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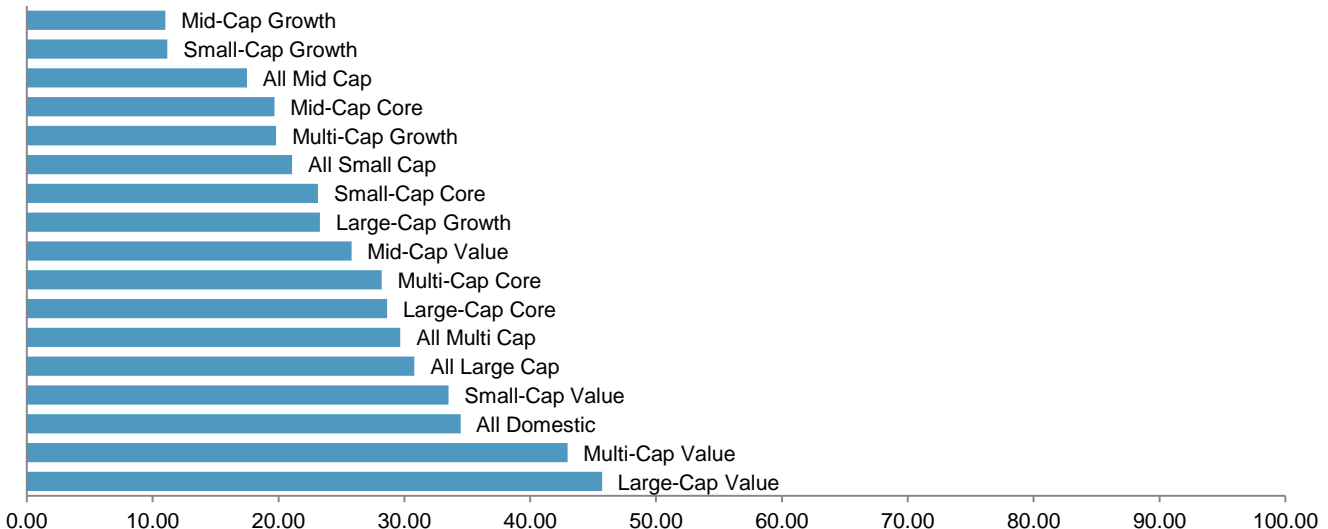
# SPIVA<sup>®</sup> Institutional Scorecard: How Much Do Fees Affect the Active Versus Passive Debate?

## EXECUTIVE SUMMARY

- This report examines the impact of fees on the performance of mutual funds and institutional managed accounts across equity and fixed income categories, using gross- and net-of-fees returns.
- Fees negatively affect managers' performance regardless of the type of investment account, though the magnitude varies depending on the category.
- For mutual fund and institutional managed accounts, the majority of managers in nearly every domestic equity category underperformed their respective benchmarks over the 10-year horizon.
- Large-cap value mutual funds was the only category that outperformed the benchmark on a gross-of-fees basis.
- In general, more mutual fund managers underperformed than their institutional counterparts for most equity categories on a net-of-fees basis, with the exception of small-cap core and small-cap growth.
- In the large-cap equity space, 84.60% of mutual fund managers and 79.58% of institutional accounts underperformed the [S&P 500<sup>®</sup>](#) on a net-of-fees basis. When measured on a gross-of-fees basis, 68.16% of large-cap mutual funds and 69.20% of institutional accounts underperformed.
- Similarly, in the mid-cap space, 96.03% (86.24%) of mutual funds and 92.02% (82.51%) of institutional accounts underperformed the [S&P MidCap 400<sup>®</sup>](#) on a net (gross) basis.
- In the small-cap space, over 80% of managers on both fronts underperformed the [S&P SmallCap 600<sup>®</sup>](#), regardless of fees. The findings in the small-cap space dispel the myth that small-cap equity is an inefficient asset class that is best accessed via active management.
- Managers investing in international, international small-cap, and global equities fared equally to or better than their domestic counterparts with respect to their respective benchmarks on both fee schedules. This finding is consistent for mutual funds and institutional accounts.

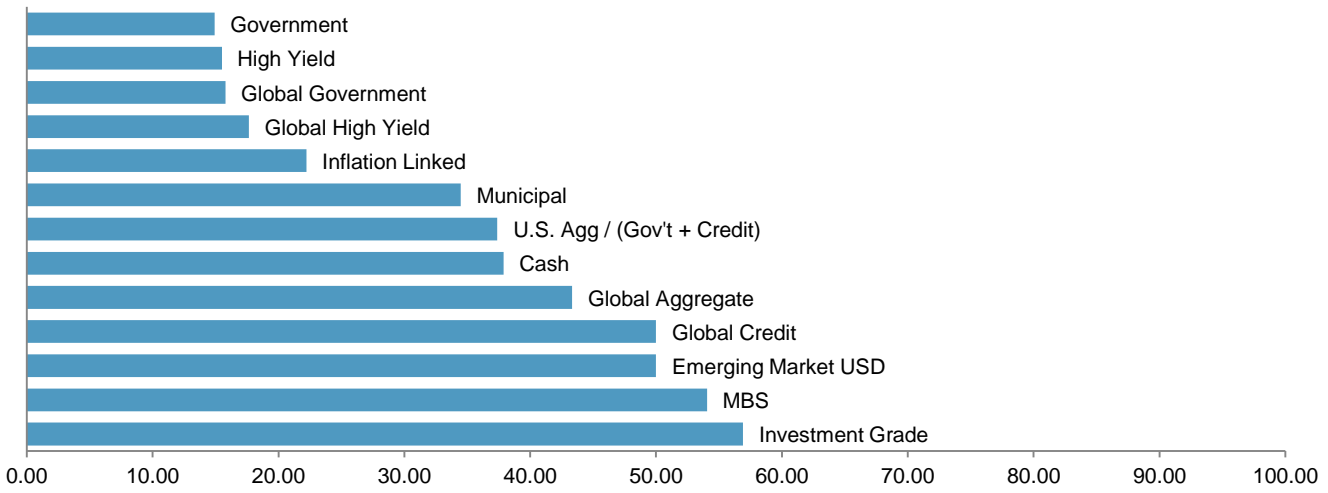
- In fixed income, the results were mixed depending on the market segment. Institutional managers continued to show strength in U.S. products such as mortgage-backed securities (MBSs), investment-grade corporate bonds, and global credit, outperforming their respective benchmarks.
- The municipal bond market saw a significant performance divergence between institutional accounts and mutual funds. Fees overwhelmingly affected the performance of mutual fund muni managers, as approximately 73% of them failed to outperform the benchmark on a net-of-fees basis, while only 47% underperformed on a gross-of-fees basis, constituting a difference of 26%. That difference is reduced to 12% when looking at institutional muni managers.
- The significant difference within the muni mutual fund space was not surprising when we examined average fees charged by muni managers across both investment categories. The median fee for muni mutual funds was 0.75% per year, whereas the median fee for institutional muni accounts was 0.35%.

**Exhibit 1a: Percent of Institutional Equity Managers Outperforming Their Benchmarks**



Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2016. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

**Exhibit 1b: Percent of Institutional Fixed Income Managers Outperforming Their Benchmarks**



Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2016. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Fees play a major role in the active versus passive debate. After subtracting fees, returns from active management tend to be less than those from passive management, as the latter costs less.<sup>1</sup> Within active management, it is widely understood and has been documented that fees can vary meaningfully depending on the type of investor.<sup>2</sup> In general, retail investors tend to pay higher advisory and management fees than institutional investors.<sup>3</sup> Institutional investors have the option to negotiate fees directly with asset managers based on the size of the mandate and how many strategies may already exist with one manager. Retail investors, on the other hand, lack such bargaining power.

Since 2002, S&P Dow Jones Indices has been publishing the S&P Indices Versus Active (SPIVA) U.S. Scorecard. The scorecard measures the performance of actively managed equity funds, investing in domestic and international equity, as well as fixed income funds against their respective benchmarks. The University of Chicago's Center for Research in Security Prices (CRSP) Survivor-Bias-Free US Mutual Fund Database serves as the underlying data source for the scorecard. As the CRSP database consists of publicly traded open-ended mutual funds, the fee structure primarily reflects retail products rather than institutional accounts.

This report attempts to answer three questions that are pertinent to the active versus passive debate.

1. When measured on a net- and gross-of-fees basis, do institutional asset managers outperform their respective benchmarks?
2. Similarly, do mutual funds outperform their respective benchmarks when measured on a net- and gross-of-fees basis?
3. For particular asset classes and sub-asset classes, do institutional managers fare better than their retail fund counterparts when measured on a gross-of-fees basis?

To answer these questions, we report the relative performance of U.S. equity and fixed income asset managers for institutional accounts<sup>4</sup> using composite returns from eVestment Alliance,<sup>5</sup> a provider of investment data and analytics for the institutional asset management industry. It should be noted that unlike the publicly traded mutual fund performance data, the data from eVestment relies on self-reporting by managers. Relative performance for retail funds on a gross-of-fees basis is computed by adding back the annual expense ratio to the net-of-fees returns. Appendix A contains detailed mapping of various investment strategies to their groups.

In addition, we compare the relative performance of open-ended mutual funds—using both net-of-fees and gross-of-fees returns—against similar peer groupings composed of institutional accounts. We report the figures for domestic equity, international equity, and fixed income categories.

<sup>1</sup> Sharpe, William F., "The Arithmetic of Active Management" *Financial Analysts Journal*, January/February 1991, Volume 47 Issue 1. "Properly measured, the average actively managed dollar must underperform the average passively managed dollar, net of costs."

<sup>2</sup> For example, research by the Investment Company Institute in "Mutual Funds and Institutional Accounts: A Comparison" (2006) showed that the average mutual fund advisory fee for large-cap domestic equity funds is around 70 bps, whereas the same category for a separate institutional account averages at 53 bps. Similarly, the average mutual fund advisory fee for a domestic fixed income fund ranges around 48 bps, while that for a separate institutional account is 30 bps.

<sup>3</sup> Fee differentials between mutual funds and separate accounts may stem from a number of factors. It is beyond the scope of our paper to cover those factors. For a more detailed write up on the key differences between the two structures, please refer to "Mutual Funds and Institutional Accounts: A Comparison" (2006).

<sup>4</sup> Institutional accounts include institutional separately managed accounts and commingled trusts.

<sup>5</sup> Composite returns can be measured as the equal-weighted or asset-weighted averages of the returns of all individual constituent portfolios, depending on the manager's discretion.

By producing this report, we aim to provide the institutional community with the ability to judge managers' true skills without the possible distortions that fees may create on performance. Including mutual funds—on both a net and gross performance basis—with institutional accounts also allows readers to see if fees make any meaningful difference in a particular asset class for a certain type of market participant.

This report also aims to address the notion that benchmarks are not directly investable and do not incur costs, thereby making any performance comparison of active funds against their benchmarks not “apples-to-apples.” By comparing retail mutual funds and institutional accounts on a gross-of-fees basis against their respective benchmarks, we eliminate any possibility that fees are the sole contributor to a given manager's underperformance.

This report is organized as follows. In Section I, we highlight the relative performance of retail funds and institutional accounts against their respective benchmarks for the equity and fixed income categories. Section II replicates the headline SPIVA U.S. Scorecard using only institutional accounts, detailing related metrics such as survivorship, style consistency, asset-weighted versus equal-weighted performance figures, and quartile breakpoints.

## SECTION I: PERCENTAGE OF RETAIL FUNDS AND INSTITUTIONAL ACCOUNTS UNDERPERFORMING THEIR BENCHMARKS

### Domestic Equity

Across various categories within the domestic equity space, the overwhelming majority of active managers, both retail and institutional, lagged their respective benchmarks. Overall findings suggest that on a gross- or net-of-fees basis, the U.S. equity space poses meaningful challenges for active managers to overcome.

**Exhibit 2: Domestic Equity – Percentage of Managers Underperforming Over 10 Years**

CATEGORY	BENCHMARK	MUTUAL FUND (%) NET OF FEES	MUTUAL FUND (%) GROSS OF FEES	INSTITUTIONAL ACCOUNTS (%) NET OF FEES	INSTITUTIONAL ACCOUNTS (%) GROSS OF FEES
All Domestic Funds	S&P Composite 1500®	82.87	67.11	76.31	65.52
All Large Cap Funds	S&P 500	84.60	68.16	79.58	69.20
All Mid Cap Funds	S&P MidCap 400	96.03	86.24	92.02	82.51
All Small Cap Funds	S&P SmallCap 600	95.64	81.40	90.61	78.91
All Multi Cap Funds	S&P Composite 1500	89.31	77.67	81.31	70.33
Large-Cap Growth Funds	S&P 500 Growth	95.22	77.99	89.96	76.70
Large-Cap Core Funds	S&P 500	89.43	70.73	84.18	71.38
Large-Cap Value Funds	S&P 500 Value	64.49	46.73	62.89	54.30
Mid-Cap Growth Funds	S&P MidCap 400 Growth	97.93	91.71	92.66	88.99
Mid-Cap Core Funds	S&P MidCap 400	98.04	86.27	90.16	80.33
Mid-Cap Value Funds	S&P MidCap 400 Value	89.16	77.11	84.95	74.19
Small-Cap Growth Funds	S&P SmallCap 600 Growth	98.01	92.04	95.53	88.83
Small-Cap Core Funds	S&P SmallCap 600	94.32	80.35	91.74	76.86
Small-Cap Value Funds	S&P SmallCap 600 Value	91.75	68.04	83.80	66.48
Multi-Cap Growth Funds	S&P Composite 1500 Growth	91.28	83.14	87.74	80.19
Multi-Cap Core Funds	S&P Composite 1500	89.40	77.81	82.91	71.79
Multi-Cap Value Funds	S&P Composite 1500 Value	81.05	64.71	66.67	57.02

Source: S&P Dow Jones Indices LLC, eVestment Alliance, CRSP. Data as of Dec. 31, 2016. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

### International Equity

In the non-U.S. equity space, we find that managers investing in international small-cap equities delivered higher returns than their respective benchmarks over the 5- and 10-year periods. Observations from previous SPIVA U.S. Scorecards also show that international small-cap funds is one area of international equity investing in which active management has fared quite well historically. While managers outperformed on a gross-of-fees basis in this space, they failed to provide value after fees were accounted for. This is to be expected, as access to smaller, less liquid foreign securities can be costly.

Managers investing in emerging market equities, which has traditionally been thought to be one area where active management can add value, fell short of the benchmark over the trailing 10-year period.

Nearly two-thirds of these managers failed to deliver excess returns compared with the broad-based benchmark.

**Exhibit 3: International Equity – Percentage of Managers Underperforming Over 10 Years**

CATEGORY	BENCHMARK	MUTUAL FUND (%) NET OF FEES	MUTUAL FUND (%) GROSS OF FEES	INSTITUTIONAL ACCOUNTS (%) NET OF FEES	INSTITUTIONAL ACCOUNTS (%) GROSS OF FEES
Emerging Market Funds	S&P/IFCI Composite	85.71	64.94	78.70	69.44
Global Funds	S&P Global 1200	84.26	58.33	78.63	67.52
International Funds	S&P International 700	83.89	67.45	81.48	69.44
International Small-Cap Funds	S&P Developed Ex-U.S. SmallCap	62.96	48.15	65.38	50.00

Source: S&P Dow Jones Indices LLC, eVestment Alliance, CRSP. Data as of Dec. 31, 2016. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

### Fixed Income

For fixed income, we present the performance of retail funds separate from institutional accounts due to classification nuances. Our source for mutual fund data, the CRSP Survivor-Bias-Free US Mutual Funds Database, adopted style and objective codes from the Lipper objective codes after 1998. Lipper objective codes classify funds by sector, maturity, and credit quality, whereas our source for institutional SMA data, the eVestment Universe, groups fixed income strategies mostly by sector. While it is reasonably straightforward to map sector funds between CRSP and eVestment, a good amount of subjectivity is required in mapping them for composites and composites with various maturity slices. In some sectors, such as government and investment grade, it is challenging to make a direct comparison between the performance of mutual funds and institutional accounts due to maturity slices.

For government bonds, when measured on a gross-of-fees basis, institutional managers performed worse than their mutual fund counterparts in the short- and intermediate-term maturities, and they performed at par in the longer-term maturity range. For investment-grade bonds, institutional accounts outperformed retail funds in all maturity buckets. In other sectors, such as MBSs, high yield, and emerging markets, both institutional and retail funds delivered similar results. In the municipal bond market, mutual fund managers outperformed institutional managers on gross-of-fees basis.

However, when examined on a net-of-fees basis, the narrative changes significantly due to fee structures. In emerging market debt, one-half of the managers in both groups outperformed their benchmarks on a gross-of-fees basis. However, this was negated after fees were accounted for, resulting in nearly three-fourths of the managers underperforming the benchmark.

Fees appeared to give retail MBS and municipal bond managers the biggest performance hurdles. When measured on a gross (net) basis, approximately 40% (84%) of retail municipal bond funds underperformed the benchmark. Similarly, nearly 66% of institutional muni bond managers lagged on a gross-of-fees basis, compared with 78% when measured on a net-of-fees basis.

For MBSs, institutional and retail funds had similar gross-of-fees performance, with the former underperforming the benchmark by 46% and the latter by 50%. However, on a net-of-fees basis, 80% of retail funds underperformed the benchmark while only 54% of institutional accounts underperformed.

**Exhibit 4: Fixed Income – Percentage of Managers Underperforming Over 10 Years**

CATEGORY	BENCHMARK	MUTUAL FUND (%) NET OF FEES	MUTUAL FUND (%) GROSS OF FEES
Government Short Funds	Barclays US Government (1-3 Year)	76.74	51.16
Government Intermediate Funds	Barclays US Government Intermediate	78.18	54.55
Government Long Funds	Barclays US Government Long	95.65	86.96
Investment-Grade Short Funds	Barclays US Government/Credit (1-3 Year)	64.63	51.22
Investment-Grade Intermediate Funds	Barclays US Government/Credit Intermediate	58.60	46.05
Investment-Grade Long Funds	Barclays US Government/Credit Long	96.30	94.44
Mortgage-Backed Securities Funds	Barclays US Aggregate Securitized - MBS	80.36	50.00
High-Yield Funds	Barclays US Corporate High Yield	96.60	76.87
Global Income Funds	Barclays Global Aggregate	61.29	50.00
Emerging Markets Debt Funds	Barclays Emerging Markets	76.19	47.62
General Municipal Debt Funds	S&P National AMT-Free Municipal Bond	72.73	46.59
California Municipal Debt Funds	S&P California AMT-Free Municipal Bond	85.71	38.10
New York Municipal Debt Funds	S&P New York AMT-Free Municipal Bond	94.12	35.29

Source: S&P Dow Jones Indices LLC, CRSP. Data as of Dec. 31, 2016. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

**Exhibit 5: Fixed Income – Percentage of Managers Underperforming Over 10 Years**

CATEGORY	BENCHMARK	INSTITUTIONAL ACCOUNTS (%) NET OF FEES	INSTITUTIONAL ACCOUNTS (%) GROSS OF FEES
Cash Funds	Barclays Short Treasury	66.67	62.12
Government Funds	Barclays US Government	85.07	85.07
Investment-Grade Funds	Barclays US Credit	48.28	43.10
MBS Funds	Barclays US Aggregate Securitized - MBS	54.05	45.95
U.S. Agg. / (Gov't + Credit) Funds	Barclays US Aggregate	69.53	62.62
Inflation-Linked Funds	Barclays US Treasury: US TIPS	88.89	77.78
High-Yield Funds	Barclays US Corporate High Yield	93.80	84.50
Global Aggregate Funds	Barclays Global Aggregate	73.33	56.67
Global Government Funds	Barclays Global Treasuries	89.47	84.21
Global Credit Funds	Barclays Global Aggregate - Corporate	50.00	50.00
Global High-Yield Funds	Barclays Global High Yield	100.00	82.35
Emerging Market USD Funds	Barclays Emerging Markets	75.00	50.00
Municipal Funds	S&P National AMT-Free Municipal Bond	77.93	65.52

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2016. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

**SECTION II: INSTITUTIONAL ACCOUNTS – SPIVA U.S. SCORECARD**

<b>Report 1: Percentage of U.S. Equity Funds Outperformed by Benchmarks</b>					
<b>FUND CATEGORY</b>	<b>COMPARISON INDEX</b>	<b>ONE-YEAR</b>	<b>THREE-YEAR</b>	<b>FIVE-YEAR</b>	<b>TEN-YEAR</b>
All Domestic Funds	S&P Composite 1500	63.69	88.33	85.35	76.31
All Large-Cap Funds	S&P 500	72.69	91.53	89.58	79.58
All Mid-Cap Funds	S&P MidCap 400	86.28	87.40	88.49	92.02
All Small-Cap Funds	S&P SmallCap 600	82.42	88.51	90.34	90.61
All Multi-Cap Funds	S&P Composite 1500	70.88	86.76	90.21	81.31
Large-Cap Growth Funds	S&P 500 Growth	80.40	95.00	90.65	89.96
Large-Cap Core Funds	S&P 500	83.00	91.47	91.04	84.18
Large-Cap Value Funds	S&P 500 Value	85.71	83.71	86.36	62.89
Mid-Cap Growth Funds	S&P Midcap 400 Growth	96.74	95.00	92.37	92.66
Mid-Cap Core Funds	S&P MidCap 400	90.57	86.67	89.19	90.16
Mid-Cap Value Funds	S&P MidCap 400 Value	96.30	82.98	87.50	84.95
Small-Cap Growth Funds	S&P SmallCap 600 Growth	94.04	93.53	93.69	95.53
Small-Cap Core Funds	S&P SmallCap 600	92.97	89.13	88.16	91.74
Small-Cap Value Funds	S&P SmallCap 600 Value	87.50	84.04	89.05	83.80
Multi-Cap Growth Funds	S&P Composite 1500 Growth	74.04	94.87	92.25	87.74
Multi-Cap Core Funds	S&P Composite 1500	80.00	85.00	88.51	82.91
Multi-Cap Value Funds	S&P Composite 1500 Value	74.38	78.20	89.47	66.67

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2016. Table is provided for illustrative purposes. Past performance is no guarantee of future results.

<b>Report 2: Survivorship and Style Consistency of U.S. Equity Funds</b>			
<b>FUND CATEGORY</b>	<b>NO. OF FUNDS AT START</b>	<b>SURVIVORSHIP (%)</b>	<b>STYLE CONSISTENCY (%)</b>
<b>ONE-YEAR</b>			
All Domestic Funds	3153	92.23	100.00
All Large-Cap Funds	1396	91.98	100.00
All Mid-Cap Funds	393	92.62	100.00
All Small-Cap Funds	774	91.73	100.00
All Multi-Cap Funds	590	93.22	100.00
Large-Cap Growth Funds	433	90.99	100.00
Large-Cap Core Funds	458	92.14	100.00
Large-Cap Value Funds	505	92.67	100.00
Mid-Cap Growth Funds	158	90.51	100.00
Mid-Cap Core Funds	98	92.86	100.00
Mid-Cap Value Funds	137	94.89	100.00
Small-Cap Growth Funds	231	88.74	100.00
Small-Cap Core Funds	243	93.83	100.00
Small-Cap Value Funds	300	92.33	100.00
Multi-Cap Growth Funds	163	93.87	100.00
Multi-Cap Core Funds	217	93.55	100.00
Multi-Cap Value Funds	210	92.38	100.00

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2016. Table is provided for illustrative purposes. Past performance is no guarantee of future results.



<b>Report 2: Survivorship and Style Consistency of U.S. Equity Funds (cont.)</b>			
<b>FUND CATEGORY</b>	<b>NO. OF FUNDS AT START</b>	<b>SURVIVORSHIP (%)</b>	<b>STYLE CONSISTENCY (%)</b>
<b>THREE-YEAR</b>			
All Domestic Funds	3354	82.80	100.00
All Large-Cap Funds	1501	82.28	100.00
All Mid-Cap Funds	425	83.29	100.00
All Small-Cap Funds	807	82.53	100.00
All Multi-Cap Funds	621	84.06	100.00
Large-Cap Growth Funds	467	81.58	100.00
Large-Cap Core Funds	502	80.48	100.00
Large-Cap Value Funds	532	84.59	100.00
Mid-Cap Growth Funds	165	83.03	100.00
Mid-Cap Core Funds	109	82.57	100.00
Mid-Cap Value Funds	151	84.11	100.00
Small-Cap Growth Funds	248	76.61	100.00
Small-Cap Core Funds	245	86.12	100.00
Small-Cap Value Funds	314	84.39	100.00
Multi-Cap Growth Funds	180	82.78	100.00
Multi-Cap Core Funds	218	88.07	100.00
Multi-Cap Value Funds	223	81.17	100.00
<b>FIVE-YEAR</b>			
All Domestic Funds	3596	71.44	100.00
All Large-Cap Funds	1600	70.75	100.00
All Mid-Cap Funds	470	71.28	100.00
All Small-Cap Funds	855	72.16	100.00
All Multi-Cap Funds	671	72.28	100.00
Large-Cap Growth Funds	501	70.26	100.00
Large-Cap Core Funds	536	67.91	100.00
Large-Cap Value Funds	563	73.89	100.00
Mid-Cap Growth Funds	181	71.27	100.00
Mid-Cap Core Funds	121	69.42	100.00
Mid-Cap Value Funds	168	72.62	100.00
Small-Cap Growth Funds	280	63.57	100.00
Small-Cap Core Funds	254	75.98	100.00
Small-Cap Value Funds	321	76.64	100.00
Multi-Cap Growth Funds	191	72.25	100.00
Multi-Cap Core Funds	242	74.38	100.00
Multi-Cap Value Funds	238	70.17	100.00

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2016. Table is provided for illustrative purposes. Past performance is no guarantee of future results.

**Report 2: Survivorship and Style Consistency of U.S. Equity Funds (cont.)**

FUND CATEGORY	NO. OF FUNDS AT START	SURVIVORSHIP (%)	STYLE CONSISTENCY (%)
<b>TEN-YEAR</b>			
All Domestic Funds	3053	67.28	100.00
All Large-Cap Funds	1397	67.36	100.00
All Mid-Cap Funds	408	65.20	100.00
All Small-Cap Funds	719	66.62	100.00
All Multi-Cap Funds	529	69.57	100.00
Large-Cap Growth Funds	449	66.82	100.00
Large-Cap Core Funds	467	63.81	100.00
Large-Cap Value Funds	481	71.31	100.00
Mid-Cap Growth Funds	165	63.64	100.00
Mid-Cap Core Funds	102	63.73	100.00
Mid-Cap Value Funds	141	68.09	100.00
Small-Cap Growth Funds	241	58.51	100.00
Small-Cap Core Funds	200	70.00	100.00
Small-Cap Value Funds	278	71.22	100.00
Multi-Cap Growth Funds	158	68.35	100.00
Multi-Cap Core Funds	192	70.83	100.00
Multi-Cap Value Funds	179	69.27	100.00

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2016. Table is provided for illustrative purposes. Past performance is no guarantee of future results.

**Report 3: Average U.S. Equity Fund Performance (Equal-Weighted)**

CATEGORY	ONE-YEAR (ANNUALIZED %)	THREE-YEAR (ANNUALIZED %)	FIVE-YEAR (ANNUALIZED %)	TEN-YEAR (ANNUALIZED %)
S&P Composite 1500	13.03	8.89	14.78	7.19
All Domestic Funds	12.05	6.12	13.13	6.94
S&P 500	11.96	8.87	14.66	6.95
All Large-Cap Funds	8.86	6.60	13.02	6.44
S&P MidCap 400	20.74	9.04	15.33	9.16
All Mid-Cap Funds	11.04	5.79	12.92	7.36
S&P SmallCap 600	26.56	9.47	16.62	9.03
All Small-Cap Funds	19.05	5.84	13.99	7.58
S&P Composite 1500	13.03	8.89	14.78	7.19
All Multi-Cap Funds	10.18	5.54	12.16	6.71
<b>LARGE-CAP</b>				
S&P 500 Growth	6.89	9.03	14.54	8.29
Large-Cap Growth Funds	3.25	6.10	12.98	6.98
S&P 500	11.96	8.87	14.66	6.95
Large-Cap Core Funds	8.96	6.73	12.74	6.28
S&P 500 Value	17.40	8.51	14.69	5.50
Large-Cap Value Funds	13.56	6.82	13.17	5.87

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2016. Table is provided for illustrative purposes. Past performance is no guarantee of future results.

**Report 3: Average U.S. Equity Fund Performance (Equal-Weighted) (cont.)**

CATEGORY	ONE-YEAR (ANNUALIZED %)	THREE-YEAR (ANNUALIZED %)	FIVE-YEAR (ANNUALIZED %)	TEN-YEAR (ANNUALIZED %)
<b>MID-CAP</b>				
S&P MidCap 400 Growth	14.77	7.99	14.42	9.74
Mid-Cap Growth Funds	4.87	3.99	11.69	7.31
S&P MidCap 400	20.74	9.04	15.33	9.16
Mid-Cap Core Funds	12.02	6.34	12.82	7.31
S&P MidCap 400 Value	26.53	9.81	16.07	8.48
Mid-Cap Value Funds	17.25	7.32	14.27	7.27
<b>SMALL-CAP</b>				
S&P SmallCap 600 Growth	22.16	9.26	16.35	9.90
Small-Cap Growth Funds	10.93	3.72	13.17	7.27
S&P SmallCap 600	26.56	9.47	16.62	9.03
Small-Cap Core Funds	19.04	6.38	14.14	7.72
S&P SmallCap 600 Value	31.32	9.64	16.88	8.18
Small-Cap Value Funds	25.97	7.16	14.44	7.55
<b>MULTI-CAP</b>				
S&P Composite 1500 Growth	7.90	8.95	14.60	8.48
Multi-Cap Growth Funds	4.24	3.87	11.76	7.11
S&P Composite 1500	13.03	8.89	14.78	7.19
Multi-Cap Core Funds	10.72	6.25	12.51	6.35
S&P Composite 1500 Value	18.49	8.63	14.87	5.83
Multi-Cap Value Funds	14.82	6.27	12.08	6.48

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2016. Table is provided for illustrative purposes. Past performance is no guarantee of future results.

**Report 4: Average U.S. Equity Fund Performance (Asset-Weighted)**

CATEGORY	ONE-YEAR (ANNUALIZED %)	THREE-YEAR (ANNUALIZED %)	FIVE-YEAR (ANNUALIZED %)	TEN-YEAR (ANNUALIZED %)
S&P Composite 1500	13.03	8.89	14.78	7.19
All Domestic Funds	10.11	6.59	13.44	6.60
S&P 500	11.96	8.87	14.66	6.95
All Large-Cap Funds	8.46	6.87	13.57	6.28
S&P MidCap 400	20.74	9.04	15.33	9.16
All Mid-Cap Funds	11.57	6.60	13.54	7.52
S&P SmallCap 600	26.56	9.47	16.62	9.03
All Small-Cap Funds	18.28	5.62	13.51	7.51
S&P Composite 1500	13.03	8.89	14.78	7.19
All Multi-Cap Funds	8.87	6.02	12.34	6.13

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2016. Table is provided for illustrative purposes. Past performance is no guarantee of future results.

<b>Report 4: Average U.S. Equity Fund Performance (Asset-Weighted) (cont.)</b>				
<b>CATEGORY</b>	<b>ONE-YEAR (ANNUALIZED %)</b>	<b>THREE-YEAR (ANNUALIZED %)</b>	<b>FIVE-YEAR (ANNUALIZED %)</b>	<b>TEN-YEAR (ANNUALIZED %)</b>
<b>LARGE-CAP</b>				
S&P 500 Growth	6.89	9.03	14.54	8.29
Large-Cap Growth Funds	1.66	6.33	13.61	7.27
S&P 500	11.96	8.87	14.66	6.95
Large-Cap Core Funds	8.90	6.82	13.08	5.70
S&P 500 Value	17.40	8.51	14.69	5.50
Large-Cap Value Funds	14.04	7.19	13.64	5.62
<b>MID-CAP</b>				
S&P MidCap 400 Growth	14.77	7.99	14.42	9.74
Mid-Cap Growth Funds	6.10	5.36	12.41	7.49
S&P MidCap 400	20.74	9.04	15.33	9.16
Mid-Cap Core Funds	13.72	7.22	14.61	7.81
S&P MidCap 400 Value	26.53	9.81	16.07	8.48
Mid-Cap Value Funds	16.46	7.48	14.38	7.44
<b>SMALL-CAP</b>				
S&P SmallCap 600 Growth	22.16	9.26	16.35	9.90
Small-Cap Growth Funds	9.35	3.38	12.88	7.14
S&P SmallCap 600	26.56	9.47	16.62	9.03
Small-Cap Core Funds	18.93	6.15	13.59	7.65
S&P SmallCap 600 Value	31.32	9.64	16.88	8.18
Small-Cap Value Funds	25.48	7.06	13.81	7.57
<b>MULTI-CAP</b>				
S&P Composite 1500 Growth	7.90	8.95	14.60	8.48
Multi-Cap Growth Funds	5.35	4.47	12.55	6.81
S&P Composite 1500	13.03	8.89	14.78	7.19
Multi-Cap Core Funds	9.10	5.92	12.06	5.54
S&P Composite 1500 Value	18.49	8.63	14.87	5.83
Multi-Cap Value Funds	13.13	8.08	12.57	5.94

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2016. Table is provided for illustrative purposes. Past performance is no guarantee of future results.

<b>Report 5: Quartile Breakpoints of U.S. Equity Funds</b>			
<b>FUND CATEGORY</b>	<b>THIRD QUARTILE</b>	<b>SECOND QUARTILE</b>	<b>FIRST QUARTILE</b>
<b>ONE-YEAR</b>			
All Domestic Funds	6.13	11.08	17.30
All Large-Cap Funds	4.80	9.34	13.36
All Mid-Cap Funds	5.95	10.74	17.26
All Small-Cap Funds	13.38	19.66	25.01
All Multi-Cap Funds	4.89	9.26	14.84
Large-Cap Growth Funds	0.58	3.43	6.70
Large-Cap Core Funds	6.29	9.04	11.17
Large-Cap Value Funds	10.18	13.81	16.15
Mid-Cap Growth Funds	2.47	5.59	7.41
Mid-Cap Core Funds	8.68	11.41	16.22
Mid-Cap Value Funds	14.22	17.29	21.06
Small-Cap Growth Funds	6.77	10.93	15.73
Small-Cap Core Funds	17.27	19.39	22.45
Small-Cap Value Funds	21.01	26.21	29.31
Multi-Cap Growth Funds	-1.19	2.88	8.15
Multi-Cap Core Funds	6.24	9.26	12.52
Multi-Cap Value Funds	9.36	14.44	19.37
<b>THREE-YEAR</b>			
All Domestic Funds	4.50	6.69	8.20
All Large-Cap Funds	5.40	6.89	8.12
All Mid-Cap Funds	4.29	6.21	8.16
All Small-Cap Funds	3.73	6.62	8.63
All Multi-Cap Funds	2.83	6.01	8.06
Large-Cap Growth Funds	4.82	6.34	7.58
Large-Cap Core Funds	5.62	7.16	8.22
Large-Cap Value Funds	5.75	7.21	8.29
Mid-Cap Growth Funds	3.05	4.57	6.19
Mid-Cap Core Funds	4.49	6.14	8.16
Mid-Cap Value Funds	6.41	7.95	9.26
Small-Cap Growth Funds	2.05	4.23	6.25
Small-Cap Core Funds	5.38	7.30	8.76
Small-Cap Value Funds	5.23	7.77	9.26
Multi-Cap Growth Funds	1.77	3.52	5.90
Multi-Cap Core Funds	3.94	6.37	8.13
Multi-Cap Value Funds	4.38	7.04	9.43

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2016. Table is provided for illustrative purposes. Past performance is no guarantee of future results.

<b>Report 5: Quartile Breakpoints of U.S. Equity Funds (cont.)</b>			
<b>FUND CATEGORY</b>	<b>THIRD QUARTILE</b>	<b>SECOND QUARTILE</b>	<b>FIRST QUARTILE</b>
<b>FIVE-YEAR</b>			
All Domestic Funds	11.77	13.29	14.81
All Large-Cap Funds	11.83	13.21	14.34
All Mid-Cap Funds	11.67	13.54	15.10
All Small-Cap Funds	12.54	14.44	15.94
All Multi-Cap Funds	10.66	12.31	13.92
Large-Cap Growth Funds	11.89	13.02	14.17
Large-Cap Core Funds	11.68	13.15	14.21
Large-Cap Value Funds	11.88	13.38	14.52
Mid-Cap Growth Funds	10.80	12.11	13.49
Mid-Cap Core Funds	11.86	14.09	15.23
Mid-Cap Value Funds	13.41	14.47	15.82
Small-Cap Growth Funds	11.88	13.25	15.52
Small-Cap Core Funds	12.82	14.88	16.17
Small-Cap Value Funds	12.97	14.80	16.10
Multi-Cap Growth Funds	9.47	11.44	13.26
Multi-Cap Core Funds	10.81	12.42	13.94
Multi-Cap Value Funds	11.73	12.74	14.22
<b>TEN-YEAR</b>			
All Domestic Funds	5.92	7.07	8.06
All Large-Cap Funds	5.78	6.72	7.57
All Mid-Cap Funds	6.91	7.78	8.76
All Small-Cap Funds	6.59	7.59	8.45
All Multi-Cap Funds	5.19	6.37	7.67
Large-Cap Growth Funds	6.70	7.47	8.07
Large-Cap Core Funds	6.05	6.58	7.40
Large-Cap Value Funds	5.21	6.02	7.04
Mid-Cap Growth Funds	6.66	7.58	8.59
Mid-Cap Core Funds	7.16	8.14	9.10
Mid-Cap Value Funds	7.01	7.78	8.71
Small-Cap Growth Funds	6.62	7.64	8.69
Small-Cap Core Funds	6.92	7.77	8.59
Small-Cap Value Funds	6.40	7.36	8.26
Multi-Cap Growth Funds	5.28	6.54	8.23
Multi-Cap Core Funds	5.15	6.29	7.39
Multi-Cap Value Funds	5.19	6.37	7.44

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2016. Table is provided for illustrative purposes. Past performance is no guarantee of future results.

**Report 6: Percentage of International Equity Funds Outperformed by Benchmarks**

FUND CATEGORY	COMPARISON INDEX	ONE-YEAR	THREE-YEAR	FIVE-YEAR	TEN-YEAR
Emerging Market Funds	S&P/IFCI Composite	67.32	77.73	75.00	78.70
Global Funds	S&P Global 1200	76.53	79.27	77.23	78.63
International Funds	S&P International 700	89.32	75.00	63.91	81.48
International Small-Cap Funds	S&P Developed Ex-U.S. SmallCap	73.58	60.00	38.10	65.38

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2016. Table is provided for illustrative purposes. Past performance is no guarantee of future results.

**Report 7: Survivorship and Style Consistency of International Equity Funds**

FUND CATEGORY	NO. OF FUNDS AT START	SURVIVORSHIP (%)	STYLE CONSISTENCY (%)
<b>ONE-YEAR</b>			
Emerging Market Funds	373	92.49	100.00
Global Funds	317	92.43	100.00
International Funds	208	92.79	100.00
International Small-Cap Funds	81	90.12	100.00
<b>THREE-YEAR</b>			
Emerging Market Funds	371	81.67	100.00
Global Funds	309	84.47	100.00
International Funds	218	81.65	100.00
International Small-Cap Funds	74	83.78	100.00
<b>FIVE-YEAR</b>			
Emerging Market Funds	322	71.43	100.00
Global Funds	304	74.01	100.00
International Funds	226	72.57	100.00
International Small-Cap Funds	66	78.79	100.00
<b>TEN-YEAR</b>			
Emerging Market Funds	171	64.91	100.00
Global Funds	181	64.64	100.00
International Funds	187	68.45	100.00
International Small-Cap Funds	48	70.83	100.00

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2016. Table is provided for illustrative purposes. Past performance is no guarantee of future results.

**Report 8: Average International Equity Fund Performance (Equal-Weighted)**

CATEGORY	ONE-YEAR (ANNUALIZED %)	THREE-YEAR (ANNUALIZED %)	FIVE-YEAR (ANNUALIZED %)	TEN-YEAR (ANNUALIZED %)
S&P/IFCI Composite	10.79	-1.36	2.56	2.67
Emerging Market Funds	9.35	-2.39	2.34	2.96
S&P Global 1200	8.89	4.40	10.84	4.45
Global Funds	6.16	3.19	10.02	4.53
S&P International 700	4.79	-1.01	6.35	1.66
International Funds	0.76	-1.59	6.51	1.36
S&P Developed Ex-U.S. SmallCap	3.78	2.02	9.67	3.03
International Small-Cap Funds	1.52	2.27	11.32	4.09

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2016. Table is provided for illustrative purposes. Past performance is no guarantee of future results.

**Report 9: Average International Equity Fund Performance (Asset-Weighted)**

CATEGORY	ONE-YEAR (ANNUALIZED %)	THREE-YEAR (ANNUALIZED %)	FIVE-YEAR (ANNUALIZED %)	TEN-YEAR (ANNUALIZED %)
S&P/IFCI Composite	10.79	-1.36	2.56	2.67
Emerging Market Funds	9.15	-2.46	1.92	2.56
S&P Global 1200	8.89	4.40	10.84	4.45
Global Funds	6.56	4.00	10.94	3.94
S&P International 700	4.79	-1.01	6.35	1.66
International Funds	0.28	-1.84	6.50	1.20
S&P Developed Ex-U.S. SmallCap	3.78	2.02	9.67	3.03
International Small-Cap Funds	1.17	1.61	10.31	2.76

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2016. Table is provided for illustrative purposes. Past performance is no guarantee of future results.

**Report 10: Quartile Breakpoints of International Equity Funds**

FUND CATEGORY	THIRD QUARTILE	SECOND QUARTILE	FIRST QUARTILE
<b>ONE-YEAR</b>			
Emerging Market Funds	4.54	8.37	12.74
Global Funds	2.30	5.48	9.06
International Funds	-1.77	0.15	2.37
International Small-Cap Funds	-1.67	0.41	5.10
<b>THREE-YEAR</b>			
Emerging Market Funds	-3.69	-2.23	-1.11
Global Funds	1.84	2.94	4.60
International Funds	-2.72	-1.50	-0.62
International Small-Cap Funds	0.96	2.01	3.78
<b>FIVE-YEAR</b>			
Emerging Market Funds	1.00	2.38	3.60
Global Funds	9.20	10.21	11.70
International Funds	5.72	6.72	7.77
International Small-Cap Funds	10.01	11.11	13.11
<b>TEN-YEAR</b>			
Emerging Market Funds	1.03	2.21	3.58
Global Funds	3.05	3.95	6.00
International Funds	0.39	1.53	2.27
International Small-Cap Funds	2.60	3.28	3.98

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2016. Table is provided for illustrative purposes. Past performance is no guarantee of future results.



**Report 11: Percentage of Fixed Income Funds Outperformed by Benchmarks**

FUND CATEGORY	COMPARISON INDEX	ONE-YEAR	THREE-YEAR	FIVE-YEAR	TEN-YEAR
Cash Funds	Barclays Short Treasury	30.77	48.76	64.14	66.67
Government Funds	Barclays US Government	53.33	83.64	80.56	85.07
Investment-Grade Funds	Barclays US Credit	28.44	35.58	32.67	48.28
MBS Funds	Barclays US Aggregate Securitized - MBS	24.49	50.85	47.62	54.05
High-Yield Funds	Barclays US Corporate High Yield	90.61	79.23	86.77	93.80
U.S. Agg. / (Gov't + Credit) Funds	Barclays US Aggregate	49.52	67.42	60.47	69.53
Inflation-Linked Funds	Barclays US Treasury: US TIPS	68.00	82.76	81.25	88.89
Global Aggregate Funds	Barclays Global Aggregate	59.18	67.27	66.67	73.33
Global Government Funds	Barclays Global Treasuries	60.00	73.33	78.26	89.47
Global Credit Funds	Barclays Global Aggregate - Corporate	38.46	52.00	60.00	50.00
Global High-Yield Funds	Barclays Global High Yield	64.10	52.78	77.42	100.00
Emerging Market USD Funds	Barclays EM USD Aggregate	45.83	86.96	90.48	75.00
Municipal Funds	S&P National AMT-Free Municipal Bond	71.18	76.60	77.96	77.93

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2016. Table is provided for illustrative purposes. Past performance is no guarantee of future results.

**Report 12: Survivorship and Style Consistency of Fixed Income Funds**

FUND CATEGORY	NO. OF FUNDS AT START	SURVIVORSHIP (%)	STYLE CONSISTENCY (%)
<b>ONE-YEAR</b>			
Cash Funds	196	92.86	100.00
Government Funds	108	95.37	100.00
Investment-Grade Funds	189	96.83	100.00
MBS Funds	94	96.81	100.00
High-Yield Funds	321	94.08	100.00
U.S. Agg. / (Gov't + Credit) Funds	940	94.68	100.00
Inflation-Linked Funds	52	92.31	100.00
Global Aggregate Funds	106	90.57	100.00
Global Government Funds	29	96.55	100.00
Global Credit Funds	58	93.10	100.00
Global High-Yield Funds	85	96.47	100.00
Emerging Market USD Funds	45	100.00	100.00
Municipal Funds	311	94.53	100.00

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2016. Table is provided for illustrative purposes. Past performance is no guarantee of future results.

<b>Report 12: Survivorship and Style Consistency of Fixed Income Funds (cont.)</b>			
<b>FUND CATEGORY</b>	<b>NO. OF FUNDS AT START</b>	<b>SURVIVORSHIP (%)</b>	<b>STYLE CONSISTENCY (%)</b>
<b>THREE-YEAR</b>			
Cash Funds	220	81.36	100.00
Government Funds	119	84.87	100.00
Investment-Grade Funds	185	92.97	100.00
MBS Funds	104	85.58	100.00
High-Yield Funds	324	86.11	100.00
U.S. Agg. / (Gov't + Credit) Funds	998	85.97	100.00
Inflation Linked Funds	58	82.76	100.00
Global Aggregate Funds	109	82.57	100.00
Global Government Funds	32	78.13	100.00
Global Credit Funds	53	90.57	100.00
Global High-Yield Funds	78	88.46	100.00
Emerging Market USD Funds	45	91.11	100.00
Municipal Funds	332	84.34	100.00
<b>FIVE-YEAR</b>			
Cash Funds	242	68.60	100.00
Government Funds	137	72.26	100.00
Investment-Grade Funds	167	86.83	100.00
MBS Funds	108	78.70	100.00
High-Yield Funds	315	77.78	100.00
U.S. Agg. / (Gov't + Credit) Funds	1051	78.40	100.00
Inflation-Linked Funds	62	74.19	100.00
Global Aggregate Funds	105	77.14	100.00
Global Government Funds	37	56.76	100.00
Global Credit Funds	39	82.05	100.00
Global High-Yield Funds	60	83.33	100.00
Emerging Market USD Funds	40	85.00	100.00
Municipal Funds	332	80.12	100.00
<b>TEN-YEAR</b>			
Cash Funds	223	66.37	100.00
Government Funds	125	69.60	100.00
Investment-Grade Funds	95	82.11	100.00
MBS Funds	71	83.10	100.00
High-Yield Funds	231	77.06	100.00
U.S. Agg. / (Gov't + Credit) Funds	923	74.86	100.00
Inflation-Linked Funds	49	67.35	100.00
Global Aggregate Funds	68	79.41	100.00
Global Government Funds	30	46.67	100.00
Global Credit Funds	17	82.35	100.00
Global High-Yield Funds	30	83.33	100.00
Emerging Market USD Funds	15	80.00	100.00
Municipal Funds	253	79.84	100.00

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2016. Table is provided for illustrative purposes. Past performance is no guarantee of future results.

<b>Report 13: Average Fixed Income Fund Performance (Equal-Weighted)</b>				
<b>CATEGORY</b>	<b>ONE-YEAR (ANNUALIZED %)</b>	<b>THREE-YEAR (ANNUALIZED %)</b>	<b>FIVE-YEAR (ANNUALIZED %)</b>	<b>TEN-YEAR (ANNUALIZED %)</b>
Barclays Short Treasury	0.53	0.25	0.21	0.99
Cash Funds	1.02	0.75	0.79	1.81
Barclays US Government	1.05	2.26	1.22	3.86
Government Funds	0.84	1.85	1.11	3.26
Barclays US Credit	5.63	4.07	3.85	5.31
Investment-Grade Funds	7.34	5.06	5.09	6.36
Barclays US Aggregate Securitized - MBS	1.67	3.07	2.06	4.28
MBS Funds	2.67	3.35	4.43	5.52
Barclays US Corporate High Yield	17.13	4.66	7.36	7.45
High-Yield Funds	13.02	3.54	6.27	6.34
Barclays US Aggregate	2.65	3.03	2.23	4.34
U.S. Agg. / (Gov't + Credit) Funds	3.42	2.93	2.68	4.48
Barclays US Treasury: U.S. TIPS	4.68	2.26	0.89	4.36
Inflation-Linked Funds	4.67	1.73	0.84	4.13
Barclays Global Aggregate	2.09	-0.19	0.21	3.29
Global Aggregate Funds	2.42	0.60	1.24	3.77
Barclays Global Treasuries	1.65	-0.83	-1.01	2.96
Global Government Funds	4.10	0.50	0.92	3.97
Barclays Global Aggregate - Corporate	4.20	1.54	3.59	4.10
Global Credit Funds	5.54	2.80	4.69	5.37
Barclays Global High-Yield	14.27	3.60	7.37	7.35
Global High-Yield Funds	13.14	3.91	7.05	7.12
Barclays EM USD Aggregate	9.88	5.25	5.69	6.71
Emerging Market USD Funds	9.74	0.58	2.22	5.34
S&P National AMT-Free Municipal Bond	0.36	4.12	3.06	4.02
Municipal Funds	0.09	3.07	2.48	3.85

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2016. Table is provided for illustrative purposes. Past performance is no guarantee of future results.

<b>Report 14: Average Fixed Income Fund Performance (Asset-Weighted)</b>				
<b>CATEGORY</b>	<b>ONE-YEAR (ANNUALIZED %)</b>	<b>THREE-YEAR (ANNUALIZED %)</b>	<b>FIVE-YEAR (ANNUALIZED %)</b>	<b>TEN-YEAR (ANNUALIZED %)</b>
Barclays Short Treasury	0.53	0.25	0.21	0.99
Cash Funds	0.80	0.60	0.62	1.34
Barclays US Government	1.05	2.26	1.22	3.86
Government Funds	1.62	5.69	2.25	5.23
Barclays US Credit	5.63	4.07	3.85	5.31
Investment-Grade Funds	7.51	5.10	4.98	6.35
Barclays US Aggregate Securitized - MBS	1.67	3.07	2.06	4.28
MBS Funds	2.35	3.28	2.81	4.72
Barclays US Corporate High Yield	17.13	4.66	7.36	7.45
High-Yield Funds	13.01	3.96	6.63	6.59
Barclays US Aggregate	2.65	3.03	2.23	4.34
U.S. Agg. / (Gov't + Credit) Funds	4.20	3.52	3.29	5.01
Barclays US Treasury: US TIPS	4.68	2.26	0.89	4.36
Inflation-Linked Funds	4.36	1.94	0.63	3.91
Barclays Global Aggregate	2.09	-0.19	0.21	3.29
Global Aggregate Funds	1.80	1.21	1.19	3.95
Barclays Global Treasuries	1.65	-0.83	-1.01	2.96
Global Government Funds	5.44	0.95	3.70	6.25
Barclays Global Aggregate - Corporate	4.20	1.54	3.59	4.10
Global Credit Funds	6.98	4.38	5.12	5.41
Barclays Global High Yield	14.27	3.60	7.37	7.35
Global High-Yield Funds	13.79	4.31	7.37	7.61
Barclays EM USD Aggregate	9.88	5.25	5.69	6.71
Emerging Market USD Funds	10.30	2.14	3.49	5.77
S&P National AMT-Free Municipal Bond	0.36	4.12	3.06	4.02
Municipal Funds	0.12	3.44	2.83	3.74

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2016. Table is provided for illustrative purposes. Past performance is no guarantee of future results.

<b>Report 15: Quartile Breakpoints of Fixed Income Funds</b>			
<b>FUND CATEGORY</b>	<b>THIRD QUARTILE</b>	<b>SECOND QUARTILE</b>	<b>FIRST QUARTILE</b>
<b>ONE-YEAR</b>			
Cash Funds	0.57	1.02	1.37
Government Funds	0.76	1.06	1.46
Investment-Grade Funds	5.79	7.18	9.72
MBS Funds	1.78	2.58	3.84
High-Yield Funds	10.15	13.35	15.29
U.S. Agg. / (Gov't + Credit) Funds	1.98	2.85	4.31
Inflation-Linked Funds	4.00	4.47	4.89
Global Aggregate Funds	0.68	2.25	3.08
Global Government Funds	1.21	1.49	2.97
Global Credit Funds	4.24	5.48	7.39
Global High-Yield Funds	11.87	13.59	15.11
Emerging Market USD Funds	8.91	9.98	11.67
Municipal Funds	-0.35	0.06	0.63
<b>THREE-YEAR</b>			
Cash Funds	0.29	0.61	0.99
Government Funds	0.73	1.22	2.24
Investment-Grade Funds	3.97	4.59	6.86
MBS Funds	2.89	3.36	3.97
High-Yield Funds	3.07	3.92	4.74
U.S. Agg. / (Gov't + Credit) Funds	1.85	2.79	3.52
Inflation-Linked Funds	1.25	1.84	2.25
Global Aggregate Funds	-0.83	-0.20	1.76
Global Government Funds	-1.08	-0.67	0.40
Global Credit Funds	1.31	3.54	4.22
Global High-Yield Funds	3.09	3.93	4.70
Emerging Market USD Funds	-2.48	1.81	4.45
Municipal Funds	1.17	2.56	4.62

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2016. Table is provided for illustrative purposes. Past performance is no guarantee of future results.

<b>Report 15: Quartile Breakpoints of Fixed Income Funds (cont.)</b>			
<b>FUND CATEGORY</b>	<b>THIRD QUARTILE</b>	<b>SECOND QUARTILE</b>	<b>FIRST QUARTILE</b>
<b>FIVE-YEAR</b>			
Cash Funds	0.23	0.50	1.03
Government Funds	0.73	1.11	1.71
Investment-Grade Funds	4.32	4.86	5.90
MBS Funds	2.30	3.69	5.97
High-Yield Funds	5.70	6.57	7.13
U.S. Agg. / (Gov't + Credit) Funds	1.85	2.53	3.43
Inflation-Linked Funds	0.54	0.74	1.05
Global Aggregate Funds	-0.31	0.40	3.50
Global Government Funds	-1.00	0.52	0.90
Global Credit Funds	2.96	4.17	4.66
Global High-Yield Funds	6.36	6.82	7.59
Emerging Market USD Funds	-0.13	3.45	5.04
Municipal Funds	1.13	2.00	3.80
<b>TEN-YEAR</b>			
Cash Funds	0.98	1.53	2.05
Government Funds	2.71	3.09	4.04
Investment-Grade Funds	5.28	5.96	6.43
MBS Funds	4.06	4.38	5.18
High-Yield Funds	5.91	6.47	7.08
U.S. Agg. / (Gov't + Credit) Funds	3.55	4.40	4.96
Inflation-Linked Funds	3.82	4.11	4.29
Global Aggregate Funds	3.00	3.30	4.23
Global Government Funds	3.41	3.87	5.30
Global Credit Funds	4.17	5.00	5.97
Global High-Yield Funds	6.09	6.38	6.69
Emerging Market USD Funds	6.39	6.43	7.04
Municipal Funds	2.64	3.71	4.17

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2016. Table is provided for illustrative purposes. Past performance is no guarantee of future results.

## APPENDIX A: MAPPING

### U.S. Equity

While covering the U.S. equity markets, the SPIVA U.S. Scorecard reports on the nine traditional style boxes, as well as multi-cap core, growth, and value funds. It also reports on the U.S. REIT market. Style classifications are based on fundamental characteristics such as the P/E ratio, return on equity (ROE), and earnings growth expectation. Growth and value characteristics are assigned based on a subjective method, with a large weighting on the median of the three statistics as well as the preferred benchmark. Capitalization is subjective, based on the distribution of holdings as well as the preferred benchmark.

<b>Exhibit A1: U.S. Equity Category Mappings</b>	
<b>SPIVA INSTITUTIONAL CATEGORY</b>	<b>eVESTMENT ALLIANCE CLASSIFICATION</b>
Large-Cap Growth Equity	United States Large Cap Growth
Large-Cap Core Equity	United States Large Cap Core
Large-Cap Value Equity	United States Large Cap Value
Mid-Cap Growth Equity	United States Mid Cap Growth
Mid-Cap Core Equity	United States Mid Cap Core
Mid-Cap Value Equity	United States Mid Cap Value
Small-Cap Growth Equity	United States Small Cap Growth
Small-Cap Core Equity	United States Small Cap Core
Small-Cap Value Equity	United States Small Cap Value
Multi-Cap Growth Equity	United States All Cap Growth
Multi-Cap Core Equity	United States All Cap Core
Multi-Cap Value Equity	United States All Cap Value

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Table is provided for illustrative purposes.

### International Equity

For international equity, SPIVA reports on four major categories (global, international, international small-cap, and emerging market funds) of interest to global asset allocators. These categories also include multiple eVestment capitalization and style classifications.

<b>Exhibit A2: International Equity Category Mappings</b>	
<b>SPIVA INSTITUTIONAL CATEGORY</b>	<b>eVESTMENT ALLIANCE CLASSIFICATION</b>
Global Equity	Global Large Cap Value
	Global Large Cap Growth
	Global Large Cap Core
International Equity	EAFE Large Cap Value
	EAFE Large Cap Growth
	EAFE Large Cap Core
International Small-Cap Equity	EAFE Small Cap Value
	EAFE Small Cap Growth
	EAFE Small Cap Core
Emerging Market Equity	Brazil Large Cap Value
	Brazil All Cap Value
	Brazil All Cap Growth
	Brazil All Cap Core
	Mexico All Cap Value
	Mexico All Cap Growth
	Latin America Small Cap Value
	Latin America Mid Cap Value
	Latin America Large Cap Growth
	Latin America Large Cap Core
	Latin America All Cap Value
	Latin America All Cap Growth
	Latin America All Cap Core
	Global Emg Mkts Small Cap Value
	Global Emg Mkts Small Cap Growth
	Global Emg Mkts Small Cap Core
	Global Emg Mkts Mid Cap Value
	Global Emg Mkts Mid Cap Growth
Global Emg Mkts Mid Cap Core	
Global Emg Mkts Large Cap Value	
Global Emg Mkts Large Cap Growth	
Global Emg Mkts Large Cap Core	
Global Emg Mkts All Cap Value	
Global Emg Mkts All Cap Growth	
Global Emg Mkts All Cap Core	

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Table is provided for illustrative purposes.



**Fixed Income**

SPIVA reports include eight domestic and five global fixed income classifications. For maturity buckets, short duration is one to three years, intermediate duration is three to seven years, and long duration is seven years or more. Cash funds are those with a duration similar to cash deposits. For the U.S. market, credit quality is separated into U.S. government, investment-grade corporate ('BBB' rated or higher) and high yield ('BB' rated or lower). eVestment also includes a municipals and U.S. mortgage category.

Global fixed income funds are split into emerging and global markets. Maturity and credit quality is similar to that of the U.S. market.

<b>Exhibit A3: U.S. Fixed Income Category Mappings</b>	
<b>SPIVA INSTITUTIONAL CATEGORY</b>	<b>eVESTMENT ALLIANCE CLASSIFICATION</b>
<b>U.S. FUNDS</b>	
U.S. Agg. / (Gov't + Credit) Funds	United States CoreAggregate
	United States Core Plus
Cash Funds	United States Cash Mgmt
	United States Stable Value
Government Funds	United States GovtAgency Only
Inflation-Linked Funds	United States Inflation Indexed
MBS Funds	United States Mortgage Only
Investment-Grade Funds	United States Corporate Only
High-Yield Funds	United States High Yield
Municipal Funds	United States Municipal Only
<b>GLOBAL/EMERGING FUNDS</b>	
Emerging Market USD Funds	Global Emg Mkts CoreAggregate
Global Aggregate Funds	Global CoreAggregate
Global Government Funds	Global GovtAgency Only
Global Credit Funds	Global Corporate Only
Global High-Yield Funds	Global High Yield

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Table is provided for illustrative purposes.

## **APPENDIX B: GLOSSARY**

### **Percentage of Managers Outperformed by the Index**

To correct for survivorship bias, we use the opportunity set available at the beginning of the period as the denominator. We determine the count of products that have survived and beat the index. We then report the index outperformance percentage.

### **Survivorship (%)**

This measure represents the percentage of products in existence at the beginning of the time period that is still active at the end of the time period.

### **Style Consistency (%)**

This calculation shows the percentage of managers that had the same style classification at the end of the time period as at the beginning of the time period.

### **Equal-Weighted Performance**

Equal-weighted returns for a particular style category are determined by calculating a simple average return of all active managers in that category in a particular month.

### **Asset-Weighted Performance**

Asset-weighted returns for a particular style category are determined by calculating the weighted-average return of all managers in that category in a particular month, with each product's return weighted by its total net assets. Asset-weighted returns are a better indicator of manager category performance because they more accurately reflect the returns of the total money invested in that particular style category.

### **Quartile Breakpoints**

The pth percentile for a set of data is the value that is greater than or equal to p% of the data but is less than or equal to (100-p)% of the data. In other words, it is a value that divides the data into two parts: the lower p% of the values and the upper (100-p)% of the values. The first quartile is the 75th percentile, the value separating the elements of a population into the lower 75% and the upper 25%. The second quartile is the 50th percentile and the third quartile is the 25th percentile.

### **Indices**

A benchmark index provides an investment vehicle against which fund performance can be measured.

### **U.S. Equity**

#### **S&P 500**

Widely regarded as the best single gauge of the U.S. equities market, this market-capitalization-weighted index includes a representative sample of 500 leading companies in the foremost industries of the U.S. economy and provides over 80% coverage of U.S. equities.

## S&P MIDCAP 400

This index consists of 400 mid-sized companies and covers approximately 7% of the U.S. equities market.

## S&P SMALLCAP 600

This index consists of 600 small-cap stocks and covers approximately 3% of the U.S. equities market.

## S&P COMPOSITE 1500

This is a broad, market-capitalization-weighted index of 1500 stocks. This index is comprised of three size-based indices: the [S&P 500](#), [S&P MidCap 400](#), and [S&P SmallCap 600](#), which measure the performance of large-, mid-, and small-cap stocks, respectively. This index represents 90% of U.S. equities.

## S&P 500 GROWTH AND VALUE INDICES

These indices form an exhaustive, multi-factor style series covering the entire market capitalization of the S&P 500. Constituents, weighted according to market capitalization, are classified as growth, value, or a mix of growth and value.

## S&P MIDCAP 400 GROWTH AND VALUE INDICES

These indices form an exhaustive, multi-factor style series covering the entire market capitalization of the S&P MidCap 400.

## S&P SMALLCAP 600 GROWTH AND VALUE INDICES

These indices form an exhaustive, multi-factor style series covering the entire market capitalization of the S&P SmallCap 600.

## S&P COMPOSITE 1500 GROWTH AND VALUE INDICES

These indices form an exhaustive, multi-factor style series covering the entire market capitalization of the [S&P Composite 1500](#).

## S&P UNITED STATES REIT INDEX

This index measures the investable universe of publicly traded real estate investment trusts.

## International Equity

### S&P GLOBAL 1200

Capturing approximately 70% of the world's capital markets, the [S&P Global 1200](#) is a composite of seven headline indices, many of which are accepted leaders in their regions. It includes the S&P 500 (U.S.), [S&P Europe 350](#) (Europe), [S&P/Topix 150](#) (Japan), [S&P/TSX 60](#) (Canada), [S&P/ASX All Australian 50](#) (Australia), [S&P Asia 50](#) (Asia Ex-Japan), and [S&P Latin America 40](#) (Latin America).

## S&P 700

This index measures the non-U.S. component of the global equity markets, covering all the regions included in the [S&P Global 1200](#), excluding the U.S. ([S&P 500](#)).

## S&P WORLD EX-U.S. SMALL CAP

This index represents the small-cap segment—the bottom 15%—of the world’s universe of institutionally investable securities, excluding the U.S.

## S&P/IFCI COMPOSITE INDEX

This index is widely recognized as a comprehensive and reliable measure of the world’s emerging markets. It measures the returns of stocks that are legally and practically available to foreign investors.

## Fixed Income

### BARCLAYS CAPITAL LONG GOVERNMENT BOND INDEX

This index consists of U.S. Treasury and U.S. Government agency bonds with maturities greater than 10 years.

### BARCLAYS CAPITAL INTERMEDIATE GOVERNMENT BOND INDEX

This index consists of U.S. Treasury and U.S. Government agency bonds with maturities from 1 to 10 years.

### BARCLAYS CAPITAL 1-3 YEAR GOVERNMENT BOND INDEX

This index consists of U.S. Treasury and U.S. Government agency bonds with maturities from one to three years.

### BARCLAYS CAPITAL LONG GOVERNMENT/CREDIT BOND INDEX

This index covers corporate and non-corporate fixed income securities that are rated investment grade and have maturities greater than 10 years.

### BARCLAYS CAPITAL INTERMEDIATE GOVERNMENT/CREDIT BOND INDEX

This index covers corporate and non-corporate fixed income securities that are rated investment grade with maturities from 1 to 10 years.

### BARCLAYS CAPITAL 1-3 YEAR GOVERNMENT/CREDIT BOND INDEX

This index covers corporate and non-corporate fixed income securities that are rated investment grade and have one to three years until their final maturity.

### BARCLAYS CAPITAL HIGH YIELD BOND INDEX

This index includes all fixed income securities with a maximum quality rating of Ba1/BB+ (including defaulted issues), a minimum amount outstanding of USD 100 million, and at least one year to maturity.

**BARCLAYS CAPITAL BROTHERS MORTGAGE-BACKED SECURITIES INDEX**

This index includes 15- and 30-year fixed-rate securities backed by mortgage pools of the Government National Mortgage Association (GNMA), Federal Home Loan Mortgage Corporation (FHLMC), and Federal National Mortgage Association (FNMA).

**BARCLAYS CAPITAL GLOBAL AGGREGATE BOND INDEX**

This index covers the most liquid portion of the global investment-grade, fixed-rate bond market, including government, credit, and collateralized securities.

**BARCLAYS CAPITAL EMERGING MARKETS INDEX**

This index includes fixed- and floating-rate, USD-denominated debt from emerging markets.

**BARCLAYS CAPITAL EMERGING MARKETS LOCAL CURRENCY GOVERNMENT INDEX**

This index includes all emerging markets government debt in the local currency.

**BARCLAYS CAPITAL EMERGING MARKETS USD AGGREGATE - CORPORATE INDEX**

This index covers only the corporate sector of the Barclays Emerging Markets Aggregate Index.

**BARCLAYS CAPITAL GLOBAL AGGREGATE CORPORATE INDEX**

This index covers only the corporate sector of the Barclays Global Aggregate Index.

**BARCLAYS GLOBAL TREASURY INDEX**

This index covers fixed-rate government debt of investment-grade-rated countries.

**BARCLAYS U.S. SHORT TREASURY INDEX**

This index covers fixed-rate, USD-denominated Treasury bills issued by the U.S. Treasury.

**BARCLAYS U.S. AGGREGATE INDEX**

This index covers investment-grade, USD-denominated, fixed-rate taxable bonds.

**BARCLAYS U.S. AGGREGATE CREDIT INDEX**

This index includes all investment-grade, USD-denominated, fixed-rate, taxable corporate, and government-related bonds.

**BARCLAYS U.S. AGGREGATE GOVERNMENT INDEX**

This index covers U.S. Treasury and U.S. Government agency bonds with all maturities.

**BARCLAYS U.S. TIPS INDEX**

This index includes all maturities of U.S. Treasury Inflation Protected Securities.

**S&P/LSTA U.S. LEVERAGED LOAN 100 INDEX**

This index is designed to reflect the performance of the largest facilities in the floating-rate bank loan, or senior loan, market.

**S&P NATIONAL AMT-FREE MUNICIPAL BOND INDEX**

This index is a broad, comprehensive, market-value-weighted index designed to measure the performance of the investment-grade U.S. municipal bonds that are exempt from the Alternative Minimum Tax.

**S&P CALIFORNIA AMT-FREE MUNICIPAL BOND INDEX**

This index is designed to measure the performance of the investment-grade California municipal bonds that are exempt from the Alternative Minimum Tax.

**S&P NEW YORK AMT-FREE MUNICIPAL BOND INDEX**

This index is designed to measure the performance of the investment-grade New York bonds that are exempt from the alternative minimum tax.

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