Minnesota Legislative Commission on Pensions and Retirement

Review of July 1, 2019 – June 30, 2023 Experience Study and Proposed Actuarial Assumptions

Minnesota State Retirement System
Judges Retirement Fund

July 10, 2025




VIA ACTUARIAL SOLUTIONS

July 10, 2025

Minnesota Legislative Commission on Pensions and Retirement
Centennial Office Building, 1st Floor
658 Cedar St.
St. Paul, MN 55155

Attn: Susan Lenczewski, Executive Director

Re: Review of MSRS JRF 2019-2023 Actuarial Experience Study

Commission Members:

This report presents our review of the July 1, 2019 – June 30, 2023 actuarial experience study for the Minnesota State Retirement System – Judges Retirement Fund (JRF, or Plan).

This experience study was prepared by the Plan's retained actuary to develop assumptions for the July 1, 2025 actuarial valuation. The proposed assumptions are based on a review of the Plan's economic and demographic experience during the four-year period from July 1, 2019 through June 30, 2023.

The proposed assumptions were approved by MSRS's Board and the Legislative Commission on Pensions and Retirement (LCPR, or Commission) as required by Minnesota Statutes Section 356.215 Subd. 18.

Based on our review of the experience study report, we agree that the proposed actuarial assumptions are reasonable. The basis for this conclusion is described in the rest of this report. We also encourage the LCPR to consider the actuarial methodology update recommended by the Plan's actuary, which would require legislative action.

Purpose of the Study

This study was prepared at the request of the LCPR for the benefit and use of the LCPR and the State of Minnesota. Its sole purpose is to review the experience study and proposed actuarial assumptions and methods used to value the Plan's actuarial liabilities. These liabilities are used to complete various computations for financial reporting and funding/contribution purposes.

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Data Used in the Analysis

The results and recommendations in this report are based on the July 1, 2019 – June 30, 2023 experience study report dated July 16, 2024. Although we have reviewed the experience study for reasonability, we have not audited the underlying data and are relying on its substantial accuracy. If any data supplied is not accurate or complete, our conclusions and recommendations may differ significantly.

Actuarial Certification

To the best of our knowledge, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices.

Upon receipt of the report, the LCPR should notify us if you disagree with any information contained in the report or if you are aware of any information that would affect the results that has not been communicated to us. The report will be deemed final and acceptable to the LCPR unless you immediately notify us otherwise.

The undersigned credentialed actuaries are members of the American Academy of Actuaries and meet the Academy's Qualification Standards to render the actuarial opinion contained herein. We are available to answer questions on the material contained in the report or to provide explanations or further detail, as may be appropriate. We are not aware of any financial interest or relationship that could create a conflict of interest or impair the objectivity of our work.

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Executive Summary

Based on the available data and supporting information, we support the approval of the actuarial assumption changes requested by the Minnesota State Retirement System (MSRS) for the Judges Retirement Fund (JRF, or Plan), as required by Minnesota Statutes 356.215 Subd. 18. The proposed assumptions have already been approved by MSRS's Board and the LCPR.

The proposed assumptions are based on a review of the Plan's recent experience (the four-year period from July 1, 2019 through June 30, 2023) prepared by the Plan's retained actuary. We believe that:

1. The methodology used to develop the assumptions is based on contemporary actuarial methods combined with a careful review of relevant reference data;
2. The recommended assumptions/methods are reasonable estimates of future experience; and
3. The recommended assumptions/methods are appropriate for determining the Plan's actuarial liabilities and calculating contribution rate sufficiency.

The Plan's retained actuary recommended a prescribed actuarial assumption update that we support. Note that this proposed change requires updates to the LCPR Standards. We also have one recommendation for the next actuarial assumption review. The table below summarizes these items.

Actuarial Assumption	Actuary's Notes
Delayed retirement assumption	**GRS recommendation:** Adjust the LCPR's Actuarial Standards section II.D.(4) so the actuary isn't required to assume members currently older than the 100% retirement decrement age (age 70 for this plan) delay retirement by exactly one year. **VIA comment:** We support GRS' recommendation.
Disability incidence assumption	**VIA comment:** Because the expected and actual rates of disability are so low, the Plan could consider eliminating this assumption. This would be a simplification similar to the justification for assuming no members terminate prior to retirement eligibility.

The rest of the report shows our comments for each actuarial assumption proposed by MSRS and their retained actuaries.

Assumption Selection Guidance

Guidance on selecting assumptions is provided by Actuarial Standard of Practice No. 27, Selection of Assumptions for Measuring Pension Obligations (ASOP 27)[1]. When considering relevant assumption data, ASOP 27 outlines a recommended process for identifying and selecting reasonable assumptions. It also describes what it means for an assumption to be "reasonable". This guidance is summarized below.

ASOP 27 Sections 3.2, 3.3, and 3.4 Assumption Selection Process, Identification, and General Considerations	ASOP 27 Section 3.5 Assessing Assumption Reasonability[2]
▪ Consider the purpose of the measurement, the plan provisions and characteristics of the obligations, the relevant benefit contingencies, and the characteristics of the covered group ▪ Evaluate relevant data and other information, including components of the assumption ▪ Consider whether to provide for adverse deviation and how to value provisions that are difficult to measure ▪ Consider the materiality of the assumption to the measurement ▪ Reflect other technical factors such as assumption format, rounding, and subsequent events	▪ Is it appropriate for the measurement's purpose? ▪ Does it consider historical and current data that is relevant as of the measurement date? ▪ Does it reflect expectations about future experience? ▪ Is the assumption significantly optimistic or pessimistic? If so, for what purpose? ▪ Does the assumption fall within a reasonable range, based on the actuary's professional judgement? ▪ Has the actuary considered the combined effect of assumptions?

Some of the most important assumption guidance is found in Section 3.4.1. It states that:

> *"The actuary should take into account the possibility that some historical data may not be appropriate for use in developing assumptions for future periods due to changes in the underlying environment."*

This focus on forward-looking assumptions (instead of solely historical data) recognizes that current and future economic and demographic environments may be significantly different than they were several decades ago when many pension plans were established.

We support relying on forward-looking data instead of purely historical experience. The latter often represents the conditions of a particular time period (the selection of which is subjective) and may not adequately reflect future expectations. Although forward-looking expectations may also be subjective, we believe they provide an important consideration when selecting assumptions.

A final important ASOP 27 theme we'll highlight is that there are a range of reasonable assumptions, and "different actuaries will apply different professional judgment and may choose different reasonable assumptions."[3]

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[1] ASOP 27 was recently revised and effective for actuarial reports issues on or after January 1, 2025. The previous version of ASOP 27 only covered economic assumptions, while the former ASOP 35 covered non-economic (e.g., demographic) assumptions. Since the combined guidance of the prior ASOPs 27 and 35 is substantially similar to guidance in the newly consolidated ASOP 27, our commentary in this report simply refers to the new ASOP 27.

[2] The characteristics of a reasonable assumption in ASOP 27, Section 3.5 are paraphrased as questions here.

[3] ASOP 27, Section 3.5.2

Economic Assumptions

Economic assumptions play a significant role in determining both the estimated amount of projected retiree payments and the “present value” of those payments (i.e., the discounted actuarial liabilities).

Some of these assumptions are based on system-specific experience (e.g., salary merit increases), while others are based on general market expectations (e.g., price inflation). The most important economic assumption is the expected investment return, which is based on a set of capital market assumptions applied to a fund’s specific investment mix.

The remainder of this section provides a summary of each recommended economic assumption, along with our review and commentary on these proposals. These assumptions include:

- Price inflation
- Wage inflation / payroll growth
- Pay increases for merit and seniority
- Investment return

Price Inflation, Wage Inflation, and Payroll Growth

Price inflation is a building block for several of the other economic assumptions. Relevant guidance includes:

- ASOP 27 states that *"The actuary should evaluate appropriate inflation data. These data may include consumer price indices, the implicit price deflator, forecasts of inflation, yields on government securities of various maturities, and yields on nominal and inflation-indexed debt".*
- The 2010 LCPR actuarial standards require assumed price inflation to be disclosed by the retained actuary and that it should be consistent among the assumptions for which it is a component.

The **wage inflation** assumption is developed by adding "real" wage inflation to price inflation. It is used as a building block for the overall salary increase assumption.

The **payroll growth** assumption is important because it is used to amortize the unfunded liability as a level percent of payroll. If the assumption is set too high, then actual contributions could be lower than expected and pension costs would be shifted to future generations of taxpayers.

Relevant guidance includes:

- ASOP 27 recommends that "*the actuary should use an assumption that is consistent with but typically not identical to the compensation increase assumption. One approach to setting the payroll growth assumption may be to reduce the compensation increase assumption by the effect of any assumed merit adjustments"*.
- The LCPR Actuarial Standards have no specific wage inflation or payroll growth guidance for the Plan, other than a payroll growth definition in section VI.B.(3).

Plan actuary's recommendation: Maintain price inflation assumption of 2.25% and current 2.50% wage inflation/payroll growth assumption.

Plan actuary's rationale: The price inflation assumptions were developed in the State Employees Retirement Fund experience study dated June 29, 2023. The payroll growth assumption of 2.50% is based on historical and expected experience. The legislature sets the pay each year to move with general inflation and these increases are independent of age and service.

VIA review of price inflation assumption / wage inflation / payroll growth assumption
We believe the recommended 2.25% price inflation assumption and the recommended 2.50% wage inflation / payroll growth assumption are still reasonable based on the supporting information provided by the Plan actuary. However, some of the price inflation reference data has increased since the prior analysis so we recommend monitoring these assumptions closely until the next experience study. Commentary and detailed analysis can be found in our report reviewing the experience study for MSRS State Employees Retirement Fund dated February 16, 2024.

Pay Increases for Merit and Seniority

Pay increases for merit and seniority are in addition to price and wage inflation. It's an important assumption because members' projected benefits and associated Plan liabilities are based on final average salary at retirement or other termination of employment.

Assumed merit and seniority pay increases are much more system-specific than wage inflation assumptions. Relevant guidance includes:

- ASOP 27 Section 3.9.2 recommends that, when developing compensation increase assumptions, the actuary consider "the plan sponsor's current compensation practice and any contemplated changes" as well as competitive factors, collective bargaining, and compensation volatility.
- The 2010 LCPR actuarial standards section VI.B.(2) provides specific guidance on how overall compensation increases should be analyzed (e.g., only measuring salary changes for members who are active on consecutive valuation dates). The implied merit and seniority factors can then be determined by subtracting the wage inflation assumption from the overall salary increase results.

Plan actuary's recommendation: Continue to assume pay increases at 2.50% per year.

Plan actuary's rationale: This plan does not include merit and seniority pay increases above the payroll growth assumption. The legislature sets the pay increases each year to move with general inflation.

VIA review of merit and seniority pay increase assumption
We believe the recommended pay increase assumption is reasonable, based on the supporting information provided by the Plan actuary.

Investment Return

Review of the investment return assumption was outside the scope of the July 1, 2019 – June 30, 2023 experience study for the JRF. Analysis and conclusions for this item can be found in the State Employees Retirement Fund experience study dated June 29, 2023.

Commentary and detailed analysis can be found in our report reviewing the experience study for MSRS State Employees Retirement Fund dated February 16, 2024.

Demographic Assumptions

Demographic assumptions play a significant role in determining the likelihood of projected retiree payments; when they will start and end; and the resulting "present value" of those payments (i.e., the actuarial liabilities).

Some of these assumptions are based on system-specific experience (e.g., retirement rates) while others may be based on statistics for a larger group (e.g., mortality), especially when the system's data set over the study period isn't large enough to be "credible" on its own.

The remainder of this section provides a summary of each recommended demographic assumption, along with our review and commentary on these proposals. These assumptions include:

- Retirement rates
- Withdrawal (i.e., termination before retirement eligibility)
- Disability
- Mortality
- Miscellaneous and technical assumptions

Retirement

Retirement rates are a key assumption because they determine when members' benefits are expected to begin. This has a substantial effect on liabilities and recommended contributions.

Retirement rates are entirely system-specific and heavily influenced by plan provisions. Relevant guidance includes:

- ASOP 27 recommends the actuary consider job-related factors, plan design and incentives, social insurance programs like Social Security and Medicare, and the availability of other employer plans like savings plans and postretirement health coverage.
- Section II.C.(2) of the LCPR Actuarial Standards requires retirement rates to be based on gender, age and/or years of service, or duration of eligibility unless experience shows otherwise. Section II.D.(4) requires that members active beyond the latest assumed retirement age should be assumed to work one year beyond the valuation date and then retire.
- Section VI.C. of the LCPR Actuarial Standards specifies the process to be followed when the retained actuary evaluates demographic assumptions.

Plan actuary's recommendation:

- Amend the LCPR actuarial standards to remove the required assumption that active members currently at the 100% decrement age or older (age 70 for this plan) will delay retirement and retire one year after the valuation date. Instead, the actuary recommends that the Plan assume these members retire mid-year like other members.
- Increase the rate of assumed 'unreduced retirements' at several ages less than 70.
- Adjustments to reduced early retirement rates at all ages.

Plan actuary's rationale: The proposed rates are adjusted from current rates to reflect observed July 1, 2019 – June 30, 2023 experience. In general, more members are working until they are eligible to receive an unreduced Normal Retirement benefit.

The measurements were prepared on a liability-weighted basis since retirement decisions are often correlated with the value of expected pension benefits.

The Plan actuary also recommends no change to the retirement assumption for terminated vested members[4]. They provide commentary that the effect of this assumption is relatively minor since benefits are approximately actuarially adjusted for any early retirements.

[4] Current assumption is that these members will choose a refund of employee contributions if greater than the actuarial value of a deferred annuity. Those expected to elect an annuity are assumed to defer receipt until normal retirement age.

VIA review of retirement rates
We believe the recommended retirement rates are reasonable based on the supporting information provided by the Plan actuary. The Plan actuary has shown a thoughtful analysis of retirement rate experience. In addition, the proposed amendment to the LCPR Actuarial Standards for the delayed retirement assumption is reasonable. We believe that the Plan actuary's development of proposed retirement rates meets the applicable Actuarial Standards of Practice and the LCPR Actuarial Standards. **However, the LCPR's Actuarial Standards section II.D.(4) will need to be amended to reflect the Plan actuary's proposed retirement assumption for active members currently over the 100% decrement age.**

Withdrawal (i.e., termination before retirement eligibility)

Withdrawal rates are an important assumption because they determine the extent to which members are expected to stay in covered employment and become eligible for benefits. This has a substantial effect on liabilities and contributions.

Withdrawal rates are heavily influenced by plan provisions. Relevant guidance includes:

- ASOP 27 recommends that, when developing withdrawal rates, the actuary consider plan provisions as well as job-related factors like occupation, employment practices, work environment, unionization, hazardous conditions, and location.
- Section II.C.(2) of the LCPR Actuarial Standards requires withdrawal rates to be based on gender, age and/or years of service unless experience shows otherwise.
- Section VI.C. of the LCPR Actuarial Standards specifies the process to be followed when the retained actuary evaluates demographic assumptions.

Plan actuary's recommendation: Continue to assume there are no member terminations prior to retirement eligibility.

Plan actuary's rationale: Proposed rates reflect observed July 1, 2019 – June 30, 2023 experience. In general, there are very few terminations prior to retirement.

VIA review of withdrawal rates
We believe the recommended withdrawal rates are reasonable based on the supporting information provided by the Plan actuary. The Plan actuary provided a reasonable analysis of withdrawal rate experience. We believe that the Plan actuary's development of proposed withdrawal rates meets the applicable Actuarial Standards of Practice and the LCPR Actuarial Standards.

Disability

Rates of disablement and disability recovery are not significant assumptions for Judges as the rates of incidence are low. Relevant guidance for disability rates includes:

- ASOP 27 recommends that, when developing disability rates, the actuary consider:
  - the plan's definition of disability, e.g. whether it's based on the Social Security definition or a less stringent standard, and
  - the potential for recovery. The probability of recovery may be reflected by assuming a lower incidence of disability than the actuary might otherwise assume.
- Section II.C.(2) of the LCPR Actuarial Standards requires disability rates to be based on gender, age and/or type of disability (occupational or not) unless experience shows otherwise. Specific disability rates are not included in Appendix A to the LCPR Actuarial Standards.
- Section VI.C. of the LCPR Actuarial Standards specifies the process to be followed when the retained actuaries evaluate demographic assumptions.

Plan actuary's recommendation: No change to the current assumption.

Plan actuary's rationale: Over the observed period of July 1, 2019 – June 30, 2023 there was one member that left employment due to disability. The expected number of disabilities was 1.3. Because this was close to expected, no updates are recommended to this assumption.

VIA review of disability rates
We believe the recommended disability rates are reasonable, based on the supporting information provided by the Plan actuary. Their continued use of an age-specific table is also appropriate based on the data available. Because the expected and actual rates of disability are low, the Plan could consider eliminating this assumption. This would be a simplification similar to the justification for assuming no members terminate prior to retirement eligibility as described on the prior page.

Mortality

Mortality rates are an important assumption because they determine how long members' benefits are expected to be paid. Depending on plan size, mortality experience may or may not be fully credible. Many systems choose to base their mortality assumption on a published table that is then adjusted to either partially or fully recognize the plan's own experience. Relevant guidance includes:

- ASOP 27 recommends that, when developing mortality rates, the actuary consider:
  - the possible use of different assumptions before and after retirement,
  - the use of a different assumption for disabled lives,
  - the use of different assumptions for participant subgroups and beneficiaries, and
  - the effect of mortality improvement both before and after the measurement date.
- Section II.C.(2) of the LCPR Actuarial Standard requires mortality rates (pre-retirement, post-retirement, and survivor) to be based on gender and age unless experience shows otherwise.
- Section VI.C. of the LCPR Actuarial Standards specifies the process to be followed when the retained actuaries evaluate demographic assumptions.

Plan actuary's recommendation: Plan experience is not considered credible for this Plan. The Plan actuary recommends updating to the Pub-2010 General Mortality Table, Above Median Income rates and projection scale MP-2021 for healthy retirees and active members.

For disabled members, the Plan actuary recommends continued use of the Pub-2010 General Disabled Mortality Table with an update to the projection scale to MP-2021.

Plan actuary's rationale: The plan actuary reviewed the actual experience for the group and found that the General Above Median Income rates were a better fit than the current rates in the General table.

VIA review of mortality rates
We believe the recommended mortality rates are reasonable, based on the supporting information provided by the Plan actuary. The Plan actuary has shown a thorough analysis of mortality rate experience. The proposed rates appear reasonable based on the available data. We also support their recommended generational mortality improvement scale and use of benefit-weighted analysis. We believe that the Plan actuary's development of proposed mortality rates meets the applicable Actuarial Standards of Practice and the LCPR Actuarial Standards. **Appendix A to the LCPR's standards will need to be amended to reflect the new recommendations.**

Miscellaneous and Technical Assumptions

There are several other demographic assumptions used to calculate the actuarial liabilities, but they have less effect on costs than the assumptions previously discussed. The proposed changes to these assumptions have a relatively small effect on liabilities and the recommendations are well supported. **We believe the recommended updates are reasonable based on the supporting information provided by the Plan actuary.** These assumptions and recommended actions are summarized in the table below.

Miscellaneous and Technical Assumptions	Recommendation
Marital status	No change
Age of survivor	Update
Payment form	No change[5]
Actuarial equivalence factors	Update[6]
Missing participant data	Update
Miscellaneous assumptions	
Benefit service calculation	No change
Decrement operation	No change
Decrement timing	No change
Eligibility testing	No change
Forfeitures/contribution refunds	No change
Contribution timing	No change
Pay increase timing	No change
Service credit accruals	No change

[5] Optional payment forms are calculated on an actuarially equivalent basis, so a life annuity is assumed as the standard form of payment for all future retirees. This assumption is appropriate as long as the actuarial equivalence definition in State statutes is updated on a timely basis to reflect changes to the actuarial equivalent interest rate and mortality assumptions.

[6] Although the experience study report only mentions updates to the actuarial equivalence mortality assumption, the retained actuary confirmed that they will be updating the interest rate assumption as well.

Actuarial Methods

The calculation of recommended contributions relies on several actuarial methods for determining the unfunded liability as well as developing an actuarial contribution that is intended to pay down (i.e., "amortize") the unfunded liability. They include:

- Asset valuation method
- Actuarial funding method
- Unfunded liability amortization period and method
- Post-retirement benefit increases
- Projected payroll

Most of these methods are prescribed by State Statute or the LCPR's Actuarial Standards. Selecting some of these methods is also influenced by ASOPs or other guidance, including:

- ASOP 4, Measuring Pension Obligations and Determining Pension Plan Costs or Contributions
- ASOP 44, Selection and Use of Asset Valuation Methods for Pension Valuations
- The Society of Actuaries Report of the Blue Ribbon Panel on Public Pension Plan Funding
- Conference of Consulting Actuaries Public Plans Community - Actuarial Funding Policies and Practices for Public Pension Plans

Although the latter two documents are non-binding for the actuarial profession, they provide useful considerations when selecting actuarial funding methods.

Review of the actuarial methods was outside the scope of the July 1, 2019 – June 30, 2023 experience study for the JRF. Analysis and conclusions for this item can be found in the State Employees Retirement Fund experience study dated June 29, 2023.

Commentary and detailed analysis can be found in our report reviewing the experience study for MSRS State Employees Retirement Fund dated February 16, 2024.

Cost Impact

Section VI.E. of the LCPR's Actuarial Standards specifies that the systems must measure the cost impact of any assumption change. The measurement must present the change in "*the dollar amount of the UAAL, the change in the Actuarial Liability Funded Ratio, the change in the normal cost rate and the change in the UAAL contribution rate.*"

The Standards specify that the assumption changes should be measured in the following order:

1. Mortality
2. Retirement
3. Termination of employment
4. Disability
5. Salary increases
6. Interest rate/investment return assumption
7. Other
8. Payroll growth

MSRS provided an assumption request letter to the LCPR dated January 13, 2025 which lists the proposed assumption changes. They also provided a separate letter from the retained actuary dated July 9, 2024 which summarized the required cost impact measurements.

The cost calculations contained all the required items (e.g., change in funded ratio and normal cost rate) and were presented in the following order:

- Mortality assumption
- Retirement rates and miscellaneous assumptions (e.g., age of survivor, actuarial equivalence, and missing participant data)

The recommended assumption changes are expected to slightly increase Plan liability measurements, decrease funded status, and decrease contribution sufficiency.

We note that the cost calculations reflected one small deviation from the requirements of Section VI.E. of the LCPR's Actuarial Standards:

- The cost impact of items 2 through 8 above were measured in aggregate instead of presented separately.

We do not believe this deviation is meaningful since the overall contribution rate, accrued liability, and funded status changes from the aggregated assumption changes are relatively minor. However, we encourage providing the additional cost impact details in future actuarial experience study reports.