

Presentation on the Actuarial Audit of the  
Ohio Highway Patrol Retirement System  
for Ohio Retirement Study Council

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To HPRS – TBD

# Agenda

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

# Major Findings

- We find that the actuarial math is correct
  - Our calculations match Foster & Foster (F&F) calculations
  - The F&F calculations captured key provisions accurately
- Two significant concerns with actuarial assumptions
  - No future cost of living adjustments
  - No mortality improvement after 2025
- Other Actuarial Assumptions are reasonable, and have been periodically revised based on results of experience studies

# Findings of Actuarial Review - Summary

## Actuarial Assumptions

- ↳ **Major concern with COLA and Mortality Improvement**
- ↳ Other assumptions are reasonable and consistent

## Actuarial Methods

- ↳ Reasonable and consistent
- ↳ But 30-year funding not met if COLA or mortality improvement is considered

## Actuarial Valuation Replication

- ↳ Close match (0.4% on total liability)
- ↳ Based on modified assumptions, 7.6% higher liability

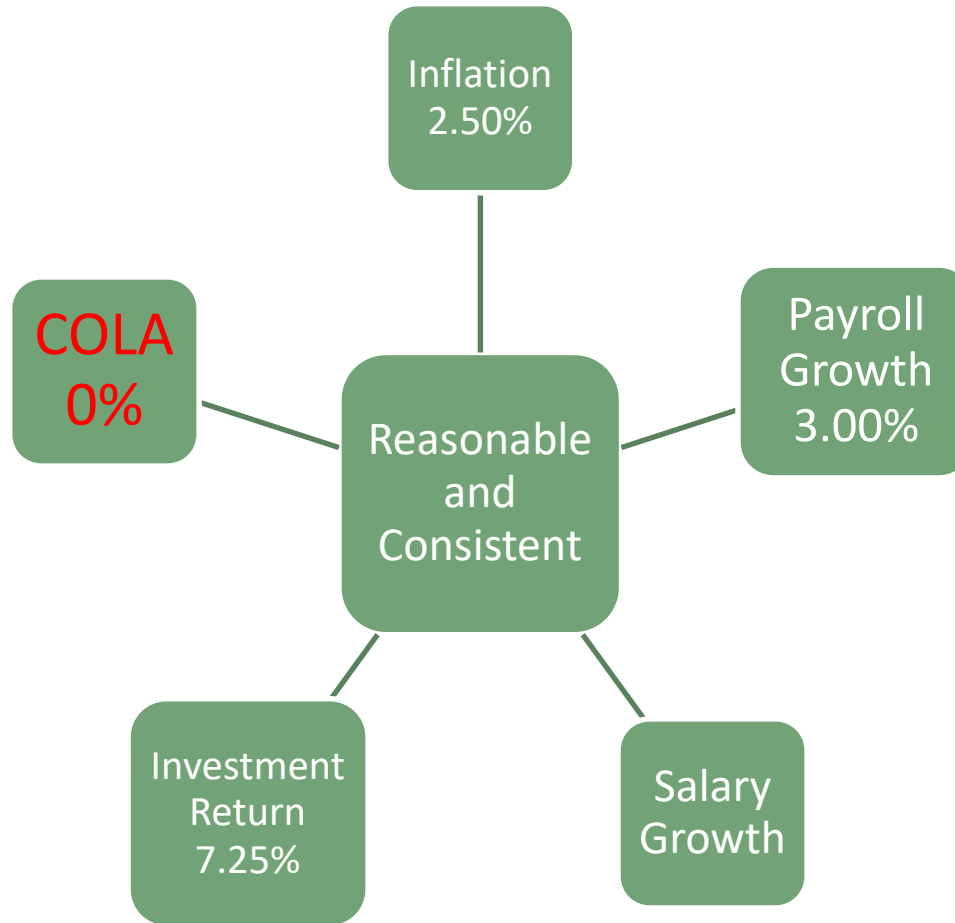
## Actuarial Process

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

# Demographic Assumptions



# Economic Assumptions



# Economic Assumptions

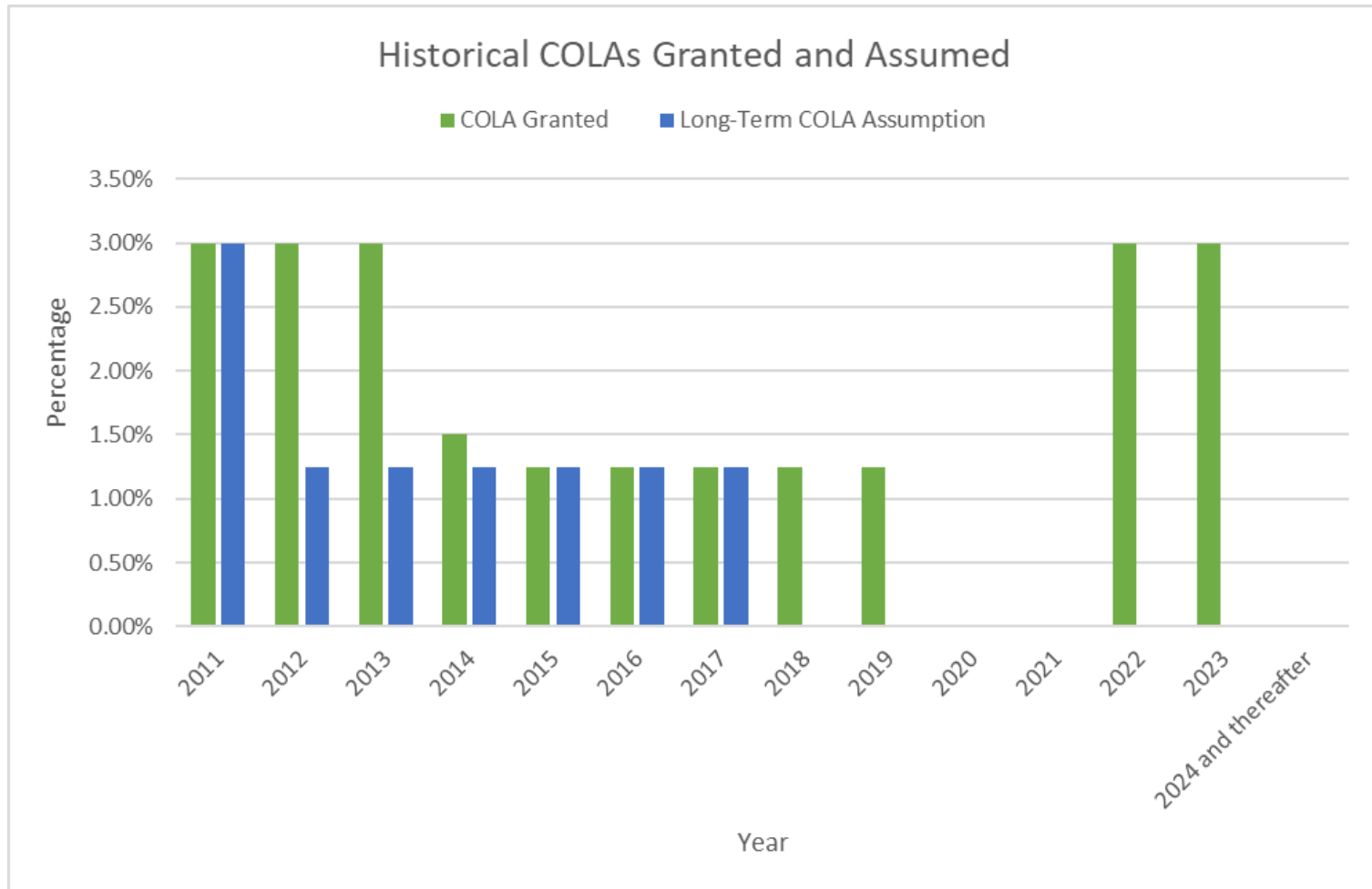
- Investment Return Rate of 7.25%
  - Consistent with Ohio systems (range is 6.90%-7.50%)
  - Higher than current NASRA average of 6.99%
- Inflation Rate of 2.50%
  - Consistent with peers (median is 2.50%)
- Payroll Growth of 3.00%
  - Real wage inflation of 0.50% plus 2.50% inflation
- Salary Growth Rate
  - Reasonable, experience study analyzed inflation-adjusted salary growth appropriately
- Cost Of Living Allowance – None Assumed

# No Assumed COLA beyond “next year”

- COLAs have been given regularly by HPRS
- Actuarial assumptions must reflect actuary’s best estimate of future experience
- Reflection of 1.25% COLA assumption would:
  - Increase liabilities by 6%
  - Increase normal cost by 5%
  - extend funding period beyond 30 years to 31 years
  - Make COLA unaffordable under statute



# HPRS has granted COLAs, but F&F has not anticipated this happening again



# Ignoring future COLAs is non-standard actuarial practice

- Actuarial Standard of Practice require actuary to use “best estimate of future experience”
- Government Accounting Standards require statements to reflect “best estimate of future experience”
- From 2011 to 2017, actuarial assumption did match future experience
- Even in 2018 when actuary assumed only one COLA, this proved correct for three more years.
- But unlikely that HPRS board will never grant another COLA

# No Assumed Mortality Improvement beyond 2025

- Pre-pandemic, mortality has improved
- Actuarial assumptions must reflect actuary's best estimate of future experience
- Reflection of future mortality improvement would:
  - Increase pension liabilities by another 1%
  - Increase pension normal cost by another 2%
  - Increase health care liabilities by 3%
  - Increase health care normal cost by 5%
  - extend funding period another 3 years to 34 years

# Do Ohio Troopers really die earlier than other Ohioans or troopers in other states?

System	25-Year Old Male Member Hired Today	Actuary	Expected Age at Death
<i>HPRS</i>	<i>Trooper</i>	<i>Foster &amp; Foster</i>	<b>83.4</b>
OP&F	Police Officer	Cavanaugh Macdonald	84.2
OPERS	Public Worker	GRS	85.8
SERS	Bus Driver	Cavanaugh Macdonald	83.2
STRS	Teacher	Cheiron	89.9

# Ignoring future Mortality Improvement is non-standard actuarial practice

- Actuarial Standard of Practice require assumptions to:
  - “reflect the actuary’s best judgement,” and
  - “reflect the actuary’s estimate of future experience.”
- Government Accounting Standards require statements to reflect “best estimate of future experience”
- HPRS did assume long-term mortality improvement prior to 2019
- We are not aware of any state retirement system today using anything but a fully generational mortality basis
  - Not the 5-year-only approach used by F&F

# Does Pandemic Make this assumption reasonable?

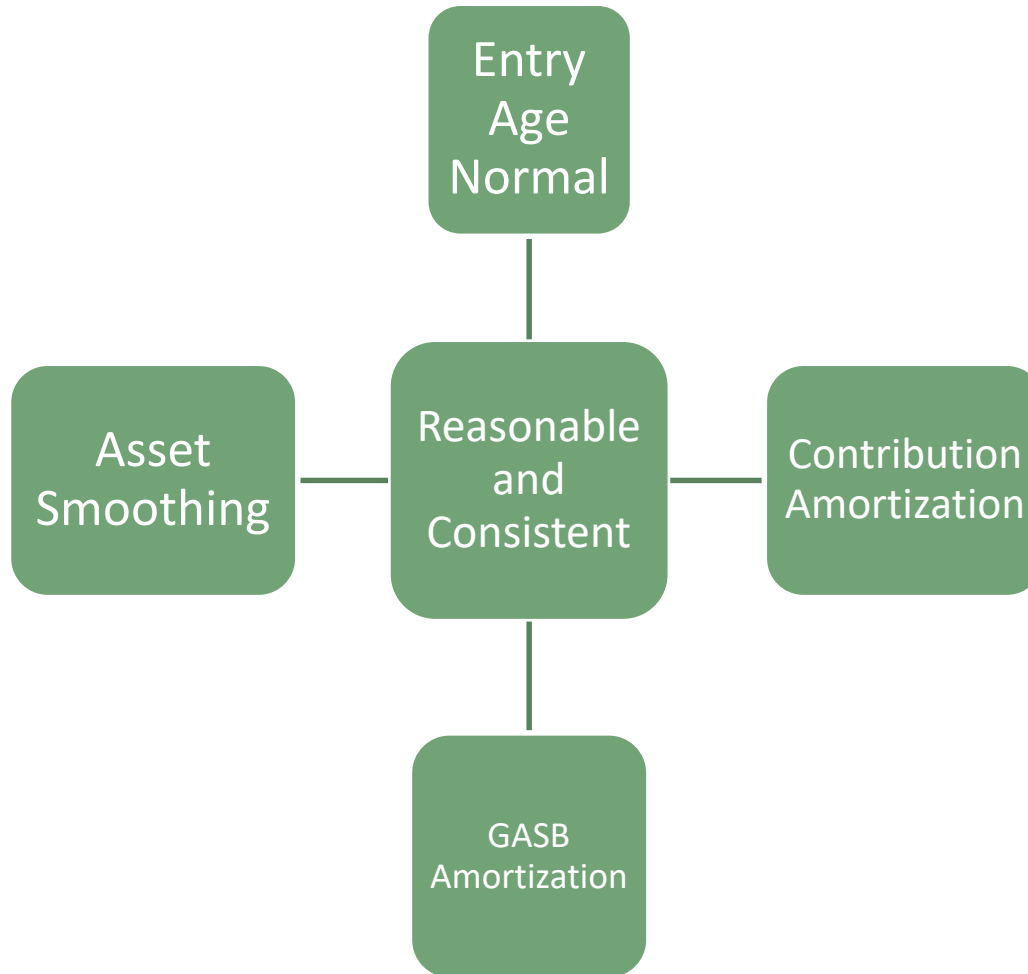
- Maybe “best estimates” have changed
- Actuaries *might be* reconsidering mortality improvement assumptions
- Improvement has moderated somewhat
- And pandemic adds tremendous uncertainty
- However:
  - F&F’s report mention nothing of pandemic uncertainty
  - No apparent trend for actuaries to abandon improvement assumptions

# Healthcare-Specific Assumptions



Mortality Improvement has large impact on health care costs

# Actuarial Methods





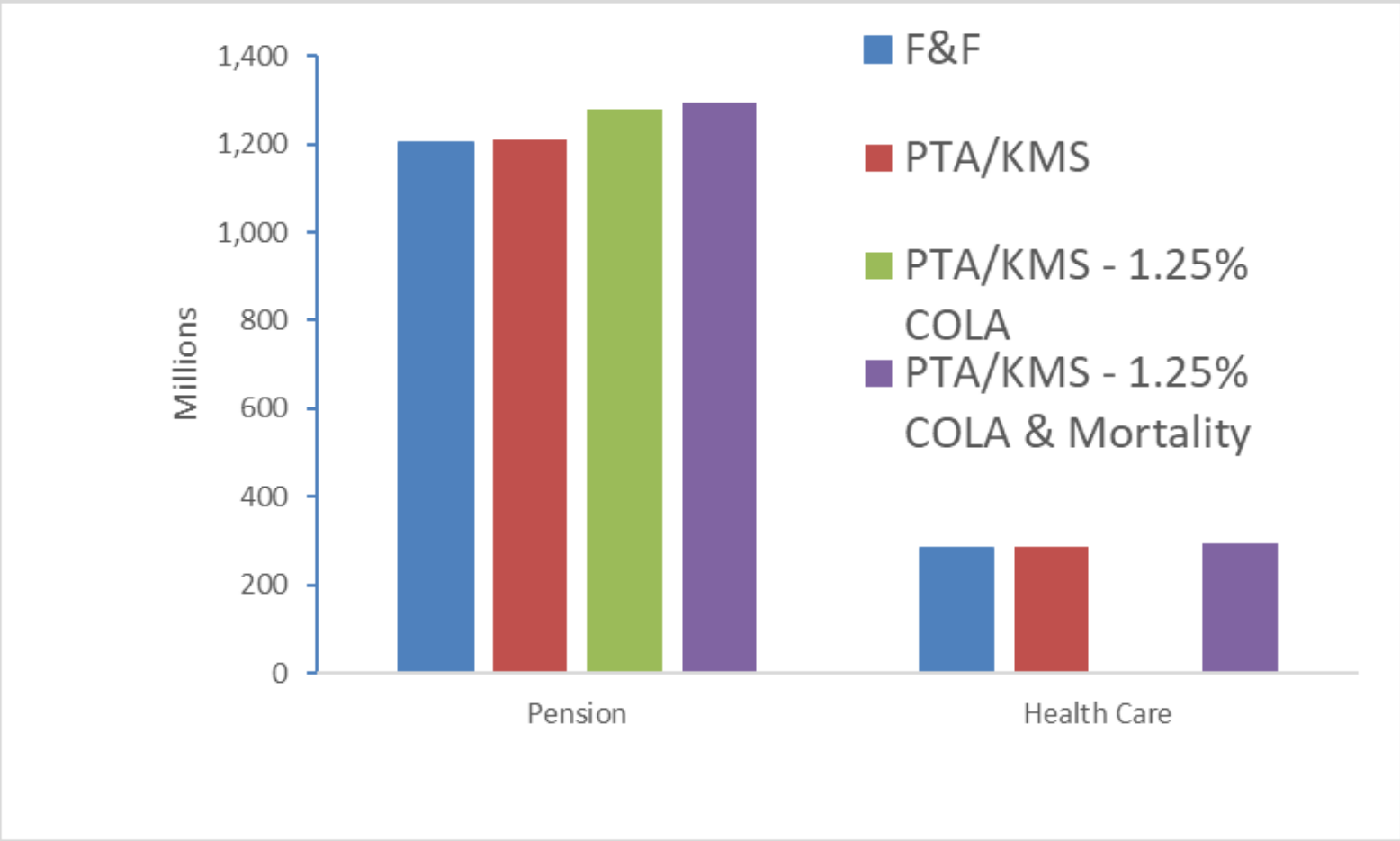
# Amortization Methods

- 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
  - Amortization period is 22 years as of December 31, 2020
    - Down from 30 years as of December 31, 2015
    - But would be 31 years if 1.25% COLA assumed
    - And 34 years if mortality improvement also assumed
    - We recommend closed period approach – more conservative than open period approach

# Actuarial Valuation Replication

- Data used by F&F consistent with data provided by HPRS
- Reasonable match
- Actuarial liabilities match within 0.4% in total
- Thorough, complete work by F&F
- But more realistic reflection of COLA and mortality improvement have significant impact

# Actuarial Liability



# Health Care Review

- Assumed 2020 monthly rates are reasonable
- Age-adjusted rates reflect reasonable morbidity by age, are consistent with monthly rates and are reasonable

# Audit Conclusions

- Major concern with two assumptions
  - No future COLAs ever to be granted
  - Mortality rates will not improve beyond 2025
- Reasonable match in valuation replication
- Other Assumptions, Methods and Factors
  - Reasonable
  - Consistent
  - Accurate
- Health care rates are reasonable
- F&F reports are complete
- Recommendations
  - Adopt COLA increase assumption
  - Adopt mortality improvement assumption beyond merely five years

# Findings of Actuarial Review - Recap

## Actuarial Assumptions

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