Missouri Local Government Employees Retirement System

Compiled 52nd Annual Actuarial Valuation
as of February 29, 2020

Outline of Contents

Report of Compiled Actuarial Valuations of LAGERS

Outline of Contents - Concluded

Report of Compiled Actuarial Valuations of LAGERS

800.521.0498 | P: 248.799.9000 | www.grsconsulting.com

September 9, 2020

Board of Trustees
Missouri Local Government Employees Retirement System
Jefferson City, Missouri

Submitted in this report are the compiled results of the ***52nd annual actuarial valuations*** for the Missouri Local Government Employees Retirement System, as amended through February 29, 2020. ***The date of the valuations*** was February 29, 2020.

Actuarial valuations of individual participating employers are made for the purposes of (i) revising employer contribution rates and (ii) examining the reserve strength of each separately experience-rated group. These individual valuations are made annually for each employer who was participating as of the valuation date. Such valuations were made for ***1,207 groups (789 employers)***. Actuarial valuations are also made of retired life benefits being paid from the Benefit Reserve Fund to determine the financial condition of this pooled Fund.

This report was prepared at the request of the Board and is intended for use by the Retirement System and those designated or approved by the Board. This report may be provided to parties other than the System only in its entirety and only with the permission of the Board. GRS is not responsible for unauthorized use of this report.

The signing individuals are independent of the plan sponsor.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as: plan experience differing from that anticipated by the economic and 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 the actuary's assignment, the actuary did not perform an analysis of the potential range of such future measurements.

The valuations were based upon data furnished by LAGERS staff concerning members, retirees and beneficiaries.

The financial assumptions used in making the valuations are shown in the Appendix of this report. Assumptions concerning future experience are needed for computing employer contribution rates. As time passes and actual experience develops, assumed and actual experiences are compared. From time to time one or more of the assumptions about the future are changed by the Board after consulting with the actuary. The assumptions used in performing the 2020 valuations were adopted by the Board in conjunction with a five-year experience investigation for the period ending February 28, 2015.

Your attention is directed particularly to pages 3 through 8, and to the Short Condition Test on page B-5. Based upon the 2020 valuations, it is our opinion that ***LAGERS continues to satisfy the actuarial principles of level cost financing***.

Mita D. Drazilov and Judith A. Kermans are Members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

Respectfully submitted,

Mita D. Drazilov, ASA, FCA, MAAA

Judith A. Kermans, EA, FCA, MAAA

MDD/JAK:rmg:dj

Comments on Valuation Results

Individual Valuations of Participating Employers. There were 1,207 new employer contribution rates computed as of February 29, 2020. (Sixty-Five groups had no active employees and a dollar contribution was calculated for them. These sixty-five groups are excluded from the totals on this page.) Of the 1,207 new rates, 342 were decreases from the previous rates, 771 were increases from the previous rates and 94 were unchanged. Further detail is shown in Section G. A ten-year comparative schedule follows:

Valuation Date	Decreases	Unchanged	Increases	Total
2-28-2011*	230	41	724	995
2-29-2012	507	61	439	1,007
2-28-2013	595	77	359	1,031
2-28-2014	772	52	231	1,055
2-28-2015	738	80	244	1,062
2-29-2016*	255	53	759	1,067
2-28-2017	397	105	576	1,078
2-28-2018	494	135	487	1,116
2-28-2019	385	105	651	1,141
2-29-2020	**342**	**94**	**771**	**1,207**

** Revised financial assumptions and/or funding method.*

Decreases in employer contribution rates are seldom a problem. Increases can be a problem. As a result of the adoption of the new actuarial assumptions for the February 29, 2016 valuations, the employer contribution rate for many valuation groups was capped due to the 1% increase limitation (e.g., 334 valuation groups had capped employer contribution rates as of February 29, 2016). This is the primary reason that the number of increases in computed employer contribution rates remains high as of February 29, 2020.

Experience During Valuation Year. Investment return was below the assumed rate of return on a funding value of assets basis as of February 29, 2020. The actuarial value of assets are lower than the market value of assets by roughly 1% which puts slight downward pressure on future contribution rates. However, the unrecognized gains are not evenly distributed over the next four years. There will be slight downward pressure on contribution rates as of the February 28, 2021 valuations. (Beginning in 2003, the actuarial value of assets is not allowed to deviate from the market value of assets by more than 20%.) In addition, there is still upward pressure on capped employer contribution rates (331 valuation groups).

Comments on Valuation Results - Concluded

Section D of this report presents a summary of the analysis of the economic and non-economic risk areas. For the year ended February 29, 2020, the System experienced an actuarial loss of approximately $117 million. This primarily consisted of worse than assumed investment return and pay increases greater than assumed.

Retired Life Experience. The Benefit Reserve Fund (BRF) funded ratio decreased from 108.0% to 107.8% as of February 29, 2020. The recognized rate of investment return was less than the actuarial assumed rate of investment return but this was somewhat offset by lower than expected cost-of-living increases. Please refer to pages B-10 and D-2 for detail.

Funded Ratio. The funded ratio for the System as of the valuation date is 93.7% based on the actuarial value of assets. If the market value of assets were used and the reserve for future experience in the BRF shown on page B-10 were unchanged, the funded ratio would be approximately 94.3%.

Comments on
Reserve Strength of Each Group Being Separately Experience-Rated

"Reserve strength" means the portion of accrued liabilities which are covered by accrued assets. The larger the portion covered, the greater the reserve strength.

At the time a local government joins LAGERS the reserve strength of that new employer is zero because there are no assets, while liabilities (for past service) have been generated.

Contributions to LAGERS are patterned so that reserve strength increases year by year.

However, this underlying pattern is being modified each year as actual financial experiences occur. Experiences more favorable than assumed cause reserve strength to increase more than planned, while less favorable experiences reduce reserve strength. Like snowflakes, no two groups have identical experiences.

In addition, reserve strength is lowered when a local government adopts a higher benefit formula (larger liabilities for past service are generated).

The hundreds of separately experience-rated groups within LAGERS have considerable differences in reserve strength. These differences are summarized on page B-7.

Financially, LAGERS consists of a large number of diverse groups, not a large number of clones of a single LAGERS average.

Summary of Risk Measures

Valuation Date	Funded Ratio	UAAL Amortization Period #	Dollar Standard Deviation of Investment Return / Total Payroll *	UAAL / Total Payroll	Actuarial Value of Assets / Total Payroll	Total AAL / Total Payroll
2-28-2011	81.6%	43	32.7%	66.1%	292.1%	358.2%
2-29-2012	83.5	34	34.4	62.2	314.4	376.6
2-28-2013	86.5	26	37.0	52.4	336.3	388.7
2-28-2014	91.7	21	41.1	33.4	370.1	403.4
2-28-2015	94.4	21	43.6	24.0	408.5	432.5
2-29-2016	94.7	24	39.3	23.3	419.2	442.5
2-28-2017	94.8	19	43.2	23.9	434.8	458.7
2-28-2018	95.6	16	47.0	20.7	451.3	472.0
2-28-2019	94.9	15	46.0	24.7	457.5	482.1
2-29-2020	93.7	14	45.5	30.6	452.4	483.0

 # Aggregate amortization period for all employers combined.
** Assumes System goal of a 10% standard deviation. Based upon the market value of assets.*

Funded ratio: This is the most widely known measure of a plan's financial strength. The trend in the funded ratio is much more important than the absolute ratio. A trend approaching 100% is desirable.

UAAL Amortization Period: The aggregate amortization period is for all employers combined. Each employer has specific amortization periods for their respective amortization bases. Periods above 17 to 20 years indicate that the UAAL payment is less than the interest on the UAAL. This situation is referred to as "negative amortization." Negative amortization is increasingly viewed as undesirable.

Standard Deviation of Investment Return / Total Payroll: The portfolio standard deviation measures the volatility of investment return. When divided by payroll it gives the effect of a one standard deviation asset gain or loss as a percent of payroll. This theoretically may happen once every 6 years.

UAAL / Total Payroll: The ratio of the UAAL to payroll gives an indication of the plan sponsor's ability to pay off the UAAL. A declining ratio is desirable. A percentage above approximately 300% or 400% may indicate difficulty in discharging the unfunded liability in some circumstances.

Actuarial Value of Assets / Total Payroll: The ratio of assets to payroll gives an indication of both maturity and volatility. Many systems have percentages between 500% and 700%. A high ratio can indicate volatility of contribution rates or amortization period.

Total AAL / Total Payroll: This is similar to the prior ratio. It illustrates the expected ratio of assets to payroll when the plan has a funded ratio of 100%.

Risk Commentary

Determination of the accrued liability, the employer contribution, and the funded percent requires the use of assumptions regarding future economic and demographic experience. Risk measures, as illustrated in this report, are intended to aid in the understanding of the effects of future experience differing from the assumptions used in the course of the actuarial valuation. Risk measures may also help with illustrating the potential volatility in actuarial measurements that results from the differences between actual experience and the actuarial assumptions.

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 due to changing conditions; 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. The scope of an actuarial valuation does not include an analysis of the potential range of such future measurements.

Examples of risk that may reasonably be anticipated to significantly affect the plan's future financial condition include:

(1) **Investment Risk** – The risk that actual investment returns may differ from the expected investment returns.
(2) **Contribution Risk** – Under Section 70.730 of the Revised Statutes of Missouri, the computed employer contribution rate shall not exceed the contribution rate for the immediately preceding fiscal year by more than one percent (not including the effects of any benefit changes). Contribution risk is the risk that a group's uncapped computed employer contribution rate may be significantly greater than the capped employer contribution rate.
(3) **Group Size Risk** – Generally speaking, the fewer active members in a valuation group, the more potential for volatility in the actuarial measurements for that group. Presented below are a couple of examples to illustrate this risk:
    a. **Payroll** – If a valuation group has a prior service cost rate and the valuation group's payroll declined by 50% from one valuation to the next (e.g., 2 active members went down to 1 active member), the valuation group's prior service cost rate could double.
    b. **Actuarial Gains/Losses** – Actuarial gains and losses will generally be a larger percentage of the total actuarial accrued liability for a smaller valuation group than a larger valuation group. This could lead to more volatility in the computed employer contribution rate and funded percent.

Other Observations

General Implications of Contribution Allocation Procedure or Funding Policy on Future Expected Plan Contributions and Funded Status

Given the plan's contribution allocation procedure, if all actuarial assumptions are met (including the assumption of the plan earning 7.25% on the actuarial value of assets), it is expected that:

(1) Each employer's normal cost as a percentage of pay is expected to remain level in the absence of significant changes due to hiring patterns of each employer. However, given the small number of active members in many of the participating valuation groups, the employer normal cost may change significantly from one valuation to the next.
(2) Positive unfunded actuarial accrued liabilities for each employer are expected to be fully amortized after completion of their respective amortization periods.
(3) In general, the funded status for each employer is expected to trend gradually towards a 100% funded ratio.

When selecting a contribution allocation procedure, the following three items should be considered, including the balance amongst the three items:

(1) Benefit security;
(2) Intergenerational equity; and
(3) Contribution stability and predictability.

Generally, given the nature of public employee retirement systems (e.g., level contribution financing objective and perceived ongoing nature of the plan or plan sponsor), intergenerational equity and contribution stability and predictability have received more consideration than benefit security when contribution allocation procedures are selected. However, given the importance of benefit security to any retirement system, we suggest that contributions to the System in excess of those presented in the annual valuation reports be considered.

Limitations of Funded Status Measurements

Unless otherwise indicated, a funded status measurement presented in this report is based upon the actuarial accrued liability and the actuarial value of assets. Unless otherwise indicated, with regard to any funded status measurements presented in this report:

(1) The measurement is inappropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations.
(2) The measurement is dependent upon the actuarial cost method which, in combination with the plan's amortization policy, affects the timing and amounts of future contributions. The amounts of future contributions will most certainly differ from those assumed in this report due to future actual experience differing from assumed experience based upon the actuarial assumptions. A funded status measurement in this report of 100% is not synonymous with no required future contributions. If the funded status were 100%, the plan would still require future normal cost contributions (i.e., contributions to cover the cost of the active membership accruing an additional year of service credit).
(3) The measurement would produce a different result if the market value of assets were used instead of the actuarial value of assets, unless the market value of assets is used in the measurement.

SECTION A

FINANCIAL PRINCIPLES

Financial Principles and Operational Techniques of LAGERS

Promises Made, and To Be Paid For. As each year is completed, the System in effect hands an "IOU" to each member then acquiring a year of service credit -- the "IOU" says: "The Missouri Local Government Employees Retirement System owes you one year's worth of retirement benefits, payments in cash commencing when you qualify for retirement."

The related ***key financial questions*** are:

Which generation of taxpayers contributes the money to cover the IOU**?**
The present taxpayers, who receive the benefit of the member's present year of service?
Or the future taxpayers, who happen to be in Missouri at the time the IOU becomes a cash demand?

LAGERS intends that this year's taxpayers contribute the money to cover the IOUs being handed out this year. By following this principle, ***the employer contribution rate will remain approximately level from generation to generation*** -- our children and our grandchildren will contribute the same percents of pay we contribute now.

(There are Systems which have a design for deferring contributions to future taxpayers lured by a lower contribution rate now and putting aside the fact that the contribution rate must relentlessly grow much greater over decades of time -- consume now, and let your children face your ***financial pollution*** after you have retired.)

An inevitable by-product of the level-cost design is the accumulation of reserve assets, for decades, and the income produced when the assets are invested. ***Invested assets are a by-product and not the objective. Investment income*** becomes in effect ***the third contributor*** for benefits to employees and is interlocked with the contribution amounts required from employees and employers.

Translated to actuarial terminology, this level-cost objective means that the contribution rates must total at least the following:

> Normal Cost (the cost of members' service being rendered this year)
>
> ... plus ...
>
> Interest on Unfunded Actuarial Accrued Liabilities (unfunded actuarial accrued liabilities are the difference between: liabilities for members' service already rendered and the accrued assets of the governmental unit in the plan).

Computing Contributions to Support System Benefits. From a given schedule of benefits and from the employee data and asset data furnished, the actuary determines the contribution rates to support the benefits by means of ***an actuarial valuation and a funding method*.**

An actuarial valuation has a number of ingredients such as: the rate of investment return which plan assets will earn; the rates of withdrawal of active members who leave covered employment before qualifying for any monthly benefit; the rates of mortality; the rates of disability; the rates of pay increases; and the assumed age or ages at actual retirement.

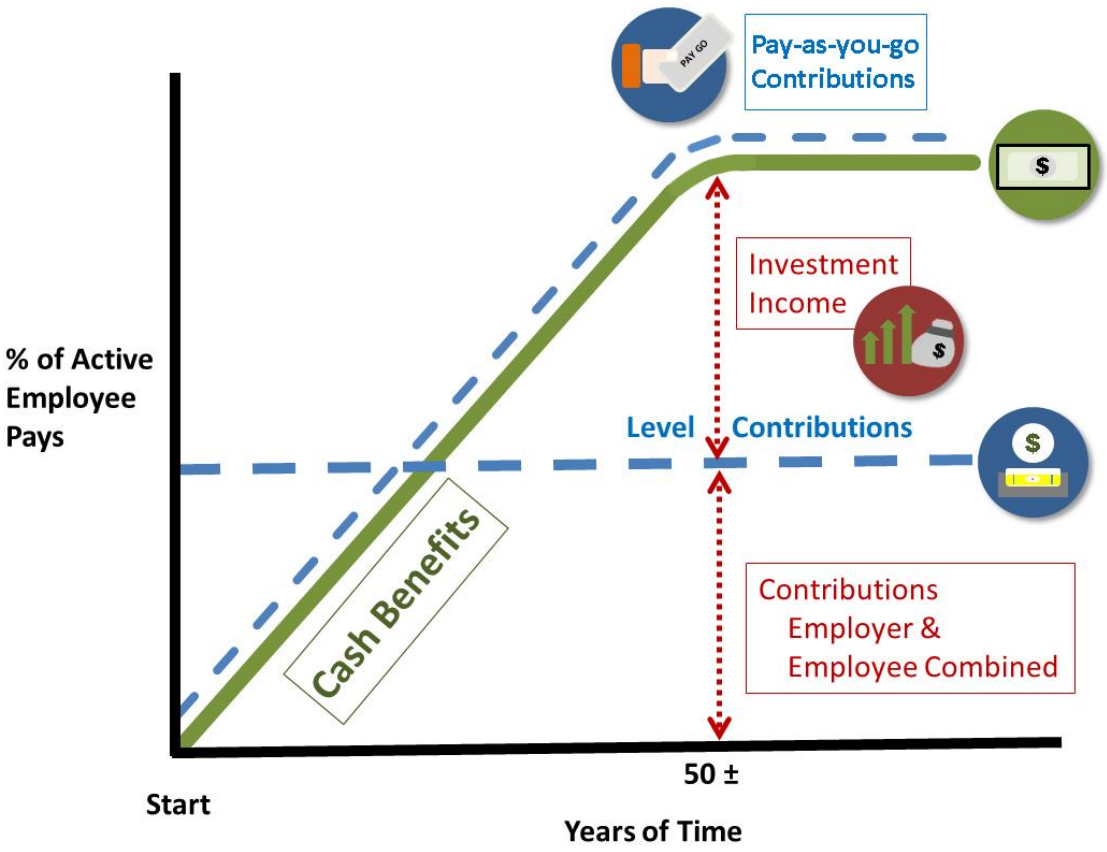
In making an actuarial valuation, the System must assume what the above experience will be for the next year and for decades in the future. Only the subsequent actual experience of the System can indicate the degree of accuracy of the assumptions.

Reconciling Differences Between Assumed Experience and Actual Experience. Once actual experience has occurred and been observed, it will not coincide exactly with assumed experience, regardless of the wisdom of the assumptions and regardless of the skill of the actuary and the calculations made. The future can be predicted with considerable but not complete precision, except that inflation seems to defy reliable prediction.

LAGERS copes with these continually changing differences by having ***annual actuarial valuations***, separately for each participating employer group. Each annual actuarial valuation is a complete recalculation of assumed future experience, taking into account all past differences between assumed and actual experience. The result is continually changing employer contribution rates.

Generally, the size of an annual change in an employer rate is less than one percent of payroll (up or down), particularly for the larger groups, where activities of one or two employees have little effect on the group's status. In periods of volatile investment markets, groups with large Employer Accumulation Fund (EAF) balances may experience larger changes in computed rates.

To avoid causing employer budget problems, LAGERS provides a maximum annual increase of one percent of payroll for any one participating employer. Beginning with the February 28, 1999 valuations, the maximum allowed annual decrease in an employer contribution rate is also one percent of payroll, unless it is clear that a larger decrease will likely be long term in nature. (For example, if a change in active group size appears to not be temporary.)



CASH BENEFITS LINE. This relentlessly increasing line is the fundamental reality of retirement plan financing. It happens each time a new benefit is added for future retirements (and happens regardless of the design for contributing for benefits).

LEVEL CONTRIBUTION LINE. Determining the level contribution line requires detailed assumptions concerning a variety of experiences in future decades, including:

- **Economic Risk Areas**
  - Rates of investment return
  - Rates of pay increase
  - Changes in active member group size
- **Non-Economic Risk Areas**
  - Ages at actual retirement
  - Rates of mortality
  - Rates of withdrawal of active members (turnover)
  - Rates of disability

Actuarial Valuation Process

The ***actuarial valuation*** is the mathematical process by which the contribution rate is determined, and the flow of activity constituting the valuation may be summarized as follows:

A. ***Covered people data***, furnished by plan administrator, including:

Retired lives now receiving benefits
Former employees with vested benefits not yet payable
Active employees

B. + ***Asset data*** (cash & investments), furnished by plan administrator

C. + ***Assumptions concerning future financial experiences in various risk areas***, which assumptions are established by the Board of Trustees after consulting with the actuary

D. + ***The funding method*** for determining employer contributions (the long-term, planned pattern for employer contributions)

E. + ***Mathematically combining the assumptions, the funding method, and the data***

F. = Determination of:

Plan financial position

and/or ***New Employer Contribution Rate.***

SECTION B

VALUATION RESULTS

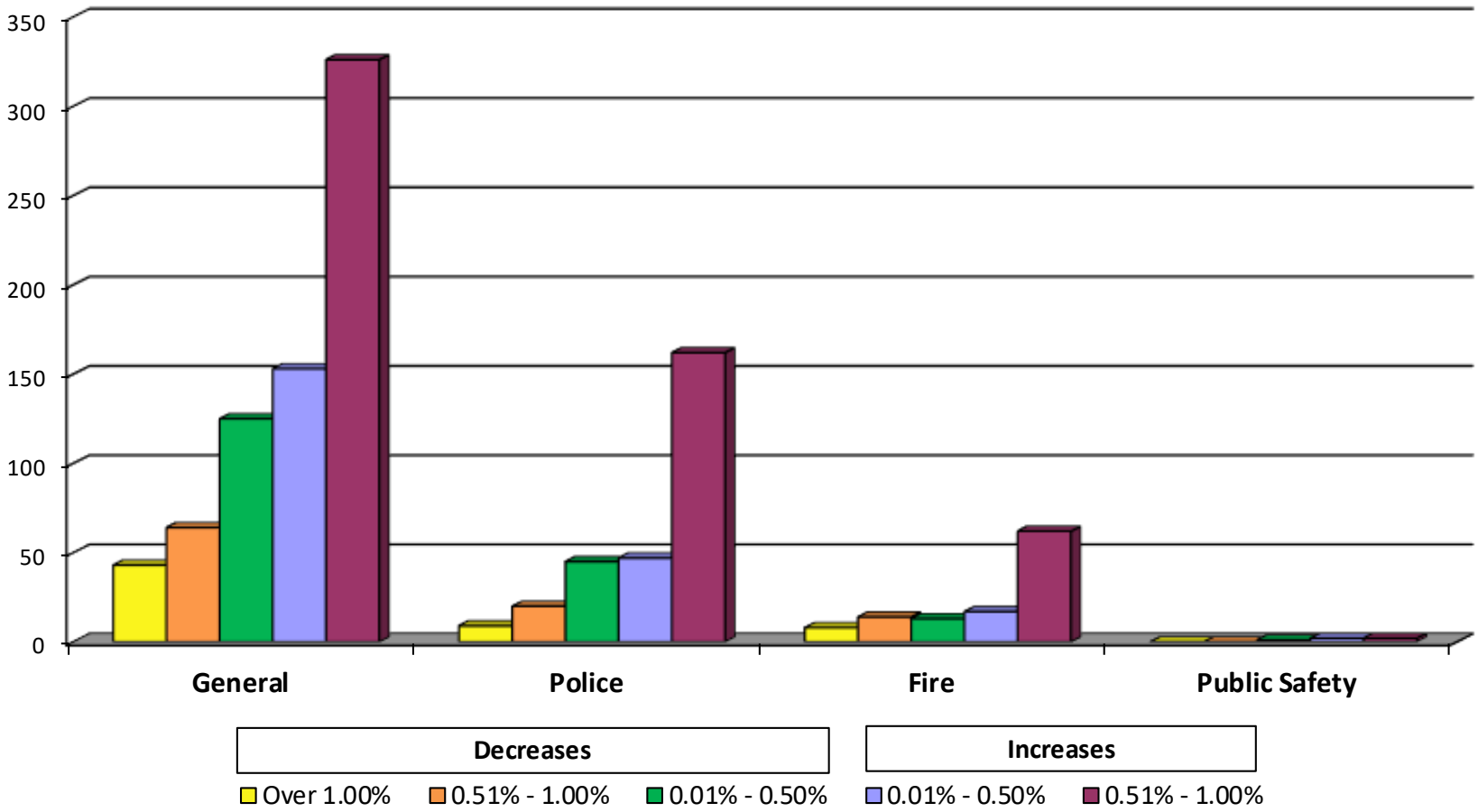
Change in Employer Contributions*
by Valuation Groups as of February 29, 2020

Group	Number of Active Members	Number of Valuation Groups with Indicated Change in Employer Contribution Rate						
		Decreases				Increases		
		Over 1.00%	0.51% to 1.00%	0.01% to 0.50%	Unchanged 0.00%	0.01% to 0.50%	0.51% to 1.00%	Totals
General:	1 - 9	34	39	66	32	76	134	381
	10 - 49	6	23	44	21	45	129	268
	50 & up	3	2	15	7	32	63	122
	Totals	43	64	125	60	153	326	771
Police:	1 - 9	8	11	21	16	19	61	136
	10 - 49	1	9	22	9	23	83	147
	50 & up	0	0	2	1	5	18	26
	Totals	9	20	45	26	47	162	309
Fire:	1 - 9	5	8	2	3	6	21	45
	10 - 49	3	6	11	5	11	32	68
	50 & up	0	0	0	0	0	9	9
	Totals	8	14	13	8	17	62	122
Public Safety:	1 - 9	0	0	1	0	0	0	1
	10 - 49	0	0	0	0	2	2	4
	50 & up	0	0	0	0	0	0	0
	Totals	0	0	1	0	2	2	5
Totals		**60**	**98**	**184**	**94**	**219**	**552**	**1,207**

* *Includes changes in employer contribution rates due to actual experience, changes in actuarial assumptions and changes in actuarial methods. It does not include changes in employer contribution rates due to benefit program changes.*

In broad terms, the smaller the group, the greater the chance of a relatively large change in employer rate from one year to the next.

Change in Employer Contribution Rate*
by Valuation Group



* *Includes changes in employer contribution rates due to actual experience, changes in actuarial assumptions and changes in actuarial methods. It does not include changes in employer contribution rates due to benefit program changes. (LAGERS provides a maximum annual increase of one percent of payroll in the absence of benefit changes for any one participating employer.)*

Schedule of Funding Progress

Each time a new employer joins the System, or an employer adopts a higher level of benefits, unfunded actuarial accrued liabilities are created. The law governing the System requires that these additional obligations be financed systematically over a period of future years.

In an inflationary economy the value of dollars is decreasing. This environment results in employee pays increasing in dollar amounts, retirement benefits increasing in dollar amounts, and then, unfunded actuarial accrued liabilities, all at a time when the actual substance of these items may be decreasing. Looking at just the dollar amounts of unfunded actuarial accrued liabilities can be misleading. Unfunded actuarial accrued liability dollars divided by active employee payroll provides an index which helps understanding. The smaller the ratio of unfunded liabilities to active member payroll, the stronger the System.

Valuation Date	(a) Actuarial Value of Assets	(b) Entry Age Actuarial Accrued Liability	(b-a) Unfunded Accrued Liability (UAL)	(a/b) Funded Ratio	(c) Annual Payroll	[(b-a)/c] UAL as a % of Payroll
2-28-2011 #	$ 3,945,085,880	$ 4,837,423,311	$ 892,337,431	81.6%	$ 1,350,646,560	66.1%
2-29-2012	4,274,440,345	5,120,274,198	845,833,853	83.5	1,359,655,784	62.2
2-28-2013	4,692,218,862	5,423,684,243	731,465,381	86.5	1,395,261,077	52.4
2-28-2014	5,388,198,677	5,873,910,959	485,712,282	91.7	1,456,008,487	33.4
2-28-2015	5,972,471,342	6,324,109,191	351,637,849	94.4	1,462,218,216	24.0
2-29-2016 #	6,320,171,438	6,671,352,337	351,180,899	94.7	1,507,588,470	23.3
2-28-2017	6,764,626,389	7,135,950,253	371,323,864	94.8	1,555,729,666	23.9
2-28-2018	7,297,699,793	7,631,702,645	334,002,852	95.6	1,616,895,524	20.7
2-28-2019	7,698,244,648	8,113,100,648	414,856,000	94.9	1,682,772,357	24.7
2-29-2020	8,083,990,980	8,630,842,143	546,851,163	93.7	1,787,038,817	30.6

 # Revised actuarial assumptions.

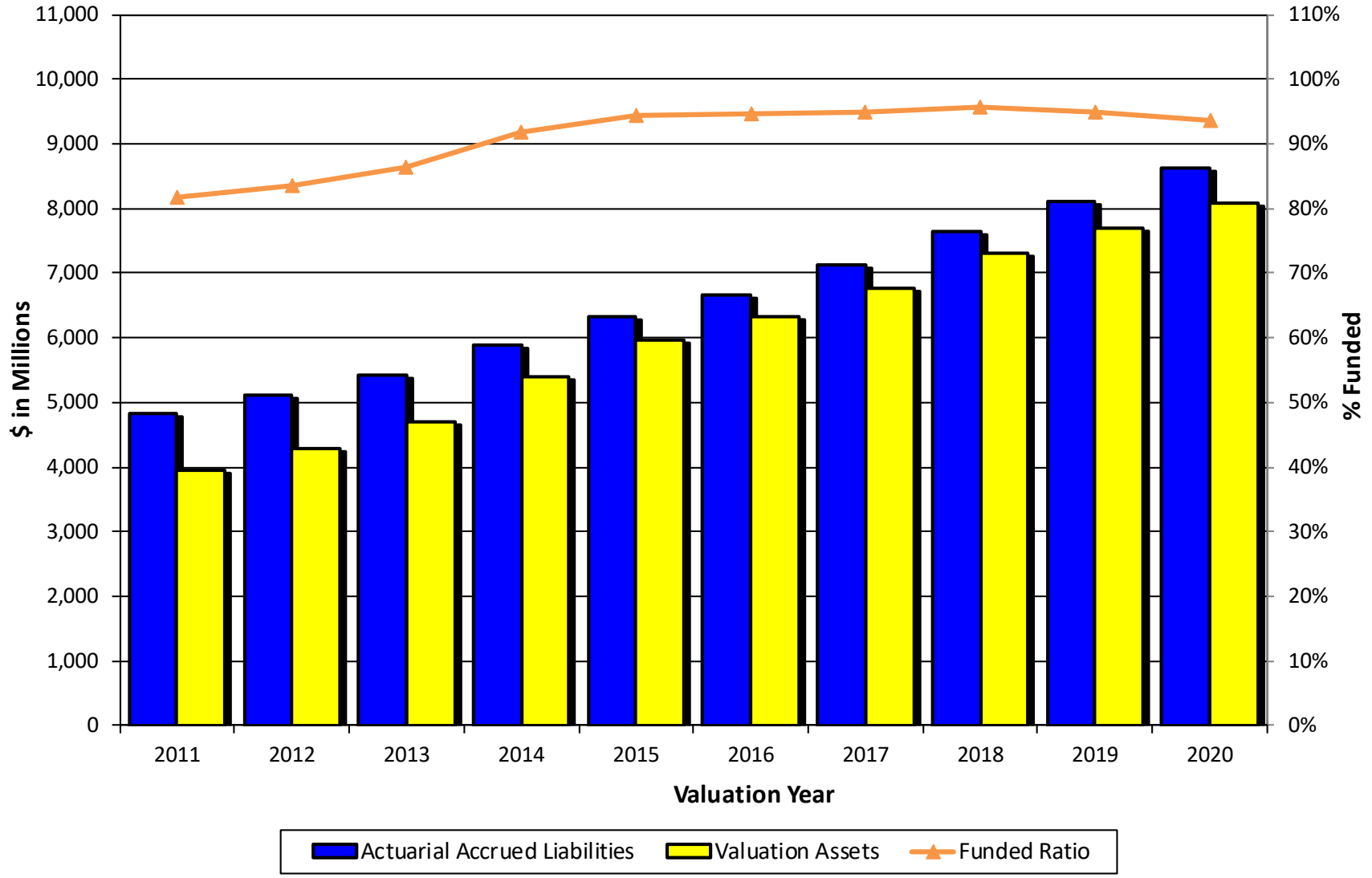
Each employer participating in the System is financially responsible for its own obligation. Accordingly, the aggregate numbers presented on this and the following pages are indicative only of the overall condition of the System and are not indicative of any one employer.

Factors that generally have a downward effect on the funded ratio include unfavorable actuarial experience and the following:

- Employers adopting new benefit programs. For example, before reflecting the benefit changes adopted by political subdivisions during the year, the 2-28-2019 and 2-29-2020 Funded Ratios would have been 95.2% (instead of 94.9%) and 93.9% (instead of 93.7%), respectively.
- New employers joining LAGERS (who at time of joining do not have assets on hand to cover actuarial accrued liabilities associated with past service). For example, before including new political subdivisions joining LAGERS during the year, the 2-29-2020 Funded Ratio would have been 93.8% (instead of 93.7%).
- The planned reduction in funding levels (through reduced employer contributions) for employers that are over 100% funded.

Factors that generally have an upward effect on the funded ratio include scheduled employer contributions for employers that are less than 100% funded and favorable actuarial experience.

Portion of Actuarial Accrued Liabilities Covered by Valuation Assets



Short Condition Test

The LAGERS funding objective is to meet long-term benefit promises through contributions that remain approximately level from year to year as a percent of member payroll. If the contributions to the System are level in concept and soundly executed, the System will ***pay all promised benefits when due -- the ultimate test of financial soundness***. Testing for level contribution rates is the long-term test.

A short condition test is one means of checking a System's progress under its funding program. In a short condition test, the plan's present assets (cash and investments) are compared with the actuarial accrued liabilities for: (1) active member contributions on deposit; (2) future benefits to present retired lives; and (3) service already rendered by active members. In a System that has been following the discipline of level percent of payroll financing, the liabilities for active member contributions on deposit and for future benefits to present retired lives will be fully covered by present assets (except in rare circumstances). In addition, the liabilities for service already rendered by active members will be partially covered by the remainder of present assets. The larger the funded portion of liability 3, the stronger the condition of the System.

The schedule below illustrates the most recent 10-year history of the System's actuarial accrued liabilities and is indicative of the LAGERS policy of following the discipline of level percent-of-payroll financing.

Comparative Schedule

Valuation Date	Entry Age Accrued Liability For (1) Active Member Contributions	(2) Retirants and Beneficiaries*	(3) Active Members (Employer Financed Portion)	Actuarial Value of Assets	Portion of Accrued Liability Covered by Assets (1)	(2)	(3)
2-28-2011 #	$ 98,127,911	$ 1,737,107,211	$ 3,002,188,189	$ 3,945,085,880	100%	100%	70%
2-29-2012	102,637,353	1,954,579,782	3,063,057,063	4,274,440,345	100	100	72
2-28-2013	107,120,593	2,132,575,405	3,183,988,245	4,692,218,862	100	100	77
2-28-2014	129,399,490	2,401,194,322	3,343,317,147	5,388,198,677	100	100	85
2-28-2015	133,985,740	2,797,401,342	3,392,722,109	5,972,471,342	100	100	90
2-29-2016 #	137,652,896	2,896,669,106	3,637,030,335	6,320,171,438	100	100	90
2-28-2017	144,754,979	3,195,680,396	3,795,514,878	6,764,626,389	100	100	90
2-28-2018	150,947,222	3,548,016,100	3,932,739,323	7,297,699,793	100	100	92
2-28-2019	162,317,487	3,840,475,375	4,110,307,786	7,698,244,648	100	100	90
2-29-2020	169,100,962	4,121,913,291	4,339,827,890	8,083,990,980	100	100	87

 # Revised actuarial assumptions.
** Includes reserve for future experience.*

Employers Accumulation Fund

The Employers Accumulation Fund assets totaled $3,774,319,040 as of February 29, 2020 based on the actuarial value of assets. The individual participating Employers Accumulation Fund accrued liabilities (entry age normal cost method) were computed to be $4,321,170,203 as of that date.

Each time a new employer joins the System, or an employer adopts a higher level of benefit, unfunded accrued liabilities are created. The law governing the System requires that these additional EAF liabilities be financed systematically over a period of future years.

Each employer is financially responsible for its own EAF liabilities. Accordingly, the aggregate numbers presented for the Employers Accumulation Fund are indicative only of overall condition and not indicative of the status of any individual employer.

Aggregate Accrued Liabilities and Actuarial Value of Assets
Comparative Statement

Valuation Date	Actuarial Value of Assets	Aggregate Accrued Liabilities	Ratio of Assets to Liabilities*
2-28-2011#	$2,225,518,352	$2,970,498,686	74.9%
2-29-2012	2,373,234,521	3,040,800,711	78.0
2-28-2013	2,539,356,780	3,163,926,221	80.3
2-28-2014	2,841,763,098	3,327,475,380	85.4
2-28-2015	3,027,965,806	3,379,603,655	89.6
2-29-2016#	3,278,700,980	3,629,881,879	90.3
2-28-2017	3,408,020,661	3,779,344,525	90.2
2-28-2018	3,581,932,208	3,915,935,060	91.5
2-28-2019	3,676,379,143	4,091,235,143	89.9
2-29-2020	3,774,319,040	4,321,170,203	87.3

 # Revised actuarial assumptions.

** The larger the ratio of assets to liabilities, the greater the reserve strength of the Employers Accumulation Fund.*

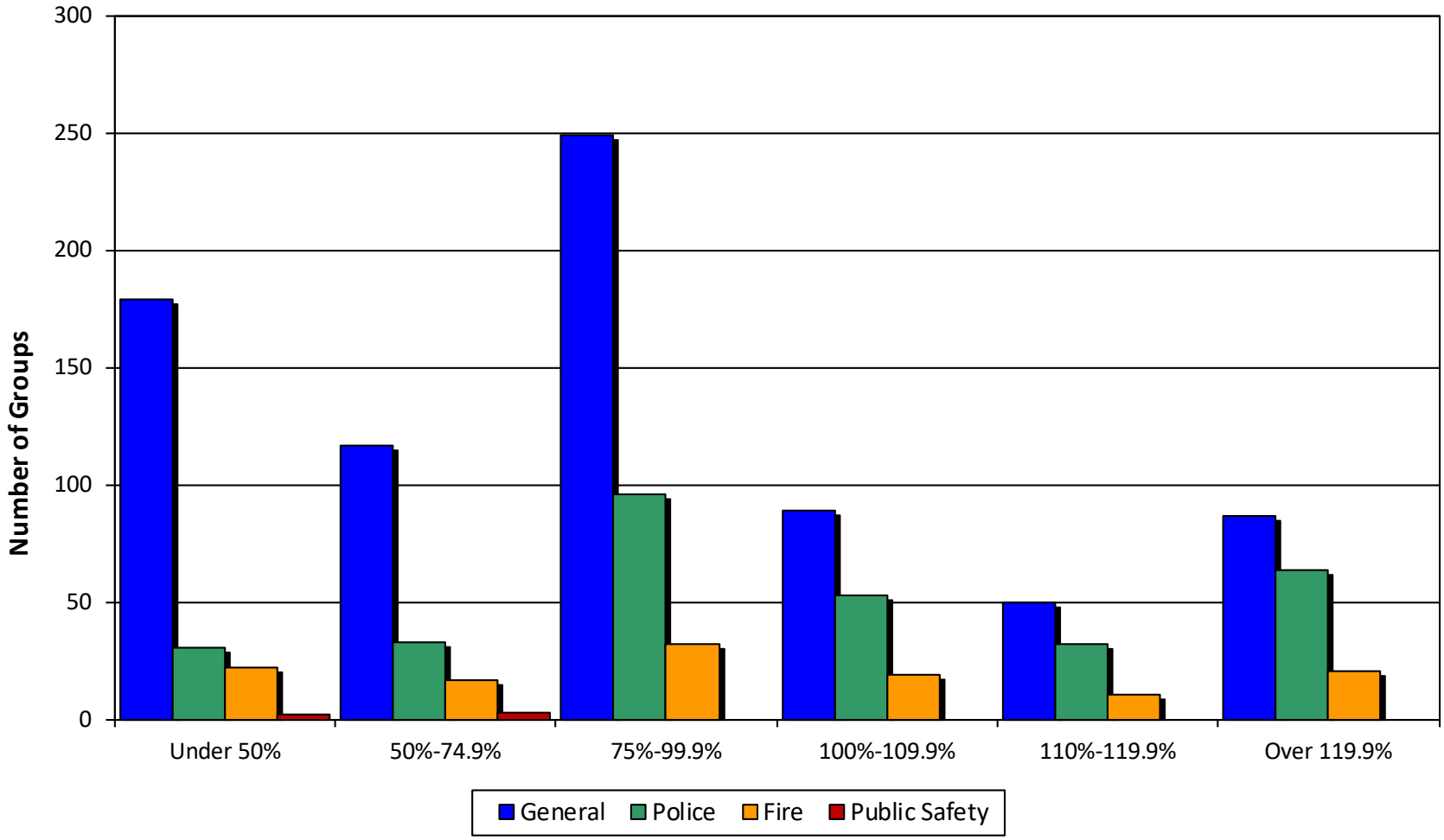
Employers Accumulation Fund
Portion of Liabilities Covered by Assets
by Valuation Groups as of February 29, 2020

Group	Number of Active Members	Number of Valuation Groups with Assets as a Percent of Actuarial Accrued Liabilities						
		Under 50.0% #	50.0% - 74.9%	75.0% - 99.9%	100.0% - 109.9%	110.0% - 119.9%	Over 119.9%	Totals*
General:	1 - 9	141	69	84	25	15	47	381
	10 - 49	34	39	102	44	19	30	268
	50 & up	4	9	63	20	16	10	122
	Totals	179	117	249	89	50	87	771
Police:	1 - 9	20	14	31	20	10	41	136
	10 - 49	9	19	47	30	19	23	147
	50 & up	2	—	18	3	3	—	26
	Totals	31	33	96	53	32	64	309
Fire:	1 - 9	10	5	12	7	1	10	45
	10 - 49	10	10	17	10	10	11	68
	50 & up	2	2	3	2	—	—	9
	Totals	22	17	32	19	11	21	122
Public	1 - 9		1					1
Safety:	10 - 49	2	2					4
	50 & up	—	—	—	—	—	—	0
	Totals	2	3	0	0	0	0	5
Totals*		**234**	**170**	**377**	**161**	**93**	**172**	**1,207**

** Not included in this tabulation are 65 groups which presently have no active members.*

 # Valuation groups included in these totals are generally from employers recently joining the System.

Employers Accumulation Fund
Portion of Liabilities Covered by Assets



Members Deposit Fund

The Members Deposit Fund assets for active members totaled $169,100,962 as of February 29, 2020. The Members Deposit Fund actuarial accrued liabilities are set equal to assets.

Aggregate Actuarial Accrued Liabilities and Actuarial Value of Assets Comparative Statement

Valuation Date	Actuarial Value of Assets	Aggregate Accrued Liabilities	Ratio of Assets to Liabilities
2-28-2011	$ 98,127,911	$ 98,127,911	100.0%
2-29-2012	102,637,353	102,637,353	100.0
2-28-2013	107,120,593	107,120,593	100.0
2-28-2014	129,399,490	129,399,490	100.0
2-28-2015	133,985,740	133,985,740	100.0
2-29-2016	137,652,896	137,652,896	100.0
2-28-2017	144,754,979	144,754,979	100.0
2-28-2018	150,947,222	150,947,222	100.0
2-28-2019	162,317,487	162,317,487	100.0
2-29-2020	169,100,962	169,100,962	100.0

Benefit Reserve Fund

The Benefit Reserve Fund assets as of February 29, 2020 totaled $4,121,913,291 based on the actuarial value of assets. The present value of future benefits was computed to be $3,823,959,982 as of that date.

When a member retires, there is transferred to the Benefit Reserve Fund a single sum reserve which is expected to cover all future pension benefits; this reserve is calculated based on assumptions about mortality and assumed annual investment return.

Beginning in 1986, each year LAGERS actual investment return rate is credited to the Benefit Reserve Fund. Investment return on BRF assets over an assumed rate of approximately 4.63% (1.0725 / 1.025 - 1) provides the money from which the Board can grant benefit increases after retirement. Beginning in 1999, the investment return credit is limited if the funded ratio exceeds 140%. Beginning in 2002, the threshold was changed to 125%. Beginning in 2014, the investment return credit to the Employers Accumulation Fund is limited if the funded ratio of the benefit reserve fund is below 75%.

The most recent such benefit increase occurred October 1, 2019 and consisted of an overall increase of 4% or less.

Actuarial Accrued Liabilities and Accrued Assets
Comparative Statement

Annual Valuation Date	Pensions Being Paid	Benefit Increase % Last Oct. 1	Investment Return % Last June 30	Present Value of Future Benefits	Reserve for Future Experience	Accrued Liabilities	Actuarial Value of Assets	Ratio of Actuarial Value of Assets to PVFB
2-28-2011 #	$150,824,098	4.0%	5.4%	$1,737,107,211	$ 0	$1,737,107,211	$1,589,750,114	91.5%
2-29-2012	169,170,529	4.0	9.8	1,954,579,782	0	1,954,579,782	1,776,312,119	90.9
2-28-2013	184,411,123	4.0	8.7	2,132,575,405	0	2,132,575,405	2,025,679,465	95.0
2-28-2014	199,601,520	4.0	10.1	2,304,570,607	96,623,715	2,401,194,322	2,401,194,322	104.2
2-28-2015	218,892,566	4.0	14.1	2,523,309,015	274,092,327	2,797,401,342	2,797,401,342	110.9
2-29-2016 #	233,448,283	4.0	21.4	2,767,773,907	128,895,199	2,896,669,106	2,896,669,106	104.7
2-28-2017	251,511,120	4.0	(0.4)	2,981,680,216	214,000,180	3,195,680,396	3,195,680,396	107.2
2-28-2018	273,607,002	4.0	12.0	3,247,350,369	300,665,731	3,548,016,100	3,548,016,100	109.3
2-28-2019	299,644,108	4.0	12.4	3,556,662,590	283,812,785	3,840,475,375	3,840,475,375	108.0
2-29-2020	322,165,724	4.0	6.6	3,823,959,982	297,953,309	4,121,913,291	4,121,913,291	107.8

 # Revised actuarial assumptions.

Casualty Reserve Fund

Beginning with the 1989 valuation, at the time a disability benefit becomes payable there is transferred from the Casualty Reserve Fund to the Benefit Reserve Fund the difference between (i) the full employer reserve covering the disability benefit and (ii) the accrued service liability of the Employer Accumulation Fund for the member who became disabled. Beginning September 2011, this procedure also occurs for duty related death-in-service cases.

Employer contributions to cover the transfers described above are determined on a pooled-group basis (not separately for each financing group). The contribution rates, varying by size of benefit formula, were last changed in 2016.

Benefit Formula	Employer Contribution Rate to the CRF		
	General	Police	Fire
L-1, LT-4	0.2%	0.4%	0.6%
L-3, LT-5	0.3%	0.5%	0.7%
L-7, LT-8	0.3%	0.6%	0.8%
L-9, LT-10, L-12, LT-14	0.4%	0.7%	0.9%
L-6	0.5%	0.8%	1.0%
L-11	0.6%	1.0%	1.2%

If there is a positive asset balance in the Casualty Reserve Fund at any time, it indicates that cumulative past contributions have fully funded the cumulative past obligations --- similarly, a negative balance would indicate that cumulative past contributions have fallen short of the target. For actuarial valuation purposes, actuarial accrued liabilities equal the actuarial value of assets.

Actuarial Value of Assets at Valuation Dates
Comparative Statement

Valuation Date	Employer L-1 Contributions*: Year Ended	Actuarial Value of Assets	Accrued Liabilities	Assets Expressed as Percents of Member Payroll	
				Total	Change
2-28-2011	0.2%	$ 31,689,503	$ 31,689,503	2.3%	0.4%
2-29-2012 @	0.2	22,256,352	22,256,352	1.6	-0.7
2-28-2013	0.2	20,062,024	20,062,024	1.4	-0.2
2-28-2014	0.2	15,841,767	15,841,767	1.1	-0.3
2-28-2015	0.2	13,118,454	13,118,454	0.9	-0.2
2-29-2016	0.2	7,148,456	7,148,456	0.5	-0.4
2-28-2017 #	0.2	16,170,353	16,170,353	1.0	0.5
2-28-2018	0.2	16,804,263	16,804,263	1.0	0.0
2-28-2019	0.2	19,072,643	19,072,643	1.1	0.1
2-29-2020	0.2	18,657,687	18,657,687	1.0	-0.1

@ Reflects a special $12 million transfer from the Casualty Reserve Fund to the Income-Expense Fund.
 # Reflects a special $10 million transfer from the Income-Expense Fund to the Casualty Reserve Fund.
** General group.*

SECTION C

ASSET DATA USED IN THE VALUATIONS

Reported Accrued Assets Available for Benefits as of February 29, 2020

Statutory Funds	Reported Assets	Actuarial Value of Assets
Employers Accumulation Fund	$3,783,409,802	$3,774,319,040
Members Deposit Fund	169,100,962	169,100,962
Benefit Reserve Fund	4,131,415,547	4,121,913,291
Casualty Reserve Fund	18,700,699	18,657,687
Total	**$8,102,627,010**	**$8,083,990,980**

The Actuarial Value of Assets is based on market value, but with a 5-year smoothing of the difference between projected investment return, based on the actuarial assumptions, and actual market to market returns. The actuarial value of assets is not permitted to deviate from market value by more than 20%. The derivation of the actuarial value of assets (also called the funding value of assets) is shown on pages C-3 and C-4. A funding value adjustment factor is applied to the reported value of assets of each employer (cost value for valuation years 2015 and prior; market value thereafter). The funding value adjustment factor serves two purposes:

- it incorporates the balance in the Income-Expense Fund for actuarial valuation purposes, since it is not allocated until June 30; and
- it converts the reported value of assets to the actuarial value of assets.

The Employers Accumulation Fund represents employer contributions accumulated for benefits to or on behalf of present active and deferred members.

The Members Deposit Fund represents employee contributions accumulated for (1) monthly benefits upon future retirements and (2) refunds upon termination if monthly benefits are not payable.

The Benefit Reserve Fund represents employer and employee reserves held for the monthly benefits being paid to present retired lives.

The Casualty Reserve Fund represents employer contributions accumulated for the added liability incurred when a member becomes a disability retirement.

The Income-Expense Fund represents investment income received less administrative expenses paid. At the end of the System's fiscal year, interest is paid to the other four Funds from this Fund. The February 29, 2020 balance in the Income-Expense Fund was used for valuation purposes.

Investment Activities

A retirement system acquires and invests assets as the result of following the financial objective of level contribution rates. The Board of Trustees of LAGERS has the responsibility for seeing that the assets are invested effectively and within the limits imposed by law. The Board retains professional money managers to assist in the investment process, and reviews their activities throughout each year.

Presented below is a table showing investment credits to the various Funds of the System for the last 5 years.

Rates of Investment Return Allocated to LAGERS Fund Accounts

Year Ended June 30	Investment Credits as % of Fund Balance				Inflation Loss % (CPI)
	Casualty Reserve Fund A	Members Deposit Fund B	Benefit Reserve Fund C	Employer Accumulation Fund D	
2016	7.25 %	0.5 %	(0.4) %	(0.4) %	1.0 %
2017	7.25	0.5	12.0	12.5	1.6
2018	7.25	0.5	12.4	12.9	2.9
2019	7.25	0.5	6.6	6.8	1.6
2020	7.25	0.5	1.2	1.3	0.6
5-Year Compound Average			**6.2** %	**6.5** %	**1.5** %

A. Casualty Reserve assets are for the non-accrued service portion of disability benefits to future disabled lives. The investment percent is the rate set for actuarial purposes.

B. Member Deposit assets are the contributions of present members. The investment percent, set by the Board, affects amounts payable to members who request a refund. The percent does not affect the monthly benefit of a retiring member.

C. Benefit Reserve assets are for benefits to present retired lives. The investment credit comes from the remainder of net investment return after crediting the Casualty Reserve assets. This revised allocation of investment credits is intended to provide the resources for additional benefit increases after retirement, and is based upon a 1986 change in the LAGERS law. Beginning in 1999, the investment credit to the Benefit Reserve Fund (BRF) is limited, if the funded ratio of the BRF exceeds 140%. Beginning in 2002, the threshold was changed to 125%. In addition, for the 2002 interest credits the BRF interest credit was further reduced to permit a 0.0% interest credit to the EAF. Beginning in 2014, the investment credit to the Employer Accumulation Fund is limited if the funded ratio of the BRF is below 75%.

D. Employer Accumulation assets are for benefits to future retired lives including the accrued service portion of disability benefits. The investment credit is derived from the remainder of net investment return after crediting the Casualty Reserve assets, followed by a further adjustment for the investment credit to the Member Deposit assets (and beginning in 1999 for any reallocation of investment credits from the Benefit Reserve Fund). The Employer Accumulation Fund is responsible for covering liability increases resulting from inflation losses.

Development of Funding Value of Retirement System Assets

Year Ending February 28:	2016	2017	2018	2019
A. Actuarial Value Beginning of Year	$5,972,290,794	$6,320,364,000	$6,764,807,794	$7,297,490,115
B. Market Value End of Year	5,927,009,651	6,724,171,234	7,591,902,046	7,749,029,831
C. Market Value Beginning of Year	6,373,132,885	5,927,009,651	6,724,171,234	7,591,902,046
D. Non-Investment/Administrative Net Cash Flow	(60,777,985)	(76,813,805)	(72,965,196)	(87,121,137)
E. Investment Income				
E1. Market Total: B-C-D	(385,345,249)	873,975,388	940,696,008	244,248,922
E2. Assumed Rate of Return	7.25%	7.25%	7.25%	7.25%
E3. Amount for Immediate Recognition	430,787,881	455,441,890	487,803,577	525,909,892
E4. Amount for Phased-In Recognition: E1-E3	(816,133,130)	418,533,498	452,892,431	(281,660,970)
F. Phased-In Recognition of Investment Income				
F1. Current Year: 0.20 x E4	(163,226,626)	83,706,700	90,578,486	(56,332,194)
F2. First Prior Year	7,431,139	(163,226,626)	83,706,700	90,578,486
F3. Second Prior Year	99,354,239	7,431,139	(163,226,626)	83,706,700
F4. Third Prior Year	38,550,259	99,354,239	7,431,139	(163,226,626)
F5. Fourth Prior Year	(4,045,701)	38,550,257	99,354,241	7,431,140
F6. Total Recognized Phase-Ins	(21,936,690)	65,815,709	117,843,940	(37,842,494)
G. **Actuarial Value End of Year**				
G1. Preliminary Actuarial Value End of Year: A+D+E3+F6	$6,320,364,000	$6,764,807,794	$7,297,490,115	$7,698,436,376
G2. Upper Corridor Limit: 120% x B	7,112,411,581	8,069,005,481	9,110,282,455	9,298,835,797
G3. Lower Corridor Limit: 80% x B	4,741,607,721	5,379,336,987	6,073,521,637	6,199,223,865
G4. Actuarial Value End of Year	$6,320,364,000	$6,764,807,794	$7,297,490,115	$7,698,436,376
H. Difference Between Market & Actuarial Value	(393,354,349)	(40,636,560)	294,411,931	50,593,455
I. Ratio of Actuarial Value to Market Value	106.6%	100.6%	96.1%	99.3%
J. Actuarial Value Adjustment Factor (ratio of actuarial value to EAF+MDF+CRF+BRF reported value)	0.9967	1.0821	1.0527	0.9991
K. Recognized Rate of Return	6.88%	8.30%	9.00%	6.73%
L. Market Rate of Return	(6.08)%	14.84%	14.07%	3.24%

The asset valuation method recognizes assumed investment income (line E3) fully each year. Differences between actual and expected investment income (line E4) are phased-in over a closed 5-year period. If in the future, total investment income (line E1) were always equal to assumed investment income (line E3), Funding Value and Market Value would be identical 4 years after the valuation date (line H).

Note: Asset values on this page differ slightly from asset values reported elsewhere in this report, due to a number of miscellaneous closing entries that are not included in the above amounts and rounding.

Development of Funding Value of Retirement System Assets

Year Ending February 28:	2020	2021	2022	2023	2024
A. Actuarial Value Beginning of Year	$7,698,436,376				
B. Market Value End of Year	8,137,172,285				
C. Market Value Beginning of Year	7,749,029,831				
D. Non-Investment/Administrative Net Cash Flow	(112,970,524)				
E. Investment Income					
E1. Market Total: B-C-D	501,112,978				
E2. Assumed Rate of Return	7.25%				
E3. Amount for Immediate Recognition	554,041,456				
E4. Amount for Phased-In Recognition: E1-E3	(52,928,478)				
F. Phased-In Recognition of Investment Income					
F1. Current Year: 0.20 x E4	(10,585,696)				
F2. First Prior Year	(56,332,194)	$ (10,585,696)			
F3. Second Prior Year	90,578,486	(56,332,194)	$ (10,585,696)		
F4. Third Prior Year	83,706,700	90,578,486	(56,332,194)	$ (10,585,696)	
F5. Fourth Prior Year	(163,226,626)	83,706,698	90,578,487	(56,332,194)	$ (10,585,694)
F6. Total Recognized Phase-Ins	(55,859,330)	107,367,294	23,660,597	(66,917,890)	(10,585,694)
G. **Actuarial Value End of Year**					
G1. Preliminary Actuarial Value End of Year: A+D+E3+F6	$8,083,647,978				
G2. Upper Corridor Limit: 120% x B	9,764,606,742				
G3. Lower Corridor Limit: 80% x B	6,509,737,828				
G4. Actuarial Value End of Year	$8,083,647,978				
H. Difference Between Market & Actuarial Value	53,524,307	(53,842,987)	(77,503,584)	(10,585,694)	
I. Ratio of Actuarial Value to Market Value	99.3%				
J. Actuarial Value Adjustment Factor (ratio of actuarial value to EAF+MDF+CRF+BRF reported value)	0.9977				
K. Recognized Rate of Return	6.52%				
L. Market Rate of Return	6.51%				

The asset valuation method recognizes assumed investment income (line E3) fully each year. Differences between actual and expected investment income (line E4) are phased-in over a closed 5-year period. If in the future, total investment income (line E1) were always equal to assumed investment income (line E3), Funding Value and Market Value would be identical 4 years after the valuation date (line H).

Note: Asset values on this page differ slightly from asset values reported elsewhere in this report, due to a number of miscellaneous closing entries that are not included in the above amounts and rounding.

Summary of Current Asset Information Reported for Valuation

Reported Assets (Including Income/Expense Fund)

Market Value - February 29, 2020	
Cash & leverage	$(1,749,676,358)
Receivables & accruals	735,542
Stocks	2,866,609,883
Bonds & government securities	2,599,585,850
Real assets/alpha	3,652,038,277
Strategic assets	767,879,091
Total Current Assets	**$ 8,137,172,285**

Revenues and Expenses

Market Value	Year Ended February 28, 2019	Year Ended February 29, 2020
Balance - Beginning of year	$ 7,591,902,046	$ 7,749,029,831
Revenues:		
Employees' contributions	25,590,871	20,253,618
Employer contributions	216,826,489	225,581,832
Investment income	347,365,405	614,057,340
Total	589,782,765	859,892,790
Expenditures:		
Benefit payments	322,605,084	349,445,285
Refund of member contributions	2,166,701	2,528,231
Investment expenses	103,116,483	112,944,362
Administrative expenses	4,766,712	6,832,458
Total	432,654,980	471,750,336
Balance - End of Year	$ 7,749,029,831	$ 8,137,172,285

SECTION D

GAIN/(LOSS) ANALYSIS

Gain/(Loss) Analysis

Purpose of Gain/(Loss) Analysis. Regular actuarial valuations provide information about the composite change in unfunded actuarial accrued liabilities -- whether or not the liabilities are increasing or decreasing, and by how much.

However, valuations do not show the portion of the change attributable to each risk area within the Retirement System: the rate of investment income on plan assets; the rates of withdrawal of active members who leave covered employment; the rates of mortality; the rates of disability; the rates of salary increases; and the assumed ages at actual retirement. In an actuarial valuation, assumptions are made as to what these rates will be for the next year and for decades in the future.

The objective of a gain and loss analysis is to determine the portion of the change in unfunded actuarial accrued liabilities attributable to each risk area.

The fact that actual experience differs from assumed experience is to be expected. The future cannot be predicted with precision. Changes in the valuation assumption for a risk area should be made when the differences between assumed and actual experience have been observed to be sizable and persistent. One year's gain and loss analysis may or may not be indicative of ***long-term trends, which are the basis of financial assumptions*.**

Development of Total Gain/(Loss)
March 1, 2019 to February 29, 2020

Unfunded Accrued Liabilities (UAL), March 1	$ 414,856,000
Employer Normal Cost	175,732,994
Employer Contributions	225,581,832
Interest	28,270,040
Expected UAL Before Any Changes	393,277,202
Change from Benefit Changes Plus New Employers	36,707,776
Change from Revised Actuarial Assumptions	0
Expected UAL After All Changes	429,984,978
Actual UAL, February 29	546,851,163
Gain/(Loss) for Year from Experience	**$(116,866,185)**

This schedule measures the actual gain or loss for the year after adjusting for the effect of benefit and assumption changes plus any new employers joining LAGERS during the year.

Analysis of Changes in the BRF Reserve for Future Experience
March 1, 2019 to February 29, 2020

Reserve for Future Experience, March 1	$ 283,812,785
Investment Gain/(Loss)	(28,035,470)
Expected Investment Return on Reserve	20,576,427
Mortality Gain/(Loss)	(5,858,968)
Cost-of-Living Gain/(Loss)	26,957,942
Other	500,593
Reserve for Future Experience, February 29	$ 297,953,309

Analysis of Financial Experience
for the Year Ended February 29, 2020

Gains and Losses in Pension Accrued Liabilities Resulting from Differences Between Assumed Experience and Actual Experience

Type of Activity	For Year Ended 2/29/2020	
	Gain or (Loss)	% of Liability
Age & Service Retirements. If members retire at older ages or with lower final average pay than assumed, there is a gain. If younger ages or higher average pays, a loss.	$ (3,308,768)	-0.04%
Death-in-Service Benefits. If more liabilities are released by deaths-in-service than assumed, there is a gain. If smaller releases, a loss.	281,930	0.00%
Withdrawal From Employment. If more liabilities are released by withdrawals than assumed, there is a gain. If smaller releases, a loss.	6,678,461	0.08%
Disability Benefits. If more liabilities are released by disabilities than assumed, there is a gain. If smaller releases, a loss.	(302,208)	0.00%
Pay Increases. If there are smaller pay increases than assumed, there is a gain. If greater increases, a loss.	(56,685,606)	-0.70%
Investment Income. If there is greater investment return on assets than assumed, there is a gain. If less return, a loss.	(55,859,330)	-0.69%
New active members. Includes the hiring of existing LAGERS members by other employers ("linked" members).	(16,875,548)	-0.21%
Benefit Reserve Fund. The effect of the change in reserve for future experience and other retiree experience on system-wide UAAL.	28,035,470	0.35%
Other. Miscellaneous gains and losses resulting from data adjustments, timing of financial transactions, valuation methods, etc.	(18,830,586)	-0.23%
Gain or (Loss) During Year From Experience	$(116,866,185)	-1.44%

Investment Gain/(Loss)
for the Year Ended February 29, 2020

Assets, Beginning of Year	$7,698,436,376
Net Cash Flow	(112,970,524)
Assumed Investment Return	554,041,456
Expected Assets End of Year	8,139,507,308
Actual Assets End of Year	8,083,647,978
Gain/(Loss) for Year	**$ (55,859,330)**

Active Member Population Reconciliation
March 1, 2019 to February 29, 2020

	Actual	Expected
Active Members Beginning of Year	34,523	
Plus New Hires	5,219	
Minus Retirements*	1,006	1,365.7
Minus Deaths	12	41.8
Minus Disabilities	39	61.2
Minus Other Terminations	3,437	2,200.3
Active Members End of Year	**35,248**	

* *Actual retirements include 94 retirees at or above the age where retirements are assumed to occur 100% of the time. Expected retirements include 486 retirees at or above the age where retirements are assumed to occur 100% of the time.*

SECTION E

BENEFIT PROVISIONS CONSIDERED IN THE VALUATION

Missouri LocAl Government Employees Retirement System
Brief Summary of LAGERS
Benefits and Conditions Evaluated and/or Considered Through February 29, 2020
(Section References are to RSMo)

Voluntary Retirement. Sections 70.645 & 70.600. A member may retire with an age & service allowance after both (i) completing 5 years of credited service, and (ii) attaining the minimum service retirement age.

The minimum service retirement age is age 60 for a general employee and age 55 for a police, public safety or fire employee. Optionally, employers may also elect to provide for unreduced benefits for employees whose combination of years of age and years of service equals 80 or more.

Final Average Salary. Section 70.600. The average of a member's monthly compensation during the period of 60 consecutive months (or optionally, 36 consecutive months) of credited service producing the highest monthly average, which period is contained within the 120 consecutive months of credited service immediately preceding retirement.

Age & Service Allowance. Section 70.655. The allowance, payable monthly for life, equals a specified percent of a member's final average salary multiplied by the number of years of credited service. Each employer elects the percent applicable to its members, from the following programs:

L-1 Benefit Program:	1.00% for life
L-3 Benefit Program:	1.25% for life
L-7 Benefit Program:	1.50% for life
LT-4 Benefit Program:	1.00% for life, plus 1.00% to age 62
LT-5 Benefit Program:	1.25% for life, plus 0.75% to age 62
LT-8 Benefit Program:	1.50% for life, plus 0.50% to age 62
LT-4(65) Benefit Program:	1.00% for life, plus 1.00% to age 65
LT-5(65) Benefit Program:	1.25% for life, plus 0.75% to age 65
LT-8(65) Benefit Program:	1.50% for life, plus 0.50% to age 65
L-9 Benefit Program:	1.60% for life
LT-10(65) Benefit Program:	1.60% for life, 0.40% to age 65
L-12 Benefit Program:	1.75% for life
LT-14(65) Benefit Program:	1.75% for life, 0.25% to age 65
L-6 Benefit Program:	2.00% for life
L-11 Benefit Program:	2.50% for life

The only LT benefit programs available for adoption after August 1, 1994 are the LT(65) programs.

Benefit programs L-9 and LT-10(65) are unavailable for adoption after August 1, 2005.

Benefit program L-11 is only available to groups not covered by Social Security.

Subsequent to joining the System the governing body can elect to change benefit programs for the employees, but not more often than once every 2 years.

Missouri LocAl Government Employees Retirement System
Brief Summary of LAGERS
Benefits and Conditions Evaluated and/or Considered
Through February 29, 2020
(Section References are to RSMo)
(Continued)

Early Allowance. Section 70.670. A member may retire with an early allowance after both (i) completing 5 years of credited service, and (ii) attaining age 55 if a general employee or age 50 if a police, public safety or fire employee.

The early allowance amount, payable monthly for life, is computed in the same manner as an age & service allowance, based upon the service and earnings record to time of early retirement, but reduced to reflect the fact that the age when payments begin is younger than the minimum service retirement age. The amount of the reduction is 1/2% of 1% (.005) for each month the age at retirement is younger than the minimum service retirement age.

Deferred Allowance. Section 70.675. If a member leaves LAGERS-covered employment (i) before attaining the early retirement age, and (ii) after completing 5 years of credited service, the member becomes eligible for a deferred allowance; provided the former member lives to the minimum service retirement age and does not withdraw the accumulated contributions.

The deferred allowance amount, payable monthly for life from the minimum service retirement age, is computed in the same manner as an age & service allowance, based upon the service and earnings record to time of leaving LAGERS coverage.

Deferred allowances are also payable any time after reaching the early retirement age, with the reduction for early retirement noted above.

Non-Duty Disability Allowance. Section 70.680. A member with 5 or more years of credited service who becomes totally and permanently disabled from other than duty-connected causes becomes eligible to receive a non-duty disability allowance computed in the same manner as an age & service allowance, based upon the service & earnings record to time of disability.

Duty Disability Allowance. Section 70.680. A member regardless of credited service who becomes totally and permanently disabled from duty-connected causes becomes eligible to receive a duty disability allowance computed in the same manner as an age & service allowance, based upon the earnings record to time of disability but based upon the years of credited service the member would have completed had the member continued in LAGERS-covered employment to age 60.

Death-in-Service. Section 70.661. Upon the death of a member who had completed 5 years of credited service, the eligible surviving dependents receive the following benefits:

(a) The surviving spouse receives an allowance equal to the Option A allowance (joint and 75% survivor benefit) computed based upon the deceased members' service & earnings record to time of death.

(b) When no spouse benefit is payable, the dependent children under age 18 (age 23 if they are full-time students) each receive an equal share of 60% of an age & service allowance computed based upon the deceased member's service & earnings record to time of death.

Missouri LocAl Government Employees Retirement System
Brief Summary of LAGERS
Benefits and Conditions Evaluated and/or Considered Through February 29, 2020
(Section references are to RSMo)
(Concluded)

(c) If the death is determined to be duty related, the 5-year service requirement is waived and the benefit is based on years of credited service the member would have completed had the member continued in LAGERS-covered employment to age 60.

Benefit Changes After Retirement. Section 70.655. For retirements effective after September 28, 1975, there is an annual redetermination of monthly benefit amount, beginning the October first following 12 months of retirement. As of each October first, the amount of each eligible benefit is redetermined as follows:

(a) Subject to the maximum in (b), the redetermined amount is the amount otherwise payable multiplied by: 100% plus up to 4%, as determined by the LAGERS Board of Trustees, for each full year of retirement.

(b) The redetermined amount may not exceed the amount otherwise payable multiplied by the ratio of the Consumer Price Index for the immediately preceding month of June to the Consumer Price Index for the month of June immediately preceding retirement.

Member Contributions. Sections 70.690 & 70.700. Each member contributes 4% of compensation beginning after completion of sufficient employment of 6 months of credited service.

If a member leaves LAGERS-covered employment before an allowance is payable, the accumulated contributions are refunded to the member. If the member dies, his accumulated contributions are refunded to a designated beneficiary.

The law governing LAGERS also has a provision for the adoption of a non-contributory plan in which the full cost of LAGERS participation is paid by the employer. Adoption of the non-contributory provisions may be done at the time of membership or a later date; however, a change from contributory to non-contributory or vice-versa may not be made more frequently than every 2 years. Under the non-contributory provisions there is no individual account maintained for each employee and no refund of contributions if an employee terminates before being eligible for a benefit.

Employer Contributions. Section 70.730. Each employer contributes the remainder amounts necessary to finance the employees' participation in LAGERS. Contributions to LAGERS are determined based upon level percent-of-payroll principles, so that contribution rates do not have to increase over decades of time.

Benefit Programs in Effect as of February 29, 2020

Benefit programs now available to each employer are:

L-1, since 1967	LT-8(65), since 1994
L-3, since 1975	L-9, since 1995
LT-4, since 1977	LT-10(65) since 1995
LT-4(65), since 1994	L-11, since 2000
LT-5, since 1977	L-12, since 2005
LT-5(65), since 1994	LT-14(65), since 2005
L-6, since 1987	Non-Contributory, since 1983
L-7, since 1988	3-Year Final Average Salary (FAS), since 1984
LT-8, since 1988	Rule of 80, since 1988

The only LT benefit programs that can be adopted after August 1, 1994 are the LT(65) programs. Benefit programs L-9 and LT-10(65) are unavailable for adoption after August 1, 2005. Please see pages E-1 through E-3 for a summary of LAGERS provisions.

When the 2020 actuarial valuations were made, the Benefit Programs evaluated were as follows:

		Benefit Programs																							
		Non-Contributory												Contributory											
FAS	Groups	L-1	L-3	LT-4	LT-5	L-6	L-7	LT-8	L-9	LT-10	L-11	L-12	LT-14	L-1	L-3	LT-4	LT-5	L-6	L-7	LT-8	L-9	LT-10	L-11	L-12	LT-14	Totals
5 yr.	General	39	36	1	2	35	48	8	2	2		10	2	73	32	4	1	30	32	5	2			8	1	373
	Police	17	16	1	1	18	30	4	1		1	6		26	14			14	15	2			1	3		170
	Fire	1	4			11	9	2			1	4		7	5			13	7				1	1		66
	Public Safety	–	1	–	1	–	–	1	–	–	–	–	–	1	–	–	–	–	–	–	–		–	–	–	4
	Totals	57	57	2	4	64	87	15	3	2	2	20	2	107	51	4	1	57	54	7	2		2	12	1	613
3 yr.	General	12	19		3	70	115	16	5	6	3	34	7	23	25	1		32	38	2	4	2	1	4		422
	Police	2	12		3	33	22	13	3	2	1	19	5	9	5	1		16	14	2	2		2	2		168
	Fire	2	4		2	15	5	9			4	7	3	3	1			6	3	1			2	1		68
	Public Safety	–	–		–	–	–	–	–	–	–	1	–	–	–	–		–	–	–	–	–	–	–		1
	Totals	16	35		8	118	142	38	8	8	8	61	15	35	31	2		54	55	5	6	2	5	7		659

The above LT columns include both the LT(62) and LT(65) benefit programs. The table includes 65 groups with no active members. The table does not include 5 legacy plan groups.

SECTION F

PARTICIPANT DATA

Participating Employers Evaluated as of February 29, 2020

Type of Group	Number of Participating Employers
General Only	421
Police Only	1
Fire Only	20
Public Safety Only	4
General and Police	240
General and Fire	34
General and Public Safety	1
General and Police and Fire	68
Total	**789**

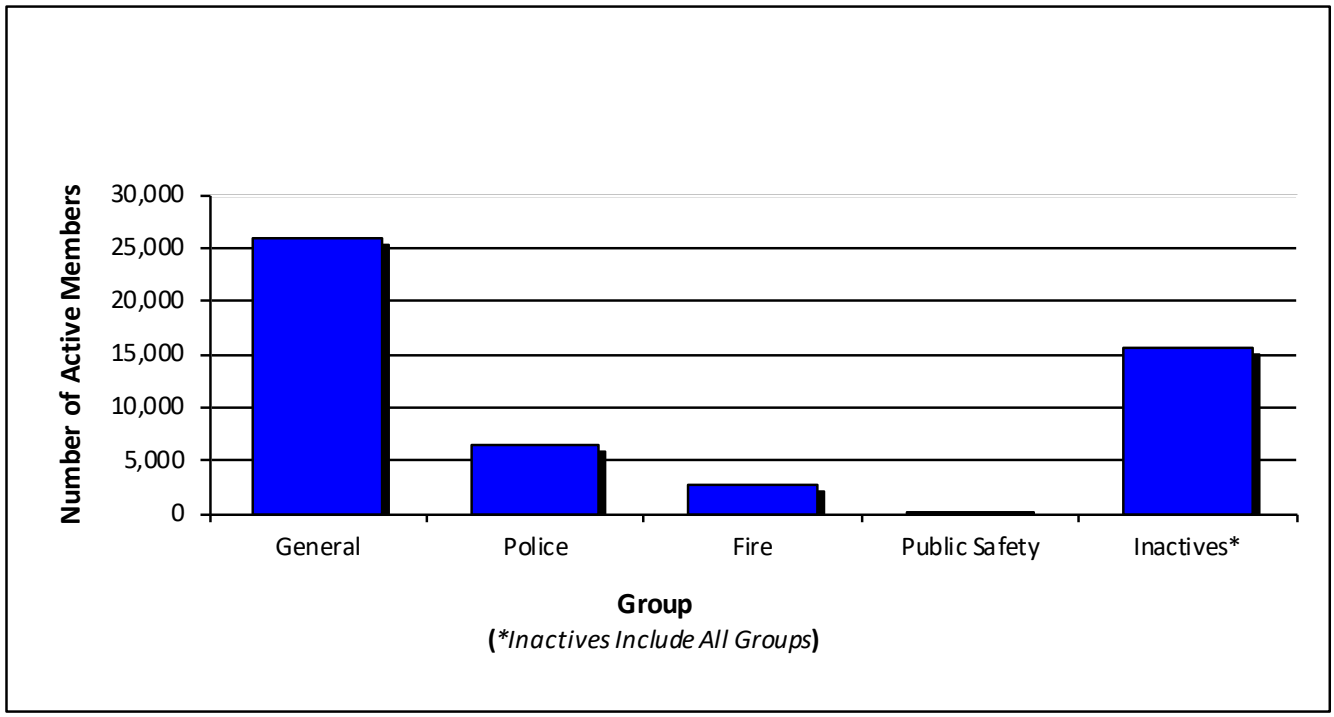
Active and Inactive Members in Valuations as of February 29, 2020

Classification	Number of Members	Number of Valuation Groups*	Annual Payroll
Active Members			
General	26,010	771	$1,261,730,399
Police	6,530	309	362,086,875
Fire	2,645	122	160,566,075
Public Safety	63	5	2,655,468
Total Actives	35,248	1,207	$1,787,038,817
Inactive Members #	15,654		
Total Members	50,902		

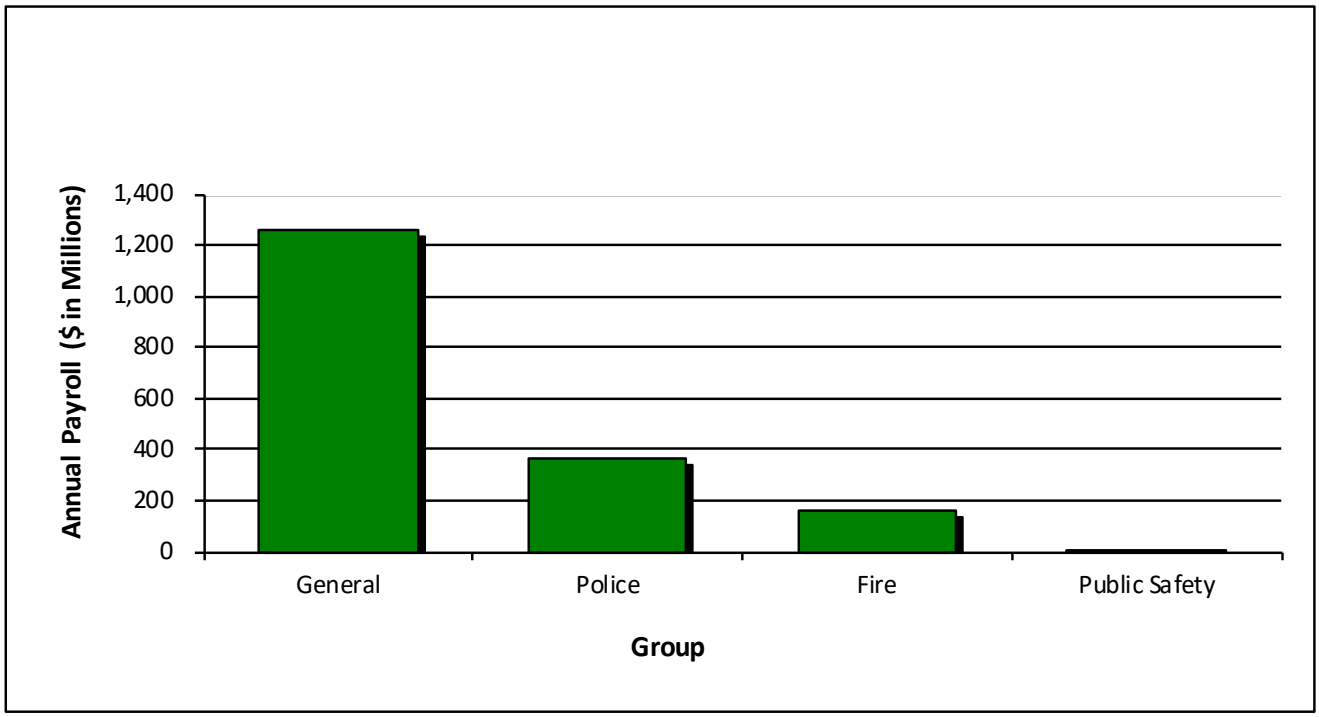
* *Each Police group, each Public Safety group and each Fire group is evaluated separately. Each General group is evaluated separately, but also may be broken into sub-groups for separate financial experience if the employer desires separate employer rates for internal accounting purposes.*

\# *Inactive members are individuals who terminated employment after 5 or more years of LAGERS service, with rights to a deferred benefit commencing at age 60 (age 55 for Police, Public Safety and Fire members). In addition, members who terminated with one employer and have worked or are now working for another LAGERS-covered employer are included in this number count ("linked members"). There are 10,962 linked records included in the above total.*

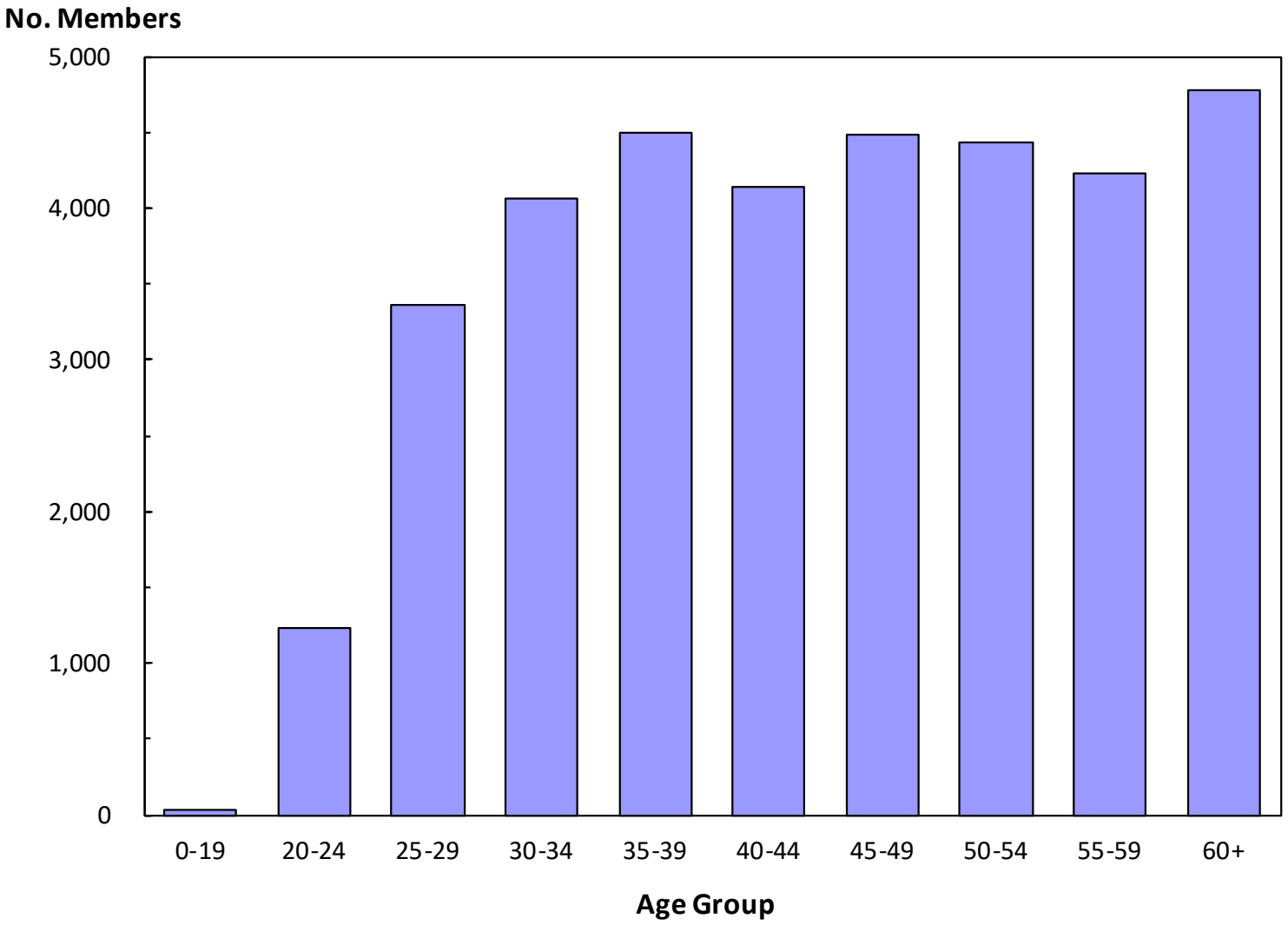
Active Members by Group



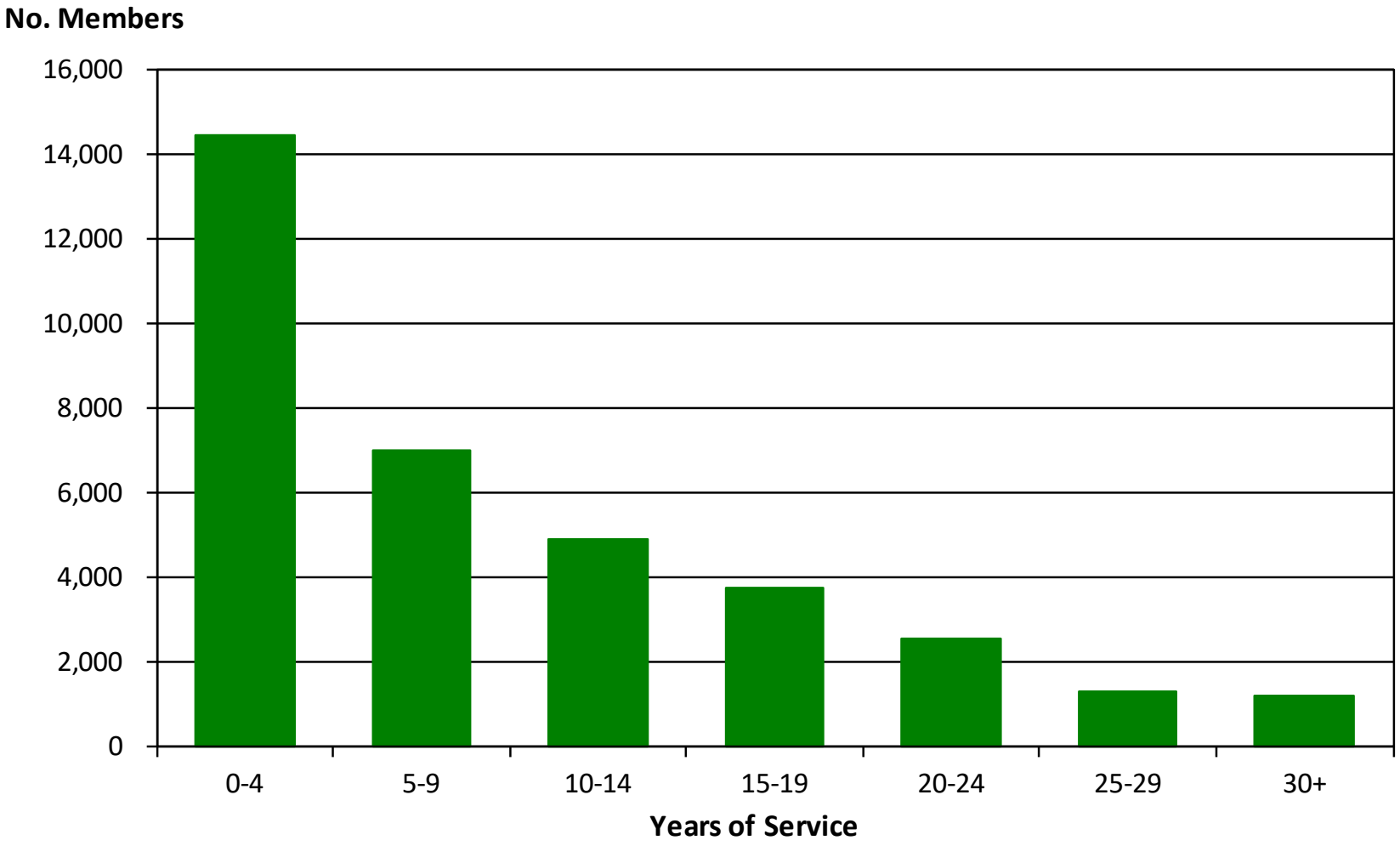
Annual Payroll by Group



Distribution of Active Members by Age as of February 29, 2020



Distribution of Active Members by Service as of February 29, 2020



General Members - Men
Active as of February 29, 2020
by Attained Age and Years of Service

Attained Age	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
Under 20	18							18	$ 498,341
20-24	564	7						571	19,605,936
25-29	948	182	2					1,132	45,327,272
30-34	804	415	124	5				1,348	62,377,351
35-39	719	412	321	129	1			1,582	81,317,196
40-44	564	352	305	296	116	1		1,634	89,737,486
45-49	500	326	296	273	240	85	0	1,720	99,061,994
50-54	490	311	285	287	245	179	82	1,879	111,195,415
55-59	494	309	311	290	243	184	234	2,065	117,661,507
60	70	68	68	56	46	32	57	397	21,443,458
61	83	61	49	34	42	18	54	341	18,954,990
62	66	52	52	49	31	22	55	327	18,019,679
63	61	47	44	39	27	11	38	267	14,734,559
64	54	40	28	35	24	15	22	218	11,694,383
65	39	39	27	22	12	8	21	168	8,477,096
66	25	26	27	17	14	7	18	134	7,153,954
67	26	21	15	12	7	7	8	96	4,977,782
68	23	21	14	5	4	4	8	79	3,746,259
69	16	12	18	9	3	0	2	60	2,987,996
70 & Over	53	44	47	36	17	6	18	221	9,450,079
Totals	**5,617**	**2,745**	**2,033**	**1,594**	**1,072**	**579**	**617**	**14,257**	**$748,422,733**

While not used in the financial computations, the following ***group averages*** are computed and shown because of their general interest.

Age: 46.2 years
Benefit Service: 10.3 years
Annual Pay: $52,495

General Members - Women
Active as of February 29, 2020
by Attained Age and Years of Service

Attained Age	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
Under 20	6							6	$ 153,286
20-24	302	2						304	10,109,542
25-29	874	79	0					953	35,051,784
30-34	763	331	48	1				1,143	46,340,545
35-39	685	370	236	76	0			1,367	59,610,340
40-44	543	281	223	159	51	1		1,258	57,753,651
45-49	501	310	250	182	141	57	0	1,441	66,893,980
50-54	511	330	206	214	165	103	37	1,566	72,169,191
55-59	464	297	254	247	200	101	112	1,675	75,837,927
60	91	63	56	46	39	15	38	348	15,837,587
61	64	65	60	46	43	23	25	326	14,563,719
62	60	63	28	51	41	23	22	288	12,434,785
63	38	49	41	44	38	16	20	246	10,771,099
64	32	43	37	38	33	16	23	222	10,511,213
65	33	31	26	27	19	7	17	160	7,051,515
66	21	23	20	22	8	14	11	119	5,185,579
67	14	16	17	12	7	3	7	76	3,402,722
68	8	12	9	10	3	6	1	49	1,980,689
69	4	15	16	8	0	1	2	46	1,962,820
70 & Over	27	35	33	25	15	9	16	160	5,685,692
Totals	**5,041**	**2,415**	**1,560**	**1,208**	**803**	**395**	**331**	**11,753**	**$513,307,666**

While not used in the financial computations, the following ***group averages*** are computed and shown because of their general interest.

Age: 46.6 years
Benefit Service: 9.3 years
Annual Pay: $43,675

Police Members
Active as of February 29, 2020
by Attained Age and Years of Service

Attained Age	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
Under 20	0							0	$ -
20-24	222	0						222	9,126,264
25-29	824	123	0					947	42,345,086
30-34	678	410	54	0				1,142	55,979,800
35-39	387	332	274	47	0			1,040	56,866,962
40-44	227	195	224	203	50	0		899	51,924,729
45-49	185	125	162	195	211	39	0	917	56,957,305
50-54	111	86	84	115	130	133	21	680	44,463,907
55-59	57	42	39	61	39	47	60	345	22,654,651
60	6	7	4	8	4	4	6	39	2,514,950
61	8	11	3	4	6	11	19	62	4,080,772
62	8	7	1	10	7	2	11	46	3,132,406
63	8	3	5	3	4	1	12	36	2,411,117
64	8	7	3	3	3	8	11	43	2,880,955
65	6	2	6	2	1	2	8	27	1,738,853
66	4	4	4	1	2	3	6	24	1,336,988
67	2	5	4	2	1	3	1	18	1,030,381
68	5	0	1	2	2	0	2	12	849,359
69	2	0	1	0	0	0	5	8	426,774
70 & Over	2	5	5	2	5	0	4	23	1,365,616
Totals	**2,750**	**1,364**	**874**	**658**	**465**	**253**	**166**	**6,530**	**$362,086,875**

While not used in the financial computations, the following group averages are computed and shown because of their general interest.

Age: 40.3 years
Benefit Service: 9.4 years
Annual Pay: $55,450

Fire Members
Active as of February 29, 2020
by Attained Age and Years of Service

Attained Age	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
Under 20	2							2	$ 62,702
20-24	131	0						131	5,391,846
25-29	272	46	0					318	14,689,834
30-34	261	136	23	0				420	21,873,129
35-39	175	136	157	34	0			502	29,354,183
40-44	77	69	103	74	18	0		341	21,543,432
45-49	51	44	85	107	94	15	0	396	27,342,674
50-54	24	26	37	66	83	51	16	303	22,782,489
55-59	15	12	12	21	24	29	31	144	11,282,479
60	2	1	2	1	0	3	8	17	1,164,718
61	4	2	1	2	1	1	4	15	1,116,827
62	1	3	2	3	2	0	4	15	1,083,351
63	2	0	1	2	1	1	7	14	954,493
64	0	2	0	1	3	0	3	9	738,934
65	1	0	1	0	0	0	3	5	390,296
66	0	0	1	0	0	0	1	2	200,956
67	0	0	0	1	0	0	2	3	230,845
68	0	0	0	1	0	0	2	3	123,536
69	0	0	0	0	0	0	2	2	80,085
70 & Over	0	1	0	0	0	0	2	3	159,266
Totals	**1,018**	**478**	**425**	**313**	**226**	**100**	**85**	**2,645**	**$160,566,075**

While not used in the financial computations, the following ***group averages*** are computed and shown because of their general interest.

Age: 40.1 years
Benefit Service: 10.3 years
Annual Pay: $60,706

Public Safety Members
Active as of February 29, 2020
by Attained Age and Years of Service

Attained Age	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
Under 20	0							0	$ -
20-24	3	0						3	108,113
25-29	8	3	0					11	408,782
30-34	5	4	1	0				10	403,106
35-39	5	2	1	3	0			11	430,673
40-44	2	3	2	2	0	0		9	431,393
45-49	3	1	2	2	0	1	0	9	337,422
50-54	1	1	2	1	1	0	0	6	325,351
55-59	0	1	1	1	0	1	0	4	210,628
60	0	0	0	0	0	0	0	0	0
61	0	0	0	0	0	0	0	0	0
62	0	0	0	0	0	0	0	0	0
63	0	0	0	0	0	0	0	0	0
64	0	0	0	0	0	0	0	0	0
65	0	0	0	0	0	0	0	0	0
66	0	0	0	0	0	0	0	0	0
67	0	0	0	0	0	0	0	0	0
68	0	0	0	0	0	0	0	0	0
69	0	0	0	0	0	0	0	0	0
70 & Over	0	0	0	0	0	0	0	0	0
Totals	**27**	**15**	**9**	**9**	**1**	**2**	**0**	**63**	**$2,655,468**

While not used in the financial computations, the following ***group averages*** are computed and shown because of their general interest.

Age: 38.8 years
Benefit Service: 8.0 years
Annual Pay: $42,150

Participating Employers and Members in Valuations
10-Year Comparative Statement

Valuation Date	Number of		Active Members				Inflation Increase % (C.P.I.)
	Participating Employers	Valuation Groups	Number	Annual Payroll	Average Pay	% Increase	
2-28-2011	608	995	32,851	$1,350,646,560	$41,114	1.8%	2.1%
2-29-2012	618	1,007	32,690	1,359,655,784	41,592	1.2	2.9
2-28-2013	640	1,031	32,840	1,395,261,077	42,487	2.2	2.0
2-28-2014	654	1,055	33,205	1,456,008,487	43,849	3.2	1.1
2-28-2015	663	1,062	33,104	1,462,218,216	44,170	0.7	0.0
2-29-2016	667	1,067	33,335	1,507,588,470	45,225	2.4	1.0
2-28-2017	681	1,078	33,633	1,555,729,666	46,256	2.3	2.7
2-28-2018	704	1,116	34,053	1,616,895,524	47,482	2.7	2.2
2-28-2019	730	1,141	34,523	1,682,772,357	48,744	2.7	1.5
2-29-2020	789	1,207	35,248	1,787,038,817	50,699	4.0	2.3
10-Year Compound Average						**2.3%**	**1.8%**

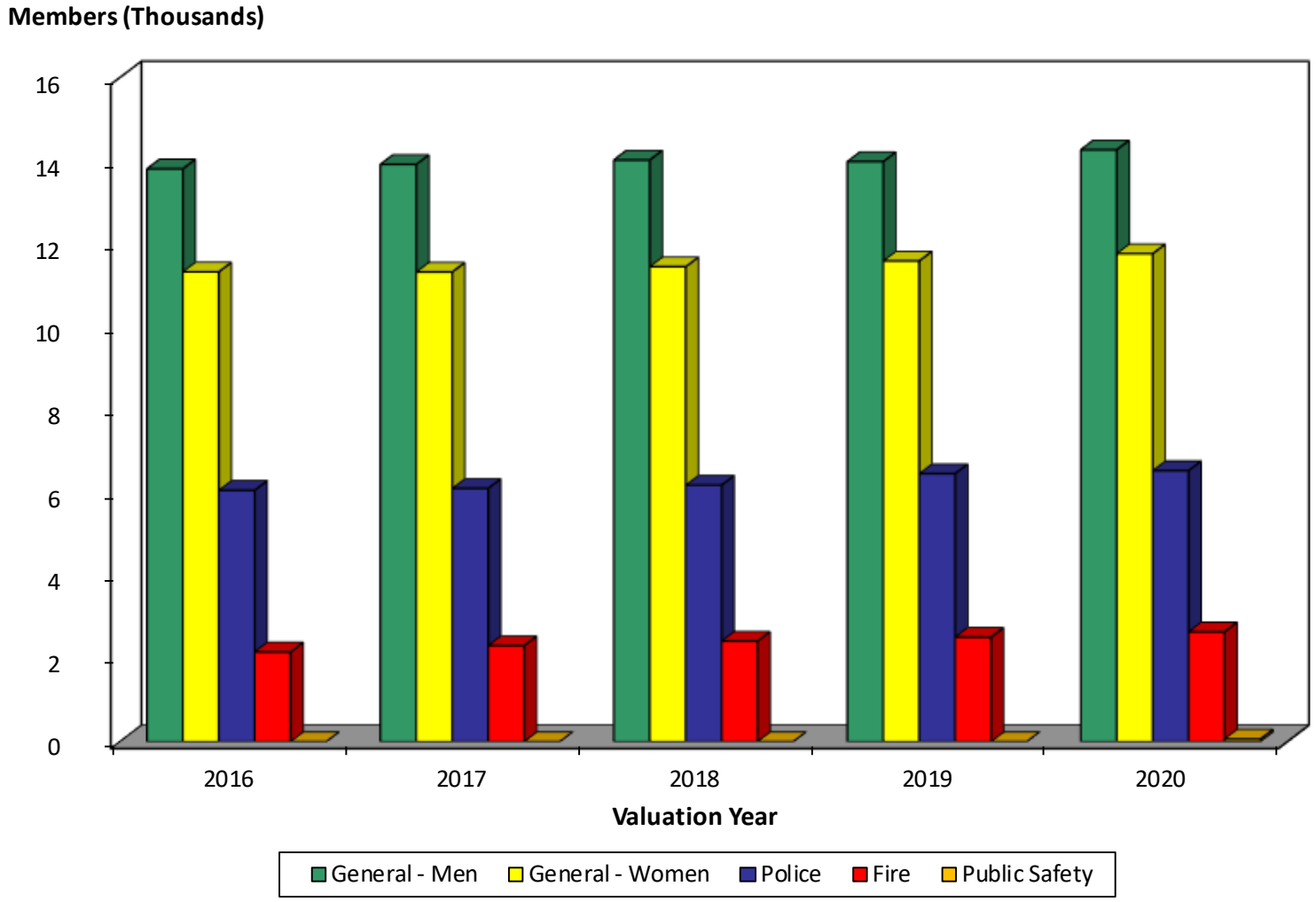
Active Members in Valuations - Group Averages (Averages Not Used in Valuations; Computed and Shown Because of General Information Value)

Group	Valuation at 2-28	No. of Members	Group Averages (In Years) Age	Service	Annual Payroll Average	Change	Inflation Increase % (C.P.I)
General - Men	2011	13,798	46.1	10.9	$43,271	+2.1	+2.1
	2012	13,695	46.2	11.0	43,553	+0.7	+2.9
	2013	13,714	46.4	11.0	44,541	+2.3	+2.0
	2014	13,761	46.5	11.0	46,048	+3.4	+1.1
	2015	13,712	46.4	11.0	46,269	+0.5	+0.0
	2016	13,800	46.5	11.0	47,395	+2.4	+1.0
	2017	13,906	46.4	10.8	48,193	+1.7	+2.7
	2018	14,010	46.4	10.6	49,407	+2.5	+2.2
	2019	13,972	46.3	10.6	50,592	+2.4	+1.5
	2020	14,257	46.2	10.3	52,495	+3.8	+2.3
General - Women	2011	11,296	46.6	9.6	35,041	+1.5	+2.1
	2012	11,224	46.8	9.8	35,603	+1.6	+2.9
	2013	11,245	47.0	9.9	36,411	+2.3	+2.0
	2014	11,291	47.1	9.9	37,442	+2.8	+1.1
	2015	11,268	47.0	9.9	37,821	+1.0	+0.0
	2016	11,316	46.9	9.9	38,819	+2.6	+1.0
	2017	11,313	46.9	9.8	39,875	+2.7	+2.7
	2018	11,441	46.8	9.7	41,008	+2.8	+2.2
	2019	11,579	46.7	9.5	42,086	+2.6	+1.5
	2020	11,753	46.6	9.3	43,675	+3.8	+2.3

Active Members in Valuations - Group Averages (Averages Not Used in Valuations; Computed and Shown Because of General Information Value) - Concluded

Group	Valuation at 2-28	No. of Members	Group Averages (In Years) Age	Service	Annual Payroll Average	Change	Inflation Increase % (C.P.I)
Police	2011	5,753	40.2	9.3	$44,448	+0.4	+2.1
	2012	5,740	40.4	9.5	45,043	+1.3	+2.9
	2013	5,784	40.4	9.5	45,885	+1.9	+2.0
	2014	5,982	40.4	9.3	47,279	+3.0	+1.1
	2015	5,956	40.4	9.4	47,742	+1.0	+0.0
	2016	6,057	40.3	9.4	48,600	+1.8	+1.0
	2017	6,101	40.2	9.3	49,765	+2.4	+2.7
	2018	6,181	40.3	9.2	51,151	+2.8	+2.2
	2019	6,456	40.2	9.3	52,767	+3.2	+1.5
	2020	6,530	40.3	9.4	55,450	+5.1	+2.3
Fire	2011	2,004	40.3	11.1	50,932	+2.0	+2.1
	2012	2,031	40.4	11.1	51,721	+1.5	+2.9
	2013	2,097	40.5	11.2	52,259	+1.0	+2.0
	2014	2,171	40.8	11.2	53,782	+2.9	+1.1
	2015	2,168	40.7	11.2	54,088	+0.6	+0.0
	2016	2,162	40.8	11.2	55,456	+2.5	+1.0
	2017	2,313	40.6	10.8	56,569	+2.0	+2.7
	2018	2,421	40.2	10.4	57,563	+1.8	+2.2
	2019	2,516	40.2	10.6	58,795	+2.1	+1.5
	2020	2,645	40.1	10.3	60,706	+3.3	+2.3
Public Safety	2020	63	38.8	8.0	42,150	+0.0	+2.3

Active Members by Group
2016-2020



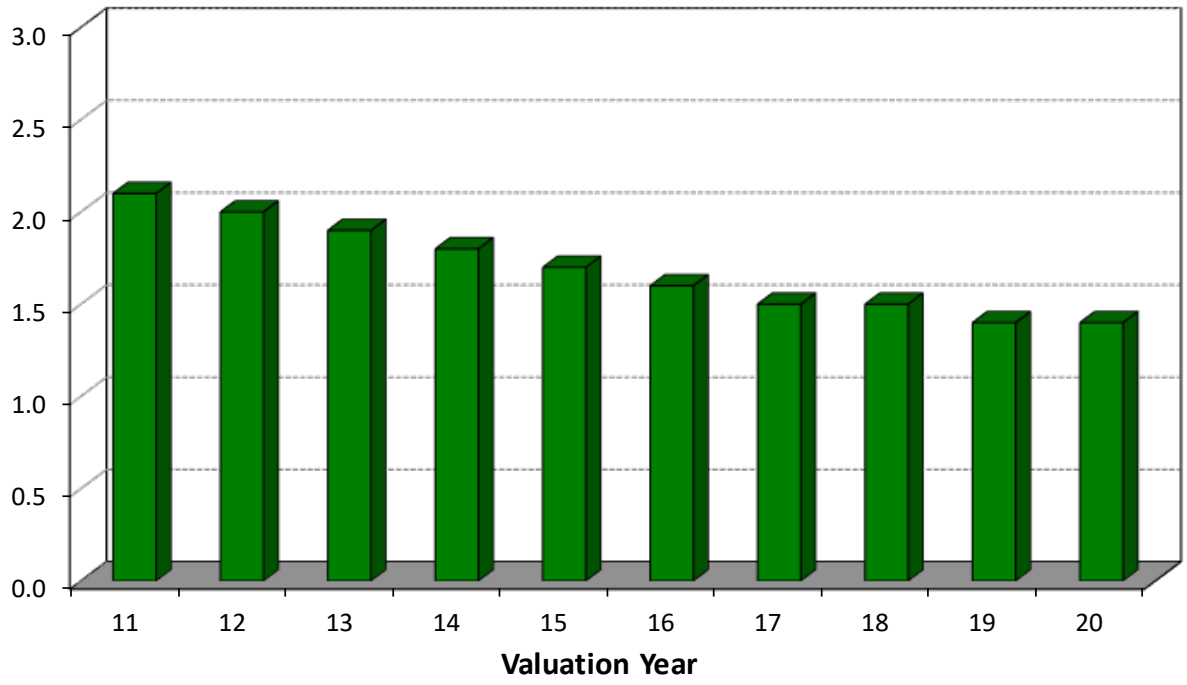
Retirants and Beneficiaries Added to and Removed from Rolls
10-Year Comparative Statement

Year Ended	Added to Rolls		Removed from Rolls		Rolls End of Year		% Incr. in Annual Allowances	Average Annual Allowances	Retired Lives in Relation to Active Members	
	No.	Annual Allowances*	No.	Annual Allowances	No.	Annual Allowances			Active Members Per Benefit Recipient	Allowances as Percents of Active Payroll
2-28-2011	1,399	$16,372,009	529	$ 4,939,905	15,492	$150,824,098	8.2%	$ 9,736	2.1	11.2%
2-29-2012	1,519	22,768,228	528	4,421,797	16,483	169,170,529	12.2	10,263	2.0	12.4
2-28-2013	1,524	20,204,275	504	4,963,681	17,503	184,411,123	9.0	10,536	1.9	13.2
2-28-2014	1,586	20,455,414	587	5,265,017	18,502	199,601,520	8.2	10,788	1.8	13.7
2-28-2015	1,698	25,056,006	632	5,764,961	19,568	218,892,566	9.7	11,186	1.7	15.0
2-29-2016	1,715	21,160,239	634	6,604,522	20,649	233,448,283	6.6	11,306	1.6	15.5
2-28-2017	1,817	24,889,736	686	6,826,899	21,780	251,511,120	7.7	11,548	1.5	16.2
2-28-2018	1,898	30,005,238	760	7,909,356	22,918	273,607,002	8.8	11,939	1.5	16.9
2-28-2019	1,909	33,269,236	691	7,232,130	24,136	299,644,108	9.5	12,415	1.4	17.8
2-29-2020	1,914	30,831,382	762	8,309,766	25,288	322,165,724	7.5	12,740	1.4	18.0

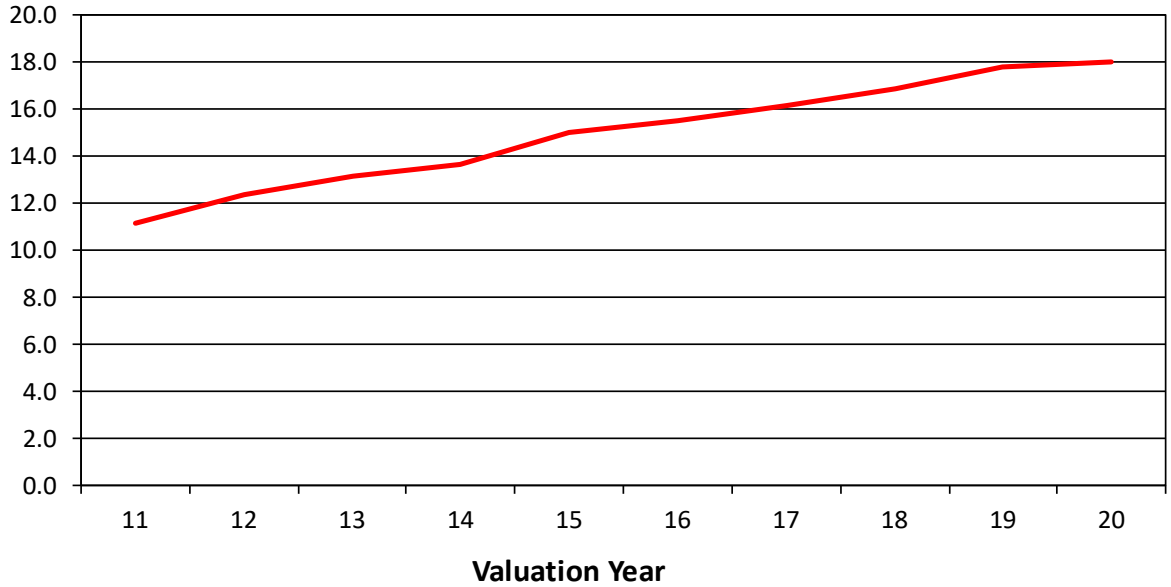
* *Includes post-retirement adjustments.*

Retirants and Beneficiaries
Comparative Data

Active Members Per Benefit Recipient



Allowances as % of Active Pay



Retirants and Beneficiaries on Rolls as of February 29, 2020 by Disbursing Fund and Type of Benefit Being Paid

Type of Benefit	Number#	Annual Allowances
Service Early & Deferred		
Life Option	11,210	$138,455,381
Option A	4,309	61,285,520
Option B	3,066	56,480,680
Option C	2,587	24,232,968
Beneficiary Receiving	1,633	12,854,135
Totals	22,805	293,308,684
Duty Disability		
Life Option	407	8,239,553
Option A	145	2,424,491
Option B	98	2,046,483
Option C	66	990,839
Totals	716	13,701,366
Non-Duty Disability		
Life Option	368	3,575,183
Option A	187	1,916,275
Option B	80	1,097,269
Option C	86	732,864
Totals	721	7,321,591
Beneficiary Receiving	279	2,158,158
Total Disability	1,716	23,181,115
Death-In-Service		
Spouse Receiving	757	5,640,978
Children Receiving	10	34,947
Totals	767	5,675,925
Totals	**25,288**	**$322,165,724**

 # Legacy retirees with optional forms of payment not typical to LAGERS are included above with similar benefit types. Currently, there are two service retirees with 100% Joint and Survivor included with Option A, one service retiree with 66 2/3% Joint and Survivor included with Option B and one service retiree with a 20-Year Certain Only included with Option C.

SECTION G

COMPUTED EMPLOYER CONTRIBUTIONS: SUMMARY OF COMPUTED INDIVIDUAL RATES

Computed Employer Contributions: Non-Contributory Plans by Valuation Groups as of February 29, 2020

Group	Number of Valuation Groups				
	Under 2.00%	2.00-4.99%	5.00-7.99%	Over 8.00%	Totals
Benefit Program L-1					
General	7	11	14	15	47
Police	2	4	6	3	15
Fire	0	0	1	1	2
Public Safety	0	0	0	0	0
Total	9	15	21	19	64
Benefit Program L-3					
General	11	8	14	20	53
Police	4	8	7	7	26
Fire	1	1	1	4	7
Public Safety	0	0	0	1	1
Total	16	17	22	32	87
Benefit Program LT-4(62)					
General	0	0	0	0	0
Police	0	0	0	0	0
Fire	0	0	0	0	0
Public Safety	0	0	0	0	0
Total	0	0	0	0	0
Benefit Program LT-4(65)					
General	0	0	0	1	1
Police	0	0	1	0	1
Fire	0	0	0	0	0
Public Safety	0	0	0	0	0
Total	0	0	1	1	2
Benefit Program LT-5(62)					
General	1	0	0	0	1
Police	0	0	0	0	0
Fire	0	0	0	0	0
Public Safety	0	0	0	0	0
Total	1	0	0	0	1
Benefit Program LT-5(65)					
General	0	1	1	1	3
Police	1	0	1	2	4
Fire	1	0	1	1	3
Public Safety	1	0	0	0	1
Total	3	1	3	4	11

Computed Employer Contributions: Non-Contributory Plans by Valuation Groups as of February 29, 2020 (Continued)

Group	Number of Valuation Groups				
	Under 2.00%	2.00-4.99%	5.00-7.99%	Over 8.00%	Totals
Benefit Program L-6					
General	3	0	3	99	105
Police	1	1	4	45	51
Fire	1	1	0	20	22
Public Safety	0	0	0	0	0
Total	5	2	7	164	178
Benefit Program L-7					
General	4	17	43	95	159
Police	3	10	16	19	48
Fire	2	2	3	6	13
Public Safety	0	0	0	0	0
Total	9	29	62	120	220
Benefit Program LT-8(62)					
General	0	1	0	1	2
Police	0	0	0	1	1
Fire	0	0	0	1	1
Public Safety	0	0	0	0	0
Total	0	1	0	3	4
Benefit Program LT-8(65)					
General	0	2	11	7	20
Police	1	1	3	10	15
Fire	3	0	1	6	10
Public Safety	0	0	0	1	1
Total	4	3	15	24	46
Benefit Program L-9					
General	2	1	1	3	7
Police	1	0	2	0	3
Fire	0	0	0	0	0
Public Safety	0	0	0	0	0
Total	3	1	3	3	10
Benefit Program LT-10(65)					
General	1	0	2	5	8
Police	1	0	0	1	2
Fire	0	0	0	0	0
Public Safety	0	0	0	0	0
Total	2	0	2	6	10

Computed Employer Contributions: Non-Contributory Plans by Valuation Groups as of February 29, 2020 (Concluded)

Group	Number of Valuation Groups				
	Under 2.00%	2.00-4.99%	5.00-7.99%	Over 8.00%	Totals
Benefit Program L-11					
General	0	0	0	3	3
Police	0	0	0	2	2
Fire	0	0	0	4	4
Public Safety	0	0	0	0	0
Total	0	0	0	9	9
Benefit Program L-12					
General	3	3	8	29	43
Police	2	3	6	12	23
Fire	3	1	0	6	10
Public Safety	0	0	0	1	1
Total	8	7	14	48	77
Benefit Program LT-14(65)					
General	0	0	2	7	9
Police	1	0	1	3	5
Fire	0	0	0	3	3
Public Safety	0	0	0	0	0
Total	1	0	3	13	17
Totals*	**61**	**76**	**153**	**446**	**736**

** There are thirty-six Non-Contributory groups presently without active members. They are not included in the totals.*

Computed Employer Contributions: Contributory Plans by Valuation Groups as of February 29, 2020

Group	Number of Valuation Groups				
	Under 2.00%	2.00-4.99%	5.00-7.99%	Over 8.00%	Totals
Benefit Program L-1					
General	12	23	21	35	91
Police	4	13	9	2	28
Fire	0	2	3	5	10
Public Safety	0	0	0	1	1
Total	16	38	33	43	130
Benefit Program L-3					
General	11	6	17	22	56
Police	3	8	1	3	15
Fire	0	2	2	1	5
Public Safety	0	0	0	0	0
Total	14	16	20	26	76
Benefit Program LT-4(62)					
General	0	0	0	0	0
Police	0	0	0	0	0
Fire	0	0	0	0	0
Public Safety	0	0	0	0	0
Total	0	0	0	0	0
Benefit Program LT-4(65)					
General	1	2	1	1	5
Police	0	0	0	0	0
Fire	0	0	0	0	0
Public Safety	0	0	0	0	0
Total	1	2	1	1	5
Benefit Program LT-5(62)					
General	0	0	0	0	0
Police	0	0	0	0	0
Fire	0	0	0	0	0
Public Safety	0	0	0	0	0
Total	0	0	0	0	0
Benefit Program LT-5(65)					
General	0	0	0	0	0
Police	0	0	0	0	0
Fire	0	0	0	0	0
Public Safety	0	0	0	0	0
Total	0	0	0	0	0

Computed Employer Contributions: Contributory Plans by Valuation Groups as of February 29, 2020 (Continued)

Group	Number of Valuation Groups				
	Under 2.00%	2.00-4.99%	5.00-7.99%	Over 8.00%	Totals
Benefit Program L-6					
General	1	1	6	53	61
Police	1	4	6	18	29
Fire	1	1	0	15	17
Public Safety	0	0	0	0	0
Total	3	6	12	86	107
Benefit Program L-7					
General	6	6	26	29	67
Police	4	6	9	9	28
Fire	0	1	2	7	10
Public Safety	0	0	0	0	0
Total	10	13	37	45	105
Benefit Program LT-8(62)					
General	0	1	0	0	1
Police	0	0	0	1	1
Fire	0	0	0	0	0
Public Safety	0	0	0	0	0
Total	0	1	0	1	2
Benefit Program LT-8(65)					
General	1	0	2	3	6
Police	1	1	1	0	3
Fire	0	0	0	1	1
Public Safety	0	0	0	0	0
Total	2	1	3	4	10
Benefit Program L-9					
General	1	1	1	3	6
Police	0	1	0	0	1
Fire	0	0	0	0	0
Public Safety	0	0	0	0	0
Total	1	2	1	3	7
Benefit Program LT-10(65)					
General	0	0	0	2	2
Police	0	0	0	0	0
Fire	0	0	0	0	0
Public Safety	0	0	0	0	0
Total	0	0	0	2	2

Computed Employer Contributions: Contributory Plans by Valuation Groups as of February 29, 2020 (Concluded)

Group	Number of Valuation Groups				
	Under 2.00%	2.00-4.99%	5.00-7.99%	Over 8.00%	Totals
Benefit Program L-11					
General	0	0	0	1	1
Police	0	0	0	3	3
Fire	0	0	0	3	3
Public Safety	0	0	0	0	0
Total	0	0	0	7	7
Benefit Program L-12					
General	0	0	2	10	12
Police	0	0	1	4	5
Fire	0	0	1	1	2
Public Safety	0	0	0	0	0
Total	0	0	4	15	19
Benefit Program LT-14(65)					
General	0	0	0	1	1
Police	0	0	0	0	0
Fire	0	0	0	0	0
Public Safety	0	0	0	0	0
Total	0	0	0	1	1
Totals*	**47**	**79**	**111**	**234**	**471**

** There are twenty-nine contributory groups presently without active members. They are not included in the totals.*

SECTION H

APPENDIX

Summary of Assumptions
Used For LAGERS Actuarial Valuations
Assumptions Adopted By LAGERS Board
After Consulting With Actuary

The actuarial assumptions used in making the valuations are shown in this Appendix of the report. In accordance with Section 70.605, subsection 14 of the Revised Statutes of Missouri, the Board adopts the actuarial assumptions after receiving the advice of its actuary. The assumptions used in performing the valuations were adopted by the Board in conjunction with a five-year investigation for the period ending February 28, 2015. A report of this investigation was issued March 18, 2016. The actuarial assumptions represent estimates of future experience.

ECONOMIC ASSUMPTIONS -

The investment return rate used in making the valuations was 7.25% per year, compounded annually (net after investment expenses). The real rate of return is the portion of total investment return which is more than the wage inflation rate. Considering wage inflation recognition of 3.25%, the 7.25% investment return rate translates to an assumed real rate of return of 4.00%. The price inflation component of the investment return rate and the wage inflation rate is assumed to be 2.50%. Adopted 2016.

Pay increase assumptions for individual active members are shown for sample ages on pages H-4 and H-5. Part of the assumption for each age is for merit and/or seniority increase, and the other 3.25% recognizes wage inflation. Adopted 2016.

The active member payroll is assumed to increase 3.25% annually, which is the portion of the individual pay increase assumptions attributable to wage inflation. Adopted 2016.

Post-retirement increases are assumed to be 2.50%, compounded annually.

The number of active members per employer is assumed to continue at the present number. Adopted 1967.

NON-ECONOMIC ASSUMPTIONS -- -

The ***healthy retiree mortality tables***, for post-retirement mortality, used in evaluating allowances to be paid were the RP-2014 Healthy Annuitant mortality table for males and females, adjusted for mortality improvement back to the observation period base year of 2006. The ***disabled retiree mortality tables***, for post-retirement mortality, used in evaluating allowances to be paid were the RP-2014 disabled mortality table for males and females, adjusted for mortality improvement back to the observation period base year of 2006. The ***pre-retirement mortality tables*** used were the RP-2014 employees mortality table for males and females, adjusted for mortality improvement back to the observation period base year of 2006. It was assumed that 50% of pre-retirement deaths would be duty related. For both the post-retirement and pre-retirement tables, the base year for males was then established to be 2017. Mortality rates for a particular calendar year are determined by applying the MP-2015 mortality improvement scale to the above described tables. Related values are shown on page H-3. Adopted 2016.

The probabilities of age and service retirement are shown on page H-3. Adopted 2016.

The probabilities of withdrawal from service and death-in-service are shown for sample ages on pages H-4 and H-5. It is assumed that all members contributing the 4% or 6% member contribution rate and terminating before age 40 or with less than 10 years of service, and a percentage (General: 30%, Other: 20%) of members terminating after age 40 with 10 or more years of service, withdraw their contributions and forfeit any vested employer-

financed benefit. It is assumed that all members contributing the 2% member contribution rate and terminating before age 30 or with less than 5 years of service, and a percentage (General: 50%, Other: 40%; at age 30 grading to 0% at early retirement age) of members terminating after age 30 with 5 or more years of service, withdraw their contributions and forfeit any vested employer-financed benefit. Adopted 2016 for members contributing the 4% member contribution rate and 2020 for members contributing the 2% or 6% member contribution rate.

An individual entry age normal cost method of valuation was used in determining age & service allowance normal costs and the allocation of actuarial present values between service rendered before and after the valuation date. The entry age normal cost method has the following characteristics:

(i) the annual normal costs for each individual active member, payable from the member's actual date of employment to the member's projected date of retirement are sufficient to accumulate the actuarial present value of the member's benefit at the time of retirement; and

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

Unfunded accrued liabilities (UAL) are amortized by level (principal & interest) percent-of-payroll contributions. Actuarial gains or losses for each employer resulting from experience prior to February 28, 2014 are amortized over various closed periods ranging from 15 to 30 years. Actuarial gains or losses for each employer resulting from experience on or after February 28, 2014 are amortized over closed 15-year periods. Benefit changes adopted by employers are amortized over a closed 20-year period. Adoption of the Non-Contributory Refund provision is amortized over a closed 15-year period. Initial unfunded accrued liabilities for new employers joining LAGERS are amortized over closed 30-year periods. If a valuation group's UAL (excluding the UAL associated with benefit changes) is negative, the valuation group's separate amortization bases (excluding the amortization bases associated with benefit changes) will be combined into one amortization base. This amortization base will be amortized over the greater of (i) the valuation group's remaining initial amortization period and (ii) 15 years. Adopted 2017.

Contribution rates for the Casualty Reserve Fund (CRF) are determined using a modified terminal funding method. Contribution rates are periodically adjusted based on the trend of the balance of the CRF. The funding objective of the CRF is to finance disability and death-in-service benefits not covered by the entry age normal cost financing of these benefits. The CRF is expected to represent 37% of the financing of the benefits. Adopted 2016.

Future service credit is always assumed to accrue at the rate of 1 year of credit every 12 calendar months. Lower service accrual rates (service breaks or less-than-full-time employment) or higher service accrual rates (addition of military credit or reinstatement of prior service) are reflected as they are reported. Any lower or higher accrual rates may result in small financial gains or losses when reported. Adopted 1967.

The form of benefit payment assumed in the valuation is the Life Option. However, for members with accumulated member contributions, the residual refund available upon an early death after retirement is approximated by assuming pension payments are made for at least 3 years. Adopted 1967.

Employer contribution dollars were assumed to be ***paid in equal installments*** throughout the employer fiscal year. Adopted 1967.

The Funding Value of Assets recognizes assumed investment return fully each year. Differences between actual and assumed investment return are phased-in over a closed 5-year period. The funding value of assets is not permitted to deviate from the market value of assets by more than 20%. Adopted 1995 and 2003, respectively.

The data about persons now covered and about present assets were furnished by the System's administrative staff. Although examined for general reasonableness, the data was not audited by the Actuary.

The actuarial valuation computations were made by or under the supervision of a Member of the American Academy of Actuaries (MAAA).

Future Life Expectancy
(RP-2014 Healthy Annuitant Mortality Table with Base Year of 2017 for Males and 2006 for Females)

Sample Ages	Future Life Expectancy (Years)*	
	Men	Women
50	33.68	38.00
55	28.96	33.05
60	24.36	28.24
65	19.99	23.60
70	15.94	19.19
75	12.28	15.09
80	9.08	11.41

* *Applicable to calendar year 2020. Values for future years are determined by the above rates and the MP-2015 scale.*

Percent of Eligible Active Members Retiring within the Next Year

	Without Rule of 80 Eligibility				With Rule of 80 Eligibility			
	General*		Police/Public		General		Police/Public	
Ages	Men	Women	Safety*	Fire*	Men	Women	Safety	Fire
50			2.5%	2.5%	15.0%	15.0%	25.0%	25.0%
51			2.5	2.5	15.0	15.0	25.0	20.0
52			2.5	2.5	15.0	15.0	15.0	20.0
53			2.5	2.5	15.0	15.0	15.0	20.0
54			2.5	2.5	15.0	15.0	15.0	20.0
55	3.0%	3.0%	10.0	13.0	15.0	15.0	15.0	20.0
56	3.0	3.0	10.0	13.0	15.0	15.0	15.0	20.0
57	3.0	3.0	10.0	13.0	15.0	15.0	15.0	25.0
58	3.0	3.0	10.0	13.0	15.0	15.0	15.0	25.0
59	3.0	3.0	10.0	13.0	15.0	15.0	15.0	25.0
60	10.0	10.0	10.0	15.0	15.0	15.0	15.0	35.0
61	10.0	10.0	10.0	15.0	15.0	15.0	25.0	35.0
62	25.0	15.0	25.0	20.0	30.0	15.0	30.0	45.0
63	20.0	15.0	20.0	20.0	30.0	15.0	30.0	45.0
64	20.0	15.0	20.0	20.0	30.0	20.0	30.0	45.0
65	25.0	25.0	100.0	100.0	30.0	25.0	100.0	100.0
66	25.0	25.0			30.0	25.0		
67	20.0	25.0			30.0	25.0		
68	20.0	25.0			30.0	25.0		
69	20.0	20.0			30.0	25.0		
70	100.0	100.0			100.0	100.0		

* *First 5 years of retirement pattern only apply to early retirement. Early retirement rates are also applicable if Rule of 80 is adopted.*

General - Men
Separations from Active Employment
Before Age & Service Retirement
& Individual Pay Increase Assumptions

Sample Ages	Years of Service	Percent of Active Members Separating within the Next Year			Pay Increase Assumptions for an Individual Employee		
		Death*	Disability	Other	Merit & Seniority	Base (Economy)	Increase Next Year
ALL	0			19.00%			
	1			17.00			
	2			15.00			
	3			13.00			
	4			11.00			
25	5 & Over	0.05%	0.09%	7.30	3.30%	3.25%	6.55%
30		0.04	0.12	6.50	2.50	3.25	5.75
35		0.05	0.15	5.00	2.00	3.25	5.25
40		0.07	0.21	3.70	1.50	3.25	4.75
45		0.11	0.30	3.00	1.00	3.25	4.25
50		0.18	0.44	2.40	0.60	3.25	3.85
55		0.28	0.68	1.80	0.40	3.25	3.65
60		0.48	1.02	1.00	0.30	3.25	3.55
65		0.92		0.00	0.00	3.25	3.25

** Applicable to calendar year 2020. Rates in future years are determined by the above rates and the MP-2015 scale.*

General - Women
Separations from Active Employment
Before Age & Service Retirement
& Individual Pay Increase Assumptions

Sample Ages	Years of Service	Percent of Active Members Separating within the Next Year			Pay Increase Assumptions for an Individual Employee		
		Death*	Disability	Other	Merit & Seniority	Base (Economy)	Increase Next Year
ALL	0			22.00%			
	1			20.00			
	2			17.00			
	3			14.00			
	4			13.00			
25	5 & Over	0.01%	0.02%	10.80	3.30%	3.25%	6.55%
30		0.02	0.03	8.90	2.50	3.25	5.75
35		0.03	0.06	7.40	2.00	3.25	5.25
40		0.04	0.10	5.70	1.50	3.25	4.75
45		0.06	0.16	4.20	1.00	3.25	4.25
50		0.10	0.24	3.30	0.60	3.25	3.85
55		0.16	0.34	2.50	0.40	3.25	3.65
60		0.24	0.48	1.20	0.30	3.25	3.55
65		0.35		0.00	0.00	3.25	3.25

** Applicable to calendar year 2020. Rates in future years are determined by the above rates and the MP-2015 scale.*

The pay increase assumptions are age based only, and not service based.

Police/Public Safety
Separations from Active Employment
Before Age & Service Retirement
& Individual Pay Increase Assumptions

Sample Ages	Years of Service	Percent of Active Members Separating within the Next Year			Pay Increase Assumptions for an Individual Employee		
		Death*	Disability	Other	Merit & Seniority	Base (Economy)	Increase Next Year
ALL	0			18.00%			
	1			17.00			
	2			16.00			
	3			13.00			
	4			12.00			
25	5 & Over	0.05%	0.10%	9.80	3.30%	3.25%	6.55%
30		0.04	0.11	7.80	2.50	3.25	5.75
35		0.05	0.16	6.10	2.00	3.25	5.25
40		0.07	0.22	4.40	1.50	3.25	4.75
45		0.11	0.34	3.20	1.00	3.25	4.25
50		0.18	0.53	1.80	0.60	3.25	3.85
55		0.28	0.88	1.00	0.40	3.25	3.65

** Applicable to calendar year 2020. Rates in future years are determined by the above rates and the MP-2015 scale.*

Fire
Separations from Active Employment
Before Age & Service Retirement
& Individual Pay Increase Assumptions

Sample Ages	Years of Service	Percent of Active Members Separating within the Next Year			Pay Increase Assumptions for an Individual Employee		
		Death*	Disability	Other	Merit & Seniority	Base (Economy)	Increase Next Year
ALL	0			10.00%			
	1			8.00			
	2			7.00			
	3			6.00			
	4			6.00			
25	5 & Over	0.05%	0.06%	5.00	3.90%	3.25%	7.15%
30		0.04	0.10	4.00	2.80	3.25	6.05
35		0.05	0.23	2.80	1.90	3.25	5.15
40		0.07	0.35	2.20	1.20	3.25	4.45
45		0.11	0.56	1.80	0.90	3.25	4.15
50		0.18	0.85	1.00	0.60	3.25	3.85
55		0.28	1.31	0.50	0.40	3.25	3.65

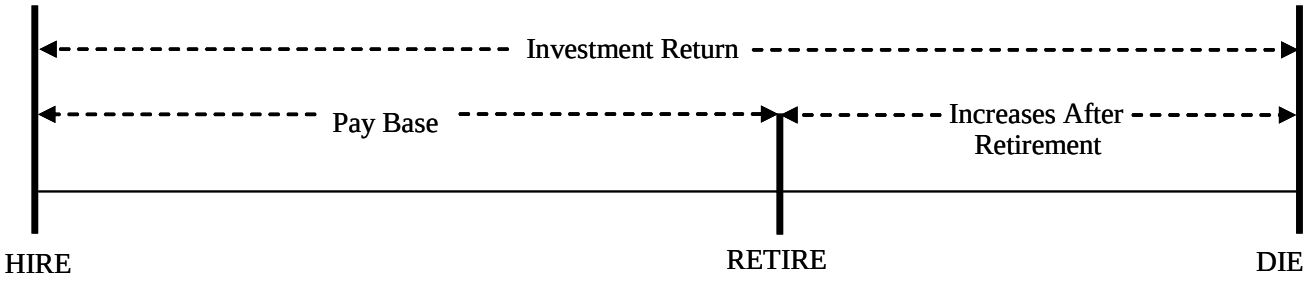
** Applicable to calendar year 2020. Rates in future years are determined by the above rates and the MP-2015 scale.*

The pay increase assumptions are age based only, and not service based. It was assumed the 30% of General members, 45% of Police and Public Safety members and 65% of Fire members becoming disabled were duty related.

Miscellaneous and Technical Assumptions

Benefit Service	Exact fractional service on the decrement date is used to determine the amount of benefit payable.
Decrement Operation	The mortality and disability decrements do not operate during the first 5 years of service. The withdrawal decrement does not operate during retirement eligibility. The disability decrement does not operate during normal retirement eligibility.
Decrement Relativity	Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.
Decrement Timing	Decrements of all types are assumed to occur mid-year.
Deferred Members' Retirement Age	It was assumed that deferred members would retire at the later of age 60 (55 for police, public safety or fire) or their attained age.
Eligibility Testing	Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.
Expenses	Assumed investment return is net of investment expenses. Assumed administrative expenses are added to the Normal Cost and were 0.4% of payroll.
Incidence of Contributions	Contributions are assumed to be received continuously throughout the employer's applicable fiscal year based upon the computed percent of payroll shown in each employer's individual report, and the actual payroll payable at the time contributions are made.
Marriage Assumption	90% of male and 90% of female participants are assumed to be married for purposes of death-in-service benefits. Male spouses are assumed to be three years older than female spouses for active member valuation purposes.
Pay Increase Timing	Beginning of year. This is equivalent to assuming that reported pays represent amounts paid to members during the year ended on the valuation date.
Post-Retirement Increases	Assumed to be 2.50%, compounded annually.

Relationship of Economic Assumptions in Computing Contributions to a Retirement System



Investment Return

An increase in this assumption reduces computed contributions. The assumption operates over all parts of an employee's lifetime.

Pay Base

An increase in this assumption increases computed contributions. However, a 1% increase in this assumption, coupled with a 1% increase in Investment Return reduces computed contributions. This is because the Pay Base assumption operates only over an employee's working lifetime, while the Investment Return assumption operates over the employee's entire lifetime.

Increases After Retirement

An increase in this element increases computed contributions.

If Investment Return, Pay Base, and Increases After Retirement are each increased by equal amounts, computed contributions remain the same (except in plans using Final Average Pay as a factor in computing benefits; the multi-year average used for Final Average Pay causes computed contributions to decrease slightly).

If Investment Return and Pay Base are increased by equal amounts, with no change in Increases After Retirement, computed contributions decrease – sometimes significantly. The decreases represent the projected devaluation of an employee's benefits following retirement.

Investment Return and Inflation: Past and Future

Inflation Distortions

Inflation's impact on investment return is not uniform from year to year. A common expectation for real investment return (which is the portion of total return remaining after price inflation) is in the area of 3% to 5% annually.

Historical Economic Data

Over the last 30 years, for the sample funds A, B, and C that are listed below, real return on average has exceeded the 3% to 5% range. However, for parts of this period, real return was actually negative. It is difficult to maintain a long-term portfolio allocation during periods of negative real return.

Annual Investment Return % (including Income) expressed as Real Return (Remainder after Price Inflation)

No. Years Ended December	Inflation (CPI)	Cash Equiv. (T-Bills)	Bonds (Long Term) US Treasury	Bonds (Long Term) Corporate (Sol. Bro.)	Stocks (S & P 500)	Real Return for Sample Fund A	Real Return for Sample Fund B	Real Return for Sample Fund C
1/2015	0.7	(0.2)	(2.0)	(5.5)	0.7	(2.0)	(1.2)	(0.6)
1/2016	2.1	(1.0)	(0.9)	8.7	9.9	5.2	6.4	7.5
1/2017	2.1	(1.8)	6.5	9.6	19.7	10.6	12.9	14.7
1/2018	1.9	(0.5)	(3.4)	(8.9)	(6.3)	(5.6)	(5.7)	(5.8)
1/2019	2.3	(1.8)	12.0	21.6	29.2	18.7	21.1	23.2
5/1985	4.8	5.2	11.5	12.3	9.4	10.7	10.2	9.8
5/1990	4.1	2.6	6.4	6.1	8.6	6.7	7.2	7.6
5/1995	2.8	1.5	10.0	9.1	13.4	10.0	10.8	11.3
5/2000	2.5	2.6	4.9	3.2	15.4	7.7	10.0	11.7
5/2005	2.5	(0.4)	5.1	6.6	(2.0)	3.4	2.0	0.7
5/2010	2.2	0.0	3.3	3.6	0.1	3.1	2.6	2.0
5/2015	1.5	(1.4)	6.0	4.8	11.1	6.9	8.0	8.7
5/2019	1.8	(1.0)	2.3	4.5	9.9	5.0	6.3	7.3
30/2019	**2.4**	**0.3**	**5.4**	**5.6**	**7.6**	**6.1**	**6.6**	**6.8**

Sample Funds (only three of many reasonable samples)

	A	B	C
Cash Equiv.: T-Bills	10 %	10 %	10 %
Bonds: US Treasury	30	20	10
Bonds: Corporate	30	20	15
Stock	30	50	65

For many pension plans, benefit increases after retirement have fallen short of keeping up with inflation. The retired life group has been affected more than the active life group. The investment return that would be necessary for the indexing of benefits with inflation after retirement probably cannot be realized during periods of high inflation.

Forward-Looking Economic Data

The assumed rate of price inflation should not give undue weight to recent experience. Some historical economic data may not be appropriate for use in developing assumptions for future periods due to changes in the underlying economic environment. Professional forecasters, economists, and investors are reliable sources to guide in the selection and evaluation of expected future price inflation rates.

Investment Return and Inflation: Past and Future - Concluded

The Survey of Professional Forecasters, maintained by the Federal Reserve Bank of Philadelphia, is the longest running quarterly survey of macroeconomic forecasts in the U.S. Over 50 forecasters from industry, government, banking, and academics are included in this Survey. With respect to price inflation, their median projections are published quarterly for the annual-average Headline CPI over the next 10 years. Headline CPI is the total CPI, as opposed to Core CPI, which excludes food and energy prices. The following table presents the Survey's quarterly projections through the first quarter of 2020.

Quarterly Median Projections of the 10-Year Annual-Average Headline CPI-U Inflation (Philadelphia Federal Reserve)

2017-2	2017-3	2017-4	2018-1	2018-2	2018-3	2018-4	2019-1	2019-2	2019-3	2019-4	2020-1
2.30%	2.25%	2.20%	2.25%	2.30%	2.20%	2.21%	2.20%	2.20%	2.20%	2.20%	2.20%

Source: Federal Reserve Bank of Philadelphia – Survey of Professional Forecasters Quarterly (Inflation.xlsx)

The Congressional Budget Office (CBO) regularly publishes its Budget and Economic Outlook. This report includes a forecast of annual CPI-U (All Urban Consumers). The following table presents the CBO's forecast for calendar years 2020 – 2030, as published in its report dated January, 2020.

Consumer Price Index Forecast (CBO)

2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Compound Average
2.50%	2.60%	2.60%	2.40%	2.40%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.34%

Source: Congressional Budget Office – The Budget and Economic Outlook: 2020 – 2030, Table 2-1 (p. 30)

The Trustees of the Social Security system prepare and publish an annual report. Social Security's economists develop a forecast of future CPI-W (for Urban Wage Earners and Clerical Workers). The following table presents their forecasts in the 2019 annual report.

Social Security Trustees' Ultimate CPI-W Assumption for 2021 and later

Low-cost	3.20%
Intermediate	2.60%
High-cost	2.00%

Source: 2019 Social Security Trustees' Report (p. 8)

Another source of information about future price inflation is the market for U.S. Treasury bonds. Comparing spreads between nominal and inflation-indexed treasury securities (TIPS) provides an estimate of the bond market's expectation of inflation over the next decade or more. However, this analysis ignores the inflation risk premium that buyers of U.S. Treasury bonds often demand, and it ignores the differences in liquidity between U.S. Treasury bonds and TIPS.

Treasury Constant Maturities (2018 Annual Yields)

Term	Nominal	Inflation-Indexed	Implied Inflation
10-year	2.14%	0.40%	1.74%
20-year	2.40%	0.60%	1.80%
30-year	2.58%	0.78%	1.80%

Source: Board of Governors of the Federal Reserve System, H.15 Selected Interest Rates for August 10, 2020

LAGERS Retainer Actuarial Fees
10-Year Comparative Statement

Valuation Date as of	Number of Valuation Groups	Annual Actuarial Fees (Nearest $1)	Consumer Price Index (1967 is 100)	Average Fee per Group	
				Unadjusted Dollars	1967* Dollars
2-28-2011	995	$262,962	662.943	$264	$40
2-29-2012	1,007	274,957	681.977	273	40
2-28-2013	1,031	289,900	695.467	281	40
2-28-2014	1,055	297,900	703.300	282	40
2-28-2015	1,062	296,000	703.122	279	40
2-29-2016	1,067	305,000	710.278	286	40
2-28-2017	1,078	314,000	729.727	291	40
2-28-2018	1,116	323,000	745.866	289	39
2-28-2019	1,141	332,000	757.204	291	38
2-29-2020	1,207	341,000	774.886	283	37

* *A goal for LAGERS during the initial design activity in 1966 and 1967 was that the actuarial retainer fee be approximately $100 annually per valuation group - - - an amount substantially less than the amount the municipality would pay if it arranged independently for an actuarial valuation of comparable quality.*