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Market Risk

WHITE PAPER

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An Overview of Market Risks for Near-Retirees and Retirees

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White Paper

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Introduction

While Social Security provides those ages 62 and older with a predictable stream of income, most households need other resources as well for a secure retirement. The bulk of these other resources come from employer-sponsored retirement plans, although more affluent households may save additional amounts on their own. With the shift from traditional defined benefit plans, where employers make the contributions and bear the risk, to 401(k)-type plans, where households are responsible, market risk has become a major concern.

This paper explores the implications of market risk for retirement investors – both those approaching retirement and those already retired – by addressing three major questions. The first section asks the question, "For whom is market risk particularly important?" Not surprisingly, market risk matters for those who have a meaningful amount of financial assets and are reliant on those assets to supplement Social Security. It turns out that 45 percent of near-retirees and retirees currently have $100,000+ in financial assets – most of whom rely meaningfully on these assets to achieve their retirement goals and invest in risky assets. The second section asks, "What does market risk mean for wealth accumulation?" The discussion highlights how short-term risk can compound over time and lead to dramatic uncertainty as to the final accumulations, and how the interaction between market volatility – particularly early in retirement – and the drawdown of accumulated assets during retirement can meaningfully affect lifetime resources.

Given the potential impact of market risk on retirement outcomes, the third section asks, "What determines how much near-retirees and retirees invest in risky assets?" The discussion explores the determination of optimal portfolios under the lifecycle model and provides some details on important factors affecting households' investment decisions, such as beliefs about stock risks and returns, risk preferences, home ownership, health, and working with financial advisors.

The existing data and literature are used to identify the relevant households for analysis, document current risk exposure for this population, illustrate the impact of variable returns on wealth accumulation and withdrawals, and summarize the key factors affecting household decisions on risk-taking. But it falls short in three respects, which are briefly summarized in the fourth section. First, it focuses on actual holdings of risky assets, as opposed to desired holdings. But, actual stock holdings may be more reflective of institutional arrangements, such as target

date funds in 401(k) plans, than of individual preferences. Second, existing studies tend to explore the role of a specific set of factors within the lifecycle model. But, it is not immediately clear how the various factors identified in the literature might combine to explain the variation in stock allocation among the more homogenous population of near-retirees and retirees – individuals who are older and wealthier, more likely to own a home, be considering bequests, use a financial advisor, etc. Finally, the literature is still relatively unsettled regarding what impact financial advisors have on households' portfolio choices.

In response to these shortcomings, this study undertook two surveys conducted by Greenwald Research. One survey focused on retirement investors ages 48-78 with total investable assets of $100,000+, probing their desired asset allocation, their views on market risk, their current and future expected expenses, and their experience with advisors. The second survey focused on financial advisors – how they view market risk, how they address this issue with their clients, and how they perceive their impact on clients' decisions. Importantly, the two surveys also allow for a comparison of what retirement investors say about their experience with advisors and what advisors say about their experience with clients. The fifth section discusses the results of these two surveys.

The final section concludes that retirement investors' desired allocation to risky assets tends to be lower than the actual allocations, which is likely due to the misalignment between their risk preferences and the default retirement portfolios (often target date funds), and their over-pessimistic perceptions about equity returns. Given the importance of portfolio choice for asset accumulation and retirement security, expert advice and customization regarding market risk could be beneficial for retirement investors. While financial advisors could fill this role, research suggests that their effectiveness to date remains limited.

For Whom Is Market Risk Particularly Important?

Market risk is most salient for near-retirees and retirees with meaningful financial assets, as Social Security benefits generally replace a smaller portion of their pre-retirement income. And among these households, market risk is particularly salient for those who do not have the steady income provided by a defined benefit (DB) plan. The focus here is households with heads ages 48-78 to be consistent with the new retirement investor survey reported in the fifth section.

For market risk to be relevant, one must have a meaningful amount of financial wealth. Table 1 presents the wealth distribution for all households ages 48-78 in 2022. It shows that 55 percent of these households have less than $100,000 in financial wealth and hold less than 2 percent of all financial wealth in aggregate. On the other end of the spectrum, 13 percent of households ages 48-78 have at least $1 million in financial wealth and hold over 80 percent of all financial assets in aggregate.

Table 1. *Distribution of Financial Wealth for Households Ages 48-78, 2022*

Total financial wealth	Percentage of population	Percentage of aggregate financial assets
Less than $10k	33%	0.1%
$10k - $100k	22	1.3
$100k -$200k	9	1.9
$200k - $500k	12	5.9
$500k - $1m	10	9.8
$1m or more	13	81.0

Source: U.S. Board of Governors of the Federal Reserve System, *Survey of Consumer Finances* (SCF) (2022).

For those with little wealth, resources in retirement come mainly from Social Security, where the progressive benefit formula replaces a much higher share of pre-retirement earnings for low earners than for high earners (see Table 2). And, given how little financial assets they own, investment outcomes are unlikely to affect the living standard in retirement for these low-earning, low-financial wealth groups.

Table 2. *Social Security Replacement Rates for Workers Retiring at 65 in 2023*

Earnings level	Average indexed earnings (2023)	Replacement rate
Very low	$16,563	71.0%
Low	29,813	51.6
Medium	65,251	38.3
High	106,002	31.7
Maximum	163,084	25.1

Source: Burkhalter and Rose (2024).

Given these facts, the main population of interest for this study is households ages 48-78 with $100,000+ in investable assets. While DB benefits serve as the primary benefit for state

and local government employees (and remain important for some private sector workers), most of these households still rely meaningfully on their financial wealth in retirement.[1] The question is, then, how exposed are these households to market risk? Table 3 documents stock holdings for households with $100,000+ in financial wealth in 2022. Almost all of these households hold some stocks, with the average share in stocks ranging from 35 percent to 52 percent.[2] Interestingly, the standard deviation – a statistical measure of dispersion – of the share of stocks is about 30 percent, which shows significant variation in stock holdings even among those with similar asset levels.[3]

Table 3. *Household Stock Holdings by Financial Wealth Group for Households Ages 48-78 with 100k+ in Financial Wealth, 2022*

Total financial wealth	Percentage with stocks	Percentage invested in stocks	
		Average	Standard deviation
$100k - $500k	83%	35%	31%
$500k - $1m	96	47	30
$1m or more	96	52	29

Source: Authors' calculations from the 2022 SCF.

An important question is the extent to which these asset allocations reflect the preferences of households as opposed to the default investment options provided in 401(k)-type defined contribution (DC) plans – where most households accumulate their financial assets. DC plans offer a convenient and low-cost channel for households to access the stock market.[4] Target date funds (TDFs), the most common default investment option in DC plans, have been playing

[1] As shown in Table 1, using data from the *Survey of Consumer Finances* (SCF), we estimate 45 percent of households ages 48-78 have $100,000+ in assets. Additionally, the SCF data show that just over half of these households (53 percent) have no DB plan. Among the half with a DB, we use the *Health and Retirement Study* (HRS) to estimate that two-thirds of them cannot rely solely upon their DB income in retirement. In the HRS, only one-third of those ages 60-78 with $100,000+ in financial assets and receiving DB income can replace at least two-thirds of their pre-retirement earnings from Social Security benefits and DB income alone -- meaning that two-thirds will need to rely on other resources. For simplicity, we presume that those currently ages 48-59 with $100,000+ in assets and a DB plan – most of whom have not yet claimed their DB benefits – will have a similar share relying on their financial wealth as those ages 60-78 in the HRS. Altogether, this translates to 85 percent of households ages 48-78 with $100,000+ relying on their financial wealth in retirement [.85 = .53+((1-.53)*.6667)].

[2] Similarly consistent and high levels of stock holdings exist by age and DB coverage.

[3] Similarly wide levels of variation in stock holdings exist by age and DB coverage.

[4] In fact, U.S. households' exposure to stocks increased substantially since the 1980s – a development that some academics argue reflects the expansion of DC plans (Gomes 2020).

an increasingly important role in determining households' lifetime portfolio choices. As of 2023, according to Vanguard data, more than 80 percent of all plan participants use TDFs, and TDFs account for about 40 percent of all DC assets.[5] In typical TDF glide paths, the total share of stocks stays close to 90 percent during the primary working years, declines to 40-60 percent around age 60, and continues to decline thereafter.

In summary, market risk is primarily a concern for the 45 percent of near-retirees and retirees that currently have $100,000+ in financial assets – most of whom rely meaningfully on these assets to achieve their retirement goals and invest in risky assets. Their portfolio choices may be increasingly affected by investment options offered in 401(k)s – TDFs in particular – while still exhibiting considerable variation even among those with similar wealth. The rest of this paper primarily focuses on this group of near-retirees and retirees and refers to them as "retirement investors."

What Does Market Risk Mean for Wealth Accumulation?

Market risk is commonly defined as the potential for the return of a financial asset to vary from its expected values.[6] One important question for this paper is how these fluctuations can affect retirement planning and outcomes. As discussed, the main goal of portfolio choice is determining the optimal risk-return profile by allocating assets among various risky and less-risky assets. Thus, a natural starting point for understanding market risk is the historical risk/return profiles of assets commonly included in retirement investors' portfolios (see Table 4). Unsurprisingly, stocks have dramatically outperformed fixed-income assets in the long run, albeit with greater associated risk as evident in the large standard deviation of annual returns.

[5] See Vanguard (2024).
[6] This paper focuses on systematic market risk that affects the entire market rather than a specific investment. It cannot be eliminated through diversification.

Table 4. *Average Annual Returns and Standard Deviation for Different Assets, 1928-2023*

	Annualized long-term compound return	Standard deviation of annual return
Stocks (S&P 500)	9.8%	19.6%
Corporate bonds	6.7	7.7
10-year Treasury bond	4.6	8.0
3-month Treasury bill	3.3	3.0

Note: Data reflect nominal annual returns from January to December.
Source: Damodaran (2024).

Although risk-return profiles are informative, what ultimately affects retirement investors' well-being is the value of their accumulated assets in retirement and the spending level those assets can support. Therefore, it is important to understand how uncertainty surrounding annual returns translates into uncertainty regarding the amount of assets accumulated over various investment horizons.

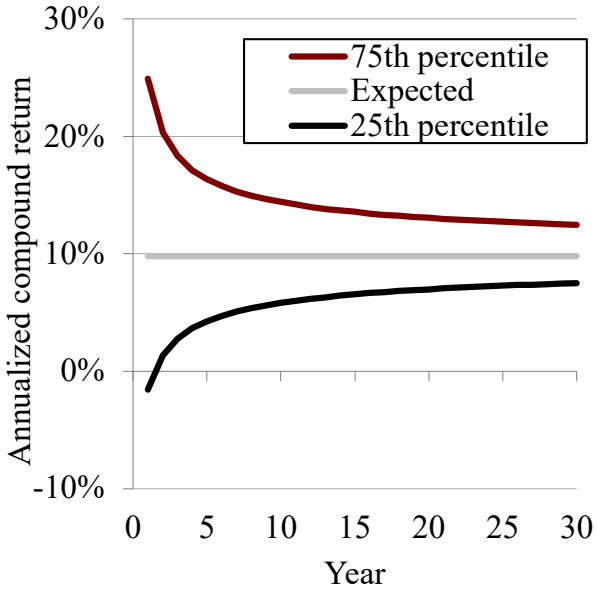
Retirement investors typically face fairly long investment horizons. For example, a contribution made in a person's 401(k) at age 40 may not be withdrawn until their 70s in response to required minimum distribution rules; similarly, money set aside in a person's 50s to cover the costs of long-term care probably will not be needed until their 80s. Over such extended investment periods, how much uncertainty do retirement investors face?

A common fallacy is that risk declines with longer investment horizons because short-term market fluctuations average out in the long run. Figure 1 shows how $1,000 invested in a S&P 500 stock fund evolve over a 30-year period – with annual returns simulated using the risk-return profile in Table 4. Even as the range of the annualized return converges to its long-term expectation over time (left panel), the range of wealth accumulation widens as a percentage of expected wealth (right panel). As a result, over a 15-year period, the stock investor faces a 25-percent chance that their assets could be 60 percent more than what they expect, and a 25-percent chance that their assets could be 40 percent less than what they expect. If you extend the period to 30 years, they face a 25-percent chance that their assets could be 100 percent more than expected or 50 percent less. The reason is that annual deviations from the long-term expectation

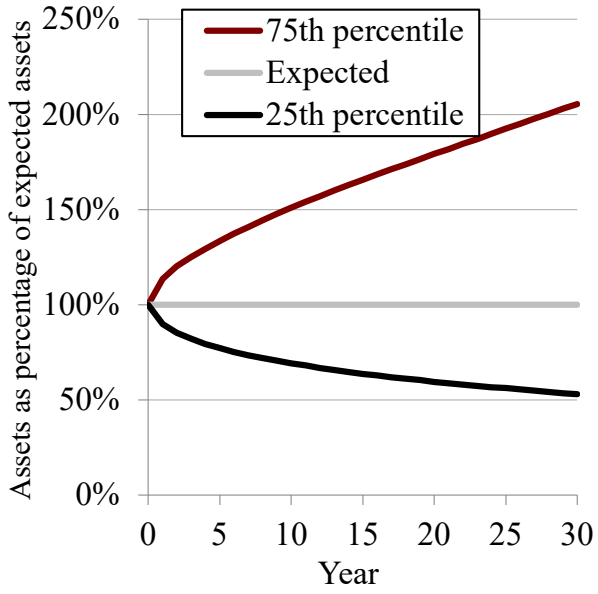
compound over a longer period, ultimately outweighing the impact of the narrowing range around expected returns.[7]

Figure 1. *The Likely Range around Expected Return and Asset Values over a 30-year Period*

1a. *Distribution of annualized compound returns*



1b. *Distribution of asset values*



Source: Authors' calculations.

In addition to the uncertainty in asset values over the long term, short-term fluctuations in asset returns may also affect retirement investors in important ways. First, academic research has found that many investors care about the short-term fluctuations in their account balances, especially large losses, even if these losses do not eventually affect their spending and standard of living.[8] Second, once retirement investors start withdrawing from their financial assets to finance their retirement spending, the timing of high and low returns over the withdrawal period becomes relevant. Without any cashflow, return sequences with the same compound average returns over a period always result in the same final asset value regardless of the path of the sequence. In the presence of regular withdrawals from the portfolio, however, returns early in

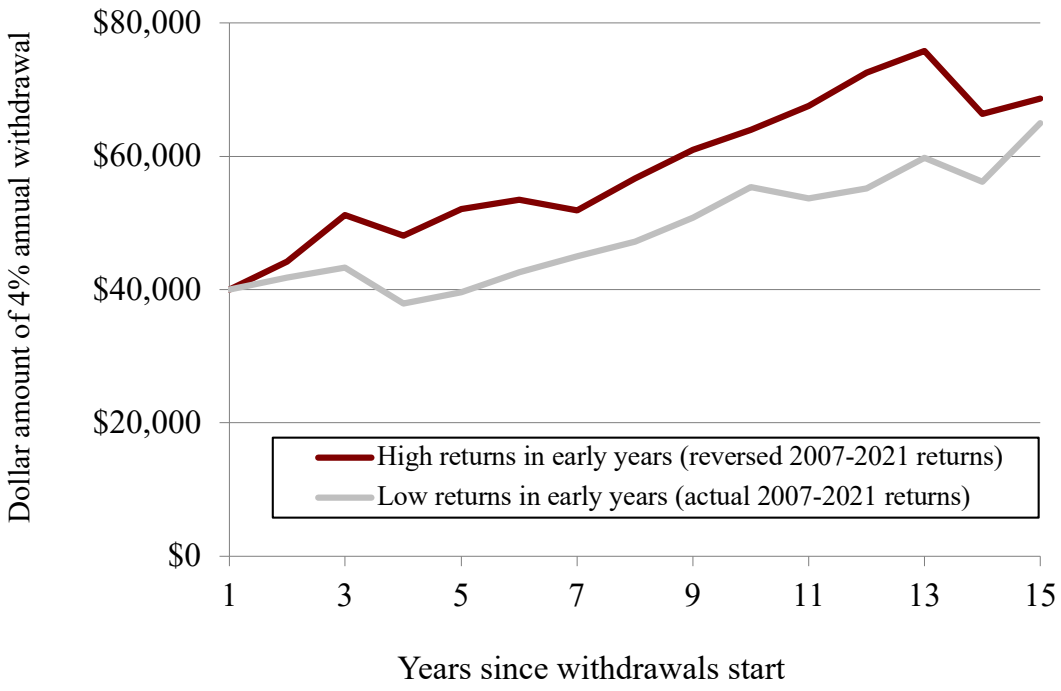
[7] See a similar discussion in Boyd and Yin (2017) about the increasing uncertainty in asset values in the context of public sector pension funds, which are also long-term investors. Also see Bodie (1995) and Pastor and Stambaugh (2012) for more in-depth analyses on the risk of stocks in the long run.

[8] This issue will be discussed in greater detail in the review of the literature in Section III.

the period have greater effects on future asset values. This phenomenon is referred to as "sequence-of-returns" risk.

Figure 2 illustrates sequence-of-returns risk by showing annual withdrawals, which always equal 4 percent of current assets, from an initial asset of $1 million invested in a 50-50 stock-bond portfolio. The analysis compares two stylized return paths with the same average annual return: 1) the historical returns from 2007-2021 with lower returns in the early years due to the Great Recession and higher returns in the later years due to the persistent stock market boom in the 2010s (gray line); and 2) the same return sequence in reverse order (red line). The comparison shows that a retiree sticking with this withdrawal method would have about 10- to 20-percent lower annual withdrawals in the scenario with worse returns in the early years.

Figure 2. *Sequence of Return Risk: Annual Withdrawals under Return Paths with the Same Average Return but Different Timing of High and Low Returns*



Source: Authors' calculations.

In conclusion, even run-of-the-mill market risk translates into a significant amount of uncertainty in retirement wealth and must be carefully considered in retirement planning. It is also important to recognize that portfolio choice is not an isolated investment decision for retirement investors; rather, it is an integral part of broader household finance that involves

interconnected decisions on working, saving, and investing and management of various types of risks (such as longevity risk and health risk) throughout a household's lifetime. Thus, understanding portfolio choice in the context of household finance entails an analytical framework that accounts for these complexities. The next section discusses what the literature says about portfolio choice with an eye towards identifying gaps in knowledge that can be filled by findings in the two new surveys.

What Do We Know about the Determinants of Households' Portfolio Choice?

Households' lifetime portfolio choices have been an increasingly active research topic in economics over the past two decades. This section describes the underlying model and then explores the individual factors that influence portfolio allocation.

The Life-Cycle Portfolio Choice Framework

Theoretical economic analyses typically use structural lifecycle models to examine how individuals should choose their optimal exposure to risky financial assets, in the presence of one or more other elements of household finance, to maximize their lifetime well-being.

It is helpful to start with the seminal work by Samuelson (1969) and Merton (1969), in which the household has no labor income and withdrawals from financial assets are the only source of income (and the volatility of risky assets is the only source of risk). Such a model results in a clear and simple rule for optimal asset allocation: investors should maintain a *constant* share in risky assets throughout their lifetime regardless of age and initial wealth levels. That share depends on three factors: 1) the expected return of risky assets relative to that of risk-free assets (i.e., the stock risk premium); 2) the volatility of stock returns; and 3) the risk aversion level of the investor.[9]

A crucial extension to this basic portfolio choice model is introducing labor income (e.g., wages).[10] In theory, human capital (the skills and knowledge that allow someone to earn labor income) generates a stream of future labor income that is more similar to holding a bond than a stock. If human capital is like a bond, incorporating it into households' asset allocation decisions

[9] This result also requires that the financial market is frictionless, stock returns are independently and identically distributed, and the individual's preference takes a certain functional form.
[10] See Merton (1971) and Bodie, Merton, and Samuelson (1992).

should shift the allocation of their financial wealth towards more risky assets to maintain an *overall* balanced portfolio.[11] Because human capital declines with age, the share of risky assets in total financial wealth should decline as one approaches retirement. This framework underlies the familiar recommendation offered by financial advisors and the pattern of TDF glide paths.[12]

As the portfolio choice framework extends into the retirement period, the problem becomes more complex and existing theoretical work generally does not offer a clear prediction about retirees' asset-allocation pattern. Retirees no longer earn labor income but receive bond-like income streams through Social Security and DB benefits. Thus, the trade-off between human capital and financial wealth still applies. Unlike the pre-retirement period, during which the declining human capital and increasing wealth accumulation drives down the allocation to risky assets, in retirement both human capital (present value of Social Security and DB benefits) and financial wealth tend to fall, and the pattern over time can result in either an increasing or decreasing risky share, depending on the specific model assumptions used.[13]

More importantly, considerations such as longevity risk, health risk, and bequest motives all become increasingly relevant as one ages and incorporating them can alter the asset allocation paths predicted by basic models. These factors, generally depressing the incentive to invest in risky assets, can be an important source of the observed heterogeneity in retirement investors' asset allocations.

The economic framework of lifecycle portfolio choice underlies the design of TDFs and related indexes, which have been constructed by financial firms, such as Vanguard, T. Rowe Price, and Morningstar. Although differing in specific model designs and underlying assumptions, glide-path models developed by these firms typically incorporate all core features of lifecycle models, such as the trade-off between human capital and financial wealth, investor preferences, and other income sources available.[14]

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[11] Although usually considered as a bond-like asset, labor-income risk varies across occupations and household characteristics, thus individual retirement investors should account for the potential risk of their labor income when making asset allocation decisions. Empirically, Calvet and Sodini (2014) find that a higher present value of labor income is associated with greater risk-taking using Swedish registry data.

[12] See Jagannathan and Kocherlakota (1996).

[13] See the benchmark model in Gomes (2020) for an illustration.

[14] The Vanguard Life-Cycle Investing Model and T. Rowe Price develop full lifecycle models to guide their TDF glide path constructions. Morningstar provides indexes for TDFs that incorporate considerations about time and risk patterns of human capital, combined with modern portfolio theory. See Aliaga-Díaz et al. (2021), Fullmer et al. (2017) and Morningstar (2015) for descriptions of these models.

Determinants of Households' Asset Allocation Decisions

This subsection examines the major extensions of portfolio choice models and the findings regarding the major factors that affect portfolio choice.[15] These factors include: risk preferences, subjective perceptions about market risk and asset returns, wealth, longevity risk, health risk, homeownership, and the impact of financial advisors.

Risk preferences. As discussed, risk-aversion levels are a crucial parameter in portfolio choice models that are, all else equal, negatively associated with optimal ownership of risky assets. This association has been documented in several empirical studies.[16] The heterogeneity in individuals' risk tolerance levels can translate into large variations in preferred asset allocations.

Perceptions about market risk and return. Investors' expectations about stock returns and market volatility may differ from reality and affect their investment decisions. Empirical evidence suggests that positive expectations about the stock market result in greater stock ownership (Dominitz and Manski 2007; Kezdi and Willis 2008; and Beutel and Weber 2022).[17] Interestingly, Egan, Yang, and MacKay (2022) find that beliefs account for twice as much variation in observed portfolio holdings as risk aversion.

The literature based on surveys suggests households tend to have much lower expectations of stock market gains and higher expectations of volatility than historical averages. For example, research using the *Health and Retirement Study* (HRS) has consistently found that individuals tend to underestimate the likelihood of positive stock market performance when compared to historical data.[18] Similarly, research based on the University of Michigan's *Survey of Consumer Confidence* (SCC) data and the *Gallup Investor Survey* finds that individuals regularly underestimate stock market performance.[19] More recently, research using

[15] See Gomes (2020) and Gomes, Haliassos, and Ramadorai (2021) for a more comprehensive review of the literature on portfolio choice over the lifecycle.
[16] For example, see Fellner and Maciejovsky (2007).
[17] In the 2004 *Health and Retirement Study* (HRS), 43 percent of married males owned stock if they thought the chance of a stock market gain was 90 percent or greater. However, only 27 percent owned stock if they thought the chance of a stock market gain was 10 percent or less. Similarly, in the 2002 HRS, individuals holding stocks reckoned a 57-percent chance of a stock-market gain compared with a 47-percent chance for those who did not hold stocks.
[18] See Kezdi and Willis (2008) and Hou (2020).
[19] Dominitz and Manski (2005); Amronin and Sharpe (2012); and Greenwood and Shleifer (2014).

administrative data on investor portfolios and trading behavior has also found retail investors to be slightly pessimistic relative to historical norms.[20]

Studies documenting investor expectations naturally explore the determinants of these expectations. The main conclusion from the literature is that individual expectations at any given point in time are substantially influenced by recent events in the stock market and the broader economy.[21] Research has also identified demographic factors correlated with stock market expectations. In particular, the research finds that males, those with more education, those with higher cognitive scores, and those with more wealth have more positive stock market expectations.[22] That said, more recent research has concluded that the variance in beliefs is mainly driven by idiosyncratic factors, with demographic characteristics explaining only a small part of why some individuals are optimistic and some are pessimistic.[23]

Not only do individual investors tend to underestimate stock returns, they also significantly overestimate market volatility. Using HRS questions about respondents' beliefs about stock returns over the next year, Hou (2020) finds that individuals' expectations about stock return volatility are much larger than that of historical returns of broad market indexes. Individual investors also tend to overestimate the probability of severe market downturns.[24] Existing research on investor expectations also highlights the fact that investor beliefs generally run counter to basic tenets of finance theory and empirical market research.[25]

Wealth. Interestingly, the relationship between wealth and risky assets is not clear-cut theoretically (nor empirically). Empirical studies find a strong correlation between wealth and the likelihood of investing in stocks, but the evidence on the relationship between wealth and the share of financial assets invested in risky assets is mixed.[26] Wachter and Yogo (2010) and Heaton and Lucas (2000) find that the share in risky assets increases with wealth using SCF and tax return data; Calvet and Sodini (2014) obtain similar results using Swedish data. By contrast, Brunnermeier and Nagel (2008) and Chiappori and Paiella (2011), using survey data in the

[20] Giglio et al. (2021) and Egan, MacKay, and Yang (2022, 2024).
[21] Hurd (2009); Dominitz and Manski (2005); Amronin and Sharpe (2012); Greenwood and Shleifer (2014); and Egan, MacKay, and Yang (2022, 2024).
[22] Dominitz and Manski (2005); Kezdi and Willis (2008); and Egan, MacKay, and Yang (2022, 2024).
[23] Giglio et al. (2021).
[24] Goetzmann et al. (2016).
[25] Amronin and Sharpe (2012); Greenwood and Shleifer (2014); and Egan, MacKay, and Yang (2022, 2024).
[26] See Guiso, Haliassos, and Japelli (2002), Campbell (2006), and Guiso and Sodini (2013). This result is likely driven by the cost of market participation relative to wealth levels, which is discussed below.

United States and Italy respectively, find that the risky share of liquid wealth is flat across the wealth distribution.

Longevity risk and annuities. Retirement investors face the risk of running out of wealth prematurely due to the uncertainty about the time of death, which should give rise to the desire to purchase vehicles that can provide guaranteed lifetime income such as annuities. The seminal work by Yaari (1965) suggests that individuals who only face longevity risk and have no bequest motives should fully annuitize their wealth upon retirement if an actuarially fair annuity is available. The intuition behind this result can be understood from an investment perspective: an annuity, which can be a wrapper around any investment product, provides mortality credits above and beyond market returns and thereby dominates any alternative investment portfolio regardless of market performance.[27]

In more realistic portfolio choice models, a major disadvantage of annuities is their illiquidity, which may conflict with other needs in retirement such as bequest motives and large health expenditures. Therefore, the attractiveness of annuities compared to liquid investments in stocks and bonds depends on whether the mortality credits are high enough to compensate for the loss of flexibility.[28]

Empirically, only a small fraction of older adults in the United States annuitize part of their assets and virtually no one fully annuitizes their assets. In addition to bequest motives and health-related spending, other explanations for the low annuitization rates include adverse selection and loading costs, crowd-out by government-provided annuities, and intra-family risk sharing, as well as various behavioral factors.[29]

Health and health expenditures. Retirement investors are subject to increasingly higher health-related risks as they age, which can affect their portfolio choices through two channels: 1) uninsured medical and/or long-term care expenditures absorb their wealth; and 2) a decline in

[27] As illustrated in Arapakis and Wettstein (2023).
[28] Horneff, Maurer, and Stamos (2008) examine a model in which households allocate their assets among stocks, bonds, and annuities. The result shows that the optimal share of stocks still exhibits the typical lifecycle pattern, while the household prefers shifting from stocks to annuities instead of bonds as annuities are a close substitute to bonds and offer the extra benefit of longevity insurance; as expected, introducing bequest motives reduces the allocation to annuities. Horneff et al. (2009) and Horneff et al. (2010) studied the benefits of alternative annuity products with variable or index-linked payouts in lifecycle portfolio choice models.
[29] See Arapakis and Wettstein (2023) for a comprehensive review of the literature on longevity risk and the "annuity puzzle."

health status alters their preferences. Existing studies generally suggest that health-related risks tend to reduce the risky share in the portfolio of retirement investors.

Pang and Warshawsky (2010) examine optimal stock-bond-annuity portfolio choices for retirees in the presence of uninsured health expenses and show that health spending risk shifts household portfolios from stocks to safer assets and enhances the demand for annuities. Yogo (2016) considers a portfolio choice model in which health shocks also have a direct impact on marginal utility. In his specific model calibration based on HRS data, non-health consumption and health are substitutes (e.g., physically disabled individuals could derive a greater marginal utility from a massage). His model suggests a low share of stocks is positively correlated with health status, especially for younger retirees. His model also predicts a negative relationship between the portfolio share in housing wealth and health for younger retirees. Edwards (2008) obtains a similar result and estimates that risky health may explain about 20 percent of the observed age-related decline in financial risk-taking after retirement.

Homeownership. Aside from human capital, houses are generally the largest assets held by most households and can be an important consideration when households allocate their financial assets. Yao and Zhang (2005) and Cocco (2005) introduce housing decisions into lifecycle portfolio choice models, predicting that individuals with a higher share of their total wealth in houses should invest less in risky assets due to risk and illiquidity concerns about housing wealth.[30]

Empirical studies, however, have not found a consistent relationship between housing wealth and portfolio choices.[31] In a more recent study, Chetty, Sandor, and Szeidl (2017) argue that it is important to distinguish between the effects of home equity and mortgage debt on portfolios, which previous studies fail to do. Using refined empirical methods and panel data on households spanning 1990-2008, the authors show that exogenous increases in mortgage debt substantially reduce the share of stocks in financial assets, while exogenous increases in home equity increase stock ownership.

[30] Cocco (2005) further argues that this crowd-out effect of housing on stock investment is particularly large for young and lower-income individuals, reducing the benefits of stock market participation.
[31] See Fratantoni (1998); Heaton and Lucas (2000); Yamashita (2003); and Cocco (2005).

The role of financial advisors. Many households with $100,000+ in financial assets use investment professionals. Ideally, a financial professional should help individuals find the appropriate level of risk exposure by educating them about the core tenets of finance theory as well as empirical research, asking a series of risk tolerance questions to elicit risk preferences, lowering the costs of market participation, and helping them reflect upon various factors potentially relevant to their retirement planning such as bequests, late-life health costs, and using the house as an asset. While the empirical evidence is mixed on the ultimate impact of financial advice, it is clear that advisors do have some influence. Using a unique Canadian dataset, Foerster et al. (2017) find that financial advisors exert substantial influence over their clients' asset allocation. Linnainmaa et al. (2019) find plausibly causal evidence that advisors increase clients' willingness to take financial risks.

Research also suggests that financial advisors may fall prey to the same pitfalls as individual investors. Based on a large sample of Canadian financial advisors, Linnainmaa, Melzer, and Previtero (2021) find that advisors trade frequently, chase returns, prefer expensive and actively managed funds, and under-diversify. Importantly, the research also finds that advisors' returns are similar to their clients', that advisors adhere personally to the investment advice that they give their clients, and that advisors continue these patterns even after they leave the industry. That said, for retirement purposes, Harlow et al. (2020) find that advised households generate significantly larger proportions of retirement spending (both gross and net of Social Security) than non-advised households with the same savings behavior and asset allocation.

How Can New Research Further Our Understanding of Market Risk and Retirement?

The existing data and literature identify the relevant households for analysis, document current risk exposure for this population, illustrate the impact of variable returns on wealth accumulation and withdrawals, and summarize the key factors affecting household decisions about taking on risk. But prior research falls short in three respects. First, it focuses on actual holdings of risky assets, as opposed to desired holdings. But, institutional arrangements, such as target date funds in 401(k) plans, may be equally – if not more – important than individual preferences in determining actual stock holdings. Second, each analysis tends to explore the role of a specific set of factors within the lifecycle model. But, it is not immediately clear how the

various factors identified across the literature might combine to explain the variation in stock allocation among the more homogenous population of near-retirees and retirees – individuals who are older and wealthier, more likely to own a home, be considering bequests, use a financial advisor, etc. Finally, the literature is still relatively unsettled regarding the impact that financial advisors have on households' portfolio choices.

In light of these shortfalls, we set upon answering three open questions in the literature through new surveys of retirement investors and of financial advisors:

1) How do the desired stock allocations compare to actual allocations for near-retirees and retirees?
2) What explains the range of desired and actual stock allocations for near-retirees and retirees?
3) What do advisors typically recommend to their clients, and do they impact their clients' appetite for risk?

What Can Two New Surveys Tell Us About Market Risk and Retirement?

The two new surveys were administered by Greenwald Research in mid-2024. The investor survey questioned 1,016 retirement investors ages 48-78 with total investable assets of $100,000+. Because the survey deliberately under-sampled DB participants, our analysis focuses on a subsample of 897 retirement investors who are not covered by DB plans, consisting of 582 retirees and 315 near-retirees.[32] The advisor survey questioned 400 financial advisors with at least three years of experience, $30 million in assets under management, and 75 clients (of whom at least 40 percent are ages 50+). The two surveys are not explicitly linked – that is, advisors cannot be matched with retirement investors.

Retirement Investor Survey.[33] The investor survey solicits basic demographic and financial information from respondents – such as the investor's age, marital status, total financial assets, and homeownership. It also includes respondents' subjective preferences, beliefs, and concerns related to market risk – factors often studied as determinants of asset allocation. In addition, the survey solicits information on somewhat less thoroughly studied factors that may be particularly relevant for older wealthier individuals. For example, the survey asks the amount

[32] Sampling weights are used in the survey to make the results match the corresponding population.
[33] See Appendix A for a summary description of responses to the investor survey.

that individuals hope to leave as a bequest, the relative importance of leaving said bequest versus other goals, and whether respondents have set aside any funds for potential future long-term care expenses. Similarly, to better understand the extent to which respondents might be incentivized to take risk in their financial portfolio to maintain a desired level of consumption, the survey elicits information on current and expected future expenditures. Finally, the survey asks investors whether they have ever worked with an advisor, the types of information the advisor presented them, and whether working with the advisor altered their appetite for risk.

Financial Advisor Survey.[34] The advisor survey solicits basic information from 400 advisors about each advisor's practice – whether they work for a Registered Investment Advisor (RIA), the number of clients they serve, the total assets they have under management, and the advisor's compensation structure. The survey also inquiries about the age and wealth distribution of each advisor's client base. In addition to basic facts about each advisor's practice, the survey asks about each advisor's beliefs regarding the riskiness of stocks, their approach to providing financial advice, the advisor's main concerns for their clients, the advisor's own perceptions about their clients' concerns, and the advisor's take on the level of risk-taking among their new clients when they first meet.

Question 1: How does desired allocation compare to actual allocation?

The first step is to document retirement investors' desired allocation to risky assets – specifically, their desired allocation to stocks.[35] In the investor survey, both near-retirees and retirees are asked about their desired current allocation – Table 5 shows basic statistics on their responses. On average, both groups desire their current stock allocation to be just under 40 percent.[36] However, they also have a large standard deviation that includes 9 percent (near-retirees) and 16 percent (retirees) who desire no stocks at all.

[34] See Appendix B for a summary description of responses to the advisor survey.
[35] The desired asset allocation is asked in simple terms and offers survey respondents a set of relatively recognizable asset categories (e.g., stocks, bonds, real estate, other) to choose from.
[36] The investor survey also asks near-retirees about their desired allocation for retirement. Interestingly, near-retirees show some desire to reduce their exposure to stocks when they retire – with the average desired stock allocation dropping from 39 percent for their current allocation to 32 percent for retirement.

Table 5. *Basic Statistics on Desired Stock Allocation*

Statistic	Near-Retirees	Retirees
Mean	39%	37%
Std. dev.	26	26
No stocks	9	16

Source: Authors' calculations from the 2024 Greenwald Research investor survey.

Table 6 compares the average desired allocation across both near-retirees and retirees to the actual allocation for a similar sample in both the HRS and the SCF. Interestingly, the average desired allocation from the investor survey is lower than the actual allocation reported in both the HRS and SCF.[37] The variation in desired allocation is also smaller than for actual allocation. Interestingly, a meaningful fraction of retirement investors desire to avoid stocks entirely – and actually do so in practice.

Table 6. *Desired and Actual Stock Allocation for Near-Retirees and Retirees*

Statistic	Stocks as a percentage of investable assets		
	Desired in Investor Survey	Actual in HRS 2020	Actual in SCF 2022
Mean	37%	48%	43%
Std. dev.	26	34	32
% no stocks	13	16	10

Note: For the purposes of comparison across surveys, the table is limited to those ages 50-78 with $100,000+ in financial assets and no DB coverage.
Sources: Authors' calculations from the 2024 Greenwald Research investor survey, the 2020 HRS, and the 2022 SCF.

One likely reason for the difference between desired and actual allocations are the defaults embedded into the retirement system – namely, TDF glide paths.[38] To illustrate, Figure 3 shows three glide paths of stock allocation over a 40-year period centered around the

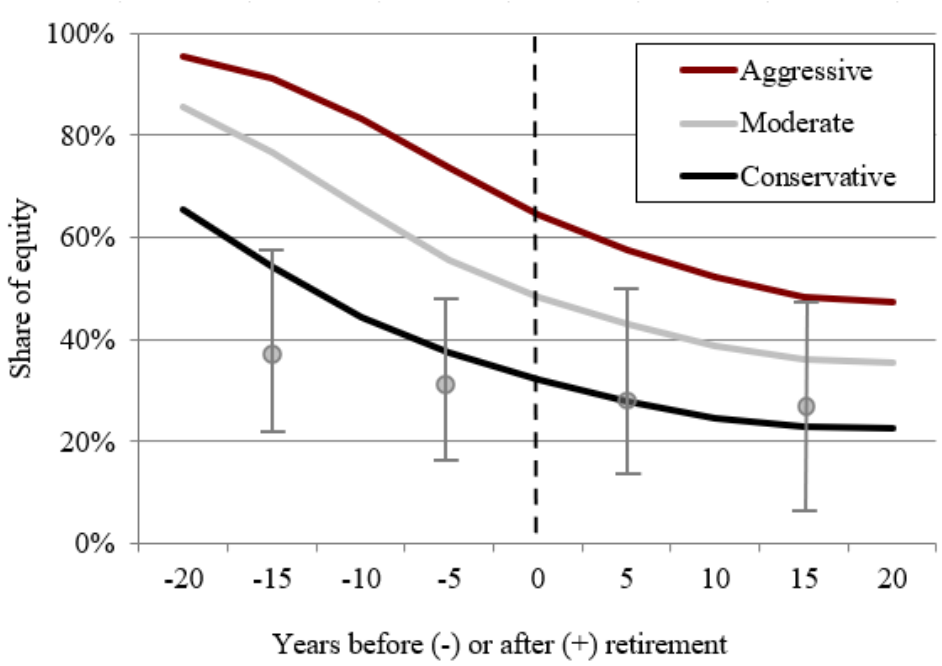
[37] This is true even for retirement investors who are working with or have worked with an advisor in the survey, among whom the mean and standard deviation of stock allocation are 39 percent and 25 percent, respectively.
[38] As noted above, TDF glide paths are usually developed based on lifecycle portfolio choice theory and incorporate multiple key determinants of household portfolio choice.

retirement age, along with the distribution of the desired stock allocation (vertical lines) from the investor survey for each 10-year interval. The bottom of each vertical line represents the 25th percentile, the mid-point represents the median, and the top represents the 75th percentile.[39] The three glide paths correspond to the aggressive, moderate, and conservative variants of Morningstar Lifetime Allocation Indexes, which are constructed presuming rational investors who have different risk preferences and labor income risk.[40] While the desired allocation exhibits substantial variation, the median (the mid-point of the intervals) hues closest to the conservative path, with the median for younger near-retirees (more than ten years away from their expected retirement age) falling about 15 percentage points below the conservative allocation. If the moderate glide path is the common default, it would help explain the higher-than-desired allocation. Interestingly, the average actual allocation in the HRS – 48 percent – is quite similar to the allocation for those near retirement under the moderate glide path.

[39] The distributions of desired stock allocations are calculated for four 10-year windows around retirement, with the two on the left for near-retirees (aligned using expected years to retirement) and the two on the right for retirees (aligned using reported years since retirement).

[40] Asset allocations of these glide paths are obtained from Morningstar (2024a, 2024b, 2024c). See Morningstar (2015) for an overview of the underlying methodology. Greater risk tolerance levels and less risky labor income results in more aggressive glide paths (higher stock allocation at all given ages). While the specific shapes of the glide paths are affected by the TDF providers' choice of assumptions, glide paths of TDFs targeting a broad market can still serve as a useful benchmark.

Figure 3. *Desired Stock Allocation from Investor Survey and Morningstar TDF Glide Paths*



Sources: Authors' calculations from the 2024 Greenwald Research investor survey and Morningstar (2024 a, b, and c).

Question 2: What explains the range of desired and actual stock allocations among near-retirees and retirees?

If the desired allocations really reflect individual preferences unencumbered by defaults, one would expect the individual preferences and characteristics that are related to portfolio choice in the literature to better explain the variation in desired allocation than in actual allocation. Unfortunately, no existing survey – including the new Greenwald Research surveys – asks individuals about both their desired and actual allocation. So, we perform the analysis with two separate regressions – one using the investor survey to explain desired allocation and another using the HRS to explain actual allocation.[41] While both regressions include the same set of conceptual determinants of allocation identified in the literature, they rely on different raw variables to reflect each determinant.[42] (See Appendix C for details on the variables used.)

[41] The HRS data are limited to households with the heads ages 50-78 that own $100,000+ investable assets, are not covered by DB plans, and provide sufficient information about their perceived risk and return of stocks, resulting in a sample of 1,033 households. To match the age range in the HRS, respondents younger than 50 are dropped from the investor survey, reducing the sample size to 876.

[42] To keep each regression parsimonious without compromising completeness, we test multiple potential measures related to each factor and keep the one with the most explanatory power. For example, among the multiple questions about risk preferences in the investor survey, only the one asking about respondents' willingness to take

The regression results are presented below (see Table 7). Financial wealth and subjective factors, such as risk preferences, return expectations, and perceived risk of stocks play a major role in explaining both desired and actual allocation – but the relationships are generally much stronger for desired allocation.[43] Overall, the regression using the investor survey explains 19 percent of the variation in *desired* allocation, while the regression using the HRS explains 12 percent of the variation in *actual* allocation (as measured by R-squared). These results suggest that the desired allocation is a truer reflection of individual preferences.

Research has shown, however, that individuals are not often rational. Responses to the investor survey regarding perceptions of stock risk and return corroborate prior research indicating that individuals tend to harbor pessimistic misperceptions – and the regression results suggest that they would desire more stocks if they held a more realistic view. As such, it is not clear that desired allocations are always optimal. Just the opposite might be true – and defaulting participants into TDFs that use a lifecycle model based on the rational investor could be nudging many people in the right direction.

financial risk is used. Also, to make the results comparable, variables in one survey may be modified to approximately match the form of their conceptual counterparts in the other survey. See Appendix C for more details.

[43] Interestingly, some factors and household characteristics such as homeownership and marital status show statistically significant impacts on actual stock allocations but not on desired allocations. However, their contributions to the share of variation explained are quite small compared to wealth and subjective factors.

Table 7. *Determinants of Desired and Actual Stock Allocations*

	Desired Stock Allocation (Investor Survey)	Actual Stock Allocation (HRS 2020)
Investable assets	0.015***	0.012***
Investable assets - squared	-0.000*	-0.000***
Risk preferences compared to average risk-taking:		
Willing to take low/no risk	-0.128***	-0.048
Willing to take high risk	0.080***	0.017
Expectation of stock returns:		
Expected stock return is higher than sample median	0.036**	0.088***
Perceived risk of stocks:		
Consider stocks highly risky or volatile	-0.081***	-0.038
Higher incentive to take risk to meet desired spending	0.039**	0.058*
Purchased long-term care insurance	-0.028	-0.015
Plan to leave a certain/meaningful amount of bequest	-0.021	-0.030
Expected remaining longevity	0.001	0.010
Demographics		
Homeowner	0.027	0.157***
College degree or above	0.036**	-0.003
Married	-0.001	-0.075**
Female as household head / major decision-maker	-0.054***	-0.034
Age	-0.000	0.004
Retired	0.003	-0.022
Reported fair/poor health	-0.007	-0.006
Constant	0.334***	0.013
Observations	876	1033
R-squared	0.191	0.121

* p<0.10 ** p<0.05 *** p<0.01.

Note: For the purpose of comparison across the different surveys, the analysis includes only those aged 50 to 78 with $100,000+ in financial assets and no DB coverage.
Sources: Authors' calculations from the 2024 Greenwald Research investor survey and 2020 HRS.

Question 3: What do advisors typically recommend to their clients, and do they impact their clients' appetite for risk?

Using data from both the investor and advisor surveys, this analysis explores advisors' recommendations to their clients and their ultimate impact on retirement investors' appetite for risk. Specifically, the investor survey asks respondents about their beliefs regarding the riskiness of stocks, their knowledge about sequence-of-return-risk, whether they have ever worked with an advisor, the types of information that the advisor presented them, and whether the advisor had any impact on their appetite for risk. The advisor survey asks advisors what their clients discuss with them, their beliefs regarding stock riskiness, their recommended allocations, their approaches to communicating risk, and their opinions on the risk exposure of their new clients. While the analysis cannot directly explore the impact of actual investor-advisor pairings, weighting the responses to the advisor survey by the number of clients over age 50 that each advisor serves allows the analysis of the advisor survey to better reflect the experience of the population of near-retirees and retirees for comparison purposes.

Prior research suggests that roughly 50 percent of U.S. households work with a financial advisor. But, data from the investor survey suggest that 68 percent of near-retirees and 75 percent of retirees have worked with an advisor. The higher percentage in the investor survey likely reflects the fact that the sample is older and wealthier than the national average. The first question is what do these retirement investors discuss with their advisors? Based on responses to the advisor survey, it seems that advisors spend most of their time discussing the proper asset allocation for the risk-preference of their clients (see Table 8).

Table 8. *Distribution of Topics that Advisors Spent the Most Time Discussing with Clients*

Topic	Most time discussing	2nd most time discussing
Choosing an investment allocation to match risk tolerance	34%	22%
Setting a spending plan for retirement	26	21
Saving more for retirement	20	15
Pros and cons of specific investments or products	11	16
Balancing pre- and post-tax retirement savings	6	13
Mentally preparing for the possibility of major market downturns	5	13

Note: To reflect the advisor responses most relevant to near-retirees and retirees, responses in the advisor survey are weighted by the number of clients ages 50+ that the advisor serves.
Source: Authors' calculations from the 2024 Greenwald Research investor survey.

If advisors are to help people towards an appropriate stock allocation, they should – at minimum – hold more rational beliefs about the riskiness of stocks than the average investor. Both the advisor and investor surveys asked respondents to score the riskiness of six types of investments – stocks, bond funds, directly holding bonds, real estate trusts, directly holding real estate, and directly holding physical commodities – on a scale of 1 to 7. Using these data, we compare the perceived riskiness of stocks relative to other asset classes among retirement advisors and investors (see Table 9). The results suggest that advisors – compared to investors (with and/or without advisors) – are less likely to think of stocks as the riskiest asset class, less likely to think stocks are riskier than other "risky" asset classes such as real estate and physical commodities, and more likely to think stocks are riskier than bond funds and/or directly holding bonds. In contrast, investors are more wary of the riskiness of bonds, perhaps due to the recent period of high interest rates, which erodes the value of bonds if sold before maturity. However, directly holding investment-grade or government bonds to maturity generally presents very little risk in nominal terms.[44]

[44] Advisors could also be reacting to the recent bout of inflation, which erodes the value of bonds in real terms.

Table 9. *Perceived Riskiness of Stocks for Retirement Investors and Advisors*

Stock Riskiness	Advisors	Investor w/o advisor	Investors w/ advisor
Stocks are:			
the riskiest asset class	18%	29%	17%
Compared to bond funds, stocks are:			
Riskier	73	55	42
Just as risky	19	36	48
Less risky	8	9	10
Compared to directly holding bonds, stocks are:			
Riskier	86	73	67
Just as risky	8	20	20
Less risky	6	7	12
Compared to real estate trusts, stocks are:			
Riskier	36	49	39
Just as risky	29	26	34
Less risky	35	25	28
Compared to directly holding real estate, stocks are:			
Riskier	44	59	53
Just as risky	23	19	25
Less risky	32	22	22
Compared to directly holding physical commodities, stocks are:			
Riskier	42	60	55
Just as risky	20	19	23
Less risky	38	21	22

Note: To reflect the advisor responses most relevant to near-retirees and retirees, responses in the advisor survey are weighted by the number of clients aged 50 and older that the advisor serves.
Source: Authors' calculations from the 2024 Greenwald Research investor and advisor surveys.

Additionally, when advising retirees who are drawing down their accumulated assets for income in retirement, an often-overlooked feature of stock riskiness is sequence-of-return risk – that is, the timing of returns. Both the investor and advisor surveys ask respondents about sequence-of-return-risk. Table 10 shows that advisors are much more likely than retirement investors to understand how the timing of returns matters for outcomes – with 75 percent of advisors identifying investment returns in the first 10 years of retirement as the most crucial to

overall retirement security. Overall, the results support the notion that advisors hold more rational beliefs about stock riskiness than the average investor. We next turn to one of our main questions: what stock allocation do advisors recommend to their clients?

Table 10. *Understanding of Sequence of Return Risk*

Investment Risk	Investor w/o advisor	Investors w/ advisor	Advisors
Most Impactful Period of Return Risk			
First 10 years	40%	43%	75%
Between first and last 10 years	9	4	5
Last 10 years	11	9	8
Timing does not mater	40	44	13

Note: To reflect the advisor responses most relevant to near-retirees and retirees, responses in the advisor survey are weighted by the number of clients ages 50+ that the advisor serves.
Sources: Authors' calculations from the 2024 Greenwald Research investor and advisor surveys.

The advisor survey asks advisors to recommend a stock allocation for the financial wealth of a 65-year-old retired household under three scenarios: a baseline scenario, a scenario that matches the baseline scenario except for the households' low tolerance for risk, and a scenario that matches the baseline scenario except for an increase in the households' share of non-housing wealth that is in the form of guaranteed income.[45] The intention behind these questions is to explore the sensitivity of an advisor's recommendations to various client characteristics.

The average recommended allocation for the baseline scenario was 48 percent – quite similar to the TDF stock allocation for an individual at retirement with moderate risk tolerance (see Table 11). The average recommended stock allocation in the scenario with lower risk tolerance was 30 percent – again, very similar to the TDF allocation for an individual near retirement with lower risk tolerance. The average recommendation for the scenario with increased guaranteed income was 45 percent, which is very similar to the baseline scenario even though guaranteed income is expected to crowd out an investor's bond allocation, suggesting

[45] The survey included a fourth scenario that matches the baseline scenario except for the household now has some bequest intentions. However, it is unclear what the expected change in recommendation would or should be under such a scenario. In any case, the responses did not differ much from the baseline.

they invest more in stocks. The fact that the average recommendations seemed to match the TDF allocation according to the household's risk preference suggests that advisors are nudging individuals towards a more rational allocation (TDFs are premised on a rational investor within a lifecycle model) and that risk preference is a salient client characteristic for their recommendations.

Table 11. *Recommended Stock Allocation for a Typical Retiree Household, by Scenario*

Statistic	Baseline scenario	Decrease in risk tolerance	Increase in guaranteed income
Mean	48%	30%	45%
Std. dev.	18	19	20
% no stocks	1	8	2

Note: To reflect the experience most relevant to near-retirees and retirees, responses in the advisor survey are weighted by the number of clients ages 50+ that the advisor serves.
Source: Authors' calculations from the 2024 Greenwald Research advisor survey.

Looking a bit deeper at the recommendations, however, reveals significant variation across advisors. For example, the recommended allocation for the baseline scenario has a standard deviation of 18 percent. A shift in equity allocation of this magnitude would have a substantial impact on retirement planning. To understand what factors might explain the wide range of recommendations across advisors for – ostensibly – the same client, we do a regression analysis relating survey information about the advisor to their recommendation under the baseline scenario. The equation includes five concepts.

1) *Advisor's compensation:* The larger the share of compensation derived from percentage-of-asset fees, the higher the expected stock recommendation.
2) *Stock risk premium:* The higher the advisor's assumed risk premium for stocks relative to bonds, the higher the expected stock recommendation.
3) *Perceived riskiness of stocks:* The higher the advisor's perceived riskiness of stocks, the lower the expected recommendation to stocks.
4) *Type of advisor:* Both Registered Investment Advisors (RIAs) and broker dealers, to some extent, operate under a requirement to act in their clients' best interest. The RIA

standard is more comprehensive, so the activities of broker dealers do not always fall under the "best interest" requirement. However, it is not clear in what direction this would push recommendations.

5) *Income strategies:* The income strategy commonly used by the advisor might also matter.
   i. "Total return strategy": implements one main asset allocation across all the client's accounts and relies on all facets of investment return (dividends, interest, capital gains, and principal) to finance a pre-determined monthly withdrawal amount.
   ii. "Bucket" or "time segmentation" strategy: divides the client's investable assets into categories, called buckets, based on when – and for what purpose – the money is to be spent.
   iii. "Floor" strategy: seeks to fund essential expenses through vehicles that provide income that is guaranteed for life, such as Social Security, pensions, and annuities.

The key finding is that the higher the share of the advisor's compensation derived from percentage-of-asset fees, the higher the recommended allocation to stocks (see Table 12). The type of commonly used income strategy also matters – in particular, advisors that frequently use the total return strategy recommend higher stock allocations on average, while those who frequently use the floor strategy tend to recommend lower stock allocations, likely reflecting a higher priority given to securing essential spending. Interestingly, however, neither their beliefs about the riskiness of stocks, nor the risk premium for stocks in their financial models, appear to matter. Also, whether the advisor works for an RIA or not does not seem to have any systematic effect on the recommended allocation.

In conclusion, data from the advisor survey suggests that advisor recommendations are most sensitive to their clients' reported risk preference, their compensation structure, and their financial management strategy.

Table 12. *Relationship Between Recommended Stock Allocation and Advisors' Characteristics*

	Recommended stock allocation	
	Coefficient	Std. Err
Assumed risk premium of stocks over bonds in financial models	0.000	(0.006)
Rates stocks as highly risky	0.006	(0.019)
Share of compensation stemming from asset mgmt. fees	0.160***	(0.039)
Registered Investment Advisor (RIA) with a formal affiliation	0.006	(0.024)
Registered Investment Advisor (RIA) without a formal affiliation	-0.017	(0.024)
Use the following strategies for more than 25% of clients		
Total return strategy	0.046**	(0.022)
Bucket strategy	-0.020	(0.020)
Floor strategy	-0.096***	(0.021)
Constant	0.375***	(0.040)
Observations	400	
R-squared	0.16	

* p<0.10 ** p<0.05 *** p<0.01. Standard errors in parentheses

Note: To reflect the responses most relevant to near-retirees and retirees, responses in the advisor survey are weighted by the number of clients aged 50 and older that the advisor serves.
Source: Authors' calculations from 2024 Greenwald Research advisor survey.

Now with the advisor recommendations in hand, the next step is to compare the recommended allocations to the desired allocations for retirement investors. To align results between the two surveys, Table 13 compares the average allocations recommended by advisors (under the baseline and low risk tolerance scenarios) to the desired allocation of retirees ages 60-70 (with average and low risk tolerance respectively). The data show that – on average – advisors' recommended allocations are higher than retirees' desired allocations for those with average risk tolerance but aligned for those with low risk tolerance.

Table 13. *Comparison of Recommended and Desired Allocations*

Statistic	Recommended allocation		Retirees' desired allocation	
	Avg. risk tolerance (Baseline)	Low risk tolerance	Avg. risk tolerance	Low risk tolerance
Mean	48%	30%	39%	29%
Std. dev.	18	19	24	22
% no stocks	1	8	7	16

Note: To reflect the responses most relevant to near-retirees and retirees, responses in the advisor survey are weighted by the number of clients ages 50+ that the advisor serves. The investor survey sample is limited to retirees ages 60-70.
Sources: Authors' calculations from 2024 Greenwald Research investor and advisor surveys.

Given the potential differences in recommended and desired allocations, effectively communicating risk to clients is of paramount importance for advisors. Interestingly, advisors take many different approaches to communicating risk (see Table 14). One way to help retirement investors understand their exposure to risk that is often touted by academics is to show them how much they could afford to spend in retirement if they took no risk in their investment portfolio. From there, retirees could decide whether including some portfolio risk to increase their potential spending was worth it. Results from the advisor survey suggest that just 68 percent of clients are shown this information (see last row of Table 14).[46]

[46] Interestingly, results from the investor survey suggest that only about 55 percent of those who work with advisors are shown this information.

Table 14. *Distribution of Advisors' Various Approaches to Communicating Risk*

Method for communicating risk	Share of advisors
Advisors' preferred approach	
The risk of losing more than the client can psychologically handle	35%
The risk of losing significant value, such as 25% or more	17
The risk of losing significant value for an extended period of time	14
The risk of losing so much value that the client's lifestyle will be affected	13
The risk of losing any value for an extended period of time	11
The risk of losing any value at all	5
Something else	4
Components included in advisor's discussion of client's financial plan	
The probability of meeting essential expenses	96
The probability of sustaining their target spending level	95
The sustainable spending levels under different market scenarios	86
The spending level that could be 100% guaranteed	68

Note: To reflect the responses most relevant to near-retirees and retirees, responses in the advisor survey are weighted by the number of clients ages 50+ that the advisor serves.
Source: Authors' calculations from 2024 Greenwald Research advisor survey.

To better understand the overall effectiveness of advisors' various approaches to communicating market risk, we first consider how investors believe advisors influence their desired risk level. We then compare these responses to what advisors say about their new clients' desired risk level. Specifically, the investor survey asks whether working with an advisor increased, decreased, or had no effect on the investor's desired risk. And, on the other side, the advisor survey asks what share of new clients are generally taking too little/the right amount/too much risk when they first meet with them.

To measure the overall effectiveness of advisors, we compare: 1) the share of investors who say advisors increased their appetite for risk with the share of new clients that advisors say are taking too little risk; 2) the share of investors who say advisors had no impact with the share of new clients that advisors say have the right amount of risk; and 3) the share of investors who say working with an advisor decreased their appetite for risk with the share of new clients that advisors say are taking too much risk. The results are shown in Table 15. Interestingly, advisors believe 60 percent (38+22) of their new clients are taking either too much or too little risk while only 38 percent (25+13) of retirement investors who have worked with an advisor believe that it has either decreased or increased their appetite for risk. This finding may suggest that advisors

are affecting only about two-thirds of the clients that they think need to change their risk exposure.

Table 15. *Comparing the Client-Advisor Experience from Perspective of Client and Advisor*

	Investor Survey	Advisor Survey
Increased appetite for risk / taking too little risk	25%	38%
No change to appetite for risk / taking right amount of risk	62	40
Decreased appetite for risk / taking too much risk	13	22

Note: Responses from the advisor survey are weighted by the number of clients ages 50+ that the advisor serves. The investor survey sample is limited to just those who say that they have worked with an advisor.
Sources: Authors' calculations from 2024 Greenwald Research investor and advisor surveys.

In conclusion, the analysis shows that – on average – advisors tend to have a more rational view of stock riskiness than retirement investors and recommend allocations that align TDFs (which are designed for the rational investor within a lifecycle model). While the average recommendation is well above the average desired allocations for retirement investors, recommendations also vary dramatically across advisors – with higher recommended stock allocations being positively correlated with higher shares of the advisor's compensation stemming from percentage-of-asset fees. But, in the end, the data suggest that advisors only affect the risk appetite of only about two-thirds of the clients they think need to adjust their risk exposure. So, left to their own devices, many retirement investors might diverge from their recommended allocation to stocks – potentially to their own detriment. As such, understanding the most effective methods of communicating risk is an important area for future research.

Conclusion

When considering the challenge of managing market risk for retirement investors, existing data and literature can be used to determine the relevant households for analysis, document their current risk exposure, illustrate the impact of variable returns on their wealth accumulation and withdrawals, and identify the key factors affecting household decisions on risk-taking.

However, existing research falls short in three respects. First, it focuses on actual holdings of risky assets, as opposed to desired holdings. But, actual stock holdings may be more reflective of institutional arrangements, such as target date funds in 401(k) plans, than of individual preferences. Second, existing studies tend to explore the role of a specific set of factors within the lifecycle model. But, it is not immediately clear how the various factors identified in the literature might combine to explain the variation in stock allocation among the more homogenous population of near-retirees and retirees – individuals who are older and wealthier, more likely to own a home, be considering bequests, use a financial advisor, etc. Finally, the literature is still relatively unsettled regarding what impact financial advisors have on households' portfolio choices.

To address these shortcomings, this study relied on data from two new surveys covering retirement investors ages 48-78 with total investable assets of $100,000+ and financial advisors. The findings from our analysis suggest that retirement investors' desired allocation to risky assets tends to be lower than actual allocations – which is likely due to the misalignment between their risk preferences and target date funds and to their over-pessimistic perceptions about equity returns. Thus, expert advice and customization regarding market risk could be beneficial for retirement investors. While financial advisors could fill this role, research suggests that their effectiveness to date remains limited.

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Appendix A: Investor Survey Responses

The tables below present response rates for various topics and questions included in the investor survey. Response rates have been weighted using population weights.

Demographics and wealth categories. The exploration begins by reviewing the respondents' basic demographic characteristics and asset holdings (see Table A1). Note that, for married couples, the gender variable indicates the gender of the spouse participating in the survey. As the survey requires that respondents be actively involved in decision-making about financial matters in the household, the gender variable can capture possible differential investment behavior of females and males.

Table A1. *Respondents' Demographic Characteristics and Financial Wealth*

Demographic and Asset Groups	Retirees	Near-Retirees
Gender:		
Female	49%	54%
Male	51	47
Age:		
48-57	9	53
58-67	30	38
68-78	61	9
Marital Status:		
Married	60	57
Not married	40	43
Financial Assets:		
$100k-$199k	24	32
$200k-$499k	31	31
$500k-$999m	25	25
$1m +	20	12
Education:		
High school or less	19	18
Some college	31	19
College degree	26	34
Graduate or more	23	29
Homeownership:		
Non-homeowner	9	12
Homeowner	91	88

Source: Authors' calculations from 2024 Greenwald Research investor survey.

Risk Preferences. The investor survey includes multiple questions related to respondents' risk preferences. The analysis mainly relies on the question that directly asks about the amount of investment risk the respondents are willing to take, which is similar to the question on risk preference used in the SCF. Albeit a simple question, research shows that its result is reasonably correlated with more comprehensive risk preference measures.[47] Another question focuses on the tolerance of downside risk, asking about how much assets the respondents can afford to lose without jeopardizing their retirement plan. The results show that the respondents' risk preferences generally lean toward the conservative side (See Table A2).

Table A2. *Respondents' Risk Preferences*

Survey topic	Retirees	Near-Retirees
Self-reported willingness to take investment risk		
Substantial risk	6%	16%
Average risk	47	53
Small risk	26	23
No risk	15	7
Do not know enough	6	2
How much could you afford to lose?		
10%	49	42
15-30%	40	41
30%+	10	17

Source: Authors' calculations from 2024 Greenwald Research investor survey.

Return Expectations and Risk Perceptions. Regarding the expectations about future stock returns, the survey asks the respondents whether they think average annual stock returns will be below, equal to, or above the long-term historical average (11 percent). A little more than a third of the respondents think future returns will be close to the historical average; and respondents with a pessimistic view about future returns outnumber those with an optimistic view by about two to one (see Table A3). Interestingly, about a quarter of respondents report that they do not know enough to make a judgement.

To provide some context for individual's subjective perceptions of stock riskiness, the survey also asked respondents to score the riskiness of 5 other types of investments – bond

[47] See Grable and Lytton (1999).

funds, directly holding bonds, real estate trusts, directly holding real estate, and directly holding physical commodities – on a scale of 1 to 7. These responses make it possible to explore individuals' beliefs about the riskiness of stocks and how perceived risk compared to their beliefs about other asset classes.

Table A3. *Summary of Respondents' Return Expectations and Risk Perceptions*

Survey Topic	Retirees	Near-Retirees
What do you think the average annual stock return will be?		
Above 11%	14%	12%
Equal to 11%	36	37
Below 11%	26	28
No guess	24	23
On a scale of 1-7, how risky do you think stocks are?		
1-3 (less risky)	23	20
4	39	38
5-7 (more risky)	39	42
Relative to bonds, stocks are:		
2-7 pts. riskier	18	20
1 pt. riskier	24	21
Just as risky	55	56
1 pt. less risky	3	4
2-7 pts. less risky	1	0

Source: Authors' calculations from 2024 Greenwald Research investor survey.

Health Status, Preparation for Long-term Care, Longevity, and Bequest Motive. Respondents' answers to questions related to these factors except for longevity are summarized in Table A4. Fourteen percent of retirees and 9 percent of near-retirees report fair or poor health, which may give rise to concern about future healthcare expenses. Less than 40 percent of retirement investors have planned to reserve any assets for LTC expenses (and less than 15 percent have long-term care insurance). However, roughly half of those that plan to reserve some assets, plan to set aside at least $80,000. And, while the majority of respondents have not reserved any of their financial assets for bequests, almost two-thirds plan to bequeath their

current primary residence. The average subjective life expectancies reported by retirees and near-retirees are 87.1 and 85.5, with their respective standard deviation being 6.9 and 8.0 years.[48] The values of *remaining* longevity reported by retirees and near-retirees, which represent their investment horizon, are 19 years and 28 years respectively.

Table A4. *Responses about Health, Long-term Care Preparation, and Bequests*

Survey Topic	Retirees	Near-Retirees
Self-reported health		
Very good or excellent	45%	55%
Good	41	36
Fair or poor	14	9
Long-term care insurance		
Yes	15	10
No	85	90
Assets reserved for long-term care expenses		
None	63	74
$1-$80,000	18	14
> $80,000	19	12
Percentage of assets reserved for bequest		
Whatever is left or not sure	78	76
0%	12	18
1%-10%	2	1
11%-20%	2	1
> 20%	7	4

Source: Authors' calculations from 2024 Greenwald Research investor survey.

Spending covered by lifetime income. The following exercise attempts to measure how much spending goals influence risk-taking. As a proxy for target consumption in retirement, we use current spending. Target spending is then compared to Social Security benefits and payments of commercial annuities.[49] The idea behind the ratio is that the more spending that could potentially be covered by guaranteed lifetime income, the weaker the incentive to take risk with their financial assets. Because this is just a simple ratio, it is best utilized as a measure of

[48] The lower median subjective life expectancy of near-retirees may reflect the finding in Arapakis and Wettstein (2023) that younger individuals tend to be overly pessimistic about living to older ages.
[49] The survey asks individuals directly if they expect to receive any guaranteed income from an annuity.

each respondent's relative position in the sample – the regression analysis uses a binary variable to indicate whether the respondent's ratio is above or below the median for the sample.[50]

Table A5. *Share of Desired Retirement Spending Covered by Lifetime Income*

Survey Topic	Retirees	Near-Retirees
Potential lifetime income as % of current spending		
< 50%	44%	66%
50% to 150%	41	28
> 150%	15	6

Source: Authors' calculations from 2024 Greenwald Research investor survey.

Financial advisors. While the survey includes a series of questions regarding the interaction between the respondents and their financial advisors, the analysis below focuses on whether respondents are working or have worked with an advisor. Table A6 shows that 75 percent of retirees and 68 percent of near-retirees have worked or are currently working with an advisor.

Table A6. *Share of Respondents Who Have Worked or Are Working With a Financial Advisor*

Survey Topic	Retirees	Near-Retirees
Worked or currently working with an advisor	75%	68%
Never worked with an advisor	25	32

Source: Authors' calculations from Greenwald Investor Survey on Market Risk.

[50] The median ratio was 61 percent for retirees and 42 percent for near-retirees.

Appendix B: Advisor Survey Responses

The tables below present the responses for various topics and questions included in the advisor survey. The share of respondents is weighted by the number of clients ages 50+ that the advisor serves.

Table B1. *Characteristics of Advisor's Practice*

Characteristic	Share of respondents
Affiliation of practice	
Registered Investment Advisor w/ a broker-dealer affiliation	12%
Registered Investment Advisor w/o a broker-dealer affiliation	17
Not a Registered Investment Advisor	71
Total assets under management	
$30 million - $100 million	28
$100 million - $150 million	22
More than $150 million	51
Number of clients	
75 - 99 clients	6
100 - 200 clients	33
More than 200 clients	61
Years working as a financial advisor	
3 - 5 years	0
6 - 10 years	7
11 - 20 years	32
Over 20 years	61
Share of asset management fee in compensation	
< 50%	31
50% - 90%	51
> 90%	18

Source: Authors' calculations from 2024 Greenwald Research advisor survey.

Table B2. *Characteristics of Advisor's Client Base*

Characteristic	Share of respondents
Share of clients ages 50+	
40% to 59%	29%
60% to 79%	55
80% or more	16
Clients' average wealth	
< $500,000	12
$500,000 ~ $1 million	48
> $ 1 million	39

Source: Authors' calculations from 2024 Greenwald Research advisor survey.

Table B3. *Approach to Financial Planning and Advice*

Approach	Share of respondents
Estimates of Retirement Spending	
Calculated guaranteed spending level	68%
Calculated spending, but not guaranteed level	32
How investment risk is described	
Loss of portfolio value over a certain time period	50
Loss of portfolio value that cannot be psychologically handled	37
Loss of portfolio value that will affect lifestyle	13
Use the following strategy for more than 25% of clients	
Total Return Strategy	66
Bucket Strategy	50
Floor Strategy	28

Source: Authors' calculations from 2024 Greenwald Research advisor survey.

Table B4. *Beliefs and Perceptions*

Belief / Perception	Share of respondents
On a scale of 1-7, how risky do you think stocks are?	
1-3 (less risky)	17%
4	24
5-7 (more risky)	59
On a scale of 1-7, how risky do you think bonds are?	
1-3 (less risky)	63
4	25
5-7 (more risky)	12
Most Impactful Period of Return Risk	
First 10 years	75
Between first and last 10 years	5
Last 10 years	8
Timing does not matter	13

Source: Authors' calculations from 2024 Greenwald Research advisor survey.

Appendix C: Variables Used to Compare Determinants of Desired and Actual Allocation

Table C1 shows how variables presented in Table 8 are constructed from the Greenwald Research investor survey and the HRS to capture the same set of conceptual determinants of stock allocation. Variables directly comparable across the two surveys, such as age, educational attainment, marital status and homeownership, are not included in the table.

Table C1. *Comparing Variables from the Investor Survey and HRS regarding the Same Set of Conceptual Determinants of Stock Allocation*

Variables	Greenwald Investor Survey	HRS 2020
Investable assets	Self-reported total investable assets	Sum of gross financial assets, IRA and DC holdings.
Risk preference	The variable is based on an SCF question that asks how much financial risk respondents are willing to take to earn higher returns. Options include (1) substantial risk, (2) average risk, (3) small risk, (4) no risk, and (5) do not know enough. (3) - (5) are combined into one category in the regression (preliminary analysis shows that respondents answering "do not know enough", which accounts for 4% of the sample, tend to have stock allocations similar to those with lower risk tolerance levels). The weighted shares of respondents in the resulting risk tolerance levels are 10% (substantial risk), 50% (average risk), and 40% (small or no risk).	The variable is based on a 0-10 scale that measures the respondent's general willingness to take risk. In the subsample of HRS used in the regression, the average level of risk-taking is 6.2 with a standard deviation of 1.9. The share of respondents with an average risk tolerance level in the investor survey and a corresponding sample in the SCF are 50% to 60%. To approximately match these shares, the risk-taking levels of 5-7 in the HRS scale are defined as "being willing to take average risk," which accounts for 59% of the HRS subsample. Accordingly, 0-4 are categorized as "being willing to take low or no risk" (15% of the subsample), and 8-10 as "being willing to take substantial risk" (26% of the subsample).
Expectation of stock returns	The variable is based on the question about whether the respondents' expected stock return is lower than, approximately equal to, or higher than the long-term historical average of 11 percent. About 50% of respondents chose "about equal to 11%" or "above 11%" and are categorized as "expected stock return is higher than sample median" (preliminary analysis of the data shows that respondents answering "no guess", which accounts for 24% of the sample, tend to have stock	Using three questions in the HRS about respondents' subjective estimates of the probabilities that the return of a blue-chip stock fund will be (1) greater than 0%, (2) higher than 20%, and (3) lower than -20% next year, the implied mean and standard deviation of stock returns are estimated for each respondent assuming normality. Respondents who only answered one question or were unsure about these probabilities are excluded from the analysis as their perceptions

	allocations similar to those with lower return expectations, thus they are included in the group with expectations lower than the sample median.	of stock returns cannot be estimated. Categories for return expectations and perceived risk of stocks are then created to approximately match the distribution of the corresponding variables in the Investor Survey.
Perceived risk of stocks	Based on the question about respondents' perceived risk of stocks on a 1-7 scale. Respondents rating the risk of stocks higher 4 are categorized as "considering stocks highly risky", whose weighed share in the sample is about 40 percent.	
Incentive to take risks to meet desired spending	The variable is constructed as the ratio of guaranteed lifetime income to reported total current spending. Guaranteed lifetime income is the sum of Social Security benefits and payments of commercial annuities. (Households with DB plans are excluded from the sample.) The idea behind the ratio is that the more spending that could be potentially covered by risk-free income, the weaker the incentive to take risk with their financial assets.	The ratio of riskless income to current spending is calculated based on the same concept as in the Investor Survey. Spending is the sum of food spending, out-of-pocket medical costs, and rent/mortgage payments, which are similar to the sub-categories of spending in the investor survey.
Plan to leave a certain/meaningful among of bequest	Respondents are categorized as planning to leave a bequest only if they specify an amount they plan to leave. Those who plan to leave "whatever is left" are not categorized as planning to leave a bequest.	Respondents who are absolutely certain to leave an inheritance of more than $100,000 or $500,000 are categorized as planning to leave a bequest.
Expected remaining longevity	Self-reported remaining longevity in years.	Self-reported probability of living for another 10-15 years.
Female as household head / major decision maker	Gender of the respondent. The survey requires the respondents to be a major decision maker about financial matters or make decisions in total partnership in their households.	Gender of the household head as defined by RAND. RAND assigns the financial respondent of the corresponding year's survey as the head of the household. Financial respondents answer questions regarding the household's finances. If there is no financial respondent in a household, the family respondent is the head.
Retirement status	Self-reported retirement status	Self-reported as fully or partially retired.

Reported fair / poor health	Based on the question about self-reported health (poor, fair, good, very good, or excellent).	Based on a similar question about self-reported health (poor, fair, good, very good, or excellent).

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