

SPIVA[®] Institutional Scorecard: How Much Do Fees Affect the Active Versus Passive Debate?

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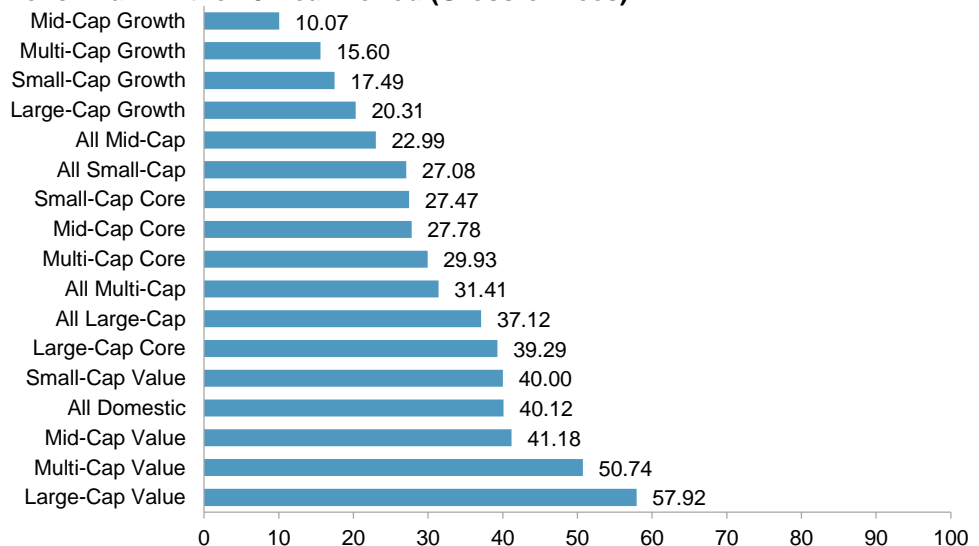
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EXECUTIVE SUMMARY

- This report adds institutional accounts to the mutual funds analyzed in the U.S. SPIVA scorecards. **Underperformance among institutional accounts was not meaningfully different from those reported for retail funds.**
- We also examine the impact of fees. **While fees may negatively affect managers' performance regardless of the type of investment account, our results show that the impact varies across categories.**
- For active equity institutional managers, the one-year performance figures ending December 2017 were positive. Managers in 10 out of 17 categories outperformed their benchmarks, gross-of-fees.
- However, **the majority of equity managers in 15 out of 17 categories underperformed their respective benchmarks over the 10-year horizon, gross-of-fees.**

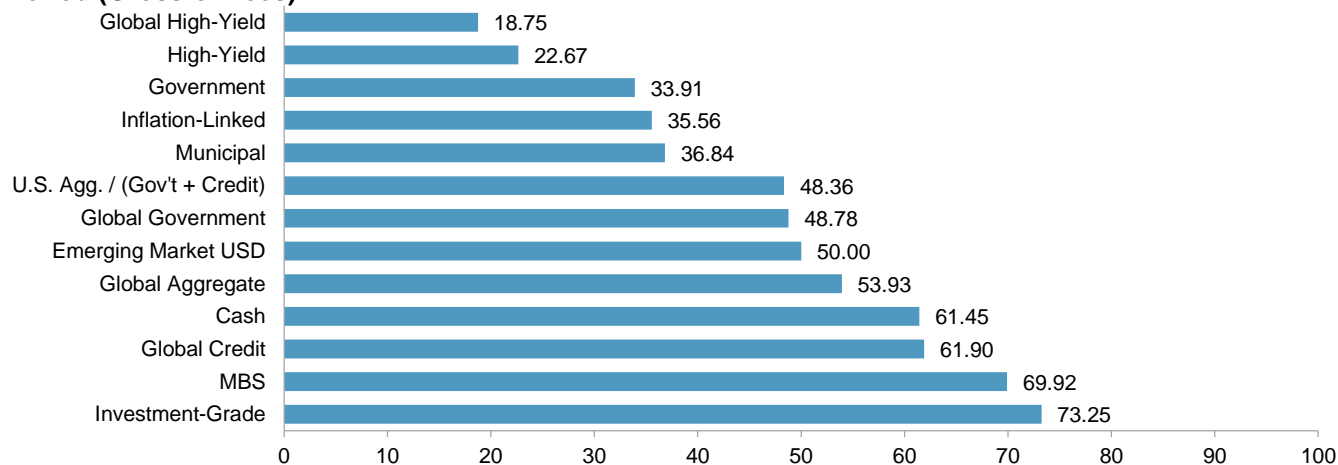
Exhibit 1a: Percent of Institutional Equity Managers Outperforming Their Benchmark in the 10-Year Period (Gross-of-Fees)



Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2017. Past performance is no guarantee of future results. Chart is provided for illustrative purposes.

- Large-cap value offered the best relative performance over the last 10 years. Almost 58% of active managers in this category beat the benchmark on a gross-of-fees basis, while about 53% of large-cap value institutional accounts outperformed net-of-fees.
- Similar to findings in previous scorecards, **underperformance on a net-of-fees basis was nearly always more prevalent among mutual fund managers compared with their institutional counterparts.** Only multi-cap growth funds offered an exception.
- For example, over the past 10 years in the large-cap equity space, 89.51% of mutual fund managers and 73.61% of institutional accounts lagged the [S&P 500®](#) on a net-of-fees basis. When measured on a gross-of-fees basis, 71.97% of large-cap mutual funds and 62.88% of institutional accounts underperformed.
- **The findings in the small-cap space help to dispel the myth that small-cap equity is an inefficient asset class that is best accessed via active management.** Over 80% of mutual funds underperformed the [S&P SmallCap 600®](#) (net- and gross-of-fees) over the last decade, while 86.80% (72.92%) of institutional accounts underperformed on a net (gross) basis.
- Institutional managers investing in international, international small-cap, and emerging markets fared just as well as, or better than, their domestic counterparts against their respective benchmarks on both fee schedules.
- **Results were mixed in fixed income, depending on the market segment and the type of returns used.** On a gross-of-fees basis, institutional managers continued to show strength in many categories. Global aggregate, global credit, investment-grade, cash, and mortgage-backed securities (MBS) funds all outperformed their respective benchmarks.
- **The impact of fees in the municipal bond market varied significantly between institutional accounts and mutual funds.** Fees overwhelmingly affected the performance of mutual fund muni managers; approximately 63% failed to beat the benchmark on a net-of-fees basis compared with 41% on a gross-of-fees basis, constituting a difference of 22%. The corresponding difference for institutional muni managers was 3%.
- The significant performance differential in the muni mutual fund space was not surprising once we examined average fees charged by muni managers across both investment categories. The median fee for muni mutual funds was 0.75% per year, compared with 0.35% for institutional muni accounts.

Exhibit 1b: Percent of Institutional Fixed Income Managers Outperforming Their Benchmark in the 10-Year Period (Gross-of-Fees)



Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2017. Past performance is no guarantee of future results. Chart 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.¹ Within active management, it is widely understood and has been documented that fees can vary meaningfully depending on the type of investor.² Retail investors typically pay higher advisory and management fees than institutional investors.³ 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 accounts⁴ using composite returns from eVestment Alliance,⁵ 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. Since our study shows that there are more funds reporting gross returns than net returns, there may be times when net-of-fees returns are higher than gross-of-fees returns. This is because of differences in the fund universes used for performance comparisons on a gross- and net-of-fees basis. 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.

¹ 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."

² 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 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.

³ 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 the Investment Company Institute's "[Mutual Funds and Institutional Accounts: A Comparison](#)," (2006).

⁴ Institutional accounts include institutional separately managed accounts and commingled trusts.

⁵ 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.

In addition, **we compare the relative performance of open-ended mutual funds, using net- 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.

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 comparisons. Including mutual funds—on both a net- and gross-of-fees 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, 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 on a net-of-fees basis. Institutional managers have delivered better performance than their retail counterparts; over 40% outperformed the [S&P Composite 1500®](#) on a gross-of-fees basis. **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	86.65	71.20	71.11	59.88
All Large-Cap Funds	S&P 500	89.51	71.97	73.61	62.88
All Mid-Cap Funds	S&P MidCap 400	96.48	85.37	85.16	77.01
All Small-Cap Funds	S&P SmallCap 600	95.71	82.00	86.80	72.92
All Multi-Cap Funds	S&P Composite 1500	90.70	78.77	79.00	68.59
Large-Cap Growth Funds	S&P 500 Growth	93.65	84.66	88.61	79.69
Large-Cap Core Funds	S&P 500	94.95	73.85	75.98	60.71
Large-Cap Value Funds	S&P 500 Value	70.44	50.74	46.81	42.08
Mid-Cap Growth Funds	S&P MidCap 400 Growth	97.69	91.33	94.29	89.93
Mid-Cap Core Funds	S&P MidCap 400	96.15	84.62	81.36	72.22
Mid-Cap Value Funds	S&P MidCap 400 Value	88.04	73.91	69.57	58.82
Small-Cap Growth Funds	S&P SmallCap 600 Growth	95.56	86.11	90.11	82.51
Small-Cap Core Funds	S&P SmallCap 600	96.23	83.49	85.71	72.53
Small-Cap Value Funds	S&P SmallCap 600 Value	92.78	74.23	79.89	60.00
Multi-Cap Growth Funds	S&P Composite 1500 Growth	94.77	88.24	95.12	84.40
Multi-Cap Core Funds	S&P Composite 1500	90.14	78.52	75.79	70.07
Multi-Cap Value Funds	S&P Composite 1500 Value	84.21	63.91	59.62	49.26

Source: S&P Dow Jones Indices LLC, eVestment Alliance, CRSP. Data as of Dec. 31, 2017. 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, retail funds in this category failed to provide value after accounting for fees. This is to be expected, as access to smaller, less liquid foreign securities can be costly.

Mutual fund managers investing in emerging market equities, which has traditionally been viewed as an area where active management can add value, fell short of the benchmark over the trailing 10-year period. Approximately 60% of these managers failed to deliver excess returns on a gross-of-fees basis when compared with the broad-based [S&P International 700](#).

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	85.14	60.81	62.71	48.74
Global Funds	S&P Global 1200	81.98	57.66	61.17	59.79
International Funds	S&P International 700	81.68	61.07	63.64	57.71
International Small-Cap Funds	S&P Developed Ex-U.S. SmallCap	72.55	43.14	51.43	32.69

Source: S&P Dow Jones Indices LLC, eVestment Alliance, CRSP. Data as of Dec. 31, 2017. 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.

Institutional funds’ relative performance beat that of their retail counterparts on a gross-of-fees basis across almost all categories. Less than 30% of institutional managers in the investment-grade funds category underperformed, outperforming the retail managers of all maturity buckets.

Fees appeared to give retail MBS and municipal bond managers the biggest performance hurdles. When measured on a gross (net) basis, approximately 41% (63%) of retail general municipal debt funds underperformed the benchmark. Similarly, about 63% of institutional muni bond managers lagged on a gross-of-fees basis, compared with 66% when measured on a net-of-fees basis.

For MBS, on a net-of-fees basis, 81% of retail funds underperformed the benchmark, while only 41% of institutional accounts underperformed.

Exhibit 4: Fixed Income – Percentage of Mutual Fund Managers Underperforming over 10 Years

CATEGORY	BENCHMARK	MUTUAL FUND (%) NET OF FEES	MUTUAL FUND (%) GROSS OF FEES
Government Long Funds	Barclays U.S. Government Long	95.24	88.10
Government Intermediate Funds	Barclays U.S. Government Intermediate	78.05	58.54
Government Short Funds	Barclays U.S. Government (1-3 Year)	76.47	52.94
Investment-Grade Long Funds	Barclays U.S. Government/Credit Long	95.40	94.25
Investment-Grade Intermediate Funds	Barclays U.S. Government/Credit Intermediate	51.06	40.43
Investment-Grade Short Funds	Barclays U.S. Government/Credit (1-3 Year)	57.81	45.31
High-Yield Funds	Barclays U.S. Corporate High Yield	98.37	84.55
Mortgage-Backed Securities Funds	Barclays U.S. Aggregate Securitized - MBS	81.40	32.56
Global Income Funds	Barclays Global Aggregate	58.33	45.83
Emerging Markets Debt Funds	Barclays Emerging Markets	73.68	42.11
General Municipal Debt Funds	S&P National AMT-Free Municipal Bond	63.29	40.51
California Municipal Debt Funds	S&P California AMT-Free Municipal Bond	66.67	25.64
New York Municipal Debt Funds	S&P New York AMT-Free Municipal Bond	85.29	35.29
Loan Participation Funds	S&P/LSTA U.S. Leveraged Loan 100	100.00	41.18

Source: S&P Dow Jones Indices LLC, CRSP. Data as of Dec. 31, 2017. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Exhibit 5: Fixed Income – Percentage of Institutional Managers Underperforming over 10 Years

CATEGORY	BENCHMARK	INSTITUTIONAL ACCOUNTS (%) NET OF FEES	INSTITUTIONAL ACCOUNTS (%) GROSS OF FEES
Emerging Market USD Funds	Barclays EM USD Aggregate	60.00	50.00
Global Aggregate Funds	Barclays Global Aggregate	62.50	46.07
Global Credit Funds	Barclays Global Aggregate - Corporate	45.45	38.10
Global Government Funds	Barclays Global Treasuries	64.29	51.22
Global High-Yield Funds	Barclays Global High Yield	100.00	81.25
Cash Funds	Barclays Short Treasury	44.00	38.55
U.S. Agg. / (Gov't + Credit) Funds	Barclays U.S. Aggregate	56.95	51.64
Investment-Grade Funds	Barclays U.S. Credit	30.86	26.75
Government Funds	Barclays U.S. Government	61.64	66.09
High-Yield Funds	Barclays U.S. Corporate High Yield	87.40	77.33
MBS Funds	Barclays U.S. Aggregate Securitized - MBS	41.46	30.08
Municipal Funds	S&P National AMT-Free Municipal Bond	65.79	63.16
Inflation-Linked Funds	Barclays U.S. Treasury: U.S. TIPS	83.33	64.44

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2017. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

SECTION II: INSTITUTIONAL ACCOUNTS – SPIVA U.S. SCORECARD (GROSS-OF-FEES)

Report 1: Percentage of U.S. Equity Funds Outperformed by Benchmarks

FUND CATEGORY	COMPARISON INDEX	ONE-YEAR	THREE-YEAR	FIVE-YEAR	TEN-YEAR
All Domestic Funds	S&P Composite 1500	60.25	70.22	70.15	59.88
All Large-Cap Funds	S&P 500	55.72	69.20	69.41	62.88
All Mid-Cap Funds	S&P MidCap 400	34.77	71.39	61.31	77.01
All Small-Cap Funds	S&P SmallCap 600	44.90	74.15	74.26	72.92
All Multi-Cap Funds	S&P Composite 1500	57.25	74.15	73.59	68.59
Large-Cap Growth Funds	S&P 500 Growth	40.92	62.03	71.32	79.69
Large-Cap Core Funds	S&P 500	51.54	69.64	68.54	60.71
Large-Cap Value Funds	S&P 500 Value	32.55	54.89	54.90	42.08
Mid-Cap Growth Funds	S&P Midcap 400 Growth	13.16	80.00	63.38	89.93
Mid-Cap Core Funds	S&P MidCap 400	29.87	58.23	56.67	72.22
Mid-Cap Value Funds	S&P MidCap 400 Value	24.32	56.10	57.78	58.82
Small-Cap Growth Funds	S&P SmallCap 600 Growth	15.08	77.18	71.24	82.51
Small-Cap Core Funds	S&P SmallCap 600	42.21	73.91	70.70	72.53
Small-Cap Value Funds	S&P SmallCap 600 Value	58.00	68.56	77.04	60.00
Multi-Cap Growth Funds	S&P Composite 1500 Growth	48.51	81.74	76.47	84.40
Multi-Cap Core Funds	S&P Composite 1500	53.66	73.94	71.17	70.07
Multi-Cap Value Funds	S&P Composite 1500 Value	50.34	67.08	66.46	49.26

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2017. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 2: Survivorship of U.S. Equity Funds

FUND CATEGORY	NO. OF FUNDS AT START	SURVIVORSHIP (%)
ONE-YEAR		
All Domestic Funds	2691	93.72
All Large-Cap Funds	1170	93.59
All Mid-Cap Funds	345	93.33
All Small-Cap Funds	709	95.06
All Multi-Cap Funds	467	92.29
Large-Cap Growth Funds	357	92.44
Large-Cap Core Funds	391	95.14
Large-Cap Value Funds	422	93.13
Mid-Cap Growth Funds	140	94.29
Mid-Cap Core Funds	81	91.36
Mid-Cap Value Funds	124	93.55
Small-Cap Growth Funds	205	93.17
Small-Cap Core Funds	226	96.46
Small-Cap Value Funds	278	95.32
Multi-Cap Growth Funds	122	90.98
Multi-Cap Core Funds	179	94.41
Multi-Cap Value Funds	166	90.96

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2017. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 2: Survivorship of U.S. Equity Funds (cont.)'		
FUND CATEGORY	NO. OF FUNDS AT START	SURVIVORSHIP (%)
THREE-YEAR		
All Domestic Funds	2909	83.57
All Large-Cap Funds	1282	82.76
All Mid-Cap Funds	373	84.72
All Small-Cap Funds	759	84.45
All Multi-Cap Funds	495	83.43
Large-Cap Growth Funds	395	80.51
Large-Cap Core Funds	427	83.61
Large-Cap Value Funds	460	83.91
Mid-Cap Growth Funds	155	83.23
Mid-Cap Core Funds	83	86.75
Mid-Cap Value Funds	135	85.19
Small-Cap Growth Funds	232	78.88
Small-Cap Core Funds	235	88.51
Small-Cap Value Funds	292	85.62
Multi-Cap Growth Funds	136	80.88
Multi-Cap Core Funds	180	88.33
Multi-Cap Value Funds	179	80.45
FIVE-YEAR		
All Domestic Funds	3034	75.21
All Large-Cap Funds	1348	73.81
All Mid-Cap Funds	405	72.84
All Small-Cap Funds	788	76.90
All Multi-Cap Funds	493	78.30
Large-Cap Growth Funds	427	70.49
Large-Cap Core Funds	445	74.38
Large-Cap Value Funds	476	76.26
Mid-Cap Growth Funds	165	72.73
Mid-Cap Core Funds	94	70.21
Mid-Cap Value Funds	146	74.66
Small-Cap Growth Funds	249	69.08
Small-Cap Core Funds	241	80.08
Small-Cap Value Funds	298	80.87
Multi-Cap Growth Funds	138	76.09
Multi-Cap Core Funds	177	81.92
Multi-Cap Value Funds	178	76.40

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2017. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 2: Survivorship of U.S. Equity Funds (cont.)

FUND CATEGORY	NO. OF FUNDS AT START	SURVIVORSHIP (%)
TEN-YEAR		
All Domestic Funds	2816	66.62
All Large-Cap Funds	1286	64.93
All Mid-Cap Funds	385	62.86
All Small-Cap Funds	712	69.38
All Multi-Cap Funds	433	70.44
Large-Cap Growth Funds	425	62.35
Large-Cap Core Funds	422	63.51
Large-Cap Value Funds	439	68.79
Mid-Cap Growth Funds	161	62.11
Mid-Cap Core Funds	94	58.51
Mid-Cap Value Funds	130	66.92
Small-Cap Growth Funds	243	60.91
Small-Cap Core Funds	203	72.91
Small-Cap Value Funds	266	74.44
Multi-Cap Growth Funds	126	68.25
Multi-Cap Core Funds	155	73.55
Multi-Cap Value Funds	152	69.08

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2017. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

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	21.13	11.41	15.74	8.69
All Domestic Funds	20.08	10.53	15.09	8.98
S&P 500	21.83	11.41	15.79	8.50
All Large-Cap Funds	22.19	10.75	15.38	8.53
S&P MidCap 400	16.24	11.14	15.01	9.97
All Mid-Cap Funds	20.19	9.97	14.76	9.09
S&P SmallCap 600	13.23	12.00	15.99	10.43
All Small-Cap Funds	16.30	10.70	15.01	9.76
S&P Composite 1500	21.13	11.41	15.74	8.69
All Multi-Cap Funds	20.86	10.02	14.60	8.65
LARGE-CAP				
S&P 500 Growth	27.44	12.86	17.00	9.99
Large-Cap Growth Funds	29.01	12.33	16.46	9.08
S&P 500	21.83	11.41	15.79	8.50
Large-Cap Core Funds	21.67	10.70	15.31	8.52
S&P 500 Value	15.36	9.47	14.24	6.80
Large-Cap Value Funds	17.47	9.48	14.51	7.99

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2017. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

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

CATEGORY	ONE-YEAR (ANNUALIZED, %)	THREE-YEAR (ANNUALIZED, %)	FIVE-YEAR (ANNUALIZED, %)	TEN-YEAR (ANNUALIZED, %)
MID-CAP				
S&P MidCap 400 Growth	19.92	11.98	14.93	10.35
Mid-Cap Growth Funds	25.76	9.95	14.50	8.71
S&P MidCap 400	16.24	11.14	15.01	9.97
Mid-Cap Core Funds	19.41	10.52	14.98	9.06
S&P MidCap 400 Value	12.32	9.88	14.83	9.46
Mid-Cap Value Funds	15.28	9.60	14.87	9.46
SMALL-CAP				
S&P SmallCap 600 Growth	14.79	12.96	16.39	10.82
Small-Cap Growth Funds	24.76	11.09	15.77	9.31
S&P SmallCap 600	13.23	12.00	15.99	10.43
Small-Cap Core Funds	14.76	10.62	14.93	9.88
S&P SmallCap 600 Value	11.51	10.97	15.52	9.99
Small-Cap Value Funds	11.26	10.29	14.30	10.01
MULTI-CAP				
S&P Composite 1500 Growth	26.49	12.82	16.84	10.07
Multi-Cap Growth Funds	29.18	11.51	15.74	9.03
S&P Composite 1500	21.13	11.41	15.74	8.69
Multi-Cap Core Funds	20.51	9.91	14.69	8.47
S&P Composite 1500 Value	14.99	9.54	14.32	7.13
Multi-Cap Value Funds	15.78	8.96	13.61	8.46

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2017. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

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	21.13	11.41	15.74	8.69
All Domestic Funds	21.95	11.11	15.56	8.82
S&P 500	21.83	11.41	15.79	8.50
All Large-Cap Funds	23.26	11.37	15.76	8.45
S&P MidCap 400	16.24	11.14	15.01	9.97
All Mid-Cap Funds	20.49	10.32	15.24	9.46
S&P SmallCap 600	13.23	12.00	15.99	10.43
All Small-Cap Funds	17.59	11.07	15.09	10.02
S&P Composite 1500	21.13	11.41	15.74	8.69
All Multi-Cap Funds	21.68	10.31	15.00	8.35

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2017. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 4: Average U.S. Equity Fund Performance (Asset-Weighted) (cont.)				
CATEGORY	ONE-YEAR (ANNUALIZED, %)	THREE-YEAR (ANNUALIZED, %)	FIVE-YEAR (ANNUALIZED, %)	TEN-YEAR (ANNUALIZED, %)
LARGE-CAP				
S&P 500 Growth	27.44	12.86	17.00	9.99
Large-Cap Growth Funds	32.36	13.37	17.22	9.43
S&P 500	21.83	11.41	15.79	8.50
Large-Cap Core Funds	21.40	10.62	15.15	8.01
S&P 500 Value	15.36	9.47	14.24	6.80
Large-Cap Value Funds	17.90	10.13	14.88	7.80
MID-CAP				
S&P MidCap 400 Growth	19.92	11.98	14.93	10.35
Mid-Cap Growth Funds	26.13	10.80	15.38	9.30
S&P MidCap 400	16.24	11.14	15.01	9.97
Mid-Cap Core Funds	21.56	11.39	16.23	9.83
S&P MidCap 400 Value	12.32	9.88	14.83	9.46
Mid-Cap Value Funds	15.21	9.38	14.69	9.36
SMALL-CAP				
S&P SmallCap 600 Growth	14.79	12.96	16.39	10.82
Small-Cap Growth Funds	26.95	11.50	15.94	9.91
S&P SmallCap 600	13.23	12.00	15.99	10.43
Small-Cap Core Funds	15.27	10.88	14.89	9.99
S&P SmallCap 600 Value	11.51	10.97	15.52	9.99
Small-Cap Value Funds	11.80	10.49	14.25	9.86
MULTI-CAP				
S&P Composite 1500 Growth	26.49	12.82	16.84	10.07
Multi-Cap Growth Funds	27.05	10.75	15.88	8.40
S&P Composite 1500	21.13	11.41	15.74	8.69
Multi-Cap Core Funds	21.13	10.40	14.72	8.29
S&P Composite 1500 Value	14.99	9.54	14.32	7.13
Multi-Cap Value Funds	17.49	9.55	14.33	8.30

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2017. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 5: Quartile Breakpoints of U.S. Equity Funds			
FUND CATEGORY	THIRD QUARTILE	SECOND QUARTILE	FIRST QUARTILE
ONE-YEAR			
All Domestic Funds	15.07	19.81	24.96
All Large-Cap Funds	17.44	21.46	26.62
All Mid-Cap Funds	15.74	20.19	25.33
All Small-Cap Funds	10.36	14.76	20.74
All Multi-Cap Funds	15.86	20.19	25.00
Large-Cap Growth Funds	26.25	28.79	32.47
Large-Cap Core Funds	19.59	21.89	24.25
Large-Cap Value Funds	15.13	17.19	19.77
Mid-Cap Growth Funds	22.71	25.73	28.41
Mid-Cap Core Funds	16.55	19.23	22.10
Mid-Cap Value Funds	12.74	14.91	17.58
Small-Cap Growth Funds	19.82	24.33	28.69
Small-Cap Core Funds	11.79	14.76	17.52
Small-Cap Value Funds	7.51	10.70	14.00
Multi-Cap Growth Funds	23.90	27.95	33.27
Multi-Cap Core Funds	17.15	20.64	23.78
Multi-Cap Value Funds	13.12	15.63	18.60
THREE-YEAR			
All Domestic Funds	9.05	10.58	12.16
All Large-Cap Funds	9.39	10.80	12.16
All Mid-Cap Funds	8.66	10.21	11.67
All Small-Cap Funds	9.14	10.65	12.41
All Multi-Cap Funds	8.11	10.18	11.91
Large-Cap Growth Funds	11.01	12.51	13.81
Large-Cap Core Funds	9.83	10.88	11.84
Large-Cap Value Funds	8.57	9.67	10.84
Mid-Cap Growth Funds	8.64	10.33	11.75
Mid-Cap Core Funds	8.75	10.66	13.14
Mid-Cap Value Funds	8.57	9.90	11.38
Small-Cap Growth Funds	9.05	11.16	13.37
Small-Cap Core Funds	9.37	10.94	12.34
Small-Cap Value Funds	8.88	10.27	11.93
Multi-Cap Growth Funds	9.44	12.02	12.70
Multi-Cap Core Funds	8.63	10.41	11.71
Multi-Cap Value Funds	7.18	9.03	10.51

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2017. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 5: Quartile Breakpoints of U.S. Equity Funds (cont.)			
FUND CATEGORY	THIRD QUARTILE	SECOND QUARTILE	FIRST QUARTILE
FIVE-YEAR			
All Domestic Funds	13.93	15.25	16.53
All Large-Cap Funds	14.33	15.46	16.70
All Mid-Cap Funds	13.83	15.14	16.39
All Small-Cap Funds	13.70	15.09	16.52
All Multi-Cap Funds	13.20	14.79	16.19
Large-Cap Growth Funds	15.34	16.75	17.58
Large-Cap Core Funds	14.67	15.57	16.40
Large-Cap Value Funds	13.62	14.63	15.77
Mid-Cap Growth Funds	13.58	15.05	16.16
Mid-Cap Core Funds	14.34	15.60	17.02
Mid-Cap Value Funds	13.83	15.19	16.28
Small-Cap Growth Funds	14.10	15.86	17.40
Small-Cap Core Funds	13.90	15.25	16.44
Small-Cap Value Funds	13.20	14.51	15.71
Multi-Cap Growth Funds	14.27	15.75	17.29
Multi-Cap Core Funds	13.27	14.97	16.24
Multi-Cap Value Funds	12.59	14.09	15.35
TEN-YEAR			
All Domestic Funds	8.06	9.15	10.19
All Large-Cap Funds	7.88	8.83	9.64
All Mid-Cap Funds	8.54	9.66	10.56
All Small-Cap Funds	8.73	9.93	11.06
All Multi-Cap Funds	7.47	8.52	9.64
Large-Cap Growth Funds	8.67	9.58	10.26
Large-Cap Core Funds	8.05	8.83	9.37
Large-Cap Value Funds	7.38	8.17	9.08
Mid-Cap Growth Funds	8.16	9.26	10.04
Mid-Cap Core Funds	9.43	9.93	10.71
Mid-Cap Value Funds	8.65	9.85	10.97
Small-Cap Growth Funds	8.35	9.55	10.94
Small-Cap Core Funds	8.85	9.83	10.97
Small-Cap Value Funds	9.09	10.08	11.19
Multi-Cap Growth Funds	7.96	9.39	10.05
Multi-Cap Core Funds	7.38	8.52	9.28
Multi-Cap Value Funds	7.20	8.27	9.55

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2017. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

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	34.81	43.24	46.88	48.74
Global Funds	S&P Global 1200	41.91	58.12	54.31	59.79
International Funds	S&P International 700	55.88	51.14	44.15	57.71
International Small-Cap Funds	S&P Developed Ex-U.S. SmallCap	35.80	27.78	25.00	32.69

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2017. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 7: Survivorship of International Equity Funds

FUND CATEGORY	NO. OF FUNDS AT START	SURVIVORSHIP (%)
ONE-YEAR		
Emerging Market Funds	443	93.23
Global Funds	293	94.20
International Funds	208	94.71
International Small-Cap Funds	86	94.19
THREE-YEAR		
Emerging Market Funds	442	83.94
Global Funds	296	86.15
International Funds	213	84.98
International Small-Cap Funds	76	86.84
FIVE-YEAR		
Emerging Market Funds	412	75.00
Global Funds	287	77.35
International Funds	222	76.13
International Small-Cap Funds	72	81.94
TEN-YEAR		
Emerging Market Funds	213	70.42
Global Funds	204	61.27
International Funds	205	64.88
International Small-Cap Funds	58	68.97

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2017. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

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	33.30	8.97	4.93	2.15
Emerging Market Funds	37.28	9.93	5.92	3.53
S&P Global 1200	23.84	10.16	12.14	5.67
Global Funds	25.78	10.26	12.29	6.22
S&P International 700	26.64	8.50	7.93	2.64
International Funds	26.50	8.81	8.83	3.08
S&P Developed Ex-U.S. SmallCap	32.37	13.32	12.12	5.22
International Small-Cap Funds	35.13	15.38	14.41	7.01

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2017. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

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	33.30	8.97	4.93	2.15
Emerging Market Funds	37.80	10.13	5.67	3.33
S&P Global 1200	23.84	10.16	12.14	5.67
Global Funds	25.23	10.49	12.70	5.57
S&P International 700	26.64	8.50	7.93	2.64
International Funds	26.22	8.39	8.35	2.70
S&P Developed Ex-U.S. SmallCap	32.37	13.32	12.12	5.22
International Small-Cap Funds	33.57	14.41	13.17	6.28

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2017. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 10: Quartile Breakpoints of International Equity Funds

FUND CATEGORY	THIRD QUARTILE	SECOND QUARTILE	FIRST QUARTILE
ONE-YEAR			
Emerging Market Funds	32.05	37.26	42.24
Global Funds	22.15	25.26	28.45
International Funds	23.79	26.52	29.16
International Small-Cap Funds	31.65	34.08	38.20
THREE-YEAR			
Emerging Market Funds	8.32	10.18	11.84
Global Funds	8.89	10.08	11.18
International Funds	7.99	8.93	9.96
International Small-Cap Funds	13.59	14.98	16.38
FIVE-YEAR			
Emerging Market Funds	4.61	5.95	7.77
Global Funds	11.35	12.60	13.58
International Funds	8.04	9.10	9.87
International Small-Cap Funds	12.85	14.06	15.94
TEN-YEAR			
Emerging Market Funds	2.02	3.20	4.63
Global Funds	5.27	6.18	7.14
International Funds	2.42	3.46	3.99
International Small-Cap Funds	5.91	6.38	8.20

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2017. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 11: Percentage of Fixed Income Funds Outperformed by Benchmarks

FUND CATEGORY	COMPARISON INDEX	ONE-YEAR	THREE-YEAR	FIVE-YEAR	TEN-YEAR
Emerging Market USD Funds	Barclays EM USD Aggregate	16.13	61.40	69.39	50.00
Global Aggregate Funds	Barclays Global Aggregate	43.18	48.59	49.65	46.07
Global Credit Funds	Barclays Global Aggregate - Corporate	50.62	35.90	44.26	38.10
Global Government Funds	Barclays Global Treasuries	65.12	59.18	57.89	51.22
Global High-Yield Funds	Barclays Global High Yield	70.30	81.52	63.53	81.25
Cash Funds	Barclays Short Treasury	5.63	16.45	30.47	38.55
U.S. Agg. / (Gov't + Credit) Funds	Barclays U.S. Aggregate	45.14	39.42	47.39	51.64
Investment-Grade Funds	Barclays U.S. Credit	26.73	20.46	21.83	26.75
Government Funds	Barclays U.S. Government	60.61	58.10	60.00	66.09
High-Yield Funds	Barclays U.S. Corporate High Yield	56.33	67.94	65.10	77.33
MBS Funds	Barclays U.S. Aggregate Securitized - MBS	9.04	11.11	21.76	30.08
Municipal Funds	S&P National AMT-Free Municipal Bond	64.39	62.80	59.45	63.16
Inflation-Linked Funds	Barclays U.S. Treasury: U.S. TIPS	41.03	47.83	46.00	64.44

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2017. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 12: Survivorship of Fixed Income Funds

FUND CATEGORY	NO. OF FUNDS AT START	SURVIVORSHIP (%)
ONE-YEAR		
Emerging Market USD Funds	65	93.85
Global Aggregate Funds	146	97.26
Global Credit Funds	91	96.70
Global Government Funds	48	87.50
Global High-Yield Funds	118	93.22
Cash Funds	247	98.38
U.S. Agg. / (Gov't + Credit) Funds	1023	96.19
Investment-Grade Funds	310	98.06
Government Funds	118	94.92
High-Yield Funds	329	94.83
MBS Funds	202	97.03
Municipal Funds	472	97.46
Inflation-Linked Funds	94	91.49

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2017. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 12: Survivorship of Fixed Income Funds (cont.)		
FUND CATEGORY	NO. OF FUNDS AT START	SURVIVORSHIP (%)
THREE-YEAR		
Emerging Market USD Funds	59	81.36
Global Aggregate Funds	157	82.80
Global Credit Funds	86	93.02
Global Government Funds	55	74.55
Global High-Yield Funds	108	88.89
Cash Funds	259	90.35
U.S. Agg. / (Gov't + Credit) Funds	1048	89.31
Investment-Grade Funds	312	93.91
Government Funds	124	89.52
High-Yield Funds	342	85.09
MBS Funds	205	92.68
Municipal Funds	472	92.37
Inflation-Linked Funds	108	77.78
FIVE-YEAR		
Emerging Market USD Funds	51	80.39
Global Aggregate Funds	159	77.36
Global Credit Funds	70	92.86
Global Government Funds	61	62.30
Global High-Yield Funds	96	83.33
Cash Funds	285	77.19
U.S. Agg. / (Gov't + Credit) Funds	1066	82.55
Investment-Grade Funds	293	91.47
Government Funds	127	83.46
High-Yield Funds	322	79.81
MBS Funds	209	87.08
Municipal Funds	490	86.94
Inflation-Linked Funds	116	72.41
TEN-YEAR		
Emerging Market USD Funds	23	78.26
Global Aggregate Funds	109	77.06
Global Credit Funds	29	93.10
Global Government Funds	43	51.16
Global High-Yield Funds	53	83.02
Cash Funds	287	70.38
U.S. Agg. / (Gov't + Credit) Funds	961	75.34
Investment-Grade Funds	172	87.21
Government Funds	132	75.00
High-Yield Funds	250	78.00
MBS Funds	146	84.25
Municipal Funds	390	83.59
Inflation-Linked Funds	102	64.71

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2017. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 13: Average Fixed Income Fund Performance (Equal-Weighted)				
CATEGORY	ONE-YEAR (ANNUALIZED, %)	THREE-YEAR (ANNUALIZED, %)	FIVE-YEAR (ANNUALIZED, %)	TEN-YEAR (ANNUALIZED, %)
Barclays EM USD Aggregate	8.17	6.38	3.87	7.01
Emerging Market USD Funds	12.86	5.57	2.19	6.03
Barclays Global Aggregate	7.39	2.02	0.79	3.09
Global Aggregate Funds	8.13	2.48	1.62	4.19
Barclays Global Aggregate - Corporate	9.09	3.21	2.96	4.37
Global Credit Funds	10.04	3.83	3.48	5.77
Barclays Global Treasuries	7.29	1.79	0.03	2.65
Global Government Funds	7.35	1.80	0.51	3.81
Barclays Global High Yield	10.43	7.08	5.67	8.08
Global High-Yield Funds	11.13	6.03	5.28	7.55
Barclays Short Treasury	0.81	0.49	0.34	0.55
Cash Funds	1.59	1.33	1.20	1.87
Barclays U.S. Aggregate	3.54	2.24	2.10	4.01
U.S. Agg. / (Gov't + Credit) Funds	4.13	2.81	2.60	4.60
Barclays U.S. Credit	6.18	3.63	3.24	5.42
Investment-Grade Funds	7.57	4.64	4.39	6.86
Barclays U.S. Government	2.31	1.40	1.28	3.23
Government Funds	2.93	1.80	1.68	3.48
Barclays U.S. Corporate High Yield	7.50	6.35	5.78	8.03
High-Yield Funds	7.08	5.86	5.42	7.40
Barclays U.S. Aggregate Securitized - MBS	2.14	1.77	1.97	3.80
MBS Funds	4.39	3.29	3.61	5.44
S&P National AMT-Free Municipal Bond	5.09	2.89	2.79	4.22
Municipal Funds	4.64	2.77	2.82	4.22
Barclays U.S. Treasury: U.S. TIPS	3.01	2.05	0.13	3.53
Inflation-Linked Funds	3.06	2.17	0.27	3.62

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2017. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 14: Average Fixed Income Fund Performance (Asset-Weighted)				
CATEGORY	ONE-YEAR (ANNUALIZED, %)	THREE-YEAR (ANNUALIZED, %)	FIVE-YEAR (ANNUALIZED, %)	TEN-YEAR (ANNUALIZED, %)
Barclays EM USD Aggregate	8.17	6.38	3.87	7.01
Emerging Market USD Funds	12.48	6.57	2.89	6.56
Barclays Global Aggregate	7.39	2.02	0.79	3.09
Global Aggregate Funds	6.90	2.32	1.58	3.97
Barclays Global Aggregate - Corporate	9.09	3.21	2.96	4.37
Global Credit Funds	10.20	3.80	3.51	5.67
Barclays Global Treasuries	7.29	1.79	0.03	2.65
Global Government Funds	4.94	1.84	1.66	5.51
Barclays Global High Yield	10.43	7.08	5.67	8.08
Global High-Yield Funds	9.97	6.47	5.72	8.34
Barclays Short Treasury	0.81	0.49	0.34	0.55
Cash Funds	1.48	1.15	1.03	1.52
Barclays U.S. Aggregate	3.54	2.24	2.10	4.01
U.S. Agg. / (Gov't + Credit) Funds	5.16	3.26	2.93	5.08
Barclays U.S. Credit	6.18	3.63	3.24	5.42
Investment-Grade Funds	8.17	4.92	4.58	7.02
Barclays U.S. Government	2.31	1.40	1.28	3.23
Government Funds	5.69	2.48	2.87	5.38
Barclays U.S. Corporate High Yield	7.50	6.35	5.78	8.03
High-Yield Funds	7.02	5.95	5.64	7.44
Barclays U.S. Aggregate Securitized - MBS	2.14	1.77	1.97	3.80
MBS Funds	3.62	2.68	2.82	4.85
S&P National AMT-Free Municipal Bond	5.09	2.89	2.79	4.22
Municipal Funds	5.23	3.00	3.01	4.48
Barclays U.S. Treasury: U.S. TIPS	3.01	2.05	0.13	3.53
Inflation-Linked Funds	2.91	2.04	0.16	3.64

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2017. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 15: Quartile Breakpoints of Fixed Income Funds			
FUND CATEGORY	THIRD QUARTILE	SECOND QUARTILE	FIRST QUARTILE
ONE-YEAR			
Emerging Market USD Funds	11.23	13.03	15.13
Global Aggregate Funds	4.50	7.87	10.94
Global Credit Funds	6.37	9.42	12.08
Global Government Funds	4.01	6.96	9.09
Global High-Yield Funds	8.17	9.17	14.19
Cash Funds	1.15	1.48	1.87
U.S. Agg. / (Gov't + Credit) Funds	2.51	3.80	4.82
Investment-Grade Funds	6.12	6.95	8.28
Government Funds	1.08	1.65	2.81
High-Yield Funds	6.01	7.37	8.26
MBS Funds	2.58	3.68	5.64
Municipal Funds	2.82	4.36	6.23
Inflation-Linked Funds	2.61	3.17	3.60
THREE-YEAR			
Emerging Market USD Funds	3.86	6.01	8.23
Global Aggregate Funds	1.59	2.32	3.07
Global Credit Funds	2.86	3.91	4.72
Global Government Funds	1.21	1.88	2.58
Global High-Yield Funds	5.14	6.22	6.95
Cash Funds	0.81	1.27	1.79
U.S. Agg. / (Gov't + Credit) Funds	2.06	2.58	3.25
Investment-Grade Funds	4.02	4.51	5.44
Government Funds	0.96	1.39	1.93
High-Yield Funds	5.23	6.00	6.76
MBS Funds	2.13	2.85	4.38
Municipal Funds	1.64	2.57	3.70
Inflation-Linked Funds	2.00	2.17	2.33

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2017. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 15: Quartile Breakpoints of Fixed Income Funds (cont.)			
FUND CATEGORY	THIRD QUARTILE	SECOND QUARTILE	FIRST QUARTILE
FIVE-YEAR			
Emerging Market USD Funds	-0.51	2.87	4.44
Global Aggregate Funds	0.59	1.37	2.93
Global Credit Funds	1.90	3.42	4.39
Global Government Funds	-0.19	0.76	1.80
Global High-Yield Funds	4.48	5.58	6.48
Cash Funds	0.62	1.08	1.66
U.S. Agg. / (Gov't + Credit) Funds	1.82	2.40	3.03
Investment-Grade Funds	3.74	4.20	5.26
Government Funds	0.80	1.27	1.81
High-Yield Funds	4.96	5.70	6.19
MBS Funds	2.24	3.11	4.95
Municipal Funds	1.68	2.70	3.91
Inflation-Linked Funds	0.15	0.24	0.56
TEN-YEAR			
Emerging Market USD Funds	6.83	7.27	8.20
Global Aggregate Funds	3.09	3.45	4.43
Global Credit Funds	3.90	5.22	6.29
Global Government Funds	3.32	4.18	4.54
Global High-Yield Funds	5.68	7.22	7.86
Cash Funds	0.90	1.97	2.44
U.S. Agg. / (Gov't + Credit) Funds	3.66	4.40	5.05
Investment-Grade Funds	5.89	6.41	7.06
Government Funds	2.06	3.02	3.79
High-Yield Funds	6.58	7.62	8.20
MBS Funds	4.09	4.62	5.60
Municipal Funds	2.94	3.99	4.90
Inflation-Linked Funds	3.36	3.63	3.87

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2017. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

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.

Exhibit A1: U.S. Equity Category Mappings	
SPIVA INSTITUTIONAL CATEGORY	eVESTMENT ALLIANCE CLASSIFICATION
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.

Exhibit A2: International Equity Category Mappings	
SPIVA INSTITUTIONAL CATEGORY	eVESTMENT ALLIANCE CLASSIFICATION
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.

Exhibit A3: U.S. Fixed Income Category Mappings	
SPIVA INSTITUTIONAL CATEGORY	eVESTMENT ALLIANCE CLASSIFICATION
U.S. FUNDS	
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
GLOBAL/EMERGING FUNDS	
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.

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 p^{th} 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 approximately 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.

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 INTERNATIONAL 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 DEVELOPED 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

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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