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401(k) Plan Asset Allocation, Account Balances, and Loan Activity in 2022

KEY FINDINGS

- » **401(k) plans draw in many young retirement savers and new hires.** At year-end 2022, 40 percent of 401(k) plan participants were in their twenties or thirties, and 23 percent were in their forties. Forty-eight percent of 401(k) plan participants had five or fewer years of tenure, including nearly one-quarter who were recent hires (two or fewer years of tenure).
- » **Younger 401(k) plan participants tend to be invested more in equities than older 401(k) plan participants.** On average, at year-end 2022, 71 percent of 401(k) participants' assets were invested in equity securities through equity funds, the equity portion of balanced funds, and company stock. Younger participants, as a group, nearly 90 percent of their 401(k) plan assets invested in equities, compared with 57 percent of 401(k) plan assets among participants in their sixties.
- » **Ownership of investments in equities is widespread among 401(k) plan participants.** Overall, 97 percent of 401(k) participants had at least some investment in equities at year-end 2022.
- » **More 401(k) plan participants held equities at year-end 2022 than before the financial market crisis (year-end 2007), and most had the majority of their accounts invested in equities.** For example, more than 90 percent of participants in their twenties had more than 80 percent of their 401(k) plan accounts invested in equities at year-end 2022, up from less than half of participants in their twenties at year-end 2007.

Key findings continued »

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Thanks to Adam Bensimhon, EBRI data compliance and IT director, for data tabulations. This paper is an annual update to EBRI and ICI's ongoing research into 401(k) plan participants' activity. The previous update was "401(k) Plan Asset Allocation, Account Balances, and Loan Activity in 2020," published in November 2022. The entire series of research updates is available at www.ici.org/research/investors/ebri_ici.

For all of the figures in this report, components may not add to the totals presented because of rounding. Appendix figures are available at www.ici.org/files/2024/per30-03-data.xlsx.

Key findings continued »

- » **Target date funds continue to be an often-used investment option among 401(k) plan participants.** At year-end 2022, 85 percent of 401(k) plans, covering 88 percent of 401(k) plan participants, included target date funds in their investment lineup. Target date funds were 38 percent of the assets in the EBRI/ICI 401(k) database, and 68 percent of 401(k) participants in the database held target date funds. Also known as lifecycle funds, these funds are designed to offer a diversified portfolio that automatically rebalances to be more focused on income over time.
- » **401(k) plan loans are widely available but rarely taken.** At year-end 2022, 84 percent of 401(k) plan participants were in plans allowing loans, but only 15 percent of 401(k) participants who were eligible for loans had loans outstanding against their 401(k) plan accounts. Loans outstanding amounted to 10 percent of the remaining account balance, on average, at year-end 2022, in line with recent history.
- » **The average 401(k) plan account balance tends to increase with participant age and tenure.** For example, at year-end 2022, participants in their forties with more than two to five years of tenure had an average 401(k) plan account balance of about \$38,000, compared with an average 401(k) plan account balance of about \$312,000 among participants in their sixties with more than 30 years of tenure.

Introduction

Over the past four decades, 401(k) plans have become the most widespread private-sector employer-sponsored retirement plan in the United States.¹ In 2022, an estimated 66 million American workers were active 401(k) plan participants.² At year-end 2022, 401(k) plan assets were \$6.4 trillion, representing nearly one-fifth of all retirement assets.³ In an ongoing collaborative effort, the Employee Benefit Research Institute (EBRI)⁴ and the Investment Company Institute (ICI)⁵ collect annual data on millions of 401(k) plan participants as a means to

examine how these participants manage their 401(k) plan accounts. This report is an update of EBRI and ICI's ongoing research into 401(k) plan participants' activity through year-end 2022.⁶ The report is divided into three sections: the first presents a snapshot of participant account balances at year-end 2022; the second looks at participants' asset allocations, including analysis of 401(k) participants' use of target date, or lifecycle, funds; and the third focuses on participants' 401(k) loan activity. An appendix describes the EBRI/ICI 401(k) database.

About the EBRI/ICI Database

The EBRI/ICI Participant-Directed Retirement Plan Data Collection Project gathers information about individual 401(k) plan participant accounts. As of December 31, 2022, the EBRI/ICI database included statistical information about:

- » 12.3 million 401(k) plan participants, in
- » 83,630 employer-sponsored 401(k) plans, holding
- » \$0.9 trillion in assets.

The 2022 EBRI/ICI database covers 19 percent of the universe of active 401(k) plan participants, 12 percent of plans, and 13 percent of 401(k) plan assets. The project is unique because it includes data provided by a wide variety of plan recordkeepers and therefore represents the activity of participants in 401(k) plans of varying sizes—from very large corporations to small businesses—with a variety of investment options. See the appendix for additional detail on the EBRI/ICI 401(k) plan database (Figure A1).

401(k) Plans Draw In Many Younger Retirement Savers and New Hires

401(k) participants represent a wide range of age and tenure groups. At year-end 2022, many 401(k) plan participants were younger: 40 percent of participants were in their twenties or thirties, while 23 percent of participants were in their forties (Figure 1). Another 23 percent of 401(k) plan participants were in their fifties, and 14 percent were in their sixties. The median age of the participants in the 2022 database is 44 years, similar to prior years. Because older participants tend to have larger account balances, assets in the database are more heavily concentrated among the older 401(k) participant

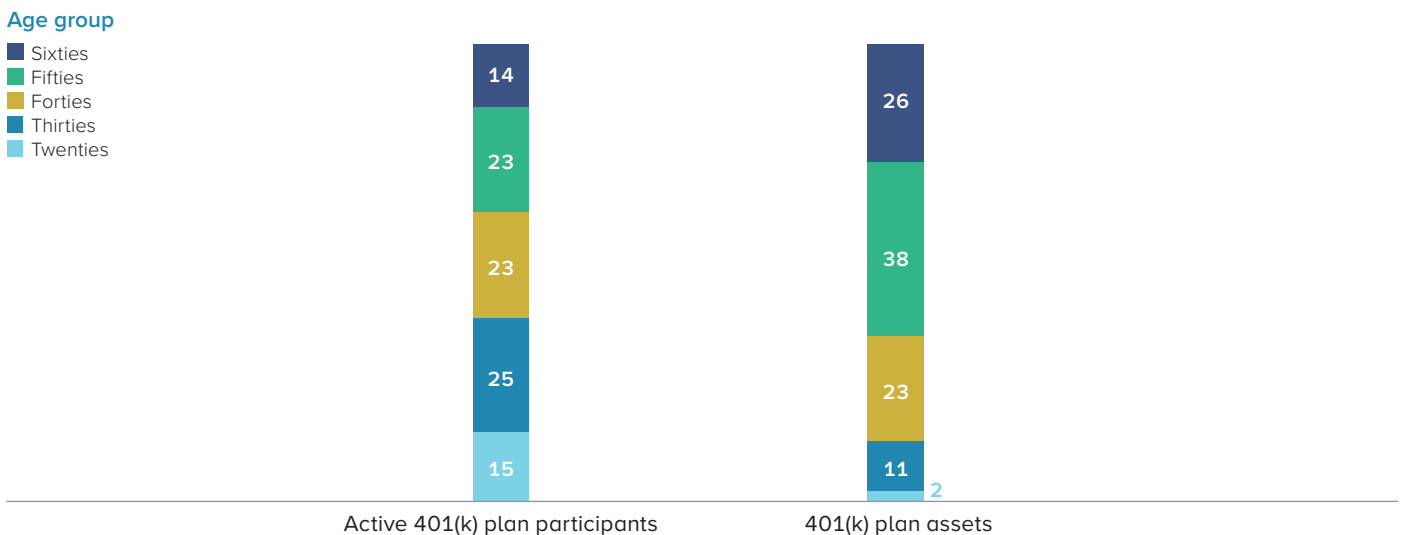
groups. At year-end 2022, 64 percent of 401(k) plan assets were held by participants in their fifties or sixties, while 13 percent of 401(k) plan assets were held by participants in their twenties or thirties.

Participants in 401(k) plans represent a wide range of job tenure experiences, and many were new to their jobs. In 2022, 48 percent of the participants in the database had five or fewer years of tenure, including nearly one-quarter with two or fewer years of tenure (Figure 2). Another 13 percent of 401(k) plan participants had more than 20 years of tenure. The median tenure at the current employer was six years in 2022, similar to recent years.

FIGURE 1

401(k) Participants Represent a Range of Ages

Percentage of active 401(k) plan participants and 401(k) plan assets by participant age, 2022



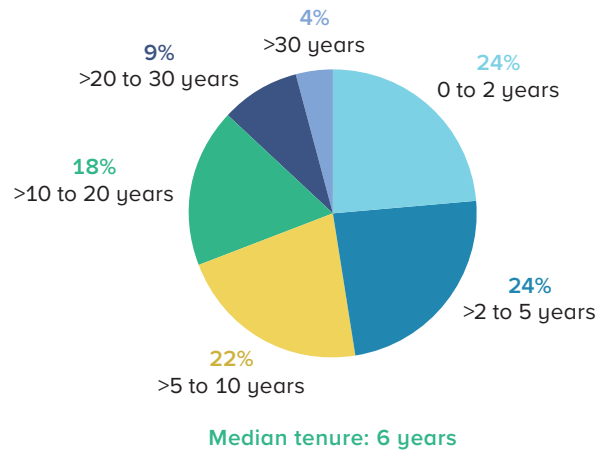
Note: At year-end 2022, the median 401(k) plan participant age was 44 years old.

Source: Tabulations from EBRI/ICI Participant-Directed Retirement Plan Data Collection Project

FIGURE 2

401(k) Participants Represent a Range of Job Tenures

Percentage of active 401(k) plan participants by years of tenure, 2022



Note: The tenure variable is generally years working at current employer and thus may overstate years of participation in the 401(k) plan.

Source: Tabulations from EBRI/ICI Participant-Directed Retirement Plan Data Collection Project

401(k) Participants' Account Balances Tend to Rise with Participant Age and Tenure

Many Factors Affect 401(k) Participants' Account Balances

In any given year, the change in a participant's account balance in the database is the sum of three factors:

- » new contributions by the participant (+), the employer (+), or both;
- » total investment return on account balances (\pm), which depends on the performance of financial markets and on the allocation of assets in an individual's account; and

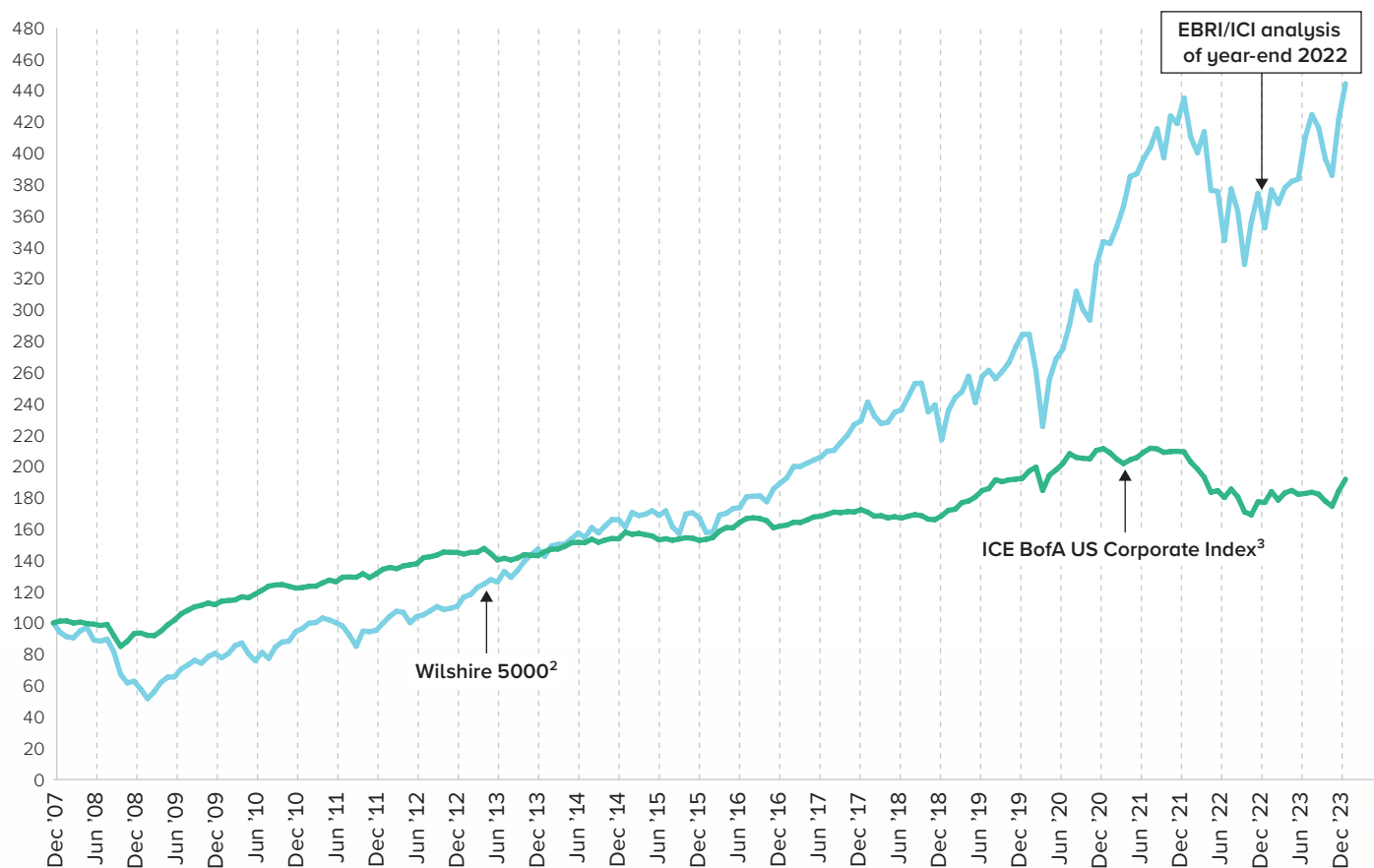
» withdrawals (-), borrowing (-), and loan repayments (+).

The change in any individual participant's account balance in the database is influenced by the magnitude of these three factors relative to the starting account balance.⁷ For example, a contribution of a given dollar amount produces a larger growth rate when added to a smaller account. On the other hand, investment returns of a given percentage produce larger dollar increases (or decreases) when compounded on a larger asset base. Asset allocation also influences investment returns and changes in assets. For example, stocks (as measured by the Wilshire 5000 total return index) decreased by

FIGURE 3

Domestic Stock and Bond Market Indexes

Month-end level,¹ December 2007 to December 2023



¹ All indexes are set to 100 in December 2007.

² The Wilshire 5000 index is a comprehensive measure of the US stock market, designed to reflect the performance of all US equity securities that have readily available prices.

³ The ICE BofA US Corporate Index tracks the performance of investment grade corporate debt that is publicly issued in the US domestic market and denominated in US dollars.

Sources: Federal Reserve Bank of St. Louis, ICE Data Indices, and Wilshire Associates

19.0 percent during 2022, while bonds (as measured by the ICE BofA US Corporate Index) decreased by 15.4 percent (Figure 3).

Definition of 401(k) Plan Account Balance

As a cross section, or snapshot, of the entire population of 401(k) plan participants, the database includes 401(k) participants who are young and those who are new to their jobs, as well as older participants and those who have been with their current employers for many years. These annual updates of the database provide snapshots of 401(k) plan account balances, asset allocation, and loan activity across wide cross sections of participants. However, the cross-sectional analysis is not well suited to addressing the question of the impact of participation in 401(k) plans over time. Cross sections

change in composition from year to year because the selection of data providers and sample of plans using a given provider vary and because 401(k) participants join or leave plans.⁸ In addition, the database contains only the account balances held in the 401(k) plans at participants' current employers. Retirement savings held in plans at previous employers or rolled over into individual retirement accounts (IRAs) are not included in the analysis.⁹ Furthermore, account balances are net of unpaid loan balances. Because of all these factors, it is not correct to presume that the change in the average or median account balance for the database as a whole reflects the experience of "typical" 401(k) plan participants. (See About Changes in Account Balances below.)

About Changes in Account Balances

In order to analyze the change in participant account balances over time, it is important to have a consistent sample of participants. Comparing average account balances across different year-end snapshots can lead to false conclusions. For example, adding a large number of new plans with smaller balances to the database would tend to pull down the average account balance. This could then be mistakenly described as an indication that balances are declining, but it would tell us nothing about consistently participating workers. Similarly, the aggregate

average account balance would tend to be pulled down if a large number of older participants retired. In addition, changes in the sample of recordkeepers and changes in the set of plans for which they keep records can also influence the change in aggregate average account balance. Thus, to ascertain what is happening to 401(k) participants' account balances, a set of consistent participants must be analyzed. Future research will examine linked data to analyze the consistent sample of participants in the EBRI/ICI data collection effort.

401(k) Plan Account Balances Vary Across Participants

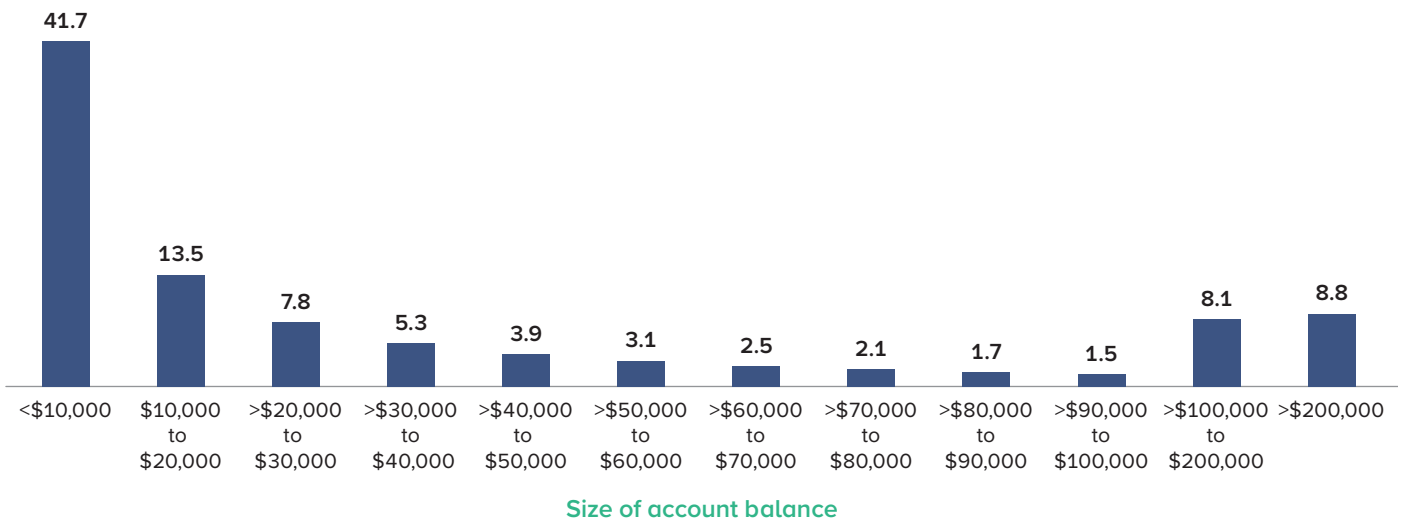
At year-end 2022, the average account balance was \$70,320 and the median account balance was \$15,331 (Figure A3), but balances varied widely. For example, more than three-quarters of the participants in the 2022 EBRI/ICI 401(k) database had account balances that were lower than \$70,320, the size of the average account balance. In fact, 42 percent of participants had

account balances of less than \$10,000, while 17 percent of participants had account balances greater than \$100,000 (Figure 4). The variation in account balances partly reflects the effects of participant age, tenure, salary, contribution behavior, rollovers from other plans, asset allocation, withdrawals, loan activity, and employer contribution rates. This paper examines the relationship between account balances and participants' age and tenure.

FIGURE 4

Distribution of 401(k) Plan Account Balances by Size of Account Balance

Percentage of participants with account balances in specified ranges, 2022



Note: At year-end 2022, the average account balance among all 12.3 million 401(k) participants was \$70,320; the median account balance was \$15,331. Account balances are participant account balances held in 401(k) plans at the participants' current employers and are net of plan loans. Retirement savings held in plans at previous employers or rolled over into IRAs are not included.

Source: Tabulations from EBRI/ICI Participant-Directed Retirement Plan Data Collection Project

401(k) Plan Account Balances Tend to Rise with Participant Age and Tenure

Age and account balance are positively correlated among participants covered by the 2022 database.¹⁰ Smaller 401(k) plan account balances tend to be held by younger participants, larger account balances by older participants (Figure A4). The positive correlation between age and account balance is expected because younger workers are likely to have lower incomes and to have had less time to accumulate a balance with their current employer. In addition, they are less likely to have rollovers from a previous employer’s plan in their current plan accounts. Account balance and tenure are also positively correlated among participants in the 2022 database. A participant’s tenure with an employer serves as a proxy for the length of time a worker has participated

in the 401(k) plan.¹¹ Smaller 401(k) plan account balances tend to be held by more recent hires, and larger balances by longer-tenured participants (Figure A5).¹²

Examining the interaction of both age and tenure with account balances reveals that, for a given age group, average account balances tend to increase with tenure. For example, the average account balance of participants in their sixties with up to two years of tenure was \$46,609, compared with \$312,092 for participants in their sixties with more than 30 years of tenure (Figure 5).¹³ Similarly, the average account balance of participants in their forties with up to two years of tenure was \$20,996, compared with \$164,865 for participants in their forties with more than 20 years of tenure.

FIGURE 5

401(k) Plan Account Balances Increase with Participant Age and Tenure

Average 401(k) plan account balance by participant age and tenure, 2022

Age group	Years of tenure					
	0 to 2	>2 to 5	>5 to 10	>10 to 20	>20 to 30	>30
20s	\$5,780	\$13,424	\$21,158			
30s	12,633	24,921	42,907	\$68,003		
40s	20,996	37,956	64,906	114,961	\$164,865	
50s	30,575	51,097	82,842	141,914	234,865	\$282,992
60s	46,609	59,616	87,847	135,768	212,690	312,092

Note: The average account balance among all 12.3 million 401(k) participants was \$70,320; the median account balance was \$15,331. Account balances are participant account balances held in 401(k) plans at the participants’ current employers and are net of plan loans. Retirement savings held in plans at previous employers or rolled over into IRAs are not included. The tenure variable is generally years working at current employer and thus may overstate years of participation in the 401(k) plan.

Source: Tabulations from EBRI/ICI Participant-Directed Retirement Plan Data Collection Project

401(k) Participants' Asset Allocations Continue to Skew Toward Investment in Equities

At year-end 2022, 38 percent of 401(k) plan participants' account balances were invested in equity funds, on average, which is in line with recent years (Figures 6 and A6). Another 41 percent of 401(k) participants' account balances were invested in balanced funds, largely target date funds. 401(k) participants' investment in company stock continued at historically low levels. Less than 4 percent of 401(k) assets were invested in company stock at year-end 2022, in line with recent years. This share has fallen by 81 percent since 1999, when company stock accounted for 19 percent of assets.¹⁴ Altogether, equity securities—equity funds, the equity portion of balanced funds,¹⁵ and company stock—represented 71 percent of 401(k) plan participants' assets at year-end 2022 (Figure 6).

Younger 401(k) Plan Participants Tend to Invest in Equities More Than Older 401(k) Plan Participants

Among individual 401(k) plan participants, the allocation of account balances to equities (equity funds, company stock, and the equity portion of balanced funds) varies widely around the average of 71 percent

for all participants in the 2022 database (Figure 6).¹⁶ Participants' allocations to equity funds varied by age, with participants in their fifties having the highest average allocation and participants in their twenties the lowest. Younger participants tended to favor balanced funds, while older participants were more likely to invest in fixed-income securities such as bond funds, GICs and other stable value funds, or money funds. For example, among participants in their twenties, the average allocation to equity and balanced funds was 94 percent of assets, compared with 72 percent of assets among participants in their sixties.

Younger participants had consistently higher allocations to target date funds. A target date, or lifecycle, fund pursues a long-term investment strategy, using a mix of asset classes that follow a predetermined reallocation, typically rebalancing to shift its focus from growth to income as the fund approaches and passes its target date.¹⁷ At year-end 2022, 38 percent of 401(k) assets in the database were invested in target date funds (Figure 6). Among participants in their twenties, 66 percent of their 401(k) assets were invested in target date funds at year-end 2022; among participants in their sixties, 32 percent of their 401(k) assets were invested in target date funds.

FIGURE 6

Average Asset Allocation of 401(k) Plan Accounts by Participant Age

Percentage of account balances,¹ 2022

Age group	Balanced funds		Non–target date balanced funds	Bond funds	Money funds	GICs ^{3,4} and other stable value funds	Company stock ³	Other	Unknown	Memo: equities ⁵
	Equity funds	Target date funds ^{2,3}								
20s	26.3	65.6	1.7	2.4	0.2	2.0	1.2	0.4	0.1	89.5
30s	32.8	55.6	1.9	3.6	0.3	2.8	2.3	0.6	0.1	87.4
40s	39.3	42.9	2.3	5.4	0.4	4.7	3.9	0.9	0.2	80.6
50s	40.8	34.3	2.6	7.6	0.7	8.2	4.3	1.2	0.2	68.9
60s	36.3	32.0	3.5	10.1	1.0	12.2	3.3	1.3	0.3	57.0
All	37.9	38.0	3.0	7.4	0.7	8.0	3.6	1.1	0.2	71.0

¹ Percentages are dollar-weighted averages.

² A target date fund typically rebalances its portfolio to become less focused on growth and more focused on income as it approaches and passes the target date of the fund, which is usually included in the fund’s name.

³ Not all participants are offered this investment option (see Figure A7).

⁴ GICs are guaranteed investment contracts.

⁵ Equities include equity funds, company stock, and the equity portion of balanced funds.

Note: Funds include mutual funds, bank collective trusts, life insurance separate accounts, and any pooled investment product primarily invested in the security indicated. For asset allocation by participant age at year-end 2021, see Figure A13.

Source: Tabulations from EBRI/ICI Participant-Directed Retirement Plan Data Collection Project

Target Date Funds Continue to Be Popular

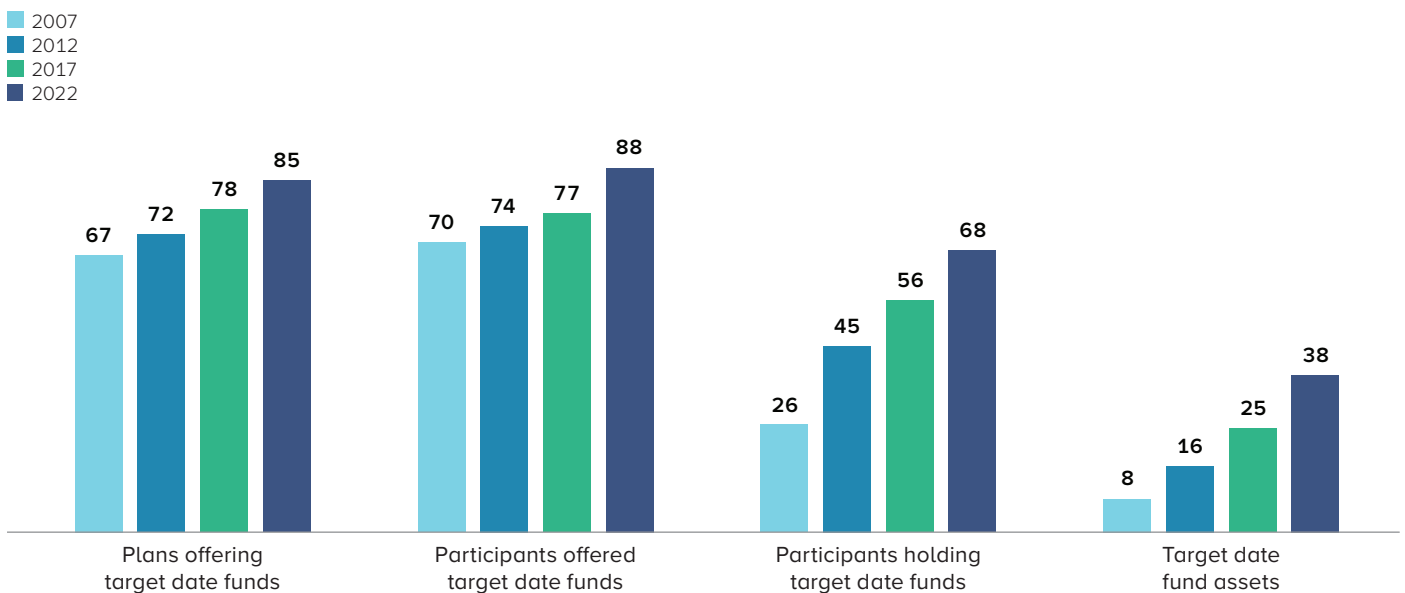
The investment options that a plan offers can significantly affect how participants allocate their 401(k) assets;¹⁸ and target date funds are an investment option that have been increasingly offered in 401(k) plans and increasingly used by 401(k) plan participants (Figure 7). Target date funds were available in 85 percent of the 401(k) plans in the year-end 2022 database.¹⁹ These plans offered target date funds to 88 percent of the participants in

the database.²⁰ At year-end 2022, 68 percent of 401(k) plan participants in the EBRI/ICI 401(k) database held target date funds and target date funds were 38 percent of 401(k) plan assets. Not all participants are offered target date funds—among participants who were offered target date funds, 77 percent held them at year-end 2022.²¹ Target date fund assets represented 44 percent of the assets of plans offering such funds in their investment lineups.²²

FIGURE 7

Target Date Funds' 401(k) Market Share

Percentage of total 401(k) market, year-end



Note: A target date fund typically rebalances its portfolio to become less focused on growth and more focused on income as it approaches and passes the target date of the fund, which is usually included in the fund's name. Funds include mutual funds, bank collective trusts, life insurance separate accounts, and any pooled investment product primarily invested in the security indicated.

Source: Tabulations from EBRI/ICI Participant-Directed Retirement Plan Data Collection Project

Ownership of Target Date Funds Varies with Participant Age and Tenure

Younger participants were more likely to hold target date funds than older participants. At year-end 2022, 77 percent of participants in their twenties held target date funds, compared with 61 percent of participants in their sixties (Figure A8).²³ EBRI/ICI analysis of 401(k) plan target date fund investors finds that the majority of them are holding one age-appropriate target date fund.²⁴

Recently hired participants were more likely to hold target date funds than those with more years on the job. At year-end 2022, 74 percent of participants with two or fewer years of tenure held target date funds, compared with 42 percent of participants with more than 30 years of tenure (Figure A9).

Ownership of Investments in Equities Is Commonplace Among 401(k) Plan Participants

At year-end 2022, 97 percent of 401(k) plan participants held investments in equities (equity funds, company stock, and the equity portion of balanced funds) (Figure 8).

Nearly six in 10 401(k) plan participants had more than 80 percent of their account balances invested in equities at year-end 2022. Younger 401(k) plan participants were much more likely to have high concentrations in equities. At year-end 2022, more than 90 percent of 401(k) plan participants in their twenties had more than 80 percent of their account balances invested in equities, compared with 13 percent of 401(k) plan participants in their sixties.

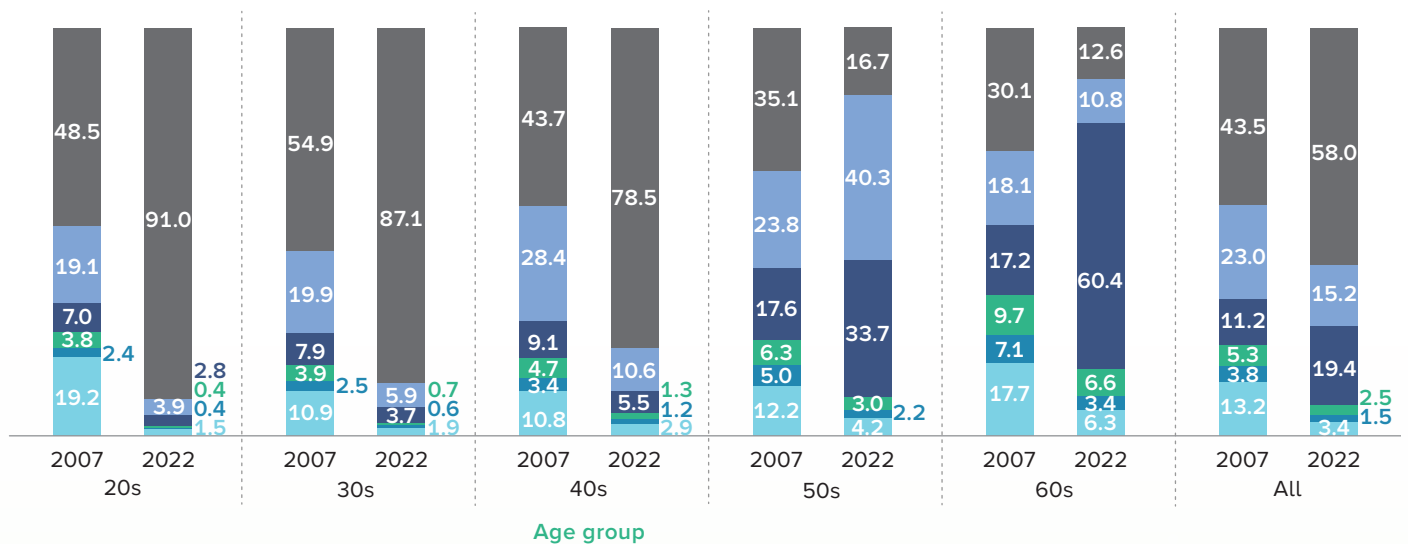
FIGURE 8

Exposure to Equities Increased Among 401(k) Participants Between 2007 and 2022

Percentage of 401(k) participants by age of participant,¹ year-end 2007 and year-end 2022

Percentage of account balance invested in equities²

- >80 percent
- >60 to 80 percent
- >40 to 60 percent
- >20 to 40 percent
- >0 to 20 percent
- Zero



¹ Participants include the 12.3 million 401(k) plan participants in the year-end 2022 EBRI/ICI 401(k) database and the 21.8 million 401(k) plan participants in the year-end 2007 EBRI/ICI database.

² Equities include equity funds, company stock, and the equity portion of balanced funds. Funds include mutual funds, bank collective trusts, life insurance separate accounts, and any pooled investment product primarily invested in the security indicated.

Source: Tabulations from EBRI/ICI Participant-Directed Retirement Plan Data Collection Project

Younger 401(k) Plan Participants Have Increased Concentrations in Equities Since the Financial Crisis

More 401(k) plan participants held equities at year-end 2022 than at year-end 2007, and a larger percentage of younger investors had higher concentrations in equities. Overall, at year-end 2022, 3 percent of 401(k) plan participants held no equities, down from 13 percent at year-end 2007 (Figure 8). Younger 401(k) participants were much more likely to hold equities and to hold high concentrations in equities at year-end 2022 compared with year-end 2007. For example, more than 90 percent of 401(k) plan participants in their twenties had more than 80 percent of their account balances invested in equities at year-end 2022 compared with less than half at year-end 2007. Older 401(k) participants were much less likely to have such high concentrations in equities at year-end 2022 compared with year-end 2007: 13 percent of 401(k) plan participants in their sixties had more than 80 percent of their account balances invested in equities at year-end 2022 compared with 30 percent of 401(k) plan participants in their sixties at year-end 2007. Across all age groups, a lower share held no equities at year-end 2022 compared with year-end 2007.

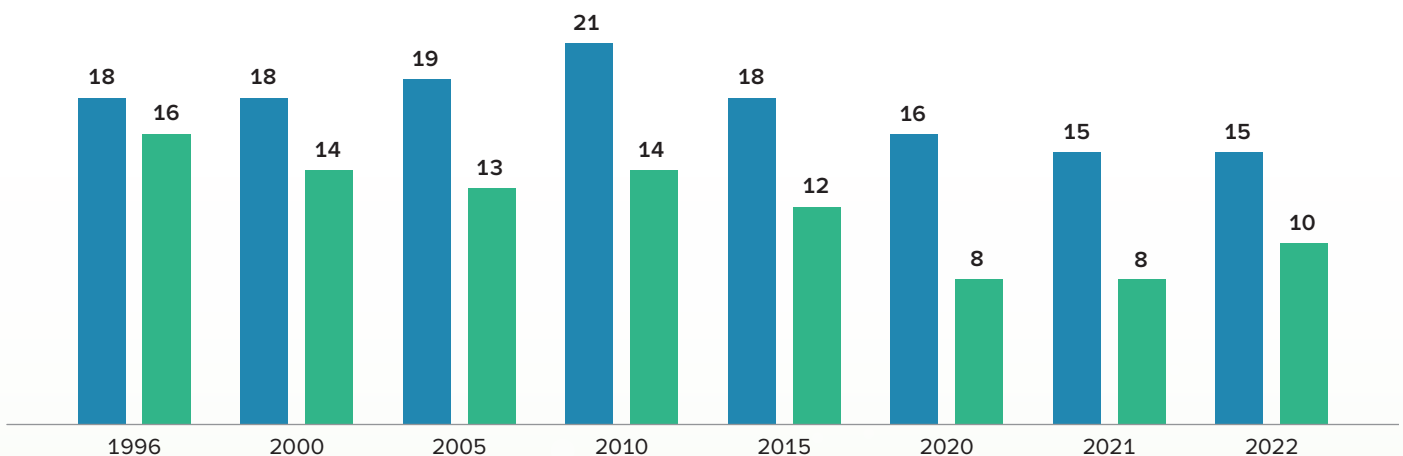
401(k) Plan Loans Are Widely Available but Rarely Taken

While a majority of 401(k) plan participants are in plans that allow loans, relatively few participants made use of this borrowing privilege (Figure 9). Overall, 52 percent of the 401(k) plans for which loan data were available in the 2022 EBRI/ICI 401(k) database offered a plan loan provision to participants (Figure A10).²⁵ At year-end 2022, 15 percent of 401(k) participants with access to loans had loans outstanding (Figure 9).^{26, 27} However, not all participants have access to 401(k) plan loans—in the 2022 EBRI/ICI 401(k) database, 84 percent of participants were in plans offering loans. Factoring in all 401(k) participants with and without loan access in the database, only 13 percent had loans outstanding at year-end 2022. On average, over the past 25 years, among participants with loans outstanding, about 12 percent of the remaining account balance remained unpaid. DOL data indicate that loan amounts tend to be a negligible portion of plan assets.²⁸

FIGURE 9

Few 401(k) Participants Had Outstanding 401(k) Loans; Loans Tended to Be Small

■ Percentage of eligible 401(k) participants with outstanding 401(k) loans
■ Loan as a percentage of the remaining 401(k) plan account balance



Source: Tabulations from EBRI/ICI Participant-Directed Retirement Plan Data Collection Project

401(k) Plan Loan Activity Varies with Participant Age, Tenure, and Account Balance

At year-end 2022, 15 percent of those eligible for loans had 401(k) plan loans outstanding, and loan activity varies with age, tenure, and account balance (Figure 10). Of those participants in plans offering loans, the highest percentages of participants with outstanding loan balances were among participants in their forties or fifties. Put another way, a sizable majority of eligible 401(k)

participants in all age groups have no loan outstanding at all. For example, 94 percent of participants in their twenties, 80 percent of participants in their forties, and 88 percent of participants in their sixties had no loans outstanding at year-end 2022.²⁹ In addition, participants with five or fewer years of tenure or with more than 30 years of tenure were less likely to use the loan provision than other participants. Only 8 percent of participants with account balances of less than \$10,000 had loans outstanding at year-end 2022.

FIGURE 10

401(k) Loan Activity Varied Across 401(k) Plan Participants

Loan activity by participant age, tenure, or account size, 2022

	Percentage of eligible 401(k) participants with outstanding 401(k) loans	Loan as a percentage of the remaining 401(k) plan account balance
All	15	10
Age group		
20s	6	24
30s	14	18
40s	20	12
50s	19	8
60s	12	7
Years of tenure*		
0 to 2	7	19
>2 to 5	15	18
>5 to 10	21	15
>10 to 20	24	10
>20 to 30	24	6
>30	16	4
Size of account balance		
<\$10,000	8	37
\$10,000 to \$20,000	19	31
>\$20,000 to \$30,000	20	27
>\$30,000 to \$40,000	21	24
>\$40,000 to \$50,000	21	22
>\$50,000 to \$60,000	21	19
>\$60,000 to \$70,000	21	17
>\$70,000 to \$80,000	21	16
>\$80,000 to \$90,000	21	14
>\$90,000 to \$100,000	21	13
>\$100,000 to \$200,000	20	10
>\$200,000	15	4

* The tenure variable is generally years working at current employer and thus may overstate years of participation in the 401(k) plan.

Source: Tabulations from EBRI/ICI Participant-Directed Retirement Plan Data Collection Project

Loans from 401(k) Plans Tend to Be Small

Among participants with outstanding 401(k) loans at year-end 2022, the average unpaid balance was \$8,069 and the median was \$4,538—in line with prior years (Figure A11). The ratio of the loan outstanding to the remaining account balance was 10 percent at year-end 2022 (Figure 9). In addition, variation around this average tends to correspond with age (the older the participant, the lower the average), tenure (the longer the tenure of the participant, the lower the average), and account balance (the higher the account balance, the lower the average)³⁰ (Figure 10). Overall, loans from 401(k) plans tended to be small (Figure A12).

APPENDIX: EBRI/ICI 401(k) Database

Sources and Types of Data

Several recordkeeping organizations provided records on active participants in 401(k) plans at year-end 2022. These plan recordkeepers include mutual fund companies, banks, insurance companies, and consulting firms. Although the EBRI/ICI project has collected data from 1996 through 2022, the universe of data providers may vary from year to year. In addition, the plans with any given provider may change from year to year, which changes the plans provided. Thus, aggregate figures

in this report generally should not be used to estimate time trends. Records were encrypted before inclusion in the database to conceal the identity of employers and employees but were coded so that both could be tracked by researchers over multiple years.³¹ Data provided for each participant included date of birth, from which an age group is assigned; date of hire, from which a tenure range is assigned; outstanding loan balance; funds in the participant's investment portfolios; and asset values attributed to those funds. An account balance for each participant is the sum of the participant's assets in all funds.³² Plan balances are constructed as the sum of all participant balances in the plan. Plan size is estimated as the sum of active participants in the plan and, as such, does not necessarily represent the total number of employees at the sponsoring firm. Within the year-end 2022 EBRI/ICI database, it is possible to link individuals across plans across a majority of the recordkeepers. This improves the identification of active participants and resulted in the reclassification of 0.4 million participant accounts that were multiple accounts owned by single individuals. This procedure allows EBRI and ICI to begin to consolidate account balances for individuals across data providers to provide a more accurate estimate of average account balances per individual.³³

Investment Options

Investment options are grouped into eight broad categories.³⁴

- » Equity funds consist of pooled investments primarily invested in stocks, including equity mutual funds, bank collective trusts, life insurance separate accounts, and other pooled investments.
- » Bond funds are pooled accounts primarily invested in bonds.
- » Balanced funds are pooled accounts invested in both stocks and bonds. They are classified into two subcategories: target date funds and non–target date balanced funds.
 - » A target date fund pursues a long-term investment strategy using a mix of asset classes, or asset allocation, that the fund provider adjusts to become less focused on growth and more focused on income as the fund approaches and passes its target date.³⁵
 - » Non–target date balanced funds include asset allocation funds (also called hybrid funds) and lifestyle funds.³⁶
- » Company stock is equity in the plan’s sponsor (the employer).
- » Money funds consist of those funds designed to maintain a stable share price.
- » Stable value products, such as guaranteed investment contracts (GICs)³⁷ and other stable value funds,³⁸ are reported as one category.
- » Other is the residual for other investments, such as real estate funds.
- » Unknown, which is the final category, consists of assets that could not be identified.³⁹

Distribution of Plans, Participants, and Assets by Plan Size

The 2022 EBRI/ICI 401(k) database contains information on 83,630 401(k) plans with \$0.9 trillion in assets and 12.3 million participants (Figure A1).⁴⁰ As in the 401(k) universe at large, most of the plans in the database are small: 62 percent of the plans have 25 or fewer participants, and 23 percent have 26 to 100 participants. In contrast, less than 1 percent of the plans have more than 2,500 participants. However, participants and assets are concentrated in large plans. For example, 51 percent of participants are in plans with more than 2,500 participants, and these same plans account for 50 percent of all plan assets. Because most of the plans have a small number of participants, the asset size for many plans is modest. At year-end 2022, 24 percent of the plans have assets of \$250,000 or less, and another 30 percent have plan assets between \$250,001 and \$1,250,000.⁴¹

Relationship of EBRI/ICI 401(k) Database Plans to the Universe of All 401(k) Plans

The 2022 EBRI/ICI 401(k) database is a representative sample of the estimated universe of 401(k) plans. At year-end 2022, all 401(k) plans held a total of \$6.4 trillion in assets, and the database represents about 13 percent of that total.⁴² The database also covers 19 percent of the universe of active 401(k) plan participants and 12 percent of all 401(k) plans.⁴³ The distribution of assets, participants, and plans in the database for 2022 is similar to the universe of plans as reported by the US Department of Labor (DOL) (Figure A2).

Notes

- ¹ For data on 401(k) plan assets, participants, and plans through 2021, see US Department of Labor, Employee Benefits Security Administration 2023a and 2023b. For total retirement assets (including those in 401(k) plans) through the fourth quarter of 2023, see Investment Company Institute 2024. For a discussion of trends between defined benefit (DB) and defined contribution (DC) plans, see Poterba, Venti, and Wise 2007; Holden, Brady, and Hadley 2006; Brady and Bogdan 2010 and 2016; and Brady, Burham, and Holden 2012.
- ² Before 2005, DOL private pension plan bulletins reported a count of active 401(k) plan participants that had been adjusted from the number of active participants actually reported in the Form 5500 filings to exclude (1) individuals eligible to participate in a 401(k) plan who had not elected to have their employers make contributions; and (2) nonvested former employees who had not (at the time the Form 5500 filings were submitted) incurred the break-in service period established by their plan; that adjustment was no longer possible beginning in 2005 (see US Department of Labor, Employee Benefits Security Administration 2012 for further detail). This change in methodology results in a dramatic increase in the number of individuals reported as active participants in 401(k) plans; in 2004, the number of active participants increased to 53.1 million (new method) from 44.4 million (old method; see US Department of Labor, Employee Benefits Security Administration 2021b). As the DOL notes: “In a purely economic sense and for research purposes, individuals in these groups should not be included in the count of active participants.” However, the form schedule needed to make the adjustment is no longer required. Using National Compensation Survey data and historical relationships and trends evident in the Form 5500 data, ICI estimates the number of active 401(k) participants to be about 66 million in 2022. The estimate of the number of active 401(k) plan participants is based on a combination of data from US Department of Labor, Employee Benefits Security Administration 2024 and US Department of Labor, Bureau of Labor Statistics 2024. ICI estimates there were about 681,000 401(k) plans in 2022. For 2023, ICI estimates that 401(k) plans held more than \$7 trillion in assets (see Investment Company Institute 2024), in more than 710,000 plans, on behalf of about 70 million active participants and millions of former employees and retirees.
- ³ See Investment Company Institute 2024.
- ⁴ The Employee Benefit Research Institute (EBRI) is a nonprofit, nonpartisan, public policy research organization that does not lobby or take positions on legislative proposals.
- ⁵ The Investment Company Institute (ICI) is the leading association representing regulated investment funds, including mutual funds, exchange-traded funds (ETFs), closed-end funds, and unit investment trusts (UITs) in the United States, and UCITS and similar funds offered to investors in Europe, Asia, and other jurisdictions. ICI also represents its members in their capacity as investment advisers to certain collective investment trusts (CITs) and retail separately managed accounts (SMAs). ICI’s mission is to strengthen the foundation of the asset management industry for the ultimate benefit of the long-term individual investor.
- ⁶ This update extends previous findings from the project for 1996 through 2020. For year-end 2020 results, see Holden, Bass, and Copeland 2022. Results for earlier years are available in earlier issues of ICI Research Perspective (www.ici.org/research/investors/ebri-ici) and EBRI Issue Brief (www.ebri.org/publications/research-publications/issue-briefs).
- ⁷ For an analysis of the changes in account balances of consistent participants in the EBRI/ICI 401(k) database over the four-year period from year-end 2016 to year-end 2020, see Holden, Bass, and Copeland 2023.
- ⁸ Because of these changes in the cross sections, comparing average account balances across different year-end cross-sectional snapshots can lead to false conclusions. For example, newly formed plans would tend to pull down the average account balance but would tell us nothing about consistently participating workers. Similarly, the aggregate average account balance would tend to be pulled down if a large number of participants retired.
- ⁹ Tabulations of the Survey of Consumer Finances reveal that 56 percent of traditional IRA assets in 2022 resulted from rollovers from employer-sponsored retirement plans.
- ¹⁰ At year-end 2022, 3 percent of the participants in the database were missing a birth date entry, were younger than 20, or were older than 69. They were not included in this analysis.
- ¹¹ At year-end 2022, 10 percent of the participants in the database were missing a date of hire entry and were not included in this analysis.
- ¹² The positive correlation between tenure and account balance is expected because long-term employees have had more time to accumulate an account balance. However, a rollover from a previous employer’s plan could interfere with this positive correlation because a rollover could give a short-tenured employee a high account balance. There is some discernible evidence of rollover assets among the participants with account balances greater than \$100,000, as 4 percent of them had two or fewer years of tenure, and 9 percent of them had between two and five years of tenure (see Figure A5).
- ¹³ Because 401(k) plans were introduced about 40 years ago, older and longer-tenured employees may not have participated in 401(k) plans for their entire careers. The Revenue Act of 1978 contained a provision that became Internal Revenue Code Section 401(k). The law went into effect on January 1, 1980, but it was not until November 1981 that proposed regulations were issued (see Holden, Brady, and Hadley 2006; Employee Benefit Research Institute 2018; and Internal Revenue Service 1981).

- ¹⁴ See Holden and VanDerhei 2001a. Some of this movement away from company stock may be the result of regulations put in place by the Pension Protection Act of 2006 (PPA), which limited the length of time participants could be required to hold company stock contributed to their accounts by their employer; specified rules regarding the notification of blackout periods; and required quarterly statements that must include a notice highlighting the importance of diversification (see Joint Committee on Taxation 2006).
- ¹⁵ At year-end 2022, 59 percent of non–target date balanced mutual fund assets were assumed to be invested in equities (see Investment Company Institute, Quarterly Supplementary Data). Allocation to equities in target date funds is assumed to vary with investor age. Asset allocation to equities for target date funds was based on Morningstar analysis of target date fund asset allocation (see Morningstar 2022 and note 16 for additional discussion).
- ¹⁶ At year-end 2022, 59 percent of non–target date balanced fund assets were assumed to be invested in equities (see Investment Company Institute, Quarterly Supplementary Data). The allocation to equities in target date funds varies with the funds’ target dates. For target date funds, investors were assumed to be in a fund whose target date was nearest to their 65th birthday. The equity portion was estimated using the industry average equity percentage for the assigned target date fund calculated using the Morningstar Lifetime Allocation Indexes (see Morningstar 2022). For the average 401(k) plan asset allocation to equities (through equity funds, company stock, and the equity portion of balanced funds) by participant age, see Figure 6.
- ¹⁷ See note 16 for additional detail on target date funds.
- ¹⁸ The 401(k) plan sponsor selects the investment options available in the plan. Figure A7 in the Excel file presents the distribution of plans, participants, and assets by four combinations of investment offerings. The first category is the base group, which consists of plans that offer neither company stock nor GICs or other stable value funds. Twenty percent of participants in the 2022 EBRI/ICI 401(k) database were in these plans, which generally offer equity funds, bond funds, money funds, and balanced funds as investment options. Another 61 percent of participants were in plans that offer GICs and other stable value funds as an investment option, in addition to the base options. Alternatively, 8 percent of participants were in plans that offer company stock but no stable value products, while the remaining 11 percent of participants were in plans that offered both company stock and stable value products in addition to the base options.
- ¹⁹ Analysis of year-end 2018 EBRI/ICI 401(k) plan participant target date fund investors finds they tend to hold one age-appropriate target date fund (see Holden, VanDerhei, and Bass 2021). For an analysis tracking target date fund use and the persistence of their use from 2007 through 2009, see Copeland 2011. For an analysis of target date fund use among defaulted and non-defaulted 401(k) plan participants, see Mitchell and Utkus 2012.
- ²⁰ Target date funds are often used as the default investment in automatic enrollment plans and in plans’ investment lineups (see Plan Sponsor Council of America 2023). At year-end 2022, 67 percent of target date mutual fund assets were held in DC plans (see Investment Company Institute 2024). Clark 2023 reports that 58 percent of DC plans in their recordkeeping system in 2022 offer automatic enrollment, up from 56 percent in 2021 and 41 percent in 2015.
- ²¹ See Figures 7 and A7.
- ²² See Figures 6 and A7.
- ²³ Figure A8 also highlights that Individual 401(k) participants’ asset allocation to balanced funds varied widely around an average of 41 percent at year-end 2022 (Figure A6). For example, 26 percent of participants held no balanced funds, while 60 percent of participants held more than 80 percent of their accounts in balanced funds at the end of 2022 (Figure A8). At year-end 2022, 74 percent of 401(k) participants held balanced funds through target date funds and non–target date balanced funds, up from 67 percent in 2020. Sixty-eight percent of 401(k) participants held target date funds, 8 percent held non–target date balanced funds, and 1 percent held both.
- ²⁴ See Holden, VanDerhei, and Bass 2021.
- ²⁵ Plan-specific information on loan provisions is available for the majority of the plans in the sample (including virtually all of the small plans). Some plans without this information are classified as having a loan provision if any participant in the plan has an outstanding loan balance. This may understate the number of plans offering loans (or participants eligible for loans) because some plans may have offered a plan loan, but no participant had taken out a loan. It is likely that this omission is small, as US General Accounting Office 1997 found that more than 95 percent of 401(k) plans that offer loans had at least one plan participant with an outstanding loan.
- ²⁶ For a complete time series of the percentage of eligible 401(k) participants with outstanding 401(k) loans and loan amounts as a percentage of the remaining 401(k) plan account balance, see Holden et al. 2013.
- For an analysis of 401(k) participant loan activity over time, see Holden, Bass, and Copeland 2023b.
- ²⁷ This may reflect changes instituted by the Bipartisan Act of 2018, which as explained by the Internal Revenue Service 2020, among other things:
- The Bipartisan Budget Act of 2018 mandated changes to the 401(k) hardship distribution rules. On November 14, 2018, the Internal Revenue Service released proposed regulations to implement these changes. Generally, these changes relax certain restrictions on taking a hardship distribution. Although the provisions are effective January 1, 2019, for calendar year plans, the proposed regulations do not require changes for 2018–2019. Effective January 1, 2020, following issuance of final regulations, certain changes will be required.... Under the proposed regulations, effective January 1, 2019, a plan

administrator has the option of including or excluding the requirement that the employee first obtain a plan loan prior to requesting a hardship distribution (Reg. Section 1.401(k)-1(d)(3)(iv)(E)).

See also Dold 2018 and Joint Committee on Taxation 2019 (pp. 104–105). Holden, Schrass, and Chism 2023 find an ongoing downward trend in the percentage of 401(k) plan participants with outstanding loans in recent periods.

²⁸ In plan year 2021 (latest data available), less than 1 percent of the \$8.0 trillion in 401(k) plan assets were participant loans. See Table D6 in US Department of Labor, Employee Benefits Security Administration 2023a.

²⁹ See also Figure A12.

³⁰ This pattern is driven in part by restrictions placed on loan amounts.

³¹ The EBRI/ICI 401(k) database environment is certified to be fully compliant with the ISO-27002 Information Security Audit standard. Moreover, EBRI has obtained a legal opinion that the methodology used meets the privacy standards of the Gramm-Leach-Bliley Act. At no time has any nonpublic personal information that is personally identifiable, such as a Social Security number, been transferred to or shared with EBRI.

³² Account balances are net of unpaid loan balances. Thus, unpaid loan balances are not included in any of the eight asset categories described.

³³ The cross-sectional analysis for this publication found that consolidating the multiple accounts across a majority of the providers to the single individual owning them resulted in an overall increase of 3.4 percent in the average 401(k) plan account balance. This statistic should be interpreted with caution, as it may not represent the total 401(k) assets owned by the individual. The impact of account consolidation varied with the participant's age and tenure with the current employer. The largest increases in average account balance occurred among older participants with fewer years of tenure. For example, among participants in their sixties with two or fewer years of tenure, the average account balance increased 9.7 percent with the consolidation of their multiple accounts. Among participants in their fifties or sixties with more than 30 years of tenure, the average account balance increased 3.1 percent with the consolidation of their multiple accounts.

³⁴ This system of classification does not consider the number of distinct investment options presented to a given participant but rather the types of options presented. Preliminary research analyzing 1.4 million participants drawn from the 2000 EBRI/ICI 401(k) database suggests that the sheer number of investment options presented does not influence participants. On average, participants have 10.4 distinct options but, on average, choose only 2.5 (Holden and VanDerhei 2001b). In addition, the preliminary analysis

found that 401(k) participants are not naive—that is, when given n options, they do not divide their assets among all n . Indeed, less than 1 percent of participants followed a $1/n$ asset allocation strategy. BrightScope and Investment Company Institute 2023 reports an average of 28 investment options in 2020 and an average of 20 investment options when a target date fund suite is counted as a single investment option. Surveys of individuals owning DC plan accounts find that DC-owning individuals appreciate the investment choice and control and typically agree that their plan offers a good lineup of investment options. See Holden et al. 2024.

³⁵ The asset allocation path that the target date fund follows to shift its focus from growth to income over time is typically referred to as the glide path. Because discussions of asset allocation usually focus on the percentage of the portfolio invested in equities, the glide path generally reflects the declining percentage of equities in the portfolio as it approaches and passes the target date, which is usually indicated in the fund's name. The target date generally is the date at which the typical investor for whom that fund is designed would reach retirement age and stop making new investments in the fund.

³⁶ Lifestyle funds maintain a predetermined risk level and generally use words such as “conservative,” “moderate,” or “aggressive” in their name to indicate the fund's risk level. Lifestyle funds generally are included in the non–target date balanced fund category.

³⁷ GICs are insurance company products that guarantee a specific rate of return on the invested capital over the life of the contract.

³⁸ Other stable value funds include synthetic GICs, which consist of a portfolio of fixed-income securities “wrapped” with a guarantee (typically by an insurance company or a bank) to provide benefit payments according to the plan at book value.

³⁹ Some recordkeepers supplying data were unable to provide complete asset allocation detail on certain pooled asset classes for one or more of their clients. The final EBRI/ICI 401(k) database includes only plans for which at least 90 percent of all plan assets could be identified.

⁴⁰ For additional detail, see Figure A1 in the appendix.

⁴¹ See Figure A1 in the appendix.

⁴² For 401(k) asset figures, see Investment Company Institute 2024.

⁴³ Estimates of the number of 401(k) plans and active participants are based on a combination of data from the US Department of Labor's Employee Benefits Security Administration and Bureau of Labor Statistics. See discussion in note 2.

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