

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

Contributors

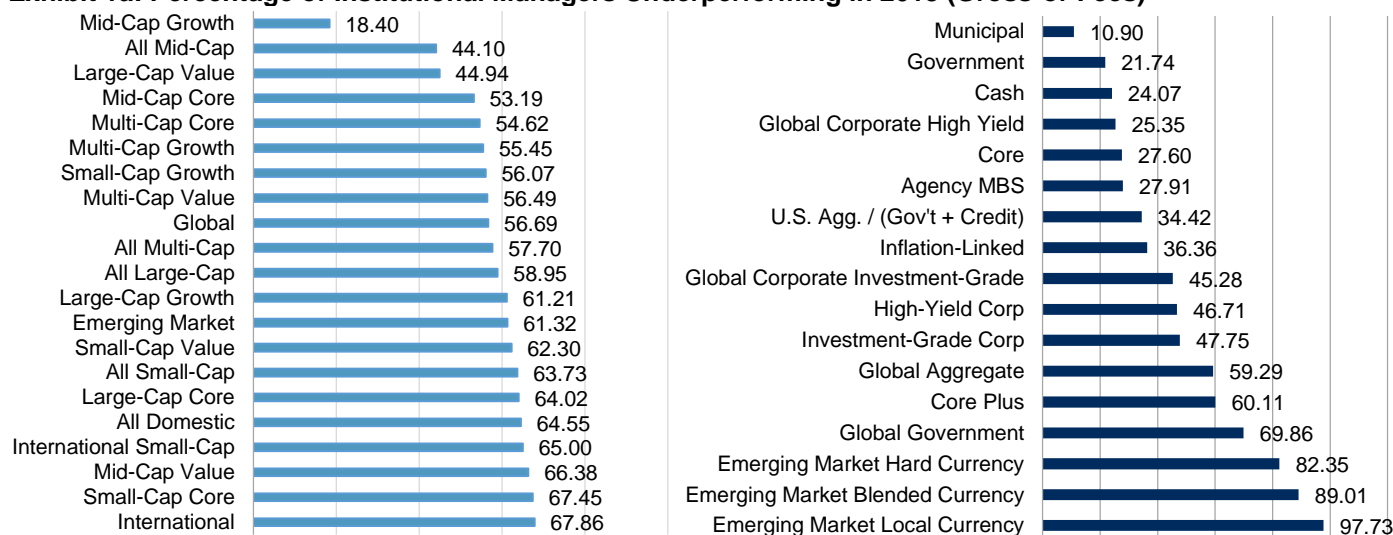
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EXECUTIVE SUMMARY

- This report adds institutional accounts to the mutual funds analyzed in the S&P Indices Versus Active (SPIVA) U.S. Scorecards. We also examine the impact of fees.
- **Overall, underperformance among institutional equity accounts was not meaningfully different from that reported for mutual funds.** For example, 77.97% of large-cap mutual fund managers and 73.21% of institutional accounts underperformed the [S&P 500[®]](#) on a gross-of-fees basis over the 10-year horizon.
- **2018 proved challenging for institutional equity managers:** the majority of U.S. equity funds in most categories, and most international equity funds in all categories, underperformed last year.
- Mid-cap growth funds offered the best relative performance among equity categories in 2018; an impressive 81.60% outperformed the [S&P MidCap 400[®] Growth](#)'s 10.34% decline last year.
- **Institutional fixed income managers showed strength in many categories in 2018;** the majority outperformed in 11 out of 17 categories, gross-of-fees.

Exhibit 1a: Percentage of Institutional Managers Underperforming in 2018 (Gross-of-Fees)



Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2018. Past performance is no guarantee of future results. Charts are provided for illustrative purposes.

- Highlighting how difficult it can be to beat benchmarks over longer horizons, **the majority of institutional managers in all but one equity category underperformed over the 10-year horizon, gross-of-fees.** International small-cap funds offered the exception.
- However, incorporating a profitability screen in international small caps would have removed this exception. Most (52.46%) institutional international small-cap funds would have underperformed the [S&P Developed Ex U.S. SmallCap Select Index](#)'s 10.76% annualized total returns over the 10-year period ending Dec. 31, 2018.

Exhibit 1b: Incorporating a Profitability Screen in Small Caps Would Have Made the Benchmark More Difficult to Beat				
COMPARISON INDEX	1-YEAR	3-YEAR	5-YEAR	10-YEAR
S&P DEVELOPED EX-U.S. SMALLCAP				
Annualized Returns (%)	-18.41	3.88	2.78	10.00
% International Small-Cap Funds Underperforming (Gross-of-Fees)	65.00	64.77	43.59	44.26
S&P DEVELOPED EX-U.S. SMALLCAP SELECT INDEX				
Annualized Returns (%)	-17.46	4.34	3.53	10.76
% International Small-Cap Funds Underperforming (Gross-of-Fees)	72.50	70.45	58.97	52.46

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2018. Past performance is no guarantee of future results. Table is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

- **Active equity managers focusing on market segments perceived to be relatively inefficient appeared to charge higher fees than their peers in other categories.** There were typically greater differences between the gross- and net-of-fees relative performance figures in domestic and international small-cap categories, as well as for emerging market funds.
- **Institutional fixed income funds typically performed better than their benchmarks, gross-of-fees, compared with their mutual fund counterparts.** However, California municipal debt mutual funds posted the best relative performance figures over the 10-year horizon, gross-of-fees.
- **Fees appeared to have a sizeable impact on the relative performance of mutual funds in the mortgage-backed securities (MBS) and municipal bond categories.**
- For example, while 64.81% of MBS mutual funds underperformed, gross-of-fees, over the 10-year horizon, 42.59% underperformed net-of-fees. This 22.22 percentage point difference was one of the largest across any fixed income category over the 10-year horizon.
- We report only gross-of-fees returns for institutional fixed income funds in the global corporate investment-grade and global corporate high-yield categories. Only three funds in each category posted a complete history of net returns and assets under management over the 10-year horizon.

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 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 MUTUAL FUNDS AND INSTITUTIONAL ACCOUNTS UNDERPERFORMING THEIR BENCHMARKS

Equity – Institutional Accounts

Institutional account data relies on self-reporting by active managers and, typically, fewer institutional managers report net-of-fees returns compared with gross-of-fees returns. Although the underlying universes of institutional accounts differ on a net- and gross-of-fees basis, **overall findings suggest that U.S. equities pose meaningful challenges for active managers to overcome.** Exhibit 2 shows that the majority of domestically focused institutional equity managers lagged in each category.

We find similar challenges for institutional equity managers focused on the non-U.S. equity space. Only international small-cap funds, gross-of-fees, were able to outperform over the 10-year horizon. **Unsurprisingly, relative performance among institutional equity managers was always worse on a net-of-fees returns basis.**

Exhibit 2: Equity – Percentage of Institutional Managers Underperforming over 10 Years

CATEGORY	BENCHMARK	INSTITUTIONAL ACCOUNTS (%) NET-OF-FEES	INSTITUTIONAL ACCOUNTS (%) GROSS-OF-FEES	NO. OF FUNDS AT START NET-OF-FEES	NO. OF FUNDS AT START GROSS-OF-FEES
All Domestic Funds	S&P Composite 1500®	76.17	67.39	2461	3096
All Large-Cap Funds	S&P 500	79.11	73.21	1020	1347
All Mid-Cap Funds	S&P MidCap 400	80.71	64.87	299	364
All Small-Cap Funds	S&P SmallCap 600®	77.06	66.10	808	965
All Multi-Cap Funds	S&P Composite 1500	77.13	71.61	334	420
Large-Cap Growth Funds	S&P 500 Growth	81.69	73.10	375	455
Large-Cap Core Funds	S&P 500	87.82	77.92	263	400
Large-Cap Value Funds	S&P 500 Value	65.28	50.31	382	492
Mid-Cap Growth Funds	S&P MidCap 400 Growth	82.11	70.00	131	156
Mid-Cap Core Funds	S&P MidCap 400	85.11	68.49	51	75
Mid-Cap Value Funds	S&P MidCap 400 Value	73.64	58.46	117	133
Small-Cap Growth Funds	S&P SmallCap 600 Growth	79.86	67.65	317	351
Small-Cap Core Funds	S&P SmallCap 600	84.14	67.87	169	232
Small-Cap Value Funds	S&P SmallCap 600 Value	70.85	51.87	322	382
Multi-Cap Growth Funds	S&P Composite 1500 Growth	82.83	72.87	112	134
Multi-Cap Core Funds	S&P Composite 1500	84.29	80.18	86	130
Multi-Cap Value Funds	S&P Composite 1500 Value	66.94	50.99	136	156
Emerging Market Funds	S&P/IFCI Composite	75.00	54.32	177	253
Global Funds	S&P Global 1200	75.00	69.64	175	325
International Funds	S&P International 700	68.28	59.55	165	228
International Small-Cap Funds	S&P Developed Ex-U.S. SmallCap	59.52	44.26	49	63

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2018. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Equity – Mutual Funds

Mutual fund analysis is based on CRSP data, and so the same fund universe is used for net-of-fees and gross-of-fees comparisons. Exhibit 3 shows that **the majority of active U.S. equity mutual funds underperformed their benchmarks over the 10-year period, even before accounting for fees.**

This underperformance included those areas that are perceived to be more suited to active management, such as emerging markets and international small-caps. In other words, Exhibit 3 highlights how challenging it can be to outperform benchmarks, especially over longer horizons.

Exhibit 3: Equity – Percentage of Mutual Funds Underperforming over 10 Years

CATEGORY	BENCHMARK	MUTUAL FUNDS (%) NET-OF-FEES	MUTUAL FUNDS (%) GROSS-OF-FEES	NO. OF FUNDS AT START NET-OF-FEES	NO. OF FUNDS AT START GROSS-OF-FEES
All Domestic Funds	S&P Composite 1500	84.49	75.58	2897	2897
All Large-Cap Funds	S&P 500	85.14	77.97	1010	1010
All Mid-Cap Funds	S&P MidCap 400	88.03	76.25	521	521
All Small-Cap Funds	S&P SmallCap 600	85.67	76.01	626	626
All Multi-Cap Funds	S&P Composite 1500	86.36	77.90	740	740
Large-Cap Growth Funds	S&P 500 Growth	84.08	74.47	333	333
Large-Cap Core Funds	S&P 500	93.27	83.92	345	345
Large-Cap Value Funds	S&P 500 Value	81.71	65.85	332	332
Mid-Cap Growth Funds	S&P MidCap 400 Growth	87.40	77.64	247	247
Mid-Cap Core Funds	S&P MidCap 400	90.23	82.71	134	134
Mid-Cap Value Funds	S&P MidCap 400 Value	87.77	72.66	140	140
Small-Cap Growth Funds	S&P SmallCap 600 Growth	85.65	73.91	232	232
Small-Cap Core Funds	S&P SmallCap 600	92.97	84.77	259	259
Small-Cap Value Funds	S&P SmallCap 600 Value	87.41	71.85	135	135
Multi-Cap Growth Funds	S&P Composite 1500 Growth	87.39	80.43	230	230
Multi-Cap Core Funds	S&P Composite 1500	91.79	82.99	346	346
Multi-Cap Value Funds	S&P Composite 1500 Value	81.48	71.60	164	164
Emerging Market Funds	S&P/IFCI Composite	87.72	64.91	114	114
Global Funds	S&P Global 1200	81.20	66.92	133	133
International Funds	S&P International 700	81.07	66.07	280	280
International Small-Cap Funds	S&P Developed Ex-U.S. SmallCap	64.15	50.94	53	53

Source: S&P Dow Jones Indices LLC, CRSP. Data as of Dec. 31, 2018. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Fixed Income – Mutual Funds

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. 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 degree 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.

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	NO. OF FUNDS AT START NET-OF-FEES	NO. OF FUNDS AT START GROSS-OF-FEES
Government Long Funds	Bloomberg Barclays Long Government Bond Index	94.94	89.87	79	79
Government Intermediate Funds	Bloomberg Barclays Intermediate Government Bond Index	80.56	55.56	36	36
Government Short Funds	Bloomberg Barclays 1-3 Year Government Bond Index	67.65	50.00	34	34
Investment-Grade Long Funds	Bloomberg Barclays Long Government/Credit Bond Index	80.31	73.23	131	131
Investment-Grade Intermediate Funds	Bloomberg Barclays Intermediate Government/Credit Bond Index	49.38	44.86	245	245
Investment-Grade Short Funds	Bloomberg Barclays 1-3 Year US Government/Credit Bond Index	43.75	39.06	65	65
High-Yield Funds	Bloomberg Barclays U.S. Corporate High Yield Bond Index	96.63	90.45	180	180
Mortgage-Backed Securities Funds	Bloomberg Barclays U.S. MBS Index	64.81	42.59	54	54
Global Income Funds	Bloomberg Barclays Global Aggregate Bond Index	47.22	38.89	73	73
Emerging Markets Debt Funds	Bloomberg Barclays Emerging Markets USD Aggregate Index	90.91	68.18	22	22
General Municipal Debt Funds	S&P National AMT-Free Municipal Bond Index	44.59	37.84	74	74
California Municipal Debt Funds	S&P California AMT-Free Municipal Bond Index	36.84	26.32	38	38
New York Municipal Debt Funds	S&P New York AMT-Free Municipal Bond Index	54.55	33.33	33	33
Loan Participation Funds	S&P/LSTA U.S. Leveraged Loan 100 Index	80.95	61.90	21	21

Source: S&P Dow Jones Indices LLC, CRSP. Data as of Dec. 31, 2018. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Fixed Income – Institutional Accounts

We report only gross-of-fees returns for institutional fixed income funds in the global corporate investment-grade and global corporate high-yield categories since only three funds in each category posted a complete history of net returns and assets under management over the past 10 years.

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

CATEGORY	BENCHMARK	INSTITUTIONAL ACCOUNTS (%) NET-OF-FEES	INSTITUTIONAL ACCOUNTS (%) GROSS-OF-FEES	NO. OF FUNDS AT START NET-OF-FEES	NO. OF FUNDS AT START GROSS-OF-FEES
U.S. Agg. / (Gov't + Credit) Funds	Bloomberg Barclays U.S. Aggregate Index	55.86	50.86	646	906
Core Funds	Bloomberg Barclays U.S. Aggregate Index	64.30	56.27	510	727
Core Plus Funds	Bloomberg Barclays U.S. Aggregate Index	26.40	28.32	138	181
Cash Funds	Bloomberg Barclays U.S. Short Treasury Index	63.83	43.06	63	75
Government Funds	Bloomberg Barclays U.S. Government Index	66.07	60.98	66	87
Inflation-Linked Funds	Bloomberg Barclays U.S. Treasury Inflation Notes Index	81.58	61.82	46	56
Investment-Grade Corp Funds	Bloomberg Barclays U.S. Corporate Index	46.88	32.08	39	59
High-Yield Corp Funds	Bloomberg Barclays U.S. Corporate High Yield Bond Index	90.91	86.15	111	137
Agency MBS Funds	Bloomberg Barclays U.S. MBS Index	37.04	33.33	33	52
Municipal Funds	S&P National AMT-Free Municipal Bond Index	79.26	79.08	157	202
Emerging Market Hard Currency Funds	Bloomberg Barclays Emerging Markets USD Aggregate Index	66.67	49.15	37	65
Emerging Market Blended Currency Funds	50% Barclays EM USD Agg + 50% Barclays EM Local Gov	47.37	38.71	25	38
Emerging Market Local Currency Funds	Bloomberg Barclays Emerging Markets Local Currency Government Index	81.82	75.56	27	50
Global Government Funds	Bloomberg Barclays Global Treasury Index	51.43	56.25	41	89
Global Aggregate Funds	Bloomberg Barclays Global Aggregate Bond Index	45.07	41.80	90	143
Global Corporate Investment Grade Funds	Bloomberg Barclays Global Aggregate Corporate Index	-	40.00	5	16
Global Corporate High-Yield Funds	Bloomberg Barclays Global High Yield Index	-	88.57	20	42

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2018. 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 Underperforming Benchmarks

FUND CATEGORY	COMPARISON INDEX	1-YEAR	3-YEAR	5-YEAR	10-YEAR
All Domestic Funds	S&P Composite 1500	64.55	72.22	80.34	67.39
All Large-Cap Funds	S&P 500	58.95	69.26	73.76	73.21
All Mid-Cap Funds	S&P MidCap 400	44.10	65.34	59.94	64.87
All Small-Cap Funds	S&P SmallCap 600	63.73	76.83	78.61	66.10
All Multi-Cap Funds	S&P Composite 1500	57.70	72.73	78.79	71.61
Large-Cap Growth Funds	S&P 500 Growth	61.21	72.38	80.09	73.10
Large-Cap Core Funds	S&P 500	64.02	70.44	76.55	77.92
Large-Cap Value Funds	S&P 500 Value	44.94	54.26	54.15	50.31
Mid-Cap Growth Funds	S&P MidCap 400 Growth	18.40	46.85	51.02	70.00
Mid-Cap Core Funds	S&P MidCap 400	53.19	75.00	65.57	68.49
Mid-Cap Value Funds	S&P MidCap 400 Value	66.38	79.53	67.16	58.46
Small-Cap Growth Funds	S&P SmallCap 600 Growth	56.07	66.98	79.58	67.65
Small-Cap Core Funds	S&P SmallCap 600	67.45	81.90	79.20	67.87
Small-Cap Value Funds	S&P SmallCap 600 Value	62.30	80.99	75.74	51.87
Multi-Cap Growth Funds	S&P Composite 1500 Growth	55.45	67.20	80.88	72.87
Multi-Cap Core Funds	S&P Composite 1500	54.62	77.10	79.67	80.18
Multi-Cap Value Funds	S&P Composite 1500 Value	56.49	66.47	63.53	50.99

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2018. 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 (%)
1-YEAR		
All Domestic Funds	2761	93.37
All Large-Cap Funds	1148	92.60
All Mid-Cap Funds	297	92.93
All Small-Cap Funds	908	94.16
All Multi-Cap Funds	408	94.12
Large-Cap Growth Funds	364	95.33
Large-Cap Core Funds	344	87.79
Large-Cap Value Funds	440	94.09
Mid-Cap Growth Funds	129	92.25
Mid-Cap Core Funds	50	86.00
Mid-Cap Value Funds	118	96.61
Small-Cap Growth Funds	292	92.81
Small-Cap Core Funds	225	92.44
Small-Cap Value Funds	391	96.16
Multi-Cap Growth Funds	115	94.78
Multi-Cap Core Funds	133	94.74
Multi-Cap Value Funds	160	93.13

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2018. 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 (%)
3-YEAR		
All Domestic Funds	3039	81.51
All Large-Cap Funds	1270	80.71
All Mid-Cap Funds	336	80.65
All Small-Cap Funds	977	82.70
All Multi-Cap Funds	456	81.80
Large-Cap Growth Funds	408	81.86
Large-Cap Core Funds	377	75.33
Large-Cap Value Funds	485	83.92
Mid-Cap Growth Funds	148	79.05
Mid-Cap Core Funds	59	71.19
Mid-Cap Value Funds	129	86.82
Small-Cap Growth Funds	327	78.59
Small-Cap Core Funds	235	82.13
Small-Cap Value Funds	415	86.27
Multi-Cap Growth Funds	130	82.31
Multi-Cap Core Funds	147	82.99
Multi-Cap Value Funds	179	80.45
5-YEAR		
All Domestic Funds	3151	74.74
All Large-Cap Funds	1343	73.34
All Mid-Cap Funds	352	74.15
All Small-Cap Funds	999	75.88
All Multi-Cap Funds	457	76.81
Large-Cap Growth Funds	439	74.72
Large-Cap Core Funds	405	65.19
Large-Cap Value Funds	499	78.76
Mid-Cap Growth Funds	152	73.68
Mid-Cap Core Funds	64	62.50
Mid-Cap Value Funds	136	80.15
Small-Cap Growth Funds	344	69.48
Small-Cap Core Funds	240	75.42
Small-Cap Value Funds	415	81.45
Multi-Cap Growth Funds	141	74.47
Multi-Cap Core Funds	140	77.86
Multi-Cap Value Funds	176	77.84

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2018. 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 (%)
10-YEAR		
All Domestic Funds	3096	62.63
All Large-Cap Funds	1347	60.80
All Mid-Cap Funds	364	58.79
All Small-Cap Funds	965	63.94
All Multi-Cap Funds	420	68.81
Large-Cap Growth Funds	455	64.18
Large-Cap Core Funds	400	50.00
Large-Cap Value Funds	492	66.46
Mid-Cap Growth Funds	156	58.33
Mid-Cap Core Funds	75	41.33
Mid-Cap Value Funds	133	69.17
Small-Cap Growth Funds	351	57.26
Small-Cap Core Funds	232	60.78
Small-Cap Value Funds	382	71.99
Multi-Cap Growth Funds	134	68.66
Multi-Cap Core Funds	130	66.92
Multi-Cap Value Funds	156	70.51

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2018. 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	1-YEAR (ANNUALIZED, %)	3-YEAR (ANNUALIZED, %)	5-YEAR (ANNUALIZED, %)	10-YEAR (ANNUALIZED, %)
S&P Composite 1500	-4.96	9.17	8.25	13.20
All Domestic Funds	-7.25	8.11	6.48	13.30
S&P 500	-4.38	9.26	8.49	13.12
All Large-Cap Funds	-5.16	8.53	7.65	12.94
S&P MidCap 400	-11.08	7.66	6.03	13.68
All Mid-Cap Funds	-8.79	7.13	5.97	13.61
S&P SmallCap 600	-8.48	9.46	6.34	13.61
All Small-Cap Funds	-9.69	7.89	5.15	13.68
S&P Composite 1500	-4.96	9.17	8.25	13.20
All Multi-Cap Funds	-6.18	8.11	6.51	13.07
LARGE-CAP				
S&P 500 Growth	-0.01	10.85	10.55	14.81
Large-Cap Growth Funds	-1.36	9.94	9.25	14.25
S&P 500	-4.38	9.26	8.49	13.12
Large-Cap Core Funds	-4.84	8.60	7.86	12.73
S&P 500 Value	-8.95	7.23	6.06	11.21
Large-Cap Value Funds	-8.45	7.27	6.12	11.87

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2018. 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	1-YEAR (ANNUALIZED, %)	3-YEAR (ANNUALIZED, %)	5-YEAR (ANNUALIZED, %)	10-YEAR (ANNUALIZED, %)
MID-CAP				
S&P MidCap 400 Growth	-10.34	7.26	6.25	14.42
Mid-Cap Growth Funds	-4.22	8.39	6.87	14.35
S&P MidCap 400	-11.08	7.66	6.03	13.68
Mid-Cap Core Funds	-9.41	6.85	6.17	13.16
S&P MidCap 400 Value	-11.88	7.79	5.56	12.82
Mid-Cap Value Funds	-12.97	6.02	4.98	13.00
SMALL-CAP				
S&P SmallCap 600 Growth	-4.05	10.39	7.51	14.86
Small-Cap Growth Funds	-4.17	9.73	6.43	14.75
S&P SmallCap 600	-8.48	9.46	6.34	13.61
Small-Cap Core Funds	-10.23	7.35	5.21	13.37
S&P SmallCap 600 Value	-12.64	8.56	5.13	12.37
Small-Cap Value Funds	-13.46	6.71	4.05	12.91
MULTI-CAP				
S&P Composite 1500 Growth	-0.82	10.62	10.17	14.83
Multi-Cap Growth Funds	-1.06	9.94	8.26	14.62
S&P Composite 1500	-4.96	9.17	8.25	13.20
Multi-Cap Core Funds	-6.56	7.75	6.62	12.63
S&P Composite 1500 Value	-9.29	7.32	5.98	11.38
Multi-Cap Value Funds	-9.51	7.02	5.10	12.19

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2018. 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	1-YEAR (ANNUALIZED, %)	3-YEAR (ANNUALIZED, %)	5-YEAR (ANNUALIZED, %)	10-YEAR (ANNUALIZED, %)
S&P Composite 1500	-4.96	9.17	8.25	13.20
All Domestic Funds	-5.25	8.84	7.46	13.51
S&P 500	-4.38	9.26	8.49	13.12
All Large-Cap Funds	-4.08	9.15	8.16	13.31
S&P MidCap 400	-11.08	7.66	6.03	13.68
All Mid-Cap Funds	-7.83	7.65	6.55	14.03
S&P SmallCap 600	-8.48	9.46	6.34	13.61
All Small-Cap Funds	-7.81	8.56	5.65	13.90
S&P Composite 1500	-4.96	9.17	8.25	13.20
All Multi-Cap Funds	-5.98	8.22	6.90	13.19

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2018. 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	1-YEAR (ANNUALIZED, %)	3-YEAR (ANNUALIZED, %)	5-YEAR (ANNUALIZED, %)	10-YEAR (ANNUALIZED, %)
LARGE-CAP				
S&P 500 Growth	-0.01	10.85	10.55	14.81
Large-Cap Growth Funds	0.56	10.88	10.22	15.07
S&P 500	-4.38	9.26	8.49	13.12
Large-Cap Core Funds	-4.27	8.43	7.92	12.76
S&P 500 Value	-8.95	7.23	6.06	11.21
Large-Cap Value Funds	-7.88	7.87	6.48	12.07
MID-CAP				
S&P MidCap 400 Growth	-10.34	7.26	6.25	14.42
Mid-Cap Growth Funds	-2.72	9.18	7.88	15.16
S&P MidCap 400	-11.08	7.66	6.03	13.68
Mid-Cap Core Funds	-7.58	8.76	7.47	14.22
S&P MidCap 400 Value	-11.88	7.79	5.56	12.82
Mid-Cap Value Funds	-12.99	5.60	4.87	12.79
SMALL-CAP				
S&P SmallCap 600 Growth	-4.05	10.39	7.51	14.86
Small-Cap Growth Funds	-1.35	11.01	7.36	15.40
S&P SmallCap 600	-8.48	9.46	6.34	13.61
Small-Cap Core Funds	-8.86	7.51	5.49	13.74
S&P SmallCap 600 Value	-12.64	8.56	5.13	12.37
Small-Cap Value Funds	-13.46	6.79	4.06	12.51
MULTI-CAP				
S&P Composite 1500 Growth	-0.82	10.62	10.17	14.83
Multi-Cap Growth Funds	-2.10	9.31	8.20	14.32
S&P Composite 1500	-4.96	9.17	8.25	13.20
Multi-Cap Core Funds	-7.12	7.86	6.51	12.57
S&P Composite 1500 Value	-9.29	7.32	5.98	11.38
Multi-Cap Value Funds	-9.04	7.41	5.74	12.35

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2018. 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
1-YEAR			
All Domestic Funds	-11.72	-6.87	-2.98
All Large-Cap Funds	-8.28	-5.03	-1.97
All Mid-Cap Funds	-13.33	-9.38	-4.13
All Small-Cap Funds	-14.49	-10.61	-5.64
All Multi-Cap Funds	-10.47	-5.57	-2.03
Large-Cap Growth Funds	-3.83	-1.17	1.48
Large-Cap Core Funds	-6.70	-4.96	-3.16
Large-Cap Value Funds	-10.85	-8.25	-5.22
Mid-Cap Growth Funds	-7.40	-4.12	-0.81
Mid-Cap Core Funds	-13.15	-10.83	-6.72
Mid-Cap Value Funds	-15.86	-13.25	-9.97
Small-Cap Growth Funds	-8.80	-4.56	-0.21
Small-Cap Core Funds	-13.35	-10.09	-7.23
Small-Cap Value Funds	-16.55	-13.62	-10.75
Multi-Cap Growth Funds	-5.05	-1.30	2.69
Multi-Cap Core Funds	-8.59	-5.28	-3.10
Multi-Cap Value Funds	-12.25	-9.78	-5.47
3-YEAR			
All Domestic Funds	6.21	8.04	9.88
All Large-Cap Funds	7.08	8.58	10.00
All Mid-Cap Funds	5.39	7.05	9.16
All Small-Cap Funds	5.36	7.52	9.72
All Multi-Cap Funds	6.10	7.91	10.13
Large-Cap Growth Funds	8.56	10.00	11.25
Large-Cap Core Funds	7.70	8.74	9.71
Large-Cap Value Funds	6.30	7.49	8.74
Mid-Cap Growth Funds	6.66	8.47	10.54
Mid-Cap Core Funds	5.37	6.54	8.92
Mid-Cap Value Funds	4.64	6.11	7.72
Small-Cap Growth Funds	7.36	9.39	11.71
Small-Cap Core Funds	5.54	7.39	9.05
Small-Cap Value Funds	4.68	6.37	8.23
Multi-Cap Growth Funds	7.43	9.56	11.67
Multi-Cap Core Funds	6.03	7.95	9.51
Multi-Cap Value Funds	5.55	6.92	8.86

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2018. 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
5-YEAR			
All Domestic Funds	4.83	6.59	8.30
All Large-Cap Funds	6.43	7.83	9.09
All Mid-Cap Funds	4.65	6.18	7.81
All Small-Cap Funds	3.70	5.08	6.53
All Multi-Cap Funds	5.01	6.68	8.43
Large-Cap Growth Funds	8.07	9.46	10.61
Large-Cap Core Funds	7.28	8.13	8.83
Large-Cap Value Funds	5.32	6.40	7.49
Mid-Cap Growth Funds	5.91	7.10	8.49
Mid-Cap Core Funds	4.19	6.11	7.78
Mid-Cap Value Funds	3.56	5.25	6.49
Small-Cap Growth Funds	4.82	6.37	7.78
Small-Cap Core Funds	4.19	5.42	6.52
Small-Cap Value Funds	2.91	4.11	5.34
Multi-Cap Growth Funds	6.39	8.16	10.06
Multi-Cap Core Funds	4.84	6.98	8.38
Multi-Cap Value Funds	3.86	5.76	7.16
10-YEAR			
All Domestic Funds	12.08	13.28	14.67
All Large-Cap Funds	11.80	12.92	14.18
All Mid-Cap Funds	13.02	14.06	14.81
All Small-Cap Funds	12.48	13.66	15.29
All Multi-Cap Funds	11.56	12.88	14.31
Large-Cap Growth Funds	13.12	14.47	15.46
Large-Cap Core Funds	12.28	13.02	13.74
Large-Cap Value Funds	11.20	11.99	12.84
Mid-Cap Growth Funds	13.83	14.46	15.57
Mid-Cap Core Funds	13.59	14.35	14.60
Mid-Cap Value Funds	12.15	13.13	14.13
Small-Cap Growth Funds	13.63	14.96	16.29
Small-Cap Core Funds	12.43	13.62	14.72
Small-Cap Value Funds	11.85	13.10	14.11
Multi-Cap Growth Funds	12.45	14.32	16.32
Multi-Cap Core Funds	11.11	12.79	13.38
Multi-Cap Value Funds	11.17	12.15	13.45

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2018. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 6: Percentage of International Equity Funds Underperforming Benchmarks

FUND CATEGORY	COMPARISON INDEX	1-YEAR	3-YEAR	5-YEAR	10-YEAR
Emerging Market Funds	S&P/IFCI Composite	61.32	62.45	66.59	54.32
Global Funds	S&P Global 1200	56.69	74.30	64.58	69.64
International Funds	S&P International 700	67.86	86.51	66.36	59.55
International Small-Cap Funds	S&P Developed Ex-U.S. SmallCap	65.00	64.77	43.59	44.26

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2018. 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 (%)
1-YEAR		
Emerging Market Funds	470	94.89
Global Funds	437	94.28
International Funds	205	95.12
International Small-Cap Funds	80	95.00
3-YEAR		
Emerging Market Funds	491	85.34
Global Funds	453	85.65
International Funds	225	83.11
International Small-Cap Funds	88	78.41
5-YEAR		
Emerging Market Funds	466	78.33
Global Funds	436	77.75
International Funds	230	74.35
International Small-Cap Funds	78	74.36
10-YEAR		
Emerging Market Funds	253	72.33
Global Funds	325	60.62
International Funds	228	63.16
International Small-Cap Funds	63	60.32

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2018. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

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

CATEGORY	1-YEAR (ANNUALIZED, %)	3-YEAR (ANNUALIZED, %)	5-YEAR (ANNUALIZED, %)	10-YEAR (ANNUALIZED, %)
S&P/IFCI Composite	-14.22	9.43	2.57	9.03
Emerging Market Funds	-14.91	9.09	2.41	9.88
S&P Global 1200	-8.17	7.39	5.29	10.29
Global Funds	-8.55	6.81	5.02	10.69
S&P International 700	-13.21	4.82	1.29	7.01
International Funds	-14.49	3.18	1.17	7.45
S&P Developed Ex-U.S. Small-Cap	-18.41	3.88	2.78	10.00
International Small-Cap Funds	-19.18	3.85	3.75	11.59

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2018. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

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

CATEGORY	1-YEAR (ANNUALIZED, %)	3-YEAR (ANNUALIZED, %)	5-YEAR (ANNUALIZED, %)	10-YEAR (ANNUALIZED, %)
S&P/IFCI Composite	-14.22	9.43	2.57	9.03
Emerging Market Funds	-14.94	9.46	2.38	9.55
S&P Global 1200	-8.17	7.39	5.29	10.29
Global Funds	-8.24	6.84	5.29	10.62
S&P International 700	-13.21	4.82	1.29	7.01
International Funds	-15.02	3.28	0.84	7.14
S&P Developed Ex-U.S. Small-Cap	-18.41	3.88	2.78	10.00
International Small-Cap Funds	-19.83	3.55	2.75	10.62

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2018. 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
1-YEAR			
Emerging Market Funds	-17.40	-15.02	-12.54
Global Funds	-11.55	-8.71	-5.67
International Funds	-16.87	-14.83	-12.67
International Small-Cap Funds	-21.76	-19.60	-16.60
3-YEAR			
Emerging Market Funds	7.18	9.05	10.59
Global Funds	5.49	6.76	7.67
International Funds	2.08	3.34	4.28
International Small-Cap Funds	2.02	3.48	5.22
5-YEAR			
Emerging Market Funds	1.33	2.33	3.56
Global Funds	3.70	5.03	6.35
International Funds	0.46	1.14	2.18
International Small-Cap Funds	2.48	3.54	4.99
10-YEAR			
Emerging Market Funds	8.28	9.50	10.79
Global Funds	9.37	10.32	11.44
International Funds	6.54	7.52	8.41
International Small-Cap Funds	10.16	11.80	12.87

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2018. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 11: Percentage of Fixed Income Funds Underperforming Benchmarks					
FUND CATEGORY	COMPARISON INDEX	1-YEAR	3-YEAR	5-YEAR	10-YEAR
U.S. Agg. / (Gov't + Credit) Funds	Bloomberg Barclays U.S. Aggregate Index	34.42	44.16	56.19	50.86
Core Funds	Bloomberg Barclays U.S. Aggregate Index	27.60	51.32	62.97	56.27
Core Plus Funds	Bloomberg Barclays U.S. Aggregate Index	60.11	17.28	29.63	28.32
Cash Funds	Bloomberg Barclays U.S. Short Treasury Index	24.07	24.07	32.26	43.06
Government Funds	Bloomberg Barclays U.S. Government Index	21.74	54.05	65.75	60.98
Inflation-Linked Funds	Bloomberg Barclays U.S. Treasury Inflation Notes Index	36.36	40.00	54.55	61.82
Investment-Grade Corp Funds	Bloomberg Barclays U.S. Corporate Index	47.75	33.03	31.68	32.08
High-Yield Corp Funds	Bloomberg Barclays U.S. Corporate High Yield Bond Index	46.71	77.27	60.00	86.15
Agency MBS Funds	Bloomberg Barclays U.S. MBS Index	27.91	31.11	32.65	33.33
Municipal Funds	S&P National AMT-Free Municipal Bond Index	10.90	67.76	75.23	79.08
Emerging Market Hard Currency Funds	Bloomberg Barclays Emerging Markets USD Aggregate Index	82.35	31.68	43.48	49.15
Emerging Market Blended Currency Funds	50% Barclays EM USD Agg + 50% Barclays EM Local Gov	89.01	35.00	54.41	38.71
Emerging Market Local Currency Funds	Bloomberg Barclays Emerging Markets Local Currency Government Index	97.73	40.86	86.67	75.56
Global Government Funds	Bloomberg Barclays Global Treasury Index	69.86	60.92	58.95	56.25
Global Aggregate Funds	Bloomberg Barclays Global Aggregate Bond Index	59.29	44.44	44.74	41.80
Global Corporate Investment-Grade Funds	Bloomberg Barclays Global Aggregate Corporate Index	45.28	37.25	33.33	40.00
Global Corporate High-Yield Funds	Bloomberg Barclays Global High Yield Index	25.35	64.38	58.21	88.57

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2018. 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 (%)
1-YEAR		
U.S. Agg. / (Gov't + Credit) Funds	845	96.69
Core Funds	664	96.69
Core Plus Funds	189	96.30
Cash Funds	56	98.21
Government Funds	73	97.26
Inflation-Linked Funds	45	97.78
Investment-Grade Corp Funds	114	97.37
High-Yield Corp Funds	169	98.22
Agency MBS Funds	46	93.48
Municipal Funds	217	95.85
Emerging Market Hard Currency Funds	107	96.26
Emerging Market Blended Currency Funds	96	95.83
Emerging Market Local Currency Funds	89	97.75
Global Government Funds	82	92.68
Global Aggregate Funds	159	98.74
Global Corporate Investment-Grade Funds	60	93.33
Global Corporate High-Yield Funds	82	95.12
3-YEAR		
U.S. Agg. / (Gov't + Credit) Funds	885	90.17
Core Funds	700	89.71
Core Plus Funds	193	91.71
Cash Funds	56	96.43
Government Funds	78	87.18
Inflation-Linked Funds	51	84.31
Investment-Grade Corp Funds	112	94.64
High-Yield Corp Funds	179	87.71
Agency MBS Funds	48	89.58
Municipal Funds	221	90.95
Emerging Market Hard Currency Funds	106	87.74
Emerging Market Blended Currency Funds	87	93.10
Emerging Market Local Currency Funds	94	89.36
Global Government Funds	96	78.13
Global Aggregate Funds	171	89.47
Global Corporate Investment-Grade Funds	58	89.66
Global Corporate High-Yield Funds	85	85.88

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2018. 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 (%)
5-YEAR		
U.S. Agg. / (Gov't + Credit) Funds	923	83.10
Core Funds	736	82.74
Core Plus Funds	192	84.38
Cash Funds	64	82.81
Government Funds	77	84.42
Inflation-Linked Funds	56	75.00
Investment-Grade Corp Funds	104	91.35
High-Yield Corp Funds	180	81.67
Agency MBS Funds	52	80.77
Municipal Funds	224	84.82
Emerging Market Hard Currency Funds	98	84.69
Emerging Market Blended Currency Funds	73	89.04
Emerging Market Local Currency Funds	92	85.87
Global Government Funds	104	66.35
Global Aggregate Funds	172	82.56
Global Corporate IG Funds	49	91.84
Global Corporate High-Yield Funds	80	81.25
10-YEAR		
U.S. Agg. / (Gov't + Credit) Funds	906	73.51
Core Funds	727	72.90
Core Plus Funds	181	76.24
Cash Funds	75	66.67
Government Funds	87	72.41
Inflation-Linked Funds	56	64.29
Investment-Grade Corp Funds	59	86.44
High-Yield Corp Funds	137	78.10
Agency MBS Funds	52	75.00
Municipal Funds	202	77.72
Emerging Market Hard Currency Funds	65	78.46
Emerging Market Blended Currency Funds	38	86.84
Emerging Market Local Currency Funds	50	78.00
Global Government Funds	89	58.43
Global Aggregate Funds	143	72.03
Global Corporate Investment-Grade Funds	16	87.50
Global Corporate High-Yield Funds	42	80.95

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2018. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 13: Average Fixed Income Fund Performance (Equal-Weighted)				
CATEGORY	1-YEAR (ANNUALIZED, %)	3-YEAR (ANNUALIZED, %)	5-YEAR (ANNUALIZED, %)	10-YEAR (ANNUALIZED, %)
Bloomberg Barclays U.S. Aggregate Index	0.01	2.06	2.52	3.48
U.S. Agg. / (Gov't + Credit) Funds	0.30	2.46	2.67	4.23
Bloomberg Barclays U.S. Aggregate Index	0.01	2.06	2.52	3.48
Core Funds	0.42	2.29	2.53	3.88
Bloomberg Barclays U.S. Aggregate Index	0.01	2.06	2.52	3.48
Core Plus Funds	-0.24	3.18	3.24	5.63
Bloomberg Barclays U.S. Short Treasury Index	1.88	1.07	0.68	0.46
Cash Funds	1.98	1.28	0.89	0.73
Bloomberg Barclays U.S. Government Index	0.88	1.41	1.99	2.12
Government Funds	1.06	1.72	2.16	2.61
Bloomberg Barclays U.S. Treasury Inflation Notes Index	-1.26	2.11	1.69	3.64
Inflation-Linked Funds	-1.03	2.29	1.67	3.75
Bloomberg Barclays U.S. Corporate Index	-2.51	3.26	3.28	5.92
Investment-Grade Corp Funds	-2.91	3.87	4.06	7.06
Bloomberg Barclays U.S. Corporate High Yield Bond Index	-2.08	7.23	3.83	11.12
High-Yield Corp Funds	-1.65	6.45	3.65	10.28
Bloomberg Barclays U.S. MBS Index	0.99	1.71	2.53	3.11
Agency MBS Funds	1.27	2.17	2.90	4.21
S&P National AMT-Free Municipal Bond Index	1.01	2.13	3.68	4.62
Municipal Funds	1.46	1.96	2.86	3.76
Bloomberg Barclays Emerging Markets USD Aggregate Index	-2.46	5.05	4.23	8.47
Emerging Market Hard Currency Funds	-4.73	5.88	4.28	8.90
50% Barclays EM USD Agg + 50% Barclays EM Local Gov	-2.89	5.25	2.42	6.33
Emerging Market Blended Currency Funds	-5.96	5.65	2.51	7.93
Bloomberg Barclays Emerging Markets Local Currency Government Index	-3.40	5.33	0.54	4.11
Emerging Market Local Currency Funds	-6.91	5.73	-0.57	4.15
Bloomberg Barclays Global Treasury Index	-0.38	2.81	0.84	1.62
Global Government Funds	-1.46	2.92	1.12	2.98
Bloomberg Barclays Global Aggregate Bond Index	-1.20	2.70	1.08	2.49
Global Aggregate Funds	-2.01	3.02	1.56	4.17
Bloomberg Barclays Global Aggregate Corporate Index	-3.57	3.13	1.76	4.83
Global Corporate Investment-Grade Funds	-2.97	3.72	2.35	5.85
Bloomberg Barclays Global High Yield Index	-4.06	6.58	3.33	11.06
Global Corporate High-Yield Funds	-3.16	6.19	2.81	10.16

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2018. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 14: Average Fixed Income Fund Performance (Asset-Weighted)				
CATEGORY	1-YEAR (ANNUALIZED, %)	3-YEAR (ANNUALIZED, %)	5-YEAR (ANNUALIZED, %)	10-YEAR (ANNUALIZED, %)
Bloomberg Barclays U.S. Aggregate Index	0.01	2.06	2.52	3.48
U.S. Agg. / (Gov't + Credit) Funds	0.20	2.69	2.78	4.62
Bloomberg Barclays U.S. Aggregate Index	0.01	2.06	2.52	3.48
Core Funds	0.36	2.48	2.62	4.07
Bloomberg Barclays U.S. Aggregate Index	0.01	2.06	2.52	3.48
Core Plus Funds	-0.13	3.09	3.05	5.35
Bloomberg Barclays U.S. Short Treasury Index	1.88	1.07	0.68	0.46
Cash Funds	1.98	1.22	0.82	0.62
Bloomberg Barclays U.S. Government Index	0.88	1.41	1.99	2.12
Government Funds	0.91	2.34	2.67	3.49
Bloomberg Barclays U.S. Treasury Inflation Notes Index	-1.26	2.11	1.69	3.64
Inflation-Linked Funds	-1.05	2.31	1.71	4.15
Bloomberg Barclays U.S. Corporate Index	-2.51	3.26	3.28	5.92
Investment-Grade Corp Funds	-3.65	3.91	4.06	7.11
Bloomberg Barclays U.S. Corporate High Yield Bond Index	-2.08	7.23	3.83	11.12
High-Yield Corp Funds	-1.97	6.56	3.79	10.40
Bloomberg Barclays U.S. MBS Index	0.99	1.71	2.53	3.11
Agency MBS Funds	1.15	2.13	2.90	4.27
S&P National AMT-Free Municipal Bond Index	1.01	2.13	3.68	4.62
Municipal Funds	1.63	2.10	3.17	4.07
Bloomberg Barclays Emerging Markets USD Aggregate Index	-2.46	5.05	4.23	8.47
Emerging Market Hard Currency Funds	-4.81	6.06	4.67	9.05
50% Barclays EM USD Agg + 50% Barclays EM Local Gov	-2.89	5.25	2.42	6.33
Emerging Market Blended Currency Funds	-5.82	5.81	2.54	7.57
Bloomberg Barclays Emerging Markets Local Currency Government Index	-3.40	5.33	0.54	4.11
Emerging Market Local Currency Funds	-7.16	6.01	-0.80	3.93
Bloomberg Barclays Global Treasury Index	-0.38	2.81	0.84	1.62
Global Government Funds	0.14	3.15	1.60	3.59
Bloomberg Barclays Global Aggregate Bond Index	-1.20	2.70	1.08	2.49
Global Aggregate Funds	-0.32	3.42	2.17	4.64
Bloomberg Barclays Global Aggregate Corporate Index	-3.57	3.13	1.76	4.83
Global Corporate Investment-Grade Funds	-2.28	4.20	3.07	5.39
Bloomberg Barclays Global High Yield Index	-4.06	6.58	3.33	11.06
Global Corporate High-Yield Funds	-3.80	6.40	3.18	10.97

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2018. 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
1-YEAR			
U.S. Agg. / (Gov't + Credit) Funds	-0.16	0.51	1.36
Core Funds	0.00	0.76	1.50
Core Plus Funds	-0.68	-0.15	0.48
Cash Funds	1.89	2.04	2.13
Government Funds	1.09	1.41	1.66
Inflation-Linked Funds	-1.32	-1.09	-0.43
Investment-Grade Corp Funds	-3.68	-2.41	-1.13
High-Yield Corp Funds	-2.68	-1.95	-0.76
Agency MBS Funds	1.01	1.14	1.90
Municipal Funds	1.29	1.48	1.68
Emerging Market Hard Currency Funds	-5.79	-4.75	-2.96
Emerging Market Blended Currency Funds	-7.15	-6.11	-4.44
Emerging Market Local Currency Funds	-8.00	-6.88	-5.99
Global Government Funds	-2.22	-0.77	-0.24
Global Aggregate Funds	-3.67	-1.47	0.22
Global Corporate Investment-Grade Funds	-4.51	-2.58	-1.13
Global Corporate High-Yield Funds	-3.90	-2.80	-1.68
3-YEAR			
U.S. Agg. / (Gov't + Credit) Funds	1.85	2.25	2.83
Core Funds	1.75	2.12	2.55
Core Plus Funds	2.53	3.01	3.58
Cash Funds	1.09	1.30	1.37
Government Funds	1.22	1.47	1.74
Inflation-Linked Funds	2.09	2.21	2.39
Investment-Grade Corp Funds	3.16	3.80	4.45
High-Yield Corp Funds	5.62	6.43	7.29
Agency MBS Funds	1.74	2.05	2.32
Municipal Funds	1.37	1.85	2.43
Emerging Market Hard Currency Funds	5.18	5.63	6.57
Emerging Market Blended Currency Funds	5.04	5.89	6.81
Emerging Market Local Currency Funds	5.04	5.65	6.65
Global Government Funds	2.28	2.82	3.28
Global Aggregate Funds	2.43	2.90	3.58
Global Corporate Investment-Grade Funds	2.87	3.70	4.15
Global Corporate High-Yield Funds	5.80	6.43	7.01

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2018. 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
5-YEAR			
U.S. Agg. / (Gov't + Credit) Funds	1.95	2.59	3.04
Core Funds	1.82	2.40	2.90
Core Plus Funds	2.70	3.02	3.50
Cash Funds	0.70	0.88	0.95
Government Funds	1.19	1.70	2.36
Inflation-Linked Funds	1.43	1.74	1.85
Investment-Grade Corp Funds	3.26	3.74	4.89
High-Yield Corp Funds	3.30	3.82	4.35
Agency MBS Funds	2.59	2.75	3.04
Municipal Funds	1.66	2.57	3.92
Emerging Market Hard Currency Funds	4.12	4.63	5.04
Emerging Market Blended Currency Funds	1.26	2.49	3.51
Emerging Market Local Currency Funds	-1.25	-0.86	-0.03
Global Government Funds	0.60	1.12	1.76
Global Aggregate Funds	0.93	1.55	3.05
Global Corporate Investment-Grade Funds	1.70	2.57	3.92
Global Corporate High-Yield Funds	2.65	3.48	4.19
10-YEAR			
U.S. Agg. / (Gov't + Credit) Funds	3.17	4.01	5.05
Core Funds	3.00	3.75	4.53
Core Plus Funds	4.78	5.45	6.31
Cash Funds	0.48	0.62	0.74
Government Funds	1.73	2.19	2.92
Inflation-Linked Funds	3.54	3.65	3.87
Investment-Grade Corp Funds	6.26	6.78	7.83
High-Yield Corp Funds	9.57	10.41	10.95
Agency MBS Funds	3.43	3.87	4.67
Municipal Funds	2.35	3.42	4.67
Emerging Market Hard Currency Funds	8.26	8.80	9.58
Emerging Market Blended Currency Funds	6.23	7.44	9.06
Emerging Market Local Currency Funds	3.17	3.96	4.31
Global Government Funds	1.83	2.57	4.15
Global Aggregate Funds	3.01	3.87	5.04
Global Corporate Investment-Grade Funds	5.14	5.87	6.97
Global Corporate High-Yield Funds	8.99	10.38	10.83

Source: S&P Dow Jones Indices LLC, eVestment Alliance. Data as of Dec. 31, 2018. 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. 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. Market capitalization is subjective and based on the distribution of holdings as well as the preferred benchmark.

Exhibit A1: U.S. Equity Category Mappings		
SPIVA INSTITUTIONAL CATEGORY	eVESTMENT CLASSIFICATION	
	MARKET CAPITALIZATION	STYLE EMPHASIS
Large-Cap Growth Equity	Mega Cap Large Cap Mid-Large Cap	Growth GARP
Large-Cap Core Equity	Mega Cap Large Cap Mid-Large Cap	Core
Large-Cap Value Equity	Mega Cap Large Cap Mid-Large Cap	Value Relative Value Deep Value
Mid-Cap Growth Equity	Mid Cap	Growth GARP
Mid-Cap Core Equity	Mid Cap	Core
Mid-Cap Value Equity	Mid Cap	Value Relative Value Deep Value
Small-Cap Growth Equity	Small-Mid Cap Small Cap	Growth GARP
Small-Cap Core Equity	Small-Mid Cap Small Cap	Core
Small-Cap Value Equity	Small-Mid Cap Small Cap	Value Relative Value Deep Value
Multi-Cap Growth Equity	All Cap	Growth GARP
Multi-Cap Core Equity	All Cap	Core
Multi-Cap Value Equity	All Cap	Value Relative Value Deep 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 market capitalization and style classifications.

Exhibit A2: International Equity Category Mappings

SPIVA INSTITUTIONAL CATEGORY	eVESTMENT CLASSIFICATION			
	eVESTMENT CATEGORY	REGION	MARKET CAPITALIZATION	STYLE EMPHASIS
Global Equity	Global Large Cap Value	Global	Mega Cap Large Cap Mid-Large Cap	Value Relative Value Deep Value
	Global Large Cap Growth	Global	Mega Cap Large Cap Mid-Large Cap	Growth GARP
	Global Large Cap Core	Global	Mega Cap Large Cap Mid-Large Cap	Core
International Equity	EAFE Large Cap Value	EAFAs	Mega Cap Large Cap Mid-Large Cap	Value Relative Value Deep Value
	EAFE Large Cap Growth	EAFAs	Mega Cap Large Cap Mid-Large Cap	Growth GARP
	EAFE Large Cap Core	EAFAs	Mega Cap Large Cap Mid-Large Cap	Core
International Small-Cap Equity	EAFE Small Cap Value	EAFAs	Small-Mid Cap Small Cap	Value Relative Value Deep Value
	EAFE Small Cap Growth	EAFAs	Small-Mid Cap Small Cap	Growth GARP
	EAFE Small Cap Core	EAFAs	Small-Mid Cap Small Cap	Core

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

Exhibit A2: International Equity Category Mappings (cont.)

SPIVA INSTITUTIONAL CATEGORY	eVESTMENT CLASSIFICATION			
	eVESTMENT CATEGORY	REGION	MARKET CAPITALIZATION	STYLE EMPHASIS
Emerging Market Equity	Brazil Large Cap Value	Brazil	Mega Cap Large Cap Mid-Large Cap	Value Relative Value Deep Value
	Brazil All Cap Value	Brazil	All Cap	Value Relative Value Deep Value
	Brazil All Cap Growth	Brazil	All Cap	Growth GARP
	Brazil All Cap Core	Brazil	All Cap	Core
	Mexico All Cap Value	Mexico	All Cap	Value Relative Value Deep Value
	Mexico All Cap Growth	Mexico	All Cap	Growth GARP
	Latin America Small Cap Value	Latin America	Small-Mid Cap Small Cap	Value Relative Value Deep Value
	Latin America Mid Cap Value	Latin America	Mid Cap	Value Relative Value Deep Value
	Latin America Large Cap Growth	Latin America	Mega Cap Large Cap Mid-Large Cap	Growth GARP
	Latin America Large Cap Core	Latin America	Mega Cap Large Cap Mid-Large Cap	Core
	Latin America All Cap Value	Latin America	All Cap	Value Relative Value Deep Value
	Latin America All Cap Growth	Latin America	All Cap	Growth GARP
	Latin America All Cap Core	Latin America	All Cap	Core
	Global Emg Mkts Small Cap Value	Global Emg Mkts	Small-Mid Cap Small Cap	Value Relative Value Deep Value
	Global Emg Mkts Small Cap Growth	Global Emg Mkts	Small-Mid Cap Small Cap	Growth GARP
	Global Emg Mkts Small Cap Core	Global Emg Mkts	Small-Mid Cap Small Cap	Core
	Global Emg Mkts Mid Cap Value	Global Emg Mkts	Mid Cap	Value Relative Value Deep Value
	Global Emg Mkts Mid Cap Growth	Global Emg Mkts	Mid Cap	Growth GARP
	Global Emg Mkts Mid Cap Core	Global Emg Mkts	Mid Cap	Core
	Global Emg Mkts Large Cap Value	Global Emg Mkts	Mega Cap Large Cap Mid-Large Cap	Value Relative Value Deep Value
	Global Emg Mkts Large Cap Growth	Global Emg Mkts	Mega Cap Large Cap Mid-Large Cap	Growth GARP
	Global Emg Mkts Large Cap Core	Global Emg Mkts	Mega Cap Large Cap Mid-Large Cap	Core
	Global Emg Mkts All Cap Value	Global Emg Mkts	All Cap	Value Relative Value Deep Value
	Global Emg Mkts All Cap Growth	Global Emg Mkts	All Cap	Growth GARP
	Global Emg Mkts All Cap Core	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 10 domestic and 8 global fixed income classifications. Global fixed income funds are split into emerging and global markets.

Exhibit A3: U.S. Fixed Income Category Mappings				
SPIVA INSTITUTIONAL CATEGORY	eVESTMENT ALLIANCE CLASSIFICATION			
	REGION	INVESTMENT FOCUS	STYLE EMPHASIS	CREDIT QUALITY/APPROACH
U.S. FUNDS				
U.S. Agg. / (Gov't + Credit) Funds	U.S.	Aggregate	Aggregate Gov/Credit	-
Core	U.S.	-	-	Core
Core Plus	U.S.	-	-	Core Plus
Cash Funds	U.S.	Cash Management	Cash Pure Cash Enhanced	-
Government Funds	U.S.	Government	-	-
Inflation-Linked Funds	U.S.	Inflation Linked	-	-
Investment-Grade Corp Funds	U.S.	Credit	Corporate	Investment Grade
High-Yield Corp Funds	U.S.	Credit	Corporate	High Yield
Agency MBS Funds	U.S.	Securitized/Collateralized	Agency Mortgage Backed Securities (MBS)	-
Municipal Funds	U.S.	Municipals	Tax Exempt Municipals	-
GLOBAL/EMERGING MARKET FUNDS				
Emerging Market Hard Currency	Global	Emerging Markets Debts	Hard Currency	-
Emerging Market Blended Currency	Global	Emerging Markets Debts	Blended Currency	-
Emerging Market Local Currency	Global	Emerging Markets Debts	Local Currency	-
Global Cash Funds	Global	Cash Management	Cash Pure Cash Enhanced	-
Global Government Funds	Global	Government	-	-
Global Aggregate Funds	Global	Aggregate	Aggregate Gov/Credit	-
Global Corporate Investment-Grade Funds	Global	Credit	Corporate	Investment Grade
Global Corporate High-Yield Funds	Global	Credit	Corporate	High Yield

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

APPENDIX B: GLOSSARY

Percentage of Managers Underperforming 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 are designed to 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 is designed to measure 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 is designed to measure the returns of stocks that are legally and practically available to foreign investors.

Fixed Income

BLOOMBERG BARCLAYS LONG GOVERNMENT BOND INDEX

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

BLOOMBERG BARCLAYS INTERMEDIATE GOVERNMENT BOND INDEX

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

BLOOMBERG BARCLAYS 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.

BLOOMBERG BARCLAYS 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.

BLOOMBERG BARCLAYS 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.

BLOOMBERG BARCLAYS 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.

BLOOMBERG BARCLAYS U.S. AGGREGATE INDEX

This index is a broad-based flagship benchmark that measures the investment grade, US dollar-denominated, fixed-rate taxable bond market.

BLOOMBERG BARCLAYS U.S. SHORT TREASURY INDEX

This index tracks the market for treasury bills issued by the US government. US Treasury bills are issued in fixed maturity terms of 4-, 13-, 26-, and 52-weeks.

BLOOMBERG BARCLAYS U.S. GOVERNMENT INDEX

This index is comprised of the US Treasury and US Agency Indices. The index includes US dollar-denominated, fixed-rate, nominal US Treasuries and US agency debentures (securities issued by US government owned or government sponsored entities, and debt explicitly guaranteed by the US government).

BLOOMBERG BARCLAYS U.S. TREASURY INFLATION NOTES INDEX

This index measures the performance of the US Treasury Inflation Protected Securities (TIPS) market. Federal Reserve holdings of US TIPS are not index eligible and are excluded from the face amount outstanding of each bond in the index.

BLOOMBERG BARCLAYS U.S. CORPORATE INDEX

This index measures the investment grade, fixed-rate, taxable corporate bond market. It includes USD-denominated securities publicly issued by US and non-US industrial, utility, and financial issuers.

BLOOMBERG BARCLAYS U.S. CORPORATE HIGH YIELD BOND INDEX

This index measures the USD-denominated, high yield, fixed-rate corporate bond market. Securities are classified as high yield if the middle rating of Moody's, Fitch, and S&P is Ba1/BB+/BB+ or below.

BLOOMBERG BARCLAYS U.S. MBS INDEX

This index tracks agency mortgage pass-through securities (no longer incorporates hybrid ARM) guaranteed by Ginnie Mae (GNMA), Mae (FNMA), and Freddie Mac (FHLMC). The index is constructed by grouping individual TBA- deliverable MBS pools into aggregates or generics based on program, coupon, and vintage.

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 NATIONAL AMT-FREE MUNICIPAL BOND INDEX

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

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.

BLOOMBERG BARCLAYS EMERGING MARKETS USD AGGREGATE INDEX

This index is a flagship hard currency Emerging Markets debt benchmark that includes USD-denominated debt from sovereign, quasi-sovereign, and corporate EM issuers.

BLOOMBERG BARCLAYS EMERGING MARKETS LOCAL CURRENCY GOVERNMENT INDEX

This index provides a broad measure of the performance of local currency emerging markets (EM) government debt.

BLOOMBERG BARCLAYS GLOBAL TREASURY INDEX

This index tracks fixed-rate, local currency government debt of investment grade countries, including both developed and emerging markets.

BLOOMBERG BARCLAYS GLOBAL AGGREGATE BOND INDEX

This index is a flagship measure of global investment grade debt from twenty-four local currency markets. This multi-currency benchmark includes treasury, government-related, corporate, and securitized fixed-rate bonds from both developed and emerging markets issuers.

BLOOMBERG BARCLAYS GLOBAL AGGREGATE CORPORATE INDEX

This index is a flagship measure of global investment grade, fixed-rate corporate debt. This multi-currency benchmark includes bonds from developed and emerging markets issuers within the industrial, utility, and financial sectors.

BLOOMBERG BARCLAYS GLOBAL HIGH YIELD INDEX

This index is a multi-currency flagship measure of the global high yield debt market. The index represents the union of the US High Yield, the Pan-European High Yield, and Emerging Markets (EM) Hard Currency High Yield Indices.

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PERFORMANCE DISCLOSURE

The S&P Developed Ex-U.S. SmallCap Select Index was launched December 21, 2018. All information presented prior to an index's Launch Date is hypothetical (back-tested), not actual performance. The back-test calculations are based on the same methodology that was in effect on the index Launch Date. However, when creating back-tested history for periods of market anomalies or other periods that do not reflect the general current market environment, index methodology rules may be relaxed to capture a large enough universe of securities to simulate the target market the index is designed to measure or strategy the index is designed to capture. For example, market capitalization and liquidity thresholds may be reduced. Complete index methodology details are available at www.spdji.com. Past performance of the Index is not an indication of future results. Prospective application of the methodology used to construct the Index may not result in performance commensurate with the back-test returns shown.

S&P Dow Jones Indices defines various dates to assist our clients in providing transparency. The First Value Date is the first day for which there is a calculated value (either live or back-tested) for a given index. The Base Date is the date at which the Index is set at a fixed value for calculation purposes. The Launch Date designates the date upon which the values of an index are first considered live: index values provided for any date or time period prior to the index's Launch Date are considered back-tested. S&P Dow Jones Indices defines the Launch Date as the date by which the values of an index are known to have been released to the public, for example via the company's public website or its datafeed to external parties. For Dow Jones-branded indices introduced prior to May 31, 2013, the Launch Date (which prior to May 31, 2013, was termed "Date of introduction") is set at a date upon which no further changes were permitted to be made to the index methodology, but that may have been prior to the Index's public release date.

The back-test period does not necessarily correspond to the entire available history of the Index. Please refer to the methodology paper for the Index, available at www.spdji.com for more details about the index, including the manner in which it is rebalanced, the timing of such rebalancing, criteria for additions and deletions, as well as all index calculations.

Another limitation of using back-tested information is that the back-tested calculation is generally prepared with the benefit of hindsight. Back-tested information reflects the application of the index methodology and selection of index constituents in hindsight. No hypothetical record can completely account for the impact of financial risk in actual trading. For example, there are numerous factors related to the equities, fixed income, or commodities markets in general which cannot be, and have not been accounted for in the preparation of the index information set forth, all of which can affect actual performance.

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