



# 2022 QAIB Report

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## *Quantitative Analysis of Investor Behavior*

For the period ending: **December 31, 2021**

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## Introduction

Since 1994, **DALBAR's Quantitative Analysis of Investor Behavior (QAIB)** has measured the effects of investor decisions to buy, sell and switch into and out of mutual funds over short and long-term time frames. These effects are measured from the perspective of the investor and do not represent the performance of the investments themselves. The results consistently show that the average investor earns less – in many cases, much less – than mutual fund performance reports would suggest.

The goal of QAIB is to improve performance of both independent investors and financial advisors by managing behaviors that cause investors to act imprudently. QAIB offers guidance on how and where investor behaviors can be improved.

This 28<sup>th</sup> Annual QAIB report examines real investor returns from 1985 through the end of 2021, which encompasses the crash of 1987, bull market of the 90's, the drop at the turn of the millennium, the crash of 2008, recovery periods leading up to the most recent bull market, and the unprecedented events of 2020.

### Importance of QAIB

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The best financial professionals double as behavioral finance coaches of their clients. When markets are down or even volatile, questions will arise from concerned clients and perspective will be needed. The QAIB report and materials give advisors the tools to tell a story, put things into perspective, and deliver the calming messages that are needed to mitigate return-destroying behavior. Such messages include:

- The prudence of a long-term, buy and hold approach
- The folly of measuring investment success against statistical benchmarks
- Awareness of common behavioral influences
- Lessons from past markets
- The importance of investing assets as early as possible

## About DALBAR, Inc.

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DALBAR, Inc. is the financial community’s leading independent expert for evaluating, auditing and rating business practices, customer performance, product quality and service. Launched in 1976, DALBAR has earned the recognition for consistent and unbiased evaluations of investment companies, registered investment advisers, insurance companies, broker/dealers, retirement plan providers and financial professionals. DALBAR awards are recognized as marks of excellence in the financial community.

## Methodology

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QAIB uses data from the Investment Company Institute (ICI), Standard & Poor’s, Bloomberg Barclays Indices and proprietary sources to compare mutual fund investor returns to an appropriate set of benchmarks. Covering the period from January 1, 1985 to December 31, 2021, the study utilizes mutual fund sales, redemptions and exchanges each month as the measure of investor behavior. These behaviors reflect the “[Average Investor](#).” Based on this behavior, the analysis calculates the “[average investor return](#)” for various periods. These results are then compared to the returns of respective indices.

A [glossary of terms](#) and examples of how the calculations are performed can be found in the Appendices section of this report.

## The QAIB Benchmark and Rights of Usage

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Investor returns, retention and other industry data presented in this report can be used as benchmarks to assess investor performance in specific situations. Among other scenarios, QAIB has been used to compare investor returns in individual mutual funds and variable annuities, as well as for client bases and in retirement plans. Please see the “[Rights of Usage](#)” section in the Appendices for more information and appropriate citation language.

## Visit the QAIB Store!

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Renowned investor behavior research is now at your fingertips! Visit the QAIB Store at [www.QAIB.com](http://www.QAIB.com) for images, infographics and more.

For questions, please see our FAQ page in the QAIB Store ([www.QAIB.com](http://www.QAIB.com)) or contact us at [qaib@dalbar.com](mailto:qaib@dalbar.com) or 617-624-7100.

## Executive Summary

- The Average Equity Fund Investor experienced a relatively unalarming investor gap in 2020 (1.31%) despite an epic market meltdown in March due to COVID. The Average Fixed Income Fund Investor trailed the relevant index acutely in 2020 (4.42%).
- The **Average Equity Fund Investor** continued to be a net withdrawer of assets in 2021 for the 6<sup>th</sup> year in a row.
- The **Average Fixed Income Fund Investor** has been a heavy contributor of assets throughout the same period.
- The Average Investor has maintained an approximate 70% equity to 30% fixed income allocation since 2017.
- The aggregate outflow of equity assets and inflow of fixed income assets over the past several years suggest a rebalancing on the part of investors after significant appreciation of the equities within the portfolio.
- The **Average Equity Fund Investor** outperformed the S&P 500 in the first two months of 2021 but in only 2 of the remaining 10 months thereafter.
- The **Average Equity Fund Investor** finished the year with a return of 18.39% versus an S&P 500 return of 28.71%; an investor return gap of 1,032 bps.
- The gap of 1,032 basis points was the 3<sup>rd</sup> largest annual gap since 1985, when QAIB analysis began

|          | Average<br>Equity Fund<br>Investor<br>(%) | Average Fixed<br>Income Fund<br>Investor<br>(%) | Average Asset<br>Allocation<br>Fund Investor<br>(%) | S&P 500<br>(%) | Bloomberg-<br>Barclays<br>Aggregate<br>Bond Index<br>(%) | Inflation<br>(%) |
|----------|---|---|---|----------------|--|------------------|
| 30 Year  | 7.13                                      | 0.34  | 2.95  | 10.65          | 5.29   | 3.38             |
| 20 Year  | 8.13                                      | 0.44  | 3.57  | 9.52           | 4.33   | 2.32             |
| 10 Year  | 13.44                                     | 0.42  | 6.36  | 16.55          | 2.90   | 2.16             |
| 5 Year   | 14.80                                     | 0.80  | 7.46  | 18.47          | 3.57   | 2.93             |
| 3 Year   | 21.56                                     | 1.71  | 11.60   | 26.07          | 4.79   | 3.53             |
| 12 Month | 18.39                                     | -1.55   | 13.29   | 28.71          | -1.54  | 7.04             |

## Executive Summary (continued)

- The **Average Fixed Income Fund Investor** finished the year with a return of -1.55% versus a Bloomberg Barclays Aggregate Bond Index return of -1.54%; an investor return gap of 1 bps.
- Inflation finally reared its ugly head 2021, checking in at 7.04% for the year.
- The markets have shown the historical ability to recover from major declines within 5 years. Since 1940, there have been 8 years in which the S&P experienced a drop of 10% or more. In those 8 years, 3 of them recovered within a year, and all recovered within 5 years.
- [Prudent Asset Allocation](#) is an investment strategy that sets aside the cash needs for 5 years into preservation investments. The remainder of the portfolio is invested in growth assets that maximize return.
- The **Average Equity Fund Investor** with a \$100,000 portfolio at the beginning of 2021 earned \$17,950 throughout the year. A **buy and hold** strategy of \$100,000, earning S&P returns, would have earned \$28,705.
- The **Average Equity Index Fund Investor** outperformed the **Average Active Equity Fund Investor** for the year 2021 with an annual return of 23.44% versus 18.18%.
- The Average Equity Fund Investor performed best in value funds, with the **Average Small-Cap Value Fund Investor** being the top performing size and style investor (30.38%).
- The **Average Real Estate Fund Investor** was the top performing Sector Fund Investor, earning 38.89% in 2021.
- The **Average Equity Fund Investor** retention rates averaged 4.36 years in 2021. This was a rebound from a 2020 low of 3.51 years.
- Retention rates increased for the **Average Fixed Income Fund Investor** and **Average Asset Allocation Fund Investor** in 2021. For bond investors, Retention Rates jumped from 3.12 years to 3.44 years. For asset allocation investors, Retention Rates increased from 4.38 to 5.45 years.

## BEHIND THE NUMBERS...

## INVESTOR PSYCHOLOGY

When discussing investor behavior, it is helpful to first understand the specific thoughts and actions that lead to poor decision-making. Investor behavior is not simply buying and selling at the wrong time, it is the psychological traps, triggers and misconceptions that cause investors to act irrationally. That irrationality leads to buying and selling at the wrong time, which leads to underperformance.

There are 9 distinct behaviors that tend to plague investors based on their personal experiences and unique personalities.

**Loss Aversion**

Expecting to find high returns with low risk

**Narrow Framing**

Making decisions without considering all implications

**Mental Accounting**

Taking undue risk in one area and avoiding rational risk in another

**Diversification**

Seeking to reduce risk, but simply using different sources

**Anchoring**

Relating to the familiar experiences, even when inappropriate

**Optimism**

Belief that good things happen to me and bad things happen to others

**Media Response**

Tendency to react to news without reasonable examination

**Regret**

Treating errors of commission more seriously than errors of omission

**Herding**

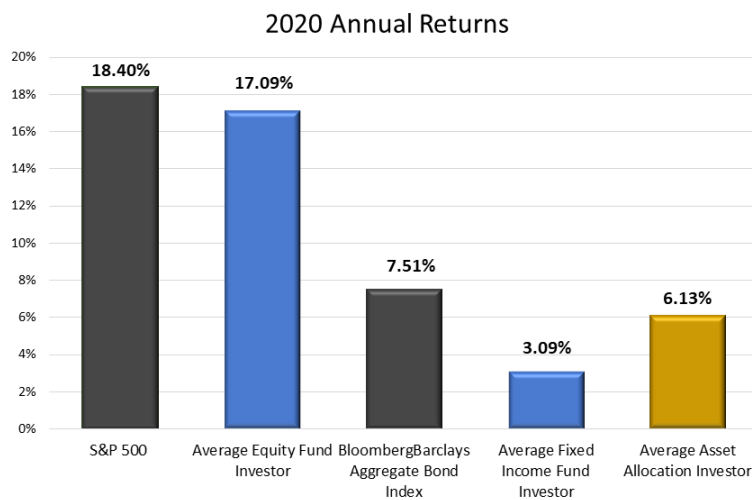
Copying the behavior of others even in the face of unfavorable outcomes

## A Review of 2020

As 2021 began, the average investor was coming off a year in which it had dodged a financial calamity in 2020. Markets crashed in unprecedented fashion in March of 2020 due to global pandemic fears. Markets swiftly recovered to new highs by August of 2020. Normally an extreme drop followed by a full recovery 5 months later is a recipe for disaster for an average investor. Investors, as we know, generally react late to a crash and then recognize the recovery and buy back in late as well. The result is a locking in of losses and a re-entry nowhere near the bottom.

The year 2020 was a different story however. Investors reacted in an atypical fashion by temporarily moving out of fixed income investments at a record pace, all while staying on trend with respect to their equity levels.

The result was that the Average Investor underperformed the fixed income market by a substantial amount but experienced a modest investor gap as it related to equities. The Average Equity Fund Investor underperformed the S&P 500 by only 1.31% (17.09% vs. 18.40%) in 2020 while the Average Fixed Income Fund Investor did much worse. Due to the panic selling in March, the Average Fixed Income Fund Investor experienced a gap of 4.42% against the BloombergBarclays Aggregate Bond Index (3.09% vs. 7.51%).



## The Great Rebalance

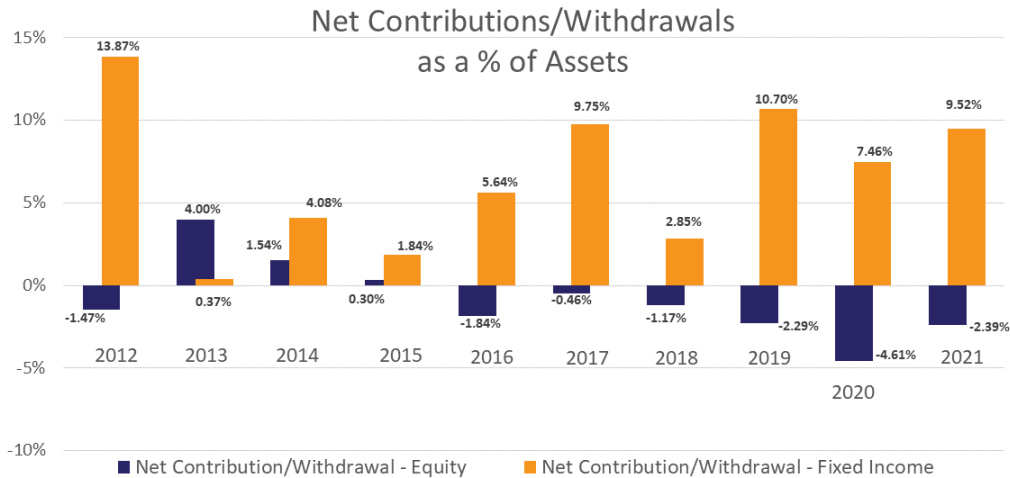
The Average Investor has traditionally owned a split of approximately 70% stocks and 30% bonds. As the equity portion of that portfolio continues to appreciate, the Average Investor has been a net withdrawer of equity funds and a net purchaser of fixed income funds in an apparent attempt to rebalance the portfolio. This isn't just a 2021 phenomenon, it is a pattern that has been observed since 2016.

The Average Investor continued to be a net withdrawer of equity funds in 2021 for the 6<sup>th</sup> year in a row. In 2021, the Average Equity Fund Investor withdrew 2.39% of the equity fund assets they held on January first. Meanwhile, the Average Investor increased its fixed income portfolio by 9.52% of fixed income assets held on January first.

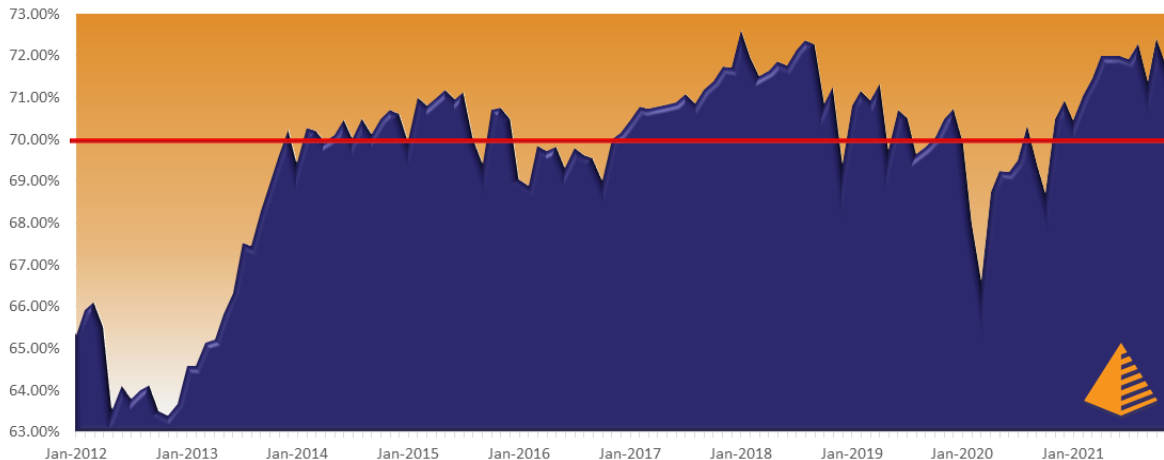
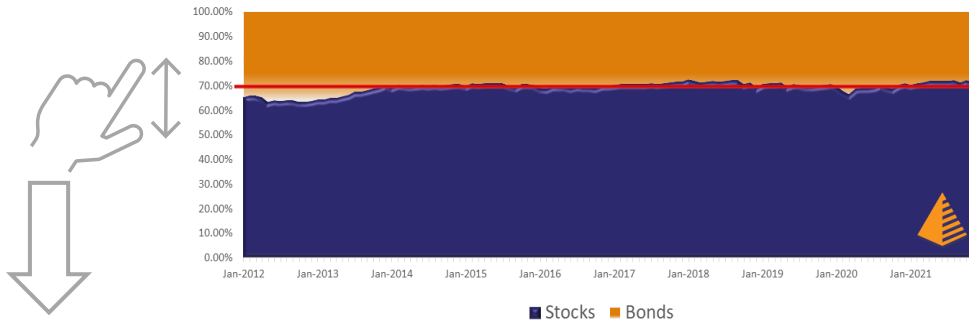
The 2.39% of net withdrawals from equities and 9.52% net contributions to fixed income helped to counteract the substantial appreciation of the equity portfolio and maintain a fairly



consistent allocation of stocks to bonds. On December 31, 2020, the Average Investor held 70.94% equity and by December 31, 2021 the Average Investor portfolio was 72.35%.



### Average Investor Asset Allocation Stocks vs. Bonds – 10 years



## A Lost Opportunity

The markets were undeterred by the pandemic that began in 2020 and continued to rise through 2021. The S&P 500 gained an additional 28.71% during the year. That 28.71% return marked the 12<sup>th</sup> year in which the S&P 500 experienced a return of 28% or higher in the last half century.

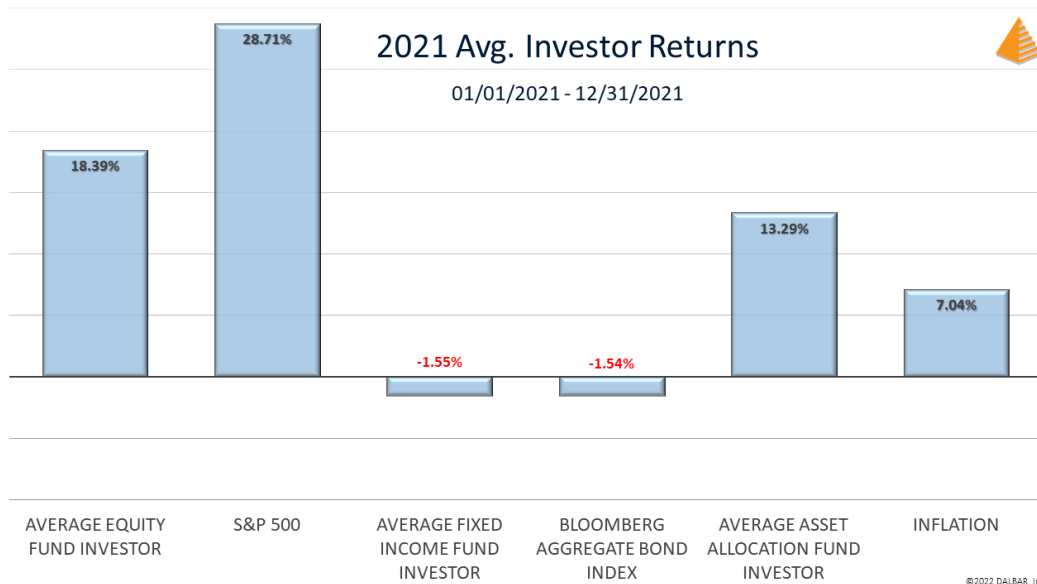
### The Boom Years

Years with S&P Return of 28% or more  
1972-2021 (50 years)

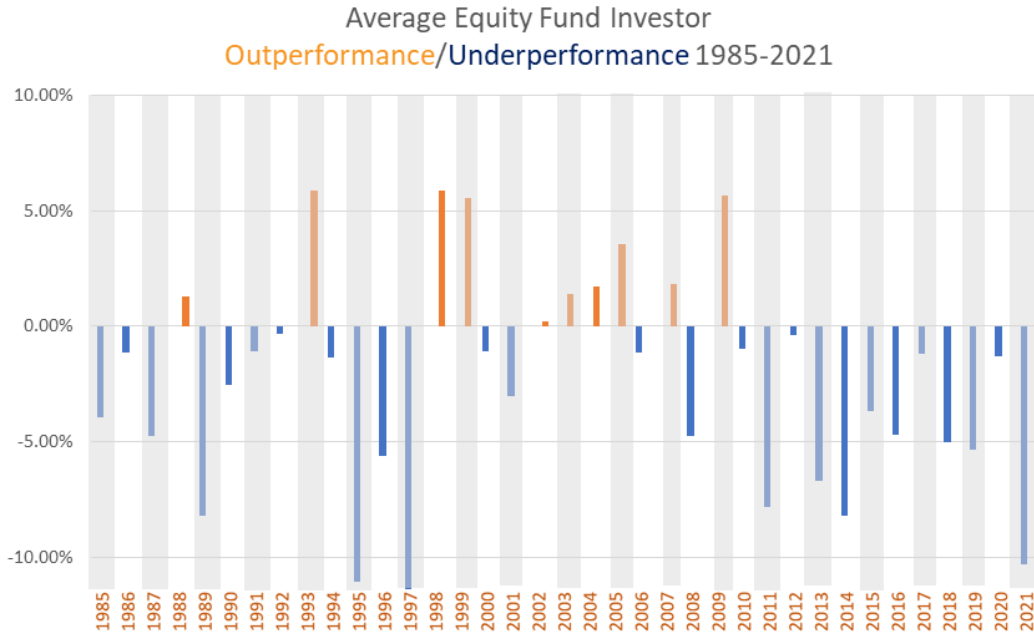
| S&P 500 Annual Return | Years                                    |
|-----------------------|--|
| 37% or more           | 1975, 1995                               |
| 30% - 33.36%          | 1980, 1985, 1989, 1991, 1997, 2013, 2019 |
| 28% - 30%             | 1998, 2003, <b>2021</b>                  |

The fixed income market experienced a negative year in 2021, with the Bloomberg Barclays Aggregate Bond Index losing -1.54% for the year. The Average Fixed Income Fund Investor basically tracked that index perfectly, trailing it by only 1 basis point.

While the S&P soared by over 28% in 2021, the Average Investor lost an opportunity to realize a return on their equity portfolio anywhere near that of the broader equity market. The Average Equity Fund Investor earned only 18.39%, an alarming underperformance of 1,032 basis points against the S&P 500.



The gap of over 1,000 basis points is one of the largest gaps QAIB has identified over the years, which looks back as far as 1985. The only other two years since 1985 in which there was a 10% or greater investor gap were 1995 and 1997.



The Average Equity Fund Investor’s underperformance is partly due to the outflow of equity assets during 2021, as discussed above. Another reason for the underperformance is low retention rates on the part of the investor, which will be discussed in more detail on page 21. Both the cash flow and retention rate measures point to a lack of patience and discipline related to an investment strategy. While other factors such as fees, availability of cash to invest, and investment selection play a role, a gap of this magnitude is avoidable when a more rational approach is taken.

## An Alternative to Current Asset Allocation Practices

Current asset allocation practices use a blend of growth<sup>1</sup> and preservative<sup>2</sup> assets that are intended to provide appreciation produced from the growth component and the protection of the preservative component. This growth/preservation split is then periodically maintained through a rebalance when appreciation/depreciation of the various asset classes of a portfolio causes a deviation from the prescribed allocation. The challenge has historically been determining what allocation will provide adequate protection with acceptable loss in return that is in the investors’ best interest.

This approach is flawed for two reasons: (1) the stock/bond split is not tied directly to the actual cash needs of the investor, which can lead one to be too heavy or too light on growth assets and

<sup>1</sup> Growth investments primarily consists of equity securities, equity mutual funds and other securities, whose primary goal is appreciation.

<sup>2</sup> Preservative investments are typically bonds, bond mutual funds, money market funds, bank deposits, annuities, guaranteed contracts and other investments that are designed to prevent loss.

(2) the rebalancing is ostensibly shifting assets from high performing asset classes to lower performing ones.

### Addressing Cash Needs

Adequately addressing cash needs requires an understanding of how long it takes the market to recover from a “shock.” If cash needs are covered for this period of time, an investor should have the utmost confidence that markets will recover from a shock before the preservation component of the portfolio is depleted.

If we consider any decline of 10% or more to be a shock, there were 8 years where losses reached “Shock Levels” during the 81 years of the Modern Era<sup>3</sup>. This represents 9.9% of the years. For these years, recovery times are provided in the table to the right. The S&P fully recovered its value in each of these eight cases in 5 years or less.

Current asset allocation practices can lead investors to being over invested in equities when cash needs over the next 5 years cannot be met through the preservation portion of the portfolio. Even a 10% allocation to growth is too much if the 90% preservation component does not cover cash needs over the next 5 years.

More often, it will lead to investors being under invested in equities when the preservation portion of their portfolio exceeds what they need to meet their cash needs over the next 5 years.

| Year | % S&P Decline | Recovery Time (Years) |
|------|---------------|-----------------------|
| 1940 | (10.7%)       | 3                     |
| 1941 | (12.8%)       | 2                     |
| 1957 | (10.5%)       | 1                     |
| 1973 | (14.3%)       | 4                     |
| 1974 | (25.9%)       | 1                     |
| 2001 | (11.8%)       | 5                     |
| 2002 | (22.0%)       | 1                     |
| 2008 | (36.6%)       | 5                     |

### The Folly of Abandoning High Performers

The practice of rebalancing a portfolio leads investors to systematically sell out of higher performing investments and into lower performing ones in the name of maintaining an arbitrary asset allocation. In the case of rebalancing from equity to fixed income, investors may be sacrificing growth for little in return if their cash needs over the next 5 years are already protected through the preservation portion of the portfolio.

The most recent completed year of 2021 is a perfect example of what the Average Investor sacrifices when siphoning assets from rapidly appreciating growth assets to preservation assets as part of a rebalancing strategy. In this instance, the Average Investor earned roughly half of

<sup>3</sup> The Modern Era is defined as starting in 1940 when the principal securities regulations were in place under the control of the Securities and Exchange Commission and its associated regulators.

what the S&P 500 could have provided through a buy and hold strategy (28.71% for S&P 500 vs. 18.39% for Average Equity Fund Investor).

### A Prudent Asset Allocation Strategy

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Instead of an arbitrary asset allocation, practitioners should consider a [Prudent Asset Allocation](#) strategy that sets aside the cash needs for 5 years. Those cash needs define the dollar amount that should be set aside into preservative investments. The remainder of the portfolio is invested in assets that maximize growth.

The economic benefits of a prudent asset allocation strategy can be put into context through the table below, which shows the annual cost of various bond allocations. When investors are over invested in bonds, beyond their 5-year cash needs, there is a lost opportunity for growth.

|                                | Composite Return at Various Bond Allocations |         |         |         |          |          |
|--------------------------------|--|---------|---------|---------|----------|----------|
|                                | 0%   | 20%     | 40%     | 60%     | 80%      | 100%     |
| Annual Median Adjusted Return  | 14.8%  | 12.5%   | 10.2%   | 7.8%    | 5.5%     | 3.2%     |
| Annual Cost of Bond Allocation | 0.0%   | (2.3%)  | (4.6%)  | (7.0%)  | (9.3%)   | (11.6%)  |
| Cost after 81 Years*           | 0.0%   | (85.1%) | (97.9%) | (99.7%) | (100.0%) | (100.0%) |

\* Percentage of initial portfolio value lost to Arbitrary Asset Allocation

### Prudent Asset Allocation: A Case Study

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The following case study compares an investor subject to traditional asset allocation to one employing Prudent Asset Allocation described above.

The case study examines a hypothetical married couple, Quincy and Caroline, who have different methods of investing. Quincy employs a traditional asset allocation strategy that rebalances to maintain a certain equity level. Caroline employs a more innovative Prudent Asset Allocation strategy. See profiles of the two investors below:

| Quincy (Arbitrary Asset Allocation) |   | Caroline (Prudent Asset Allocation) |   |
|-------------------------------------|---|-------------------------------------|---|
| Portfolio Value                     | <b>\$100,000</b><br>(on 1/1/2017)                       | Portfolio Value                     | <b>\$100,000</b><br>(on 1/1/2017)                       |
| 5-year cash needs                   | <b>\$20,000</b><br>(\$4,000/yr.)                        | 5-year cash needs                   | <b>\$20,000</b><br>(\$4,000/yr.)                        |
| Assumed Equity Return               | <b>S&amp;P 500</b><br>(18.47% Annualized 2017-2021)     | Assumed Equity Return               | <b>S&amp;P 500</b><br>(18.47% Annualized 2017-2021)     |
| Assumed Bond Return                 | <b>BbgBcl Agg. Bond</b><br>(3.57% Annualized 2017-2021) | Assumed Bond Return                 | <b>BbgBcl Agg. Bond</b><br>(3.57% Annualized 2017-2021) |
| Allocation                          | 60% Stocks / 40% Bonds                                  | Allocation                          | \$20,000 Bonds / The rest - Stocks                      |
| Rebalance                           | Annually  | Rebalance                           | Annually  |

**Quincy** had a \$100,000 portfolio on January 1, 2017. At that time, he met with his advisor, who assessed his age, desired retirement age, other assets, and had him fill out a risk tolerance questionnaire. Quincy and his advisor also estimated that he may need up to \$4,000 a year from his investment portfolio above and beyond his annual income for each of the next 5 years (\$20,000 total) to cover his cash needs. The advisor presented Quincy with a chart that was called a glide path, which put him at a 60/40 split based on his age and other factors.

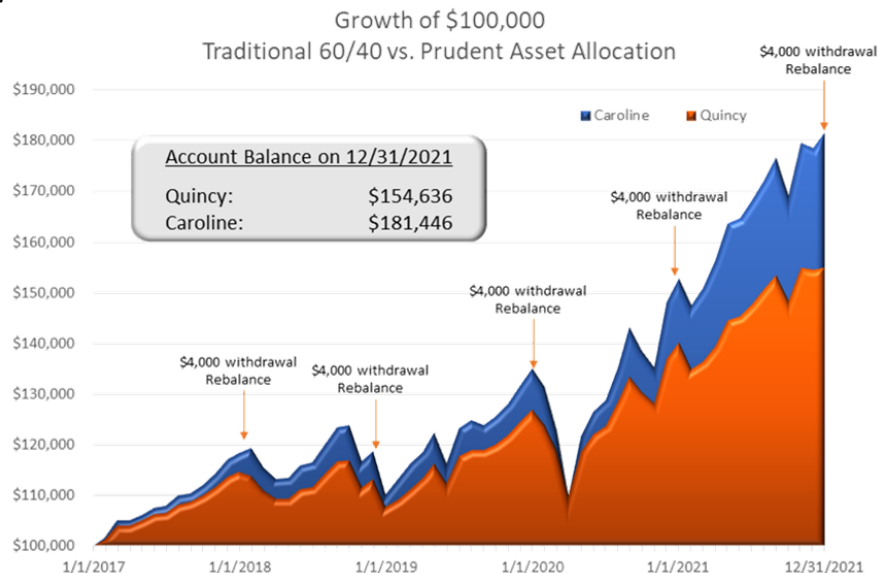
Quincy does in fact withdraw \$4,000 from his investment portfolio each year to cover his cash needs from 2017-2021. Quincy is a patient and prudent buy and hold investor. He does not attempt to time the market or chase performance. He simply buys and holds, earning market index returns, but annually rebalances to maintain a 60/40 stock to bond split.

**Caroline** also had a \$100,000 portfolio on January 1, 2017 with the same cash needs over the next 5 years. Caroline met with a different advisor who uses a **Prudent Asset Allocation** strategy. Based on her 5-year cash needs, her advisor recommended putting \$20,000 into the fixed income component of the portfolio and investing the remaining \$80,000 in growth assets.

Caroline also withdrew \$4,000 from her investment portfolio each year to cover her cash needs from 2017-2021. Caroline is also a patient and prudent buy and hold investor. She does not attempt to time the market or chase performance. She simply buys and holds, earning market returns identical to her husband's, but annually rebalances to maintain a fixed income balance equal to her 5-year cash needs, which remained \$20,000 from 2017-2021.

**Allocation and Rebalancing Effects Combined**

The graph below illustrates the portfolio growth of the two hypothetical investors. Quincy is allocated at 60% equity and 40% bonds and rebalances to that allocation at the end of each year after a \$4,000 withdrawal. Caroline has her 5-year cash needs of \$20,000 invested in a bond portfolio and the remaining \$80,000 in an equity portfolio. She also takes a \$4,000 withdrawal at the end of each year and rebalances to maintain a \$20,000 bond portfolio with the remainder of the total portfolio invested in equities. Both investors begin 2017 with \$100,000 and earn the returns of the S&P 500 and Bloomberg Barclays Aggregate Bond Index for equities and bonds respectively.



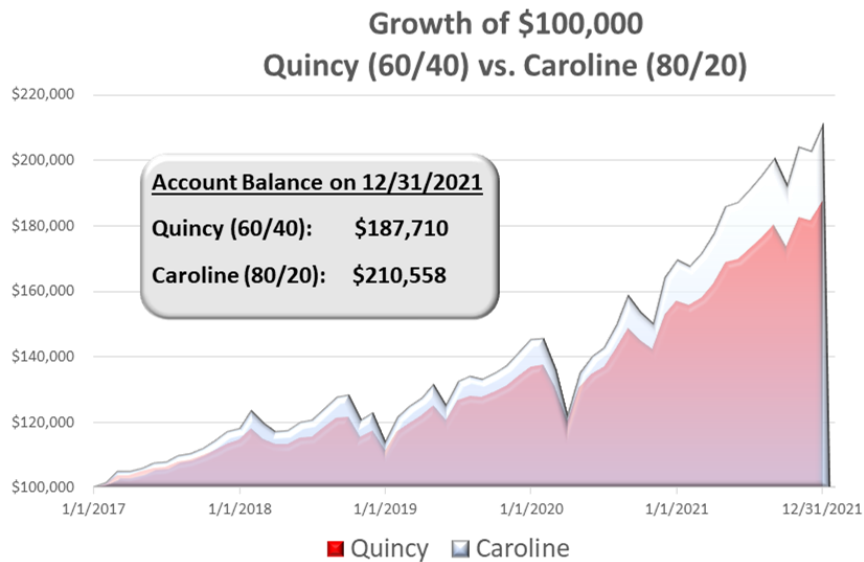
### The Allocation Effect

The “**Composite Return at Various Bond Allocations**” table on the previous page shows the cost of preservation assets in a portfolio. Given this significant cost, it stands to reason that the allocation to fixed income assets should be limited to what must be protected, and no more. Since the markets have shown the historical ability to recover from major declines within 5 years, why should assets that are not needed for 5+ years pay such a severe opportunity cost for protection?

As a result of Quincy’s 40% allocation in bonds, his portfolio had more protection against market volatility than Caroline’s. However, Quincy was also paying a heavy opportunity cost to protect \$20,000 of assets that he wouldn’t need for 5 or more years.

As a result of Caroline’s employing a Prudent Asset Allocation strategy, she had a significantly higher allocation to equities than Quincy (80% vs. Quincy’s 60%). This subjected her portfolio to more volatility than her husband’s, but no funds that were needed within 5 years were at risk.

The graph below isolates the effect of asset allocation and illustrates the difference between a 60/40 portfolio earning index returns and a 80/20 portfolio earning the same returns over a 5 year period ending December 31, 2021. This graph assumes no rebalancing.

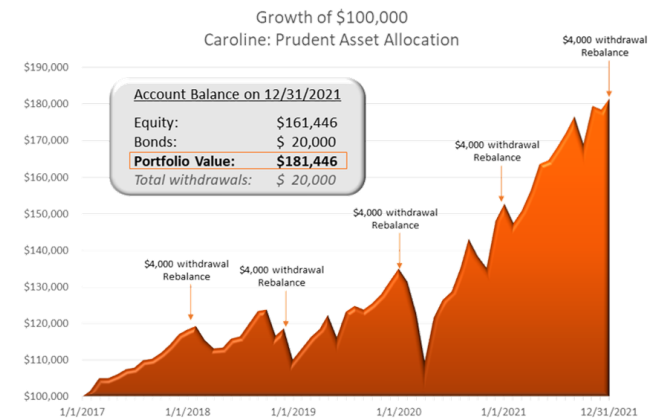
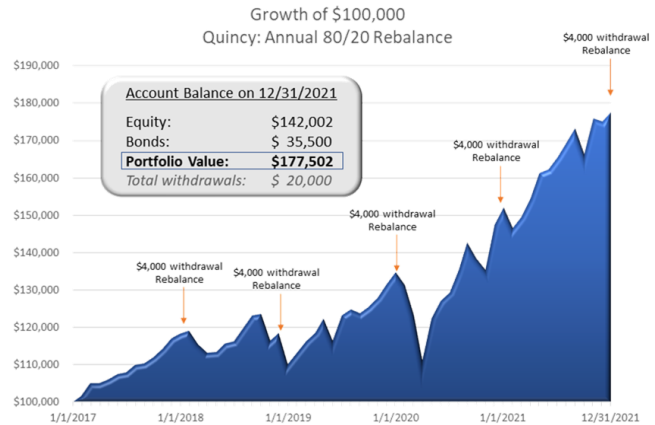


The fact that a 80/20 portfolio outperformed a 60/40 portfolio comes as no surprise, but the graph provides proportional context of the opportunity cost borne by Quincy. In terms of dollars, the difference between the two portfolios is a difference of \$22,848 earned over 5 years.

### The Rebalancing Effect

A less visible “hole in the bucket” is that which results from rebalancing. In the graphs to the right, the effect of rebalancing is isolated by setting both Quincy and Caroline’s equity/fixed income allocation to 80/20. Both earn the same investment returns (that of the S&P 500 and Bloomberg Barclays Aggregate Bond Index for equities and bonds respectively). Both withdraw \$4,000 at the end of each year. The only difference between Quincy and Caroline in these graphs is that Quincy rebalances to 80% equities and 20% fixed income at the end of each year, while Caroline simply rebalances only to maintain a \$20,000 fixed income balance to cover her 5-year cash needs and invests the remainder in equities.

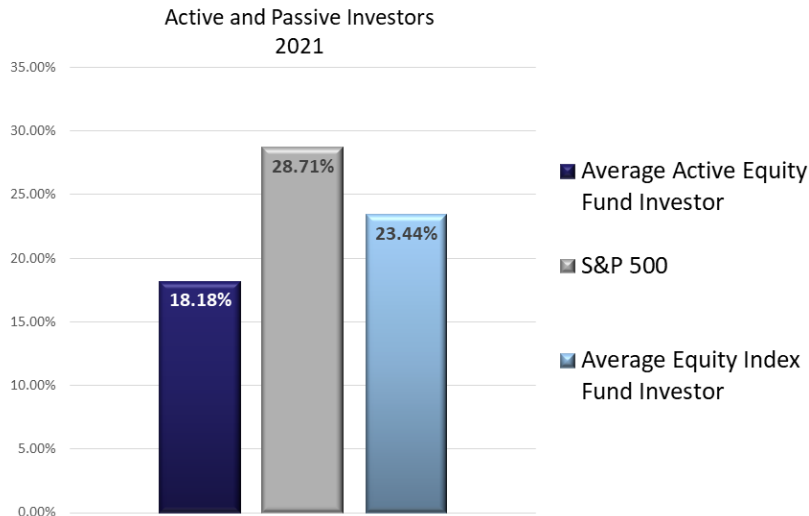
The Prudent Asset Allocation strategy led to Caroline owning more growth assets in years 2-5. The result was an extra \$3,944 earned over the 5 years.





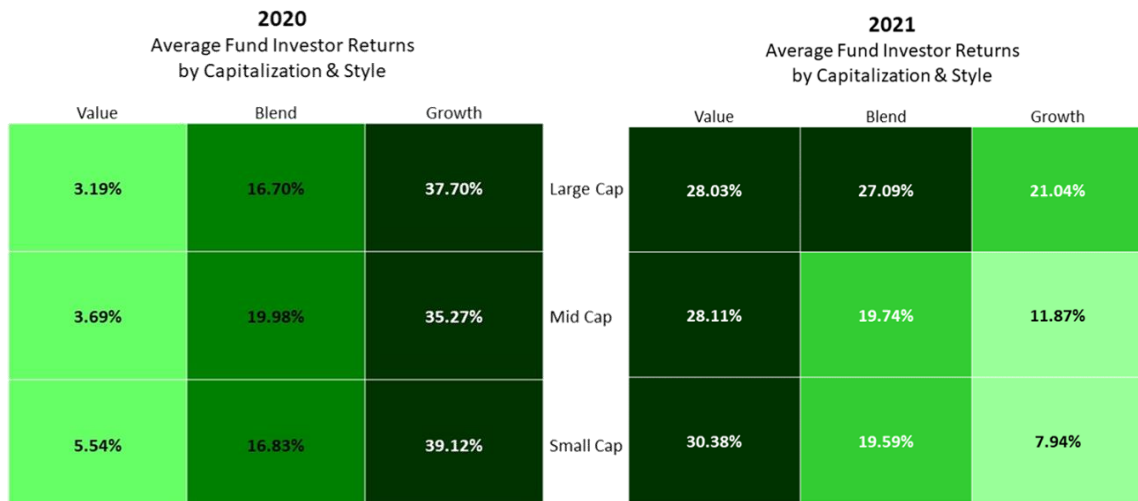
## Active vs. Passive

Investors in equity index funds experienced a far smaller gap than their active equity counterparts. The Average Equity Index Fund Investor earned 23.44%, a gap of 527 bps. A 5.27% gap is still sizable by historical measures, as we previously saw [in this chart](#). But this was approximately half the gap experienced by the Average Active Equity Fund Investor, who earned 18.18% in 2021, which amounted to a gap of 1,053



## A Shift Towards Value

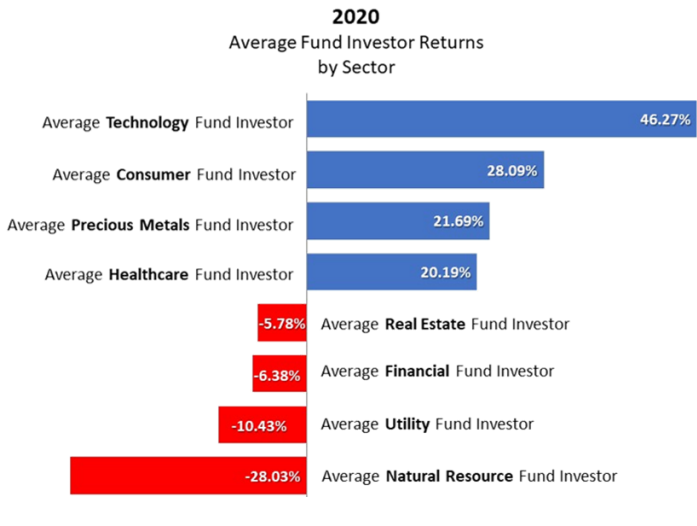
2021 saw a shift from growth to value. Over the previous several years, the Average Growth Fund Investor outperformed the Average Value Fund Investor. In 2020 the gap between the returns of a value investor and a growth investor was over 30 percentage points. In 2021 the size/style box from 2021 is a near mirror image of the one from 2020 (see below). Value investors outperformed growth investors in 2021 with the gap quite large in mid and small caps.



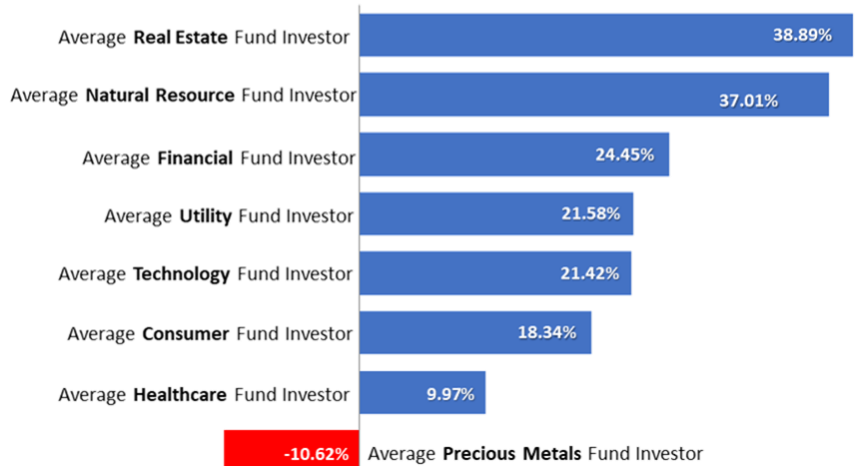
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## Sectors Turn Over

New sectors emerged as top performers in 2021. Technology was far and away the leading sector in 2020, but was outperformed by 4 notable sectors in 2021: real estate, natural resources, financials and utilities. Real estate was in the red in 2020 but was the leading sector in 2021. Natural resources was the lowest performing sector in 2020 and was the second leading sector in 2021. All 4 sectors that experienced negative returns in 2020 were leading sectors in 2021.

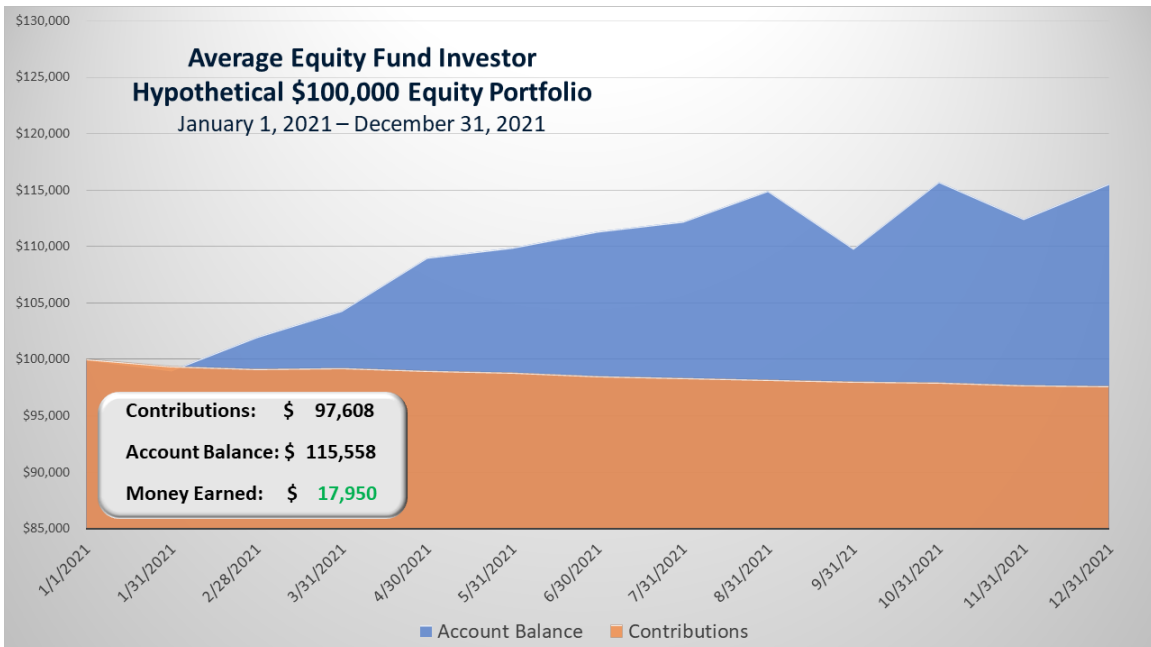
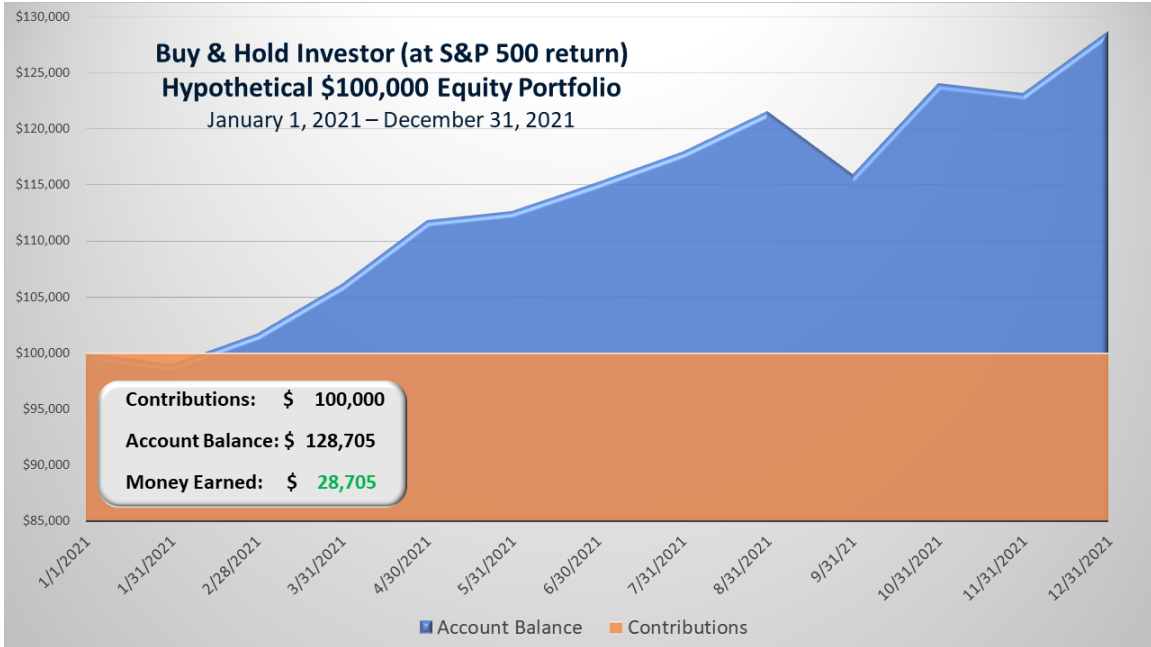


**2021**  
Average Fund Investor Returns by Sector



## Sellers vs. Holders

The graphs below compare two hypothetical investors. The first hypothetical investor has a \$100,000 equity portfolio that is held throughout the year of 2021, earning returns equal to the S&P. The second hypothetical investor also starts with a \$100,000 equity investment, but cash flows and returns mimic proportionally that of the Average Equity Fund Investor. The graphs provide a visual of both investors' total contributions and account balance throughout the year of 2021.

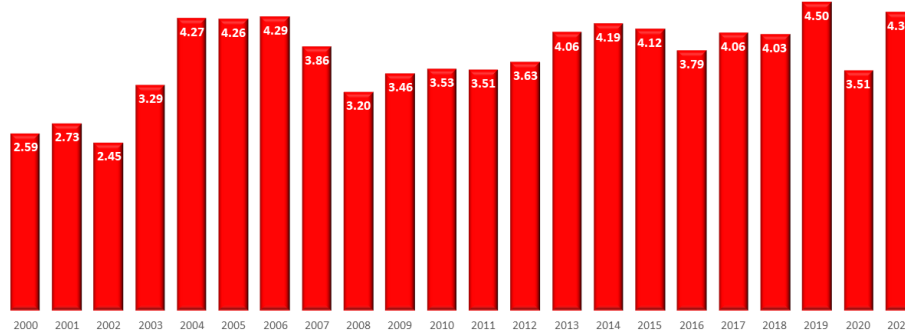


## Retention Rates

Historically, the Average Investor has failed to realize the long-term benefits of asset ownership because they do not stay invested in any given investment for a long enough period of time. [Retention rates](#) measure cash outflows in proportion to assets to arrive at the length of time the average investor holds a fund if the current redemption rate persists. Historically, Retention Rates increase when the market is rising and contract during market downturns.

The Average Equity Fund Investor experienced a contraction of retention rates in 2020 due to reallocating much of their equity holdings. Evidence of the reallocation is the dramatic drop in retention rates coupled with withdrawals from equities that were not drastic. This means that money was moving at a high velocity, but not moving out of equities, but among them. Retention rates shrank from 4.50 years to 3.51 years in 2020.

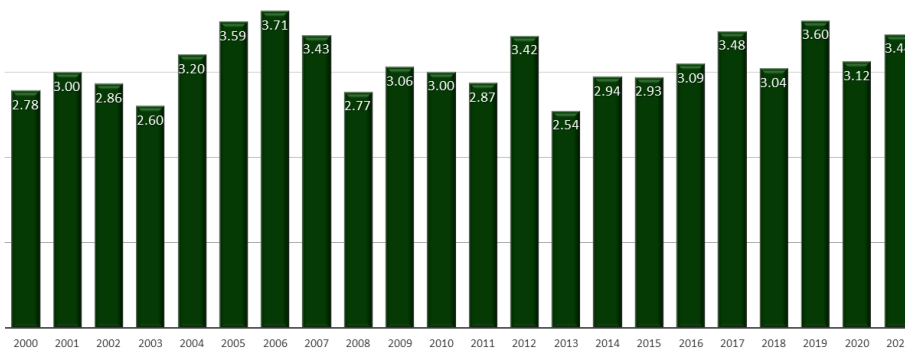
Equity Fund Investor Retention Rates  
2000-2021



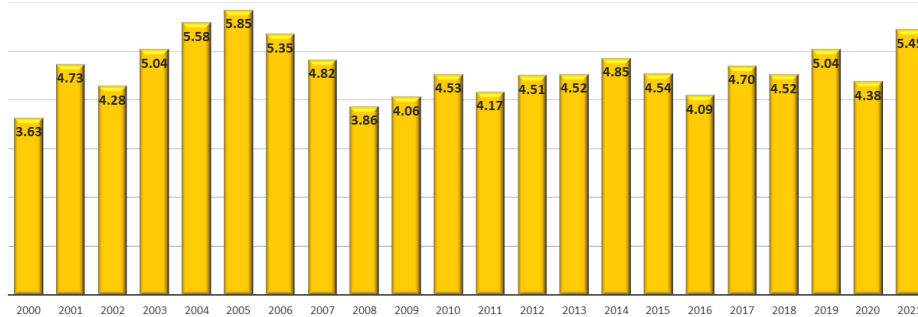
The 4.50 year retention rate of 2019 is the longest retention rate ever observed by QAIB for equity fund investors. After a 1-year hiccup in 2020, retention rates rebounded to 4.36 years, which is the second longest retention rate ever observed.

All types of investors followed a similar trend: strong retention rates in 2019, a sharp drop in 2020, and an impressive rebound in 2021.

Fixed Income Fund Investor Retention Rates  
2000-2021

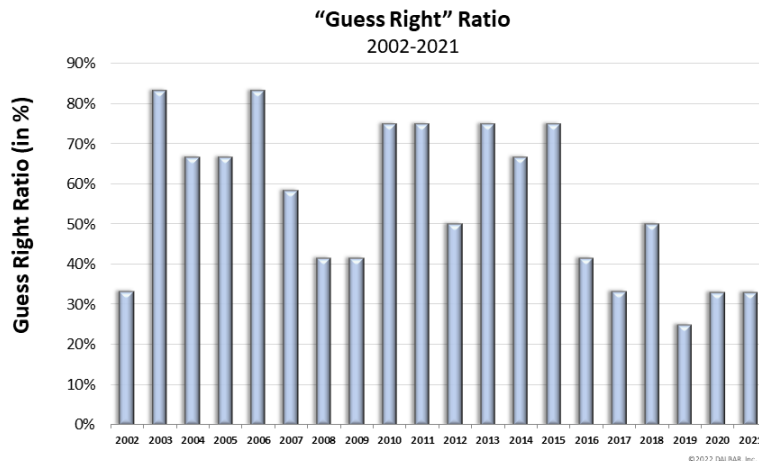


## Asset Allocation Fund Investor Retention Rates 2000-2021



## Guess Right Ratio

For 28 years, DALBAR has analyzed investors’ market timing successes and failures through their net purchases and sales. This form of analysis, known as the [Guess Right Ratio](#), examines fund inflows and outflows to determine how often investors correctly anticipate the direction of the market the following month. Investors guess right when a net inflow is followed by a market gain, or a net outflow is followed by a decline.



Investors have guessed right at least half the time in 11 out of the last 20 years, but guessed correctly only 4 of the 12 months in 2021. Unfortunately for the Average Investor, whether they guess right or wrong, it seldom produces superior gains either way because the dollar volume of bad guesses exceeds the dollar volume of right guesses. Even one month of wrong guesses can wipe out several months of right ones.

## APPENDICES

1. Year-by-Year Investor Returns
2. Glossary
3. QAIB Products
4. Investor Return Calculations: An Example
5. Rights of Usage and Sourcing Information

## YEAR-BY-YEAR INVESTOR RETURNS

The following table shows the one-year investor return since inception from 1985 to 2021. These calculations assume that investors start investing on January 1 of each year and withdraw their investments on December 31. The effect of compounding across years is therefore lost. Additionally, because of the year-by-year nature of the calculation, returns cannot be asset weighted.

| Year | Avg. Equity Fund Investor | Avg. Fixed Income Investor | Avg. Asset Allocation Investor |
|------|---------------------------|----------------------------|--------------------------------|
| 1985 | 27.79%                    | 11.86%                     | 20.50%                         |
| 1986 | 17.53%                    | 7.94%                      | 5.97%                          |
| 1987 | 0.51%                     | -0.84%                     | 6.03%                          |
| 1988 | 17.88%                    | 4.70%                      | -1.78%                         |
| 1989 | 23.51%                    | 6.63%                      | 20.77%                         |
| 1990 | -5.62%                    | 2.18%                      | 6.81%                          |
| 1991 | 29.40%                    | 11.94%                     | 17.25%                         |
| 1992 | 7.28%                     | 8.60%                      | 1.13%                          |
| 1993 | 15.93%                    | 7.87%                      | 16.66%                         |
| 1994 | -0.02%                    | -4.99%                     | -5.48%                         |
| 1995 | 26.52%                    | 14.37%                     | 25.36%                         |
| 1996 | 17.33%                    | 7.71%                      | 11.51%                         |
| 1997 | 20.59%                    | 8.14%                      | 16.02%                         |
| 1998 | 34.48%                    | 5.92%                      | 32.40%                         |
| 1999 | 26.58%                    | -5.68%                     | 5.47%                          |
| 2000 | -10.20%                   | 4.17%                      | 1.39%                          |
| 2001 | -14.92%                   | -0.75%                     | -5.15%                         |
| 2002 | -21.86%                   | 2.20%                      | -10.56%                        |
| 2003 | 30.08%                    | 4.31%                      | 16.80%                         |
| 2004 | 12.60%                    | 1.30%                      | 8.01%                          |
| 2005 | 8.45%                     | -0.58%                     | 1.95%                          |
| 2006 | 14.65%                    | 2.09%                      | 11.12%                         |
| 2007 | 7.33%                     | 0.80%                      | 3.47%                          |
| 2008 | -41.77%                   | -11.55%                    | -31.35%                        |
| 2009 | 32.10%                    | 9.78%                      | 19.31%                         |
| 2010 | 14.11%                    | 3.05%                      | 8.83%                          |

| Year | Avg. Equity Fund Investor | Avg. Fixed Income Investor | Avg. Asset Allocation Investor |
|------|---------------------------|----------------------------|--------------------------------|
| 2011 | -5.73%                    | 1.84%                      | -2.60%                         |
| 2012 | 15.62%                    | 4.70%                      | 8.53%                          |
| 2013 | 25.69%                    | -3.47%                     | 13.72%                         |
| 2014 | 5.51%                     | 1.19%                      | 2.60%                          |
| 2015 | -2.28%                    | -3.11%                     | -3.48%                         |
| 2016 | 7.26%                     | 1.23%                      | 5.48%                          |
| 2017 | 20.64%                    | 1.52%                      | 10.08%                         |
| 2018 | -9.42%                    | -2.84%                     | -6.97%                         |
| 2019 | 26.14%                    | 4.62%                      | 15.36%                         |
| 2020 | 17.09%                    | 3.09%                      | 6.13%                          |
| 2021 | 18.39%                    | -1.55%                     | 13.29%                         |



## GLOSSARY

### Average Investor

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The Average Investor refers to the universe of all mutual fund investors whose actions and financial results are restated to represent a single investor. This approach allows the entire universe of mutual fund investors to be used as the statistical sample, ensuring ultimate reliability.

### [Average] Investor Behavior

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QAIB quantitatively measures sales, redemptions and exchanges (provided by the Investment Company Institute) and describes these measures as investor behaviors. The measurement of investor behavior is the net dollar volume of these activities that occur in a single month during the period being analyzed.

### [Average] Investor Return (Performance)

---

QAIB calculates investor returns as the change in assets, after excluding sales, redemptions, and exchanges. This method of calculation captures realized and unrealized capital gains, dividends, interest, trading costs, sales charges, fees, expenses and any other costs. After calculating investor returns in dollar terms (above), two percentages are calculated:

- Total investor return rate for the period
- Annualized investor return rate

Total return rate is determined by calculating the investor return dollars as a percentage of the net assets, sales, redemptions and exchanges for the period.

Annualized return rate is calculated as the uniform rate that can be compounded annually for the period under consideration to produce the investor return dollars.

### Average Equity Fund Investor

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The Average Equity Fund Investor is comprised of a universe of both domestic and world equity mutual funds. It includes growth, sector, alternative strategy, value, blend, emerging markets, global equity, international equity, and regional equity funds.

### Average Fixed Income Investor

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The Average Fixed Income Fund Investor is comprised of a universe of fixed income mutual funds, which includes investment grade, high yield, government, municipal, multi-sector, and global bond funds. It does not include money market funds.

### Average Asset Allocation Investor

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The Average Asset Allocation Fund Investor is comprised of a universe of funds that invest in a mix of equity and debt securities.

### Average [Sector] Fund Investor

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The Average [Sector] Fund Investor is comprised of a universe of funds that invest solely in companies that operate in related fields or specific industries. The following Average Sector Fund Investors were referenced in this report: Consumer, Health, Financial, Tech/Telecom, Real Estate, Precious Metals, Utilities, and Natural Resources.

### Average [Capitalization and Style] Fund Investor

---

The Average [Capitalization and Style] Fund Investor is comprised of a universe of funds that are categorized by the types of companies in which they invest:

**Small-cap mutual funds** invest primarily in companies with market capitalizations of up to \$2-2.5 billion.

**Mid-cap mutual funds** invest primarily in companies with market capitalization that generally ranges from \$1 billion to \$7 billion or in companies with both small and medium market capitalization.

**Large-cap mutual funds** invest primarily in companies with market capitalizations which are generally more than \$5 billion or in companies with both medium and large market capitalizations.

**Growth mutual funds** invest primarily in common stock of growth companies, which are those that exhibit signs of above-average growth, even if the share price is high relative to earnings/intrinsic value.

**Value mutual funds** invest primarily in common stock of value companies, which are those that are out of favor with investors, appear underpriced by the market relative to their earnings/intrinsic value, or have high dividend yields.

**Blend mutual funds** invest primarily in common stock of both growth and value companies or are not limited to the types of companies in which they can invest.

### Average Equity Index Fund Investor

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The Average Equity Index Fund Investor is comprised of a universe of funds that are designed to track the performance of a U.S. equity market index.

### Average Target Date Fund Investor

---

The Average Target Date Fund Investor is comprised of a universe of funds that follow a predetermined reallocation of assets over time based on a specified target retirement date.

### Average Alternative Strategies (Alt-) Fund Investor

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The Average Alternative Strategies (Alt-) Fund Investor is comprised of a universe of funds that employ alternative investment approaches like long/short, market neutral, leveraged, inverse, or commodity strategies to meet their investment objective. The following Average Alternative Strategies Fund Investors were referenced in this report: Alt-Domestic Equity, Alt-World Equity, Alt – Asset Allocation (“AA”), and Alt-Multisector Bond.

### Guess Right Ratio

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The Guess Right Ratio is the frequency that the average investor makes a short-term gain. One point is scored each month when the average investor has net inflows and the market (S&P 500) rises in the next month. A point is also scored when the average investor has net outflows and the market declines in the next month. The ratio is the number of points scored as a percentage of the total number of months under consideration.

### Retention Rate

---

Retention Rate reflects the length of time the average investor holds a fund if the current redemption rate persists. It is the time required to fully redeem the account. Retention rates are expressed in years and fractions of years.

### Inflation Rate

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The monthly value of the consumer price index is converted to a monthly rate. The monthly rates are used to compound a “return” for the period under consideration. This result is then annualized to produce the inflation rate for the period.

## INVESTOR RETURN CALCULATION...

### AN EXAMPLE

Investor return is calculated by measuring the actual gains that investors realize. The following example is hypothetical:

#### Step 1: Compute Monthly Net Change

The equity assets at the end of 1/31 are subtracted from the assets at 12/31 to determine the change for the month. The change is the net of investor actions [new investments (which includes the reinvestment of dividends and capital gain distributions), withdrawals (redemptions), exchanges in and out], changes in market value, net of loads, fees, expenses, commissions, etc.

|   |
|---|
| $  \begin{aligned}  &1/31 \text{ Assets} - 12/31 \text{ Assets} = \\  &\quad \text{Change} \\  &5196 - 4940 \\  &= 256 \\  &\text{(In \$ Billions)}  \end{aligned}  $ |
|---|

|                                  |                  |
|----------------------------------|------------------|
| Monthly Change                   | 256              |
| Minus New Investments            | -123             |
| Plus Withdrawals                 | +105             |
| Minus Exchanges in               | -25              |
| Plus Exchanges out               | +12              |
| Equal Net Change in Market Value | 225              |
|                                  | (In \$ Billions) |

#### Step 2: Compute Change in Market Value

The change in assets due to investor actions are deducted from monthly net change, resulting in the market value change that is net of loads, fees, expenses, commissions, etc. The net change in market value is the return earned by the investor for the month, after all fees and expenses are paid. This could be either a gain or loss.

#### Step 3: Calculate Total for Period

The calculation is repeated for each month to develop the total for the periods for which the investor return is being measured – (1, 3, 5, 10 and 20 years.)

The example illustrates a one-year period. Note that the average investor suffered losses in February, May, June and July, but these were more than offset by the gains in the other months.

|                  |      |
|------------------|------|
| January          | 225  |
| February         | -28  |
| March            | +106 |
| April            | +106 |
| May              | -213 |
| June             | -5   |
| July             | -20  |
| August           | +119 |
| September        | +88  |
| October          | +195 |
| November         | +154 |
| December         | +30  |
| Total for period | 757  |

**Step 4: Determine Cost Basis**

The cost basis is the opening balance for the period adjusted by the investor actions (new investments, withdrawals, exchanges in and out).

|                      |                  |
|----------------------|------------------|
| Opening Assets       | 4940             |
| Plus New Investments | +1288            |
| Minus Withdrawals    | -1150            |
| Plus Exchanges in    | +206             |
| Minus Exchanges out  | <u>-128</u>      |
| Equal Cost Basis     | 5156             |
|                      | (In \$ Billions) |

|  |
|--|
| <p>Investor Return \$ / Cost Basis =<br/>% Return</p> <p>757 / 5156= 15%</p> <p>(In \$ Billions)</p> |
|--|

**Step 5: Calculate Investor Return Percentage**

Dividing the investor return dollars calculated in Step 3 by the cost basis in Step 4 gives the total investor return percentage.

**Step 6: Find Annualized Rate of Return**

Annualized return is then calculated. This is the single rate that can be compounded for each year to produce the same effect as the varying monthly rates.

Since the period in our example is only one year, the annualized investor return is the same as the total investor return.

The formula used to calculate annualized return is:

|  |
|--|
| <p>Annualized Return =</p> <p><math>[\% \text{ Return } ^{(1/\# \text{ of years})}] - 1</math></p> |
|--|

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Source example: "Quantitative Analysis of Investor Behavior, 2022," DALBAR, Inc. [www.dalbar.com](http://www.dalbar.com)

### Applicable Disclosures Examples:

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*Equity benchmark performance and systematic equity investing examples are represented by the Standard & Poor's 500 Composite Index, an unmanaged index of 500 common stocks generally considered representative of the U.S. stock market. Indexes do not take into account the fees and expenses associated with investing, and individuals cannot invest directly in any index. Past performance cannot guarantee future results.*

*Bond benchmark performance are represented by the BloombergBarclays Aggregate Bond Index, an unmanaged index of bonds generally considered representative of the bond market. Indexes do not take into account the fees and expenses associated with investing, and individuals cannot invest directly in any index. Past performance cannot guarantee future results.*

*Average stock investor, average bond investor and average asset allocation investor performance results are based on a DALBAR study, "Quantitative Analysis of Investor Behavior (QAIB), 2022." DALBAR is an independent financial research firm. Using monthly fund data supplied by the Investment Company Institute, QAIB calculates investor returns as the change in assets after excluding sales, redemptions and exchanges. This method of calculation captures realized and unrealized capital gains, dividends, interest, trading costs, sales charges, fees, expenses and any other costs. After calculating investor returns in dollar terms, two percentages are calculated for the period examined: Total investor return rate and annualized investor return rate. Total return rate is determined by calculating the investor return dollars as a percentage of the net of the sales, redemptions, and exchanges for the period.*