American Academy of Actuaries

ANNUAL MEETING AND PUBLIC POLICY FORUM 2019

NOVEMBER 5-6

CAPITAL HILTON | WASHINGTON, D.C.

#ACTUARIES2019

Public Plan Innovations and Plan Designs

2019 Public Policy Forum, American Academy of Actuaries
Washington DC
November 5, 2019

David Draine, Senior Researcher
Strengthening Public Sector Retirement Systems

The Pew Charitable Trusts

- An independent, nonprofit, and nonpartisan research and policy organization

- "Driven by the power of knowledge to solve today's most challenging problems"

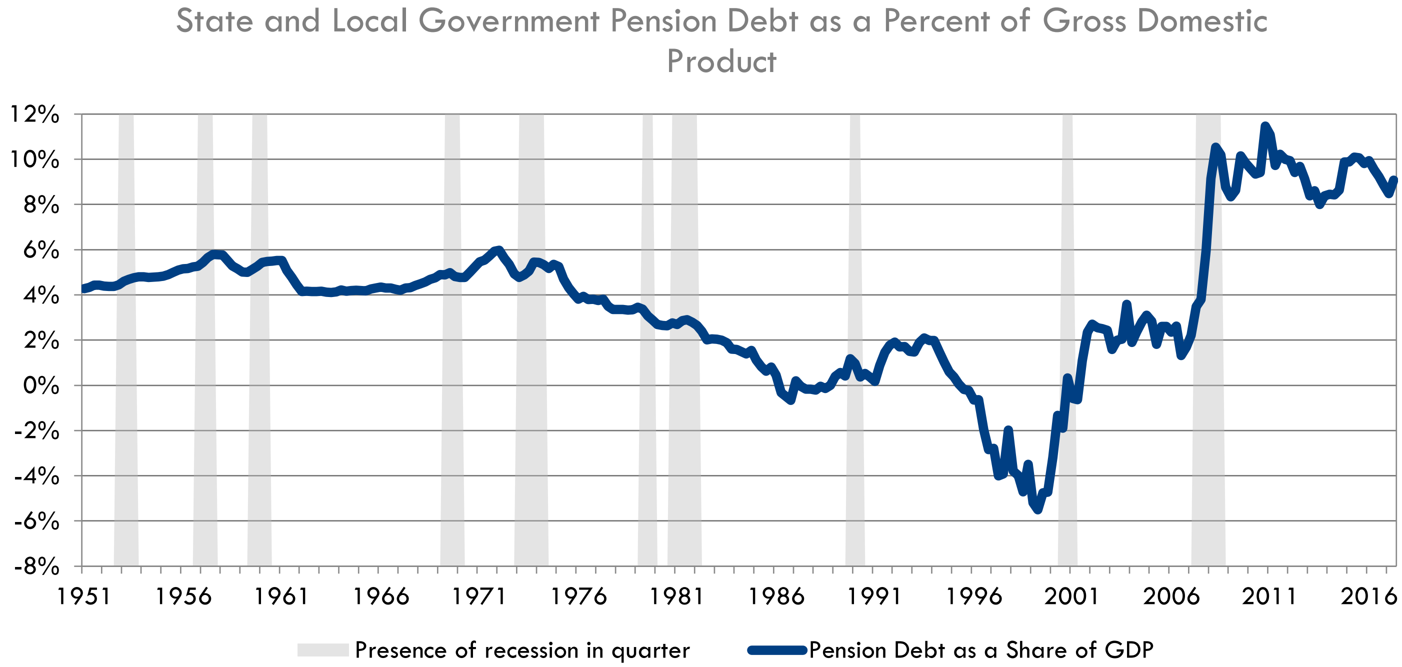
- Our mission is to:
  - Improve public policy
  - Inform the public
  - Invigorate civic life

Pew's Public Sector Retirement Systems Project

- Research since 2007 includes 50-state trends on public pensions and retiree benefits related to funding, investments, governance, plan design, and retirement security.

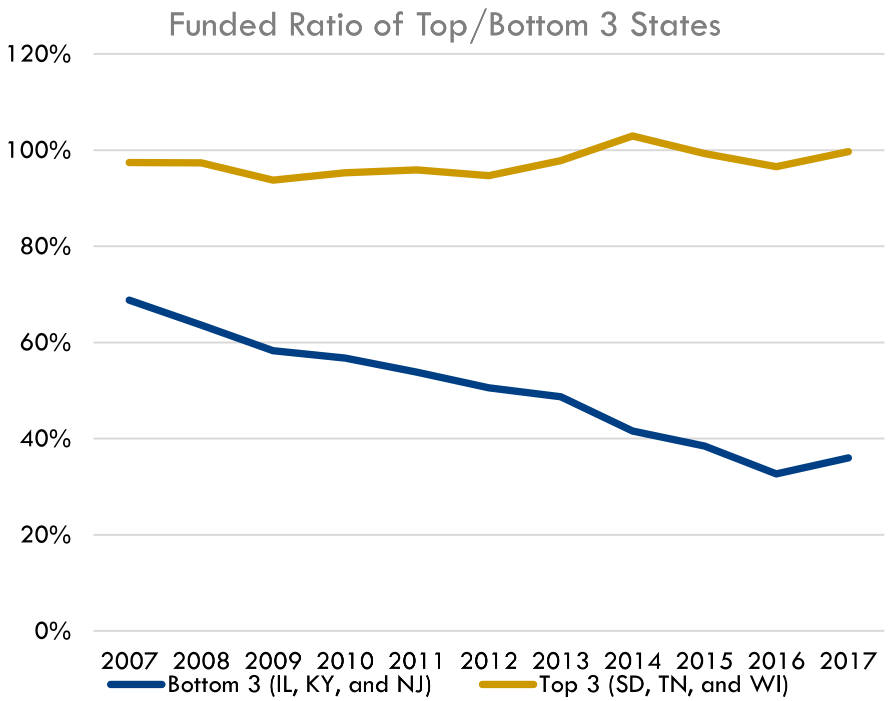
- Technical assistance for states and cities since 2011.

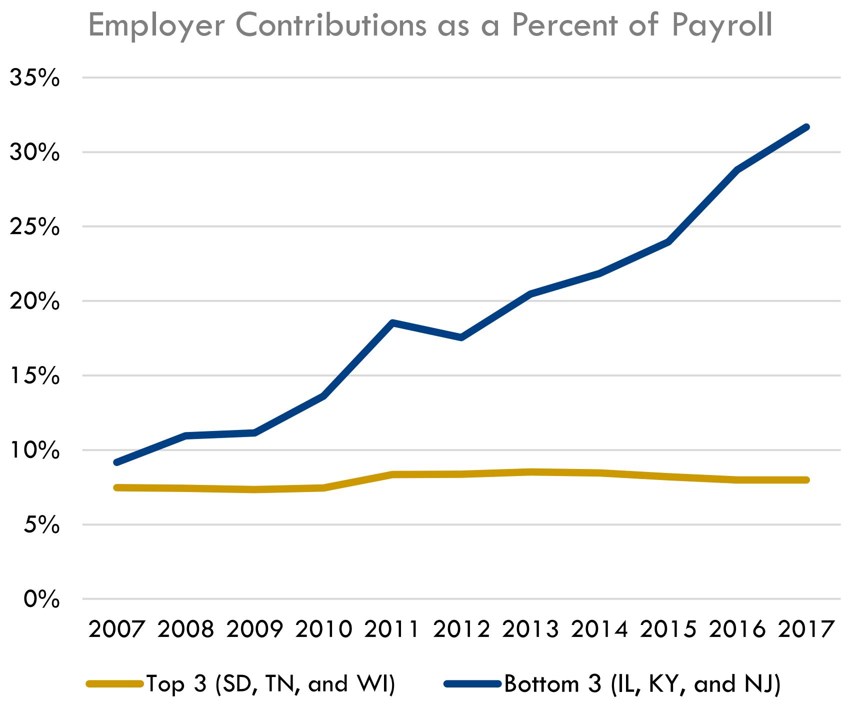
After Nine Years of Economic Recovery, Aggregate Pension Debt Remains at Historically High Level



Note: Data reflects Federal Reserve data as of Q1 2018, prior to a change in the Fed's methodology for calculating pension liabilities.
Source: Federal Reserve Board

Policy Matters—Growing Disparity Between States





No One-Size-Fits-All Approach

- Policymakers have a range of tools to provide retirement security to public employees while keeping costs affordable, sustainable, and predictable.

- Contribution policy is the single biggest difference-maker between well-funded and poorly funded state pension plans. Addressing the over $1 trillion in accumulated pension debt will largely be a financing challenge.

- Plan design is a crucial tool for policymakers looking to avoiding future funding shortfalls while maintaining a robust retirement benefit for workers.

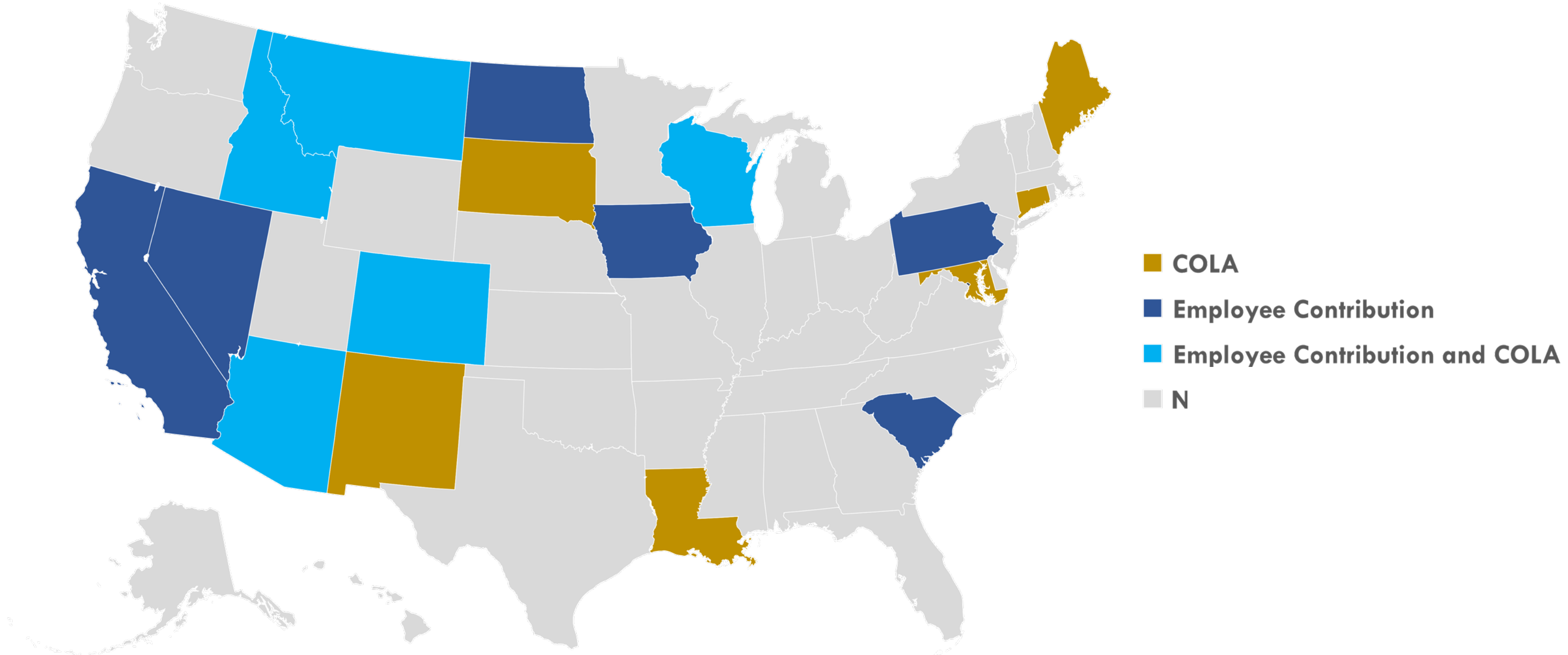
- Actuaries have a role in all of this; forward-looking financial projections and stress testing can show the adequacy (or lack thereof) of a plan sponsor's funding policy or the riskiness of a plan design.

Applying Risk-Sharing to a Defined Benefit Plan

- Seventeen states with defined benefit plans have built in cost-sharing features to share the cost of low returns or other downside scenarios, and potentially to share gains as well.
- Two policy levers are most commonly used—variable employee contributions and variable retiree COLAs.
- These tools can also be applied to the defined benefit in a side-by-side hybrid.
- Example of how plan design can be more important than plan type.

Cost-Sharing in Traditional Defined Benefit Plans

26 DB plans in 17 states have formal cost-sharing policies



Plan Design Definitions

Defined Benefit Plan (DB): Plan that provides a lifetime benefit based on a formula that takes into account the employee's salary and years of service.

Side-by-Side Hybrid Plan: Combines a DB with a separate Defined Contribution (DC) (401(k)-style) individual savings account.

Cash Balance Plan (CB): Pooled and professionally managed employee savings accounts with a guaranteed minimum annual investment return and access to lifetime benefit.

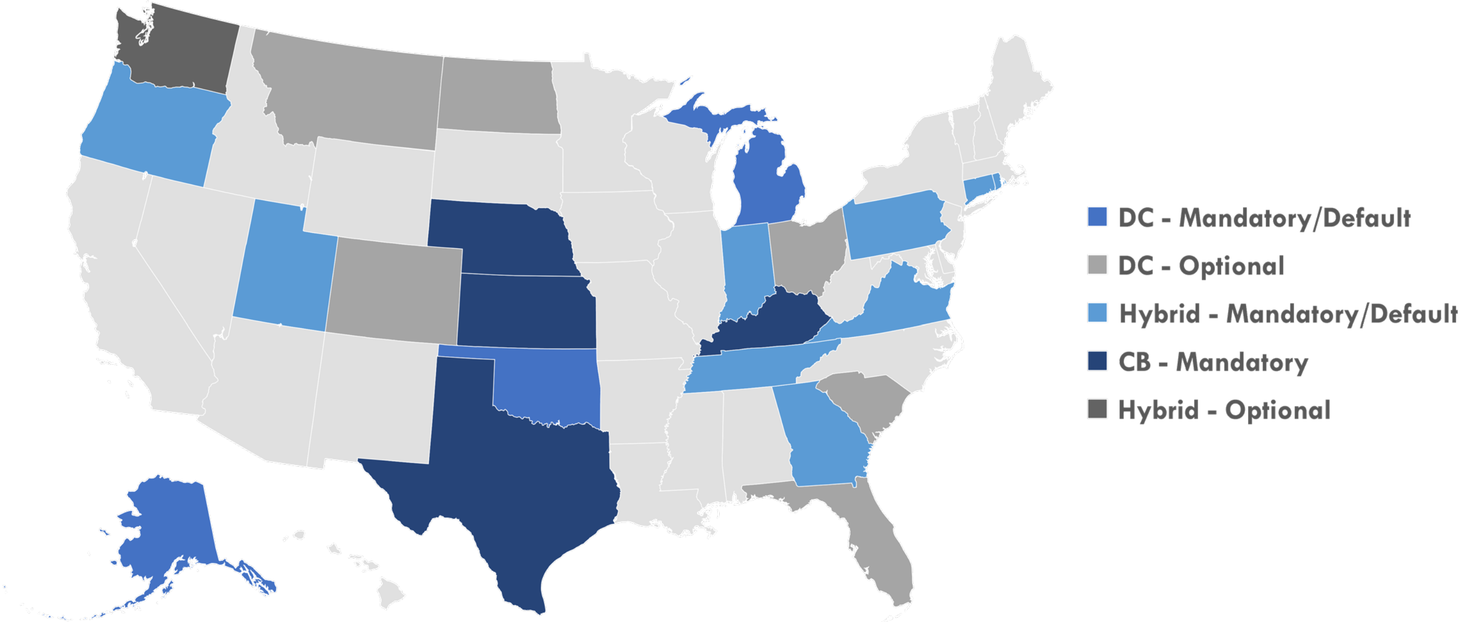
Cost-Sharing Features: Formal mechanisms that allocate risk and/or distribute unexpected costs among employers, employees, and retirees.

Career Replacement Income: Retirement income as a share of career-end take-home pay, adjusted for inflation and including Social Security.

Retirement Savings Rate: The percentage of salary saved annually that is available to a worker who may leave public service before reaching retirement age eligibility.

Growing Number of States with Alternative Retirement Plan Designs

23 states have implemented an alternative plan for workers.



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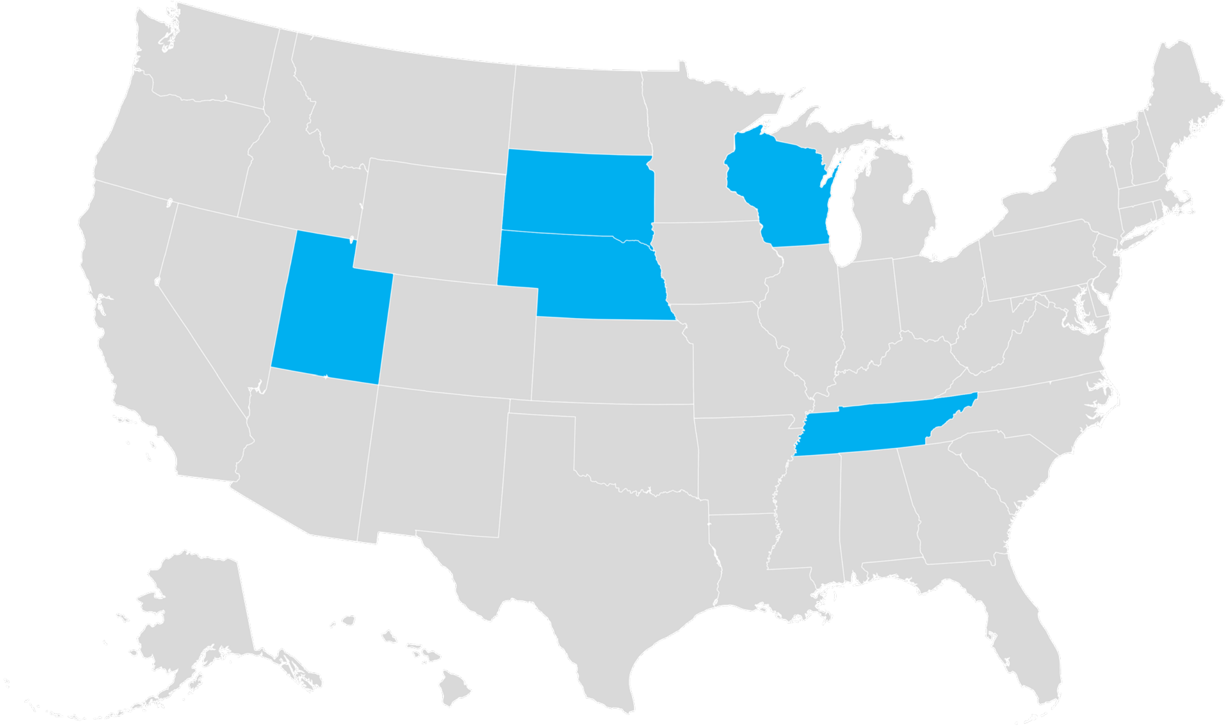
Notes: In cases where a state has more than one alternative plan, the plan type with the greater number of participants is marked on the map. California provides an optional cash balance plan for a limited group of educational employees. Texas' cash balance plan is available only to local workers. In 2017, Illinois approved the adoption of an optional hybrid that has yet to be implemented. Vermont offers a defined contribution plan to some exempt state workers and municipal workers.

Spotlight on Five State Pension Plans

Well funded (>90%) with strong risk management policies, participation in Social Security



Plans Identified by Pew:

- Nebraska – State and County Employees Pension Plans
- South Dakota Retirement System (SDRS)
- Tennessee – Public Employees Retirement Plan
- Utah Retirement System (URS)
- Wisconsin Retirement System (WRS)

Well-Funded Plans Have a Range of Designs and Cost Sharing Features

Plans with the strongest risk management also provide path to retirement security across the workforce

Plan	Plan Type	2017 Funded Ratio	Risk Sharing/ Predictable Costs*	Career Replacement Income**	Retirement Savings Rate > 10%
Wisconsin Retirement System	Defined Benefit w/ Money Purchase	103%	✓	✓	Yes
South Dakota Retirement System	Defined Benefit	100%	✓	✓	Yes
Tennessee – Public Employees Retirement Plan	DB/DC Hybrid	97%	✓	✓	Yes
Nebraska – State and County Employees Pension Plans	Cash Balance	100%+	✓	✓	Yes
Utah Retirement System	DB/DC Hybrid with Optional DC	90%	✓	✓	Yes

*Criteria is met if the potential increase of expected employer costs, expressed as a percent of payroll, in a lower than expected return scenario is less than two percentage points and if the range of employer contributions rates between 2007 and 2017 is less than five percentage points.

**Criteria is met if the retirement benefit is at least 90 percent of take-home pay, on average (adjusted for inflation) in retirement, including Social Security.

What Can Actuaries Do?

- Forward-looking projections of plan funding can let policymakers and stakeholders know whether current policy is fiscally sustainable, particularly if investments fall short of expectations.

- Measuring risk and volatility, and the impact of any risk-management policies in place, can help plan administrators and budget officials plan for downturns and manage uncertainty.

- Stress testing is an important tool—both to assess the sustainability of current policy and to consider potential changes.

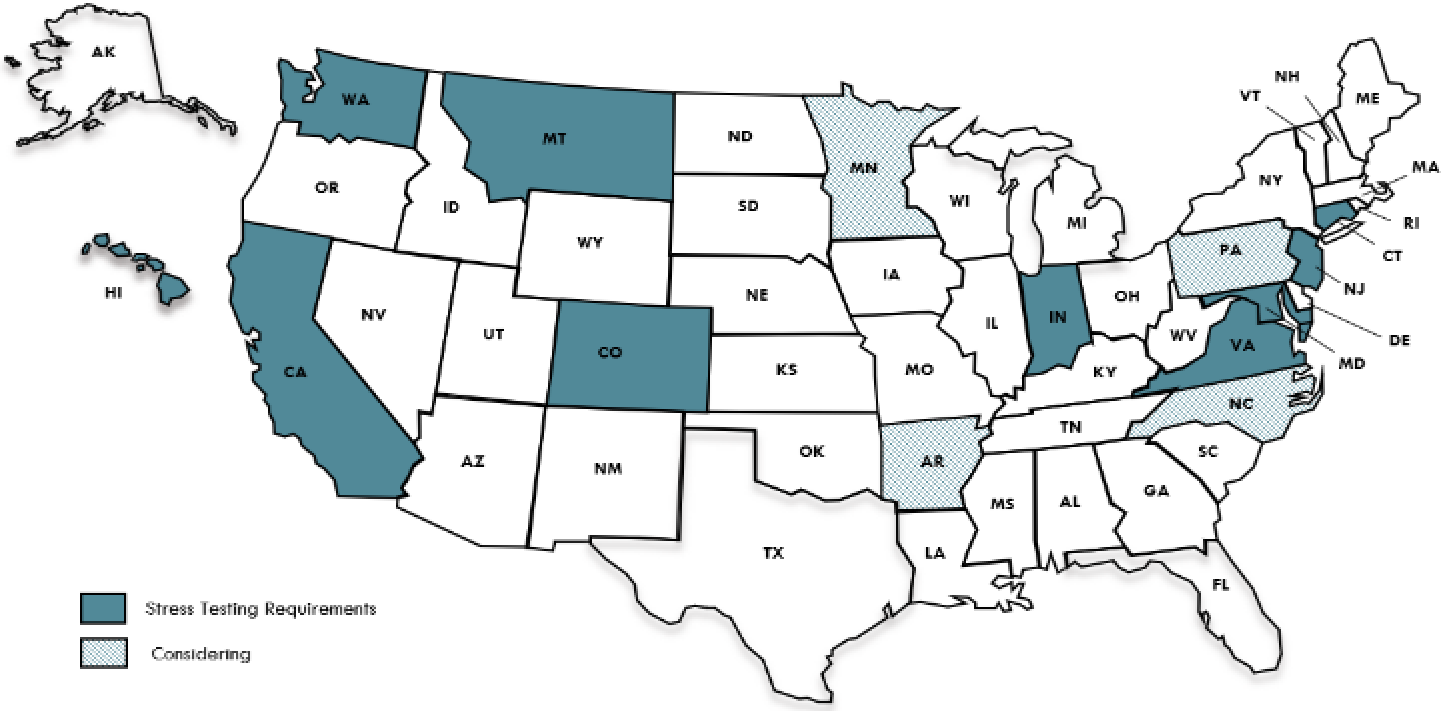
What Is Stress Testing?

- A simulation technique to assess the potential impact of **investment risk** and **contribution risk** on pension balance sheets and government budgets.
- An emerging trend that aligns with new actuarial standards (ASOP No. 51).
- A tool to help policymakers plan for economic uncertainty and the next recession.

What gets Measured gets Managed!

Notes: Pew's recommended framework is detailed in the Foundation for Public Pensions Risk Reporting, The Foundation was informed by input from various academics, practitioners and other stakeholders in the field of public sector retirement and in partnership with the Harvard Kennedy School of Government; It focuses on the measurement and assessment of investment and contribution risks for public pension plans – to inform planning and decision making.

Emerging Trend: States That Have Enacted or Are Considering Adopting Stress Testing Requirements



Note: See [Pew's Foundation for Public Pensions Risk Reporting] for more information on Pew's recommendations.

Not Just an Academic Exercise

Powerful tool to ensure that policies are in place to weather economic uncertainty ahead

Comprehensive stress testing can aid officials and policymakers in:

- Preparing for the next recession.
- Planning for lower returns and higher costs over the long term.
- Managing financial market volatility through the business cycle.
- Evaluating reform proposals in a standard fashion.

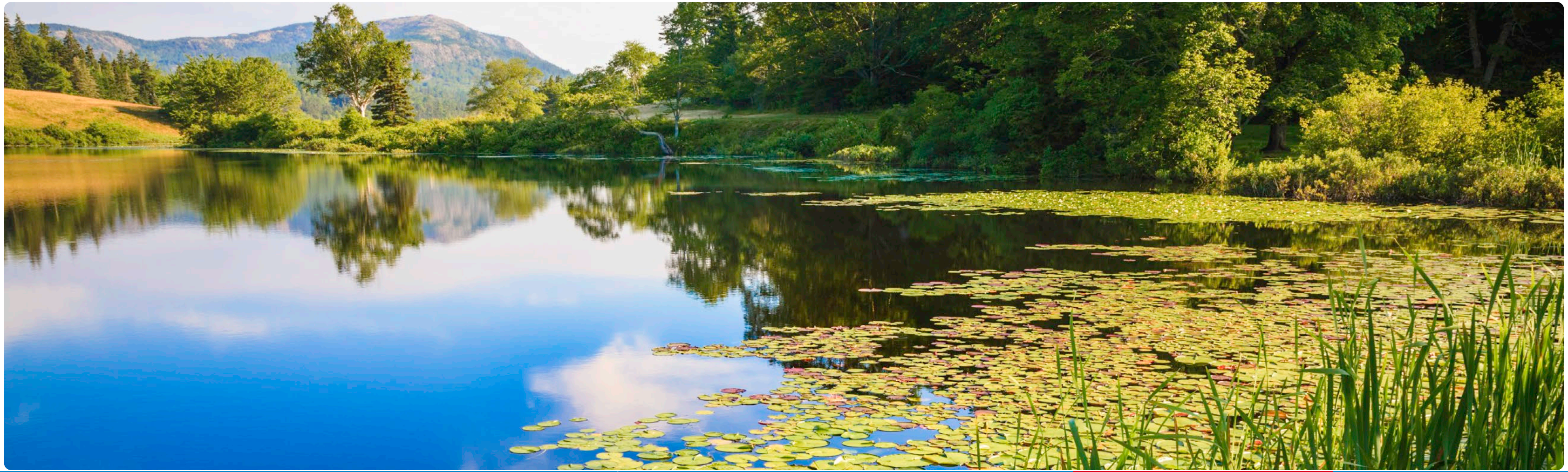
Stress testing was used as a tool to help guide reforms in both Colorado and Pennsylvania

Key Takeaways

- No one-size-fits-all solution for successful retirement systems.
- State policymakers have a broad toolbox of plan features and plan designs.
- Plan sponsors looking to manage risk can build in cost-sharing features to a traditional defined benefit or look to an alternative plan design.
- Effective risk management and stress testing can help policymakers keep costs predictable and plans solvent while providing workers with a secure retirement.
- Actuaries need to be part of the conversation.

MainePERS
PUBLIC EMPLOYEES RETIREMENT SYSTEM

American Academy of Actuaries 2019 Annual Meeting
Public Plan Innovations and Plan Designs Break-Out Session



MainePERS Mission and Services

Our mission is to serve the public with sound retirement services to Maine governments.

We administer defined benefit plans for the State of Maine that are provided in lieu of Social Security.

We administer *optional* defined benefit plans for Maine Local Governments, and provide these employers with a set of supplemental defined contribution plans that we call MaineSTART.

Dilemma

What could possibly go wrong in an optional multiple-employer cost-sharing defined benefit retirement plan?

We may be long-term investors . . . .

May 2016

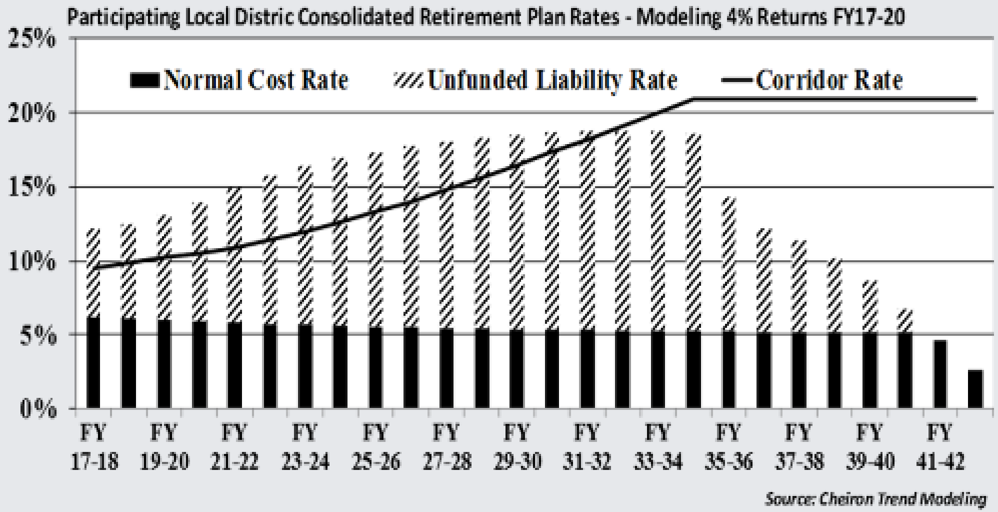
2 Years of low investment returns

- FY 2015 – 2%
- FY 2016 – 0.6%

Speculation at the time

- Next 4 years – 4%
- Following 6 years – climbing up to 7% or 8%

… but stress testing shows short-term returns can create problems for contribution rates and employer budgets



What else mattered in this multiple-employer cost-sharing pension plan?

- Employers - Local governments with modest budgets and optional membership
- Discount Rate - 6.875% (now 6.75%)
- Funding – Struggling to recover
  - Dropped from 108% in 2008 to 87% in 2014 due to employer rate holiday through 2009 compounded by the Great Recession
  - Benefit cuts in 2014 temporarily restored funding to 90%
  - Funding continued to drop to 86% in 2016 as graduated employer rate increases did not yet fully cover the UAL payment
- Employer withdrawal liability - None

Without changes, each major market downturn could create a downward spiral with the possibility of insolvency down the road

What Creates Effective Pension Solutions?

Panic

Understanding the true risks unlocks the urgency needed to change

Innovate

Understanding the true risks leads to innovative *long-term* solutions

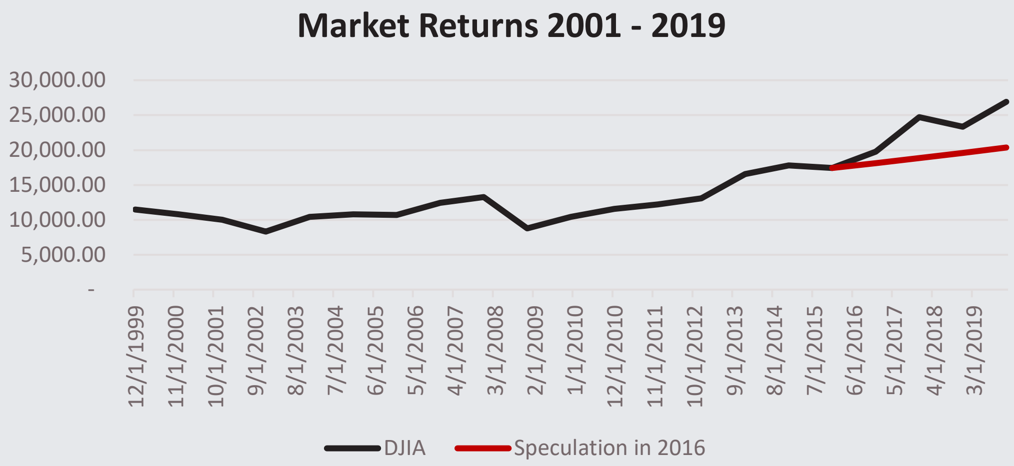
Implement

Matching the true risks to the solutions allows stakeholders to accept the changes

Who Could Have Guessed What Actually Happened, or "Hope is not a Strategy"

Market returns actually became quite robust starting in late 2016, and we earned:

- FY 2017 – 12.5%
- FY 2018 – 10.2%
- FY 2019 – 7.3%



Fortunately, panic turned into a plan before we could be lulled back into hope by strong market gains

Traditional "Reform" is Not Reform

Reactionary "Reform"	Known Downsides
• Freeze or reduce COLA	• Permanent loss of retiree buying power
• Raise employer contribution rates for each market downturn	• If employers withdraw, a "last employer standing" situation is created and plan insolvency is more likely
• Raise employee contribution rates after market downturns	• Cost to employees becomes greater than benefit value
• Reduce future benefits	• Employees only share in downside risk
• Hope there isn't another market downturn	• Can't invest out of underfunding

What did we actually do?

We set goals

- Pay each member their basic benefit throughout their life

  Final average salary X years X multiplier

- Pay 100% of required annual contributions without rate uncertainty
  - Know ahead of time how market downturns will be handled

We broke the cycle

- Understand the cause of the risk each party to the pension faces

Members	Employers
Retirees	Taxpayers

- Redistribute the same risk in a different way that mitigates damage and makes the risks acceptable
- Assure that 100% of the required annual funding is paid

Turning Panic into Innovation

- Identify your goal
  - Pay every member their basic benefit throughout their lifetime
- Understand your risks
  - Low interest rates have created higher portfolio volatility
  - High rates cause employers and employees not to join the plan
  - Employees share only in downside risk
  - COLA cuts harm retirees
  - Retire/rehire is more attractive

Year	Market Value	1 year	3 year	5 year	10 year	20 year	30 year
FY2019	$ 14,886	7.3%	10.0%	6.4%	9.3%	5.7%	8.1%
FY 2018	$ 14,344	10.3%	7.7%	8.2%	6.3%	5.9%	8.3%
FY 2017	$ 13,385	12.5%	4.9%	8.4%	4.9%	6.3%	7.9%
FY 2016	$ 12,283	0.6%	6.2%	6.0%	5.2%	6.6%	7.9%
FY 2015	$ 12,610	2.0%	9.8%	10.2%	5.9%	7.4%	8.7%
FY 2014	$ 12,732	16.7%	9.3%	12.1%	6.9%	8.1%	9.5%
FY 2013	$ 11,264	11.1%	11.0%	4.3%	6.9%	7.5%	8.7%
FY 2012	$ 10,470	0.6%	11.0%	1.5%	6.3%	7.7%	9.7%
FY 2011	$ 10,739	22.4%	3.4%	4.4%	5.4%	8.3%	9.6%
FY 2010	$ 8,934	11.1%	-4.4%	1.8%	2.5%	7.5%	9.4%
FY 2009	$ 8,291	-18.8%	-3.0%	1.9%	2.3%	7.5%	9.5%
FY 2008	$ 10,538	-3.2%	6.5%	9.5%	5.6%	9.3%	10.7%
FY 2007	$ 11,031	16.2%	11.8%	11.4%	7.7%	9.4%	11.0%
FY 2006	$ 9,559	7.5%	11.9%	6.4%	7.9%	9.2%	
FY 2005	$ 8,921	11.8%	11.1%	3.2%	8.8%	10.1%	
FY 2004	$ 8,021	16.6%	4.3%	2.8%	9.4%	10.8%	

Innovation
Auto-trigger Framework Adopted in 2018

Pay every member their basic retirement benefit throughout their life.

- Part 1 – Contribution Rates
  - Both employers and employees will share in market losses *and* gains through variable, not fixed, contribution rates
  - Rate maximums and minimums are established for both groups
- Part 2 – Benefits
  - Some discretionary benefit enhancements that no longer make sense and weighed on plan costs were reduced
- Part 3 – COLA
  - When required contributions exceed rate caps for employers and employees, excess required contributions are collected by phasing into and reducing the COLA, allowing market recovery to phase back in and restore full COLA eligibility
- Part 4 – Withdrawal liability
  - Employers pay for their UAL upon withdrawal

How does the design mitigate risks?

Employers	Employees	Retirees	Funding
Rate certainty removes fear of continuous/endless increases which allows employers to budget for their range of required contributions. Employers are less likely to drop out.	Employees can have confidence their benefit will be there in retirement without further benefit reductions. Employees can share in the upside market risk through lower rates.	Benefit will grow throughout retirement with possible temporary reductions, but the COLA is unlikely to be frozen or permanently reduced absent extreme market losses.	Full contributions occur automatically as required contributions in excess of the employer and employee caps are phased into future COLAs and phased out as markets recover.

Testing the design using historic returns

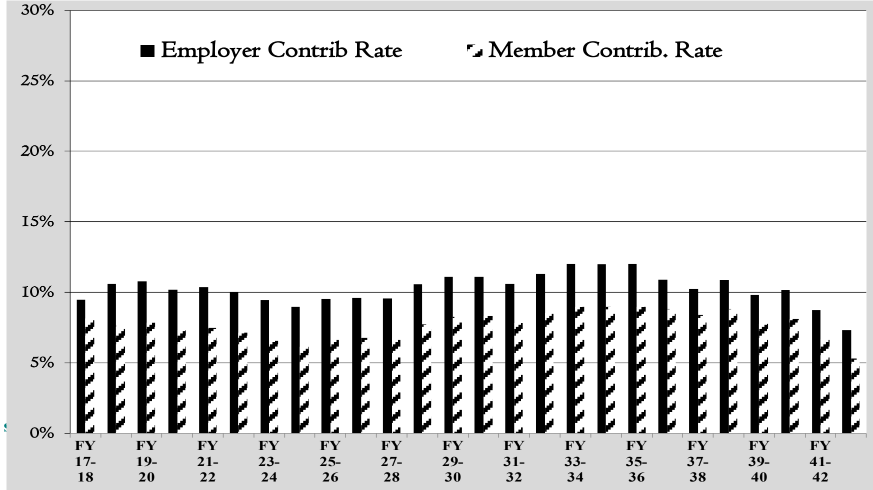
Extensive modeling showed that contribution rates can stay within the minimums and maximums using auto-trigger COLA reductions

MainePERS Participating Local District Consolidated Retirement Plan Risk Allocation Modeling

FYE		COLA Adjustment	Funded Ratio
2018	3.94%		89%
2019	18.06%	0%	89%
2020	-2.06%	0%	92%
2021	14.56%	0%	91%
2022	11.82%	0%	93%
2023	7.34%	0%	96%
2024	-5.98%	0%	99%
2025	12.44%	0%	96%
2026	7.70%	0%	96%
2027	-8.34%	0%	97%
2028	9.76%	0%	92%
2029	12.98%	0%	90%
2030	14.32%	0%	91%
2031	-8.38%	0%	94%
2032	-17.14%	0%	91%
2033	28.16%	0%	83%
2034	20.52%	-46%	82%
2035	-3.12%	-60%	85%
2036	4.52%	-40%	85%
2037	11.80%	0%	84%
2038	20.52%	0%	85%
2039	-0.46%	0%	89%
2040	25.88%	0%	90%
2041	16.86%	0%	96%
2042	9.82%	0%	105%
ave=	8.22%		

Cost Sharing	ER	EE
initial benefit	58.0%	42.0%
future gains and loses	50.0%	50.0%

Contribution	Caps
maximum	21.5%
minimum	12%



Implementation

Getting stakeholders from this . . . . . .

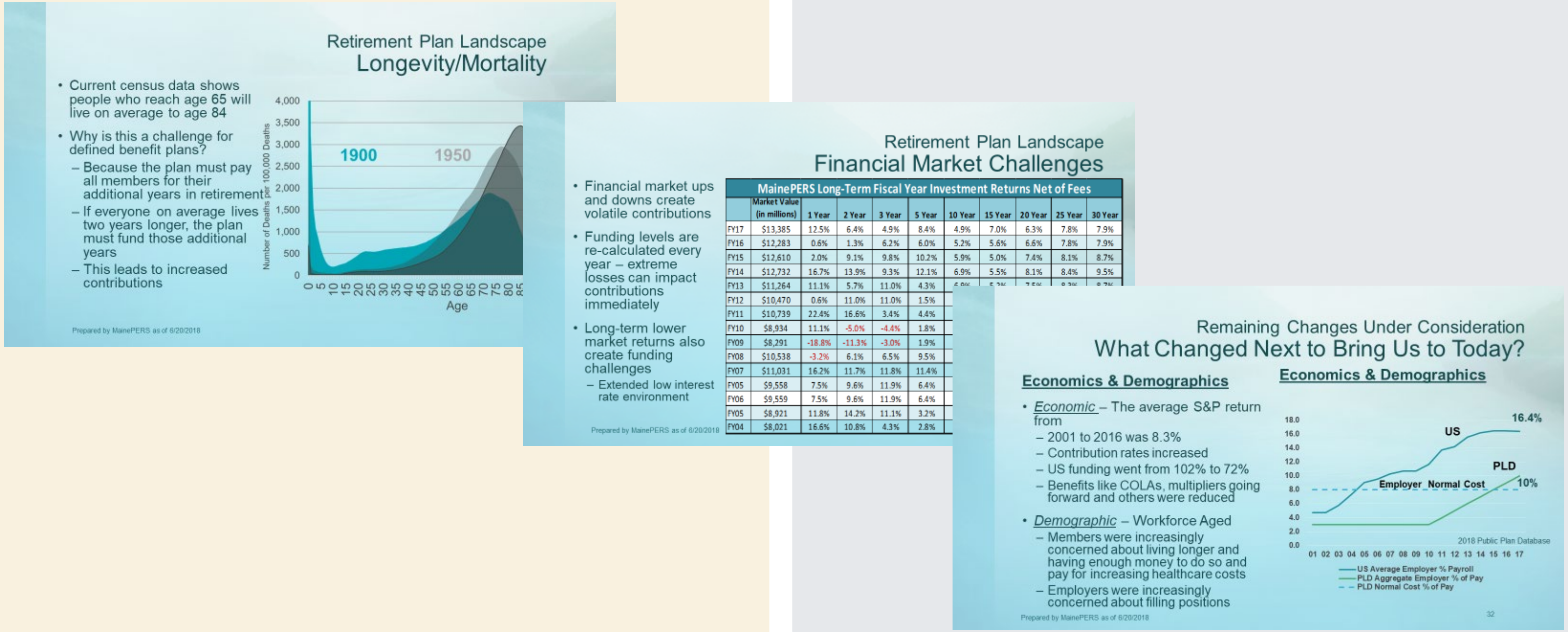
to this

is possible.

How did we obtain buy-in to the changes?

- Patience – 2 year process
- Worked as a team with our employers, members and retirees
- Educated each group first on the challenges pension plans are facing, then showed how the plan changes address each risk to keep the plan funded and there for them in retirement
- Listened to feedback and incorporated it whenever it made sense, never comprising our goal of paying every benefit throughout everyone's life
- Sincere in our commitment to saving the benefit and gained trust that we were doing what is in stakeholders' best interest

Samples from Outreach to Stakeholders



MainePERS Long-Term Fiscal Year Investment Returns Net of Fees

	Market Value (in millions)	1 Year	2 Year	3 Year	5 Year	10 Year	15 Year	20 Year	25 Year	30 Year
FY17	$13,385	12.5%	6.4%	4.9%	8.4%	4.9%	7.0%	6.3%	7.8%	7.9%
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FY06	$9,559	7.5%	9.6%	11.9%	6.4%					
FY05	$8,921	11.8%	14.2%	11.1%	3.2%					
FY04	$8,021	16.6%	10.8%	4.3%	2.8%					

Lessons Learned

- Knowing how you are going to handle market fluctuations in advance can help you design a plan that protects benefits and funding
- Being realistic about what benefits the plan can and can't afford to provide is critical in creating a benefit that can be maintained without constant reductions and heartache
- Members and employers can understand and accept plan changes when they are fully explained and those changes are clearly in their best interest
- Remove the word "can't" and replace it with "how can we"
- Making plan changes is a lot of hard work but can be the very best thing you can do for your members
- Risk-sharing does not necessarily mean negative risk-shifting

Wisconsin Retirement System

A Risk-Sharing Public Pension Plan

Bob Conlin, Secretary

Wisconsin Department of Employee Trust Funds

Background: Wisconsin Retirement System

- Statewide, defined benefit plan
- Some defined contribution features
- Covers most public employees in Wisconsin
  - State, university, elected, judicial, teachers, municipal, public safety

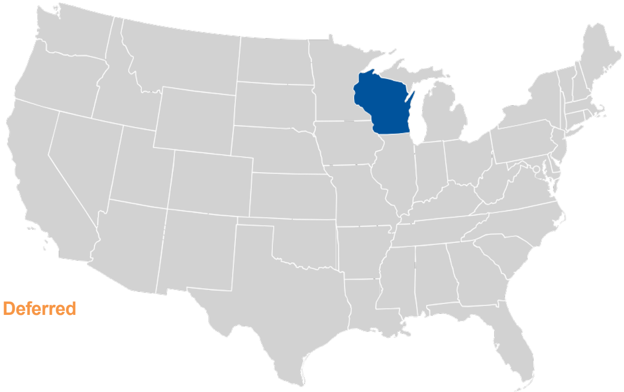
Background: Wisconsin Retirement System

1500
Public Employers

27% State
73% Local

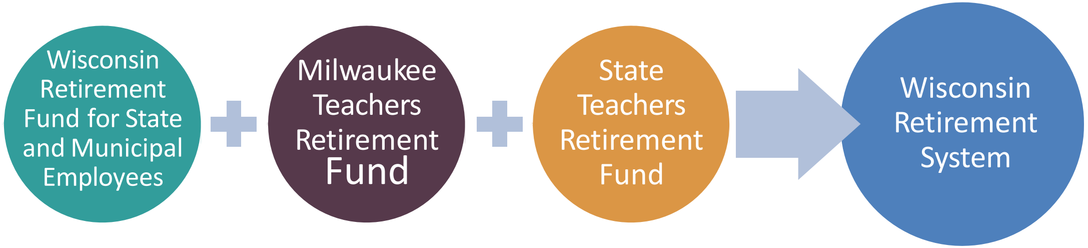
639K
Participants

40% Active
33% Retired
27% Vested / Deferred



Background: Wisconsin Retirement System

- Established 1982
- Merger of several smaller plans over 40 years



Background: WRS Funding

Funding Goal

Full Funding
100% funded goal

Stable Rates
Relatively stable contribution rates

Funding Statistics (12/31/17)

$107B
Assets

100%
Funded (FIL)

103%
GASB

99.5%
EAN

Background: WRS Key Risk-Sharing Features

- Split normal **cost** contribution rates between employer and employee
- Post-retirement **benefit** adjustments based on investment performance
- Active employee money purchase **benefit** minimum/Variable Fund

Cost: WRS Annual Rate Setting

1 Board establishes rates annually **based upon recommendation of consulting actuary**

2 Normal cost contribution rates are split evenly between employers and employees

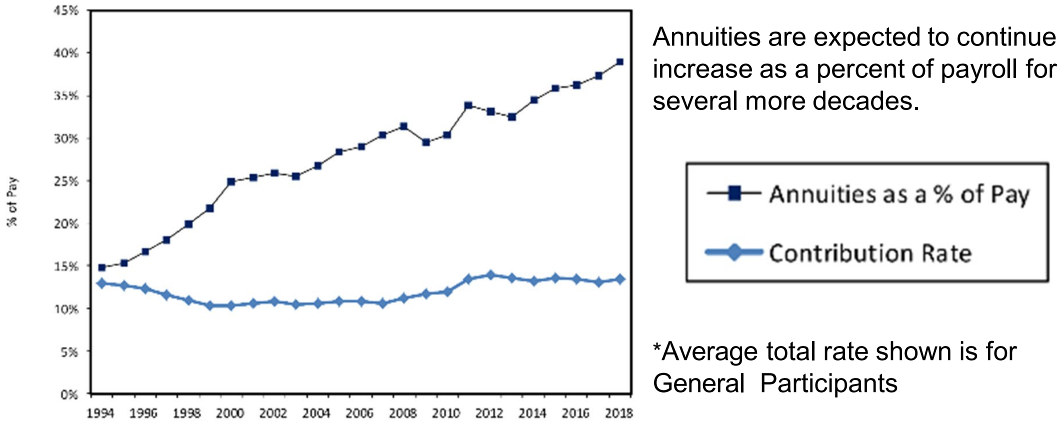
- 2020 Contribution Rates: 13.5%

ER: 6.75%	EE: 6.75%

3 Contributions are remitted monthly

- 2018 Statewide Payroll: $14.3B
- WRS can intercept state aids for non-payment

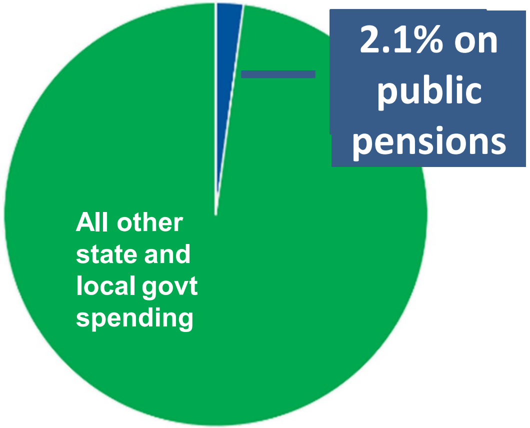
Cost: WRS Annuities and Contributions*



Annuities are expected to continue to increase as a percent of payroll for several more decades.

*Average total rate shown is for General Participants

Cost: WRS Impact on Taxpayers



- State and local governments in Wisconsin spend 2.1% of their budgets on public pensions (WRS is largest)
- National average: 4.7%

•Fiscal Year 2016
Source: National Association of State Retirement Administrators (March 2019)

Benefits: WRS Retirement Benefits

We compare two calculations:

Money Purchase
- Account balance
- Age

vs.

Formula
- Years of service
- 3 highest years of earnings
- Category
- Age

Members get paid the higher of the 2

Benefits: WRS Core and Variable Funds

Core Fund

- Automatic enrollment for all employees
- Diversified portfolio
  - Guaranteed minimum annuity payment
  - 5-year smoothing

Core + Variable Fund

- Optional 50% of contribution
- All-stock portfolio
  - No guaranteed minimum annuity payment
  - No smoothing

Benefits: WRS No Cost-of-Living Adjustment

Compounding adjustments are based on investment performance

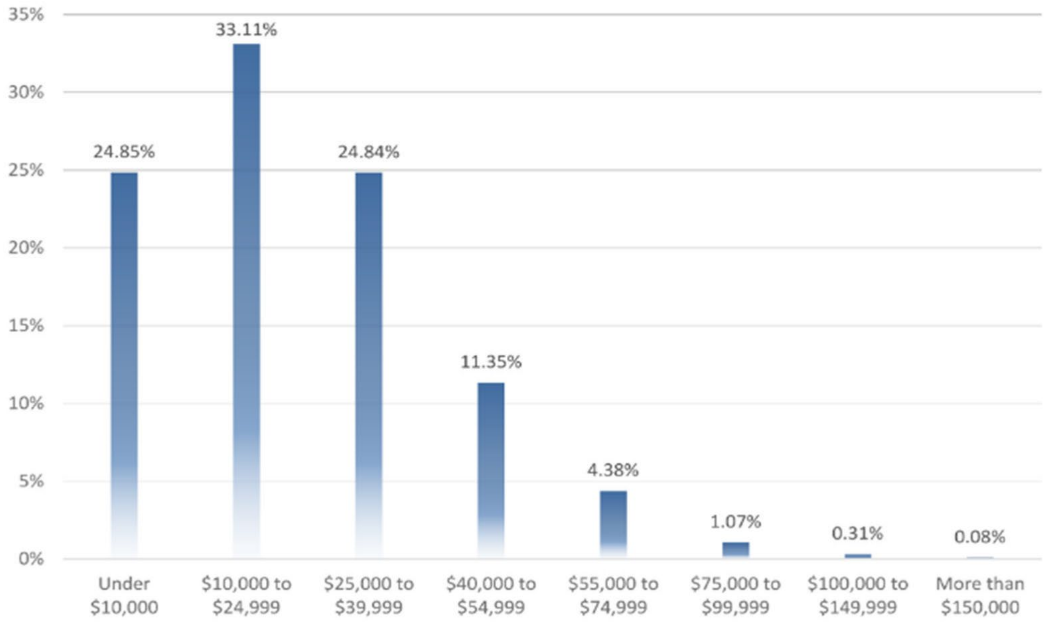
- A 5% investment return assumption is used to fund original retirement benefit.
  - Only investment returns in excess of 5% can produce an increase in annuity
  - For example, 7.0% performance - 5% = ~2% annuity adjustment
- Can reduce previously granted adjustments

Average annual adjustment since 1982 merger

- Core: 3.7%
- Variable: 3.8%
- In 2018, $5.4 billion in benefits paid

! Between 2009 and 2013, pensions reduced by cumulative $6 billion

Benefits: WRS Annuities by Amount in 2018



WRS Lessons Learned

- Communicate, communicate, communicate
- A 2008/09 event is painful for any type of system, but risk-sharing systems markedly improve chances of sustainability
- Implementation of risk-sharing won't necessarily fix legacy costs, but will start addressing future liabilities
- No one-size-fits-all approach
- Still need to manage system and pay contributions

Thank You

Wisconsin Department of Employee Trust Funds

etf_wi

etf.wi.gov

ETF E-mail Updates

608-266-3285
1-877-533-5020

Appendix

History of Post-Retirement Adjustments in Wisconsin

1957 Teachers System paid first annuity adjustment based on surplus in the annuity reserve

1967 Law allowed Wisconsin Retirement Fund to pay annuity adjustment based on surplus in its annuity reserve fund to non-teacher retirees

1981/82 Merger legislation provided for annuity adjustments from annuity surplus if at least 2% upon recommendation of actuary and allowed the board to revoke such adjustments prospectively if a deficit in the reserve occurs

1957 1962 1967 1972 1977 1982 1987 1992

1957 Constitutional amendment allowed for ad hoc adjustments for retired teachers if approved by Legislature with supermajority of both houses. Post-retirement adjustments were previously prohibited by Constitution

1974 Constitutional amendment extended post- retirement adjustments to all public retirees but required sufficient state funds be appropriated for any such increases. Four separate general fund ad hoc adjustments for teachers granted between 1957 and 1974

History of % Changes in WRS Annuities and Consumer Price Index