



ISSUE BRIEF:

Public Pension Plan Investment Return Assumptions

Pace of reductions slows in wake of higher inflation

June 2025

OVERVIEW

As of December 31, 2024, state and local government retirement systems held assets of approximately \$6.2 trillion.¹ These assets are held in trust and invested to pre-fund the cost of pension benefits. Because investment earnings account for a majority of public pension revenues, the investment return on these assets has an outsized effect on public pension plan funding levels and costs. A shortfall in long-term expected investment earnings must, over time, be made up by higher contributions, reduced benefits, or both.

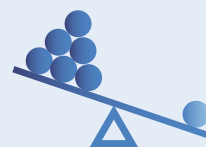
Funding a pension benefit requires the use of predictions about future events, which are used to develop actuarial assumptions. Actuarial assumptions fall into one of two broad categories: demographic and economic. Demographic assumptions are those pertaining to a pension plan's membership, such as changes in the number of working and retired plan participants; at what age participants will retire, and how long they'll live after they retire. Economic assumptions pertain to such factors as the rate of plan participant wage growth and the future expected investment return on the fund's assets.

As with other actuarial assumptions, projecting public pension fund investment returns requires a focus on the long-term. This brief discusses how investment return assumptions are established and evaluated, and recent trends and changes in assumed rates used by public pension plans.

Why It Matters

Because investment earnings account for most of the long-term revenue for a typical public pension fund, the degree of accuracy of the return assumption over time has a major effect on a plan's cost and actuarial funding level. Because the investment return assumption for most plans also serves as the discount rate used to determine the present value of the

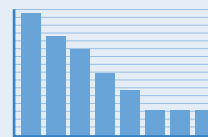
Key Findings



In terms of its effect on a pension plan's funding level and cost, the investment return assumption is the most consequential of all public pension plan actuarial assumptions.



The plan's expected rate of inflation is a key variable within the investment return assumption.



Following more than a decade of declining investment return assumptions amid historically low rates of inflation, since 2021 the median and average investment return assumption has stabilized in the wake of a notable increase in inflation.

¹ Federal Reserve, *Flow of Funds Accounts of the United States: Flows and Outstandings, Fourth Quarter 2023*, Table L.120

plan’s liabilities, an investment return assumption that is set too low will overstate liabilities and costs, causing current taxpayers to be overcharged and future taxpayers to be undercharged. A rate set too high will understate liabilities, undercharging current taxpayers at the expense of future taxpayers. An assumption that is significantly wrong in either direction will cause a misallocation of resources and unfairly distribute costs among generations of taxpayers.

As shown in Figure 1, for the 30-year period ended in 2023, public pension funds accrued approximately \$10.5 trillion in revenue, of which \$6.4 trillion, or 61 percent, is from investment earnings. The remainder comes from employer and employee contributions.² The large portion of revenues from investment earnings reflect the important role they play in funding public pension benefits.

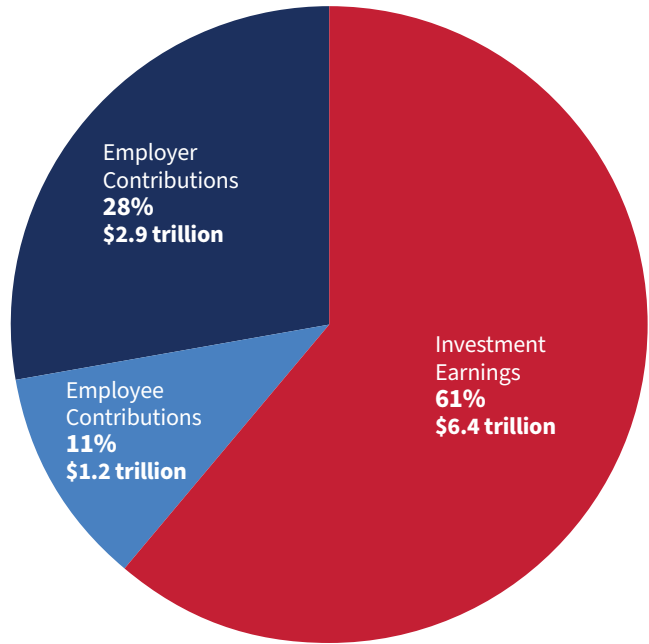
Although each pension plan is unique, the effect of a 25-basis point reduction in the investment return actuarial assumption, such as from 7.0 percent to 6.75 percent, is estimated to increase the cost of a plan that has an automatic COLA of 3.0 percent, by three percent of pay (such as from 10 percent to 13 percent), and for a plan that does not have a COLA, by two percent of pay.

How the Investment Return Assumption Is Set

Most public retirement systems review their actuarial assumptions regularly, pursuant to state or local statute or system policy. The entity (or entities) responsible for setting the return assumption (as identified in Appendix B), typically works with one or more professional actuaries, who follow guidelines set forth by the Actuarial Standards Board in *Actuarial Standards of Practice No. 27: Selection of Economic Assumptions for Measuring Pension Obligations* (ASOP 27). ASOP 27 prescribes the factors actuaries should consider in setting economic actuarial assumptions and recommends that actuaries consider the context of the measurement they are making, defined by such factors as the purpose of the measurement, the length of time the measurement period is intended to cover, and the projected pattern of the plan’s cash flows.

ASOP 27 also advises that actuarial assumptions should be “reasonable” (defined in subsection 3.5 as satisfying specified criteria); and requires that actuaries consider

FIGURE 1. Public Pension Sources of Revenue, 1994-2023



Compiled by NASRA based on U.S. Census Bureau data

“relevant data” such as current and projected interest rates and rates of inflation; historic and projected returns for individual asset classes; and historic returns of the fund itself.

For plans that remain open to new members, actuaries focus chiefly on a long investment horizon, i.e., 20 to 30 years, which is the length of a typical public pension plan’s funding period. A primary purpose for relying on a long timeframe is to promote the key policy objectives of cost stability and predictability, and intergenerational equity among taxpayers. As this brief illustrates, the variables used to determine the investment return assumption are prone to volatility and can rise or fall sharply in any given year and over brief periods of time. Year-to-year volatility levels out over longer periods.

² US Census Bureau, Annual Survey of Public Pensions, State & Local Data

The Role of Inflation as an Actuarial Assumption

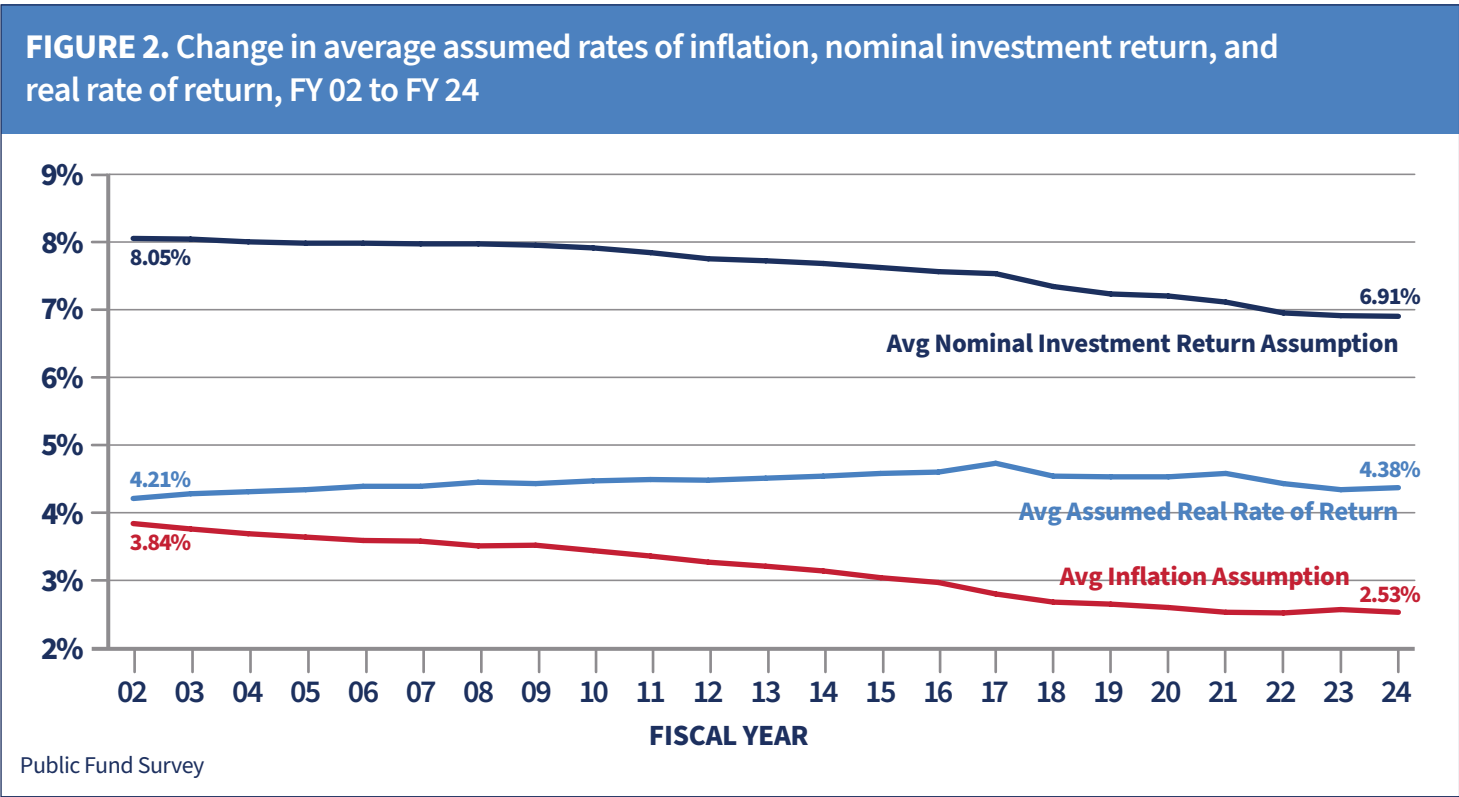
A plan’s inflation assumption serves as a fundamental factor supporting not just the investment return assumption, but also the plan’s assumed rates of wage and payroll growth, and, for some plans, their cost-of-living adjustment assumption. For this reason, the inflation assumption plays a direct or indirect role in determining much of a plan’s actuarial cost and condition.

The investment return assumption is essentially the sum of the plan’s inflation assumption plus its projected return above the assumed rate of inflation, also known as the real rate of return. The total of these components is the nominal rate of return, which is the rate that is commonly used and cited as a plan’s investment return assumption.

An investment return approximately commensurate with the inflation rate normally is attainable by investing in high-quality fixed income securities, such as US Treasuries. The real rate of return is the return generated by investing in assets that are projected to produce a return above the rate of inflation. Figure 2 plots the average value of each of the three main variables that comprise a public pension plan’s investment

return assumption: the assumed rate of inflation, the real rate of return, and the resulting nominal (non inflation-adjusted) assumed rate of return.

Figure 2 illustrates the steady reduction in the assumed rate of inflation, particularly beginning in 2009 and lasting through 2020. This reduction in the expected rate of inflation explains much or all of the reduction in the nominal investment return assumption during this period, as the real rate of return has remained mostly stable through the measurement period. Likewise, the sharp rise in inflation since 2021 is the likely reason that the trend toward lower nominal rates of investment return (inflation plus the real rate of return) has virtually stopped, as a higher rate of inflation can be expected to result in higher nominal investment returns. The slight increase in the real rate of return over the course of the measurement period may be attributable to public pension funds’ increased allocation to alternative assets, such as private equities, real estate, and hedge funds, some of which have a higher expected return than those of public equities and fixed income securities.

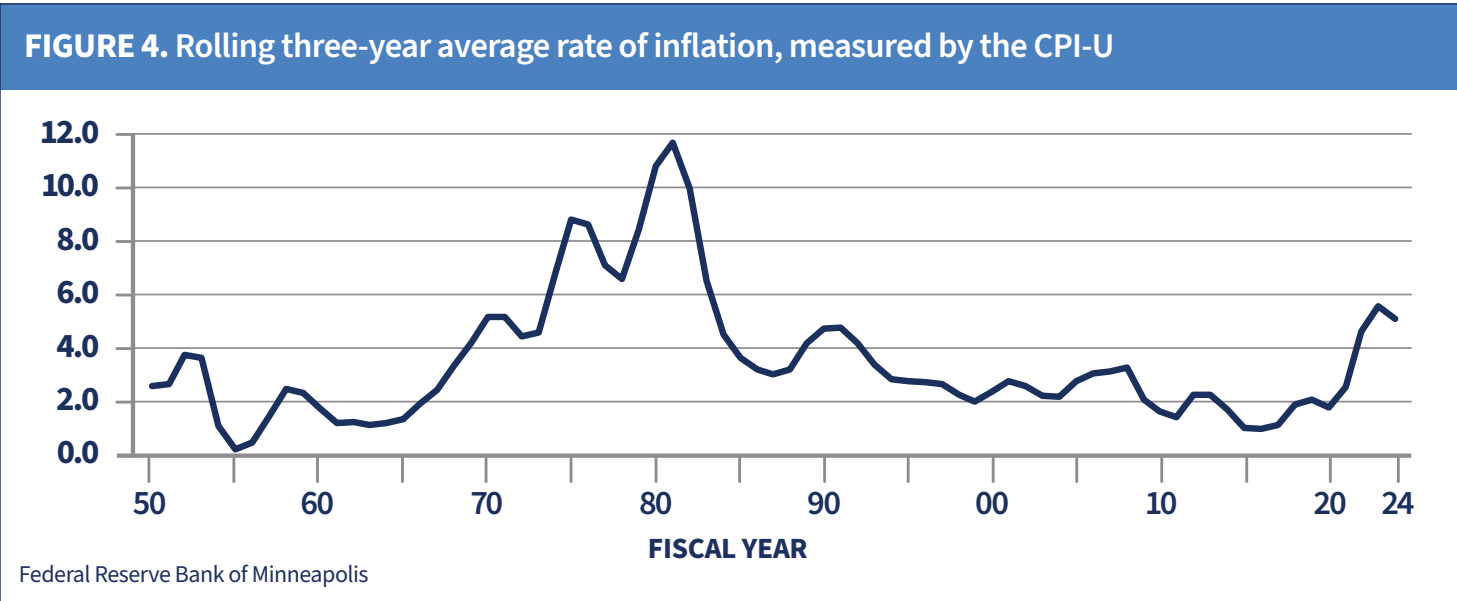
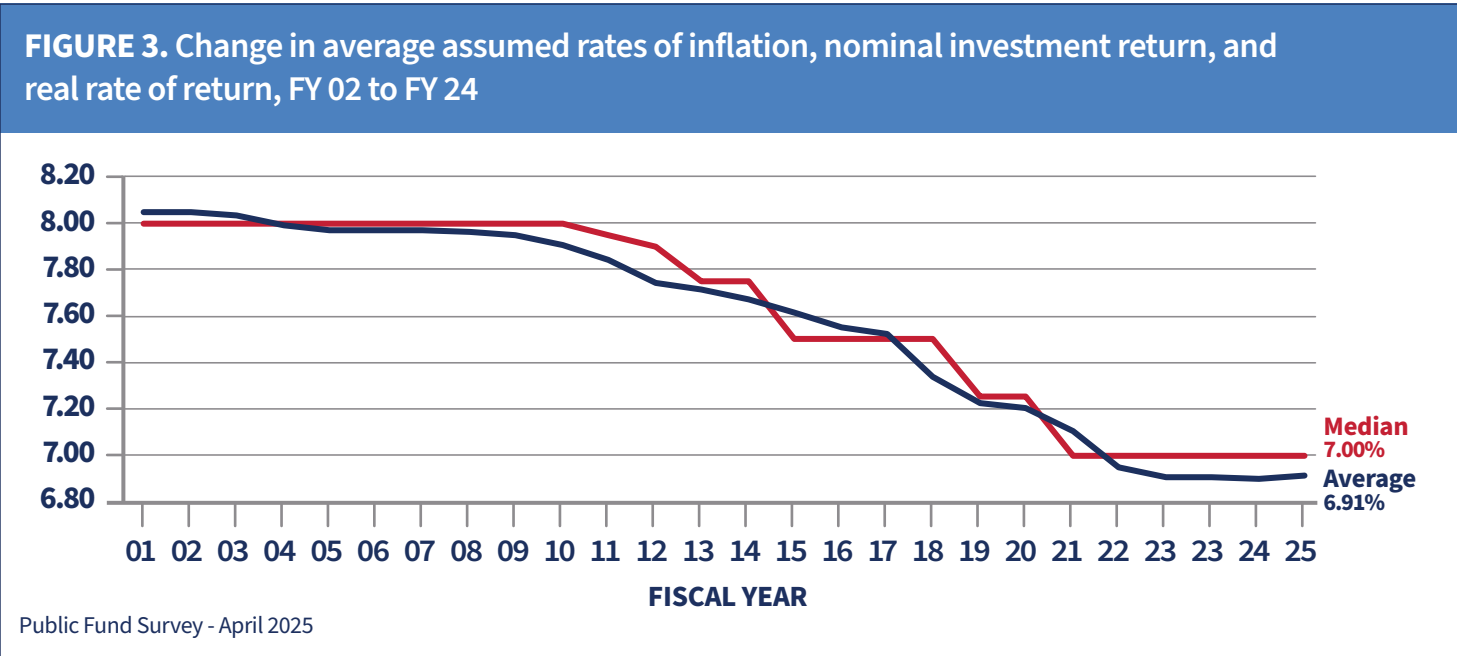


Recent History of the Investment Return Assumption

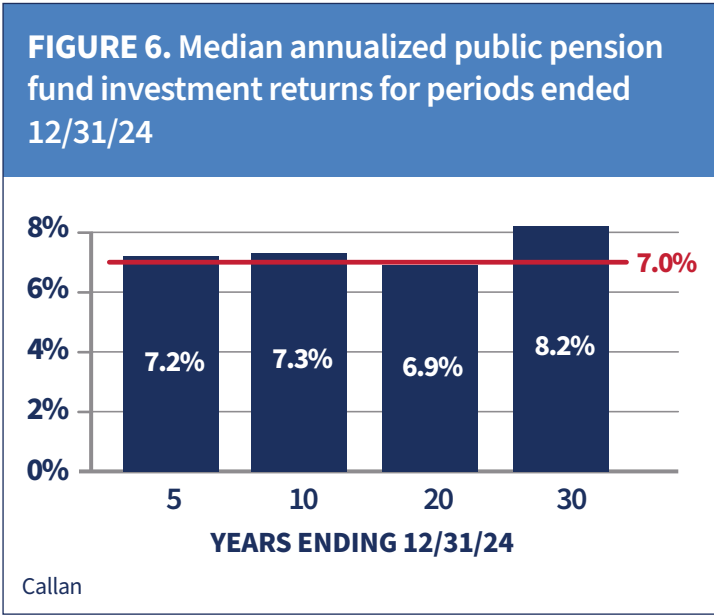
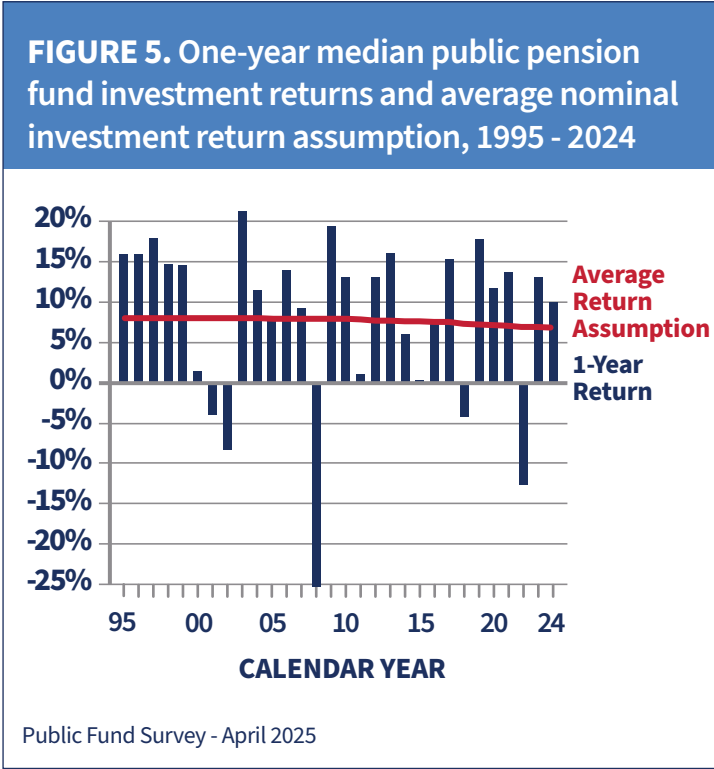
Figure 3 shows the combined history of investment return assumptions used by 131 public pension plans in the NASRA dataset, plotting the change in the average and median assumed rates of return from 2001 to the present. Following an extended period of average and median investment return assumptions of around 8.0 percent, in the years after the Great Financial Crisis, every one of the 131 plans in the NASRA dataset reduced their return assumption at least once. These reductions resulted in a decline in the average return assumption from 7.94 percent in FY 09 to 7.10 percent in FY 21. During this same timeframe, the median return assumption declined

from 8.0 percent to 7.0 percent. The median rate has remained at that level since FY 21, as the number of plans reducing their assumption has slowed significantly.

Figure 4, which plots the rolling three-year average annual rate of inflation since 1950, shows why the ASOP No. 27 requirement to consider both historic and projected experience creates a challenge: past results often are not indicative of future outcomes. Predicting rates not just of inflation, but also bond yields and returns for individual asset classes, is a significant challenge, as these factors historically have been volatile and difficult to predict.



Similarly, Figure 5 presents median public pension fund investment returns for each calendar year since 1995, compared to the average public pension investment return assumption. Figures 4 and 5 illustrate the significant volatility (and unpredictability) in the experience of these key variables, illustrating the challenge of setting these assumptions and the importance of relying on long-term outcomes. In just four of the 30 years included in Figure 5 did the



median public pension fund experience fall within two percentage points of the assumed investment return.

Figure 6 shows how median public pension fund investment performance compares with the current median assumption of 7.0 percent over longer periods. This experience affirms plans’ long-term assumptions: despite the volatility evidenced in Figure 5, over time, public funds’ investment experience for periods five years and longer closely match their assumptions. For the longest period measured, 30 years, the median public fund return exceeds both the current median long-term assumption and the 8.0 percent assumption in place for much of this period.

Appendix A lists the nominal investment return assumptions in use or adopted for future use by the 131 plans in this dataset as of June 2025.

Looking Ahead

After three years above 3.0 percent, beginning in early 2021, the annual rate of inflation, measured by CPI-U, since mid-2024 has declined steadily, remaining at or below 3.0 percent since May 2024. The 30-Year Breakeven Rate, a technical market indicator of future inflation, remains around 2.25 percent; this suggests that capital markets expect a projected long-term inflation rate around that level.³ If actual inflation remains below three percent, given the current average public pension inflation assumption of 2.6 percent, investment return assumptions may remain stable for the foreseeable future.

³ 30-Year Breakeven Inflation Rate, St. Louis Federal Reserve, <https://fred.stlouisfed.org/series/T30YIEM>

Conclusion

In terms of its effect on a pension plan’s finances and funding level, the investment return assumption is the single most consequential of all actuarial assumptions. The sustained period of historically low inflation and interest rates, which lasted for over a decade beginning in 2009, combined with lower projected returns for most asset classes, caused many public pension plans to reduce their long-term expected investment returns.

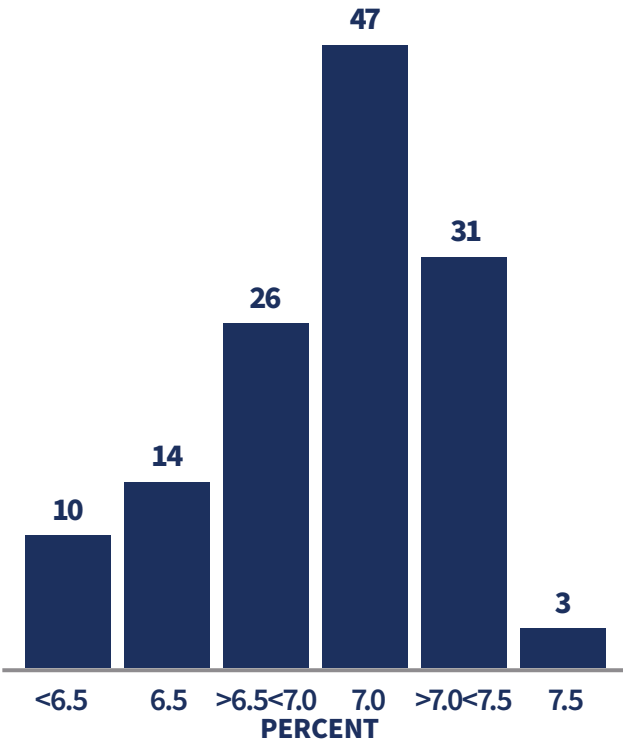
More recently, the higher rate of inflation since early 2021 is the likely primary driver of the near cessation in the number of public pension plans reducing their investment return assumption.

By itself, a lower investment return assumption increases both the plan’s unfunded liabilities and cost. The process for evaluating a pension plan’s investment return assumption should (and typically does) include abundant input and feedback from investment experts and actuarial professionals, and also should reflect consideration of the factors prescribed in actuarial standards of practice.

See Also

[Selection of Assumptions for Measuring Pension Obligations](#), Actuarial Standards Board
[The Liability Side of the Equation Revisited](#), Missouri SERS, September 2006

FIGURE 7. Distribution of latest nominal investment return assumptions



NASRA - June 2025

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Appendix A: Investment Return Assumption by Plan

Figures reflect the nominal assumption in use, or announced for use, as of June 2025.

This list of nominal investment return assumptions is updated at www.nasra.org/latestreturnassumptions

Plan	Assumed Rate	Plan	Assumed Rate
Alaska PERS	7.25	DC Police & Fire	6.25
Alaska Teachers	7.25	DC Teachers	6.25
Alabama ERS	7.45	Delaware PERS	7.00
Arkansas PERS	7.00	Florida RS	6.70
Arkansas State Highway ERS	7.50	Georgia ERS	7.00
Arkansas Teachers	7.25	Georgia Teachers	6.90
Arizona Public Safety ¹	7.20	Hawaii ERS	7.00
Arizona SRS	7.00	Iowa PERS	7.00
Phoenix ERS	7.00	Idaho PERS	6.50
CalPERS	6.80	Chicago Teachers	6.50
CalSTRS	7.00	Illinois Municipal	7.25
Contra Costa County ERA	6.75	Illinois SERS	6.75
Denver Employees	7.00	Illinois Teachers	7.00
LA County ERS	7.00	Illinois Universities	6.50
Orange County ERS	7.00	Indiana PERF	6.25
San Diego City ERS	6.50	Indiana Teachers	6.25
San Diego County ERA	6.50	Kansas PERS	7.00
San Francisco City & County	7.20	Kentucky County	6.50
University of California	6.75	Kentucky ERS ²	5.25
Colorado Affiliated Local	7.00	Kentucky Teachers	7.10
Colorado Fire & Police Statewide	7.00	Louisiana Parochial Employees	6.40
Colorado Municipal	7.25	Louisiana SERS ³	7.25
Colorado School	7.25	Louisiana Teachers ⁴	7.25
Colorado State	7.25	Massachusetts SERS	7.00
Denver Public Schools	7.25	Massachusetts Teachers	7.00
Connecticut SERS	6.90	Maryland PERS	6.80
Connecticut Teachers	6.90	Maryland Teachers	6.80

Appendix A: Investment Return Assumption by Plan

Plan	Assumed Rate
Maine Local	6.50
Maine State and Teacher	6.50
Michigan Municipal ⁵	6.93
Michigan Public Schools	6.00
Michigan SERS	6.00
Minnesota PERF	7.00
Minnesota State Employees	7.00
Minnesota Teachers	7.00
St. Paul Teachers	7.00
Missouri DOT and Highway Patrol	6.50
Missouri Local	7.00
Missouri PEERS	7.30
Missouri State Employees	6.95
Missouri Teachers	7.30
St. Louis School Employees	7.00
Mississippi PERS	7.00
Montana PERA	7.30
Montana Teachers	7.30
North Carolina Local Government	6.50
North Carolina Teachers and State Employees	6.50
North Dakota PERS	6.50
North Dakota Teachers	7.25
Nebraska Schools ⁵	6.95
New Hampshire Retirement System	6.75
New Jersey PERS	7.00
New Jersey Police & Fire	7.00
New Jersey Teachers	7.00
New Mexico Educational	7.00
New Mexico PERF	7.25

Plan	Assumed Rate
Nevada Police Officer and Firefighter	7.25
Nevada Regular Employees	7.25
New York City ERS	7.00
New York City Teachers	7.00
New York State & Local ERS	5.90
New York State & Local Police & Fire	5.90
New York State Teachers	6.95
Ohio PERS	6.90
Ohio Police & Fire	7.50
Ohio School Employees	7.00
Ohio Teachers	7.00
Oklahoma PERS	6.50
Oklahoma Teachers	7.00
Oregon PERS	6.90
Pennsylvania School Employees	7.00
Pennsylvania State ERS	6.88
Rhode Island ERS	7.00
Rhode Island Municipal	7.00
South Carolina Police	7.00
South Carolina RS	7.00
South Dakota RS	6.50
Alabama Teachers	7.45
Tennessee Public Employee Retirement Plan	6.75
Tennessee Teacher Retirement Plan	6.75
Austin ERS	6.75
Houston Firefighters	7.00
Texas County & District	7.50
Texas ERS	7.00
Texas LECOS	7.00

Appendix A: Investment Return Assumption by Plan

Plan	Assumed Rate
Texas Municipal	6.75
Texas Teachers	7.00
Utah Noncontributory	6.85
Fairfax County Schools	7.00
Richmond Retirement Plan	7.00
Virginia Retirement Plan	6.75
Vermont State Employees	7.00
Vermont Teachers	7.00
Washington LEOFF Plan 1	7.25
Washington LEOFF Plan 2	7.00

Plan	Assumed Rate
Washington PERS 1	7.25
Washington PERS 2/3	7.25
Washington School Employees Plan 2/3	7.25
Washington Teachers Plan 1	7.25
Washington Teachers Plan 2/3	7.25
Wisconsin Retirement System	6.80
West Virginia PERS	7.25
West Virginia Teachers	7.25
Wyoming Public Employees	6.80

¹ The Arizona Public Safety Personnel Retirement System administers a plan for public safety personnel comprised of three tiers depending on participants' date of hire. The assumption used for Tiers 1 & 2 is 7.2%, and the assumption used for Tier 3 is 7.0%. The assumption given reflects a liability-weighted average for all tiers.

² The Kentucky ERS is composed of two plans: Hazardous and Non-Hazardous. The rate shown applies to the plan's Non-Hazardous plan, which accounts for more than 90 percent of the Kentucky ERS plan liabilities. The investment return assumption used for the Hazardous plan is 6.25 percent.

³ The discount rate used to determine the FY 2022/2023 funding requirement is 7.25%, which is net of gain-sharing. The investment return assumption differs from the discount rate because of the effective cost of providing potential future ad hoc post-retirement benefit increases, or gain-sharing. The investment return assumption, which includes gain-sharing, is currently 7.60%.

⁴ The investment return assumption differs from the discount rate because of the effective cost of providing potential future ad hoc post-retirement benefit increases, or gain-sharing. The investment return assumption, which includes gain-sharing, is currently 7.60%.

⁵ In February 2022 the MERS Board adopted a dedicated gains policy for systematically reducing the investment return assumption when actual investment returns exceed the plan's current assumed rate of return. Whether the assumed rate of return is lowered, and the magnitude of any reduction, depends on the excess gains available and the most recent range of reasonable economic assumptions as provided by MERS' consulting actuary. Under this policy a portion of the excess returns will continue to be smoothed over a five year period, and some of the excess return will be immediately recognized to offset the increase in contributions.

- If the current assumed rate of return is at or above the mid-point in the range, the full amount of excess gains will be used to lower the assumption. If the current assumed rate of return is below the mid-point in the range, half of the excess gains will be used to lower the assumption.
- The assumed rate of return will not be reduced below the bottom of the range
- If the ratio of Actuarial Value of Assets to Market Value of Assets is below 80% or above 120%, excess market gains will not be used to lower or buy down the rate of return, and the normal smoothing method will be applied.

⁶ The Nebraska Schools nominal investment return assumption will be reduced gradually from the previous rate of 7.0%, as follows: to 6.95% beginning January 1, 2025, to 6.90% beginning January 1, 2026, to 6.85% beginning January 1, 2027, and to 6.75% beginning January 1, 2028 and thereafter.

Appendix B: Entity Responsible for Setting Investment Return Assumption for Selected State Plans

State	System	Investment Return Assumption Set By
AK	Alaska Public Employees Retirement System	Alaska Retirement Management Board
AK	Alaska Teachers Retirement System	Alaska Retirement Management Board
AL	Retirement Systems of Alabama	Retirement board
AR	Arkansas Public Employees Retirement System	Retirement board
AR	Arkansas State Highway Employees' Retirement System	Retirement board
AR	Arkansas Teachers Retirement System	Retirement board
AZ	Arizona Public Safety Personnel Retirement System	Retirement board
AZ	Arizona State Retirement System	Retirement board
CA	California Public Employees Retirement System	Retirement board
CA	California State Teachers Retirement System	Retirement board
CO	Colorado Public Employees Retirement Association	Retirement board
CO	Fire & Police Pension Association of Colorado	Retirement board
CT	Connecticut State Employees Retirement System	State Employees Retirement Commission
CT	Connecticut Teachers Retirement Board	Retirement board
DC	District of Columbia Retirement Board	Retirement board
DE	Delaware Public Employees Retirement System	Retirement board
FL	Florida Retirement System	FRS Actuarial Assumption Estimating Conference ¹
GA	Georgia Employees Retirement System	Retirement board
GA	Georgia Teachers Retirement System	Retirement board
HI	Hawaii Employees Retirement System	Retirement board
IA	Iowa Public Employees Retirement System	IPERS Investment Board
ID	Idaho Public Employees Retirement System	Retirement board
IL	Illinois State Universities Retirement System	Retirement board
IL	Illinois State Employees Retirement System	Retirement board
IL	Illinois Municipal Retirement Fund	Retirement board
IL	Illinois Teachers Retirement System	Retirement board
IN	Indiana Public Retirement System	Retirement board
KS	Kansas Public Employees Retirement System	Retirement board

Appendix B: Entity Responsible for Setting Investment Return Assumption for Selected State Plans

State	System	Investment Return Assumption Set By
KY	Kentucky Retirement Systems	Retirement board
KY	Kentucky Teachers Retirement System	Retirement board
LA	Louisiana State Employees Retirement System	Retirement board
LA	Louisiana Parochial Employees' Retirement System	Retirement board
LA	Louisiana Teachers Retirement System	Retirement board
MA	Massachusetts State Employees Retirement System	Collaborative between the legislature, state treasurer, governor, and the Massachusetts Public Employee Retirement Administration Commission
MA	Massachusetts Teachers Retirement Board	Collaborative between the legislature, state treasurer, governor, and the Massachusetts Public Employee Retirement Administration Commission
MD	Maryland State Retirement and Pension System	Retirement board
ME	Maine Public Employees Retirement System	Retirement board
MI	Michigan Public School Employees Retirement System	Retirement board
MI	Michigan State Employees Retirement System	Retirement board
MI	Municipal Employees' Retirement System of Michigan	Retirement board
MN	Minnesota Public Employees Retirement Association	Legislature
MN	Minnesota State Retirement System	Legislature
MN	Minnesota Teachers Retirement Association	Legislature
MO	Missouri Local Government Employees Retirement System	Retirement board
MO	Missouri Public Schools Retirement System	Retirement board
MO	Missouri State Employees Retirement System	Retirement board
MO	MoDOT & Patrol Employees' Retirement System	Retirement board
MS	Mississippi Public Employees Retirement System	Retirement board
MT	Montana Public Employees Retirement Board	Retirement board
MT	Montana Teachers Retirement System	Retirement board
NC	North Carolina Retirement Systems	Retirement board
ND	North Dakota Public Employees Retirement System	Retirement board
ND	North Dakota Teachers Fund for Retirement	Retirement board
NE	Nebraska Public Employees Retirement System	Retirement board

Appendix B: Entity Responsible for Setting Investment Return Assumption for Selected State Plans

State	System	Investment Return Assumption Set By
NH	New Hampshire Retirement System	Retirement board
NJ	New Jersey Division of Pension and Benefits	Retirement board and state treasurer
NM	New Mexico Educational Retirement Board	Retirement board
NM	New Mexico Public Employees Retirement Association	Retirement board
NV	Nevada Public Employees Retirement System	Retirement board
NY	New York State & Local Retirement Systems	State comptroller
NY	New York State Teachers Retirement System	Retirement board
OH	Ohio Police and Fire Pension Fund	Retirement board
OH	Ohio Public Employees Retirement System	Retirement board
OH	Ohio School Employees Retirement System	Retirement board
OH	Ohio State Teachers Retirement System	Retirement board
OK	Oklahoma Public Employees Retirement System	Retirement board
OK	Oklahoma Teachers Retirement System	Retirement board
OR	Oregon Public Employees Retirement System	Retirement board
PA	Pennsylvania Public School Employees Retirement System	Retirement board
PA	Pennsylvania State Employees Retirement System	Retirement board
RI	Rhode Island Employees Retirement System	Retirement board
SC	South Carolina Retirement Systems	Legislature
SD	South Dakota Retirement System	Retirement board
TN	Tennessee Consolidated Retirement System	Retirement board
TX	Teacher Retirement System of Texas	Retirement board
TX	Texas County & District Retirement System	Retirement board
TX	Texas Employees Retirement System	Retirement board
TX	Texas Municipal Retirement System	Retirement board
UT	Utah Retirement Systems	Retirement board
VA	Virginia Retirement System	Retirement board
VT	Vermont State Employees Retirement System	Vermont Pension Investment Commission
VT	Vermont Teachers Retirement System	Vermont Pension Investment Commission

Appendix B: Entity Responsible for Setting Investment Return Assumption for Selected State Plans

State	System	Investment Return Assumption Set By
WA	Washington Department of Retirement Systems	Legislature
WI	Wisconsin Retirement System	Retirement board
WV	West Virginia Consolidated Public Retirement Board	Retirement board
WY	Wyoming Retirement System	Retirement board