Mind the Gap 2025

The more investors traded, the less they made.

Portfolio and Planning Research
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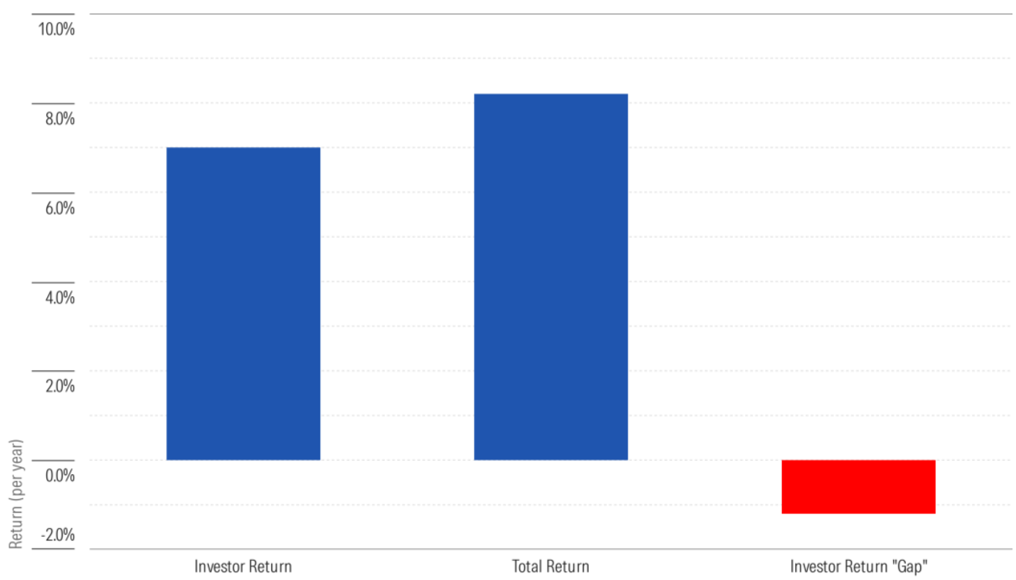
Jeffrey Ptak, CFA
Managing Director
jeffrey.ptak@morningstar.com

Contributors
Amy Arnott, CFA
Nikhil Chidurala
Michael Manetta
Sandeep

Executive Summary

We estimate the average dollar invested in US mutual funds and exchange-traded funds earned 7.0% per year over the 10 years ended Dec. 31, 2024 ("investor return"). That's about 1.2 percentage points per year less than these funds' 8.2% aggregate annual total return ("total return") over that span assuming an initial lump-sum purchase. That 1.2 percentage point "investor return gap," which is explained by the timing and magnitude of investors' purchases and sales of fund shares during the 10-year period, is equivalent to around 15% of the funds' aggregate total return.

Exhibit 1 Annual Investor Returns and Total Returns of US Open-End Funds and ETFs (10 Years Ended Dec. 31, 2024)

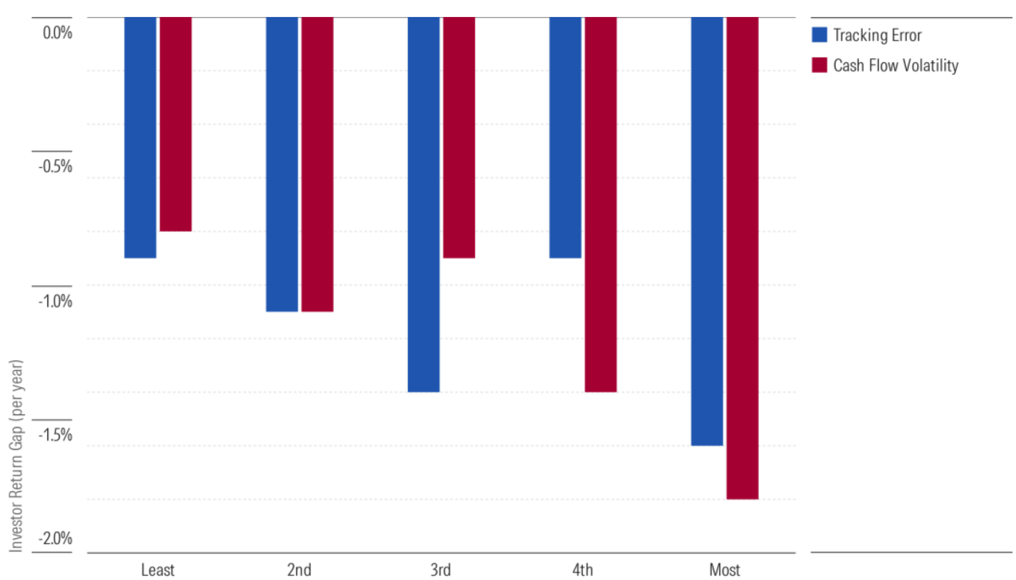


Source: Morningstar, author's calculations. Data as of Dec. 31, 2024. Excludes "commodities" category group and funds of funds.

New to this year's study are two additional dimensions of analysis—one focused on gaps by the degree to which funds' returns diverge from a style-appropriate benchmark ("tracking error") and another estimating gaps by the volatility of funds' cash flows ("cash flow volatility," which proxies for trading activity). Strikingly, we find that the more funds deviated from their index, or the more investors transacted, the wider the gaps between investor returns and total returns grew, as shown below.

Exhibit 2 Annual Investor Return Gaps by Tracking Error and Cash Flow Volatility Quintile (10 Years Ended Dec. 31, 2024)

Measure	Least	2nd	3rd	4th	Most
Tracking Error	-0.9%	-1.1%	-1.4%	-0.9%	-1.6%
Cash Flow Volatility	-0.8%	-1.1%	-0.9%	-1.4%	-1.8%



Source: Morningstar, author's calculations. Data as of Dec. 31, 2024. Excludes "commodities" category group and funds of funds. "Least" corresponds to lowest tracking error and cash flow volatility and "Most" to highest tracking error and cash flow volatility.

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 the aggregate dollar-weighted and time-weighted returns of more than 25,000 individual US open-end funds and ETFs. The difference between them, or "gap," represents the portion of funds' total returns that have been forgone because of the timing and magnitude of transactions investors made during the 10-year study horizon.

To be sure, inopportunely timed purchases and sales—buying high or selling low on impulse, for instance—can chip away at investor returns. But even laudable practices like investing a portion of every paycheck or regularly rebalancing can open a gap between investor results and reported total returns. Given that nuance, it's not advisable to view this study's findings as a parable of "dumb money" or evidence of individual investors' fallibility.

Also, it is a truism that for the theoretical “total market,” there can be no “gap,” as for every buyer there is a seller, meaning one’s shortfall is another’s surplus. We would, however, note that the US open-end fund industry, large and significant as it is, is a subset of the global market and, as further described in the Methodology section, the study is limited to funds and ETFs that existed as of Jan. 1, 2015, excluding those that came after.

Caveats aside, what "Mind the Gap" does aim to address is the question of where investors succeeded in capturing most of their funds' returns. While such insights will not necessarily fully close the gap between investor and total returns, they might help investors avoid circumstances that our data suggests have bedeviled them in the past, leading to poor dollar-weighted returns.

With that in mind, this study addresses not just the question of how wide the investor return gap is but also how it can vary based on numerous important factors, including a fund’s category group; Morningstar Category; investment type (open-end fund versus ETF); management style (active versus index); tracking error (versus its benchmark); cash flow volatility; fees; and return volatility.

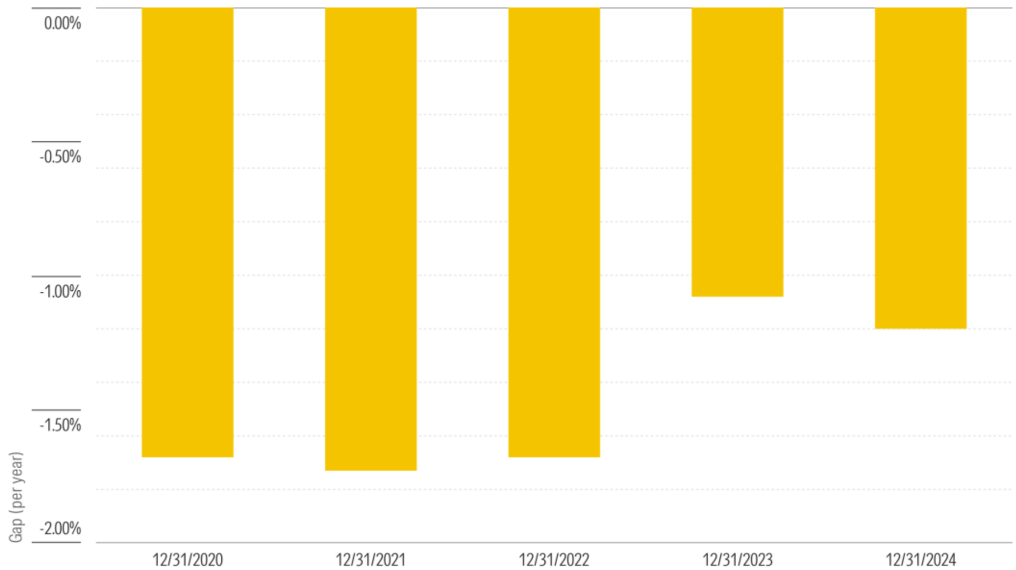
And so, in the pages that follow, this study delves into those factors, the key findings surrounding them, and the implications they might have for investors seeking to capture as much of their funds' returns as possible.

Key Findings

Overall

- The average dollar invested in US stock funds and ETFs earned 7.0% per year over the 10 years ended Dec. 31, 2024, while those funds earned 8.2% per year, with that 1.2-percentage-point annual “gap” stemming from the timing and magnitude of investors’ cash flows during the 10-year period.
- The 1.2-percentage-point per year gap, which is equivalent to around 15% of funds’ aggregate total return over this period, is generally consistent in magnitude with gaps we estimated over the 10-year periods ended Dec. 31 of 2020, 2021, 2022, and 2023.

Exhibit 3 Rolling 10-Year Annual Investor Return Gaps (10 Year Periods Ended Dec. 31 of Years 2020 to 2024)



Source: Morningstar. Data as of Dec. 31 of 2020-24. Excludes "commodities" category group and funds of funds.

Takeaways for Investors

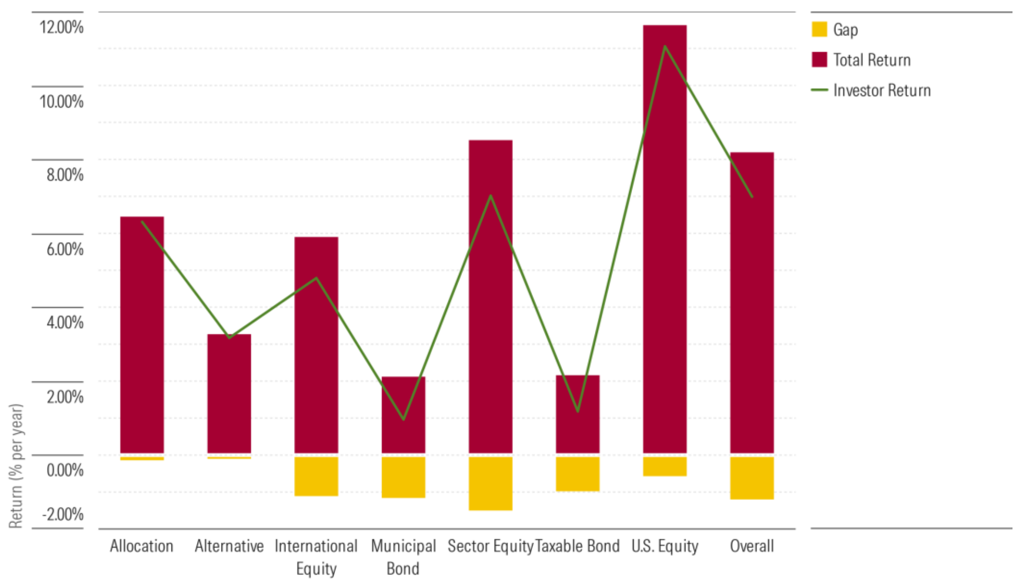
- Our research has found investors consistently struggle to earn their funds' total returns, with the shortfall owing to the timing and magnitude of their purchases and sales.
- While there can be considerable debate about what causes investor return gaps—some chalk it up to behavior, but it appears to reflect a number of factors, including the context in which investors utilize funds—the gaps have persisted, nonetheless.
- Given this, it's advisable for investors to be deliberate about the necessity, timing, and nature of transactions, with a goal of keeping discretionary purchases and sales to a minimum.
- Given that dollar-weighted returns have tended to lag funds' total returns, it can also make sense to build a margin for error into the return forecasts one might incorporate as part of a spending and savings plan, slightly haircutting projections to give the effect of the return drags one might experience in the normal course of transacting over a longer horizon.

Investment Style

- In absolute terms, investors in sector equity funds saw the largest shortfall to the funds' total return, as the average dollar gained 7.0% per year compared with the funds' aggregate 8.5% annual total return.
- Investors in allocation funds captured the largest share of their funds' aggregate total returns, as the funds' 6.3% per year dollar-weighted return accounted for nearly 97% of the funds' 6.5% aggregate annual total return.
- Conversely, taxable-bond and municipal-bond fund investors earned the smallest share of their funds' aggregate total returns, capturing only about half.

Exhibit 4 Annual Investor Return Gaps by US Category Group (10 Years Ended Dec. 31, 2024)

US Category Group	Investor Return	Total Return	Gap
Allocation	6.3%	6.5%	-0.1%
Alternative	3.2%	3.3%	-0.1%
International Equity	4.8%	5.9%	-1.1%
Municipal Bond	1.0%	2.1%	-1.2%
Sector Equity	7.0%	8.5%	-1.5%
Taxable Bond	1.2%	2.2%	-1.0%
US Equity	11.1%	11.6%	-0.6%
Overall	**7.0%**	**8.2%**	**-1.2%**



Source: Morningstar. Data as of Dec. 31, 2024. Excludes "commodities" category group. The "alternative" category group also includes funds assigned to the "nontraditional equity" category group. The category group figures include funds of funds, but the "overall" figures exclude funds of funds to avoid double-counting. Gap numbers may not match differences in returns because of rounding.

- The trends by category group were generally consistent with what we have measured in the past, with narrower gaps among allocation funds and wider gaps among sector equity funds.
- Though the gap narrowed considerably for alternative funds over the decade ended Dec. 31, 2024, compared with prior rolling 10-year periods, it would have been substantially wider (negative 0.8 percentage points per year) had we excluded liquidated funds, as such funds are assumed to earn no total return from the time they're liquidated through the end of the study, pushing the category group's aggregate total return lower. Of the 1,259 alternative funds that started the study, 711 were subsequently liquidated.

Exhibit 5 Annual Investor Return Gaps by US Category Group (Rolling 10-Year Periods Ended Dec. 31, 2020-24)

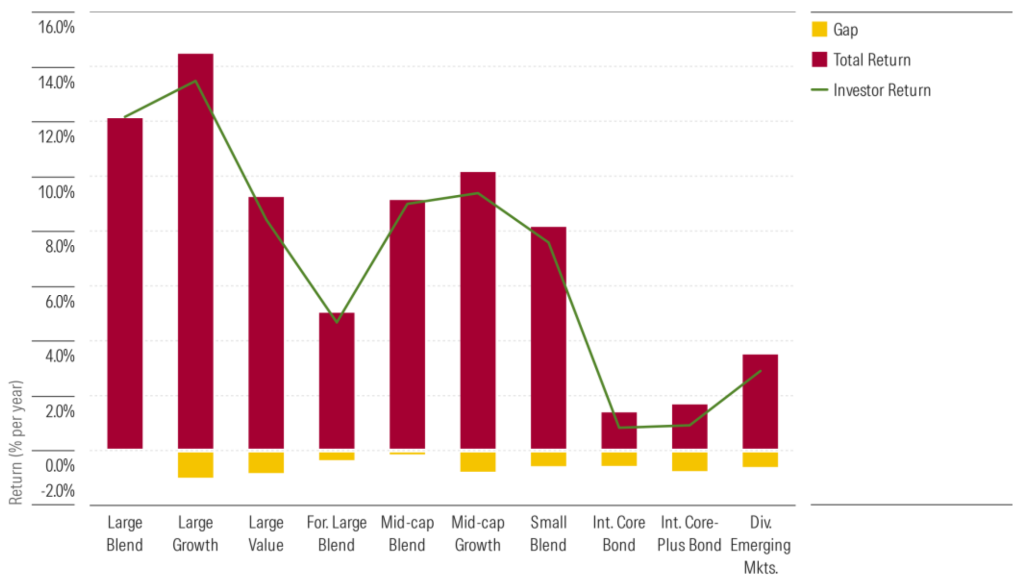
US Category Group	2020	2021	2022	2023	2024
Allocation	-0.7%	-0.8%	-0.5%	-0.4%	-0.1%
Alternative	-4.3%	-1.2%	-1.9%	-0.6%	-0.1%
International Equity	-1.4%	-1.8%	-1.6%	-0.7%	-1.1%
Municipal Bond	-1.3%	-1.2%	-1.4%	-1.3%	-1.2%
Nontrad Equity	N/A	-2.9%	-2.1%	-2.3%	N/A
Sector Equity	-4.0%	-4.3%	-4.4%	-2.6%	-1.5%
Taxable Bond	-1.1%	-1.2%	-1.4%	-1.0%	-1.0%
US Equity	-1.2%	-1.2%	-0.8%	-0.8%	-0.6%
Overall	**-1.7%**	**-1.7%**	**-1.7%**	**-1.1%**	**-1.2%**

Source: Morningstar. Data as of Dec. 31, 2024. Excludes "commodities" category group. Beginning with the 10-year period ended Dec. 31, 2024, the "alternative" category group also includes funds assigned to the "nontraditional equity" category group. We have displayed the gaps for "nontraditional equity" for the prior rolling 10-year periods for comparability purposes. The category group figures include funds of funds, but the "overall" figures exclude funds of funds to avoid double-counting. Gap numbers may not match differences in returns because of rounding.

- Among the largest Morningstar Categories by assets, the large-blend category had the narrowest gap, with the average dollar slightly outperforming the funds' aggregate total return.
- On the flip side, large-growth funds saw the largest shortfall in absolute terms (negative 1.0 percentage points), while investors in intermediate core-plus bond funds captured barely half of the funds' aggregate total returns.

Exhibit 6 Annual Investor Return Gaps for Largest Morningstar Categories by Assets (10 Years Ended Dec. 31, 2024)

US Category Group	Investor Return	Total Return	Gap
Large Blend	12.2%	12.1%	0.1%
Large Growth	13.5%	14.5%	-1.0%
Large Value	8.4%	9.2%	-0.8%
For Large Blend	4.7%	5.0%	-0.4%
Mid-Cap Blend	9.0%	9.1%	-0.1%
Mid-Cap Growth	9.4%	10.2%	-0.8%
Small Blend	7.6%	8.2%	-0.6%
Int Core Bond	0.8%	1.4%	-0.6%
Int Core-Plus Bond	0.9%	1.7%	-0.8%
Div Emerging Mkts	2.9%	3.5%	-0.6%



Source: Morningstar; author's calculations. Data as of Dec. 31, 2024. Excludes funds of funds from tallies of assets by Morningstar Category, explaining absence of categories from the "allocation" US category group. Gap numbers may not match differences in returns due to rounding

Takeaways for Investors

- It's apparent that the type of fund can have a strong bearing on the average dollar's return.
- Investors have had more success capturing the total returns of all-in-one funds like allocation funds, of which target-date strategies are a popular type. These funds automate routine tasks like asset allocation and rebalancing, obviating the need for investors to take these actions.
- Relatedly, the most popular Morningstar Categories exhibited narrow-to-moderate investor return gaps. While not the sole cause, it's likely that some of the largest funds in those categories have seen steadier usage, and thus narrower gaps, than otherwise because they are holdings in target-date funds or fixtures of retirement plan menus.

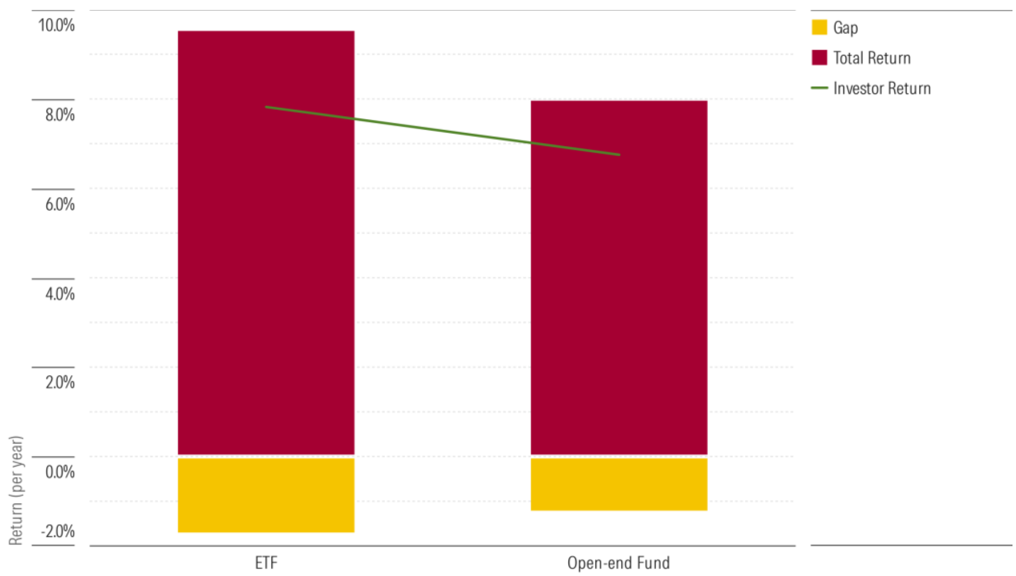
- Conversely, investors have struggled to use fund types that are likelier to be used in a stand-alone or nonstrategic way, such as sector equity funds. It's notable that these types of funds aren't usually held by allocation funds and normally aren't found in 401(k) plan lineups. This means they tend to be used more opportunistically, with past performance often being an important input into investors' buy and sell decisions.
- In a sense, *where* a fund is utilized can be just as important as the type of fund and how it's used.

Fund Type/Management Style

- ETFs earned higher dollar-weighted (7.8% per year) and aggregate total (9.5% annually) returns than open-end funds (6.8% and 8.0% per year, respectively), but the gap was wider for ETFs (negative 1.7 percentage points per year) than for open-end funds (negative 1.2 percentage points annually).
- Though investors in US equity ETFs fared well, capturing virtually all the ETFs' aggregate total returns (11.8% per year investor return versus 12.1% total return), they saw larger gaps in other category groups including international equity (negative 3.2 percentage point per year gap) and sector equity (negative 2.1 percentage point per year gap) as well as taxable bond (negative 1.5 percentage points annually, equivalent to nearly three fourths of the ETFs' aggregate total return).

Exhibit 7 Annual Investor Return Gaps by US Category Group and Investment Type (10 Years Ended Dec. 31, 2024)

US Category Group	Investment Type	Investor Return	Total Return	Gap
Allocation	ETF	3.9%	6.4%	-2.5%
	Open-End Fund	6.3%	6.5%	-0.1%
Alternative	ETF	9.6%	11.0%	-1.4%
	Open-End Fund	2.0%	2.8%	-0.8%
International Equity	ETF	3.6%	6.8%	-3.2%
	Open-End Fund	5.2%	5.7%	-0.5%
Municipal Bond	ETF	0.7%	1.8%	-1.1%
	Open-End Fund	1.0%	2.1%	-1.2%
Sector Equity	ETF	7.5%	9.6%	-2.1%
	Open-End Fund	6.5%	7.7%	-1.2%
Taxable Bond	ETF	0.6%	2.1%	-1.5%
	Open-End Fund	1.3%	2.2%	-0.8%
US Equity	ETF	11.8%	12.1%	-0.3%
	Open-End Fund	10.8%	11.6%	-0.7%
Overall	**ETF**	**7.8%**	**9.5%**	**-1.7%**
	Open-End Fund	**6.8%**	**8.0%**	**-1.2%**

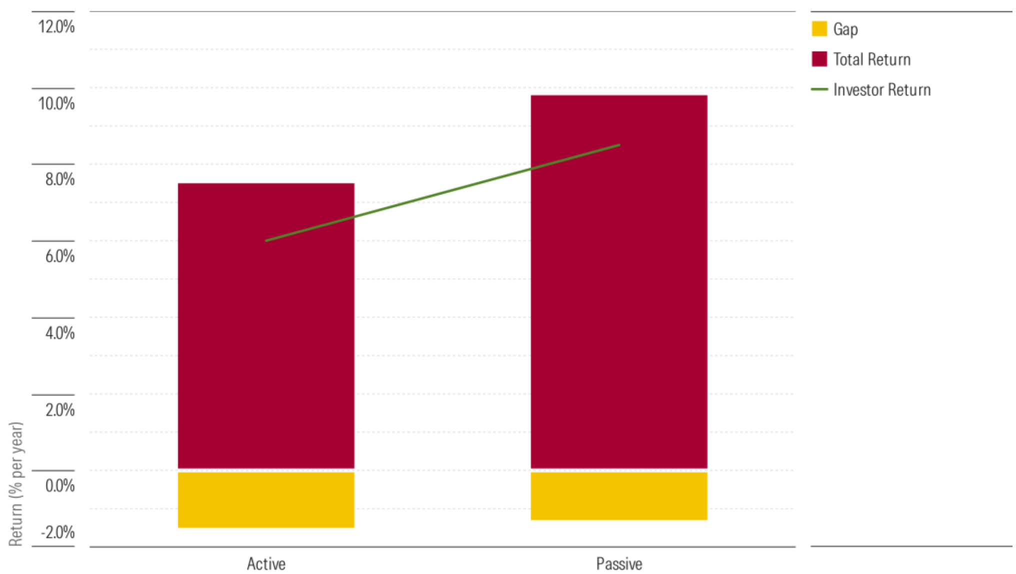


Source: Morningstar; author's calculations. Data as of Dec. 31, 2024. Excludes "commodities" category group. Funds of funds excluded from overall figures to avoid double-counting. Gap numbers may not match differences in returns due to rounding.

- The average dollar invested in active funds gained 6.0% annually, which was around 1.5 percentage points less per year than the aggregate total return the funds earned over the decade ended Dec. 31, 2024.
- Index funds earned a higher dollar-weighted return than active funds (8.5% per year), but this still fell shy of the funds' aggregate time-weighted return (9.8% annual), leaving a 1.3-percentage-point per year gap.

Exhibit 8 Annual Investor Return Gaps by US Category Group and Management Style (10 Years Ended Dec. 31, 2024)

US Category Group	Mgmt Style	Investor Return	Total Return	Gap
Alternative	Active	2.1%	2.8%	-0.7%
	Index	9.5%	11.2%	-1.8%
International Equity	Active	5.2%	5.8%	-0.6%
	Index	4.2%	6.1%	-2.0%
Municipal Bond	Active	1.0%	2.1%	-1.2%
	Index	0.7%	1.8%	-1.1%
Sector Equity	Active	6.3%	7.8%	-1.5%
	Index	7.6%	9.3%	-1.7%
Taxable Bond	Active	1.4%	2.3%	-0.9%
	Index	0.8%	1.7%	-0.9%
US Equity	Active	10.0%	11.3%	-1.3%
	Index	12.1%	12.2%	0.0%
Overall	**Active**	**6.0%**	**7.5%**	**-1.5%**
	Index	**8.5%**	**9.8%**	**-1.3%**



Source: Morningstar; author's calculations. Data as of Dec. 31, 2024. Excludes "commodities" category group and funds of funds. "Allocation" category group not shown because all "allocation" funds are assigned to the "active" management style. Gap numbers may not match differences in returns due to rounding.

Takeaways for Investors

- While ETFs have increasingly become the managed investment of choice thanks to their low cost, tax efficiency, and ease of use, they still can be prone to misuse associated with overtransacting, negating some of the advantages they enjoy compared with standard open-end funds.
- ETF investors should be especially deliberate about where and how they're used to ensure they're part of a strategic allocation or in a context that doesn't require frequent, ad hoc

trading. This is especially important knowing that, unlike open-end funds, ETFs aren't usually held by other mutual funds or in a retirement plan lineup, which are contexts that help to enforce long-term ownership.

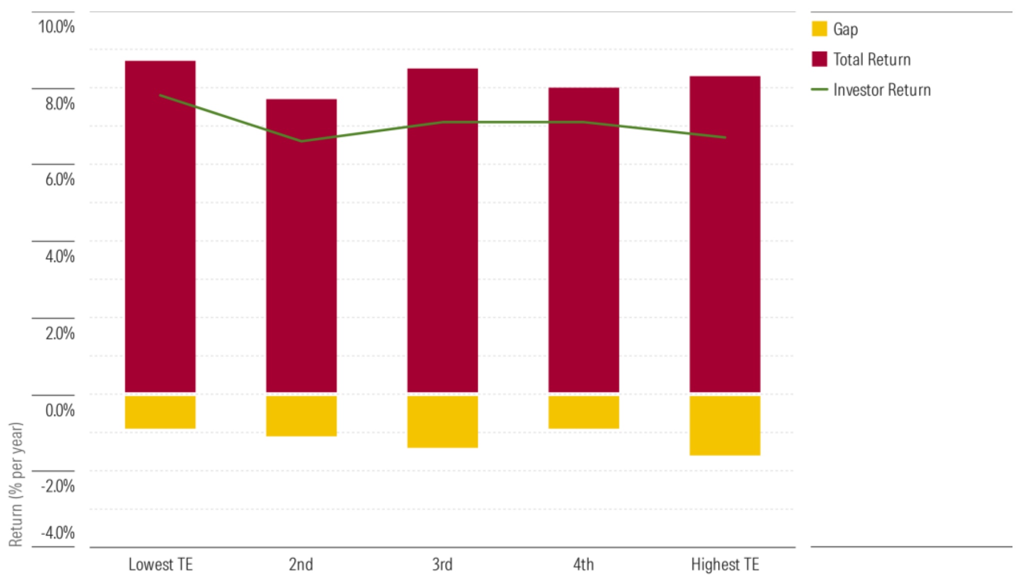
- Management style—active or passive—was not a strong determinant of how much total return investors captured, as the investor return gaps were similar between the two types of funds.
- This is a reminder that laudable practices like minimizing fees by allocating to lower-cost passive funds don't necessarily translate to superior investor returns. In fact, there were larger investor return gaps for passive funds in the international equity and sector equity category groups. And while the gaps were similar in absolute terms between active and passive taxable-bond funds, passive bond investors captured a smaller share of the funds' aggregate total returns.

Tracking Error/Cash Flow Volatility

- The more a fund's returns diverged from its style-appropriate benchmark ("tracking error"), the wider the gap between its investor and total returns tended to be.
- The average dollar invested in funds with the lowest tracking error lagged the funds' aggregate total return by less than 1 percentage point per year whereas the dollar-weighted returns of funds with the highest tracking error fell shy of their aggregate total return by nearly twice as much (1.6 percentage points per year).
- Funds with lower tracking error earned comparable aggregate total returns to funds with higher tracking error, but investor returns gradually eroded as one moved from lower to higher tracking error quintiles.

Exhibit 9 Annual Investor Return Gaps by US Category Group and Tracking Error Quintile (10 Years Ended Dec. 31, 2024)

US Cat Group	Lowest TE	2nd	3rd	4th	Highest TE
Allocation	-0.8%	4.1%	0.5%	-1.1%	-0.3%
Alternative	-5.7%	-0.1%	-0.1%	-2.1%	-3.8%
International Equity	-2.9%	-0.7%	-0.6%	-1.0%	-1.4%
Municipal Bond	-1.1%	-1.3%	-1.2%	-1.7%	1.4%
Sector Equity	-1.2%	-1.8%	-2.1%	-2.0%	-1.4%
Taxable Bond	-0.7%	-1.1%	-1.3%	-1.1%	-1.4%
US Equity	0.1%	-0.7%	-1.3%	-0.9%	-1.8%
Overall	**-0.9%**	**-1.2%**	**-1.4%**	**-0.9%**	**-1.6%**

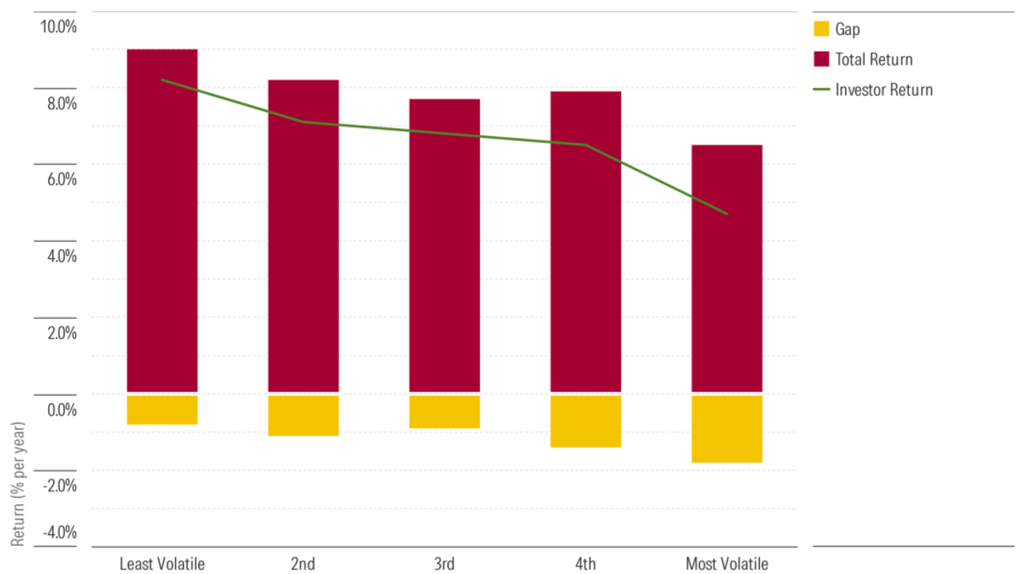


Source: Morningstar, author's calculations. Data as of Dec. 31, 2024. Excludes "commodities" category group. The "alternative" category group also includes funds assigned to the "nontraditional equity" category group. The category group figures include funds of funds, but the "overall" figures exclude funds of funds to avoid double-counting.

- Similarly, funds with more-volatile cash flows ("cash flow volatility," which proxies for trading activity) tended to earn lower dollar-weighted returns than funds with more-stable cash flows.
- The return of the average dollar invested in funds with the most stable cash flows lagged the funds' aggregate total return by 0.8% per year, which was 1 percentage point narrower than the gap for funds with the most volatile cash flows (negative 1.8 percentage points).
- Not only were the gaps narrower among funds with less-volatile cash flows, these funds also tended to earn higher dollar-weighted and aggregate total returns than funds where investors traded more often. The average dollar invested in funds with the least-volatile cash flows gained 8.2% per year over the 10 years ended Dec. 31, 2024 (versus a 9% per year aggregate total return), compared with 4.7% in funds with the most volatile cash flows (compared with a 6.5% aggregate total return).

Exhibit 10 Annual Investor Return Gaps by US Category Group and Cash Flow Volatility Quintile (10 Years Ended Dec. 31, 2024)

US Cat Group	Least Volatile	2nd	3rd	4th	Most Volatile
Allocation	1.9%	-0.1%	0.3%	-0.3%	0.1%
Alternative	-1.2%	-0.2%	-2.9%	-1.6%	-6.0%
International Equity	-0.7%	-0.6%	-0.4%	-3.9%	-1.3%
Municipal Bond	-1.0%	-1.3%	-1.3%	-1.1%	-1.2%
Sector Equity	-1.4%	-1.8%	-1.1%	-2.1%	-1.5%
Taxable Bond	-0.4%	-1.0%	-0.9%	-1.3%	-1.1%
US Equity	-0.6%	-0.6%	-0.5%	0.2%	-0.8%
Overall	**-0.8%**	**-1.1%**	**-0.9%**	**-1.4%**	**-1.8%**



Source: Morningstar, author's calculations. Data as of Dec. 31, 2024. Excludes "commodities" category group. The "alternative" category group also includes funds assigned to the "nontraditional equity" category group. The category group figures include funds of funds, but the "overall" figures exclude funds of funds to avoid double-counting.

Takeaways for Investors

- While there's merit to active funds that go their own way, one potential trade-off investors in high-tracking error funds face is the degree to which they can capture the funds' total returns. These funds' more idiosyncratic approaches can test investors' resolve, leading to mistimed purchases and sales, which could explain the wider gaps between the funds' dollar-weighted and aggregate total returns when compared with funds with lower tracking error. It's worth noting that this pattern was more pronounced among US equity and taxable-bond funds than other fund types.
- With respect to cash flow volatility, the main lesson seems to be the more investors traded—that is, the more volatile the funds' cash flows—the less their average dollar made when compared with the funds' aggregate total returns. This seems to underscore the importance

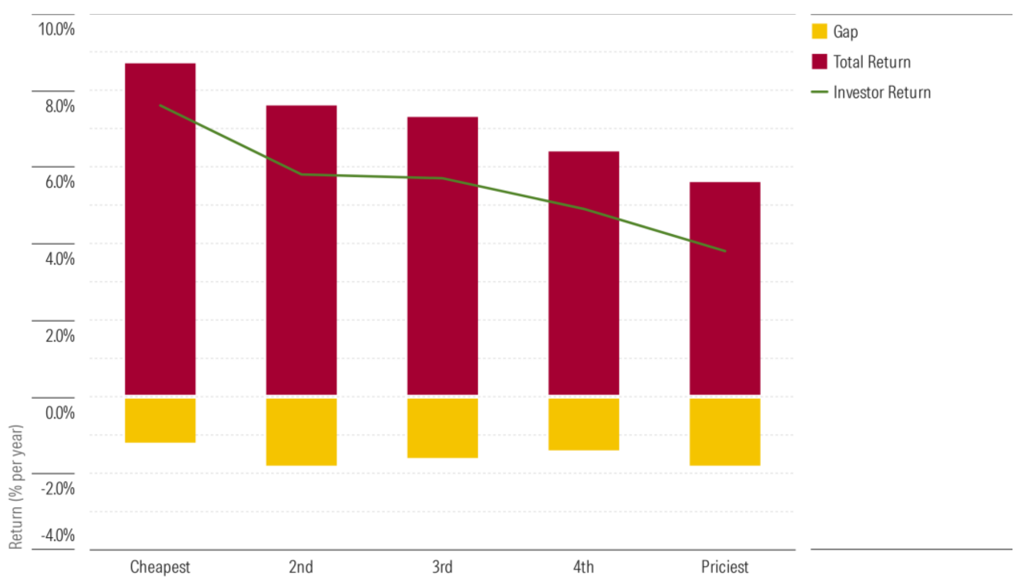
of holding the line on transacting, which can be accomplished by keeping discretionary trades to a minimum and automating other routine tasks, like rebalancing, to the greatest extent possible.

Fees/Return Volatility

- Cheaper funds tended to see smaller gaps than pricey funds, though it varied by category group, with the trend especially pronounced among US equity and sector equity funds but less so in international equity and taxable bond.
- It's worth noting that the cheapest quintile of funds also earned significantly higher dollar-weighted (7.6% per year over the decade ended Dec. 31, 2024) and aggregate total (8.7% annual) returns than the priciest quintile did (3.8% and 5.6% per year, respectively).

Exhibit 11 Annual Investor Return Gaps by US Category Group and Fee Quintile (10 Years Ended Dec. 31, 2024)

US Cat Group	Cheapest	2nd	3rd	4th	Priciest
Allocation	-0.2%	-0.4%	0.7%	-0.5%	-1.2%
Alternative	-0.3%	-1.9%	-0.2%	-5.7%	-2.5%
International Equity	-0.7%	-1.3%	-4.6%	-1.1%	-0.8%
Municipal Bond	-1.1%	-1.4%	-1.3%	-0.9%	-0.7%
Sector Equity	-1.4%	-1.6%	-1.9%	-2.2%	-3.9%
Taxable Bond	-1.0%	-1.2%	-0.7%	-0.5%	-0.9%
US Equity	-0.4%	-1.4%	-1.6%	-1.3%	-2.1%
Overall	**-1.2%**	**-1.8%**	**-1.6%**	**-1.4%**	**-1.8%**

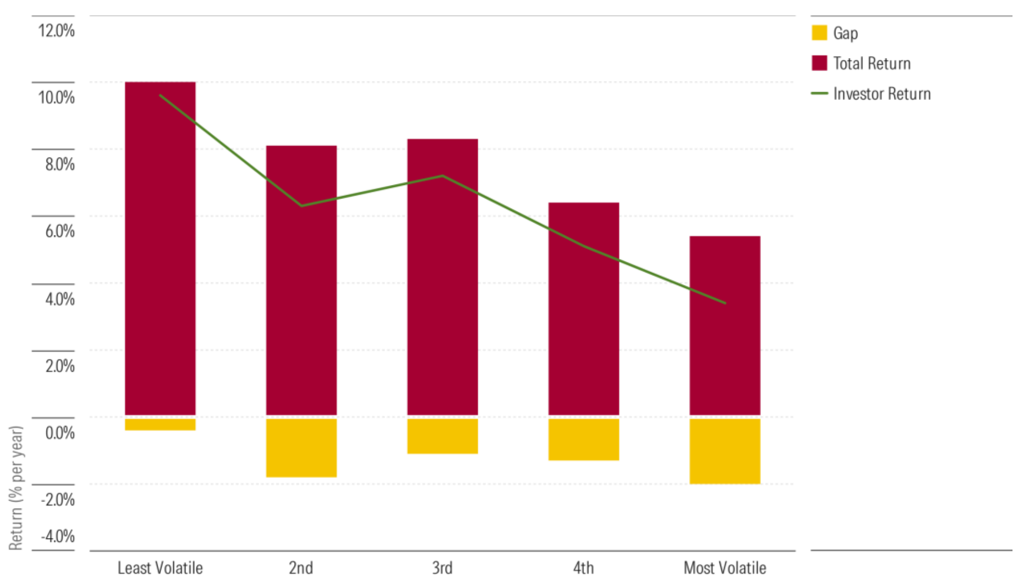


Source: Morningstar, author's calculations. Data as of Dec. 31, 2024. Excludes "commodities" category group. The "alternative" category group also includes funds assigned to the "nontraditional equity" category group. The category group figures include funds of funds, but the "Overall" figures exclude funds of funds to avoid double-counting.

- There was a much clearer relationship between volatility of returns and investor outcomes: The more volatile the funds were, the more trouble investors encountered in capturing the funds' aggregate total returns, as evidenced by much larger investor-return gaps among the most volatile quintile of funds, mostly irrespective of asset class.
- We also found that more-volatile funds earned far lower dollar-weighted (3.4% per year over the decade ended Dec. 31, 2024) and aggregate total (5.4% annually) returns than less-volatile funds (9.6% and 10.0% per year, respectively). In a sense, investors in the more volatile funds within a particular category group could incur two levels of costs—lower returns in an absolute sense and a larger shortfall in the return of their average dollar compared with the funds' aggregate total return.

Exhibit 12 Annual Investor Return Gaps by US Category Group and Standard Deviation Quintile (10 Years Ended Dec. 31, 2024)

US Cat Group	Least Volatile	2nd	3rd	4th	Most Volatile
Allocation	-0.3%	-0.1%	0.3%	1.4%	3.7%
Alternative	-0.3%	0.1%	-2.6%	-1.6%	-11.0%
International Equity	-0.7%	-0.5%	-0.3%	-0.5%	-3.0%
Municipal Bond	-0.7%	-0.9%	-1.1%	-1.4%	-1.9%
Sector Equity	-1.6%	-1.0%	-1.6%	-0.5%	-2.6%
Taxable Bond	-0.8%	-1.1%	-0.7%	-1.4%	-1.1%
US Equity	0.0%	-1.0%	-1.0%	-1.2%	-1.7%
Overall	**-0.4%**	**-1.8%**	**-1.1%**	**-1.3%**	**-2.0%**



Source: Morningstar, author's calculations. Data as of Dec. 31, 2024. Excludes "commodities" category group. The "alternative" category group also includes funds assigned to the "nontraditional equity" category group. The category group figures include funds of funds, but the "Overall" figures exclude funds of funds to avoid double-counting.

Takeaways for Investors

- Though cheaper funds had smaller gaps than pricier funds, it would be overly reductive to conclude that investors in inexpensive funds will capture more of their funds' total returns than investors in costlier funds. This was evident when we examined the gaps for active and passive funds, which showed that passive fund investors were almost as susceptible, and in some cases more prone, to mistiming their transactions than investors in costlier active funds. Rather, it is likelier the case that less expensive funds are used in contexts and circumstances where investors are less likely to go astray. For instance, they might be holdings in other allocation funds or otherwise serve as components of long-term, strategic asset allocations where they're less likely to be touched.
- With respect to volatility and investor outcomes, the findings somewhat upend the notion that risk and return are joined at the hip. While it stands to reason that more-volatile assets like stocks will outearn less-volatile investments like bonds over longer horizons, it's not necessarily the case that a more volatile equity fund will outgain a less volatile stock fund, which the study's results seem to highlight.
- The findings also illustrate the potential peril of chasing returns, which investors are likelier to do when it comes to more-volatile funds, given the funds' wider return amplitudes. This potentially works to their detriment in two main ways. First, they transact more often, and we have found that the more investors traded, the less of their funds' total returns they captured. Second, they fall prey to buying high—after a burst of performance—and selling low, as returns erode and investors give chase to a different highflyer.

Conclusion

We find that investors captured most, but not all, of their funds' aggregate total returns over the decade ended Dec. 31, 2024. The 1.2 percentage point per year shortfall is significant, equivalent to around 15% of those funds' gains over that span. This finding is consistent with prior studies, which also found gaps over the rolling 10-year periods ended Dec. 31, 2020, 2021, 2022, and 2023.

We also found indications that the presence and magnitude of investor return gaps were correlated with certain factors, including:

Factor	Key Finding	Key Takeaway
Category Group	Allocation funds saw the narrowest gaps, while specialized funds like sector equity funds saw the widest gaps.	Utilize all-in-one solutions like target-date funds that widely diversify and automate key tasks, lessening the need to transact; in addition, build in a margin of safety to long-term return forecasts to better account for return drags associated with transacting.
Morningstar Category	Narrow-to-moderate gaps for the largest Morningstar Categories by assets, with the largest funds in these categories often held by multi-asset strategies or featured on retirement plan menus, where they're likelier to be used strategically.	Be deliberate about the context in which a fund is used, favoring solutions that automate key tasks or promote strategic long-term investment that doesn't require ad hoc, discretionary decisions that could lead to frequent, costly transactions.
Investment Type	Higher dollar-weighted and total returns for ETFs but also wider gaps, especially among international equity, sector equity, and taxable bonds.	Keep trading to a minimum and seek out settings and contexts that promote strategic, long-term investment, or otherwise risk blunting some of the advantages ETFs boast over comparable open-end funds.
Management Style	Active and passive funds saw roughly comparable gaps.	Avoid assuming indexing will lead to better dollar-weighted outcomes. The management style appears to matter less than the circumstances and setting in which a fund is utilized.
Tracking Error	Funds that veered the most from their style-appropriate benchmark saw far wider gaps than those that more closely mirrored the index.	Be clear-eyed about the resolve that go-anywhere strategies can demand, so as to avoid buying and selling inopportunely, denting dollar-weighted returns in the process.
Cash Flow Volatility	Funds with more stable cash flows earned higher dollar-weighted and total returns than funds with volatile cash flows and had narrower return gaps.	If anything seems to predict poor dollar-weighted returns, it is trading activity, making it paramount to keep discretionary trading to a bare minimum and refrain from chasing performance from one fund to the next.
Fees	Cheaper funds earned higher dollar-weighted and total returns than pricier funds and captured more of the funds' aggregate total returns.	Keeping fees low is a laudable objective, but expense ratios are probably incidental to gaps. What matters more is the context and setting in which lower-cost funds are most often found, including as holdings of other allocation funds or on retirement plan menus that promote more disciplined, strategic use.
Volatility of Returns	Funds with more-volatile returns had lower dollar-weighted and total returns, and wider gaps, than those with less-volatile returns.	Eschew investments in streaky funds that can push our buttons, leading to inopportunely timed buys and sells, in favor of funds that, if less exciting, give us a better shot of capturing as much of the total return as possible.

Appendix

Study Synopsis

Exhibit 13 Breakdown of Number of Funds Included in Study by Category Group, Management Style, and Type

US Category Group	Active	Passive	Open-End	ETF	Total
Allocation	4,988	31	4,983	36	5,019
Alternative	1,149	110	1,207	52	1,259
International Equity	3,554	476	3,679	351	4,030
Municipal Bond	1,739	29	1,736	32	1,768
Sector Equity	1,390	332	1,429	293	1,722
Taxable Bond	4,441	305	4,512	234	4,746
US Equity	6,579	725	7,037	267	7,304
Total (ex Funds of Funds)	**23,840**	**2,008**	**24,583**	**1,265**	**25,848**

Exhibit 14 Breakdown of Beginning Net Assets of Funds Included in Study by Category Group, Management Style, and Type (USD Bil)

US Category Group	Active	Passive	Open-End	ETF	Total
Allocation	2,322	8	2,321	9	2,330
Alternative	167	6	166	7	173
International Equity	1,674	618	1,913	380	2,293
Municipal Bond	569	15	568	15	583
Sector Equity	410	338	446	302	748
Taxable Bond	2,306	612	2,625	294	2,918
US Equity	3,641	2,225	4,958	908	5,866
Total (ex Funds of Funds)	**9,947**	**3,819**	**11,856**	**1,911**	**13,766**

Exhibit 15 Breakdown of Ending Net Assets of Funds Included in Study by Category Group, Management Style, and Type (USD Bil)

US Category Group	Active	Passive	Open-End	ETF	Total
Allocation	3,130	14	3,129	15	3,144
Alternative	135	35	131	40	170
International Equity	1,570	1,704	2,213	1,061	3,274
Municipal Bond	641	76	636	80	717
Sector Equity	397	886	467	816	1,283
Taxable Bond	2,454	1,972	3,121	1,305	4,426
US Equity	4,778	8,572	8,151	5,200	13,351
Total (ex Funds of Funds)	**11,262**	**13,251**	**16,005**	**8,508**	**24,513**

Exhibit 16 Breakdown of Cumulative Net Flows of Funds Included in Study by Category Group, Management Style, and Type (USD Bil)

US Category Group	Active	Passive	Open-End	ETF	Total
Allocation	(930)	1	(930)	1	(929)
Alternative	(66)	4	(69)	7	(61)
International Equity	(989)	590	(819)	420	(398)
Municipal Bond	13	59	9	63	72
Sector Equity	(267)	128	(279)	139	(139)
Taxable Bond	(209)	1,266	86	970	1,057
US Equity	(2,913)	1,020	(3,509)	1,615	(1,894)
Total (ex Funds of Funds)	**(5,063)**	**3,065**	**(5,211)**	**3,213**	**(1,998)**

Source: Morningstar. Data as of Dec. 31, 2024. Excludes "commodities" category group. The "alternative" category group also includes funds assigned to the "nontraditional equity" category group. The category group figures include funds of funds, but the “overall” figures exclude funds of funds to avoid double-counting. Category group figures will not sum to “Total” shown in bottom row for this reason. Numbers may not sum exactly across columns due to rounding.

Methodology

Morningstar's annual "Mind the Gap" study compares funds' dollar-weighted returns with their time-weighted returns to see how large the gap, or difference, has been over time.

We use a portfolio-based methodology to pool funds' net assets and monthly flows to an aggregate level. We then estimate the pool's dollar-weighted returns using an internal-rate-of-return calculation that represents the constant monthly rate of return that makes the pool's beginning net assets equal its ending assets with all monthly cash flows accounted for. This estimate approximates the return of the average dollar in the pool over the study period.

It is important to note that this estimate is not a proxy for the average investor's dollar-weighted return, as this will depend on the particular magnitude and timing of an individual investor's purchases and sales, which is beyond the scope of this study.

Each pool consists of all share classes of all eligible funds and exchange-traded funds that existed at the beginning of the study period, in this case as of Jan. 1, 2015. This includes funds that were merged or liquidated during the study period. We incorporate obsolete funds by aggregating their beginning assets and monthly flows through their final partial month of existence. In the case of liquidated funds, we carry the fund's terminal net assets forward to the end of the study, which is akin to assuming these assets were held in cash. With respect to merged funds, we treat the final net assets before the fund is merged as a transfer to the acquiring fund.

While we attempt to correct for survivorship bias, we do not correct for creation bias, as the study captures net assets, cash flows, and returns only for funds that existed at the start of the study period. In other words, we exclude funds that launched after Dec. 31, 2014, from the study.

The study also excludes funds in the "commodities" and "miscellaneous" category groups as well as any fund lacking complete net assets, monthly net flows, or monthly net return data through the end of the study period or, if an obsolete fund, its final month of existence. For brevity, we've folded funds in the "nontraditional equity" category group into the "alternatives" category group.

We include funds of funds in the category group pools, and thus their dollar-weighted and total returns are reflected in the aggregate category group investor return and total returns shown. (The vast majority of funds of funds belong to the "allocation" category group.) However, to avoid double-counting, we exclude funds of funds from the overall investor return and total return calculations.

In this year's study, we slightly modified our approach to calculating each pool's aggregate total return. Previously, we had derived this aggregate time-weighted return by multiplying each constituent fund's monthly return by its average assets that month divided by the sum of the average assets of all funds in that pool. We then summed those products for all funds in that pool to arrive at the aggregate monthly return for that month and repeated that process for all subsequent months. Then we compounded these monthly aggregate returns across the full 120-month study period.

In this year's study, we adopted a simpler approach to calculating each pool's aggregate total return by compounding each constituent fund's beginning net assets by its monthly net returns to the end of the study period. We summed these values to arrive at the pool's aggregate ending net assets, which we compared with its beginning net assets to derive the total return for the study period.

Though this modified approach yielded a slightly lower aggregate total return, and thus a modestly narrower gap, than the former method, we felt it better mirrored our approach to calculating total return at the individual fund level. It also mitigated the risk of procyclicality affecting our total return calculation, as the former approach incorporated each fund's monthly net assets and therefore impounded monthly net flows to and from those funds.

For purposes of aggregating the total returns of obsolete funds, we incorporate the monthly returns of liquidated funds through the terminal month and assume the returns are zero thereafter. With respect to merged funds, we incorporate the monthly net returns of the acquired fund through the month before it merges and then assume it inherits the monthly net returns of the acquiring fund thereafter.

The study includes investor returns and total returns for both mutual funds and exchange-traded funds. ETFs can be used as trading vehicles, but our data uses monthly asset data rather than daily data. Given that ETFs do not report changes in net assets attributable to dividend reinvestments, we adjust reported flows by an assumed reinvestment rate that's tailored to each category group. (We make the same adjustment for open-end funds if the fund doesn't separately report reinvestments.)

(For more detailed information on Morningstar's approach to estimating funds' monthly net flows, please see Morningstar's "Estimated Net Cash Flow Methodology" dated Aug. 31, 2018.)

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, 2024, but we also show 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.

About Morningstar Portfolio and Planning Research

Morningstar Portfolio and Planning Research provides independent, fundamental analysis on topics like portfolio construction, retirement planning, personal finance, and investment strategy. The analysis seeks to frame the critical choices that investors face in designing and implementing a financial plan and offers practical solutions covering areas like setting goals, allocating assets, selecting investments, and withdrawing retirement income. The research takes various forms, including articles on Morningstar's flagship research platforms as well as in-depth studies of topics that are particularly relevant to investors seeking to build cohesive portfolios or achieve other financial goals like retirement security.

22 West Washington Street
Chicago, IL 60602 USA