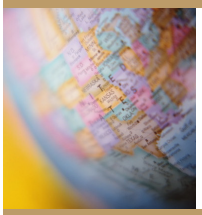


CENTER for RETIREMENT RESEARCH at BOSTON COLLEGE

State and Local Pension Plans

Number 39, June 2014

THE FUNDING OF STATE AND LOCAL PENSIONS: 2013-2017

*By Alicia H. Munnell, Jean-Pierre Aubry, and Mark Cafarelli **

Introduction

The funded status of our sample of state and local pension plans remained unchanged in 2013, despite the very strong stock market performance during the year. The main reason is that asset values are generally averaged over a five-year period (2009-2013), and these averages – which still include the disastrous returns in 2009 – increased only modestly. This is the last year, however, that asset values will be smoothed. In 2014, under the Governmental Accounting Standards Board's (GASB) new provisions, funded ratios will be based on current market values, so recent stock market performance will provide a better clue as to changes in funding. The new GASB proposals will also require some plans – those where assets are projected to be insufficient to cover future benefits – to use a lower rate to calculate liabilities. To get a sense of the impact of the transition to the new funding standards, this update reports projections for the period 2014-2017 under both the old and new GASB standards.

The discussion is organized as follows. The first section describes our expanded sample of 150 plans and reports that the ratio of assets to liabilities stayed steady at 72 percent in 2013. The second section shows that the Annual Required Contribution (ARC) increased to 17.6 percent of payrolls, while the percent of ARC paid increased to about 83 percent. These funded ratios and ARCs, however, are based on promised benefits discounted by the expected long-term yield on plan assets, roughly 7.7 percent, so the third section revalues liabilities using the riskless rate, as advocated by most economists for *reporting* purposes. The fourth section projects funded ratios for our sample plans for 2014-2017 under three alternative economic scenarios and under both the old and new GASB standards. The final section concludes that while the shift in GASB standards will make monitoring funding more difficult, the public pension landscape should improve over the next few years if financial markets do not collapse again.

**Alicia H. Munnell is director of the Center for Retirement Research at Boston College (CRR) and the Peter F. Drucker Professor of Management Sciences at Boston College's Carroll School of Management. Jean-Pierre Aubry is the assistant director of state and local research at the CRR. Mark Cafarelli is a research associate at the CRR.* *The authors wish to thank David Blitzstein and Keith Brainard for helpful comments.*

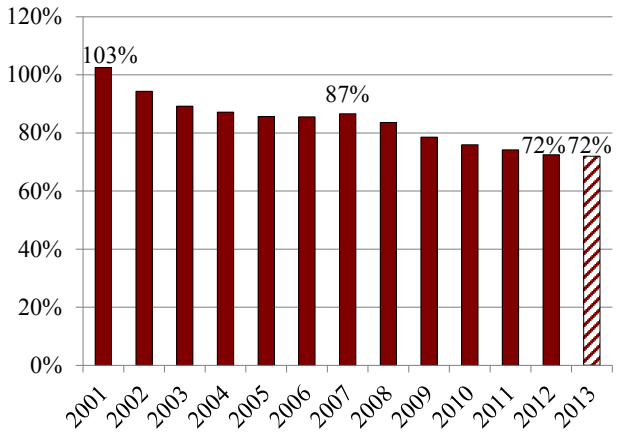
LEARN MORE →

Search for other publications on this topic at:
crr.bc.edu

Funded Status in 2013

Before reporting on the funded status for fiscal year 2013, it should be noted that the *Public Plans Database* sample has been expanded from 126 to 150 plans. The expansion involved removing three Washington State plans, which have been closed to new hires for more than 30 years, and adding 10 new state plans and 17 new local plans. The new state plans, which all have over $1.5 billion in liabilities (the size of the Vermont State ERS, the smallest state plan in the original sample of 126), increased the total number of state plans to 114. The new local plans, which tend to be large, raised the number of local plans to 36. The additional plans make up about 5 percent of the assets and 6 percent of the liabilities in the new sample of 150 plans. All the calculations reported below were carried out for both the original and expanded sample, and the results were very similar.

Figure 1. State and Local Pension Funded Ratios, FY 2001-2013



Note: 2013 involves estimates for about one-third of plans.
Sources: Various 2013 actuarial valuations; and *Public Plans Database* (PPD) (2001-2013).

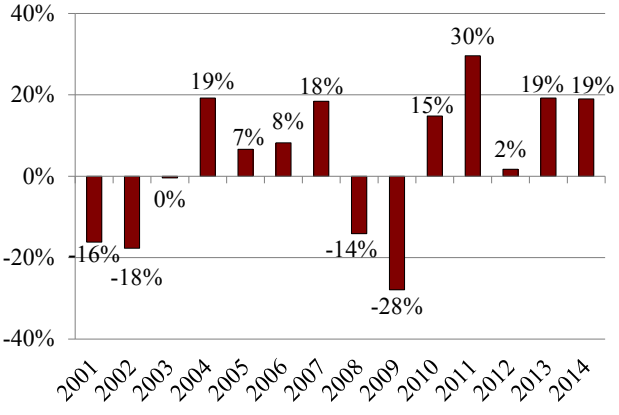
In 2013, the estimated aggregate ratio of assets to liabilities for our expanded sample was 72 percent under GASB's old standards.[1] (The ratio for each individual plan appears in the Appendix). This ratio is equal to the 2012 level, where it has hovered since the financial crisis (see Figure 1).

Because only about two-thirds of our sample of 150 plans had reported their funded levels by early May 2014, the 2013 aggregate figure involves some estimates. As in previous years, for those plans without 2013 valuations, assets and liabilities are estimated on a plan-by-plan basis.[2] This process resulted in a complete set of plan funded ratios for FY 2013. In the aggregate, the actuarial value of assets amounted to $2.9 trillion and liabilities amounted to $4.1 trillion, producing the funded ratio of 72 percent.

The reason that the funded ratio remained unchanged is twofold. First, despite the fact that the stock market surged in FY 2013 (see Figure 2) and plans hold more than half of their investments in equities, the actuarially smoothed value of plan assets increased by only 2 percent over the same period.[3] Second, CalPERS, one of the largest plans in the nation, changed its assumptions and the way it values assets, reducing its funded ratio from 83 percent in 2012 to 70 percent in 2013. If CalPERS had retained its old method, the funded ratio for our sample of 150 plans would have increased to 73 percent.

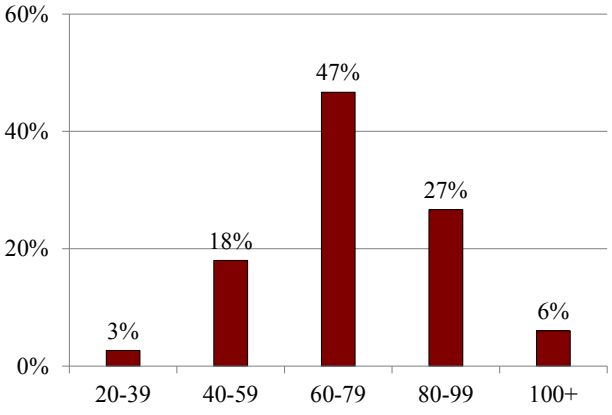
In 2013, as in earlier years, funded levels among plans vary substantially. Figure 3 (on the next page) shows the distribution of funding for the sample of 150 plans. Although many of the poorly funded plans are relatively small, several large plans, such as those in Illinois (SERS, Teachers, and Universities) and Connecticut (SERS), had funded levels below 50 percent.

Figure 2. Percent Change in Wilshire 5000 Index, FY 2001-2014



Note: Data for 2014 available through May 27, 2014.
Source: Wilshire Associates (2014).

Figure 3. Distribution of Funded Ratios for Public Plans, FY 2013

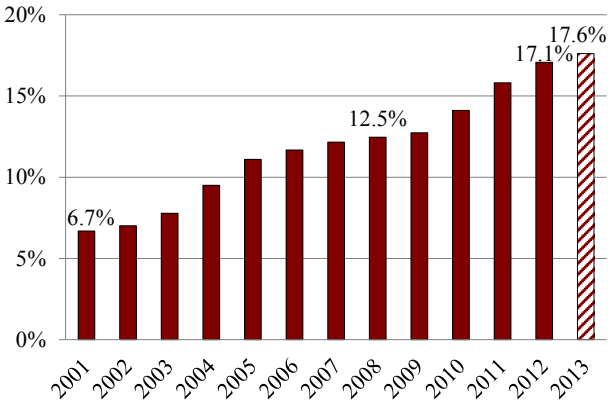


Sources: Various 2013 actuarial valuations; and authors' calculations from the PPD (2013).

The ARC

The ARC, as defined by GASB, is the payment required to keep the plan on a steady path toward full funding. (The new GASB standards, which take effect in 2014, no longer require plan sponsors to report the ARC.) The ARC equals normal cost – the present value of the benefits accrued in a given year – plus a payment to amortize the unfunded liability, generally over a 30-year period. Each year the plan sponsor reports the ratio of the employers' actual contribution to the ARC. The ARC is an extremely important metric, because as long as sponsors pay their full ARC they will not get in trouble. At a minimum, the ARC should be calculated to cover normal cost plus the interest on the unfunded liability to prevent the unfunded liability from growing.

Figure 4. Annual Required Contribution as a Percent of Payroll, FY 2001-2013

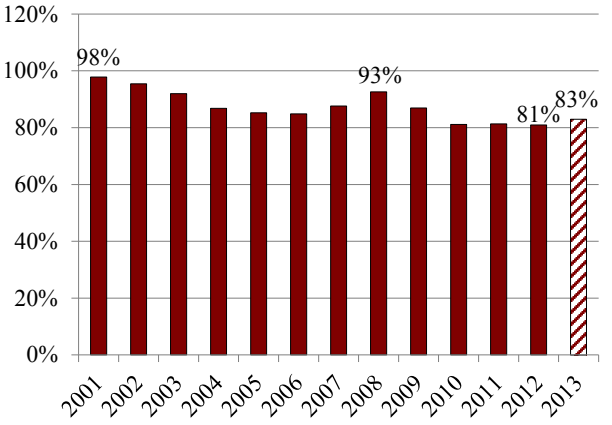


Note: 2013 involves projections for about one-third of plans.
Sources: Various 2013 actuarial valuations; and PPD (2001-2013).

The ARC has increased significantly in the last four years, primarily because the financial crisis led to higher unfunded liabilities and thereby increased the amortization component of the ARC. In 2013, the ARC was 17.6 percent of payroll, up sharply from 2012 (see Figure 4).

The increase in the ARC occurred 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 appear to be paying an increasing share of their required contribution. In 2013, they paid 83 percent of the required amount (see Figure 5). 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 in 2000-2001.

Figure 5. Percent of Annual Required Contribution Paid, FY 2001-2013



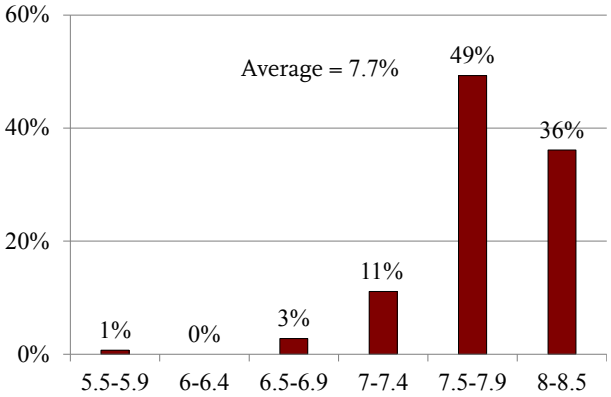
Note: 2013 is authors' estimate.
Sources: Various 2013 actuarial valuations; and PPD (2001-2013).

Liabilities at the Riskless Rate

The funded ratios presented above follow GASB's existing standards under which assets are reported on an actuarially smoothed basis and the discount rate is the long-run expected rate of return, which has

moved from around 8.0 percent to 7.7 percent in 2013 (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.[4]

Figure 6. Distribution of Discount Rates for Public Plans, FY 2013



Sources: Various 2013 actuarial valuations; and PPD (2001-2013).

Financial economists argue that if benefits are 100 percent guaranteed, the obligation must be discounted using the riskless rate. Their rationale is that the sponsor can only be sure of having enough assets in the plan to pay those guaranteed benefits by investing in riskless assets. As events have unfolded in the wake of the economic crisis, benefits have proved not to be riskless; the benefits for current workers and retirees have been reduced in several states by cutting cost-of-living adjustments. Nevertheless, core benefits will almost certainly be paid, so liabilities – for reporting purposes – should be discounted by something closer to the risk-free interest rate.[5]

Table 1 shows the value of total liabilities and unfunded liabilities for our sample of 150 plans under different interest rates. As noted, in 2013 – calculated under a typical discount rate of 7.7 percent – the aggregate liability was $4.1 trillion, assets were $2.9 trillion, and the unfunded liability was $1.1 trillion. A discount rate of 5 percent raises public sector liabilities to $5.9 trillion and the unfunded liability to $3.0 trillion. In the end, required contributions to fund future benefits will depend on actual investment returns, not the discount rate used to calculate liabilities.

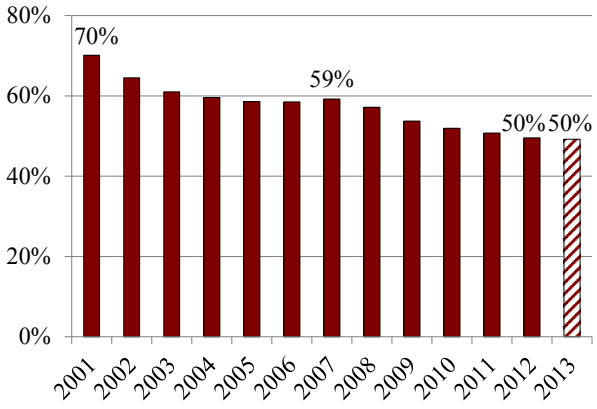
Table 1. Aggregate State and Local Pension Liabilities under Alternative Discount Rates, 2013, Trillions of Dollars

Liability	Discount rate				
	7.7%	7%	6%	5%	4%
Total	$4.1	$4.6	$5.2	$6.0	$6.8
Unfunded	1.1	1.7	2.3	3.0	3.8

Sources: Various 2013 actuarial valuations; and authors' calculations from PPD (2013).

Recalculating the liabilities for each plan at 5 percent in 2013 produces a funded ratio of 50 percent: $2.9 trillion in actuarial assets (the same value used earlier) compared to $5.9 trillion in liabilities. The 2013 ratio of 7.7-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 2001-2013



Note: Authors' estimates.
Sources: Various 2013 actuarial valuations; and PPD (2001-2013).

Preview of 2014 and Beyond

2014 was always going to be a pivotal year because, under the old GASB accounting standards, the disastrous stock market performance of 2009 rotates out of the smoothing calculations. Now 2014 will be pivotal because plan sponsors will report under GASB's new accounting standards.

The new GASB standards involve two major changes pertaining to the valuation of assets and liabilities used to measure reported funded ratios. First, assets will be reported at current market value rather than being actuarially smoothed. In 2013, market assets surpassed actuarial assets and are projected to continue to outpace actuarial assets in 2014, so the use of market assets should help funded ratios. Second, projected benefit payments will be discounted by a combined rate that reflects the expected return for the portion of liabilities that are projected to be covered by plan assets and the return on high-grade municipal bonds for the portion that are to be covered by other resources.[6] It is unclear the extent to which discount rates will really change for reporting purposes, and GASB standards are not intended for determining funding contributions. GASB's proposed combined rate requires a complicated calculation based on a number of assumptions, including future contributions from the government and from employees. Plan sponsors can easily assert that adequate contributions will be made and, therefore, assets will always be available to cover projected benefits. In this case, the relevant discount rate reverts to the plan's expected long-run rate of return.

Given the uncertainty over changes in discount rates, projections for 2014-2017 are made for three standards: old GASB; new GASB with assets at market; and new GASB with both assets at market and combined-rate discount rate.

Future funded levels (under any of the three standards) depend on four factors: the growth in contributions, the growth in 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 2014-2017 is assumed to equal their average growth over 2001-2013.[7] Growth in liabilities is assumed to hold steady at 3 percent under GASB's old standards.[8] Under the alternative scenario, in which all plans adopt a combined rate, the liability growth assumptions are also 3 percent for 2014-2017.

Public pensions currently hold more than half of their assets in equities and a total of about 70 percent in risky assets. To address uncertainty about the future performance of these assets, projections for the Dow Jones Wilshire 5000 Index are made using three sets of economic assumptions – baseline, optimistic, and pessimistic.[9] The remaining 30 percent of pension assets are assumed to yield a 3.5 percent return. The baseline was designed to yield an overall return on portfolio close to that assumed by most plans.

The projected funded ratios are shown in Table 2. Under the baseline assumption, without any adjustment to the discount rate, the 2014 reports will show funded ratios higher than 2013, given the increase in stock prices that has already occurred. The 2014 funded ratio using market assets improves the most, because the projected market return for 2014 will exceed that based on smoothed returns for the period 2010-2014. After 2014, funded ratios continue to climb as asset growth under either actuarial or market value continues to exceed assumed liability growth. Looking beyond the projection period, the picture should further improve as liability growth will likely be restrained somewhat by the long-term benefit cutbacks enacted in recent years.[10]

Table 2. Projected Funded Ratios for FY 2014-2017 under GASB's Old and New Standards

Scenario and year	GASB old	GASB new	
		Market assets	Market assets/ combined rate
2013	72.0 %	75.3 %	64.9 %
		Baseline	
2014	75.2	80.6	69.5
2015	77.4	81.6	70.4
2016	79.4	82.7	71.3
2017	81.2	83.7	72.1
		Optimistic	
2014	75.4	81.1	69.9
2015	78.2	83.7	72.1
2016	81.0	86.4	74.5
2017	84.0	89.2	76.9
		Pessimistic	
2014	75.0	80.1	69.0
2015	76.7	79.6	68.6
2016	77.8	79.0	68.1
2017	78.6	78.3	67.5

Source: Authors' projections.

Of course, the funded numbers are much lower if, in accordance with the new GASB standards, many plans adopt a combined discount rate. Such a reduction in discount rates would produce a one-shot increase in liabilities and lower funded ratios there-

after. However, as noted above, sponsors are likely to claim that they will have enough assets to cover their benefits, and therefore only the weakest plans are likely to adopt the new rates.

Conclusion

The funded status of state and local pensions has been front-page news since the collapse of financial markets in 2008. At the time, it was clear that the funded ratios of public plans would continue to decline as actuaries gradually averaged in the losses. Indeed, the funded status of public plans has remained low as the losses work their way through the averaging process, with the 2013 level the same as 2012.

2014 will be a year of big change. Just as 2009 was about to rotate out of the five-year averaging period to produce a sharp increase in actuarial assets, GASB has required sponsors to replace actuarially smoothed assets with the market value. Funded ratios may also change to the extent that sponsors with significantly underfunded plans will be forced to use a combined rate, which will be lower than the long-run expected return on assets. But our sense is that this effect will be minimal.

Regardless of the measurement standard, a continued healthy stock market will improve the funding picture in 2014. What happens thereafter depends very much on the performance of the stock market and the extent to which plans adjust their discount rates. In 2017, assuming a healthy stock market, plans should be at least 80 percent funded. The ratio will be lower if public plans widely adopt a combined rate to discount their benefit promises.

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 those plans without published 2013 actuarial valuations, we estimated the percent change in actuarial assets between 2012 and 2013, calculated according to the plan's own methodology, and applied that change to its published 2012 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 plan administrators and any suggested alterations were incorporated.

3 Another, but less significant, factor slowing asset growth is the negative cash flows that many plans are experiencing as they mature. The most recent financial reports show these negative flows to equal about 3 percent of assets in aggregate.

4 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).

5 Such an approach has been adopted by other public or semi-public plans, such as the Ontario Teachers' Pension Plan (2011) and the quasi-public defined benefit plans in the Netherlands (Ponds and van Riel, 2007). For a more detailed discussion of valuing liabilities for reporting purposes and the implications for funding and investments, see Munnell et al. (2010).

6 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).

7 The focus here is on contributions, where growth remains fairly steady, rather than on the percent of ARC paid, which is more variable.

8 Liabilities increased at an average rate of about 7 percent over the period 2001-2009. The annual rate then declined to about 4.8 percent in 2010, 4.2 percent in 2011, and 3.6 percent in 2012. For the 100 or so plans that did report in 2013, liabilities grew by only 3.0 percent.

9 Baseline: Output grows 5.00 percent per year (3.25 percent real, 1.75 percent inflation), the price/earnings (p/e) ratio is 15 at the end of 2017, and the dividend yield remains at 2 percent. Stock prices rise, on average, 5.75 percent annually, producing an average total real return on equity of 7.75 percent. Optimistic: Output grows 6.00 percent per year (3.25 percent real, 2.75 percent inflation), the p/e ratio is 16 at the end of 2017, and the dividend yield averages 1.8 percent over the four years. Stock prices rise, on average, 7.2 percent annually, producing an average real return of 9 percent. Pessimistic: Output grows 4.25 percent per year (2.75 percent real, 1.5 percent inflation), the p/e ratio is 15 at the end of 2017, and the dividend yield averages 2.2 percent. Stock prices rise, on average, 3.30 percent annually, producing an average real return of 5.80 percent.

10 Munnell et al. (2013).

References

Benninga, Simon. 2008. *Financial Modeling*. Cambridge MA: MIT Press.

Bodie, Zvi, Robert Merton, and David Cheeton. 2008. *Financial Economics*. Upper Saddle River, NJ: Prentice Hall, Inc.

Gollier, Christian. 2001. *The Economics of Risk and Time*. Cambridge, MA: MIT Press.

Luenberger, David G. 1997. *Investment Science*. Oxford: Oxford University Press.

Munnell, Alicia H., Jean-Pierre Aubry, Anek Belbase, and Josh Hurwitz. 2013. "State and Local Pension Costs: Pre-Crisis, Post-Crisis, and Post-Reform." *State and Local Plans Issue in Brief* 30. Chestnut Hill, MA: Center for Retirement Research at Boston College.

Munnell, Alicia H., Richard W. Kopcke, Jean-Pierre Aubry, and Laura Quinby. 2010. "Valuing Liabilities in State and Local Plans." *State and Local Plans Issue in Brief* 11. Chestnut Hill, MA: Center for Retirement Research at Boston College. Jointly published by the Center for State and Local Government Excellence.

Ontario Teachers' Pension Plan. 2011. *2011 Annual Report*. Toronto, Ontario.

Ponds, Eduard H. M. and Bart van Riel. 2007. "The Recent Evolution of Pension Funds in the Netherlands: The Trend to Hybrid DB-DC Plans and Beyond." Working Paper 2007-9. Chestnut Hill, MA: Center for Retirement Research at Boston College.

Public Plans Database. 2001-2013. Center for Retirement Research at Boston College, Center for State and Local Government Excellence, and National Association of State Retirement Administrators.

Sharpe, William, Gordon J. Alexander, and Jeffrey W. Bailey. 2003. *Investments*. Upper Saddle River, NJ: Prentice Hall, Inc.

Wilshire Associates. 2014. "Dow Jones Wilshire 5000 (Full Cap) Price Levels Since Inception." Available at: http://www.wilshire.com/Indexes/calculator/csv/w5kppidd.csv.

APPENDIX

Appendix. Ratio of Assets to Liabilities for State/Local Plans 2001, 2004, 2007-2012, and 2013 Estimates[a]

Plan name	2001	2004	2007	2008	2009	2010	2011	2012	2013
Alabama ERS	100.2	89.7	79.0	75.7	72.2	68.2	65.8	65.7	69.5 *
Alabama Teachers	101.4	89.6	79.5	77.6	74.7	71.1	67.5	66.5	70.4 *
Alameda County Employees	105.8	82.1	89.2	83.9	81.2	77.5	76.6	73.9	75.9
Alaska PERS	100.9	70.2	77.8	78.8	63.0	62.4	61.9	57.1	55.4 *
Alaska Teachers	95.0	62.8	68.2	70.2	57.0	54.3	54.0	49.9	47.9 *
Arizona Public Safety Personnel	126.9	92.4	66.4	68.8	70.0	67.7	63.7	60.2	58.7
Arizona SRS	115.1	92.5	83.3	82.1	79.0	76.4	75.5	75.3	75.4
Arizona State Corrections Officers	140.0	104.8	84.6	90.3	86.4	83.8	76.6	70.7	70.9 *
Arkansas PERS	105.6	88.7	89.1	89.7	78.0	74.1	70.7	68.9	74.3
Arkansas Teachers	95.4	83.8	85.3	84.9	75.7	73.8	71.8	71.2	73.3
Austin ERS	96.4	80.8	78.3	65.9	71.8	69.6	65.8	63.9	70.4
Boston Retirement Board	70.3	63.3	67.6	59.3	60.2	63.1	61.4	61.9	61.1 *
California PERF	111.9	87.3	87.2	86.9	83.3	83.4	82.6	83.1	69.6 **
California Teachers	98.0	82.5	88.8	87.3	78.2	71.5	69.3	67.2	66.9
Chicago Municipal Employees	93.3	72.0	69.1	64.2	58.1	50.8	45.2	37.6	37.0
Chicago Police	70.5	55.9	51.5	48.3	44.5	40.4	36.2	31.3	30.9 *
Chicago Teachers	100.0	85.8	80.1	79.4	73.3	66.9	59.7	53.9	53.1 *
Colorado Municipal	104.3	77.2	81.2	76.4	76.2	73.0	69.3	74.5	81.1 *
Colorado School	98.2	70.1	75.5	70.1	69.2	64.8	60.2	62.1	67.6 *
Colorado State	98.2	70.1	73.3	67.9	67.0	62.8	57.7	59.2	64.3 *
Connecticut Municipal Employees	109.3	102.9	103.7	103.3	88.9	88.4	88.3	85.0	87.5
Connecticut SERS	N/A	54.5	53.6	51.9	N/A	44.4	47.9	42.3	41.2
Connecticut Teachers	N/A	65.3	N/A	70.0	N/A	61.4	N/A	55.2	54.5 *
Contra Costa County Employees	87.6	82.0	89.9	88.4	83.8	80.3	78.5	70.6	73.1 *
Cook County Employees	88.9	70.9	85.9	79.6	69.2	66.4	62.5	58.4	61.4 *
Dallas Police & Fire	84.5	80.8	89.4	78.4	81.9	79.5	74.0	78.1	78.4 *
DC Police & Fire	N/A	N/A	101.0	99.8	100.7	108.0	108.6	110.1	110.1
DC Teachers	N/A	N/A	111.6	108.2	110.8	118.3	101.9	94.4	90.1
Delaware State Employees	112.4	103.0	103.7	103.1	98.8	96.0	94.0	91.5	91.1
Denver Employees	99.5	99.1	98.2	91.8	88.4	85.0	81.6	76.4	77.2 *
Denver Schools	96.5	88.2	87.7	84.3	88.3	88.9	81.5	84.8	92.2 *
Duluth Teachers	107.6	91.8	86.8	82.1	76.5	81.7	73.2	63.4	54.0
Fairfax County Schools	103.0	84.9	88.0	76.9	75.6	76.4	75.6	75.4	77.7 *
Florida RS[b]	117.9	112.1	105.6	105.3	87.9	88.0	86.9	86.4	85.4
Georgia ERS	101.7	97.6	93.0	89.4	85.7	80.1	76.0	73.1	71.4
Georgia Teachers	103.9	100.9	94.7	91.9	89.9	85.7	84.0	82.3	81.1 **
Hawaii ERS	90.6	71.7	67.5	68.8	64.6	61.4	59.4	59.2	60.0
Houston Firefighters	112.9	88.2	91.1	95.6	95.4	93.4	90.6	87.0	87.0 *
Idaho PERS	96.2	91.0	104.9	92.8	73.7	78.6	89.9	84.4	85.0

Plan name	2001	2004	2007	2008	2009	2010	2011	2012	2013
Illinois Municipal	106.4	94.3	96.1	84.3	83.2	83.3	83.0	84.3	87.6
Illinois SERS	65.8	54.2	54.2	46.1	43.5	37.4	35.5	34.7	34.2
Illinois Teachers[c]	59.5	61.9	63.8	56.0	52.1	48.4	46.5	42.1	40.6
Illinois Universities	72.1	66.0	68.4	58.5	54.3	46.4	44.3	42.1	41.5
Indiana PERF	105.0	100.1	98.2	97.5	93.1	85.2	80.5	76.6	80.2
Indiana Teachers[d]	43.0	44.8	45.1	48.2	41.9	44.3	43.8	42.7	45.7
Iowa Municipal Fire & Police	N/A	N/A	87.2	89.7	85.6	81.1	78.2	73.7	73.9
Iowa PERS	97.2	88.6	90.2	89.1	81.2	81.4	79.9	79.9	81.0
Kansas PERS	84.8	69.8	70.8	58.8	63.7	62.2	59.2	56.4	60.4 *
Kentucky County Employees	141.0	101.0	80.1	77.1	70.6	65.5	62.9	60.0	59.5
Kentucky ERS	125.8	85.8	58.4	54.2	46.7	40.3	35.6	29.7	25.8
Kentucky Teachers	90.8	80.9	71.9	68.2	63.6	61.0	57.4	54.5	51.9
Kern County Employees	93.6	86.1	N/A	72.3	66.1	62.7	60.8	60.5	61.1
Los Angeles City Employees	108.1	82.5	81.7	84.4	79.5	75.9	72.4	69.0	68.7
Los Angeles County ERS	100.0	82.8	93.8	94.5	88.9	83.3	80.6	76.1	75.0
Los Angeles Fire & Police	118.9	103.0	99.2	99.1	96.2	91.6	86.3	83.7	83.1
Los Angeles Water & Power Employees	109.9	97.3	91.9	95.1	90.0	81.5	80.3	78.1	78.8
Louisiana Municipal Police Employees	101.1	72.9	89.1	86.9	65.2	59.9	58.1	59.8	64.2
Louisiana School Employees	103.0	75.8	80.0	76.6	65.5	61.0	59.9	61.6	62.1
Louisiana SERS	74.2	59.6	67.2	67.6	60.8	57.7	57.6	55.9	60.2
Louisiana State Parochial Employees	N/A	93.5	96.9	96.0	96.9	97.2	97.6	99.0	109.5 *
Louisiana Teachers	78.4	63.1	71.3	70.2	59.1	54.4	55.1	55.4	56.4
Maine Local Employees	108.2	112.1	113.6	112.7	102.5	96.3	93.5	88.8	88.4
Maine State & Teacher	73.1	68.5	74.1	74.1	67.7	66.0	77.6	77.0	77.7
Maryland PERS	102.2	91.2	79.5	77.2	63.9	62.8	62.8	62.5	63.3
Maryland Teachers	95.3	92.8	81.1	79.6	66.1	65.4	66.3	65.8	67.1
Massachusetts SERS	94.0	82.8	89.4	71.6	76.5	81.0	73.8	69.1	70.3 **
Massachusetts Teachers	76.2	67.6	73.9	58.2	63.0	66.3	60.7	55.7	56.6 **
Michigan Municipal	84.3	76.7	77.3	75.1	75.5	74.5	72.6	71.4	76.4 *
Michigan Public Schools	96.5	83.7	88.7	83.6	78.9	71.1	64.7	61.3	59.6 **
Michigan SERS	107.6	84.5	86.2	82.8	78.0	72.6	65.5	60.3	60.3
Milwaukee City Employees	137.2	116.7	131.2	99.1	112.8	104.4	96.0	90.8	99.8 *
Minneapolis ERF	93.3	92.1	85.9	77.0	56.7	65.6	73.5	69.1	74.4
Minnesota PERA – General Employees	87.0	76.7	73.3	73.6	70.0	76.4	75.2	73.5	72.8
Minnesota PERA – Police & Fire	120.5	101.2	91.7	88.4	83.2	87.0	82.9	78.3	81.2
Minnesota State Employees	112.1	100.1	92.5	90.2	85.9	87.3	86.3	82.7	82.0
Minnesota Teachers	105.8	100.0	87.5	82.0	77.4	78.5	77.3	73.0	71.6
Mississippi PERS	87.5	74.9	73.7	72.9	67.3	64.2	62.2	58.0	57.7
Missouri DOT & Highway Patrol	66.1	53.4	58.2	59.1	47.3	42.2	43.3	46.3	46.2
Missouri Local Employees	104.0	95.9	96.1	97.5	80.0	81.0	81.6	83.5	86.5
Missouri PEERS	103.1	82.7	83.2	82.5	80.7	79.1	85.3	82.5	81.6

Plan name	2001	2004	2007	2008	2009	2010	2011	2012	2013
Missouri State Employees	97.0	84.6	86.8	85.9	83.0	80.4	79.2	73.2	72.7
Missouri Teachers	99.4	82.0	83.5	83.4	79.9	77.7	85.5	81.5	80.1
Montana PERS	N/A	86.7	91.0	90.2	83.5	74.2	70.2	67.4	80.2
Montana Teachers	N/A	77.4	80.4	80.7	67.4	65.4	61.5	59.2	66.8
Nebraska Schools	87.2	87.2	90.5	90.6	86.6	82.4	80.4	76.6	77.1
Nevada Police & Fire	78.9	71.7	71.1	70.8	68.9	67.8	68.4	70.1	71.1
Nevada Regular Employees	85.5	80.5	78.8	77.7	73.4	71.2	70.6	71.2	68.9
New Hampshire Retirement System[e]	85.0	71.1	67.0	67.8	58.3	58.5	57.4	56.1	56.7
New Jersey PERS	117.1	91.3	76.0	73.1	64.9	69.5	66.8	63.6	62.1
New Jersey Police & Fire	100.8	84.0	77.6	74.3	70.8	77.1	75.0	74.3	73.1
New Jersey Teachers	108.0	85.6	74.7	70.8	63.8	67.1	62.8	59.5	57.1
New Mexico PERF	105.4	93.1	92.8	93.3	84.2	78.5	70.5	65.3	72.9
New Mexico Teachers	91.9	75.4	70.5	71.5	67.5	65.7	63.0	60.7	60.1
New York City ERS	117.4	94.5	79.0	79.7	78.6	64.2	65.0	66.3	66.0*
New York City Fire Dept Article 1B	84.7	63.9	55.1	56.4	56.8	48.2	50.3	52.3	52.7
New York City Police Pension Fund Article 2	104.5	80.1	68.9	70.8	71.3	60.1	61.1	63.7	64.9*
New York City Teachers	98.0	81.1	69.6	65.2	64.1	58.9	58.2	57.6	55.6*
New York State & Local ERS	N/A	N/A	105.8	107.3	101.0	93.9	90.2	87.2	88.5**
New York State & Local Police & Fire	N/A	N/A	106.5	108.0	103.8	96.7	91.9	87.9	89.5**
New York State Teachers	N/A	N/A	104.2	106.6	103.2	100.3	96.7	89.8	87.5**
North Carolina Local Government Employees	99.3	99.3	99.5	99.6	99.5	99.6	99.8	99.8	99.8**
North Carolina Teachers & State Employees	111.6	108.1	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
North Dakota Teachers	96.4	80.3	79.2	81.9	77.7	69.8	66.3	60.9	58.8
Ohio PERS	102.6	87.6	96.3	75.3	75.3	79.1	77.4	80.9	83.8*
Ohio Police & Fire	92.7	80.9	81.7	65.1	72.8	69.4	63.1	64.2	63.1*
Ohio School Employees	95.0	78.1	80.8	82.0	68.4	72.6	65.2	62.8	65.3
Ohio Teachers	91.2	74.8	82.2	79.1	60.0	59.1	58.8	56.0	66.3
Oklahoma PERS	82.6	76.1	72.6	73.0	66.8	66.0	80.7	80.2	81.6
Oklahoma Police	N/A	81.1	79.9	82.2	76.2	74.9	93.0	90.2	89.3
Oklahoma Teachers	51.4	47.3	52.6	50.5	49.8	47.9	56.7	54.8	57.2
Orange County Employees	94.7	70.9	74.1	71.3	68.8	69.8	67.0	62.5	68.0*
Oregon PERS	106.7	96.2	112.2	80.2	85.8	86.9	82.0	90.7	96.4**
Pennsylvania Municipal Employees	N/A	105.6	105.9	106.1	103.8	102.4	103.8	104.5	104.9*
Pennsylvania School Employees	114.4	91.2	85.8	86.0	79.2	75.1	69.1	66.3	63.8
Pennsylvania State ERS	116.3	96.1	97.1	89.0	84.4	75.2	65.3	58.8	62.4*
Philadelphia Municipal Employees	77.5	59.8	53.9	55.0	45.0	45.4	47.3	45.8	47.4
Phoenix ERS	102.5	84.2	83.9	79.1	75.3	69.3	66.6	62.2	64.2
Rhode Island ERS	77.6	59.4	56.2	61.5	58.5	48.4	58.8	57.8	57.3
Rhode Island Municipal Employees	118.1	93.2	90.3	92.8	88.3	73.6	84.3	82.5	82.1
Sacramento County Employees	107.7	93.3	93.4	93.2	86.0	87.7	87.0	83.3	82.8

Plan name	2001	2004	2007	2008	2009	2010	2011	2012	2013
San Diego City Employees	89.9	65.8	78.8	78.1	66.5	67.1	68.5	68.6	70.4
San Diego County Employees	106.8	81.1	89.7	94.4	91.5	84.3	81.5	78.7	79.0
San Francisco City & County Employees	129.0	103.8	110.2	103.8	97.0	91.1	87.7	82.6	80.6
South Carolina Police[f]	94.6	87.7	84.7	77.9	76.3	74.5	72.8	71.1	69.2
South Carolina RS[f]	87.4	80.3	69.7	69.3	67.8	65.5	67.4	64.7	62.5
South Dakota PERS	96.4	97.7	97.1	97.2	91.8	96.3	96.4	92.6	100.0
St. Louis School Employees	80.5	86.3	87.6	87.6	88.4	88.6	84.9	84.3	80.5*
St. Paul Teachers	81.9	71.8	73.0	75.1	72.2	68.0	70.0	62.0	60.4
Tennessee Political Subdivisions	90.4	N/A	89.5	N/A	86.3	N/A	89.1	N/A	95.0
Tennessee State & Teachers	99.6	N/A	96.2	N/A	90.6	N/A	92.1	N/A	93.3
Texas County & District Employees	89.3	91.0	94.3	88.6	89.8	89.4	88.8	88.2	89.4**
Texas ERS	104.9	97.3	95.6	92.6	89.8	85.4	84.5	82.6	79.6
Texas LECOS	131.6	109.3	98.0	92.0	89.7	86.3	86.4	82.0	73.3
Texas Municipal	85.0	82.8	73.7	74.4	75.8	82.9	85.1	87.2	89.1**
Texas Teachers	102.5	91.8	89.2	90.5	83.1	82.9	82.7	81.9	80.8
University of California	147.7	117.9	104.8	103.0	94.8	86.7	82.5	78.7	75.9
Utah Noncontributory	102.8	92.3	95.1	86.5	85.7	83.8	80.1	77.4	79.4*
Utah Public Safety	100.8	88.3	90.7	81.6	80.6	77.1	75.4	73.0	74.8*
Vermont State Employees	93.0	97.6	100.8	94.1	78.9	81.2	79.6	77.7	76.7
Vermont Teachers	89.0	90.2	84.9	80.9	65.4	66.5	63.8	61.6	60.5
Virginia Retirement System[g]	107.3	90.3	82.3	84.0	80.2	72.4	69.9	65.8	65.9
Washington LEOFF Plan 2	154.4	116.9	128.8	133.5	127.9	119.0	118.7	119.0	117.7**
Washington PERS 2/3	179.1	134.4	119.9	118.7	116.3	112.7	111.6	111.3	107.8**
Washington School Employees Plan 2/3	197.0	136.9	126.1	120.8	115.7	112.5	110.2	109.9	106.2**
Washington Teachers Plan 2/3	197.4	152.6	130.4	125.4	118.2	115.5	113.4	114.1	110.3**
West Virginia PERS	84.4	80.0	97.0	84.2	79.7	74.6	78.4	77.6	79.7
West Virginia Teachers	21.0	22.2	51.3	50.0	41.3	46.5	53.7	53.0	57.9
Wisconsin Retirement System	96.5	99.4	99.6	99.7	99.8	99.8	99.9	99.9	104.2*
Wyoming Public Employees	103.2	96.0	94.0	78.6	87.5	84.6	81.9	78.6	91.0*

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 average discount rate is 7.7 percent, the rates range from 8.5 percent for Connecticut Teachers and 8.25 percent for Ohio Police & Fire to 7.0 percent in New York City, 6.75 percent in Indiana, and 5.5 percent for Pennsylvania Municipal Retirement System.
[b] The reported funded ratios for Florida in 2009 and 2010 reflect pension legislation passed just after the valuation for each year was performed. Funded ratios for 2009 and 2010 – as originally determined – were 87.1 and 86.6, respectively.
[c] Through 2008, the Illinois Teachers plan 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 Teachers plan 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 93.8 percent. As expected, the pay-go account has a much lower funded ratio of 31.8 percent.
[e] Prior to 2007, the New Hampshire Retirement System used the Open Group Aggregate method to calculate its funded ratio. Beginning in 2007, the entry age normal method was used.
[f] 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.
[g] 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.

About the Center

The mission of the Center for Retirement Research at Boston College is to produce first-class research and educational tools and forge a strong link between the academic community and decision-makers in the public and private sectors around an issue of critical importance to the nation's future. To achieve this mission, the Center sponsors a wide variety of research projects, transmits new findings to a broad audience, trains new scholars, and broadens access to valuable data sources. Since its inception in 1998, the Center has established a reputation as an authoritative source of information on all major aspects of the retirement income debate.

Affiliated Institutions

The Brookings Institution
Massachusetts Institute of Technology
Syracuse University
Urban Institute

Contact Information

Center for Retirement Research
Boston College
Hovey House
140 Commonwealth Avenue
Chestnut Hill, MA 02467-3808
Phone: (617) 552-1762
Fax: (617) 552-0191
E-mail: crr@bc.edu
Website: http://crr.bc.edu

The CRR gratefully acknowledges the Center for State and Local Government Excellence for its support of this research. The Center for State and Local Government Excellence (http://www.slge.org) is a proud partner in seeking retirement security for public sector employees, part of its mission to attract and retain talented individuals to public service. The opinions and conclusions expressed in this *brief* are solely those of the authors and do not represent the opinions or policy of the CRR or the Center for State and Local Government Excellence.