

Presentation on the Actuarial Audit of the
State Teachers Retirement System of Ohio
for Ohio Retirement Study Council

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Agenda

- Major Findings of Actuarial Review
- Actuarial Assumptions
 - Demographic
 - Economic
 - Healthcare
- Actuarial Methods
- Actuarial Liability
- Healthcare Review
- Audit Conclusions

Major Findings

- We believe the numbers are correct
 - Our calculations match Cheiron calculations
 - Although the STRS benefit structure is very complex, the Cheiron calculations captured key provisions accurately
- Improved transparency in the Cheiron reporting is desirable
 - Development of assumptions
 - Disclosure of calculations
- Actuarial Assumptions are reasonable, and have been somewhat revised based on results of recent experience study
 - Review of new assumptions not included in scope of this audit
 - However, brief review indicates no items of concern

Findings of Actuarial Review - Summary

Actuarial Assumptions

- ↳ Reasonable and consistent
- ↳ Some minor concerns

Actuarial Methods

- ↳ Reasonable and consistent
- ↳ Some minor concerns with disclosure

Actuarial Valuation Replication

- ↳ Close match (0.7% on total liability)
- ↳ Reasonable, consistent and accurate

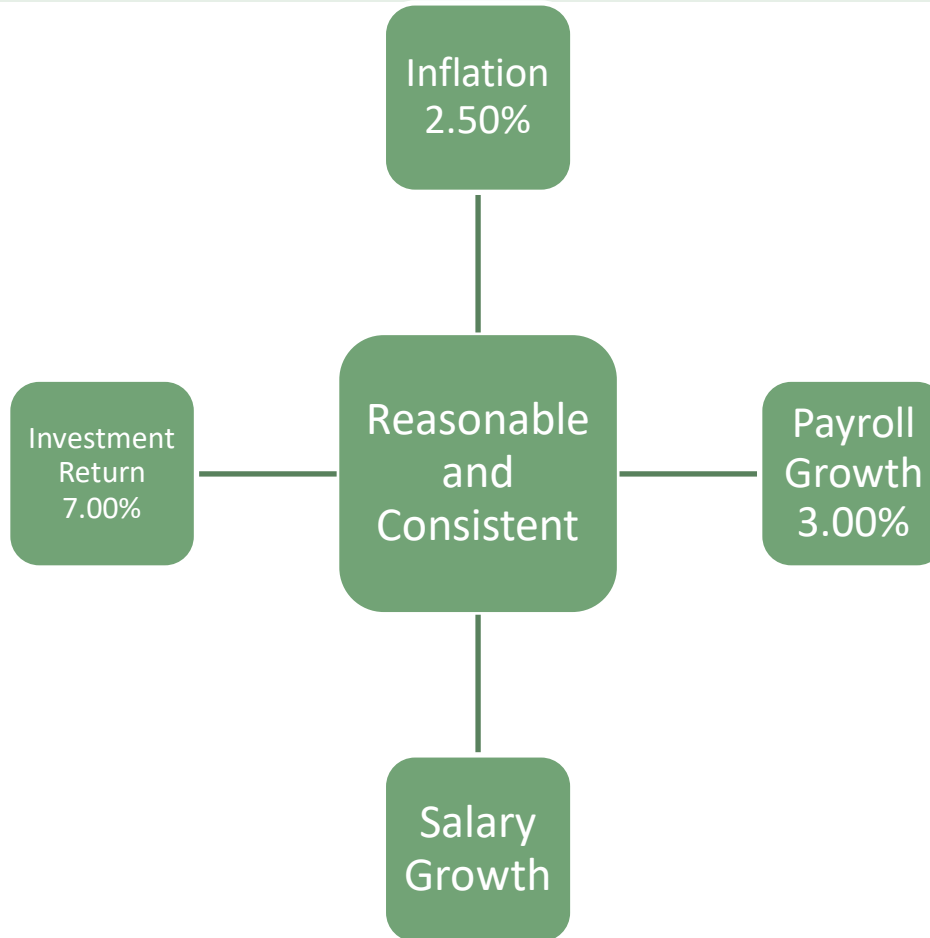
Actuarial Process

- ↳ Unable to precisely verify detailed calculations
- ↳ But overall close replication match suggests confidence in numbers

Demographic Assumptions



Economic Assumptions



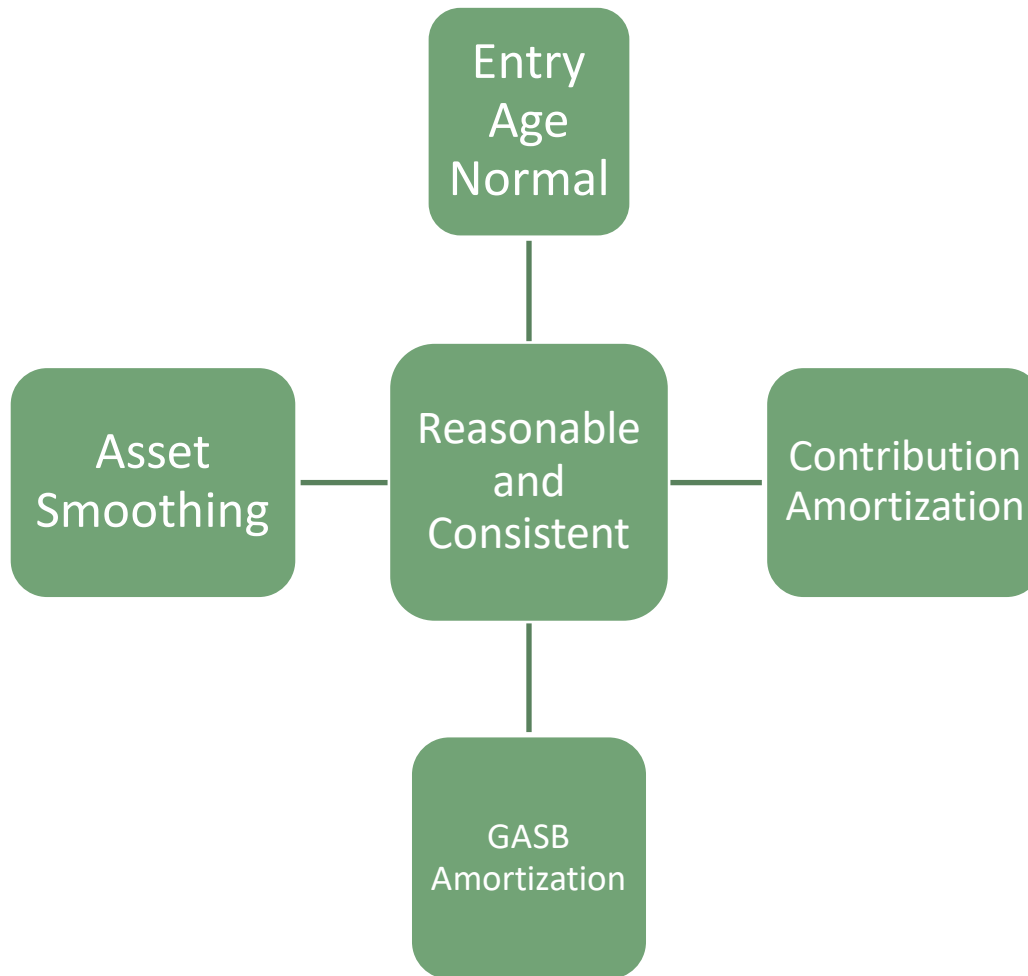
Economic Assumptions

- Investment Return Rate of 7.00%
 - Among the lowest of other systems (range is 6.90%-7.50%)
 - Consistent with current NASRA average of 6.99%
- Inflation Rate of 2.50%
 - Consistent with peers (median is 2.50%)
- Payroll Growth of 3.00%
 - Real wage inflation of 0.50% plus 2.50% inflation
- Salary Growth Rate
 - Reasonable, experience study analyzed inflation-adjusted salary growth appropriately
- Cost Of Living Allowance – None Assumed

Healthcare Assumptions



Actuarial Methods



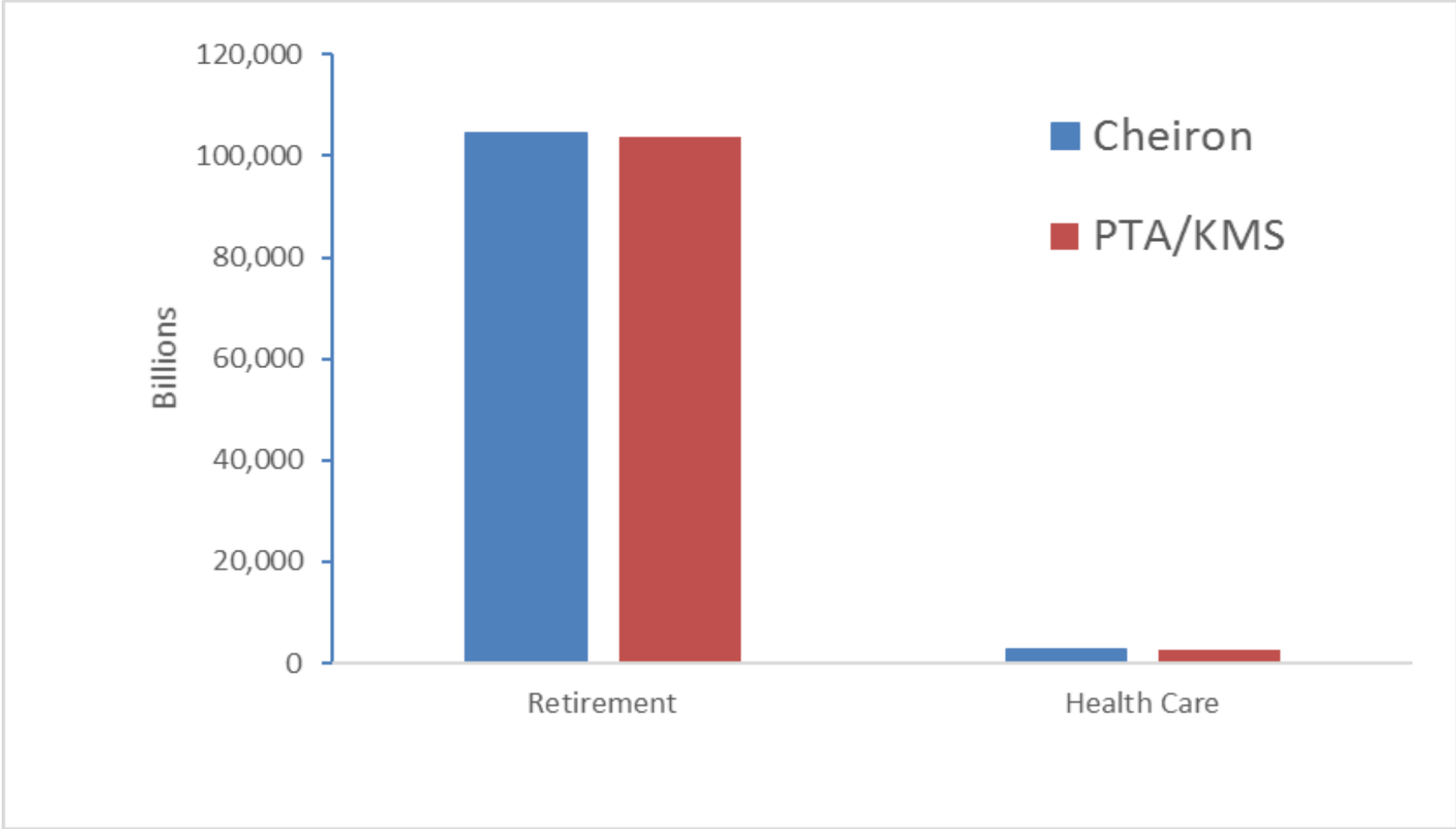
Amortization Methods

- For determination of contribution requirements
 - Based on increasing payroll (3.00% of total payroll)
 - 3.00% payroll growth reasonable in aggregate for a stable population
 - Consider reviewing payroll growth assumption given declining active population over the last 5 years
 - Amortization period is 14 years as of June 30, 2021
 - Down from 30 years as of June 30, 2014
 - Closed period approach – more conservative than open period approach

Actuarial Valuation Replication

- Data used by Cheiron matches data provided by STRS
- Reasonable match
- Actuarial liabilities match within 0.7% in total
- Thorough, complete work by Cheiron

Actuarial Liability



Health Care Review

- Assumed 2021 monthly rates are reasonable
- Age-adjusted rates reflect reasonable morbidity by age, are consistent with monthly rates and are reasonable

Audit Conclusions

- Reasonable match in valuation replication
- Assumptions, Methods and Factors
 - Reasonable
 - Consistent
 - Accurate
- Health care rates are reasonable
- Cheiron reports are complete
- Recommendations
 - Provide next auditor with transparent calculations
 - Correct minor issues mentioned in audit report

Minor Concerns and Areas for Improvement

- Clarify grandfathered retirement rates
- Address minor concerns with application of assumptions in health care report, including retirement rates, subsidies, and trend rates
- Provide more robust disclosures regarding the Combined Plan benefits in the pension report
- ORSC and STRS may wish to consider timing of changes in actuarial assumptions with timing of actuarial audit

Actuarial Audit Replication – In a Perfect World

- Auditing actuary receives:
 - From pension system:
 - Plan provisions,
 - Member data, and
 - Asset information
 - From system actuary:
 - Actuarial valuation reports, and
 - Experience study reports
- Auditing actuary is able to:
 - Match calculations of system actuary, and
 - Opine that system actuary's assumptions and methods are reasonable and appropriate

Actuarial Audit Replication – In the Real World

- Actuarial valuation report is not 100% complete in its description of plan benefits, actuarial assumptions, and actuarial methods
- Actuaries and retirement system have ongoing conversations clarifying ambiguities
- System actuary provides test cases illustrating precise calculations

Actuarial Audit Replication – In STRS World

- Cheiron was helpful and responsive in clarifying plan provisions and assumptions
- Cheiron would not provide detailed calculations
 - PTA/KMS could only try to replicate individual calculations through trial and error
 - After detailed questions and clarifications, we were able to match to totals reasonably
- We recommend that Cheiron provide fully transparent sample calculations
 - And enhance minor reporting issues in the next experience study report and/or actuarial valuation report

Findings of Actuarial Review - Recap

Actuarial Assumptions

- ↳ Reasonable and consistent
- ↳ Some minor concerns

Actuarial Methods

- ↳ Reasonable and consistent
- ↳ Some minor concerns with disclosure

Actuarial Valuation Replication

- ↳ Very close match (0.7% on total liability)
- ↳ Reasonable, consistent and accurate

Actuarial Process

- ↳ Unable to precisely verify detailed calculations
- ↳ But overall close replication match suggests confidence in numbers