Note: GASB reporting standards changed in 2014.
Source: Data for this graph were collected from Comprehensive Annual Financial Reports (CAFRs), actuarial reports and valuations, or other public documents.
The U.S. average funded ratio is 66%.

Note: MVA funded ratio used to reflect changes in GASB reporting standards as of 2014.
Source: Comprehensive Annual Financial Reports (CAFRs), actuarial reports and valuations.
## Rankings on Key Fiscal Metrics

<table>
<thead>
<tr>
<th></th>
<th>2016 Funded Ratio</th>
<th>Rank</th>
<th>Net Amortization as Share of Payroll</th>
<th>Rank</th>
<th>Cash Flow</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alaska</td>
<td>63%</td>
<td>35</td>
<td>-8.7%</td>
<td>46</td>
<td>-4.3%</td>
<td>40</td>
</tr>
<tr>
<td>Arizona</td>
<td>60%</td>
<td>36</td>
<td>-2.7%</td>
<td>35</td>
<td>-2.7%</td>
<td>22</td>
</tr>
<tr>
<td>California</td>
<td>69%</td>
<td>26</td>
<td>-5.8%</td>
<td>45</td>
<td>-2.4%</td>
<td>17</td>
</tr>
<tr>
<td>Colorado</td>
<td>46%</td>
<td>46</td>
<td>-10.5%</td>
<td>47</td>
<td>-5.3%</td>
<td>47</td>
</tr>
<tr>
<td>Hawaii</td>
<td>51%</td>
<td>45</td>
<td>-3.0%</td>
<td>36</td>
<td>-1.6%</td>
<td>8</td>
</tr>
<tr>
<td>Idaho</td>
<td>88%</td>
<td>7</td>
<td>3.2%</td>
<td>13</td>
<td>-2.0%</td>
<td>12</td>
</tr>
<tr>
<td>Montana</td>
<td>71%</td>
<td>25</td>
<td>0.5%</td>
<td>21</td>
<td>-2.5%</td>
<td>19</td>
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<tr>
<td>Nevada</td>
<td>72%</td>
<td>21</td>
<td>-3.9%</td>
<td>39</td>
<td>-1.3%</td>
<td>5</td>
</tr>
<tr>
<td>New Mexico</td>
<td>65%</td>
<td>29</td>
<td>-4.9%</td>
<td>42</td>
<td>-3.2%</td>
<td>34</td>
</tr>
<tr>
<td>Oregon</td>
<td>81%</td>
<td>12</td>
<td>-4.6%</td>
<td>40</td>
<td>-5.0%</td>
<td>45</td>
</tr>
<tr>
<td>Utah</td>
<td>86%</td>
<td>8</td>
<td>4.7%</td>
<td>8</td>
<td>-1.5%</td>
<td>7</td>
</tr>
<tr>
<td>Washington</td>
<td>84%</td>
<td>9</td>
<td>2.2%</td>
<td>16</td>
<td>-1.3%</td>
<td>4</td>
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<tr>
<td>Wyoming</td>
<td>73%</td>
<td>18</td>
<td>-5.4%</td>
<td>43</td>
<td>-3.0%</td>
<td>28</td>
</tr>
<tr>
<td>U.S. Average</td>
<td>66%</td>
<td>18</td>
<td>-2.2%</td>
<td>43</td>
<td>-3.2%</td>
<td>28</td>
</tr>
</tbody>
</table>

*Source: Comprehensive Annual Financial Reports (CAFRs), actuarial reports and valuations.*
STRESS TESTING FOR PUBLIC PENSIONS
BACKGROUND

➢ After nine years of economic recovery, public retirement systems remain vulnerable to the next economic downturn.

➢ Stress testing provides state officials with a tool to understand how pension plans and state budgets will weather the next recession.

➢ This is not an academic exercise: Five states have adopted policies since 2017. Stress test analysis prompted needed reforms in Colorado and was central to reform evaluation in Pennsylvania.
State and Local Pension Debt As a Share of Gross Domestic Product

State and local pensions debt as a share of GDP spiked after the Great Recession and remains at a historically high level.
Financial Indicators for State and Local Public Pensions

Pension Balance Sheets and Government Budgets Likely to Face Significant Pressure in the Next Recession

Pension Fund Risk Premium at Historic High

- Presence of Recession in Quarter
- Treasury 30-Year Yield
- Average Assumed Rate of Return
Annual Returns: Median Public Pension Plan vs. S&P 500, 2006-17
Public pension investments track stock market volatility

Note: Data are reported gross of fees on a June 30 fiscal year basis.
Source: Wilshire Trust Universe Comparison Service (TUCS)
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Financial Indicators for State and Local Public Pensions

Pension Balance Sheets and Government Budgets Likely to Face Significant Pressure in the Next Recession

Contributions as a Share of Own Source Revenue

<table>
<thead>
<tr>
<th>Percentage of Own Source Revenue</th>
<th>2001</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0%</td>
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<tr>
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<td></td>
</tr>
<tr>
<td>2.0%</td>
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<td></td>
</tr>
<tr>
<td>3.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.0%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- 2001: 2.9%
- 2015: 5.8%
Financial Indicators for State and Local Public Pensions

Pension Balance Sheets and Government Budgets Likely to Face Significant Pressure in the Next Recession
What is Stress Testing?

➢ Simulation technique used to assess the impact of different economic conditions on pension balance sheets and governmental budgets.

➢ Central to emerging actuarial reporting standards (Actuarial Standard of Practice No. 51.)

➢ Budget tool to help policymakers plan for the next recession and better manage economic uncertainty.
**Methodology:**

**Pew’s Stress Testing Model for Pensions**

Comprehensive model incorporates State Revenue Forecasts and measures Budget Impacts
RANGE OF INVESTMENT RETURNS IMPACT POTENTIAL COSTS

Percentiles of 20-Year Investment Returns
- 20-5%
- 40-20%
- 50-40%
- 60-50%
- 80-60%
- 95-80%
- Expected (7%)
- Expected (6.4%)

Employer Contribution Rate as a % of Payroll

Fiscal Year Ending

pewtrusts.org
GOALS FOR PENSIONS RISK REPORTING

(1) Plan for the possibility of lower returns and higher costs over the long-term.

(2) Prepare for the next economic downturn.

(3) Manage financial market volatility throughout the business cycle.

(4) Evaluate the impact of proposed policy changes.
AUDIENCE FOR PENSIONS RISK REPORTING

Target audience:
- Budget officials may include executive branch appointees, appropriations legislators and staff, state treasurers, and comptrollers, etc.

Key stakeholders:
- Elected Officials
- Tax Payers
- Beneficiaries
- Fiduciaries

Notes: Budget officials may include executive branch appointees, appropriations legislators and staff, state treasurers, and comptrollers, etc.
COLORADO’S PROJECTED FUNDED STATUS BEFORE AND AFTER PENSION REFORMS

For PERA’s state division, under lower-than-expected investment returns
COLORADO AND MINNESOTA BEFORE AND AFTER REFORMS

Colorado Applied Stress Testing. Minnesota Did Not

Sources: Analysis by The Pew Charitable Trusts and The Terry Group based on publicly available Comprehensive Annual Financial Reports (CAFRs), actuarial reports and valuations, other public documents or as provided by plan officials.
WHY IS STRESS TESTING IMPORTANT?

➢ State budgets are more vulnerable to the next recession.

➢ Enhanced pensions risk reporting required by Actuarial Standard of Practice (ASOP) No. 51 goes into effect this November.

➢ Provides a framework to examine the issues that are most important to budget officials as well as evaluate new policy proposals.

➢ And, ultimately…

What gets Measured gets Managed!
QUESTIONS?
Fiscal Health and Discipline Across States

- **50 States**

- **CSG West States**
**States Vary in Their Return Assumptions**

Assumed Rate of Return on Pension Investments (state employee plans)

*Note: Rates of return reflect most recent policy changes.*

*Sources: Comprehensive Annual Financial Reports, news articles, and plan responses*
TEN-YEAR RETURNS REPORTING NET OF FEES ON A JUNE 30 FISCAL YEAR

Returns averaged 5.5 percent and ranged from 3.8 percent to 6.8 percent.

Sources: Comprehensive Annual Financial Reports, 2016; quarterly investment reports; and plan responses to data inquiries.
2016 Retiree Health (OPEB) Obligations (Preliminary)

Preliminary: 2016 OPEB Liability as a Percent of Personal Income

Source: State CAFRs, OPEB actuarial valuations, and plan documents.
Recent changes in reporting standards have led to increased momentum among states in adopting stress testing.
INVESTMENT RETURNS IN A HYPOTHETICAL ASSET SHOCK COMPARED TO THE GREAT RECESSION

Asset losses are larger and market rebound gains are smaller in the asset shock scenario.