

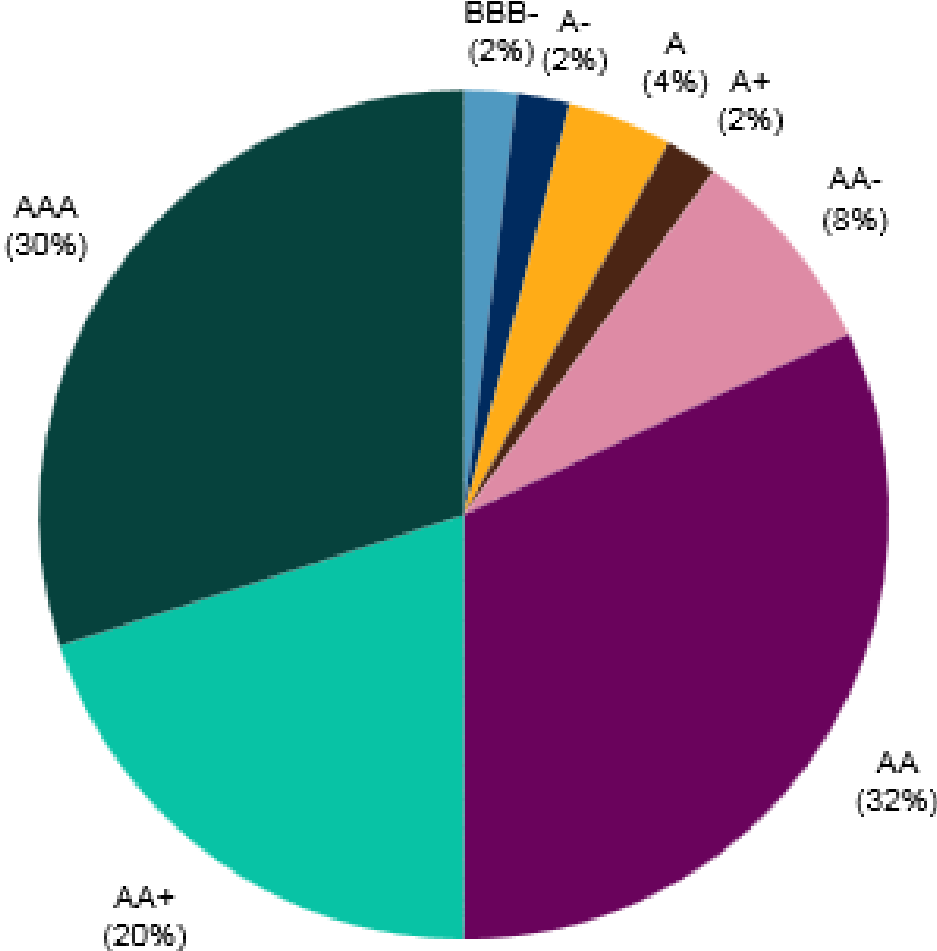
S&P Global's Perspectives on Unfunded Pension & OPEB Liabilities

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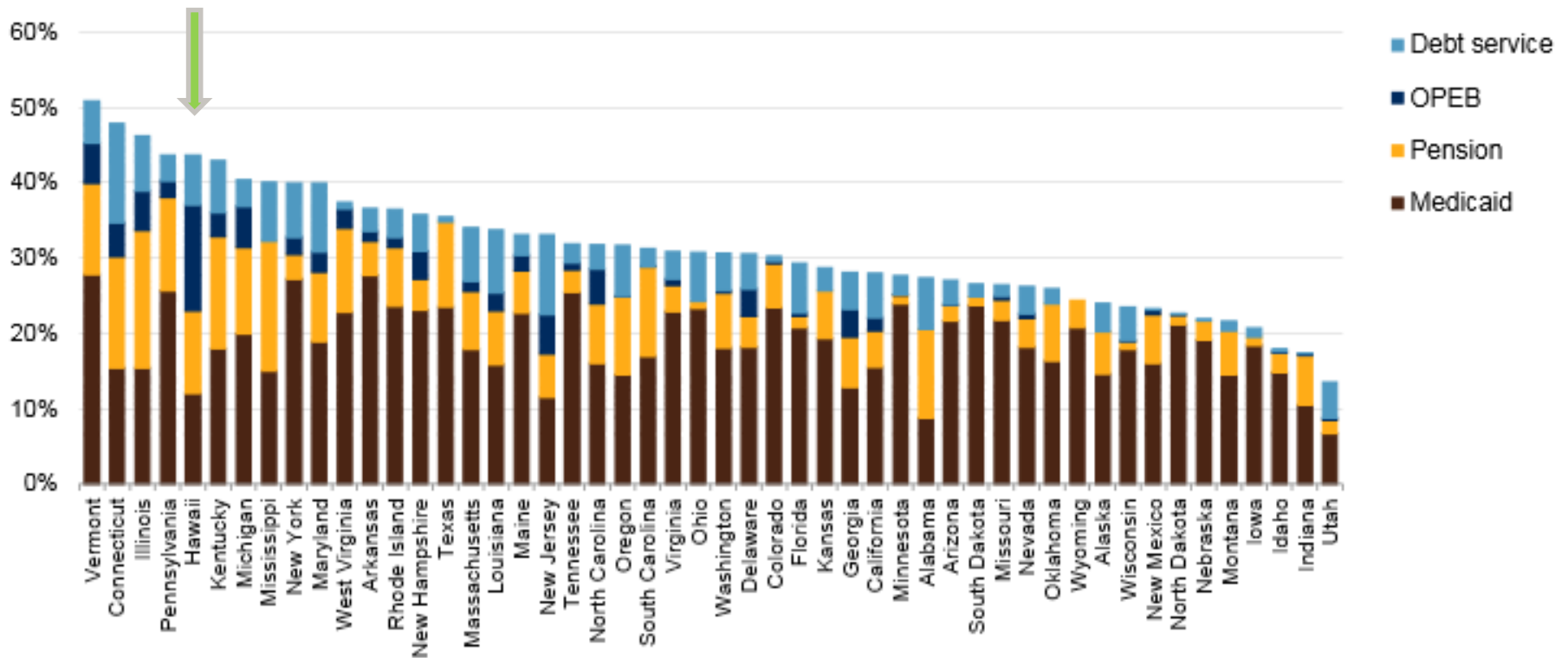


U.S. States Ratings Distribution



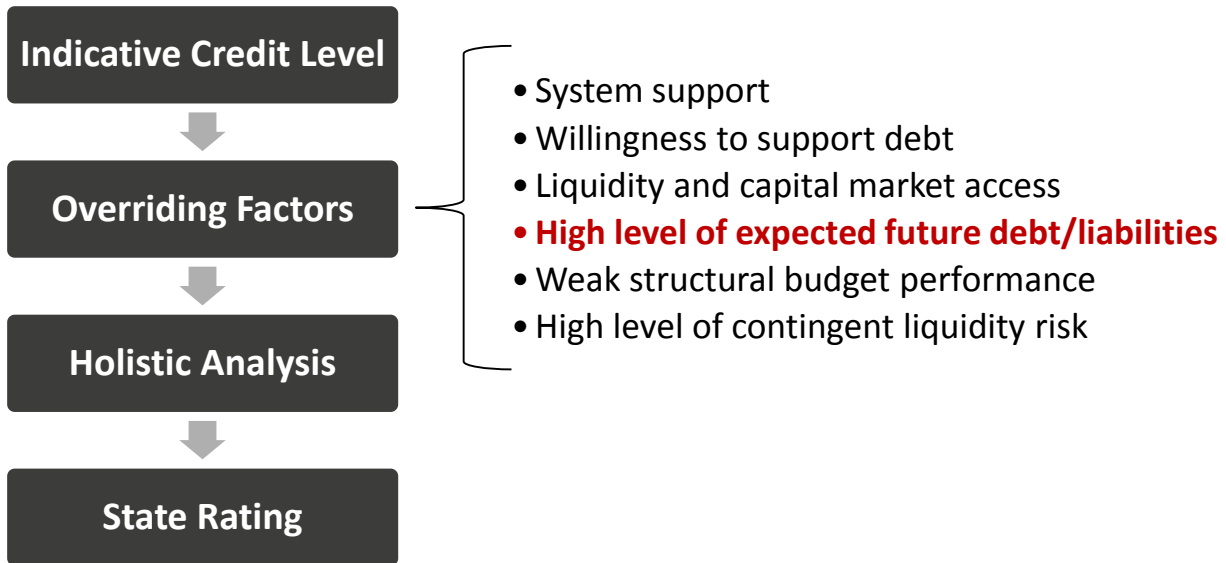
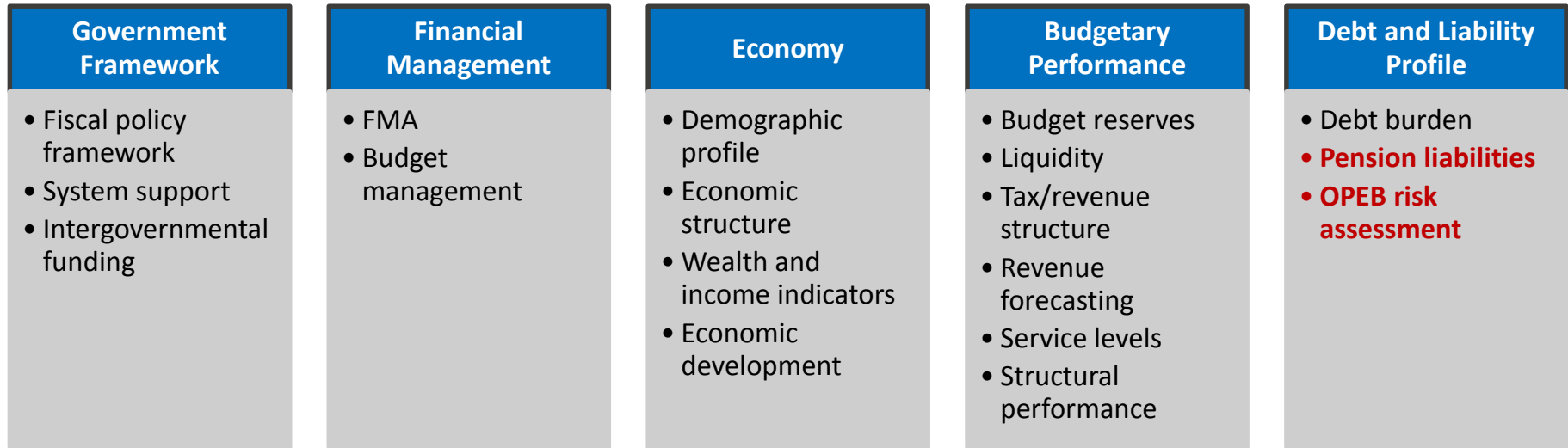
Source: U.S. State Ratings And Outlooks: Current List: September 20, 2018

Combined Medicaid, Debt Service, And Pension And OPEB Contributions Share Of General Fund Expenditures



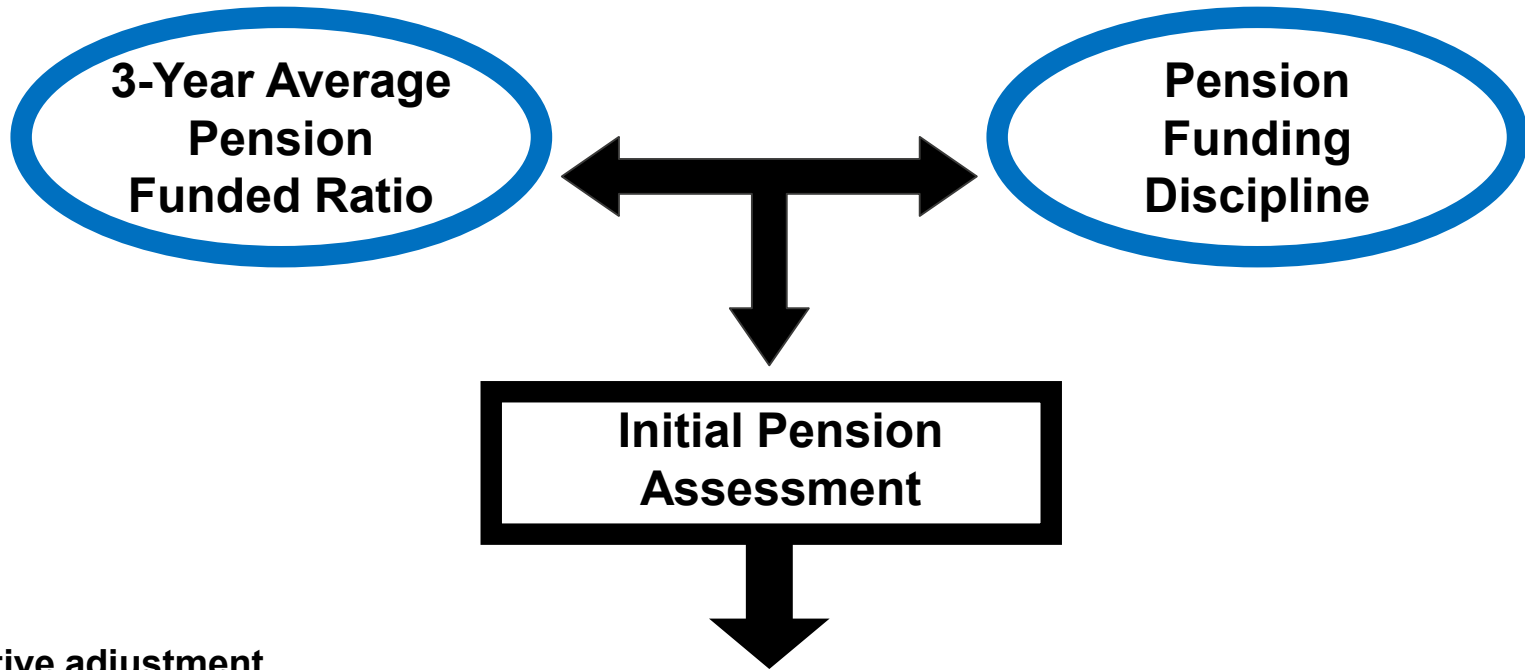
Source: When The Credit Cycle Turns, U.S. States May Be Tested In Unprecedented Ways: September 17, 2018

S&P Approach: U.S. States Overall Analytical Framework



Source: S&P Global Ratings U.S. States Ratings Methodology, October 17, 2016

S&P State Ratings Pension Approach



Positive adjustment

- Unfunded pension liability per capita at or below \$500, or
- Unfunded pension liability as % of income at or below 2%.

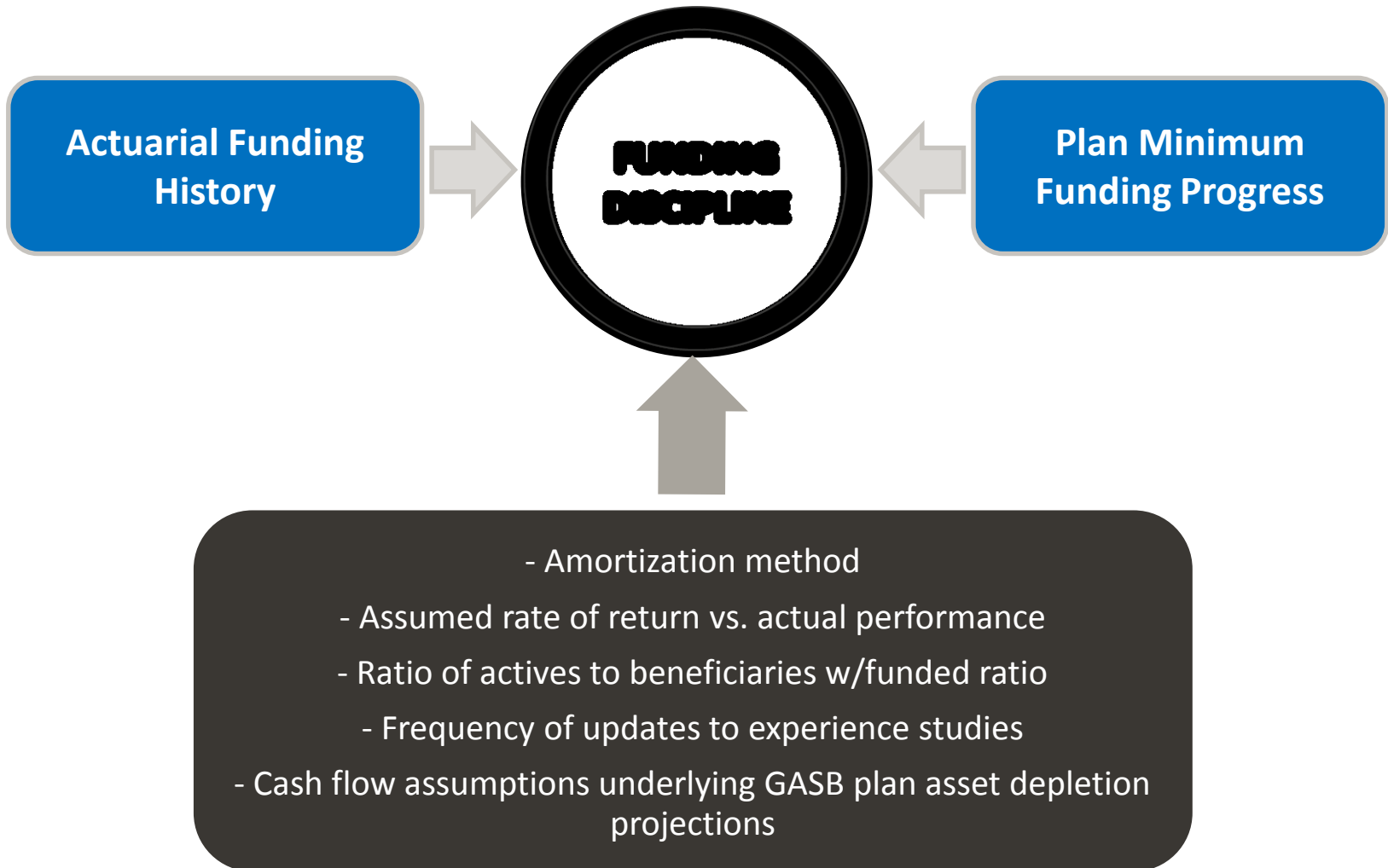
Negative adjustment

- Unfunded pension liability per capita at or above \$3500, or
- Unfunded pension liability as % of income at or above 7%.

Final Pension
Liabilities
Assessment

Source: S&P Global Ratings U.S. States Ratings Methodology, October 17, 2016

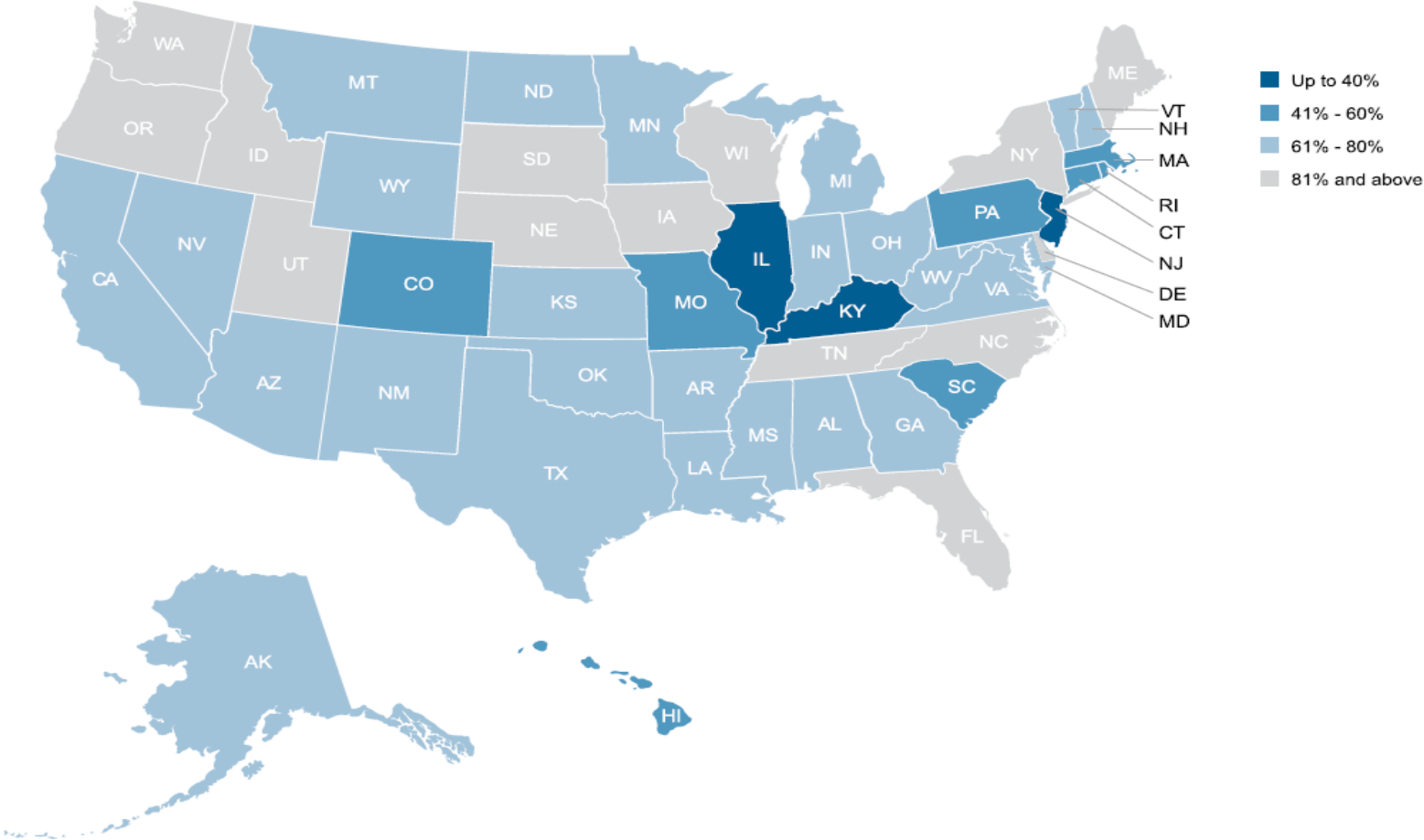
S&P State Pension Approach



Source: S&P Global Ratings U.S. States Ratings Methodology, October 17, 2016

State Pension Survey Funded Ratios

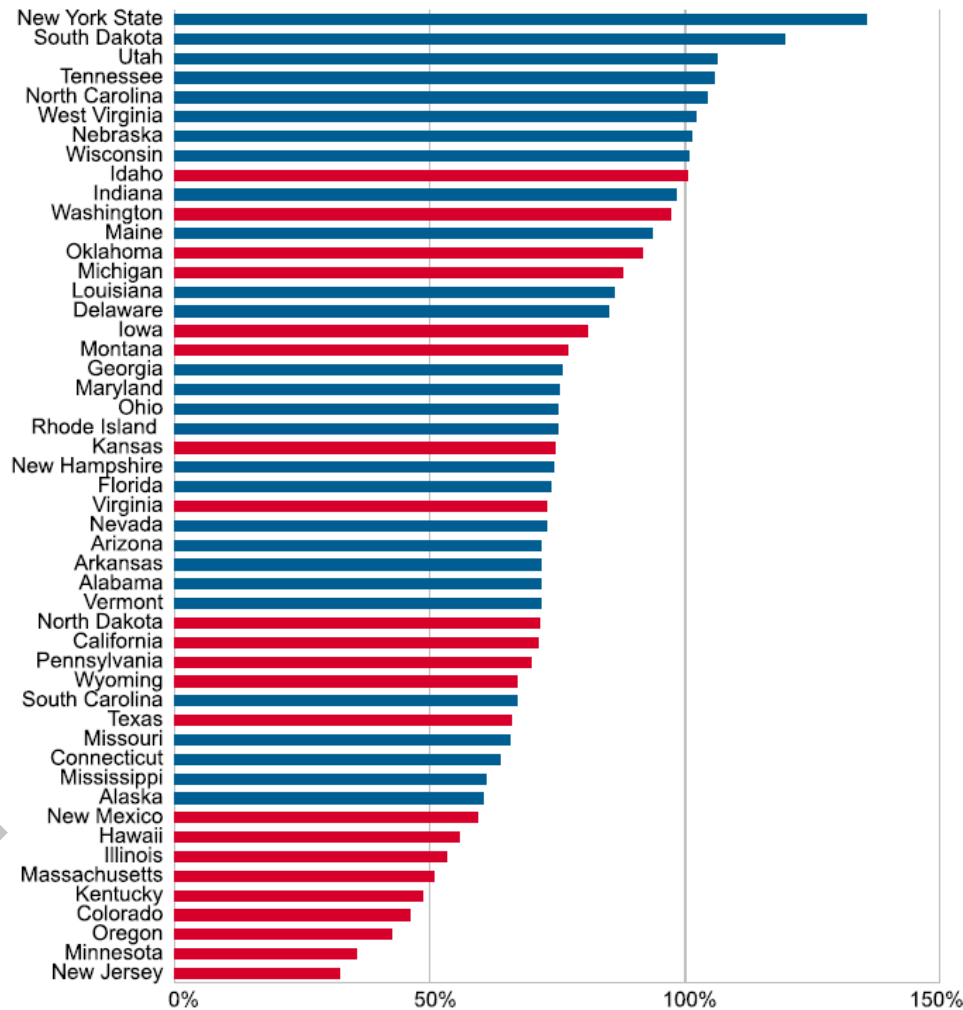
State Pension Funded Ratios



Source: S&P Global Ratings U.S. State Pensions Struggle For Gains Amid Market Shifts And Demographic Headwinds, October 30, 2018

U.S. State Pension Plan Minimum Funding Progress

State Plan Minimum Funding Progress



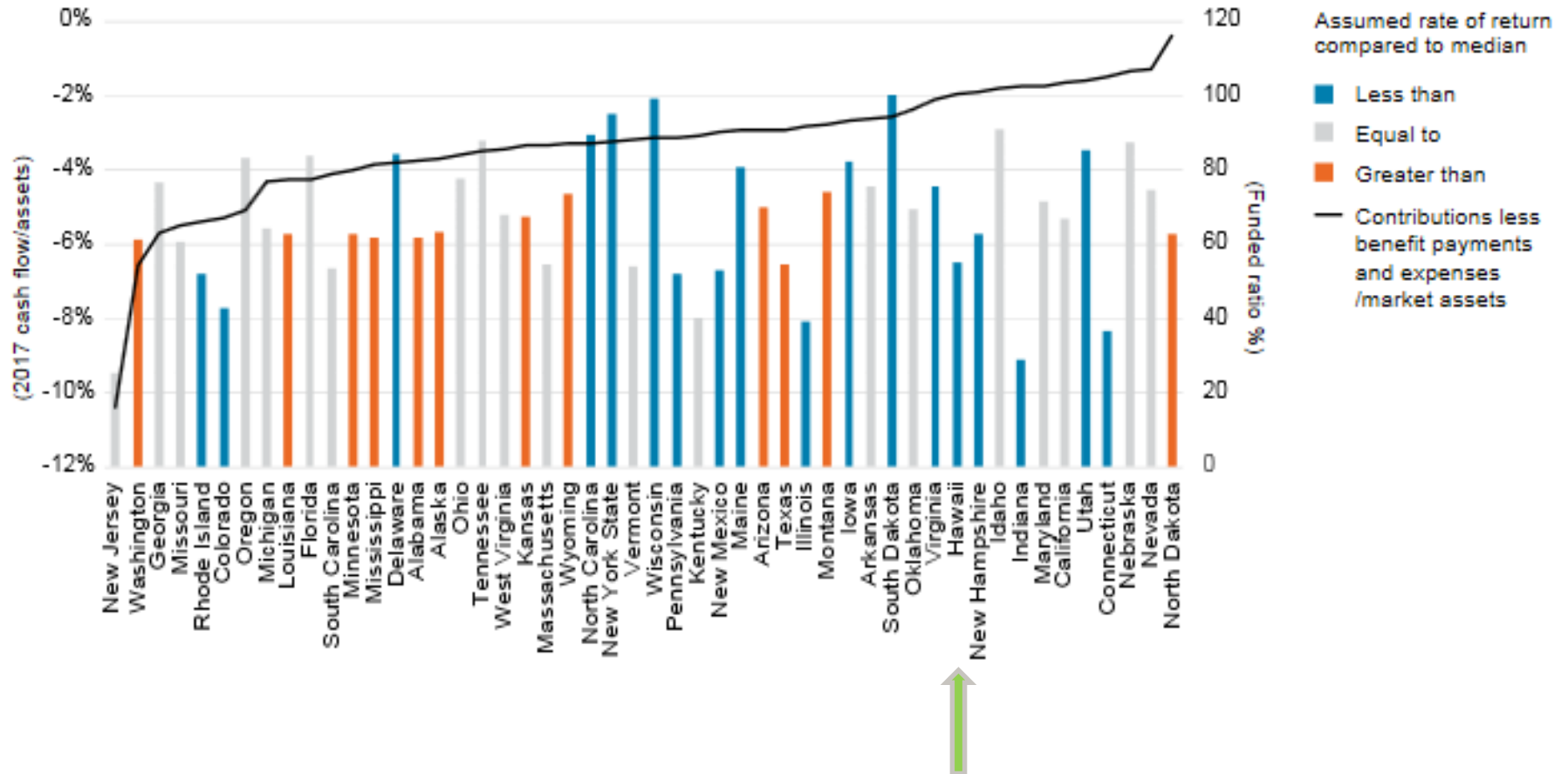
In our view, states that consistently fund full required contributions on an actuarial basis and use conservative assumptions and methods are more likely to effectively manage their pension liabilities and the associated long-term budgetary costs than states that do not.

Blue: Pension contributions are actuarially based and usually meet or exceed required levels

Red: Pension contributions do not have an actuarial basis or are not usually fully funded

Source: S&P Global Ratings U.S. State Pensions Struggle For Gains Amid Market Shifts And Demographic Headwinds, October 30, 2018

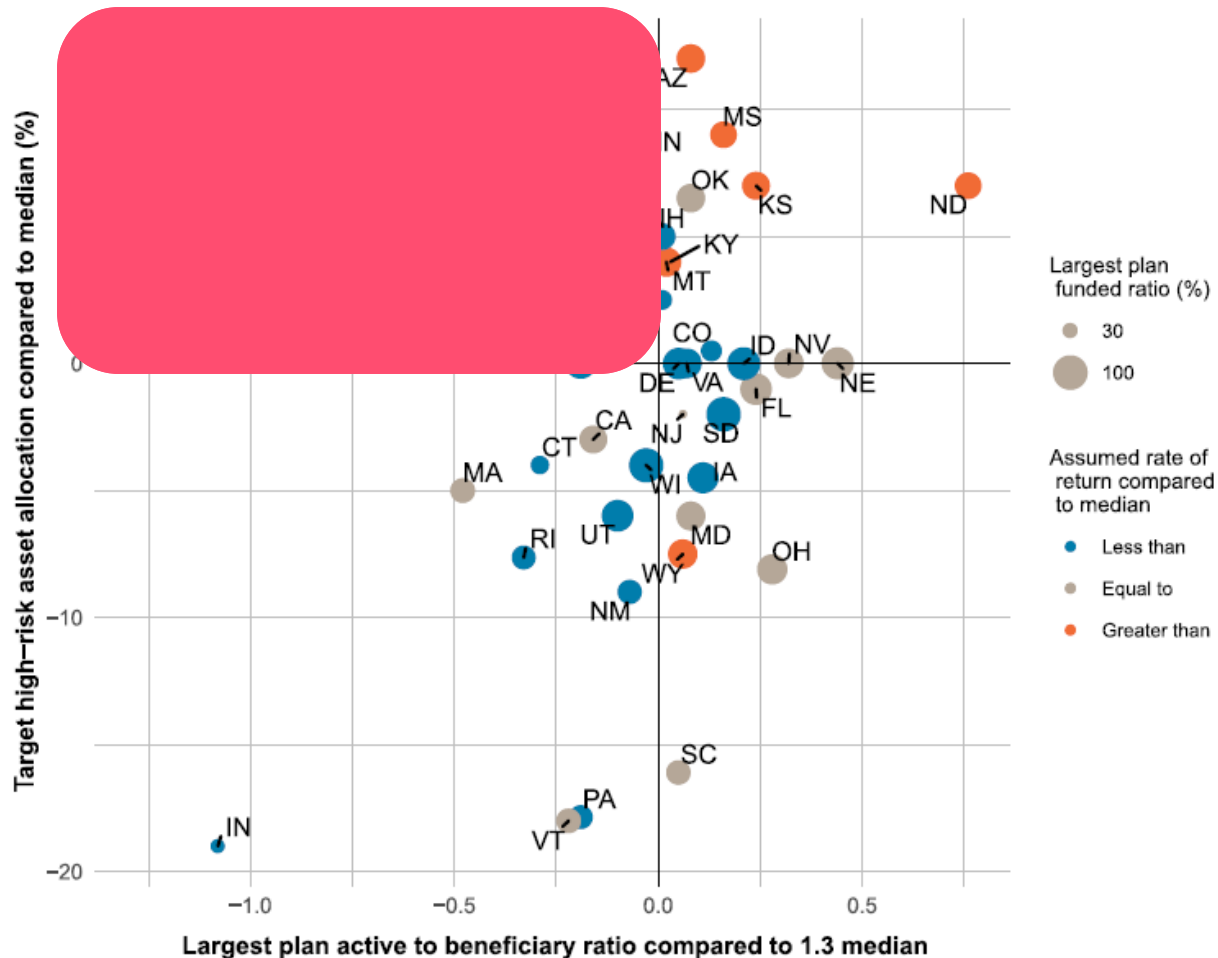
Largest State Plans: Cash Flow and Market Volatility



Sources: Five U.S. State And Local Government Pension And OPEB Trends To Watch For In 2019 And Beyond, January 16, 2019

Mature Plans *Compound* Risks of High Discount Rates

Plan Demographics And Target Asset Allocations Largest State Pension Plans



Mature plans with riskier target asset allocations could expose participating governments to higher costs in the event of a market downturn.

Demographic effects of aging populations are expected to amplify in the next ten years due to continued retirement of baby boomers.

Source: S&P Global Ratings U.S. State Pensions Struggle For Gains Amid Market Shifts And Demographic Headwinds, Oct 30, 2018

S&P State Ratings OPEB Approach

Liability

- Relative level of unfunded OPEB liability compared to other states

Flexibility

- The legal and practical flexibility that a state has to adjust these liabilities

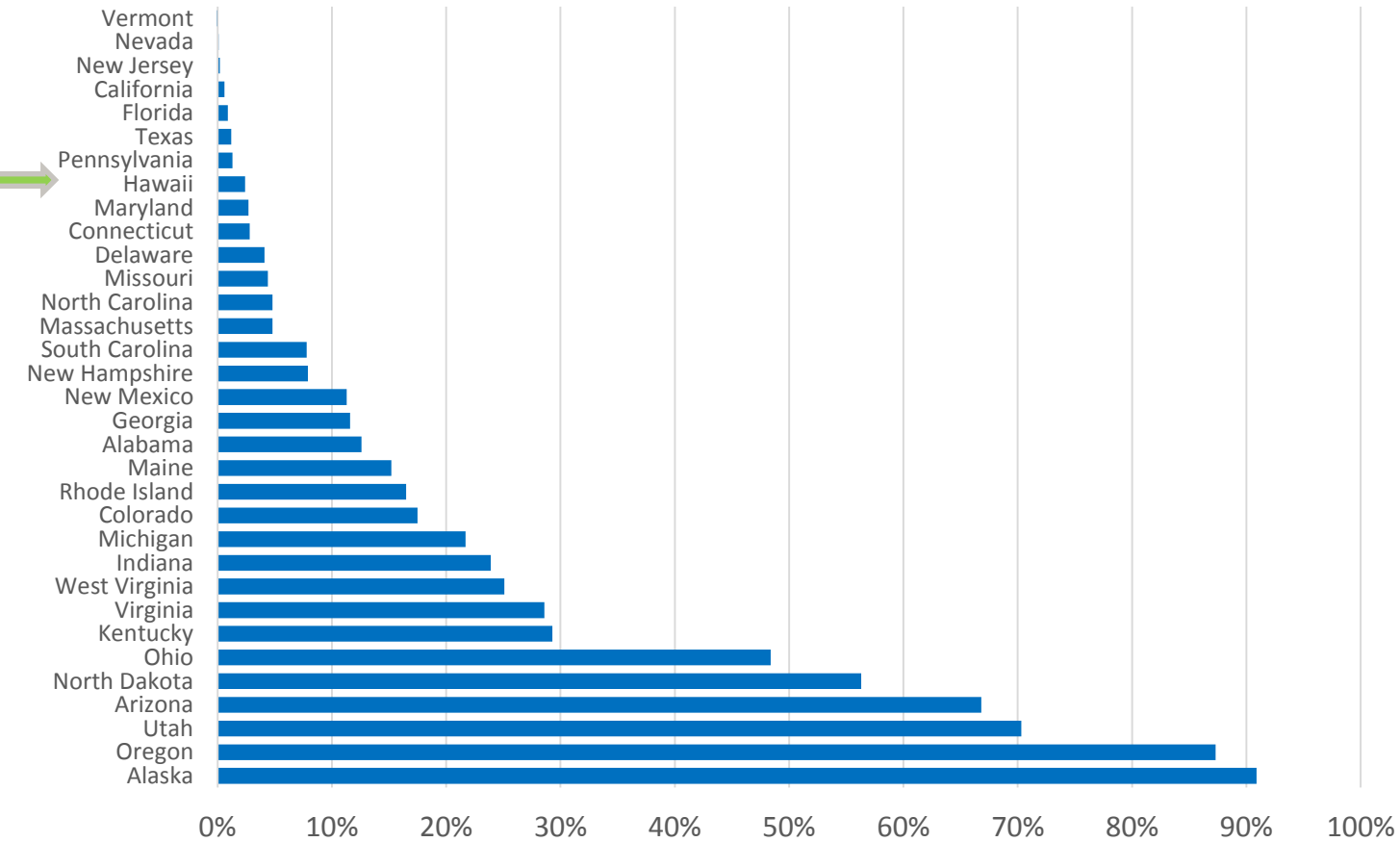
Funding

- The overall strategy to manage the cost of these benefits, which will affect future contribution rates and budgetary requirements

Source: S&P Global Ratings U.S. States Ratings Methodology, October 17, 2016

OPEB will play an increased role in 2019 budgets

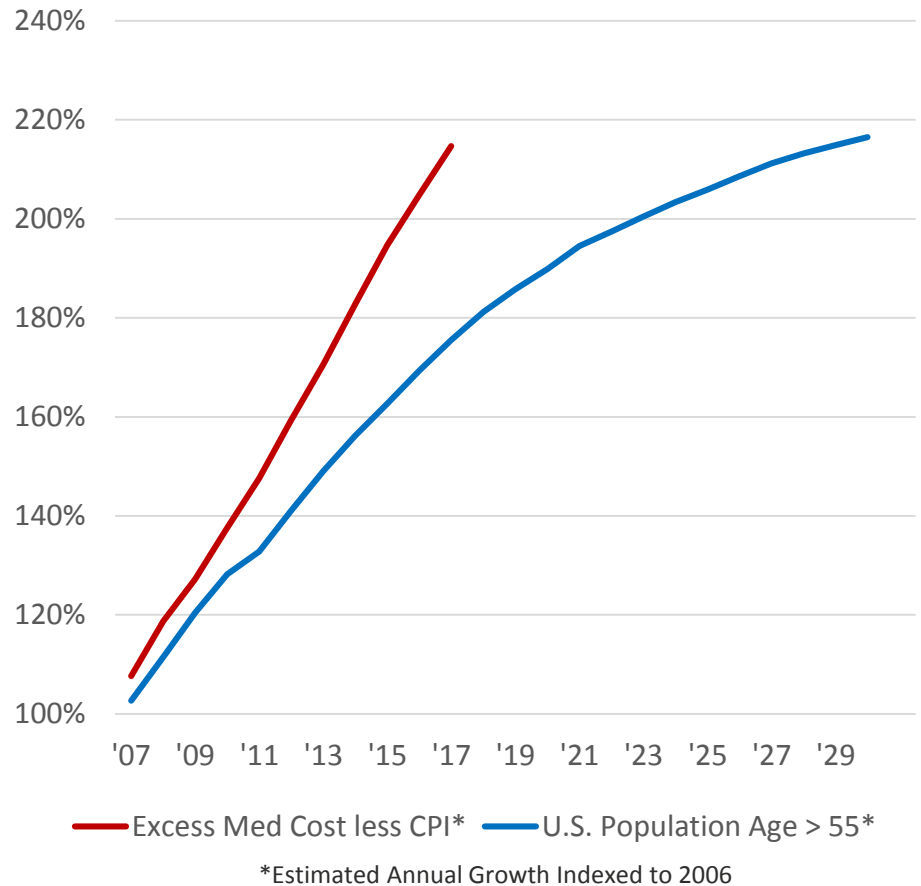
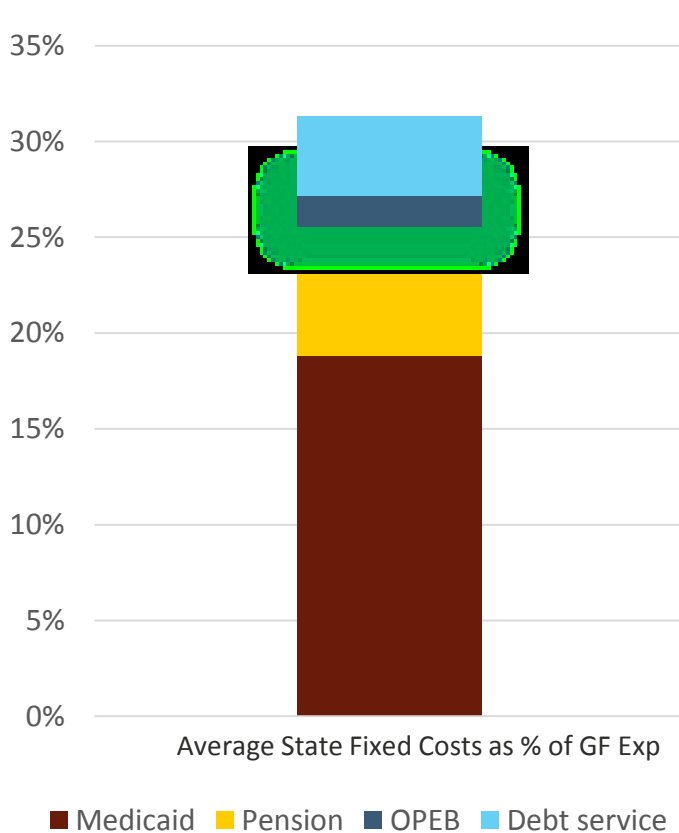
Survey: Combined Funded Ratio for OPEB Funds



OPEB liabilities are likely to continue to escalate without meaningful funding progress or benefit reductions.

Source: Rising U.S. States' OPEB Liabilities Signal Higher Costs Ahead, November 28, 2018

Upward Trajectory of OPEB Costs



Sources: S&P Global Ratings When The Credit Cycle Turns, U.S. States May Be Tested In Unprecedented Ways, Sep 17, 2018. Credit FAQ New GASB Statements 74 and 75 Provide Transparency For Assessing Budgetary Stress on U.S. State and Local Government OPEBs, Mar 14, 2018. CPI: Bureau of Labor Statistics; all items in U.S. city average, all urban consumers, not seasonally adjusted. Medical Trend: PwC Health Research Institute-Estimated Medical Cost Trend. Population: US Census Bureau

S&P Global Select Pension/OPEB Publications

January 16, 2019	• Five U.S. State And Local Government Pension And OPEB Trends To Watch For In 2019 And Beyond
December 12, 2018	• New Jersey Pension Funding: State Actions Reverberate At The Local Level
November 28, 2018	• Rising U.S. States' OPEB Liabilities Signal Higher Costs Ahead
October 30, 2018	• U.S. State Pensions Struggle for Gains Amid Market Shifts and Demographic Headwinds
September 27, 2018	• The Increasing Cost of Governmental Pensions: Discount Rate and Contribution Practices
September 13, 2018	• Looking Forward: The Application of the Discount Rate in Funding U.S. Government Pensions
September 5, 2018	• Pension Costs Will Remain High for Largest U.S. Cities as Revised Liability Measures Place Upward Pressure on Contributions
March 14, 2018	• New GASB Statements 74 And 75 Provide Transparency For Assessing Budgetary Stress on U.S. State & Local Government OPEBs
February 9, 2018	• Recent U.S. State Pension Reform: Balancing Long-Term Strategy and Budget Reality
December 6, 2017	• Pension Obligation Bonds Credit Impact On U.S. Local Government Issuers
October 24, 2017	• For the Five Highest-Funded U.S. State Pension Plans Being Proactive Keeps Liabilities Manageable

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