

Pension Funding Update and National Comparison

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S&P Global Local Ratings Pension Approach

Direct Assessment



Large Obligation

Potential for Accelerating Payments

Budget Stress

Funded Ratio and Assumptions

Contribution practice

ADC strength (consider amortization, payroll, etc.)

Pension/OPEB Cost as % of Total Governmental Fund

Influence from assumptions and methods

Further Implications



Management

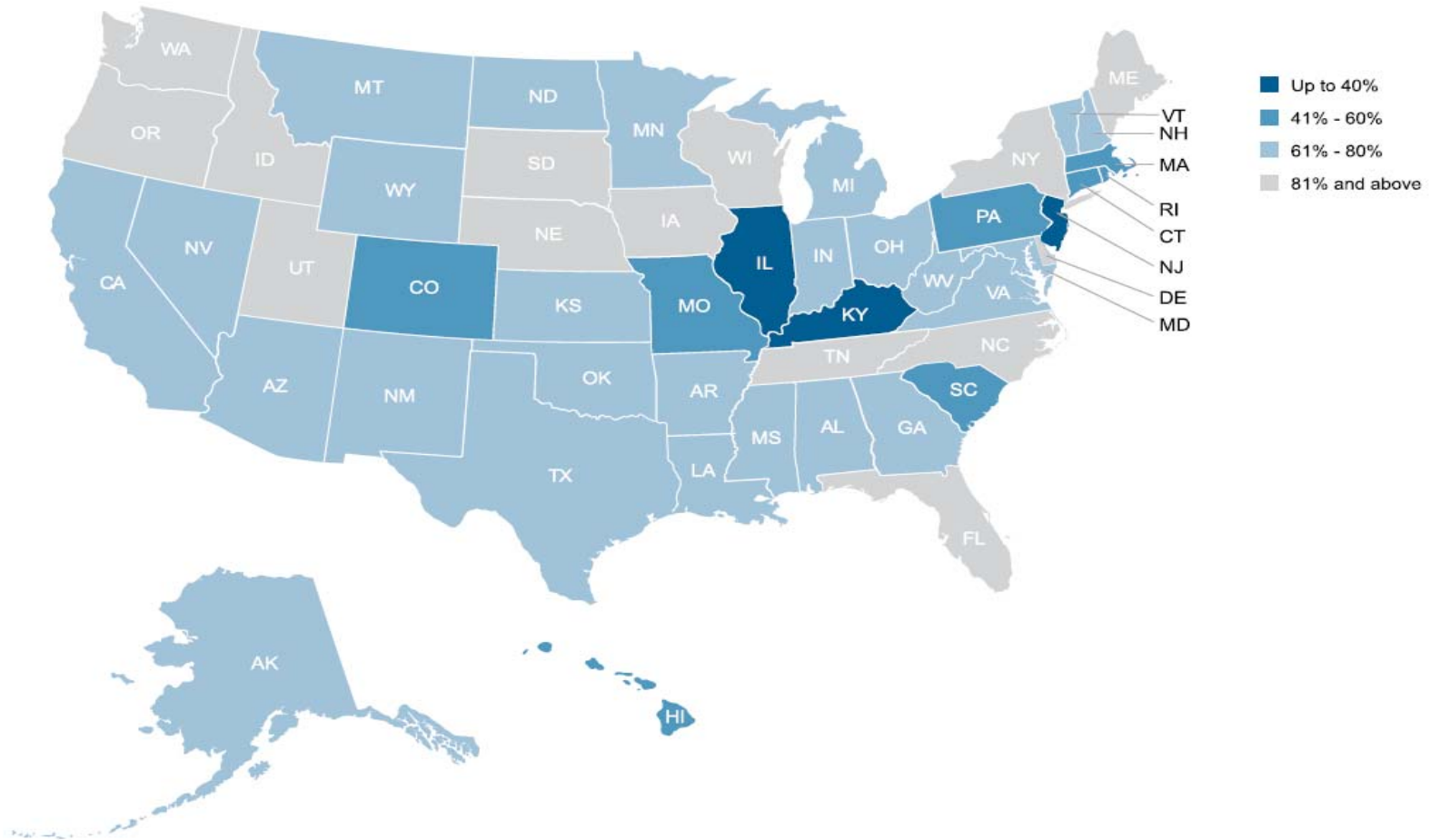
Budgetary Flexibility

Budgetary Performance

Institutional Framework

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

State Pension Funding Extremes

Fiscal 2017 Best-Funded Pension Ratios

South Dakota	100.08
Wisconsin	99.12
New York State	96.69
North Carolina	90.65
Idaho	90.62

Fiscal 2017 Worst-Funded Pension Ratios

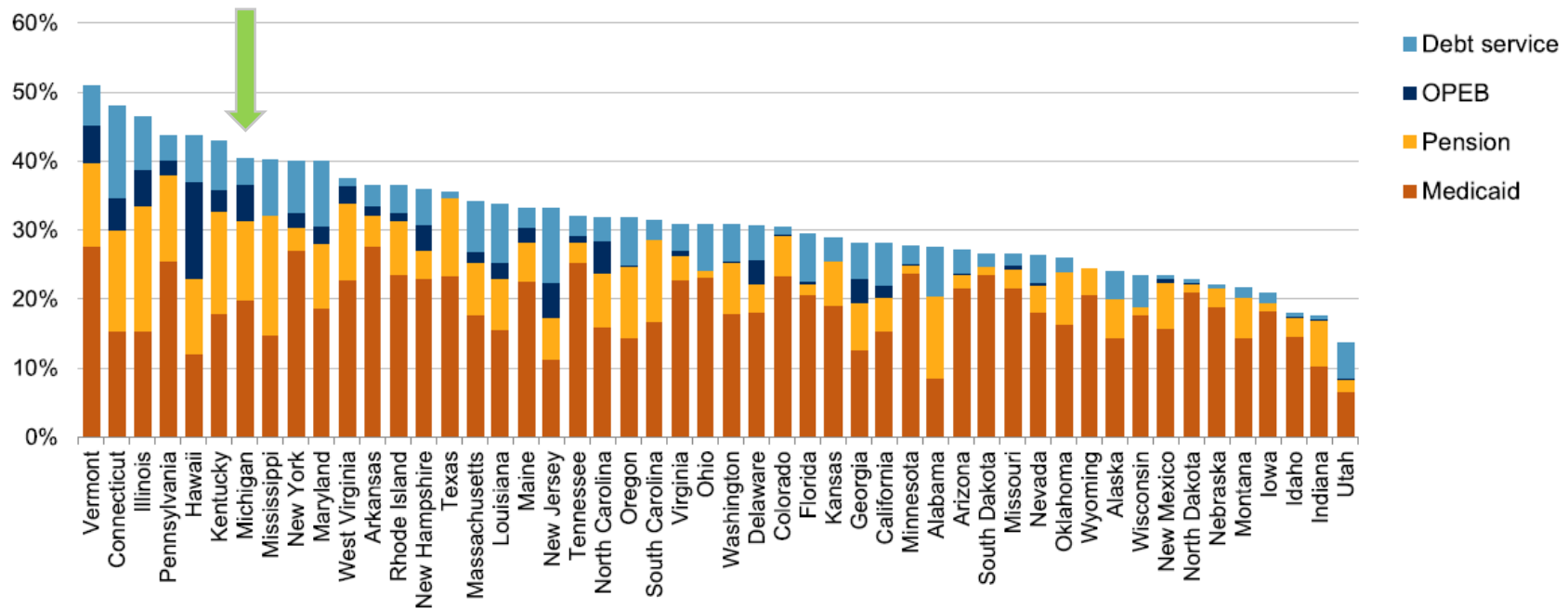
Kentucky	33.82
New Jersey	35.79
Illinois	38.42
Colorado	42.77
Connecticut	45.72

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

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

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

Mandatory expenditures can reduce fiscal flexibility

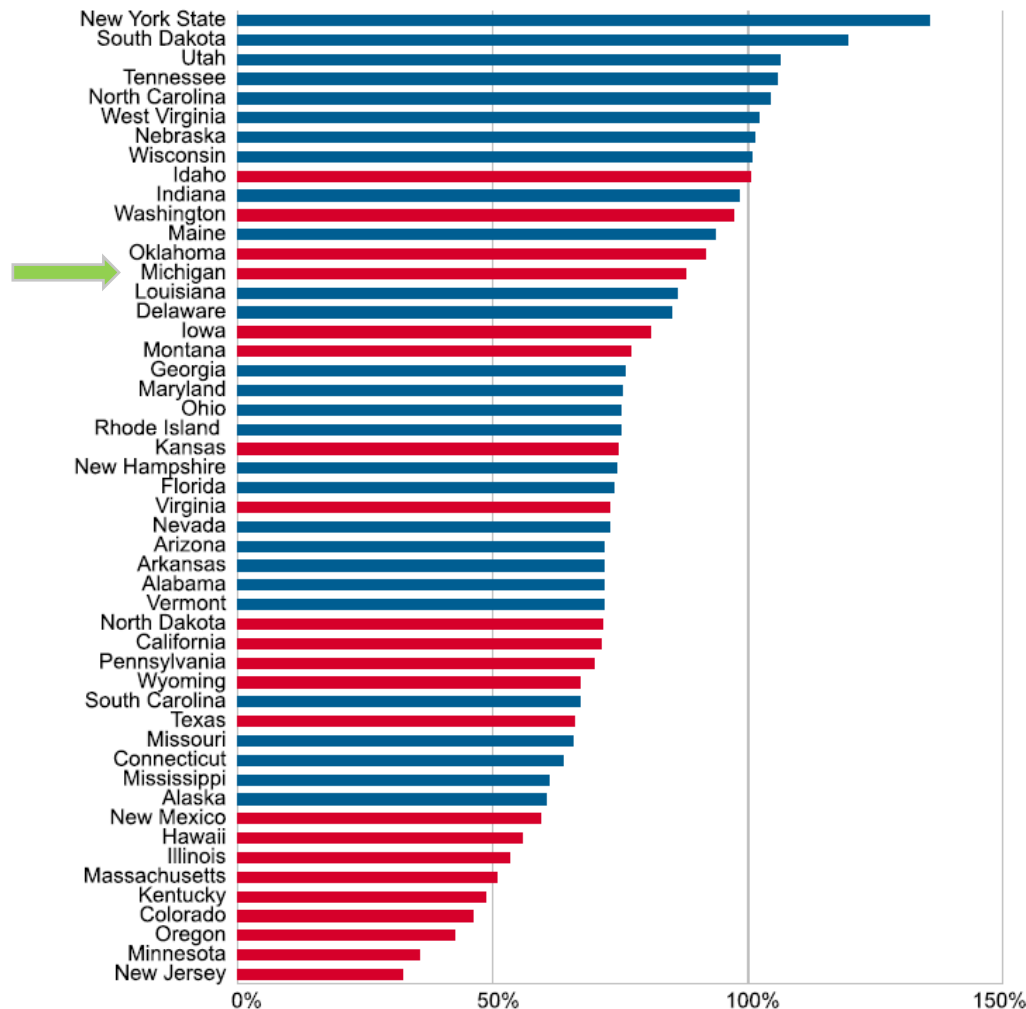


Source: S&P Global Ratings' survey of state budgets, adjusted for biennial budgets where applicable.

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

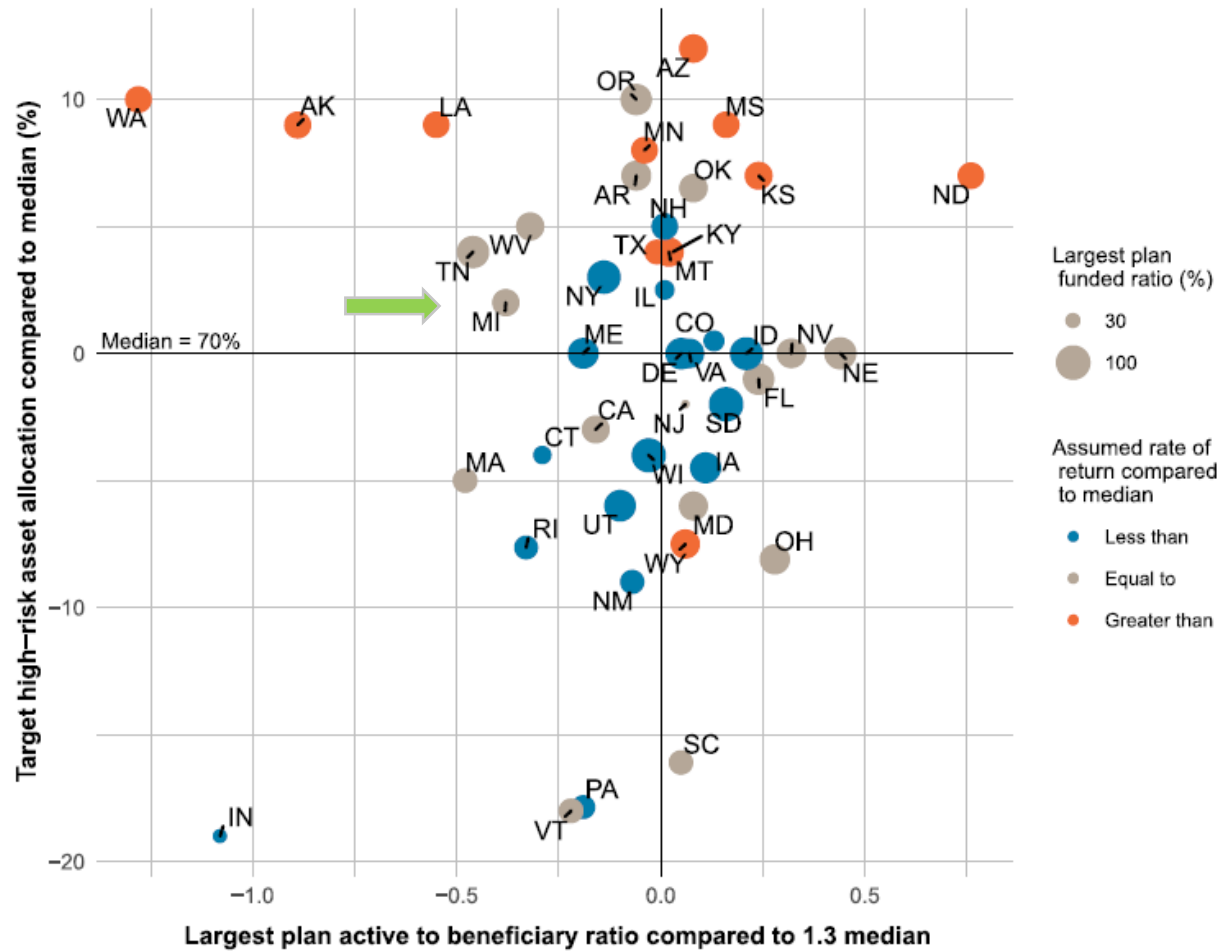
Blue: Pension contributions are actuarially based and usually meet or exceed required levels

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

State Survey: Demographics and Asset Allocation

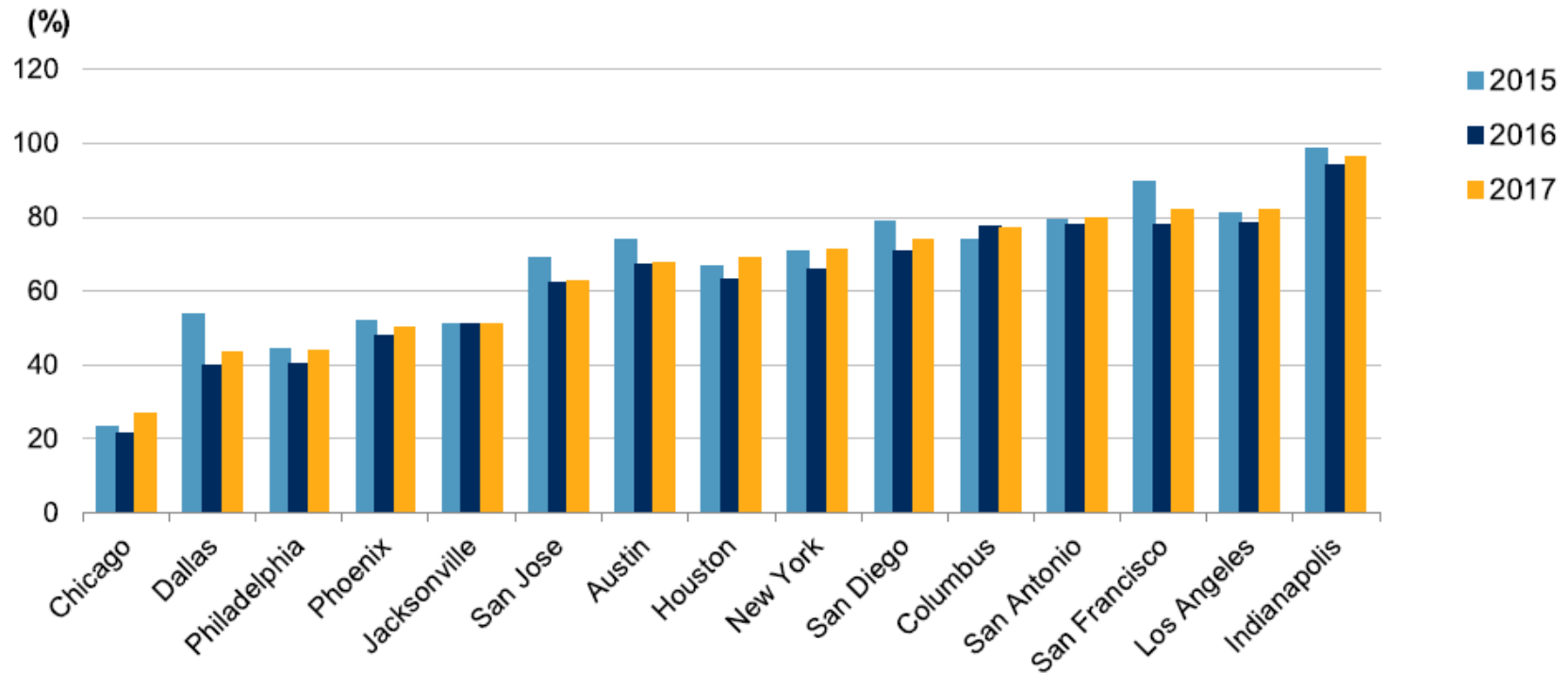
Plan Demographics And Target Asset Allocations Largest State Pension Plans



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

15 Largest U.S. Cities: Funded Ratios

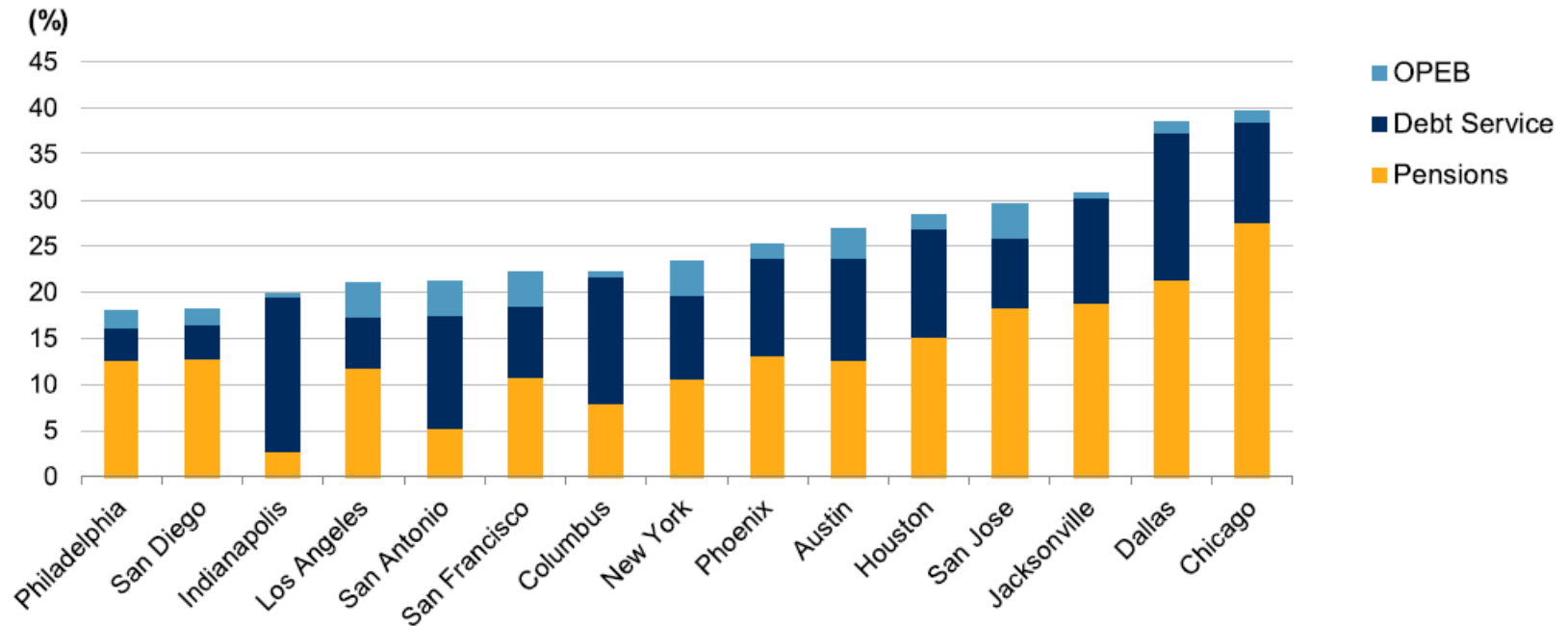
Weighted Pension Funded Ratios (2015-2017)



Source: S&P Global Ratings Pension Costs Will Remain High For Largest U.S. Cities, As Revised Liability Measures Place Upward Pressure On Contributions, September 5, 2018

15 Largest U.S. Cities: Primary Fixed Costs

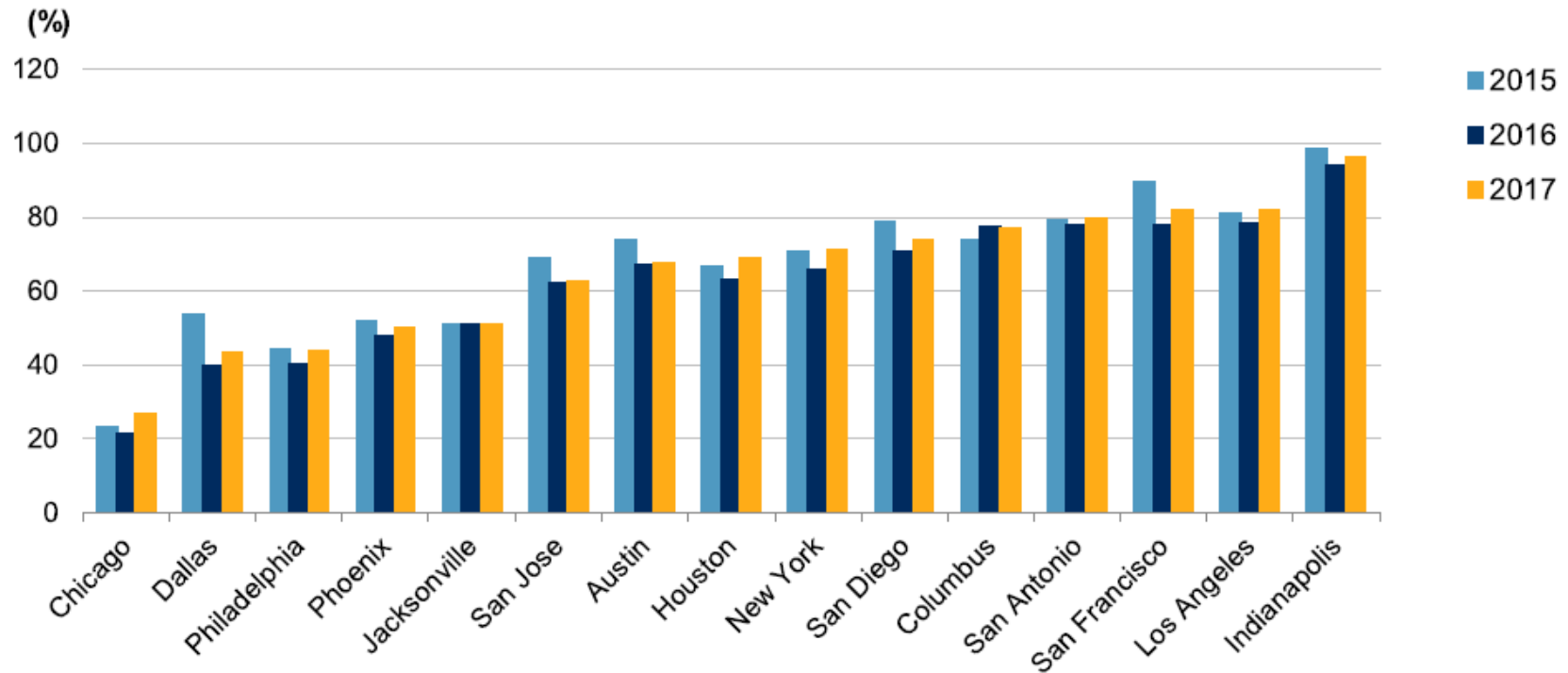
Annual Debt, Pension, And OPEB Costs
 % of governmental expenditures



Source: S&P Global Ratings Pension Costs Will Remain High For Largest U.S. Cities, As Revised Liability Measures Place Upward Pressure On Contributions, September 5, 2018

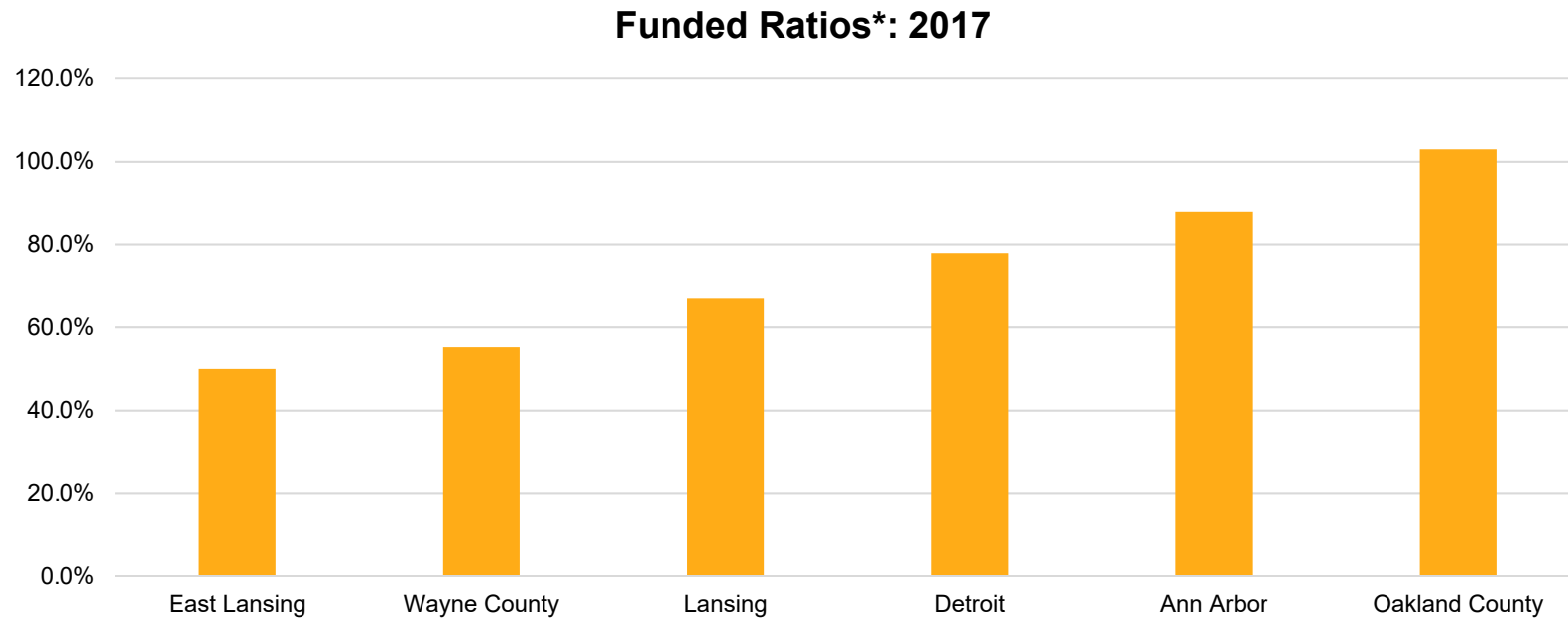
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Weighted Pension Funded Ratios (2015-2017)



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Sample Michigan Municipal Funded Ratios

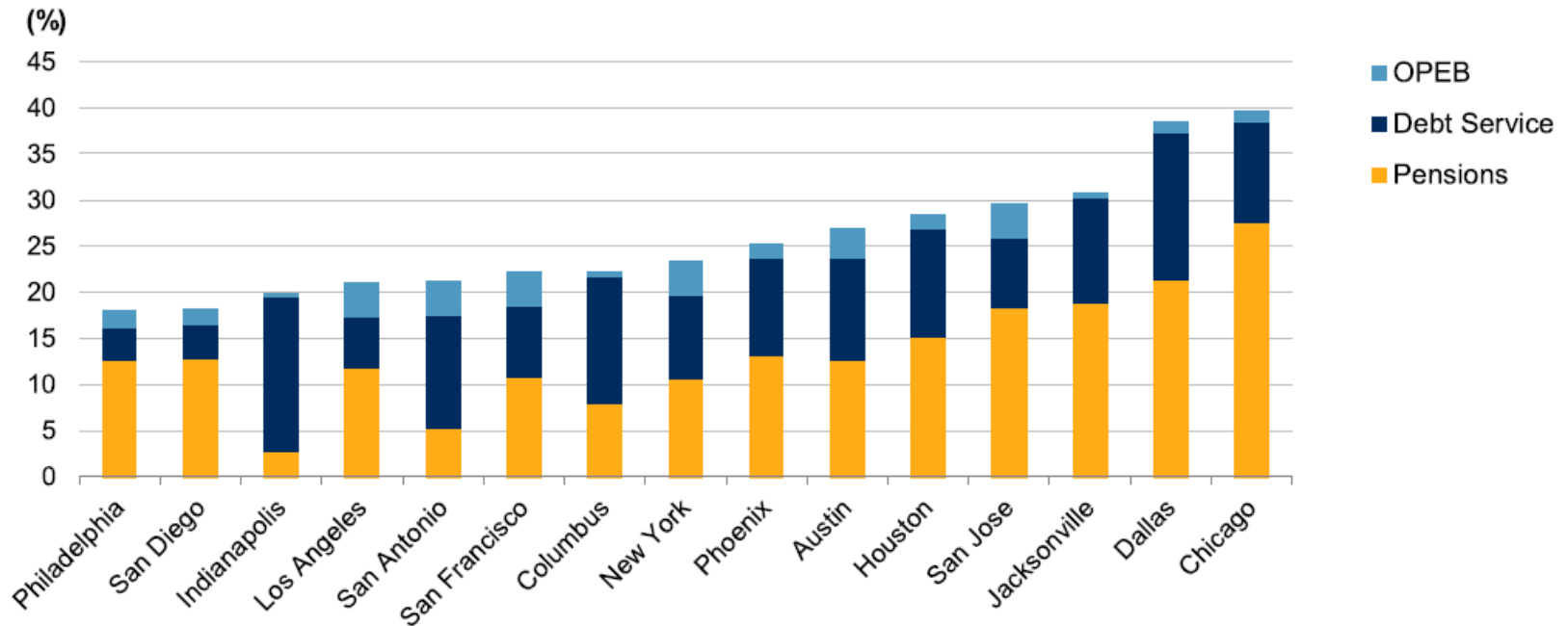


*Largest Plan only

Source: S&P published rating reports

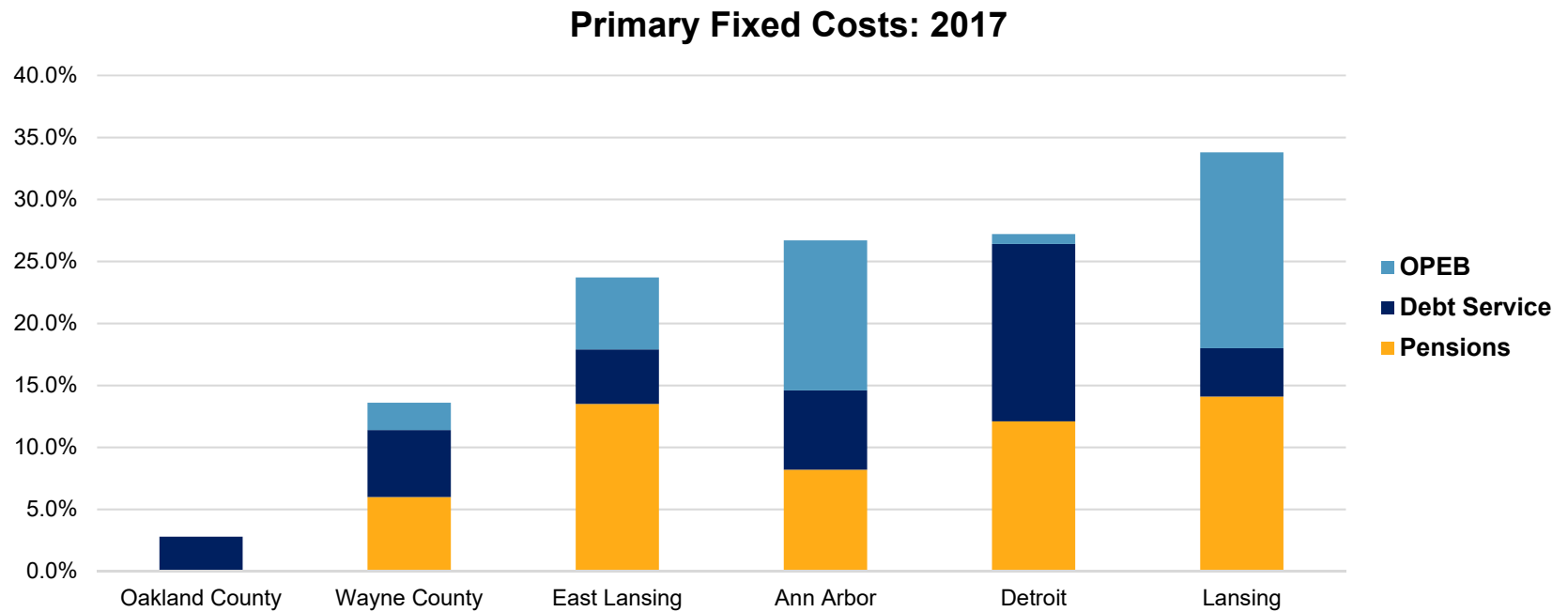
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Source: S&P Global Ratings Pension Costs Will Remain High For Largest U.S. Cities, As Revised Liability Measures Place Upward Pressure On Contributions, September 5, 2018

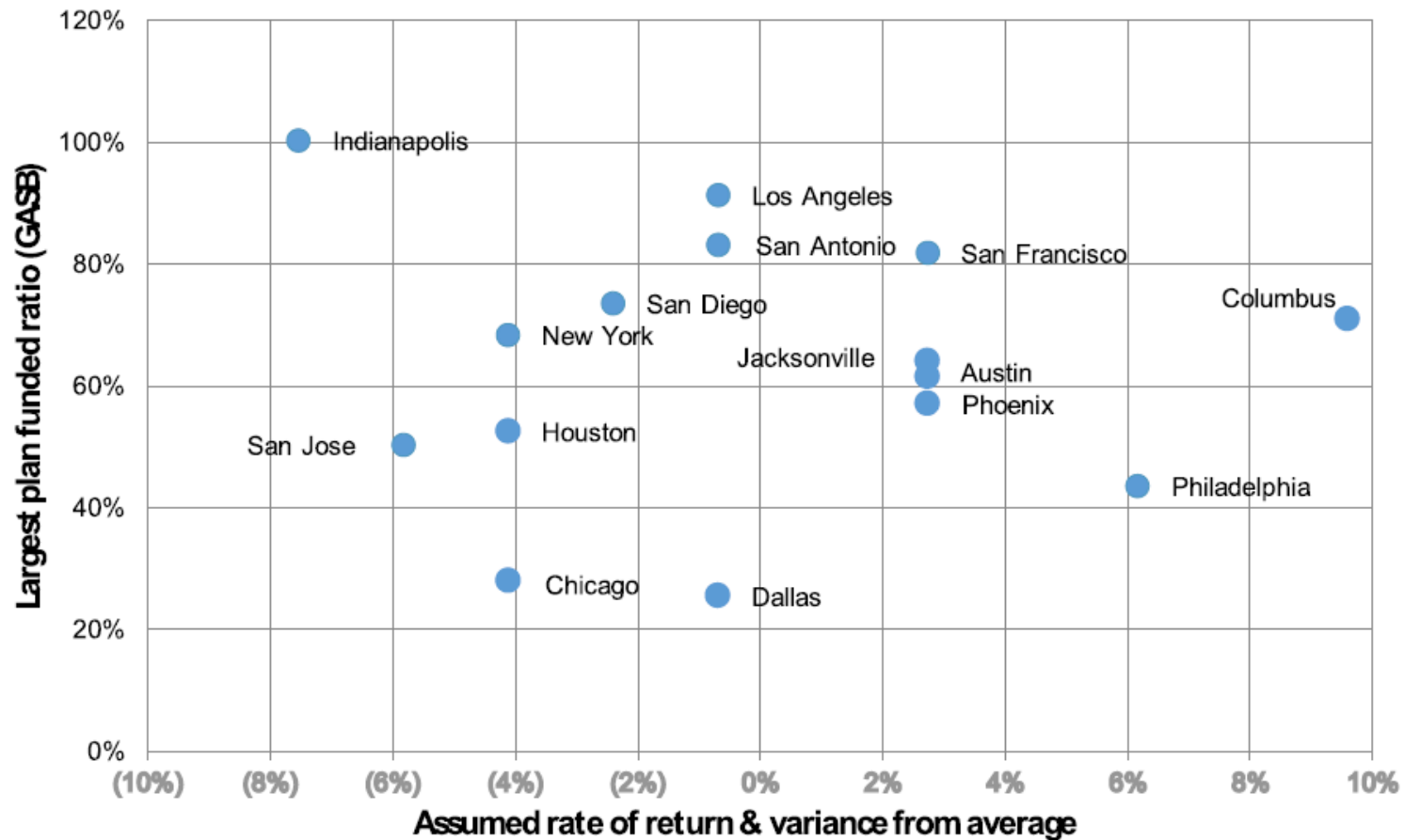
Sample Michigan Municipal Fixed Costs



Source: S&P published rating reports

15 Largest U.S. Cities: Funded Ratio and Discount Rate

Largest Plan Funded Ratio And Rate Of Return
 (% difference from mean)



Source: S&P Global Ratings Pension Costs Will Remain High For Largest U.S. Cities, As Revised Liability Measures Place Upward Pressure On Contributions, September 5, 2018

Michigan Public Act 202

Semi-uniform report requirement

Liability Measurements

- Discount rate: Max 7%
- Mortality table: RP-2014

Cost Determination

- Amortization: 20-year closed period
 - Level \$ for closed plans
 - Level % for open plans

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