

Wisconsin Retirement System

Forty-Second Annual Actuarial Valuation and
Gain/Loss Analysis
December 31, 2022



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May 25, 2023

Employee Trust Funds Board
Wisconsin Department of Employee
Trust Funds
4822 Madison Yards Way
Madison, Wisconsin 53705

Ladies and Gentlemen:

The results of the December 31, 2022 **annual actuarial valuations of non-retired members covered by the Wisconsin Retirement System** are presented in this report. The valuations establish contribution rates for the 2024 calendar year in conformance with Chapter 40 of the Wisconsin Statutes. This report should not be relied upon for any other purpose. This report may be distributed to parties other than the ETF Board and Staff only in its entirety and only with the permission of the Board. GRS is not responsible for unauthorized use of this report. Determinations of financial results, associated with the benefits described in this report, for purposes other than those identified above may be significantly different. The change in the total normal cost rates from last year are shown below:

General, Executive & Elected	Protective with SS	Protective without SS
0.2%	1.2%	1.1%

The valuations are based upon our understanding of the main plan provisions related to General, Executive and Elected, and Protective Occupation employment with and without Social Security coverage. The plan provisions evaluated are summarized in Section G of this report. Please advise us of any material misstatements in the summary and do not rely on this report until such are resolved.

The individual member statistical data required for the valuations was furnished by the Department of Employee Trust Funds (DETF), together with pertinent data on financial operations. The cooperation of DETF staff in furnishing these materials is acknowledged with appreciation. We checked for internal reasonability and year-to-year consistency, but did not audit the data. We are not responsible for the accuracy or completeness of the information provided by others.

Actuarial valuations are based upon assumptions regarding future activity in specific risk areas including the rates of investment return and payroll growth, eligibility for the various classes of benefits, and longevity among retired lives. The Board adopts these assumptions after considering the advice of the actuary and other professionals. Each actuarial valuation takes into account all prior differences between actual and assumed experience in each risk area and adjusts the contribution rates as needed. The December 31, 2022 valuations were based upon assumptions that were recommended in connection with a study of experience during 2018-2020 and benefit provisions in effect on December 31, 2022.

Future actuarial measurements may differ significantly from those presented in this report due to such factors as experience differing from that anticipated by actuarial assumptions, changes in plan provisions, actuarial assumptions/methods or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements.

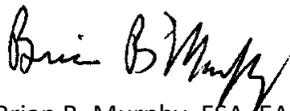
This report includes various risk factors, but does not include an assessment of the risks of future experience not meeting the actuarial assumptions. Additional assessment of risks was outside the scope of this assignment. However, an additional assessment of risk including stress testing for the Wisconsin Retirement System was conducted in the fall of 2019 in conjunction with the State of Wisconsin Investment Board and a separate study commissioned in the fall of 2020 by the Department of Employee Trust Funds. Additional discussion of various risk factors is included on pages B-9 to B-12 of this report.

This report was prepared using our proprietary valuation model and related software which, in our professional judgment, has the capability to provide results that are consistent with the purposes of the valuation and has no material limitations or known weaknesses. We performed tests to ensure that the model reasonably represents that which is intended to be modeled.

To the best of our knowledge, this report is complete and accurate and was made in accordance with generally recognized actuarial methods. Brian B. Murphy, Mark Buis, James D. Anderson, and Richard C. Koch Jr. 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. The signing actuaries are independent of the plan sponsor.

The valuations were completed by qualified actuaries in accordance with accepted actuarial procedures as prescribed by the Actuarial Standards Board. It is our opinion that the Wisconsin Retirement System is operating in accordance with actuarial principles of level percent-of-payroll financing.

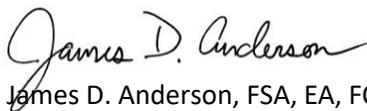
Respectfully submitted,
Gabriel, Roeder, Smith & Company



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SECTION A

EXECUTIVE SUMMARY

Executive Summary

1. Required Employer Contributions to Support Retirement System Benefits

	General, Executive & Elected Officials		Protective Occupation				Average 2024
			With Soc. Sec.		Without Soc. Sec.		
	2024	2023	2024	2023	2024	2023	
Employer Normal Cost	6.90%	6.80%	14.30%	13.20%	19.10%	18.10%	7.80%
Participant Normal Cost	6.90%	6.80%	6.90%	6.80%	6.90%	6.80%	6.90%
Total Normal Cost	13.8%	13.6%	21.2%	20.0%	26.0%	24.9%	14.70%

All employers are required to contribute the employer normal cost shown above. Certain employers are required to make additional contributions to fund their “Frozen Initial Liability” which are liabilities that they either brought on when they joined the WRS, or when they increased their prior service percentage. Related information is provided on page B-2.

Under Section 40.05 of the Wisconsin statutes updated for Acts 10 and 32 of 2011, contribution rates are split evenly between the employer normal cost and the participant normal cost for both General Participants and Executive and Elected Officials. For protective occupations, the participant normal cost is set equal to the participant normal cost for General Participants.

Contributions to support the Section 40.65 Duty Disability Program and the Accumulated Sick Leave Conversion Credit Program are in addition to the WRS rates shown above.

Executive Summary

2. Reasons for Change

There are three general reasons why contribution rates change from one valuation to the next. The first is a change in the benefits or eligibility conditions of the plan. The second is a change in the valuation assumptions used to project future occurrences. The third is the difference during the year between the plan’s actual experience and what the assumptions predicted.

In Wisconsin, there is a fourth reason. When the contribution rate changes for any of the first three reasons, the effect of the change is split evenly between employers and participants, except for protective occupation participants. When the participant normal cost changes, projected future participant account balances also change. By statute, the value of the participant retirement benefits must be at least equal to twice the account balance at retirement. This then changes the value of the retirement benefit, which then changes the total normal cost, which is then split between employers and participants. This final effect on normal cost is referred to as the “Money Purchase Effect.”

In total, changes in the contribution rate are illustrated in the following chart. Additional detail on gains and losses can be found in Section D of this report.

	General, Executive & Elected Officials	Protective with Soc. Sec.	Protective without Soc. Sec.
2023 Normal Cost Rate	13.60%	20.00%	24.90%
Effect of Benefit Change	0.00%	0.00%	0.00%
Effect of Assumption Change	0.00%	0.00%	0.00%
Effect of Asset Performance	0.03%	0.21%	0.31%
Effect of Salary Experience	0.05%	0.89%	0.49%
Effect of Money Purchase Benefit	0.07%	0.03%	0.01%
Demographic and Other Experience	0.05%	0.07%	0.29%
2024 Normal Cost Rate	13.80%	21.20%	26.00%

Although the investment income is allocated proportionately to each group, the effect on the contribution rate will be different because the ratio of assets to payroll is different for each group.

Executive Summary

3. General Comments

Based upon this valuation, normal cost contribution rates increased for all groups primarily due to higher than expected pay increases and unfavorable investment performance from prior years flowing through the Market Recognition Account (MRA).

In total, during 2022, investment return was below the assumed 2022 level of 6.80% on a market value basis. Under the asset valuation method (using the MRA), gains and losses are phased-in over a five-year period, resulting in a 6.2% return on an Actuarial Value of Assets basis in the Core Fund. The Actuarial Value of Assets exceeds the Market Value of Assets by approximately 5.8% as of the valuation date. The statutory asset valuation method will recognize all of the differences between actuarial value and market value of -\$7.0 billion over four future years putting upward pressure on future contribution rates, given that all assumptions are realized.

Conclusion. Based upon the results of the December 31, 2022 regular annual actuarial valuation, it is our opinion that *the Wisconsin Retirement System continues to operate in accordance with actuarial principles of level percent-of-payroll financing.*

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 6.80% on the actuarial value of assets), it is expected that:

- (1) The normal cost as a percentage of pay will decrease to the level of the entry age normal cost as time passes.
- (2) The unfunded liability will decrease in dollar amount until it is fully funded.
- (3) The funded status of the plan will remain very close to a 100% funded ratio.

Limitations of Funded Status Measurements

Unless otherwise indicated, a funded ratio 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, in other words, of transferring the obligations to an unrelated third party in an arm's length market value type transaction.
- (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 amount of future contributions will most certainly differ from those assumed in this report due to future actual experience differing from assumed experience based upon actuarial assumptions. A funded ratio measurement in this report of 100% is not synonymous with no required future contributions. If the funded ratio 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.

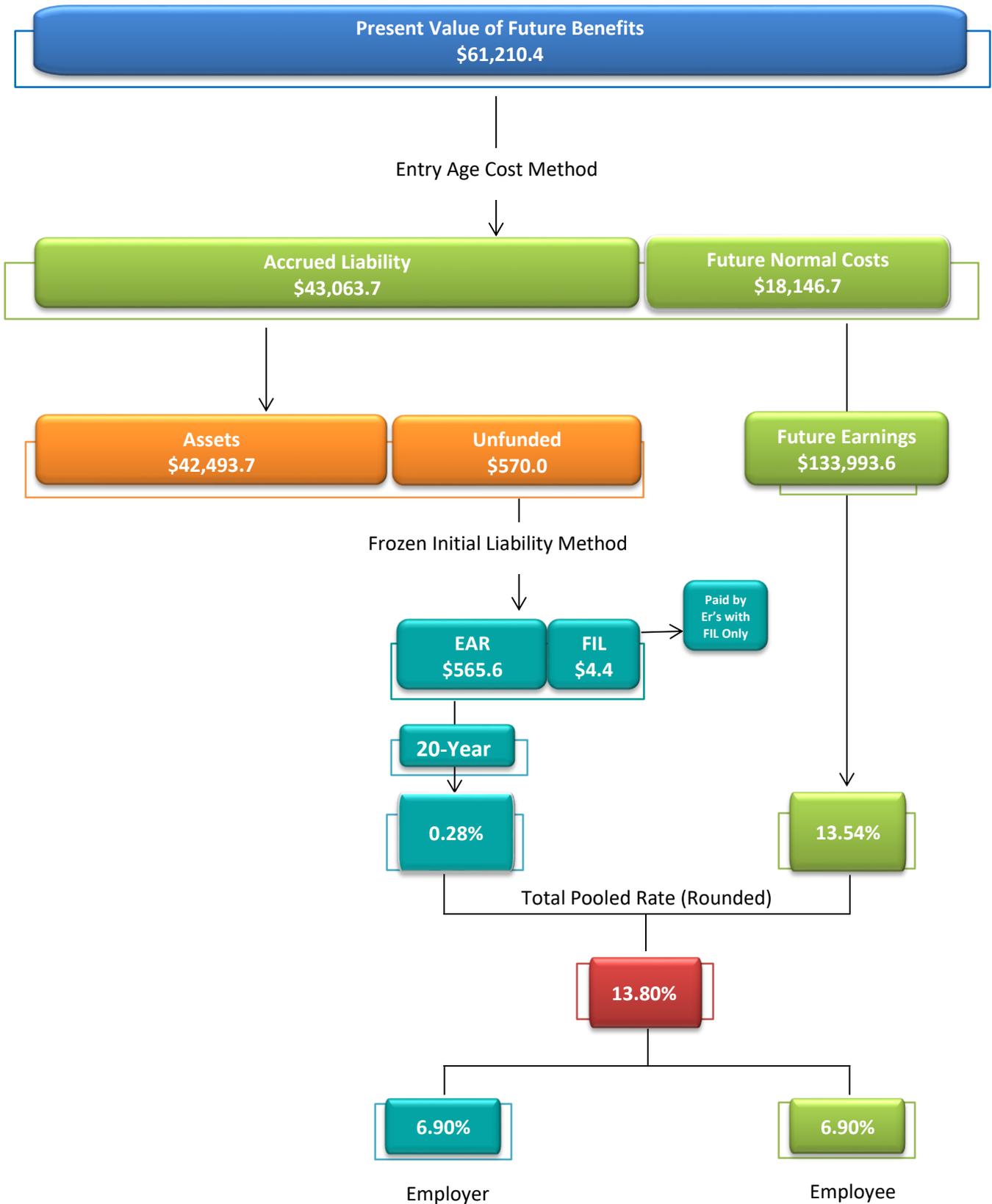
Limitation of Project Scope

Actuarial standards do not require the actuary to evaluate the ability of the plan sponsor or other contributing entity to make required contributions to the plan when due. Such an evaluation was not within the scope of this project and is not within the actuary's domain of expertise. Consequently, the actuary performed no such evaluation.

SECTION B

VALUATION RESULTS

Actuarial Valuation Process (Illustration for General/Elected Group – not to scale) \$ Millions -- %'s of Payroll



Wisconsin Retirement System

December 31, 2022 Valuation Overview

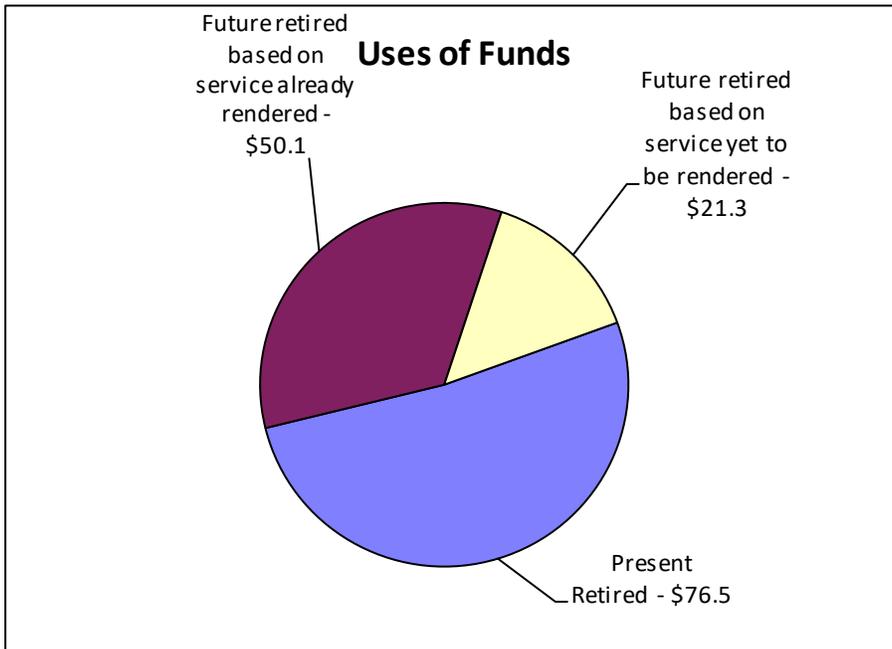
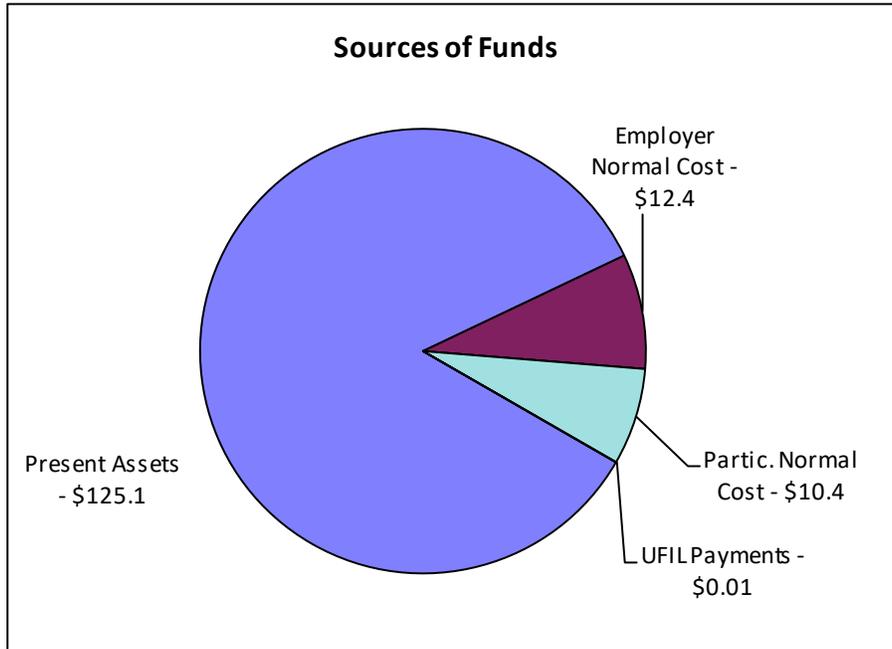
		\$ Millions					
		Non-Retired					
		Protective		Unallocated			
		General, Executives & Elected Officials	With Soc. Sec.	Without Soc. Sec.	Add 'l Contribs	Retired	Total/Average
1	Number of People						
	a. Active	237,826	18,961	2,805			259,592
	b. Inactive, not retired	173,364	8,104	290			181,758
	c. Total	411,190	27,065	3,095		233,804	675,154
2	Current Earnings	\$14,268.7	\$1,501.5	\$255.7			\$16,025.9
3	Present Values of						
	Future Benefits for						
	a. Active	\$52,143.4	\$7,314.4	\$1,727.8			\$61,185.6
	b. Inactive, not retired	\$8,671.7	\$773.3	\$68.1			\$9,513.1
	c. Variable Adjustment	\$395.3	\$40.6	\$8.6			\$444.5
	d. Total	\$61,210.4	\$8,128.3	\$1,804.5	\$276.0	\$76,511.4	\$147,930.6
4	Future Entry Age Normal Costs	\$18,146.7	\$2,591.8	\$610.1			\$21,348.6
5	Future Earnings	\$133,993.6	\$14,784.1	\$2,697.6			\$151,475.3
6	Pooled Entry Age Normal Cost (4/5)	13.54%	17.53%	22.62%			14.09%
7	Entry Age Accrued Liability (3d-4)	\$43,063.7	\$5,536.5	\$1,194.4	\$276.0	\$76,511.4	\$126,582.0
8	Assets	\$42,493.7	\$4,756.8	\$1,073.6	\$276.0	\$76,511.4	\$125,111.5
9	Total Entry Age Unfunded Liability (7-8)	\$570.0	\$779.7	\$120.8	\$0.0	\$0.0	\$1,470.5
10	Frozen Initial Liability Portion	\$4.4	\$0.7	\$0.0	\$0.0	\$0.0	\$5.1
11	Pooled Unfunded Liability (EAR) (9-10)	\$565.6	\$779.0	\$120.8	\$0.0	\$0.0	\$1,465.4
12	20-year amortization factor	14.0212	14.0212	14.0212			14.0212
13	Pooled Amortization % (11/12/2)	0.28%	3.70%	3.37%			0.65%
14	Total Pooled Rate Rounded (6+13)	13.8%	21.2%	26.0%			14.7%
15	2024 F-I-L Normal Cost Rates						
16	Participant (0.5x14 (Gen'l))	6.90%	6.90%	6.90%			6.90%
17	Employer (14-16)	6.90%	14.30%	19.10%			7.90%
18	Total (16+17)	13.8%	21.2%	26.0%			14.80%
19	Entry Age Funded Ratio (8/7)	98.7%	85.9%	89.9%	100.0%	100.0%	98.8%

		Unfunded Frozen Initial Liability (UFIL)				
		Protective				
		General, Executives & Elected Officials	With Soc. Sec.	Without Soc Sec		Total
	Balance January 1, 2022	\$5,156,982	\$598,701	\$0		\$5,755,683
	New Employers	\$0	\$0	\$0		\$0
	Payments and Adjustments	\$(1,053,362)	\$68,568	\$0		\$(984,794)
	Interest	\$279,046	\$45,374	\$0		\$324,420
	Balance December 31, 2022	\$4,382,666	\$712,643	\$0		\$5,095,309
	WRS Average UFIL Contribution	0.01%	0.00%	0.00%		0.01%

Each employer contributes the Employer Normal Cost shown in line 17 above. Each participant contributes an identical percentage of pay as indicated. Some employers have an unfunded Frozen Initial Liability and contribute an additional amount to amortize that liability. The retirement system provides the information regarding the remaining unfunded frozen initial liability.



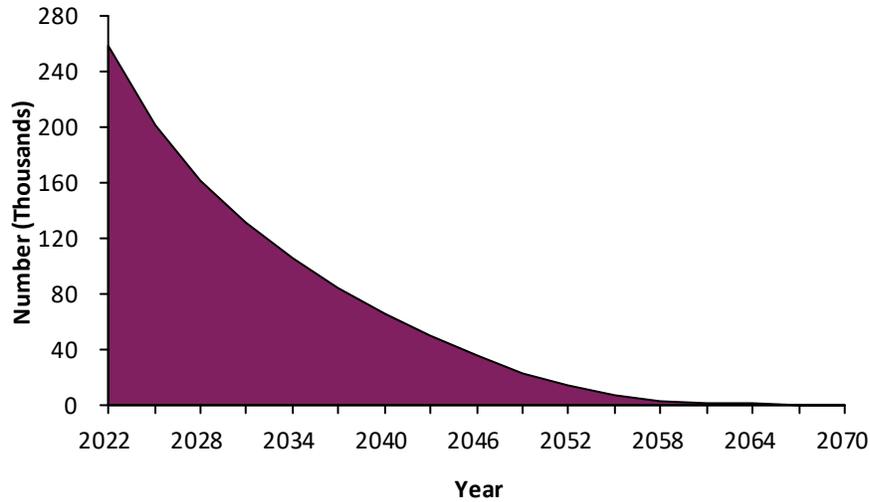
Financing \$147.9 Billion¹ of Benefit Promises for Present Active and Retired Participants December 31, 2022



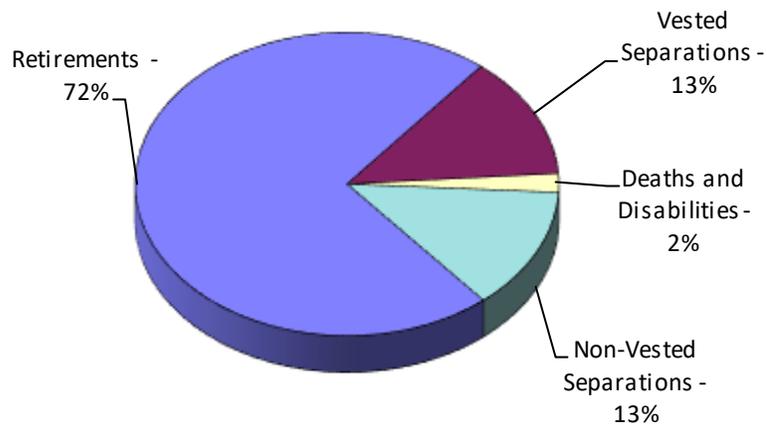
¹ Present value of future benefits; all divisions combined.

Expected Development of Present Population December 31, 2022

Closed Group Active Population Projection



Expected Terminations from Active Employment for Current Active Members



The charts above show the expected future development of the present population in simplified terms. The retirement system presently covers 259,592 active members. Eventually, 13% of the population is expected to terminate covered employment prior to retirement and forfeit eligibility for a monthly benefit. About 85% of the present population is expected to receive monthly retirement benefits either by retiring directly from active service, or by retiring from vested deferred status. The remaining 2% of the present population is expected to become eligible for death-in-service or disability benefits. Within 10 years, over half of the covered membership is expected to consist of new hires.

Comparative Statement of Computed Contribution Rates

Valuation 12/31	Rate Effective 1/1	General				Executive and Elected			
		Participant	Benefit Adj. Contr.	Employer ¹	Total	Participant	Benefit Adj. Contr.	Employer ¹	Total
1998	2000	5.00 %	0.50 %	5.50 %	11.00 %	4.10 %	0.00 %	10.60 %	14.70 %
1999	2001	5.00 %	0.20 %	5.10 %	10.30 %	3.90 %	0.00 %	10.40 %	14.30 %
2000	2002	5.00 %	0.20 %	5.10 %	10.30 %	3.10 %	0.00 %	9.60 %	12.70 %
2001 ²	2003	5.00 %	0.40 %	5.23 %	10.63 %	2.60 %	0.00 %	9.06 %	11.66 %
2002	2004	5.00 %	0.60 %	5.22 %	10.82 %	2.60 %	0.00 %	8.91 %	11.51 %
2003	2005	5.00 %	0.80 %	4.70 %	10.50 %	2.80 %	0.00 %	8.40 %	11.20 %
2004	2006	5.00 %	0.90 %	4.73 %	10.63 %	2.90 %	0.00 %	8.47 %	11.37 %
2005	2007	5.00 %	1.00 %	4.81 %	10.81 %	3.00 %	0.00 %	8.56 %	11.56 %
2006	2008	5.00 %	1.00 %	4.79 %	10.79 %	3.00 %	0.00 %	8.56 %	11.56 %
2007	2009	5.00 %	0.90 %	4.68 %	10.58 %	3.00 %	0.00 %	8.55 %	11.55 %
2008	2010	5.00 %	1.20 %	4.95 %	11.15 %	3.20 %	0.00 %	8.75 %	11.95 %
2009	2011	5.00 %	1.50 %	5.22 %	11.72 %	3.90 %	0.00 %	9.45 %	13.35 %
2010	2012	5.00 %	1.60 %	5.30 %	11.90 %	4.30 %	0.00 %	9.80 %	14.10 %
2011 ³	2013	6.65 %	N/A	6.75 %	13.40 %	7.00 %	N/A	7.00 %	14.00 %
2012	2014	7.00 %	N/A	7.00 %	14.00 %	7.75 %	N/A	7.75 %	15.50 %
2013	2015	6.80 %	N/A	6.80 %	13.60 %	7.70 %	N/A	7.70 %	15.40 %
2014	2016	6.60 %	N/A	6.60 %	13.20 %	7.80 %	N/A	7.80 %	15.60 %
2015 ⁴	2017	6.80 %	N/A	6.87 %	13.67 %	6.80 %	N/A	6.87 %	13.67 %
2016	2018	6.70 %	N/A	6.73 %	13.43 %	6.70 %	N/A	6.73 %	13.43 %
2017	2019	6.55 %	N/A	6.57 %	13.12 %	6.55 %	N/A	6.57 %	13.12 %
2018	2020	6.75 %	N/A	6.79 %	13.54 %	6.75 %	N/A	6.79 %	13.54 %
2019	2021	6.75 %	N/A	6.78 %	13.53 %	6.75 %	N/A	6.78 %	13.53 %
2020	2022	6.50 %	N/A	6.50 %	13.00 %	6.50 %	N/A	6.50 %	13.00 %
2021	2023	6.80 %	N/A	6.80 %	13.60 %	6.80 %	N/A	6.80 %	13.60 %
2022	2024	6.90 %	N/A	6.91 %	13.81 %	6.90 %	N/A	6.91 %	13.81 %

¹ Employer normal cost plus weighted-average of unfunded Frozen Initial liability contribution rates.

² Act 11 of 1999 was implemented in 2001.

³ Act 10 and Act 32 were implemented in 2011.

⁴ Contribution rates for General and Executive and Elected Officials groups were combined beginning with the 2015 valuation. Actual 2016 Participant and Employer contribution rates for the Executive and Elected Officials group were each 6.6%, respectively.



Comparative Statement of Computed Contribution Rates

Valuation 12/31	Rate Effective 1/1	Protective with Social Security				Protective without Social Security			
		Participant	Benefit Adj. Contr.	Employer ¹	Total	Participant	Benefit Adj. Contr.	Employer ¹	Total
1998	2000	4.10 %	0.00 %	8.00 %	12.10 %	4.40 %		13.30 %	17.70 %
1999	2001	3.80 %	0.00 %	7.60 %	11.40 %	3.30 %		12.20 %	15.50 %
2000	2002	4.00 %	0.00 %	7.80 %	11.80 %	3.00 %		11.90 %	14.90 %
2001 ²	2003	4.00 %	0.00 %	7.68 %	11.68 %	2.40 %		11.28 %	13.68 %
2002	2004	4.50 %	0.00 %	8.02 %	12.52 %	3.20 %		11.81 %	15.01 %
2003	2005	4.90 %	0.00 %	8.10 %	13.00 %	3.30 %		11.30 %	14.60 %
2004	2006	5.00 %	0.00 %	8.19 %	13.19 %	3.30 %		11.11 %	14.41 %
2005	2007	5.10 %	0.00 %	8.28 %	13.38 %	3.40 %		11.16 %	14.56 %
2006	2008	5.10 %	0.00 %	8.27 %	13.37 %	3.40 %		11.17 %	14.57 %
2007	2009	5.00 %	0.00 %	8.15 %	13.15 %	3.20 %		10.89 %	14.09 %
2008	2010	5.50 %	0.00 %	8.64 %	14.14 %	3.90 %		11.56 %	15.46 %
2009	2011	5.80 %	0.00 %	8.94 %	14.74 %	4.80 %		12.46 %	17.26 %
2010	2012	5.90 %	0.00 %	9.00 %	14.90 %	4.90 %		12.60 %	17.50 %
2011 ³	2013	6.65 %	N/A	9.75 %	16.40 %	6.65 %		12.65 %	19.30 %
2012	2014	7.00 %	N/A	10.10 %	17.10 %	7.00 %		14.00 %	21.00 %
2013	2015	6.80 %	N/A	9.50 %	16.30 %	6.80 %		13.40 %	20.20 %
2014	2016	6.60 %	N/A	9.40 %	16.00 %	6.60 %		13.40 %	20.00 %
2015	2017	6.80 %	N/A	10.70 %	17.50 %	6.80 %		15.00 %	21.80 %
2016	2018	6.70 %	N/A	10.73 %	17.43 %	6.70 %		14.95 %	21.65 %
2017	2019	6.55 %	N/A	10.55 %	17.10 %	6.55 %		15.04 %	21.59 %
2018	2020	6.75 %	N/A	11.66 %	18.41 %	6.75 %		16.27 %	23.02 %
2019	2021	6.75 %	N/A	11.76 %	18.51 %	6.75 %		16.36 %	23.11 %
2020	2022	6.50 %	N/A	12.02 %	18.52 %	6.50 %		17.36 %	23.86 %
2021	2023	6.80 %	N/A	13.23 %	20.03 %	6.80 %		18.10 %	24.90 %
2022	2024	6.90 %	N/A	14.30 %	21.20 %	6.90 %		19.10 %	26.00 %

¹ Employer normal cost plus weighted-average of unfunded Frozen Initial liability contribution rates.

² Act 11 of 1999 was implemented in 2001.

³ Act 10 and Act 32 were implemented in 2011.



Schedule of Funding Progress & Accrued Liabilities (\$ Millions)

Frozen Initial Liability Method

Valuation Date Dec. 31	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) Frozen Entry Age (b)	Unfunded AAL (UAAL) (b) - (a)	Funded Ratio (a)/(b)	Covered Payroll ¹ (c)	UAAL as a Percent of Covered Payroll [(b) - (a)] / (c)
2013	\$ 85,276.1	\$ 85,328.7	\$ 52.6	99.9 %	\$ 12,884.8	0.4 %
2014	89,360.4	89,392.1	31.7	100.0 %	13,219.5	0.2 %
2015	91,502.4	91,526.5	24.1	100.0 %	13,530.5	0.2 %
2016	95,396.2	95,414.0	17.8	100.0 %	13,706.0	0.1 %
2017	100,802.5	100,819.3	16.8	100.0 %	13,943.1	0.1 %
2018	101,410.5	101,422.3	11.8	100.0 %	14,301.4	0.1 %
2019	106,524.4	106,532.4	8.0	100.0 %	14,832.5	0.1 %
2020	114,259.2	114,265.0	5.8	100.0 %	15,359.9	0.0 %
2021	124,665.4	124,671.2	5.8	100.0 %	15,780.8	0.0 %
2022	125,111.5	125,116.6	5.1	100.0 %	16,361.3	0.0 %

Entry Age Method

Valuation Date Dec. 31	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) Entry Age (b)	Unfunded AAL (UAAL) (b) - (a)	Funded Ratio (a)/(b)	Covered Payroll ¹ (c)	UAAL as a Percent of Covered Payroll [(b) - (a)] / (c)
2013	\$ 85,276.1	\$ 86,055.0	\$ 778.9	99.1 %	\$ 12,884.8	6.0 %
2014	89,360.4	89,794.0	433.6	99.5 %	13,219.5	3.3 %
2015	91,502.4	92,736.3	1,233.9	98.7 %	13,530.5	9.1 %
2016	95,396.2	96,351.2	955.0	99.0 %	13,706.0	7.0 %
2017	100,802.5	101,321.9	519.4	99.5 %	13,943.1	3.7 %
2018	101,410.5	102,823.3	1,412.8	98.6 %	14,301.4	9.9 %
2019	106,524.4	108,053.7	1,529.3	98.6 %	14,832.5	10.3 %
2020	114,259.2	115,250.3	991.1	99.1 %	15,359.9	6.5 %
2021	124,665.4	125,488.0	822.6	99.3 %	15,780.8	5.2 %
2022	125,111.5	126,582.0	1,470.5	98.8 %	16,361.3	9.0 %

¹ As reported by ETF staff. This figure is intended to represent the total pay upon which contributions were based during the year ended on the valuation date and does not necessarily match other figures in this report.

Funding Metrics (\$ Millions)

Frozen Initial Liability Method

Valuation Date Dec. 31	Actuarial Value of Assets	F-I-L Accrued Liability for				Percent Funded for			
		Annuitants and Beneficiaries	Member Contribs.	Active & Inactive Members	Total	Annuitants and Beneficiaries	Participant Contributions	Active & Inactive Members	Total
2013	\$85,276.1	\$48,460.5	\$15,559.2	\$21,309.0	\$85,328.7	100.0%	100.0%	99.8%	99.9%
2014	89,360.4	51,131.1	16,259.3	22,001.7	89,392.1	100.0%	100.0%	99.9%	100.0%
2015	91,502.4	52,851.8	16,707.2	21,967.5	91,526.5	100.0%	100.0%	99.9%	100.0%
2016	95,396.2	55,764.0	17,361.7	22,288.3	95,414.0	100.0%	100.0%	99.9%	100.0%
2017	100,802.5	59,224.9	18,434.4	23,160.0	100,819.3	100.0%	100.0%	99.9%	100.0%
2018	101,410.5	60,242.9	18,455.6	22,723.9	101,422.3	100.0%	100.0%	99.9%	100.0%
2019	106,524.4	63,657.8	19,487.0	23,387.6	106,532.4	100.0%	100.0%	100.0%	100.0%
2020	114,259.2	68,759.8	20,884.4	24,620.8	114,265.0	100.0%	100.0%	100.0%	100.0%
2021	124,665.4	75,528.7	22,737.5	26,405.0	124,671.2	100.0%	100.0%	100.0%	100.0%
2022	125,111.5	76,511.4	22,575.3	26,029.8	125,116.6	100.0%	100.0%	100.0%	100.0%

Entry Age Method

Valuation Date Dec. 31	Actuarial Value of Assets	Entry Age Accrued Liability for				Percent Funded for			
		Annuitants and Beneficiaries	Member Contribs.	Active & Inactive Members	Total	Annuitants and Beneficiaries	Participant Contributions	Active & Inactive Members	Total
2013	\$85,276.1	\$48,460.5	\$15,559.2	\$22,035.3	\$86,055.0	100.0%	100.0%	96.5%	99.1%
2014	89,360.4	51,131.1	16,259.3	22,403.6	89,794.0	100.0%	100.0%	98.1%	99.5%
2015	91,502.4	52,851.8	16,707.2	23,177.3	92,736.3	100.0%	100.0%	94.7%	98.7%
2016	95,396.2	55,764.0	17,361.7	23,225.5	96,351.2	100.0%	100.0%	95.9%	99.0%
2017	100,802.5	59,224.9	18,434.4	23,662.6	101,321.9	100.0%	100.0%	97.8%	99.5%
2018	101,410.5	60,242.9	18,455.6	24,124.8	102,823.3	100.0%	100.0%	94.1%	98.6%
2019	106,524.4	63,657.8	19,487.0	24,908.9	108,053.7	100.0%	100.0%	93.9%	98.6%
2020	114,259.2	68,759.8	20,884.4	25,606.1	115,250.3	100.0%	100.0%	96.1%	99.1%
2021	124,665.4	75,528.7	22,737.5	27,221.8	125,488.0	100.0%	100.0%	97.0%	99.3%
2022	125,111.5	76,511.4	22,575.3	27,495.3	126,582.0	100.0%	100.0%	94.7%	98.8%



Discussion of Risk/Maturity Measures

The determination of the accrued liability and the actuarially determined contribution requires the use of assumptions regarding future economic and demographic experience. GRS investigates gains or losses due to economic and demographic experience explicitly as they arise each year in this Annual Actuarial Valuation and Gain/Loss Analysis Report. The results of each valuation report then serves as the underlying basis for the three-year experience study, which investigates and adjusts assumptions so that future gains and losses are minimized. 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 the accrued liability and the actuarially determined contribution that result 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** – actual investment returns may differ from the expected returns;
2. **Asset/Liability Mismatch** – changes in asset values may not match changes in liabilities, thereby altering the gap between the accrued liability and assets and consequently altering the funded status and contribution requirements; because of the way most public retirement systems invest, this tends to be synonymous with investment risk;
3. **Contribution Risk** – actual contributions may differ from expected future contributions. For example, actual contributions may not be made in accordance with the plan's funding policy or material changes may occur in the anticipated number of covered employees, covered payroll, or other relevant contribution base;
4. **Salary and Payroll Risk** – actual salaries and total payroll may differ from expected, resulting in actual future accrued liability and contributions differing from expected;
5. **Longevity Risk** – members may live longer or shorter than expected and receive pensions for a period of time other than assumed; and
6. **Other Demographic Risks** – members may terminate, retire or become disabled at times or with benefits other than assumed resulting in actual future accrued liability and contributions differing from expected.

The effects of certain trends in experience can generally be anticipated. For example, if the investment return since the most recent actuarial valuation is less (or more) than the assumed rate, the cost of the plan can be expected to increase (or decrease). Likewise, if longevity is improving (or worsening), increases (or decreases) in cost can be anticipated.

The contribution rates shown on page A-1 and A-2 may be considered as minimum contribution rates that comply with the Board's funding policy and statutes. The timely receipt of the actuarially determined contributions is critical to support the financial health of the plan. Users of this report should be aware that contributions made at the actuarially determined rate do not necessarily guarantee benefit security.



Discussion of Risk/Maturity Measures

PLAN MATURITY MEASURES

Risks facing a pension plan evolve over time. A young plan with virtually no investments and paying few benefits may experience little investment risk. An older plan with a large number of members in pay status and a significant trust may be much more exposed to investment risk. Generally accepted plan maturity measures include the following: ratio of the market value of assets to total payroll, ratio of actuarial accrued liability to payroll, ratio of actives to retirees and beneficiaries, and the ratio of net cash flow to market value of assets.

RATIO OF MARKET VALUE OF ASSETS TO PAYROLL

The relationship between assets and payroll is a useful indicator of the potential volatility of contributions. For example, if the market value of assets is 2.0 times the payroll, a return on assets 5% different than assumed would equal 10% of payroll. A higher (lower) or increasing (decreasing) level of this maturity measure generally indicates a higher (lower) or increasing (decreasing) volatility in plan sponsor contributions as a percentage of payroll. In the WRS, this volatility is mitigated by the extensive risk sharing features that are present in the plan.

RATIO OF ACTUARIAL ACCRUED LIABILITY TO PAYROLL

The relationship between actuarial accrued liability and payroll is a useful indicator of the potential volatility of contributions for a fully funded plan. In the WRS, this volatility is mitigated by the extensive risk sharing features that are present in the plan. A funding policy that targets a funded ratio of 100% is expected to result in the ratio of assets to payroll and the ratio of liability to payroll converging over time. The ratio of liability to payroll may also be used as a measure of sensitivity of the liability itself. For example, if the actuarial accrued liability is 2.5 times the payroll, a change in liability 2% other than assumed would equal 5% of payroll. A higher (lower) or increasing (decreasing) level of this maturity measure generally indicates a higher (lower) or increasing (decreasing) volatility in liability (and also plan sponsor contributions) as a percentage of payroll.

RATIO OF ACTIVES TO RETIREES AND BENEFICIARIES

A young plan with many active members and few retirees will have a high ratio of actives to retirees. A mature open plan may have close to the same number of actives to retirees resulting in a ratio near 1.0. A super-mature or closed plan may have significantly more retirees than actives resulting in a ratio below 1.0.

RATIO OF NET CASH FLOW TO MARKET VALUE OF ASSETS

A positive net cash flow means contributions exceed benefits and expenses. A negative cash flow means existing funds are being used to make payments. A certain amount of negative net cash flow is generally expected to occur when benefits are prefunded through a qualified trust. Large negative net cash flows as a percent of assets may indicate a super-mature plan or a need for additional contributions.

ADDITIONAL RISK ASSESSMENT

Additional risk assessment is outside the scope of the annual actuarial valuation. Additional assessment may include scenario tests, sensitivity tests, stochastic modeling, stress tests, and a comparison of the present value of accrued benefits at low-risk discount rates with the actuarial accrued liability. Additional assessment of risk including stress testing for the Wisconsin Retirement System was conducted in the fall of 2019 in conjunction with the State of Wisconsin Investment Board and a separate study commissioned in the fall of 2020 by the Department of Employee Trust Funds.



Risk/Maturity Measures

\$ Millions									
Valuation Date	(1) Entry Age Accrued Liabilities (AAL)	(2) Market Value of Assets	(3) (Overfunded)/ Unfunded AAL (1) - (2)	(4) Valuation Payroll	(5) Change in Valuation Payroll	(6) Funded Ratio (2)/(1)	(7) Annuitant Liabilities (AnnLiab)	(8) AnnLiab/ AAL (7)/(1)	(9) AAL/ Valuation Payroll (1)/(4)
2017	\$101,321.9	\$104,159.6	\$(2,837.7)	\$13,720.5	1.7%	102.8%	\$59,224.9	58.5%	738.5%
2018	102,823.3	96,734.3	6,089.0	14,041.3	2.3%	94.1%	60,242.9	58.6%	732.3%
2019	108,053.7	112,098.6	(4,044.9)	14,583.7	3.9%	103.7%	63,657.8	58.9%	740.9%
2020	115,250.3	124,966.8	(9,716.5)	15,065.6	3.3%	108.4%	68,759.8	59.7%	765.0%
2021	125,488.0	141,847.8	(16,359.8)	15,410.0	2.3%	113.0%	75,528.7	60.2%	814.3%
2022	126,582.0	118,366.4	8,215.6	16,025.9	4.0%	93.5%	76,511.4	60.4%	789.9%

These Risk Measures were based on assumptions in place on the valuation date. For the current valuation, this includes 6.8% future investment return, Entry Age Normal accrued liabilities and Market Value of Assets.

The Risk/Maturity measures shown on this page and on the following page have been developed in response to Actuarial Standard of Practice ("ASOP") No. 51 entitled "Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contributions." In a maturing plan, the ratio of retiree liabilities to total liabilities increases, and the ratios of both assets and liabilities to payroll increases, and contribution rates tend to become increasingly volatile. The risk/maturity measures and associated commentary are intended to help keep stakeholders informed of some of the risks that the plan faces, and the potential contribution rate volatility. In the WRS, however, contribution volatility is mitigated by the extensive risk sharing features of the plan, including the dividend process, the Money Purchase Effect, the sharing of contribution rate changes, etc. Thus, these measures, while interesting, have somewhat less meaning for the WRS than they do for most systems.

Notes:

The measures shown above provide information in accordance with Actuarial Standard of Practice No. 51.

Columns (1) to (4). These columns provide various items for comparison in Columns 5 through 16.

Column (5). When payroll grows at or faster than the assumed rate of 3.0%, funding of unfunded accrued liabilities is likely to proceed at least at the scheduled rate. Payroll growing slower than the assumed rate can lead to underfunding of the plan because expected contributions for unfunded liability may not be received.

Column (6). The Funded ratio is the most widely known measure of a plan's financial strength, but the trend in the funded ratio is much more important than the absolute ratio. The funded ratio should trend to 100%. As it approaches 100%, it is important to re-evaluate the level of investment risk in the portfolio and potentially to re-evaluate the assumed rate of return.

Columns (7) and (8). The ratio of Annuitant liabilities to total accrued liabilities gives an indication of the maturity of the system. As the ratio increases, cash flow needs increase, and the investment policy may need to change. A ratio on the order of 50% indicates a maturing system. Ratios near or above 50% are common today.

Column (9). The ratio of liabilities to payroll gives an indication of both maturity and volatility. Many systems have ratios between 500% and 700%. Ratios significantly above that range may indicate difficulty in supporting the benefit level as a level % of payroll. In the WRS, this potential difficulty is mitigated by the many risk sharing features inherent in the plan design since liabilities are impacted by the dividend process and the impact on money purchase benefits.

Risk/Maturity Measures (Concluded)

\$ Millions								
Valuation Date	(10) Assets/ Payroll (2)/(4)	(11) Core Trust Fund Portfolio StdDev	(12) Std Dev % of Pay (10)x(11)	(13) Unfunded/ Payroll (3)/(4)	(14) Net External Cash Flow (NECF)	(15) NECF/ Assets (14)/(2)	(16) Core Trust Fund NOF Return	(17) Ratio of Actives to Retirees
2017	759.2%	12.0%	91.1%	-	\$(3,055.1)	-2.9%	15.8%	1.26
2018	688.9%	11.8%	81.3%	43.4%	(3,282.2)	-3.4%	-3.6%	1.18
2019	768.7%	11.8%	90.7%	-	(3,481.2)	-3.1%	16.8%	1.19
2020	829.5%	11.8%	97.9%	-	(3,484.9)	-2.8%	15.0%	1.16
2021	920.5%	11.8%	108.6%	-	(3,854.1)	-2.7%	16.9%	1.13
2022	738.6%	11.8%	87.2%	51.3%	(4,483.2)	-3.8%	-13.0%	1.11

Notes:

Column (10). The ratio of assets to payroll gives an indication of both maturity and volatility. Many systems have ratios between 500% and 700%. Ratios significantly above that range may indicate difficulty in supporting the benefit level as a level % of payroll. In the WRS, this potential difficulty is mitigated by the many risk sharing features inherent in the plan design.

Columns (11) and(12). The portfolio standard deviation measures the volatility of investment return. When multiplied by the ratio of assets to payroll it gives the effect of a one standard deviation asset move as a percent of payroll. This figure helps users understand the difficulty of dealing with investment volatility and the challenges volatility brings to sustainability. In the WRS, the potential threat to sustainability is mitigated by the many risk sharing features inherent in the plan design. The portfolio standard deviation represents the standard deviation of the Core Trust Fund.

Column (13). The ratio of unfunded liability to payroll gives an indication of the plan sponsor's ability to actually pay off the unfunded liability. A ratio above approximately 300% or 400% may indicate difficulty in discharging the unfunded liability within a reasonable time frame.

Columns (14) and (15). The ratio of Net External Cash Flow to assets is an important measure of sustainability. Negative ratios are common and expected for a maturing system. In the longer term, this ratio should be on the order of approximately -4%. A ratio that is significantly more negative than that for an extended period could be a leading indicator of potential exhaustion of assets.

Column (16). Investment return is probably the largest single risk that most systems face. The year by year return gives an indicator of the performance of the portfolio versus the system's assumed return.

Column (17). In the 1970's and 1980's it was common for the ratio of actives to retirees to be 3 or 4 to 1. As plans mature, this ratio can drop significantly. Ratios below 2 are common today. A ratio significantly below 1 usually indicates a closed plan, a shrinking workforce or other special situation.

Employer Contributions Required and Contributions Made

Year Ended December 31	Annual Required Contribution (\$ millions)	Percent Contributed ¹
2013	\$ 912.4	100.0%
2014	977.1	100.0%
2015	966.5	100.0%
2016	954.2	100.0%
2017	1,014.9	100.0%
2018	1,028.4	100.0%
2019	1,045.0	100.0%
2020	1,131.5	100.0%
2021	1,162.8	100.0%
2022	1,174.7	100.0%

¹ Includes additional UAAL payments when amount is greater than 100%.

SECTION C

FUND ASSETS

Total Valuation Assets (Reserves)

	Valuation Assets at December 31	
	2022	2021
Non Retired		
Participant Statutory		
Core	\$ 20,296,390,936	\$ 19,875,869,565
Variable	2,002,958,772	2,593,403,602
Total Statutory	22,299,349,708	22,469,273,167
Additional ¹	276,033,257	268,165,692
Total Participant	22,575,382,965	22,737,438,859
Employer		
Core	24,021,786,505	23,805,813,383
Variable	2,002,958,772	2,593,403,602
Total Employer	26,024,745,277	26,399,216,985
Total Non Retired	48,600,128,242	49,136,655,844
Retired Assets		
Core	72,108,369,192	69,910,653,744
Variable	4,403,020,630	5,617,979,671
Total Retired Assets	76,511,389,822	75,528,633,415
Total Assets used in Valuation	125,111,518,064	124,665,289,259

	Valuation Assets at December 31	
	2022	2021
Core Assets	\$ 116,687,322,215	\$ 113,841,176,183
Variable Assets	8,424,195,849	10,824,113,076
Total Assets	125,111,518,064	124,665,289,259

¹ Includes employer, employee, and tax deferred additional contributions.

Reserves for Non-Retired Participants Balances by Valuation Group

	Reserve for Year Ended			
	December 31, 2022			December 31, 2021
	Participant (Statutory)	Employer	Total ¹	Total
General, Executives & Elected	\$20,757,529,393	\$21,736,133,077	\$42,493,662,470	\$42,871,533,914
Protective with Soc. Sec.	1,350,301,687	3,406,493,906	4,756,795,593	4,877,244,405
Protective w/o Soc. Sec.	191,518,628	882,118,294	1,073,636,922	1,119,711,833
Total	\$22,299,349,708	\$26,024,745,277	\$48,324,094,985	\$48,868,490,152

¹ Totals differ slightly from page C-1 due to rounding and additional contributions.

The above schedule shows the distribution of Participant and Employer reserves among the valuation groups according to WRS accounting records. This separation of assets is needed because the valuation groups are separately experience rated. The assets are pooled for investment purposes.

Development of Participant and Employer Reserves during the Year

	Participant Accumulation			Employer Accumulation			Grand Total
	Core	Variable	Total	Core	Variable	Total	
Ending Balance December 31, 2021	\$19,875,869,565	\$2,593,403,602	\$22,469,273,167	\$23,805,813,383	\$2,593,403,602	\$26,399,216,985	\$48,868,490,152
Closing Adjustments	(1)	0	(1)	852,252	0	852,252	852,251
Beginning Balance January 1, 2022	19,875,869,564	2,593,403,602	22,469,273,166	23,806,665,635	2,593,403,602	26,400,069,237	48,869,342,403
Revenues:							
Employer Contributions	0	0	0	1,090,827,301	85,076,131	1,175,903,432	1,175,903,432
Participant Contributions	981,582,590	85,413,927	1,066,996,517	0	0	0	1,066,996,517
Total Revenues	981,582,590	85,413,927	1,066,996,517	1,090,827,301	85,076,131	1,175,903,432	2,242,899,949
Expenditures							
Separations	52,384,993	2,199,104	54,584,097	0	0	0	54,584,097
Retirement Single Sums	30,284,741	949,167	31,233,908	28,894,895	947,958	29,842,853	61,076,761
Death Benefits	22,043,782	2,230,072	24,273,854	13,479,666	1,174,034	14,653,700	38,927,554
Disability Benefits	0	0	0	0	0	0	0
Total Expenditures	104,713,516	5,378,343	110,091,859	42,374,561	2,121,992	44,496,553	154,588,412
Transfers:							
Earnings Allocation	1,198,594,709	(418,076,185)	780,518,524	1,507,192,580	(419,787,674)	1,087,404,906	1,867,923,430
Annuities Awarded	(1,732,973,087)	(174,356,970)	(1,907,330,057)	(2,395,979,624)	(193,624,693)	(2,589,604,317)	(4,496,934,374)
Intra-Fund Transfers	(232,321)	215,738	(16,583)	(4,531,677)	249	(4,531,428)	(4,548,011)
Inter-Fund Transfers	78,262,997	(78,262,997)	0	78,262,991	(78,262,991)	0	0
Variable Equalization Transfer	0	0	0	(18,276,140)	18,276,140	0	0
Net Transfers	(456,347,702)	(670,480,414)	(1,126,828,116)	(833,331,870)	(673,398,969)	(1,506,730,839)	(2,633,558,955)
Ending December 31, 2022	\$20,296,390,936	\$2,002,958,772	\$22,299,349,708	\$24,021,786,505	\$2,002,958,772	\$26,024,745,277	\$48,324,094,985
Internal Rate of Return	6.2%	(16.7)%	3.5%	6.5%	(16.7)%	4.2%	3.9%

This page does not include additional contributions.



Development of Retiree Reserves during the Year

	Core	Variable	Total
Balance December 31, 2021	\$ 69,910,653,744	\$ 5,617,979,671	\$ 75,528,633,415
Closing Adjustments	4,558,444	(2,842,992)	1,715,452
Variable Terminations	56,111,835	(56,111,835)	0
Beginning Balance	69,971,324,023	5,559,024,844	75,530,348,867
Additions			
Reserve transfers	\$ 4,148,648,795	\$ 369,614,269	\$ 4,518,263,064
Earnings	4,275,039,785	0	4,275,039,785
Other	0	(966,516,724)	(966,516,724)
Total Additions	8,423,688,580	(596,902,455)	7,826,786,125
Subtractions			
Annuities and Lump Sums	\$ 6,286,643,411	\$ 559,101,759	\$ 6,845,745,170
Credit reestablishments	0	0	0
Other	0	0	0
Total Subtractions	6,286,643,411	559,101,759	6,845,745,170
Ending Balance December 31, 2022	\$ 72,108,369,192	\$ 4,403,020,630	\$ 76,511,389,822

Statement of Net Plan Assets (\$ Thousands) (Market Value)

	2022	2021
Assets		
Cash and Cash Equivalents	\$ 4,947,833	\$ 6,816,816
Securities Lending Collateral	1,702,300	396,434
Prepaid Expenses	26,047	19,752
Total Short Term Assets	6,676,180	7,233,002
Receivables		
Contributions	234,898	230,826
Prior Service Contributions	5,130	5,789
Benefits Overpayment	2,666	2,095
Due from Other Trust Funds	2,775	1,541
Miscellaneous	71	102
Securities Lending	4,454	3,344
Interest and Dividends	504,249	450,913
Investment Sales	5,569,609	10,869,737
Total Receivables	6,323,852	11,564,347
Investments at Fair Value		
Fixed Income	43,319,858	48,219,267
Financial Futures Contracts	(3,065)	76,789
Preferred Securities	512,888	703,312
Convertible Securities	12,862	2,153
Stocks	58,050,495	83,778,809
Options	(103)	(1,946)
Limited Partnerships	0	26,573,553
Real Estate	31,718,665	0
Foreign Currency Contracts	51,004	3,794
Multi Asset Investments	7,682,286	6,227,923
Swaps	(22,874)	25,690
To Be Announced Securities	1,263,200	2,899,255
Total Investments	142,585,216	168,508,599
Capital Assets	9,075	4,865
Total Assets	155,594,323	187,310,813
Liabilities		
Core Investment Due Other Programs	4,084,843	4,957,050
Variable Investment Due Other Programs	19,242	19,611
Obligation Under Reverse Repo Agreement	17,689,749	17,012,077
Short Sell Obligations	3,643,331	8,050,666
Securities Lending Collateral Liability	5,413,300	1,157,434
Collateral Due to Counterparty	47,028	125,917
Benefits Payable	507,597	455,788
Unearned Revenue	8	11
Due to Other Trust Funds	3,902	4,926
Miscellaneous Payables	144,963	146,575
Investment Payables	5,673,918	13,532,952
Total Liabilities	37,227,881	45,463,007
Net Assets in Trust for Pension Benefits	\$118,366,442	\$141,847,806



Statement of Changes in Assets (\$ Thousands) (Market Value)

	Activity During Year	
	2022	2021
Additions:		
Contributions:		
Employer Contributions	\$ 1,175,881	\$ 1,164,586
Employee Contributions	1,082,040	1,086,782
Total Contributions	2,257,921	2,251,368
Investment Income:		
Net Appreciation (Depreciation) in Fair Value of Investments	(21,239,109)	19,625,644
Interest and Dividends	2,606,476	2,564,884
Securities Lending Income	140,328	47,080
Other	0	0
Less		
Current Income Distributed	642,584	(742,564)
SWIB Investment Expense	(778,521)	(435,466)
Investment Income Distributed to Securities Lending Rebates and Fees	(76,178)	(3,282)
Net Investment Income	(18,704,420)	21,056,296
Interest on Prior Service Receivable	324	366
Miscellaneous Income	0	118
Total Additions	(16,446,175)	23,308,148
Deductions:		
Benefits and Refunds:		
Retirement, Disability, and Beneficiary	6,949,119	6,352,709
Separation Benefits	54,797	42,042
Total Benefits and Refunds	7,003,916	6,394,751
ETF Administrative Expenses	384	31,625
Other Expenses	30,788	361
Total Deductions	7,035,088	6,426,737
Net Increase (Decrease)	(23,481,263)	16,881,411
Net Assets Held in Trust:		
Beginning of Year ¹	\$141,847,701	\$124,966,394
End of Year	\$118,366,439	\$141,847,806

¹ Report uses preliminary financial statements due to timing of valuation. Any change between the prior year ending balance and the current year beginning balance reflects differences between preliminary and final financial statements.

The figures on this page do not always reconcile exactly to the amounts used in the valuation.



Core Investment Trust: Market Recognition Account

	For the Year Ended December 31						
	2020	2021	2022	2023	2024	2025	2026
Beginning of year							
a. Funding value	\$101,741,893,719	\$108,808,559,030	\$118,333,790,482	\$121,100,545,689	\$122,504,966,974	\$121,705,294,129	\$119,132,263,272
b. Market value	107,454,203,938	119,878,132,107	135,992,928,312	114,064,328,077	114,064,328,077	114,064,328,077	114,064,328,077
End of year							
c. Market value	119,878,132,107	135,992,928,312	114,064,328,077				
d. Non-investment cash flow (contributions minus benefits)	(3,444,245,848)	(3,841,859,532)	(4,483,193,436)				
e. Investment income							
e1. Total investment income	15,868,174,017	19,956,655,737	(17,445,406,799)				
e2. Assumed rate	7.0%	7.0%	6.8%				
e3. Amount for immediate recognition	7,001,383,956	7,482,134,048	7,894,269,176	-	-	-	-
e4. Amount for phased-in recognition: e1-e3	8,866,790,061	12,474,521,689	(25,339,675,975)	-	-	-	-
f. Phased-in recognition of investment income							
f1. Current year: 0.2 x e4	1,773,358,012	2,494,904,338	(5,067,935,195)	-	-	-	-
f2. First prior year	2,204,094,130	1,773,358,012	2,494,904,338	(5,067,935,195)	-	-	-
f3. Second prior year	(2,048,741,818)	2,204,094,130	1,773,358,012	2,494,904,338	(5,067,935,195)	-	-
f4. Third prior year	1,461,342,274	(2,048,741,818)	2,204,094,130	1,773,358,012	2,494,904,338	(5,067,935,195)	-
f5. Fourth prior year	119,474,605	1,461,342,274	(2,048,741,818)	2,204,094,130	1,773,358,012	2,494,904,338	(5,067,935,195)
f6. Total MRA recognition	3,509,527,203	5,884,956,936	(644,320,533)	1,404,421,285	(799,672,845)	(2,573,030,857)	(5,067,935,195)
f7. Amount for MRA recognition	-	-	-	-	-	-	-
f8. Total recognized gain (loss)	3,509,527,203	5,884,956,936	(644,320,533)	1,404,421,285	(799,672,845)	(2,573,030,857)	(5,067,935,195)
g. Total recognized investment income: e3 + f8	10,510,911,159	13,367,090,984	7,249,948,643	1,404,421,285	(799,672,845)	(2,573,030,857)	(5,067,935,195)
h. Funding value end of year: a + d + e3 + f8	108,808,559,030	118,333,790,482	121,100,545,689	122,504,966,974	121,705,294,129	119,132,263,272	114,064,328,077
i. Difference between market and funding values	11,069,573,077	17,659,137,830	(7,036,217,612)	(8,440,638,897)	(7,640,966,052)	(5,067,935,195)	-
j. Recognized rate of return: g / (a + 0.5 * d)	10.5%	12.5%	6.2%				
k. Market rate of return (net of fee): e1 / (b + 0.5 * d)	15.0%	16.9%	-13.0%				

The Core Investment Trust includes all WRS core assets, as well as the assets of certain other programs. The Market Recognition Account is a statutory method applicable to all assets invested in the Core Trust. Considerable additional information would be required to reconcile these figures to other asset figures in this report. Note that the market rate of return is calculated by GRS and may differ from rates of return calculated by SWIB and ETF.



SECTION D

GAIN/LOSS

Active Member Gain/Loss Analysis

Purpose of Gain/Loss Analysis. Regular actuarial valuations provide information about the composite change in computed contribution rates and total liabilities -- whether or not the rates and related 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 Wisconsin Retirement System financial mechanism: the rate of recognized investment income on plan assets; the rates of withdrawal of active participants 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.

Assumptions should be carefully chosen and continually monitored. A poor initial choice of assumptions or continued use of outdated assumptions can lead to understated costs resulting in either an inability to pay benefits when due, or sharp increases in required contributions at some point in the future or overstated costs resulting in either benefit levels that are kept below the level that could be supported by the computed rate or an unnecessarily large burden on the current generation of participants, employers and taxpayers. The actuarial assumptions for the Wisconsin Retirement System are reviewed and updated as necessary every three years in an experience study. This triennial review is intended to manage the potential for future gains and losses.

The objective of a gain and loss analysis is to determine the portion of the change that is attributable to each risk area.

The fact that actual experience differs from assumed experience should be expected. The future cannot be predicted with complete precision. Further, year-to-year statistical fluctuations occur, even in very large groups. This year's report reflects just a single year's experience. Changes in the valuation assumed experience for a risk area should be made only 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 actuarial assumptions.*** However, a persistent series of gains and losses can indicate a need for an assumption change or a method change, even if on a demographic basis, the assumptions appear to model reality well. In the Wisconsin Retirement System, longer term trends are reviewed in connection with the regular three-year investigation of experience (the most recent three-year investigation covered the period January 1, 2018 to December 31, 2020). It is the results of the three-year investigation that lead to recommendations for changes in the actuarial assumptions.

Overall Experience

Overall experience resulted in a net actuarial loss of \$588 million for the 2022 calendar year. The development of this figure is shown on the following page, reflecting losses from economic (investment return, salary increases) and demographic (retirement, death, withdrawal, etc.) experience.



Development of Total Actuarial Gain (Loss) Calendar Year December 31, 2022 (\$ Millions)

	Year Ended December 31, 2022				
	General	Executive & Elected	Protective		Total
			With S.S.	Without S.S.	
(1) Entry Age UAAL at start of year	\$ 125.4	\$ 131.6	\$ 486.0	\$ 79.6	\$ 822.6
(2) Entry Age Normal cost from last valuation	1,916.7	15.3	257.2	57.9	2,247.1
(3) Actual contributions	1,882.8	16.4	284.6	59.2	2,243.0
(4) Interest	9.7	8.9	32.1	5.4	56.1
(5) Expected UAAL before changes: (1) + (2) - (3) + (4)	169.0	139.4	490.7	83.7	882.8
(6) Change in actuarial assumptions	0.0	0.0	0.0	0.0	0.0
(7) Other changes	0.0	0.0	0.0	0.0	0.0
(8) Expected UAAL after changes: (5) + (6) + (7)	169.0	139.4	490.7	83.7	882.8
(9) Actual Entry Age UAAL at end of year	433.6	136.4	779.7	120.8	1,470.5
(10) Gain (loss): (8) - (9)	\$ (264.6)	\$ 3.0	\$ (289.0)	\$ (37.1)	\$ (587.7)

The gain/loss analysis is intended to explain the financial effect of differences between actual and assumed experience in basic risk areas: investment income, pay increases, retirement rates, turnover rates, etc. In order for the gain/loss analysis to proceed, the change in the Entry Age Unfunded Actuarial Accrued Liabilities from one year to the next is analyzed to remove the effect of expected changes. The table above develops this year's gain or loss (line 10) which is subtracted from the Experience Amortization Reserve (EAR). When the EAR decreases "unexpectedly," this is favorable experience and downward pressure is exerted on contribution rates. Similarly, an unexpected increase in the EAR is unfavorable experience and upward pressure is exerted on contribution rates.

By measuring gains and losses each year and, to the extent possible, determining the "responsible" assumptions, insight is gained into how well the actuarial assumptions estimate WRS liabilities. Such information aids in understanding financial effects of emerging trends and is particularly useful during preparation of the WRS experience study.



Population Development during Calendar Year 2022

	General	Executive & Elected	Protective		Total	Expected
			With S.S.	Without S.S.		
Beginning Census	234,494	1,252	19,175	2,762	257,683	
(-) Normal Retirement	3,751	41	559	93	4,444	4,812
(-) Reduced Retirement	3,788	18	178	14	3,998	4,061
(-) Death	96	0	12	0	108	275
(-) Disability Retirement						
-Total disabilities approved	216	0	32	6	254	155
-Less pending at beginning of year	74	0	10	2	86	
-Net new from active status	142	0	22	4	168	
(-) Other Separations	17,583	61	942	42	18,628	13,857
(-) Transfers Out	2,790	20	356	13	3,179	
(+) Transfers In	2,736	77	322	44	3,179	
(+) New Entrants	27,512	45	1,533	165	29,255	
Ending Census	236,592	1,234	18,961	2,805	259,592	

This schedule reconciles the active member populations reported in connection with the December 31, 2022 and the prior year valuations. Assumptions related to population development are a primary focus of the gain/loss analysis. They generally tend to be more stable than economic assumptions and, therefore, measurements have more meaning. Please note also that the table above represents changes in actual and expected counts of members. Beginning with the 2009 valuations, some of the actuarial assumptions (retirement, turnover, etc.) are based on liability weighted rates. Therefore, comparing actual to expected number counts alone may not form the basis for our conclusions.

Transfers for the General group include transfer between subgroups (teachers, university, general employees, etc.). Please note that the number of new retirees shown in the table above may include a small cohort of retirees (primarily members retiring during the end of December) that were not included in the Retired Lives Valuation. This is due to the lag in reporting dates and they will be included in the following year Retired Lives Valuation.



Gain (Loss) Overview

Population Results

Normal Retirements varied by group and gender. Overall normal retirements were less than expected. In general, fewer normal retirements than assumed often creates a gain. However, looking at counts alone is not always an accurate predictor of whether a gain or loss occurs. If there are fewer retirements in shorter service, lower paid groups and more retirements than expected in longer service, higher paid groups, there will be a net loss to the System even if the actual total counts might be equal to or less than expected. In order to account for this, retirement rates are now developed partially on a liability weighted methodology. The net result for this past year was a small loss.

Reduced Retirements were less than expected, overall producing a small loss.

Disabilities were slightly more than expected and overall produced a small gain.

Deaths among active participants were less than expected. The net result for the past year was a small loss.

Other Separations varied by group, gender, and service but were overall higher than expected. The net result for the past year was a small gain.

In total, the population risk areas (retirement, death, disability, and other separations) varied by decrement, producing a net loss during 2022.

Economic Results

On a market recognition account basis net of fee **investment return** was 6.2% and investment activity produced a loss for all groups except Executive and Elected due to the combined effect of this year's loss and the continued recognition of prior gains and losses. The total recognized investment loss of \$1,373 million was partially offset by a \$1,241 million decrease in the combined value of variable excess benefits and money purchase benefits (as shown on page D-7), resulting in a net recognized investment loss of about \$132 million.

Pay Increases were overall higher than expected, producing a loss.



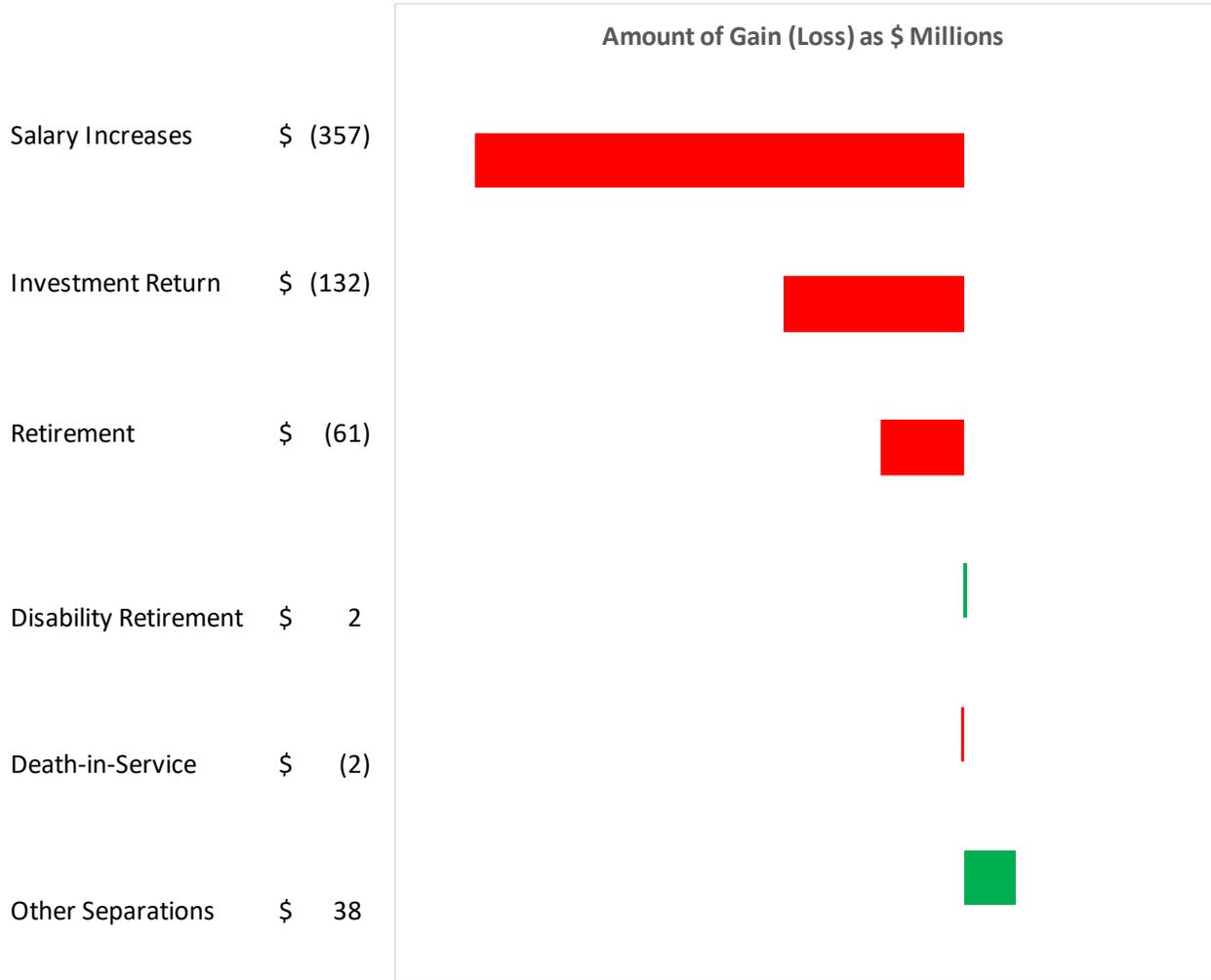
Gain (Loss) Detail (\$ Millions)

Type of Activity	General	Executive & Elected	Protective		Total	Prior Year
			With S.S.	Without S.S.		
Decrement Risk Areas						
Normal Retirement	\$ (15.3)	\$ (0.1)	\$ (15.6)	\$ (5.4)	\$ (36.4)	\$ (27.4)
Reduced Retirement	(20.9)	0.0	(2.9)	(0.4)	(24.2)	(20.9)
Disability Retirement	3.6	0.0	(1.7)	0.1	2.0	4.2
Death with Benefit	(1.6)	0.0	(0.2)	(0.2)	(2.0)	(3.0)
Other Separations	36.6	(0.4)	0.9	0.4	37.5	20.1
Economic Risk Areas						
Salary Increases	(116.3)	(0.8)	(221.3)	(18.6)	(357.0)	159.3
Investment Return	(83.1)	8.9	(45.9)	(11.7)	(131.8)	1,129.3
Other Activity	(67.6)	(4.6)	(2.3)	(1.3)	(75.8)	(90.2)
Total Gain (Loss)	\$ (264.6)	\$ 3.0	\$ (289.0)	\$ (37.1)	\$(587.7)	\$ 1,171.4
-% of Accrued Liability	(0.6)%	1.9%	(6.1)%	(3.5)%	(1.2)%	2.4%

Page D-8 presents a partial explanation of the other activity shown in this schedule.



Gain/Loss Analysis 2022 Experience Divisions Combined



Gain (Loss) from Investment Income during Calendar Year 2022 (\$ Millions)

	General	Executive & Elected	Protective		Total
			With SS	Without SS	
(1) Beginning of Year Active Participant Assets					
(a) Participant Accumulation Reserve	\$20,749.4	\$ 9.6	\$1,473.4	\$236.8	\$22,469.2
(b) PAR Closing Adjustment	0.0	0.0	0.0	0.0	0.0
(c) Employer Accumulation Reserve	21,959.4	153.0	3,403.9	882.9	26,399.2
(d) EAR Closing Adjustment	0.7	0.0	0.1	0.0	0.8
(e) Total	42,709.5	162.6	4,877.4	1,119.7	48,869.2
(2) End of Year Active Participant Assets					
(a) Participant Accumulation Reserve	20,752.7	4.9	1,350.3	191.5	22,299.4
(b) Employer Accumulation Reserve	21,583.3	152.8	3,406.5	882.1	26,024.7
(c) Total	42,336.0	157.7	4,756.8	1,073.6	48,324.1
(3) Investment Earnings Credited					
(a) Participant Accumulation Reserve	756.8	0.6	24.0	(0.8)	780.6
(b) Employer Accumulation Reserve	880.6	10.3	154.7	41.8	1,087.4
(c) Total	1,637.4	10.9	178.7	41.0	1,868.0
(4) Average Balance: $.5 \times \{(1e)+(2c)-(3c)\}$	41,704.1	154.7	4,727.8	1,076.2	47,662.8
(5) Expected Earnings: $.068 \times (4)$	2,835.9	10.5	321.5	73.2	3,241.1
(6) Gain (Loss) for Year from Investment Experience: $(3c)-(5)$	(1,198.5)	0.4	(142.8)	(32.2)	(1,373.1)
(7) Portion applied to Change in Variable Excess Reserve and Money Purchase Minimum Benefit	(1,115.5)	(8.5)	(96.9)	(20.5)	(1,241.4)
(8) Remaining Gain (Loss): (6)-(7)	\$ (83.1)	\$ 8.9	\$ (45.9)	\$(11.7)	\$ (131.8)

Analysis of “Other” Activity (\$ Millions)

“Other” activity refers to gain or loss activity that is not directly related to the main actuarial assumptions. Other activity this year resulted in a loss of \$75.8 million as shown on page D-5. The schedule below analyzes this activity. The **Reserve Difference** produced a loss of about \$27 million. There are two identifiable sources for this loss. The first relates to cases where the service credit or final average salary at retirement differed from what was expected based upon the prior valuation. The second relates to final computations of annuities that were originally based on estimates. The **Re-established Liability** represents the liability for new or rehired active members who were not active in the prior year. Typically, it is expected that a new hire will have very little liability. However, often new members appear with more than one year of service or with liability greater than contributions made on their behalf. Although this amount is difficult to determine accurately due to the timing of contribution amounts, we estimate the Re-established Liability loss at about \$79 million.

	General	Executive & Elected	Protective		Total
			With S.S.	Without S.S.	
Expected Reserve Transfers					
Normal Retirement	\$1,977	\$25	\$ 398	\$115	\$2,515
Reduced Retirement	1,276	4	123	15	1,418
Death	16	0	3	0	19
Disability Retirement	50	0	12	3	65
Deferred Retirement	418	3	40	14	475
Expected Total Reserve Transfers	3,737	32	576	147	4,492
Actual Reserve Transfer (From Retiree Report)	3,772	32	571	144	4,519
Reserve Difference	(35)	0	5	3	(27)
Expected Refunds	90	0	7	0	97
Actual Refunds	51	0	3	1	55
Refund Difference	39	0	4	(1)	42
Re-established Liability	(69)	1	(9)	(2)	(79)
Total Explained Difference	(65)	1	0	0	(64)
Unknown Difference	(3)	(6)	(2)	(1)	(12)
Total Other Activity	(68)	(5)	(2)	(1)	(76)
Other Activity as % of Liabilities	(0.16)%	(3.17)%	(0.04)%	(0.09)%	(0.16)%



Comparative Schedule of Experience 5-Year History of Gains and Losses (\$ Millions)

Year	Retmt.	Disability Retmt.	Other Separations*	Salary Increases	Investment Return	Other	Total
GENERAL							
2018	\$ (21.5)	\$ (7.7)	\$ (13.8)	\$ 322.0	\$ (583.3)	\$ (80.2)	\$ (384.5)
2019	(11.6)	(3.3)	(17.2)	(32.6)	117.7	(111.4)	(58.4)
2020	(35.1)	(6.5)	(34.4)	(264.0)	1,012.9	(113.3)	559.6
2021	(25.0)	3.7	10.9	89.1	899.8	(73.5)	905.0
2022	(36.2)	3.6	35.0	(116.3)	(83.1)	(67.6)	(264.6)
EXECUTIVE & ELECTED							
2018	\$ 0.6	\$ 0.1	\$ 0.2	\$ 1.7	\$ (0.7)	\$ (2.1)	\$ (0.2)
2019	(0.8)	(0.1)	1.3	(1.8)	(1.3)	(4.5)	(7.2)
2020	(0.8)	0.1	(0.4)	(3.3)	4.1	(5.5)	(5.8)
2021	(0.2)	-	(0.4)	2.9	1.4	(15.3)	(11.6)
2022	(0.1)	-	(0.4)	(0.8)	8.9	(4.6)	3.0
PROTECTIVE WITH SOCIAL SECURITY							
2018	\$ (11.0)	\$ -	\$ (2.3)	\$ (5.4)	\$ (89.9)	\$ (7.1)	\$ (115.7)
2019	(22.0)	(2.6)	(1.0)	(26.6)	34.6	(4.9)	(22.5)
2020	(17.5)	(3.4)	(6.6)	(150.5)	145.7	(23.6)	(55.9)
2021	(19.4)	0.1	6.2	65.8	187.9	1.3	241.9
2022	(18.5)	(1.7)	0.7	(221.3)	(45.9)	(2.3)	(289.0)
PROTECTIVE WITHOUT SOCIAL SECURITY							
2018	\$ (0.9)	\$ (0.1)	\$ (0.8)	\$ (0.7)	\$ (23.1)	\$ 0.7	\$ (24.9)
2019	(4.0)	0.5	(0.3)	(4.5)	9.2	(1.3)	(0.4)
2020	(2.8)	(0.7)	(0.7)	(21.3)	36.0	(6.6)	3.9
2021	(3.7)	0.4	0.4	1.5	40.2	(2.7)	36.1
2022	(5.8)	0.1	0.2	(18.6)	(11.7)	(1.3)	(37.1)

* Includes separation due to death.



SECTION E

CENSUS DATA

Total Participants Included in Valuations December 31, 2022

Valuation Group	Number	Average Annual Earnings/Benefits ¹
Actives	259,592	\$61,735
Inactives	181,758	\$20,892
Retirees & Beneficiaries	233,804	\$29,889
Total Participants	675,154	

¹ For inactives, average money purchase balance.

Active Participants Included in Valuations December 31, 2022

Active participants included in the valuations totaled 259,592 with an annual payroll totaling \$16,025.9 million, as follows:

Valuation Group	Number	Annual Earnings (\$ Millions)	Group Averages			
			Earnings	Age	Years of Service	Contribs.
General	236,592	\$14,148.7	\$59,802	44.8	10.8	\$68,070
Executive Group & Elected Officials	1,234	120.0	97,250	55.0	14.5	135,438
Protective Occupation with Social Security	18,961	1,501.5	79,189	39.5	11.9	81,660
Protective Occupation without Social Security	2,805	255.7	91,155	39.9	13.1	98,476
Total Active Participants	259,592	\$16,025.9	\$61,735	44.4	10.9	\$69,712
Prior Year	257,683	\$15,410.0	\$59,802	44.6	11.1	\$69,680

Group averages are not used in the valuation, but are shown here for their general interest.

Inactive Participants Included in Valuations December 31, 2022

Inactive participants included in the valuations totaled 181,758 as follows:

Valuation Group	Number	Group Averages		
		Age	Service	Money Purchase Balance
General	172,796	46.9	3.5	\$20,622
Executive Group & Elected Officials	568	54.8	4.8	40,607
Protective Occupation with Social Security	8,104	41.2	4.0	24,545
Protective Occupation without Social Security	290	42.0	5.7	40,648
Total Inactive Participants	181,758	46.7	3.5	\$20,892
Prior Year	174,799	46.8	3.4	\$20,059

The valuations also included 3,499 Qualified Domestic Relations Order cases whose average age was 52.8 years. These accounts for divorced spouses of WRS participants have been established in accordance with Wisconsin Domestic Relations Law.

General Participants as of December 31, 2022 by Attained Age and Years of Service

Attained Ages	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
15-19	261							261	\$ 7,761,982
20-24	7,506	9						7,515	278,866,885
25-29	17,761	2,347	1					20,109	936,377,343
30-34	12,979	11,216	1,336	5				25,536	1,354,068,054
35-39	11,196	9,163	8,000	1,273	7			29,639	1,721,541,590
40-44	10,030	7,432	6,072	7,576	1,492	12		32,614	2,032,397,456
45-49	7,699	5,716	4,530	4,960	7,640	949	2	31,496	2,071,399,287
50-54	6,341	5,264	4,221	4,206	5,871	6,080	1,044	33,027	2,215,829,611
55	1,151	970	787	786	992	1,014	825	6,525	433,614,639
56	1,057	888	734	764	904	870	881	6,098	400,553,082
57	1,041	825	754	757	939	729	912	5,957	387,863,197
58	1,005	852	702	709	769	630	754	5,421	346,934,704
59	993	836	701	715	771	534	659	5,209	326,284,171
60	869	746	677	643	715	483	635	4,768	294,597,745
61	843	702	602	630	628	472	556	4,433	267,800,198
62	759	633	568	558	607	371	541	4,037	242,498,619
63	576	537	440	485	498	296	431	3,263	194,994,474
64	466	439	384	405	404	236	376	2,710	164,082,866
65	430	369	263	288	290	210	297	2,147	130,874,353
66	285	273	225	170	206	136	218	1,513	92,428,763
67	218	195	138	130	114	72	130	997	62,256,748
68	177	120	88	82	90	58	112	727	46,201,106
69	170	104	76	50	58	41	75	574	32,299,332
70	139	89	42	50	41	20	76	457	25,802,642
71	117	53	36	39	27	25	61	358	19,526,421
72	89	50	32	29	19	19	45	283	16,840,292
73	73	50	21	26	19	12	29	230	11,828,688
74	58	21	22	13	15	10	19	158	7,022,507
75 & Up	170	118	44	46	42	24	86	530	26,145,437
Totals	84,459	50,017	31,496	25,395	23,158	13,303	8,764	236,592	\$14,148,692,192



**Executive Group and Elected Officials
as of December 31, 2022
by Attained Age and Years of Service**

Attained Ages	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
20-24	2							2	\$ 110,282
25-29	5							5	368,258
30-34	10	11						21	1,553,203
35-39	23	29	24	6				82	7,372,691
40-44	38	22	37	16	2			115	11,528,789
45-49	27	23	33	25	28	5		141	14,622,806
50-54	41	29	30	32	31	33	7	203	20,635,966
55	5	5	8	5	8	7	6	44	4,638,589
56	7	6	11	8	7	2	7	48	5,566,695
57	6	8	11	5	6	7	8	51	5,559,946
58	3	13	3	6	7	1	5	38	3,466,679
59	9	3	8	11	8	4	9	52	5,228,085
60	10	10	6	3	5	7	7	48	4,831,891
61	7	6	10	2	4	7	11	47	4,365,995
62	8	5	6	4	4	4	12	43	4,274,690
63	7	8	2	5	6	3	8	39	4,535,932
64	10	5	5	5	1	4	13	43	4,120,273
65	5	6	4	3	6	4	7	35	3,630,621
66	4	4	1	3	4	1	3	20	1,791,603
67	6	2	4	1	3	2	2	20	1,767,786
68	6	4	5			1	4	20	1,459,786
69	2	1	2	3	1	1	4	14	1,367,367
70	4	2	1	1	3	1	3	15	1,646,342
71	5	2	4	2	2		4	19	1,292,473
72	2	3		1		1	2	9	753,825
73	3	1	2		3		1	10	771,233
74	2	1	2		1			6	501,688
75 & Up	15	11	6	3	4	1	4	44	2,242,396
Totals	272	220	225	150	144	96	127	1,234	\$120,005,890

Protective Occupation Participants with Social Security as of December 31, 2022 by Attained Age and Years of Service

Attained Ages	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
15-19	21							21	\$ 948,192
20-24	1,001	3						1,004	53,831,546
25-29	2,045	677	5					2,727	186,033,425
30-34	1,016	1,713	321	6				3,056	227,240,189
35-39	518	835	1,099	475	3			2,930	234,540,576
40-44	321	409	519	1,083	532	1		2,865	240,909,627
45-49	218	204	246	483	1,213	328	2	2,694	233,558,666
50	23	32	37	68	184	192	2	538	48,464,136
51	41	29	27	59	137	231	13	537	48,993,554
52	37	25	46	66	159	219	40	592	53,571,538
53	32	34	29	49	109	166	48	467	42,428,287
54	27	25	26	38	75	90	27	308	27,057,201
55	26	18	24	27	44	52	33	224	19,929,298
56	13	25	17	25	36	38	24	178	15,778,089
57	17	16	13	33	30	25	27	161	13,735,771
58	18	6	10	21	26	16	17	114	10,115,506
59	15	10	13	20	13	12	8	91	7,544,107
60	14	15	13	22	18	16	16	114	9,211,254
61	7	13	14	23	18	14	12	101	8,502,548
62	5	8	7	12	12	4	7	55	4,905,684
63	9	8	3	6	15	5	8	54	4,581,141
64	6	2	2	10	9	2	4	35	2,667,812
65	7	2	3	7	10	2	4	35	2,753,401
66	2	3	1	2	5	1	2	16	1,459,540
67	1		4	3	2		3	13	1,106,613
68	1		1	1	1	1	1	6	525,162
69	3	4	2	2			1	12	810,914
70 & Up	6	4			2		1	10	292,337
Totals	5,450	4,120	2,482	2,541	2,653	1,415	300	18,961	\$1,501,496,114

**Protective Occupation Participants without Social Security
as of December 31, 2022
by Attained Age and Years of Service**

Attained Ages	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
15-19	1							1	\$ 32,706
20-24	140							140	7,651,884
25-29	203	83						286	20,349,326
30-34	148	233	67					448	37,070,669
35-39	77	132	214	71				494	43,949,148
40-44	36	73	127	176	62			474	44,477,201
45-49	11	21	45	82	210	59		428	43,028,366
50	1	2	7	10	37	32		89	9,349,028
51	1	3	7	12	32	36	4	95	10,312,598
52		2	4	9	21	38	11	85	9,539,600
53			1	13	26	33	16	89	9,945,575
54	2			4	20	14	3	43	4,762,117
55			3	4	8	6	5	26	2,927,889
56	4		3	2	16	4	4	33	3,601,907
57			1	4	6	10	2	23	2,744,257
58		1		2	1	6	5	15	1,730,327
59		1			3	4	3	11	1,308,007
60	1	1	1	1	1	2	3	10	1,222,918
61			1		1	1	1	4	580,138
62				1				1	101,985
63		1			1	3		5	533,784
64				1		1	2	4	466,302
67	1							1	3,158
Totals	626	553	481	392	445	249	59	2,805	\$255,688,890

Active Participants as of December 31, 2022 by Years of Service and Gender

Completed Years of Service	Males	Females	Totals	Valuation Payroll	
				Total	Average
0	8,233	18,204	26,437	\$ 915,619,535	\$34,634
1	6,891	13,164	20,055	925,095,458	46,128
2	5,134	10,140	15,274	758,300,460	49,646
3	5,584	9,746	15,330	816,782,837	53,280
4	4,919	8,792	13,711	754,749,692	55,047
5	4,626	8,106	12,732	729,536,839	57,299
6	4,440	7,276	11,716	699,018,567	59,664
7	4,030	6,606	10,636	644,974,322	60,641
8	3,888	6,415	10,303	640,283,312	62,145
9	3,574	5,949	9,523	605,820,699	63,617
10	3,411	5,193	8,604	561,767,933	65,291
11	2,842	4,650	7,492	498,765,366	66,573
12	2,382	3,814	6,196	420,689,056	67,897
13	2,101	3,726	5,827	399,267,109	68,520
14	2,446	4,119	6,565	462,177,253	70,400
15 & Up	32,129	47,062	79,191	6,193,034,648	78,204
Totals	96,630	162,962	259,592	\$16,025,883,086	\$61,735

Average

Age	44.5	44.3	44.4
Service	11.6	10.5	10.9

Comparative Statement of Active Participants in Valuations

Valuation 12/31	General				Executive and Elected			
	No.	Earnings			No.	Earnings		
		\$ Millions	Average	% Incr.		\$ Millions	Average	% Incr.
1998	227,017	\$ 7,457	\$ 32,847	2.7%	1,450	\$ 73	\$50,664	3.6 %
1999 ¹	229,657	7,704	34,445	4.9%	1,468	77	53,263	5.1 %
2000	234,076	8,335	35,610	3.4%	1,486	83	55,582	4.4 %
2001	238,944	8,746	36,605	2.8%	1,486	85	57,060	2.7 %
2002	240,990	9,007	37,377	2.1%	1,476	87	58,865	3.2 %
2003	239,696	9,273	38,686	3.5%	1,468	86	58,336	(0.9)%
2004	238,943	9,501	39,764	2.8%	1,469	89	60,379	3.5 %
2005	237,501	9,661	40,678	2.3%	1,452	90	61,788	2.3 %
2006	236,877	9,933	41,935	3.1%	1,436	93	64,480	4.4 %
2007	237,124	10,278	43,344	3.4%	1,427	95	66,320	2.9 %
2008 ²	238,994	10,806	45,216	4.3%	1,430	101	70,316	6.0 %
2009	240,401	11,098	46,165	2.1%	1,427	101	70,786	0.7 %
2010	239,959	11,195	46,655	1.1%	1,418	101	71,394	0.9 %
2011	232,518	10,947	47,080	0.9%	1,393	99	70,802	(0.8)%
2012	231,765	11,041	47,639	1.2%	1,408	104	73,968	4.5 %
2013	231,973	11,270	48,584	2.0%	1,397	106	76,125	2.9 %
2014	232,433	11,574	49,794	2.5%	1,401	109	77,998	2.5 %
2015	231,631	11,786	50,881	2.2%	1,380	108	78,230	0.3 %
2016	232,684	11,964	51,417	1.1%	1,347	106	78,667	0.6 %
2017	232,874	12,167	52,249	1.6%	1,335	107	80,366	2.2 %
2018	233,462	12,445	53,307	2.0%	1,302	108	82,986	3.3 %
2019	235,645	12,926	54,855	2.9%	1,302	112	86,269	4.0 %
2020 ²	234,628	13,295	56,663	3.3%	1,280	116	90,894	5.4 %
2021	234,494	13,643	58,179	2.7%	1,252	117	93,428	2.8 %
2022	236,592	14,149	59,802	2.8%	1,234	120	97,250	4.1 %

¹ After change in method of calculating average pay.

² Some groups had a 27-period payroll during 2008 and 2020.



Comparative Statement of Active Participants in Valuations

Valuation 12/31	Protective with Social Security				Protective without Social Security			
	No.	Earnings			No.	Earnings		
		\$ Millions	Average	% Incr.		\$ Millions	Average	% Incr.
1998	14,810	\$ 570	\$ 38,509	2.3%	2,658	\$127	\$47,733	4.8 %
1999 ¹	16,483	649	39,864	3.5%	2,691	131	48,947	2.5 %
2000	16,970	717	42,263	6.0%	2,685	135	50,423	3.0 %
2001 ¹	17,981	772	42,914	1.5%	2,715	142	52,339	3.8 %
2002	18,325	804	43,871	2.2%	2,709	148	54,603	4.3 %
2003	18,660	856	45,891	4.6%	2,714	154	56,673	3.8 %
2004	18,964	896	47,266	3.0%	2,709	159	58,546	3.3 %
2005	19,036	920	48,330	2.3%	2,689	162	60,241	2.9 %
2006	19,297	977	50,622	4.7%	2,692	167	62,153	3.2 %
2007	19,757	1,036	52,419	3.5%	2,695	174	64,449	3.7 %
2008 ²	20,038	1,099	54,859	4.7%	2,724	181	66,502	3.2 %
2009	20,205	1,124	55,636	1.4%	2,733	189	69,149	4.0 %
2010	20,019	1,125	56,184	1.0%	2,754	189	68,559	(0.9)%
2011	19,610	1,119	57,065	1.6%	2,711	189	69,898	2.0 %
2012	19,353	1,105	57,104	0.1%	2,727	193	70,949	1.5 %
2013	19,290	1,121	58,127	1.8%	2,736	197	71,960	1.4 %
2014	19,533	1,151	58,916	1.4%	2,733	204	74,487	3.5 %
2015	19,273	1,171	60,755	3.1%	2,730	209	76,376	2.5 %
2016	19,431	1,203	61,924	1.9%	2,746	213	77,553	1.5 %
2017	19,431	1,227	63,145	2.0%	2,743	219	79,753	2.8 %
2018	19,399	1,263	65,113	3.1%	2,770	225	81,206	1.8 %
2019	19,528	1,314	67,310	3.4%	2,759	231	83,619	3.0 %
2020 ²	19,676	1,415	71,893	6.8%	2,754	240	87,136	4.2 %
2021	19,175	1,405	73,249	1.9%	2,762	246	89,016	2.2 %
2022	18,961	1,501	79,189	8.1%	2,805	256	91,155	2.4 %

¹ After change in method of calculating average pay.

² Some groups had a 27-period payroll during 2008 and 2020.



Core Annuities Being Paid Tabulated by Attained Ages

Attained Ages	Regular		Disability		Death-in-Service		Totals	
	No.	Annual Amount	No.	Annual Amount	No.	Annual Amount	No.	Annual Amount
Under 20	0	\$ 0	0	\$ 0	6	\$ 46,486	6	\$ 46,486
20-24	0	0	3	54,446	8	83,304	11	137,750
25-29	0	0	4	44,206	20	175,111	24	219,317
30-34	0	0	16	386,745	30	227,219	46	613,964
35-39	2	44,044	59	1,376,001	32	245,376	93	1,665,421
40-44	7	90,576	138	3,596,017	49	513,110	194	4,199,703
45-49	44	657,287	258	6,538,468	38	461,562	340	7,657,317
50-54	1,653	58,471,182	581	15,589,928	81	1,257,695	2,315	75,318,805
55-59	12,832	413,005,914	973	26,942,325	118	1,981,197	13,923	441,929,436
60-64	28,787	808,683,747	1,505	37,377,681	206	3,364,366	30,498	849,425,794
65-69	46,094	1,225,735,838	1,162	31,480,080	251	5,217,067	47,507	1,262,432,985
70-74	51,574	1,463,888,111	1,088	28,422,306	233	5,097,600	52,895	1,497,408,017
75-79	38,271	1,050,181,917	830	20,609,261	164	3,524,977	39,265	1,074,316,155
80-84	23,004	596,575,363	567	12,601,752	96	1,846,379	23,667	611,023,494
85-89	13,196	339,502,154	340	6,938,178	66	1,013,884	13,602	347,454,216
90-94	6,186	162,794,276	127	2,486,075	35	470,096	6,348	165,750,447
95 & Up	1,736	39,522,839	29	494,926	15	248,338	1,780	40,266,103
Certain Only ¹	1,258	29,192,748	0	3,919	32	646,675	1,290	29,843,342
Totals	224,644	\$6,188,345,996	7,680	\$194,942,314	1,480	\$26,420,442	233,804	\$6,409,708,752

Averages in Years

Age at retirement	59.9	50.7	51.4	59.6
Attained age	71.6	65.0	67.6	71.4

¹ Certain Only category consists of continuations of 5-, 10- and 15-year certain and life annuities to beneficiaries of deceased annuitants.



Variable Annuities Being Paid Tabulated by Attained Ages

Attained Ages	Regular		Disability		Death-in-Service		Totals	
	No.	Annual Amount	No.	Annual Amount	No.	Annual Amount	No.	Annual Amount
Under 20	0	\$ 0	0	\$ 0	0	\$ 0	0	\$ 0
20-24	0	0	1	1,677	1	939	2	2,616
25-29	0	0	2	2,870	7	12,689	9	15,559
30-34	0	0	5	16,323	3	3,869	8	20,192
35-39	0	0	10	31,119	5	3,084	15	34,203
40-44	3	11,070	23	118,369	12	44,812	38	174,251
45-49	18	165,973	27	184,544	12	79,106	57	429,623
50-54	375	3,647,969	77	524,060	27	196,217	479	4,368,246
55-59	2,807	31,674,616	145	924,016	27	180,045	2,979	32,778,677
60-64	4,966	44,098,883	189	1,062,006	60	395,072	5,215	45,555,961
65-69	7,651	60,655,026	236	1,092,502	46	337,724	7,933	62,085,252
70-74	9,229	94,523,602	187	1,342,837	59	309,805	9,475	96,176,244
75-79	7,646	126,596,353	155	1,959,751	42	568,256	7,843	129,124,360
80-84	4,078	93,293,610	105	1,523,190	26	453,131	4,209	95,269,931
85-89	2,556	65,366,570	69	835,626	16	164,770	2,641	66,366,966
90-94	1,371	33,491,875	25	286,332	11	211,114	1,407	33,989,321
95 & Up	449	9,945,525	7	55,699	10	137,858	466	10,139,082
Certain Only ¹	227	1,902,609	0	0	4	56,664	231	1,959,273
Totals	41,376	\$565,373,681	1,263	\$9,960,921	368	\$3,155,155	43,007	\$578,489,757

Averages in Years

Age at retirement	59.2	52.6	51.8	59.0
Attained age	71.6	66.5	67.6	71.4

¹ Certain Only category consists of continuations of 5-, 10- and 15-year certain and life annuities to beneficiaries of deceased annuitants.



SECTION F

METHODS AND ASSUMPTIONS

Summary of Actuarial Assumptions and Methods

Valuation Date	December 31, 2022
Actuarial Cost Method	Frozen Entry Age
Amortization Method	Level Percent -- Closed Period
Amortization Period	30-Year closed from date of participation in WRS
Asset Valuation Method	5-Year Smoothed Market (Closed)

Actuarial Assumptions

Assumed Rates of Investment Return for:

Retired participants	5.0%
Post-retirement active participants	5.0%
Pre-retirement active participants	6.8%
Weighted Average Investment Rate of Return	5.4%
Projected Salary Increases ¹	3.1% to 8.6%
Payroll Growth Rate	3.0%
Population Growth Rate	0.0%

¹ Includes merit and seniority increases that vary by service plus wage inflation of 3.0%/year.

Financial Principles and Operational Techniques of the Wisconsin Retirement System

Benefit Promises Made Which Must Be Paid For. A retirement program is an orderly means of handing out, keeping track of, and financing contingent retirement promises. As each participant of the Retirement System acquires a unit of service credit he is, in effect, handed an “IOU” which reads: “The Wisconsin Retirement System promises to pay you one unit of annuity benefits, payments in cash commencing when you retire.”

The principal related financial question is: ***When shall the money required to cover the “IOU” be contributed?*** This year, when the benefit of the participant’s unit of service is received? Or, some future year, when the “IOU” becomes a cash demand?

The law governing the Wisconsin Retirement System financing intends that the money to cover an “IOU” is contributed in the year the “IOU” is handed out. In this way contribution rates expressed as percents of participant payroll can be determined so as to remain approximately level from year to year and decade to decade as long as the basic experience and make-up of the group of participants does not change significantly. This means that for equivalent benefits each generation of Wisconsin taxpayers will contribute at approximately the same payroll rates.

Translated into actuarial terminology, the level percent-of-payroll contribution objective means that the contribution rate must total at least:

Normal Cost (the current discounted value of benefits likely to be paid on account of participants’ service rendered in the current year)

... plus ...

Amortization of any Unfunded Frozen Initial Liabilities (UFIL)

If contributions to the system are less than the preceding amount, the difference, **plus investment earnings not realized thereon**, will have to be contributed at some later time, or benefits will have to be reduced, to satisfy the fundamental equation under which all retirement programs must operate; that is:

$$B = C + I - E$$

Benefit payments to any group of participants and their beneficiaries cannot exceed

Contributions received on behalf of the group
... plus ...
Interest earnings on those contributions
... minus ...
Expenses incurred in operating the program.

There are retirement programs (Social Security is an example) designed to defer the bulk of contributions far into the future. The present contribution rate for such systems is artificially low, but is destined to increase relentlessly to a level which may be greatly in excess of the level percent-of-payroll rate.

A by-product of a level percent-of-payroll contribution objective is the accumulation of invested assets for varying periods of time. Investment income becomes the third and largest contributor to the retirement system and the amount is directly related to the amount of contributions and investment performance.

Computing Contribution Rates to Finance Benefits. From a given schedule of benefits and from the data furnished, the actuary calculates the contribution rates **by means of an actuarial valuation** – the technique of assigning monetary values to the risks assumed in operating a retirement program.

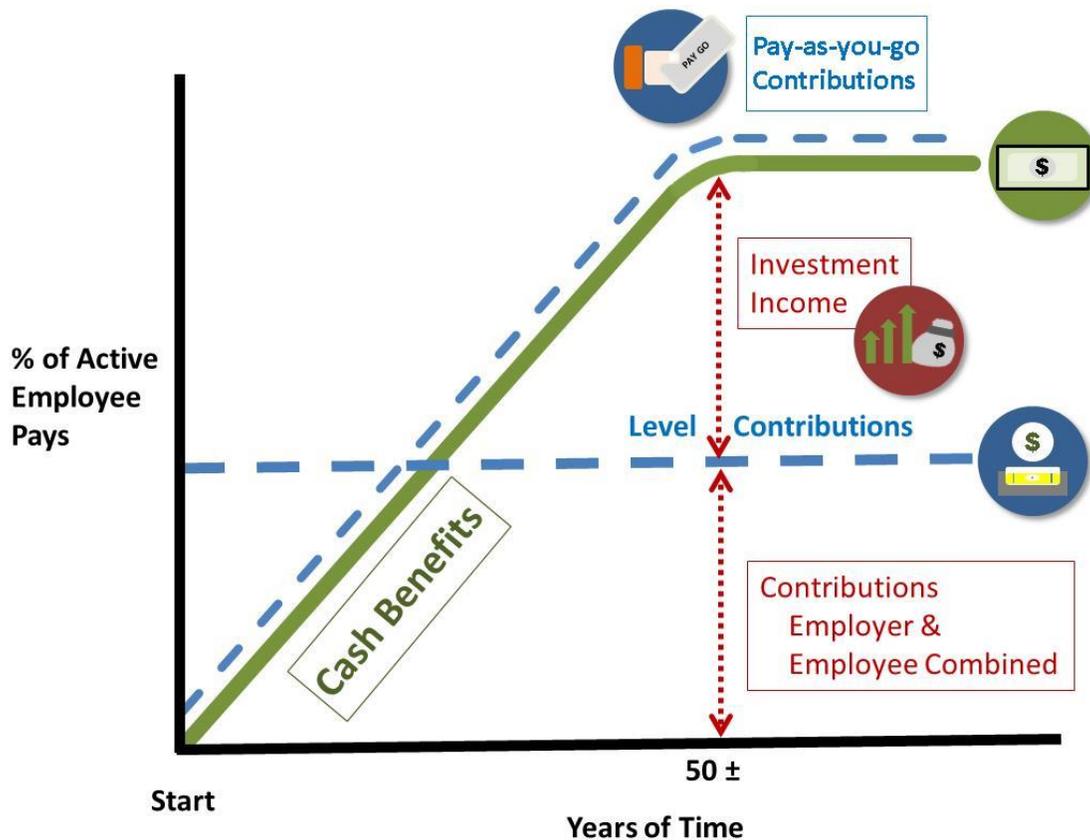
Actuarial Method and Assumptions Used in Valuations

The principal actuarial assumptions relate to:

- Long-term ***rates of investment income*** likely to be generated by system assets;
- ***Rates of mortality*** among participants, retirants and beneficiaries;
- ***Rates of withdrawal*** of active participants;
- ***Rates of disability*** among participants;
- ***Patterns of salary increases*** to be experienced by participants; and
- The age and service ***distribution of actual retirements***.

In an actuarial valuation, the actuary projects the monetary effect of each assumption for each distinct experience group, for the next year and for each year over the next half-century or longer.

Once actual risk experience has occurred and been observed, it will not coincide exactly with assumed risk experience, regardless of the skill of the actuary, the completeness of the data, and the precision of the calculations. Each valuation provides a complete recalculation of assumed future risk experience and takes into account all past differences between assumed and actual risk experience. The result is a continual series of small adjustments to the computed contribution rate. From time to time it becomes necessary to adjust the package of risk measurements to reflect basic experience trends – but not random year-to-year fluctuations.



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

Actuarial Valuation Method

The actuarial funding method prescribed in the statute for WRS is the Frozen Entry Age Method which is also referred to as the Frozen Initial Liability (FIL) method in this report. Under this method, the amount of remaining unfunded actuarial accrued liabilities at any valuation date is affected only by the monthly amortization payments, compound interest, the added liability created by new employer units, and any added liabilities caused by changes in benefit provisions.

Actuarial gains or losses arising from the difference between actual and assumed experience are reflected in the determination of the normal cost. In this manner, experience gains or losses in any year are amortized (spread) over the average future working lifetime of the active participant group – a period of approximately 12 years. Hence, the computed normal cost is made up of two parts:

- The pure entry-age normal cost (EANC) determined without regard to past gains or losses; and
- An experience amortization component.

Section 40.04(1) of the Wisconsin Statutes provides authority to maintain accounts and reserves determined to be “useful in achieving the funds’ purposes - -”. A fundamental WRS objective is stable contribution rates. Accordingly, based on the authority granted under Section 40.04, the experience portion of the normal cost is separately calculated each year and the amortization period is varied upward or downward in order to minimize short-term rate fluctuations. The policy regarding the EAR amortization period is described below:

- The standard period is set 20 years.
- The standard period is reconsidered as part of each triennial experience study (no changes were made with the most recent experience study).
- Temporary interim changes in the period are made only when there are large, but mostly offsetting market gains and losses known to be flowing through the MRA that would otherwise result in contribution rate volatility. Large changes would be defined as those which, over a 2-year period, were expected to result in contribution rate changes of at least 0.4% of payroll.
- The minimum and maximum EAR amortization periods are 10 years and 30 years respectively.
- The amortization policy will be applied in the same manner to market gains and losses flowing through the MRA.
- For 2022, a 20-year period was used.

Asset Valuation Method

An essential step in the valuation process is comparing valuation assets with computed liabilities. Computed liabilities result from actuarial calculations involving the covered population, the benefits, and actuarial assumptions. Valuation assets are those assets that are recognized and available to fund the System's liabilities. WRS assets are invested in the Core Investment Trust, and in the Variable Investment Trust, both of which are managed by the State of Wisconsin Investment Board (SWIB). Assets in the Variable Investment Trust are marked to market each year. Assets in the Core Investment Trust (most of the assets) are valued (or recognized) using an "asset valuation method."

Asset valuation methods are distinguished by the timing of the recognition of investment return. Total investment return is the sum of ordinary income and capital value changes. Under a book value approach, ordinary income is recognized immediately and capital gains (or losses) are recognized only when securities are sold. Book value investment return is directly affected by the timing of sales activity and underlying experience may be distorted. Under a pure market value approach, ordinary investment income and all capital value changes are recognized immediately. Because of market volatility, use of pure market values in retirement funding can result in volatile contribution rates and unstable financial ratios, contrary to WRS objectives.

The asset valuation method used for WRS valuations is statutory, and is referred to as the "Market Recognition Account" or MRA. Act 11 of 1999 closed the former Transaction Amortization Account (TAA) and created the Market Recognition Account (MRA). The MRA recognizes assumed returns fully each year. Differences between actual and assumed returns are phased-in over a closed five-year period. The objective is to give recognition to long-term changes in asset values while minimizing the effect of short-term fluctuations in the capital markets. In accordance with its smoothing objective, the MRA will tend to exceed the market value when the markets are doing poorly, and will fall short of the market value when markets are doing well. Some retirement systems set limits on the amount by which the recognized value of assets can differ from the market value.

Annual Actuarial Valuations Assumptions Adopted by ETF Board after Consulting with Actuary

ECONOMIC ASSUMPTIONS

The rationale for these assumptions is based upon an experience study covering the period 2018-2020. Beginning with the December 31, 2021 actuarial valuation, separate demographic assumptions were developed and used for State and Non-State employees.

For determining plan liabilities, the discount rate is 5.0% for retired participants, 5.0% for active and inactive participants following retirement, and 6.8% for active and inactive participants prior to their retirement. A valuation performed assuming a 5.4% discount rate for all participants at all stages of life, reproduces the results of an actuarial valuation using the 5.0% post-retirement and 6.8% pre-retirement assumptions. Thus, it can be said that **the net discount rate assumed in the valuations was 5.4% per year, compounded annually (net after administrative expenses).**

The **Wage Inflation Rate** assumed in this valuation was 3.0% per year. The wage inflation rate is defined to be the portion of total pay increases for an individual that are due to macroeconomic forces including productivity, price inflation, and labor market conditions. The wage inflation rate does not include pay changes rated to individual merit and seniority effects.

No specific **Price Inflation** assumption is required to perform this valuation. The price inflation assumption used to evaluate the investment return assumption is 2.4%.

The assumed **Real Rate of Return** over wage inflation is defined to be the portion of total investment return that is more than the assumed total wage growth rate. Considering other economic assumptions, the 6.8% pre-retirement investment return rate translates to an assumed real rate of return over wage inflation of 3.8%. The assumed real rate of return over price inflation is 4.4% considering an inflation assumption of 2.4%.

Merit and Longevity pay increase assumptions for individual active members are shown for sample services below. An additional 3.0% recognizes wage inflation, including price inflation, productivity increases, and other macroeconomic forces.

Service	% Merit Increases in Salaries Next Year								
	General Non-State (Not Including Schools)	General State (Not Including Schools)	Executive & Elected Non-State	Executive & Elected State	University Teachers State	Public School Teachers Non-State	Protective With SS Non-State	Protective With SS State	Protective Without SS Non-State
1	3.5%	3.5%	2.5%	2.5%	3.0%	5.6%	4.8%	4.8%	5.5%
2	3.5%	3.5%	2.5%	2.5%	3.0%	5.6%	4.8%	4.8%	5.5%
3	3.1%	3.1%	2.0%	2.0%	2.9%	5.2%	4.1%	4.1%	4.7%
4	2.8%	2.8%	1.6%	1.6%	2.8%	4.7%	3.5%	3.5%	3.8%
5	2.5%	2.5%	1.1%	1.1%	2.7%	4.3%	2.8%	2.8%	3.0%
10	1.5%	1.5%	0.2%	0.2%	2.2%	2.6%	1.1%	1.1%	0.9%
15	1.1%	1.1%	0.2%	0.2%	1.7%	1.4%	0.8%	0.8%	0.5%
20	0.9%	0.9%	0.2%	0.2%	1.2%	0.6%	0.7%	0.7%	0.4%
25	0.6%	0.6%	0.2%	0.2%	0.9%	0.3%	0.6%	0.6%	0.3%
30	0.4%	0.4%	0.2%	0.2%	0.7%	0.2%	0.5%	0.5%	0.2%

Decrement Probabilities

The Active Member Population is assumed to remain constant. For purposes of financing the unfunded liabilities and amortizing the EAR, total payroll is assumed to grow at the wage inflation rate – 3.00% per year.

The mortality table used was the 2020 WRS Experience Tables adopted by the Board in connection with the 2018-2020 Experience Study. The rates in this table were based on actual WRS experience adjusted for future mortality improvements using the MP-2021 fully generational improvement scale from a base year of 2010. Sample retirement values from this table are shown below. This assumption is used to measure the probabilities of participants dying before retirement and the probabilities of each benefit payment being made after retirement.

Single Life Retirement Values 2020 WRS Experience Table with 5% Interest

Sample Attained Ages in 2022	Present Value of \$1 Monthly for Life		Future Life Expectancy (years)		Mortality Rates ¹	
	Males	Females	Males	Females	Males	Females
	40	\$216.63	\$219.72	47.1	49.2	0.000640
45	208.66	212.41	41.9	44.0	0.000820	0.000544
50	198.55	203.05	36.7	38.7	0.001222	0.000868
55	186.05	191.58	31.6	33.6	0.002436	0.002245
60	171.19	178.16	26.7	28.7	0.004194	0.003498
65	153.77	162.04	22.0	23.9	0.006810	0.004982
70	133.63	142.62	17.5	19.3	0.011302	0.007910
75	111.11	120.17	13.4	14.9	0.020599	0.015081
80	87.53	96.20	9.7	11.0	0.039363	0.030226
85	64.98	72.84	6.7	7.7	0.075850	0.059473

¹ With a fully generational mortality table, the mortality rate depends on the year of birth. Later years of birth will typically correspond to a lower mortality rate at a given age.

The values shown above are for non-disabled participants in 2022. For disabled participants, the following table was used:

Sample Attained Ages in 2022	Present Value of \$1 Monthly for Life		Future Life Expectancy (years)		Mortality Rates ¹	
	Males	Females	Males	Females	Males	Females
	40	\$175.46	\$182.24	32.2	35.0	0.009815
45	164.89	172.56	28.2	30.9	0.012317	0.011175
50	153.34	162.16	24.5	27.1	0.017211	0.015893
55	141.56	151.92	21.2	23.7	0.023092	0.020269
60	129.85	141.65	18.2	20.6	0.029405	0.023841
65	117.89	129.69	15.4	17.5	0.035020	0.025201
70	104.54	114.20	12.8	14.4	0.041203	0.029402
75	88.93	95.88	10.2	11.2	0.052659	0.041321
80	72.07	77.05	7.8	8.4	0.075206	0.064431
85	56.01	60.11	5.7	6.2	0.113366	0.103036

¹ With a fully generational mortality table, the mortality rate depends on the year of birth. Later years of birth will typically correspond to a lower mortality rate at a given age.



Active Participant Mortality Rates

Sample Attained Ages in 2022	Mortality Rates ¹	
	Males	Females
20	0.000400	0.000165
25	0.000214	0.000129
30	0.000351	0.000226
35	0.000512	0.000325
40	0.000640	0.000428
45	0.000820	0.000544
50	0.001190	0.000783
55	0.001879	0.001245
60	0.003102	0.001962
65	0.005005	0.003016
70	0.007489	0.004983
75	0.010923	0.009507
80	0.021800	0.019586

¹ With a fully generational mortality table, the mortality rate depends on the year of birth. Later years of birth will typically correspond to a lower mortality rate at a given age.

This assumption is used to measure the probability of participants dying while in service.

Rates of Retirement for Those Eligible to Retire

Normal Retirement

Age	% of Active Participants Retiring													
	General Non-State		General State		Executive & Elected Non-State	Executive & Elected State	University State		Public Schools Non-State		Protective			
	Male	Female	Male	Female			Male	Female	Male	Female	With SS Non-State ¹	With SS State ¹	Without SS Non-State ¹	
50												6.0%	7.5%	3.0%
51												8.0%	9.0%	3.5%
52												11.0%	11.0%	4.5%
53												34.0%	25.0%	17.0%
54												32.0%	20.0%	24.0%
55												26.0%	20.0%	29.0%
56												23.0%	20.0%	32.0%
57	20.0%	17.0%	19.0%	19.0%	10.0%	12.0%	12.0%	10.0%	31.0%	27.5%		27.0%	20.0%	23.0%
58	20.0%	18.0%	19.0%	19.0%	10.0%	12.0%	16.0%	20.0%	29.0%	27.5%		21.0%	20.0%	27.0%
59	20.0%	14.0%	19.0%	19.0%	10.0%	12.0%	9.0%	12.0%	28.0%	26.0%		23.0%	20.0%	40.0%
60	20.0%	20.0%	19.0%	21.0%	10.0%	12.0%	15.0%	14.0%	27.0%	29.0%		22.0%	20.0%	25.0%
61	20.0%	18.0%	19.0%	25.0%	10.0%	12.0%	9.0%	13.0%	26.0%	27.0%		30.0%	20.0%	25.0%
62	30.0%	24.0%	28.0%	29.0%	10.0%	18.0%	10.0%	15.0%	39.0%	36.0%		35.0%	25.0%	31.0%
63	30.0%	29.0%	30.0%	28.0%	10.0%	18.0%	11.0%	19.0%	33.0%	31.0%		27.0%	25.0%	40.0%
64	30.0%	23.0%	25.0%	31.0%	15.0%	18.0%	15.5%	17.0%	30.0%	30.0%		30.0%	36.0%	40.0%
65	30.0%	35.0%	27.0%	31.0%	15.0%	18.0%	15.5%	21.0%	32.0%	38.5%		34.0%	38.0%	40.0%
66	40.0%	39.0%	35.0%	36.0%	15.0%	18.0%	21.0%	25.0%	35.0%	44.0%		35.0%	38.0%	100.0%
67	32.0%	33.0%	32.0%	33.0%	15.0%	18.0%	18.0%	25.0%	31.0%	31.0%		35.0%	38.0%	100.0%
68	32.0%	30.0%	21.0%	25.0%	10.0%	18.0%	19.0%	18.0%	28.0%	30.0%		35.0%	38.0%	100.0%
69	28.0%	22.0%	21.0%	27.0%	10.0%	18.0%	14.0%	16.5%	20.0%	30.0%		35.0%	38.0%	100.0%
70	28.0%	26.0%	21.0%	29.0%	10.0%	18.0%	21.0%	22.0%	30.0%	32.0%		100.0%	100.0%	100.0%
71	28.0%	28.0%	21.0%	34.0%	10.0%	15.0%	24.0%	16.5%	25.0%	25.0%		100.0%	100.0%	100.0%
72	28.0%	30.0%	21.0%	33.0%	10.0%	15.0%	24.0%	17.0%	25.0%	25.0%		100.0%	100.0%	100.0%
73	18.0%	30.0%	30.0%	24.0%	20.0%	15.0%	24.0%	21.0%	25.0%	25.0%		100.0%	100.0%	100.0%
74	18.0%	16.0%	30.0%	18.0%	20.0%	15.0%	24.0%	14.0%	25.0%	25.0%		100.0%	100.0%	100.0%
75	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%		100.0%	100.0%	100.0%

¹ Includes reduced retirements for Protective with 20+ years of service.

Reduced Retirement

Age	% of Active Participants Retiring									
	General Non-State		General State		Executive & Elected Non-State	Executive & Elected State	University State		Public Schools Non-State	
	Male	Female	Male	Female			Male	Female	Male	Female
55	7.3%	7.0%	5.5%	6.0%	2.5%	6.0%	3.3%	5.0%	12.0%	11.0%
56	6.0%	7.0%	6.5%	8.0%	2.5%	6.0%	3.3%	5.0%	13.0%	13.0%
57	5.2%	5.5%	5.5%	6.0%	2.5%	6.0%	4.0%	5.0%	13.0%	12.0%
58	5.6%	6.5%	5.5%	9.0%	2.5%	6.0%	4.0%	5.5%	12.0%	13.0%
59	5.9%	7.0%	6.5%	7.5%	2.5%	6.0%	4.4%	6.0%	14.3%	13.5%
60	9.3%	9.5%	9.0%	10.0%	5.0%	6.0%	4.8%	7.5%	16.0%	17.0%
61	8.0%	9.5%	12.5%	11.0%	5.0%	6.0%	4.8%	9.0%	16.0%	17.0%
62	19.0%	16.0%	16.0%	18.0%	1.0%	6.0%	7.0%	11.0%	23.0%	24.0%
63	20.0%	18.0%	17.0%	19.5%	1.0%	3.0%	8.3%	12.0%	21.0%	24.0%
64	18.0%	18.0%	21.0%	18.0%	1.0%	3.0%	11.5%	14.5%	21.0%	24.0%

The assumed rates of separation from employment prior to service retirement due to disability and other causes are shown below for sample ages. For other terminations it was assumed that a percentage, depending on age of participants terminating after age 35 with 5 or more years of service, will leave their contributions on deposit and be paid a benefit at normal retirement age and that the remaining participants would take a separation benefit. The percentage taking a separation benefit is 25% at age 35, grading downward to 0% at retirement eligibility. All participants terminating prior to normal retirement age with less than five years of service were assumed to take a separation benefit.

Assumed Termination Rates by Attained Age and Years of Service

Age	Service	% of Active Participants Withdrawing													
		General Non-State		General State		Executive & Elected Non-State	Executive & Elected State	University State		Public Schools Non-State		Protective			
		Male	Female	Male	Female			Male	Female	Male	Female	With SS Non-State	With SS State	Without SS Non-State	
Under 30	0-1	17.7%	20.0%	17.2%	19.5%	25.0%	19.0%	14.0%	14.1%	12.6%	12.0%	15.6%	18.8%	4.5%	
	1-2	12.5%	15.0%	12.9%	15.5%	20.0%	16.0%	13.8%	14.0%	11.6%	10.0%	9.4%	15.5%	4.0%	
	2-3	9.0%	11.5%	9.5%	12.5%	17.0%	13.0%	12.6%	12.7%	8.5%	8.5%	5.3%	10.5%	2.0%	
	3-4	7.1%	9.6%	7.4%	10.0%	16.0%	12.5%	11.0%	10.0%	6.0%	6.2%	4.4%	6.5%	1.8%	
	4-5	6.6%	9.0%	7.3%	8.7%	13.0%	12.0%	8.6%	9.3%	5.6%	5.8%	4.2%	5.5%	1.7%	
	5-6	5.3%	7.4%	6.1%	7.8%	4.0%	6.0%	8.5%	8.1%	4.5%	4.8%	3.3%	5.0%	1.3%	
	6-7	4.8%	6.3%	5.2%	6.9%	4.0%	6.0%	7.0%	7.0%	3.7%	4.1%	3.2%	4.5%	1.2%	
	7-8	4.6%	6.0%	5.1%	6.0%	4.0%	6.0%	5.6%	5.6%	2.9%	3.5%	3.0%	4.0%	0.9%	
	8-9	4.1%	5.7%	4.5%	5.6%	4.0%	6.0%	4.6%	4.9%	2.6%	3.4%	2.7%	3.5%	0.8%	
	9-10	4.0%	5.0%	3.6%	5.5%	4.0%	6.0%	4.3%	4.3%	2.5%	3.0%	2.3%	3.3%	0.7%	
	10 & Up	3.2%	4.9%	3.1%	4.8%	4.5%	4.5%	4.2%	4.0%	2.0%	2.2%	2.1%	2.9%	0.7%	
35		2.8%	4.1%	2.7%	3.9%	4.5%	4.5%	4.0%	4.0%	1.6%	1.9%	1.8%	2.4%	0.6%	
40		2.4%	3.2%	2.6%	3.0%	4.2%	4.5%	3.4%	3.7%	1.4%	1.6%	1.5%	1.8%	0.6%	
45		2.0%	2.9%	2.4%	2.7%	3.7%	4.2%	2.8%	3.2%	1.4%	1.4%	1.4%	1.4%	0.5%	
50		1.7%	2.5%	1.9%	2.1%	3.2%	3.7%	2.3%	2.7%	1.3%	1.2%	1.3%	1.2%	0.5%	
54		1.6%	2.2%	1.7%	1.8%	3.0%	3.5%	2.2%	2.5%	1.3%	1.2%	1.3%	1.2%	0.5%	

Disability Rates

Age	% of Active Participants Becoming Disabled													
	General Non-State		General State		Executive & Elected Non-State	Executive & Elected State	University State		Public Schools Non-State		Protective			
	Male	Female	Male	Female			Male	Female	Male	Female	With SS Non-State	With SS State	Without SS Non-State	
20	0.01%	0.00%	0.01%	0.01%	0.00%	0.00%	0.00%	0.01%	0.01%	0.01%	0.01%	0.02%	0.02%	0.03%
25	0.01%	0.00%	0.01%	0.01%	0.00%	0.00%	0.00%	0.01%	0.01%	0.01%	0.01%	0.02%	0.02%	0.03%
30	0.01%	0.02%	0.01%	0.04%	0.00%	0.00%	0.00%	0.01%	0.01%	0.01%	0.01%	0.02%	0.02%	0.03%
35	0.01%	0.02%	0.01%	0.05%	0.01%	0.01%	0.00%	0.03%	0.01%	0.01%	0.01%	0.03%	0.03%	0.03%
40	0.03%	0.03%	0.03%	0.07%	0.01%	0.01%	0.01%	0.04%	0.01%	0.02%	0.04%	0.05%	0.05%	0.05%
45	0.06%	0.05%	0.06%	0.10%	0.01%	0.01%	0.02%	0.04%	0.03%	0.05%	0.05%	0.07%	0.10%	0.10%
50	0.13%	0.07%	0.13%	0.16%	0.02%	0.02%	0.03%	0.07%	0.08%	0.10%	0.09%	0.11%	0.55%	0.55%
55	0.24%	0.13%	0.24%	0.29%	0.09%	0.09%	0.08%	0.11%	0.14%	0.14%	1.39%	1.73%	0.41%	0.41%
60	0.43%	0.18%	0.43%	0.41%	0.11%	0.11%	0.11%	0.17%	0.24%	0.21%	2.34%	2.92%	0.12%	0.12%

Miscellaneous and Technical Assumptions

Amortization Payoff Reserve:	Additional reserves in the amount of \$4,659,461 (discounted from the year 2029 to the current valuation date) were added to general group liabilities to account for the possibility that some non-state employers may never be able to pay off their unfunded actuarial accrued liability.
Assumed Retirement for Deferred Members:	Members with a deferred vested benefit were assumed to retire at age 65 for General members, age 54 for Protective members and age 62 for Executive and Elected members.
Benefit Service:	Exact fractional service on the decrement date is used to determine the amount of benefit payable.
Decrement Operation:	Disability operates during the retirement pattern.
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.
Eligibility Testing:	Eligibility for benefits is determined based upon the age nearest birthday and total service (in all benefit groups) nearest whole year on the date the decrement is assumed to occur.
Expenses:	Assumed investment return is net of administrative and investment expenses.
Final Average Salary:	For present value of future benefit purposes, final average salary was calculated in accordance with pay increase assumptions, but was not permitted to fall below the final average salary reported in the data.
Incidence of Contributions:	Contributions are assumed to be received continuously throughout the year based upon the computed percent of payroll shown in this report, and the actual payroll payable at the time contributions are made.
Liability Adjustments:	Final Average Salaries were increased 3.5% (4.0% for Executive and Elected and 4.5% for Protectives) to account for additional contingencies in actual benefit amount calculated at the time of retirement.
Marriage Assumption:	75% of males and 55% of females are assumed to be married for purposes of death-in-service benefits. Male spouses are assumed to be three years older than female spouses.



Miscellaneous and Technical Assumptions (Concluded)

Non-Benefit Service:	Liabilities for service in divisions other than the division in which the individual is currently active are calculated as indexed deferred vested benefits. Benefits are indexed in accordance with the salary adjustment factors for the division where the member is currently employed. People are assumed to retire at the earliest age that full benefits will become available. The liabilities are assigned to the division in which the service was rendered.
Normal Form of Benefit:	The assumed normal form of benefit is a straight life benefit, except where otherwise noted.
Pay Annualization:	Reported pay for members with less than 12 contributing months was annualized by the ratio of 12 to the number of contributing months in the year.
Pay Increase Timing:	Beginning of (calendar) year for most people. Middle of calendar year for teachers.
Service Credit Accruals:	It is assumed that members accrue one year of service credit per year.
Variable Excess Benefits:	These benefits are valued by increasing the otherwise calculated liabilities by an amount equal to twice the value of the variable excess. (The variable excess is the difference between the variable account and the variable at core account, summed over all participants.)

SECTION G

PLAN PROVISIONS

Summary of Benefit Provisions Evaluated December 31, 2022 Actuarial Valuation

Normal Retirement Eligibility

The age a participant becomes eligible for an unreduced age and service annuity is:

General, Public School, & University		Protective		Executive & Elected [#]	
Age	Service	Age	Service	Age	Service
65	Any*	54	Any*	62	Any*
57	30	53	25	57	30

* Participants first employed after 1989 and terminated before April 24, 1998 must have creditable service in five calendar years.

These conditions apply to those people hired on or before December 31, 2016. For others, the General eligibility conditions apply.

Normal Retirement Annuity

The age and service annuity payable at Normal Retirement Age is based on Final Average Earnings (FAE) and Creditable Service (CS) as follows:

Multiplier for Service Rendered			Group
Before 2000	Between 2000 & 2011	After 2011	
2.165%	2.0%	1.6%	Executive group and elected officials
2.165%	2.0%	2.0%	Protective occupation participants covered by Social Security
2.665%	2.5%	2.5%	Protective occupation participants not covered by Social Security
1.765%	1.6%	1.6%	All other participants

FAE is generally the average of the three highest years of earnings (July 1 - June 30 for teachers, educational support staff, and judges; calendar year for others) preceding retirement. These years do not have to be consecutive. For legislators and state constitutional officers who are ineligible to receive pay increases during their term, FAE is the statutory rate of earnings at termination.

Maximum formula annuity is 85% of FAE for protective occupation participants not covered by Social Security, 65% of FAE for protectives covered by Social Security, and 70% for all other participants. If greater than the formula amount, an annuity equal to the actuarial equivalent of two times the required accumulated contributions is paid in lieu of the formula amount (i.e., the Money Purchase Minimum).



Reduced Retirement. Any participant who has attained age 55 and any Protective occupation participant who has attained age 50 may apply for a reduced retirement annuity. The benefit is reduced 0.4% for each month that the annuity effective date precedes the Normal Retirement Age. For Non-Protective participants terminating after 6/30/90, the 0.4% is reduced for months after the attainment of age 57 and before the annuity effective date by .001111% for each month of creditable service.

Voluntary Termination Before Immediate Benefit Eligibility. Participant may either (i) receive a refund of accumulated contributions, or (ii) leave contributions on deposit and apply for a retirement annuity on or after the minimum retirement age based upon age and accrued service at time of termination.

Post-Retirement Adjustments. Annuities are increased annually if the investment income credited to retired life funds is in excess of the assumed benefit rate (presently 5%), other plan experiences are within projected ranges, and the resulting adjustment would be at least 0.5% (2.0% for the variable fund).

Disability Benefits. Generally, disability means the inability to engage in any substantial gainful activity by reason of a medically determinable physical or mental impairment which can be expected to result in death or to be of long-continued and indefinite duration. Disability applicants must be participating employees who are under normal retirement age, have not already taken a WRS benefit and who meet a service requirement.

For this purpose, **normal retirement age** is:

- 65 for general employees and executives and elected officials hired after December 31, 2016
- 62 for executives and elected officials hired on or before December 31, 2016
- 53 for protective occupation employees with 25 or more years of creditable service
- 54 for other protective occupation employees

The **service requirement** is that during the seven years preceding application the individual must have earned:

- At least 6 months of service credit in five of those years or
- A total of five years of service credit.

The service credit requirement may be waived if the disability is work related.

Protective occupation employees who become disabled between the ages of 50 and 55, who have at least 15 years of service, and who can no longer perform the duties of their position may apply for a special disability benefit until age 55.

Disability Amount: The disability benefit is the WRS formula benefit based upon service projected to normal retirement age as described above, without regard to the reduced retirement reduction.

Death-in-Service.

- (a) Prior to age 50 for Protective participants, age 55 for others, the benefit is the equivalent of twice the accumulated employee contributions required and all additional contributions and employer amounts contributed prior to 1974 for teachers, or 1966 for others.
- (b) After age 50 for Protective participants, age 55 for others, the benefit is the amount that would have been paid if participant had retired and elected 100% survivor option. Benefit is payable to an eligible beneficiary who must be a natural living person. If there is no eligible beneficiary, a refund of contributions is paid to the estate.



Interest Credits. For years after 1999, and for people with some active service after 1999, participant core accounts (including the variable at core accounts) are credited with interest at the full (core) effective rate. For others, accounts are credited with interest as follows:

Date of Participation	Rate Credited for Purpose of	
	Money Purchase Minimum	Refunds
Prior to 1982	Actual	Actual
January 1, 1982 & Later	5%	3%

Participant variable accounts are credited with interest based on the earnings in the variable portfolio.

Contribution Rates. The financial objective of WRS is to establish and receive contributions that will remain level from year to year and decade to decade.

Statutory required participant contributions prior to July 1, 2011 were as follows:

General, Public School, and University	5.0%
Executives & Elected Officials	5.5
Protectives	
- With Social Security	6.0
- Without Social Security	8.0

Statutory required participant contributions after July 1, 2011 are set equal to one-half of the actuarially determined rate for General participants and Executive and Elected Officials. Participant contributions for Protective participants are set equal to the participant contribution for General members.

Normal Form of Benefit. The normal form of benefit is a straight life annuity with no death benefits. Optional forms of benefit which are actuarially reduced are listed below:

- A life annuity with 60 or 180 monthly payments guaranteed.
- A joint survivorship annuity with 75% continued to beneficiary.
- A joint survivorship annuity with 100% continued to beneficiary.
- A joint survivorship annuity reduced 25% upon either your death or your beneficiary’s death.
- A joint survivorship annuity with 100% continued to beneficiary combined with 180 monthly payments guaranteed.

For formula benefit calculations, optional forms are calculated at the lower of the current age or age 62 (Normal Retirement Age for Protective occupations). If a retiree (and beneficiary if in receipt of a joint survivorship annuity) dies prior to receiving benefits which, in total, are at least equal to the members contributions, a “residual refund” for the difference is paid.

Vesting. Participants hired prior to July 1, 2011 vest immediately. After July 1, 2011, participants vest after five years of service.



SECTION H

GAIN/LOSS STATISTICAL SUMMARY

General Males Non-State Withdrawal Experience during Calendar Year 2022

Male Service-Based Withdrawals All Ages

Service Index	Withdrawals	Exposure	Crude Rates	Current Rates	Expected Withdrawals
1	408	1,811	0.2253	0.1770	321
2	523	2,808	0.1863	0.1250	351
3	297	2,351	0.1263	0.0900	212
4	236	2,196	0.1075	0.0710	156
5	184	1,883	0.0977	0.0660	124
6	137	1,821	0.0752	0.0530	97
7	112	1,534	0.0730	0.0480	74
8	88	1,470	0.0599	0.0460	68
9	63	1,248	0.0505	0.0410	51
10	75	1,144	0.0656	0.0400	46
Totals	2,123	18,266	0.1162	0.0821	1,500

Service index 1 corresponds to service between 0 and 1 years, service index 2 corresponds to service between 1 and 2 years of service, etc. As such, service index 10 corresponds to service between 9 and 10 years of service.

Male Age-Based Withdrawals 10+ Years of Service

Age	Withdrawals	Exposure	Crude Rates	Current Rates	Expected Withdrawals
25-29	1	3	0.3333	0.0350	-
30-34	12	193	0.0622	0.0300	6
35-39	40	795	0.0503	0.0260	21
40-44	61	1,510	0.0404	0.0220	33
45-49	78	1,893	0.0412	0.0180	34
50-54	62	2,516	0.0246	0.0160	40
Over 54	99	6,356	0.0156		99
Totals	353	13,266	0.0266	0.0176	233

General Males State Withdrawal Experience during Calendar Year 2022

Male Service-Based Withdrawals All Ages

Service Index	Withdrawals	Exposure	Crude Rates	Current Rates	Expected Withdrawals
1	162	709	0.2285	0.1720	122
2	224	1,156	0.1938	0.1290	149
3	150	1,084	0.1384	0.0950	103
4	121	1,015	0.1192	0.0740	75
5	76	909	0.0836	0.0730	66
6	74	921	0.0803	0.0610	56
7	63	808	0.0780	0.0520	42
8	45	763	0.0590	0.0510	39
9	44	731	0.0602	0.0450	33
10	24	637	0.0377	0.0360	23
Totals	983	8,733	0.1126	0.0811	708

Service index 1 corresponds to service between 0 and 1 years, service index 2 corresponds to service between 1 and 2 years of service, etc. As such, service index 10 corresponds to service between 9 and 10 years of service.

Male Age-Based Withdrawals 10+ Years of Service

Age	Withdrawals	Exposure	Crude Rates	Current Rates	Expected Withdrawals
25-29	-	2	0.0000	0.0350	-
30-34	2	83	0.0241	0.0280	2
35-39	31	532	0.0583	0.0270	14
40-44	28	763	0.0367	0.0260	20
45-49	24	977	0.0246	0.0220	21
50-54	35	1,255	0.0279	0.0170	21
Over 54	26	3,001	0.0087		26
Totals	146	6,613	0.0221	0.0157	104

General Females Non-State Withdrawal Experience during Calendar Year 2022

Female Service-Based Withdrawals All Ages

Service Index	Withdrawals	Exposure	Crude Rates	Current Rates	Expected Withdrawals
1	1,228	5,018	0.2447	0.2000	1,004
2	1,343	6,879	0.1952	0.1500	1,032
3	763	5,386	0.1417	0.1150	619
4	571	4,491	0.1271	0.0960	431
5	422	3,855	0.1095	0.0900	347
6	357	3,382	0.1056	0.0740	250
7	307	2,832	0.1084	0.0630	178
8	210	2,550	0.0824	0.0600	153
9	171	2,246	0.0761	0.0570	128
10	136	2,004	0.0679	0.0500	100
Totals	5,508	38,643	0.1425	0.1098	4,242

Service index 1 corresponds to service between 0 and 1 years, service index 2 corresponds to service between 1 and 2 years of service, etc. As such, service index 10 corresponds to service between 9 and 10 years of service.

Female Age-Based Withdrawals 10+ Years of Service

Age	Withdrawals	Exposure	Crude Rates	Current Rates	Expected Withdrawals
25-29	1	3	0.3333	0.0500	-
30-34	17	178	0.0955	0.0480	9
35-39	61	1,063	0.0574	0.0360	38
40-44	98	1,870	0.0524	0.0300	56
45-49	112	2,584	0.0433	0.0290	75
50-54	145	3,727	0.0389	0.0220	82
Over 54	252	11,466	0.0220		252
Totals	686	20,891	0.0328	0.0245	512

General Females State Withdrawal Experience during Calendar Year 2022

Female Service-Based Withdrawals All Ages

Service Index	Withdrawals	Exposure	Crude Rates	Current Rates	Expected Withdrawals
1	358	1,476	0.2425	0.1950	288
2	499	2,284	0.2185	0.1550	354
3	287	2,017	0.1423	0.1250	252
4	229	1,806	0.1268	0.1000	181
5	152	1,582	0.0961	0.0870	138
6	173	1,706	0.1014	0.0780	133
7	126	1,324	0.0952	0.0690	91
8	84	1,229	0.0683	0.0600	74
9	69	1,065	0.0648	0.0560	60
10	50	970	0.0515	0.0550	53
Totals	2,027	15,459	0.1311	0.1051	1,624

Service index 1 corresponds to service between 0 and 1 years, service index 2 corresponds to service between 1 and 2 years of service, etc. As such, service index 10 corresponds to service between 9 and 10 years of service.

Female Age-Based Withdrawals 10+ Years of Service

Age	Withdrawals	Exposure	Crude Rates	Current Rates	Expected Withdrawals
25-29	-	2	0.0000	0.0500	-
30-34	14	147	0.0952	0.0470	7
35-39	48	870	0.0552	0.0340	30
40-44	49	1,361	0.0360	0.0280	38
45-49	50	1,571	0.0318	0.0260	41
50-54	51	1,882	0.0271	0.0180	34
Over 54	30	4,382	0.0068		30
Totals	242	10,215	0.0237	0.0176	180

Public Schools Males Non-State Withdrawal Experience during Calendar Year 2022

Male Service-Based Withdrawals All Ages

Service Index	Withdrawals	Exposure	Crude Rates	Current Rates	Expected Withdrawals
1	68	548	0.1241	0.1260	69
2	101	919	0.1099	0.1160	107
3	118	953	0.1238	0.0850	81
4	81	848	0.0955	0.0600	51
5	61	826	0.0738	0.0560	46
6	62	778	0.0797	0.0450	35
7	45	783	0.0575	0.0370	29
8	40	783	0.0511	0.0290	23
9	40	762	0.0525	0.0260	20
10	35	769	0.0455	0.0250	19
Totals	651	7,969	0.0817	0.0602	480

Service index 1 corresponds to service between 0 and 1 years, service index 2 corresponds to service between 1 and 2 years of service, etc. As such, service index 10 corresponds to service between 9 and 10 years of service.

Male Age-Based Withdrawals 10+ Years of Service

Age	Withdrawals	Exposure	Crude Rates	Current Rates	Expected Withdrawals
25-29	-	-	N/A	0.0250	-
30-34	4	182	0.0220	0.0170	3
35-39	37	1,344	0.0275	0.0150	20
40-44	65	2,306	0.0282	0.0140	32
45-49	53	2,701	0.0196	0.0135	36
50-54	62	2,881	0.0215	0.0130	37
Over 54	39	3,043	0.0128		39
Totals	260	12,457	0.0209	0.0134	167

Public Schools Females Non-State Withdrawal Experience during Calendar Year 2022

Female Service-Based Withdrawals All Ages

Service Index	Withdrawals	Exposure	Crude Rates	Current Rates	Expected Withdrawals
1	172	1,603	0.1073	0.1200	192
2	364	2,991	0.1217	0.1000	299
3	300	2,783	0.1078	0.0850	237
4	295	2,818	0.1047	0.0620	175
5	229	2,597	0.0882	0.0580	151
6	205	2,492	0.0823	0.0480	120
7	159	2,353	0.0676	0.0410	96
8	164	2,549	0.0643	0.0350	89
9	137	2,487	0.0551	0.0340	85
10	140	2,379	0.0588	0.0300	71
Totals	2,165	25,052	0.0864	0.0605	1,515

Service index 1 corresponds to service between 0 and 1 years, service index 2 corresponds to service between 1 and 2 years of service, etc. As such, service index 10 corresponds to service between 9 and 10 years of service.

Female Age-Based Withdrawals 10+ Years of Service

Age	Withdrawals	Exposure	Crude Rates	Current Rates	Expected Withdrawals
25-29	-	-	N/A	0.0250	-
30-34	22	663	0.0332	0.0200	13
35-39	136	4,050	0.0336	0.0180	73
40-44	165	6,220	0.0265	0.0145	90
45-49	149	6,663	0.0224	0.0130	87
50-54	170	7,402	0.0230	0.0115	85
Over 54	83	8,229	0.0101		83
Totals	725	33,227	0.0218	0.0130	431

University Males State Withdrawal Experience during Calendar Year 2022

Male Service-Based Withdrawals All Ages

Service Index	Withdrawals	Exposure	Crude Rates	Current Rates	Expected Withdrawals
1	48	290	0.1655	0.1400	41
2	132	616	0.2143	0.1380	85
3	113	723	0.1563	0.1260	91
4	107	706	0.1516	0.1100	78
5	68	611	0.1113	0.0860	53
6	59	538	0.1097	0.0850	46
7	28	466	0.0601	0.0700	33
8	24	432	0.0556	0.0560	24
9	30	429	0.0699	0.0460	20
10	17	445	0.0382	0.0430	19
Totals	626	5,256	0.1191	0.0932	490

Service index 1 corresponds to service between 0 and 1 years, service index 2 corresponds to service between 1 and 2 years of service, etc. As such, service index 10 corresponds to service between 9 and 10 years of service.

Male Age-Based Withdrawals 10+ Years of Service

Age	Withdrawals	Exposure	Crude Rates	Current Rates	Expected Withdrawals
25-29	-	-	N/A	0.0430	-
30-34	2	24	0.0833	0.0410	1
35-39	14	228	0.0614	0.0385	9
40-44	17	528	0.0322	0.0305	16
45-49	22	839	0.0262	0.0255	21
50-54	26	1,034	0.0251	0.0220	23
Over 54	20	2,330	0.0086		20
Totals	101	4,983	0.0203	0.0181	90

University Females State Withdrawal Experience during Calendar Year 2022

Female Service-Based Withdrawals All Ages

Service Index	Withdrawals	Exposure	Crude Rates	Current Rates	Expected Withdrawals
1	78	446	0.1749	0.1410	63
2	146	826	0.1768	0.1400	116
3	146	904	0.1615	0.1270	115
4	129	960	0.1344	0.1000	96
5	86	847	0.1015	0.0930	79
6	71	785	0.0904	0.0810	64
7	73	704	0.1037	0.0700	49
8	43	647	0.0665	0.0560	36
9	42	581	0.0723	0.0490	28
10	31	576	0.0538	0.0430	25
Totals	845	7,276	0.1161	0.0922	671

Service index 1 corresponds to service between 0 and 1 years, service index 2 corresponds to service between 1 and 2 years of service, etc. As such, service index 10 corresponds to service between 9 and 10 years of service.

Female Age-Based Withdrawals 10+ Years of Service

Age	Withdrawals	Exposure	Crude Rates	Current Rates	Expected Withdrawals
25-29	-	1	0.0000	0.0400	-
30-34	-	46	0.0000	0.0400	2
35-39	16	386	0.0415	0.0400	15
40-44	46	814	0.0565	0.0350	28
45-49	36	997	0.0361	0.0300	30
50-54	32	1,095	0.0292	0.0250	27
Over 54	12	2,272	0.0053		12
Totals	142	5,611	0.0253	0.0203	114

Protective with Social Security Non-State Withdrawal Experience during Calendar Year 2022

Male and Female Service-Based Withdrawals All Ages

Service Index	Withdrawals	Exposure	Crude Rates	Current Rates	Expected Withdrawals
1	44	281	0.1566	0.1560	44
2	64	712	0.0899	0.0940	67
3	46	655	0.0702	0.0530	35
4	46	673	0.0684	0.0440	30
5	40	595	0.0672	0.0420	25
6	31	562	0.0552	0.0330	19
7	18	521	0.0345	0.0320	17
8	16	463	0.0346	0.0300	14
9	15	409	0.0367	0.0270	11
10	14	390	0.0359	0.0230	9
Totals	334	5,261	0.0635	0.0515	271

Service index 1 corresponds to service between 0 and 1 years, service index 2 corresponds to service between 1 and 2 years of service, etc. As such, service index 10 corresponds to service between 9 and 10 years of service.

Male and Female Age-Based Withdrawals 10+ Years of Service

Age	Withdrawals	Exposure	Crude Rates	Current Rates	Expected Withdrawals
25-29	-	1	0.0000	0.0220	-
30-34	4	233	0.0172	0.0200	5
35-39	13	1,096	0.0119	0.0160	18
40-44	27	1,377	0.0196	0.0150	21
45-49	22	1,430	0.0154	0.0140	20
50-54	8	1,384	0.0058	0.0130	18
Totals	74	5,521	0.0134	0.0149	82

Protective with Social Security State Withdrawal Experience during Calendar Year 2022

Male and Female Service-Based Withdrawals All Ages

Service Index	Withdrawals	Exposure	Crude Rates	Current Rates	Expected Withdrawals
1	66	177	0.3729	0.1880	33
2	115	503	0.2286	0.1550	78
3	85	567	0.1499	0.1050	60
4	61	478	0.1276	0.0650	31
5	36	438	0.0822	0.0550	24
6	40	472	0.0847	0.0500	24
7	32	420	0.0762	0.0450	19
8	15	297	0.0505	0.0400	12
9	12	320	0.0375	0.0350	11
10	12	247	0.0486	0.0330	8
Totals	474	3,919	0.1209	0.0766	300

Service index 1 corresponds to service between 0 and 1 years, service index 2 corresponds to service between 1 and 2 years of service, etc. As such, service index 10 corresponds to service between 9 and 10 years of service.

Male and Female Age-Based Withdrawals 10+ Years of Service

Age	Withdrawals	Exposure	Crude Rates	Current Rates	Expected Withdrawals
25-29	-	1	0.0000	0.0300	-
30-34	3	112	0.0268	0.0280	3
35-39	8	457	0.0175	0.0220	10
40-44	15	801	0.0187	0.0160	13
45-49	16	888	0.0180	0.0130	12
50-54	11	1,029	0.0107	0.0120	12
Totals	53	3,288	0.0161	0.0152	50

Protective without Social Security Non-State Withdrawal Experience during Calendar Year 2022

Male and Female Service-Based Withdrawals All Ages

Service Index	Withdrawals	Exposure	Crude Rates	Current Rates	Expected Withdrawals
1	3	40	0.0750	0.0450	2
2	6	136	0.0441	0.0400	5
3	4	112	0.0357	0.0200	2
4	2	108	0.0185	0.0180	2
5	3	126	0.0238	0.0170	2
6	2	115	0.0174	0.0130	1
7	2	110	0.0182	0.0120	1
8	2	113	0.0177	0.0090	1
9	4	117	0.0342	0.0080	1
10	1	108	0.0093	0.0070	1
Totals	29	1,085	0.0267	0.0166	18

Service index 1 corresponds to service between 0 and 1 years, service index 2 corresponds to service between 1 and 2 years of service, etc. As such, service index 10 corresponds to service between 9 and 10 years of service.

Male and Female Age-Based Withdrawals 10+ Years of Service

Age	Withdrawals	Exposure	Crude Rates	Current Rates	Expected Withdrawals
25-29	-	1	0.0000	0.0070	-
30-34	-	64	0.0000	0.0065	-
35-39	3	267	0.0112	0.0060	2
40-44	5	361	0.0139	0.0055	2
45-49	1	399	0.0025	0.0050	2
50-54	4	425	0.0094	0.0045	2
Totals	13	1,517	0.0086	0.0053	8

Executive and Elected Non-State Withdrawal Experience during Calendar Year 2022

Male and Female Service-Based Withdrawals All Ages

Service Index	Withdrawals	Exposure	Crude Rates	Current Rates	Expected Withdrawals
1	4	13	0.3077	0.2500	3
2	5	34	0.1471	0.2000	7
3	10	26	0.3846	0.1700	4
4	6	28	0.2143	0.1600	4
5	3	18	0.1667	0.1300	2
6	3	28	0.1071	0.0400	1
7	1	21	0.0476	0.0400	1
8	-	15	0.0000	0.0400	1
9	1	15	0.0667	0.0400	1
10	2	24	0.0833	0.0400	1
Totals	35	222	0.1577	0.1126	25

Service index 1 corresponds to service between 0 and 1 years, service index 2 corresponds to service between 1 and 2 years of service, etc. As such, service index 10 corresponds to service between 9 and 10 years of service.

Male and Female Age-Based Withdrawals 10+ Years of Service

Age	Withdrawals	Exposure	Crude Rates	Current Rates	Expected Withdrawals
25-29	-	-	N/A	0.0450	-
30-34	-	-	N/A	0.0450	-
35-39	-	7	0.0000	0.0450	-
40-44	-	19	0.0000	0.0400	1
45-49	-	24	0.0000	0.0350	1
50-54	-	53	0.0000	0.0300	2
Over 54	2	172	0.0116		2
Totals	2	275	0.0073	0.0218	6

Executive and Elected State Withdrawal Experience during Calendar Year 2022

Male and Female Service-Based Withdrawals All Ages

Service Index	Withdrawals	Exposure	Crude Rates	Current Rates	Expected Withdrawals
1	-	8	0.0000	0.2500	2
2	1	33	0.0303	0.2000	7
3	2	21	0.0952	0.1700	4
4	8	49	0.1633	0.1600	8
5	1	19	0.0526	0.1300	2
6	-	31	0.0000	0.0400	1
7	-	23	0.0000	0.0400	1
8	2	42	0.0476	0.0400	2
9	1	14	0.0714	0.0400	1
10	-	30	0.0000	0.0400	1
Totals	15	270	0.0556	0.0000	29

Service index 1 corresponds to service between 0 and 1 years, service index 2 corresponds to service between 1 and 2 years of service, etc. As such, service index 10 corresponds to service between 9 and 10 years of service.

Male and Female Age-Based Withdrawals 10+ Years of Service

Age	Withdrawals	Exposure	Crude Rates	Current Rates	Expected Withdrawals
25-29	-	-	N/A	0.0450	-
30-34	-	-	N/A	0.0450	-
35-39	-	18	0.0000	0.0450	1
40-44	1	37	0.0270	0.0400	1
45-49	5	50	0.1000	0.0350	2
50-54	2	72	0.0278	0.0300	2
Over 54	1	247	0.0040		1
Totals	9	424	0.0212	0.0165	7

General Non-State Disability Experience during Calendar Year 2022

Male Disability Experience

Age	Disabilities	Exposure	Crude Rates	Current Rates	Expected Disabilities
Under 20	-	-	N/A	0.0001	-
20-24	-	17	0.0000	0.0001	-
25-29	-	476	0.0000	0.0001	-
30-34	-	1,492	0.0000	0.0001	-
35-39	-	2,194	0.0000	0.0002	-
40-44	2	2,796	0.0007	0.0005	1
45-49	4	2,846	0.0014	0.0006	2
50-54	7	3,393	0.0021	0.0017	6
55-59	7	3,404	0.0021	0.0030	10
60-64	6	2,586	0.0023	0.0059	15
65-69	1	-	N/A	0.0023	-
70-74	-	-	N/A	0.0020	-
75 and over	-	-	N/A	0.0020	-
Totals	27	19,204	0.0014	0.0018	34

Female Disability Experience

Age	Disabilities	Exposure	Crude Rates	Current Rates	Expected Disabilities
Under 20	-	-	N/A	0.0000	-
20-24	-	8	0.0000	0.0000	-
25-29	-	538	0.0000	0.0000	-
30-34	1	2,071	0.0005	0.0002	-
35-39	-	3,118	0.0000	0.0002	1
40-44	-	3,856	0.0000	0.0004	1
45-49	1	4,615	0.0002	0.0005	2
50-54	6	6,055	0.0010	0.0009	5
55-59	7	6,736	0.0010	0.0016	11
60-64	10	5,358	0.0019	0.0020	11
65-69	-	-	N/A	0.0016	-
70-74	-	-	N/A	0.0014	-
75 and over	-	-	N/A	0.0014	-
Totals	25	32,355	0.0008	0.0010	31

The people shown on this page are cases involving \$40.63 disability benefits and includes those who were either active or inactive with pending benefits at the beginning of the year.



General State Disability Experience during Calendar Year 2022

Male Disability Experience

Age	Disabilities	Exposure	Crude Rates	Current Rates	Expected Disabilities
Under 20	-	-	N/A	0.0001	-
20-24	-	2	0.0000	0.0001	-
25-29	-	175	0.0000	0.0001	-
30-34	-	927	0.0000	0.0001	-
35-39	1	1,371	0.0007	0.0002	-
40-44	-	1,403	0.0000	0.0005	1
45-49	-	1,405	0.0000	0.0006	1
50-54	3	1,721	0.0017	0.0017	3
55-59	2	1,586	0.0013	0.0030	5
60-64	2	1,124	0.0018	0.0059	7
65-69	1	-	N/A	0.0023	-
70-74	-	-	N/A	0.0020	-
75 and over	-	-	N/A	0.0020	-
Totals	9	9,714	0.0009	0.0018	17

Female Disability Experience

Age	Disabilities	Exposure	Crude Rates	Current Rates	Expected Disabilities
Under 20	-	-	N/A	0.0000	-
20-24	-	5	0.0000	0.0000	-
25-29	-	494	0.0000	0.0000	-
30-34	2	1,747	0.0011	0.0002	-
35-39	-	2,217	0.0000	0.0002	-
40-44	2	2,330	0.0009	0.0004	1
45-49	3	2,325	0.0013	0.0005	1
50-54	3	2,563	0.0012	0.0009	2
55-59	10	2,377	0.0042	0.0016	4
60-64	13	1,780	0.0073	0.0020	4
65-69	-	-	N/A	0.0016	-
70-74	-	-	N/A	0.0014	-
75 and over	-	-	N/A	0.0014	-
Totals	33	15,838	0.0021	0.0008	12

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Public Schools Non-State Disability Experience during Calendar Year 2022

Male Disability Experience

Age	Disabilities	Exposure	Crude Rates	Current Rates	Expected Disabilities
Under 20	-	-	N/A	0.0001	-
20-24	-	-	N/A	0.0001	-
25-29	-	314	0.0000	0.0001	-
30-34	-	1,685	0.0000	0.0001	-
35-39	-	2,269	0.0000	0.0001	-
40-44	-	2,870	0.0000	0.0002	-
45-49	1	3,080	0.0003	0.0003	1
50-54	4	3,155	0.0013	0.0012	4
55-59	3	1,857	0.0016	0.0016	3
60-64	-	607	0.0000	0.0028	2
65-69	-	-	N/A	0.0040	-
70-74	-	-	N/A	0.0041	-
75 and over	-	-	N/A	0.0041	-
Totals	8	15,837	0.0005	0.0006	10

Female Disability Experience

Age	Disabilities	Exposure	Crude Rates	Current Rates	Expected Disabilities
Under 20	-	-	N/A	0.0001	-
20-24	-	1	0.0000	0.0001	-
25-29	-	1,384	0.0000	0.0001	-
30-34	-	5,572	0.0000	0.0001	-
35-39	-	6,602	0.0000	0.0001	-
40-44	3	7,849	0.0004	0.0002	2
45-49	3	7,855	0.0004	0.0008	6
50-54	6	8,338	0.0007	0.0011	9
55-59	14	5,172	0.0027	0.0017	9
60-64	7	1,895	0.0037	0.0024	5
65-69	-	-	N/A	0.0014	-
70-74	-	-	N/A	0.0011	-
75 and over	-	-	N/A	0.0011	-
Totals	33	44,668	0.0007	0.0007	31

The people shown on this page are cases involving \$40.63 disability benefits and includes those who were either active or inactive with pending benefits at the beginning of the year.



University State Disability Experience during Calendar Year 2022

Male Disability Experience

Age	Disabilities	Exposure	Crude Rates	Current Rates	Expected Disabilities
Under 20	-	-	N/A	0.0000	-
20-24	-	-	N/A	0.0000	-
25-29	-	73	0.0000	0.0000	-
30-34	-	347	0.0000	0.0000	-
35-39	-	823	0.0000	0.0000	-
40-44	-	1,152	0.0000	0.0001	-
45-49	-	1,184	0.0000	0.0002	-
50-54	-	1,252	0.0000	0.0004	-
55-59	2	1,044	0.0019	0.0012	1
60-64	1	702	0.0014	0.0011	1
65-69	-	-	N/A	0.0014	-
70-74	-	-	N/A	0.0012	-
75 and over	-	-	N/A	0.0012	-
Totals	3	6,577	0.0005	0.0003	2

Female Disability Experience

Age	Disabilities	Exposure	Crude Rates	Current Rates	Expected Disabilities
Under 20	-	-	N/A	0.0001	-
20-24	-	-	N/A	0.0001	-
25-29	-	144	0.0000	0.0001	-
30-34	-	720	0.0000	0.0001	-
35-39	-	1,237	0.0000	0.0004	-
40-44	-	1,541	0.0000	0.0005	1
45-49	-	1,408	0.0000	0.0004	1
50-54	1	1,447	0.0007	0.0009	1
55-59	1	1,217	0.0008	0.0013	2
60-64	2	794	0.0025	0.0020	2
65-69	-	-	N/A	0.0013	-
70-74	-	-	N/A	0.0011	-
75 and over	-	-	N/A	0.0011	-
Totals	4	8,508	0.0005	0.0008	7

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Protective without Social Security Non-State Disability Experience during Calendar Year 2022

Male and Female Disability Experience

Age	Disabilities	Exposure	Crude Rates	Current Rates	Expected Disabilities
Under 20	-	-	N/A	0.0003	-
20-24	-	-	N/A	0.0003	-
25-29	-	102	0.0000	0.0003	-
30-34	-	337	0.0000	0.0003	-
35-39	-	424	0.0000	0.0004	-
40-44	-	435	0.0000	0.0006	-
45-49	-	421	0.0000	0.0012	1
50-54	4	335	0.0119	0.0084	3
55-59	-	-	N/A	0.0012	-
60-64	-	-	N/A	0.0012	-
65-69	-	-	N/A	0.0012	-
70-74	-	-	N/A	0.0012	-
75 and over	-	-	N/A	0.0012	-
Totals	4	2,054	0.0019	0.0019	4

The people shown on this page are cases involving \$40.63 disability benefits and includes those who were either active or inactive with pending benefits at the beginning of the year.

Protective with Social Security Non-State Disability Experience during Calendar Year 2022

Male and Female Disability Experience

Age	Disabilities	Exposure	Crude Rates	Current Rates	Expected Disabilities
Under 20	-	-	N/A	0.0002	-
20-24	-	-	N/A	0.0002	-
25-29	-	574	0.0000	0.0002	-
30-34	-	1,401	0.0000	0.0002	-
35-39	2	1,636	0.0012	0.0003	1
40-44	3	1,572	0.0019	0.0004	1
45-49	8	1,519	0.0053	0.0006	1
50-54	3	1,118	0.0027	0.0010	1
55-59	-	-	N/A	0.0224	-
60-64	-	-	N/A	0.0240	-
65-69	-	-	N/A	0.0016	-
70-74	-	-	N/A	0.0016	-
75 and over	-	-	N/A	0.0016	-
Totals	16	7,820	0.0020	0.0005	4

The people shown on this page are cases involving \$40.63 disability benefits and includes those who were either active or inactive with pending benefits at the beginning of the year.

Protective with Social Security State Disability Experience during Calendar Year 2022

Male and Female Disability Experience

Age	Disabilities	Exposure	Crude Rates	Current Rates	Expected Disabilities
Under 20	-	-	N/A	0.0002	-
20-24	-	12	0.0000	0.0002	-
25-29	-	333	0.0000	0.0002	-
30-34	-	780	0.0000	0.0002	-
35-39	-	869	0.0000	0.0004	-
40-44	-	1,057	0.0000	0.0005	1
45-49	3	1,020	0.0029	0.0008	1
50-54	3	865	0.0035	0.0013	1
55-59	-	-	N/A	0.0280	-
60-64	-	-	N/A	0.0300	-
65-69	-	-	N/A	0.0020	-
70-74	-	-	N/A	0.0020	-
75 and over	-	-	N/A	0.0020	-
Totals	6	4,936	0.0012	0.0006	3

The people shown on this page are cases involving \$40.63 disability benefits and includes those who were either active or inactive with pending benefits at the beginning of the year.

Executive and Elected Non-State Disability Experience during Calendar Year 2022

Male and Female Disability Experience

Age	Disabilities	Exposure	Crude Rates	Current Rates	Expected Disabilities
Under 20	-	-	N/A	0.0000	-
20-24	-	-	N/A	0.0000	-
25-29	-	-	N/A	0.0000	-
30-34	-	7	0.0000	0.0000	-
35-39	-	16	0.0000	0.0001	-
40-44	-	31	0.0000	0.0001	-
45-49	-	33	0.0000	0.0002	-
50-54	-	68	0.0000	0.0003	-
55-59	-	75	0.0000	0.0012	-
60-64	-	34	0.0000	0.0011	-
65-69	-	-	N/A	0.0009	-
70-74	-	-	N/A	0.0009	-
75 and over	-	-	N/A	0.0009	-
Totals	-	264	N/A	N/A	-

The people shown on this page are cases involving \$40.63 disability benefits and includes those who were either active or inactive with pending benefits at the beginning of the year.

Executive and Elected State Disability Experience during Calendar Year 2022

Male and Female Disability Experience

Age	Disabilities	Exposure	Crude Rates	Current Rates	Expected Disabilities
Under 20	-	-	N/A	0.0000	-
20-24	-	-	N/A	0.0000	-
25-29	-	-	N/A	0.0000	-
30-34	-	6	0.0000	0.0000	-
35-39	-	42	0.0000	0.0001	-
40-44	-	51	0.0000	0.0001	-
45-49	-	66	0.0000	0.0002	-
50-54	-	95	0.0000	0.0003	-
55-59	-	104	0.0000	0.0012	-
60-64	-	33	0.0000	0.0011	-
65-69	-	-	N/A	0.0009	-
70-74	-	-	N/A	0.0009	-
75 and over	-	-	N/A	0.0009	-
Totals	-	397	N/A	N/A	-

The people shown on this page are cases involving \$40.63 disability benefits and includes those who were either active or inactive with pending benefits at the beginning of the year.

General Non-State Pay Increase Assumption during Calendar Year 2022

Service-Based Pay Increase Experience

Service Group		Total % Increase	
Beginning of Year	Number	Actual	Expected
1-5	30,108	11.86 %	6.45 %
6-10	18,075	6.28 %	4.90 %
11-15	10,026	5.56 %	4.25 %
16-20	7,557	4.98 %	4.00 %
21-25	6,562	4.71 %	3.75 %
26-30	3,298	4.21 %	3.50 %
31-35	1,811	4.00 %	3.30 %
36-40	554	3.94 %	3.20 %
Over 40	194	3.21 %	3.10 %
Total	78,185		

General State Pay Increase Assumption during Calendar Year 2022

Service-Based Pay Increase Experience

Service Group		Total % Increase	
Beginning of Year	Number	Actual	Expected
1-5	11,312	18.76 %	6.45 %
6-10	8,991	8.32 %	4.90 %
11-15	4,982	7.83 %	4.25 %
16-20	3,607	7.17 %	4.00 %
21-25	3,228	5.91 %	3.75 %
26-30	1,669	5.07 %	3.50 %
31-35	1,082	4.66 %	3.30 %
36-40	295	3.78 %	3.20 %
Over 40	101	4.34 %	3.10 %
Total	35,267		

Public Schools Non-State Pay Increase Assumption during Calendar Year 2022

Service-Based Pay Increase Experience

Service Group		Total % Increase	
Beginning of Year	Number	Actual	Expected
1-5	14,977	12.30 %	8.60 %
6-10	14,953	5.29 %	6.40 %
11-15	11,461	5.08 %	5.10 %
16-20	10,841	3.85 %	4.00 %
21-25	10,585	3.22 %	3.35 %
26-30	6,530	2.79 %	3.20 %
31-35	2,516	2.45 %	3.15 %
36-40	392	2.26 %	3.10 %
Over 40	43	5.99 %	3.05 %
Total	72,298		

University State Pay Increase Assumption during Calendar Year 2022

Service-Based Pay Increase Experience

Service Group		Total % Increase	
Beginning of Year	Number	Actual	Expected
1-5	5,778	13.29 %	6.00 %
6-10	5,042	2.28 %	5.50 %
11-15	3,482	1.60 %	5.00 %
16-20	2,527	0.90 %	4.50 %
21-25	2,078	(0.15)%	3.95 %
26-30	903	(0.20)%	3.80 %
31-35	519	(0.93)%	3.60 %
36-40	189	(1.32)%	3.20 %
Over 40	76	(2.09)%	3.10 %
Total	20,594		

Protective with Social Security Non-State Pay Increase Assumption during Calendar Year 2022

Male and Female Service-Based Pay Increase Experience

Service Group		Total % Increase	
Beginning of Year	Number	Actual	Expected
1-5	2,616	17.80 %	7.75 %
6-10	2,231	6.17 %	4.50 %
11-15	1,674	4.69 %	3.90 %
16-20	1,464	4.36 %	3.80 %
21-25	1,488	4.94 %	3.70 %
26-30	717	4.40 %	3.60 %
31-35	130	4.52 %	3.50 %
36-40	17	4.35 %	3.40 %
Over 40	11	1.87 %	3.20 %
Total	10,348		

Protective with Social Security State Pay Increase Assumption during Calendar Year 2022

Male and Female Service-Based Pay Increase Experience

Service Group		Total % Increase	
Beginning of Year	Number	Actual	Expected
1-5	1,694	25.79 %	7.75 %
6-10	1,590	16.30 %	4.50 %
11-15	791	16.02 %	3.90 %
16-20	974	18.05 %	3.80 %
21-25	1,100	16.93 %	3.70 %
26-30	523	16.52 %	3.60 %
31-35	77	13.37 %	3.50 %
36-40	6	7.14 %	3.40 %
Over 40	3	5.36 %	3.20 %
Total	6,758		

Protective without Social Security Non-State Pay Increase Assumption during Calendar Year 2022

Male and Female Service-Based Pay Increase Experience

Service Group		Total % Increase	
Beginning of Year	Number	Actual	Expected
1-5	495	18.06 %	8.50 %
6-10	549	4.39 %	4.30 %
11-15	462	4.09 %	3.60 %
16-20	391	5.72 %	3.50 %
21-25	433	4.94 %	3.40 %
26-30	214	4.82 %	3.30 %
31-35	51	6.36 %	3.20 %
36-40	-	N/A	3.10 %
Over 40	1	3.63 %	3.05 %
Total	2,596		

Executive and Elected Non-State Pay Increase Assumption during Calendar Year 2022

Service-Based Pay Increase Experience

Service Group		Total % Increase	
Beginning of Year	Number	Actual	Expected
1-5	113	1.23 %	5.50 %
6-10	102	1.69 %	3.20 %
11-15	57	2.88 %	3.20 %
16-20	51	1.68 %	3.20 %
21-25	60	1.52 %	3.20 %
26-30	44	2.14 %	3.20 %
31-35	25	2.28 %	3.20 %
36-40	11	1.81 %	3.20 %
Over 40	10	2.33 %	3.20 %
Total	473		

Executive and Elected State Pay Increase Assumption during Calendar Year 2022

Service-Based Pay Increase Experience

Service Group		Total % Increase	
Beginning of Year	Number	Actual	Expected
1-5	117	14.56 %	5.50 %
6-10	132	4.49 %	3.20 %
11-15	124	3.92 %	3.20 %
16-20	77	3.00 %	3.20 %
21-25	82	4.23 %	3.20 %
26-30	46	3.26 %	3.20 %
31-35	43	4.33 %	3.20 %
36-40	13	4.19 %	3.20 %
Over 40	5	3.97 %	3.20 %
Total	639		

General Males Non-State Normal Retirement Experience during Calendar Year 2022

Male Age-Based Retirement Experience

Age	Retirements	Exposure	Crude Rates	Current Rates	Expected Retirements
57	34	131	0.2595	0.2000	26
58	31	127	0.2441	0.2000	25
59	22	133	0.1654	0.2000	27
60	26	141	0.1844	0.2000	28
61	44	180	0.2444	0.2000	36
62	40	139	0.2878	0.3000	42
63	24	104	0.2308	0.3000	31
64	30	96	0.3125	0.3000	29
65	110	433	0.2540	0.3000	130
66	82	312	0.2628	0.4000	125
67	64	228	0.2807	0.3200	73
68	34	161	0.2112	0.3200	52
69	21	116	0.1810	0.2800	32
70	20	98	0.2041	0.2800	27
71	15	91	0.1648	0.2800	25
72	10	66	0.1515	0.2800	18
73	2	49	0.0408	0.1800	9
74	1	34	0.0294	0.1800	6
Totals	610	2,639	0.2311	0.2808	741
75 & Over	17	138			138
Totals	627	2,777			879

**General Males State
Normal Retirement Experience
during Calendar Year 2022**

Male Age-Based Retirement Experience

Age	Retirements	Exposure	Crude Rates	Current Rates	Expected Retirements
57	16	70	0.2286	0.1900	13
58	17	70	0.2429	0.1900	13
59	13	65	0.2000	0.1900	12
60	13	56	0.2321	0.1900	11
61	21	75	0.2800	0.1900	14
62	25	79	0.3165	0.2800	22
63	18	52	0.3462	0.3000	16
64	7	44	0.1591	0.2500	11
65	58	240	0.2417	0.2700	65
66	40	179	0.2235	0.3500	63
67	27	100	0.2700	0.3200	32
68	19	104	0.1827	0.2100	22
69	16	58	0.2759	0.2100	12
70	15	55	0.2727	0.2100	12
71	8	37	0.2162	0.2100	8
72	3	33	0.0909	0.2100	7
73	4	27	0.1481	0.3000	8
74	1	13	0.0769	0.3000	4
Totals	321	1,357	0.2366	0.2542	345
75 & Over	7	51			51
Totals	328	1,408			396

General Males Non-State Reduced Retirement Experience during Calendar Year 2022

Male Age-Based Reduced Retirement Experience

Age	Retirements	Exposure	Crude Rates	Current Rates	Expected Retirements
55	52	762	0.0682	0.0730	56
56	38	770	0.0494	0.0600	46
57	32	603	0.0531	0.0520	31
58	42	672	0.0625	0.0560	38
59	39	597	0.0653	0.0590	35
60	62	660	0.0939	0.0930	61
61	44	577	0.0763	0.0800	46
62	89	546	0.1630	0.1900	104
63	67	444	0.1509	0.2000	89
64	61	359	0.1699	0.1800	65
Totals	526	5,990	0.0878	0.0953	571

General Males State Reduced Retirement Experience during Calendar Year 2022

Male Age-Based Reduced Retirement Experience

Age	Retirements	Exposure	Crude Rates	Current Rates	Expected Retirements
55	14	347	0.0403	0.0550	19
56	30	377	0.0796	0.0650	25
57	21	325	0.0646	0.0550	18
58	23	267	0.0861	0.0550	15
59	12	270	0.0444	0.0650	18
60	19	275	0.0691	0.0900	25
61	20	235	0.0851	0.1250	29
62	30	234	0.1282	0.1600	37
63	36	193	0.1865	0.1700	33
64	29	187	0.1551	0.2100	39
Totals	234	2,710	0.0863	0.0952	258

General Females Non-State Normal Retirement Experience during Calendar Year 2022

Female Age-Based Retirement Experience

Age	Retirements	Exposure	Crude Rates	Current Rates	Expected Retirements
57	32	153	0.2092	0.1700	26
58	24	153	0.1569	0.1800	28
59	35	168	0.2083	0.1400	24
60	37	156	0.2372	0.2000	31
61	29	163	0.1779	0.1800	29
62	36	140	0.2571	0.2400	34
63	29	138	0.2101	0.2900	40
64	33	102	0.3235	0.2300	23
65	260	953	0.2728	0.3500	334
66	178	575	0.3096	0.3900	224
67	111	370	0.3000	0.3300	122
68	47	241	0.1950	0.3000	72
69	41	183	0.2240	0.2200	40
70	23	168	0.1369	0.2600	44
71	21	125	0.1680	0.2800	35
72	10	79	0.1266	0.3000	24
73	12	74	0.1622	0.3000	22
74	5	45	0.1111	0.1600	7
Totals	963	3,986	0.2416	0.2908	1,159
75 & Over	20	196			196
Totals	983	4,182			1,355

**General Females State
Normal Retirement Experience
during Calendar Year 2022**

Female Age-Based Retirement Experience

Age	Retirements	Exposure	Crude Rates	Current Rates	Expected Retirements
57	28	103	0.2718	0.1900	20
58	15	107	0.1402	0.1900	20
59	23	96	0.2396	0.1900	18
60	20	103	0.1942	0.2100	22
61	20	85	0.2353	0.2500	21
62	29	88	0.3295	0.2900	26
63	24	74	0.3243	0.2800	21
64	24	66	0.3636	0.3100	20
65	73	281	0.2598	0.3100	87
66	48	207	0.2319	0.3600	75
67	42	127	0.3307	0.3300	42
68	22	112	0.1964	0.2500	28
69	14	67	0.2090	0.2700	18
70	10	40	0.2500	0.2900	12
71	13	42	0.3095	0.3400	14
72	3	20	0.1500	0.3300	7
73	4	19	0.2105	0.2400	5
74	3	19	0.1579	0.1800	3
Totals	415	1,656	0.2506	0.2772	459
75 & Over	5	27			27
Totals	420	1,683			486

General Females Non-State Reduced Retirement Experience during Calendar Year 2022

Female Age-Based Reduced Retirement Experience

Age	Retirements	Exposure	Crude Rates	Current Rates	Expected Retirements
55	65	1,359	0.0478	0.0700	95
56	60	1,430	0.0420	0.0700	100
57	62	1,302	0.0476	0.0550	72
58	79	1,314	0.0601	0.0650	85
59	86	1,331	0.0646	0.0700	93
60	116	1,247	0.0930	0.0950	118
61	136	1,242	0.1095	0.0950	118
62	199	1,155	0.1723	0.1600	185
63	190	962	0.1975	0.1800	173
64	162	752	0.2154	0.1800	135
Totals	1,155	12,094	0.0955	0.0971	1,174

General Females State Reduced Retirement Experience during Calendar Year 2022

Female Age-Based Reduced Retirement Experience

Age	Retirements	Exposure	Crude Rates	Current Rates	Expected Retirements
55	28	527	0.0531	0.0600	32
56	37	554	0.0668	0.0800	44
57	22	439	0.0501	0.0600	26
58	30	427	0.0703	0.0900	38
59	38	430	0.0884	0.0750	32
60	28	421	0.0665	0.1000	42
61	33	383	0.0862	0.1100	42
62	65	409	0.1589	0.1800	74
63	65	324	0.2006	0.1950	63
64	47	243	0.1934	0.1800	44
Totals	393	4,157	0.0945	0.1051	437

Public School Males Non-State Normal Retirement Experience during Calendar Year 2022

Male Age-Based Retirement Experience

Age	Retirements	Exposure	Crude Rates	Current Rates	Expected Retirements
57	65	181	0.3591	0.3100	56
58	43	128	0.3359	0.2900	37
59	33	99	0.3333	0.2800	28
60	32	81	0.3951	0.2700	22
61	13	53	0.2453	0.2600	14
62	10	36	0.2778	0.3900	14
63	12	29	0.4138	0.3300	10
64	4	23	0.1739	0.3000	7
65	25	93	0.2688	0.3200	30
66	19	56	0.3393	0.3500	20
67	9	49	0.1837	0.3100	15
68	13	46	0.2826	0.2800	13
69	7	31	0.2258	0.2000	6
70	4	25	0.1600	0.3000	8
71	1	19	0.0526	0.2500	5
72	2	13	0.1538	0.2500	3
73	2	13	0.1538	0.2500	3
74	-	7	0.0000	0.2500	2
Totals	294	982	0.2994	0.2984	293
75 & Over	1	20			20
Totals	295	1,002			313

Public School Males Non-State Reduced Retirement Experience during Calendar Year 2022

Male Age-Based Reduced Retirement Experience

Age	Retirements	Exposure	Crude Rates	Current Rates	Expected Retirements
55	60	581	0.1033	0.1200	70
56	65	554	0.1173	0.1300	72
57	32	296	0.1081	0.1300	38
58	30	244	0.1230	0.1200	29
59	24	182	0.1319	0.1430	26
60	23	159	0.1447	0.1600	25
61	25	150	0.1667	0.1600	24
62	23	116	0.1983	0.2300	27
63	19	92	0.2065	0.2100	19
64	12	90	0.1333	0.2100	19
Totals	313	2,464	0.1270	0.1416	349

Public School Females Non-State Normal Retirement Experience during Calendar Year 2022

Female Age-Based Retirement Experience

Age	Retirements	Exposure	Crude Rates	Current Rates	Expected Retirements
57	133	394	0.3376	0.2750	108
58	99	319	0.3103	0.2750	88
59	86	242	0.3554	0.2600	63
60	65	185	0.3514	0.2900	54
61	43	160	0.2688	0.2700	43
62	45	109	0.4128	0.3600	39
63	26	92	0.2826	0.3100	29
64	20	54	0.3704	0.3000	16
65	72	240	0.3000	0.3850	92
66	45	154	0.2922	0.4400	68
67	27	106	0.2547	0.3100	33
68	13	62	0.2097	0.3000	19
69	13	47	0.2766	0.3000	14
70	7	40	0.1750	0.3200	13
71	6	41	0.1463	0.2500	10
72	1	14	0.0714	0.2500	4
73	2	24	0.0833	0.2500	6
74	-	6	0.0000	0.2500	2
Totals	703	2,289	0.3071	0.3062	701
75 & Over	4	38			38
Totals	707	2,327			739

Public School Females Non-State Reduced Retirement Experience during Calendar Year 2022

Female Age-Based Reduced Retirement Experience

Age	Retirements	Exposure	Crude Rates	Current Rates	Expected Retirements
55	184	1,651	0.1114	0.1100	182
56	156	1,455	0.1072	0.1300	189
57	87	808	0.1077	0.1200	97
58	71	671	0.1058	0.1300	87
59	74	587	0.1261	0.1350	79
60	79	527	0.1499	0.1700	90
61	67	417	0.1607	0.1700	71
62	87	413	0.2107	0.2400	99
63	58	292	0.1986	0.2400	70
64	50	246	0.2033	0.2400	59
Totals	913	7,067	0.1292	0.1448	1,023

University Males State Normal Retirement Experience during Calendar Year 2022

Male Age-Based Retirement Experience

Age	Retirements	Exposure	Crude Rates	Current Rates	Expected Retirements
57	5	13	0.3846	0.1200	2
58	2	23	0.0870	0.1600	4
59	3	20	0.1500	0.0900	2
60	5	28	0.1786	0.1500	4
61	3	30	0.1000	0.0900	3
62	2	34	0.0588	0.1000	3
63	9	42	0.2143	0.1100	5
64	6	44	0.1364	0.1550	7
65	29	191	0.1518	0.1550	30
66	26	137	0.1898	0.2100	29
67	25	116	0.2155	0.1800	21
68	14	89	0.1573	0.1900	17
69	17	71	0.2394	0.1400	10
70	11	52	0.2115	0.2100	11
71	10	47	0.2128	0.2400	11
72	5	36	0.1389	0.2400	9
73	5	27	0.1852	0.2400	6
74	1	23	0.0435	0.2400	6
Totals	178	1,023	0.1740	0.1760	180
75 & Over	14	72			72
Totals	192	1,095			252

University Males State Reduced Retirement Experience during Calendar Year 2022

Male Age-Based Reduced Retirement Experience

Age	Retirements	Exposure	Crude Rates	Current Rates	Expected Retirements
55	5	217	0.0230	0.0330	7
56	9	214	0.0421	0.0330	7
57	9	200	0.0450	0.0400	8
58	6	218	0.0275	0.0400	9
59	5	195	0.0256	0.0440	9
60	6	158	0.0380	0.0480	8
61	11	137	0.0803	0.0480	7
62	12	137	0.0876	0.0700	10
63	21	147	0.1429	0.0830	12
64	11	123	0.0894	0.1150	14
Totals	95	1,746	0.0544	0.0521	91

University Females State Normal Retirement Experience during Calendar Year 2022

Female Age-Based Retirement Experience

Age	Retirements	Exposure	Crude Rates	Current Rates	Expected Retirements
57	4	23	0.1739	0.1000	2
58	6	36	0.1667	0.2000	7
59	7	25	0.2800	0.1200	3
60	12	38	0.3158	0.1400	5
61	7	29	0.2414	0.1300	4
62	8	28	0.2857	0.1500	4
63	5	29	0.1724	0.1900	6
64	3	24	0.1250	0.1700	4
65	34	143	0.2378	0.2100	30
66	29	123	0.2358	0.2500	31
67	24	85	0.2824	0.2500	21
68	14	63	0.2222	0.1800	11
69	7	37	0.1892	0.1650	6
70	12	38	0.3158	0.2200	8
71	10	29	0.3448	0.1650	5
72	5	22	0.2273	0.1700	4
73	5	15	0.3333	0.2100	3
74	3	10	0.3000	0.1400	1
Totals	195	797	0.2447	0.1945	155
75 & Over	4	35			35
Totals	199	832			190

University Females State Reduced Retirement Experience during Calendar Year 2022

Female Age-Based Reduced Retirement Experience

Age	Retirements	Exposure	Crude Rates	Current Rates	Expected Retirements
55	9	255	0.0353	0.0500	13
56	13	263	0.0494	0.0500	13
57	9	251	0.0359	0.0500	13
58	18	239	0.0753	0.0550	13
59	14	209	0.0670	0.0600	13
60	15	199	0.0754	0.0750	15
61	14	175	0.0800	0.0900	16
62	24	169	0.1420	0.1100	19
63	27	147	0.1837	0.1200	18
64	16	104	0.1538	0.1450	15
Totals	159	2,011	0.0791	0.0736	148

Protective with Social Security Non-State Normal Retirement Experience during Calendar Year 2022

Male and Female Age-Based Retirement Experience

Age	Retirements	Exposure	Crude Rates	Current Rates	Expected Retirements
50	34	276	0.1232	0.0600	17
51	32	267	0.1199	0.0800	21
52	35	277	0.1264	0.1100	30
53	83	217	0.3825	0.3400	74
54	43	164	0.2622	0.3200	52
55	36	129	0.2791	0.2600	34
56	16	72	0.2222	0.2300	17
57	24	87	0.2759	0.2700	23
58	17	51	0.3333	0.2100	11
59	13	45	0.2889	0.2300	10
60	8	45	0.1778	0.2200	10
61	4	30	0.1333	0.3000	9
62	8	25	0.3200	0.3500	9
63	3	11	0.2727	0.2700	3
64	4	12	0.3333	0.3000	4
65	6	10	0.6000	0.3400	3
66	6	14	0.4286	0.3500	5
67	1	4	0.2500	0.3500	1
68	-	8	0.0000	0.3500	3
69	2	2	1.0000	0.3500	1
70	1	2	0.5000	1.0000	2
71	-	1	0.0000	1.0000	1
72	-	1	0.0000	1.0000	1
73	-	-	N/A	1.0000	-
74	-	-	N/A	1.0000	-
Totals	376	1,750	0.2149	0.1949	341
75 & Over	-	5			5
Totals	376	1,755			346

**Protective with Social Security State
Normal Retirement Experience
during Calendar Year 2022**

Male and Female Age-Based Retirement Experience

Age	Retirements	Exposure	Crude Rates	Current Rates	Expected Retirements
50	17	150	0.1133	0.0750	11
51	22	184	0.1196	0.0900	17
52	33	203	0.1626	0.1100	22
53	45	155	0.2903	0.2500	39
54	42	173	0.2428	0.2000	35
55	24	119	0.2017	0.2000	24
56	25	118	0.2119	0.2000	24
57	25	89	0.2809	0.2000	18
58	23	83	0.2771	0.2000	17
59	18	71	0.2535	0.2000	14
60	10	73	0.1370	0.2000	15
61	17	55	0.3091	0.2000	11
62	14	53	0.2642	0.2500	13
63	17	39	0.4359	0.2500	10
64	6	31	0.1935	0.3600	11
65	11	25	0.4400	0.3800	10
66	2	9	0.2222	0.3800	3
67	4	9	0.4444	0.3800	3
68	5	10	0.5000	0.3800	4
69	-	3	0.0000	0.3800	1
70	-	-	N/A	1.0000	-
71	-	2	0.0000	1.0000	2
72	-	-	N/A	1.0000	-
73	-	-	N/A	1.0000	-
74	-	-	N/A	1.0000	-
Totals	360	1,654	0.2177	0.1838	304
75 & Over	1	1			1
Totals	361	1,655			305

**Protective without Social Security Non-State
Normal Retirement Experience
during Calendar Year 2022**

Male and Female Age-Based Retirement Experience

Age	Retirements	Exposure	Crude Rates	Current Rates	Expected Retirements
50	1	76	0.0132	0.0300	2
51	5	80	0.0625	0.0350	3
52	6	74	0.0811	0.0450	3
53	26	89	0.2921	0.1700	15
54	17	42	0.4048	0.2400	10
55	10	33	0.3030	0.2900	10
56	12	42	0.2857	0.3200	13
57	7	28	0.2500	0.2300	6
58	6	20	0.3000	0.2700	5
59	3	12	0.2500	0.4000	5
60	4	10	0.4000	0.2500	3
61	3	6	0.5000	0.2500	2
62	2	4	0.5000	0.3100	1
63	-	5	0.0000	0.4000	2
64	1	3	0.3333	0.4000	1
65	1	1	1.0000	0.4000	-
66	-	-	N/A	1.0000	-
67	1	1	1.0000	1.0000	1
68	-	-	N/A	1.0000	-
69	1	1	1.0000	1.0000	1
70	-	-	N/A	1.0000	-
71	1	1	1.0000	1.0000	1
72	-	-	N/A	1.0000	-
73	-	-	N/A	1.0000	-
74	-	-	N/A	1.0000	-
Totals	107	528	0.2027	0.1591	84
75 & Over	-	-	N/A		-
Totals	107	528			84

Executive and Elected Non-State Normal Retirement Experience during Calendar Year 2022

Male and Female Age-Based Retirement Experience

Age	Retirements	Exposure	Crude Rates	Current Rates	Expected Retirements
57	1	4	0.2500	0.1000	-
58	1	2	0.5000	0.1000	-
59	-	5	0.0000	0.1000	1
60	-	7	0.0000	0.1000	1
61	1	4	0.2500	0.1000	-
62	2	16	0.1250	0.1000	2
63	1	16	0.0625	0.1000	2
64	3	14	0.2143	0.1500	2
65	2	11	0.1818	0.1500	2
66	-	9	0.0000	0.1500	1
67	-	5	0.0000	0.1500	1
68	2	8	0.2500	0.1000	1
69	-	3	0.0000	0.1000	-
70	1	4	0.2500	0.1000	-
71	1	5	0.2000	0.1000	1
72	1	4	0.2500	0.1000	-
73	-	1	0.0000	0.2000	-
74	-	4	0.0000	0.2000	1
Totals	16	122	0.1311	0.1230	15
75 & Over	3	20			20
Totals	19	142			35

Executive and Elected State Normal Retirement Experience during Calendar Year 2022

Male and Female Age-Based Retirement Experience

Age	Retirements	Exposure	Crude Rates	Current Rates	Expected Retirements
57	-	7	0.0000	0.1200	1
58	-	2	0.0000	0.1200	-
59	-	4	0.0000	0.1200	-
60	1	6	0.1667	0.1200	1
61	1	6	0.1667	0.1200	1
62	3	21	0.1429	0.1800	4
63	2	21	0.0952	0.1800	4
64	2	19	0.1053	0.1800	3
65	3	18	0.1667	0.1800	3
66	4	14	0.2857	0.1800	3
67	4	13	0.3077	0.1800	2
68	-	7	0.0000	0.1800	1
69	-	10	0.0000	0.1800	2
70	-	10	0.0000	0.1800	2
71	-	7	0.0000	0.1500	1
72	-	7	0.0000	0.1500	1
73	-	1	0.0000	0.1500	-
74	1	3	0.3333	0.1500	-
Totals	21	176	0.1193	0.1648	29
75 & Over	1	14			14
Totals	22	190			43

Executive and Elected Non-State Reduced Retirement Experience during Calendar Year 2022

Male and Female Age-Based Reduced Retirement Experience

Age	Retirements	Exposure	Crude Rates	Current Rates	Expected Retirements
55	1	13	0.0769	0.0250	-
56	-	19	0.0000	0.0250	-
57	-	11	0.0000	0.0250	-
58	1	18	0.0556	0.0250	-
59	-	14	0.0000	0.0250	-
60	1	19	0.0526	0.0500	1
61	1	15	0.0667	0.0500	1
62	-	6	0.0000	0.0100	-
63	-	2	0.0000	0.0100	-
64	-	3	0.0000	0.0100	-
Over 64	-	40	0.0000		
Totals	4	160			2

Executive and Elected State Reduced Retirement Experience during Calendar Year 2022

Male and Female Age-Based Reduced Retirement Experience

Age	Retirements	Exposure	Crude Rates	Current Rates	Expected Retirements
55	1	20	0.0500	0.0600	1
56	1	25	0.0400	0.0600	2
57	-	20	0.0000	0.0600	1
58	3	20	0.1500	0.0600	1
59	-	19	0.0000	0.0600	1
60	3	16	0.1875	0.0600	1
61	2	17	0.1176	0.0600	1
62	1	3	0.3333	0.0600	-
63	1	4	0.2500	0.0300	-
64	1	4	0.2500	0.0300	-
Over 64	1	15	0.0667		
Totals	14	163			8

Death-in-Service during Calendar Year 2022

Male

Age	Deaths	Exposure	Crude Rates	Current Rates	Expected Deaths
Under 20	-	38	0.0000	0.0004	-
20-24	-	2,012	0.0000	0.0003	1
25-29	3	7,649	0.0004	0.0002	2
30-34	2	10,718	0.0002	0.0003	3
35-39	4	12,464	0.0003	0.0004	5
40-44	2	13,433	0.0001	0.0006	8
45-49	8	12,862	0.0006	0.0009	12
50-54	12	13,797	0.0009	0.0015	20
55-59	12	11,241	0.0011	0.0023	26
60-64	10	7,876	0.0013	0.0036	29
65-69	3	2,978	0.0010	0.0060	18
70-74	2	802	0.0025	0.0095	8
75 and over	3	1	3.0000	0.0157	-
Totals	61	95,871	0.0006	0.0014	132

Female

Age	Deaths	Exposure	Crude Rates	Current Rates	Expected Deaths
Under 20	-	56	0.0000	0.0001	-
20-24	-	3,897	0.0000	0.0001	-
25-29	1	14,101	0.0001	0.0001	2
30-34	1	17,838	0.0001	0.0002	3
35-39	2	19,939	0.0001	0.0003	6
40-44	5	21,803	0.0002	0.0004	10
45-49	7	21,274	0.0003	0.0007	14
50-54	8	22,760	0.0004	0.0010	23
55-59	4	20,514	0.0002	0.0014	30
60-64	13	13,855	0.0009	0.0023	32
65-69	5	4,234	0.0012	0.0039	17
70-74	1	888	0.0011	0.0071	6
75 and over	-	-	N/A	0.0138	-
Totals	47	161,159	0.0003	0.0009	143

APPENDIX

GLOSSARY

Glossary

Accrued Service. The service credited under the plan which was rendered before the date of the actuarial valuation.

Actuarial Accrued Liability. The difference between (i) the actuarial present value of future plan benefits, and (ii) the actuarial present value of future normal cost. Sometimes referred to as “accrued liability” or “past service liability.”

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

Actuarial Cost Method. A mathematical budgeting procedure for allocating the dollar amount of the “actuarial present value of future plan benefits” between the actuarial present value of future normal cost and the actuarial accrued liability. Sometimes referred to as the “actuarial funding method.”

Actuarial Equivalent. A series of payments is called an actuarial equivalent of another series of payments if the two series have the same actuarial present value.

Actuarial Present Value. The amount of funds presently required to provide a payment or series of payments in the future. It is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Amortization. Paying off an interest-bearing liability by means of periodic payments of interest and principal, as opposed to paying it off with a lump sum payment.

Experience Gain (Loss). A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions during the period between two actuarial valuation dates, in accordance with the actuarial cost method being used.

Normal Cost. The annual cost assumed, under the actuarial funding method, for current and subsequent plan years. Sometimes referred to as “current service cost.” Any payment toward the unfunded actuarial accrued liability is not part of the normal cost.

Plan Termination Liability. The actuarial present value of future plan benefits based on the assumption that there will be no future accruals for future service and salary. The termination liability will generally be less than the liabilities computed on a “going-concern” basis and is not normally determined in a routine actuarial valuation.

Reserve Account. An account used to indicate that funds have been set aside for a specific purpose and are not generally available for other uses.



Glossary (Concluded)

Unfunded Actuarial Accrued Liability. The difference between the actuarial accrued liability and valuation assets. Sometimes referred to as “unfunded accrued liability.”

Valuation Assets. The value of current plan assets recognized for valuation purposes. Generally based on book value plus a portion of unrealized appreciation or depreciation.