



Office of the State Actuary

“Supporting financial security for generations.”

2024 VFF RELIEF EXPERIENCE STUDY

November 2024

This communication documents the results of an actuarial experience study on the assumptions related to relief benefits for the Volunteer Fire Fighters’ and Reserve Officers’ (VFF) Relief and Pension Fund. The primary purpose of this experience study is to evaluate the reasonableness of the current relief assumptions by comparing them to the actual experience of the plan and to determine if any adjustments are needed to the assumptions using our professional judgement.

The Office of the State Actuary (“we”) will continue to review these relief assumptions approximately every six years, or sooner if appropriate. In addition, we perform a similar study on the assumptions related to pension benefits on a different review cycle. Please see [our website](#) for more information.

Executive Summary

When studying the VFF relief assumptions, we aimed to balance the complexity of the assumption with its materiality. For reference, as of the [2022 VFF Actuarial Valuation Report](#) (VAVR), relief benefits comprise less than 10% of the VFF plan’s total liability.

The following table provides a high-level summary of the current assumptions used to value relief benefits and the new assumptions we selected as part of this experience study.

Summary of Changes in Assumptions		
Assumption	Current Value	New Value
Healthcare Expenses*	\$165.11 for medical claims. \$11.43 for temporary disability. \$11.00 for physical exams.	\$180 total
Duty-Related Death**	0.5 occurrences per year.	No change
Duty-Related Disability**	0.5 occurrences per year.	No change
Percent Married	65%	No change
Spousal Duty-Benefit Duration	Death benefits paid for spouse’s lifetime. Disability benefits paid for member’s lifetime.	No change
Child Duty-Benefit Load	10% load for death benefits. 5% load for disability benefits.	No change

*Expense amounts represented as annual, per-person values as of 2023. Our new assumption is grown annually with 4% inflation. See the **Healthcare Expenses** section for the inflation rates applied to the current assumptions.

**Modeled as a flat rate of 0.005% per year across all active members.



Please see the remainder of this document for additional details on how we set these assumptions and our actuarial disclosures. See the 2022 VAVR for additional information on the relief benefits.

Actuarial Disclosures and Certification

We prepared this study as of the date shown in the footer for the purposes described above. Readers should not use this study for other purposes. We also advise readers of this study to seek professional guidance as to its content and interpretation and not to rely on this communication without such guidance.

To conduct this study, we used annual valuation data and asset disbursement figures previously provided to us by the Board for Volunteer Fire Fighters and Reserve Officers (BVFF) staff. We also utilized data from the U.S. Bureau of Labor Statistics and U.S. Census Bureau to perform our analysis. We did not perform an audit of this information, but we did assess it for reasonableness. In our opinion, this information is adequate and reasonable for purposes of this study.

Relief benefits were first included in our 2009 VAVR. For some assumptions in this study, that means a limited data history. We continue to work with BVFF staff to collect data on relief benefits. More detailed data improves our assumption-setting process, allowing us to analyze trends in the underlying data and more accurately project future liabilities.

The experience study results summarized in this document involve methods for analyzing past experience and setting new assumptions. We believe that the methods used and the assumptions developed in this study are reasonable and are in conformity with Actuarial Standards of Practice (ASOPs) as of the date of this publication.

This analysis will become outdated with the release of the next relief experience study. Please replace this study with our next study when available.

We prepared this analysis and provided opinions in accordance with Washington State law and accepted ASOPs. The undersigned, with actuarial credentials, meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein and are available to provide extra advice and explanations as needed.

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Appendix

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APPENDIX

Healthcare Expenses

What is the Healthcare Expenses Assumption and How Do We Use It?

The Healthcare Expenses assumption represents the expected annual average per-person amount that BVFF reimburses its members for duty-related medical costs. These medical costs include physician, hospital, and exam fees (the Revised Code of Washington [RCW] 41.24.110), medical treatment (RCW 41.24.220), vocational rehabilitation (RCW 41.24.155), and temporary disability (RCW 41.24.150). We use this assumption to model the total annual healthcare expenses paid by the VFF trust fund to reimburse members.

The Healthcare Expenses assumption combines three separate assumptions from our prior relief experience study – the Medical Claims, Temporary Disability, and Member Physicals assumptions. We made this change primarily for purposes of modeling simplicity.

Data and Assumptions

We analyzed six years of data (2017-2022) to set this assumption. This data came from the annual financial summaries provided by BVFF staff for our actuarial valuations of the plan. We only analyzed this data back to 2017, as that was the first year the financial summaries were itemized into the broad healthcare expense categories noted above.

We also analyzed roughly 30 years of claims data by injury type from BVFF staff. This data served as an additional resource but was not relied on for developing this assumption since it did not capture the full scope of healthcare expenses.

Analysis

The first table below summarizes the actual healthcare expenses reported in BVFF’s annual financial summaries for Fiscal Years 2017 to 2022. These amounts are converted to a per-person basis and grown with medical inflation to 2023. The second table compares these average per-person healthcare expenses to our 2023 assumption.

Healthcare Expenses Summary							
Fiscal Year	2017	2018	2019	2020	2021	2022	Average
Total Healthcare Cost* <i>(Dollars in Thousands)</i>	\$1,542	\$1,078	\$1,588	\$3,407	\$541	\$1,215	\$1,562
Number of Relief Members	11,184	10,785	10,089	9,651	9,290	9,649	10,108
Average Per-Person Cost	\$138	\$100	\$157	\$353	\$58	\$126	\$155
Average Per-Person Cost in 2023 Dollars**	\$162	\$116	\$175	\$372	\$60	\$125	\$168

*Reflects Medical Claims, Temporary Disability, and Member Physicals.

**Calculated using historical medical inflation consistent with the [U.S. Bureau of Labor Statistics' CPI-W all-cities average index](#) (medical care services category).



Average Per-Person Healthcare Expenses in 2023 Dollars	
Fiscal Year	2017-22 Average
Actual	\$168
Expected*	\$188
Actual/Expected Ratio	90%

**Reflects Medical Claims, Temporary Disability, and Member Physicals.*

Our current assumption was high in some years and low in others, but over the six-year period, our current assumption modeled actual experience fairly well.

The annual volatility of actual healthcare expenses is exacerbated by the potential for very large medical claims. For example, in 2020, there was a significant medical claim that cost roughly \$2 million alone. Such large claims are not a regular occurrence, but when they do occur, they notably increase the plan’s annual healthcare expenses.

We anticipate most healthcare expenses will grow annually with inflation. We currently expect medical claims to grow with a medical inflation assumption¹ from our [2022 Public Employees Benefits Board Other Postemployment Benefits](#) valuation. The 2022 medical inflation table currently projects a short-term medical inflation of roughly 6% which trends downward to an ultimate rate of roughly 4% over the next 50 years, yielding a 50-year geometric mean inflation of roughly 4.5%. We expect temporary disability to grow annually with our national economic inflation assumption (currently 2.25%) and member physicals to remain flat due to the presence of a reimbursement amount cap. For reference, medical claims have historically comprised over 75% of healthcare expenses.

Results and Considerations

We set the Healthcare Expenses assumption equal to \$180 per person per year as of 2023 and assume this per-person amount will grow annually by 4% going forward.

The actual per-person healthcare expenses observed over our study period was \$168, in 2023 dollars. Our combined Medical Claims, Temporary Disability, and Member Physicals assumption for 2023 was \$188. We therefore set our rounded Healthcare Expenses assumption between these two rates to acknowledge the lower than assumed healthcare costs over the past six years while also being mindful of the potential for future significant, periodic medical claims.

We applied an inflation assumption to this assumed cost that primarily focuses on the annual expected increase in medical claims given they comprise the majority of VFF’s healthcare expenses. For simplicity, we chose a rounded, flat-rate, annual medical inflation trend of 4%. This trend is consistent with the Uniform Medical Plan (UMP) non-Medicare trend table’s

¹This assumption was initially reviewed for our 2009 VAVR by healthcare actuaries at Milliman. They anticipated the growth in medical claims would likely mirror the trend assumption associated with the UMP non-Medicare trend.



ultimate assumption but is lower than the 50-year geometric mean to reflect the lower anticipated inflation for temporary disability and member physicals expenses.

The following table summarizes our new combined Healthcare Expenses assumption, our prior Medical Claims, Temporary Disability, and Member Physicals assumptions, and our annual inflation expectations for these assumptions.

Assumption Summary			
	Assumption	Per-Person Rate*	Annual Inflation
New Assumption	Healthcare Expenses	\$180.00	4%
Current Component Assumptions	Medical Claims	\$165.11	Medical**
	Temporary Disability	\$11.43	2.25%
	Member Physicals	\$11.00	0%

*In terms of 2023 dollars.

**UMP Non-Medicare rates.



Duty-Related Death

What is the Duty-Related Death Assumption and How Do We Use It?

The Duty-Related Death assumption represents the average annual number of active members that die while performing VFF duties.

Survivors (or the estate) of active members who suffer a duty-related death receive a one-time lump sum of \$214,000 (plus \$2,000 funeral and burial expenses), as defined under [RCW 41.24.160](#) and [RCW 41.24.230](#). Additionally, a surviving spouse and eligible dependent children would receive monthly benefits. See the **Spousal Duty-Benefit Duration** and **Child Duty-Benefit Load** sections for more information on the spousal and child benefits.

Data and Assumptions

We analyzed 13 years of duty-death data (2010-2022) for this assumption. The data came from the membership files provided annually by BVFF staff for our actuarial valuations of the plan; it includes records of spouses receiving monthly duty-related death benefits. The data does not reflect members who suffered a duty-related death and did not have a survivor, but BVFF staff confirmed that there have not been any recent occurrences of this.

Analysis

The following table compares the average annual number of duty-related deaths over various time-periods to our current assumption. The current assumption was high when compared to the entire study period but modeled the more recent data well.

Average Annual Number of Duty-Related Deaths	
Observed over Entire Study Period (2010-2022)	0.3
Observed over Current Study Period (2017-2022)	0.5
Current Assumption	0.5

Results and Considerations

We chose to make no change to this assumption and will continue to assume an average of approximately 0.5 duty-related deaths per year.

We model this assumption in our valuation software as a likelihood that an active member death is caused by a duty-related event. This likelihood is assumed to be a constant 0.005% per year across all ages, which results in approximately 0.5 expected duty-related deaths per year. We considered an age-based assumption but ultimately decided to use a constant assumption for simplicity and due to the limited number of observed duty-related deaths with which to develop an age-based assumption.

We also considered the impact of a large-scale incident that results in multiple duty-related deaths. However, we did not reflect such an incident in our assumption because we have not observed an event like this in the data and because the occurrence of such an event (e.g., ten duty-related deaths in a single year) is not expected to materially alter plan funding.



Duty-Related Disability

What is the Duty-Related Disability Assumption and How Do We Use It?

The Duty-Related Disability assumption represents the average annual number of active members that suffer a permanent disability while performing VFF duties and receive a disability benefit.

Members who suffer a permanent duty-related disability receive a monthly benefit for their lifetime, as defined under RCW 41.24.150. Additionally, their spouse and eligible dependent children would receive monthly benefits. See the **Spousal Duty-Benefit Duration** and **Child Duty-Benefit Load** sections for more information on the spousal and child benefits.

Data and Assumptions

We analyzed 17 years of duty-disability data (2006-2022) for this assumption. The data came from the membership files provided annually by BVFF staff for our actuarial valuations of the plan; it includes records of members receiving duty-related disability benefits.

Analysis

The following table compares the average annual number of new duty-related disabilities over various time-periods to our current assumption. The current assumption was high when compared to both the entire study period and the current study period.

Average Annual Number of Duty-Related Disabilities	
Observed over Entire Study Period (2006-2022)	0.2
Observed over Current Study Period (2017-2022)	0.0
Current Assumption	0.5

Results and Considerations

We chose to make no change to this assumption and will continue to assume an average of approximately 0.5 duty-related disabilities per year.

We model this assumption in our valuation software as a likelihood that an active member suffers a permanent duty-related disability. This likelihood is assumed to be a constant 0.005% per year across all ages, which results in approximately 0.5 expected duty-related disabilities per year. We considered an age-based assumption but ultimately decided to use a constant assumption for simplicity and due to the limited number of observed duty-related disabilities with which to develop an age-based assumption.

We also considered the impact of a large-scale incident that results in multiple duty-related disabilities. However, we did not reflect such an incident in our assumption because we have not observed an event like this in the data and because the occurrence of such an event (e.g., 10 duty-related disabilities in a single year) is not expected to materially alter plan funding.



Percent Married

What is the Percent Married Assumption and How Do We Use It?

The Percent Married assumption represents the likelihood that a VFF member has a spouse.

A member’s spouse is eligible to receive relief benefits if the member dies or becomes permanently disabled as a result of a duty-related event.

Data and Assumptions

Because BVFF staff does not collect data on marital status, we relied on data from the [U.S. Census Bureau](#). Specifically, we used the Washington State marital data for Calendar Year 2022.

Analysis

The following table summarizes the 2022 Washington State marital data by age band and sex. For our analysis, we focused on ages 35 to 64, because our data showed the average age of duty-related disability and death is about 46 (which compares well to our expected age of 42). The weighted average percent married for ages 35 to 64 was 65% for males and 64% for females.

Washington Marriage Statistics				
Age	Male		Female	
	Number	Percent Married	Number	Percent Married
15-19 years	234,824	0.3%	222,236	0.9%
20-34 years	877,619	28.8%	798,032	36.5%
35-44 years	575,442	62.2%	540,196	63.9%
45-54 years	481,755	66.6%	455,080	65.5%
55-64 years	465,383	67.4%	466,914	61.8%
65+ years	598,703	69.5%	710,439	49.1%

Source: U.S. Census Bureau, 2022 American Community Survey 1-Year Estimates.

Results and Considerations

We chose to make no change to this assumption and will continue to assume 65% of VFF members are married.



Spousal Duty-Benefit Duration

What is the Spousal Duty-Benefit Duration Assumption and How Do We Use It?

The Spousal Duty-Benefit Duration assumption represents the length of time that we expect a spouse to receive relief benefits from the plan.

A spouse is eligible to receive relief benefits if the member dies or becomes permanently disabled as a result of a duty-related event. Relief benefits to the spouse cease when the spouse dies, when the permanently disabled member dies or the spouse divorces the disabled member, or when the surviving spouse remarries. Spouses of duty-related death or duty-related disability members receive monthly benefits, as defined under RCW 41.24.160 and RCW 41.24.150.

Data and Assumptions

Using the annual valuation data files, we can determine when a spousal duty-benefit stops being paid, but we can't always determine the reason. We therefore reached out to BVFF staff, who informed us that a spousal duty-benefit has not been stopped due to divorce or remarriage for at least the past ten years.

This suggests that spousal duty-death benefits are effectively paid until the death of the spouse, and spousal duty-disability benefits are effectively paid until the death of either the spouse or the member. Based on the plan's current mortality assumptions, we assume that a member with disabilities will generally pass away before their spouse.

Results and Considerations

We chose to make no change to this assumption and will continue to assume that spousal duty-death benefits are paid for the duration of the surviving spouse's lifetime and spousal duty-disability benefits are paid for the duration of the member's lifetime.

If we set an assumption for divorce or remarriage, it would lower the relief benefit liabilities, but we expect the impact would be limited.



Child Duty-Benefit Load

What is the Child Duty-Benefit Load Assumption and How Do We Use It?

The Child Duty-Benefit Load assumption represents a percent increase applied to duty-related death and disability annuities. This load is intended to model the potential cost of benefits paid to children of members who incur a duty-related death or disability in the future. Such benefits are paid as a monthly annuity until the child reaches an age of 18 per RCW 41.24.160 and RCW 41.24.150.

Data and Assumptions

We looked at the valuation data used in the **Duty-Related Death** and **Duty-Related Disability** sections and did not observe any dependent children receiving relief benefits during the current study period.

Analysis

Given the limited materiality of the liability associated with these annuities, we model this benefit as a load (in other words, an applied percent increase) to the primary underlying duty-related death and disability annuities.

We reviewed our last experience study, given no new data was available, to compare and assess the continued reasonability of the current load assumption. Below are our key takeaways.

- ❖ We believe our current assumption of increasing the spousal duty-related death benefit by 10% to account for child benefits remains reasonable. We determined this based on the following information.
 - Per RCW 41.24.160 and actual historical inflation, the monthly spousal duty-related death benefit was \$2,226 as of 2023, while the monthly child benefit was \$623, or around 28% of the value.
 - However, 28% is a high watermark of the value of child benefits relative to spousal benefits because not all duty-related death members will have a dependent child. Furthermore, the child benefits are only provided until the age of 18, whereas spousal benefits are provided until the spouse dies or remarries which could be several decades.
 - After considering this, the lower rounded load of 10% still appeared reasonable.
- ❖ We believe our current assumption of increasing the member and spousal duty-related disability benefit by 5% to account for child benefits remains reasonable. We determined this based on the following information.
 - Per RCW 41.24.150 and actual historical inflation, the monthly member duty-related disability benefit was \$2,226 as of 2023. For



members with a spouse (which we assume is the case 65% of the time, per the **Percent Married** assumption), the monthly spousal benefit was \$445 as of 2023. The associated monthly child benefit was \$192, or around 8% of the combined member and spouse benefit, accounting for the probability the member is married.

- However, 8% is a high watermark of the value of the child benefits relative to the combined member and spouse benefits for similar reasons as noted above for the duty-related death load.
- After considering this, the lower rounded load of 5% still appeared reasonable.

Results and Considerations

We chose to make no change to this assumption and will continue to use a 10% duty-related death load and a 5% duty-related disability load to value the liability for future potential dependent child benefits.