

THINKING ABOUT RISK AND SUSTAINABILITY IN PUBLIC PENSION SYSTEMS

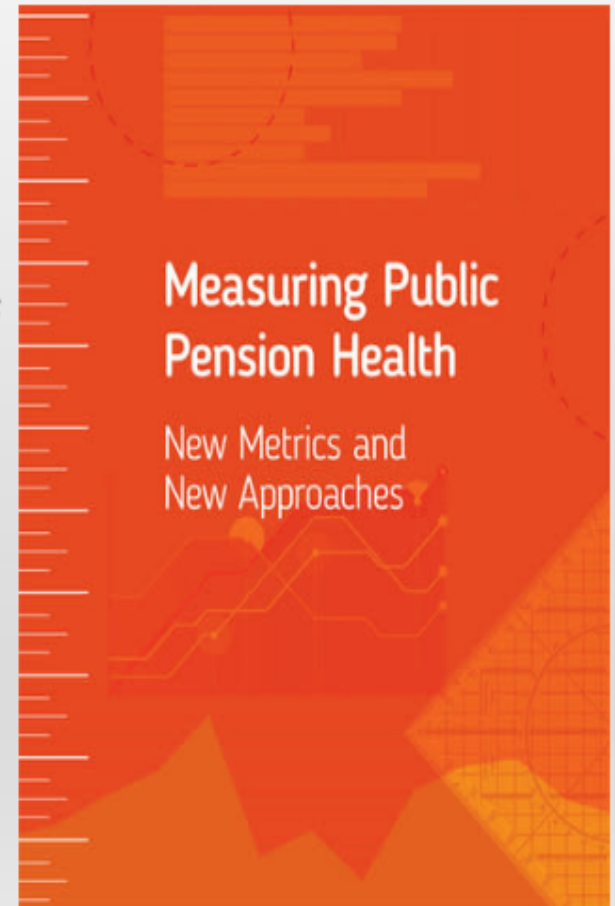
Tom Sgouros

The Policy Lab at Brown University

NES GFOA, April 28, 2023, Waltham, Massachusetts

Thinking about pension metrics

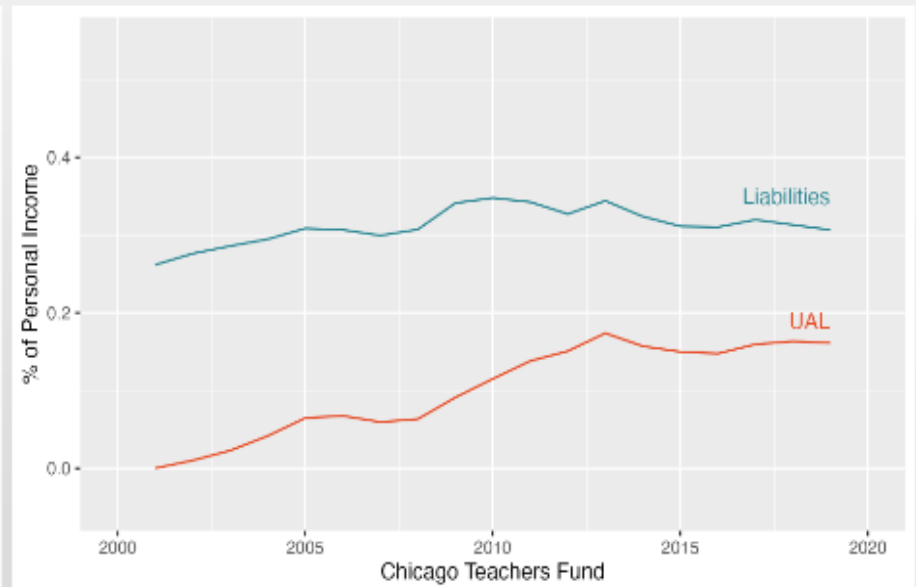
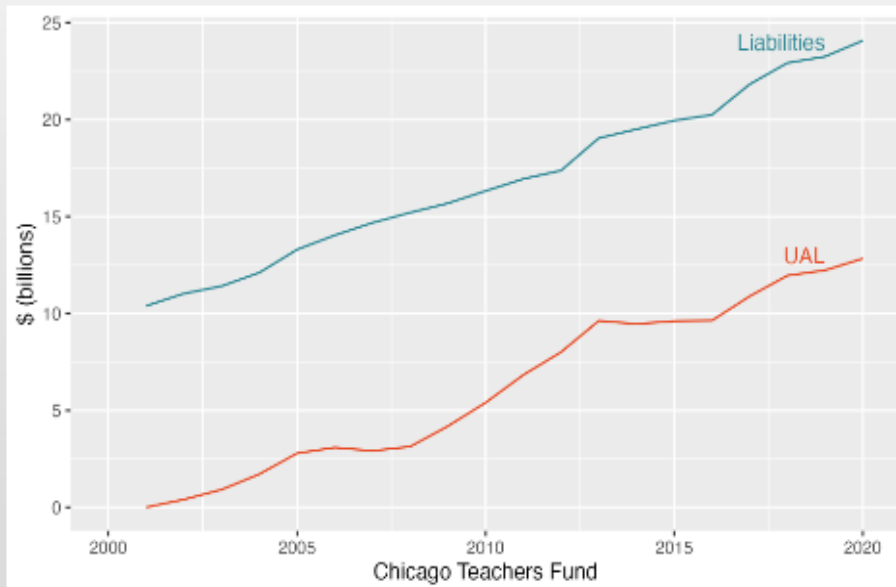
- NCPERS commissioned a report: The Case for New Pension Accounting Standards.
- 2021 working group formed to consider the important metrics used to assess the health of a pension system.
- Working group report released June 2022: ncpers.org/files/NCPERS-Pension-Metrics.pdf
- Some issues remain unresolved, but some useful suggestions.



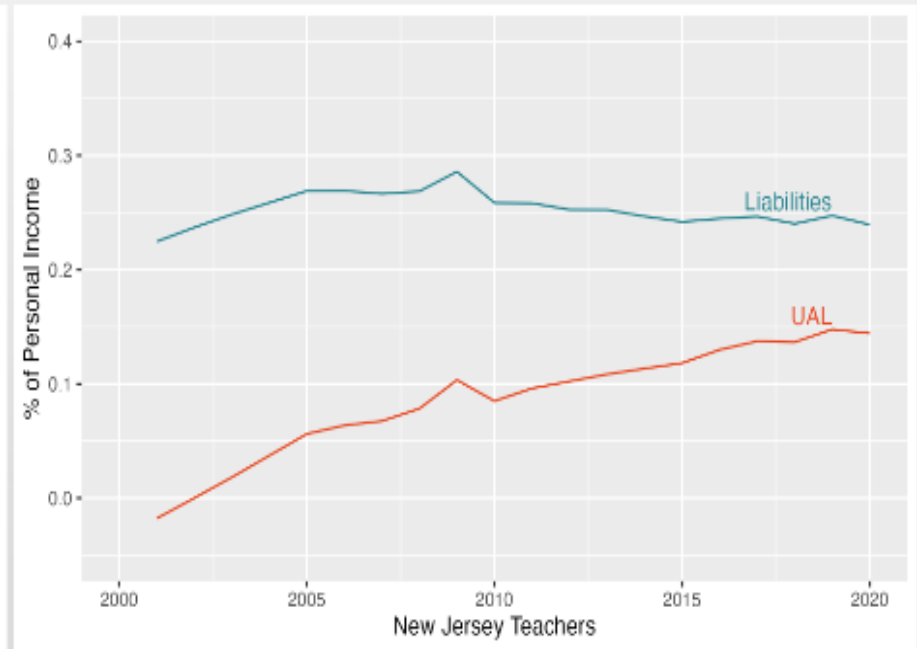
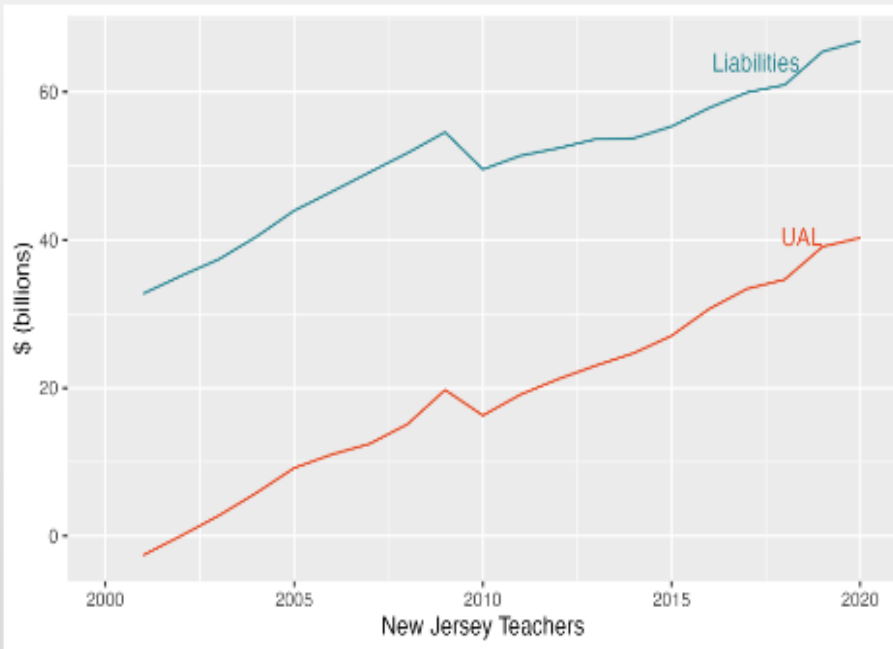
Sustainability valuation or scaled liability

- Compares pension liabilities to the economy of the plan sponsor.
- Help to assess a plan sponsor's ability to pay.
- Similar to Lenney, Sheiner, Schüle and Lutz, 2019 or Kahn, 2022.
- Recommend using personal income as a measure of an economy for ease of use, consistency, comparability.

Sustainability valuation or scaled liability



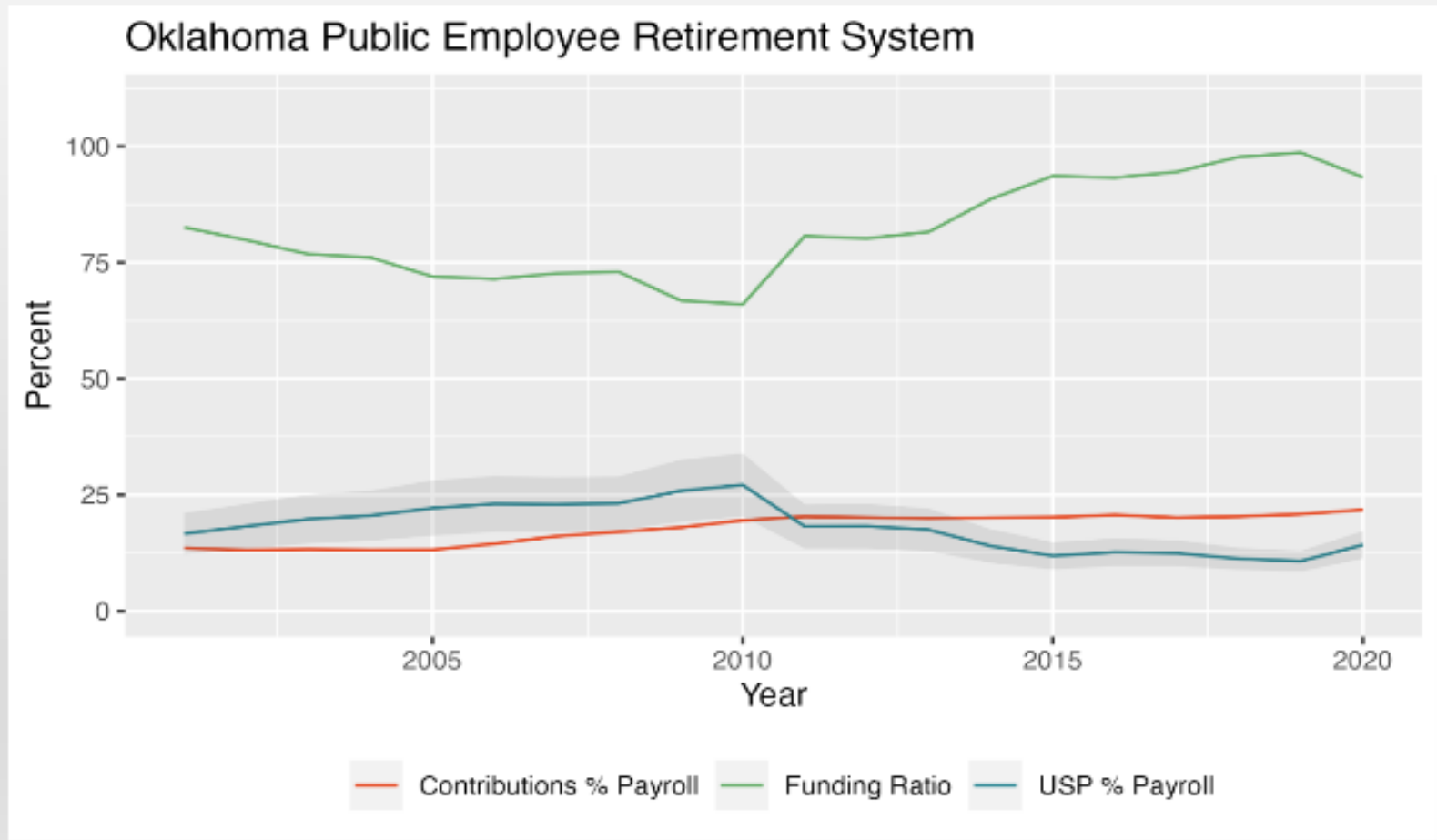
Sustainability valuation or scaled liability



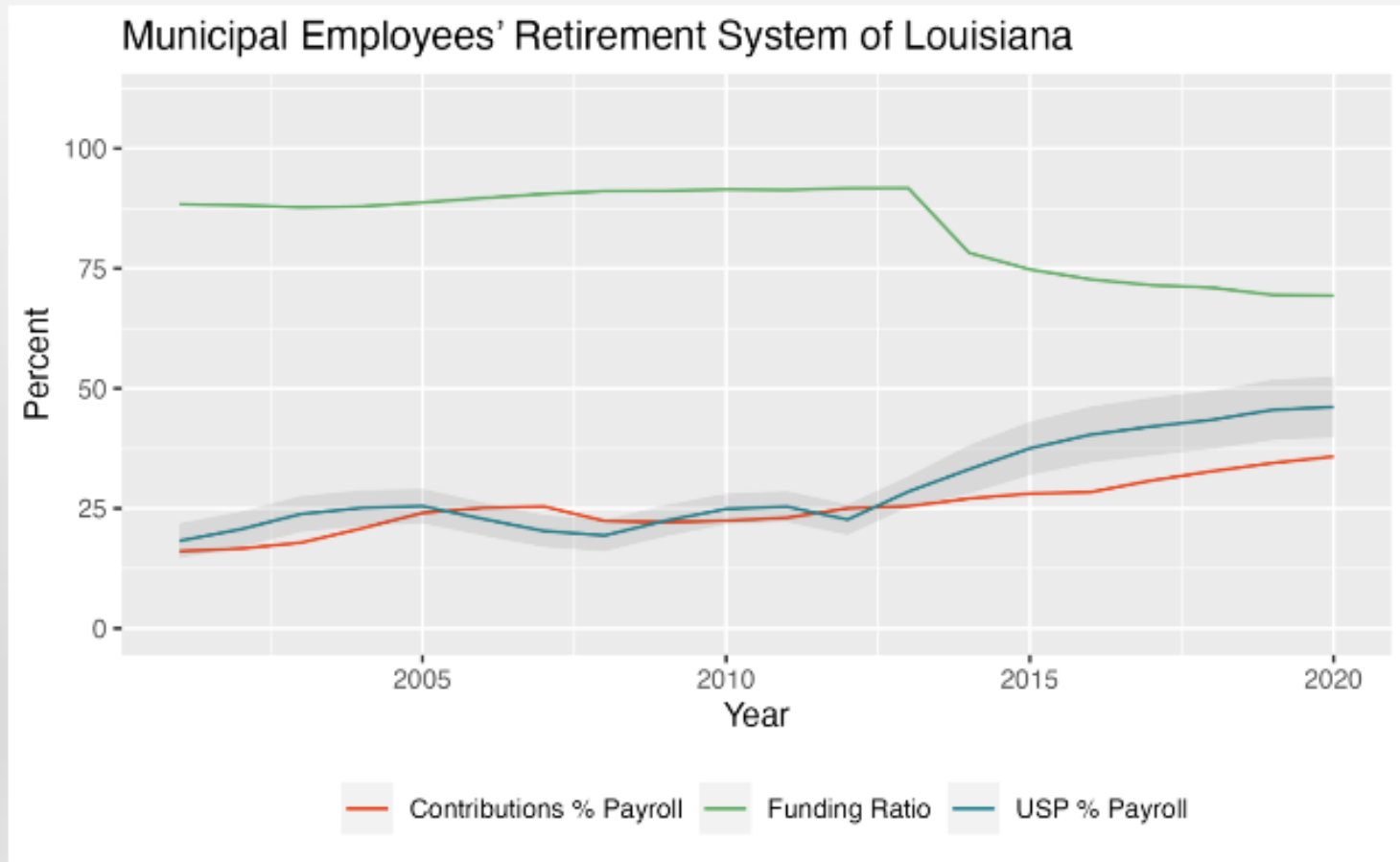
USP: UAL Stabilization Payment

- Payment necessary to put a pension plan in the same funding position at the end of the year as the beginning.
- Objectively definable, comparable to funding position.
- Not a recommendation, just a yardstick.
- Related to Moody's "Tread Water" metric and the S&P "Minimum Funding Progress" but questions the accrual rate.

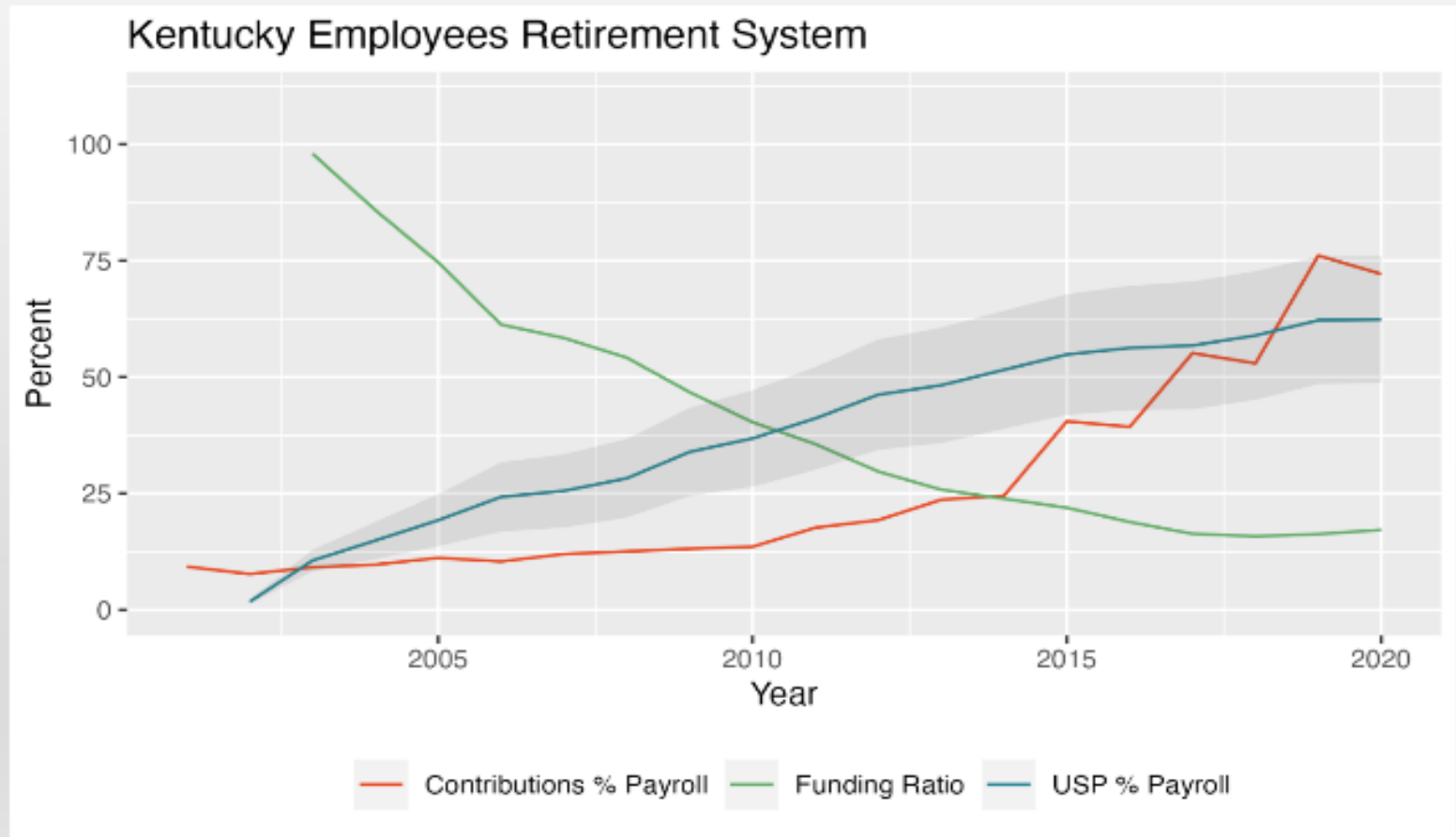
USP: UAL Stabilization Payment



USP: UAL Stabilization Payment



USP: UAL Stabilization Payment

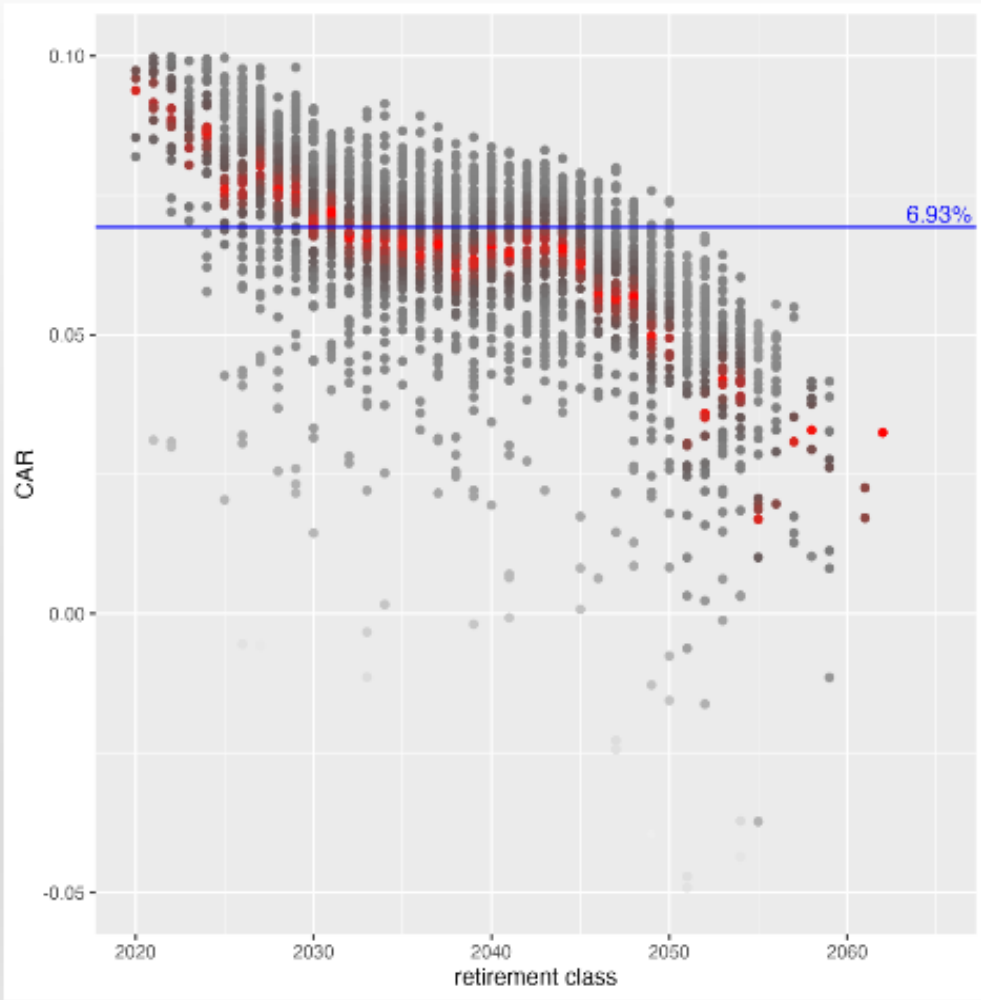


CAR: A Contractual Accrual Rate

- Any individual in a pension system represents a cash flow, paying in while active, and paying out after retirement.
- There is an accrual rate that is the internal rate of return for that individual.
- What is true for the individual is true for the aggregate, though the sampling strategy may be complex.
- This rate is completely independent of the financial markets.

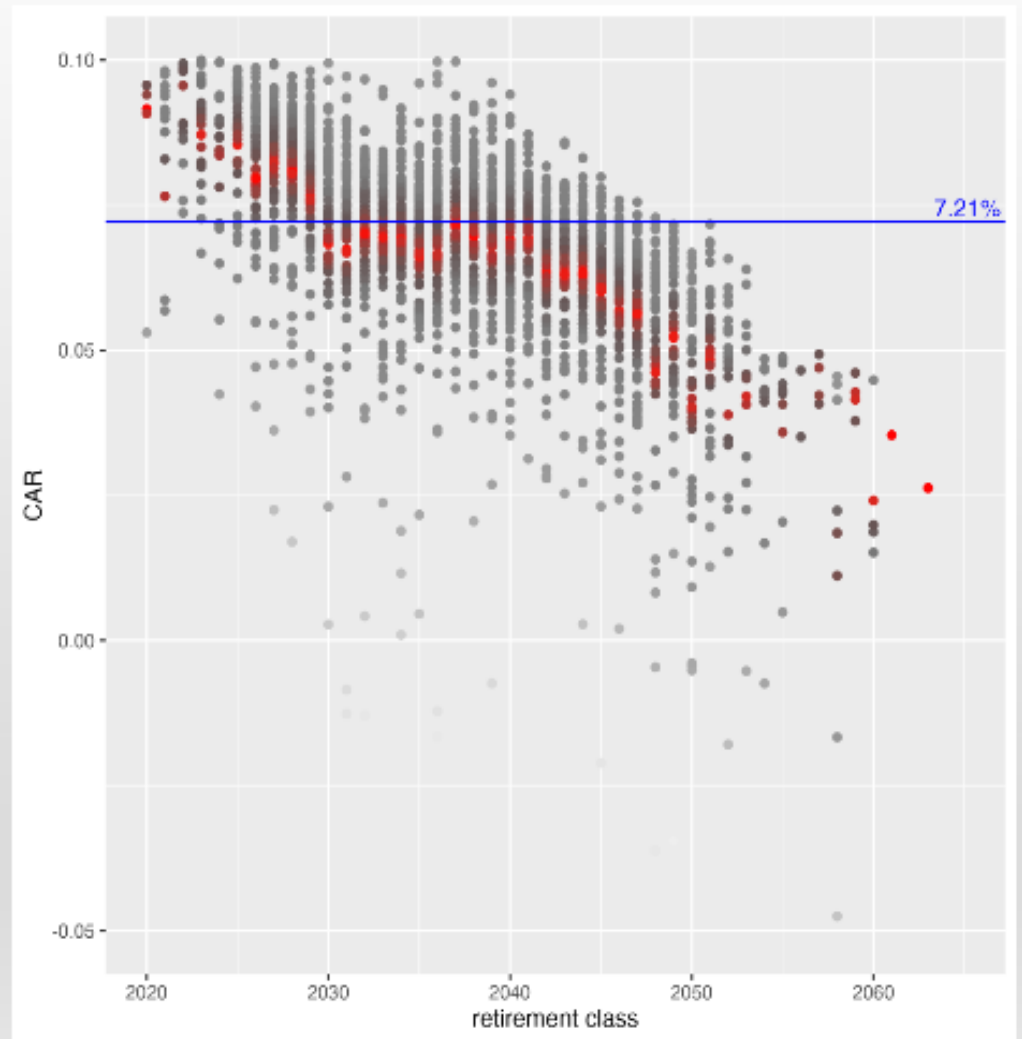
CAR: Contractual Accrual Rate

Queen Creek Fire



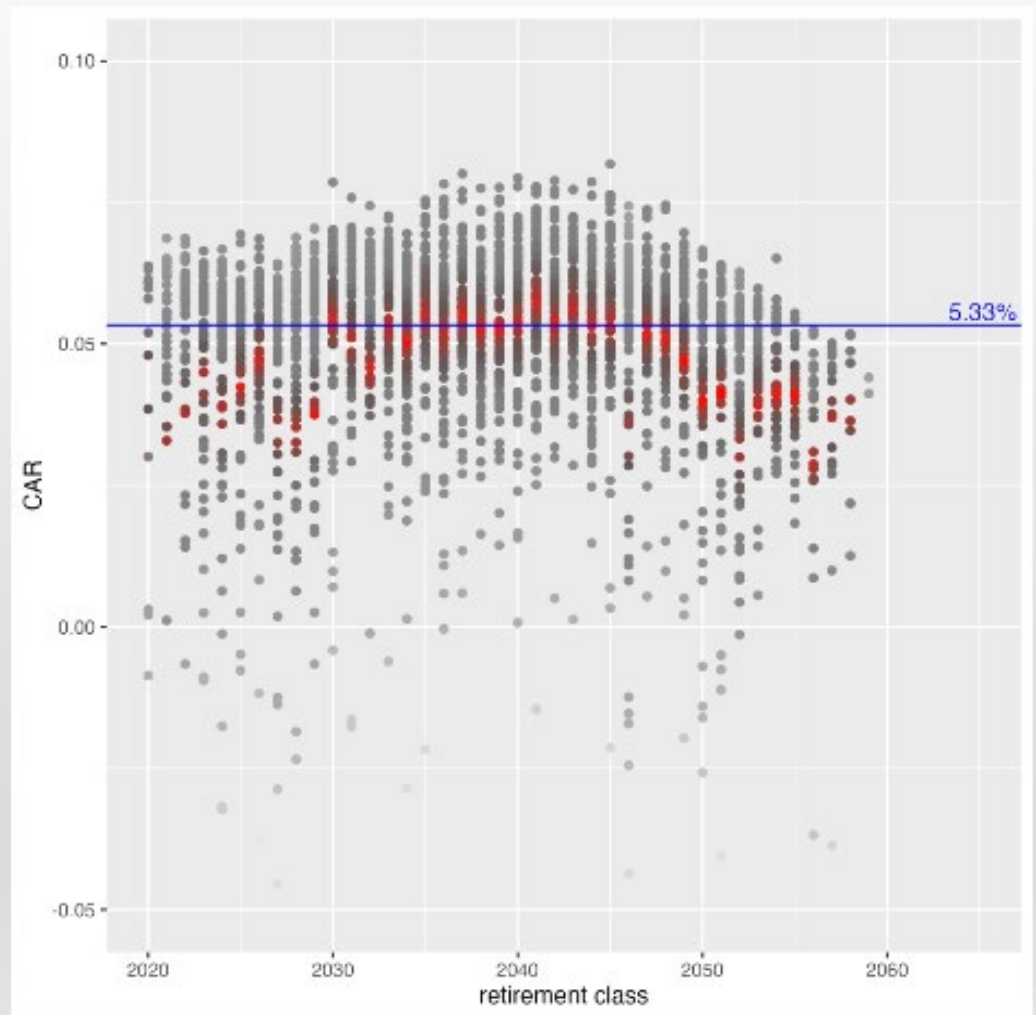
CAR: Contractual Accrual Rate

Tier one



CAR: Contractual Accrual Rate

Tier three

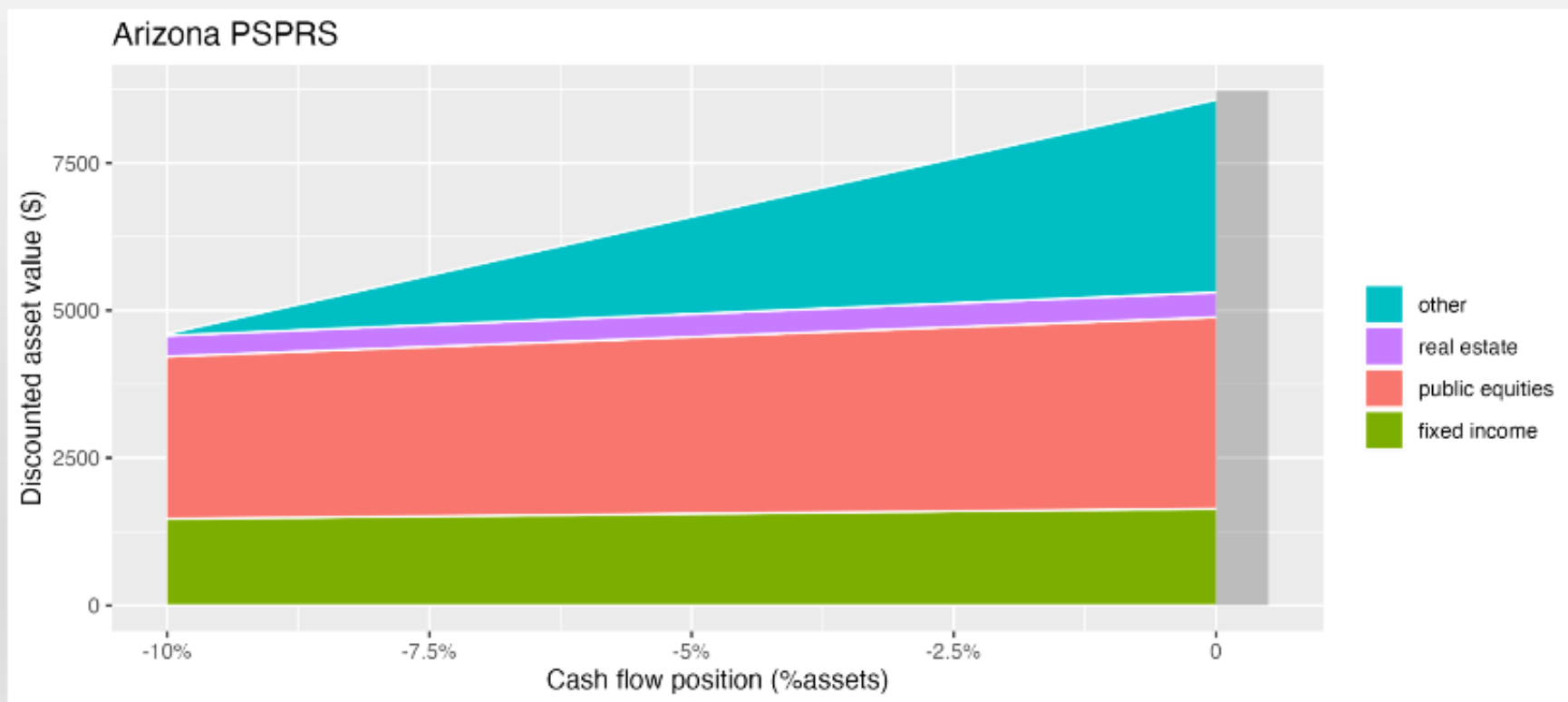


Risk Weighting Assets

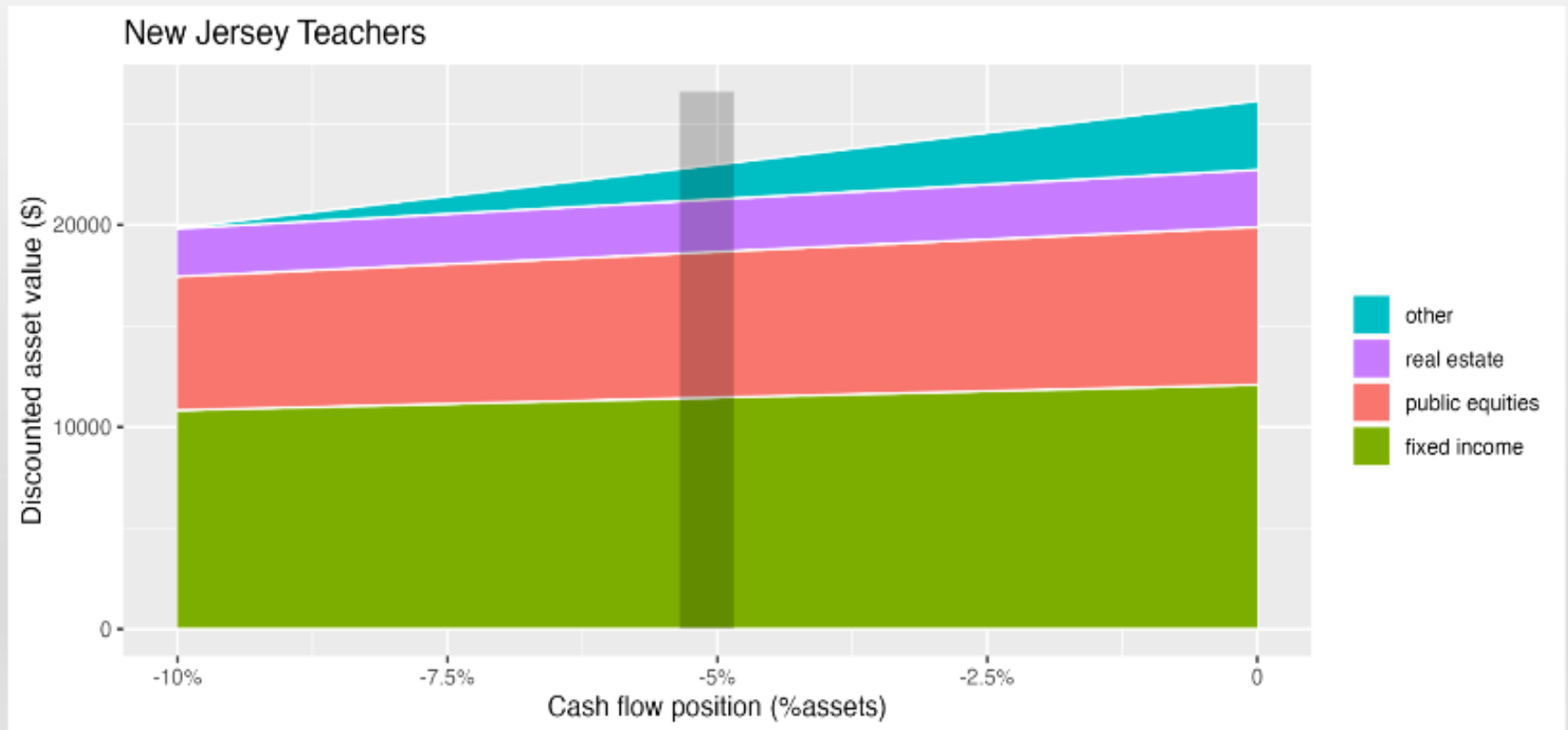
- Evaluates assets for downside risk.
- Cheaper and easier than stress test.
- A metric one can manage to.
- Related to VaR and other risk metrics.

Asset Class	Short-discount	Long discount
Fixed	11.2%	1.2%
Equities	17%	2.1%
Real Estate	19%	3%
Other	99%	1.5%

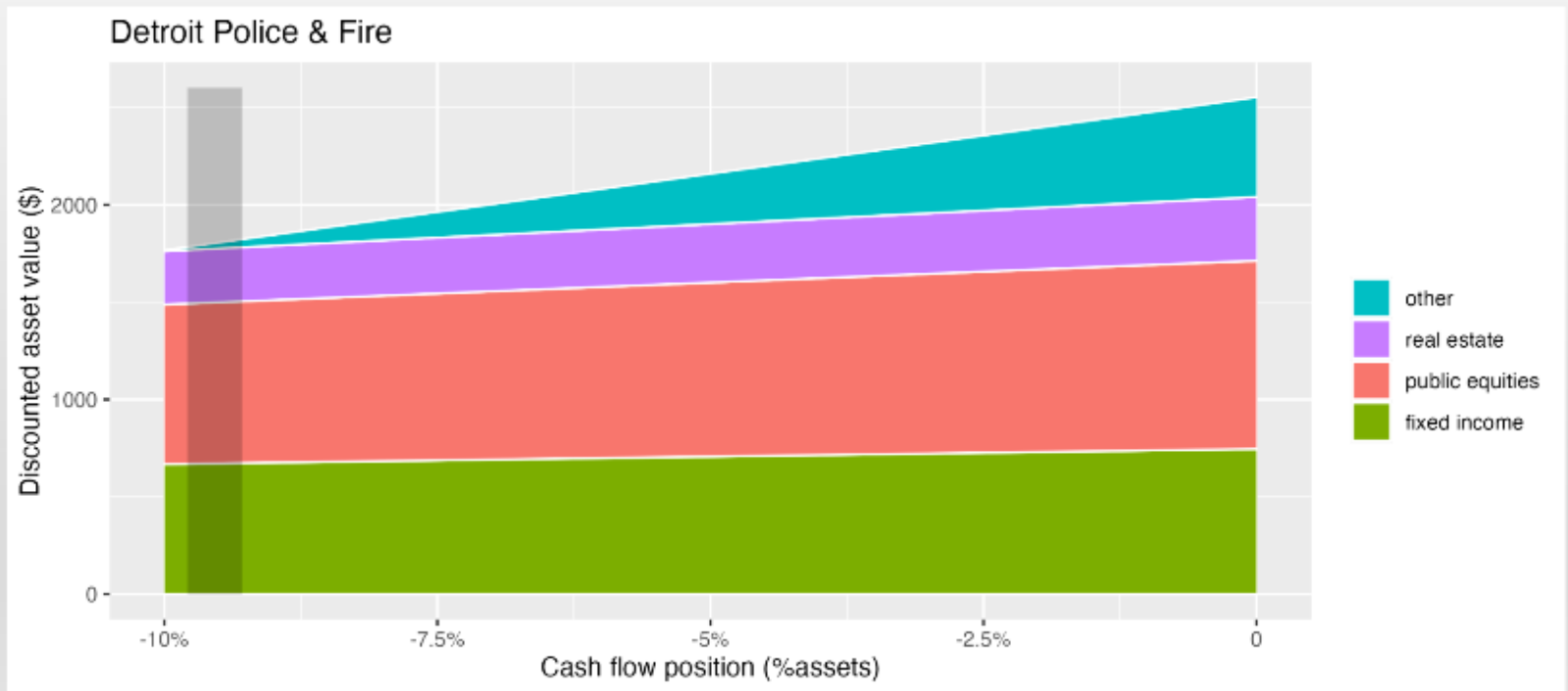
Risk Weighting Assets



Risk Weighting Assets



Risk Weighting Assets



Other ideas

- Evaluating risk
 - Beyond ASOP 51, to *categorize* risk.
 - Risk to plan, risk to sponsor, risk to members.
 - Market risk, volatility risk, actuarial risk, operational risk, contribution risk, etc.
- Evaluating stress testing for risk.
 - Distinguish between stress testing and other kinds of modeling.
 - Sensitivity testing, parameter search, projections.
 - Validation, initial conditions.

Other ideas

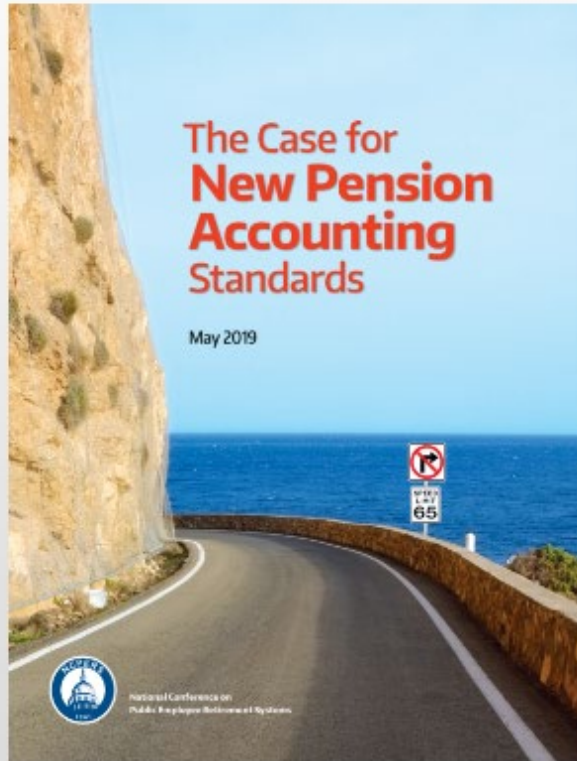
- Standardized scorecard.
- Includes policy, action, condition.
- Succinct, standard.

Rhode Island ERS (State Employees + Teachers)

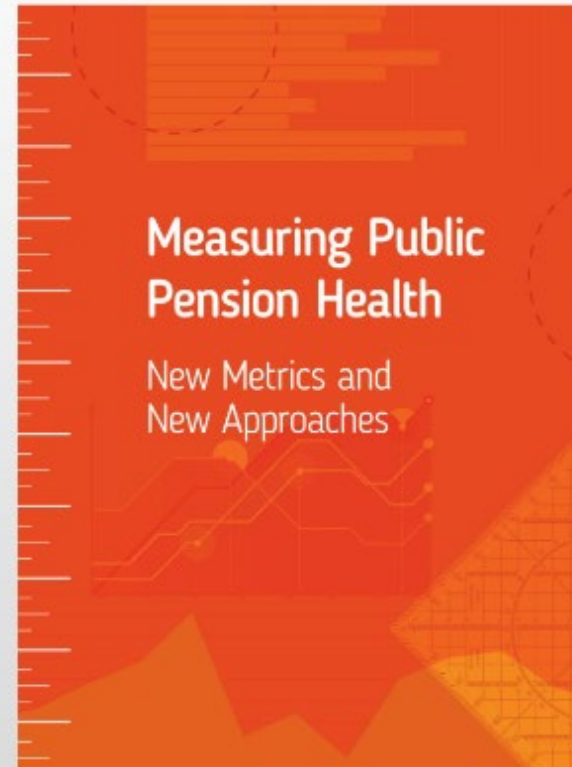
POLICY					
Benefits		Funding		Investments	
Employee participation	●	Annual employer share	●	Investment strategy	●
Income replacement	●	UAL sources	●	Risk discussion	●
COLA terms	●	COLA funding	●	Allocation motivation	●
Other Benefits	●	Employee contribution	●	Benchmark defined	●
ACTION					
Benefits		Funding		Investments	
Benefit replacement	10yr 16%	USP % payroll	28.3%	Global equities	42%
	30yr 53%	ADC % payroll	31.3%	Fixed-income	24%
COLA	suspended until UAL>80%	Actual Contribution	31.3%	Real estate	7%
		Normal Cost	8.1%	Hedging	9%
SS participation	some	Experience study	●	Private equity	14%
		Assumed return	7%	Cash	4%
		Assumed inflation	2.5%	Investment mgmt fees	●
		Wage inflation	3%	Sharpe ratio	●
CONDITION					
Benefits		Funding		Investments	
Active state employees	N=10,803	Total liability	\$18.89 billion	Assets/Benefits	8.05
	Age 49.2	Actuarial assets	\$6.89 billion	Risk-weighted assets	6.92
Active teachers	N=13,372	Market Assets	\$7.73 billion	Market returns 1-year	
	Age 46.8	UAL as % payroll	26%	Net	2.2%
Retired state employees	N=9,270	POB debt	\$0	Bench	11.2%
	Age 74.3	Scaled liability	0.4%	Market returns 5-year	
Retired teachers	N=10,441	Net cash flow	21%	Net	0.1%
	Age 74.2	Extra contribution?	No	Bench	9.8%
Actual FY21 CDLA	0.0%	Layered Amort?	●	Market returns 10-year	
				Net	8.5%
				Bench	9.8%
Sponsor Fiscal Health					
Budgeted general revenue	\$4.43 billion			Market returns since 1995	
Per capita income	\$37,504			Net	7.7%
Poverty rate	10.6%				
GO Bonds M/SPYF	A+2/AA/AA				

THE END

Thank you



ncpers.org/files/ncpers-research-the-case-for-new-pension-accounting-standards-2019.pdf



ncpers.org/files/NCPERS-Pension-Metrics.pdf