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Abstract

Target-date fund asset allocations are strongly linked to the choice architecture of a 401(k) plan. Participants automatically enrolled into a target-date fund are 40 percent more likely to hold a single target-date fund than all other participants. After controlling on plan design variables, measures of high information overload and low financial literacy are also associated with a greater prevalence of single target-date fund holdings. Meanwhile, workers with low trust in financial institutions are more likely to steer clear of a single-fund target-date option. High levels of information overload are also associated with limited time spent choosing an initial allocation and infrequent portfolio monitoring.

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I. Introduction

In recent years target-date funds have grown rapidly within U.S. defined contribution (DC) plans. Assets in such investment strategies have grown from $15 billion in 2002 to $256 billion in 2009 (Brady, Holden and Short, 2010), and more than 70% of DC plans now include such funds within their investment menus (PSCA, 2012). The funds are also a popular choice among sponsors choosing a default investment for participants who are automatically enrolled within their plan.

Target-date funds are offered to participants as a series of about a dozen funds labeled with years in five-year increments (e.g., the 2010 fund, the 2015 fund, the 2020 fund, etc). Participants making their own investment choices are encouraged to select a fund based on their expected date of retirement. Sponsors using the funds as a default generally select a fund assuming an expected retirement age of 65. Once the fund selection is made, the target-date portfolio manager is responsible for all portfolio construction decisions. In particular, over time, the portfolio manager reduces portfolio equity exposure with age according to the target date series "glide path" (Figure 1, Panel A). In effect, when offering target-date funds within a plan menu, plan sponsors are offering participants a simplified heuristic for portfolio construction – one based on expected retirement age. The target-date series also has an embedded risk reduction feature in the form of the glide path.

Arguably, target-date funds are intended to address the needs of participants who lack the skills, interest or time to make portfolio construction decisions within their DC plan account. Yet most of the research to-date in target-date funds has focused on an analysis of participant

holdings reported in administrative records. In this current paper, we combine both administrative and survey data to more fully understand the decision-making underlying participant selection of target-date funds. Our approach allows us to explore a number of motivational issues not previously explored, including the relationship of such issues as information overload, financial literacy and trust in financial institutions on target-date portfolio decisions, both in a voluntary choice and default setting. And while target-date funds are presented to participants as a single portfolio option, many participants combine a target-date fund with other plan options, in a phenomenon known as mixed target-date investing. Our survey data allows us to explore the motivation behind this development.

This paper represents a preliminary analysis of our results. It is organized as follows. Section II provides an overview of recent literature in this area and Section III presents our data. Sections IV and V consider portfolio allocation decisions, and Section VI, the impact of trust, literacy and information overload factors on portfolio decisions. Section VII concludes with our recommendations based on our preliminary analysis.

II. Prior Literature

One important theme within the literature on target-date funds has been the optimal design of target-date glide paths from a lifecycle perspective (Viceira, 2008). Balduzzi and Reuter (2012) describe the evolution of target-date fund market over the 1994-2009 timeframe and document a wide heterogeneity in glide paths across providers, while Pang and Warshawsky (2009) study how this heterogeneity affects terminal retirement wealth. Several other studies use lifecycle simulations to examine properties of target-date funds (for example, Shiller, 2005; Gomes, Kotlikoff and Vicera, 2008; and Poterba et. al., 2009). These academic studies are

complemented by industry research considering the dynamics of target-date glide paths, such as those by the fund-rating firm Morningstar (Charlson and Lutton, 2012).

Our current effort is more closely aligned with the literature on the demand for target-date funds and the role of a 401(k) plan's choice architecture (for example, Choi et al., 2004; Thaler and Sunstein, 2008). Using an extensive longitudinal administrative data set, Mitchell and Utkus (2012) examine the intersection of a plan's choice architecture and the demand for target-date funds over the 2003-2010 period, particularly the impact of the decision-making architecture on "pure" investing (i.e., those participants owning a single target-date fund only) and "mixed" investing (those combining a target-date fund with other options). Young (2012) also documents the growing use of target-date funds, both in pure and mixed form, and the reduction in extreme portfolio risk levels of target-date investors compared to all others. Meanwhile, Park (2009) and Pagliaro and Utkus (2010) describe the dynamics of mixed target-date investing. In particular, the latter paper describes five patterns of portfolio diversification associated with participants combining target-date funds with other plan options.

More recently researchers have also sought to use survey data to identify some of the decision-making factors underlying target-date usage. Ameriks, Hamilton and Ren (2011) find, among other results, that target-date fund holders (in both DC plans and in Individual Retirement Accounts) have high levels of familiarity about key features and risks, yet a lower understanding of target-date designs later in the lifecycle, either near or into retirement. Other industry surveys have sought to identify strengths and weaknesses in participants' understanding of the funds. The U.S. Securities and Exchange Commission also commissioned a survey of target-date fund users as part of its rule-making process for enhancing disclosures (SEC, 2012). Morrin, et. al (2012), by comparison, take an experimental approach, examining the relationship of self-

reported financial knowledge on target date usage in a laboratory experiment. In an extension of the "choice overload" literature, they find the presence of a target fund option improves plan participation among low-knowledge participants as the number of available options increases.

Our paper seeks to build on this body of work by examining the determinants of pure and mixed target-date investing using both survey and administrative data. To our knowledge, this is the first paper to employ survey and administrative data to test simultaneously the influence of financial knowledge, behavioral factors and plan features on actual target-date usage.

III. Data and Summary Statistics

Our research effort began with a series of four focus groups conducted with DC plan participants in April 2010.[1] All focus group attendees were recruited from retirement plans administered by Vanguard, a leading DC plan recordkeeper and investment manager. Both pure and mixed investors were included in each of the four sessions. During the sessions, a number of themes emerged about the portfolio construction process, including trust, lack of financial knowledge, the desire for control, information overload, and common diversification heuristics. Mixed investors also presented various reasons for "mixing" their portfolios with target-date and other strategies. A summary of the results of the focus groups is available from the authors.

The focus group findings were used to design a survey instrument that would assess the relationship between attitudes, behavioral factors and motivations related to target-date portfolio decisions. The survey was administered in September and October 2010 to approximately 2,000 Vanguard DC recordkeeping participants divided into three groups: pure target-date investors, mixed investors, and non-target-date investors. The aim was to have approximately one-third of

[1] The first two focus groups were conducted on in Washington, D.C., on April 5, 2010; the third and fourth focus groups, in Philadelphia, on April 6, 2010.

the sample (666 participants) within each group, with results to be subsequently reweighted to reflect their population incidence. The sample for the survey was based on each participant's actual balance allocations drawn from administrative records, not self-reported holdings. Our sample was drawn from a population of over one million actively contributing participants from approximately 1,500 401(k) plans administered by Vanguard and offering target-date funds as of December 31, 2009. In terms of response rates, 12% of those contacted completed the survey, 29% were disqualified, 51% declined and 8% were not eligible because a quota had been filled.

At the time of the survey, the target-date series offered to participants consisted of the Vanguard target-date series. Figure 1, Panel B displays for each of the funds in that series the fund's allocation to equity as of October 2010. As would be expected, funds with target years far into the future (for example, Target-date Fund 2055 and Target-date Fund 2050) have greater allocations to equity than funds with closer target dates (for example, Target-date Fund 2005).

Table 1 provides demographic characteristics for the survey population (Panel A) and each of the three survey groups, pure investors, mixed investors and non-target-date investors. Table 1, Panel B (Panel C) provides similar statistics for the unweighted (weighted) survey sample.[2] The three survey groups have roughly the same sample sizes, ranging from 634 to 692. These tabulations reveal some of the patterns found in broader analyses (such as Mitchell and Utkus, 2012). Single or pure target-date investors tend to be younger, shorter-tenured and with lower account savings, whereas mixed target-date and non-target-date investors tend to be somewhat older, longer-tenured and wealthier. The latter two groups are also significantly more

[2] The population included only participants hired prior to January 1, 2010, and who were considered "active" contributors, defined as receiving an employer or employee contribution in their accounts in January 2010. The survey population was generated on July 31, 2010. It was possible for individuals to shift target-date allocation categories from the time the sample population was drawn in July to when the survey was administered in September. If this occurred, we reclassified the respondents based on their balances as of September 30, 2010, which corresponds to the approximate time participants answered the survey. To be considered a target-date holder, the participant needed at least a balance of $100 in target-date funds. We screened survey participants at the beginning of the survey to ensure that they still worked for the company sponsoring the plan.

male. Being eligible for automatic enrollment is much more common among pure target-date investors due to the effect of the default designation.

Because the three sample groups were chosen to be roughly a similar size, they do not reflect the actual weights of different types of target-date fund investors in our sample. In addition, low-income participants in these samples are underweighted relative to the populations from which they were drawn. Therefore, at various points in this paper, we present statistics reweighted based on income and on the relative incidence of these types of investors in our population. Table 1, Panel C reports summary statistics related to the weighted sample.

IV. A Closer Look at Portfolio Allocations

We begin our analysis by first examining participant equity allocations.[3] Summary statistics are featured in Figure 2. Consistent with Young (2012), we find that target-date investors (mixed and pure) do not hold extreme equity allocations (defined as 0 or 100 percent in equity), whereas over one-third of non-target date investors fall at these extremes. In particular, 13 percent of the non-target-date group in our sample have a zero equity holding, while 22 percent have a 100% equity exposure. Most pure investors have an equity exposure ranging from 50% to 90%. In part, this reflects younger participants choosing (or being defaulted into) single target-date funds with high equity exposure levels. Mixed investors tend to have more dispersion in their investments relative to their pure counterparts but no extreme allocations like the non-target-date investors.

[3]The participant's equity allocation is based on equity holdings as well as the appropriate fraction of balanced, target-date and similar strategies. We do not incorporate holdings in self-directed 401(k) brokerage accounts in the equity calculation because we do not have data regarding how it is invested. Such accounts are typically held by 2% of participants in less than 10% of plans.

Figure 3 presents an alternative view of the equity allocations. It relates the participant's actual equity allocation to the implicit equity allocation embedded in the target-date fund glide path. For example, if a participant is approaching age 65, the embedded target-date equity allocation, what we call the "default benchmark" equity allocation, is approximately 50% equity. If the participant actually holds 60% of her account balance in equities, her deviation is + 10 percentage points. If the participant actually holds 35% in equities, the deviation is -15 points. Figure 3 plots the differences between each participant's actual equity allocation and this default benchmark.[4] A positive (negative) number implies that individuals have more (less) equity than the benchmark. Consistent with the prior figure, non-target date investors display the greatest dispersion of equity holdings. Thus, differences in age dispersion among investment types did not drive the results in Figure 2.

Another way to examine this difference is by calculating the distance in years from the Vanguard benchmark. In this analysis, we focus *only* on the pure investors. For example, if a participant is age 40, but has the equity allocation that is consistent with the glide path at age 50, the participant is +10 years ahead of the glide path. Table 2 tabulates these differences for a variety of decision architecture settings: where the target-date fund is the default and the participant was defaulted into it; where the target-date fund is the default but the participant was not defaulted; and where the default is an option other than the target-date fund.[5] Table 2 highlights the importance of varying degrees of default effects.[6] When the target-date fund is the default, 80 percent of participants who are defaulted are at the age-appropriate allocation, but the figure is only 70 percent when the fund is a default for others but the participants in question

[4] Based on the equity allocations offered by each target date fund, the differences can range from a positive 50 percent to a negative 90 percent.

[5] Please note that all three groups are offered target-date funds.

[6] For more reading on the powerful effect of defaults, see for example Madrian and Shea (2001), Choi, Laibson and Madrian (2009b), and Choi, Laibson, Madrian and Metrick (2002, 2004).

were not subject to the default. When the target-date series is simply offered to participants, without a default designation, 63 percent are at the age-appropriate allocation. Perhaps the most striking finding here is that a large majority of participants are at or near the age-appropriate allocation even when they are not subject to the default itself.

Turning to mixed investors, Figure 4 demonstrates that over half of the mixed group own more than 4 funds. In addition, their target-date investment tends to account for only a relative small component of their overall portfolio. Figure 5 reports that 50 percent of the mixed investors hold less than 30 percent of their portfolio in target-date funds.[7] In terms of mixed portfolio composition, a little over 5% of mixed investors invest in multiple target-date funds, while the majority (78 percent) invest in one target-date fund and other assets. The remaining 18 percent own multiple target-date funds and other assets. Like mixed target-date investors, non-target date holders also tend to hold multiple funds (Figure 6).

V. Participant Knowledge of Own Allocations

In our survey, we asked participants about their portfolio allocations in order to compare their own perceptions with their actual holdings in the administrative data. Table 3 compares actual portfolio allocations with self-reported data from each participant. The percentages reflect the percentage each cell represents of the total (n=1,960). Focusing on the sum of the diagonal cells that are highlighted, we observe that 45 percent of the respondents knew their actual allocation (either pure (11 percent), mixed (15 percent) or non-target (19 percent)), while 10 percent reported that they were not sure of their current allocations. An additional 20 percent

[7] Pagliaro and Utkus (2010) find a number of reasons for small positions in target-date funds among mixed investors, including employer contributions, recordkeeping adjustments, and mappings of discontinued funds to the plan's default target-date series.

reported that they had never heard of target-date funds despite having it as an option in their 401(k) plan. Interestingly, we found that out of the 638 individuals who reported that they did not own target-date funds, 258 were actually target-date investors, either pure (132) or mixed (126).

While the percentage of individuals reporting different allocations may seem large, there are several explanations for why some individual responses may not match the actual data. One reason is that our survey participants were asked, at various points in the survey, including the qualification questions, to consider all of their savings, not just their 401(k) plan assets. It is true that our "pure or mixed" target date allocation survey question did refer specifically to their current employer 401(k) plan. However, it is possible that respondents continued to think holistically about their entire savings portfolio and answered accordingly. Employer actions are another possible reason for some of the observed discrepancies. For example, if individuals were defaulted into an employer-selected fund when they were automatically enrolled in their plan, it is understandable why they may have difficulty remembering their actual allocations. In addition, individuals who contribute one hundred percent of their own contributions to a target-date fund might consider themselves pure investors. However, if an employer match or other contribution is allocated to a different fund (for example, the employer match is directed to employer stock, or an employer profit-sharing contribution is directed to a different balanced option), we would consider the respondent a mixed investor in terms of the administrative data, but the investor might perceive herself as a pure target-date investor.

Beyond the influence of the plan sponsor actions, another reason individuals might be unsure of their allocations or be unaware of target-date funds is that they do not spend sufficient time establishing and periodically reviewing their portfolios. When asked about how much time

was spent choosing their allocations when they first began contributing to their retirement accounts, less than half of the respondents reported spending more than a "little bit of time." [8] Figure 7 provides details on the responses. In addition, Table 4 shows 28 percent of participants report only reviewing their portfolios occasionally or not at all.

A related issue is that a large group of participants do not take into account other asset holdings when making retirement allocation decisions. Figure 8 shows that only 51 percent of respondents considered their assets outside their retirement plan (such as home, non-retirement investments, and savings accounts) when selecting their initial asset allocations.[9] Neoclassical portfolio theory would suggest that individuals should make portfolio decisions considering the entirety of their financial situation. The response by participants suggests that a large number of individuals may use a mental accounting approach (Choi, Madrian and Laibson, 2009a; Thaler, 1999) or a narrow framing when making investment decisions within their retirement accounts.

We also explored whether a sense of information overload might affect decision-making. Prior research suggests that choice overload, whether with respect to decision options or information about them, may lead to less effective decision-making or simplicity-seeking (Agnew and Szykman, 2005; Iyengar and Lepper, 2000; Sethi-Iyengar, Huberman and Jiang, 2004; Iyengar and Kamenica, 2010). Thus, we might expect a relationship between time spent allocating assets within a 401(k) plan and information overload. To measure information overload while making retirement decisions, we adapted questions from Agnew and Szykman (2005). A five-point scale was used (1=strongly disagree, 3=neither agree or disagree,

[8] We did not ask participants to quantify what they meant for a "little bit of time." Therefore, each participant will have a different personal definition of the presented time categories.

[9] The print educational material produced by Vanguard as recordkeeper does mention the security of income sources but does not mention in detail considering outside assets when making these types of decisions. Online advice tools do take into account these holdings, but are not extensively used. In the future, we will extend this analysis and incorporate self-reported data related to each participants' outside assets collected in the survey.

5=strongly agree) to gather responses to the following statements: (1) When saving for retirement, there is too much information to consider. (2) Retirement financial planning requires a great deal of thought. (3) Retirement financial planning is difficult. (4) I get overwhelmed when I think about saving enough for retirement. And (5) it is difficult to comprehend all the information available to me about retirement financial planning. Individuals were placed in high and low categories (high were those above the mean, low were those below it).

We estimated several Probit regression models to examine the relationship between information overload and four elements of portfolio decision-making: the initial time spent investing, the time spent reviewing allocations, uncertainty about current holdings, and the desire to have another party make the decision. We controlled for participant demographics (age, sex, marital status, dependents, race, income, education and job tenure), job type and employer industry. We also included a measure of financial literacy. To construct this variable we asked individuals four questions related to asset awareness and financial knowledge on such issues as diversification, market risk, money funds and bonds. [10] The average score correct out of the four questions was 1.2. We created an indicator variable for high financial literacy that equals one if the individual answered two or more questions correctly. Thirty-three percent of the sample is categorized in the high literacy group.

Preliminary Probit results (weighted by investment style and income, as noted earlier) are reported in Table 5. In the regression results, it is clear that information overload is positively related to less time initially spent allocating 401(k) assets, infrequent portfolio reviews, lack of

[10] The following is a list of the four financial knowledge/asset awareness questions used with the correct answers underlined: 1) Which of the following types of investments are typically found in a money market fund? A. Stocks B. Long-term Bonds C. Short-term debt securities D Not Sure 2) If interest rates go up, then bond prices generally: A Increase B. Decrease C. Do Not Change D. Not Sure 3) When an investor spreads his money among different types of investments, does the risk of losing money: A. Increase B. Decrease C. Stay the Same D. Not Sure 4) A stock fund's beta is a relative measure comparing the fund to a market portfolio. For example, the S&P 500. Is beta a measure of relative: A. Volatility versus the Market B. Growth versus the Market C. Capital outflow versus the Market D. Not Sure

knowledge related to target-date funds, and the desire for someone else to make decisions. However, the causal direction is not obvious. In terms of financial literacy, greater knowledge has the opposite effect of information overload. Those who are more financially literate seem to spend more time on their allocations and do not prefer others to make decisions. Once again the causality is not obvious. Finally, those eligible for automatic enrollment spend less time initially allocating their portfolio. However, automatic enrollment does not appear to relate to the amount of time participants subsequently review their portfolio after the initial decision. Of course, whether such reviews actually result in portfolio changes is in the end an empirical question.

VI. Mixed versus Pure Investors

Finally, we examine the relationship between the participant's actual (not self-reported) investment style – namely, whether the investor is a pure target-date investor, a mixed target-date investor, or not a target-date investor at all – and a number plan design and subjective variables, including financial literacy, trust and information overload. Table 6 reports results from a multinomial logit estimation relating investment style to a range of independent variables. The sample is weighted both by income and investment style. Independent variables include plan design dummy indicators for automatic enrollment (AE) and whether the target-date fund is the plan default investment. In addition, the regression includes indicator variables for high financial literacy, high information overload and low trust in financial institutions.[11] The regression includes demographic, income, occupation, race, employer industry and education controls.

[11]We are following the procedures of Alesina and Ferrara (2002) and Agnew et. al. (2012) and focusing on trust in financial institutions because broad trust measures have been criticized as being too vague and unrelated to specific behavior (Glaeser et. al. 2000)

By and large, the results are consistent with the focus group findings. Choice architecture features, such as automatic enrollment and the default designation, have the largest influence on the individual's portfolio choice. For example, if a participant is in a plan with automatic enrollment and the plan's default fund is a target-fund, the participant is 40 percent more likely to be a pure investor and 43 percent less likely to be a non-target investor. The other subjective factors are an order of magnitude smaller in impact generally. Individuals who report feelings of information overload are more likely to be pure investors (3%) and less likely to be non-target investors (-6%). We would expect that those who are overwhelmed by investment information to prefer at the margin a prepackaged investment portfolio. We also find that those with high financial literacy are less likely to invest their entire portfolio in a single target-date fund. Finally, consistent with the focus group discussions, those who do not trust financial institutions are less likely to be pure investors (-4%). This may be the result of such investors choosing to avoid concentrating their holdings in a single fund and preferring to diversify their holdings among multiple options.

VII. Conclusions

This paper provides a preliminary analysis of data relating to the determinants of portfolio allocations to target-date funds. The preliminary results, which draw on both administrative and survey data, provide insights into the motivations for target-date fund allocations. Our initial findings are consistent with prior research on choice architecture and reinforce the notion that plan design elements, particularly default structures such as automatic enrollment, have a very strong relationship with single target-date fund usage. Beyond default considerations, holding a single target-date fund is associated with information overload, and

seems related to simplicity-seeking in the face of choice overload (Iyengar and Kamenica, 2010). A single target-date holding is also linked to low levels of financial literacy, which is consistent with a model whereby less informed workers delegate portfolio construction decisions to the target-date fund portfolio manager. Trust in financial institutions operates in the opposite direction. Low-trust individuals are more likely to hold a diversified multi-fund portfolio, not a single holding, perhaps out of fear of concentrating their assets.

We also find strong associations between information overload and a variety of portfolio monitoring behaviors. Those participants with high measures for information overload report less time spent on the initial allocation decision, an unwillingness to regularly review their portfolio, and a preference for others to make choices for them. This result provides some additional evidence of the linkage between choice of a single target-date fund and a relative unwillingness to engage in portfolio monitoring tasks. One implication for this finding is that target-date fund education might emphasize the target-date option as solving a complex allocation problem, as in Morrin et. al. (2012), rather than simply being one of many options available for investment by the participant. In this vein, some plan sponsors have introduced "tiering" (grouping) of investment options, with target-date options being presented as the first tier or group, and standalone funds options as the second tier. Given our results, this type of approach may be a less intimidating way to present target-date information to plan participants, especially those easily overwhelmed by investment or retirement planning information.

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Table 1. Demographics of Survey Population and Sample

Administrative Data, Weighted and Unweighted Data

Panel A: Vanguard Survey Population[A]

	Total Population	Pure	Mixed	Non-Target
Number of Active Participants	1,173,157	244,481	303,048	625,628
% of Sample Based on Active Participants	100%	21%	26%	53%
Percent of Actives in Plans Offering Automatic Enrollment	NA	NA	NA	NA
Percent of Actives Eligible for Automatic Enrollment	NA	NA	NA	NA
Percent Male	56%	50%	59%	57%
Average Age (Years)	46	41	45	48
Average Job Tenure (Years)	11	6	11	13
Average Account Balance	$87,431	$26,156	$92,231	$108,123
Household Income				
Less than $30,000	8%	11%	9%	8%
$30,000 to $50,000	14%	15%	13%	13%
$50,000 to $75,000	24%	23%	24%	24%
$75,000 to $100,000	17%	15%	18%	18%
Greater than $100,000	27%	19%	27%	29%
Refused	10%	16%	9%	8%
Total	100%	100%	100%	100%

Panel B: Unweighted Sample

	Total Sample	Pure	Mixed	Non-Target
Number of Active Participants	1,960	634	634	692
% of Sample Based on Active Participants	100%	32%	32%	35%
Percent of Actives in Plans Offering Automatic Enrollment	45%	49%	49%	38%
Percent of Actives Eligible for Automatic Enrollment	14%	32%	9%	3%
Percent Male	60%	53%	62%	64%
Average Age (Years)	47	46	47	49
Average Job Tenure (Years)	12	7	14	15
Average Account Balance	$90,659	$40,858	$103,436	$124,579
Household Income				
Less than $30,000	3%	5%	2%	3%
$30,000 to $50,000	13%	15%	11%	11%
$50,000 to $75,000	19%	23%	19%	17%
$75,000 to $100,000	22%	20%	22%	23%
Greater than $100,000	34%	32%	38%	37%
Refused	9%	6%	8%	10%
Total	100%	100%	100%	100%

Panel C: Weighted Sample

	Pure	Mixed	Non-Target
Number of Active Participants	NA	NA	NA
% of Sample Based on Active Participants	21%	26%	53%
Percent of Actives in Plans Offering Automatic Enrollment	49%	50%	39%
Percent of Actives Eligible for Automatic Enrollment	34%	8%	3%
Percent Male	51%	61%	61%
Average Age (Years)	46	48	49
Average Job Tenure (Years)	7	15	15
Average Account Balance	$34,980	$95,863	$111,911
Household Income			
Less than $30,000	11%	8%	8%
$30,000 to $50,000	15%	13%	13%
$50,000 to $75,000	23%	24%	24%
$75,000 to $100,000	15%	18%	18%
Greater than $100,000	19%	27%	29%
Refused	16%	9%	8%
Total	100%	100%	100%

[A] The survey population includes active participants in the plan prior to 1/1/2010 who made contributions in January 2010.

Weighted results are reweighted to population based on investment style (single target-date fund, mixed target-date fund, non-target-date fund investor) and income. See text.

NA indicates data are not available or not applicable.

Source: Authors' tabulations.

Table 2. Pure Investors and Target-date Selection
Survey Data

Difference in Years from Vanguard Recommended	Default Target Fund		Default Not Target Fund	Total
	Defaulted	Not Defaulted		
-25	0%	0%	0%	0%
-15	0%	1%	1%	1%
-10	1%	1%	23%	1%
-5	6%	9%	12%	10%
0	80%	70%	63%	70%
5	11%	14%	15%	14%
10	2%	3%	4%	3%
15	0%	1%	0%	0%
20	0%	1%	1%	1%
25	0%	1%	1%	0%
sample size	170	160	304	634

Source: Authors' tabulations.

Table 3. Actual versus Self-Described Allocations

Survey and Administrative data, Unweighted Results

	Self-Described Allocation					
Actual Allocation	**Pure**	**Mixed**	**Non-Target**	**Not Sure**	**Not Heard**	**Total**
Pure	214	88	132	69	131	634
	11%	4%	7%	4%	7%	32%
Mixed	76	296	126	66	70	634
	4%	15%	6%	3%	4%	32%
Non-Target	18	48	380	58	188	692
	1%	2%	19%	3%	10%	35%
Total	308	432	638	193	389	1,960
	16%	22%	33%	10%	20%	100%

Source: Authors' tabulations.

Table 4. Frequency of Portfolio Reviews
Survey data, Unweighted Results

Panel A: Unweighted Results

Frequency of Review	Number	Percent
Quarterly	578	29%
Annually	291	15%
Occasionally	274	14%
Don't Typically Review	256	13%
Semi-Annually	215	11%
Monthly	188	10%
Weekly or More Often	144	7%
I don't review	15	1%
Total	**1961**	**100%**

Source: Authors' tabulations.

Table 5. Determinants of Portfolio Selection Factors

Survey and Administrative data, Weighted Results

Probit regressions. Average marginal effects and robust standard errors reported.

	(1)		(2)		(3)		(4)	
Dependent Variable	**Little Time on Initial 401(k) Allocation**		**Do Not Frequently Review Allocation**		**Not Aware of Target-date Funds**		**Wants Others to Make Decision**	
High Information Overload	0.1039	***	0.1063	***	0.0831	***	0.1489	***
	(0.0278)		(0.0255)		(0.0261)		(0.0218)	
Eligible for Automatic Enrollment	0.1257	***	0.0383		0.0458		0.0179	
	(0.0380)		(0.0376)		(0.0403)		(0.0328)	
High Financial Literacy	-0.1483	***	-0.0530	*	-0.1190	***	-0.0653	***
	(0.0308)		(0.0279)		(0.0287)		(0.0227)	
Demographic Controls	YES		YES		YES		YES	
Household Income Controls	YES		YES		YES		YES	
Job Type Controls	YES		YES		YES		YES	
Race Controls	YES		YES		YES		YES	
Education Controls	YES		YES		YES		YES	
Industry Controls	YES		YES		YES		YES	
N	**1774**		**1774**		**1774**		**1774**	
Pseudo R-Squared	**0.078**		**0.1233**		**0.092**		**0.1204**	

Description of Dependent Variables.

(1) "Little Time on Initial 401(k) Allocation": Indicator variable that equals one if respondent reports spending less than a "A Great Deal of Time" or "A Moderate Amount of Time" to initial 401(k) portfolio allocation

(2) "Do Not Frequently Review Allocation": Indicator variable that equals one if respondent reports "Occasionally," Don't Typically Review" or "I Don't Recall" regarding how often they review their 401(k) portfolio

(3) "Not Aware of Target-date Funds": Indicator variable that equals one if respondent reports either "Not Sure" of Allocation or "Never Heard" of Target Date Funds

(4) "Wants Other to Make Decision": Indicator variable that equals one if respondent agrees or Strongly Agrees to the statement "I just wish someone would make my retirement investment decisions for me"

Description of Controls

Demographic Controls: sex, age,married, number of dependents

Household Income Controls: Indicator variables for different ranges of household income

Job Type Controls: Indicator variables for hourly workers, administrative/support, management/supervisory, professional/technical, and other salaried

Race Controls: Indicator variable for caucasian

Education Controls: Indicator Variables for high school or less, some college, college degree, some graduate school, graduate degree

Industry Controls: Indicator Variables for 20 different company sponsor industries.

Weighted results are reweighted to the population based on investment style (single target-date fund, mixed target-date fund, non-target-date fund investor) and income. See text. *** Significant at 1% level, ** significant at 5% level, * significant at 10% level

Table 6. Determinants of Investor Type

Survey and Administration Data, Weighted Results.

Multinomial Logit. Marginal Effects and Robust Standard Errors reported.

	Outcome 1: Pure Investor		Outcome 2: Mixed Investor		Outcome 3: Non-Target Investor	
AE Eligible, Default Target	0.4000	***	0.0328		-0.4328	***
	(0.0450)		(0.0488)		(0.0452)	
AE Eligible, Default Other	0.0530		0.0381		-0.0911	
	(0.0452)		(0.0628)		(0.0821)	
High Information Overload	0.0273	*	0.0351		-0.0624	**
	(0.0162)		(0.0236)		(0.0265)	
High Financial Literacy	-0.0321	*	-0.0109		0.0430	
	(0.0170)		(0.0248)		(0.0285)	
Low Trust	-0.0424	**	0.0070		0.0354	
	(0.0183)		(0.0264)		(0.0311)	
Demographic Controls	YES		YES		YES	
Household Income Controls	YES		YES		YES	
Job Type Controls	YES		YES		YES	
Race Controls	YES		YES		YES	
Education Controls	YES		YES		YES	
Industry Controls	YES		YES		YES	
N	**1774**					
Pseudo R-Squared	**0.1598**					

Demographic Controls: sex, age,married, number of dependents, job tenure

Household Income Controls: Indicator variables for different ranges of household income

Job Type Controls: Indicator variables for hourly workers, administrative/support, management/supervisory, professional/technical, and other salaried

Race Controls: Indicator variable for caucasian

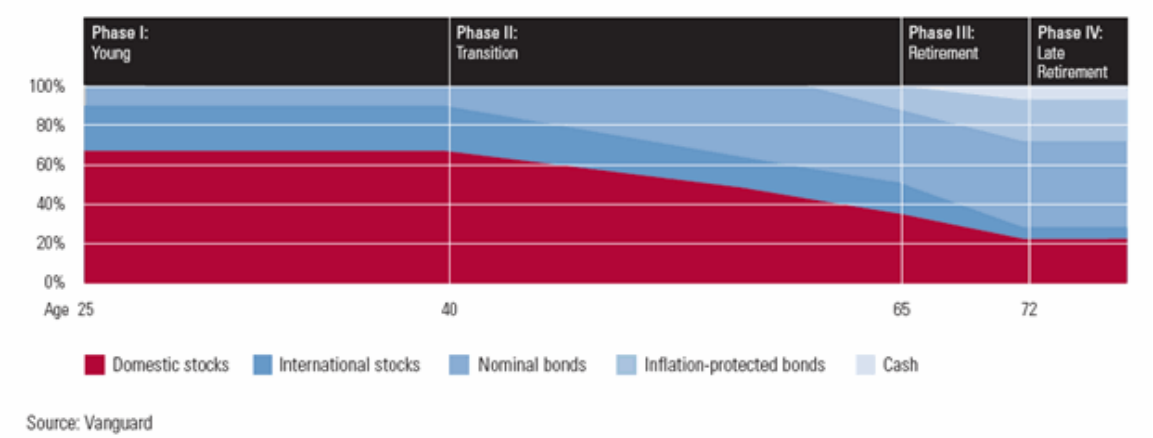
Education Controls: Indicator Variables for high school or less, some college, college degree, some graduate school, graduate degree

Industry Controls: Indicator Variables for 20 different company sponsor industries.

Weighted results are reweighted to population based on investment style (single target-date fund, mixed target-date fund, non-target-date fund investor) and income. See text. *** Significant at 1% level, ** significant at 5% level, * significant at 10% level

Figure 1.

Panel A. Example of Glide Path for One Target-date Fund



website:
https://institutional.vanguard.com/VGApp/iip/site/institutional/investments/mutualfunds/article?File=TargetRetirementGlidePath

Panel B.

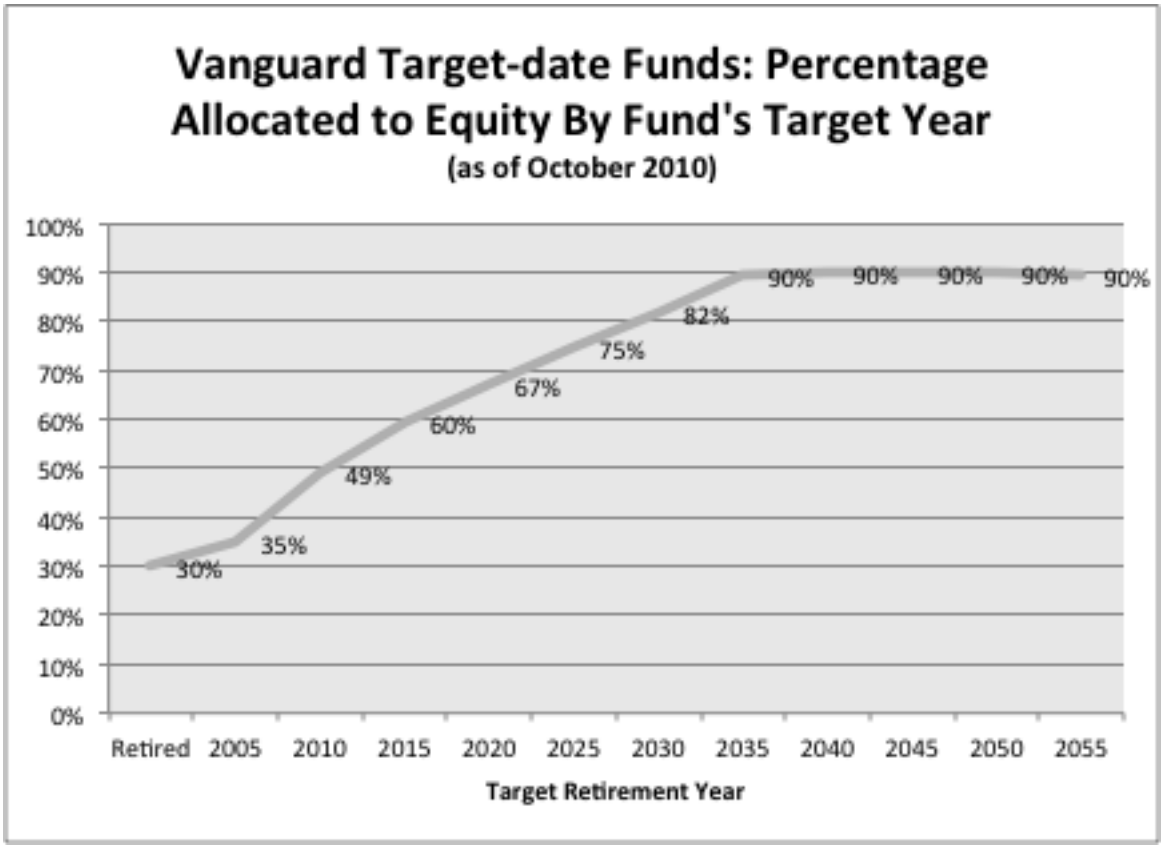
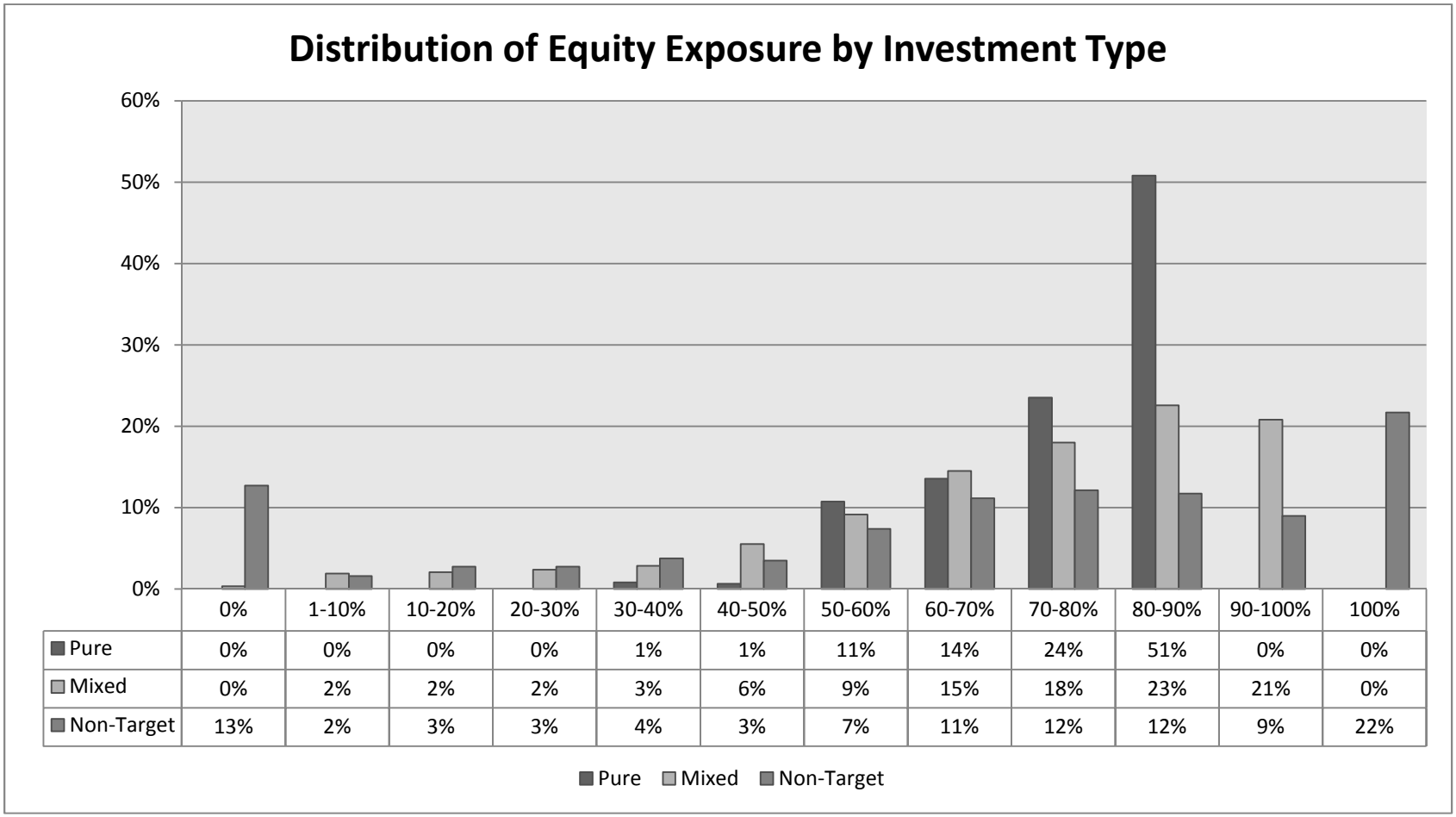


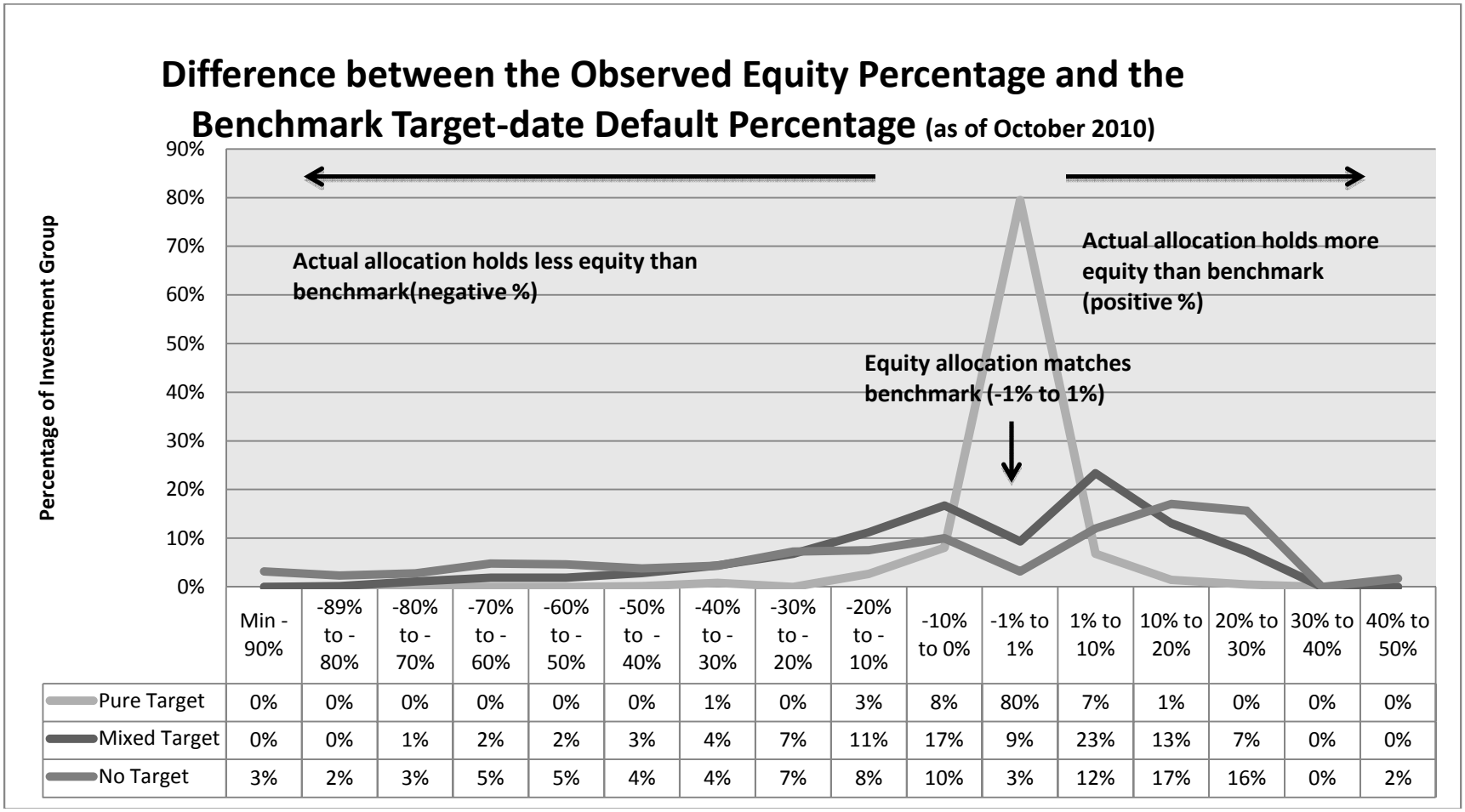
Figure 2.



	0%	1-10%	10-20%	20-30%	30-40%	40-50%	50-60%	60-70%	70-80%	80-90%	90-100%	100%
Pure	0%	0%	0%	0%	1%	1%	11%	14%	24%	51%	0%	0%
Mixed	0%	2%	2%	2%	3%	6%	9%	15%	18%	23%	21%	0%
Non-Target	13%	2%	3%	3%	4%	3%	7%	11%	12%	12%	9%	22%

Note: Author's tabulations. Administrative data. Unweighted results.

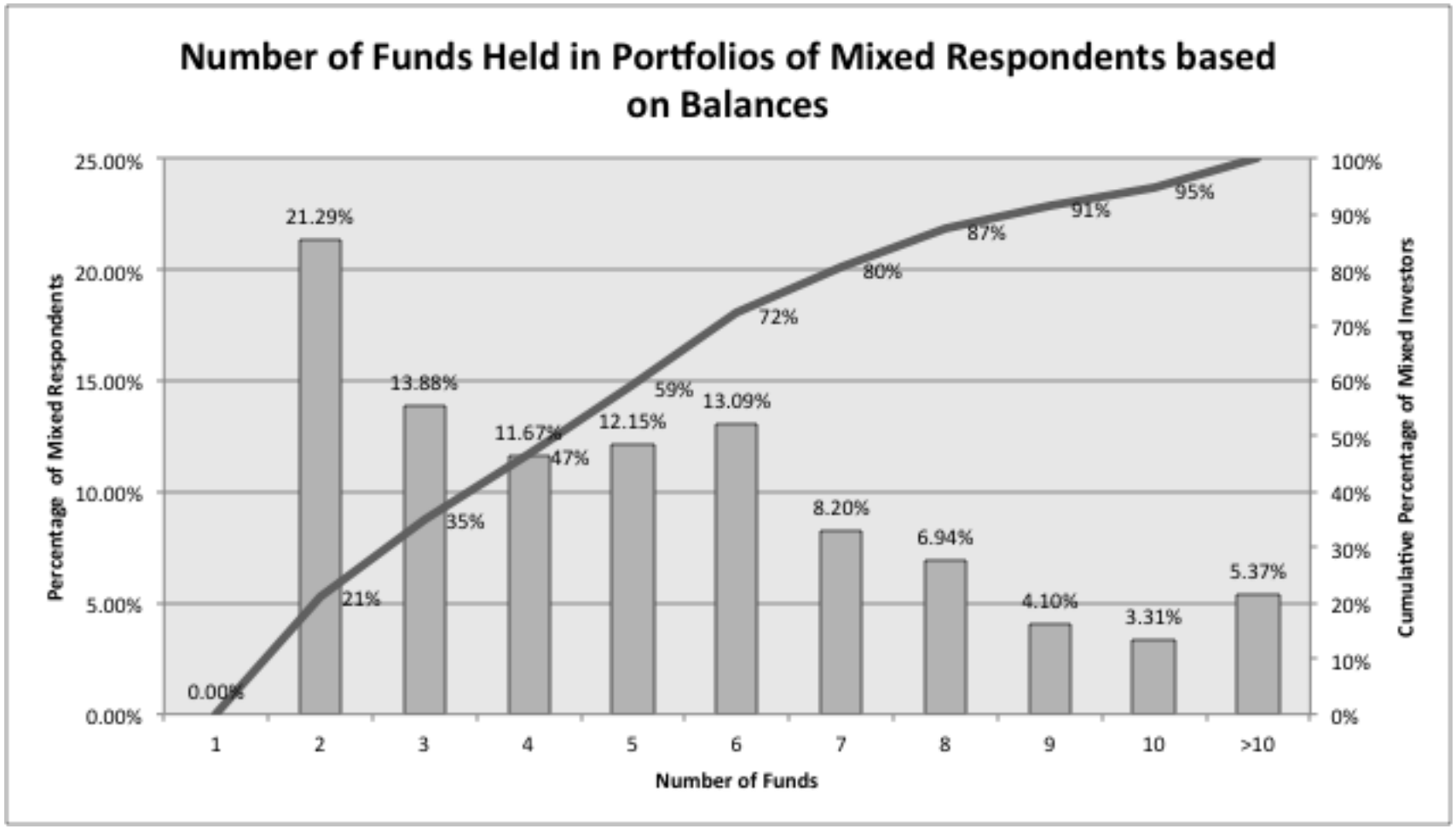
Figure 3.



	Min - 90%	-89% to -80%	-80% to -70%	-70% to -60%	-60% to -50%	-50% to -40%	-40% to -30%	-30% to -20%	-20% to -10%	-10% to 0%	-1% to 1%	1% to 10%	10% to 20%	20% to 30%	30% to 40%	40% to 50%
Pure Target	0%	0%	0%	0%	0%	0%	1%	0%	3%	8%	80%	7%	1%	0%	0%	0%
Mixed Target	0%	0%	1%	2%	2%	3%	4%	7%	11%	17%	9%	23%	13%	7%	0%	0%
No Target	3%	2%	3%	5%	5%	4%	4%	7%	8%	10%	3%	12%	17%	16%	0%	2%

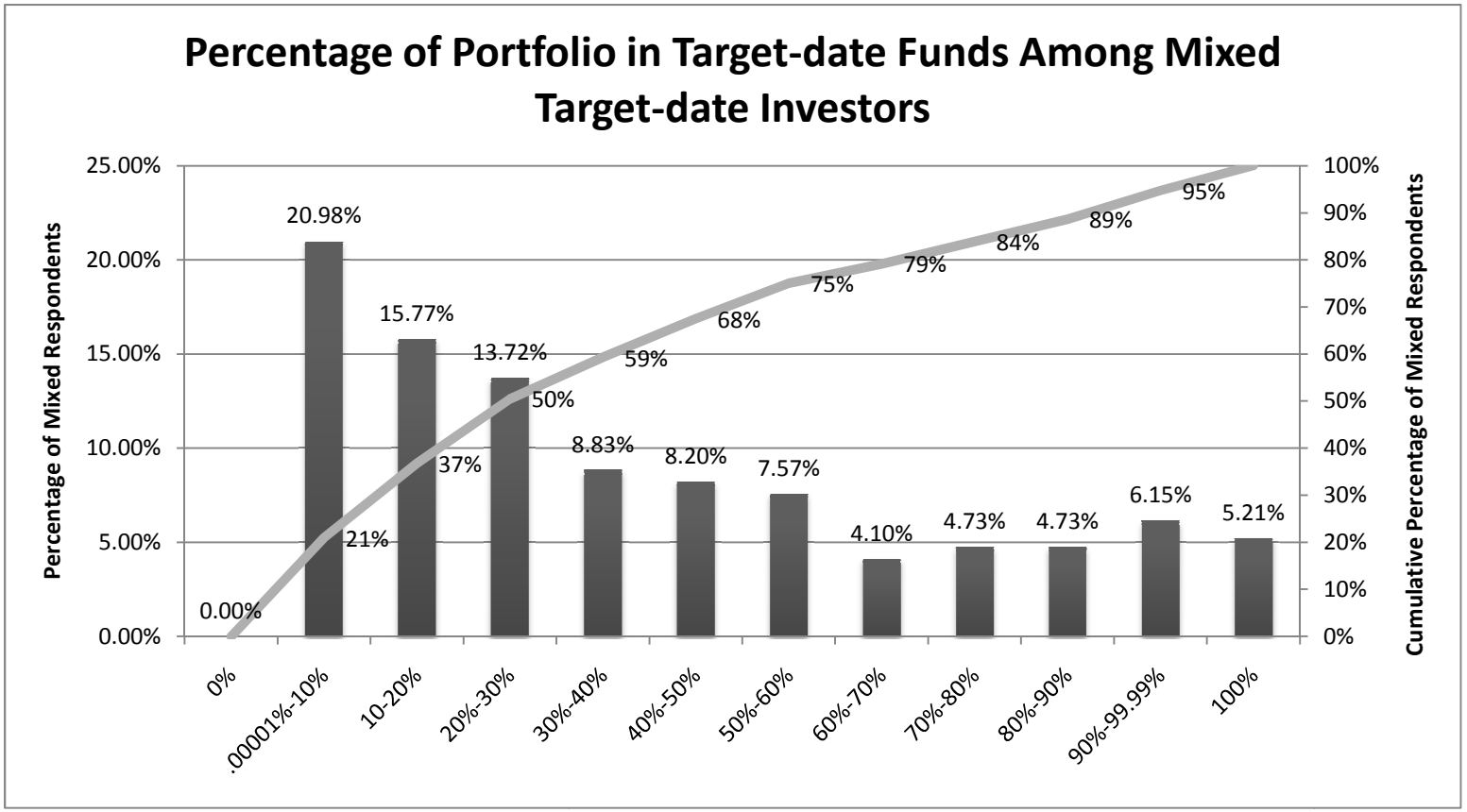
Note: Author's tabulations. Administrative data. Unweighted results.

Figure 4.



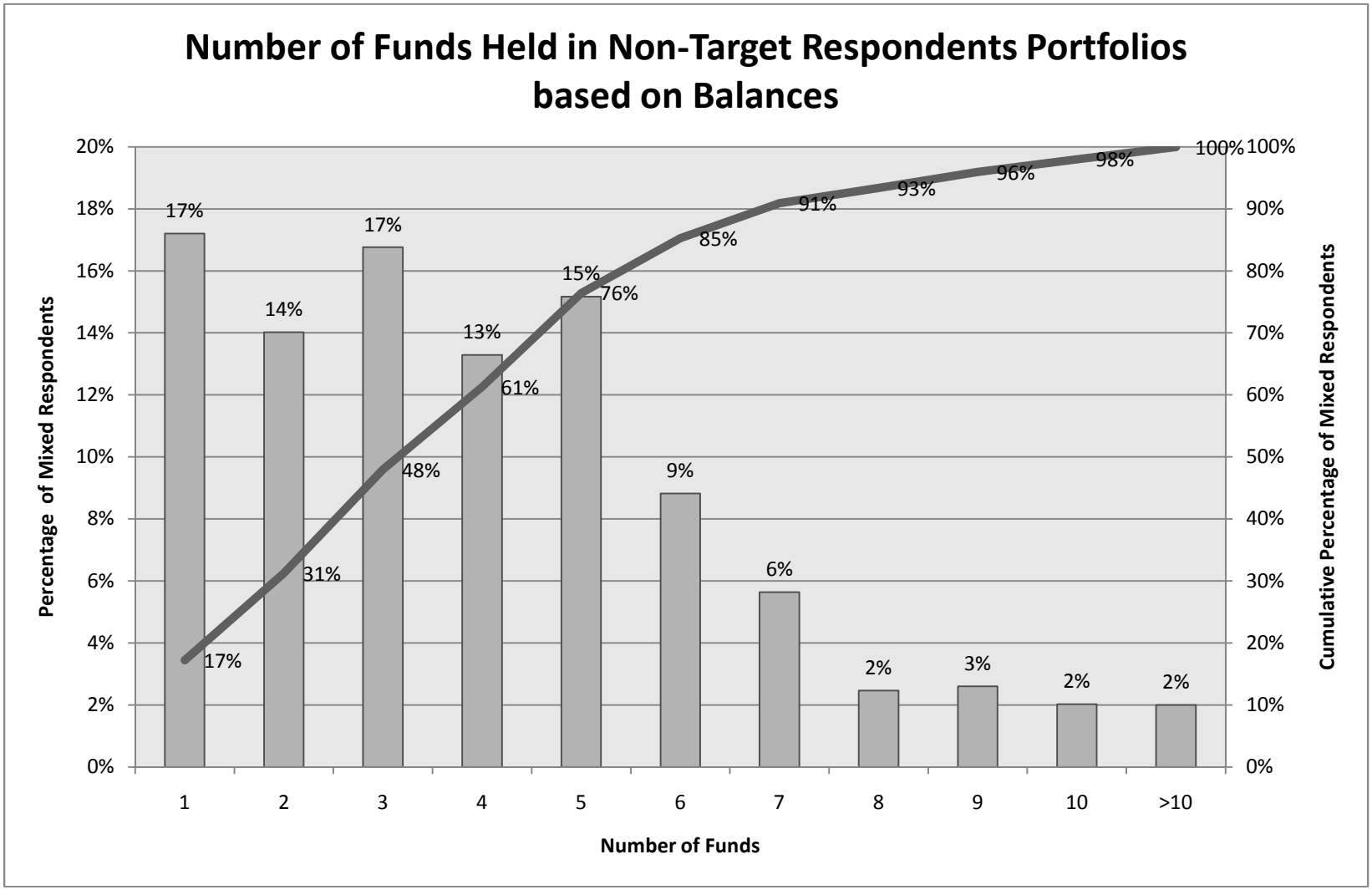
Note: Author's tabulations. Administrative data. Unweighted results.

Figure 5.



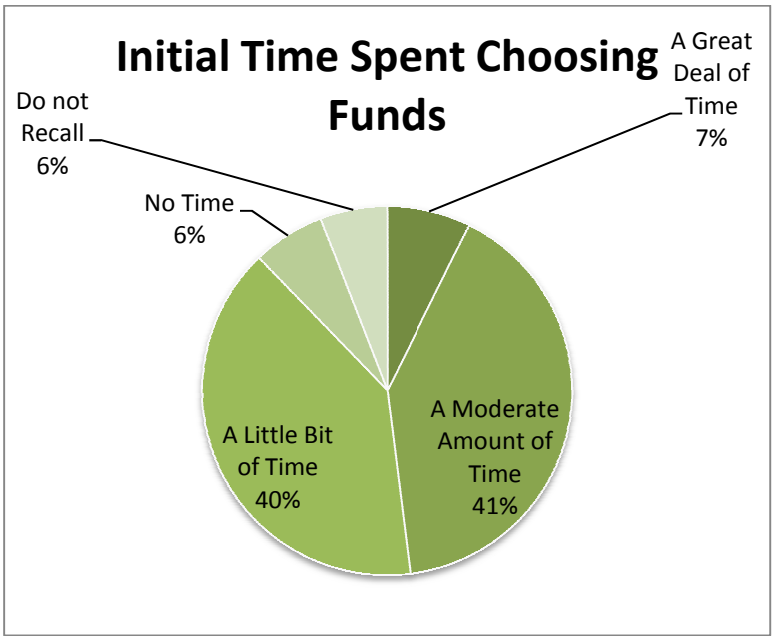
*N*ote: Author's tabulations. Administrative data. Unweighted results.

Figure 6.



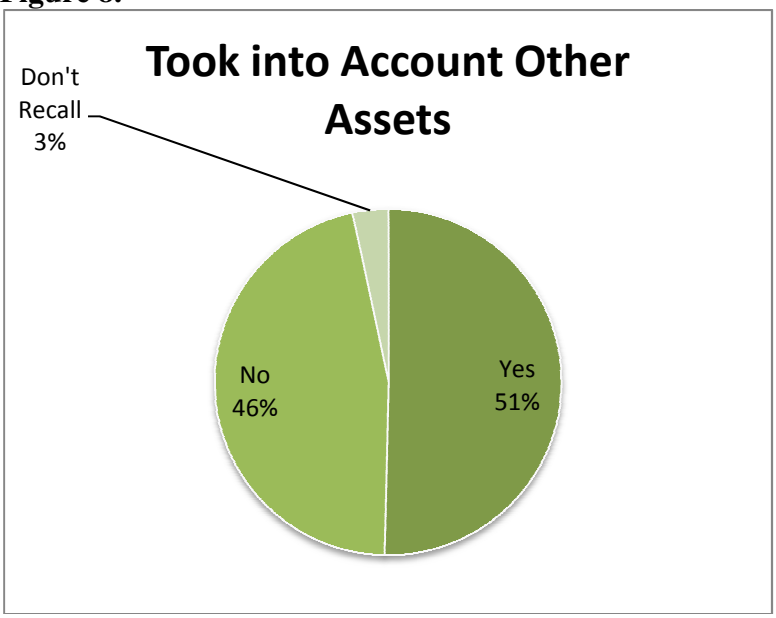
Note: Author's tabulations. Administrative data. Unweighted results.

Figure 7.



Note: Author's tabulations. Administrative data. Unweighted results. Survey Responses to "Thinking Back to When You First Established your Retirement Account, How Much Time Did You Spend Choosing the Funds to Include in Your 401(k) Plan and How Much to Invest in Each Fund? Did you spend …" Possible responses do not recall, no time, a little bit of time, a moderate amount of time, a great deal of time.

Figure 8.



Note: Author's tabulations. Administrative data. Unweighted results. Survey Responses to "When You First Selected Your Retirement Account, Did You Make Your 401(k) Selection Purposefully Taking into Account Other Assets You May Own-Such as Your Savings Account, Your Stock Holdings, Your Bond Holdings, Your Home, etc?" Possible responses yes, no or don't recall.