

SPIVA[®] U.S. Scorecard

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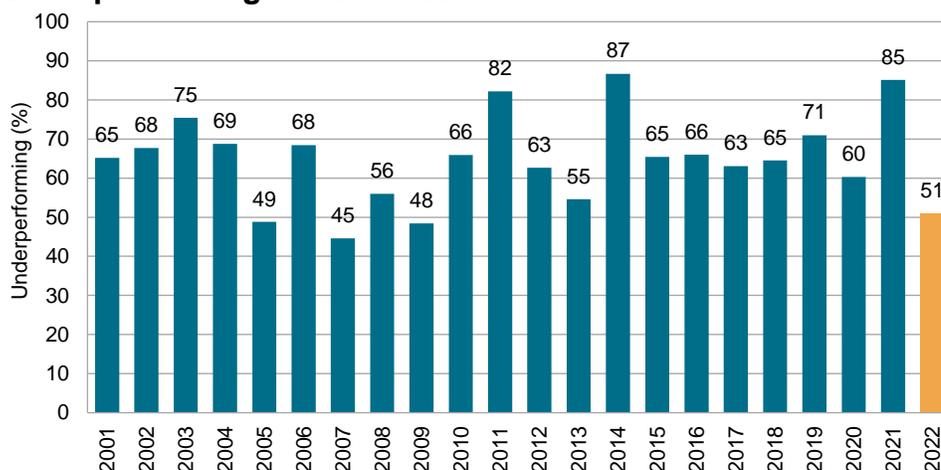
Experience the active vs. passive debate on a global scale.

Summary

The **S&P 500[®]** finished 2022 with a -18% total return, its worst performance since 2008, and fixed income markets offered little diversification benefit: the **iBoxx \$ Liquid Investment Grade** also fell 18%. Both asset classes suffered as yields rose in response to a surge in domestic inflation, accompanied by an aggressive series of rate hikes by the U.S. Federal Reserve.

Declining markets *can* make active management skill more valuable, and **our 2022 scorecard identifies several fund categories in which a majority of active managers outperformed**. However, in the largest and most closely watched category, **U.S. large-cap equities, a slim majority underperformed**. On the positive side, this was the lowest underperformance rate since 2009 and the fourth best across more than two decades of our annual SPIVA Scorecards. Less positively, 2022 was characterized by several specific and unusual active tailwinds that may not persist.

Exhibit 1: Percentage of Large-Cap Domestic Equity Funds Underperforming the S&P 500 Each Year



Sources: S&P Dow Jones Indices LLC, CRSP. Data as of Dec. 31, 2022. Past performance is no guarantee of future results. Chart is provided for illustrative purposes.

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In contrast to the near coin-flip chances of finding an outperforming large-cap manager, **63% of mid-cap funds** underperformed the [S&P MidCap 400®](#) and **57% of small-cap funds** underperformed the [S&P SmallCap 600®](#) in 2022. The lowest underperformance rate among domestic equity categories was in **Small-Cap Core**, in which **40%** of active funds underperformed. At the other end of the spectrum, the **Real Estate** and **Mid-Cap Growth** categories saw the highest annual underperformance rates of **88%** and **91%**, respectively.

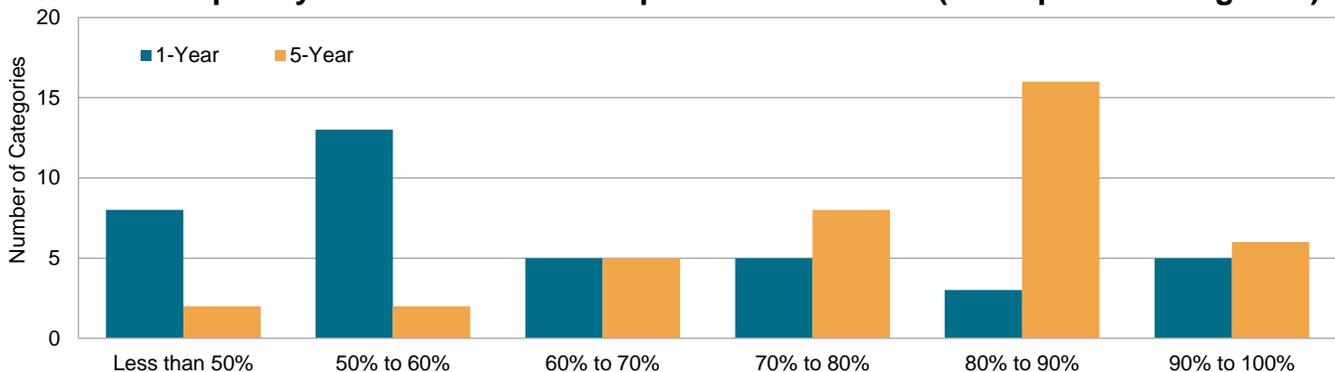
In international equities, a majority of actively managed funds underperformed in every category during 2022. However, in relative terms, **managers in the International Small-Cap category continued to outshine their peers**, with just 60% underperforming in 2022 compared to 69%, 68% and 76%, in the Global, International and Emerging Markets categories, respectively.

The 2022 completion of the merger between IHS Markit and S&P Global brought a new range of fixed income indices to the S&P DJI family¹ and—as introduced in our most recent mid-year scorecard²—the 2022 edition of our year-end U.S. scorecard presents a new range of fixed income comparison indices as well as several new fixed income categories.

The performance of actively managed fixed income funds was generally more creditable in 2022, with just **6% of Core Plus Bond funds** and **21% of General Investment Grade funds** underperforming. However, we report majority underperformance in 11 out of 17 fixed income categories, topping out at **95%** for actively managed **Government Intermediate** funds.

Echoing a frequent theme of SPIVA Scorecards over the past 20 years, **underperformance rates generally rose with the length of the period over which they were measured**. Of 39 reported categories, eight displayed majority outperformance over a one-year horizon, falling to just two categories over a five-year horizon.

Exhibit 2: Frequency Distribution of Underperformance Rates (All Reported Categories)



Source: S&P Dow Jones Indices LLC, CRSP. Data as of Dec. 31, 2022. See Reports 1a, 6a and 11a. Past performance is no guarantee of future results. Chart is provided for illustrative purposes.

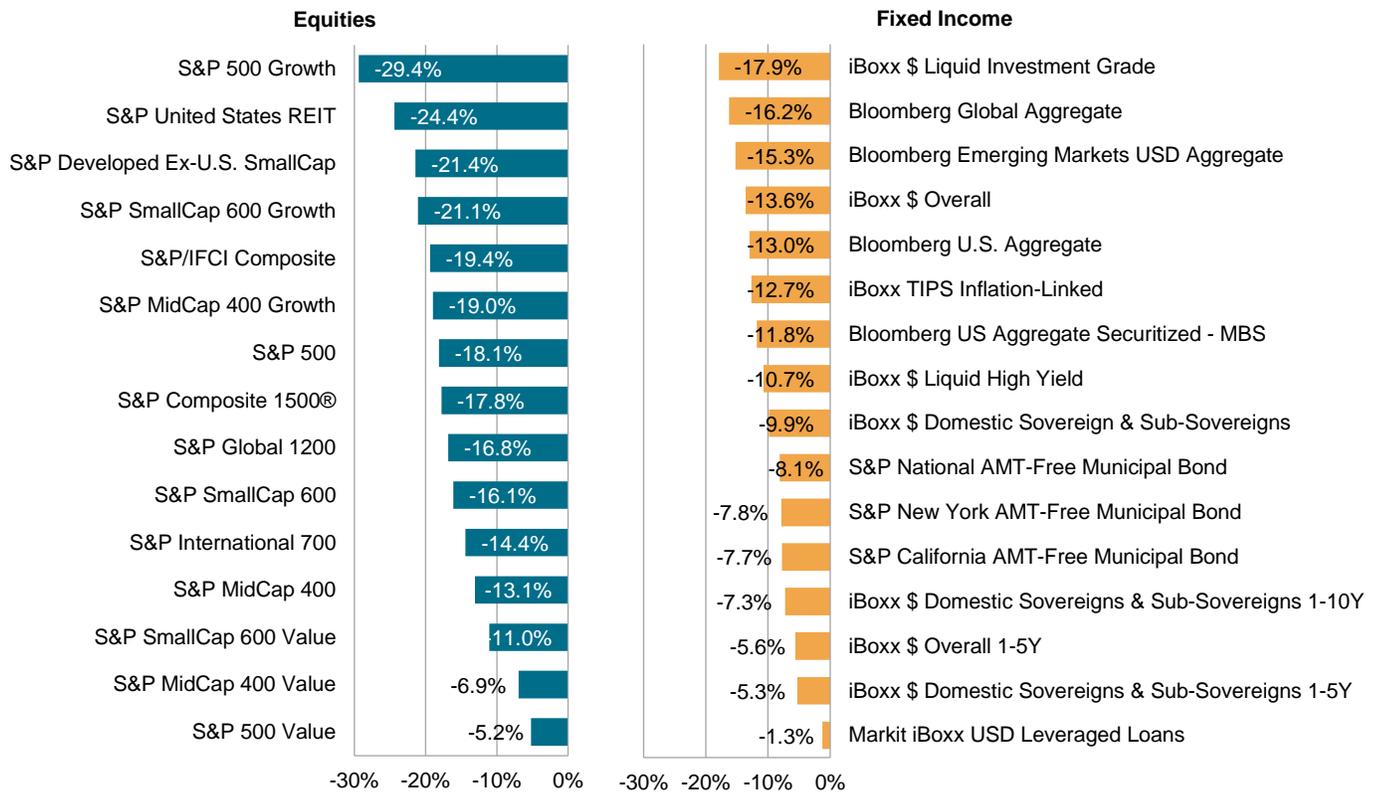
¹ The press release announcing the merger’s completion is available [here](#).

² Prior scorecards, including the [SPIVA U.S. Mid-Year 2022 Scorecard](#), are available at www.spglobal.com/spiva.

Market Context

Market conditions for equities and fixed income were uncommonly challenging in 2022; it would have been difficult for any manager to finish the year with absolute gains just by making systematic allocations across sizes, styles or categories. As Exhibit 3 illustrates, none of the benchmarks for the various fund categories included in this report finished the year positively—most had a double-digit total return loss.

Exhibit 3: 2022 Performances of U.S. Scorecard Comparison Indices



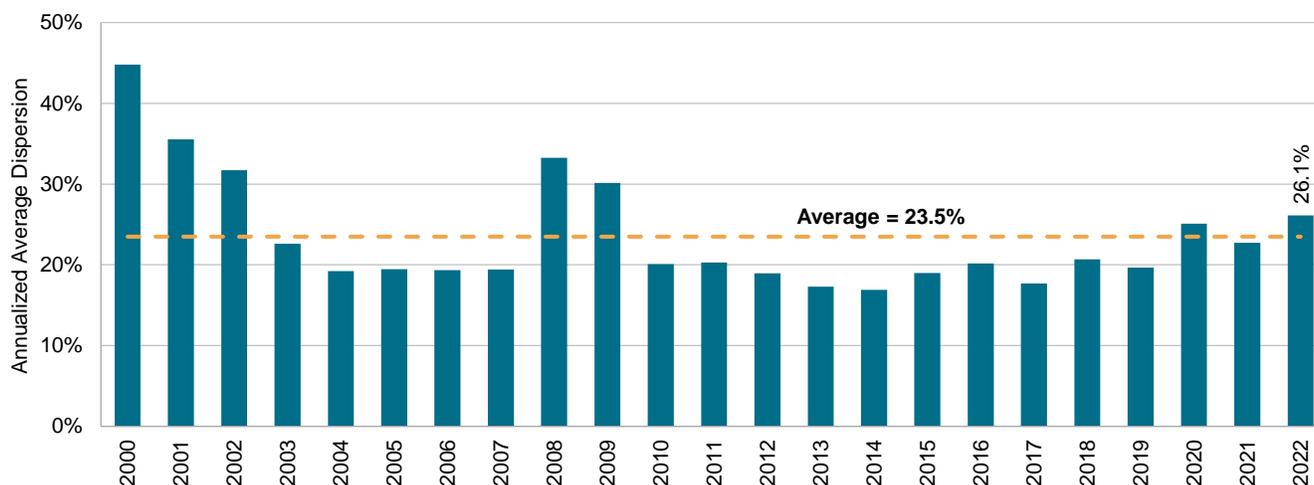
Source: S&P Dow Jones Indices LLC, Bloomberg LLC. Data as of Dec. 31, 2022. Past performance is no guarantee of future results. Chart is provided for illustrative purposes.

There were, however, material opportunities to generate *relative performance*, even among neighboring categories. For example, the **S&P 500 Growth** and **S&P 500 Value** indices, both of which contain only large-cap U.S. equities, were at the top and bottom extremes of relative performance among equity benchmarks (see Exhibit 3), with more than 20% separating their full-year returns. Meanwhile, **there was also a large spread between the returns of broad corporate and government U.S. bond indices**, with the iBoxx \$ Domestic Sovereign & Sub-Sovereigns outperforming the iBoxx \$ Liquid Investment Grade by 8%, the most of any year since 2008.

In addition to a material potential for generating relative returns by switching between styles and segments, as illustrated in the following three exhibits, **the prospects for skilled stock-**

pickers in large-cap U.S. equities were above average and the tailwinds for even unskilled managers were unusually favorable. In demonstration of the former, Exhibit 4 shows that average S&P 500 monthly dispersion—a measure of the magnitude of differences among constituent returns and hence the opportunity set for skilled stock-picking³—was at its highest annual level since 2009, which was also a year in which our scorecard reported relatively better underperformance rates among large-cap equity funds.

Exhibit 4: S&P 500 Average Monthly Dispersion by Calendar Year



Source: S&P Dow Jones Indices LLC. Data as of Dec. 31, 2022. Past performance is no guarantee of future results. Chart is provided for illustrative purposes.

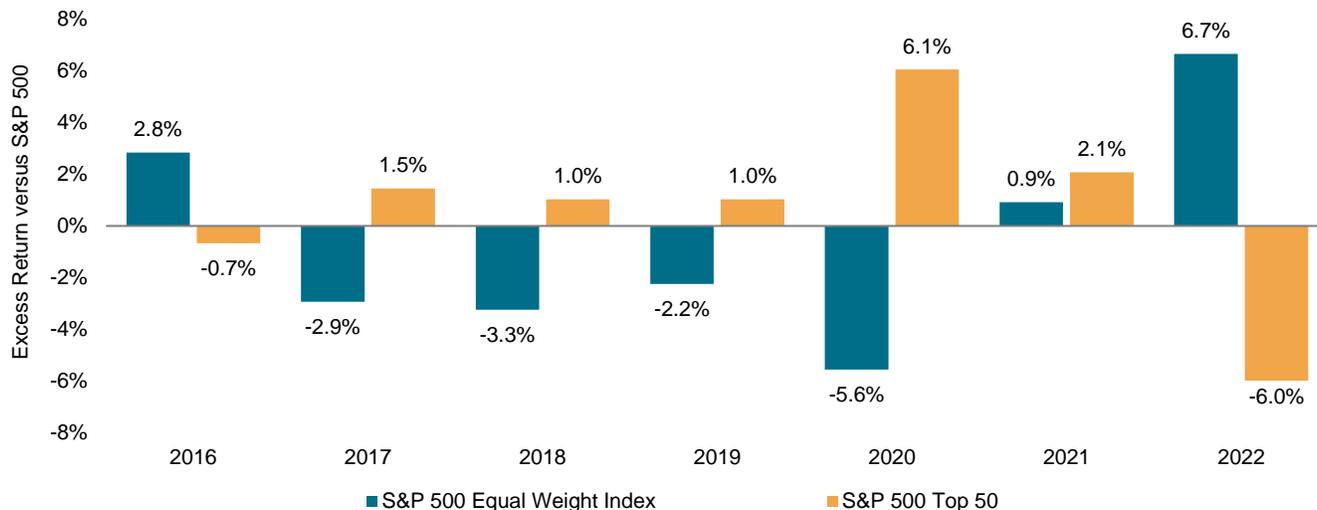
Of course, higher dispersion does not guarantee better performance; it indicates a greater opportunity for embarrassment as well as glory. **But an examination of the particular market segments that over- and underperformed shows that they *should* have given the advantage to active managers**, in particular thanks to their ability to deviate from broad-based, market-capitalization-weighted allocations to large-cap U.S. equities.

Exhibit 5 highlights that the [S&P 500 Equal Weight Index](#)—which offers a proxy for the performance of the *average* stock in the benchmark⁴—outperformed by nearly 7% in 2022. Meanwhile, the constituents with the largest weights in the S&P 500, represented by the [S&P 500 Top 50](#), materially underperformed. It is not surprising that both occurred concurrently, as equal weight, by definition, has a tilt toward smaller-cap companies. To stress the implications for active performance: **in years when the average constituent beats the benchmark, it should be easier to select stocks that do so.** And when the very largest companies lag, **the ability of active managers to deviate from market-capitalization weightings has a greater chance of generating outperformance.**

³ Edwards, Tim, and Craig J. Lazzara, "[Dispersion: Measuring Market Opportunity](#)," S&P Dow Jones Indices LLC (2013).

⁴ Edwards Tim, and Craig J. Lazzara, "[Equal Weight Benchmarking: Raising the Monkey Bars](#)," S&P Dow Jones Indices LLC (2014).

Exhibit 5: Equal Weight Outperformed and the Largest Names Underperformed in 2022



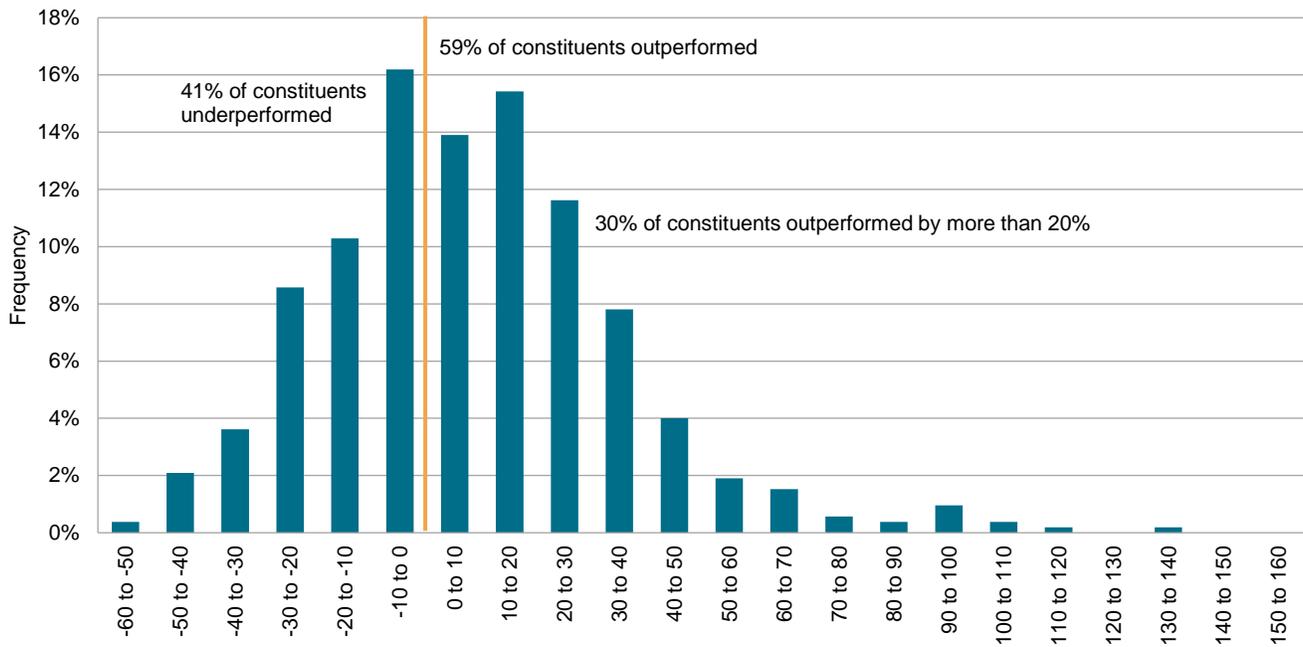
Source: S&P Dow Jones Indices LLC. Data as of Dec. 31, 2022. Past performance is no guarantee of future results. Chart is provided for illustrative purposes.

Exhibit 6 provides a final perspective on **the relatively abundant prospects for concentrated active U.S. large-cap “stock-pickers,”** even for those hypothetically selecting stocks at random. In most years for the past two decades, and over the full period, a majority of S&P 500 constituents *underperformed* the index itself.⁵ In contrast, Exhibit 6 shows that in 2022, **a manager selecting a random stock would have had a 59% chance of beating the S&P 500 and a 30% chance of outperforming the S&P 500 by 20% or better**—compared with a 41% chance of selecting an underperformer and just a 15% chance of picking one that lagged by 20% or worse.

While the chance of selecting an outperforming U.S. large-cap manager in 2022 was among of the highest of any year this century, celebrations in the active investment community might be qualified for three reasons. First, because it was still close to a 50-50 split and marginally in favor of the benchmark. Second, because, even including 2022’s relatively benign performances, the vast majority of actively managed funds nonetheless underperformed over periods of 10 years or more. And finally, because although the challenges to outperformance diminished in 2022, it was an unusual year and active outperformance might well be harder to attain in the future.

⁵ Source: S&P Dow Jones Indices LLC. Based on the calendar years 2000-2022 inclusive. See also Lazzara, Craig J., “[The Skew is Not New](#),” S&P Dow Jones Indices LLC, (2018), and, for an even longer-term perspective, Bessembinder, Hendrik, “[Do Stocks Outperform Treasury Bills?](#)” Journal of Financial Economics (2018).

Exhibit 6: 2022 Frequency Distribution of S&P 500 Constituent Excess Returns



Source: S&P Dow Jones Indices LLC, FactSet. Data as of Dec. 31, 2022. Past performance is no guarantee of future results. Chart is provided for illustrative purposes.

A Unique Scorecard for the Active Versus Passive Debate

There is nothing novel about the index versus active debate. It has been a contentious subject for decades, and there are a few strong believers on both sides, with the vast majority of market participants falling somewhere in between. Since its first publication in 2002, the SPIVA Scorecard has served as the de facto scorekeeper. When headline numbers have deviated from their beliefs, we have heard passionate arguments from both camps.

Beyond the SPIVA Scorecard's widely cited headline numbers is a rich data set that addresses issues—often far more fascinating though far less discussed—about measurement techniques, universe composition and fund survivorship. These data sets are rooted in the following fundamental principles of the SPIVA Scorecard, with which regular readers will be familiar.

- **Survivorship Bias Correction:** Many funds might be liquidated or merged during a period of study. However, for someone making an investment decision at the beginning of the period, these funds are part of the opportunity set. Unlike other commonly available comparison reports, SPIVA Scorecards account for the entire opportunity set—not just the survivors—thereby eliminating survivorship bias.
- **Apples-to-Apples Comparison:** Fund returns are often compared to popular benchmarks such as the S&P 500, regardless of size or style classification. SPIVA Scorecards avoid this pitfall by measuring a fund's returns against the returns of a benchmark appropriate for that particular investment category.
- **Asset-Weighted Returns:** Average returns for a fund group are often calculated using only equal weighting, which results in the returns of a USD 10 billion fund affecting the average in the same manner as the returns of a USD 10 million fund. A more accurate representation of how market participants fared in a particular period is found by calculating weighted average returns where each fund's return is weighted by net assets. SPIVA Scorecards show both equal- and asset-weighted averages.
- **Style Consistency:** SPIVA Scorecards measure style consistency for each style category across different time horizons. Style consistency is an important metric because style drift (the tendency of funds to diverge from their initial investment categorization) can have an impact on asset allocation decisions.
- **Data Cleaning:** SPIVA Scorecards avoid double-counting multiple share classes in all count-based calculations, using only the share class with greater assets. Since this is meant to be a scorecard for active managers, it excludes index funds, leveraged and inverse funds, and other index-linked products.

Historical View

To provide context for the relative performance of active funds, we compile annual league tables across the U.S. and international equity categories. The tables show how active funds performed against their benchmarks in each calendar year. Owing to the 2022 change in fixed income categories and benchmarks (see Appendix C), equivalent year-over-year comparisons for fixed income funds would not provide “apples-to-apples” comparisons.⁶

Exhibit 7: Percentage of U.S. Equity and International Funds Underperforming Benchmarks Each Year

Fund Category	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Domestic Equity Funds (%)																						
All Domestic Funds	55	58	48	51	42	68	49	65	41	48	85	65	43	87	74	61	63	69	70	57	80	50
All Large-Cap Funds	65	68	75	69	49	68	45	56	48	66	82	63	55	87	65	66	63	65	71	60	85	51
All Mid-Cap Funds	68	74	52	65	74	45	46	76	56	73	69	80	37	66	57	89	44	46	32	51	62	63
All Small-Cap Funds	54	68	35	84	61	63	46	83	31	54	86	66	68	72	72	86	48	69	39	46	71	57
All Multi-Cap Funds	55	54	49	49	37	69	46	70	39	60	84	65	47	82	70	75	57	67	69	56	80	51
Large-Cap Growth Funds	95	83	48	44	38	94	27	91	37	51	96	46	41	96	48	90	33	60	33	38	99	74
Large-Cap Core Funds	77	67	85	83	56	81	44	52	51	77	83	67	58	80	74	75	69	76	70	66	79	54
Large-Cap Value Funds	31	35	86	87	54	80	46	25	46	71	54	85	65	78	62	78	47	46	97	33	39	59
Mid-Cap Growth Funds	88	86	36	64	80	28	42	91	54	84	77	87	35	55	80	95	18	15	9	17	83	91
Mid-Cap Core Funds	80	70	55	57	66	32	61	60	71	87	66	79	43	59	68	91	62	62	41	80	45	54
Mid-Cap Value Funds	47	64	68	53	69	37	58	68	47	57	68	74	41	71	34	97	43	72	65	53	63	73
Small-Cap Growth Funds	77	97	27	95	78	51	41	95	31	62	94	63	55	64	88	96	15	62	14	14	87	80
Small-Cap Core Funds	58	67	35	80	58	56	56	82	33	59	86	69	78	67	78	90	59	88	41	62	61	40
Small-Cap Value Funds	39	30	48	72	45	71	39	72	25	42	82	62	79	94	45	89	74	83	80	44	51	41
Multi-Cap Growth Funds	76	62	34	51	18	73	30	88	42	46	95	52	39	87	66	85	46	66	45	47	93	56
Multi-Cap Core Funds	62	49	55	61	38	77	45	66	39	66	83	68	53	84	84	75	69	82	74	62	80	58
Multi-Cap Value Funds	31	61	57	79	72	84	58	48	36	68	67	73	48	67	56	71	50	75	92	50	51	58
Real Estate Funds	91	48	57	43	44	68	45	73	38	67	66	62	65	68	43	84	37	89	27	25	70	88
International Equity Funds (%)																						
Global Funds	65	58	59	59	50	75	54	62	52	44	72	62	48	77	58	80	50	71	57	54	84	69
International Funds	60	61	81	73	71	75	68	64	72	40	70	44	43	68	26	85	54	77	57	55	50	68
International Small-Cap Funds	70	68	56	56	60	65	37	53	49	45	60	25	48	69	49	72	44	91	61	52	31	60
Emerging Markets Funds	84	63	65	79	65	78	70	65	71	65	53	46	55	71	66	64	65	62	36	52	65	76

Sources: S&P Dow Jones Indices LLC, CRSP. Data as of Dec. 31, 2022. See reports 1a and 6a for the indices used as benchmarks for each category. Past performance is no guarantee of future results. Chart is provided for illustrative purposes.

⁶ The interested reader may find the as-reported historical outperformance rates for fixed income categories in prior scorecards, available at www.spglobal.com/spiva.

Reports

Report 1a: Percentage of U.S. Equity Funds Underperforming Their Benchmarks (Based on Absolute Return)

SPIVA Category	Comparison Index	1-Year (%)	3-Year (%)	5-Year (%)	10-Year (%)	15-Year (%)	20-Year (%)
All Domestic Funds	S&P Composite 1500	50.29	78.69	88.01	93.14	93.95	92.14
All Large-Cap Funds	S&P 500	51.08	74.27	86.51	91.41	93.40	94.79
All Mid-Cap Funds	S&P MidCap 400	62.60	77.97	64.78	81.51	93.22	94.04
All Small-Cap Funds	S&P SmallCap 600	56.91	66.92	70.54	89.11	94.35	93.67
All Multi-Cap Funds	S&P Composite 1500	50.75	81.02	87.55	93.20	94.58	93.54
Large-Cap Growth Funds	S&P 500 Growth	73.85	88.94	86.09	95.89	98.15	97.65
Large-Cap Core Funds	S&P 500	54.30	68.27	84.01	95.91	95.69	96.38
Large-Cap Value Funds	S&P 500 Value	58.70	39.46	69.02	84.90	79.13	86.51
Mid-Cap Growth Funds	S&P MidCap 400 Growth	91.23	78.36	38.89	65.87	91.00	91.58
Mid-Cap Core Funds	S&P MidCap 400	53.66	70.75	78.15	88.43	96.49	97.03
Mid-Cap Value Funds	S&P MidCap 400 Value	72.73	81.82	83.93	95.65	93.00	92.16
Small-Cap Growth Funds	S&P SmallCap 600 Growth	79.60	75.76	58.60	84.50	95.43	96.67
Small-Cap Core Funds	S&P SmallCap 600	39.83	65.48	76.33	95.26	94.81	95.12
Small-Cap Value Funds	S&P SmallCap 600 Value	40.63	43.84	80.65	90.99	91.43	92.16
Multi-Cap Growth Funds	S&P Composite 1500 Growth	56.21	85.00	84.36	89.55	96.05	91.36
Multi-Cap Core Funds	S&P Composite 1500	58.38	79.43	90.20	96.69	93.48	95.36
Multi-Cap Value Funds	S&P Composite 1500 Value	58.16	58.04	86.84	91.23	90.60	88.89
Real Estate Funds	S&P United States REIT	87.67	58.44	61.90	74.03	87.25	87.10

Sources: S&P Dow Jones Indices LLC, CRSP. Data as of Dec. 31, 2022. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 1b: Percentage of U.S. Equity Funds Underperforming Their Benchmarks (Based on Risk-Adjusted Return)

Fund Category	Comparison Index	3-Year (%)	5-Year (%)	10-Year (%)	15-Year (%)	20-Year (%)
All Domestic Funds	S&P Composite 1500	82.72	90.36	96.43	96.54	96.85
All Large-Cap Funds	S&P 500	72.89	87.12	95.50	94.98	96.73
All Mid-Cap Funds	S&P MidCap 400	76.95	60.47	79.83	91.28	92.80
All Small-Cap Funds	S&P SmallCap 600	67.50	70.89	87.08	93.22	92.08
All Multi-Cap Funds	S&P Composite 1500	84.96	90.33	95.98	95.20	95.53
Large-Cap Growth Funds	S&P 500 Growth	84.33	87.39	95.21	98.61	99.22
Large-Cap Core Funds	S&P 500	65.87	82.16	94.01	96.86	98.05
Large-Cap Value Funds	S&P 500 Value	37.12	71.78	84.56	74.78	83.72
Mid-Cap Growth Funds	S&P MidCap 400 Growth	78.36	42.86	73.05	92.00	93.56
Mid-Cap Core Funds	S&P MidCap 400	67.92	68.91	81.82	92.98	95.05
Mid-Cap Value Funds	S&P MidCap 400 Value	67.27	75.00	81.16	87.00	86.27
Small-Cap Growth Funds	S&P SmallCap 600 Growth	74.24	59.68	84.50	94.42	96.67
Small-Cap Core Funds	S&P SmallCap 600	65.08	75.97	89.22	94.37	91.46
Small-Cap Value Funds	S&P SmallCap 600 Value	42.47	73.12	83.78	91.43	84.31
Multi-Cap Growth Funds	S&P Composite 1500 Growth	80.00	84.36	92.04	98.31	96.91
Multi-Cap Core Funds	S&P Composite 1500	85.17	91.02	97.29	94.72	94.09
Multi-Cap Value Funds	S&P Composite 1500 Value	64.34	89.47	90.35	85.23	89.37
Real Estate Funds	S&P United States REIT	59.74	59.52	61.04	88.24	77.42

Sources: S&P Dow Jones Indices LLC, CRSP. Data as of Dec. 31, 2022. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 2: Survivorship and Style Consistency of U.S. Equity Funds

Fund Category	Number of Funds at Start	Survivorship (%)	Style Consistency
1-Year			
All Domestic Funds	1929	97.77	91.24
All Large-Cap Funds	650	98.31	93.85
All Mid-Cap Funds	262	98.85	85.88
All Small-Cap Funds	492	97.15	94.92
All Multi-Cap Funds	534	97.19	87.45
Large-Cap Growth Funds	218	96.79	96.33
Large-Cap Core Funds	186	98.92	93.01
Large-Cap Value Funds	247	99.19	92.31
Mid-Cap Growth Funds	114	99.12	92.98
Mid-Cap Core Funds	82	100.00	91.46
Mid-Cap Value Funds	66	96.97	66.67
Small-Cap Growth Funds	201	96.52	97.51
Small-Cap Core Funds	231	96.97	96.97
Small-Cap Value Funds	64	100.00	78.13
Multi-Cap Growth Funds	153	97.39	78.43
Multi-Cap Core Funds	185	96.76	89.73
Multi-Cap Value Funds	196	97.45	92.35
Real Estate Funds	73	97.26	100.00
3-Year			
All Domestic Funds	2060	88.54	76.41
All Large-Cap Funds	723	91.70	77.73
All Mid-Cap Funds	295	87.46	70.17
All Small-Cap Funds	520	87.12	85.77
All Multi-Cap Funds	532	86.09	69.17
Large-Cap Growth Funds	217	93.55	88.02
Large-Cap Core Funds	208	91.83	75.00
Large-Cap Value Funds	299	90.30	72.24
Mid-Cap Growth Funds	134	88.06	75.37
Mid-Cap Core Funds	106	84.91	66.98
Mid-Cap Value Funds	55	90.91	63.64
Small-Cap Growth Funds	198	88.38	92.93
Small-Cap Core Funds	252	86.11	86.51
Small-Cap Value Funds	73	87.67	64.38
Multi-Cap Growth Funds	180	88.89	58.89
Multi-Cap Core Funds	209	86.60	69.38
Multi-Cap Value Funds	143	81.82	81.82
Real Estate Funds	77	89.61	100.00

Sources: S&P Dow Jones Indices LLC, CRSP. Data as of Dec. 31, 2022. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

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

Fund Category	Number of Funds at Start	Survivorship (%)	Style Consistency
5-Year			
All Domestic Funds	2210	79.82	65.16
All Large-Cap Funds	823	82.50	68.29
All Mid-Cap Funds	301	77.08	59.80
All Small-Cap Funds	560	78.04	75.36
All Multi-Cap Funds	538	79.00	52.79
Large-Cap Growth Funds	230	84.35	79.13
Large-Cap Core Funds	269	83.27	59.11
Large-Cap Value Funds	326	80.37	68.40
Mid-Cap Growth Funds	126	78.57	69.05
Mid-Cap Core Funds	119	78.99	51.26
Mid-Cap Value Funds	56	69.64	57.14
Small-Cap Growth Funds	186	82.26	87.63
Small-Cap Core Funds	283	76.33	74.91
Small-Cap Value Funds	93	75.27	52.69
Multi-Cap Growth Funds	179	85.47	44.13
Multi-Cap Core Funds	245	75.51	51.43
Multi-Cap Value Funds	114	76.32	69.30
Real Estate Funds	84	79.76	97.62
10-Year			
All Domestic Funds	2491	64.67	53.27
All Large-Cap Funds	955	65.45	59.90
All Mid-Cap Funds	357	60.22	49.58
All Small-Cap Funds	542	66.79	66.05
All Multi-Cap Funds	647	64.45	35.24
Large-Cap Growth Funds	292	64.04	70.55
Large-Cap Core Funds	367	65.40	49.59
Large-Cap Value Funds	298	66.78	62.08
Mid-Cap Growth Funds	167	61.08	59.28
Mid-Cap Core Funds	121	56.20	44.63
Mid-Cap Value Funds	69	65.22	34.78
Small-Cap Growth Funds	200	63.00	83.50
Small-Cap Core Funds	232	66.81	65.09
Small-Cap Value Funds	111	73.87	36.94
Multi-Cap Growth Funds	201	66.67	38.31
Multi-Cap Core Funds	332	65.66	31.02
Multi-Cap Value Funds	114	57.02	42.11
Real Estate Funds	77	76.62	96.10

Sources: S&P Dow Jones Indices LLC, CRSP. Data as of Dec. 31, 2022. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

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

Fund Category	Number of Funds at Start	Survivorship (%)	Style Consistency
20-Year			
All Domestic Funds	2253	32.18	44.56
All Large-Cap Funds	825	27.76	54.18
All Mid-Cap Funds	403	34.74	35.98
All Small-Cap Funds	442	38.01	49.32
All Multi-Cap Funds	604	32.28	33.44
Large-Cap Growth Funds	255	22.35	58.04
Large-Cap Core Funds	359	25.91	56.82
Large-Cap Value Funds	215	37.67	44.65
Mid-Cap Growth Funds	202	26.73	49.50
Mid-Cap Core Funds	101	35.64	29.70
Mid-Cap Value Funds	102	50.98	14.71
Small-Cap Growth Funds	180	32.22	70.00
Small-Cap Core Funds	164	39.63	43.90
Small-Cap Value Funds	102	45.10	22.55
Multi-Cap Growth Funds	162	26.54	41.98
Multi-Cap Core Funds	237	32.91	32.07
Multi-Cap Value Funds	207	36.71	28.02
Real Estate Funds	62	45.16	80.65

Sources: S&P Dow Jones Indices LLC, CRSP. Data as of Dec. 31, 2022. 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 (%)	3-Year (Annualized, %)	5-Year (Annualized, %)	10-Year (Annualized, %)	20-Year (Annualized, %)
S&P Composite 1500	-17.78	7.59	9.15	12.40	9.92
All Domestic Funds	-19.18	5.32	6.43	10.83	8.92
S&P 500	-18.11	7.66	9.42	12.56	9.80
All Large-Cap Funds	-19.59	5.81	7.27	10.25	8.16
S&P MidCap 400	-13.06	7.23	6.71	10.78	10.66
All Mid-Cap Funds	-18.25	5.11	6.18	9.60	8.91
S&P SmallCap 600	-16.10	5.80	5.88	10.82	10.64
All Small-Cap Funds	-19.73	4.84	5.04	8.81	8.84
S&P Composite 1500	-17.78	7.59	9.15	12.40	9.92
All Multi-Cap Funds	-18.70	5.00	6.55	13.54	9.55

Sources: S&P Dow Jones Indices LLC, CRSP. Data as of Dec. 31, 2022. Returns shown are annualized for periods greater than one year. 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 (%)	3-Year (Annualized, %)	5-Year (Annualized, %)	10-Year (Annualized, %)	20-Year (Annualized, %)
Large-Cap					
S&P 500 Growth	-29.41	7.54	10.28	13.59	10.30
Large-Cap Growth Funds	-33.25	3.63	7.43	11.07	8.57
S&P 500	-18.11	7.66	9.42	12.56	9.80
Large-Cap Core Funds	-18.01	6.58	7.65	10.36	8.28
S&P 500 Value	-5.22	6.26	7.58	10.86	8.93
Large-Cap Value Funds	-7.41	6.57	6.62	9.33	7.64
Mid-Cap					
S&P MidCap 400 Growth	-18.96	5.76	6.02	10.39	10.45
Mid-Cap Growth Funds	-26.70	3.68	6.76	10.30	9.06
S&P MidCap 400	-13.06	7.23	6.71	10.78	10.66
Mid-Cap Core Funds	-13.51	5.82	5.70	9.07	8.86
S&P MidCap 400 Value	-6.93	8.05	6.98	10.84	10.65
Mid-Cap Value Funds	-8.58	6.30	5.24	8.88	8.86
Small-Cap					
S&P SmallCap 600 Growth	-21.08	4.99	6.11	11.13	10.97
Small-Cap Growth Funds	-28.04	3.74	6.54	9.82	8.92
S&P SmallCap 600	-16.10	5.80	5.88	10.82	10.64
Small-Cap Core Funds	-15.24	4.87	4.29	8.28	8.79
S&P SmallCap 600 Value	-11.04	6.10	5.38	10.33	10.19
Small-Cap Value Funds	-8.65	6.73	4.17	8.18	8.75
Multi-Cap					
S&P Composite 1500 Growth	-28.66	7.41	9.92	13.33	10.38
Multi-Cap Growth Funds	-31.72	3.32	7.32	10.53	8.55
S&P Composite 1500	-17.78	7.59	9.15	12.40	9.92
Multi-Cap Core Funds	-18.28	5.30	6.06	15.94	10.78
S&P Composite 1500 Value	-5.47	6.39	7.48	10.85	9.14
Multi-Cap Value Funds	-7.72	6.55	6.17	9.12	7.89
Real Estate					
S&P United States REIT	-24.36	0.02	3.68	6.37	8.93
Real Estate Funds	-26.47	-0.65	2.85	5.49	7.34

Sources: S&P Dow Jones Indices LLC, CRSP. Data as of Dec. 31, 2022. Returns shown are annualized for periods greater than one year. 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 (%)	3-Year (Annualized, %)	5-Year (Annualized, %)	10-Year (Annualized, %)	20-Year (Annualized, %)
S&P Composite 1500	-17.78	7.59	9.15	12.40	9.92
All Domestic Funds	-20.82	5.70	7.40	10.90	8.87
S&P 500	-18.11	7.66	9.42	12.56	9.80
All Large-Cap Funds	-21.00	6.21	7.89	11.23	8.55
S&P MidCap 400	-13.06	7.23	6.71	10.78	10.66
All Mid-Cap Funds	-19.95	5.03	6.58	10.05	9.53
S&P SmallCap 600	-16.10	5.80	5.88	10.82	10.64
All Small-Cap Funds	-21.32	4.05	5.70	9.44	9.05
S&P Composite 1500	-17.78	7.59	9.15	12.40	9.92
All Multi-Cap Funds	-20.49	4.84	6.91	10.90	9.13
Large-Cap					
S&P 500 Growth	-29.41	7.54	10.28	13.59	10.30
Large-Cap Growth Funds	-32.77	4.15	7.85	11.85	9.08
S&P 500	-18.11	7.66	9.42	12.56	9.80
Large-Cap Core Funds	-17.32	6.77	7.92	11.17	8.45
S&P 500 Value	-5.22	6.26	7.58	10.86	8.93
Large-Cap Value Funds	-6.84	7.96	8.00	10.75	8.42
Mid-Cap					
S&P MidCap 400 Growth	-18.96	5.76	6.02	10.39	10.45
Mid-Cap Growth Funds	-28.88	3.35	7.03	10.76	10.06
S&P MidCap 400	-13.06	7.23	6.71	10.78	10.66
Mid-Cap Core Funds	-14.01	6.62	6.26	9.53	8.86
S&P MidCap 400 Value	-6.93	8.05	6.98	10.84	10.65
Mid-Cap Value Funds	-9.46	6.75	5.87	9.32	9.45
Small-Cap					
S&P SmallCap 600 Growth	-21.08	4.99	6.11	11.13	10.97
Small-Cap Growth Funds	-26.24	3.00	7.00	10.72	9.24
S&P SmallCap 600	-16.10	5.80	5.88	10.82	10.64
Small-Cap Core Funds	-15.61	5.28	5.00	8.68	9.12
S&P SmallCap 600 Value	-11.04	6.10	5.38	10.33	10.19
Small-Cap Value Funds	-9.31	5.45	4.36	8.35	8.79

Sources: S&P Dow Jones Indices LLC, CRSP. Data as of Dec. 31, 2022. Returns shown are annualized for periods greater than one year. 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 (%)	3-Year (Annualized, %)	5-Year (Annualized, %)	10-Year (Annualized, %)	20-Year (Annualized, %)
Multi-Cap					
S&P Composite 1500 Growth	-28.66	7.41	9.92	13.33	10.38
Multi-Cap Growth Funds	-31.98	4.54	8.08	12.13	10.08
S&P Composite 1500	-17.78	7.59	9.15	12.40	9.92
Multi-Cap Core Funds	-18.08	4.80	6.30	10.31	8.84
S&P Composite 1500 Value	-5.47	6.39	7.48	10.85	9.14
Multi-Cap Value Funds	-7.74	6.55	6.06	9.89	8.60
Real-Estate					
S&P United States REIT	-24.36	0.02	3.68	6.37	8.93
Real Estate Funds	-25.16	-0.83	2.86	5.74	7.90

Sources: S&P Dow Jones Indices LLC, CRSP. Data as of Dec. 31, 2022. Returns shown are annualized for periods greater than one year. 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	-26.91	-17.53	-9.74
All Large-Cap Funds	-28.84	-18.20	-7.97
All Mid-Cap Funds	-27.82	-17.24	-9.41
All Small-Cap Funds	-26.30	-17.07	-12.47
All Multi-Cap Funds	-25.03	-17.54	-8.07
Large-Cap Growth Funds	-37.60	-31.74	-28.73
Large-Cap Core Funds	-20.13	-18.47	-16.28
Large-Cap Value Funds	-10.35	-6.31	-3.27
Mid-Cap Growth Funds	-33.31	-28.53	-24.48
Mid-Cap Core Funds	-16.24	-13.63	-9.11
Mid-Cap Value Funds	-9.95	-8.48	-6.13
Small-Cap Growth Funds	-31.54	-27.60	-22.45
Small-Cap Core Funds	-18.04	-15.04	-11.64
Small-Cap Value Funds	-12.45	-10.19	-5.05
Multi-Cap Growth Funds	-36.03	-29.89	-25.09
Multi-Cap Core Funds	-20.72	-18.31	-15.19
Multi-Cap Value Funds	-10.60	-6.35	-3.18
Real-Estate Funds	-27.95	-26.69	-25.34
3-Year			
All Domestic Funds	3.35	5.76	7.51
All Large-Cap Funds	4.39	6.46	7.84
All Mid-Cap Funds	3.36	5.45	7.21
All Small-Cap Funds	2.54	4.80	6.99
All Multi-Cap Funds	3.09	5.79	7.40
Large-Cap Growth Funds	2.18	4.23	6.16
Large-Cap Core Funds	5.57	7.02	8.36
Large-Cap Value Funds	5.72	7.06	8.15
Mid-Cap Growth Funds	2.37	3.87	5.71
Mid-Cap Core Funds	4.57	6.11	8.08
Mid-Cap Value Funds	5.32	6.58	7.88
Small-Cap Growth Funds	1.17	3.27	5.60
Small-Cap Core Funds	3.18	5.15	7.08
Small-Cap Value Funds	5.42	6.75	8.68
Multi-Cap Growth Funds	1.89	4.75	6.61
Multi-Cap Core Funds	3.75	6.02	7.48
Multi-Cap Value Funds	4.74	6.42	7.78
Real-Estate Funds	-1.61	-0.07	0.71

Sources: S&P Dow Jones Indices LLC, CRSP. Data as of Dec. 31, 2022. Returns shown are annualized for periods greater than one year. 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	4.96	6.90	8.34
All Large-Cap Funds	6.44	7.73	8.88
All Mid-Cap Funds	4.96	6.49	8.24
All Small-Cap Funds	3.67	5.15	6.85
All Multi-Cap Funds	5.21	6.99	8.36
Large-Cap Growth Funds	6.70	8.02	9.52
Large-Cap Core Funds	7.02	8.19	9.12
Large-Cap Value Funds	5.83	7.15	8.10
Mid-Cap Growth Funds	6.34	7.70	8.77
Mid-Cap Core Funds	4.73	5.63	7.13
Mid-Cap Value Funds	4.48	6.28	6.94
Small-Cap Growth Funds	4.35	6.14	7.80
Small-Cap Core Funds	3.45	4.88	6.26
Small-Cap Value Funds	3.21	4.67	5.43
Multi-Cap Growth Funds	5.86	7.57	9.25
Multi-Cap Core Funds	4.79	7.08	8.08
Multi-Cap Value Funds	4.77	6.25	6.96
Real-Estate Funds	2.53	3.56	4.33
10-Year			
All Domestic Funds	8.82	10.25	11.47
All Large-Cap Funds	9.88	10.91	11.87
All Mid-Cap Funds	8.80	10.09	11.10
All Small-Cap Funds	8.19	9.24	10.29
All Multi-Cap Funds	8.33	10.04	11.51
Large-Cap Growth Funds	10.90	11.85	12.77
Large-Cap Core Funds	10.21	11.11	11.79
Large-Cap Value Funds	9.06	10.08	10.73
Mid-Cap Growth Funds	9.40	10.65	11.67
Mid-Cap Core Funds	8.78	9.64	10.59
Mid-Cap Value Funds	8.51	9.12	10.33
Small-Cap Growth Funds	9.10	10.04	11.11
Small-Cap Core Funds	8.12	8.97	9.92
Small-Cap Value Funds	7.86	8.48	9.40
Multi-Cap Growth Funds	9.72	11.16	12.38
Multi-Cap Core Funds	7.70	9.31	11.02
Multi-Cap Value Funds	8.94	9.65	10.41
Real-Estate Funds	4.80	6.02	6.66

Sources: S&P Dow Jones Indices LLC, CRSP. Data as of Dec. 31, 2022. Returns shown are annualized for periods greater than one year. 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
20-Year			
All Domestic Funds	8.27	9.12	9.89
All Large-Cap Funds	8.16	8.82	9.53
All Mid-Cap Funds	8.44	9.47	10.38
All Small-Cap Funds	8.81	9.42	10.23
All Multi-Cap Funds	7.66	8.63	9.67
Large-Cap Growth Funds	8.54	9.38	9.88
Large-Cap Core Funds	8.30	8.82	9.45
Large-Cap Value Funds	7.80	8.53	9.21
Mid-Cap Growth Funds	8.77	9.79	10.75
Mid-Cap Core Funds	8.29	9.05	9.77
Mid-Cap Value Funds	8.44	9.43	10.10
Small-Cap Growth Funds	9.03	9.85	10.62
Small-Cap Core Funds	8.65	9.35	10.02
Small-Cap Value Funds	8.76	9.25	9.84
Multi-Cap Growth Funds	8.92	9.86	10.49
Multi-Cap Core Funds	7.66	8.42	9.48
Multi-Cap Value Funds	7.21	8.34	9.31
Real-Estate Funds	7.12	8.32	9.13

Sources: S&P Dow Jones Indices LLC, CRSP. Data as of Dec. 31, 2022. Returns shown are annualized for periods greater than one year. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 6a: Percentage of International Equity Funds Underperforming Their Benchmarks

Fund Category	Comparison Index	1-Year	3-Year	5-Year	10-Year	15-Year	20-Year
Global Funds	S&P Global 1200	69.09	83.77	82.98	89.13	88.98	88.50
International Funds	S&P 700	68.38	76.66	80.75	86.50	86.57	93.53
International Small-Cap Funds	S&P Developed Ex-U.S. SmallCap	60.00	50.62	63.22	68.97	73.08	84.85
Emerging Markets Funds	S&P/IFCI Composite	75.79	74.50	78.60	85.25	89.66	97.01

Sources: S&P Dow Jones Indices LLC, CRSP. Data as of Dec. 31, 2022. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 6b: Percentage of International Equity Funds Underperforming Their Benchmarks (Based on Risk-Adjusted Return)

Fund Category	Comparison Index	3-Year (%)	5-Year (%)	10-Year (%)	15-Year (%)	20-Year (%)
Global Funds	S&P Global 1200	84.21	85.53	96.20	91.34	89.38
International Funds	S&P 700	78.51	82.89	87.23	87.28	94.24
International Small-Cap Funds	S&P Developed Ex-U.S. SmallCap	-	63.22	70.69	69.23	84.85
Emerging Markets Funds	S&P/IFCI Composite	-	-	85.79	88.51	94.03

Source: S&P Dow Jones Indices LLC. Data as of Dec. 31, 2022. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 7: Survivorship of International Equity Funds

Fund Category	Number of Funds at Start	Survivorship (%)	Style Consistency (%)
1-Year			
Global Funds	220	97.73	89.09
International Funds	370	96.76	85.41
International Small-Cap Funds	75	98.67	97.33
Emerging Markets Funds	190	96.32	100.00
3-Year			
Global Funds	228	85.09	65.35
International Funds	377	87.80	64.46
International Small-Cap Funds	81	83.95	80.25
Emerging Markets Funds	200	82.00	99.50
5-Year			
Global Funds	235	77.87	48.94
International Funds	374	82.62	47.59
International Small-Cap Funds	87	71.26	68.97
Emerging Markets Funds	215	74.42	93.02
10-Year			
Global Funds	184	56.52	33.15
International Funds	274	61.68	37.96
International Small-Cap Funds	58	67.24	65.52
Emerging Markets Funds	183	64.48	93.44

Sources: S&P Dow Jones Indices LLC, CRSP. Data as of Dec. 31, 2022. Returns shown are annualized for periods greater than one year. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 7: Survivorship of International Equity Funds (cont.)

Fund Category	Number of Funds at Start	Survivorship (%)	Style Consistency (%)
20-Year			
Global Funds	113	36.28	19.47
International Funds	278	35.97	16.91
International Small-Cap Funds	33	45.45	15.15
Emerging Markets Funds	67	46.27	95.52

Source: S&P Dow Jones Indices LLC. Data as of Dec. 31, 2022. Returns shown are annualized for periods greater than one year. 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 (%)	3-Year (Annualized, %)	5-Year (Annualized, %)	10-Year (Annualized, %)	20-Year (Annualized, %)
S&P Global 1200	-16.83	5.32	6.59	9.33	8.78
Global Funds	-20.63	2.92	4.13	7.03	7.01
S&P 700	-14.40	1.52	2.31	5.08	7.44
International Funds	-18.17	0.01	1.32	4.25	5.96
S&P Developed Ex-U.S. SmallCap	-21.41	-0.54	0.01	5.89	8.98
International Small-Cap Funds	-24.34	-0.67	-0.43	5.00	8.35
S&P/IFCI Composite	-19.39	-1.62	-0.72	2.41	9.70
Emerging Markets Funds	-24.04	-3.42	-2.12	0.67	7.66

Sources: S&P Dow Jones Indices LLC, CRSP. Data as of Dec. 31, 2022. Returns shown are annualized for periods greater than one year. 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 (%)	3-Year (Annualized, %)	5-Year (Annualized, %)	10-Year (Annualized, %)	20-Year (Annualized, %)
S&P Global 1200	-16.83	5.32	6.59	9.33	8.78
Global Funds	-21.73	3.06	4.47	7.83	8.01
S&P 700	-14.40	1.52	2.31	5.08	7.44
International Funds	-19.51	0.33	1.10	4.60	6.66
S&P Developed Ex-U.S. SmallCap	-21.41	-0.54	0.01	5.89	8.98
International Small-Cap Funds	-25.98	-0.40	0.15	5.77	9.04
S&P/IFCI Composite	-19.39	-1.62	-0.72	2.41	9.70
Emerging Markets Funds	-24.17	-3.05	-0.90	1.98	8.67

Sources: S&P Dow Jones Indices LLC, CRSP. Data as of Dec. 31, 2022. Returns shown are annualized for periods greater than one year. 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			
Global Funds	-25.37	-19.41	-15.00
International Funds	-22.33	-17.12	-13.28
International Small-Cap Funds	-30.41	-24.48	-17.74
Emerging Markets Funds	-27.03	-22.63	-19.34
3-Year			
Global Funds	1.56	3.43	4.80
International Funds	-0.98	0.37	1.60
International Small-Cap Funds	-2.08	0.09	1.42
Emerging Markets Funds	-4.85	-3.36	-0.77
5-Year			
Global Funds	2.93	4.55	6.47
International Funds	-0.30	0.98	2.07
International Small-Cap Funds	-1.29	0.20	1.49
Emerging Markets Funds	-3.19	-1.99	-0.25
10-Year			
Global Funds	6.34	7.64	8.68
International Funds	3.58	4.26	4.93
International Small-Cap Funds	4.41	5.83	7.12
Emerging Markets Funds	0.18	1.04	2.19
20-Year			
Global Funds	6.60	7.87	8.88
International Funds	5.44	6.31	7.19
International Small-Cap Funds	8.12	8.39	10.64
Emerging Markets Funds	7.24	8.20	9.03

Sources: S&P Dow Jones Indices LLC, CRSP. Data as of Dec. 31, 2022. Returns shown are annualized for periods greater than one year. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 11a: Percentage of Fixed Income Funds Underperforming Their Benchmarks

Fund Category	Comparison Index	1-Year	3-Year	5-Year	10-Year	15-Year
General Government Funds	iBoxx \$ Domestic Sovereign & Sub-Sovereigns	82.35	74.29	90.20	98.25	78.00
Government Intermediate Funds	iBoxx \$ Domestic Sovereigns & Sub-Sovereigns 1-10Y	94.74	90.00	88.89	93.75	91.30
Government Short & Short-Intermediate Funds	iBoxx \$ Domestic Sovereigns & Sub-Sovereigns 1-5Y	65.38	70.97	90.63	94.87	96.30
General Investment-Grade Funds	iBoxx \$ Liquid Investment Grade	20.73	35.23	73.56	84.82	93.81
Investment-Grade Intermediate Funds	Bloomberg U.S. Aggregate	78.83	52.48	71.92	64.13	70.44
Investment-Grade Short & Intermediate Funds	iBoxx \$ Overall 1-5Y	34.06	33.10	68.18	72.66	79.28
General Bond Funds	iBoxx \$ Overall	38.46	46.88	52.38	61.54	69.23
High Yield Funds	iBoxx \$ Liquid High Yield	52.94	42.95	72.38	73.40	80.88
Mortgage-Backed Securities Funds	Bloomberg US Aggregate Securitized - MBS	52.00	61.22	80.39	78.33	89.13
Core Plus Bond Funds	iBoxx \$ Liquid Investment Grade	5.62	14.29	79.73	-	-
Inflation-Linked Funds	iBoxx TIPS Inflation-Linked	29.55	52.17	86.79	89.58	100.00
Global Income Funds	Bloomberg Global Aggregate	36.96	50.00	47.66	59.66	57.89
Emerging Market Debt Funds	Bloomberg Emerging Markets USD Aggregate	61.02	71.19	81.36	94.59	95.24
General Municipal Debt Funds	S&P National AMT-Free Municipal Bond	93.24	92.21	89.33	76.83	76.83
California Municipal Debt Funds	S&P California AMT-Free Municipal Bond	93.75	100.00	96.97	74.29	78.57
New York Municipal Debt Funds	S&P New York AMT-Free Municipal Bond	92.59	92.86	92.00	86.21	85.29
Loan Participation Funds	Markit iBoxx USD Leveraged Loans	84.62	96.36	94.23	94.74	100.00

Sources: S&P Dow Jones Indices LLC, CRSP, Bloomberg LLC. Data as of Dec. 31, 2022. Results not shown for the “Core Plus Bond” category for periods beginning prior to the category’s inception in 2017. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 11b: Percentage of Fixed Income Funds Underperforming Their Benchmarks (Based on Risk-Adjusted Return)

Fund Category	Comparison Index	3-Year	5-Year	10-Year	15-Year
General Government Funds	iBoxx \$ Domestic Sovereign & Sub-Sovereigns	-	90.20	96.49	94.00
Government Intermediate Funds	iBoxx \$ Domestic Sovereigns & Sub-Sovereigns 1-10Y	-	88.89	100.00	100.00
Government Short & Short-Intermediate Funds	iBoxx \$ Domestic Sovereigns & Sub-Sovereigns 1-5Y	-	87.50	92.31	94.44
General Investment-Grade Funds	iBoxx \$ Liquid Investment Grade	-	72.41	70.54	72.16
Investment-Grade Intermediate Funds	Bloomberg U.S. Aggregate	-	74.66	72.28	86.16
Investment-Grade Short & Intermediate Funds	iBoxx \$ Overall 1-5Y	-	74.03	79.86	90.99
General Bond Funds	iBoxx \$ Overall	-	59.52	56.92	69.23
High Yield Funds	iBoxx \$ Liquid High Yield	-	68.10	69.46	66.18
Mortgage-Backed Securities Funds	Bloomberg US Aggregate Securitized - MBS	-	-	76.67	84.78
Core Plus Bond Funds	iBoxx \$ Liquid Investment Grade	-	70.27	-	-
Inflation-Linked Funds	iBoxx TIPS Inflation-Linked	58.70	77.36	89.58	100.00
Global Income Funds	Bloomberg Global Aggregate	-	-	-	71.93
Emerging Market Debt Funds	Bloomberg Emerging Markets USD Aggregate	-	-	97.30	95.24
General Municipal Debt Funds	S&P National AMT-Free Municipal Bond	-	96.00	90.24	92.68
California Municipal Debt Funds	S&P California AMT-Free Municipal Bond	-	96.97	97.14	100.00
New York Municipal Debt Funds	S&P New York AMT-Free Municipal Bond	-	96.00	100.00	100.00
Loan Participation Funds	Markit iBoxx USD Leveraged Loans	89.09	90.38	86.84	80.00

Sources: S&P Dow Jones Indices LLC, CRSP, Bloomberg LLC. Data as of Dec. 31, 2022. Results not shown for the "Core Plus Bond" category for periods beginning prior to the category's inception in 2017. Results not shown for periods in which the benchmark return was negative. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 12: Survivorship and Style Consistency of Fixed Income Funds

Fund Category	Number of Funds at Start	Survivorship (%)	Style Consistency (%)
1-Year			
General Government Funds	34	94.12	100.00
Government Intermediate Funds	19	100.00	94.74
Government Short & Short-Intermediate Funds	26	100.00	96.15
General Investment-Grade Funds	82	90.24	97.56
Investment-Grade Intermediate Funds	137	92.70	100.00
Investment-Grade Short & Intermediate Funds	138	96.38	100.00
General Bond Funds	39	92.31	76.92
High Yield Funds	153	100.00	100.00
Mortgage-Backed Securities Funds	50	96.00	100.00
Core Plus Bond Funds	89	97.75	96.63
Inflation-Linked Funds	44	97.73	100.00
Global Income Funds	92	95.65	100.00
Emerging Market Debt Funds	59	93.22	100.00
General Municipal Debt Funds	74	98.65	100.00
California Municipal Debt Funds	32	100.00	100.00
New York Municipal Debt Funds	27	100.00	100.00
Loan Participation Funds	52	100.00	98.08

Sources: S&P Dow Jones Indices LLC, CRSP. Data as of Dec. 31, 2022. Results not shown for the "Core Plus Bond" category for periods beginning prior to the category's inception in 2017. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 12: Survivorship and Style Consistency of Fixed Income Funds (cont.)

Fund Category	Number of Funds at Start	Survivorship (%)	Style Consistency (%)
3-Year			
General Government Funds	35	88.57	100.00
Government Intermediate Funds	20	95.00	95.00
Government Short & Short-Intermediate Funds	31	90.32	87.10
General Investment-Grade Funds	88	81.82	95.45
Investment-Grade Intermediate Funds	141	88.65	97.16
Investment-Grade Short & Intermediate Funds	142	89.44	98.59
General Bond Funds	32	84.38	75.00
High Yield Funds	156	93.59	99.36
Mortgage-Backed Securities Funds	49	93.88	97.96
Core Plus Bond Funds	77	94.81	94.81
Inflation-Linked Funds	46	91.30	97.83
Global Income Funds	98	85.71	98.98
Emerging Market Debt Funds	59	84.75	100.00
General Municipal Debt Funds	77	92.21	96.10
California Municipal Debt Funds	35	94.29	97.14
New York Municipal Debt Funds	28	92.86	100.00
Loan Participation Funds	55	92.73	98.18
5-Year			
General Government Funds	51	80.39	72.55
Government Intermediate Funds	9	100.00	77.78
Government Short & Short-Intermediate Funds	32	87.50	87.50
General Investment-Grade Funds	87	85.06	87.36
Investment-Grade Intermediate Funds	146	80.82	95.21
Investment-Grade Short & Intermediate Funds	154	81.17	94.81
General Bond Funds	42	66.67	66.67
High Yield Funds	210	82.86	75.71
Mortgage-Backed Securities Funds	51	80.39	96.08
Core Plus Bond Funds	74	91.89	89.19
Inflation-Linked Funds	53	77.36	96.23
Global Income Funds	107	82.24	87.85
Emerging Market Debt Funds	59	72.88	94.92
General Municipal Debt Funds	75	86.67	94.67
California Municipal Debt Funds	33	90.91	96.97
New York Municipal Debt Funds	25	92.00	100.00
Loan Participation Funds	52	92.31	100.00

Sources: S&P Dow Jones Indices LLC, CRSP. Data as of Dec. 31, 2022. Results not shown for the "Core Plus Bond" category for periods beginning prior to the category's inception in 2017. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 12: Survivorship and Style Consistency of Fixed Income Funds (cont.)

Fund Category	Number of Funds at Start	Survivorship (%)	Style Consistency (%)
10-Year			
General Government Funds	57	68.42	73.68
Government Intermediate Funds	16	56.25	81.25
Government Short & Short-Intermediate Funds	39	66.67	84.62
General Investment-Grade Funds	112	73.21	66.07
Investment-Grade Intermediate Funds	184	66.85	66.85
Investment-Grade Short & Intermediate Funds	139	71.22	76.26
General Bond Funds	65	50.77	38.46
High Yield Funds	203	71.43	80.79
Mortgage-Backed Securities Funds	60	68.33	80.00
Inflation-Linked Funds	48	70.83	95.83
Global Income Funds	119	64.71	72.27
Emerging Market Debt Funds	37	67.57	91.89
General Municipal Debt Funds	82	78.05	86.59
California Municipal Debt Funds	35	85.71	94.29
New York Municipal Debt Funds	29	79.31	96.55
Loan Participation Funds	38	92.11	100.00
15-Year			
General Government Funds	50	50.00	72.00
Government Intermediate Funds	23	47.83	73.91
Government Short & Short-Intermediate Funds	54	50.00	72.22
General Investment-Grade Funds	97	48.45	57.73
Investment-Grade Intermediate Funds	159	51.57	72.33
Investment-Grade Short & Intermediate Funds	111	47.75	84.68
General Bond Funds	13	46.15	53.85
High Yield Funds	136	57.35	83.82
Mortgage-Backed Securities Funds	46	63.04	86.96
Inflation-Linked Funds	29	48.28	89.66
Global Income Funds	57	57.89	66.67
Emerging Market Debt Funds	21	61.90	76.19
General Municipal Debt Funds	82	62.20	90.24
California Municipal Debt Funds	42	66.67	92.86
New York Municipal Debt Funds	34	64.71	91.18
Loan Participation Funds	20	75.00	95.00

Sources: S&P Dow Jones Indices LLC, CRSP, Bloomberg LLC. Data as of Dec. 31, 2022. Results not shown for the “Core Plus Bond” category for periods beginning prior to the category’s inception in 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	1-Year (%)	3-Year (%)	5-Year (%)	10-Year (%)	15-Year (%)
iBoxx \$ Domestic Sovereign & Sub-Sovereigns	-9.88	-2.18	0.36	0.99	2.35
General Government Funds	-14.47	-3.65	-0.87	0.02	1.95
iBoxx \$ Domestic Sovereigns & Sub-Sovereigns 1-10Y	-7.27	-1.31	0.61	0.94	2.13
Government Intermediate Funds	-11.05	-2.46	-0.44	0.05	1.43
iBoxx \$ Domestic Sovereigns & Sub-Sovereigns 1-5Y	-5.31	-0.76	0.78	0.89	1.83
Government Short & Short-Intermediate Funds	-5.54	-1.21	0.07	0.20	1.06
iBoxx \$ Liquid Investment Grade	-17.92	-3.45	0.33	2.02	4.21
General Investment-Grade Funds	-9.66	-0.68	1.32	1.82	3.05
Bloomberg U.S. Aggregate	-13.01	-2.71	0.02	1.06	2.66
Investment-Grade Intermediate Funds	-13.56	-2.73	-0.25	0.96	2.34
iBoxx \$ Overall 1-5Y	-5.63	-0.68	0.86	1.01	1.91
Investment-Grade Short & Intermediate Funds	-5.02	-0.51	0.68	0.84	1.43
iBoxx \$ Overall	-13.61	-2.69	0.13	1.08	2.63
General Bond Funds	-11.95	-2.44	-0.20	1.09	2.53
iBoxx \$ Liquid High Yield	-10.74	-0.80	1.97	3.34	5.00
High Yield Funds	-10.72	-0.47	1.42	2.79	4.19
Bloomberg US Aggregate Securitized – MBS	-11.81	-3.22	-0.53	0.74	2.36
Mortgage-Backed Securities Funds	-11.92	-3.33	-0.79	0.47	1.94
iBoxx \$ Liquid Investment Grade	-17.92	-3.45	0.33	2.02	4.21
Core Plus Bond Funds	-13.72	-2.45	0.08	-	-
iBoxx TIPS Inflation-Linked	-12.67	1.04	2.02	1.09	3.08
Inflation-Linked Funds	-11.36	0.71	1.50	0.60	2.11
Bloomberg Global Aggregate	-16.25	-4.48	-1.66	-0.44	1.48
Global Income Funds	-13.52	-3.67	-1.06	-0.01	1.90
Bloomberg Emerging Markets USD Aggregate	-15.26	-3.89	-0.42	1.71	4.48
Emerging Market Debt Funds	-15.32	-4.88	-2.12	0.01	2.16
S&P National AMT-Free Municipal Bond	-8.10	-0.68	1.23	2.01	3.21
General Municipal Debt Funds	-11.09	-1.72	0.46	1.51	2.58
S&P California AMT-Free Municipal Bond	-7.75	-0.72	1.18	2.25	3.47
California Municipal Debt Funds	-11.05	-1.79	0.41	1.84	3.00
S&P New York AMT-Free Municipal Bond	-7.84	-0.74	1.05	1.99	3.21
New York Municipal Debt Funds	-11.28	-1.84	0.38	1.40	2.61
Markit iBoxx USD Leveraged Loans	-1.27	2.01	2.82	3.26	4.01
Loan Participation Funds	-3.22	0.50	1.56	2.39	2.92

Sources: S&P Dow Jones Indices LLC, CRSP, Bloomberg LLC Data as of Dec. 31, 2022. Returns shown are annualized for periods greater than one year. Results not shown for the "Core Plus Bond" category for periods beginning prior to the category's inception in 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	1-Year (%)	3-Year (%)	5-Year (%)	10-Year (%)	15-Year (%)
iBoxx \$ Domestic Sovereign & Sub-Sovereigns	-9.88	-2.18	0.36	0.99	2.35
General Government Funds	-14.49	-2.98	-0.40	0.38	2.14
iBoxx \$ Domestic Sovereigns & Sub-Sovereigns 1-10Y	-7.27	-1.31	0.61	0.94	2.13
Government Intermediate Funds	-11.86	-2.36	-0.68	0.51	2.18
iBoxx \$ Domestic Sovereigns & Sub-Sovereigns 1-5Y	-5.31	-0.76	0.78	0.89	1.83
Government Short & Short-Intermediate Funds	-4.81	-0.59	0.57	0.58	1.71
iBoxx \$ Liquid Investment Grade	-17.92	-3.45	0.33	2.02	4.21
General Investment-Grade Funds	-17.18	-3.10	0.08	1.45	2.80
Bloomberg U.S. Aggregate	-13.01	-2.71	0.02	1.06	2.66
Investment-Grade Intermediate Funds	-12.92	-2.04	0.45	1.36	3.09
iBoxx \$ Overall 1-5Y	-5.63	-0.68	0.86	1.01	1.91
Investment-Grade Short & Intermediate Funds	-5.75	-0.61	0.77	1.05	1.85
iBoxx \$ Overall	-13.61	-2.69	0.13	1.08	2.63
General Bond Funds	-9.25	-1.38	0.24	1.24	2.80
iBoxx \$ Liquid High Yield	-10.74	-0.80	1.97	3.34	5.00
High Yield Funds	-10.11	0.18	1.97	3.45	4.74
Bloomberg US Aggregate Securitized – MBS	-11.81	-3.22	-0.53	0.74	2.36
Mortgage-Backed Securities Funds	-12.04	-3.23	-0.65	0.62	2.29
iBoxx \$ Liquid Investment Grade	-17.92	-3.45	0.33	2.02	4.21
Core Plus Bond Funds	-14.80	-2.92	-0.16	-	-
iBoxx TIPS Inflation-Linked	-12.67	1.04	2.02	1.09	3.08
Inflation-Linked Funds	-11.31	0.86	1.68	0.84	2.70
Bloomberg Global Aggregate	-16.25	-4.48	-1.66	-0.44	1.48
Global Income Funds	-15.07	-4.91	-1.69	-0.31	2.11
Bloomberg Emerging Markets USD Aggregate	-15.26	-3.89	-0.42	1.71	4.48
Emerging Market Debt Funds	-15.59	-5.26	-2.37	0.55	3.39
S&P National AMT-Free Municipal Bond	-8.10	-0.68	1.23	2.01	3.21
General Municipal Debt Funds	-11.27	-1.46	0.80	1.99	3.12
S&P California AMT-Free Municipal Bond	-7.75	-0.72	1.18	2.25	3.47
California Municipal Debt Funds	-10.79	-1.51	0.83	2.26	3.37
S&P New York AMT-Free Municipal Bond	-7.84	-0.74	1.05	1.99	3.21
New York Municipal Debt Funds	-11.94	-1.59	1.13	1.82	2.88
Markit iBoxx USD Leveraged Loans	-1.27	2.01	2.82	3.26	4.01
Loan Participation Funds	-2.54	0.94	1.73	2.58	3.03

Sources: S&P Dow Jones Indices LLC, CRSP, Bloomberg LLC. Data as of Dec. 31, 2022. Returns shown are annualized for periods greater than one year. Results not shown for the "Core Plus Bond" category for periods beginning prior to the category's inception in 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
1-Year			
General Government Funds	-14.35	-12.97	-10.92
Government Intermediate Funds	-12.78	-10.95	-9.77
Government Short & Short-Intermediate Funds	-6.45	-5.59	-4.12
General Investment-Grade Funds	-16.74	-15.57	-13.63
Investment-Grade Intermediate Funds	-14.58	-13.76	-13.15
Investment-Grade Short & Intermediate Funds	-5.88	-4.76	-3.88
General Bond Funds	-13.88	-12.78	-8.18
High Yield Funds	-11.94	-10.86	-9.55
Mortgage-Backed Securities Funds	-12.80	-11.72	-10.25
Core Plus Bond Funds	-14.83	-14.00	-13.06
Inflation-Linked Funds	-12.78	-11.90	-10.36
Global Income Funds	-17.14	-13.59	-9.87
Emerging Market Debt Funds	-17.47	-15.50	-12.86
General Municipal Debt Funds	-12.30	-10.71	-9.43
California Municipal Debt Funds	-11.85	-10.65	-9.32
New York Municipal Debt Funds	-12.37	-11.12	-10.35
Loan Participation Funds	-4.22	-2.58	-1.76
3-Year			
General Government Funds	-3.66	-3.20	-2.02
Government Intermediate Funds	-2.85	-2.47	-1.79
Government Short & Short-Intermediate Funds	-1.57	-1.02	-0.59
General Investment-Grade Funds	-3.34	-2.73	-2.31
Investment-Grade Intermediate Funds	-3.04	-2.69	-2.28
Investment-Grade Short & Intermediate Funds	-0.67	-0.43	-0.11
General Bond Funds	-2.96	-1.79	-0.37
High Yield Funds	-1.19	-0.43	0.44
Mortgage-Backed Securities Funds	-3.62	-3.30	-2.71
Core Plus Bond Funds	-2.96	-2.60	-2.07
Inflation-Linked Funds	0.41	1.09	1.45
Global Income Funds	-5.13	-3.90	-2.41
Emerging Market Debt Funds	-5.81	-4.43	-3.53
General Municipal Debt Funds	-1.78	-1.42	-1.16
California Municipal Debt Funds	-1.75	-1.44	-1.11
New York Municipal Debt Funds	-1.80	-1.57	-1.39
Loan Participation Funds	0.23	0.93	1.40

Sources: S&P Dow Jones Indices LLC, CRSP. Data as of Dec. 31, 2022. Returns shown are annualized for periods greater than one year. Results not shown for the "Core Plus Bond" category for periods beginning prior to the category's inception in 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
5-Year			
General Government Funds	-0.93	-0.55	-0.15
Government Intermediate Funds	-0.71	-0.35	0.05
Government Short & Short-Intermediate Funds	-0.11	0.17	0.45
General Investment-Grade Funds	-0.30	0.03	0.46
Investment-Grade Intermediate Funds	-0.37	-0.17	0.15
Investment-Grade Short & Intermediate Funds	0.55	0.79	1.03
General Bond Funds	-0.16	0.35	0.88
High Yield Funds	1.05	1.62	2.14
Mortgage-Backed Securities Funds	-0.93	-0.74	-0.54
Core Plus Bond Funds	-0.30	0.00	0.30
Inflation-Linked Funds	1.42	1.80	1.98
Global Income Funds	-2.22	-0.99	0.03
Emerging Market Debt Funds	-2.76	-1.76	-0.42
General Municipal Debt Funds	0.47	0.66	0.98
California Municipal Debt Funds	0.39	0.69	0.90
New York Municipal Debt Funds	0.33	0.49	0.62
Loan Participation Funds	1.48	1.94	2.16
10-Year			
General Government Funds	0.05	0.29	0.51
Government Intermediate Funds	0.03	0.22	0.76
Government Short & Short-Intermediate Funds	0.07	0.37	0.57
General Investment-Grade Funds	0.92	1.43	1.87
Investment-Grade Intermediate Funds	0.82	1.08	1.34
Investment-Grade Short & Intermediate Funds	0.70	0.90	1.18
General Bond Funds	1.13	1.56	2.03
High Yield Funds	2.74	3.13	3.61
Mortgage-Backed Securities Funds	0.20	0.47	0.86
Inflation-Linked Funds	0.54	0.76	0.91
Global Income Funds	-0.78	0.06	1.10
Emerging Market Debt Funds	-0.01	0.39	0.83
General Municipal Debt Funds	1.59	1.79	2.12
California Municipal Debt Funds	1.96	2.14	2.31
New York Municipal Debt Funds	1.44	1.61	1.79
Loan Participation Funds	2.35	2.72	2.99

Sources: S&P Dow Jones Indices LLC, CRSP. Data as of Dec. 31, 2022. Returns shown are annualized for periods greater than one year. Results not shown for the "Core Plus Bond" category for periods beginning prior to the category's inception in 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
15-Year			
General Government Funds	1.73	2.06	2.84
Government Intermediate Funds	1.51	1.66	2.08
Government Short & Short-Intermediate Funds	1.11	1.33	1.57
General Investment-Grade Funds	2.46	3.06	3.82
Investment-Grade Intermediate Funds	2.51	2.72	3.10
Investment-Grade Short & Intermediate Funds	1.48	1.80	2.18
General Bond Funds	2.92	3.93	4.39
High Yield Funds	4.38	4.80	5.18
Mortgage-Backed Securities Funds	1.81	1.98	2.26
Inflation-Linked Funds	2.03	2.43	2.65
Global Income Funds	1.35	1.83	2.60
Emerging Market Debt Funds	3.07	3.44	4.15
General Municipal Debt Funds	2.83	3.07	3.32
California Municipal Debt Funds	3.07	3.32	3.52
New York Municipal Debt Funds	2.72	2.95	3.02
Loan Participation Funds	2.56	3.12	3.30

Sources: S&P Dow Jones Indices LLC, CRSP. Data as of Dec. 31, 2022. Returns shown are annualized for periods greater than one year. Results not shown for the "Core Plus Bond" category for periods beginning prior to the category's inception in 2017. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Appendix A: Mapping

SPIVA Styles and Fund Classifications

The SPIVA Scorecard covers domestic equity, global equity and global fixed income categories. Fund returns are sourced from the CRSP Survivor-Bias-Free US Mutual Fund Database, a complete database of both active and liquidated or merged mutual funds created in 1995 and containing fund data from December 1961. Institutional-only funds as identified by CRSP are excluded.⁷ Fund classifications are based upon the Lipper fund classification system.

U.S. Equity

SPIVA covers major capitalization levels (large-, mid-, small- and multi-cap funds) and investment styles (growth, core and value). S&P Dow Jones Indices relies on the Lipper fund classifications, which determine a fund portfolio's capitalization and investment style assignments.

Lipper assigns a market capitalization to each fund based on the percentages of a fund's three-year weighted equity assets that fall into each of Lipper's three defined market capitalization slices. The market capitalization breakpoints are calculated using all common stocks, excluding all non-U.S. domiciled stocks and ADRs, trading on the NYSE, AMEX and NASDAQ. Funds are assigned to the capitalization level in which they have a 75% or higher weighting. Any fund that has less than 75% of its three-year weighted allocation in any of the three market capitalization ranges is classified as a multi-cap fund.

For investment style selection, the Lipper classification system uses three-year fundamental portfolio characteristics (price/earnings, price/book and three-year sales-per-share growth) and, if necessary, confirms secondary characteristics (price-to-sales and price-to-operating cash flow).

In some cases, S&P Dow Jones Indices combines closely related Lipper fund classifications in one SPIVA category. Exhibit A1 maps the SPIVA U.S. Equity fund categories to Lipper classifications.

⁷ For an analysis of institutional funds, please refer to the latest [SPIVA Institutional Scorecard](#).

Exhibit A1: U.S. Equity Category Mappings

SPIVA Category	Lipper Fund Classification
Large-Cap Growth Equity	Large-Cap Growth Funds
Large-Cap Core Equity	Large-Cap Core Funds
Large-Cap Value Equity	Large-Cap Value Funds
	Equity Income Funds
Mid-Cap Growth Equity	Mid-Cap Growth Funds
Mid-Cap Core Equity	Mid-Cap Core Funds
Mid-Cap Value Equity	Mid-Cap Value Funds
Small-Cap Growth Equity	Small-Cap Growth Funds
Small-Cap Core Equity	Small-Cap Core Funds
Small-Cap Value Equity	Small-Cap Value Funds
Multi-Cap Growth Equity	Multi-Cap Growth Funds
Multi-Cap Core Equity	Multi-Cap Core Funds
Multi-Cap Value Equity	Multi-Cap Value Funds

Source: S&P Dow Jones Indices LLC, Lipper. 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) of interest to global asset allocators. These categories also include multiple Lipper capitalization and style classifications.

Exhibit A2: International Equity Category Mappings

SPIVA Category	Lipper Funds Classification
Global Funds	Global Large-Cap Growth Funds
	Global Large-Cap Core Funds
	Global Large-Cap Value Funds
	Global Multi-Cap Growth Funds
	Global Multi-Cap Core Funds
	Global Multi-Cap Value Funds
International Funds	International Large-Cap Growth Funds
	International Large-Cap Core Funds
	International Large-Cap Value Funds
	International Multi-Cap Growth Funds
	International Multi-Cap Core Funds
	International Multi-Cap Value Funds
International Small-Cap Funds	International Small-/Mid-Cap Growth Funds
	International Small-/Mid-Cap Core Funds
	International Small-/Mid-Cap Value Funds
Emerging Market Funds	Emerging Markets Funds

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

Fixed Income

SPIVA reports on 12 domestic, two global and three municipal fixed income categories. The Lipper domestic fixed income classifications are based on maturity and credit quality. For maturity, long is over 10 years, intermediate is 5-10 years, short/intermediate is 1-5 years and short is 1-3.5 years. For credit quality, bonds are assigned to U.S. Treasury, U.S. government (includes government and agency issues), A- or BBB-rated (according to Lipper fund rating methodology), loan participations and high yield classifications. Lipper also includes U.S. mortgages and Government National Mortgage Association (GNMA) classifications.

In global fixed income, Lipper differentiates between global (including the U.S.) and international (excluding the U.S.) objectives. For municipal debt funds, we include the general classification (invests in the top four credit ratings) plus two state funds (California and New York)

Exhibit A3: Fixed Income Category Mappings

SPIVA Category	Lipper Funds Classification
General Government Funds	General U.S. Government Funds
Government Intermediate Funds	General U.S. Treasury Funds Intermediate U.S. Government Funds
Government Short & Short-Intermediate Funds	Short-Intermediate U.S. Government Funds Short U.S. Government Funds
General Investment-Grade Funds	Short U.S. Treasury Funds Corporate Debt Funds A Rated
Investment-Grade Intermediate Funds	Corporate Debt Funds BBB-Rated Intermediate Investment Grade Debt Funds
Investment-Grade Short & Intermediate Funds	Short-Intermediate Investment Grade Debt Funds Short Investment Grade Debt Funds
General Bond Funds	General Bond Funds
High Yield Funds	High Current Yield Funds
Mortgage-Backed Securities Funds	U.S. Mortgage Funds GNMA Funds
Core Plus Bond Funds	Core Plus Bond Funds
Inflation-Linked Funds	Inflation Protected Bond Funds
Global Income Funds	Global Income Funds International Income Funds
Emerging Market Debt Funds	Emerging Markets Debt Funds
General Municipal Debt Funds	General & Insured Municipal Debt Funds
California Municipal Debt Funds	California Municipal Debt Funds
New York Municipal Debt Funds	New York Municipal Debt Funds
Loan Participation Funds	Loan Participation Funds
General Government Funds	General U.S. Government Funds
Loan Participation Funds	General U.S. Treasury Funds

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

Appendix B: Glossary

Percentage of Funds 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 funds that have survived and beat the index. We then report the index outperformance percentage.

Survivorship (%)

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

Style Consistency (%)

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

Equal-Weighted Performance

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

Asset-Weighted Performance

Asset-weighted returns for a particular style category are determined by calculating a weighted average return of all funds in that category in a particular month, with each fund's return weighted by its total net assets.

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.

Survivorship Bias

Many funds might liquidate or merge during a period of study. This usually occurs due to continued poor performance by the fund. Therefore, if index returns were compared to fund returns using only surviving funds, the comparison would be biased in favor of the fund category. These reports remove this bias by (a) using the entire investment opportunity set, made up of all funds in that particular category at the outset of the period, as the denominator

for outperformance calculations, (b) explicitly showing the survivorship rate in each category and (c) constructing peer average return series for each category based on all available funds at the outset of the period.

Fees

The fund returns used are net of fees, excluding loads.

Indices⁸

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 companies and covers approximately 3% of the U.S. equities market.

S&P Composite 1500

This is a broad, market-capitalization-weighted index of 1500 companies formed by combining the S&P 500, S&P MidCap 400 and S&P SmallCap 600. The 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.

⁸ For more information on S&P Dow Jones Indices, please visit www.spglobal.com/spdji.

S&P MidCap 400 Growth and Value Indices

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

S&P SmallCap 600 Growth and Value Indices

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

S&P Composite 1500 Growth and Value Indices

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

S&P United States REIT

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

International Equity

S&P Global 1200

Capturing approximately 70% of the world's capital markets by market capitalization, 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. SmallCap

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

iBoxx \$ Liquid High Yield Index

This index consists of USD-denominated corporate high yield debt from developed markets with maturities greater than 1 year and less than 15 years.

iBoxx \$ Liquid Investment Grade Index

This index consists of USD-denominated corporate investment grade debt from developed markets with maturities greater than three years.

iBoxx TIPS Inflation Linked Index

This index measures the performance of the U.S. Treasury Inflation Protected Securities (TIPS) market across all maturities.

iBoxx \$ Domestic Sovereigns & Sub-Sovereigns Index

This index comprises USD-denominated sovereign and sub-sovereign bonds that have an investment grade rating and are SEC registered. Eligible bonds must have maturities greater than one year.

iBoxx \$ Domestic Sovereigns & Sub-Sovereigns 1-10Y Index

This index comprises USD-denominated sovereign and sub-sovereign bonds that have an investment grade rating and are SEC registered. Eligible bonds must have maturities greater than 1 year and less than 10 years.

iBoxx \$ Domestic Sovereigns & Sub-Sovereigns 1-5Y Index

This index comprises USD-denominated sovereign and sub-sovereign bonds that are SEC registered. Eligible bonds must have maturities greater than one year and less than five years.

iBoxx \$ Overall Index

This index is a broad set of USD-denominated bonds, comprising U.S. treasuries, sovereigns, sub-sovereigns, corporates and covered bonds with an investment grade rating. It includes bonds from developed markets and emerging markets. Eligible bonds must have maturities greater than one year.

iBoxx \$ Overall 1-5Y Index

This index is a broad set of USD-denominated bonds, comprising U.S. treasuries, sovereigns, sub-sovereigns, corporates and covered bonds with an investment grade rating. It includes bonds from developed markets and emerging markets. Eligible bonds must have maturities greater than one year and less than five years.

Markit iBoxx USD Leveraged Loans Index

This index represents the main sections of the USD leveraged loan market. It comprises rated, non-rated and defaulted loans. Eligible rated loans must have a non-investment grade rating. The minimum initial time to maturity for loans is one year and the minimum amount outstanding is USD 100 million.

Bloomberg 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).

Bloomberg 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.

Bloomberg Capital Emerging Markets Index

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

S&P National AMT-Free Municipal Bond Index

This index is a broad, comprehensive, market-value-weighted index designed to measure the performance of 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 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 investment grade New York 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.

Appendix C: Change of Categories and Benchmarks in Fixed Income

Since the inaugural SPIVA U.S. Scorecard was published in 2002, the landscape of actively managed fixed income funds and the availability of benchmarks to measure them have changed appreciably. Despite the evolution of indices and active fund marketplaces over the past two decades, until 2022, the SPIVA Scorecards largely retained the original assignments of categories and benchmarks—primarily in order to facilitate year-over-year comparisons. In this edition, we made several changes.

February 2022 brought an opportunity to review the fixed income fund categories and their associated benchmarks via the merger of S&P Global and IHS Markit, which resulted in a material expansion in the range of fixed income indices available to S&P DJI for use in the production of SPIVA reports.⁹ Accordingly, this scorecard (and the mid-year 2022 scorecard that preceded it) incorporates several changes in fixed income reports, including the addition of several previously unreported categories and an updated assignment of benchmarks. **The previous assignments of SPIVA categories and benchmarks are summarized in Exhibit C1, and the new assignments are summarized in Exhibit C2 for purposes of comparison.**

To form the new assignments, funds were first grouped into appropriate SPIVA categories, and benchmarks for each category were assigned, through a combination of quantitative and qualitative considerations. These included:

- All else equal, the organization of the historical U.S. scorecards was followed or approximated where possible.
- Where sensible, smaller fund categories were grouped with similar categories to provide broader sample sizes, with size measured both on the number of funds and their aggregate assets under management.
- Lipper category and benchmark definitions were reviewed for similarities and differences.
- The benchmarks reported by the various active funds in each category were reviewed in comparison to potential category benchmarks.
- The correlations and tracking errors between fund category returns (both asset-weighted and equal weighted) and potential category benchmarks were examined over various time horizons.

⁹ <https://investor.spglobal.com/news-releases/news-details/2022/SP-Global-Completes-Merger-with-IHS-Markit-Creating-a-Global-Leader-to-Power-the-Markets-of-the-Future/>

Although the new assignments seek a degree of continuity, the 2022 year-end scorecard incorporates a methodological “break” with prior editions for some fixed income fund categories. The updated categorization scheme generally improves the correspondence between category and benchmark performance and expands the fund universe to include several previously excluded categories.

Exhibit C1: Previous Fixed Income SPIVA Assignments

Lipper Category	Previous SPIVA Category	Previous Comparison Index
General U.S. Government Funds General U.S. Treasury Funds	Government Long Funds	Bloomberg US Aggregate Government – Long
Intermediate U.S. Government Funds Short-Intermediate U.S. Government Funds	Government Intermediate Funds	Bloomberg US Aggregate Government - Intermediate
Short U.S. Government Funds Short U.S. Treasury Funds	Government Short Funds	Bloomberg US 1-3 Year Government
Corporate Debt Funds A Rated Corporate Debt Funds BBB-Rated	Investment-Grade Long Funds	Bloomberg US Aggregate Government & Credit - Long
Intermediate Investment Grade Debt Funds Short-Intermediate Investment Grade Debt Funds	Investment-Grade Intermediate Funds	Bloomberg US Intermediate Government/Credit
Short Investment Grade Debt Funds	Short Investment-Grade Funds	Bloomberg US Aggregate Government & Credit (1-3 Y)
High Current Yield Funds	High Yield Funds	Bloomberg US High Yield – Corporate
U.S. Mortgage Funds GNMA Funds	Mortgage-Backed Securities Funds	Bloomberg US Aggregate Securitized – MBS
Global Income Funds International Income Funds	Global Income Funds	Bloomberg Global Aggregate
Emerging Markets Debt Funds	Emerging Market Debt Funds	Bloomberg Emerging Markets USD Aggregate
General & Insured Municipal Debt Funds	General Municipal Debt Funds	S&P National AMT-Free Municipal Bond
California Municipal Debt Funds	California Municipal Debt Funds	S&P California AMT-Free Municipal Bond Index
New York Municipal Debt Funds	New York Municipal Debt Funds	S&P New York AMT-Free Municipal Bond Index
Loan Participation Funds	Loan Participation Funds	S&P/LSTA U.S. Leveraged Loan 100 Index
Inflation Protected Bond Funds	Not previously included	Not previously included
Core Plus Bond Funds	Not previously included	Not previously included
General Bond Funds	Not previously included	Not previously included

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

Exhibit C2: New Fixed Income SPIVA Assignments

Lipper Category	New SPIVA Category	New Comparison Index
General U.S. Government Funds General U.S. Treasury Funds	General Government Funds	iBoxx \$ Domestic Sovereign & Sub-Sovereigns
Intermediate U.S. Government Funds Short-Intermediate U.S. Government Funds	Government Intermediate Funds	iBoxx \$ Domestic Sovereign & Sub-Sovereigns 1-10Y
Short U.S. Government Funds Short U.S. Treasury Funds	Government Short & Short-Intermediate Funds	iBoxx \$ Domestic Sovereign & Sub-Sovereigns 1-5Y
Corporate Debt Funds A Rated Corporate Debt Funds BBB-Rated	General Investment-Grade Funds	iBoxx \$ Liquid Investment Grade
Intermediate Investment Grade Debt Funds Short-Intermediate Investment Grade Debt Funds	Investment-Grade Intermediate Funds	Bloomberg U.S. Aggregate
Short Investment Grade Debt Funds	Investment-Grade Short & Intermediate Funds	iBoxx \$ Overall 1-5Y
High Current Yield Funds	High Yield Funds	iBoxx USD Liquid High Yield
U.S. Mortgage Funds GNMA Funds	Mortgage-Backed Securities Funds	Bloomberg US Aggregate Securitized - MBS
Global Income Funds International Income Funds	Global Income Funds	Bloomberg Global Aggregate
Emerging Markets Debt Funds	Emerging Market Debt Funds	Bloomberg Emerging Markets USD Aggregate
General & Insured Municipal Debt Funds	General Municipal Debt Funds	S&P National AMT-Free Municipal Bond
California Municipal Debt Funds	California Municipal Debt Funds	S&P California AMT-Free Municipal Bond
New York Municipal Debt Funds	New York Municipal Debt Funds	S&P New York AMT-Free Municipal Bond
Loan Participation Funds	Loan Participation Funds	Markit iBoxx USD Leveraged Loans
Inflation Protected Bond Funds	Inflation-Linked Funds	iBoxx TIPS Inflation-Linked
Core Plus Bond Funds	Core Plus Bond Funds	iBoxx \$ Liquid Investment Grade
General Bond Funds	General Bond Funds	iBoxx \$ Overall

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

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