KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
ACTUARIAL BALANCE SHEET
AS OF DECEMBER 31, 2020

	Total KPERS	KP&F	Judges	Total
ASSETS				
Actuarial Value of Assets	$ 19,425,199,088	$ 2,803,042,592	$ 194,057,436	$ 22,422,299,116
Present Value of Future Normal Costs	3,941,002,308	719,305,049	38,747,981	4,699,055,338
Unfunded Actuarial Liability	7,562,936,503	918,600,882	6,465,686	8,488,003,071
Total Net Assets	$ 30,929,137,899	$ 4,440,948,523	$ 239,271,103	$ 35,609,357,525
LIABILITIES				
Present Value of Future Benefits				
Active employees	$ 15,512,936,709	$ 2,204,183,588	$ 110,223,562	$ 17,827,343,859
Inactive Members *	1,043,778,591	72,153,425	1,751,700	1,117,683,716
In-pay Members	14,372,422,599	2,164,611,510	127,295,841	16,664,329,950
Total Liabilities	$ 30,929,137,899	$ 4,440,948,523	$ 239,271,103	$ 35,609,357,525

*Includes Unclaimed Account Reserves

TABLE 8
ANALYSIS OF ACTUARIAL GAIN OR LOSS

	State	School	State/School	Local
1. Expected Actuarial Liability				
a. Actuarial liability at 12/31/19	$ 4,603,839,926	$ 15,900,876,965	$ 20,504,716,891	$ 5,704,514,304
b. Normal cost during 2020	66,644,556	280,073,746	346,718,302	120,971,811
c. Benefit payments for plan year ending 12/31/20	(348,491,718)	(999,423,864)	(1,347,915,582)	(361,202,201)
d. Interest on (a), (b), and (c)	348,710,462	1,216,018,614	1,564,729,076	437,739,747
e. Expected actuarial liability as of 12/31/20	$ 4,670,703,226	$ 16,397,545,461	$ 21,068,248,687	$ 5,902,023,661
2. Actuarial Liability at 12/31/2020	$ 4,675,069,483	$ 16,384,616,149	$ 21,059,685,632	$ 5,928,449,959
3. Actuarial Liability Gain/(Loss) (1e) - (2)	$ (4,366,257)	$ 12,929,312	$ 8,563,055	$ (26,426,298)
4. Expected Actuarial Value of Assets				
a. Actuarial value of assets at 12/31/19	$ 3,641,509,766	$ 10,318,132,870	$ 13,959,642,636	$ 4,202,428,554
b. Contributions for plan year ending 12/31/20	163,653,714	862,800,994	1,026,454,708	278,465,908
c. Benefit payments for plan year ending 12/31/20	(348,491,718)	(999,423,864)	(1,347,915,582)	(361,202,201)
d. Interest on (a), (b) and (c)	275,188,177	794,459,943	1,069,648,120	322,542,002
e. Expected actuarial value of assets as of 12/31/20	$ 3,731,859,939	$ 10,975,969,943	$ 14,707,829,882	$ 4,442,234,263
5. Actuarial Value of Assets as of 12/31/20	$ 3,788,989,089	$ 11,127,320,391	$ 14,916,309,480	$ 4,508,889,608
6. Actuarial Value of Assets Gain/(Loss) (5) - (4e)	$ 57,129,150	$ 151,350,448	$ 208,479,598	$ 66,655,345
7. Net Actuarial Gain/(Loss) (3) + (6)	$ 52,762,893	$ 164,279,760	$ 217,042,653	$ 40,229,047

TABLE 8 (cont.)
ANALYSIS OF ACTUARIAL GAIN OR LOSS

	Total KPERS	KP&F	Judges	Total
1. Expected Actuarial Liability				
a. Actuarial liability at 12/31/19	$ 26,209,231,195	$ 3,577,512,085	$ 195,593,331	$ 29,982,336,611
b. Normal cost during 2020	467,690,113	75,640,795	5,114,866	548,445,774
c. Benefit payments for plan year ending 12/31/20	(1,709,117,783)	(230,252,123)	(14,650,761)	(1,954,020,667)
d. Interest on (a), (b), and (c)	2,002,468,823	274,363,557	14,997,761	2,291,830,141
e. Benefit Changes	0	97,254	0	97,254
f. Expected actuarial liability as of 12/31/20	$ 26,970,272,348	$ 3,697,361,568	$ 201,055,197	$ 30,868,689,113
2. Actuarial Liability at 12/31/2020	$ 26,988,135,591	$ 3,721,643,474	$ 200,523,122	$ 30,910,302,187
3. Actuarial Liability Gain/(Loss) (1f) - (2)	$ (17,863,243)	$ (24,281,906)	$ 532,075	$ (41,613,074)
4. Expected Actuarial Value of Assets				
a. Actuarial value of assets at 12/31/19	$ 18,162,071,190	$ 2,628,140,348	$ 185,323,804	$ 20,975,535,342
b. Contributions for plan year ending 12/31/20	1,304,920,616	166,043,657	6,809,463	1,477,773,736
c. Benefit payments for plan year ending 12/31/20	(1,709,117,783)	(230,252,123)	(14,650,761)	(1,954,020,667)
d. Interest on (a), (b) and (c)	1,392,190,122	201,239,223	14,064,414	1,607,493,759
e. Expected actuarial value of assets as of 12/31/20	$ 19,150,064,145	$ 2,765,171,105	$ 191,546,920	$ 22,106,782,170
5. Actuarial Value of Assets as of 12/31/20	$ 19,425,199,088	$ 2,803,042,592	$ 194,057,436	$ 22,422,299,116
6. Actuarial Value of Assets Gain/(Loss) (5) - (4e)	$ 275,134,943	$ 37,871,487	$ 2,510,516	$ 315,516,946
7. Net Actuarial Gain/(Loss) (3) + (6)	$ 257,271,700	$ 13,589,581	$ 3,042,591	$ 273,903,872

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The previous two sections were devoted to a discussion of the assets and liabilities of the System. A comparison of Tables 4 and 6 indicates that current assets fall short of meeting the present value of future benefits (total liability). This is expected in all but a fully closed fund, where no further contributions are anticipated.

In an active system, there will almost always be a difference between the actuarial value of assets and total liabilities. This deficiency has to be made up by future contributions and investment returns. An actuarial valuation sets out a schedule of future contributions that will deal with this deficiency in an orderly fashion.

The method used to determine the incidence of the contributions in various years is called the actuarial cost method. Under an actuarial cost method, the contributions required to meet the difference between current assets and current liabilities are allocated each year between two elements: (1) the normal cost and (2) the payment on the unfunded actuarial liability.

The term "fully funded" is often applied to a system in which contributions at the normal cost rate are sufficient to pay for the benefits of existing employees as well as for those of new employees. More often than not, systems are not fully funded, either because of past benefit improvements that have not been completely funded and/or because of actuarial deficiencies that have occurred because experience has not been as favorable as anticipated. Under these circumstances, an unfunded actuarial liability exists.

Description of Rate Components

The actuarial cost method for all three systems is the traditional Entry Age Normal (EAN) – level percent of pay cost method. Under the EAN cost method, the actuarial present value of each member's projected benefits allocates on a level basis over the member's compensation between the entry age of the member and the assumed exit ages. The portion of the actuarial present value allocated to the valuation year is called the normal cost. The actuarial present value of benefits allocated to prior years of service is called the actuarial liability. The unfunded actuarial liability represents the difference between the actuarial liability and the actuarial value of assets as of the valuation date. The unfunded actuarial liability is calculated each year and reflects experience gains/losses.

The contribution rates based on the December 31, 2020 actuarial valuation will be used to determine employer contribution rates to the Kansas Public Employees Retirement System for fiscal years beginning in 2023 (July 1, 2023 to June 30, 2024 for the State and calendar year 2023 for Local employers).

KPERS

The law provides for the calculation of separate employer contribution rates for three groups: State, School and Local (for all other covered employers).

SB 4 and SB 228, as passed by the 2015 Legislature, reset the statutory employer contribution rate from 11.27% to 8.65% for the last half of fiscal year 2015, from 12.37% to 10.91% for fiscal year 2016, and from 13.57% to 10.81% for fiscal year 2017 for the State/School group. For fiscal year 2018 and beyond, the statutory cap described below applied.

State statute provides that the employer contribution rates recommended by the Board of Trustees for all groups cannot increase more than the statutory cap. This cap was increased in Senate Substitute for House Bill 2333, passed by the 2012 Legislature, to 0.90% for FY 2014, 1.00% for FY 2015, 1.10% for FY 2016 and 1.20% for FY 2017 and later. The prior limit on the statutory cap for the State/School group was 0.40%

in FY 2006, 0.50% in FY 2007, and 0.60% in FY 2008 through FY 2013. The prior limit for the Local group was 0.40% in 2006, 0.50% in 2007, and 0.60% in 2008 through 2013. The limits on the increase in the statutory contribution rate do not apply to the increase in the employer contribution rate for benefit enhancements. Although not shown in these rates, the total contribution rates for KPERS employers include the statutory employer contribution to the KPERS Group Life Insurance and disability benefits plan.

The 2016 Legislature passed House Sub for SB 161 and House Sub for SB 249 which impacted KPERS' funding by authorizing a delay of up to $100 million in State/School and KP&F contributions for FY 2016 and providing that the delayed contributions must be paid to KPERS by June 30, 2018 with interest at 8.00%. Ultimately, a total of $97.4 million in FY 2016 State/School and KP&F contributions was delayed. However, the 2017 Legislature passed Senate Substitute for Substitute for HB 2052, which cancelled payment of the $97.4 million delayed contribution. Subsequent legislation passed by the 2019 Legislature repaid these contributions.

2017 Senate Substitute for Substitute HB 2052 (S Sub for Sub HB 2052) provided that a portion of the contributions for the School group for fiscal year 2017 (FY 2017) would be delayed so the total State/School contribution was $64.13 million less than the scheduled statutory contributions. The delayed employer contributions for fiscal year 2017 are to be repaid in level-dollar annual installments of $6.4 million over twenty years beginning in fiscal year 2018. These payments are determined as a contribution rate for School employers to be paid in addition to the statutory State/School contribution rate. Further, S Sub for Sub HB 2052 provided that the repayment of the contribution reduction from FY 2016 with interest ($115 million), scheduled in FY 2018, would <u>not</u> be paid (subsequent legislation passed by the 2019 Legislature repaid these delayed contributions).

2017 Senate Substitute for HB 2002 contained KPERS funding provisions for FY 2018 and FY 2019, including the following:

- **FY 2018**: The contributions for the State/School group for fiscal year 2018 were made at the scheduled statutory rate of 12.01%. In addition, the first installment of $6.4 million on the 20-year amortization of the delayed contributions for FY 2017 was included.
- **FY 2019**: A portion of the employer contributions for School employers within the State/School group for fiscal year 2019 were delayed so the total employer contribution was $420 million, including the second installment of $6.4 million on the delayed contribution for FY 2017. This resulted in an expected delay of $194 million to be paid by the School group, as a level dollar amount over 20 years beginning in FY 2020.
- **FY 2020**: The current statutory cap of 1.20% per year was applied in determining the statutory contribution rate for the State/School group for FY 2020. The certified statutory rate from FY 2019 of 13.21%, without inclusion of the $6.4 million amortization of the delayed contributions in FY 2017 and $19.4 million amortization of the delayed contributions in FY 2019, was increased by 1.2%, resulting in a statutory contribution rate for FY 2020 of 14.41%. The current statutory cap of 1.2% per year applies for all subsequent years.

The 2018 Legislature passed House Substitute for Senate Bill 109 that provided for the following additional funding to the KPERS School group:

- An additional payment of $82 million in July 2018 (received by KPERS).
- A contingent additional payment of up to $56 million to be paid in FY 2018, if actual FY 2018 receipts exceed the consensus revenue estimates (full amount received in June 2018).

- A contingent additional payment of up to $56 million to be paid in FY 2019, if actual FY 2019 receipts exceed the consensus revenue estimates (this payment was changed by the 2019 Legislature to a transfer of $51 million in FY 2020 and was received by KPERS on July 1, 2019).

The 2019 Legislature passed two pieces of legislation that impacted contributions to KPERS. Senate Bill 9 provided for a transfer of $115 million from the State General Fund to KPERS in March, 2019. This payment covered the $97 million in missed KPERS School contributions for FY 2016 plus interest. The 2019 Legislature also passed House Substitute for Senate Bill 25. This legislation repealed the actions of the 2018 Legislature which provided for a contingent payment of up to $56 million in FY 2019, if actual FY 2019 receipts exceeded the consensus revenue estimates. Instead, this legislation directly transferred $51 million to the KPERS Trust Fund in FY 2020 (received by KPERS on July 1, 2019).

The 2021 Legislature passed House Bill 2405, which provided for bonds to be issued to improve the funded status of the School group. As a result, net proceeds of up to $500 million from bonds issued by the state of Kansas are to be deposited into the KPERS trust fund for the School group, subject to certain criteria. The bonds must be issued at an interest rate no greater than 4.3% and approved by the State Finance Council. Due to the passage of House Bill 2405, Senate Bill 159, which was the 2021 legislative session's omnibus budget bill, included a provision to reduce the previously certified employer contribution rates for FY 2022 and FY 2023. As a result, the previously certified State/School employer contribution rate changed from 14.09% to 13.33% for FY 2022 and from 13.86% to 13.11% for FY 2023.

Beginning with the December 31, 2016 valuation, the unfunded actuarial liability is amortized using a "layered" approach. The unfunded actuarial liability in the December 31, 2015 valuation, which was projected to June 30, 2018 for the State/School group and to December 31, 2017 for the Local group, serves as the initial or "legacy" amortization base and continues to be amortized over the original period, set at 40 years beginning July 1, 1993 (12 years remaining in the December 31, 2020 valuation). Changes in the unfunded actuarial liability that result from assumption changes are amortized over a closed 25-year period. Changes in the unfunded actuarial liability that result from actuarial experience each year are amortized over a closed 20-year period beginning with the fiscal year in which the contribution rates will apply.

The unfunded actuarial liability is amortized as a level-percent of payroll using a payroll growth assumption of 3.0%. Therefore, the dollar amount of the annual amortization payment will increase 3.0% each year. As a result, if all assumptions are met in the future (including a 3.0% payroll growth), the amortization payment will remain level as a percentage of total payroll. If payroll increases less/more than 3.0% each year, the amortization payment will increase/decrease as a percentage of total payroll.

The actuarial contribution rate for KPERS is comprised of the normal cost rate and a contribution toward the unfunded actuarial liability. Local employers who affiliate with KPERS for prior service on or after January 1, 1999 pay an additional employer contribution to finance the unfunded actuarial liability as of their affiliation date.

KP&F

The actuarially determined contribution requirements for employers in KP&F are comprised of:

(a) a "uniform" rate, determined separately for State and Local employers, which includes the normal cost and an unfunded actuarial liability payment for the entire group, plus

(b) any payment required to amortize the unfunded past service liability or any 15% excess benefit liability, which is determined separately for each participating employer.

For employers who enter KP&F for future service only, the total cost is the uniform contribution rate.

Beginning with the December 31, 2016 valuation, the unfunded actuarial liability is amortized using a "layered" approach. The unfunded actuarial liability in the December 31, 2015 valuation, which was projected to December 31, 2017 for the KP&F group, serves as the initial or "legacy" amortization base and continues to be amortized over the original period, set at 40 years beginning July 1, 1993 (12 years in the December 31, 2020 valuation). Changes in the unfunded actuarial liability that result from assumption changes are amortized over a closed 25-year period. Changes in the unfunded actuarial liability that result from actuarial experience are amortized over a closed 20-year period beginning with the fiscal year in which the contribution rates will apply.

The unfunded actuarial liability is amortized as a level-percent of payroll using a payroll growth assumption of 3.0%. Therefore, the dollar amount of the annual amortization payment will increase 3.0% each year. As a result, if all assumptions are met in the future (including a 3.0% payroll growth), the amortization payment will remain level as a percentage of total payroll. If payroll increases less/more than 3.0% each year, the amortization payment will increase/decrease as a percentage of total payroll.

Judges

The actuarial contribution rate for the Judges is comprised of the normal cost rate and a contribution toward the unfunded actuarial liability. Beginning with the December 31, 2016 valuation, the unfunded actuarial liability is amortized using a "layered" approach. The unfunded actuarial liability in the December 31, 2015 valuation, which was projected to June 30, 2018 for the Judges group, serves as the initial or "legacy" amortization base and continues to be amortized over the original period, set at 40 years beginning July 1, 1993 (12 years in the December 31, 2020 valuation). Changes in the unfunded actuarial liability that result from assumption changes are amortized over a closed 25-year period. Changes in the unfunded actuarial liability that result from actuarial experience are amortized over a closed 20-year period beginning with the fiscal year in which the contribution rates will apply. The unfunded actuarial liability is amortized with payments determined as level-dollar amounts.

Contribution Rate Summary

The normal cost rate for each group is shown in Table 9. The unfunded actuarial liability for each group is shown in Table 10. Tables 11A and 11B project each group's unfunded actuarial liability to the beginning of the fiscal year in which the contribution rates from the December 31, 2020 actuarial valuation will be applied. Tables 12A-F develop the actuarial contribution rates for the unfunded actuarial liability using the projected unfunded actuarial liability amounts from Tables 11A and 11B. The total actuarial contribution rates determined as of December 31, 2020 are presented in Table 13. The contribution rates for local employers who affiliated with KPERS for prior service and are amortizing the payment of that liability over a period of years (ending no later than 2035) are shown in Tables 14A and 14B. Table 15 shows the KP&F individual employer contribution rates for fiscal years beginning in 2022 and 2023 while Tables 16 and 17 show the calculation of the additional contribution rate due to amortization of prior service unfunded actuarial liability for fiscal years beginning in 2023.

The rates shown in this report, which are based on the actuarial assumptions and cost methods described in Appendix C, are applicable for determining employer contribution rates for fiscal years commencing in 2023.

TABLE 9
KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
NORMAL COST RATE
AS OF DECEMBER 31, 2020

	State	School	State/School	Local
1. Normal Cost Rate				
a. Retirement Benefits	4.45%	5.69%	5.44%	4.35%
b. Pre-Retirement Death Benefits	0.15%	0.08%	0.10%	0.16%
c. Termination Benefits	2.36%	1.75%	1.87%	2.42%
d. Disability Benefits	0.25%	0.13%	0.15%	0.15%
e. Administrative Expenses	0.18%	0.18%	0.18%	0.18%
f. Total	7.39%	7.83%	7.74%	7.26%

TABLE 9 (cont.)
KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
NORMAL COST RATE
AS OF DECEMBER 31, 2020

	KP&F	Judges
1. Normal Cost Rate		
a. Retirement Benefits	10.51%	19.80%
b. Pre-Retirement Death Benefits	0.35%	0.34%
c. Termination Benefits	1.60%	0.00%
d. Disability Benefits	2.38%	0.00%
e. Administrative Expenses	0.18%	0.18%
f. Total	15.02%	20.32%

TABLE 10
KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
UNFUNDED ACTUARIAL LIABILITY (UAL)
AS OF DECEMBER 31, 2020

	State	School	State/School	Local	KP&F	Judges
1. Actuarial Liability	$ 4,675,069,483	$ 16,384,616,149	$ 21,059,685,632	$ 5,928,449,959	$ 3,721,643,474	$ 200,523,122
2. Actuarial Value of Assets	3,788,989,089	11,127,320,391	14,916,309,480	4,508,889,608	2,803,042,592	194,057,436
3. Unfunded Actuarial Liability (UAL)	886,080,394	5,257,295,758	6,143,376,152	1,419,560,351	918,600,882	6,465,686
a. Other local employer UAL*	0	0	0	2,392,017	1,381,091	0
b. Remaining UAL	886,080,394	5,257,295,758	6,143,376,152	1,417,168,334	917,219,791	6,465,686

*These amounts are paid directly by the employer and do not enter into the overall unfunded actuarial liability and amortization calculations.

TABLE 11A
KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
PROJECTED UNFUNDED ACTUARIAL LIABILITY AT JUNE 30, 2023
EMPLOYERS CONTRIBUTING ON JUNE 30 FISCAL YEARS

	State	School	State/School	Judges
1. Unfunded Actuarial Liability at December 31, 2020	$886,080,394	$5,257,295,758	$6,143,376,152	$6,465,686
2. FY 2021 Expected Contribution Rate	15.22%	20.23%	20.23%	22.91%
3. Normal Cost Rate	7.39%	7.83%	7.74%	20.32%
4. Contribution Rate Applied to UAL for 2021 [(2) – (3)]	7.83%	12.40%	12.49%	2.59%
5. Expected Payroll for January to June, 2021	505,469,422	1,997,312,024	2,502,781,446	14,235,865
6. Statutory Excess State Contributions	0	25,324,018	0	N/A
7. Expected UAL Contribution [(4) * (5)] + (6)	$39,578,256	$272,990,709	$312,597,403	$368,709
8. Projected UAL at June 30, 2021	$879,451,595	$5,179,082,024	$6,058,504,646	$6,335,902
9. Bond Proceeds as of July 1, 2021	0	500,000,000	500,000,000	0
10. FY 2022 Expected Contribution Rate*	15.97%	19.33%	19.33%	24.05%
11. Normal Cost Rate	7.39%	7.83%	7.74%	20.32%
12. Contribution Rate Applied to UAL for 2022 [(9) – (10)]	8.58%	11.50%	11.59%	3.73%
13. Expected Payroll for FY 2022	1,026,102,926	4,054,543,408	5,080,646,334	28,471,730
14. Statutory Excess State Contributions	0	34,477,058	0	N/A
15. Expected UAL Contribution [(11) * (12)] + (13)	$88,039,631	$500,749,550	$588,846,910	$1,061,996
16. Projected UAL at June 30, 2022	$856,221,582	$4,521,919,340	$5,378,049,780	$5,724,554
17. FY 2023 Expected Contribution Rate*	16.08%	19.11%	19.11%	23.40%
18. Normal Cost Rate	7.39%	7.83%	7.74%	20.32%
19. Contribution Rate Applied to UAL for 2023 [(17) – (18)]	8.69%	11.28%	11.37%	3.08%
20. Expected Payroll for FY 2023	1,056,886,014	4,176,179,710	5,233,065,724	28,471,730
21. Statutory Excess State Contributions	0	32,023,646	0	N/A
22. Expected UAL Contribution [(19) * (20)] + (21)	$91,843,395	$503,096,717	$594,999,573	$876,929
23. Projected UAL at June 30, 2023	$827,242,833	$4,350,140,126	$5,177,223,031	$5,257,931

Note: The projected unfunded actuarial liability amount for State/School may not equal the sum of State and School due to rounding. The excess of the State/School statutory contribution rate over the actuarial required contribution rate for the State alone is allocated to the School group.

* The 2021 Legislature passed Senate Bill 159 which revised the State/School employer contribution rate from 14.09% to 13.33% for FY 2022 and from 13.86% to 13.11% for FY 2023.

TABLE 11B
KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
PROJECTED UNFUNDED ACTUARIAL LIABILITY AT DECEMBER 31, 2022
EMPLOYERS CONTRIBUTING ON DECEMBER 31 FISCAL YEARS

	KPERS - Local	KP&F
1. Unfunded Actuarial Liability at December 31, 2020	$1,417,168,334	$917,219,791
2. FY 2021 Expected Contribution Rate	14.87%	29.95%
3. Normal Cost Rate	7.26%	15.02%
4. Contribution Rate Applied to UAL for 2021 [(2) – (3)]	7.61%	14.93%
5. Expected Payroll for 2021	$1,901,233,030	$570,630,955
6. Expected UAL Contribution (4) * (5)	$144,683,834	$85,195,202
7. Projected UAL at December 31, 2021	$1,376,813,157	$899,869,407
8. FY 2022 Expected Contribution Rate	14.90%	30.14%
9. Normal Cost Rate	7.26%	15.02%
10. Contribution Rate Applied to UAL for 2022 [(8) – (9)]	7.64%	15.12%
11. Expected Payroll for FY 2022	$1,958,270,021	$587,749,884
12. Expected UAL Contribution (10) * (11)	$149,611,830	$88,867,782
13. Projected UAL at December 31, 2022	$1,328,215,061	$877,362,131

TABLE 12A
KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
AMORTIZATION OF THE UNFUNDED ACTUARIAL LIABILITY

STATE

Amortization Base	Original Amount	Remaining Payments	Projected June 30, 2023 Balance	Annual Payment*
2015 Legacy UAL	$ 805,072,157	12	$ 733,445,203	$ 80,322,725
2016 Assumption Changes	138,527,291	21	141,148,055	10,553,592
2016 Experience	(30,061,574)	16	(29,266,586)	(2,605,987)
2017 Experience	(48,125,421)	17	(47,384,829)	(4,050,400)
2018 Experience	87,214,152	18	86,560,998	7,126,447
2019 Assumption Changes	(1,864,370)	24	(1,877,863)	(129,983)
2019 Data Refinements	(24,321,613)	19	(24,262,017)	(1,929,484)
2019 Experience	56,254,496	19	56,116,653	4,462,787
2020 Experience	(87,236,781)	20	(87,236,781)	(6,719,103)
Total			**$ 827,242,833**	**$ 87,030,594**

* Payment amount reflects mid-year timing.

1. Total UAL Amortization Payments	$	87,030,594
2. Projected Payroll for FY 2024	$	1,088,592,594
3. UAL Amortization Payment Rate (1) / (2)		7.99%

TABLE 12B
KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
AMORTIZATION OF THE UNFUNDED ACTUARIAL LIABILITY

SCHOOL

Amortization Base	Original Amount	Remaining Payments	Projected June 30, 2023 Balance	Annual Payment*
2015 Legacy UAL	$ 5,683,566,131	12	$ 5,177,901,487	$ 567,054,166
2016 Assumption Changes	311,625,331	21	317,520,897	23,740,929
2016 Experience	(67,865,818)	16	(66,071,084)	(5,883,173)
2017 Experience	(380,457,726)	17	(374,602,937)	(32,020,621)
2018 Experience**	85,786,454	18	85,143,991	7,009,787
2019 Assumption Changes	(49,065,546)	24	(49,420,649)	(3,420,818)
2019 Data Refinements	(31,800,380)	19	(31,722,459)	(2,522,791)
2019 Experience**	40,229,271	19	40,130,695	3,191,472
2020 Experience	(252,484,358)	20	(252,484,358)	(19,446,710)
2021 Bond Proceeds	(500,000,000)	18	(496,255,457)	(40,856,026)
Total			**$ 4,350,140,126**	**$ 496,846,215**

* Payment amount reflects mid-year timing.
** Bases adjusted to reflect the expected impact of bonds issued in 2021.

1. Total UAL Amortization Payments	$	496,846,215
2. Projected Payroll for FY 2024	$	4,301,465,101
3. UAL Amortization Payment Rate (1) / (2)		11.55%

TABLE 12C
KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
AMORTIZATION OF THE UNFUNDED ACTUARIAL LIABILITY

STATE/SCHOOL

Amortization Base	Original Amount	Remaining Payments	Projected June 30, 2023 Balance	Annual Payment*
2015 Legacy UAL	$ 6,489,108,272	12	$ 5,911,774,860	$ 647,423,781
2016 Assumption Changes	451,174,445	21	459,710,107	34,372,367
2016 Experience	(98,610,703)	16	(96,002,910)	(8,548,396)
2017 Experience	(429,833,140)	17	(423,218,521)	(36,176,224)
2018 Experience**	172,578,779	18	171,286,322	14,101,766
2019 Assumption Changes	(50,929,916)	24	(51,298,512)	(3,550,800)
2019 Data Refinements	(56,121,993)	19	(55,984,475)	(4,452,275)
2019 Experience**	96,732,992	19	96,984,348	7,712,870
2020 Experience	(339,772,731)	20	(339,772,731)	(26,169,787)
2021 Bond Proceeds	(500,000,000)	18	(496,255,457)	(40,856,026)
Total			**$ 5,177,223,031**	**$ 583,857,276**

* Payment amount reflects mid-year timing.
** Bases adjusted to reflect the expected impact of bonds issued in 2021.
Note: Projected UAL contributions and amounts for State/School may not equal the sum of State and School due to rounding.

1. Total UAL Amortization Payments	$ 583,857,276
2. Projected Payroll for FY 2024	$ 5,390,057,696
3. UAL Amortization Payment Rate (1) / (2)	10.83%

TABLE 12D
KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
AMORTIZATION OF THE UNFUNDED ACTUARIAL LIABILITY

LOCAL

Amortization Base	Original Amount	Remaining Payments	Projected December 31, 2022 Balance	Annual Payment*
2015 Legacy UAL	$ 1,467,792,387	12	$ 1,337,203,475	$ 146,442,879
2016 Assumption Changes	107,171,397	21	109,198,947	8,164,768
2016 Experience	(68,664,163)	16	(66,848,317)	(5,952,381)
2017 Experience	(60,452,753)	17	(59,522,458)	(5,087,910)
2018 Experience	63,978,893	18	63,499,750	5,227,847
2019 Assumption Changes	(4,516,228)	24	(4,548,913)	(314,868)
2019 Data Refinements	(23,437,259)	19	(23,379,829)	(1,859,327)
2019 Experience	50,740,268	19	50,615,937	4,025,331
2020 Experience	(78,003,531)	20	(78,003,531)	(6,007,945)
Total			**$ 1,328,215,061**	**$ 144,638,394**

* Payment amount reflects mid-year timing.

1. Total UAL Amortization Payments	$	144,638,394
2. Projected Payroll for FY 2023	$	2,017,018,122
3. UAL Amortization Payment Rate (1) / (2)		7.17%

TABLE 12E
KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
AMORTIZATION OF THE UNFUNDED ACTUARIAL LIABILITY

KP&F

Amortization Base	Original Amount	Remaining Payments	Projected December 31, 2022 Balance	Annual Payment*
2015 Legacy UAL	$ 770,980,567	12	$ 702,386,731	$ 76,921,379
2016 Assumption Changes	90,081,927	21	91,786,165	6,862,820
2016 Plan Changes	801,442	16	780,248	69,476
2016 Experience	(6,054,297)	16	(5,894,190)	(524,837)
2017 Experience	5,430,585	17	5,347,014	457,056
2018 Experience	81,326,658	18	80,717,595	6,645,368
2019 Assumption Changes	(5,098,584)	24	(5,135,485)	(355,470)
2019 Data Refinements	7,499,453	19	7,481,077	594,947
2019 Experience	23,510,848	19	23,453,239	1,865,165
2020 Experience	(23,560,263)	20	(23,560,263)	(1,814,646)
Total			**$ 877,362,131**	**$ 90,721,258**

* Payment amount reflects mid-year timing.

1. Total UAL Amortization Payments	$	90,721,258
2. Projected Payroll for FY 2023	$	605,382,381
3. UAL Amortization Payment Rate (1) / (2)		14.99%

TABLE 12F
KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
AMORTIZATION OF THE UNFUNDED ACTUARIAL LIABILITY

JUDGES

Amortization Base	Original Amount	Remaining Payments	Projected June 30, 2023 Balance	Annual Payment*
2015 Legacy UAL	$ 2,439,245	12	$ 2,009,096	$ 253,514
2016 Assumption Changes	12,158,838	21	11,384,442	1,073,961
2016 Experience	(2,548,598)	16	(2,291,557)	(245,437)
2017 Experience	(3,798,326)	17	(3,521,988)	(365,789)
2018 Experience	3,150,713	18	3,003,668	303,422
2019 Assumption Changes	(603,799)	24	(595,233)	(53,332)
2019 Experience	(530,383)	19	(518,468)	(51,077)
2020 Experience	(4,212,029)	20	(4,212,029)	(405,629)
Total			**$ 5,257,931**	**$ 509,633**

* Payment amount reflects mid-year timing.

1. Total UAL Amortization Payments	$	509,633
2. Projected Payroll for 2021	$	28,471,730
3. UAL Amortization Payment Rate (1) / (2)		1.79%

TABLE 13
KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
ACTUARIAL EMPLOYER CONTRIBUTION RATES
FISCAL YEAR COMMENCING IN 2023

	Total Normal Cost	Employee Normal Cost	Employer Normal Cost	Unfunded Actuarial Liability	Total Employer Contribution*
State	7.39%	6.00%	1.39%	7.99%	9.38%
Correctional Employees - Age 55	7.81%	6.00%	1.81%	7.99%	9.80%
Correctional Employees - Age 60	8.55%	6.00%	2.55%	7.99%	10.54%
School	7.83%	6.00%	1.83%	11.55%	13.38%
State/School	7.74%	6.00%	1.74%	10.83%	12.57%
Local	7.26%	6.00%	1.26%	7.17%	8.43%
KP&F Uniform Contribution Rate					
State **	15.02%	7.15%	7.87%	14.99%	22.86%
Local **	15.02%	7.15%	7.87%	14.99%	22.86%
Judges	20.32%	5.63%	14.69%	1.79%	16.48%

* Does not include the contribution to the Death and Disability Program.

** The total contribution rate for each employer is equal to the appropriate uniform contribution rate (state or local) plus an additional rate, if applicable, required to amortize the unfunded past service liability, determined separately for each employer. (See Table 15)

TABLE 14A
LOCAL KPERS AFFILIATION COST FACTORS
FOR FISCAL YEAR BEGINNING IN 2023

Employer	Year Affiliated	Projected 2023 Annual Payroll	Projected 1/1/2023 Unfunded Actuarial Liability	Payment on 1/1/2023 Unfunded Liability	Payment on Unfunded Liability as % of Payroll	Total Rate for Years Commencing[1] in 2023
Bourbon County RWD#2	1999	$252,499	$106,260	$11,813	4.68%	13.11%
City of Burden	1999	116,916	15,114	1,675	1.43%	9.86%
City of Longton	1999	67,802	18,323	2,039	3.01%	11.44%
St. Francis Housing Authority	1999	30,599	7,642	850	2.78%	11.21%
Towanda Township	1999	58,492	8,716	963	1.65%	10.08%
Bucklin Public Library	2000	37,181	13,447	1,345	3.62%	12.05%
City of Blue Mound	2000	87,188	2,823	296	0.34%	8.77%
City of Linn Valley	2000	132,300	942	106	0.08%	8.51%
Elkhart Cemetery District	2000	35,118	1,657	192	0.55%	8.98%
Ellis Public Library	2000	37,121	4,859	539	1.45%	9.88%
Hamilton County Library	2000	90,639	12,787	1,421	1.57%	10.00%
Hays Housing Authority	2000	60,545	1,613	195	0.32%	8.75%
Haysville Community Library	2000	184,175	193,246	21,452	11.65%	20.08%
Kansas Workers' Risk Coop for Counties	2000	390,508	49,408	5,431	1.39%	9.82%
City of Arcadia	2002	90,455	15,815	1,667	1.84%	10.27%
City of North Newton	2002	571,271	161,484	17,062	2.99%	11.42%
Lindsborg Community Library	2002	31,573	3,627	370	1.17%	9.60%
Basehor Community Library	2003	381,161	55,975	5,914	1.55%	9.98%
City of Gypsum	2003	74,510	4,747	504	0.68%	9.11%
City of Linwood	2003	123,243	2,359	251	0.20%	8.63%
City of Bentley	2004	125,063	34,388	4,208	3.36%	11.79%
Mulvane Public Library	2004	210,295	12,323	1,509	0.72%	9.15%
The Center for Counseling and Consultation	2004	2,664,674	1,036,179	126,861	4.76%	13.19%
City of Denison	2005	32,067	18,167	2,225	6.94%	15.37%
Doniphan County RFD #2	2005	152,931	8,241	1,007	0.66%	9.09%
Stanton County Recreation Commission	2005	74,920	22,389	2,739	3.66%	12.09%
Total		$6,113,246	$1,812,531	$212,634		

[1] Basic local employer contribution rates excluding Death and Disability contribution: FY 2022: 8.90% FY 2023: 8.43%

TABLE 14B
LOCAL KPERS AFFILIATION COST FACTORS - AFFILIATION AFTER 1/1/06
FOR FISCAL YEAR BEGINNING IN 2023

Effective for affiliations on or after January 1, 2006, the payment on the unfunded actuarial liability due to affiliation for prior service is amortized as a fixed level dollar payment. No adjustment is made to the employer contribution rate for these payments.

Employer	Year Affiliated	Unfunded Actuarial Liability on Jan 1 Following Affiliation	Annual Payment Due Jan 1, 2023 to Amortize Unfunded Liability	Final Payment Year
City of Vermillion	2006	3,950	338	2032
Stockton Recreation Commission	2010	1,245	113	2032
Johnson Co. Fire District No. 2	2018	503,527	53,765	2033

TABLE 15
KP&F
EMPLOYER CONTRIBUTION RATES FOR FISCAL YEARS COMMENCING IN CALENDAR YEARS 2022 AND 2023

Employer	Total Rate for Fiscal Year Commencing in 2022	Recommended Total Rate for Fiscal Year Commencing in 2023
Anderson County	22.99 %	22.86 %
Atchinson County	22.99	22.86
Board of Regents Campus Police	22.99	22.86
Cherokee County	22.99	22.86
City of Abilene	22.99	22.86
City of Andover	22.99	22.86
City of Arkansas City	22.99	22.86
City of Atchison	22.99	22.86
City of Augusta	22.99	22.86
City of Baldwin City	22.99	22.86
City of Basehor	22.99	22.86
City of Belleville	22.99	22.86
City of Bonner Springs	22.99	22.86
City of Burden	22.99	22.86
City of Chanute	22.99	22.86
City of Cimarron	22.99	22.86
City of Coffeyville	22.99	22.86
City of Concordia	22.99	22.86
City of Derby	22.99	22.86
City of Dodge City	28.55	28.03
City of Edwardsville Firemen	26.62	25.90
City of Edwardsville Police	24.51	24.29
City of El Dorado	22.99	22.86
City of Emporia	22.99	22.86
City of Erie	22.99	22.86
City of Eudora	22.99	22.86
City of Fairway	22.99	22.86
City of Fort Scott	22.99	22.86
City of Garden City	22.99	22.86
City of Gardner Public Safety Officers	22.99	22.86
City of Garnett	22.99	22.86
City of Girard	22.99	22.86
City of Goddard	22.99	22.86
City of Hays	22.99	22.86
City of Herington	22.99	22.86
City of Hutchinson	22.99	22.86
City of Junction City	22.99	22.86

TABLE 15 (cont.)
KP&F
EMPLOYER CONTRIBUTION RATES FOR FISCAL YEARS COMMENCING IN CALENDAR YEARS 2022 AND 2023

Employer	Total Rate for Fiscal Year Commencing in 2022	Recommended Total Rate for Fiscal Year Commencing in 2023
City of Lake Quivira	22.99 %	22.86 %
City of Lansing	22.99	22.86
City of Lawrence	22.99	22.86
City of Leavenworth	22.99	22.86
City of Leawood	22.99	22.86
City of Lenexa	22.99	22.86
City of Liberal Police & Firemen	22.99	22.86
City of Linn Valley	22.99	22.86
City of Louisburg	22.99	22.86
City of Manhattan	22.99	22.86
City of Marion	22.99	22.86
City of McPherson	22.99	22.86
City of Merriam	22.99	22.86
City of Minneola	22.99	22.86
City of Mission	22.99	22.86
City of Moundridge	22.99	22.86
City of Newton	22.99	22.86
City of Newton EMTs	22.99	22.86
City of Olathe	22.99	22.86
City of Oswego	22.99	22.86
City of Ottawa	22.99	22.86
City of Overbrook	22.99	22.86
City of Overland Park	22.99	22.86
City of Paola	22.99	22.86
City of Park City	22.99	22.86
City of Parsons	22.99	22.86
City of Pittsburg	22.99	22.86
City of Roeland Park	22.99	22.86
City of Rossville	22.99	22.86
City of Salina	22.99	22.86
City of Shawnee	22.99	22.86
City of Spring Hill	22.99	22.86
City of Topeka	22.99	22.86
City of Victoria	22.99	22.86
City of Wakefield	22.99	22.86
City of Wellington	22.99	22.86
City of Westwood	22.99	22.86

TABLE 15 (cont.)
KP&F
EMPLOYER CONTRIBUTION RATES FOR FISCAL YEARS COMMENCING IN CALENDAR YEARS 2022 AND 2023

Employer	Total Rate for Fiscal Year Commencing in 2022	Recommended Total Rate for Fiscal Year Commencing in 2023
City of Winfield	22.99 %	22.86 %
City of Winfield (EMS)	22.99	22.86
Clark County	22.99	22.86
Cowley County Sheriff's Dept	22.99	22.86
Dickinson County	22.99	22.86
Douglas County Law Enforcement	25.49	25.13
Ellis County	22.99	22.86
Ford County	22.99	22.86
Franklin County Sheriff's Dept	22.99	22.86
Gray County Sheriff's Dept.	22.99	22.86
Harvey County Sheriff's Dept.	22.99	22.86
Jefferson County	22.99	22.86
Johnson Co. Fire District No. 2	22.99	22.86
Johnson County Fire Dept.	22.99	22.86
Johnson County Fire No. 1	22.99	22.86
Johnson County Fire No. 2	22.99	22.86
Johnson County Park Commission	22.99	22.86
Johnson County Sheriff's Dept.	22.99	22.86
Kansas Bureau of Investigation	22.99	22.86
Kansas Highway Patrol	22.99	22.86
Kearny County	22.99	22.86
Labette County Sheriff's Dept.	25.00	24.73
Leavenworth County	22.99	22.86
Leavenworth County (EMS)	22.99	22.86
Leavenworth County Fire District #1	22.99	22.86
McPherson County Rural Fire District #9	22.99	22.86
Miami County	22.99	22.86
Neosho County	22.99	22.86
Northwest Consolidated Fire District	22.99	22.86
Ottawa County	22.99	22.86
Pottawatomie County	22.99	22.86
Pottawatomie County (EMT)	22.99	22.86
Reno County Sheriff's Dept.	22.99	22.86
Republic County	22.99	22.86
Riley County	22.99	22.86
Riley County Law Enforcement	22.99	22.86
Russell County	22.99	22.86

TABLE 15 (cont.)
KP&F
EMPLOYER CONTRIBUTION RATES FOR FISCAL YEARS COMMENCING IN CALENDAR YEARS 2022 AND 2023

Employer	Total Rate for Fiscal Year Commencing in 2022	Recommended Total Rate for Fiscal Year Commencing in 2023
Sedgwick County EMT's	22.99 %	22.86 %
Sedgwick County Fire No. 1	22.99	22.86
Sedgwick County Sheriff's Dept.	22.99	22.86
Seward County	22.99	22.86
Shawnee County Sheriff's Dept.	22.99	22.86
Shawnee Heights Fire District	22.99	22.86
Soldier Township	22.99	22.86
State Fire Marshall	22.99	22.86
Sumner County Sheriff's Dept.	22.99	22.86
Unified Gov't of Wyandotte County	22.99	22.86

TABLE 16A
KP&F EMPLOYER ADDITIONAL CONTRIBUTION RATES
PRIOR SERVICE LIABILITY
FOR FISCAL YEARS BEGINNING IN 2023

Employer		1/1/2021 Unfunded Prior Service Liability		Payment on Unfunded Liability
City of Dodge City	$	574,913	$	215,432
City of Edwardsville Firemen		311,823		37,963
City of Edwardsville Police		204,020		18,952
Douglas County Law Enforcement		160,483		166,779
Labette County Sheriff's Dept.		129,852		16,582
Total	$	1,381,091	$	455,708

TABLE 16B
KP&F EMPLOYER ADDITIONAL CONTRIBUTION RATES
PRIOR SERVICE LIABILITY - AFFILIATION AFTER 1/1/06
FOR FISCAL YEAR BEGINNING IN 2023

Effective for affiliations on or after January 1, 2006, the payment on the unfunded actuarial liability due to affiliation for prior service is amortized as a fixed level dollar payment. No adjustment is made to the employer contribution rate for these payments.

Employer	Year Affiliated	Unfunded Actuarial Liability on Jan 1 Following Affiliation	Annual Payment Due Jan 1, 2022 to Amortize Unfunded Liability	Final Payment Year
None				

Note: Only employers with remaining obligations as of the valuation date are shown.

TABLE 17
KP&F EMPLOYER ADDITIONAL CONTRIBUTION RATES FOR FISCAL YEARS BEGINNING IN 2023

Employer	Number of Employees	Total Estimated 2023 Payroll	Payment on Unfunded Liability (Table 16)	As Percent of Payroll
City of Dodge City	66	4,166,939	$215,432	5.17 %
City of Edwardsville Firemen	17	1,250,525	37,963	3.04
City of Edwardsville Police	17	1,322,329	18,952	1.43
Douglas County Law Enforcement	83	7,356,503	166,779	2.27
Labette County Sheriff's Dept.	16	884,906	16,582	1.87
Total	199	$14,981,202	$455,708	

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SECTION 6

HISTORICAL FUNDING AND OTHER INFORMATION

The actuarial liability is a measure intended to help the reader assess:

(i) a retirement system's funded status on a "going concern" basis, and

(ii) progress being made toward accumulating the assets needed to pay benefits as due.

Allocation of the actuarial present value of projected benefits between past and future service was based on service using the Entry Age Normal actuarial cost method. Assumptions, including projected pay increases, were the same as used to determine the System's level percent of payroll annual required contribution between entry age and assumed exit age. Entry age was established by subtracting credited service from current age on the valuation date. The Entry Age Normal actuarial liability was determined as part of an actuarial valuation of the System as of December 31, 2020. The actuarial assumptions used in determining the actuarial liability can be found in Appendix C.

TABLE 18
KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
HISTORICAL FUNDING INFORMATION
(All Groups Combined)

Schedule of Funding Progress
($ in thousands)

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Liability (AL) (b)	Unfunded AL (UAL) (b-a)	Funded Ratio (a/b)	Covered Payroll (c)	UAL as a Percent of Covered Payroll ((b-a)/c)
12/31/2006	$12,189,197	$17,552,791	$5,363,593	69%	$5,599,193	96%
12/31/2007	13,433,115	18,984,915	5,551,800	71%	5,949,228	93%
12/31/2008	11,827,619	20,106,787	8,279,168	59%	6,226,526	133%
12/31/2009	13,461,221	21,138,206	7,676,985	64%	6,532,496	118%
12/31/2010	13,589,658	21,853,783	8,264,125	62%	6,494,048	127%
12/31/2011	13,379,020	22,607,170	9,228,150	59%	6,401,462	144%
12/31/2012	13,278,490	23,531,423	10,252,933	56%	6,498,962	158%
12/31/2013	14,562,765	24,328,670	9,765,906	60%	6,509,809	150%
12/31/2014	15,662,010	25,130,467	9,468,457	62%	6,560,105	144%
12/31/2015	17,408,578	25,947,781	8,539,203	67%	6,603,613	129%
12/31/2016	18,256,373	27,317,754	9,061,381	67%	6,650,451	136%
12/31/2017	19,246,613	28,153,827	8,907,214	68%	6,744,301	132%
12/31/2018	19,898,330	29,100,136	9,201,807	68%	7,048,621	131%
12/31/2019	20,975,535	29,982,337	9,006,801	70%	7,336,004	123%
12/31/2020	22,422,299	30,910,302	8,488,003	73%	7,505,899	113%

TABLE 19
KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
HISTORICAL FUNDING INFORMATION
(All Groups Combined)

Short Term Solvency Test

Actuarial Valuation Date	Member Contributions (A)	Retirants and Beneficiaries (B)	Active Member Employer Financed Portion (C)	Actuarial Value of Assets	Portions of Accrued Liabilities Covered by Assets (A)	(B)	(C)
12/31/2011	$5,334,463,714	$9,923,555,011	$7,349,151,307	$13,379,020,161	100%	81%	0%
12/31/2012	5,448,296,911	10,585,891,383	7,497,235,156	13,278,490,294	100%	74%	0%
12/31/2013	5,636,937,795	11,298,180,557	7,393,551,786	14,562,764,625	100%	79%	0%
12/31/2014	5,791,313,287	12,361,327,805	6,977,825,595	15,662,009,783	100%	80%	0%
12/31/2015	5,942,762,790	13,095,276,871	6,909,740,897	17,408,577,508	100%	88%	0%
12/31/2016	6,008,633,568	14,095,278,126	7,213,842,679	18,256,373,273	100%	87%	0%
12/31/2017	6,008,405,879	14,751,711,502	7,393,709,608	19,246,613,272	100%	90%	0%
12/31/2018	6,132,527,315	15,401,874,720	7,565,734,390	19,898,329,527	100%	89%	0%
12/31/2019	6,298,997,993	15,982,142,480	7,701,196,138	20,975,535,342	100%	92%	0%
12/31/2020	6,440,728,342	16,664,329,950	7,805,243,895	22,422,299,116	100%	96%	0%

TABLE 20
KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
HISTORICAL FUNDING INFORMATION
(All Groups Combined)

Schedule of Employer Contributions
For the Fiscal Year Ended June 30

Year	Actuarial Required Contribution	Percentage Contributed
2001	$277,096,692	77.6%
2002	289,519,647	79.7%
2003	311,365,296	78.9%
2004	317,900,432	74.0%
2005	381,791,085	68.6%
2006	471,424,006	63.4%
2007	531,292,151	63.9%
2008	607,662,300	65.1%
2009	660,833,664	68.0%
2010	682,062,413	72.1%
2011	709,964,322	74.1%
2012	843,361,836	67.4%
2013	825,196,972	74.9%
2014	842,285,931	79.4%
2015	908,019,000	74.5%
2016	891,638,000	80.9% *
2017	920,789,000	80.9%
2018	937,808,000	87.2%
2019	921,045,000	98.7%
2020	1,022,243,000	97.1%

This information is as reported by KPERS. Cavanaugh Macdonald Consulting has relied on the accuracy of the numbers as provided and has not verified them.

* Includes the long-term receivable contribution of $97.4 million for the State/School group which was subsequently paid in FY 2019, with interest (2019 SB 9).

TABLE 21
KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
HISTORICAL FUNDING INFORMATION

Historical Contribution Rates

Valuation Date	State/School Actuarial	State/School Statutory	Local Actuarial	Local Statutory	KP&F*	Judges*
12/31/2000	7.05%	4.58%	4.13%	3.07%	6.86%	16.67%
12/31/2001	7.69%	4.78%	4.64%	3.22%	9.47%	18.67%
12/31/2002	9.14%	5.27%	5.44%	3.41%	11.63%	21.97%
12/31/2003[1]	8.64%	5.77%	6.24%	3.81%	12.39%	19.11%
12/31/2004	10.37%	6.37%	7.69%	4.31%	13.32%	22.38%
12/31/2005	10.86%	6.97%	7.92%	4.93%	13.88%	22.08%
12/31/2006	10.98%	7.57%	8.12%	5.53%	13.49%	20.50%
12/31/2007	11.30%	8.17%	8.52%	6.14%	12.86%	19.49%
12/31/2008	14.09%	8.77%	10.42%	6.74%	17.88%	26.38%
12/31/2009	13.46%	9.37%	9.44%	7.34%	16.54%	23.75%
12/31/2010	13.83%	10.27%[2]	9.43%	7.94%	17.26%	23.62%
12/31/2011	14.34%	11.27%/8.65%[3]	9.77%	8.84%	19.92%	22.59%
12/31/2012	14.95%	10.91%[4] [5]	9.48%	9.48%[6]	21.36%	23.98%
12/31/2013	14.85%	10.81%[4] [5]	9.18%	9.18%	20.42%	21.36%
12/31/2014	14.89%	12.01%	8.46%	8.46%	19.03%	15.89%
12/31/2015	13.23%	13.21%[5]	8.39%	8.39%	20.09%	14.68%
12/31/2016	14.74%	14.41%	8.89%	8.89%	22.13%	18.65%
12/31/2017	14.23%	14.23%[6]	8.61%	8.61%	21.93%	17.26%
12/31/2018	13.33%[7]	13.33%[7]	8.87%	8.87%	22.80%	18.40%
12/31/2019	13.11%[7]	13.11%[7]	8.90%	8.90%	22.99%	17.77%
12/31/2020	12.57%	12.57%	8.43%	8.43%	22.86%	16.48%

* KP&F and Judges contribute the full actuarial contribution rate.

(1) Actuarial cost method changed to Entry Age Normal for valuations on or after 12/31/2003.

(2) Recertified from 9.97% after passage of Sub HB 2333 in the 2012 session.

(3) 11.27% for the first half of the fiscal year. Reduced by the governor's allotment and SB 4 to 8.65% for the second half of the fiscal year.

(4) Recertified from 12.37% to 10.91% and 13.57% to 10.81% after passage of SB 228 in the 2015 session.

(5) Although the rates were not revised, the full contribution amounts were not made.

(6) First actuarial valuation where the actuarial and the statutory contribution rate are equal (i.e., the ARC date).

(7) Recertified from 14.09% to 13.33% for FY 2022 and from 13.86% to 13.11% for FY 2023 after passage of SB 159 in the 2021 session.

TABLE 22
KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
PROJECTED BENEFIT PAYMENTS

Year	State	School	Local	Total KPERS	KP&F	Judges	Total
2021	$368,521,000	$1,086,219,000	$387,887,000	$1,842,627,000	$237,149,000	$16,672,000	$2,096,448,000
2022	373,768,000	1,117,682,000	399,626,000	1,891,076,000	245,546,000	16,470,000	2,153,092,000
2023	381,591,000	1,152,545,000	415,209,000	1,949,345,000	256,381,000	17,273,000	2,222,999,000
2024	387,317,000	1,187,361,000	430,197,000	2,004,875,000	266,790,000	17,891,000	2,289,556,000
2025	392,678,000	1,223,652,000	445,472,000	2,061,802,000	279,373,000	18,265,000	2,359,440,000
2026	398,951,000	1,260,571,000	462,862,000	2,122,384,000	291,942,000	18,706,000	2,433,032,000
2027	404,315,000	1,296,812,000	478,930,000	2,180,057,000	297,697,000	18,985,000	2,496,739,000
2028	408,858,000	1,332,074,000	495,002,000	2,235,934,000	307,087,000	19,200,000	2,562,221,000
2029	412,620,000	1,369,256,000	510,137,000	2,292,013,000	317,739,000	19,742,000	2,629,494,000
2030	415,575,000	1,403,766,000	525,325,000	2,344,666,000	329,172,000	19,781,000	2,693,619,000
2031	417,962,000	1,438,944,000	539,150,000	2,396,056,000	339,793,000	20,276,000	2,756,125,000
2032	419,737,000	1,473,793,000	553,560,000	2,447,090,000	350,008,000	20,324,000	2,817,422,000
2033	420,109,000	1,508,641,000	564,737,000	2,493,487,000	361,333,000	20,515,000	2,875,335,000
2034	420,144,000	1,540,847,000	575,941,000	2,536,932,000	371,932,000	20,418,000	2,929,282,000
2035	419,056,000	1,574,164,000	586,703,000	2,579,923,000	380,852,000	20,742,000	2,981,517,000
2036	417,606,000	1,608,546,000	596,348,000	2,622,500,000	391,481,000	20,741,000	3,034,722,000
2037	415,634,000	1,638,012,000	605,115,000	2,658,761,000	401,150,000	20,940,000	3,080,851,000
2038	412,524,000	1,663,932,000	611,919,000	2,688,375,000	411,018,000	20,537,000	3,119,930,000
2039	409,242,000	1,690,397,000	619,269,000	2,718,908,000	420,556,000	20,867,000	3,160,331,000
2040	405,594,000	1,709,860,000	625,038,000	2,740,492,000	429,829,000	20,700,000	3,191,021,000
2041	401,360,000	1,725,293,000	629,070,000	2,755,723,000	439,421,000	20,516,000	3,215,660,000
2042	397,888,000	1,741,276,000	634,966,000	2,774,130,000	447,401,000	20,201,000	3,241,732,000
2043	393,228,000	1,755,727,000	637,832,000	2,786,787,000	455,736,000	20,071,000	3,262,594,000
2044	388,904,000	1,768,283,000	640,514,000	2,797,701,000	463,841,000	19,594,000	3,281,136,000
2045	385,158,000	1,784,290,000	646,065,000	2,815,513,000	470,890,000	19,585,000	3,305,988,000

Note: Cash flows are the expected future non-discounted payments to current members. These numbers exclude refund payouts to current non-vested inactives and assume future retirees elect the normal form of payment and future withdrawals elect refunds according to valuation assumptions.

SECTION 7

RISK CONSIDERATIONS

Actuarial Standards of Practice are issued by the Actuarial Standards Board and are binding on credentialed actuaries practicing in the United States. These standards generally identify what the actuary should consider, document and disclose when performing an actuarial assignment. In September, 2017, Actuarial Standard of Practice Number 51, *Assessment and Disclosure of Risk in Measuring Pension Obligations*, (ASOP 51) was issued as final with application to measurement dates on or after November 1, 2018. This ASOP, which applies to funding valuations, actuarial projections, and actuarial cost studies of proposed plan changes, was first applicable for the December 31, 2018 actuarial valuation for the Kansas Public Employees Retirement System (KPERS).

A typical retirement plan faces many different risks, but the greatest risk is the inability to make benefit payments when due. The term "risk" is most commonly associated with an outcome with undesirable results. However, in the actuarial world, risk can simply be translated as uncertainty. The actuarial valuation process uses many actuarial assumptions to project how future contributions and investment returns will meet the cash flow needs for expected future benefit payments. Of course, we know that actual experience will not unfold exactly as anticipated by the assumptions and that uncertainty, whether favorable or unfavorable, creates risk. ASOP 51 defines risk as the potential of actual future measurements to deviate from expected results due to actual experience that is different than the actuarial assumptions.

The various risk factors for a given plan can have a significant impact – positive or negative – on the actuarial projection of liability and contribution rates. There are a number of risks inherent in the funding of a defined benefit plan. These include:

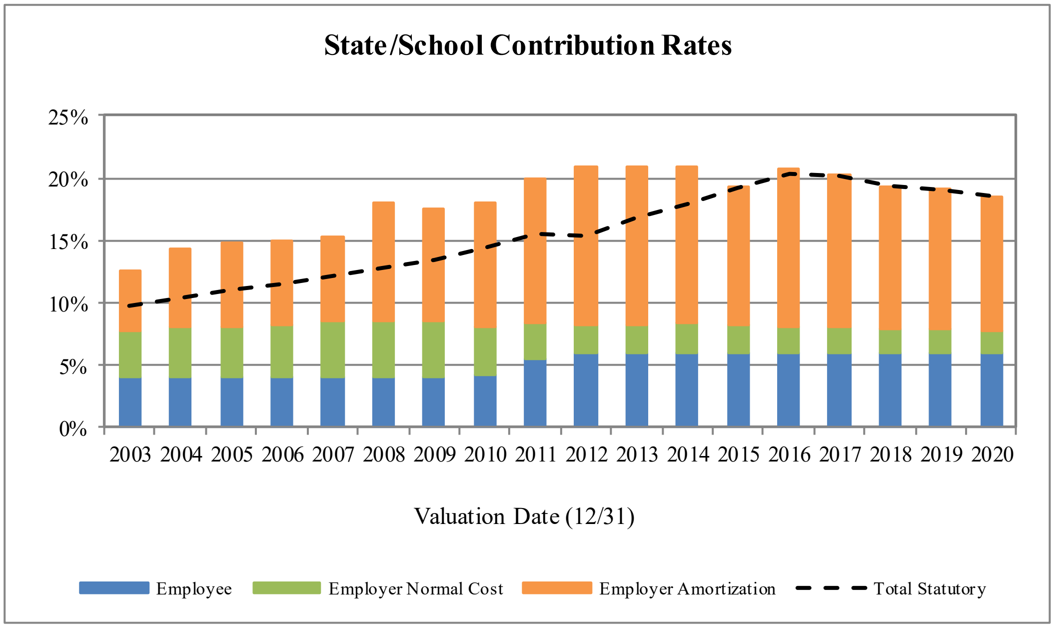
- economic risks, such as investment return, salary increases, and price inflation;
- demographic risks, such as mortality, payroll growth, aging population including impact of baby boomers, and retirement ages;
- contribution risk, i.e., the potential for contribution rates to be higher than expected due to population changes or other factors (note ASOP 51 does not require the actuary to opine on the willingness or ability of the plan sponsor/employer to pay the contribution rate); and
- external risks, such as the regulatory and political environment (which are not included in the risks to be assessed under ASOP 51).

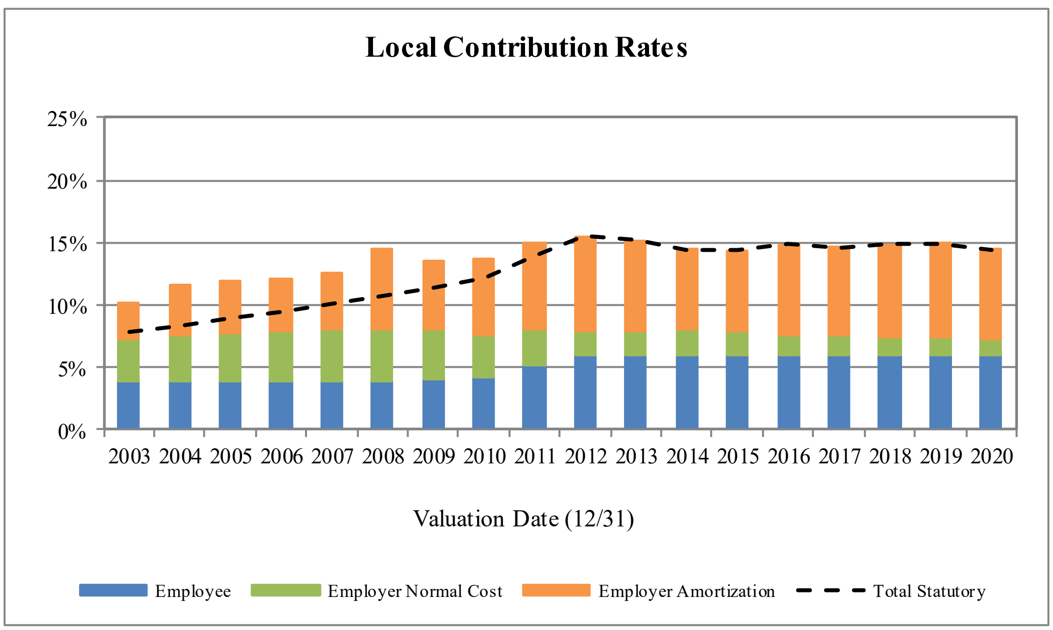
Impact of Funding Policy

One of the most important factors in the funding of any retirement system is consistently making contributions that are at least equal to the actuarial required contribution rate. With respect to this practice, there is a significant difference in the funding policy for KPERS (State/School and Local) and KP&F and Judges. KP&F and Judges have historically contributed the full actuarial contribution rate. However, there is a long history of contributing less than the full actuarial contribution rate for KPERS, particularly the School group.

The Kansas School Retirement System (KSRS) was created by the Kansas Legislature in 1940 and provided for a service annuity and a savings annuity (funded by employee contributions). The service annuity was not actuarially funded in advance, but rather was funded by general appropriations from the State General Fund for the amount necessary to fund the benefits each year (pay as you go). The Legislature explored options and eventually decided to merge KSRS into KPERS on January 1, 1971. At that time, any KSRS members who were not retired became KPERS members, with the provision for benefits on their years of service in the KSRS. Any KSRS member who was retired was not made a KPERS member at that time. In lieu of employer contributions in 1970, the State Permanent School Fund was abolished and all proceeds were transferred to the KPERS Trust Fund. Employer contributions for 1971 were set at 5.05% (4.55% Pension and 0.50% death and disability). Beginning in 1973, School group employer contributions were certified by the Board of Trustees and paid from the State General Fund. In 1972, a bill was passed to fund the remaining unfunded actuarial liability of $68.4 million over eleven years with level payments of $5.0 million per year starting in July, 1973. Due to increases in the unfunded actuarial liability from post-retirement benefit adjustments, the State contribution amount was increased to $10 million in 1973 which was paid from FY 1974 through FY 1984 (11 total payments). The 1984 Legislature made the remaining KSRS retirees special KPERS members and rolled the remaining unfunded actuarial liability into the KPERS unfunded actuarial liability. The remaining KSRS unfunded actuarial liability at that time was estimated to be $22.3 million (June, 1983). Rather than make the final two payments on the KSRS unfunded actuarial liability, the Legislature amortized the remaining $22.3 million over 27 years, the years remaining on the KPERS unfunded actuarial liability in 1984. Since the State funds the contributions for both the State and School group, one valuation was performed to set the contribution rate for the combined State/School group. Legislation passed in 2004 (effective with the December 31, 2003 valuation) split the actuarial valuation into two separate groups, although the statutory contribution rate has continued to be determined on a combined basis. By statute, any excess of the statutory contribution over the actuarial required contribution for the State group is allocated to fund the School group.

Unlike KP&F and Judges, the State, School and Local employers do not necessarily contribute the full actuarial contribution rate. Due to legislation passed in 1993, the employer contribution rates certified by the Board may not increase over the prior year by more than the statutory cap. The statutory cap has changed over time but is currently set at 1.20%. Due to this cap, the statutory contribution rate was below the actuarial contribution for many years (25 years for the State/School group and 21 for the Local group). In the December 31, 2015 valuation, the statutory rate for the Local group was equal to the actuarial contribution rate and in the 2017 valuation, the statutory rate for the State/School group is equal to the actuarial contribution rate. The following graphs show the contribution rates for the State/School and Local groups over the last 18 years. Note these are the rates developed in the valuations which apply to later fiscal years.





Over the last two decades, there have been multiple efforts to address the long-term funding of KPERS and some significant changes have occurred. As was discussed earlier, the statutory cap, which was 0.10% for State/School and 0.05% for Local when established in 1993, has been increased several times and is currently 1.20% for all groups. In addition, the Legislature approved the issuance of bonds in 2004, 2015 and 2021, resulting in total proceeds of about $1.4 billion contributed to the KPERS trust fund so far and an additional $0.5 billion expected in August, 2021. Different benefit structures with lower costs were created for members hired after July 1, 2009 (KPERS 2) and then again for members hired after January 1, 2015 (KPERS 3). The plan design for KPERS 3 members is intended to share the pre-retirement investment risk directly with the members by adjusting the interest crediting rate when actual investment experience is different than expected, thereby effectively lowering the benefits to be paid to members. Over the very long term, this change in the benefit structure will reduce some of the investment risk for KPERS.

However, in more recent years, there have been times when the Legislature and Governor have not paid the full statutory contribution rate (which was already lower than the actuarial contribution rate). In 2015, SB 4 reset the previously certified employer contribution rate for the State/School group for the last half of FY 2015 from 11.27% to 8.65%. In addition, 2015 SB 228 lowered the statutory rates for the State/School group from 12.37% to 10.91% for FY 2016 and 13.57% to 10.81% for FY 2017, to reflect the impact of the bond proceeds on the current year's contribution rates.

The 2016 Legislature passed legislation to permit a delay of contributions of up to $100 million in State and School contributions for fiscal year 2016, but provided that the delayed contributions would be repaid in full, with interest at 8.00%, by June 30, 2018. The Governor used this allotment authority to delay payments of $97.4 million in State/School group and KP&F State contributions during the final quarter of FY 2016. Legislation in the 2017 session then provided that the repayment of these contributions would not be paid (subsequent legislation passed by the 2019 Legislature repaid these delayed contributions).

The 2017 Legislature passed bills that provided for a delay of $64.13 million of the total FY 2017 State/School statutory contributions. The delayed employer contributions for fiscal year 2017 are repaid in level-dollar annual installments of $6.4 million over twenty years beginning in fiscal year 2018. A portion of the employer contributions for School employers within the State/School group for fiscal year 2019 ($194 million) were also delayed with repayment by the School group, as a level dollar amount over 20 years beginning in FY 2020.

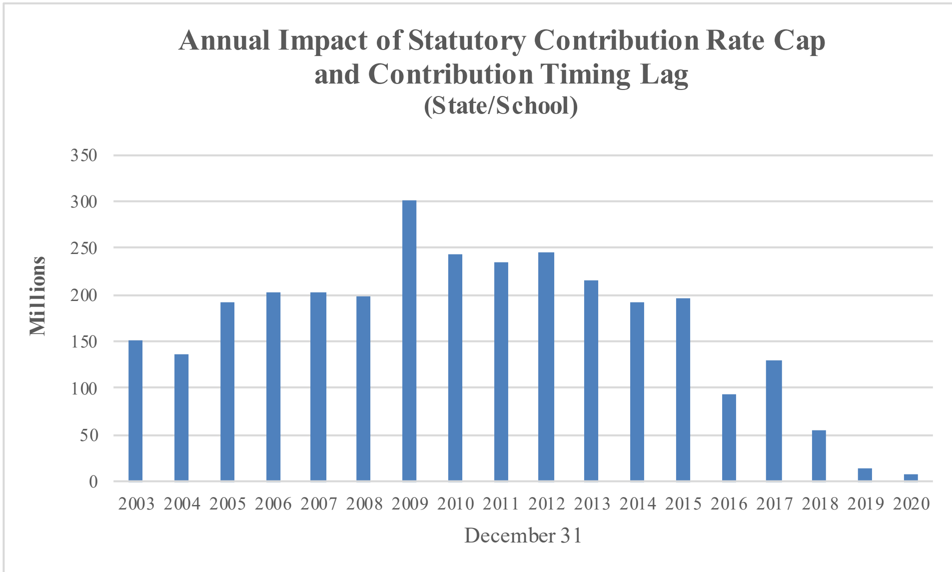
The 2018 and 2019 Legislatures passed bills to contribute additional funding to the KPERS School group:

- $82 million in July 2018 (received July 2018)
- $56 million in FY 2018 (received June 2018)
- $51 million in FY 2020 (received July 2019)

In addition, the 2019 Legislature passed Senate Bill 9 which provided for a transfer of $115 million from the State General Fund to KPERS in March, 2019. This payment covers the $97 million in missed KPERS School contributions for FY 2016 plus interest.

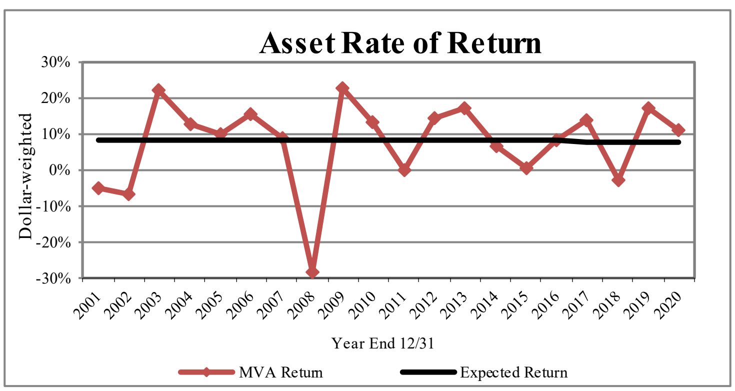
The 2021 Legislature passed House Bill 2405, which provided for bonds to be issued to improve the funded status of the School group. As a result, net proceeds of up to $500 million from bonds issued by the state of Kansas are to be deposited into the KPERS trust fund for the School group, subject to certain criteria. Due to the passage of House Bill 2405, Senate Bill 159, which was the 2021 legislative session's omnibus budget bill, included a provision to reduce the previously certified employer contribution rates for FY 2022 and FY 2023. As a result, the previously certified State/School employer contribution rate changed from 14.09% to 13.33% for FY 2022 and from 13.86% to 13.11% for FY 2023 to reflect the projected impact of the bond proceeds on the employer contribution rates.

While there has been significant activity over the last 25 years by the Legislature to address the funding of the State/School group, contributions have been significantly less than the full actuarial rate since 1994. The contribution shortfall results in an increase in the actual unfunded actuarial liability compared to that expected, based on the actuarial funding policy. The following graph shows the shortfall between the actuarial and statutory contributions over the last 18 years.



Other Risk Factors

The most significant risk factor for KPERS is investment return because of the volatility of returns and the size of plan assets compared to payroll (see Table 23). A perusal of historical returns over 10-20 years reveals that the actual return each year is rarely close to the expected return for the same period. This is to be expected, given the underlying capital market assumptions and the System's asset allocation.



A key demographic risk for all retirement systems, including the Kansas Public Employees Retirement System, is improvements in mortality (longevity) greater than anticipated. While the actuarial assumptions reflect small, continuous improvements in mortality experience over time and these assumptions are refined every experience study, the risk arises because there is a possibility of some sudden shift, perhaps from a significant medical breakthrough that could quickly increase liabilities. Likewise, there is some possibility of a significant public health crisis that could result in a significant number of additional deaths in a short time period, as experienced with Covid-19. This kind of event is also significant, although more easily absorbed. While either of these events could happen, it represents a small probability and thus represents much less risk than the volatility associated with investment returns.

Finally, the unfunded actuarial liability is amortized as a level percentage of payroll for all groups, except for the Judges group. The underlying assumption used in developing the payment schedule assumes an increasing payroll over time which is dependent on a stable employment level, i.e., active member count remains the same. When payroll does not grow as expected, the unfunded actuarial liability contribution rate will be higher than expected even if the dollar amount of the payment is the same as scheduled. With the statutory employer contribution cap for the State/School and Local groups, stagnant growth in covered payroll together with investment returns far below the expected return, could create a situation in the future where the statutory contribution rate is less than the actuarial contribution rate.

Many of the public retirement systems were created shortly after the end of World War II. Although KPERS (established in 1962) is younger than many of its peers, it has still been in existence for more than fifty years. In addition, the merger of KSRS into KPERS impacted the demographics of the System. In general, the aging of the population, including the retirement of the baby boomers, along with earlier retirement eligibility has created a shift in the demographics of most retirement systems. This change is not unexpected and has, in fact, been anticipated in the funding of the retirement systems. Even though it was anticipated, the demographic shift and maturing of the plans have increased the risk associated with funding the system. The following exhibits summarize certain historical information that indicates how certain key risk metrics have changed over time due to the maturing of the retirement system.

TABLE 23
KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
ASSET VOLATILITY RATIOS

As a retirement system matures, the size of the market value of assets increases relative to the covered payroll of active members, on which the System is funded. The size of the plan assets relative to covered payroll, sometimes referred to as the asset volatility ratio, is an important indicator of the contribution risk for the System. The higher this ratio, the more sensitive a plan's contribution rate is to investment return volatility. In other words, it will be harder to recover from investment losses with increased contributions.

Group	Market Value of Assets	Covered Payroll	Asset Volatility Ratio	Increase in ARC with a Return 10% Lower than Assumed*
Local	4,699,700,683	1,901,233,030	2.47	1.90%
State/School	15,532,753,473	5,005,562,890	3.10	2.39%
KP&F	2,918,249,554	570,630,955	5.11	3.94%
Judges	201,931,613	28,471,730	7.09	5.46%

*The impact of asset smoothing is not reflected in the impact on the Actuarial Required Contribution Rate (ARC).

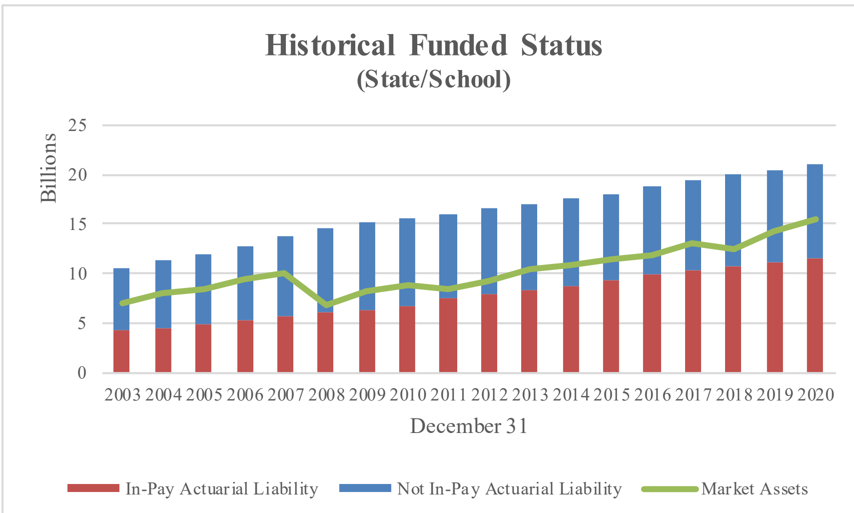
	Asset Volatility Ratio	Increase in ARC with a Return 10% Lower than Assumed*
	1.00	0.77%
	2.00	1.54%
Local ->	2.47	1.90%
	3.00	2.31%
State/School ->	3.10	2.39%
	4.00	3.08%
	5.00	3.85%
KP&F ->	5.11	3.94%
	6.00	4.62%
	7.00	5.39%
Judges ->	7.09	5.46%

The assets for the State/School group at December 31, 2020 are 310% of payroll, so underperforming the investment return assumption by 10.00% (i.e., earn -2.25% for one year) is equivalent to an actuarial loss of 31.0% of payroll. The impact on the employer contribution rate varies by group because of the difference in the Asset Volatility Ratio. While the actual impact in the first year is mitigated by the asset smoothing method and amortization of the unfunded actuarial liability, this exhibit illustrates the contribution risk associated with volatile investment returns.

TABLE 24
KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
HISTORICAL FUNDED STATUS

Another key measurement is whether, and by how much, the current market value of assets exceeds the liability for current retirees and beneficiaries (in-pay members). This also provides an indication of the maturity of the retirement system.

The general trend line of the market value of assets is similar for both the State/School and Local groups, but the assets of the Local group have been well above the liability for in-pay members in all years while that has not been the case for the State/School group.



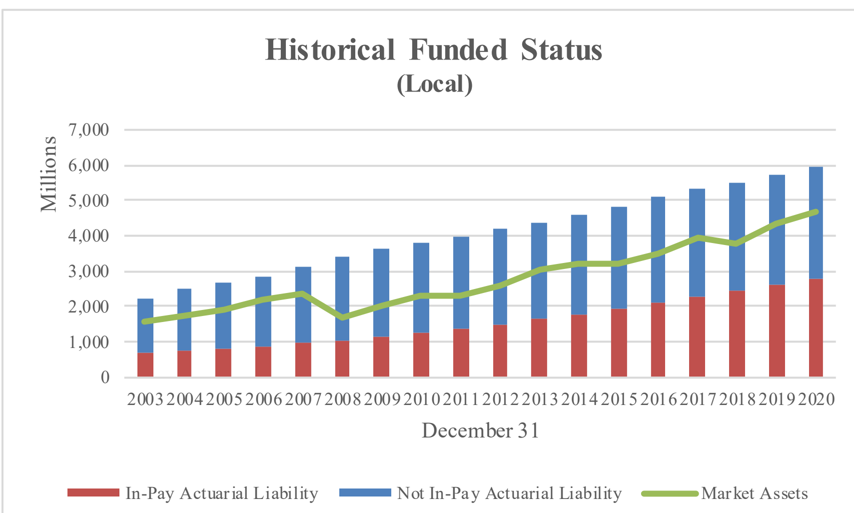
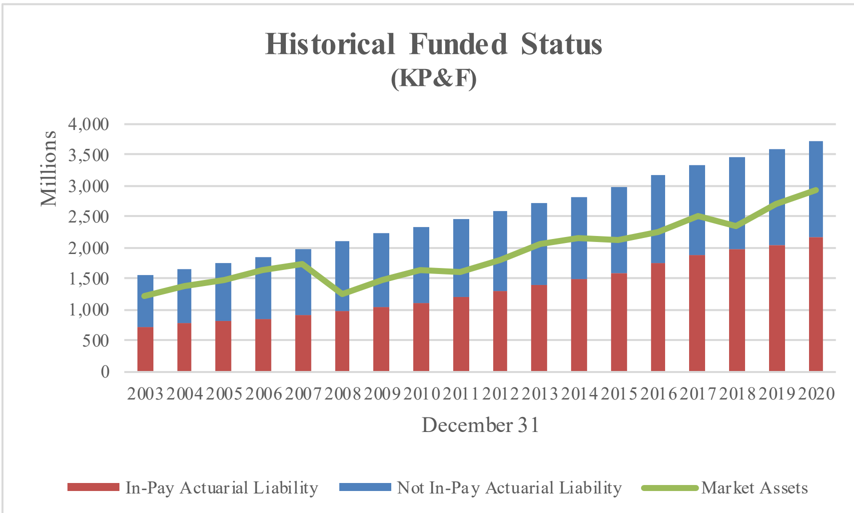


TABLE 24 (cont.)
KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
HISTORICAL FUNDED STATUS

The fact that the Kansas Police and Fire (KP&F) system has been funded with contributions equal to the full actuarial rate has contributed to the fact the market value of assets has historically been higher than the inactive liability. KP&F is currently about 78% funded on a market value basis.



The Judges System has also been funded with contributions equal to the actuarial contribution rate. The funded status of the system declined due to the Great Recession in 2008 and 2009, but has recovered and is currently about 101% funded on a market value basis.

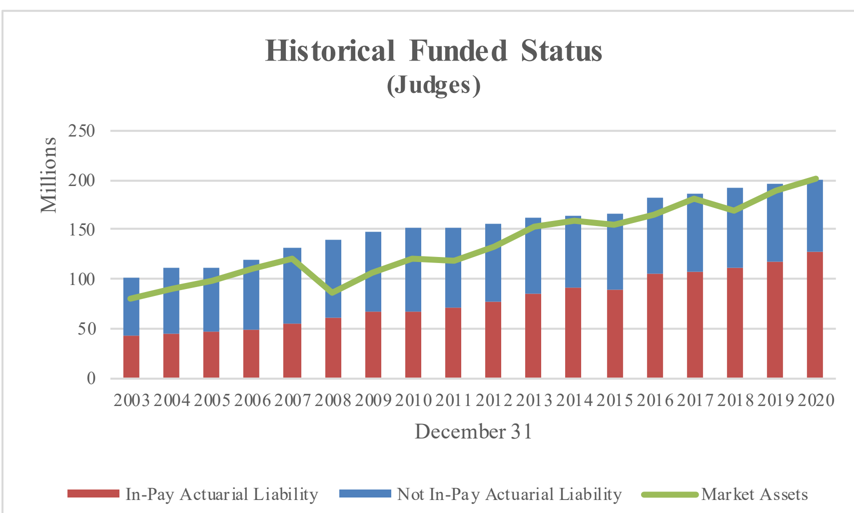
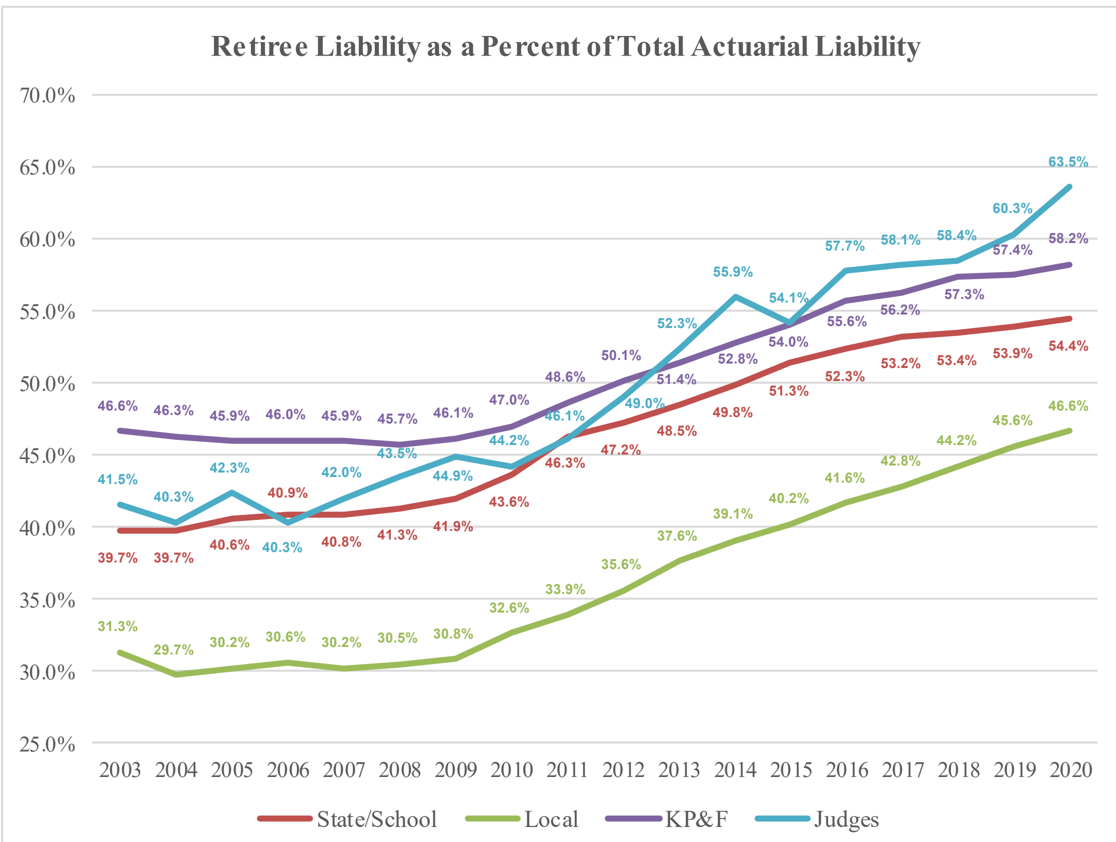


TABLE 25
KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
LIABILITY MATURITY MEASUREMENTS

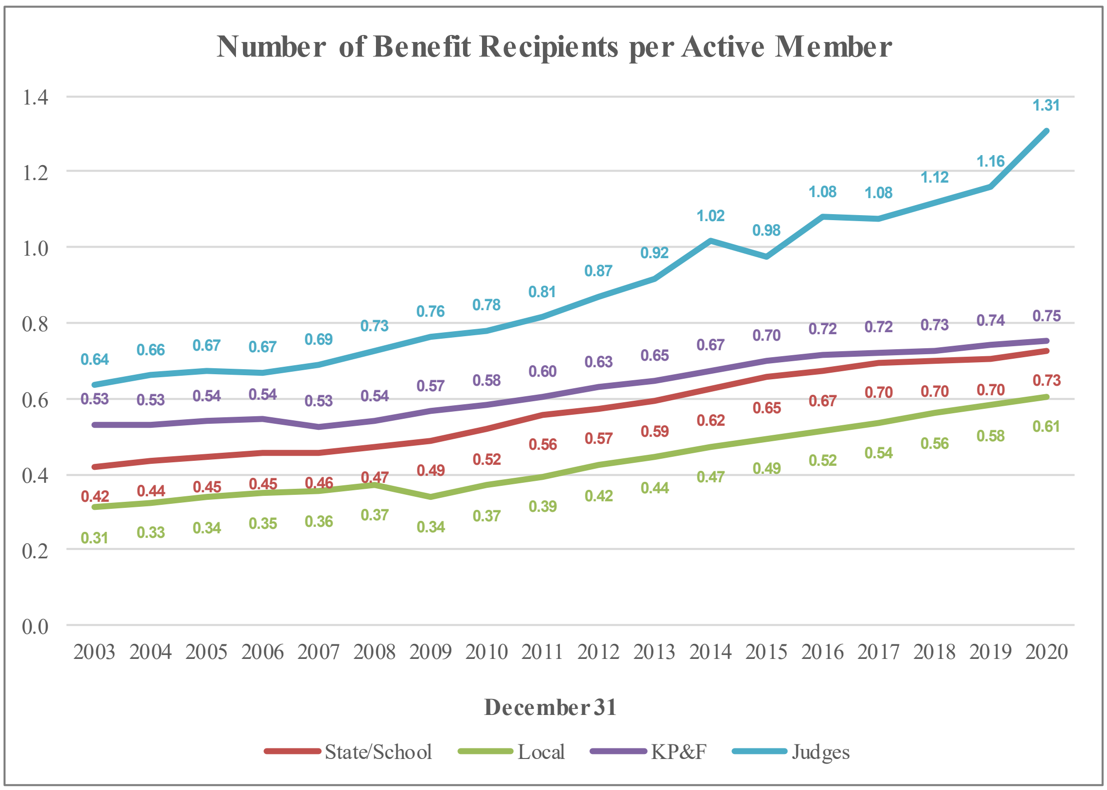
Most public sector retirement systems have been in operation for many years. As a result, they have aging plan populations, and in some cases declining active populations, resulting in a growing percentage of retiree liability. With more of the total liability residing with retirees, investment volatility has a greater impact on the funding of the system since it is more difficult to restore the system financially after losses occur when there is comparatively less payroll to spread costs over.



As the graph above illustrates, the relative percentage of total liability attributable to retirees has varied over time and different patterns exist for the different groups. However, for all groups, the trend has been an increase in the percentage over the last 18 years, indicating retirees are a growing portion of the membership of the System.

TABLE 26
KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
NUMBER OF BENEFIT RECIPIENTS PER ACTIVE MEMBER

In the past 18 years, KPERS has become more mature, as indicated by a continual increase in the ratio of benefit recipients (retirees and beneficiaries) to active members, shown in the graph below. The increase in the ratio is significant from a funding perspective because any increase in the unfunded actuarial liability due to unfavorable future investment or non-investment experience for a larger group of non-active members has to be amortized and funded using the payroll of a smaller group of active members.



There has been a general increasing trend of benefit recipients to active members over the last 17 years, indicating a maturation of the systems. The increase has been more dramatic for the Judges system due to the size and demographics of the group.

TABLE 27

KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
SCENARIO TESTING - STATE/SCHOOL GROUP

KPERS is subject to various risks that may impact the funded status and employer contribution rates. As past experience has demonstrated, investment performance is one of the most impactful risks. Any variance in actual experience, including but not limited to members living longer or shorter than expected, future salary increases more or less than assumed, and members leaving active employment earlier or later than assumed will also impact the liabilities and contribution rates. It is because of these possible, and often likely, annual variances from expectations that an actuarial valuation is performed annually to assess and measure the variances and update the employer contribution rates.

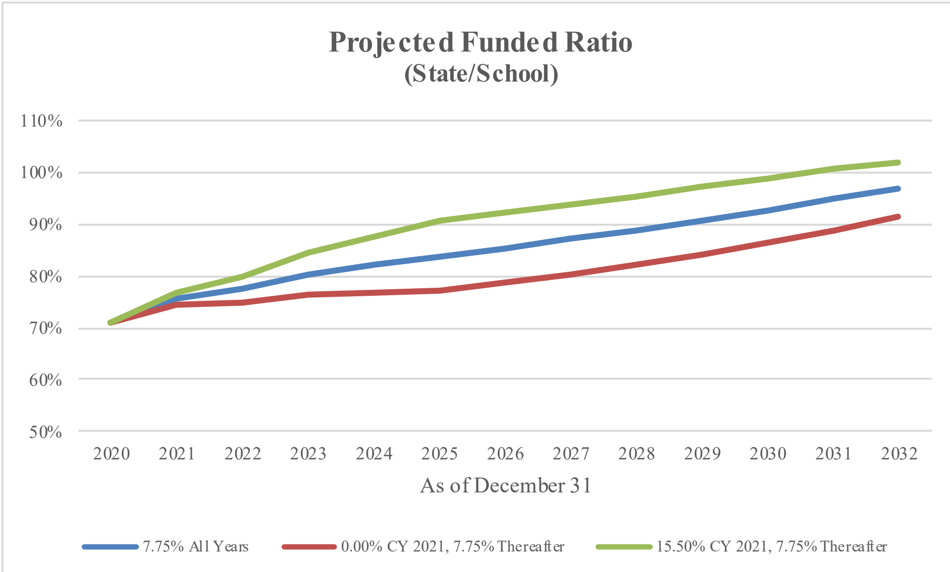
To measure the investment risk, a "Scenario Test" is included to study the change in funded status and employer contribution rates if KPERS were to earn market returns higher or lower than 7.75% in the first year following the December 31, 2020 valuation (calendar year 2021) and then earn the assumed return in all other years. This section of the valuation report contains three deterministic projections of actuarial valuation results to illustrate the impact of variance in the investment return for a single year. The projections assume the actual return on assets for the year ending December 31, 2020 will be as follows:

- Scenario 1: 7.75% return in all years (the current assumption)
- Scenario 2: 0.00% return in CY 2021, then 7.75% thereafter
- Scenario 3: 15.50% return in CY 2021, then 7.75% thereafter

Impact on the Future Valuation Results

The following graphs show the impact of each scenario on the State/School funded ratio and the State/School employer contribution rate. The blue line reflects the expected path for the funded ratio if all assumptions are met in the future, including the 7.75% assumed rate of return. The funded ratio improves steadily as deferred asset gains are realized and then continues to improve as the System is expected to contribute the full actuarial contribution rate until reaching 97% in 2032. If the actual investment return for calendar year 2021 is 0%, followed by returns of 7.75% in all subsequent years, the funded ratio would hold steady around 76% for a few years as the deferred asset experience flows through the asset smoothing method and then steadily increase (red line). Under the third scenario (green line), the return for calendar year 2021 is 15.50%, followed by 7.75% and the funded ratio increases steadily reaching 101% by 2032. The purpose of the scenario testing is to illustrate the long term impact of one year where the investment return is significantly better or worse than expected.

Similarly, for the State/School employer contribution rate, the blue line indicates the projection of the employer contribution rate, if all assumptions are met, which remains around 11.4% once the deferred investment experience works through the asset smoothing method. If the return in calendar year 2021 is 0% (red line), the employer contribution rate increases to around 13.7% as the investment experience is recognized in the actuarial value of assets and then remains at that level for the remainder of the period. Under the third scenario (green line), where the return in calendar year 2021 is 15.50%, the employer contribution rate decreases to around 9.0%.


Projected Funded Ratio
(State/School)
110%
100%
90%
80%
70%
60%
50%
2020
2021
2022
2023
2024
2025
2026
2027
2028
2029
2030
2031
2032
As of December 31
7.75% All Years
0.00% CY 2021, 7.75% Thereafter
15.50% CY 2021, 7.75% Thereafter

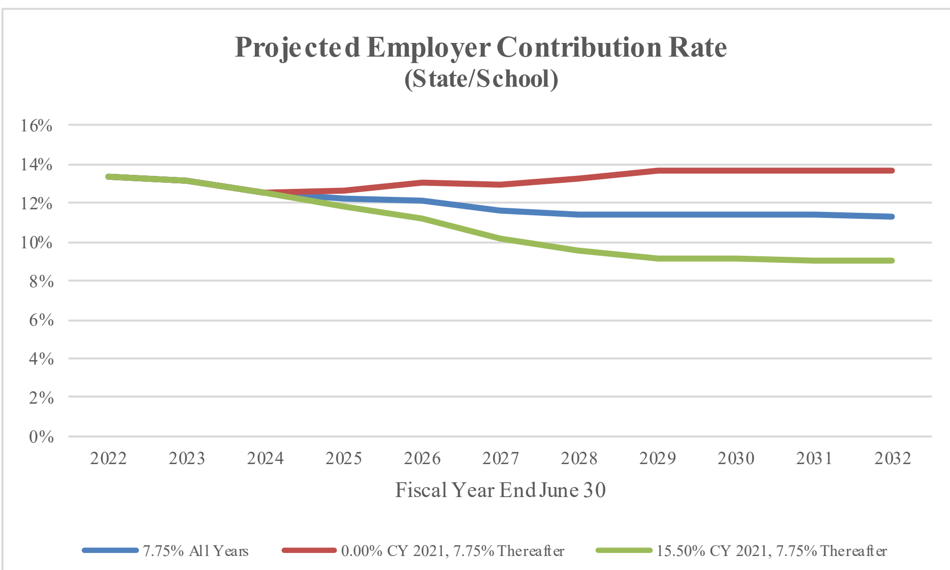

Projected Employer Contribution Rate
(State/School)
16%
14%
12%
10%
8%
6%
4%
2%
0%
2022
2023
2024
2025
2026
2027
2028
2029
2030
2031
2032
Fiscal Year End June 30
7.75% All Years
0.00% CY 2021, 7.75% Thereafter
15.50% CY 2021, 7.75% Thereafter

TABLE 28A
KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
COMPARISON OF VALUATION RESULTS UNDER ALTERNATE INVESTMENT RETURN ASSUMPTIONS

STATE/SCHOOL
($ in millions)

This exhibit compares the key December 31, 2020 valuation results under five (5) different investment return assumptions to illustrate the impact of different assumptions on the funding of the System. Note that only the investment return assumption is changed, as identified in the heading below. All other assumptions, including PLSO factors, annuity factors and interest crediting rate, are unchanged for purposes of this analysis.

Investment Return Assumption	7.25%	7.50%	7.75%	8.00%	8.25%
Actuarial Liability	$22,201	$21,618	$21,060	$20,525	$20,011
Actuarial Value of Assets	14,916	14,916	14,916	14,916	14,916
Unfunded Actuarial Liability (UAL)	$7,285	$6,702	$6,143	$5,608	$5,095
Funded Ratio	67.2%	69.0%	70.8%	72.7%	74.5%
Contribution Rates					
- Total Normal Cost Rate	8.64%	8.17%	7.74%	7.34%	6.96%
- Member Contribution Rate	(6.00%)	(6.00%)	(6.00%)	(6.00%)	(6.00%)
- Employer Normal Cost Rate	2.64%	2.17%	1.74%	1.34%	0.96%
- Amortization of the UAL	12.26%	11.55%	10.83%	10.10%	9.36%
Actuarial Contribution Rate	14.90%	13.72%	12.57%	11.44%	10.32%
Statutory Employer Contribution Rate*	14.31%	13.72%	12.57%	11.44%	10.32%

Note: Totals may not add due to rounding. The change in the UAL due to different investment return assumption is amortized over a 25-year period.
*Employer contribution rates may be impacted by the statutory cap.

TABLE 28B
KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
COMPARISON OF VALUATION RESULTS UNDER ALTERNATE INVESTMENT RETURN ASSUMPTIONS

LOCAL
($ in millions)

This exhibit compares the key December 31, 2020 valuation results under five (5) different investment return assumptions to illustrate the impact of different assumptions on the funding of the System. Note that only the investment return assumption is changed, as identified in the heading below. All other assumptions, including PLSO factors, annuity factors and the interest crediting rate, are unchanged for purposes of this analysis.

Investment Return Assumption	**7.25%**	**7.50%**	**7.75%**	**8.00%**	**8.25%**
Actuarial Liability	$6,260	$6,090	$5,928	$5,773	$5,625
Actuarial Value of Assets	4,509	4,509	4,509	4,509	4,509
Unfunded Actuarial Liability (UAL)	$1,751	$1,582	$1,420	$1,264	$1,116
Funded Ratio	72.0%	74.0%	76.1%	78.1%	80.2%
Contribution Rates					
- Total Normal Cost Rate	8.00%	7.62%	7.26%	6.92%	6.61%
- Member Contribution Rate	(6.00%)	(6.00%)	(6.00%)	(6.00%)	(6.00%)
- Employer Normal Cost Rate	2.00%	1.62%	1.26%	0.92%	0.61%
- Amortization of the UAL	8.26%	7.72%	7.17%	6.62%	6.06%
Actuarial Contribution Rate	10.26%	9.34%	8.43%	7.54%	6.67%
Statutory Employer Contribution Rate*	10.10%	9.34%	8.43%	7.54%	6.67%

Note: Totals may not add due to rounding. The change in the UAL due to different investment return assumption is amortized over a 25-year period.
*Employer contribution rates may be impacted by the statutory cap.

TABLE 28C
KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
COMPARISON OF VALUATION RESULTS UNDER ALTERNATE INVESTMENT RETURN ASSUMPTIONS

KP&F
($ in millions)

This exhibit compares the key December 31, 2020 valuation results under five (5) different investment return assumptions to illustrate the impact of different assumptions on the funding of the System. Note that only the investment return assumption is changed, as identified in the heading below.

Investment Return Assumption	7.25%	7.50%	7.75%	8.00%	8.25%
Actuarial Liability	$3,925	$3,821	$3,722	$3,626	$3,535
Actuarial Value of Assets	2,803	2,803	2,803	2,803	2,803
Unfunded Actuarial Liability (UAL)	$1,122	$1,018	$919	$823	$732
Funded Ratio	71.4%	73.4%	75.3%	77.3%	79.3%
Contribution Rates					
- Total Normal Cost Rate	16.63%	15.80%	15.02%	14.28%	13.60%
- Member Contribution Rate	(7.15%)	(7.15%)	(7.15%)	(7.15%)	(7.15%)
- Employer Normal Cost Rate	9.48%	8.65%	7.87%	7.13%	6.45%
- Amortization of the UAL	17.19%	16.10%	14.99%	13.86%	12.73%
Actuarial Contribution Rate	26.67%	24.75%	22.86%	20.99%	19.18%
Statutory Employer Contribution Rate	26.67%	24.75%	22.86%	20.99%	19.18%

Note: Totals may not add due to rounding. The change in the UAL due to different investment return assumption is amortized over a 25-year period.

TABLE 28D
KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
COMPARISON OF VALUATION RESULTS UNDER ALTERNATE INVESTMENT RETURN ASSUMPTIONS

JUDGES

This exhibit compares the key December 31, 2020 valuation results under five (5) different investment return assumptions to illustrate the impact of different assumptions on the funding of the System. Note that only the investment return assumption is changed, as identified in the heading below.

Investment Return Assumption	**7.25%**	**7.50%**	**7.75%**	**8.00%**	**8.25%**
Actuarial Liability	$209,138,579	$204,753,261	$200,523,122	$196,441,032	$192,500,254
Actuarial Value of Assets	194,057,436	194,057,436	194,057,436	194,057,436	194,057,436
Unfunded Actuarial Liability (UAL)	$15,081,143	$10,695,825	$6,465,686	$2,383,596	($1,557,182)
Funded Ratio	92.8%	94.8%	96.8%	98.8%	100.8%
Contribution Rates					
- Total Normal Cost Rate	22.09%	21.18%	20.32%	19.50%	18.72%
- Member Contribution Rate	(5.63%)	(5.63%)	(5.63%)	(5.63%)	(5.63%)
- Employer Normal Cost Rate	16.46%	15.55%	14.69%	13.87%	13.09%
- Amortization of the UAL	5.17%	3.49%	1.79%	0.06%	(1.69%)
Actuarial Contribution Rate	21.63%	19.04%	16.48%	13.93%	11.40%
Statutory Employer Contribution Rate	21.65%	19.05%	16.48%	13.92%	11.38%

Note: The change in the UAL due to different investment return assumption is amortized over a 25-year period.

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HISTORICAL SUMMARY OF MEMBERS

The following tables display selected historical data for KPERS, KP&F and Judges as available.

KPERS

Valuation		Active Members						Number			
			Average								
Date December 31	Total Count	Number	Age	Entry Age	Service	Annual Pay ($)	Pay Increase	Deferred Disabled*	Inactives	Retired	Act/Ret Ratio
2001	229,185	139,253	44.4	34.2	10.2	31,279	3.2%		37,175	52,757	2.64
2002	234,023	140,498	44.7	34.3	10.4	31,634	1.1%		39,420	54,105	2.60
2003	237,123	141,401	45.0	34.4	10.6	32,111	1.5%	2,933	37,280	55,509	2.55
2004	238,375	140,779	45.3	34.4	10.8	32,937	2.6%	3,004	37,191	57,401	2.45
2005	241,684	142,047	45.3	34.4	10.9	33,724	2.4%	3,099	37,015	59,523	2.39
2006	245,555	144,227	45.4	34.6	10.8	35,284	4.6%	3,007	36,513	61,808	2.33
2007	249,624	146,406	45.5	34.7	10.8	36,924	4.6%	2,911	37,140	63,167	2.32
2008	255,427	148,569	45.6	34.7	10.9	38,087	3.1%	2,823	37,567	66,468	2.24
2009	264,280	153,386	45.4	34.7	10.7	38,749	1.7%	2,781	39,212	68,901	2.23
2010	265,477	150,482	45.6	34.9	10.7	40,109	3.5%	2,749	40,122	72,124	2.09
2011	267,713	147,647	45.6	34.4	11.2	40,166	0.1%	2,711	41,358	75,997	1.94
2012	272,561	148,605	45.5	34.3	11.2	40,522	0.9%	2,575	41,991	79,390	1.87
2013	275,983	147,957	45.5	34.2	11.3	40,684	0.4%	2,436	43,660	81,930	1.81
2014	281,172	146,746	45.4	34.2	11.2	41,367	1.7%	2,340	46,503	85,583	1.71
2015	284,912	144,669	45.4	34.2	11.2	42,149	1.9%	2,210	49,488	88,545	1.63
2016	290,025	144,564	45.4	34.2	11.2	42,460	0.7%	2,051	52,140	91,270	1.58
2017	296,383	143,947	45.3	34.2	11.1	43,128	1.6%	1,904	56,402	94,130	1.53
2018	302,735	146,104	45.1	34.1	11.0	44,404	3.0%	1,771	58,008	96,852	1.51
2019	309,154	148,199	45.0	34.2	10.8	45,563	2.6%	1,650	59,746	99,559	1.49
2020	310,298	145,880	45.0	34.1	10.9	47,346	3.9%	1,566	61,211	101,641	1.44

*Prior to 2003, deferred disabled members were included in the Inactives count.

HISTORICAL SUMMARY OF MEMBERS
(continued)

KP&F

Valuation		Active Members						Number			
			Average								
Date December 31	Total Count	Number	Age	Entry Age	Service	Annual Pay ($)	Pay Increase	Deferred Disabled*	Inactives	Retired	Act/Ret Ratio
2001	10,471	6,405	38.3	27.7	10.6	46,483	4.4%		855	3,211	1.99
2002	10,847	6,548	38.4	27.8	10.6	47,580	2.4%		961	3,338	1.96
2003	11,007	6,464	38.8	27.9	11.0	49,017	3.0%		1,087	3,456	1.87
2004	11,528	6,721	38.9	28.0	11.0	51,014	4.1%	187	1,062	3,558	1.89
2005	11,719	6,772	38.9	27.9	11.0	52,222	2.4%	194	1,099	3,654	1.85
2006	12,070	6,965	39.0	28.1	11.0	53,939	3.3%	186	1,134	3,785	1.84
2007	12,210	7,137	39.1	28.1	11.0	56,068	3.9%	175	1,143	3,755	1.90
2008	12,499	7,242	39.1	28.0	11.1	57,800	3.1%	173	1,175	3,909	1.85
2009	12,556	7,179	39.5	28.1	11.4	60,287	4.3%	181	1,136	4,060	1.77
2010	12,691	7,173	39.6	28.2	11.4	61,805	2.5%	181	1,169	4,168	1.72
2011	12,863	7,143	39.6	27.9	11.7	61,907	0.2%	197	1,208	4,315	1.66
2012	13,109	7,187	39.5	27.8	11.7	62,489	0.9%	203	1,194	4,525	1.59
2013	13,276	7,224	39.6	27.8	11.8	63,928	2.3%	208	1,174	4,670	1.55
2014	13,463	7,204	39.7	27.8	11.9	64,156	0.4%	210	1,196	4,853	1.48
2015	13,762	7,244	39.5	27.8	11.7	65,925	2.8%	210	1,243	5,065	1.43
2016	14,090	7,303	39.3	27.7	11.6	66,441	0.8%	204	1,351	5,232	1.40
2017	14,533	7,481	39.1	27.8	11.3	67,875	2.2%	200	1,454	5,398	1.39
2018	15,001	7,695	38.8	27.8	11.0	69,184	1.9%	192	1,519	5,595	1.38
2019	15,412	7,797	38.8	27.9	10.9	71,122	2.8%	192	1,660	5,763	1.35
2020	15,732	7,835	38.7	27.8	10.9	72,831	2.4%	184	1,823	5,890	1.33

*Prior to 2003, deferred disabled members were included in the Inactives count.

HISTORICAL SUMMARY OF MEMBERS
(continued)

JUDGES

Valuation		Active Members						Number		
			Average							
Date December 31	Total Count	Number	Age	Entry Age	Service	Annual Pay ($)	Pay Increase	Inactives	Retired	Act/Ret Ratio
2001	417	252	54.4	43.9	10.5	85,625	1.0%	18	147	1.71
2002	417	248	55.0	43.9	11.1	86,116	0.6%	15	154	1.64
2003	424	250	55.1	43.8	11.3	86,770	0.8%	15	159	1.56
2004	435	251	55.5	43.9	11.6	88,761	2.3%	18	166	1.51
2005	444	254	55.7	44.1	11.6	90,585	2.1%	19	171	1.47
2006	447	257	56.2	44.2	11.9	96,743	6.8%	18	172	1.49
2007	455	261	56.6	44.8	11.8	101,732	5.2%	14	180	1.45
2008	463	262	57.1	45.2	11.9	104,159	2.4%	11	190	1.38
2009	483	266	57.1	45.6	11.5	105,709	1.5%	14	203	1.31
2010	480	264	57.8	45.7	12.1	107,019	1.2%	10	206	1.28
2011	486	264	58.1	45.5	12.6	109,387	2.2%	7	215	1.23
2012	494	261	58.3	46.0	12.3	107,584	(1.6)%	6	227	1.15
2013	514	265	57.8	46.1	11.7	107,364	(0.2)%	6	243	1.09
2014	516	253	58.2	46.3	11.9	108,411	1.0%	6	257	0.98
2015	526	262	58.4	46.4	12.0	108,166	(0.2%)	8	256	1.02
2016	533	252	58.1	46.5	11.6	107,633	(0.5%)	9	272	0.93
2017	544	259	58.0	46.6	11.4	109,391	1.6%	6	279	0.93
2018	547	256	58.5	46.8	11.7	111,465	1.9%	5	286	0.90
2019	564	257	58.1	47.0	11.1	113,100	1.5%	9	298	0.86
2020	572	244	57.4	46.9	10.5	116,687	3.2%	9	319	0.76

SUMMARY OF DATA FILE RECONCILIATION

The following table reconciles the data Cavanaugh Macdonald Consulting received from KPERS to the final membership counts used in the valuation.

Records on the in-pay data file	125,515
Removed deaths prior to 12/31/2020	(16,885)
Records removed because the member has received all benefits or is not eligible for KPERS benefits	(1,659)
Removed certain periods ending within six months	0
Added new retirees from supplemental file	879
Records used in the valuation	107,850
Records on the not-in-pay data file	252,594
Missing records added	8
Records removed because the member has received all benefits or is not eligible for KPERS benefits	(27,102)
Records removed because the member began receiving benefits	(6,748)
Records used in the valuation	218,752

These records are allocated as follows:

	State	School	Local	KP&F	Judges
Active members*	20,796	87,660	37,424	7,835	244
Inactive vested members	4,375	13,907	7,185	240	9
Inactive nonvested members	4,906	18,678	12,160	1,583	0
Deferred disabled members	486	630	450	184	0
Total	30,563	120,875	57,219	9,842	253
Retirees and beneficiaries	21,006	57,933	22,702	5,890	319
GRAND TOTAL	51,569	178,808	79,921	15,732	572

* For KP&F, includes 36 current DROP participants.

SUMMARY OF MEMBERSHIP DATA

KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
ACTIVE MEMBER DATA

	12/31/2020	12/31/2019	Change
State			
Number	20,796	21,239	(2.1%)
KPERS 1	8,423	9,329	(9.7%)
KPERS 2	4,409	4,640	(5.0%)
KPERS 3	7,964	7,270	9.5%
Average Current Age	45.96	46.09	(0.3%)
Average Service	11.44	11.53	(0.8%)
Average Pay	$48,612	$46,891	3.7%
School			
Number	87,660	88,953	(1.5%)
KPERS 1	33,907	36,705	(7.6%)
KPERS 2	16,726	17,809	(6.1%)
KPERS 3	37,027	34,439	7.5%
Average Current Age	44.59	44.66	(0.2%)
Average Service	11.10	10.95	1.4%
Average Pay	$45,570	$43,960	3.7%
State/School			
Number	108,456	110,192	(1.6%)
KPERS 1	42,330	46,034	(8.0%)
KPERS 2	21,135	22,449	(5.9%)
KPERS 3	44,991	41,709	7.9%
Average Current Age	44.85	44.94	(0.2%)
Average Service	11.17	11.06	1.0%
Average Pay	$46,153	$44,525	3.7%
Local			
Number	37,424	38,007	(1.5%)
KPERS 1	13,633	14,961	(8.9%)
KPERS 2	6,469	7,093	(8.8%)
KPERS 3	17,322	15,953	8.6%
Average Current Age	45.25	45.30	(0.1%)
Average Service	10.22	10.16	0.6%
Average Pay	$50,803	$48,573	4.6%

SUMMARY OF MEMBERSHIP DATA

KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
ACTIVE MEMBER DATA

	12/31/2020	12/31/2019	Change
KPERS Total			
Number	145,880	148,199	(1.6%)
KPERS 1	55,963	60,995	(8.2%)
KPERS 2	27,604	29,542	(6.6%)
KPERS 3	62,313	57,662	8.1%
Average Current Age	44.95	45.03	(0.2%)
Average Service	10.92	10.83	0.8%
Average Pay	$47,346	$45,563	3.9%
KP&F			
Number	7,835	7,797	0.5%
Tier 1	24	41	(41.5%)
Tier 2	7,775	7,731	0.6%
DROP	36	25	44.0%
Average Current Age	38.73	38.80	(0.2%)
Average Service	10.88	10.92	(0.4%)
Average Pay	$72,831	$71,122	2.4%
Judges			
Number	244	257	(5.1%)
Average Current Age	57.41	58.09	(1.2%)
Average Service	10.52	11.11	(5.3%)
Average Pay	$116,687	$113,100	3.2%
System Total			
Number	153,959	156,253	(1.5%)
Average Current Age	44.66	44.74	(0.2%)
Average Service	10.92	10.84	0.7%
Average Pay	$48,753	$46,950	3.8%

SUMMARY OF MEMBERSHIP DATA

KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
INACTIVE MEMBER DATA

	12/31/2020	12/31/2019	Change
State			
Inactive Vested	4,375	3,744	16.9%
Inactive Nonvested	4,906	5,329	(7.9%)
Deferred Disabled	486	500	(2.8%)
School			
Inactive Vested	13,907	13,103	6.1%
Inactive Nonvested	18,678	18,651	0.1%
Deferred Disabled	630	659	(4.4%)
Local			
Inactive Vested	7,185	6,806	5.6%
Inactive Nonvested	12,160	12,113	0.4%
Deferred Disabled	450	491	(8.4%)
KPERS Total			
Inactive Vested	25,467	23,653	7.7%
Inactive Nonvested	35,744	36,093	(1.0%)
Deferred Disabled	1,566	1,650	(5.1%)
KP&F			
Inactive Vested	240	224	7.1%
Inactive Nonvested	1,583	1,436	10.2%
Deferred Disabled	184	192	(4.2%)
Judges			
Inactive Vested	9	9	0.0%
Inactive Nonvested	0	0	0.0%
Deferred Disabled	0	0	0.0%
System Total			
Inactive Vested	25,716	23,886	7.7%
Inactive Nonvested	37,327	37,529	(0.5%)
Deferred Disabled	1,750	1,842	(5.0%)

SUMMARY OF MEMBERSHIP DATA

KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
RETIREE MEMBER DATA

	12/31/2020	12/31/2019	Change
State			
Number	18,971	18,845	0.7%
Average Benefit	$15,655	$15,294	2.4%
Average Age	72.65	72.55	0.1%
School			
Number	54,750	53,557	2.2%
Average Benefit	$16,530	$16,235	1.8%
Average Age	72.79	72.63	0.2%
Local			
Number	20,473	19,957	2.6%
Average Benefit	$13,986	$13,485	3.7%
Average Age	72.25	72.15	0.1%
KPERS Total			
Number	94,194	92,359	2.0%
Average Benefit	$15,801	$15,449	2.3%
Average Age	72.64	72.51	0.2%
KP&F			
Number	4,896	4,773	2.6%
Average Benefit	$39,280	$38,535	1.9%
Average Age	65.50	65.41	0.1%
Judges			
Number	247	233	6.0%
Average Benefit	$47,194	$46,849	0.7%
Average Age	74.76	74.90	(0.2%)
System Total			
Number	99,337	97,365	2.0%
Average Benefit	$17,036	$16,656	2.3%
Average Age	72.29	72.17	0.2%

SUMMARY OF MEMBERSHIP DATA

KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
BENEFICIARY MEMBER DATA

	12/31/2020	12/31/2019	Change
State			
Number	2,035	1,999	1.8%
Average Benefit	$9,795	$9,551	2.6%
Average Age	76.72	76.78	(0.1%)
School			
Number	3,183	3,059	4.1%
Average Benefit	$9,887	$9,702	1.9%
Average Age	76.85	76.87	(0.0%)
Local			
Number	2,229	2,142	4.1%
Average Benefit	$8,167	$7,992	2.2%
Average Age	75.64	75.56	0.1%
KPERS Total			
Number	7,447	7,200	3.4%
Average Benefit	$9,347	$9,151	2.1%
Average Age	76.45	76.46	(0.0%)
KP&F			
Number	994	990	0.4%
Average Benefit	$18,461	$18,211	1.4%
Average Age	69.91	69.43	0.7%
Judges			
Number	72	65	10.8%
Average Benefit	$29,536	$29,105	1.5%
Average Age	76.89	77.00	(0.1%)
System Total			
Number	8,513	8,255	3.1%
Average Benefit	$10,582	$10,395	1.8%
Average Age	75.69	75.62	0.1%

SUMMARY OF MEMBERSHIP DATA

KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
RETIREE AND BENEFICIARY MEMBER DATA

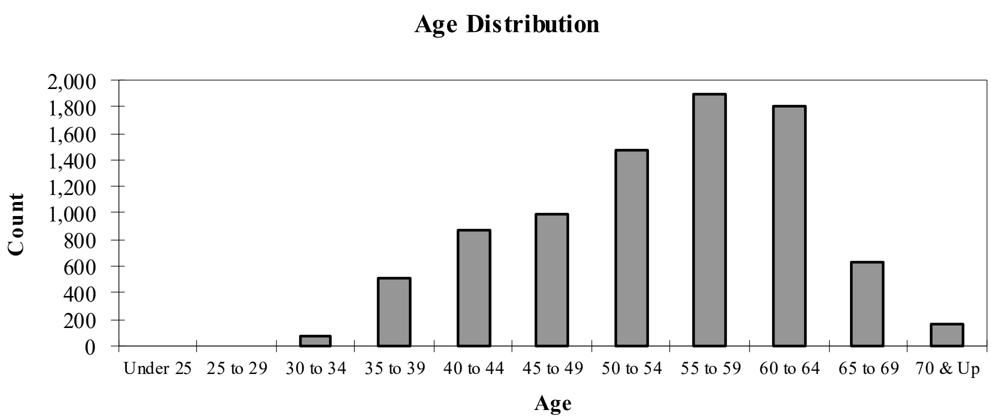
	12/31/2020	12/31/2019	Change
State			
Number	21,006	20,844	0.8%
Average Benefit	$15,087	$14,743	2.3%
Average Age	73.04	72.95	0.1%
School			
Number	57,933	56,616	2.3%
Average Benefit	$16,165	$15,882	1.8%
Average Age	73.01	72.86	0.2%
Local			
Number	22,702	22,099	2.7%
Average Benefit	$13,415	$12,952	3.6%
Average Age	72.58	72.48	0.1%
KPERS Total			
Number	101,641	99,559	2.1%
Average Benefit	$15,328	$14,993	2.2%
Average Age	72.92	72.79	0.2%
KP&F			
Number	5,890	5,763	2.2%
Average Benefit	$35,767	$35,043	2.1%
Average Age	66.24	66.10	0.2%
Judges			
Number	319	298	7.0%
Average Benefit	$43,208	$42,978	0.5%
Average Age	75.24	75.36	(0.2%)
System Total			
Number	107,850	105,620	2.1%
Average Benefit	$16,527	$16,166	2.2%
Average Age	72.56	72.43	0.2%

KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
DISTRIBUTION OF ACTIVE MEMBERS
as of December 31, 2020

STATE - KPERS 1*

	Service									
Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	Total
Under 25	0	0	0	0	0	0	0	0	0	0
25 to 29	0	0	0	0	0	0	0	0	0	0
30 to 34	0	4	69	1	0	0	0	0	0	74
35 to 39	1	7	394	109	1	0	0	0	0	512
40 to 44	0	11	341	417	104	0	0	0	0	873
45 to 49	4	6	251	322	331	73	0	0	0	987
50 to 54	4	7	252	324	375	378	136	2	0	1,478
55 to 59	8	12	270	364	325	353	400	149	12	1,893
60 to 64	16	8	279	298	309	252	280	223	140	1,805
65 to 69	5	3	108	113	109	84	76	51	82	631
70 & Up	0	1	37	37	21	25	19	9	21	170
Total	38	59	2,001	1,985	1,575	1,165	911	434	255	8,423

* Closed effective July 1, 2009.

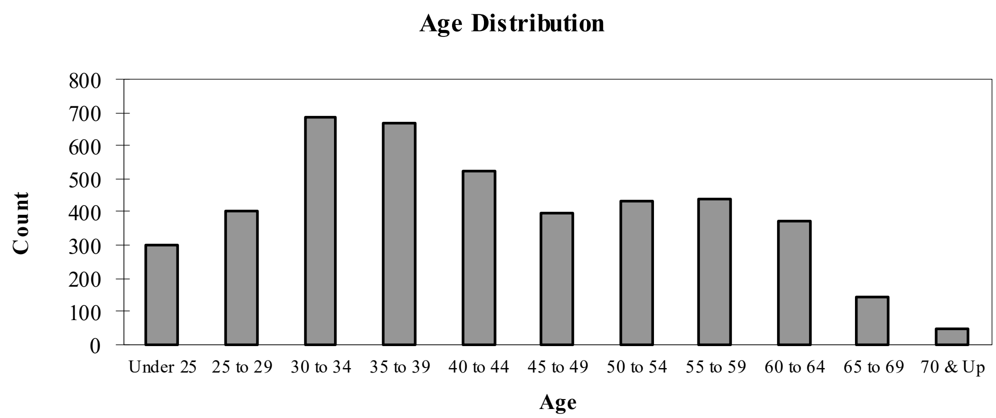


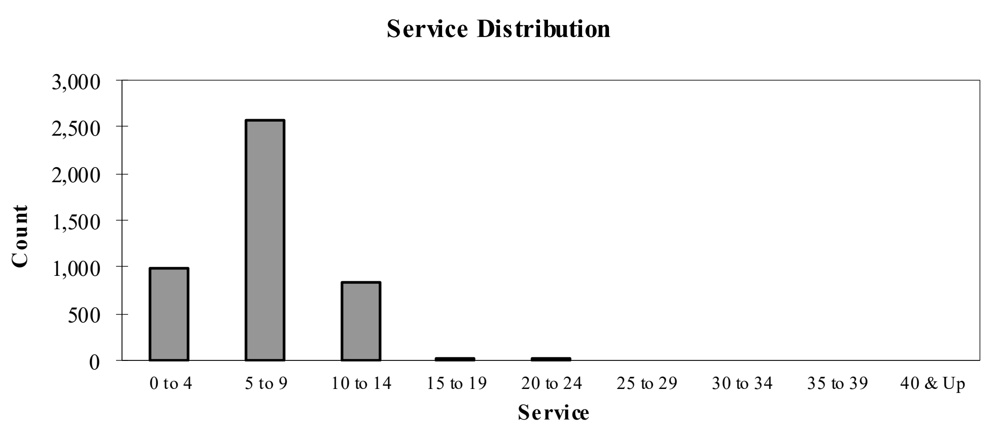
KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
DISTRIBUTION OF ACTIVE MEMBERS
as of December 31, 2020

STATE - KPERS 2*

	Service									
Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	Total
Under 25	291	10	0	0	0	0	0	0	0	301
25 to 29	233	171	1	0	0	0	0	0	0	405
30 to 34	149	442	92	0	0	0	0	0	0	683
35 to 39	81	434	150	2	0	0	0	0	0	667
40 to 44	64	326	132	4	0	0	0	0	0	526
45 to 49	50	256	87	3	0	0	0	0	0	396
50 to 54	47	268	109	6	1	0	0	0	0	431
55 to 59	35	296	101	7	1	0	0	0	0	440
60 to 64	20	247	98	5	2	0	0	0	0	372
65 to 69	6	91	44	1	0	0	0	0	0	142
70 & Up	2	28	15	1	0	0	0	0	0	46
Total	978	2,569	829	29	4	0	0	0	0	4,409

* Effective date of KPERS 2 was July 1, 2009. Closed effective January 1, 2015.



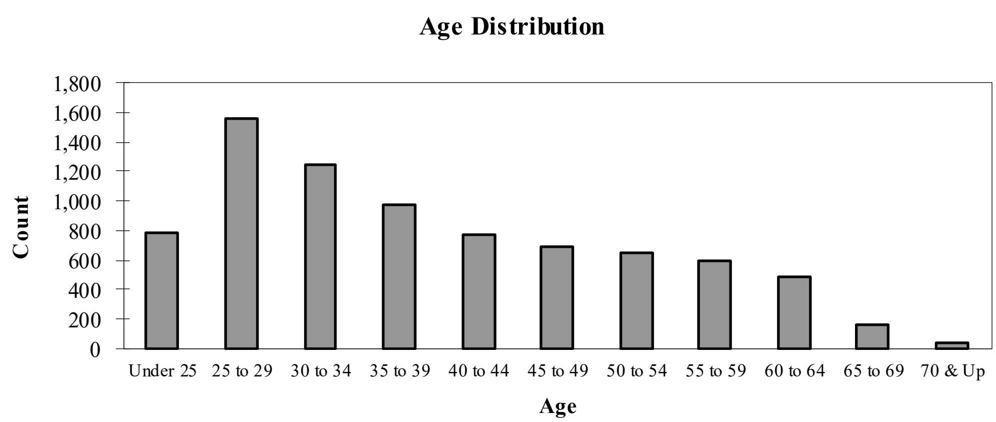


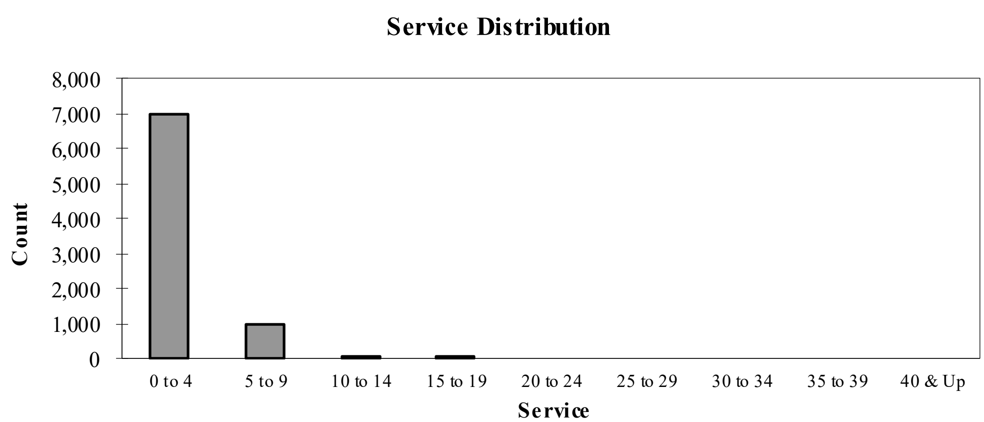
KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
DISTRIBUTION OF ACTIVE MEMBERS
as of December 31, 2020

STATE - KPERS 3*

	Service									
Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	Total
Under 25	786	2	0	0	0	0	0	0	0	788
25 to 29	1,454	104	0	0	0	0	0	0	0	1,558
30 to 34	1,033	206	0	0	0	0	0	0	0	1,239
35 to 39	826	152	0	0	0	0	0	0	0	978
40 to 44	675	94	5	0	0	0	0	0	0	774
45 to 49	598	92	2	0	0	0	0	0	0	692
50 to 54	552	97	0	0	0	0	0	0	0	649
55 to 59	489	106	3	1	0	0	0	0	0	599
60 to 64	388	100	1	0	0	0	0	0	0	489
65 to 69	129	28	0	0	0	0	0	0	0	157
70 & Up	35	6	0	0	0	0	0	0	0	41
Total	6,965	987	11	1	0	0	0	0	0	7,964

* Effective date of KPERS 3 was January 1, 2015





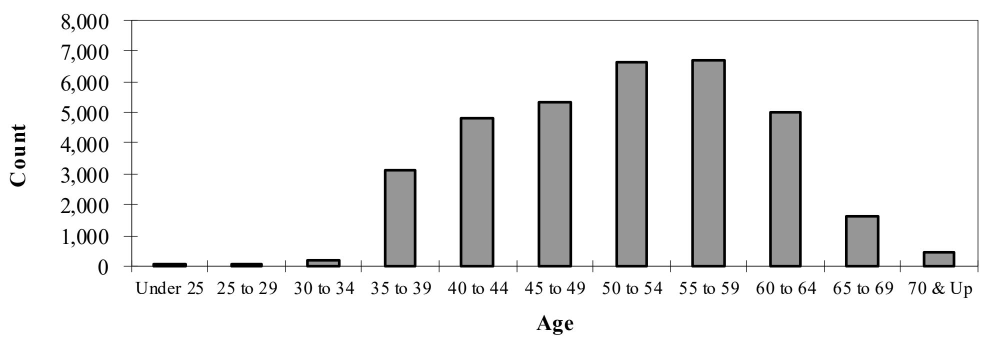
KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
DISTRIBUTION OF ACTIVE MEMBERS
as of December 31, 2020

SCHOOL - KPERS 1*

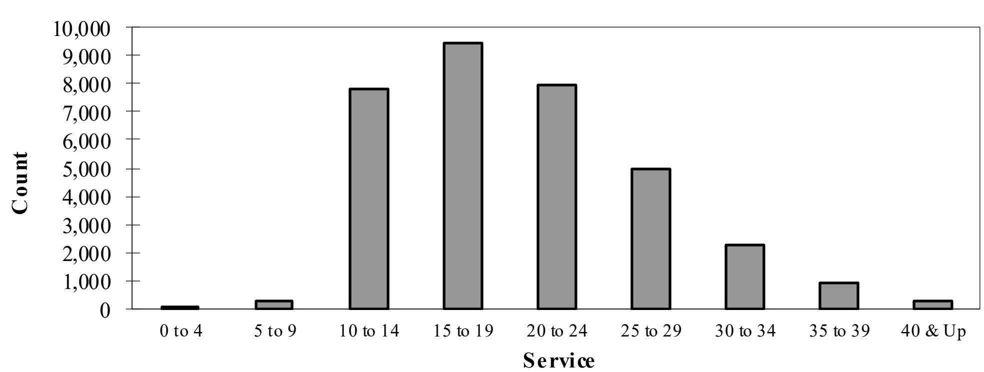
	Service									
Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	Total
Under 25	4	0	0	0	0	0	0	0	0	4
25 to 29	3	0	1	0	0	0	0	0	0	4
30 to 34	2	8	146	6	0	0	0	0	0	162
35 to 39	0	82	2,208	848	5	0	0	0	0	3,143
40 to 44	2	65	1,272	2,822	656	3	0	0	0	4,820
45 to 49	1	36	1,051	1,355	2,501	400	0	0	0	5,344
50 to 54	1	27	1,058	1,418	1,564	2,131	411	2	0	6,612
55 to 59	2	34	958	1,454	1,515	1,274	1,200	270	8	6,715
60 to 64	3	17	737	1,075	1,271	834	481	501	109	5,028
65 to 69	1	5	262	343	342	284	163	92	106	1,598
70 & Up	1	0	117	116	74	70	43	24	32	477
Total	20	274	7,810	9,437	7,928	4,996	2,298	889	255	33,907

* Closed effective July 1, 2009.

Age Distribution



Service Distribution



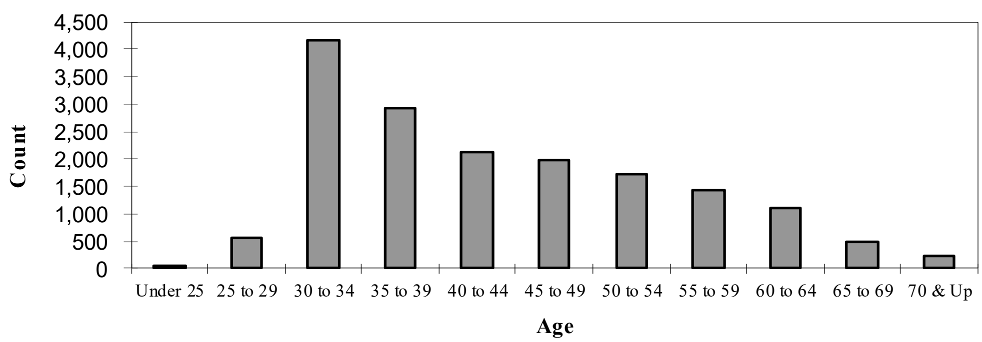
KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
DISTRIBUTION OF ACTIVE MEMBERS
as of December 31, 2020

SCHOOL - KPERS 2*

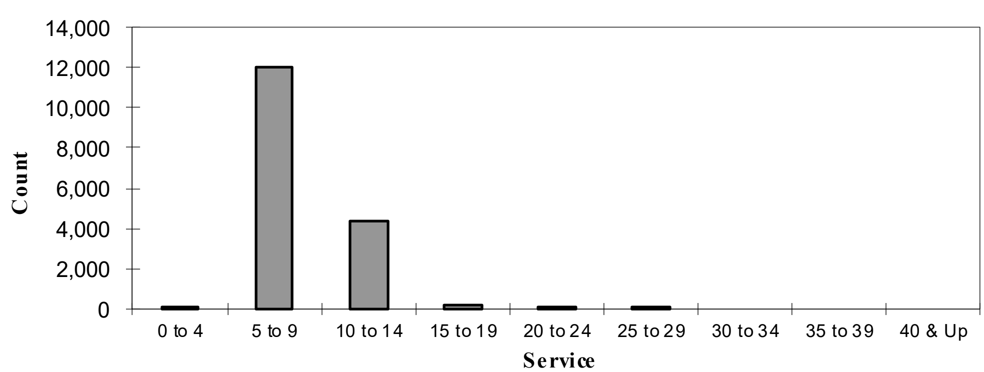
	Service									
Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	Total
Under 25	2	1	0	0	0	0	0	0	0	3
25 to 29	6	557	6	0	0	0	0	0	0	569
30 to 34	16	3,418	723	0	0	0	0	0	0	4,157
35 to 39	7	1,748	1,136	12	0	0	0	0	0	2,903
40 to 44	6	1,472	580	49	0	0	0	0	0	2,107
45 to 49	8	1,383	538	49	5	0	0	0	0	1,983
50 to 54	6	1,216	486	26	3	0	0	0	0	1,737
55 to 59	5	945	459	19	0	1	0	0	0	1,429
60 to 64	1	795	300	18	2	0	0	0	0	1,116
65 to 69	0	354	130	5	2	0	0	0	0	491
70 & Up	3	174	53	1	0	0	0	0	0	231
Total	60	12,063	4,411	179	12	1	0	0	0	16,726

* Effective date of KPERS 2 was July 1, 2009. Closed effective January 1, 2015.

Age Distribution



Service Distribution



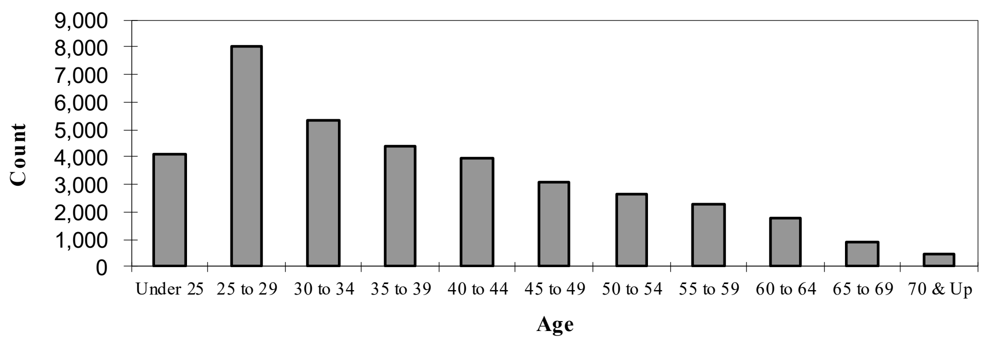
KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
DISTRIBUTION OF ACTIVE MEMBERS
as of December 31, 2020

SCHOOL - KPERS 3*

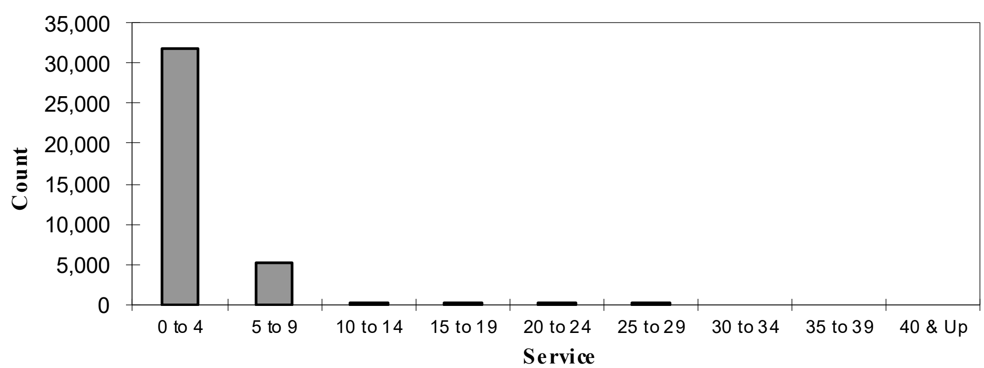
	Service									
Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	Total
Under 25	4,098	15	0	0	0	0	0	0	0	4,113
25 to 29	7,160	896	0	0	0	0	0	0	0	8,056
30 to 34	4,211	1,096	0	0	0	0	0	0	0	5,307
35 to 39	3,669	747	1	0	0	0	0	0	0	4,417
40 to 44	3,340	637	2	0	0	0	0	0	0	3,979
45 to 49	2,527	526	5	0	0	0	0	0	0	3,058
50 to 54	2,206	421	7	1	1	0	0	0	0	2,636
55 to 59	1,893	398	4	1	0	0	0	0	0	2,296
60 to 64	1,471	306	5	0	0	1	0	0	0	1,783
65 to 69	768	148	2	0	1	0	0	0	0	919
70 & Up	390	72	1	0	0	0	0	0	0	463
Total	31,733	5,262	27	2	2	1	0	0	0	37,027

* Effective date of KPERS 3 was January 1, 2015

Age Distribution



Service Distribution

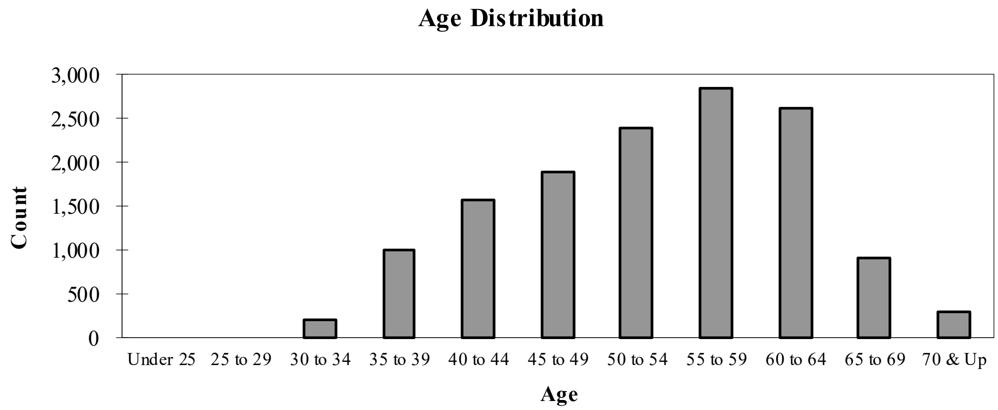


KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
DISTRIBUTION OF ACTIVE MEMBERS
as of December 31, 2020

LOCAL - KPERS 1*

	Service									
Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	Total
Under 25	0	0	0	0	0	0	0	0	0	0
25 to 29	0	0	0	0	0	0	0	0	0	0
30 to 34	1	3	186	2	0	0	0	0	0	192
35 to 39	3	24	705	259	6	0	0	0	0	997
40 to 44	0	16	631	676	240	3	0	0	0	1,566
45 to 49	0	7	508	617	610	135	2	0	0	1,879
50 to 54	4	10	484	613	632	477	154	4	0	2,378
55 to 59	2	9	504	602	665	530	372	145	14	2,843
60 to 64	0	10	429	549	575	418	292	235	92	2,600
65 to 69	0	2	189	191	173	160	68	70	39	892
70 & Up	0	1	77	78	42	31	28	13	16	286
Total	10	82	3,713	3,587	2,943	1,754	916	467	161	13,633

* Closed effective July 1, 2009.

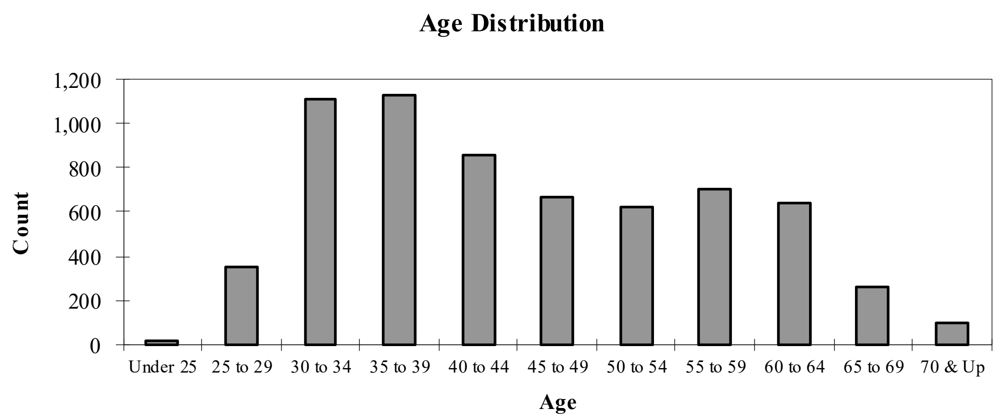


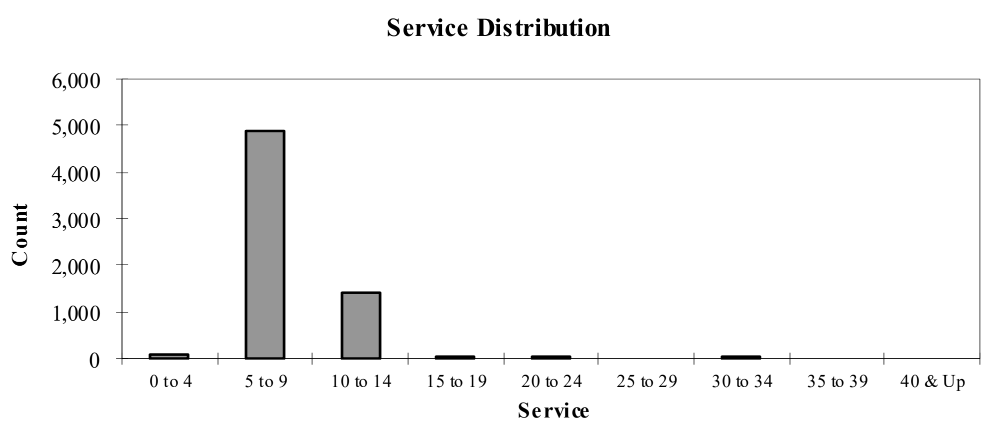
KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
DISTRIBUTION OF ACTIVE MEMBERS
as of December 31, 2020

LOCAL - KPERS 2*

	Service									
Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	Total
Under 25	19	2	0	0	0	0	0	0	0	21
25 to 29	24	322	8	0	0	0	0	0	0	354
30 to 34	19	918	176	0	0	0	0	0	0	1,113
35 to 39	6	847	272	0	0	0	0	0	0	1,125
40 to 44	5	629	218	7	1	0	0	0	0	860
45 to 49	8	489	166	7	1	0	0	0	0	671
50 to 54	1	462	147	7	3	0	0	0	0	620
55 to 59	4	518	175	7	3	0	0	0	0	707
60 to 64	0	461	172	3	0	0	1	0	0	637
65 to 69	2	189	68	5	1	0	0	0	0	265
70 & Up	0	69	25	2	0	0	0	0	0	96
Total	88	4,906	1,427	38	9	0	1	0	0	6,469

* Effective date of KPERS 2 was July 1, 2009. Closed effective January 1, 2015.





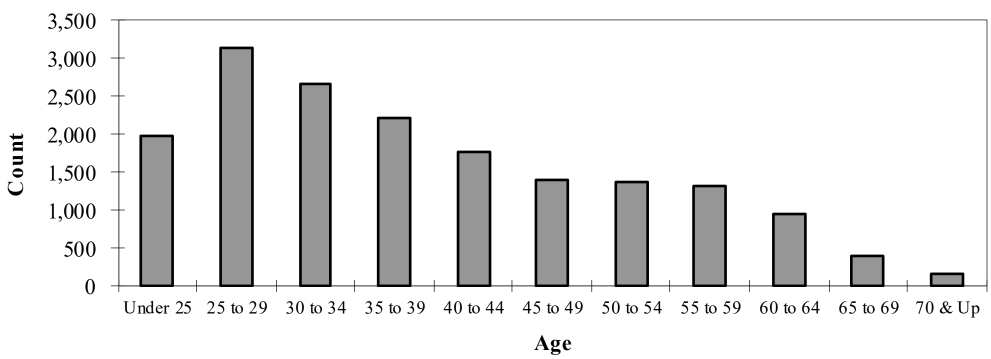
KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
DISTRIBUTION OF ACTIVE MEMBERS
as of December 31, 2020

LOCAL - KPERS 3*

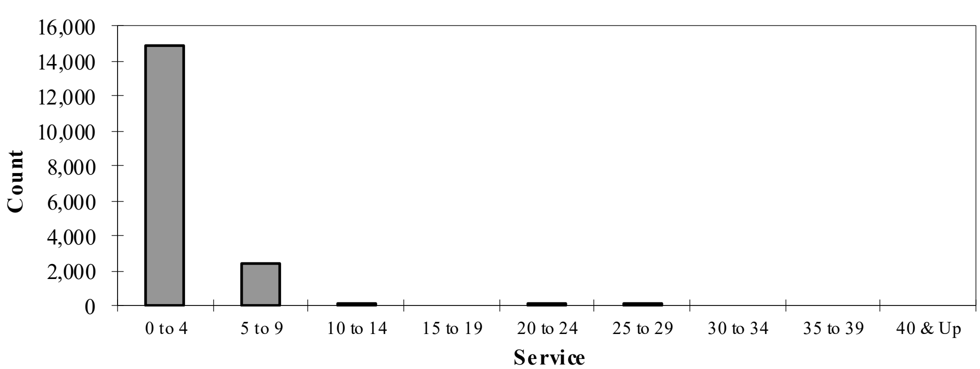
	Service									
Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	Total
Under 25	1,968	16	0	0	0	0	0	0	0	1,984
25 to 29	2,788	336	0	0	0	0	0	0	0	3,124
30 to 34	2,205	465	0	0	0	0	0	0	0	2,670
35 to 39	1,855	361	2	0	0	0	0	0	0	2,218
40 to 44	1,475	280	0	0	0	0	0	0	0	1,755
45 to 49	1,184	220	0	0	0	0	0	0	0	1,404
50 to 54	1,129	229	1	0	1	0	0	0	0	1,360
55 to 59	1,095	215	4	0	0	1	0	0	0	1,315
60 to 64	749	193	4	0	0	0	0	0	0	946
65 to 69	292	87	1	0	1	0	0	0	0	381
70 & Up	129	36	0	0	0	0	0	0	0	165
Total	14,869	2,438	12	0	2	1	0	0	0	17,322

* Effective date of KPERS 3 was January 1, 2015

Age Distribution



Service Distribution



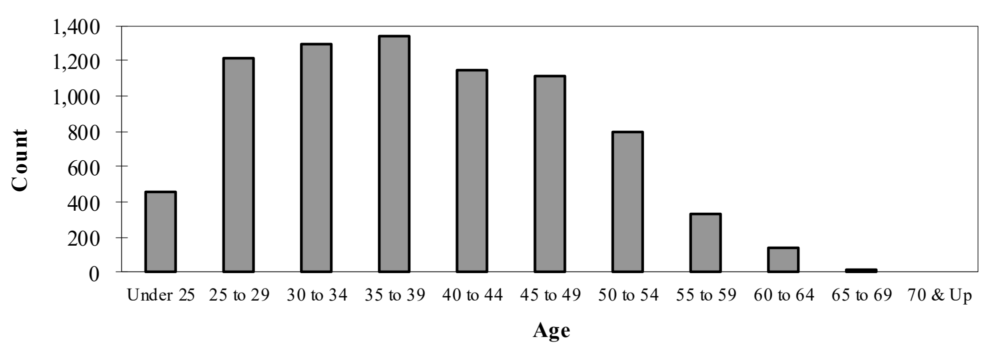
KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
DISTRIBUTION OF ACTIVE MEMBERS*
as of December 31, 2020

KP&F

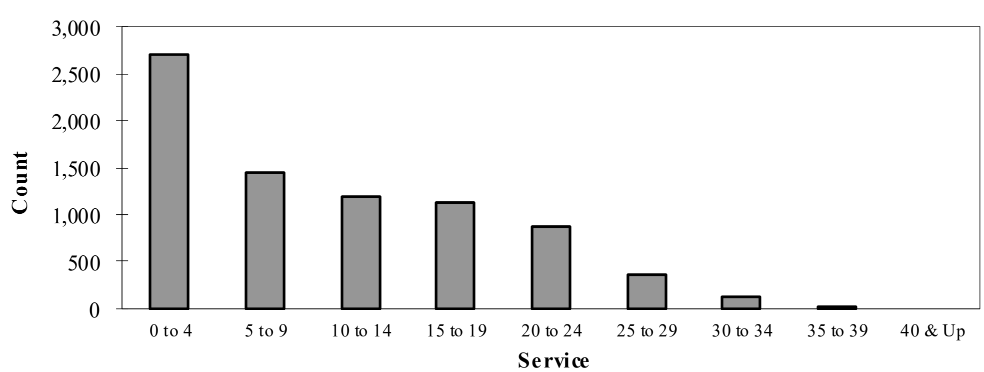
	Service									
Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	Total
Under 25	457	0	0	0	0	0	0	0	0	457
25 to 29	1,006	213	0	0	0	0	0	0	0	1,219
30 to 34	547	591	150	1	0	0	0	0	0	1,289
35 to 39	311	367	495	157	3	0	0	0	0	1,333
40 to 44	138	145	267	471	129	0	0	0	0	1,150
45 to 49	106	69	132	269	438	95	0	0	0	1,109
50 to 54	72	39	79	141	238	180	41	0	0	790
55 to 59	38	14	42	57	44	71	63	8	0	337
60 to 64	19	15	16	24	22	17	20	2	0	135
65 to 69	3	2	2	2	2	1	3	1	0	16
70 & Up	0	0	0	0	0	0	0	0	0	0
Total	2,697	1,455	1,183	1,122	876	364	127	11	0	7,835

* Includes 36 KP&F members currently participating in DROP.

Age Distribution



Service Distribution

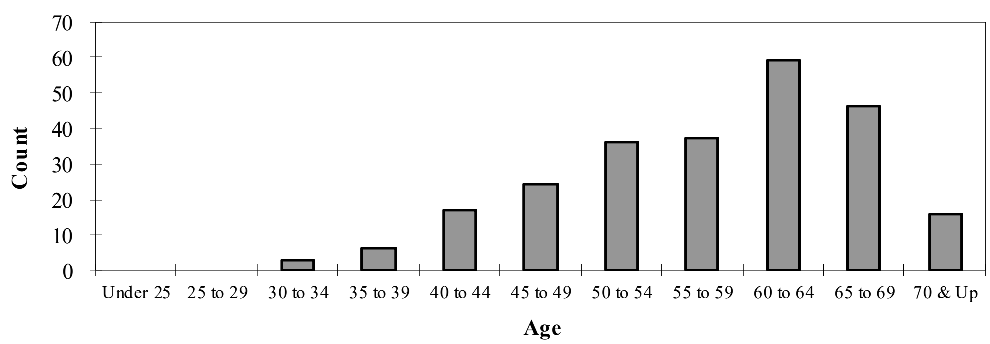


KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
DISTRIBUTION OF ACTIVE MEMBERS
as of December 31, 2020

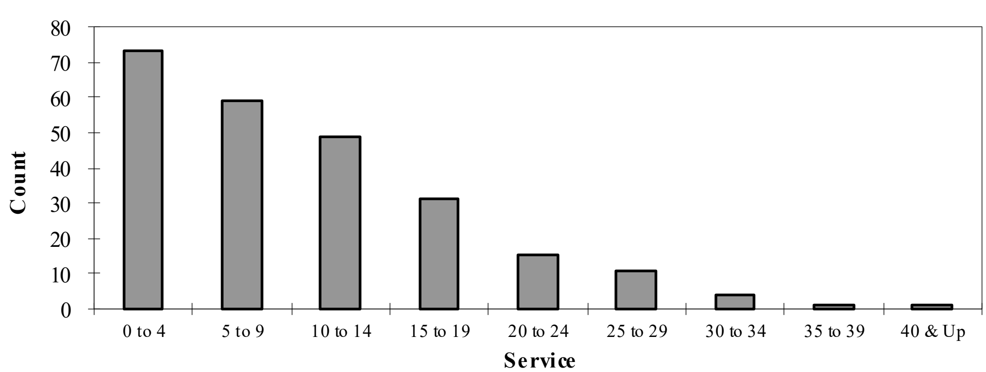
JUDGES

	Service									
Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	Total
Under 25	0	0	0	0	0	0	0	0	0	0
25 to 29	0	0	0	0	0	0	0	0	0	0
30 to 34	2	1	0	0	0	0	0	0	0	3
35 to 39	5	1	0	0	0	0	0	0	0	6
40 to 44	11	6	0	0	0	0	0	0	0	17
45 to 49	13	8	2	0	1	0	0	0	0	24
50 to 54	14	13	6	3	0	0	0	0	0	36
55 to 59	8	11	11	6	1	0	0	0	0	37
60 to 64	14	9	15	12	8	1	0	0	0	59
65 to 69	4	9	14	5	3	6	4	1	0	46
70 & Up	2	1	1	5	2	4	0	0	1	16
Total	73	59	49	31	15	11	4	1	1	244

Age Distribution



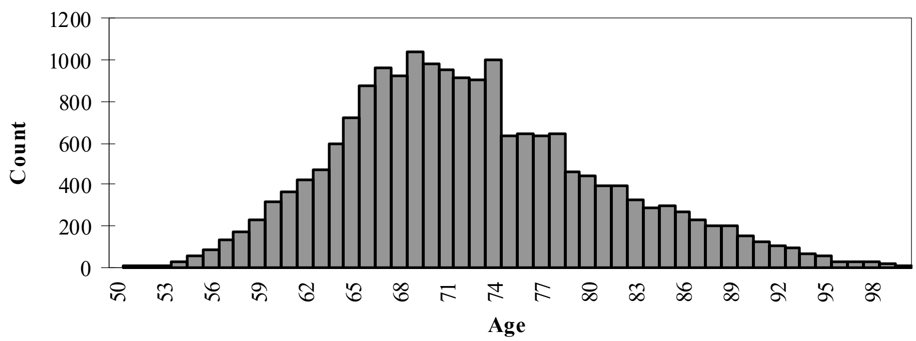
Service Distribution



KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
DISTRIBUTION OF RETIREES AND BENEFICIARIES
as of December 31, 2020

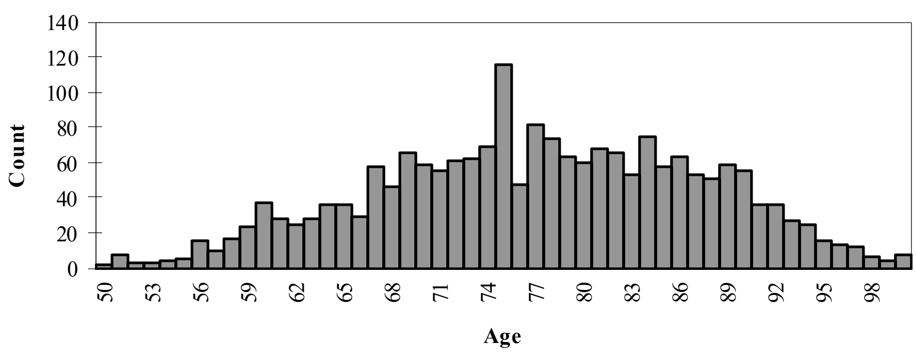
STATE

Retirees



Count: 18,971 Average age: 72.7 Average benefit: $15,655

Beneficiaries

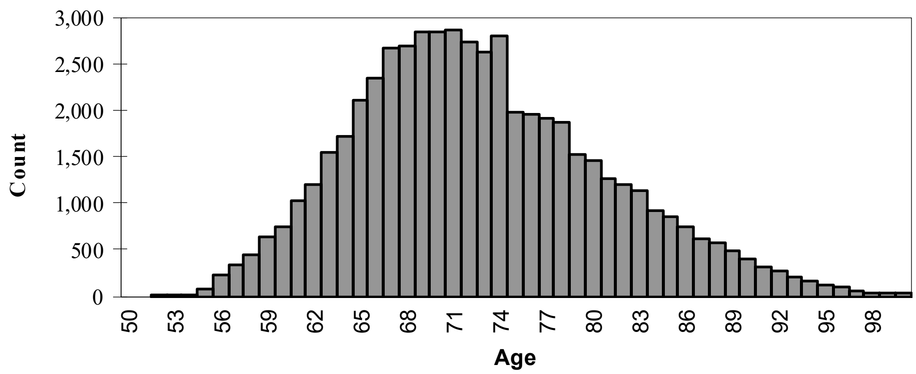


Count: 2,035 Average age: 76.7 Average benefit: $9,795

KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
DISTRIBUTION OF RETIREES AND BENEFICIARIES
as of December 31, 2020

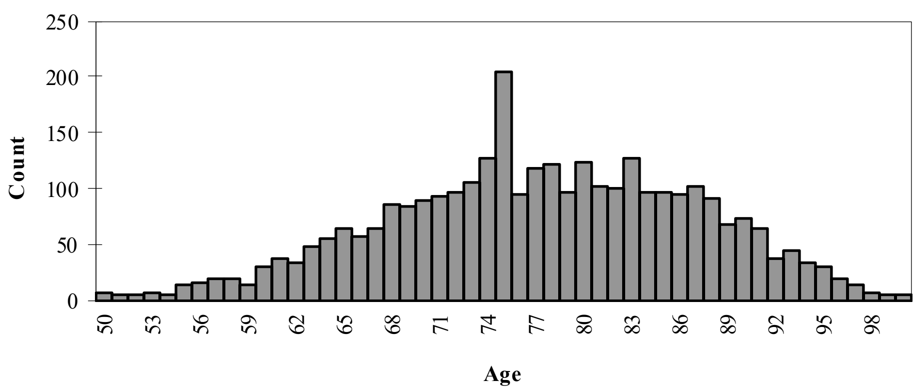
SCHOOL

Retirees



Count: 54,750 Average age: 72.8 Average benefit: $16,530

Beneficiaries

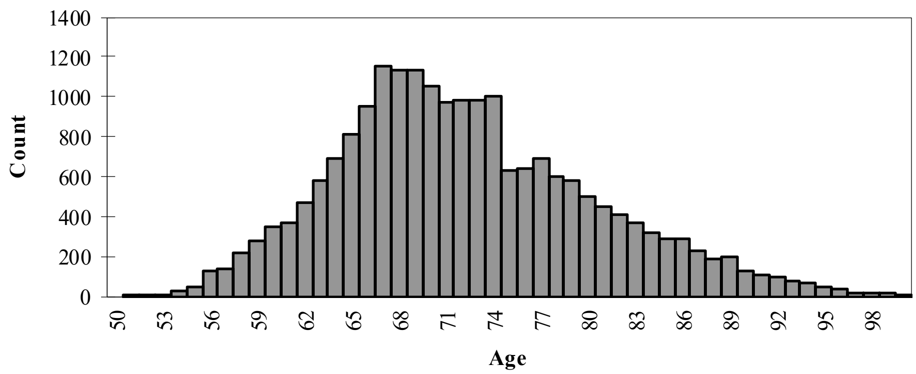


Count: 3,183 Average age: 76.9 Average benefit: $9,887

KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
DISTRIBUTION OF RETIREES AND BENEFICIARIES
as of December 31, 2020

LOCAL

Retirees



Count:	20,473	Average age:	72.3	Average benefit:	$13,986

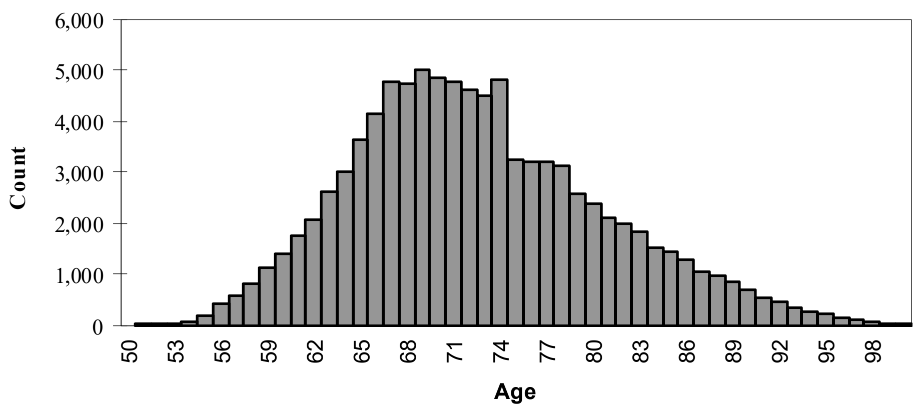
Beneficiaries

Count:	2,229	Average age:	75.6	Average benefit:	$8,167

KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
DISTRIBUTION OF RETIREES AND BENEFICIARIES
as of December 31, 2020

TOTAL KPERS

Retirees



Count: 94,194 Average age: 72.6 Average benefit: $15,801

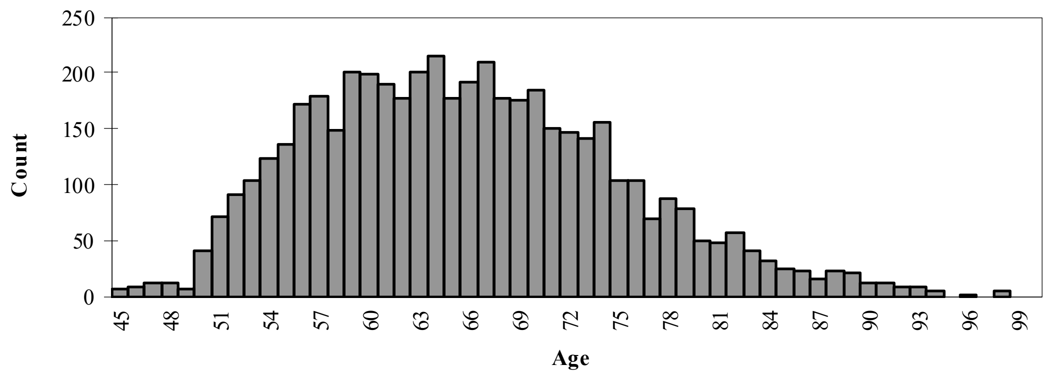
Beneficiaries

Count: 7,447 Average age: 76.5 Average benefit: $9,347

KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
DISTRIBUTION OF RETIREES AND BENEFICIARIES
as of December 31, 2020

KP&F

Retirees



Count: 4,896 Average age: 65.5 Average benefit: $39,280

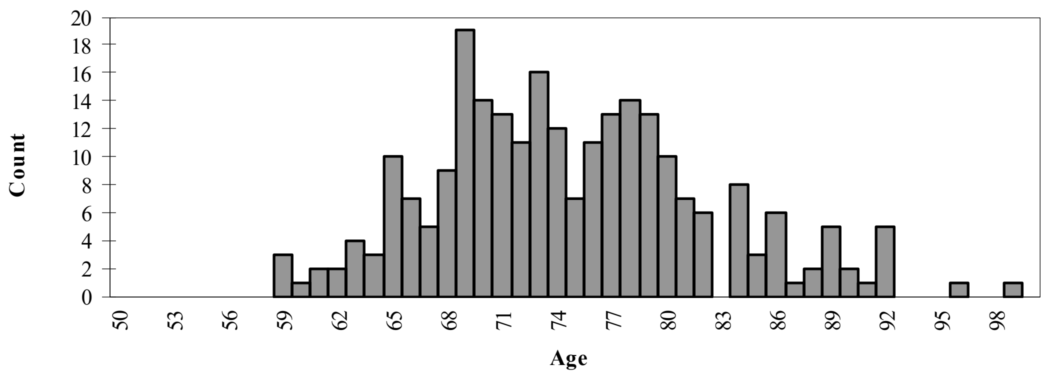
Beneficiaries

Count: 994 Average age: 69.9 Average benefit: $18,461

KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
DISTRIBUTION OF RETIREES AND BENEFICIARIES
as of December 31, 2020

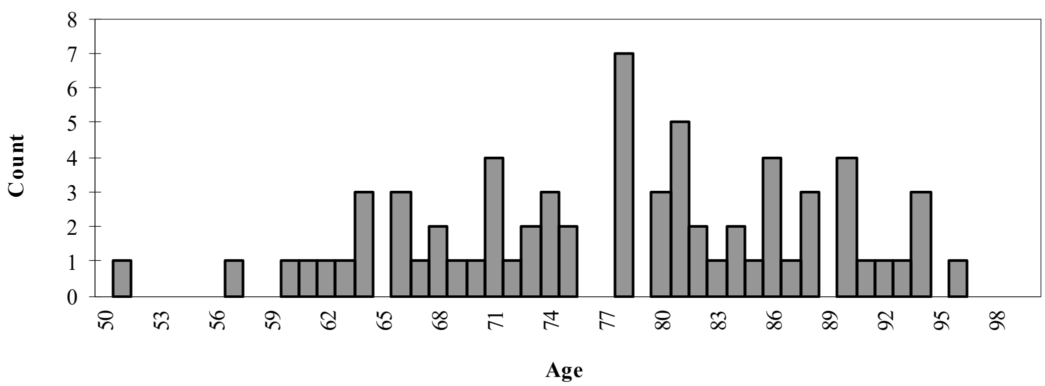
JUDGES

Retirees



Count: 247 Average age: 74.8 Average benefit: $47,194

Beneficiaries



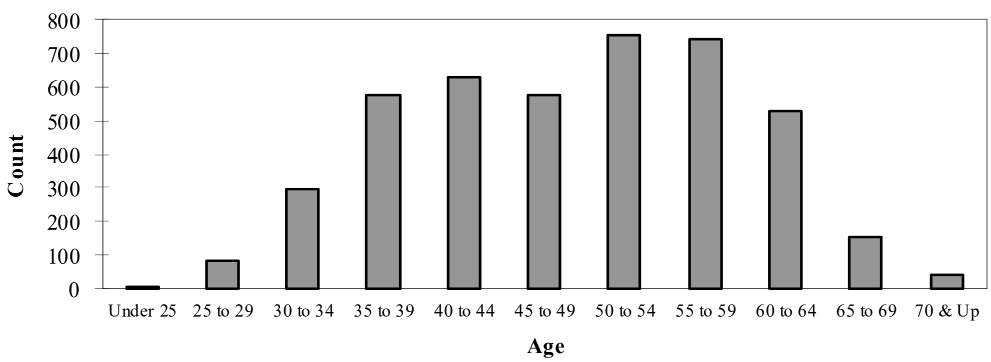
Count: 72 Average age: 76.9 Average benefit: $29,536

KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
DISTRIBUTION OF INACTIVE VESTED MEMBERS
as of December 31, 2020

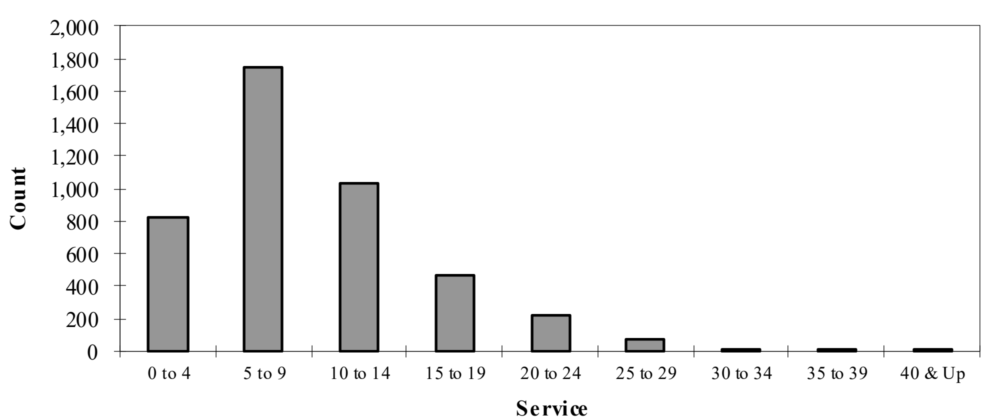
STATE

	Service									
Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	Total
Under 25	7	0	0	0	0	0	0	0	0	7
25 to 29	41	40	0	0	0	0	0	0	0	81
30 to 34	119	165	10	0	0	0	0	0	0	294
35 to 39	176	323	71	5	0	0	0	0	0	575
40 to 44	130	319	148	30	1	0	0	0	0	628
45 to 49	114	201	158	79	19	3	0	0	0	574
50 to 54	71	222	249	126	72	11	2	0	0	753
55 to 59	58	219	213	127	85	36	5	1	0	744
60 to 64	52	218	131	76	34	12	4	0	2	529
65 to 69	35	39	41	20	7	3	3	1	2	151
70 & Up	19	6	8	1	2	2	1	0	0	39
Total	822	1,752	1,029	464	220	67	15	2	4	4,375

Age Distribution



Service Distribution

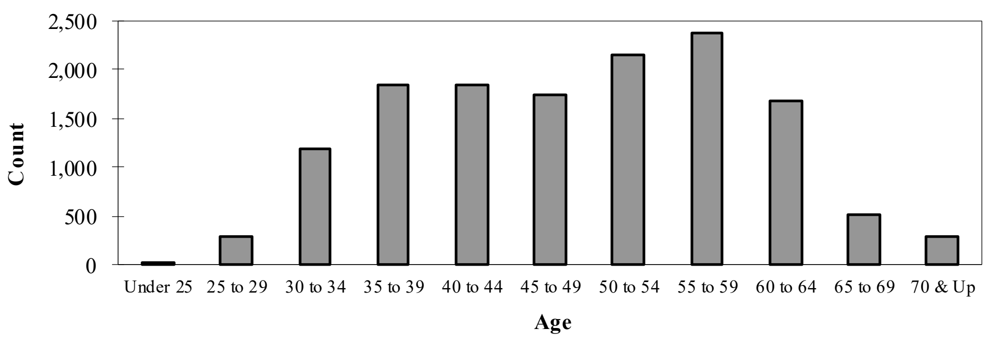


KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
DISTRIBUTION OF INACTIVE VESTED MEMBERS
as of December 31, 2020

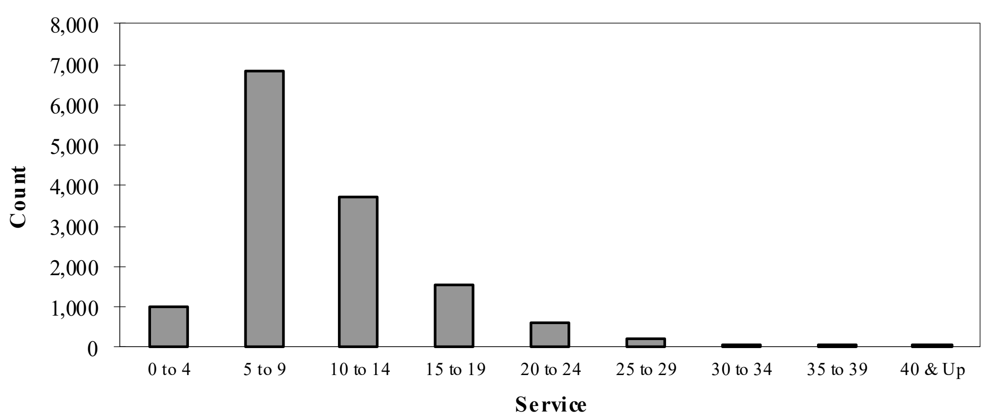
SCHOOL

	Service									
Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	Total
Under 25	6	1	0	0	0	0	0	0	0	7
25 to 29	83	193	1	0	0	0	0	0	0	277
30 to 34	124	1,005	57	0	0	0	0	0	0	1,186
35 to 39	150	1,286	384	23	0	0	0	0	0	1,843
40 to 44	93	985	562	192	14	0	0	0	0	1,846
45 to 49	92	739	540	275	90	5	0	0	0	1,741
50 to 54	93	789	691	336	181	62	3	0	0	2,155
55 to 59	84	803	787	393	215	86	8	0	0	2,376
60 to 64	81	758	487	242	82	25	5	4	0	1,684
65 to 69	38	229	147	52	24	9	4	0	1	504
70 & Up	151	70	44	12	8	3	0	0	0	288
Total	995	6,858	3,700	1,525	614	190	20	4	1	13,907

Age Distribution



Service Distribution

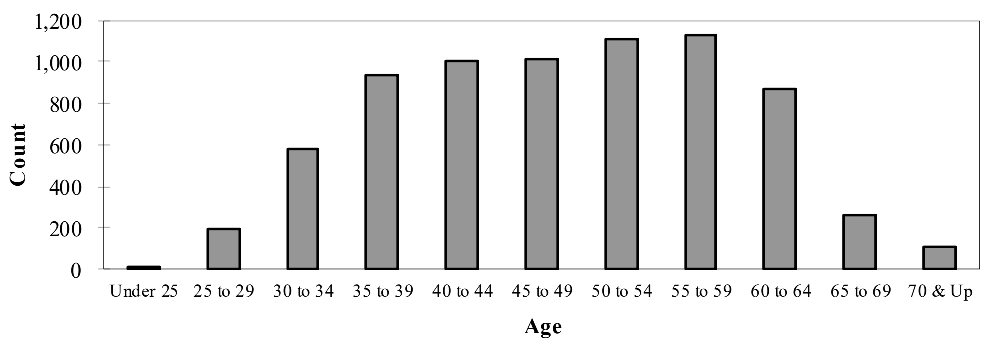


KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
DISTRIBUTION OF INACTIVE VESTED MEMBERS
as of December 31, 2020

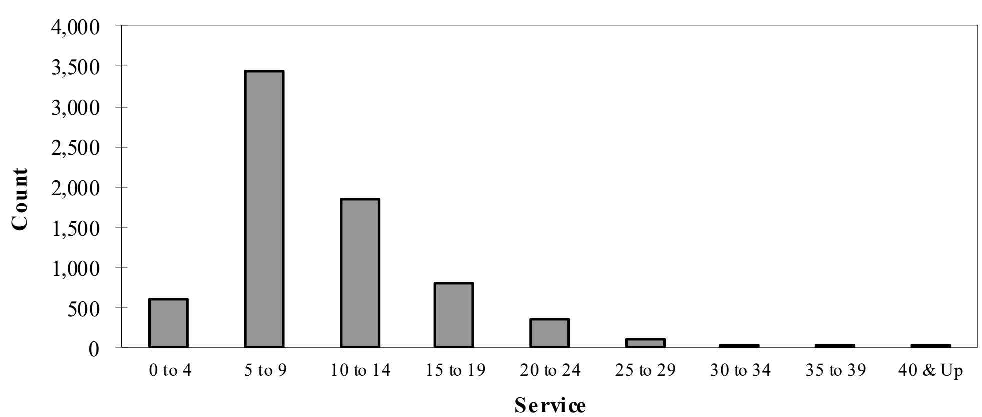
LOCAL

	Service									
Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	Total
Under 25	6	2	0	0	0	0	0	0	0	8
25 to 29	63	127	0	0	0	0	0	0	0	190
30 to 34	107	436	30	1	0	0	0	0	0	574
35 to 39	107	639	175	17	0	0	0	0	0	938
40 to 44	65	548	294	82	12	0	0	0	0	1,001
45 to 49	52	425	303	174	53	5	0	0	0	1,012
50 to 54	34	375	358	203	108	28	2	0	0	1,108
55 to 59	50	371	352	187	123	37	7	1	0	1,128
60 to 64	43	391	245	109	49	15	8	3	1	864
65 to 69	28	98	68	33	15	11	2	0	1	256
70 & Up	42	28	16	10	3	3	2	0	2	106
Total	597	3,440	1,841	816	363	99	21	4	4	7,185

Age Distribution



Service Distribution

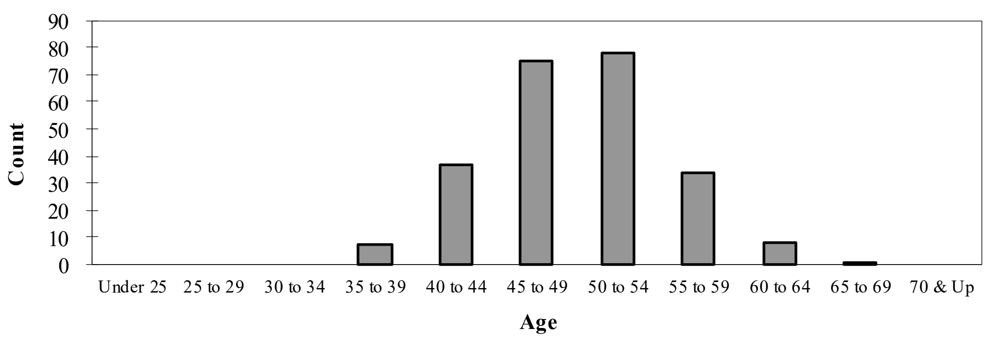


KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
DISTRIBUTION OF INACTIVE VESTED MEMBERS
as of December 31, 2020

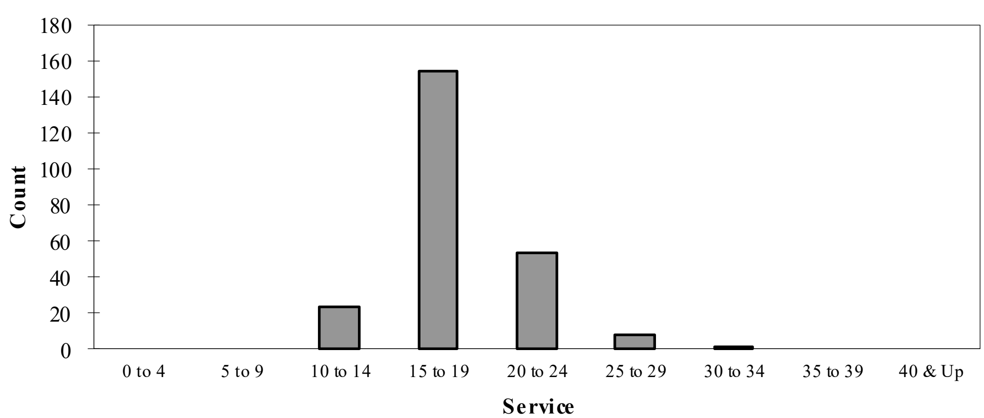
KP&F

	Service									
Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	Total
Under 25	0	0	0	0	0	0	0	0	0	0
25 to 29	0	0	0	0	0	0	0	0	0	0
30 to 34	0	0	0	0	0	0	0	0	0	0
35 to 39	0	0	2	4	1	0	0	0	0	7
40 to 44	0	0	3	33	1	0	0	0	0	37
45 to 49	0	0	6	47	19	3	0	0	0	75
50 to 54	0	0	11	38	25	4	0	0	0	78
55 to 59	0	0	2	26	4	1	1	0	0	34
60 to 64	0	0	0	6	2	0	0	0	0	8
65 to 69	0	0	0	0	1	0	0	0	0	1
70 & Up	0	0	0	0	0	0	0	0	0	0
Total	0	0	24	154	53	8	1	0	0	240

Age Distribution



Service Distribution

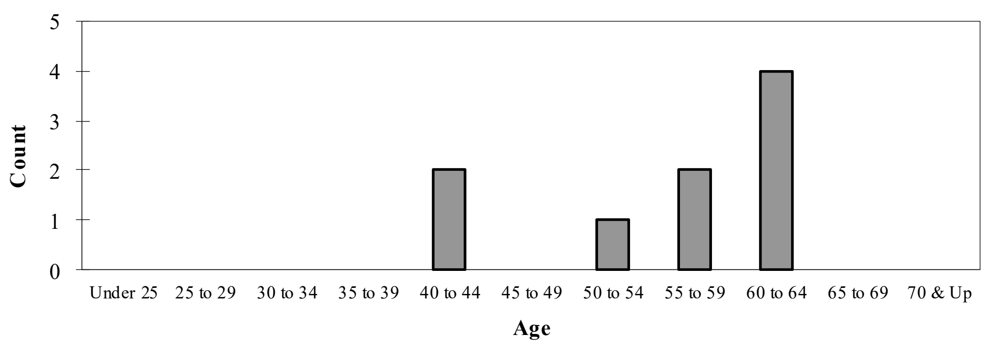


KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
DISTRIBUTION OF INACTIVE VESTED MEMBERS
as of December 31, 2020

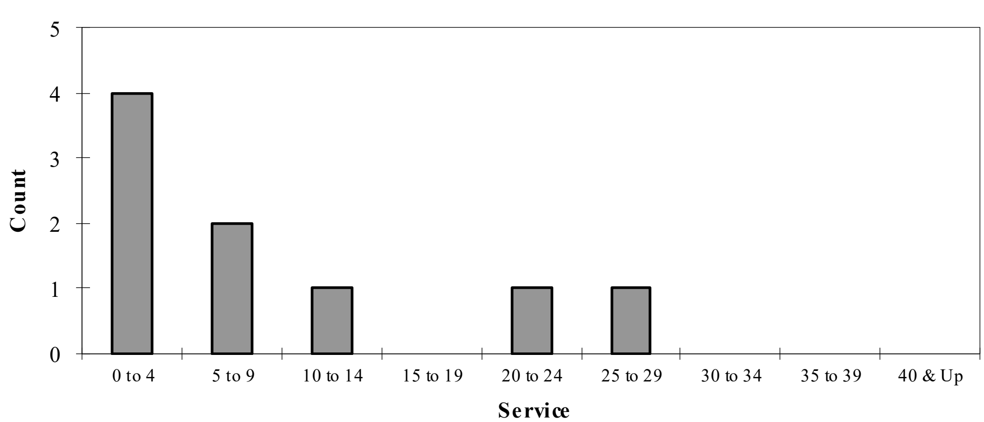
JUDGES

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

Age Distribution



Service Distribution



Plan Membership

The Kansas Public Employees Retirement System (the Retirement System, or, the System), is an umbrella organization administering three statewide retirement systems: the Kansas Public Employees Retirement System (KPERS), the Kansas Police and Firemen's Retirement System (KP&F), and the Kansas Retirement System for Judges. All three systems are defined benefit, contributory plans that cover nearly all public employees in Kansas. The Kansas Retirement System for Judges is a single employer plan, while the other two are cost-sharing, multiple employer plans. Participation by the State of Kansas is mandatory, whereas participation by local political subdivisions is optional, but irrevocable once elected. Benefit payments are also provided for a certain group of legislative employees.

KANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
Summary of Provisions *

* KPERS 2 refers to members who either began their participation or rehired on or after July 1, 2009, but before January 1, 2015. KPERS 3 refers to non-corrections members who either began their participation or rehired on or after January 1, 2015. Corrections members do not participate in KPERS 3.

This valuation reflects the benefit structure in place as of December 31, 2020.

Employee Membership

Membership is mandatory for all employees in covered positions, except elected officials. A covered position for non-school employees is one that is covered by Social Security, is not seasonal or temporary, and requires at least 1,000 hours of work per year. School employees who work at least 630 hours per year or 3.5 hours per day for at least 180 days are eligible for membership. Effective July 1, 2009, all employees become KPERS members on their date of employment. Prior to July 1, 2009, only School employees were covered immediately, but there was a one-year service requirement for the State and Local groups. Members who retire under the provisions of the Retirement System may not become contributing members again.

Normal Retirement

Eligibility –

KPERS 1: (a) Age 65, or (b) age 62 with ten years of credited service, or (c) any age when combined age and years of credited service equal 85 "points". Age is determined by the member's last birthday and is not rounded up.

KPERS 2 & 3: (a) Age 65 with 5 years of credited service or (b) age 60 with 30 years of credited service.

Benefit –

KPERS 1 & 2: Benefits are based on the member's years of credited service, Final Average Salary (FAS), and a statutory multiplier. For those who were hired prior to July 1, 1993, Final Average Salary equals the greater of either: a four-year Final Average Salary, including add-ons, such as sick and annual leave; or a three-year Final Average Salary, excluding add-ons, such as sick and annual leave. For those who are hired on or after July 1, 1993 and before July 1, 2009, Final Average Salary equals the average of the three highest years of salary, excluding add-ons, such as sick and annual leave. Effective July 1, 2009, (KPERS 2), Final Average Salary equals the average of the five highest years of salary, excluding additional compensation.

KPERS 3: KPERS 3 members participate in a cash balance plan with benefits based on the Annuity Savings Account balance, the Retirement Annuity Account balance, and an annuity factor. The member's annuity factor at retirement is based on the member's age and benefit payment form. The current annuity factors were adopted by the Board upon recommendation of the actuary. They are expected to be updated periodically. The interest rate used to calculate the current annuity factors is 5.75% (7.75% assumed investment return, minus 2.00%), and the mortality table used is a set of blended mortality rates from the current post-retirement mortality assumptions for KPERS members. The blended mortality rates are projected to 2030 using improvement scale MP-2016. The weighting used to blend the mortality rates is shown in the following table:

	Members	Beneficiaries
State – Males	17.5%	42.5%
State – Females	42.5%	17.5%
School – Males	7.5%	8.5%
School – Females	8.5%	7.5%
Local – Males	12.5%	11.5%
Local– Females	11.5%	12.5%

A member's Annuity Savings Account balance is the sum of mandatory member contributions plus the interest credits and dividends on those contributions. A member's Retirement Annuity Account is the sum of all employer retirement credits to the account plus the interest credits and dividends on those credits.

Mandatory member contributions are 6% of compensation. The employer retirement credits follow the schedule below:

Years of Service	Retirement Credit Rate
Less than 5	3%
5 – 11	4%
12 – 23	5%
24 or more	6%

Interest credits are 4% per annum, paid quarterly. The interest credits are based on the account balances as of the last day of the preceding quarter. There is also a possibility of additional interest credits, depending on KPERS' investment return. These additional interest credits are called "dividends" and are equal to 75% of the five-year average net compound rate of return, as determined by the board, for the preceding calendar year and the previous four calendar years on the market value of assets that is above 6.0%. A schedule of dividend rates over the past five years is contained in the following table:

Year	Applicable Rate of Return	Compound Average	Dividend
2016	8.5%	4.3%	0.000%
2017	14.0%	7.4%	1.100%
2018	(2.9%)	4.7%	0.000%
2019	17.1%	7.1%	0.825%
2020	11.1%	9.3%	2.475%

Prior Service Credit – Prior service credit is 0.75% or 1.00% of Final Average Salary per year [School employees receive 0.75% of Final Average Salary for each year of prior service that is not credited under the former Kansas School Retirement System (KSRS)].

Participating Service Credit –

KPERS 1: Participating service credit is 1.75% of Final Average Salary for years of service prior to January 1, 2014. Participating service credit is 1.85% of Final Average Salary for years of service after December 31, 2013.

KPERS 2: For those retiring on or after January 1, 2012, participating service credit is 1.85% for all years of service.

KPERS 3: Not applicable for the Cash Balance Plan.

<u>Early Retirement</u>

Eligibility – Eligibility is age 55 and 10 years of credited service.

Benefit –

KPERS 1: The normal retirement benefit is reduced 0.2% per month for each month between the ages of 60 and 62, and 0.6% for each month between the ages of 55 and 60.

KPERS 2: The normal retirement benefit is reduced actuarially for early commencement. The reduction factor is 35.0% at age 60 and 57.5% at age 55. If the member has 30 years of credited service, the early retirement reduction is less (50% of regular reduction).

KPERS 3: The early retirement benefit is determined in the same manner as a normal retirement benefit, but is based on the account balances and annuity factor at the member's retirement age.

<u>Vesting Requirements</u>

Eligibility – Effective July 1, 2009, a member must have five years of credited service (ten years prior to July 1, 2009). Should the vested member terminate employment, the member must leave accumulated contributions on deposit with the Retirement System to be eligible for future benefits. If a vested member terminates employment and withdraws accumulated contributions, the member forfeits all rights and privileges under the Retirement System.

Benefit –

KPERS 1 & 2: Retirement benefits are payable when the vested member reaches normal retirement age, or reduced benefits are payable when the vested member reaches a specified early retirement age.

KPERS 3: Retirement benefits are payable when the vested member meets the retirement eligibility requirements and is based on the member's account balances at retirement. The member's vested account will be granted interest credits and dividends during the deferral period between termination of employment and retirement.

Other Benefits

Withdrawal Benefit – Members who terminate employment may withdraw contributions with interest after the last day on the employer's payroll. Withdrawing member contributions forfeits all membership rights and benefits, which a member may have accrued prior to withdrawing their contributions from the Retirement System. Inactive, non-vested members who return to covered employment within five years after terminating employment, will not have lost any membership rights or privileges if they *haven't* withdrawn contributions. The Retirement Act provides for withdrawal of contributions 31 days after employment terminates, but it does not allow members to borrow from contributions.

Disability Benefit –

KPERS 1 & 2: Members receiving disability benefits under the KPERS Death and Disability Benefits Program continue to receive service credit under KPERS. If a disabled member retires after receiving disability benefits for at least five years immediately preceding retirement, the member's Final Average Salary is adjusted by the actuarial salary increase assumption rates in existence during the member's period of disability prior to July 1, 1993, 5% per year to July, 1998 and the change in CPI-U less 1%, not to exceed 4% after July, 1998.

KPERS 3: For any KPERS 3 member who becomes disabled, such member's Annuity Savings Account and Retirement Annuity Account will be credited with employee contributions, employer retirement credits, interest credits and dividends for the entire period of disability, but no later than the member's normal retirement age. The salary upon which credits are based shall be the employee's salary at the time of disability. After five years of disability, the underlying salary shall be increased by the lesser of (a) the percentage increase in CPI-U, minus 1%, and (b) 4% per annum.

Death Benefits – Pre-retirement death (non-service connected) –

KPERS 1 & 2: The member's accumulated contributions plus interest are paid in a lump sum to the designated beneficiary. In lieu of receiving the member's accumulated contributions, the surviving spouse of a member who is eligible to retire at death may elect to receive benefits under any survivor option. The spouse must be the member's sole designated beneficiary to exercise this option. If the member had at least 10 years of credited service, but had not reached retirement age, the spouse may elect to leave the member's contributions on deposit with the System and receive a monthly benefit to begin on the date the member would have been eligible to retire.

KPERS 3: If a vested member dies before attaining normal retirement age, the member's surviving spouse shall receive an annuity on the date the member would have attained normal retirement age had such member not died. The benefit is based upon the member's Annuity Savings Account and Retirement Annuity Account, and is payable as a single life annuity with 10-year certain.

Service-connected accidental death – The member's accumulated contributions plus interest, plus lump sum amount of $50,000, plus annual benefit based on 50% of Final Average Salary; reduced by Workers' Compensation benefits and subject to a minimum benefit of $100 a month; are payable to a spouse, minor children, or dependent parents, for life, or until the youngest child reaches age 18 (or up to age 23 if they are full-time students), in this order of preference. The monthly accidental death benefit is in lieu of any joint/survivor benefit for which the surviving spouse would have been eligible. For KPERS 3 members, Final Average Salary equals the average of the three final years of salary.

Post-retirement death – A lump sum amount of $4,000 is payable to the member's beneficiary. If the member has selected a retirement option, benefits are paid to the joint annuitant or the designated beneficiary. Under joint and survivor retirement options, if the joint annuitant predeceases the retired member, the reduced option benefit is increased to the amount the retired member would have received if no retirement option had been elected. Benefits payable to a joint annuitant cease at the joint annuitant's death. If a member does not select an option, the designated beneficiary receives the excess, if any, of the member's accumulated contributions plus interest over total benefits paid to date of death.

Member Contributions

KPERS 1: Prior to January 1, 2014, member contributions were 4% of compensation for KPERS 1. 2012 HB 2333 established an election by KPERS 1 members, contingent upon IRS approval, between different contribution rate and benefit levels. The legislation provided that, if the IRS rejected or did not take action to approve the election, KPERS 1 members would default to an increase in their employee contributions to 5% of compensation effective January 1, 2014, and 6% effective January 1, 2015, with an increase in the benefit multiplier to 1.85% beginning January 1, 2014, for future years of service only. Subsequently, the IRS issued a private letter ruling stating that the election granted to KPERS 1 members under 2012 HB 2333 was impermissible.

KPERS 2: The member contribution rate for KPERS 2 is 6% of compensation.

KPERS 3: The member contribution rate for KPERS 3 is 6% of compensation.

Interest on Member Contributions

KPERS 1: Interest is credited to members' contribution accounts on June 30 each year, based on the account balance as of the preceding December 31. Those who became members prior to July 1, 1993, have interest credited to their accounts at the rate of 8% per year. Those who become members on and after July 1, 1993, have interest credited to their accounts at the rate of 4% per year.

KPERS 2: Interest is credited to members' contribution accounts on June 30 each year, based on the account balance as of the preceding December 31, at the rate of 4% per year.

KPERS 3: Interest credited varies by years of service. Please refer to the KPERS 3 Benefit section under Normal Retirement in these Plan Provisions.

Employer Contributions

Rates are certified by the Board of Trustees, based on the results of annual actuarial valuations and statutory provisions.

Board of Regents Plan Members (TIAA and equivalents)

Board of Regents plan members (TIAA and equivalents) do not make contributions to KPERS.

Group A: Joined the Board of Regents prior to January 1, 1962. These members receive prior service benefits for service before 1962. The benefit is 1.00% of Final Average Salary for each year of credited prior service. The Final Average Salary is calculated using current pay as a member of the Board of Regents, if higher than pay received under KPERS. Service after 1961 is counted for purposes of determining eligibility for vesting.

Group B: Joined the Board of Regents after January 1, 1962, but prior to July 1, 1998. These members receive prior service benefits for service credited under KPERS. The benefit is 1.75% of Final Average Salary for each year of credited prior service. The Final Average Salary is calculated using current pay as a member of the Board of Regents, if higher than pay received under KPERS. Service after joining the Board of Regents is counted for purposes of determining eligibility for vesting.

Group C: Joined the Board of Regents after July 1, 1998. These members receive prior service benefits for service credited under KPERS. The benefit is 1.75% or 1.85% (as applicable under the KPERS1 and KPERS2 benefit provisions) of Final Average Salary for each year of credited prior service. The Final Average Salary is calculated using current pay as a member of the Board of Regents, if higher than pay received under KPERS. Service after 1961 is counted for purposes of determining eligibility for vesting.

Correctional Members

Correctional employees, as certified to the Board of Trustees by the Secretary of Corrections, are defined in K.S.A. 74-4914a: (a) correctional officers, (b) certain directors and deputy directors of correctional institutions, (c) correctional power plant operators, (d) correctional industries employees, (e) correctional food service employees, and (f) correctional maintenance employees.

KPERS 1: For groups (a) and (b) with at least 3 consecutive years of credited service in such positions immediately preceding retirement, normal retirement age is 55 or Rule of 85; and early retirement requirements are age 50 with 10 years of credited service. For groups (c), (d), (e), and (f) with at least 3 consecutive years of service in such positions immediately preceding retirement, normal retirement age is 60 or Rule of 85, and early retirement requirements are 55 with 10 years of credited service.

KPERS 2: For groups (a) and (b) with at least 3 consecutive years of credited service in such positions immediately preceding retirement, normal retirement age is 55 with 10 years of credited service, and early retirement requirements are age 50 with 10 years of credited service. For groups (c), (d), (e), and (f) with at least 3 consecutive years of service in such positions immediately preceding retirement, normal retirement age is 60 with 10 years of credited service, and early retirement requirements are 55 with 10 years of credited service.

Cost of Living Adjustments (COLAs)

KPERS 2 Members Who Retired Prior to July 1, 2012: 2% cost-of-living adjustment (COLA) each year beginning at age 65 or the second July 1 after the retirement date, whichever is later. Other KPERS 2 members will not receive a COLA.

KPERS 3: Upon retirement, the benefit option selected by the member may include a self-funded cost of living adjustment feature, in which the account value is converted to a benefit amount that increases by a fixed percentage over time.

KANSAS POLICE & FIREMEN'S RETIREMENT SYSTEM

Normal Retirement

Tier I – age 55 and 20 years of service or 32 years of service (regardless of age).

Tier II – age 50 and 25 years of service, or age 55 and 20 years of service, or age 60 and 15 years of service.

Benefits – Benefits are based on the member's Final Average Salary. For those who were hired prior to July 1, 1993, Final Average Salary equals the average of the highest three of the last five years of credited participating service, including add-ons, such as sick and annual leave. For those who are hired on or after July 1, 1993, Final Average Salary equals the average of the highest three of the last five years of participating service, excluding add-ons, such as sick and annual leave. Benefits are based on a member's years of credited service and a multiplier of 2.5% of Final Average Salary for each year of credited service, to a maximum of 90% of Final Average Salary (first effective July 1, 2013).

Local Plan – For members covered by local plan provisions on the employer's entry date, normal retirement is at age 50 with 22 years of credited service.

Early Retirement

Eligibility – Members must be at least age 50 and have 20 years of credited service.

Benefit – Normal retirement benefits are reduced 0.4% per month under age 55.

Vesting Requirements

Eligibility – Tier I: The member must have 20 years of credited service; if terminating employment, the member must leave contributions on deposit with the Retirement System to be eligible for future benefits. Unreduced benefits are payable at age 55 or reduced benefits are payable as early as age 50.

Eligibility – Tier II: The member must have 15 years of credited service to be considered vested. If terminating employment, the member must leave contributions on deposit with the Retirement System to be eligible for future benefits. A vested member may draw unreduced benefits as early as age 50 with 25 years of credited service, age 55 with 20 years of credited service, or age 60 with 15 years of credited service. A reduced benefit is available at age 50 with 20 years of credited service.

Other Benefits

Withdrawal Benefits – Members who terminate employment before retirement may withdraw contributions with interest after the last day on the employer's payroll. Withdrawal of contributions forfeits all membership rights and benefits, which a member may have accrued prior to withdrawing accumulated contributions from the Retirement System. Inactive, nonvested members, who return to covered employment within five years after terminating employment, will not have lost any membership rights or privileges if they *haven't* withdrawn contributions.

Disability Benefits

Tier I: Service-connected disability – There are no age or service requirements to be eligible for this benefit. There is an annual benefit of 50% of Final Average Salary, plus 10% of Final Average Salary for each dependent child under age 18 (or up to age 23 for full-time students), to a maximum of 75% of Final Average Salary. If dependent child benefits aren't payable, the benefit is 50% of Final Average Salary or 2.5% for each year of credited service up to a maximum of 90% of Final Average Salary. Upon the death of a member after two years from the proximate cause of death which is the original service-connected disability, the same benefits are payable. Upon the death of a member after two years from a cause different than the disability for which the member is receiving service-connected disability benefits, the surviving spouse receives a lump sum payment of 50% of Final Average Salary. Additionally, a pension benefit of one-half the member's benefit is payable to either the spouse or to the dependent children.

Tier I: Non-Service-connected disability – An annual benefit of 2.5% times years of credited service times Final Average Salary with a minimum of 25% of FAS and a maximum of 90% of FAS.

Tier II: Service-connected disability – The annual benefit is 50% of Final Average Salary. Service Credit is granted during the period of disability. Disability benefits convert to age and service retirement at the earliest date the member is eligible for full retirement benefits. If the member is disabled for at least five years immediately preceding retirement, the member's Final Average Salary is adjusted during the period of disability. If the member dies prior to the conversion of the disability benefit to a service retirement benefit, the spouse's benefit will be:

- 50% of the member's Final Average Salary; or
- If there are no dependent children, the benefit the member would have been entitled to if they had retired on the date of death.

In addition, an annual benefit of 10% of the member's Final Average Salary would be paid for each of the member's dependent children until the earlier of age 18 (or 23 if a full-time student) or death. However, in no case would the total of benefits payable exceed 75% of the member's Final Average Salary.

Tier II: Non-Service-connected disability – The annual benefit is 50% of Final Average Salary. Service Credit is granted during the period of disability. Disability benefits convert to age and service retirement at the earliest date the member is eligible for full retirement benefits. If the member is disabled for at least five years immediately preceding retirement, the member's Final Average Salary is adjusted during the period of disability. If the member dies prior to the conversion of the disability benefit to a service retirement benefit, the member's spouse will receive a lump sum benefit equal to 50% of the member's Final Average Salary at the time the member was disabled.

Death Benefits (Tier I and Tier II)

Active Member Service Connected Death – There is no age or service requirement. An annual benefit equal to the greater of the accrued retirement benefit under the 100% joint and survivor option and 50% of Final Average Salary is payable to the spouse, plus 10% of Final Average Salary for each dependent child under age 18 (or up to age 23 for full-time students), to a maximum of 90% of Final Average Salary Active Member.

Active Member Non-Service Connected Death – A lump sum of 100% of Final Average Salary and a pension of 2.5% of Final Average Salary per year of credited service (to a maximum of 50%) is payable to the spouse. If there is no spouse, the monthly benefit is paid to the dependent children (age 18, or 23 if a full time student). If there is no surviving spouse or eligible children, the beneficiary will receive a lump sum payment of 100% of the member's current annual pay, inclusive of the member's accumulated contributions.

Inactive Member Death – If an inactive member is eligible for retirement when death occurs, and the inactive member's spouse is the sole beneficiary, the spouse may elect to receive benefits as a joint annuitant under any option in lieu of a refund of the member's accumulated contributions.

Post-Retirement Death – There is a lump sum amount of $4,000 payable, less any death benefit payable under local plan provisions. If the member has selected a retirement option, benefits are paid to the joint annuitant or the designated beneficiary. Under joint and survivor options, if the joint annuitant predeceases the retired member, the benefit is increased to the amount the retired member would have received if no option had been selected. Benefits payable to the joint annuitant cease when the joint annuitant dies. If no option is selected, the designated beneficiary receives the excess, if any, of the member's accumulated contributions over total benefits paid to the date of death. The surviving spouse of a transfer member (who was covered by local plan on the employer's entry date, who dies after retirement, and who has not elected a retirement benefit option) receives a lump sum payment of 50% of Final Average Salary. Additionally, a pension benefit of three-fourths of the member's benefit is payable either to the spouse or dependent children.

Classifications

Tier I – Members have Tier I coverage if they were employed prior to July 1, 1989, and they did not elect coverage under Tier II.

Tier II – Members have Tier II coverage if they were employed July 1, 1989, or later. This also includes members employed before July 1, 1989 who elected Tier II coverage.

Some KP&F members are considered either Tier I or Tier II Transfer or Brazelton members.

Transfer Member – A member who is a former member of a local plan who elected to participate in KP&F. Former Kansas Highway Patrol and former Kansas Bureau of Investigation members are included in this group.

Brazelton member – A member who participated in a class action lawsuit, whose contribution is lower, and whose benefits are offset by Social Security.

Member Contributions

Member contributions are 7.15% of compensation, effective July 1, 2013.

Brazelton members contribute 0.008% with a Social Security offset. Benefits payable to these members are reduced by one-half of original Social Security benefits accruing from employment with the participating employer.

Employer Contributions

Individual rates are certified by the Board of Trustees for each participating employer based on the results of annual actuarial valuations.

Deferred Retirement Option Program (DROP)

Upon attaining normal retirement age, members of the Kansas Highway Patrol (KHP) and Kansas Bureau of Investigation (KBI) have the option of participating in the DROP plan for a minimum of three years and no more than five years. After electing to participate, a member's monthly retirement benefit is deposited into the member's DROP account for the duration of the DROP period. The DROP account accrues interest on an annual basis, equaling either 0.0% or 3.0%. Employer and employee contributions continue to be made to the System, but the member does not earn any additional service credit after the effective date of the DROP election. At the end of the DROP period, a member is entitled to a distribution from the DROP account.

KANSAS JUDGES RETIREMENT SYSTEM

Normal Retirement

Eligibility – (a) Age 65, or (b) age 62 with ten years of credited service, or (c) any age when combined age and years of credited service equals 85 "points". Age is determined by the member's last birthday and is not rounded up.

Benefit – The benefit is based on the member's Final Average Salary, which is the average of the three highest years of service under any retirement system administered by KPERS. The basic formula for those who were members prior to July 1, 1987, is 5% of Final Average Salary for each year of service up to ten years, plus 3.5% for each year of service greater than ten, to a maximum of 70% of Final Average Salary. For those who became members on or after July 1, 1987, the formula is 3.5% for each year, to a maximum benefit of 70% of Final Average Salary.

Early Retirement

Eligibility – A member must be age 55 and have ten years of credited service to take early retirement.

Benefit – The retirement benefit is reduced 0.2% per month for each month between the ages of 60 and 62, and 0.6% per month for each month between the ages of 55 and 60.

Vesting Requirements

Eligibility – There is no minimum service requirement; however, after terminating employment, the member must leave contributions on deposit with the Retirement System in order to be eligible for future benefits. Eligible judges who have service credited under KPERS have vested benefits under both KPERS and the Retirement System for Judges when the combined total credited service equals ten years.

Benefit – Normal benefit accrued at termination is payable at age 62 or in reduced amount at age 55, provided the member has 10 years of credited service. Otherwise, benefits are not payable until age 65.

Other Benefits

Disability Benefits – These benefits are payable if a member is defined as totally and permanently disabled as certified by the Supreme Court. The disability benefit, payable until age 65, is 3.5% of Final Average Salary for each year of service (minimum of 50% and maximum of 70% of Final Average Salary). Benefits are recalculated when the member reaches retirement age based on participating service credit for the period of disability. If a judge is disabled for at least five years immediately preceding retirement, the judge's Final Average Salary is adjusted.

Withdrawal Benefit – Members who terminate employment may withdraw contributions with interest, but they will forfeit any right to a future benefit if they do.

Pre-retirement Death – A refund of the member's accumulated contributions is payable. In lieu of receiving the member's accumulated contributions, the surviving spouse of a member who is eligible to retire at death may elect to receive benefits under any survivor benefit option. If the member had at least ten years of credited service, but hadn't reached retirement age at the time of death, the spouse may elect a monthly benefit to begin on the date the member first would have been eligible to retire as long as the member's contributions aren't withdrawn.

Post-retirement Death – A lump sum death benefit of $4,000 is payable to the member's beneficiary. If the member had selected an option with survivor benefits, those benefits are paid to the joint annuitant or to the member's designated beneficiary. Under retirement options with survivor benefits, if the joint annuitant predeceases the retired member, the retirement benefit is increased to the amount the retired member would have received if no survivor benefits had been elected. Benefits payable to a joint annuitant cease when the joint annuitant dies. If no option was chosen by the retired member, the member's designated beneficiary receives the excess, if any, of the member's accumulated contributions over the total benefits paid to the date of the retired member's death.

Member Contributions

Judges contributions are 6% of compensation. Upon reaching the maximum retirement benefit level of 70% of Final Average Salary, the contribution rate is reduced to 2%.

Employer Contributions

Rates are certified by the Board of Trustees, based on the results of annual actuarial valuations.

KPERS

Rate of Investment Return: 7.75%

Price Inflation: 2.75%

Payroll Growth: 3.00%

KPERS 3 Interest Crediting Rate, Including dividends: 6.25% per annum

Administrative Expenses: 0.18% of covered payroll

Rate of Mortality:

Post-retirement

The RP-2014 Healthy Annuitant table was first adjusted by an age setback or set forward. Rates were further adjusted to fit actual experience. Rates are projected into the future using Scale MP-2016

Starting Table
School Males: RP-2014 M White Collar Healthy +0
School Females: RP-2014 F White Collar Healthy +0
State Males: RP-2014 M Healthy +2
State Females: RP-2014 F Healthy +1
Local Males: RP-2014 M Healthy +2
Local Females: RP-2014 F Healthy +1

Sample Rates (2014)

	School		State		Local	
Age	Male	Female	Male	Female	Male	Female
50	0.310%	0.172%	0.462%	0.332%	0.532%	0.276%
55	0.438%	0.225%	0.635%	0.397%	0.732%	0.367%
60	0.585%	0.323%	0.868%	0.582%	1.001%	0.536%
65	0.849%	0.544%	1.267%	0.909%	1.461%	0.838%
70	1.389%	0.876%	1.974%	1.460%	2.276%	1.346%
75	2.383%	1.459%	3.208%	2.381%	3.699%	2.196%
80	4.520%	3.192%	5.255%	4.249%	6.163%	3.939%
85	8.618%	6.444%	9.025%	7.662%	10.674%	7.119%
90	15.900%	11.824%	15.570%	13.531%	18.416%	12.573%
95	26.671%	20.501%	23.721%	22.137%	28.057%	20.570%
100	39.563%	31.961%	32.978%	32.888%	39.006%	30.559%

Pre-retirement

School Males: 80 % of RP-2014 M White Collar +0
School Females: 80% of RP-2014 F White Collar +0
State Males: 90% of RP-2014 M Total Dataset +2
State Females: 90% of RP-2014 F Total Dataset +1
Local Males: 90% of RP-2014 M Total Dataset +2
Local Females: 90% of RP-2014 F Total Dataset +1

Disabled Life Mortality

RP-2014 Disabled Life Table with same age adjustments as used for pre-retirement mortality tables.

Rates of Salary Increase:

	Rate of Increase*		
Years of Service	School	State	Local
1	11.50%	10.00%	10.00%
5	6.05%	5.10%	5.70%
10	4.60%	4.40%	4.70%
15	4.10%	3.90%	4.30%
20	3.60%	3.60%	4.10%
25	3.50%	3.50%	3.60%
30	3.50%	3.50%	3.50%

* Includes general wage increase assumption of 3.50% (composed of 2.75% inflation and 0.75% productivity.

Load for Pre-1993 Hires:

State:	2.50%	School:	0.50%
Local:	2.00%	KPF:	7.50%
C55/C60:	2.50%		

Rates of Termination:

	School		State		Local	
Duration	Male	Female	Male	Female	Male	Female
0	20.75%	23.00%	21.00%	21.50%	23.00%	25.00%
1	17.25%	18.00%	18.00%	19.00%	19.00%	22.00%
2	13.75%	14.50%	15.25%	16.50%	16.50%	19.00%
3	10.75%	11.25%	13.50%	14.00%	13.50%	15.75%
4	8.75%	9.75%	12.00%	12.00%	11.75%	13.50%
5	7.50%	8.25%	10.75%	10.00%	10.00%	12.10%
6	6.75%	7.25%	9.50%	9.00%	9.00%	10.25%
7	6.00%	6.50%	8.50%	8.25%	8.00%	9.30%
8	5.25%	5.50%	7.50%	7.50%	7.00%	8.50%
9	5.00%	5.00%	6.50%	7.00%	6.30%	7.50%
10	4.60%	4.50%	5.50%	6.50%	5.60%	6.70%
11	4.30%	4.00%	5.00%	6.00%	5.20%	6.25%
12	4.00%	3.50%	4.50%	5.50%	4.90%	5.75%
13	3.75%	3.25%	4.25%	5.00%	4.60%	5.25%
14	3.50%	3.00%	4.00%	4.60%	4.00%	4.75%
15	3.25%	2.75%	3.80%	4.20%	3.80%	4.50%
16	3.00%	2.50%	3.60%	3.90%	3.60%	4.25%
17	2.75%	2.25%	3.40%	3.70%	3.40%	4.00%
18	2.50%	2.00%	3.20%	3.20%	3.20%	3.80%
19	2.25%	1.90%	3.00%	3.00%	3.00%	3.60%
20	2.00%	1.80%	2.80%	2.80%	2.80%	3.40%
21	1.75%	1.70%	2.60%	2.60%	2.60%	3.20%
22	1.50%	1.60%	2.40%	2.40%	2.40%	3.00%
23	1.25%	1.50%	2.20%	2.20%	2.20%	2.70%
24	1.00%	1.40%	2.00%	2.00%	2.00%	2.40%
25	1.00%	1.30%	1.80%	1.80%	1.80%	2.00%
26	1.00%	1.20%	1.60%	1.60%	1.60%	1.75%
27	1.00%	1.10%	1.40%	1.40%	1.40%	1.50%
28	1.00%	1.00%	1.20%	1.20%	1.20%	1.25%
29	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%
30	1.00%	1.00%	0.80%	0.80%	0.80%	0.80%
30+	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Retirement Rates

School Members:

	Early Retirement			Normal Retirement			Rule of 85 (Tier 1 Only)	
Age	Tier 1	Tier 2	Tier 3	Tier 1	Tier 2	Tier 3	1st Year With 85 Points	After 1st Year With 85 Points
53							20.0%	
54							20.0%	15.0%
55	3.0%	3.0%	3.0%				20.0%	15.0%
56	3.0%	3.0%	3.0%				22.0%	15.0%
57	3.0%	3.0%	3.0%				24.0%	15.0%
58	3.0%	3.0%	3.0%				26.0%	15.0%
59	5.0%	5.0%	5.0%				28.0%	20.0%
60	10.0%	10.0%	5.0%		35.0%	20.0%	35.0%	22.0%
61	15.0%	15.0%	5.0%		22.0%	15.0%	25.0%	22.0%
62		25.0%	5.0%	25.0%	25.0%	15.0%		25.0%
63		22.0%	5.0%	22.0%	22.0%	15.0%		22.0%
64		22.0%	5.0%	22.0%	22.0%	15.0%		22.0%
65				35.0%	35.0%	30.0%		35.0%
66				35.0%	35.0%	30.0%		35.0%
67-74				30.0%	30.0%	35.0%		30.0%
75				100.0%	100.0%	100.0%		100.0%

State Members:

	Early Retirement			Normal Retirement			Rule of 85 (Tier 1 Only)	
Age	Tier 1	Tier 2	Tier 3	Tier 1	Tier 2	Tier 3	1st Year With 85 Points	After 1st Year With 85 Points
53							18.0%	
54							18.0%	10.0%
55	4.0%	4.0%	3.0%				18.0%	10.0%
56	4.0%	4.0%	3.0%				18.0%	10.0%
57	4.0%	4.0%	3.0%				18.0%	10.0%
58	5.0%	5.0%	3.0%				18.0%	10.0%
59	5.0%	5.0%	5.0%				18.0%	10.0%
60	5.0%	5.0%	5.0%		18.0%	15.0%	18.0%	10.0%
61	10.0%	10.0%	5.0%		18.0%	10.0%	18.0%	15.0%
62		15.0%	5.0%	18.0%	18.0%	10.0%		18.0%
63		15.0%	5.0%	18.0%	18.0%	10.0%		18.0%
64		15.0%	5.0%	18.0%	18.0%	10.0%		18.0%
65				30.0%	30.0%	25.0%		30.0%
66				30.0%	30.0%	25.0%		30.0%
67-72				27.0%	27.0%	25.0%		27.0%
73				20.0%	20.0%	25.0%		20.0%
74				20.0%	20.0%	25.0%		20.0%
75				100.0%	100.0%	100.0%		100.0%

Local Members:

	Early Retirement			Normal Retirement			Rule of 85 (Tier 1 Only)	
Age	Tier 1	Tier 2	Tier 3	Tier 1	Tier 2	Tier 3	1st Year With 85 Points	After 1st Year With 85 Points
53							15.0%	
54							15.0%	8.0%
55	3.0%	3.0%	3.0%				15.0%	8.0%
56	3.0%	3.0%	3.0%				15.0%	8.0%
57	3.0%	3.0%	3.0%				15.0%	8.0%
58	3.0%	3.0%	3.0%				15.0%	10.0%
59	6.0%	6.0%	5.0%				15.0%	10.0%
60	6.0%	6.0%	5.0%		15.0%	15.0%	15.0%	10.0%
61	10.0%	10.0%	5.0%		20.0%	10.0%	25.0%	20.0%
62		20.0%	5.0%	20.0%	20.0%	10.0%		20.0%
63		20.0%	5.0%	20.0%	20.0%	10.0%		20.0%
64		20.0%	5.0%	20.0%	20.0%	10.0%		20.0%
65				30.0%	30.0%	25.0%		30.0%
66				30.0%	30.0%	25.0%		30.0%
67-70				30.0%	30.0%	30.0%		30.0%
71-74				22.0%	22.0%	30.0%		22.0%
75				100.0%	100.0%	100.0%		100.0%

Inactive vested members: Earliest unreduced retirement age.

Correctional employees with an age 55 normal retirement date:

Age	Rate
55-59	10%
60	15%
61-63	20%
64	35%
65	100%

Correctional employees with an age 60 normal retirement date:

Age	Rate
60	20%
61	20%
62	35%
63	20%
64	20%
65	45%
66	45%
67	45%
68	100%

TIAA employees: Age 66

Rates of Disability:

Age	School	State	Local
25	0.017%	0.015%	0.015%
30	0.019%	0.043%	0.033%
35	0.023%	0.067%	0.049%
40	0.039%	0.130%	0.072%
45	0.075%	0.195%	0.126%
50	0.123%	0.260%	0.182%
55	0.166%	0.325%	0.217%
60	0.238%	0.358%	0.266%

Indexation of Final Average Salary for Disabled Members: 1.75% per year.

Probability of Vested Members Leaving Contributions with System:

KPERS 1

Age	School	State	Local
25	80%	65%	60%
30	80%	65%	70%
35	80%	65%	70%
40	80%	65%	70%
45	82%	75%	70%
50	87%	85%	74%
55	100%	100%	100%

KPERS 2 Members are assumed to elect to take a refund if it is more valuable than the deferred annuity. The comparison is based on 7.75% interest and a 50% Male/50% Female blend of the RP-2014 Mortality Table, projected to 2045 (static).

KPERS 3 100% of vested members are assumed to leave their contributions with the System.

Marriage Assumptions: 70% of all members are assumed married with male spouse assumed 3 years older than the female.

Partial Lump Sum Option (PLSO): 40% of KPERS 1 and KPERS 2 members are assumed to take a PLSO equal to 30% of the value of their benefit upon retirement. 100% of KPERS 3 members are assumed to take a PLSO equal to 30% of the value of their benefit upon retirement.

PLSO Factors: Interest Rate: 7.75%
Mortality: SOA 1983 Group Annuity Mortality Table, blended 50% male and 50% female.

KPF

Rate of Investment Return: 7.75%

Price Inflation: 2.75%

Payroll Growth: 3.00%

Administrative Expenses: 0.18% of covered payroll

Rates of Mortality: Mortality rates are projected into the future using Scale MP-2016

Post-retirement RP-2014 Total Dataset Table, set forward one year

Pre-retirement 90% of the RP-2014 Total Dataset Table, set forward one year*

* 70% of preretirement deaths assumed to be service-related.

Disabled Life Mortality: RP-2014 Disabled Life Table, set forward one year

Rates of Salary Increase:

Years of Service	Rate of Increase*
1	12.0%
5	6.5%
10	4.4%
15	3.8%
20	3.5%
25	3.5%

* Includes general wage increase assumption of 3.50% (composed of 2.75% inflation and 0.75% productivity)

Rates of Termination:

Years of Service	Rate
1	11.0%
5	6.0%
10	2.8%
15	1.8%
20	1.1%
25	0.0%

Retirement Rates:

Tier 1

Early Retirement		Normal Retirement	
Age	Rate	Age	Rate
50	5%	55	35%
51	7%	56	30%
52	7%	57	30%
53	15%	58	35%
54	30%	59	30%
		60	30%
		61	35%
		62	100%

Tier 2

Early Retirement		Normal Retirement	
Age	Rate	Age	Rate
50	10%	50	30%
51	10%	51	25%
52	10%	52	25%
53	10%	53	25%
54	20%	54	25%
		55	25%
		56	25%
		57	25%
		58	20%
		59	30%
		60	25%
		61	25%
		62	30%
		63	30%
		64	30%
		65	100%

Inactive Vested Earliest unreduced retirement age

Rates of Disability:

Age	Rate*
22	0.04%
27	0.07%
32	0.15%
37	0.35%
42	0.56%
47	0.76%
52	0.96%
57	1.00%

* 90% of disabilities are assumed to be service-connected.

Marriage Assumption: 80% of all members assumed married with male spouse assumed to be three years older than female. When an active member dies, they have no child beneficiaries.

DROP Election: 75% of Kansas Highway Patrol and Kansas Bureau of Investigation members are assumed to enter DROP for the maximum DROP period.

It is assumed that no members enter DROP with less than 25 years of service.

Interest Credited on DROP Accounts: 3.00%, compounded annually.

Judges

Rate of Investment Return:	7.75%
Price Inflation:	2.75%
Administrative Expenses:	0.18% of covered payroll
Rates of Mortality:	Mortality rates are projected into the future used Scale MP-2016
Post-retirement	RP-2014 Total Dataset Table, set back two years
Pre-retirement	80% of RP-2014 Total Dataset Table, set back two years
Disabled Life Mortality:	RP-2014 Disabled Retiree Table, set back two years
Rates of Salary Increase:	4.00%
Rates of Termination:	None assumed
Rates of Disability:	None assumed

Retirement Rates:

Age	Rate
62	15%
63-64	10%
65-66	33%
67-69	15%
70+	100%

Marriage Assumption: 70% of all members are assumed married with male spouse assumed 3 years old than female.

TECHNICAL VALUATION PROCEDURES

Data Procedures

In-pay members:

If a birth date is not available, the member is assumed to have retired at 62. If a retirement date is also not available, the member is assumed to be 75.

If a beneficiary birth date is needed but not supplied, males are assumed to be 3 years older than females.

Not in-pay members:

If a birth date is not available, it is assigned according to the following schedule:

System	Active member age at hire	Inactive member age at valuation
KPERS	34.7	50
KPF	27.5	49
Judges	43.4	54

If gender is not provided, it is assigned randomly with a 40% probability of being male and 60% probability of being female.

If salary information is not available for an active record, it is assigned according to the following schedule:

System	Salary
KPERS	$24,700
KPF	$36,100
Judges	$79,100

Salaries for first year members are annualized.

Other Valuation Procedures

No actuarial accrued liability in excess of the unclaimed member contribution balance is held for nonvested, inactive members. A reserve is also held for accounts that have been forfeited but could be reclaimed in the future.

Benefits above the projected IRC Section 415 limit for active participants are assumed to be immaterial for the valuation. The compensation limitation under IRC Section 401(a) (17) is considered in this valuation. On a projected basis, the impact of this limitation is insignificant.

Salary increases are assumed to apply to annual amounts.

Decrements are assumed to occur mid-year, except that immediate retirement is assumed for those who are at or above the age at which retirement rates are 100%. Standard adjustments are made for multiple decrements. Withdrawal does not operate once early or unreduced retirement eligibility is met.

KPERS 3 employees who transfer employment to a non-KPERS covered position are treated as actives who are not accruing benefits.

Actuarial Methods

1. Funding Method

Under the entry age normal cost method, the actuarial present value of each member's projected benefits is allocated on a level basis over the member's compensation between the entry age of the member and the assumed exit ages. The portion of the actuarial present value allocated to the valuation year is called the normal cost. The actuarial present value of benefits allocated to prior years of service is called the actuarial liability. The unfunded actuarial liability represents the difference between the actuarial liability and the actuarial value of assets as of the valuation date. The unfunded actuarial liability is calculated each year and reflects experience gains/losses.

There is currently a lag between the valuation date in which the employer contribution rates are determined and the effective date of those contribution rates, i.e., a two year lag for Local employers and a two and one-half year lag for the State/School group. The unfunded actuarial liability is projected from the valuation date to the first day of the fiscal year in which the contribution rate will apply based on the scheduled statutory contribution rates and expected payroll in the intervening years.

For valuations beginning with December 31, 2016 and following, the unfunded actuarial liability is amortized using a "layered" approach. The unfunded actuarial liability in the December 31, 2015 valuation, which was projected to June 30, 2018 for the State/School and Judges groups and to December 31, 2017 for the Local and KP&F groups, serves as the initial or "legacy" amortization base and continues to be amortized over the original period, set at 40 years beginning July 1, 1993 (12 years in the December 31, 2020 valuation). The change in the unfunded actuarial liability, resulting from the assumption changes reflected in the 2016 and 2019 valuations, was amortized over a closed 25-year period. Changes in the unfunded actuarial liability that result from actuarial experience each year (gains and losses) are amortized over a closed 20-year period that begins with the fiscal year in which the contribution rates will apply.

The unfunded actuarial liability is amortized as a level percentage of payroll for all groups except Judges, who use a level dollar payment. The payroll growth assumption is 3% so the annual amortization payments will increase 3% each year. As a result, if total payroll grows 3% per year, as assumed, the amortization payment will remain level as a percentage of total current payroll.

2. Asset Valuation Method

For actuarial purposes, assets are valued using an asset smoothing method. The difference between the actual return and the expected return (based on the actuarial assumed net rate of return) on the market value of assets is calculated each year and recognized equally over a five-year period.

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APPENDIX D – GLOSSARY OF TERMS

The following are key terms used in the discussion of actuarial funding valuations. Actuarial measurements for other purposes, such as accounting, may use different terms.

Actuarial Accrued Liability — The difference between the actuarial present value of system benefits and the actuarial value of future normal costs. Also referred to as "accrued liability" or "actuarial liability".

Actuarial Assumptions — Estimates of future experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and salary increases. Decrement assumptions (rates of mortality, disability, turnover and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (salary increases and investment income) consist of an underlying rate in an inflation-free environment plus a provision for a long-term average rate of inflation.

Accrued Service — Service credited under the system which was rendered before the date of the actuarial valuation.

Actuarial Equivalent — A single amount or series of amounts of equal actuarial value to another single amount or series of amounts, computed on the basis of appropriate assumptions.

Actuarial Cost Method — A mathematical budgeting procedure for allocating the dollar amount of the actuarial present value of retirement system benefit between future normal cost and actuarial accrued liability. Sometimes referred to as the "actuarial funding method".

Experience Gain (Loss) — The difference between actual experience and anticipated experience, based on the actuarial assumptions, during the period between two actuarial valuation dates.

Actuarial Present Value — The amount of funds currently required to provide a payment or series of payments in the future. It is determined by discounting future payments at predetermined rates of interest and by probabilities of payment.

Amortization — Paying off an interest-discounted amount with periodic payments of interest and principal, as opposed to paying off with lump sum payment.

In-Pay Members — Members receiving monthly benefit payments as of the valuation date.

Not-in-Pay Members — Members not receiving monthly benefit payments as of the valuation, i.e., active members and terminated members entitled to a benefit in the future.

Normal Cost

The actuarial present value of retirement system benefits allocated to the current year by the actuarial cost method.

Unfunded Actuarial Accrued Liability

The difference between actuarial accrued liability and the valuation assets. Sometimes referred to as "unfunded actuarial liability" or "unfunded accrued liability".

Most retirement systems have unfunded actuarial accrued liability. They arise each time new benefits are added and each time an actuarial loss is realized.