THE FUNDING OF STATE AND LOCAL PENSIONS: 2014-2018

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INTRODUCTION

The year 2014 was always going to be a pivotal one for the funded status of public pension plans because, under the old GASB 25 accounting standards, the disastrous stock market performance of 2009 rotates out of the smoothing calculations for the majority of plans that use a five-year averaging period. But 2014 also became pivotal because it was the first year that plan sponsors reported under GASB's new accounting standards for their financial disclosures. The new GASB 67 standards involve two major changes. First, assets are reported at market value rather than actuarially smoothed. Second, in cases when assets are projected to fall short of future benefits, liabilities are valued using a "blended" discount rate.

Although GASB standards apply to financial reporting only, when GASB 25 was in effect, most plans also used the same standards for funding purposes. Under GASB 67, however, plans are now using separate standards for reporting and funding. For reporting in their financial documents, all plans in our sample that have released 2014 data adopted the market valuation of assets as required by GASB 67, but only seven plans determined it necessary to use a significantly lower blended discount rate. For funding purposes (i.e. in plans' actuarial valuations), they maintained the traditional approach used under GASB 25 of using smoothed assets and expected long-run returns for discounting. This *brief* focuses on the data used in plans' actuarial valuations because they provide the basis for historical comparisons and for funding decisions.

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The discussion is organized as follows. The first section reports that the ratio of assets to liabilities for the 150 plans in the *Public Plans Database* increased from 72 percent in 2013 to 74 percent in 2014. The second section shows that the required contribution increased from 17.8 percent to 18.6 percent of payrolls, while the percentage of required contributions paid increased from 82 percent to 88 percent. The third section revalues liabilities and recalculates funded ratios using the riskless rate, as advocated by most economists for *reporting* – as opposed to funding – purposes. The fourth section projects funded ratios for our sample plans for 2015-18 under two economic scenarios. The fifth section briefly describes the information reported in the financial statements under the new GASB standards. The final section concludes that, if plans achieve their assumed returns, the public pension landscape should continue to improve over the next few years.

Funded Status in 2014

In fiscal year (FY) 2014, the estimated aggregate ratio of assets to liabilities for our sample of 150 state and local pension plans was 74 percent under GASB's old standards (see Figure 1).[1] (The ratio for each individual plan appears in the Appendix).

Figure 1. State and Local Pension Funded Ratios under GASB 25 Standards, FY 1990-2014
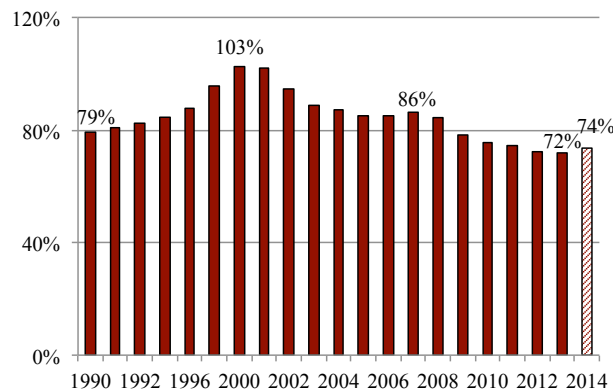
Note: 2014 involves projections for about one third of plans.
Sources: 2014 actuarial valuations; *Public Plans Database* (PPD) (2001-2014); and Zorn (1990-2000).

Because only about two thirds of our sample of 150 plans had reported their funded levels by early June 2015, the 2014 aggregate figure involves some projections. As in previous years, for those plans without 2014 valuations, assets are projected on a plan-by-plan basis using the detailed process described in the valuations.[2] This process resulted in a complete set of plan funded ratios for FY 2014. In the aggregate, the actuarial value of assets amounted to $3.2 trillion and liabilities amounted to $4.3 trillion, producing the funded ratio of 74 percent.

The funded ratio rose because asset values increased faster than liabilities. Not only was 2014 a strong year for the stock market, but the terrible 2009 performance of the market was rotated out of the smoothing calculations (see Figure 2). These two changes boosted smoothed asset values by 7 percent. Since liabilities grew by only 4.5 percent in 2014, below their historical rate of 5.6 percent, funding rose.

Figure 2. Percent Change in Wilshire 5000 Index, FY 2001-2014
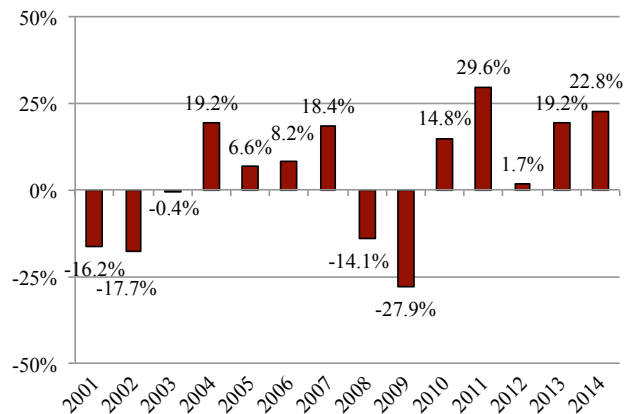
Source: Wilshire Associates (2015).

In 2014, as in earlier years, funded levels among plans varied substantially. Figure 3 on the next page shows the distribution of funding for the sample of 150 plans. Although many of the poorly funded plans are relatively small, several large plans, such as those in Illinois (SERS, Teachers, and Universities) and Connecticut (SERS), had funded levels below 50 percent.

Figure 3. Distribution of Funded Ratios for Public Plans, FY 2014
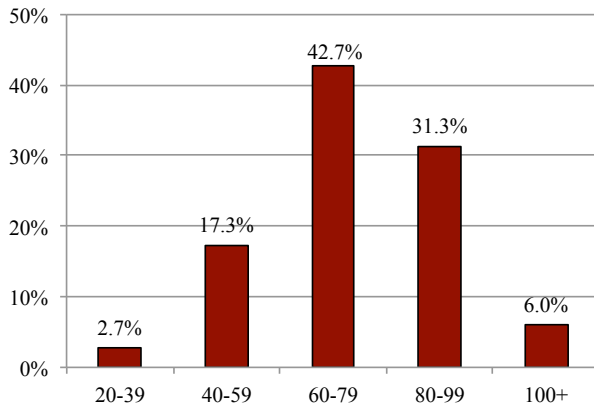
Sources: 2014 actuarial valuations; and authors' calculations from the PPD (2014).

The ADEC (Formerly the ARC)

The new GASB standards replaced the Annual Required Contribution (ARC) with the Actuarially Determined Employer Contribution (ADEC). Unlike with assets and liabilities, plans do not seem to be maintaining two sets of required-contribution numbers – one for the actuarial valuation and one for the financial statements – but rather have shifted to using the ADEC for both purposes.

While both the ARC and ADEC are meant to capture the employer's "required contribution" to keep the plan on a steady path toward full funding, the two concepts differ slightly. First, while GASB 25 limited the range of allowable assumptions and methods that could be used to calculate the ARC, GASB 67 places no limitation on the calculation of the ADEC. Second, for the few plans that use a statutory contribution rate, GASB allows for the ADEC to reflect the statutory contribution rather than an actuarially calculated contribution. While conceptually these differences could cause a discontinuity between the ARC and ADEC, in practice they do not appear to be consequential. For the plans in our database, the ARC and ADEC are nearly identical; most plans have continued to use the same methods and assumptions they became accustomed to under the old GASB standards, and the few plans with a statutory rate have continued to report an actuarially determined

contribution rather than the statutory rate. Thus, it is possible to extend our prior ARC series using the ADEC for 2014 forward.

Both the ARC and the ADEC equal the normal cost – the present value of the benefits accrued in a given year – plus a payment to amortize the unfunded liability, generally over 20-30 years. These measures have increased because the financial crisis led to higher unfunded liabilities and thereby a higher amortization component of the calculation. In 2014, the ADEC was 18.6 percent of payroll, up sharply from 2013 (see Figure 4).

Figure 4. Required Contribution as a Percentage of Payroll, FY 2001-2014
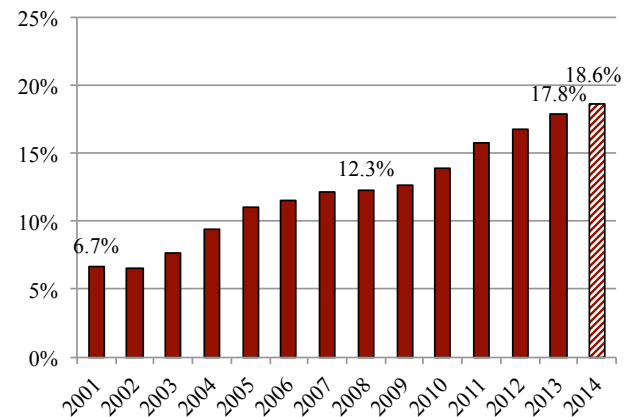
Notes: The measure for 2001-2013 is the ARC; the measure for 2014 is the ADEC. The 2014 value involves projections for about one third of plans.
Sources: 2014 actuarial valuations; and PPD (2001-2014).

The increase in required contributions over the past several years began just as the recession eroded state and local government revenues. As a result, states and localities cut back on their pension contributions. As revenues have started to recover, sponsors are paying an increasing share of their required contribution, rising to 88 percent in 2014 (see Figure 5 on the next page). Hopefully, this trend will continue as the economy improves, mirroring the pattern of decline and recovery evident in the wake of the bursting of the dot.com bubble at the turn of the century.

FIGURE 5. PERCENTAGE OF REQUIRED CONTRIBUTION PAID, FY 2001-2014
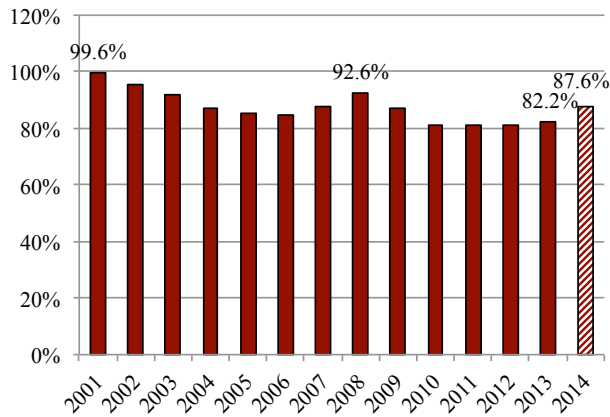
Notes: The measure for 2001-2013 is the ARC; the measure for 2014 is the ADEC. The 2014 value is authors' estimate.
Sources: 2014 actuarial valuations; and PPD (2001-2014).

LIABILITIES VALUED AT RISKLESS RATE

The funded ratios presented above reflect assets reported on an actuarially smoothed basis and a discount rate equal to the long-run expected rate of return, which has moved from around 8.0 percent to 7.6 percent in 2014 (see Figure 6). These ratios have been challenged by financial economists who argue that – *for reporting purposes* – future streams of payment should be discounted at a rate that reflects their risk.[3]

FIGURE 6. DISTRIBUTION OF DISCOUNT RATES FOR PUBLIC PLANS UNDER GASB 25, FY 2014
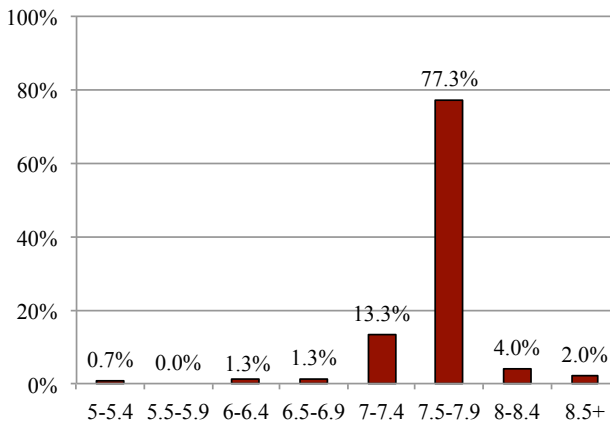
Sources: 2014 actuarial valuations; and PPD (2001-2014).

Table 1 shows the value of total liabilities and unfunded liabilities for our sample of 150 plans under different interest rates. As noted, in 2014 – calculated under a typical discount rate of 7.6 percent – the aggregate liability was $4.3 trillion and, given assets of $3.2 trillion, the unfunded liability was $1.1 trillion. A discount rate of 5 percent – a close approximation to the riskless rate – raises public sector liabilities to $6.3 trillion and the unfunded liability to $3.1 trillion.[4] In the end, required contributions to fund future benefits will depend on actual investment returns, not the discount rate used to calculate liabilities.

TABLE 1. AGGREGATE STATE AND LOCAL PENSION LIABILITIES UNDER ALTERNATIVE DISCOUNT RATES, 2014, TRILLIONS OF DOLLARS

Measure	Discount rate				
	7.6%	7%	6%	5%	4%
Total liability	$4.3	$4.9	$5.5	$6.3	$7.1
Assets	3.2	3.2	3.2	3.2	3.2
Unfunded liability	1.1	1.7	2.3	3.1	3.9

Source: Various 2014 actuarial valuations; and authors' calculations from the *Public Plans Database* (2014).

Recalculating the liabilities for each plan at 5 percent in 2014 produces a funded ratio of 51 percent: $3.2 trillion in actuarial assets compared to $6.3 trillion in liabilities. The 2014 ratio of 7.6-percent liability to 5-percent liability was applied retroactively to derive funded ratios for earlier years (see Figure 7).

FIGURE 7. STATE AND LOCAL FUNDED RATIOS WITH LIABILITIES DISCOUNTED BY RISKLESS RATE, FY 2001-2014
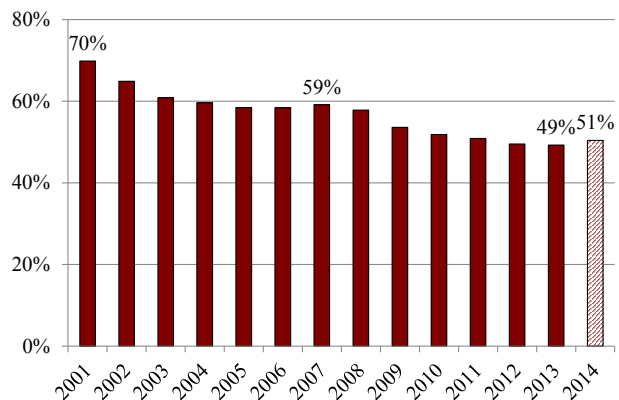
Note: Authors' estimates.
Sources: 2014 actuarial valuations; and PPD (2001-2014).

Looking Beyond 2014

Future funded levels depend on three factors: cash flows (contributions and benefits), the growth in liabilities, and the performance of the stock market. Both contributions and benefits rise slowly over time, so their average growth for the period 2015-2018 is assumed to equal their average growth over 2001-14.[5] Growth in liabilities, which will likely be restrained by the long-term benefit cutbacks enacted in recent years, is assumed to hold steady at the 2014 level of 4.5 percent.[6]

Public pensions currently hold more than half of their assets in equities and about 70 percent in risky assets. While most plans assume portfolio returns of 7.6 percent nominal (implying nominal stock returns are at least 9.6 percent), many investment firms – such as Bridgewater, Goldman Sachs, and GMO – project nominal returns for a balanced portfolio of between 4 and 5 percent.[7] To address uncertainty about the future performance of plan assets, projections are made under two scenarios. The baseline is designed to yield an overall return on portfolios close to that assumed by most plans. The alternative scenario assumes portfolio returns are 3 percent below plans' assumed return – 4.6 percent nominal.

The projected funded ratios are shown in Table 2. After 2014, if plans achieve their assumed return, funded ratios keep climbing, as asset growth continues to exceed assumed liability growth. If, instead, returns are at the lower rates predicted by the investment firms, funding grows for the next year and then levels off.

Table 2. Projected Funded Ratios for FY 2015-18 under Two Scenarios for Asset Returns

Year	Baseline	Alternative
2014 (actual)	73.7%	73.7%
2015	77.5	77.4
2016	78.6	77.8
2017	79.7	77.9
2018	80.5	77.3

Source: Authors' projections.

GASB 67

The new GASB 67 standards involve two major changes relating to the valuation of assets and liabilities used to measure reported funded ratios. First, assets are reported at market value rather than actuarially smoothed. Second, projected benefit payments are discounted by a combined rate that reflects the expected return for the portion of liabilities that is projected to be covered by plan assets and the return on high-grade municipal bonds for the portion that is to be covered by other resources.[8] It was always unclear the extent to which discount rates would really change for reporting purposes, and in fact only seven plans in our sample reduced their rates by more than 50 basis points (see Table 3).

Table 3. Plans Adopting a Significantly Lower GASB 67 Blended Rate, 2014

Plan	Rate		Funded status	
	Actuarial	GASB 67	Actuarial	GASB 67
Duluth Teachers	8.0%	5.4%	56.9%	46.8%
Kentucky Teachers	7.5	5.2	53.6	45.6
New Jersey PERS	7.9	5.4	60.9	42.7
New Jersey Police & Fire	7.9	6.3	72.6	58.9
New Jersey Teachers	7.9	4.7	54.0	33.6
Texas ERS	8.0	6.1	77.2	63.4
Texas LECOS	8.0	5.7	73.2	56.4

Note: A number of other plans, such as IL SERS and IL SURS, have reduced their rate by less than 50 basis points. *Sources*: 2014 actuarial valuations; and PPD (2014).

Even though market assets were greater than actuarially smoothed assets for some of these plans in FY 2014, lowering the discount rate reduced the funded status for all the plans. Until more is understood about the adoption of GASB 67, our updates will continue to focus on assets and liabilities reported in the actuarial valuations.

Conclusion

The year 2014 was a year of big change. A strong stock market and the elimination of 2009 from the smoothing process led to a sharp increase in actuarial assets and to the first improvement in the funded status of public sector plans since the financial crisis. What happens from here on out depends very much on the performance of the stock market. In 2018, assuming plans achieve their expected return, they should be 81 percent funded. If returns are lower, as predicted by many investment firms, funding will stabilize at about 77 percent.

2014 was also the first year that GASB's new provisions took effect for financial reporting. Under these provisions, funded ratios were based on market values, and seven plans – those with assets projected to be insufficient to cover future benefits – adopted a significantly lower blended rate to calculate liabilities. As a result, the overall ratio of assets to liabilities for these plans was lower under the new standards.

For understanding the long-term trends in plan funding, however, we believe that it makes more sense to continue to focus on the numbers calculated for funding purposes.

ENDNOTES

1 The sample represents about 90 percent of the assets in state-administered plans and 30 percent of those in plans administered at the local level.

2 For plans without published 2014 actuarial valuations, we estimated the percent change in actuarial assets between 2013 and 2014, calculated according to the plan's own methodology, and applied that change to its published 2013 GASB level of actuarial assets. Liabilities are projected based on the average rate of growth for plans already reporting. The initial estimates of assets and liabilities were then sent to the plan administrators, and any suggested alterations were incorporated.

3 The analysis of choice under uncertainty in economics and finance identifies the discount rate for riskless payoffs with the riskless rate of interest. See Gollier (2001) and Luenberger (1997). This correspondence underlies much of the current theory and practice for the pricing of risky assets and the setting of risk premiums. See Sharpe, Alexander, and Bailey (2003); Bodie, Merton, and Cheeton (2008); and Benninga (2008).

4 Just what constitutes the riskless rate is a subject of debate. See Munnell et al. (2010) for the rationale for our choice of 5 percent.

5 The focus here is on contributions, where growth remains fairly steady, rather than on the percentage of required contributions paid, which is more variable.

6 See Munnell et al. (2013). From 2001-2013, liabilities have grown an average of 5.6 percent annually. In 2013, liabilities grew by 4.1 percent in aggregate. For the 90 or so plans that did report in 2014, liabilities grew by 5.0 percent. For the remaining plans, we assume a 4-percent growth rate, resulting in aggregate liability growth of 4.5 percent for 2014.

7 GMO (2015); Goldman Sachs (2014).

8 In addition, the entry age normal/level percentage of payroll would be the sole allocation method used for reporting purposes (roughly three quarters of plans already use this method).

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APPENDIX

APPENDIX: RATIO OF ASSETS TO LIABILITIES FOR STATE/LOCAL PLANS 2001, 2004, 2007-2013, AND 2014 ESTIMATES[a]

Plan name	2001	2004	2007	2008	2009	2010	2011	2012	2013	2014
Alabama ERS	100.2	89.7	79.0	75.7	72.2	68.2	65.8	65.7	65.7	69.5 *
Alabama Teachers	101.4	89.6	79.5	77.6	74.7	71.1	67.5	66.5	66.2	70.1 *
Alameda County Employee's Retirement Association	105.8	82.1	89.2	83.9	81.2	77.5	76.6	73.9	75.9	79.2 *
Alaska PERS	100.9	70.2	77.8	78.8	63.0	62.4	61.9	57.1	54.5	57.1 *
Alaska Teachers	95.0	62.8	68.2	70.2	57.0	54.3	54.0	49.9	48.1	50.2 *
Arizona Public Safety Personnel	126.9	92.4	66.4	68.8	70.0	67.7	63.7	60.2	58.7	49.2
Arizona SRS	115.1	92.5	83.3	82.1	79.0	76.4	75.5	75.3	75.4	76.3
Arizona State Corrections Officers	140.0	104.8	84.6	90.3	86.4	83.8	76.6	70.7	66.9	57.3
Arkansas PERS	105.6	88.7	89.1	89.7	78.0	74.1	70.7	68.9	74.3	77.8
Arkansas Teachers	95.4	83.8	85.3	84.9	75.7	73.8	71.8	71.2	73.3	77.3
Boston Retirement Board[b]	70.3	63.3	67.6	59.3	60.2	63.1	61.4	61.9	59.5	60.9 *
California PERF	111.9	87.3	87.2	86.9	83.3	83.4	82.6	83.1	75.2	75.8 *
California Teachers	98.0	82.5	88.8	87.3	78.2	71.5	69.3	67.2	66.9	68.5
Chicago Municipal Employees	93.3	72.0	69.1	64.2	58.1	50.8	45.2	37.6	37.0	40.9
Chicago Police	70.5	55.9	51.5	48.3	44.5	40.4	36.2	31.3	29.7	29.2 *
Chicago Teachers	100.0	85.8	80.1	79.4	73.3	66.9	59.7	53.9	49.5	51.5
City of Austin ERS	96.4	80.8	78.3	65.9	71.8	69.6	65.8	63.9	70.4	70.9
Colorado Municipal	104.3	77.2	81.2	76.4	76.2	73.0	69.3	74.5	73.1	77.2 *
Colorado School	98.2	70.1	75.5	70.1	69.2	64.8	60.2	62.1	60.3	63.6 *
Colorado State	98.2	70.1	73.3	67.9	67.0	62.8	57.7	59.2	57.5	60.6 *
Connecticut Municipal	109.3	102.9	103.7	103.3	88.9	88.4	88.3	85.0	87.5	92.3 *
Connecticut SERS	63.1	54.5	53.6	51.9	–	44.4	47.9	42.3	41.2	41.5
Connecticut Teachers	–	65.3	–	70.0	–	61.4	–	55.2	–	59.0
Contra Costa County	87.6	82.0	89.9	88.4	83.8	80.3	78.5	70.6	76.4	79.7 *
Cook County Employees	88.9	70.9	77.3	72.6	63.2	60.7	57.5	53.5	56.6	57.5 *
Dallas Police and Fire	84.5	80.8	89.4	78.4	81.9	79.5	74.0	78.1	75.6	74.2 *
DC Police & Fire	–	–	101.0	99.8	100.7	108.0	108.6	110.1	110.1	107.3
DC Teachers	–	–	111.6	108.2	110.8	118.3	101.9	94.4	90.1	88.6
Delaware State Employees	112.4	103.0	103.7	103.1	98.8	96.0	94.0	91.5	91.1	92.3
Denver Employees	99.5	99.1	98.2	91.8	88.4	85.0	81.6	76.4	76.4	75.5 **
Denver Schools	96.5	88.2	87.7	84.3	88.3	88.9	81.5	84.0	81.2	85.7 *
Duluth Teachers	107.6	91.8	86.8	82.1	76.5	81.7	73.2	63.4	54.0	56.9
Fairfax County Schools	103.0	–	86.4	88.0	76.9	75.6	76.4	75.6	75.4	77.1 *
Florida RS	117.9	112.1	105.6	105.3	87.9	88.0	86.9	86.4	85.4	86.6
Georgia ERS	101.7	97.6	93.0	89.4	85.7	80.1	76.0	73.1	71.4	72.8 **
Georgia Teachers	103.9	100.9	94.7	91.9	89.9	85.7	84.0	82.3	81.1	81.9
Hawaii ERS	90.6	71.7	67.5	68.8	64.6	61.4	59.4	59.2	60.0	61.4
Houston Firefighters	112.9	88.2	91.1	95.6	95.4	93.4	90.6	87.0	86.6	90.4 *
Idaho PERS	97.2	91.7	105.5	93.3	73.3	78.9	90.2	84.7	85.3	93.9
Illinois Municipal	106.4	94.3	96.1	84.3	83.2	83.3	83.0	84.3	87.6	92.4 *
Illinois SERS	65.8	54.2	54.2	46.1	43.5	37.4	35.5	34.7	34.2	33.7

Plan name	2001	2004	2007	2008	2009	2010	2011	2012	2013	2014
Illinois Teachers[c]	59.5	61.9	63.8	56.0	52.1	48.4	46.5	42.1	40.6	40.6
Illinois Universities	72.1	66.0	68.4	58.5	54.3	46.4	44.3	42.1	41.5	42.3
Indiana PERF	105.0	100.1	98.2	97.5	93.1	85.2	80.5	76.6	80.2	82.4
Indiana Teachers[d]	43.0	44.8	45.1	48.2	41.9	44.3	43.8	42.7	45.7	48.1
Iowa Municipal Fire and Police	–	84.2	87.2	89.7	85.6	81.1	78.2	73.7	73.9	77.8
Iowa PERS	97.2	88.6	90.2	89.1	81.2	81.4	79.9	79.9	81.0	82.7
Kansas PERS	88.3	75.2	69.4	70.8	58.8	63.7	62.2	59.2	59.9	63.6 *
Kentucky County	141.0	101.0	80.1	77.1	70.6	65.5	62.9	60.0	59.5	61.9
Kentucky ERS	125.8	85.8	58.4	54.2	46.7	40.3	35.6	29.7	25.8	23.9
Kentucky Teachers	90.8	80.9	71.9	68.2	63.6	61.0	57.4	54.5	51.9	53.6
Kern County Employees Retirement Association	103.3	93.6	75.7	72.3	66.1	62.7	60.8	60.5	61.1	60.8
LA County ERS	100.0	82.8	93.8	94.5	88.9	83.3	80.6	76.1	75.0	79.5
Los Angeles City Employees' Retirement System	108.1	82.5	81.7	84.4	79.5	75.9	72.4	69.0	68.7	67.4
Los Angeles Fire and Police	118.9	103.0	99.2	99.1	96.2	91.6	86.3	83.7	83.1	86.6
Los Angeles Water and Power	109.9	97.3	91.9	95.1	90.0	81.5	80.3	78.1	78.8	80.9
Louisiana Municipal Police	101.1	72.9	89.1	86.9	65.2	59.9	58.1	59.8	64.2	68.1
Louisiana Schools	103.0	75.8	80.0	76.6	65.5	61.0	59.9	61.6	62.1	66.9
Louisiana SERS	74.2	59.6	67.2	67.6	60.8	57.7	57.6	55.9	60.2	59.3
Louisiana State Parochial Employees	–	93.5	96.9	96.0	96.9	97.2	97.6	86.8	92.5	99.1 *
Louisiana Teachers	78.4	63.1	71.3	70.2	59.1	54.4	55.1	55.4	56.4	57.4
Maine Local	108.2	112.1	113.6	112.7	102.5	96.3	93.5	88.8	88.4	91.2
Maine State and Teacher	73.1	68.5	74.1	74.1	67.7	66.0	77.6	77.0	77.7	81.4
Maryland PERS	102.2	91.2	79.5	77.2	63.9	62.8	62.8	62.5	63.3	65.9
Maryland Teachers	95.3	92.8	81.1	79.6	66.1	65.4	66.3	65.8	67.1	70.7
Massachusetts SRS	91.8	83.9	85.1	89.4	71.6	76.5	81.0	73.8	69.1	70.3
Massachusetts Teachers	79.2	69.6	71.0	73.9	58.2	63.0	66.3	60.7	55.7	56.3
Michigan Municipal	84.3	76.7	77.3	75.1	75.5	74.5	72.6	71.4	71.7	71.4 *
Michigan Public Schools	96.5	83.7	88.7	83.6	78.9	71.1	64.7	61.3	59.6	59.9
Michigan SERS	107.6	84.5	86.2	82.8	78.0	72.6	65.5	60.3	60.3	61.6
Milwaukee City ERS	137.2	116.7	131.2	99.1	112.8	104.4	96.0	90.8	94.8	100.8 *
Minneapolis ERF	93.3	92.1	85.9	77.0	56.7	65.6	73.5	69.1	74.4	82.0
Minnesota GERF	87.0	76.7	73.3	73.6	70.0	76.4	75.2	73.5	72.8	73.5
Minnesota Police and Fire Retirement Fund	120.5	101.2	91.7	88.4	83.2	87.0	82.9	78.3	81.2	80.0
Minnesota State Employees	112.1	100.1	92.5	90.2	85.9	87.3	86.3	82.7	82.0	83.0
Minnesota Teachers	105.8	100.0	87.5	82.0	77.4	78.5	77.3	73.0	71.6	74.1
Mississippi PERS	87.5	74.9	73.7	72.9	67.3	64.2	62.2	58.0	57.7	61.0
Missouri DOT and Highway Patrol	66.1	53.4	58.2	59.1	47.3	42.2	43.3	46.3	46.2	49.2
Missouri Local	104.0	95.9	96.1	97.5	80.0	81.0	81.6	83.5	86.5	91.7
Missouri PEERS	103.1	82.7	83.2	82.5	80.7	79.1	85.3	82.5	81.6	85.1
Missouri State Employees	97.0	84.6	86.8	85.9	83.0	80.4	79.2	73.2	72.7	75.1
Missouri Teachers	99.4	82.0	83.5	83.4	79.9	77.7	85.5	81.5	80.1	82.8

Plan name	2001	2004	2007	2008	2009	2010	2011	2012	2013	2014
Montana PERS	–	86.7	91.0	90.2	83.5	74.2	70.2	67.4	80.2	74.4
Montana Teachers	–	77.4	80.4	80.7	67.4	65.4	61.5	59.2	66.8	65.4
Nebraska Schools	87.2	87.2	90.5	90.6	86.6	82.4	80.4	76.6	77.1	82.7
Nevada Police Officer and Firefighter	78.9	71.7	71.1	70.8	68.9	67.8	68.4	70.1	71.1	74.9 *
Nevada Regular Employees	85.5	80.5	78.8	77.7	73.4	71.2	70.6	71.2	68.9	71.2 *
New Hampshire Retirement System[e]	85.0	71.1	67.0	67.8	58.3	58.5	57.4	56.1	56.7	60.7
New Jersey PERS	117.1	91.3	76.0	73.1	64.9	69.5	66.8	63.6	62.1	60.9
New Jersey Police & Fire	100.8	84.0	77.6	74.3	70.8	77.1	75.0	74.3	73.1	72.6
New Jersey Teachers	108.0	85.6	74.7	70.8	63.8	67.1	62.8	59.5	57.1	54.0
New Mexico Educational	91.9	75.4	70.5	71.5	67.5	65.7	63.0	60.7	60.1	63.1
New Mexico PERA	105.4	93.1	92.8	93.3	84.2	78.5	70.5	65.3	72.9	75.8
New York City ERS	117.4	94.5	79.0	79.7	78.6	64.2	65.0	66.3	68.4	70.6 *
New York City Fire	84.7	63.9	55.1	56.4	56.8	48.2	50.3	52.3	54.3	56.6 *
New York City Police	104.5	80.1	68.9	70.8	71.3	60.1	61.1	63.7	66.8	70.5 *
New York City Teachers	98.0	81.1	69.6	65.2	64.1	58.9	58.2	57.6	57.7	60.3 *
New York State Teachers	125.0	99.2	104.2	106.6	103.2	100.3	96.7	89.8	87.5	89.6 *
North Carolina Local Government[f]	99.3	99.3	99.5	99.5	99.6	99.5	99.6	99.8	99.8	99.8
North Carolina Teachers and State Employees[f]	112.8	108.1	106.1	104.7	99.3	95.9	95.4	94.0	94.2	94.8
North Dakota PERS	110.6	94.0	93.3	92.6	85.1	73.4	70.5	65.1	62.0	64.5
North Dakota Teachers	96.4	80.3	79.2	81.9	77.7	69.8	66.3	60.9	58.8	61.8
NY State & Local ERS	120.1	100.5	105.8	107.3	101.0	93.9	90.2	87.2	88.5	94.2 *
NY State & Local Police & Fire	132.6	104.1	106.5	108.0	103.8	96.7	91.9	87.9	89.5	95.1 *
Ohio PERS	102.6	87.6	96.3	75.3	75.3	79.1	77.4	80.9	82.4	83.8 *
Ohio Police & Fire	92.7	80.9	81.7	65.1	72.8	69.4	63.1	64.2	66.7	66.2 *
Ohio School Employees	95.0	78.1	80.8	82.0	68.4	72.6	65.2	62.8	65.3	68.1
Ohio Teachers	91.2	74.8	82.2	79.1	60.0	59.1	58.8	56.0	66.3	69.3
Oklahoma PERS	82.6	76.1	72.6	73.0	66.8	66.0	80.7	80.2	81.6	88.6
Oklahoma Police Pension and Retirement System	91.4	81.1	79.9	82.2	76.2	74.9	93.0	90.2	89.3	94.6
Oklahoma Teachers	51.4	47.3	52.6	50.5	49.8	47.9	56.7	54.8	57.2	63.2
Orange County ERS	94.7	70.9	74.1	71.3	68.8	69.8	67.0	62.5	66.0	69.2 *
Oregon PERS	97.6	97.0	110.5	112.2	80.2	85.8	86.9	82.0	90.7	95.9
Pennsylvania Municipal Retirement System	–	105.6	105.9	106.1	103.8	102.4	103.8	99.1	98.4	99.3 *
Pennsylvania School Employees	114.4	91.2	85.8	86.0	79.2	75.1	69.1	66.3	63.8	62.0
Pennsylvania State ERS	116.3	96.1	97.1	89.0	84.4	75.2	65.3	58.8	59.2	61.3 *
Philadelphia Municipal Retirement System	77.5	59.8	53.9	55.0	45.0	45.4	47.3	45.8	47.4	45.8
Phoenix ERS	102.5	84.2	83.9	79.1	75.3	69.3	66.6	62.2	64.2	58.7
Rhode Island ERS	77.6	59.4	56.2	61.5	58.5	48.4	58.8	57.8	57.3	58.7
Rhode Island Municipal	118.1	93.2	90.3	92.8	88.3	73.6	84.3	82.5	82.1	84.1
Sacramento County ERS	107.7	93.3	93.4	93.2	86.0	87.7	87.0	83.3	82.8	85.2
San Diego City ERS	89.9	65.8	78.8	78.1	66.5	67.1	68.5	68.6	70.4	74.2
San Diego County	106.8	81.1	89.7	94.4	91.5	84.3	81.5	78.7	79.0	80.9

Plan name	2001	2004	2007	2008	2009	2010	2011	2012	2013	2014
San Francisco City & County	129.0	103.8	110.2	103.8	97.0	91.1	87.7	82.6	80.6	85.3
South Carolina Police[g]	94.6	87.7	84.7	77.9	76.3	74.5	72.8	71.1	69.2	69.5 **
South Carolina RS[g]	87.4	80.3	69.7	69.3	67.8	65.5	67.4	64.7	62.5	62.7 **
South Dakota RS	96.4	97.7	97.1	97.2	91.8	96.3	96.4	92.6	100.0	100.0
St. Louis School Employees[h]	80.5	86.3	87.6	87.6	88.4	88.6	84.9	84.3	84.4	84.8 **
St. Paul Teachers	81.9	71.8	73.0	75.1	72.2	68.0	70.0	62.0	60.4	61.8
Texas County & District	89.3	91.0	94.3	88.6	89.8	89.4	88.8	88.2	89.4	95.3 *
Texas ERS	104.9	97.3	95.6	92.6	89.8	85.4	84.5	82.6	79.6	77.2
Texas LECOS	131.6	109.3	98.0	92.0	89.7	86.3	86.4	82.0	73.3	73.2
Texas Municipal	85.0	82.8	73.7	74.4	75.8	82.9	85.1	87.2	84.1	85.8
Texas Teachers	102.5	91.8	89.2	90.5	83.1	82.9	82.7	81.9	80.8	80.2
TN Political Subdivisions	90.4	–	89.5	–	86.3	–	89.1	–	95.0	94.5 *
TN State and Teachers	99.6	–	96.2	–	90.6	–	92.1	–	93.3	92.9 *
University of California	147.7	117.9	104.8	103.0	94.8	86.7	82.5	78.7	75.9	80.0
Utah Noncontributory	102.8	92.3	95.1	86.5	85.7	83.8	80.1	77.4	82.0	83.0 *
Utah Public Safety	100.8	88.3	90.7	81.6	80.6	77.1	75.4	73.0	79.3	80.4 *
Vermont State Employees	93.0	97.6	100.8	94.1	78.9	81.2	79.6	77.7	76.7	77.9
Vermont Teachers	89.0	90.2	84.9	80.9	65.4	66.5	63.8	61.6	60.5	59.9
Virginia Retirement System[i]	107.3	90.3	82.3	84.0	80.2	72.4	69.9	65.8	65.9	69.6
Washington LEOFF Plan 2	154.4	116.9	128.8	133.5	127.9	119.0	118.7	119.0	114.6	117.4 *
Washington PERS 2/3	179.1	134.4	119.9	118.7	116.3	112.7	111.6	111.3	102.3	103.0 *
Washington School Employees Plan 2/3	197.0	136.9	126.1	120.8	115.7	112.5	110.2	109.9	101.9	102.8 *
Washington Teachers Plan 2/3	197.4	152.6	130.4	125.4	118.2	115.5	113.4	114.1	104.9	107.2 *
West Virginia PERS	84.4	80.0	97.0	84.2	79.7	74.6	78.4	77.6	79.7	83.1
West Virginia Teachers	21.0	22.2	51.3	50.0	41.3	46.5	53.7	53.0	57.9	66.2
Wisconsin Retirement System	96.5	99.4	99.6	99.7	99.8	99.8	99.9	99.9	99.9	104.7 *
Wyoming Public Employees	103.2	96.0	94.0	78.6	87.5	84.6	81.9	78.6	77.6	81.0 *

Note: Municipal agency plans such as Michigan Municipal and Illinois Municipal do not have a single funded ratio, as they are made up of individual retirement systems that each maintain their own liabilities and funded ratio. For these types of plans, the funded ratios reported above represent an aggregate of assets and liabilities of the individual systems.

* Numbers are authors' estimates.   ** Received from plan administrator.

[a] Funded ratios may vary across plans because of the discount rate used to value liabilities. While the median discount rate is 7.75 percent, the rates range from 8.5 percent for Connecticut Teachers and 8.25 percent for Ohio Police and Fire, to 7.0 percent in Virginia, 6.75 percent for Indiana, and 5.5 percent in Pennsylvania Municipal.

[b] If you include the Commonwealth's share of the Boston Retirement System's actuarial liability, the plan was 59.5 percent funded in fiscal year 2014 (without the Commonwealth's share the plan was 70.2 percent funded).

[c] Through 2008, Illinois TRS funded ratio was based on the market value of assets. Beginning in 2009, the funded ratio was calculated using five-year smoothed actuarial assets.

[d] The reported funded ratios of the Indiana TRF are made up of two separately funded accounts: the pre-1996 account and the 1996 account. The pre-1996 account is for employees hired prior to 1996 and is funded under a pay-go schedule. The 1996 account is for employees hired afterwards and is pre-funded. The funded ratio for the pre-funded account is currently 96.1 percent. As expected, the pay-go account has a much lower funded ratio of 32.8 percent.

[e] Prior to 2007, the New Hampshire Retirement System used the Open Group Aggregate to calculate its funded ratio. Beginning in 2007, the entry age normal (EAN) was used.

[f] For North Carolina Local Government and North Carolina Teachers and State Employees, data are as of December 31st of the previous year. For example, the funded ratio reported for 2014 is the funded ratio as of December 31, 2013.

[g] The 2011 funded ratios for South Carolina Police and RS are calculated based on the plan design features and actuarial methods in place prior to the passing of Act 278.

[h] For St. Louis School Employees, data are as of the Jan. 1 actuarial valuation of the following calendar year. For example, the funded ratio reported for 2014 is the funded ratio as of Jan. 1, 2015.

[i] The funded ratios presented represent the "VRS" plan only for the state employees, teachers and political subdivisions. They do not reflect the information in the other plans – SPORS, JRS and VaLORS.

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