Measuring Pension Health:

New Metrics, New Approaches

Webinar

September 20, 2022

NATIONAL INSTITUTE ON
Retirement Security
Reliable Research. Sensible Solutions.

Agenda

- Logistics and Introductions

- Research Review

- Q&A

Logistics

- Attendees in listen only mode.

- Question are welcome. Submit using "Question" function on control panel

- Audio/technical issues during webinar: call GoToWebinar at 1-800-263-6316

- Webinar replay and slides will be posted at nirsonline.org/events.
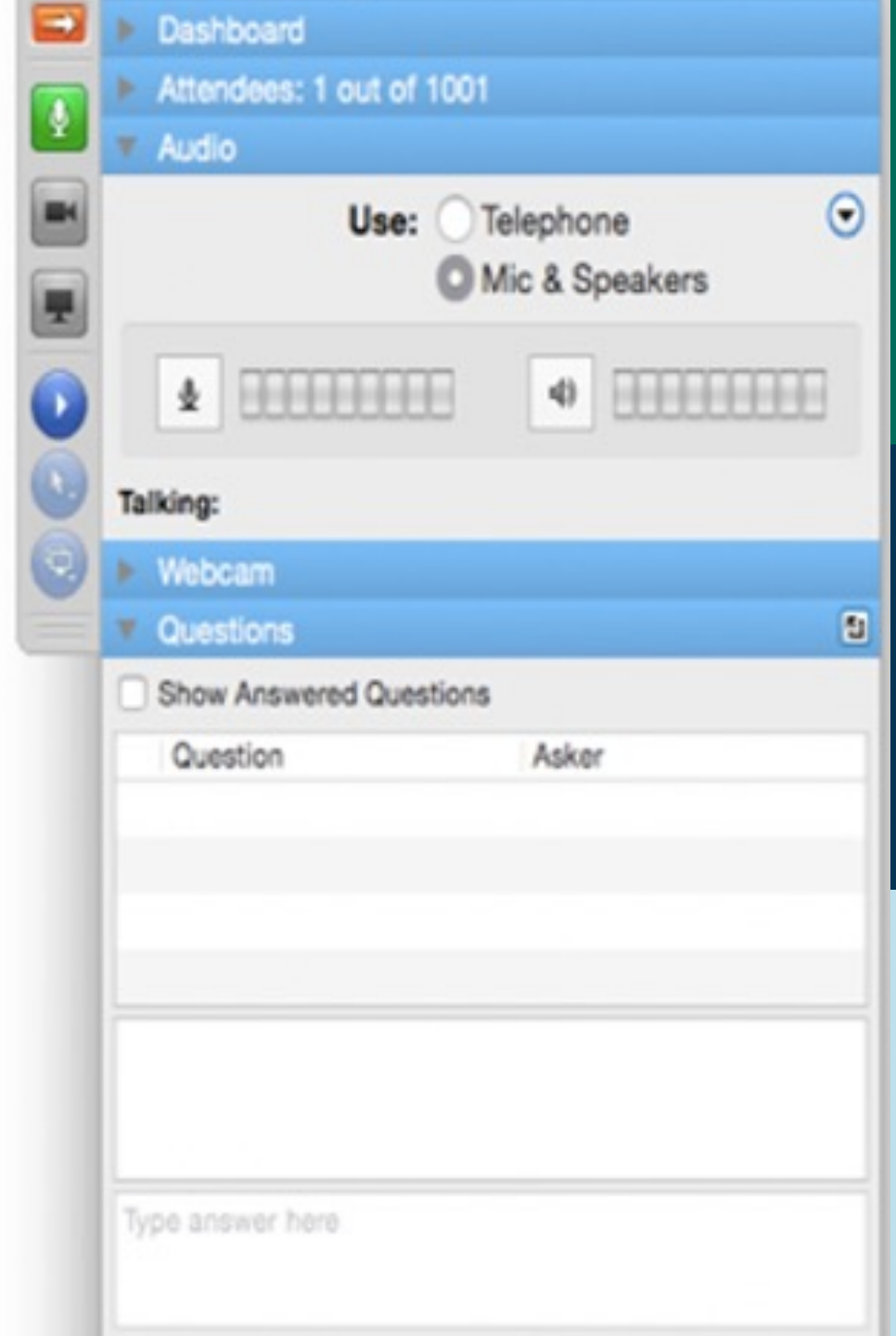
Speakers

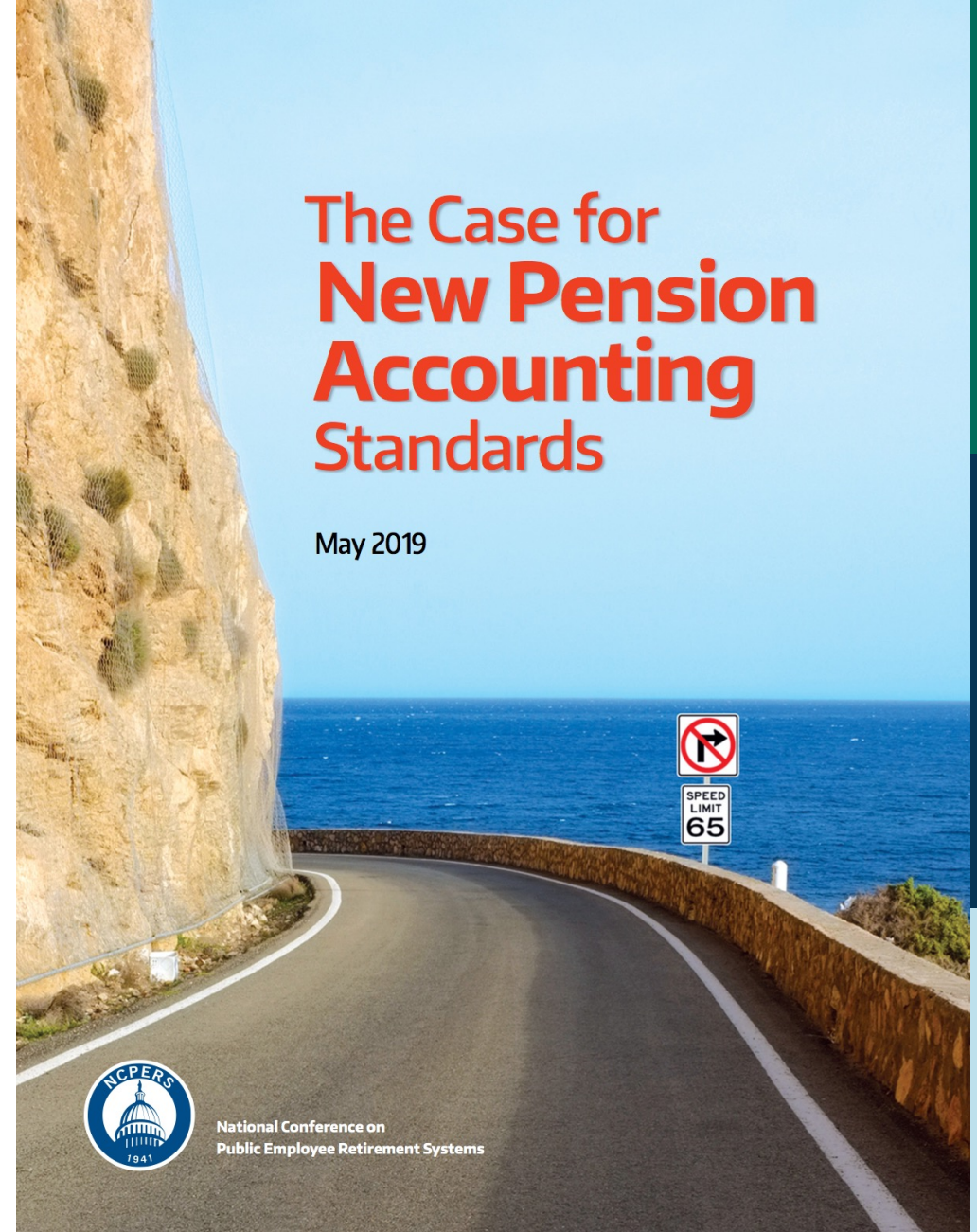**Dan Doonan**

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Tom Sgouros

Fellow, Policy Lab at Brown University

Pension Accounting

The Case for
New Pension Accounting Standards

May 2019

NCPERS

National Conference on
Public Employee Retirement Systems

Pension Accounting Working Group

- Made up of managers, actuaries, and other experts.

- Looking for metrics to provide further insight to trustees, elected officials, and other policy makers.

- Convened in February 2021.

Result

Measuring Public Pension Health

New Metrics and New Approaches

Scorecard

Benefits, Funding, Investments for each of three categories.

- **Policy** What is supposed to be done?

- **Action** Is it being done?

- **Condition** What is the status?

Also sponsor fiscal health for the "Condition" category.

Example

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%
	30ty 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 COLA	0.0%	Layered Amort?	🟢	Market returns *10-year*	
				Net	8.5%
Sponsor Fiscal Health				Bench	9.8%
Budgeted general revenue	$4.43 billion			Market returns	*Since 1995*
Median income p/c	$61,942,342			Net	7.7%
Poverty rate	10.6%				
GO Bonds M/SP/F	Aa2/AA/AA				

A mock-up of the proposed pension funding scorecard, for the Rhode Island Employee Retirement System.

Example

Rhode Island ERS (State Employees + Teachers)

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The Pension Funding Scorecard includes some innovative new metrics, as well as a proposal to incorporate the abstractions of policy into a quantitative framework, highlighted here.

XBRL: Electronic Reporting Standard

- Mature fiscal reporting standard.

- SEC requirement, also Fed, FERC, FASB managed.

- Municipal reporting in Spain, Finland, Florida, now Michigan.

- Inline version, invisible to humans, visible to machines.

Measuring Pension Liabilities in Context

- What really stands behind a public pension plan?

- How to measure tax capacity?

- Compare pension obligations with size of the economy.

- Not new: Kahn, 2022, Lenney *et al*. 2019.
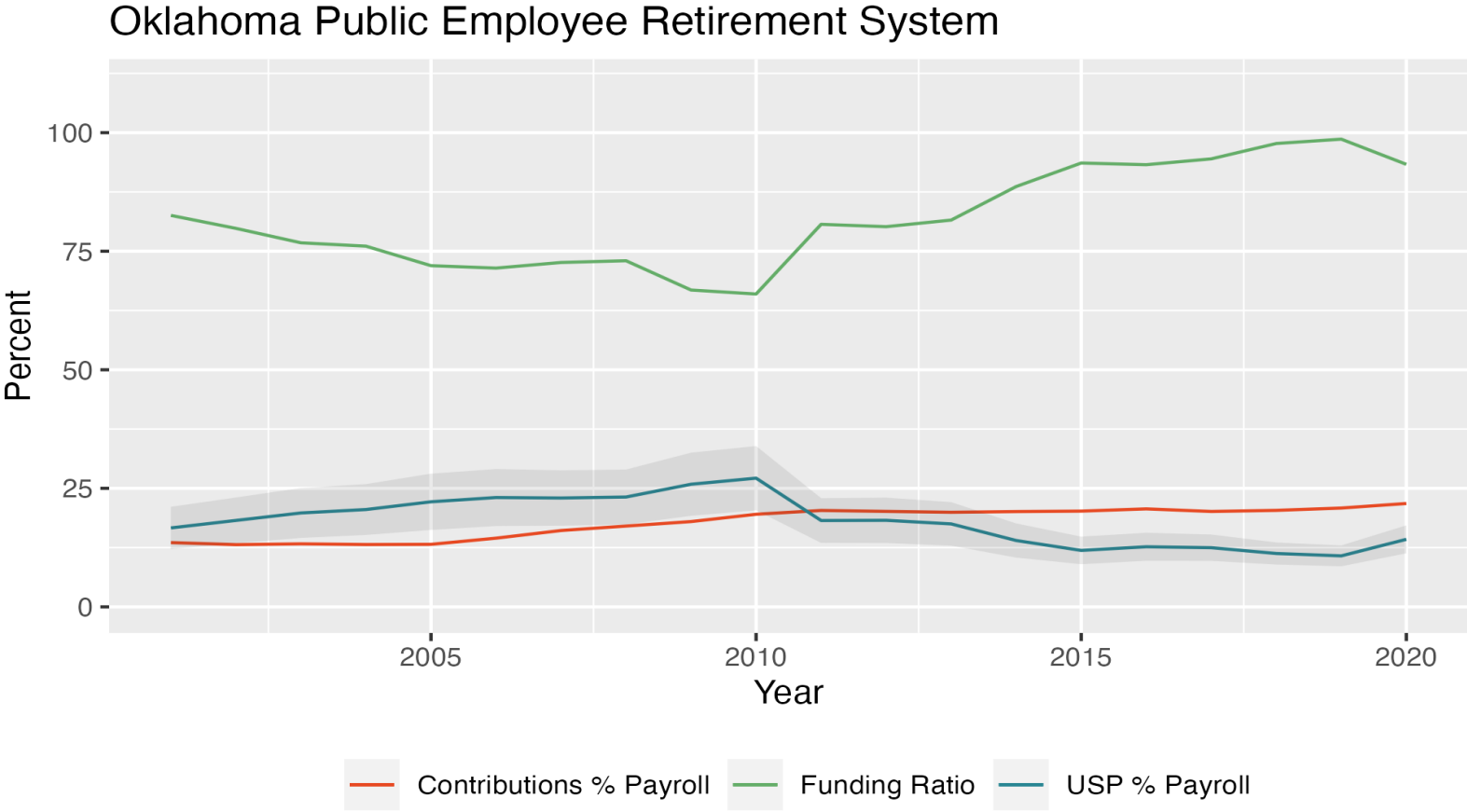
Measuring Pension Liabilities in Context

Measuring Pension Liabilities in Context

Chicago Teachers Fund
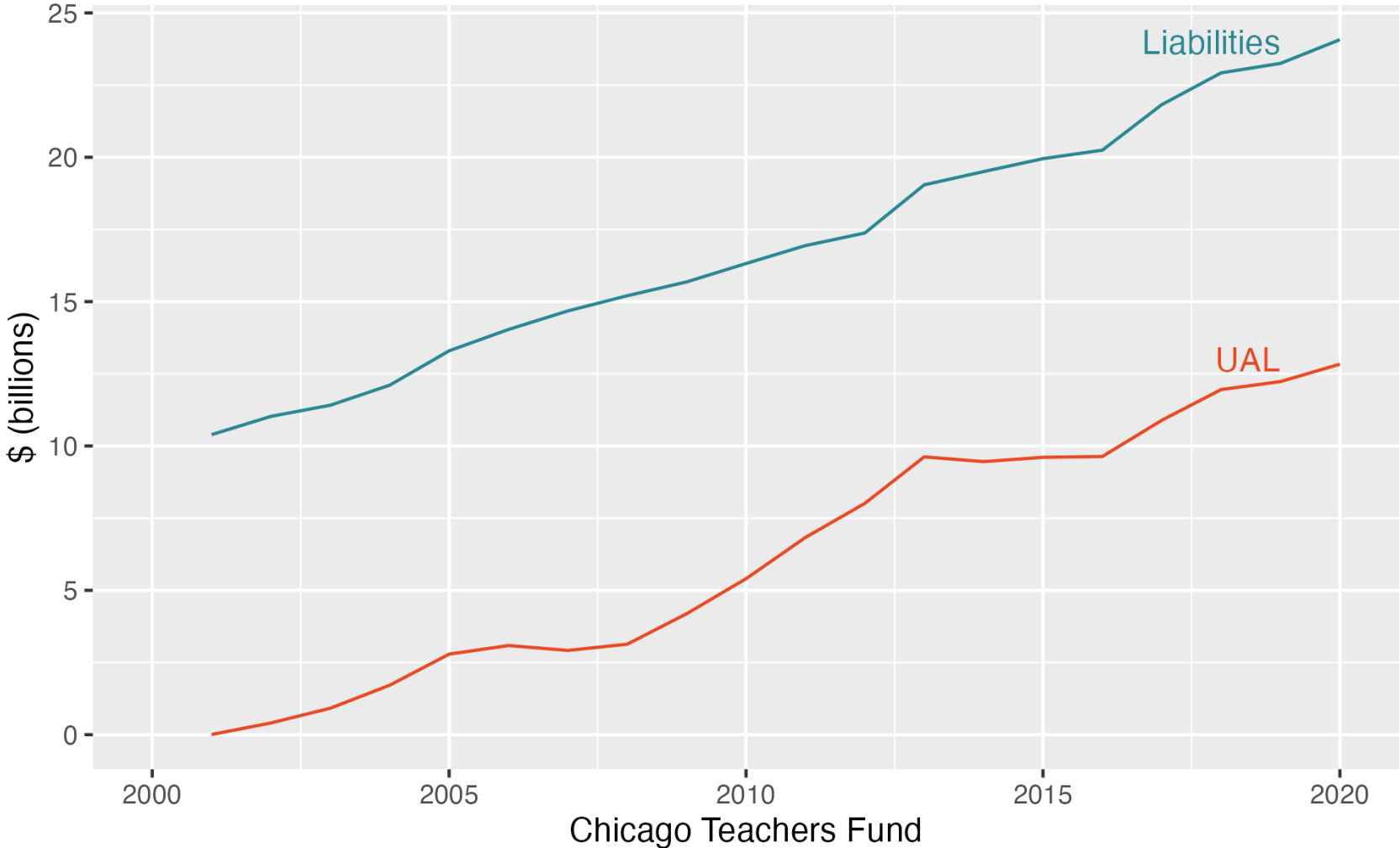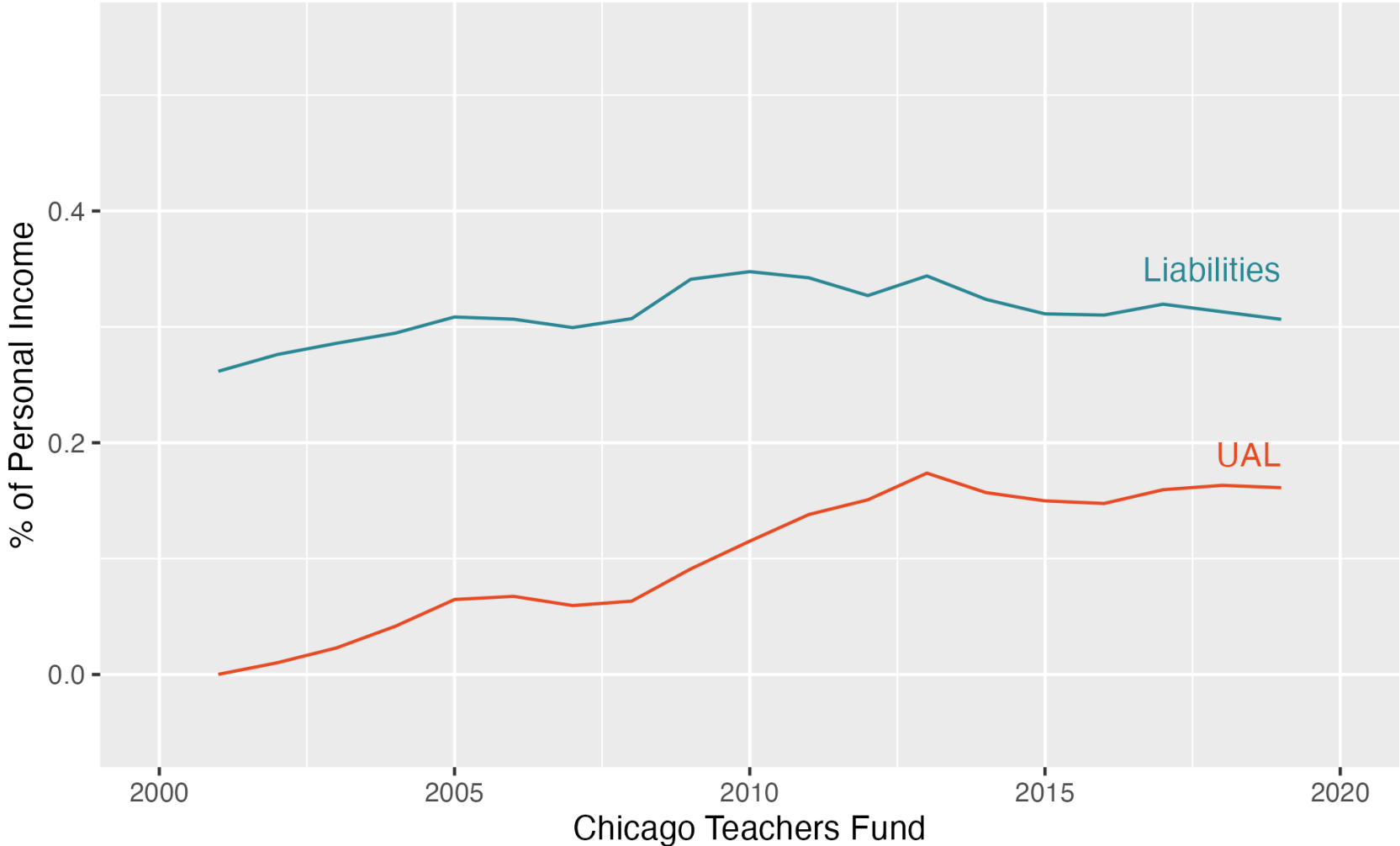
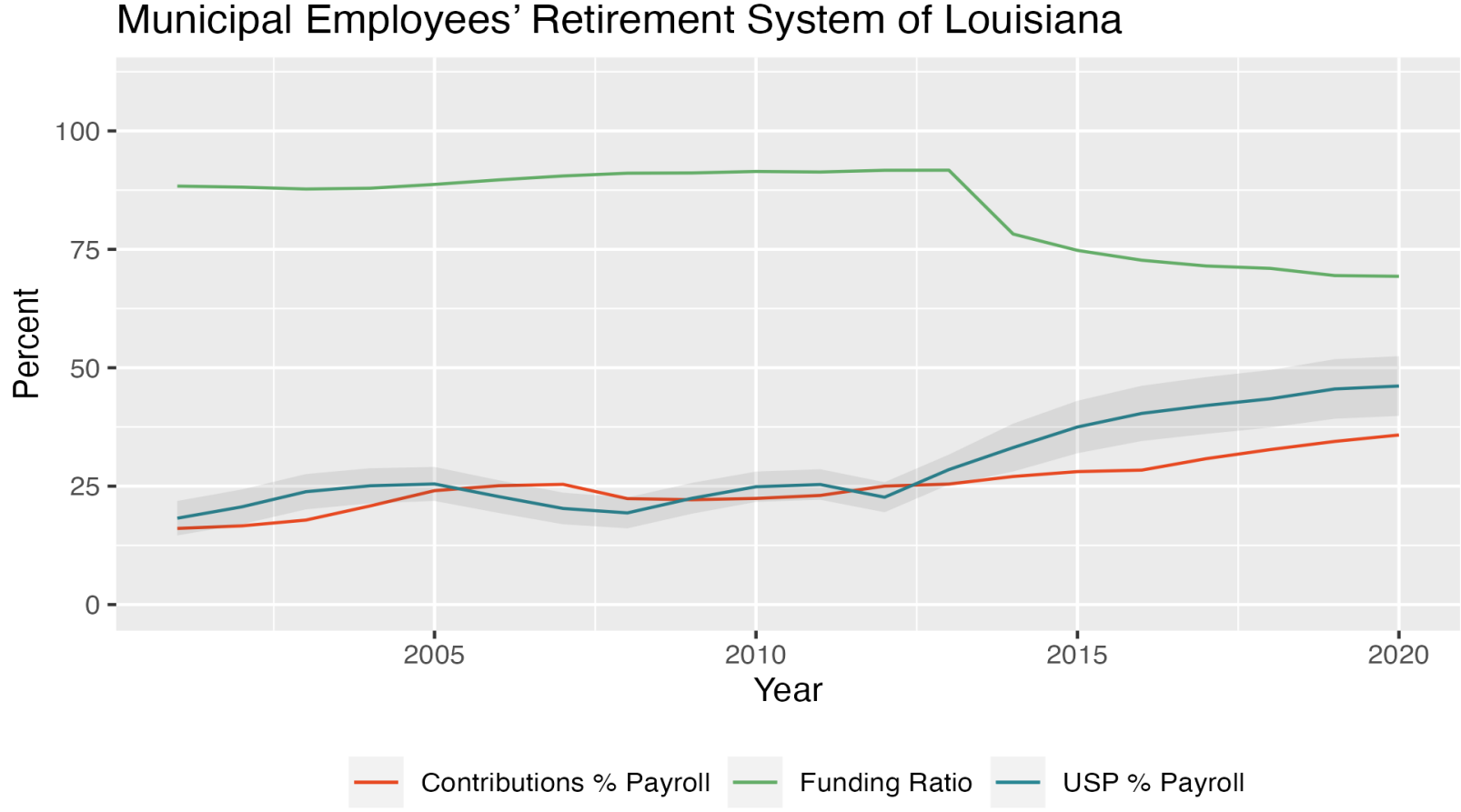# UAL Stabilization Payment

- What payment is necessary to keep the UAL the same?

- Assume making the investment goals.

- Related to Tread Water, Minimum Funding Progress.

- Cash flow analogue to funding position.

UAL Stabilization Payment

Oklahoma Public Employee Retirement System

Legend: Contributions % Payroll | Funding Ratio | USP % Payroll

UAL Stabilization Payment

Municipal Employees' Retirement System of Louisiana

Legend: Contributions % Payroll — Funding Ratio — USP % Payroll

UAL Stabilization Payment

Kentucky Employees Retirement System

Legend: Contributions % Payroll — Funding Ratio — USP % Payroll
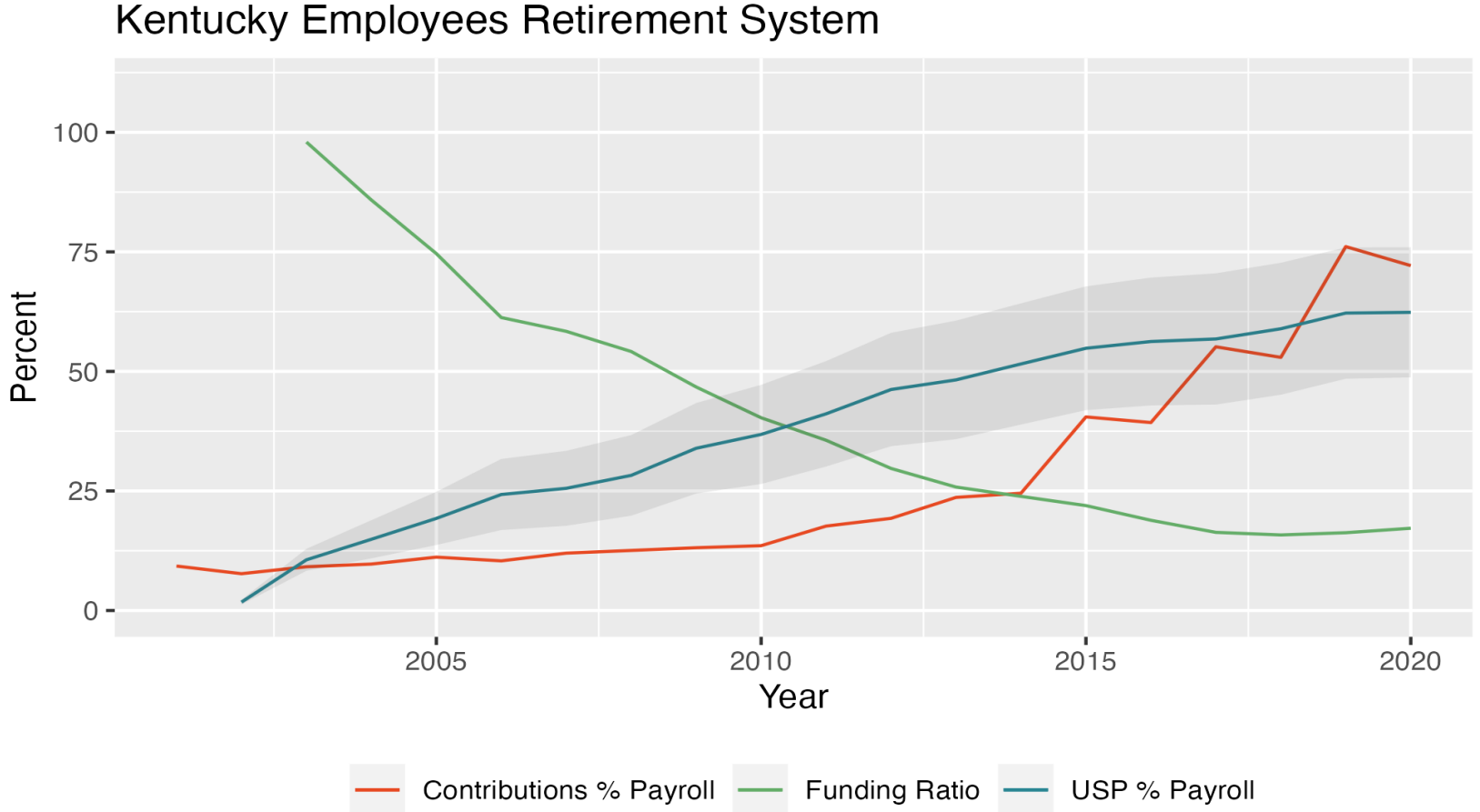
Risk Weighting Assets

- Many fields use shortcuts to more expensive tests: hydrology, meteorology, insurance, investors.

- Banks use a similar approach to valuing capital.

- For a pension fund, depends on cash flow and contrast between investing for the short- and long-terms.

Risk Weighting Assets

- Difference between short-term and long-term volatility for almost all asset classes.

- Use cash flow as a way to suggest how much risk a plan can afford to assume.

- Positive cash flow can afford to wait out a downturn, use the long-term volatility.

- Otherwise scale between short- and long-term number.

Risk Weighting Assets

Plan	Assets	Benefits	Contributions	Cash Flow	Assets/Benefit
Detroit P&F	2,601	291	47	-9.39%	8.94
NJ Teachers	26,583	4,478	3,138	-5.04%	5.94
RI ERS	6,509	809	557	-3.86%	8.05
IL Teachers	54,891	6,927	5,901	-1.87%	7.92
AZ PSPRS	8,725	912	1,096	2.11%	9.57

(dollars in millions)

Risk Weighting Assets

Plan	Fixed	Equities	Real Estate	Other
Detroit P&F	29%	38%	13%	20%
NJ Teachers	30%	46%	11%	13%
RI ERS	31%	44%	9%	16%
IL Teachers	24%	52%	16%	8%
AZ PSPRS	19%	38%	5%	38%

Asset Class	Short-discount	Long discount
Fixed	15%	2%
Equities	20%	3%
Real Estate	30%	4%
Other	99%	6%

(dollars in
millions)

Risk Weighting Assets

Plan	Assets	Weighted	Assets/Benefits	Weighted
Detroit P&F	2,601	1,723	8.94	5.92
NJ Teachers	26,583	22,155	5.94	4.95
RI ERS	6,509	5,580	8.05	6.90
IL Teachers	54,891	50,752	7.92	7.33
AZ PSPRS	8,725	8,375	9.57	9.18

(dollars in
millions)

Risk Taxonomy

- Like ASOP 51, but with classification.

- Risks to plan. Operational risks, mismanagement of funds, bad investments. Also contribution risk, internal vs. external.

- Risks to sponsor. Market risk, demographic risks.

- Risks to plan members. Political risk that might cause a plan to close, or benefits cut.

Risk Taxonomy

Risks to sponsor can be divided further.

- Actuarial risk. Some predictions are wrong.

- Volatility risk. The averages on which planning is based may be an inadequate description of the actual world.

- Regulatory risk. The rules changed.

Computer modeling: Taxonomy

- Parameter search. What set of parameters brings me closest to some outcome?

- Sensitivity testing. How dependent are outcomes on some choice of parameter?

- Stress testing. What outcomes are the potential result of some catastrophic scenario?

- Projecting a possible future. What is going to happen next week? Next month? Next year?

Computer Modeling: Validation

Any model — and its initial conditions — must be validated according to its purpose.

- Parameter search. None, or retrospective.

- Sensitivity testing. Is it plausible?

- Stress testing. Is it reasonably likely? Is it historically justified?

- Projecting a possible future. Is it accurate? Are initial conditions complete and accurate?

Innovation

- Pensions were an innovation. And one that changed lives for the better.

- Innovations in measuring them will provide more and better information to policy makers.

- Some systems moving to implement.

- Goal is to preserve this valuable institution for a long time to come.

Questions