

TWO: DEVELOPMENT OF DEMOGRAPHIC ASSUMPTIONS

DISABILITY RATES

What is the Disability Rates Assumption and How Do We Use it?

The Disability Rates assumption represents the probability that an eligible active service individual will experience a disabling incident and select a disability pension benefit immediately. Members that experience a disabling incident may not immediately leave employment, or when they leave, may not immediately retire. This assumption focuses only on members that select a disability pension benefit, the goal of which is to project when members will leave employment and move into disabled retirement. We then use the assumed disablement behavior, along with other assumptions, to estimate how much and for how long members will collect their disabled retirement benefits for purposes of plan funding.

This assumption generally varies by plan and age. However, where appropriate, we set an assumption by combining the experience of similar plans. We also set an assumption that varies by years of service credit where appropriate.

High-Level Takeaways

In general, disabled retirement data available since the Great Recession (2008-2017) showed consistently lower rates of disabled retirement than prior to the recession (1995-2007). In the prior experience study, we had removed 2008-2012 data for PERS, TRS, and SERS Plans 2 and 3 because of impacts from the recession. We removed the recession data because we did not think there was sufficient experience after the recession in which to observe an economic recovery. Economic cycles can impact the selection aspect of disabled retirements because the benefit may be less affordable during poor economic times. We included 2008-2017 data in this study due to the continued trend of lower disabled retirement. As a result, observed rates of disability in the study period were lower than old disability rates, and in general, we lowered our assumed rates.

The following list demonstrates some of the economic and demographic changes that may have impacted disabled retirement behavior – specifically the selection or choice aspect of the benefit – over the last decade:

- ❖ **Life Expectancy** – Washington State employees are living longer than in the past. Members could be deferring disabled retirement to save money and build a larger retirement benefit instead of retiring earlier with a reduced benefit.
- ❖ **Plan 3 Retirement Accounts** – The Great Recession heavily affected Plan 3 Defined Contribution (DC) retirement account balances. When a member experiences a disability, the size of their Plan 3 DC account may impact their decision to choose a disabled retirement benefit. If their DC account is large enough to provide sufficient financial support, members may choose to terminate employment and defer service retirement, rather than choose a disabled retirement benefit. Over the last decade, Plan 3 DC accounts have recovered since the 2008-09 market downturn.
- ❖ **Cost of Health Insurance** – Some members may continue working prior to Medicare eligibility in order to retain employer provided health insurance that is typically cheaper than other options.

Due to data credibility concerns, we made several changes to the disability rates assumption. For all retirement systems, we now use gender-neutral rates. Further, we combined rates for PERS, TRS, and SERS Plan 2, and similarly for Plan 3. Experience shows that Plan 3 members select disabled retirement at lower rates than Plan 2 members, in general. We believe that occurs because Plan 3 members can elect to retire from the defined contribution portion of the plan and defer commencement of their defined benefit. However, we don't have sufficient data to set experience-based rates in Plan 3. To set separate Plan 3 rates, we applied our professional judgment to reflect lower rates of selection of the immediate disability retirement benefit than Plan 2.

While we also observed few disabled retirements in LEOFF Plan 2, PSERS Plan 2, and WSPRS, we did not combine these public safety plans with the other, larger systems because public safety occupations, and many of the systems' disability benefits, are fundamentally different. Likewise, we set rates for LEOFF 2, PSERS Plan 2, and WSPRS separate from each other due to population and benefit structure differences. For example, in PSERS Plan 2, many of its members transferred from PERS so we expect its experience will be similar to that of PERS. However, we expect a different rate of selection between PERS and PSERS due to the more generous disability benefit in PSERS.

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Data and Assumptions

We looked at 23 years of experience study records, from 1995-2017. No special data was added for this assumption, but some data was removed as noted below.

Consistent with prior studies, we removed valuation years 2001 and 2007 because the valuation date changed in those years. Including data for 2001 and 2007 would lead to valuation periods of unequal length. We also removed 2000 data for SERS Plans 2/3 because the plan was created in 2000. SERS experienced relatively few disabled retirements in 2000 compared to subsequent years. We do not believe the year 2000 disability experience is representative of expected long-term experience.

For PERS, TRS, and LEOFF Plans 1, we considered a 1995-2017 study period for setting rates in these closed plans. However, we believe recent rates of disablement are more indicative of future rates of disablement for the relatively small group of remaining actives in these closed plans. Therefore, we relied on data after the end of the last experience study, 2013-2017, to set new assumptions. For LEOFF Plan 2, we excluded data prior to 2005 due to significant changes in benefits during and beyond that year.

Because PSERS is a relatively new system, we do not have sufficient data to set a credible disability rates assumption for PSERS from plan experience. Instead, we relied on the PERS-TRS-SERS Plan 2 disability rates assumption to inform the PSERS Plan 2 assumption and then made subsequent adjustments based on differences in disability benefit provisions between these plans and PSERS.

Additionally, SERS is another relatively new system. However, we were able to gather SERS data prior to the creation of the plan by selectively pulling data for PERS members employed at school districts that would have been eligible for SERS had it been in place at that time.

We set no assumption for disability recovery. In the context of disabled retirement benefits, a recovery represents a member recovering from the incurred disability and returning to work, resulting in a suspension of the benefit. Over the entire study period (1984-2017), we observed very few instances of recovery. We believe an assumption based on this experience would be immaterial to any retirement system.

Law Changes

There were two law changes since the last study that could impact member disability behavior:

- ❖ **HB 2592 (2016)** – Allows disability coverage for LEOFF 2 members that become totally incapacitated as a result of certain federal emergency management service.
- ❖ **SSB 6214 (2018)** – Adds Post-Traumatic Stress Disorder (PTSD) to the list of occupational diseases and creates a rebuttable presumption for LEOFF members that PTSD is an occupational disease.

We have not yet accumulated sufficient experience under HB 2592 or SSB 6214 to update our assumptions. We will continue to monitor the situation and make adjustments as necessary.

General Methodology

For most retirement plans, we calculated the actual disability rate by dividing the number of members that experience a disabling incident and selected a disabled retirement benefit by the total number of members who were ineligible to retire. We assume retirement-eligible members in most plans, if offered the choice would select a service retirement over a disabled retirement. For LEOFF and WSPRS, we included all members regardless of retirement eligibility. In some instances, their tax-free disability benefits may exceed their after-tax service retirement benefits, thus we assume members of these systems may select a disabled retirement benefit over a retirement benefit if presented the option.

We compared the number of actual disablements (observations) to our expected number of disablements based on our old assumed rates. To determine the expected number, we applied the old assumption to the eligible population over the study period, by age. We considered this actual-to-expected measurement on an annual basis and as a whole over the entire study period. This helped us identify trends in the data where the assumption was over or underestimating disabled retirement behavior. In general, to set the new assumed rates, we divided observed disabled retirements by retirement-ineligible active members over five-year age bands. We then considered historical trend experience and applied professional judgment about future expectations to determine our final assumed rates.

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It is important to note that not all eligible members who experience a disabling incident will choose to receive a disability benefit. Some will choose to keep working, while others will choose a traditional service retirement or choose a new career and withdraw their contributions. As noted above, Plan 3 members may elect to retire from their defined contribution portion of their benefit and defer the commencement of their defined benefit. This selection aspect of the disability assumption produces a disconnect between the disabling incident and the decision to retire based on that incident. Many individual factors unrelated to the actual incident may drive a member's decision, such as overall health, job satisfaction, financial security, and the general state of the economy.

We considered an alternate approach of studying disability rates weighted by salary instead of headcount. We created salary-weighted rates by dividing the salary that left the system through disabled retirement by the total salary ineligible for retirement. This approach attempts to set rates that better model the salary leaving the system. We studied PERS using salary-weighted rates because of the large dispersion in member salaries in the system. Overall, we did not see a large enough difference in rates to justify a method change. We decided to maintain our prior approach of using headcount weighted rates and did not pursue the salary-weighted approach in PERS or with other systems.

Results

For most plans, we reduced the disability rates assumption to reflect experience and behavior. In PERS, TRS, and LEOFF Plans 1, we removed disability rates. Nearly all members in these systems are at or near service retirement eligibility and we believe they would select a retirement benefit if they experience a disability in the future. Recent experience also shows very few disabled retirements in PERS, TRS, and LEOFF Plans 1.

We calculated an Actual-to-Expected (A/E) ratio to better understand how our assumptions compare to plan experience in our study period. The "actual" represents the number of disabled retirements we observed during the study period and the "expected" represents the number of disabled retirements our assumption produced based on the number of eligible members. In general, an A/E ratio less than 1.00 indicates lower actual rates of disability relative to our assumption. We see a ratio above 1.00 when members disable at higher rates than we assume.

In the following table, note that the A/E ratio under the old assumptions for PERS, TRS, and LEOFF Plans 1 represents a study period of 2013-2017. The ratio under the new assumptions shows Not Applicable (N/A) because we removed disability rates for these plans. Please see the **Disability Rates Appendix** for additional information on how we set this assumption.

Summary of A/E Ratios		
	Under Current Assumptions	Under New Assumptions
PERS 1	0.63	N/A
PERS 2	0.72	0.86
PERS 3	0.35	0.65
TRS 1	0.78	N/A
TRS 2	1.08	0.86
TRS 3	0.44	0.65
SERS 2	0.73	0.86
SERS 3	0.31	0.65
PSERS 2	0.49	0.48
LEOFF 1	0.00	N/A
LEOFF 2	0.73	0.87
WSPRS 1/2	0.81	0.93