



City of El Paso Employees Retirement Trust
Investment Practices Review

April 15, 2020



We are proud to announce that ACG has been named a Greenwich Associates Quality Leader – recognized as one of the top mid-sized consultants in the industry. This award is based on a number of factors, and a culmination of extensive nationwide interviews with institutional investors. We are appreciative of this honor, and we are grateful to all those who have helped us get to where we are.

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Executive Summary

Executive Summary

Asset Consulting Group (ACG) has conducted an 'investment practices' review of The City of El Paso Employees Retirement Trust Investment Program. This review incorporates performance data provided by Callan, communication with The City of El Paso Employees Retirement Trust, and several ACG proprietary resources and data providers.

Executive Summary

Asset Consulting Group was retained by the City of El Paso Employees Retirement Trust to complete a review of the Trust's investment practices in response to section 802.109 of the Texas Government Code. This review focused on five main areas:

Statement of Investment Policy

In this portion of the report, we reviewed the Investment Policy Statement (IPS) to ensure that it included all the critical elements to be effective and thorough. We also reviewed for compliance with the IPS by surveying the Trust's investment managers, reviewing documents and reports produced on behalf of the Trust as well as meeting minutes.

Asset Allocation

In this portion of the report, we reviewed the process for determining target allocations that included examining the most recent asset/liability study, meeting minutes supporting the decision and the IPS. We also reviewed the expected risk and expected return by asset class by comparing the assumptions used in the asset liability study to ACG's capital markets assumptions. Cash flow and liquidity needs were assessed by reviewing the Trust's ability to meet liquidity needs in the prior two years as well as analyzing the daily liquidity available from investments in the fund and targeted cash.

Investment Fee and Commission Review

We reviewed individual investment manager fees compared to relevant peer groups and assessed the total portfolio's overall blended fee rate for reasonableness. Commission rates were also evaluated versus available industry data. Fees paid to the Trust's investment consultant and custodian were also compared to industry data for reasonableness.

Governance Processes

We reviewed the governance processes related to investment activities, including investment decision making, delegation of investment authority and board education. We reviewed the process for selecting a new strategic asset allocation in 2019 by obtaining and reviewing the asset/liability study and meeting minutes supporting the decision. We compared the process to the responsibilities outlined in the IPS. We obtained documentation from staff that included education requirements for Trustees and Administrators and compared that to the education requirements.

Investment Manager Search & Monitoring

In this portion of the report, we reviewed the process for the selection of a new investment manager. We obtained the investment manager search materials from the Trust's investment consultant and reviewed the process for selecting investment managers as outlined in the IPS and corresponding meeting minutes. We also reviewed the process for monitoring the investment managers according to the performance standards within the IPS. We asked all the investment managers if they presented to the Board annually or semi-annually if they were on watch as documented within the IPS.

Summary of Key Takeaways:

Overall, the investment practices appear appropriate, adequate and effective. The processes for determining asset allocation, making investment decisions and selecting/monitoring investment managers appear to properly follow the steps outlined in the IPS and are prudent. Investment fees and commissions paid to the Trust's investment managers, consultant and custodian appear reasonable. Governance processes related to investment activities appear effective and properly follow documented procedures.

The Board can strengthen its compliance with the IPS by performing a thorough annual review of those required processes and establish procedures to ensure requirements are fulfilled. The Board should also consider adding language to the IPS that includes comparing performance of the total fund and individual investment managers (where applicable) to risk adjusted returns for peers and index benchmarks, a comparison that is already being performed, but not documented. We also recommend that all reports and documentation prepared for the Trust be retained for a reasonable period of time.

Statement of Investment Policy

Scope

- The IPS was reviewed for completeness and to ensure all the key elements were included. The key elements include:
 - Purpose Statement
 - Investment Goals and Objectives
 - Roles and Responsibilities
 - Asset Allocation Targets/Ranges
 - Rebalancing Policy
 - Investment Guidelines
 - Performance Benchmarks
 - Risk Tolerance
 - Administration
- The IPS was also reviewed for compliance throughout. This entailed collecting documentation to support that procedures were being followed to fulfill the requirements outlined within the IPS.

Observations

- The IPS is thoroughly written and all nine major key elements are included. In order to enhance the documentation of the performance standards, we recommend that the Board consider including a process for the comparison of the total portfolio and the investment managers' risk adjusted returns to both peers and the benchmark index.
- Overall, compliance with the IPS is adequate. The Board should review the IPS at least annually to ensure that all required actions are being implemented or make necessary changes to the IPS to reflect the actual process.
- We surveyed all the investment managers in the portfolio and found that not all managers with separate accounts were providing an annual trading cost analysis report as outlined in the IPS. The investment managers with separate accounts were providing a summary of their proxy votes, however, not the rationale for the votes.

Investment Policy "Report Card"

Category	Assessment*			Observations
	1	2	3	
Purpose Statement (page 1)	x			The purpose of the investment program is clearly stated.
Investment Goals and Objectives (page 4)	x			Return, risk, liquidity and time horizon are all mentioned.
Roles and Responsibilities (page 5)	x			Roles and responsibilities of the Board of Trustees, Investment Committee, Pension Fund Administrator and Staff, Investment Consultant, Investment Managers, Custodian, Actuary and Legal Counsel are clearly defined.
Asset Allocation Targets/Ranges (page 14)	x			Targets and ranges for all sub-asset classes have been established.
Rebalancing Policy (page 15)	x			The rebalancing process and considerations are thoroughly outlined.
Investment Guidelines (page 17)				Investing guidelines, objectives and any restrictions for each asset class appear to be clearly stated.
Performance Measurement (page 38)		x		Performance objectives for the total fund as well as each asset class and a detailed description of the benchmark and relevant metrics are documented. Consider documenting the evaluation of risk adjusted returns for the total fund and investment managers relative to relevant peer groups and the benchmark index.
Risk Tolerances (pages 38-43)	x			Acceptable volatility ranges are set for each asset class.
Administration (page 44)	x			Investment manager and custodian selection procedures are detailed. Board responsibilities regarding ongoing IPS review of applicability is outlined.

*1 = Included; no significant changes necessary; 2 = Included; consider enhancements; 3 = Not included; should be addressed.

- **Assets invested so that liabilities can be funded.** During late 2019, the Trust’s investment consultant prepared an asset/liability study and evaluated several different asset allocation mixes with the Investment Committee. A strategic asset allocation was selected so that assets could be invested in a manner that considers return and risk and to fund future liabilities.
- **Maintain liquidity to pay current benefits.** The portfolio has a 1% strategic allocation to cash and an estimated 71% of the portfolio has daily liquidity. Annual cash flow needs are estimated to be approximately 8% of the portfolio value based on the last two fiscal year ends. The portfolio appears to be in a reasonable position to provide for future cash flow needs.
- **Diversify to earn a reasonable return with acceptable risk of capital loss.** The portfolio is well diversified with allocations to all major asset classes. The strategic target consists of 52% domestic and international equity, 13% private equity, 24% fixed income, 10% real assets and 1% cash. The expected return over the next 10 years appears reasonable.
- **Comply with performance standards within the IPS.** The Investment Consultant provides an overview of performance on a monthly basis. Performance standards are discussed and the investment managers that fall short of standards appear to be appropriately put on watch.
- **Each manager will meet annually with the Board and Investment Committee.** We requested from the investment managers the most recent date that they presented to the Board and Investment Committee. All of the Investment Managers had presented within the last year.
- **Investment managers on watch, will meet semi-annually with the investment committee.** We requested that the investment managers on watch inform us if they had presented to the Investment Committee on a semi-annual basis. Three out of the four investment managers had done so.
- **For investment managers with separate accounts, an annual trading cost analysis report shall be provided.** We asked the separate account managers if an annual trading costs analysis was being provided. No investment managers are currently providing an annual trading cost analysis report.
- **Investment managers with separate accounts shall forward to the Board annually a summarization of all proxy voting and rationale.** Investment managers with separate accounts provide a summary of proxy voting; however, there is not rationale provided.

Asset Allocation

Asset Allocation Review

- The Board of Trustees conducted an asset liability study in 2019 and selected target allocations for each asset class as a result of the study.
- The current portfolio is **well-diversified** with allocations to all major asset classes.
- The selected strategic target consists of **31% domestic equity, 21% international equity, 13% private equity, 24% fixed income, 10% real estate and 1% cash.**
- Using ACG’s capital markets assumptions, the strategic target has an estimated **median expected return of 6.9% per year** over the next ten years. This is in line with Callan’s projections for the strategic target, a **median expected return of 7.0% per year.**
- The **equity** portfolio is **globally diversified** with exposures across market caps and liquidity constraints.
- The **fixed income** portfolio is **globally diversified** across a variety of fixed income sectors (Credit, MBS, High Yield, Treasuries, etc.).
- The portfolio has some exposure to **real assets**.

Requirement	Assessment*		Observations
	Yes	No	
The portfolio is invested in a manner such that future assets are available to fund liabilities.	x		The portfolio is diversified across equity, fixed income and real assets. The funded ratio of 80% compares to 72% in the 2019 NCPERS Public Retirement System Study.
The portfolio maintains sufficient liquidity to pay current benefits when due.	x		The portfolio has a 1% strategic allocation to cash and an estimated 71% of the portfolio has daily liquidity. Annual cash flow needs are estimated to be approximately 8% of the value of the portfolio based on the last two fiscal year end values. The portfolio appears to be in a reasonable position to provide for future cash flow needs.
The Fund is invested according to the asset allocation guidelines detailed in the IPS.	x		The portfolio is invested within the strategic allocation outlined in the IPS and all portfolio managers are adhering to their investment mandates.
Each manager category is at least 3% of the total fund.	x		The MLP allocation dropped below 3% in the 3 rd quarter of 2019. In November 2019 the Board decided to exit the asset class completely.
Asset class weights are within the strategic target allowable range.	x		On the 3 rd quarter 2019 report international equity and fixed income weights were outside of their target ranges. The following quarter the portfolio was rebalanced to within the allowable range.
All assets are properly diversified to reduce the potential of a single security or sector from having a disproportionate impact on the portfolio.	x		All current holdings are under the maximum allowable weight, documented in the IPS.

2019 Capital Market Assumptions Comparison

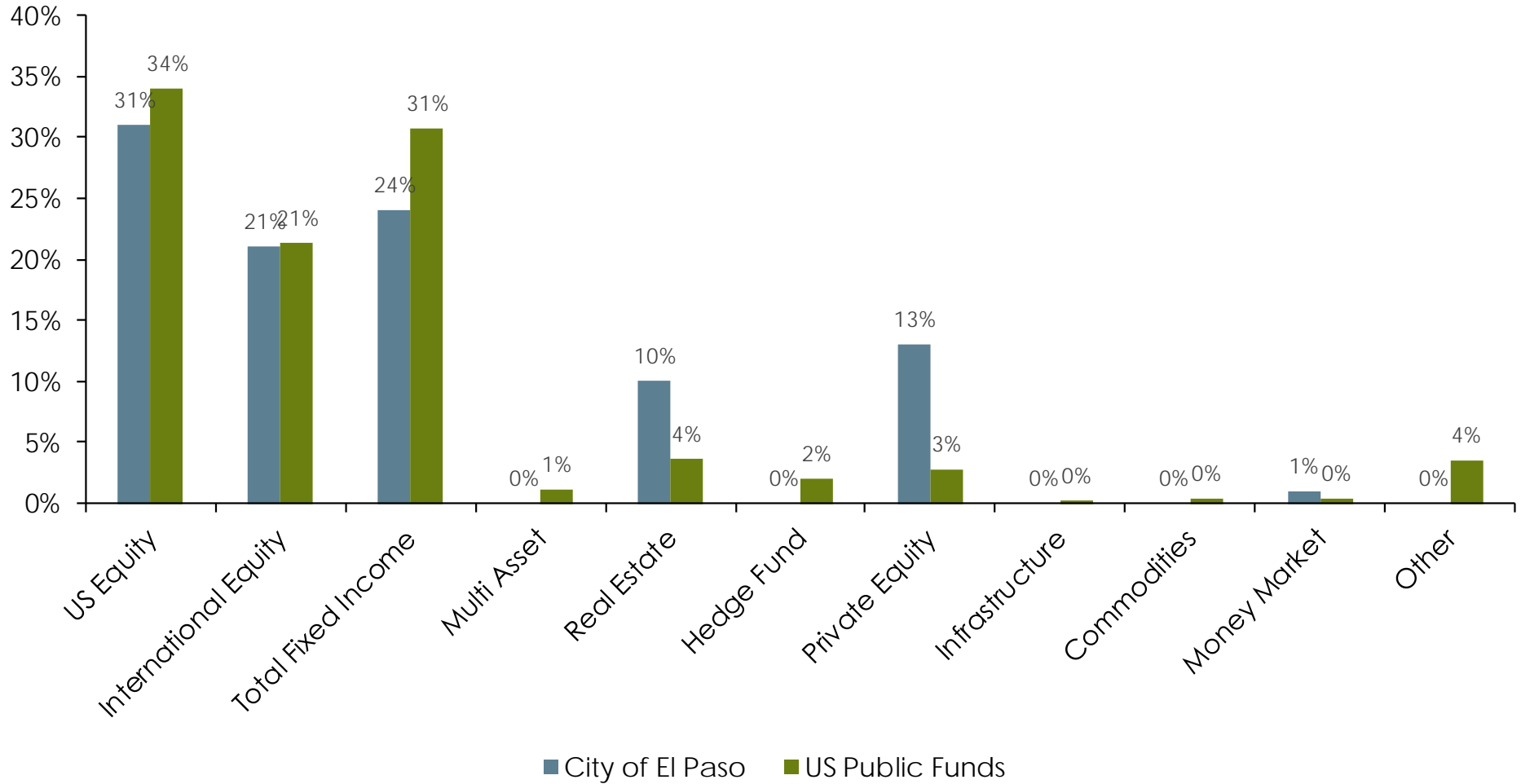
Callan Asset Class	Expected Return		Expected Risk		ACG Asset Class
	Callan ¹ (%)	ACG ² (%)	Callan ³ (%)	ACG ³ (%)	
Cash					Cash
Cash	2.50	2.26	0.90	2.09	Cash
Fixed Income					Fixed Income
Short Duration	3.40	3.08	2.10	2.81	Short Govt/Credit
Domestic Fixed	3.75	3.62	3.75	4.19	Core Bonds
Long Duration	3.75	4.15	10.65	8.46	Long Credit
TIPS	3.75	3.08	5.05	4.98	TIPS
High Yield	5.35	5.26	10.35	11.38	High Yield
Non-US Fixed	1.40	1.00	9.20	8.53	Non-US Developed Bonds
Emerging Market Debt	5.05	4.69	9.50	12.52	Emerging Market Debt
Equity					Equity
Broad Domestic Equity	7.15	7.99	17.95	17.34	All Cap US Equity
US Large Cap Equity	7.00	7.09	17.10	17.22	US Large Cap Equity
US Small/Mid Cap Equity	7.25	8.26 / 8.40	22.65	18.55 / 17.89	US Small Cap & US Mid Cap Equity
Global ex-US Equity	7.25	8.38	21.10	17.21	Global Equity
International Developed Equity	7.00	9.42	19.75	18.59	International Developed Equity
Emerging Market Equity	7.25	12.16	27.45	28.96	Emerging Market Equity
Private Equity	8.50	10.41	29.30	19.51	Private Equity
Other					Real Assets
Real Estate	6.25	6.66	15.70	10.10	Core Real Estate
Commodities	2.50	2.20	18.00	18.05	Commodities
Inflation	2.25	2.21	1.50	2.84	Inflation

¹ Callan uses the 10 year geometric return to estimate expected returns.

² ACG uses the 10 year median return to estimate expected returns.

³ Standard deviation is used to measure the expected risk.

City of El Paso Asset Allocation vs. Peers



Source: Greenwich Associates US Investors 2019 Market Trends

Note: US Public Funds includes surveyed US Public Funds dollar weighted asset mix. Includes public funds with assets between \$501 million and \$1 billion

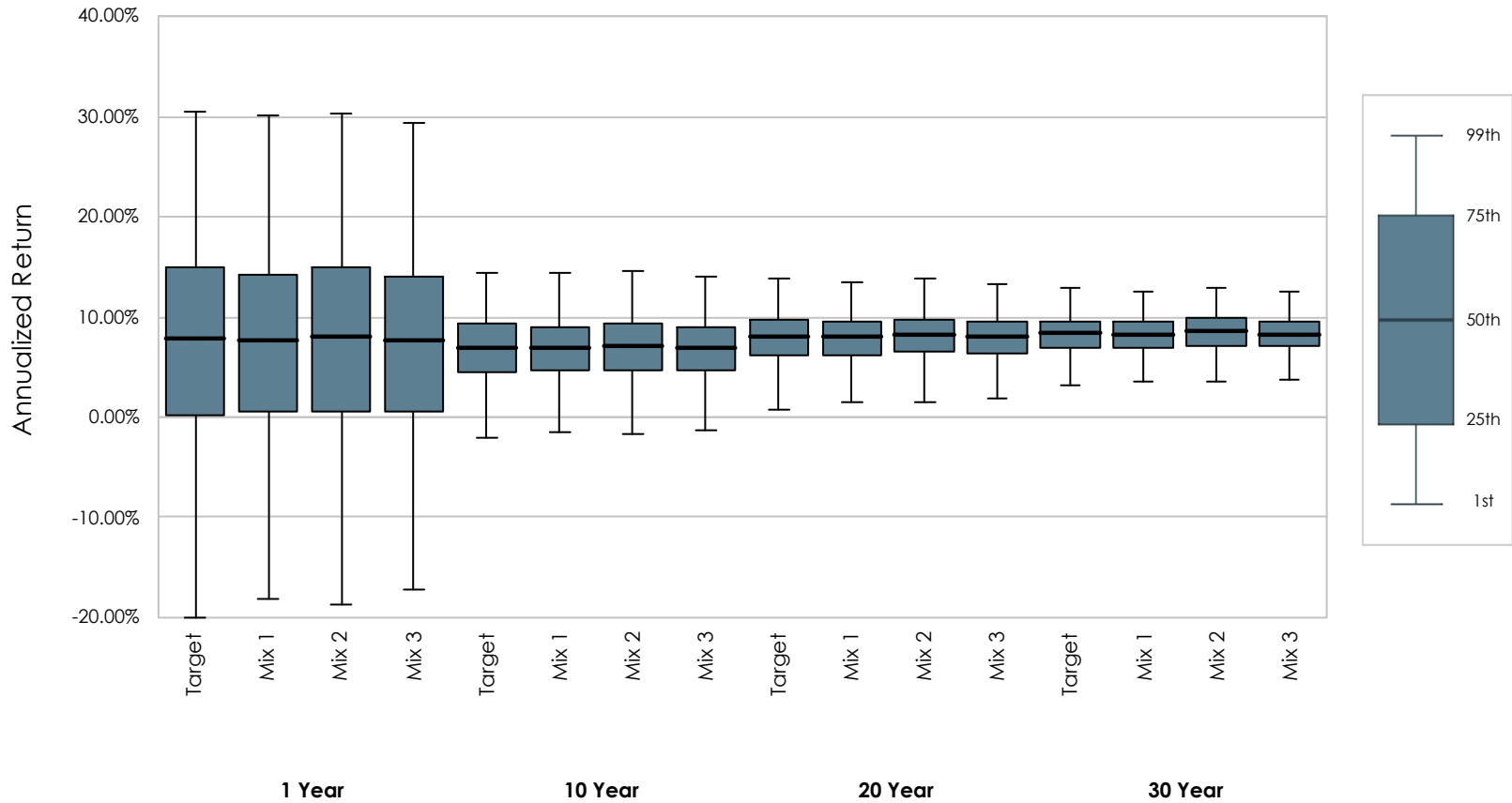
- We assessed the current strategic asset allocation using ACG's capital markets assumptions and modeled three other portfolio mixes to illustrate ways to potentially improve return, reduce risk or both.
- **Mix 1**- introduce long/short equity and consolidate all cap equity and global equity into US small cap and international developed equity. Relative to target, the standard deviation decreases, Sharpe ratio and 1st percentile return improves.
- **Mix 2** – introduce opportunistic real estate, reduce equity. Relative to target, the expected return, Sharpe ratio and 1st percentile return improves
- **Mix 3** – introduce opportunistic real estate and long/short equity. Relative to target, the expected return is approximately the same, volatility, Sharpe ratio and 1st percentile return all improve.

Portfolio Mixes

	Liquidity	Target	Mix 1	Mix 2	Mix 3
Total		100.00	100.00	100.00	100.00
Cash		1.00	1.00	1.00	1.00
Cash	1	1.00	1.00	1.00	1.00
Fixed Income		24.00	24.00	24.00	24.00
Core Bonds	1	6.00	6.00	6.00	6.00
Core Plus	1	12.00	12.00	12.00	12.00
Multi-Sector	1	6.00	6.00	6.00	6.00
Equity		65.00	65.00	60.00	60.00
All Cap US Equity	1	4.65	0.00	0.00	0.00
US Large Cap Equity	1	17.05	17.00	20.00	16.00
US Small Cap Equity	1	9.30	10.00	10.00	9.00
International Developed Equity	1	8.40	10.00	11.00	8.00
Emerging Market Equity	1	4.20	5.00	6.00	4.00
Global Equity	1	8.40	0.00	0.00	0.00
Long/Short Equity	2	0.00	10.00	0.00	10.00
Private Equity	3	13.00	13.00	13.00	13.00
Real Assets		10.00	10.00	15.00	15.00
Core Real Estate	2	10.00	10.00	10.00	10.00
Opportunistic Real Estate	3	0.00	0.00	5.00	5.00
Simulated Pre-Tax Intermediate-Term Statistics					
10-Year Median Return		6.93 %	6.90 %	7.13 %	6.91 %
Standard Deviation		10.89 %	10.31 %	10.64 %	9.96 %
Sharpe Ratio		0.47	0.48	0.49	0.50
1st Percentile Return		-19.94 %	-18.16 %	-18.77 %	-17.25 %
Simulated Pre-Tax Portfolio Statistics					
30-Year Median Return		8.34 %	8.24 %	8.52 %	8.31 %
Standard Deviation		10.89 %	10.31 %	10.64 %	9.96 %
Sharpe Ratio		0.53	0.55	0.56	0.58
1st Percentile Return		-19.94 %	-18.16 %	-18.77 %	-17.25 %
Liquidity Breakdown					
1 - High Liquidity (weekly)		77.00 %	67.00 %	72.00 %	62.00 %
2 - Medium Liquidity (1-2 year lock-up)		10.00 %	20.00 %	10.00 %	20.00 %
3 - Illiquidity (5-10 year lock-up)		13.00 %	13.00 %	18.00 %	18.00 %
Weighted Average Liquidity		1.36	1.46	1.46	1.56

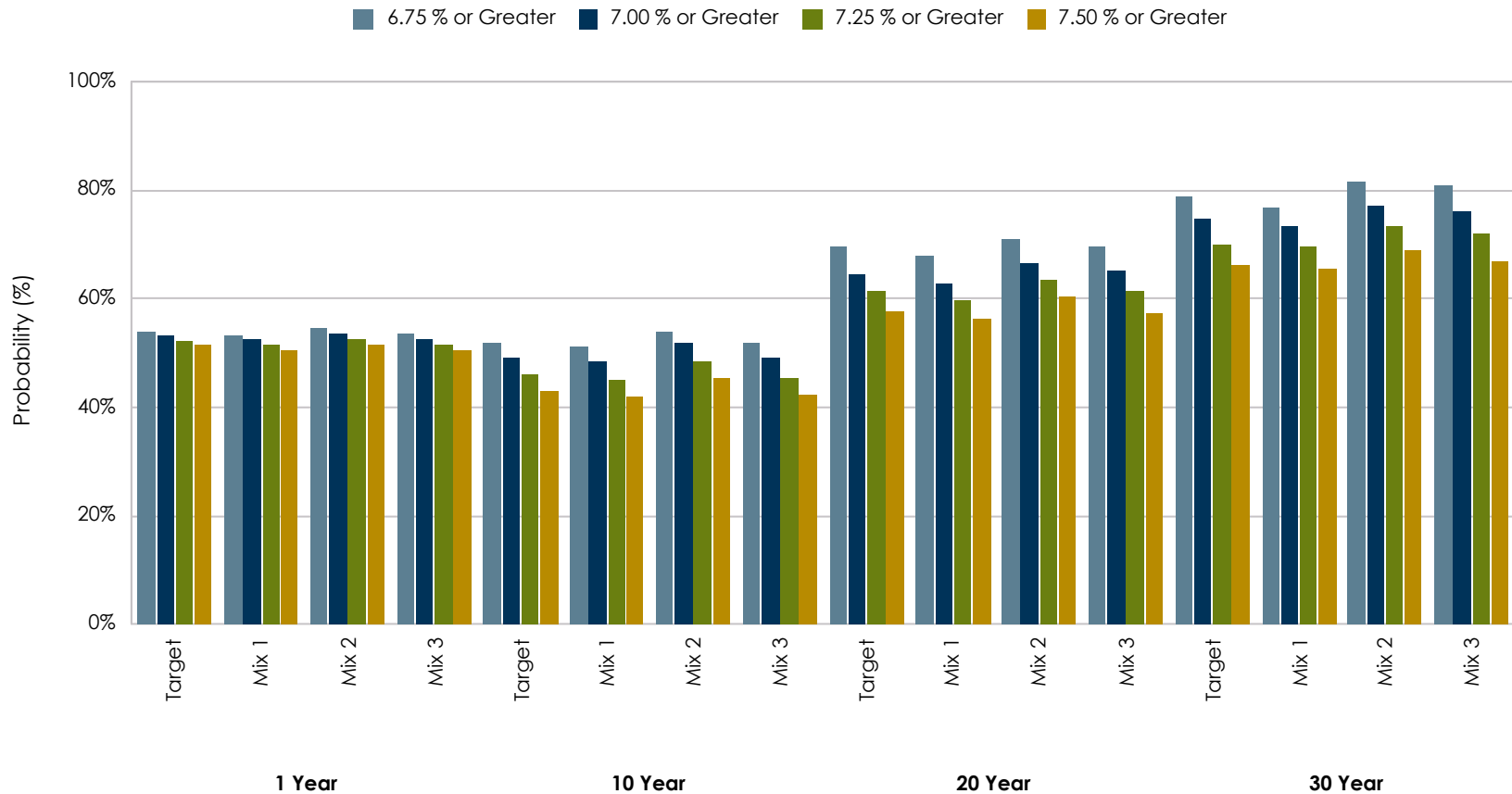
The chart and table below illustrate the simulated distribution of annualized pre-tax returns for each asset mix over multiple time periods. Simulated statistics reflect intermediate-term assumptions for the first 10 years and long term-assumptions for all additional years.

Percentile	1 Year (%)				10 Year (%)				20 Year (%)				30 Year (%)			
	Target	Mix 1	Mix 2	Mix 3	Target	Mix 1	Mix 2	Mix 3	Target	Mix 1	Mix 2	Mix 3	Target	Mix 1	Mix 2	Mix 3
99th	30.54	30.06	30.38	29.45	14.42	14.33	14.51	13.99	13.79	13.41	13.77	13.21	12.97	12.53	12.93	12.55
75th	14.99	14.31	14.93	14.01	9.26	9.03	9.31	9.05	9.73	9.56	9.82	9.55	9.62	9.47	9.84	9.55
50th	7.92	7.60	7.96	7.61	6.93	6.90	7.13	6.91	8.09	7.95	8.24	8.03	8.34	8.24	8.52	8.31
25th	0.26	0.49	0.47	0.64	4.57	4.62	4.76	4.73	6.26	6.23	6.52	6.40	6.99	6.89	7.18	7.08
1st	-19.94	-18.16	-18.77	-17.25	-2.09	-1.46	-1.71	-1.26	0.84	1.44	1.53	1.90	3.25	3.46	3.63	3.72



The chart and table below illustrate the probability of achieving annualized pre-tax returns of 6.75 %, 7.00 %, 7.25 % and 7.50 % or greater over multiple time periods for each asset mix based on simulated returns. Simulated statistics reflect intermediate-term assumptions for the first 10 years and long term-assumptions for all additional years.

Hurdle	1 Year (%)				10 Year (%)				20 Year (%)				30 Year (%)			
	Target	Mix 1	Mix 2	Mix 3	Target	Mix 1	Mix 2	Mix 3	Target	Mix 1	Mix 2	Mix 3	Target	Mix 1	Mix 2	Mix 3
6.75%	53.92	53.43	54.51	53.51	51.90	51.10	53.85	51.85	69.50	67.90	70.90	69.50	78.98	76.88	81.53	80.78
7.00%	53.19	52.45	53.61	52.58	49.30	48.45	51.80	49.10	64.60	62.90	66.70	65.20	74.62	73.27	77.33	76.13
7.25%	52.34	51.59	52.59	51.51	46.25	45.10	48.60	45.30	61.60	59.80	63.60	61.50	69.97	69.82	73.42	71.92
7.50%	51.48	50.48	51.63	50.44	43.10	42.00	45.60	42.30	57.90	56.50	60.40	57.30	66.22	65.47	68.92	66.82



Investment Fee and Commission Review

Investment Fee and Commission Review

El Paso Investment Portfolio

- The estimated total **weighted average investment management fee** using ending 2019 market values for the City of El Paso portfolio is **0.63%** (63 basis points); this includes all traditional and non-traditional strategies (but does not include incentive or performance-based fee structures). Based on 2019 ending market values the annual investment management fees are approximately **\$5,200,000**.
- The estimated weighted average investment management fee of 63 basis points is slightly above median, but below the top quartile (highest fees) when compared to similarly structured institutional portfolios.
- We also estimated the weighted average investment management fee rate using the recently adopted strategic allocation which excludes MLPs and Absolute Return funds to be approximately **0.54% (54 basis points)**. The weighted average management fee is above the least expensive quartile, but below median when compared to similarly structured institutional portfolios.
- Fees paid to Callan in 2019 were \$298,000. The mean fee paid for Investment Consultant on the 2019 Greenwich Associates Study for Municipal Public funds is \$319,000.
- Fees paid to Bank of New York Mellon in 2019 were \$187,000. The mean fee paid for Trust and Custody on the 2019 Greenwich Associates study for Public Funds is \$232,000.

Individual Investment Managers

- We have included an analysis of each underlying investment manager's fee relative to its broad peer universe (this does not include private equity as there is no readily available peer universe for comparison purposes).
- Most of the underlying investment managers' fees are in-line with or less expensive than the median manager in their respective universes.
- Excluding managers in liquidation, only **three managers rank above median (most expensive)** in management fees against their peer universes.

Above Median (60 th +)	Median (40 th - 60 th)	Below Median (40 th -)
Vulcan All Cap	Mellon Equity Index	Mellon Dynamic US Equity
Riverbridge Partners	Lazard Intl Equity	WEDGE
Franklin Templeton Global Plus	Heitman	Mellon International Stock Index
Allianz (liquidated)		Franklin Templeton Intl Equity
		AQR Emerging Markets
		Mellon Aggregate Index
		Janus Core Plus
		UBS Trumbull Fund
		Salient Advisors (liquidated)
		AQR Style Premia (liquidated)
		Invesco (liquidated)

Investment Fee and Commission Review – Allocation at December 31, 2019

Fund	Asset Class	Mandate Size ¹	Current Fee Schedule (bps)	Peer Group ²	Least Expensive Quartile (bps)	Median (bps)	Most Expensive Quartile (bps)
Mellon Equity Index	Passive Large Cap Equity	\$96,924,000	5	US Passive Large Cap Equity	3	4	8
Mellon Dynamic US Equity	Large Cap Equity	\$62,542,000	30	US Large Cap Equity	41	52	62
Vulcan All Cap	All Cap Equity	\$39,577,000	85	US All Cap Equity	56	71	85
WEDGE	Small/Mid Cap Value Equity	\$31,223,000	70	US SMID Cap Value Equity	80	85	94
Riverbridge Partners	Small/Mid Cap Growth Equity	\$38,409,000	90	US SMID Cap Growth Equity	78	85	92
Mellon International Stock Index	Passive Intl. Developed Equity	\$68,678,000	5	EAFE Passive Equity	6	10	13
Franklin Templeton Intl Equity	All Country Small Cap Equity	\$27,174,000	84	Non-US Small Cap Equity	84	90	100
Lazard Intl Equity	All Country Equity	\$30,001,000	73	Non-US Equity	60	73	85
AQR Emerging Markets	Emerging Markets Equity	\$30,014,000	80	Global Emerging Mkts Equity	71	85	100
Portfolio Advisors Combined	Private Equity	\$84,890,000	105	--	105	105	105
Mellon Aggregate Index	Passive Core Fixed Income	\$64,003,000	5	US Passive Core FI	5	5	8
Janus Core Plus	Core Plus Fixed Income	\$78,118,000	25	US Core Plus FI	28	30	33
Franklin Templeton Global Plus	Opportunistic Fixed Income	\$36,974,000	47	Global Multi-Sector FI	40	45	50
UBS Trumbull Fund	Core Private Real Estate	\$36,884,000	85	NFI ODCE Index	96	100	110
Heitman	Core Private Real Estate	\$37,462,000	99	NFI ODCE Index	96	100	110
Salient Advisors	MLP	\$6,982,000	75	Master Limited Partnership	88	100	118
Allianz	Absolute Return	\$35,208,000	315	Hedge Fund Research, Inc	100	110	150
AQR Style Premia	Absolute Return	\$7,650,000	75	Hedge Fund Research, Inc	100	110	150
Invesco	Absolute Return	\$14,916,000	85	Hedge Fund Research, Inc	100	110	150
City of El Paso Weighted Average Fee		\$827,629,000	63		53	58	67
Annual Fee for Plans with Similar Structure (\$)			\$5,181,359		\$4,391,693	\$4,797,104	\$5,516,743

¹ Market values provided by Callan as of 12/31/2019 were used for the investment mandate size. Excludes cash.

² Peer Group Sources: eVestment Universes.

Fee Schedule does not include incentive-based fees.

Fees may vary based on changes in Market Values or Investment Results

Private Equity is ranked against itself to calculate quartile ranks because there is not a meaningful peer group comparison.

³ The current fee schedule shows total fees paid to Allianz during the year divided by year-end assets.

Investment Fee and Commission Review – Strategic Allocation

Fund	Asset Class	Mandate Size ¹	Current Fee Schedule (bps)	Peer Group ²	Least Expensive Quartile (bps)	Median (bps)	Most Expensive Quartile (bps)
Mellon Equity Index	Passive Large Cap Equity	\$77,190,000	5	US Passive Large Cap Equity	3	4	8
Mellon Dynamic US Equity	Large Cap Equity	\$64,325,000	30	US Large Cap Equity	41	52	62
Vulcan All Cap	All Cap Equity	\$38,595,000	85	US All Cap Equity	56	71	85
WEDGE	Small/Mid Cap Value Equity	\$38,595,000	70	US SMID Cap Value Equity	80	85	94
Riverbridge Partners	Small/Mid Cap Growth Equity	\$38,595,000	90	US SMID Cap Growth Equity	78	85	92
Mellon International Stock Index	Passive Intl. Developed Equity	\$71,463,000	5	EAFE Passive Equity	6	10	13
Franklin Templeton Intl Equity	All Country Small Cap Equity	\$34,860,000	84	Non-US Small Cap Equity	84	90	100
Lazard Intl Equity	All Country Equity	\$34,860,000	73	Non-US Equity	60	73	85
AQR Emerging Markets	Emerging Markets Equity	\$34,860,000	80	Global Emerging Mkts Equity	71	85	100
Portfolio Advisors Combined	Private Equity	\$107,900,000	105	--	105	105	105
Mellon Aggregate Index	Passive Core Fixed Income	\$49,800,000	5	US Passive Core FI	5	5	8
Janus Core Plus	Core Plus Fixed Income	\$99,600,000	25	US Core Plus FI	28	30	33
Franklin Templeton Global Plus	Opportunistic Fixed Income	\$49,800,000	47	Global Multi-Sector FI	40	45	50
UBS Trumbull Fund	Core Private Real Estate	\$41,500,000	85	NFI ODCE Index	96	100	110
Heitman	Core Private Real Estate	\$41,500,000	99	NFI ODCE Index	96	100	110
City of El Paso Weighted Average Fee		\$830,000,000	54		52	57	63
Annual Fee for Plans with Similar Structure (\$)			\$4,482,000		\$4,316,000	\$4,731,000	\$5,229,000

¹ Market values estimated using asset class targets in the IPS and a total portfolio size of \$830 million. Excludes cash.

² Peer Group Sources: eVestment Universes.

Fee Schedule does not include incentive-based fees.

Fees may vary based on changes in Market Values or Investment Results

Private Equity is ranked against itself to calculate quartile ranks because there is not a meaningful peer group comparison.

City of El Paso - Fee Comparison	Fees
The weighted average investment management fee for the City of El Paso - Strategic Asset Allocation¹	54 bps
<i>Median fee paid for plans with similar structure per Evestment Universe</i>	<i>57 bps</i>
Total fees paid to BNY Mellon for custody services in 2019	\$187,000
<i>Mean fee for Trust and Custody on 2019 Greenwich Associates Fee Study for Municipal Public Funds</i>	<i>\$232,000</i>
Total fees paid to Callan in 2019	\$298,000
<i>Mean fee for Investment Consultant on 2019 Greenwich Associates Fee Study for Municipal Public Funds</i>	<i>\$319,000</i>
City of El Paso Total Cost of Managing Investment Program²	59.8 bps

1) Based on strategic asset allocation and total fund value of \$830 million. Excludes cash.

2) Total cost of managing the investment program consists of the weighted average manager fee using strategic targets (54 bps), custody fees (2.2 bps) and investment consultant fee (3.6bps).

Investment Fee and Commission Review

Commission Review

- Commission reports were requested for all equity separately managed accounts in the City of El Paso portfolio. This included Riverbridge, Vulcan Value Partners and Wedge Capital.
- The broker commissions paid by the three managers, which include trading and research costs, totaled **\$53,489** and the cps (cents per share) **ranged from 2.8 to 5.0 cents**.

	Commissions (\$)	cps (¢)
Riverbridge	12,264	5.00
Vulcan Value Partners	27,454	3.11
Wedge Capital	13,771	2.81
Industry Average		3.80

Note: industry average from 2017 Greenwich Associates study in 2017

Governance Process

Governance Review

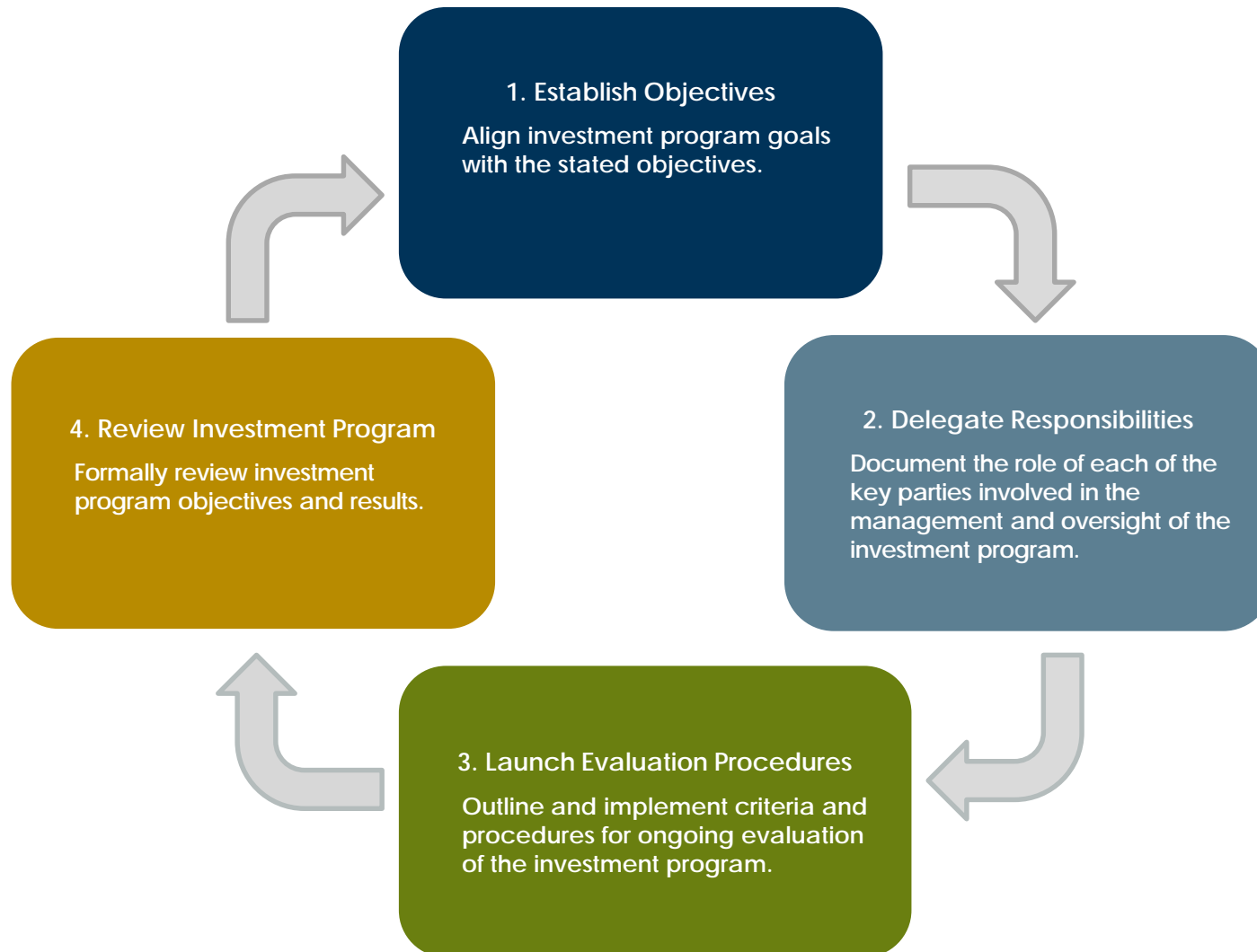
Scope

- The governance structure and processes for the City of El Paso Employees Retirement Trust was studied by reviewing recent meeting notes, audits, the IPS and additional documents provided by the Staff and Investment Consultant.
- This review included all parties affiliated with the Trust and looked into proper alignment of investment, financial and general obligations, documented responsibilities and the ongoing evaluation structure.
- Documentation for appropriate trustee education as required in addition to compliance with the El Paso Municipal code were also reviewed.

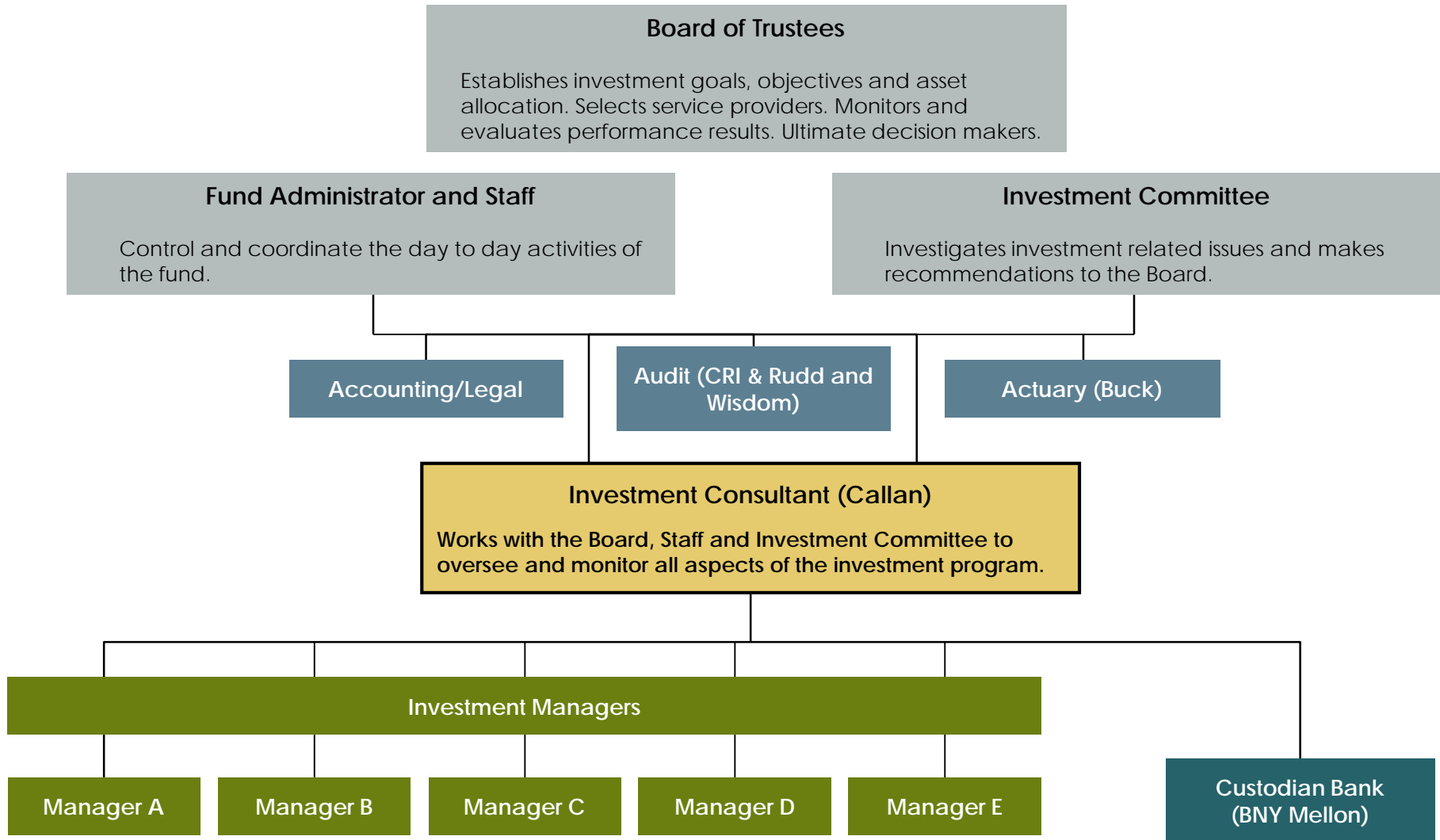
Observations

- The IPS clearly outlines the responsibilities and duties of the Trust as well as each party of interest.
- The Board of Trustees delegates to an Investment Committee which considers issues related to the investment of Fund assets and which makes recommendations to the Board. The Investment Committee are charged with investigating investment related issues. The Investment Committee reports its findings and recommendations to the Board of Trustees. The investment decision making process and delegation of investment authority are appropriately documented within the IPS. Review of the November 14th meeting minutes and asset/liability study supports that the **current documented process is being properly followed.**
- The Board voted to adopt the State Pension Review Board's minimum educational training requirements for both Trustees and System Administrators. New Trustees are required to complete seven credit hours of education in core content within the first year of service. Continuing Trustees and Administrators are required to complete at least four hours of continuing education in either core or non-core content areas within each two-year period after the first year of service. Trustees appear to have reasonable access to education resources through self-pace training as well as other resources circulated. Appropriate documentation tracking the progress of the Trustees and the Administrator was also provided. **Education requirements appear adequate for the Board and Administrators.**
- Plan audit, actuary audit, financial report and consulting audit are up to date and have been conducted by outside firms.
- BNY Mellon is the Custodian and Investment Manager to several strategies funded by the City of El Paso. The strategies run by BNY Mellon are mostly passive and have reasonable fees. In addition, Callan provides oversight to ensure investment objectives are being met.
- Performance and investment objectives are reviewed by an independent third party.
- Overall, the current governance structure and review process in place appear to be **in line with industry standards.**

Effective Governance is Ongoing



City of El Paso Governance Structure



2.64 El Paso Municipal Code

All of the current portfolio managers were contacted and asked to confirm compliance with the below excerpts from the El Paso Municipal Code 2.64.180 Investments.

El Paso Municipal Code "Report Card"

Category	Assessment*			Observations
	Yes	No		
All managers have acknowledged their fiduciary responsibility in writing.	x			Every manager confirmed they had provided their fiduciary responsibility in writing.
All investments are made in the name of the fund or equivalent designation belonging to the fund.	x			Each portfolio manager verified the investments executed were in the name of the Trust or equivalent designation belonging to the Trust.
Each manager is registered with the Investment Advisors Act of 1940.	x			All of the managers are registered with the Investment Advisors Act of 1940.
Each manager has presented to the Board and Investment Committee within the last year.	x			Each manager confirmed they have presented to the Board and Investment Committee in the past year. In addition, most managers had upcoming meetings scheduled.

*1 = Included; no significant changes necessary; 2 = Included; consider enhancements; 3 = Not included; should be addressed.

Investment Manager Search & Monitoring

Scope

- The Board, through its Investment Committee hires investment managers from time-to-time in order to carry out its duties to diversify the Trust's investment portfolio. The Board has granted authority to the Investment Committee to review possible manager candidates and make recommendations to the Board.
- The most recent manager search, conducted in 2015, was reviewed for compliance with the process as documented within the IPS (**pages 44-45**).
- Manager guidelines, objectives, requirements and constraints outlined in the IPS were validated using prior flash reports and quarterly performance reports provided by Callan.

Observations

- In 2015 the Board added Absolute Return to the asset allocation. Following the addition, the Trust's investment consultant prepared an investment manager search that covered the broad universe of managers and led to **six finalists** that presented to the Board.
- The search process was documented and **met all of the guidelines** outlined in the IPS.
- The investment mandates detailed for each manager and their asset class is properly detailed in the IPS.
- Managers are **meeting their expectations** and **investing within the constraints** outlined in the IPS. Managers with performance concerns are undergoing periodic reviews and the **watch list is actively monitored**.
- There is one current asset class, Private Equity, with different performance benchmarking than what is instructed in the IPS. **Consider reviewing the current direction**.
- Trading cost analysis and proxy voting instructions detailed in the IPS should be reviewed each year to ensure compliance with the IPS.

Manager Monitoring "Report Card"

Category	Assessment*			Observations
	1	2	3	
Manager Search				
The manager search and selection process is fully documented and retained for the Board's records.	x			The most recent manager search was in 2015 for Absolute Return. Manager specific factors were evaluated along with the overall portfolio construction.
The consultant identified qualified candidates from the manager search database.	x			Callan began with the broadest possible universe of candidates and used quantitative and qualitative screening to narrow the search to six finalists.
The analysis of qualified candidates included quantitative, qualitative and organizational factors.	x			A seven step process directed by Callan reviewed each manager extensively ranging from performance to financial viability of the firm.
Monitoring Checklist				
Managers in the portfolio are investing within their investment guidelines outlined in the IPS.	x			Managers in the portfolio adhere to cost, custody and investment vehicle constraints outlined in the IPS.
Managers are meeting their investment objective outlined in the IPS. Managers in question are being monitored on the watch list.	x			Performance goals and benchmarks are documented. The watch list is actively updated and currently includes Vulcan, Wedge, AQR EM and UBS Trumbull Fund.
Managers are investing based on the investment strategy recorded in the IPS.	x			Investing approach regarding geography, asset class, holding concentration and security types are being followed by each manager.
Manager performance is compared against the most appropriate peer group and benchmark stated in the IPS.		x		The Private Equity benchmark on the performance report differs from what is documented in the IPS (the Russell 3000 Index vs Russell 3000 Index +3%). In addition, the Private Equity peer group comparison does not appear to be populating on the reports and is footnoted as of 9/30/2017.
Managers are adhering to the portfolio restrictions documented in the IPS.	x			Company weightings, country weightings, leverage, cash positions and investment types restrictions are all being adhered to based on the Quarterly Report.
Annual trading cost analysis is provided to the board for applicable managers.			x	The separately managed accounts are not providing the Board with trading cost analyses. A process should be established to comply with this requirement.
Managers forward all proxy voting and rationale to the Board.		x		Investment managers with separate accounts provide summarization of proxy voting to the Board, however, rationale is not provided.
Each manager has presented to the Board and IC within the last year.	x			Each manager confirmed they have presented to the Board and IC in the past year. In addition, most managers have upcoming meetings scheduled.

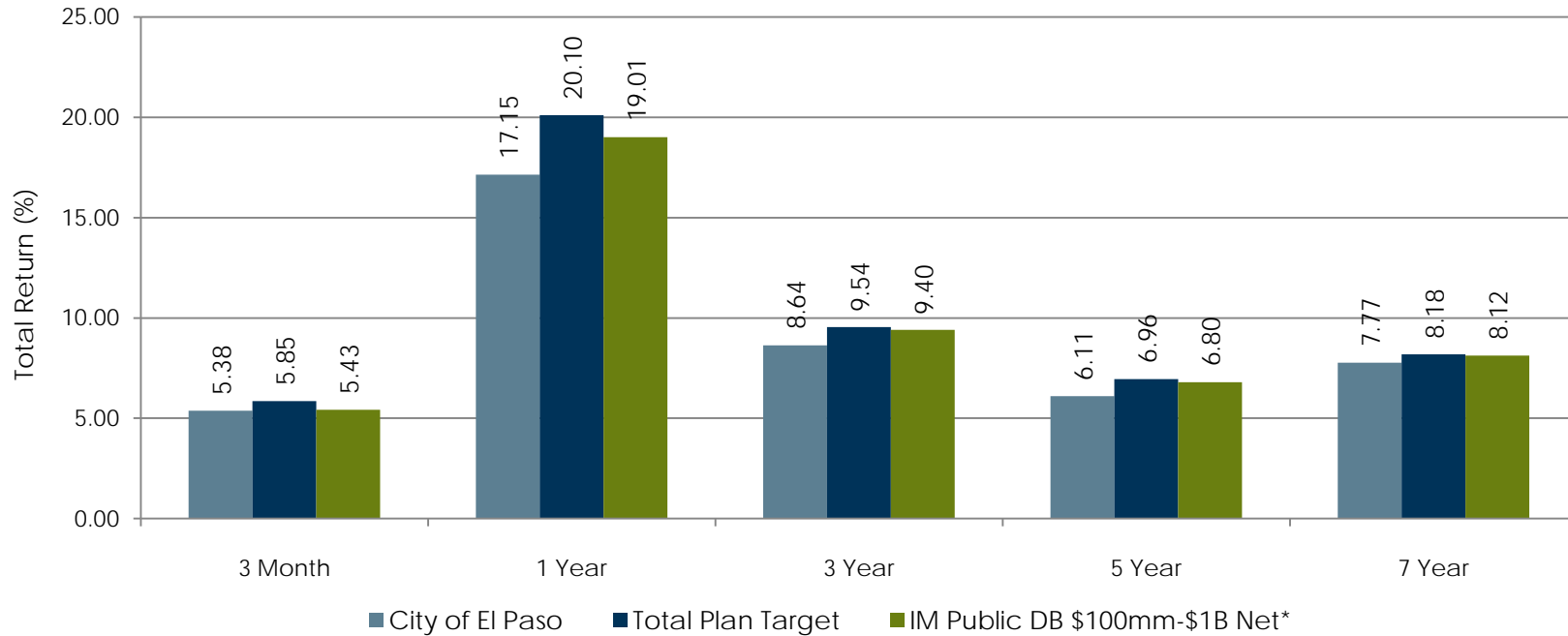
*1 = Included; no significant changes necessary; 2 = Included; consider enhancements; 3 = Not included; should be addressed.

Performance Discussion

Performance Discussion

- We reviewed trailing net performance for the total fund per the most recent quarterly investment report and compared the performance to peers within the Investment Metrics Public Funds universe with assets between \$100 million and \$1 billion.
- Over the trailing 1-year, the plan ranks at the 76th percentile. Over the trailing 3-year, the plan ranks at the 70th percentile. Over the trailing 5-year, the plan ranks at the 85th percentile and over the trailing 7-year, the plan ranks at the 63rd percentile.
- Net of fees, the total fund performance trails the policy index and the peer group (Investment Metrics Public Funds with asset between \$100 million and \$1 billion) over the 1- year, 3-year, 5-year and 7-year time periods.
- During 2019, the plan's allocations to domestic and international equities were the largest positive contributors. Real estate, private equity and absolute return strategies were the biggest reasons for the plan's underperformance.

City of El Paso Total Portfolio For the Periods Ending December 31, 2019



Ranking	54	76	70	85	63
5 th Percentile	6.64	22.31	11.20	8.43	9.79
25 th Percentile	5.96	20.65	10.00	7.38	8.70
50 th Percentile	5.43	19.01	9.40	6.80	8.12
75 th Percentile	4.91	17.17	8.45	6.36	7.40
95 th Percentile	3.98	14.91	7.43	5.66	6.35
Observations	177	177	168	153	146

*Performance is calculated using net of fee returns.
The rankings are on a scale of 1 to 100 with 1 being the best.
Source: Investment Metrics Net Universe. Q4 2019 El Paso City Employees' Pension Fund Performance Report



Appendix

Reviewed Documents

- We obtained and reviewed the following documentation in order to complete this review:
 - Statement of Investment Policy
 - 2019 Asset Liability Study
 - Monthly meeting minutes for calendar years 2015 and 2019
 - Q4 performance reports for the last seven years
 - 2015 Absolute Return Search Reports
 - Continuing education Requirements
 - Documentation supporting the tracking of continuing education
 - Questionnaire responses from all of the investment managers
 - 2019 Annual Financial Report

Investment Manger Performance

Fund Performance Gross of Fees

As of 12/31/2019

	City of El Paso (%)	Benchmark (%)	Objective Met?
The total return of the portion of each portfolio should exceed the total return of the respective benchmark over a rolling market cycle (approximately 3-5 years).			
Mellon Equity Index (S&P 500 Index)			
3 Years	15.3	15.3	Yes
5 Years	11.7	11.7	Yes
Mellon Dynamic US Equity (S&P 500 Index)			
3 Years	18.5	15.3	Yes
5 Years	14.0	11.7	Yes
Vulcan (All Cap Russell 3000 Index)			
3 Years	17.2	14.6	Yes
5 Years	11.4	11.2	Yes
WEDGE (Wedge Spliced Index*)			
3 Years	5.8	10.0	No
5 Years	7.3	8.0	No
Riverbridge Partners (Riverbridge Spliced Index**)			
3 Years	19.2	10.7	Yes
5 Years	12.2	8.4	Yes
Mellon International Stock Index (MSCI EAFE Index)			
3 Years	10.0	9.6	Yes
5 Years	6.1	5.7	Yes
Franklin Templeton Intl Equity (ACWI Small Cap ex US)			
3 Years	11.3	9.7	Yes
5 Years	7.3	7.0	Yes

* The Wedge target is currently the Russell 2500 Value as of 3/31/2019.

** The Riverbridge target is currently the Russell 2500 Growth as of 3/31/2019.

Source: Q4 2019 El Paso City Employees' Pension Fund Performance Report

Fund Performance Gross of Fees (Continued)

As of 12/31/2019

	City of El Paso (%)	Benchmark (%)	Objective Met?
Lazard Intl Equity (MSCI ACWI ex-US IMI Index)			
3 Years	12.9	9.8	Yes
5 Years	5.3	5.6	No
AQR Emerging Markets (MSCI Emerging Mkts Index)			
3 Years	10.6	11.6	No
5 Years	5.3	5.6	No
Portfolio Advisors Composite (Russell 3000 Index)*			
3 Years	17.6	13.9	Yes
5 Years	13.9	11.2	Yes
Mellon Aggregate Index (Blmbg Aggregate Index)			
3 Years	4.0	4.0	Yes
5 Years	3.0	3.1	Yes
Janus Core Plus (Blmbg Aggregate Index)			
3 Years	4.5	3.4	Yes
5 Years	3.4	3.1	Yes
Franklin Templeton Global Plus (Blmbg Multiverse Index)			
3 Years	1.6	1.8	No
5 Years	1.8	2.5	No
UBS Trumbull Fund (NFI-ODCE Equal Weight Net)*			
3 Years	3.8	6.5	No
5 Years	6.2	8.3	No
Heitman (NFI-ODCE Equal Weight Net)*			
3 Years	5.5	6.5	No
5 Years	--	8.3	n/a

- Performance is Net of Fees.
- Source: Q4 2019 El Paso City Employees' Pension Fund Performance Report

Fund Performance Gross of Fees (Continued)

As of 12/31/2019

	City of El Paso (%)	Benchmark (%)	Objective Met?
Salient Advisors (S&P MLP Index)			
3 Years	-1.5	-2.9	Yes
5 Years	-4.1	-6.2	Yes
Allianz (60% ACWI/40% BC Gbl Agg)*			
3 Years	8.1	9.3	No
5 Years	--	--	n/a
AQR Style Premia (60% ACWI/40% BC Gbl Agg)*			
3 Years	-4.4	9.3	No
5 Years	--	--	n/a
Invesco (60% ACWI/40% BC Gbl Agg)			
3 Years	--	9.3	n/a
5 Years	--	--	n/a
Cash (3-month Treasury Bill)			
3 Years	2.3	1.7	Yes
5 Years	2.1	1.1	Yes
Total Fund (Total Fund Benchmark)**			
3 Years	9.1	9.5	No
5 Years	6.5	7.0	No

• Performance is Net of Fees.

** Current Quarter Target is 30.0% Russell 3000 Index, 22.0% Blmbg Aggregate, 18.5% MSCI ACWI ex US IMI, 10.0% Russell 3000 Index, 10.0% NCREIF NFI-ODCE Eq Wt Net, 4.5% MSCI ACWI, 3.0% Blmbg:Glb Agg, 1.0% 3-month Treasury Bill and 1.0% S&P MLP Index.

Source: Q4 2019 El Paso City Employees' Pension Fund Performance Report

Manager Questionnaire

Question	Riverbridge	Wedge Capital	Vulcan Value Partners	AQR Capital	Franklin Templeton	Lazard
What was the most recent date of an in-person presentation to the Board and IC?	March 17, 2020	Feb 18, 2020	Aug 20, 2019	Jan 14, 2020	April 17, 2019	May 15, 2019
If you are currently on the Watch List are you presenting semi-annually to the Investment Committee?	n/a	Semiannually	Annually	Semiannually	n/a	n/a
Do you provide the Board an annual trading cost analysis?	No	n/a	No	n/a	n/a	n/a
Do you forward a summary of all proxy voting and the rationale for each vote?	Yes (but no rationale)	n/a	Yes (but no rationale)	n/a	n/a	n/a
Have you acknowledged in writing your fiduciary responsibility?	Yes	n/a	Yes	n/a	n/a	n/a
Are investments made in the name of the Trust or equivalent designation belonging to the Trust?	Yes	Yes	Yes	Yes	Yes	Yes
Are you registered with the Investment Advisors Act of 1940?	Yes	Yes	Yes	Yes	Yes	Yes
What are your liquidity terms?	Daily	Daily	Daily (3 days notice)	Semi-Monthly (15 th and EOM)	Daily	Daily (5 days notice)

Green = Indicates manager is in compliance with instructions documented in the IPS
 Orange = Indicates needs review.

Manager Questionnaire (Continued)

Question	Portfolio Advisors	Mellon Capital Management	Janus Henderson	Heitman American	UBS Realty
What was the most recent date of an in-person presentation to the Board and IC?	Nov 14, 2019	September 2019	Feb 19, 2020	March 20, 2019	August 21, 2019
If you are currently on the Watch List are you presenting semi-annually to the Investment Committee?	n/a	n/a	n/a	n/a	Yes
Do you provide the Board an annual trading cost analysis?	n/a	n/a	n/a	n/a	n/a
Do you forward a summary of all proxy voting and the rationale for each vote?	n/a	n/a	n/a	n/a	n/a
Have you acknowledged in writing your fiduciary responsibility?	n/a	n/a	Yes	n/a	n/a
Are investments made in the name of the Trust or equivalent designation belonging to the Trust?	Yes	Yes	Yes	Yes	Yes
Are you registered with the Investment Advisors Act of 1940?	Yes	Yes	Yes	Yes	Yes
What are your liquidity terms?	Illiquid	Daily	Daily	Quarterly (90 days written notice)	Quarterly (60 days written notice)

Green = Indicates manager is in compliance with instructions documented in the IPS
Orange = Indicates needs review.

Greenwich Associates US Investors Market Trends

2019 U.S. Institutional Market Trends

Research with U.S. Institutional Investors - Consulting Business

Market Trends

January 2020

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U.S. Institution Research Coverage, 2016 – Present

U.S. Institutional Investors – Universe of Institutions (3733) (4939) (4991) (4536)

	Number in Universe				Number Interviewed				Percent Interviewed			
	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019
Corporate Funds												
Corporate Funds	1,780	2,306	2,327	2,079	592	460	446	447	33.3%	19.9%	19.2%	21.5%
Over \$5 billion	308	313	314	327	120	128	123	128	39.0%	40.9%	39.2%	39.1%
\$1 – 5 billion	581	624	662	713	172	190	181	180	29.6%	30.4%	27.3%	25.2%
\$501 million – 1 billion	422	526	577	540	75	84	80	76	17.8%	16.0%	13.9%	14.1%
\$500 million and under	290	843	774	499	46	58	62	63	15.9%	6.9%	8.0%	12.6%
Public Funds												
Public Funds	639	748	754	739	265	246	252	235	41.5%	32.9%	33.4%	31.8%
– Federal	14	18	17	17	6	6	6	5	42.9%	33.3%	35.3%	29.4%
– State	288	303	324	325	118	94	96	88	41.0%	31.0%	29.6%	27.1%
– Municipal	337	427	413	397	141	146	150	142	41.8%	34.2%	36.3%	35.8%
Over \$5 billion	243	253	262	275	104	102	104	90	42.8%	40.3%	39.7%	32.7%
\$1 – 5 billion	168	178	196	187	64	60	62	52	38.1%	33.7%	31.6%	27.8%
\$501 million – 1 billion	110	136	139	124	42	43	39	43	38.2%	31.6%	28.1%	34.7%
\$500 million and under	99	182	159	155	36	41	49	51	36.4%	22.5%	30.8%	32.9%
Endowments and Foundations												
Endowments & Foundations	696	963	896	842	190	188	215	211	27.3%	19.5%	24.0%	25.1%
– Endowments	304	368	334	318	85	70	83	82	28.0%	19.0%	24.9%	25.8%
– Foundations	392	595	562	524	105	118	132	129	26.8%	19.8%	23.5%	24.6%
Over \$1 billion	230	248	252	252	48	54	54	51	20.9%	21.8%	21.4%	20.2%
\$501 million – 1 billion	211	229	252	241	52	50	60	65	24.6%	21.8%	23.8%	27.0%
\$500 million and under	244	486	392	349	79	84	101	95	32.4%	17.3%	25.8%	27.2%
Unions												
Unions	293	409	445	375	70	70	86	90	23.9%	17.1%	19.3%	24.0%
Healthcare												
Healthcare Organizations	325	513	507	439	99	95	110	101	30.5%	18.5%	21.7%	23.0%
Total Institutions	3,733	4,939	4,991	4,536	1,216	1,059	1,128	1,100	32.6%	21.4%	22.6%	24.3%

U.S. Institutions' Disclosure Rates for Competitive Evaluations, 2017 – Present

U.S. Institutional Investors – Total Interviews (1059) (1128) (1100)

	<i>Disclosure of Participation</i>									<i>Disclosure of Evaluations</i>					
	Total Institutions			Number			Percent			Number			Percent		
	2017	2018	2019	2017	2018	2019	2017	2018	2019	2017	2018	2019	2017	2018	2019
Corporate Funds															
Corporate Funds	460	446	447	440	410	398	95.7%	91.9%	89.0%	278	289	263	60.4%	64.8%	58.8%
Over \$5 billion	128	123	128	120	110	110	93.8%	89.4%	85.9%	69	67	60	53.9%	54.5%	46.9%
\$1 – 5 billion	190	181	180	183	169	163	96.3%	93.4%	90.6%	120	116	109	63.2%	64.1%	60.6%
\$501 million – 1 billion	84	80	76	80	75	70	95.2%	93.8%	92.1%	49	57	49	58.3%	71.3%	64.5%
\$500 million and under	58	62	63	57	56	55	98.3%	90.3%	87.3%	40	49	45	69.0%	79.0%	71.4%
Public Funds															
Public Funds	246	252	235	234	220	198	95.1%	87.3%	84.3%	170	162	141	69.1%	64.3%	60.0%
– Federal	6	6	5	6	5	3	100.0%	83.3%	60.0%	4	3	3	66.7%	50.0%	60.0%
– State	94	96	88	88	80	72	93.6%	83.3%	81.8%	62	55	52	66.0%	57.3%	59.1%
– Municipal	146	150	142	140	135	123	95.9%	90.0%	86.6%	104	104	86	71.2%	69.3%	60.6%
Over \$5 billion	102	104	90	97	84	70	95.1%	80.8%	77.8%	55	49	45	53.9%	47.1%	50.0%
\$1 – 5 billion	60	62	52	57	55	43	95.0%	88.7%	82.7%	47	48	34	78.3%	77.4%	65.4%
\$501 million – 1 billion	43	39	43	41	36	38	95.3%	92.3%	88.4%	36	35	31	83.7%	89.7%	72.1%
\$500 million and under	41	49	51	39	47	48	95.1%	95.9%	94.1%	32	32	32	78.0%	65.3%	62.7%
Endowments and Foundations															
Endowments & Foundations	188	215	211	175	191	179	93.1%	88.8%	84.8%	123	142	125	65.4%	66.0%	59.2%
– Endowments	70	83	82	65	72	66	92.9%	86.7%	80.5%	44	50	44	62.9%	60.2%	53.7%
– Foundations	118	132	129	110	119	113	93.2%	90.2%	87.6%	79	92	81	66.9%	69.7%	62.8%
Over \$1 billion	54	54	51	50	49	42	92.6%	90.7%	82.4%	31	30	24	57.4%	55.6%	47.1%
\$501 million – 1 billion	50	60	65	47	54	55	94.0%	90.0%	84.6%	35	40	40	70.0%	66.7%	61.5%
\$500 million and under	84	101	95	78	88	82	92.9%	87.1%	86.3%	57	72	61	67.9%	71.3%	64.2%
Unions															
Unions	70	86	90	67	82	81	95.7%	95.3%	90.0%	33	40	41	47.1%	46.5%	45.6%
Healthcare															
Healthcare Organizations	95	110	101	94	105	91	98.9%	95.5%	90.1%	63	78	72	66.3%	70.9%	71.3%
Total Institutions	1,059	1,128	1,100	1,010	1,026	960	95.4%	91.0%	87.3%	667	722	651	63.0%	64.0%	59.2%

Key Issues Facing Defined Benefit Plans and Investment Pools

U.S. Institutional Investors – Total Interviews (1128) (1100)

	Base		Asset Allocation		Manager Selection		Liability Management		Funding Rate Volatility		Market Volatility		Risk Management		Inflation Risk	
	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019
Corporate Funds																
Corporate Funds	221	276	41%	45%	25%	22%	38%	33%	23%	28%	30%	33%	31%	25%	7%	3%
Over \$5 billion	63	80	46%	48%	32%	28%	44%	38%	24%	33%	24%	24%	41%	26%	8%	3%
\$1 – 5 billion	96	121	36%	44%	21%	18%	36%	32%	25%	31%	29%	31%	25%	24%	7%	3%
\$501 million – 1 billion	34	40	41%	43%	24%	18%	32%	38%	15%	28%	29%	43%	32%	23%	6%	5%
\$500 million and under	28	35	46%	43%	25%	31%	32%	23%	25%	11%	50%	51%	29%	31%	7%	*
Public Funds																
Public Funds	153	166	44%	46%	24%	23%	16%	18%	19%	19%	36%	31%	31%	19%	4%	3%
– Federal	6	4	50%	25%	33%	25%	33%	75%	50%	75%	17%	*	50%	75%	*	*
– State	50	60	40%	40%	24%	22%	12%	12%	14%	17%	48%	18%	30%	15%	8%	2%
– Municipal	97	102	45%	50%	23%	24%	16%	20%	20%	19%	31%	39%	31%	19%	2%	4%
Over \$5 billion	63	70	38%	47%	24%	23%	13%	14%	16%	14%	40%	31%	35%	19%	5%	*
\$1 – 5 billion	41	42	46%	50%	27%	24%	17%	17%	17%	17%	20%	21%	32%	14%	5%	7%
\$501 million – 1 billion	24	26	46%	31%	29%	19%	13%	15%	29%	31%	42%	42%	38%	19%	4%	*
\$500 million and under	25	28	52%	50%	12%	25%	24%	32%	20%	25%	48%	32%	16%	25%	*	7%
Endowments and Foundations																
Endowments & Foundations	116	148	48%	47%	33%	35%	3%	6%	8%	3%	41%	47%	36%	25%	13%	3%
– Endowments	48	62	48%	48%	38%	29%	4%	6%	13%	2%	31%	44%	35%	19%	8%	3%
– Foundations	68	86	49%	45%	29%	40%	3%	6%	4%	5%	47%	49%	37%	29%	16%	3%
Over \$1 billion	32	33	56%	48%	31%	36%	*	*	6%	*	31%	39%	31%	18%	16%	3%
\$501 million – 1 billion	38	53	47%	47%	37%	30%	5%	6%	8%	4%	45%	49%	39%	30%	13%	4%
\$500 million and under	46	62	43%	45%	30%	39%	4%	10%	9%	5%	43%	48%	37%	24%	11%	3%
Unions																
Unions	36	63	39%	51%	17%	19%	6%	10%	22%	25%	64%	48%	25%	11%	6%	3%
Healthcare																
Healthcare Organizations	62	77	45%	38%	18%	23%	31%	16%	18%	17%	34%	45%	34%	26%	10%	8%
Total Institutions	597	739	44%	45%	25%	25%	22%	20%	18%	20%	36%	38%	32%	22%	8%	4%

Key Issues Facing Defined Benefit Plans and Investment Pools (Cont'd.)

U.S. Institutional Investors – Total Interviews (1128) (1100)

	Base		Rate of Return and Funding Issues		Liquidity		Internal Organization & Staffing		Government Regulation		Governance Structure and Practices		Other	
	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019
Corporate Funds														
Corporate Funds	221	276	34%	33%	5%	4%	4%	4%	6%	7%	6%	9%	10%	9%
Over \$5 billion	63	80	27%	29%	3%	3%	11%	6%	2%	4%	5%	5%	8%	13%
\$1 – 5 billion	96	121	39%	37%	6%	7%	1%	4%	5%	7%	6%	11%	10%	7%
\$501 million – 1 billion	34	40	41%	35%	*	3%	*	*	12%	20%	12%	8%	9%	8%
\$500 million and under	28	35	25%	29%	7%	3%	*	*	11%	*	4%	11%	11%	9%
Public Funds														
Public Funds	153	166	58%	54%	16%	13%	17%	15%	10%	8%	7%	10%	6%	12%
– Federal	6	4	17%	*	*	*	17%	*	*	*	*	*	*	*
– State	50	60	44%	42%	18%	13%	22%	15%	10%	8%	8%	8%	6%	22%
– Municipal	97	102	68%	63%	16%	14%	14%	16%	11%	8%	6%	11%	6%	7%
Over \$5 billion	63	70	48%	40%	19%	13%	25%	26%	10%	9%	8%	11%	8%	14%
\$1 – 5 billion	41	42	59%	64%	12%	10%	17%	12%	7%	5%	7%	7%	7%	14%
\$501 million – 1 billion	24	26	79%	58%	17%	19%	8%	8%	17%	15%	8%	12%	*	12%
\$500 million and under	25	28	64%	68%	16%	14%	4%	*	12%	4%	*	7%	4%	4%
Endowments and Foundations														
Endowments & Foundations	116	148	47%	43%	16%	16%	11%	7%	3%	3%	8%	4%	7%	9%
– Endowments	48	62	42%	45%	10%	15%	19%	10%	2%	2%	17%	5%	8%	6%
– Foundations	68	86	51%	41%	21%	17%	6%	5%	3%	3%	1%	3%	6%	10%
Over \$1 billion	32	33	53%	33%	28%	21%	16%	12%	*	3%	13%	3%	6%	9%
\$501 million – 1 billion	38	53	32%	36%	11%	17%	13%	9%	5%	6%	8%	8%	5%	8%
\$500 million and under	46	62	57%	53%	13%	13%	7%	2%	2%	*	4%	2%	9%	10%
Unions														
Unions	36	63	75%	67%	19%	17%	6%	2%	14%	17%	6%	10%	*	5%
Healthcare														
Healthcare Organizations	62	77	39%	35%	13%	12%	8%	6%	10%	8%	6%	10%	5%	6%
Total Institutions	597	739	45%	42%	12%	11%	9%	7%	7%	7%	7%	8%	7%	9%

Funding Ratio of U.S. Defined Benefit Plans

U.S. Institutional Investors – Total Interviews (1216) (1059) (1128) (1100)

	Base				Mean (%)				Under 50%	50 – 55%	56 – 59%	60 – 65%	66 – 69%	70 – 75%	76 – 79%	80 – 85%	86 – 89%
	2016	2017	2018	2019	2016	2017	2018	2019	2019	2019	2019	2019	2019	2019	2019	2019	2019
Corporate Funds																	
Corporate Funds	177	169	147	140	83%	88%	93%	91%	2%	*	*	1%	1%	7%	6%	19%	9%
Over \$5 billion	49	58	50	52	84%	91%	99%	91%	4%	*	*	2%	*	*	6%	15%	13%
\$1 – 5 billion	85	74	69	60	82%	85%	90%	90%	2%	*	*	*	3%	12%	10%	18%	8%
\$501 million – 1 billion	21	20	17	19	88%	90%	89%	95%	*	*	*	*	*	11%	*	21%	5%
\$500 million and under	22	17	11	9	81%	86%	96%	92%	*	*	*	*	*	11%	*	44%	*
Public Funds																	
Public Funds	119	106	118	96	77%	80%	77%	77%	6%	*	3%	8%	8%	18%	11%	14%	11%
– Federal	4	3	3	1	84%	84%	91%	100%	*	*	*	*	*	*	*	*	*
– State	40	34	32	29	72%	70%	73%	74%	7%	*	3%	3%	14%	24%	10%	17%	10%
– Municipal	75	69	83	66	80%	84%	78%	79%	6%	*	3%	11%	6%	15%	12%	12%	12%
Over \$5 billion	41	37	37	32	74%	74%	76%	78%	6%	*	*	3%	9%	22%	3%	19%	22%
\$1 – 5 billion	33	25	35	25	78%	82%	75%	74%	8%	*	4%	12%	12%	12%	20%	8%	4%
\$501 million – 1 billion	21	24	25	23	81%	81%	82%	80%	9%	*	4%	4%	9%	17%	4%	17%	4%
\$500 million and under	24	20	18	16	79%	86%	72%	76%	*	*	6%	19%	*	19%	25%	6%	13%
Unions																	
Unions	24	24	30	30	79%	79%	81%	80%	10%	*	*	10%	10%	3%	*	23%	3%
Healthcare																	
Healthcare Organizations	5	7	9	6	83%	87%	78%	87%	*	*	*	*	17%	*	17%	17%	*
Total Institutions	325	306	304	272	81%	84%	85%	85%	4%	*	1%	4%	5%	10%	8%	18%	9%

Mean calculation does not include values of zero or null. At time of interview, valuation calculated within the last 6 months.

Results are for largest funded and qualified defined benefit plan assets of corporate and public funds. At time of interview, valuation calculated within the last 6 months.

PBO (Projected Benefits Obligation) shown for corporate funds. Funding Ratio (net present value of assets divided by net present value of liabilities) shown for public funds.

Funding Ratio of U.S. Defined Benefit Plans (Cont'd.)

U.S. Institutional Investors – Total Interviews (1216) (1059) (1128) (1100)

	Base				Mean (%)				90 – 95%	96 – 99%	100 – 105%	106 – 109%	110 – 115%	116 – 119%	120 – 125%	126 – 129%	Over 130%
	2016	2017	2018	2019	2016	2017	2018	2019	2019	2019	2019	2019	2019	2019	2019	2019	2019
Corporate Funds																	
Corporate Funds	177	169	147	140	83%	88%	93%	91%	11%	11%	18%	4%	2%	1%	4%	*	2%
Over \$5 billion	49	58	50	52	84%	91%	99%	91%	13%	13%	19%	2%	2%	2%	6%	*	2%
\$1 – 5 billion	85	74	69	60	82%	85%	90%	90%	12%	12%	12%	3%	2%	*	3%	*	3%
\$501 million – 1 billion	21	20	17	19	88%	90%	89%	95%	11%	5%	32%	11%	*	*	5%	*	*
\$500 million and under	22	17	11	9	81%	86%	96%	92%	*	*	22%	*	11%	11%	*	*	*
Public Funds																	
Public Funds	119	106	118	96	77%	80%	77%	77%	11%	2%	4%	*	*	*	*	*	2%
– Federal	4	3	3	1	84%	84%	91%	100%	*	*	100%	*	*	*	*	*	*
– State	40	34	32	29	72%	70%	73%	74%	7%	3%	*	*	*	*	*	*	*
– Municipal	75	69	83	66	80%	84%	78%	79%	14%	2%	5%	*	*	*	*	*	3%
Over \$5 billion	41	37	37	32	74%	74%	76%	78%	13%	*	3%	*	*	*	*	*	*
\$1 – 5 billion	33	25	35	25	78%	82%	75%	74%	4%	4%	12%	*	*	*	*	*	*
\$501 million – 1 billion	21	24	25	23	81%	81%	82%	80%	22%	*	*	*	*	*	*	*	9%
\$500 million and under	24	20	18	16	79%	86%	72%	76%	6%	6%	*	*	*	*	*	*	*
Unions																	
Unions	24	24	30	30	79%	79%	81%	80%	17%	13%	3%	3%	3%	*	*	*	*
Healthcare																	
Healthcare Organizations	5	7	9	6	83%	87%	78%	87%	17%	17%	17%	*	*	*	*	*	*
Total Institutions	325	306	304	272	81%	84%	85%	85%	12%	8%	11%	2%	1%	1%	2%	*	2%

Mean calculation does not include values of zero or null. At time of interview, valuation calculated within the last 6 months.

Results are for largest funded and qualified defined benefit plan assets of corporate and public funds. At time of interview, valuation calculated within the last 6 months.

PBO (Projected Benefits Obligation) shown for corporate funds. Funding Ratio (net present value of assets divided by net present value of liabilities) shown for public funds.

Actuarial Discount Rate Assumption for Defined Benefit Plans

U.S. Institutional Investors – Total Interviews (1216) (1059) (1128) (1100)

	Base				Mean (%)				Under 5%				5 – 5.9%				6 – 6.9%				7% and over			
	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019
Corporate Funds																								
Corporate Funds	168	*	142	105	4.5%	*	4.5%	4.3%	79%	*	77%	85%	9%	*	6%	2%	5%	*	8%	5%	7%	*	8%	9%
Over \$5 billion	49	*	45	42	4.5%	*	4.1%	4.2%	82%	*	89%	90%	10%	*	4%	*	2%	*	4%	2%	6%	*	2%	7%
\$1 – 5 billion	80	*	60	43	4.5%	*	4.6%	4.4%	79%	*	77%	86%	8%	*	3%	2%	5%	*	12%	2%	9%	*	8%	9%
\$501 million – 1 billion	20	*	13	14	4.5%	*	5.4%	4.8%	80%	*	46%	64%	5%	*	15%	7%	10%	*	8%	14%	5%	*	31%	14%
\$500 million and under	19	*	13	6	4.5%	*	4.8%	4.1%	74%	*	69%	83%	16%	*	15%	*	5%	*	*	17%	5%	*	15%	*
Public Funds																								
Public Funds	2	*	126	93	7.8%	*	7.2%	7.1%	*	*	2%	3%	*	*	1%	*	*	*	7%	10%	100%	*	90%	87%
– Federal	*	*	2	*	*	*	4.6%	*	*	*	50%	*	*	*	50%	*	*	*	*	*	*	*	*	*
– State	1	*	39	29	8.0%	*	7.1%	7.2%	*	*	5%	3%	*	*	*	*	*	*	13%	14%	100%	*	82%	83%
– Municipal	1	*	85	64	7.5%	*	7.2%	7.1%	*	*	*	3%	*	*	*	*	*	*	5%	8%	100%	*	95%	89%
Over \$5 billion	*	*	40	32	*	*	7.0%	7.2%	*	*	8%	6%	*	*	3%	*	*	*	5%	*	*	*	85%	94%
\$1 – 5 billion	*	*	32	24	*	*	7.2%	7.2%	*	*	*	*	*	*	*	*	*	*	9%	8%	*	*	91%	92%
\$501 million – 1 billion	*	*	19	21	*	*	7.2%	7.2%	*	*	*	*	*	*	*	*	*	*	11%	24%	*	*	89%	76%
\$500 million and under	2	*	18	16	7.8%	*	7.3%	6.8%	*	*	*	6%	*	*	*	*	*	*	6%	13%	100%	*	94%	81%
Unions																								
Unions	32	*	32	27	7.4%	*	7.2%	6.9%	*	*	*	7%	*	*	*	*	9%	*	19%	19%	91%	*	81%	74%
Healthcare																								
Healthcare Organizations	5	*	32	4	4.9%	*	5.1%	4.6%	60%	*	63%	75%	20%	*	3%	*	*	*	19%	25%	20%	*	16%	*
Total Institutions	207	*	348	229	5.0%	*	5.8%	5.8%	66%	*	40%	42%	8%	*	3%	1%	5%	*	10%	9%	21%	*	46%	48%

Mean calculation does not include values of zero or null.
Results are for corporate fund defined benefit plan assets.

Total Return on Investments Held in Defined Benefit Plans and Investment Pools

U.S. Institutional Investors – Total Interviews (1216) (1059) (1128) (1100)

	Base				Mean (%)			
	2016	2017	2018	2019	2016	2017	2018	2019
Corporate Funds								
Corporate Funds	172	168	138	134	3%	10%	8%	9%
Over \$5 billion	45	53	44	46	4%	9%	9%	10%
\$1 – 5 billion	81	71	63	56	3%	10%	8%	8%
\$501 million – 1 billion	22	24	17	21	4%	10%	7%	10%
\$500 million and under	24	20	14	11	4%	9%	7%	6%
Public Funds								
Public Funds	109	104	113	98	1%	12%	9%	6%
– Federal	4	3	4	*	3%	9%	7%	*
– State	36	34	32	33	1%	13%	9%	6%
– Municipal	69	67	77	65	0%	12%	10%	6%
Over \$5 billion	38	38	37	32	1%	12%	9%	7%
\$1 – 5 billion	31	23	33	26	0%	11%	9%	6%
\$501 million – 1 billion	20	24	27	24	1%	12%	10%	6%
\$500 million and under	21	19	18	17	0%	13%	10%	5%
Endowments and Foundations								
Endowments & Foundations	94	90	89	83	-1%	12%	8%	6%
– Endowments	39	37	38	35	-1%	12%	9%	5%
– Foundations	55	53	51	48	-1%	12%	8%	6%
Over \$1 billion	28	32	27	21	0%	13%	9%	7%
\$501 million – 1 billion	31	31	34	33	-1%	12%	8%	6%
\$500 million and under	35	27	28	29	-1%	12%	8%	6%
Unions								
Unions	32	33	33	36	1%	14%	9%	6%
Healthcare								
Healthcare Organizations	10	9	9	7	0%	10%	8%	9%
Total Institutions	417	404	382	358	1%	11%	9%	7%

Mean calculation shown. Percentages are not weighted in U.S. dollars. At time of interview, valuation calculated within the last 6 months. Results are for corporate and union fund defined benefit plan assets, public fund defined benefit plan assets, and endowment and foundation fund investment pool assets.

Long-term Rate of Return on Investments in Defined Benefit Plans

U.S. Institutional Investors – Total Interviews (1216) (1059) (1128) (1100)

Distribution of Expected Returns

	Base				Mean (%)				Under 7.0%	7.0 – 7.4%	7.5 – 7.9%	8.0 – 8.4%	8.5 – 8.9%	9.0 – 9.4%	9.5 – 9.9%	10.0 – 10.4%	Over 10.5%
	2016	2017	2018	2019	2016	2017	2018	2019	2019	2019	2019	2019	2019	2019	2019	2019	2019
Corporate Funds																	
Corporate Funds	*	*	183	115	*	*	6.4%	6.6%	49%	30%	10%	10%	1%	*	*	*	1%
Over \$5 billion	*	*	51	43	*	*	6.5%	6.7%	47%	30%	9%	12%	*	*	*	*	2%
\$1 – 5 billion	*	*	79	51	*	*	6.3%	6.5%	47%	31%	12%	8%	2%	*	*	*	*
\$501 million – 1 billion	*	*	21	16	*	*	6.4%	6.5%	63%	25%	*	13%	*	*	*	*	*
\$500 million and under	*	*	19	5	*	*	6.4%	6.8%	40%	20%	20%	20%	*	*	*	*	*
Public Funds																	
Public Funds	*	*	136	93	*	*	7.1%	7.2%	13%	53%	16%	17%	*	1%	*	*	*
– Federal	*	*	4	1	*	*	6.2%	4.0%	100%	*	*	*	*	*	*	*	*
– State	*	*	45	30	*	*	7.0%	7.1%	23%	43%	17%	17%	*	*	*	*	*
– Municipal	*	*	87	62	*	*	7.2%	7.3%	6%	58%	16%	18%	*	2%	*	*	*
Over \$5 billion	*	*	42	33	*	*	7.1%	7.2%	12%	45%	24%	18%	*	*	*	*	*
\$1 – 5 billion	*	*	34	24	*	*	7.2%	7.2%	4%	67%	17%	13%	*	*	*	*	*
\$501 million – 1 billion	*	*	20	21	*	*	6.9%	7.2%	19%	48%	5%	29%	*	*	*	*	*
\$500 million and under	*	*	19	15	*	*	7.0%	7.1%	20%	53%	13%	7%	*	7%	*	*	*
Unions																	
Unions	*	*	38	27	*	*	7.3%	7.1%	22%	33%	30%	11%	*	4%	*	*	*
Healthcare																	
Healthcare Organizations	*	*	49	4	*	*	6.6%	5.8%	100%	*	*	*	*	*	*	*	*
Total Institutions	*	*	514	239	*	*	6.7%	6.9%	33%	38%	14%	13%	0%	1%	*	*	0%

Mean calculation does not include values of zero or null.

Results are for corporate and union fund defined benefit plan assets and cash balanced plan assets, public fund defined benefit plan assets, and endowment and foundation fund investment pool assets.

Distribution of Spending Rate of U.S. Endowment Fund Investment Pools

U.S. Institutional Investors – Endowments and Foundations (179) (188) (215) (211)

	Endowments and Foundations				Over \$1 billion				\$501 million – 1 billion				\$500 million and under			
	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019
Total Institutions	179	188	215	211	48	54	54	51	52	50	60	65	79	84	101	95
Mean (%)	5%	*	5%	5%	4%	*	5%	5%	5%	*	5%	5%	5%	*	6%	6%
Under 4.6%	28%	*	27%	35%	28%	*	20%	43%	20%	*	38%	45%	34%	*	22%	20%
4.6 – 4.7%	4%	*	7%	3%	4%	*	9%	5%	4%	*	11%	4%	3%	*	*	*
4.8 – 4.9%	3%	*	3%	1%	5%	*	5%	*	*	*	4%	*	3%	*	*	4%
5.0 – 5.9%	57%	*	44%	43%	63%	*	60%	52%	65%	*	34%	26%	45%	*	41%	55%
6.0 – 6.9%	5%	*	4%	5%	*	*	6%	*	5%	*	*	10%	8%	*	5%	5%
7.0 – 7.9%	2%	*	9%	2%	*	*	*	*	6%	*	12%	6%	*	*	13%	*
8.0 – 8.9%	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
9.0 – 9.9%	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10% and over	3%	*	6%	9%	*	*	*	*	*	*	*	9%	7%	*	18%	16%

Mean calculation does not include values of zero or null.

Results are for endowment and foundation fund investment pool assets.

Distribution of Long-Term Spending Goals of U.S. Endowment and Foundations

U.S. Institutional Investors – Endowments and Foundations (179) (188) (215) (211)

	Endowments and Foundations				Over \$1 billion				\$501 million – 1 billion				\$500 million and under			
	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019
Base	78	*	70	65	21	*	21	20	30	*	29	24	27	*	20	21
Mean (%)	4.9%	*	5.0%	4.9%	4.9%	*	4.7%	4.8%	4.9%	*	4.8%	4.8%	5.0%	*	5.5%	5.0%
1.0 – 1.9%	1%	*	*	*	*	*	*	*	3%	*	*	*	*	*	*	*
2.0 – 2.9%	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
3.0 – 3.9%	*	*	4%	2%	*	*	5%	*	*	*	7%	4%	*	*	*	*
4.0 – 4.3%	13%	*	16%	18%	14%	*	5%	25%	7%	*	14%	17%	19%	*	30%	14%
4.4 – 4.7%	9%	*	19%	15%	5%	*	24%	10%	10%	*	21%	17%	11%	*	10%	19%
4.8 – 5.0%	63%	*	49%	49%	76%	*	62%	60%	67%	*	41%	42%	48%	*	45%	48%
5.1 – 5.3%	4%	*	3%	*	5%	*	5%	*	3%	*	3%	*	4%	*	*	*
5.4 – 5.7%	*	*	4%	6%	*	*	*	*	*	*	7%	17%	*	*	5%	*
5.8 – 5.9%	1%	*	*	*	*	*	*	*	*	*	*	*	4%	*	*	*
6.0 – 6.9%	8%	*	1%	6%	*	*	*	*	10%	*	3%	4%	11%	*	*	14%
7.0 – 7.9%	*	*	3%	3%	*	*	*	5%	*	*	3%	*	*	*	5%	5%
8.0 – 8.9%	1%	*	*	*	*	*	*	*	*	*	*	*	4%	*	*	*
9.0 – 9.9%	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10 – 10.9%	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Over 11%	*	*	1%	*	*	*	*	*	*	*	*	*	*	*	5%	*

Mean calculations do not include values of zero or null.
Results are for endowment and foundation investment pools.

U.S. Endowment and Foundations' Spending Rules for Investment Pool Assets

U.S. Institutional Investors – Endowments and Foundations (179) (188) (215) (211)

	Endowments and Foundations				Over \$1 billion				\$501 million – 1 billion				\$500 million and under			
	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019
Base	84	*	74	77	23	*	25	23	29	*	28	30	32	*	21	24
Spend all Current Income	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Spend Pre-Specified Percentage of Current Income	6%	*	*	*	13%	*	*	*	3%	*	*	*	3%	*	*	*
Spend Pre-Specified Percentage of Beginning Market Value	7%	*	1%	8%	4%	*	*	4%	7%	*	*	3%	9%	*	5%	17%
Spend Pre-Specified Percentage of A Moving Average of Market Value	54%	*	72%	68%	57%	*	68%	61%	48%	*	79%	73%	56%	*	67%	67%
Increase Prior Year's Spending by Pre-Specified Percentage With Income Stabilization Rule	6%	*	7%	3%	*	*	8%	*	10%	*	7%	7%	6%	*	5%	*
Judgment on a Year-to-Year Basis	11%	*	12%	10%	9%	*	20%	13%	14%	*	*	10%	9%	*	19%	8%
Other	17%	*	8%	12%	17%	*	4%	22%	17%	*	14%	7%	16%	*	5%	8%

Results are for endowment and foundation investment pools.

Distribution of U.S. Endowment and Foundations' Investment Pool Assets Spent Over 5-Years

U.S. Institutional Investors – Endowments and Foundations (179) (188) (215) (211)

	Endowments and Foundations				Over \$1 billion				\$501 million – 1 billion				\$500 million and under			
	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019
Base	75	*	69	69	21	*	23	19	25	*	26	27	29	*	20	23
Mean (%)	5.2%	*	5.2%	5.0%	4.6%	*	4.7%	4.8%	4.8%	*	4.7%	4.7%	5.8%	*	6.3%	5.6%
1.0 – 1.9%	3%	*	*	1%	5%	*	*	*	4%	*	*	4%	*	*	*	*
2.0 – 2.9%	*	*	1%	1%	*	*	4%	*	*	*	*	4%	*	*	*	*
3.0 – 3.9%	4%	*	7%	12%	5%	*	9%	16%	4%	*	12%	15%	3%	*	*	4%
4.0 – 4.3%	16%	*	17%	12%	19%	*	4%	16%	4%	*	31%	11%	24%	*	15%	9%
4.4 – 4.7%	9%	*	14%	13%	5%	*	17%	5%	8%	*	15%	15%	14%	*	10%	17%
4.8 – 5.0%	41%	*	32%	36%	48%	*	43%	47%	56%	*	19%	22%	24%	*	35%	43%
5.1 – 5.3%	4%	*	4%	1%	10%	*	9%	*	4%	*	4%	4%	*	*	*	*
5.4 – 5.7%	8%	*	10%	9%	10%	*	4%	11%	12%	*	12%	11%	3%	*	15%	4%
5.8 – 5.9%	1%	*	1%	*	*	*	4%	*	*	*	*	*	3%	*	*	*
6.0 – 6.9%	7%	*	1%	7%	*	*	*	*	*	*	*	11%	17%	*	5%	9%
7.0 – 7.9%	1%	*	4%	4%	*	*	*	5%	4%	*	8%	4%	*	*	5%	4%
8.0 – 8.9%	3%	*	*	1%	*	*	*	*	*	*	*	*	7%	*	*	4%
9.0 – 9.9%	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10% and Over	1%	*	3%	1%	*	*	*	*	*	*	*	*	3%	*	10%	4%

Mean calculation does not include values of zero or null.
Results are for endowment and foundation investment pools.

U.S. Endowment and Foundations' Duration of Fixed Income Investments

U.S. Institutional Investors – Endowments and Foundations (188) (215) (211)

	Base			Investment Grade			High Yield			Entire Fixed Income Portfolio		
	2017	2018	2019	2017	2018	2019	2017	2018	2019	2017	2018	2019
Endowments and Foundations												
Endowments & Foundations	67	62	61	5	5	4	3	3	4	4	4	4
– Endowments	25	19	23	6	5	5	4	4	4	5	5	4
– Foundations	42	43	38	5	5	4	3	3	3	4	4	4
Over \$1 billion	24	19	14	7	5	5	4	3	4	5	5	5
\$501 million – 1 billion	19	24	24	5	4	4	4	4	3	5	4	4
\$500 million and under	24	19	23	4	5	4	3	3	4	4	4	3
Total Institutions	67	62	61	5	5	4	3	3	4	4	4	4

Mean calculation does not include values of zero or null.
Results are for endowment and foundation investment pools.

U.S. Institutions' Share of Assets Dedicated to Defined Benefit and Defined Contribution Plans

U.S. Institutional Investors – Total Interviews (1216) (1059) (1128) (1100)

Share of Total Current Assets

	Base				DB Allocation (%)				DC Allocation (%)			
	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019
Corporate Funds												
Corporate Funds	207	179	162	166	50.1%	51.2%	47.8%	44.1%	49.9%	48.8%	52.2%	55.9%
Over \$5 billion	52	50	48	56	51.3%	53.5%	49.0%	44.9%	48.7%	46.5%	51.0%	55.1%
\$1 – 5 billion	96	78	74	75	47.7%	44.1%	45.2%	43.0%	52.3%	55.9%	54.8%	57.0%
\$501 million – 1 billion	35	33	25	24	45.2%	52.3%	43.3%	41.7%	54.8%	47.7%	56.7%	58.3%
\$500 million and under	24	18	15	11	50.1%	41.3%	41.1%	31.7%	49.9%	58.7%	58.9%	68.3%
Public Funds												
Public Funds	112	109	112	90	90.2%	85.0%	78.8%	79.1%	9.8%	15.0%	21.2%	20.9%
– Federal	4	2	3	1	97.4%	100.0%	94.6%	100.0%	2.6%	*	5.4%	*
– State	40	38	35	27	91.8%	84.8%	74.3%	77.5%	8.2%	15.2%	25.7%	22.5%
– Municipal	68	69	74	62	82.1%	81.8%	82.9%	80.3%	17.9%	18.2%	17.1%	19.7%
Over \$5 billion	40	43	40	28	90.6%	85.0%	78.0%	79.2%	9.4%	15.0%	22.0%	20.8%
\$1 – 5 billion	34	26	33	26	82.1%	80.7%	78.6%	74.5%	17.9%	19.3%	21.4%	25.5%
\$501 million – 1 billion	16	21	22	21	88.0%	90.8%	98.1%	88.9%	12.0%	9.2%	1.9%	11.1%
\$500 million and under	22	19	17	15	97.9%	96.4%	99.7%	98.9%	2.1%	3.6%	0.3%	1.1%
Unions												
Unions	35	33	30	33	91.2%	84.6%	88.3%	96.5%	8.8%	15.4%	11.7%	3.5%
Healthcare												
Healthcare Organizations	8	7	10	8	23.2%	14.8%	30.1%	24.1%	76.8%	85.2%	69.9%	75.9%
Total Institutions	362	329	315	299	73.0%	69.8%	63.1%	60.9%	27.0%	30.2%	36.9%	39.1%

Percentages are weighted in U.S. dollars and projected to the Greenwich Associates universe of U.S. institutional investors. Projections based only on the assets of institutions disclosing the proportion of assets in DB and DC plans. Results are for corporate and union DB and DC plans and public fund DB and DC plans.

U.S. Institutions' Share of Defined Benefit, Defined Contribution, and Investment Pool Assets Managed Internally

U.S. Institutional Investors – Total Interviews (1216) (1059) (1128) (1100)

	Total Institutions				Presently Managed Internally			
	2016	2017	2018	2019	2016	2017	2018	2019
Corporate Funds								
Corporate Funds	413	460	446	447	3.1%	*	16.8%	7.3%
Over \$5 billion	104	112	102	98	2.9%	*	23.2%	9.2%
\$1 – 5 billion	157	173	154	148	2.0%	*	1.1%	2.9%
\$501 million – 1 billion	66	74	62	60	12.3%	*	3.9%	4.2%
\$500 million and under	43	54	53	49	*	*	7.1%	*
Public Funds								
Public Funds	245	246	252	235	21.5%	*	15.5%	17.0%
– Federal	6	6	6	5	*	*	*	*
– State	98	94	96	88	26.8%	*	23.5%	19.3%
– Municipal	141	146	150	142	1.5%	*	0.0%	15.5%
Over \$5 billion	78	80	69	54	22.9%	*	17.6%	19.1%
\$1 – 5 billion	58	53	56	44	2.8%	*	1.4%	0.8%
\$501 million – 1 billion	37	41	32	35	1.9%	*	*	*
\$500 million and under	31	36	40	38	*	*	0.1%	*
Endowments and Foundations								
Endowments & Foundations	179	188	215	211	17.0%	*	17.7%	11.8%
– Endowments	74	70	83	82	24.6%	*	27.2%	20.4%
– Foundations	105	118	132	129	4.0%	*	5.4%	3.0%
Over \$1 billion	42	51	48	44	18.5%	*	21.8%	14.2%
\$501 million – 1 billion	50	46	53	56	7.7%	*	2.0%	1.8%
\$500 million and under	74	81	84	70	15.0%	*	4.0%	4.8%
Unions								
Unions	68	70	86	90	0.5%	*	0.3%	0.2%
Healthcare								
Healthcare Organizations	76	95	110	101	3.6%	*	*	9.7%
Total Institutions	1,216	1,059	1,128	1,100	16.1%	*	15.2%	12.2%

Percentages are weighted in U.S. dollars and projected to the Greenwich Associates universe of U.S. institutional investors. Projections based only on the assets of institutions disclosing their specific internal/external management details. Results are for corporate and union DB and DC plans, public fund DB and DC plans, and endowment and foundation investment pools.

Note: This question is asked every other year.

U.S. Investors' Use of Defined Benefit and Defined Contribution Plans

U.S. Institutional Investors – Total Interviews (1059) (1128) (1100)

	Base			Use Defined Benefit Plan			Use Defined Contribution Plan			Use Defined Benefit Plan Only			Use Defined Contribution Plan Only			Use Both			Use Cash Balance Only		
	2017	2018	2019	2017	2018	2019	2017	2018	2019	2017	2018	2019	2017	2018	2019	2017	2018	2019	2017	2018	2019
Corporate Funds																					
Corporate Funds	238	216	216	85%	84%	83%	93%	90%	88%	7%	10%	12%	15%	16%	17%	78%	74%	71%	24%	24%	24%
Over \$5 billion	71	63	68	90%	90%	88%	94%	90%	93%	6%	10%	7%	10%	10%	12%	85%	81%	81%	35%	38%	32%
\$1 – 5 billion	104	95	93	86%	86%	84%	93%	93%	87%	7%	7%	13%	14%	14%	16%	79%	79%	71%	22%	22%	26%
\$501 million – 1 billion	38	32	33	79%	81%	85%	95%	88%	85%	5%	13%	15%	21%	19%	15%	74%	69%	70%	16%	16%	12%
\$500 million and under	25	26	21	76%	62%	62%	84%	81%	81%	16%	19%	19%	24%	38%	38%	60%	42%	43%	12%	8%	5%
Public Funds																					
Public Funds	130	144	118	93%	94%	95%	37%	28%	27%	63%	72%	73%	7%	6%	5%	30%	22%	22%	1%	1%	1%
– Federal	3	4	1	100%	100%	100%	33%	50%	*	67%	50%	100%	*	*	*	33%	50%	*	*	25%	*
– State	45	47	39	91%	89%	92%	44%	38%	33%	56%	62%	67%	9%	11%	8%	36%	28%	26%	*	*	*
– Municipal	82	93	78	94%	96%	96%	33%	23%	24%	67%	77%	76%	6%	4%	4%	27%	18%	21%	1%	*	1%
Over \$5 billion	50	47	39	88%	85%	90%	42%	43%	33%	58%	57%	67%	12%	15%	10%	30%	28%	23%	2%	2%	3%
\$1 – 5 billion	31	45	33	94%	96%	97%	45%	22%	24%	55%	78%	76%	6%	4%	3%	39%	18%	21%	*	*	*
\$501 million – 1 billion	26	27	26	96%	100%	96%	27%	22%	27%	73%	78%	73%	4%	*	4%	23%	22%	23%	*	*	*
\$500 million and under	23	22	20	100%	100%	100%	26%	18%	20%	74%	82%	80%	*	*	*	26%	18%	20%	*	*	*
Unions																					
Unions	37	40	45	97%	98%	93%	43%	43%	38%	57%	58%	62%	3%	3%	7%	41%	40%	31%	*	*	2%
Healthcare																					
Healthcare Organizations	13	19	16	62%	53%	50%	77%	89%	100%	23%	11%	*	38%	47%	50%	38%	42%	50%	*	*	*
Total Institutions	418	419	396	88%	87%	86%	71%	64%	65%	29%	36%	35%	12%	13%	14%	58%	51%	51%	14%	13%	13%

Results are based on funds indicating the type(s) of pension plan(s) they currently use. "Use of Defined Benefit Plans" includes Cash Balance Plans.

U.S. Corporate Funds' Defined Benefit Plan for Core Pension Buyout

U.S. Institutional Investors – Total Interviews (1059) (1128) (1100)

Plans to Engage in Pension Buyout Over the Next 12 Months

	Base			Yes			No		
	2017	2018	2019	2017	2018	2019	2017	2018	2019
Corporate Funds									
Corporate Funds	*	130	138	*	12%	9%	*	88%	91%
Over \$5 billion	*	37	49	*	11%	*	*	89%	100%
\$1 – 5 billion	*	64	64	*	9%	11%	*	91%	89%
\$501 million – 1 billion	*	19	16	*	16%	19%	*	84%	81%
\$500 million and under	*	10	8	*	30%	25%	*	70%	75%
Public Funds									
Public Funds	*	*	1	*	*	*	*	*	100%
– Federal	*	*	1	*	*	*	*	*	100%
– State	*	*	*	*	*	*	*	*	*
– Municipal	*	*	*	*	*	*	*	*	*
Over \$5 billion	*	*	1	*	*	*	*	*	100%
\$1 – 5 billion	*	*	*	*	*	*	*	*	*
\$501 million – 1 billion	*	*	*	*	*	*	*	*	*
\$500 million and under	*	*	*	*	*	*	*	*	*
Unions									
Unions	*	31	34	*	3%	*	*	97%	100%
Healthcare									
Healthcare Organizations	*	8	6	*	13%	*	*	88%	100%
Total Institutions	*	171	180	*	11%	7%	*	89%	93%

Note: This question was not asked in 2014

U.S. Institutional Investors' Total Assets in Defined Benefit Plans, Defined Contribution Plans, and Investment Pools

U.S. Institutional Investors – Universe of Institutions (3733) (4939) (4991) (4536)

	Base				Current Assets (\$B)			
	2016	2017	2018	2019	2016	2017	2018	2019
Corporate Funds								
Corporate Funds	356	399	366	368	\$4,900	\$4,986	\$5,189	\$5,358
Over \$5 billion	94	106	95	102	\$3,646	\$3,577	\$3,490	\$3,405
\$1 – 5 billion	154	176	157	154	\$932	\$1,076	\$1,281	\$1,394
\$501 million – 1 billion	64	75	66	65	\$225	\$250	\$300	\$393
\$500 million and under	44	42	48	47	\$97	\$83	\$120	\$167
Public Funds								
Public Funds	190	192	193	182	\$4,617	\$5,189	\$5,265	\$5,485
– Federal	4	5	4	3	\$166	\$196	\$213	\$229
– State	68	70	71	66	\$3,655	\$4,076	\$4,012	\$4,008
– Municipal	118	117	118	113	\$796	\$917	\$1,041	\$1,248
Over \$5 billion	64	66	67	62	\$4,202	\$4,781	\$4,736	\$4,988
\$1 – 5 billion	59	56	57	45	\$321	\$311	\$392	\$375
\$501 million – 1 billion	37	36	32	37	\$64	\$62	\$86	\$79
\$500 million and under	30	34	37	38	\$30	\$34	\$51	\$42
Endowments and Foundations								
Endowments & Foundations	149	167	171	166	\$1,036	\$1,126	\$1,174	\$1,135
– Endowments	62	63	67	67	\$604	\$590	\$633	\$569
– Foundations	87	104	104	99	\$431	\$536	\$541	\$565
Over \$1 billion	38	51	50	45	\$830	\$930	\$941	\$890
\$501 million – 1 billion	44	45	51	56	\$134	\$123	\$156	\$154
\$500 million and under	67	71	70	65	\$72	\$73	\$77	\$91
Unions								
Unions	49	54	55	61	\$435	\$493	\$523	\$530
Healthcare								
Healthcare Organizations	66	94	95	85	\$406	\$571	\$589	\$560
Total Institutions	810	906	880	862	\$11,394	\$12,365	\$12,740	\$13,068

In billions of U.S. dollars and projected to the Greenwich Associates universe of U.S. institutional investors. Projections based on total assets. At time of interview, valuation calculated within the last six months. Results are for corporate and union DB and DC plans, public fund DB and DC plans, endowment and foundation investment pools, healthcare operating assets and insurance general account operating assets.

U.S. Institutions' Total Dollar-Weighted Asset Mix of Defined Benefit, Defined Contribution, and Investment Pool Assets

U.S. Institutional Investors – Total Interviews (1216) (1059) (1128) (1100)

	Total Institutions			
	2016	2017	2018	2019
Base	499	472	446	431
Total U.S. Equity	26.6%	27.0%	26.5%	27.1%
Total International Equity	18.9%	18.3%	18.5%	18.1%
Total Fixed Income	21.7%	24.2%	22.0%	19.5%
Multi-Asset	1.3%	0.9%	0.8%	1.3%
Total Real Estate	6.0%	3.3%	2.4%	3.7%
Total Hedge Fund	4.9%	4.2%	3.8%	4.2%
Total Private Equity	6.1%	6.0%	5.4%	6.3%
Total Infrastructure	0.3%	0.3%	0.1%	0.5%
Commodities	0.8%	0.8%	0.8%	0.6%
Stable Value Investments / GICs	2.7%	3.1%	3.5%	3.6%
Target Retirement Date	4.1%	4.5%	6.4%	7.9%
Target Risk	0.2%	0.2%	0.4%	0.4%
Traditional Balanced Fund	0.4%	0.3%	0.5%	0.4%
Money Market	1.4%	2.6%	3.1%	1.6%
Other	2.8%	2.7%	4.0%	3.0%
Total	100%	100%	100%	100%

Percentages are weighted in U.S. dollars and projected to the Greenwich Associates universe of U.S. institutional investors. Projections based only on the assets of institutions disclosing their specific asset allocation.

U.S. Institutions' Total Dollar-Weighted Asset Mix of Defined Benefit, Defined Contribution, and Investment Pool Assets (Cont'd.)

U.S. Institutional Investors – Total Interviews (1216) (1059) (1128) (1100)

	Total Institutions			
	2016	2017	2018	2019
Base	499	472	446	431
Company's own Securities	2.0%	2.2%	2.6%	2.8%
U.S. Equity (Active)	12.8%	13.7%	12.0%	12.4%
U.S. Equity (Passive)	11.9%	11.0%	11.9%	11.9%
Int'l. Equity (Active)	6.9%	7.6%	6.5%	6.6%
Int'l. Equity (Passive)	4.4%	3.7%	4.2%	3.2%
Global Equity (Active)	5.4%	4.5%	5.7%	5.7%
Emerging Markets Equity	2.3%	2.5%	2.1%	2.5%
U.S. Fixed Income (Active)	15.4%	18.8%	16.7%	14.1%
U.S. Fixed Income (Passive)	3.0%	1.9%	3.1%	2.9%
Int'l. Fixed Income (Active)	0.5%	0.9%	0.3%	0.3%
Global Fixed Income (Active)	1.9%	1.6%	1.1%	1.4%
Emerging Market Debt	0.9%	1.0%	0.8%	0.9%
Multi-Asset	1.3%	0.9%	0.8%	1.3%
Direct Real Estate	4.1%	2.3%	1.6%	3.0%
Listed Real Estate	1.4%	0.8%	0.6%	0.4%
Real Estate, incl. REITs	0.2%	0.1%	0.2%	0.2%
Direct Hedge Fund	3.9%	3.6%	2.8%	3.3%
Hedge Fund-Of-Fund	1.0%	0.7%	1.0%	0.9%
Direct Private Equity	4.7%	4.1%	4.1%	5.3%
Private Equity Fund-Of-Fund	1.3%	1.8%	1.3%	1.0%
Private Infrastructure	0.1%	0.3%	0.1%	0.4%
Commodities	0.8%	0.8%	0.8%	0.6%
Stable Value Investments / GICs	2.7%	3.1%	3.5%	3.6%
Target Retirement Date	4.1%	4.5%	6.4%	7.9%
Target Risk	0.2%	0.2%	0.4%	0.4%
Traditional Balanced Fund	0.4%	0.3%	0.5%	0.4%
Money Market	1.4%	2.6%	3.1%	1.6%
Private Debt	*	*	*	0.7%
Other	2.8%	2.7%	4.0%	3.0%
Total*	100%	100%	100%	100%

Percentages are weighted in U.S. dollars and projected to the Greenwich Associates universe of U.S. institutional investors. Projections based only on the assets of institutions disclosing their specific asset allocation. Private Debt not tracked before 2019

U.S. Corporate Funds' Dollar-Weighted Asset Mix of Defined Benefit and Defined Contribution Plan Assets

U.S. Institutional Investors – Corporate Funds (413) (460) (446) (447)

	Corporate Funds				Over \$5 billion				\$1 – 5 billion				\$501 million – 1 billion				\$500 million and under			
	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019
Base	213	188	166	172	53	51	48	58	98	80	75	75	35	34	26	26	27	23	17	13
Total U.S. Equity	33.4%	32.0%	33.5%	31.7%	32.5%	30.7%	33.5%	31.2%	34.9%	35.1%	33.4%	31.7%	38.2%	34.6%	33.5%	35.8%	31.2%	37.2%	38.4%	45.0%
Total International Equity	12.5%	12.8%	12.3%	12.7%	12.6%	13.4%	12.2%	12.6%	12.7%	11.7%	12.7%	13.3%	10.7%	10.0%	12.9%	11.2%	13.3%	10.5%	10.3%	12.3%
Total Fixed Income	20.4%	24.0%	19.8%	19.3%	20.0%	24.7%	20.4%	19.5%	21.1%	20.5%	18.2%	18.7%	18.7%	27.3%	17.9%	20.4%	27.5%	28.9%	19.8%	15.2%
Multi-Asset	0.6%	0.3%	0.7%	0.4%	0.5%	0.1%	0.1%	0.2%	0.9%	0.8%	2.4%	0.9%	1.2%	0.8%	1.5%	1.5%	0.4%	1.0%	*	*
Total Real Estate	2.4%	2.1%	1.5%	1.8%	2.8%	2.5%	1.6%	2.2%	1.6%	1.3%	1.2%	1.0%	0.8%	0.8%	0.7%	0.5%	2.2%	0.2%	0.6%	0.2%
Total Hedge Fund	2.5%	1.9%	1.9%	1.9%	2.5%	2.0%	1.9%	2.3%	2.2%	1.7%	1.9%	1.2%	2.5%	1.2%	1.7%	0.6%	3.9%	1.3%	1.2%	1.1%
Total Private Equity	2.0%	2.4%	1.9%	2.7%	2.6%	3.1%	2.3%	3.5%	0.9%	0.7%	0.8%	0.6%	0.5%	0.9%	1.0%	1.0%	0.6%	0.4%	0.5%	0.8%
Total Infrastructure	0.1%	0.0%	0.0%	0.1%	0.1%	0.0%	*	0.1%	0.0%	*	0.1%	0.1%	*	*	*	*	*	*	*	*
Commodities	0.4%	0.3%	0.2%	0.1%	0.5%	0.3%	0.2%	0.1%	0.1%	0.2%	0.3%	0.1%	0.2%	0.1%	0.1%	0.1%	*	0.0%	*	*
Stable Value Investments / GICs	5.9%	5.3%	6.1%	5.4%	6.4%	5.4%	6.6%	5.8%	5.3%	5.2%	4.9%	4.8%	3.6%	2.9%	3.4%	3.4%	4.7%	4.2%	4.7%	2.3%
Target Retirement Date	9.9%	9.6%	12.1%	15.0%	9.6%	8.6%	11.4%	14.0%	10.1%	12.4%	13.8%	17.8%	14.3%	14.0%	16.2%	15.7%	6.1%	8.3%	14.8%	13.9%
Target Risk	0.4%	0.4%	0.7%	0.5%	0.2%	0.2%	0.7%	0.7%	0.7%	1.1%	0.5%	0.0%	1.4%	0.2%	3.2%	1.1%	*	*	*	*
Traditional Balanced Fund	1.0%	0.6%	1.1%	0.8%	1.0%	0.5%	0.6%	0.7%	0.8%	0.9%	2.5%	1.1%	1.1%	1.0%	2.0%	1.6%	3.0%	1.7%	1.8%	1.4%
Money Market	1.3%	2.1%	2.1%	1.4%	1.2%	2.3%	2.3%	1.5%	1.6%	1.4%	1.7%	1.0%	1.3%	1.3%	1.0%	2.1%	1.4%	1.3%	1.4%	2.4%
Other	3.3%	3.0%	3.6%	3.5%	3.8%	3.5%	4.2%	3.4%	2.5%	1.8%	2.0%	4.3%	1.3%	2.0%	2.6%	1.7%	2.7%	0.5%	1.5%	1.3%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Percentages are weighted in U.S. dollars and projected to the Greenwich Associates universe of U.S. institutional investors. Projections based only on the assets of institutions disclosing their specific asset allocation.

U.S. Corporate Funds' Dollar-Weighted Asset Mix of Defined Benefit and Defined Contribution Plan Assets (Cont'd.)

U.S. Institutional Investors – Corporate Funds (413) (460) (446) (447)

	Corporate Funds				Over \$5 billion				\$1 – 5 billion				\$501 million – 1 billion				\$500 million and under			
	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019
Base	213	188	166	172	53	51	48	58	98	80	75	75	35	34	26	26	27	23	17	13
Company's own Securities	5.3%	5.9%	6.1%	5.9%	6.5%	6.9%	7.3%	7.1%	3.0%	3.4%	3.1%	3.0%	2.4%	3.2%	2.6%	3.0%	0.8%	3.9%	1.7%	1.5%
U.S. Equity (Active)	14.8%	13.3%	13.3%	12.4%	13.2%	11.7%	12.1%	11.0%	17.7%	17.7%	15.6%	15.0%	22.6%	17.5%	17.2%	17.5%	15.2%	17.3%	24.9%	23.7%
U.S. Equity (Passive)	13.2%	12.7%	14.2%	13.4%	12.8%	12.2%	14.1%	13.1%	14.2%	14.1%	14.7%	13.7%	13.1%	14.0%	13.6%	15.3%	15.2%	16.0%	11.9%	19.8%
Int'l. Equity (Active)	6.0%	6.0%	5.5%	5.3%	5.4%	5.8%	5.2%	4.8%	7.7%	6.9%	6.5%	6.6%	5.9%	6.0%	6.5%	6.2%	6.4%	3.9%	4.8%	5.7%
Int'l. Equity (Passive)	2.3%	2.4%	2.5%	2.5%	2.2%	2.4%	2.4%	2.5%	2.5%	2.2%	2.6%	2.3%	2.1%	2.0%	2.5%	2.9%	3.8%	4.6%	3.4%	3.5%
Global Equity (Active)	2.6%	2.5%	2.6%	3.3%	3.1%	3.0%	2.8%	3.5%	1.3%	1.2%	2.3%	3.3%	1.1%	0.7%	2.7%	0.8%	2.3%	0.5%	1.1%	1.2%
Emerging Markets Equity	1.7%	2.0%	1.7%	1.6%	1.8%	2.2%	1.8%	1.8%	1.2%	1.4%	1.4%	1.2%	1.5%	1.3%	1.2%	1.2%	0.8%	1.5%	1.0%	1.8%
U.S. Fixed Income (Active)	15.1%	19.2%	15.1%	15.9%	14.2%	20.2%	15.8%	15.8%	17.7%	16.6%	13.5%	16.1%	15.7%	16.6%	14.1%	17.3%	12.7%	18.0%	11.4%	11.0%
U.S. Fixed Income (Passive)	3.4%	2.6%	3.3%	2.4%	3.9%	2.5%	3.6%	2.7%	2.2%	2.1%	2.6%	1.8%	1.9%	5.5%	2.9%	2.5%	5.2%	3.3%	1.7%	3.5%
Int'l. Fixed Income (Active)	0.5%	0.8%	0.3%	0.2%	0.5%	0.7%	0.1%	0.2%	0.3%	0.8%	0.6%	0.2%	0.8%	3.0%	0.0%	*	3.4%	0.0%	1.2%	*
Global Fixed Income (Active)	1.0%	1.1%	0.8%	0.6%	1.1%	1.0%	0.6%	0.7%	0.5%	0.7%	1.0%	0.4%	0.2%	2.2%	*	*	5.7%	7.4%	5.3%	0.7%
Emerging Market Debt	0.4%	0.3%	0.3%	0.3%	0.4%	0.3%	0.2%	0.2%	0.4%	0.4%	0.5%	0.3%	0.1%	0.1%	0.8%	0.7%	0.4%	*	0.2%	*
Multi-Asset	0.6%	0.3%	0.7%	0.4%	0.5%	0.1%	0.1%	0.2%	0.9%	0.8%	2.4%	0.9%	1.2%	0.8%	1.5%	1.5%	0.4%	1.0%	*	*
Direct Real Estate	1.2%	1.2%	1.0%	1.3%	1.4%	1.4%	1.1%	1.7%	0.7%	0.7%	0.7%	0.5%	0.3%	0.2%	0.2%	*	0.6%	*	0.2%	*
Listed Real Estate	0.8%	0.8%	0.3%	0.3%	1.0%	0.9%	0.4%	0.3%	0.5%	0.4%	0.2%	0.3%	0.3%	0.5%	0.3%	0.5%	1.5%	0.2%	0.3%	0.1%
Real Estate, incl. REITs	0.3%	0.2%	0.1%	0.2%	0.3%	0.2%	0.1%	0.2%	0.2%	0.2%	0.2%	0.2%	0.0%	0.1%	0.1%	0.0%	0.1%	*	0.0%	0.2%
Direct Hedge Fund	1.8%	1.5%	1.3%	1.4%	2.1%	1.8%	1.4%	1.7%	1.3%	0.9%	0.8%	0.7%	0.3%	0.4%	1.0%	0.2%	3.2%	0.3%	0.3%	0.8%
Hedge Fund-Of-Fund	0.7%	0.4%	0.6%	0.5%	0.5%	0.3%	0.5%	0.6%	0.8%	0.8%	1.1%	0.5%	2.2%	0.8%	0.7%	0.4%	0.7%	1.0%	0.9%	0.4%
Direct Private Equity	1.7%	1.6%	1.3%	1.9%	2.3%	2.0%	1.6%	2.5%	0.6%	0.4%	0.6%	0.4%	0.3%	0.5%	0.5%	0.6%	0.6%	0.0%	0.1%	0.3%
Private Equity Fund-Of-Fund	0.3%	0.9%	0.5%	0.8%	0.4%	1.1%	0.7%	1.0%	0.3%	0.3%	0.1%	0.2%	0.2%	0.4%	0.4%	0.4%	*	0.3%	0.3%	0.5%
Private Infrastructure	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	*	0.1%	0.0%	*	0.1%	*	*	*	*	*	*	*	*	*
Commodities	0.4%	0.3%	0.2%	0.1%	0.5%	0.3%	0.2%	0.1%	0.1%	0.2%	0.3%	0.1%	0.2%	0.1%	0.1%	0.1%	*	0.0%	*	*
Stable Value Investments / GICs	5.9%	5.3%	6.1%	5.4%	6.4%	5.4%	6.6%	5.8%	5.3%	5.2%	4.9%	4.8%	3.6%	2.9%	3.4%	3.4%	4.7%	4.2%	4.7%	2.3%
Target Retirement Date	9.9%	9.6%	12.1%	15.0%	9.6%	8.6%	11.4%	14.0%	10.1%	12.4%	13.8%	17.8%	14.3%	14.0%	16.2%	15.7%	6.1%	8.3%	14.8%	13.9%
Target Risk	0.4%	0.4%	0.7%	0.5%	0.2%	0.2%	0.7%	0.7%	0.7%	1.1%	0.5%	0.0%	1.4%	0.2%	3.2%	1.1%	*	*	*	*
Traditional Balanced Fund	1.0%	0.6%	1.1%	0.8%	1.0%	0.5%	0.6%	0.7%	0.8%	0.9%	2.5%	1.1%	1.1%	1.0%	2.0%	1.6%	3.0%	1.7%	1.8%	1.4%
Money Market	1.3%	2.1%	2.1%	1.4%	1.2%	2.3%	2.3%	1.5%	1.6%	1.4%	1.7%	1.0%	1.3%	1.3%	1.0%	2.1%	1.4%	1.3%	1.4%	2.4%
Private Debt	*	*	*	0.1%	*	*	*	0.1%	*	*	*	0.1%	*	*	*	*	*	*	*	*
Other	3.3%	3.0%	3.6%	3.5%	3.8%	3.5%	4.2%	3.4%	2.5%	1.8%	2.0%	4.3%	1.3%	2.0%	2.6%	1.7%	2.7%	0.5%	1.5%	1.3%
Total*	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Percentages are weighted in U.S. dollars and projected to the Greenwich Associates universe of U.S. institutional investors. Projections based only on the assets of institutions disclosing their specific asset allocation.
Private Debt not tracked before 2019

U.S. Public Funds' Dollar-Weighted Asset Mix of Defined Benefit and Defined Contribution Plan Assets

U.S. Institutional Investors – Public Funds (245) (246) (252) (235)

	Public Funds				Over \$5 billion				\$1 – 5 billion				\$501 million – 1 billion				\$500 million and under			
	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019
Base	106	102	105	90	39	39	38	28	30	24	30	26	15	20	20	20	22	19	17	16
Total U.S. Equity	22.7%	24.6%	22.6%	24.0%	22.2%	24.0%	21.5%	23.1%	26.5%	30.1%	29.0%	28.4%	31.7%	30.9%	35.5%	36.4%	36.2%	39.6%	37.1%	33.9%
Total International Equity	23.5%	22.2%	26.3%	22.5%	23.8%	22.3%	26.7%	22.7%	20.9%	19.0%	23.7%	22.2%	19.7%	22.3%	21.6%	20.0%	18.5%	22.6%	21.2%	18.3%
Total Fixed Income	24.6%	25.9%	24.0%	19.5%	24.8%	26.0%	24.2%	18.9%	21.4%	23.1%	21.8%	22.0%	23.0%	24.6%	23.8%	27.6%	25.4%	23.0%	25.6%	25.3%
Multi-Asset	0.9%	0.7%	0.3%	2.5%	0.7%	0.5%	0.1%	2.5%	4.0%	4.0%	2.2%	3.3%	1.6%	0.2%	0.5%	1.0%	2.2%	0.6%	0.7%	1.0%
Total Real Estate	8.5%	4.1%	2.4%	5.8%	8.5%	4.1%	2.1%	6.1%	8.1%	2.3%	4.8%	3.5%	7.2%	3.9%	3.3%	3.3%	8.0%	4.3%	4.3%	5.1%
Total Hedge Fund	3.9%	3.7%	2.6%	4.0%	3.9%	3.7%	2.5%	4.0%	4.1%	4.9%	3.1%	4.5%	3.3%	3.9%	2.0%	1.8%	2.8%	3.3%	3.5%	3.8%
Total Private Equity	8.5%	8.0%	6.7%	8.5%	8.8%	8.4%	7.0%	9.3%	4.6%	3.4%	4.2%	3.6%	3.3%	3.2%	4.1%	2.5%	2.3%	2.4%	4.1%	6.4%
Total Infrastructure	0.4%	0.2%	0.2%	1.1%	0.4%	0.2%	0.2%	1.1%	0.5%	*	0.0%	0.8%	*	0.1%	*	0.2%	0.1%	*	*	0.9%
Commodities	0.9%	1.1%	1.2%	0.9%	0.8%	1.1%	1.3%	1.0%	2.0%	1.5%	0.7%	0.6%	1.4%	0.8%	0.8%	0.4%	0.5%	0.5%	0.6%	1.0%
Stable Value Investments / GICs	1.2%	2.2%	2.5%	3.2%	1.3%	2.2%	2.7%	3.3%	0.8%	2.5%	0.8%	2.8%	3.1%	0.5%	0.6%	0.6%	0.2%	0.3%	0.0%	0.0%
Target Retirement Date	1.1%	1.8%	3.0%	2.2%	1.1%	1.9%	3.3%	2.5%	1.2%	0.9%	0.6%	0.6%	*	1.4%	0.3%	1.6%	0.3%	0.4%	0.0%	0.2%
Target Risk	0.1%	0.1%	0.1%	0.5%	0.1%	0.1%	0.1%	0.5%	0.0%	0.1%	*	*	1.5%	1.4%	1.3%	*	*	*	*	*
Traditional Balanced Fund	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Money Market	1.2%	2.3%	2.9%	1.6%	1.2%	2.5%	3.2%	1.7%	1.0%	0.6%	0.8%	0.9%	1.5%	1.3%	0.8%	0.4%	1.2%	0.3%	0.7%	1.1%
Other	2.2%	2.3%	3.8%	2.1%	2.1%	2.1%	3.7%	1.7%	3.8%	6.5%	5.1%	4.6%	1.8%	5.0%	5.3%	3.3%	2.0%	2.2%	2.2%	3.2%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Percentages are weighted in U.S. dollars and projected to the Greenwich Associates universe of U.S. institutional investors. Projections based only on the assets of institutions disclosing their specific asset allocation.

U.S. Public Funds' Dollar-Weighted Asset Mix of Defined Benefit and Defined Contribution Plan Assets (Cont'd.)

U.S. Institutional Investors – Public Funds (245) (246) (252) (235)

	Public Funds				Over \$5 billion				\$1 – 5 billion				\$501 million – 1 billion				\$500 million and under			
	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019
Base	106	102	105	90	39	39	38	28	30	24	30	26	15	20	20	20	22	19	17	16
Company's own Securities	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
U.S. Equity (Active)	10.6%	14.2%	10.6%	12.4%	10.3%	13.9%	9.5%	11.2%	13.5%	16.9%	16.8%	18.7%	22.3%	20.3%	24.6%	27.2%	21.1%	26.4%	20.0%	16.4%
U.S. Equity (Passive)	12.0%	10.3%	12.0%	11.6%	12.0%	10.2%	12.0%	11.9%	13.0%	13.1%	12.2%	9.7%	9.4%	10.6%	10.8%	9.1%	15.1%	13.2%	17.0%	17.5%
Int'l. Equity (Active)	7.7%	9.0%	8.2%	8.5%	7.5%	8.8%	7.4%	7.9%	8.7%	9.8%	12.5%	12.1%	13.1%	13.3%	16.4%	14.1%	13.7%	15.4%	14.6%	11.7%
Int'l. Equity (Passive)	6.1%	4.8%	6.8%	4.3%	6.2%	4.8%	7.3%	4.6%	5.2%	4.3%	4.2%	2.5%	2.4%	3.8%	1.2%	1.3%	3.3%	3.0%	2.9%	3.6%
Global Equity (Active)	7.4%	6.1%	9.0%	6.6%	7.7%	6.3%	9.8%	7.2%	5.0%	3.1%	4.0%	3.5%	1.5%	1.7%	0.6%	0.9%	*	2.5%	1.9%	*
Emerging Markets Equity	2.3%	2.3%	2.3%	3.1%	2.4%	2.3%	2.2%	3.0%	2.0%	1.9%	3.0%	4.1%	2.8%	3.5%	3.4%	3.7%	1.5%	1.8%	1.8%	3.0%
U.S. Fixed Income (Active)	16.8%	20.2%	18.7%	11.1%	17.0%	20.5%	19.1%	10.2%	14.0%	16.0%	15.3%	14.6%	17.2%	17.3%	17.6%	24.1%	19.9%	20.7%	22.8%	22.5%
U.S. Fixed Income (Passive)	3.3%	1.3%	2.6%	3.5%	3.3%	1.2%	2.6%	3.5%	3.5%	3.2%	2.7%	4.2%	2.0%	1.9%	4.1%	0.5%	3.1%	0.8%	0.5%	1.0%
Int'l. Fixed Income (Active)	0.5%	1.2%	0.2%	0.5%	0.5%	1.3%	0.2%	0.5%	0.6%	0.3%	0.7%	0.1%	0.6%	1.6%	0.8%	1.2%	1.2%	0.2%	*	0.3%
Global Fixed Income (Active)	2.7%	1.4%	1.1%	2.8%	2.8%	1.3%	1.1%	3.0%	2.5%	2.7%	1.8%	1.5%	2.0%	3.0%	1.1%	1.7%	0.8%	0.7%	1.6%	0.2%
Emerging Market Debt	1.2%	1.8%	1.3%	1.7%	1.2%	1.8%	1.4%	1.7%	0.8%	0.9%	1.4%	1.7%	1.1%	0.9%	0.3%	0.2%	0.4%	0.6%	0.7%	1.2%
Multi-Asset	0.9%	0.7%	0.3%	2.5%	0.7%	0.5%	0.1%	2.5%	4.0%	4.0%	2.2%	3.3%	1.6%	0.2%	0.5%	1.0%	2.2%	0.6%	0.7%	1.0%
Direct Real Estate	5.8%	2.9%	1.2%	4.9%	6.0%	3.0%	1.2%	5.5%	3.6%	1.2%	1.9%	1.5%	1.1%	3.0%	1.5%	1.3%	2.3%	1.2%	1.5%	1.8%
Listed Real Estate	2.3%	1.1%	0.9%	0.7%	2.4%	1.1%	0.9%	0.6%	0.9%	0.5%	1.1%	0.4%	4.7%	0.9%	1.9%	2.0%	4.1%	3.1%	2.8%	3.2%
Real Estate, incl. REITs	0.1%	0.1%	0.2%	0.2%	0.0%	0.0%	0.0%	0.0%	0.3%	0.6%	1.8%	1.6%	0.2%	*	*	0.0%	0.0%	0.1%	*	*
Direct Hedge Fund	3.5%	3.2%	1.4%	3.6%	3.6%	3.3%	1.4%	3.7%	1.8%	3.3%	2.0%	3.6%	1.2%	0.5%	0.6%	0.9%	1.1%	1.5%	0.9%	1.1%
Hedge Fund-Of-Fund	0.4%	0.5%	1.1%	0.4%	0.3%	0.4%	1.1%	0.3%	2.3%	1.7%	1.1%	0.8%	2.1%	3.4%	1.4%	0.9%	1.7%	1.8%	2.6%	2.7%
Direct Private Equity	6.1%	5.1%	4.5%	8.0%	6.5%	5.3%	4.7%	8.9%	1.8%	2.6%	3.3%	2.6%	1.2%	1.6%	1.3%	1.3%	1.0%	0.7%	1.6%	2.8%
Private Equity Fund-Of-Fund	2.3%	2.9%	2.2%	0.5%	2.3%	3.1%	2.3%	0.4%	2.8%	0.8%	0.8%	1.0%	2.1%	1.5%	2.8%	1.2%	1.3%	1.6%	2.5%	3.6%
Private Infrastructure	0.1%	0.2%	0.2%	0.8%	0.1%	0.2%	0.2%	0.9%	0.3%	*	0.0%	0.1%	*	0.1%	*	*	*	*	*	0.8%
Commodities	0.9%	1.1%	1.2%	0.9%	0.8%	1.1%	1.3%	1.0%	2.0%	1.5%	0.7%	0.6%	1.4%	0.8%	0.8%	0.4%	0.5%	0.5%	0.6%	1.0%
Stable Value Investments / GICs	1.2%	2.2%	2.5%	3.2%	1.3%	2.2%	2.7%	3.3%	0.8%	2.5%	0.8%	2.8%	3.1%	0.5%	0.6%	0.6%	0.2%	0.3%	0.0%	0.0%
Target Retirement Date	1.1%	1.8%	3.0%	2.2%	1.1%	1.9%	3.3%	2.5%	1.2%	0.9%	0.6%	0.6%	*	1.4%	0.3%	1.6%	0.3%	0.4%	0.0%	0.2%
Target Risk	0.1%	0.1%	0.1%	0.5%	0.1%	0.1%	0.1%	0.5%	0.0%	0.1%	*	*	1.5%	1.4%	1.3%	*	*	*	*	*
Traditional Balanced Fund	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Money Market	1.2%	2.3%	2.9%	1.6%	1.2%	2.5%	3.2%	1.7%	1.0%	0.6%	0.8%	0.9%	1.5%	1.3%	0.8%	0.4%	1.2%	0.3%	0.7%	1.1%
Private Debt	*	*	*	1.4%	*	*	*	1.3%	*	*	*	1.7%	*	*	*	0.6%	*	*	*	1.7%
Other	2.2%	2.3%	3.8%	2.1%	2.1%	2.1%	3.7%	1.7%	3.8%	6.5%	5.1%	4.6%	1.8%	5.0%	5.3%	3.3%	2.0%	2.2%	2.2%	3.2%
Total*	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Percentages are weighted in U.S. dollars and projected to the Greenwich Associates universe of U.S. institutional investors. Projections based only on the assets of institutions disclosing their specific asset allocation.

Private Debt not tracked before 2019

U.S. Institutions' Dollar-Weighted Asset Mix of Defined Benefit Plans and Investment Pool Assets

U.S. Institutional Investors – Total Interviews (1216) (1059) (1128) (1100)

	Total Institutions			
	2016	2017	2018	2019
Base	449	427	404	382
Total U.S. Equity	22.2%	21.8%	20.1%	21.3%
Total International Equity	21.9%	21.5%	23.2%	22.9%
Total Fixed Income	27.7%	31.5%	30.8%	28.4%
Multi-Asset	1.6%	1.1%	1.1%	1.9%
Total Real Estate	7.5%	4.1%	3.1%	5.1%
Total Hedge Fund	6.2%	5.5%	5.4%	6.1%
Total Private Equity	7.7%	7.8%	7.6%	9.1%
Total Infrastructure	0.4%	0.3%	0.2%	0.8%
Commodities	1.1%	1.1%	1.1%	0.8%
Money Market	1.2%	2.8%	3.6%	1.6%
Other	2.4%	2.4%	3.9%	2.1%
Total	100%	100%	100%	100%

Percentages are weighted in U.S. dollars and projected to the Greenwich Associates universe of U.S. institutional investors. Projections based only on the assets of institutions disclosing their specific asset allocation.

U.S. Institutions' Dollar-Weighted Asset Mix of Defined Benefit Plans and Investment Pool Assets (Cont'd.)

U.S. Institutional Investors – Total Interviews (1216) (1059) (1128) (1100)

	Total Institutions			
	2016	2017	2018	2019
Base	449	427	404	382
Company's own Securities	0.1%	0.4%	0.7%	0.6%
U.S. Equities – Active	11.9%	12.6%	10.3%	11.1%
U.S. Equities – Passive	10.2%	8.8%	9.1%	9.5%
Int'l. Equities – Active	7.6%	8.5%	7.8%	8.1%
Int'l. Equities – Passive	4.7%	4.0%	4.8%	3.2%
Global Equities – Active	6.9%	5.9%	7.9%	8.3%
Emerging Market Equities	2.7%	3.0%	2.7%	3.3%
U.S. Fixed Income – Active	19.6%	24.5%	23.4%	20.4%
U.S. Fixed Income – Passive	3.9%	2.5%	4.3%	4.2%
Int'l. Fixed Income – Active	0.6%	1.2%	0.4%	0.4%
Global Fixed Income – Active	2.4%	2.1%	1.5%	2.0%
Emerging Market Debt	1.2%	1.3%	1.1%	1.3%
Multi-Asset	1.6%	1.1%	1.1%	1.9%
Direct Real Estate	5.2%	3.0%	2.3%	4.4%
Listed Real Estate	1.8%	1.1%	0.8%	0.7%
Direct Hedge Fund	5.0%	4.7%	3.9%	4.8%
Hedge Fund-Of-Fund	1.3%	0.9%	1.4%	1.3%
Direct Private Equity	6.1%	5.4%	5.7%	7.6%
Private Equity Fund-Of-Fund	1.7%	2.4%	1.9%	1.5%
Private Infrastructure	0.2%	0.3%	0.2%	0.5%
Infrastructure (direct)	0.2%	*	*	0.3%
Commodities	1.1%	1.1%	1.1%	0.8%
Money Market	1.2%	2.8%	3.6%	1.6%
Private Debt	*	*	*	1.1%
Other	2.4%	2.4%	3.9%	2.1%
Total*	100%	100%	100%	100%

Percentages are weighted in U.S. dollars and projected to the Greenwich Associates universe of U.S. institutional investors. Projections based only on the assets of institutions disclosing their specific asset allocation. Private Debt not tracked before 2019

U.S. Institutions' Dollar-Weighted Asset Mix of Defined Benefit Plan Assets

U.S. Institutional Investors – Total Interviews (1216) (1059) (1128) (1100)

	Total Institutions			
	2016	2017	2018	2019
Base	306	275	266	246
Total U.S. Equity	22.4%	22.5%	21.0%	21.3%
Total International Equity	22.0%	21.8%	24.7%	23.2%
Total Fixed Income	30.0%	32.7%	33.1%	31.0%
Multi-Asset	1.3%	1.0%	1.1%	2.2%
Total Real Estate	7.8%	4.1%	2.8%	5.2%
Total Hedge Fund	4.4%	4.0%	3.4%	4.4%
Total Private Equity	7.3%	7.5%	6.2%	7.9%
Total Infrastructure	0.4%	0.2%	0.1%	0.9%
Commodities	0.9%	1.0%	1.0%	0.6%
Money Market	1.0%	2.5%	3.1%	1.4%
Other	2.5%	2.7%	3.5%	1.9%
Total	100%	100%	100%	100%

Percentages are weighted in U.S. dollars and projected to the Greenwich Associates universe of U.S. institutional investors. Projections based only on the assets of institutions disclosing their specific asset allocation.

U.S. Institutions' Dollar-Weighted Asset Mix of Defined Benefit Plan Assets (Cont'd.)

U.S. Institutional Investors – Total Interviews (1216) (1059) (1128) (1100)

	Total Institutions			
	2016	2017	2018	2019
Base	306	275	266	246
Company's own Securities	0.2%	0.5%	0.9%	0.8%
U.S. Equities (Active)	11.7%	12.8%	10.1%	10.3%
U.S. Equities (Passive)	10.6%	9.2%	9.9%	10.1%
Int'l. Equities (Active)	7.7%	8.8%	8.4%	8.3%
Int'l. Equities (Passive)	4.7%	4.1%	5.0%	3.1%
Global Equities (Active)	7.1%	6.2%	8.6%	8.6%
Emerging Market Equities	2.5%	2.7%	2.7%	3.2%
U.S. Fixed Income (Active)	21.3%	25.6%	25.6%	22.7%
U.S. Fixed Income (Passive)	4.3%	2.7%	4.5%	4.2%
Int'l. Fixed Income (Active)	0.7%	1.3%	0.4%	0.5%
Global Fixed Income (Active)	2.5%	1.6%	1.5%	2.3%
Emerging Market Debt	1.1%	1.5%	1.2%	1.4%
Multi-Asset	1.3%	1.0%	1.1%	2.2%
Direct Real Estate	5.2%	2.8%	1.9%	4.5%
Listed Real Estate	2.2%	1.3%	0.9%	0.7%
Real Estate Fund-Of-Funds	0.4%	*	*	*
Direct Hedge Fund	3.6%	3.3%	2.1%	3.4%
Hedge Fund-of-Funds	0.9%	0.7%	1.3%	1.0%
Direct Private Equity	5.4%	4.8%	4.2%	6.8%
Private Equity Fund-of-Fund	1.9%	2.7%	1.9%	1.2%
Private Infrastructure	0.1%	0.2%	0.1%	0.6%
Infrastructure (direct)	0.2%	*	*	0.3%
Commodities	0.9%	1.0%	1.0%	0.6%
Money Market	1.0%	2.5%	3.1%	1.4%
Private Debt	*	*	*	1.4%
Other	2.5%	2.7%	3.5%	1.9%
Total*	100.0%	100.0%	100.0%	100.0%

Percentages are weighted in U.S. dollars and projected to the Greenwich Associates universe of U.S. institutional investors. Projections based only on the assets of institutions disclosing their specific asset allocation. Private Debt not tracked before 2019

U.S. Corporate Funds' Dollar-Weighted Asset Mix of Defined Benefit Plan Assets

U.S. Institutional Investors – Corporate Funds (413) (460) (446) (447)

	Corporate Funds				Over \$5 billion				\$1 – 5 billion				\$501 million – 1 billion				\$500 million and under			
	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019
Base	171	150	135	131	48	46	43	47	79	63	63	60	26	27	20	19	18	14	9	5
Total U.S. Equity	22.0%	21.4%	22.6%	20.6%	19.5%	19.4%	21.6%	19.4%	27.2%	26.8%	24.0%	21.6%	30.9%	29.7%	27.9%	33.2%	27.8%	32.3%	36.6%	27.2%
Total International Equity	18.0%	18.1%	18.1%	20.1%	18.4%	18.8%	17.8%	19.7%	17.4%	16.8%	19.2%	21.4%	15.6%	13.4%	20.9%	18.6%	20.2%	11.9%	10.6%	18.8%
Total Fixed Income	41.0%	42.4%	41.4%	41.6%	40.6%	41.2%	41.7%	41.2%	42.1%	44.8%	40.2%	43.5%	41.3%	48.9%	40.3%	35.8%	39.5%	49.9%	48.9%	47.3%
Multi-Asset	1.3%	0.7%	1.4%	0.9%	1.0%	0.3%	0.3%	0.3%	1.9%	1.9%	5.3%	2.0%	2.6%	1.7%	3.6%	4.0%	1.0%	3.0%	*	*
Total Real Estate	4.2%	2.9%	2.7%	3.4%	4.9%	3.2%	3.0%	4.1%	3.0%	2.5%	1.9%	1.9%	1.6%	1.0%	0.3%	0.8%	1.9%	0.1%	0.6%	*
Total Hedge Fund	4.9%	3.9%	3.8%	4.3%	4.8%	4.0%	3.9%	5.0%	4.6%	3.8%	3.7%	2.7%	5.5%	2.4%	4.0%	1.6%	9.5%	2.6%	3.2%	3.9%
Total Private Equity	4.0%	5.0%	3.9%	5.6%	5.0%	6.1%	4.6%	7.4%	1.9%	1.6%	1.7%	1.4%	1.2%	1.5%	1.6%	1.1%	0.1%	0.2%	0.2%	0.1%
Total Infrastructure	0.1%	0.0%	0.0%	0.2%	0.2%	0.0%	*	0.2%	0.1%	*	0.1%	0.2%	*	*	*	*	*	*	*	*
Commodities	0.8%	0.5%	0.5%	0.1%	1.1%	0.6%	0.5%	0.1%	0.2%	0.3%	0.7%	0.2%	0.3%	0.1%	0.2%	0.2%	*	*	*	*
Money Market	0.4%	2.0%	2.8%	1.2%	0.3%	2.4%	3.3%	1.2%	0.5%	0.7%	1.7%	0.7%	0.4%	0.5%	0.6%	3.8%	*	*	*	2.7%
Other	3.3%	3.2%	2.7%	2.0%	4.3%	3.9%	3.3%	1.3%	1.2%	0.8%	1.4%	4.2%	0.6%	0.8%	0.6%	1.0%	0.1%	*	*	*
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Percentages are weighted in U.S. dollars and projected to the Greenwich Associates universe of U.S. institutional investors. Projections based only on the assets of institutions disclosing their specific asset allocation.

U.S. Corporate Funds' Dollar-Weighted Asset Mix of Defined Benefit Plan Assets (Cont'd.)

U.S. Institutional Investors – Corporate Funds (413) (460) (446) (447)

	Corporate Funds				Over \$5 billion				\$1 – 5 billion				\$501 million – 1 billion				\$500 million and under				
	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	
Base	171	150	135	131	48	46	43	47	79	63	63	60	26	27	20	19	18	14	9	5	
Company's own Securities	0.4%	1.6%	2.5%	2.2%	0.4%	2.0%	3.3%	3.0%	0.6%	0.5%	0.1%	0.2%	*	*	*	*	0.4%	*	0.4%	*	
U.S. Equities (Active)	13.3%	11.7%	10.7%	8.8%	12.0%	10.5%	9.5%	8.0%	15.5%	15.0%	12.5%	9.1%	19.1%	14.5%	16.5%	16.8%	14.2%	24.8%	32.7%	24.2%	
U.S. Equities (Passive)	8.3%	8.1%	9.4%	9.6%	7.0%	6.9%	8.8%	8.4%	11.0%	11.3%	11.4%	12.3%	11.7%	15.2%	11.4%	16.4%	13.2%	7.5%	3.5%	3.0%	
Int'l. Equities (Active)	7.8%	7.7%	7.7%	7.5%	7.1%	7.4%	7.4%	7.0%	9.9%	9.1%	8.6%	8.7%	7.6%	7.7%	8.5%	8.7%	7.8%	3.6%	6.5%	12.3%	
Int'l. Equities (Passive)	2.3%	2.3%	2.2%	2.3%	2.1%	2.2%	1.9%	2.0%	2.6%	2.7%	2.9%	2.8%	2.7%	2.0%	3.3%	4.8%	5.3%	4.1%	2.0%	1.5%	
Global Equities (Active)	5.3%	5.0%	5.5%	7.3%	6.3%	5.8%	5.7%	7.6%	2.9%	2.8%	5.1%	7.6%	2.5%	1.4%	6.6%	2.2%	5.7%	1.1%	1.1%	2.5%	
Emerging Market Equities	2.6%	3.1%	2.7%	2.9%	2.9%	3.4%	2.8%	3.1%	2.0%	2.2%	2.7%	2.3%	2.8%	2.3%	2.5%	2.9%	1.5%	3.1%	1.1%	2.5%	
U.S. Fixed Income (Active)	30.5%	33.1%	31.7%	35.8%	29.0%	32.5%	32.2%	35.8%	34.8%	35.7%	29.9%	37.5%	34.7%	32.4%	32.9%	28.1%	17.7%	33.9%	27.0%	32.9%	
U.S. Fixed Income (Passive)	6.8%	5.2%	6.9%	3.6%	7.6%	5.0%	7.4%	3.2%	4.6%	4.8%	5.7%	4.1%	4.2%	9.9%	5.3%	5.9%	9.4%	9.9%	4.4%	12.1%	
Int'l. Fixed Income (Active)	1.0%	1.6%	0.5%	0.4%	1.0%	1.3%	0.3%	0.4%	0.6%	1.8%	1.4%	0.4%	1.8%	6.0%	0.1%	*	8.2%	0.1%	3.2%	*	
Global Fixed Income (Active)	2.0%	1.8%	1.6%	1.2%	2.3%	1.9%	1.3%	1.3%	1.1%	1.6%	2.1%	0.9%	0.4%	0.4%	*	*	3.6%	6.0%	13.8%	2.3%	
Emerging Market Debt	0.7%	0.7%	0.7%	0.6%	0.7%	0.6%	0.5%	0.5%	0.9%	0.9%	1.1%	0.7%	0.3%	0.2%	2.0%	1.8%	0.6%	*	0.5%	*	
Multi-Asset	1.3%	0.7%	1.4%	0.9%	1.0%	0.3%	0.3%	0.3%	1.9%	1.9%	5.3%	2.0%	2.6%	1.7%	3.6%	4.0%	1.0%	3.0%	*	*	
Direct Real Estate	2.2%	1.5%	2.0%	2.8%	2.6%	1.5%	2.3%	3.5%	1.4%	1.7%	1.4%	1.3%	0.6%	0.4%	*	*	0.5%	*	0.6%	*	
Listed Real Estate	1.7%	1.5%	0.7%	0.6%	2.0%	1.7%	0.7%	0.6%	1.0%	0.8%	0.6%	0.7%	0.6%	0.6%	0.3%	0.8%	1.4%	0.1%	*	*	
Real Estate Fund-Of-Funds	0.4%	*	*	*	0.3%	*	*	*	0.5%	*	*	*	0.4%	*	*	*	*	*	*	*	*
Direct Hedge Fund	3.6%	3.0%	2.6%	3.0%	3.9%	3.5%	2.9%	3.6%	2.8%	2.0%	1.7%	1.6%	0.7%	0.8%	2.3%	0.4%	7.7%	0.7%	0.7%	2.7%	
Hedge Fund-of-Funds	1.4%	0.8%	1.2%	1.3%	1.0%	0.5%	0.9%	1.3%	1.8%	1.8%	2.1%	1.1%	4.8%	1.6%	1.7%	1.1%	1.8%	1.9%	2.4%	1.2%	
Direct Private Equity	3.3%	3.2%	2.7%	3.9%	4.3%	3.9%	3.3%	5.1%	1.2%	0.8%	1.4%	1.0%	0.6%	0.8%	0.6%	0.1%	0.1%	*	*	*	
Private Equity Fund-of-Fund	0.7%	1.8%	1.1%	1.7%	0.7%	2.2%	1.4%	2.2%	0.7%	0.8%	0.3%	0.5%	0.6%	0.8%	1.0%	1.1%	*	0.2%	0.2%	0.1%	
Private Infrastructure	0.1%	0.0%	0.0%	0.1%	0.1%	0.0%	*	0.2%	0.0%	*	0.1%	*	*	*	*	*	*	*	*	*	
Infrastructure (direct)	0.1%	*	*	0.1%	0.1%	*	*	0.0%	0.1%	*	*	0.2%	*	*	*	*	*	*	*	*	
Commodities	0.8%	0.5%	0.5%	0.1%	1.1%	0.6%	0.5%	0.1%	0.2%	0.3%	0.7%	0.2%	0.3%	0.1%	0.2%	0.2%	*	*	*	*	
Money Market	0.4%	2.0%	2.8%	1.2%	0.3%	2.4%	3.3%	1.2%	0.5%	0.7%	1.7%	0.7%	0.4%	0.5%	0.6%	3.8%	*	*	*	2.7%	
Private Debt	*	*	*	0.2%	*	*	*	0.3%	*	*	*	0.2%	*	*	*	*	*	*	*	*	
Other	3.3%	3.2%	2.7%	2.0%	4.3%	3.9%	3.3%	1.3%	1.2%	0.8%	1.4%	4.2%	0.6%	0.8%	0.6%	1.0%	0.1%	*	*	*	
Total*	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	

Percentages are weighted in U.S. dollars and projected to the Greenwich Associates universe of U.S. institutional investors. Projections based only on the assets of institutions disclosing their specific asset allocation.

Private Debt not tracked before 2019

U.S. Public Funds' Dollar-Weighted Asset Mix of Defined Benefit Plan Assets

U.S. Institutional Investors – Public Funds (245) (246) (252) (235)

	Public Funds				Over \$5 billion				\$1 – 5 billion				\$501 million – 1 billion				\$500 million and under			
	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019
Base	97	90	96	79	34	31	32	24	27	21	28	21	14	19	19	19	22	19	17	15
Total U.S. Equity	22.1%	22.7%	19.8%	21.9%	21.7%	22.1%	18.2%	20.8%	25.1%	29.7%	28.3%	27.1%	31.2%	30.2%	35.9%	34.0%	36.1%	39.5%	37.1%	33.9%
Total International Equity	24.2%	24.1%	29.8%	24.9%	24.4%	24.2%	30.6%	25.1%	22.0%	20.5%	24.9%	24.5%	20.8%	23.8%	22.2%	21.3%	18.7%	22.9%	21.2%	18.3%
Total Fixed Income	26.0%	28.7%	28.3%	23.1%	26.2%	28.9%	28.6%	22.4%	23.6%	26.5%	26.0%	27.6%	25.8%	26.8%	24.7%	30.7%	25.9%	23.7%	25.6%	25.2%
Multi-Asset	1.0%	0.7%	0.4%	3.0%	0.7%	0.6%	0.2%	2.9%	4.4%	4.6%	2.6%	4.2%	1.8%	0.3%	0.5%	1.1%	2.3%	0.6%	0.7%	1.0%
Total Real Estate	9.0%	4.4%	2.6%	6.6%	9.0%	4.6%	2.4%	7.2%	8.6%	2.0%	3.6%	2.0%	7.8%	4.3%	3.5%	3.6%	8.1%	4.4%	4.3%	5.2%
Total Hedge Fund	4.1%	4.2%	3.0%	4.6%	4.1%	4.1%	3.0%	4.8%	4.5%	5.7%	3.7%	3.4%	3.7%	4.2%	2.1%	2.0%	2.8%	3.4%	3.5%	3.8%
Total Private Equity	9.0%	9.0%	7.9%	10.2%	9.3%	9.4%	8.3%	11.1%	5.0%	3.9%	5.0%	4.8%	3.7%	3.4%	4.3%	2.8%	2.4%	2.4%	4.1%	6.4%
Total Infrastructure	0.4%	0.2%	0.2%	1.3%	0.4%	0.2%	0.3%	1.4%	0.5%	*	0.0%	1.0%	*	0.1%	*	0.2%	0.1%	*	*	0.9%
Commodities	1.0%	1.2%	1.4%	1.1%	0.9%	1.2%	1.5%	1.1%	2.2%	1.7%	0.8%	0.9%	1.6%	0.9%	0.8%	0.4%	0.5%	0.5%	0.6%	1.0%
Money Market	1.1%	2.5%	2.7%	1.5%	1.1%	2.7%	3.0%	1.6%	0.8%	0.7%	0.6%	1.1%	1.6%	0.9%	0.8%	0.4%	1.2%	0.3%	0.7%	1.1%
Other	2.1%	2.3%	4.0%	1.8%	2.0%	2.1%	3.9%	1.6%	3.2%	4.9%	4.4%	3.5%	2.0%	5.1%	5.2%	3.5%	2.0%	2.3%	2.2%	3.2%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Percentages are weighted in U.S. dollars and projected to the Greenwich Associates universe of U.S. institutional investors. Projections based only on the assets of institutions disclosing their specific asset allocation.

U.S. Public Funds' Dollar-Weighted Asset Mix of Defined Benefit Plan Assets (Cont'd.)

U.S. Institutional Investors – Public Funds (245) (246) (252) (235)

	Public Funds				Over \$5 billion				\$1 – 5 billion				\$501 million – 1 billion				\$500 million and under			
	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019
Base	97	90	96	79	34	31	32	24	27	21	28	21	14	19	19	19	22	19	17	15
Company's own Securities	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
U.S. Equities (Active)	10.5%	13.1%	9.1%	11.2%	10.1%	12.7%	7.7%	10.1%	12.7%	15.8%	16.4%	16.6%	21.6%	19.2%	25.0%	25.2%	21.0%	26.6%	20.0%	16.6%
U.S. Equities (Passive)	11.6%	9.7%	10.8%	10.7%	11.6%	9.4%	10.6%	10.7%	12.4%	13.9%	11.8%	10.5%	9.6%	11.0%	10.9%	8.8%	15.1%	12.9%	17.0%	17.3%
Int'l. Equities (Active)	7.9%	9.6%	9.1%	9.5%	7.7%	9.4%	8.3%	8.9%	9.0%	10.7%	14.1%	12.6%	14.0%	14.1%	16.9%	14.8%	13.8%	15.7%	14.6%	11.8%
Int'l. Equities (Passive)	5.9%	5.2%	7.5%	4.0%	6.0%	5.3%	8.3%	4.4%	5.3%	4.2%	2.6%	1.6%	2.1%	4.1%	1.2%	1.4%	3.4%	2.9%	2.9%	3.6%
Global Equities (Active)	7.9%	6.7%	10.6%	8.0%	8.2%	7.0%	11.6%	8.6%	5.5%	3.5%	4.8%	5.1%	1.6%	1.8%	0.7%	1.0%	*	2.5%	1.9%	*
Emerging Market Equities	2.4%	2.5%	2.6%	3.4%	2.4%	2.5%	2.5%	3.2%	2.2%	2.0%	3.5%	5.2%	3.0%	3.8%	3.5%	4.1%	1.5%	1.8%	1.8%	3.0%
U.S. Fixed Income (Active)	17.8%	22.4%	22.0%	13.0%	17.9%	22.7%	22.5%	12.0%	15.4%	18.4%	18.2%	17.2%	19.3%	18.8%	18.2%	26.7%	20.2%	21.2%	22.8%	22.5%
U.S. Fixed Income (Passive)	3.6%	1.4%	3.0%	4.2%	3.5%	1.3%	3.0%	4.2%	3.9%	3.6%	3.2%	6.0%	2.3%	2.0%	4.3%	0.6%	3.1%	0.9%	0.5%	1.0%
Int'l. Fixed Income (Active)	0.6%	1.3%	0.3%	0.6%	0.5%	1.4%	0.2%	0.6%	0.6%	0.3%	0.8%	0.2%	0.7%	1.7%	0.8%	1.3%	1.2%	0.2%	*	0.3%
Global Fixed Income (Active)	2.9%	1.5%	1.3%	3.4%	3.0%	1.4%	1.3%	3.6%	2.8%	3.1%	2.2%	2.1%	2.3%	3.2%	1.1%	1.8%	0.9%	0.8%	1.6%	0.3%
Emerging Market Debt	1.2%	2.0%	1.6%	2.0%	1.3%	2.0%	1.6%	2.0%	0.9%	1.1%	1.6%	2.0%	1.3%	1.0%	0.3%	0.3%	0.4%	0.6%	0.7%	1.2%
Multi-Asset	1.0%	0.7%	0.4%	3.0%	0.7%	0.6%	0.2%	2.9%	4.4%	4.6%	2.6%	4.2%	1.8%	0.3%	0.5%	1.1%	2.3%	0.6%	0.7%	1.0%
Direct Real Estate	6.2%	3.2%	1.5%	5.8%	6.4%	3.4%	1.4%	6.5%	4.0%	1.4%	2.3%	1.4%	1.2%	3.3%	1.5%	1.4%	2.3%	1.2%	1.5%	1.9%
Listed Real Estate	2.5%	1.2%	1.1%	0.8%	2.5%	1.2%	1.0%	0.8%	0.9%	0.6%	1.3%	0.5%	5.3%	1.0%	1.9%	2.2%	4.2%	3.2%	2.8%	3.3%
Real Estate Fund-Of-Funds	0.3%	*	*	*	0.1%	*	*	*	3.7%	*	*	*	1.3%	*	*	*	1.6%	*	*	*
Direct Hedge Fund	3.7%	3.6%	1.7%	4.1%	3.8%	3.7%	1.7%	4.4%	1.9%	3.7%	2.4%	2.2%	1.4%	0.5%	0.6%	1.0%	1.1%	1.6%	0.9%	1.1%
Hedge Fund-of-Funds	0.5%	0.5%	1.3%	0.5%	0.3%	0.4%	1.3%	0.3%	2.6%	1.9%	1.3%	1.2%	2.3%	3.6%	1.5%	1.0%	1.7%	1.9%	2.6%	2.7%
Direct Private Equity	6.5%	5.7%	5.3%	9.6%	6.9%	5.9%	5.6%	10.6%	2.0%	2.9%	4.0%	3.4%	1.4%	1.8%	1.3%	1.4%	1.0%	0.8%	1.6%	2.8%
Private Equity Fund-of-Fund	2.5%	3.3%	2.6%	0.7%	2.5%	3.4%	2.7%	0.5%	3.0%	1.0%	1.0%	1.4%	2.4%	1.7%	2.9%	1.4%	1.3%	1.7%	2.5%	3.6%
Private Infrastructure	0.1%	0.2%	0.2%	0.9%	0.1%	0.2%	0.3%	1.0%	0.3%	*	0.0%	*	*	0.1%	*	*	*	*	*	0.8%
Infrastructure (direct)	0.3%	*	*	0.4%	0.3%	*	*	0.3%	0.2%	*	*	1.0%	*	*	*	0.2%	0.1%	*	*	0.1%
Commodities	1.0%	1.2%	1.4%	1.1%	0.9%	1.2%	1.5%	1.1%	2.2%	1.7%	0.8%	0.9%	1.6%	0.9%	0.8%	0.4%	0.5%	0.5%	0.6%	1.0%
Money Market	1.1%	2.5%	2.7%	1.5%	1.1%	2.7%	3.0%	1.6%	0.8%	0.7%	0.6%	1.1%	1.6%	0.9%	0.8%	0.4%	1.2%	0.3%	0.7%	1.1%
Private Debt	*	*	*	1.6%	*	*	*	1.6%	*	*	*	2.4%	*	*	*	0.6%	*	*	*	1.7%
Other	2.1%	2.3%	4.0%	1.8%	2.0%	2.1%	3.9%	1.6%	3.2%	4.9%	4.4%	3.5%	2.0%	5.1%	5.2%	3.5%	2.0%	2.3%	2.2%	3.2%
Total*	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Percentages are weighted in U.S. dollars and projected to the Greenwich Associates universe of U.S. institutional investors. Projections based only on the assets of institutions disclosing their specific asset allocation.

Private Debt not tracked before 2019

U.S. Union Funds' Dollar-Weighted Asset Mix of Defined Benefit Plan Assets

U.S. Institutional Investors – Unions (291) (409) (445) (375)

	Unions			
	2016	2017	2018	2019
Base	34	32	29	33
Total U.S. Equity	28.1%	26.2%	22.0%	21.0%
Total International Equity	16.9%	18.0%	21.0%	27.2%
Total Fixed Income	20.4%	22.8%	23.9%	29.2%
Multi-Asset	4.9%	5.5%	5.2%	3.0%
Total Real Estate	12.7%	7.0%	5.1%	4.8%
Total Hedge Fund	5.4%	3.6%	4.0%	3.8%
Total Private Equity	4.8%	6.4%	6.0%	5.4%
Total Infrastructure	0.9%	0.6%	0.1%	1.7%
Commodities	0.5%	0.2%	0.5%	0.1%
Money Market	2.1%	5.2%	8.2%	1.4%
Other	3.2%	4.5%	4.2%	2.3%
Total	100%	100%	100%	100%

Percentages are weighted in U.S. dollars and projected to the Greenwich Associates universe of U.S. institutional investors. Projections based only on the assets of institutions disclosing their specific asset allocation.

U.S. Union Funds' Dollar-Weighted Asset Mix of Defined Benefit Plan Assets (Cont'd.)

U.S. Institutional Investors – Unions (291) (409) (445) (375)

	Unions			
	2016	2017	2018	2019
Base	34	32	29	33
Company's own Securities	0.6%	*	*	*
U.S. Equities (Active)	17.4%	17.3%	15.0%	12.0%
U.S. Equities (Passive)	10.1%	8.9%	7.0%	9.0%
Int'l. Equities (Active)	4.0%	6.6%	6.6%	5.6%
Int'l. Equities (Passive)	3.0%	1.5%	1.1%	1.6%
Global Equities (Active)	7.5%	7.1%	9.8%	16.4%
Emerging Market Equities	2.4%	2.8%	3.4%	3.5%
U.S. Fixed Income (Active)	16.8%	18.7%	19.4%	20.1%
U.S. Fixed Income (Passive)	1.6%	1.9%	2.3%	6.6%
Int'l. Fixed Income (Active)	0.3%	0.0%	0.3%	0.4%
Global Fixed Income (Active)	0.9%	1.4%	0.9%	0.9%
Emerging Market Debt	0.8%	0.8%	1.0%	1.1%
Multi-Asset	4.9%	5.5%	5.2%	3.0%
Direct Real Estate	9.5%	6.0%	4.4%	4.2%
Listed Real Estate	1.0%	1.0%	0.7%	0.6%
Real Estate Fund-Of-Funds	2.1%	*	*	*
Direct Hedge Fund	2.6%	1.2%	1.7%	1.5%
Hedge Fund-of-Funds	2.8%	2.4%	2.2%	2.3%
Direct Private Equity	3.2%	4.5%	4.2%	3.9%
Private Equity Fund-of-Fund	1.6%	1.8%	1.8%	1.5%
Private Infrastructure	0.7%	0.6%	0.1%	0.7%
Infrastructure (direct)	0.2%	*	*	1.0%
Commodities	0.5%	0.2%	0.5%	0.1%
Money Market	2.1%	5.2%	8.2%	1.4%
Private Debt	*	*	*	3.1%
Other	3.2%	4.5%	4.2%	2.3%
Total*	100%	100%	100%	100%

Percentages are weighted in U.S. dollars and projected to the Greenwich Associates universe of U.S. institutional investors. Projections based only on the assets of institutions disclosing their specific asset allocation. Private Debt not tracked before 2019

U.S. Endowment and Foundations' Dollar-Weighted Asset Mix of Investment Pool Assets

U.S. Institutional Investors – Endowments and Foundations (179) (188) (215) (211)

	Endowments and Foundations				Over \$1 billion				\$501 million – 1 billion				\$500 million and under			
	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019
Base	113	106	105	104	32	33	31	25	35	33	36	37	46	40	38	42
Total U.S. Equity	21.1%	21.7%	17.4%	20.8%	20.3%	20.1%	15.3%	19.5%	24.9%	29.8%	28.2%	26.5%	24.5%	26.2%	25.4%	24.1%
Total International Equity	22.7%	23.8%	20.1%	22.7%	23.0%	23.7%	19.3%	21.5%	21.6%	24.0%	23.4%	25.7%	21.2%	24.4%	25.2%	28.1%
Total Fixed Income	17.1%	16.3%	17.9%	14.3%	17.5%	16.4%	18.5%	14.2%	14.8%	15.7%	15.1%	14.2%	16.6%	16.6%	15.3%	15.5%
Multi-Asset	2.5%	2.0%	1.1%	1.0%	2.6%	2.2%	0.9%	0.7%	1.9%	0.9%	1.0%	2.4%	2.1%	1.4%	3.8%	1.6%
Total Real Estate	6.4%	3.7%	4.8%	4.9%	6.8%	4.0%	5.4%	5.7%	4.9%	2.0%	2.4%	2.7%	3.2%	1.8%	2.2%	1.9%
Total Hedge Fund	13.4%	13.1%	12.9%	12.7%	12.9%	12.9%	12.7%	12.7%	15.4%	13.3%	15.4%	13.9%	15.3%	15.1%	10.1%	11.2%
Total Private Equity	10.3%	11.2%	14.6%	15.4%	10.9%	12.0%	16.1%	17.3%	7.6%	7.7%	8.2%	8.7%	8.7%	7.7%	6.6%	9.1%
Total Infrastructure	0.6%	1.4%	0.5%	0.5%	0.6%	1.6%	0.5%	0.6%	0.7%	0.2%	0.4%	0.3%	0.4%	0.8%	0.6%	0.1%
Commodities	1.8%	1.9%	1.4%	1.7%	1.6%	1.9%	1.4%	1.8%	2.5%	1.8%	1.3%	1.4%	3.4%	1.4%	0.9%	1.9%
Money Market	1.8%	3.5%	3.7%	2.6%	1.7%	3.6%	3.8%	2.6%	2.2%	3.2%	3.2%	3.1%	2.3%	2.2%	2.5%	2.0%
Other	2.3%	1.6%	5.7%	3.2%	2.1%	1.6%	6.2%	3.5%	3.5%	1.4%	1.5%	1.0%	2.3%	2.5%	7.4%	4.6%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Percentages are weighted in U.S. dollars and projected to the Greenwich Associates universe of U.S. institutional investors. Projections based only on the assets of institutions disclosing their specific asset allocation.

U.S. Endowment and Foundations' Dollar-Weighted Asset Mix of Investment Pool Assets (Cont'd.)

U.S. Institutional Investors – Endowments and Foundations (179) (188) (215) (211)

	Endowments and Foundations				Over \$1 billion				\$501 million – 1 billion				\$500 million and under			
	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019
Base	113	106	105	104	32	33	31	25	35	33	36	37	46	40	38	42
U.S. Equities (Active)	12.5%	13.8%	11.2%	13.1%	11.0%	13.4%	10.2%	12.9%	19.6%	15.8%	16.6%	15.2%	17.4%	15.2%	14.5%	11.8%
U.S. Equities (Passive)	8.7%	7.9%	6.2%	7.7%	9.3%	6.8%	5.1%	6.6%	5.3%	13.9%	11.6%	11.3%	7.1%	10.9%	10.9%	12.3%
Int'l. Equities (Active)	7.0%	8.8%	6.4%	7.1%	5.9%	7.8%	5.4%	6.0%	12.2%	13.7%	11.7%	12.2%	10.7%	11.8%	9.8%	9.2%
Int'l. Equities (Passive)	5.3%	4.3%	4.1%	3.7%	6.2%	4.6%	4.1%	3.5%	1.6%	3.1%	4.3%	4.2%	1.4%	2.9%	4.5%	4.5%
Global Equities (Active)	6.7%	5.8%	6.9%	8.0%	7.3%	6.4%	7.4%	8.5%	3.6%	2.5%	3.4%	4.4%	4.2%	4.8%	6.1%	9.7%
Emerging Market Equities	3.8%	5.0%	2.7%	3.9%	3.6%	5.0%	2.4%	3.6%	4.3%	4.8%	4.0%	4.9%	4.8%	5.0%	4.7%	4.6%
U.S. Fixed Income (Active)	11.6%	10.0%	11.1%	10.8%	11.9%	9.7%	11.4%	11.2%	10.2%	10.7%	9.6%	8.7%	10.6%	12.7%	9.6%	10.1%
U.S. Fixed Income (Passive)	1.8%	1.1%	3.8%	1.3%	1.7%	0.6%	3.8%	0.8%	2.1%	4.0%	4.4%	4.1%	2.4%	1.0%	2.1%	1.5%
Int'l. Fixed Income (Active)	0.4%	0.8%	0.4%	0.2%	0.3%	0.9%	0.4%	0.3%	0.6%	0.1%	0.2%	0.1%	1.2%	0.4%	0.6%	0.1%
Global Fixed Income (Active)	1.8%	4.1%	1.6%	0.8%	1.8%	4.8%	1.6%	0.4%	1.6%	0.4%	0.8%	1.3%	1.7%	2.2%	2.4%	3.1%
Emerging Market Debt	1.5%	0.3%	1.1%	1.3%	1.7%	0.3%	1.3%	1.6%	0.2%	0.4%	0.1%	0.1%	0.6%	0.3%	0.7%	0.6%
Multi-Asset	2.5%	2.0%	1.1%	1.0%	2.6%	2.2%	0.9%	0.7%	1.9%	0.9%	1.0%	2.4%	2.1%	1.4%	3.8%	1.6%
Direct Real Estate	5.7%	3.2%	4.3%	4.6%	6.4%	3.6%	4.9%	5.3%	2.9%	1.5%	1.3%	2.2%	2.0%	1.3%	1.4%	1.2%
Listed Real Estate	0.4%	0.5%	0.5%	0.4%	0.3%	0.5%	0.5%	0.3%	0.8%	0.6%	1.0%	0.5%	0.6%	0.4%	0.7%	0.7%
Real Estate Fund-Of-Funds	0.3%	*	*	*	0.1%	*	*	*	1.2%	*	*	*	0.6%	*	*	*
Direct Hedge Fund	10.8%	12.0%	11.2%	10.4%	10.3%	12.3%	11.1%	10.5%	12.5%	10.6%	12.9%	11.7%	13.0%	10.9%	8.8%	7.7%
Hedge Fund-Of-Fund	2.6%	1.1%	1.7%	2.3%	2.6%	0.6%	1.6%	2.2%	2.9%	2.7%	2.5%	2.2%	2.3%	4.2%	1.3%	3.5%
Direct Private Equity	9.4%	9.8%	12.5%	12.2%	10.1%	10.9%	14.1%	14.0%	6.1%	4.9%	5.6%	5.8%	5.6%	4.6%	4.7%	6.2%
Private Equity Fund-Of-Fund	1.0%	1.4%	2.0%	3.2%	0.7%	1.1%	2.0%	3.3%	1.5%	2.8%	2.6%	2.9%	3.1%	3.0%	1.9%	2.9%
Private Infrastructure	0.3%	1.4%	0.5%	0.5%	0.3%	1.6%	0.5%	0.6%	0.4%	0.2%	0.4%	0.3%	0.2%	0.8%	0.6%	0.1%
Infrastructure (direct)	0.3%	*	*	*	0.3%	*	*	*	0.3%	*	*	*	0.2%	*	*	*
Commodities	1.8%	1.9%	1.4%	1.7%	1.6%	1.9%	1.4%	1.8%	2.5%	1.8%	1.3%	1.4%	3.4%	1.4%	0.9%	1.9%
Money Market	1.8%	3.5%	3.7%	2.6%	1.7%	3.6%	3.8%	2.6%	2.2%	3.2%	3.2%	3.1%	2.3%	2.2%	2.5%	2.0%
Private Debt	*	*	*	0.7%	*	*	*	0.6%	*	*	*	1.3%	*	*	*	0.6%
Other	2.3%	1.6%	5.7%	3.2%	2.1%	1.6%	6.2%	3.5%	3.5%	1.4%	1.5%	1.0%	2.3%	2.5%	7.4%	4.6%
Total*	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Percentages are weighted in U.S. dollars and projected to the Greenwich Associates universe of U.S. institutional investors. Projections based only on the assets of institutions disclosing their specific asset allocation. Private Debt not tracked before 2019

U.S. Healthcare Organizations' Dollar-Weighted Asset Mix of Operating Assets

U.S. Institutional Investors – Total Interviews (507) (439)

	Total Institutions	
	2018	2019
Base	25	17
Total U.S. Equity	17.7%	22.0%
Total International Equity	12.5%	23.5%
Total Fixed Income	44.0%	29.9%
Multi-Asset	1.6%	1.5%
Total Real Estate	1.4%	2.3%
Total Hedge Fund	5.9%	10.3%
Total Private Equity	2.1%	3.4%
Total Infrastructure	*	*
Commodities	0.9%	1.4%
Money Market	10.6%	3.7%
Other	3.1%	2.0%
Total	100%	100%

Percentages are weighted in U.S. dollars and projected to the Greenwich Associates universe of U.S. institutional investors. Projections based only on the assets of institutions disclosing their specific asset allocation.

U.S. Healthcare Organizations' Dollar-Weighted Asset Mix of Operating Assets (Cont'd.)

U.S. Institutional Investors – Total Interviews (302) (513) (507) (439)

	Total Institutions			
	2016	2017	2018	2019
Base	20	32	25	17
Company's own Securities	*	*	*	*
U.S. Equities (Active)	16.6%	10.3%	11.0%	12.3%
U.S. Equities (Passive)	5.1%	6.8%	6.7%	9.7%
Int'l. Equities (Active)	9.3%	6.6%	4.4%	8.5%
Int'l. Equities (Passive)	2.0%	3.8%	3.5%	3.7%
Global Equities (Active)	3.1%	3.3%	2.1%	8.1%
Emerging Market Equities	3.5%	3.1%	2.6%	3.3%
U.S. Fixed Income (Active)	18.6%	32.7%	38.1%	18.1%
U.S. Fixed Income (Passive)	1.9%	4.6%	3.5%	6.5%
Int'l. Fixed Income (Active)	0.5%	0.4%	0.1%	0.2%
Global Fixed Income (Active)	3.0%	3.1%	1.6%	4.7%
Emerging Market Debt	2.1%	1.2%	0.7%	0.5%
Multi-Asset	6.4%	1.7%	1.6%	1.5%
Direct Real Estate	1.1%	0.6%	0.9%	1.8%
Listed Real Estate	2.0%	0.6%	0.5%	0.5%
Real Estate Fund-Of-Funds	1.0%	*	*	*
Direct Hedge Fund	6.6%	5.1%	4.0%	7.2%
Hedge Fund-Of-Fund	5.7%	3.1%	1.9%	3.1%
Direct Private Equity	3.1%	2.2%	1.7%	3.2%
Private Equity Fund-of-Fund	0.6%	1.1%	0.4%	0.1%
Private Infrastructure	0.2%	0.1%	*	*
Infrastructure (direct)	*	*	*	*
Commodities	1.2%	0.9%	0.9%	1.4%
Money Market	4.7%	7.6%	10.6%	3.7%
Private Debt	*	*	*	0.7%
Other	1.4%	1.0%	3.1%	2.0%
Total*	100%	100%	100%	100%

Percentages are weighted in U.S. dollars and projected to the Greenwich Associates universe of U.S. institutional investors. Projections based only on the assets of institutions disclosing their specific asset allocation. Private Debt not tracked before 2019

U.S. Institutions' 3-Year Allocation Expectations for Defined Benefit and Investment Pool Assets

U.S. Institutional Investors – Total Interviews (1100)

	Percent of Investors Predicting	Number of Investors Predicting	<u>Significantly Increase by 2022</u>		<u>Significantly Decrease by 2022</u>		<u>No Change by 2022</u>	
			Number	Percent	Number	Percent	Number	Percent
			2019	2019	2019	2019	2019	2019
Company's Own Securities	10%	(105)	(2)	2%	(1)	1%	(102)	97%
U.S. Equity (Active)	19%	(214)	(4)	2%	(38)	18%	(172)	80%
U.S. Equity (Passive)	19%	(210)	(14)	7%	(26)	12%	(170)	81%
International Equity (Active)	18%	(203)	(6)	3%	(18)	9%	(179)	88%
International Equity (Passive)	16%	(177)	(7)	4%	(21)	12%	(149)	84%
Global Equity (Active)	15%	(166)	(12)	7%	(9)	5%	(145)	87%
Emerging Markets Equity	17%	(191)	(12)	6%	(10)	5%	(169)	88%
U.S. Fixed Income (Active)	20%	(215)	(23)	11%	(10)	5%	(182)	85%
U.S. Fixed Income (Passive)	15%	(161)	(7)	4%	(5)	3%	(149)	93%
International Fixed Income (Active)	12%	(137)	(1)	1%	(1)	1%	(135)	99%
Global Fixed Income (Active)	13%	(147)	(3)	2%	(5)	3%	(139)	95%
Emerging Market Debt	13%	(145)	(6)	4%	(3)	2%	(136)	94%
Multi-Asset	13%	(144)	(4)	3%	(11)	8%	(129)	90%
Direct Hedge Fund	14%	(157)	(8)	5%	(10)	6%	(139)	89%
Hedge Fund-of-Funds	13%	(145)	(1)	1%	(12)	8%	(132)	91%
Direct Real Estate	13%	(148)	(6)	4%	(5)	3%	(137)	93%
Listed Real Estate (REITS)	13%	(145)	(5)	3%	(4)	3%	(136)	94%
Real Estate Fund-of-Funds	16%	(177)	(21)	12%	(5)	3%	(151)	85%
Direct Private Equity	16%	(179)	(41)	23%	(2)	1%	(136)	76%
Private Equity Fund-of-Funds	15%	(160)	(12)	8%	(11)	7%	(137)	86%
Private Infrastructure	12%	(128)	(3)	2%	(1)	1%	(124)	97%
Infrastructure	12%	(137)	(6)	4%	(1)	1%	(130)	95%
Commodities	13%	(143)	(1)	1%	(4)	3%	(138)	97%
Money Market & Cash	15%	(162)	(5)	3%	(7)	4%	(150)	93%
Private Debt	13%	(143)	(13)	9%	(3)	2%	(127)	89%
Other	11%	(126)	(14)	11%	(1)	1%	(111)	88%

Results are for corporate and union DB plans, public fund DB plans, and endowment and foundation investment pools.

U.S. Corporate Funds' 3-Year Allocation Expectations for Defined Benefit Plan Assets

U.S. Institutional Investors – Corporate Funds (2079)

	Percent of Investors Predicting	Number of Investors Predicting	<u>Significantly Increase by 2022</u>		<u>Significantly Decrease by 2022</u>		<u>No Change by 2022</u>	
			Number	Percent	Number	Percent	Number	Percent
			2019	2019	2019	2019	2019	2019
Company's Own Securities	2%	(45)	(2)	4%	(1)	2%	(42)	93%
U.S. Equity (Active)	3%	(71)	(3)	4%	(18)	25%	(50)	70%
U.S. Equity (Passive)	4%	(73)	(6)	8%	(10)	14%	(57)	78%
International Equity (Active)	3%	(64)	(3)	5%	(9)	14%	(52)	81%
International Equity (Passive)	3%	(66)	(3)	5%	(10)	15%	(53)	80%
Global Equity (Active)	3%	(57)	(6)	11%	(3)	5%	(48)	84%
Emerging Markets Equity	3%	(61)	(3)	5%	(6)	10%	(52)	85%
U.S. Fixed Income (Active)	3%	(72)	(15)	21%	(2)	3%	(55)	76%
U.S. Fixed Income (Passive)	3%	(56)	(3)	5%	(2)	4%	(51)	91%
International Fixed Income (Active)	2%	(50)	(1)	2%	*	*	(49)	98%
Global Fixed Income (Active)	2%	(50)	(3)	6%	*	*	(47)	94%
Emerging Market Debt	3%	(52)	(2)	4%	(3)	6%	(47)	90%
Multi-Asset	2%	(51)	(3)	6%	(1)	2%	(47)	92%
Direct Hedge Fund	2%	(49)	(2)	4%	(2)	4%	(45)	92%
Hedge Fund-of-Funds	2%	(48)	*	*	(3)	6%	(45)	94%
Direct Real Estate	2%	(51)	(1)	2%	(1)	2%	(49)	96%
Listed Real Estate (REITS)	2%	(50)	(1)	2%	(1)	2%	(48)	96%
Real Estate Fund-of-Funds	3%	(57)	(3)	5%	(3)	5%	(51)	89%
Direct Private Equity	3%	(53)	(5)	9%	(1)	2%	(47)	89%
Private Equity Fund-of-Funds	3%	(52)	*	*	(3)	6%	(49)	94%
Private Infrastructure	2%	(46)	(1)	2%	*	*	(45)	98%
Infrastructure	2%	(48)	*	*	*	*	(48)	100%
Commodities	2%	(48)	*	*	*	*	(48)	100%
Money Market & Cash	3%	(54)	(1)	2%	(3)	6%	(50)	93%
Private Debt	2%	(48)	(4)	8%	*	*	(44)	92%
Other	2%	(44)	(4)	9%	*	*	(40)	91%

Results are for corporate DB plans.

U.S. Public Funds' 3-Year Allocation Expectations for Defined Benefit Plan Assets

U.S. Institutional Investors – Public Funds (739)

	Percent of Investors Predicting	Number of Investors Predicting	<u>Significantly Increase by 2022</u>		<u>Significantly Decrease by 2022</u>		<u>No Change by 2022</u>	
			Number	Percent	Number	Percent	Number	Percent
			2019	2019	2019	2019	2019	2019
Company's Own Securities	2%	(18)	*	*	*	*	(18)	100%
U.S. Equity (Active)	6%	(46)	(1)	2%	(6)	13%	(39)	85%
U.S. Equity (Passive)	6%	(46)	(4)	9%	(4)	9%	(38)	83%
International Equity (Active)	6%	(43)	(2)	5%	(3)	7%	(38)	88%
International Equity (Passive)	5%	(34)	(2)	6%	(2)	6%	(30)	88%
Global Equity (Active)	4%	(32)	(2)	6%	(3)	9%	(27)	84%
Emerging Markets Equity	6%	(44)	(4)	9%	(2)	5%	(38)	86%
U.S. Fixed Income (Active)	6%	(42)	(2)	5%	(1)	2%	(39)	93%
U.S. Fixed Income (Passive)	5%	(34)	*	*	(3)	9%	(31)	91%
International Fixed Income (Active)	4%	(28)	*	*	*	*	(28)	100%
Global Fixed Income (Active)	4%	(29)	*	*	(2)	7%	(27)	93%
Emerging Market Debt	4%	(32)	(2)	6%	*	*	(30)	94%
Multi-Asset	4%	(27)	(1)	4%	(1)	4%	(25)	93%
Direct Hedge Fund	4%	(32)	(1)	3%	(1)	3%	(30)	94%
Hedge Fund-of-Funds	4%	(29)	*	*	(3)	10%	(26)	90%
Direct Real Estate	5%	(34)	(2)	6%	(2)	6%	(30)	88%
Listed Real Estate (REITS)	4%	(33)	(1)	3%	(1)	3%	(31)	94%
Real Estate Fund-of-Funds	5%	(37)	(4)	11%	*	*	(33)	89%
Direct Private Equity	5%	(37)	(7)	19%	*	*	(30)	81%
Private Equity Fund-of-Funds	5%	(35)	(3)	9%	(4)	11%	(28)	80%
Private Infrastructure	4%	(27)	*	*	*	*	(27)	100%
Infrastructure	4%	(29)	(1)	3%	*	*	(28)	97%
Commodities	4%	(32)	*	*	(1)	3%	(31)	97%
Money Market & Cash	4%	(30)	*	*	(1)	3%	(29)	97%
Private Debt	4%	(32)	(6)	19%	(1)	3%	(25)	78%
Other	3%	(25)	(1)	4%	*	*	(24)	96%

Results are for public fund DB plans.

U.S. Endowment and Foundation Funds' 3-Year Allocation Expectations for Investment Pool Assets

U.S. Institutional Investors – Endowments and Foundations (842)

	Percent of Investors Predicting	Number of Investors Predicting	<u>Significantly Increase by 2022</u>		<u>Significantly Decrease by 2022</u>		<u>No Change by 2022</u>	
			Number	Percent	Number	Percent	Number	Percent
			2019	2019	2019	2019	2019	2019
Company's Own Securities	3%	(28)	*	*	*	*	(28)	100%
U.S. Equity (Active)	6%	(54)	*	*	(8)	15%	(46)	85%
U.S. Equity (Passive)	6%	(47)	(2)	4%	(6)	13%	(39)	83%
International Equity (Active)	6%	(53)	(1)	2%	(3)	6%	(49)	92%
International Equity (Passive)	5%	(44)	*	*	(5)	11%	(39)	89%
Global Equity (Active)	5%	(44)	(1)	2%	(3)	7%	(40)	91%
Emerging Markets Equity	6%	(48)	(2)	4%	(1)	2%	(45)	94%
U.S. Fixed Income (Active)	6%	(52)	(2)	4%	(4)	8%	(46)	88%
U.S. Fixed Income (Passive)	5%	(44)	*	*	*	*	(44)	100%
International Fixed Income (Active)	5%	(38)	*	*	(1)	3%	(37)	97%
Global Fixed Income (Active)	5%	(41)	*	*	(2)	5%	(39)	95%
Emerging Market Debt	5%	(38)	(2)	5%	*	*	(36)	95%
Multi-Asset	4%	(37)	*	*	(1)	3%	(36)	97%
Direct Hedge Fund	5%	(45)	(4)	9%	(3)	7%	(38)	84%
Hedge Fund-of-Funds	5%	(41)	(1)	2%	(3)	7%	(37)	90%
Direct Real Estate	5%	(38)	(2)	5%	(2)	5%	(34)	89%
Listed Real Estate (REITS)	5%	(39)	(3)	8%	(1)	3%	(35)	90%
Real Estate Fund-of-Funds	6%	(47)	(10)	21%	(1)	2%	(36)	77%
Direct Private Equity	6%	(52)	(20)	38%	*	*	(32)	62%
Private Equity Fund-of-Funds	6%	(48)	(5)	10%	(4)	8%	(39)	81%
Private Infrastructure	4%	(35)	(1)	3%	(1)	3%	(33)	94%
Infrastructure	5%	(38)	(2)	5%	*	*	(36)	95%
Commodities	5%	(40)	*	*	(2)	5%	(38)	95%
Money Market & Cash	6%	(48)	(4)	8%	(2)	4%	(42)	88%
Private Debt	5%	(41)	(1)	2%	(1)	2%	(39)	95%
Other	4%	(34)	(4)	12%	*	*	(30)	88%

Results are for endowment and foundation investment pools.

U.S. Union Funds' 3-Year Allocation Expectations for Defined Benefit Plan Assets

U.S. Institutional Investors – Unions (375)

	Percent of Investors Predicting	Number of Investors Predicting	<u>Significantly Increase by 2022</u>		<u>Significantly Decrease by 2022</u>		<u>No Change by 2022</u>	
			Number	Percent	Number	Percent	Number	Percent
			2019	2019	2019	2019	2019	2019
Company's Own Securities	2%	(6)	*	*	*	*	(6)	100%
U.S. Equity (Active)	5%	(17)	*	*	(4)	24%	(13)	76%
U.S. Equity (Passive)	5%	(19)	(1)	5%	(3)	16%	(15)	79%
International Equity (Active)	5%	(18)	*	*	(1)	6%	(17)	94%
International Equity (Passive)	3%	(13)	*	*	(3)	23%	(10)	77%
Global Equity (Active)	5%	(18)	(2)	11%	*	*	(16)	89%
Emerging Markets Equity	5%	(19)	(1)	5%	(1)	5%	(17)	89%
U.S. Fixed Income (Active)	6%	(22)	(2)	9%	(2)	9%	(18)	82%
U.S. Fixed Income (Passive)	3%	(11)	(1)	9%	*	*	(10)	91%
International Fixed Income (Active)	2%	(9)	*	*	*	*	(9)	100%
Global Fixed Income (Active)	3%	(12)	*	*	*	*	(12)	100%
Emerging Market Debt	2%	(9)	*	*	*	*	(9)	100%
Multi-Asset	5%	(19)	*	*	(8)	42%	(11)	58%
Direct Hedge Fund	4%	(16)	*	*	(2)	13%	(14)	88%
Hedge Fund-of-Funds	3%	(11)	*	*	(1)	9%	(10)	91%
Direct Real Estate	4%	(15)	(1)	7%	*	*	(14)	93%
Listed Real Estate (REITS)	3%	(11)	*	*	(1)	9%	(10)	91%
Real Estate Fund-of-Funds	5%	(19)	(2)	11%	(1)	5%	(16)	84%
Direct Private Equity	6%	(23)	(5)	22%	(1)	4%	(17)	74%
Private Equity Fund-of-Funds	3%	(13)	(2)	15%	*	*	(11)	85%
Private Infrastructure	3%	(10)	(1)	10%	*	*	(9)	90%
Infrastructure	3%	(12)	(3)	25%	(1)	8%	(8)	67%
Commodities	3%	(10)	(1)	10%	*	*	(9)	90%
Money Market & Cash	4%	(15)	*	*	(1)	7%	(14)	93%
Private Debt	3%	(12)	(2)	17%	(1)	8%	(9)	75%
Other	3%	(13)	(5)	38%	*	*	(8)	62%

Results are for union DB plans.

U.S. Healthcare Organization Funds' 3-Year Allocation Expectations for Defined Benefit Plan Assets

U.S. Institutional Investors – Healthcare Organization (439)

	Percent of Investors Predicting	Number of Investors Predicting	<u>Significantly Increase by 2022</u>		<u>Significantly Decrease by 2022</u>		<u>No Change by 2022</u>	
			Number	Percent	Number	Percent	Number	Percent
			2019	2019	2019	2019	2019	2019
Company's Own Securities	2%	(8)	*	*	*	*	(8)	100%
U.S. Equity (Active)	5%	(23)	*	*	(2)	9%	(21)	91%
U.S. Equity (Passive)	5%	(23)	(1)	4%	(3)	13%	(19)	83%
International Equity (Active)	5%	(22)	*	*	(2)	9%	(20)	91%
International Equity (Passive)	4%	(18)	(2)	11%	(1)	6%	(15)	83%
Global Equity (Active)	3%	(14)	(1)	7%	*	*	(13)	93%
Emerging Markets Equity	4%	(17)	(2)	12%	*	*	(15)	88%
U.S. Fixed Income (Active)	5%	(23)	(2)	9%	(1)	4%	(20)	87%
U.S. Fixed Income (Passive)	3%	(15)	(2)	13%	*	*	(13)	87%
International Fixed Income (Active)	3%	(11)	*	*	*	*	(11)	100%
Global Fixed Income (Active)	3%	(15)	*	*	(1)	7%	(14)	93%
Emerging Market Debt	3%	(12)	*	*	*	*	(12)	100%
Multi-Asset	2%	(10)	*	*	*	*	(10)	100%
Direct Hedge Fund	3%	(15)	(1)	7%	(2)	13%	(12)	80%
Hedge Fund-of-Funds	3%	(15)	*	*	(2)	13%	(13)	87%
Direct Real Estate	2%	(10)	*	*	*	*	(10)	100%
Listed Real Estate (REITS)	3%	(12)	*	*	*	*	(12)	100%
Real Estate Fund-of-Funds	3%	(15)	(1)	7%	*	*	(14)	93%
Direct Private Equity	3%	(14)	(4)	29%	*	*	(10)	71%
Private Equity Fund-of-Funds	3%	(12)	(2)	17%	*	*	(10)	83%
Private Infrastructure	2%	(10)	*	*	*	*	(10)	100%
Infrastructure	2%	(10)	*	*	*	*	(10)	100%
Commodities	3%	(13)	*	*	(1)	8%	(12)	92%
Money Market & Cash	3%	(15)	*	*	*	*	(15)	100%
Private Debt	2%	(10)	*	*	*	*	(10)	100%
Other	2%	(10)	*	*	(1)	10%	(9)	90%

Results are for healthcare organization investment pools.

Institutional Use of and Hiring for U.S. Equity – Total

U.S. Institutional Investors – Total Interviews (1059) (1128) (1100)

U.S. Equity - Total

	Base			Now Use			Expect to Hire		
	2017	2018	2019	2017	2018	2019	2017	2018	2019
Corporate Funds									
Corporate Funds	141	146	150	87%	95%	95%	11%	8%	7%
Over \$5 billion	46	42	50	83%	98%	96%	11%	12%	10%
\$1 – 5 billion	60	66	63	90%	94%	97%	13%	5%	5%
\$501 million – 1 billion	18	21	21	94%	90%	95%	17%	14%	5%
\$500 million and under	17	17	16	82%	94%	81%	*	*	6%
Public Funds									
Public Funds	97	112	89	85%	87%	91%	10%	16%	12%
– Federal	3	4	1	67%	75%	100%	*	*	*
– State	33	35	27	82%	91%	89%	21%	23%	11%
– Municipal	61	73	61	87%	85%	92%	5%	14%	13%
Over \$5 billion	37	43	30	78%	88%	93%	22%	21%	13%
\$1 – 5 billion	24	34	25	92%	79%	88%	*	6%	12%
\$501 million – 1 billion	20	23	19	80%	87%	84%	*	17%	11%
\$500 million and under	16	14	16	94%	100%	100%	13%	21%	13%
Endowments and Foundations									
Endowments & Foundations	50	75	81	42%	89%	91%	16%	7%	14%
– Endowments	23	31	32	48%	87%	91%	13%	6%	22%
– Foundations	27	44	49	37%	91%	92%	19%	7%	8%
Over \$1 billion	18	22	19	44%	91%	84%	22%	9%	16%
\$501 million – 1 billion	18	28	31	28%	96%	97%	11%	11%	16%
\$500 million and under	14	25	31	57%	80%	90%	14%	*	10%
Unions									
Unions	30	29	35	83%	93%	91%	13%	10%	6%
Healthcare									
Healthcare Organizations	37	39	32	86%	97%	97%	16%	5%	9%
Total Institutions	355	404	392	80%	91%	93%	12%	10%	9%

"Now Use" refers to mandates or assignments currently used by U.S. institutions. "Expect to Hire" refers to anticipated hiring for mandates or assignments in the next 12 months.

"Total" consists of U.S. Equity: Large Cap Core, Large Cap Value, Small Cap Value, Large Cap Growth, Small Cap Growth, All Cap, Long / Short, Low Volatility / Defensive Equity, Active Quantitative, Enhanced Index, and Passive or Index.

Institutional Use of and Hiring for Active U.S. Equity – Total

U.S. Institutional Investors – Total Interviews (1059) (1128) (1100)

Active U.S. Equity - Total

	Base			Now Use			Expect to Hire		
	2017	2018	2019	2017	2018	2019	2017	2018	2019
Corporate Funds									
Corporate Funds	141	146	150	83%	90%	87%	7%	5%	6%
Over \$5 billion	46	42	50	78%	93%	88%	11%	12%	8%
\$1 – 5 billion	60	66	63	85%	88%	89%	7%	3%	5%
\$501 million – 1 billion	18	21	21	89%	90%	86%	6%	5%	5%
\$500 million and under	17	17	16	82%	88%	75%	*	*	6%
Public Funds									
Public Funds	97	112	89	78%	83%	83%	9%	16%	11%
– Federal	3	4	1	33%	50%	*	*	*	*
– State	33	35	27	73%	89%	89%	18%	23%	11%
– Municipal	61	73	61	84%	82%	82%	5%	14%	11%
Over \$5 billion	37	43	30	70%	84%	77%	19%	21%	13%
\$1 – 5 billion	24	34	25	79%	76%	84%	*	6%	8%
\$501 million – 1 billion	20	23	19	80%	83%	84%	*	17%	11%
\$500 million and under	16	14	16	94%	100%	94%	13%	21%	13%
Endowments and Foundations									
Endowments & Foundations	50	75	81	40%	84%	81%	14%	7%	10%
– Endowments	23	31	32	48%	81%	84%	9%	6%	16%
– Foundations	27	44	49	33%	86%	80%	19%	7%	6%
Over \$1 billion	18	22	19	44%	82%	74%	22%	9%	16%
\$501 million – 1 billion	18	28	31	28%	89%	90%	6%	11%	10%
\$500 million and under	14	25	31	50%	80%	77%	14%	*	6%
Unions									
Unions	30	29	35	77%	90%	80%	10%	10%	6%
Healthcare									
Healthcare Organizations	37	39	32	76%	87%	81%	14%	5%	9%
Total Institutions	355	404	392	74%	86%	84%	10%	9%	8%

"Now Use" refers to mandates or assignments currently used by U.S. institutions. "Expect to Hire" refers to anticipated hiring for mandates or assignments in the next 12 months.

"Total" consists of U.S. Equity: Large Cap Core, Large Cap Value, Small Cap Value, Large Cap Growth, Small Cap Growth, All Cap, Low Volatility / Defensive Equity, Long / Short Equity and Active Quantitative.

Institutional Use of and Hiring for International / Global Equity – Total

U.S. Institutional Investors – Total Interviews (1059) (1128) (1100)

International/Global Equity Total

	Base			Now Use			Expect to Hire		
	2017	2018	2019	2017	2018	2019	2017	2018	2019
Corporate Funds									
Corporate Funds	141	146	150	85%	90%	91%	11%	7%	8%
Over \$5 billion	46	42	50	87%	95%	92%	24%	17%	16%
\$1 – 5 billion	60	66	63	85%	89%	94%	7%	2%	5%
\$501 million – 1 billion	18	21	21	94%	90%	95%	*	10%	5%
\$500 million and under	17	17	16	71%	76%	69%	6%	*	*
Public Funds									
Public Funds	97	112	89	86%	84%	92%	7%	15%	17%
– Federal	3	4	1	67%	75%	100%	*	*	*
– State	33	35	27	85%	91%	93%	9%	20%	11%
– Municipal	61	73	61	87%	81%	92%	7%	14%	20%
Over \$5 billion	37	43	30	84%	91%	90%	16%	28%	20%
\$1 – 5 billion	24	34	25	92%	76%	96%	4%	6%	16%
\$501 million – 1 billion	20	23	19	85%	78%	84%	*	13%	11%
\$500 million and under	16	14	16	81%	93%	100%	*	*	19%
Endowments and Foundations									
Endowments & Foundations	50	75	81	42%	92%	94%	28%	16%	9%
– Endowments	23	31	32	48%	90%	97%	39%	19%	13%
– Foundations	27	44	49	37%	93%	92%	19%	14%	6%
Over \$1 billion	18	22	19	44%	95%	95%	33%	14%	16%
\$501 million – 1 billion	18	28	31	28%	100%	97%	33%	18%	10%
\$500 million and under	14	25	31	57%	80%	90%	14%	16%	3%
Unions									
Unions	30	29	35	80%	90%	86%	20%	3%	9%
Healthcare									
Healthcare Organizations	37	39	32	76%	92%	91%	11%	8%	16%
Total Institutions	355	404	392	78%	88%	91%	13%	11%	11%

"Now Use" refers to mandates or assignments currently used by U.S. institutions. "Expect to Hire" refers to anticipated hiring for mandates or assignments in the next 12 months.

"Total" consists of International Investments: Global Equity, Global Equity ex-U.S., EAFE Equity, Emerging Market, Regional Equities, Long / Short, Low Volatility / Defensive Equity, Active Quantitative, and Passive International / Global Equities.

Institutional Use of and Hiring for Fixed Income – Total

U.S. Institutional Investors – Total Interviews (1059) (1128) (1100)

Fixed Income Total

	Base			Now Use			Expect to Hire		
	2017	2018	2019	2017	2018	2019	2017	2018	2019
Corporate Funds									
Corporate Funds	141	146	150	84%	92%	97%	11%	17%	13%
Over \$5 billion	46	42	50	80%	95%	96%	17%	26%	18%
\$1 – 5 billion	60	66	63	87%	92%	97%	8%	17%	10%
\$501 million – 1 billion	18	21	21	94%	95%	100%	17%	14%	14%
\$500 million and under	17	17	16	76%	82%	94%	*	*	6%
Public Funds									
Public Funds	97	112	89	87%	88%	92%	10%	16%	11%
– Federal	3	4	1	67%	75%	100%	33%	*	*
– State	33	35	27	82%	97%	93%	6%	23%	*
– Municipal	61	73	61	90%	84%	92%	11%	14%	16%
Over \$5 billion	37	43	30	81%	91%	90%	11%	23%	17%
\$1 – 5 billion	24	34	25	96%	79%	96%	8%	12%	12%
\$501 million – 1 billion	20	23	19	85%	87%	84%	10%	13%	*
\$500 million and under	16	14	16	88%	100%	100%	13%	14%	13%
Endowments and Foundations									
Endowments & Foundations	50	75	81	44%	96%	91%	18%	5%	11%
– Endowments	23	31	32	52%	97%	97%	22%	6%	16%
– Foundations	27	44	49	37%	95%	88%	15%	5%	8%
Over \$1 billion	18	22	19	50%	100%	89%	28%	5%	16%
\$501 million – 1 billion	18	28	31	28%	100%	97%	17%	11%	13%
\$500 million and under	14	25	31	57%	88%	87%	7%	*	6%
Unions									
Unions	30	29	35	87%	100%	94%	7%	14%	11%
Healthcare									
Healthcare Organizations	37	39	32	81%	95%	97%	14%	23%	6%
Total Institutions	355	404	392	79%	93%	94%	12%	15%	11%

"Now Use" refers to mandates or assignments currently used by U.S. institutions. "Expect to Hire" refers to anticipated hiring for mandates or assignments in the next 12 months.

"Total" consists of Fixed Income: U.S. Core, U.S. Core Plus, Investment Grade Credit, U.S. High Yield, U.S. Long Duration, Long / Short, U.S. Real Return incl-TIPS, Global / International Bonds, Emerging Market, and Passive or Index.

Institutional Use of and Hiring for U.S. Fixed Income – Total

U.S. Institutional Investors – Total Interviews (1059) (1128) (1100)

U.S. Fixed Income Total

	Base			Now Use			Expect to Hire		
	2017	2018	2019	2017	2018	2019	2017	2018	2019
Corporate Funds									
Corporate Funds	141	146	150	84%	92%	96%	9%	14%	10%
Over \$5 billion	46	42	50	80%	95%	96%	13%	21%	16%
\$1 – 5 billion	60	66	63	87%	92%	95%	5%	14%	6%
\$501 million – 1 billion	18	21	21	94%	95%	100%	17%	14%	10%
\$500 million and under	17	17	16	76%	82%	94%	*	*	6%
Public Funds									
Public Funds	97	112	89	87%	88%	92%	8%	13%	7%
– Federal	3	4	1	67%	75%	100%	33%	*	*
– State	33	35	27	82%	97%	93%	6%	17%	*
– Municipal	61	73	61	90%	84%	92%	8%	11%	10%
Over \$5 billion	37	43	30	81%	91%	90%	11%	19%	10%
\$1 – 5 billion	24	34	25	96%	79%	96%	4%	6%	8%
\$501 million – 1 billion	20	23	19	85%	87%	84%	5%	13%	*
\$500 million and under	16	14	16	88%	100%	100%	13%	14%	6%
Endowments and Foundations									
Endowments & Foundations	50	75	81	44%	95%	90%	12%	4%	10%
– Endowments	23	31	32	52%	94%	94%	17%	3%	16%
– Foundations	27	44	49	37%	95%	88%	7%	5%	6%
Over \$1 billion	18	22	19	50%	95%	84%	17%	*	16%
\$501 million – 1 billion	18	28	31	28%	100%	97%	11%	11%	10%
\$500 million and under	14	25	31	57%	88%	87%	7%	*	6%
Unions									
Unions	30	29	35	83%	100%	91%	3%	3%	6%
Healthcare									
Healthcare Organizations	37	39	32	81%	95%	97%	14%	21%	6%
Total Institutions	355	404	392	79%	92%	94%	9%	12%	8%

"Now Use" refers to mandates or assignments currently used by U.S. institutions. "Expect to Hire" refers to anticipated hiring for mandates or assignments in the next 12 months.
 "Total" consists of Fixed Income: U.S. Core, U.S. Core Plus, Investment Grade Credit, U.S. High Yield, U.S. Long Duration, U.S. Real Return incl-TIPS, and Passive or Index.

Institutional Use of and Hiring for International / Global Fixed Income – Total

U.S. Institutional Investors – Total Interviews (1059) (1128) (1100)

International/Global Fixed Income Total

	Base			Now Use			Expect to Hire		
	2017	2018	2019	2017	2018	2019	2017	2018	2019
Corporate Funds									
Corporate Funds	141	146	150	24%	27%	21%	2%	1%	3%
Over \$5 billion	46	42	50	39%	31%	24%	4%	2%	6%
\$1 – 5 billion	60	66	63	23%	30%	21%	2%	2%	2%
\$501 million – 1 billion	18	21	21	6%	19%	24%	*	*	*
\$500 million and under	17	17	16	6%	18%	6%	*	*	6%
Public Funds									
Public Funds	97	112	89	26%	35%	36%	3%	7%	4%
– Federal	3	4	1	33%	50%	100%	*	*	*
– State	33	35	27	30%	37%	30%	*	11%	*
– Municipal	61	73	61	23%	33%	38%	5%	5%	7%
Over \$5 billion	37	43	30	43%	53%	40%	3%	9%	7%
\$1 – 5 billion	24	34	25	21%	24%	36%	*	9%	4%
\$501 million – 1 billion	20	23	19	10%	13%	26%	5%	9%	*
\$500 million and under	16	14	16	13%	36%	38%	6%	*	6%
Endowments and Foundations									
Endowments & Foundations	50	75	81	12%	31%	26%	6%	1%	4%
– Endowments	23	31	32	22%	42%	38%	4%	3%	6%
– Foundations	27	44	49	4%	23%	18%	7%	*	2%
Over \$1 billion	18	22	19	17%	45%	37%	11%	5%	5%
\$501 million – 1 billion	18	28	31	6%	21%	23%	6%	*	6%
\$500 million and under	14	25	31	14%	28%	23%	*	*	*
Unions									
Unions	30	29	35	33%	41%	43%	*	10%	6%
Healthcare									
Healthcare Organizations	37	39	32	38%	38%	28%	*	3%	*
Total Institutions	355	404	392	25%	32%	28%	3%	4%	4%

"Now Use" refers to mandates or assignments currently used by U.S. institutions. "Expect to Hire" refers to anticipated hiring for mandates or assignments in the next 12 months.
 "Total" consists of Fixed Income: Global / International Bonds, and Emerging Market.

Institutional Use of and Hiring for Hedge Funds - Total

U.S. Institutional Investors – Total Interviews (1059) (1128) (1100)

Hedge Funds - Total

	Base			Now Use			Expect to Hire		
	2017	2018	2019	2017	2018	2019	2017	2018	2019
Corporate Funds									
Corporate Funds	141	146	150	29%	27%	25%	4%	1%	5%
Over \$5 billion	46	42	50	33%	24%	34%	7%	5%	10%
\$1 – 5 billion	60	66	63	30%	26%	22%	3%	*	3%
\$501 million – 1 billion	18	21	21	22%	48%	24%	*	*	*
\$500 million and under	17	17	16	24%	12%	13%	*	*	*
Public Funds									
Public Funds	97	112	89	39%	35%	37%	5%	5%	3%
– Federal	3	4	1	*	*	*	*	*	*
– State	33	35	27	42%	37%	30%	9%	9%	7%
– Municipal	61	73	61	39%	36%	41%	3%	4%	2%
Over \$5 billion	37	43	30	41%	47%	50%	14%	12%	7%
\$1 – 5 billion	24	34	25	29%	29%	32%	*	*	4%
\$501 million – 1 billion	20	23	19	45%	26%	16%	*	*	*
\$500 million and under	16	14	16	44%	29%	44%	*	7%	*
Endowments and Foundations									
Endowments & Foundations	50	75	81	34%	73%	73%	34%	17%	9%
– Endowments	23	31	32	43%	74%	72%	48%	13%	13%
– Foundations	27	44	49	26%	73%	73%	22%	20%	6%
Over \$1 billion	18	22	19	39%	73%	68%	56%	18%	16%
\$501 million – 1 billion	18	28	31	22%	82%	81%	28%	21%	3%
\$500 million and under	14	25	31	43%	64%	68%	14%	12%	10%
Unions									
Unions	30	29	35	43%	62%	54%	7%	3%	*
Healthcare									
Healthcare Organizations	37	39	32	57%	46%	47%	19%	8%	13%
Total Institutions	355	404	392	37%	42%	42%	10%	6%	5%

"Now Use" refers to mandates or assignments currently used by U.S. institutions. "Expect to Hire" refers to anticipated hiring for mandates or assignments in the next 12 months. Prior to 2013 results include hedge fund - single-strategy and hedge fund - fund-of-funds.

Institutional Use of and Hiring for Direct Hedge Funds

U.S. Institutional Investors – Total Interviews (1059) (1128) (1100)

Direct Hedge Funds

	Base			Now Use			Expect to Hire		
	2017	2018	2019	2017	2018	2019	2017	2018	2019
Corporate Funds									
Corporate Funds	141	146	150	21%	14%	13%	4%	1%	4%
Over \$5 billion	46	42	50	28%	17%	14%	7%	5%	8%
\$1 – 5 billion	60	66	63	22%	15%	11%	3%	*	3%
\$501 million – 1 billion	18	21	21	11%	14%	19%	*	*	*
\$500 million and under	17	17	16	12%	6%	13%	*	*	*
Public Funds									
Public Funds	97	112	89	23%	22%	26%	4%	5%	3%
– Federal	3	4	1	*	*	*	*	*	*
– State	33	35	27	33%	29%	30%	9%	9%	7%
– Municipal	61	73	61	18%	21%	25%	2%	4%	2%
Over \$5 billion	37	43	30	32%	40%	47%	11%	12%	7%
\$1 – 5 billion	24	34	25	21%	18%	24%	*	*	4%
\$501 million – 1 billion	20	23	19	10%	*	11%	*	*	*
\$500 million and under	16	14	16	19%	14%	6%	*	7%	*
Endowments and Foundations									
Endowments & Foundations	50	75	81	24%	60%	56%	34%	16%	9%
– Endowments	23	31	32	35%	65%	59%	48%	13%	13%
– Foundations	27	44	49	15%	57%	53%	22%	18%	6%
Over \$1 billion	18	22	19	33%	59%	47%	56%	18%	16%
\$501 million – 1 billion	18	28	31	6%	71%	71%	28%	18%	3%
\$500 million and under	14	25	31	36%	48%	45%	14%	12%	10%
Unions									
Unions	30	29	35	27%	38%	34%	*	*	*
Healthcare									
Healthcare Organizations	37	39	32	41%	36%	31%	19%	8%	9%
Total Institutions	355	404	392	25%	29%	28%	9%	6%	5%

"Now Use" refers to mandates or assignments currently used by U.S. institutions. "Expect to Hire" refers to anticipated hiring for mandates or assignments in the next 12 months.

Institutional Use of and Hiring for Hedge Fund-of-Funds

U.S. Institutional Investors – Total Interviews (1059) (1128) (1100)

Hedge Fund-of-Funds

	Base			Now Use			Expect to Hire		
	2017	2018	2019	2017	2018	2019	2017	2018	2019
Corporate Funds									
Corporate Funds	141	146	150	16%	18%	16%	*	*	1%
Over \$5 billion	46	42	50	11%	10%	26%	*	*	2%
\$1 – 5 billion	60	66	63	20%	20%	13%	*	*	*
\$501 million – 1 billion	18	21	21	17%	38%	14%	*	*	*
\$500 million and under	17	17	16	12%	6%	*	*	*	*
Public Funds									
Public Funds	97	112	89	23%	22%	24%	1%	*	1%
– Federal	3	4	1	*	*	*	*	*	*
– State	33	35	27	18%	14%	11%	*	*	*
– Municipal	61	73	61	26%	27%	30%	2%	*	2%
Over \$5 billion	37	43	30	19%	23%	23%	3%	*	*
\$1 – 5 billion	24	34	25	13%	21%	20%	*	*	4%
\$501 million – 1 billion	20	23	19	35%	26%	11%	*	*	*
\$500 million and under	16	14	16	31%	21%	44%	*	*	*
Endowments and Foundations									
Endowments & Foundations	50	75	81	18%	23%	31%	2%	1%	*
– Endowments	23	31	32	22%	16%	28%	4%	*	*
– Foundations	27	44	49	15%	27%	33%	*	2%	*
Over \$1 billion	18	22	19	17%	18%	26%	6%	*	*
\$501 million – 1 billion	18	28	31	17%	25%	26%	*	4%	*
\$500 million and under	14	25	31	21%	24%	39%	*	*	*
Unions									
Unions	30	29	35	23%	38%	29%	7%	3%	*
Healthcare									
Healthcare Organizations	37	39	32	30%	18%	22%	*	3%	3%
Total Institutions	355	404	392	20%	21%	22%	1%	1%	1%

"Now Use" refers to mandates or assignments currently used by U.S. institutions. "Expect to Hire" refers to anticipated hiring for mandates or assignments in the next 12 months.

Institutional Use of and Hiring for Real Estate - Total

U.S. Institutional Investors – Total Interviews (1059) (1128) (1100)

Real Estate - Total

	Base			Now Use			Expect to Hire		
	2017	2018	2019	2017	2018	2019	2017	2018	2019
Corporate Funds									
Corporate Funds	141	146	150	40%	42%	42%	6%	5%	5%
Over \$5 billion	46	42	50	61%	57%	58%	13%	10%	10%
\$1 – 5 billion	60	66	63	40%	44%	37%	3%	5%	5%
\$501 million – 1 billion	18	21	21	17%	24%	33%	*	*	*
\$500 million and under	17	17	16	12%	24%	25%	6%	6%	*
Public Funds									
Public Funds	97	112	89	69%	78%	80%	13%	19%	17%
– Federal	3	4	1	67%	50%	100%	*	25%	*
– State	33	35	27	70%	80%	81%	21%	20%	15%
– Municipal	61	73	61	69%	78%	79%	10%	18%	18%
Over \$5 billion	37	43	30	59%	74%	83%	16%	28%	20%
\$1 – 5 billion	24	34	25	79%	79%	80%	21%	18%	28%
\$501 million – 1 billion	20	23	19	75%	78%	68%	*	4%	11%
\$500 million and under	16	14	16	69%	86%	88%	13%	14%	*
Endowments and Foundations									
Endowments & Foundations	50	75	81	34%	76%	73%	38%	16%	16%
– Endowments	23	31	32	43%	84%	81%	48%	19%	25%
– Foundations	27	44	49	26%	70%	67%	30%	14%	10%
Over \$1 billion	18	22	19	39%	77%	68%	50%	23%	21%
\$501 million – 1 billion	18	28	31	17%	86%	74%	39%	14%	16%
\$500 million and under	14	25	31	50%	64%	74%	21%	12%	13%
Unions									
Unions	30	29	35	77%	79%	89%	13%	17%	20%
Healthcare									
Healthcare Organizations	37	39	32	54%	54%	41%	8%	15%	16%
Total Institutions	355	404	392	52%	62%	61%	14%	13%	12%

"Now Use" refers to mandates or assignments currently used by U.S. institutions. "Expect to Hire" refers to anticipated hiring for mandates or assignments in the next 12 months.

Institutional Use of and Hiring for Listed Real Estate (REITs)

U.S. Institutional Investors – Total Interviews (1059) (1128) (1100)

Listed Real Estate (REITs)

	Base			Now Use			Expect to Hire		
	2017	2018	2019	2017	2018	2019	2017	2018	2019
Corporate Funds									
Corporate Funds	141	146	150	16%	19%	13%	*	*	1%
Over \$5 billion	46	42	50	22%	26%	18%	*	*	*
\$1 – 5 billion	60	66	63	17%	18%	10%	*	*	2%
\$501 million – 1 billion	18	21	21	6%	10%	14%	*	*	*
\$500 million and under	17	17	16	6%	18%	13%	*	*	*
Public Funds									
Public Funds	97	112	89	22%	32%	28%	*	1%	1%
– Federal	3	4	1	67%	50%	100%	*	*	*
– State	33	35	27	33%	40%	30%	*	3%	*
– Municipal	61	73	61	13%	27%	26%	*	*	2%
Over \$5 billion	37	43	30	24%	33%	30%	*	2%	*
\$1 – 5 billion	24	34	25	29%	38%	28%	*	*	4%
\$501 million – 1 billion	20	23	19	15%	26%	26%	*	*	*
\$500 million and under	16	14	16	13%	29%	25%	*	*	*
Endowments and Foundations									
Endowments & Foundations	50	75	81	8%	29%	16%	2%	*	1%
– Endowments	23	31	32	9%	29%	22%	*	*	3%
– Foundations	27	44	49	7%	30%	12%	4%	*	*
Over \$1 billion	18	22	19	17%	32%	21%	6%	*	5%
\$501 million – 1 billion	18	28	31	*	36%	16%	*	*	*
\$500 million and under	14	25	31	7%	20%	13%	*	*	*
Unions									
Unions	30	29	35	23%	14%	20%	*	*	*
Healthcare									
Healthcare Organizations	37	39	32	5%	13%	9%	*	3%	*
Total Institutions	355	404	392	16%	24%	17%	0%	0%	1%

"Now Use" refers to mandates or assignments currently used by U.S. institutions. "Expect to Hire" refers to anticipated hiring for mandates or assignments in the next 12 months.

Institutional Use of and Hiring for Direct Real Estate

U.S. Institutional Investors – Total Interviews (1059) (1128) (1100)

Direct Real Estate

	Base			Now Use			Expect to Hire		
	2017	2018	2019	2017	2018	2019	2017	2018	2019
Corporate Funds									
Corporate Funds	141	146	150	9%	10%	13%	*	*	1%
Over \$5 billion	46	42	50	17%	17%	24%	*	*	2%
\$1 – 5 billion	60	66	63	8%	9%	8%	*	*	2%
\$501 million – 1 billion	18	21	21	*	*	10%	*	*	*
\$500 million and under	17	17	16	*	6%	*	*	*	*
Public Funds									
Public Funds	97	112	89	18%	28%	20%	5%	6%	3%
– Federal	3	4	1	*	25%	*	*	25%	*
– State	33	35	27	18%	31%	26%	9%	11%	7%
– Municipal	61	73	61	18%	26%	18%	3%	3%	2%
Over \$5 billion	37	43	30	27%	42%	30%	8%	9%	*
\$1 – 5 billion	24	34	25	8%	26%	20%	4%	6%	12%
\$501 million – 1 billion	20	23	19	20%	13%	16%	*	*	*
\$500 million and under	16	14	16	6%	14%	13%	6%	7%	*
Endowments and Foundations									
Endowments & Foundations	50	75	81	10%	20%	12%	14%	3%	*
– Endowments	23	31	32	17%	29%	19%	17%	*	*
– Foundations	27	44	49	4%	14%	8%	11%	5%	*
Over \$1 billion	18	22	19	17%	32%	16%	17%	5%	*
\$501 million – 1 billion	18	28	31	*	18%	6%	17%	4%	*
\$500 million and under	14	25	31	14%	12%	16%	7%	*	*
Unions									
Unions	30	29	35	47%	34%	26%	*	*	3%
Healthcare									
Healthcare Organizations	37	39	32	16%	15%	6%	3%	8%	3%
Total Institutions	355	404	392	15%	19%	15%	4%	3%	2%

"Now Use" refers to mandates or assignments currently used by U.S. institutions. "Expect to Hire" refers to anticipated hiring for mandates or assignments in the next 12 months.

Institutional Use of and Hiring for Private Real Estate (via funds)

U.S. Institutional Investors – Total Interviews (1059) (1128) (1100)

Private Real Estate (via funds)

	Base			Now Use			Expect to Hire		
	2017	2018	2019	2017	2018	2019	2017	2018	2019
Corporate Funds									
Corporate Funds	141	146	150	29%	30%	31%	6%	5%	3%
Over \$5 billion	46	42	50	43%	43%	44%	13%	10%	8%
\$1 – 5 billion	60	66	63	27%	32%	25%	3%	5%	2%
\$501 million – 1 billion	18	21	21	17%	19%	24%	*	*	*
\$500 million and under	17	17	16	12%	6%	19%	6%	6%	*
Public Funds									
Public Funds	97	112	89	54%	60%	62%	10%	14%	12%
– Federal	3	4	1	*	25%	*	*	*	*
– State	33	35	27	52%	60%	59%	15%	14%	7%
– Municipal	61	73	61	57%	62%	64%	8%	15%	15%
Over \$5 billion	37	43	30	46%	63%	63%	14%	23%	20%
\$1 – 5 billion	24	34	25	58%	53%	64%	17%	12%	12%
\$501 million – 1 billion	20	23	19	50%	61%	53%	*	4%	11%
\$500 million and under	16	14	16	69%	71%	69%	6%	7%	*
Endowments and Foundations									
Endowments & Foundations	50	75	81	26%	53%	62%	30%	15%	15%
– Endowments	23	31	32	35%	58%	63%	43%	19%	22%
– Foundations	27	44	49	19%	50%	61%	19%	11%	10%
Over \$1 billion	18	22	19	33%	55%	53%	39%	18%	16%
\$501 million – 1 billion	18	28	31	17%	61%	68%	28%	14%	16%
\$500 million and under	14	25	31	29%	44%	61%	21%	12%	13%
Unions									
Unions	30	29	35	47%	52%	60%	13%	17%	20%
Healthcare									
Healthcare Organizations	37	39	32	41%	38%	28%	5%	8%	13%
Total Institutions	355	404	392	38%	45%	46%	11%	11%	10%

"Now Use" refers to mandates or assignments currently used by U.S. institutions. "Expect to Hire" refers to anticipated hiring for mandates or assignments in the next 12 months.

Institutional Use of and Hiring for Private Equity

U.S. Institutional Investors – Total Interviews (1059) (1128) (1100)

Private Equity - Total

	Base			Now Use			Expect to Hire		
	2017	2018	2019	2017	2018	2019	2017	2018	2019
Corporate Funds									
Corporate Funds	141	146	150	30%	29%	31%	11%	7%	3%
Over \$5 billion	46	42	50	39%	45%	54%	17%	10%	6%
\$1 – 5 billion	60	66	63	28%	27%	21%	8%	5%	2%
\$501 million – 1 billion	18	21	21	28%	19%	29%	6%	10%	*
\$500 million and under	17	17	16	12%	12%	6%	6%	6%	*
Public Funds									
Public Funds	97	112	89	44%	53%	61%	18%	20%	24%
– Federal	3	4	1	33%	50%	100%	*	*	*
– State	33	35	27	61%	54%	56%	18%	20%	19%
– Municipal	61	73	61	36%	52%	62%	18%	21%	26%
Over \$5 billion	37	43	30	62%	65%	80%	22%	23%	30%
\$1 – 5 billion	24	34	25	38%	44%	56%	25%	24%	32%
\$501 million – 1 billion	20	23	19	35%	39%	32%	5%	4%	11%
\$500 million and under	16	14	16	25%	50%	63%	13%	21%	13%
Endowments and Foundations									
Endowments & Foundations	50	75	81	30%	72%	78%	56%	31%	23%
– Endowments	23	31	32	39%	84%	78%	57%	32%	25%
– Foundations	27	44	49	22%	64%	78%	56%	30%	22%
Over \$1 billion	18	22	19	28%	68%	74%	56%	32%	21%
\$501 million – 1 billion	18	28	31	17%	86%	84%	78%	29%	26%
\$500 million and under	14	25	31	50%	60%	74%	29%	32%	23%
Unions									
Unions	30	29	35	63%	62%	63%	23%	24%	17%
Healthcare									
Healthcare Organizations	37	39	32	43%	36%	38%	27%	13%	16%
Total Institutions	355	404	392	38%	47%	51%	22%	17%	14%

"Now Use" refers to mandates or assignments currently used by U.S. institutions. "Expect to Hire" refers to anticipated hiring for mandates or assignments in the next 12 months. Prior to 2013 results include private equity - single-manager and private equity - fund-of-funds.

Institutional Use of and Hiring for Private Equity

U.S. Institutional Investors – Total Interviews (1059) (1128) (1100)

Direct Private Equity

	Base			Now Use			Expect to Hire		
	2017	2018	2019	2017	2018	2019	2017	2018	2019
Corporate Funds									
Corporate Funds	141	146	150	16%	14%	19%	9%	6%	2%
Over \$5 billion	46	42	50	24%	26%	32%	15%	7%	6%
\$1 – 5 billion	60	66	63	17%	12%	11%	7%	5%	*
\$501 million – 1 billion	18	21	21	6%	5%	19%	*	10%	*
\$500 million and under	17	17	16	6%	6%	6%	6%	6%	*
Public Funds									
Public Funds	97	112	89	29%	38%	44%	14%	15%	19%
– Federal	3	4	1	*	50%	*	*	*	*
– State	33	35	27	45%	43%	48%	18%	20%	19%
– Municipal	61	73	61	21%	34%	43%	13%	14%	20%
Over \$5 billion	37	43	30	51%	58%	70%	19%	23%	30%
\$1 – 5 billion	24	34	25	29%	29%	44%	25%	12%	28%
\$501 million – 1 billion	20	23	19	5%	9%	11%	*	*	*
\$500 million and under	16	14	16	6%	36%	31%	6%	21%	6%
Endowments and Foundations									
Endowments & Foundations	50	75	81	26%	56%	64%	54%	28%	22%
– Endowments	23	31	32	30%	71%	69%	57%	32%	22%
– Foundations	27	44	49	22%	45%	61%	52%	25%	22%
Over \$1 billion	18	22	19	28%	68%	63%	56%	32%	16%
\$501 million – 1 billion	18	28	31	11%	61%	65%	78%	25%	26%
\$500 million and under	14	25	31	43%	40%	65%	21%	28%	23%
Unions									
Unions	30	29	35	47%	48%	57%	20%	21%	17%
Healthcare									
Healthcare Organizations	37	39	32	30%	28%	34%	22%	10%	16%
Total Institutions	355	404	392	25%	32%	38%	19%	14%	13%

"Now Use" refers to mandates or assignments currently used by U.S. institutions. "Expect to Hire" refers to anticipated hiring for mandates or assignments in the next 12 months. Prior to 2013 results include private equity - single-manager and private equity - fund-of-funds.

Institutional Use of and Hiring for Private Equity

U.S. Institutional Investors – Total Interviews (1059) (1128) (1100)

Private Equity Fund-of-Funds

	Base			Now Use			Expect to Hire		
	2017	2018	2019	2017	2018	2019	2017	2018	2019
Corporate Funds									
Corporate Funds	141	146	150	20%	21%	19%	2%	1%	1%
Over \$5 billion	46	42	50	22%	29%	36%	2%	2%	*
\$1 – 5 billion	60	66	63	20%	21%	11%	2%	*	2%
\$501 million – 1 billion	18	21	21	22%	14%	14%	6%	*	*
\$500 million and under	17	17	16	12%	12%	6%	*	6%	*
Public Funds									
Public Funds	97	112	89	29%	34%	36%	4%	7%	7%
– Federal	3	4	1	33%	25%	100%	*	*	*
– State	33	35	27	33%	31%	30%	*	3%	*
– Municipal	61	73	61	26%	36%	38%	7%	10%	10%
Over \$5 billion	37	43	30	32%	35%	43%	3%	5%	7%
\$1 – 5 billion	24	34	25	25%	29%	32%	4%	12%	4%
\$501 million – 1 billion	20	23	19	30%	35%	21%	5%	4%	11%
\$500 million and under	16	14	16	25%	36%	44%	6%	7%	6%
Endowments and Foundations									
Endowments & Foundations	50	75	81	22%	41%	46%	8%	4%	1%
– Endowments	23	31	32	26%	35%	47%	9%	*	3%
– Foundations	27	44	49	19%	45%	45%	7%	7%	*
Over \$1 billion	18	22	19	22%	36%	42%	6%	*	5%
\$501 million – 1 billion	18	28	31	17%	54%	48%	11%	7%	*
\$500 million and under	14	25	31	29%	32%	45%	7%	4%	*
Unions									
Unions	30	29	35	30%	28%	31%	10%	10%	9%
Healthcare									
Healthcare Organizations	37	39	32	22%	18%	13%	16%	5%	*
Total Institutions	355	404	392	24%	28%	29%	6%	4%	3%

"Now Use" refers to mandates or assignments currently used by U.S. institutions. "Expect to Hire" refers to anticipated hiring for mandates or assignments in the next 12 months. Prior to 2013 results include private equity - single-manager and private equity - fund-of-funds.

Institutional Use of and Hiring for Commodities

U.S. Institutional Investors – Total Interviews (1059) (1128) (1100)

Commodities

	Base			Now Use			Expect to Hire		
	2017	2018	2019	2017	2018	2019	2017	2018	2019
Corporate Funds									
Corporate Funds	141	146	150	12%	12%	7%	1%	*	*
Over \$5 billion	46	42	50	22%	17%	8%	*	*	*
\$1 – 5 billion	60	66	63	12%	17%	10%	*	*	*
\$501 million – 1 billion	18	21	21	*	*	5%	*	*	*
\$500 million and under	17	17	16	*	*	*	6%	*	*
Public Funds									
Public Funds	97	112	89	20%	25%	21%	4%	1%	1%
– Federal	3	4	1	*	25%	*	*	*	*
– State	33	35	27	18%	23%	15%	6%	3%	*
– Municipal	61	73	61	21%	26%	25%	3%	*	2%
Over \$5 billion	37	43	30	30%	35%	30%	8%	2%	*
\$1 – 5 billion	24	34	25	13%	15%	16%	4%	*	4%
\$501 million – 1 billion	20	23	19	20%	26%	11%	*	*	*
\$500 million and under	16	14	16	6%	21%	25%	*	*	*
Endowments and Foundations									
Endowments & Foundations	50	75	81	12%	29%	21%	4%	1%	*
– Endowments	23	31	32	13%	35%	31%	9%	3%	*
– Foundations	27	44	49	11%	25%	14%	*	*	*
Over \$1 billion	18	22	19	11%	36%	21%	6%	5%	*
\$501 million – 1 billion	18	28	31	17%	39%	29%	6%	*	*
\$500 million and under	14	25	31	7%	12%	13%	*	*	*
Unions									
Unions	30	29	35	10%	21%	14%	*	*	*
Healthcare									
Healthcare Organizations	37	39	32	30%	33%	22%	*	*	*
Total Institutions	355	404	392	16%	22%	15%	2%	0%	0%

"Now Use" refers to mandates or assignments currently used by U.S. institutions. "Expect to Hire" refers to anticipated hiring for mandates or assignments in the next 12 months.

Institutional Use of and Hiring for Currency

U.S. Institutional Investors – Total Interviews (1059) (1128) (1100)

Currency

	Base			Now Use			Expect to Hire		
	2017	2018	2019	2017	2018	2019	2017	2018	2019
Corporate Funds									
Corporate Funds	141	146	150	3%	6%	5%	*	*	*
Over \$5 billion	46	42	50	7%	5%	2%	*	*	*
\$1 – 5 billion	60	66	63	2%	11%	6%	*	*	*
\$501 million – 1 billion	18	21	21	*	*	5%	*	*	*
\$500 million and under	17	17	16	*	*	6%	*	*	*
Public Funds									
Public Funds	97	112	89	8%	9%	4%	2%	2%	*
– Federal	3	4	1	*	*	*	*	*	*
– State	33	35	27	15%	20%	7%	6%	6%	*
– Municipal	61	73	61	5%	4%	3%	*	*	*
Over \$5 billion	37	43	30	22%	23%	13%	3%	5%	*
\$1 – 5 billion	24	34	25	*	*	*	4%	*	*
\$501 million – 1 billion	20	23	19	*	*	*	*	*	*
\$500 million and under	16	14	16	*	*	*	*	*	*
Endowments and Foundations									
Endowments & Foundations	50	75	81	4%	4%	6%	*	1%	*
– Endowments	23	31	32	9%	6%	6%	*	3%	*
– Foundations	27	44	49	*	2%	6%	*	*	*
Over \$1 billion	18	22	19	11%	9%	11%	*	*	*
\$501 million – 1 billion	18	28	31	*	4%	6%	*	4%	*
\$500 million and under	14	25	31	*	*	3%	*	*	*
Unions									
Unions	30	29	35	*	3%	*	*	*	*
Healthcare									
Healthcare Organizations	37	39	32	5%	*	*	*	*	*
Total Institutions	355	404	392	5%	6%	4%	1%	1%	*

"Now Use" refers to mandates or assignments currently used by U.S. institutions. "Expect to Hire" refers to anticipated hiring for mandates or assignments in the next 12 months.

Institutional Use of and Hiring for Private Infrastructure

U.S. Institutional Investors – Total Interviews (1059) (1128) (1100)

Private Infrastructure

	Base			Now Use			Expect to Hire		
	2017	2018	2019	2017	2018	2019	2017	2018	2019
Corporate Funds									
Corporate Funds	141	146	150	3%	7%	6%	*	2%	1%
Over \$5 billion	46	42	50	2%	7%	8%	*	5%	2%
\$1 – 5 billion	60	66	63	3%	9%	5%	*	2%	*
\$501 million – 1 billion	18	21	21	6%	*	5%	*	*	*
\$500 million and under	17	17	16	*	6%	6%	*	*	*
Public Funds									
Public Funds	97	112	89	16%	18%	21%	8%	9%	8%
– Federal	3	4	1	33%	25%	*	*	*	*
– State	33	35	27	27%	29%	33%	15%	11%	7%
– Municipal	61	73	61	10%	12%	16%	5%	8%	8%
Over \$5 billion	37	43	30	24%	28%	33%	11%	16%	13%
\$1 – 5 billion	24	34	25	21%	18%	28%	13%	6%	8%
\$501 million – 1 billion	20	23	19	*	4%	5%	*	4%	5%
\$500 million and under	16	14	16	13%	7%	6%	6%	*	6%
Endowments and Foundations									
Endowments & Foundations	50	75	81	6%	16%	17%	10%	3%	1%
– Endowments	23	31	32	13%	16%	19%	17%	3%	*
– Foundations	27	44	49	*	16%	16%	4%	2%	2%
Over \$1 billion	18	22	19	6%	23%	26%	17%	9%	5%
\$501 million – 1 billion	18	28	31	11%	14%	13%	6%	*	*
\$500 million and under	14	25	31	*	12%	16%	7%	*	*
Unions									
Unions	30	29	35	33%	31%	6%	3%	7%	9%
Healthcare									
Healthcare Organizations	37	39	32	11%	10%	9%	5%	3%	3%
Total Institutions	355	404	392	10%	14%	12%	5%	4%	3%

"Now Use" refers to mandates or assignments currently used by U.S. institutions. "Expect to Hire" refers to anticipated hiring for mandates or assignments in the next 12 months.

Institutional Use of and Hiring for Private Infrastructure (via funds)

U.S. Institutional Investors – Total Interviews (1059) (1128) (1100)

Private Infrastructure (via funds)

	Base			Now Use			Expect to Hire		
	2017	2018	2019	2017	2018	2019	2017	2018	2019
Corporate Funds									
Corporate Funds	141	146	150	3%	8%	7%	1%	3%	1%
Over \$5 billion	46	42	50	2%	10%	10%	2%	5%	4%
\$1 – 5 billion	60	66	63	3%	9%	6%	*	3%	*
\$501 million – 1 billion	18	21	21	6%	*	5%	*	*	*
\$500 million and under	17	17	16	*	6%	6%	*	*	*
Public Funds									
Public Funds	97	112	89	16%	18%	21%	8%	9%	8%
– Federal	3	4	1	33%	25%	*	*	*	*
– State	33	35	27	27%	29%	33%	15%	11%	7%
– Municipal	61	73	61	10%	12%	16%	5%	8%	8%
Over \$5 billion	37	43	30	24%	28%	33%	11%	16%	13%
\$1 – 5 billion	24	34	25	21%	18%	28%	13%	6%	8%
\$501 million – 1 billion	20	23	19	*	4%	5%	*	4%	5%
\$500 million and under	16	14	16	13%	7%	6%	6%	*	6%
Endowments and Foundations									
Endowments & Foundations	50	75	81	6%	15%	17%	10%	3%	1%
– Endowments	23	31	32	13%	16%	19%	17%	3%	*
– Foundations	27	44	49	*	14%	16%	4%	2%	2%
Over \$1 billion	18	22	19	6%	23%	26%	17%	9%	5%
\$501 million – 1 billion	18	28	31	11%	11%	13%	6%	*	*
\$500 million and under	14	25	31	*	12%	16%	7%	*	*
Unions									
Unions	30	29	35	33%	45%	40%	10%	14%	14%
Healthcare									
Healthcare Organizations	37	39	32	11%	8%	9%	3%	3%	3%
Total Institutions	355	404	392	10%	14%	16%	5%	5%	4%

"Now Use" refers to mandates or assignments currently used by U.S. institutions. "Expect to Hire" refers to anticipated hiring for mandates or assignments in the next 12 months.

Institutional Use of and Hiring for Listed Infrastructure

U.S. Institutional Investors – Total Interviews (1059) (1128) (1100)

Listed Infrastructure

	Base			Now Use			Expect to Hire		
	2017	2018	2019	2017	2018	2019	2017	2018	2019
Corporate Funds									
Corporate Funds	141	146	150	6%	8%	5%	2%	1%	*
Over \$5 billion	46	42	50	9%	10%	8%	4%	5%	*
\$1 – 5 billion	60	66	63	7%	9%	2%	2%	*	*
\$501 million – 1 billion	18	21	21	*	5%	10%	*	*	*
\$500 million and under	17	17	16	6%	6%	6%	*	*	*
Public Funds									
Public Funds	97	112	89	5%	8%	12%	1%	5%	2%
– Federal	3	4	1	*	*	*	*	25%	*
– State	33	35	27	3%	11%	15%	3%	3%	*
– Municipal	61	73	61	7%	7%	11%	*	5%	3%
Over \$5 billion	37	43	30	3%	14%	20%	3%	9%	3%
\$1 – 5 billion	24	34	25	13%	6%	8%	*	3%	4%
\$501 million – 1 billion	20	23	19	5%	4%	5%	*	4%	*
\$500 million and under	16	14	16	*	7%	13%	*	*	*
Endowments and Foundations									
Endowments & Foundations	50	75	81	4%	12%	7%	*	4%	1%
– Endowments	23	31	32	4%	13%	6%	*	*	3%
– Foundations	27	44	49	4%	11%	8%	*	7%	*
Over \$1 billion	18	22	19	6%	14%	5%	*	5%	5%
\$501 million – 1 billion	18	28	31	6%	18%	10%	*	*	*
\$500 million and under	14	25	31	*	4%	6%	*	8%	*
Unions									
Unions	30	29	35	3%	3%	3%	3%	*	9%
Healthcare									
Healthcare Organizations	37	39	32	8%	3%	3%	*	*	*
Total Institutions	355	404	392	6%	8%	7%	1%	3%	2%

"Now Use" refers to mandates or assignments currently used by U.S. institutions. "Expect to Hire" refers to anticipated hiring for mandates or assignments in the next 12 months.

Institutional Use of Exchange-Traded Funds

U.S. Institutional Investors – Total Interviews (1216) (1059) (1128) (1100)

Use of Exchange-Traded Funds

Plans to Invest in the Next 12 Months Among Current Non-Users

	Base				Current Users				Current Non-Users				Yes				No			
	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019
Corporate Funds																				
Corporate Funds	204	199	172	161	12%	13%	13%	12%	88%	87%	87%	88%	2%	2%	2%	1%	97%	97%	97%	96%
Over \$5 billion	52	57	48	54	21%	21%	29%	17%	79%	79%	71%	83%	5%	4%	3%	2%	90%	96%	94%	98%
\$1 – 5 billion	93	87	77	71	8%	8%	5%	8%	92%	92%	95%	92%	*	1%	*	2%	97%	98%	99%	97%
\$501 million – 1 billion	32	31	25	21	13%	10%	8%	14%	88%	90%	92%	86%	4%	*	9%	*	96%	100%	91%	89%
\$500 million and under	27	24	22	15	11%	17%	9%	7%	89%	83%	91%	93%	*	*	*	*	108%	95%	100%	100%
Public Funds																				
Public Funds	125	107	116	98	13%	13%	17%	16%	87%	87%	83%	84%	2%	1%	2%	7%	92%	97%	97%	90%
– Federal	4	3	3	1	25%	33%	33%	100%	75%	67%	67%	*	*	*	*	*	100%	100%	100%	*
– State	44	38	38	31	20%	26%	21%	19%	80%	74%	79%	81%	3%	*	3%	8%	86%	100%	93%	92%
– Municipal	77	66	75	66	8%	5%	15%	14%	92%	95%	85%	86%	1%	2%	2%	7%	94%	95%	98%	89%
Over \$5 billion	43	40	40	31	21%	25%	23%	23%	79%	75%	78%	77%	3%	*	*	4%	88%	100%	97%	96%
\$1 – 5 billion	39	26	35	29	10%	4%	9%	10%	90%	96%	91%	90%	3%	*	3%	*	86%	100%	97%	96%
\$501 million – 1 billion	22	23	27	22	5%	4%	19%	9%	95%	96%	81%	91%	*	*	5%	25%	95%	95%	95%	70%
\$500 million and under	22	18	16	17	9%	11%	19%	24%	91%	89%	81%	76%	*	6%	*	*	105%	88%	100%	100%
Endowments and Foundations																				
Endowments & Foundations	94	84	91	90	22%	20%	19%	19%	78%	80%	81%	81%	7%	6%	5%	4%	93%	91%	95%	93%
– Endowments	40	36	33	34	25%	31%	30%	26%	75%	69%	70%	74%	7%	8%	9%	8%	90%	84%	91%	92%
– Foundations	54	48	58	56	20%	13%	12%	14%	80%	88%	88%	86%	7%	5%	4%	2%	95%	95%	96%	94%
Over \$1 billion	27	32	26	23	26%	25%	15%	22%	74%	75%	85%	78%	10%	8%	5%	6%	90%	88%	95%	94%
\$501 million – 1 billion	31	25	35	34	16%	16%	23%	24%	84%	84%	77%	76%	8%	*	4%	4%	96%	100%	96%	92%
\$500 million and under	36	27	30	33	25%	19%	17%	12%	75%	81%	83%	88%	4%	9%	8%	3%	93%	86%	92%	93%
Unions																				
Unions	31	30	35	32	16%	10%	9%	6%	84%	90%	91%	94%	*	*	*	*	100%	100%	97%	100%
Healthcare																				
Healthcare Organizations	41	42	48	44	7%	17%	15%	18%	93%	83%	85%	82%	*	*	2%	*	92%	97%	98%	94%
Total Institutions	495	462	467	431	14%	15%	15%	15%	86%	85%	85%	85%	2%	2%	3%	3%	95%	96%	96%	95%

Number of U.S. Equity Managers Used

U.S. Institutional Investors – Total Interviews (981) (1059) (1128) (1100)

	Total Institutions				U.S. Equity				U.S. Equity (Active)				U.S. Equity (Passive)			
	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019
Corporate Funds																
Corporate Funds	413	460	446	447	4.1	3.4	3.2	3.3	3.7	2.9	2.8	2.8	1.4	1.4	1.4	1.5
Over \$5 billion	120	128	123	128	5.2	3.9	3.7	3.8	4.5	3.4	3.2	3.1	1.7	1.7	1.6	1.6
\$1 – 5 billion	172	190	181	180	3.7	3.0	3.1	3.1	3.3	2.6	2.8	2.6	1.3	1.3	1.4	1.4
\$501 million – 1 billion	75	84	80	76	4.1	3.1	3.1	3.0	3.8	2.7	2.7	2.9	1.5	1.4	1.3	1.4
\$500 million and under	46	58	62	63	3.0	3.5	2.2	3.1	2.8	3.3	1.9	2.7	1.1	1.4	1.0	1.4
Public Funds																
Public Funds	245	246	252	235	3.8	2.9	3.0	2.9	3.4	2.5	2.8	2.7	1.4	1.3	1.3	1.4
– Federal	6	6	6	5	4.3	3.5	3.8	1.5	3.0	4.5	5.0	*	2.0	1.3	1.3	1.5
– State	98	94	96	88	4.0	3.3	3.5	3.2	4.0	3.1	3.8	3.5	1.3	1.3	1.4	1.4
– Municipal	141	146	150	142	3.6	2.6	2.7	2.8	3.1	2.2	2.3	2.3	1.5	1.3	1.3	1.4
Over \$5 billion	104	102	104	90	4.7	3.4	3.8	3.6	4.8	3.3	4.2	3.7	1.8	1.4	1.6	1.6
\$1 – 5 billion	64	60	62	52	3.8	3.2	3.3	3.1	3.3	2.7	2.7	2.5	1.3	1.3	1.3	1.3
\$501 million – 1 billion	42	43	39	43	3.0	2.5	2.0	2.2	2.5	1.9	1.7	2.0	1.3	1.2	1.1	1.2
\$500 million and under	36	41	49	51	2.5	1.7	2.0	2.1	2.3	1.6	1.6	1.8	1.2	1.1	1.1	1.2
Endowments and Foundations																
Endowments & Foundations	179	188	215	211	3.0	2.3	2.2	2.4	2.8	2.0	1.9	2.2	1.2	1.2	1.2	1.3
– Endowments	74	70	83	82	3.1	2.5	2.3	2.5	3.1	2.1	2.0	2.6	1.2	1.2	1.3	1.2
– Foundations	105	118	132	129	2.9	2.1	2.2	2.3	2.6	2.0	1.9	1.9	1.3	1.2	1.2	1.4
Over \$1 billion	48	54	54	51	3.9	2.8	2.6	3.2	3.6	2.3	2.3	3.3	1.2	1.4	1.2	1.6
\$501 million – 1 billion	52	50	60	65	2.5	1.8	2.0	2.1	2.3	1.5	1.7	1.8	1.2	1.1	1.2	1.3
\$500 million and under	79	84	101	95	2.7	2.2	2.1	2.0	2.6	2.1	1.8	1.6	1.2	1.1	1.3	1.2
Unions																
Unions	68	70	86	90	4.1	3.3	3.3	3.1	3.9	3.0	3.0	3.0	1.1	1.4	1.1	1.1
Healthcare																
Healthcare Organizations	76	95	110	101	3.3	2.5	2.5	2.7	3.1	2.1	2.2	2.5	1.2	1.3	1.4	1.2
Total Institutions	981	1,059	1,128	1,100	3.8	3.0	2.9	3.0	3.4	2.6	2.6	2.7	1.4	1.3	1.3	1.4

Mean calculation does not include values of zero or null.

Number of International / Global Managers Used

U.S. Institutional Investors – Total Interviews (981) (1059) (1128) (1100)

	Total Institutions				International / Global Equity*				International / Global Equity (Active)				International / Global Equity (Passive)			
	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019
Corporate Funds																
Corporate Funds	413	460	446	447	3.2	3.0	3.0	3.0	3.0	2.8	2.8	2.8	1.3	1.2	1.3	1.3
Over \$5 billion	120	128	123	128	4.5	4.2	3.9	3.8	4.3	4.0	3.7	3.4	1.6	1.4	1.5	1.4
\$1 – 5 billion	172	190	181	180	2.7	2.7	2.9	2.8	2.6	2.4	2.5	2.5	1.2	1.2	1.3	1.2
\$501 million – 1 billion	75	84	80	76	2.5	2.3	2.3	2.3	2.3	2.0	2.1	2.2	1.3	1.1	1.1	1.1
\$500 million and under	46	58	62	63	2.3	2.3	2.0	2.4	2.2	2.1	1.9	2.2	1.1	1.2	1.1	1.3
Public Funds																
Public Funds	245	246	252	235	3.5	3.1	3.4	3.4	3.4	3.0	3.2	3.3	1.3	1.3	1.3	1.3
– Federal	6	6	6	5	3.0	3.5	4.8	5.0	3.0	3.3	4.3	8.0	1.5	1.3	1.5	2.0
– State	98	94	96	88	4.2	3.9	4.6	4.0	4.4	4.0	4.7	4.0	1.3	1.3	1.4	1.3
– Municipal	141	146	150	142	3.0	2.6	2.6	3.0	2.9	2.4	2.4	2.8	1.4	1.3	1.3	1.3
Over \$5 billion	104	102	104	90	4.8	4.3	5.1	4.7	5.3	4.6	5.5	5.0	1.4	1.4	1.6	1.5
\$1 – 5 billion	64	60	62	52	3.1	2.6	2.5	3.1	2.9	2.4	2.2	2.8	1.3	1.2	1.3	1.4
\$501 million – 1 billion	42	43	39	43	2.7	2.3	2.0	2.0	2.6	2.1	1.8	1.9	1.6	1.4	1.0	1.0
\$500 million and under	36	41	49	51	1.8	1.9	1.9	2.4	1.6	1.6	1.6	2.0	1.0	1.1	1.1	1.1
Endowments and Foundations																
Endowments & Foundations	179	188	215	211	3.1	2.7	2.9	2.8	2.9	2.5	2.6	2.7	1.3	1.2	1.2	1.1
– Endowments	74	70	83	82	3.2	2.8	2.8	3.0	3.0	2.5	2.6	3.0	1.3	1.1	1.3	1.2
– Foundations	105	118	132	129	3.0	2.7	3.0	2.6	2.8	2.4	2.6	2.4	1.2	1.2	1.2	1.1
Over \$1 billion	48	54	54	51	3.7	3.0	2.9	3.5	3.4	2.7	2.7	3.6	1.3	1.2	1.1	1.3
\$501 million – 1 billion	52	50	60	65	2.9	2.7	2.9	2.6	2.7	2.3	2.7	2.5	1.3	1.3	1.1	1.1
\$500 million and under	79	84	101	95	2.8	2.5	2.8	2.5	2.7	2.4	2.5	2.3	1.1	1.0	1.3	1.1
Unions																
Unions	68	70	86	90	3.3	2.7	2.6	2.6	3.1	2.5	2.3	2.3	1.1	1.1	1.1	1.1
Healthcare																
Healthcare Organizations	76	95	110	101	2.8	2.4	2.4	2.6	2.8	2.3	2.4	2.5	1.0	1.0	1.0	1.1
Total Institutions	981	1,059	1,128	1,100	3.2	2.9	3.0	3.0	3.1	2.7	2.8	2.8	1.3	1.2	1.3	1.2

Mean calculation does not include values of zero or null.

*In 2013 this includes citations for emerging market equities

Number of Fixed Income Managers Used

U.S. Institutional Investors – Total Interviews (981) (1059) (1128) (1100)

	Total Institutions				Fixed Income				Fixed Income (Active)				Fixed Income (Passive)			
	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019
Corporate Funds																
Corporate Funds	413	460	446	447	3.3	3.2	3.3	3.5	3.1	2.9	3.0	3.2	1.3	1.4	1.3	1.3
Over \$5 billion	120	128	123	128	4.7	4.4	4.7	4.7	4.5	4.0	4.5	4.6	1.5	1.6	1.5	1.4
\$1 – 5 billion	172	190	181	180	3.0	3.0	2.9	3.2	2.8	2.7	2.7	2.8	1.2	1.4	1.3	1.3
\$501 million – 1 billion	75	84	80	76	2.4	2.3	2.5	2.5	2.1	2.1	2.2	2.2	1.2	1.2	1.1	1.1
\$500 million and under	46	58	62	63	2.2	2.3	1.9	2.2	2.0	2.1	1.5	2.1	1.3	1.4	1.1	1.1
Public Funds																
Public Funds	245	246	252	235	3.4	3.2	3.2	3.2	3.3	3.0	3.1	3.0	1.3	1.2	1.3	1.3
– Federal	6	6	6	5	6.5	6.0	6.8	6.3	6.0	5.8	6.0	6.0	1.0	1.0	1.5	2.5
– State	98	94	96	88	3.7	3.6	3.5	3.6	4.0	3.6	3.6	3.5	1.3	1.2	1.3	1.2
– Municipal	141	146	150	142	3.1	2.8	2.9	2.8	2.9	2.6	2.7	2.6	1.3	1.3	1.3	1.4
Over \$5 billion	104	102	104	90	4.6	4.2	4.4	4.4	5.0	4.4	4.8	4.5	1.3	1.4	1.5	1.4
\$1 – 5 billion	64	60	62	52	3.1	2.9	2.8	3.0	2.8	2.5	2.5	2.7	1.3	1.3	1.3	1.3
\$501 million – 1 billion	42	43	39	43	2.5	2.5	2.2	2.0	2.2	2.1	1.9	1.9	1.3	1.1	1.2	1.0
\$500 million and under	36	41	49	51	2.1	2.2	1.9	1.8	2.0	1.9	1.8	1.7	1.3	1.0	1.0	1.0
Endowments and Foundations																
Endowments & Foundations	179	188	215	211	2.6	2.4	2.2	2.3	2.4	2.3	2.2	2.2	1.2	1.1	1.1	1.2
– Endowments	74	70	83	82	2.8	2.9	2.5	2.7	2.7	2.7	2.4	2.4	1.1	1.1	1.1	1.2
– Foundations	105	118	132	129	2.4	2.2	2.1	2.1	2.2	2.0	2.0	2.0	1.2	1.2	1.0	1.1
Over \$1 billion	48	54	54	51	3.4	3.1	2.7	3.1	3.3	3.0	2.6	2.9	1.3	1.5	1.0	1.5
\$501 million – 1 billion	52	50	60	65	1.9	2.2	1.9	2.1	1.8	2.2	2.0	1.9	1.0	1.1	1.1	1.0
\$500 million and under	79	84	101	95	2.5	2.0	2.2	2.0	2.2	1.8	1.9	1.9	1.2	1.0	1.1	1.1
Unions																
Unions	68	70	86	90	3.0	2.6	2.5	2.7	2.8	2.4	2.3	2.5	1.2	1.2	1.4	1.2
Healthcare																
Healthcare Organizations	76	95	110	101	3.4	2.9	2.9	2.9	3.1	2.7	2.8	2.7	1.1	1.1	1.1	1.2
Total Institutions	981	1,059	1,128	1,100	3.2	3.0	3.0	3.1	3.0	2.8	2.8	2.9	1.3	1.3	1.3	1.3

Mean calculation does not include values of zero or null.

Market Coverage by U.S. Equity Managers

U.S. Institutional Investors – Total Interviews (1216) (1059) (1128) (1100)

	Total Institutions				Percent Solicited				Mean Number of Solicitations			
	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019
Corporate Funds												
Corporate Funds	592	460	446	447	9%	*	17%	*	2.4	*	3.6	*
Over \$5 billion	120	128	123	128	10%	*	17%	*	2.3	*	5.0	*
\$1 – 5 billion	172	190	181	180	14%	*	20%	*	2.6	*	3.1	*
\$501 million – 1 billion	75	84	80	76	13%	*	9%	*	2.6	*	2.1	*
\$500 million and under	46	58	62	63	15%	*	15%	*	1.9	*	3.6	*
Public Funds												
Public Funds	265	246	252	235	11%	*	15%	*	2.2	*	2.6	*
– Federal	6	6	6	5	17%	*	33%	*	2.0	*	2.0	*
– State	118	94	96	88	13%	*	16%	*	2.0	*	2.9	*
– Municipal	141	146	150	142	10%	*	14%	*	2.4	*	2.4	*
Over \$5 billion	104	102	104	90	15%	*	16%	*	2.4	*	2.5	*
\$1 – 5 billion	64	60	62	52	16%	*	18%	*	2.0	*	2.5	*
\$501 million – 1 billion	42	43	39	43	5%	*	13%	*	1.0	*	3.4	*
\$500 million and under	36	41	49	51	6%	*	10%	*	2.5	*	2.0	*
Endowments and Foundations												
Endowments & Foundations	190	188	215	211	8%	*	16%	*	2.0	*	2.4	*
– Endowments	85	70	83	82	6%	*	17%	*	1.4	*	2.1	*
– Foundations	105	118	132	129	10%	*	16%	*	2.3	*	2.7	*
Over \$1 billion	48	54	54	51	10%	*	20%	*	2.2	*	3.5	*
\$501 million – 1 billion	52	50	60	65	8%	*	17%	*	1.5	*	1.6	*
\$500 million and under	79	84	101	95	9%	*	14%	*	2.1	*	2.1	*
Unions												
Unions	70	70	86	90	10%	*	6%	*	2.0	*	7.0	*
Healthcare												
Healthcare Organizations	99	95	110	101	13%	*	16%	*	2.1	*	2.6	*
Total Institutions	1,216	1,059	1,128	1,100	10%	*	15%	*	2.2	*	3.1	*

Mean calculation does not include values of zero or null.

Market Coverage by International / Global Managers

U.S. Institutional Investors – Total Interviews (1216) (1059) (1128) (1100)

	Total Institutions				Percent Solicited				Mean Number of Solicitations			
	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019
Corporate Funds												
Corporate Funds	592	460	446	447	7%	*	15%	*	2.1	*	3.1	*
Over \$5 billion	120	128	123	128	12%	*	16%	*	2.4	*	3.8	*
\$1 – 5 billion	172	190	181	180	9%	*	18%	*	1.9	*	2.9	*
\$501 million – 1 billion	75	84	80	76	11%	*	8%	*	1.8	*	1.7	*
\$500 million and under	46	58	62	63	4%	*	13%	*	1.5	*	3.0	*
Public Funds												
Public Funds	265	246	252	235	12%	*	16%	*	2.2	*	2.6	*
– Federal	6	6	6	5	17%	*	17%	*	4.0	*	1.0	*
– State	118	94	96	88	12%	*	19%	*	2.4	*	3.3	*
– Municipal	141	146	150	142	11%	*	15%	*	2.0	*	2.2	*
Over \$5 billion	104	102	104	90	13%	*	16%	*	2.6	*	3.0	*
\$1 – 5 billion	64	60	62	52	16%	*	23%	*	2.0	*	2.4	*
\$501 million – 1 billion	42	43	39	43	7%	*	13%	*	1.3	*	3.0	*
\$500 million and under	36	41	49	51	11%	*	10%	*	2.3	*	1.8	*
Endowments and Foundations												
Endowments & Foundations	190	188	215	211	8%	*	16%	*	1.9	*	2.9	*
– Endowments	85	70	83	82	11%	*	20%	*	2.6	*	3.2	*
– Foundations	105	118	132	129	6%	*	14%	*	1.0	*	2.6	*
Over \$1 billion	48	54	54	51	15%	*	20%	*	1.9	*	4.0	*
\$501 million – 1 billion	52	50	60	65	8%	*	17%	*	1.5	*	2.2	*
\$500 million and under	79	84	101	95	5%	*	14%	*	2.5	*	2.5	*
Unions												
Unions	70	70	86	90	7%	*	9%	*	2.4	*	3.5	*
Healthcare												
Healthcare Organizations	99	95	110	101	4%	*	15%	*	2.0	*	2.4	*
Total Institutions	1,216	1,059	1,128	1,100	8%	*	15%	*	2.1	*	2.9	*

Mean calculation does not include values of zero or null.

Market Coverage by Fixed Income Managers

U.S. Institutional Investors – Total Interviews (1216) (1059) (1128) (1100)

	Total Institutions				Percent Solicited				Mean Number of Solicitations			
	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019
Corporate Funds												
Corporate Funds	592	460	446	447	12%	*	*	*	2.4	*	*	*
Over \$5 billion	120	128	123	128	19%	*	*	*	3.1	*	*	*
\$1 – 5 billion	172	190	181	180	17%	*	*	*	2.0	*	*	*
\$501 million – 1 billion	75	84	80	76	13%	*	*	*	2.1	*	*	*
\$500 million and under	46	58	62	63	13%	*	*	*	2.0	*	*	*
Public Funds												
Public Funds	265	246	252	235	15%	*	*	*	2.5	*	*	*
– Federal	6	6	6	5	33%	*	*	*	2.5	*	*	*
– State	118	94	96	88	14%	*	*	*	2.6	*	*	*
– Municipal	141	146	150	142	14%	*	*	*	2.4	*	*	*
Over \$5 billion	104	102	104	90	22%	*	*	*	2.7	*	*	*
\$1 – 5 billion	64	60	62	52	16%	*	*	*	2.3	*	*	*
\$501 million – 1 billion	42	43	39	43	5%	*	*	*	1.5	*	*	*
\$500 million and under	36	41	49	51	11%	*	*	*	2.0	*	*	*
Endowments and Foundations												
Endowments & Foundations	190	188	215	211	7%	*	*	*	1.9	*	*	*
– Endowments	85	70	83	82	11%	*	*	*	2.2	*	*	*
– Foundations	105	118	132	129	5%	*	*	*	1.4	*	*	*
Over \$1 billion	48	54	54	51	13%	*	*	*	3.0	*	*	*
\$501 million – 1 billion	52	50	60	65	6%	*	*	*	1.0	*	*	*
\$500 million and under	79	84	101	95	6%	*	*	*	1.2	*	*	*
Unions												
Unions	70	70	86	90	9%	*	*	*	5.3	*	*	*
Healthcare												
Healthcare Organizations	99	95	110	101	13%	*	*	*	2.2	*	*	*
Total Institutions	1,216	1,059	1,128	1,100	12%	*	*	*	2.5	*	*	*

Mean calculation does not include values of zero or null.

Number of Separate Investment Assignments for Major Asset Classes

U.S. Institutional Investors – Total Interviews (1128) (1100)

	Base		U.S. Equities		International / Global Equities		U.S. Fixed Income		International / Global Fixed Income		Multi-Asset Class (Risk Parity, GTAA, Multi-Asset)	
	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019
Corporate Funds												
Corporate Funds	111	118	6	6	4	5	3	4	2	2	4	4
Over \$5 billion	29	40	8	8	6	6	5	5	3	3	5	4
\$1 – 5 billion	55	53	5	6	3	5	3	4	2	2	3	5
\$501 million – 1 billion	16	15	5	6	2	3	3	3	1	1	4	7
\$500 million and under	11	10	4	5	3	3	3	3	2	2	3	2
Public Funds												
Public Funds	68	61	6	6	5	5	5	4	3	2	4	4
– Federal	3	1	4	1	8	13	14	29	5	7	1	*
– State	15	17	8	9	6	5	5	5	4	2	7	4
– Municipal	50	43	6	6	4	4	4	4	2	2	3	4
Over \$5 billion	23	20	6	7	7	6	6	7	4	3	7	5
\$1 – 5 billion	22	18	8	8	4	5	4	4	2	2	2	2
\$501 million – 1 billion	15	14	6	6	3	4	3	3	1	3	5	6
\$500 million and under	10	10	4	4	4	4	4	3	1	2	*	*
Endowments and Foundations												
Endowments & Foundations	65	70	5	4	6	6	3	4	2	2	2	3
– Endowments	22	25	5	4	9	7	3	2	3	2	3	2
– Foundations	43	45	5	4	5	5	3	5	2	2	2	3
Over \$1 billion	18	15	5	4	8	7	4	4	3	3	2	2
\$501 million – 1 billion	29	28	4	4	6	6	3	2	2	2	2	3
\$500 million and under	18	27	6	4	5	5	3	6	2	2	3	3
Unions												
Unions	25	21	7	7	5	4	4	4	2	2	4	3
Healthcare												
Healthcare Organizations	8	26	7	5	3	5	3	4	3	2	7	4
Total Institutions	277	302	6	6	5	5	4	4	2	2	4	4

Mean calculation shown.

Number of Separate Investment Assignments for Major Asset Classes (Cont'd.)

U.S. Institutional Investors – Total Interviews (1128) (1100)

	Base		Private Equity – Single Manager		Private Equity – Fund of Funds		Hedge Funds – Single Manager		Hedge Funds – Fund of Funds		Real Estate		Other Alternatives (Commodities, Infrastructure, Currency)	
	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019
Corporate Funds														
Corporate Funds	111	118	16	19	6	5	10	10	2	1	5	7	8	8
Over \$5 billion	29	40	20	21	19	7	20	17	2	2	7	10	6	5
\$1 – 5 billion	55	53	7	12	3	4	4	5	1	2	3	4	11	13
\$501 million – 1 billion	16	15	29	34	2	2	2	2	2	1	2	3	2	2
\$500 million and under	11	10	5	8	3	6	2	2	*	1	3	3	3	2
Public Funds														
Public Funds	68	61	48	66	7	7	7	9	1	2	9	9	15	4
– Federal	3	1	3	*	10	2	*	*	*	*	6	4	5	*
– State	15	17	99	52	13	15	9	16	1	1	14	14	7	4
– Municipal	50	43	34	75	4	4	7	7	1	2	7	7	18	4
Over \$5 billion	23	20	68	108	9	15	8	14	1	1	19	21	32	5
\$1 – 5 billion	22	18	20	19	4	3	7	4	2	1	5	4	4	5
\$501 million – 1 billion	15	14	23	8	2	2	10	6	2	1	2	3	3	3
\$500 million and under	10	10	7	11	8	6	2	*	1	2	3	3	2	2
Endowments and Foundations														
Endowments & Foundations	65	70	18	17	6	7	8	7	2	2	6	6	7	7
– Endowments	22	25	25	27	6	10	7	8	2	2	7	8	9	10
– Foundations	43	45	13	11	7	6	9	7	2	2	5	5	6	6
Over \$1 billion	18	15	20	23	5	7	11	9	3	2	8	7	8	8
\$501 million – 1 billion	29	28	17	20	7	7	8	7	2	1	6	6	7	7
\$500 million and under	18	27	16	12	7	8	6	7	2	2	4	4	6	7
Unions														
Unions	25	21	36	24	6	7	18	6	3	1	10	9	11	8
Healthcare														
Healthcare Organizations	8	26	20	30	1	6	2	9	1	2	1	6	2	4
Total Institutions	277	302	27	27	6	7	9	8	2	1	7	7	10	6

Mean calculation shown.

Fees Paid to External Managers of Defined Benefit Plans and Investment Pools

U.S. Institutional Investors – Total Interviews (1216) (1059) (1128) (1100)

	Active U.S. Equities								International / Global Equities							
	Base				Mean (bps)				Base				Mean (bps)			
	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019
Corporate Funds																
Corporate Funds	93	77	69	65	54.2	57.1	52.4	49.3	94	71	69	69	62.8	70.0	57.2	57.7
Over \$5 billion	29	28	26	24	47.2	47.6	48.6	49.1	31	25	24	24	58.5	58.2	54.7	52.2
\$1 – 5 billion	45	34	30	29	53.0	55.4	51.1	46.9	45	32	32	32	62.6	72.6	55.1	60.5
\$501 million – 1 billion	11	11	9	10	71.9	84.5	69.1	49.4	8	10	10	11	76.3	96.4	67.4	61.5
\$500 million and under	8	4	4	2	61.3	62.5	48.3	85.0	10	4	3	2	66.1	56.3	66.7	60.0
Public Funds																
Public Funds	58	49	55	40	50.0	52.9	48.8	51.7	57	43	52	40	57.7	59.7	60.3	57.9
– Federal	1	*	*	*	33.0	*	*	*	2	*	*	*	27.0	*	*	*
– State	18	15	16	12	44.7	39.9	35.0	35.2	19	16	17	13	47.1	47.4	45.7	47.4
– Municipal	39	34	39	28	52.9	58.7	54.5	58.7	36	27	35	27	64.9	67.1	67.4	63.0
Over \$5 billion	18	17	19	12	37.9	31.9	32.8	37.0	20	16	18	13	43.1	41.3	44.7	43.8
\$1 – 5 billion	16	10	11	11	43.6	62.9	49.3	45.6	16	10	13	13	57.3	66.0	67.0	57.9
\$501 million – 1 billion	12	11	15	10	58.6	67.1	56.2	60.8	12	10	13	9	73.3	77.1	62.8	73.4
\$500 million and under	13	11	12	8	66.2	62.1	67.2	71.3	10	7	10	6	71.4	68.1	75.1	65.8
Endowments and Foundations																
Endowments & Foundations	59	52	42	46	63.2	65.1	64.2	61.6	53	51	41	47	76.6	73.5	71.9	68.1
– Endowments	21	20	13	18	64.5	66.8	68.1	65.1	22	22	13	18	74.0	73.5	77.7	71.7
– Foundations	38	32	29	28	62.4	64.1	62.6	59.4	31	29	28	29	78.4	73.5	69.4	65.9
Over \$1 billion	15	19	12	12	59.5	63.5	66.0	57.8	16	19	13	12	69.4	67.1	67.8	55.2
\$501 million – 1 billion	24	18	19	20	65.1	65.2	62.3	59.2	22	19	18	18	82.4	76.8	70.9	67.3
\$500 million and under	20	15	11	14	63.6	67.1	65.8	68.4	15	13	10	17	75.7	78.1	78.5	78.2
Unions																
Unions	20	18	19	21	51.6	48.9	57.6	51.5	20	20	22	25	72.3	76.9	76.9	70.7
Healthcare																
Healthcare Organizations	18	19	16	12	63.7	56.8	59.8	56.5	16	17	16	15	74.8	64.2	64.9	67.7
Total Institutions	248	215	202	187	55.8	57.4	55.0	53.7	240	202	201	197	66.2	68.9	63.8	62.8

Mean calculation does not include values of zero or null. Values shown in basis points.

Results are for corporate and union fund defined benefit plan assets, public fund defined benefit plan assets, healthcare organization defined benefit plan assets, and endowment and foundation fund investment pool assets.

Fees Paid to External Managers of Defined Benefit Plans and Investment Pools (Cont'd.)

U.S. Institutional Investors – Total Interviews (1216) (1059) (1128) (1100)

	<i>Emerging Market Equities</i>								<i>Active Fixed Income</i>							
	Base				Mean (bps)				Base				Mean (bps)			
	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019
Corporate Funds																
Corporate Funds	62	51	49	45	78.7	75.4	67.0	69.0	112	85	84	86	32.1	28.5	28.6	26.4
Over \$5 billion	23	21	20	16	74.3	72.3	62.3	65.5	35	32	30	30	25.1	24.5	27.1	26.2
\$1 – 5 billion	26	20	21	21	73.9	70.4	68.6	73.2	54	34	38	39	37.0	27.8	26.3	24.4
\$501 million – 1 billion	8	7	6	7	103.5	97.0	88.8	65.9	11	13	11	12	22.6	39.5	36.1	32.0
\$500 million and under	5	3	2	1	84.0	80.3	31.5	56.0	12	6	5	5	39.1	29.8	37.8	30.2
Public Funds																
Public Funds	36	33	39	37	72.6	75.5	72.6	74.9	62	57	60	47	30.5	29.3	29.3	30.8
– Federal	*	*	*	*	*	*	*	*	2	1	1	*	20.5	10.0	10.0	*
– State	13	11	12	9	63.5	57.0	65.6	59.1	17	16	16	14	27.9	26.8	21.7	29.4
– Municipal	23	22	27	28	77.8	84.8	75.7	80.0	43	40	43	33	32.0	30.8	32.5	31.4
Over \$5 billion	14	14	17	11	65.0	57.4	62.5	61.3	22	21	22	14	26.0	25.8	23.1	25.1
\$1 – 5 billion	8	5	7	11	73.6	91.6	67.9	75.8	18	12	13	13	28.2	35.1	27.5	30.8
\$501 million – 1 billion	9	10	10	9	75.9	87.2	76.6	84.3	10	13	15	12	32.1	30.2	33.1	32.5
\$500 million and under	5	4	7	7	86.6	90.0	89.3	83.4	13	11	12	9	39.2	28.5	37.9	39.1
Endowments and Foundations																
Endowments & Foundations	45	42	34	38	95.6	91.0	99.5	87.0	54	49	41	47	36.8	37.5	37.9	37.6
– Endowments	17	18	12	13	95.9	79.4	99.5	88.7	22	20	13	18	42.1	34.2	43.7	40.3
– Foundations	28	24	22	25	95.4	99.7	99.5	86.1	32	29	28	29	33.1	39.6	35.4	35.9
Over \$1 billion	15	14	11	8	96.4	86.5	113.0	83.8	14	17	13	10	33.4	32.4	40.4	38.8
\$501 million – 1 billion	15	15	14	17	96.9	92.3	98.6	85.9	20	17	16	19	34.8	35.3	33.7	32.8
\$500 million and under	15	13	9	13	93.5	94.4	85.9	90.5	20	15	12	18	41.1	45.5	40.9	41.9
Unions																
Unions	12	15	16	20	74.7	80.5	85.1	79.6	23	22	24	27	39.5	38.5	40.8	40.4
Healthcare																
Healthcare Organizations	15	17	15	11	69.2	66.2	75.9	73.5	19	22	19	16	40.3	33.9	35.3	34.1
Total Institutions	170	158	154	153	80.8	79.1	78.2	76.3	270	235	230	226	33.9	32.0	32.1	31.7

Mean calculation does not include values of zero or null. Values shown in basis points.

Results are for corporate and union fund defined benefit plan assets, public fund defined benefit plan assets, healthcare organization defined benefit plan assets, and endowment and foundation fund investment pool assets.

Fees Paid to External Managers of Defined Benefit Plans and Investment Pools (Cont'd.)

U.S. Institutional Investors – Total Interviews (1059) (1128) (1100)

Hedge Funds*

	Base			Mean (bps)			Base	Performance Fees as a % of Outperformance
	2017	2018	2019	2017	2018	2019	2019	2019
Corporate Funds								
Corporate Funds	32	32	33	131.8	106.4	112.5	23	16.2%
Over \$5 billion	15	13	13	122.2	109.4	106.5	11	15.7%
\$1 – 5 billion	12	14	15	134.5	100.6	118.3	9	18.1%
\$501 million – 1 billion	5	3	3	154.4	123.0	97.7	2	10.5%
\$500 million and under	*	2	2	*	103.0	132.5	1	15.0%
Public Funds								
Public Funds	21	28	23	121.6	138.6	135.0	18	13.4%
– Federal	*	*	*	*	*	*	*	*
– State	5	5	5	115.2	130.5	107.8	4	6.8%
– Municipal	16	23	18	123.6	140.0	142.6	14	15.3%
Over \$5 billion	8	12	9	140.1	134.6	128.8	6	11.7%
\$1 – 5 billion	2	5	6	200.0	163.0	122.0	6	17.0%
\$501 million – 1 billion	7	5	4	108.6	137.0	155.0	4	13.0%
\$500 million and under	4	7	4	68.0	121.4	148.8	2	8.5%
Endowments and Foundations								
Endowments & Foundations	45	38	47	135.3	133.6	133.8	43	16.6%
– Endowments	17	14	18	142.1	127.6	148.7	16	17.1%
– Foundations	28	24	29	131.1	136.9	124.6	27	16.3%
Over \$1 billion	15	11	10	124.2	122.8	118.3	8	18.5%
\$501 million – 1 billion	18	18	19	142.9	140.4	135.5	18	17.1%
\$500 million and under	12	9	18	137.6	132.2	140.7	17	15.3%
Unions								
Unions	11	14	14	126.2	113.9	111.1	6	14.2%
Healthcare								
Healthcare Organizations	18	14	11	97.3	113.8	107.6	12	14.2%
Total Institutions	127	127	130	126.0	122.3	124.1	103	15.4%

Mean fee calculation does not include values of zero or null. Performance fee calculation does include values of zero. Values shown in basis points.

Results are for corporate and union fund defined benefit plan assets, public fund defined benefit plan assets, healthcare organization defined benefit plan assets, and endowment and foundation fund investment pool assets.

Fees Paid to External Managers of Defined Benefit Plans and Investment Pools (Cont'd.)

U.S. Institutional Investors – Total Interviews (1128) (1100)

	<i>Private Equity</i>					Performance Fees as a % of Outperformance	<i>Real Estate</i>			
	Base		Mean (bps)		Base		Base		Mean (bps)	
	2018	2019	2018	2019	2019		2018	2019	2018	2019
Corporate Funds										
Corporate Funds	38	35	134.4	130.0	26	17.2%	35	34	92.7	97.2
Over \$5 billion	18	17	159.3	140.2	13	17.8%	19	15	103.5	98.5
\$1 – 5 billion	14	12	117.3	125.3	9	20.0%	12	14	74.3	92.7
\$501 million – 1 billion	5	5	101.4	114.2	3	4.7%	2	3	100.0	115.0
\$500 million and under	1	1	90.0	90.0	1	20.0%	2	2	92.5	92.5
Public Funds										
Public Funds	41	35	139.9	141.8	29	16.2%	49	43	103.7	100.3
– Federal	1	*	150.0	*	*	*	1	*	150.0	*
– State	9	12	123.0	113.8	8	15.8%	11	12	98.5	91.4
– Municipal	31	23	144.5	156.3	21	16.4%	37	31	104.1	103.8
Over \$5 billion	18	15	153.2	144.3	12	16.8%	20	15	104.1	86.6
\$1 – 5 billion	9	9	144.6	130.0	10	19.0%	11	11	93.1	112.3
\$501 million – 1 billion	6	5	107.8	177.2	2	20.0%	12	10	100.8	98.5
\$500 million and under	8	6	128.8	123.7	5	8.0%	8	8	119.9	110.9
Endowments and Foundations										
Endowments & Foundations	37	47	158.3	157.0	44	16.4%	32	31	117.7	122.1
– Endowments	11	18	135.1	153.4	16	15.7%	10	12	131.1	128.8
– Foundations	26	29	167.5	159.3	28	16.8%	22	19	112.3	117.9
Over \$1 billion	11	10	162.7	171.2	10	15.9%	9	9	130.3	142.8
\$501 million – 1 billion	17	19	156.4	157.9	16	16.6%	15	12	119.1	105.8
\$500 million and under	9	18	156.8	148.2	18	16.4%	8	10	102.6	123.1
Unions										
Unions	17	20	123.5	122.9	18	14.2%	22	25	96.9	97.8
Healthcare										
Healthcare Organizations	9	9	157.2	152.2	10	16.0%	8	7	358.5	131.3
Total Institutions	142	147	142.1	141.6	128	16.0%	146	143	117.1	105.1

Mean fee calculation does not include values of zero or null. Performance fee calculation does include values of zero. Values shown in basis points.

Results are for corporate and union fund defined benefit plan assets, public fund defined benefit plan assets, healthcare organization defined benefit plan assets, and endowment and foundation fund investment pool assets.

Number of Full-Time Equivalents (FTEs) Within Sponsor Organization

U.S. Institutional Investors – Total Interviews (1216) (1059) (1128) (1100)

	Total Institutions				Selecting and Supervising External Managers				Managing Investments Internally				Investment Administrative Services				Benefit Administrative Services			
	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019
Corporate Funds																				
Corporate Funds	592	460	446	447	2.4	3.9	2.9	4.5	3.0	3.2	2.7	2.7	2.3	2.3	2.2	2.2	4.2	3.3	4.1	3.5
Over \$5 billion	120	128	123	128	3.7	3.6	3.9	3.9	5.7	6.0	4.6	2.8	3.3	3.1	2.9	2.6	8.1	5.6	7.1	4.9
\$1 – 5 billion	172	190	181	180	1.5	4.8	2.4	5.9	1.3	1.4	1.5	3.0	1.5	1.8	1.6	1.8	3.9	2.9	3.3	2.8
\$501 million – 1 billion	75	84	80	76	2.3	2.7	2.2	2.3	3.2	3.4	2.5	2.5	2.1	1.5	2.0	1.6	2.0	2.2	2.9	2.8
\$500 million and under	46	58	62	63	2.2	1.9	1.2	1.5	1.5	1.5	1.0	2.0	1.3	2.3	*	1.7	2.9	2.8	3.5	3.0
Public Funds																				
Public Funds	265	246	252	235	5.1	5.9	3.7	6.8	5.8	7.1	4.5	6.0	3.7	4.1	3.4	3.8	15.4	13.8	11.9	15.2
– Federal	6	6	6	5	8.5	8.0	5.7	14.0	*	*	*	*	1.0	1.0	3.0	2.0	6.0	*	*	*
– State	118	94	96	88	6.9	6.8	5.3	9.7	8.2	8.0	6.7	7.3	4.4	5.4	5.4	6.4	34.4	21.3	21.5	31.8
– Municipal	141	146	150	142	3.4	4.7	2.7	4.7	1.7	4.0	2.0	2.0	3.3	3.2	2.0	1.9	7.1	10.1	8.8	9.5
Over \$5 billion	104	102	104	90	9.0	9.7	6.6	10.3	8.2	8.4	8.2	7.3	7.3	7.4	5.4	5.5	42.2	34.9	30.1	39.2
\$1 – 5 billion	64	60	62	52	1.8	2.0	1.8	5.6	2.0	6.0	2.0	2.0	1.5	1.3	1.4	1.4	8.9	9.1	6.3	7.0
\$501 million – 1 billion	42	43	39	43	1.7	2.3	1.5	1.1	1.0	1.0	1.0	*	1.0	1.1	1.7	1.0	3.6	4.0	3.6	3.6
\$500 million and under	36	41	49	51	2.8	2.5	1.7	1.0	*	*	1.0	*	1.2	1.7	1.5	1.0	2.4	1.8	3.0	2.4
Endowments and Foundations																				
Endowments & Foundations	190	188	215	211	2.9	3.5	2.6	3.3	3.1	3.6	3.0	3.1	2.3	3.6	3.4	3.5	3.7	3.1	2.5	3.5
– Endowments	85	70	83	82	3.7	4.3	3.2	4.4	4.1	5.4	4.7	5.0	3.0	4.8	5.2	4.8	5.9	3.3	3.3	5.5
– Foundations	105	118	132	129	2.1	2.6	2.1	2.4	2.1	1.4	1.5	1.4	1.7	2.0	1.9	2.0	1.9	2.5	1.9	2.2
Over \$1 billion	48	54	54	51	4.8	5.3	3.9	5.5	6.0	6.6	5.9	6.4	3.6	5.3	4.8	5.6	4.9	3.5	3.5	5.0
\$501 million – 1 billion	52	50	60	65	2.0	1.8	1.7	1.8	1.8	1.3	1.4	1.4	1.3	1.4	1.6	1.5	1.8	3.3	3.0	3.4
\$500 million and under	79	84	101	95	1.3	1.3	1.2	1.4	2.0	1.2	1.0	1.3	1.4	1.8	2.0	1.8	3.7	1.0	1.0	2.3
Unions																				
Unions	70	70	86	90	4.5	4.1	3.3	4.3	3.0	3.3	1.0	2.0	5.4	5.1	5.5	5.9	43.6	49.3	46.5	39.9
Healthcare																				
Healthcare Organizations	99	95	110	101	1.7	2.2	2.8	2.3	2.8	2.1	1.8	1.5	1.5	2.0	2.2	3.0	3.1	3.2	2.5	2.8
Total Institutions	1,216	1,059	1,128	1,100	3.2	4.0	3.1	4.5	3.5	3.8	3.0	2.8	2.8	3.1	2.9	3.1	9.3	9.0	9.4	9.9

Mean calculation does not include values of zero or null.

Full-time equivalents (FTEs) providing investment administrative services are responsible for performance analysis and reporting. FTEs providing benefit administrative services are responsible for enrollment, benefits determination and payments.

Fees for Investment-Related Administration Service of Defined Benefit Plans and Investment Pools (bps)

U.S. Institutional Investors – Total Interviews (1216) (1059) (1128) (1100)

	Total Institutions				Trust and Custody Fees (bps)				Accounting Fees (bps)				Legal Fees (bps)				Salaries or Administrative Expenses (bps)				Record Keeping (bps)		
	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2017	2018	2019
Corporate Funds																							
Corporate Funds	592	460	446	447	1.6	1.9	1.6	1.6	0.7	0.8	0.5	0.4	0.4	0.6	0.7	0.3	4.3	3.7	2.9	2.9	3.7	2.2	2.4
Over \$5 billion	120	128	123	128	0.8	0.6	0.6	0.6	0.3	0.3	0.2	0.2	0.2	0.1	0.2	0.2	1.1	1.1	0.6	1.2	1.4	0.7	1.4
\$1 – 5 billion	172	190	181	180	1.4	1.9	2.0	1.9	0.8	1.1	0.5	0.3	0.4	0.3	0.6	0.4	5.2	3.9	3.5	3.5	3.2	2.6	2.5
\$501 million – 1 billion	75	84	80	76	2.2	1.9	2.2	2.0	0.6	0.7	1.0	0.7	0.7	1.0	1.3	0.3	5.4	5.5	5.2	2.8	4.7	4.0	3.3
\$500 million and under	46	58	62	63	3.8	5.3	3.4	3.2	1.3	1.2	1.4	1.3	1.6	2.4	2.4	0.5	6.6	7.2	2.8	6.3	10.3	3.8	4.8
Public Funds																							
Public Funds	265	246	252	235	1.4	1.4	1.3	1.2	0.6	0.4	0.4	0.4	0.7	0.5	0.7	0.5	4.7	4.7	5.4	6.3	2.1	1.5	2.6
– Federal	6	6	6	5	1.2	1.4	1.4	*	*	0.2	0.2	*	*	*	*	*	*	0.9	0.9	*	*	*	*
– State	118	94	96	88	0.8	0.9	1.1	1.0	0.3	0.6	0.2	0.6	0.2	0.3	0.2	0.2	2.1	2.4	2.5	4.5	0.4	0.3	1.2
– Municipal	141	146	150	142	1.7	1.6	1.3	1.3	0.6	0.3	0.4	0.4	0.9	0.6	0.8	0.6	6.0	5.5	6.3	6.9	3.0	2.0	3.4
Over \$5 billion	104	102	104	90	0.6	0.4	0.5	0.4	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.2	1.6	1.1	1.8	2.1	1.5	0.7	1.2
\$1 – 5 billion	64	60	62	52	1.2	1.2	1.5	1.2	0.4	0.2	0.4	0.2	0.4	0.3	1.0	0.5	4.7	3.6	5.3	4.2	1.1	2.2	3.9
\$501 million – 1 billion	42	43	39	43	2.1	2.1	1.7	1.5	0.4	0.6	0.6	0.5	1.1	0.8	1.2	0.4	7.2	6.1	7.9	7.2	8.5	3.9	2.8
\$500 million and under	36	41	49	51	2.5	2.6	1.8	2.0	1.4	0.6	0.6	0.7	2.4	2.0	1.9	1.2	13.7	12.9	14.4	17.8	2.3	*	*
Endowments and Foundations																							
Endowments & Foundations	190	188	215	211	2.9	2.8	2.5	2.4	0.9	0.7	1.1	1.2	1.0	0.5	0.4	0.4	8.0	6.6	9.4	9.1	*	*	*
– Endowments	85	70	83	82	2.7	3.2	2.8	2.5	0.8	0.7	1.0	1.0	0.9	0.3	0.3	0.4	8.0	7.1	9.5	8.1	*	*	*
– Foundations	105	118	132	129	3.1	2.5	2.2	2.4	1.0	0.7	1.1	1.2	1.0	0.6	0.4	0.4	8.0	6.3	9.3	9.7	*	*	*
Over \$1 billion	48	54	54	51	3.1	2.2	2.0	1.4	0.5	0.5	0.6	0.5	0.4	0.3	0.2	0.2	4.0	3.8	5.9	7.5	*	*	*
\$501 million – 1 billion	52	50	60	65	2.1	2.5	2.2	2.6	1.0	0.9	1.2	0.9	0.9	0.5	0.4	0.4	6.8	6.8	6.8	6.5	*	*	*
\$500 million and under	79	84	101	95	3.7	3.9	3.7	3.9	1.1	0.8	1.2	2.4	1.3	0.7	0.6	0.6	12.4	9.6	16.8	17.2	*	*	*
Unions																							
Unions	70	70	86	90	0.9	1.0	0.9	1.1	0.6	0.5	0.9	0.7	0.7	0.8	1.6	1.5	4.7	9.2	5.0	4.7	1.4	3.8	1.5
Healthcare																							
Healthcare Organizations	99	95	110	101	1.9	2.3	1.4	2.3	0.7	0.8	1.4	0.3	0.5	0.3	0.3	0.4	3.1	3.8	2.5	2.2	3.3	1.5	0.5
Total Institutions	1,216	1,059	1,128	1,100	1.8	2.0	1.7	1.7	0.7	0.7	0.6	0.6	0.6	0.5	0.7	0.5	5.2	5.1	5.7	6.1	3.3	2.1	2.4

Mean calculation does not include values of zero or null. Values shown in basis points.

Fees for Investment-Related Administration Service of Defined Benefit Plans and Investment Pools (\$K)

U.S. Institutional Investors – Total Interviews (1059) (1128) (1100)

	Total Institutions			Trust and Custody Fees (\$K)			Accounting Fees (\$K)			Legal Fees (\$K)			Salaries or Administrative Expenses (\$K)			Record Keeping (\$K)		
	2017	2018	2019	2017	2018	2019	2017	2018	2019	2017	2018	2019	2017	2018	2019	2017	2018	2019
Corporate Funds																		
Corporate Funds	460	446	447	\$456	\$502	\$578	\$155	\$152	\$131	\$106	\$143	\$144	\$984	\$751	\$1,017	\$786	\$627	\$930
Over \$5 billion	128	123	128	\$841	\$814	\$883	\$297	\$295	\$299	\$207	\$248	\$370	\$1,242	\$1,101	\$1,640	1,478	\$924	1,895
\$1 – 5 billion	190	181	180	\$443	\$432	\$540	\$179	\$96	\$63	\$79	\$98	\$70	\$974	\$606	\$911	\$715	\$549	\$571
\$501 million – 1 billion	84	80	76	\$136	\$146	\$151	\$47	\$77	\$49	\$70	\$83	\$20	\$750	\$338	\$267	\$352	\$243	\$201
\$500 million and under	58	62	63	\$89	\$64	\$89	\$36	\$58	\$47	\$80	\$95	\$20	\$971	\$1,603	\$288	\$249	\$179	\$177
Public Funds																		
Public Funds	246	252	235	\$339	\$332	\$377	\$59	\$81	\$66	\$127	\$186	\$182	\$877	\$1,212	\$1,628	1,415	\$795	1,537
– Federal	6	6	5	\$231	\$231	*	\$29	\$29	*	*	*	*	\$148	\$148	*	*	*	*
– State	94	96	88	\$648	\$664	\$706	\$72	\$185	\$170	\$86	\$239	\$403	\$712	\$1,401	\$3,305	\$457	\$604	3,719
– Municipal	146	150	142	\$244	\$240	\$232	\$59	\$67	\$53	\$136	\$175	\$117	\$947	\$1,189	\$1,069	1,893	\$876	\$446
Over \$5 billion	102	104	90	\$677	\$586	\$899	\$140	\$190	\$287	\$230	\$364	\$463	\$1,314	\$2,143	\$3,953	1,960	1,094	3,719
\$1 – 5 billion	60	62	52	\$268	\$287	\$249	\$37	\$61	\$49	\$84	\$154	\$122	\$849	\$893	\$797	\$180	\$346	\$674
\$501 million – 1 billion	43	39	43	\$154	\$134	\$119	\$41	\$59	\$38	\$59	\$126	\$27	\$458	\$682	\$520	\$834	\$471	\$217
\$500 million and under	41	49	51	\$95	\$78	\$69	\$24	\$26	\$24	\$77	\$77	\$42	\$517	\$594	\$572	\$99	*	*
Endowments and Foundations																		
Endowments & Foundations	188	215	211	\$246	\$233	\$219	\$71	\$73	\$76	\$41	\$28	\$27	\$602	\$605	\$626	*	*	*
– Endowments	70	83	82	\$244	\$290	\$203	\$80	\$101	\$88	\$27	\$25	\$33	\$613	\$740	\$715	*	*	*
– Foundations	118	132	129	\$248	\$191	\$231	\$64	\$62	\$70	\$51	\$29	\$24	\$593	\$544	\$579	*	*	*
Over \$1 billion	54	54	51	\$407	\$414	\$319	\$92	\$103	\$88	\$55	\$28	\$25	\$978	\$904	\$1,270	*	*	*
\$501 million – 1 billion	50	60	65	\$182	\$157	\$181	\$64	\$82	\$64	\$36	\$29	\$32	\$489	\$504	\$494	*	*	*
\$500 million and under	84	101	95	\$133	\$114	\$152	\$37	\$37	\$81	\$29	\$26	\$24	\$371	\$507	\$419	*	*	*
Unions																		
Unions	70	86	90	\$401	\$323	\$500	\$136	\$113	\$160	\$238	\$253	\$348	\$1,308	\$1,067	\$1,235	\$234	\$221	\$213
Healthcare																		
Healthcare Organizations	95	110	101	\$287	\$415	\$409	\$66	\$109	\$149	\$103	\$111	\$190	\$339	\$456	\$654	3,700	\$750	\$800
Total Institutions	1,059	1,128	1,100	\$362	\$372	\$418	\$111	\$108	\$105	\$109	\$143	\$161	\$837	\$891	\$1,161	\$895	\$645	\$952

Mean calculation does not include values of zero or null. Values shown in thousands of dollars.

Hiring Third-Party Discretionary Manager

U.S. Institutional Investors – Total Interviews (1216) (1059) (1128) (1100)

Plans to Hire Third-Party Manager in Next 2 Years

	Base				Yes				No			
	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019
Corporate Funds												
Corporate Funds	*	*	*	320	*	*	*	13%	*	*	*	87%
Over \$5 billion	*	*	*	103	*	*	*	7%	*	*	*	93%
\$1 – 5 billion	*	*	*	129	*	*	*	16%	*	*	*	84%
\$501 million – 1 billion	*	*	*	49	*	*	*	14%	*	*	*	86%
\$500 million and under	*	*	*	39	*	*	*	18%	*	*	*	82%
Public Funds												
Public Funds	*	*	*	180	*	*	*	4%	*	*	*	96%
– Federal	*	*	*	4	*	*	*	*	*	*	*	100%
– State	*	*	*	71	*	*	*	3%	*	*	*	97%
– Municipal	*	*	*	105	*	*	*	5%	*	*	*	95%
Over \$5 billion	*	*	*	78	*	*	*	*	*	*	*	100%
\$1 – 5 billion	*	*	*	39	*	*	*	*	*	*	*	100%
\$501 million – 1 billion	*	*	*	31	*	*	*	6%	*	*	*	94%
\$500 million and under	*	*	*	33	*	*	*	15%	*	*	*	85%
Endowments and Foundations												
Endowments & Foundations	*	*	*	141	*	*	*	6%	*	*	*	94%
– Endowments	*	*	*	56	*	*	*	5%	*	*	*	95%
– Foundations	*	*	*	85	*	*	*	7%	*	*	*	93%
Over \$1 billion	*	*	*	42	*	*	*	5%	*	*	*	95%
\$501 million – 1 billion	*	*	*	44	*	*	*	7%	*	*	*	93%
\$500 million and under	*	*	*	55	*	*	*	7%	*	*	*	93%
Unions												
Unions	*	*	*	43	*	*	*	9%	*	*	*	91%
Healthcare												
Healthcare Organizations	*	*	*	71	*	*	*	1%	*	*	*	99%
Total Institutions	*	*	*	766	*	*	*	8%	*	*	*	92%

Institutional Use of and Hiring for Investment Consultants

U.S. Institutional Investors – Total Interviews (1216) (1059) (1128) (1100)

	Base				Now Use				Have Hired				Expect to Hire			
	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019
Corporate Funds																
Corporate Funds	592	460	446	447	84%	81%	82%	81%	12%	4%	4%	6%	12%	4%	4%	6%
Over \$5 billion	120	128	123	128	63%	68%	72%	74%	4%	2%	3%	4%	4%	2%	3%	4%
\$1 – 5 billion	172	190	181	180	83%	86%	87%	85%	4%	5%	4%	8%	4%	5%	4%	8%
\$501 million – 1 billion	75	84	80	76	89%	87%	84%	82%	8%	6%	6%	11%	8%	6%	6%	11%
\$500 million and under	46	58	62	63	87%	86%	82%	81%	2%	2%	3%	4%	2%	2%	3%	4%
Public Funds																
Public Funds	265	246	252	235	88%	94%	96%	93%	8%	9%	5%	6%	8%	9%	5%	6%
– Federal	6	6	6	5	80%	83%	83%	80%	40%	*	17%	20%	40%	*	17%	20%
– State	118	94	96	88	81%	91%	93%	90%	9%	11%	6%	9%	9%	11%	6%	9%
– Municipal	141	146	150	142	94%	97%	99%	97%	6%	8%	4%	3%	6%	8%	4%	3%
Over \$5 billion	104	102	104	90	76%	92%	91%	90%	9%	12%	5%	7%	9%	12%	5%	7%
\$1 – 5 billion	64	60	62	52	94%	95%	100%	98%	5%	7%	8%	7%	5%	7%	8%	7%
\$501 million – 1 billion	42	43	39	43	95%	98%	100%	91%	5%	5%	5%	9%	5%	5%	5%	9%
\$500 million and under	36	41	49	51	97%	95%	98%	97%	3%	7%	2%	*	3%	7%	2%	*
Endowments and Foundations																
Endowments & Foundations	190	188	215	211	80%	83%	85%	84%	4%	5%	6%	5%	4%	5%	6%	5%
– Endowments	85	70	83	82	78%	81%	83%	85%	7%	7%	5%	6%	7%	7%	5%	6%
– Foundations	105	118	132	129	82%	83%	87%	84%	2%	4%	6%	4%	2%	4%	6%	4%
Over \$1 billion	48	54	54	51	70%	69%	82%	77%	*	8%	6%	7%	*	8%	6%	7%
\$501 million – 1 billion	52	50	60	65	78%	86%	82%	84%	4%	4%	5%	6%	4%	4%	5%	6%
\$500 million and under	79	84	101	95	85%	89%	89%	88%	3%	5%	6%	3%	3%	5%	6%	3%
Unions																
Unions	70	70	86	90	89%	95%	95%	85%	2%	3%	1%	*	2%	3%	1%	*
Healthcare																
Healthcare Organizations	99	95	110	101	89%	95%	95%	96%	9%	8%	8%	9%	9%	8%	8%	9%
Total Institutions	1,216	1,059	1,128	1,100	85%	87%	88%	85%	9%	6%	5%	6%	9%	6%	5%	6%

"Now Use" refers to investment consulting firms providing services (such as asset allocation, manager monitoring, and manager searches) used by U.S. Investors.

"Have Hired" refers to hiring for mandates or assignments in the past 12 months.

"Expect to Hire" refers to anticipated hiring for mandates or assignments in the next 12 months.

Market Coverage by Investment Consultants

U.S. Institutional Investors – Total Interviews (1216) (1059) (1128) (1100)

	Total Institutions				Mean Number of Consultants Used				Percent Solicited				Mean Number of Solicitations			
	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019
Corporate Funds																
Corporate Funds	592	460	446	447	1.3	1.2	1.1	1.1	26%	*	*	*	2.6	*	*	*
Over \$5 billion	120	128	123	128	1.3	1.3	1.2	1.2	18%	*	*	*	2.1	*	*	*
\$1 – 5 billion	172	190	181	180	1.2	1.1	1.1	1.1	24%	*	*	*	2.0	*	*	*
\$501 million – 1 billion	75	84	80	76	1.1	1.1	1.1	1.1	15%	*	*	*	1.8	*	*	*
\$500 million and under	46	58	62	63	1.0	1.0	1.0	1.1	16%	*	*	*	1.9	*	*	*
Public Funds																
Public Funds	265	246	252	235	1.4	1.4	1.2	1.2	21%	*	*	*	2.0	*	*	*
– Federal	6	6	6	5	1.0	1.3	1.3	1.3	*	*	*	*	*	*	*	*
– State	118	94	96	88	1.5	1.4	1.3	1.3	20%	*	*	*	2.3	*	*	*
– Municipal	141	146	150	142	1.3	1.4	1.2	1.1	22%	*	*	*	1.9	*	*	*
Over \$5 billion	104	102	104	90	1.7	1.7	1.4	1.4	13%	*	*	*	2.5	*	*	*
\$1 – 5 billion	64	60	62	52	1.1	1.2	1.1	1.1	29%	*	*	*	1.9	*	*	*
\$501 million – 1 billion	42	43	39	43	1.0	1.1	1.0	1.0	24%	*	*	*	1.9	*	*	*
\$500 million and under	36	41	49	51	1.0	1.0	1.1	1.0	11%	*	*	*	1.8	*	*	*
Endowments and Foundations																
Endowments & Foundations	190	188	215	211	1.2	1.1	1.1	1.1	19%	*	*	*	2.5	*	*	*
– Endowments	85	70	83	82	1.3	1.2	1.1	1.1	21%	*	*	*	2.7	*	*	*
– Foundations	105	118	132	129	1.1	1.1	1.1	1.1	18%	*	*	*	2.3	*	*	*
Over \$1 billion	48	54	54	51	1.6	1.3	1.2	1.2	19%	*	*	*	2.0	*	*	*
\$501 million – 1 billion	52	50	60	65	1.1	1.1	1.1	1.1	16%	*	*	*	2.1	*	*	*
\$500 million and under	79	84	101	95	1.0	1.0	1.0	1.0	19%	*	*	*	2.5	*	*	*
Unions																
Unions	70	70	86	90	1.1	1.2	1.2	1.2	9%	*	*	*	1.7	*	*	*
Healthcare																
Healthcare Organizations	99	95	110	101	1.3	1.1	1.1	1.1	30%	*	*	*	2.9	*	*	*
Total Institutions	1,216	1,059	1,128	1,100	1.3	1.2	1.1	1.1	23%	*	*	*	2.5	*	*	*

Mean calculation does not include values of zero or null.

Fees Paid to 'Most Important' Investment Consultant for Defined Benefit Plans and Investment Pools

U.S. Institutional Investors – Total Interviews (1216) (1059) (1128) (1100)

	Total Institutions				Mean (\$K)			
	2016	2017	2018	2019	2016	2017	2018	2019
Corporate Funds								
Corporate Funds	592	460	446	447	\$333	\$335	\$301	\$311
Over \$5 billion	120	128	123	128	\$600	\$446	\$394	\$460
\$1 – 5 billion	172	190	181	180	\$307	\$368	\$289	\$300
\$501 million – 1 billion	75	84	80	76	\$186	\$161	\$317	\$152
\$500 million and under	46	58	62	63	\$228	\$224	\$187	\$135
Public Funds								
Public Funds	265	246	252	235	\$349	\$334	\$310	\$339
– Federal	6	6	6	5	\$273	\$155	\$155	*
– State	118	94	96	88	\$537	\$413	\$279	\$386
– Municipal	141	146	150	142	\$265	\$300	\$324	\$319
Over \$5 billion	104	102	104	90	\$597	\$535	\$469	\$517
\$1 – 5 billion	64	60	62	52	\$316	\$340	\$336	\$361
\$501 million – 1 billion	42	43	39	43	\$190	\$201	\$152	\$155
\$500 million and under	36	41	49	51	\$147	\$133	\$125	\$131
Endowments and Foundations								
Endowments & Foundations	190	188	215	211	\$268	\$304	\$374	\$397
– Endowments	85	70	83	82	\$247	\$284	\$446	\$473
– Foundations	105	118	132	129	\$285	\$318	\$331	\$349
Over \$1 billion	48	54	54	51	\$389	\$335	\$499	\$481
\$501 million – 1 billion	52	50	60	65	\$283	\$307	\$325	\$426
\$500 million and under	79	84	101	95	\$182	\$271	\$308	\$322
Unions								
Unions	70	70	86	90	\$325	\$238	\$336	\$458
Healthcare								
Healthcare Organizations	99	95	110	101	\$460	\$357	\$388	\$393
Total Institutions	1,216	1,059	1,128	1,100	\$337	\$325	\$329	\$352

Mean calculation does not include values of zero or null. Values shown in thousands of dollars.

U.S. Institutions' Dollar-Weighted Asset Mix of Defined Contribution Plan Assets

U.S. Institutional Investors – Total Interviews (1216) (1059) (1128) (1100)

	Total Institutions			
	2016	2017	2018	2019
Base	207	183	165	171
Company's own Securities	8.6%	8.3%	7.4%	7.4%
U.S. Equities (Active)	16.0%	17.5%	16.3%	15.4%
U.S. Equities (Passive)	18.0%	18.3%	18.9%	17.3%
Total U.S. Equity	42.6%	44.0%	42.6%	40.1%
Int'l. Equities (Active)	4.3%	4.5%	3.4%	3.5%
Int'l. Equities (Passive)	3.0%	2.5%	2.7%	3.3%
Emerging Market Equities	*	0.8%	0.7%	0.8%
Total International Equity	8.0%	7.8%	6.8%	7.6%
Fixed Income	7.9%	7.6%	5.8%	5.8%
Real Estate (incl. REITs)	0.7%	0.6%	0.6%	0.6%
Stable Value Investments / GICs	12.6%	13.2%	12.4%	11.4%
Target Retirement Date	19.0%	19.3%	22.3%	25.3%
Target Risk	0.8%	0.8%	1.3%	1.3%
Traditional Balanced Fund	*	*	*	1.3%
Money Market	2.1%	1.9%	2.0%	1.7%
Private Debt	*	*	*	0.0%
Other	4.2%	3.5%	4.4%	4.8%
Total	100.0%	100.0%	100.0%	100.0%

Percentages are weighted in U.S. dollars and projected to the Greenwich Associates universe of U.S. institutional investors. Projections based only on the assets of institutions disclosing their specific asset allocation. Results are for corporate and union DC plans and public fund DC plans.

*Company's own securities asked of corporate funds only. "Other" includes historical allocations to commodities.

U.S. Corporate Funds' Dollar-Weighted Asset Mix of Defined Contribution Plan Assets

U.S. Institutional Investors – Corporate Funds (413) (460) (446) (447)

	Corporate Funds				Over \$5 billion				\$1 – 5 billion				\$501 million – 1 billion				\$500 million and under			
	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019
Base	168	141	128	138	46	42	40	46	77	64	61	65	28	24	18	19	17	11	9	8
Company's own Securities	10.2%	10.9%	9.4%	9.1%	12.7%	13.2%	11.1%	10.9%	5.4%	5.7%	5.5%	5.1%	4.4%	7.1%	4.7%	5.8%	1.6%	8.1%	2.8%	2.4%
U.S. Equities (Active)	16.6%	16.1%	15.6%	15.1%	14.4%	14.1%	14.5%	12.9%	20.0%	20.4%	18.3%	19.5%	25.5%	22.0%	17.8%	20.6%	21.3%	15.4%	22.1%	26.7%
U.S. Equities (Passive)	17.9%	18.5%	18.6%	17.0%	18.5%	19.4%	19.2%	17.7%	16.7%	16.4%	17.6%	14.7%	14.3%	13.1%	15.9%	16.0%	20.9%	25.3%	15.5%	25.6%
Total U.S. Equity	44.6%	45.5%	43.7%	41.2%	45.6%	46.7%	44.8%	41.6%	42.1%	42.6%	41.4%	39.3%	44.2%	42.1%	38.4%	42.3%	43.8%	48.7%	40.3%	54.7%
Int'l. Equities (Active)	4.3%	4.6%	3.5%	3.7%	3.7%	4.4%	3.0%	3.2%	5.8%	5.3%	4.9%	5.1%	4.6%	4.0%	4.4%	4.5%	5.1%	3.0%	2.8%	1.2%
Int'l. Equities (Passive)	2.2%	2.7%	2.7%	2.7%	2.3%	3.0%	2.8%	3.1%	2.3%	1.9%	2.3%	1.9%	1.6%	1.6%	1.3%	1.0%	1.7%	5.6%	3.3%	2.7%
Emerging Market Equities	0.7%	0.9%	0.7%	0.7%	0.8%	1.0%	0.9%	0.8%	0.6%	0.7%	0.3%	0.3%	0.5%	0.2%	0.2%	0.3%	0.4%	0.5%	0.6%	1.0%
Total International Equity	7.2%	8.2%	6.9%	7.0%	6.7%	8.4%	6.7%	7.1%	8.7%	7.9%	7.5%	7.2%	6.6%	5.8%	6.0%	5.8%	7.2%	9.2%	6.7%	4.9%
Fixed Income	7.7%	6.9%	4.7%	4.8%	7.2%	6.1%	4.0%	4.3%	9.0%	8.9%	6.6%	6.0%	7.9%	6.5%	4.2%	6.4%	6.0%	9.4%	9.1%	6.9%
Real Estate (incl. REITs)	0.5%	0.4%	0.3%	0.4%	0.6%	0.5%	0.2%	0.4%	0.5%	0.4%	0.4%	0.4%	0.0%	0.2%	0.3%	0.0%	0.2%	*	0.1%	0.3%
Stable Value Investments / GICs	11.8%	11.2%	11.6%	10.0%	12.8%	12.2%	12.9%	10.9%	10.4%	9.6%	9.0%	8.5%	6.6%	6.4%	6.2%	6.5%	11.5%	8.8%	8.5%	3.7%
Target Retirement Date	19.7%	20.6%	23.4%	27.6%	19.2%	19.2%	22.2%	26.3%	19.8%	22.6%	25.3%	31.2%	26.1%	31.0%	29.6%	30.0%	15.0%	17.3%	26.9%	22.7%
Target Risk	0.8%	0.8%	1.4%	1.0%	0.5%	0.4%	1.4%	1.3%	1.4%	2.1%	0.8%	0.0%	2.6%	0.3%	5.9%	2.1%	*	*	*	*
Traditional Balanced Fund	*	*	2.1%	1.5%	*	*	1.2%	1.3%	*	*	4.6%	1.9%	*	*	3.7%	3.1%	*	*	3.3%	2.3%
Money Market	2.2%	2.1%	1.5%	1.6%	2.1%	2.2%	1.4%	1.7%	2.7%	2.0%	1.8%	1.1%	2.1%	2.3%	1.4%	1.2%	2.6%	2.1%	2.4%	2.5%
Private Debt	*	*	*	0.0%	*	*	*	*	*	*	*	0.1%	*	*	*	*	*	*	*	*
Other	3.5%	3.0%	4.4%	4.8%	3.4%	3.2%	5.1%	5.1%	3.8%	2.3%	2.5%	4.3%	1.9%	3.2%	4.4%	2.5%	6.4%	1.1%	2.7%	2.1%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Percentages are weighted in U.S. dollars and projected to the Greenwich Associates universe of U.S. institutional investors. Projections based only on the assets of institutions disclosing their specific asset allocation. Results are for corporate DC plans.

*Company's own securities asked of corporate funds only. "Other" includes historical allocations to commodities.

U.S. Public Funds' Dollar-Weighted Asset Mix of Defined Contribution Plan Assets

U.S. Institutional Investors – Public Funds (245) (246) (252) (235)

	Public Funds				Over \$5 billion				\$1 – 5 billion				\$501 million – 1 billion				\$500 million and under			
	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019
Base	22	24	21	18	10	10	12	10	7	9	6	4	3	2	2	3	2	3	1	1
Company's own Securities	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
U.S. Equities (Active)	14.2%	25.3%	19.3%	18.4%	13.3%	25.3%	19.4%	16.9%	20.7%	24.4%	18.5%	25.2%	27.9%	33.4%	15.6%	45.5%	26.9%	19.6%	15.0%	1.0%
U.S. Equities (Passive)	16.4%	14.3%	19.2%	17.0%	16.3%	14.8%	19.8%	18.1%	19.2%	8.1%	14.0%	10.4%	8.3%	5.7%	9.0%	12.2%	15.1%	22.6%	*	47.0%
Total U.S. Equity	30.6%	39.6%	38.5%	35.4%	29.5%	40.1%	39.2%	35.0%	39.8%	32.5%	32.5%	35.6%	36.1%	39.1%	24.6%	57.7%	42.1%	42.2%	15.0%	48.0%
Int'l. Equities (Active)	3.9%	3.9%	2.7%	2.4%	3.7%	3.9%	2.5%	2.1%	5.6%	3.0%	4.2%	3.8%	6.0%	4.6%	3.9%	7.0%	6.8%	5.0%	*	5.0%
Int'l. Equities (Passive)	8.8%	1.3%	3.1%	6.1%	9.4%	1.0%	2.1%	5.9%	4.2%	5.4%	12.4%	7.8%	4.6%	0.8%	0.9%	1.0%	*	6.6%	*	1.0%
Emerging Market Equities	0.9%	0.8%	0.6%	1.6%	1.0%	0.8%	0.6%	1.7%	*	0.6%	0.3%	0.4%	0.5%	*	*	0.2%	2.1%	1.4%	*	*
Total International Equity	13.7%	5.9%	6.3%	10.0%	14.1%	5.7%	5.3%	9.7%	9.7%	9.0%	16.9%	12.0%	11.1%	5.3%	4.8%	8.2%	8.9%	13.0%	*	6.0%
Fixed Income	7.5%	8.9%	9.1%	10.3%	7.0%	8.9%	8.0%	10.1%	12.4%	9.3%	20.5%	11.5%	7.7%	5.1%	2.6%	10.3%	13.3%	16.2%	*	4.0%
Real Estate (incl. REITs)	0.9%	0.7%	1.3%	1.3%	0.6%	0.4%	0.3%	0.3%	3.7%	4.8%	11.1%	8.7%	2.3%	*	*	0.5%	0.8%	2.4%	*	*
Stable Value Investments / GICs	21.2%	21.6%	16.6%	20.2%	22.4%	22.0%	17.8%	21.0%	8.2%	19.7%	5.0%	16.0%	28.7%	6.0%	16.6%	5.9%	15.1%	11.3%	2.0%	8.0%
Target Retirement Date	19.0%	18.3%	20.1%	14.3%	20.0%	19.1%	21.8%	15.8%	13.0%	6.7%	4.0%	3.4%	*	17.1%	8.1%	16.0%	18.3%	13.7%	83.0%	34.0%
Target Risk	1.2%	0.9%	0.9%	3.0%	1.0%	0.8%	0.7%	3.5%	0.5%	0.5%	*	*	13.6%	17.0%	37.5%	*	*	*	*	*
Traditional Balanced Fund	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Money Market	1.9%	0.9%	4.2%	2.0%	1.8%	0.9%	4.5%	2.2%	3.3%	*	1.4%	0.8%	0.5%	6.2%	*	0.2%	0.8%	0.6%	*	*
Private Debt	*	*	*	0.1%	*	*	*	*	*	*	*	0.4%	*	*	*	*	*	*	*	*
Other	4.0%	3.1%	3.0%	3.5%	3.5%	2.1%	2.4%	2.3%	9.3%	17.6%	8.6%	11.6%	*	4.1%	5.8%	1.3%	0.8%	0.6%	*	*
Total	00.0%	00.0%	00.0%	00.0%	00.0%	00.0%	00.0%	00.0%	00.0%	00.0%	00.0%	00.0%	00.0%	00.0%	00.0%	00.0%	00.0%	00.0%	00.0%	00.0%

Percentages are weighted in U.S. dollars and projected to the Greenwich Associates universe of U.S. institutional investors. Projections based only on the assets of institutions disclosing their specific asset allocation. Results are for public fund DC plans.

*Company's own securities asked of corporate funds only. "Other" includes historical allocations to commodities.

Influences on External Manager Selection Decisions - Brand Strength

U.S. Institutional Investors – Total Interviews (1128) (1100)

Brand Strength

	Base		Mean		1 = Least Influential		2		3		4		5 = Most Influential	
	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019
Corporate Funds														
Corporate Funds	(143)	(237)	3.2	3.2	10%	8%	15%	15%	32%	33%	32%	35%	10%	9%
Over \$5 billion	(42)	(58)	3.0	3.1	10%	12%	21%	16%	40%	33%	21%	31%	7%	9%
\$1 – 5 billion	(66)	(86)	3.3	3.2	12%	3%	14%	20%	24%	41%	36%	29%	14%	7%
\$501 million – 1 billion	(21)	(34)	3.3	3.6	10%	3%	10%	6%	33%	29%	38%	50%	10%	12%
\$500 million and under	(14)	(31)	3.3	3.4	7%	10%	7%	13%	43%	19%	36%	42%	7%	16%
Public Funds														
Public Funds	(89)	(128)	3.1	2.9	11%	13%	18%	23%	30%	35%	30%	20%	10%	11%
– Federal	(2)	(4)	4.0	3.4	*	*	*	25%	*	50%	100%	25%	*	25%
– State	(27)	(45)	3.1	2.9	7%	18%	11%	18%	48%	36%	26%	20%	7%	11%
– Municipal	(60)	(79)	3.1	2.9	13%	10%	22%	27%	23%	34%	30%	20%	12%	10%
Over \$5 billion	(31)	(37)	2.9	2.8	6%	16%	26%	19%	39%	41%	26%	22%	3%	5%
\$1 – 5 billion	(29)	(22)	3.0	2.8	17%	9%	17%	27%	24%	45%	31%	14%	10%	5%
\$501 million – 1 billion	(17)	(18)	3.4	2.9	6%	17%	18%	28%	29%	22%	24%	17%	24%	17%
\$500 million and under	(11)	(18)	3.2	3.6	18%	11%	*	11%	27%	6%	55%	50%	*	22%
Endowments and Foundations														
Endowments & Foundations	(79)	(111)	3.0	3.1	19%	9%	14%	20%	29%	29%	23%	34%	15%	8%
– Endowments	(29)	(46)	2.9	3.0	24%	13%	14%	20%	24%	26%	28%	33%	10%	9%
– Foundations	(50)	(65)	3.1	3.2	16%	6%	14%	20%	32%	31%	20%	35%	18%	8%
Over \$1 billion	(22)	(28)	3.2	2.8	5%	21%	18%	21%	41%	21%	23%	29%	14%	7%
\$501 million – 1 billion	(31)	(37)	2.8	3.4	29%	5%	13%	11%	16%	32%	29%	43%	13%	8%
\$500 million and under	(26)	(38)	3.0	3.2	19%	5%	12%	21%	35%	32%	15%	32%	19%	11%
Unions														
Unions	(28)	(30)	3.0	3.0	4%	20%	43%	20%	14%	23%	25%	13%	14%	23%
Healthcare														
Healthcare Organizations	(39)	(56)	3.2	3.1	15%	11%	8%	16%	33%	30%	31%	38%	13%	5%
Total Institutions	(382)	(569)	3.1	3.1	12%	10%	16%	18%	30%	32%	29%	31%	12%	10%

Note: Means exclude "None."

Influences on External Manager Selection Decisions - Fee Competitiveness

U.S. Institutional Investors – Total Interviews (1128) (1100)

Fee Competitiveness

	Base		Mean		1 = Least Influential		2		3		4		5 = Most Influential	
	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019
Corporate Funds														
Corporate Funds	(143)	(240)	4.1	4.3	1%	*	3%	3%	14%	13%	44%	40%	38%	45%
Over \$5 billion	(42)	(61)	4.1	4.0	*	*	5%	7%	10%	18%	55%	41%	31%	34%
\$1 – 5 billion	(66)	(86)	4.1	4.3	2%	*	3%	2%	14%	10%	44%	47%	38%	41%
\$501 million – 1 billion	(21)	(34)	4.3	4.6	*	*	*	*	19%	9%	33%	24%	48%	68%
\$500 million and under	(14)	(31)	4.1	4.5	*	*	7%	*	21%	6%	29%	42%	43%	52%
Public Funds														
Public Funds	(91)	(129)	4.1	4.3	*	*	1%	4%	15%	9%	53%	40%	31%	48%
– Federal	(2)	(4)	4.0	4.4	*	*	*	*	50%	*	*	75%	50%	50%
– State	(28)	(45)	4.1	4.3	*	*	*	4%	18%	7%	54%	44%	29%	44%
– Municipal	(61)	(80)	4.1	4.3	*	*	2%	4%	13%	11%	54%	35%	31%	50%
Over \$5 billion	(31)	(37)	3.9	4.2	*	*	*	8%	29%	8%	52%	41%	19%	46%
\$1 – 5 billion	(29)	(22)	4.3	4.6	*	*	*	*	7%	9%	59%	23%	34%	68%
\$501 million – 1 billion	(18)	(18)	4.3	4.4	*	*	*	*	17%	6%	39%	44%	44%	50%
\$500 million and under	(12)	(19)	4.1	4.3	*	*	8%	5%	*	16%	67%	26%	25%	53%
Endowments and Foundations														
Endowments & Foundations	(79)	(114)	3.5	3.8	3%	3%	13%	3%	29%	26%	44%	49%	11%	19%
– Endowments	(29)	(47)	3.4	3.8	7%	2%	3%	4%	38%	26%	48%	49%	3%	19%
– Foundations	(50)	(67)	3.6	3.8	*	3%	18%	1%	24%	27%	42%	49%	16%	19%
Over \$1 billion	(22)	(29)	3.5	3.5	*	3%	14%	7%	27%	38%	50%	38%	9%	14%
\$501 million – 1 billion	(31)	(38)	3.1	3.7	6%	3%	23%	3%	26%	29%	42%	50%	3%	16%
\$500 million and under	(26)	(38)	3.9	4.0	*	3%	*	*	35%	13%	42%	61%	23%	24%
Unions														
Unions	(28)	(30)	4.3	4.3	*	*	*	*	18%	20%	36%	27%	46%	53%
Healthcare														
Healthcare Organizations	(39)	(55)	4.0	4.2	3%	*	*	*	21%	15%	46%	47%	31%	38%
Total Institutions	(384)	(575)	4.0	4.2	1%	1%	4%	2%	18%	15%	46%	42%	30%	40%

Note: Means exclude "None."

Influences on External Manager Selection Decisions - Commitment to Knowledge Transfer

U.S. Institutional Investors – Total Interviews (1128) (1100)

Commitment to Knowledge Transfer

	Base		Mean		1 = Least Influential		2		3		4		5 = Most Influential	
	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019
Corporate Funds														
Corporate Funds	(140)	(237)	3.4	3.6	6%	2%	12%	12%	31%	31%	36%	38%	14%	17%
Over \$5 billion	(42)	(60)	3.5	3.6	2%	*	12%	12%	29%	28%	45%	45%	12%	15%
\$1 – 5 billion	(64)	(85)	3.2	3.4	9%	2%	16%	12%	31%	36%	33%	38%	11%	12%
\$501 million – 1 billion	(20)	(34)	3.6	3.5	5%	3%	5%	21%	35%	21%	35%	35%	20%	21%
\$500 million and under	(14)	(30)	3.8	3.5	*	*	7%	10%	36%	40%	29%	37%	29%	13%
Public Funds														
Public Funds	(90)	(128)	3.4	3.7	6%	4%	8%	8%	34%	27%	42%	40%	10%	23%
– Federal	(2)	(4)	2.5	4.0	*	*	50%	*	50%	25%	*	50%	*	25%
– State	(28)	(45)	3.8	4.0	*	*	4%	4%	32%	24%	50%	42%	14%	31%
– Municipal	(60)	(79)	3.3	3.5	8%	6%	8%	10%	35%	29%	40%	38%	8%	18%
Over \$5 billion	(30)	(37)	3.3	3.8	7%	3%	13%	8%	27%	22%	47%	41%	7%	27%
\$1 – 5 billion	(29)	(22)	3.4	3.5	7%	5%	7%	5%	34%	41%	38%	41%	14%	9%
\$501 million – 1 billion	(18)	(18)	3.5	3.7	*	*	*	11%	56%	28%	39%	44%	6%	17%
\$500 million and under	(12)	(18)	3.4	3.5	8%	17%	8%	6%	25%	22%	50%	22%	8%	33%
Endowments and Foundations														
Endowments & Foundations	(78)	(113)	3.2	3.3	8%	12%	18%	6%	32%	39%	28%	25%	14%	18%
– Endowments	(29)	(47)	3.4	3.4	3%	9%	24%	6%	24%	34%	28%	36%	21%	15%
– Foundations	(49)	(66)	3.1	3.2	10%	15%	14%	6%	37%	42%	29%	17%	10%	20%
Over \$1 billion	(21)	(28)	3.2	3.2	*	11%	33%	14%	19%	36%	43%	21%	5%	18%
\$501 million – 1 billion	(31)	(38)	3.2	3.2	16%	16%	10%	3%	32%	37%	23%	34%	19%	11%
\$500 million and under	(26)	(38)	3.3	3.3	4%	13%	15%	5%	42%	42%	23%	18%	15%	21%
Unions														
Unions	(28)	(29)	3.5	4.0	4%	*	7%	10%	29%	17%	54%	34%	7%	38%
Healthcare														
Healthcare Organizations	(38)	(55)	3.5	3.5	5%	7%	5%	5%	39%	31%	32%	42%	18%	15%
Total Institutions	(378)	(569)	3.4	3.6	6%	5%	11%	9%	33%	31%	37%	36%	13%	19%

Note: Means exclude "None."

Influences on External Manager Selection Decisions - Willingness and Ability to Customize to Meet Needs

U.S. Institutional Investors – Total Interviews (1128) (1100)

Willingness and Ability to Customize to Meet Needs

	Base		Mean		1 = Least Influential		2		3		4		5 = Most Influential	
	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019
Corporate Funds														
Corporate Funds	(143)	(237)	3.7	3.9	1%	2%	12%	9%	24%	18%	43%	36%	20%	36%
Over \$5 billion	(42)	(60)	3.8	3.9	*	*	7%	12%	26%	22%	45%	33%	21%	33%
\$1 – 5 billion	(67)	(86)	3.7	4.0	1%	1%	12%	6%	21%	22%	48%	36%	18%	35%
\$501 million – 1 billion	(20)	(32)	3.4	4.1	5%	*	15%	6%	35%	19%	25%	38%	20%	41%
\$500 million and under	(14)	(31)	3.6	3.7	*	6%	21%	13%	21%	10%	36%	42%	21%	29%
Public Funds														
Public Funds	(90)	(127)	3.6	4.0	4%	2%	10%	5%	28%	21%	37%	31%	21%	41%
– Federal	(2)	(4)	3.0	4.8	*	*	*	*	100%	*	*	25%	*	75%
– State	(28)	(44)	4.0	4.3	4%	*	4%	2%	18%	20%	43%	25%	32%	52%
– Municipal	(60)	(79)	3.5	3.9	5%	4%	13%	6%	30%	23%	35%	34%	17%	33%
Over \$5 billion	(30)	(36)	4.0	4.2	*	3%	10%	*	17%	19%	40%	33%	33%	44%
\$1 – 5 billion	(29)	(22)	3.4	3.9	10%	*	10%	9%	31%	23%	28%	41%	21%	27%
\$501 million – 1 billion	(18)	(18)	3.4	4.1	*	*	11%	*	39%	33%	44%	28%	6%	39%
\$500 million and under	(12)	(18)	3.3	3.6	8%	11%	8%	17%	33%	11%	42%	22%	8%	39%
Endowments and Foundations														
Endowments & Foundations	(76)	(112)	3.0	3.7	11%	7%	21%	12%	39%	21%	16%	29%	13%	32%
– Endowments	(28)	(46)	3.1	3.8	7%	4%	25%	11%	32%	22%	18%	30%	18%	33%
– Foundations	(48)	(66)	2.9	3.6	13%	9%	19%	12%	44%	20%	15%	27%	10%	32%
Over \$1 billion	(19)	(28)	3.3	3.9	*	7%	21%	7%	42%	14%	21%	36%	16%	36%
\$501 million – 1 billion	(31)	(37)	2.9	3.3	13%	11%	16%	14%	45%	30%	16%	27%	10%	19%
\$500 million and under	(26)	(38)	2.8	3.7	15%	5%	27%	13%	31%	21%	12%	24%	15%	37%
Unions														
Unions	(28)	(29)	4.0	4.1	*	*	11%	3%	18%	21%	29%	41%	43%	34%
Healthcare														
Healthcare Organizations	(38)	(55)	3.6	3.9	5%	5%	11%	5%	21%	18%	42%	33%	21%	38%
Total Institutions	(379)	(567)	3.6	3.9	4%	3%	13%	8%	27%	20%	34%	33%	21%	36%

Note: Means exclude "None."

Approach to Investing – Highly Dynamic and Tactical

U.S. Institutional Investors – Total Interviews (1128) (1100)

Highly Dynamic and Tactical

	Base		Mean		1 = Weak		2		3		4		5 = Strong	
	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019
Corporate Funds														
Corporate Funds	(139)	(237)	2.6	2.7	25%	19%	19%	25%	31%	34%	18%	16%	6%	7%
Over \$5 billion	(38)	(60)	2.4	2.6	32%	25%	21%	23%	24%	30%	18%	13%	5%	8%
\$1 – 5 billion	(65)	(87)	2.8	2.7	18%	16%	22%	30%	34%	31%	18%	15%	8%	8%
\$501 million – 1 billion	(19)	(34)	2.6	2.9	32%	15%	5%	15%	42%	47%	16%	18%	5%	9%
\$500 million and under	(17)	(31)	2.5	2.2	29%	26%	24%	35%	24%	29%	18%	10%	6%	*
Public Funds														
Public Funds	(88)	(128)	2.6	2.8	20%	18%	31%	24%	23%	30%	22%	20%	5%	9%
– Federal	(2)	(4)	2.0	2.3	*	25%	100%	25%	*	50%	*	*	*	*
– State	(28)	(48)	2.8	3.0	18%	8%	29%	29%	21%	25%	25%	25%	7%	13%
– Municipal	(58)	(76)	2.5	2.6	22%	24%	29%	21%	24%	32%	21%	17%	3%	7%
Over \$5 billion	(31)	(37)	2.2	2.8	32%	16%	32%	35%	16%	19%	19%	16%	*	14%
\$1 – 5 billion	(27)	(24)	2.8	2.3	15%	42%	26%	8%	37%	33%	11%	13%	11%	4%
\$501 million – 1 billion	(18)	(17)	2.8	2.5	11%	24%	33%	29%	22%	24%	33%	24%	*	*
\$500 million and under	(11)	(17)	2.9	3.4	18%	*	27%	29%	9%	24%	36%	24%	9%	24%
Endowments and Foundations														
Endowments & Foundations	(79)	(113)	2.6	2.7	27%	21%	24%	29%	22%	18%	15%	22%	13%	10%
– Endowments	(29)	(47)	2.7	2.7	28%	26%	14%	23%	28%	19%	21%	21%	10%	11%
– Foundations	(50)	(66)	2.6	2.7	26%	18%	30%	33%	18%	17%	12%	23%	14%	9%
Over \$1 billion	(22)	(29)	3.0	2.8	18%	24%	23%	17%	18%	21%	23%	28%	18%	10%
\$501 million – 1 billion	(32)	(36)	2.7	2.8	22%	25%	25%	22%	25%	17%	16%	25%	13%	11%
\$500 million and under	(25)	(38)	2.2	2.5	40%	21%	24%	39%	20%	16%	8%	16%	8%	8%
Unions														
Unions	(28)	(32)	2.8	3.1	18%	13%	7%	16%	57%	28%	14%	34%	4%	9%
Healthcare														
Healthcare Organizations	(37)	(51)	2.3	2.9	27%	18%	24%	14%	41%	43%	5%	14%	3%	12%
Total Institutions	(376)	(568)	2.6	2.7	24%	18%	23%	24%	30%	30%	17%	19%	7%	8%

Note: Means exclude "None."

Approach to Investing – Willing to be a Pioneer

U.S. Institutional Investors – Total Interviews (1128) (1100)

Willing to be a Pioneer

	Base		Mean		1 = Weak		2		3		4		5 = Strong	
	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019
Corporate Funds														
Corporate Funds	(138)	(237)	2.3	2.3	29%	31%	29%	27%	27%	26%	9%	12%	7%	4%
Over \$5 billion	(38)	(60)	2.6	2.6	24%	27%	29%	22%	24%	28%	13%	17%	11%	7%
\$1 – 5 billion	(64)	(87)	2.3	2.3	28%	26%	30%	33%	28%	29%	8%	9%	6%	2%
\$501 million – 1 billion	(19)	(34)	2.1	2.1	37%	41%	26%	26%	32%	18%	*	9%	5%	6%
\$500 million and under	(17)	(31)	2.1	1.6	35%	55%	29%	35%	24%	6%	12%	3%	*	*
Public Funds														
Public Funds	(89)	(129)	2.7	2.5	18%	20%	28%	36%	29%	21%	13%	18%	11%	6%
– Federal	(2)	(4)	2.0	1.5	*	75%	100%	*	*	25%	*	*	*	*
– State	(29)	(48)	3.2	2.9	14%	13%	17%	31%	24%	23%	21%	23%	24%	10%
– Municipal	(58)	(77)	2.5	2.4	21%	22%	31%	40%	33%	19%	10%	16%	5%	4%
Over \$5 billion	(31)	(37)	3.2	2.7	10%	19%	26%	30%	26%	22%	16%	22%	23%	8%
\$1 – 5 billion	(28)	(24)	2.6	2.6	18%	21%	36%	38%	25%	13%	11%	21%	11%	8%
\$501 million – 1 billion	(18)	(17)	2.1	2.1	33%	18%	22%	59%	44%	24%	*	*	*	*
\$500 million and under	(11)	(18)	2.7	2.6	18%	22%	27%	22%	18%	33%	36%	17%	*	6%
Endowments and Foundations														
Endowments & Foundations	(78)	(114)	2.7	2.5	23%	22%	28%	32%	17%	27%	21%	10%	12%	9%
– Endowments	(29)	(47)	3.0	2.6	10%	21%	34%	26%	14%	32%	31%	13%	10%	9%
– Foundations	(49)	(67)	2.5	2.4	31%	22%	24%	37%	18%	24%	14%	7%	12%	9%
Over \$1 billion	(22)	(29)	2.8	2.7	18%	14%	23%	28%	27%	41%	23%	7%	9%	10%
\$501 million – 1 billion	(32)	(37)	2.9	2.5	22%	22%	22%	30%	16%	35%	25%	8%	16%	5%
\$500 million and under	(24)	(38)	2.3	2.4	29%	29%	42%	34%	8%	16%	13%	13%	8%	8%
Unions														
Unions	(28)	(32)	3.1	2.8	7%	16%	18%	28%	46%	31%	18%	16%	11%	9%
Healthcare														
Healthcare Organizations	(37)	(52)	2.0	2.3	32%	23%	38%	38%	24%	29%	5%	6%	*	4%
Total Institutions	(373)	(571)	2.5	2.4	24%	25%	29%	32%	27%	26%	13%	12%	8%	6%

Note: Means exclude "None."

Approach to Investing – Expert and Well Resourced

U.S. Institutional Investors – Total Interviews (1128) (1100)

Expert and Well Resourced

	Base		Mean		1 = Weak		2		3		4		5 = Strong	
	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019
Corporate Funds														
Corporate Funds	(138)	(242)	3.8	3.8	3%	1%	6%	6%	27%	27%	41%	40%	24%	25%
Over \$5 billion	(38)	(63)	4.1	3.8	*	2%	3%	8%	18%	21%	50%	44%	29%	25%
\$1 – 5 billion	(65)	(88)	3.7	3.8	3%	1%	8%	6%	31%	33%	37%	35%	22%	25%
\$501 million – 1 billion	(18)	(34)	3.7	3.9	6%	3%	6%	3%	28%	24%	33%	44%	28%	26%
\$500 million and under	(17)	(30)	3.6	3.6	6%	*	6%	10%	29%	37%	41%	37%	18%	17%
Public Funds														
Public Funds	(89)	(128)	3.6	3.8	3%	5%	10%	9%	33%	24%	31%	32%	22%	30%
– Federal	(2)	(4)	3.5	4.3	*	*	*	*	50%	25%	50%	25%	*	50%
– State	(29)	(47)	3.7	3.9	3%	2%	10%	6%	31%	19%	28%	40%	28%	32%
– Municipal	(58)	(77)	3.6	3.6	3%	6%	10%	10%	33%	27%	33%	27%	21%	29%
Over \$5 billion	(31)	(36)	3.7	3.9	*	3%	6%	8%	42%	14%	26%	44%	26%	31%
\$1 – 5 billion	(28)	(24)	3.4	3.5	7%	4%	18%	13%	25%	42%	29%	13%	21%	29%
\$501 million – 1 billion	(18)	(17)	3.7	3.2	*	18%	11%	6%	33%	35%	28%	24%	28%	18%
\$500 million and under	(11)	(18)	3.5	4.1	9%	*	*	17%	27%	6%	55%	33%	9%	44%
Endowments and Foundations														
Endowments & Foundations	(79)	(113)	3.6	4.0	6%	4%	14%	5%	20%	17%	32%	36%	28%	38%
– Endowments	(28)	(46)	4.0	4.1	*	2%	11%	7%	11%	13%	43%	33%	36%	46%
– Foundations	(51)	(67)	3.4	3.9	10%	4%	16%	4%	25%	19%	25%	39%	24%	33%
Over \$1 billion	(23)	(28)	3.7	4.1	4%	4%	9%	*	26%	25%	30%	21%	30%	50%
\$501 million – 1 billion	(32)	(37)	3.6	3.8	9%	3%	13%	11%	16%	14%	34%	46%	28%	27%
\$500 million and under	(24)	(38)	3.5	4.0	4%	5%	21%	5%	21%	16%	29%	34%	25%	39%
Unions														
Unions	(28)	(32)	3.6	4.2	7%	*	4%	9%	43%	13%	11%	31%	36%	47%
Healthcare														
Healthcare Organizations	(37)	(54)	3.7	3.9	5%	*	8%	9%	30%	28%	27%	31%	30%	31%
Total Institutions	(376)	(576)	3.7	3.9	4%	2%	9%	7%	28%	24%	33%	36%	26%	31%

Note: Means exclude "None."

Approach to Investing – Reliant Upon External Advice

U.S. Institutional Investors – Total Interviews (1128) (1100)

Reliant Upon External Advice

	Base		Mean		1 = Weak		2		3		4		5 = Strong	
	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019
Corporate Funds														
Corporate Funds	(142)	(240)	3.8	3.7	6%	8%	8%	10%	18%	18%	35%	30%	32%	34%
Over \$5 billion	(39)	(61)	3.1	3.2	13%	13%	26%	20%	18%	20%	28%	26%	15%	21%
\$1 – 5 billion	(66)	(89)	4.0	3.8	5%	6%	2%	4%	18%	22%	42%	35%	33%	33%
\$501 million – 1 billion	(20)	(34)	4.1	4.3	5%	6%	5%	3%	10%	6%	40%	29%	40%	56%
\$500 million and under	(17)	(30)	4.4	4.2	*	3%	*	3%	24%	17%	18%	27%	59%	50%
Public Funds														
Public Funds	(87)	(128)	4.0	3.7	1%	4%	6%	14%	17%	16%	44%	38%	32%	29%
– Federal	(2)	(4)	4.0	2.8	*	*	*	50%	*	25%	100%	25%	*	*
– State	(28)	(47)	3.7	3.4	4%	6%	11%	15%	14%	26%	54%	34%	18%	19%
– Municipal	(57)	(77)	4.1	3.9	*	3%	4%	12%	19%	10%	37%	40%	40%	36%
Over \$5 billion	(31)	(36)	3.8	3.5	3%	6%	6%	17%	16%	19%	52%	42%	23%	17%
\$1 – 5 billion	(26)	(22)	4.1	4.0	*	5%	8%	9%	15%	9%	35%	36%	42%	41%
\$501 million – 1 billion	(18)	(18)	4.1	4.4	*	*	*	6%	22%	*	44%	44%	33%	50%
\$500 million and under	(11)	(19)	4.0	4.1	*	*	9%	16%	18%	5%	36%	37%	36%	42%
Endowments and Foundations														
Endowments & Foundations	(81)	(111)	3.6	3.5	9%	9%	14%	14%	17%	18%	35%	32%	26%	26%
– Endowments	(28)	(45)	3.5	3.3	7%	9%	11%	22%	29%	18%	29%	31%	25%	20%
– Foundations	(53)	(66)	3.6	3.7	9%	9%	15%	9%	11%	18%	38%	33%	26%	30%
Over \$1 billion	(23)	(28)	3.2	2.9	9%	14%	17%	25%	30%	29%	35%	18%	9%	14%
\$501 million – 1 billion	(32)	(35)	3.5	3.5	13%	11%	13%	11%	16%	14%	34%	46%	25%	17%
\$500 million and under	(26)	(38)	4.0	4.0	4%	5%	12%	8%	8%	18%	35%	21%	42%	47%
Unions														
Unions	(29)	(32)	3.5	3.9	3%	6%	24%	6%	24%	22%	14%	19%	34%	47%
Healthcare														
Healthcare Organizations	(37)	(53)	3.9	4.1	3%	2%	11%	2%	11%	23%	43%	34%	32%	40%
Total Institutions	(381)	(571)	3.8	3.7	5%	6%	10%	11%	17%	18%	36%	32%	31%	32%

Note: Means exclude "None."

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2019 NCPERS Public Retirement Systems Study Report

2019 NCPERS Public Retirement Systems Study

January 22, 2020

Study conducted by the
National Conference on Public Employee Retirement Systems and
Cobalt Community Research

Table of Contents



This study reviews funds' current fiscal condition and steps they are taking to ensure fiscal and operational integrity.

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Overview

Over the last nine years, funds continue to take a serious look at the concerns and challenges that face public pensions. They continue to take serious actions to address them.

About Cobalt Community Research

Cobalt Community Research is a nonprofit research coalition created to help governments and other nonprofit organizations optimize value to their constituents. Cobalt provides high-quality tools to help them measure, benchmark, and manage their efforts through geofencing, population segmentation, and affordable evaluations. Cobalt is headquartered in Charlotte, Michigan.

Executive Summary

From September to December 2019, the National Conference on Public Employee Retirement Systems (NCPERS) undertook a comprehensive study exploring retirement practices of the public sector. In partnership with Cobalt Community Research, NCPERS has collected and analyzed the most current data available on funds' fiscal condition and steps they are taking to ensure fiscal and operational integrity.

The *2019 NCPERS Public Retirement Systems Study* includes responses from 155 state and local government pension funds with more than 12.6 million active and retired members and assets exceeding \$1.4 trillion in actuarial and market value. The majority (62 percent) were local pension funds, while 38 percent were state-wide pension funds.

NCPERS is the largest trade association for public-sector pension funds, representing approximately 500 funds throughout the United States and Canada. We are a unique network of public trustees, administrators, public officials, and investment professionals who collectively oversee nearly \$3 trillion in retirement funds managed on behalf of seven million retirees and nearly 15 million active public servants - including firefighters, law enforcement officers, teachers, and other public servants.

Founded in 1941, NCPERS is the principal trade association working to promote and protect pensions by focusing on advocacy, research, and education for the benefit of public-sector pension stakeholders.

To access the interactive *2019 NCPERS Public Retirement Systems Study* dashboard, please contact Amanda Rok, communication and social media manager, at Amanda@NCPERS.org.

To view previous editions of this report, please visit www.NCPERS.org/surveys.

2019 Key Findings

1. The overall average expense for all respondents to administer the funds and to pay investment manager fees is 55 basis points (100 basis points equals 1 percentage point). This is down from 60 basis points in the prior year. According to the *2019 Investment Company Fact Book*, the expenses of most equity funds average 55 basis points and those of hybrid funds average 66 basis points.
2. Reporting funds saw, on average, one-year returns around 4.5 percent. The five-year and 10-year average returns also hovered near or above the assumed rate of return, and the 20-year returns generally outperformed the assumed rate of return. The timing of the fiscal year-end accounts for significant difference in investment experience between funds. Funds that have a December fiscal year-end date saw one-year returns much lower than those closing at other times. Consequently, the average funded level is 71.7 percent, down from 72.6 percent in 2018.
3. The average assumed rate of return on investment for responding funds is 7.24 percent, compared with 7.34 percent last year. The inflation assumption is 2.8 percent, which is about the same as last year.
4. About 82 percent of all responding funds are considering lowering or have lowered their assumed rate of return, and 51 percent are implementing or considering higher benefit age/service requirements. Raising employee contributions continues to be a prominent strategy as well. According to the 2019 study, 55 percent of respondents do not include overtime in the benefit calculation, which is 6 percent lower than last year.
5. The average cost-of-living adjustment (COLA) offered to members was 1.6 percent, which is slightly lower than in 2018. Many responding funds did not offer a COLA in the most recent fiscal year.
6. About 72 percent of funds do not think the Supreme Court *Janus v AFSCME Council 31* case regarding the power of labor unions to collect fees from non-union members will have an impact on them.
7. While 63 percent of respondents noted that they are not having a problem attracting and retaining skilled staff as people retire, about 27 percent are starting to experience or anticipate a problem in this area.
8. Responding funds were asked if they offer a health plan. In 2019, about 52 percent offered a plan or subsidy, while about 48 percent of funds did not. In 2018, about 46 percent offered such benefits, and 54 percent did not. For funds responding in both study years, we saw a 6 percent drop in traditional coverage to 26 percent, with data suggesting a transition to a health savings account (HSA) strategy.

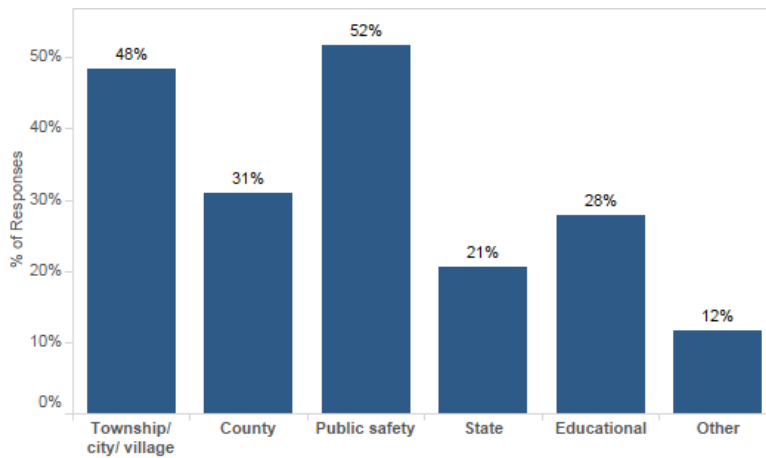
Who Responded

There were 155 public retirement funds that responded to the *2019 NCPERS Public Retirement Systems Study*. There were 167 respondents in 2018. Of the 155 respondents, 90 also completed the study in 2018.

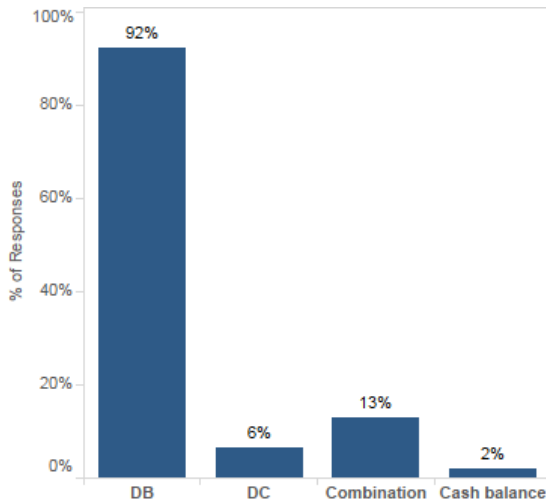
About 48 percent of all 2019 responding funds serve township, city, and village employees and beneficiaries. About 52 percent of the responding funds serve police and fire employees. The top graph shows the distribution of employee types served by the funds. The bottom graph shows response by type of plan provided. Totals may exceed 100 percent because of multiple responses.

The overall distribution of responding funds is similar to prior years.

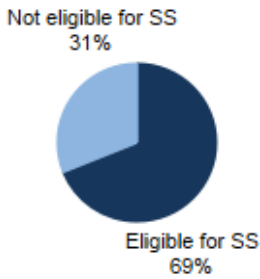
Employee/Retiree Type



Type of Plan

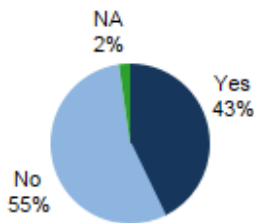


Members' Social Security Eligibility



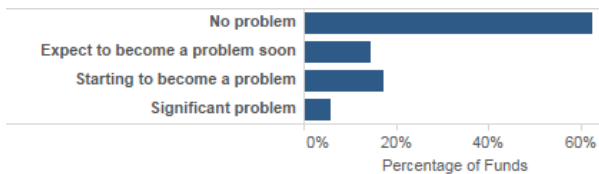
About 69 percent of responding funds have members who are eligible for Social Security, and 31 percent have members who are not eligible. In this report, breakdowns are presented for plans by their members' Social Security eligibility. Funds whose members are not eligible for Social Security tend to offer higher levels of benefits to make up for the loss of income typically supplemented by Social Security.

Includes Overtime in Benefit Calculation



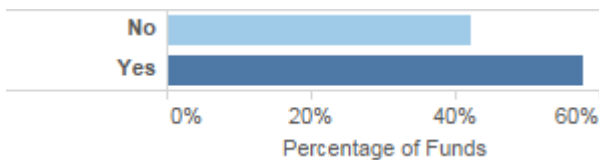
Inclusion of overtime in the calculation of a retirement benefit has been an area of interest to public funds. According to the 2019 study, 55 percent of respondents do not include overtime in the benefit calculation, which is 6 percent more than last year.

Attracting/Retaining Skilled Staff



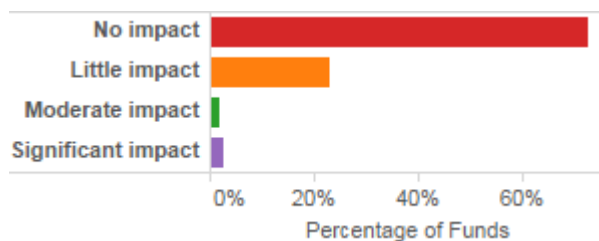
While 63 percent of respondents note that they are not having a problem attracting and retaining skilled staff as people retire, about 27 percent are starting to experience or anticipate a problem in this area.

Call and Vote via Conference Call



The ability for board members to participate and vote by phone has slipped from 69 percent in 2018 to 58 percent. When looking only at funds that participated both years, the decline was only about 2 percent.

Impact of Janus v AFSCME Council 31 Case



About 72 percent of funds do not think the Supreme Court case regarding the power of labor unions to collect fees from non-union members will have an impact on them.

Fund Confidence

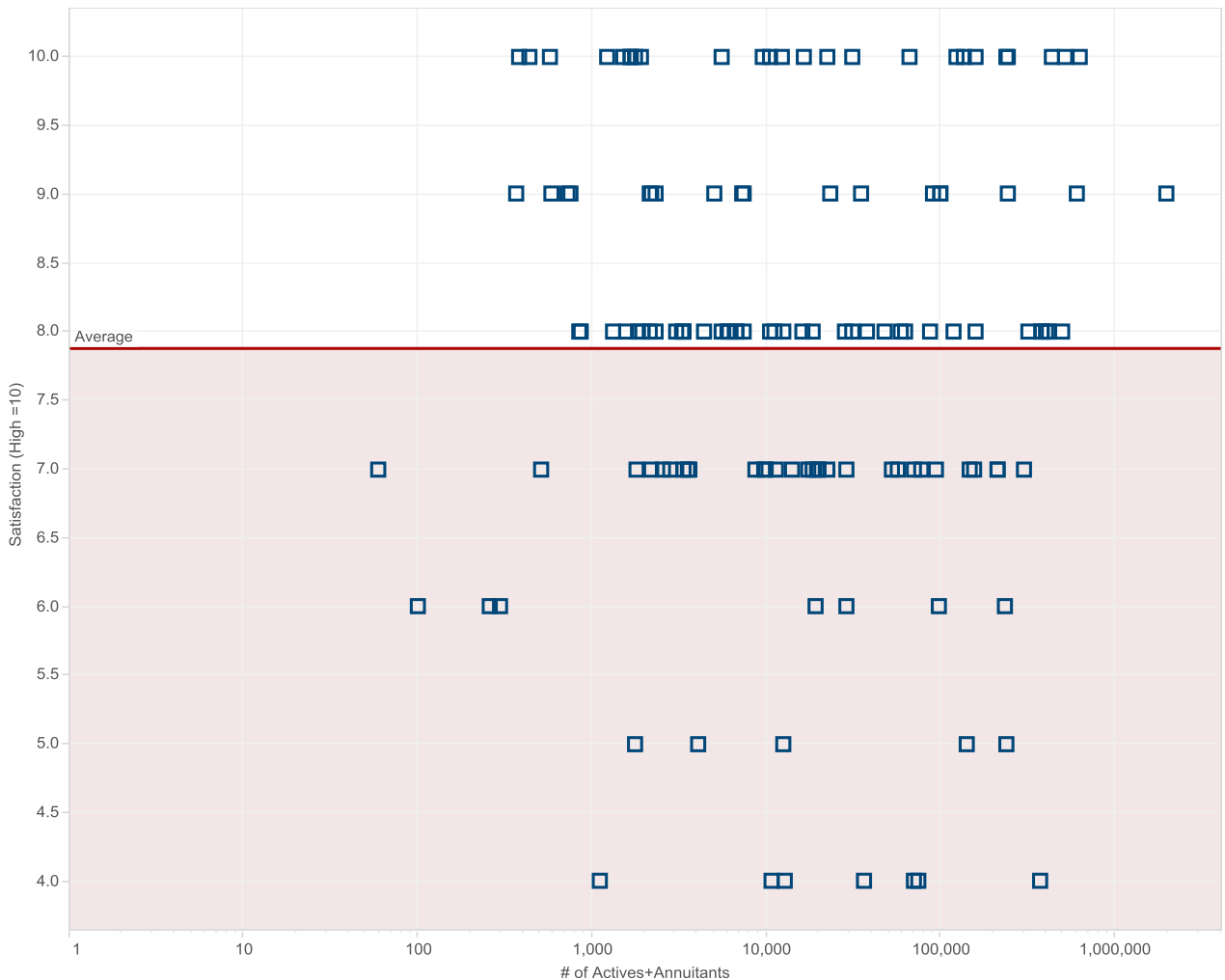
The study asked respondents, “How satisfied are you with your readiness to address retirement trends and issues over the next two years?” Respondents provided an overall “confidence” rating of 7.9 on a 10-point scale (very satisfied = 10). This is slightly below the 8.1 reported last year and well above the 7.4 in 2011. Funds that also responded to last year’s study saw an increase in confidence from 8.0 to 8.1.

Over the last nine years, responding funds have generally become increasingly confident in their ability to adapt and address issues in this volatile environment surrounding public pensions.

Responding funds have been proactive in making changes to their plan assumptions and benefits to ensure sustainability.

Social Security-eligible and non-eligible funds rated this question 7.9 and 8.1, respectively. Funds with 10,000 to 100,000 participants rated this question 7.6.

Fund Confidence



Expenses

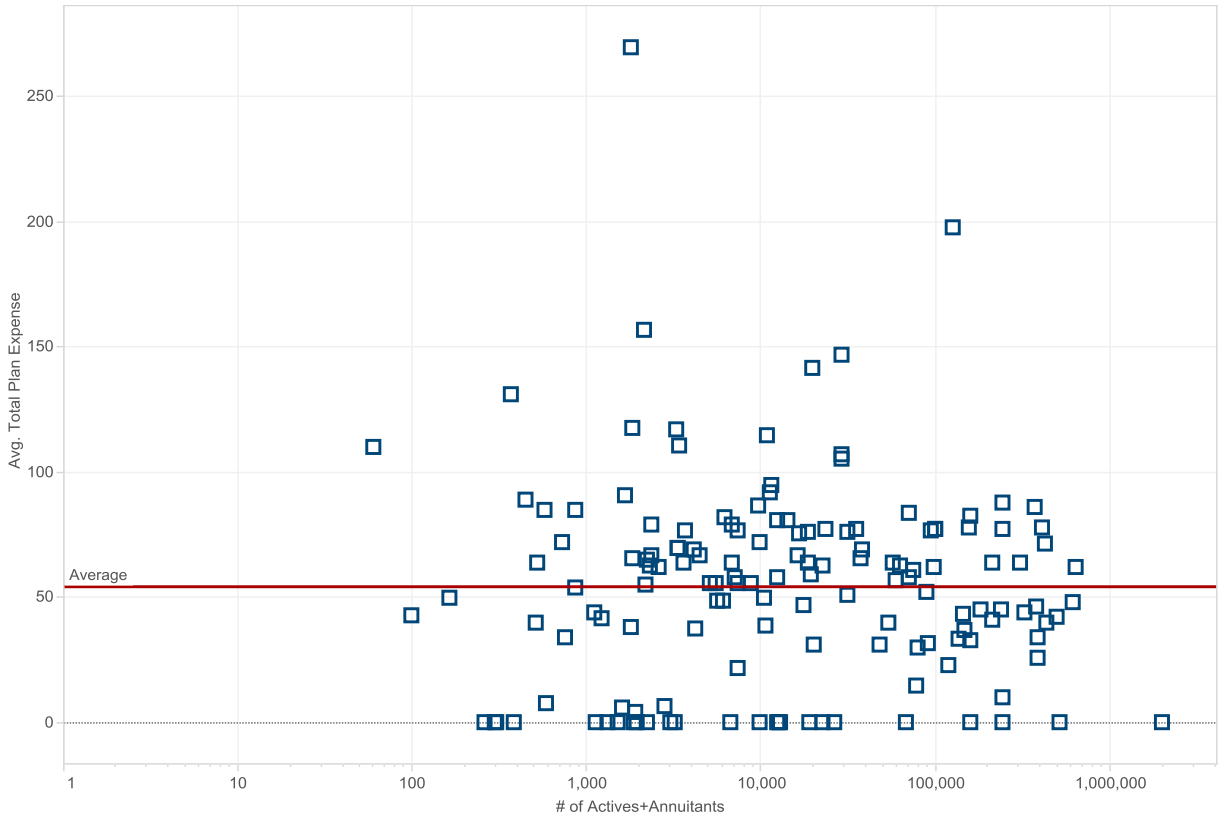
The overall average expense for all respondents to administer the funds and to pay investment manager fees is 55 basis points (100 basis points equals 1 percentage point). This is down from 60 basis points in the prior year.

According to the *2019 Investment Company Fact Book*, the expenses of most equity funds average 55 basis points and those of hybrid funds average 66 basis points.

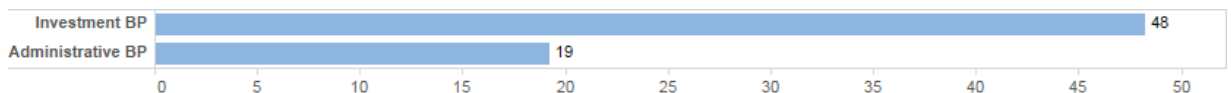
The top graph shows the distribution of total expenses (in basis points) on the vertical axis and the size of the fund (by total participants) on the horizontal. The red line represents average expense.

The bottom graph shows average administrative and investment expenses. Note: The averages below do not total the average expense above because not all funds reported both investment and administrative numbers.

2019 Total Fund Expense by Fund Size

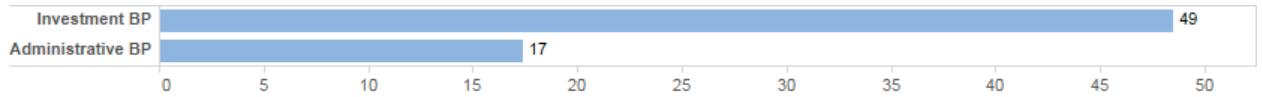


2019 Study Fund Expenses (Basis Points)

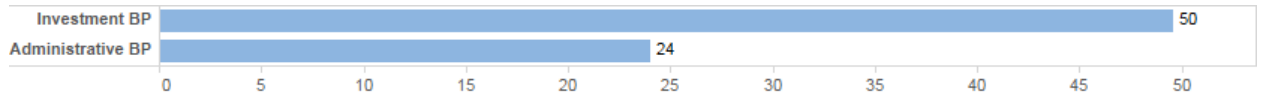


The graphs below show expenses separated by funds eligible for Social Security and those not Social Security eligible. Total expenses in basis points were 57 and 63, respectively. Administrative expenses were above last year's level for non-Social Security-eligible funds.

Fund Expenses: Social Security Eligible

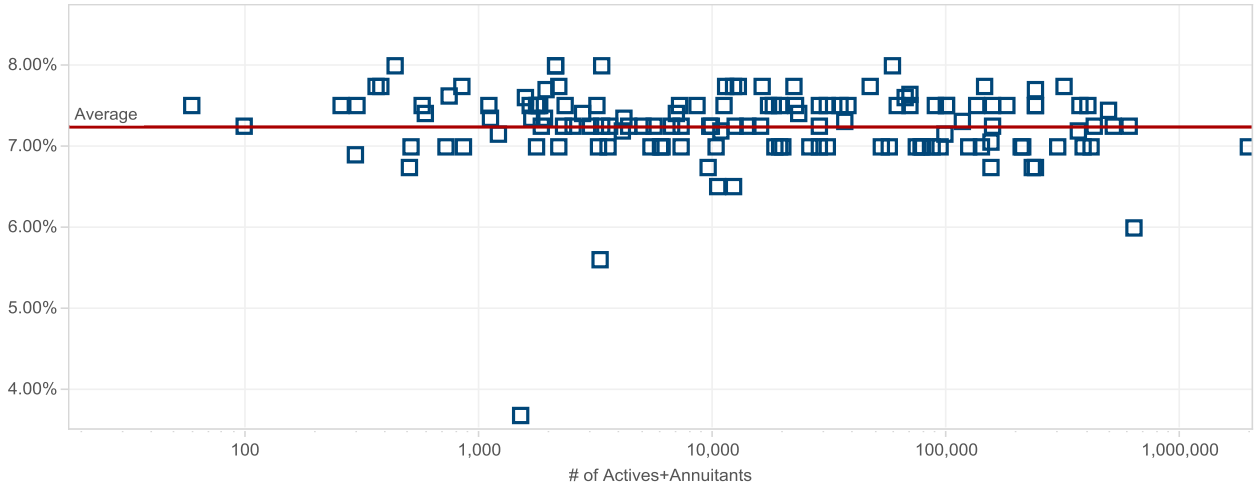


Fund Expenses: Not Social Security Eligible



Actuarial Assumptions

Investment Assumptions



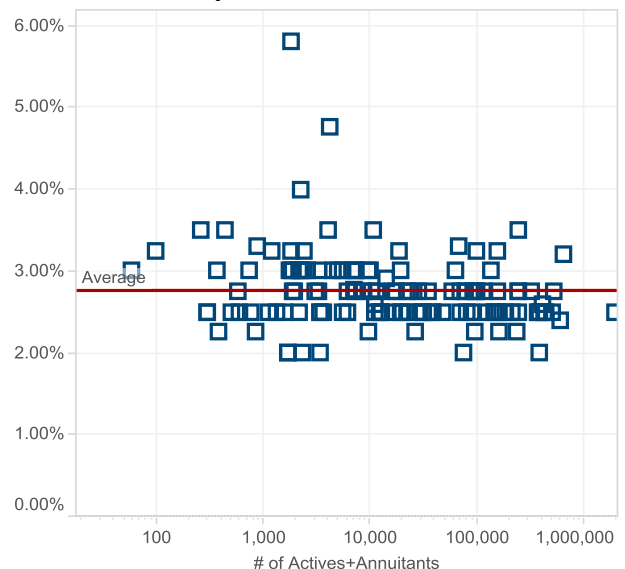
Retirement funds utilize a long-term planning horizon to ensure liabilities are fully funded at the time they are due to be paid. To help set contribution rates and measure progress toward meeting their financial obligations, funds make actuarial assumptions to estimate what investment and demographic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

Such assumptions have powerful effects on the funded 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.

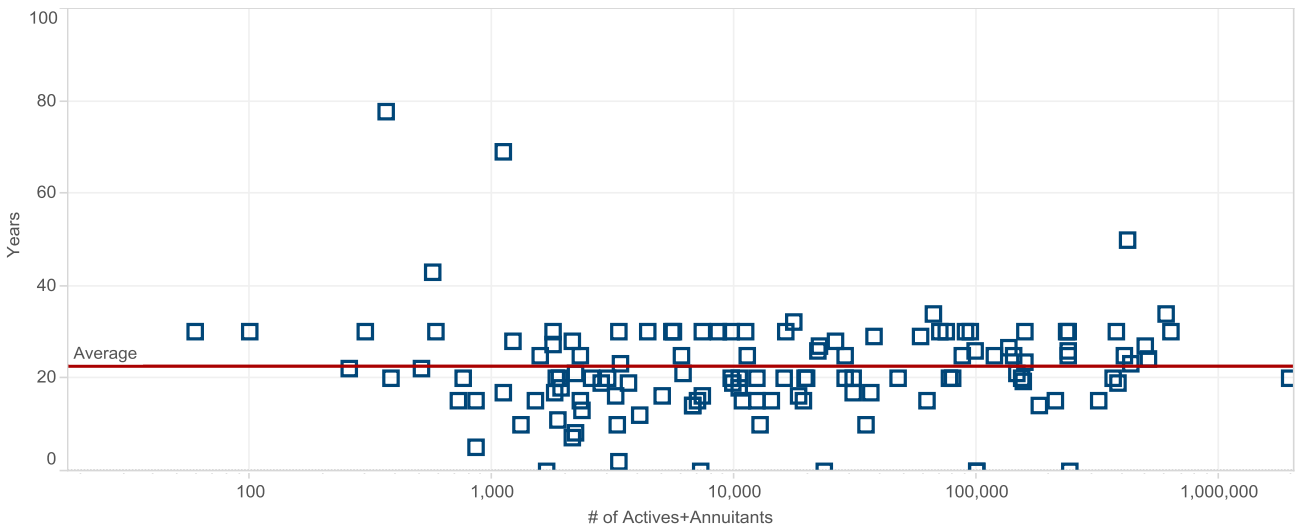
The average assumed rate on investment return for responding funds is 7.24 percent, compared with 7.34 percent last year. Plans that responded both years saw the assumption fall 0.05 percent to 7.25 percent.

The aggregated inflation assumption is 2.8 percent, which is about the same as last year.

Inflation Assumption



Amortization Period



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

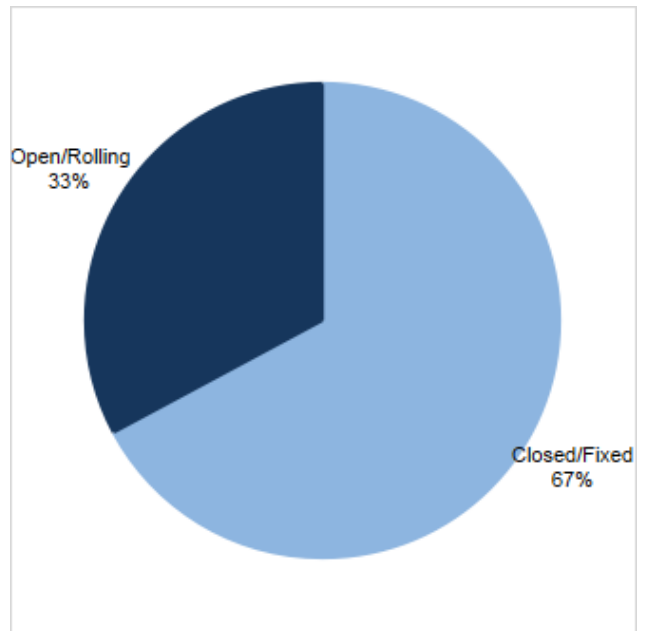
For responding funds, that period of time averages 22.4 years, which is the same as last year.

Groups can tighten their amortization period by adjusting the period in years or using a fixed (or closed) method, which pays all liabilities in a fixed time frame.

Open (or rolling) amortization periods are used to determine the actuarially required payment, but they are recalculated each year. The same number of years is used in determining the payment each year. Overall, the percentage of closed/fixed funds fell from 73 percent to 67 percent; however, funds participating in both survey years show a steady use of 73 percent.

Larger funds are much more likely to have closed/fixed amortization periods.

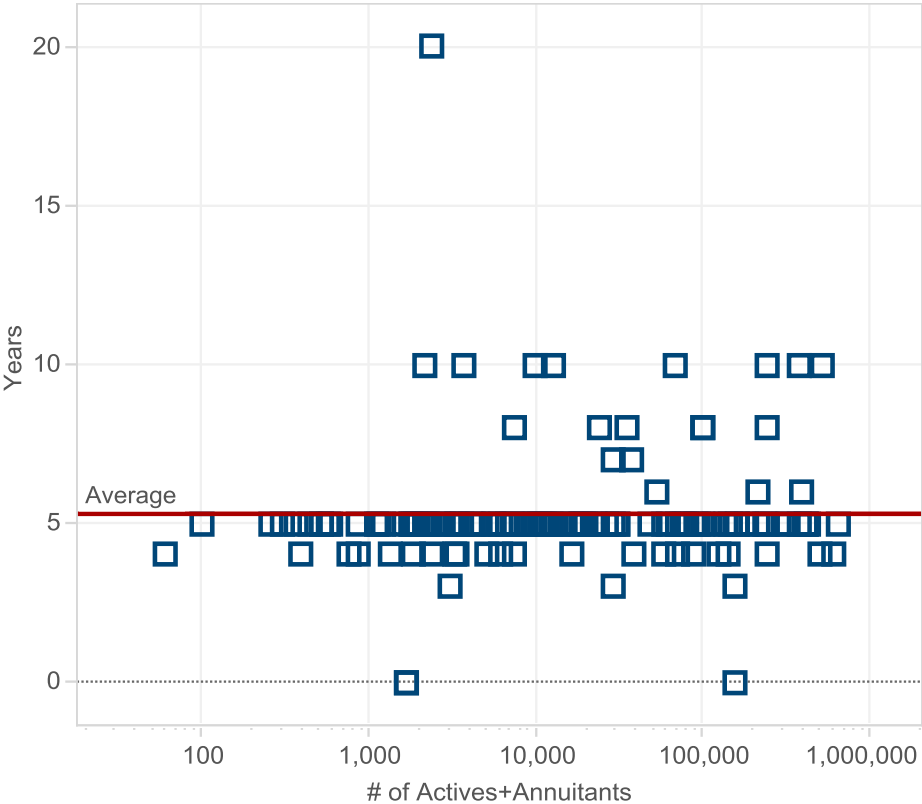
Type of Amortization Period



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. This helps stabilize contribution levels over time without undermining the long-term integrity of the funding mechanism.

The average investment-smoothing period for respondents rose to 5.3 years from 5.1 years last year, but it remained at 5.2 for respondents to both the 2018 and 2019 studies. The distribution of responding funds on the graph below shows the majority smoothing periods of five years or less. For Social Security-eligible funds, the smoothing period averages 5.5 years. Non-Social Security-eligible funds have an average smoothing period of 4.7 years.

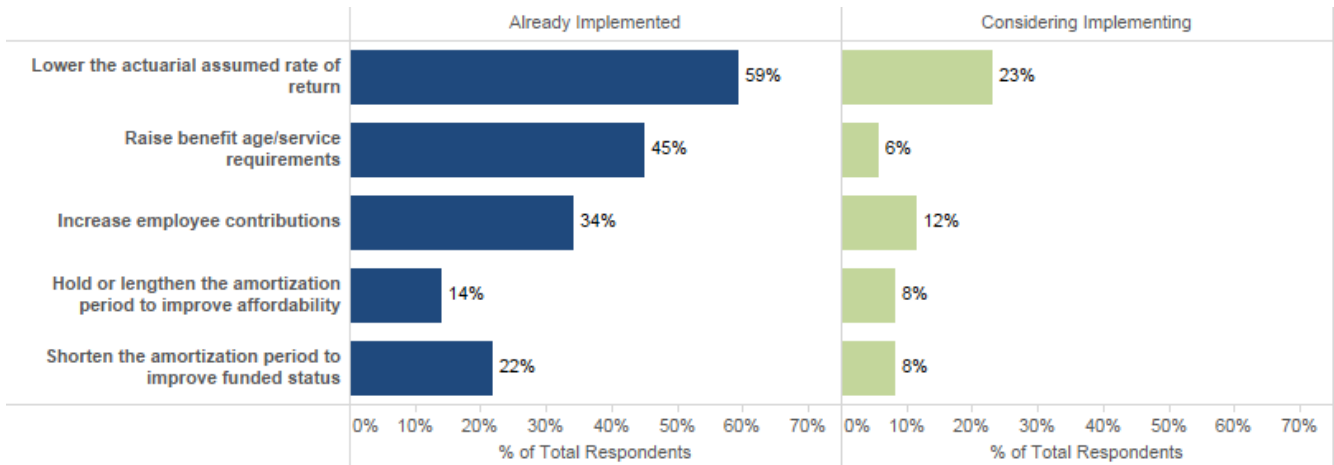
Investment Smoothing



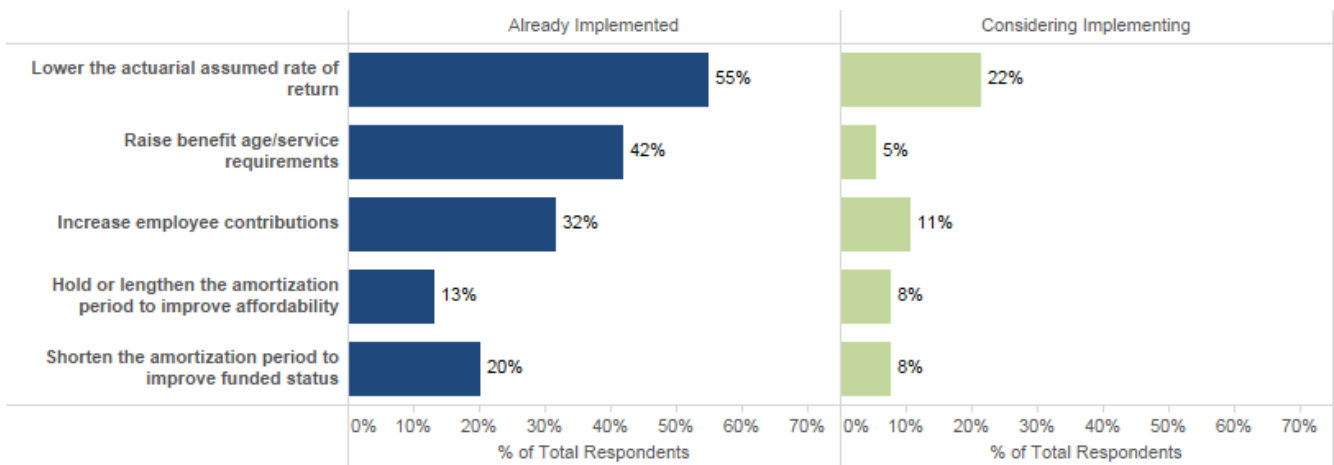
Trends in Plan Changes

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 funds. It is important to note that 82 percent of all responding funds are considering lowering or have lowered their actuarial assumed rate of return, and 51 percent are implementing or considering higher benefit age/service requirements. Raising employee contributions continues to be a prominent strategy as well.

2019



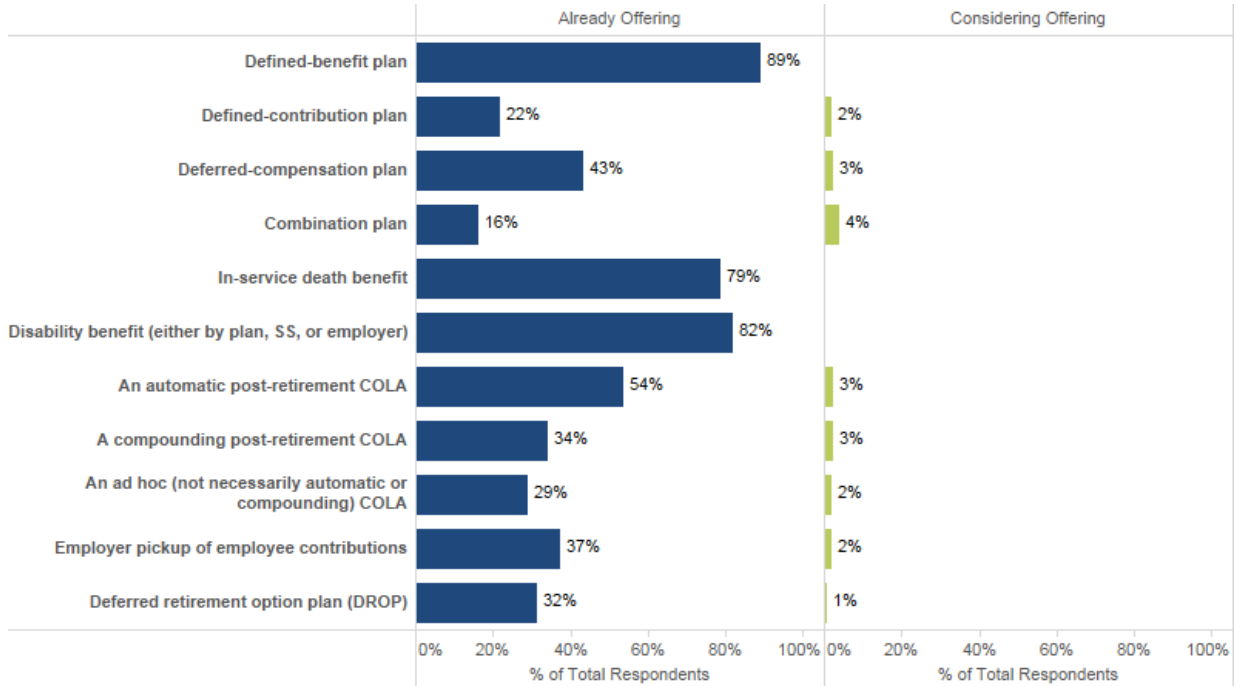
2018



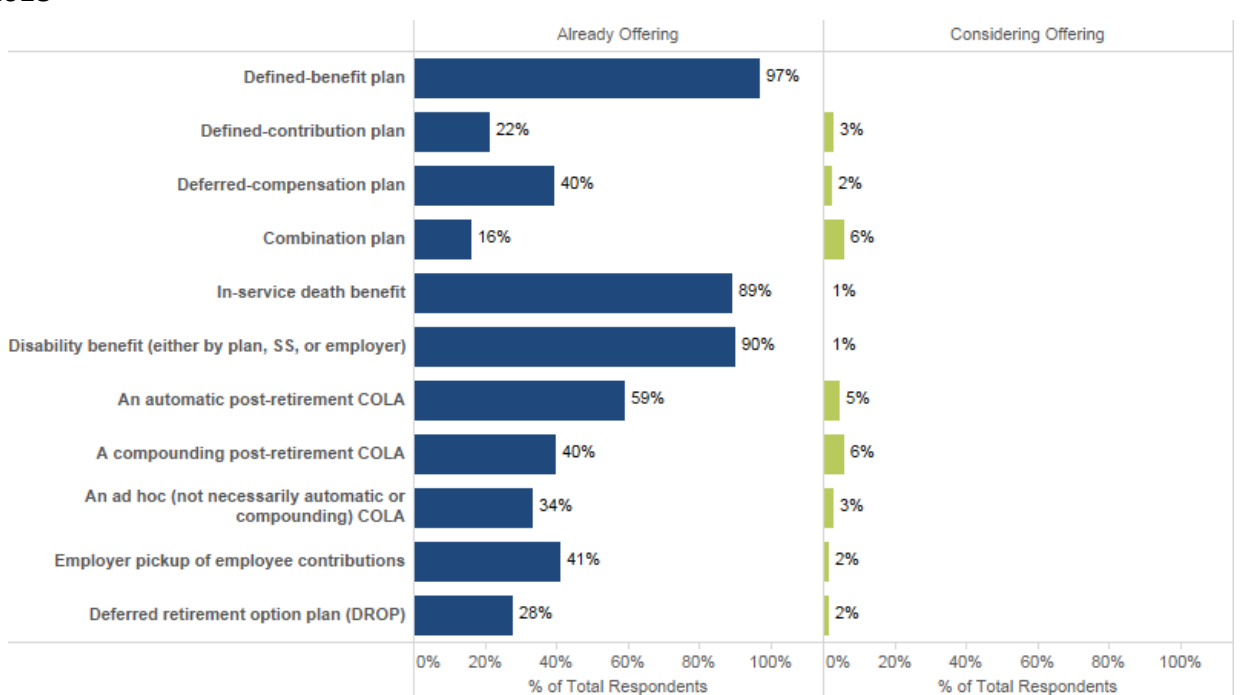
Trends in Retirement Benefits

There is minimal activity in terms of responding funds considering offering additional benefits to their members. Most funds provide a disability benefit, an in-service death benefit, and some variation of a cost-of-living adjustment (COLA). Overall, nine percent fewer respondents are offering a defined-benefit (DB) plan; however, funds responding in 2018 and 2019 show a slight increase year over year.

2019



2018

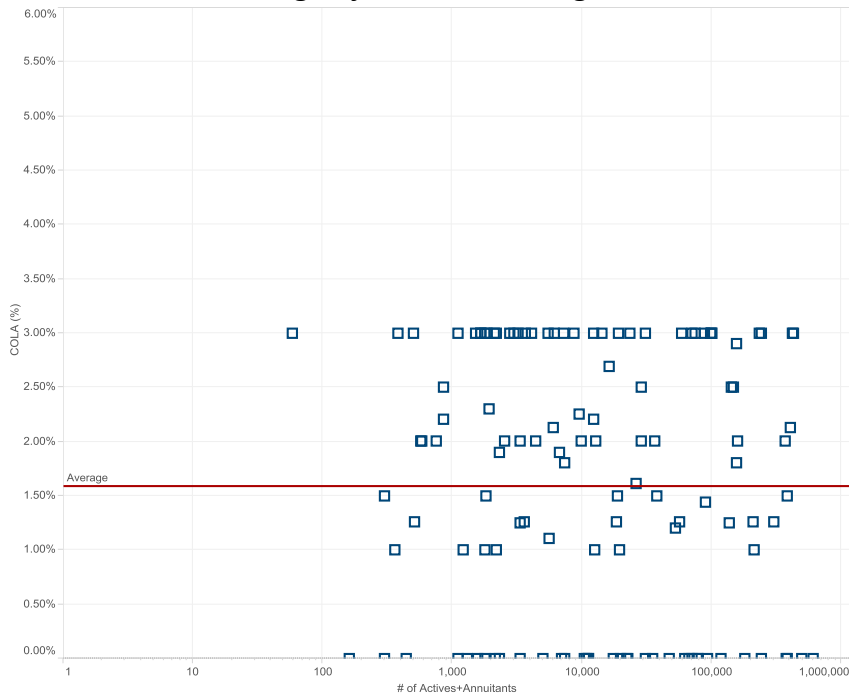


Cost-of-Living Adjustments

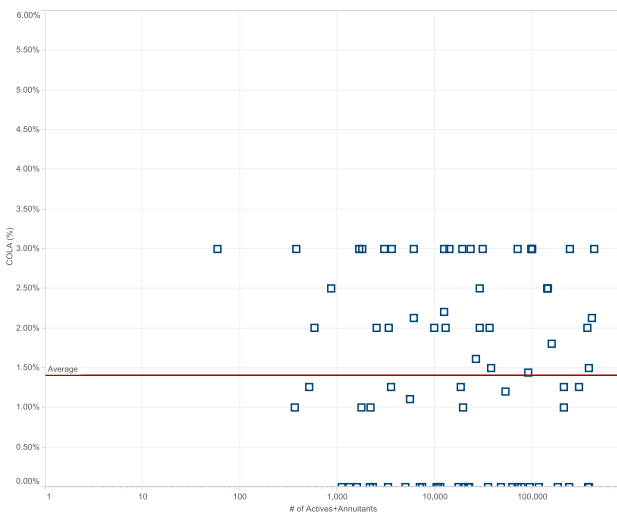
The top chart shows the distribution of funds offering various percentages of cost-of-living adjustments (COLAs). The aggregated average COLA offered to members was 1.6 percent, which is slightly lower than in 2018. Many responding funds did not offer a COLA in the most recent fiscal year.

Funds with members who are not eligible for Social Security tend to offer higher cost-of-living adjustments (2.1 percent) than those with members who are eligible for Social Security (1.4 percent).

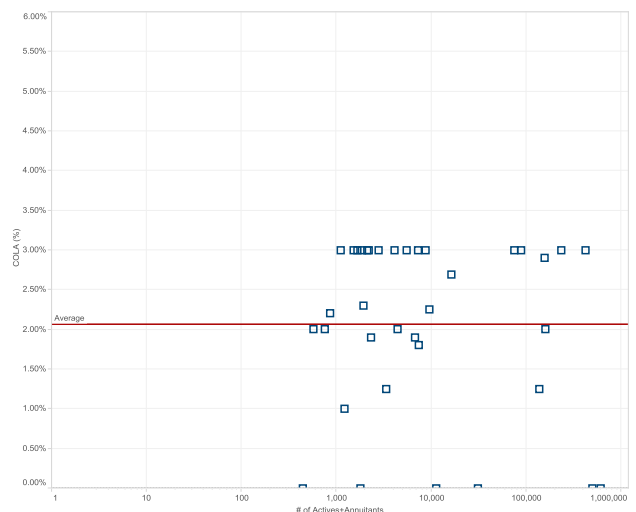
Overall Cost-of-Living Adjustment Offerings



Social Security Eligible



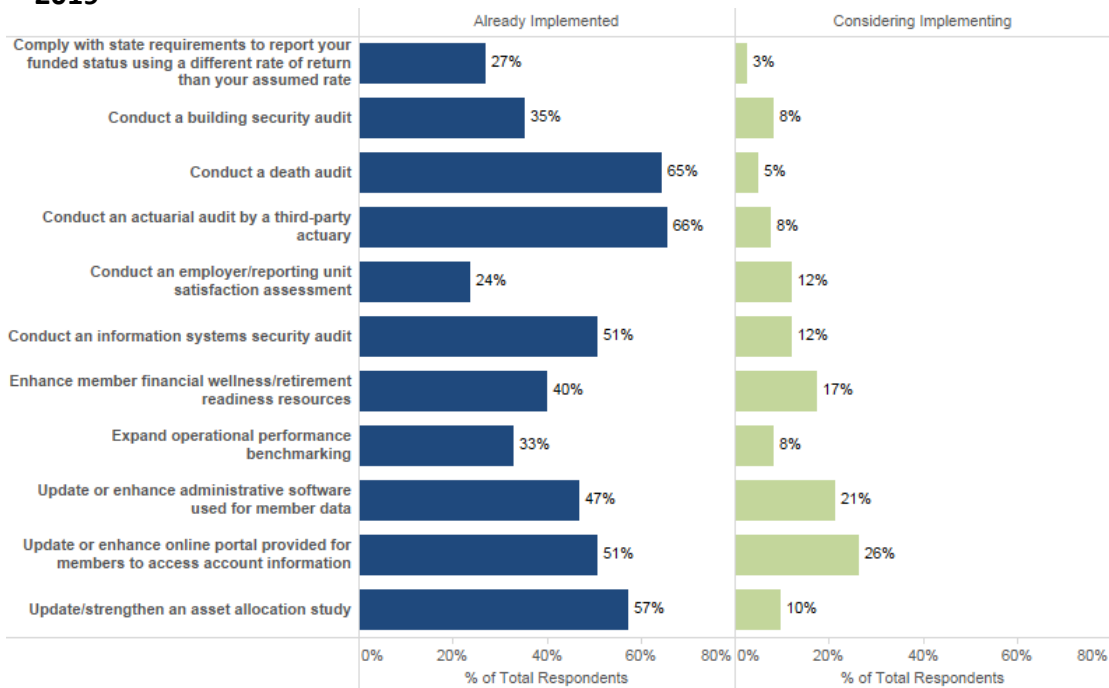
Not Social Security Eligible



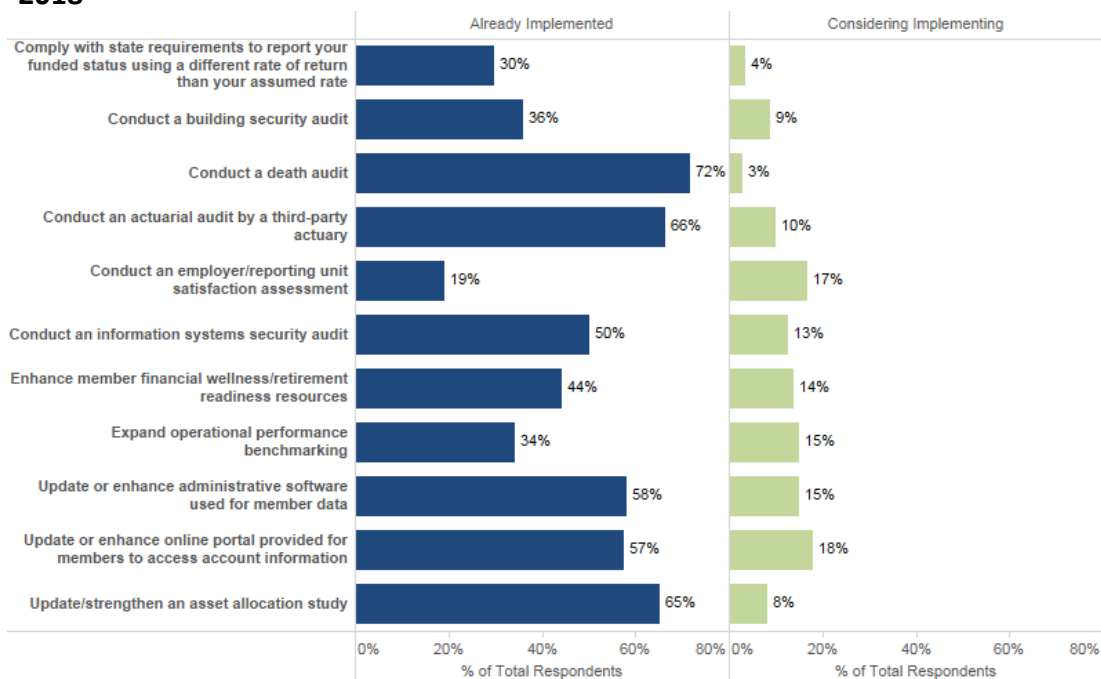
Trends in Business Practices

Conducting a death audit, updating administrative software, and updating/strengthening an asset allocation study declined in the respondent population overall; however, funds that responded in both survey years show those areas as stable. Funds also have increased implementation of an employer/reporting unit satisfaction assessment and an actuarial audit.

2019



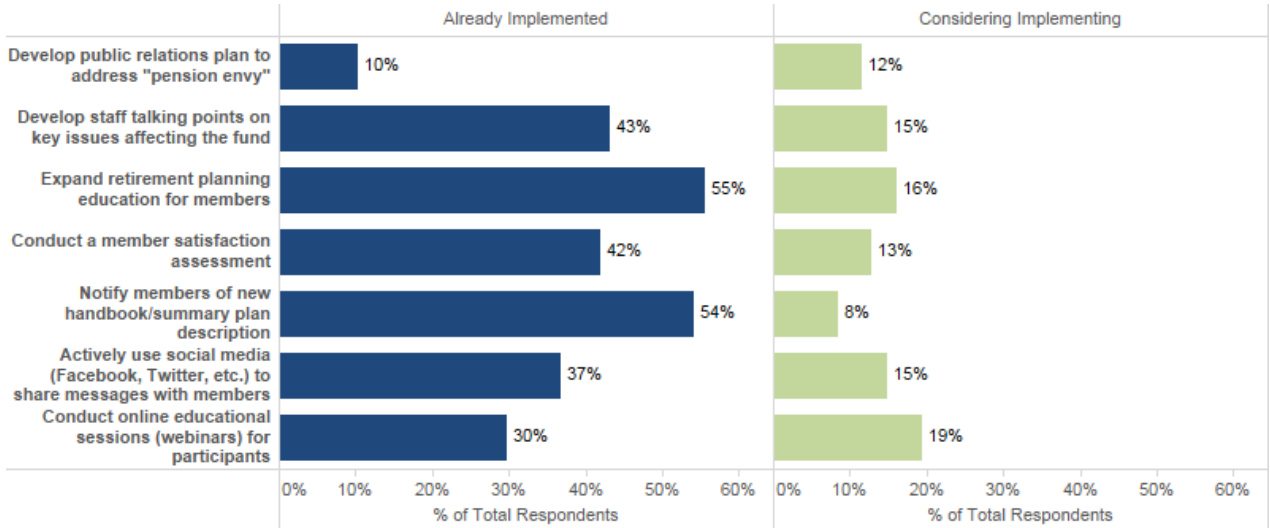
2018



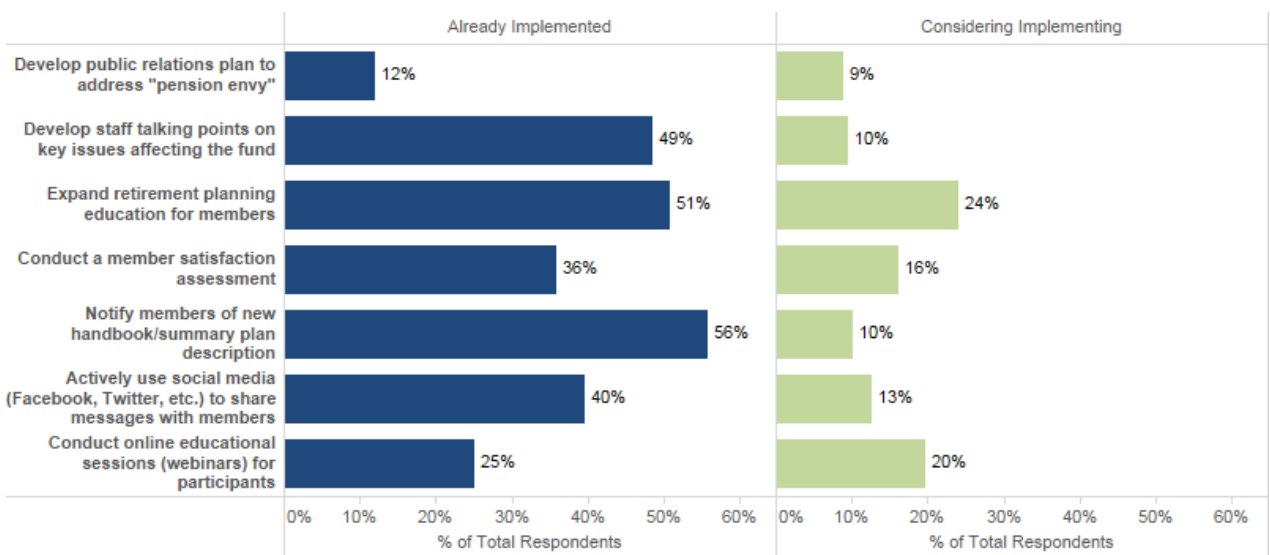
Trends in Engagement

In 2019, the three largest activities remain notification of updated handbook/summary plan descriptions, expanding retirement planning education for members, and developing staff talking points on key issues. Conducting a member satisfaction assessment has grown by 6 percent. The activity being considered by the most plans is conducting online educational sessions for participants.

2019



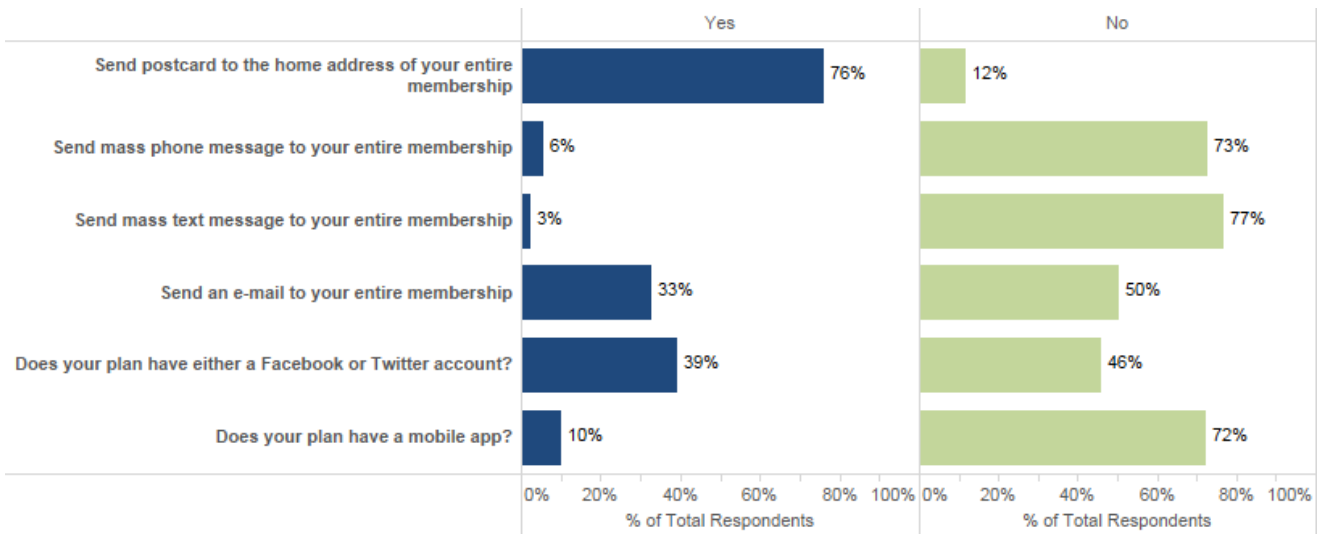
2018



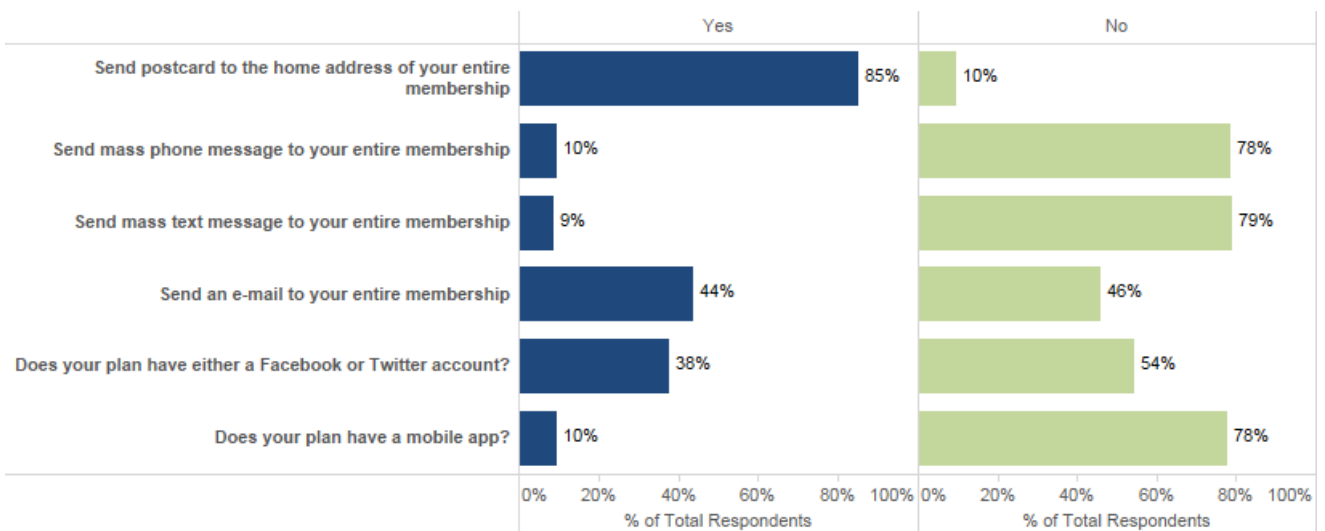
Trends in Communication

For funds that responded to both of the past two surveys, communication capabilities are very similar to 2018, with a slight decline in use of Facebook and Twitter. Overall, responding funds also showed a decline in sending postcards to home addresses and sending e-mail messages to the entire membership.

2019 Communication Capabilities



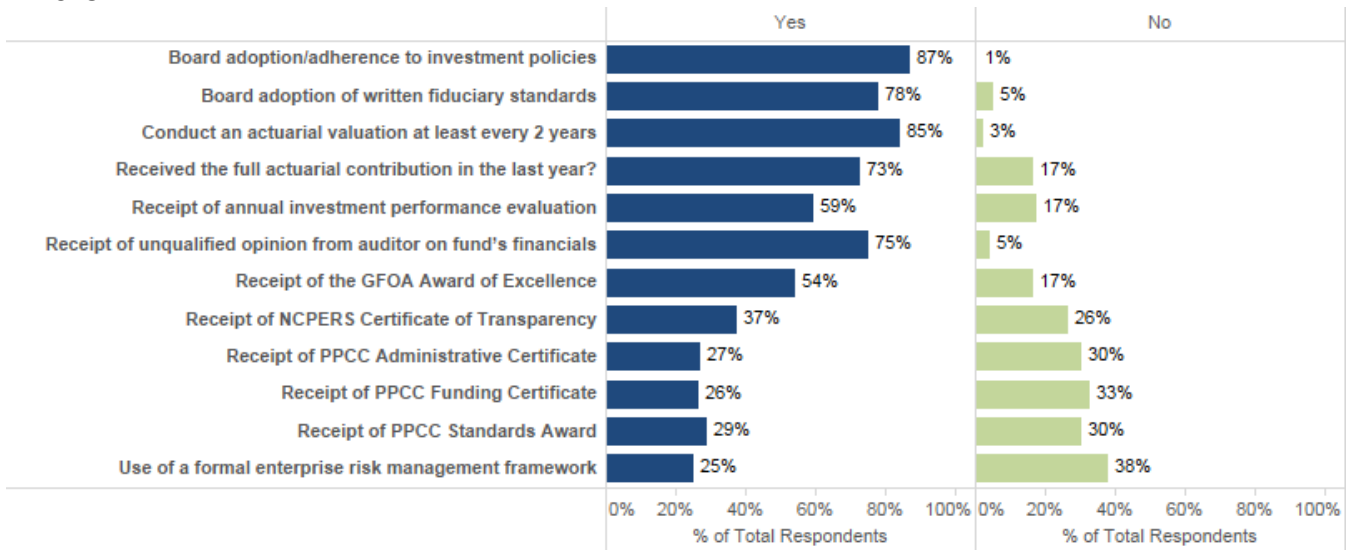
2018 Communication Capabilities



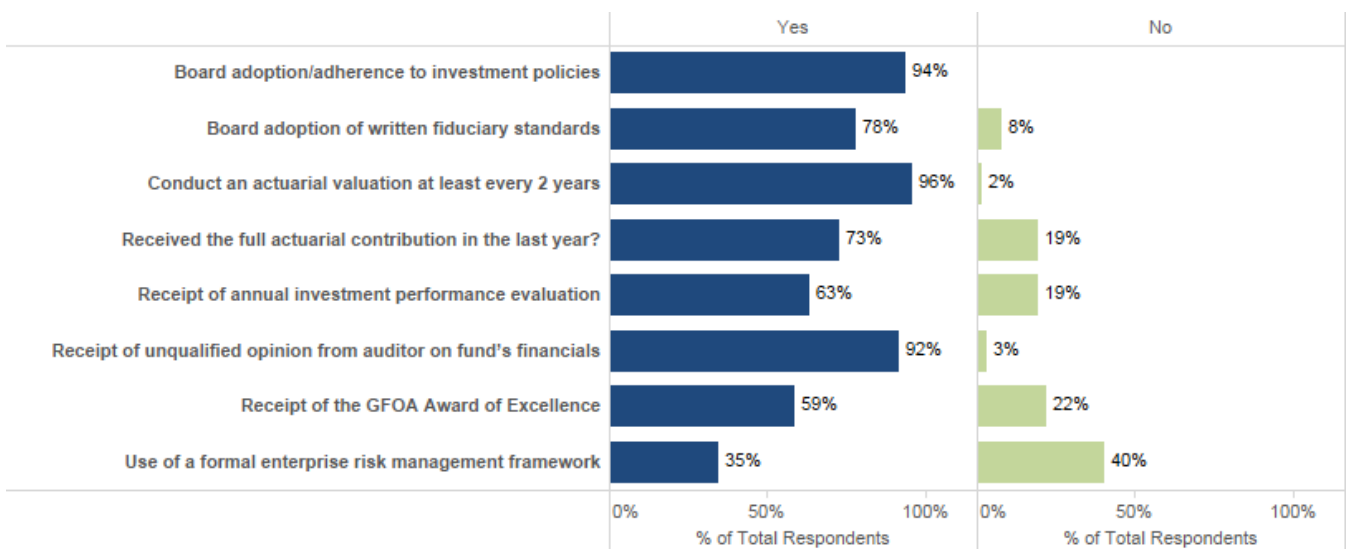
Trends in Oversight Practices

Overall, responding funds showed a slight decrease in the use of several oversight practices; however, among funds that responded in both years, most practices increased slightly compared with 2018. This is especially seen in board adoption of written fiduciary standards, which rose by 7 percent.

2019



2018

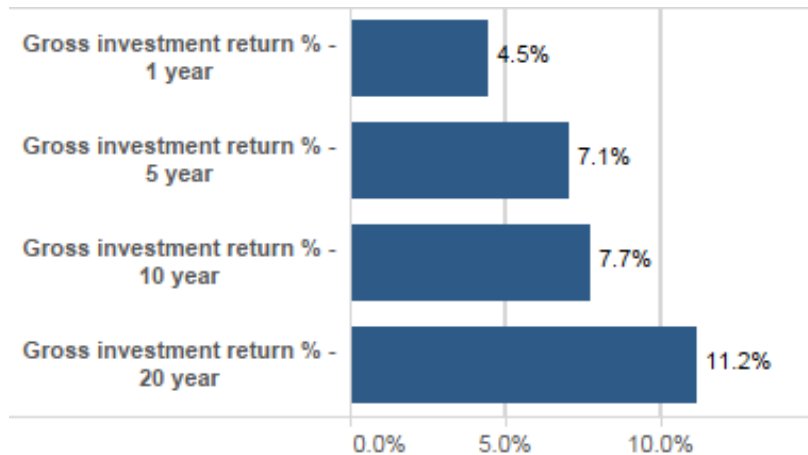


Investment Returns

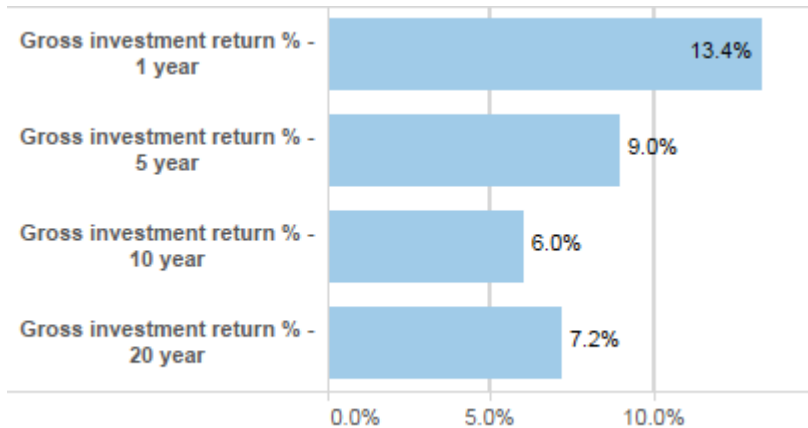
Reporting funds saw, on average, one-year returns around 4.5 percent. The five-year and 10-year average returns also hovered near or above the assumed rate of return, and the 20-year returns are generally outperforming the assumed rate of return. Funds responding in both years report five-year and 20-year returns just below the assumed rate of return, and 10-year return slightly above.

It is important to note not all responding funds have the same fiscal year-end date. The timing of fiscal year-end accounts for significant difference in investment experience between funds. Funds that have a December fiscal year-end date saw one-year returns much lower than those closing at other times.

2019 Study Investment Returns

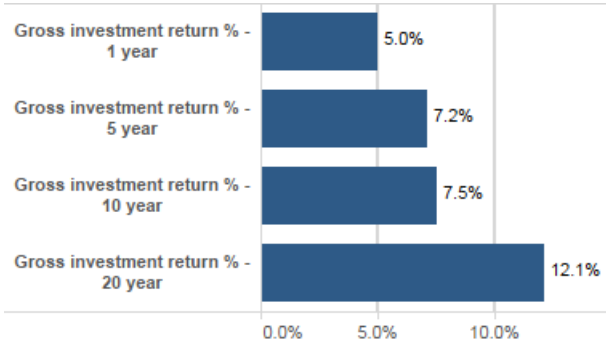


2018 Study Investment Returns

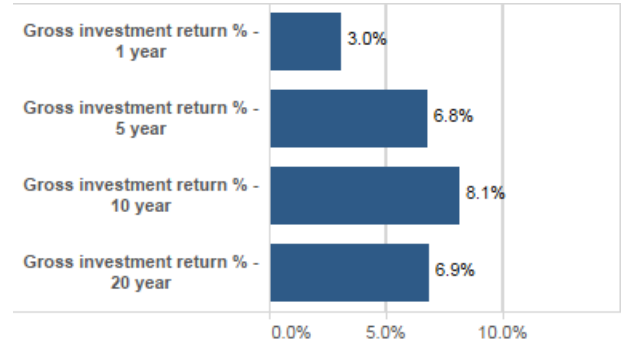


Funds with members who are Social Security eligible reported higher one-year returns than non-Social Security-eligible funds.

2019 Returns: Social Security Eligible

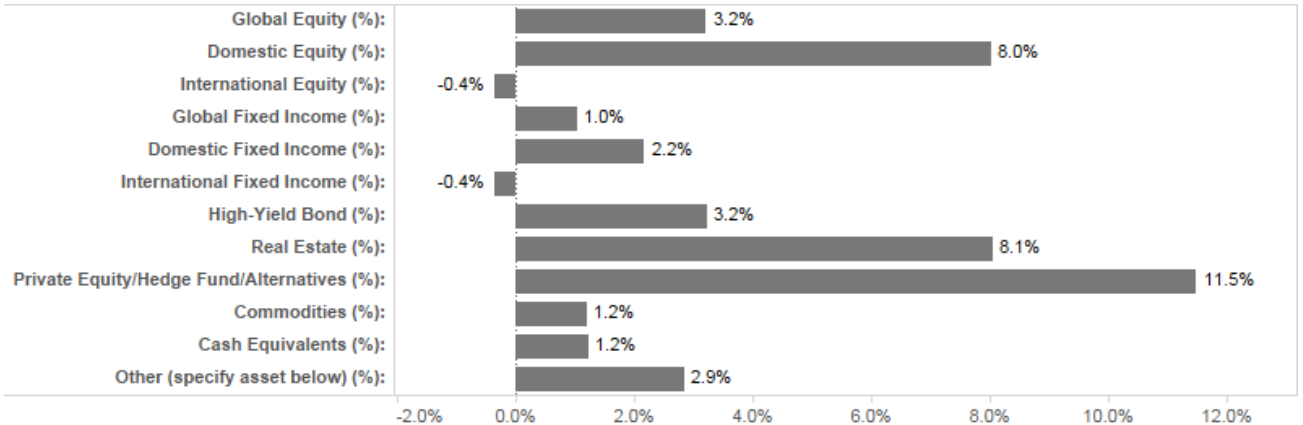


2019 Returns: Not Social Security Eligible



The graph below shows the one-year gross investment returns based on the various asset classes in which responding funds are invested. Private equity/hedge fund/alternatives, real estate and domestic equity saw the largest returns.

One-Year Gross Investment Returns

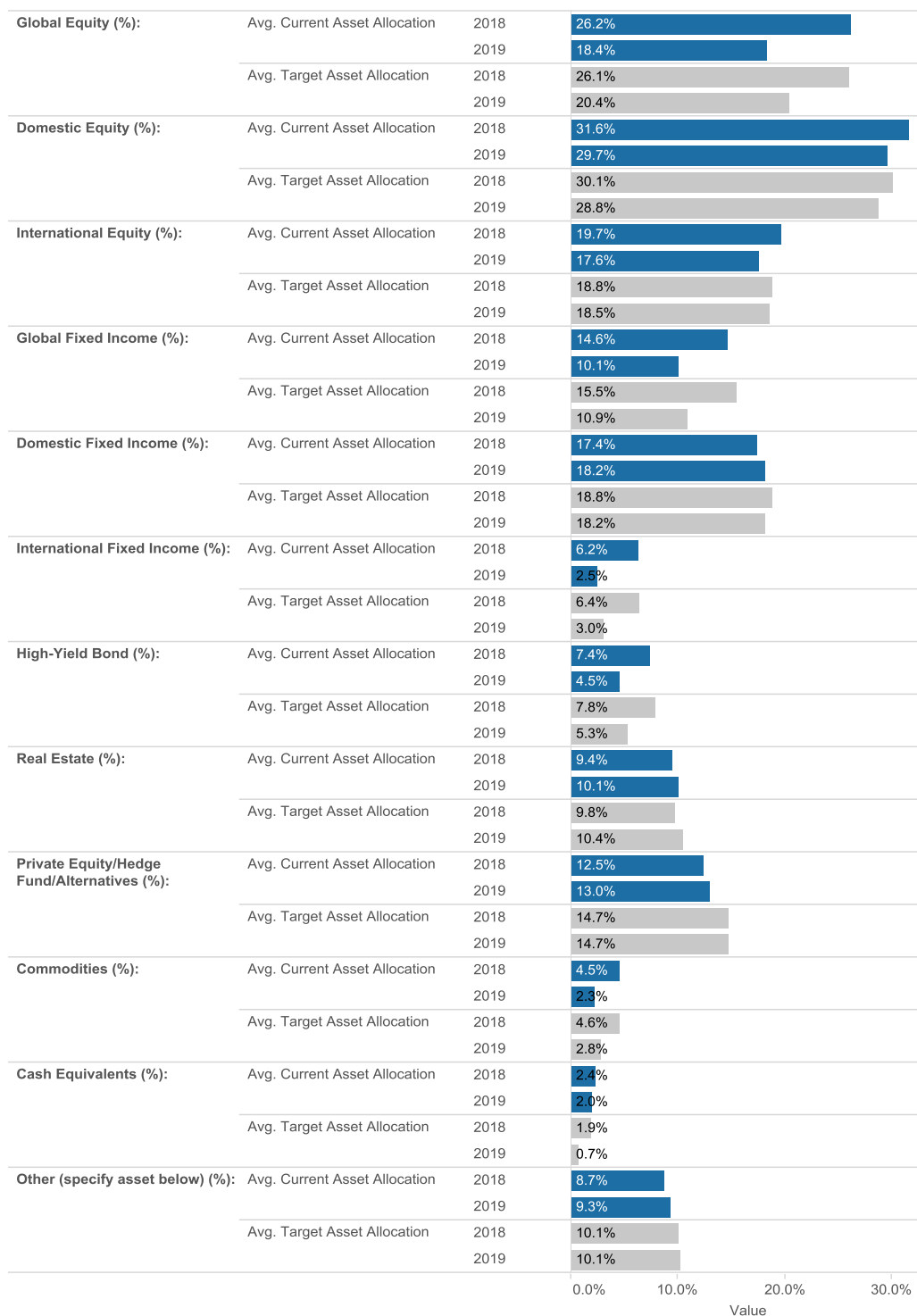


Investment Asset Allocation

Responding funds had asset class allocations similar to those of 2018. There continues to be a decrease in allocation to global equities, global fixed income, and international fixed income.

Allocation by Class and Year

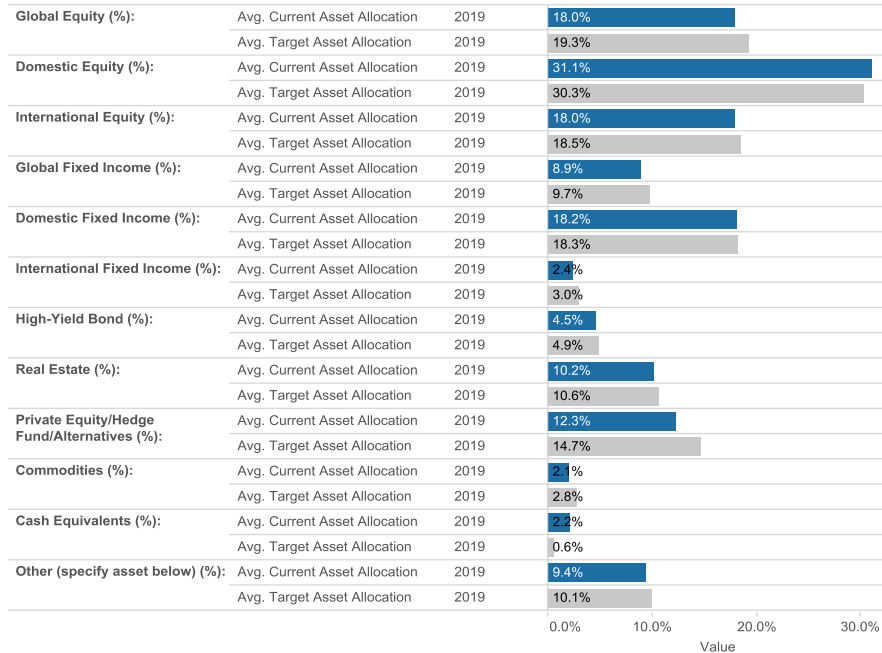
Note: Average allocations in each asset class do not total 100 percent because of the way individual allocations were reported.



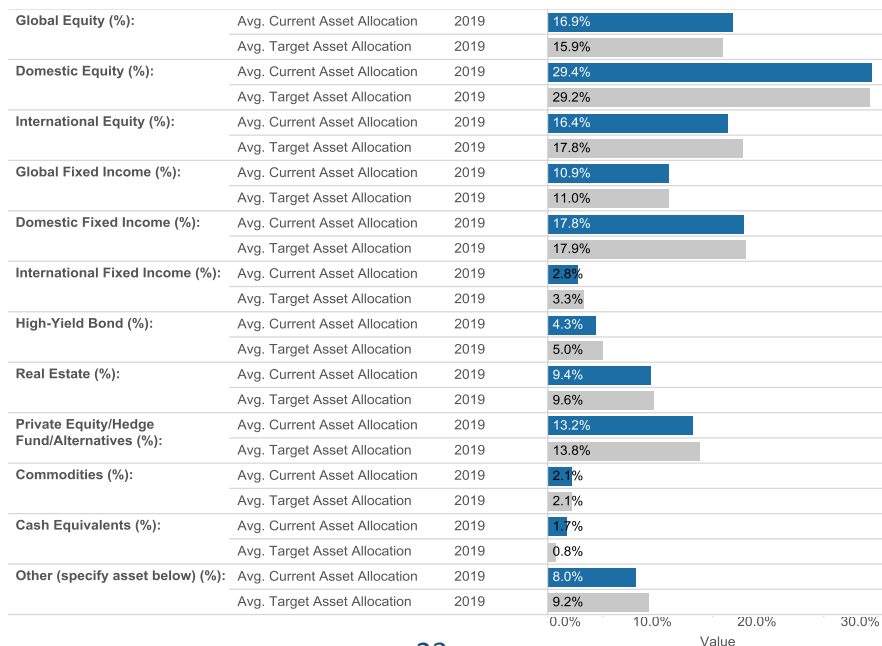
Below are two graphs that show the asset allocations for those funds that reported higher-than-average one-year and 10-year investment returns.

Funds with the highest returns had allocations similar to funds with lower allocations. The major impact on returns appears to be the timing of fiscal year-end, as funds with a December close had a much lower return than those closing in other periods.

Highest One-Year Return



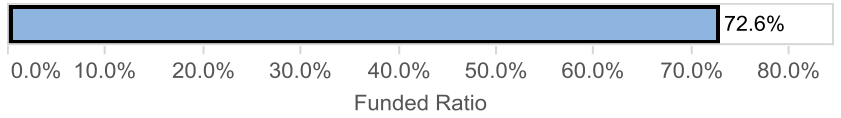
Highest 10-Year Return



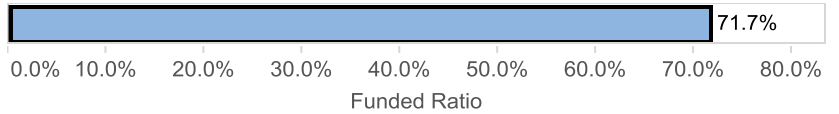
Funded Levels

The average funded level is 71.7 percent, down from 72.6 percent in 2018. Funds eligible for Social Security tended to have higher funded levels.

2018 Funded Level

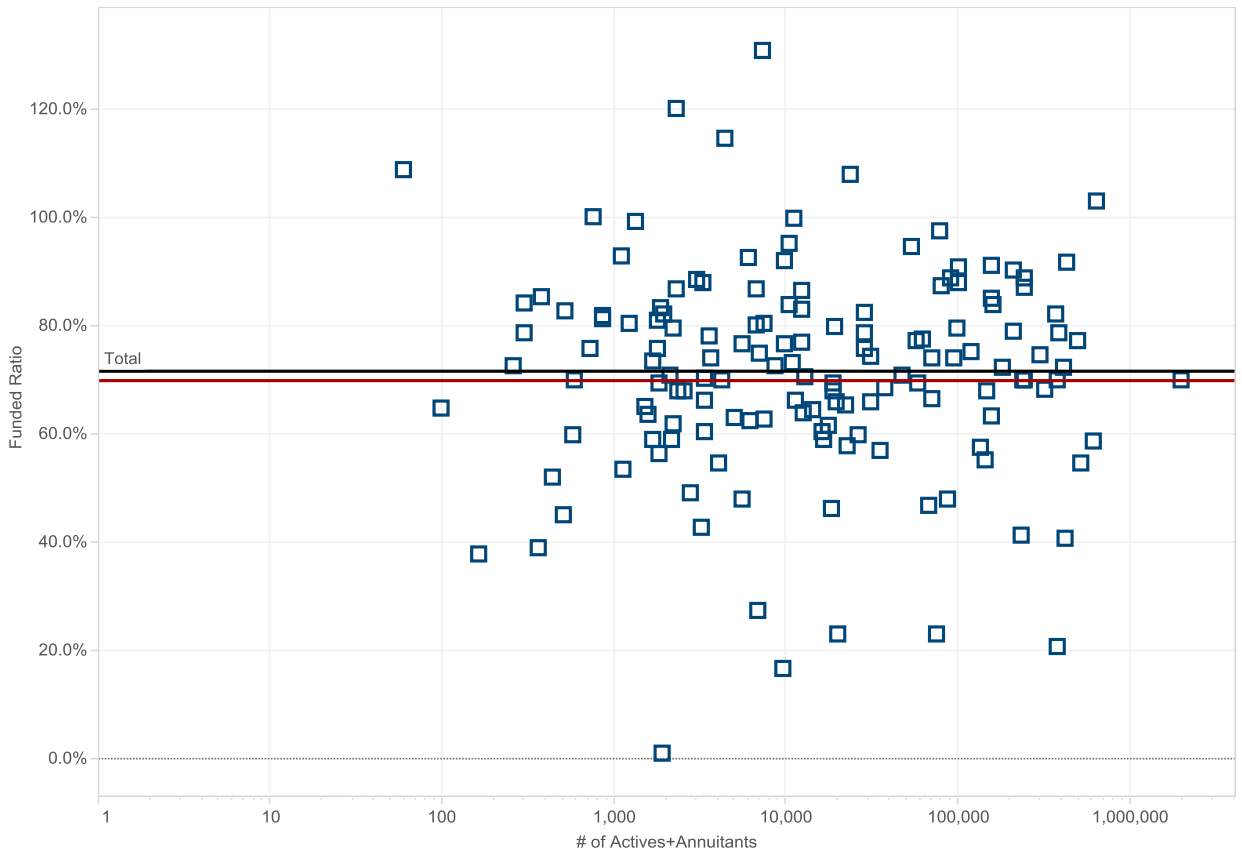


2019 Funded Level



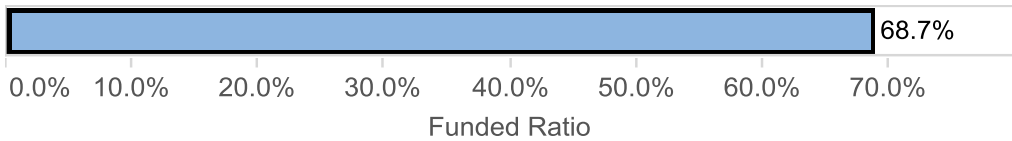
The bottom graph shows the distribution of funded levels and fund size. The vertical axis shows level of funding, and the horizontal axis shows the size of the fund by total active and retired participants. The black center line denotes the average of 71.7 percent, and the red center line denotes the 70 percent funding target that Fitch Ratings considers to be adequate.

2019 Funded Level Distribution



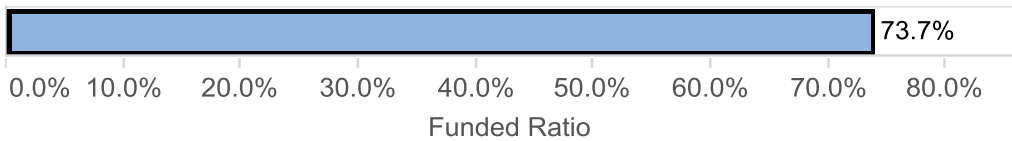
Many funds include members who are not eligible to receive Social Security at the time of retirement. For this reason, such funds often have higher benefit levels to offset the loss of this source of retirement income. Those funds that include such members report an average funded level of 68.7 percent, which is below the 69.4 percent in the 2018 study.

Funds Not Eligible for Social Security



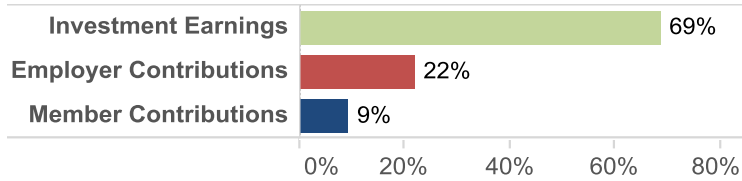
The graph below shows the funded level for those funds that include members who are eligible for Social Security. The average funded level for this group is 73.7 percent, down from 75.0 percent in the 2018 study.

Funds Eligible for Social Security



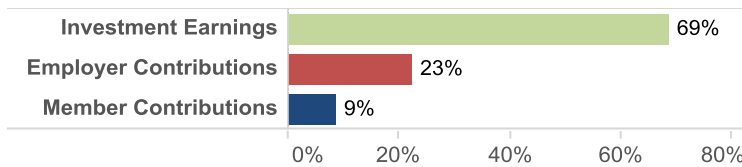
Sources of Funding

Overall Sources of Revenue



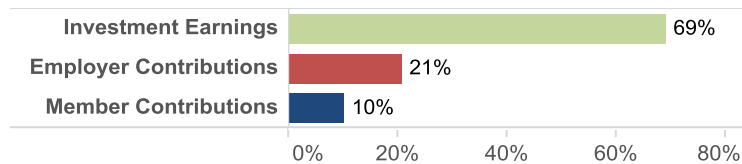
Income used to fund pension programs generally comes from three sources: member contributions, employer contributions, and investment returns. The first chart to the left shows the proportion of funding provided through each of these sources based on reported data.

Social Security Eligible



Investment returns are by far the most significant source of revenue (69 percent). This is the same as in 2018, as are the member and employer shares of total revenue.

Not Social Security Eligible



The next two graphs show funds disaggregated by Social Security eligibility. Non-social Security-eligible funds reported a slightly higher share of revenue from members and employers.

Contribution Rates as a Percentage of Payroll

	2018	2019
Member Contributions	9%	9%
Employer Contributions	22%	22%
All Contributions	31%	31%

Contribution rates as a percentage of payroll were stable, and they declined slightly for employers for those funds that responded for both 2018 and 2019.

Contribution Rates – Respondents in Both Years

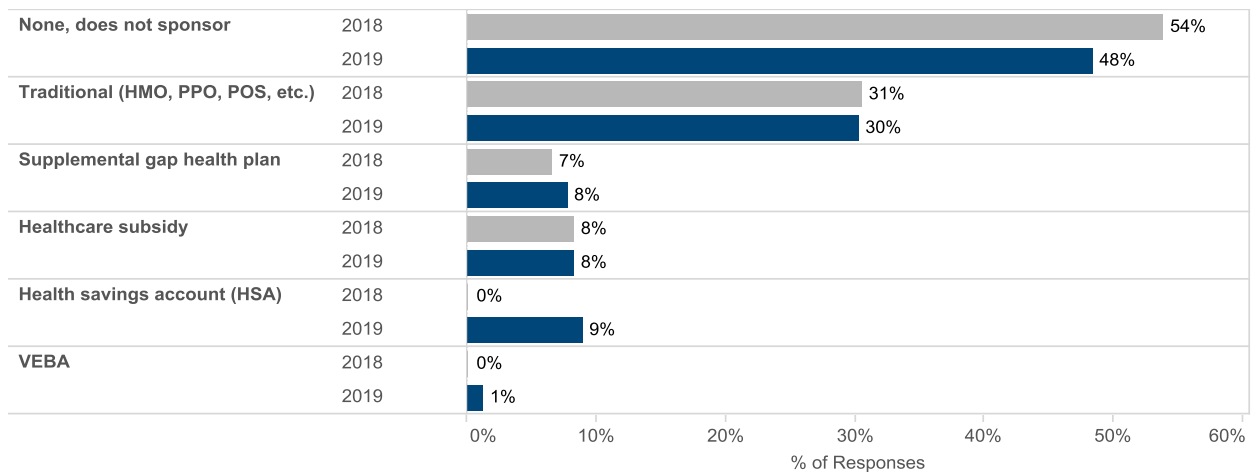
	2018	2019
Member Contributions	9%	10%
Employer Contributions	24%	23%
All Contributions	33%	33%

Health Plans

Responding funds were asked whether or not the plan sponsor offers a health plan. In 2019, about 52 percent offered a plan or subsidy, while about 48 percent of funds did not sponsor a plan. In 2018, about 46 percent offered such coverage, and 54 percent did not. For funds responding in both study years, we saw a 6 percent drop in traditional coverage, to 26 percent. While the health savings account (HSA) and voluntary employees' beneficiary association (VEBA) options are new this year, these may be the plans to which these funds are transitioning.

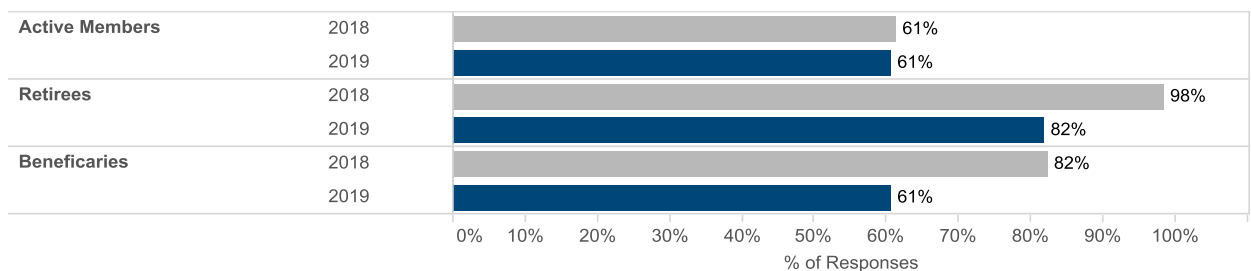
What type of health plan does your pension plan sponsor?

Note: Totals may exceed 100 percent because of multiple health benefits offered



The funds that do sponsor a health plan or subsidy were also asked to report which types of members are eligible to participate. About 61 percent of the sponsors with a health plan or subsidy are also open to the sponsor's active members, 82 percent include retirees, and 61 percent include beneficiaries. Overall, these numbers are lower than in 2018. In addition, we see a reduction in eligibility for retirees and beneficiaries when looking at the population of funds that responded to both of the 2019 and 2018 studies. This may be driven by the transition to subsidy and HSA-style benefits.

Who is eligible for the health plan?



Reducing Liability

Respondents were asked to share strategies they have put in place to reduce accrued actuarial liabilities beyond traditional amortization. Below is a text cloud showing the words that appear most often in respondents' comments. Larger words appear more often. Most frequently used comments surrounding each of the largest words:

Years – Shortened the years of amortization

Employer – Increased employer contributions, ensure full employer contributions are made

Increased – Increased contributions and age requirement



Verbatim Comments

- 20-year layered amortization implemented 2019.
- 20-year layered amortization of future biennial gains or losses incurred after 6/30/17.
- 2012 pension reform. Adoption of a funding policy. Asset/liability study.
- 2018 legislation created layered amortization for future losses or gains over a closed, 20-year period.
- 2018 legislation was passed which eliminated augmentation of early retirement benefits. This is a benefit reduction which accelerates the rate of improvement towards full funding.
- Accelerated amortization for closed groups, bridge down future benefit accruals, lowered the assumed rate of return and updated mortality tables.
- Accelerated amortization for closed groups, bridge down future benefit accruals, updated economic assumptions (reduced investment rate of return, wage inflation).
- Adjusted the plan retirement provisions and increased contribution funding.
- ALM [asset/ liability management] risk mitigation, discount rate reduction, shorten amortization.
- ALM, risk mitigation, reduction of discount rate.
- Amortization period has reduced from 30 to 20 years since fiscal year 2017 as our funded ratio has reached 72%.
- An additional contribution rate was levied on employers to pay the unfunded liability.
- An extra contribution rate was levied several years ago to pay the unfunded liability in the states closed legacy plans that have an unfunded liability.
- Assembly Bill 1469 was signed into law on June 24, 2014, to fully fund the DB program by 2046.

Continued

- Beginning at 30 years; the amortization is reducing by one year annually due the plan being closed to new members.
- Benefit changes, increase contributions, attend funding conferences, make changes in investments.
- Broaden the number and type of investment holding trying to spread the risk and enhance the ability to earn over a wider variety of investments. In addition, the board has requested and been granted a (4) four year implementation of contribution increases at the rate of .25 per year beginning with 2018 and ending in 2021 whereby the contribution rate will be 9% employee/employer match.
- Changed asset allocation.
- Changed asset allocation policy, increased member contributions.
- Changed retirement eligibility (service/age). Contribution rate increases.
- Closed amortization period, employer makes 100% of ARC.
- Closed amortization schedule, 18-year layering of annual UAAL changes.
- Closed the amortization period to 30 yr. closed, reduced assumed rate from 8% to 7.5% for 2019, raised contribution rate for employees to 8%, raised vesting to 8 years for new hires 1-1-2013 & beyond, min age of 50 for Rule of 75 for all new hires 1-1-2016 onward.
- Closed the amortization schedule and ensure all employers remit the full actuarial required contribution.
- Closer control of liabilities; limit creation of new employee positions, practice employee attrition.
- Continue funding actuarially required contribution.
- Continue to evaluate benefit structure and make small adjustments. Most recent legislative session, we implemented changes that decreased the UAL by about \$50 million.
- Continue to evaluate every two years once a re-evaluation is completed.
- Continue to make the required contribution per the actuarial valuation.
- Continue to work with actuary and investment consultants to make sure plan is funded.
- Contribute more than ADC.
- Contribution rate increase for members & employers.
- Current amortization period is 29 years, funding policy goal is to be 100% funded. We have increased funding and established a new tier of membership in 2013 with reduced benefits for new hires.
- Currently reviewing COLA; currently directing all contributions to fund pension and none to fund health care.
- Currently working through strategy options but no decisions have been made.
- Cut COLAs for beneficiaries and future beneficiaries, increased member and employer contributions, and cut future benefits for new hires.
- Decreased amortization years, restructured investment guidelines, negotiated lower management fees.
- Education to members and funding sources as to what creates liability beyond investment returns.
- Employer additional payment towards UAAL, employees contribute towards UAAL -- these are employer strategies, not SCERA strategies
- Employer contributions are restricted from being used to fund discretionary benefits (such as health care) until the pension fund reaches funding goals of 70%, 80%, and 90%.
- Employer pays additional UAAL payments, plan provisions changed in 2013 to lower benefit accrual and pensionable compensation limits, employees contribute towards payment of UAAL.
- Employers are allowed (and encouraged) to pay additional contributions toward their unfunded liability.
- Encourage employers to make early contributions and also allow employers to contribute to reserve fund to smooth out contribution volatility.
- Established a retirement sustainability taskforce to look at alternatives and possibilities.
- Focus on funding and management.
- Format funding policy in code to fund at actuarially recommended levels.
- Fraud prevention measures, measures to ensure correct benefit calculations and payments, enhanced financial reporting, conservative actuarial assumptions.
- Funding plan with government through fiscal responsibility act.
- Funding policy goal is to be 100% funded and board will not support any benefit enhancements unless the proposal includes funding for the benefit enhancement.
- Funding policy is determined by the Illinois state legislature.
- Funding policy review and work with plan sponsor on long-term financial sustainability.
- Funding policy that at least funds the ADC but does not reduce the rate until 105% funded.
- Funding policy that both funds the ADC and does not reduce the rate until 105% funded.
- Funding rehabilitation plan.
- Funding rehabilitation program.

Continued

- Have worked with county to strengthen their funding policy and to guarantee that they not lower their contribution rate until the plan(s) are fully funded.
- Having actuary conduct experience studies reviewing the current assumptions for their accuracy.
- Having municipality contribute a payment out of free cash.
- In 2015 and 2016 the board redesigned DROP to be actuarially neutral. Also, an experience study is in process to provide better information generally about the plan for the board to assess what, if any, next steps are in order to improve funding.
- In 2017, the Texas legislature required a funding corridor that forces certain adjustments, including benefit adjustments, if the city's contribution exceeds a certain level.
- In 2018, the general assembly lowered COLAs for current and future retirees, raised member and employer contributions, increased age and service requirements for new hires, and created a closed 30-year funding corridor that will automatically adjust COLAs, member, and employer contributions to maintain amortization schedule.
- Increase employer contributions.
- Increase in employee contributions.
- Increase required contribution and reduced amortization period.
- Increase to employer's contribution for the current fiscal year.
- Increased contributions.
- Increased contributions raise the retirement age.
- Increased employee, employer, and state contributions were part of 2018 legislative package.
- Increased employer and employee contributions, revised asset allocation mix, reduced amortization period.
- Increased employer contributions over 4 years (2017--2020); 2012 new tier of new members with lower benefit multipliers, higher vesting and age requirements, higher member contributions, lower post-retirement benefits, lower average final compensation, restricted eligible compensation to base pay.
- Increased member and employer contributions until plan reaches 100% funding; raised benefit eligibility age and service requirements and raised final average salary period and vesting requirements for new tier of members.
- Increased member and employer contributions until plan reaches 100% funding; raised benefit eligibility age and service requirements; raised FAS period and vesting requirements.
- Increased member contributions for new members, changed asset allocation.
- Increasing member and employer contributions (total contributions are greater than the normal cost).
- Introduce legislation to increase contributions. Recently made plan design changes for new employees (lower multiplier, higher "rule", eliminated health credit).
- Legislation to increase contributions. Legislation to transfer/increase funding.
- Level dollar method of funding and use of a CIO to address investment practices.
- Lower assumed payroll growth to increase employer contributions; allow employers to make additional payments to reduce the unfunded liability; using 10-year layered amortization for new tier of employees.
- Lower benefit tiers.
- Lowering investment rate of return to 7.70% effective 9/30/2018 from 7.75% as of 9/30/2017.
- Maine addressed the unfunded liability of the State Employees and Teacher Plan in the 1980s when the funding level was less than 20% with a Constitutional amendment that has served to bring the funding to 81.4% as of 6-30-18. The constitution mandates that required contributions be made every year, that no new unfunded liabilities other than experience losses can be created, that experience losses are amortized over 20 years (10 years until 2017), and that the unfunded liability as of 1996 be fully paid in 31 years. These provisions enable Maine to boost plan funding by retaining the extraordinary market gains of the 1990s. As plan funding moves toward full funding, Maine PERS is also moderating assumptions and investment practices to protect the existing funding rather than aggressively grow the funding. For example, the discount rate or earnings assumption has been periodically lowered over the last 10 years from 7.75% to 6.75%, and other assumptions reviewed in view of protecting the funding. Investments are risk-based instead of targeting maximum returns. We are currently evaluating our practices and assumptions as we move toward an increasingly mature plan to help protect funding and retiree benefits.
- Making annual required contributions, looking at investment funds to look for opportunities to get better return.
- MEABF is governed by state statute and as such is the administrator of the fund. Any changes to the benefit structure are generated by the plan sponsor and enacted by state legislature.
- Meet with our financial advisors and ensure that our asset allocation is set accordingly to ensure highest returns.
- Middlesex County Retirement is a multi-employer retirement system. Some units make additional payments toward their unfunded liability.
- Multiple employer agent plan; new employers joining regularly with unfunded AAL affects overall plan funded ratio slightly.
- New contribution policy based on future pension surtax.
- New tier added in 2012 and investment reallocation along with new investment managers. Discount rate was lowered in small increments in conjunction with good market yield years.

Continued

- Our board of trustees is studying and evaluating the annual COLA as well as many other areas to possibly make changes to help reduce the unfunded liability.
- Our plan was new as of 2/1/2013. We are on track to be fully funded within 10 years if not sooner. The city continues to pay 100% of the required contributions.
- Passed legislative update to increase employer contribution and added mandate to not reduce employer contribution even if greater than ARC until the system is fully funded.
- Payment of actuarially determined employer contribution (ADEC) is required including a closed amortization period not to exceed 25 years. Additional employer contributions are permitted to reduce liability.
- Payment of ADEC is required, including a closed amortization period not to exceed 25 years. Additional employee contributions are permitted.
- Pension reforms 2012: Increased employer contributions, lower benefit multiplier, higher age and service eligibility requirements, lower post retirement increases, longer average final compensation period, higher member contribution.
- Plan design changes are accomplished through legislation and assumption changes are adopted by the FRS Assumptions conference comprised of representatives from the Governors Office and the Florida Legislature.
- Plan design changes increased contributions.
- Positive net cash flow.
- Primary employer paying additional contributions towards unfunded liability.
- PSERS has consistently advocated for payment of the full ADC and for additional funding to the plan to accelerate UAL amortization.
- Reallocation of assets long-term steady returns with lower volatility, more long-range strategies, terminating marginally performing investments.
- Recent legislation passed to increase employer contribution to cover or exceed ARC.
- Recent pension reform gave board authority to establish a COLA consistent with the change in CPI-W versus an automatic 3% simple COLA. Previous pension reform included changes to age and length of service requirements. Established a board-approved funding policy to provide guidelines for funding pension liability and health care programs.
- Reduce administration and investment costs; employers paying additional contributions towards unfunded liability.
- Reduce multiplier, reduced COLA, started employer contributions.
- Reduce the rate of return assumption.
- Reducing the amortization by one each year until 2026, then switching to a rolling 15-year period.
- Reducing the amortization period by one year until 2026, then switching to a rolling 15-year period.
- Reduction of investment return assumption, bargaining of benefit changes.
- Several years ago, an additional contribution rate was placed on employers to pay the unfunded liability for the underfunded legacy plans.
- Shortened amortization period, lowered assumed rate of return, increased employer & employee contribution rates.
- Significant plan design changes were put in place through pension reform, including development of the hybrid retirement plan. Statutory requirement to fund the full board-certified rates (fiscal year 2017 for the state plans and 2018 for the teachers).
- State contributions under state law are too low to begin reducing the unfunded liability. The board certifies both the amount required under state law and the amount required under an actuarial process (different cost method, shorter amortization) that does begin reducing the unfunded liability. This approach is needed because our funded status is low.
- State intends to continue funding 100% of ADC going forward. State budget adopted in 2018 provides full funding for 2019 and 2020 fiscal years. Closed amortization period. State considering advanced funding beyond actuary's recommended ADC.
- State statute requires employer funding as a level percent of payroll to achieve 90% by 2059.
- State statutes require certain surplus funds to be appropriated to the UAL. Changes in plan design for new members since 2006 are designed to limit accumulation of UAL.
- Statutory requirement for state funding of normal cost as a continuing appropriation and dedicated local property tax for employer contribution. Statutory requirement for 90% funding status by 2059.
- Steadily reducing the assumed rate of return so our required contributions increase.
- Steady stream of employer and employee contributions over last several years has reduced the unfunded liability and increased the funded ratio to an all-time high of 97.7%.

Continued

- The board adopted a funding policy to enhance communications and transparency with the legislature, plan members and retirees regarding the board's position on plan funding strategy.
- The board adopted a funding policy with a scorecard component. The scorecard is a risk tool to gauge the financial and economic status of the plan.
- The board recently adopted a new funding policy to address the system's unfunded actuarial accrued liability.
- The board recently concluded a five-year actuarial study which included several recommendations. The board is reviewing for possible implementation.
- The city has agreed to pay additional yearly contributions to help with bringing the unfunded liability down.
- The city has been paying over the required contribution amount to pay down certain bases of the unfunded liability.
- The city makes additional fixed contributions to eliminate the unfunded liability over 5 years.
- The County of Tulare issued \$250 million in pension obligation bonds to reduce the UAAL.
- The fund is governed by Illinois state statute.
- The GERS has submitted legislation for reduction of active member benefits and indefinitely suspended the COLA, raised the employee and employer contribution rates up to the limits allowed by law.
- The governor and General Assembly have focused on reducing plan costs and liabilities with a multipronged approach that included: accelerating repayment of deferred contributions, estimated to save \$60.5 million over six years; funding 100% of actuarially determined contribution rates earlier than anticipated, saving \$232 million over 20 years.
- The only step has been to shorten the amortization period from 30 years to 20 years.
- The State of Kansas sold \$1.0 billion in bonds in 2015 and deposited the proceeds into the KPERS Trust Fund. This was in addition to regular contributions.
- The system has kept contribution rate stable and not decreased it to the ADC each year. Which allows the fund to improve overall financial health.
- This plan is a pay-as-you-go plan that was closed in 1995. The state has a well-established plan to get to 100% funded around 2035.
- Tied age requirement to Social Security. Implemented DC for new hires with mandatory annuity.
- Tier A / Tier B.
- TRA recently reduced COLAs; increased employee and employer contributions (2018 legislative session).
- Trustees are working with the City and the actuary to address this issue.
- Two of our three employers are making supplemental contributions to accelerate the paydown of their unfunded liability.
- We are a regional retirement system comprising 71 employer units. We accept additional payments toward unfunded liability made by the individual units.
- We ensure that we collect employer and member contributions.
- We have implemented a little more risk with our investment strategy.
- We have implemented a new asset allocation in order to ideally achieve a higher rate of return. We have also adjusted COLA and employee contributions.
- We have kept contribution rate stable and not decreased it to the ADC each year, which allows the fund to improve overall financial condition.
- We have utilized a reserve fund to maintain our employer contribution rate at a level above what the actuarially determined rate would call for.
- We've increased contribution rates and reduced benefits (tier II), and reduced certain small benefits (like death benefits for non-vested inactive members, and reduced interest accrual for non-vested inactive members).
- With the plan's 95.3% funded ratio, we feel that traditional amortization will be sufficient to reach full funding over the next 15 years.
- With the plan's 95.3% funded ratio, we feel that traditional amortization will be sufficient to reach full funding over the next 14 years.
- Work closely with plan sponsors and other stakeholders to make plan changes that will allow the plan to be more sustainable in the long run.
- Worked with county to firm up and enhance the employer contribution.
- Working with members to develop legislative package to improve sustainability.

Innovations/Best Practices

In the study, respondents were asked to share a success story regarding a best practice or innovation that other plans may like to learn about. Below is a text cloud showing those words that appear most often in respondents' comments. Underneath the text cloud are the verbatim comments. Below are the themes of the comments surrounding each of the largest, most frequently-used words:

Members – Improved member education

Benefit – Improved death audit to ensure appropriate benefit payments, provide better benefit information

Board – More planning and education with boards



Verbatim Comments:

- "TRS on the Road" - about 4 staff will travel out in the state and provide counseling services. Normally on a Saturday. This provides members the same service they would get in the office without traveling to our office.
- 1) Oversight - in 2016 the Board adopted Board Bylaws to better discern the role of ED vs Board. 2) Investment - Board just concluded a robust review and selection process for an investment consultant.
- Adoption of an Automatic Adjustment Provision which (within boundaries) automatically and equitably adjusts future COLAs and member and employer contribution rates on the relationship of total actual contributions to total required contributions.
- After a yearlong review of the investment policy, ERS transitioned from a rules-based policy to principles-based investment policy to enhance readability, reduce redundancies and include more discussion on risk. ERS also produced eight short videos to help members and stakeholders better understand our long-range approach to investing and the importance of diversification to grow and protect the fund.
- An Enterprise Risk Management Program has been implemented to assess risks across the plan.
- Annual training session in cooperation with governmental agencies, i.e.: Social Security Administration, Centers for Medicare, Deferred Compensate and Estate Planning, Sr Health Insurance supplements. Provide and updated and enhanced employee portal into the current retirement system.
- Appropriate Investment Pools, Wellness Initiative, Online Enrollment.
- Based on changes to the Social Security electronic database for death checks, we strongly recommend that plans perform an annual audit of inactive members by sending verification letters.
- Beta testing new online software that will allow our membership to get a better overall picture of their financial wellness and provide education in areas of need.

– Continued

- CalSTRS administers a three-part hybrid system that includes traditional DB, CB, and voluntary DC plans.
- COAERS recently launched a multi-asset strategic partnership with BlackRock in order to garner best in class insights into asset allocation and risk management.
- Communication, by providing and enhancing the employee portal whereby any active member can access their account and see the balance, contributions plus interest, cash out value, and potential monthly benefit as of normal retirement age, (65), and perform their own future dated projection.
- Comparing fees with other systems and see if we are being overcharged.
- Consolidated recordkeepers, decreased plan expenses, Added Financial Wellness plan to assist participants achieve retirement goals, executed a Beneficiary Campaign that received recognition for participant education and effective communication.
- Continue to enhance security for member portal. Created two-step process for account setup, which includes sending a time-sensitive PIN to the address we have on file and requiring stronger passwords for existing accounts.
- Continued Executive Workshops. Board Member investment educational series (voluntary).
- Contracted with an independent third party to perform a Governance and Asset allocation review.
- Created a matched 457 with annuity and life insurance to bridge time between separation and collection of first pension check at Social Security age.
- Created from the ground up a mandatory defined contribution plan pursuant to legislative direction.
- Customer Service Improvements The multi-year effort to upgrade the pension administration system was successfully completed in March 2018. This mission critical system is used by PSERS' professionals, members, and employers to execute PSERS' primary pension administration functions for its members. This upgrade included for members and employers the ability to conduct transactions for themselves which would have previously required staff intervention and to view correspondence from PSERS such as letters, newsletters, Statement of Accounts and 1099Rs online. Since April 2018 more than 100,000 members have created a Member Self-Service (MSS) account and have conducted more than 50,000 transactions for themselves with the most common action being to update their nomination of beneficiaries. This new system also enables members to select their preference for how they would like PSERS to communicate with them and 98% of all MSS accounts have opted to go paperless and receive information from PSERS electronically.
- Developed educational presentations, online materials, and dedicated web page for members approaching retirement as part of a multi-year effort to expand education and outreach to members, retirees, and employers. Also developed and posted financial literacy content for members and retirees on website.
- Developing an outreach campaign for potential/eligible members who are currently not enrolled in the pension.
- Disaster Recovery Plan - We created a formal plan to continue operations if something were to occur at our main office. We test out the DR site on a regular basis and have employees rotate at least 1 per year.
- Disaster recovery site and plan. We have staff test the site by working there at least one day per year.
- Enhance online user security features beyond username and password. Executive Workshops held throughout the state for city officials, with presentations by Trustees and key staff.
- Establishment of a formal funding policy.
- Focus on outreach as identified in Strategic Plan, promoting a message of the real purpose and value of a DB plan to all stakeholders, legislators, local, state and national conference audiences, and media to counter attacks on DB plans.
- Gemini is a multi-year initiative that encompasses a complete re-write of our pension administration system. The current system has been in use since 2003. It has become increasingly difficult to update and maintain. The PAS is the backbone of our organization and performs all of our core functions for over 417,000 members and 990 school districts and employers, such as recording contributions and service, processing benefits, generating monthly member payroll and supporting the portals that our members and their employers use to work with TRS. In order to be able to launch its new defined contribution retirement plan, the System must upgrade the current frequency in which school districts and other employers report member information to TRS. Instead of an annual report, employers will now be required to report member data at the end of each pay period. This change to pay-period reporting will be the first aspect of Gemini to be developed, tested and implemented.
- Have provided members with online access to their accounts.
- Hired third party investment firm to perform an Independent Evaluation study on the Fund's investment performance and strategies.
- Idaho PERSI has recently re-located staff within our main office building in order to free up space to create an on-site member/employer training/education center. We plan for this space to be outfitted for face-to-face educational opportunities, and with the technological capabilities necessary for multi-media presentations and remote (webinar, etc.) participation via the internet. In order to have on-site capabilities, we are in the process of expanding available off-street parking to accommodate future guest populations.
- If we have a best practice story, I think it is the reserve fund noted above. It has maintained a stable contribution rate (albeit a high one) so employers have confidence for budgeting and the reserve has further reinforced our funding by holding the rate above where it would be absent the reserve fund.
- Implemented an immunization program for benefit shortfalls.

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- In 2016, we shifted from self-insured health care for the eligible over 65 retirees to a health care exchange market offering connectivity to the exchange via a vendor selected by OPERS. Additionally, we provide an allowance to this group to cover eligible health care costs, including, but not limited to, the premiums on medical plans obtained through the market. Prior to implementation of this plan change, health care costs had grown to approximately \$1.8 billion annually. Subsequent to this change, costs have declined annually by approximately \$600 million.
- In 2017 IMRF was awarded the ILPEX Gold Award for performance excellence. This qualified us to apply for the Baldrige Award in 2018. Our application has been reviewed and we have been awarded a site visit from Baldrige in Oct. 2018.
- In 2017 IMRF won the ILPEX Gold award for performance excellence. This qualified us to apply for the Baldrige Award in 2018. We were awarded a site visit from Baldrige in 2018 and again in 2019.
- In 2018, the Board conducted a "Governance Effectiveness Assessment" to ensure it was following governance best practices. The assessment yielded suggested next steps to improve the Board's overall effectiveness.
- In November 2017 NYSTRS began offering members the ability to file for retirement online. By fiscal year end, more than half of all retirement applications received were filed online. The electronic application is designed to ensure a member cannot inadvertently miss a step or make a mistake that would cause the paper application to be rejected. Also, because electronic filing requires the creation of a secure member account, the percentage of members with an account increased.
- In our current benefit tier, the 401(k) plan has an employer match. Members must save at least 5% of pay to receive the maximum 3% match. In 2014 we changed the default contribution rate for new hires from 1% of pay to 5% of pay. Since then, the percentage of active members saving enough to receive the full employer match has increased from less than 20% of the population to more than 70% of the population.
- In recent years COAERS has moved toward an outcome-oriented investment model that focuses foremost on the achievement of the Fund's strategic objectives. This evolution has meant shifting Board attention and Staff resources toward asset allocation and risk management, which are widely acknowledged as the key drivers of long-term investment success. This effort has also involved a rethink of existing processes such as manager selection, which has in turn led from a shift from the traditional "beauty contest" approach to manager selection to a "Premier List" model that helps mitigate the churn that is typical in institutional rosters. These changes have enabled the System to focus much more closely on the long-term sustainability of the System and the fulfillment of promises made to its beneficiaries.
- Interactive data dashboard.
- Investments is using Bloomberg Port/Port+ for improved risk management. We are in negotiations with XTP to improve cost transparency. Administration is adopting Concur for expense management and BoardDocs for board agenda and document management. Benefits has contracted for additional death reporting services. We have updated websites for the public and employers.
- Issue debt certificates to lower or eliminate unfunded liability while interest rates are at historic lows.
- MainePERS recently balanced the risks in the local governments plan by adopting a model that shares the same risks in a different manner between employees, employers and retirees. MainePERS staff, and advisory committee and our actuary dedicated 2 ½ years to developing and sharing the proposed changes with stakeholders before the changes were adopted. The goals of these changes were to have a high degree of certainty that basic benefits could be paid throughout member and retiree lifetimes. Our modeling suggests the auto-trigger approach that determines how market downturns will be handled ahead of time will protect the benefits in this plan.
- Make the governance structure as apolitical as possible.
- Methods to monitor retiree benefit compliance (i.e. reemployment, disability, children, widows).
- Middlesex County Retirement System employs a part-time social security consultant to deliver educational programs regarding social security benefits, the Government Pension Offset, and Windfall Elimination Provision. Further, MCRS educates its employer units through Advisory Council meetings, attendance at Boards of Selectmen/Finance Committee meetings, and onsite Employer Training Programs.
- Modify Investment Allocation to minimize downside risk.
- New closed 30-year amortization funding corridor, see #11.
- Next Generation Managers.
- On-boarding Private Market analytics and fee verification services.
- Our plan started experimenting with having staff available to members and retirees after hours to make our agency more accessible.
- Recently developed strategic plan working with Board and staff.
- Related to the scorecard above, STRS Ohio is using Monte Carlo simulations to provide probability analysis of funded ratios and funding periods 10 years in the future.
- Related to the scorecard above, STRS Ohio is using Monte Carlo simulations to provide probability analysis of funded ratios and funding periods 10 years in the future.
- Separate funding mechanism for postretirement benefit increases.
- Solicit retirees to fill seasonal positions at the Parks and Zoo.
- Started new program that pairs Defined Contribution plan with our supplemental savings program to function as a single, flexible plan with multiple benefits: (1) Employers can require mandatory participation in the DC portion of this plan, (2) Employers can incentive employee savings through matching pre-tax contributions.

– Continued

- The Fund continues to host education and retirement seminars for its members.
- THE FUND IS IN THE PROCESS OF ENHANCING CYBER SECURITY AND DATA SECURITY.
- The MEABF performs an annual Signature Verification process to ensure that Pension Benefits are being sent/used to the intended recipient. This program has retrieved over-payments to non-members and identified fraudulent activity.
- The Plan is exploring advanced investment risk management techniques with the hopes to deploy them in the coming years.
- The Plan worked quickly with City Council to change the plan after 2011 which kept the Plan from ever falling below 80% funded.
- Use early warning to identify payee accounts, multiple death notification services, and a third-party personal verification via interview to check verify and protect payments to retiree population.
- Use of a more effective long-term investment allocation model.
- Use of "Alive and Well" Letters annually, as databases alone are insufficient to prevent overpayments. Increasing terms of board member service from 2 or 3 years, to 4 years. Implementation of Board: Education Policy, Code of Conduct, Code of Ethics Policy. Annual Pension Status mailing, along with annual benefit statement.
- Virtual Desktop and soft phone implementation as cloud-based disaster recovery plan.
- VRS's comprehensive financial wellness program is aimed at helping members make informed and educated decisions on everyday financial matters while saving for the future. The program includes interactive courses, personalized action plans and content recommendations based on the member's interests as well as their demographics and history. VRS is in the midst of a multi-year modernization program which is phasing out the legacy system, RIMS and replacing it with VNAV. VRS continues the final phase of its technology modernization project by developing new technology systems to support interactions with VRS members. The new system allows members to electronically request refunds and initiate a service purchase request, and in the future will allow members to manage beneficiaries and file for retirement on-line. A redesigned benefit estimator allows members to easily create VRS retirement benefit estimates based on different retirement dates or payout options. VRS introduced a new goal-based retirement planner where members can input a benefit scenario and add other sources of income and expenses, including income taxes, health insurance and living expenses. Based on their individualized retirement goals, the planner helps members project their income and expenses in retirement and take a broader view of life after work.
- We are anticipating completing a CAFR report.
- We are in the process of launching an online member resource portal called "Ask Rob" (Retirement Options and Benefits). We are excited about this project, as it replaces our annual paper booklet.
- We conduct regional training programs throughout the year. The two-hour programs focus on the public retirement plan benefits and the interplay with Social Security, WEP and GPO.
- We define stakeholders broadly. Beyond just members and beneficiaries. We conduct a summer social, affidavit breakfast, union visits, council visits and annual meeting as communication/engagement practices. We have others related to plan change, business practice and oversight.
- We moved benefit payments to our custody bank. This allows us to make one-time payments electronically (refunds, etc.) and to withhold income taxes for all states that have them (Wyoming does not; 80% of our payments are within Wyoming, but 20% reside out of state, usually in states that have an income tax); we will also save money vs. the state controller. We also implemented performance pay for our investment professionals. They will receive extra pay if they achieve excellence as defined by besting certain investment benchmarks. We hope that this will improve retention and recruiting for our investment team and thus lead to better returns.
- We recently implemented a custom-developed pension administration system, built from the ground-up. We used a mixture of consultants and staff on the project.
- We recently overhauled our employer web portal, which streamlined the payroll reporting process. We saw a 114% increase in remitted revenue for April 2018 (when the new portal was launched) vs. April 2017.
- We successfully initiated a step towards tying retiree increases to an inflation index. This has not previously been done in Minnesota. Prior to that change, the annual post-retirement increase was dependent on plan funding status.
- Weekly death match run to post date of death to database. When an identified retiree has no continuing benefit and the last benefit payment has been issued, the account is automatically closed and a letter to the member's estate automatically generated to confirm no further benefit eligibility.
- Whiteboard training video.

Appendix A: Other Investments

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. The size of the word is based on the frequency of its use. Underneath the text cloud are the verbatim comments.



Verbatim Comments:

- *Private Equity return: 18.38; Hedge Fund return: 10.81; Opportunistic return: 21.61.
- Other Fixed: Current 4.0; Target 5.0; IRR -.65 2) Multi-asset: Current 4.0; Target 5.0; IRR .81.
- 2% Emerging Markets Debt, 8.63% return.
- 8% is allocated to commingled funds, 2% is allocated to bank loans.
- 8.6%-10% Public Real Assets, 2.5% Credit Opportunities.
- Absolute Return.
- Absolute Return and Natural Resources/Infrastructure.
- Absolute Return: 8.5% / 8.0% / 3.73% & Natural Resources/Infrastructure: 3.0% / 4.0% / 5.74%.
- All "Other" asset classes are included in the Private Equity/Hedge Fund/Alternatives classification.
- Alternative.
- Alternative investments include private equity, private real estate, and hedge fund.
- Alternatives are all private equity/private debt.
- As of 06/30/2018: (Actual) Broad Growth = 74.7%, Principal Protection = 8.3%, Crisis Risk Offset = 12.9%, Real Return = 3.1%, Opportunities = 0.2%, Other = 0.9%. (Target) Broad Growth = 72.0%, Principal Protection = 8.0%, Crisis Risk Offset = 13.0%, Real Return = 7.0%, Opportunities = 0%, Other = 0%.
- Bank Loans.
- Bank Loans.
- Bank Loans, GTAA.
- Bond Fund, Inflation Protection Fund, and Socially Responsive Fund.
- CAA (Other): Private Real Asset 1.4%, TIPS 0.8%, Risk Parity 8.3%, Public Real Assets 7% Target (Other): Private Real Asset 2%, TIPS 2%, Risk Parity 8%, Public Real Assets 6% GIR (Other): Private Real Asset -6%, TIPS 4.5%, Risk Parity 10.8%, Public Real Assets -0.7%.
- Convertible Bonds.
- Covers all Alternative Investments.
- Credit Fixed Income.
- Credit strategies.
- Credit-current allocation is 11.3% with target of 14% and one yr. gross of 6.53%; Risk Parity-current allocation is 13% with target of 14% and one year gross of 13.25%; Crisis Risk Offset-current allocation is 16.7 with a target of 20% and one year gross return of 3.65%; Private Appreciation-current allocation is 11.4% with target of 12% and a one year return of 15.14%. Private real estate makes up 7% of the private appreciation class and has been included on the Real Estate line item.
- CURRENT | TARGET | RETURN. Real Assets = 11.3 | 13.5 | 3.5; Diversifying Strategies = 10.4 | 12.5 | 1.98.
- CURRENT/TARGET/RETURN. Real Assets = 9.5%/13.5%/1.74%; Diversifying Strategies = 9.2%/12.5%/9.10%.
- Current: Non-Core FI=16.2%; Real Return=10.2%; Target: Non-Core FI=20%; Real Return=10%; Gross Inv Return: Non-Core=8.06%; Real Return=8.32%.
- Current: Non-Core Fixed Income=18.64%; Real Return=10.73%; Target: Non-Core Fixed Income=20% Real Return=10%; Gross Investment Return: Non-Core Fixed Income=2.55% Real Return=-4.04%.
- Current: Yield Driven: 7.8; Real Return: 11.0; Target: YD: 8.0; RR: 11.0; Performance: YD 6.4; RR 6.5.
- Diversified Multi Asset.
- Diversified Strategies /Other investments.

– Continued

- Domestic Fixed Income comprised of Core/Core Plus Fixed Income = 8.6%, United States Treasury = 7.2% and Public Credit = 2.4% Private Equity/Hedge Fund/ Alternatives comprised of Real Assets = 12.8%, SSgA Real Asset Overlay Proxy =5.3%, Commodities = (8.1%), Absolute Return - Diversifying = 0.3%, Private Credit = 5.6%, Private Equity = 24.0%, and Opportunities = 5.3%.
- Dynamic asset.
- Emerging Equity.
- Emerging Markets Bonds (4.5/5/7), Real Return (7.4/8/10.8), Absolute Return (10.9/10/6.4).
- Emerging Markets, Total Timberland, Total PCS.
- Energy MLPs.
- For returns we calculate returns separate for private equity, hedge funds and private credit.
- Global Asset Allocation.
- Global Asset Allocation and for Hedge Fund Alternatives, it is an opportunistic allocation that has a 0-6% possible allocation, funds taken from the fixed income and equity portion of the portfolio. We also have an overlay strategy for our cash.
- Global Listed Infrastructure.
- Global options, inflation protection, long treasuries, systematic trend following.
- GTAA.
- Hedge fund.
- Hedge fund of funds, MLP, multi asset income fund.
- Hedge Funds classified separately. Private Equity/Alternatives reported separately above.
- Hedge Funds, TIPS, MLP's.
- High Yield & Alternative Credit included in "Other".
- Hybrid.
- Inflation Protection.
- Inflation Sensitive (1.81%, 2.0%, 9.09%); Risk Mitigating Strategies (8.69%, 9.0%, -8.9%); Innovative Strategies (0.21%, 0.0%, 5.91%).
- Infrastructure.
- Infrastructure 0 for current for end of year 17; we wanted 5%.
- Infrastructure 3.1% current, 3% target; private credit 3.8% current, 8% target; cash held for overlay 2.6%; 1-yr returns: Infrastructure 18.1%; private credit 8.5%.
- Infrastructure, Multi-Asset Funds, Derivative Positions.
- infrastructure, Multi Asset Strategies.
- Infrastructure, Risk Parity.
- International Equity - Dev xus: 19; International Equity - EM: 23; Domestic Fixed Income - US Debt Index: 0.1; Domestic Fixed Income - US TIPS: -0.7; International Fixed Income - Dev: -0.4; International Fixed Income - EM: 8; High Yield Bond - HY: 16; High Yield Bond - Bank Loan: 3.
- International Equity - Dev xus: 19; International Equity - EM: 23; Domestic Fixed Income - US Debt Index: 0.1; Domestic Fixed Income - US TIPS: -0.7; International Fixed Income - Dev: -0.4; International Fixed Income - EM: 8; High Yield Bond - HY: 16; High Yield Bond - Bank Loan: 3.
- Investment grade credit and mortgage backed securities.
- Investment grade credit, Mortgage backed securities, Diversified Strategies.
- LIQUID DIVERSIFYING ASSETS.
- Master Limited Partnership.
- Master Limited Partnerships.
- Master Limited Partnerships.
- MLP.
- MLP 5%, emerging markets 9%.
- MLP's.
- MLPs, private credit.
- Multi-asset.
- Multi-asset - GTAA and Risk Parity.
- multi-asset class strategies.
- Multi-asset including real assets, opportunistic private market and risk mitigation strategies.
- Multi-Asset: Risk Parity, GTAA.
- Mutual TIPS 5.31%, Emerging public market equities (7%).
- Natural resources and infrastructure/investment return is net of fees.
- Natural Resources.
- NOTE: PSERS Reports investment returns net of net of fees. Current and target allocations differ from the asset classes shown in this survey. Data will be supplied separately via email.
- Note: cash is invested in an overlay program using stock and bond index futures producing a return equivalent to a 60% stock / 40% composite bond portfolio.
- Opportunistic Fixed Income.
- Opportunity Fund includes timber, tactical, credit, risk-parity, and other opportunistic strategies.
- Other = Global Asset Allocation. International FI is defined as Emerging Market Debt.
- Other classes include multi-asset strategies 95.4% return) and opportunistic strategies (13.0% return).
- Other is floating rate debt.
- Other is TIPS and Liquid Diversifying.
- Other- timber and infrastructure.
- OTHER: Column 1 Infrastructure 2.9 and Risk Parity 4.6 OTHER Column 2 Infrastructure 4 Risk Parity 5 OTHER Column 3 Infra 5.03 Risk parity 12.35.
- Other: timber and infrastructure.
- Other=emerging markets; note domestic equity includes 20% SMID CAP and 29.6% Large CAP; Large CAP returned 29.6% & SMID CAP 20.0%.
- preferred/convertible securities.
- Privat Credit.
- Private Credit.
- Private credit, MLPs.
- Private Credit, MLP's and Real Assets (Infrastructure, Timberland and Agriculture. Current and Target allocation info as of 6/30/19. Returns on 1st page as of 12/31/18.
- Private Credit. Also please note a cash contribution was received at year end, therefore zero return for cash equivalents.
- Private Equity - 10% allocation; return 15.18%; Hedge Funds - 10% allocation; return 2.58%; Private Credit - 3.5%; return 6.19%.
- Private Equity excludes hedge funds, hedge funds included separately under "other".
- Public Real Assets and Opportunistic Credit.

– Continued

- Rates Global Fixed Income not tracked separate from Total Global Credit ** PE - 16.6, HF - 5.88, Alt. - 9.29.
- Rates Global Fixed Income not tracked separately from Total Global Credit ** PE: 16.60, HF: 5.88, Alt.: 9.29.
- Real Assets.
- Real Assets (MLPs and Infrastructure).
- Real Assets 7.5%.
- Real Assets and Risk Parity.
- Real Estate Debt (2.0% 1-yr return), Private Debt (13.7% 1-yr return).
- Real Return.
- Real Return Current Allocation 8.6%, Real Return Target 10% and Real Return Investment Return 1.96. Absolute Return Current Allocation 5.71%, Absolute Return Target 10% and investment return 5.52%.
- Real return, absolute return, and other real assets.
- REIS Composite & Real Assets Composite.
- Risk Diversifying, Opportunistic.
- Risk Parity.
- Risk Parity (8.2 vs. 8.0) Infrastructure (2.7 vs 2.0) MLPs (4.1 vs 4.0)
Note: PSERS reports net of fee returns only. Gross returns not available.
- Risk Parity + MLP's.
- Risk Parity allocation of 13.1% target of 14% with return of -6%; Crisis Risk Offset allocation of 18% with target of 20%, return of 0.2%; Credit allocation of 11.3% with target of 14%, return of 3%.
- Risk Parity Strategy. Has been terminated in mid-2019.
- Risk Parity, GTAA, Other Pension Assets, and Rebalancing.
- Stabilized Growth = 31.9%, Traditional Growth = 32.8%, Noncore Real Estate = 2.4%, Private Equity = 7.7%, Crisis Risk Offset = 12.9%, Opportunities = 0.2%, Principal Protection = 8.3%, Real Return = 3.1%, Other = 0.9%.
- Strategic.
- Strategic Investments.
- Tangible assets portfolio and Innovation portfolio.
- Target Date Fund (OSGP) *Alternatives 11.03%.
- This is the cumulative performance of the portfolio.
- Timber.
- Timber & Infrastructure.
- Timber 2.2% (2.2% actual) and Infrastructure 5.8% (4.7% actual) targets.
- Timber, Farmland.
- TIPS = 8.93% current, 10.00% Target; MLPs = 5.21% current, 5.00% target. TIPS net return = 1.80%, MLPs net return = -0.24%; Commodities was a net return.
- TIPS = 9.31% actual, 10% target. MLPs = 5.35% actual, 5% target. TIPS net of fee return = 1.80%, MLPs net of fee return = -0.22%. Commodities was net of fee as well.
- We are part of the State of MA-PRIT Fund.

Appendix B: 2019 Study Instrument



2019 NCPERS PUBLIC EMPLOYEE RETIREMENT SYSTEMS STUDY

Please share your feedback so we can continue to provide the most up-to-date data addressing retirement issues for public pension plans across the nation. Your most recent Comprehensive Annual Financial Report will help answer most questions.

If you administer more than one plan, please copy this survey for each and note the name of the fund. If you are a multiple employer plan, you may use aggregate numbers from your CAFR and respond to the questions in the generally applicable way for most of the plans you administer.

Please enter your ID number from the cover email:	<input type="text"/>
Plan name:	<input type="text"/>
What type of plan is this? (Mark all that apply.)	
<input type="checkbox"/> <i>Defined Benefit Plan (Traditional Pension Plan)</i>	<input type="checkbox"/> <i>Combination Plan (Blends Defined Benefit & Defined Contribution)</i>
<input type="checkbox"/> <i>Defined Contribution Plan (Mandatory Retirement Account)</i>	<input type="checkbox"/> <i>Cash Balance Plan</i>
Plan Statistics	
1. Fund statistics from most recently completed fiscal year (if applicable). <u>Please do not use commas, dollar signs or percentage marks in the field - it is numeric only.</u>	
Total number of members (actives + deferred + retirees + beneficiaries):	<input type="text"/>
Total number of staff who administer the fund (full-time equivalent):	<input type="text"/>
Fiscal year of your CAFR referenced for this survey (MM/DD/YYYY):	<input type="text"/>
Market value of plan assets (\$ in thousands from actuarial valuation):	<input type="text"/>
Plan fiduciary net position (a) (\$ in thousands from actuarial valuation):	<input type="text"/>
Total pension liability (b) (\$ in thousands from actuarial valuation):	<input type="text"/>
Current funded ratio (a divided by b) (%):	<input type="text"/>
Cost of Living Adjustment (COLA) offered by plan in last fiscal year (%):	<input type="text"/>
Did your plan receive the full (100%) actuarially determined contribution in the last fiscal year?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Member contributions as percent of payroll (%):	<input type="text"/>
Employer contributions as percent of payroll (%):	<input type="text"/>
Investment manager expenses (basis points):	<input type="text"/>
Administrative expenses (basis points):	<input type="text"/>
Investment assumption/discount rate (%):	<input type="text"/>
Inflation assumption (%):	<input type="text"/>
Investment smoothing period (years):	<input type="text"/>
Amortization period (years):	<input type="text"/>
Type of amortization period:	<input type="checkbox"/> <i>Open/Rolling</i> <input type="checkbox"/> <i>Closed/Fixed</i>
Gross investment return % (1 year):	<input type="text"/>
Gross investment return % (5 year):	<input type="text"/>
Gross investment return % (10 year):	<input type="text"/>
Gross investment return % (20 year):	<input type="text"/>

Current and Target Asset Allocation / Investment Return

2. For each of the asset classes below, please specify your **CURRENT** and **TARGET** asset allocation and your **1 YEAR GROSS INVESTMENT RETURN (%)** for each asset class. **Please note:** percentages for asset allocation should equal 100%.

CURRENT asset allocation:	TARGET asset allocation:	Gross investment return % (1 yr):
Global Equity (%): <input type="text"/>	Global Equity (%): <input type="text"/>	Global Equity (%): <input type="text"/>
Domestic Equity (%): <input type="text"/>	Domestic Equity (%): <input type="text"/>	Domestic Equity (%): <input type="text"/>
International Equity (%): <input type="text"/>	International Equity (%): <input type="text"/>	International Equity (%): <input type="text"/>
Global Fixed Income (%): <input type="text"/>	Global Fixed Income (%): <input type="text"/>	Global Fixed Income (%): <input type="text"/>
Domestic Fixed Income (%): <input type="text"/>	Domestic Fixed Income (%): <input type="text"/>	Domestic Fixed Income (%): <input type="text"/>
International Fixed Income (%): <input type="text"/>	International Fixed Income (%): <input type="text"/>	International Fixed Income (%): <input type="text"/>
High Yield Bond (%): <input type="text"/>	High Yield Bond (%): <input type="text"/>	High Yield Bond (%): <input type="text"/>
Real Estate (%): <input type="text"/>	Real Estate (%): <input type="text"/>	Real Estate (%): <input type="text"/>
Private Equity/Hedge Fund/ Alternatives (%): <input type="text"/>	Private Equity/Hedge Fund/ Alternatives (%): <input type="text"/>	Private Equity/Hedge Fund/ Alternatives (%): <input type="text"/>
Commodities (%): <input type="text"/>	Commodities (%): <input type="text"/>	Commodities (%): <input type="text"/>
Cash Equivalents (%): <input type="text"/>	Cash Equivalents (%): <input type="text"/>	Cash Equivalents (%): <input type="text"/>
Other (specify asset below) (%): <input type="text"/>	Other (specify asset below) (%): <input type="text"/>	Other (specify asset below) (%): <input type="text"/>

If you entered an "Other" asset class above, please specify the other class(es) in which your fund is currently invested:

3. Which **retirement benefits** below does your plan offer or is considering offering? Please skip individual items below if not applicable.

	<i>Already Offering</i>	<i>Considering Offering</i>
Defined Benefit Plan (traditional pension plan in which the benefit is defined by a formula based on service and average wages)	<input type="checkbox"/>	<input type="checkbox"/>
Defined Contribution Plan (retirement account such as a 403(b) or 401(k) in which an employer's contribution is specified and employee participation is generally mandatory)	<input type="checkbox"/>	<input type="checkbox"/>
Deferred Compensation Plan (tax-deferred retirement savings account such as a 457 in which employee participation is voluntary)	<input type="checkbox"/>	<input type="checkbox"/>
Combination Plan (blends Defined Benefit and Defined Contribution elements)	<input type="checkbox"/>	<input type="checkbox"/>
In-service death benefit	<input type="checkbox"/>	<input type="checkbox"/>
Disability benefit provided either within the plan, by Social Security or by employer	<input type="checkbox"/>	<input type="checkbox"/>
An automatic post-retirement adjustment of payments (e.g. COLA)	<input type="checkbox"/>	<input type="checkbox"/>
A compounding post-retirement adjustment of payments (e.g. COLA)	<input type="checkbox"/>	<input type="checkbox"/>
An ad hoc (not necessarily automatic or compounding) post-retirement adjustment of payments (e.g. COLA)	<input type="checkbox"/>	<input type="checkbox"/>
Employer pick up of employee contributions	<input type="checkbox"/>	<input type="checkbox"/>
Deferred Retirement Option Plan (DROP - in all forms)	<input type="checkbox"/>	<input type="checkbox"/>

4. Which **retirement plan changes** below have been implemented or are being considered by the plan or plan sponsors? Please skip individual changes below if not applicable.

	<i>Already Implemented</i>	<i>Considering Implementing</i>
Lower the actuarial assumed rate of return	<input type="checkbox"/>	<input type="checkbox"/>
Raise benefit age/service requirements	<input type="checkbox"/>	<input type="checkbox"/>
Increase employee contributions	<input type="checkbox"/>	<input type="checkbox"/>
Hold or lengthen the amortization period to improve affordability	<input type="checkbox"/>	<input type="checkbox"/>
Shorten the amortization period to improve funded status	<input type="checkbox"/>	<input type="checkbox"/>

5. Which **business practices** below have been implemented or are being considered by the plan or plan sponsors? Please skip individual items below if not conducted.

	Already Implemented	Considering Implementing
Conduct a death audit	<input type="checkbox"/>	<input type="checkbox"/>
Conduct an actuarial audit by a third party actuary (includes replication of valuation and opinion on actuarial assumptions)	<input type="checkbox"/>	<input type="checkbox"/>
Conduct an information systems security audit	<input type="checkbox"/>	<input type="checkbox"/>
Conduct a building security audit	<input type="checkbox"/>	<input type="checkbox"/>
Update/strengthen an asset allocation study	<input type="checkbox"/>	<input type="checkbox"/>
Expand operational performance benchmarking	<input type="checkbox"/>	<input type="checkbox"/>
Update or enhance administrative software used for member data	<input type="checkbox"/>	<input type="checkbox"/>
Update or enhance online portal provided for members to access account information	<input type="checkbox"/>	<input type="checkbox"/>
Conduct an employer/reporting unit satisfaction assessment	<input type="checkbox"/>	<input type="checkbox"/>
Comply with new State statutory or regulatory requirements to report your funded status based on a rate of return different from your assumed rate of return	<input type="checkbox"/>	<input type="checkbox"/>
Enhance member financial wellness/retirement readiness resources	<input type="checkbox"/>	<input type="checkbox"/>

6. Which **communications and member engagement practices** below have been implemented or are under consideration by the plan or plan sponsors? Please skip individual practices below if not conducted.

	Already Implemented	Considering Implementing
Develop public relations plan to address "Pension Envy"	<input type="checkbox"/>	<input type="checkbox"/>
Develop staff talking points on key issues affecting the fund	<input type="checkbox"/>	<input type="checkbox"/>
Expand retirement planning education for members	<input type="checkbox"/>	<input type="checkbox"/>
Conduct a member satisfaction survey	<input type="checkbox"/>	<input type="checkbox"/>
Notify members of updated handbook/summary plan description (electronically or paper)	<input type="checkbox"/>	<input type="checkbox"/>
Actively use social media (Facebook, Twitter, etc.) to share messages with members	<input type="checkbox"/>	<input type="checkbox"/>
Conduct online educational sessions (webinars) for participants	<input type="checkbox"/>	<input type="checkbox"/>

7. Which of the following **communication methods** does your plan or plan sponsor have the ability to conduct?

	Yes	No
Capacity to send a postcard to the home address of your entire membership	<input type="checkbox"/>	<input type="checkbox"/>
Capacity to send a mass phone message to your entire membership	<input type="checkbox"/>	<input type="checkbox"/>
Capacity to send a mass text message to your entire membership	<input type="checkbox"/>	<input type="checkbox"/>
Capacity to send an e-mail to your entire membership	<input type="checkbox"/>	<input type="checkbox"/>
Does your plan have a Facebook or Twitter account?	<input type="checkbox"/>	<input type="checkbox"/>
Does your plan have a mobile app?	<input type="checkbox"/>	<input type="checkbox"/>

8. Which **oversight practices** below have been implemented? Please skip individual practices below if not conducted.

	Yes	No
Receipt of the GFOA Award of Excellence for the most recent award cycle	<input type="checkbox"/>	<input type="checkbox"/>
Receipt of NCPERS Certificate of Transparency	<input type="checkbox"/>	<input type="checkbox"/>
Receipt of PPCC Standards Award	<input type="checkbox"/>	<input type="checkbox"/>
Receipt of PPCC Administrative Certificate	<input type="checkbox"/>	<input type="checkbox"/>
Receipt of PPCC Funding Certificate	<input type="checkbox"/>	<input type="checkbox"/>
Receipt of an unqualified opinion from the auditor on the fund's financial statements, internal controls, and compliance with applicable laws and regulations	<input type="checkbox"/>	<input type="checkbox"/>
Conduct an actuarial valuation at least every 2 years	<input type="checkbox"/>	<input type="checkbox"/>
Board adoption and adherence to written investment policies	<input type="checkbox"/>	<input type="checkbox"/>
Board adoption of written fiduciary standards	<input type="checkbox"/>	<input type="checkbox"/>
Receipt of annual investment performance evaluation from an outside independent investment review entity	<input type="checkbox"/>	<input type="checkbox"/>
Use of a formal enterprise risk management framework	<input type="checkbox"/>	<input type="checkbox"/>

9. How satisfied are you with your plan's readiness to address retirement trends and issues over the next 2 years?

Very Dissatisfied= 1 2 3 4 5 6 7 8 9 Very Satisfied= 10

10. If you have an unfunded accrued actuarial liability, what strategies have you put in place to reduce it beyond traditional amortization?

11. Think about best practices. Please share a success story or plan innovation you are considering that other plans may like to learn about

12. Which categories best describe your innovation or best practice story above? **(Please mark all that apply.)**

Retirement benefit Business practice Oversight practice

Plan change Communication/ engagement practice Investment

Questions about your fund (your responses will be confidential)

13. What type of employees/beneficiaries does your fund serve? **(Please mark all that apply.)**

Local (township/city/village) Public safety Educational

County State Other

14. What type of health plan does your pension plan sponsor? **(Please mark all that apply.)**

None, does not sponsor (skip to Q16) Healthcare subsidy

Traditional (HMO, PPO, POS, etc.) Health Savings Account (HSA)

Supplemental gap health plan Voluntary Employees' Beneficiary Association (VEBA)

15. Who is eligible for the health plan? **(Please mark all that apply.)** Active members Retirees Beneficiaries

16. Are your members eligible for Social Security coverage? Yes No

17. Are your members eligible for Medicare coverage? Yes No

18. Do you include overtime in the calculation of the retirement benefit? Yes No N/A

19. How much of an impact on your fund will the US Supreme Court decision in the Janus v AFSCME Council 31 case have? Significant impact Little impact

Moderate impact No impact

20. Does your plan allow Board Members the ability to participate via conference call and vote? Yes No

21. How is your fund's current ability to attract and retain skilled employees as your staff retire? Significant problem Expect to become a problem soon

Starting to become a problem No problem

22. Which role(s) best describe your relationship to the fund? **(Please mark all that apply.)** Staff Plan consultant

Board member/ trustee Other

23. May we contact you if we have additional questions? Yes No

24. Please provide your name and email so we may provide access to the interactive comparison dashboard.

This concludes the study. Thank you for your time and cooperation.

For more information:

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