How America Saves 2014

A report on Vanguard 2013 defined contribution plan data

Contents

Chris McIsaac

Managing Director
Institutional Investor Group

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Defined contribution (DC) retirement plans are the centerpiece of the private-sector retirement system in the United States. More than 88 million Americans are covered by DC plans, with assets now in excess of $5.5 trillion.

Vanguard is among the leaders in the DC marketplace with nearly $600 billion in DC assets under management.* In our full-service DC recordkeeping business alone, we serve more than 3,000 plan sponsors and more than 3.5 million participants. As an industry leader, Vanguard recognizes the importance of having a detailed understanding of DC plans and the role they play in the U.S. retirement system. Accordingly, we are pleased to present *How America Saves 2014: A report on Vanguard 2013 defined contribution plan data*. In this 13th edition of *How America Saves*, we update our analysis of DC plans and participant behavior, based on 2013 Vanguard recordkeeping data.

The adoption by participants of professionally managed allocations continues to grow. In 2013, 40% of all Vanguard participants had their entire account balance invested in either a single target-date fund, a single target-risk or traditional balanced fund, or a managed account advisory service. These professionally managed investment options have the potential to reshape retirement savings outcomes for these participants. They signal a shift in responsibility for investment decision-making away from the participant and back to employer-selected investment and advice programs. We predict that within five years, more than half of all Vanguard participants will be using a professionally managed allocation.

The first edition of *How America Saves* was published in 2000. In 2011 we introduced a series of benchmark data supplements for selected industry sectors. These industry sector supplements have been very well received and a list of the sectors covered is on page 96.

This year we are pleased to further enhance the value of our analysis by introducing a supplement dedicated to Vanguard Retirement Plan Access™ clients. Launched in 2011, Vanguard Retirement Plan Access (VRPA) is a comprehensive, turnkey service for retirement plans with up to $20-plus million in assets.

We are confident this report will continue to serve as a valuable reference tool and that our observations will prove useful as your organization continues to develop its retirement programs.

Sincerely,

*As of March 31, 2014.

Executive summary

During the past year, the U.S. and global stock markets rose by double-digit rates, with U.S. stocks gaining 30% in 2013. The five-year period from 2008 to 2013 was marked by the sharp market downturn in 2008–2009 followed by a subsequent market recovery. During this period, as in prior periods of market turbulence, the saving and investment behavior of DC plan participants changed modestly, with neither large-market rallies nor sharp downturns affecting long-term behaviors substantially. As we look to the future, the main concerns affecting retirement savings plans remain largely the same—improving plan participation and contribution rates and enhancing portfolio diversification—although increasingly these changes are occurring through plan and investment menu design decisions made by sponsors, rather than by participants' own decisions.

Account balances and returns

In 2013, the median participant account balance was $31,396 and the average was $101,650. Vanguard participants' median and average account balances rose by 13% and 18%, respectively, during 2013. During the five-year 2008–2013 period, both median and average balances rose by about 80%.

Reflecting strong stock market performance in 2013, the median one-year participant total return was 21.9%. Five-year participant total returns averaged 12.7% per year.

Among continuous participants—those with a balance at year-end 2008 and 2013—the median account balance rose by 182% over five years, reflecting both the effect of ongoing contributions and market returns during this period. More than 90% of continuous participants saw their account balance rise during the five-year period ended December 31, 2013.

Professionally managed allocations

An important development in DC plans is the rising prominence of professionally managed allocations. Participants with professionally managed allocations are those who have their entire account balance invested in a single target-date or balanced fund or a managed account advisory service. At year-end 2013, 40% of all Vanguard participants were solely invested in an automatic investment program—compared with 22% at the end of 2008. Thirty-one percent of all participants were invested in a single target-date fund; another 6% held one other balanced fund; and 3% used a managed account program. These diversified, professionally managed investment portfolios dramatically improve portfolio diversification compared with participants making choices on their own. Among new plan entrants (participants entering the plan for the first time in 2013), three-quarters were solely invested in a professionally managed allocation.

Because of the growing use of target-date options, we anticipate that 58% of all participants and 80% of new plan entrants will be entirely invested in a professionally managed allocation by 2018.

Growth in use of target-date funds

Use of target-date strategies in DC plans continues to grow. Eighty-six percent of plan sponsors offered target-date funds at year-end 2013, up 26% compared with year-end 2008. Fifty-five percent of all participants use target-date funds. Fifty-six percent of participants owning target-date funds have their entire account invested in a single target-date fund. Three in 10 Vanguard participants are wholly invested in a single target-date fund, either by voluntary choice or by default.

An important factor driving use of target-date funds is their role as an automatic or default investment strategy. The qualified default investment alternative (QDIA) regulations promulgated under the Pension Protection Act of 2006 (PPA) continue to influence adoption of target-date funds. That said, voluntary choice is still important, with 4 in 10 single target-date investors choosing the funds on their own, not through default.

High-level savings metrics

High-level metrics of participant savings behavior remained steady in 2013. The plan participation rate was 76% in 2013. The average deferral rate was 7.0% and the median was unchanged at 6.0%. However, average deferral rates have declined slightly from their peak of 7.3% in 2007. The decline in average contribution rates is attributable to increased adoption of automatic enrollment. While automatic enrollment increases participation rates, it also leads to declining plan contribution rates when default deferral rates are set at low levels, such as 3% or lower.

These figures reflect the level of employee-elective deferrals. Most Vanguard plans also make employer contributions. Taking into account both employee and employer contributions, the average total participant contribution rate in 2013 was 10.2% and the median was 9.2%. Aggregate contribution rates have also declined slightly from 2007, again likely because of the impact of low default contribution rates for automatic enrollment.

Growth of automatic savings features

The adoption of automatic enrollment has grown by 70% since year-end 2008. At year-end 2013, 34% of Vanguard plans had adopted automatic enrollment, up two percentage points from 2012. In 2013, however, because larger plans were more likely to offer automatic enrollment, more than 60% of new plan entrants in 2013 were enrolled via automatic enrollment.

More than half of all contributing participants in 2013 were in plans with automatic enrollment. The automatic enrollment feature, while initially applied only to new hires, has now been applied to eligible nonparticipants in half of Vanguard plans with the feature. Seven in 10 automatic enrollment plans have implemented automatic annual deferral rate increases. Almost all plans with automatic enrollment—98%—default participants into a balanced investment strategy—with 9 in 10 choosing a target-date fund as the default.

Roth 401(k) adoption

At year-end 2013, the Roth feature was adopted by 52% of Vanguard plans and 13% of participants within these plans had elected the option. We anticipate steady growth in Roth adoption rates, given the feature's tax diversification benefits.

Presence of index core options

Given the growing focus on plan fees, there is increased interest among plan sponsors in offering a wider range of low-cost passive or index funds. A "passive core" is a comprehensive set of low-cost index options that span the global capital markets. In 2013, nearly half of Vanguard plans offered a set of options providing an index core. Because large plans have adopted this approach more quickly, about 60% of all Vanguard participants were offered an index core as part of the overall plan investment menu. Factoring in passive target-date funds, 84% of participants hold equity index investments.

Shift in participant investment allocations

Reflecting stock market performance in 2013, the percentage of plan assets invested in equities rose to 71%, up from 66% in 2012. Equity allocations continue to vary dramatically among participants. One in 7 participants has taken an extreme position, holding either 100% in equities (8% of participants) or no equities (6% of participants), although these extreme allocations have fallen in recent years as a result of the rise of target-date funds and other professionally managed allocations.

Participant contributions to equities were steady in 2013 compared with 2012 at around 70%. In 2013, one-third of all contributions were directed to target-date funds.

Participant trading muted

During 2013, only 10% of DC plan participants traded within their accounts, while 90% did not initiate any exchanges. This measure of trading by plan participants declined by about 40% compared with 2008, when 14% of plan participants initiated trades. On a net basis, there was a shift of 0.2% of assets to equities in 2013, with most traders making small changes to their portfolios. Less than 1% (0.5%) of all participants actually abandoned equities during the year—that is, shifted from a portfolio with some equity exposure to a portfolio with no equity exposure.

The decline in participant trading is partially attributable to participants' increased adoption of target-date funds. Only 2% of participants holding a single target-date fund traded in 2013.

Drop in company stock exposure

A shift away from company stock holdings first observed in 2006 continued into 2013. Among plans offering company stock, the number of participants holding a concentrated position of more than 20% of their account balance fell from 32% in 2007 to 31% in 2013. In addition, the number of plans actively offering company stock to participants declined to 10% in 2013 from 11% in 2007. As a result, only 9% of all Vanguard participants held concentrated company stock positions in 2013, compared with 12% at the end of 2007.

Loan activity flat

There was a slight increase in new loans issued in 2013, up 4% compared with 2012. In 2013, 18% of participants had a loan outstanding (no change from 2012) and the average loan balance was $9,500. Only about 2% of aggregate plan assets were borrowed by participants.

In-service withdrawals

During 2013, 4% of participants took an in-service withdrawal, withdrawing about one-third of their account balances. All in-service withdrawals during 2013 amounted to 1% of aggregate plan assets. Weak economic conditions appeared to be affecting the withdrawal behavior of a very small group of participants.

Assets largely preserved for retirement

Participants separating from service largely preserved their assets for retirement. During 2013, about 30% of all participants could have taken their account as a distribution because they had separated from service in the current year or prior years. The majority of these participants (85%) continued to preserve their plan assets for retirement by either remaining in their employer's plan or rolling over their savings to an IRA or new employer plan. In terms of assets, 97% of all plan assets available for distribution were preserved and only 3% were taken in cash.

Figure 1. Highlights at a glance

How America Saves population	*How America Saves 2014* reference	2009	2010	2011	2012	2013
Number of participant accounts (millions)		3.4	3.4	3.4	3.4	3.4
Number of plans (thousands)		2.2	2.1	2.0	2.0	1.9
Median participant age		46	46	46	46	46
Median participant tenure		8	8	8	8	8
Percentage male		59%	59%	59%	59%	59%
Median eligible employee income (thousands)		$53	$57	$60	$61	$64
Median participant income (thousands)		$60	$65	$68	$67	$75
Median nonparticipant income (thousands)		$38	$41	$45	$46	$48
1. Accumulating						
Plan design—page 11						
Plans offering immediate eligibility for employee contributions	Figure 3	52%	54%	58%	58%	55%
Plans requiring one year of service for matching contributions	Figure 3	28%	25%	25%	26%	28%
Plans providing an employer contribution	Figure 5	92%	88%	91%	92%	91%
Plans with automatic enrollment	Figure 14	24%	27%	29%	32%	34%
Plans with automatic enrollment with automatic annual increases	Figure 15	75%	69%	69%	69%	69%
Plans offering catch-up contributions	Text page 32	95%	96%	95%	97%	97%
Plans offering Roth contributions	Text page 32	37%	42%	46%	49%	52%
Plans offering after-tax contributions	Text page 32	19%	19%	19%	19%	19%
Participation rates—page 20						
Plan-weighted participation rate	Figure 18	76%	76%	77%	78%*	76%*
Participant-weighted participation rate	Figure 18	73%	72%	74%	74%*	67%*
Voluntary enrollment participant-weighted participation rate	Figure 24	71%	70%	71%	71%	65%
Automatic enrollment participant-weighted participation rate	Figure 24	84%	86%	88%	88%	82%
Participants using catch-up contributions (when offered)	Figure 34	12%	13%	14%	13%	14%
Participants using Roth (when offered)	Figure 36	8%	9%	9%	10%	13%
Participants using after-tax (when offered)	Figure 35	8%	7%	7%	7%	8%
Employee deferrals—page 26						
Average participant deferral rate	Figure 26	6.8%	6.9%	6.9%	6.9%	7.0%
Median participant deferral rate	Figure 26	6.0%	6.0%	6.0%	6.0%	6.0%
Percentage of participants deferring more than 10%	Figure 27	21%	22%	20%	20%	22%
Voluntary enrollment plan average participant deferral rate	Figure 32	7.0%	7.3%	7.3%	7.3%	7.5%
Automatic enrollment plan average participant deferral rate	Figure 32	4.8%	5.0%	5.2%	5.1%	4.9%
Participants reaching 402(g) limit ($17,500 in 2013)	Figure 33	9%	10%	11%	10%	12%
Average total contribution rate (participant and employer)	Figure 37	9.8%	10.4%	10.5%	10.8%	10.2%
Median total contribution rate (participant and employer)	Figure 37	9.0%	9.6%	9.8%	10.0%	9.2%
Account balances—page 36						
Average balance	Figure 41	$69,084	$79,077	$78,276	$86,212	$101,650
Median balance	Figure 41	$23,140	$26,926	$25,550	$27,843	$31,396
2. Managing						
Asset and contribution allocations—page 43						
Average plan asset allocation to equities	Figure 47	66%	68%	65%	66%	71%
Average plan contribution allocation to equities	Figure 48	68%	70%	71%	70%	71%
Average plan asset allocation to target-date funds	Figure 47	9%	12%	14%	17%	19%
Average plan contribution allocation to target-date funds	Figure 48	16%	22%	27%	31%	34%
Participants with balanced strategies	Figure 73	52%	57%	61%	63%	66%
Extreme participant asset allocations (100% fixed income or equity)	Figure 71	25%	22%	18%	16%	14%

*The 2013 data is preliminary. The previously reported plan- and participant-weighted participation rates for 2012 were 76% and 68%, respectively.

(Continued)

Figure 1. Highlights at a glance

2. Managing (continued)

Plan investment options—page 46	*How America Saves 2014* reference	2009	2010	2011	2012	2013
Average number of funds offered	Figure 52	18.3	18.6	18.9	18.4	18.2
Average number of funds used	Figure 52	3.4	3.3	3.2	3.1	3.1
Plans offering an index core	Figure 56	38%	40%	44%	46%	49%
Participants offered an index core	Figure 57	42%	48%	53%	56%	59%
Percentage of plans designating a QDIA	Figure 58	58%	61%	64%	67%	70%
Among plans designating a QDIA, percentage target-date fund	Figure 58	80%	89%	90%	90%	91%
Plans offering target-date funds	Figure 65	75%	79%	82%	84%	86%
Participants using target-date funds (when offered)	Figure 62	34%	42%	47%	58%	61%
Plans offering managed account program	Figure 75	10%	13%	14%	16%	19%
Participants offered managed account program	Figure 75	36%	41%	44%	47%	52%
Participants with professionally managed allocations	Figure 63	25%	29%	33%	36%	40%
Participants using a single target-date fund	Figure 63	16%	20%	24%	27%	31%
Participants using a single risk-based balanced fund	Figure 63	6%	6%	6%	6%	6%
Participants using a managed account program	Figure 63	3%	3%	3%	3%	3%
Plans actively offering company stock	Figure 62	11%	11%	10%	10%	10%
Participants using company stock	Text page 68	21%	20%	17%	16%	15%
Participants with >20% company stock	Text page 68	11%	10%	9%	9%	9%
Investment returns—page 70						
Average 1-year participant total return rate	Figure 78	22.3%	12.3%	0.0%	12.4%	20.4%
Average 1-year participant personal return rate	Figure 78	25.2%	13.1%	(0.4%)	12.0%	19.9%
Trading activity—page 74						
Participant-directed trading	Figure 82	11%	10%	10%	9%	10%
Recordkeeping assets exchanged to equities (fixed income)	Figure 82	(0.6%)	(1.1%)	(2.5%)	(1.7%)	0.2%

3. Accessing

Loans—page 81						
Plans offering loans	Text page 81	75%	75%	75%	76%	77%
Participants with an outstanding loan (when offered)	Figure 89	16%	18%	18%	18%	18%
Recordkeeping assets borrowed	Text page 83	2%	2%	2%	2%	2%
Withdrawals—page 85						
Plans offering hardship withdrawals	Figure 93	81%	81%	81%	82%	83%
Participants using withdrawals (when offered)	Figure 94	3%	4%	4%	4%	4%
Recordkeeping assets withdrawn	Figure 94	1%	1%	1%	1%	1%
Participant account balance withdrawn	Figure 94	33%	30%	33%	33%	32%
Distributions and rollovers—page 86						
Terminated participants preserving assets	Figure 102	82%	81%	83%	82%	85%
Assets preserved that were available for distribution	Figure 102	96%	96%	96%	96%	97%
Participant access methods—page 92						
Participants not contacting Vanguard during the year	Figure 103	47%	47%	45%	43%	40%
Participants registered for internet account access	Figure 106	62%	64%	66%	68%	70%
Participant account transactions processed via the web	Figure 108	76%	80%	81%	82%	83%

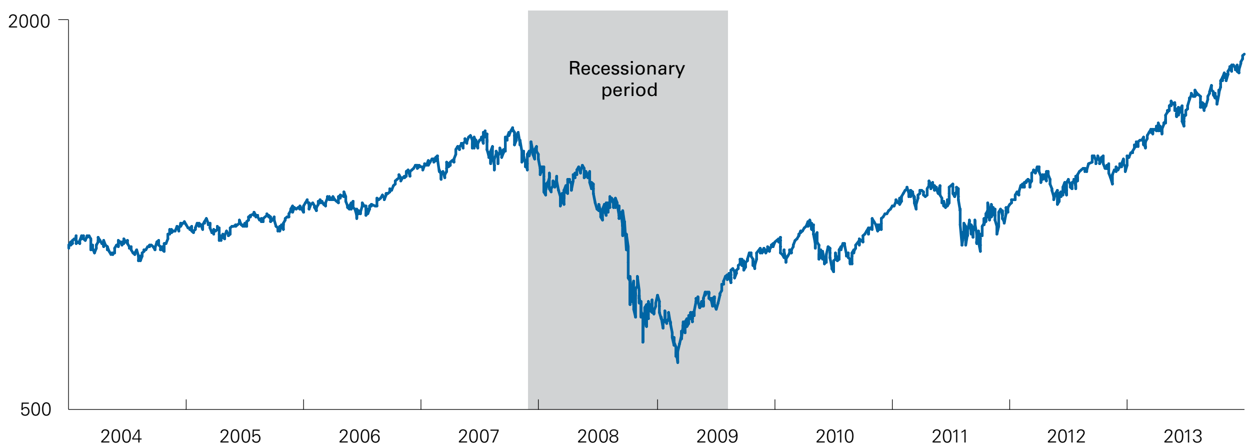
Source: Vanguard, 2014.

Market overview

Since the cyclical low in March 2009, stocks have rebounded by 173% through year-end 2013 (**Figure 2**). In 2013, stock prices rose 30% for the year, and the year was characterized by volatility more in line with historical norms and was not as volatile as in recent years. As of year-end 2013, the S&P 500 Index had risen 18% above its October 2007 peak before the financial crisis.[1]

During the crisis, stock prices were exceptionally volatile. In 2008, 16.8% of trading days had a change in stock prices greater than +/–3%. The comparable figure was 8.7% in 2009, 3.2% in 2010, and 4.8% in 2011. However, in 2012 and 2013, no trading days exhibited this level of volatility. Historically, 1% of stock market trading days are associated with a change in stock prices of greater than +/–3%.

Figure 2. S&P 500 daily close



Source: Standard & Poor's 500.

Past performance is no guarantee of future results. The performance of an index is not an exact representation of any particular investment, as you cannot invest directly in an index.

1 These changes reflect on the price-index level; the total return of buy-and-hold stock market investors would have also included reinvested dividends.

DC retirement plans

DC plans are the dominant type of retirement plan sponsored by private-sector employers in the United States, covering nearly half of all private-sector workers. Although there is still a significant minority of individuals eligible for such plans who fail to participate in them, DC plans have nonetheless enabled millions of American workers to accumulate savings for retirement.

The performance of DC plans can be measured in several ways:

Accumulating plan assets. The level of plan contributions is fundamental to retirement savings adequacy. Plan contributions are affected by employee participation rates, participant deferral rates, and the value of employer contributions. Participant deferral behavior is increasingly influenced by employers' automatic enrollment and autoescalation default designations. Overall, retirement plan design varies substantially across employers—and variation in the level of employer contributions does impact the employee contributions needed to accumulate sufficient retirement savings.

Managing participant accounts. After deciding to contribute to a retirement savings plan, participants' most important decision is how to allocate their holdings among the major asset classes. As with deferral decisions, many such investment decisions are increasingly influenced by employer-established defaults, as well as the growing use of all-in-one portfolio strategies such as target-date funds and managed account programs. These investment decisions—including the types of investment options offered by the plan and the choices participants or employers make from among those options—have a direct impact on account performance over time. Thus, investment choices, in conjunction with the level of plan contributions, ultimately influence participants' level of retirement readiness.

Accessing plan assets. Participants may be able to take a loan or in-service withdrawal to access their savings while working. When changing jobs or retiring, they typically have the option of remaining in the plan, rolling over to another plan or IRA, or taking a cash lump sum.

Our analysis shows that, despite a volatile market and economic environment in recent years, most Vanguard DC plan participants have seen their retirement savings grow over one- and five-year periods. Meanwhile, most metrics of participant behavior have returned to prerecession levels.

1

Accumulating plan assets

Historically employees have had to decide whether to participate and at what rate to save. Increasingly employers are making these decisions through automatic enrollment.

Plan design

Nine in 10 Vanguard-administered DC plans permit pre-tax elective deferrals by eligible employees. Employee deferral decisions are shaped by the design of the DC plan sponsored by their employer.

DC plans with employee-elective deferrals can be grouped into four categories based on the type of employer contributions made to the plan: (1) plans with matching contributions, (2) plans with nonmatching employer contributions, (3) plans with both matching and nonmatching contributions, and finally (4) plans with no employer contributions at all. Nonmatching contributions are typically structured as a variable or fixed profit-sharing contribution, or less frequently as an employee stock ownership plan (ESOP) contribution.

In employee-contributory DC plans, employer contributions are typically a secondary source of plan funding. Both the type and size of employer contributions vary substantially across plans.

Eligibility

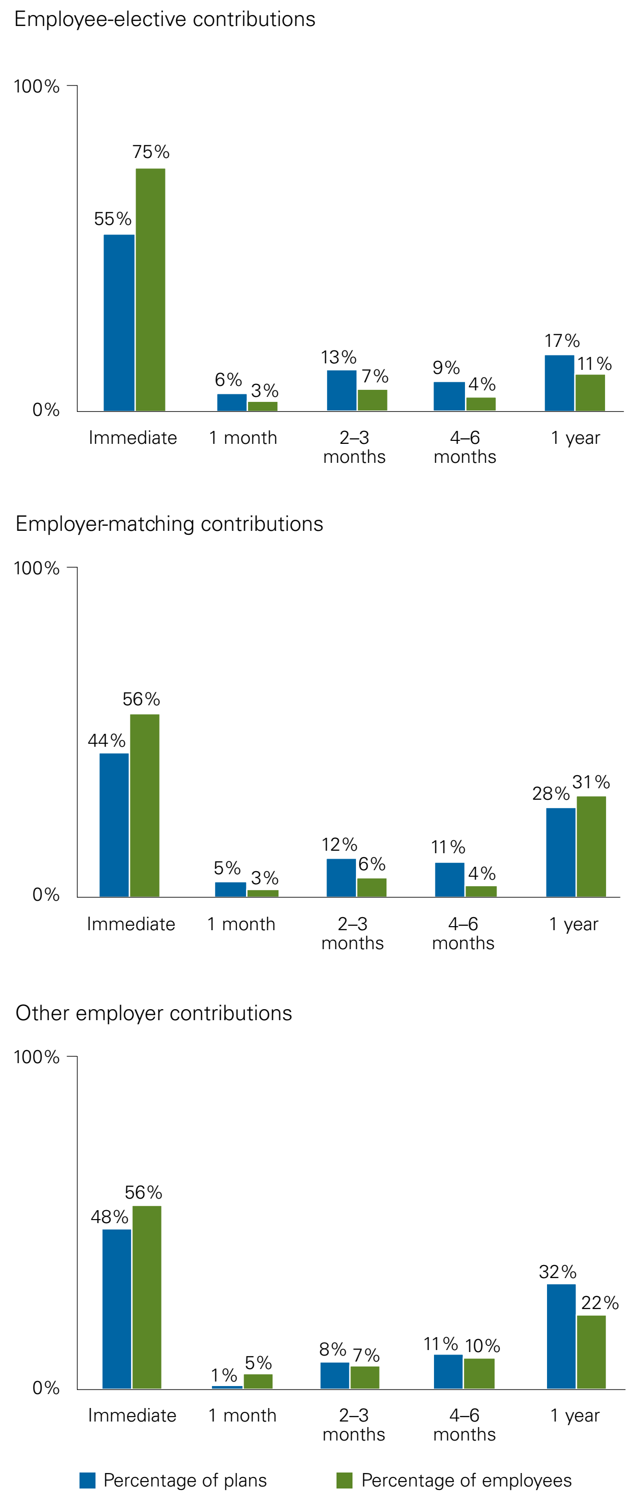
In 2013, more than half (55%) of Vanguard plans allowed employees to make voluntary contributions immediately after they joined their employer (Figure 3). Larger plans were more likely to offer immediate eligibility than smaller plans were; as a result, 75% of employees qualified for immediate eligibility in 2013.

At the other extreme, 17% of plan sponsors required eligible employees to have one year of service before they could make employee-elective contributions to their plan. Smaller plans were more likely to impose the one-year wait; as a result, only 11% of total eligible employees were subject to this restriction.

Eligibility rules are more restrictive for employer contributions, including matching contributions and other types of employer contributions, such as profit-sharing or ESOP contributions. A one-year eligibility rule is much more common for employer contributions, presumably because employers want to minimize compensation costs for short-tenured employees.

Figure 3. Eligibility, 2013

Vanguard defined contribution plans permitting employee-elective deferrals



Source: Vanguard, 2014.

Vesting

In 2013, 4 in 10 plans (45%) immediately vested participants in employer-matching contributions (Figure 4). Large plans are slightly more likely to offer immediate vesting and about half (49%) of participants are in plans with immediate vesting of employer-matching contributions. Smaller plans are more likely to use longer vesting schedules. One-third of plans with employer-matching contributions use a 5- or 6-year graded vesting schedule. One in 5 (21%) participants with employer-matching contributions is in a plan with a longer vesting schedule.

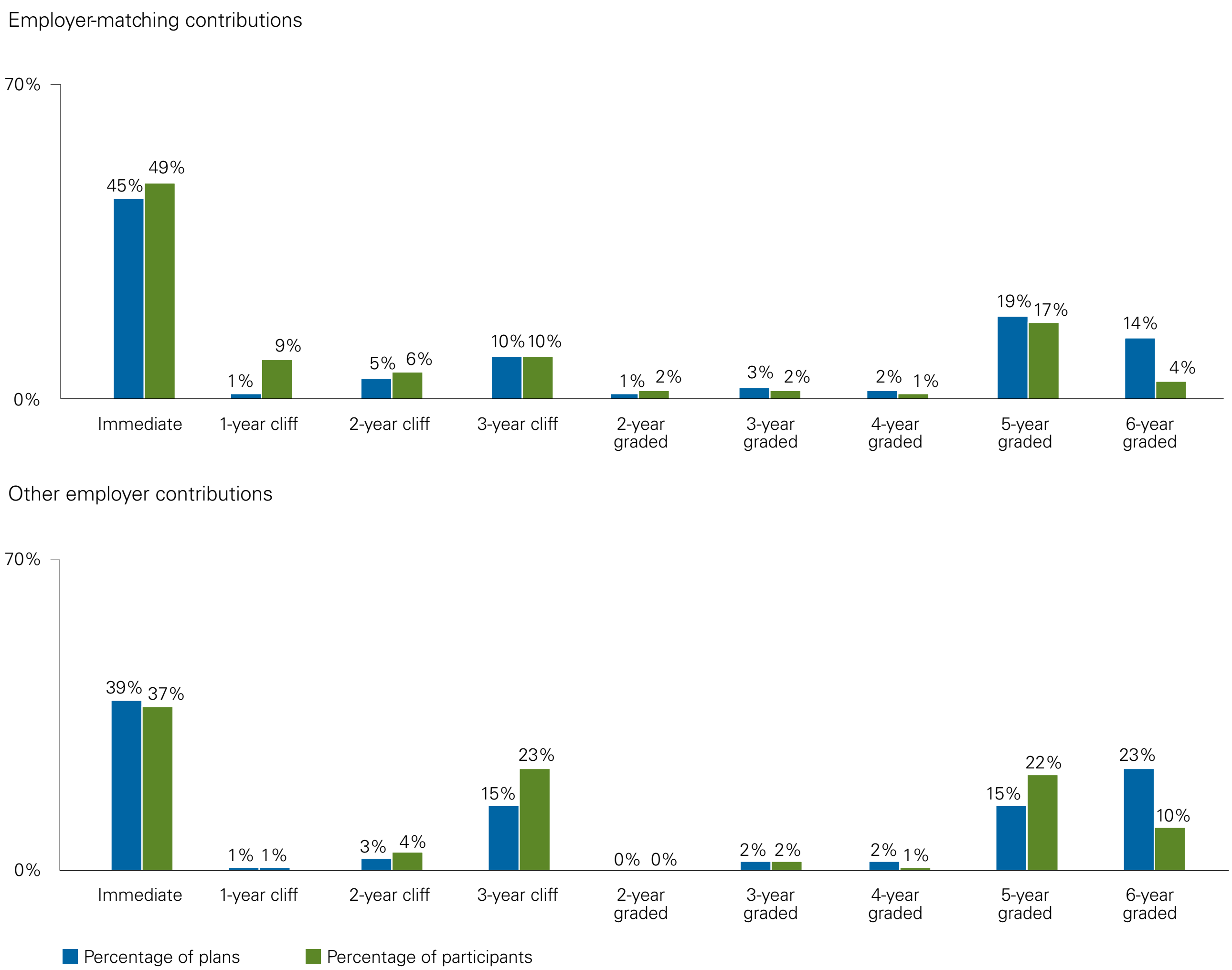
In 2013, 4 in 10 plans (39%) immediately vested participants for other employer contributions, such as profit-sharing or ESOP contributions. On the other hand, 4 in 10 plans (38%) with other employer contributions use a 5- or 6-year graded vesting schedule and 3 in 10 participants (32%) receiving other employer contributions are in plans with longer vesting schedules.

Employer contributions

Half of Vanguard plans (49%) provided only a matching contribution in 2013, and this type of design covered 57% of participants (Figure 5).

Figure 4. Vesting, 2013

Vanguard defined contribution plans with employer contributions



Source: Vanguard, 2014.

One-third of plans (34%), covering 4 in 10 participants (38%), provided both a matching and a nonmatching employer contribution. Eight percent of plans provided only a nonmatching employer contribution, and 2% of participants were in this type of design. Finally, 9% of plans made no employer contributions of any kind in 2013, and 3% of participants were in this category.

As noted previously, eligibility for employer contributions is typically more restrictive than eligibility for employee-elective deferrals. In 2013, a higher proportion of plans imposed a one-year waiting period on employer contributions, whether in the form of a matching or other type of contribution, than imposed a one-year waiting period on employee-elective deferrals.

These statistics summarize the incidence of employer contributions to a DC plan that accepts employee deferrals. They do not necessarily reflect the entire retirement benefits program funded by certain employers. Some employers may offer a companion employer-funded plan—such as a defined benefit (DB) plan, a stand-alone profit-sharing, ESOP, or a money purchase DC plan—in addition to an employee-contributory DC plan.

Matching contributions

The wide variation in employer contributions is most evident in the design of employer-matching formulas. In 2013, Vanguard administered more than 225 distinct match formulas for plans offering an employer match. Among plans offering a matching contribution in 2013, three-quarters (covering 81% of participants) provided a single-tier match formula, such as $0.50 on the dollar on the first 6% of pay (Figure 6). Less common, used by 15% of plans (covering 11% of participants), were multitier match formulas, such as $1.00 per dollar on the first 3% of pay and $0.50 per dollar on the next 2% of pay.

Another 7% of plans (covering 6% of participants) had a single- or multitier formula, but imposed a maximum dollar cap on the employer contribution, such as $2,000. Finally, a very small percentage of plans used a match formula that varied by age, tenure, or other variables.

The matching formula most commonly cited as a typical employer match is $0.50 on the dollar on the first 6% of pay. This is the match most commonly offered among Vanguard DC plans and most commonly received by Vanguard DC plan participants. In fact, among plans offering a match, 25% provided exactly this match formula in 2013, covering 21% of participants.

Figure 5. Types of employer contributions, 2013

Vanguard defined contribution plans permitting employee-elective deferrals

Type of employer contribution	Percentage of plans	Percentage of participants
Matching contribution only	49%	57%
Nonmatching contribution only	8	2
Both matching and other nonmatching contribution	34	38
Subtotal	**91%**	**97%**
No employer contribution	9%	3%

Source: Vanguard, 2014.

Figure 6. Types of matching contributions, 2013

Vanguard defined contribution plans with matching contributions

Match type	Example	Percentage of plans	Percentage of participants
Single-tier formula	$0.50 per dollar on first 6% of pay	74%	81%
Multitier formula	$1.00 per dollar on first 3% of pay; $0.50 per dollar on next 2% of pay	15	11
Dollar cap	Single- or multitier formula with $2,000 maximum	7	6
Other	Variable formulas based on age, tenure, or similar variables	4	2

Source: Vanguard, 2014.

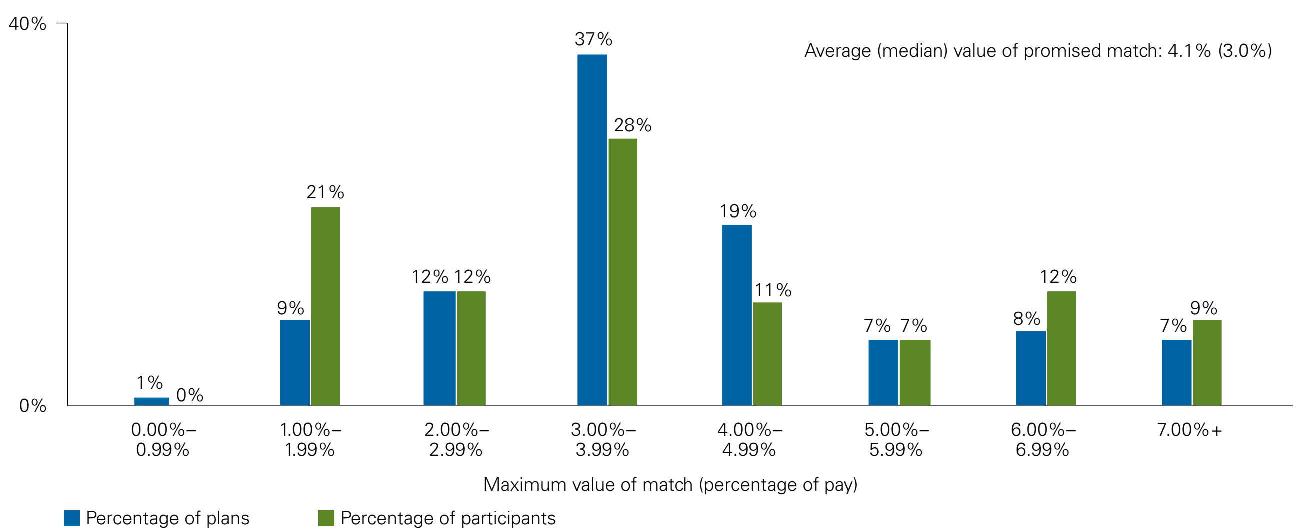
Given the multiplicity of match formulas, one way to summarize matching contributions is to calculate the maximum value of the match promised by the employer. For example, a match of $0.50 on the dollar on the first 6% of pay promises the same matching contribution—3% of pay—as a formula of $1.00 per dollar on the first 3% of pay.

The promised value of the match varies substantially from plan to plan. Among plans with single- or multitier match formulas, 6 in 10 (covering 46% of participants) promised a match of between 3% and 6% of pay (**Figure 7**). Most promised matches ranged from 1% to 6% of pay. The average value of the promised match was 4.1% of pay; the median value, 3.0%. Average promised matches dipped a bit in 2009 following the recession, as some sponsors reduced matches. Average and median promised matches have remained fairly stable between 2005 and 2013 (**Figure 8**).

Another way to assess matching formulas is to calculate the employee-elective deferral needed to realize the maximum value of the match. In 2013, 8 in 10 plans (covering 7 in 10 participants) required participants to defer between 4% and 7% of their pay to receive the maximum employer-matching contribution (**Figure 9**). The average employee-elective deferral required to maximize the match was 7.5% of pay; the median value, 6.0%.

Figure 7. **Distribution of promised matching contributions, 2013**

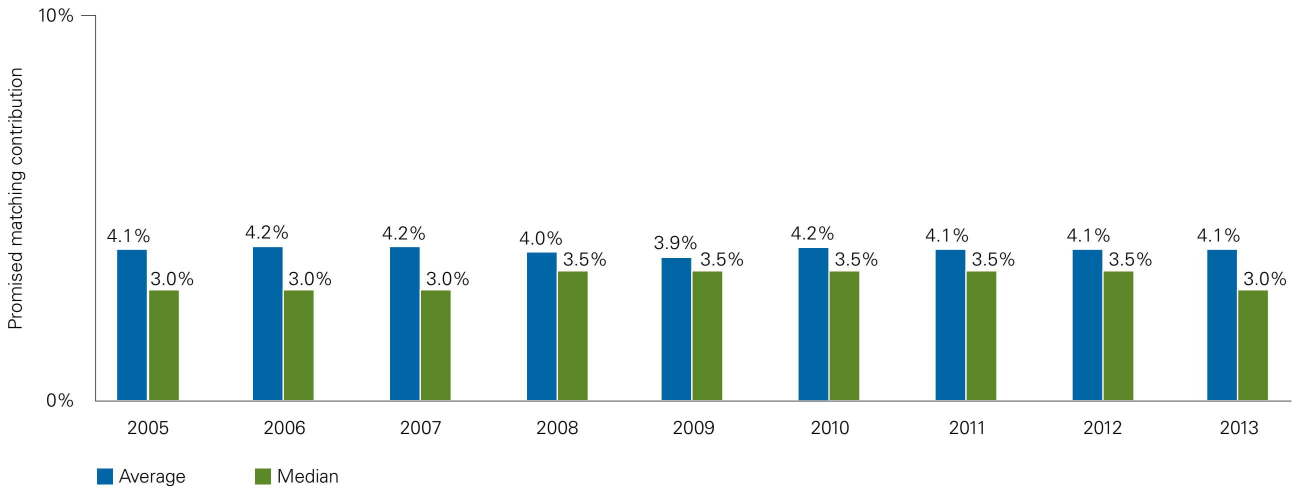
Vanguard defined contribution plans permitting employee-elective deferrals with a single- or multitier match formula



Source: Vanguard, 2014.

Figure 8. Promised matching contributions

Vanguard defined contribution plans permitting employee-elective deferrals with a single- or multitier match formula

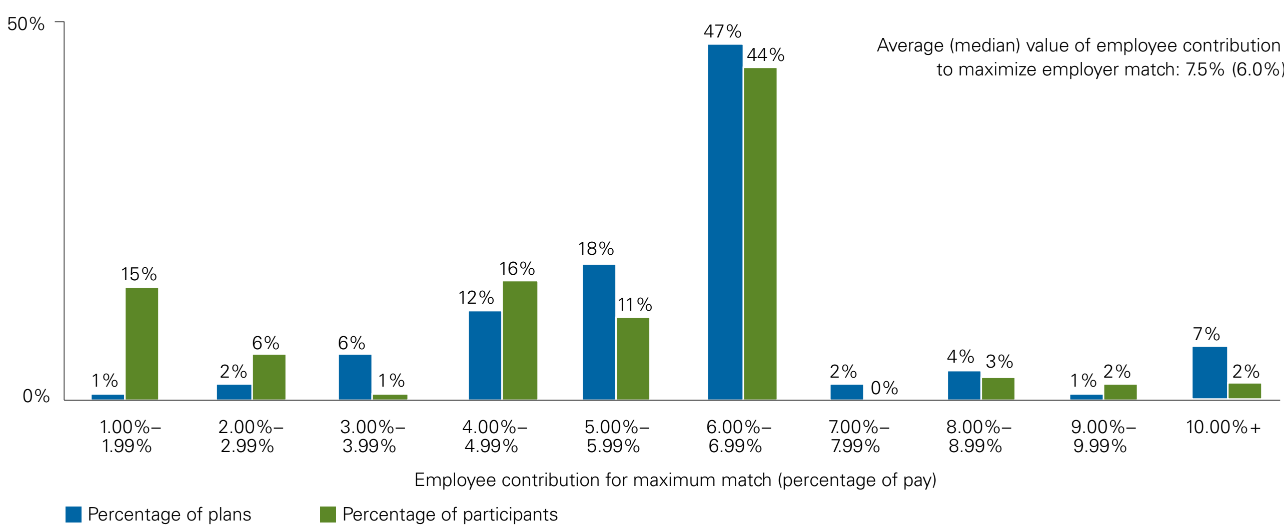


Note: The 2013 employer contribution data are drawn from a subset of plans that had completed nondiscrimination testing by March 2014 and represents approximately half of the clients for whom we perform testing. When testing has been completed for all plans, that analysis is performed again and the data is restated for prior years. Plans that complete testing by March generally have lower participation rates and include plans with concerns related to passing nondiscrimination testing. The previously reported average and median promised matching contributions rates for 2012 were 3.9% and 3.0%, respectively.

Source: Vanguard, 2014.

Figure 9. Employee contributions for maximum match, 2013

Vanguard defined contribution plans permitting employee-elective deferrals with a single- or multitier match formula



Source: Vanguard, 2014.

The average employee-elective deferral required to maximize the match declined slightly in 2008 and 2009 and again in 2011 and 2012 before rising in 2013; however, the median deferral required remained constant at 6.0% (Figure 10).

Other employer contributions

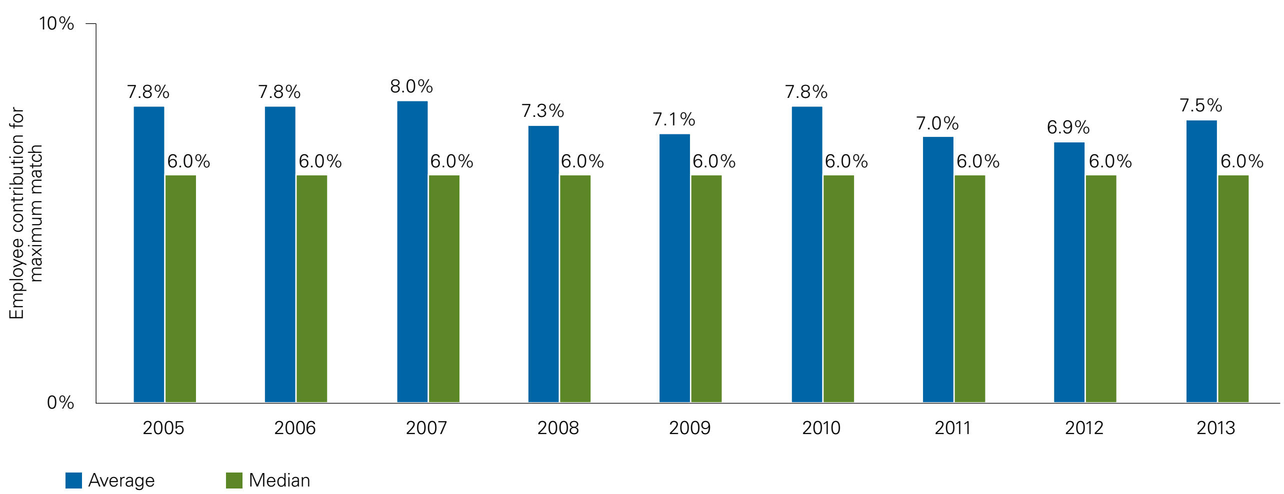
As noted previously, in a minority of plan designs, employers may make another contribution to the accounts of eligible employees in the form of a variable or fixed profit-sharing contribution or an ESOP contribution. These contributions, unlike matching contributions, may be made on behalf of eligible employees whether or not they actually contribute any part of their pay to the plan. As with matching contributions, eligibility is more restrictive for these types of employer contributions—many employees are not entitled to receive these contributions until they complete one year of service.

The value of other employer contributions also varies significantly from plan to plan. Among plans offering such contributions in 2013, half provided all participants with a contribution based on the same percentage of pay, while the other half varied the contribution by age and/or tenure. These nonmatching contributions varied in value from about 1% of pay to more than 10% of pay (Figure 11). Among plans with a nonmatching employer contribution, the average contribution was equivalent to 5.4% of pay; the median contribution, 3.9% of pay.

Between 2007 and 2009, the average value of other employer contributions was about 20% lower than in 2005 and 2006. We attribute this to reductions in variable profit-sharing contributions—consistent with the economic environment during the period. Between 2010 and 2013, the average value of other employer contributions rebounded and surpassed prerecession levels (Figure 12).

Figure 10. Employee contributions for maximum match

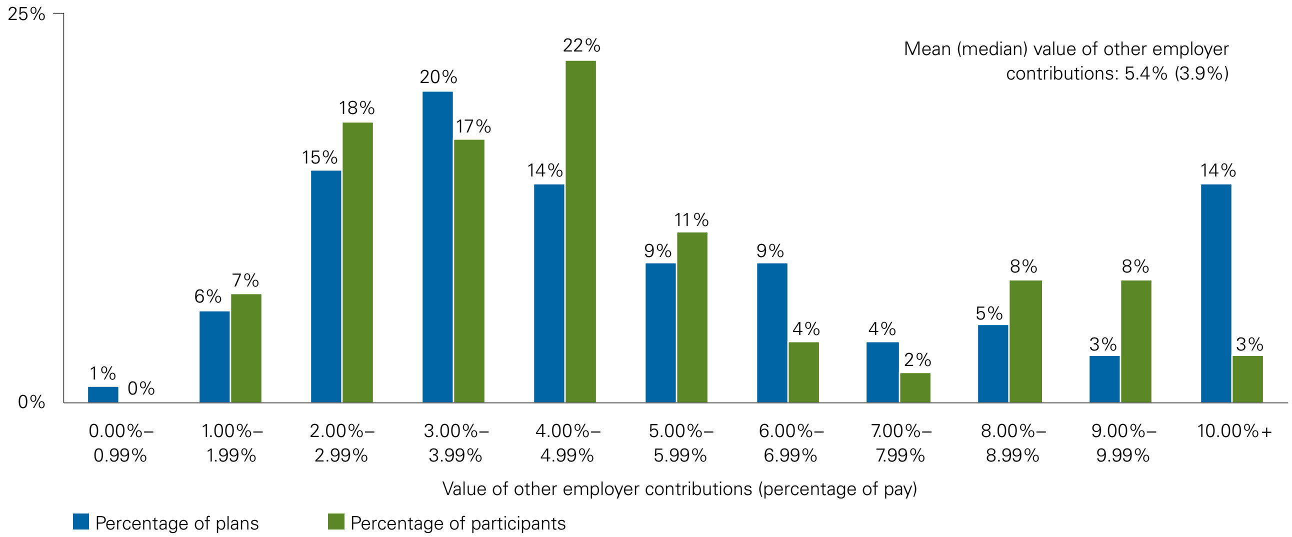
Vanguard defined contribution plans permitting employee-elective deferrals with a single- or multitier match formula



Source: Vanguard, 2014.

Figure 11. Other employer contributions, 2013

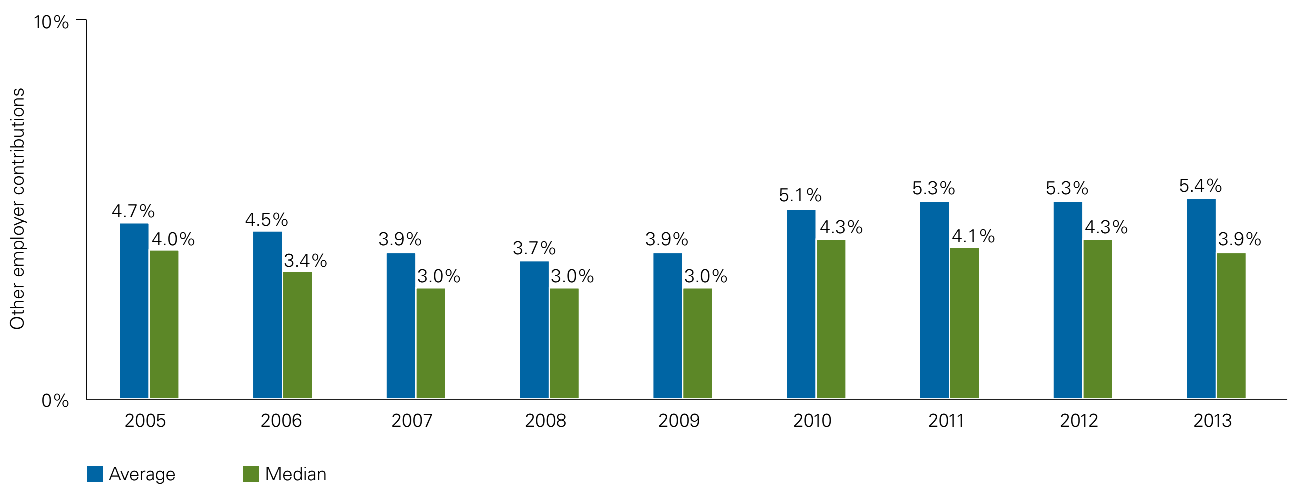
Vanguard defined contribution plans with other employer contributions



Source: Vanguard, 2014.

Figure 12. Other employer contributions

Vanguard defined contribution plans with other employer contributions



Source: Vanguard, 2014.

Maximum employee contribution limit
Many plans have incorporated expanded contribution limits authorized in the Economic Growth and Tax Relief Reconciliation Act of 2001 (EGTRRA). Eighty-seven percent of DC plans (covering 88% of participants) have raised to 50% or more the maximum percentage of pay that employees can contribute to their plans (Figure 13).

Automatic enrollment designs

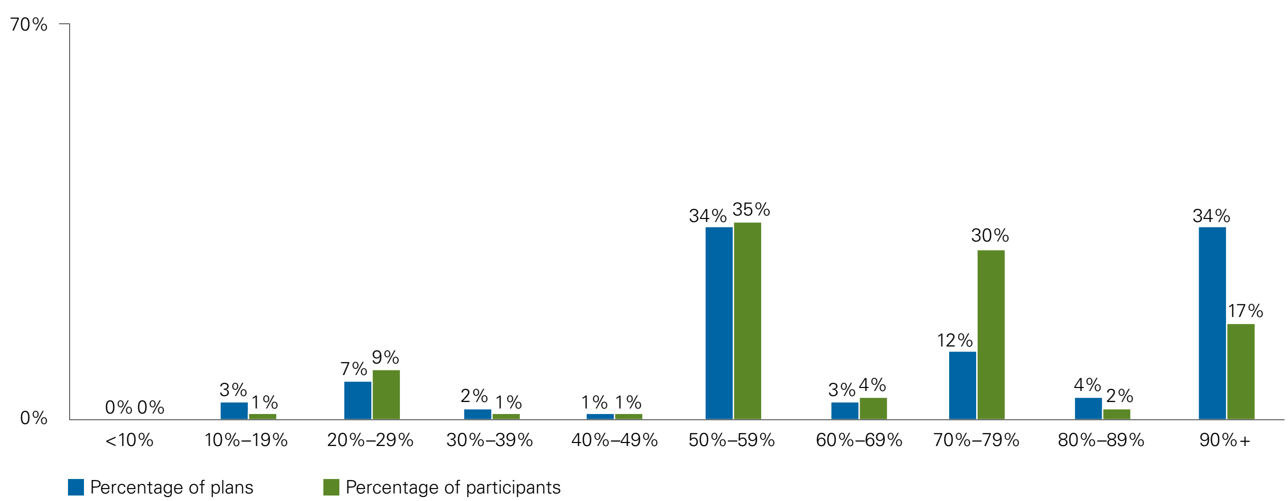
In a typical 401(k) or 403(b) plan, employees must make an active choice to join the plan. The enrollment decision is framed as a positive election: "Decide if you'd like to join the plan." Why do employees fail to take advantage of their employers' plans? Research in the field of behavioral finance provides a number of explanations:

- **Lack of planning skills.** Some employees are not active, motivated decision-makers when it comes to retirement planning. They have weak planning skills and find it difficult to defer gratification.
- **Default decisions.** Faced with a complex choice and unsure what to do, many individuals often take the default or "no decision" choice. In the case of a voluntary savings plan, which requires that a participant take action in order to sign up, the "no decision" choice is a decision not to contribute to the plan.
- **Inertia and procrastination.** Many individuals deal with a difficult choice by deferring it to another day. Eligible nonparticipants, unsure of what to do, decide to postpone their decision. While many employees know they are not saving enough and express an interest in saving more, they simply never get around to joining the plan or, if they do join, to increasing their contribution rates over time.

Automatic enrollment or autopilot plan designs reframe the savings decision. With an autopilot design, individuals are automatically enrolled into the plan, their deferral rates are automatically increased each year, and their contributions are automatically invested in a balanced investment strategy. Under an autopilot plan, the decision to save is framed negatively: "Quit the plan if you like." In such a design, "doing nothing" leads to participation in the plan and investment of assets in a long-term retirement portfolio.

Figure 13. Maximum contribution limit, 2013

Vanguard defined contribution plans permitting employee-elective deferrals



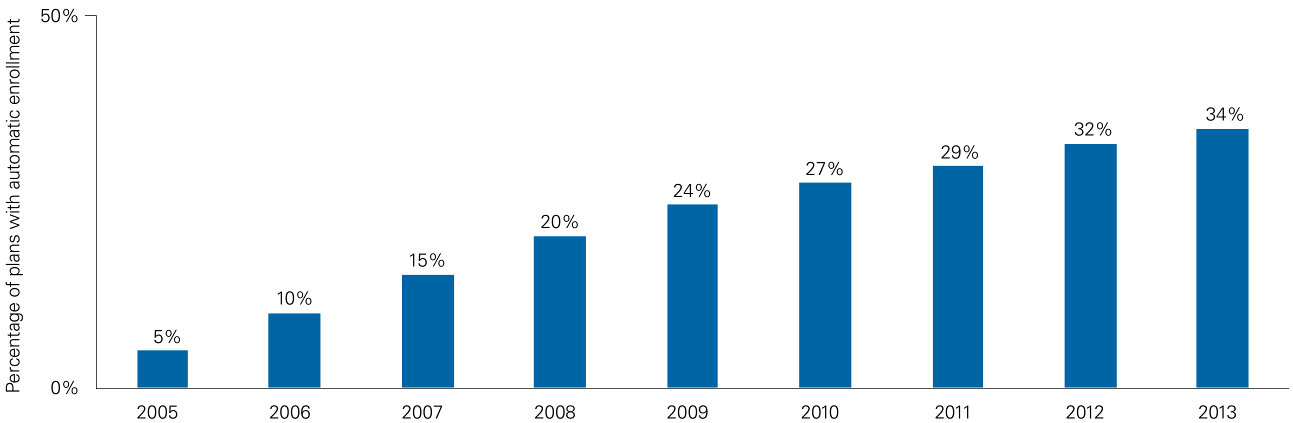
Source: Vanguard, 2014.

As of December 2013, one-third of Vanguard plans permitting employee-elective deferrals had adopted components of an autopilot design (**Figure 14**). Large plans are more likely to implement automatic enrollment, with more than half of midsized and large plans using the feature. As a result, 6 in 10 participants are now in plans with autopilot designs, although automatic enrollment itself may only apply to newly eligible participants (**Figure 15**).

Approximately half of these plans have now "swept" eligible nonparticipants—namely they implemented automatic enrollment for all nonparticipating employees. The remaining half have implemented automatic enrollment for new hires only. Adoption of automatic enrollment designs grew only modestly in 2013, and by the end of 2013, 6 in 10 large plans had added the feature.

Figure 14. Automatic enrollment adoption

Vanguard defined contribution plans with employee-elective contributions



Source: Vanguard, 2014.

Figure 15. Automatic enrollment design by plan size, 2013

Vanguard defined contribution plans with automatic enrollment

		Number of participants		
	All	<1,000	1,000–4,999	5,000+
Percentage of plans with employee-elective contributions offering	34%	25%	55%	56%
Percentage of participants in plans offering	58	38	58	62
For plans offering automatic enrollment				
Percentage of plans with automatic enrollment, automatic savings rate increases, and a balanced default fund	69%	65%	77%	67%
Percentage of plans with automatic enrollment and a balanced default fund	29	32	23	33
Percentage of plans with automatic enrollment and a money market or stable value default fund	2	3	0	0

Source: Vanguard, 2014.

Among plans automatically enrolling employees, 69% use all three features of an autopilot design. These plan sponsors automatically enroll employees, automatically increase the deferral rate annually, and invest participants' assets in a balanced fund. Another 29% of plan sponsors automatically enroll employees and invest participants' assets in a balanced fund but do not automatically increase participant deferral rates. In 2013, 62% of new plan entrants, participants contributing to the plan for the first time in 2013, were in plans that had adopted automatic enrollment (**Figure 16**).

Fifty-one percent of these plans automatically enroll participants at a 3% contribution rate (**Figure 17**). Seven in 10 plans (69%) automatically increase the contribution rate annually. Ninety-eight percent of these plans use a target-date or other balanced investment strategy as the default fund, with 9 in 10 choosing a target-date fund as the default.

Participation rates

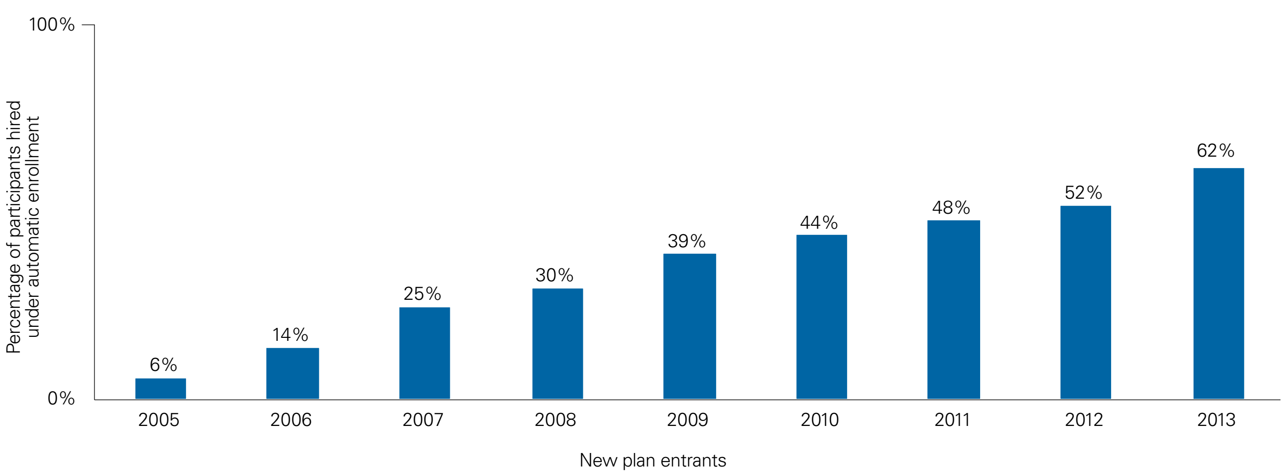
A plan's participation rate—the percentage of eligible employees who choose to make voluntary contributions—remains the broadest metric for gauging 401(k) plan performance. The most common measure of participation rates is calculated by taking the average of participation rates among a group of plans. We refer to this as the plan-weighted participation rate. In 2013, Vanguard's plan-weighted participation rate was 76% and has remained basically unchanged since 2004 (**Figure 18**).

A second measure of participation rates considers all employees in Vanguard-administered plans as if they were in a single plan. We refer to this as the participant-weighted participation rate. Across the universe of Vanguard participants, 67% (preliminary, see Figure 18 note) of eligible employees are enrolled in their employer's voluntary savings program. This broader measure of plan participation has begun a modest rise in recent years. This increase likely reflects the adoption of automatic enrollment by larger plan sponsors.

These two measures provide different views of employee participation in their retirement savings plans, although with the rising adoption of automatic enrollment these two metrics are converging. The first measure indicates that, in the average plan, about one-fifth of eligible employees fail to contribute. The second measure, however, shows that within the entire employee universe, about one-quarter of employees fail to take advantage of their employer's plan. The first measure is a useful benchmark for an individual plan sponsor because it is calculated at the plan level; the second is a valuable measure of the progress of 401(k) plans as a whole because it looks at all eligible employees across all plans.

Figure 16. Automatic enrollment adoption

Vanguard defined contribution plans with employee-elective contributions



Source: Vanguard, 2014.

Figure 17. Automatic enrollment design trends

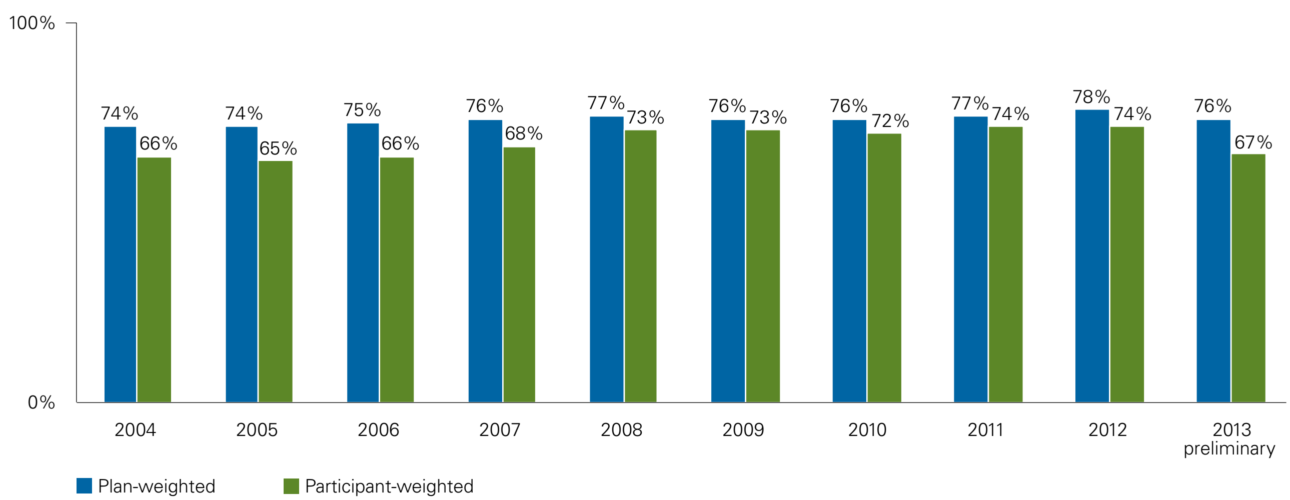
Vanguard defined contribution plans with automatic enrollment

Default automatic enrollment rate	2005	2006	2007	2008	2009	2010	2011	2012	2013
1 percent	4%	3%	3%	2%	3%	2%	2%	2%	2%
2 percent	23	20	17	13	14	13	13	13	12
3 percent	46	52	56	60	56	57	55	53	51
4 percent	12	10	10	10	11	11	11	12	13
5 percent	10	8	7	7	7	7	8	8	9
6 percent or more	5	7	7	8	9	10	11	12	13
Default automatic increase rate									
1 percent	31%	57%	66%	73%	68%	68%	67%	67%	67%
2 percent	0	2	2	2	1	1	2	2	2
Voluntary election	44	27	23	16	15	16	16	17	17
Service feature not offered	25	14	9	9	16	15	15	14	14
Default fund									
Target-date fund	42%	63%	81%	87%	87%	89%	90%	91%	93%
Other balanced fund	33	26	15	11	10	8	7	6	5
Subtotal	**75%**	**89%**	**96%**	**98%**	**97%**	**97%**	**97%**	**97%**	**98%**
Money market or stable value fund	25%	11%	4%	2%	3%	3%	3%	3%	2%

Source: Vanguard, 2014.

Figure 18. Plan participation rates

Vanguard defined contribution plans permitting employee-elective deferrals



Note: The 2013 participation rates are drawn from a subset of plans that had completed nondiscrimination testing by March 2014 and represents approximately half of the clients for whom we perform testing. When testing has been completed for all plans, the data is restated. Plans that complete testing by March generally have lower participation rates and include plans with concerns related to passing nondiscrimination testing. The previously reported plan- and participant-weighted participation rates for 2012 were 76% and 68%, respectively.

Source: Vanguard, 2014.

Distribution of participation rates

Participation rates vary considerably across plans (Figure 19). In 2013, more than half of plans had a participation rate of 80% or higher, while 1 in 10 plans had a participation rate of less than 50%.

Participation rates also vary by plan size, with larger plans historically having lower participation rates than other plans (Figure 20). One reason for lower participation rates at large companies may have been the presence of another retirement plan benefit, such as an employer-funded DB plan, employer profit-sharing, or ESOP contributions to a DC plan.

Figure 19. Distribution of participation rates

Vanguard defined contribution plans permitting employee-elective deferrals

Percentage of plans

Plan participation rate	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013 preliminary
90%–100%	15%	16%	17%	20%	24%	23%	21%	24%	29%	25%
80%–89%	28	26	28	31	30	29	31	31	28	29
70%–79%	24	25	23	20	20	20	19	17	17	18
60%–69%	15	15	16	14	11	11	12	12	10	9
50%–59%	9	9	8	8	8	7	7	7	7	7
<50%	9	9	8	7	7	10	10	9	9	12
Average plan participation rate	**74%**	**74%**	**75%**	**76%**	**77%**	**76%**	**76%**	**77%**	**78%**	**76%**

Note: The previously reported plan-weighted participation rate for 2012 was 76% (see Figure 18 note).

Source: Vanguard, 2014.

Figure 20. Participation rates by plan size

Vanguard defined contribution plans permitting employee-elective deferrals

Number of participants

Plan-weighted participation rate	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013 preliminary
<1,000	75%	75%	75%	76%	77%	75%	75%	76%	77%	76%
1,000–4,999	71	71	73	75	78	79	78	79	80	76
5,000+	70	69	71	73	78	76	78	80	81	76
All plans unweighted	**74%**	**74%**	**75%**	**76%**	**77%**	**76%**	**76%**	**77%**	**78%**	**76%**
Participant-weighted participation rate										
<1,000	69%	68%	68%	72%	74%	71%	71%	73%	74%	71%
1,000–4,999	66	64	66	67	71	72	69	70	72	66
5,000+	63	64	65	67	74	73	75	76	76	67
All plans weighted	**65%**	**65%**	**66%**	**68%**	**73%**	**73%**	**72%**	**74%**	**74%**	**67%**

Note: The previously reported plan- and participant-weighted participation rates for 2012 were 76% and 68%, respectively (see Figure 18 note).

Source: Vanguard, 2014.

Other possible reasons included the inherent difficulty of communicating across many locations in a large firm and the fact that large firms often outsource the enrollment process to their provider, while small firms may tend to rely on an in-house human resources representative. With larger plans most likely to add automatic enrollment, there is now less variation in participation rates by plan size.

Participation rates by employee demographics
Participation rates also vary considerably by employee demographics (**Figure 21**). Income is one of the primary determinants of plan participation rates. About 4 in 10 eligible employees with income of less than $30,000 contributed to their employer's DC plan in 2013, while 88% of employees with income of more than $100,000 elected to participate. Even among the highest-paid employees, 12% of eligible workers still failed to take advantage of their employer's DC plan.

Participation rates were lowest for employees younger than 25. Only 39% of employees younger than 25 made voluntary deferrals to their employer's plan in 2013, while about 7 in 10 eligible employees between ages 35 and 64 saved for retirement in their employer's plan. Tenure had a significant influence on plan participation. In 2013, only about half of eligible employees with less than two years on the job participated in their employer's plan, while 77% of employees with tenure of ten years or more participated.

Figure 21. Participation rates by participant demographics

Vanguard defined contribution plans permitting employee-elective deferrals

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013 preliminary
All	65%	65%	66%	68%	73%	73%	72%	74%	74%	67%
Income										
<$30,000	41%	43%	43%	45%	56%	55%	53%	56%	57%	44%
$30,000–$49,999	63	64	63	66	71	70	69	70	71	62
$50,000–$74,999	75	75	74	76	78	76	76	75	75	66
$75,000–$99,999	83	83	84	84	85	84	83	82	82	75
$100,000+	90	90	91	91	91	90	91	90	90	88
Age										
<25	28%	30%	33%	38%	49%	49%	44%	51%	52%	39%
25–34	58	57	58	61	68	68	68	69	70	61
35–44	69	68	69	70	75	74	74	74	75	68
45–54	72	71	71	74	78	77	77	78	78	72
55–64	71	71	72	74	77	76	76	78	79	74
65+	58	58	57	62	67	68	67	71	74	68
Gender										
Male	64%	65%	66%	69%	75%	73%	73%	74%	73%	65%
Female	62	64	64	67	73	72	71	75	74	72
Job tenure (years)										
0–1	41%	42%	45%	49%	58%	55%	56%	61%	61%	51%
2–3	56	56	58	61	69	69	66	69	71	61
4–6	68	66	67	68	73	72	72	72	73	68
7–9	75	73	73	74	79	77	76	76	78	71
10+	77	77	79	80	82	81	81	81	82	77

Note: The previously reported participant-weighted participation rate for 2012 was 68% (see Figure 18 note).
Source: Vanguard, 2014.

Men and women appear to participate at about the same level. But these overall averages fail to account for the income differences between men and women. At most income levels, women are significantly more likely than men to join their employer's plan (Figure 22). For example, in 2013, 79% of women earning $50,000 to $74,999 participated in their employer's plan—compared with 60% of men in the same income group.

Participation rates also vary by industry group (Figure 23). Employees in the finance, insurance, and real estate industry group had the highest participation rate, with more than 9 in 10 workers participating in their employer's plan, while employees in the wholesale and retail trade had the lowest participation rate, at 53%.

Figure 22. Participation by income and gender, 2013

Vanguard defined contribution plans permitting employee-elective deferrals

	Female	Male	All
<$30,000	50%	39%	44%
$30,000–$49,999	69	57	62
$50,000–$74,999	79	60	66
$75,000–$99,999	86	72	75
$100,000+	90	88	88

Source: Vanguard, 2014.

Figure 23. Participation rates by industry sector, 2013

Vanguard defined contribution plans permitting employee-elective deferrals

	Plan-weighted	Participant-weighted
Overall	76%	67%
Industry group		
Finance, insurance, and real estate	86	92
Agriculture, mining, and construction	76	88
Manufacturing	75	76
Education and health	72	70
Media, entertainment, and leisure	71	64
Business, professional, and nonprofit	77	59
Transportation, utilities, and communications	73	58
Wholesale and retail trade	75	53

Source: Vanguard, 2014.

Impact of automatic enrollment on plan participation

Reflecting increased adoption of automatic enrollment designs, there has been a dramatic improvement in participation rates between 2004 and 2013 among demographic groups that traditionally have lower voluntary participation rates. Employees subjected to an automatic enrollment feature have an overall participation rate of 82%, compared with a participation rate of only 65% for employees hired under plans with voluntary enrollment (**Figure 24**).[2]

Plans with automatic enrollment have higher participation rates across all demographic variables. For individuals earning less than $30,000 in plans with automatic enrollment, the participation rate is more than double that of individuals with voluntary enrollment.

Figure 24. Participation rates by plan design, 2013

Vanguard defined contribution plans permitting employee-elective deferrals

	Voluntary enrollment	Automatic enrollment	All
All	65%	82%	67%
Income			
<$30,000	34%	78%	44%
$30,000–$49,999	57	86	62
$50,000–$74,999	64	91	66
$75,000–$99,999	74	94	75
$100,000+	88	96	88
Age			
<25	29%	68%	39%
25–34	56	83	61
35–44	65	84	68
45–54	71	85	72
55–64	73	85	74
65+	68	77	68
Gender			
Male	63%	83%	65%
Female	70	84	72
Job tenure (years)			
0–1	39%	77%	51%
2–3	53	88	61
4–6	65	91	68
7–9	70	88	71
10+	77	82	77

Source: Vanguard, 2014.

2 In prior editions of *How America Saves*, we categorized plans and participants based on whether or not the plan had adopted automatic enrollment at the end of the year. As noted previously, about half of plans have implemented automatic enrollment for all eligible employees, by either “sweeping” these nonparticipants when automatic enrollment was initially adopted or at a later date. We have refined our analysis to segregate individuals hired under voluntary enrollment design from those individuals subjected to an automatic enrollment design. Participants in plans with automatic enrollment that were not subjected to automatic enrollment are included in the voluntary enrollment category.

Aggregate plan participation rates

As noted previously, some plan sponsors make other nonmatching contributions for all eligible employees, whether or not these employees actually defer any part of their pay to the plan. When these contributions are factored in, both the plan- and participant-weighted participation rates improve. The plan-weighted participation rate rises to 82% and the participant-weighted rate to 70% (**Figure 25**). In other words, across all Vanguard plans, about 80% of employees either make their own contributions, receive an employer contribution, or both.

Employee deferrals

In a typical DC plan, employees are the main source of funding, while employer contributions play a secondary role. Thus, the level of participant deferrals is a critical determinant of whether the DC plan will generate an adequate level of savings for retirement.

Vanguard participants saved 7.0% of their income on average in their employer's plan in 2013 (**Figure 26**). The median participant deferral rate was 6.0%, meaning that half of participants were saving above this rate and half were saving below it.

Vanguard deferral rates are drawn from recordkeeping data and exclude eligible employees not contributing to their plans. Industry deferral rates sometimes include eligible employees not contributing to their plan and are generally self-reported by plan sponsors.

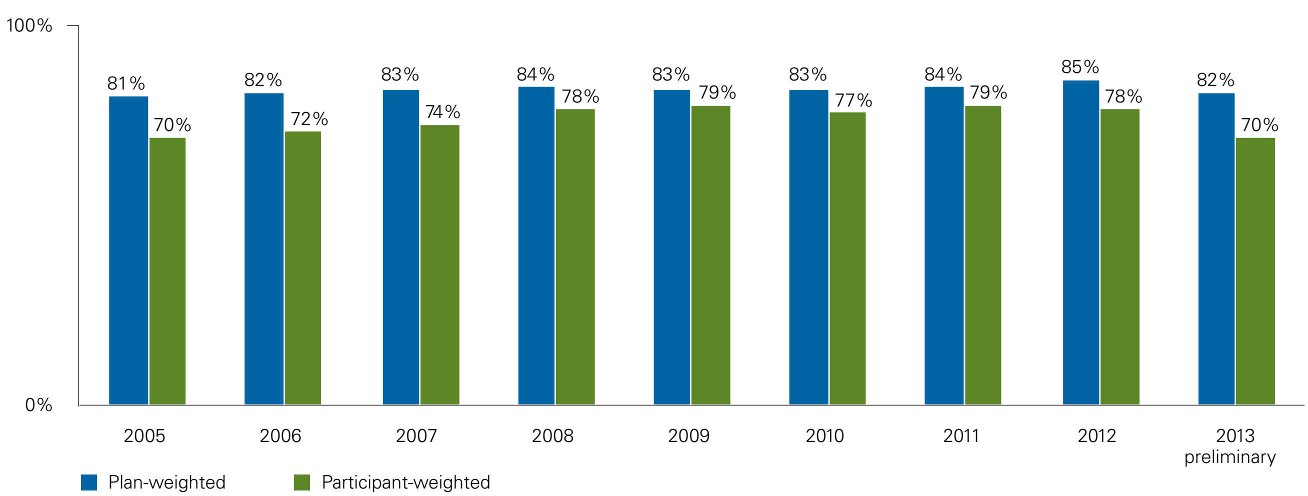
Median deferral rates are unchanged since 2004. However, average deferral rates declined slightly in 2009 by 0.5 percentage points compared with 2007. This slight decline is attributable to the growth in automatic enrollment, where the dominant default deferral rate is 3%.

Distribution of deferral rates

Individual deferral rates vary considerably among participants (**Figure 27**). One in 5 participants had a deferral rate of 10% or higher in 2013, while 3 in 10 had a deferral rate of less than 4%. During 2013, only 12% of participants saved the statutory maximum of $17,500 ($23,000 for participants age 50 or older) (see page 31). In plans offering catch-up contributions, only 14% of participants age 50 or older took advantage of this feature in 2013 (see page 32).

Figure 25. Aggregate participation rates

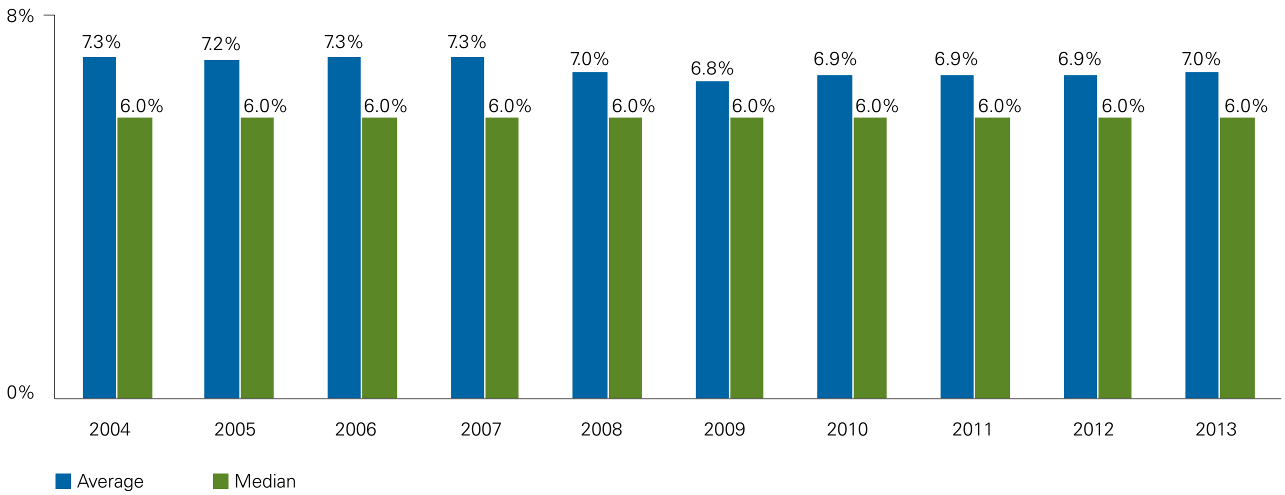
Vanguard defined contribution plans permitting employee-elective deferrals



Note: The previously reported plan- and participant-weighted participation rates for 2012 were 83% and 71%, respectively (see Figure 18 note).
Source: Vanguard, 2014.

Figure 26.	Deferral rates

Vanguard defined contribution plans permitting employee-elective deferrals



Source: Vanguard, 2014.

Figure 27.	Distribution of deferral rates

Vanguard defined contribution plans permitting employee-elective deferrals

Percentage of participants

Deferral rate	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
0.1%–3.9%	24%	26%	26%	27%	30%	32%	28%	28%	29%	30%
4.0%–6.0%	25	25	24	23	22	22	23	25	23	22
6.1%–9.9%	27	26	26	27	26	25	27	27	28	26
10.0%–14.9%	17	16	16	15	15	14	15	14	14	15
15.0%+	7	7	8	8	7	7	7	6	6	7

Source: Vanguard, 2014.

Plan size has little effect on participant deferral rates (Figure 28). In 2013, plans with 5,000 or more participants had an average deferral rate of 7.3%—only modestly higher than the overall average rate of 7.0%. Employees at large firms typically have more generous compensation packages and so arguably should have a higher propensity to save than employees at small companies. But the presence of automatic enrollment and other employer-funded retirement benefits as part of that package may dilute this effect.

Deferral rates by employee demographics

As with plan participation rates, employee demographics have a strong influence on deferral rates (Figure 29). Income is the primary determinant of deferral rates, which generally rise with income, but then decline as highly paid participants reach either the statutory maximum contribution level or plan-imposed caps on contributions related to nondiscrimination testing. The statutory maximum contribution was $17,500 ($23,000 for participants 50 and older), and a highly compensated employee was one who earned $115,000 or more in 2012.

In 2013, participants with incomes of less than $30,000 had deferral rates averaging 4.7%, while participants earning $75,000 to $99,999 had deferral rates of 8.0%—a savings rate that is 70% higher. Deferral rates were 8.4% for participants earning $100,000 or more.

Age is another important variable influencing savings. In 2013, deferral rates were lowest for participants younger than 25. This group saved only 4.5% of income. Deferral rates for participants ages 55 to 64 were nearly twice as high, averaging 8.8%. Deferral rates also rose directly with employee tenure.

Figure 28. Deferral rates by plan size

Vanguard defined contribution plans permitting employee-elective deferrals

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Average—all plans	7.3%	7.2%	7.3%	7.3%	7.0%	6.8%	6.9%	6.9%	6.9%	7.0%
Median	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Average by plan size (number of participants)										
<1,000	7.2%	7.2%	7.2%	7.3%	7.1%	6.9%	6.9%	6.9%	6.9%	6.8%
1,000–4,999	7.2	7.3	7.2	7.2	7.0	6.8	6.9	6.8	6.8	6.7
5,000+	7.5	7.2	7.4	7.4	6.9	6.7	7.0	6.9	6.8	7.3

Source: Vanguard, 2014.

Figure 29. Deferral rates by participant demographics

Vanguard defined contribution plans permitting employee-elective deferrals

Average deferral rate	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
All	7.3%	7.2%	7.3%	7.3%	7.0%	6.8%	6.9%	6.9%	6.9%	7.0%
Income										
<$30,000	6.4%	6.0%	6.0%	5.7%	4.8%	4.7%	4.8%	4.8%	4.7%	4.7%
$30,000–$49,999	6.6	6.4	6.3	6.2	5.9	5.6	5.8	5.8	5.7	5.6
$50,000–$74,999	7.8	7.7	7.7	7.6	7.4	7.0	7.1	7.0	6.9	6.9
$75,000–$99,999	8.6	8.7	8.9	8.9	8.6	8.4	8.4	8.2	8.1	8.0
$100,000+	7.3	7.6	8.1	8.5	8.1	8.2	8.2	8.1	8.1	8.4
Age										
<25	5.0%	4.7%	4.6%	4.5%	4.1%	4.0%	4.2%	4.2%	4.0%	4.5%
25–34	6.5	6.0	5.9	5.9	5.6	5.5	5.7	5.6	5.4	5.6
35–44	6.8	6.7	6.8	6.7	6.4	6.2	6.4	6.1	6.3	6.4
45–54	7.6	7.6	7.8	7.8	7.5	7.2	7.3	7.2	7.2	7.4
55–64	8.9	9.0	9.1	9.2	8.9	8.5	8.6	8.6	8.5	8.8
65+	10.2	10.4	10.7	10.8	10.4	9.8	9.9	9.8	9.8	10.1
Gender										
Male	7.2%	7.2%	7.3%	7.3%	7.0%	6.7%	6.9%	6.9%	6.9%	7.0%
Female	7.4	7.3	7.3	7.2	6.9	6.8	6.9	6.9	6.8	7.1
Job tenure (years)										
0–1	6.0%	5.9%	5.7%	5.6%	5.0%	4.9%	4.8%	4.8%	4.7%	4.9%
2–3	6.8	6.6	6.6	6.7	6.3	6.1	6.3	6.3	6.0	6.1
4–6	7.1	7.0	7.1	7.1	6.8	6.5	6.8	6.8	6.8	7.0
7–9	7.2	7.2	7.4	7.4	7.1	6.9	7.0	7.0	7.0	7.1
10+	7.8	7.9	8.1	8.2	8.0	7.7	7.8	7.8	7.9	8.1
Account balance										
<$10,000	4.5%	4.4%	4.2%	4.1%	4.1%	3.6%	3.8%	3.9%	3.8%	3.7%
$10,000–$24,999	6.3	6.3	6.4	6.5	6.8	5.8	5.7	5.9	5.8	5.9
$25,000–$49,999	7.5	7.4	7.3	7.4	7.9	7.1	6.8	6.8	6.7	6.9
$50,000–$99,999	8.8	8.8	8.5	8.6	9.1	8.4	8.2	8.1	7.8	7.9
$100,000–$249,999	9.6	9.8	10.1	10.2	10.5	10.0	9.8	9.8	9.6	9.5
$250,000+	8.9	9.3	10.1	10.6	10.1	10.6	10.4	10.3	10.4	10.5

Source: Vanguard, 2014.

Deferral rates also are correlated with account balances. Participants with account balances of less than $10,000 had the lowest average deferral rate, 3.7% in 2013. As account balances rose, average deferral rates also rose. Overall, men and women appear to save at similar rates. But, as with participation rates, the overall averages understate the difference because they fail to account for women's lower incomes. Across every income group, women saved at rates that are about 6% to 12% higher than those of men (**Figure 30**).

Deferral rates also vary—by about one-third—by industry group (**Figure 31**). Participants in the agriculture, mining, and construction industry group had the highest median deferral rates in 2013, while participants in wholesale and retail trade group had the lowest deferral rates.

Impact of automatic enrollment

As noted previously, the increased adoption of automatic enrollment contributed to a deterioration in deferral rates in 2009 as compared with 2007, among most demographic measures. Plan design, specifically the predominant use of a 3% default deferral rate, means participants in plans with automatic enrollment are saving less. In addition, because of economic factors, other participants were choosing lower deferral rates.

Participants joining a plan under an automatic enrollment feature have an average deferral rate of 4.9%, compared with 7.5% for participants under plans with voluntary enrollment—a deferral rate that is about 35% lower overall (**Figure 32**). This is especially remarkable in light of the fact that participants earning less than $30,000 save about 75% more on average under voluntary enrollment designs. This suggests that higher default deferral rates would be amenable to plan participants in automatic enrollment designs. Our research on automatic enrollment indicates that "quit rates" do not deteriorate when higher default percentages are used to enroll employees.

Maximum contributors

During 2013, only 12% of participants saved the statutory maximum dollar amount of $17,500 ($23,000 for participants age 50 or older) (**Figure 33**). Participants who contributed the maximum dollar amount tended to have higher incomes, were older, were more likely to be male, had longer tenures with their current employer, and had accumulated substantially higher account balances.

Figure 30. Deferral rates by income and gender, 2013

Vanguard defined contribution plans permitting employee-elective deferrals

Average deferral rate

	Female	Male	All
<$30,000	4.9%	4.6%	4.7%
$30,000–$49,999	5.8	5.4	5.6
$50,000–$74,999	7.2	6.7	6.9
$75,000–$99,999	8.8	7.7	8.0
$100,000+	9.0	8.1	8.4

Source: Vanguard, 2014.

Figure 31. Deferral rates by industry sector, 2013

Vanguard defined contribution plans permitting employee-elective deferrals

Average deferral rate

	Mean	Median
Overall	**7.0%**	**6.0%**
Industry group		
Agriculture, mining, and construction	7.8%	7.0%
Media, entertainment, and leisure	7.6	6.8
Education and health	8.0	6.7
Business, professional, and nonprofit	7.3	6.0
Transportation, utilities, and communications	7.0	6.0
Manufacturing	6.6	5.9
Finance, insurance, and real estate	6.2	5.5
Wholesale and retail trade	6.1	4.9

Source: Vanguard, 2014.

Figure 32. Participant deferral rates by plan design, 2013

Vanguard defined contribution plans permitting employee-elective deferrals

Average deferral rates

	Voluntary enrollment	Automatic enrollment	All
All	7.5%	4.9%	7.0%
Income			
<$30,000	5.7%	3.3%	4.7%
$30,000–$49,999	6.0	4.3	5.6
$50,000–$74,999	7.1	5.7	6.9
$75,000–$99,999	8.2	6.8	8.0
$100,000+	8.4	7.2	8.4
Age			
<25	5.4%	3.6%	4.5%
25–34	6.0	4.4	5.6
35–44	6.7	4.9	6.4
45–54	7.6	5.5	7.4
55–64	9.0	6.4	8.8
65+	10.4	7.1	10.1
Gender			
Male	7.4%	5.1%	7.0%
Female	7.6	4.8	7.1
Job tenure (years)			
0–1	5.8%	3.9%	4.9%
2–3	6.4	5.7	6.1
4–6	7.2	6.2	7.0
7–9	7.2	6.1	7.1
10+	8.2	6.1	8.1
Account balance			
<$10,000	4.0%	3.3%	3.7%
$10,000–$24,999	5.9	6.1	5.9
$25,000–$49,999	6.8	7.4	6.9
$50,000–$99,999	7.8	8.7	7.9
$100,000–$249,999	9.5	9.6	9.5
$250,000+	10.5	10.0	10.5

Source: Vanguard, 2014.

Figure 33. Participants contributing the maximum by participant demographics, 2013

Vanguard defined contribution plans permitting employee-elective deferrals

	2013
All	12%
Income	
<$30,000	0%
$30,000–$49,999	0
$50,000–$74,999	2
$75,000–$99,999	6
$100,000+	36
Age	
<25	1%
25–34	3
35–44	9
45–54	15
55–64	21
65+	25
Gender	
Male	13%
Female	10
Job tenure (years)	
0–1	3%
2–3	7
4–6	10
7–9	12
10+	17
Account balance	
<$10,000	0%
$10,000–$24,999	1
$25,000–$49,999	4
$50,000–$99,999	8
$100,000–$249,999	17
$250,000+	47
Industry group	
Agriculture, mining, and construction	23%
Media, entertainment, and leisure	20
Education and health	15
Business, professional, and nonprofit	15
Finance, insurance, and real estate	9
Transportation, utilities, and communications	8
Manufacturing	7
Wholesale and retail trade	7

Source: Vanguard, 2014.

One-third of participants with incomes of more than $100,000 contributed the maximum allowed. Similarly, nearly half of participants with account balances of more than $250,000 contributed the maximum allowed in 2013. One-quarter of participants older than 65 contributed the maximum.

Catch-up contributions

EGTRRA authorized a higher catch-up contribution limit for participants age 50 and older to be adopted by plan sponsors at their discretion. More than 90% of Vanguard plans offered catch-up contributions in 2013. Only 14% of age-50-and-older participants eligible for catch-up contributions took advantage of this feature in 2013 (Figure 34). The characteristics of participants making catch-up contributions are similar to those of participants making the maximum contribution to their plan. They tended to have higher incomes, were more likely to be male, and had accumulated substantially higher account balances.

One-third of participants with incomes of more than $100,000 made catch-up contributions. Similarly, one-third of participants with account balances of more than $250,000 made catch-up contributions in 2013.

After-tax contributions

After-tax employee-elective deferrals are available to participants in one-fifth of Vanguard plans. The after-tax feature is more likely to be offered by large plans and 4 in 10 participants have access to this feature. In 2013, only 8% of employees offered the after-tax deferral feature took advantage of it (Figure 35). Those who used the feature also tended to have higher incomes and were older, longer-tenured employees.

Roth contributions

Roth contributions were originally introduced in EGTRRA and made permanent in PPA. At year-end 2013, the Roth feature was offered by 52% of Vanguard plans and had been adopted by 13% of participants in plans offering the feature (Figure 36). Those who used this feature tended to be younger and shorter-tenured participants.

Figure 34. Catch-up contribution participation rates by participant demographics, 2013

Vanguard defined contribution plans permitting catch-up contributions

	2013
All	14%
Income	
<$30,000	0%
$30,000–$49,999	1
$50,000–$74,999	3
$75,000–$99,999	8
$100,000+	34
Gender	
Male	15%
Female	13
Job tenure (years)	
0–1	6%
2–3	11
4–6	13
7–9	13
10+	16
Account balance	
<$10,000	1%
$10,000–$24,999	1
$25,000–$49,999	5
$50,000–$99,999	7
$100,000–$249,999	13
$250,000+	35
Industry group	
Education and health	26%
Media, entertainment, and leisure	22
Business, professional, and nonprofit	16
Agriculture, mining, and construction	15
Transportation, utilities, and communications	13
Finance, insurance, and real estate	12
Manufacturing	9
Wholesale and retail trade	9

Source: Vanguard, 2014.

Figure 35. After-tax participation rates by participant demographics, 2013

Vanguard defined contribution plans permitting after-tax contributions

	2013
All	8%
Income	
<$30,000	2%
$30,000–$49,999	5
$50,000–$74,999	4
$75,000–$99,999	6
$100,000+	16
Age	
<25	4%
25–34	5
35–44	6
45–54	10
55–64	11
65+	9
Gender	
Male	9%
Female	5
Job tenure (years)	
0–1	4%
2–3	5
4–6	7
7–9	6
10+	11
Industry group	
Agriculture, mining, and construction	18%
Finance, insurance, and real estate	13
Manufacturing	9
Business, professional, and nonprofit	7
Media, entertainment, and leisure	7
Education and health	6
Transportation, utilities, and communications	6
Wholesale and retail trade	6

Source: Vanguard, 2014.

Figure 36. Roth participation rates by participant demographics, 2013

Vanguard defined contribution plans permitting Roth contributions

	2013
All	13%
Income	
<$30,000	14%
$30,000–$49,999	12
$50,000–$74,999	14
$75,000–$99,999	14
$100,000+	13
Age	
<25	24%
25–34	20
35–44	13
45–54	11
55–64	8
65+	5
Gender	
Male	13%
Female	12
Job tenure (years)	
0–1	20%
2–3	17
4–6	15
7–9	11
10+	9
Account balance	
<$10,000	17%
$10,000–$24,999	15
$25,000–$49,999	13
$50,000–$99,999	11
$100,000–$249,999	10
$250,000+	11
Industry group	
Business, professional, and nonprofit	17%
Agriculture, mining, and construction	16
Wholesale and retail trade	16
Education and health	16
Media, entertainment, and leisure	13
Transportation, utilities, and communications	12
Manufacturing	9
Finance, insurance, and real estate	8

Source: Vanguard, 2014.

Eight percent of plans offered Roth in-plan conversions, and less than 1% (0.3%) of participants with access to the option converted assets between 2010 and 2013.

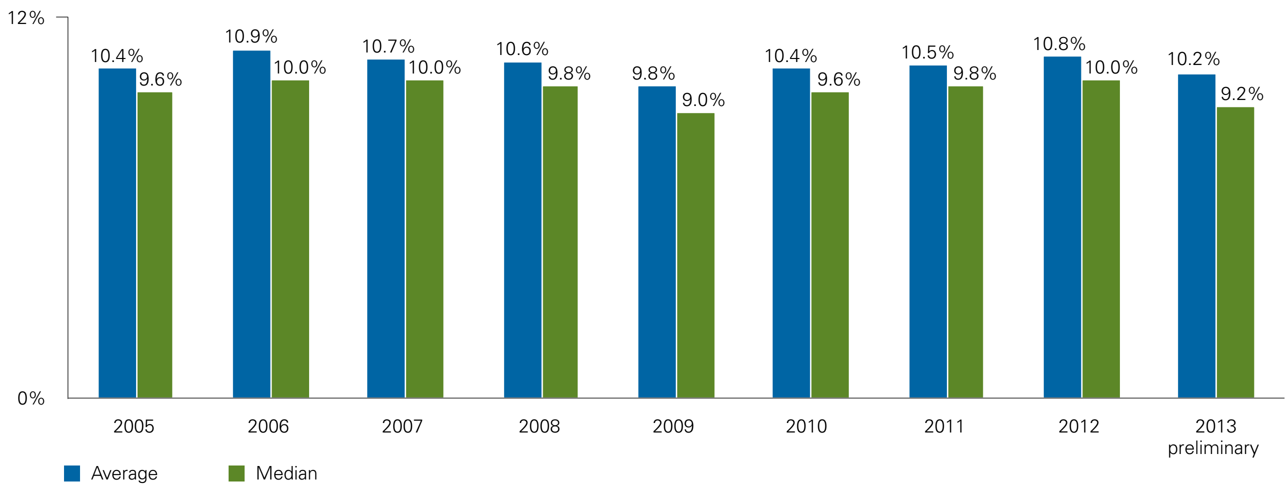
Aggregate contributions

Taking into account both employee and employer contributions, the average total participant contribution rate in 2013 was 10.2% and the median was 9.2% (**Figure 37**). Measured in dollars contributed to the plan, both average employee and employer contributions rose in 2013—by 3% (**Figure 38**).

These rates exclude eligible nonparticipants. When eligible nonparticipants, with their 0% contribution rate, are included, the average aggregate contribution rate is 7.1% and the median is 6.0%—down, compared with 2008 rates (**Figure 39**). This decline is attributable in part to the growing use of automatic enrollment and participants' tendency to stick with the default deferral rate adopted by the plan sponsor.

Figure 37. Aggregate participant and employer contribution rates

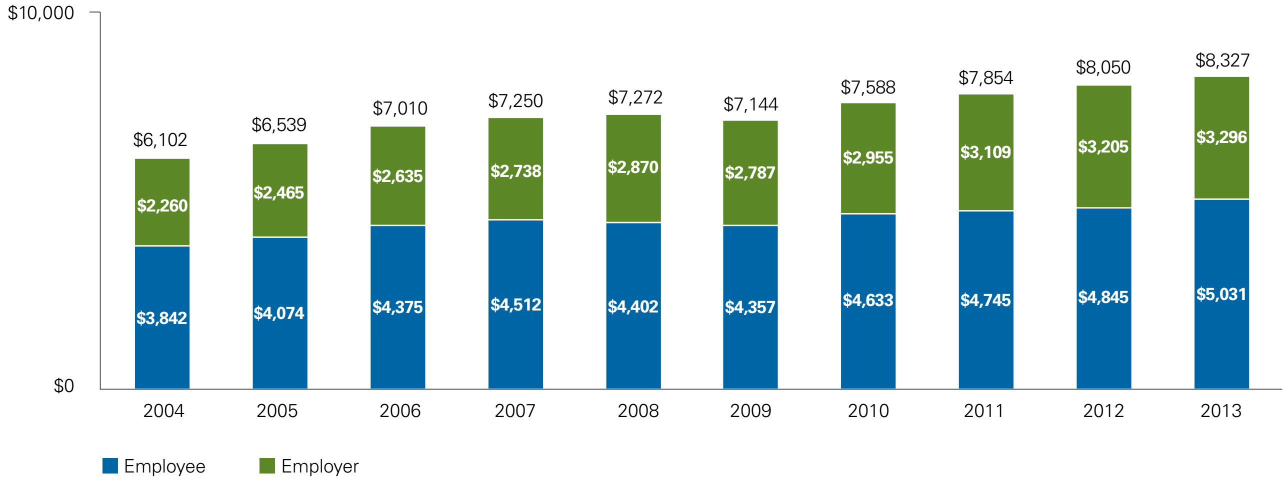
Vanguard defined contribution plans permitting employee-elective deferrals



Note: The previously reported average and median aggregate contribution rates for 2012 were 10.5% and 9.5%, respectively (see Figure 18 note).
Source: Vanguard, 2014.

Figure 38. Account contributions

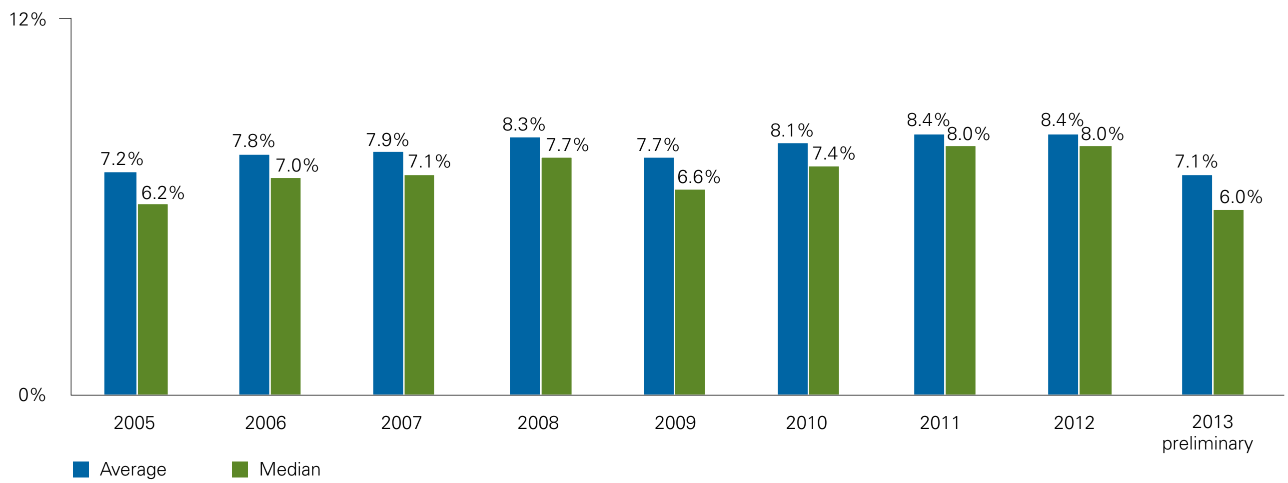
Vanguard defined contribution plans permitting employee-elective deferrals



Source: Vanguard, 2014.

Figure 39. Aggregate employee and employer contribution rates

Vanguard defined contribution plans permitting employee-elective deferrals



Note: The previously reported average and median aggregate contribution rates for 2012 were 7.5% and 6.2%, respectively (see Figure 18 note).
Source: Vanguard, 2014.

Distribution of aggregate contribution rates

Vanguard estimates that a typical participant should target a total contribution rate of 12% to 15%, including both employee and employer contributions. About one-third of participants in 2013 had total employee and employer savings rates that met those thresholds (Figure 40). For participants with lower wages, Social Security is expected to replace a higher percentage of income and so a lower retirement savings rate may be appropriate. For higher-wage participants, Social Security replaces a lower percentage of income and savings rates may need to be higher. In fact, higher-wage participants may not be able to achieve sufficient savings rates within the plan because of statutory contribution limits.

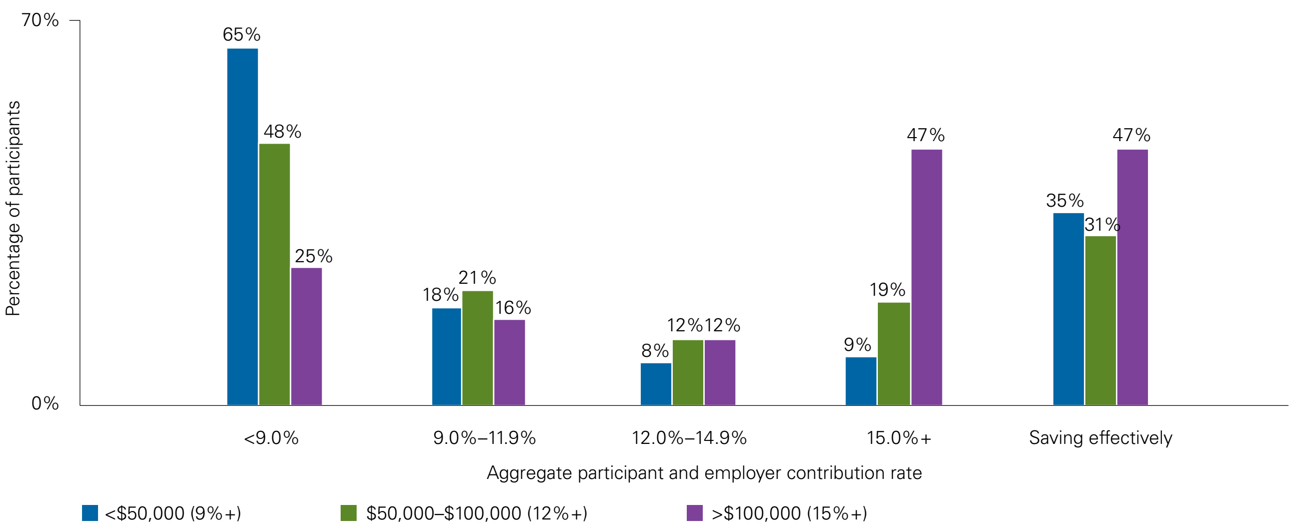
Account balances

Account balances are a widely cited measure of the overall effectiveness of DC plans and are determined by contribution levels and investment performance over time.

Vanguard account balances are a measure of how much plan participants have accumulated for retirement at a given employer. In the United States, DC plans are not a closed system. When participants change jobs or retire, their plan assets may remain with the plan of the employer they are leaving, may be rolled over to another employer plan or to an IRA, or may be cashed out. As a result, current DC plan balances often do not reflect lifetime savings and are only a partial measure of retirement preparedness for most participants.

Figure 40. Distribution of aggregate participant and employer contribution rates, 2013

Vanguard defined contribution plans permitting employee-elective deferrals



Note: The percentage noted after the income range is the total contribution rate recommended for effective savings.

Source: Vanguard, 2014.

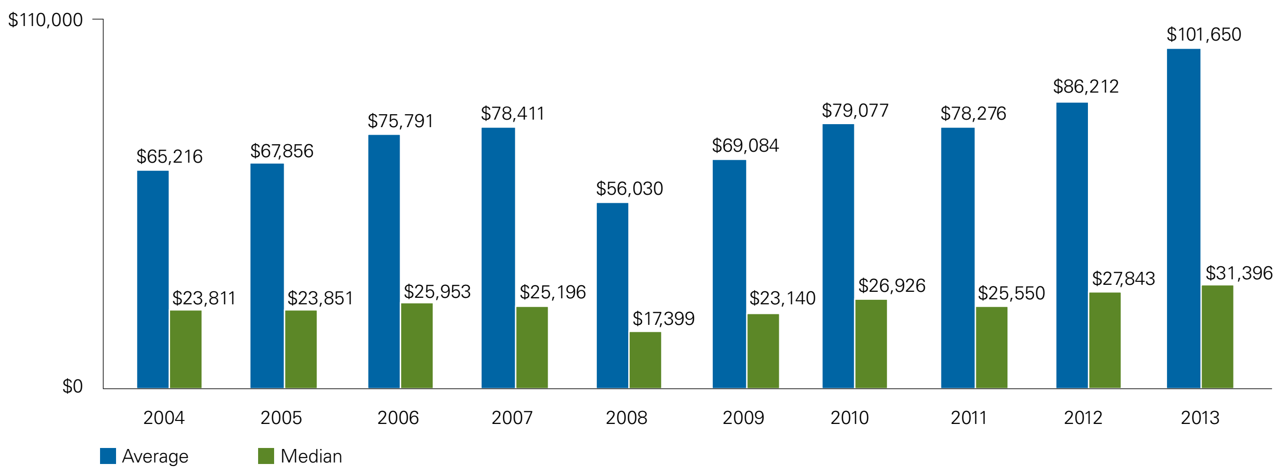
Average versus median balances
In 2013, the average account balance for Vanguard participants was $101,650; the median balance was $31,396 (**Figure 41**). Vanguard participants' average and median account balances rose by 18% and 13%, respectively, in 2013. The median 1-year participant total return was 20.4% in 2013 (see page 71).

The wide divergence between the median and the average balance is due to a small number of very large accounts that significantly raises the average above the median (**Figure 42**). Three in 10 participants had a 2013 account balance of less than $10,000, while 26% had balances in excess of $100,000.

Because of the skewed distribution of assets, average balances are indicative of participants at about the 75th percentile (i.e., about 75% of all participants have balances below, and 25% have balances above the average). Average balances are more indicative of the results experienced by longer-tenured, more affluent, or older participants. The median balance represents the typical participant: Half of all participants have balances above the median, half have balances below.

Figure 41. Account balances

Vanguard defined contribution plans



Source: Vanguard, 2014.

Figure 42. Distribution of account balances

Vanguard defined contribution plans

Percentage of accounts

Range of balance	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
<$10,000	32%	33%	32%	33%	39%	34%	31%	32%	31%	30%
$10,000–$19,999	14	13	13	12	14	13	13	13	12	12
$20,000–$39,999	16	15	15	14	14	15	15	14	14	14
$40,000–$59,999	10	9	9	9	8	9	9	9	9	8
$60,000–$79,999	6	6	6	6	6	6	6	6	6	6
$80,000–$99,999	4	5	4	4	4	4	5	4	4	4
>$100,000	18	19	21	22	15	19	21	22	24	26

Source: Vanguard, 2014.

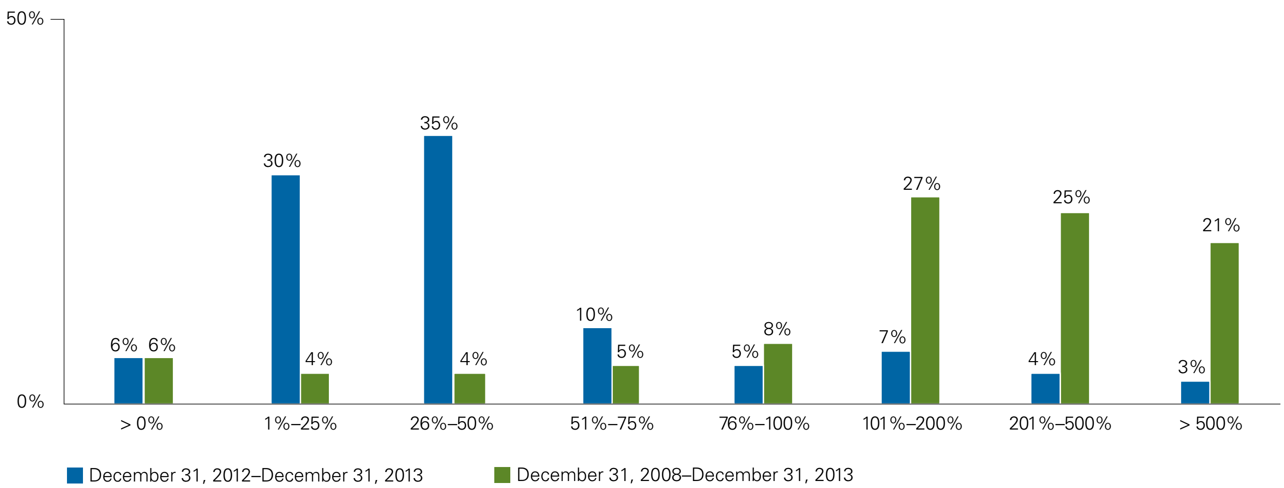
Change in account balances

The increase in average and median account balances in 2013 is the result of evolution in the participant base and market performance. When we examine continuous participants—those with an account balance in both December 2012 and December 2013—the median account balance rose by one-third (Figure 43). Ninety-four percent of these continuous participants saw their balances rise because of equity-oriented asset allocations and/or ongoing contributions. Among continuous participants with a balance in both December 2008 and December 2013—the median account balance rose 182%, and 94% of continuous participants had a higher account balance in 2013 than in 2008.

Account balances are widely available on statements and websites, and are often cited as participants' principal tool for monitoring investment results. Because of ongoing contributions, account balances will appear to be less negatively impacted during falling markets. This "contribution effect" may mute the psychological impact of falling stock prices on participants.

Figure 43. Change in account balances, continuous participants

Vanguard defined contribution plan participants with a balance at both the beginning and end of the period



	December 31, 2012–December 31, 2013	December 31, 2008–December 31, 2013
Median change	33%	182%
Percentage of participants with positive changes	94	94

Source: Vanguard, 2014.

Account balances by participant demographics

Median and average account balances vary considerably by participant demographics (Figure 44). Among the factors influencing account balances are household income, age, and job tenure. These three factors are intertwined. Not only do incomes, on average, tend to rise somewhat with age, making saving more affordable, but older participants generally save at higher rates. Also, the longer an employee's tenure with a firm, the more likely the employee is to earn a higher salary, participate in the plan, and contribute at higher levels. Longer-tenured participants also have higher balances because they have been contributing to their employer's plan for a longer period.

Gender also influences current balances. Sixty percent of Vanguard participants are male, and men have average and median balances that are about 50% higher than those of women. Gender is often a proxy for other factors, such as income and job tenure. Women in our sample tend to have lower incomes and shorter job tenure than men. However, as noted earlier in this report, women tend to save more than men at the same income level.

Figure 44. Account balances by participant demographics, 2013

Vanguard defined contribution plans

	All participants	
	Average	Median
All	**$101,650**	**$31,396**
Household income		
<$30,000	$62,586	$18,889
$30,000–$49,999	$66,572	$24,428
$50,000–$74,999	$87,211	$35,165
$75,000–$99,999	$123,486	$53,986
>$100,000	$182,313	$80,237
Age		
<25	$4,407	$1,580
25–34	$25,259	$10,272
35–44	$65,204	$27,747
45–54	$122,566	$52,236
55–64	$180,771	$76,381
>65	$202,800	$72,957
Gender		
Male	$121,201	$38,543
Female	$78,007	$25,737
Job tenure (years)		
0–1	$11,104	$2,605
2–3	$25,864	$11,263
4–6	$52,900	$25,479
7–9	$78,128	$40,003
>10	$188,684	$97,614

Source: Vanguard, 2014.

Figure 45. Account balances by plan size

Vanguard defined contribution plans

Number of participants	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Average										
<1,000	$68,546	$73,032	$81,124	$83,988	$63,065	$77,875	$87,637	$88,834	$99,294	$117,680
1,000–4,999	$59,217	$61,997	$69,118	$72,811	$52,516	$66,210	$75,038	$76,613	$85,385	$99,389
>5,000	$67,894	$70,068	$78,234	$80,127	$56,331	$68,648	$79,178	$77,030	$84,285	$99,883
All plans	$65,216	$67,856	$75,791	$78,411	$56,030	$69,084	$79,077	$78,276	$86,212	$101,650
Median										
<1,000	$25,020	$25,882	$27,770	$27,095	$20,403	$26,729	$30,816	$30,755	$33,474	$37,749
1,000–4,999	$22,471	$22,859	$24,753	$24,254	$16,834	$22,824	$26,427	$23,217	$29,283	$32,603
>5,000	$24,318	$23,945	$26,216	$25,260	$17,102	$22,593	$26,401	$24,414	$26,453	$30,024
All plans	$23,811	$23,851	$25,953	$25,196	$17,399	$23,140	$26,926	$25,550	$27,843	$31,396

Source: Vanguard, 2014.

Balances by plan size and industry group

Average account balances also vary somewhat by plan size, with smaller plans having slightly higher balances than larger plans (Figure 45). Automatic enrollment is one factor driving differences in average balances—larger plans have been more likely to adopt automatic enrollment.

There are significant variations in account balances by industry sector, which reflect a complex mixture of firm characteristics (influencing employer contributions) and workforce demographics (influencing participant savings rates). Participants employed in the agriculture, mining, and construction industries have average and median account balances that are about three to four times higher than other participants (Figure 46). Participants employed in the wholesale and retail trade sectors have the lowest average and median account balances.

Figure 46. Balances by industry sector, 2013

Vanguard defined contribution plans

	Average	Median
All	$101,650	$31,396
Agriculture, mining, and construction	$228,842	$68,919
Business, professional, and nonprofit	$117,076	$37,014
Education and health	$69,012	$18,278
Finance, insurance, and real estate	$99,760	$36,507
Manufacturing	$103,617	$38,548
Media, entertainment, and leisure	$94,679	$40,365
Transportation, utilities, and communications	$86,627	$28,492
Wholesale and retail trade	$62,905	$16,121

Source: Vanguard, 2014.

2

Managing participant accounts

Participant investment decisions are a critical determinant of long-term retirement savings growth.

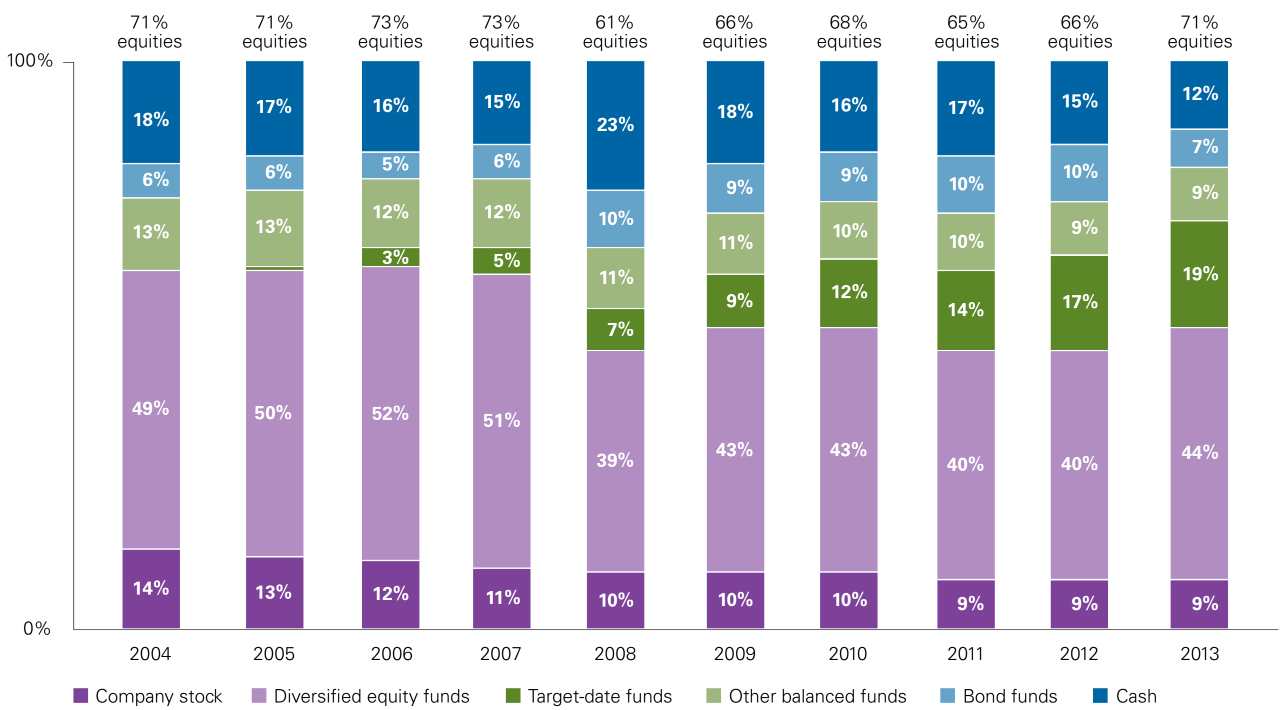
Asset and contribution allocations

The percentage of plan assets invested in equities stood at 71% in 2013 (**Figure 47**). The allocation to equities includes the equity component of balanced strategies. The overall equity allocation is up from 61% in 2008, a shift of 10 percentage points, due to the rise in equity markets from the 2008–2009 downturn. Equity allocations have nearly returned to their pre-recession peak of 73%.

In 2013, investment in balanced strategies reached 28%, including 19% in target-date funds and 9% in other balanced options. The growth of target-date funds in particular is dramatically reshaping investment patterns in DC plans, including increasing equity allocation differences by age and reducing extreme allocations.

Figure 47. Plan asset allocation summary

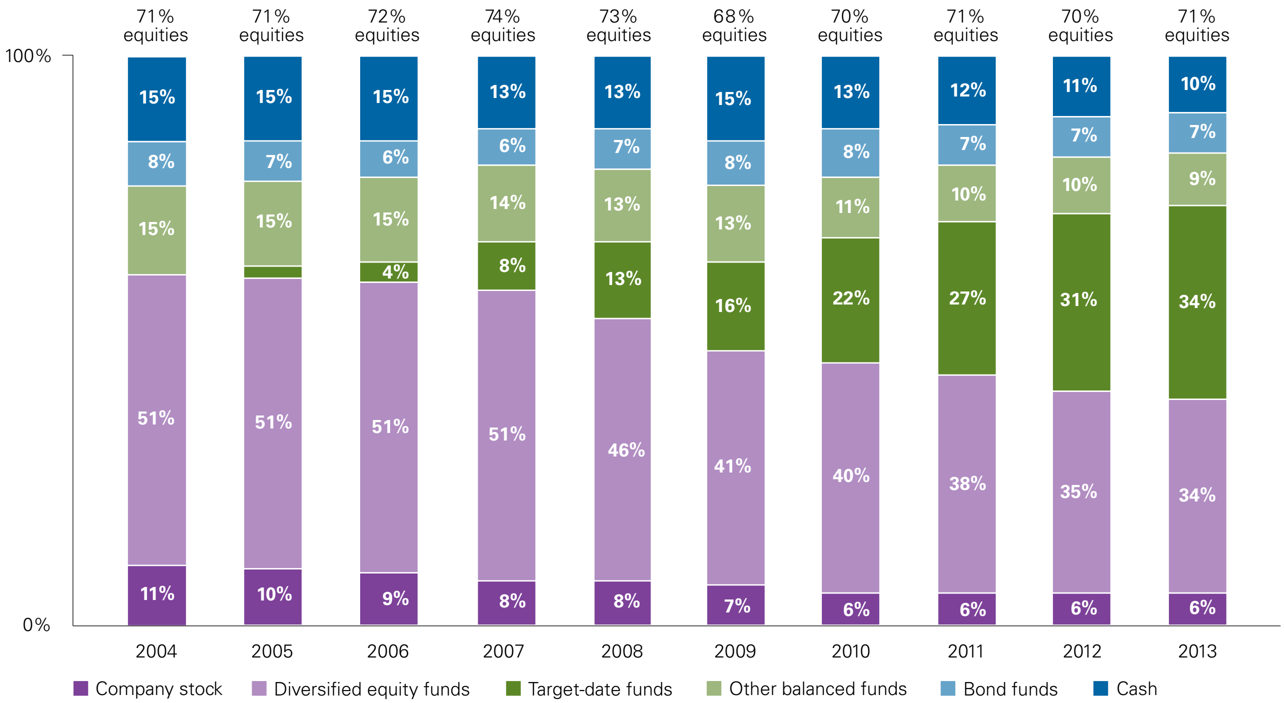
Vanguard defined contribution plans



Source: Vanguard, 2014.

Figure 48. Participant contribution allocation summary

Vanguard defined contribution plans



Source: Vanguard, 2014.

Seven in 10 plan contribution dollars were invested in equities during 2013 and one-third of plan contribution dollars were invested in target-date funds (Figure 48). Participant contribution allocations to equities remained below their peak of 74% in 2007.

Asset allocation by participant demographics

The average participant-weighted asset allocation to equities was 72% in 2013 and asset allocation decisions vary somewhat by participant demographics (Figure 49). Higher-income participants tend to take on somewhat more average equity market risk than do lower-income participants. However, the differences are small. In 2013, participants with household incomes of less than $30,000 had 69% of their average account balance allocated to equities; for participants with household incomes of more than $100,000, the figure was 71%.

Participants younger than age 45 had the highest equity exposure, with more than 85% of plan assets, at the median, invested in equities in 2013. Equity allocations were lowest for participants older than age 65, many of whom are currently retired or will soon retire. Participants older than age 65 had a median equity allocation of 50%. The age-related variation in equity exposure has changed markedly due to the rising use of target-date funds (see page 62).

Figure 49. Asset allocation by participant demographics, 2013

Vanguard defined contribution plans

	Company stock	Diversified equity funds	Target-date funds	Other balanced funds	Bond funds	Cash	Average equity participant-weighted	Median equity participant-weighted
All asset-weighted	9%	44%	19%	9%	7%	12%		
Average participant-weighted	5%	28%	41%	11%	5%	10%	72%	82%
Household income								
<$30,000	6%	22%	45%	10%	4%	13%	69%	80%
$30,000–$49,999	6	25	42	10	5	12	70	80
$50,000–$74,999	6	29	38	11	5	11	70	80
$75,000–$99,999	5	33	34	11	6	11	70	78
$100,000+	5	37	30	11	6	11	71	78
Age								
<25	4%	7%	80%	6%	1%	2%	85%	90%
25–34	4	18	61	9	3	5	81	90
35–44	5	30	42	11	4	8	77	85
45–54	5	34	34	11	5	11	70	77
55–64	6	31	28	12	7	16	60	63
65+	7	26	22	11	8	26	48	50
Gender								
Male	6%	30%	41%	8%	5%	10%	73%	84%
Female	4	27	40	13	5	11	70	78
Job tenure (years)								
0–1	4%	15%	68%	7%	2%	4%	79%	90%
2–3	4	20	59	9	3	5	77	88
4–6	5	25	48	11	4	7	74	84
7–9	5	32	35	13	5	10	71	81
10+	6	37	22	12	7	16	65	74
Account balance								
<$10,000	4%	11%	63%	12%	2%	8%	73%	85%
$10,000–$24,999	4	22	49	11	4	10	71	83
$25,000–$49,999	5	29	39	11	5	11	71	80
$50,000–$99,999	5	37	30	10	6	12	71	80
$100,000–$149,999	5	43	23	10	7	12	71	80
$150,000–$199,999	6	45	20	9	7	13	71	79
$200,000–$249,999	6	47	18	9	7	13	71	79
$250,000+	9	48	14	8	8	13	71	78

Source: Vanguard, 2014.

Figure 50. Asset allocation by plan size, 2013

Vanguard defined contribution plans

	Plan participants			
	<1,000	1,000–4,999	5,000+	All plans
Total equity asset-weighted	**69%**	**69%**	**73%**	**71%**
Company stock	1%	3%	12%	9%
Diversified equity	48	46	43	44
Target-date funds	21	21	18	19
Other balanced funds	10	9	8	9
Bond funds	8	7	7	7
Cash	12	14	12	12

Source: Vanguard, 2014.

Asset allocation by plan size and industry sector

The average allocation to equities does not vary significantly by plan size (Figure 50). However, among larger plans there is a substitution of company stock holdings for diversified equity funds and a modestly larger allocation to equities overall. Large plans are more likely than small plans to offer company stock and are more likely to make employer matching or other contributions in stock. As a result, certain large firms have significantly higher exposure to company stock as an asset class.

Company stock accounted for 9% of assets for all DC plans at Vanguard in 2013. Among large plans, 12% of assets were allocated to company stock at year-end 2013, compared with a 1% allocation among small plans. These averages include plans offering—and plans not offering—company stock. The averages for those plans actively offering company stock to participants were higher (see page 68).

Balanced funds, including target-date funds, accounted for 28% of assets for all DC plans at Vanguard in 2013. Among small plans, 31% of assets were allocated to balanced funds at year-end 2013, compared with 26% among large plans.

Overall asset allocations also vary by industry group (Figure 51). Participants in the education and health industry group have the most conservative allocations, while participants in the agriculture, mining, and construction industry group have the most aggressive allocations and the highest allocations to company stock.

Plan investment options

Participant investment decisions in DC plans occur within the context of a set or menu of choices offered by the employer.

Number of options offered

The average Vanguard plan offered 26.9 investment options in 2013, essentially unchanged from 26.6 investment options in 2012 but up from 17.7 options in 2004—an increase of 52% (Figure 52).

The growth in the number of funds offered has been influenced by the increased use of "all-in-one" funds such as target-date funds, which are offered as a series of options. When each distinct target-date (or target-risk) fund is counted as a single offering, the average number of investment options for 2013 is 27. But when an entire series of such funds is counted as a single offering, the average number of investment options offered falls to 18. By this measure, sponsors have added one series of target-date (or target-risk) funds and two or three other investment options since 2004—not the nine additional options implied by the aggregate number.

Figure 51. Asset allocation by industry sector, 2013

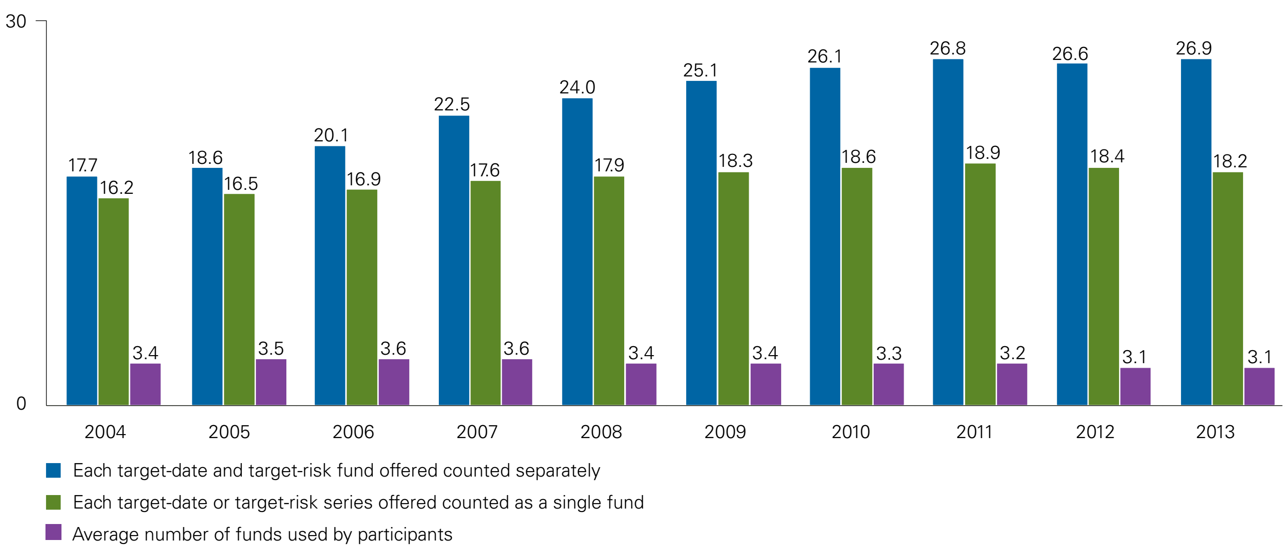
Vanguard defined contribution plans

	Company stock	Diversified equity funds	Target-date funds	Other balanced funds	Bond funds	Cash	Average equity participant-weighted	Median equity participant-weighted
All asset-weighted	9%	44%	19%	9%	7%	12%		
Average participant-weighted	5%	28%	41%	11%	5%	10%	72%	82%
Industry group								
Agriculture, mining, and construction	22%	23%	36%	4%	4%	11%	76%	87%
Transportation, utilities, and communications	6	28	45	6	5	10	74	85
Business, professional, and nonprofit	5	34	39	7	6	9	74	84
Wholesale and retail trade	11	22	44	9	4	10	73	85
Media, entertainment, and leisure	1	32	41	10	6	10	73	83
Finance, insurance, and real estate	2	30	47	4	6	11	72	84
Manufacturing	6	27	44	7	4	12	71	81
Education and health	0	26	34	27	5	8	66	75

Source: Vanguard, 2014.

Figure 52. Average number of investment options offered and used

Vanguard defined contribution plans



Source: Vanguard, 2014.

Counting a target-date or target-risk series as a single fund offering, the median plan sponsor offered 15 investment options in 2013. In 2013, 12% of plans offered more than 25 distinct investment options, while 13% of plans offered 10 or fewer (Figure 53).

Types of options offered

Virtually all Vanguard DC plans offer an array of investment options covering four major investment categories: equities, bonds, balanced (including target-date and target-risk strategies), and money market or stable value options (Figure 54). Given most sponsors' desire to promote equity-oriented portfolios for retirement, diversified equity funds continued to be the most popular type of fund offered. Equity offerings typically included both indexed and actively managed U.S. stock funds, including large-capitalization and mid- or small-capitalization stocks, as well as one or more international funds.

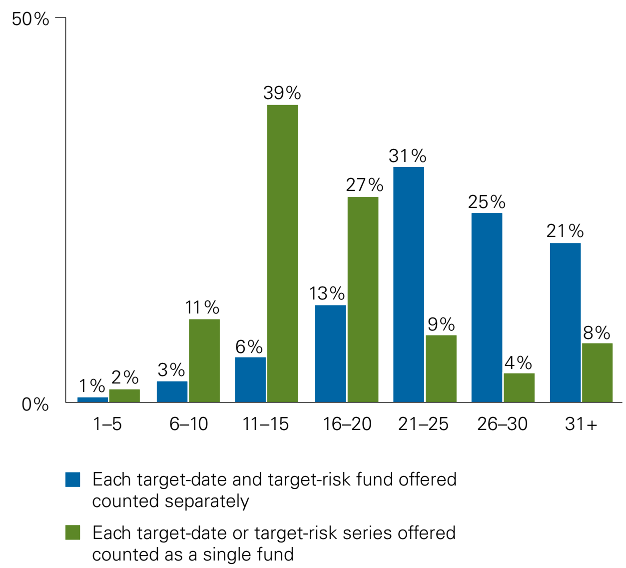
Virtually all plans offered international equity funds, but only 27% offered separate emerging markets funds. Many of the broader international funds include emerging markets exposure already, as do target-date and some balanced strategies. One-third of plans offered sector funds, such as technology or health care funds. One in 8 plans offered a self-directed brokerage feature. Meanwhile, plan sponsor interest in target-date funds continued to grow. At year-end 2013, 86% of plans offered target-date funds.

The types of investment options offered do not vary substantially by plan size. However, large plans are much more likely than small plans to offer company stock, self-directed brokerage accounts, and managed account programs. In addition, larger plans have been quicker than smaller plans to add target-date and inflation-protected securities funds.

Figure 53. Number of options offered, 2013

Vanguard defined contribution plans

Percentage of plans offering



Source: Vanguard, 2014.

Figure 54. Type of investment options offered, 2013

Vanguard defined contribution plans

Percentage of plans offering

		Number of participants		
	All	<1,000	1,000–4,999	5,000+
Cash	**99%**	**98%**	**100%**	**100%**
Money market	71	71	69	73
Stable value/Investment contract	58	56	64	60
Bond funds	**98%**	**98%**	**99%**	**99%**
Active	68	66	74	71
Index	88	89	87	88
Inflation-protected securities	32	31	33	43
High-yield	18	18	19	22
International	7	6	8	8
Balanced funds	**99%**	**99%**	**99%**	**99%**
Traditional balanced	75	75	75	69
Target-risk	24	26	18	20
Target-date	86	82	94	95
Equity funds	**99%**	**99%**	**99%**	**100%**
Domestic equity funds	**99%**	**99%**	**99%**	**100%**
Active domestic	95	94	97	94
Index domestic	98	98	99	99
Large-cap value	92	92	94	87
Large-cap growth	93	92	96	89
Large-cap blend	98	98	99	99
Mid-cap	88	97	91	85
Small-cap	87	87	90	80
Socially responsible	9	8	10	20
International equity funds	**97%**	**97%**	**98%**	**98%**
Active international	85	84	87	84
Index international	59	58	61	71
Emerging markets	27	26	27	34
Sector funds	**33%**	**35%**	**30%**	**27%**
REIT	28	29	28	27
Health care	12	12	8	15
Energy	8	8	6	12
Precious metals	5	4	5	10
Technology	2	2	2	3
Communications	1	1	0	3
Utilities	1	1	1	1
Company stock	**10%**	**4%**	**22%**	**38%**
Self-directed brokerage	**13%**	**11%**	**14%**	**28%**
Managed account program	**19%**	**9%**	**43%**	**48%**

Source: Vanguard, 2014.

Figure 55. Index core offered, 2013

Vanguard defined contribution plans

		Number of participants		
	All	<1,000	1,000–4,999	5,000+
Percentage of plans offering an index core	49%	47%	51%	64%
Percentage of plans offering an index core and target-date funds	43	39	48	62
Percentage of participants offered an index core	59	50	52	63
Percentage of participants offered an index core and target-date funds	57	45	49	62

An index core includes broadly diversified index funds for U.S. stocks, U.S. bonds, and international stocks. At a minimum, the definition includes index funds for large-cap U.S. stocks, intermediate- or long-term bonds, and developed markets.

Source: Vanguard, 2014.

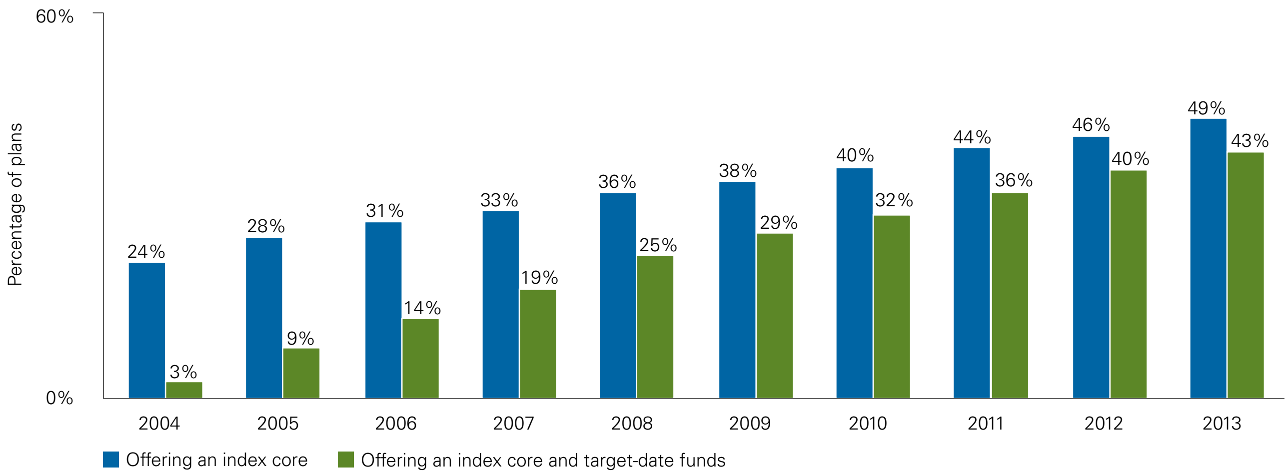
Index core

A newer development in investment menu design is offering a passive (or index) "core." A passive core is a comprehensive set of low-cost index options that span the global capital markets. At a minimum, a passive core in our definition consists of four options covering U.S. equities, non-U.S. equities, U.S. taxable bonds, and cash. A passive core of these four options offers participants broad diversification, varying levels of risk exposure, and very low investment costs.

In 2013, nearly half of Vanguard plans offered at least four options within a passive core (**Figure 55**). Because larger plans have been quicker to offer this approach, 6 in 10 Vanguard participants were offered a passive core in 2013. In addition, many of these plans also offered a passive target-date fund to further simplify participant portfolio construction. Four in 10 plans offered both a passive core and passive target-date funds, and more than half of participants had access to these fund lineups. In 2004, about one-quarter of plans offered a passive core and only 3% offered both a passive core and passive target-date funds (**Figure 56**). In 2004, 3 in 10 participants were offered a passive core and only 5% were offered both a passive core and passive target-date funds (**Figure 57**).

Figure 56. Index core offered trend, plans

Vanguard defined contribution plans

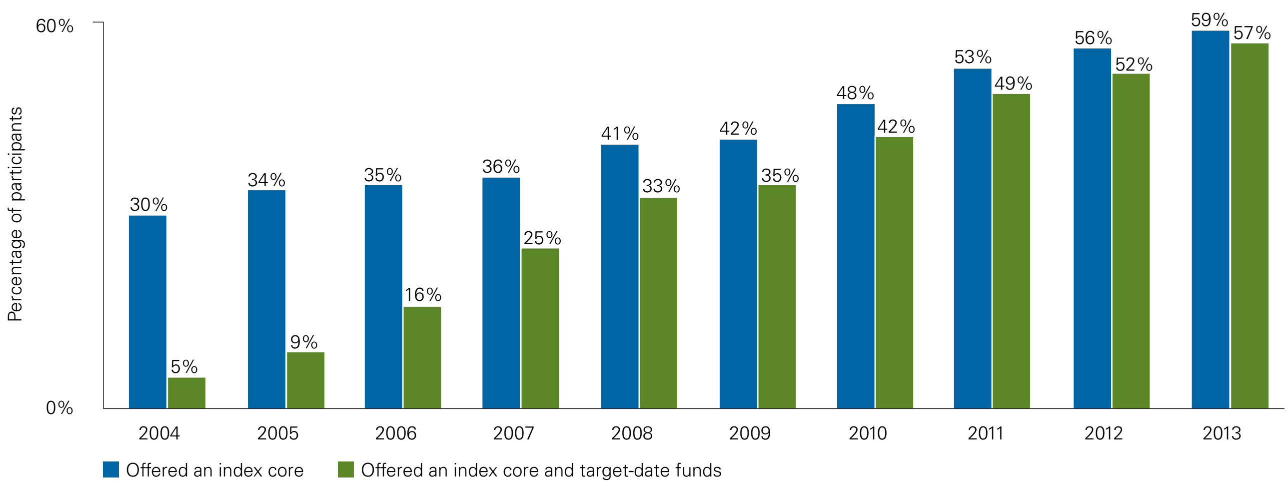


An index core includes broadly diversified index funds for U.S. stocks, U.S. bonds, and international stocks. At a minimum, the definition includes index funds for large-cap U.S. stocks, intermediate- or long-term bonds, and developed markets.

Source: Vanguard, 2014.

Figure 57. Index core offered trend, participants

Vanguard defined contribution plans



An index core includes broadly diversified index funds for U.S. stocks, U.S. bonds, and international stocks. At a minimum, the definition includes index funds for large-cap U.S. stocks, intermediate- or long-term bonds, and developed markets.

Source: Vanguard, 2014.

Default funds

Increasingly, participants are being directed into default investments selected by the plan sponsor, rather than making active investment choices on their own. Default investing is rising in importance in response to concerns about the lack of investment knowledge among participants, as well as the growing use of automatic enrollment. In response to these developments, the U.S. Department of Labor (DOL), acting under the PPA, authorized three types of default investments as eligible for special fiduciary protection. These options, known as QDIAs, include target-date funds, other balanced funds, and managed account advisory services.

Virtually all Vanguard plans have designated a default fund, and 8 in 10 had selected a target-date or balanced fund option as the default option in 2013 (**Figure 58**). In 2004, nearly two-thirds of plan sponsors had designated a money market or stable value fund as the default option (**Figure 59**). Seventy percent of plans had specifically designated a QDIA under the DOL's regulations. Typically, these were plans with automatic enrollment or employer contributions other than a match. Among plans choosing a QDIA, 91% of designated QDIAs were target-date funds and 9% were balanced funds. Less than 1% of plans selected a managed account advisory service as a QDIA.

Number of options used

Although sponsors tend to offer a large menu of investment choices, two-thirds of participants used only 1, 2, or 3 of them (**Figure 60**). Despite the growing number of funds available, participants' use of fund options has not grown at all during the past ten years.

Figure 58. Default fund designations, 2013

Vanguard defined contribution plans

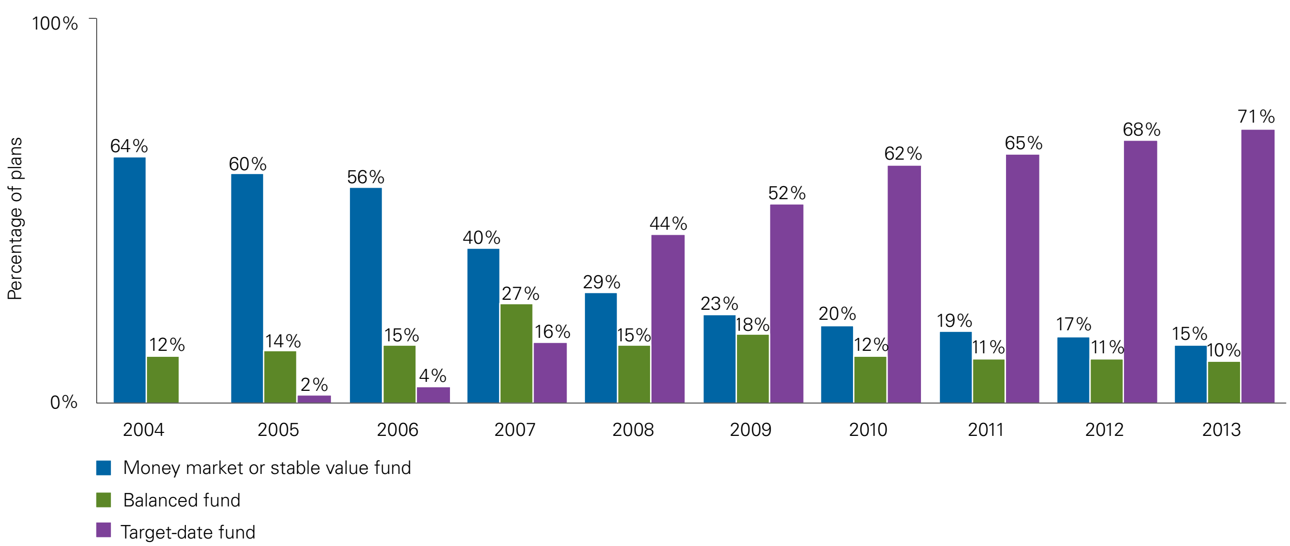
	QDIA plans	Non-QDIA plans	All plans
Among all plans			
Target-date fund	64%	7%	71%
Balanced fund	6	4	10
Money market or stable value		15	15
Total plans designating default	**70%**	**26%**	**96%**

Among plans designating a QDIA	
Target-date fund	91%
Balanced fund	9
Total plans designating a QDIA	**100%**

Source: Vanguard, 2014.

Figure 59. Default fund designation trend

Vanguard defined contribution plans



Source: Vanguard, 2014.

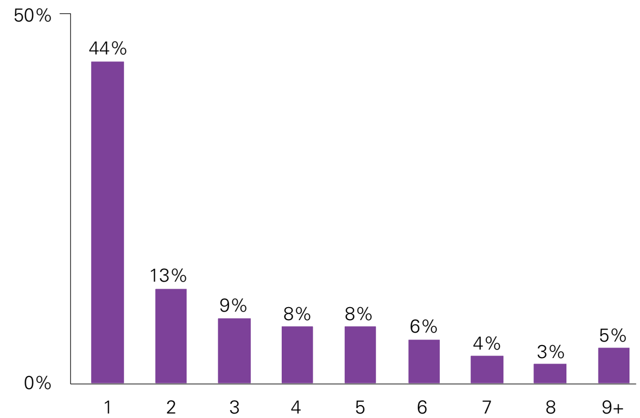
The average Vanguard participant used 3.1 options in 2013 and the median participant used 2.0 options—fewer than the 3.4 options used on average in 2004 and the median of 3.0 in 2004.

One reason for this change is the growing number of single target-date fund investors. In 2013, 44% of participants held a single-fund option in their account. (Figure 61). Seven in 10 of these participants were invested in a single target-date fund and 13% were invested in either traditional balanced funds or target-risk funds. Since 2004, the percentage of single-fund investors holding cash investments has declined from 43% to 11%, due to the growth of automatic enrollment, the availability of target-date funds, and a shift in default fund designations by employers.

Figure 60. Number of options used, 2013

Vanguard defined contribution plans

Percentage of participants using

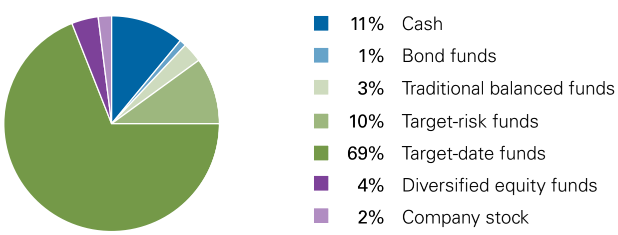


Source: Vanguard, 2014.

Figure 61. Single-fund holders, 2013

Vanguard defined contribution plans

Percentage of single-fund participants using



Vanguard defined contribution plans

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Percentage of participants holding a single fund	**25%**	**27%**	**28%**	**30%**	**34%**	**35%**	**37%**	**41%**	**43%**	**44%**
Percentage of single-fund participants using										
Cash	43%	42%	41%	33%	27%	23%	18%	16%	14%	11%
Bond funds	3	3	2	2	2	2	1	1	1	1
Traditional balanced funds	9	8	9	8	6	6	5	5	4	3
Target-risk funds	15	15	15	16	14	13	11	10	9	10
Target-date funds	1	6	13	25	39	45	53	59	64	69
Diversified equity funds	19	16	15	12	9	8	7	5	4	4
Company stock	10	10	5	4	3	3	5	4	4	2

Source: Vanguard, 2014.

Types of options used

Among the options offered by DC plans, which do participants actually use? In 2013, a balanced fund (including target-date and other balanced funds) was the most common participant holding (73% of participants), followed by a diversified domestic equity fund (44% of participants) (Figure 62). Among the balanced options held, target-date funds were overwhelmingly more likely to be held (61% of participants offered) than traditional balanced funds (23% of participants offered) or target-risk funds (35% of participants offered). Before 2008, participants were most likely to hold a diversified domestic equity fund. This trend shift was first observed in 2009.

Nearly all participants were offered a U.S. equity index fund, yet only 35% used that option. However, participants holding balanced strategies (whether traditional, target-date, or target-risk) are often holding substantial equity index exposure. When participants holding index investments through all balanced options are factored in, 84% of Vanguard participants hold some U.S. equity index exposure.

Only about one-quarter of participants chose to hold a bond fund, and about one-quarter also chose a money market or stable value cash investment.

Most Vanguard DC participants were offered a stand-alone international equity fund, but only 26% of participants chose to use one. Emerging markets funds were offered and used even less frequently; slightly more than one-quarter of participants had access to them and only 8% of those chose to use one. Increasingly, international equity exposure is occurring through packaged investment programs such as target-date funds.

Sector funds were offered to almost one-quarter of participants in 2013 and were also used infrequently; only 12% of participants who were offered these funds used them.

One-quarter of all Vanguard participants were offered a self-directed brokerage feature. Self-directed brokerage accounts allow participants to choose investments from thousands of individual stocks, bonds, and mutual funds. In plans offering a self-directed brokerage feature, only 1% of these participants used the feature in 2013. In these plans, about 1% of plan assets were invested in the self-directed brokerage feature in 2013.

Figure 62. Type of investment options offered and used, 2013

Vanguard defined contribution plans

	Percentage of plans offering	Percentage of participants offered	Percentage of participants offered using	Percentage of all participants using
Cash	**99%**	**100%**	**26%**	**26%**
Money market	71	72	17	12
Stable value/Investment contract	58	65	23	15
Bond funds	**98%**	**99%**	**24%**	**24%**
Active	68	72	14	10
Index	88	89	19	17
Inflation-protected securities	32	40	5	2
High-yield	18	16	6	1
International	7	9	2	<0.5
Balanced funds	**99%**	**100%**	**73%**	**73%**
Traditional balanced	75	73	23	17
Target-risk	24	20	35	7
Target-date	86	90	61	55
Equity funds	**99%**	**100%**	**46%**	**46%**
Domestic equity funds	**99%**	**100%**	**44%**	**44%**
Active domestic	95	95	31	30
Index domestic	98	98	35	34
Large-cap value	92	91	18	16
Large-cap growth	93	92	21	19
Large-cap blend	98	98	30	29
Mid-cap	88	81	20	17
Small-cap	87	80	17	14
Socially responsible	9	18	2	<0.5
International equity funds	**97%**	**98%**	**26%**	**26%**
Active international	85	85	21	18
Index international	59	66	16	11
Emerging markets	27	27	8	2
Sector funds	**33%**	**23%**	**12%**	**3%**
REIT	28	22	8	2
Health care	12	9	9	1
Energy	8	8	7	1
Precious metals	5	5	3	<0.5
Technology	2	3	8	<0.5
Communications	1	2	5	<0.5
Utilities	1	1	6	<0.5
Company stock	**10%**	**28%**	**55%**	**16%**
Self-directed brokerage	**13%**	**27%**	**1%**	**<0.5%**
Managed account program	**19%**	**52%**	**6%**	**3%**

Source: Vanguard, 2014.

Professionally managed allocations

The most notable effect of plan investment menus on participant choices is the expanded offering and use of professionally managed allocations. Participants with professionally managed allocations are those who have their entire account balance invested solely in a single target-date, target-risk, or traditional balanced fund, or a managed account advisory service.

In 2013, 4 in 10 Vanguard participants were invested in a professionally managed allocation (**Figure 63**).[3] Driving this development is the growing use of target-date funds. A total of 31% of participants were invested in a single target-date fund in 2013. Among new plan entrants (those entering the plan for the first time), a total of 64% of participants were invested in a single target-date fund (**Figure 64**).

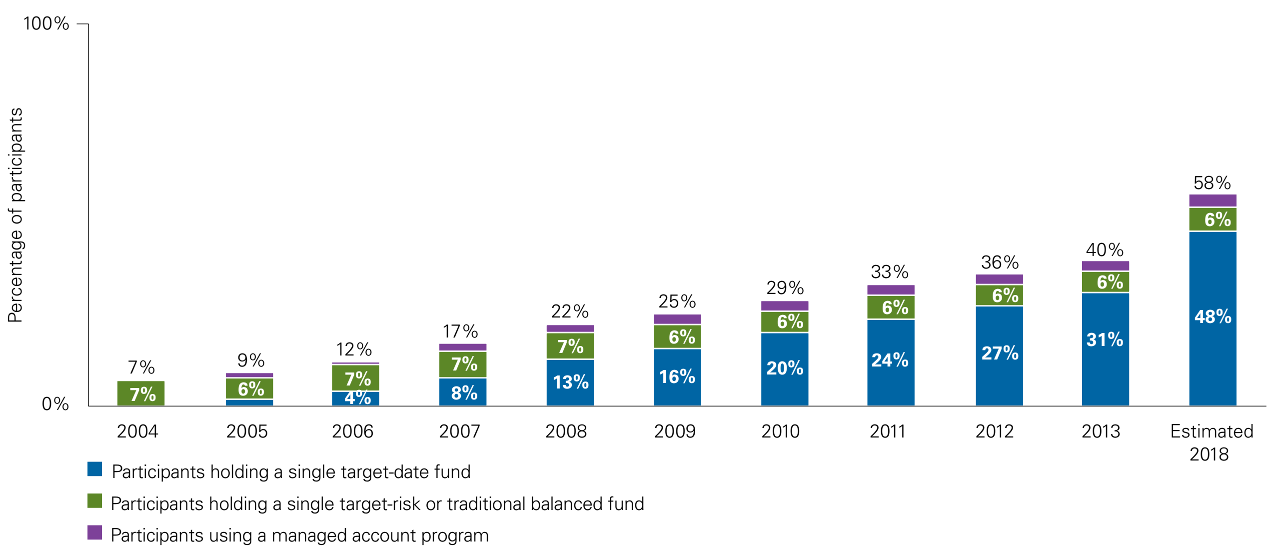
Because of the growing use of the target-date option, we anticipate that 58% of all participants and 80% of new plan entrants will be invested in a professionally managed option by 2018. These professionally managed investment options signal a shift in responsibility for investment decision-making away from the participant and toward employer-selected investment and advice programs.

Target-date funds

Target-date funds base portfolio allocations on an expected retirement date; allocations grow more conservative as the participant approaches the fund's target year. Target-date fund use has accelerated from 13% of plans in 2004 to 86% of plans in 2013 (**Figure 65**). At year-end 2013, 9 in 10 participants were in plans offering target-date funds. Fifty-five percent of all participants had all or part of their account invested in target-date funds in 2013. Nearly one-third of contribution dollars were directed to target-date funds in 2013.

Figure 63. Participants with professionally managed allocations

Vanguard defined contribution plans

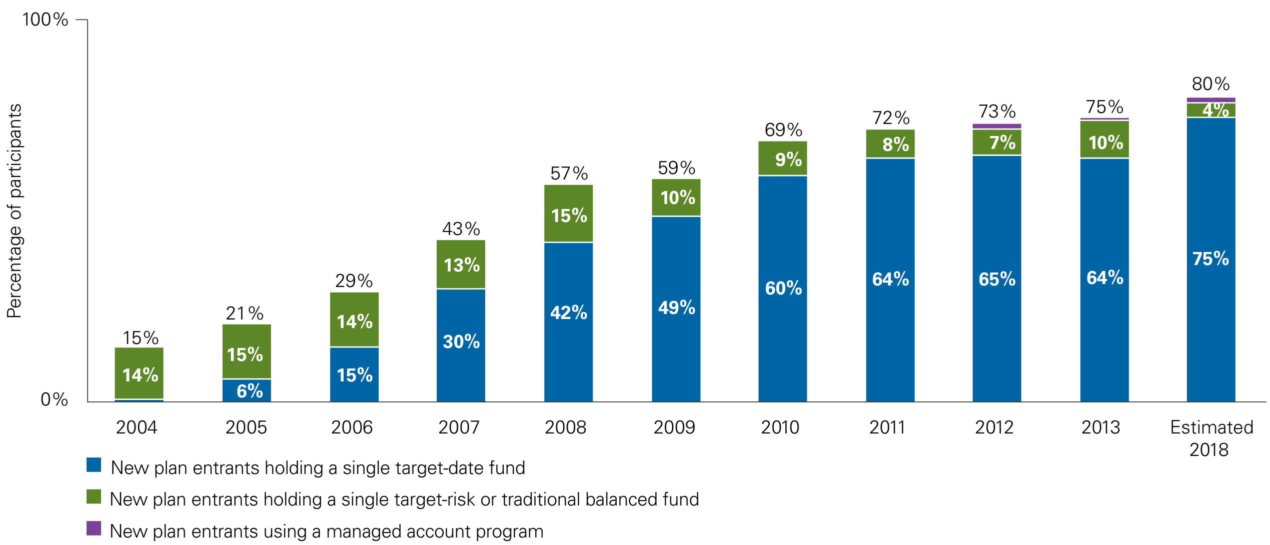


Source: Vanguard, 2014.

3 For an examination of factors affecting adoption of professionally managed allocations by participants, see Anna Madamba and Stephen P. Utkus, 2012, *Professionally managed allocations: Participant usage and impact*, Vanguard Center for Retirement Research, institutional.vanguard.com.

Figure 64. Participants with professionally managed allocations, new plan entrants during the year

Vanguard defined contribution plans



Source: Vanguard, 2014.

Figure 65. Use of target-date funds

Vanguard defined contribution plans

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Percentage of all plans offering target-date funds	13%	28%	43%	58%	68%	75%	79%	82%	84%	86%
Percentage of recordkeeping assets in target-date funds	0	1	3	5	7	9	12	14	17	19
Percentage of all contributions directed to target-date funds	0	2	4	8	13	16	22	27	31	34
Percentage of all participants offered target-date funds	14	29	46	67	76	81	86	87	88	90
Percentage of all participants using target-date funds	2	5	10	18	28	34	42	47	51	55

Source: Vanguard, 2014.

Note: Investments in target-date funds are subject to the risks of their underlying funds. The year in the fund name refers to the approximate year (the target date) when an investor in the fund would retire and leave the workforce. The fund will gradually shift its emphasis from more aggressive investments to more conservative ones based on its target date. An investment in target-date funds is not guaranteed at any time, including on or after the target date.

Among plans offering the strategy, target-date options accounted for 1 of every 5 dollars of plan assets in 2013 (Figure 66). In these plans, 38% of all contributions in 2013 were directed to target-date funds.

Target-date funds are gradually replacing target-risk funds, which maintain a static risk allocation (Figure 67). Since 2004, the fraction of plans offering target-risk funds as an investment option has fallen from half of plans to one-quarter of plans. However, 16% of plans maintain both target-risk and target-date funds, although for some of these plans, new contributions into the target-risk funds may be restricted.

Figure 66. Plan use of target-date funds

Vanguard defined contribution plans offering target-date funds

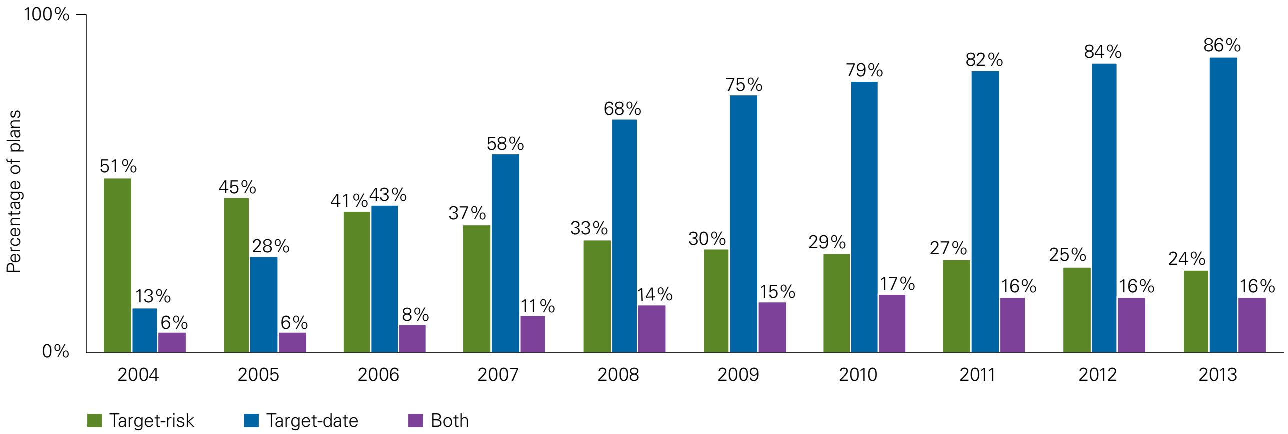
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Percentage of plan assets invested in target-date funds	3%	5%	6%	7%	9%	12%	15%	17%	19%	20%
Percentage of plan contributions invested in target-date funds	3%	6%	9%	12%	17%	21%	26%	31%	35%	38%
Distribution of percentage of plan assets in target-date funds										
<10%	88%	75%	71%	63%	55%	48%	38%	31%	25%	21%
10%–19%	6	13	14	20	25	27	32	34	34	31
20%–29%	2	5	6	8	10	11	14	17	20	23
30%–39%	1	2	3	3	3	5	6	7	8	10
40%–49%	1	1	2	2	2	3	3	4	4	5
50%+	2	4	4	4	5	6	7	7	9	10
Distribution of percentage of plan contributions to target-date funds										
<10%	83%	66%	54%	41%	27%	23%	17%	13%	9%	7%
10%–19%	10	18	24	29	32	29	25	20	17	14
20%–29%	4	7	10	14	19	23	25	25	23	21
30%–39%	1	4	5	6	10	11	16	19	21	22
40%–49%	1	1	2	4	5	5	7	10	13	16
50%+	1	4	5	6	7	9	10	13	17	20

Source: Vanguard, 2014.

Figure 67. **Trend in plan adoption of target-date and target-risk funds**

Vanguard defined contribution plans

Percentage of plans offering



Source: Vanguard, 2014.

Figure 68. Participant use of target-date funds

Vanguard defined contribution plan participants using target-date funds

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Percentage of all participants offered target-date funds	14%	29%	46%	67%	76%	81%	86%	87%	88%	90%
Percentage of participants using target-date funds when offered	11%	19%	22%	27%	37%	42%	48%	54%	58%	61%
Percentage of participant account balances in target-date funds	31%	36%	36%	38%	37%	38%	41%	43%	46%	48%
Percentage of total participant and employer contributions in target-date funds	32%	37%	48%	52%	57%	63%	67%	71%	72%	74%
Distribution of percentage of participant assets in target-date funds										
1%–24%	51%	38%	32%	28%	26%	26%	24%	21%	19%	17%
25%–49%	21	17	15	13	12	12	11	10	10	10
50%–74%	7	7	8	8	7	8	8	8	8	8
75%–99%	4	5	7	7	6	7	8	8	7	7
100%	17	33	38	44	49	47	49	53	56	58
Distribution of percentage of total participant and employer contributions in target-date funds										
1%–24%	47%	41%	28%	24%	19%	16%	14%	11%	11%	9%
25%–49%	23	18	16	14	13	11	11	9	9	8
50%–74%	9	8	7	7	7	7	6	7	7	7
75%–99%	5	5	4	4	5	4	5	4	4	5
100%	16	28	45	51	56	62	64	69	69	71
Percentage of participants owning										
One target-date fund only	17%	32%	37%	43%	46%	46%	48%	52%	54%	56%
One target-date fund plus other funds	65	58	54	48	46	46	44	41	38	36
Two or more target-date funds only	1	1	1	1	2	2	2	1	2	2
Two or more target-date funds plus other funds	17	9	8	8	6	6	6	6	6	6
Distribution of pure target-date fund holders by age										
<25	8%	8%	11%	11%	11%	9%	8%	8%	7%	7%
25–34	26	28	30	30	31	31	31	32	32	32
35–44	27	28	26	26	25	26	26	26	26	26
45–54	26	23	21	21	21	21	22	21	21	21
55–64	12	11	10	10	10	11	11	11	12	12
65+	1	2	2	2	2	2	2	2	2	2
Distribution of mixed target-date fund holders by age										
<25	4%	3%	3%	3%	3%	2%	2%	1%	2%	2%
25–34	30	26	24	24	22	21	20	19	18	18
35–44	31	31	30	28	28	27	27	27	26	26
45–54	24	26	28	28	29	30	30	30	30	29
55–64	10	13	14	15	16	17	18	20	20	21
65+	1	1	1	2	2	3	3	3	4	4

Source: Vanguard, 2014.

Participant use of target-date funds

Among participants using target-date funds, nearly half of account balances were invested in these funds (Figure 68). These target-date participants directed 74% of their 2013 total contributions to target-date funds. Participants invest in target-date funds in one of two ways. "Pure" investors hold a single target-date fund. They accounted for 56% of all target-date investors in 2013. The remaining target-date investors are "mixed" investors. They hold a target-date fund in combination with other investments (or, less commonly, multiple target-date funds and/or other options).

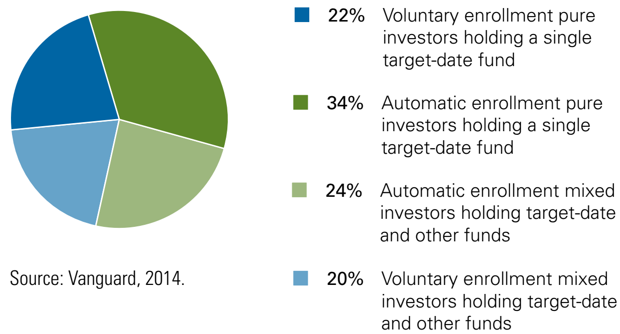
Pure target-date investors are more likely to be younger, lower-wage, shorter-tenured participants with lower 401(k) account balances than other investors. Meanwhile, "mixed" investors appear very much like non-target-date investors in terms of their demographic and portfolio characteristics. Sixty-five percent of single target-date fund investors were younger than 45, compared to only 46% of mixed investors.

Mixed target-date investors arise half through sponsor action and half through participant choice. Sponsor actions leading to mixed investors include employer contributions in company stock; nonelective contributions to the plan's default fund; recordkeeping corrections applied to the plan's default fund; or mapping of assets from an existing investment option to the default fund because of a plan menu change. Mixed investors who choose to combine a target-date fund with other plan options appear to pursue a range of reasonable diversification strategies, although they do not fit within the "all-in one" portfolio approach of the target-date concept.[4]

Automatic enrollment into a target-date fund default is one important factor explaining the increase in the fraction of pure target-date investors. However, a large fraction of pure investors select target-date options voluntarily. Of the 56% of participants who were pure investors in 2013, a large portion were participants in plans not offering automatic enrollment. Four in 10 pure investors were in plans where participants made the choice to select the fund (Figure 69).

Figure 69. Plan design and target-date funds, 2013

Vanguard defined contribution plan participants holding target-date funds



Source: Vanguard, 2014.

Note: A plan and its participants are categorized as an automatic enrollment design if the plan had adopted automatic enrollment in 2013 or prior. As noted previously in this report, automatic enrollment is typically applied only to newly eligible participants. Many participants in automatic enrollment plans were hired under traditional voluntary enrollment designs. Hence, not all participants using target-date funds in plans with automatic enrollment designs were defaulted into the funds.

4 For additional information on mixed target-date investing, see: Cynthia A. Pagliaro and Stephen P. Utkus, 2010, *Mixed target-date investors in defined contribution plans*, Vanguard Center for Retirement Research, institutional.vanguard.com; and John Ameriks, Dean J. Hamilton, and Liqian Ren, 2012, *Investor comprehension and usage of target-date funds: 2010 survey*, Vanguard Investment Counseling & Research.

Participant equity allocations

Equities are the dominant asset class holding of many plan participants. From an investment perspective, an asset allocation to equities of 80% or more may appear appropriate in light of the long-term retirement objectives of most DC plan participants.

The growing use of professionally managed allocations within DC plans, including target-date funds, is reshaping equity allocations by age and reducing extreme allocations.

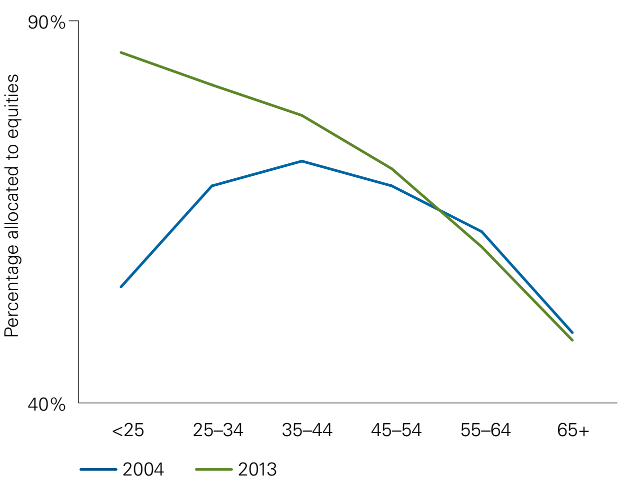
Equity allocations by age

In prior reports we have noted that participants' age-based equity allocation was hump-shaped, with younger participants adopting more conservative allocations, middle-aged participants holding the highest equity exposure, and then older participants having equity exposure on par with younger participants (Figure 70). In 2013, the equity allocation among Vanguard DC participants is downward sloping by age. This phenomenon is tied directly to the growing use of target-date funds, along with managed account advice, both of which provide for a declining equity exposure with age.[5]

Figure 70. Trend in asset allocation by participant age

Vanguard defined contribution plans

Average equity allocation participant-weighted



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Equity allocation by age										
<25	55%	57%	61%	67%	73%	77%	82%	84%	85%	85%
25–34	68	67	69	71	70	73	76	77	79	81
35–44	71	71	72	73	70	72	74	74	75	77
45–54	68	68	69	69	65	66	68	67	68	70
55–64	62	62	62	62	55	56	58	56	57	60
65+	49	50	50	50	44	45	47	45	45	48

Source: Vanguard, 2014.

5 For an examination of how target-date funds are reshaping participant portfolios, see John Ameriks and Stephen P. Utkus, 2012, *Generations: Key drivers of investor behavior*, institutional.vanguard.com

Figure 71. Distribution of equity exposure

Vanguard defined contribution plan participants

Percentage of participants

Percentage of account balances in equities	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Percentage of contributions to equities, 2013
0%	13%	13%	13%	11%	11%	11%	9%	8%	7%	6%	7%
1%–10%	2	2	2	1	2	2	2	2	2	2	1
11%–20%	2	2	2	2	2	2	2	3	2	1	1
21%–30%	2	2	2	2	3	2	2	2	2	2	1
31%–40%	3	3	3	2	4	3	3	5	5	6	6
41%–50%	6	6	5	6	4	6	6	4	4	2	3
51%–60%	6	6	5	5	9	7	6	7	7	6	6
61%–70%	10	10	10	11	12	11	10	10	10	12	13
71%–80%	10	9	11	11	11	11	12	14	15	12	12
81%–90%	13	14	16	19	18	22	26	26	28	33	34
91%–99%	11	12	12	13	8	9	9	9	9	10	6
100%	22	21	19	17	16	14	13	10	9	8	10
Average equity participant-weighted	**67%**	**67%**	**68%**	**68%**	**65%**	**66%**	**68%**	**68%**	**69%**	**72%**	**71%**
Median equity participant-weighted	**79%**	**78%**	**79%**	**80%**	**74%**	**76%**	**79%**	**79%**	**79%**	**82%**	**82%**

Source: Vanguard, 2014.

One development influencing this change is the growth in default funds under automatic enrollment and the designation of target-date funds as the most common type of default investment. However, participants choosing target-date funds on a voluntary basis are also contributing in a meaningful way to this change.

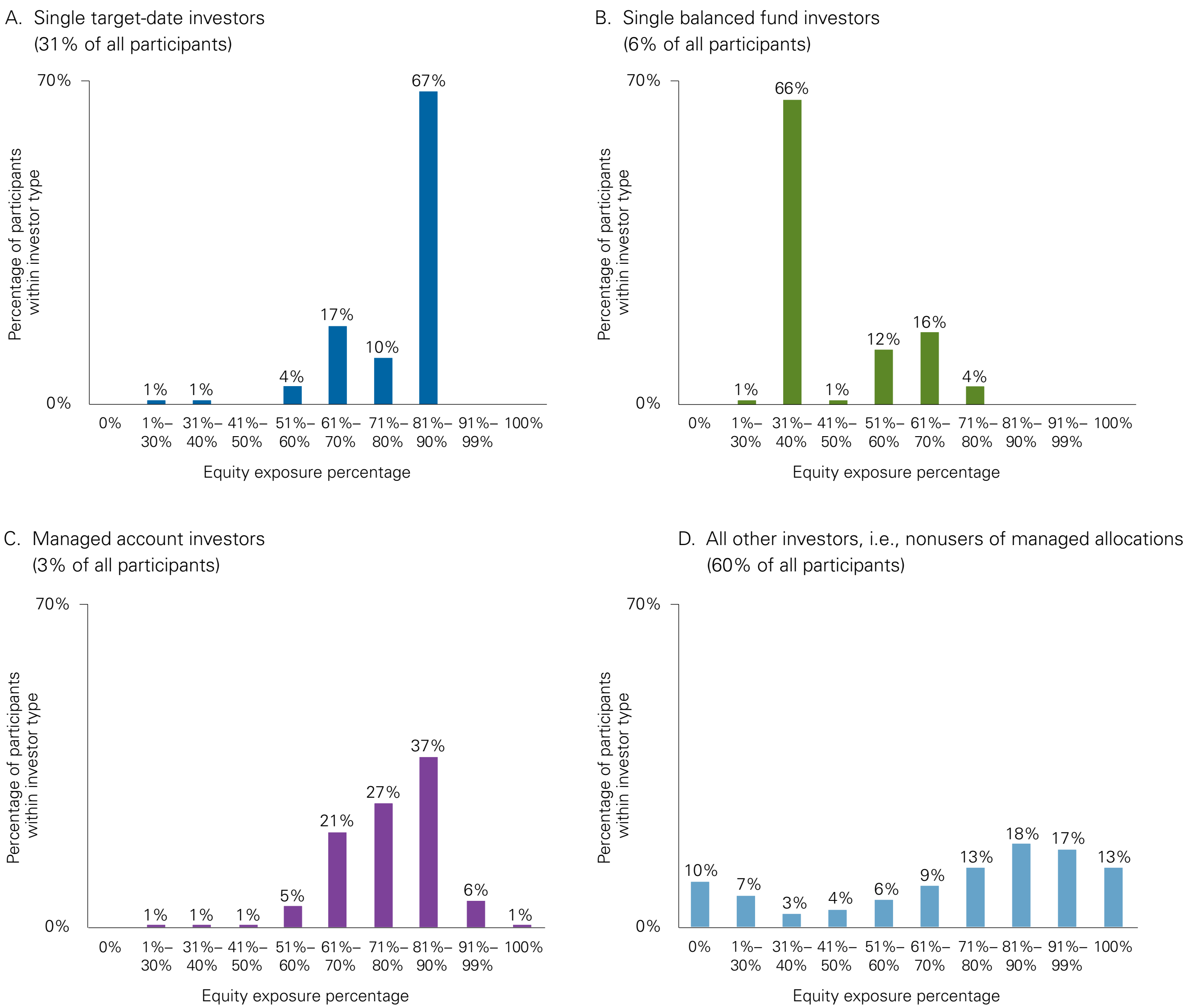
A transition is under way in the factors influencing age-related equity exposure in DC plans. On the one hand, existing participants make few changes in their allocations as they age due to inertia in financial decision-making. On the other hand, the growing use of professionally managed allocations, particularly among new entrants to plans, is contributing to a sharper delineation of equity risk-taking by age.

Extreme equity allocations

The rising use of professionally managed allocations is also influencing extreme portfolio allocations (Figure 71). The fraction of participants with no allocation to equities has fallen by half, from 13% in 2004 to 6% in 2013. At the other extreme, the fraction of participants investing exclusively in equities has fallen from 22% to 8% over the same period.

Figure 72. Distribution of equity exposure by investor type, 2013

Vanguard defined contribution plan participants



Source: Vanguard, 2014.

One of the benefits of target-date funds is that they eliminate extreme equity allocations. Non-target-date participants tend to hold greater extremes in equity exposure (Figure 72, Panel D). Twenty-three percent of "do it yourself" investors hold extreme portfolios (10% with no equities, 13% with only equities). Professionally managed investors cannot hold extreme positions because professionally managed options include both equity and fixed income assets.

Among pure target-date investors, virtually all have equity allocations ranging from 51% to 90% of their portfolios. A large group of pure target-date investors has equity allocations in the 81%–90% range. This phenomenon reflects two facts: (1) automatic enrollment into target-date funds typically applies to new hires who are disproportionately younger than 40; and (2) in voluntary enrollment plans, a single target-date fund is a popular strategy among new hires.

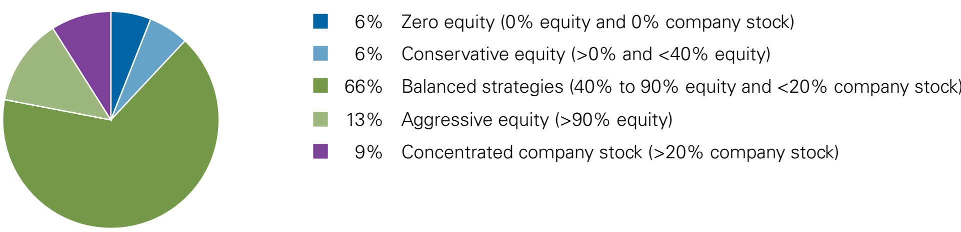
This rising use of professionally managed allocations is also contributing to a reduction in portfolio construction errors (Figure 73). The fraction of participants holding broadly diversified portfolios rose from 37% in 2004 to 66% in 2013. Participants holding concentrated stock positions fell by nearly half, along with reductions in extreme portfolio positions.[6]

Initial equity allocations

We analyzed how participants are currently allocating their contributions, based on the year they entered their employer's retirement plan.

Figure 73. Participant portfolio construction

Vanguard defined contribution plan participants



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Percentage of participants using										
Zero equity (0% equity and 0% company stock)	13%	13%	13%	11%	11%	11%	9%	8%	7%	6%
Conservative equity (>0% and <40% equity)	7	7	7	7	10	9	8	8	8	6
Balanced strategies (40% to 90% equity and <20% company stock)	37	39	42	47	51	52	57	61	63	66
Aggressive equity (>90% equity)	24	23	24	23	17	17	16	14	13	13
Concentrated company stock (>20% company stock)	19	18	14	12	11	11	10	9	9	9

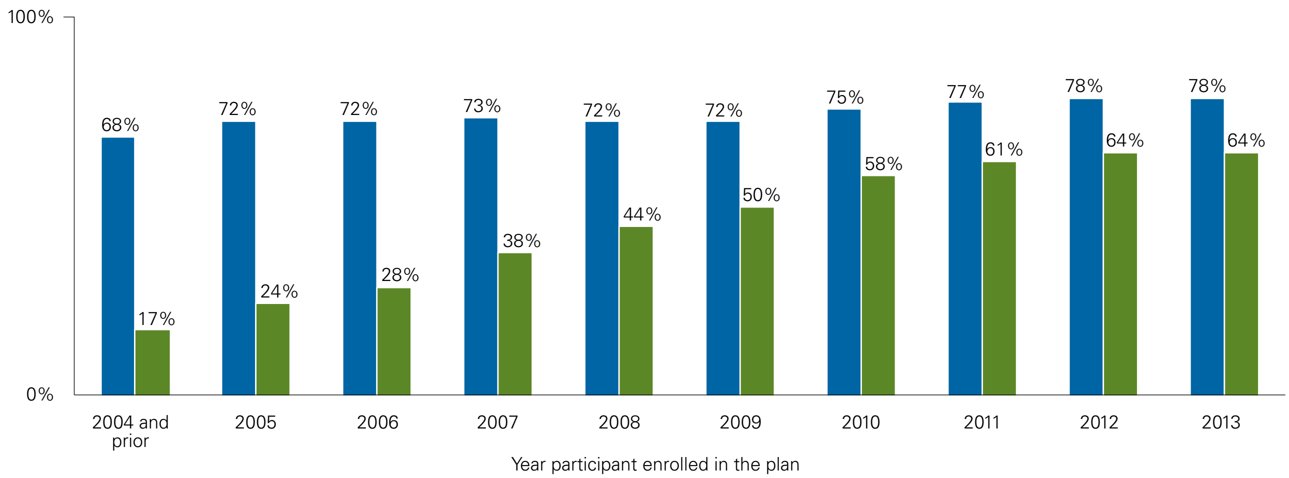
Source: Vanguard, 2014.

6 Gary R. Mottola and Stephen P. Utkus, 2007, *Red, yellow, and green: Measuring the quality of 401(k) portfolio choices.*

Figure 74. Current contribution allocation by plan entry date, 2013

Vanguard defined contribution plans

Contributions from January 1, 2013, through December 31, 2013



Distribution of all participants with contributions in 2013 by year of plan entry

2004 and prior	2005	2006	2007	2008	2009	2010	2011	2012	2013
35%	4%	5%	6%	6%	5%	6%	9%	12%	12%

■ Percentage of total 2013 contributions allocated to equity ■ Percentage of total 2013 contributions allocated to target-date funds

Source: Vanguard, 2014.

Participants who enrolled during 2008–2009 were allocating 72% of contributions to equities, only slightly below those enrolling during 2007 (Figure 74).[7] Participants who enrolled during 2011–2013 were allocating more than three-quarters of their contributions to equities.

New plan entrants in 2013 allocated almost two-thirds of their total contributions to target-date funds.

Advice

Many participants in defined contribution plans may lack the financial planning skills, time, or interest to make appropriate investment decisions. To address participants' need for assistance with investment decisions, plan sponsors using Vanguard as recordkeeper offer a range of advice programs, including an online advice service, Personal Online Advisor; a managed account advisory service, Vanguard Managed Account Program; and Vanguard Financial Planning Services.

7 We do not have ready access to contribution allocations over time and so instead focus on current contribution allocations by date of plan entry.

The online advice service and managed account program are provided by Financial Engines, a third-party advisor; the financial planning services are provided by Vanguard Advisers, Inc. Each of these programs allows participants to include information about assets they have outside the plan, which may affect the selection of in-plan investments.

Online advice is targeted toward participants who want to manage their investments themselves. Thirty-five percent of plans offer online advice, which assists participants in developing and managing optimal portfolios and continues to recommend portfolio changes over time (Figure 75). Participants need to take action to implement online advice. Because large plans are more likely to offer advice, 7 in 10 participants have access to the online advice service.

Managed account advice is targeted toward participants who prefer professional investment management. The managed account program includes development of customized portfolios using the funds offered in the plan, and ongoing monitoring and rebalancing. It also offers customized retirement savings projections. Participants may also further personalize the advice according to risk tolerance or other holdings. One in 5 plans offers managed account advice—and again, because larger plans are more likely to offer advice, slightly more than half of participants have access to the service.

Figure 75. Advice offered, 2013

Vanguard defined contribution plans

		Number of participants		
	All	<1,000	1,000–4,999	5,000+
Online advice				
Percentage of plans offering online advice	35%	25%	62%	66%
Percentage of participants offered online advice	69	36	66	75
Percentage of participants offered online advice accessing	7	10	7	7
Managed account advice				
Percentage of plans offering managed account advice	19%	9%	43%	48%
Percentage of participants offered managed account advice	52	15	48	60
Percentage of participants offered managed account advice accessing	6	7	6	7
Financial planning services				
Percentage of plans offering financial plans	68%	65%	77%	75%
Percentage of participants offered financial plans	74	71	79	72
Percentage of participants offered financial plans accessing	3	3	3	3

Source: Vanguard, 2014.

Financial planning services are offered to all participants with plan sponsor authorization, but a fee may apply. However, the service is available at no charge to participants age 55 and older who are in or nearing retirement if their plan sponsor authorizes the offer. Sixty-eight percent of plans offer this service to their participants, and about three-quarters of participants in this age group have access to the program.

Overall, 16% of participants who were offered one of these advice programs have used one of the programs. Participants were most likely to adopt the online advice program.

Company stock

Company stock is more likely to be offered as an investment option by a large plan—38% of Vanguard plans with 5,000 or more participants offered company stock, compared with only 4% of plans with fewer than 1,000 participants. In most plans that offer company stock, participants can choose whether or not to invest their own contributions in this option.

Employer contributions—which may be 401(k) matching, profit-sharing, or ESOP contributions—are either directed to company stock by the employer, invested at the participant's discretion, or a combination of the two.

As of 2013, only 10% of Vanguard recordkeeping plans offered company stock as an investment option. However, because large plans are more likely to offer company stock, 28% of Vanguard recordkeeping participants had access to company stock in their employer's plan. Among all Vanguard participants:

- 84% had no company stock investments in 2013—either because their employer did not offer company stock (72%) or because they chose not to invest in it (12%).
- 7% had company stock holdings of 1% to 20% of their account balances in 2013.
- 9% had concentrated positions exceeding 20% of their account balances as of 2013.

Among Vanguard plans actively offering company stock, 78% had 20% or less of plan assets invested in company stock (Figure 76). The remaining 22% had concentration levels of more than 20%. This is an improvement from 2004, when one-third of these plans had concentration levels of more than 20%.

In 2013, 47% of Vanguard participants who were offered company stock in their plan chose not to invest their contributions—or their employer's contributions—in company stock. If they received employer stock contributions, they diversified these assets. At the other extreme, 3 in 10 participants in plans actively offering company stock had more than 20% of their account balance invested in company stock, and 6% had more than 80% of their account balance in company stock.

During 2013, the modest shift away from participant company stock holdings persisted. The number of participants in plans with company stock and holding a concentrated position of more than 80% of their account balance in company stock fell from 15% in 2004 to 6% in 2013, and fewer plans are offering company stock.[8]

Figure 76. Company stock exposure for plans and participants

Vanguard defined contribution plans actively offering company stock

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Balance of plan in company stock—percentage of plans										
1%–20%	66%	68%	73%	77%	82%	79%	80%	75%	77%	78%
21%–40%	21	21	19	17	10	15	13	17	16	16
41%–60%	9	7	5	4	6	5	6	7	6	6
61%–80%	0	1	1	1	1	0	0	0	0	0
>80%	4	3	2	1	1	1	1	1	1	0
Balance in company stock—percentage of participants										
0%	34%	35%	37%	42%	44%	45%	43%	45%	45%	47%
1%–20%	22	23	25	26	26	25	26	25	24	22
21%–40%	16	15	15	13	12	12	12	12	13	14
41%–60%	9	8	9	7	6	6	6	5	5	7
61%–80%	4	4	5	4	3	3	3	3	3	4
>80%	15	15	9	8	9	9	10	10	10	6

Source: Vanguard, 2014.

8 For an in-depth analysis of the factors driving company stock concentration, see Stephen P. Utkus and Jean A. Young, 2014, *The evolution of company stock in defined contribution plans*, Vanguard Center for Retirement Research, institutional.vanguard.com.

Despite this shift, why do 3 in 10 participants in plans offering company stock continue to hold a concentrated position in their employer's stock? One reason is that most participants view company stock as a safer investment than a diversified equity fund. Another factor encouraging concentrated stock holdings is the plan sponsor's decision to make an employer contribution in company stock. This implied endorsement often leads participants to invest more of their own savings in the stock as well.

The effect is evident in the average company stock allocation for plans making employer contributions in cash compared with those making employer contributions in stock. In 2013, plans offering company stock as an investment option but making employer contributions in cash had an average of 10% of plan assets invested in company stock (**Figure 77**). Meanwhile, plans offering company stock as an investment option and making employer contributions in stock had an average of 36% of plan assets in company stock.

Investment returns

There are two categories of investment returns: total returns and personalized returns. Total rates of return reflect time-weighted investment performance and allow comparison of results to benchmark indexes. Personal rates of return are dollar-weighted returns, reflecting account investment performance, adjusted for each participant's unique pattern of contributions, exchanges, and withdrawals. They are not directly comparable to time-weighted performance data for market indexes or mutual funds. Both return measures are influenced by market conditions; however, only total rates of return can be compared with published benchmark indexes.

Participant returns

Due to rising equity markets in 2013, average total and personal returns for DC participants were 20.4% and 19.9% for the 1-year period ended December 31, 2013 (**Figure 78**). Reflecting the market recovery in 2009 and 2010, a flat market in 2011, and strong markets in 2012 and 2013, median total and personal returns for DC participants were 10.0% or more across 3- and 5-year periods for the period ended December 31, 2013.

Figure 77. Impact of company stock employer contributions on asset allocation, 2013

Vanguard defined contribution plans

		All Vanguard 401(k) plans with an employer contribution		
	Vanguard defined contribution plans	Plans making employer contributions in cash	Plans offering company stock making employer contributions in cash	Plans offering company stock making employer contributions in company stock
Company stock	9%	0%	10%	36%
Diversified equity funds	44	48	41	32
Balanced funds	28	31	29	15
Bond funds	7	8	6	7
Cash	12	13	14	10

Source: Vanguard, 2014.

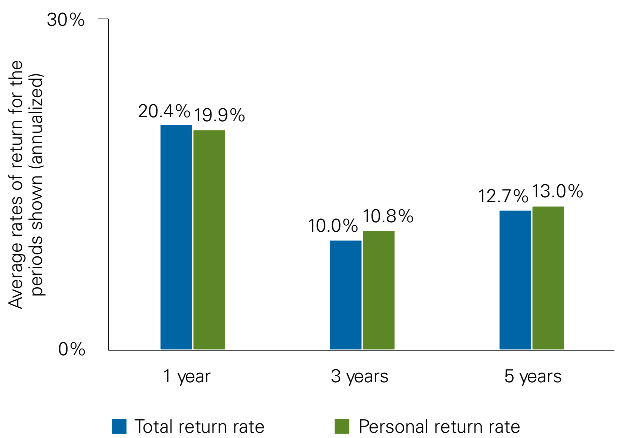
Five-year participant total returns averaged 12.7% per year or 82% cumulatively (personalized total returns rose 13.0% per year or 84% cumulatively).

Distribution of returns

As of December 2013, 5-year personalized annual returns were positive for nearly all Vanguard DC plan participants. There was wide variation in returns among participants (Figure 79). Participants at the fifth percentile had 5-year personalized returns of 2.7% per year in 2013. At the other extreme, participants above the 95th percentile had 5-year personalized returns greater than 19.6% per year. The variation in returns is largely due to the variation in participant asset allocations and their individual account holdings.

Figure 78. Participant rates of return, December 2013

Vanguard defined contribution plans

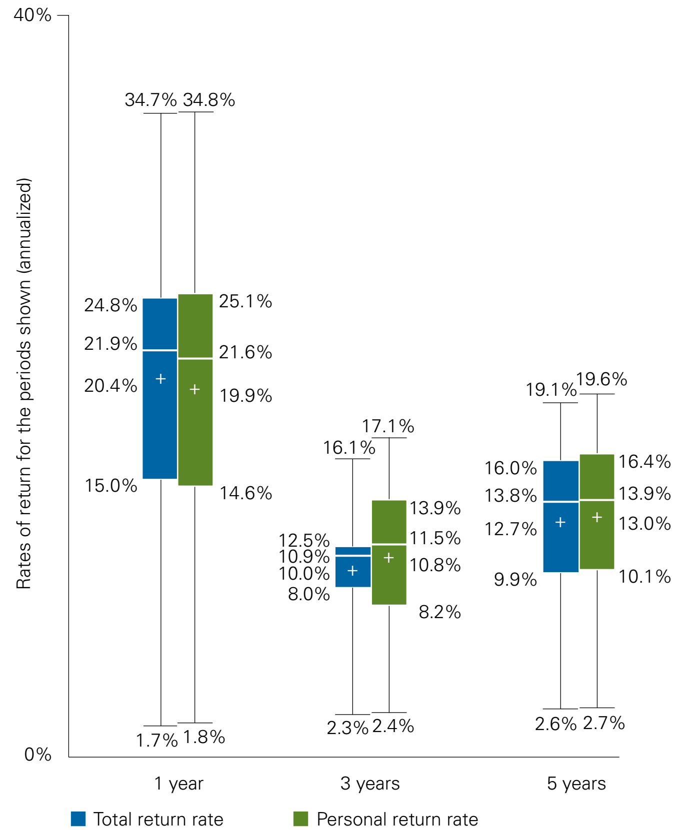


Past performance is no guarantee of future returns.

Source: Vanguard, 2014.

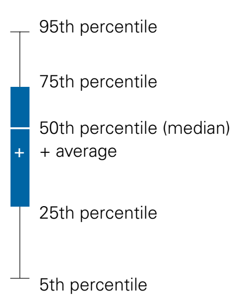
Figure 79. Variation in participant total and personal return rates, 2013

Vanguard defined contribution plans



Note: Based on 3.0 million observations for 1 year; 2.3 million for 3 years; and 1.7 million for 5 years.

Source: Vanguard, 2014.



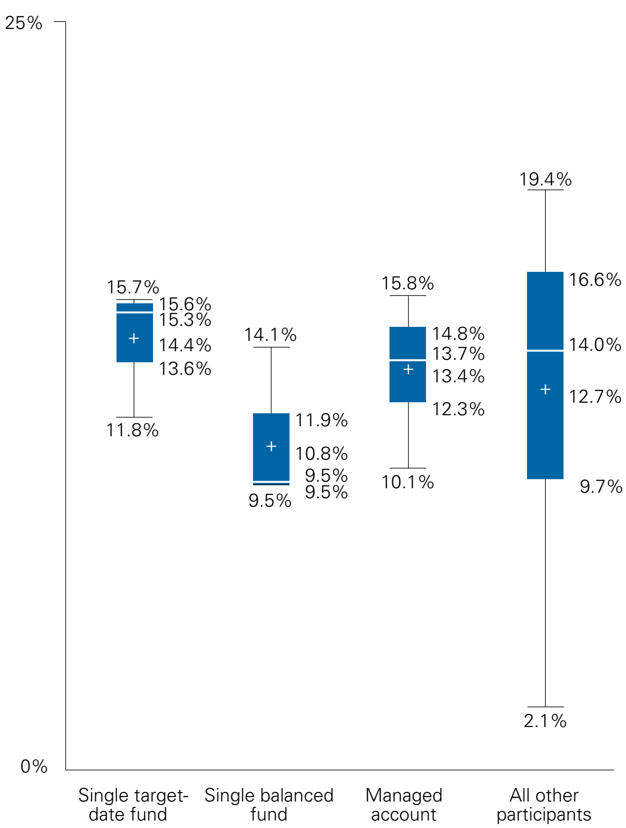
How to read a box and whisker chart:

This box and whisker chart shows the range of outcomes. Plot values represent the 95th, 75th, 50th, 25th, and 5th percentile values. The average value is represented by a white + and the median value by a white line. An example of how to interpret the data in Figure 79 is: For the 1-year period, 5% of participants had total return rates (TRR) greater than 34.7%; 25% had TRRs greater than 24.8%; half had TRRs greater than 21.9%; 75% had TRRs greater than 15.0%; 95% had TRRs greater than 1.7%; and 5% had TRRs less than 1.7%. The average 1-year TRR was 20.4%.

Participants with managed allocations—notably target-date funds and managed account advisory services—had a much lower dispersion in outcomes. Total 5-year returns for single target-date investors ranged from 11.8% per year for the 5th percentile to 15.7% for the 95th percentile, a difference of approximately 4 percentage points (Figure 80). For the single balanced fund and managed account participants, the 5th-to-95th percentile differences were approximately 5 and 6 percentage points, respectively. The managed account is a customized portfolio approach and so results are accordingly more dispersed than with target-date funds.

Figure 80. Distribution of 5-year total returns by strategy, 2013

Vanguard defined contribution plans



Note: Based on 167,000 observations for single target-date fund investors; 95,000 for balanced fund investors; 44,000 for managed account investors; and 1.4 million for all other participants.

Source: Vanguard, 2014.

By comparison, among all other participants, realized returns for those making their own choices ranged from 2.1% per year for the 5th percentile to 19.4% for the 95th percentile, a difference of more than 17 percentage points.

Dispersion of outcomes

These differences are also apparent when examining both return and risk outcomes in scatter plots. For ease in presentation, we created a random sample of 1,000 participants for each group of investors.

During the 5-year period ended 2013, outcomes for single target-date investors were distributed among major market indexes (Figure 81, Panel A), and upward sloping reflecting a positive equity risk premium. These results are consistent with the fact that most of the target-date portfolios in our sample are a specific combination of indexed U.S. equities, international equities, and U.S. bonds. In the target-date scatterplot (in Panel A), younger participants (represented by blue dots and in long-dated portfolios) are to the right of the chart; older participants (represented by purple dots and in near-dated portfolios) are to the left.

The figure includes just under 1,000 observations, although there appear to be far fewer. The reason is that while there are many observations in our sample, they are all 100% invested in a limited set of target-date portfolios, which means that portfolio outcomes are also limited. For example, if a plan offered 12 target-date options, then 1,000 participants invested solely in a single target-date fund would have 12 outcomes, not 1,000.

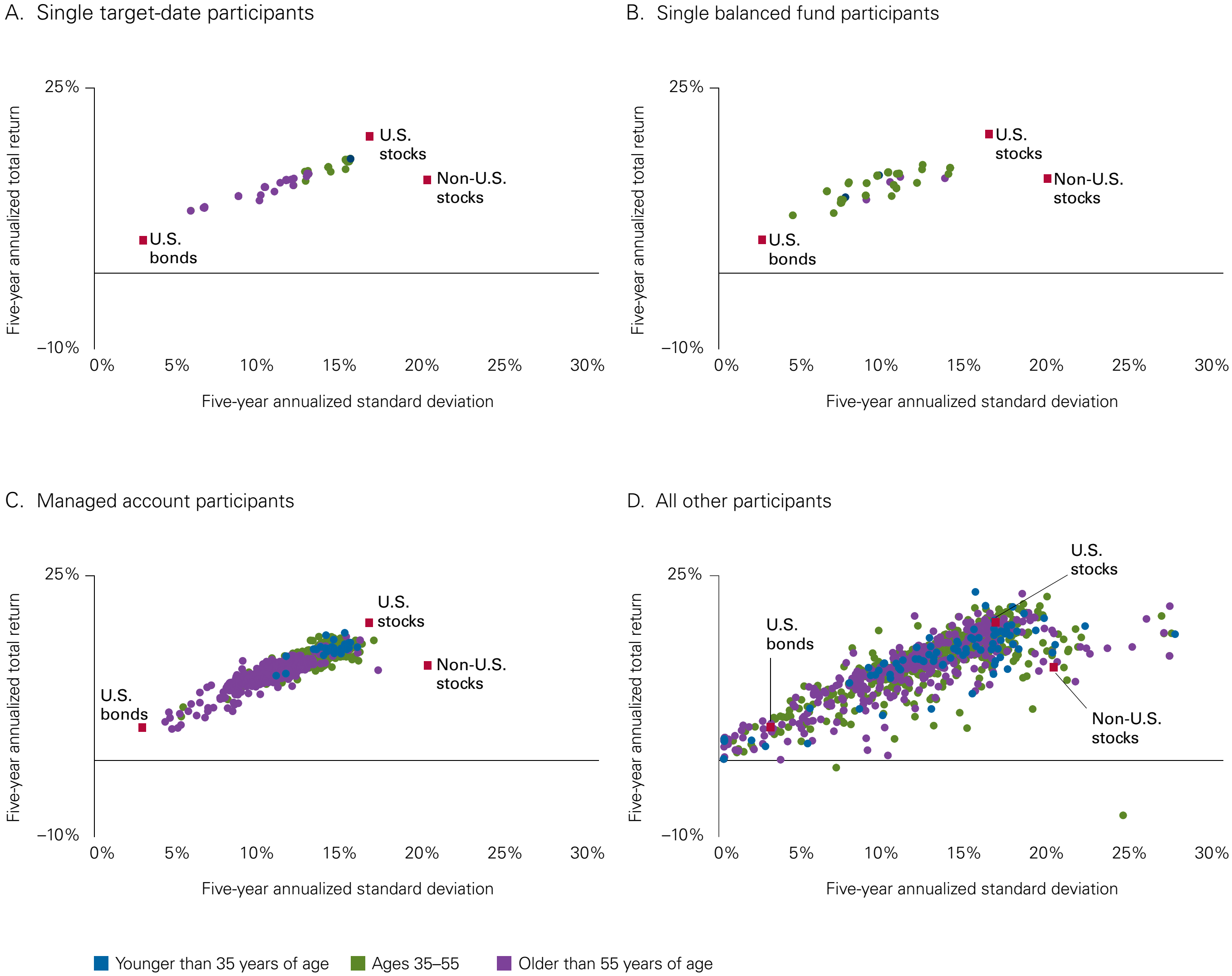
The results for single balanced fund investors reflect the fact that most balanced funds have similar equity allocations, typically around 35% to 65% of assets (Figure 81, Panel B). Managed account investors are more dispersed, reflecting the customized nature of managed account advice.[9]

The greatest dispersion of risk/return outcomes is among participants making their own investment choices (Figure 81, Panel D). Over time, due to the growing use of professionally managed allocations in DC plans, this population is expected to decline.

9 For an in-depth analysis of portfolio outcomes, see John A. Lamancusa, Stephen P. Utkus, and Jean A. Young, 2013, *Professionally managed allocations and the dispersion of participant portfolios*, Vanguard research, institutional.vanguard.com.

Figure 81. Risk and return characteristics, 2009–2013

Vanguard defined contribution plan participants for the five-year period ended December 31, 2013



Note: Includes 1,000 random samples of participant accounts drawn from respective samples.
Excludes 0.05% top and 0.05% bottom outliers for both risk and return, for a net sample of 980 observations.

Source: Vanguard, 2014.

Trading activity

Participant trading or exchange activity is the movement of existing account assets from one plan investment option to another. This transaction is distinct from a contribution allocation decision, in which participants decide how future contributions to the plan should be invested. Exchange activity is a proxy for a participant's holding period for investments, as well as a measure of the participant's willingness to change their portfolio in response to short-term market volatility.

Exchange provisions

Daily trading is nearly universal for Vanguard DC plans, with virtually all plan sponsors allowing it. While assets can be traded daily, Vanguard and other investment companies serving DC plans typically have "round-trip" restrictions designed to thwart the minority of individual participants who seek to engage in active market-timing or day-trading.

Figure 82. Participant trading summary

Vanguard defined contribution plans

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Percentage of participants										
Percentage trading including managed account investors	20%	19%	14%	15%	16%	13%	12%	11%	12%	13%
Percentage with participant-directed exchanges	20	18	13	14	14	11	10	10	9	10
Percentage of average recordkeeping assets										
Percentage traded	14.6%	13.0%	12.7%	14.7%	16.6%	14.1%	13.4%	14.8%	12.6%	14.0%
Percentage moved to equities (fixed income)	(0.2)	(0.7)	(0.6)	(1.5)	(3.9)	(0.6)	(1.1)	(2.5)	(1.7)	0.2%
Dollar flows (in billions)										
Dollars traded	$22.5	$23.6	$27.0	$36.2	$39.7	$29.0	$32.5	$40.6	$36.2	$44.8
Dollars moved to equities (fixed income)	(0.3)	(1.3)	(1.3)	(3.7)	(9.3)	(1.2)	(2.8)	(6.9)	(4.9)	0.5
S&P 500 Index volatility										
Percentage of days up or down 3% or more	0.0%	0.0%	0.0%	0.4%	16.8%	8.7%	3.2%	4.8%	0.0%	0.0%
Percentage of days up or down 1% or more	16	12	12	26	54	46	30	37	20	15

Source: Vanguard, 2014.

Volume of exchanges

Despite the ongoing market volatility of 2013, only 13% of participants made one or more portfolio trades or exchanges during the year, down from 16% in 2008 (**Figure 82**).[10] When participants using the managed account program are excluded, only 10% of participants initiated an exchange. As in prior years, most participants did not trade. Not only did participant trading activity remain at lower levels during 2013, but trading activity between 2009 and 2013 was lower than the trading activity during 2004–2005, when markets were more benign.

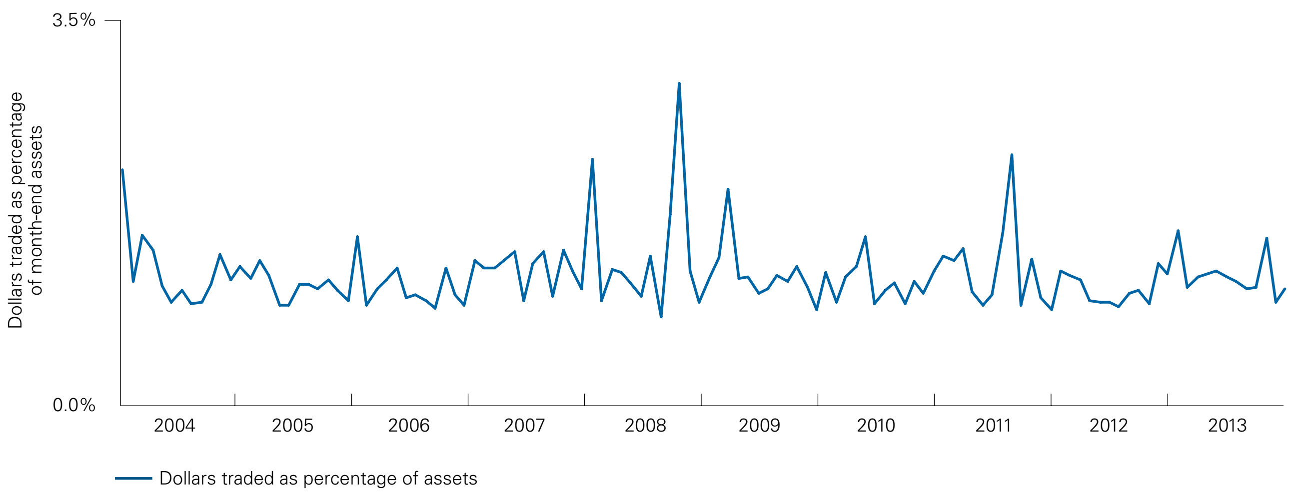
Another measure of trading is the volume of dollars traded. We measure dollar volume movements as a fraction of total recordkeeping assets in order to scale them to growth in assets and growth in the underlying recordkeeping business. In effect, the fraction of assets traded is a measure of portfolio turnover.

In 2013, traders exchanged the dollar equivalent of 14% of average DC recordkeeping assets at Vanguard. On a net basis, 0.2% of assets were shifted from fixed income to equities in 2013, compared with a 1.7% shift from equities to fixed income in 2012.

Since 2004, dollar-trading levels have generally remained stable, with the exception of periods of high market volatility (**Figure 83**). The most notable spikes in dollars traded occurred in months of high market volatility: January, September, and October 2008; March 2009; and August 2011.

Figure 83. Trading activity, January 2004–December 2013

Vanguard defined contribution participants



Source: Vanguard, 2014.

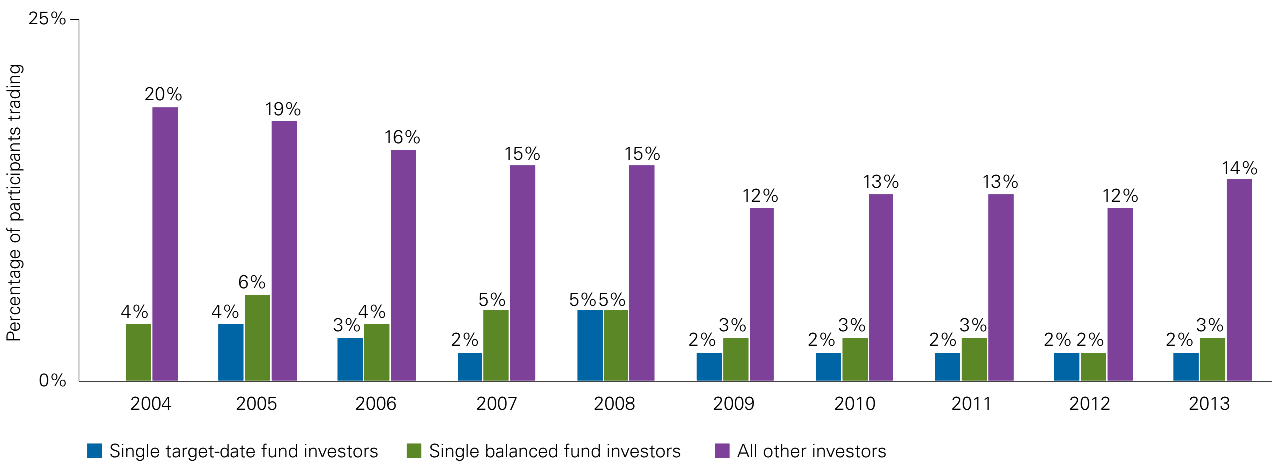
10 Our trading statistics are generally adjusted for sponsor-initiated trading—e.g., replacement of one plan option with another. On the date the option is eliminated and the balances are moved to a different fund, we are able to capture and adjust for the fund replacement effect. However, some participants initiate exchanges either before or after the fund is eliminated. We are not able to isolate this participant activity but estimate that it could account for up to one-third of the trading activity.

In addition, the growing reliance on single fund investment programs, such as target-date funds, has likely contributed to lower trading levels by participants. Pure target-date and single balanced fund investors trade much less frequently than all other participants although their portfolios are rebalanced daily by the fund managers (Figure 84).

However, participants enrolled in the managed account program trade much more frequently as their investments are rebalanced periodically to the target asset allocation.

Figure 84. Participant trading by investor type

Vanguard defined contribution plan participants



Source: Vanguard, 2014.

Direction of money movement

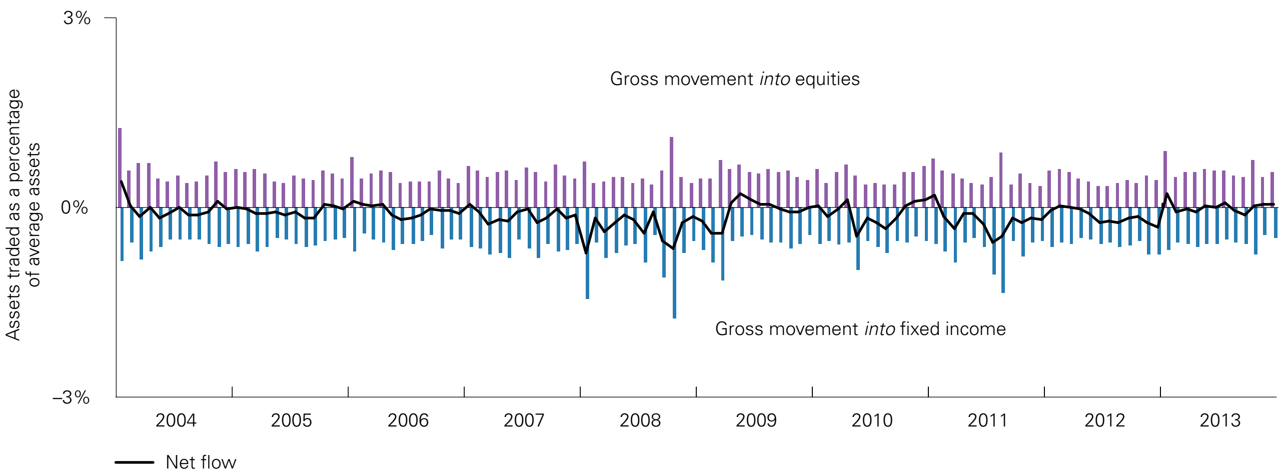
Summary statistics may sometimes give the impression that all participant trading is in one particular direction. However, in any given month, participants who trade are trading meaningful dollar amounts both into and out of equities (Figure 85). Even in volatile markets, as some traders shift their portfolios toward fixed income assets, there are others who shift toward equities.

During the past decade, which includes the 2008–2009 bear market, the net movement of money among participants trading in their accounts has been generally toward fixed income investments. Nonetheless, even at the height of the recent market volatility, there were significant gross flows toward equities among some participants.

Figure 85. Direction of money movement, January 2004–December 2013

Vanguard defined contribution participants

Money movement as a percentage of average assets



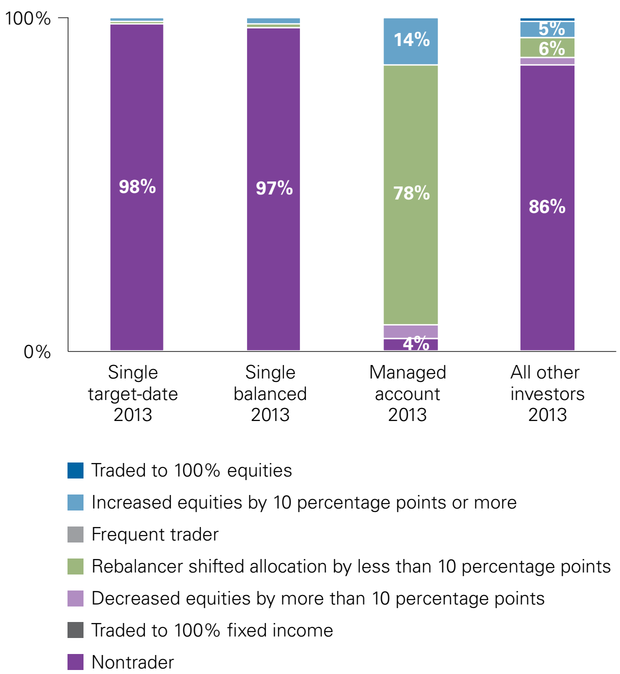
Source: Vanguard, 2014.

Types of trading activity

Among participants who trade in their accounts, the types of changes made by participants are varied. In 2013, 98% of single target-date investors and 97% of single balanced fund investors did not trade to other fund options, and instead retained their single holding (Figure 86).

Figure 86. Participant trading decisions, 2013

Vanguard defined contribution plan participants



Source: Vanguard, 2014.

However, the fund managers for these strategies rebalanced the underyling assets of the funds daily.

On the other hand, nearly all participants using a managed account had exchanges. In a managed account, the advisor oversees multiple fund holdings in a typical participant's account. The trading activity reflects the advisor rebalancing the participant's portfolio (or, with those initially signing up for the service, portfolio changes needed to arrive at the target portfolio strategy).

Among "do it yourself" investors, most participants do not trade—not even to rebalance their account. In 2013, less than 1% of all other participants abandoned equities.[11] Even among all other investors, most participants trading were rebalancing their portfolios.

Over a longer time frame, 2009–2013, 29% of participants initiated trades. Seven in 10 participants (excluding managed account investors) made no trades in their workplace retirement plan account, not even to rebalance to a target asset allocation. Again, single target-date and balanced fund investor portfolios are rebalanced by the fund managers. However, 60% of participants were making their own investment decisions in 2013.

11 A participant who abandoned equities is one who shifted his or her entire portfolio into fixed income investments during the year. Only participants with some equity exposure in their portfolio who shifted to all fixed income assets during 2013 are included in this category.

3

Accessing plan assets

Participants can access their plan assets by taking a loan or a withdrawal while they are working, or through a withdrawal or rollover when they change jobs or retire.

Plan loans

If permitted by the plan, participants can borrow up to 50% of their balance (up to a maximum of $50,000) from their DC plan account. Loans are more common for plans accepting employee contributions and less common for employer-funded DC plans, such as money purchase or profit-sharing plans. Plan loans allow DC participants to access their plan savings before retirement without incurring income taxes or tax penalties.

Loans do appear to have a beneficial effect on retirement savings, raising contribution rates above what they would otherwise be. Yet they also come with risks. Cash that has been borrowed earns fixed income rather than equity market returns, and loan interest is double-taxed. Also, participants who leave their employer must typically repay any loan balance immediately—or risk paying taxes and a penalty and incurring a reduction in retirement savings by the amount of the loan outstanding.[12]

Loan availability

Loans are widely offered by employee-contributory DC plans. In 2013, 77% of Vanguard 401(k) plans permitted participants to borrow from their plan and 92% of active participants had access to a loan feature. The availability of loans tends to depend on plan size. Large plans tend to offer loans; small plans often do not. Loans are expensive to administer, and loan origination and maintenance fees are increasing. With loan fees, sponsors can allocate costs directly to those participants incurring loan-related expenses.

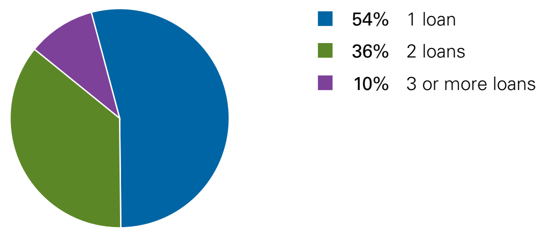
Most plans allow participants to have only one loan outstanding. In 2013, 54% of Vanguard 401(k) plans offering loans permitted only one loan at a time (Figure 87). Thirty-six percent of plans allowed two, and 10% of plans allowed three or more.

Loan use by participant demographics

Less than 1 in 5 participants had a loan outstanding at year-end 2013 (Figure 88).[13]

Figure 87. Number of loans allowed, 2013

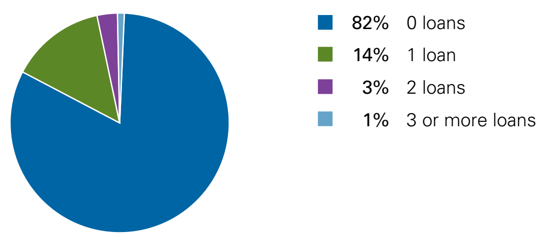
Vanguard defined contribution plans offering loans



Source: Vanguard, 2014.

Figure 88. Participant loan use, 2013

Vanguard defined contribution plans offering loans



Source: Vanguard, 2014.

12 For a comprehensive analysis of loans, see Timothy Lu, Olivia S. Mitchell, Stephen P. Utkus, and Jean A. Young, *Borrowing from the Future: 401(k) Loans and Loan Defaults*, www.pensionresearchcouncil.org/publications.

13 Our analysis of the percentage of participants with loans considers all participants with an account balance in plans offering loans. Some of these participants no longer work for the plan sponsor and are not eligible for a new loan. Some participants with loans also no longer work for the plan sponsor but are repaying loans. Loan use would likely be about five percentage points higher if based solely on active employees.

Figure 89. Participant loan demographics, 2013

Vanguard defined contribution plans offering loans

	Participants with loans					Participants with no loans
	Percentage of participants with loans	Percentage of account balance in loans	Average loan amount	Average account balance	Total average account balance including loans	Average account balance
All	**18%**	**10%**	**$9,456**	**$87,407**	**$96,863**	**$109,407**
Household income						
<$30,000	24%	12%	$7,150	$54,182	$61,332	$68,450
$30,000–$49,999	24	11	$7,737	$59,987	$67,724	$72,173
$50,000–$74,999	22	10	$9,299	$79,488	$88,787	$94,094
$75,000–$99,999	17	9	$11,159	$111,385	$122,544	$132,490
>$100,000	12	8	$13,226	$161,447	$174,673	$193,698
Age						
<25	4%	20%	$2,347	$9,232	$11,579	$4,219
25–34	14	18	$6,097	$28,517	$34,614	$26,280
35–44	22	13	$9,220	$59,607	$68,827	$71,551
45–54	22	9	$10,705	$107,452	$118,157	$134,544
55–64	16	7	$10,807	$148,879	$159,686	$196,160
>65	5	6	$9,619	$143,298	$152,917	$208,286
Gender						
Male	18%	9%	$10,144	$102,338	$112,482	$132,551
Female	17	11	$8,481	$68,380	$76,861	$84,933
Job tenure (years)						
0–1	3%	19%	$5,578	$23,481	$29,059	$12,911
2–3	10	18	$4,829	$21,981	$26,810	$31,352
4–6	17	16	$7,239	$38,375	$45,614	$63,006
7–9	23	14	$8,575	$51,700	$60,275	$96,194
>10	25	8	$11,289	$125,743	$137,032	$228,614
Account balance						
<$10,000	11%	31%	$2,473	$5,411	$7,884	$3,159
$10,000–$24,999	23	24	$5,364	$16,855	$22,219	$16,693
$25,000–$49,999	24	20	$8,985	$36,123	$45,108	$36,186
$50,000–$99,999	23	15	$12,301	$71,603	$83,904	$72,129
$100,000–$249,999	19	9	$15,105	$156,544	$171,649	$160,923
>$250,000	12	4	$17,592	$451,305	$468,897	$530,186

Source: Vanguard, 2014.

On average, the outstanding loan account balance equaled 10% of the participant's account balance including the loan, and the average participant had borrowed about $9,500 (Figure 89). Outstanding loans are typically excluded from measures of plan and participant assets because these assets have, in effect, been withdrawn from the plan and are not currently available as a retirement resource. However, more than 90% of loans are repaid and outstanding loans represent participant and plan assets. Only about 2% of aggregate plan assets were borrowed by participants.

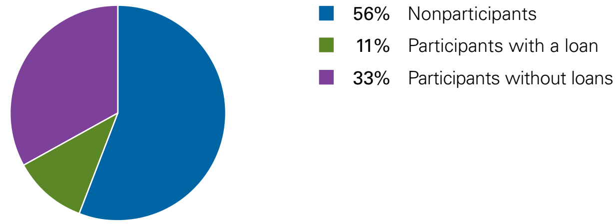
Loans are sometimes criticized as a form of revolving credit for younger, lower-income workers. While that may be partly true, loan use by age follows a hump-shaped profile, with loan use highest among participants in their prime working years. Among workers age 35–54, loan use averaged slightly more than 20% in 2013. Men and women used loans at the same rate.

Income appears to have a larger influence on loan use than age does. In 2013, 24% of participants with household incomes of less than $30,000 had a loan, while only 12% of participants with household incomes of more than $100,000 did. This difference reflects liquidity constraints among those with low wealth and income—i.e., higher income households have less need for borrowing due to their higher income or other savings.

Loan use is highest among participants who earn less than $30,000—almost 1 in 4 of these participants has a loan outstanding. However, earlier in this report, we noted that participation rates are lowest among this group, with only 44% of these workers joining their plan. Arguably, participants who earn less than $30,000 but have borrowed from their retirement savings (11% of these workers) are better off than those employees who earn less than $30,000 and do not participate in their employer plan (Figure 90).

Figure 90. Participation and loans, 2013

All employees earning less than $30,000



Source: Vanguard, 2014.

In 2013, loans were most common among participants with a balance between $10,000 and $100,000. Participants with account balances of less than $10,000 were actually somewhat less likely to have a loan, yet they borrowed the largest percentage of their balances. Only 11% of participants in this group had a loan, but the loan accounted for 31% of their account balance on average.

Across many demographic groups, participants with no loans outstanding in 2013 appear to have accumulated more in retirement savings than participants with loans. However, among participants younger than 35, participants with outstanding loans appear to have greater retirement savings accumulations. These differences in part reflect demographic differences in terms of age, income, and tenure between borrowers and nonborrowers.

Loan use by industry group

Loan use varies significantly by industry group (Figure 91). Participants in the media, entertainment, and leisure fields, as well as those in the business, professional, and nonprofit industries, use loans at a lower rate than other participants, suggesting that more highly educated participants might use loans less frequently.

Trends in new loan issuance

Among Vanguard plans, the fraction of participants taking loans from their DC plans fell between 2004 and 2008 (Figure 92). However, in 2009, the rate of new borrowing rose by 19%, returning to 2006 levels. In 2010, the fraction of participants taking loans rose again by 14%, returning to 2005 levels but still below 2004 levels. In 2011, loan-taking was on par with the level in 2010, and it declined modestly in 2012. Loan-taking grew again in 2013, but still remained below 2004 levels.

There is a pronounced seasonality to loan-taking, with borrowing typically peaking in the summer months. The reasons for this pattern, as well as the reasons for the decline and then rise in loan use in recent years, are not well understood. We speculate that loan use first fell with the overall decline in consumer spending in the economic downturn, along with the decline in housing transactions (loans are often used for housing-related expenses). Loan use may have jumped sharply in 2009 and 2010 as the effects of the recession wore on. Recent loan use also may partly reflect improving economic conditions and a resumption in consumer borrowing.

Figure 91. Participant loans by industry sector, 2013

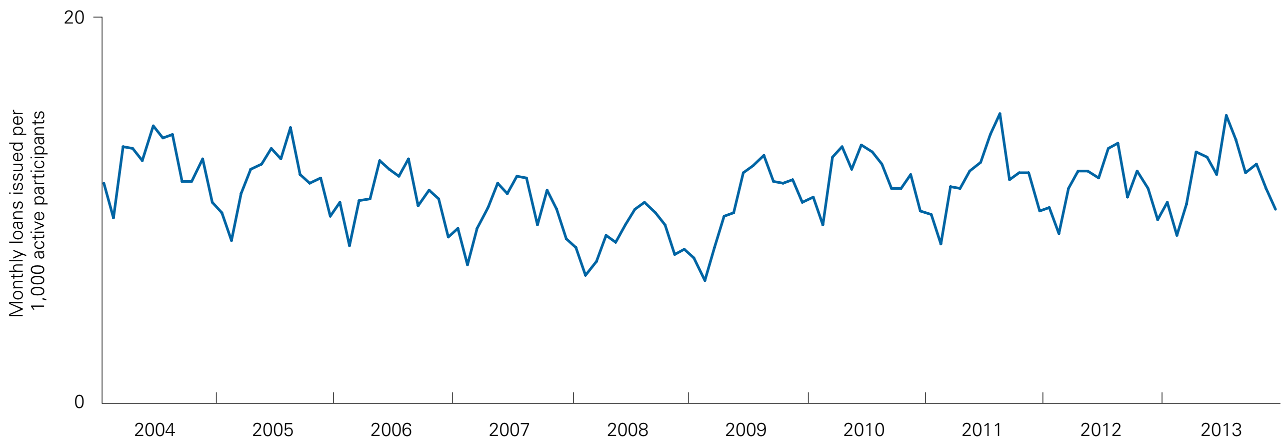
Vanguard defined contribution plans offering loans

	Participants with loans					Participants with no loans
	Percentage of participants with loans	Percentage of account balance in loan	Average loan amount	Average account balance	Total average account balance including loans	Average account balance
All	18%	10%	$9,456	$87,407	$96,863	$109,407
Industry group						
Transportation, utilities, and communications	24%	11%	$8,169	$69,518	$77,687	$93,906
Finance, insurance, and real estate	20%	12%	$10,360	$78,790	$89,150	$103,898
Manufacturing	20%	10%	$8,870	$84,355	$93,225	$111,538
Agriculture, mining, and construction	20%	7%	$13,776	$183,108	$196,884	$251,580
Wholesale and retail trade	16%	10%	$7,286	$64,252	$71,538	$63,664
Education and health	15%	13%	$8,333	$54,414	$62,747	$66,895
Media, entertainment, and leisure	13%	11%	$10,531	$88,471	$99,002	$97,553
Business, professional, and nonprofit	11%	9%	$10,962	$115,945	$126,613	$125,307

Source: Vanguard, 2014.

Figure 92. Loan origination trend

Vanguard defined contribution active participants in plans offering loans



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Monthly average (per 1,000 participants)	12.1	11.3	10.6	9.8	8.5	10.1	11.5	11.4	11.1	11.5
Annual increase (decrease) in loans issued per 1,000 participants	2%	(6%)	(7%)	(7%)	(14%)	19%	14%	(1%)	(3%)	4%

Source: Vanguard, 2014.

Plan withdrawals

Plan withdrawals allow participants to access their plan savings before a job change or retirement. Withdrawals are optional plan provisions and availability varies from plan to plan. They can be classified into two categories. Hardship withdrawals allow participants to access a portion of their savings when they have a demonstrated financial hardship, such as receipt of an eviction or home foreclosure notice, but may also be used for such purposes as college education and purchase of a first home.

Nonhardship withdrawals include both post-age-59½ withdrawals and other withdrawals. Post-age-59½ withdrawals allow participants age 59½ and older to access their savings while they are working and are exempt from the 10% penalty on premature distributions. Some plans may also allow participants to withdraw employer profit-sharing contributions, after-tax contributions, or rollover assets while they are working.

Among all Vanguard DC plans in 2013, 83% allowed hardship withdrawals and 84% allowed plan withdrawals for those who have reached age 59½ (Figure 93). In 2013, 4% of Vanguard participants in plans offering any type of withdrawal used the feature, and the average portion of account balance withdrawn was about one-third (Figure 94). About one-third were for hardship and two-thirds for nonhardship reasons. Assets withdrawn totaled 1% of Vanguard recordkeeping assets.

Of the participants who took withdrawals, around 92% took the money in cash, withdrawing on average about one-fifth of account savings. They had a median age of 51. Meanwhile, 8% of participants taking withdrawals rolled over their assets from the plan to an IRA. A major contributor to this is likely participants over age 59½ rolling over their plan savings even as they continue to work and participate in the plan. Participants choosing a rollover had a median age of 62 and on average they rolled over 84% of their account balances. These participants rolling over assets account for more than half of the assets being withdrawn.

In the aftermath of the recent recession, the rate of new nonhardship withdrawals, such as post-age-59½ in-service or other withdrawals, has more than doubled from 2004 to 2013 (Figure 95). Nonhardship withdrawals also have a seasonal pattern and often spike in the first quarter of the year. This spike in activity is likely due to the withdrawal of employer profit-sharing contributions, which are frequently made early in the calendar year.

Over the same 2004 to 2013 period, the rate of new hardship withdrawals was also up about 40%, while remaining at a low absolute level of around 2% of participants. One of the reasons a participant can take a hardship withdrawal is to avoid foreclosure or eviction from a home. We believe that the surge in foreclosures in recent years is, in part, driving this increase. Hardship withdrawals have fluctuated within a relatively narrow range from 2008 to 2013.

Plan withdrawals are used infrequently in the aggregate. However, about 4 in 10 participants taking a withdrawal in 2013 had also taken plan withdrawals in 2012, and 1 in 10 in this group had taken a plan withdrawal in each of the past five years. Certain participants could, over time, jeopardize their retirement program if they continue to rely on this feature throughout their working careers.

Plan distributions and rollovers

When changing jobs or retiring, DC plan participants have the choice of preserving their savings for retirement (by retaining them in the plan or rolling them over to an IRA or another DC plan) or taking a cash lump sum (and spending or investing it). If they choose to roll over their savings to an IRA or another qualified retirement plan, participants avoid paying taxes on the accumulated balance. If participants spend the lump-sum distribution or invest it in a taxable account, they incur a possible income tax liability (and a 10% penalty if they are younger than 59½).

The spending of plan savings before retirement—the problem of leakage from the retirement system—is a concern for the future retirement security of plan participants. In the short run, participants incur taxes and possibly penalties on any amounts they spend. In the long run, because of the lost opportunity for compound earnings, they significantly increase the amount they need to save during the remainder of their working years.

Policymakers have attempted to discourage leakage in several ways. Generally, participants may keep their plan savings in their employer's plan if their account balance is more than $5,000. Also, plan distributions between $1,000 and $5,000 are generally rolled over automatically to an IRA, unless the participant elects otherwise. In some cases, the sponsor may allow participants to retain a balance of $1,000 or more in the plan. Most sponsors permit indefinite deferral of savings, meaning that participant balances can remain in the employer plan as long as they are above the $5,000 (or $1,000) threshold.

Figure 93. Plan withdrawals

Vanguard defined contribution plans

Percentage of plans offering	2013
Hardship withdrawals	83%
Withdrawals after age 59½	84

Source: Vanguard, 2014.

Figure 94. Use of all plan withdrawals, 2013

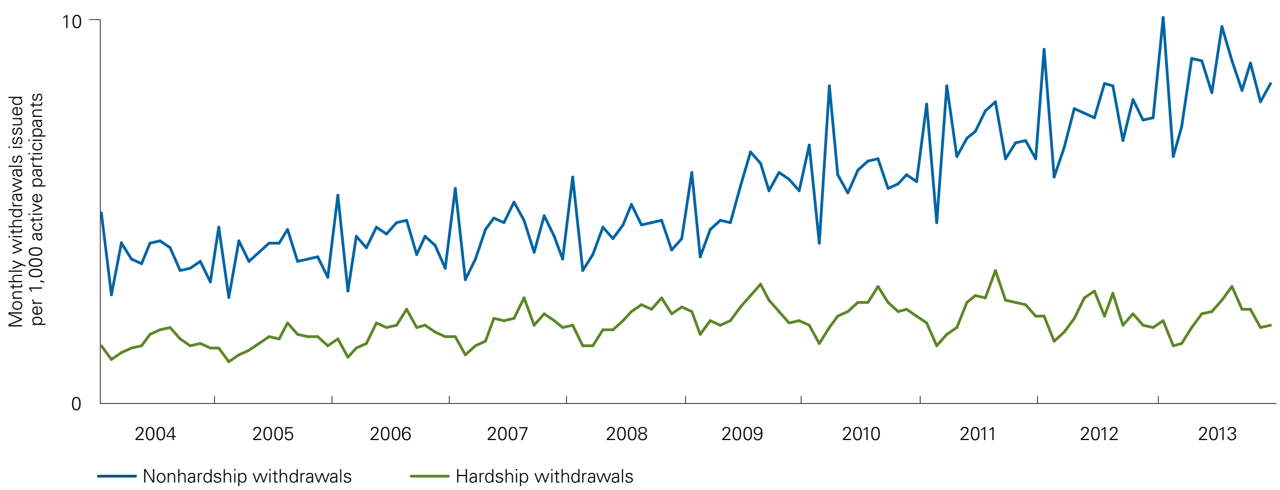
Vanguard defined contribution plans

	All	Cash	Rollover
Percentage of participants using	3.7%	3.4%	0.3%
Percentage of assets withdrawn	1.0	0.5	0.5
Percentage of participant account assets withdrawn	32.4	17.8	83.7
Median age	51	51	62

Source: Vanguard, 2014.

Figure 95. In-service withdrawal trend

Vanguard defined contribution active participants in plans offering in-service withdrawals



Average per 1,000 active participants	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Nonhardship withdrawals	3.5	3.6	3.9	4.1	4.2	5.0	5.6	6.4	7.0	7.8
Hardship withdrawals	1.4	1.5	1.7	1.8	2.0	2.2	2.2	2.2	2.1	2.0
Annual increase (decrease) per 1,000 participants										
Nonhardship withdrawals		3%	8%	5%	2%	19%	12%	15%	9%	11%
Hardship withdrawals		7%	13%	6%	11%	10%	0%	0%	(5%)	(5%)

Source: Vanguard, 2014.

However, 4% of sponsors require terminated participants to leave the plan by age 65 or age 70 (Figure 96).

Six in 10 sponsors allow participants to establish installment payments and one-quarter offer an annuity option for at least a portion of the plan assets. Eight percent of plans offered an annuity for a grandfathered source only and these annuity features are mostly associated with plan assets relating to a prior money purchase plan. Sixteen percent of plans offered an annuity as a general distribution option and one-third of these plans offered the annuity for statutory reasons or as a general market practice such as with 403(b) plans. Finally, 12% of sponsors permit terminated participants to take partial ad hoc cash distributions. These plans allowing ad hoc distributions cover one-quarter of participants. If a plan does not offer ad hoc distributions, it requires any terminated participant seeking to use any part of retirement savings to withdraw or roll over the entire amount. When it offers an ad hoc distribution feature, a plan can be used directly as a flexible source of income and withdrawals.

Participant and asset flows

Plan distributions can occur reasonably frequently as participants change jobs or retire, and they represent a large portion of total plan and participant assets. In 2013, 9% of participants left their employer and were eligible for a distribution. Their assets totaled 6% of Vanguard recordkeeping assets.

In 2013, 71% of participants terminating employment preserved their assets and 29% took a cash distribution (Figure 97). More than 90% of the assets available for distribution were preserved for retirement because they were either retained in the prior employer's plan, were rolled over to an IRA, or rolled over to a new employer's plan. The percentage of participants choosing to take cash and presumably spending their savings has returned to prerecession levels (Figure 98).

Figure 96. Distribution options, 2013

Vanguard defined contribution plans

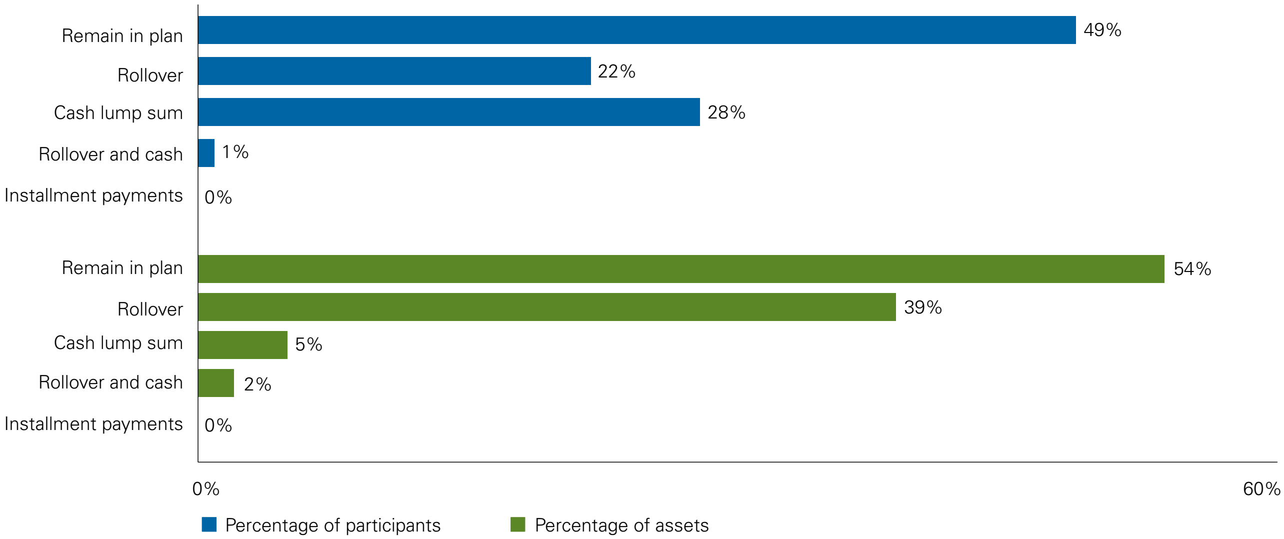
		Number of participants		
	All	<1,000	1,000–4,999	>5,000
Percentage of plans				
Deferral	96%	94%	96%	96%
Deferral only to age 65	3	5	3	3
Deferral only to age 70	1	1	1	1
Installments other than RMDs	59	59	54	69
Annuity	16	16	12	19
Annuity grandfathered source only	8	9	7	5
Ad hoc partial distributions	12	7	21	36
Percentage of participants				
Deferral	88%	96%	83%	88%
Deferral only to age 65	3	3	4	3
Deferral only to age 70	9	1	13	9
Installments other than RMDs	60	60	54	62
Annuity	17	16	12	20
Annuity grandfathered source only	1	3	1	0
Ad hoc partial distributions	27	11	23	32

Source: Vanguard, 2014.

Figure 97. Plan distributions, 2013

Vanguard defined contribution plans

Participants with termination dates in 2013



Source: Vanguard, 2014.

Figure 98. Trend in distribution of plan assets

Vanguard defined contribution plans

Participants with termination dates in the given year

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Percentage of participants choosing										
Remain in plan	45%	47%	47%	47%	48%	48%	48%	49%	48%	49%
Rollover	24	24	24	24	21	21	22	21	21	22
Installment payments	1	0	0	0	0	0	0	0	0	0
Participants preserving assets	**70%**	**71%**	**71%**	**71%**	**69%**	**69%**	**70%**	**70%**	**69%**	**71%**
Cash lump sum	29%	27%	27%	28%	30%	30%	28%	28%	29%	28%
Rollover and cash	1	2	2	1	1	1	2	2	2	1
Percentage of assets available for distribution										
Remain in plan	55%	52%	53%	51%	50%	59%	55%	54%	53%	54%
Rollover	37	39	39	42	42	33	37	38	39	39
Installment payments	0	0	0	0	0	0	0	0	0	0
Assets preserved for retirement	**92%**	**91%**	**92%**	**93%**	**92%**	**92%**	**92%**	**92%**	**92%**	**93%**
Cash lump sum	6%	7%	6%	5%	6%	6%	6%	5%	5%	5%
Rollover and cash	2	2	2	2	2	2	2	3	3	2

Source: Vanguard, 2014.

These figures differ from other reported statistics on plan distributions because they include participants who choose to retain their assets in their prior employer's plan when they change jobs or retire. Among only those participants who took a distribution from their plan, more took cash distributions (29%) than rolled over their assets to another plan or IRA (22%). But in our view, a full assessment of plan distribution behavior must include participants who kept their assets within their prior employer's plan at the time of a job change or retirement.

Determinants of distribution behavior

Age has a significant impact on distribution behavior. Younger participants are more likely than older participants to cash out, rather than save, their plan distributions. Yet most of the assets available for distribution are still preserved for retirement, even by younger individuals. In 2013, 35% of participants in their 20s chose to cash out their plan assets, compared with 19% of participants in their 60s (Figure 99). In terms of assets, 85% of assets owned by participants in their 20s and 96% of assets owned by participants in their 60s were preserved.

Account balances also have a significant impact on distribution behavior. Participants with smaller account balances are less likely to preserve their assets for retirement. Only 48% of participants with balances of less than $1,000 kept their balance in a tax-deferred account (Figure 100). However, once balances reach $100,000, more than 90% of participants chose to preserve their assets.

A more nuanced view emerges when you consider both age and account balance. At most asset levels, younger participants are more likely to preserve their assets (Figure 101). While participants in their 40s did overwhelmingly preserve their assets for retirement, at most asset levels they are slightly more likely than any other age group to cash out their DC plan when changing jobs.

Our analysis thus far reflects the behavior of individuals who terminated employment in a given year, either by changing jobs or retiring. But it is also true that participants who terminated in previous years retain the right to withdraw their plan assets from their prior employer's plan at any time and roll over or spend the money.

Figure 99. Plan distribution behavior by age, 2013

Vanguard defined contribution plans

Participants with termination dates in 2013

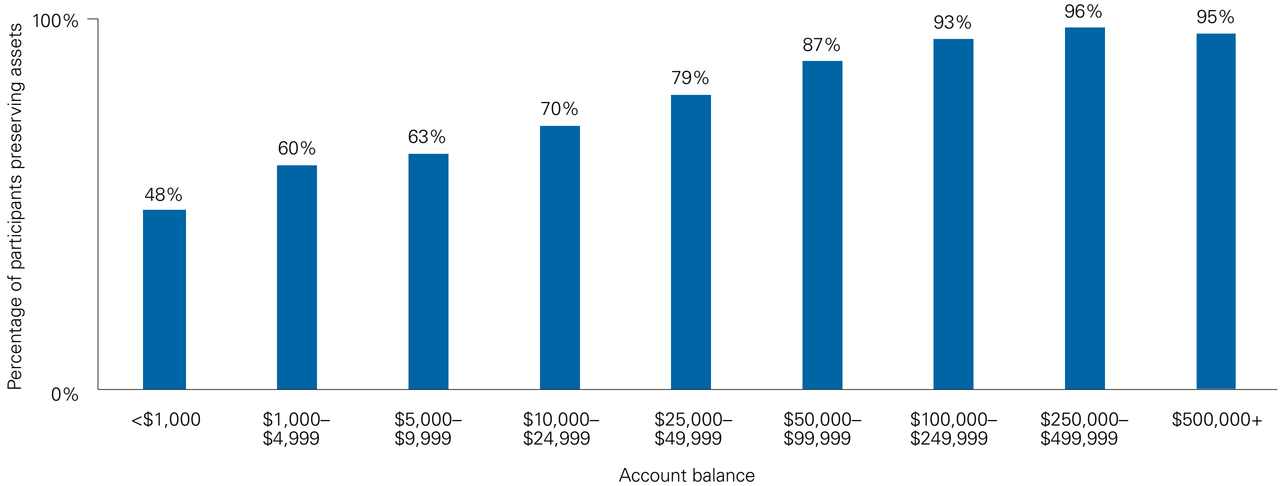
	20s	30s	40s	50s	60s	70s	All ages
Percentage of participants choosing							
Remain in plan	52%	51%	49%	50%	41%	21%	49%
Rollover	13	17	19	26	39	41	22
Installment payments	0	0	0	0	1	12	0
Participants preserving assets	**65%**	**68%**	**68%**	**76%**	**81%**	**74%**	**71%**
Cash lump sum	34%	31%	31%	22%	17%	24%	28%
Rollover and cash	1	1	1	2	2	2	1
Percentage of assets available for distribution							
Remain in plan	65%	65%	62%	57%	46%	27%	54%
Rollover	20	24	28	36	50	66	39
Installment payments	0	0	0	0	0	1	0
Assets preserved for retirement	**85%**	**89%**	**90%**	**93%**	**96%**	**94%**	**93%**
Cash lump sum	14%	10%	8%	4%	2%	4%	5%
Rollover and cash	1	1	2	3	2	2	2

Source: Vanguard, 2014.

Figure 100. Plan distribution behavior by account balance, 2013

Vanguard defined contribution plans

Participants with termination dates in 2013



Source: Vanguard, 2014.

Figure 101. Plan distribution behavior by age and account balance, 2013

Vanguard defined contribution plans

Participants with termination dates in 2013

Note: Cells with less than 100 data points are omitted.

Source: Vanguard, 2014.

A more optimistic picture of plan distribution behavior emerges if we analyze the total plan assets available for distribution at any given time. During 2013, 30% of all Vanguard qualified plan participants could have taken their plan account as a cash distribution because they had separated from service in the current year or prior years. However, just 15% of participants eligible for a cash distribution took one, while the vast majority (85%) continued to preserve their plan assets for retirement (**Figure 102**). In terms of assets, 97% of all plan assets available for distribution were preserved—either rolled over to an IRA or other qualified plan, or left in the former employer's plan. Only 3% of assets were distributed in cash.

Access methods and the internet

Within DC plans, a variety of services have evolved to foster participant control over plan savings and to facilitate savings, investment and withdrawal decisions—including phone associates, voice-response systems, and internet and mobile access. Access to retirement accounts is quite varied, ranging from those who do not contact their provider at all in a given year to those who do so multiple times a month.

Frequency of account access

In 2013, 40% of plan participants never contacted Vanguard regarding their plan account (**Figure 103**). However, 60% did contact Vanguard—a ratio that has improved from 2004, when 53% of participants contacted Vanguard (**Figure 104**). One reason for this may be the dissemination of internet and mobile access; another may be the strong equity markets in 2013, which led to higher levels of investor attention to their accounts. For participants who did not contact Vanguard, their sole method for reviewing plan balances was quarterly account statements. These participants also received Vanguard's participant electronic newsletter, fee and other regulatory disclosures, and education or communication programs in print or via electronic means.

Figure 102. Alternative view of distribution of plan assets

Vanguard defined contribution plans

All terminated participants with access to plan savings in the given year

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Percentage of participants choosing										
Remain in plan	64%	65%	66%	65%	66%	67%	65%	68%	67%	68%
Rollover	16	16	16	16	14	13	14	13	13	14
Installment payments	2	2	2	2	2	2	2	2	2	3
Participants preserving assets	**82%**	**83%**	**84%**	**83%**	**82%**	**82%**	**81%**	**83%**	**82%**	**85%**
Cash lump sum	17%	16%	15%	16%	17%	17%	18%	16%	16%	14%
Rollover and cash	1	1	1	1	1	1	1	1	2	1
Percentage of assets available for distribution										
Remain in plan	76%	76%	75%	74%	72%	78%	75%	75%	75%	76%
Rollover	20	20	21	22	23	17	20	20	20	20
Installment payments	1	1	1	1	1	1	1	1	1	1
Assets preserved for retirement	**97%**	**97%**	**97%**	**97%**	**96%**	**96%**	**96%**	**96%**	**96%**	**97%**
Cash lump sum	2%	2%	2%	2%	3%	3%	3%	3%	3%	2%
Rollover and cash	1	1	1	1	1	1	1	1	1	1

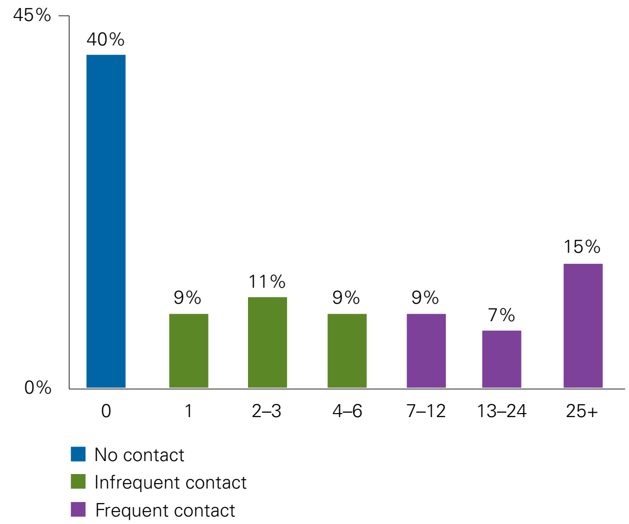
Source: Vanguard, 2014.

About 3 in 10 participants contacted Vanguard intermittently. This group interacted with Vanguard between one and six times per year through a phone associate, an automated voice-response system, mobile application, or the internet. Thirty-one percent of participants contacted Vanguard frequently. This group, using all channels, contacted Vanguard at least monthly, if not two or three times a month or more. This level of contact may seem high, but keep in mind, for those using a mobile application or the internet, a brief logon to examine account balances constitutes a unique contact event.

Account balances are a strong influence on contact behavior. The larger a participant's balance, the more likely they are to be proactive in obtaining information about their Vanguard plan account. Participants with account balances of more than $100,000—about 25% of all Vanguard participants—contacted Vanguard at least monthly, if not more, compared with a median level of one contact per year for the entire participant population.

Figure 103. Participant contact frequency, 2013

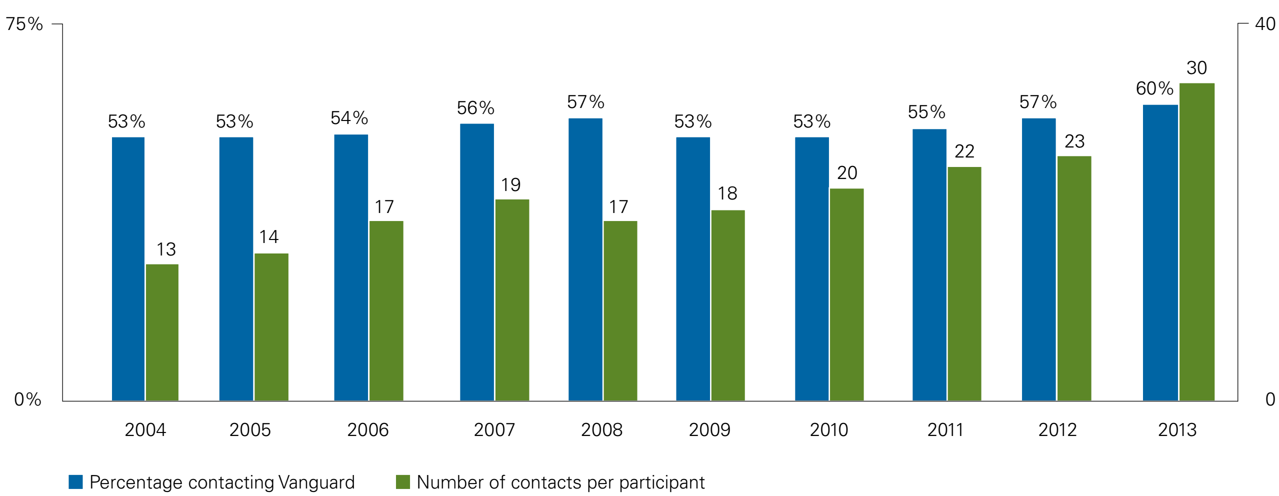
Vanguard defined contribution plans



Source: Vanguard, 2014.

Figure 104. Participant contact trend

Vanguard defined contribution plans



Source: Vanguard, 2014.

Types of account access

Participants have four access channels at their disposal: toll-free phone calls to telephone associates, toll-free phone calls to an automated voice-response system, a mobile application, and the internet. When measured in terms of total participant use, the internet remained the most widely used channel in 2013—53% used the internet, compared with 19% who used telephone associates (**Figure 105**). Introduced between 2009 and 2011, mobile applications were used by 6% of participants.

In terms of total contacts, the internet clearly dominates. Web interactions accounted for 92% of all participant contacts in 2013. Participants using this contact method averaged about 52 web interactions per year. Each distinct logon is counted as a unique contact event. Mobile access, though relatively new, was the second most common channel, accounting for 5% of all contacts—or five times the number of phone contacts.

The portion of participants selecting the internet as an access channel has grown by about 50% since 2004 (**Figure 106**). During this interval, the portion of participants selecting a phone associate as an access channel has declined by about 40%, and the portion choosing the voice-response system has stayed the same. Given current trends, the dominance of the internet as a contact channel is likely to continue. We expect adoption of the mobile applications will grow dramatically over the next few years.

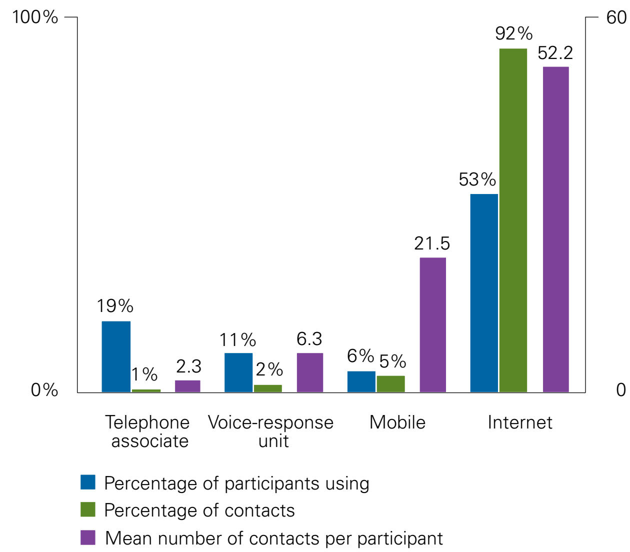
Participant registration for internet access to their DC plan account has fueled this growth. Seventy percent of participants were registered for the internet in 2013, about 60% higher than in 2004 (**Figure 107**).

Increasingly, participants are choosing the internet as the preferred access channel for transactions, as 83% of all transactions were processed via the internet during 2013 (**Figure 108**). Moreover, 90% of all exchanges, payroll deferral, and contribution allocation changes occurred on the internet.

Figure 105. Account access methods, 2013

Vanguard defined contribution plans

Participant account access



Source: Vanguard, 2014.

Figure 106. Account access trend

Vanguard defined contribution plans

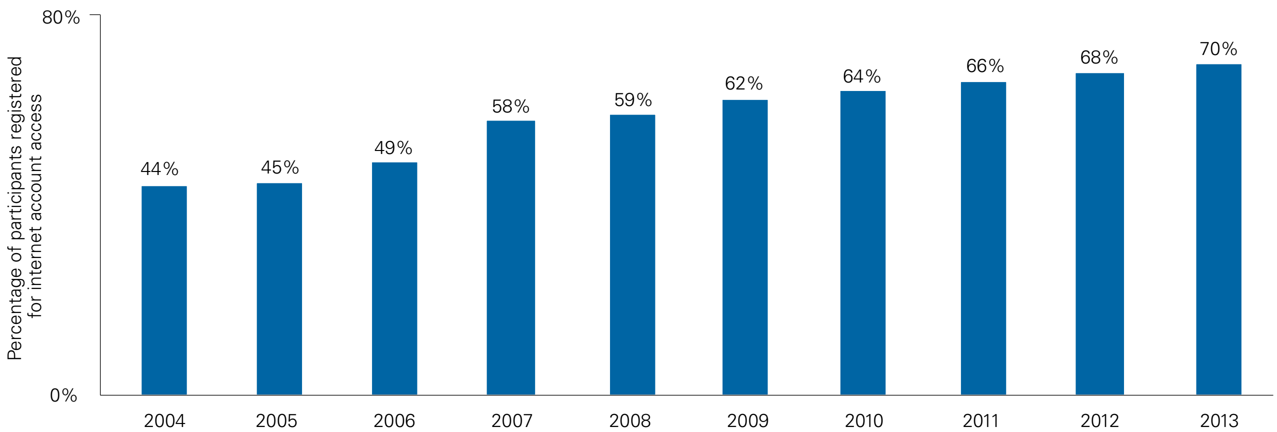
Percentage of participants contacting Vanguard via . . .

	2004	2013	Change
Voice, telephone associate, or internet	53%	60%	13%
Telephone associate	32	19	(41)
Voice-response unit	11	11	0
Mobile	0	6	
Internet	35	53	51
Participants registered for internet access	44%	70%	59%

Source: Vanguard, 2014.

Figure 107. Internet access trend

Vanguard defined contribution plans

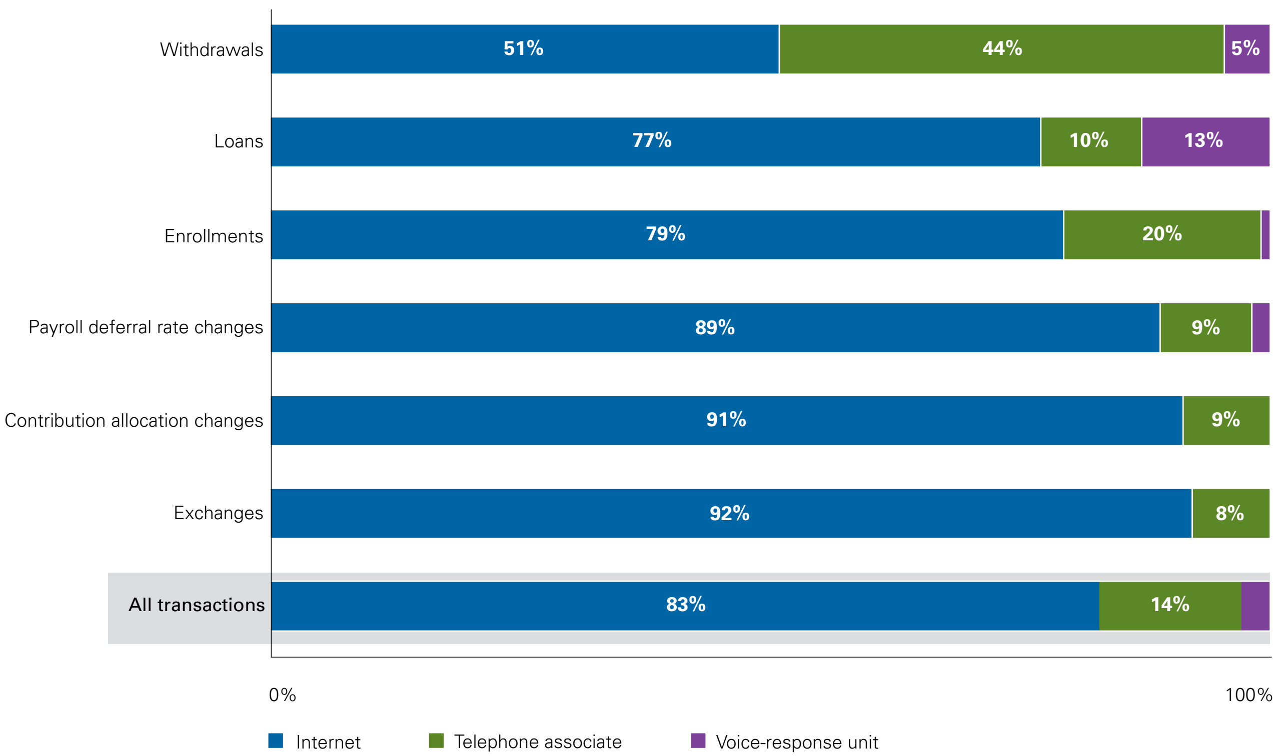


Source: Vanguard, 2014.

Figure 108. Participant channel utilization, 2013

Vanguard defined contribution plans

Percentage of transactions processed by channel



Source: Vanguard, 2014.

Methodology

The Vanguard data included in this report is drawn from several sources.

All defined contribution clients. This universe consists of about 1,900 qualified plans, 1,500 clients, and more than 3 million participants for which Vanguard directly provides recordkeeping services. About 9 in 10 of these plans have a 401(k) or 403(b) employee contributory feature; the other 1 in 10 is an employer contributory DC plan, such as a profit-sharing or money purchase plan, in which investments are directed by participants. Unless otherwise noted, all references to "Vanguard" are to this universe, and all data is as of December 31, 2013.

Vanguard participation and deferral rates. Data on participation and deferral rates is drawn from a subset of Vanguard recordkeeping clients for whom we perform nondiscrimination testing. For the 2013 analysis, the subset is composed of plans that complete their testing by March and represents approximately half of the clients for whom we perform testing.

For the 2013 analysis presented in this edition of *How America Saves*, this subset includes approximately 400 plans and 800,000 participants and eligible nonparticipants. Almost all of these plans are 401(k) or paired 401(k)/profit-sharing plans. Income data used in participation and deferral rate analyses also comes from this subset of plans.

When compliance testing has been completed for all plans, the analysis is performed again and the data is restated for prior years. The restated data for 2012 now includes 1,000 plans and 1.8 million participants and eligible nonparticipants. Plans that complete their testing by March generally have lower participation rates and generally include plans with concerns related to passing testing. Hence, the restated numbers generally show an improvement over the numbers initially reported.

Household income data. Household income data for asset allocation, account balance, and loan demographics is from an external source overlaid onto Vanguard participant data. This external household income data covers approximately 80% of the Vanguard participant universe and is the most recent data available.

Vanguard Retirement Plan Access to *How America Saves*

Launched in 2011, Vanguard Retirement Plan Access™ (VRPA) is a comprehensive, turnkey service for retirement plans with up to $20-plus million in assets. Ascensus, Inc.—a nationally recognized recordkeeping firm—provides the administration of these plans on Vanguard's behalf. Through Vanguard Retirement Plan Access we served an additional 1,400 plan sponsors with more than 60,000 participants as of year-end 2013.

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Industry benchmark data supplements to *How America Saves* are available for the following sectors:

- Ambulatory health care services
- Construction
- Engineering
- Finance and insurance
- Information
- Legal services
- Manufacturing
- Mining, oil, and gas extraction
- Small business
- Technology
- Utility
- Wholesale trade

If the sector you are interested in is not available at this time, please contact your sales executive or relationship manager.

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Authors
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Jean A. Young

Vanguard Institutional
Investor Group

P.O. Box 2900
Valley Forge, PA 19482-2900

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