CHEIRON
Classic Values, Innovative Advice

Public Pension Plan Health Check: SACRS vs. The Nation

May 16, 2025

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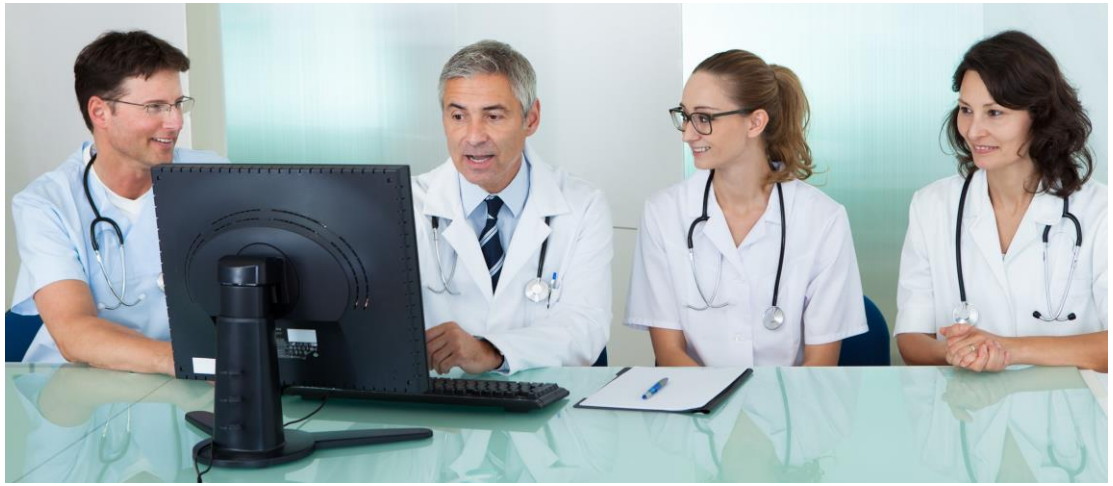
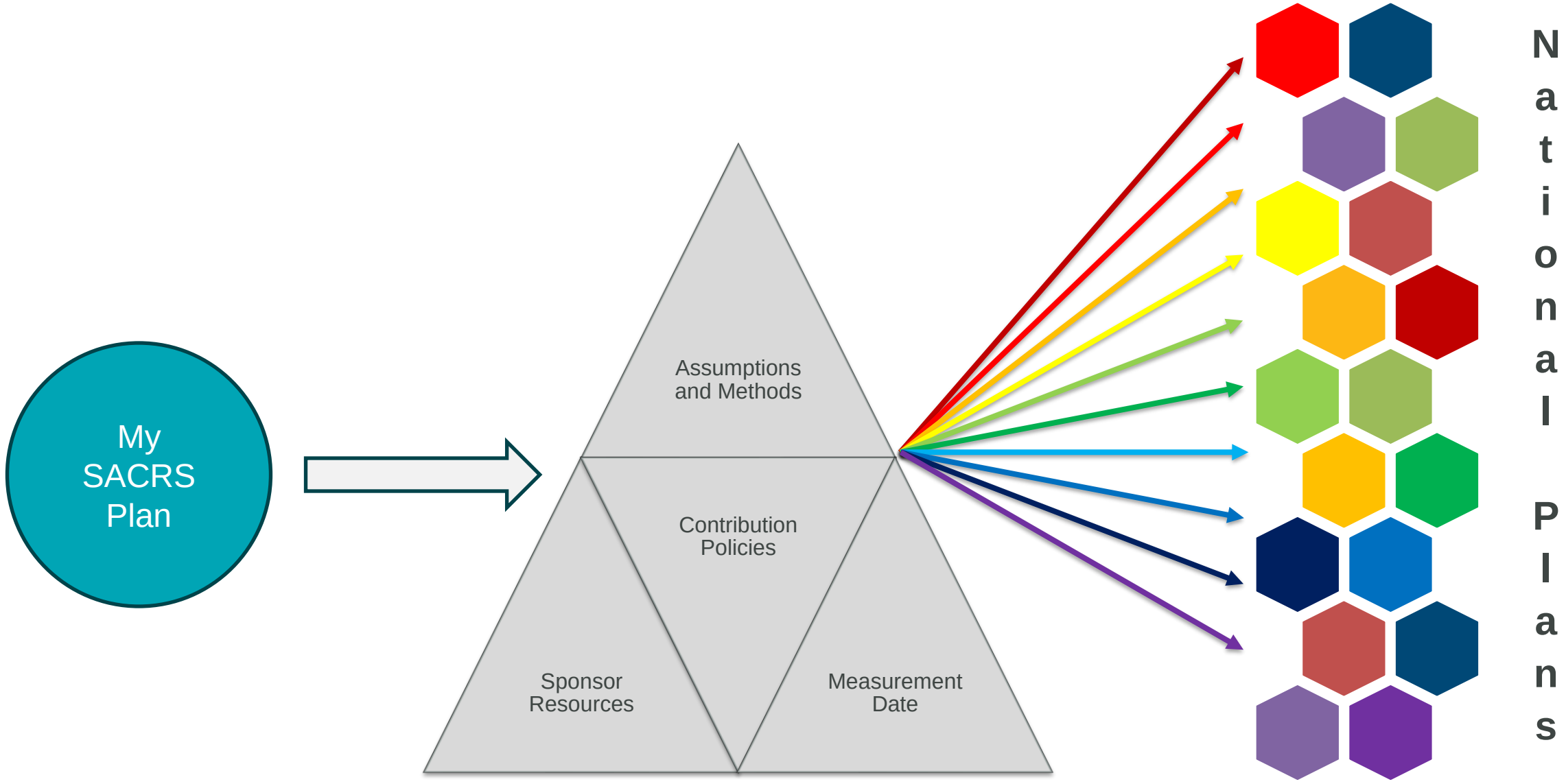
What Makes a Plan Healthy?

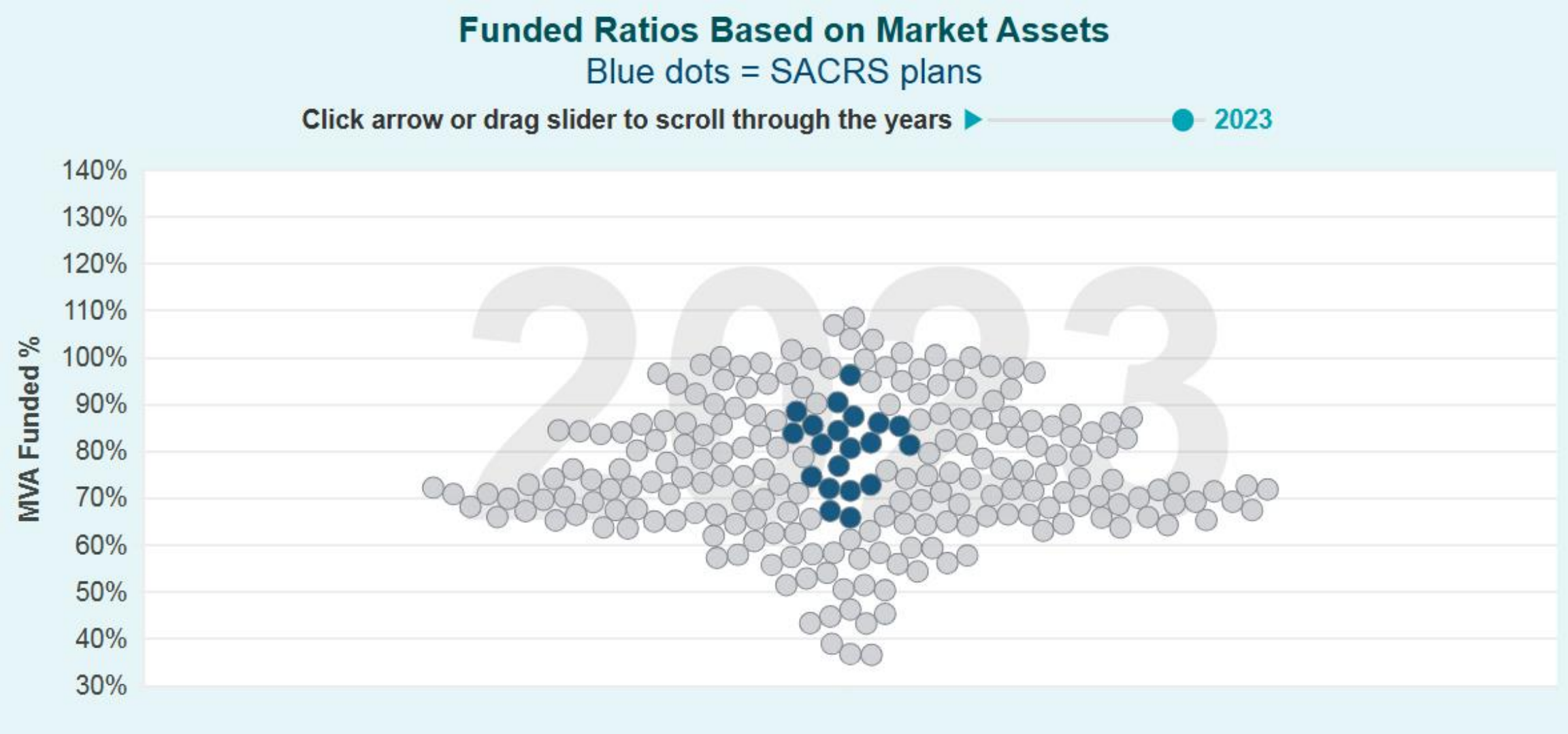


Comparing Plans – The Challenge



Funding Progress

Funded Ratios: SACRS v. Nation



Comparing Funded Ratios

Assets

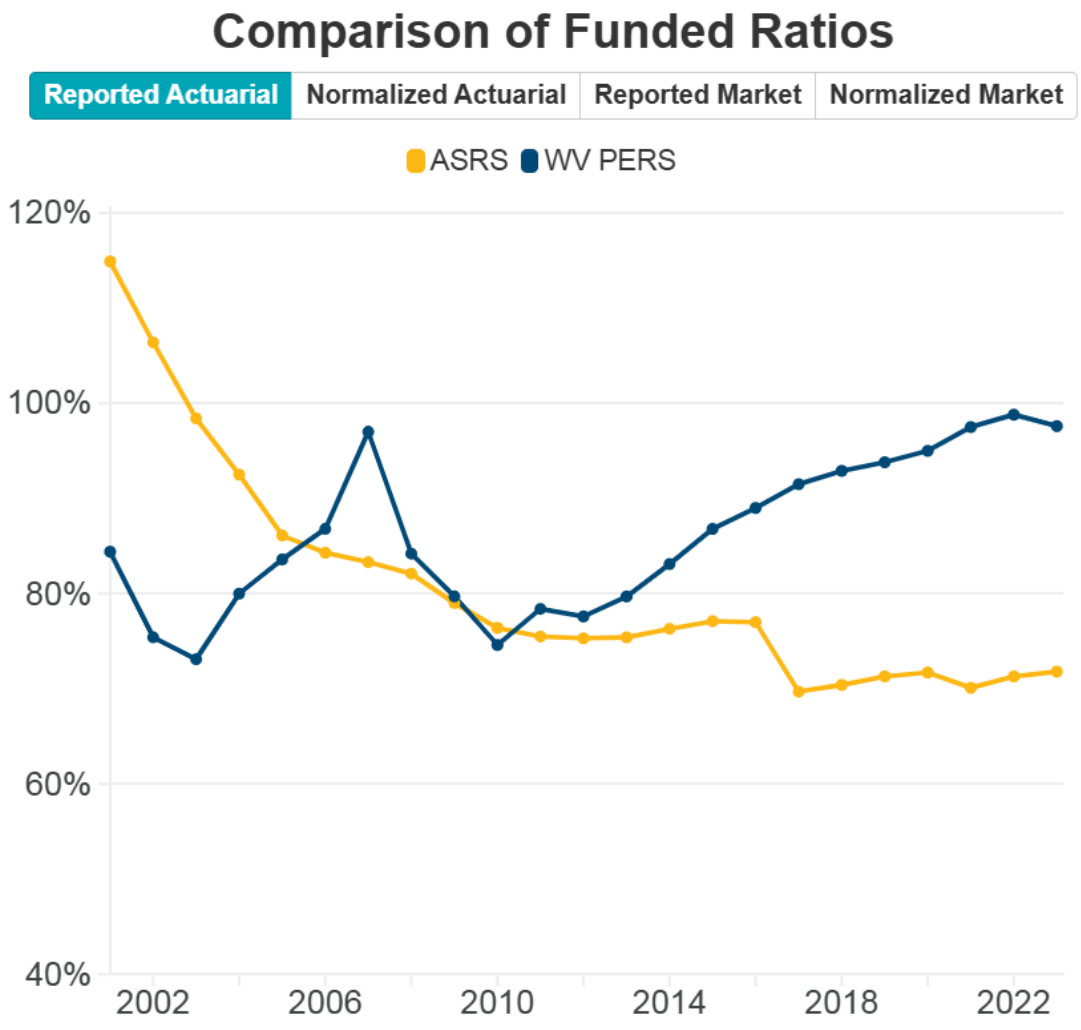
- Actuarial Value vs. Market Value
- Treatment of non-valuation reserves

Actuarial Liability

- Discount rates
- Actuarial cost method
- Other assumptions

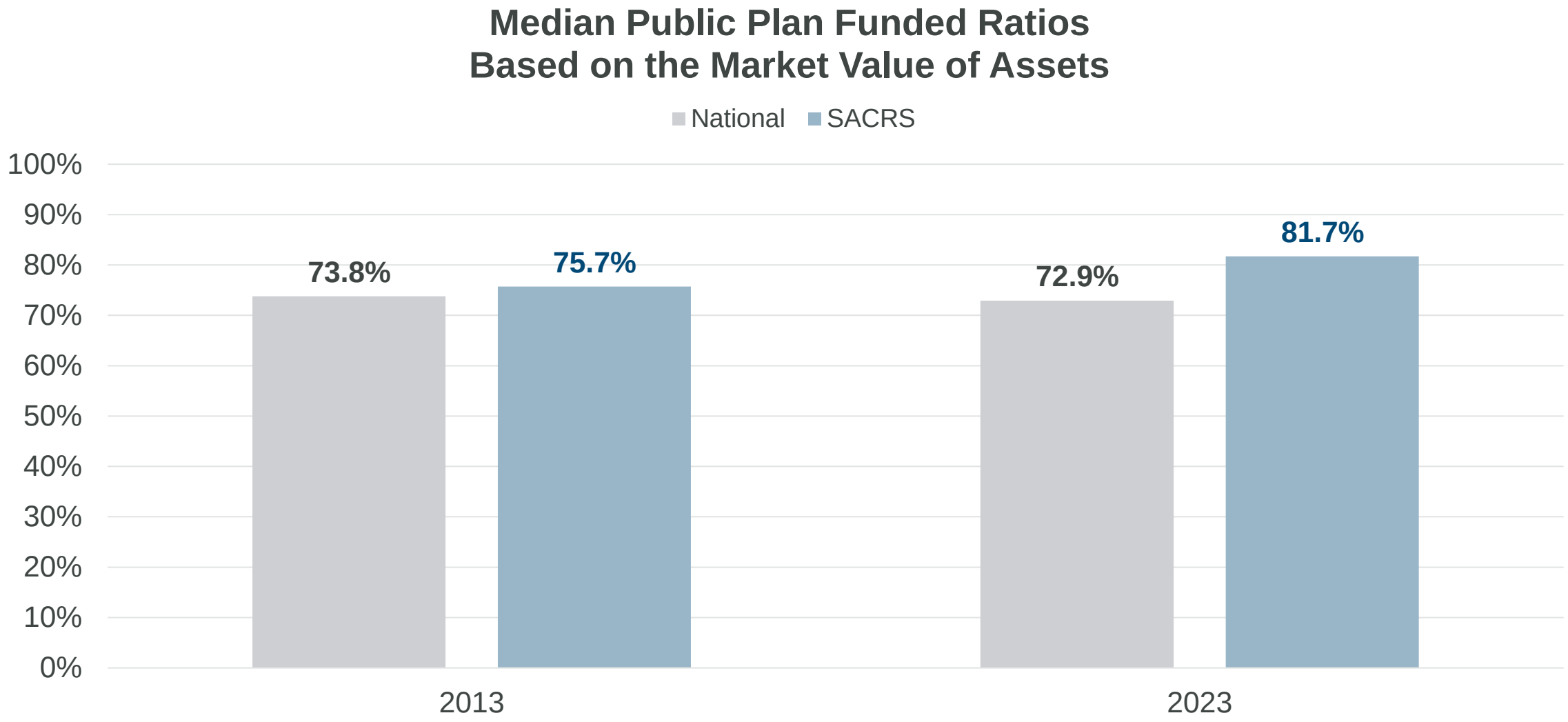
- Funded ratios are the most common metric used to compare plans and assess health
- Differences in how funded ratios are measured can make comparisons misleading

Funded Ratio Comparisons Can Be Misleading

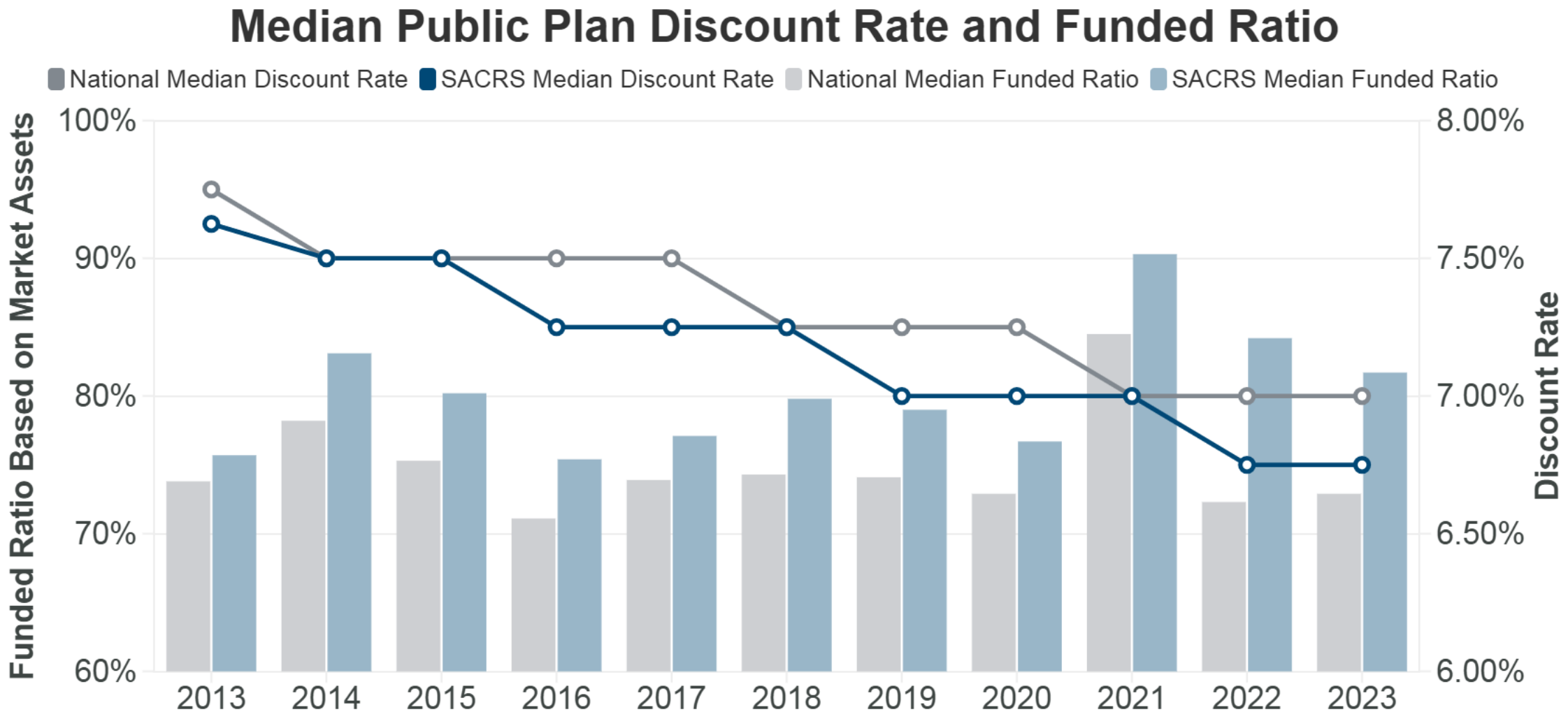


- Issues that may create misleading comparisons:
  - ✓ Different Discount Rates
  - ✓ Different methods to smooth assets
  - ✓ Different actuarial cost methods
  - ✓ Different measurement dates
  - ✓ Different data sources – actuarial valuation versus ACFR
  - ✓ Non-valuation reserves
  - ✓ Non-pension plan debt from POBs
  - ✓ Retiree health assets
- Imperfect solutions
  - ✓ Normalize to common discount rate
  - ✓ Using market value eliminates differences due to asset smoothing methods
  - ✓ Actuarial value constrains differences due to measurement dates

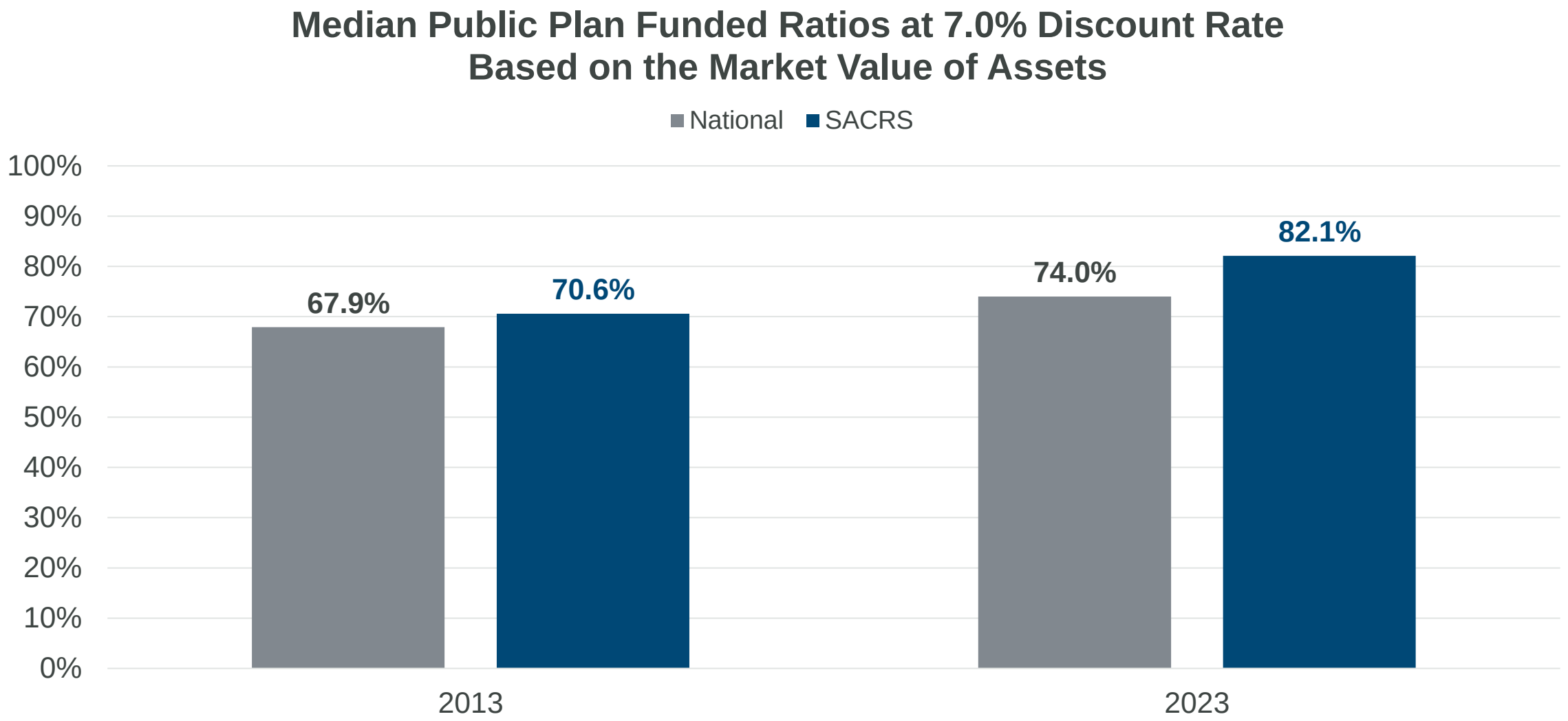
2013 to 2023: A Lost Decade in Pension Funding?



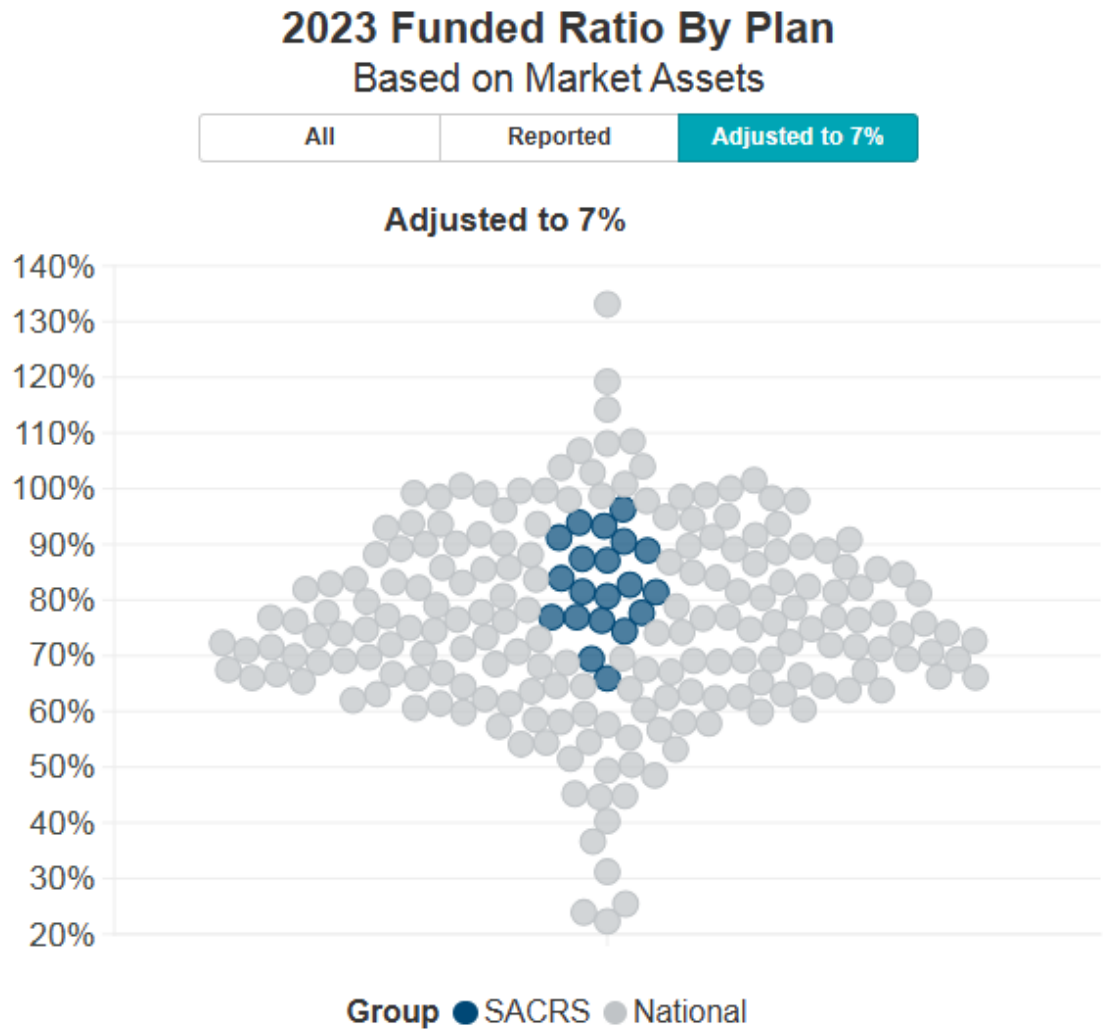
2013 to 2023: Not a Lost Decade

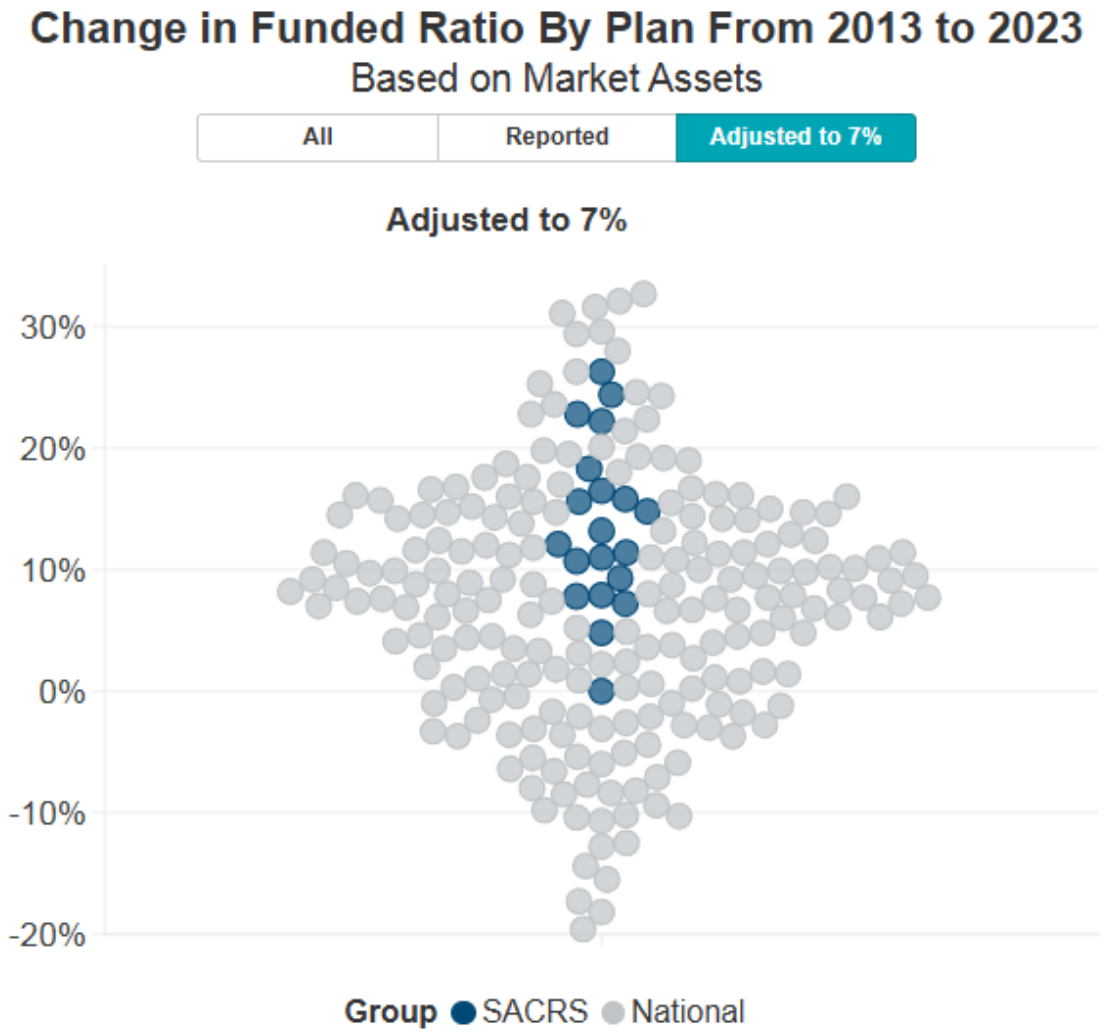


2013 to 2023: Not A Lost Decade!



Funded Ratios – Distribution and Changes





Funded Ratios Provide Valuable But Limited Information

- Funded ratios provide some important information
  - Current assets compared to funding target
  - Progress over time toward funding target
- Funded ratios provide no information related to the sustainability of the plan
  - Cost or affordability of unfunded liability
  - Commitment through contribution policy to fund plan
  - Affordability of risks borne by plan

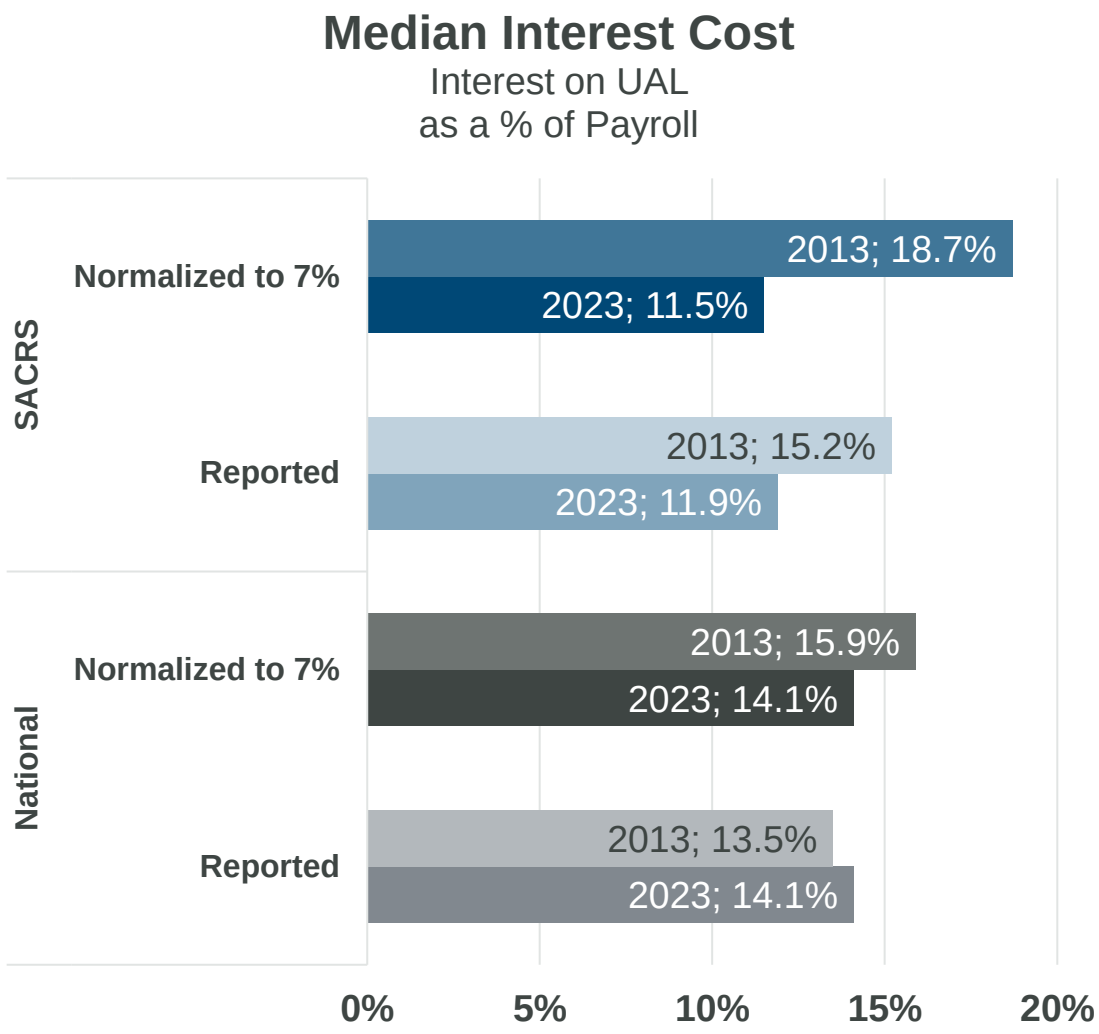
Use Interest Cost to Assess Affordability of UAL

- Interest Cost = Interest on UAL as a Percent of Payroll
  - Cost of maintaining UAL as a dollar amount
  - Expressed as a percent of payroll to assess affordability
    - Payroll is used as a proxy to scale for the resources available from the sponsor
- Differences due to discount rate are somewhat muted
  - A higher discount rate produces a smaller UAL but a larger interest charge

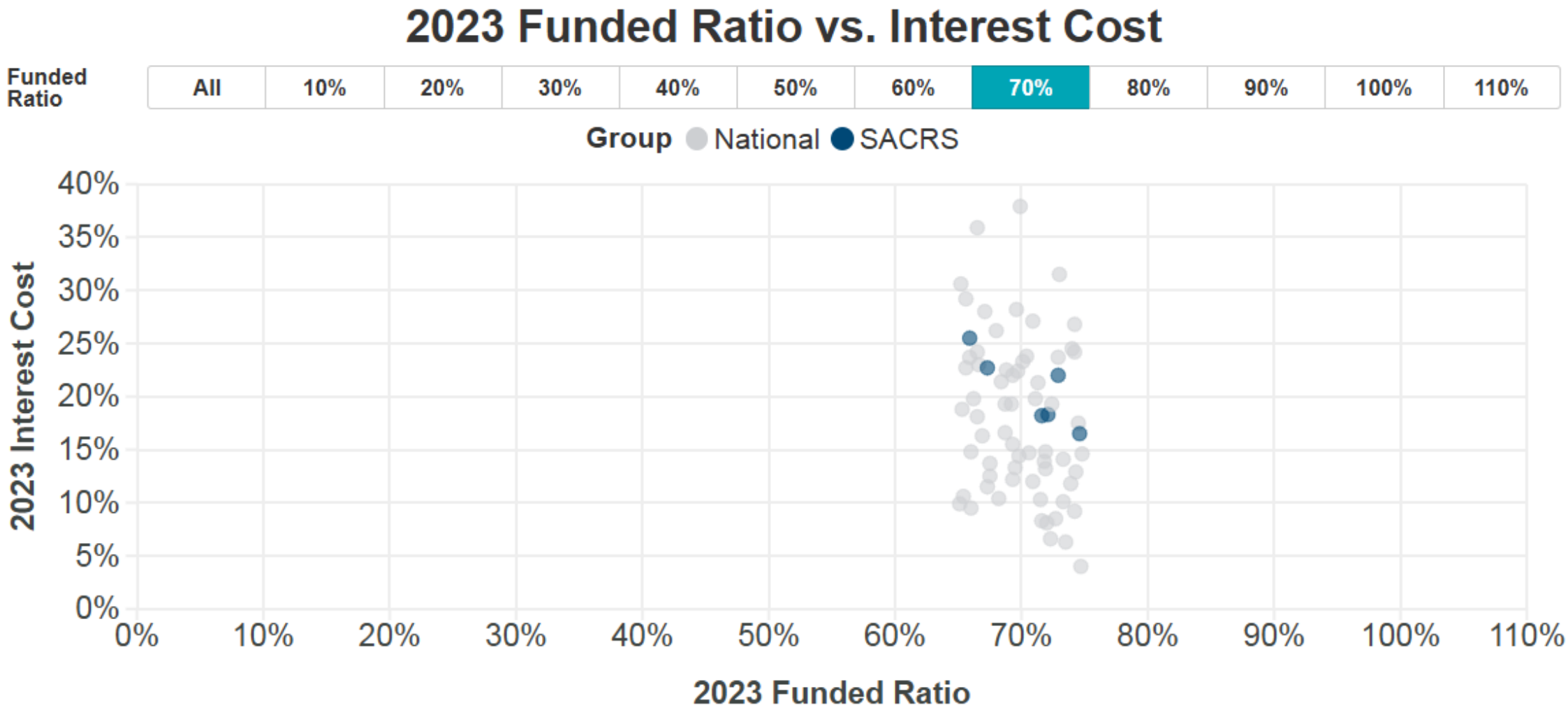
Sample Calculation of Interest Cost			
		As Reported	Normalized
1.	Discount Rate	7.50%	7.00%
2.	Actuarial Liability	$ 2,500	$ 2,670
3.	Assets	$ 1,750	$ 1,750
4.	**UAL (2) – (3)**	**$ 750**	**$ 920**
5.	Funded Ratio (3) ÷ (2)	70.0%	65.5%
6.	Interest on UAL (1) X (4)	$ 56	$ 64
7.	Payroll	$ 350	$ 350
8.	**Interest Cost (6) ÷ (7)**	**16.0%**	**18.3%**

Median Interest Cost – Historical Review

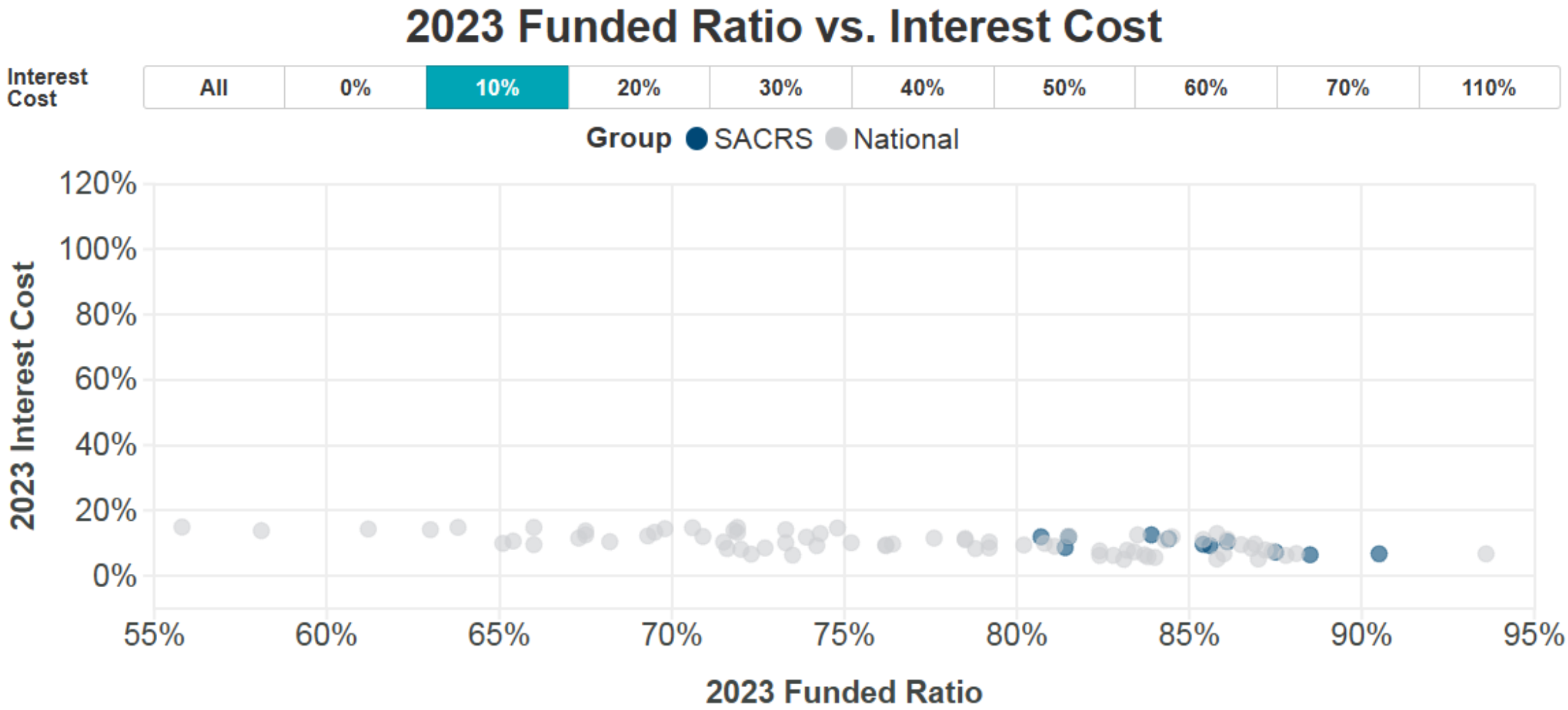
Like the Funded Ratio, the improvement on Interest Cost over the last 10 years can be masked by changing assumptions that reflect updated expectations



Interest Cost Varies For a Given Funded Ratio

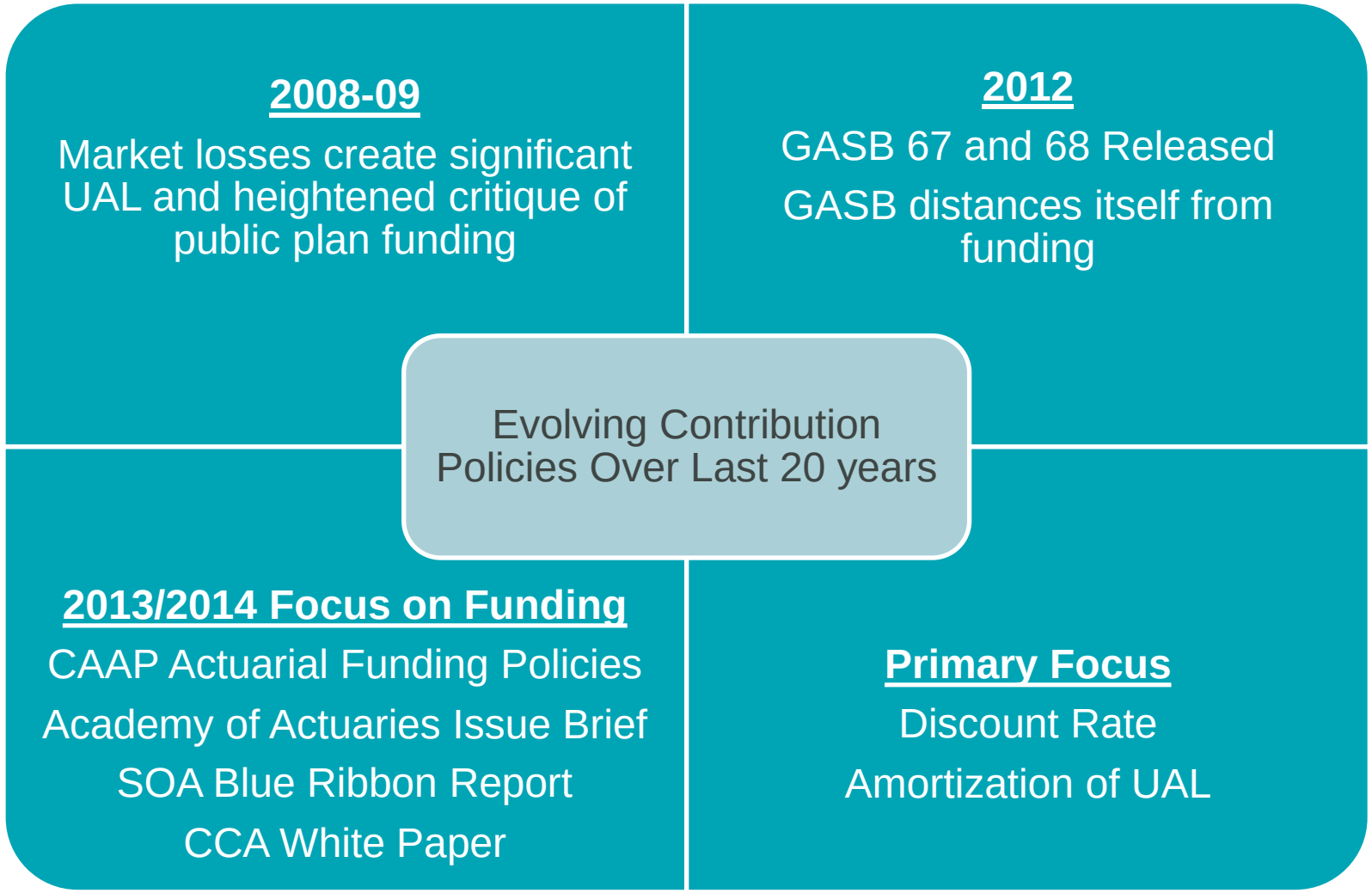


Funded Ratio Varies For a Given Interest Cost



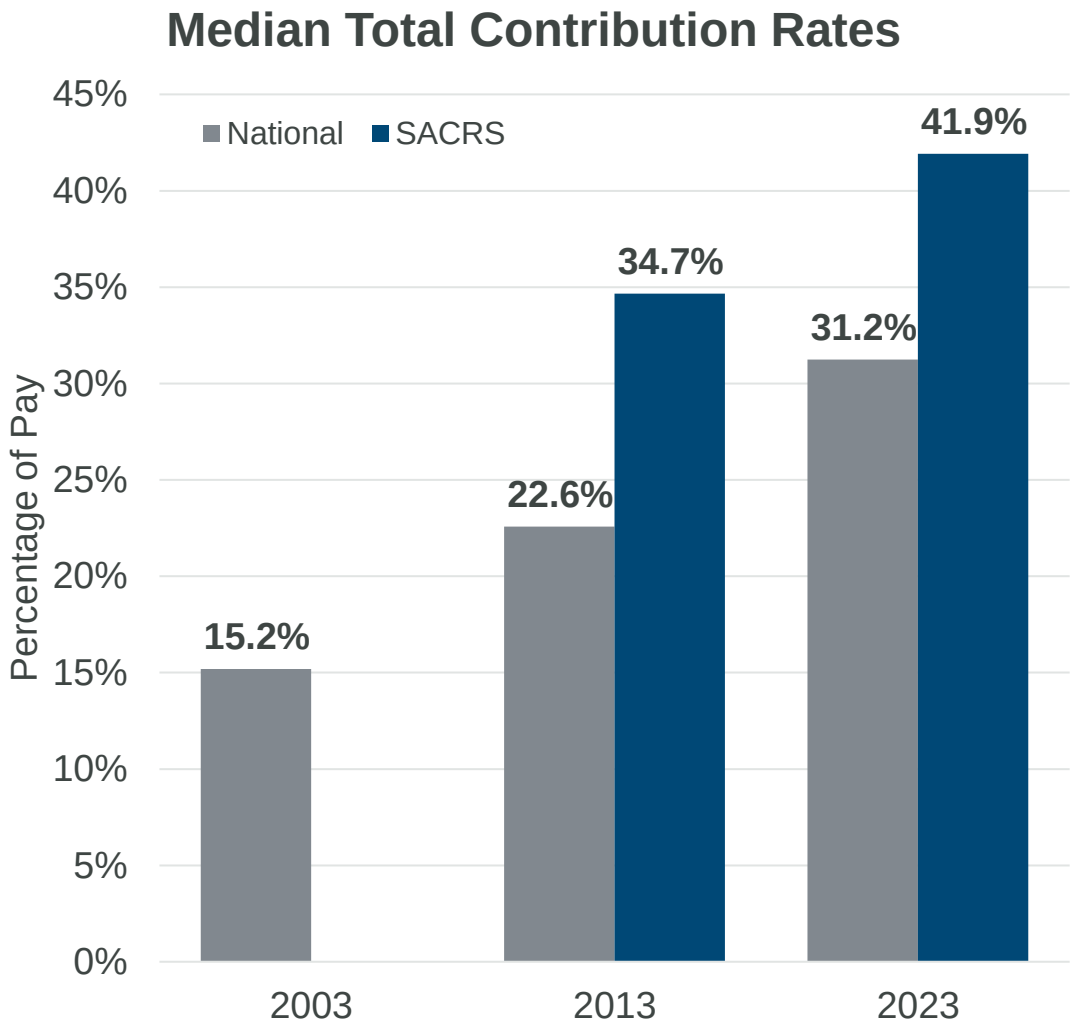
Contribution Policies

Background – Contribution Policies



Total Contribution Rates Have Increased

- Total Contribution = contributions from all sources (employee, employer, state, etc.)
- Increases over the last 20 years attributable to:
  - Market returns (2000-2002, 2008)
  - Assumption changes
  - Focus on paying down UAL
- Although total contribution rates have increased, this does not speak to the sufficiency of the contribution

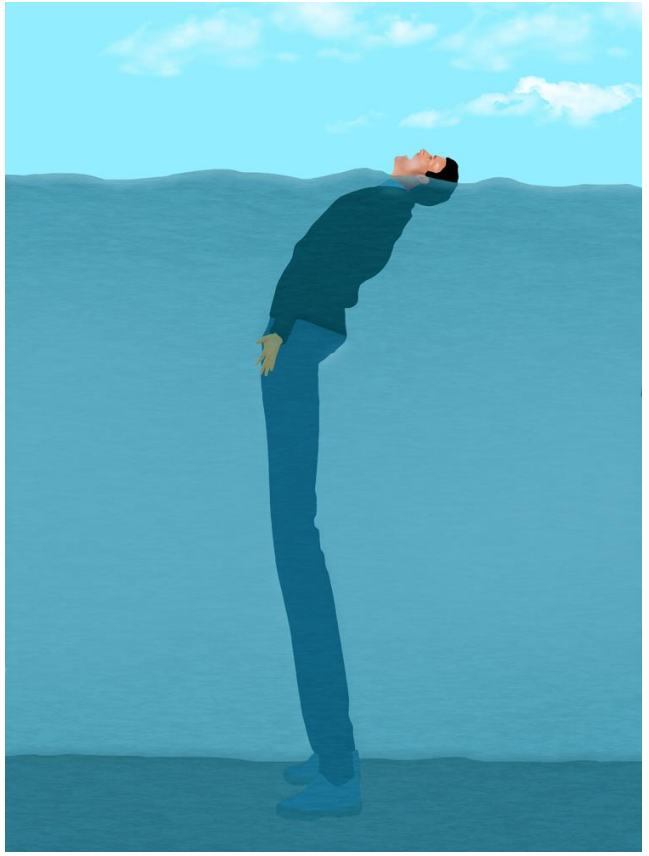


Tread Water Contribution Benchmark

Total Normal Cost* + Interest Cost = Tread Water Benchmark

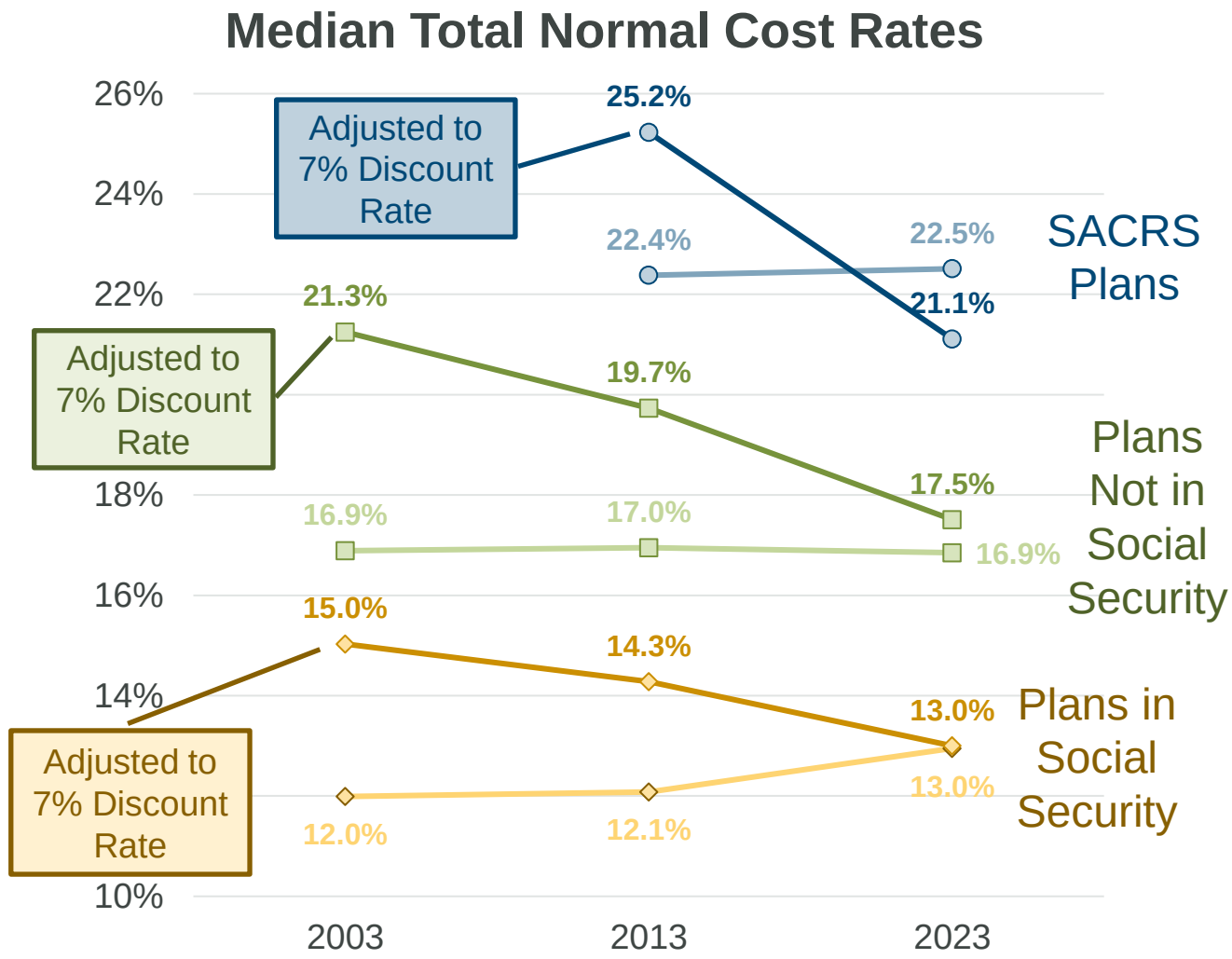
* Includes administrative expenses.

- The Tread Water Benchmark is the contribution rate at which the UAL would remain the same dollar amount if all assumptions are exactly met
- Based on the market value of assets
  - Can vary significantly from year to year
- Ideally, actual contributions exceed the Tread Water Benchmark in most years
  - Not likely every year since the benchmark is based on the market value of assets

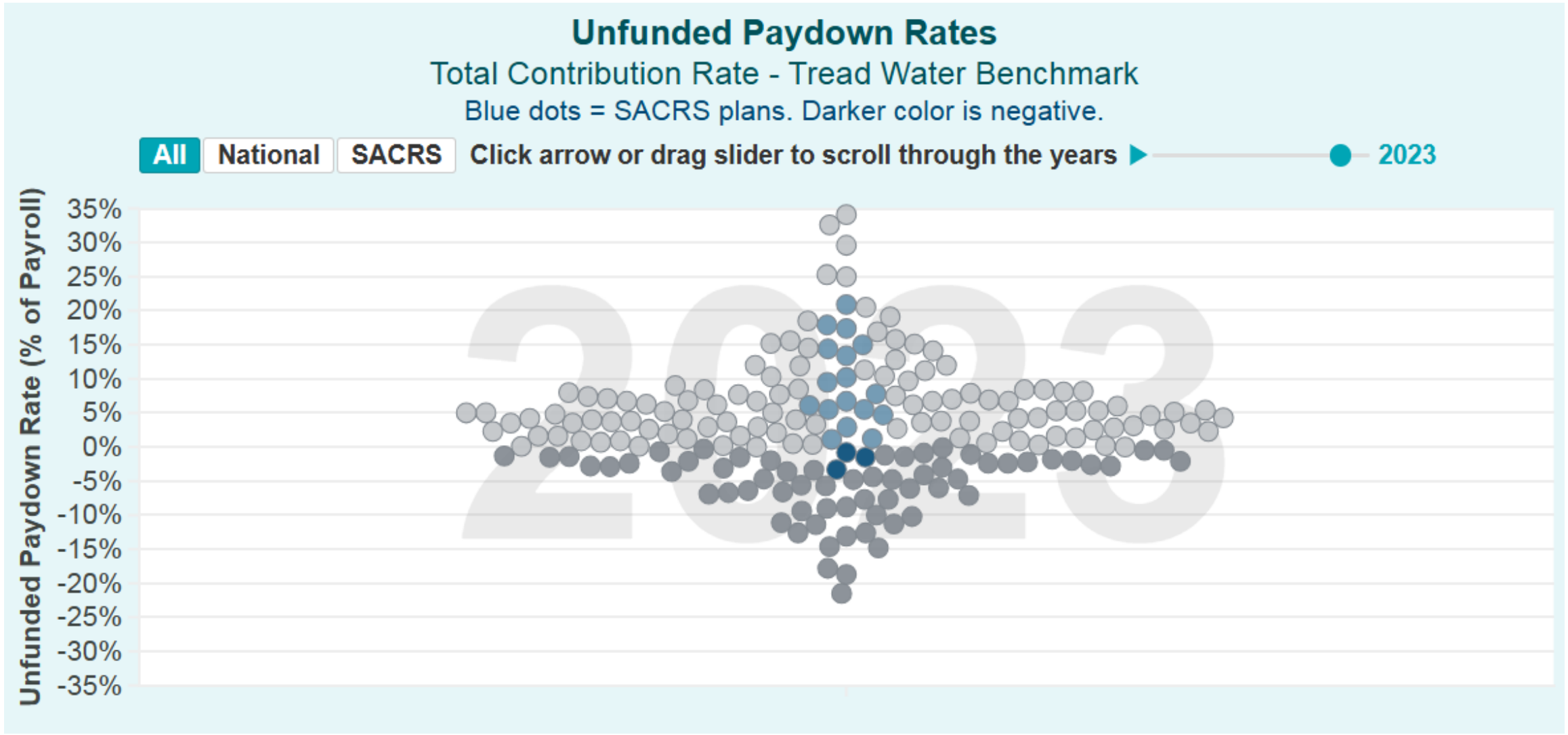


Total Normal Cost Rates Have Increased, But …

- Total Normal Cost Rates increased over the last 20 years
- However, after adjusting to a constant discount rate of 7.0%, Total Normal Cost Rates have actually decreased
  - Mortality and other assumption changes likely mean the reduction was even greater
- Many plans only reduced benefits for new tiers, so this trend may continue

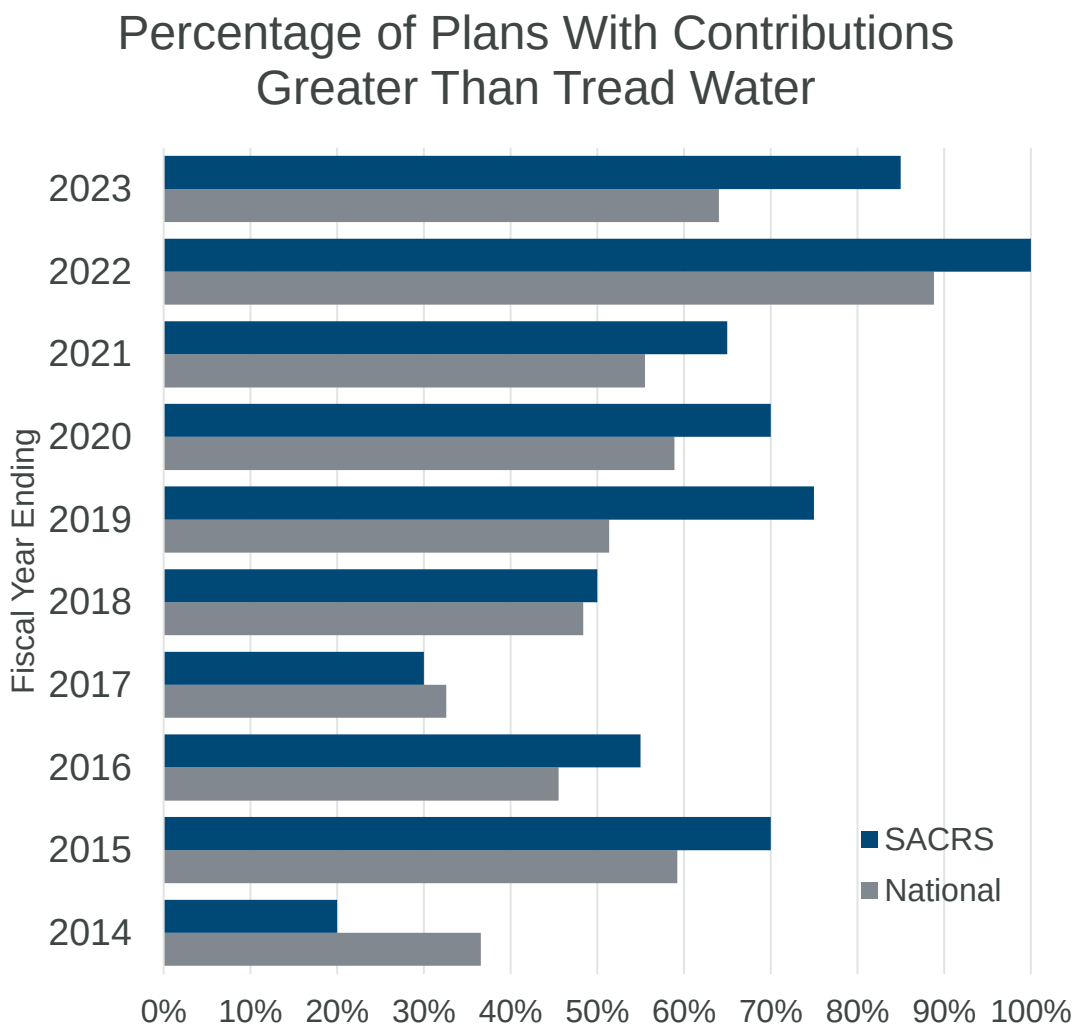


Contributions Versus Tread Water Benchmark

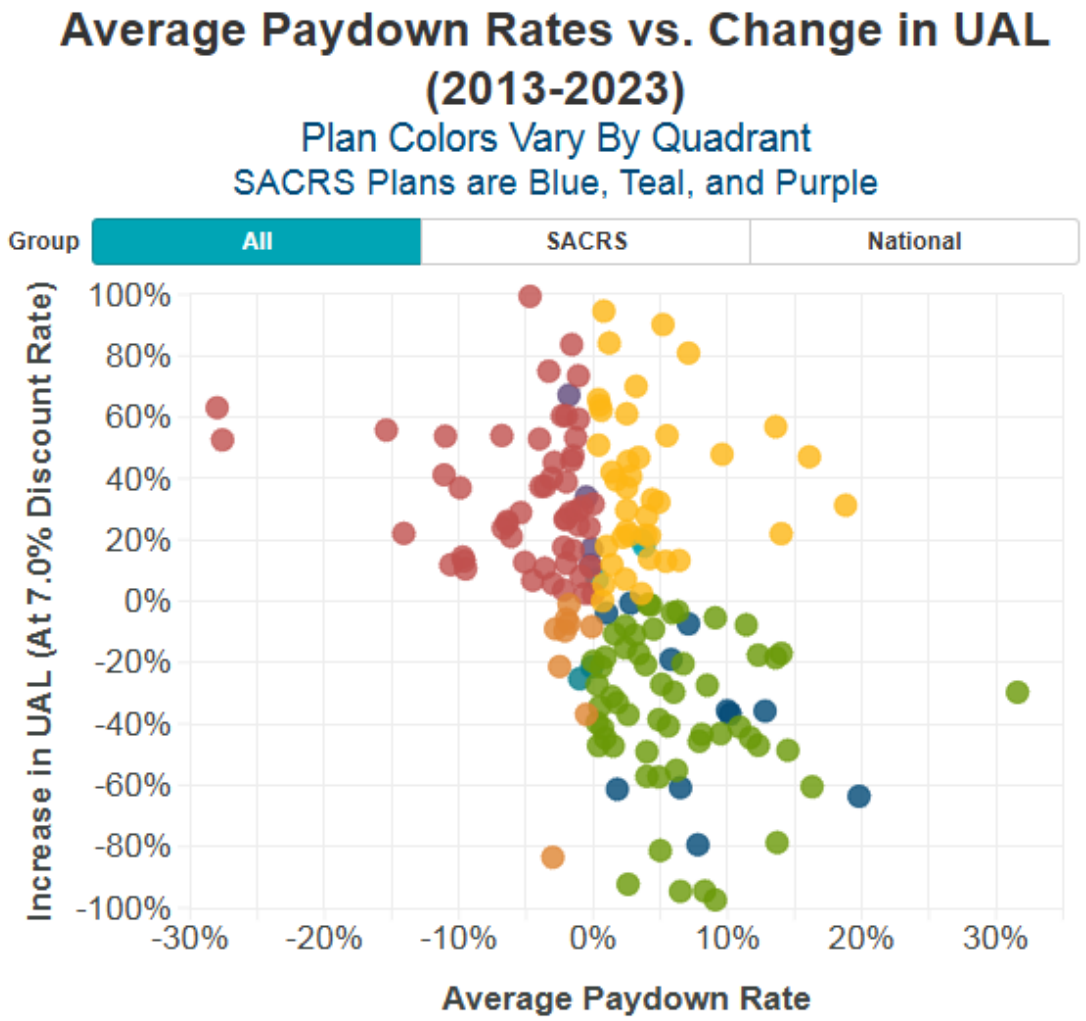


What Leads to Contributions Less Than Tread Water?

- Temporary causes
  - Asset smoothing
  - Delay between valuation date and effective date of contributions
- Long-term causes
  - Inadequate fixed-rate contribution
  - Long amortization periods with high amortization payment growth rates
- Actuaries have been working with their clients to eliminate the long-term causes by moving toward
  - Layered amortizations
  - 15 to 20-year periods for gains/losses
  - Lower amortization payment growth rates



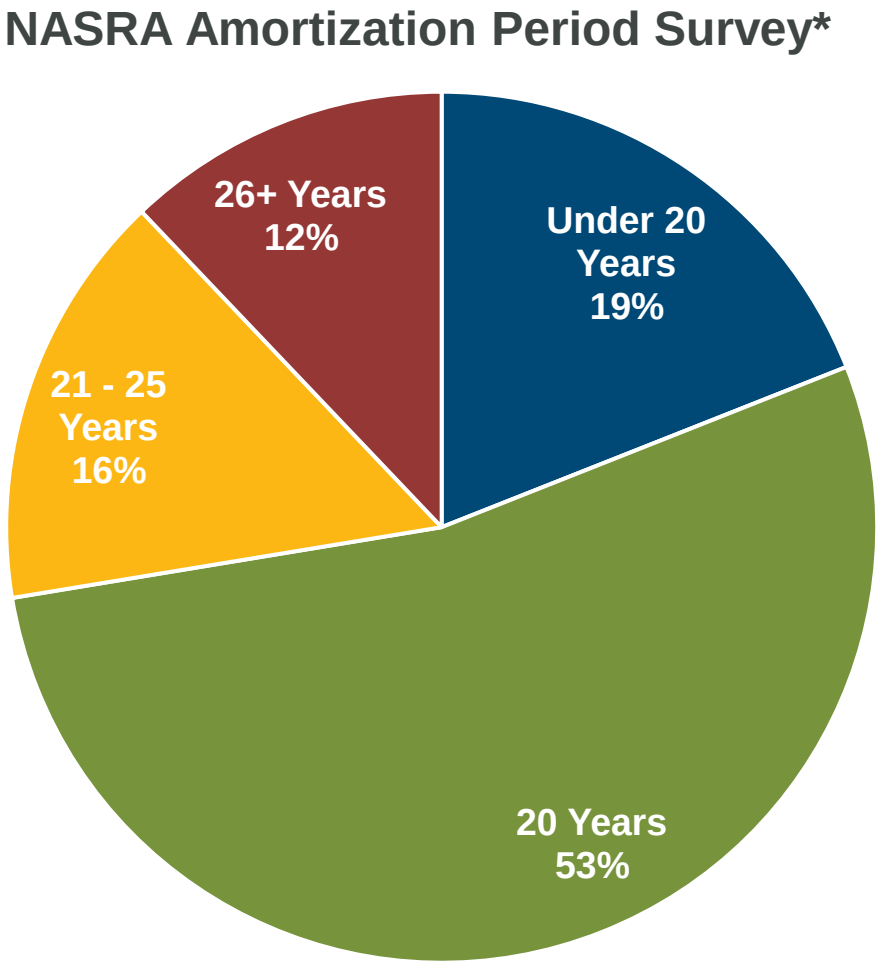
UAL Change vs. Tread Water Benchmark



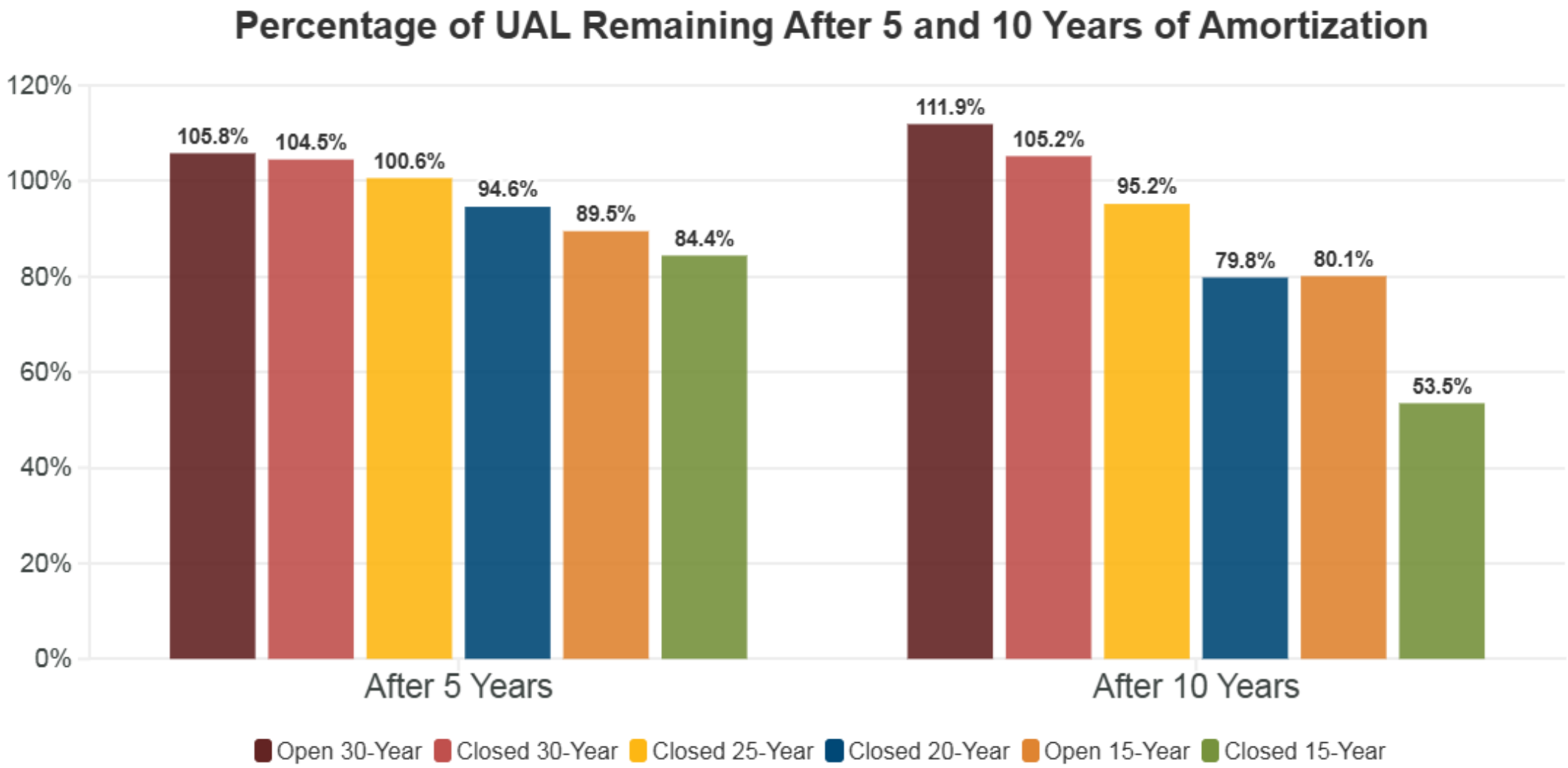
- Key factors that influence the growth or decline in UAL
  - Investment returns
  - Changes in discount rate
  - Contributions
  - Other assumption changes or gains/losses
- Very few plans reduce their UAL if contributions do not exceed the Tread Water Benchmark on average

UAL Amortization Periods

- Amortization periods have decreased over the last 20 years
- Shorter amortization periods result in:
  - ✓ Less negative amortization
  - ✓ UAL is paid off more quickly
  - ✓ More likely for the contribution to exceed tread water



Contribution Policies - Amortization of UAL



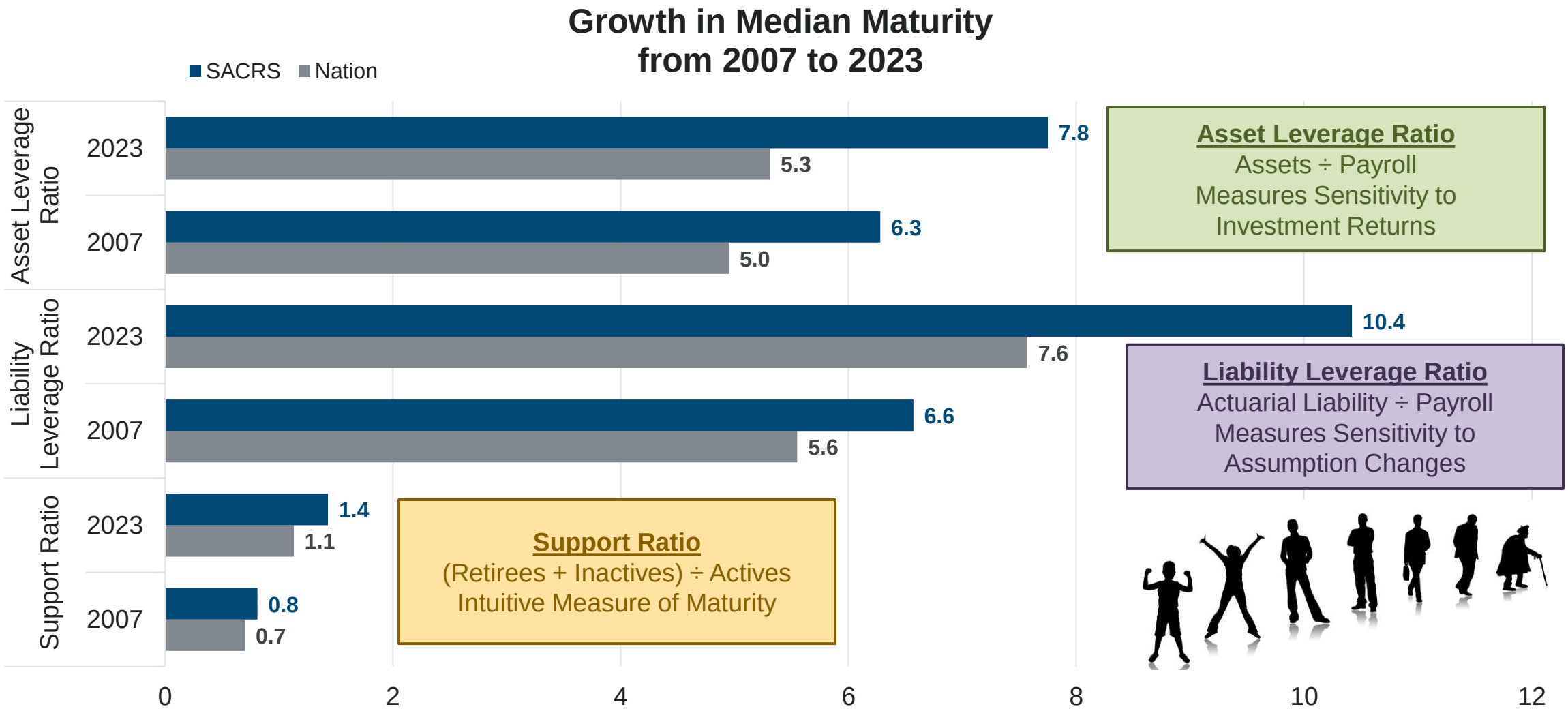
Sensitivity to Risk

Sensitivity to Risk - What Are the Risks?

Liabilities higher than expected

Assets lower than expected

Maturity Measures Point To More Sensitivity to Risk



Asset Leverage or Volatility Ratio

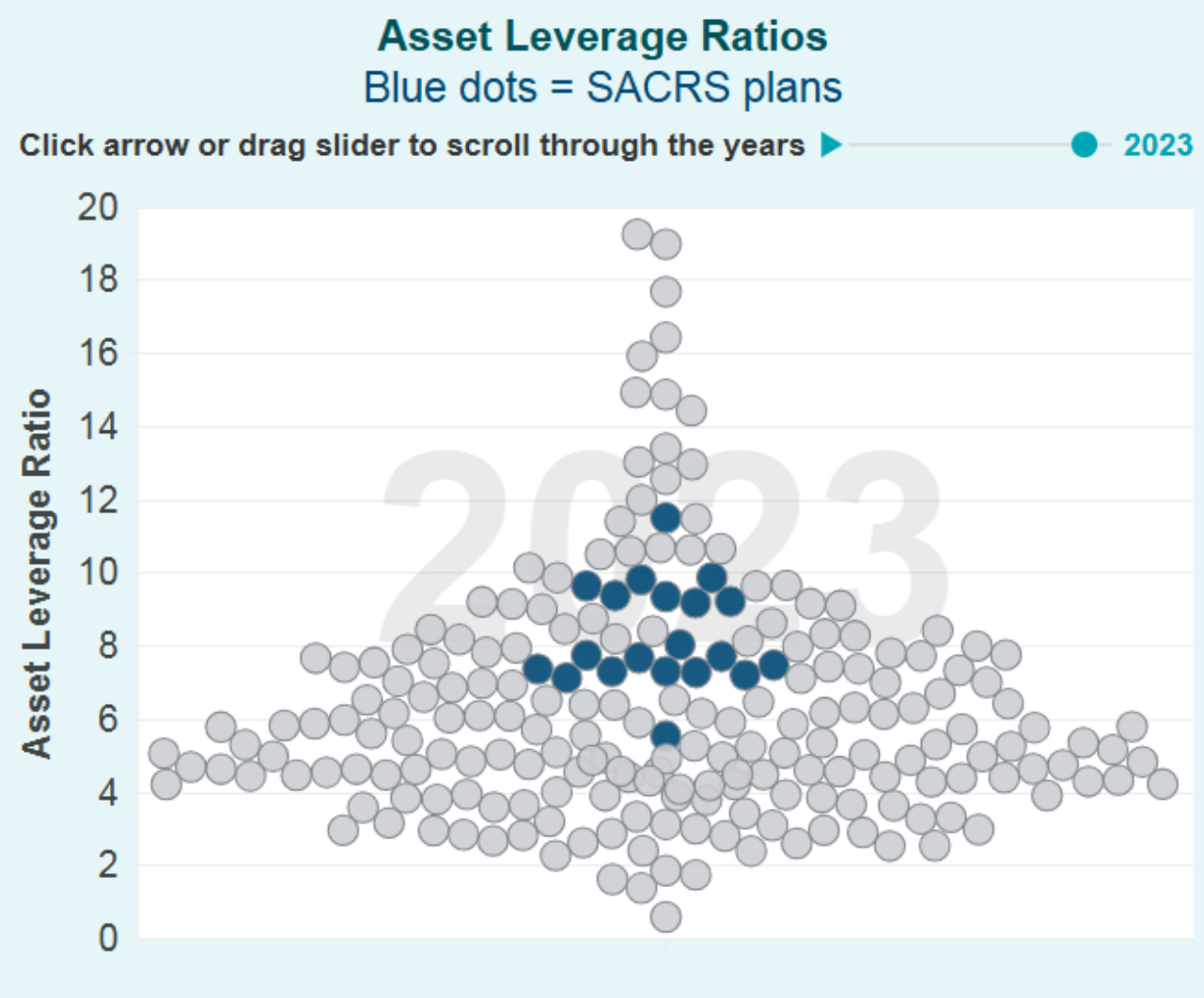
$$\frac{\text{Market Value of Assets}}{\text{Payroll}}$$

- Higher ratios lead to higher contribution volatility as a percent of payroll
- What does the Asset Leverage Ratio mean for my Plan?

Example – Assume Plan A and Plan B have the same amount of assets and both plans experience a 10% asset loss and use a discount rate of 7%

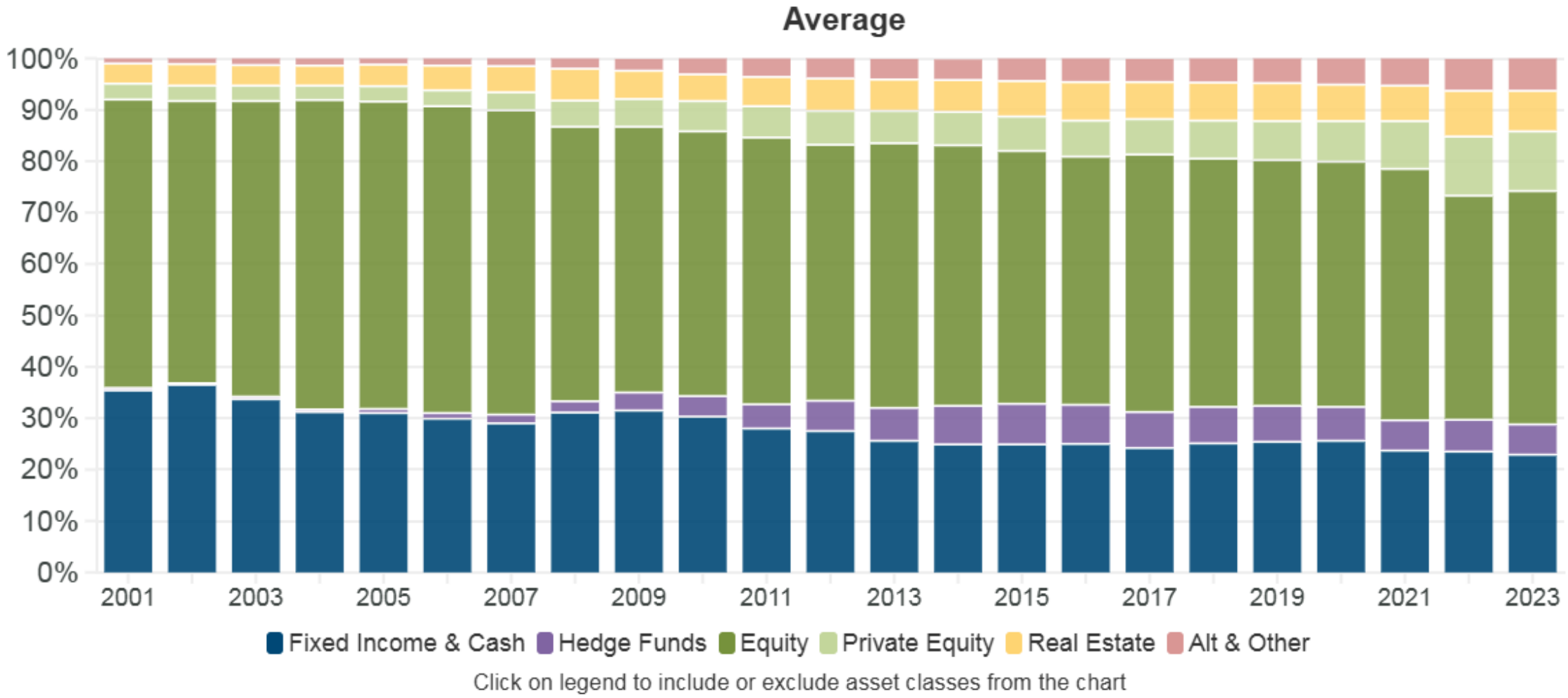
Plan	Asset Leverage Ratio	Asset Loss	Asset Loss as a % of Payroll	Increase in UAL Interest Cost as a % of Payroll
Plan A	5	10% loss	50% (5 x 10%)	3.5% (50% x 7%)
Plan B	10	10% loss	100% (10 x 10%)	7.0% (100% x 7%)

Which Plans Have Higher Asset Leverage Ratios



- What Causes a High Asset Leverage Ratio?
  - **Funding Level** – Better funded plans have higher asset leverage ratios
  - **Maturity** – Plans with more retirees per active have higher asset leverage ratios
  - **Benefit Level** – Plans that provide higher benefits as a percentage of payroll have higher asset leverage ratios

Typical Asset Allocations Have Changed



Sensitivity to Risk

Same Plan, Different Time …

Year	Asset Leverage Ratio	St. Dev. Investment Loss	Investment Loss as a % of Payroll	Increase in Interest Cost as a % of Payroll
National				
2013	4.6	10% loss	46% (4.6 x 10%)	3.6% (46% x 7.75%)
2023	5.3	13% loss	69% (5.3 x 13%)	4.8% (69% x 7.00%)
SACRS				
2013	6.0	10% Loss	60% (6.0 x 10%)	4.6% (60% x 7.625%)
2023	7.8	13% Loss	101% (7.8 x 13%)	6.8% (101% x 6.75%)

SACRS vs. Nation Scorecard

Metric	Nation	SACRS	"Winner"
Median Funded Ratio	2023: 72.9%	2023: 81.7%	**SACRS**
Funding Progress 2013-2023	As reported: -0.9% Normalized to 7%: 6.1%	As reported: 6.0% Normalized to 7%: 11.5%	**SACRS**
Median Interest Cost	2023: 14.1%	2023: 11.9%	**SACRS**
Interest Cost Progress 2013-2023	As reported: 0.6% Normalized to 7%: -1.8%	As reported: -3.3% Normalized to 7%: -7.2%	**SACRS**
Median Total Contribution Rate	2013: 22.6% 2023: 31.2%	2013: 34.7% 2023: 41.9%	**Nation**
Average UAL Paydown Rate 2013-2023	Median: 1.3% Percent >0: 60.7%	Median: 3.2% Percent >0: 70.0%	**SACRS**
2023 Plan Maturity	Support Ratio: 1.1 Asset Leverage Ratio: 5.3 Liability Leverage Ratio: 7.6	Support Ratio: 1.4 Asset Lev Ratio: 7.8 Liability Lev Ratio: 10.4	**Nation**
Impact of 13% Investment Loss	Interest Cost: 4.8% of payroll	Interest Cost: 6.8% of payroll	**Nation**

Questions