

# *Public Plan Investment Performance, 2001-2016*

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# CRR assesses plan performance in two ways.

1. A comparison of investment returns across plans:

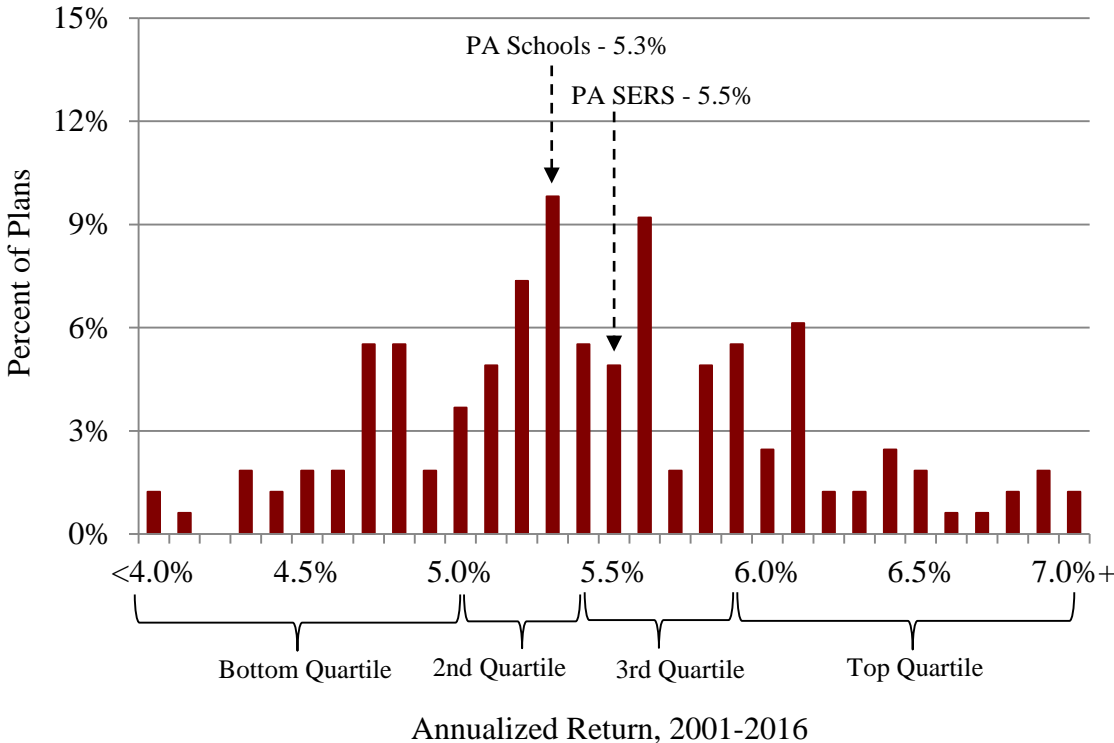
*Observed differences are the result of both differences in asset allocation and/or asset class performance.*

2. **A comparison of each plan's investment return to its own benchmark:**

*Performance relative to benchmark focuses on each plan's ability to execute its own strategy.*

# The long-term (2001-2016) investment return varies greatly among public plans.

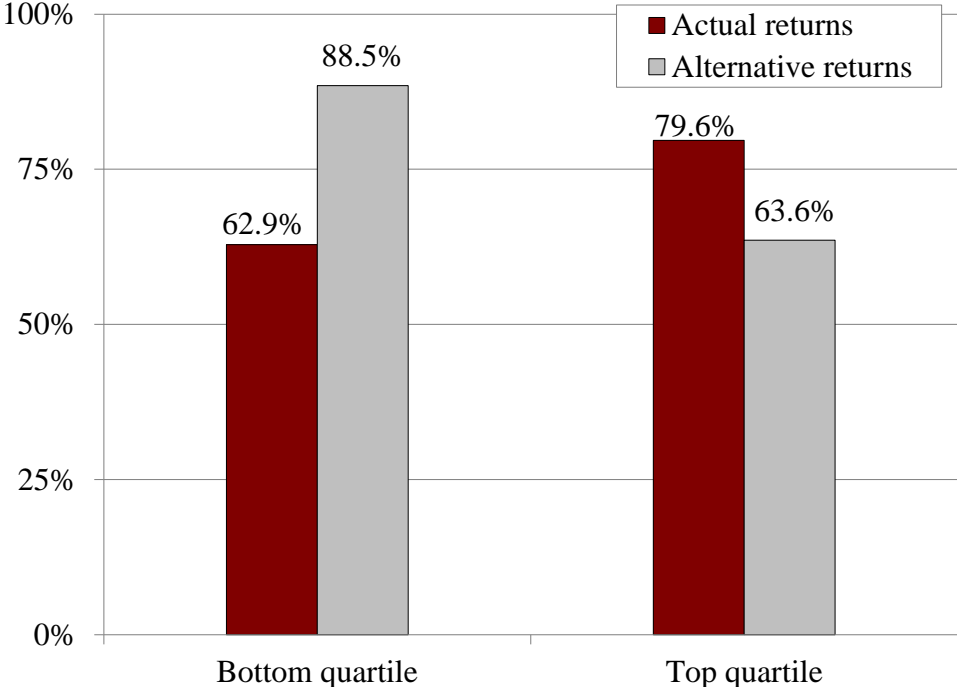
Distribution of Plans by Long-term (2001-2016) Annualized Return



Source: Author's calculations using the *Public Plans Database* (2001-2016).

# The difference in returns accounts for much of the variation in today's funded status.

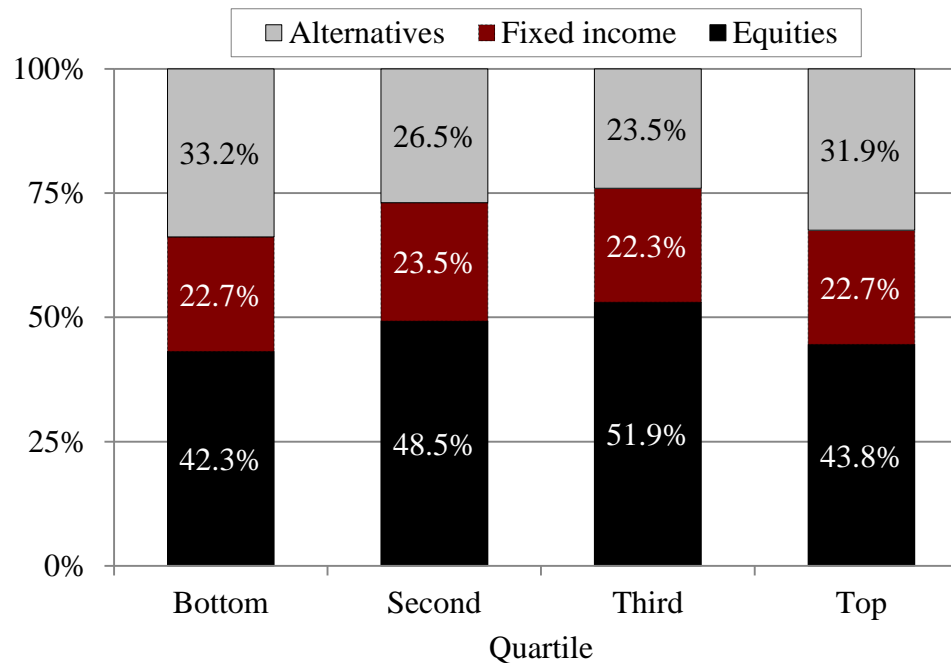
2016 Market Funded Ratios under Various Return Assumptions, by Quartile



Source: Jean-Pierre Aubry, Anqi Chen, Alicia H. Munnell, and Kevin Wandrei. 2018. "What Explains Differences in Public Pension Returns since 2001?" State and Local Plans Issue in Brief 60. Chestnut Hill, MA: Center for Retirement Research at Boston College.

# At a high level, the asset allocation of most public plans is quite similar.

Asset Allocation for State and Local Pension Plans, 2016



Source: Jean-Pierre Aubry, Anqi Chen, Alicia H. Munnell, and Kevin Wandrei. 2018. "What Explains Differences in Public Pension Returns since 2001?" State and Local Plans Issue in Brief 60. Chestnut Hill, MA: Center for Retirement Research at Boston College.

# But the top-quartile plans outperformed others in most asset classes.

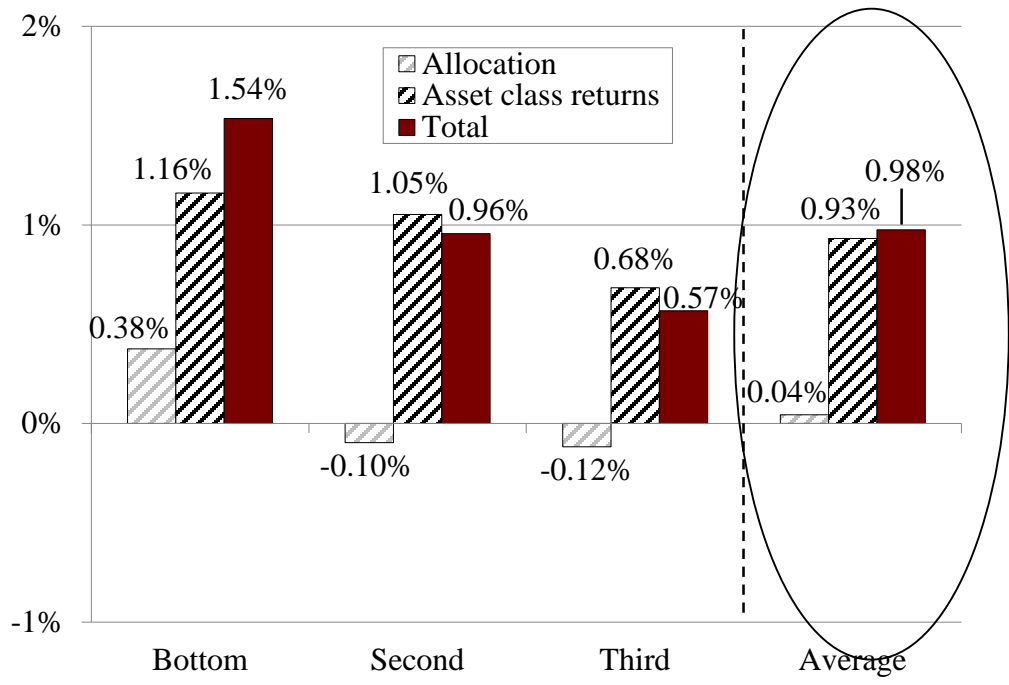
Annualized Asset Class Returns by Quartile, 2001-2016

Asset Class	Top	Third	Second	Bottom
Public Equities	6.7%	5.3%	5.4%	4.7%
Fixed Income	6.3%	6.3%	5.8%	5.8%
Alternatives				
Private Equity	9.7%	8.9%	7.1%	9.3%
Hedge Funds	4.1%	5.6%	7.5%	6.2%
Real Estate	10.1%	8.8%	8.4%	7.2%
Commodities	8.1%	3.1%	0.2%	3.9%

Source: Jean-Pierre Aubry, Anqi Chen, Alicia H. Munnell, and Kevin Wandrei. 2018. “What Explains Differences in Public Pension Returns since 2001?” State and Local Plans Issue in Brief 60. Chestnut Hill, MA: Center for Retirement Research at Boston College.

# So, for most plans, asset class returns - not allocation - explain the difference from the top quartile.

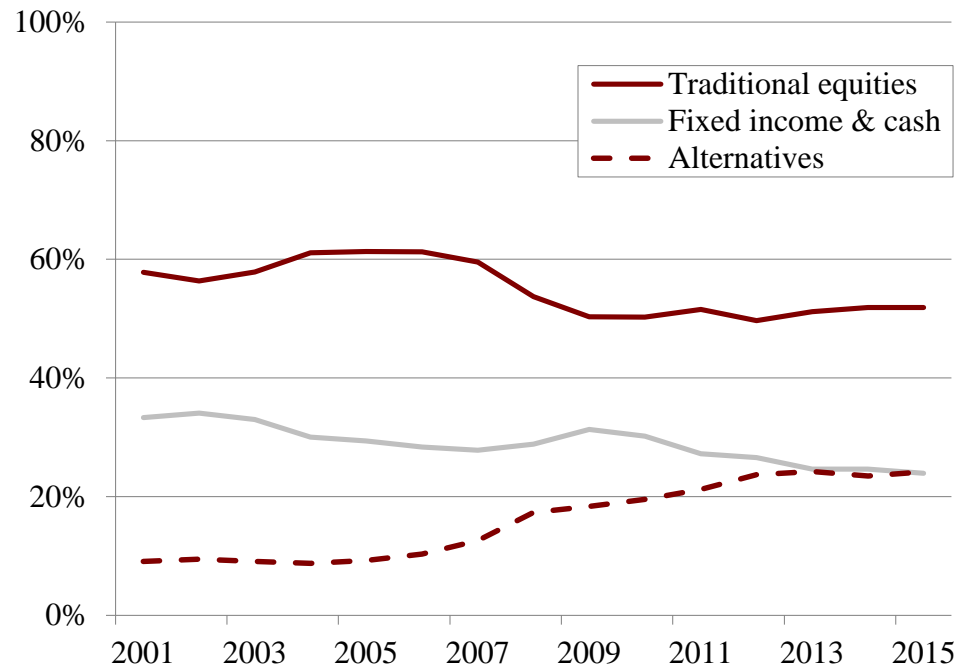
Role of Allocation and Returns on the Difference from Top Quartile



Source: Jean-Pierre Aubry, Anqi Chen, Alicia H. Munnell, and Kevin Wandrei. 2018. "What Explains Differences in Public Pension Returns since 2001?" State and Local Plans Issue in Brief 60. Chestnut Hill, MA: Center for Retirement Research at Boston College.

# In general, plans have shifted away from traditional stocks and bonds to alternatives.

Asset Allocation for State and Local Pension Plans, 2001-2015

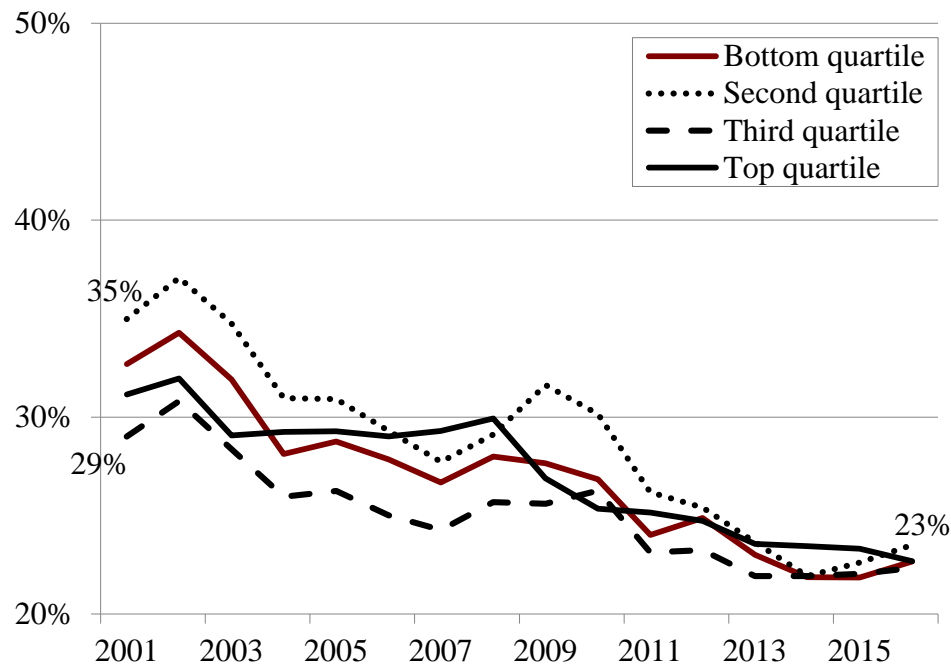


Source: Jean-Pierre Aubry, Anqi Chen, and Alicia H. Munnell. 2017. "A First Look at Alternative Investments and Public Pensions." State and Local Plans Issue in Brief 55. Chestnut Hill, MA: Center for Retirement Research at Boston College.



# All plans have made the shift away from traditional bonds in relatively similar fashion.

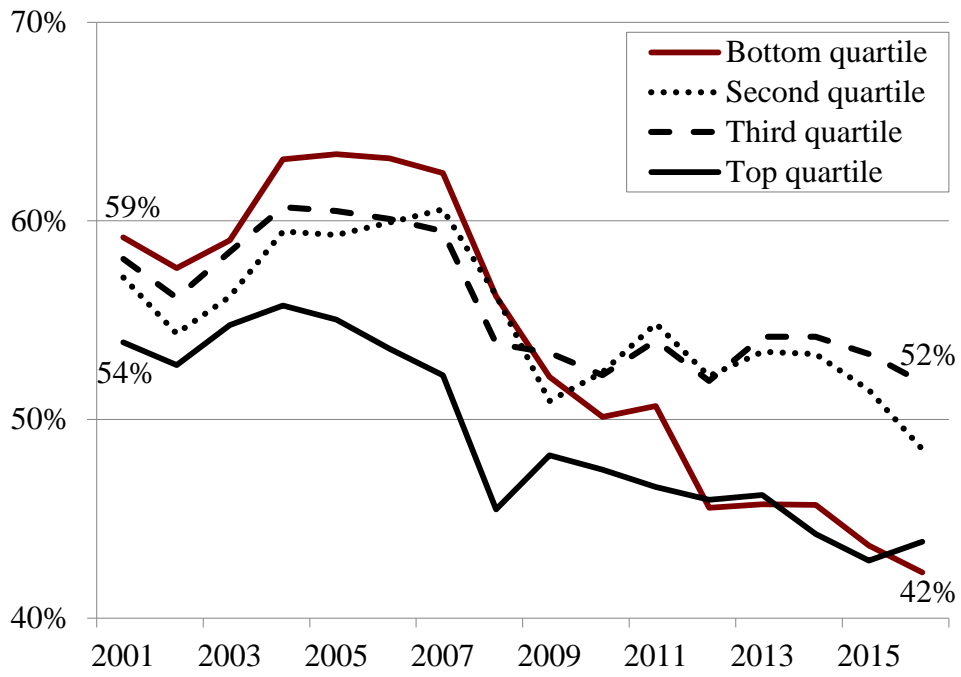
Allocation to Fixed Income by Quartile of Returns, 2001-2016



Source: Jean-Pierre Aubry, Anqi Chen, Alicia H. Munnell, and Kevin Wandrei. 2018. "What Explains Differences in Public Pension Returns since 2001?" State and Local Plans Issue in Brief 60. Chestnut Hill, MA: Center for Retirement Research at Boston College.

# However, after the crises, bottom quartile plans made the largest shift out of equities....

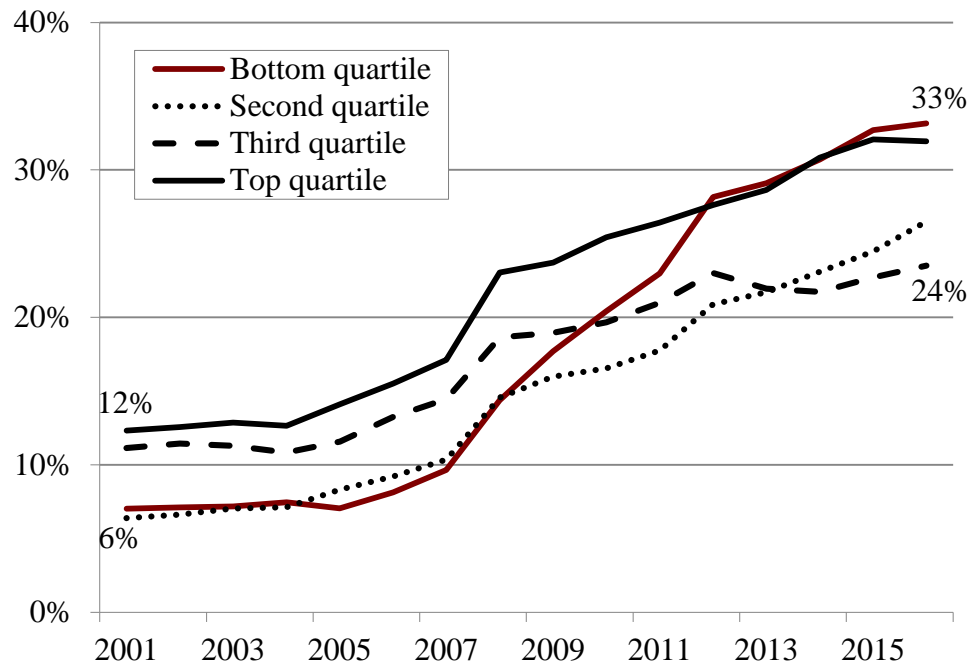
Allocation to Traditional Equities by Quartile of Returns, 2001-2016



Source: Jean-Pierre Aubry, Anqi Chen, Alicia H. Munnell, and Kevin Wandrei. 2018. "What Explains Differences in Public Pension Returns since 2001?" State and Local Plans Issue in Brief 60. Chestnut Hill, MA: Center for Retirement Research at Boston College.

# ...and into alternatives.

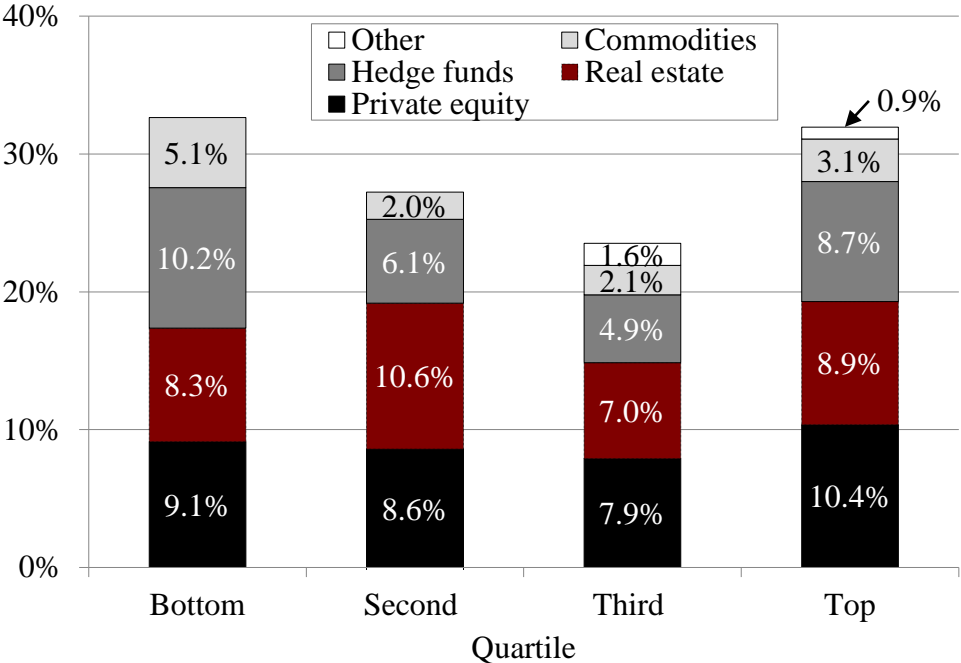
Allocation to Alternatives by Quartile of Returns, 2001-2016



Source: Jean-Pierre Aubry, Anqi Chen, Alicia H. Munnell, and Kevin Wandrei. 2018. "What Explains Differences in Public Pension Returns since 2001?" State and Local Plans Issue in Brief 60. Chestnut Hill, MA: Center for Retirement Research at Boston College.

# Specifically, they shifted more heavily into hedge funds and commodities...

Percentage of Plan Holdings in Selected Alternative Asset Classes by Quartile of Returns, 2016



Source: Jean-Pierre Aubry, Anqi Chen, Alicia H. Munnell, and Kevin Wandrei. 2018. "What Explains Differences in Public Pension Returns since 2001?" State and Local Plans Issue in Brief 60. Chestnut Hill, MA: Center for Retirement Research at Boston College.

..during a period when these asset classes dramatically underperformed others.

Returns from Alternative Asset Classes and Traditional Equities, FY 2001-2016

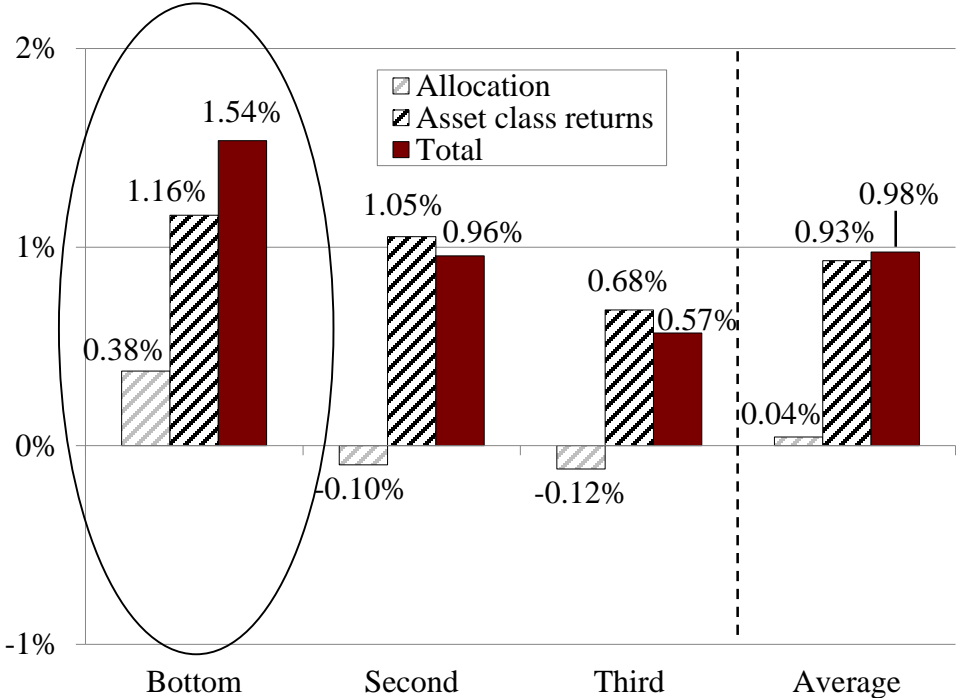
Asset class	2000-2007	2008-2009	2010-2016
Alternatives			
Private equity (before fees)	8.1%	-13.0%	25.0%
Hedge funds (after fees)	10.7%	-10.9%	1.3%
Real estate (before fees)	14.5%	-6.3%	12.1%
Commodities (after fees)	16.2%	-4.1%	-3.0%
Traditional equity	2.7%	-21.3%	14.9%

Note: Returns based on Thomson Reuters Private Equity Buyout Index, Hedge Fund Research Global Hedge Fund Index, NCREIF Property Index, S&P GSCI Index, and Wilshire 5000 Index (Total Return).

Source: Jean-Pierre Aubry, Anqi Chen, Alicia H. Munnell. 2017. "A First Look at Alternative Investments and Public Pensions." State and Local Plans Issue in Brief 55. Chestnut Hill, MA: Center for Retirement Research at Boston College.

# As a result, allocation played some role in the lower returns of the worst-performing plans

Role of Allocation and Returns on the Difference from Top Quartile



Source: Jean-Pierre Aubry, Anqi Chen, Alicia H. Munnell, and Kevin Wandrei. 2018. "What Explains Differences in Public Pension Returns since 2001?" State and Local Plans Issue in Brief 60. Chestnut Hill, MA: Center for Retirement Research at Boston College.

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1. A comparison of investment returns across plans:

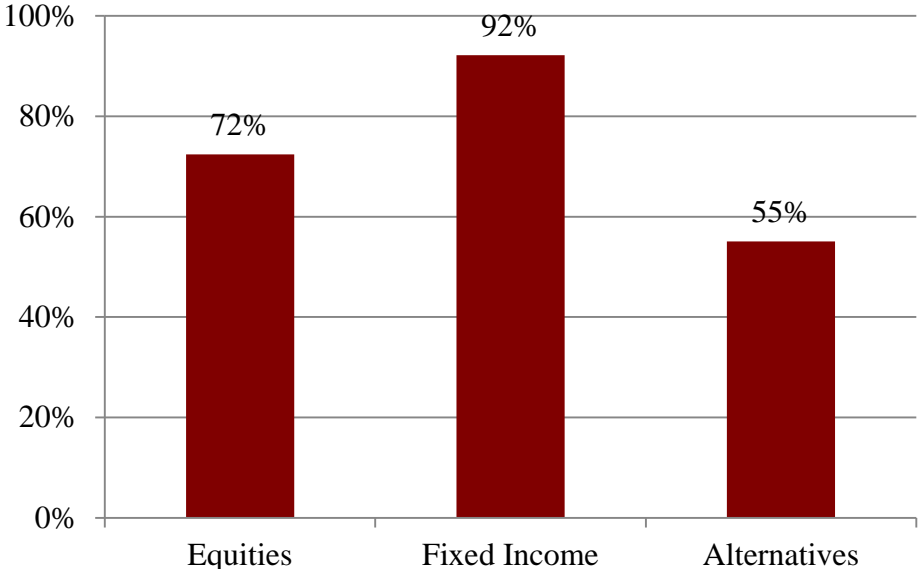
*Observed differences are the result of both differences in asset allocation and/or asset class performance.*

2. **A comparison of each plan's investment return to its own benchmark:**

*Performance relative to benchmark focuses on each plan's ability to execute its own strategy.*

# Most plans beat their benchmark for traditional investments, but only about half beat their benchmark for alternatives.

Percentage of Plans that Outperformed Their Asset-Class Benchmark from 2001-2016

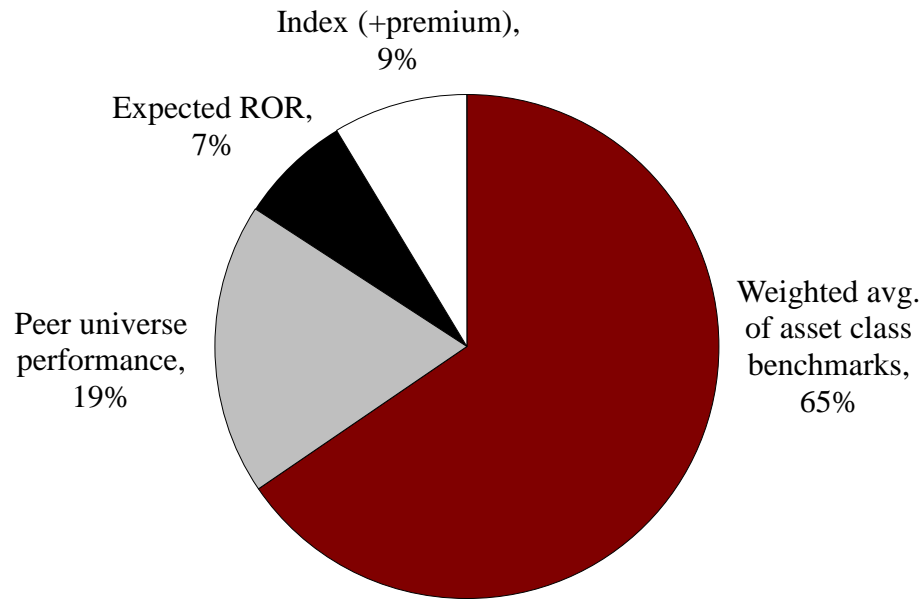


Source: Author's calculations using the *Public Plans Database* (2001-2016).



# Currently, the portfolio benchmark for most plans reflects the plan's asset allocation.

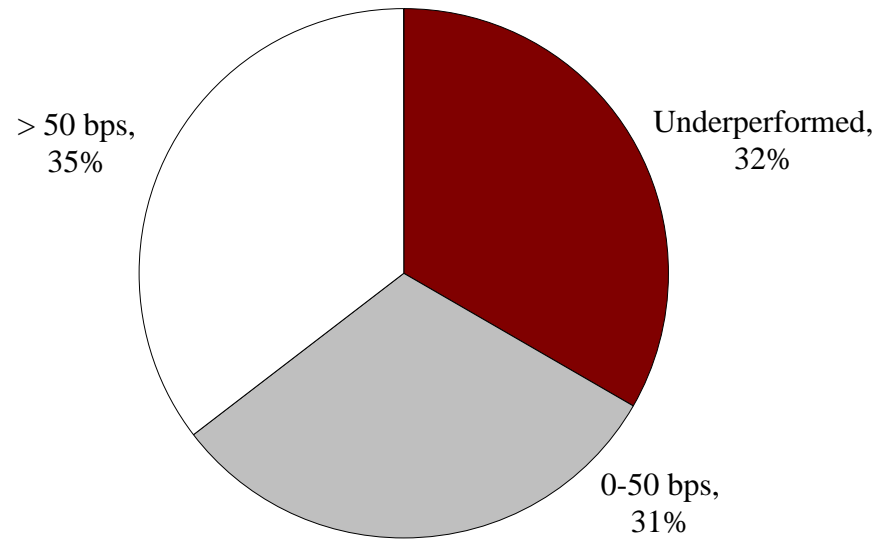
Distribution of Plans, by Type of Portfolio Benchmark, 2016



Source: Jean-Pierre Aubry and Caroline V. Crawford. "How Do Fees Affect Plans' Ability to Beat Their Benchmarks?" State and Local Plans Issue in Brief 61. Chestnut Hill, MA: Center for Retirement Research at Boston College.

# About a third of plans did not meet their portfolio benchmark over the long term.

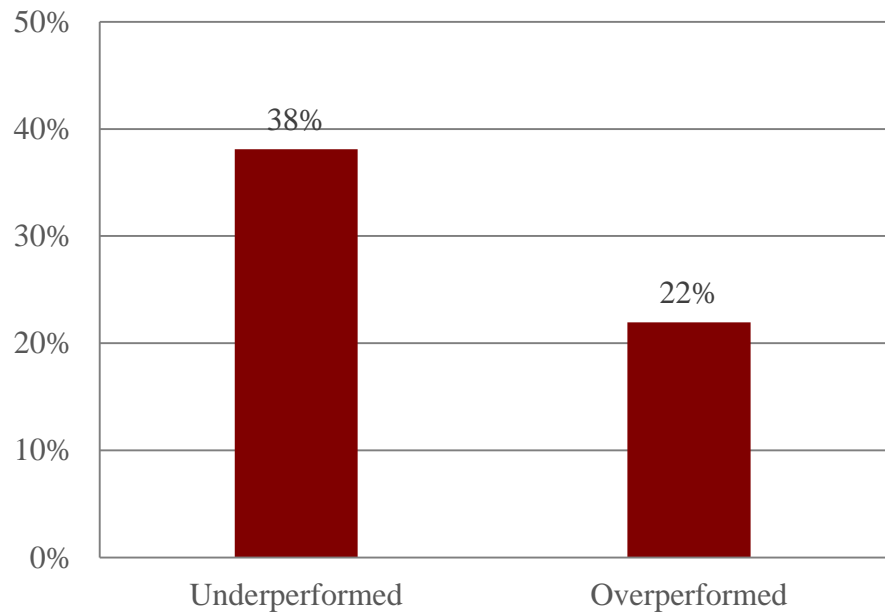
Distribution of the Gap between Portfolio Performance and Benchmark from 2002-2016



Source: Jean-Pierre Aubry and Caroline V. Crawford. "How Do Fees Affect Plans' Ability to Beat Their Benchmarks?" State and Local Plans Issue in Brief 61. Chestnut Hill, MA: Center for Retirement Research at Boston College.

# Plans that fell short of their benchmark were more likely to be bottom-quartile plans.

Percentage of Plans that Were in the Bottom Quartile, by Performance Relative to Benchmark

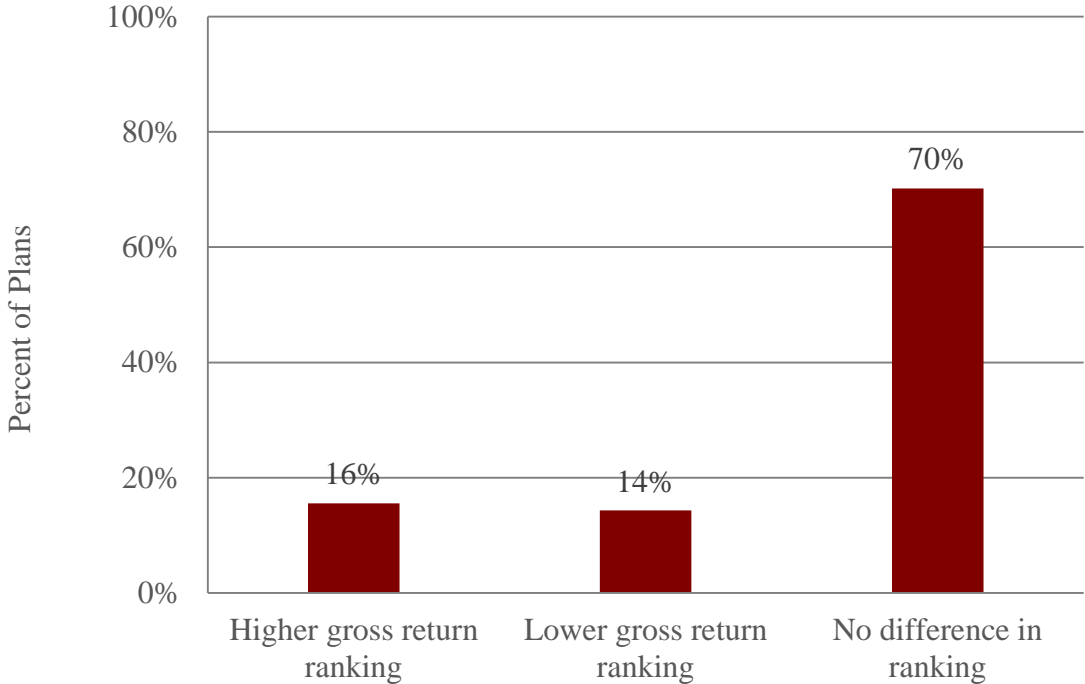


Source: Author's calculations using the *Public Plans Database* (2001-2016).

# What about fees?

# The data suggest that fees have a limited role in the relative performance of plans.

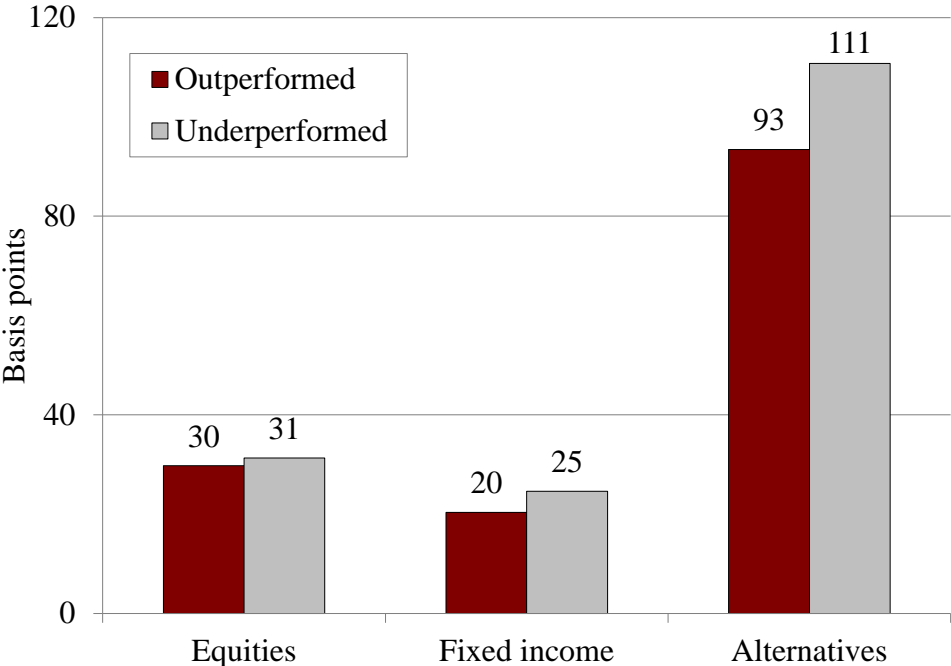
Quartile Ranking by Gross Returns Compared to Quartile Ranking by Net-of-fee Returns



Source: Author's calculations using the *Public Plans Database* (2001-2016).

# Plans that fell short of their benchmark did pay higher fees across all asset classes.

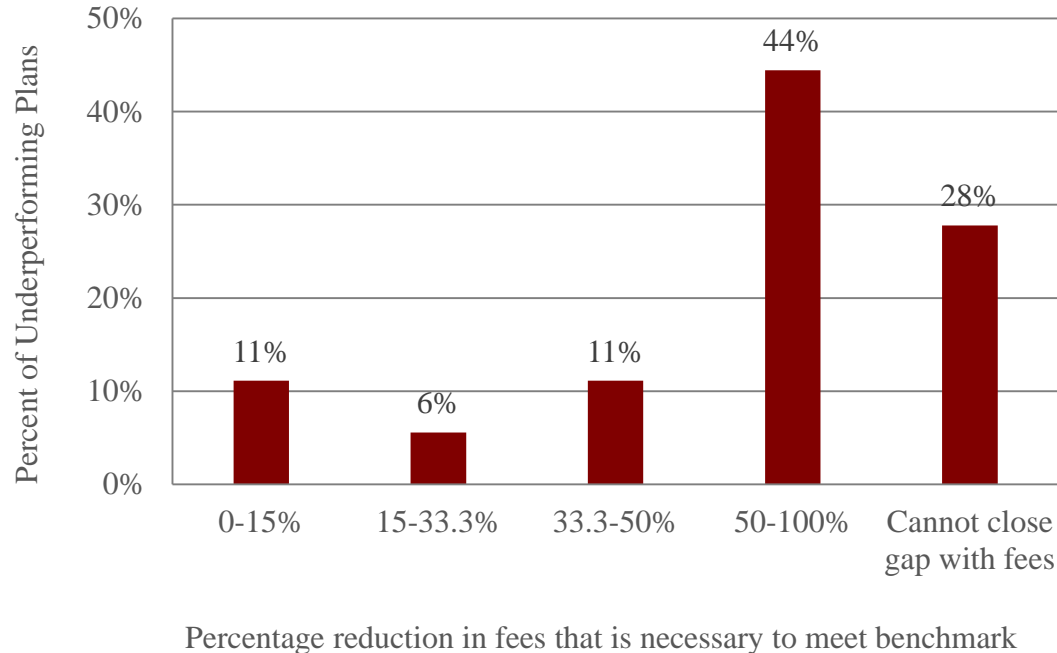
Average Expense Ratios from 2011-2016, by Plan Performance Relative to Benchmark



Source: Jean-Pierre Aubry and Caroline V. Crawford. “How Do Fees Affect Plans’ Ability to Beat Their Benchmarks?” State and Local Plans Issue in Brief 61. Chestnut Hill, MA: Center for Retirement Research at Boston College.

# But dramatic fee cuts would have been required to help most underperformers meet their benchmark.

Percentage Reduction in Fees Required to Achieve Benchmark Returns



Source: Author's calculations using the *Public Plans Database* (2001-2016).

# Conclusion

- The observed differences in long-term investment performance among plans are meaningful.
- For most, the difference is due to asset class returns. But, for the worst-performing plans, allocation to hedge funds and commodities has played a role.
- While most plans outperform their benchmarks, plans that underperformed were more likely to have bottom-quartile investment returns.
- Plans that underperformed their benchmark also paid higher fees (although, in many cases, moderate fee reduction would not have resulted in outperformance of their benchmark).

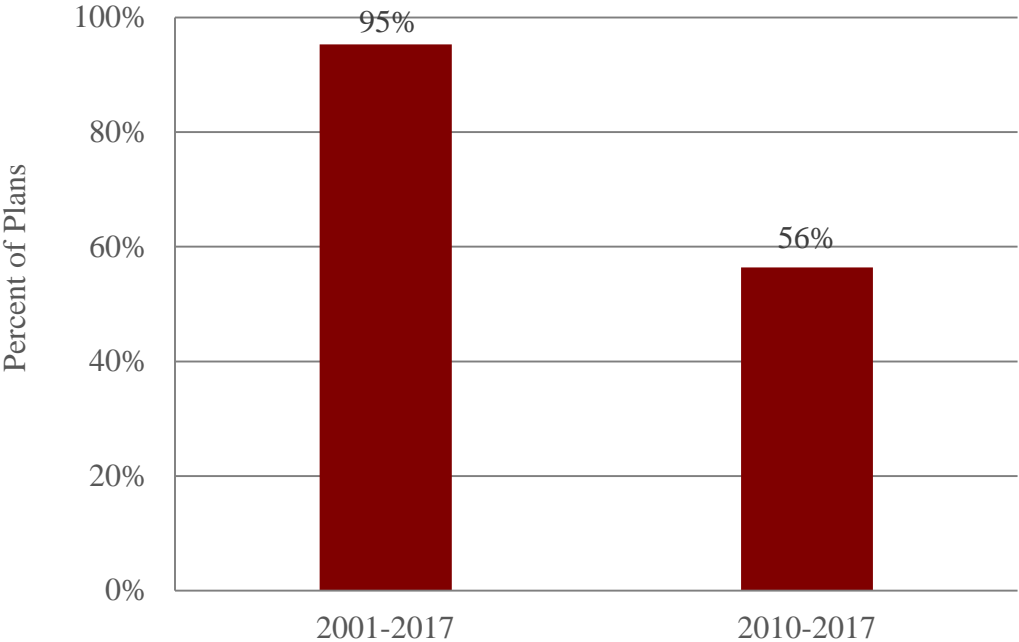


# Appendix

1. A simpler allocation: 60% Wilshire 5000 + 40% Barclay's
2. Use of leverage by public pension plans
3. Fair value of investments
4. Unfunded commitments to alternative investment funds

# The benefits of a simpler investment approach depend on the period in question.

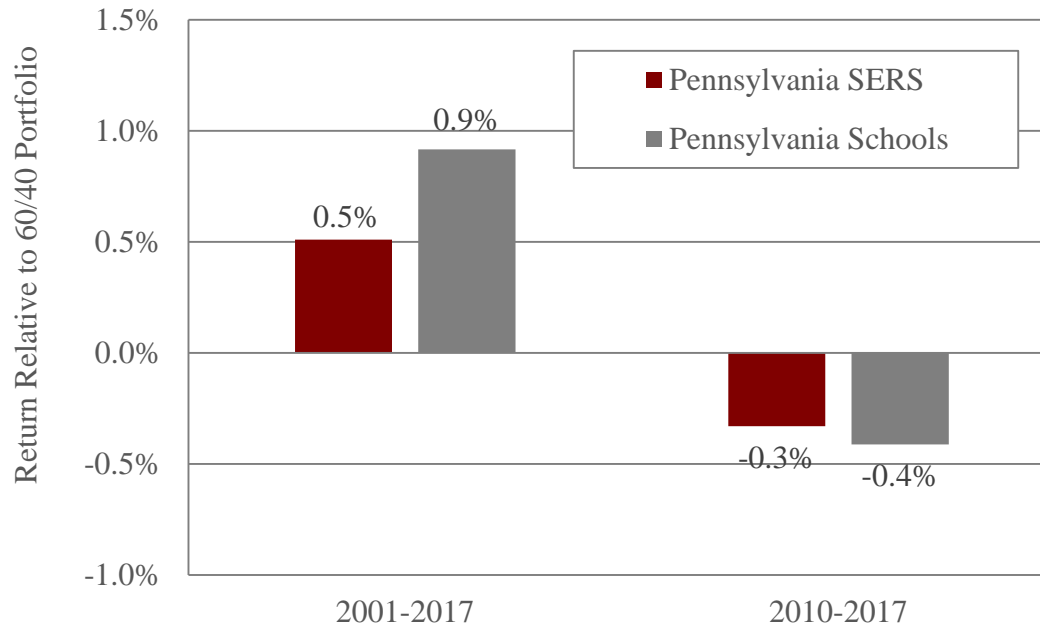
Percentage of Plans that Outperformed a Simple 60/40 Stock/Bond Portfolio



Source: Public Plans Database (2001-2016).

# SERS and PSERS have underperformed a simpler portfolio recently, but outperformed over the long-term.

Plan Returns Relative to a Simple 60/40 Stock/Bond Portfolio



Source: Author's calculations using the *Public Plans Database* (2001-2016), Dow Jones Wilshire 5000, and Barclays US Aggregate Bond Index.

# The explicit use of leverage is rare among public plans.

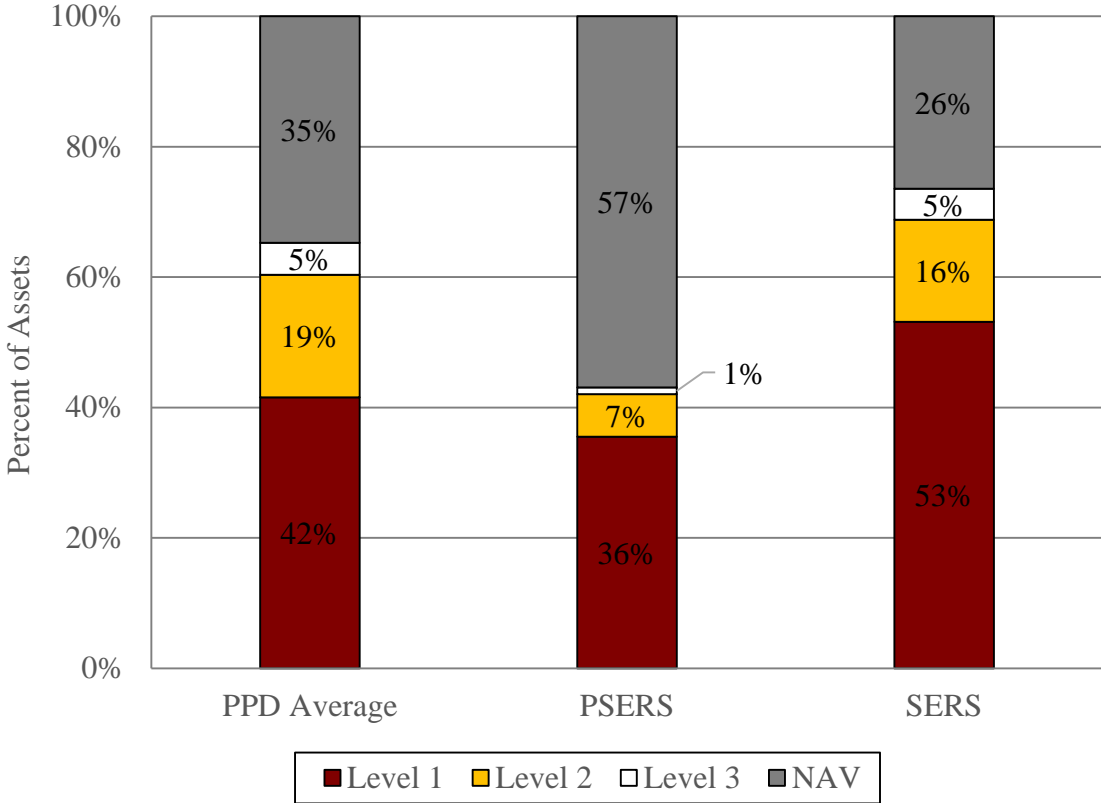
## Major State and Local Plans that Report an Explicit Use of Leverage, 2017

Plan Name	Type of Leverage	Percentage of Portfolio That is Levered
Massachusetts SRS	Uses leverage for real estate investments	1.7%
Massachusetts Teachers	Uses leverage for real estate investments	1.7%
Missouri State Employees	Uses leverage to achieve a beta balanced portfolio	52.1%
Ohio Police & Fire	Policy to leverage fixed income portfolio 2x	20.0%
San Francisco City & County	Uses leverage for real estate investments	0.0%
Virginia RS	Uses leverage in its real assets portfolio	3.6%
Wisconsin RS	Policy to leverage in fixed income portfolio	10.0%
Sacramento County ERS	Uses leverage for real assets portfolio	0.8%
San Diego City ERS	Uses leverage for real estate investments	1.8%
Pennsylvania PSERS	Uses leverage in fixed income portfolio	17.30%

Source: Author's calculations using the *Public Plans Database* (2001-2016).

# The majority of pension plan assets are classified as Level 1 and/or valued at NAV.

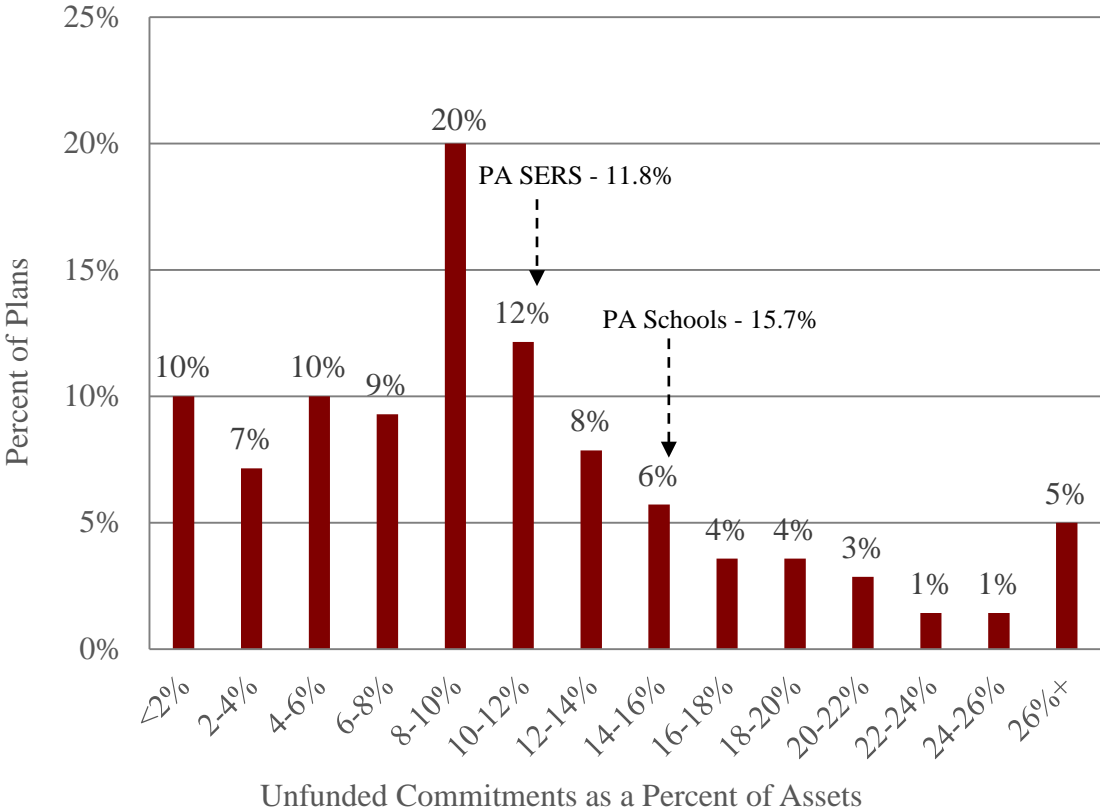
Percent of Assets, by Fair Value Measurement, 2017



Source: Author's calculations using the *Public Plans Database* (2001-2016).

# Future capital calls may limit the investment flexibility of plans.

Distribution of Plans by Unfunded Commitments as a Percent of Assets, 2017



Source: Author's calculations using the *Public Plans Database* (2001-2016).