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Oklahoma State Pension Commission

Public Fund Trends

November 18, 2015

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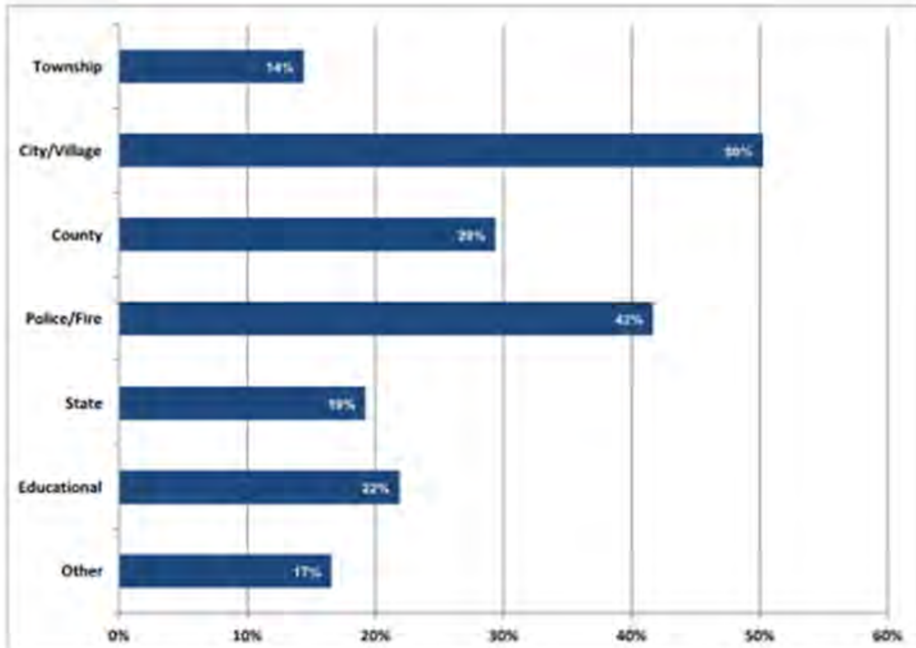
Respondents

Who Responded

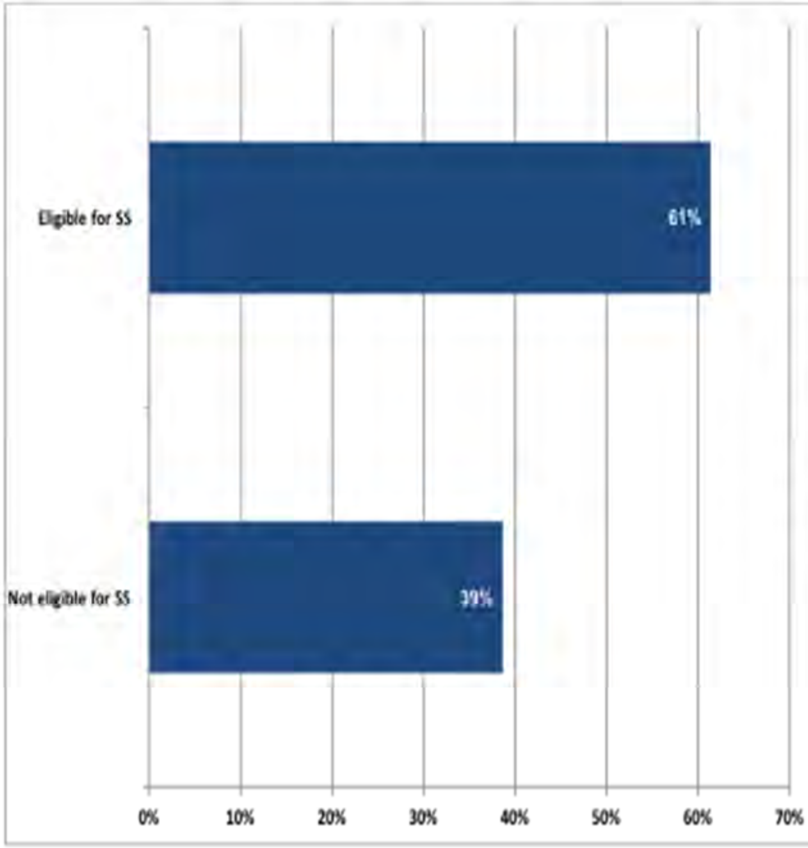
For the 2014 study, 187 respondents provided feedback to NCPERS using the most recently available data.

61 percent of responding funds are members of NCPERS. 50 percent serve city and village jurisdictions. About 40 percent of the responding funds serve police and fire employees. The graph to the right shows the 2014 distribution of jurisdictions that the funds serve (totals may exceed 100 percent because of multiple response).

The overall distribution of responding funds is similar to 2011, 2012 and 2013; however, there was a 6 percent increase in the number funds serving educational entities.

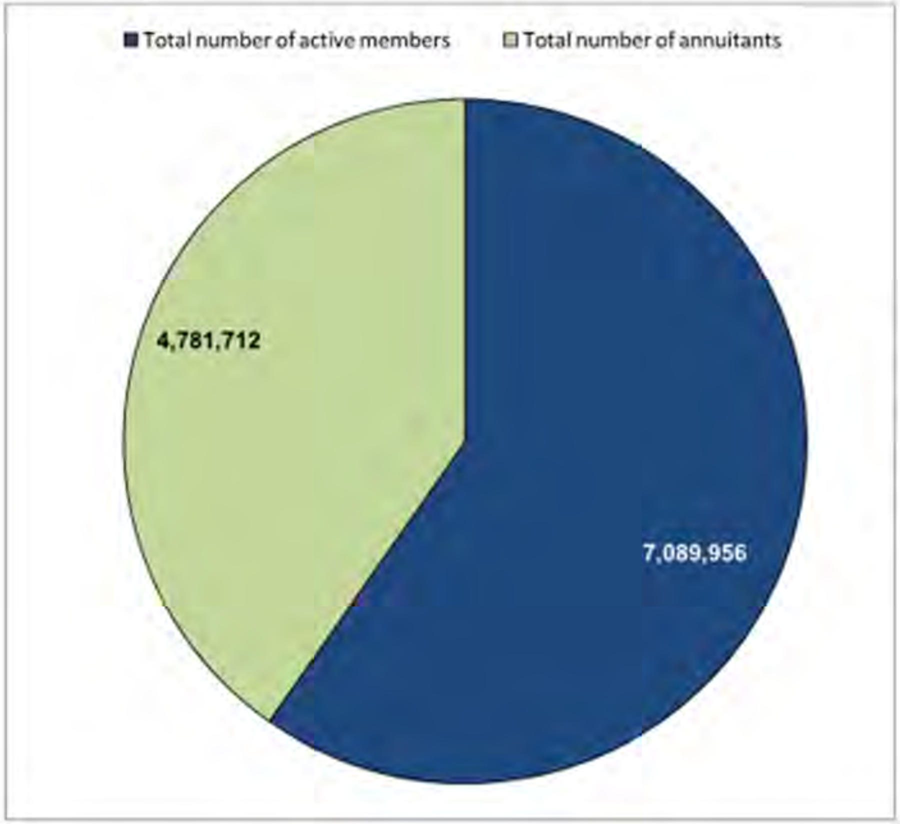


Respondents Cont'd --Demographics



About 61 percent of responding funds have members who are eligible for Social Security; and 39 percent are not eligible. In this report, breakdowns are presented for "Eligible for Social Security" and for "Not Eligible for Social Security."

Respondents Cont'd – Demographics



The graph to the left shows the number of active members and retiree/beneficiaries represented by these funds. This totals approximately 12,000,000 covered lives. The ratio is 1.5 actives per retiree. This ratio is consistent with the 2011, 2012 and 2013 findings.

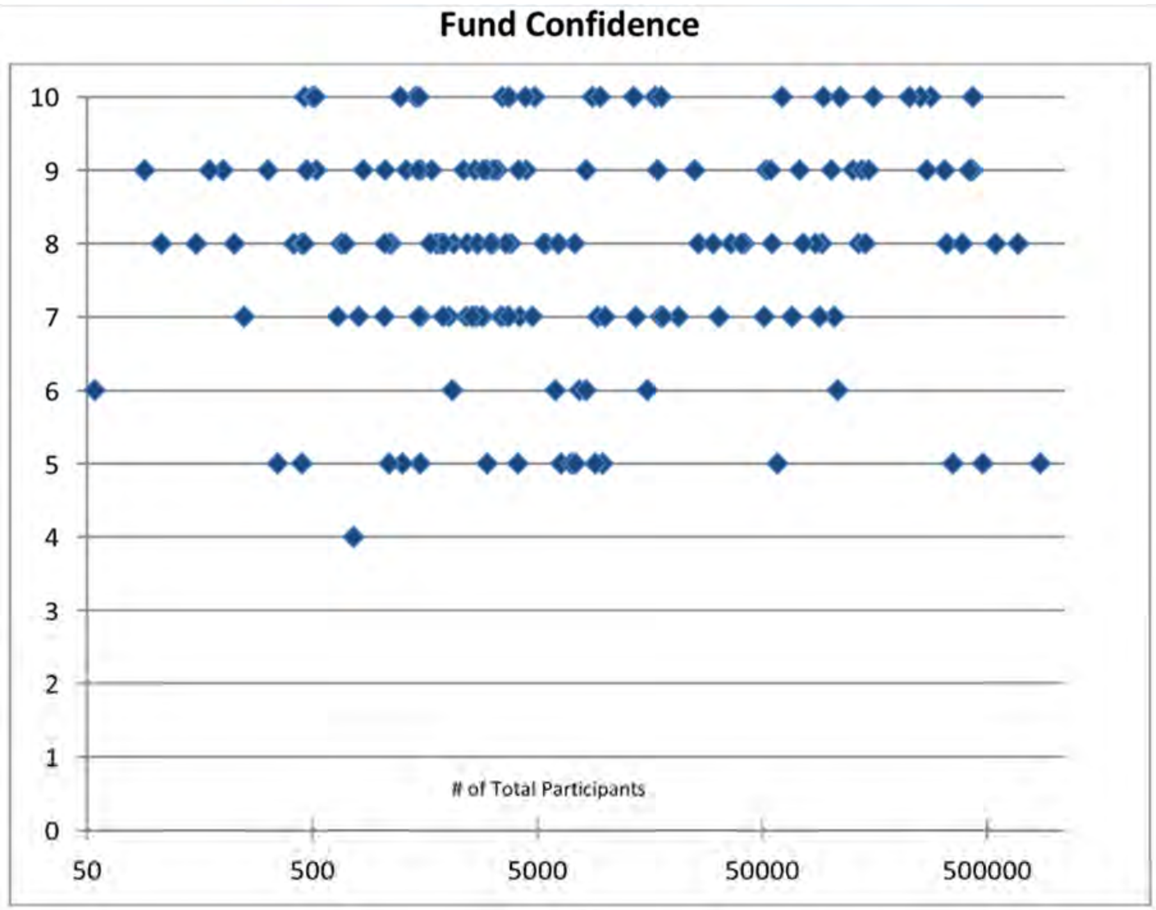
Confidence

Fund Confidence

The study asked respondents "How satisfied are you with your readiness to address retirement trends and issues over the next two years?" Overall, respondents provided an overall "confidence" rating of 7.9 on a 10-point scale (very satisfied =10). This was up from 7.8 in 2013 and a 7.4 in 2011.

The increases over the last 3 years show retirement systems across the country and becoming more cognizant and confident in their abilities to address concerns in an increasing volatile environment.

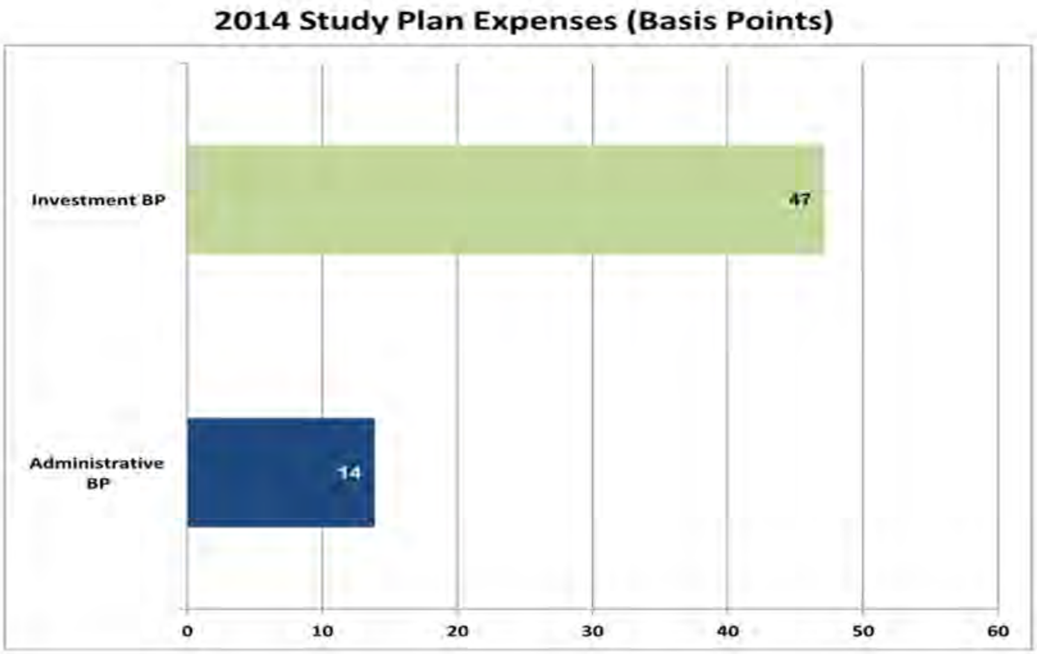
Social Security eligible and non-eligible funds rated this question 7.8 and 8.0 respectively.



Expenses

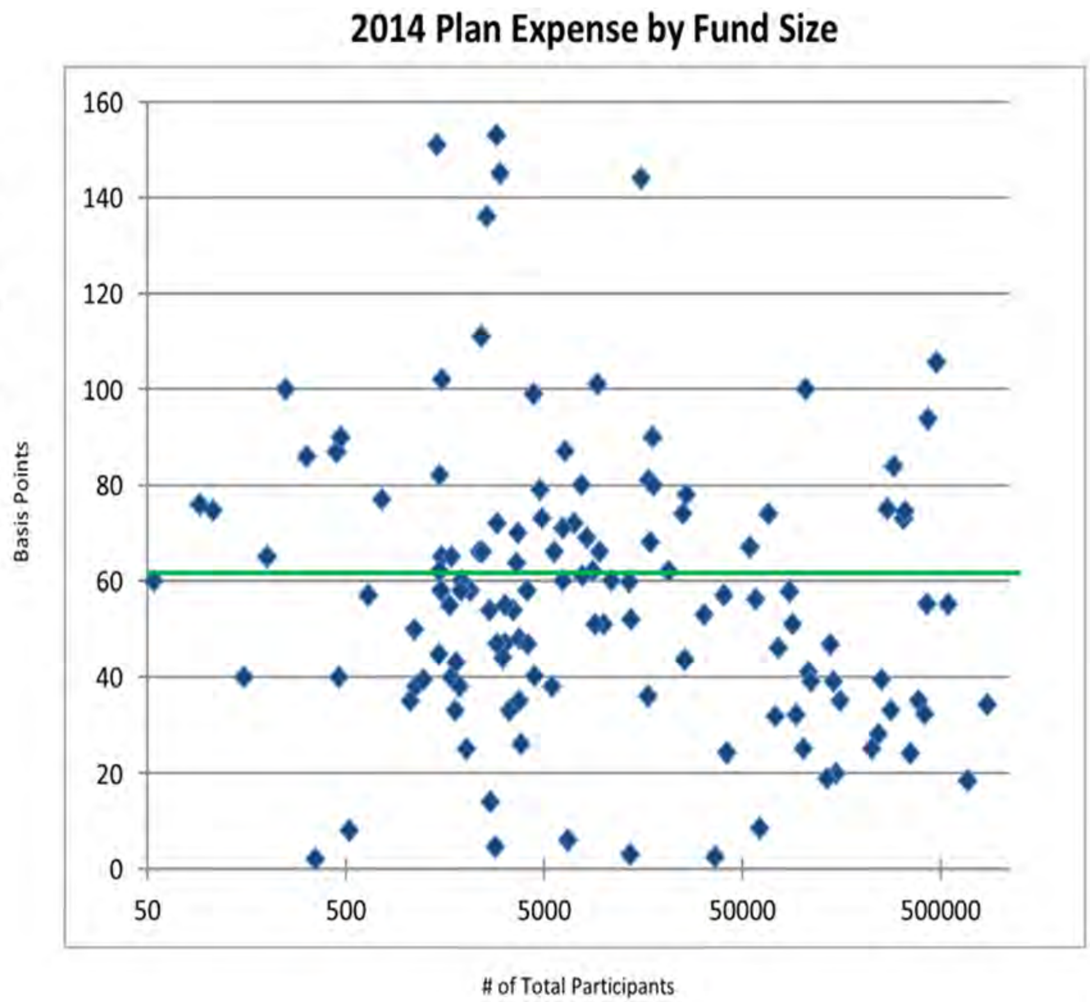
The overall average expense for respondents to administer the funds and to pay investment manager fees is 61.1 basis points (100 basis points equals 1 percentage point). This is a slight increase from the 2013 level of 57.3.

According to the *2014 Investment Company Fact Book*, the average expenses of most equity funds average 74 basis points and hybrid funds average 80 basis points. This means that funds with lower expenses provide a higher level of benefit to members (and produce a higher economic impact for the communities those members live in) than most mutual funds.



Expenses Cont'd

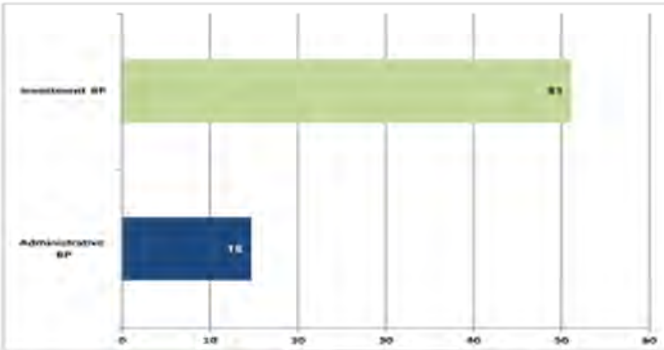
The graph in the bottom right corner shows the distribution of total expenses (in basis points) on the vertical axis and the size of the fund (by total participants) on the horizontal axis. The green line denotes the average expense.



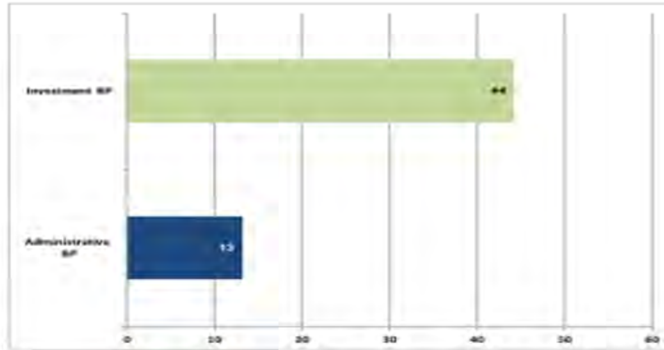
Expenses

Below are expenses separated by type of fund and size of fund. Fund size is based on if the fund has more than or fewer than 10,000 participants.

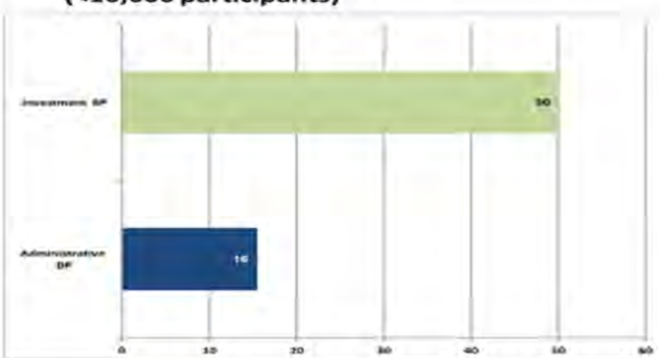
Plan Expenses: Not Social Security Eligible



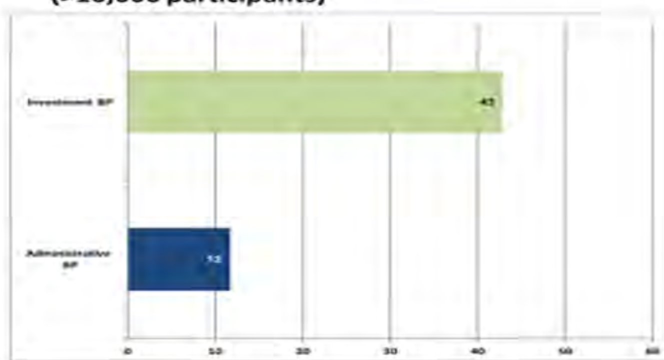
Plan Expenses: Social Security Eligible



Plan Expenses: Smaller Plans (<10,000 participants)



Plan Expenses: Larger Plans (>10,000 participants)

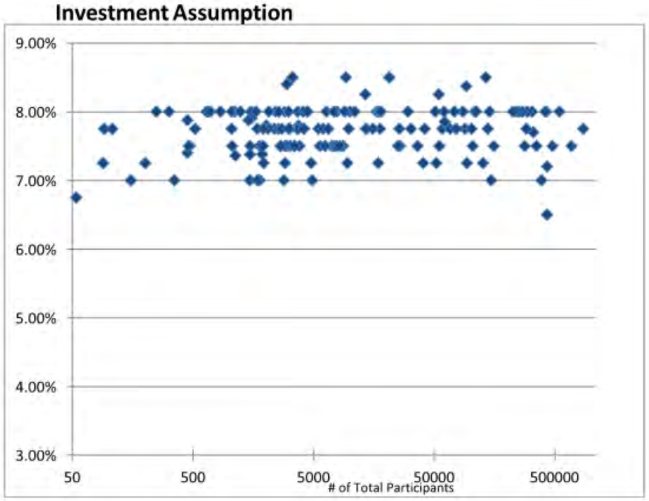


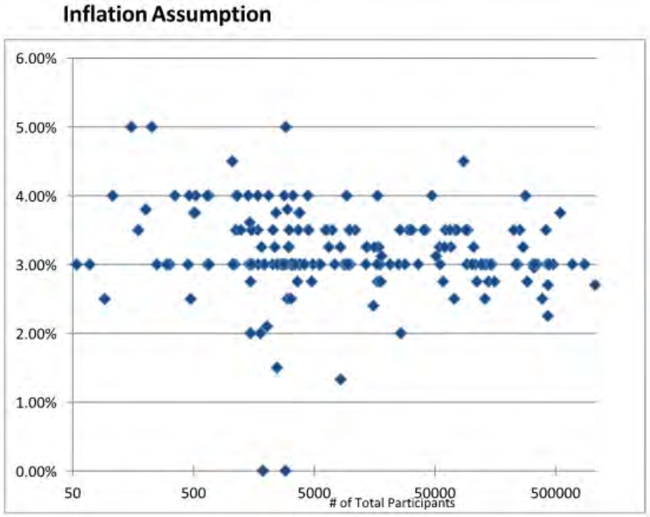
Assumptions

Retirement funds often utilize a long-term planning horizon to ensure liabilities are fully funded at the time the liability is due to be paid. To help a fund set contribution rates and measure progress toward meeting its financial obligations, funds make actuarial assumptions to estimate what investment and demographic experience is likely to be over that time horizon.

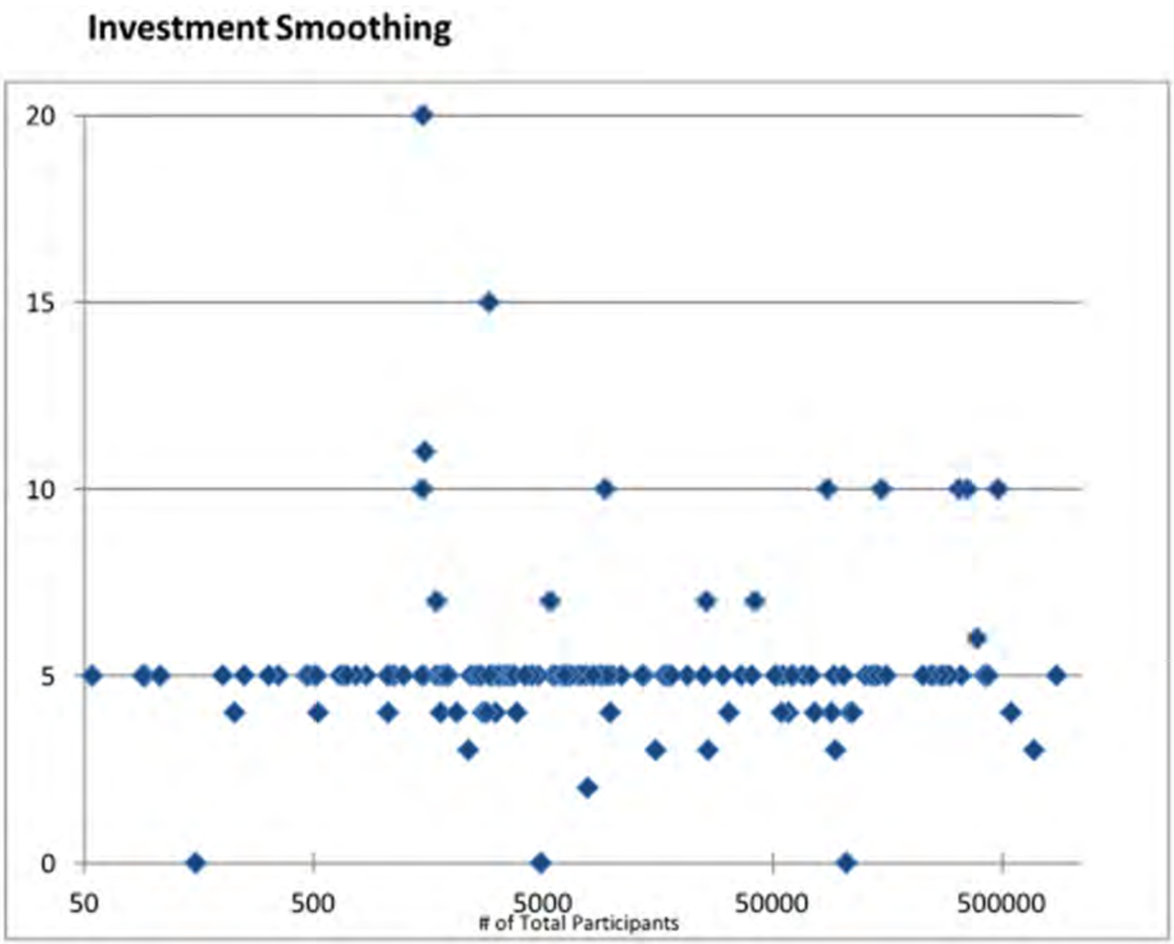
Such assumptions have powerful effects on the funding level of a plan and what the required contributions will be to pay for future benefits. Assumptions that are overly optimistic (high market returns, lower-than-expected retirement rates) tend to increase a plan's funded level and reduce the contribution rates an employer is obligated to pay today. Conversely, overly pessimistic assumptions reduce the funded level and increase short-term contribution rates.

The average investment assumption for responding funds is 7.7 percent, up 0.1 percent from 2013. The inflation assumption fell to 3.2 percent from 3.3 percent in 2013. These are not significant changes.





Investment Smoothing



The investment smoothing period is a key factor in calculating the assets currently held by the fund and the contribution levels required to continue moving toward full funding over the amortization period. By smoothing investments, funds are able to dampen sharp changes in short-term investment returns and thus contribution levels. This helps keep contribution levels more stable over time without undermining the long-term integrity of the funding mechanism.

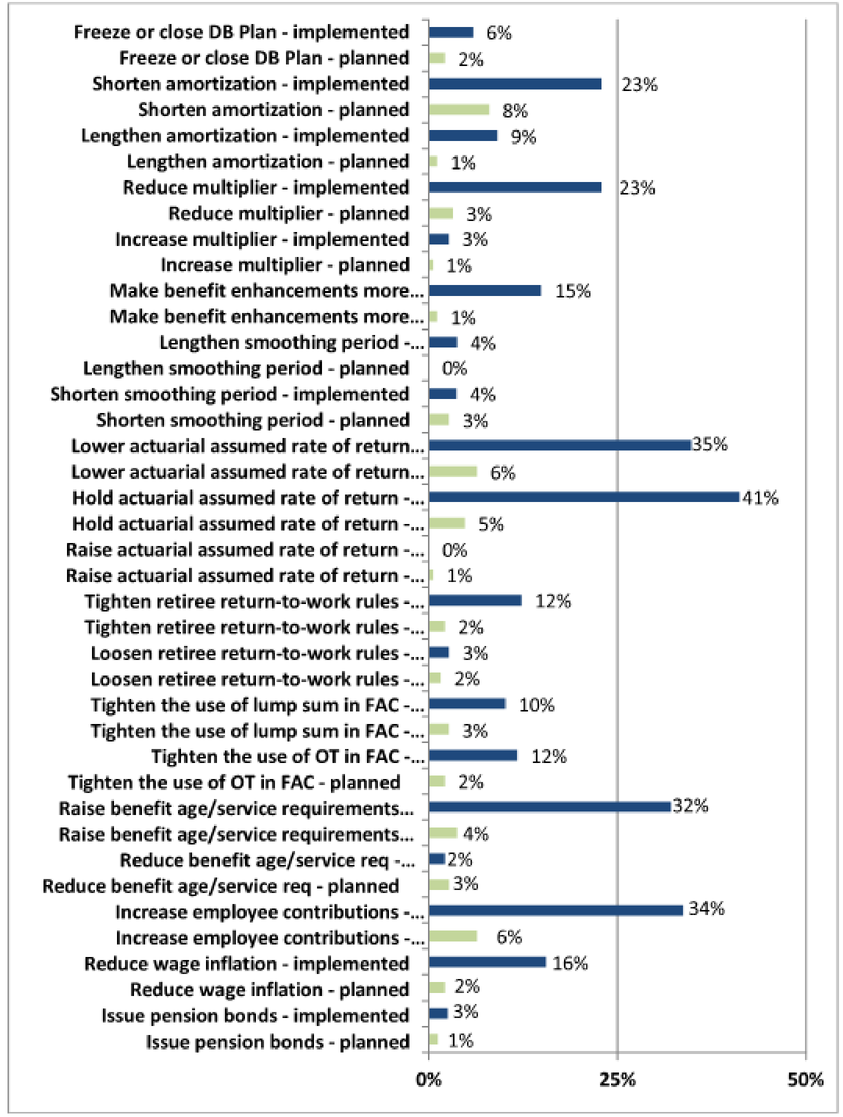
The average investment smoothing period for respondents is 5.2 years, down from 5.7 years in 2013. For Social Security eligible funds, the smoothing period averages 5.3 years, down from 5.5 years last year. Non Social Security eligible plans have an average smoothing period of 4.9 years.

Trends

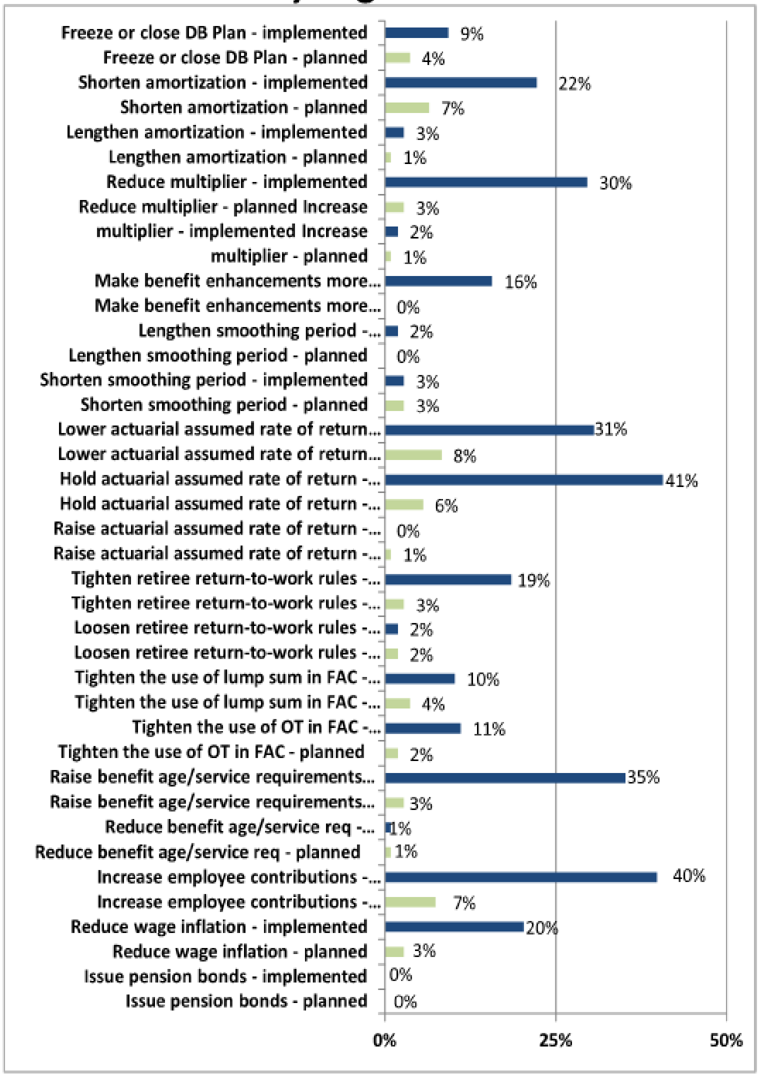
Plan Changes

Implemented   Planned

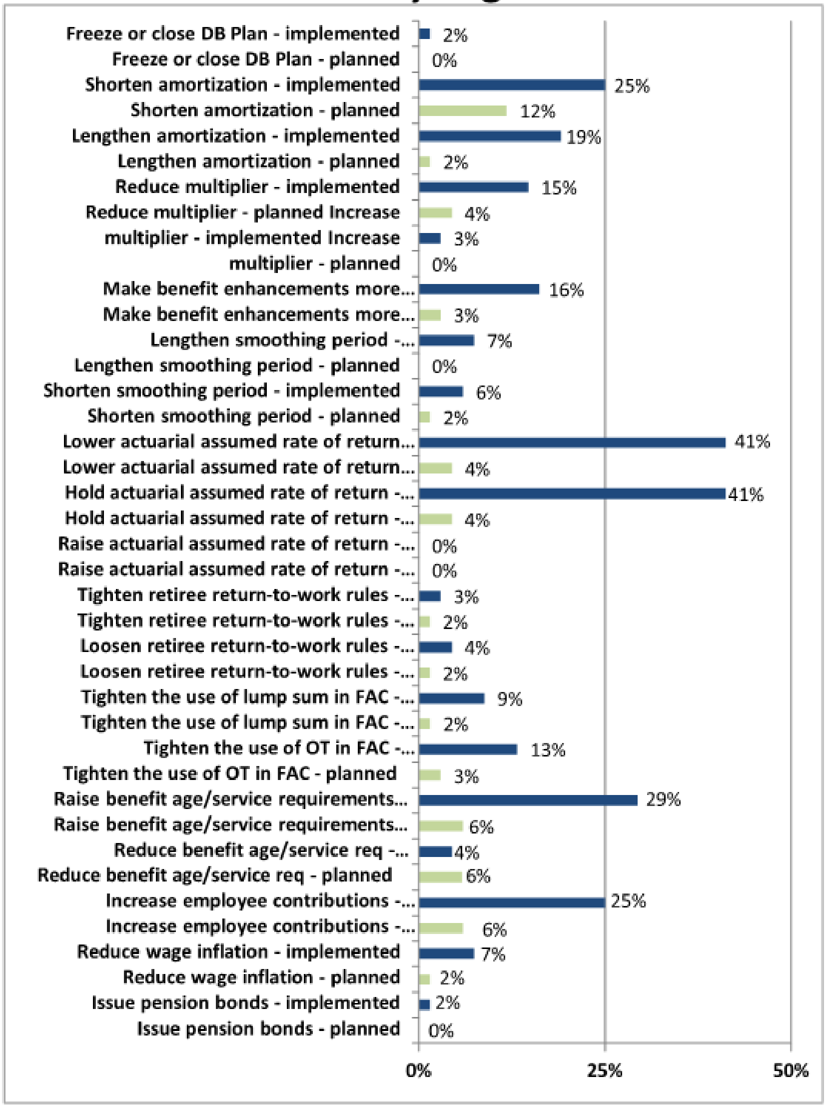
As changes emerge in the political, economic and demographic landscape, funds are adapting their design and assumptions to respond and to maintain the sustainability of the plans. Several areas that showed increased activity over the 2013 study include: shortening amortization period (8 percent increase) and holding actuarial assumed rate of return (4 percent increase.)



Social Security Eligible



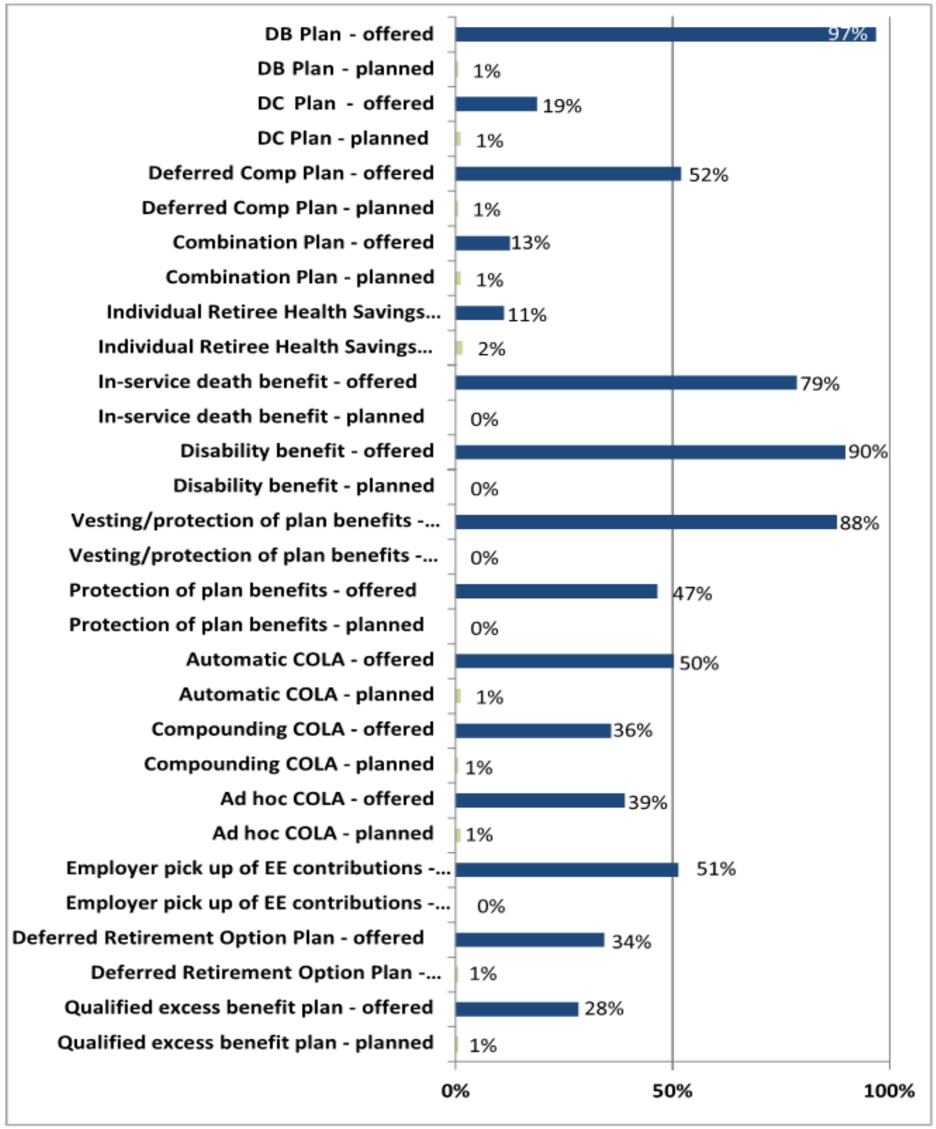
Not Social Security Eligible



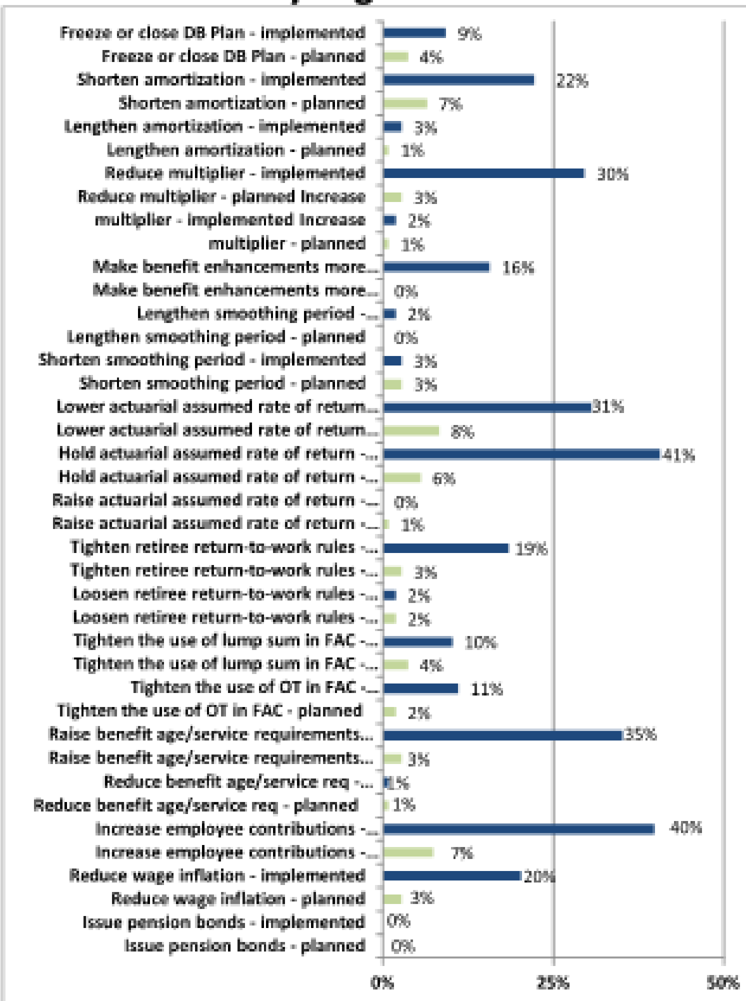
Trends in Retirement Benefits

Offered   Planned

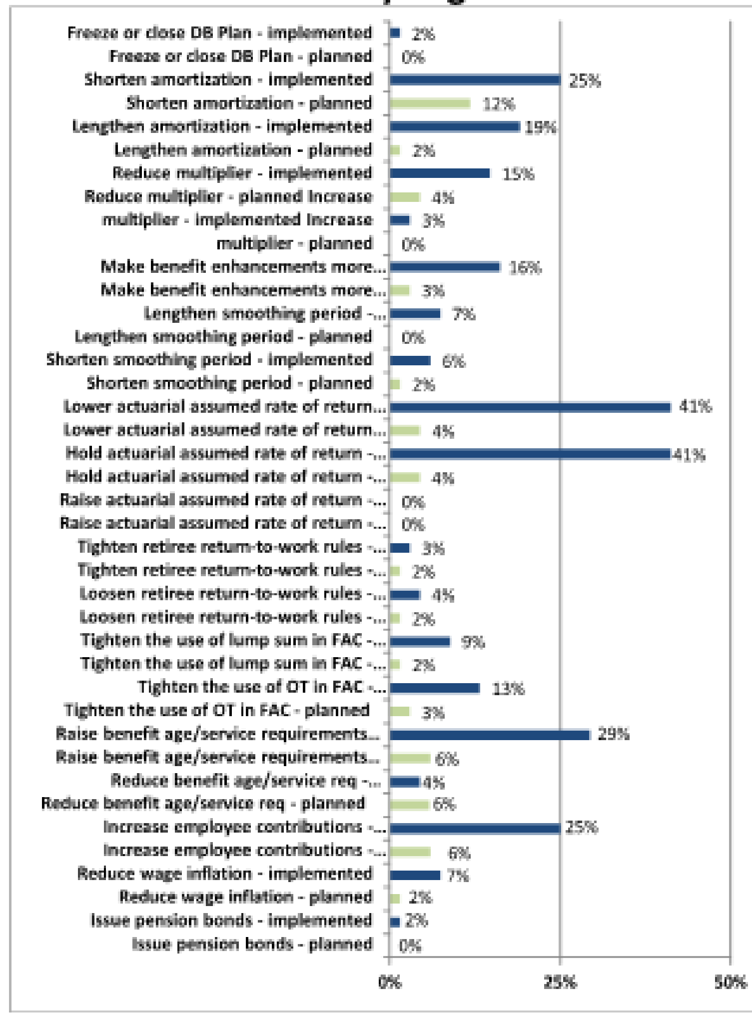
Areas with significant increase compared with the 2013 study include: offering a Deferred Retirement Option Plan (6 percent increase), offering an employer pick up of employee contributions (4 percent increase), and offering an Ad hoc COLA (3 percent increase.)



Social Security Eligible



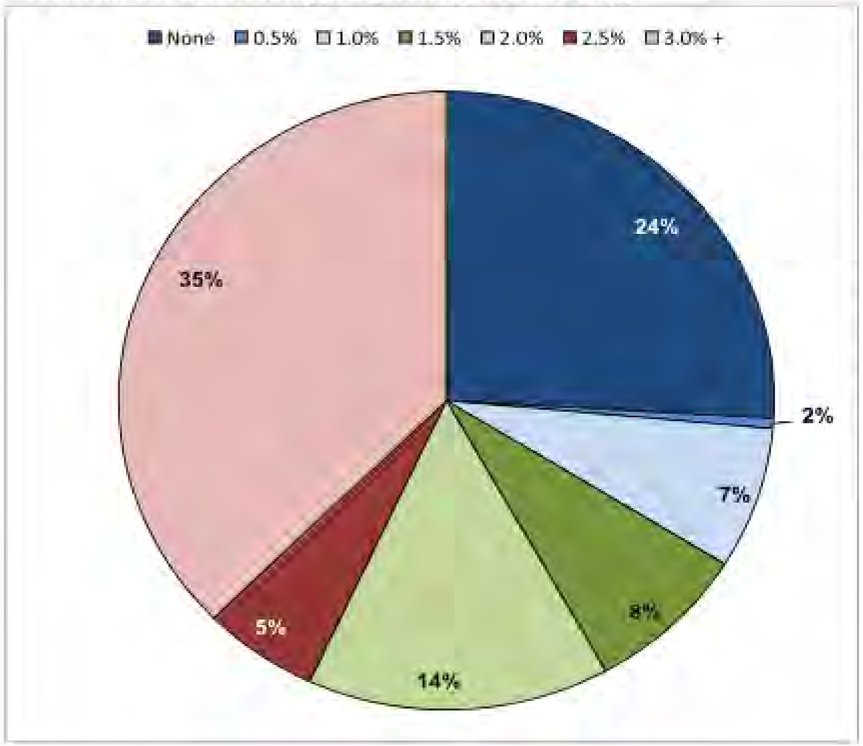
Not Social Security Eligible



Cost of living adjustments

Cost of Living Adjustments

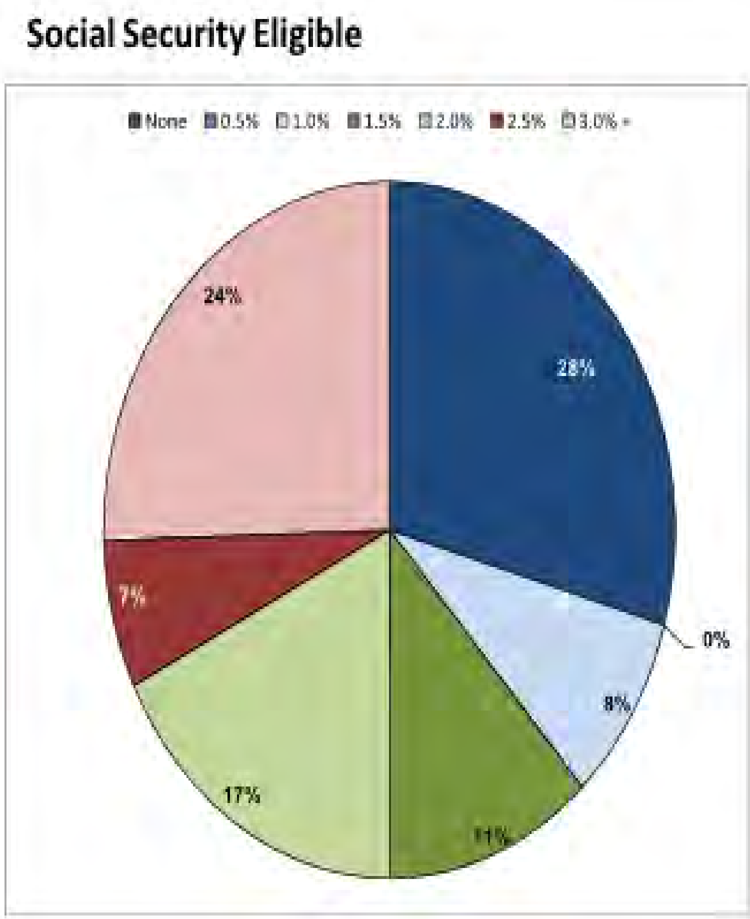
Overall Cost of Living Adjustment Offerings

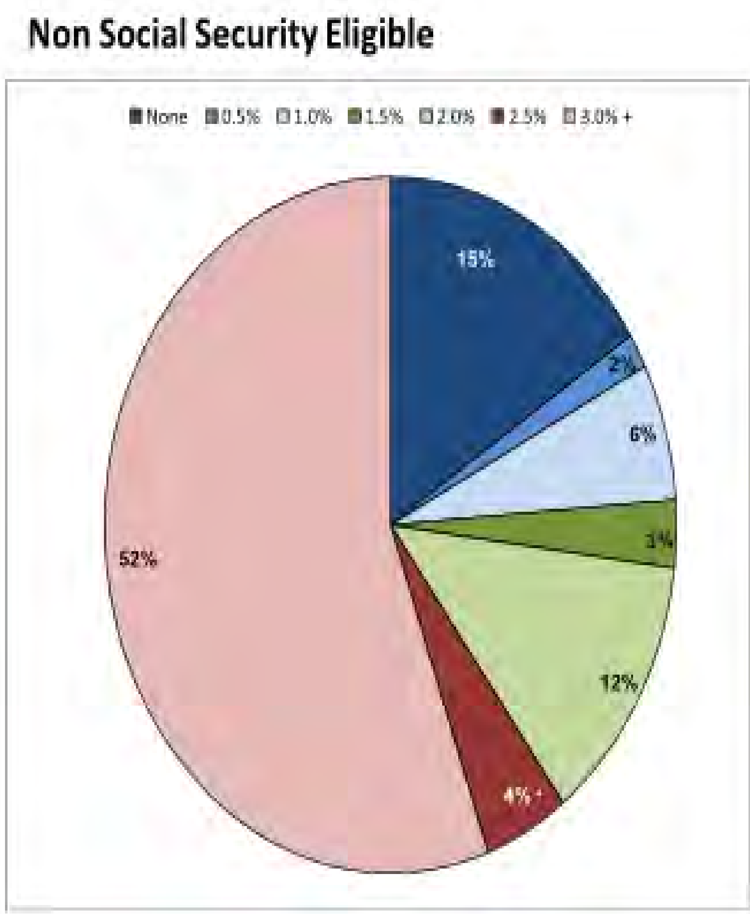


The chart at the left shows the proportion of funds offering various percentages of cost of living adjustments (COLA.) The majority of responding funds offer a COLA of 3 percent or higher. An additional 24 percent do not offer any COLA.

Funds with members who are not eligible for Social Security offer significantly higher cost of living adjustments.

Cost of living adjustments Cont'd





Investment Returns

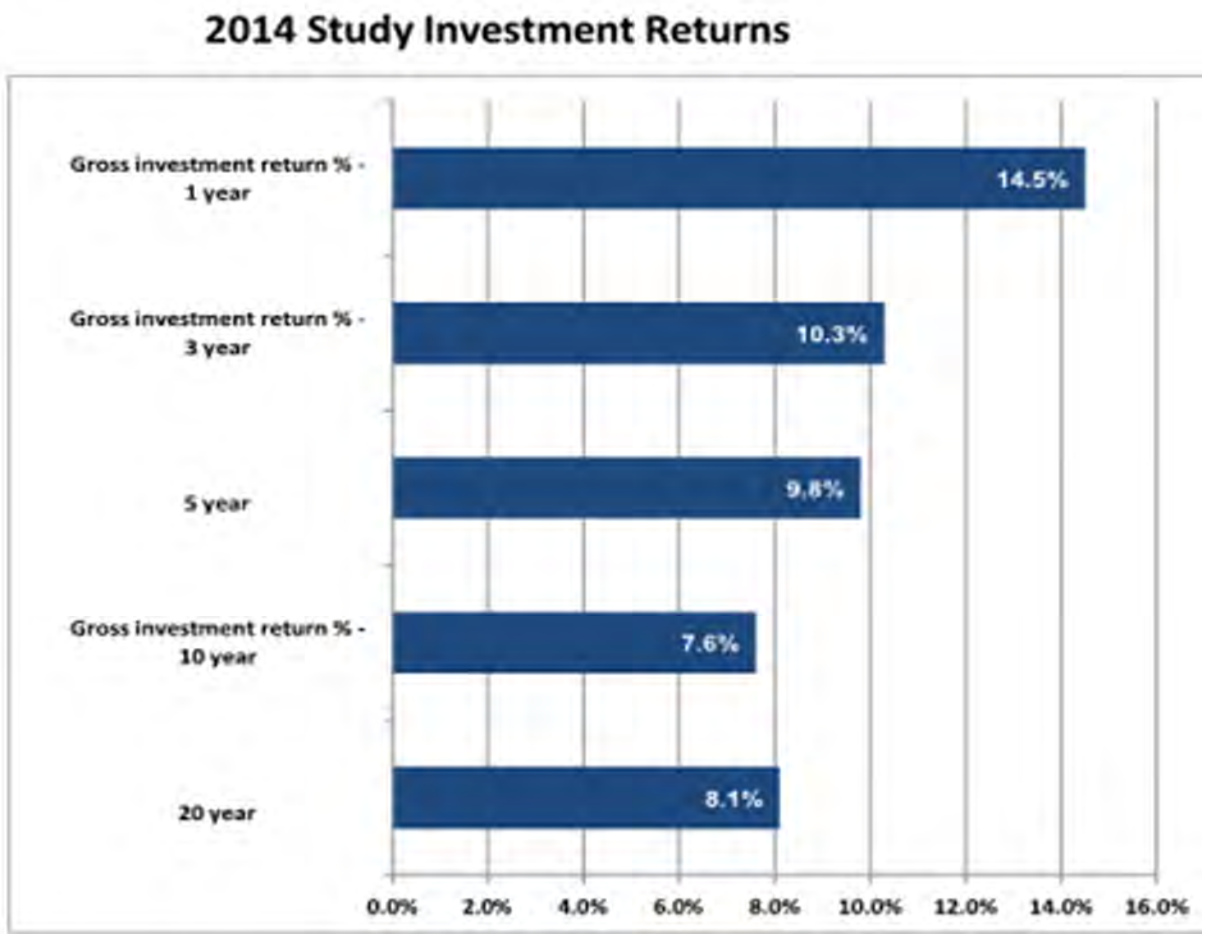
Reporting funds saw, on average, 1-year returns almost exceeding 15 percent. 3-year and 5-year average returns hovered around 10 percent.

The 20-year returns reported by participating funds point to continuing long-term improvement in funded status.

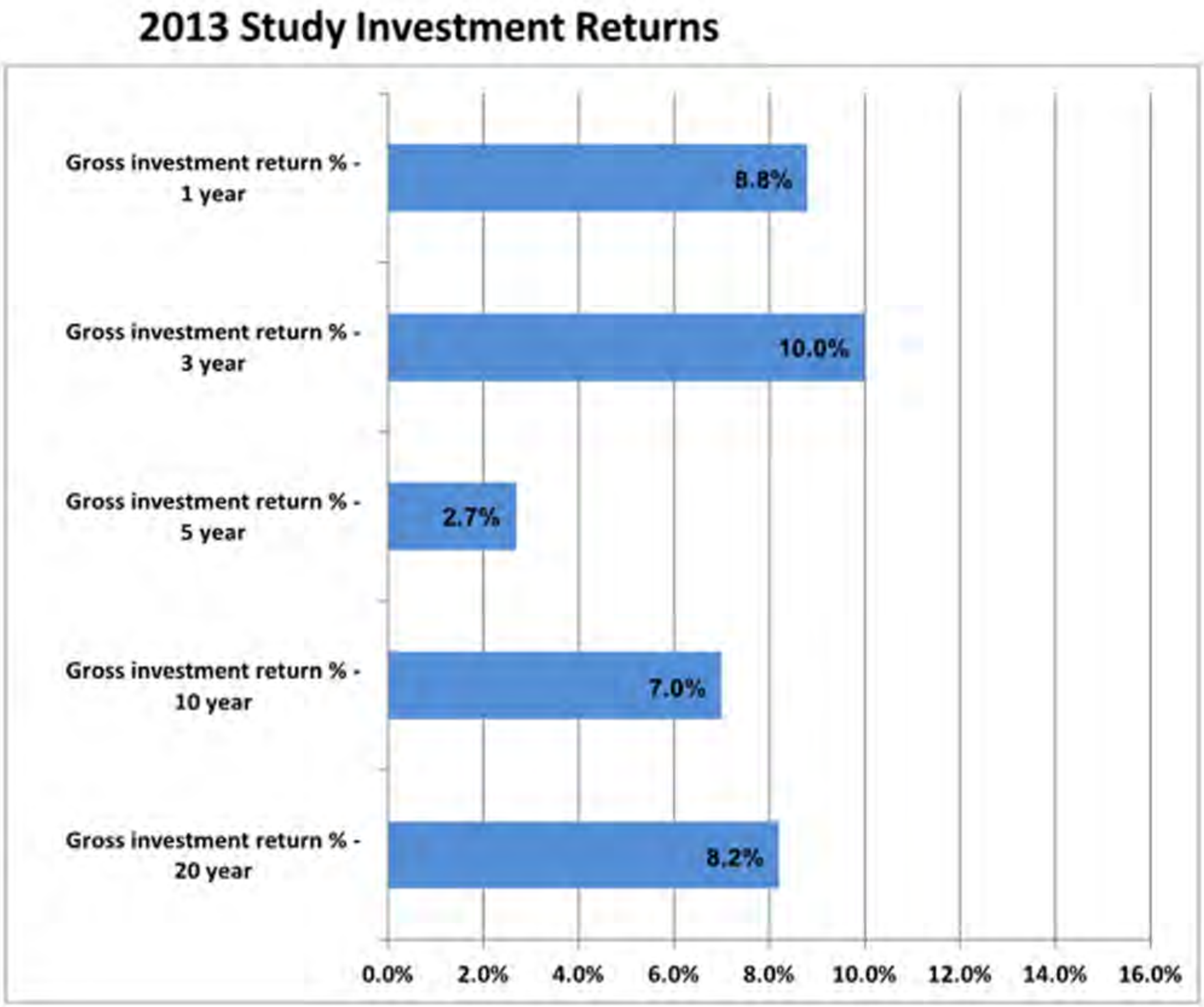
It is important to note not all responding funds have the same fiscal year end date. The timing of when a fiscal year

difference in investment experience between funds.

The graphs at the right show average reported returns.

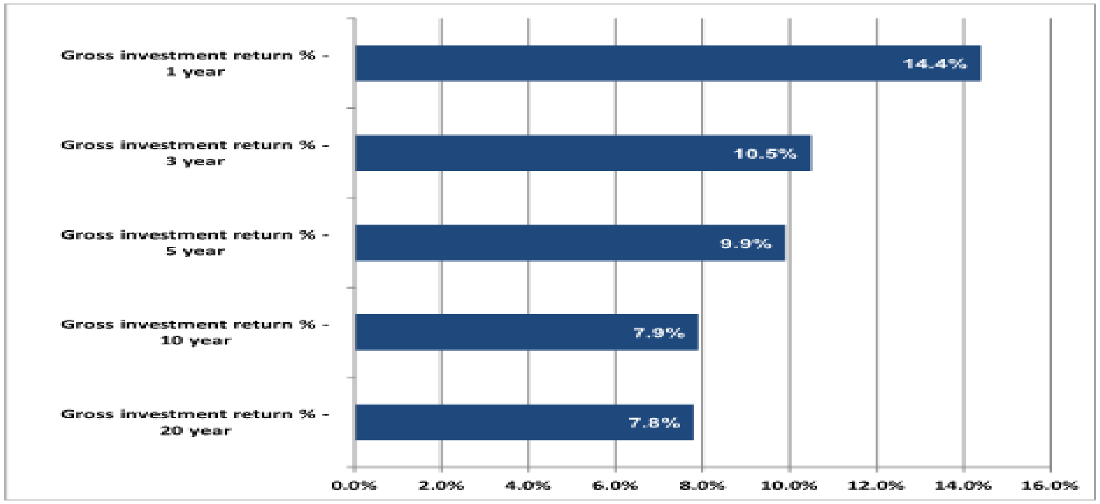


Return Assumptions Cont'd



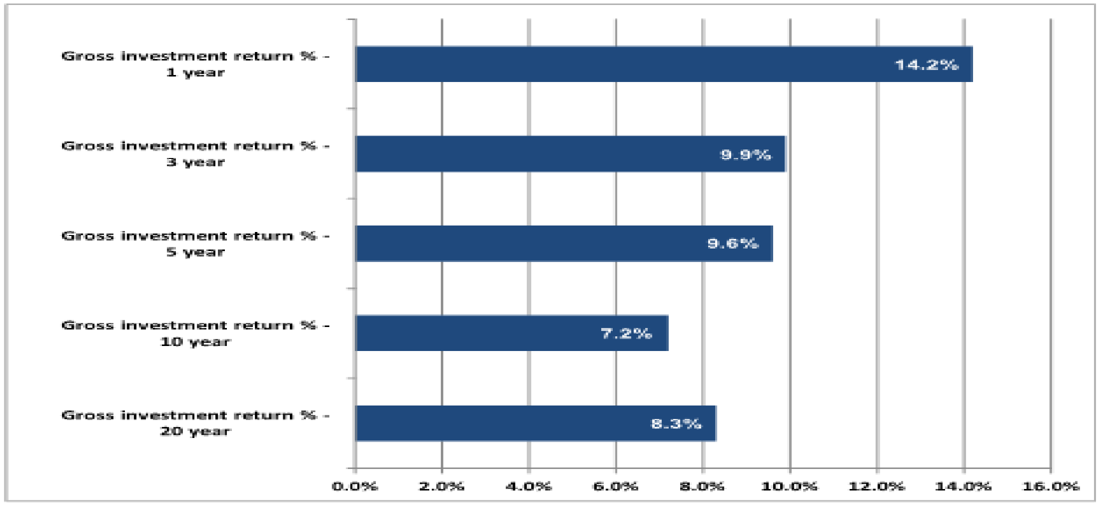
Returns

2014 Returns: Social Security Eligible



Funds with members who are Social Security eligible reported slightly higher returns than non Social Security eligible funds.

2014 Returns: Not Social Security Eligible



Investment Asset Allocation

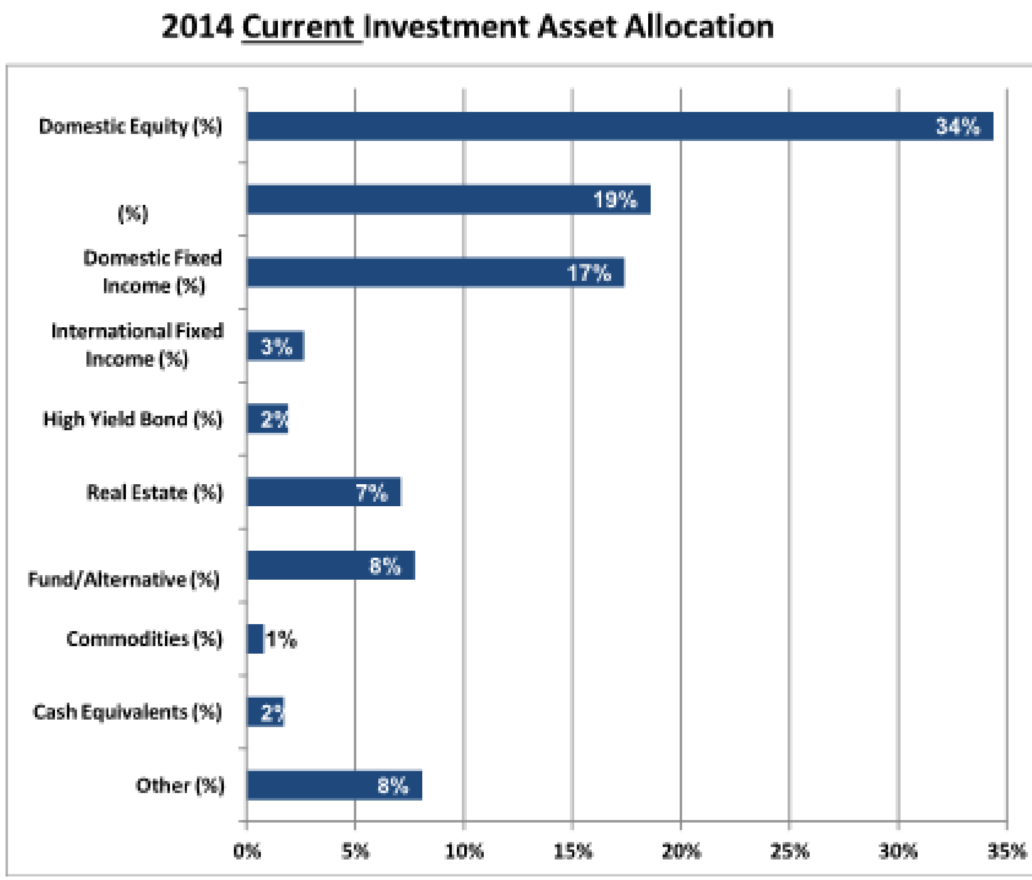
Overall, funds reported

percent (down from 35 percent in 2013) and international equity exposure increased to 19 percent. Funds reduced their exposure to domestic fixed income by 5 percent, and international fixed income by 1 percent.

Real estate, private equity,

consistent at 7 and 8 percent.

“Other investments” saw a 3 percent increase in exposure. (See Appendix A for the open-ended response to “other.”)

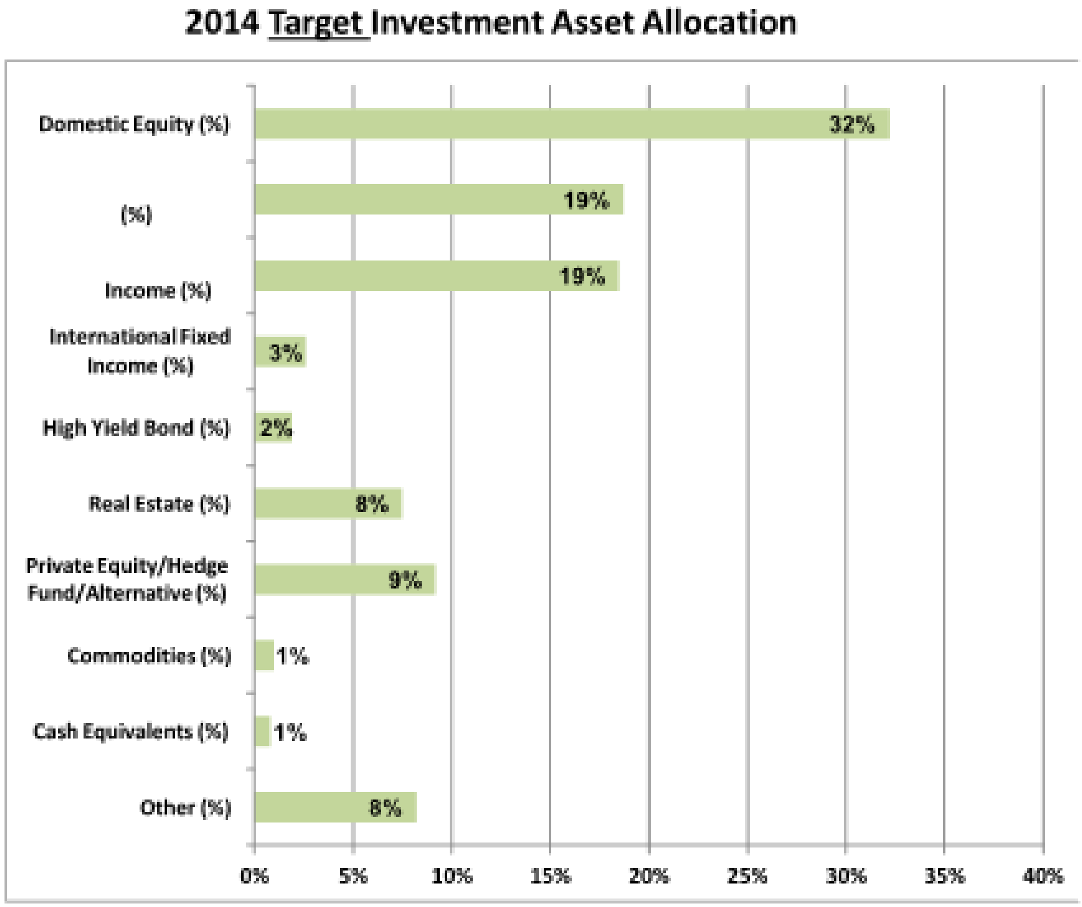


Asset Allocation Cont'd

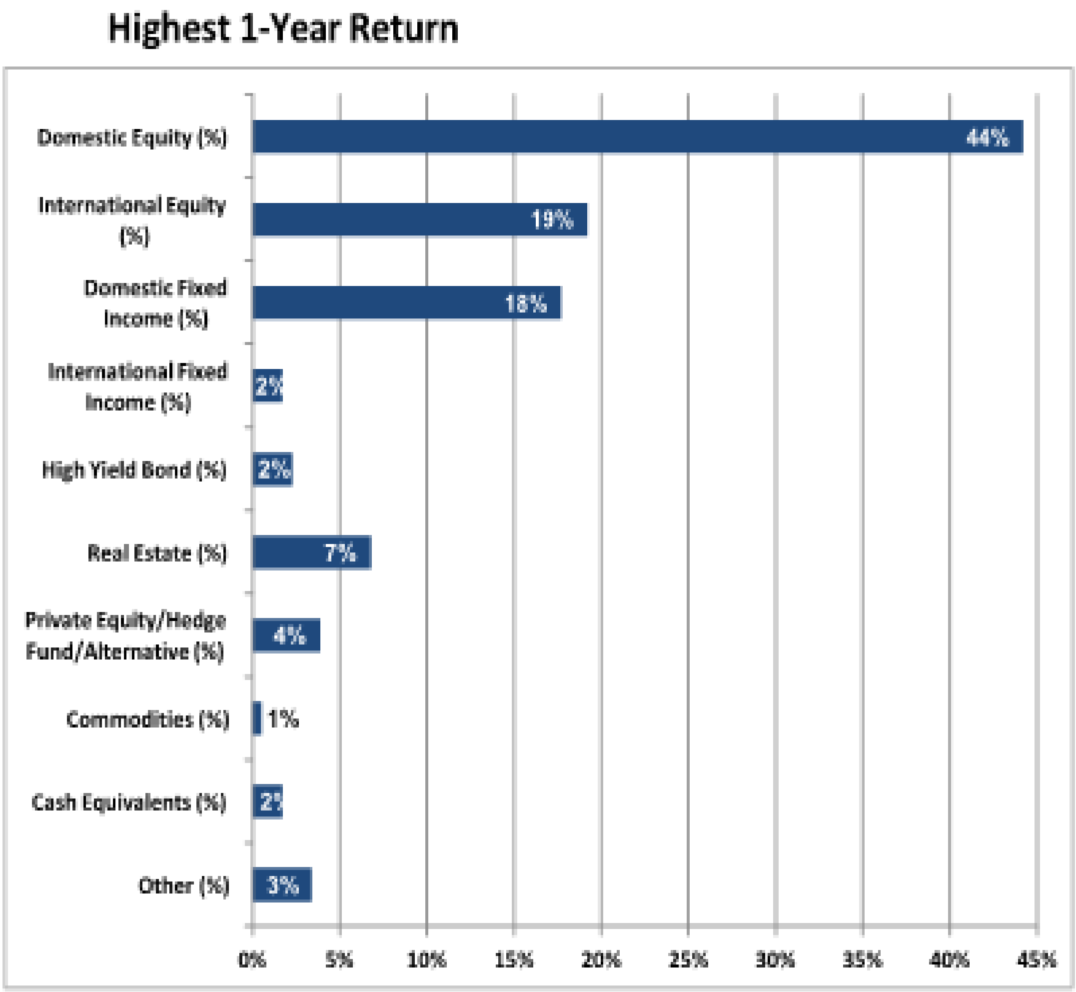
Over the next few years, responding pension funds plan

to domestic equity, and

fixed income, real estate and private equity/hedge funds.



Returns

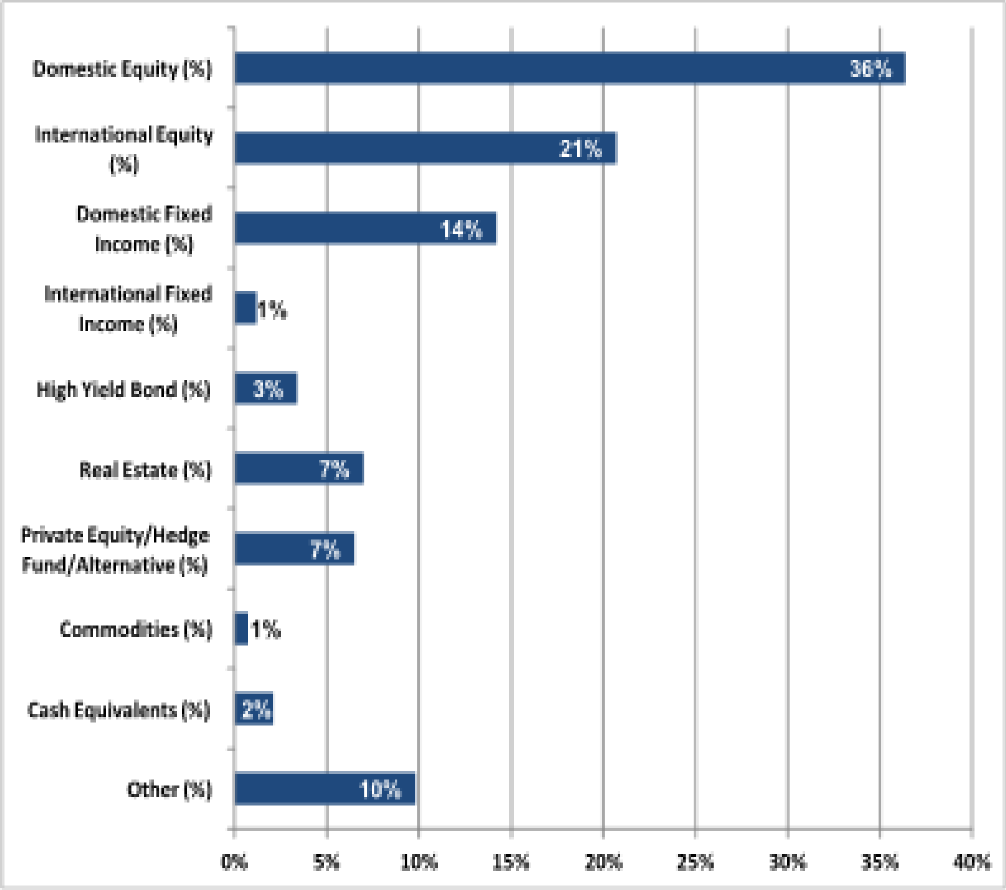


On the left are two graphs that show the asset allocations for 20 funds who reported the highest 1-year and the highest 10-year investment returns.

Funds with the highest 1-year return had a significantly higher allocation to domestic equity and lower exposure to private equity/hedge funds/alternatives.

Returns Cont'd

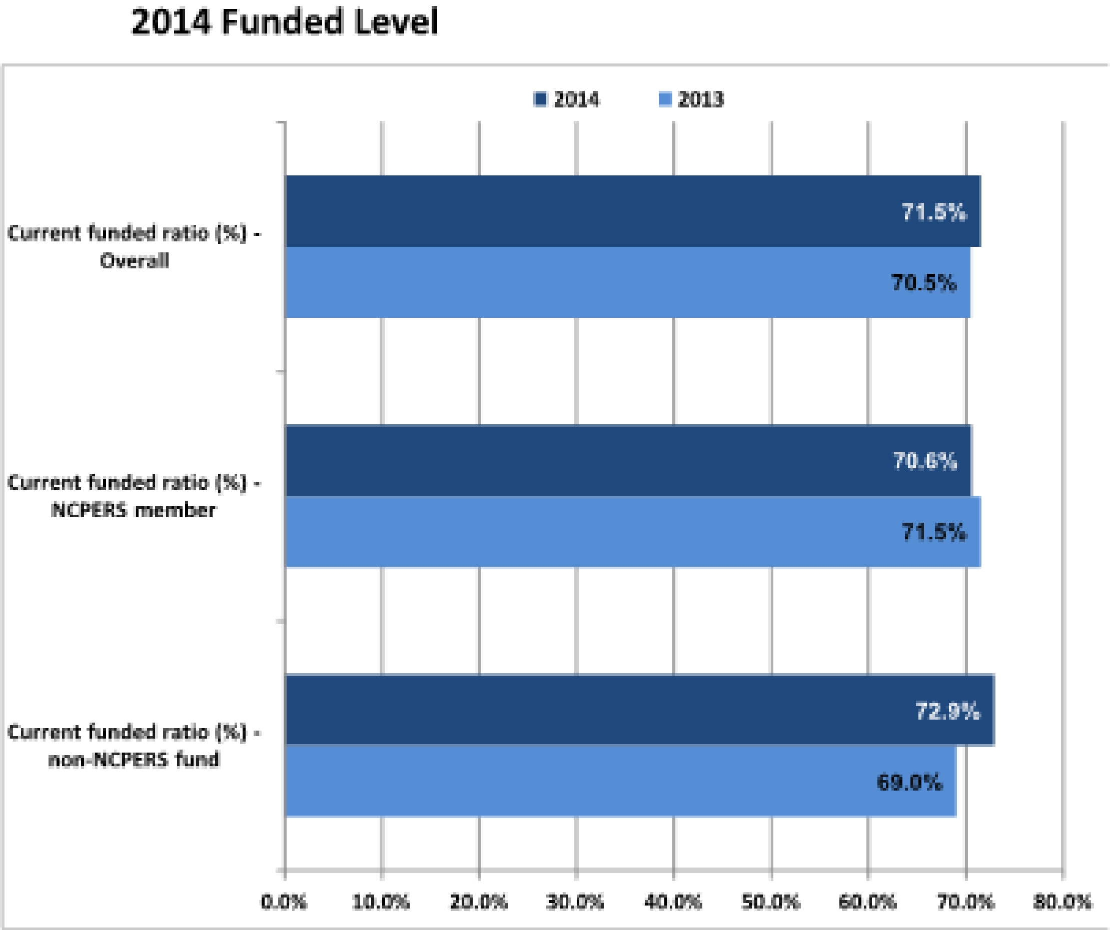
Highest 10-Year Return



Funds with the highest 10-year returns have slightly higher allocations to domestic and international equity and other investments with lower allocations to domestic fixed income and private equity/hedge funds/ alternatives.

Funding Levels

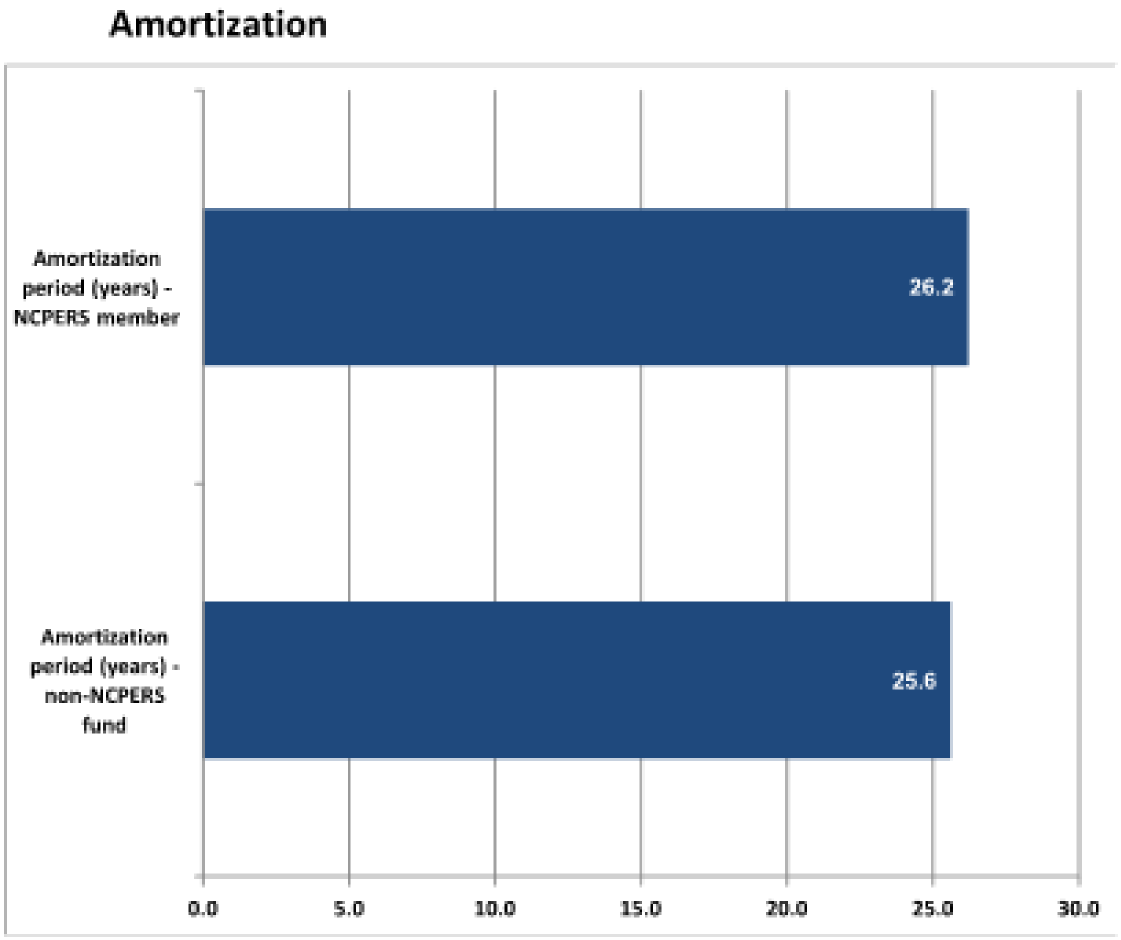
Based on responses to the 2014 study, average funded level is a solid 71.5 percent (top right), slightly above the 70.5 percent in the 2013 study. The most significant reason for this increase were strong market returns in 2013.



Funding Levels Cont'd

Pension funds are designed to pay off liabilities over a period of time which ensures long-term stability and makes annual budgeting easier through more predictable contribution levels.

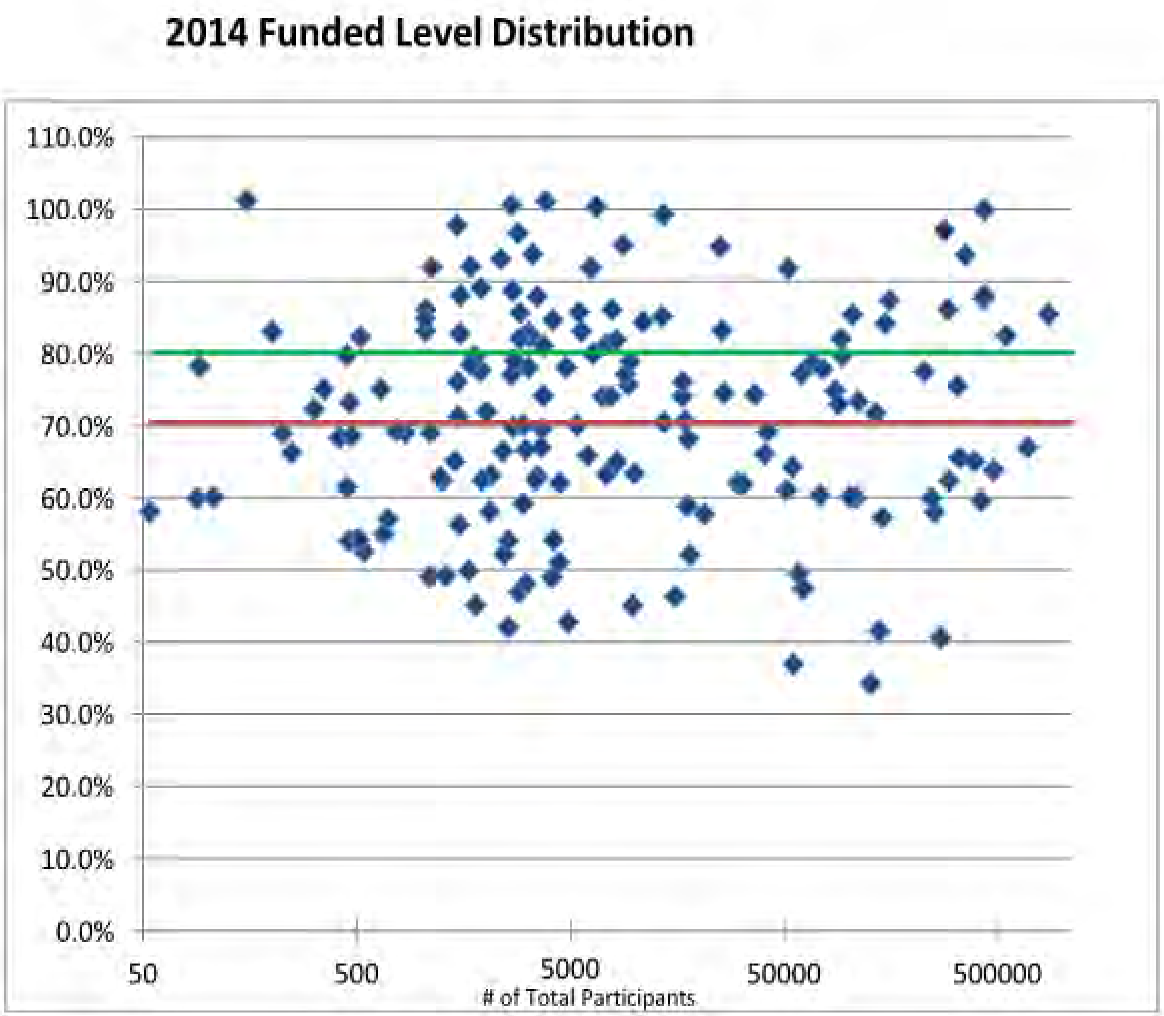
For responding funds, that period of time averages to 25.9 years, up slightly from 25.4 years in 2013. The bottom graph shows the average amortization period for all responding funds based on whether or not they are a current NCPERS member.



Funding Level

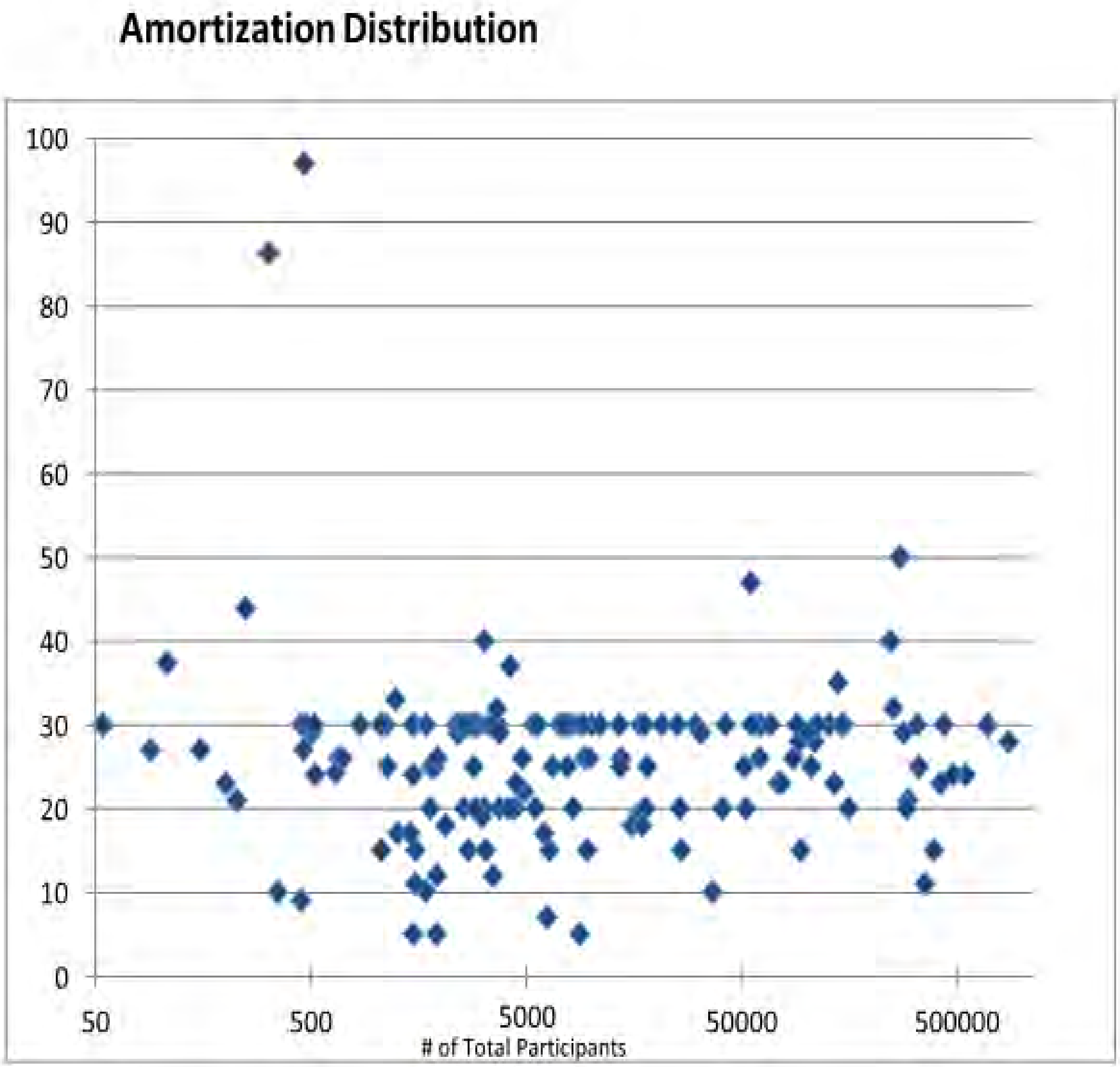
Based on responses to the 2014 study, average funded level for all responses is 71.5 percent. The graph at the top right shows the distribution of funded levels and fund size. The vertical axis shows level of funding, and the horizontal axis shows the size of the fund by total active and retired participants.

The green line denotes the 80-percent funding target identified by the Government Accountability Office, and the red line denotes the 70-percent funding target that Fitch Ratings considers to be adequate.



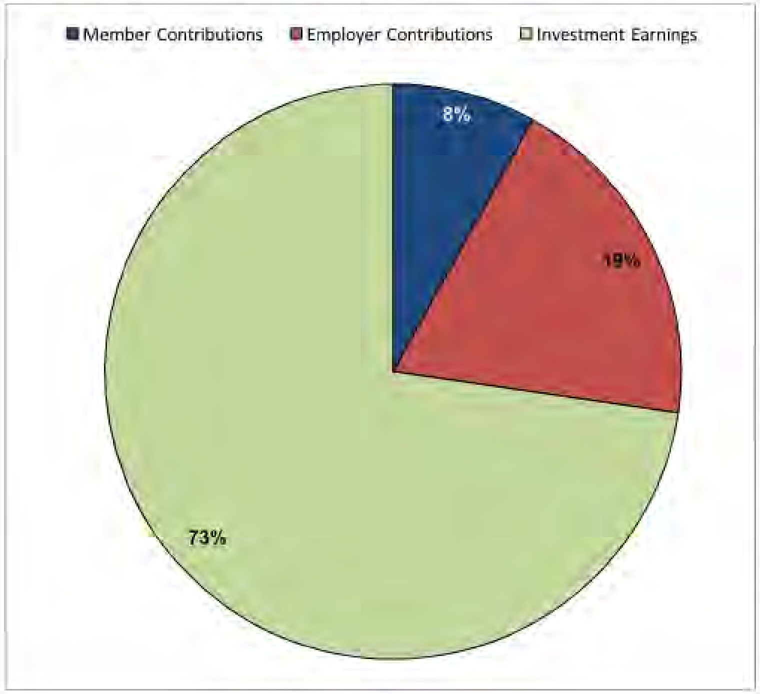
Funding Level

The bottom graph shows amortization period for each responding fund. The vertical axis shows the amortization period (years), and the horizontal axis shows the size of the fund by total active and retired participants.



Sources of Funding

Overall Sources of Revenue



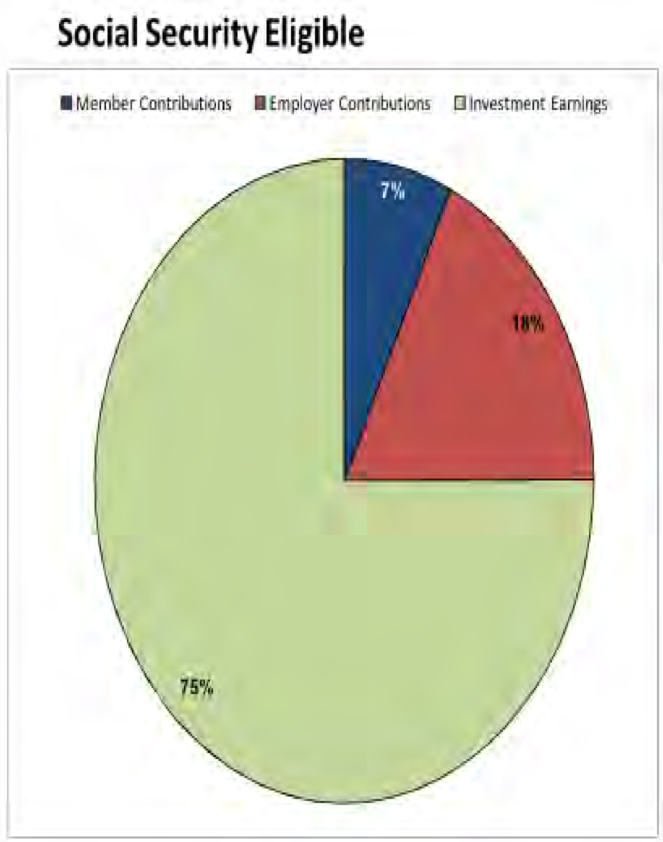
Income used to fund pension programs generally comes from three sources: member contributions, employer contributions and investment returns. The chart at the left shows the proportion of funding provided through each of these sources based on reported data.

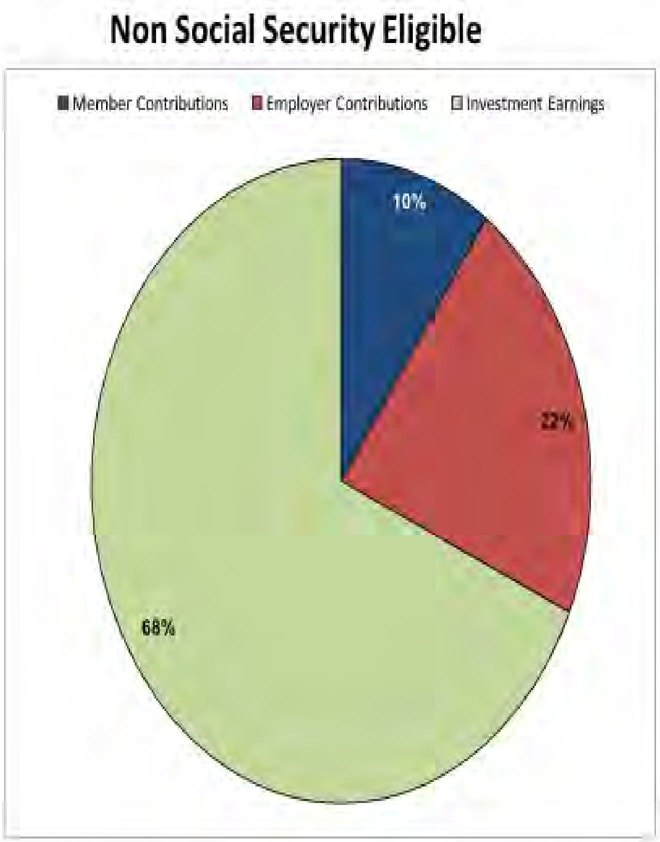
Investment returns are by far the most significant source of revenue (73 percent.) This is a four percent increase from 2013, as evidenced by the higher 1 year gross returns. Member contributions stayed consistent at 8 percent of fund income. Employer contributions equal approximately 19 percent, a four percent decrease from last year.

The findings in this study are consistent with other industry studies showing annual fund expenditures and economic impact significantly exceed the annual contributions made by the employers.

The chart below shows funds with members who are not eligible for Social Security reported higher member and employer contributions.

Funding Sources Cont'd

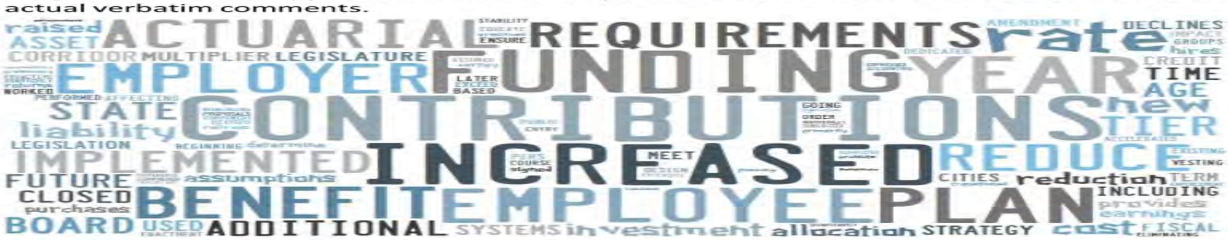




Reducing liabilities

Reducing Liability

In the study, respondents were asked to share which strategies they have put in place to reduce unfunded accrued actuarial liabilities beyond traditional amortization. Below is a text cloud showing the words that appear most often in respondents' comments. Below the text cloud are the actual verbatim comments.



- Accelerated amortization for closed groups, bridge down future benefit accruals, increased employee cost sharing, hybrid plans
- Accelerated funding adopted January 2014; total appropriation scheduled to increase 10% per year for next 3 years, then 7% per year until fully amortized.
- Additional appropriations are being made by the employer to reduce the funding schedule.
- Additional contributions by State government above and beyond the ARC
- Additional contributions to plan from State government.
- An amendment to the Maine constitution approved in 1995 requires the State to fund the unfunded actuarial liabilities of the State/Teacher Program existing on June 30, 1996, over a period not to exceed 31 years beginning July 1, 1997, and not later than June 30, 2028. The amendment prohibits the creation of new unfunded liabilities in that Program except those arising from experiences loses, which must be funded over a period of not more than ten years. In addition, the amendment requires the use of actuarially sound current cost accounting, reinforcing existing statutory requirements.
- As part of our funding policy we are amortizing our UAAL on a closed 30-year period.
- Asset allocation changed to dampen volatility. Reinstitute employee contributions.
- ATRS has closed several "loopholes" in our laws that have a small impact if evaluated individually, but the implementation of all laws over time has worked to less the unfunded liabilities significantly.
- Benefit reductions have been implemented for going forward service as well as new hires into the plan.
- Board of Directors is formalizing "funding policy". It past two years, it has recommended and legislature approved contribution increases to improve funding position.
- Changed some assumptions
- Closing the amortization period.
- Eliminated ad-hoc COLAs and replaced with a bonus policy to be funded by plan sponsor
- Employee contributions have been increased for all employees. Plans providing less expensive benefits have been implemented for new employees.
- Funding Rehabilitation Plan Adopted in 2010. Additional Stress Testing performed by Actuarial Consultant. Updated investment policy statement to reduce portfolio volatility.
- Implemented a 15-year layered amortization period, reduced assumed earnings rate, increased employer contributions
- Implemented a new tier of benefits with lower multiplier and longer service requirements; increased both member and employer contributions; COLA policy changed to only allowing a COLA to be granted when plans are funded over 100%, and will remain over 100% with a cushion after COLA is granted
- Implemented employee contributions

Reducing Liability *- Continued*

- Implemented Tier II plan provisions for members hired after August 28, 2014. As part of that agreement Kansas City (as the employer) will contribute 100% of the actuarial required contribution rate. Employee contributions also increased by 1% of pay to 11.55%.
- Implementation of statewide pension reform. Adoption of a strategic plan including a focus on long-term pension and health benefit sustainability.
- In 2012, comprehensive pension reform legislation was signed in Ohio that greatly improved long-term funding for OP&F. These changes have been implemented. Going forward, as required by Ohio law, if OP&F does not meet the required funding level, it will submit a plan to the state general assembly to meet this level.
- In discussion with Actuary & Goals & Objectives Committee to determine practices and procedures to implement to reduce unfunded accrued actuarial liability by changing future benefits.
- Increase EE contributions and then increase ER contributions by 2% a year over next 5 yrs. Look for additional one-time funding sources and possible dedicated fees from outside plan.
- Increase employer contributions.
- Increase employer/employee contributions; reduce employee service credit percentages; change the asset valuation method.
- Increase employer's responsibility to meet actuarial recommended contribution
- Increase funding, changes to asset allocation, reducing COLA
- Increased both employee and employer contribution rates
- Increased contribution rates, reduced and temporarily suspended COLAs
- Increased contributions
- Increased employee and employer contributions
- Increased employee and employer contributions by 7% over the last 5 years.
- Increased member and employer contribution rates; raised benefit age and service requirements; raised FAS period and vesting requirements
- Increasing contribution amounts for both EE and ER and normal retirement age and decreasing multiplier amount for new employees.
- Introduced reduced benefit tier for new employees. Suspended discretionary benefit increases. Increased contribution rates.
- N/A - pay as you go plan
- No benefit increases. More Contributions. Lower some Benefits
- None
- None
- None. We will pursue traditional amortization.
- Our amortization period declines by one year each year.
- Our amortization period declines by one year each year.
- Our amortization periods declines by one year each year. Currently reviewing our funding mechanism for reform
- Our Legislature has made a series of benefit plan changes in 2009 and 2013. They have also been increasing member and state contributions over the last few years. We continue to educate them about the impact those changes have made, and where we still need to go in order to be an actuarially sound plan.
- Plan design change to a cash balance plans on and after 1/1/2015, increased employer contributions, increased employee contributions
- Planned DROP changes that would reduce DROP interest rate
- Public Act 98-599, signed by the Governor on December 5, 2013, provides a comprehensive change to the plan design. The main elements of the package include: • Reduction of the Automatic Annual Increase for current and future Tier 1 retirees • Automatic Annual Increase deferments for future Tier 1 retirees • Capping pensionable earnings for Tier 1 participants • Delaying the retirement age for current Tier 1 state workers under age 45 • Eliminating the use of sick and vacation days for service credit or pensionable earnings for future participants • Changes to the Effective Rate of Interest • Changing the interest rate used for money purchase factors • Reduction of employee contributions (1%) for Tier 1 participants • Employer Funding enforcement • Increased funding formula plus supplemental payments

(Continued from column 2) The option for 5% of present Tier 1 participants to join a new defined-contribution plan On May 14, 2014, the Illinois Circuit Court granted a temporary restraining order and a preliminary injunction stopping implementation of Public Act 98-599. Most of these changes will have an impact on reducing the unfunded liability. This survey was completed based on the plan before the legislation.

- Quarterly monitoring of cash flow requirements, which includes contributions, investment earnings, and pension distributions. Working group established to look at proposals to ensure adequate funding for each component affecting the pension benefit (including costs for acquisition of service credits)
- Reduce multiplier, lengthen service for new hires to access a non-reduced benefit, raise employer/employee contribution level, implement an Investment Strategy Document, adjust asset allocation, adding new investment classes
- Reduced accrual percentage, increased contributions, lengthened vesting period
- Review of Actuarial Assumption; Expansion of Allowable Investments within our Asset Allocation
- Sell nursing home. Set up financing policy to address unfunded liability
- Shorten amortization schedule, reduce assumed rate of return, increase contributions
- Shortening amortization period for benefit enhancements and increase employer contributions.
- Shortening the amortization period.

Reducing liabilities

Reducing Liability *- Continued*

▪ Since fiscal 2002, the teacher's and employees' systems had operated under the "corridor funding method"—freezing employer contribution rates for both systems at their fiscal 2002 levels as long as the two systems remained actuarially funded between 90% and 110%. If the plans fell out of this corridor, the employer contributions were to be increased by one-fifth of the difference between the prior year's rate and the full funding rate for EPS and TPS. The employees' combined systems fell out of their corridor in fiscal 2005, followed by the teachers' combined systems in fiscal 2006. Over time, the level of underfunding prompted by the corridor system grew; exacerbating the system's declining funded status driven largely by poor investment performance. The General Assembly enacted legislation in 2013 to phase out the corridor funding method over 10 years and replace the system's current tiered amortization policy with a single 25-year closed amortization period.

▪ State law requires our trustees to certify state funding requirements under state law, but state law is not based on sound actuarial funding policies. Since 2012, the board has certified additional contributions that are based on actuarial standards as part of its strategy to educate policymakers.

▪ Stay the course. The long-term plan is still good. Watch markets carefully to maximize -- safely -- returns.

▪ Strong asset allocation policy implementation

▪ The 2013 Oregon Legislature reduced the COLA formula and removed tax remedy payments for non-residents, reducing the UAL by $5 billion.

▪ The City has dedicated parking tax revenue to fund the pension.

▪ The Florida Legislature requires funding of the actuarially recommended UAL Rate.

▪ The Fund has no authority to implement a strategy to address the unfunded accrued actuarial liability.

▪The MHSPRS Administrative Board adopted a revised funding policy in 2013 that positions MHSPRS to be at least 80 percent funded in 2042. This policy further provides for more stable contribution rates when expressed as a percentage of member payroll.

▪ The PERS Board of Trustees adopted a revised funding policy in 2012 that positions PERS to be at least 80 percent funded by 2042. This policy further provides for less volatility in the employer contribution rate, which gives our employers more stability in their budgeting process. PERS is currently on target to exceed the 2012 expectations with no increases in contribution rates or changes in economic assumptions.

▪ The reduction of future benefits and reduction of benefit formula. Increase of contribution rate and no longer refunding a portion of the employer match contributions.

▪ TMRS has a strict funding policy, which requires member cities to pay the actuarially required contribution rate. Member cities can also contribute an amount in excess of the required contribution. The TMRS Board of Trustees also made two decisions in 2014 that are important to the long-term stability of the system. First, the Board adopted new "generational" mortality tables that are used to determine annuity purchase rates and for assumptions used in the annual actuarial valuation. Second, the Board adopted the "Entry Age Normal" funding method.

▪ We are 95% actuarially funded and are on course to be 100% by 2016.

▪ We are asking Board approval to move from Normal Cost to Entry Age Normal Costing Method

▪ We believe we were very proactive years before many of our peers, when in 2004, with our funded position near 100%, we lowered the Plan multiplier from 2% times years of service to 1.5% times years of service new employees effective 9/1/04. It's ten years later now and more than half of the active workforce has transitioned into that lower-cost benefit tier.

(continued from column 2) Then in July, 2011 we added another new tier of lower-cost benefits for new employees, primarily by raising the benefit age/service requirements. We have also not given any ad hoc COLAs in the last 12 years. We have also successfully raised contributions for five years in a row, beginning in 2010 through this year, 2014, which has affected both the employers and the employees.

▪ We have implemented closed amortization periods to ensure each year's UAL will be paid off within 25 years.

▪ We holding the contribution rates (when we could have decreased them) until we are 110% funded

▪ With the OPERS-recommended and Legislature-enactment of significant pension reform legislation that went into effect in 2013, OPERS is meeting its objective of reducing subsidized benefits. The strategy aligns benefits with funding sources. For example, service credit purchases for such time as military and elected official service must be purchases at 100 percent actuarial value.

Appendix A

In the study, respondents were asked to specify what "other" asset class they invested in. Below is a text cloud showing those words that appear most often in respondents' comments. Below the text cloud are the actual verbatim comments.

Appendix Cont'd

- Absolute - 5; Alternative – 3
- Absolute - 5; Alternative – 3
- Absolute return
- All alternatives
- All fixed income total
- Alternative fixed income
- Alternative Investments (includes real estate, venture capital, etc.)
- Alternative investments including real estate - these are targets, we have range for rebalancing
- Alternative=Private Equity + Hedge Fund + Real Estate
- Alternatives
- Alternatives
- Bank Loans - 3.8; Public Real Assets - 10.1; Private Real Assets – 8
- Convertible Securities - 4.4; Alternatives-Infrastructure - 3.0
- Core plus fixed income = 18, Real assets = 16
- Covered calls
- Emerging markets equity
- Emerging markets, Timber
- Equity Long/Short
- Farmland and timber, opportunistic debt, private debt, opportunistic equity
- Fixed Income
- Fixed income 15.9, Real return 8.9, Absolute return 5.3
- Fixed income-14.9% (we don't break out by dom/int), Yield Driven-5.0%, Real Return-6.1%
- GAA and Risk Parity
- Global Asset Allocation
- Global Debt Securities 17%, Equity 50%, Private Equity 14%, Inflation Assets 4%, Real Assets 11%
- Global Equity
- Global Equity and Global Fixed Income
- Global Equity and Global Fixed Income
- Global Fixed Income
- Global tactical
- Global tactical
- Global Tactical Asset Allocation
- Global Tactical Asset Allocation (GTAA)
- GTAA
- GTAA & Credit
- Hedge Funds
- Inflation Protection
- Infrastructure
- Infrastructure
- Infrastructure
- Infrastructure .5,Natural Resources 1.4 Global Tactical Asset allocation 7.9
- Infrastructure, timber
- Int'l Equity includes 13% of balanced funds
- Loans to Primary Government
- Master Limited Partnerships
- Miscellaneous categories
- MLP
- MLP
- MLP
- MLP/Energy
- MLPs
- Mortgages
- Opportunistic - .5% and Real Assets - 5%
- Opportunity Fund
- Overlay
- Private debt, Infrastructure, Natural resources
- Private Equity; Emerging Markets
- Public Equity 36.9; Debt Securities 21.9; Private Equity 21.8; Opportunity Portfolio 1.2
- Public fixed income=22, Inflation protection=5.75, Multi-asset strategies=4.75, Public equities=46.3
- Real Assets
- Real return
- Real return
- Real Return (4); Covered Calls (5)
- Real Return/Opportunistic & Absolute Return
- Real Return/Opportunistic & Absolute Return
- Real Return/Opportunistic & Absolute Return
- Risk Parity
- Risk Parity
- Risk Parity 6.5, Master Limited Partnerships 3.9, Leverage -11.5
- Risk Parity, GTAA, Other Pension Assets and Liquidity
- Senior Secured Loans
- Specialty
- Stocks
- Strategic Investments
- Strategic lending
- Timber, emerging markets, Port Alpha Wind down
- Timber, MLPs
- Timberland
- TIPS
- US TIPS
- We are fully invested with the State Run PRIT Fund
- We have global oriented portfolio that doesn't above