

2024 Public Pension Funding Study

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Highlights

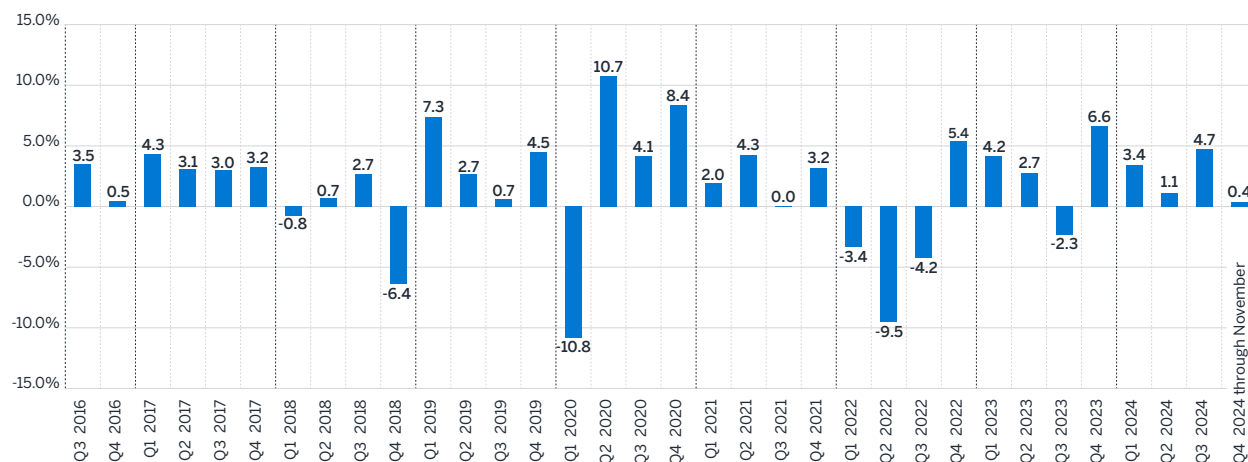
- Aggregate liabilities topped the \$6 trillion mark for the first time while aggregate assets broke the \$5 trillion barrier
- The funded ratio has increased significantly over the last two years from 69.8% as of September 30, 2022, to 81.2% as of November 30, 2024
- The funding gap between plan assets and liabilities stands at \$1.22 trillion as of November 30, 2024
- We estimate that from July 2024 through June 2025, public employers and employees will contribute \$266 billion into the plans; meanwhile, \$374 billion will flow out of the plans to pay retiree benefits and expenses

Introduction

The Milliman Public Pension Funding Study annually explores the funded status of the 100 largest U.S. public pension plans. We report the plans' own assessments of how well funded they are. We also recalibrate the liability for each plan based on our independent assessment of the expected real return on each plan's investments. This 2024 report is based on the most recently published fiscal year-end reports available for each plan—June 30, 2023, is the *measurement date* for three-quarters of the plans in our 2024 study. Some plans have subsequently issued data regarding their investment performance for more recent time periods, but that information has not been incorporated into this study.

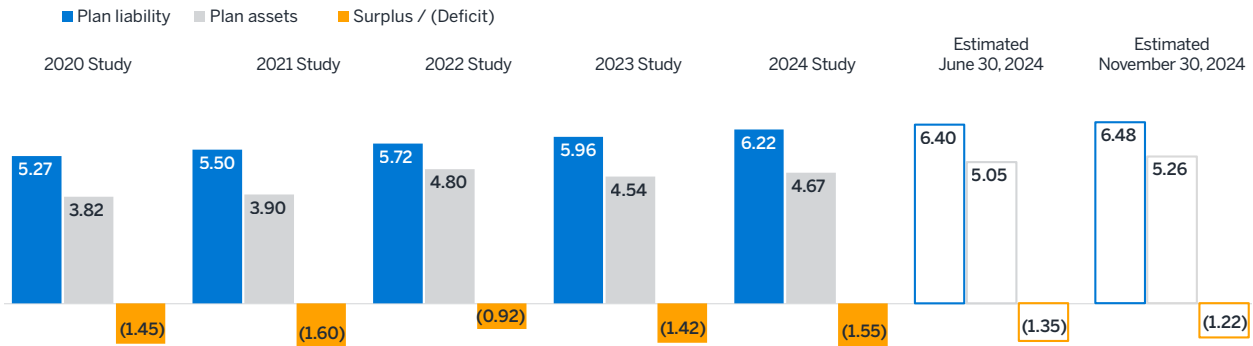
For the 91 of the 100 plans in this study with a measurement date between June 30, 2023, and December 31, 2023, reported asset levels generally met the overall expectation since the prior measurement dates, with an estimated 7.1% aggregate return. Aggregate plan assets that were reported as of the most recent measurement dates stood at \$4.67 trillion, and we estimate that asset levels increased to \$5.05 trillion as of June 30, 2024, and stand at \$5.26 trillion as of November 30, 2024. We estimate that the plans experienced a median annualized return on assets of 10.5% in the period between their measurement dates and June 30, 2024. Our estimate of the aggregate return on assets for the 2024 calendar year to date (January through November) is 10.0%.

FIGURE 1: QUARTERLY INVESTMENT RETURNS



The aggregate Total Pension Liability reported at the measurement dates was \$6.22 trillion, growing from \$5.96 trillion as of the prior measurement dates. We estimate that the Total Pension Liability has further increased to \$6.40 trillion as of June 30, 2024, and to \$6.48 trillion as of November 30, 2024. The aggregate plan-reported underfunding as of the measurement dates stood at \$1.55 trillion, which is higher than the \$1.42 trillion of underfunding one year earlier. However, as mentioned earlier, the market performance since the measurement dates has outpaced the liability growth, and we estimate that the gap between assets and liabilities has decreased to \$1.35 trillion as of June 30, 2024. As of November 30, 2024, we estimate the gap has narrowed further to \$1.22 trillion.

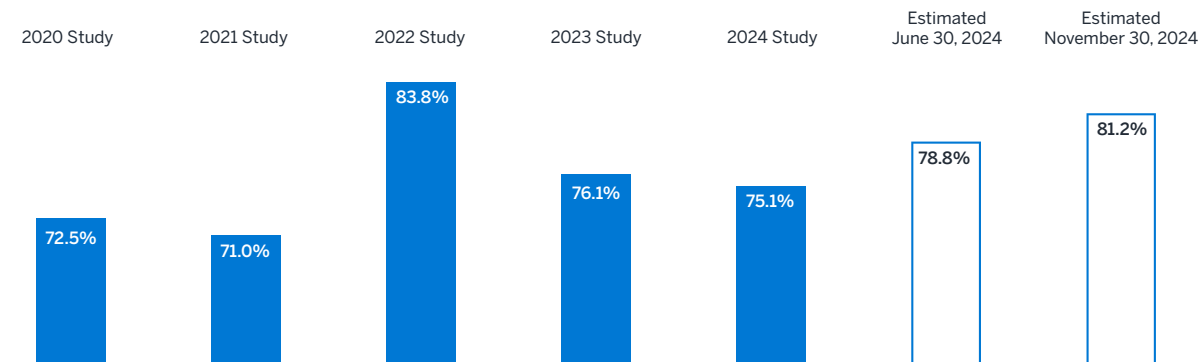
FIGURE 2: AGGREGATE PLAN-REPORTED FUNDED STATUS (\$ TRILLIONS)



Note: Yearly study results (solid bars) generally reflect measurements from one year prior.

The aggregate funded ratio reported by plan sponsors as of the most recent measurement dates declined modestly since our prior study, from 76.1% to 75.1%. With generally strong asset performance since the most recent measurement dates, we estimate that the funded ratio has subsequently recovered and climbed to 78.8% as of June 30, 2024, and further to 81.2% as of November 30, 2024.

FIGURE 3: AGGREGATE PLAN-REPORTED FUNDED RATIO



Note: Yearly study results (solid blue bars) generally reflect measurements from one year prior.

FIGURE 4: INDIVIDUAL PLAN-REPORTED FUNDED RATIOS AT MEASUREMENT DATES (SOLID BARS) AND ESTIMATED AT JUNE 30, 2024 (DOTTED LINES)

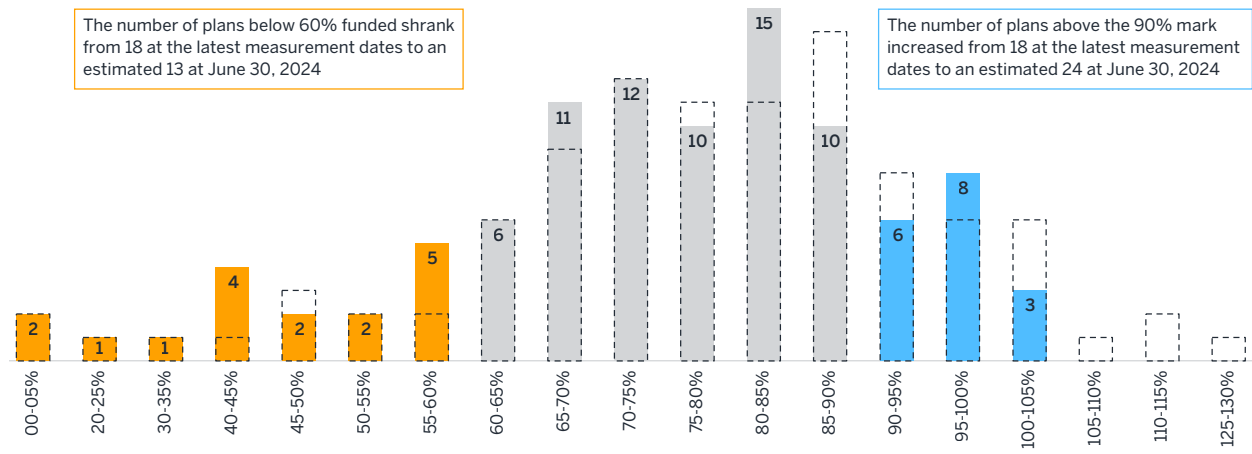
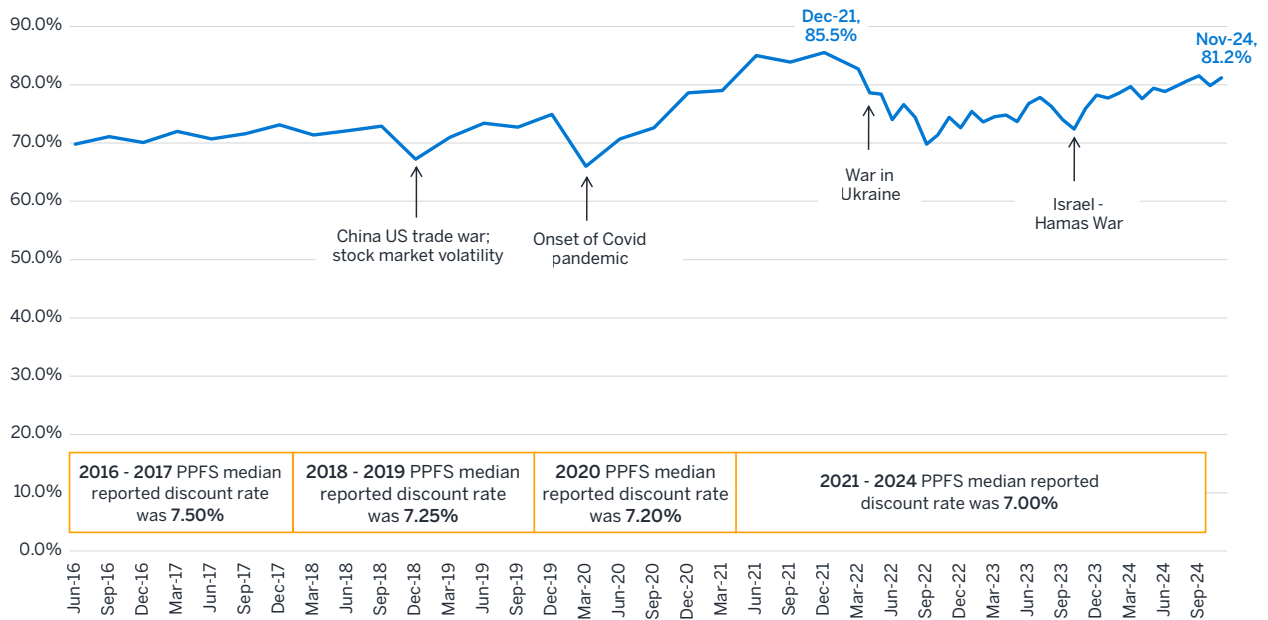


Figure 5 shows the history of the Milliman Public Pension Funding Index (PPFI) since June 2016. The median reported discount rates for our studies is noted (also shown in Figure 19 below) to illustrate the trend in relation to the PPFI and other notable global events.

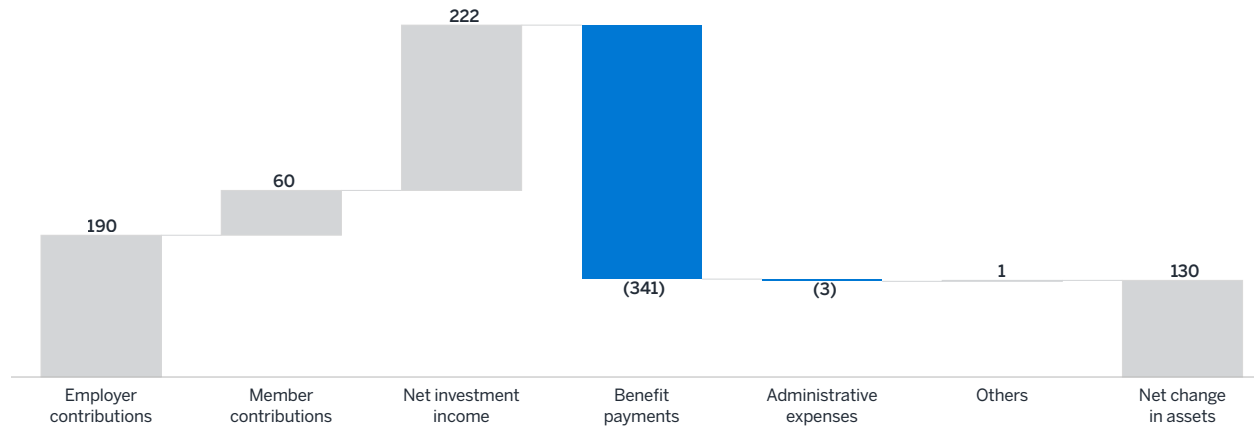
FIGURE 5: MILLIMAN PUBLIC PENSION FUNDING INDEX – FUNDED RATIO



Reported cash flows

Overall, the 100 plans reported benefit payouts totaling \$341 billion in their most recent measurement years. Reported contributions totaled \$250 billion, with \$190 billion and \$60 billion provided by employers and members, respectively. Figure 6 summarizes the change in asset balances reported by the plans in their most recent measurement years.

FIGURE 6: REPORTED CHANGE IN ASSETS, MOST RECENT MEASUREMENT YEAR (\$ BILLIONS)



We project that in the period July 2024 to June 2025 the plans will receive combined contributions from employers and members of \$266 billion and pay out a total of \$374 billion in benefits and administrative expenses, for a net cash outflow of \$108 billion. This continues a steady trend of increases in both contributions flowing into the plans *and* benefits flowing out of the plans, as shown in Figure 7. Over the period shown, the net cash outflow has remained relatively stable.

FIGURE 7: REPORTED CASH FLOWS (\$ BILLIONS)

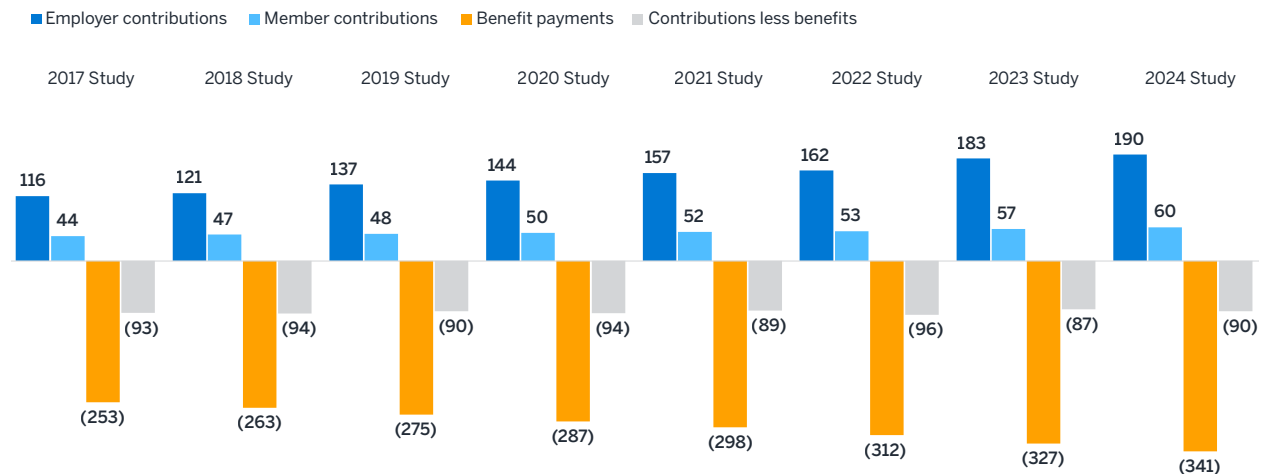
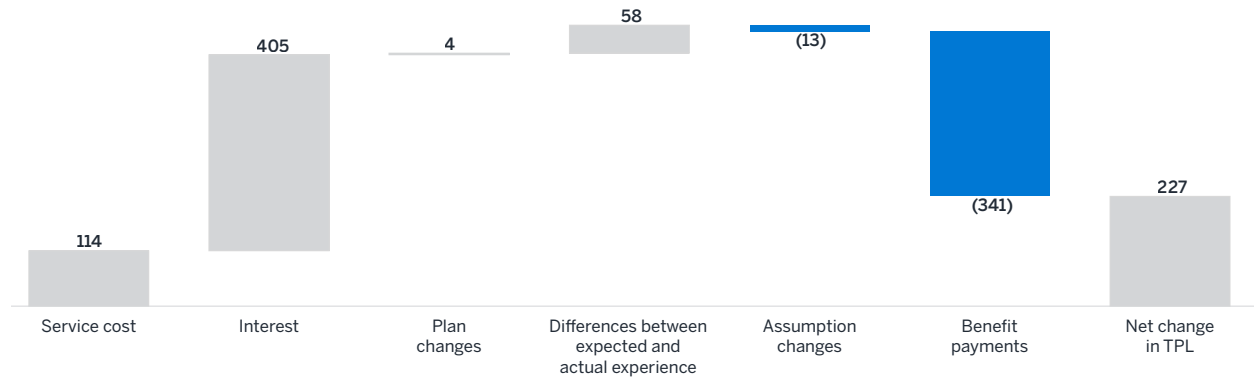


Figure 8 summarizes the change in Total Pension Liability reported by the plans in their most recent measurement years. In general, a plan’s liability is increased by service cost and interest, and reduced by benefit payments. Changes in assumptions or plan provisions can increase or decrease a plan’s liability, depending on the nature of the change.

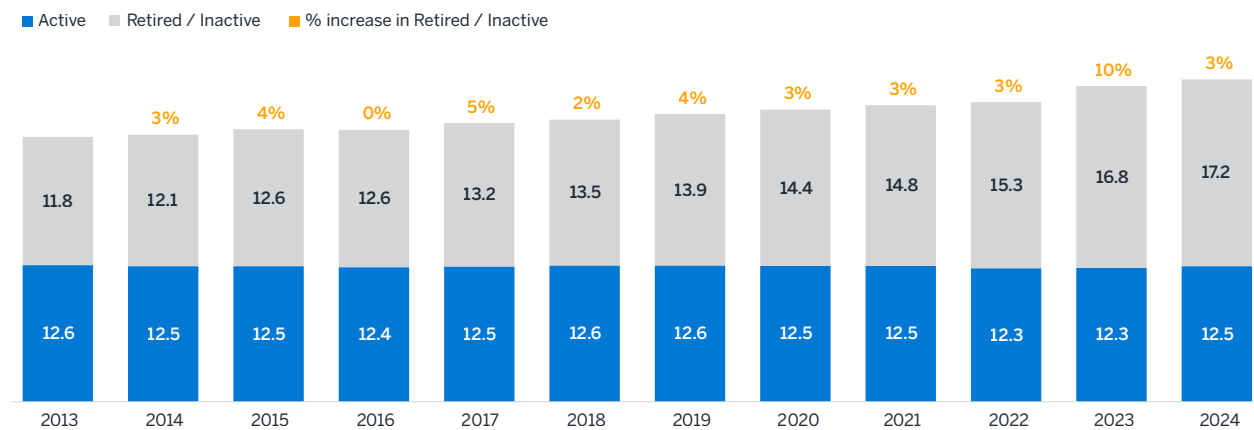
FIGURE 8: REPORTED CHANGE IN TOTAL PENSION LIABILITY, MOST RECENT MEASUREMENT YEAR (\$ BILLIONS)



Liabilities

The plans reported an aggregate Total Pension Liability of \$6.22 trillion for the 29.7 million members covered by the plans in the study. The plans continue the trend of growing more mature (that is, having relatively more retired members than active members). Figure 9 illustrates that the number of active members covered by these plans has been essentially flat for the past 12 years, while the number of retired and inactive members has increased each year.

FIGURE 9: NUMBER OF PLAN MEMBERS (MILLIONS)



The 100 public plans individually range in size of Total Pension Liability from \$12 billion to \$647 billion. Collectively, the 10 largest plans (ranked by liability) cover 36% of the total members, hold 40% of the aggregate assets, and have 39% of the aggregate liability.

FIGURE 10: COMPARISON OF PLANS RANKED BY TOTAL PENSION LIABILITY

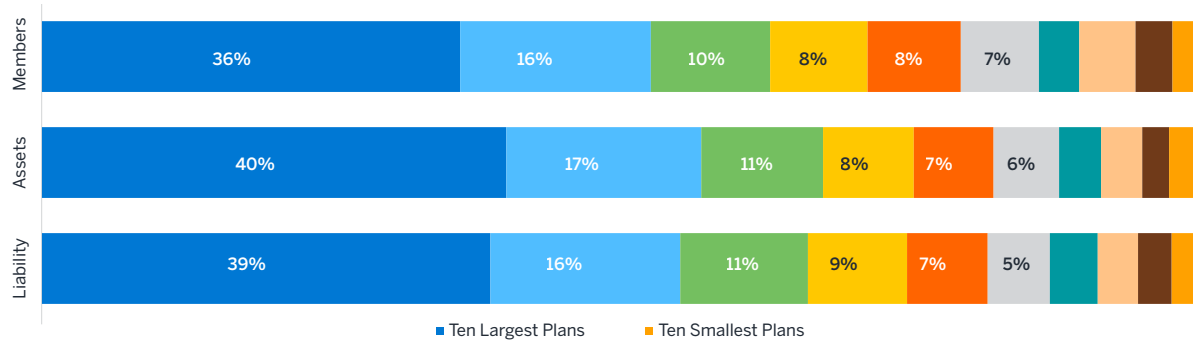
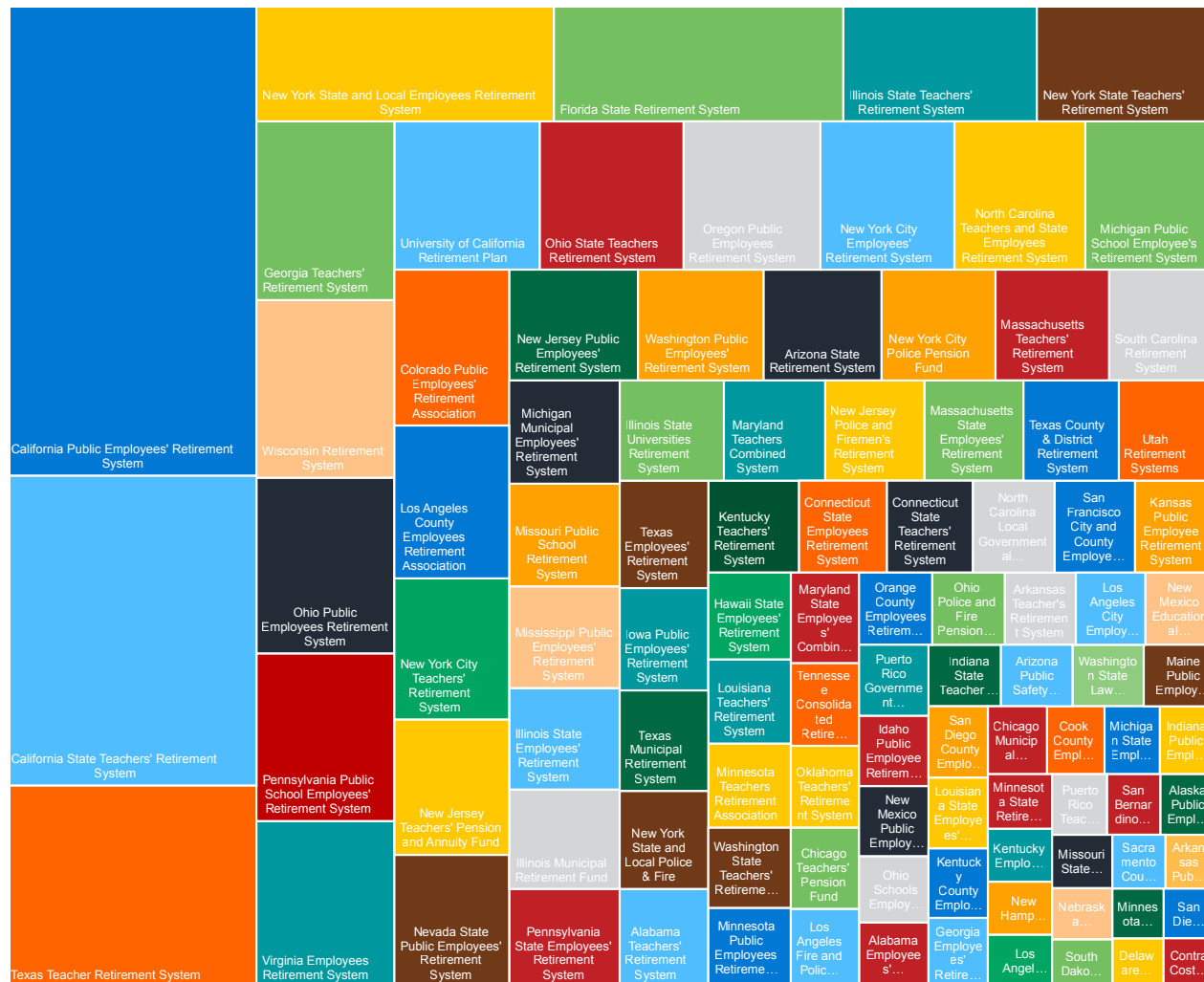


Figure 11 illustrates the relative sizes of the Total Pension Liability at their most recent measurement dates for the 100 plans in this study.

FIGURE 11: TOTAL PENSION LIABILITY (\$ BILLIONS)



Note: For plans where Total Pension Liability figures are not published on an aggregate basis, we have estimated this figure based on available data.

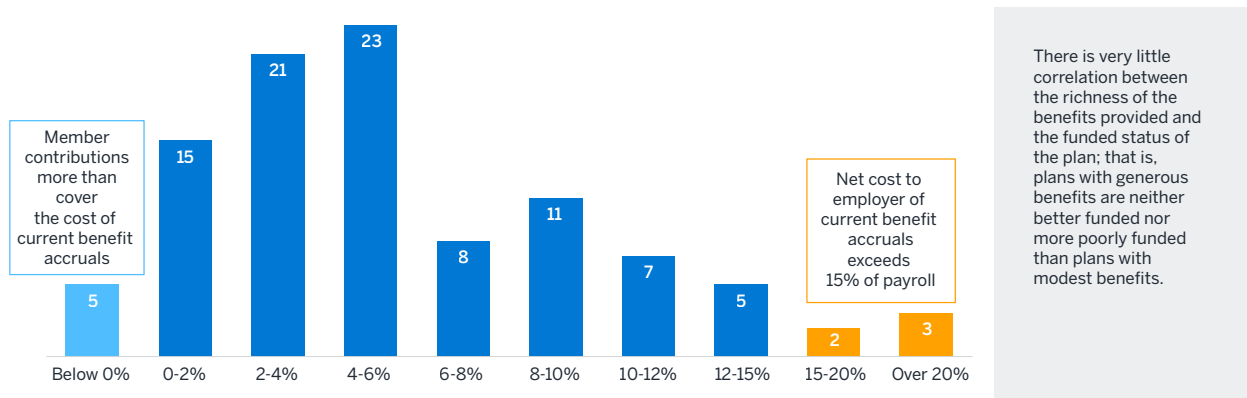
Cost of benefits earned each year

Service cost is the portion of the actuarial present value of projected benefit payments that is attributable to a given year. In other words, it is the cost to the plan to provide the benefits that active members earn by working one more year. The plans report the service cost in their Governmental Accounting Standards Board (GASB) 67/68 disclosures as a component of the change in the Total Pension Liability from one reporting date to the next.

In order to determine the relative value of pension benefits the plans provide annually to their active members, we started with each plan's reported service cost. We then subtracted out the portion of that cost that is paid for with contributions from the active members during the year. And we then divided by each plan's total payroll so that we could adjust for the relative size of a plan. The resulting metric is the net employer-paid service cost as a percentage of payroll and represents the relative richness of the pension benefits that are being paid for by the employers.

Overall, 80% of the plans provide an estimated employer-paid pension benefit in the range of 0% to 10% of payroll; the most common level of employer-paid pension benefits is 4% to 6% (23 plans). There are five plans with a negative net service cost, which means that contributions from active members more than cover the annual cost of their own annual pension accruals. On the flip side, there are five plans with a net cost of 15% of payroll or more, indicating relatively costly benefits.

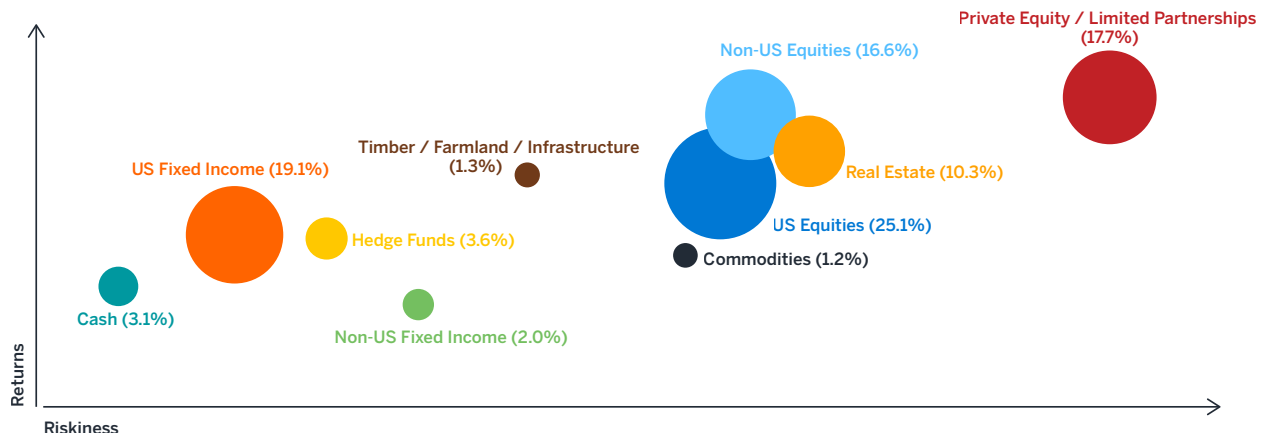
FIGURE 12: EMPLOYER-PAID NET SERVICE COST AS PERCENTAGE OF PAYROLL



Assets

The plans included in this study are invested in a mix of asset classes with different risk/return characteristics, as illustrated in Figure 13.

FIGURE 13: ASSET ALLOCATION, 2024 STUDY



Note: The expected return and riskiness metrics are based on Milliman's capital market assumptions as of June 30, 2024.

From 2013 through 2022, there was very little change in the overall asset allocation of these plans (see Figure 14), with just a modest, gradual shift from equities and fixed income to alternative investments. However, our 2023 study reflected a noticeable shift from fixed income and equities into alternative investments, specifically private equity and real estate. Our 2024 study shows there were relatively small changes from 2023 to 2024. Figure 15 provides a more detailed look at the overall asset allocation.

FIGURE 14: AGGREGATE ASSET ALLOCATIONS OVER TIME

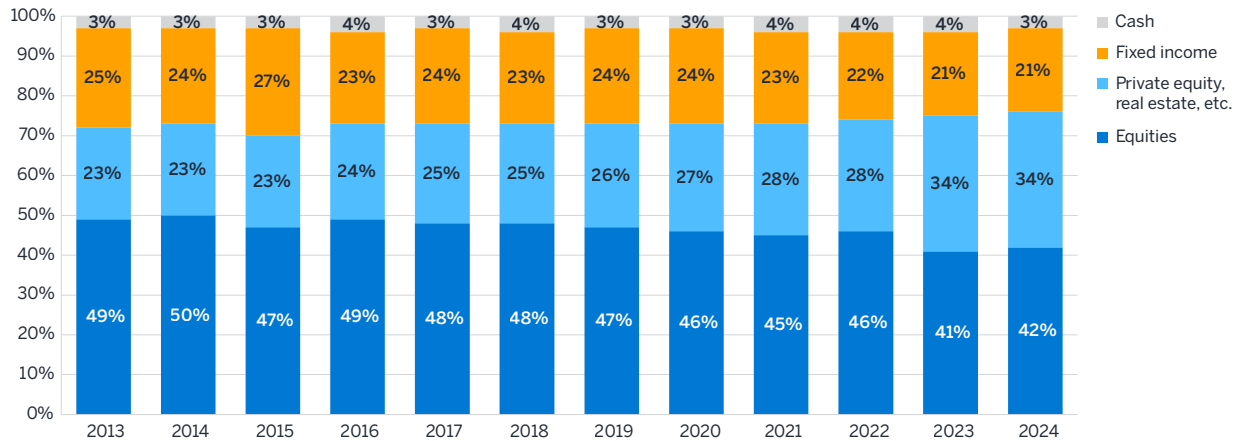
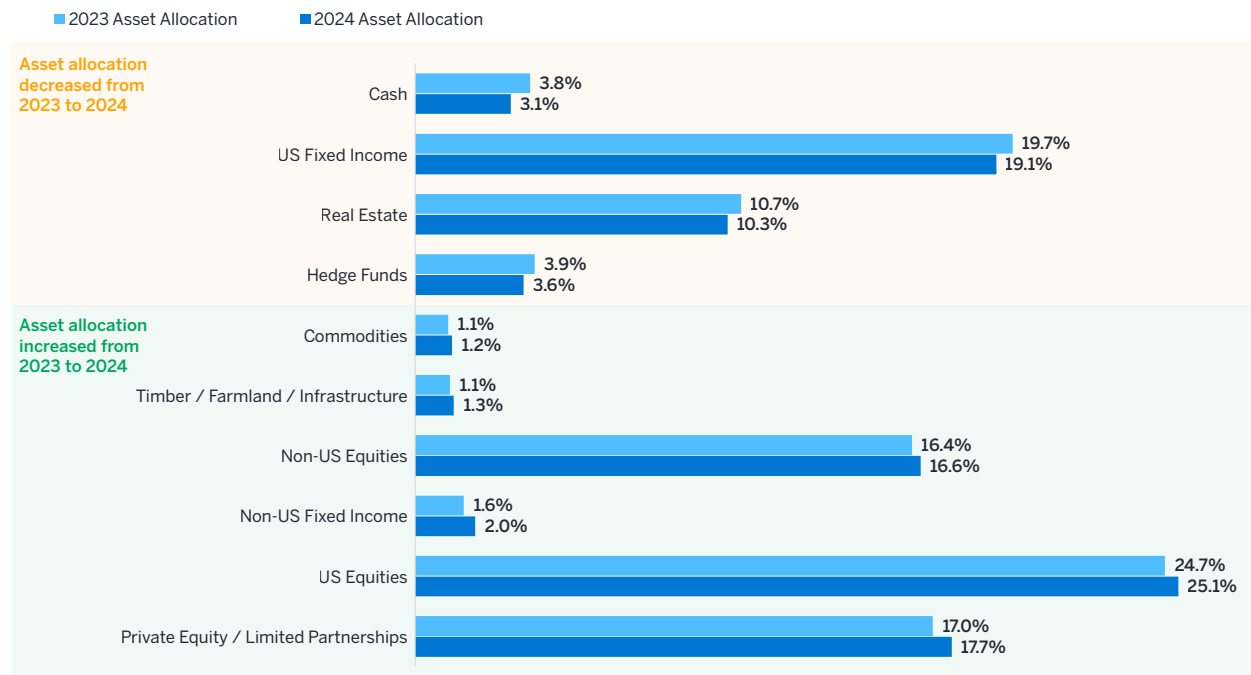
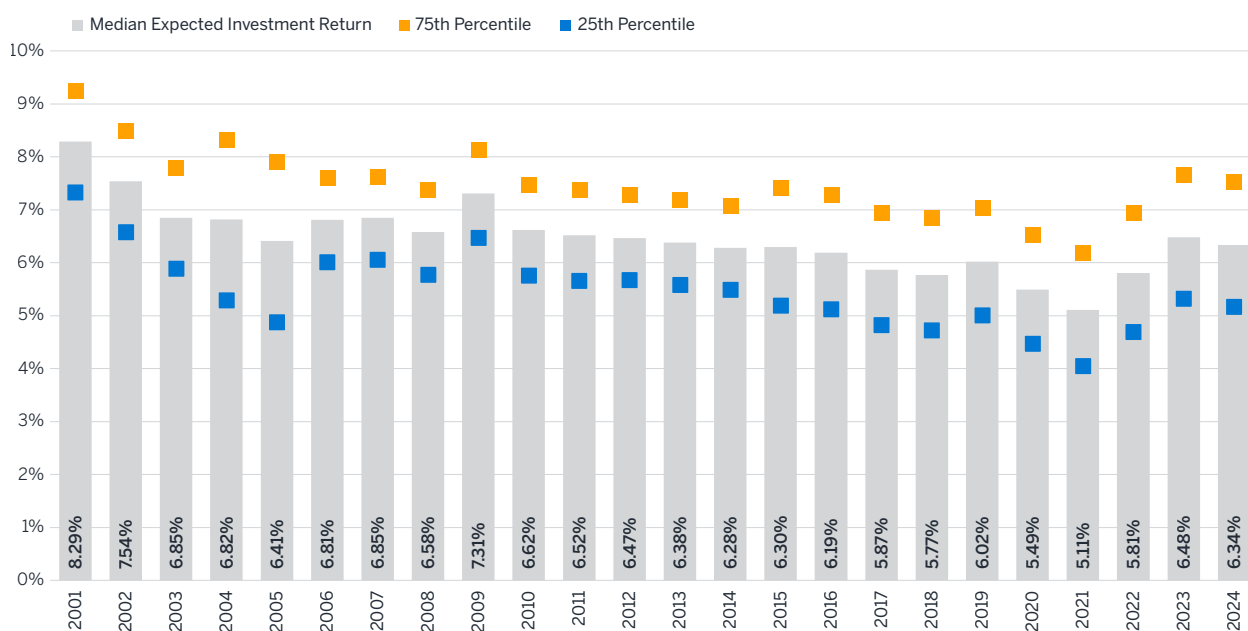


FIGURE 15: DETAILED INVESTMENT ALLOCATION 2023 VS. 2024



The market’s consensus views on long-term future investment returns have been declining since the turn of the millennium. Figure 16 illustrates this trend by showing the expected long-term future return for a hypothetical asset allocation, based on Milliman’s capital market assumptions for each year since 2000. Over this period, the median expected investment return for the illustrated hypothetical asset allocation fell from 8.29% for 2001 to a low of 5.11% at the start of 2021. From 2001 to 2024, there has been a decrease of nearly 2% in capital market expectations. Reflecting this decline, where interest rate assumptions of 8.00% were once the norm, all 100 of the plans in the study now have assumptions of 7.50% or below (one more than the 99 in the 2023 study). Just four plans lowered their assumptions from Milliman’s 2023 study to the 2024 study; all plans have lowered their assumptions at least once since our inaugural 2012 study. Since early 2021, however, the expected investment return surged upward to 5.81% at the start of 2022, to 6.48% at the start of 2023, and then has dropped slightly to 6.34% at the start of 2024.

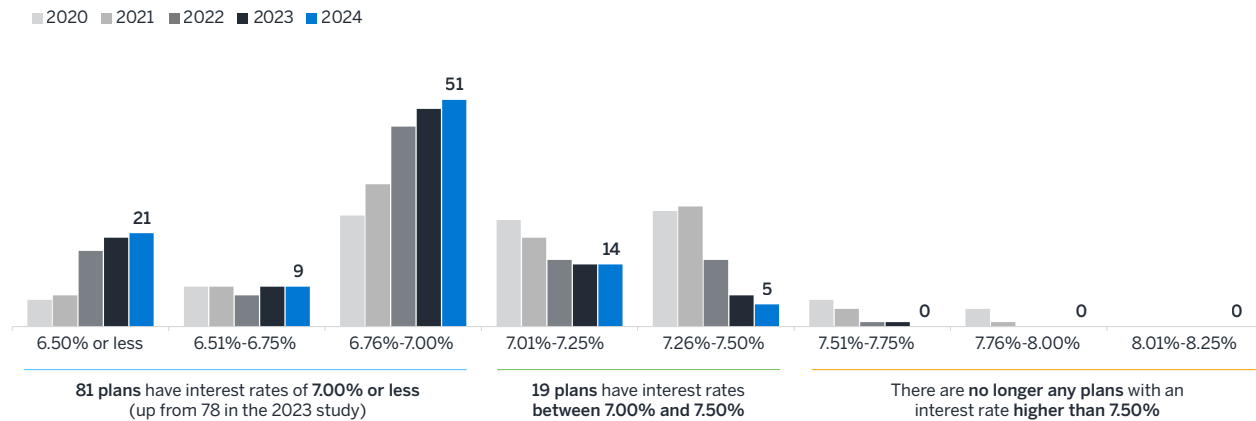
FIGURE 16: EXPECTED 30-YEAR COMPOUNDED ANNUAL RETURN FOR A HYPOTHETICAL ASSET ALLOCATION BASED ON MILLIMAN’S CAPITAL MARKET ASSUMPTIONS



Note: Hypothetical asset allocation consists of 35% broad U.S. equities, 15% developed foreign equities, 25% core fixed income, 5% high-yield bonds, 10% mortgages, 5% real estate, and 5% short-term investments; the inflation assumption is fixed at 2.5% for all years.

The terms “interest rate” and “discount rate” are often used interchangeably; both represent a rate that is used to translate future expected benefit payments into current liabilities. For this study, we use the term “interest rate” to indicate the assumption the plan has chosen to determine contribution amounts, and we use the term “discount rate” to indicate the rate that is used to measure liabilities for GASB 67/68 financial reporting purposes. Interest rates have continued to move lower each year, with a median of 7.00% and ranges from 3.50% to 7.50% (see Figure 17). For most of the plans in this study, the funding interest rate and the financial reporting discount rate are the same. However, GASB 67/68 reporting requires that the discount rate be adjusted downward in situations where current contribution policy is projected (using the GASB-mandated testing methodology) to result in a plan running out of plan assets at some future date. Such a downward adjustment currently occurs for seven of the plans in the study.

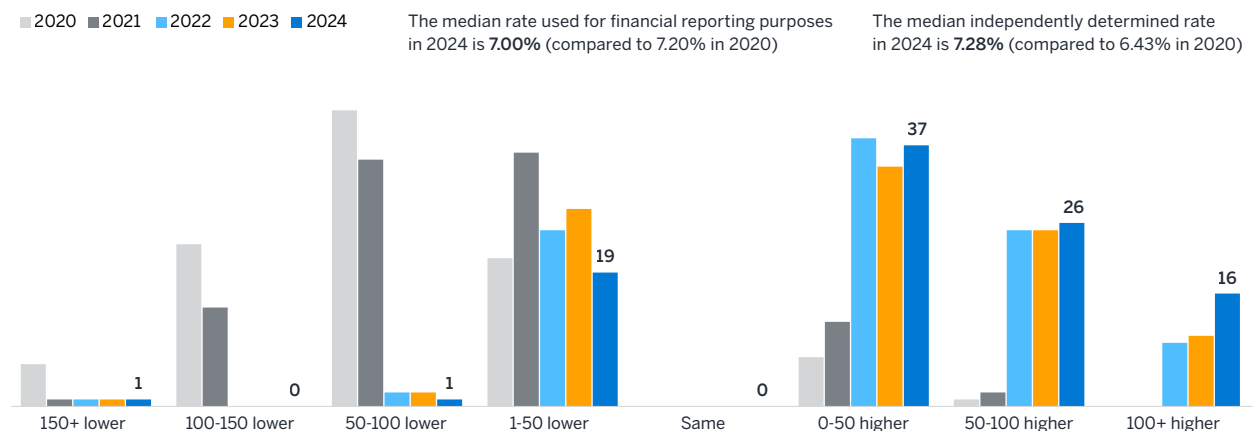
FIGURE 17: PLAN-REPORTED FUNDING INTEREST RATE



Recalibrating the Total Pension Liability

Using each plan’s specific asset allocation, we determined the 50th-percentile 30-year geometric average annual real rate of return based on Milliman’s June 30, 2024, capital market assumptions. We then applied each plan’s reported inflation assumption to arrive at our independently determined expected investment return for that plan. For purposes of the following analysis, we will use these expected returns as if they were the investment return assumptions for each plan. The median of the resulting independently determined investment return assumptions is 7.28%, which is 28 basis points higher than the 7.00% median discount rate used by the plans. Figure 18 shows that 79 of the plans have an independently determined interest rate that is higher than the reported discount rate. This continues the trend that first emerged in our 2022 study, where our independently determined investment return assumption is higher than the median reported discount rate. As discussed above, however, our independently determined figures reflect current economic conditions as of June 30, 2024, which may prove to be transitory; plan sponsors may wait until markets return to more normal levels before concluding that a change in their investment return assumption is appropriate.

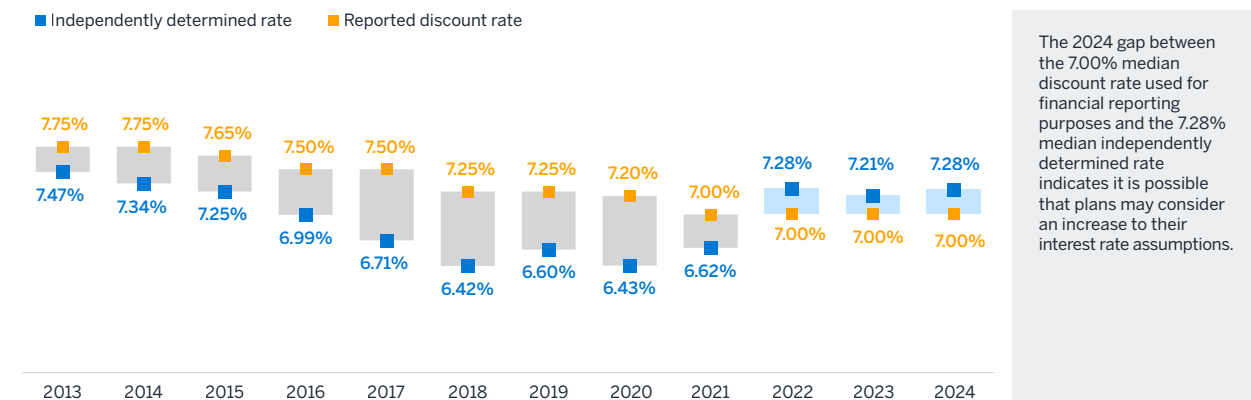
FIGURE 18: GAP BETWEEN INDEPENDENTLY DETERMINED AND PLAN-REPORTED RATES



Note: Difference shown is in basis points, so “100+ higher” indicates at least a 1.00% difference.

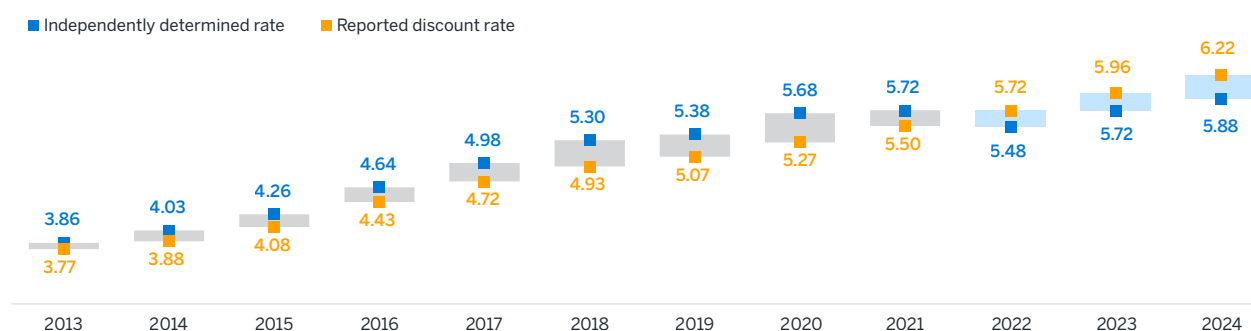
Plans periodically reassess their interest rate assumptions to ensure that they reflect updated market expectations about future investment returns. The frequency of reassessment varies by plan, with some plans reassessing annually and others using as long as five-year or six-year review cycles. As Figure 16 above illustrates, market expectations had been falling for the past two decades, but have been higher the past three years. Plans have been lowering their interest rate assumptions, but have often failed to keep pace with market expectations. For the past three years we see the reverse occurring, where plans understandably have not reacted quickly to changing market expectations. The median independently determined interest rate increased significantly from 6.62% in 2021 to 7.28% in 2022, and has remained relatively stable since then.

FIGURE 19: REPORTED VS. INDEPENDENTLY DETERMINED RATES



We used each plan’s independently determined investment return assumption to recalibrate the plan’s Total Pension Liability. In aggregate, these plans have a recalibrated Total Pension Liability of \$5.88 trillion, compared with a plan-reported Total Pension Liability of \$6.22 trillion. Similar to the gap movement in the investment return assumption analysis above, the difference in the recalibrated versus plan-reported liability has flipped such that the recalibrated plan liability is currently less than the reported plan liability.

FIGURE 20: AGGREGATE RECALIBRATION RESULTS (\$ TRILLIONS)



ASOP 51 and plan maturity measures

Actuarial Standards of Practice (ASOP) 51 directs pension actuaries to provide plan sponsors with information regarding the risks faced by pension plans. Pension actuaries in particular are directed to include metrics with respect to each plan's maturity level, because a plan's maturity affects everything from how sensitive the liability is to changes in the discount rate to asset allocation decisions to cash management and liquidity considerations. Figure 21 illustrates the range of maturity levels for the plans in this study using five of the maturity metrics discussed in ASOP 51.

Market value of assets compared to payroll: This metric, also known as the *asset volatility ratio*, helps plan sponsors anticipate the impact of investment volatility on actuarially determined contribution rates. A lower ratio means that plan assets are relatively small compared to payroll; this implies that a single-year deviation in asset performance may not move the contribution rate much. A higher ratio, on the other hand, signals that a similar single-year asset gain or loss could translate into a significant shift in the actuarially determined contribution rate. It is unsurprising that, as pension plans have accumulated assets and their member populations have matured, asset volatility rates have risen. These higher ratios mean that actuarially determined contribution rates are now more sensitive than they once were to investment volatility, despite the use of asset-smoothing methods to help mitigate the impact of market movements.

Benefit payments compared to market value of assets: This metric provides the plan sponsor with insight into managing the plan's liquidity needs. If annual benefit payouts are small relative to the overall size of plan assets, then the liquidity needs of the plan will be low and more of the assets can be invested in longer-term or less liquid holdings. However, as a plan's membership shifts to more retirees drawing monthly benefits, care is needed to ensure that cash is available to pay benefits.

Net cash flows compared to market value of assets: The liquidity pressures caused by high levels of benefit payments may be mitigated by similarly high levels of contributions flowing into the plan from employers and members. Plans with net cash flows close to zero may therefore be in better positions to invest in longer-term or less liquid holdings even though significant funds are being expended annually on benefits. Nearly all of the plans in this study have negative cash flows, meaning that benefit payments and administrative expenses exceed incoming contributions.

Benefit payments compared to employer contributions: As with the preceding two metrics, this metric helps plan sponsors understand and manage their cash flows and liquidity needs. For plans where benefit payouts are significantly higher than incoming contributions, greater attention may need to be devoted to investments that throw off higher interest or dividend income in order to meet cash flow needs.

Duration of the liability: This metric helps plan sponsors understand how sensitive their liabilities are to a change in discount rates of 100 basis points. A relatively small change in the discount rate can have a significant impact on the Total Pension Liability. A less mature plan with more active members than retirees typically has a higher sensitivity to discount rate changes than a more mature plan with a bigger retiree population. Other factors, such as automatic cost-of-living features, also come into play in determining a plan's sensitivity.

FIGURE 21: MATURITY METRICS



Methodology

This study is based on the most recently available Annual Comprehensive Financial Reports for the 100 largest public pension plans, which reflect measurement dates ranging from June 30, 2019, to December 31, 2023; 91 are from June 30, 2023, or later. For the purposes of this study, the reported asset allocation of each of the plans has been analyzed to determine an independent measure of the expected long-term median real rate of return on plan assets. The plan-reported Total Pension Liability for each plan has then been recalibrated to reflect this independently determined investment return assumption. This study therefore adjusts for differences between each plan's reported discount rate and an independently calibrated current market assessment of the expected real return based on actual asset allocations. This study is not intended to price the plans' liabilities for purposes of determining contribution amounts or near-term plan settlement purposes nor to analyze the funding of individual plans.

Financial Reporting vs. Funding

The Governmental Accounting Standards Board (GASB) sets the accounting standards for public entities. Statements No. 67 and 68 specify the financial reporting requirements for U.S. public pension plans and their participating employers. These standards require all plans to report a standardized measure of actuarial liability, referred to as the *Total Pension Liability*. The Total Pension Liability must be calculated using a uniform actuarial cost method (the individual entry age cost method), which may differ from the actuarial cost method the plan uses to determine contribution amounts. Under certain circumstances, generally when the plan is receiving a low level of funding, the discount rate used to calculate the Total Pension Liability may be lower than the investment return assumption used for funding purposes. Consequently, for some plans, the liability measurement used in determining amounts that should be contributed to fund the plan differs from the Total Pension Liability. Additionally, each plan is required to disclose how sensitive its Total Pension Liability is to changes in the discount rate.

Acknowledgements

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Study technical appendix: Methodology

EXPECTED INVESTMENT RETURN

For the purposes of this study, we recalibrated liabilities for included plans to reflect discounting at our independently calculated expected rate of return on current plan assets. To develop the expected rate of return used in these calculations, we relied on the most recently available asset statements for each plan, particularly on Statements of Plan Net Assets as disclosed in published Annual Comprehensive Financial Reports. We did not make adjustments for potential differences between actual asset allocations and target policy asset allocations.

Our method to calculate the expected rate of return was a “building-block method,” using geometric averaging methodology. We used Milliman’s June 30, 2024, capital market assumptions to calculate the 50th-percentile 30-year real rate of return, and then combined the estimated real rate of return with the plan’s inflation assumption to arrive at the total expected investment return on plan assets. Where the plan inflation assumption was not available, we used an inflation assumption of 2.50%. We did not make any adjustment to the expected rate of return for plan expenses, nor did we include any assumption for investment alpha (i.e., we did not assume any excess return over market averages resulting from active versus passive management).

LIABILITY RECALIBRATION

We performed the recalibration of liabilities for pension plans included in the study using the sensitivity information disclosed in published Comprehensive Annual Financial Reports. Where this information was not available, we made adjustments based on available information.

Appendix

PLAN-REPORTED DATA

Plan Name	Measurement Date	GASB 68 Discount Rate	Total Pension Liability (\$ millions)	Fiduciary Net Position (\$ millions)	Net Pension Liability (\$ millions)	Funded Ratio	Count of Active Members	Count of Inactive / Retired Members
Alabama Employees' Retirement System	9/30/23	7.45%	22,707	14,133	8,573	62.2%	84,697	109,329
Alabama Teachers' Retirement System	9/30/23	7.45%	43,806	27,848	15,958	63.6%	135,783	134,861
Alaska Public Employees' Retirement System	6/30/23	7.25%	16,323	11,137	5,185	68.2%	8,557	51,693
Arizona Public Safety Personnel Retirement System	6/30/23							
Arizona State Retirement System	6/30/23	7.00%	65,961	49,779	16,181	75.5%	219,830	433,034
Arkansas Public Employees Retirement System	6/30/23	7.00%	13,209	10,295	2,914	77.9%	43,352	57,523
Arkansas Teacher's Retirement System	6/30/23	7.25%	25,864	20,675	5,189	79.9%	71,387	69,001
California Public Employees' Retirement System	6/30/23							
California State Teachers' Retirement System	6/30/23	7.10%	393,080	316,919	76,161	80.6%	458,645	563,411
Chicago Municipal Employees' Annuity and Benefit Fund	12/31/23	6.75%	20,169	4,481	15,688	22.2%	36,968	28,273
Chicago Teachers' Pension Fund	6/30/23	6.33%	27,952	12,118	15,834	43.4%	31,824	34,421
Colorado Public Employees' Retirement Association	12/31/23	7.25%	90,181	60,929	29,252	67.6%	213,548	482,289
Connecticut State Employees Retirement System	6/30/22	6.90%	40,657	18,604	22,053	45.8%	47,269	60,744
Connecticut State Teachers' Retirement System	6/30/22	6.90%	39,860	21,550	18,311	54.1%	53,436	50,551
Contra Costa County Employees' Retirement Association	12/31/23	6.75%	12,404	10,809	1,595	87.1%	10,349	14,945
Cook County Employees' Annuity and Benefit Fund	12/31/23	7.00%	19,606	12,954	6,652	66.1%	18,686	38,800
Delaware State Employees' Pension Plan	6/30/23	7.00%	12,636	11,069	1,567	87.6%	38,449	35,081
Florida State Retirement System	6/30/23	6.70%	226,204	186,357	39,847	82.4%	440,134	587,194
Georgia Employees' Retirement System	6/30/23	7.00%	20,715	14,749	5,966	71.2%	54,781	128,491
Georgia Teachers' Retirement System	6/30/23	6.90%	124,515	94,991	29,524	76.3%	235,912	285,597
Hawaii State Employees' Retirement System	6/30/23	7.00%	36,225	22,425	13,799	61.9%	64,243	90,870
Idaho Public Employee Retirement System	6/30/23	6.35%	24,687	20,696	3,991	83.8%	76,668	106,754
Illinois Municipal Retirement Fund	12/31/23							
Illinois State Employees' Retirement System	6/30/23	6.59%	56,454	23,353	33,101	41.4%	61,651	111,158
Illinois State Teachers' Retirement System	6/30/23	7.00%	151,485	66,505	84,981	43.9%	169,889	278,346
Illinois State Universities Retirement System	6/30/23	6.37%	52,638	23,193	29,445	44.1%	61,509	162,304
Indiana Public Employees' Retirement Fund	6/30/23	6.25%	18,415	14,886	3,529	80.8%	119,398	134,809
Indiana State Teachers' Retirement Fund	6/30/23	6.25%	22,536	16,219	6,317	72.0%	66,344	72,940
Iowa Public Employees' Retirement System	6/30/23	7.00%	45,720	41,206	4,514	90.1%	179,903	224,221
Kansas Public Employee Retirement System	6/30/23	7.00%	36,494	25,801	10,693	70.7%	143,849	180,270
Kentucky County Employees Retirement System	6/30/23	6.25%	20,820	11,708	9,112	56.2%	88,015	197,908
Kentucky Employees Retirement Systems	6/30/23	5.33%	17,175	4,433	12,742	25.8%	35,269	117,853
Kentucky Teachers' Retirement System	6/30/23	7.10%	42,030	24,245	17,785	57.7%	75,644	70,890
Los Angeles City Employees' Retirement System	6/30/23	7.00%	25,300	17,953	7,346	71.0%	25,875	33,658
Los Angeles City Water and Power Employees' Retirement Plan	6/30/23	6.50%	17,007	16,425	582	96.6%	11,039	11,521
Los Angeles County Employees Retirement Association	6/30/23	7.13%	88,469	73,852	14,618	83.5%	96,905	93,422
Los Angeles Fire and Police Pension Plan	6/30/23	7.00%	26,801	26,437	364	98.6%	12,571	14,907

Appendix

PLAN-REPORTED DATA (CONTINUED)

Plan Name	Measurement Date	GASB 68 Discount Rate	Total Pension Liability (\$ millions)	Fiduciary Net Position (\$ millions)	Net Pension Liability (\$ millions)	Funded Ratio	Count of Active Members	Count of Inactive / Retired Members
Louisiana State Employees' Retirement System	6/30/23	7.25%	21,193	14,499	6,694	68.4%	38,414	115,165
Louisiana Teachers' Retirement System	6/30/23	7.25%	35,159	26,120	9,039	74.3%	88,527	124,932
Maine Public Employees Retirement System	6/30/23	6.50%	21,783	19,033	2,750	87.4%	53,944	62,233
Maryland State Employees' Combined System	6/30/23	6.80%	31,075	21,622	9,453	69.6%	81,181	107,751
Maryland Teachers Combined System	6/30/23	6.80%	51,308	39,421	11,886	76.8%	112,773	107,879
Massachusetts State Employees' Retirement System	6/30/23	7.00%	50,005	35,358	14,647	70.7%	87,554	74,388
Massachusetts Teachers' Retirement System	6/30/23	7.00%	63,314	37,024	26,290	58.5%	101,286	70,769
Michigan Municipal Employees' Retirement System	12/31/23							
Michigan Public School Employee's Retirement System	9/30/23	6.00%	96,112	63,723	32,389	66.3%	154,688	241,334
Michigan State Employees Retirement System	9/30/23	6.00%	18,999	13,344	5,655	70.2%	4,058	61,239
Minnesota Public Employees Police and Fire Plan	6/30/23	7.00%	12,766	11,039	1,727	86.5%	11,635	14,567
Minnesota Public Employees Retirement Association	6/30/23	7.00%	33,093	27,501	5,592	83.1%	154,261	189,301
Minnesota State Retirement System	6/30/23	7.00%	17,606	16,645	961	94.5%	52,459	66,402
Minnesota Teachers Retirement Association	6/30/23	7.00%	35,011	26,755	8,256	76.4%	84,983	129,851
Mississippi Public Employees' Retirement System	6/30/23	7.00%	56,773	31,622	25,151	55.7%	145,985	211,890
Missouri Public School Retirement System	6/30/23	7.30%	57,194	48,833	8,361	85.4%	78,437	80,342
Missouri State Employees' Plan	6/30/23	6.95%	16,191	8,558	7,633	52.9%	43,088	73,014
Nebraska Public Employees Retirement Systems School Retirement System	6/30/23	7.10%	15,648	15,230	418	97.3%	43,853	57,918
Nevada State Public Employees' Retirement System	6/30/23	7.25%	76,568	58,315	18,253	76.2%	112,019	101,951
New Hampshire Retirement System	6/30/23	6.75%	17,058	11,459	5,598	67.2%	48,589	46,869
New Jersey Police and Firemen's Retirement System	6/30/23	7.00%	50,076	32,567	17,509	65.0%	41,816	48,813
New Jersey Public Employees' Retirement System	6/30/23	7.00%	71,896	34,832	37,065	48.4%	241,151	191,699
New Jersey Teachers' Pension and Annuity Fund	6/30/23	7.00%	78,240	27,130	51,110	34.7%	160,275	113,207
New Mexico Educational Retirement Board	6/30/23	7.00%	24,946	16,262	8,684	65.2%	61,503	109,530
New Mexico Public Employees Retirement Association	6/30/23	7.25%	24,677	16,599	8,078	67.3%	46,901	70,961
New York City Employees' Retirement System	6/30/23	7.00%	100,330	82,488	17,842	82.2%	181,832	249,664
New York City Police Pension Fund	6/30/23	7.00%	63,527	54,480	9,047	85.8%	34,655	56,947
New York City Teachers' Retirement System	6/30/23	7.00%	81,613	67,934	13,679	83.2%	123,211	105,125
New York State and Local Employees Retirement System	3/31/23	5.90%	232,627	211,183	21,444	90.8%	481,547	652,764
New York State and Local Police & Fire	3/31/23	5.90%	43,835	38,325	5,510	87.4%	32,603	43,219
New York State Teachers' Retirement System	6/30/23	6.95%	138,365	137,222	1,144	99.2%	257,494	191,291
North Carolina Local Governmental Employees' Retirement System	6/30/23	6.50%	37,828	31,205	6,623	82.5%	135,706	184,284
North Carolina Teachers and State Employees Retirement System	6/30/23	6.50%	97,921	81,249	16,672	83.0%	302,293	460,839

Appendix

PLAN-REPORTED DATA (CONTINUED)

Plan Name	Measurement Date	GASB 68 Discount Rate	Total Pension Liability (\$ millions)	Fiduciary Net Position (\$ millions)	Net Pension Liability (\$ millions)	Funded Ratio	Count of Active Members	Count of Inactive / Retired Members
Ohio Police and Fire Pension Fund	12/31/23	7.50%	26,565	16,903	9,661	63.6%	30,185	31,243
Ohio Public Employees Retirement System	12/31/22	6.90%	122,419	93,114	29,305	76.1%	287,741	948,160
Ohio Schools Employees' Retirement System	6/30/23	7.00%	23,084	17,559	5,526	76.1%	159,873	88,246
Ohio State Teachers Retirement System	6/30/23	7.00%	107,783	86,248	21,535	80.0%	175,032	327,834
Oklahoma Teachers' Retirement System	6/30/23	7.00%	28,090	20,384	7,706	72.6%	100,959	99,425
Orange County Employees Retirement System	12/31/23	7.00%	26,644	21,797	4,847	81.8%	22,782	29,862
Oregon Public Employees Retirement System	6/30/23	6.90%	102,218	83,488	18,731	81.7%	183,642	215,709
Pennsylvania Public School Employees' Retirement System	6/30/23	7.00%	116,599	72,112	44,486	61.8%	250,820	276,500
Pennsylvania State Employees' Retirement System	12/31/22	6.88%	54,622	33,607	21,015	61.5%	96,395	142,835
Puerto Rico Government Employees Retirement System	6/30/22	3.54%	24,860	0	24,860	0.0%	37,439	122,253
Puerto Rico Teachers Retirement System	6/30/19	3.50%	16,802	0	16,802	0.0%	26,283	48,196
Sacramento County Employees' Retirement System	6/30/23	6.75%	14,359	12,363	1,996	86.1%	13,167	18,636
San Bernardino County Employees' Retirement Association	6/30/23	7.25%	16,444	14,071	2,373	85.6%	22,084	25,713
San Diego City Employees' Retirement System	6/30/23	6.50%	12,531	9,741	2,790	77.7%	9,651	14,279
San Diego County Employees Retirement Association	6/30/23	6.50%	21,327	15,771	5,556	73.9%	19,098	30,212
San Francisco City and County Employees' Retirement System	6/30/23	7.20%	37,333	33,688	3,644	90.2%	34,017	44,761
South Carolina Retirement System	6/30/23	7.00%	58,464	34,287	24,177	58.6%	205,985	381,085
South Dakota Retirement System	6/30/23	6.50%	14,491	14,500	(10)	100.1%	42,504	45,789
Tennessee Consolidated Retirement System	6/30/23	6.75%	28,517	29,889	(1,372)	104.8%	45,431	85,770
Texas County & District Retirement System	12/31/23							
Texas Employees' Retirement System	8/31/23	7.00%	47,992	34,050	13,943	70.9%	139,958	288,616
Texas Municipal Retirement System	12/31/23							
Texas Teacher Retirement System	8/31/23	7.00%	255,861	187,171	68,690	73.2%	953,295	1,048,679
University of California Retirement Plan	6/30/23	6.75%	108,566	88,195	20,371	81.2%	141,416	207,838
Utah Retirement Systems	12/31/23	6.85%	48,001	45,303	2,699	94.4%	100,665	142,500
Virginia Employees Retirement System	6/30/23	6.75%	115,690	98,127	17,563	84.8%	346,617	290,812
Washington Public Employees' Retirement System	6/30/23	7.00%	69,911	71,727	(1,816)	102.6%	174,120	159,082
Washington State Law Enforcement Officer's and Fire Fighters' Plan 1 and 2	6/30/23	7.00%	22,125	27,491	(5,367)	124.3%	19,314	17,694
Washington State Teachers' Retirement System	6/30/23	7.00%	33,429	32,286	1,144	96.6%	81,943	69,771
Wisconsin Retirement System	12/31/22	6.80%	123,666	118,368	5,298	95.7%	260,504	417,401