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What Does Consistent Participation in 401(k) Plans Generate? Changes in 401(k) Plan Account Balances, 2010–2019

KEY FINDINGS

This paper provides an update of a longitudinal analysis of 401(k) plan participants drawn from the EBRI/ICI 401(k) database.

Because the annual cross sections cover participants with a wide range of participation experience in 401(k) plans, meaningful analysis of the potential for 401(k) participants to accumulate retirement assets must examine the 401(k) plan accounts of participants who maintained accounts over all of the years being studied (consistent participants). For example, because of changing samples of providers, plans, and participants, changes in account balances for the entire database are not a reliable measure of how individual participants have fared. A consistent sample is necessary to accurately gauge changes, such as growth in account balances, experienced by individual 401(k) plan participants over time.

A few key insights emerge from looking at the 1.3 million consistent participants in the EBRI/ICI 401(k) database over the nine-year period from year-end 2010 to year-end 2019.

- » The average 401(k) plan account balance for consistent participants rose each year from 2010 through year-end 2019, with the exception of a slight decline in 2018. Overall, the average account balance increased at a compound annual average growth rate of 15.6 percent from 2010 to 2019, rising from \$58,658 to \$216,690 at year-end 2019.
- » The median 401(k) plan account balance for consistent participants increased at a compound annual average growth rate of 18.8 percent over the period, to \$108,433 at year-end 2019.
- » The growth in account balances for consistent participants generally exceeded the growth rate for all participants in the EBRI/ICI 401(k) database.

Key findings continued »

* Last updated in November 2022

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Sarah Holden, ICI senior director of retirement and investor research; Steven Bass, ICI economist; and Craig Copeland, EBRI director of wealth benefits research, prepared this report. Thanks to Adam Bensimhon, EBRI data compliance and IT director, for data tabulations.

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"[401\(k\) Plan Asset Allocation, Account Balances, and Loan Activity in 2019](#)" reported year-end 2019 account balance, asset allocation, and loan activity results for the EBRI/ICI 401(k) database, which consists of a large cross section of 11.8 million 401(k) plan participants. This paper presents a longitudinal analysis—the analysis of 401(k) participants who maintained accounts each year from 2010 through 2019—that was not included in the previous report. The longitudinal analysis tracks the account balances of 1.3 million 401(k) plan participants who had accounts in the year-end 2010 EBRI/ICI 401(k) database and each subsequent year through year-end 2019 (a nine-year period). 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.

Key findings continued »

Younger 401(k) participants or those with smaller year-end 2010 balances experienced higher percent growth in account balances compared with older participants or those with larger year-end 2010 balances. Three primary factors affect account balances: contributions, investment returns, and withdrawal and loan activity. The percent change in average 401(k) plan account balance of participants in their thirties was heavily influenced by the relative size of their contributions to their account balances and increased at a compound average growth rate of 26.0 percent per year between year-end 2010 and year-end 2019.

401(k) participants tend to concentrate their accounts in equity securities. The asset allocation of the 1.3 million 401(k) plan participants in the consistent group was broadly similar to the asset allocation seen in the annual EBRI/ICI 401(k) database updates. On average at year-end 2019, more than two-thirds of consistent 401(k) participants' assets were invested in equities—through equity funds, the equity portion of target date funds, the equity portion of non-target date balanced funds, or company stock. Younger 401(k) participants tend to have higher concentrations in equities than older 401(k) participants.

Introduction

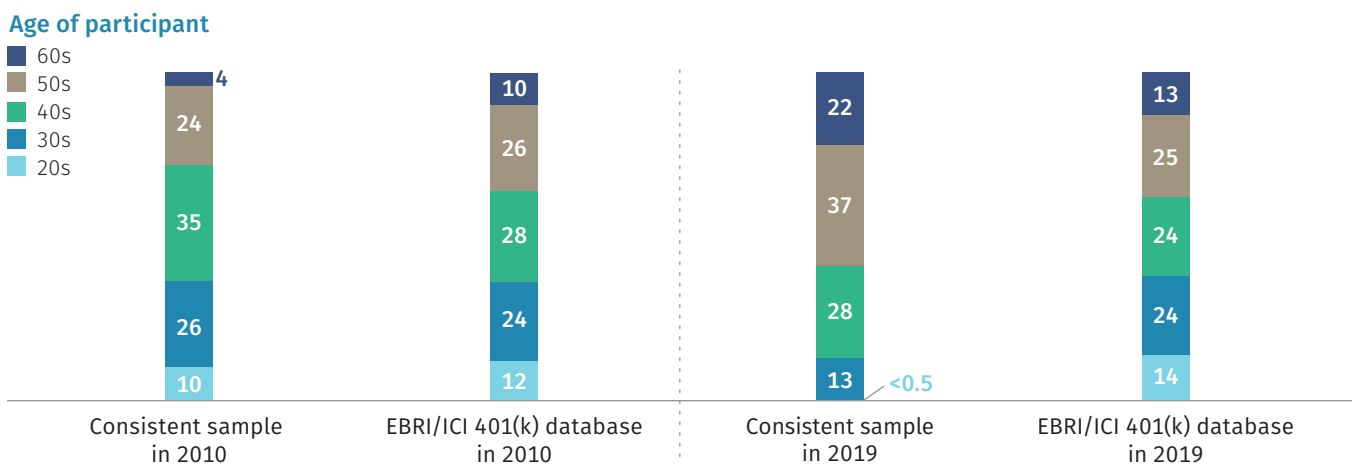
The EBRI/ICI 401(k) database, which is constructed from the administrative records of 401(k) plans, represents a large cross section, or snapshot, of 401(k) plans at the end of each year. It is a cross section of the entire population of 401(k) plan participants, and it represents a wide range of participants—including those who are young and individuals who are new to their jobs, as well as older participants and those who have been with their current employers for many years. For example, at year-end 2019, 14 percent of 401(k) participants in the EBRI/ICI 401(k) database were in their twenties, while 13 percent were in their sixties (Figure 1); 20 percent of participants had two or fewer years of tenure at their current jobs, while 4 percent had more than 30 years of tenure (Figure 2). Participants in the consistent sample are both older and longer tenured than participants in the overall database at year-end 2019.

Although annual updates of the EBRI/ICI 401(k) database provide valuable perspectives of 401(k) plan account balances, asset allocation, and loan activity across wide cross sections of participants, cross-sectional analyses are not well suited to examining the impact of consistent participation in 401(k) plans. 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.¹ In addition, the analysis covers account balances held in 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.² To explore the full impact of ongoing participation in 401(k) plans, and to understand how 401(k) plan participants have fared over an extended period, it is important to analyze a consistent group of participants (a longitudinal sample) who have been part of the database for an extended period—in this case, 2010 through 2019.

FIGURE 1

Consistent Sample Was Older Than Participants in the EBRI/ICI 401(k) Database at Year-End 2019

Percentage of participants by age, year-end



Note: The consistent sample is 1.3 million 401(k) plan participants with account balances at the end of each year from 2010 through 2019. Participant age is age as of the year-end indicated.

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

Sample of Consistent 401(k) Participants, 2010–2019

Among the 401(k) participants with accounts at the end of 2010 in the EBRI/ICI 401(k) database, 1.3 million are in the consistent sample.³ These consistent participants had accounts at the end of each year from 2010 through 2019; they make up a longitudinal sample, which removes the effect of participants and plans entering and leaving the database. Initially, this group was demographically similar to the entire EBRI/ICI 401(k) database at year-end 2010. However, by year-end 2019, these participants had grown older, accrued longer job tenures, and accumulated larger account balances compared with participants in the year-end 2019 cross section.

Age and Tenure of Consistent 401(k) Participants

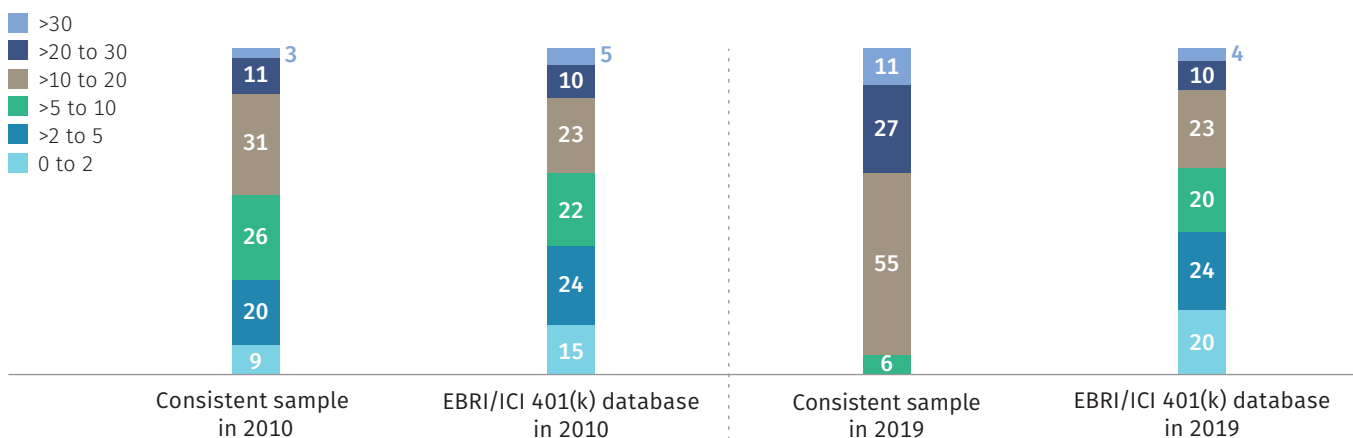
At year-end 2010, the consistent group was similar in age to the participants in the entire EBRI/ICI database. For example, 36 percent of the participants in the consistent sample were in their twenties or thirties in 2010, the same as participants in the entire database (Figure 1).⁴ Thirty-five percent of the participants in the consistent sample were in their forties in 2010, while 28 percent of participants in the entire database were in their forties. Twenty-four percent of the participants in the consistent sample were in their fifties, compared with 26 percent of participants in the EBRI/ICI database overall.

FIGURE 2

Consistent Sample Had Longer Tenure Than Participants in the EBRI/ICI 401(k) Database at Year-End 2019

Percentage of participants by years of tenure, year-end

Years of tenure



Note: The consistent sample is 1.3 million 401(k) plan participants with account balances at the end of each year from 2010 through 2019. Participant tenure is tenure as of the year-end indicated.

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

The tenure composition of the consistent sample also was roughly similar to the tenure composition of 401(k) participants in the year-end 2010 EBRI/ICI 401(k) database.⁵ For example, 14 percent of the consistent sample had more than 20 years of tenure in 2010, similar to the 15 percent of the participants in the entire EBRI/ICI 401(k) database (Figure 2). Twenty-nine percent of the consistent sample had five or fewer years of tenure in 2010, compared with 39 percent of participants in the entire EBRI/ICI 401(k) database.

As expected, the consistent participants who were followed over the nine-year period tended to have longer tenures by year-end 2019, compared with the broader base of 401(k) participants in the EBRI/ICI 401(k) database. Participants in the consistent sample, by definition, had at least nine years of tenure in 2019 (the length of time for the longitudinal analysis), with none having five or fewer years of tenure, 6 percent having more than five to 10 years, 55 percent having more than 10 to 20 years, and 38 percent having more than 20 years (Figure 2). In contrast, in the entire EBRI/ICI 401(k) database in 2019, 44 percent of participants had five or fewer years of tenure, 20 percent had more than five to 10 years, 23 percent had more than 10 to 20 years, and 14 percent had more than 20 years.

By year-end 2019, the consistent sample of 401(k) participants also was older, on average, compared with participants in the entire EBRI/ICI 401(k) database. For example, fewer than 0.5 percent of the participants in the consistent group were in their twenties⁶ and 13 percent were in their thirties at year-end 2019 (Figure 1). In the entire EBRI/ICI 401(k) database at year-end 2019, 14 percent of participants were in their twenties and 24 percent were in their thirties. Thirty-seven percent of the participants in the consistent sample were in their fifties and 22 percent were in their sixties, compared with 25 percent and 13 percent, respectively, in the entire database at year-end 2019.

Consistent Participants Have Accumulated Sizable 401(k) Plan Account Balances

Trends in the consistent group's account balances highlight the accumulation effect of ongoing 401(k) participation. At year-end 2019, 33 percent of the consistent group had more than \$200,000 in their 401(k) plan accounts at their current employers, while another 20 percent had between \$100,000 and \$200,000 (Figure 3). In contrast, in the broader EBRI/ICI 401(k) database, 11 percent had accounts with more than \$200,000, and 9 percent had between \$100,000 and \$200,000.

Reflecting their higher average age and tenure, the consistent group also had average and median account balances that were much higher than the average and median account balances of the broader EBRI/ICI 401(k) database (Figure 4). At year-end 2019, the average 401(k) plan account balance of the consistent group was \$216,690, more than two and a half times the average account balance of \$81,140 among participants in the entire EBRI/ICI 401(k) database. The median 401(k) plan account balance among the consistent participants was \$108,433 at year-end 2019, more than six times the median account balance of \$17,587 for participants in the entire EBRI/ICI 401(k) database.

401(k) plan account balances tend to increase with both age and tenure among the consistent group of participants, as they do in the cross-sectional EBRI/ICI 401(k) database. Younger participants or those with shorter job tenures at their current employers tended to have smaller account balances, while those who were older or had longer job tenures tended to have higher account balances.⁷ For example, within the consistent group, among 401(k) participants with more than 10 to 20 years of tenure at year-end 2019, older participants tended to have higher balances than younger participants: those in their thirties with more than 10 to 20 years of tenure had an average account balance of \$115,692, compared with an average of \$143,707 for participants in their sixties with more than 10 to 20 years of tenure (Figure 5). Among consistent participants in their sixties at year-end 2019, those with more than five to 10 years of tenure had a lower average 401(k) plan balance (\$133,398) than those with more than 30 years of tenure (\$408,090).

FIGURE 3

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

Percentage of participants with account balances in specified ranges, year-end 2019



Note: 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.

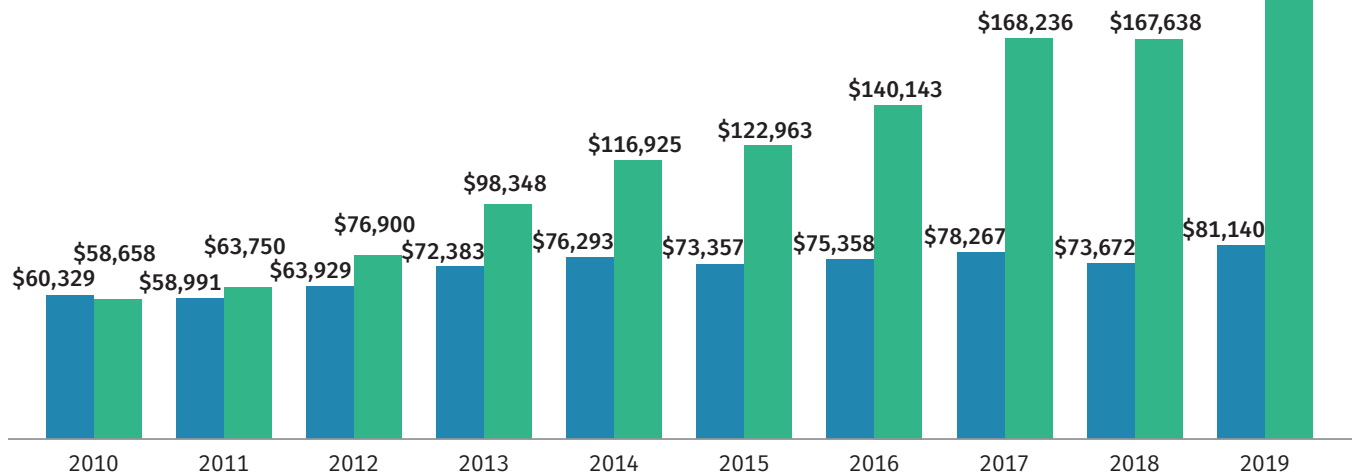
Source: Tabulations from EBRI/ICI Participant-Directed Retirement Plan Data Collection Project

FIGURE 4

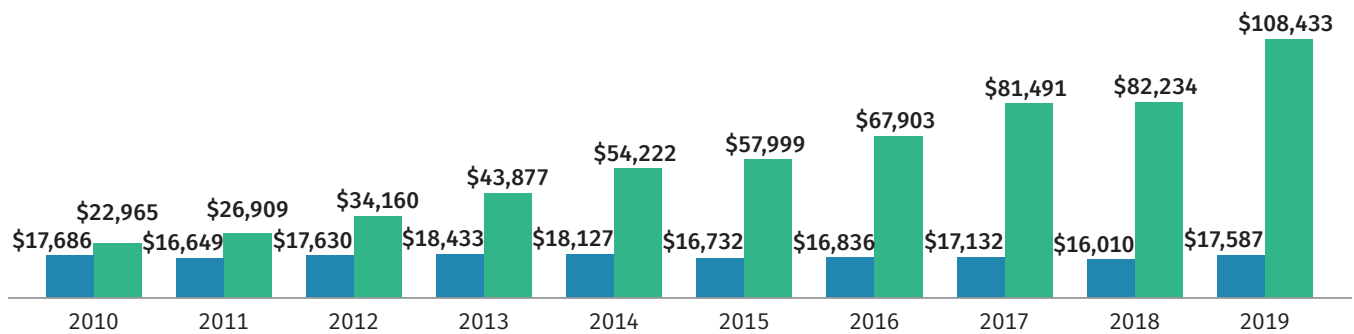
Consistent 401(k) Participants Accumulate Significant Account Balances

■ EBRI/ICI 401(k) database
 ■ Consistent sample

Average



Median



Note: 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

FIGURE 5

401(k) Plan Account Balances Among Consistent 401(k) Participants

Average 401(k) plan account balance for consistent 401(k) participants by age and tenure, year-end

Age group	Tenure (years)	2010	2011	2012	2013	2014
30s	All	\$13,995	\$17,775	\$24,598	\$33,734	\$44,403
	>5 to 10	3,824	8,204	14,783	24,492	33,752
	>10 to 20	15,711	19,555	26,493	35,423	47,069
40s	All	39,825	44,786	56,571	75,244	90,980
	>5 to 10	8,866	15,107	24,303	37,405	50,036
	>10 to 20	34,899	40,167	51,401	68,882	84,483
	>20 to 30	62,270	66,928	81,354	105,160	125,668
50s	All	71,720	77,347	93,168	119,799	141,624
	>5 to 10	15,051	21,985	32,321	47,217	61,024
	>10 to 20	41,119	46,546	58,421	76,671	93,893
	>20 to 30	96,010	101,848	120,949	153,941	181,403
	>30	135,775	142,385	164,827	207,565	242,947
60s	All	83,479	89,264	104,335	129,427	151,406
	>5 to 10	21,278	27,939	38,200	52,530	65,629
	>10 to 20	36,696	41,814	51,663	65,603	80,595
	>20 to 30	90,464	95,968	111,982	137,049	161,794
	>30	174,198	181,446	203,665	249,292	289,526
All	All	58,658	63,750	76,900	98,348	116,925

Continued on next page

FIGURE 5, *continued*

401(k) Plan Account Balances Among Consistent 401(k) Participants

Average 401(k) plan account balance for consistent 401(k) participants by age and tenure, year-end

Age group	Tenure (years)	2015	2016	2017	2018	2019
30s	All	\$49,863	\$61,419	\$78,422	\$80,713	\$112,024
	>5 to 10	40,466	52,630	70,128	74,266	105,742
	>10 to 20	52,436	64,309	81,268	83,488	115,692
40s	All	97,718	114,657	141,640	142,517	191,570
	>5 to 10	58,184	73,308	95,039	99,197	137,042
	>10 to 20	91,327	108,366	134,115	135,443	182,272
	>20 to 30	132,128	151,208	182,844	183,088	246,713
50s	All	149,049	170,087	205,424	205,663	268,560
	>5 to 10	69,083	85,233	107,940	113,084	152,730
	>10 to 20	101,089	118,391	144,704	147,060	194,270
	>20 to 30	188,881	213,206	255,387	254,903	333,777
	>30	250,611	279,200	329,604	327,421	421,928
60s	All	156,019	172,124	198,782	193,843	235,247
	>5 to 10	71,738	85,054	102,555	105,476	133,398
	>10 to 20	85,890	97,914	115,444	115,444	143,707
	>20 to 30	165,785	181,626	208,535	204,019	248,692
	>30	291,457	314,552	354,777	342,082	408,090
All	All	122,963	140,143	168,236	167,638	216,690

Note: Age and tenure groups are based on participant age and tenure at year-end 2019. The group of participants in their twenties is not reported separately because of small sample size. The *all* category includes participants with missing tenure information. 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

Changes in Consistent 401(k) Participants' Account Balances

In any given year, the change in a participant's account balance is a combination 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 401(k) plan account balance is influenced by the magnitudes of these three factors relative to the starting account balance. For example, a contribution of a given dollar amount produces a larger growth rate when added to a smaller account than it would if added to a larger one. On the other hand, investment returns of a given percentage produce larger dollar increases (or decreases) when compounded on a larger asset base. In other words, growth rates are a function of the relative size of the dollar adjustment to the size of the individual account.

FIGURE 6

Changes in 401(k) Plan Account Balances Among Consistent 401(k) Participants

Percent change in average 401(k) plan account balance among consistent 401(k) participants by age and tenure

Age group	Tenure (years)	2010–2011	2011–2012	2012–2013	2013–2014	2014–2015
30s	All	27.0%	38.4%	37.1%	31.6%	12.3%
	>5 to 10	114.5	80.2	65.7	37.8	19.9
	>10 to 20	24.5	35.5	33.7	32.9	11.4
40s	All	12.5	26.3	33.0	20.9	7.4
	>5 to 10	70.4	60.9	53.9	33.8	16.3
	>10 to 20	15.1	28.0	34.0	22.6	8.1
	>20 to 30	7.5	21.6	29.3	19.5	5.1
50s	All	7.8	20.5	28.6	18.2	5.2
	>5 to 10	46.1	47.0	46.1	29.2	13.2
	>10 to 20	13.2	25.5	31.2	22.5	7.7
	>20 to 30	6.1	18.8	27.3	17.8	4.1
	>30	4.9	15.8	25.9	17.0	3.2
60s	All	6.9	16.9	24.0	17.0	3.0
	>5 to 10	31.3	36.7	37.5	24.9	9.3
	>10 to 20	13.9	23.6	27.0	22.9	6.6
	>20 to 30	6.1	16.7	22.4	18.1	2.5
	>30	4.2	12.2	22.4	16.1	0.7
All	All	8.7	20.6	27.9	18.9	5.2

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FIGURE 6, *continued*

Changes in 401(k) Plan Account Balances Among Consistent 401(k) Participants

Percent change in average 401(k) plan account balance among consistent 401(k) participants by age and tenure

Age group	Tenure (years)	2015–2016	2016–2017	2017–2018	2018–2019	2010–2019	Compound annual average growth rate, 2010–2019
30s	All	23.2%	27.7%	2.9%	38.8%	700.5%	26.0%
	>5 to 10	30.1	33.2	5.9	42.4	2,665.2	44.6
	>10 to 20	22.6	26.4	2.7	38.6	636.4	24.8
40s	All	17.3	23.5	0.6	34.4	381.0	19.1
	>5 to 10	26.0	29.6	4.4	38.2	1,445.7	35.6
	>10 to 20	18.7	23.8	1.0	34.6	422.3	20.2
	>20 to 30	14.4	20.9	0.1	34.8	296.2	16.5
50s	All	14.1	20.8	0.1	30.6	274.5	15.8
	>5 to 10	23.4	26.6	4.8	35.1	914.7	29.4
	>10 to 20	17.1	22.2	1.6	32.1	372.5	18.8
	>20 to 30	12.9	19.8	-0.2	30.9	247.6	14.8
	>30	11.4	18.1	-0.7	28.9	210.8	13.4
60s	All	10.3	15.5	-2.5	21.4	181.8	12.2
	>5 to 10	18.6	20.6	2.8	26.5	526.9	22.6
	>10 to 20	14.0	17.9	0.0	24.5	291.6	16.4
	>20 to 30	9.6	14.8	-2.2	21.9	174.9	11.9
	>30	7.9	12.8	-3.6	19.3	134.3	9.9
All	All	14.0	20.0	-0.4	29.3	269.4	15.6

Note: Age and tenure groups are based on participant age and tenure at year-end 2019. The group of participants in their twenties is not reported separately because of small sample size. The *all* category includes participants with missing tenure information. 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

Altogether, from year-end 2010 through year-end 2019, the average 401(k) plan account balance among the group of consistent participants more than tripled (increasing by 269 percent), rising from \$58,658 at year-end 2010 to \$216,690 at year-end 2019 (Figures 4, 5, and 6). This translates into a compound annual average

growth rate of 15.6 percent over the nine-year period. The median account balance among this consistent group also grew, more than quadrupling from \$22,965 in 2010 to \$108,433 in 2019 (a compound annual average growth rate of 18.8 percent) (Figure 4).

Among the consistent group, individual 401(k) participants experienced a wide range of outcomes, often influenced by the relationship among contributions, investment returns, and withdrawal or loan activity. Participants who were younger or had fewer years of tenure experienced the largest percent increases in average account balance between year-end 2010 and year-end 2019. For example, the average account balance of 401(k) participants in their thirties rose 700.5 percent (a 26.0 percent compound annual average growth rate) between the end of 2010 and the end of 2019 (Figures 5 and 6). Because younger participants' account balances tended to be smaller (Figure 5), their contributions produced significant percent growth in their account balances. In contrast, the average account balance of older participants, or those with longer tenures—both of whom tended to have larger balances at the beginning of the study period than younger workers or those with shorter tenures—showed more modest percent growth in account size (Figure 6). For example, the average account balance of 401(k) participants in their sixties increased 181.8 percent (a 12.2 percent compound annual average growth rate) between year-end 2010 and year-end 2019. Investment returns, rather than annual contributions,⁸ generally account for most of the change in accounts with larger balances.

Investment returns, which vary with 401(k) plan account asset allocation, also influence the changes in participants' accounts. Although asset allocation varied with age, and many participants held a range of investments, stock market performance tends to have an impact on these balances because, in large part, 401(k) plan participants' balances tended to be weighted toward equities. Altogether, at year-end 2019, equities—equity funds, the equity portion of target date funds, the equity portion of non-target date balanced funds,⁹ and company stock—represented more than two-thirds of consistent 401(k) plan participants' assets (Figure 7, lower panel).¹⁰

The asset allocation of participants in the consistent sample varied with participant age, a pattern that also is observed in the cross-sectional EBRI/ICI 401(k) database.¹¹ Younger participants generally tended to favor equity funds and target date funds, while older participants were more likely to invest in fixed-income securities such as bond funds, money funds, or guaranteed investment contracts (GICs) and other stable value funds.

Finally, loan or withdrawal activities can have an impact on 401(k) plan account balances. Although in general, very few active 401(k) plan participants take withdrawals,¹² participants in their sixties tend to have a higher propensity to make withdrawals, as they approach retirement.¹³

FIGURE 7

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

Percentage of 401(k) plan account balances

Year-end 2010										
Age group	Balanced funds			Bond funds	Money funds	GICs ^{2,3} and other stable value funds	Company stock ²	Other	Unknown	Memo: equities ⁴
	Equity funds	Target date funds ^{1,2}	Non-target date balanced funds							
30s	32.3%	37.1%	3.9%	4.7%	1.9%	5.7%	11.8%	0.3%	2.2%	78.3%
40s	43.8	21.7	4.2	5.9	2.7	7.0	12.5	0.6	1.6	73.8
50s	44.5	15.9	4.9	6.9	3.2	9.6	12.7	1.0	1.3	68.1
60s	39.6	15.7	5.0	8.6	4.9	13.2	10.7	1.2	1.2	59.4
All consistent sample ⁵	42.0	17.4	4.8	7.3	3.8	10.5	11.8	1.0	1.3	65.9
2010 EBRI/ICI 401(k) database ⁶	42.0	11.1	7.1	11.6	4.4	10.3	8.0	2.9	2.6	62.0
Year-end 2019										
Age group	Balanced funds			Bond funds	Money funds	GICs ^{2,3} and other stable value funds	Company stock ²	Other	Unknown	Memo: equities ⁴
	Equity funds	Target date funds ^{1,2}	Non-target date balanced funds							
30s	36.4	41.0	2.7	4.0	0.7	2.8	9.7	2.2	0.6	82.8
40s	45.2	30.3	1.9	5.3	0.8	4.2	9.5	2.1	0.7	76.6
50s	43.8	27.4	2.6	6.9	0.9	6.5	9.0	2.2	0.8	67.9
60s	38.2	28.4	2.5	8.6	1.3	10.6	7.3	2.2	0.9	58.1
All consistent sample ⁵	42.2	29.1	2.4	6.8	1.0	6.9	8.7	2.2	0.8	68.3
2019 EBRI/ICI 401(k) database ⁷	42.1	30.7	3.5	8.1	1.0	6.9	5.2	2.0	0.5	70.2

¹ 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.

² Not all participants are offered this investment option.

³ GICs are guaranteed investment contracts.

⁴ Equities include equity funds, company stock, the equity portion of target date funds, and the equity portion of non-target date balanced funds.

⁵ Asset allocation by age group is among the consistent sample of 1.3 million 401(k) plan participants with account balances at the end of each year from 2010 through 2019. The group of participants in their twenties is not reported separately because of small sample size.

⁶ The year-end 2010 EBRI/ICI 401(k) database represents 23.4 million 401(k) plan participants.

⁷ The year-end 2019 EBRI/ICI 401(k) database represents 11.8 million 401(k) plan participants.

Note: Funds include mutual funds, bank collective trusts, life insurance separate accounts, and any pooled investment product primarily invested in the security indicated. Age group is based on the participant's age at year-end 2019. Percentages are dollar-weighted averages.

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

Background Factors Influencing 401(k) Plan Assets

Aggregate data on 401(k) plans provide insight into the possible influence of each of the factors that cause changes in account balances: contributions, investment returns, and withdrawal or loan activity. Between year-end 2010 and year-end 2019 (the latest data available), contributions to 401(k) plans have averaged \$381 billion a year, and benefits paid (including rollovers) have averaged \$380 billion (Figure 8). Investment returns—interest, dividends, and realized and unrealized asset appreciation/depreciation—vary significantly from year to year. For example, on net they had nearly no impact on assets in 2011 and 2015, but provided a significant boost as the stock market rose sharply from 2012 through 2014, and in 2016, 2017, and 2019. From year-end 2010 through year-end 2019, investment returns averaged \$355 billion per year.

Contributions—which positively affect 401(k) plan account balances—include both employer and employee contributions, and most 401(k) participants are in plans where the employer contributes. In 2019, more than nine in 10 participants were in 401(k) plans where the

employer made contributions (Figure 9). Although this figure fell slightly in the wake of the financial market crisis, reaching a low of 85 percent in 2010, it had generally rebounded during the longitudinal study. Regarding individual participants' contribution activity, defined contribution (DC) plan participants tend to continue contributing in any given year to their plans.¹⁴

Between year-end 2010 and year-end 2019, the US stock market generally rose (Figure 10), which tends to provide a boost to 401(k) plan accounts holding equities. On average, about two-thirds of the consistent sample of 401(k) participants' account balances were invested in equities (Figure 7). Subdued stock market performance in 2011 was followed by stronger growth in 2012 through 2014 (with particularly strong appreciation in 2013); growth then moderated in 2015, increased in 2016 and 2017, fell at the end of 2018, and increased in 2019 (Figure 10). Though contributions and loan repayments also play a role in the growth of the average 401(k) plan account balances observed, the pattern of account balance growth rates from year to year also reflects the stock market performance.

FIGURE 8

401(k) Plan Contributions, Benefits Disbursed, Investment Returns, and Assets

Annual flows reported on Form 5500 and year-end assets, billions of dollars, 2000–2021

	Total contributions ¹	Total benefits disbursed ²	Interest, dividends, gains, and other items ³	Assets at year-end ⁴
2000	\$169	\$172	-\$79	\$1,738
2001	174	147	-119	1,701
2002	182	147	-203	1,565
2003	186	141	300	1,932
2004	204	167	204	2,193
2005	223	189	146	2,393
2006	251	228	303	2,773
2007	273	261	215	2,975
2008	285	233	-770	2,203
2009	256	206	431	2,718
2010	265	243	337	3,119
2011	283	250	-1	3,112
2012	303	282	357	3,495
2013	325	326	645	4,148
2014	349	366	278	4,406
2015	378	386	-1	4,377
2016	399	391	335	4,741
2017	429	425	763	5,486
2018	464	474	-251	5,207
2019	499	519	1,074	6,256
2020	N/A	N/A	N/A	6,840
2021	N/A	N/A	N/A	7,725

¹ Total contributions include both employer and employee contributions.

² Total benefits disbursed include both benefits paid directly from trust funds and premium payments made by plans to insurance carriers. Amounts exclude benefits paid directly by insurance carriers.

³ This category includes interest, dividends, rent, net gains or losses on sale of assets, unrealized appreciation or depreciation of assets, and other income and expenses. The bulk of this category is net investment gains or losses.

⁴ Estimates through 2019 are based on the Department of Labor Form 5500 Research File.

Note: Data exclude plans covering only one participant.

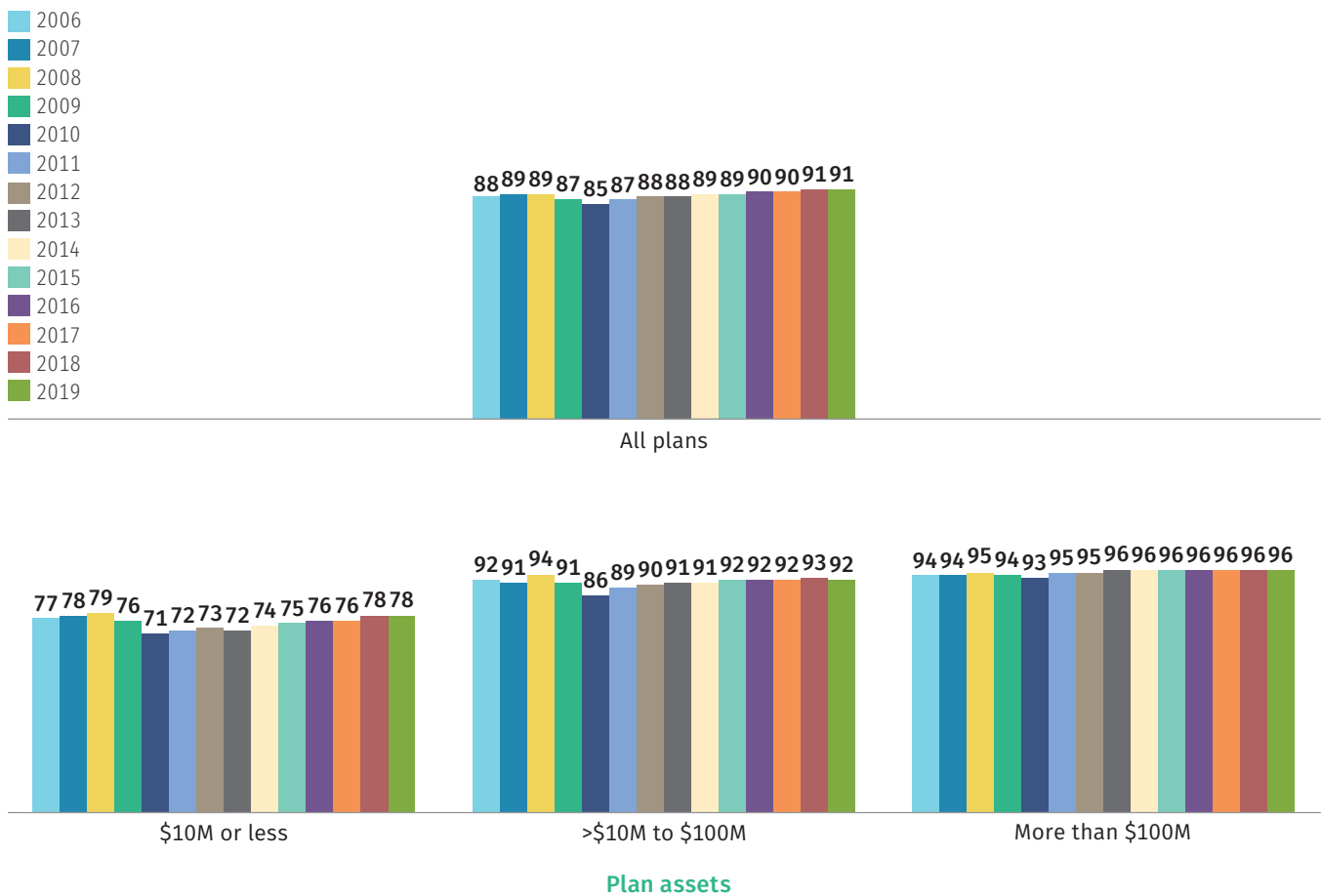
N/A = not available

Sources: Investment Company Institute and Department of Labor

FIGURE 9

Most 401(k) Plan Participants Are in Plans with Employer Contributions

Percentage of active 401(k) participants in plans with employer contributions by plan assets, plan year



Source: ICI tabulations of US Department of Labor Form 5500 Research File

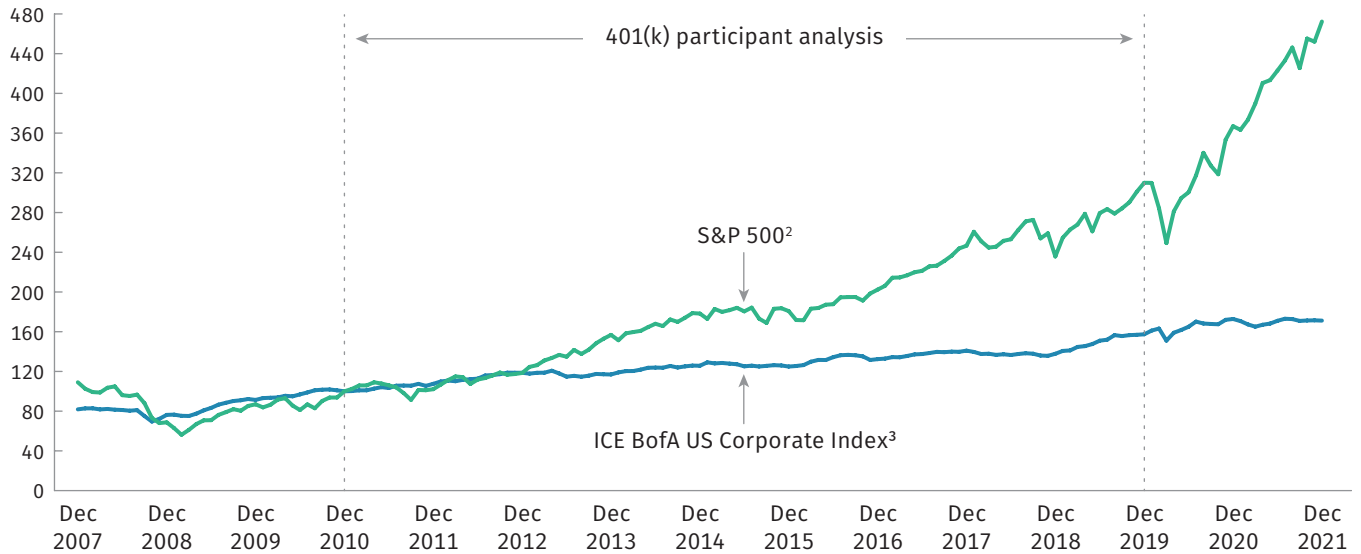
Withdrawals and borrowing reduce 401(k) plan account balances in the EBRI/ICI 401(k) database, while loan repayment has a positive impact. Withdrawal activity among active DC plan participants is relatively rare. Typically, fewer than 5 percent of active DC plan participants take any withdrawal in a given year, with fewer than 2 percent taking hardship withdrawals.¹⁵ Data from the EBRI/ICI 401(k) database indicate that 18 percent of 401(k) plan participants in plans offering

loans had loans outstanding at year-end 2019, with the youngest (8 percent of participants in their twenties) and oldest (14 percent of participants in their sixties) less likely to have loans outstanding than those in their thirties, forties, or fifties (Figure 11).¹⁶ In the database, a participant’s account balance is reduced in the year that the loan is originated, but repayment of the loan in the ensuing years contributes to account growth.

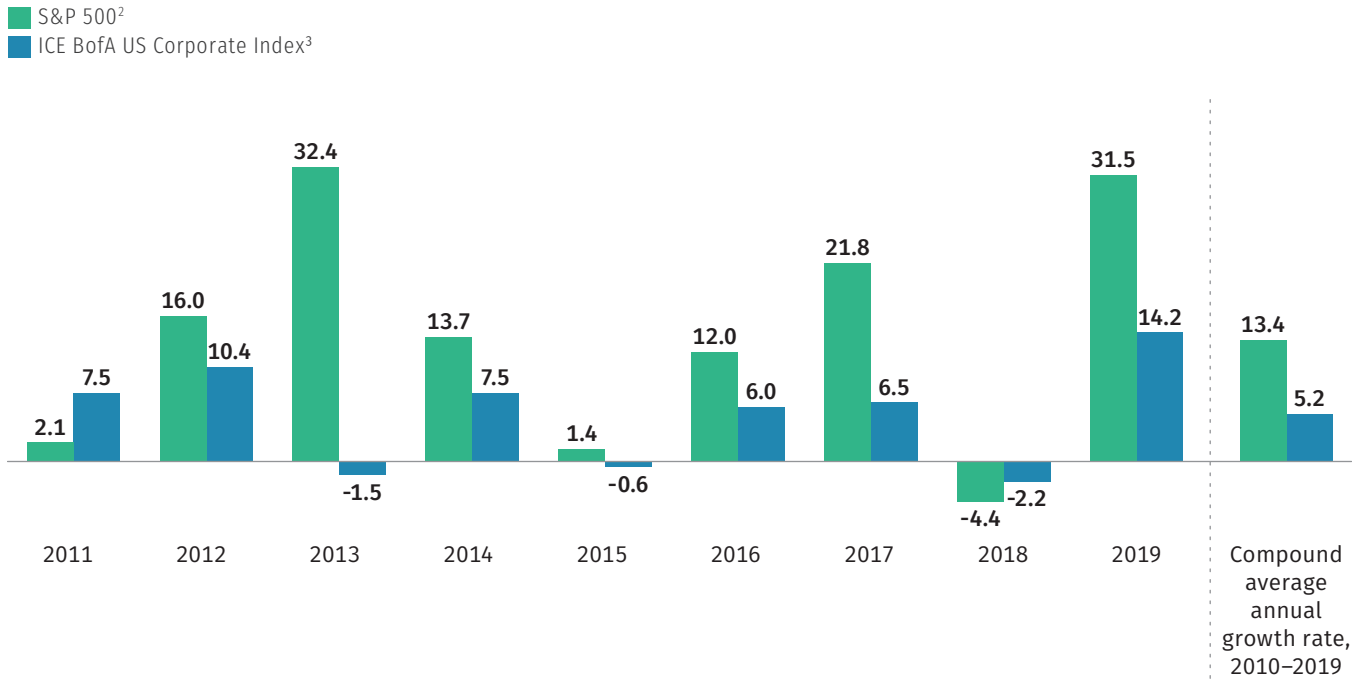
FIGURE 10

Domestic Stock and Bond Market Total Return Indexes

Month-end level¹



Annual percent change in total return index



¹ Indexes are set to 100 in December 2010.

² The S&P 500 index measures the performance of 500 stocks chosen for market size, liquidity, and industry group representation.

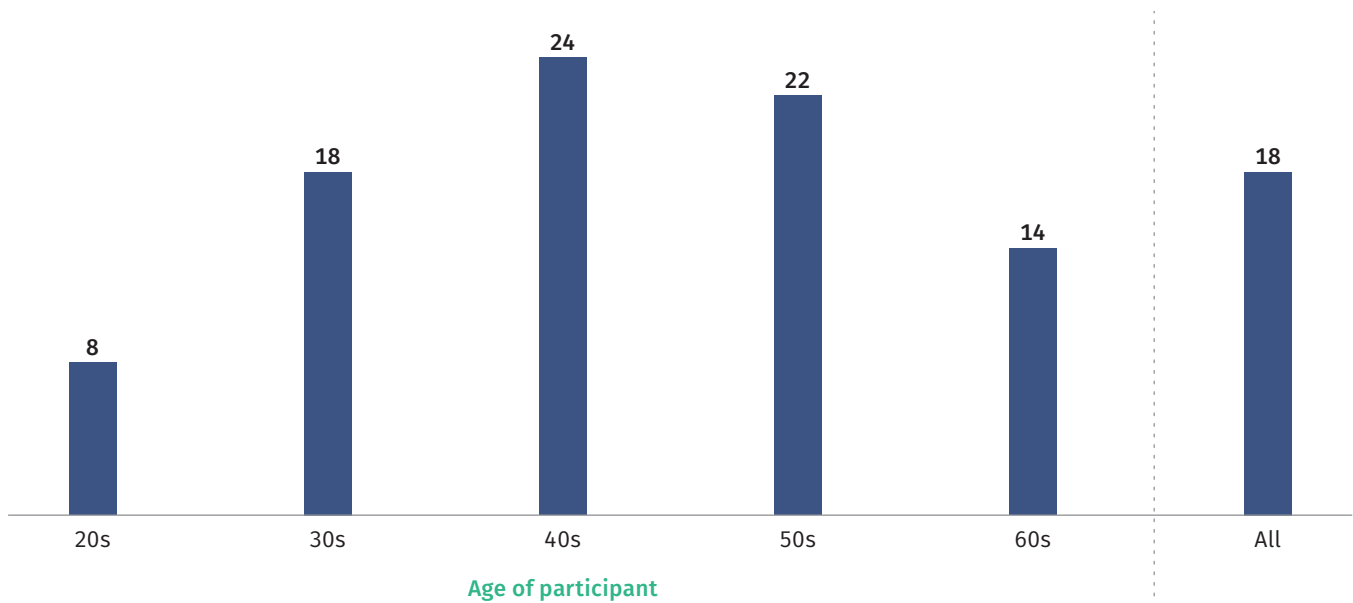
³ The ICE BofA US Corporate Index tracks the performance of investment grade corporate debt that is publicly issued in the US domestic market and denominated in US dollars.

Sources: Yahoo, Federal Reserve Bank of St. Louis, ICE Data Indices, and Standard & Poor's

FIGURE 11

Less Than One-Fifth of Eligible 401(k) Plan Participants Have Loans Outstanding

Percentage of eligible 401(k) plan participants with loans outstanding, year-end 2019



Note: Eligible 401(k) plan participants are those in 401(k) plans that offer loans.

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

Additional Reading

- » **The EBRI/ICI 401(k) Database**
www.ici.org/research/investors/ebri_ici
- » **The BrightScope/ICI Defined Contribution Plan Profile**
www.ici.org/research/retirement/dc-plan-profile
- » **Defined Contribution Plan Participants' Activities**
www.ici.org/research/investors/defined
- » **The US Retirement Market**
www.ici.org/research/stats/retirement
- » **Ten Important Facts About 401(k) Plans**
www.ici.org/pdf/ten_facts_401k.pdf

About the EBRI/ICI 401(k) Database

The EBRI/ICI project is unique because of its inclusion of data provided by a wide variety of plan recordkeepers, permitting the analysis of the activity of participants in 401(k) plans of varying sizes—from very large corporations to small businesses—with a variety of investment options.

Sources and Types of Data

Several EBRI and ICI members provided records on active participants in 401(k) plans for which they kept records for year-end 2010 through year-end 2019.¹⁷ These plan recordkeepers include mutual fund companies, banks, insurance companies, and consulting firms. Although the EBRI/ICI 401(k) project has collected data from 1996 through 2019, the universe of data providers varies from year to year. In addition, the plans using a particular provider can change over time. Records were encrypted to conceal the identity of employers and employees, but were coded so that both could be tracked over multiple years.¹⁸ For each participant, data include 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.¹⁹ Plan balances are constructed as the sum of all participant balances in the plan.

Investment Options

In the EBRI/ICI 401(k) database, investment options are grouped into eight broad categories.²⁰ 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. Similarly, bond funds are any pooled account 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 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. Non-target date balanced funds include asset allocation or hybrid funds, in addition to lifestyle funds.²¹ Company stock is equity in the 401(k) plan's sponsor (the employer). Money funds consist of those funds designed to maintain a stable share price. Stable value products, such as GICs²² and other stable value funds,²³ are reported as one category. The *other* category is the residual for other investments, such as real estate funds. The final category, *unknown*, consists of funds that could not be identified.²⁴

Notes

- ¹ 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 retire and roll over their account balances to other tax-qualified accounts.
- ² Account balances are net of unpaid loan balances.
- ³ This number is lower than it would have been if it merely reflected employee turnover and retirement. For example, if 401(k) plan sponsors change their service providers, all participants in those plans would be excluded from the consistent sample.
- ⁴ For the report on the year-end 2010 EBRI/ICI 401(k) database, see Holden et al. 2011.
- ⁵ Tenure refers to years at the current employer and is generally derived from date of hire reported for the participant. Tenure will not reflect the years of participation in the 401(k) plan if the 401(k) plan was added by the employer at a later date or if there are restrictions on participating in the 401(k) plan immediately upon hire.
- ⁶ The consistent participants in their twenties were generally 29 years old at year-end 2019 and 20 years old at year-end 2010.
- ⁷ The cross-sectional EBRI/ICI 401(k) database also shows that younger participants and those with shorter tenures tend to have lower 401(k) balances than those who are older or have longer tenures. See Holden, Bass, and Copeland 2022.
- ⁸ Contribution amounts and contribution rates tend to increase with age and earnings. See Figures A3 and A4 in Brady and Bass 2021 or data tables in Internal Revenue Service, Statistics of Income Division 2022.
- ⁹ At year-end 2019, 61 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. Allocation to equities in target date funds is assumed to vary with investor age. The equity portion was estimated using the industry average equity percentage for the assigned target date fund, which was calculated using the Morningstar Lifecycle Allocation Indexes (see Morningstar 2019).
- ¹⁰ For a description of the investment options, see page 19.
- ¹¹ See Holden, Bass, and Copeland 2022.
- ¹² See Holden and Schrass 2022.
- ¹³ For statistics indicating the higher propensity of withdrawals among participants in their sixties, see Holden and VanDerhei 2002. In addition, nonhardship withdrawals, which are generally limited to employees who are aged 59½ or older, constitute a majority of all withdrawals (see Clark 2022).
- ¹⁴ Data from the ICI Survey of Defined Contribution Plan Recordkeepers find that DC plan participants generally stayed the course through the financial crisis and ensuing years. During each year from 2010 through 2019, fewer than 3 percent of DC plan participants stopped contributing to their 401(k) plan accounts. Some of these participants may have stopped contributing because they reached the contribution limit. See Holden and Schrass 2022 for DC plan participants' annual activities between 2008 and 2021. For an analysis of contribution activity during the bear market of 2000–2002 using the cross-sectional EBRI/ICI 401(k) databases, see Holden and VanDerhei 2004. The analysis finds that, overall, 401(k) participants' contribution rates were little changed in 2000, 2001, and 2002 when compared to 1999. On average, 401(k) participants' contribution behavior does not appear to have been materially affected by the bear market in equities from 2000 through 2002, whether measured in dollar amounts or percentage of salary they contributed.
- ¹⁵ See Holden and Schrass 2022.
- ¹⁶ See Holden, Bass, and Copeland 2022.

- ¹⁷ For the complete update from the year-end 2019 EBRI/ICI 401(k) database, see Holden, Bass, and Copeland 2022.
- ¹⁸ 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.
- ¹⁹ Account balances are net of unpaid loan balances. Thus, unpaid loan balances are not included in any of the eight asset categories described.
- ²⁰ 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. Plan Sponsor Council of America 2020 indicates that in 2019, the average number of investment fund options available for participant contributions was 19 among the more than 600 plans surveyed. BrightScope and Investment Company Institute 2021 reports an average of 28 investment options in 2018, and an average of 21 investment options when a target date fund suite is counted as a single investment option.
- ²¹ 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.
- ²² GICs are insurance company products that guarantee a specific rate of return on the invested capital over the life of the contract.
- ²³ 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.
- ²⁴ 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.

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