

The behavioral economics of retirement planning

Help investors avoid the emotions behind investment decisions

Imagine sitting at a red light when suddenly, you hear a loud, obnoxious noise. Your body tenses and your first instinct is to respond to the driver laying on their horn. But then you look up and see the light has changed to green, and instead of responding, you drive through the intersection. Curious why you had such a strong emotional response to the loud stimulus? It's likely because our ancestors who responded quickly to loud noises (like a boulder crashing down a mountain) were more likely to survive. Thankfully, humans can also moderate their immediate responses by considering whether their response is appropriate, gaining context (why did someone honk at me?), and responding appropriately. This is known as a 'System Two' response because it's usually the second process that shows up when a stimulus is perceived.

There are two parts of the brain associated with System One and System Two responses. System One is associated with the limbic brain regions, which takes up most of the real estate in the central part of the brain and the prefrontal cortex is associated with System Two thinking. A stimulus is first processed in the limbic region, then the body either responds or continues processing in the prefrontal cortex. This is referred to as the Two Systems Model of human behavior.

Understanding how investors are affected by this model can help advisors anticipate how they'll respond when faced with various retirement decisions. So, in this white paper, we'll review research on retirement behavior that can be explained by the faster, emotionally driven System One and the slower, more reflective System Two. Behavioral factors are also the most common explanation for the avoidance of annuities, so this study will provide insight into using language and products that help investors make better decisions about how to manage investment and longevity risks.

How the Two Systems Model of human behavior works

A good way to understand how the model works is to imagine that System One represents an elephant and System Two represents the rider. The rider can generally steer the elephant in the desired direction. But when the elephant gets scared or sees some tasty bananas on a nearby tree, there's not much the rider can do to stop it. We overestimate our ability to control the immediate emotional response of our "elephant" when in reality, the rider is often powerless when emotions take over.



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How the Two Systems Model impacts investor responses to loss

Now that you understand that losses are processed in System One (the elephant) while gains are processed in System Two (the rider), you can begin to learn effective ways to support clients in recognizing their powerful emotional response system. It's good to note, when the amygdala — a brain region associated with System One — is damaged, individuals no longer feel the same emotional response when experiencing a monetary loss.¹ This means that our emotional system is the first to respond when we experience a loss, like a loss in an investment portfolio, and System Two works to sort out how best to respond.

Experiments conducted by Nobel prize-winning researcher Daniel Kahneman and Amos Tversky showed how the emotional response to loss is affected by the reference point, or in our case, the initial dollar amount subject to risk.² We tend to anchor on a given reference point, for example the amount of money we have saved at the time of retirement and base our emotional response to changes from this value. We can choose our own reference point. For example, if our reference point is how much money we had saved yesterday, we're likely to experience a significant amount of stress from investing in stocks that rise and fall in value every day. We're less likely to experience an emotional loss if we set the reference point at how much money we had last year, or even 5 years ago.

Setting goals can be used to harness the value of emotional response to a loss because the goal itself becomes the reference point. If the goal is to have \$500,000 saved for retirement, an investor may be motivated to save more lest she fail to reach the reference point. A lifestyle goal, for example spending \$30,000 per year in addition to Social Security, can be an equally useful reference point.



¹ De Martino, B., Camerer, C. F., & Adolphs, R. (2010). Amygdala damage eliminates monetary loss aversion. *Proceedings of the National Academy of Sciences*, 107(8), 3788-3792.

² Kahneman, D., & Tversky, A. (1979). Prospect Theory: An Analysis of Decision under Risk. *Econometrica*, 47(2), 263-292.

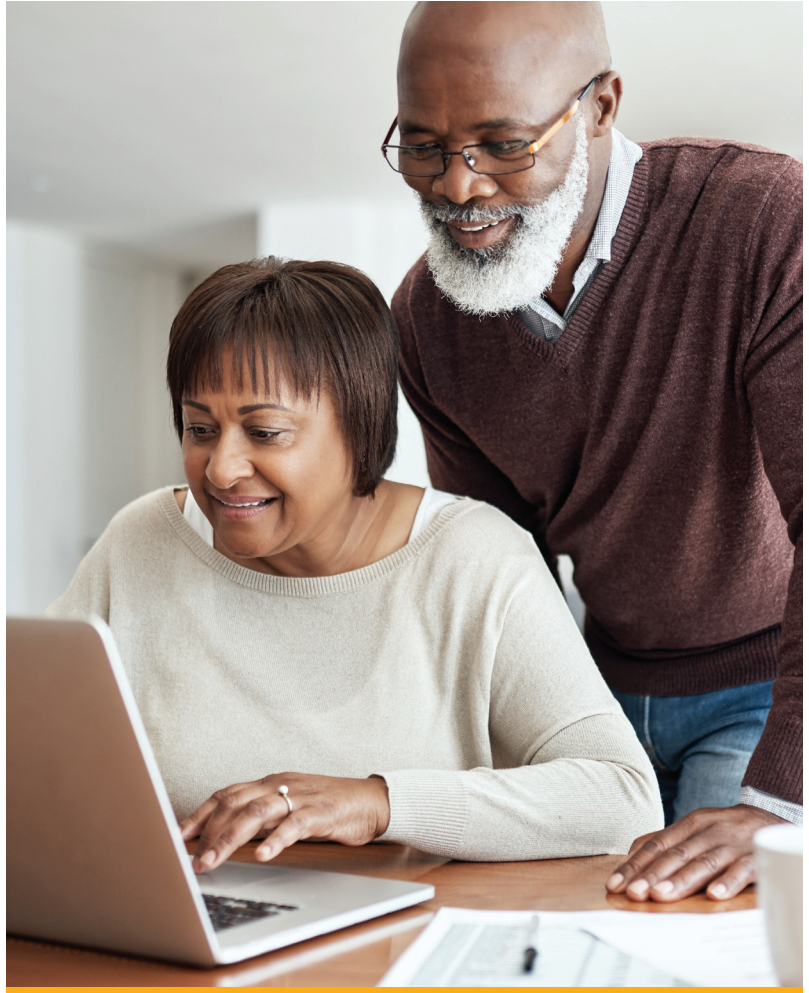
Setting the reference point in retirement

Research on retirement investing shows that setting the reference point at a dollar value has significant negative implications on retirement behavior.³ That's because investors experience a negative emotional response when their savings falls below this amount. This can lead to investors failing to spend down their savings optimally, extreme emotional responses to an investment loss that can negatively impact investment performance and failing to protect against later-life risk using annuities.

To avoid these negative outcomes, it's important to carefully frame retirement decisions in a way that minimizes the impact of the elephant (System One). Framing is valuable because we tend to process possible outcomes in different parts of our brain. For example, setting the investment reference point as the initial investment amount 5 years ago instead of last quarter is a framing technique that can reduce harmful emotional response to investment volatility.

The most important frame to help investors make better decisions about investing in retirement is to focus on income rather than investment growth. The retiree with \$500,000 saved for retirement will tend to frame retirement planning options using this dollar value as a reference point. Reframing the goal as achieving a \$30,000 annual income allows the retiree to focus less on change in the value of their initial savings and more on the value of spending at least \$30,000 per year. Framing on the income goals can help the retiree feel more comfortable spending savings because failure to spend the goal amount would be viewed as a loss. If the income goal is protected, the investor can feel more comfortable accepting investment volatility and avoiding emotional mistakes that can harm investment performance.

Historically, investors over age 65 experience lower stock investment performance than younger investors because they often respond emotionally to investment losses.⁴ This emotional loss is likely driven by framing the reference point on an investor's portfolio value and responding emotionally to seeing one's investment balance fall below this amount.



The most important frame to help investors make better decisions about investing in retirement is to focus on income rather than investment growth.

³ Brown, J. R., Kling, J. R., Mullainathan, S., & Wrobel, M. V. (2008). Why don't people insure late-life consumption? A framing explanation of the under-annuitization puzzle. *American Economic Review*, 98(2), 304-09.

⁴ Korniotis, G. M., & Kumar, A. (2011). Do older investors make better investment decisions? *The Review of Economics and Statistics*, 93(1), 244-265.

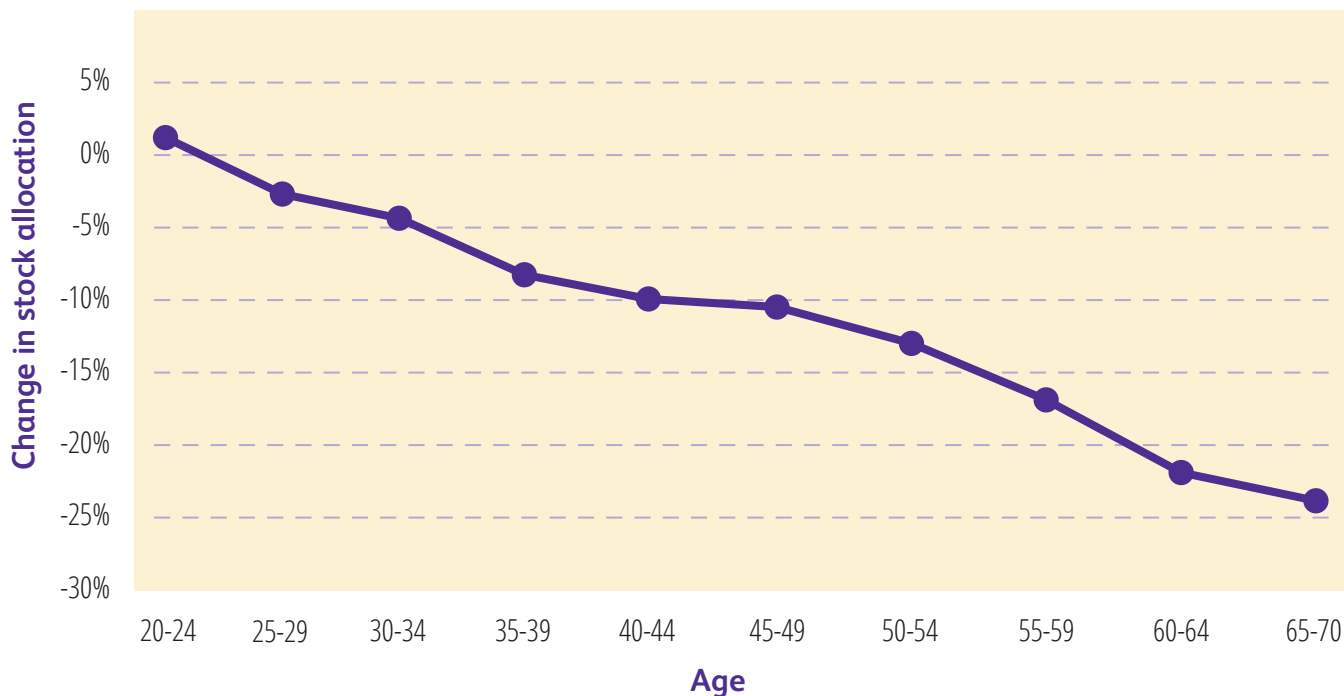
How behavioral trading impacts retirement investors

Investors are prone to responding to losses by taking less risk. Because losses are painful, our first instinct is often to get rid of whatever’s causing the pain. So, if we suffer a loss in our investments, our first response is to sell those investments.

Studies of mutual fund performance find that individual investors lose about 1.56% each year on fund investments, mainly because they pull money out of investments right after they’ve fallen in value.⁵ Investors also seem to purchase mutual funds that have recently gone up in value as they pull money out of funds that have recently fallen in value, a phenomenon known as the “dumb money effect.”⁶ The tendency for individuals to underperform the market is referred to by Morningstar as the “investor performance gap,” which in 2021 averaged -1.73% across all mutual fund categories.⁷

Older investors appear to be particularly susceptible to selling stocks during a market decline. In figure 1, we can see that older investors in retirement plans decreased their stock allocations far more than younger investors during the pandemic-induced market crash of late February and early March 2020. Although the market eventually recovered by the end of the year, those who had pulled money out of stocks after falling in value locked in investment losses and underperformed other investors. Unfortunately, older investors have much larger balances than younger investors, so the consequence of emotion-driven investment mistakes is greater.

Figure 1: Asset allocation change among retirement savers during the COVID-19 market crash



Source: Blanchett, Finke and Reuter, 2020

Why do older investors experience a stronger emotional response than younger investors when the market drops? One explanation is that the consequences of investment losses and gains are more pronounced as an individual approaches retirement. This pre-retirement period heightens awareness of retirement savings as an important financial goal.

⁵ Friesen, G., Sapp, T.R.A. 2007. Mutual fund flows and investor returns: An empirical examination of fund investor timing ability, *Journal of Banking and Finance* 31(9), 2796-2816.

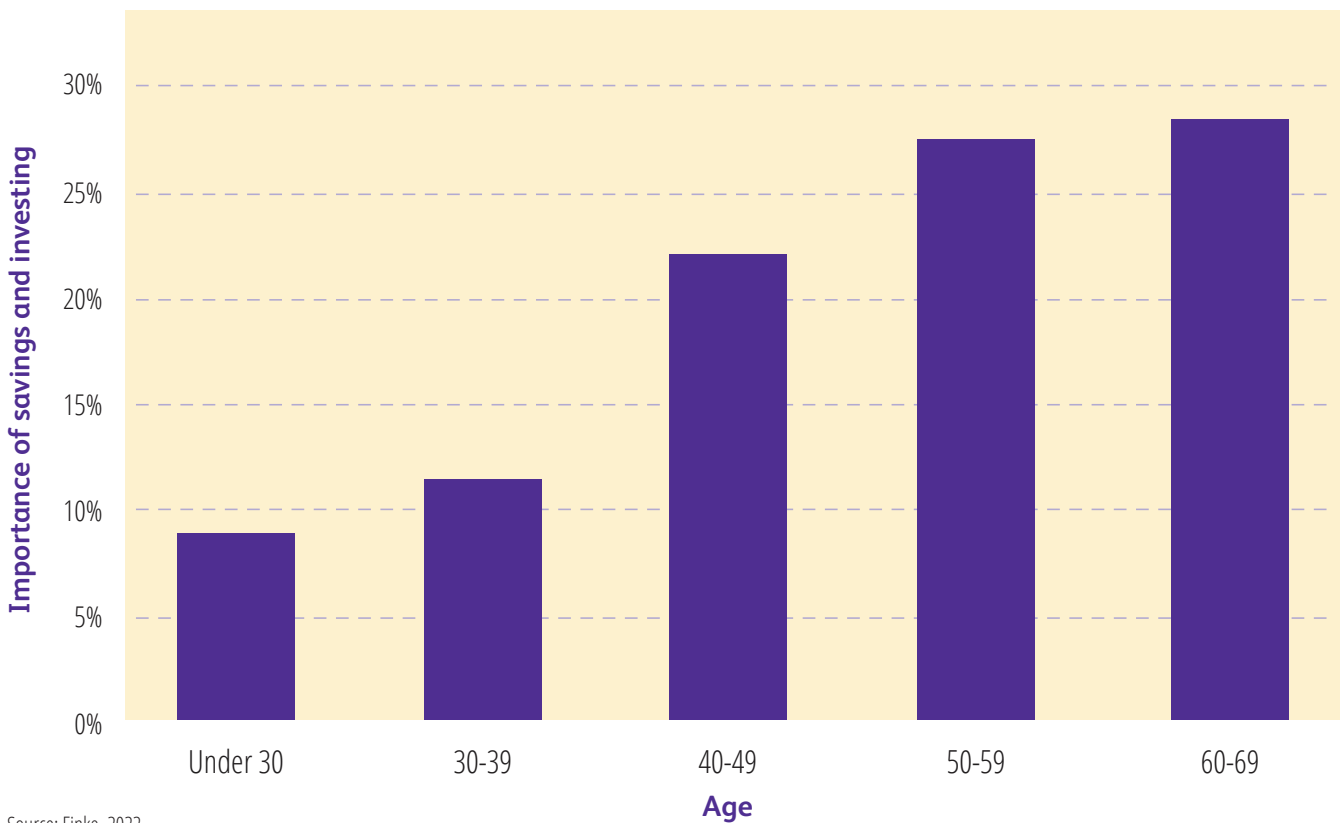
⁶ Frazzini, A., & Lamont, O. A. (2008). Dumb money: Mutual fund flows and the cross-section of stock returns. *Journal of financial economics*, 88(2), 299-322.

⁷ <https://www.morningstar.com/articles/1101942/are-you-leaving-money-on-the-table-from-your-funds-returns>

How age impacts investors' retirement goals

When consumers are asked which financial goals are most important to them, “creating a saving and investing plan for retirement” is more frequently selected as the top 1 or 2 choices by those nearing retirement age. As seen in figure 2, as individuals near retirement age, they increasingly see retirement saving as their most important financial goal (among 12 possible financial goals). The increase in importance of retirement savings correlates with the desire to move away from risky investments during a market downturn.

Figure 2: Consumers who list retirement savings and investing as a primary financial goal

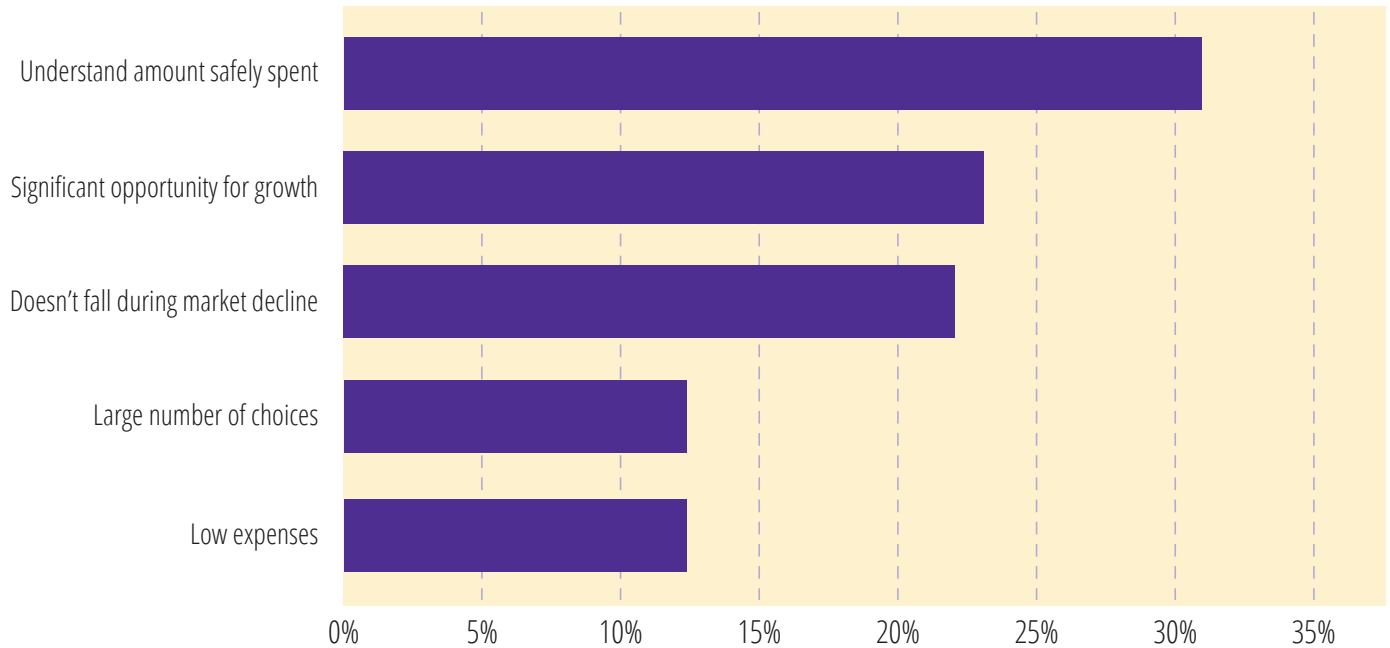


Source: Finke, 2022

It shouldn't be surprising that older investors experience a stronger emotional response than younger investors when the value of their savings drops. Many workers expect to retire at a specific age and expect a lifestyle that is based on their current savings amount. The emotional consequences of an investment loss are magnified by the need to change these expectations.⁸ If I have \$450,000 saved and hope to retire in 2 years with \$500,000 at retirement, a \$50,000 loss will require a readjustment of my retirement age in order to meet my initial goal.

⁸ Carver, C. S., & Scheier, M. F. (2000). Scaling back goals and recalibration of the affect system are processes in normal adaptive self-regulation: understanding 'response shift' phenomena. *Social science & medicine*, 50(12), 1715-1722.

Figure 3: Most important attributes of a retirement savings plan



Source: Finke and Fichtner, 2022

A lifestyle goal is even more important to most workers than preservation of savings. As shown in figure 3, 31% respond that understanding the amount that can be safely spent by retirees is the most important attribute of a retirement savings plan, and a similar amount list potential for growth (23%) and protection against losses (22%). An ideal retirement savings strategy would allow an investor to preserve a minimum future lifestyle goal while also offering an opportunity for growth.

An ideal retirement plan will use an income frame rather than an investment frame. Selecting an instrument that provides a minimum spending amount avoids loss from the income frame by ensuring that a minimum amount can be withdrawn from investments no matter what happens in the market. Using a strategy that invests in volatile assets while protecting against a drop in income can provide the potential for growth while protecting against the lifestyle impact of a market decline.



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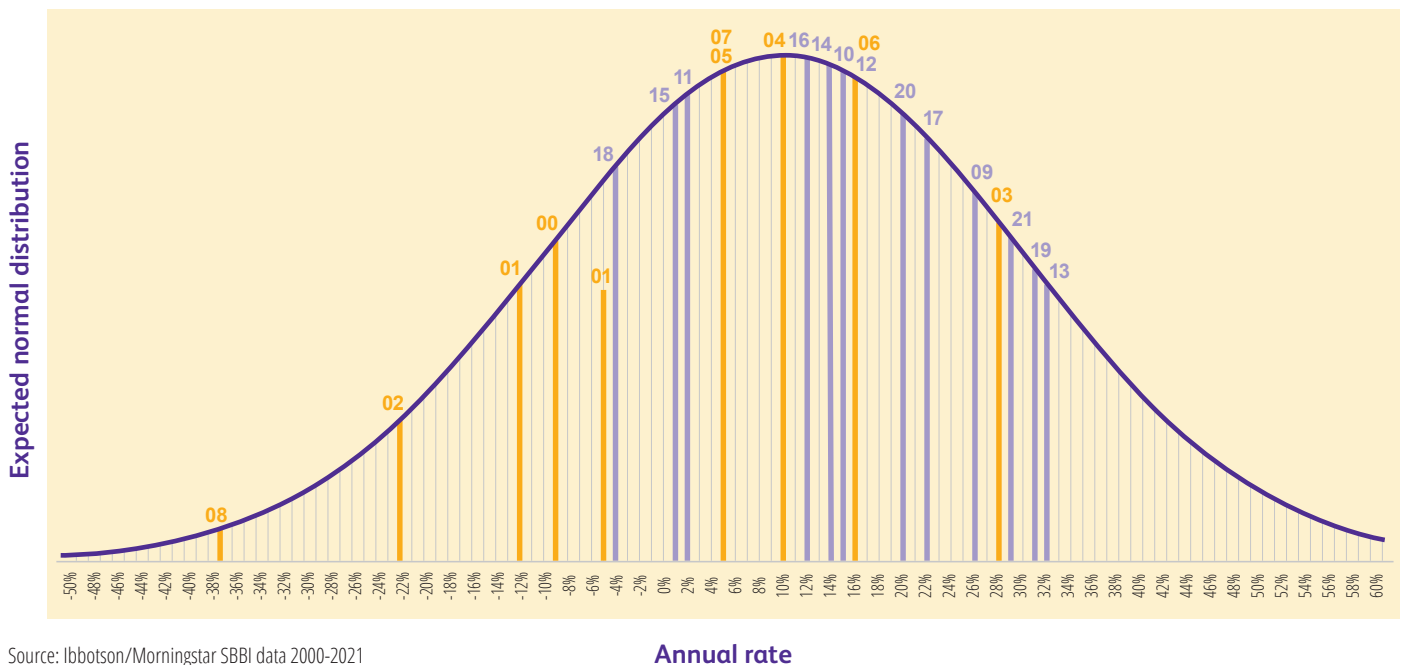
Recency bias and stock return expectations

Some investors may avoid retirement strategies that focus on income rather than investments because they believe the reward for taking investment risk is high. Unrealistic investment expectations can manifest when investors focus too much on recent returns and ignore more distant history. Stock returns tend to follow a bell-curve, or normal distribution over time. The historical average is about 10% but returns can fall well below or well above the average in any given year.

It's common for humans to place too much weight on recent experiences, known as the recency bias. But when making investment decisions, it may be more important to look into the more distant past. The failure to consider the range of possible outcomes, also known as "base rate neglect," can lead to expectations that do not take into account all of the information available.

Consider the stock return expectations of younger investors, for example the Millennial Generation, who may have begun investing in the 2010s. The average stock market (S&P 500) returns experienced by younger investors between 2009 and 2021 was 16.5%. Between 2000 and 2008, however, average returns were negative 1.6%. Figure 4 shows the bell curve distribution of possible stock returns that an investor could expect near the historical average of 10% with a standard deviation of 20%. The orange lines represent returns between 2009 and 2021, which fall mainly on the right (higher) side of the distribution, while the red lines represent returns between 2000 and 2008, which fall mainly on the left (lower) side of the distribution. Did experiencing higher returns impact the expectations of younger investors? Research shows that stock returns during our formative years may impact our willingness to take investment risk later in life. For example, investors who grew up during the depression prefer safer portfolios.⁹

Figure 4: Expected distribution of stock returns and realized returns between 2009-2021 and 2000-2009



Source: Ibbotson/Morningstar SBBI data 2000-2021

The yellow lines represent returns between 2009 and 2021, which fall mainly on the right (higher) side of the distribution, while the purple lines represent returns between 2000 and 2008, which fall mainly on the left (lower) side of the distribution. Did experiencing higher returns impact the expectations of younger investors? Research shows that stock returns during our formative years may impact our willingness to take investment risk later in life. For example, investors who grew up during the depression prefer safer portfolios.⁹

⁹ Malmendier, U., & Nagel, S. (2011). Depression babies: do macroeconomic experiences affect risk taking? *The quarterly journal of economics*, 126(1), 373-416.

How age impacts expected future returns

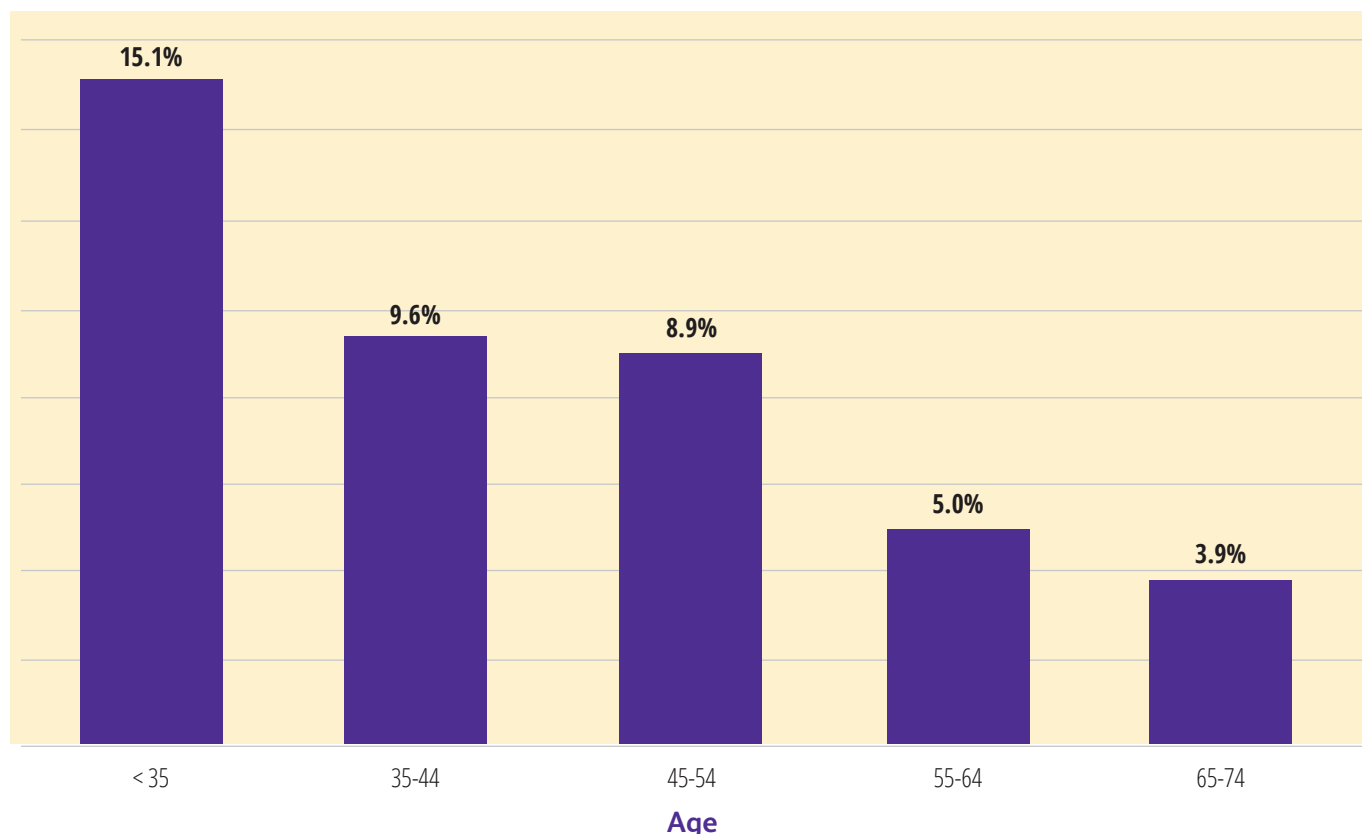
In a survey conducted during the summer of 2022, I asked respondents what average return they expect from the U.S. stock market over the next 10 years? As shown in figure 5, return expectations were highest for the youngest investors and lowest for the oldest investors. Respondents under the age of 35 believe that future stock returns will average 15.1%, which is very close to the average stock return since 2009. Investors age 55-65 expect only 5% stock returns, and investors age 65-74 expect only 3.9% annual returns.

Differences between return expectations by age can drive investment decisions. Investors who believe that markets will provide a high return will be less likely to select a retirement investing strategy that is more conservative. The longer market experience of near retirees suggests that they are more open than younger investors to strategies that provide a more balanced mix of risk and protections to meet spending goals.

While investors who are near retirement age have a more pessimistic perception of future stock returns, they have also benefitted from the recent growth in stock prices during the 2010s. These investors may be open to an additional behavioral technique known as the house money effect.

By using the techniques of loss aversion and framing, it is possible to establish a reference point at a time in the recent past, say 5 or 10 years ago, when the investor's portfolio amount was smaller than it is today. For example, if the investor had \$200,000 in savings at age 50 in 2013 and now has \$500,000, the \$300,000 can be framed as gains, or house money, from the original \$200,000 reference point. Once framed as house money, the conservative retirement investor can be encouraged to lock in these gains by using a portion to buy a base of lifetime income.

Figure 5: Expected future returns on U.S. stock investments by age category

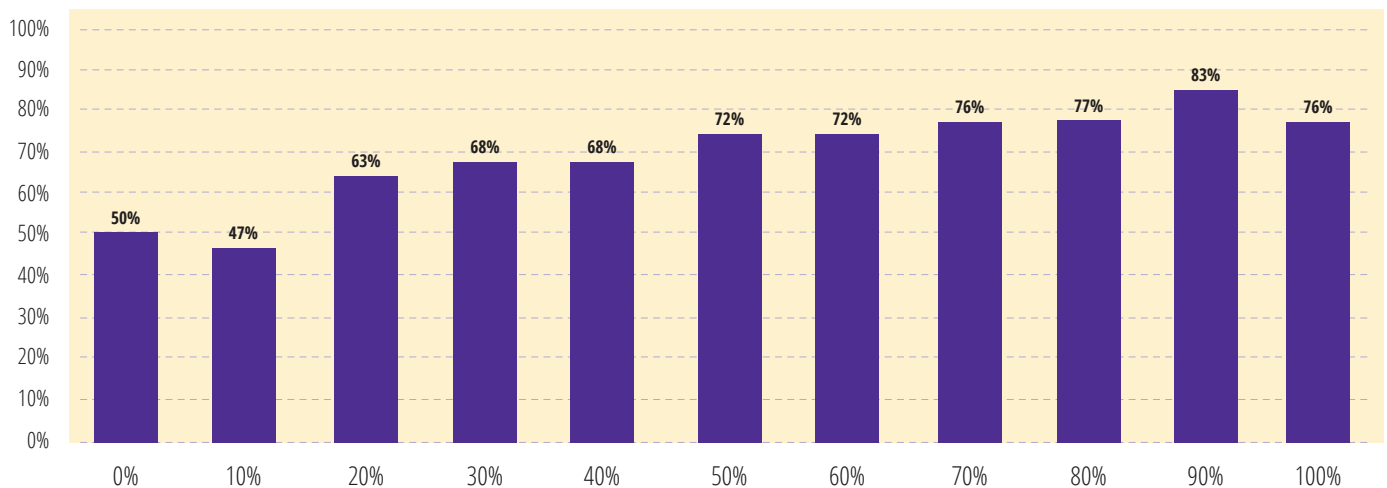


How long will clients typically live in retirement?

An additional barrier to selecting a strategy that provides lifetime income protection is a pessimistic attitude toward one’s expected longevity. Why should I care about a strategy that protects my income goal to age 90 when I’m not likely to live that long? Availability bias is the tendency to use more readily available information to make decisions. When deciding on an appropriate retirement time horizon, we often look at how long our parents or grandparents lived. We may focus on negative outcomes such as a friend or a relative who died at a young age while ignoring other relatives who are still alive at an advanced age.

Americans have made remarkable improvements in longevity in recent decades. According to a study by the Brookings Institution, men in the top 10th percentile of income have gained nearly 6 years of longevity and high-income women have gained over 3 years.¹⁰ If we only look at our parents who lived during an era with lower expected longevity, and who did not benefit from significant medical advances over time, we may have an unrealistic expectations of our own longevity. We can use data to demonstrate the tendency to underestimate longevity. In 1994, respondents in their 50s were asked to estimate the probability that they would live to the age of 75 from 0% (no chance) to 100% (certainly). We then track these same respondents over time to see what percentage lived to the age of 75.

Figure 6: Expected probability of living to age 75 and percentage who were still alive



Source: 1994-2018 Health and Retirement Study

Figure 6 shows the actual percentage of respondents in each group who lived beyond the age of 75. Of those who felt that there was a 0% chance they would make it to the age of 75, 50% were still alive after age 75. More than 2/3 of those who felt that there was a 30% or 40% chance of living to age 75 were still alive at that age.

Individuals who focus too much on available information rather than on collecting more and higher quality information are likely to make suboptimal decisions. Making a poor decision about one’s expected time horizon in retirement can result in a failure to plan for a long lifespan. This can expose a retiree to the risk of having to cut back on lifestyle, or even running out of savings in old age.

While many near retirees believe that imperfect health, or the early death of a parent or relative, means that there is little chance that they will live beyond age 75, in reality there is at least a 50% chance that even the least healthy will live into their late 70s and beyond. A healthy retired couple will have one spouse who will live, on average, into their mid-90s. Significant advances in medical science and reduced rates of smoking have increased longevity of all Americans, and all retirees need to plan for the possibility that their retirement will last decades into the future.

¹⁰ Get Rich, Live Longer: The Ultimate Consequence of Income Inequality - The Atlantic

Conclusions

Retirement planning involves several decisions that can be affected by behavioral mistakes. It's possible to make better decisions about spending down savings and managing investment volatility over time by reframing the objective from investments to income. Protecting a minimum spending amount funded by retirement savings while framing on income can allow a retiree to accept investment risk without experiencing the emotional response to an investment loss.

Investors near retirement age are most likely to respond emotionally to a loss in their investments, often resulting in lower investment performance overall. Can a safety net in the form of a protected lifetime income allow investors to accept inevitable investment losses without feeling the need to move to safety when markets fall? Can such a safety net also allow investors to spend their money without the fear that they will run out by living into their 90s and beyond? Solutions that allow investors to benefit from taking investment risk while protecting against the worst possible outcomes with respect to retirement income can give greater power to the rider to control the emotional elephant when creating the best solution to fund retirement income.

Investors with overoptimistic beliefs may be less open to solutions that balance growth and security. Younger investors who overweight more recent returns appear to have unrealistically high expectations of future stock returns, while investors closer to retirement expect more modest and realistic gains from taking greater investment risk. Availability of information can also bias beliefs about longevity. Many who believe that they won't live long enough in retirement to be concerned about protecting against the risk of outliving savings will ultimately live longer than they expect.

Millions of Americans have chosen annuities to help them chart a course towards their long-term financial goals and build confidence in their retirement plan. With tax-deferred growth potential and flexible options for guaranteed lifetime income and legacy protection, an annuity can complement your clients' portfolios while adding more security and protection to their retirement goals.



Protecting a minimum spending amount from retirement savings while framing on income can allow a retiree to accept investment risk without experiencing the emotional response to an investment loss.



Visit finpro.protective.com/retirement to learn how Protective's annuity solutions can help meet client retirement planning goals.

Key takeaways



Psychological responses to perceived gains and losses are inevitable.

Human brains have evolved over millennia and many of our critical brain regions are shared with other animals. Understanding the natural conflict between our limbic and prefrontal cortex brain regions — referred to as the dual-self model of cognition — is an important tool in combating the “animal” side of our brain that leads to emotional investing.



Short-term, emotional decisions can derail long-term retirement plans.

Keeping investors level-headed and focused on their long-term financial plan isn't always easy. Factors like market volatility and uncertainty often lead investors to make rash decisions that can derail even the best-laid retirement plans.



Awareness of behavioral biases can help your clients avoid common pitfalls.

Learning how investors are affected by the Two Systems model of human behavior is the first step to anticipating how investors will respond when faced with various retirement decisions, and how the possibility of emotional responses rises with age. By understanding this model, you'll be able to better protect your clients' hard-earned savings and help keep their retirement plans on track.



Reframing goals can help your clients avoid emotional investing.

Goal setting can be used to harness the value of emotional response because the goal itself becomes the reference point. For instance, research on retirement investing shows that setting the reference point at a dollar value has significant negative implications on retirement behavior.³ To avoid these negative emotional outcomes, it's important to carefully frame retirement decisions in a way that minimizes the impact of emotional responses. The most important frame to help investors make better decisions about investing in retirement is to focus on income rather than investment growth.

Meet the author

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Michael Finke, Ph.D. is a Professor of wealth management and Frank M. Engle Distinguished Chair in Economic Security at The American College of Financial Services. He received a doctorate in consumer economics from the Ohio State University in 1998 and in finance from the University of Missouri in 2011. He leads the O. Alfred Granum Center for Financial Security at The American College and is a Research Fellow at the Retirement Income Institute, and a member of the Defined Contribution Institutional Investment Association Academic Advisory Council. He is a nationally known researcher in the areas of retirement income planning, retirement spending, life satisfaction, and cognitive aging. He is a frequent speaker at financial planning conferences and was named one of the 25 most influential people in the field of investment advising in 2020 and 2021 by Investment Advisor Magazine.



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