

Montana Legislative Week

Pensions Breakout Session

January 15, 2020

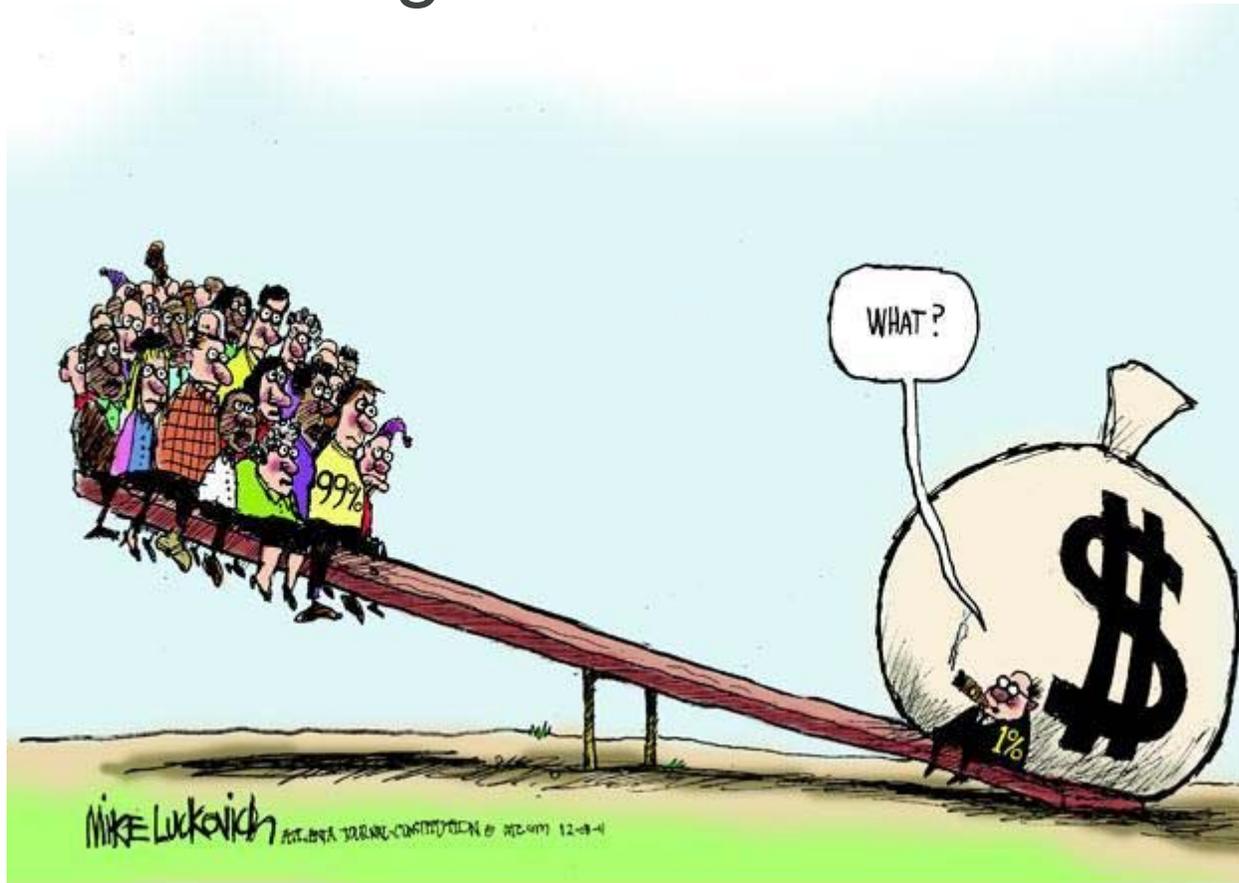
Actuarial Standards and Risks to Pension Systems

Elizabeth Wiley, FSA, EA, FCA, MAAA

Ultimate Risk

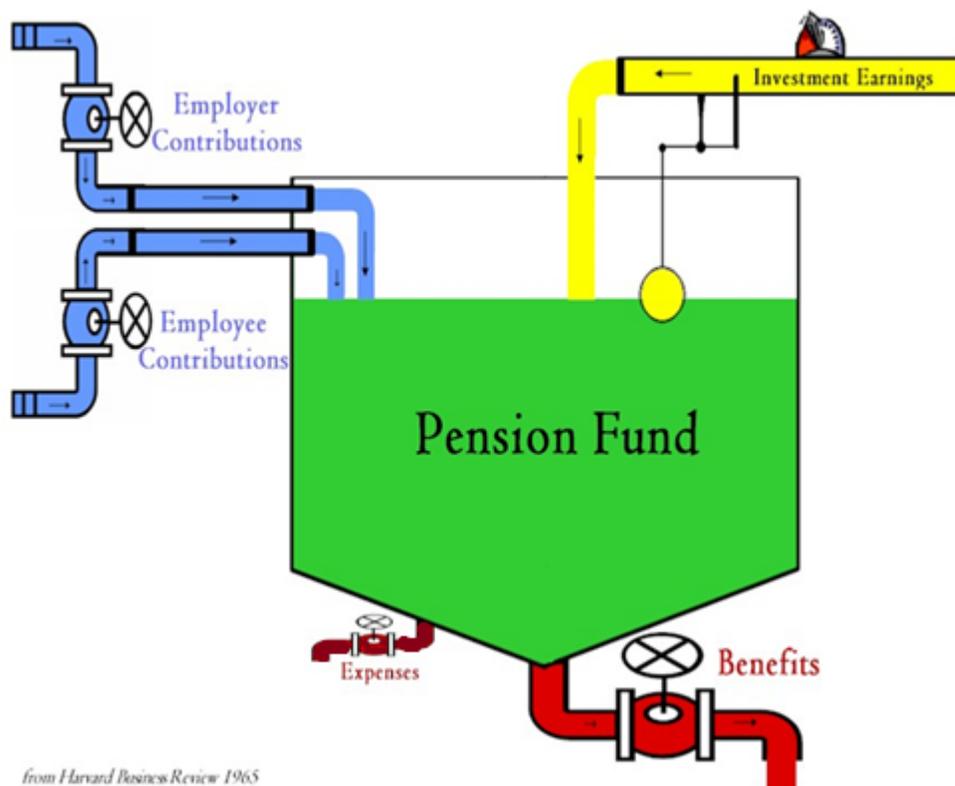


The inability to pay the plan's promised benefits at funding levels that can be afforded.





$$C + I = B + E$$



Q: how do you plan over career?



A: Actuary!



Act-u-what?



Classic Values, Innovative Advice

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What is an Actuary?



Broadly: A business professional who deals with the financial impact of risk and uncertainty

Actuaries have a deep understanding of financial security systems, their reasons for being, their complexity, their mathematics and the way they work (wikipedia.org)

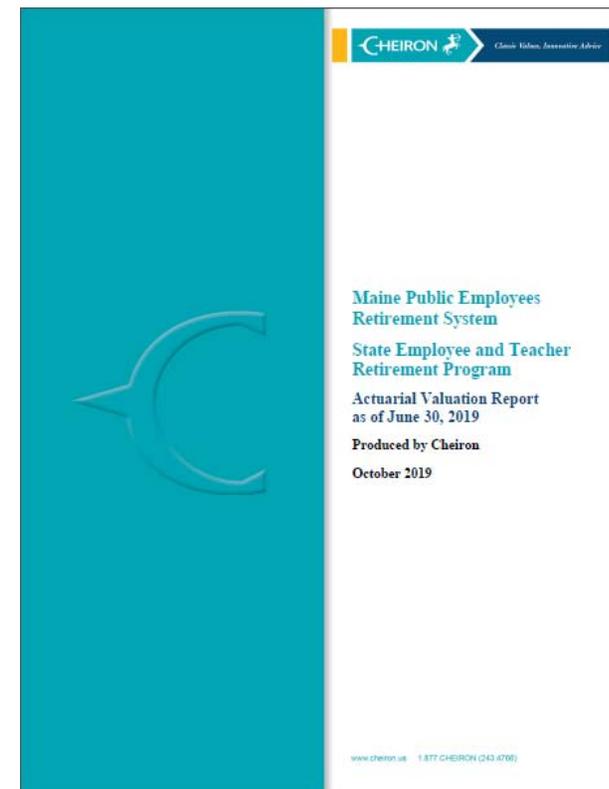
My Kindergarten Definition: someone who uses mathematics to predict the future [I was a cool kid]



Actuary



Actuarial Valuation



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Actuarial Alphabet Soup



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ACTUARIAL STANDARDS BOARD

Actuarial Standards Board



The ASB “sets standards for appropriate actuarial practice in the United States through the development and promulgation of Actuarial Standards of Practice (**ASOPs**).”

“These ASOPs describe the procedures an actuary should follow when performing actuarial services and identify what the actuary should disclose when communicating the results of those services.”



ACTUARIAL STANDARD OF PRACTICE NO. 4

Measuring Pension Obligations and Determining Pension Plan Costs or Contributions

ACTUARIAL STANDARD OF PRACTICE NO. 27

Selection of Economic Assumptions for Measuring Pension Obligations

ACTUARIAL STANDARD OF PRACTICE NO. 23

Data Quality

ACTUARIAL STANDARD OF PRACTICE NO. 35

Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations

ACTUARIAL STANDARD OF PRACTICE NO. 41

Actuarial Communications

ACTUARIAL STANDARD OF PRACTICE NO. 44

Selection and Use of Asset Valuation Methods for Pension Valuations

ACTUARIAL STANDARD OF PRACTICE NO. 51

Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contributions



ASOP 51



Requires actuaries performing pension valuations to identify risks that, in the actuary's judgement, may significantly affect the plan's future financial condition

Risk = “the potential of actual future measurements deviating from expected future measurement resulting from actual future experience deviating from actuarially assumed experience”



Actual \neq
Expected



Funding
status,
amortization
period,
contributions,
etc. being
different than
expected

Basic ASOP 51 Requirements



- **Identify risks** that “may reasonably be anticipated to significantly affect the plan’s future financial condition.”
- **Assess risks** identified, “including potential effects ... on the plan’s future financial condition.”
- **Recommend a more detailed assessment** if it “would be significantly beneficial for the intended user to understand the risks....”
- **Disclose plan maturity measures** that “are significant to understanding the risks associated with the plan.”
- **Disclose historical values** that “are significant to understanding the risks identified....”

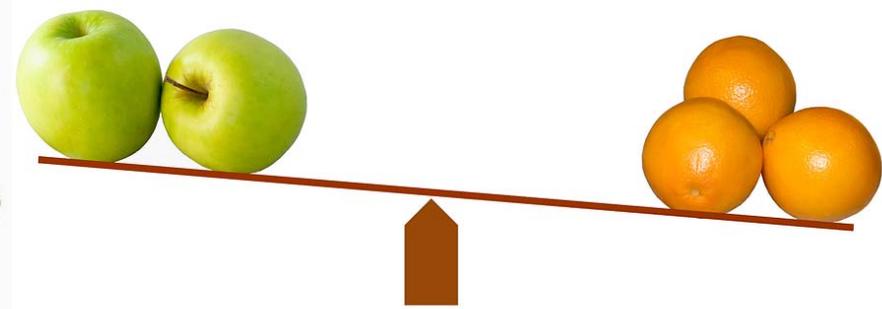
Why ASOP 51?



VALUATION DATE	June 30, 2019	June 30, 2018
Active Members	28,908	28,646
Retirees and Beneficiaries	23,099	22,398
Disabled Members*	146	158
Terminated Vested Members	3,943	3,793
Terminated Non-Vested Members	19,316	17,973
Total**	75,412	72,968
Covered Payroll of Active Members	\$1,247,343,733	\$1,230,105,350
Average Salaries from Covered Payroll	\$ 43,149	\$ 42,942
Annual Retirement Allowances for Retired Members and Beneficiaries	\$ 430,545,408	\$ 402,968,960
Assets		
Actuarial value	\$5,903,190,959	\$5,705,235,727
Market value	5,903,306,248	5,779,994,008
Actuarial Accrued Liability (AAL)	\$7,957,037,808	\$7,730,084,077
Unfunded Actuarial Accrued Liability (UAAL)	\$2,053,846,849	\$2,024,848,350
Funded Ratio	74.19%	73.81%
Market Value Rate of Return	5.65%	8.90%
Annual Cost		
Statutory Funding Rate	16.67%	16.57%
Total Normal Rate	10.09%	10.27%
Employee Contribution Rate	<u>7.90%</u>	<u>7.90%</u>
Employer Normal Rate	2.19%	2.37%
Employer Contribution Rate		
Normal Rate	2.19%	2.37%
Administrative Expense Load	0.30%	0.26%
UAAL Rate	6.24%	6.00%
Transfer to DB Education Fund	<u>0.04%</u>	<u>0.04%</u>
Total Rate***	8.77%	8.67%
Amortization Period****	36 years	38 years
Employer Contribution Rate Necessary to Amortize UAAL over 30 Years		



Classic Values, Innovative Advice



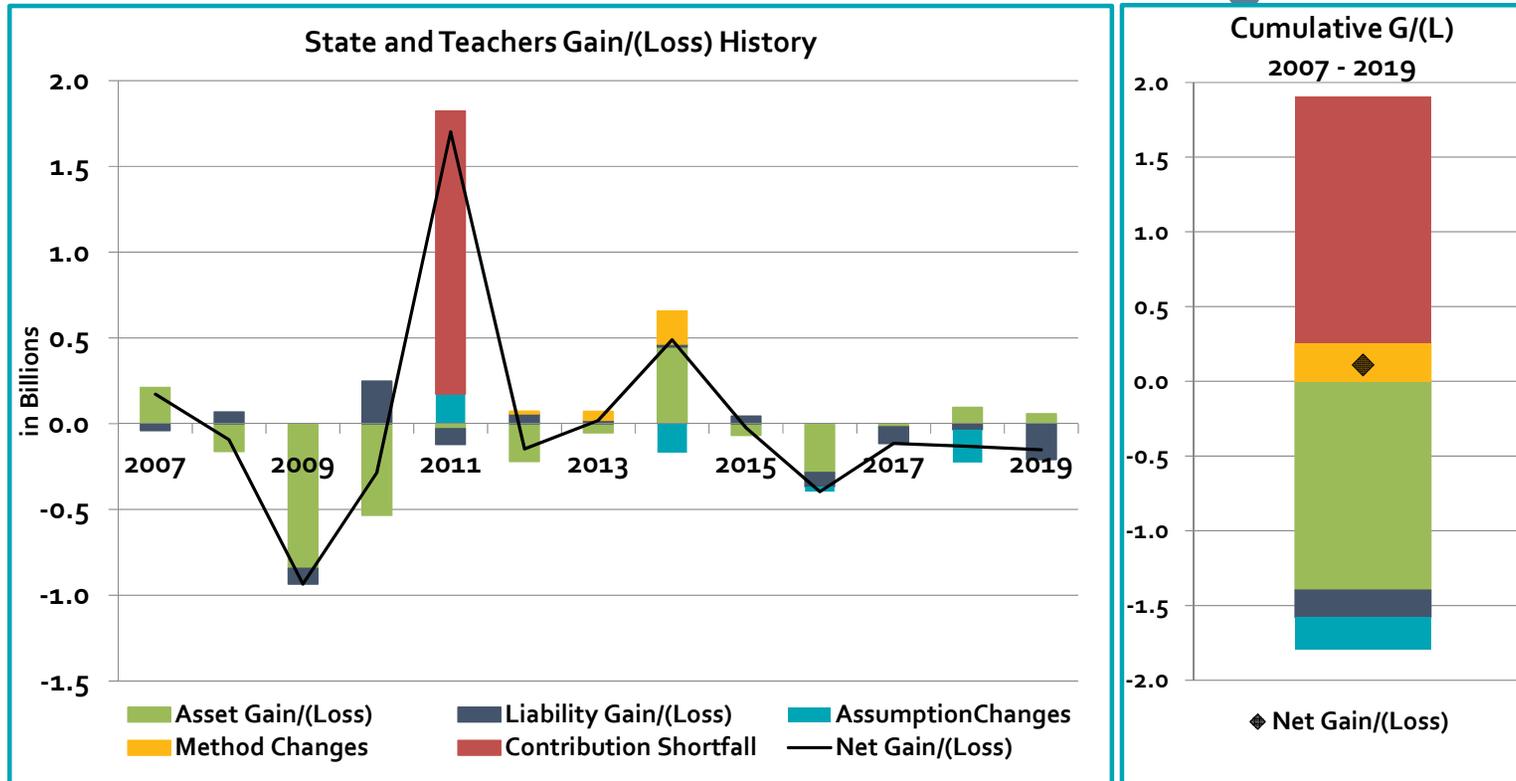
Risks to Pension Systems



- Remainder of session will focus on ways to assess pension risks
- But it is important to think about the likely causes of these “deviations from expectation” emerging
- Many, but most significant typically:
 - Investment risk
 - Contribution risk
 - Demographic risk

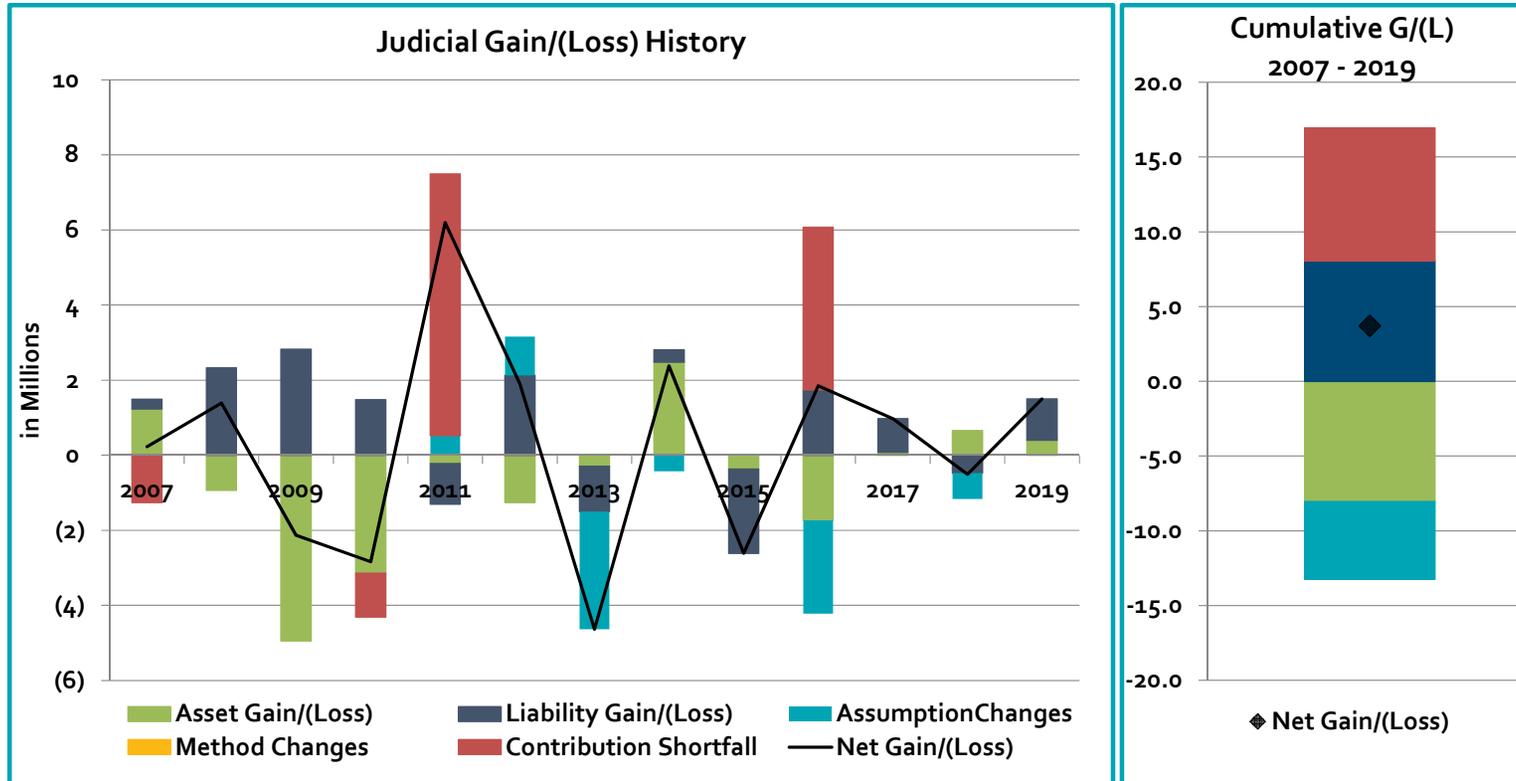


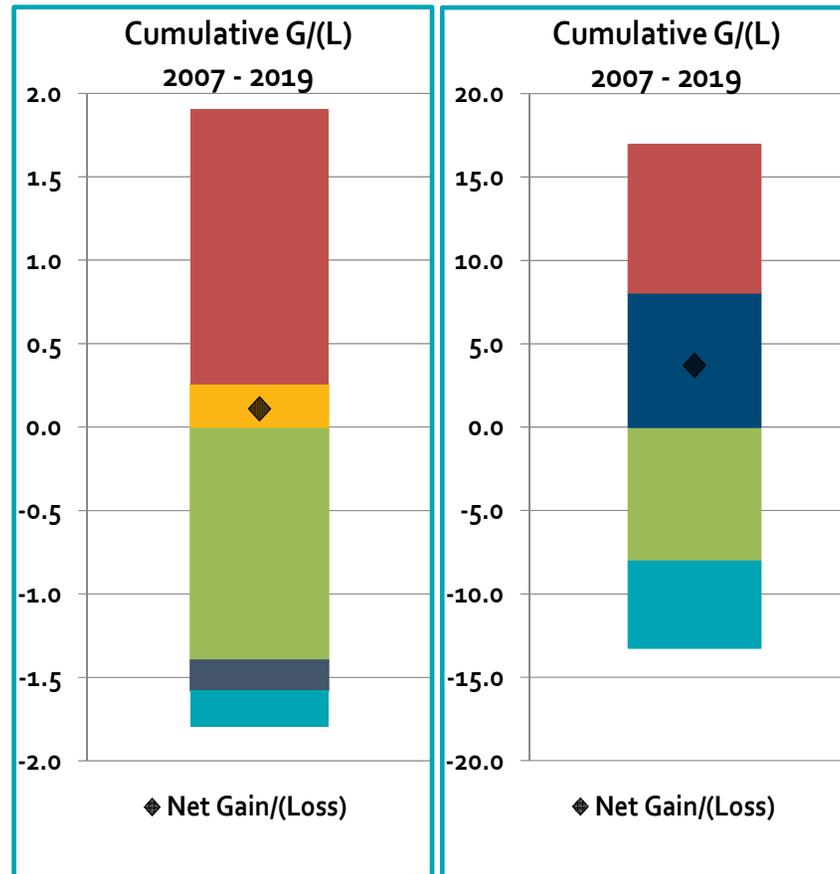
Public Plans – Extended Gain Loss – Large Plan





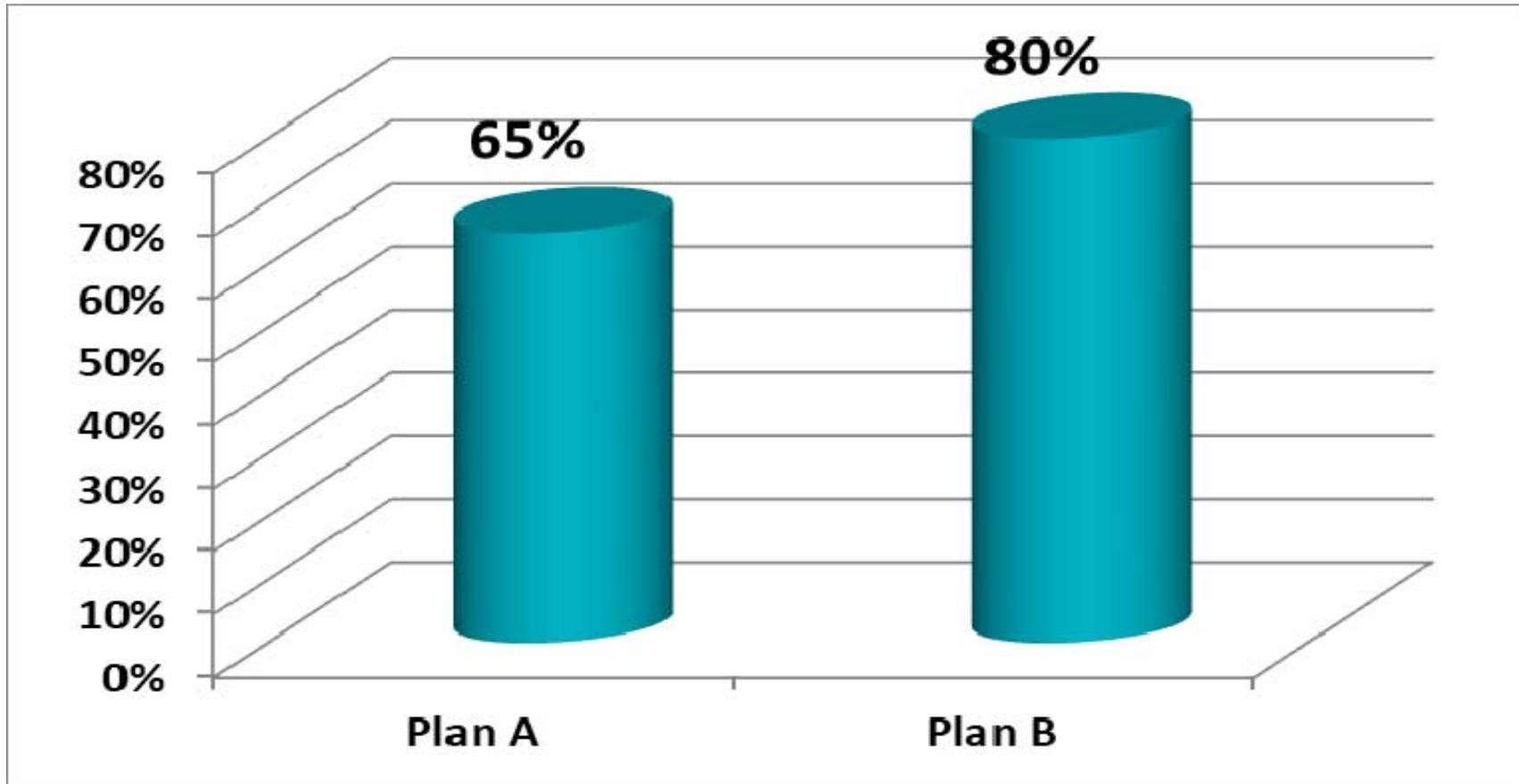
Public Plans – Extended Gain/Loss – Small Plan





Asset Gain/(Loss) Liability Gain/(Loss) Assumption Changes
Method Changes Contribution Shortfall Net Gain/(Loss)

Funded Status

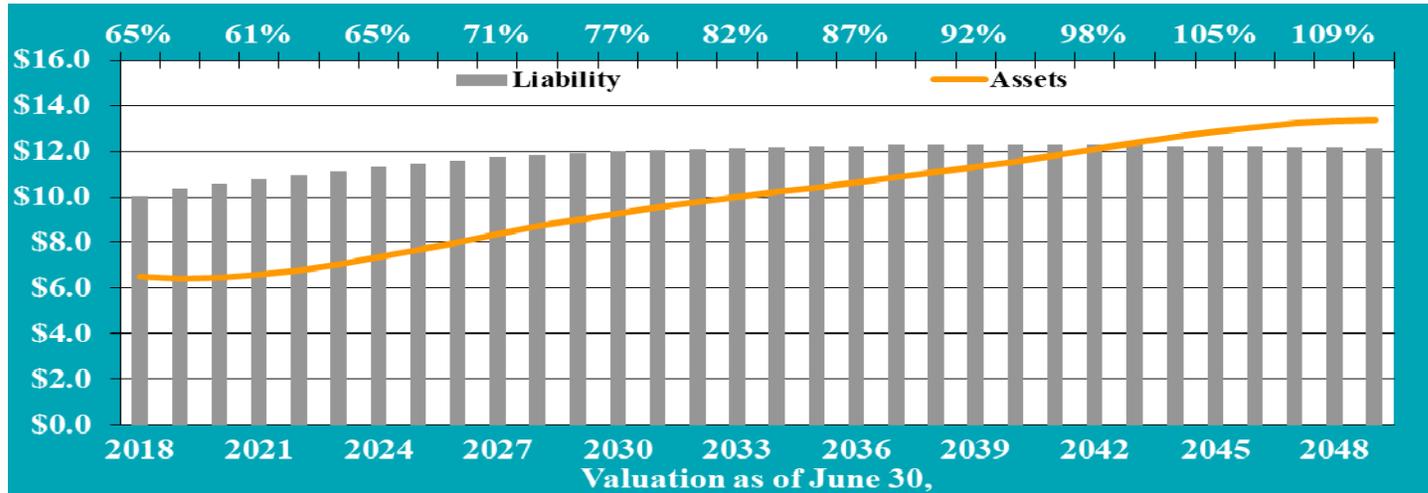


Assets divided by liabilities

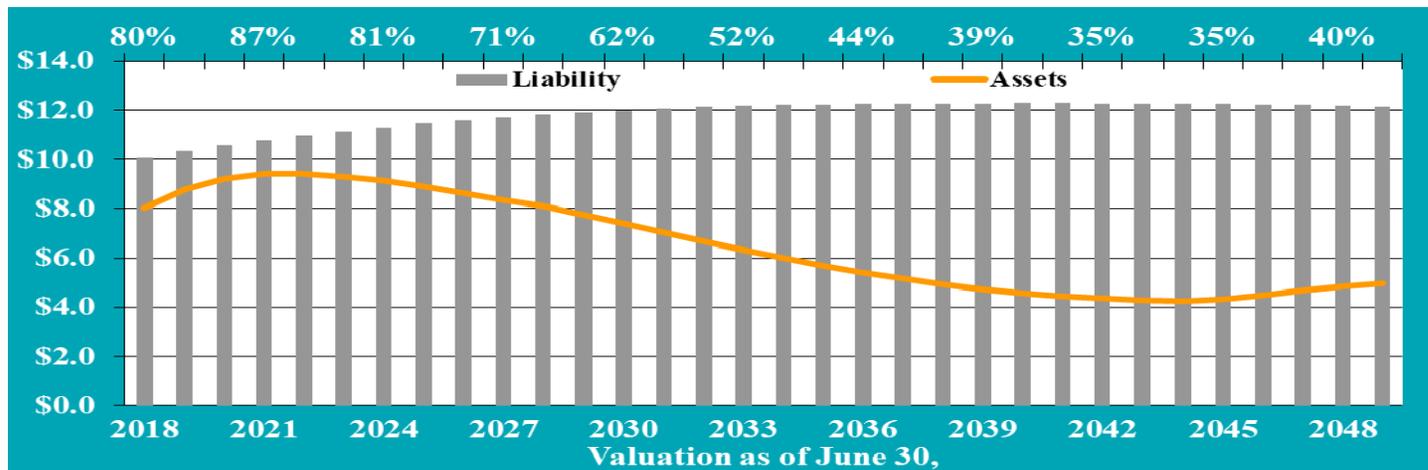
Funded Status



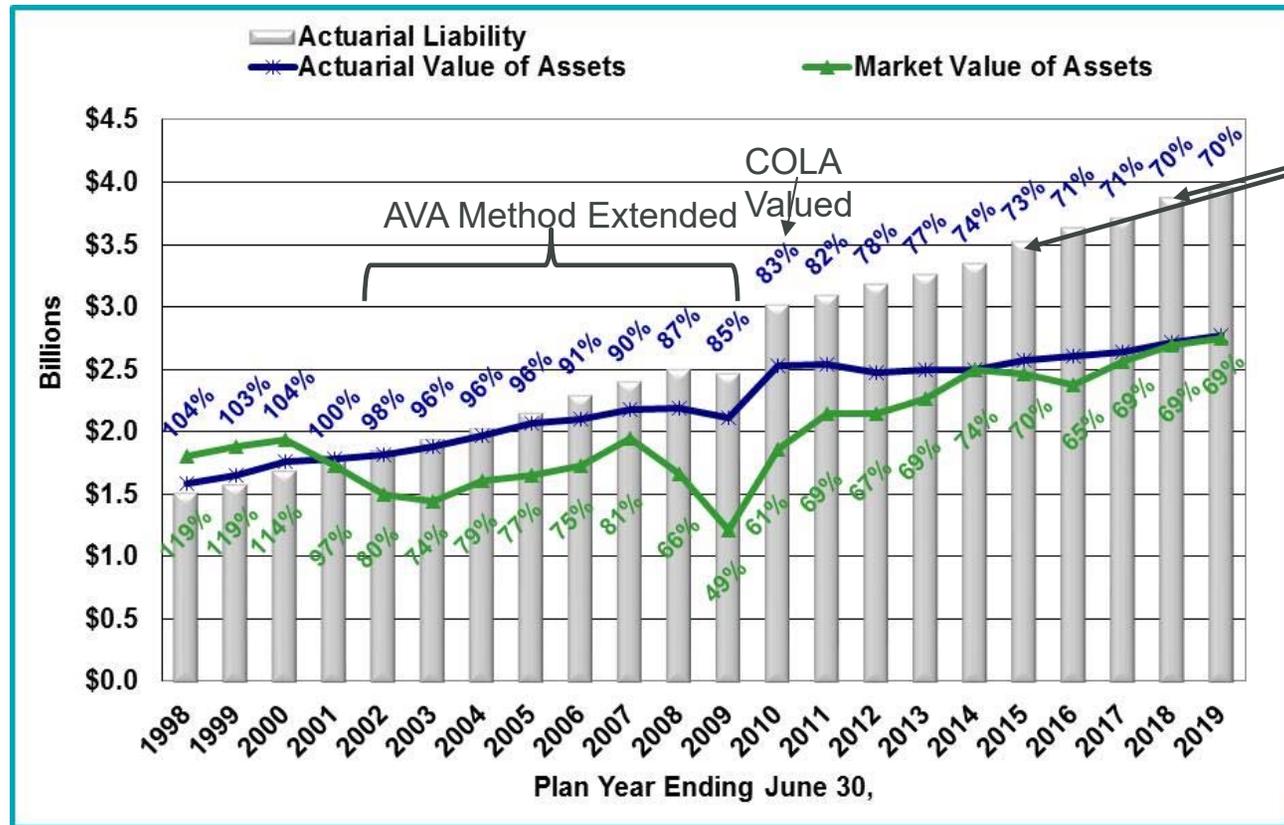
Plan A



Plan B



Which plan is better funded?



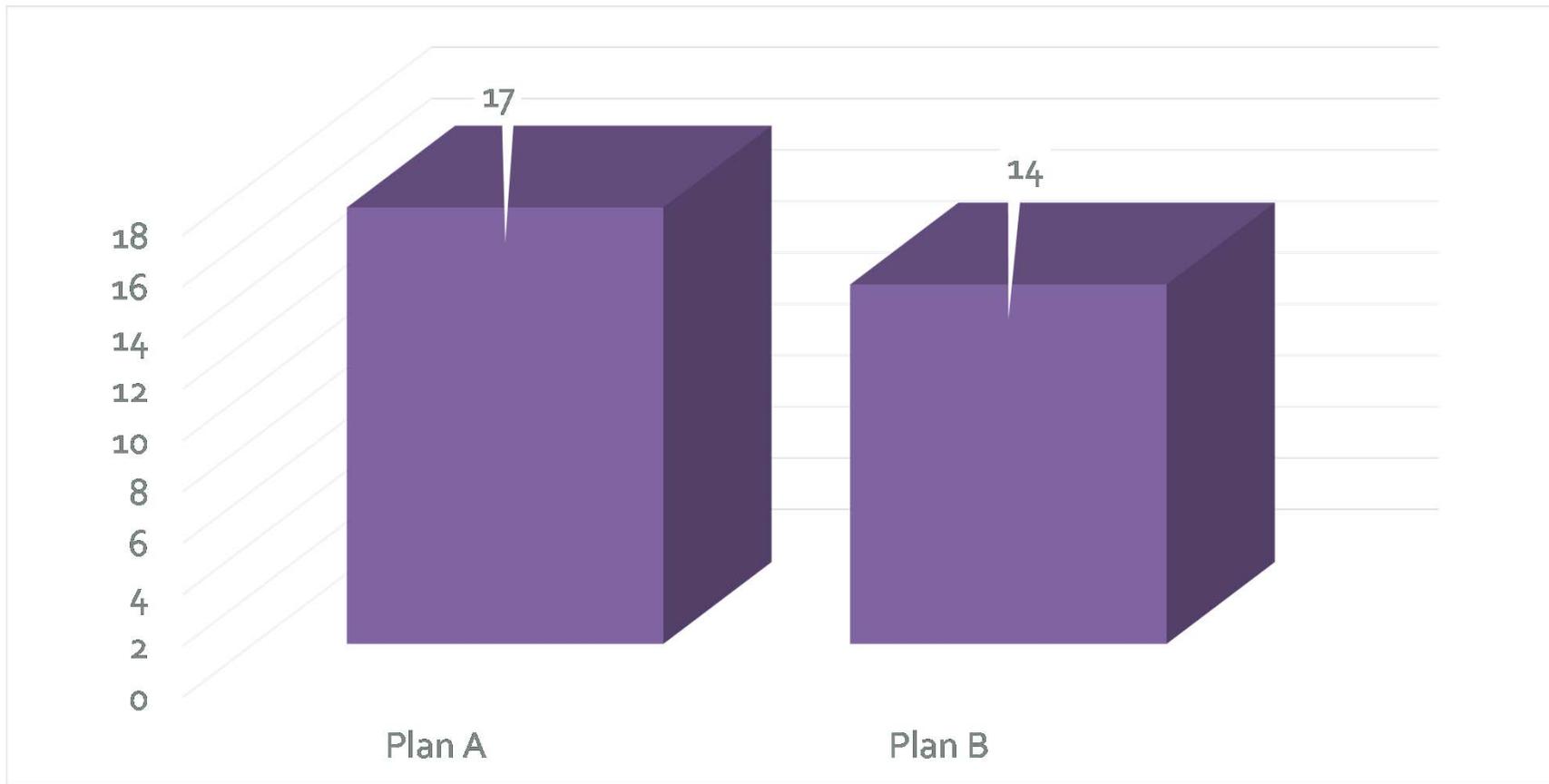
Discount Rate
dropped 0.25%

Questions to ask?



- What is the funded status of the System?
- What has been the historical trend of these values?
- Have there been events I should know about impacting that trend?
- What is the forecast for the future funded status?
- What are the most significant risks likely to impact that future forecast?

Amortization Period



Period Anticipated to pay off Unfunded Liability based on Funding Policy

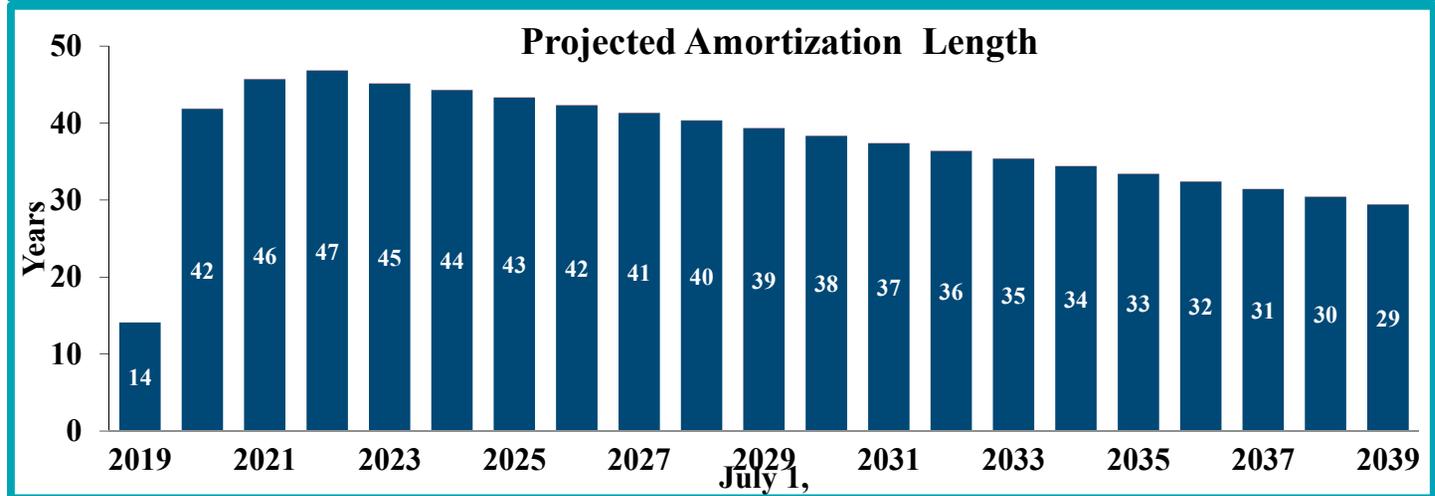
Amortization Period



Plan A

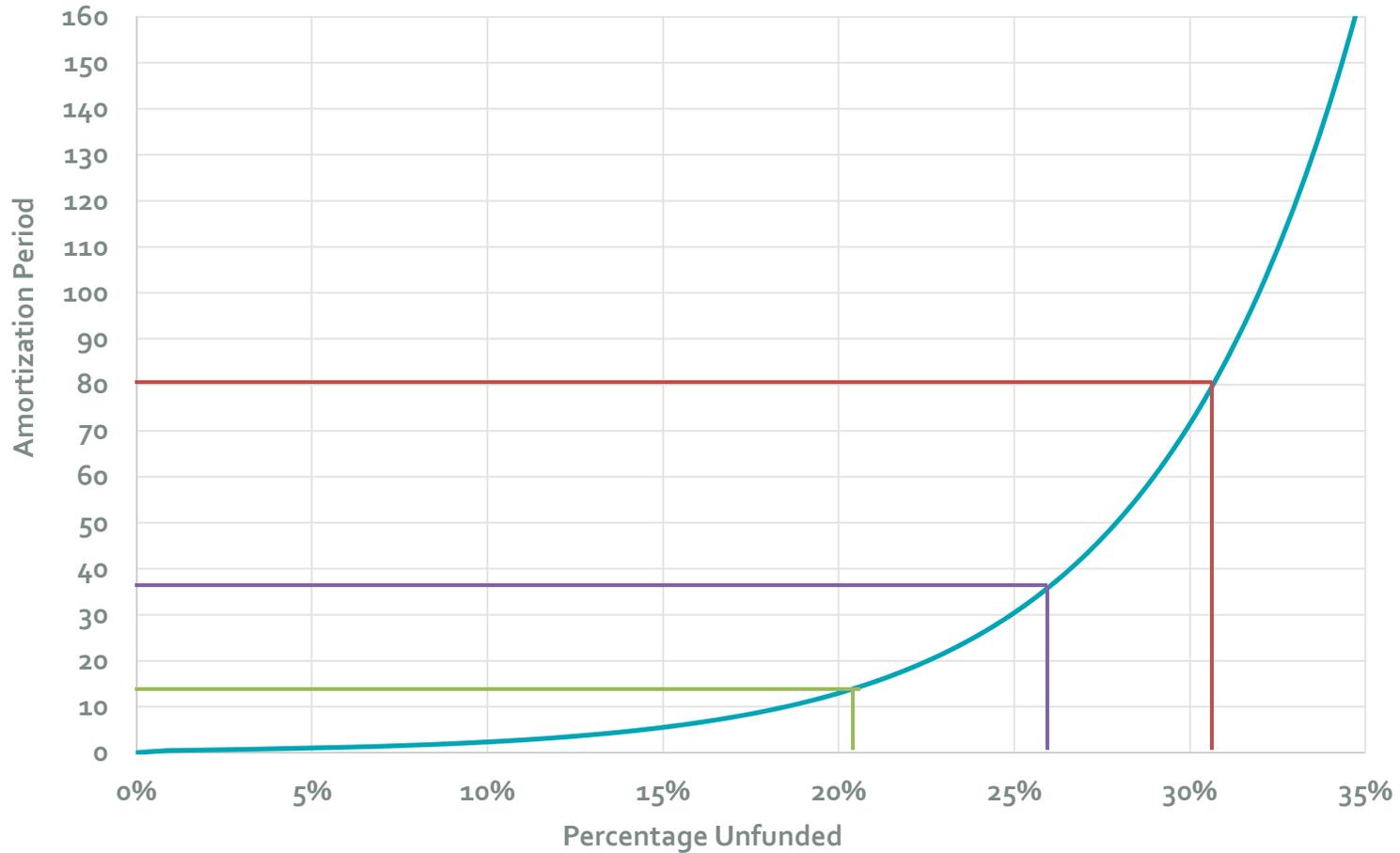


Plan B



Which plan is better funded?

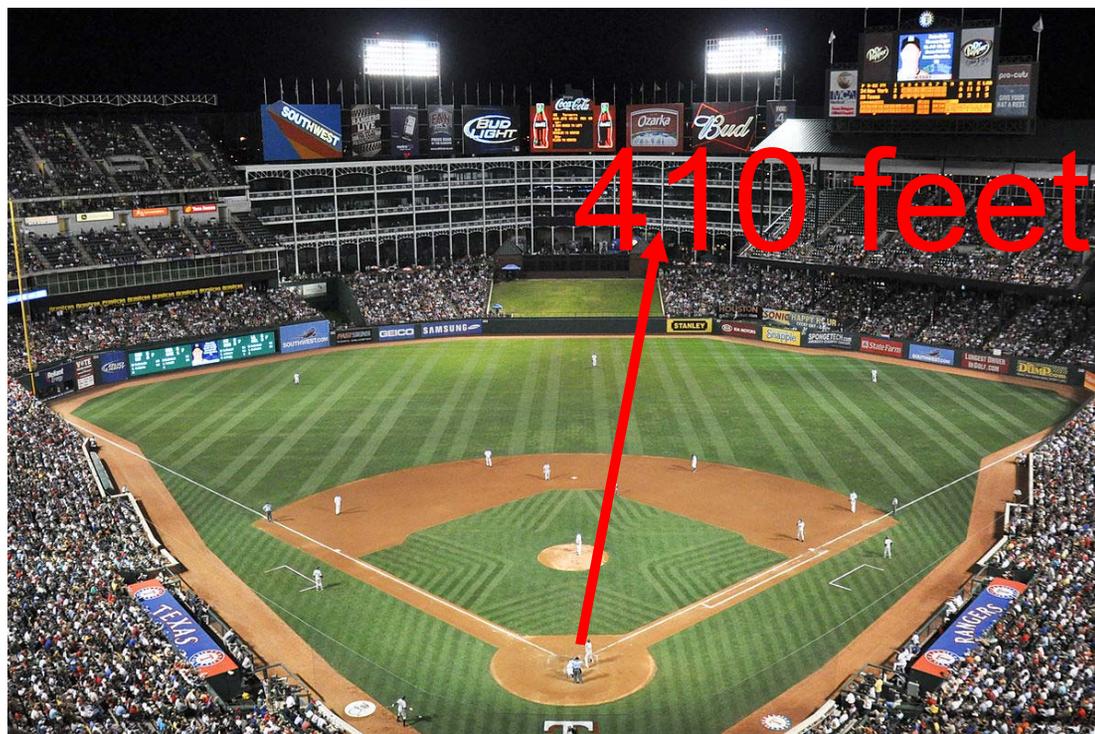
Amortization Period Leverage



Questions to ask?

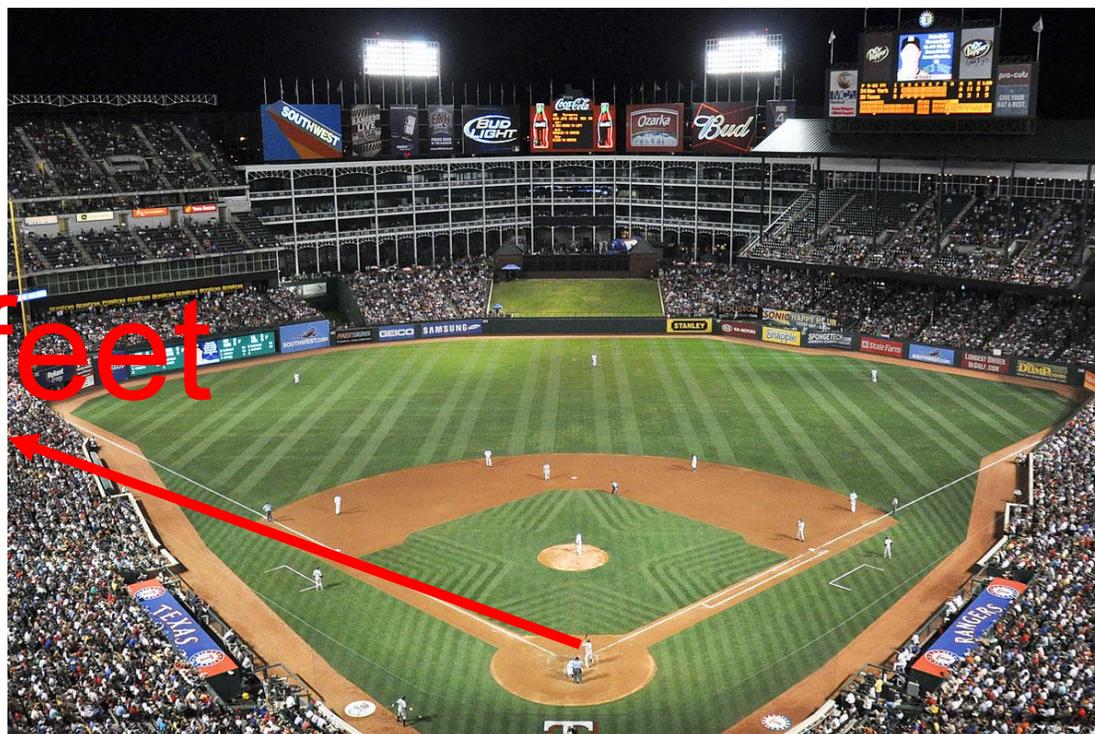


- What is the amortization period of the System?
- What has been the historical trend of these values?
- Have there been events I should know about impacting that trend?
- What is the forecast for the future funded status? How sensitive is the period?
- What are the most significant risks likely to impact that future forecast?





410 feet





Similar to “distance travelled” not being a good “single measure” of whether a hit is a home run or not, funded status is not a great indicator of pension plan risk

While no single value is a perfect assessment of pension risk, there are better options

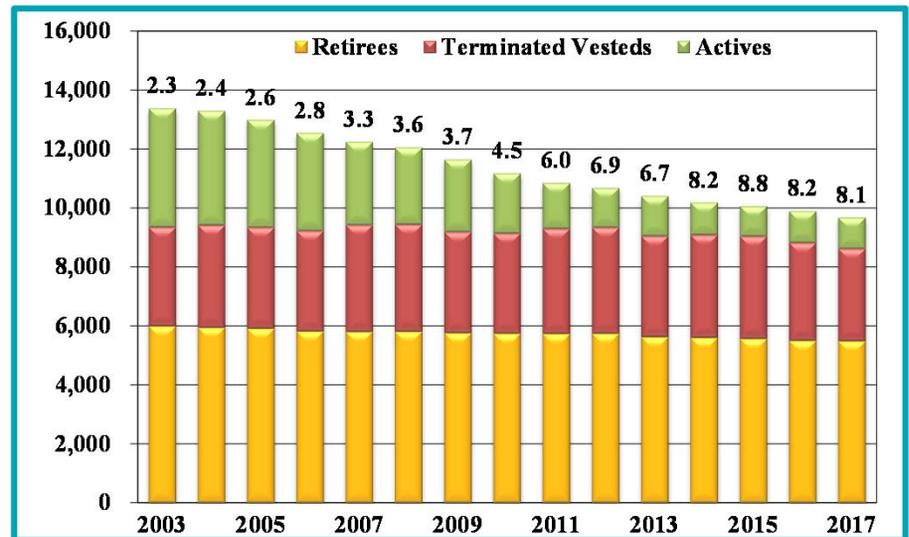
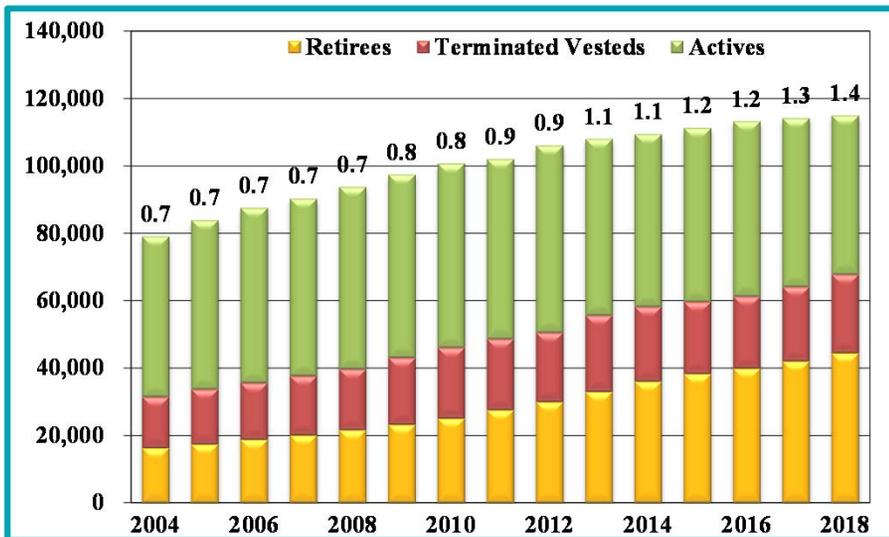
Member Support Ratio



- Equals the number of inactive members divided by active members
- “how many inactive members each active member must support”



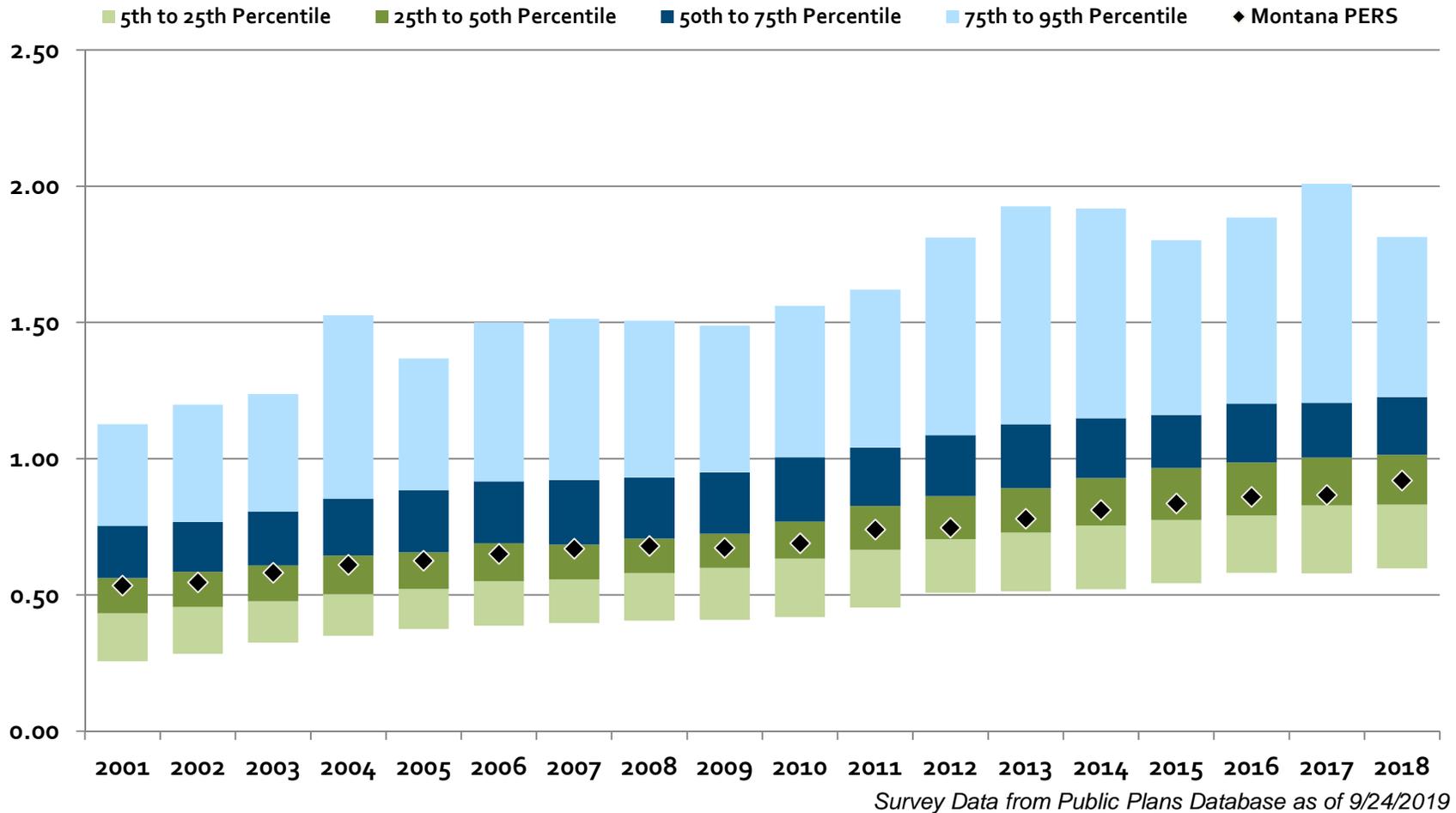
Member Support Ratio Examples



Trend is at least as important as the value



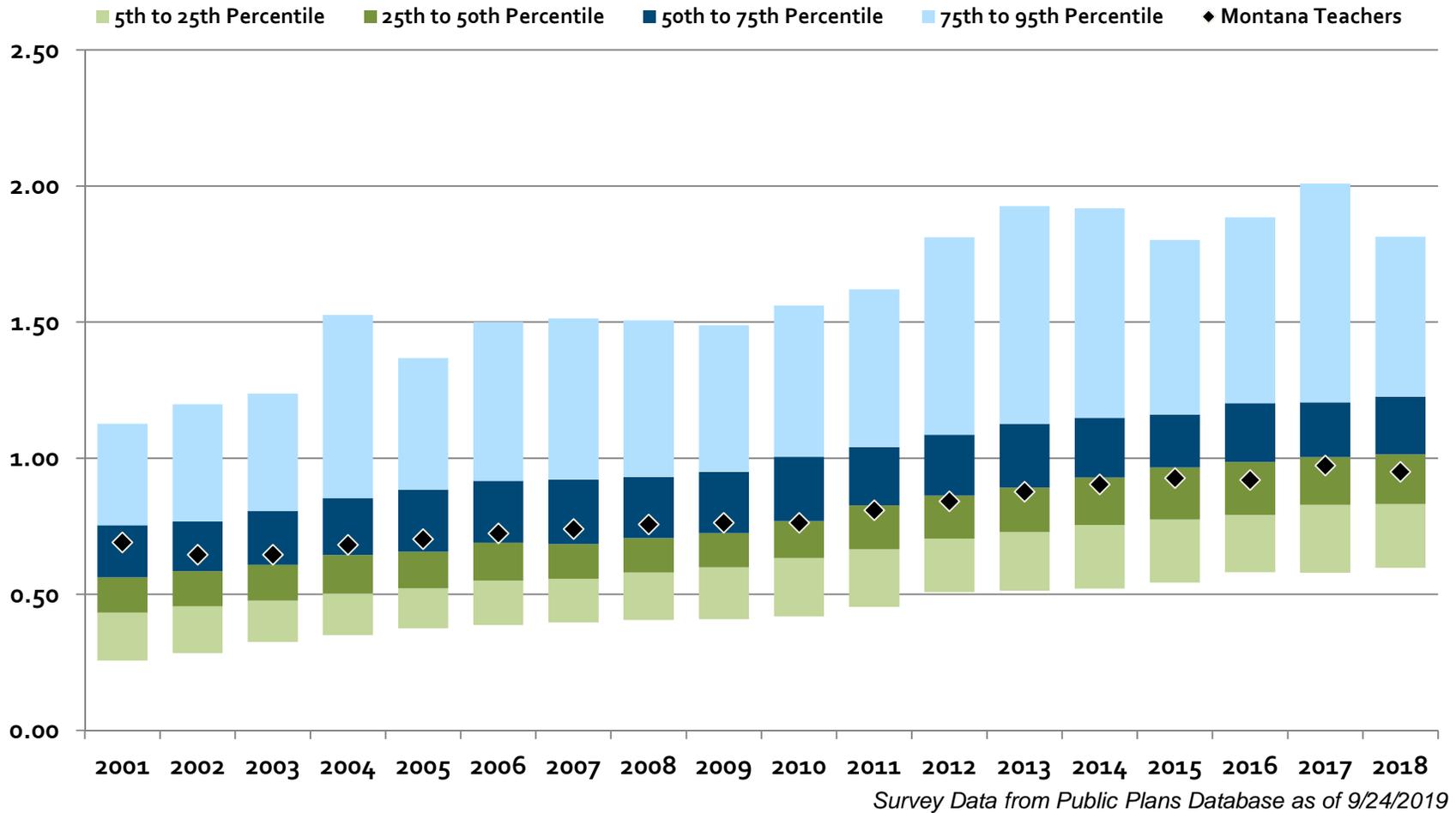
Support Ratio - Inactives per Active



Montana TRS



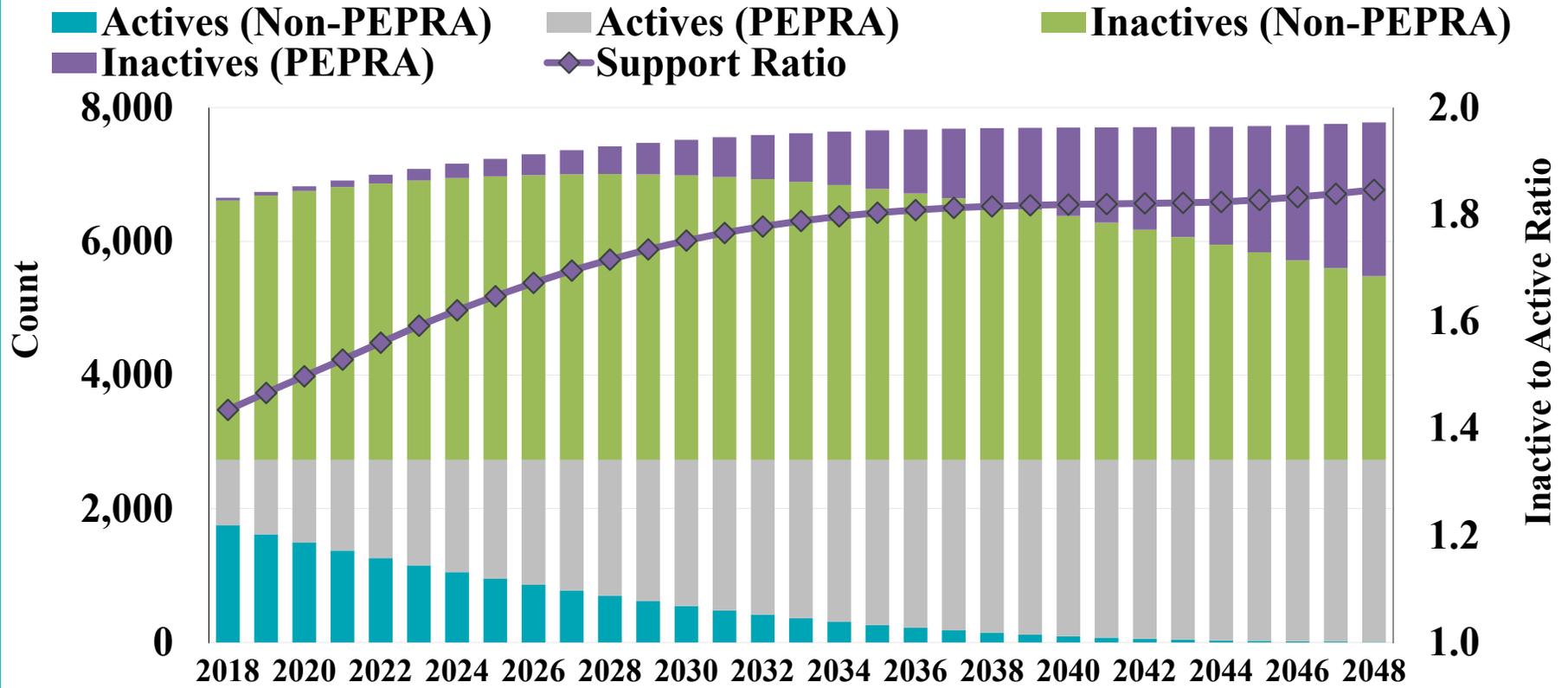
Support Ratio - Inactives per Active



To the next step

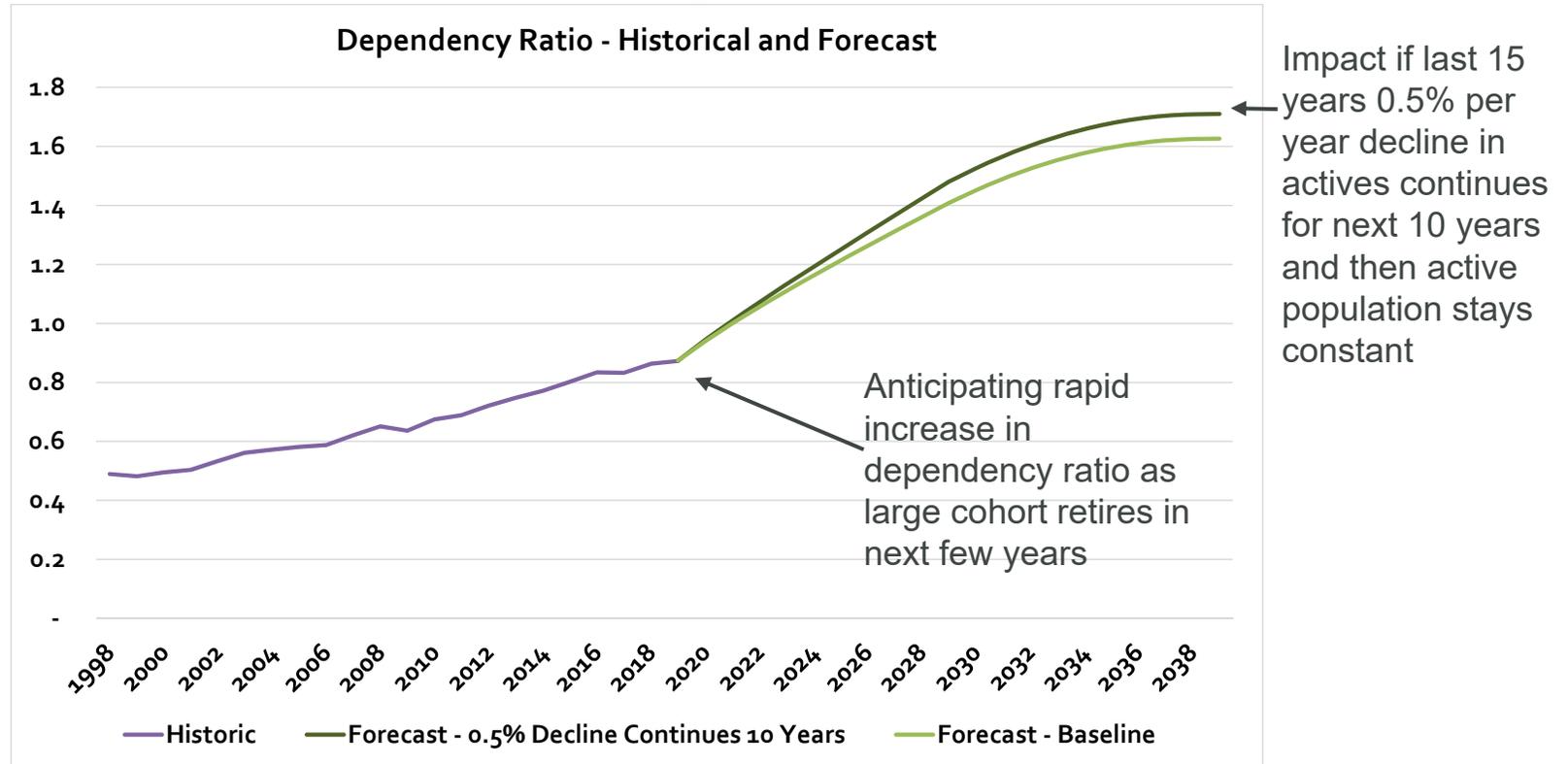


Projected Membership Counts





Historical Information Example



Questions to ask?



- What is the current support ratio for the plans?
- What has the recent trend of this ratio been?
- What does the projection of this trend into the future look like?
- Are there significant risks I should know about that may impact those projections?

Asset Leverage Ratio



Assets divided by Payroll

Higher the ratio, more % payroll needed to make up investment loss

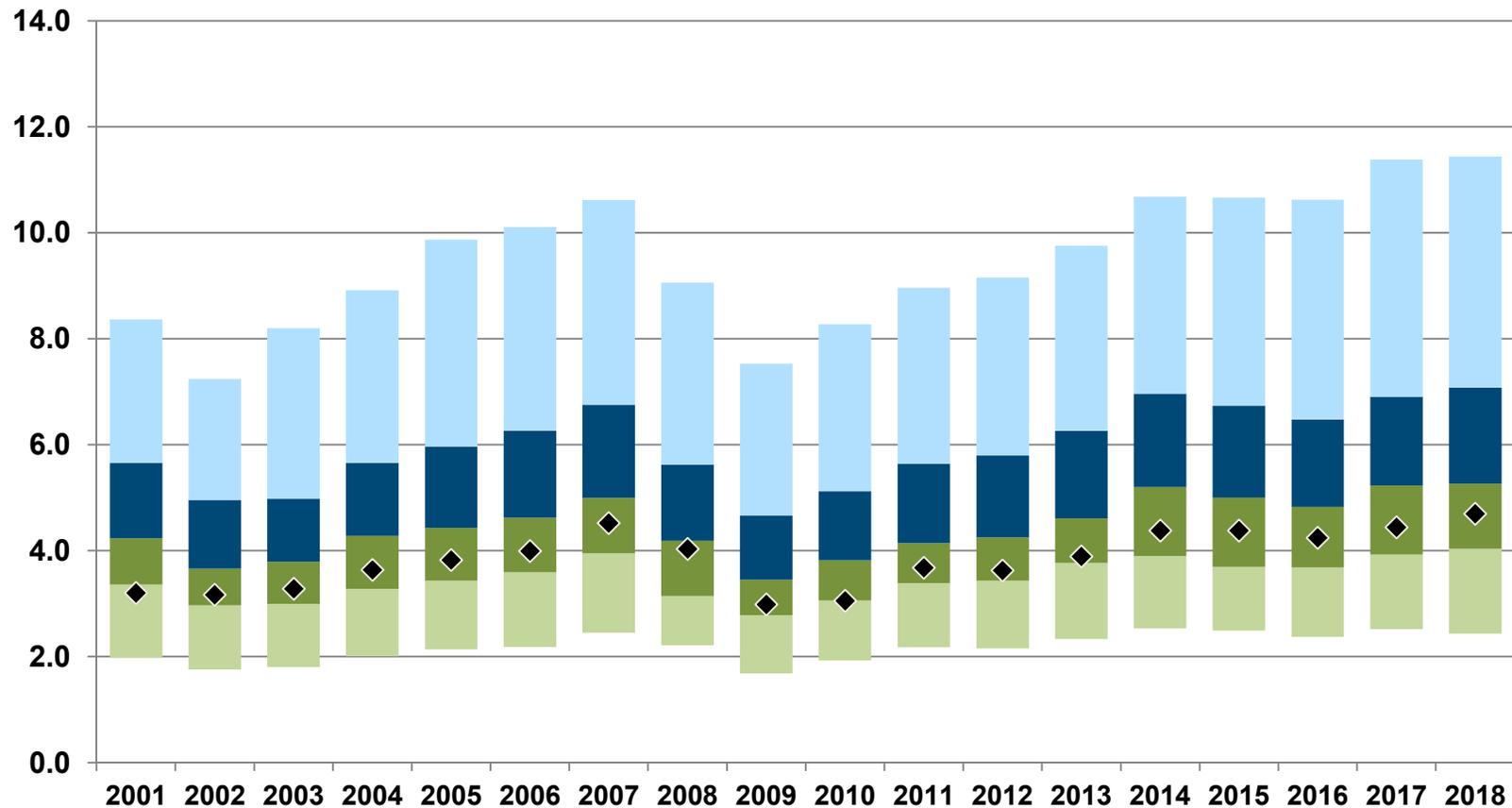
	<u>Plan A</u>	<u>Plan B</u>
Assets	1,000,000,000	1,000,000,000
Payroll	250,000,000	100,000,000
Asset Leverage Ratio	4.0	10.0
Assumed Inv. Return	7.00%	7.00%
Actual Return	-10.00%	-10.00%
Investment Loss \$	\$(170,000,000)	\$(170,000,000)
Contribution Impact	6.2%	15.5%

Montana PERA



Asset Leverage Ratio

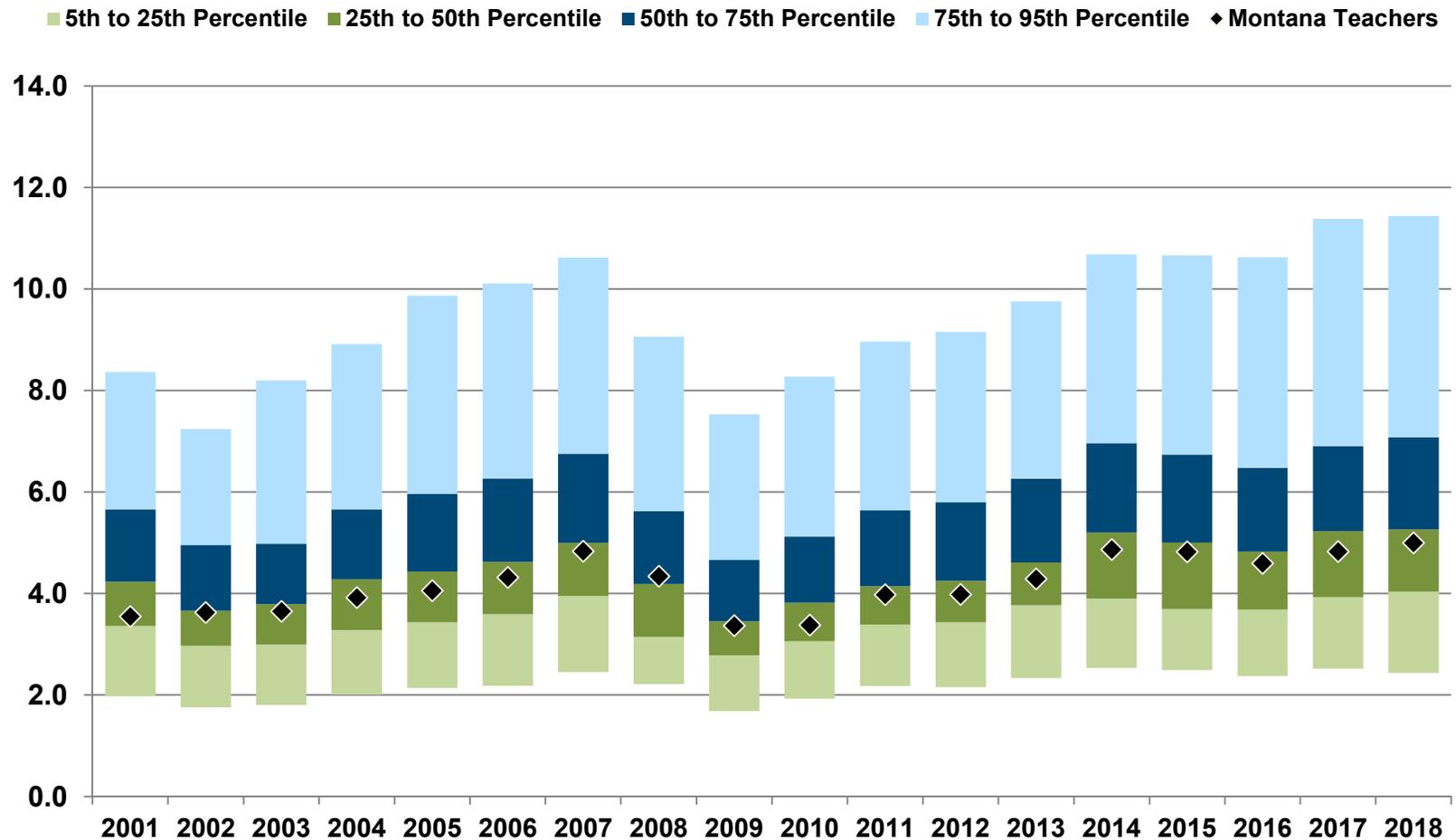
■ 5th to 25th Percentile ■ 25th to 50th Percentile ■ 50th to 75th Percentile ■ 75th to 95th Percentile ◆ Montana PERS



Montana TRS



Asset Leverage Ratio

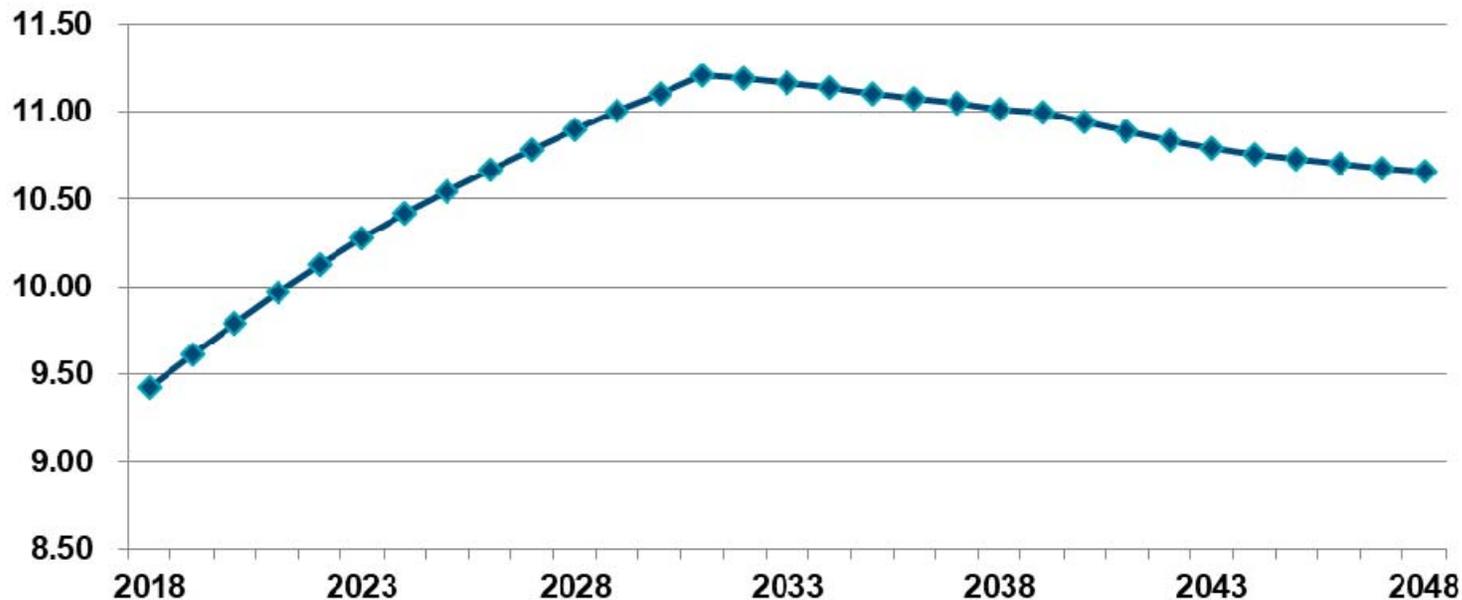


To the next step



Marin County ERA

—◆— Projected Asset Leverage Ratio



Asset leverage ratio will generally increase while a plan is improving their funding percentage and then will gradually decline

Questions to ask?



- What is the current asset leverage ratio for the plans? What percentage of payroll needed to make up a loss?
- What has the recent trend of this ratio been?
- What does the projection of this trend into the future look like?
- Are there significant risks I should know about that may impact those projections?

No Universal Answer



These have just been a couple of ways to explore the risk profile for a pension plan

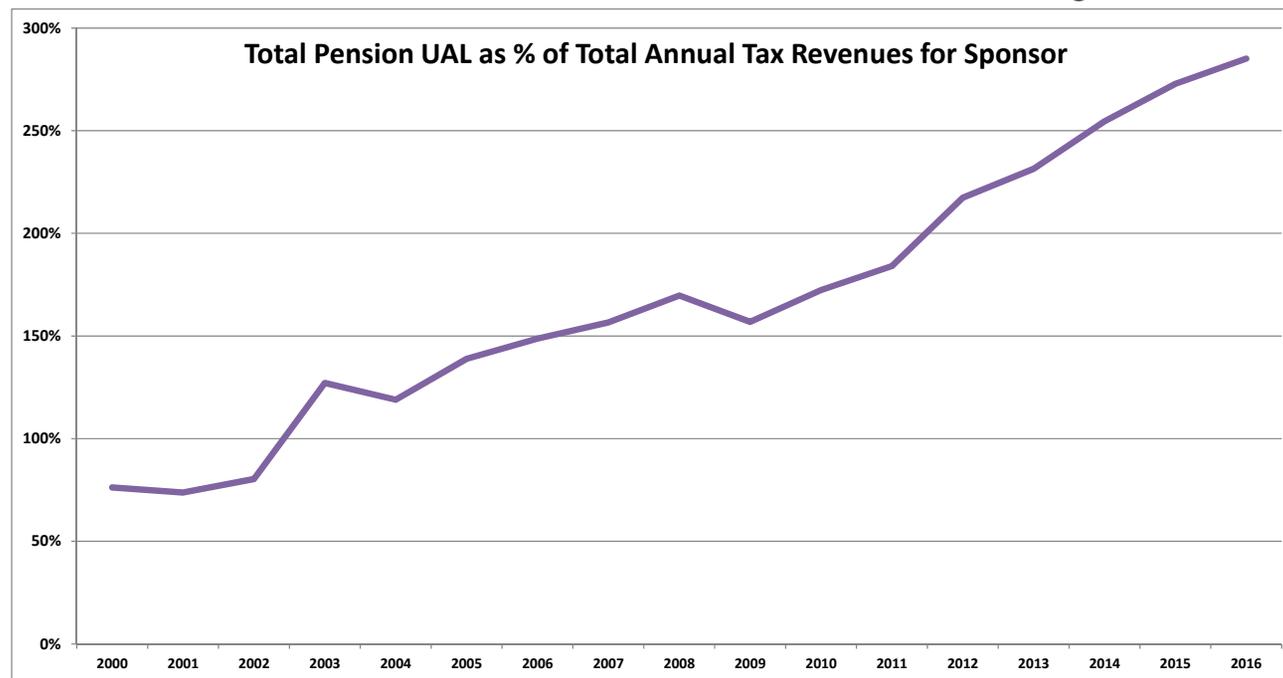
The risks of the plan, the sponsor, and what the work is being used for will impact what risk metrics you look at

Consider past, future, and peer comparisons

State perspective can be different



Most risk work on pensions done by the Systems themselves, but the State's risk from pensions include context of full budget, so some States do their own analysis



Concluding Thoughts - State



- Can specific stress testing be requested by Systems?
- Can inputs for stress testing by State be provided by the Systems?
- Have the drivers of risk, “deviation from expectation,” been considered by the State?

Legislators ≠ Board



System Board as fiduciaries focus is the System:

- Act “solely in interest of the participants and their beneficiaries”

- Make decisions for “exclusive benefit” of those in plan

Legislators focused is the State as a whole with System as a component of that for budget and proposed legislation:

- Responsible to plan members as well, but also to taxpayers as a whole

- “Duty of loyalty”

Risk Taking versus Bearing



Frequently, System (via Board) is who takes risk related to pensions, while that risk is borne by the State (as taxpayers)

Common example is investment choices being made by the Board, but the State is legally responsible for the benefits and thus must make up any resulting shortfall

Varies by System whether risks related to benefit structure are made by the System or the legislating body

But the sponsor is who bears the risk typically

Why State should care about Pension Risk



The risks that the sponsored pension systems present to the State are significant

Relative size of pension to the budget as a whole and other items is typically very significant

Obligations for pensions are long-term, but not bonded like many long-term obligations

In Systems with fixed contributions, positive experience can lead to pressure to increase benefits, which increases the risks to the State from the System

Unique Aspects Pension Risk for States



States as sponsors generally need to consider same risks as the Systems plus some additional ones

- Risks regarding System relative to economy/budget as a whole

- Interactions of System with other parts of State operations (such as healthcare costs)

- Scenarios that can lead to increased contribution requirements often also lead to decreased revenue, so it is important for the State to evaluate these aspects of the budget/economy together

- Consider implications of System "fiscal stress" on tax demands or other service cuts

Problems for State Pension Risk Assessment



System often does not perform analysis that State needs and almost never has all of the “full budget” information needed to perform assessment from State’s perspective

State often has difficulty getting the data necessary to perform risk assessment and fiscal analysis of their own

In some cases, the State currently lacks personnel or experience necessary to perform the appropriate analysis

Why System can't/won't do analysis State needs



System typically does not have motivation or financial incentive to study risk of the System from the State's perspective

In some cases a System will do so based on concern about contribution risk imperiling the promised benefits

More often, a Board feels that based on their "exclusive benefit" responsibility, the System explicitly should not pay for this type of analysis

State Approaches for Pension Risk Assessment



Ask System to provide desired studies

Pay System and/or System's consultant to perform work directly for the State

Obtain valuation output to do own analysis, either with fiscal staff or State's own consultant

Obtain valuation data and have own actuary perform full valuation work including developing of appropriate risk studies for State