

Mind the Gap 2022

A report on investor returns in the United States.

Portfolio and Planning Research

13 July 2022

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Executive Summary

Our annual study of dollar-weighted returns (also known as investor returns) finds investors earned about 9.3% per year on the average dollar they invested in mutual funds and ETFs over the 10 years ended Dec. 31, 2021. This is about 1.7 percentage points less than the total returns their fund investments generated over the same period. This shortfall, or gap, stems from poorly timed purchases and sales of fund shares, which cost investors nearly one sixth the return they would have earned if they had simply bought and held.

The 1.7-percentage-point gap between investor returns and total returns is more or less in line with the gaps we found for the four previous rolling 10-year periods. The persistent gap between the returns investors actually experience and reported total returns makes cash flow timing one of the most significant factors — along with investment costs and tax efficiency — that can influence an investor's end results.

Our research imparts a few lessons on how investors can avoid these gaps and capture more of their fund investments' total returns. Investors can improve their results by holding a small number of widely diversified funds, automating routine tasks like rebalancing, avoiding narrower or highly volatile funds, and embracing techniques that put investing on autopilot, such as dollar-cost averaging.

Key Takeaways

- ▶ Fund investors earned a 9.3% investor return (which reflects the impact of cash inflows and outflows on the returns investors actually earn) over the 10 years ended Dec. 31, 2021, while their fund holdings generated an 11.0% annual total return over the same period. Thus, investors suffered a 1.7-percentage-point annual return shortfall, or gap, due to mistimed purchases and sales.
- ▶ This annual return gap is in line with the gaps we measured over the four previous rolling 10-year periods, which ranged from 1.6 to 1.8 percentage points per year.
- ▶ The two largest fund types by net assets, U.S. equity funds and taxable-bond funds, had smaller return gaps than the fund universe as a whole.
- ▶ Investors in allocation funds, which combine stocks, bonds, and other asset classes, continued to show the smallest gap of any category group.
- ▶ On the flip side, investors have struggled to use sector, nontraditional equity funds, and international equity funds successfully; these three category groups all experienced wider-than-average return gaps.

- ▶ Dollar-cost averaging, which involves investing the same dollar amount on a regular schedule, can help investors making poorly timed moves, such as buying after a market runup or selling after a downturn. This approach would have led to significantly better results in three of the category groups included in the study.
- ▶ The more volatile a fund, the more trouble investors tended to have capturing its full return. Funds with higher levels of volatility generally experienced wider return gaps.
- ▶ The relationship between return gaps and fees was less clear-cut. While the cheapest quintile of U.S. stock funds did have smaller gaps than the costliest quintile, that wasn't the case for other asset classes like taxable bonds and nontraditional equity funds, where the reverse held true.

Introduction

Most reported total returns are time-weighted, meaning they assume a lump-sum investment made at the beginning of the measurement term that's held throughout the whole period to the end. But investor returns can be a more telling measure because they include the impact of cash inflows and outflows.

Investor returns are essentially an internal rate-of-return calculation that accounts for periods when investors have more dollars invested, which will carry more weight in their overall results. Our annual "Mind the Gap" study compares these dollar-weighted return calculations with time-weighted total returns to see how large the gap, or difference, has been over time.

Investor returns will almost always differ from reported total returns unless there are no cash flows in or out of the fund during a given period. To use a simple example, let's say an investor puts \$1,000 into a specific fund at the beginning of each year. That fund goes on to earn total returns of 10% the first year, 10% the second year, and negative 10% the third year, which works out to an annualized return of 2.9%. But in dollar-weighted terms, the investor's return is actually negative 0.4%, because there was less money in the account during the first two years of positive returns and more money exposed to the loss during the third year.

As mentioned above, bad decisions such as trading too often, buying funds after they've already run up, and selling in a panic after market declines can all chip away at investor returns. But even perfectly reasonable approaches to managing a portfolio — such as investing a portion of every paycheck or shifting more assets toward fixed-income assets as you approach retirement — can open a gap between investor results and reported total returns.

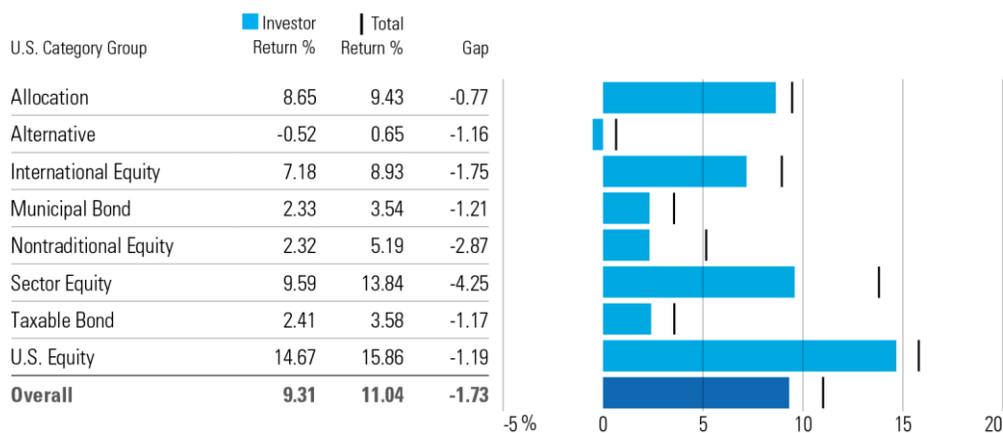
Investor returns will never perfectly match total returns because few investors can simply buy and hold over every time period. But the negative return gaps for the majority of investor dollars suggest there's still room for improvement. Investors can increase their odds of success by taking a more disciplined approach and trying to avoid some of the most common pitfalls, such as buying high and selling low.

Gaps by U.S. Category Group

Overall, the difference between investor returns and reported total returns has remained fairly stable in recent years. As a whole (weighted by asset size), the returns investors experienced lagged reported total returns by about 173 basis points per year over the trailing 10-year period, which is roughly in line with the average over the past five rolling 10-year periods.

While the gap was negative for all the underlying category groups, results varied widely. As we have seen in the past, allocation funds, which combine stocks, bonds, and other asset classes, fared the best, with the narrowest return gap of negative 77 basis points. Two main reasons continue to explain this pattern. First, by virtue of their diversified approach, allocation funds tend to have more-stable performance and are easier to own than funds that are subject to more-dramatic performance swings. Second, these funds are often used as core holdings for employer-sponsored retirement plans, such as 401(k)s. Retirement plan participants typically invest a set percentage of each paycheck, leading to more-consistent cash flows into the underlying funds.

Exhibit 1 The Gap by U.S. Category Group (10-Year Returns)



Source: Morningstar Direct. Data as of Dec. 31, 2021. Excludes commodities category group. Gap numbers may not match differences in returns because of rounding.

Alternative funds, which previously had some of the worst investor return gaps of any category group, look a bit better after recent changes to our fund groupings, which now break out nontraditional equity funds as a separate group. However, the return gap remained negative. Further, since total returns were relatively low to begin with, the average investor has actually lost money in dollar-weighted terms for the trailing 10-year period. That's an incredibly disappointing outcome given that alternative funds are supposed to generate better results than traditional stock/bond portfolios. Annual asset flows for alternative funds have not only been volatile, but also prone to bad timing. For example, investors pulled out an estimated total of \$16 billion in net flows from 2016 through 2020, thus missing the attractive returns in 2020.

Investors have fared the worst in sector equity funds, giving up close to 4 percentage points per year due to poorly timed fund flows. Sector funds are particularly prone to performance-chasing, with investors often piling into popular sectors after a strong showing and then bailing out when they fall out of favor. Healthcare funds, for example, experienced significant asset growth from 2013 through 2015, but many of those assets fled after the medical sector lagged in 2016. Investors fled out of real estate funds in 2020 as the sector lagged following the coronavirus crisis, and they missed out on a much stronger rebound in 2021.

Thematic funds, a subset of this category that includes funds focusing on emerging trends such as robotic automation and working from home, have shown even wider return gaps. We estimate that annual dollar-weighted returns for thematic funds lagged reported total returns by about 11 percentage points over the trailing three-year period through April 2021.¹

The new nontraditional equity category group had the second-worst investor return gap among all the category groups. Although this category group is relatively small, it has been prone to poorly timed cash inflows and outflows. In 2016, for example, funds in this category group experienced \$7 billion in net outflows, which accounted for roughly 20% of assets as of the previous year-end, thereby missing out on the group's solid performance in 2017. A similar pattern was observed when significant outflows in 2018 missed out on stronger returns in 2019.

Dollar-weighted returns for U.S. equity funds lagged total returns by 119 basis points, roughly in line with last year's study. The sheer size of this group helps buffer the impact of any cash inflows or outflows. For example, despite early 2020's coronavirus-driven market panic, there were net outflows from U.S. equity funds of only \$306 billion during the year, equivalent to just more than 3% of total assets.

International equity funds fared a bit worse, with investor returns lagging reported total returns by about 1.8 percentage points over the trailing 10-year period. The group has also suffered from some missteps over time, such as when strong asset flows in 2013 were followed by negative returns in 2014. Moderately large net outflows in 2020 also kept investors from taking full advantage of the rebound in global equity markets after 2020's first-quarter bear market, as well as moderately positive returns in 2021.

Investor returns for taxable-bond funds lagged total returns by 117 basis points, on average, for the trailing 10-year period. The category group enjoyed significant net inflows since 2019 (including about \$435 billion in 2021 alone). While returns have generally been strong, robust inflows mean fewer assets were around to benefit from strong performance over the full period. The low level of returns for taxable-bond funds makes this return gap particularly damaging; taxable-bond investors missed out on about a third of the returns these funds delivered, which were meager to begin with.

¹ <https://www.morningstar.com/articles/1097257/chasing-thematic-etfs-returns-has-set-investors-up-to-fail>

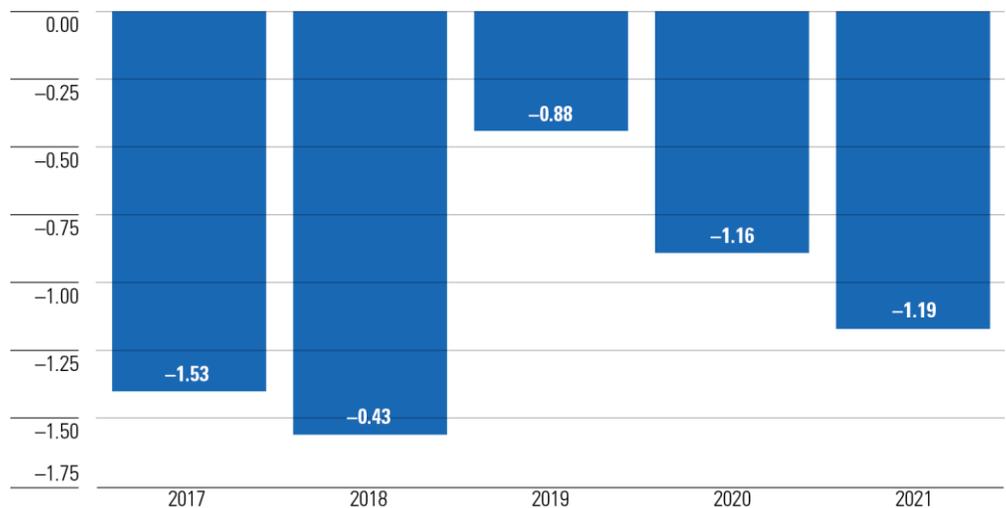
Investor returns for municipal-bond funds lagged total returns by about 1.2 percentage points per year, on average. Municipal-bond fund investors have been somewhat prone to bad timing, pouring an estimated \$55 billion in net flows into the funds in 2012 and then getting hit by negative returns in 2013 when interest rate and credit concerns weighed on the market. The same pattern happened in reverse when municipal-bond investors pulled out an estimated \$58 billion in 2013 and then missed out on stronger returns in 2014.

In addition to the return gaps within each category group, the results also reflect the adverse impact of fund flows across category groups. For example, investors have pulled about \$345 billion in aggregate assets from domestic-equity funds included in the study over the past 10 years while funneling about \$2.1 trillion into taxable-bond funds over the same period. Investors might have good reasons for making such shifts—such as de-risking portfolio allocations as they approach retirement age—but they still incurred significant costs in the form of lower investor returns.

Trends in U.S. Category Groups

While total returns for most category groups improved over the most recent 10-year period thanks to 2021's generally favorable market, investor return gaps widened slightly for most category groups. This likely reflects the increased volatility in fund flows during 2020's turbulent market. Let's drill down to some of the biggest groups to see why.

Exhibit 2 U.S. Equity Funds: 10-Year Return Gaps Over Time

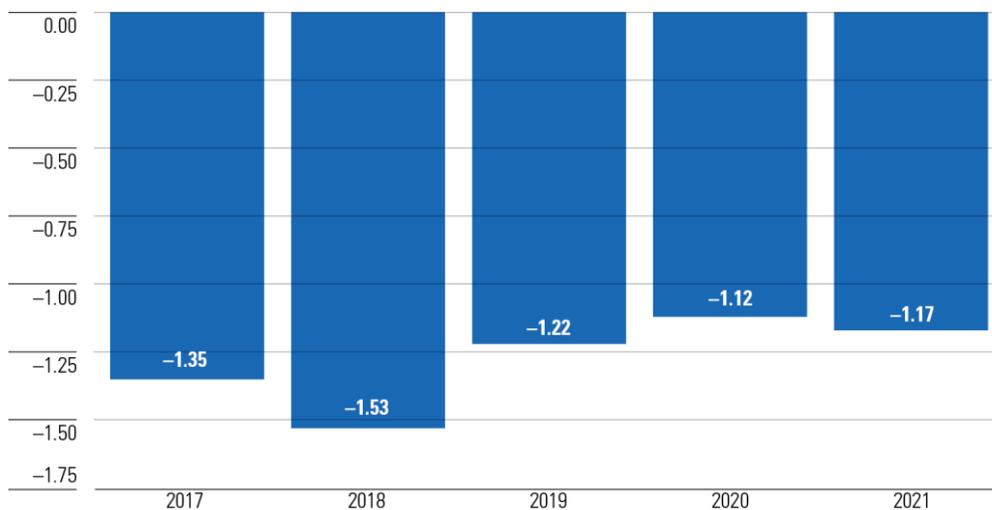


Source: Morningstar Direct. Data as of Dec. 31, 2021.

For U.S. equity funds, the gap between investor returns and total returns widened marginally for the most recent 10-year period, after widening by 28 basis points for the previous 10-year period ended in 2020. The group experienced net outflows in both 2019 and 2020, with total outflows for funds included

in the study totaling about \$60.6 billion in 2019 and \$374 billion in 2020. This was a negative for investor returns, because investors who sold off equity funds missed out on generally strong market performance in 2020 and 2021, notwithstanding the COVID-19-driven bear market in the first quarter of 2020.

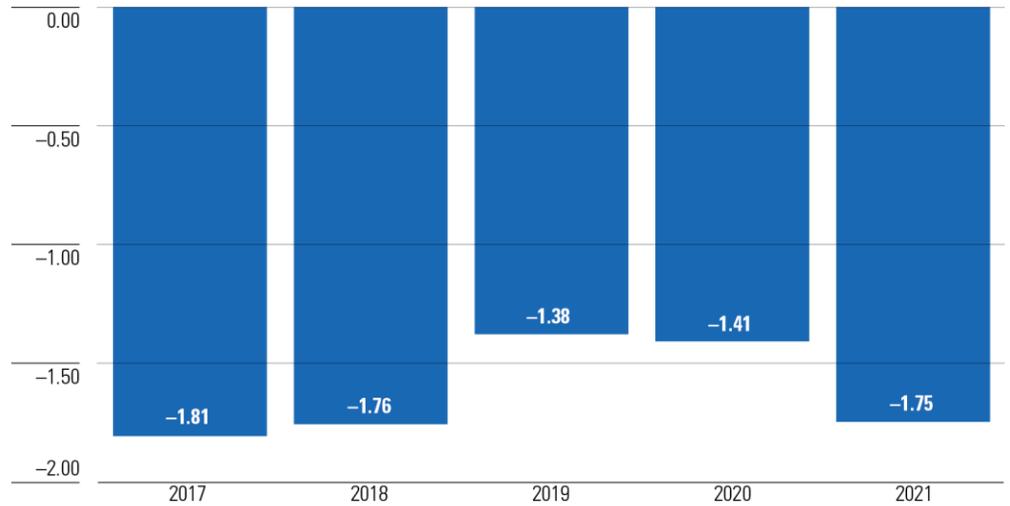
Exhibit 3 Taxable-Bond Funds: 10-Year Return Gaps Over Time



Source: Morningstar Direct. Data as of Dec. 31, 2021.

The investor return gap for taxable-bond funds also widened slightly for the most recent 10-year period ended in 2021, after showing a narrowing trend in return gaps for the previous two 10-year periods. The group has consistently enjoyed positive net inflows over the past six years, which should be beneficial during periods of improving returns. At the same time, though, only a portion of the total assets as of the end of 2021 were around to benefit from some of the strongest returns in previous years, such as in 2009 and 2012. That has kept the group's overall return gap in negative territory.

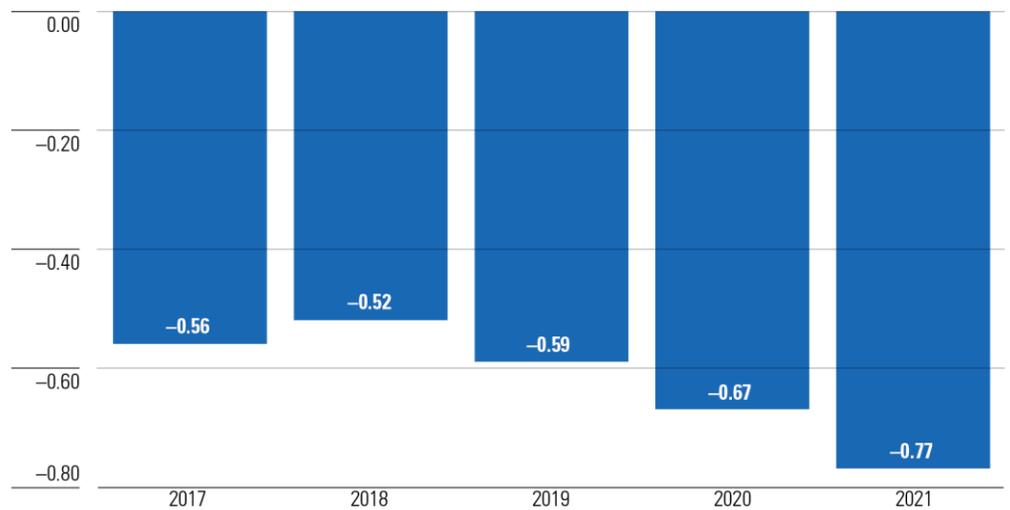
Exhibit 4 International Equity Funds: 10-Year Return Gaps Over Time



Source: Morningstar Direct. Data as of Dec. 31, 2021.

For international equity funds, the investor return gap widened by 36 basis points for the most recent 10-year period, after showing some improvement in the previous two 10-year periods. Asset flows in this category have been muted after the downdraft in 2008, when the average fund was down about 44%, but they have suffered from timing issues in the recent years. In 2017, for example, international equity funds included in our study pulled in an estimated \$192 billion in net inflows, but that was followed by a poor performance in 2018, when the average international fund lost about 14%. Conversely, massive outflows of over \$154 billion in 2020 amid COVID-19 worries cost investors because they missed out on stronger returns later in that year.

Exhibit 5 Allocation Funds: 10-Year Gaps Over Time



Source: Morningstar Direct. Data as of Dec. 31, 2021.

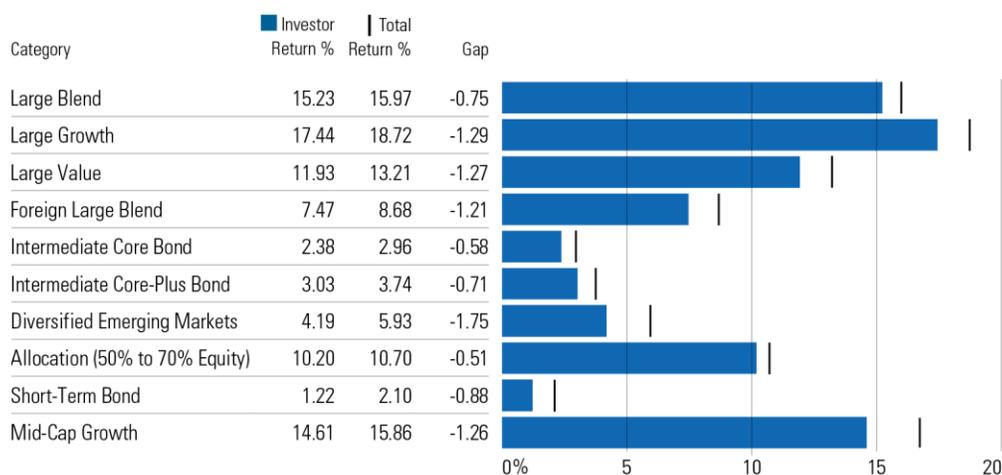
Finally, while the allocation category group has consistently shown better-than-average investor return gaps when compared with other U.S. category groups, it has seen gaps widen over the three most recent 10-year periods. This group includes target-date funds, which often experience annuity-like cash flows as investors make regular contributions through retirement plans such as 401(k)s. Despite the popularity of target-date funds, the growth rate for the allocation group as a whole has been negative over the past few years, partly reflecting conversions from mutual fund formats to collective investment trusts.

Cash outflows have cut into investor returns in recent years, because investors who sold missed out on strong returns in years such as 2019, 2020, and 2021. Still, net outflows have remained relatively small in percentage terms, limiting the damage to dollar-weighted returns.

Results for Largest Fund Categories

The categories that are home to the most investor assets generally had narrower-than-average investor return gaps. On average, investor returns for the 10 largest categories were about 102 basis points lower than their reported total returns.

Exhibit 6 10-Year Return Gaps for Biggest Fund Categories



Source: Morningstar Direct. Data as of Dec. 31, 2021.

The allocation fund--50% to 70% equity Morningstar Category was home to some of the best results, though still witnessing a negative investor return gap. As discussed earlier, these funds tend to be easier to own because they combine both stocks and bonds and are often used as core holdings for buy-and-hold investors. The Intermediate Core Bond category—the largest fixed-income category based on asset size—also fared well, with investor returns lagging total returns by 58 basis points. These funds are often used as core holdings for buy-and-hold investors and aren't as prone to poorly timed asset flows as other areas. Funds in the U.S. large-blend category, Morningstar's largest category by asset size, posted a return gap of 75 basis points. Net outflows weighed down investor returns in 2020, but the category's inflows and outflows have generally been small, keeping investor returns fairly close to reported total returns.

On the negative side, the diversified emerging-markets Morningstar category had the widest negative return gaps among the largest fund categories, thanks to less-than-ideal cash flow timing. In 2012, for example, emerging-markets funds included in our study attracted about \$50 billion in net inflows, but that was followed by a downturn in performance over the next three years. Similarly, significant inflows in 2017 were followed by double-digit losses in 2018, while outflows in 2020 likely missed out on recovering markets in the latter part of last year.

The large-growth, large-value, and mid-cap growth Morningstar categories also exhibited annualized investor return gaps of about 1.3 percentage points. That said, investor returns in these categories were still high in absolute terms, suggesting that fund investors still fared relatively well even with less-than-optimal cash flow timing. Conversely, while the short-term bond Morningstar category posted a relatively small investor return gap of 88 basis points, investors gave up a larger percentage of total returns in this category, as the returns were low to begin with.

Results by Standard Deviation Quintile

In five of the eight category groups included in the study, funds with lower volatility (as measured by standard deviation) had narrower investor return gaps, though still mostly negative, than funds with higher volatility. The general trend makes intuitive sense, as funds that expose investors to less volatility should be easier to own and less prone to erratic cash flows, thus leading to better investor results.

Exhibit 7 Less Volatility Means Better Results

U.S. Category Group	Standard Deviation Quintile	Average Return %		
		Investor	Total	Gap
Allocation	1	5.33	6.10	-0.77
	2	8.52	9.16	-0.64
	3	8.56	9.44	-0.88
	4	9.52	10.14	-0.62
	5	10.92	11.68	-0.76
Alternative	1	2.66	1.94	0.73
	2	1.81	2.74	-0.93
	3	2.62	3.98	-1.36
	4	-5.14	-3.18	-1.97
	5	-2.64	-9.01	6.37
International Equity	1	9.36	10.95	-1.59
	2	9.84	10.93	-1.10
	3	6.64	8.38	-1.74
	4	6.79	8.21	-1.42
	5	4.33	6.69	-2.37
Municipal Bond	1	1.09	1.79	-0.70
	2	2.30	3.32	-1.01
	3	2.11	3.49	-1.39
	4	2.69	4.19	-1.50
	5	3.85	5.38	-1.54
Nontraditional Equity	1	2.58	4.87	-2.29
	2	-2.09	1.42	-3.51
	3	1.34	6.03	-4.70
	4	6.22	9.26	-3.04
	5	9.77	10.54	-0.77
Sector Equity	1	12.31	15.25	-2.94
	2	17.88	21.00	-3.12
	3	7.30	10.89	-3.58
	4	7.21	11.25	-4.04
	5	6.62	11.56	-4.94
Taxable Bond	1	1.06	1.76	-0.70
	2	2.27	2.88	-0.61
	3	2.99	3.76	-0.77
	4	2.72	4.34	-1.61
	5	3.17	5.54	-2.37
U.S. Equity	1	14.97	16.10	-1.13
	2	15.55	16.66	-1.11
	3	13.88	15.33	-1.45
	4	13.43	14.77	-1.34
	5	12.13	13.61	-1.48

Source: Morningstar Direct. Data as of Dec. 31, 2021. We grouped funds by their trailing three-year standard deviation within each category group and then tracked their results over the following 10-year periods. We show the least-volatile quintile first, down to the most-volatile quintile.

There were some exceptions, though. Alternative funds and nontraditional equity funds showed the opposite pattern, with the highest-volatility quintile posting a positive return gap for alternative funds and the narrowest negative return gap for nontraditional equity funds. Both these categories have been prone to dramatic cash flows and erratic returns (as well as large return differences within each

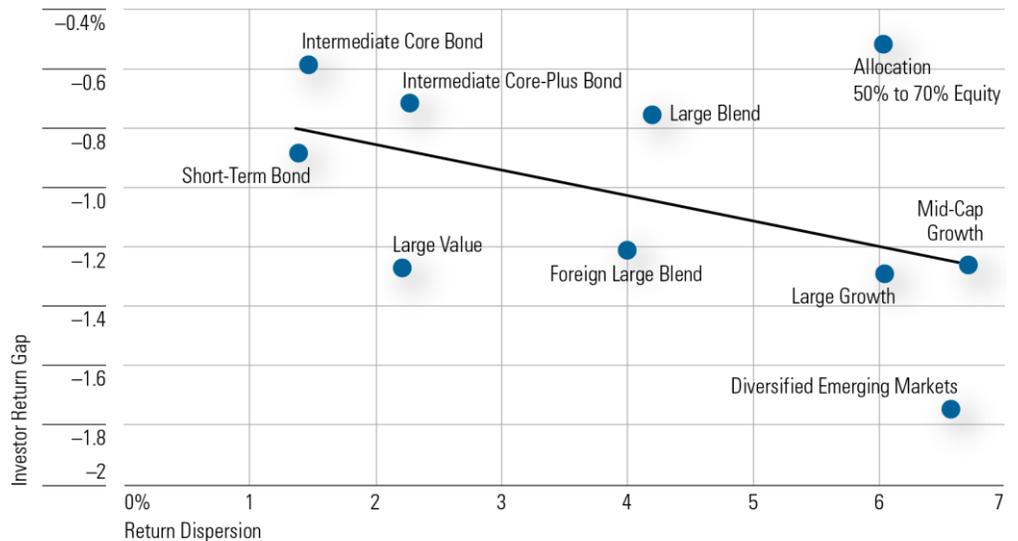
quintile), making it difficult to attribute gaps in investor returns to volatility alone. Allocation funds did not show a clear pattern in the return gap, with funds in the lowest and highest volatility quintile posting a similar return gap. Similarly, there was no clear trend for U.S. equity funds. That said, all of the return gaps for both those categories fell in a pretty narrow range, so differences in investor return gaps didn't have a major effect on investors' end results.

Municipal-bond funds, sector equity funds, and taxable bonds showed the expected pattern through the entire volatility spectrum, with the lower-volatile quintiles posting significantly better return gaps than the more-volatile counterparts.

Dispersion of Returns for Largest Morningstar Categories

In addition to standard deviation (which measures month-to-month volatility for individual funds), we also looked at the dispersion of returns within categories, which measures the range of returns across different funds. The results from comparing dispersion of returns for the 10 largest Morningstar categories by asset size with their respective investor return gaps exhibited a certain pattern; categories with higher return dispersion tend to show worse investor return gaps, with some exceptions. This trend adds to the discussion for volatility above. Not only are the most volatile funds difficult to use well, but varied fund returns within the same category likely make it more difficult for investors to use funds effectively, as opposed to categories with a narrow range of returns.

Exhibit 8 Dispersion of Returns Vs. Investor Return Gap (%)



Source: Morningstar Direct. Data as of Dec. 31, 2021. Dispersion of returns reflects the average of annual dispersion numbers within each category shown for each of the past 10 calendar years.

Results by Expense Ratio Quintile

The results for expense ratios were a bit messier. Part of this probably reflects the fact that assets aren't evenly distributed across the quintiles; in other words, assets are heavily concentrated in the lowest-expense quintile for most category groups. In line with last year's study, return gaps for two of the category groups (U.S. equity and allocation) followed the expected pattern, with funds in the lowest-expense quintile posting better investor returns than their higher-cost counterparts. Sector equity funds, international equity funds, and municipal funds also showed the worst investor returns for the most-expensive offerings, but the lowest and middle quintile funds failed to show a clear pattern.

Exhibit 9 Lower Fees (Usually) Mean Better Results

U.S. Category Group	Fee Quintile	Average Return %		
		Investor	Total	Gap
Allocation	1	9.14	9.67	-0.53
	2	8.75	9.65	-0.90
	3	7.83	8.91	-1.08
	4	7.18	8.51	-1.33
	5	6.89	8.03	-1.13
Alternative	1	-0.62	0.39	-1.01
	2	0.32	2.15	-1.83
	3	1.25	1.27	-0.02
	4	-19.32	-12.75	-6.57
	5	0.44	0.56	-0.12
International Equity	1	7.00	8.85	-1.85
	2	7.64	9.17	-1.53
	3	7.66	9.24	-1.58
	4	7.77	9.03	-1.27
	5	5.96	7.96	-2.00
Municipal Bond	1	2.33	3.46	-1.13
	2	2.40	3.78	-1.38
	3	2.38	3.52	-1.14
	4	2.01	3.20	-1.19
	5	1.78	3.00	-1.22
Nontraditional Equity	1	2.28	5.31	-3.03
	2	1.54	4.90	-3.36
	3	5.62	7.21	-1.59
	4	4.77	6.83	-2.06
	5	5.65	7.33	-1.67
Sector Equity	1	9.66	14.08	-4.42
	2	10.64	14.66	-4.01
	3	8.30	12.27	-3.97
	4	8.89	12.39	-3.50
	5	3.81	8.86	-5.05
Taxable Bond	1	2.34	3.56	-1.22
	2	2.62	3.72	-1.10
	3	2.59	3.75	-1.16
	4	2.32	3.28	-0.96
	5	1.98	2.78	-0.80
U.S. Equity	1	15.06	16.17	-1.11
	2	13.94	15.27	-1.34
	3	13.20	14.96	-1.76
	4	13.06	14.60	-1.55
	5	11.91	13.73	-1.82

Source: Morningstar Direct. Data as of Dec. 31, 2021. We grouped funds by their expense ratios within each category and then tracked their results over the following 10-year period. We show the least-expensive quintile first, down to the most-expensive quintile.

For taxable-bond funds, while lower-cost funds mostly showed better investor returns, they had wider return gaps than the more-expensive ones. This likely reflects the flood of assets into lower-cost funds, including passively managed offerings. Paradoxically, strong asset flows for the lowest-cost funds mean that fewer assets were around for the full 10-year period, which can dampen dollar-weighted returns

during a generally positive market environment. Nontraditional equity funds to a certain extent showed the opposite result, with funds in the three most-expensive quintiles posting better returns than the cheaper counterparts. However, this category has been prone to dramatic cash flows and erratic returns, leading to unpredictable results.

Active Versus Passive

The results for actively managed versus passively managed offerings show some unexpected trends. Index funds actually had lower investor returns in six of the seven category groups. (We excluded allocation funds from this analysis because the overwhelming majority of allocation funds are actively managed in the sense that they deliberately set an asset mix rather than simply matching market averages.)

Exhibit 10 Investor Return Gaps: Active Funds Vs. Passive Funds

U.S. Category Group	Management Style	Average Return %		
		Investor	Total	Gap
Alternative	Active	1.00	2.12	-1.12
	Passive	-21.75	-19.09	-2.66
International Equity	Active	8.42	9.69	-1.27
	Passive	4.83	7.46	-2.63
Municipal Bond	Active	2.39	3.56	-1.16
	Passive	0.70	3.06	-2.37
Nontraditional Equity	Active	2.14	4.81	-2.67
	Passive	6.78	11.56	-4.78
Sector Equity	Active	9.97	13.28	-3.31
	Passive	9.23	14.28	-5.05
Taxable Bond	Active	2.68	3.68	-1.00
	Passive	1.65	3.20	-1.55
U.S. Equity	Active	14.36	15.64	-1.29
	Passive	15.07	16.13	-1.06

Source: Morningstar Direct. Data as of Dec. 31, 2021. Excludes allocation category group.

This doesn't necessarily indicate poorly timed changes in asset flows. Instead, it mainly reflects the rising tide of assets flowing into passively managed offerings. Larger net flows as a percentage of assets can lead to a wider gap between investor returns and total returns. In periods when returns are positive, larger net flows mean that fewer dollars were around to experience the full benefit of those returns — leading to a negative gap between investor returns and total returns. (This is the same pattern we often see with dollar-cost averaging, where results lag when market returns are generally positive.)

The taxable-bond category group illustrates how this pattern can work in practice. Over the past 10 years, asset flows to actively managed funds in the group have been slightly positive overall, but annual inflows and outflows have been relatively small in percentage terms. As a result, dollar-weighted returns have lagged reported total returns by a smaller margin. Passively managed funds, on the other hand, have garnered double-digit annual inflows as a percentage of assets during most of the past 10 years.

That means the majority of assets were only around to experience part of the group's annualized return of 3.2% over the same period.

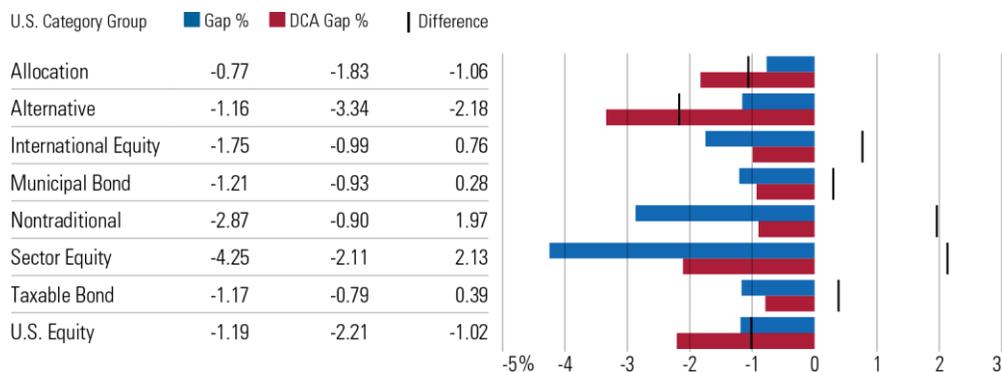
The municipal-bond and international equity groups showed similar patterns, where larger inflows into passively managed offerings resulted in bigger performance gaps. Investor returns for sector equity funds also lagged, but partly because of poorly timed flows. Asset flows to passively managed offerings were generally positive, but the group experienced net outflows in 2018 and 2019, causing some investors to miss out on strong returns over the next three years.

Investor returns for passively managed funds didn't fall behind in every category group. For U.S. equity funds, asset flows to actively managed funds have been negative overall, which cut into investor returns during the generally strong market. At the same time, asset flows to passively managed offerings were mostly positive but relatively small as a percentage of assets. As a result, investor returns for passive funds outpaced those for actively managed offerings.

Comparing the Results: Dollar-Cost Averaging

As we did in last year's report, we added a series of returns to see how the results would look in a hypothetical scenario in which an investor contributed equal monthly investments (dollar-cost averaging) to funds in each broad category group. By comparing investor returns with what they would have been assuming were steady monthly investments, we can zero in on the impact of cash flow timing on investor returns.

Dollar-cost averaging doesn't usually lead to better results compared with a buy-and-hold approach. In fact, because market returns are positive more often than not, dollar-cost averaging often leads to lower returns. As shown in the table above, investor return gaps assuming dollar-cost average were consistently negative across every category group. This simply reflects the underlying math of total returns: If returns are generally positive, investors are typically better off making a lump-sum investment and holding it for the entire period. As mentioned earlier, investors who buy and hold can take full advantage of performance trends when total returns are positive, but investors who contribute smaller amounts over time often have fewer dollars invested during periods with strong returns.

Exhibit 11 Another View of the Data: Investor Return Gaps Versus Dollar-Cost-Averaging Gaps

Source: Morningstar Direct. Data as of Dec. 31, 2021. We estimate the results for dollar-cost averaging by assuming equal monthly investments made within each category and then calculating an internal rate of return.

But dollar-cost averaging can help investors avoid some of the ill effects of poorly timed cash flows by enforcing a more disciplined approach. In fact, following a systematic investment approach would have improved investors' results in five of the eight major category groups. With international equity funds, for example, investor returns based on dollar-cost averaging came out about 76 basis points per year ahead of investors' actual returns. Dollar-cost averaging pulled even further ahead for the sector equity category group. Investors in these funds tend to make frequent purchases and sales, but all that trading activity hasn't led to better results. Following a more disciplined approach would have improved returns by more than 2 percentage points per year.

Learning From the Results

The persistent gap between the returns investors actually experience and reported total returns makes cash flow timing one of the most significant factors — along with investment costs and tax efficiency — that can influence an investor's end results. These findings add to a robust and growing body of evidence demonstrating how investors' trading behavior can undermine financial outcomes when compared with buy-and-hold or dollar-cost-averaging strategies.

The significant and continuing disparity between investors' actual results and reported total returns may seem daunting, but investors can take away a few key lessons about how to improve their results.

Focus on holding a small number of widely diversified funds. As the fund industry has grown, asset-management firms have rolled out more and more highly specialized funds. Theme-based sector funds, alternative funds of various stripes, leveraged factor portfolios, and single-country funds are just a few examples. But investors have fared far better by keeping things simple and sticking with plain-vanilla, broadly diversified funds.

Simpler has also been better when it comes to specific Morningstar categories. The broadest categories, such as large blend, intermediate core bond, and foreign large blend, have generally fared better than

more narrowly defined categories (partly because their large asset bases tend to buffer the impact of net inflows and outflows). From a portfolio-construction perspective, that means investors should lean heavily on these areas as core holdings and avoid narrowly defined funds that tend to have the widest return gaps.

Funds that offer built-in asset-class diversification also excelled in our study. Morningstar has often sung the praises of target-date funds, which provide a preset blend of exposure to major asset classes that shifts over time. These funds and other asset-allocation offerings, such as balanced funds, have consistently exhibited smaller investor return gaps. Not only are these funds easy to use, but they're also easy to live with. Investors tend to buy and hold them for long periods or make investments on a regular schedule that enforces investment discipline and helps them avoid the temptations—and pitfalls—of trading at the wrong time.

Avoid narrow or highly volatile funds. As a corollary to focusing on broadly diversified funds, it's also important to avoid highly specialized or volatile offerings. As mentioned above, narrower, or more-volatile funds experienced higher investor return gaps, on average. With only a few exceptions, funds that expose investors to less volatility are easier to own and less prone to erratic cash flows.

Automate routine tasks, such as setting asset-allocation targets and periodically rebalancing. Investors can easily get caught in a cycle of analysis paralysis by fretting over how much to buy or sell at various times. The endless drumbeat of market and economic news can make it tempting—even for professional investors and financial advisors—to feel like they should be doing something to respond to shifting market conditions. But for the most part, the time and energy that investors spend on trading decisions is wasted effort—and often counterproductive. Investors can improve their results by setting a rational asset allocation, buying low-cost funds, and just sticking with the plan. It also makes sense to set a strict schedule for rebalancing, such as rebalancing once per year or when your portfolio's allocations drift significantly away from target levels.

Embrace techniques that put investment decisions on autopilot, such as dollar-cost averaging. Dollar-cost averaging often gets a bad rap because it creates a drag on returns when market returns are generally positive. Because market returns are positive more often than not, investors who deploy a lump sum and then simply buy and hold usually enjoy better results.

But successful lump-sum investing depends on two key things: 1) having money available to invest all at once, and 2) having enough discipline to buy and hold despite the vagaries of the market. Unless they're fortunate enough to have large sums of money available via inherited wealth or other windfalls, most investors can only invest a little at a time as money becomes available—for example, setting aside a certain percentage of each paycheck to invest for retirement. This approach isn't technically considered dollar-cost averaging, but it has the same effect because it involves making systematic investments over time.

Our study suggests that this approach can improve investors' results, particularly in category groups that are more difficult to use effectively. While systematic investing may not be ideal compared with buy-and-hold investing, it can still improve investors' actual results because it helps them avoid the pitfalls of poorly timed inflows and outflows.

Conclusion

Overall, this year's results show there's a persistent gap between the returns investors actually experience and reported total returns. This gap makes cash flow timing one of the most significant factors—along with investment costs and tax efficiency—that can influence an investor's end results.

In aggregate, the return gap widened slightly for the most recent 10-year period but remained in line with the longer-term average. Under the surface, though, there's a more-nuanced story. More specialized areas with the most volatile returns—namely nontraditional equity funds and sector equity funds—fared much worse than average and pulled down the aggregate results. The more mainstream areas that are home to the majority of investor assets—such as U.S. equity funds and taxable-bond funds—fared much better, with return gaps of about 1.2 percentage points per year. Allocation funds also continued to excel, suggesting that their built-in asset-class diversification makes them easier for investors to buy and hold over time.

Our study also shines more light on the merits of keeping things simple, favoring broadly diversified funds, and following a disciplined investment approach. While following a buy-and-hold approach will generally lead to the best results for investors who have enough assets available, dollar-cost averaging can be an excellent way to enforce investment discipline and avoid the perils of poorly timed cash flows.

Whether they invest a lump sum up front or follow a dollar-cost-averaging system, investors who follow a consistent investment approach and avoid chasing performance will likely reap rewards over time. ■■■

Appendix

Methodology

Morningstar's annual "Mind the Gap" study is designed to compare dollar-weighted internal rate-of-return calculations with time-weighted total returns to see how large the gap, or difference, has been over time.

We use a portfolio-based methodology for combining fund flows to an aggregate level. This method combines all of the monthly inflows, outflows, and assets from a given category or category group into one portfolio to better capture investors' asset-weighted returns. In contrast to total returns, investor returns account for all cash flows into and out of the fund to measure how the average investor performed over time.

We include funds that were merged or liquidated during each time period by building a category-level portfolio of net flows and returns, including extinct funds, up until their final partial month. In other words, the methodology is designed to make sure the averages don't exclude results for poorly performing funds that later disappeared. We treat the final net assets before the fund is liquidated or merged as a sale. If those dollars went into another fund, we treat those incoming assets as a buy. Because fund mergers almost always occur within the same category group, those figures should be a wash on an asset-class basis.

While the study attempts to correct for survivorship bias as much possible, it does not correct for creation bias. The dataset only captures net assets, cash flows, and returns for funds that were created at least 10 years ago.

Once all of the monthly cash flows are available for the period in question, we calculate investor returns. The calculation is similar to an internal rate of return, or IRR, and measures the compound growth rate of the value of all dollars invested in the fund over the evaluation period. As with an IRR calculation, investor return is the constant monthly rate of return that makes the beginning assets equal to the ending assets with all monthly cash flows accounted for. We derive investor returns by using an iterative process, running a program that attempts to solve for the constant rate of return and adjusting the estimate up and down until it converges on a solution. After calculating investor returns for each month, we link them together to calculate an annualized return for the 10-year period.

We use time-weighted total returns, weighted by asset size, as a benchmark for comparison with investor returns. (The asset-weighted return average weights each fund's return based on its asset size at the end of the month.) We refer to the difference between investor returns and total returns as the gap or investor return gap.

The study includes investor returns and total returns for both mutual funds and exchange-traded funds. Our ETF data doesn't capture all day-to-day activity in ETFs, though. ETFs are often used as trading vehicles, but our data uses monthly asset data rather than daily data. We used the month-end asset data compared with the underlying total return to estimate a net inflow or outflow for the month. Investor returns for ETFs would likely be lower if we captured all the intramonth trades as well as newly created funds.

Because investor returns over shorter periods aren't as meaningful, we focus the study on long-term results. The aggregate numbers shown in the study are based on the 10-year period ended Dec. 31, 2021, but we also calculate results for each of the most recent five 10-year periods. This historical data allows investors to see trends in investor return gaps over time.

We run the data based on category groups instead of broad asset classes, which allows for a more detailed view of investor return patterns across different types of funds. We exclude the commodities category group because that area's extremely volatile cash flows make it difficult to measure investor returns.

Finally, we include data to see how investor returns would look if an investor contributed equal monthly investments (dollar-cost averaging). Within each category group, we assume a constant monthly investment and divided that amount among all the funds that were active during the month. If a fund became obsolete, we took the balance and divided it among the remaining funds. We then calculated total balances for each fund, as well as the deposits made, to get an internal rate of return for the category group.

Exhibit 12 Summary Data: Annual Organic Growth Rates, Total Returns, and Assets by Category Group

Annual Organic Growth Rates (%)	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	
Allocation	0.6	3.5	5.7	4.3	6.4	7.0	4.2	-1.1	-2.0	-1.1	-3.2	-1.0	-4.0	-2.4	■ ≥ 8.2
Alternative	-4.6	55.1	34.7	17.5	15.9	27.4	5.2	2.2	-0.4	-3.2	-7.1	0.0	-1.6	25.8	■ 4.3 to 8.1
International Equity	-3.8	5.1	4.7	0.5	3.2	10.7	5.7	8.0	-0.6	8.1	1.7	-0.6	-4.5	5.0	■ 0.9 to 4.2
Municipal Bond	2.2	21.5	2.7	-2.1	10.8	-9.8	6.0	3.0	5.4	3.8	-1.5	14.8	5.9	11.4	■ -2.0 to 0.8
Nontraditional Equity	26.4	33.8	23.7	1.3	9.2	79.6	4.4	-14.8	-19.9	0.8	-14.0	-19.9	-14.0	65.6	■ ≤ -2.1
Sector Equity	5.2	13.2	6.5	6.0	6.8	15.0	12.7	2.4	-0.4	2.4	-3.6	-4.2	6.7	8.1	
Taxable Bond	2.8	26.7	14.1	8.0	13.3	-1.2	3.2	-0.1	6.4	10.9	2.0	10.7	8.9	8.6	
U.S. Equity	-1.1	-2.4	-1.7	-2.3	-2.5	3.0	1.8	-2.7	-1.2	-0.5	0.4	-0.8	-3.3	1.2	

Annual Total Returns (%)	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	
Allocation	-28.1	25.3	12.3	0.4	12.8	16.0	5.7	-1.6	8.1	14.9	-5.5	20.0	12.5	13.8	■ ≥ 10.9
Alternative	-4.2	4.8	-0.9	-0.4	0.0	0.6	1.2	-1.4	-2.5	2.5	-2.5	3.1	9.2	4.6	■ 5.3 to 10.8
International Equity	-43.7	41.6	13.4	-13.3	18.9	16.3	-2.1	-3.4	4.6	28.1	-13.8	23.4	16.1	8.4	■ 1.3 to 5.2
Municipal Bond	-8.8	16.0	2.1	9.1	7.3	-3.0	8.4	2.8	0.4	4.8	1.4	7.1	4.3	2.4	■ -2.0 to 1.2
Nontraditional Equity	-20.1	13.7	6.1	-1.0	3.1	16.5	-1.7	-3.3	5.2	10.7	-8.6	13.6	4.4	15.0	■ ≤ -2.0
Sector Equity	-35.7	40.2	22.0	-1.1	13.9	18.6	15.3	-0.6	10.6	16.5	-5.4	29.7	19.1	23.9	
Taxable Bond	-4.4	16.5	8.5	5.1	8.5	-0.3	3.9	-0.7	4.9	4.4	-0.3	8.6	7.0	0.1	
U.S. Equity	-38.5	32.1	17.3	-1.2	16.1	34.1	10.7	0.3	11.9	21.3	-5.5	29.9	21.2	24.6	

Average Assets (USD Tril)	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	
Allocation	1.0	1.0	1.2	1.3	1.5	1.9	2.2	2.3	2.3	2.4	2.5	2.6	3.0	3.3	■ ≥ 3.1
Alternative	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	■ 2.2 to 3.0
International Equity	1.3	1.1	1.5	1.5	1.5	1.9	2.2	2.2	2.3	2.8	3.0	3.2	3.6	4.0	■ 0.9 to 2.1
Municipal Bond	0.4	0.4	0.5	0.5	0.6	0.6	0.5	0.6	0.6	0.7	0.7	0.8	0.9	1.0	■ 0.2 to 0.8
Nontraditional Equity	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	■ ≤ 0.1
Sector Equity	0.3	0.3	0.3	0.4	0.4	0.5	0.7	0.7	0.7	0.8	0.8	0.9	1.1	1.3	
Taxable Bond	1.1	1.4	1.8	2.1	2.5	2.7	2.8	2.9	3.0	3.4	3.7	4.0	4.7	5.3	
U.S. Equity	3.2	2.7	3.3	3.5	3.6	4.6	5.6	5.9	6.1	7.1	7.5	8.2	10.0	12.1	

Source: Morningstar Direct. Data as of Dec. 31, 2021. Includes assets, fund flows, and total returns for funds created before Jan. 1, 2012. Total returns are asset-weighted. Excludes commodities category group. Annual organic growth rates are based on estimated net flows for each category group divided by total assets as of Dec. 31 of the previous year. Average assets are based on the year-end values for the current year and the previous year.

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