

# PERSPECTIVE

Vol. 7 / No. 1

January 2001

Perspective is a series of occasional papers published by the Investment Company Institute, the national association of the American investment company industry.

John Rea,  
executive editor;  
Craig Tyle,  
executive editor;  
Sue Duncan,  
managing editor.

1401 H Street, NW  
Suite 1200  
Washington, DC 20005

[www.ici.org](http://www.ici.org)

## 401(k) Plan Asset Allocation, Account Balances, and Loan Activity in 1999

by Sarah Holden and  
Jack VanDerhei<sup>1</sup>

### OVERVIEW AND SUMMARY

With \$1.7 trillion in assets, 401(k) retirement plans are a significant part of the private pension landscape in the United States. For many U.S. households, 401(k) account balances represent an important component of their financial net worth and will be a significant source of income in retirement. This issue of *Perspective* examines asset allocation, account balances, and loan activity of a large number of 401(k) plan participants in 1999.

This research uses data gathered by the Employee Benefit Research Institute (EBRI)<sup>2</sup> and the Investment Company Institute (ICI)<sup>3</sup> in their collaborative effort, known as the EBRI/ICI Participant-Directed Retirement Plan Data Collection Project.<sup>4</sup> This research extends the previous findings of the project for 1996, 1997, and 1998.<sup>5</sup>

The 1999 EBRI/ICI database contains 10.3 million active 401(k) plan participants in 32,674 plans with \$573.4 billion in assets. The 1999 EBRI/ICI database accounts for 11 percent of all 401(k) plans, 26 percent of all 401(k) participants, and about 35 percent of the assets held in 401(k) plans. The EBRI/ICI database is large and representative of the 401(k) plan participant universe, as it pulls data from a variety of plan recordkeepers and administrators and covers a wide range of plan sizes. The results for year-end 1999 are generally similar to those for previous years.

<sup>1</sup> Sarah Holden, Senior Economist, Research Department at ICI and Jack VanDerhei, Temple University, EBRI Fellow. Special thanks to Luis Alonso at EBRI, who loaded and tabulated the data. In addition, thanks to Janet Thompson-Conley at ICI, who prepared the figures and to Mike Bogdan at ICI, who tabulated the Survey of Consumer Finances data.

<sup>2</sup> The Employee Benefit Research Institute is a nonprofit, nonpartisan, public policy research organization, which does not lobby or take positions on legislative proposals.

<sup>3</sup> The Investment Company Institute is the national association of the American investment company industry. Its membership includes 8,433 open-end investment companies ("mutual funds"), 491 closed-end investment companies and eight sponsors of unit investment trusts. Its mutual fund members have assets of about \$6.8 trillion, accounting for approximately 95% of total industry assets, and over 83 million individual shareholders.

<sup>4</sup> In this effort, EBRI and ICI have collected data from some of their members that serve as plan recordkeepers and administrators. The data include demographic information, annual contributions, plan balances, asset allocation, and loan balances.

<sup>5</sup> For year-end 1998 results, see Sarah Holden, Jack VanDerhei, and Carol Quick, "401(k) Plan Asset Allocation, Account Balances, and Loan Activity in 1998," *Perspective*, Vol. 6, No. 1, January 2000, Investment Company Institute. Summary figures for year-end 1997 are available on ICI's website at [www.ici.org/pdf/per06-01\\_appendix.pdf](http://www.ici.org/pdf/per06-01_appendix.pdf). For year-end 1996 results, see Jack VanDerhei, Russell Galer, Carol Quick, and John Rea, "401(k) Plan Asset Allocation, Account Balances, and Loan Activity," *Perspective*, Vol. 5, No. 1, January 1999, Investment Company Institute. All issues of *Perspective* are available on ICI's website at [www.ici.org/economy/perspective.html](http://www.ici.org/economy/perspective.html).

## Asset Allocation

- ▶ For all 401(k) participants in the 1999 EBRI/ICI database, three-quarters of plan balances are invested directly or indirectly in equity securities. Specifically, 53 percent of plan balances are invested in equity funds, 19 percent in company stock, 10 percent in guaranteed investment contracts (GICs), 7 percent in balanced funds, 5 percent in bond funds, 4 percent in money funds, and 1 percent in other stable value funds.
- ▶ The asset allocation of participants' account balances varies with age. Younger participants tend to concentrate their assets in equity fund investments, while older participants invest more in fixed-income securities.
- ▶ Investment options offered by plan sponsors influence participants' asset allocations. Participants in plans not offering GICs or company stock tend to have the highest allocations to equity funds. Participants in plans offering GICs but not company stock have lower allocations to bond, money, and equity funds. Alternatively, participants in plans offering company stock (but not GICs) have substantially lower allocations to all other investment options, especially equity funds.
- ▶ Participants' asset allocations appear to vary with plan size; however, much of the variation is due to differences among plans' investment options. For example, as plan size increases, the percentage of plan assets invested in equity funds falls, while the share in company stock rises. This trend occurs because few small plans offer company stock as an investment option.
- ▶ Employer contributions in the form of company stock affect participants' asset allocations. In plans where the employer contribution must be invested in company stock, participants have a higher percentage of their self-directed account balances in company stock and a much lower percentage invested in equity funds, when compared with participants in plans without employer-directed contributions.
- ▶ The allocation of plan balances to equity funds varies across participants. About one-third of participants direct more than 80 percent of their account balances to equity funds, while about one-quarter do not hold equity funds. However, more than half of the participants without equity funds hold equity securities through balanced funds and/or company stock. Overall equity-related investments of those without equity funds represent almost half of plan balances.
- ▶ Asset allocation varies with participant salary. As salary increases, the percentage of account balance invested in equity funds tends to rise, while the percentage invested in GICs tends to decline.

## Account Balances

- ▶ The average account balance (net of plan loans) for all participants was \$55,502 at year-end 1999, which is 18 percent higher than the average account balance at year-end 1998. The median account balance was \$15,246 at year-end 1999, which is 17 percent higher than the median account balance at year-end 1998. (The reported account balance represents retirement assets in the 401(k) plan at the participant's current employer. Retirement savings held in plans at previous employers or rolled over into individual retirement accounts (IRAs) are not included in this analysis.)
- ▶ Forty-two percent of participants have account balances of less than \$10,000 in the 401(k) plan at the participant's current employer, while 15 percent have balances greater than \$100,000. Individuals with account balances of less than \$10,000 are primarily young workers or workers with short tenures. In contrast, those with account balances in excess of \$100,000 are primarily older workers or workers with long tenures, who have accumulated larger account balances through years of contributions and the compounding of investment returns.
- ▶ The ratio of account balance to 1999 salary varies with age and tenure. Older participants, who have accumulated larger balances, have higher ratios than younger participants. Similarly, for a given age group, participants with more years of tenure have higher ratios than those with less tenure.
- ▶ The ratio of account balance to 1999 salary varies with salary, increasing slightly as salary rises from \$20,000 to \$80,000. The ratio tends to fall a bit for salaries greater than \$80,000, largely because of contribution and nondiscrimination rule constraints.

## Plan Loans

- ▶ Fifty-eight percent of plans, accounting for 82 percent of participants, offer loans to plan participants. The probability of a plan sponsor offering plan loans to its employees increases with plan size. Indeed, 91 percent of plans with more than 5,000 participants offer plan loans, while less than half of plans with 10 or fewer participants do so.
- ▶ Only 18 percent of eligible participants have outstanding loans at the end of 1999. Loan activity varies with age, tenure, and account balance. Participants between the ages of 30 and 59 are more likely to borrow than older or younger workers. Individuals with relatively short or long periods of tenure are less likely than other participants to have a loan outstanding. Participants with account balances of less than \$10,000 tend to borrow less frequently.
- ▶ For those with outstanding loans at the end of 1999, the level of the unpaid balance represents 14 percent of the account balance, net of the unpaid loan balance.

The remainder of this paper is organized as follows. The next section provides a detailed description of the 1999 EBRI/ICI 401(k) database, compares the 1999 data with the estimated universe of 401(k) plans, and summarizes other recent research on retirement plan participants. The following three sections present findings from the 1999 EBRI/ICI database. The first of these sections examines the asset allocations of 401(k) participants. The following section examines participant account balances and shows how account balances relate to age, tenure, and salary. The final section discusses availability and use of plan loans and analyzes the characteristics of participants with outstanding loan balances.

## THE EBRI/ICI DATABASE

### Source and Type of Data

Several plan administrators that are either EBRI or ICI members provided records on active participants in 401(k) plans administered by their organizations in 1996, 1997, 1998, and 1999. These administrators include mutual fund companies, insurance companies, and consulting firms. The universe of plan administrators varies from year to year; thus, aggregate figures should not be used to estimate time trends. Records were encrypted to conceal the identity of employers and employees but were coded so that both could be tracked over multiple years.

Data provided for each participant include participant date of birth, from which an age cohort is assigned; participant date of hire, from which a tenure range is assigned; outstanding loan balance; funds in participants' 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.<sup>6</sup> Plan balances are constructed as the sum of participant balances. 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.

Investment options are grouped into nine categories. Equity funds consist of pooled investments primarily investing in stocks. These funds include equity mutual funds, bank collective trusts, life insurance separate accounts, and other pooled investments. Similarly, bond funds are pooled accounts primarily invested in bonds, and balanced funds are pooled accounts invested in both stocks and bonds. Company stock is equity in the plan's sponsor (the employer). Money funds are funds designed to maintain a stable share price. Guaranteed investment contracts (GICs) are insurance company products that guarantee a specific rate of return on the invested capital over the life of the contract. Other stable value funds include synthetic GICs<sup>7</sup> or similar instruments. The "other fund" category is the residual for other investments such as real estate funds. The final category, "unknown," consists of funds that could not be identified.<sup>8</sup>

<sup>6</sup> Account balances are net of unpaid loan balances. Thus, unpaid loan balances are not included in any of the nine asset categories described.

<sup>7</sup> A synthetic GIC consists 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.

<sup>8</sup> Some administrators supplying data were unable to provide complete asset allocation detail on certain pooled asset classes for one or more of their clients. Only plans in which at least 90 percent of all plan assets could be identified were included in the final EBRI/ICI databases.

FIGURE 1

**EBRI/ICI Database: 401(k) Plan Characteristics by Number of Plan Participants, 1999**

Number of Plan Participants	Total Plans	Total Participants	Total Assets	Average Account Balance
1 to 10	6,006	40,339	\$1,165,569,050	\$28,894
11 to 25	8,943	152,220	3,582,781,631	23,537
26 to 50	5,972	215,061	5,699,770,855	26,503
51 to 100	4,281	303,120	9,311,884,229	30,720
101 to 250	3,488	547,842	18,159,287,861	33,147
251 to 500	1,561	544,857	19,868,122,578	36,465
501 to 1,000	962	675,972	28,779,711,171	42,575
1,001 to 2,500	764	1,185,425	55,576,358,100	46,883
2,501 to 5,000	332	1,179,585	57,020,461,195	48,339
5,001 to 10,000	195	1,364,702	70,543,930,228	51,692
>10,000	170	4,122,832	303,735,361,944	73,672
All	32,674	10,331,955	573,443,238,841	55,502

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

**Distribution of Plans, Participants, and Assets by Plan Size**

The 1999 database contains 32,674 401(k) plans with \$573.4 billion of assets and 10,331,955 participants (Figure 1). Most of the plans in the database are small, whether their size is measured by the number of plan participants or by total plan assets. Indeed, 46 percent of the plans in the database have 25 or fewer participants, and 31 percent have 26 to 100 participants. In contrast, only 4 percent of the plans have more than 1,000 participants. Because most of the plans have a small number of participants, the asset size for many plans is modest. About 34 percent of the plans have assets less than \$250,000, and another 33 percent have plan assets between \$250,001 and \$1,250,000 (Figure 2). However, participants and assets are concentrated in large plans. For example, 76 percent of participants are in plans with more than 1,000 participants, and these same plans account for 85 percent of all plan assets (Figure 1).

FIGURE 2

**EBRI/ICI Database: 401(k) Plan Characteristics by Plan Assets, 1999**

Total Plan Assets	Total Plans	Total Participants	Total Assets	Average Account Balance
\$0 to \$250,000	10,946	174,503	\$1,242,456,864	\$7,120
>\$250,000 to \$625,000	6,405	190,105	2,591,474,259	13,632
>\$625,000 to \$1,250,000	4,311	211,161	3,836,066,871	18,167
>\$1,250,000 to \$2,500,000	3,370	288,290	6,004,263,081	20,827
>\$2,500,000 to \$6,250,000	3,140	492,464	12,490,160,412	25,363
>\$6,250,000 to \$12,500,000	1,548	509,329	13,700,040,542	26,898
>\$12,500,000 to \$25,000,000	1,023	571,865	18,067,959,967	31,595
>\$25,000,000 to \$62,500,000	840	953,096	33,411,710,020	35,056
>\$62,500,000 to \$125,000,000	440	956,664	38,556,418,212	40,303
>\$125,000,000 to \$250,000,000	303	1,097,146	51,588,119,334	47,020
>\$250,000,000	348	4,887,332	391,954,569,279	80,198
All	32,674	10,331,955	573,443,238,841	55,502

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

## Relationship of Database Plans to the Universe of Plans

The 1999 EBRI/ICI database appears to be a representative sample of the estimated universe of 401(k) plans. Cerulli Associates<sup>9</sup> estimates that there were 303,893 401(k) plans at the end of 1999 with about 39.3 million participants and \$1,640 billion in assets.<sup>10</sup> The 1999 EBRI/ICI database accounts for 11 percent of all 401(k) plans, 26 percent of all 401(k) participants, and about 35 percent of the assets held in 401(k) plans. The distribution of assets, participants, and plans in the EBRI/ICI database for 1999 is similar to that reported for the universe of plans estimated by Cerulli Associates. For example, Cerulli Associates estimates that 16 percent of 401(k) plan participants at year-end 1999 were in plans with 100 or fewer participants, 45 percent were in plans with between 101 and 5,000 participants, and 39 percent were in plans with more than 5,000 participants (Figure 3, middle panel). In the 1999 EBRI/ICI database, 7 percent of participants are in plans with 100 or fewer participants, 40 percent are in plans with between 101 and 5,000 participants, and 53 percent are in plans with more than 5,000 participants. In addition, the distribution in the number of plans is virtually identical between the EBRI/ICI database and the universe estimate.

## Comparison with Other Participant-Level Databases

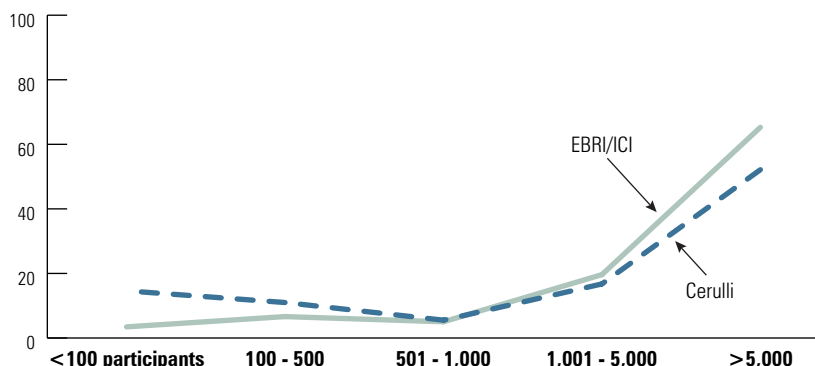
The EBRI/ICI database is the most comprehensive source of 401(k) plan participant-level data available to date. The EBRI/ICI data are unique because they cover a wide variety of plan administrators and recordkeepers and, therefore, a wide range of plan sizes offering a variety of investment alternatives. Other recent studies of participant-level data on 401(k) plans have focused on the

FIGURE 3

### 401(k) Plan Characteristics by Number of Participants: EBRI/ICI Database vs. Cerulli Estimates for All 401(k) Plans, 1999

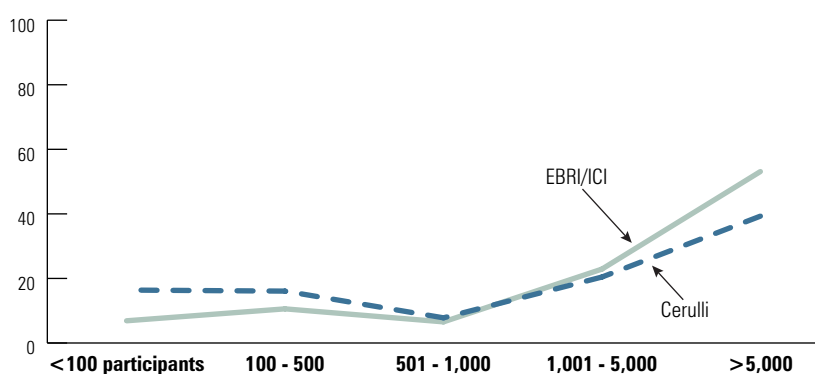
#### Plan Assets

(percent of plan assets)



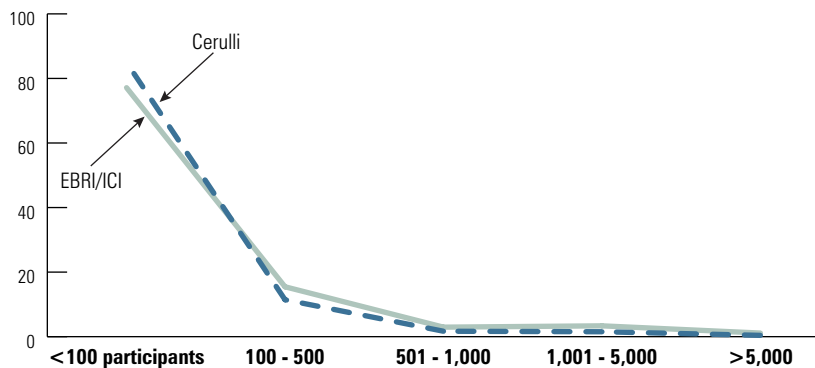
#### Participants

(percent of participants)



#### Plans

(percent of plans)



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

<sup>9</sup> Preliminary update of data originally presented in Cerulli Associates (1999).

<sup>10</sup> The latest U.S. Department of Labor (forthcoming) estimate of the universe of 401(k) type plans is for plan-year 1997. For 1997, it reported 265,251 401(k) type plans covering 34 million active participants with \$1,264 billion in assets. Investment Company Institute (May 2000) estimates that 401(k) assets totaled \$1,723 billion at year-end 1999.

plans of a particular recordkeeper,<sup>11</sup> a few large plans,<sup>12</sup> or a single large plan,<sup>13</sup> and thus have not been representative of the 401(k) universe.<sup>14</sup> In addition, other researchers have relied on aggregate plan data to gain insight into participants' behavior as a group.<sup>15</sup>

Surveys have also been used to analyze household 401(k) account and overall asset ownership activities. One of the more frequently analyzed household surveys is the Survey of Consumer Finances (SCF), which is administered by the Federal Reserve Board.<sup>16</sup> Several authors have closely examined household behavior in retirement accounts using data from the SCF.<sup>17</sup> Researchers interested in the behavior of older households use another household survey, the Health and Retirement Study (HRS), which is administered by the University of Michigan.<sup>18</sup> In addition, ICI recently released information from a survey of 401(k) participant households that identifies characteristics of 401(k) plan participants, their awareness of plan features, their types of activities since joining their current plan, and their asset allocations in the plan.<sup>19</sup>

Household surveys, despite offering a more comprehensive picture of households' finances and activities, generally define asset categories too broadly.<sup>20</sup> The EBRI/ICI database focuses exclusively on the assets in the

401(k) plan of the individual at his or her current employer, and features more detail than household surveys regarding asset allocation. Furthermore, household surveys can suffer from data problems due to inaccurate participant recall.<sup>21</sup> The EBRI/ICI data are drawn from plan administrators and recordkeepers and therefore do not suffer from errors in participant recall.

### ***The Typical 401(k) Plan Participant***

Participants in 401(k) plans cover wide ranges of age and tenure. The bulk (61 percent) of participants are in their thirties and forties, but 12 percent of the participants are in their twenties and 6 percent are in their sixties (Figure 4). The median age of the participants in the 1999 EBRI/ICI database is 42 years old.<sup>22</sup> Thirty-eight percent of the participants have five or fewer years of tenure, while 6 percent have more than 30 years

<sup>11</sup> For example, see Hewitt Associates (1999), which focuses on 401(k) plans at very large employers; the Hewitt 401(k) Index™ (updated monthly), which shows the trading activity of 401(k) plan participants at large corporations with daily transfer options; or Fidelity Investments (1999), which focuses on defined contribution plans, more generally. For examples of studies of participant behavior in 403(b) participant-directed plans, see Ameriks (October 2000) and Ameriks and Zeldes (September 2000), which study the behavior of participants in TIAA-CREF.

<sup>12</sup> For example, Choi, Laibson, and Metrick (September 2000) studied the impact of Internet access to the 401(k) plan account on participant trading activity in two corporate 401(k) plans.

<sup>13</sup> For example, Madrian and Shea (May 2000) studied a large 401(k) plan that introduced automatic enrollment into the plan and found that the default contribution rate and default investment allocation chosen by the plan sponsor have a strong influence on the savings behavior of the 401(k) plan participants; and Agnew, Balduzzi, and Sundén (May 2000) examine portfolio choice, trading activity, and asset returns of participants in one large 401(k) plan. Also see Duflo and Saez (May 2000), which analyzes the impact of colleagues on choices among participants at a university; and Benartzi and Thaler (forthcoming), which analyzes portfolio asset allocation decisions by surveying employees of the University of California about different investment options and by examining the aggregate asset allocations of several savings plans.

<sup>14</sup> Refer to the [January 1999 Perspective \(Vol. 5, No. 1\)](#) for earlier references to research using other participant-level databases.

<sup>15</sup> For example, Benartzi (June 2000) uses plan filings with the Securities and Exchange Commission (SEC) to analyze employees' allocations to company stock. In addition, the Profit Sharing/401(k) Council of America (2000) surveys its members and reports on characteristics and offerings of plan sponsors, which describe the environment facing participants.

<sup>16</sup> For an overview of the 1998 SCF results, see Kennickell, Starr-McCluer, and Surette (January 2000). For a full description of the SCF and recent SCF data, see [www.federalreserve.gov/pubs/oss/oss2/scfindex.html](http://www.federalreserve.gov/pubs/oss/oss2/scfindex.html).

<sup>17</sup> Recent papers include: Ameriks and Zeldes (September 2000); Copeland and VanDerhei (July 2000), which examines the role of retirement assets in households' balance sheets; Sundén and Surette (June 2000), which analyzes household borrowing from 401(k) plans; Uccello (May 2000), which looks at the interaction of spouses in their investment decisions; Bertaut and Starr-McCluer (April 2000), which examines household portfolio asset allocations; Engen, Gale, and Uccello (1999); and Weisbenner (November 1999).

<sup>18</sup> For example, see Gustman and Steinmeier (Winter 2000); Engen, Gale, and Uccello (1999); and Hurd, Lillard, and Panis (October 1998). For an extensive bibliography of papers using HRS data, see [www.umich.edu/~hrswwww/pubs/biblio.html](http://www.umich.edu/~hrswwww/pubs/biblio.html).

<sup>19</sup> Investment Company Institute (Spring 2000), "401(k) Plan Participants: Characteristics, Contributions, and Account Activity." The complete report is available on ICI's website at [www.ici.org/pdf/rpt\\_401k\\_plan.pdf](http://www.ici.org/pdf/rpt_401k_plan.pdf).

<sup>20</sup> For example, the SCF asks households to group their retirement plan assets into the following general categories: "mostly or all stock [including company stock]"; "mostly or all interest-earning assets"; "split between stock and interest-earning assets." Furthermore, households are not asked to indicate whether the plan sponsor required some of the assets to be invested in company stock.

<sup>21</sup> For research covering the confusion evidenced in the survey responses of households, see Gustman and Steinmeier (September 1999) and Starr-McCluer and Sundén (January 1999).

<sup>22</sup> The 1998 EBRI/ICI database has a similar breakdown of participants by age. In the year-end 1998 database, 12 percent of participants are in their twenties, 31 percent in their thirties, 31 percent in their forties, 20 percent in their fifties, and 6 percent in their sixties. The median age of the participants in the 1998 EBRI/ICI database is 42 years.

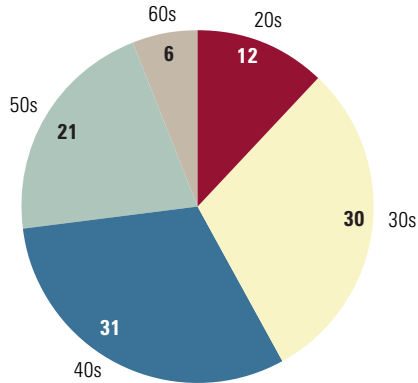
FIGURE 4

**Participants by Age and Tenure, 1999**

(percent of participants)

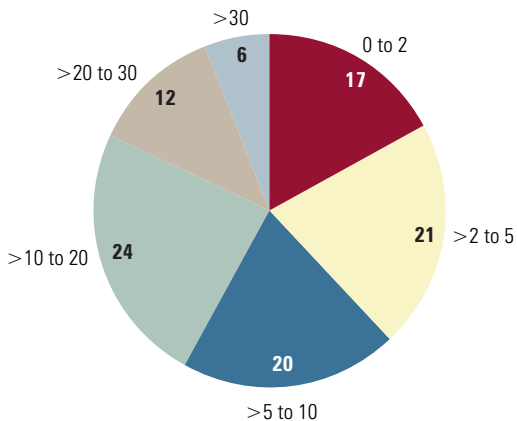
**By Age**

Median Age: 42 Years



**By Tenure (years)**

Median Tenure: 7 Years

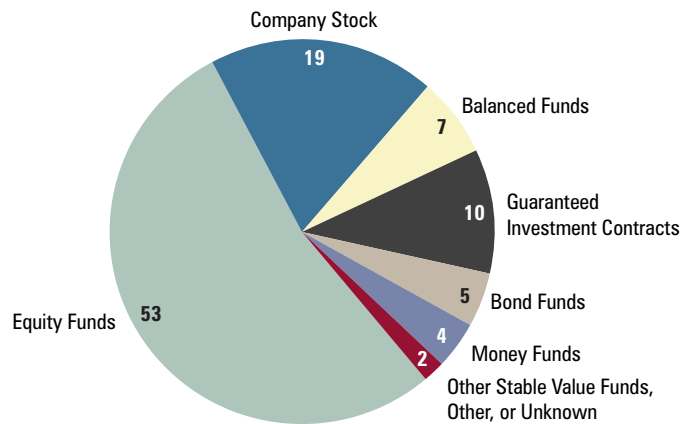


Source: Tabulations from EBRI/ICI Participant-Directed Retirement Plan Data Collection Project

FIGURE 5

**Average Asset Allocation for All Plan Balances, 1999**

(percent)



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

of tenure. The median tenure at the current employer is seven years.<sup>23</sup> In addition, salary information is available for a subset of participants and the median annual salary among that group is \$34,600.<sup>24</sup> These median characteristics are similar to those found for households holding participant-directed pension accounts in the 1998 SCF.<sup>25</sup>

**ASSET ALLOCATION**

On average, participants in the 1999 EBRI/ICI database have 53 percent of their account balance invested in equity funds, 19 percent invested in company stock, 10 percent in GICs, 7 percent in balanced funds, 5 percent in bond funds, 4 percent in money funds, and 2 percent in other stable value funds and other or unidentified assets (Figure 5).<sup>26</sup> Summing the asset shares of equity funds, company stock, and the equity portion

<sup>23</sup> The 1998 EBRI/ICI database has a similar breakdown of participants by tenure. In the year-end 1998 database, 18 percent of participants have two or fewer years of tenure at the current employer, 21 percent have between two and five years, 22 percent have between five and 10 years, 23 percent have between 10 and 20 years, 11 percent have between 20 and 30 years, and 5 percent have more than 30 years of tenure. The median tenure in 1998 is seven years.

<sup>24</sup> For the purposes of some of our analyses, the subset is restricted to participants earning \$20,000 or more. The median salary in that sub-sample is about \$46,400.

<sup>25</sup> Tabulations of the public-use 1998 SCF data indicate that the median age among heads of households that have 401(k) plan accounts, 403(b) plan accounts, and/or supplemental retirement annuities (SRAs) is 41 years. The median tenure at the current job is seven years. Among households with such accounts, the median household income in the 1998 SCF is \$54,000, which is higher than the median participant income in the EBRI/ICI database but may represent two earnings combined.

<sup>26</sup> Unless otherwise indicated, all asset allocation averages are expressed as a dollar-weighted average.

FIGURE 6

### Average Asset Allocation by Age, 1999

(percent of account balances)

Age Cohort	Equity Funds	Balanced Funds	Bond Funds	Money Funds	Guaranteed Investment Contracts	Company Stock	Other Stable Value Funds	Other	Unknown	Total
20s	63.4	7.3	3.8	3.9	3.8	16.4	0.3	0.7	0.4	100
30s	60.6	6.7	3.6	3.4	4.9	19.5	0.3	0.7	0.3	100
40s	55.9	6.7	3.9	3.8	7.9	20.4	0.4	0.8	0.3	100
50s	51.7	6.7	4.7	4.0	11.6	19.4	0.9	0.8	0.4	100
60s	44.2	6.7	6.8	4.9	19.2	15.6	1.7	0.7	0.3	100
All	53.4	6.7	4.6	4.0	10.5	19.1	0.7	0.8	0.3	100

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

of balanced funds shows that just over three-quarters of plan balances are invested directly or indirectly in equity securities.<sup>27</sup>

#### Asset Allocation by Age and Investment Options

Participant asset allocation varies considerably with age (Figure 6).<sup>28</sup> Younger participants tend to favor equity funds, and older participants prefer to invest in fixed-income securities such as GICs and bond funds. On average, participants in their twenties have 63 percent of their account balances invested in equity funds, compared with 44 percent for participants in their sixties. Participants in their twenties invest only 4 percent of their assets in GICs and 4 percent in bond funds, while participants in their sixties invest 19 percent of their assets in GICs and 7 percent in bond funds. Company stock shows a more mixed pattern by age, accounting for 16 percent of the plan balances of participants in their twenties, rising to 20 percent for participants in their forties, and tapering off to 16 percent for those in their sixties. The tendency for younger participants to favor equity funds and older participants to prefer fixed-income securities holds up even when accounting for investment options offered by the 401(k) plan sponsor.

In general, however, the mix of investment options offered by a plan sponsor significantly affects asset allocation. Figure 7 presents four

combinations of investment offerings,<sup>29</sup> starting with a base group of plans that do not offer company stock or GICs.<sup>30</sup> Participants in these plans—typically having four basic investment options of equity, bond, balanced, and money funds—have the highest allocation to equity funds. Participants in plans that also offer GICs lower their allocations to equity, bond, and money funds when compared with the base group, with the greatest reduction in relative percentage of account balance occurring in bond and money funds.<sup>31</sup> Alternatively, participants in plans that offer company stock but not GICs have dramatically lower allocations to equity and balanced funds when compared with the base group.<sup>32</sup> Finally, in plans offering both GICs and company stock, company stock appears to displace equity and balanced fund holdings, and GICs appear to displace other fixed-income investments.<sup>33</sup> These effects tend to occur across all ages of participants.

<sup>27</sup> At the end of 1999, approximately 63 percent of balanced mutual fund assets were invested in equities. See Investment Company Institute, Quarterly Supplemental Data.

<sup>28</sup> Participants in their twenties hold approximately 1 percent of the assets in the 1999 EBRI/ICI database; participants in their thirties hold 16 percent; participants in their forties hold 34 percent; participants in their fifties hold 36 percent; and participants in their sixties hold the remaining 13 percent.

<sup>29</sup> For convenience, minor investment options are not shown.

<sup>30</sup> Plans falling into this category cover 24 percent of the participants in the database and 17 percent of the assets.

<sup>31</sup> Plans falling into this category cover 25 percent of the participants in the database and 17 percent of the assets.

<sup>32</sup> Plans falling into this category cover 20 percent of the participants in the database and 25 percent of the assets.

<sup>33</sup> Plans falling into this category cover 31 percent of the participants in the database and 41 percent of the assets.



FIGURE 7

**Average Asset Allocation by Age and Investment Options, 1999**

(percent of account balances)

	Equity Funds	Balanced Funds	Bond Funds	Money Funds	Guaranteed Investment Contracts	Company Stock
<b>ALL AGES COMBINED</b>						
<b>Investment Options</b>						
Equity, Bond, Money, &/or Balanced Funds	71.1	9.7	9.0	7.7		
Equity, Bond, Money, &/or Balanced Funds, & GICs	62.3	10.6	3.7	3.9	16.8	
Equity, Bond, Money, &/or Balanced Funds, & Company Stock	44.5	3.9	6.7	5.5		36.3
Equity, Bond, Money, &/or Balanced Funds, GICs, & Company Stock	47.9	5.5	1.8	1.6	18.7	23.9
<b>PLANS WITHOUT COMPANY STOCK OR GUARANTEED INVESTMENT CONTRACTS</b>						
<b>Age</b>						
20s	79.1	7.2	6.9	5.6		
30s	78.3	8.1	6.8	5.4		
40s	73.9	9.3	8.0	6.7		
50s	68.5	10.5	9.5	8.3		
60s	58.1	12.1	14.1	12.2		
<b>PLANS WITH GUARANTEED INVESTMENT CONTRACTS</b>						
20s	70.2	12.3	3.2	3.2	8.6	
30s	70.0	11.4	3.1	3.0	10.3	
40s	65.8	10.7	3.5	3.6	13.9	
50s	60.9	10.3	3.9	4.1	18.3	
60s	48.4	10.1	4.8	5.2	29.0	
<b>PLANS WITH COMPANY STOCK</b>						
20s	50.2	4.4	3.5	5.1		35.8
30s	49.5	4.0	3.9	4.5		36.7
40s	46.7	4.0	4.8	5.2		37.2
50s	42.9	3.9	7.4	5.7		36.6
60s	38.0	3.9	12.6	6.5		33.2
<b>PLANS WITH COMPANY STOCK AND GUARANTEED INVESTMENT CONTRACTS</b>						
20s	53.3	5.6	1.7	2.0	6.7	29.9
30s	53.1	5.4	1.5	1.5	8.9	29.0
40s	49.7	5.6	1.6	1.5	14.2	27.0
50s	47.7	5.7	1.8	1.6	19.9	23.1
60s	42.0	5.4	2.0	1.7	32.4	16.1

Note: Minor investment options are not shown; therefore, row percentages will not add to 100 percent.  
 Source: Tabulations from EBRI/ICI Participant-Directed Retirement Plan Data Collection Project

## Asset Allocation by Plan Size and Investment Options

Participants' asset allocations appear to vary with plan size, however, much of the variation is due to differences among plans' investment options. For example, as plan size increases, the percentage of plan assets invested in equity funds falls, while the share in company stock rises

(Figure 8, top panel). This trend occurs because few small plans offer company stock as an investment option. For example, less than 1 percent of participants in plans with 100 or fewer participants are offered company stock as an investment

FIGURE 8

### Average Asset Allocation by Plan Size and Investment Options, 1999

(percent of account balances)

Plan size by number of participants	Equity Funds	Balanced Funds	Bond Funds	Money Funds	Guaranteed Investment Contracts	Company Stock
<b>ALL PLANS</b>						
1 to 100	65.5	12.4	5.9	6.2	8.6	0.2
101 to 500	67.3	10.6	6.8	6.4	6.2	0.8
501 to 1,000	63.1	9.7	7.0	6.4	6.8	5.0
1,001 to 5,000	58.6	9.5	5.3	5.7	10.1	8.8
>5,000	49.6	5.2	3.9	3.1	11.6	25.4
All	53.4	6.7	4.6	4.0	10.5	19.1
<b>PLANS WITHOUT COMPANY STOCK OR GUARANTEED INVESTMENT CONTRACTS</b>						
1 to 100	74.0	8.2	8.8	8.5		
101 to 500	72.7	9.5	8.3	7.3		
501 to 1,000	71.8	9.5	9.6	7.4		
1,001 to 5,000	70.5	10.4	8.8	8.8		
>5,000	71.9	8.8	11.5	7.0		
All	71.1	9.7	9.0	7.7		
<b>PLANS WITH GUARANTEED INVESTMENT CONTRACTS</b>						
1 to 100	60.5	14.5	4.6	5.1	13.7	
101 to 500	59.4	12.7	4.3	4.6	16.6	
501 to 1,000	58.4	12.6	3.9	4.0	18.1	
1,001 to 5,000	59.9	11.0	3.8	3.3	20.0	
>5,000	68.0	7.6	3.1	3.7	14.6	
All	62.3	10.6	3.7	3.9	16.8	
<b>PLANS WITH COMPANY STOCK</b>						
1 to 100	50.4	7.2	8.9	11.2		22.2
101 to 500	57.7	12.9	7.0	7.9		13.7
501 to 1,000	47.5	6.3	5.1	9.6		29.7
1,001 to 5,000	54.5	7.3	6.0	8.4		21.9
>5,000	43.0	3.6	6.8	4.9		38.7
All	44.5	3.9	6.7	5.5		36.3
<b>PLANS WITH COMPANY STOCK AND GUARANTEED INVESTMENT CONTRACTS</b>						
1 to 100	39.8	17.8	0.3	1.5	28.6	10.1
101 to 500	51.4	8.8	1.6	3.4	22.9	11.2
501 to 1,000	44.3	6.5	3.1	2.9	25.0	15.3
1,001 to 5,000	47.1	8.5	1.9	2.0	20.8	17.7
>5,000	48.5	5.3	1.8	1.6	18.6	24.0
All	47.9	5.5	1.8	1.6	18.7	23.9

Note: Minor investment options are not shown; therefore, row percentages will not add to 100 percent.

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

option, while more than three-quarters of participants in plans with more than 5,000 participants are offered company stock as an investment option.

When plans are grouped by plan size and investment option, participants in plans of differing sizes generally do not seem to behave in systematically different ways. For example, asset allocation does not appear to be related to the number of plan participants among plans not offering company stock or GICs (Figure 8, second panel). Some variation is observed among participants in plans

offering both company stock and GICs (Figure 8, bottom panel). However, few small plans fall into this category, and it is possible that these figures may be influenced by outliers.

### Asset Allocation of Employee and Employer Contributions

Typically in a 401(k) plan, an employee contributes a portion of his or her salary to a plan account and determines how the assets in the account are invested, choosing among investment options made available by the plan sponsor (employer). In many plans, the employer also makes a contribution to the participant's account, generally matching a portion of the employee's contribution. Some employers require that the employer contribution be invested in company stock, rather than as

FIGURE 9

### Impact of Company Stock on Asset Allocation by Age, 1999

(percent of account balances)

Age Cohort	Equity Funds	Balanced Funds	Bond Funds	Money Funds	Guaranteed Investment Contracts	Company Stock
<b>PLANS WITH EMPLOYER-DIRECTED AND PARTICIPANT-DIRECTED BALANCES</b>						
<b>Total Balances (Employer-Directed and Participant-Directed)</b>						
20s	36.6	5.5	0.6	3.4	5.4	48.1
30s	32.1	5.3	0.7	2.2	7.0	52.4
40s	30.2	5.6	1.1	3.3	8.4	50.9
50s	29.8	6.4	1.5	4.5	11.2	46.4
60s	28.8	7.2	2.9	8.7	15.9	36.1
All	30.2	6.0	1.4	4.2	10.2	47.6
<b>Participant-Directed Balances Only</b>						
20s	47.2	7.0	0.8	3.9	6.1	34.8
30s	46.6	7.5	1.0	2.8	8.6	33.3
40s	44.2	7.9	1.6	4.5	10.4	30.9
50s	41.0	8.2	2.1	6.0	13.4	28.8
60s	35.6	8.7	3.6	10.6	18.5	22.6
All	42.1	8.1	2.0	5.6	12.5	29.3
<b>PLANS WITH COMPANY STOCK INVESTMENT OPTION BUT NO EMPLOYER-DIRECTED CONTRIBUTIONS</b>						
<b>Total Balances</b>						
20s	58.6	8.3	1.7	6.2	4.4	17.7
30s	56.5	8.6	1.9	5.1	5.9	19.5
40s	51.1	9.2	2.3	5.5	8.6	20.9
50s	45.9	10.4	3.1	6.2	12.1	20.4
60s	38.2	11.3	4.1	8.4	17.6	18.7
All	48.7	9.7	2.7	6.1	10.4	20.2

Note: Minor investment options are not shown; therefore, row percentages will not add to 100 percent. Employer-directed balances are invested in the plan sponsor's company stock. Source: Tabulations from EBRI/ICI Participant-Directed Retirement Plan Data Collection Project

FIGURE 10

**Asset Allocation Distribution of Participant Account Balances to Equity Funds by Age, Tenure, and Salary, 1999**

(percent of participants)

	Zero	<20%	20% to 80%	>80%	Total
<b>TOTAL</b>	27.3	5.9	36.5	30.3	100
<b>AGE COHORT</b>					
20s	26.8	3.9	35.0	34.3	100
30s	23.1	5.1	37.6	34.2	100
40s	26.0	6.3	37.9	29.8	100
50s	29.5	7.1	36.4	27.0	100
60s	40.9	7.4	31.1	20.6	100
<b>TENURE (years)</b>					
0 to 2	22.5	3.2	39.2	35.1	100
>2 to 5	24.9	4.4	37.8	32.9	100
>5 to 10	25.0	6.2	37.6	31.2	100
>10 to 20	28.0	7.6	37.0	27.4	100
>20 to 30	33.6	8.4	33.9	24.2	100
>30	41.5	8.0	29.8	20.7	100
<b>SALARY</b>					
\$20,000 to \$40,000	26.1	6.4	39.8	27.7	100
>\$40,000 to \$60,000	25.6	7.0	38.9	28.5	100
>\$60,000 to \$80,000	21.4	7.5	41.0	30.0	100
>\$80,000 to \$100,000	18.3	7.1	41.2	33.4	100
>\$100,000	15.8	6.3	39.8	38.2	100

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

directed by the participant.<sup>34</sup> Participants in these plans tend to invest a higher percentage of their self-directed balances in company stock than do participants in plans without employer-directed contributions. Company stock represents 29 percent of the participant-directed account balances in plans with employer-directed contributions (Figure 9, middle panel),<sup>35</sup> compared with 20 percent in plans offering company stock but not requiring that employer contributions be invested in company stock (Figure 9, lower panel). Overall exposure to equity securities is similar between the two groups, suggesting that the higher allocations to company stock are offset by lower shares of assets in equity funds and balanced funds. Participants in plans with employer-directed contributions have 77 percent of their participant-directed balances invested in equity securities (defined as company stock, equity funds, and the equity portion of balanced funds). Similarly, participants in plans without employer-directed contributions have 75 percent of their assets invested in equity securities.

<sup>34</sup> Source of contribution (employer versus employee) can be matched to fund information for a subset of the data providers in our sample. Of those plans in the 1999 EBRI/ICI database for which the appropriate data are available, less than 0.5 percent require employer contributions to be invested in company stock. However, most of the plans with this feature are large, covering 7 percent of participants and 11 percent of plan assets in the subset.

<sup>35</sup> For this group, the participant-directed portion of the account balances represents 69 percent of the total account balances.

<sup>36</sup> Percentages are derived from data presented in Figure 9.

FIGURE 11

**Percentage of Participants Without Equity Fund Balances Who Have Equity Exposure by Age and Tenure, 1999**

	Percentage with Company Stock and/or Balanced Funds
<b>AGE COHORT</b>	
20s	49.8
30s	57.8
40s	60.2
50s	61.7
60s	51.2
All	57.1
<b>TENURE (years)</b>	
0 to 2	50.4
>2 to 5	51.2
>5 to 10	54.6
>10 to 20	61.6
>20 to 30	62.6
>30	59.4
All	57.1

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

However, the diversification of these equity investments varies significantly between the two plan groups.

When total account balances are considered, the overall exposure to equity securities through company stock and pooled investments is significantly higher for participants in plans with employer-directed contributions. For example, company stock, equity funds, and the equity portion of balanced funds represent 82 percent of the total account balances for participants in plans with employer-directed contributions, compared with a 75 percent exposure in plans without employer-directed contributions.<sup>36</sup> This higher allocation to equity securities holds across all age groups.

### Distribution of Equity Fund Allocations and Participant Exposure to Equities

Among individual participants, the allocation of account balances to equity funds varies widely around the average of 53 percent for all participants in the 1999 EBRI/ICI database. Indeed, 30 percent of participants have more than 80 percent of their account balances invested in equity funds, while 27 percent do not hold any equity funds (Figure 10). The percentage of participants not holding equity funds increases with age and tenure. For example, 27 percent of participants in their twenties do not have equity fund investments,

compared with 41 percent of those in their sixties. Similarly, 23 percent of participants with two or fewer years of tenure have no equity fund investments, compared with 42 percent for those with more than 30 years of tenure. In contrast, the percentage of participants holding no equity funds falls as salary increases.<sup>37</sup> For example, 26 percent of participants earning between \$20,000 and \$40,000 a year do not hold equity funds, compared with 16 percent of participants earning more than \$100,000.

Some participants without equity fund balances still have exposure to the stock market through company stock or balanced funds. Indeed, 57 percent of participants without equity funds have investments in either company stock or balanced funds (Figure 11).<sup>38</sup> As a result, participants without equity funds still have 46 percent<sup>39</sup> of account balances in equity-related investments (Figure 12).<sup>40</sup>

FIGURE 12

#### Average Asset Allocation for Participants Without Equity Fund Balances by Age and Tenure, 1999

(percent of account balances)

	Balanced Funds	Bond Funds	Money Funds	Guaranteed Investment Contracts	Company Stock	Other Stable Value Funds	Other	Unknown	Total
<b>AGE COHORT</b>									
20s	11.1	8.1	17.2	14.0	47.1	0.8	1.3	0.6	100
30s	9.3	6.9	12.8	15.7	52.7	0.7	1.4	0.5	100
40s	8.4	6.6	11.3	22.6	48.1	1.1	1.5	0.5	100
50s	8.0	7.5	10.2	28.2	42.3	2.0	1.6	0.6	100
60s	7.1	10.6	9.7	39.6	28.2	3.5	1.1	0.4	100
All	8.0	7.9	10.8	28.1	41.3	1.9	1.4	0.5	100
<b>TENURE (years)</b>									
0 to 2	15.9	8.7	19.8	17.6	35.2	1.1	1.0	0.8	100
> 2 to 5	14.3	8.1	18.8	15.3	40.5	1.0	1.7	0.6	100
> 5 to 10	10.8	8.0	15.4	19.3	43.8	0.6	1.8	0.6	100
> 10 to 20	8.3	7.3	12.4	23.8	44.8	1.2	1.9	0.5	100
> 20 to 30	7.1	6.9	9.2	31.2	42.2	1.5	1.7	0.5	100
> 30	4.9	10.0	6.7	38.6	34.5	4.3	0.8	0.4	100
All	8.0	7.9	10.8	28.1	41.3	1.9	1.4	0.5	100

Note: Row percentages may not sum to totals due to rounding.

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

<sup>37</sup> Goodfellow and Schieber (1997) observe that the percentage of participants without fixed-income fund investments generally tends to rise as income rises. Similarly, the percentage of participants with more than 80 percent of their account balances invested in fixed-income funds tends to fall as income rises.

<sup>38</sup> Data for year-end 1998 presented in Holden, VanDerhei, and Quick (January/February 2000) have been revised. At year-end 1998, 58.6 percent of participants with no equity funds had exposure to equities through company stock or balanced funds. In addition, 49.1 percent of participants in their twenties with no equity funds had exposure to equities; 59.3 percent of participants in their thirties; 62.5 percent of participants in their forties; 63.9 percent of participants in their fifties; and 52.2 percent of participants in their sixties. Furthermore, 48.6 percent of participants with two or fewer years of tenure with no equity funds had exposure to equities through company stock or balanced funds; 47.9 percent of participants with between two and five years of tenure; 56.3 percent of participants with between five and 10 years of tenure; 65.2 percent of participants with between 10 and 20 years of tenure; 67.2 percent of participants with between 20 and 30 years of tenure; and 62.8 percent of participants with more than 30 years of tenure.

<sup>39</sup> Estimated as the sum of the 41.3 percent of account balances that is in company stock and 63 percent of the 8.0 percent of account balances that is in balanced funds.

<sup>40</sup> Among participants with no equity funds who have company stock and/or balanced funds, company stock represents 52.9 percent of their plan assets and balanced funds account for 10.3 percent. Thus, 59.3 percent of their accounts is invested in equity securities.

## Asset Allocation by Salary

Salary information is available for a subset of participants in the 1999 EBRI/ICI database.<sup>41</sup> Because asset allocation is influenced by the investment options available to participants, Figure 13 presents asset allocation by salary range and investment option. The data show that asset allocation differs somewhat with salary. For example, the percentage of account balances invested in equity funds tends to rise as income increases, regardless of the investment options offered. Specifically, among participants in plans not offering company stock or GICs, the percentage

of account balances invested in equity funds rises from 62 percent for participants earning between \$20,000 and \$40,000 per year to 76 percent for those earning more than \$100,000 per year (Figure 13, top panel). In contrast, among plans with GICs, the percentage of participant account balances invested in GICs declines as salary increases (Figure 13).

FIGURE 13

### Average Asset Allocation by Salary and Investment Options, 1999

(percent of account balances)

	Equity Funds	Balanced Funds	Bond Funds	Money Funds	Guaranteed Investment Contracts	Company Stock
<b>SALARY</b>						
<b>PLANS WITHOUT COMPANY STOCK OR GUARANTEED INVESTMENT CONTRACTS</b>						
\$20,000 to \$40,000	62.3	10.3	12.8	10.7		
>\$40,000 to \$60,000	70.3	9.5	9.8	7.3		
>\$60,000 to \$80,000	72.8	8.5	8.1	6.6		
>\$80,000 to \$100,000	74.8	7.8	7.2	6.3		
>\$100,000	76.4	7.3	7.0	6.5		
All	71.1	9.7	9.0	7.7		
<b>PLANS WITH GUARANTEED INVESTMENT CONTRACTS</b>						
\$20,000 to \$40,000	52.2	14.6	3.5	4.1	18.9	
>\$40,000 to \$60,000	58.3	12.2	2.6	3.2	16.4	
>\$60,000 to \$80,000	60.0	10.5	2.2	3.2	16.8	
>\$80,000 to \$100,000	63.3	9.8	2.3	3.4	14.5	
>\$100,000	62.9	10.1	2.5	3.6	14.0	
All	62.3	10.6	3.7	3.9	16.8	
<b>PLANS WITH COMPANY STOCK</b>						
\$20,000 to \$40,000	32.7	4.6	5.2	7.6		49.3
>\$40,000 to \$60,000	31.9	3.0	2.6	4.8		56.1
>\$60,000 to \$80,000	37.4	2.6	2.6	4.2		50.1
>\$80,000 to \$100,000	40.3	2.7	3.4	4.1		46.9
>\$100,000	44.6	3.1	4.2	4.7		42.0
All	44.5	3.9	6.7	5.5		36.3
<b>PLANS WITH COMPANY STOCK AND GUARANTEED INVESTMENT CONTRACTS</b>						
\$20,000 to \$40,000	36.0	8.5	1.7	1.6	21.0	30.9
>\$40,000 to \$60,000	40.3	7.0	1.5	1.3	20.1	29.6
>\$60,000 to \$80,000	44.7	6.4	1.6	1.1	17.2	28.7
>\$80,000 to \$100,000	48.4	6.0	1.5	1.0	16.3	26.7
>\$100,000	49.1	6.7	1.6	1.1	15.5	25.9
All	47.9	5.5	1.8	1.6	18.7	23.9

Note: Minor investment options are not shown; therefore, row percentages will not add to 100 percent.  
Source: Tabulations from EBRI/ICI Participant-Directed Retirement Plan Data Collection Project

<sup>41</sup> For the most part, the asset allocation of participants missing salary information is similar to the asset allocation for those with such information, in aggregate. The only dramatic difference is the percentage of account balances invested in company stock, which is higher for participants with salary information than for those missing such information.

Among participants in plans offering both company stock and GICs, the percentage of participant account balances allocated to company stock tends to decline as salary rises (Figure 13). For example, participants earning between \$20,000 and \$40,000 a year have 31 percent of their account balances invested in company stock, compared with 26 percent for participants earning more than \$100,000 a year. Similarly, among participants in plans offering company stock but not GICs, participants earning between \$20,000 and \$80,000 have higher allocations to company stock compared with participants earning more than \$80,000.

## ACCOUNT BALANCES

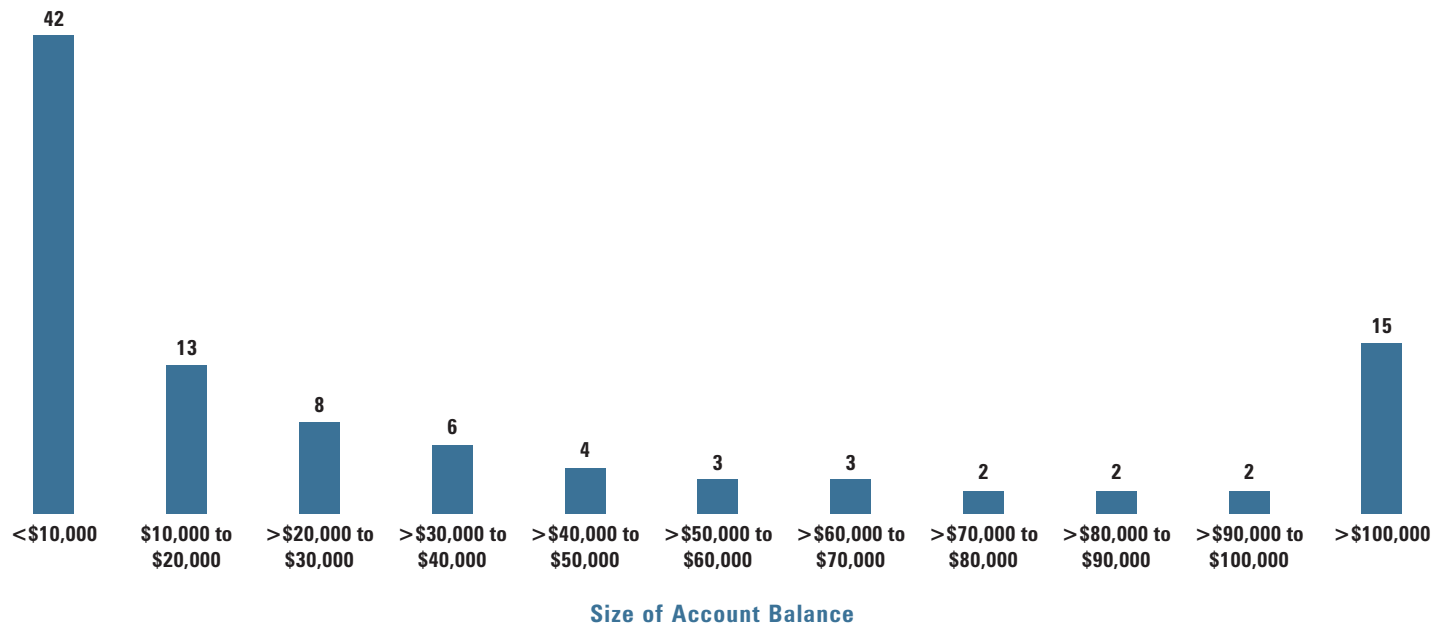
The average account balance (net of plan loans) for all participants in the EBRI/ICI database is \$55,502 at year-end 1999, which is 18 percent higher than the average account balance at year-end 1998.<sup>42</sup> The median account balance is \$15,246 at year-end 1999, which is 17 percent higher than the \$13,038 median account balance at year-end 1998. The reported account balance represents retirement assets in the 401(k) plan at the participant's current employer. Retirement savings held in plans at previous employers or rolled over into individual retirement accounts (IRAs) are not included in this analysis.

However, there is wide variation in account balances around the average. Approximately three-quarters of the participants in the 1999 EBRI/ICI database have account balances that are less than the average. Indeed, 42 percent of participants have account balances of less than \$10,000, while 15 percent have account balances greater than \$100,000 (Figure 14).

FIGURE 14

### Distribution of Account Balances by Size of Account Balance, 1999

(percent of participants with account balances in specified ranges)



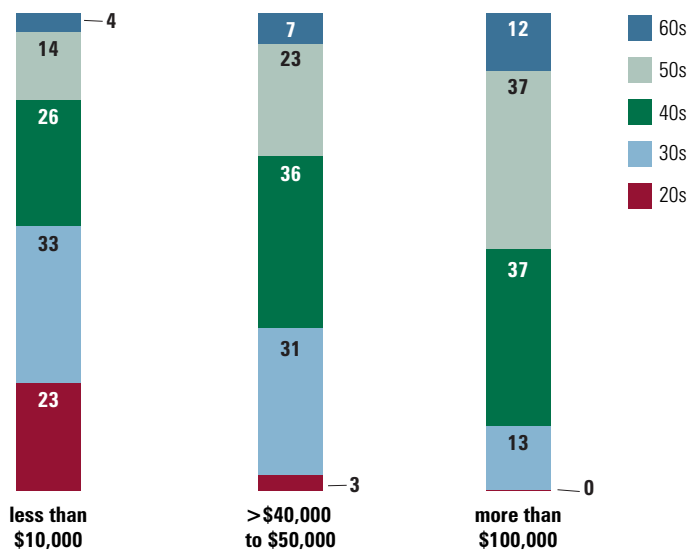
Source: Tabulations from EBRI/ICI Participant-Directed Retirement Plan Data Collection Project

<sup>42</sup> A wide range of average account balances is reported for 401(k) type plans. Data for the universe of 401(k) type plans compiled by the Department of Labor from the Form 5500 for 1997 imply an average account balance (including loan balances as a part of account assets) per active participant of \$37,330 (U.S. Department of Labor, forthcoming), a figure that is within 10 percent of the \$41,156 average balance estimate from the 1997 EBRI/ICI database. Cerulli Associates estimates an average account balance (including loan balances as part of account assets) of \$47,721 for 1999. Profit Sharing/401(k) Council of America (2000) suggests that the average account balance (also including loans) for participants in their 1999 survey, which includes profit-sharing and combination plans, as well as 401(k) plans, is approximately \$96,000.

FIGURE 15

**Age Composition of Selected Account Balance Categories, 1999**

(percent)

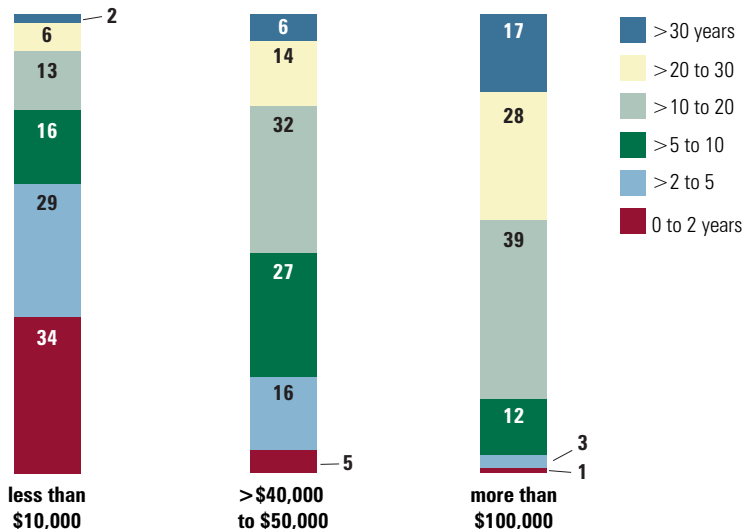


Note: Components may not sum to 100 percent due to rounding.  
 Source: Tabulations from EBRI/ICI Participant-Directed Retirement Plan Data Collection Project

FIGURE 16

**Tenure Composition of Selected Account Balance Categories, 1999**

(percent)



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

The variation in account balances partly reflects the effects of participant age, tenure, contribution behavior, rollovers from other plans, asset allocation, withdrawals, loan activity, and employer contribution rates. Information in the EBRI/ICI database can be used to examine the relationship between account balances and age, tenure, and salary of participants.

**Relationship of Age and Tenure to Account Balances**

Age and account balance should be positively related because younger workers, who are early in their careers, are likely to have lower incomes. They have also had less time to accumulate a balance with their current employer. In addition, they are less likely to have rollovers from a previous job's pension in their current plan accounts.

For participants in the 1999 EBRI/ICI database, there is a positive correlation between age and account balance.<sup>43</sup> Fifty-six percent of participants with account balances of less than \$10,000 are in their twenties and thirties, while less than one-fifth are in their fifties or sixties (Figure 15). Similarly, about half of those with account balances greater than \$100,000 are in their fifties and sixties, while only 13 percent are in their thirties and virtually none are in their twenties.

Tenure (or years of participation) and account balance also should be positively correlated as long-term employees have had more time to accumulate account balances.<sup>44</sup> The participant's tenure with the employer serves as a proxy for length of participation in the 401(k) plan.<sup>45</sup> For participants in the 1999 EBRI/ICI database, there is a positive correlation between account balance and tenure.

<sup>43</sup> Approximately 1 percent of the participants in the database have a birth date that is missing or are younger than 20 years old, or older than 69 years old; they are not included in this analysis.

<sup>44</sup> A rollover from a previous employer's plan could interfere with this positive correlation because a rollover could give a short-tenure employee a high account balance.

<sup>45</sup> Approximately 10 percent of the participants in the database have a tenure range that is missing and are not included in this analysis. In addition, for one data provider, "years of participation" are used for the tenure variable.



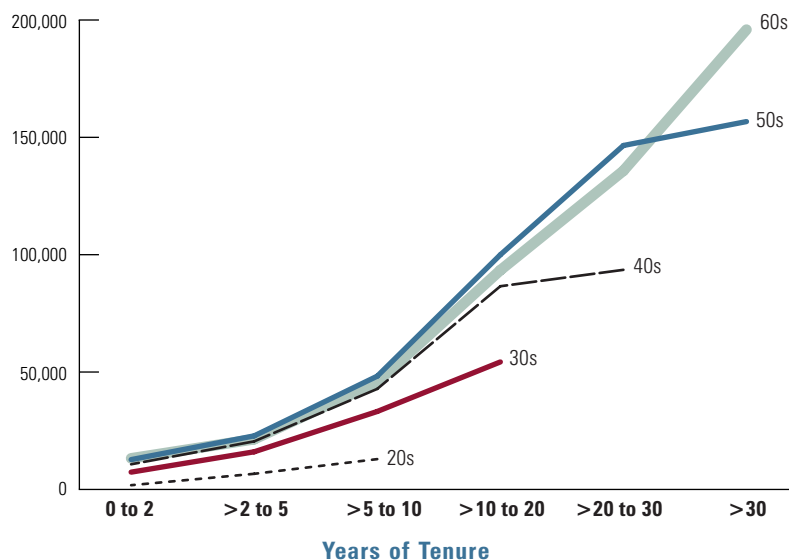
Indeed, 63 percent of participants with account balances of less than \$10,000 have five years of tenure or less, while 84 percent of participants with account balances greater than \$100,000 have more than 10 years of tenure (Figure 16).<sup>46</sup>

Examining the interaction of both age and tenure with account balances reveals that for a given age group, average account balances increase with tenure (Figure 17). For example, the average account balance of participants in their sixties with two or fewer years of tenure is \$15,919, compared with \$198,595 for participants in their sixties with at least 30 years of tenure. Similarly, the average account balance of participants in their forties with two or fewer years of tenure is \$13,389, compared with \$96,250 for participants in their forties with more than 20 years of tenure. The increase in account balance as tenure increases is largest for participants in their fifties and sixties. This is expected because the annual increase in account balance consists of both contributions and investment earnings, and those with larger account balances would experience larger investment earnings in 1999.

The distribution of account balances underscores the effects of age and tenure on account balances. For a given age group, fewer years of tenure means a higher percentage of participants with account balances of less than \$10,000. For example, 88 percent of participants in their twenties with two or fewer years of tenure have account balances of less than \$10,000, compared with 54 percent of participants in their twenties with between five and 10 years of tenure (Figure 18). Older workers display a similar pattern. For example, 71 percent of participants in their sixties with two or fewer years of tenure have account balances of less than \$10,000. In contrast,

FIGURE 17

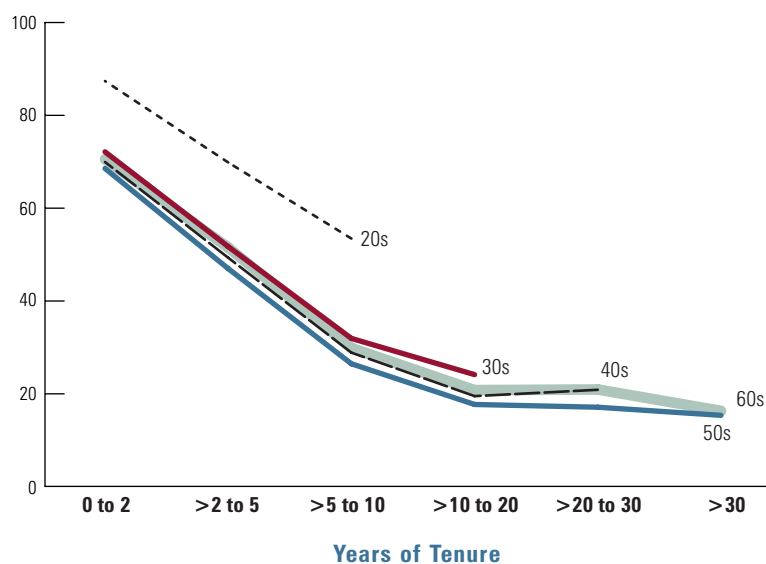
**Average Account Balance by Age and Tenure, 1999**  
(dollars)



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

FIGURE 18

**Impact of Age and Tenure on Account Balance, 1999**  
(percent of participants with account balances less than \$10,000)



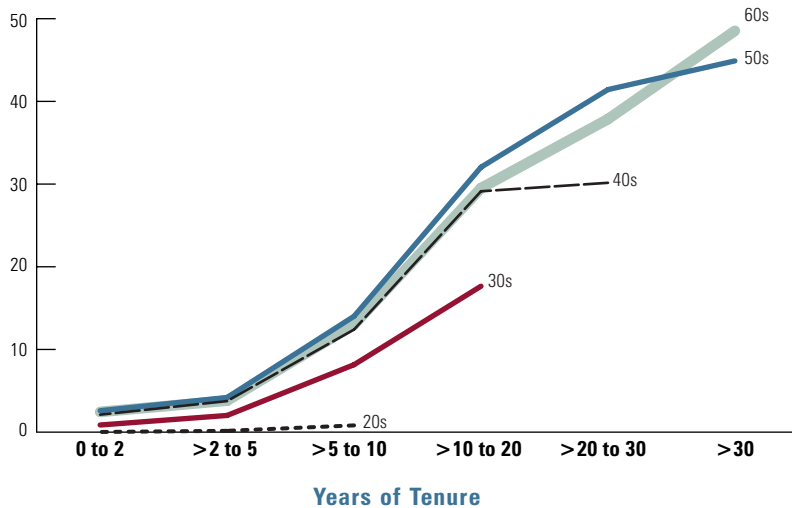
Source: Tabulations from EBRI/ICI Participant-Directed Retirement Plan Data Collection Project

<sup>46</sup> There is some discernible evidence of rollover assets among the participants with account balances greater than \$100,000, as 1 percent of them have two or fewer years of tenure and 3 percent of them have between two and five years of tenure.

FIGURE 19

**Impact of Age and Tenure on Account Balance, 1999**

(percent of participants with account balances more than \$100,000)

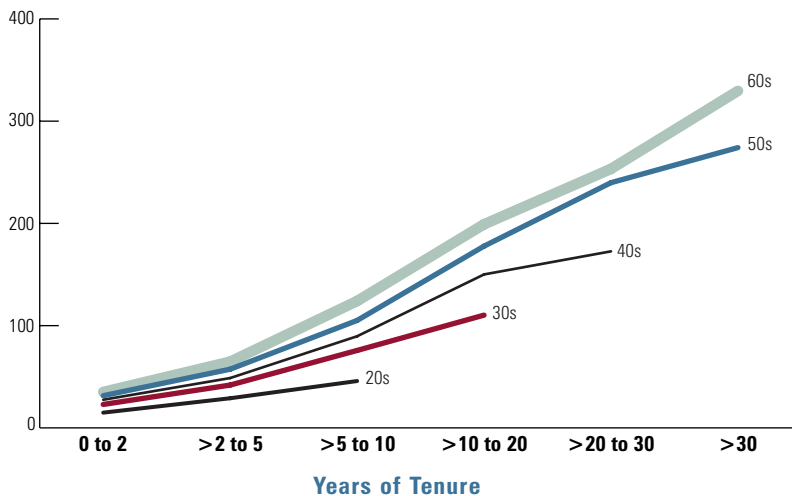


Source: Tabulations from EBRI/ICI Participant-Directed Retirement Plan Data Collection Project

FIGURE 20

**Ratio of Account Balance to Salary by Age and Tenure, 1999**

(percent)



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

only 18 percent of those in their sixties with more than 20 years of tenure have account balances of less than \$10,000.<sup>47</sup>

For a given age group, a longer tenure means a higher percentage of people with account balances greater than \$100,000 (Figure 19). For example, about 8 percent of participants in their sixties with 10 or fewer years of tenure have account balances of more than \$100,000. However, about 38 percent of participants in their sixties with 21 to 30 years of tenure with their current employer have account balances greater than \$100,000. The percentage increases to 49 percent for those in their sixties with more than 30 years of tenure.

**Relationship Between Account Balance and Salary**

This section examines how the ratio of 1999 account balance to 1999 salary varies with age and tenure and across different income groups.<sup>48</sup> The ratio of participant account balance to salary is positively correlated with age and tenure. Participants in their sixties, having had more time to accumulate assets, have higher ratios, while those in their twenties have the lowest ratios (Figure 20). For example, the average ratio of account balance to salary for participants in their twenties with two or fewer years of tenure is 15 percent, while the average ratio for participants in their sixties with two or fewer years of tenure is 35 percent. Furthermore, for a given age group, the ratio of account balance to salary rises as tenure increases. For example, for participants in their sixties with at least 30 years of tenure, the ratio of account balance to salary is 330 percent.

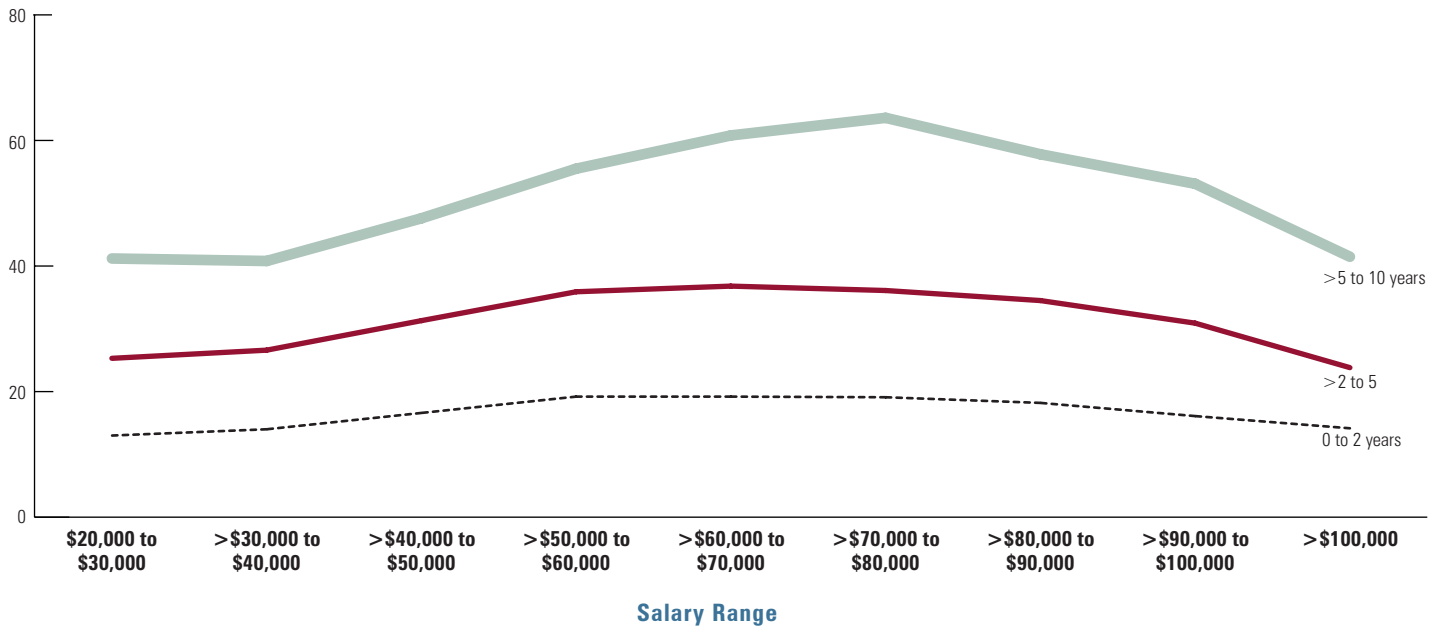
<sup>47</sup> Two possible explanations for the low account balances among this group are: (1) It may be that their employer's 401(k) plan has only recently been established (indeed, 49 percent of all 401(k) type plans in existence in 1995 were established after 1989 (U.S. Department of Labor (Spring 1999), table B.10)), or (2) The employee may have only recently joined the plan. In either event, job tenure would not accurately reflect actual 401(k) plan participation.

<sup>48</sup> The ratio of 401(k) account balance (at the current employer) to salary alone is not an indicator of preparedness for retirement. However, Leibowitz, Durham, Hammond, and Heller (May 2000) define a "personal funding ratio" (the ratio of required assets in hand to salary) as a simple measure of retirement savings adequacy analogous to the funding ratio concept used in defined benefit pension plans. A complete analysis of preparedness for retirement would require estimating projected balances at retirement, by also considering retirement income from Social Security, defined benefit plans, IRAs, and other defined contribution plans, possibly from previous employment. For such research, see Montalto (April 2000); the Social Security Administration's Modeling Income in the Near Term (MINT) projections summarized in Toder, Uccello, O'Hare, Favreault, Ratcliffe, Smith, Burtless, and Bosworth (September 1999); or Yuh, Hanna, and Montalto (1998). Furthermore, two other papers have addressed the projected role of 401(k) plans in retirement: Even and Macpherson (March 1998), and Poterba, Venti, and Wise (August 1999). In addition, Samwick and Skinner (July 1998) analyze defined contribution plan benefits more generally.

FIGURE 21

**Ratio of Account Balance to Salary for Participants in Their Twenties by Tenure, 1999**

(percent)



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

The ratio of account balance to salary varies somewhat with salary. For example, among participants in their twenties, the ratio tends to increase slightly with salary for low-to-moderate salary groups (Figure 21). However, at high salary levels the ratio tends to decline somewhat. For participants in their twenties with two to five years of tenure, the ratio of account balance to salary rises from 25 percent for salaries between \$20,000 and \$30,000 to 35 percent for salaries between \$80,001 and \$90,000. Thereafter, the ratio falls to 24 percent for salaries greater than \$100,000. Similarly, for participants in their forties with 11 to 20 years of tenure, the ratio of account balance to salary rises from 132 percent for salaries between \$30,001 and \$40,000 to 192 percent for

salaries between \$80,001 and \$90,000, then falls to 155 percent for salaries in excess of \$100,000 (Figure 22). Finally, for participants in their sixties with 11 to 20 years of tenure, the ratio rises from 186 percent for salaries between \$30,001 and \$40,000 to about 237 percent for salaries between \$70,001 and \$90,000, then falls to 184 percent for salaries in excess of \$100,000 (Figure 23).

The tendency of the ratio of account balances to salary to peak at higher salary levels and then fall off a bit likely reflects the influence of two competing forces. Empirical research suggests that higher earners tend to contribute higher percentages of salary,<sup>49</sup> and thus, one would expect the ratio of account balance to salary to rise with salary. However, constraining these individuals' greater propensities to save are tax code contribution limits and nondiscrimination rules, which aim to assure that employees of all income ranges attain the benefits of the 401(k) plan.<sup>50</sup>

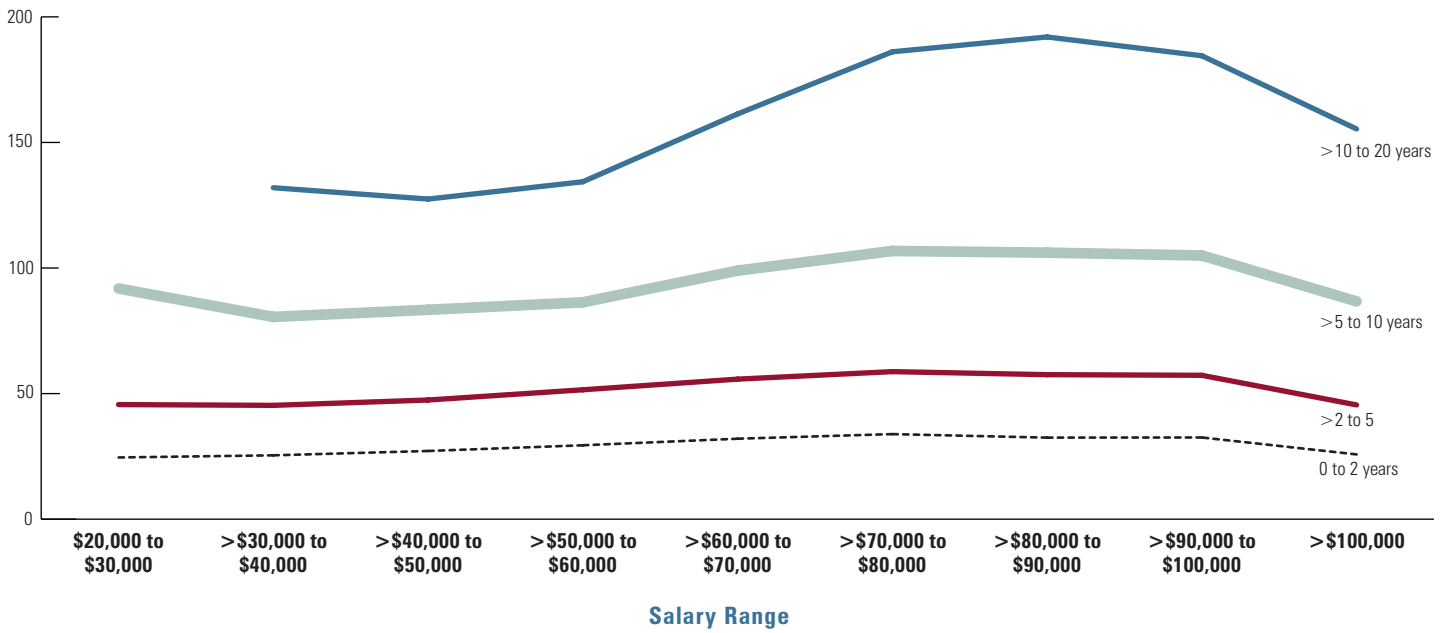
<sup>49</sup> See VanDerhei and Copeland (January 2001); Kusko, Poterba, and Wilcox (1998); and Yakoboski and VanDerhei (June 1996). Although Munnell, Sundén, and Taylor (December 2000) find a negative correlation between income and contributions, they acknowledge that it is because they do not control for the impact of the \$10,000 contribution limit (in 1998) on high-income participants.

<sup>50</sup> Specifically, contributions of high-income participants are constrained by election deferral limits in Internal Revenue Code Section 402(g) and Actual Deferral Percentage and Actual Contribution Percentage (ADP/ACP) nondiscrimination rules in Internal Revenue Code Sections 401(k) and 401(m).

FIGURE 22

**Ratio of Account Balance to Salary for Participants in Their Forties by Tenure, 1999**

(percent)

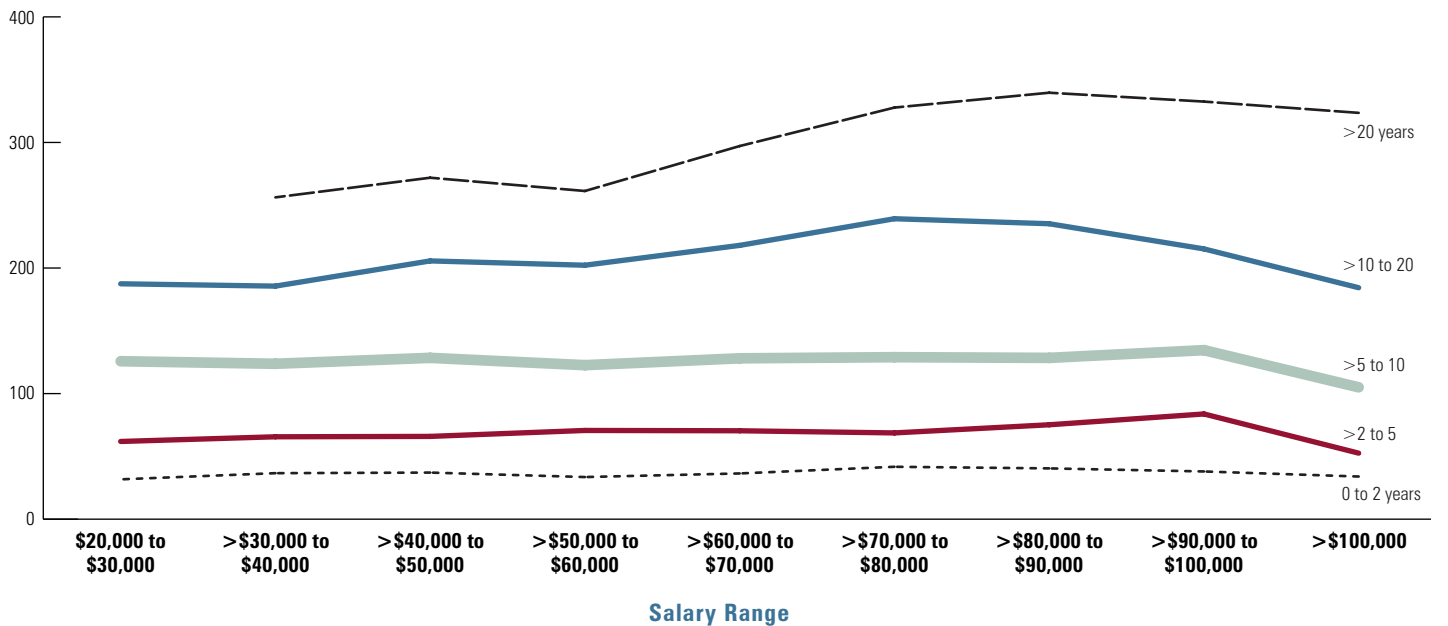


Source: Tabulations from EBRI/ICI Participant-Directed Retirement Plan Data Collection Project

FIGURE 23

**Ratio of Account Balance to Salary for Participants in Their Sixties by Tenure, 1999**

(percent)

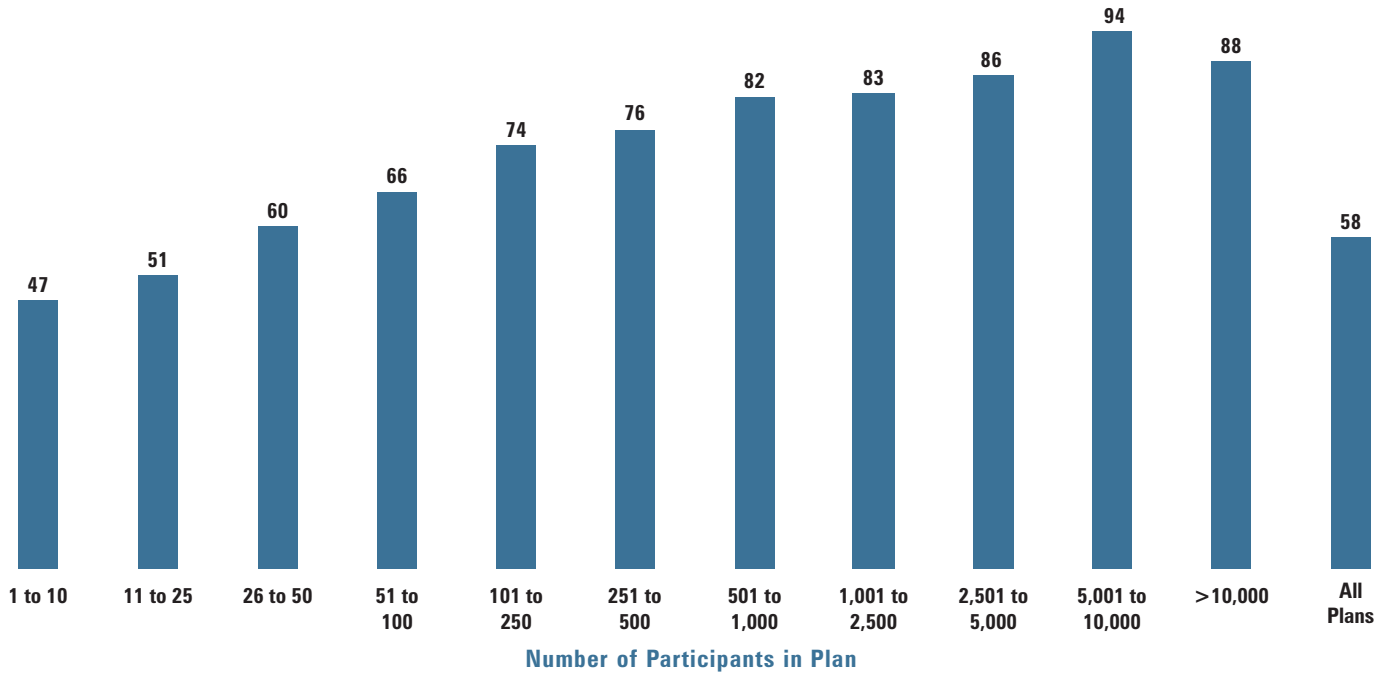


Source: Tabulations from EBRI/ICI Participant-Directed Retirement Plan Data Collection Project

FIGURE 24

**Availability of Plan Loans by Plan Size, 1999**

(percent of plans offering loans)



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

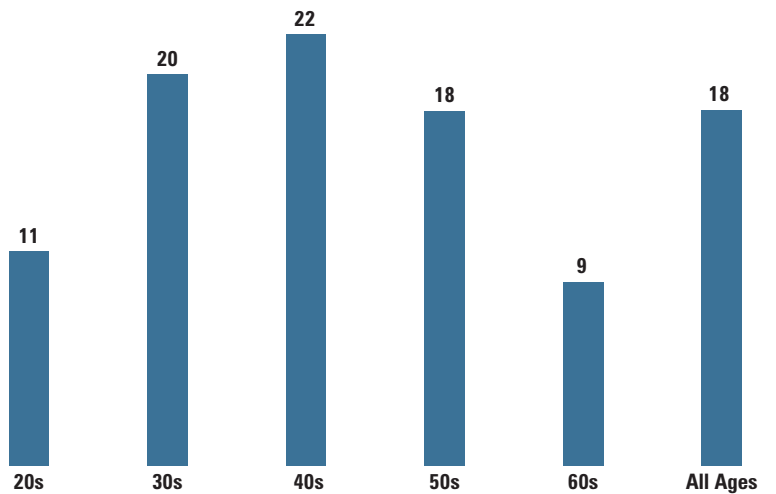
**PLAN LOANS**

**Availability of Plan Loans**

Fifty-eight percent of the plans for which loan data are available in the 1999 EBRI/ICI database offer a plan loan provision to participants (Figure 24).<sup>51</sup> The loan feature is more commonly associated with large plans. Fifty-four percent of plans with 100 or fewer participants offer borrowing privileges and three-quarters of the plans with 101 to 1,000 participants offer loans to employees, whereas 91 percent of plans with more than 5,000 participants offer a loan provision.

FIGURE 25

**Percentage of Eligible Participants with Loans by Age, 1999**

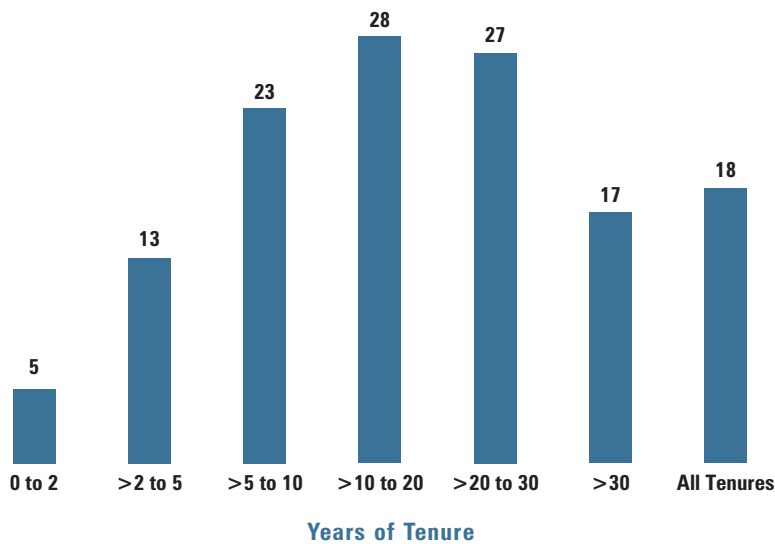


Source: Tabulations from EBRI/ICI Participant-Directed Retirement Plan Data Collection Project

<sup>51</sup> Plan-specific information on loan provision 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, but had no participant take out, a plan loan. It is likely that this omission is small as the U.S. General Accounting Office (1997) finds that more than 95 percent of 401(k) plans that offer loans had at least one plan participant with an outstanding loan.

FIGURE 26

Percentage of Eligible Participants with Loans by Tenure, 1999



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

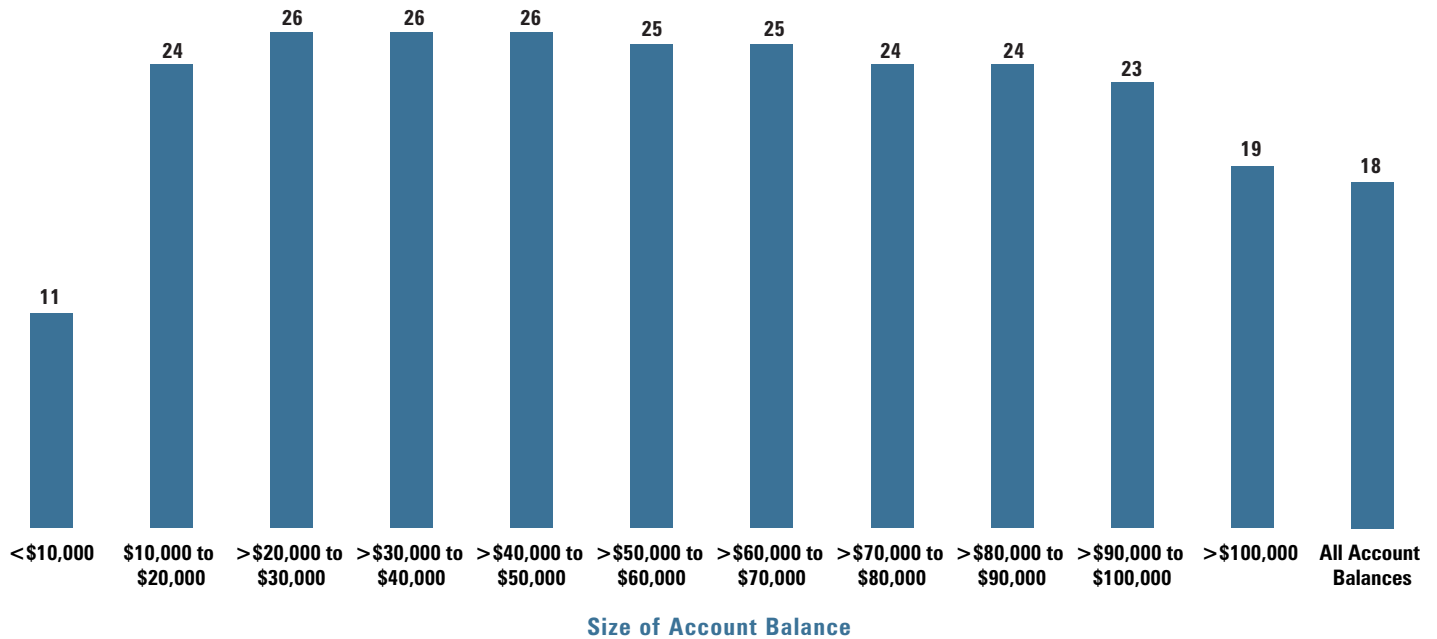
Characteristics of Participants with Outstanding Loans

Most participants in 401(k) plans have borrowing privileges. In the 1999 EBRI/ICI database, 82 percent of participants are in plans offering loans. However, only 18 percent of those eligible for loans have loans outstanding at the end of 1999 (Figure 25).<sup>52</sup>

Loan activity varies with age, tenure, account balance, and size of plan (measured by the number of participants in the plan). Of those participants in plans offering loans, the highest percentages of participants with outstanding loan balances are among participants in their thirties, forties, and fifties (Figure 25). In addition, individuals with five or fewer years of tenure or more than 30 years of tenure do not use the loan

FIGURE 27

Percentage of Eligible Participants with Loans by Account Balance, 1999

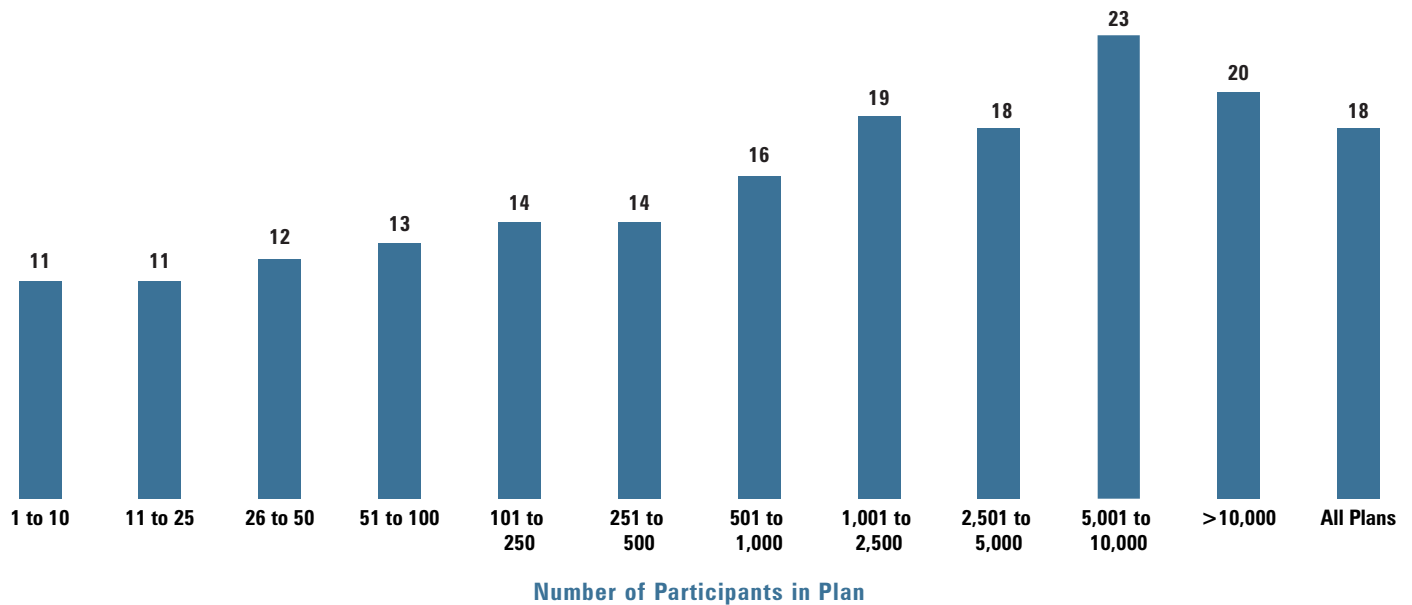


Source: Tabulations from EBRI/ICI Participant-Directed Retirement Plan Data Collection Project

<sup>52</sup> In the 1998 EBRI/ICI database, only 16 percent of participants in plans offering loans had loans outstanding. Tabulations of the 1998 SCF find a similar result: 13 percent of households (with the head of household age 20 to 69 years old) participating in 401(k) and/or 403(b) plans with a loan feature had borrowed from their plan accounts.

FIGURE 28

**Percentage of Eligible Participants with Loans by Plan Size, 1999**



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

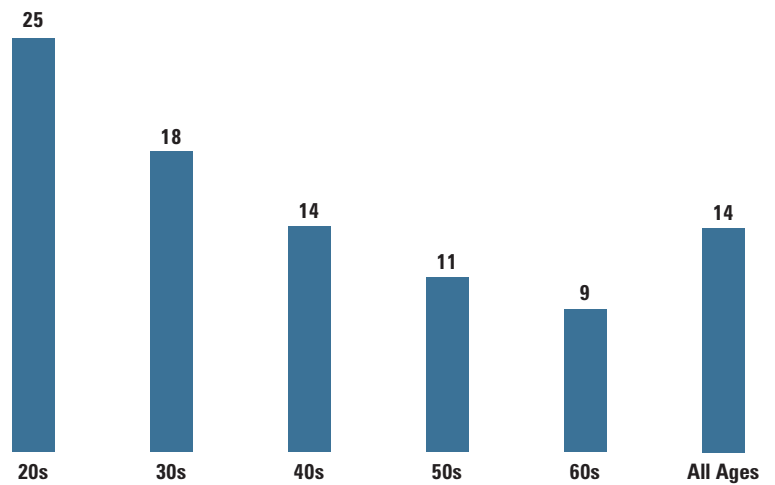
provision as often as other participants (Figure 26). Furthermore, only 11 percent of participants with account balances of less than \$10,000 have loans outstanding (Figure 27). This is well below the 18 percent for all participants and less than half the percentage for participants with account balances between \$10,000 and \$20,000. Finally, participants in smaller plans that offer loans are less likely to have taken out a loan than participants in larger plans (Figure 28).

**Average Loan Balances**

For those participants with outstanding loans at the end of 1999, the average unpaid balance is \$6,815.<sup>53</sup> Loan balances as a percentage of account balances (net of the unpaid loan balance) for participants with loans is 14 percent (Figure 29).<sup>54</sup>

FIGURE 29

**Loan Balances as a Percentage of Account Balances for Participants with Loans by Age, 1999**



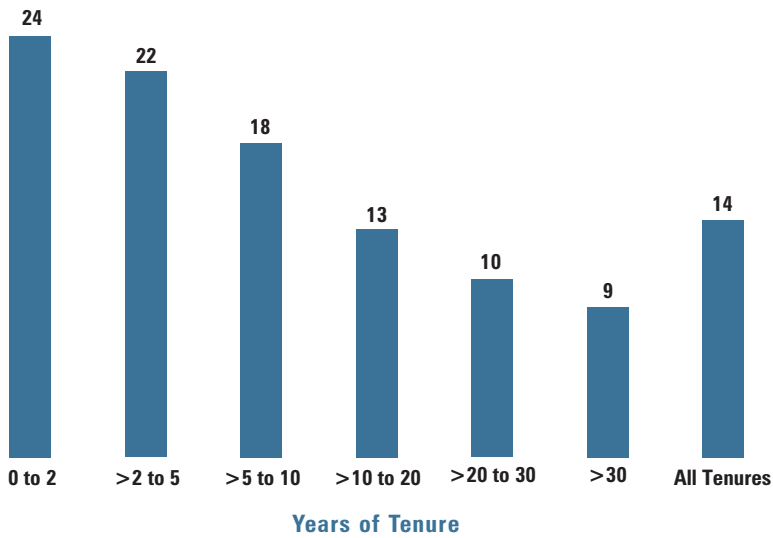
Source: Tabulations from EBRI/ICI Participant-Directed Retirement Plan Data Collection Project

<sup>53</sup> The median loan balance outstanding is \$4,400 at year-end 1999.

<sup>54</sup> In the 1998 EBRI/ICI database, the ratio of loan balance to account balance (net of loans) is 14 percent. Tabulations of the 1998 SCF find a similar result: The loan ratio is about 16 percent among households (with the head of the household age 20 to 69 years old) participating in 401(k) and/or 403(b) plans with loans outstanding.

FIGURE 30

**Loan Balances as a Percentage of Account Balances for Participants with Loans by Tenure, 1999**



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

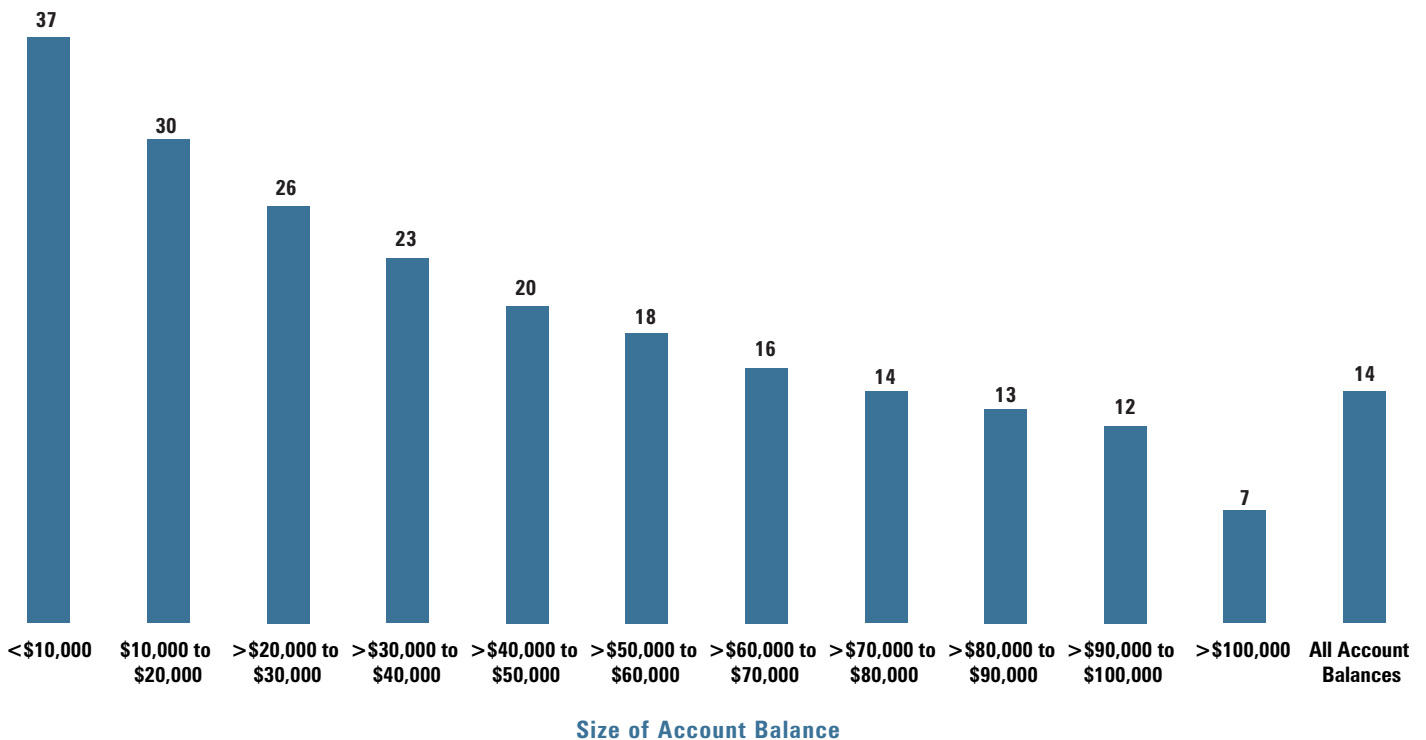
However, there is variation around this average with age, tenure, account balance, and salary. In addition, loan ratios vary slightly among participants with loans in differing plan sizes.

Loan ratios tend to decrease as age increases, dropping steadily from 25 percent for participants in their twenties to 9 percent for those in their sixties (Figure 29). Similarly, loan ratios tend to decrease as tenure increases, falling from 24 percent for participants with two or fewer years of tenure to 9 percent for those with more than 30 years of tenure (Figure 30).

Furthermore, loan ratios tend to decrease as account balance increases. Indeed, the loan ratio for participants with account balances of less than \$10,000 is 37 percent, while the loan

FIGURE 31

**Loan Balances as a Percentage of Account Balances for Participants with Loans by Account Balance, 1999**



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

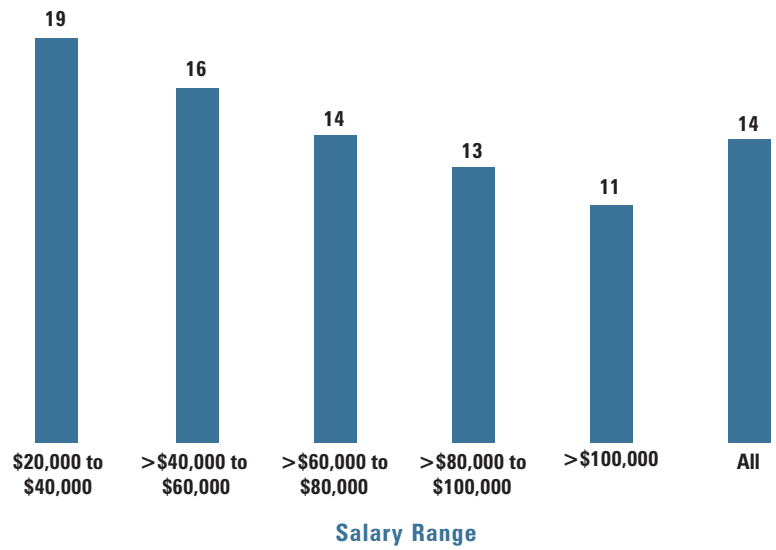


ratio for those with account balances in excess of \$100,000 is only 7 percent (Figure 31). Similarly, loan ratios tend to decrease as salary increases, falling from 19 percent for participants earning up to \$40,000 a year to 11 percent for participants earning in excess of \$100,000 (Figure 32).

Loan ratios vary only slightly when participants are grouped based on the size of their 401(k) plans (measured by the number of plan participants). On average, participants in plans with 100 or fewer participants borrowed 17 percent of their account balance, while participants in the largest plans, on average, had a loan ratio of 13 percent (Figure 33).

**FIGURE 32**

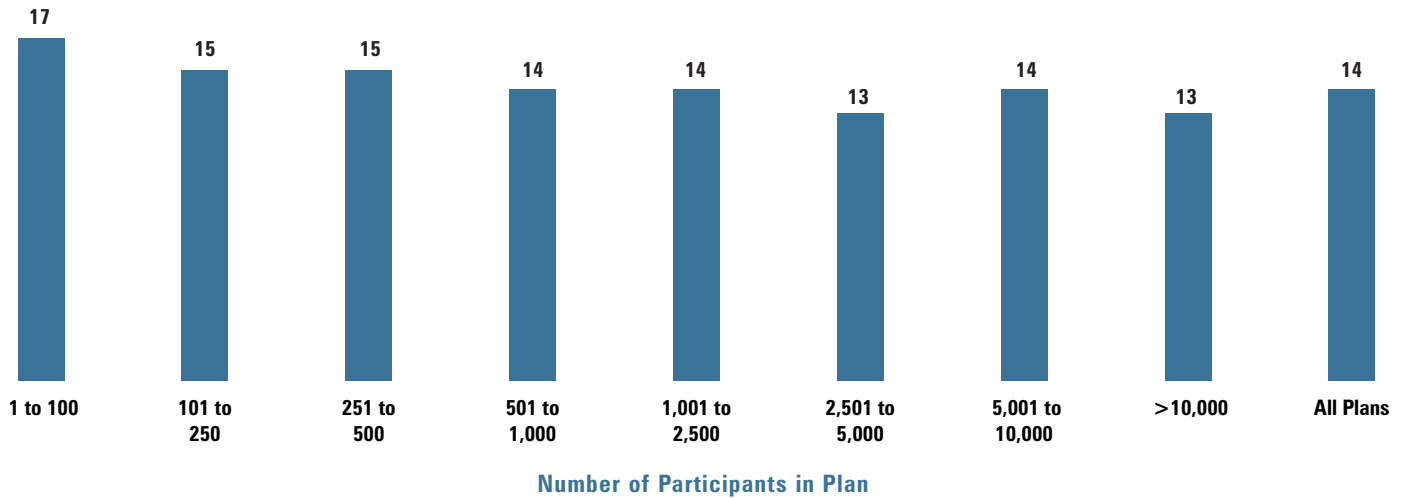
**Loan Balances as a Percentage of Account Balances for Participants with Loans by Salary, 1999**



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

**FIGURE 33**

**Loan Balances as a Percentage of Account Balances for Participants with Loans by Plan Size, 1999**



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

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