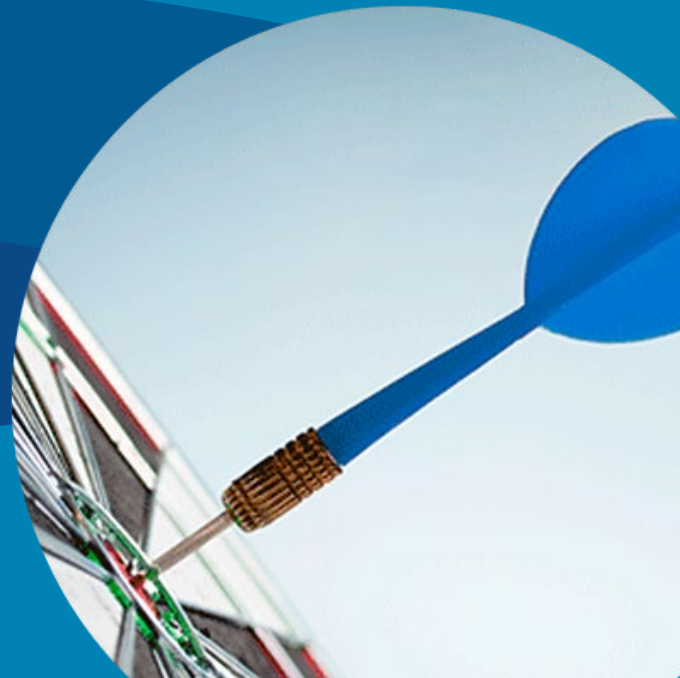




Employer Contribution Rates: Summary of 2023 Actuarial Valuation Results

Missouri LAGERS Annual Meeting
October 27, 2023

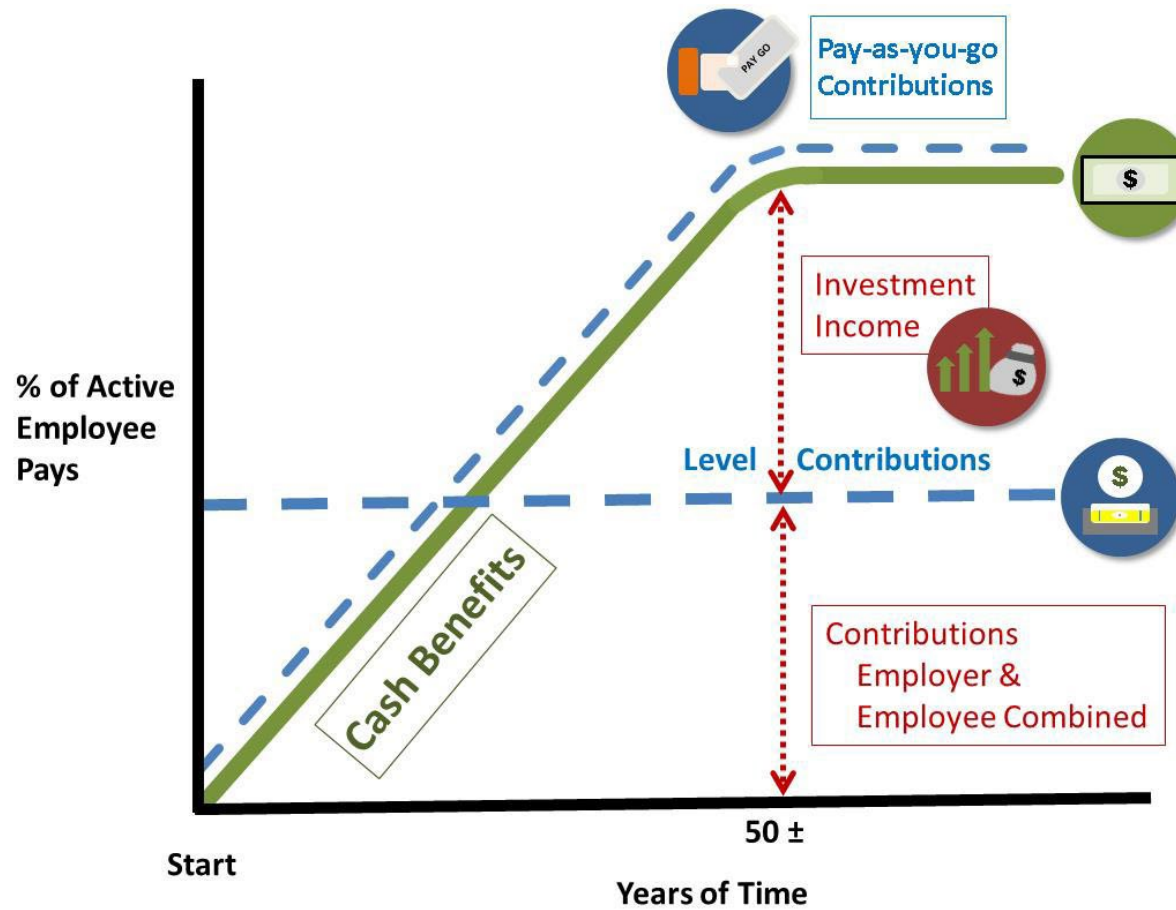
Presented by: Mita D. Drazilov, ASA, FCA, MAAA
Judith A. Kermans, EA, FCA, MAAA



55th Annual Actuarial Valuations

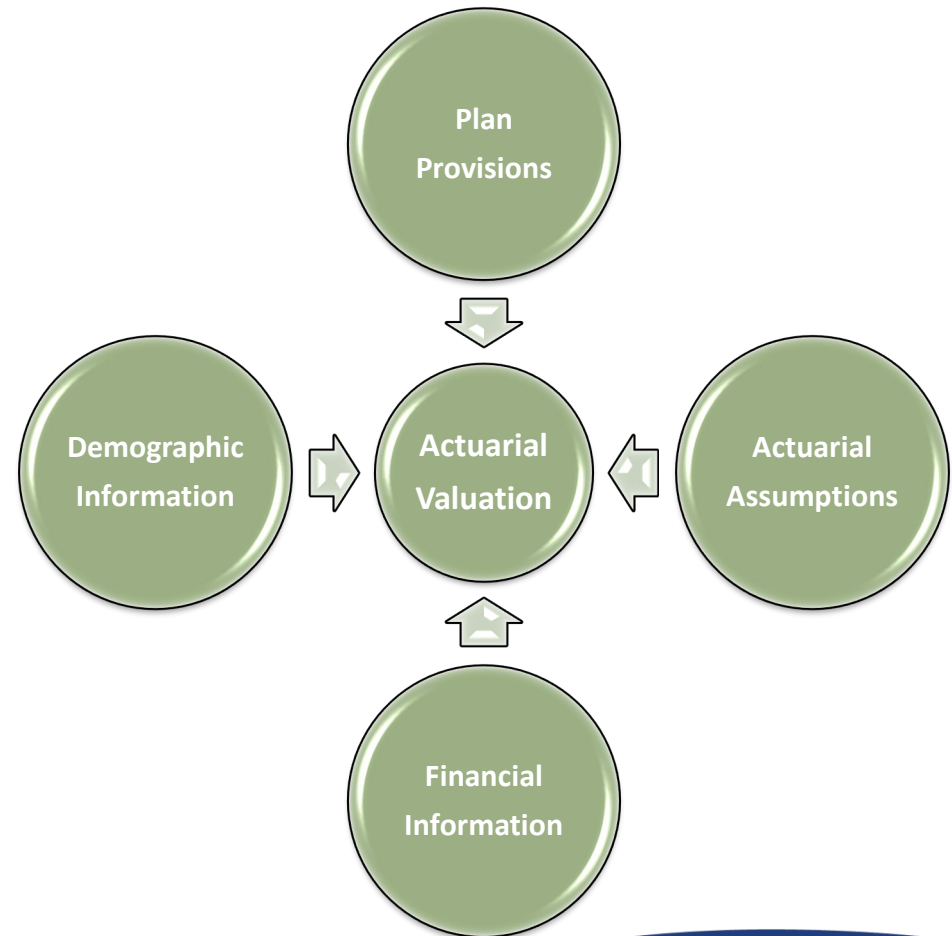
- Actuarial valuations of individual participating employers are made for the purposes of:
 - Revising employer contribution rates for fiscal years beginning in 2024
 - Examining the reserve strength of each separately experience-rated group
- Actuarial valuations are also made of retired life benefits being paid from the Benefit Reserve Fund to determine the financial condition of this pooled fund

Funding Philosophies



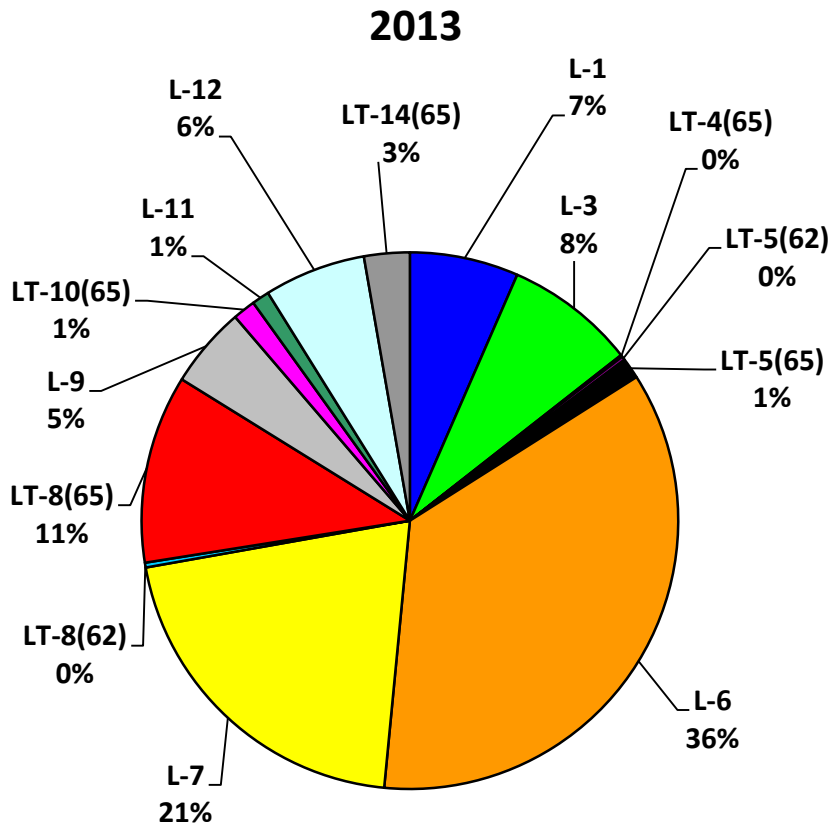
Actuarial Valuation Process

- The actuarial valuation is a mathematical process used to project future payments based on specified benefit provisions
- These projected payouts are converted to equivalent present value amounts and a corresponding level percent-of-payroll contribution rate is determined

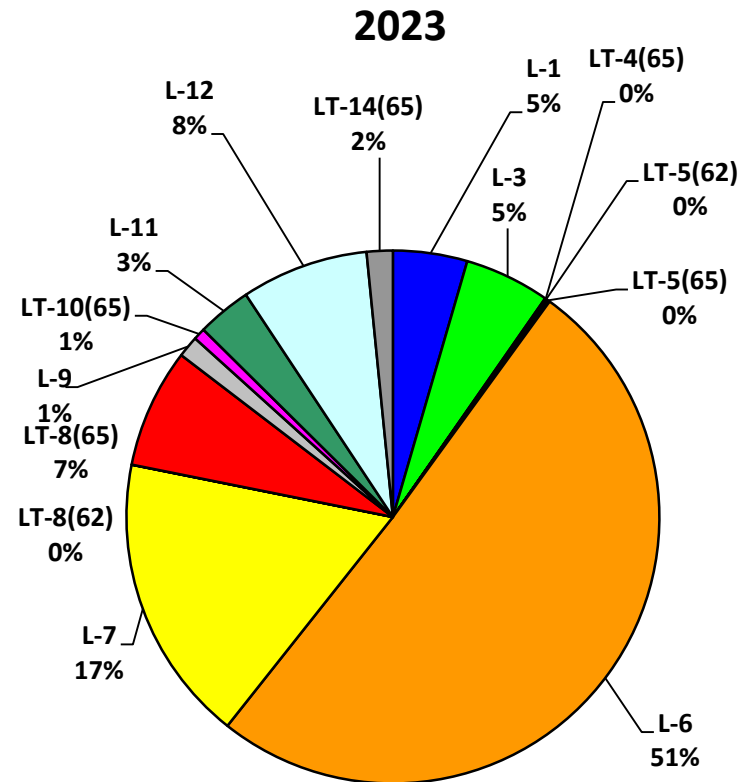


Benefit Programs – 2013 vs. 2023

By Active Membership



Avg. Benefit Multipliers: Life: 1.66%, Temporary: 0.08%



Avg. Benefit Multipliers: Life: 1.78%, Temporary: 0.05%



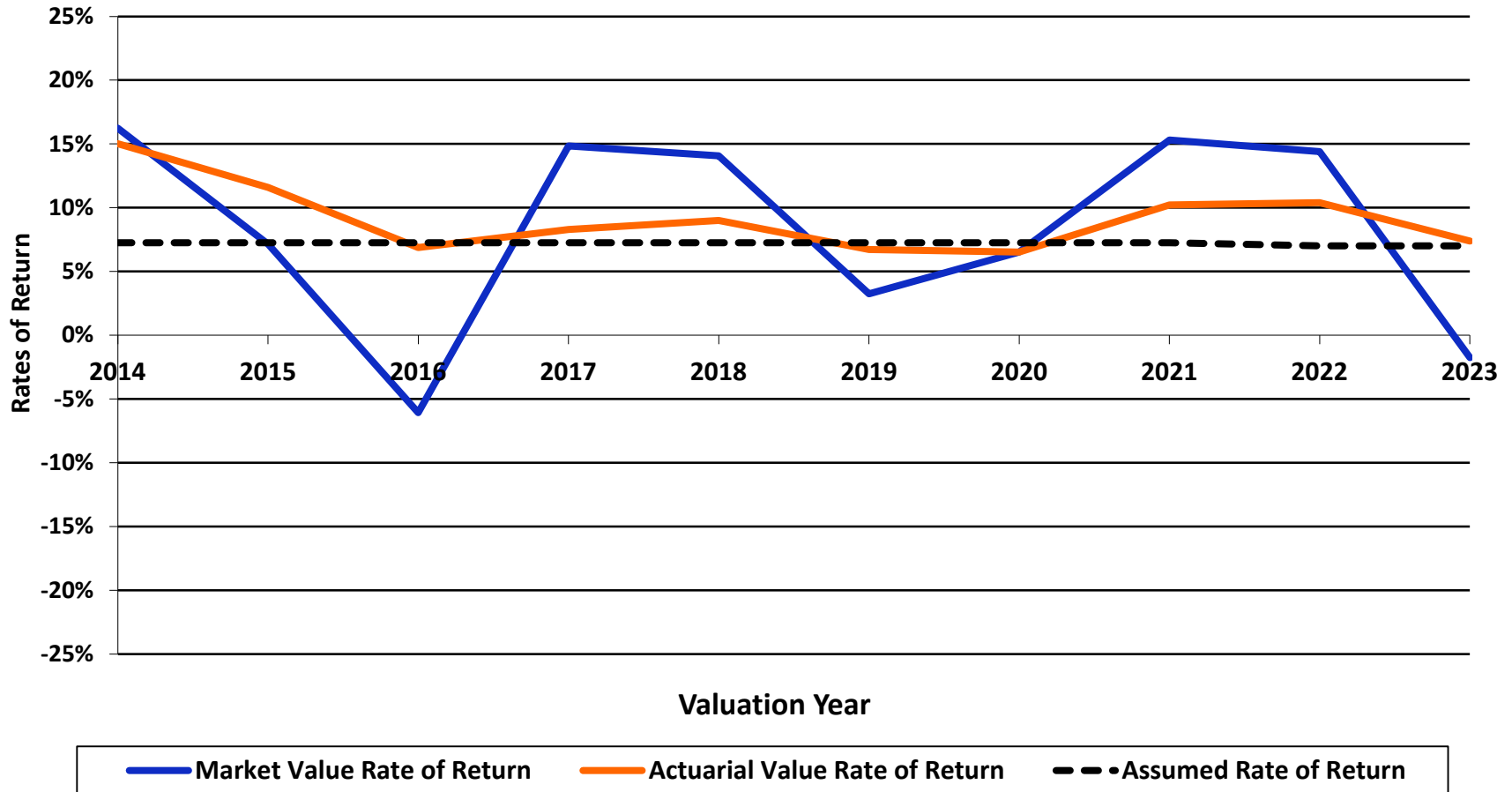
Introduction - Risk Areas

- Decrement Risk Areas
 - Rates of withdrawal
 - Rates of disability
 - Rates of retirement
 - Rates of mortality
- Economic Risk Areas
 - Investment return
 - Inflation
 - Patterns of salary increases

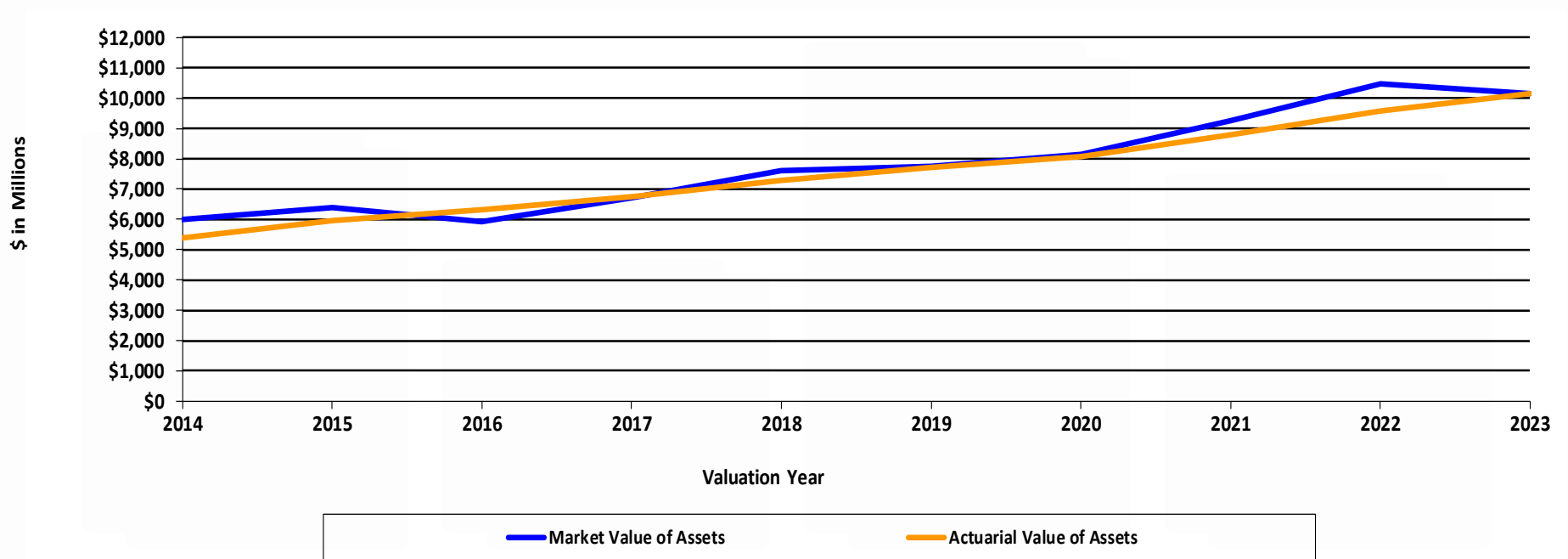
Actuarial Value of Assets

- Reported market values are converted to an actuarial value of assets for valuation purposes.
- Actuarial value of assets recognizes assumed investment return fully each year. Differences between market return and assumed return are phased-in over a closed 5-year period.
- Actuarial value of assets is not permitted to deviate from market value by more than 20% (introduced in the 2003 valuations).

Asset Rates of Returns



Market Value vs. Actuarial Value



Components of Employer Contribution Rates

- Normal Cost Rate
 - Cost associated with an active member accruing an additional year of service credit
- Casualty Rate
 - “Pooled” cost associated with disability and duty death-in-service benefits
- Prior Service Cost Rate
 - Cost associated with the amortization of the difference between actuarial accrued liabilities and the actuarial value of assets

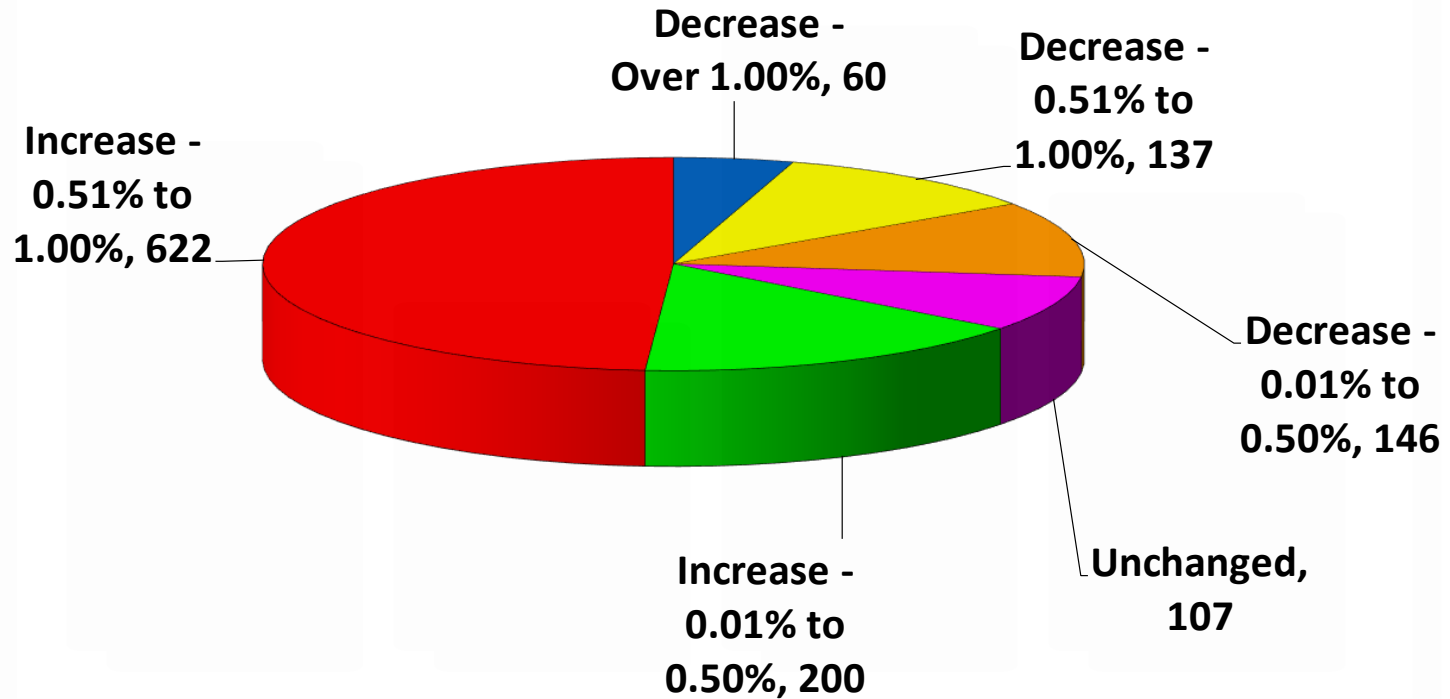
Change in Employer Contributions

Valuation Date	Decreases	Unchanged	Increases	Total
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
2-28-2021*	659	97	469	1,225
2-28-2022	585	116	544	1,245
2-28-2023	343	107	822	1,272

* Revised actuarial assumptions.



Change in Employer Contributions



Recent Valuation Results (\$ in Billions)

	As of February 28,					5 Year Average
	2019	2020	2021	2022	2023	
Market Value Rate of Return	3.2%	6.5%	15.3%	14.4%	(1.8)%	7.3%
Funding Value Rate of Return	6.7%	6.5%	10.2%	10.4%	7.4%	8.2%
Market Value of Assets	\$ 7.749	\$ 8.137	\$ 9.246	\$ 10.457	\$ 10.141	
Funding Value of Assets	\$ 7.698	\$ 8.084	\$ 8.777	\$ 9.572	\$ 10.141	
Actuarial Accrued Liability	\$ 8.113	\$ 8.631	\$ 9.182	\$ 9.922	\$ 10.659	
Unfunded Actuarial Accrued Liability	\$ 0.415	\$ 0.547	\$ 0.405	\$ 0.350	\$ 0.518	
Funded Ratio	94.9%	93.7%	95.6%	96.5%	95.1%	
BRF Actuarial Accrued Liability	\$ 3.557	\$ 3.824	\$ 3.943	\$ 4.323	\$ 4.722	
BRF Funding Value of Assets	\$ 3.840	\$ 4.122	\$ 4.615	\$ 5.141	\$ 5.573	
BRF Reserve for Future Experience	\$ 0.283	\$ 0.298	\$ 0.672	\$ 0.818	\$ 0.851	
BRF Unfunded Actuarial Accrued Liability	\$ -	\$ -	\$ -	\$ -	\$ -	
BRF Funded Ratio	108.0%	107.8%	117.1%	118.9%	118.0%	
Average Total Contribution Rates (Capped)	13.71%	14.38%	14.15%	14.25%	14.97%	
Average Total Contribution Rates (Uncapped)	14.00%	14.76%	14.39%	14.41%	15.39%	
(as a % of payroll)						



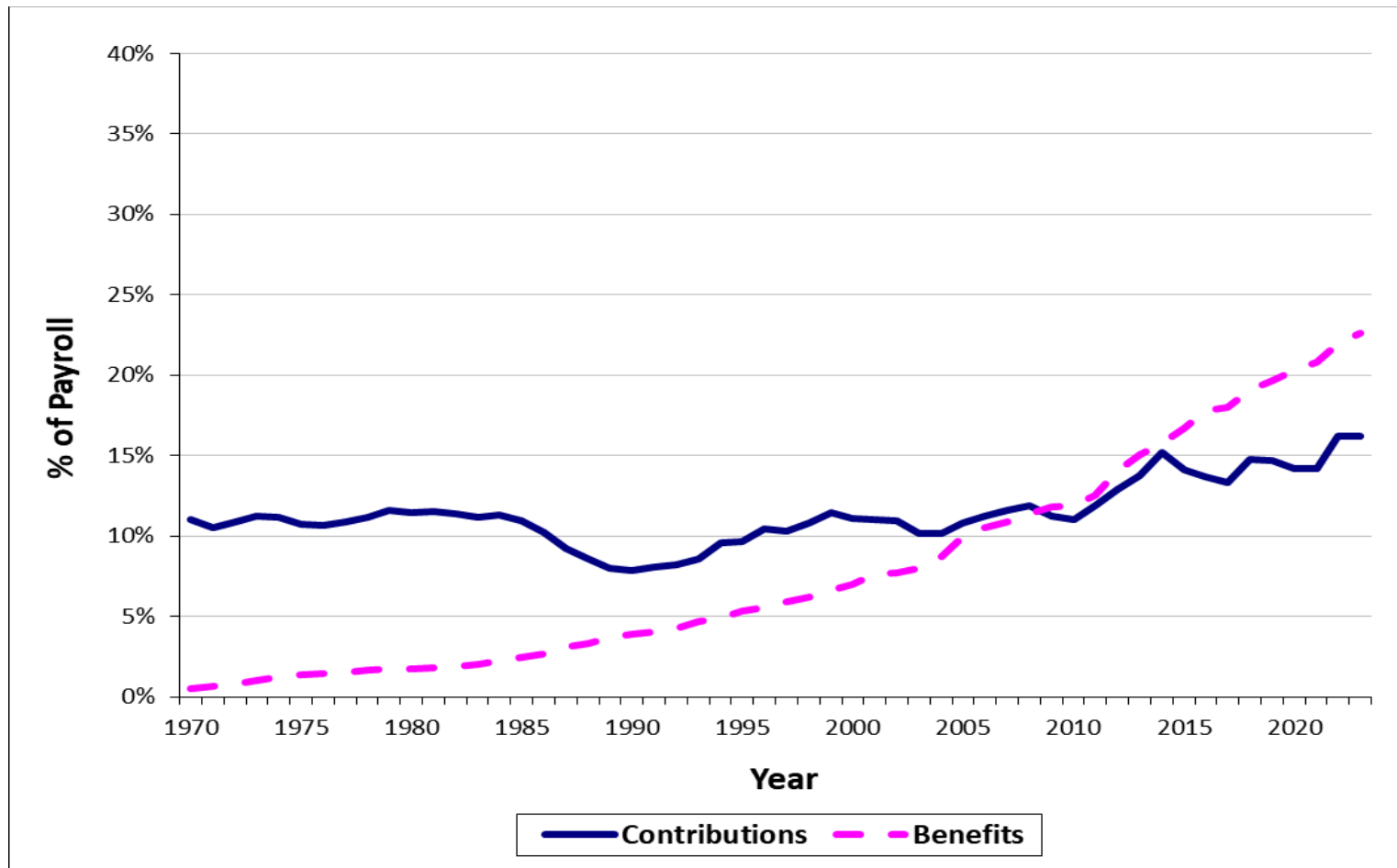
Uncapped Contribution Rate

- Uncapped employer contribution rate as a % of payroll
 - Determined annually for each employer
 - Reflects actuarial experience during the year
 - Such as investment gains/losses
 - Increases are not limited

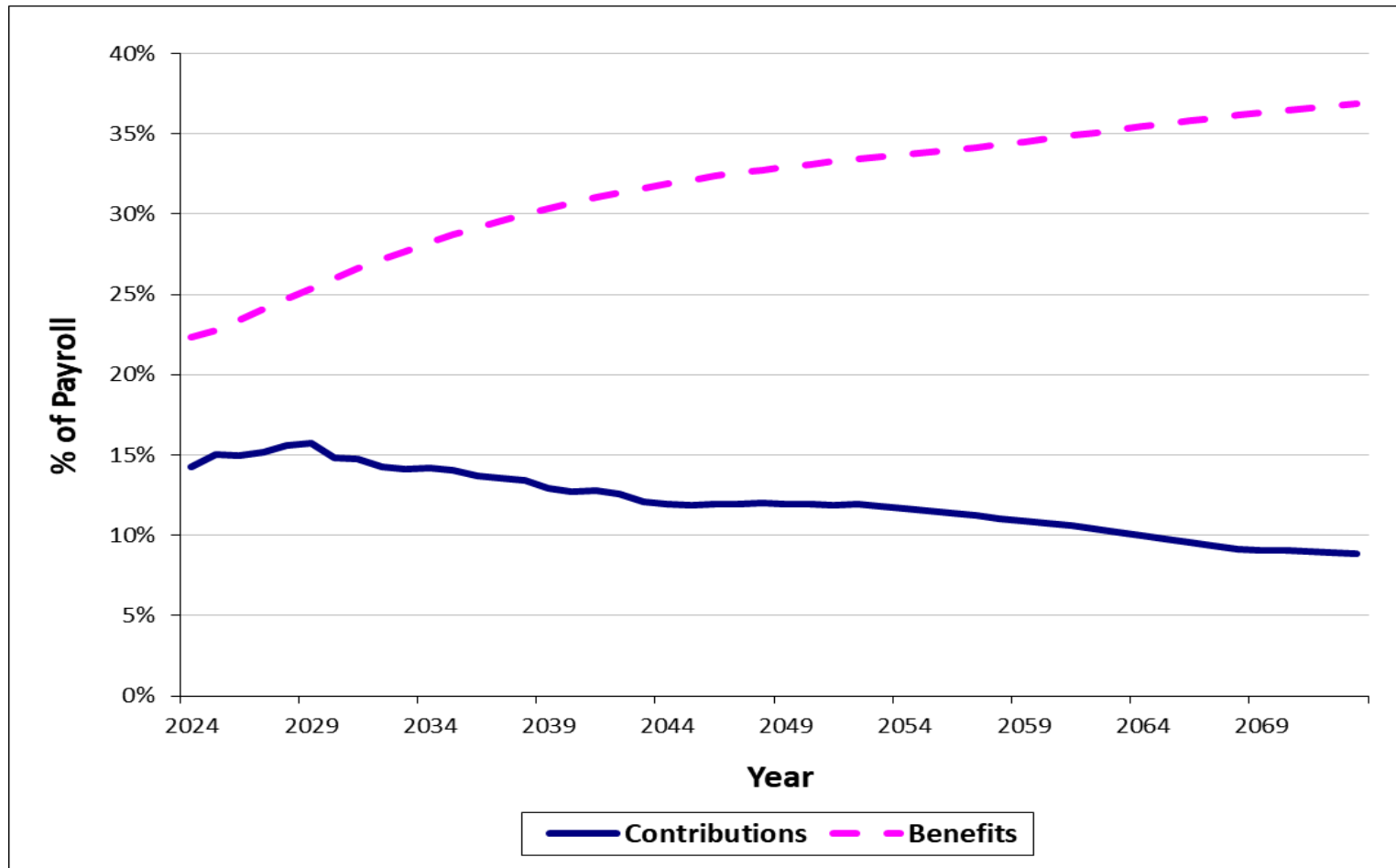
Capped Contribution Rate

- Capped employer contribution rate as a % of payroll
 - Often will equal the uncapped rate
 - However, Section 70.730 of the Revised Statutes of Missouri, limits the increase to one percent of payroll each year
 - Not including the effects of any benefit changes
 - In the absence of future actuarial gains, the capped rate is expected to increase by 1% of payroll each year until it equals the uncapped rate

Historical Total Contribution Income (Employer plus Member) and Benefit Payout



Projected Total Contribution Income (Employer plus Member) and Benefit Payout



Summary

- Actuarial valuations were performed for 1,272 valuation groups
 - 378 groups are at the 1% “employer cap”
- Funded ratio of the System decreased to 95.1% as of February 28, 2023 from 96.5% as of February 28, 2022
- BRF funded ratio decreased to 118.0% as of February 28, 2023 from 118.9% as of February 28, 2022
 - BRF reserve for future experience is approximately \$851 million

Disclosures

- This presentation shall not be construed to provide tax advice, legal advice or investment advice.
- Mita D. Drazilov and Judith A. Kermans are Members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.
- This is one of multiple documents comprising the actuarial report. Additional information regarding actuarial assumptions and methods, and important additional disclosures are provided in the report titled “Compiled 55th Annual Actuarial Valuation as of February 28, 2023.”
- If you need additional information to make an informed decision about the contents of this presentation, or if anything appears to be missing or incomplete please contact us before using this presentation.

