Cavanaugh Macdonald
CONSULTING, LLC

The experience and dedication you deserve

NEBRASKA PUBLIC EMPLOYEES RETIREMENT SYSTEM

SCHOOL RETIREMENT SYSTEM

ACTUARIAL VALUATION REPORT
as of July 1, 2019

Sixty-Seventh Actuarial Report for
System Plan Year Beginning July 1, 2019
and
State Fiscal Year Ending June 30, 2021

www.CavMacConsulting.com

Sections	Page

Cavanaugh Macdonald
CONSULTING, LLC
The experience and dedication you deserve

November 13, 2019

Public Employees Retirement Board
Nebraska Public Employees Retirement System
Post Office Box 94816
Lincoln, NE 68509

Dear Members of the Board:

At your request, we have performed an actuarial valuation of the School Retirement System as of July 1, 2019 for the purpose of determining the actuarial required contribution rate for the plan year ending June 30, 2020. It is our understanding that any required additional State contribution for this plan year will be made on July 1, 2020 (State fiscal year end 2021). The major findings of the valuation are contained in this report, which reflects the benefit and funding provisions in place on July 1, 2019. There were no changes to the actuarial assumptions and methods or plan provisions from the prior valuation.

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 the information received in prior years. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete, our results may be different and our calculations may need to be revised.

We further certify that all costs, liabilities, rates of interest and other factors for the School Retirement 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 the best estimate of anticipated experience affecting the System. 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 Public Employees Retirement Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in Appendix C.

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 an analysis of the potential range of future measurements.

3802 Raynor Pkwy, Suite 202, Bellevue, NE 68123
Phone (402) 905-4461 • Fax (402) 905-4464
www.CavMacConsulting.com
Offices in Kennesaw, GA • Bellevue, NE

The actuarial computations presented in this report are for purposes of determining the funding amounts for the System as set out in the Nebraska state statutes. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes. For example, actuarial computations for purposes of fulfilling financial accounting requirements for the System under Governmental Accounting Standards No. 67 and No. 68 will be presented in completely separate reports.

The consultants who worked on this assignment are pension actuaries. Cavanaugh Macdonald'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 any questions on the material contained in the report or to provide explanations or further details as may be appropriate.

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

This report presents the results of the July 1, 2019 actuarial valuation of the School Retirement System. The primary purposes of performing this actuarial valuation are to:

- Determine whether the employer, member and State contribution rates defined in the Nebraska state statutes are sufficient to fund the total Formula Annuity for the Nebraska School System, and whether additional State contributions are required along with the calculation of the State contribution for the Omaha Service Annuity for the plan year ending June 30, 2020;

- Disclose asset and liability measurements as well as the current funded status of the System as of the valuation date;

- Assess and disclose the key risks associated with funding the System;

- Compare the actual and expected experience of the System during the plan year ended June 30, 2019; and

- Analyze and report on trends in System contributions, assets and liabilities over the past several years.

The Nebraska statutes require the State to make an additional contribution if the regular, payroll-related contributions by members, employers, and the State are insufficient to meet the actuarial required contribution for the plan year. **Based on the results of the July 1, 2019 actuarial valuation, no additional State contribution is necessary for this plan year.**

There were no changes to the actuarial assumptions and methods or benefit provisions since the last valuation. The actuarial valuation results provide a "snapshot" view of the System's financial condition on July 1, 2019. The System's unfunded actuarial accrued liability (UAAL) decreased from $1.456 billion last year to $1.305 billion this year and the funded ratio increased from 89% to 90%. In addition, the actuarial required contribution rate decreased from 18.73% of pay last year to 18.42% of pay in this year's valuation, a decrease of 0.31%. The primary factor in the improvements was the favorable actuarial experience on the System's liabilities.

The valuation results reflect net favorable experience for the past plan year as demonstrated by an UAAL that was lower than expected. The UAAL on July 1, 2019 is $1.305 billion compared to an expected UAAL of $1.338 billion. The favorable experience was due to the net impact of an experience gain on the System's liabilities and an experience loss on the actuarial value of assets. The rate of return on the market value of assets for FY 2019 was 6.7%, as reported by the Nebraska Investment Council, which is below the assumed return of 7.5%. However, the asset smoothing method only recognizes 20% of the difference between the dollar amount of the assumed and actual return in the current valuation. The partial recognition of FY 2019 experience, coupled with the scheduled recognition of the deferred investment experience from the prior four years, resulted in a rate of return on the actuarial (smoothed) value of assets of 6.8%. Because this return is lower than the assumed rate of return (7.5%), it generated an actuarial experience loss of $85 million on the actuarial value of assets. However, there was also an actuarial experience gain of $118 million on System liabilities, largely due to lower salary increases than expected and cost of living increases that were lower than expected. The favorable actuarial experience on the System's liabilities was greater than the actuarial experience loss on the valuation assets so the aggregate experience for the last plan year was favorable.

Legislation passed in the 2013 session made changes to the benefit structure for members hired on or after July 1, 2013 (Tier Two), including changing final average salary to the highest 60 months rather than the highest 36 months of service and changing the maximum cost of living adjustment from 2.5% to 1.0%. Additional legislation was passed in the 2017 session, which granted the PERB the authority to set the actuarial assumptions used to determine the benefit amounts payable under optional forms of payment for members hired on or after July 1, 2017 (Tier Three). It also changed the minimum age required to qualify for unreduced retirement under the Rule of 85 from age 55 to age 60 for members hired on or after July 1, 2018 (Tier Four). There were 16,526 members in Tiers Two, Three and Four as of July 1, 2019, or about 39% of the active membership, compared to 33% in the prior valuation. These covered payroll for these members is about 28% of total covered payroll. It will be a number of years before the benefit changes in the newer tiers have a meaningful impact on the valuation results.

A summary of the key results from the July 1, 2019 actuarial valuation, excluding the Omaha State Service annuity, is shown in the following table. As the table indicates, the statutory contribution rates are sufficient to meet the actuarial required contribution rate and no additional State appropriation is required for the current year. Further detail on the valuation results can be found in the following sections of this Board Summary.

	July 1, 2019 Valuation Results	July 1, 2018 Valuation Results
Unfunded Actuarial Accrued Liability ($M)	$1,305	$1,456
Funded Ratio (Actuarial Assets)	90.29%	88.80%
Normal Cost Rate	13.35%	13.28%
UAAL Amortization Rate	5.07%	5.45%
Total Actuarial Required Contribution	18.42%	18.73%
Member Contribution Rate	(9.78%)	(9.78%)
Employer Contribution Rate	(9.88%)	(9.88%)
State Contribution Rate	(2.00%)	(2.00%)
Total Contribution Rate	(21.66%)	(21.66%)
Shortfall/(Margin)	(3.24%)	(2.93%)
Additional Required State Contribution	$0	$0

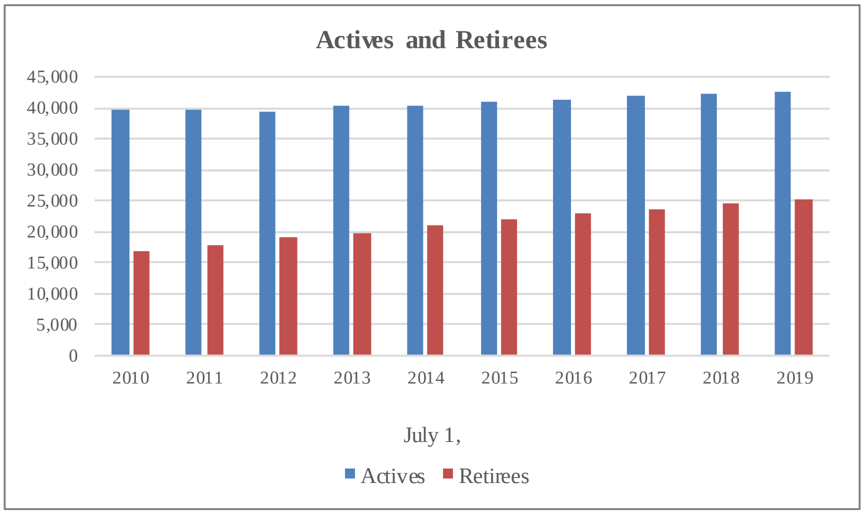
EXPERIENCE FOR THE LAST PLAN YEAR

Numerous factors contributed to the change in the System's assets, liabilities, and actuarial required contribution rate between July 1, 2018 and July 1, 2019. The components are examined in the following discussion.

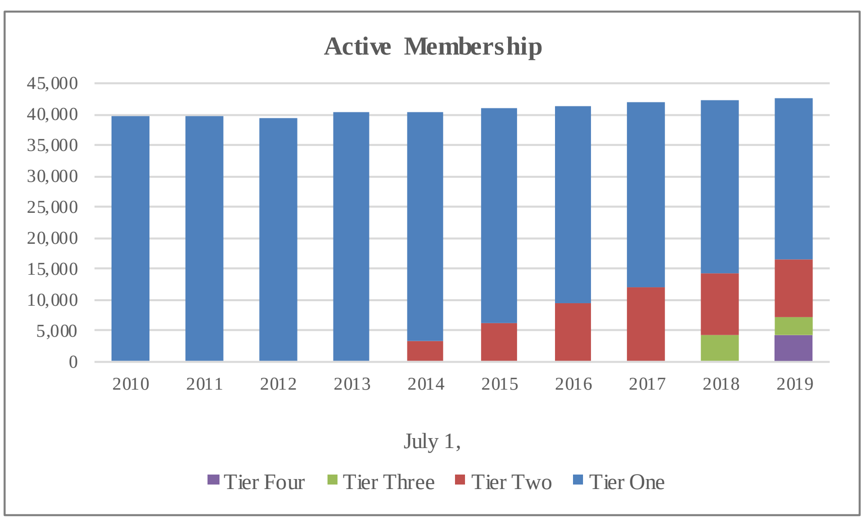
MEMBERSHIP

There are 42,713 active members in the 2019 valuation compared to 42,349 in the 2018 valuation, a 0.9% increase. When the number of active members increases, it has a positive influence on the System's funding as a higher amount of contributions is received. In addition, the UAAL contribution rate is favorably impacted by a larger group of active members and the resulting higher payroll. The UAAL is amortized assuming future covered payroll will increase 3.50% per year. If total payroll grows more than 3.50%, the UAAL payment is divided by payroll that is larger than expected, which results in a lower UAAL amortization rate. Conversely, a decrease in active members or covered payroll increases that are less than 3.50% will tend to result in a higher UAAL amortization rate.

The following graph shows the number of active and retired members in the last ten valuations. While the number of active members has fluctuated at times over this period, the number of members receiving a benefit has steadily increased and is currently 25,272.



The graph below shows the portion of the total active members covered by each of the benefit structures. In the 2019 valuation, there are 26,187 Tier One active members, 9,293 Tier Two active members, 3,138 Tier Three active members and 4,095 Tier Four active members. About 39% of the total active membership are affected by the benefit changes passed by the 2013 and later legislative sessions. While the number of members in the new tiers is significant, the actuarial liability is still heavily related to Tier 1.



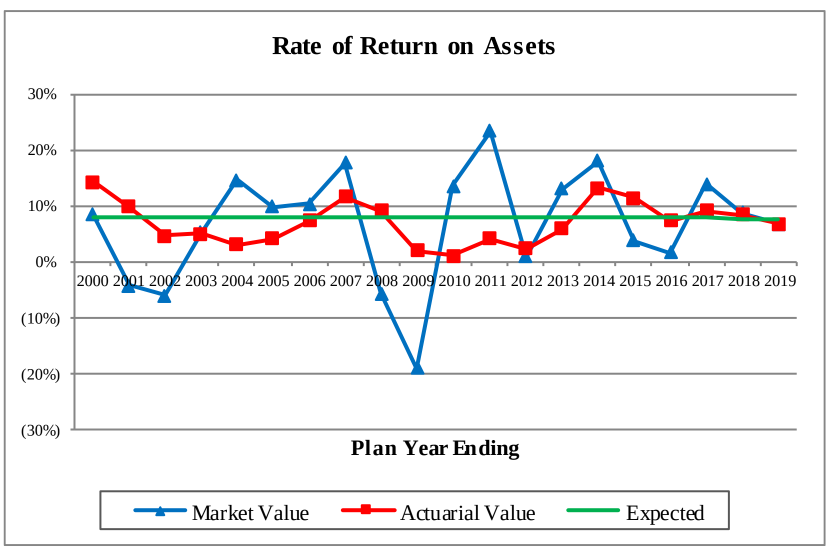
ASSETS

As of June 30, 2019, the System had net assets of $12.215 billion, when measured on a market value basis, an increase of $579 million from the prior year value.

The market value of assets is not used directly in the calculation of the unfunded actuarial accrued liability and the actuarial required contribution rate. An asset valuation method, which smoothes the effect of market fluctuations, is used to determine the value of assets used in the valuation. The resulting amount is called the actuarial value of assets. In this year's valuation, the actuarial value of assets is $12.130 billion, an increase of $585 million from the prior year. The components of change in the asset values are shown in the following table:

	Market Value ($M)		Actuarial Value ($M)	
Net Assets, June 30, 2018	$	11,636.30	$	11,545.66
- Employer and Member Contributions	+	435.74	+	435.74
- Benefit Payments	-	626.50	-	626.50
- Net Investment Income	+	769.41	+	775.60
Net Assets, June 30, 2019	$	12,214.95	$	12,130.50
Rate of Return, Net of Expenses		6.7%		6.8%

The rate of return on the actuarial value of assets was 6.8%, which was lower than the 7.5% investment return assumption. As a result, there was an experience loss on assets of $85 million. The combined impact of the unfavorable investment experience for FY 2019 and the scheduled recognition of deferred investment gains and losses resulted in the net deferred investment experience of $91 million in last year's valuation decreasing to a net deferred investment gain of $84 million in the current valuation. Please see Section 3 of this report for more detailed information on the market and actuarial value of assets.



The rate of return of the actuarial value of assets has been less volatile than the market value return, illustrating the benefit of using an asset smoothing method.

LIABILITIES

The actuarial accrued liability is that portion of the present value of future benefits that will not be paid by future normal costs, i.e. the portion allocated to past years. The difference between this liability and the actuarial value of assets as of the valuation date is called the unfunded actuarial accrued liability (UAAL). The dollar amount of unfunded actuarial accrued liability is reduced if the contributions to the System exceed the normal cost for the year plus interest on the prior year's UAAL.

The unfunded actuarial accrued liability as of July 1, 2019, using both the actuarial and market value of assets, is shown in the following table:

	Actuarial Value of Assets	Market Value of Assets
Actuarial Accrued Liability	$13,435,710,270	$13,435,710,270
Value of Assets	12,130,496,836	12,214,947,023
Unfunded Actuarial Accrued Liability	$1,305,213,434	$1,220,763,247
Funded Ratio	90.29%	90.91%

The table indicates that, absent investment returns lower than expected (7.5%), the funded ratio is expected to increase slightly over the next four years as the deferred investment experience is recognized.

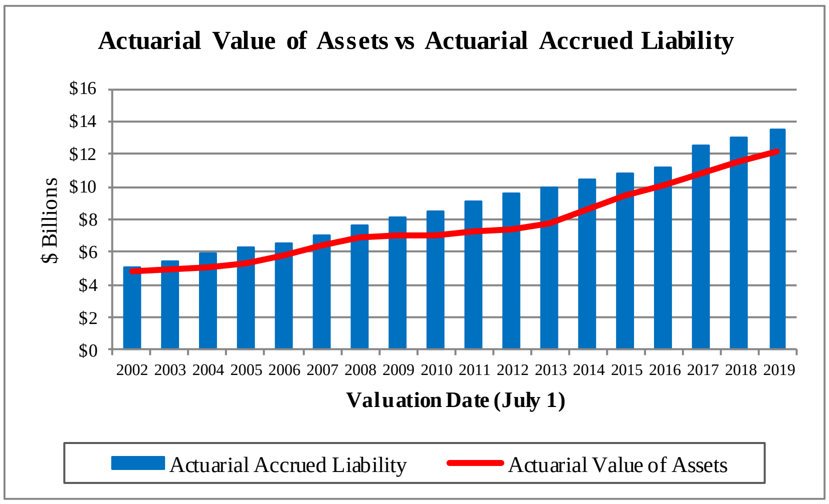
See Section 4 of the report for the detailed development of the unfunded actuarial accrued liability.

There was a net decrease of $150 million in the UAAL from July 1, 2018 to July 1, 2019. The various components of this net change are shown in the following table.

	($ Millions)
Unfunded Actuarial Accrued Liability, July 1, 2018	$1,455.6
- Expected decrease from amortization method	(5.7)
- Contributions above the Actuarial Required Contribution	(61.6)
- Investment experience	85.3
- Liability experience	(118.1)
- Deferred vested methodology	(43.2)
- Other experience	(7.1)
Unfunded Actuarial Accrued Liability, July 1, 2019	$1,305.2

As shown above, various components impacted the UAAL. Actuarial gains (losses), which result from actual experience that is more (less) favorable than anticipated based on the actuarial assumptions, are reflected in the UAAL and are measured as the difference between the expected UAAL and the actual UAAL, taking into account any changes due to actuarial assumptions and methods, or benefit provision changes. Overall, the System experienced a net actuarial experience gain of $33 million. The actuarial gain may be explained by considering the separate experience of assets and liabilities. As noted earlier, there was an actuarial experience loss of $85 million on the actuarial value of assets. Favorable experience on System liabilities resulted in an actuarial experience gain of $118 million. The liability gain was the net result of various components of actuarial gains and losses, but the most significant factors included gains from salary increases and cost of living increases that were lower than expected. A breakdown of the components of experience gains and losses can be found in Table 8 of this report.

As the following graph of historical actuarial assets and actuarial accrued liabilities shows, the System's liabilities grew at a faster pace than the System's assets for the five-year period beginning after the FY 2009 market downturn. As a result, the funded ratio declined over that period. Recently, the System's assets have been growing at a faster rate than the System's liabilities and the funded ratio has been improving. Changes to actuarial assumptions in the July 1, 2017 valuation significantly increased the System's liabilities and lowered the funded ratio.

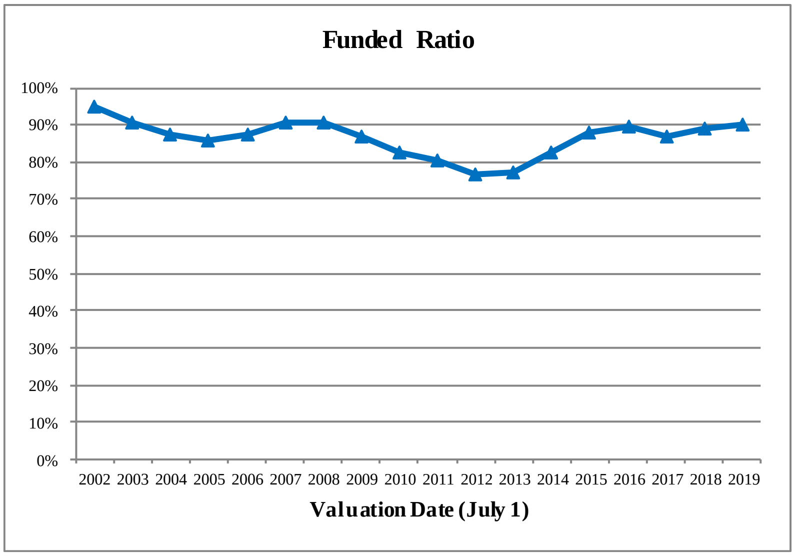


An evaluation of the UAAL on a pure dollar basis may not provide a complete analysis since only the difference between the assets and liabilities (which are both very large numbers) is reflected. Another way to evaluate the UAAL and the progress made in its funding is to track the funded ratio, the ratio of the actuarial value of assets to the actuarial accrued liability. The funded status information, using the actuarial value of assets, is shown below (in millions).

	7/1/2015	7/1/2016	7/1/2017	7/1/2018	7/1/2019
Funded Ratio	88.0%	89.6%	86.7%	88.8%	90.3%
UAAL	$1,292.7	$1,161.4	$1,655.6	$1,455.6	$1,305.2

Note that the funded ratio does not indicate whether or not the System assets are sufficient to settle benefits earned to date. The funded ratio, by itself, also may not be indicative of future funding requirements. In addition, if the funded ratios were shown using the market value of assets, the results would differ.

The funded ratio over a longer period is shown in the following graph.



ACTUARIAL REQUIRED CONTRIBUTION RATE

The System is funded by statutory contribution rates for members (9.78% of pay), employers (101% of the member rate) and the State (2.00% of pay). State statutes require the State to make an additional contribution if the regular, payroll-related contributions by employees, employers and the State are insufficient to meet the actuarial required contribution for the plan year. The additional State contributions for the plan year are made on the July 1 following the plan year end. Based on the results of the July 1, 2019 actuarial valuation, no additional State contribution is necessary for the current plan year.

Under the Entry Age Normal cost method, the actuarial contribution rate consists of two components:

- 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.

- An "unfunded actuarial accrued liability contribution" for the excess of the portion of projected liabilities allocated to service to date over the actuarial value of assets.

The UAAL contribution rate is determined by calculating the amortization payments as a level-percent of payroll. This methodology results in dollar amounts of payments that are lower in the initial years of the 30-year amortization period, but increase each year in the future with the assumed payroll growth assumption of 3.50%. Because the UAAL contribution rate is determined as a level-percent of payroll, the dollar amount of the UAAL contribution is scheduled to increase 3.50% each year in the future even if all actuarial assumptions are met. Therefore, if the increase in covered payroll is less than 3.50% per year, the UAAL contribution rate will increase.

See Section 5 of the report for the detailed development of the contribution rates, which are summarized in the following table.

Contribution Rates	July 1, 2019	July 1, 2018
1. Normal Cost Rate	13.35%	13.28%
2. UAAL Contribution Rate	5.07%	5.45%
3. Total Actuarial Required Contribution Rate	18.42%	18.73%
4. Member Contribution Rate	(9.78%)	(9.78%)
5. Employer Contribution Rate	(9.88%)	(9.88%)
6. State Contribution Rate	(2.00%)	(2.00%)
7. Total Contribution Rate	(21.66%)	(21.66%)
8. Shortfall/(Margin) [3 + 7]	(3.24%)	(2.93%)
9. Estimated Payroll	$ 2,093,017,529	$ 2,027,180,460
10. Additional State Required Contribution [8 * 9, but not less than $0]	$ 0	$ 0

Note: Contribution rates exclude State funding of Omaha Service Annuity.

The actuarial required contribution rate for the current plan year is 18.42%. The member contribution rate of 9.78%, School District contribution rate of 9.88% (101% of 9.78%) and State contribution rate of 2.00% of pay result in total statutory contributions of 21.66% of pay. As a result, there is a contribution margin of 3.24%, which indicates that the System will reach fully funded status sooner than targeted by the amortization schedule, <u>if all actuarial assumptions are met in future years</u>. The actuarial required contribution, determined this year based on the snapshot of the System taken on the valuation date of July 1, 2019, will change each year as the deferred investment experience is recognized and other experience (both investment and demographic) impacts the System. Overall, there was a decrease of 0.31% in the actuarial required contribution rate from the July 1, 2018 valuation to the July 1, 2019 valuation. The primary components of the change in the actuarial required contribution rate are shown in the following table.

Total Actuarial Required Contribution Rate, July 1, 2018	18.73%
- Change in normal cost rate	0.07%
- Contributions above the Actuarial Required Contribution	(0.17%)
- Investment experience	0.23%
- Liability experience	(0.32%)
- Payroll increase less than expected	0.01%
- Deferred vested methodology	(0.12%)
- Other experience	(0.01%)
Total Actuarial Required Contribution Rate, July 1, 2019	18.42%

A history of actuarial required contribution rates and any resulting additional required State contributions, whether or not actually contributed, is shown in the following table.

History of Required Contribution Rates and Additional State Funding

Fiscal Year	Required Contribution Rate	Additional State Contributions*
2020/2021	18.42%	$ 0
2019/2020	18.73%	0
2018/2019	19.31%	0
2017/2018	16.59%	0
2016/2017	17.03%	0
2015/2016	18.39%	0
2014/2015	19.94%	0
2013/2014	23.27%	48,092,426
2012/2013	20.45%	23,465,817
2011/2012	19.21%	18,871,705
2010/2011	17.24%	0
2009/2010	15.46%	0
2008/2009	15.64%	0
2007/2008	16.58%	0
2006/2007	17.95%	12,847,537
2005/2006	16.97%	15,415,949
2004/2005	15.26%	0
2003/2004	13.45%	0

* Excludes funding of Omaha Service Annuity.
Note: Information before Fiscal Year 2014/2015 was produced by prior actuary.

While there is a contribution margin for the current plan year, this should not be viewed an unnecessary or excess contribution. In order for the financing of the System on a fixed contribution rate basis to succeed, contributions above the actuarial required contribution rate must be made to offset years where the fixed contribution rate will be below the actuarial required contribution rate.

Risk Assessment and Disclosure

A typical retirement plan faces many different risks. The term "risk" is most commonly associated with an outcome with undesirable results. However, in the actuarial world risk can 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 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. Actuarial Standard of Practice Number 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. Risk evaluation is an important part of managing a defined benefit plan. Please see Section 6 of this report for an in-depth discussion of the specific risks facing the Nebraska School Retirement System.

SUMMARY OF PRINCIPAL RESULTS

		7/1/2019 Valuation		7/1/2018 Valuation	% Change
1. PARTICIPANT DATA					
Number of:					
Active Members					
- Tier 1		26,187		28,246	(7.3%)
- Tier 2		9,293		9,961	(6.7%)
- Tier 3		3,138		4,142	(24.2%)
- Tier 4		4,095		NA	NA
- Total		42,713		42,349	0.9%
Retired Members and Beneficiaries		24,959		24,169	3.3%
Disabled Members		313		317	(1.3%)
Inactive Members		23,924		23,109	3.5%
Total Members		91,909		89,944	2.2%
Projected Annual Salaries of Active Members	$	2,093,017,529	$	2,027,180,460	3.2%
Annual Retirement Payments for Retired Members, Disabled Members and Beneficiaries	$	620,813,778	$	588,189,542	5.5%
2. ASSETS AND LIABILITIES					
a. Market Value of Assets	$	12,214,947,023	$	11,636,298,903	5.0%
b. Actuarial Value of Assets		12,130,496,836		11,545,658,962	5.1%
c. Total Actuarial Accrued Liability		13,435,710,270		13,001,288,461	3.3%
d. Unfunded Actuarial Accrued Liability [c - b]	$	1,305,213,434	$	1,455,629,499	(10.3%)
e. Funded Ratio (Actuarial Value of Assets) [b / c]		90.29%		88.80%	1.7%
f. Funded Ratio (Market Value of Assets) [a / c]		90.91%		89.50%	1.6%
3. CONTRIBUTION RATES AS A PERCENT OF PAYROLL (excluding Omaha Service Annuity)					
Normal Cost		13.35%		13.28%	0.5%
Amortization of Unfunded Actuarial Accrued Liability		5.07%		5.45%	(7.0%)
Actuarial Required Contribution Rate		18.42%		18.73%	(1.7%)
Member Contribution Rate		(9.78%)		(9.78%)	0.0%
Employer Required Contribution Rate*		(9.88%)		(9.88%)	0.0%
State Contribution Rate		(2.00%)		(2.00%)	0.0%
Shortfall/(Margin)		(3.24%)		(2.93%)	10.6%
Additional Required State Contribution Amount	$	0	$	0	0.0%

* 101% of employee contribution rate

This report presents the actuarial valuation results of the School Retirement System as of July 1, 2019. This valuation was prepared at the request of the Public Employees Retirement Board of the Nebraska Public Employees Retirement System.

Please pay particular attention to our actuarial certification letter, where the guidelines employed in the preparation of this report are outlined. We also comment on the sources and reliability of both the data and the actuarial assumptions upon which our findings are based. Those comments are the basis for our certification that this report is complete and accurate to the best of our knowledge and belief.

A summary of the findings which result from this valuation is presented in the previous section. Section 3 describes the assets and investment experience of the System. Sections 4 and 5 describe how the obligations of the System are to be met under the actuarial cost method in use. Section 6 includes risk considerations related to the Nebraska Schools Retirement System. Section 7 includes some historical funding and other information.

This report includes several appendices:

- Appendix A Schedules of valuation data classified by various categories of members.
- Appendix B A summary of the current benefit structure, as determined by the provisions of governing law on July 1, 2019.
- 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.

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 July 1, 2019. 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 then leads to a method of determining the contributions needed by members and the employer in the future to balance the System's assets and liabilities.

Market Value of Assets

The current market value represents the "snapshot" or "cash-out" value of System assets as of the valuation date. In addition, the market value of assets provides a basis for measuring investment performance from time to time. Table 1 is a comparison, at market values, of System assets as of July 1, 2019 and July 1, 2018, in total and by investment category. Table 2 summarizes the change in the market value of assets from July 1, 2018 to July 1, 2019.

Actuarial Value of Assets

Due to the extreme volatility in the market value of assets, which represents the "cash-out" value of System assets on a single day, may not be the best measure of the System's ongoing ability to meet its obligations. To arrive at a suitable value of assets for the actuarial valuation, a technique for determining the actuarial value of assets is used which dampens swings in the market value while still indirectly recognizing market values. Under the asset smoothing methodology, the difference between the actual and assumed investment return on the market value of assets is recognized evenly over a five-year period.

Table 3 shows the development of the actuarial value of assets (AVA) as of the valuation date.

TABLE 1

SCHOOL RETIREMENT SYSTEM

MARKET VALUE OF ASSETS
by Investment Category

	June 30, 2019	June 30, 2018
1. Cash and Equivalents	$ 8,018,191	$ 8,320,931
2. Investments	12,431,150,489	11,918,124,448
3. Capital Assets	7,046	3,750
4. Receivables and Prepaids	1,599,427,495	1,126,032,799
5. Accounts Payable	(1,823,656,198)	(1,416,183,025)
6. Net Assets Available for Pension Benefits	$ 12,214,947,023	$ 11,636,298,903

TABLE 2

SCHOOL RETIREMENT SYSTEM

CHANGE IN MARKET VALUE OF ASSETS

	Nebraska School System	Omaha Service Annuity	Total
1. Market Value of Assets, July 1, 2018	$ 11,624,528,773	$ 11,770,130	$ 11,636,298,903
2. Contributions			
(a) Member (includes purchased service)	$ 197,095,568	$ 0	$ 197,095,568
(b) Employer	196,850,333	0	196,850,333
(c) State appropriations	40,543,609	1,248,297	41,791,906
(d) Total	$ 434,489,510	$ 1,248,297	$ 435,737,807
3. Expenditures			
(a) Benefit payments	$ 610,057,921	$ 1,565,355	$ 611,623,276
(b) Refunds	14,877,447	0	14,877,447
(c) Administrative expenses	3,215,740	0	3,215,740
(d) Total	$ 628,151,108	$ 1,565,355	$ 629,716,463
4. Investment Return, Net of Expenses			
(a) Investment income	$ 224,776,970	$ 220,401	$ 224,997,371
(b) Securities lending income	6,556,896	5,904	6,562,800
(c) Securities lending expense	(5,192,523)	(4,675)	(5,197,198)
(d) Net appreciation/(depreciation) in fair value of investments	545,727,042	503,246	546,230,288
(e) Other	33,515	0	33,515
(f) Net investment return	$ 771,901,900	$ 724,876	$ 772,626,776
5. Market Value of Assets, June 30, 2019 [1 + 2(d) - 3(d) + 4(f)]	$ 12,202,769,075	$ 12,177,948	$ 12,214,947,023
6. Rate of Return, Net of Expenses*			6.7%

* Annual money-weighted rate of return, net of investment expense, as reported by the Nebraska Investment Council.

TABLE 3

SCHOOL RETIREMENT SYSTEM

DEVELOPMENT OF ACTUARIAL VALUE OF ASSETS

	Year End							
		6/30/2016		6/30/2017		6/30/2018		6/30/2019
1. Actuarial Value of Assets, Beginning of Year	$	9,485,594,650	$	10,045,925,478	$	10,810,539,558	$	11,545,658,962
2. Unrecognized Return Beginning of Year	$	200,221,403	$	(347,340,668)	$	66,321,949	$	90,639,941
3. Contributions During Year								
(a) Member	$	178,613,265	$	186,176,743	$	191,483,632	$	197,095,568
(b) Employer		178,608,695		184,903,366		190,657,058		196,850,333
(c) State appropriations		37,916,718		39,031,798		40,582,547		41,791,906
(d) Total	$	395,138,678	$	410,111,907	$	422,723,237	$	435,737,807
4. Benefit Payments	$	528,499,067	$	554,369,720	$	587,984,401	$	626,500,723
5. Expected Investment Income on (1), (2), (3) and (4)*	$	771,391,900	$	772,071,965	$	811,513,641	$	867,652,575
6. Actual Return on Market Value, Net of All Expenses	$	146,129,146	$	1,322,534,510	$	924,698,560	$	769,411,036
7. Return to be Spread, End of Year [6 - 5]	$	(625,262,754)	$	550,462,545	$	113,184,919	$	(98,241,539)

* Based on the investment return assumption applicable at the beginning of the year. The assumption was 8.0% through year end 6/30/2017 and 7.5% thereafter.

TABLE 3
(continued)

SCHOOL RETIREMENT SYSTEM

DEVELOPMENT OF ACTUARIAL VALUE OF ASSETS

8. Return to be Spread

Plan Year Ending	Return to be Spread	Unrecognized Percent	Unrecognized Return
2019	($98,241,539)	80%	($78,593,231)
2018	113,184,919	60%	67,910,951
2017	550,462,545	40%	220,185,018
2016	(625,262,754)	20%	(125,052,551)
			$84,450,187

9. Total Market Value of Assets as of July 1, 2019	$12,214,947,023
10. Total Actuarial Value of Assets as of July 1, 2019 [9 - 8]	$12,130,496,836
11. Asset Ratios	
(a) Actuarial Value to Market Value [10 / 9]	99.31%
(b) Market Value to Actuarial Value [9 / 10]	100.70%

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 School Retirement System as of the valuation date, July 1, 2019. In this section, the discussion will focus on the commitments (future benefit payments) of the System, which are referred to as its liabilities.

Table 4 contains an analysis of the actuarial present value of all future benefits (PVFB) for contributing members, inactive members, retirees and their beneficiaries.

The liabilities summarized in Table 4 include the actuarial present value of all future benefits expected to be paid with respect to each member. For an active member, this value includes the measurement of both benefits already earned and future benefits to be earned. For all members, active and retired, the value extends over benefits earnable and payable for the rest of their lives and for the lives of the surviving beneficiaries.

All liabilities reflect the benefit provisions in place as of July 1, 2019.

Actuarial Accrued Liability

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

(1) that which is attributable to the past and

(2) that which is attributable to the future.

Actuarial terminology calls the part attributable to the past the "past service liability" or the "actuarial accrued liability." The portion allocated to the future is known as the present value of future normal costs, with the specific piece of it allocated to the current year being called the "normal cost." Table 5 contains the calculation of actuarial accrued liability for the System. The Entry Age Normal actuarial cost method is used to develop the actuarial accrued liability.

TABLE 4

SCHOOL RETIREMENT SYSTEM

PRESENT VALUE OF FUTURE BENEFITS (PVFB)
AS OF JULY 1, 2019

	Nebraska School System	Omaha Service Annuity	Total
1. Active Employees			
(a) Retirement	$ 7,691,776,139	$ 19,096,975	$ 7,710,873,114
(b) Withdrawal	540,004,858	1,742,749	541,747,607
(c) Death	78,866,611	134,067	79,000,678
(d) Disability	54,244,089	212,887	54,456,976
(e) Total	$ 8,364,891,697	$ 21,186,678	$ 8,386,078,375
2. Inactive Vested Members	322,098,774	1,579,087	323,677,861
3. Inactive Nonvested Members	49,826,657	0	49,826,657
4. Disabled Members	48,164,257	0	48,164,257
5. Retirees	6,888,091,623	0	6,888,091,623
6. Beneficiaries	261,220,753	0	261,220,753
7. Total Present Value of Future Benefits [1(e) + 2 + 3 + 4 + 5 + 6]	$ 15,934,293,761	$ 22,765,765	$ 15,957,059,526

TABLE 5

SCHOOL RETIREMENT SYSTEM

ACTUARIAL ACCRUED LIABILITY
AS OF JULY 1, 2019

	Nebraska School System	Omaha Service Annuity	Total
1. Present Value of Future Benefits for Active Members	$ 8,364,891,697	$ 21,186,678	$ 8,386,078,375
2. Present Value of Future Normal Costs for Active Members			
(a) Retirement benefit	$ 1,913,426,075	$ 4,356,145	$ 1,917,782,220
(b) Termination benefit	557,377,734	1,361,839	558,739,573
(c) Pre-Retirement death benefit	25,884,292	38,242	25,922,534
(d) Disability benefit	18,825,028	79,901	18,904,929
(e) Total	$ 2,515,513,129	$ 5,836,127	$ 2,521,349,256
3. Actuarial Accrued Liability for Active Members [1 - 2(e)]	$ 5,849,378,568	$ 15,350,551	$ 5,864,729,119
4. Actuarial Accrued Liability for Inactive Members	7,569,402,064	1,579,087	7,570,981,151
5. Total Actuarial Accrued Liability [3 + 4]	13,418,780,632	16,929,638	13,435,710,270
6. Actuarial Value of Assets	12,118,403,082	12,093,754	12,130,496,836
7. Unfunded Actuarial Accrued Liability [5- 6]	$ 1,300,377,550	$ 4,835,884	$ 1,305,213,434
8. Funded Ratio [6 / 5]			90.29%

TABLE 6

SCHOOL RETIREMENT SYSTEM

ACTUARIAL BALANCE SHEET
AS OF JULY 1, 2019

ASSETS

Actuarial Value of Assets			$	12,130,496,836
Unfunded Actuarial Accrued Liability				1,305,213,434
Present Value of Future Normal Costs				2,521,349,256
Total Assets			$	15,957,059,526

LIABILITIES

Present Value of Future Benefits				
Active members				
Retirement	$	7,691,776,139		
Withdrawal		540,004,858		
Death		78,866,611		
Disability		54,244,089		
Total			$	8,364,891,697
Inactive members				
Currently receiving benefits		7,197,476,633		
Not currently receiving benefits		371,925,431		
Total			$	7,569,402,064
Omaha Service Annuity				
Active		21,186,678		
Inactive vested		1,579,087		
Total			$	22,765,765
Total Liabilities			$	15,957,059,526

TABLE 7

SCHOOL RETIREMENT SYSTEM

ACTUARIAL GAIN/(LOSS)

Liabilities

1. Actuarial Accrued Liability as of July 1, 2018	$	13,001,288,461
2. Normal Cost for Plan Year Ending June 30, 2019		249,503,325
3. Benefit Payments During Plan Year Ending June 30, 2019		(626,500,723)
4. Interest at 7.5%		972,694,774
5. Deferred Vested Methodology		(43,194,151)
6. Expected Actuarial Accrued Liability as of July 1, 2019	$	13,553,791,686
7. Actuarial Accrued Liability as of July 1, 2019	$	13,435,710,270

Assets

8. Actuarial Value of Assets as of July 1, 2018	$	11,545,658,962
9. Contributions During Plan Year Ending June 30, 2019		435,737,807
10. Benefit Payments During Plan Year Ending June 30, 2019		(626,500,723)
11. Interest at 7.5%		860,854,579
12. Expected Actuarial Value of Assets as of July 1, 2019	$	12,215,750,625
13. Actuarial Value of Assets as of July 1, 2019	$	12,130,496,836

Gain / (Loss)

14. Actuarial Gain / (Loss) on Liabilities [6 - 7]	$	118,081,416
15. Actuarial Gain / (Loss) on Assets [13 - 12]	$	(85,253,789)
16. Total Actuarial Gain / (Loss) for Plan Year Ending June 30, 2019 [14 + 15]	$	32,827,627

TABLE 8

SCHOOL RETIREMENT SYSTEM

GAIN/(LOSS) ANALYSIS BY SOURCE

Liability Sources		Gain/(Loss)
Retirement	$	(3,879,000)
Termination		(20,698,000)
Disability		(543,000)
Mortality		9,436,000
Salary		90,126,000
New Entrants/Rehires		(25,843,000)
COLA		53,719,000
Inactive Vested Interest Credit		14,729,000
Miscellaneous		1,035,000
Total Liability Gain/(Loss)	$	118,082,000
Asset Gain/(Loss)	$	(85,254,000)
Net Actuarial Gain/(Loss)	$	32,828,000

TABLE 9

SCHOOL RETIREMENT SYSTEM

PROJECTED BENEFIT PAYMENTS
AS OF JULY 1, 2019

Plan Year Ending June 30	Current Active Members	Current In-Pay Members	Total
2020	$ 55,504,000	$ 622,865,000	$ 678,369,000
2021	89,382,000	629,948,000	719,330,000
2022	124,405,000	636,806,000	761,211,000
2023	160,720,000	643,014,000	803,734,000
2024	198,320,000	648,475,000	846,795,000
2025	237,410,000	652,696,000	890,106,000
2026	277,935,000	655,774,000	933,709,000
2027	320,329,000	657,770,000	978,099,000
2028	364,465,000	658,212,000	1,022,677,000
2029	410,841,000	657,518,000	1,068,359,000
2030	459,587,000	655,197,000	1,114,784,000
2031	510,796,000	651,237,000	1,162,033,000
2032	564,679,000	645,620,000	1,210,299,000
2033	620,920,000	637,871,000	1,258,791,000
2034	678,795,000	627,779,000	1,306,574,000
2035	737,960,000	615,769,000	1,353,729,000
2036	798,923,000	601,873,000	1,400,796,000
2037	862,673,000	585,477,000	1,448,150,000
2038	928,565,000	566,521,000	1,495,086,000
2039	996,226,000	544,880,000	1,541,106,000
2040	1,065,555,000	521,069,000	1,586,624,000
2041	1,135,974,000	494,863,000	1,630,837,000
2042	1,206,880,000	466,955,000	1,673,835,000
2043	1,278,012,000	437,537,000	1,715,549,000
2044	1,348,678,000	406,909,000	1,755,587,000
2045	1,418,184,000	375,426,000	1,793,610,000
2046	1,485,660,000	343,732,000	1,829,392,000
2047	1,550,706,000	312,090,000	1,862,796,000
2048	1,611,868,000	281,159,000	1,893,027,000
2049	1,668,365,000	251,195,000	1,919,560,000

Note: Cash flows are the expected future non-discounted payments to current members. These numbers exclude refund payouts to any current vested or nonvested inactives and assume future retirees elect the normal form of payment. Also excludes Omaha appropriations.

The previous two sections were devoted to a discussion of the assets and liabilities of the System. A comparison of Tables 3 and 4 indicates that current assets fall short of meeting the present value of future benefits (total liability). This is expected in all but a completely closed fund, where no further contributions are anticipated. In an active system, there will almost always be a difference between the actuarial value of assets and total liabilities. This deficiency has to be made up by future contributions and investment returns. An actuarial valuation sets out a schedule of future contributions that will deal with this deficiency in an orderly fashion.

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

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

Description of Contribution Rate Components

The Entry Age Normal (EAN) actuarial cost method is used for the valuation. Under that method, the normal cost for each year from entry age to assumed exit age is a constant percentage of the member's year by year projected compensation. The portion of the present value of future benefits not provided by the present value of future normal costs is the actuarial accrued liability. The unfunded actuarial accrued liability/(surplus) represents the difference between the actuarial accrued liability and the actuarial value of assets as of the valuation date. The unfunded actuarial accrued liability is calculated each year and reflects experience gains and losses.

In general, contributions are computed in accordance with a level percent-of-payroll funding objective. The contribution rate based on the July 1, 2019 actuarial valuation will be used to determine the actuarial required employer contribution rate to the School Retirement System for the plan year ending June 30, 2020. Any State contributions are expected to be deposited on July 1, 2020 (State fiscal year 2021). In this context, the term "contribution rate" means the percentage, which is applied to a particular active member payroll to determine the actual employer contribution amount (i.e., in dollars) for the group.

Contribution Rate Summary

In Table 10 the amortization payment related to the unfunded actuarial accrued liability, as of July 1, 2019, is developed. Table 11 develops the actuarial required contribution rate for the System and the amount of required State contributions.

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

TABLE 10

SCHOOL RETIREMENT SYSTEM

SCHEDULE OF AMORTIZATION BASES

Amortization Bases	Original Amount	July 1, 2019 Remaining Payments	Date of Last Payment	Outstanding Balance as of July 1, 2019	Annual Contribution*
2006 UAAL Base	$ 845,226,412	17	7/1/2036	$ 796,495,661	$ 64,671,958
2007 UAAL Base	(163,793,512)	18	7/1/2037	(158,891,315)	(12,391,936)
2008 UAAL Base	54,258,200	19	7/1/2038	54,038,408	4,060,127
2009 UAAL Base	370,759,908	20	7/1/2039	378,215,841	27,449,147
2010 UAAL Base	427,955,512	21	7/1/2040	446,217,523	31,356,265
2011 UAAL Base	287,237,896	22	7/1/2041	305,548,968	20,834,476
2012 UAAL Base	497,977,442	23	7/1/2042	539,529,399	35,767,525
2013 Experience Base	57,652,106	24	7/1/2043	63,523,764	4,101,603
2014 Experience Base	(514,341,070)	25	7/1/2044	(558,620,509)	(35,187,032)
2015 Experience Base	(534,298,489)	26	7/1/2045	(571,147,323)	(35,148,588)
2016 Experience Base	(140,025,390)	27	7/1/2046	(147,121,368)	(8,857,737)
2017 Assumption Change Base	853,085,886	28	7/1/2047	879,871,657	51,891,998
2017 Experience Base	(361,516,559)	28	7/1/2047	(372,867,703)	(21,990,537)
2018 Experience Base	(201,647,779)	29	7/1/2048	(204,899,342)	(11,851,156)
2019 Experience Base	(144,680,227)	30	7/1/2049	(144,680,227)	(8,215,540)
Total				**$ 1,305,213,434**	**$ 106,490,573**

* Contribution amount reflects mid-year timing.

1. Total UAAL Amortization Payments	$ 106,490,573
2. Projected Payroll for FY 2020	$ 2,093,017,529
3. UAAL Amortization Payment Rate	5.09%

Note: Beginning with the July 1, 2017 valuation, the payments on each UAAL base are determined as a level-percent of payroll using a 3.50% payroll growth assumption.

TABLE 11

SCHOOL RETIREMENT SYSTEM

ACTUARIAL REQUIRED CONTRIBUTION FOR PLAN YEAR ENDING JUNE 30, 2020 and DEVELOPMENT OF ADDITIONAL STATE CONTRIBUTION

1. Normal Cost - Nebraska School System				
(a) Amount			$	258,316,227
(b) Expected pay for current actives				1,934,292,894
(c) Normal Cost Rate as % of pay				13.35%
2. Amortization Cost - Nebraska School System				
(a) Amount				106,096,020
(b) Expected pay for all actives				2,093,017,529
(c) Amortization Rate as % of pay				5.07%
3. Total Actuarial Required Contribution Rate - Nebraska School System [1(c) + 2(c)]				18.42%
4. Statutory Contribution Rates - Nebraska School System				
(a) Member				9.78%
(b) Employer (101% of Member)				9.88%
(c) State				2.00%
(d) Total				21.66%
5. Shortfall/(Margin) - Nebraska School System [3 - 4(d)]				(3.24%)
6. Expected pay for all actives for FY 2020				2,093,017,529
7. Additional Required State Contribution payable July 1, 2020 [5 * 6 , but not less than 0]			$	0
8. State Contribution due July 1, 2020				
(a) State Statutory Amount due July 1, 2020 [2% x Expected pay]			$	41,860,351
(b) Omaha Service Annuity due July 1, 2020				
(i) Normal Cost amount	$	807,050		
(ii) Amortization amount		409,081		
(iii) Total amount				1,216,131
(d) Additional Contribution				0
(e) Total			$	43,076,482

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, is first applicable for the July 1, 2019 actuarial valuation for the Nebraska School Retirement System (System).

A typical retirement plan faces many different risks, but the greatest risk is the inability to make benefit payments when due. If plan assets are depleted, benefits may not be paid which could create legal and litigation risk or the plan could become "pay as you go". The term "risk" is most commonly associated with an outcome with undesirable results. However, in the actuarial world, risk can be translated as uncertainty. 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 actuarial valuation process uses many actuarial assumptions to project how future contributions and investment returns will meet the cash flow needs for 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.

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.

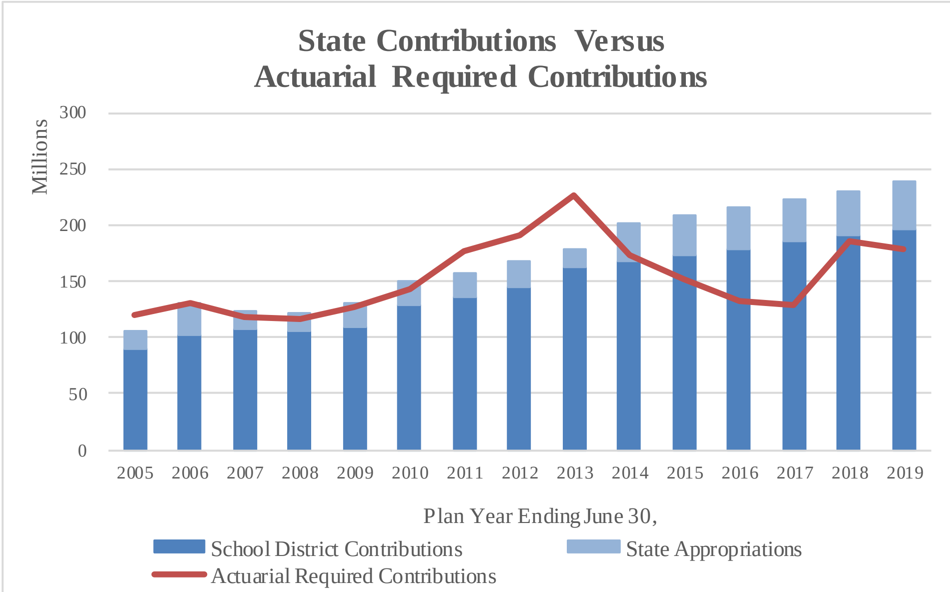
There are a number of risks inherent in the funding of a defined benefit plan. These include:

- economic risks, such as investment return 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 too high for the plan sponsor/employer to pay; and
- external risks such as the regulatory and political environment.

Although the external risks do exist, ASOP 51 does not require the actuary to opine on those risks, and so no discussion is included here.

Actual vs Actuarial Contributions

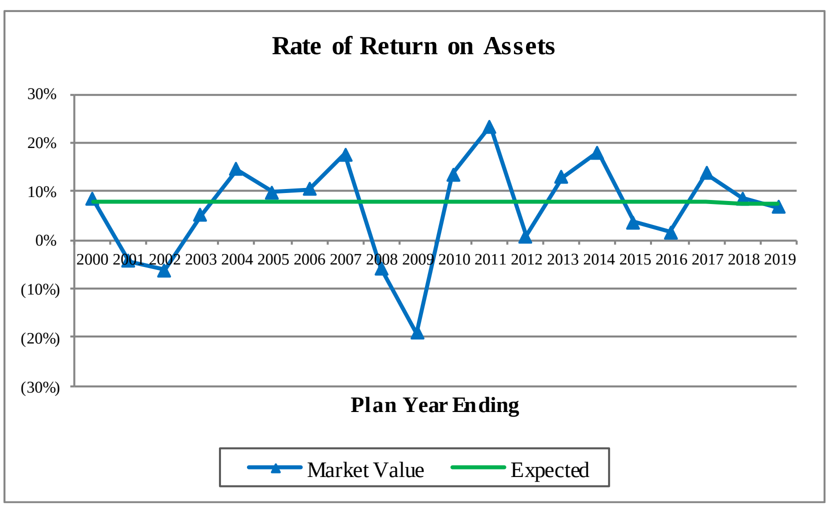
Employees contribute a fixed contribution rate of 9.78% of pay, which is set by statute, and the School Districts contribute at a rate equal to 101% of the employees' rate. In addition, the State contributes 2.00% of pay (1.00% of pay prior to July 1, 2014). The State is also required by Nebraska statutes to make additional contributions if the regular, payroll-related contributions are insufficient to meet the actuarial required contribution for the plan year. The additional State contribution for each plan year is made on the July 1 following the plan year-end. There is a direct correlation between healthy, well-funded retirement plans and consistent contributions equal to the full actuarial contribution rate each year. As the following graph shows, contributions equal to or more than the full actuarial contribution have been made in 11 of the last 15 years.



One of the positive factors regarding the funding of the School Retirement System is that contributions at least equal to the actuarial required contribution have been made in most years. As a result, the funded ratio of the System is strong and improving.

Investment Return Risk

The most significant risk factor for most public retirement systems, including the Nebraska School Retirement System, is investment return because of the volatility of returns and the size of plan assets compared to payroll (see Table 12). A perusal of historical returns over 10-20 years reveals that the actual return each year is rarely close to the assumed return. This is to be expected, given the underlying capital market assumptions and the System's asset allocation, but it creates significant contribution risk. As Table 12 illustrates, a return that varies from the 7.5% assumption by 10.0% (-2.5% or 17.5%) equates to 58% of payroll. Even with asset smoothing and amortization of the actuarial experience loss over 30 years, the impact on the actuarial contribution rate is dramatic (3.32% once the experience is fully recognized).



Contribution Risks

The actuarial required contribution, determined this year, based on the snapshot of the System taken on the valuation date of July 1, will change each year as the deferred investment experience is recognized and other experience (both investment and demographic) impacts the System. Therefore, the actuarial contribution rate is expected to change each year. To the extent the difference between the actual and expected experience is significant, the change in the actuarial contribution rate is also expected to change significantly. This volatility in the actuarial contribution rate can result in extreme volatility in the additional State contribution, as illustrated in the following table.

Return on Actuarial Value of Assets	2% Loss (5.5% Return)	5% Loss (2.5% Return)	10% Loss (-2.5% Return)
Actuarial Required Contribution Rate	19.08%	20.08%	21.74%
Member Contribution Rate	(9.78%)	(9.78%)	(9.78%)
School District Contribution Rate	(9.88%)	(9.88%)	(9.88%)
State Contribution Rate	(2.00%)	(2.00%)	(2.00%)
Additional Required State Contribution Rate	(2.58%)	(1.58%)	0.08%
Expected pay for FY 2020	$2,093,017,529	$2,093,017,529	$2,093,017,529
Additional Required State Contribution Amount	$0	$0	$1,674,414

The July 1, 2019 valuation results indicate that the current statutory contribution rates are 3.24% above the actuarial required contribution rate, indicating a healthy contribution rate margin. However, this margin assumes all actuarial assumptions will be met in the future, including the assumed investment return of 7.50%. To the extent the difference between the actual and expected investment experience is significant, the change in the actuarial contribution rate is also expected to change significantly. The table below illustrates the unfavorable investment experience over various time periods that can be absorbed without creating additional contributions by the State once the loss is fully recognized. All other assumptions are assumed to be met for purposes of this modeling.

Years	Return
1	-3.50%
2	1.75%
3	3.50%
4	4.50%
5	5.00%
10	6.25%

Demographic Risks

A key demographic risk for all retirement systems, including the Nebraska School 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, which would also be 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 accrued liability is amortized as a level percentage of payroll so the UAAL payment schedule reflects an increasing dollar amount of payments over time, in anticipation of increasing payroll. This creates demographic risk of the active membership decreasing or actual salary increases, and therefore payroll, not increasing as assumed. Because there are many different employers who participate in the School Retirement System, the risk of a significant decline in the active membership is likely small. However, some widespread outsourcing of jobs that are now covered by the System could have an adverse impact on the System's funding. In addition, lower salary increases than assumed will results in lower covered payroll. When that occurs, the UAAL contribution rate is higher than expected even if the dollar amount of the payment is the same as scheduled.

The following exhibits summarize some historical information that helps indicate how certain key risk metrics have changed over time. Many are due to the maturing of the retirement system.

TABLE 12

SCHOOL RETIREMENT SYSTEM

HISTORICAL 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.

Actuarial Valuation Date	Market Value of Assets	Covered Payroll	Asset Volatility Ratio	Increase in ACR with a Return 10% Lower than Assumed*
July 1, 2000	$4,422,099,251	$933,339,432	4.74	2.69%
July 1, 2001	4,270,376,860	995,348,331	4.29	2.44%
July 1, 2002	4,041,641,782	1,065,515,857	3.79	2.15%
July 1, 2003	4,282,430,841	1,138,776,241	3.76	2.14%
July 1, 2004	4,918,013,255	1,170,601,127	4.20	2.38%
July 1, 2005	5,393,380,574	1,214,227,197	4.44	2.52%
July 1, 2006	5,974,750,945	1,247,684,378	4.79	2.72%
July 1, 2007	7,024,856,413	1,325,616,322	5.30	3.01%
July 1, 2008	6,578,300,402	1,389,124,819	4.74	2.69%
July 1, 2009	5,265,649,707	1,481,568,432	3.55	2.02%
July 1, 2010	5,940,401,645	1,543,930,532	3.85	2.19%
July 1, 2011	7,263,954,832	1,590,225,983	4.57	2.60%
July 1, 2012	7,246,311,781	1,593,184,929	4.55	2.58%
July 1, 2013	8,092,953,030	1,735,175,956	4.66	2.65%
July 1, 2014	9,450,981,723	1,774,679,549	5.33	3.03%
July 1, 2015	9,685,816,053	1,845,979,997	5.25	2.98%
July 1, 2016	9,698,584,810	1,901,967,362	5.10	2.90%
July 1, 2017	10,876,861,507	1,966,968,901	5.53	3.14%
July 1, 2018	11,636,298,903	2,027,180,460	5.74	3.26%
July 1, 2019	12,214,947,023	2,093,017,529	5.84	3.32%

Note: Years prior to July 1, 2013 were provided by the prior actuary.

*The impact of asset smoothing is not reflected in the impact on the Actuarial Contribution Rate (ACR). Current year assumptions are used for all years shown.

The assets at July 1, 2019 are about six times payroll, so underperforming the investment return assumption by 10.00% (i.e., earn -2.50% for one year) creates an actuarial loss of about $1.22 billion, or 58% of payroll. While the actual impact in the first year is mitigated by the asset smoothing method and amortization of the UAAL, this illustrates the significant contribution risk associated with volatile investment returns.

TABLE 13

SCHOOL RETIREMENT SYSTEM

HISTORICAL CASH FLOWS

Plans with negative cash flows will experience increased sensitivity to investment return volatility. Cash flows, for this purpose, are measured as contributions less benefit payments. If the System has negative cash flows and then experiences returns below the assumed rate, there are fewer assets to be reinvested to earn the higher returns that typically follow. While any negative cash flow will produce such a result, it is typically a negative cash flow of more than 5% of MVA that may cause significant concerns. The System has had negative cash flows of between 1.00% and 1.50% in recent years, a level consistent with funded mature plans.

Year End	Market Value of Assets (MVA)	Contributions	Benefit Payments	Net Cash Flow	Net Cash Flow as a Percent of MVA
6/30/2000	$4,422,099,251	$153,710,685	$113,729,986	$39,980,699	0.90%
6/30/2001	4,270,376,860	168,140,766	130,932,390	37,208,376	0.87%
6/30/2002	4,041,641,782	174,377,049	139,927,582	34,449,467	0.85%
6/30/2003	4,282,430,841	184,361,384	154,339,488	30,021,896	0.70%
6/30/2004	4,918,013,255	190,389,662	173,370,820	17,018,842	0.35%
6/30/2005	5,393,380,574	197,738,577	191,830,379	5,908,198	0.11%
6/30/2006	5,974,750,945	234,369,665	215,191,900	19,177,765	0.32%
6/30/2007	7,024,856,413	232,011,299	242,625,499	(10,614,200)	(0.15%)
6/30/2008	6,578,300,402	229,163,204	273,432,511	(44,269,307)	(0.67%)
6/30/2009	5,265,649,707	241,497,984	300,771,337	(59,273,353)	(1.13%)
6/30/2010	5,940,401,645	280,280,640	320,509,700	(40,229,060)	(0.68%)
6/30/2011	7,263,954,832	295,505,322	351,083,806	(55,578,484)	(0.77%)
6/30/2012	7,246,311,781	316,058,643	391,133,707	(75,075,064)	(1.04%)
6/30/2013	8,092,953,030	343,844,729	427,885,060	(84,040,331)	(1.04%)
6/30/2014	9,450,981,723	372,524,092	466,161,224	(93,637,132)	(0.99%)
6/30/2015	9,685,816,053	384,302,638	502,190,816	(117,888,178)	(1.22%)
6/30/2016	9,698,584,810	395,138,678	528,499,067	(133,360,389)	(1.38%)
6/30/2017	10,876,861,507	410,111,907	554,369,720	(144,257,813)	(1.33%)
6/30/2018	11,636,298,903	422,723,237	587,984,401	(165,261,164)	(1.42%)
6/30/2019	12,214,947,023	435,737,807	626,500,723	(190,762,916)	(1.56%)

Note: Years prior to 6/30/2013 were provided by the prior actuary.

TABLE 13
(continued)

SCHOOL RETIREMENT SYSTEM

HISTORICAL CASH FLOWS

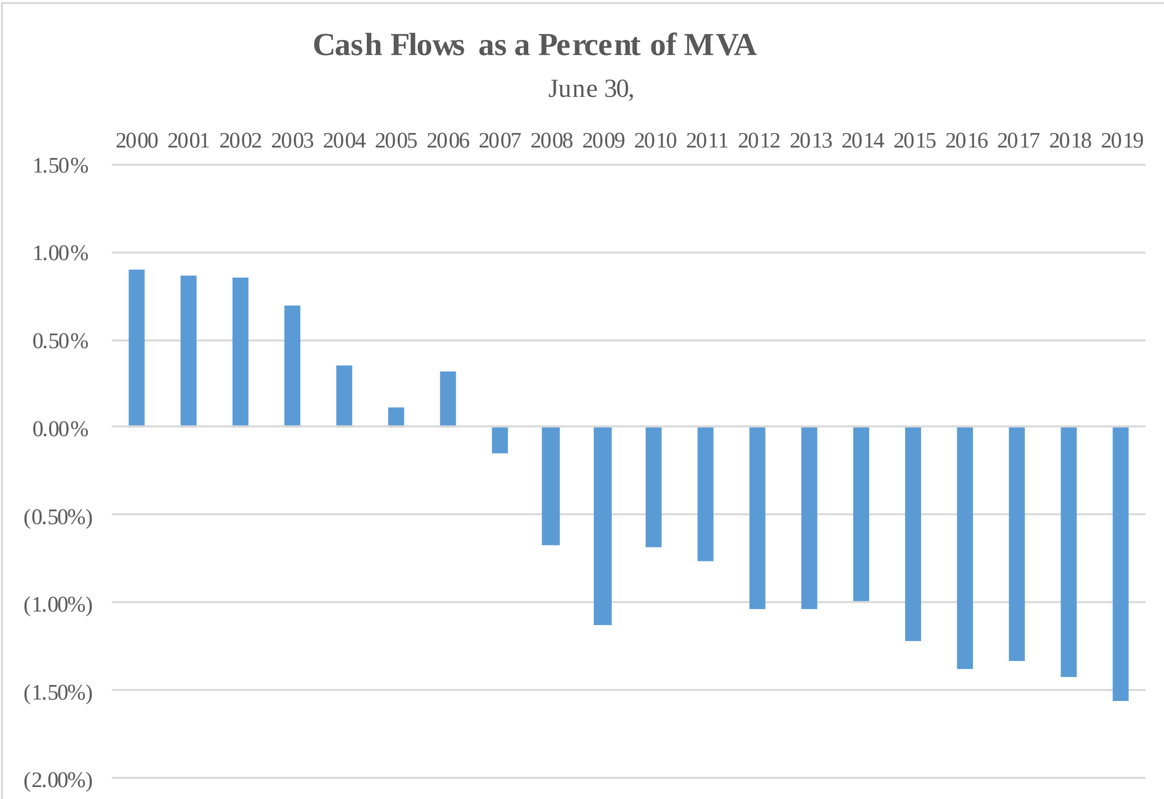


TABLE 14

SCHOOL 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 an increasing ratio of retirees to active members (see Table 15) and a growing percentage of retiree liability (see table below). With more of the total liability residing with retirees, investment volatility has a greater impact on the funding of the system because it is more difficult to restore the system financially after losses occur when there is comparatively less payroll over which to spread costs.

Actuarial Valuation Date	Retiree Liability (a)	Total Actuarial Liability (b)	Retiree Percentage (a) / (b)
July 1, 2002	1,568,042,886	5,055,867,993	31.0%
July 1, 2003	1,777,141,788	5,464,572,876	32.5%
July 1, 2004	2,123,696,982	5,868,266,970	36.2%
July 1, 2005	2,199,034,866	6,234,657,830	35.3%
July 1, 2006	2,476,199,326	6,584,275,406	37.6%
July 1, 2007	2,721,307,439	7,070,308,583	38.5%
July 1, 2008	3,109,583,957	7,654,536,359	40.6%
July 1, 2009	3,265,413,786	8,092,339,318	40.4%
July 1, 2010	3,585,655,502	8,542,119,000	42.0%
July 1, 2011	3,947,029,052	9,039,744,995	43.7%
July 1, 2012	4,584,703,061	9,609,157,134	47.7%
July 1, 2013	4,878,220,586	9,984,898,998	48.9%
July 1, 2014	5,257,094,210	10,426,112,609	50.4%
July 1, 2015	5,518,660,659	10,778,303,637	51.2%
July 1, 2016	5,871,061,908	11,207,298,169	52.4%
July 1, 2017	6,471,922,158	12,466,139,649	51.9%
July 1, 2018	6,876,106,828	13,001,288,461	52.9%
July 1, 2019	7,197,476,633	13,435,710,270	53.6%

Note: Years prior to July 1, 2013 were provided by the prior actuary.

TABLE 15

SCHOOL RETIREMENT SYSTEM

ACTIVE AND RETIREE MEMBERSHIP

Valuation Date July 1,	Number of Active Members	Number of Retired Members	Active/ Retired
2000	34,718	10,375	3.35
2001	35,589	10,929	3.26
2002	35,974	11,360	3.17
2003	36,779	11,840	3.11
2004	36,353	12,733	2.86
2005	36,042	13,052	2.76
2006	36,414	13,727	2.65
2007	37,152	14,408	2.58
2008	37,832	15,339	2.47
2009	39,231	15,949	2.46
2010	39,764	16,912	2.35
2011	39,886	17,814	2.24
2012	39,477	19,097	2.07
2013	40,314	19,790	2.04
2014	40,462	20,889	1.94
2015	40,994	21,836	1.88
2016	41,443	22,857	1.81
2017	41,943	23,654	1.77
2018	42,349	24,486	1.73
2019	42,713	25,272	1.69

Note: Years prior to July 1, 2013 were provided by the prior actuary.

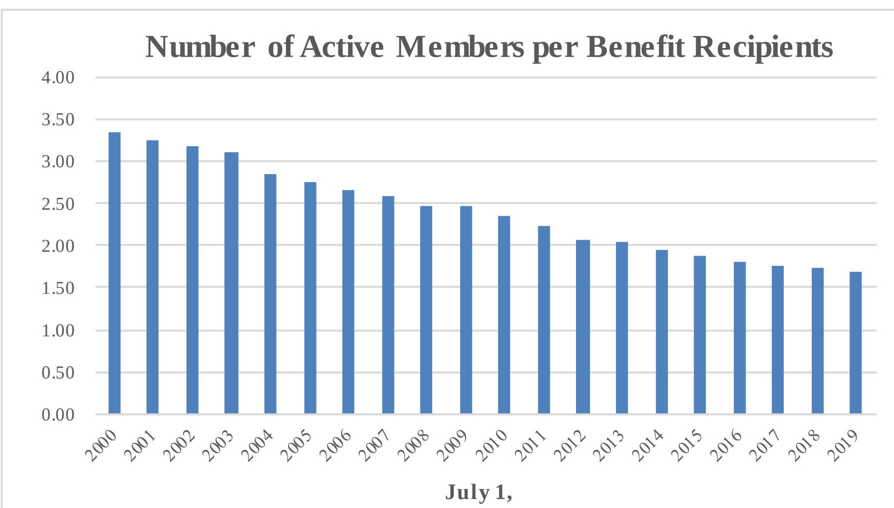


TABLE 16

SCHOOL RETIREMENT SYSTEM

COMPARISON OF VALUATION RESULTS UNDER ALTERNATE INVESTMENT RETURN ASSUMPTIONS

This exhibit compares the key July 1, 2019 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 are unchanged for purposes of this analysis.

Investment Return Assumption	**7.00%**	**7.25%**	**7.50%**	**7.75%**	**8.00%**
Actuarial Value of Assets ($ in thousands)	$12,130,497	$12,130,497	$12,130,497	$12,130,497	$12,130,497
Actuarial Accrued Liability	$14,317,360	$13,865,875	$13,435,710	$13,025,668	$12,634,625
Unfunded Actuarial Accrued Liability*	$2,186,863	$1,735,378	$1,305,213	$895,171	$504,128
Funded Ratio	84.73%	87.48%	90.29%	93.13%	96.01%
Contributions					
Normal Cost Rate	14.99%	14.14%	13.35%	12.63%	11.95%
UAAL Amortization Rate	7.15%	6.11%	5.07%	4.01%	2.95%
Total Actuarial Required Contribution Rate	22.14%	20.25%	18.42%	16.64%	14.90%
Member Contribution Rate	(9.78%)	(9.78%)	(9.78%)	(9.78%)	(9.78%)
Employer Required Contribution Rate	(9.88%)	(9.88%)	(9.88%)	(9.88%)	(9.88%)
State Contribution Rate	(2.00%)	(2.00%)	(2.00%)	(2.00%)	(2.00%)
Contribution Shortfall/(Margin)	0.48%	(1.41%)	(3.24%)	(5.02%)	(6.76%)

Note: All other assumptions are unchanged for purposes of this sensitivity analysis.
*May not add due to rounding.

This section of the report provides a historical perspective on the System's funding and contribution practices, along with other information that may be of interest.

TABLE 17

SCHOOL RETIREMENT SYSTEM

HISTORICAL FUNDING INFORMATION

SCHEDULE OF FUNDING PROGRESS

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded Actuarial Accrued Liability (UAAL) (b - a)	Funded Ratio (a / b)	Covered Payroll (c)	UAAL as a % of Covered Payroll [(b - a) / c]
June 30, 2003	$4,952,902,870	$5,464,572,876	$511,670,006	90.6%	$1,138,776,241	44.9%
June 30, 2004	5,118,011,165	5,868,266,970	750,255,805	87.2%	1,170,601,127	64.1%
June 30, 2005	5,335,197,409	6,234,657,830	899,460,421	85.6%	1,214,227,197	74.1%
June 30, 2006	5,739,048,994	6,584,275,406	845,226,412	87.2%	1,247,684,378	67.7%
June 30, 2007	6,396,336,863	7,070,308,583	673,971,720	90.5%	1,325,616,322	50.8%
June 30, 2008	6,932,918,638	7,654,536,359	721,617,721	90.6%	1,389,124,819	51.9%
June 30, 2009	7,007,581,825	8,092,339,318	1,084,757,493	86.6%	1,481,568,432	73.2%
June 30, 2010	7,040,908,599	8,542,119,000	1,501,210,401	82.4%	1,543,930,532	97.2%
June 30, 2011	7,267,497,259	9,039,744,995	1,772,247,736	80.4%	1,590,225,983	111.4%
June 30, 2012	7,358,964,135	9,609,157,134	2,250,192,999	76.6%	1,593,184,929	141.2%
June 30, 2013	7,703,084,507	9,984,898,998	2,281,814,491	77.1%	1,735,175,956	131.5%
June 30, 2014	8,622,023,999	10,426,112,609	1,804,088,610	82.7%	1,774,679,549	101.7%
June 30, 2015	9,485,594,650	10,778,303,637	1,292,708,987	88.0%	1,845,979,997	70.0%
June 30, 2016	10,045,925,478	11,207,298,169	1,161,372,691	89.6%	1,901,967,362	61.1%
June 30, 2017	10,810,539,558	12,466,139,649	1,655,600,091	86.7%	1,966,968,901	84.2%
June 30, 2018	11,545,658,962	13,001,288,461	1,455,629,499	88.8%	2,027,180,460	71.8%
June 30, 2019	12,130,496,836	13,435,710,270	1,305,213,434	90.3%	2,093,017,529	62.4%

Note: Information before 2013 was produced by the prior actuary.

TABLE 18

SCHOOL RETIREMENT SYSTEM

HISTORICAL FUNDING INFORMATION

SCHEDULE OF CONTRIBUTIONS FROM EMPLOYERS AND OTHER CONTRIBUTING ENTITIES

	Actuarial Required Contributions*			
Plan Year Ending	School Districts	State	Total	Percent Contributed
June 30, 2005	$90,178,025	$30,274,438	$120,452,463	87%
June 30, 2006	102,089,105	28,056,703	130,145,808	100%
June 30, 2007	102,849,748	15,219,871	118,069,619	104%
June 30, 2008	101,368,968	15,832,941	117,201,909	104%
June 30, 2009	105,497,775	20,620,548	126,118,323	104%
June 30, 2010	121,277,758	21,380,352	142,658,110	105%
June 30, 2011	135,328,339	40,779,653	176,107,992	89%
June 30, 2012	145,582,040	45,866,350	191,448,390	88%
June 30, 2013	161,922,831	64,966,961	226,889,792	79%
June 30, 2014	138,544,708	34,703,519	173,248,227	117%
June 30, 2015	115,776,948	35,493,591	151,270,539	138%
June 30, 2016	94,929,605	36,919,600	131,849,205	163%
June 30, 2017	90,038,793	38,039,347	128,078,140	174%
June 30, 2018	145,340,830	39,339,378	184,680,208	125%
June 30, 2019	138,503,494	40,543,609	179,047,103	133%

* Excludes Omaha appropriations.

Note: Contribution information is consistent with that shown in the GASB 67 report prepared for the System.

SCHOOL RETIREMENT SYSTEM

MEMBER DATA RECONCILIATION

	Active Members	Inactive Vested	Inactive Non-vested	Retirees and Beneficiaries	Disabled Members	Total
As of July 1, 2018	42,349	6,169	16,940	24,169	317	89,944
Changes in status						
a) Retirement	(1,017)	(284)	0	1,301	0	0
b) Death	(27)	(27)	(37)	(609)	(16)	(716)
c) Non-vested termination	(1,758)	0	1,758	0	0	0
d) Vested termination	(863)	863	0	0	0	0
e) Contribution refund	(732)	(201)	(1,029)	0	0	(1,962)
f) Beneficiary in receipt	0	0	0	142	0	142
g) Disability retirement	(7)	(5)	0	0	12	0
h) Return to active service	619	(178)	(441)	0	0	0
i) Expired benefit	0	0	0	(47)	0	(47)
j) Data adjustment	(1)	(3)	1	3	0	0
Total changes in status	(3,786)	165	252	790	(4)	(2,583)
New entrants	4,150	0	398	0	0	4,548
Net Change	364	165	650	790	(4)	1,965
As of July 1, 2019	42,713	6,334	17,590	24,959	313	91,909

SCHOOL RETIREMENT SYSTEM

SUMMARY OF MEMBERSHIP DATA

A. ACTIVE MEMBERS		July 1, 2019		July 1, 2018	% Change
1. Number of Active Members					
(a) Tier 1		26,187		28,246	(7.3%)
(b) Tier 2		9,293		9,961	(6.7%)
(c) Tier 3		3,138		4,142	(24.2%)
(d) Tier 4		4,095		NA	NA
(e) Total		42,713		42,349	0.9%
2. Annual Reported Salary					
(a) Tier 1	$	1,432,851,447	$	1,479,298,923	(3.1%)
(b) Tier 2		342,442,855		333,886,291	2.6%
(c) Tier 3		96,381,598		107,895,040	(10.7%)
(d) Tier 4		111,605,950		NA	NA
(e) Total	$	1,983,281,850	$	1,921,080,254	3.2%
3. Accumulated Contributions	$	1,889,601,933	$	1,785,633,657	5.8%
4. Active Member Averages					
(a) Age		45.0		45.1	(0.2%)
(b) Service		11.2		11.2	0.0%
(c) Compensation	$	46,433	$	45,363	2.4%
B. INACTIVE MEMBERS					
1. Number of Inactive Members					
(a) System vested		6,334		6,169	2.7%
(b) System nonvested (refund only)		17,590		16,940	3.8%
(d) Total		23,924		23,109	3.5%
2. Accumulated Member Contributions (excluding Omaha)	$	229,018,701	$	214,003,776	7.0%
3. Inactive Member Averages (excluding Omaha)					
(a) Age (vesteds only)		51.7		51.9	(0.4%)
(b) Estimated Annual Benefits (vesteds only)	$	7,211	$	NA	NA
(c) Accumulated member contributions	$	9,573	$	9,261	3.4%
C. RETIREES, DISABLEDS, AND BENEFICIARIES					
1. Number of Members					
(a) Retired		23,485		22,741	3.3%
(b) Disabled		313		317	(1.3%)
(c) Beneficiaries		1,474		1,428	3.2%
(d) Total		25,272		24,486	3.2%
2. Annual Benefits					
(a) Retired	$	586,277,092	$	555,512,556	5.5%
(b) Disabled		4,588,615		4,561,978	0.6%
(c) Beneficiaries		29,948,071		28,115,008	6.5%
(d) Total	$	620,813,778	$	588,189,542	5.5%

OMAHA SCHOOL EMPLOYEES

SUMMARY OF MEMBERSHIP DATA

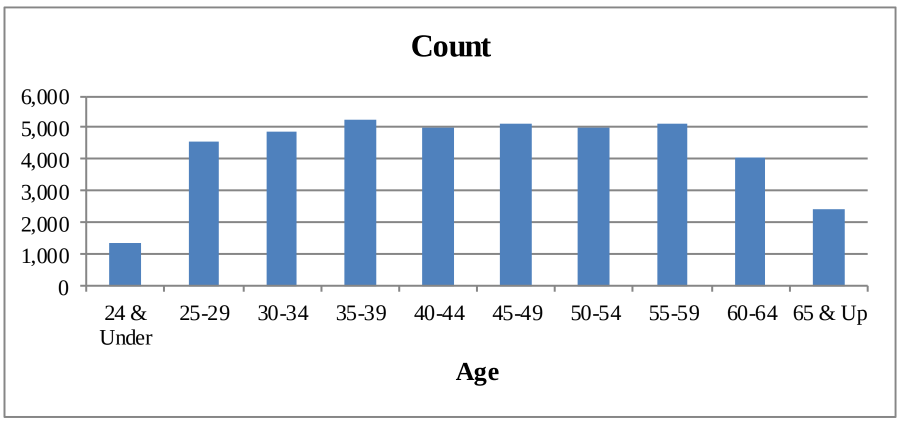
A. ACTIVE MEMBERS	January 1, 2019	January 1, 2018	% Change
1. Number of Active Members	7,177	7,569	(5.2%)
2. Average Age	44.8	44.5	0.7%
3. Average Service	11.0	10.5	4.8%
B. INACTIVE VESTED MEMBERS			
1. Number of Inactive Members	1,114	1,043	6.8%
2. Average Age	46.1	46.0	0.2%
3. Average Service	9.3	9.0	3.3%

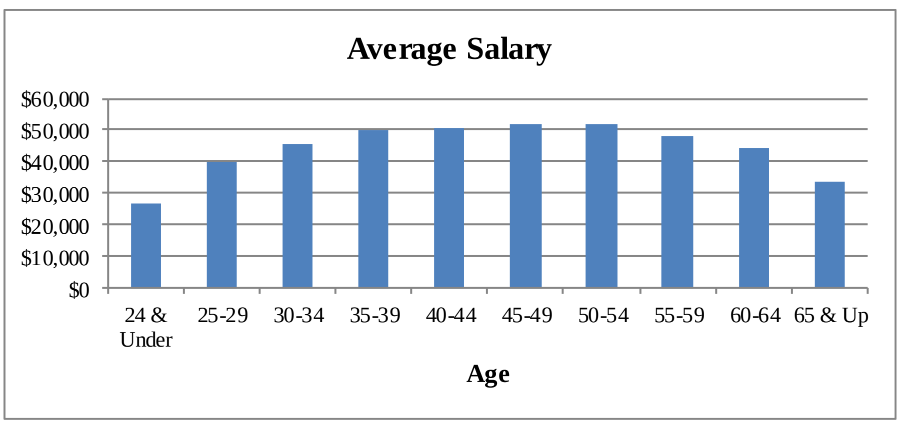
Note: Data was provided by the Omaha Schools Employee Retirement System (OSERS) for use in estimating the Service Annuity obligation. The data provided is from the most recent OSERS valuation.

ACTIVE MEMBERS
AS OF JULY 1, 2019

Total

	Count			Reported FY 2019 Earnings		
Age	Male	Female	Total	Male	Female	Total
24 & Under	251	1,124	1,375	$ 7,437,811	$ 29,408,258	$ 36,846,069
25-29	1,068	3,466	4,534	44,662,620	135,334,533	179,997,153
30-34	1,230	3,628	4,858	63,253,689	157,995,695	221,249,384
35-39	1,311	3,944	5,255	78,735,993	182,412,261	261,148,254
40-44	1,142	3,879	5,021	74,333,835	179,978,552	254,312,387
45-49	1,183	3,918	5,101	79,926,751	186,003,840	265,930,591
50-54	1,161	3,809	4,970	78,338,566	178,071,351	256,409,917
55-59	1,222	3,884	5,106	74,993,847	170,559,905	245,553,752
60-64	1,063	2,976	4,039	57,054,117	121,758,321	178,812,438
65 & Up	904	1,550	2,454	32,841,203	50,180,702	83,021,905
Total	10,535	32,178	42,713	$ 591,578,432	$ 1,391,703,418	$ 1,983,281,850

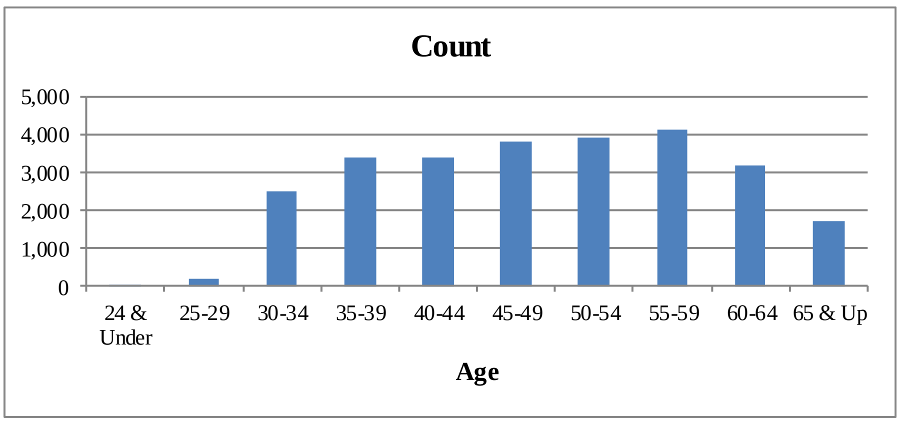


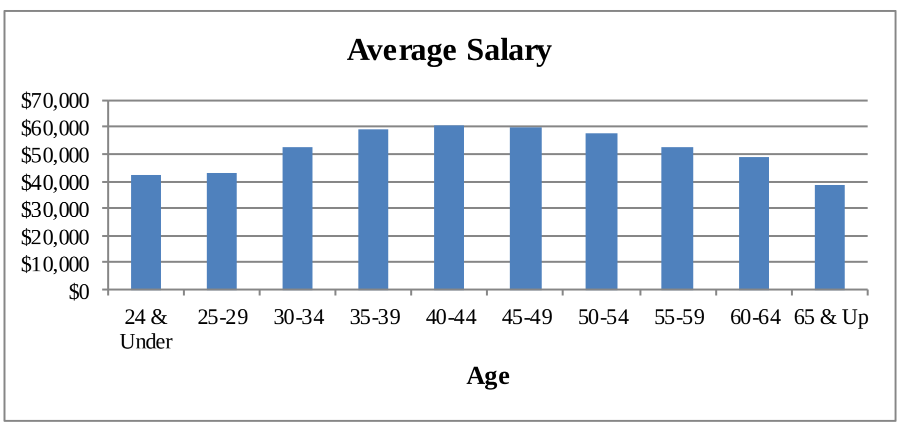


ACTIVE MEMBERS
AS OF JULY 1, 2019

Tier 1 Members

	Count			Reported FY 2019 Earnings		
Age	Male	Female	Total	Male	Female	Total
24 & Under	0	1	1	$ 0	$ 42,001	$ 42,001
25-29	46	153	199	2,064,990	6,493,679	8,558,669
30-34	612	1,857	2,469	34,925,792	94,805,248	129,731,040
35-39	910	2,477	3,387	60,116,016	138,667,345	198,783,361
40-44	860	2,535	3,395	61,020,492	143,684,293	204,704,785
45-49	935	2,856	3,791	69,604,072	156,848,868	226,452,940
50-54	928	2,980	3,908	68,867,921	156,378,998	225,246,919
55-59	941	3,183	4,124	64,740,898	152,757,698	217,498,596
60-64	783	2,404	3,187	47,262,443	107,588,088	154,850,531
65 & Up	584	1,142	1,726	24,759,578	42,223,027	66,982,605
Total	6,599	19,588	26,187	$ 433,362,202	$ 999,489,245	$ 1,432,851,447

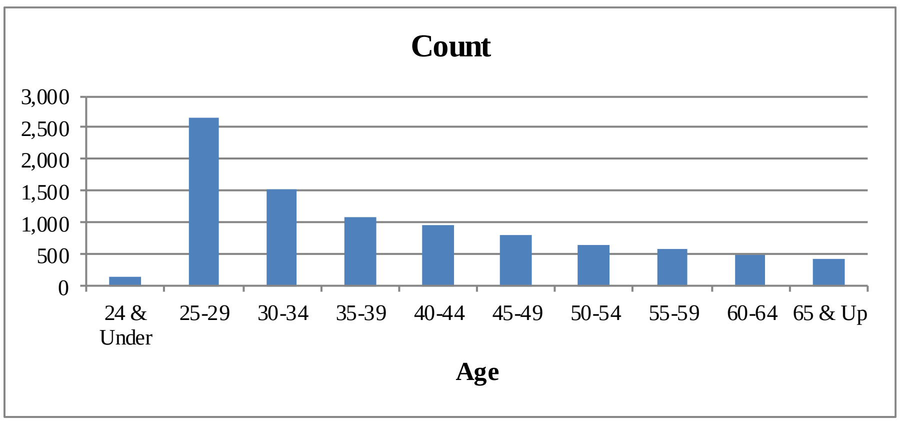


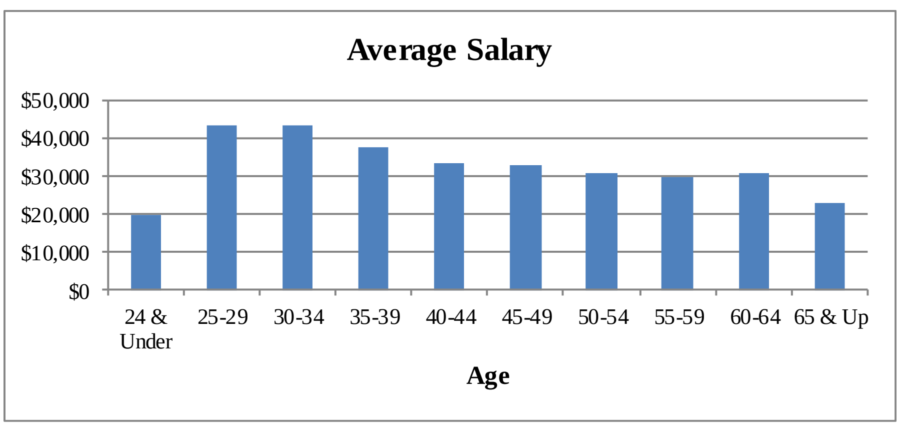


ACTIVE MEMBERS
AS OF JULY 1, 2019

Tier 2 Members

	Count			Reported FY 2019 Earnings		
Age	Male	Female	Total	Male	Female	Total
24 & Under	34	108	142	$ 850,433	$ 1,928,139	$ 2,778,572
25-29	623	2,021	2,644	28,185,700	85,525,042	113,710,742
30-34	440	1,087	1,527	21,764,795	44,116,704	65,881,499
35-39	237	841	1,078	11,585,394	28,564,007	40,149,401
40-44	167	801	968	8,409,224	23,864,592	32,273,816
45-49	147	648	795	6,826,181	19,149,607	25,975,788
50-54	131	511	642	5,865,162	13,845,099	19,710,261
55-59	162	423	585	6,183,770	11,084,305	17,268,075
60-64	169	328	497	6,562,994	8,570,423	15,133,417
65 & Up	194	221	415	4,900,726	4,660,558	9,561,284
Total	2,304	6,989	9,293	$ 101,134,379	$ 241,308,476	$ 342,442,855

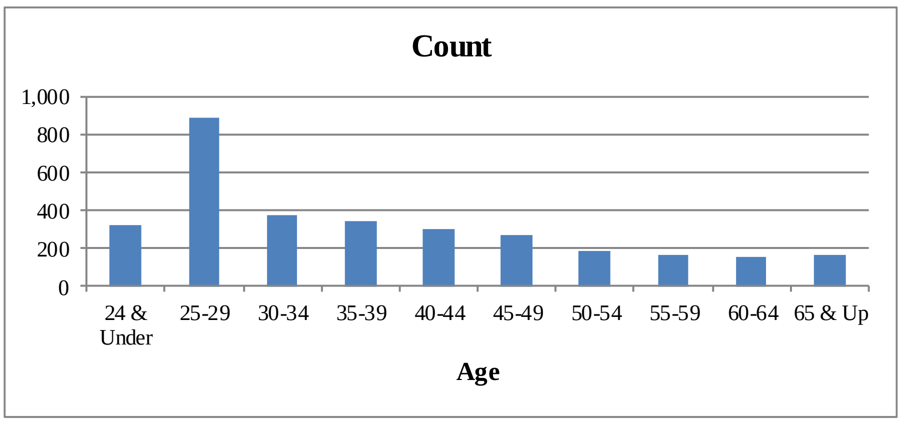


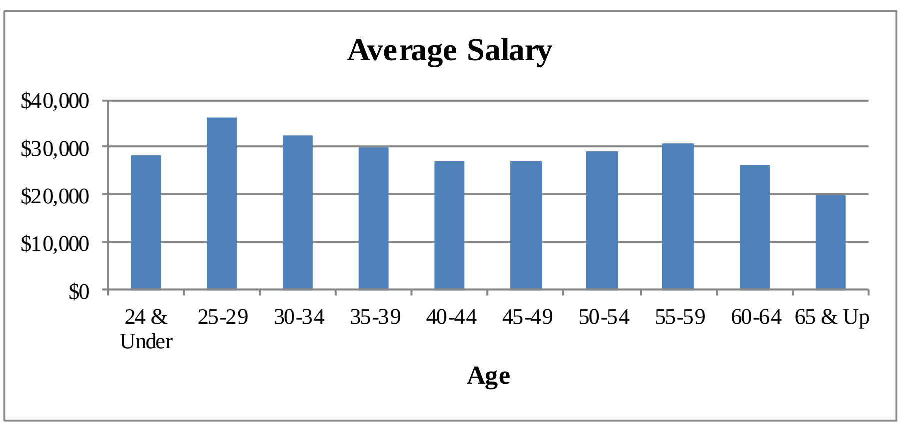


ACTIVE MEMBERS
AS OF JULY 1, 2019

Tier 3 Members

	Count			Reported FY 2019 Earnings		
Age	Male	Female	Total	Male	Female	Total
24 & Under	68	249	317	$ 2,065,611	$ 6,882,055	$ 8,947,666
25-29	199	691	890	7,678,048	24,619,399	32,297,447
30-34	80	292	372	3,092,838	9,035,255	12,128,093
35-39	84	261	345	3,553,358	6,847,898	10,401,256
40-44	57	239	296	2,508,132	5,512,112	8,020,244
45-49	54	211	265	1,980,875	5,196,613	7,177,488
50-54	38	142	180	1,348,855	3,890,583	5,239,438
55-59	49	114	163	1,947,212	3,042,260	4,989,472
60-64	45	107	152	1,375,523	2,631,353	4,006,876
65 & Up	66	92	158	1,641,520	1,532,098	3,173,618
Total	740	2,398	3,138	$ 27,191,972	$ 69,189,626	$ 96,381,598

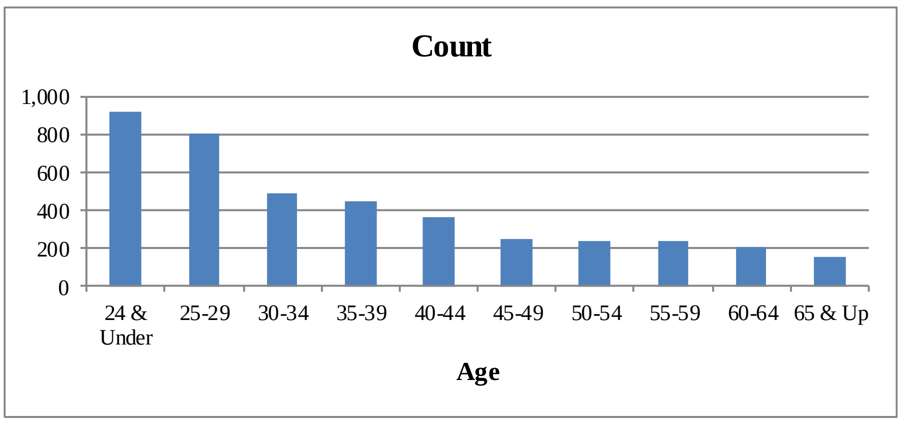


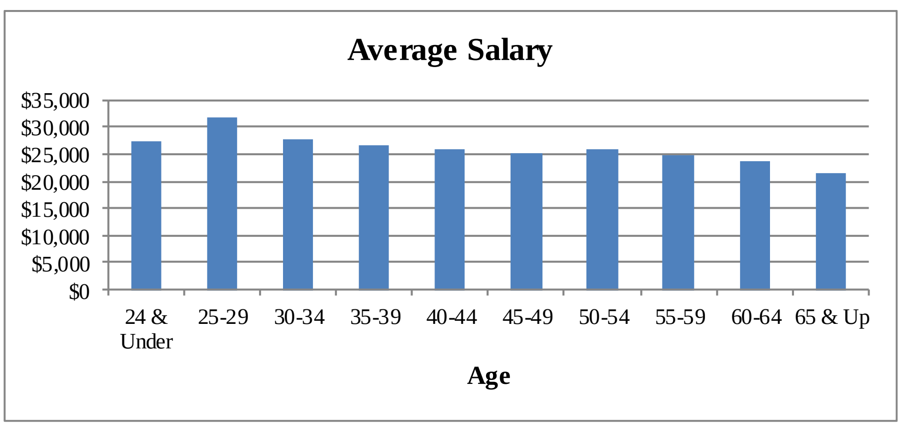


ACTIVE MEMBERS
AS OF JULY 1, 2019

Tier 4 Members

	Count			Reported FY 2019 Earnings		
Age	Male	Female	Total	Male	Female	Total
24 & Under	149	766	915	$ 4,521,767	$ 20,556,063	$ 25,077,830
25-29	200	601	801	6,733,882	18,696,413	25,430,295
30-34	98	392	490	3,470,264	10,038,488	13,508,752
35-39	80	365	445	3,481,225	8,333,011	11,814,236
40-44	58	304	362	2,395,987	6,917,555	9,313,542
45-49	47	203	250	1,515,623	4,808,752	6,324,375
50-54	64	176	240	2,256,628	3,956,671	6,213,299
55-59	70	164	234	2,121,967	3,675,642	5,797,609
60-64	66	137	203	1,853,157	2,968,457	4,821,614
65 & Up	60	95	155	1,539,379	1,765,019	3,304,398
Total	892	3,203	4,095	$ 29,889,879	$ 81,716,071	$ 111,605,950



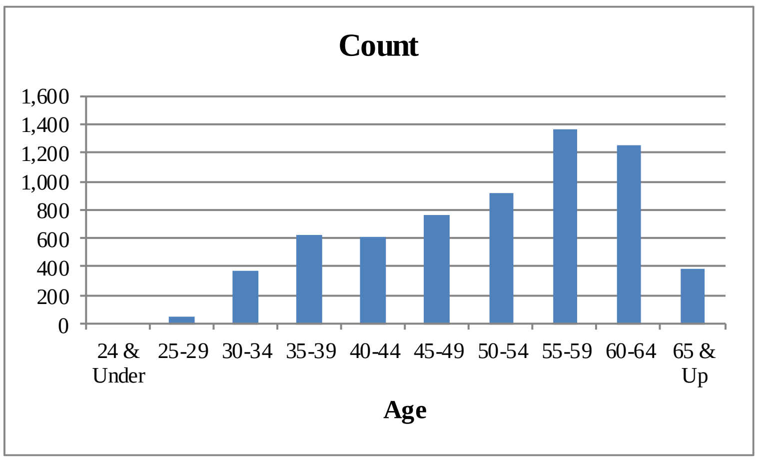


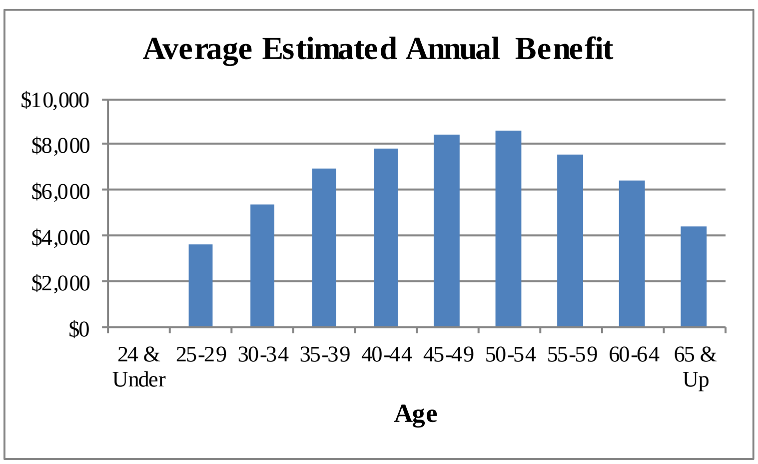
AGE AND SERVICE DISTRIBUTION
AS OF JULY 1, 2019

Age		0-4	5-9	10-14	15-19	20-24	25-29	30-34	Over 34	Total
24 & Under	Number	1,370	5	0	0	0	0	0	0	1,375
	Total Salary	$ 36,751,729	$ 94,340	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 36,846,069
	Average Sal.	$ 26,826	$ 18,868	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 26,797
25-29	Number	3,563	969	2	0	0	0	0	0	4,534
	Total Salary	$ 134,338,349	$ 45,573,750	$ 85,054	$ 0	$ 0	$ 0	$ 0	$ 0	$ 179,997,153
	Average Sal.	$ 37,704	$ 47,032	$ 42,527	$ 0	$ 0	$ 0	$ 0	$ 0	$ 39,699
30-34	Number	1,709	2,547	599	3	0	0	0	0	4,858
	Total Salary	$ 57,282,031	$ 129,544,782	$ 34,328,030	$ 94,541	$ 0	$ 0	$ 0	$ 0	$ 221,249,384
	Average Sal.	$ 33,518	$ 50,862	$ 57,309	$ 31,514	$ 0	$ 0	$ 0	$ 0	$ 45,543
35-39	Number	1,572	1,212	2,046	425	0	0	0	0	5,255
	Total Salary	$ 48,398,817	$ 57,981,794	$ 125,713,561	$ 29,054,082	$ 0	$ 0	$ 0	$ 0	$ 261,148,254
	Average Sal.	$ 30,788	$ 47,840	$ 61,444	$ 68,363	$ 0	$ 0	$ 0	$ 0	$ 49,695
40-44	Number	1,384	952	918	1,434	332	1	0	0	5,021
	Total Salary	$ 39,710,968	$ 39,844,623	$ 53,041,811	$ 97,783,157	$ 23,870,657	$ 61,171	$ 0	$ 0	$ 254,312,387
	Average Sal.	$ 28,693	$ 41,854	$ 57,780	$ 68,189	$ 71,900	$ 61,171	$ 0	$ 0	$ 50,650
45-49	Number	1,123	891	813	727	1,260	286	1	0	5,101
	Total Salary	$ 31,267,779	$ 34,369,951	$ 40,154,868	$ 46,464,008	$ 91,152,876	$ 22,480,997	$ 40,112	$ 0	$ 265,930,591
	Average Sal.	$ 27,843	$ 38,575	$ 49,391	$ 63,912	$ 72,344	$ 78,605	$ 40,112	$ 0	$ 52,133
50-54	Number	917	713	806	647	656	972	259	0	4,970
	Total Salary	$ 24,658,264	$ 25,162,163	$ 35,654,467	$ 36,192,802	$ 42,897,090	$ 72,420,834	$ 19,424,297	$ 0	$ 256,409,917
	Average Sal.	$ 26,890	$ 35,291	$ 44,236	$ 55,939	$ 65,392	$ 74,507	$ 74,997	$ 0	$ 51,592
55-59	Number	878	635	799	764	621	597	638	174	5,106
	Total Salary	$ 24,101,078	$ 20,844,486	$ 31,990,771	$ 35,072,461	$ 34,034,094	$ 40,049,314	$ 46,761,352	$ 12,700,196	$ 245,553,752
	Average Sal.	$ 27,450	$ 32,826	$ 40,039	$ 45,906	$ 54,805	$ 67,084	$ 73,294	$ 72,990	$ 48,091
60-64	Number	752	535	480	599	576	385	269	443	4,039
	Total Salary	$ 19,525,119	$ 17,321,054	$ 17,087,218	$ 25,877,827	$ 28,040,105	$ 21,430,347	$ 17,154,069	$ 32,376,699	$ 178,812,438
	Average Sal.	$ 25,964	$ 32,376	$ 35,598	$ 43,202	$ 48,681	$ 55,663	$ 63,770	$ 73,085	$ 44,271
65 & Up	Number	677	469	338	258	195	185	137	195	2,454
	Total Salary	$ 13,422,937	$ 11,937,268	$ 11,262,830	$ 9,222,616	$ 8,287,496	$ 8,530,434	$ 7,169,124	$ 13,189,200	$ 83,021,905
	Average Sal.	$ 19,827	$ 25,453	$ 33,322	$ 35,747	$ 42,500	$ 46,110	$ 52,329	$ 67,637	$ 33,831
Total	Number	13,945	8,928	6,801	4,857	3,640	2,426	1,304	812	42,713
	Total Salary	$ 429,457,071	$ 382,674,211	$ 349,318,610	$ 279,761,494	$ 228,282,318	$ 164,973,097	$ 90,548,954	$ 58,266,095	$ 1,983,281,850
	Average Sal.	$ 30,796	$ 42,862	$ 51,363	$ 57,600	$ 62,715	$ 68,002	$ 69,439	$ 71,756	$ 46,433

INACTIVE VESTED MEMBERS
AS OF JULY 1, 2019

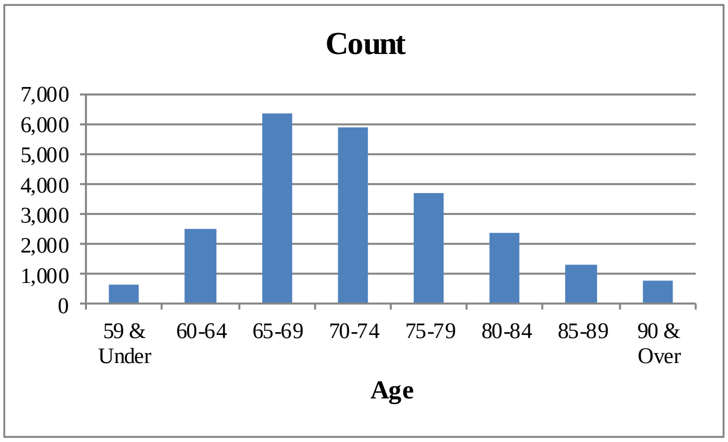
	Count			Estimated Deferred Annual Benefits		
Age	Male	Female	Total	Male	Female	Total
24 & Under	0	0	0	$ 0	$ 0	$ 0
25-29	17	30	47	70,246	100,834	171,080
30-34	76	292	368	440,586	1,544,584	1,985,170
35-39	116	510	626	958,847	3,365,499	4,324,346
40-44	131	484	615	1,430,747	3,357,837	4,788,584
45-49	141	616	757	1,804,145	4,549,191	6,353,336
50-54	158	757	915	1,987,056	5,882,748	7,869,804
55-59	218	1,152	1,370	2,513,038	7,902,317	10,415,355
60-64	177	1,075	1,252	1,627,250	6,431,102	8,058,352
65 & Up	49	335	384	297,435	1,413,624	1,711,059
Total	1,083	5,251	6,334	$ 11,129,350	$ 34,547,736	$ 45,677,086

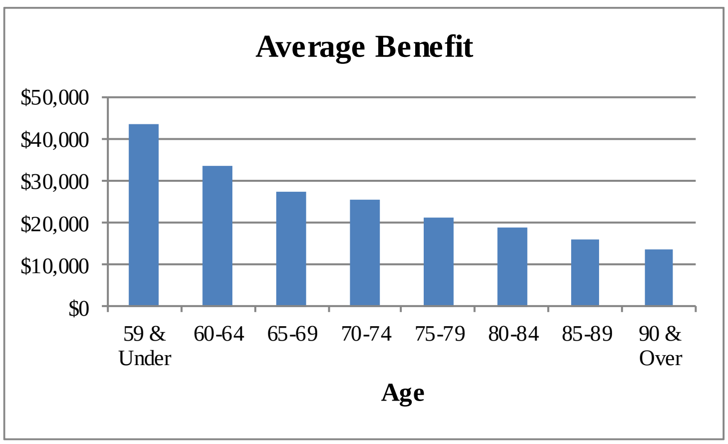




RETIRED MEMBERS
AS OF JULY 1, 2019

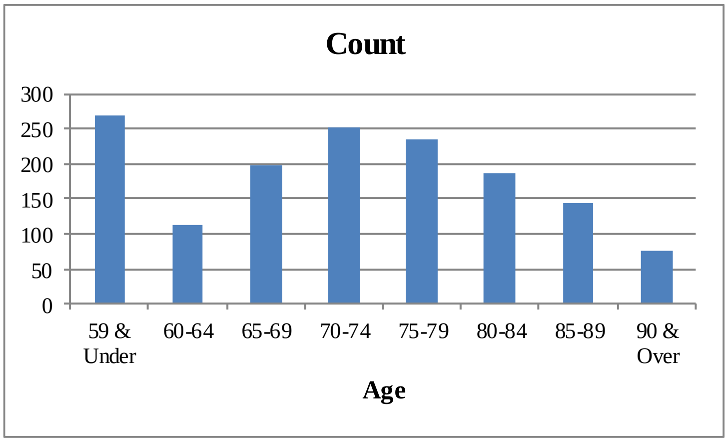
	Count			Annual Benefits		
Age	Male	Female	Total	Male	Female	Total
59 & Under	188	436	624	$ 8,867,229	$ 18,122,962	$ 26,990,191
60-64	613	1,886	2,499	24,074,476	59,718,923	83,793,399
65-69	1,578	4,761	6,339	53,884,626	119,725,065	173,609,691
70-74	1,855	4,011	5,866	57,555,118	90,859,663	148,414,781
75-79	1,244	2,464	3,708	35,148,320	43,017,774	78,166,094
80-84	749	1,606	2,355	18,985,513	24,854,600	43,840,113
85-89	363	964	1,327	7,982,993	13,014,451	20,997,444
90 & Over	172	595	767	3,427,002	7,038,377	10,465,379
Total	6,762	16,723	23,485	$ 209,925,277	$ 376,351,815	$ 586,277,092

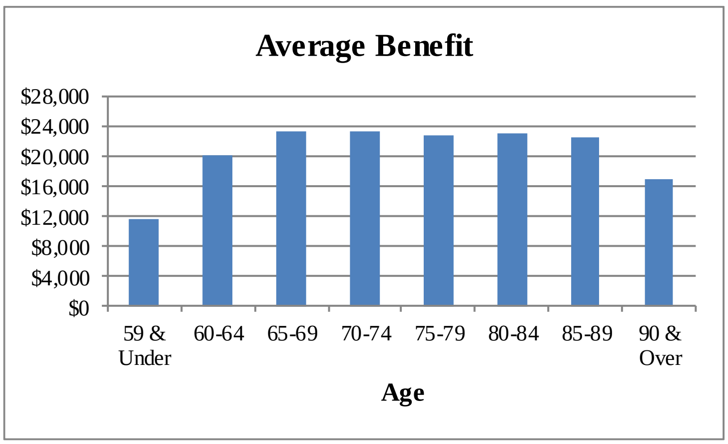




BENEFICIARIES RECEIVING BENEFITS AS OF JULY 1, 2019

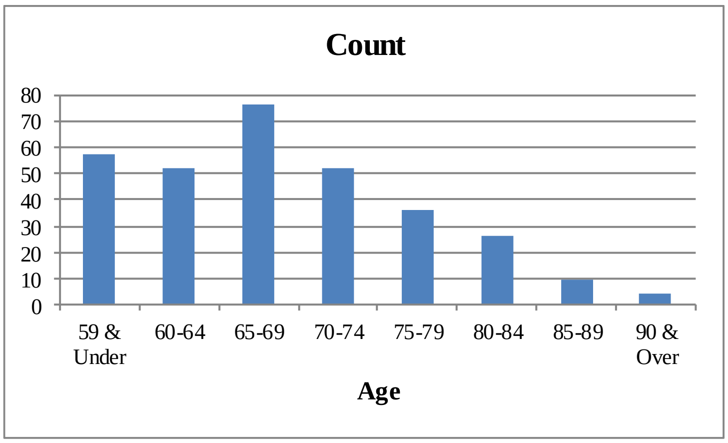
	Count			Annual Benefits		
Age	Male	Female	Total	Male	Female	Total
59 & Under	122	148	270	$ 1,141,439	$ 1,960,813	$ 3,102,252
60-64	45	68	113	699,733	1,570,554	2,270,287
65-69	78	119	197	1,806,741	2,759,228	4,565,969
70-74	102	151	253	1,951,124	3,917,042	5,868,166
75-79	84	151	235	1,472,051	3,872,838	5,344,889
80-84	42	145	187	723,389	3,582,324	4,305,713
85-89	28	116	144	526,717	2,705,940	3,232,657
90 & Over	13	62	75	185,764	1,072,374	1,258,138
Total	514	960	1,474	$ 8,506,958	$ 21,441,113	$ 29,948,071

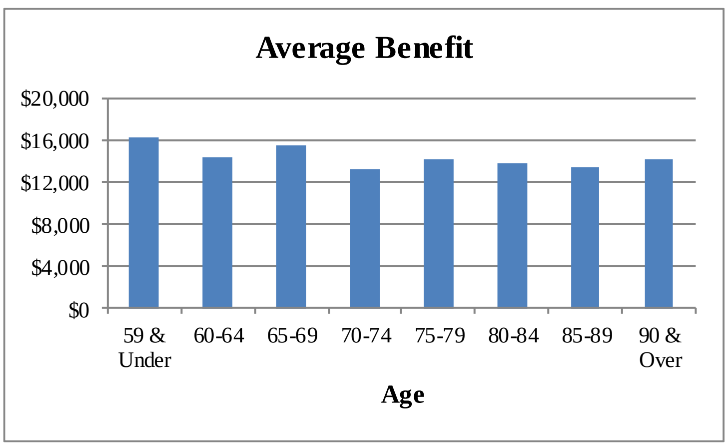




DISABLED MEMBERS
AS OF JULY 1, 2019

	Count			Annual Benefits		
Age	Male	Female	Total	Male	Female	Total
59 & Under	15	42	57	$ 255,017	$ 669,585	$ 924,602
60-64	17	35	52	236,690	511,020	747,710
65-69	16	60	76	249,681	923,569	1,173,250
70-74	22	30	52	267,940	420,491	688,431
75-79	11	25	36	167,455	340,987	508,442
80-84	8	18	26	104,331	251,775	356,106
85-89	3	7	10	39,171	94,056	133,227
90 & Over	3	1	4	51,764	5,083	56,847
Total	95	218	313	$ 1,372,049	$ 3,216,566	$ 4,588,615





Member	Any person employed by a public school 20 or more hours per week shall be a member of the system. Employees at the date of establishment could have elected not to participate, and those covered under another system do not participate. The Tier Two benefit structure covers members joining the System on or after July 1, 2013, but before July 1, 2017. The Tier Three benefit structure covers members joining the System on or after July 1, 2017, but before July 1, 2018. The Tier Four benefit structure covers members joining the System on or after July 1, 2018.
Participation Date	Date of becoming a member.
Definitions	
Final average earnings	The average of the three highest twelve month periods of service during the period ending on the earlier of the participant's termination date or retirement date. For employees who become a member on or after July 1, 1996, earnings will be capped at the maximum earning defined in Code 401(a) (17). For Tier Two, Three and Four members, it is the average of the five highest twelve month periods of service.
Fiscal year	Twelve month period ending June 30.
Contributions	Members contribute 9.78% of pay. Such contributions are credited with interest based on the 1-year Treasury yield curve on July 1 of each year, as determined by State Statutes. The School Districts contribute at a rate equal to 101% of the members' rate. The State contributes 2% of pay, effective July 1, 2014 (previously 1%).
Monthly pension benefit	The greater of (1) or (2).

(1) Amount: A monthly benefit equal to the sum of:

(a) A savings annuity which is the actuarial equivalent of the member's accumulated contributions, and
(b) A service annuity equal to $3.50 per year of service.

(2) Amount: Members employed by a class I, II, III, IV, VI School District may receive a formula annuity. The formula annuity is a monthly amount equal to the product of 2.00% of final average earnings times total years of service for those members who are employed on or after July 1, 2001.

To receive this benefit, retirement must occur after attaining age 65 or meeting the Rule of 85 requirements (minimum age is 55 for Tier One, Two and Three members and 60 for Tier Four members).

	An automatic annual cost-of-living adjustment (COLA) equal to the change in the CPI-W index, with a maximum increase of 2.5% in any one year is provided for current and future retirees. Also provided is a minimum floor benefit equal to 75% of the purchasing power of the original benefit. For Tier Two, Three and Four members, whom are hired on or after July 1, 2013, an automatic cost-of-living adjustment (COLA) equal to the change in the CPI-W index, not to exceed 1.0% in any one year. No purchasing power COLA applies.
Normal Retirement Date (NRD)	First of month coinciding with or next following the attainment of age 65 and one-half year of service.
Service	Length of service includes all service as a school employee for which contributions have been made. This service only includes years for which the member was employed on at least a half-time basis, and includes declared emergency service in the armed forces, provided certain conditions are met. Special provisions allow credit for service prior to 1945 and for up to ten years of service in another State upon payment of the actuarial cost of the additional benefit granted.
Pensionable pay	Gross earnings subject to contributions.

Eligibility for Benefits

Deferred vested	Termination for reasons other than death or disability retirement after completing five years of service.
Disability retirement	Retirement by reason of disability.
Early retirement	Retirement before NRD, as well as one of the following criteria: 1. Attaining age 60 and completing 5 years of service, 2. Attaining 35 years of service regardless of age, 3. For members hired before July 1, 2018, attaining age 55 and age plus service equals at least 85 (Rule of 85). 4. For members hired on or after July 1, 2018, attaining age 60 and age plus service equals at least 85 (Rule of 85).
Normal retirement	Retire on NRD.
Postponed retirement	Retire after NRD.
Pre-retirement spouse benefit	Death prior to retirement.

Monthly Benefits Payable

Normal retirement	Monthly pension benefit determined as of NRD.

Early retirement	Monthly pension benefit determined as of early retirement date, reduced by 3% for each year that commencement of payment precedes age 65 (members must be age 60 with five years of service). Unreduced benefits are available to members who have met the applicable criteria for the Rule of 85. Benefits payable upon retirement prior to age 60 (based on the 35 year service rule) are actuarially reduced from age 65. The service annuity is a life annuity actuarially reduced before age 65. Actuarial reductions are based on the 1994 Group Annuity Mortality Table, 75% female, 25% male and 8% interest for members hired prior to July 1, 2017. For members hired on or after July 1, 2017, the Public Employees Retirement Board sets the actuarial assumptions used for actuarial reductions, with guidance from the System's actuary.
Postponed retirement	Monthly pension benefit determined as of actual retirement date.
Termination with deferred vested benefit	Monthly pension benefit determined as of termination date, reduced by 3% for each year that commencement of payment precedes age 65 (Early Commencement requires attainment of age 60).
Disability retirement	Monthly pension benefit determined as of disability retirement date.
Death with pre-retirement benefits	Survivor portion of 100% Joint and Survivor Annuity paid to spouse assuming retirement by member at death if the member is age 65 or has 20 years of service at death. If the member has met the 5-year vesting service requirement, has less than 20 years of service and is under age 65, the spouse may choose between the following two options: (1) a lump sum equal to the member's contributions with interest plus 101% of the member's contributions with interest, and (2) an annuity which equals the survivor portion of the 100% Joint and Survivor value of the member's accrued benefit, payable immediately, reduced for commencement before age 65 and the 100% joint and survivor form of payment.
Forms of payment	Pre-retirement death benefits are payable only as described above. Monthly pension benefits are paid under the form of payment elected by the retiree at retirement. Payment forms include: life annuity, 5- year certain and life annuity, 100% joint and survivor annuity (spouse only), 10-year certain and life annuity, 15-year certain and life annuity, or a modified cash refund annuity. The normal form of payment for the formula annuity is a 5-year certain and life annuity. For members hired on or after July 1, 2017, the Public Employee Retirement Board sets the actuarial assumptions used to determine

the benefit amounts payable under optional forms of payment, with guidance from the System's actuary.

Funding Arrangement

Legislation enacted in 2002 created the School Retirement Fund. Balances existing on June 30, 2002 in the School Employers Deposit Account, the School Employees Savings Account, the Service Annuity Account, the Annuity Reserve Account, and the School Employees Retirement System Reserve Fund (RSRF) shall be combined and transferred into the School Retirement Fund.

There are four funds established in the State Treasury, which receive monies and pay the expenses and benefits of the retirement system, as follows:

1. School Retirement Fund – receives required deposits of the employers, the State, and employees. Upon retirement, the fund pays all savings annuities, service annuities, and formula annuities.

2. Contingent Account – receives all interest, dividends, and miscellaneous income, pays all regular interest allocated to the other accounts or funds, and meets any deficiencies occurring in the other accounts or funds.

3. Expense Fund – pays all expenses connected with the operation and administration of the system, and receives annual contributions to cover anticipated expenses.

4. Omaha Service Annuity Fund – pays service annuity benefits to Omaha members.

Benefits Reflected in Valuation

All benefits were valued, including future cost-of-living increases granted by statute.

Plan Provisions Effective after July 1, 2019

No future changes in plan provisions were recognized in determining the funded status or in determining the sufficiency of statutory contribution levels.

Changes in Plan Provisions Since the Prior Year

There have been no changes to the plan provisions since the prior year.

A. ACTUARIAL METHODS

1. **Calculation of Normal Cost and Actuarial Accrued Liability:** The method used to determine the normal cost and actuarial accrued liability was the Entry Age Actuarial Cost Method described below.

Entry Age Actuarial Cost Method

Projected pension and preretirement spouse's death benefits were determined for all active members under age 80. Cost factors designed to produce annual costs as a constant percentage of each member's expected compensation in each year from the assumed entry age to the assumed retirement age were applied to the projected benefits to determine the normal cost (the portion of the total cost of the plan allocated to the current year under the method). The normal cost is determined by summing intermediate results for active members under age 80 and determining an average normal cost rate which is then related to the total payroll of active members. The actuarial assumptions shown on the following page were used in determining the projected benefits and cost factors. The actuarial accrued liability for active members (the portion of the total cost of the plan allocated to prior years under the method) was determined as the excess of the actuarial present value of projected benefits over the actuarial present value of future normal costs.

The actuarial accrued liability for retired members and their beneficiaries currently receiving benefits, active members age 80 and over, terminated vested members and disabled members not yet receiving benefits was determined as the actuarial present value of the benefits expected to be paid. No future normal costs are payable for these members.

The actuarial accrued liability under this method at any point in time is the theoretical amount of the fund that would have been accumulated had annual contributions equal to the normal cost been made in prior years (it does not represent the liability for benefits accrued to the valuation date). The unfunded actuarial accrued liability is the excess of the actuarial accrued liability over the actuarial value of plan assets measured on the valuation date. Under this Entry Age method, experience gains or losses, i.e., decreases or increases in accrued liabilities attributable to deviations in experience from the actuarial assumptions, adjust the unfunded actuarial accrued liability.

The unfunded actuarial accrued liability is amortized using the "layered" approach. The unfunded actuarial accrued liability as of July 1, 2006 was the initial or legacy amortization base, amortized over a closed 30-year period. Changes in the unfunded actuarial accrued liability due to assumption changes or actuarial experience gains/losses are amortized over separate 30-year amortization bases, each with their own individual payment schedules. The UAAL amortization payment schedules are determined using the level percent of payroll methodology, where payments escalate annually with the assumed increase in payroll growth.

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

   I. 80% of the return to be spread during the first year preceding the valuation date,

   II. 60% of the return to be spread during the second year preceding the valuation date,

   III. 40% of the return to be spread during the third year preceding the valuation date, and

   IV. 20% of the return to be spread during the fourth year preceding the valuation date.

   The return to be spread is the difference between (1) the actual investment return on market value of assets and (2) the expected return of actuarial value of assets. Effective July 1, 2000, the expected return on actuarial value of assets includes interest on the previous year's unrecognized return.

B. VALUATION PROCEDURES

Data Procedures

Salaries for first year members are annualized by using the client's Calculated Salary field. For continuing active members, the Accumulated Salary field is used.

Active members who are missing a date of birth on their record are assumed to have been hired at age 35.

Members who are missing a gender are assumed to be female.

Other Valuation Procedures

The compensation amounts used in the projection of benefits and liabilities for active members were prior plan year compensations. Salary increases are assumed to apply to annual amounts.

Projected benefits were limited by the dollar limitation required by the Internal Revenue Code Section 415 as it applies to governmental plans and compensation limited by Section 401(a)(17).

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.

No actuarial accrued liability is included for participants who terminated without being vested prior to the valuation date, except those due a refund of contributions.

Changes in Methods and Procedures since the Prior Year

There have been no changes to the methods and procedures since last year.

ACTUARIAL ASSUMPTIONS

Economic Assumptions

1. Investment Return — 7.50% per annum, compounded annually, net of expenses.

2. Inflation — 2.75% per annum, compounded annually

3. Salary Increases — Rates vary by service. Sample rates are as follows:

Rates by Service	
Years	**Rate**
<1	8.50%
1	8.00
5	6.46
10	5.18
15	4.71
20	4.45
25	4.24
30	4.07
35	3.82
40+	3.50

4. Payroll Growth — 3.50% per annum

5. Investment on Employee Contributions — 3.00% per annum compounded annually.

6. Increase in Compensation And Benefit Limits — 2.75% per annum on the 401(a)(17) compensation limit and 415 benefit limit

Demographic Assumptions

1. Mortality

   a. Healthy lives - Active members — RP-2014 White Collar Table for Employees (100% of male rates for males, 55% of female rates for females), projected generationally with MP-2015.

   b. Healthy lives – Retired members and beneficiaries — RP-2014 White Collar Table for Employees, set back two years, scaled (males: under 80, 1.008; over 80, 1.449; females: under 85, 0.924; over 85, 1.5855; geometrically blended), projected generationally from 2013 with a Society of Actuaries (SOA) projection scale tool using 0.5% ultimate 2035 rate in 2035.

   c. Disabled lives — RP-2014 Disabled Lives Table (static table)

d. Healthy mortality rates and life expectancies are shown below at sample ages:

	Pre-retirement Mortality Mortality Rate (Base Rates)	
Sample Age	Males	Females
20	0.03%	0.01%
30	0.03	0.01
40	0.04	0.02
50	0.12	0.05
60	0.33	0.11

	Post-retirement Mortality Mortality Rate (Base Rates)	
Sample Age	Males	Females
50	0.23%	0.17%
60	0.47	0.31
70	1.03	0.82
80	3.65	2.28
90	14.57	12.63

	Projection Scale – Post-retirement Mortality					
	Scale (2020)		Scale (2030)		Scale (2040)	
Sample Age	Males	Females	Males	Females	Males	Females
50	0.0252	0.0144	0.0080	0.0052	0.0050	0.0050
60	0.0083	0.0051	0.0066	0.0059	0.0050	0.0050
70	0.0088	0.0121	0.0061	0.0057	0.0050	0.0050
80	0.0114	0.0104	0.0057	0.0058	0.0050	0.0050
90	0.0109	0.0104	0.0057	0.0057	0.0046	0.0046

e. Disabled mortality rates and life expectancies are shown below at sample ages:

Sample Age	Males	Females
30	0.79%	0.30%
40	1.10	0.55
50	2.04	1.19
60	2.66	1.70
70	4.03	2.82
80	7.66	6.10

2. Retirement

Rates vary by age and eligibility for benefits.
Rates are as follows:

Retirement Rates When Eligible for Unreduced Benefits Age	Rate
55	18%
56	15
57	15
58	15
59	15
60	25
61	25
62	30
63	25
64	25
65	30
66	30
67	30
68	25
69	25
70	25
71	25
72	25
73	25
74	25
75	25
76	25
77	25
78	35
79	35
80	100

Retirement Rates When Eligible for Reduced Benefits Age	Rate
60	10%
61	12
62	12
63	12
64	15

3. Termination

Rates vary by service.
Sample rates are as follows:

Rates by Service		
Years	Male	Female
<1	27.5%	31.7%
1	15.0	19.0
5	6.0	8.0
10	3.5	4.7
15	2.3	3.1
20	1.0	2.0
25+	1.0	1.0

4. Disability

Rates vary by age.
Sample rates are as follows:

Age	Male	Female
Under 35	0.00%	0.00%
35	0.02	0.01
40	0.02	0.01
45	0.03	0.03
50	0.05	0.04
55	0.07	0.06
60	0.10	0.08

Other Assumptions

1. Form of Payment

Service annuity – Life annuity
Formula annuity – Five year certain and life annuity.

Members who terminated vested are assumed to take a refund of contributions if it is more valuable than their deferred benefit.

2. Marital Status
   a. Percent married — 85% married
   b. Spouse's age — Females assumed to be two years younger than males.

3. Administrative Expense

Investment return is assumed to be net of investment and administrative expenses.

4. Commencement age for deferred vested benefit

Age 62

5. Cost of Living Adjustment	Service annuity – None Formula annuity – 2.25% per annum, compounded annually, for members hired before January 1, 2013. 1.00% per annum, compounded annually, for members hired on or after January 1, 2013.
6. State Contribution	State contributions for the current plan year are assumed to be contributed in a lump sum on the July 1 following the plan year end. These amounts from the prior plan year are treated as a contribution receivable on the plan's financial statements.

Changes in Assumptions since the Prior Year

There have been no changes to the assumptions since the prior year.

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