



Public Employees Retirement Association of Minnesota Police & Fire Plan Disability Analysis

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June 9, 2022

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ELIGIBILITY FOR DISABILITY BENEFITS

Eligibility for Disability Benefits

- Unable to perform normal duties as a police officer or fire fighter because of a physical or psychological disability
- Medical evidence, including workers compensation report, is required
- After benefits begin, periodic medical evaluations will be conducted as proof of continuing disability

Eligibility for Disability Benefits

- Duty disability occurs when injured while performing inherently dangerous duties specific to your occupation
- Other disabilities, either on or off the job, are regular disabilities
- Members age 55 or older with 20 or more years of Allowable Service (15 years for regular disability) are not eligible to apply for duty disability benefits.
- For valuation purposes, all disabilities are assumed to be duty disabilities

DUTY DISABILITY BENEFIT PROVISIONS

Duty Disability Benefit Provisions

Benefit Amount Paid to Member

- Benefit is equal to 60.0%, plus an additional 3.00% for each year of service in excess of 20 years, of Average Salary
- Benefit is paid until Normal Retirement Age, (or for 60 months if over 55 with less than 20 years). The retirement benefit is then recalculated but is never lower than the disability benefit.

Duty Disability Benefit Provisions

Death Benefit

- Payable if member dies before age 55 or within 5 years of effective date of disability.
- Surviving spouse receives 60% of salary averaged over prior 6 months.
- Each dependent child receives 10% of salary averaged over prior 6 months, payable until child marries, dies, or attains age 18 (age 23 if full-time student).
- Family benefit maximum is 80% of salary.

DISABILITY EXPERIENCE

Disability – current assumed disability rates

Age	% Becoming Disabled		Age	% Becoming Disabled	
	Male	Female		Male	Female
20	0.110%	0.110%	40	0.535%	0.535%
21	0.110%	0.110%	41	0.540%	0.540%
22	0.120%	0.120%	42	0.546%	0.546%
23	0.120%	0.120%	43	0.572%	0.572%
24	0.130%	0.130%	44	0.588%	0.588%
25	0.143%	0.143%	45	0.620%	0.620%
26	0.168%	0.168%	46	0.635%	0.635%
27	0.182%	0.182%	47	0.735%	0.735%
28	0.182%	0.182%	48	0.835%	0.835%
29	0.195%	0.195%	49	0.935%	0.935%
30	0.208%	0.208%	50	0.950%	0.950%
31	0.208%	0.208%	51	1.041%	1.041%
32	0.221%	0.221%	52	1.140%	1.140%
33	0.238%	0.238%	53	1.219%	1.219%
34	0.261%	0.261%	54	1.278%	1.278%
35	0.342%	0.342%	55*	1.300%	1.300%
36	0.420%	0.420%	56*	1.300%	1.300%
37	0.528%	0.528%	57*	1.300%	1.300%
38	0.529%	0.529%	58*	1.300%	1.300%
39	0.530%	0.530%	59*	1.300%	1.300%
			60-69*	1.300%	1.300%

For the annual valuation, all disabilities are assumed to be duty related.

** Disability retirements are assumed to continue until the earlier of age 55 with 20 years of service or age 70.*

Disability Experience – pre-2019

- The last experience study, dated July 14, 2020, analyzed experience from July 1, 2015 to June 30, 2019.
 - The actual number of disabilities during the period was 32% more than predicted by the assumptions in effect at that time
 - As a result, assumed disability rates were increased, effective with the July 1, 2021 valuation, to the rates shown on the previous page

Disability Experience – post-2019

- Disability retirements have continued their upward trend
- The 2021 valuation reflected a significant actuarial loss due to more disabilities than expected
- Disability experience shown on the following pages reflects data provided by PERA
 - Valuation data through July 1, 2021
 - Disability applicants for the period July 1, 2021 to January 31, 2022

Disability Experience

All Ages

Valuation Year	Expected Number of Disability Retirements*	Actual Number of Disability Retirements	Actual / Expected
July 1, 2015 – June 30, 2016	57.75	70	121.2%
July 1, 2016 – June 30, 2017	58.96	69	117.0%
July 1, 2017 – June 30, 2018	59.97	58	96.7%
July 1, 2018 – June 30, 2019	60.87	88	144.6%
July 1, 2019 – June 30, 2020	61.48	103	167.5%
July 1, 2020 – June 30, 2021	62.32	229	367.5%
July 1, 2021 – January 31, 2022	36.91 (63.28 over 12 months)	142	384.7%
Total			
July 1, 2015 – January 31, 2022	398.26	759	190.6%
July 1, 2018 – January 31, 2022	221.58	562	253.6%
July 1, 2020 – January 31, 2022	99.23	371	373.9%

* Based on July 1, 2021 valuation assumption



Disability Experience by Age Group

July 1, 2018 to January 31, 2022

Age Group	Expected Number of Disability Retirements*	Actual Number of Disability Retirements	Actual / Expected
20-24	1.24	1	80.5%
25-29	8.30	20	241.1%
30-34	14.16	37	261.3%
35-39	35.43	91	256.9%
40-44	37.85	116	306.5%
45-49	53.30	132	247.6%
50-54	68.85	140	203.4%
55-59	2.10	21	995.6%
60-64	0.35	4	1,146.7%
Total			
July 1, 2018 – January 31, 2022	221.58	562	253.6%

* Based on July 1, 2021 valuation assumption

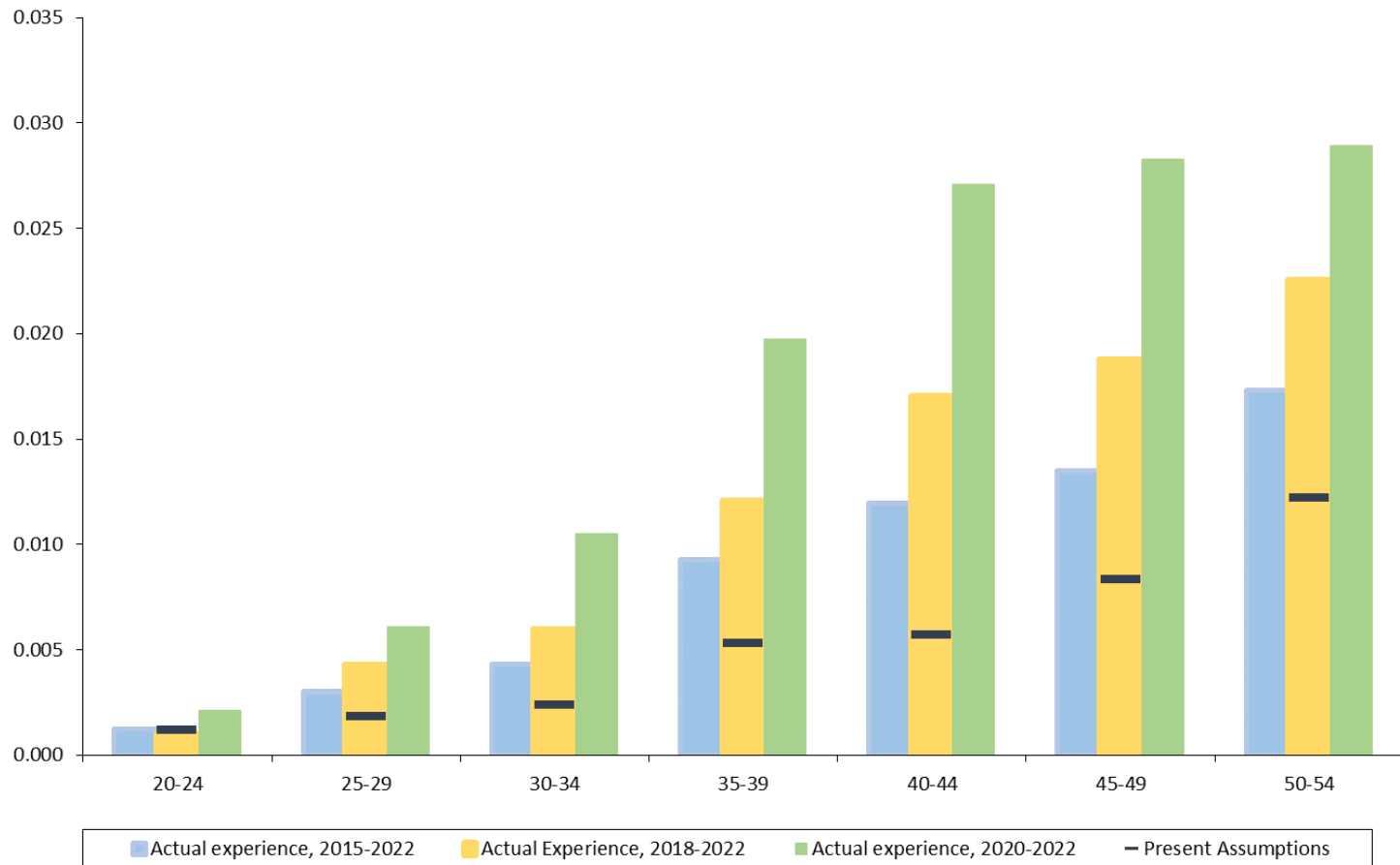
Disability Experience by Age Group

July 1, 2020 to January 31, 2022

Age Group	Expected Number of Disability Retirements*	Actual Number of Disability Retirements	Actual / Expected
20-24	0.59	1	170.5%
25-29	3.78	13	344.1%
30-34	6.29	29	460.7%
35-39	15.82	66	417.1%
40-44	16.82	82	487.5%
45-49	22.50	84	373.3%
50-54	31.50	82	260.3%
55-59	1.58	12	761.3%
60-64	0.35	2	573.3%
Total			
July 1, 2020 – January 31, 2022	99.23	371	373.9%

* Based on July 1, 2021 valuation assumption

Actual vs. Assumed Disability Rate



IMPACT ON VALUATION RESULTS

Scenarios Analyzed

- Recognize actual experience through January 31, 2022
 - Based on disability applications for the period July 1, 2021 to January 31, 2022.
 - Members who applied for disability were treated as actual disability retirements
- Analyze impact of higher future disability rates
 - 150% of current rates
 - 250% of current rates
 - 350% of current rates

Public Employees Police and Fire Plan

Impact of Change in Interest Rate (Market Value of Assets)

\$ in Billions, Contributions as % of Pay	Valuation	Reflects Change in Interest Rate			
	Results				
<i>Discount Rate:</i>	7.5%	7.0%	6.5%	6.0%	
<i>Amortization Period:</i>	27 years*	27 years	27 years	27 years	
Present Value of Benefits	\$ 12.8	\$ 13.8	\$ 14.9	\$ 16.2	
Actuarial Accrued Liability	\$ 10.8	\$ 11.5	\$ 12.2	\$ 13.0	
Market Value of Assets	11.4	11.4	11.4	11.4	
Unfunded Actuarial Accrued Liability	(0.6)	0.1	0.8	1.6	
Funding Ratio	105.6%	99.6%	93.7%	87.9%	
Normal Cost plus Expenses, % of Pay	20.44%	22.96%	25.88%	29.29%	
Amortization of Unfunded Liability, % of Pay	(3.32%)	0.28%	4.03%	7.75%	
Total Required Contribution, % of Pay	17.12%	23.24%	29.91%	37.04%	
Employee, Employer and State Contributions	31.84%	31.84%	31.84%	31.84%	
Contribution Sufficiency/(Deficiency)	14.72%	8.60%	1.93%	(5.20%)	

* Per Minnesota Statute 356.215, Subdivision 11, the amortization period is extended to 30 years if the plan is fully funded.



Public Employees Police and Fire Plan

Impact of Change in Assumed Disability Retirements (Market Value of Assets)

\$ in Billions, Contributions as % of Pay	Results at 7.0% Interest, no other changes	Results at 7.0%, with post-7/1/2021 experience*	Results at 7.0%, with post 7/1/2021 experience and Higher Disability Rates*		
<i>Discount Rate:</i>	7.0%	7.0%	7.0%	7.0%	7.0%
<i>Disability Rates:</i>	No Change	No Change	150%	250%	350%
<i>Amortization Period:</i>	27 years	27 years	27 years	27 years	27 years
Present Value of Benefits	\$ 13.8	\$ 13.8	\$ 13.9	\$ 14.0	\$ 14.1
Actuarial Accrued Liability	\$ 11.5	\$ 11.5	\$ 11.5	\$ 11.5	\$ 11.5
Market Value of Assets	11.4	11.4	11.4	11.4	11.4
Unfunded Actuarial Accrued Liability	0.1	0.1	0.1	0.1	0.1
Funding Ratio	99.6%	99.1%	99.2%	99.3%	99.3%
Normal Cost plus Expenses, % of Pay	22.96%	22.96%	24.21%	26.74%	29.27%
Amortization of Unfunded Liability, % of Pay	0.28%	0.56%	0.53%	0.47%	0.43%
Total Required Contribution, % of Pay	23.24%	23.52%	24.74%	27.21%	29.70%
Employee, Employer and State Contributions	31.84%	31.84%	31.84%	31.84%	31.84%
Contribution Sufficiency/(Deficiency)	8.60%	8.32%	7.10%	4.63%	2.14%

*Reflects actual disability applications through January 2022



Public Employees Police and Fire Plan

Impact of Change in Assumed Disability Retirements (Market Value of Assets)

\$ in Billions, Contributions as % of Pay	Results at 6.5% Interest, no other changes	Results at 6.5%, with post-7/1/2021 experience*	Results at 6.5%, with post 7/1/2021 experience and Higher Disability Rates*		
<i>Discount Rate:</i>	6.5%	6.5%	6.5%	6.5%	6.5%
<i>Disability Rates:</i>	No Change	No Change	150%	250%	350%
<i>Amortization Period:</i>	27 years	27 years	27 years	27 years	27 years
Present Value of Benefits	\$ 14.9	\$ 14.9	\$ 15.0	\$ 15.1	\$ 15.2
Actuarial Accrued Liability	\$ 12.2	\$ 12.2	\$ 12.2	\$ 12.2	\$ 12.2
Market Value of Assets	11.4	11.4	11.4	11.4	11.4
Unfunded Actuarial Accrued Liability	0.8	0.8	0.8	0.8	0.8
Funding Ratio	93.7%	93.2%	93.3%	93.4%	93.5%
Normal Cost plus Expenses, % of Pay	25.88%	25.88%	27.21%	29.88%	32.56%
Amortization of Unfunded Liability, % of Pay	4.03%	4.31%	4.27%	4.20%	4.13%
Total Required Contribution, % of Pay	29.91%	30.19%	31.48%	34.08%	36.69%
Employee, Employer and State Contributions	31.84%	31.84%	31.84%	31.84%	31.84%
Contribution Sufficiency/(Deficiency)	1.93%	1.65%	0.36%	(2.24%)	(4.85%)

*Reflects actual disability applications through January 2022



Public Employees Police and Fire Plan

Impact of Change in Assumed Disability Retirements (Market Value of Assets)

\$ in Billions, Contributions as % of Pay	Results at 6.0% Interest, no other changes	Results at 6.0%, with post-7/1/2021 experience*	Results at 6.0%, with post 7/1/2021 experience and Higher Disability Rates*		
<i>Discount Rate:</i>	6.0%	6.0%	6.0%	6.0%	6.0%
<i>Disability Rates:</i>	No Change	No Change	150%	250%	350%
<i>Amortization Period:</i>	27 years	27 years	27 years	27 years	27 years
Present Value of Benefits	\$ 16.2	\$ 16.2	\$ 16.3	\$ 16.4	\$ 16.5
Actuarial Accrued Liability	\$ 13.0	\$ 13.0	\$ 13.0	\$ 13.0	\$ 13.0
Market Value of Assets	11.4	11.4	11.4	11.4	11.4
Unfunded Actuarial Accrued Liability	1.6	1.6	1.6	1.6	1.6
Funding Ratio	87.9%	87.5%	87.6%	87.7%	87.8%
Normal Cost plus Expenses, % of Pay	29.29%	29.29%	30.69%	33.52%	36.38%
Amortization of Unfunded Liability, % of Pay	7.75%	8.03%	7.98%	7.89%	7.80%
Total Required Contribution, % of Pay	37.04%	37.32%	38.67%	41.41%	44.18%
Employee, Employer and State Contributions	31.84%	31.84%	31.84%	31.84%	31.84%
Contribution Sufficiency/(Deficiency)	(5.20%)	(5.48%)	(6.83%)	(9.57%)	(12.34%)

*Reflects actual disability applications through January 2022



Comments and Observations

- Although rates of termination and retirement are unchanged in our analysis, a result of increasing the number of disability retirements is that there are fewer retirements and terminations, due to lower numbers of active members remaining

Comments and Observations

- There is currently a separate mortality assumption for disability retirements. Will increased disability experience lead to different mortality experience and expectations?
- Life expectancy of a 55 year old male based on current assumptions
 - Healthy mortality table – 85.5 years
 - Disabled mortality table – 83.7 years
- If we apply the current healthy mortality table to future disability retirements, liabilities and contribution requirements increase modestly

Disclaimers

- The calculations are based upon assumptions regarding future events, which may or may not materialize. They are also based upon the data, assumptions, methods and Plan provisions that are outlined in the Public Employees Police and Fire Plan 2021 funding valuation report, unless noted otherwise.
- If you have reason to believe that the assumptions that were used are unreasonable, that the plan provisions are incorrectly described, that important plan provisions relevant to this proposal are not described, or that conditions have changed since the calculations were made, you should contact the authors of this report prior to relying on information in the report.

Disclaimers

- See our letter dated June 24, 2021 for complete information regarding GRS' Capital Market Assumption analysis.
- Minnesota Statute 356.215 allows for the potential extension of the statutory amortization period when the accrued liability increases due to a change in actuarial assumptions. We have not applied an extension of the amortization period, if any applies, in these estimates.