

HOW  
**AMERICA**  
SAVES

2020

**Vanguard®**





Martha King  
Managing Director  
Institutional Investor Group

June 2020

At Vanguard, we are committed to helping every investor reach their financial goals. Never has that commitment been more crucial than now, during the COVID-19 pandemic. Investors are trying to balance immediate financial pressures with enduring priorities such as retirement, and they are looking for support. Through a collaborative approach with plan sponsors, we see the individual behind every financial decision and advocate for their long-term well-being as if it were our own.

Each year we bring you *How America Saves*, the industry's definitive look at Americans' retirement saving habits. This year, as we consider how dramatically the landscape has changed in the first half of 2020, we feel it's imperative to offer more perspective. We've added two supplements to the main report to bring you that context. The first provides updated analysis of our defined contribution (DC) recordkeeping data from January through April 2020. The second—a companion report we've titled *Insights to Action*—surfaces six key themes from *How America Saves*, recommending actions plan sponsors can take to optimize their plan design in ways that allow participants to meet their investing goals. We believe these actions can add value now—amid markets and economies roiled by a global pandemic—and moving forward.

Based on the prior year's data from 5 million DC plan participants across our recordkeeping business, *How America Saves 2020* presents our latest findings on participant saving and investing behavior. And while market and economic conditions look much different in 2020 than they did last year, the data reveals trends we expect will continue. For example, 50% of plans are now using automatic enrollment, more than triple the percentage in 2007. The average total saving rate, which combines employee and employer contribution rates, is 56% higher in plans with automatic enrollment compared with plans where enrollment is voluntary. And participant use of managed allocations—including target-date funds and managed account advisory services—rose to 62% in 2019.

Increased use of automatic solutions simplifies decision-making for participants. Such features lead to better saving habits and help participants stay on track for retirement, even in the current environment. And when combined with cost-effective advice and retirement income solutions, automatic features and thoughtful investment choices can make an even more positive impact on employee retirement saving behavior.

There is no denying uncertainty, particularly as we continue to deal with the effects of COVID-19. Vanguard has always counseled investors to “stay the course” through good times and bad. During times like these, this abiding philosophy is more important than ever. Vanguard is a long-standing, steadfast partner to plan sponsors, as evidenced by the \$1.3 trillion in DC assets under management\* that have been entrusted to us, and our dedication to help our investors remains certain. *How America Saves* illustrates that partnership and commitment. We look forward to helping your participants build lasting financial security—this and every year.

Sincerely,

\* \$1.3 trillion in DC assets under management is as of March 31, 2020.

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# Executive summary

Over the past decade, retirement plan sponsors have increasingly turned to plan design to influence employee retirement savings behavior. As a result, plan participation rates have increased, automatic enrollment designs have become stronger, and participant portfolio construction continues to improve. However, attention is starting to shift to how best to accommodate the income needs of retirees who stay in their employers' plans. Meeting these retirement income needs, along with continually encouraging strong saving rates with appropriate investment diversification, are the primary drivers in creating successful retirement outcomes for employees.

## Growth of automatic savings features

The adoption of automatic enrollment has more than tripled since year-end 2007, the first year after the Pension Protection Act (PPA) of 2006 took effect. At year-end 2019, 50% of Vanguard plans had adopted automatic enrollment, including 71% of plans with at least 1,000 participants. In 2019, because larger plans were more likely to offer automatic enrollment, 63% of participants were in plans offering automatic enrollment.

Two-thirds of automatic enrollment plans have implemented automatic annual deferral rate increases. Additionally, automatic enrollment defaults have increased over the past decade. Fifty-five percent of plans now default employees at a deferral rate of 4% or higher, compared with 28% of plans in 2010.

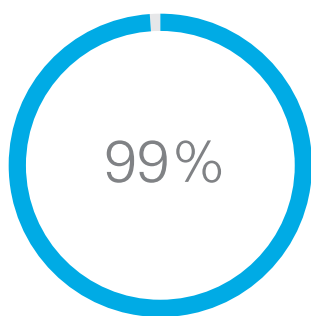
Ninety-nine percent of all plans with automatic enrollment default participants into a balanced investment strategy—with 98% choosing a target-date fund as the default.

## Professionally managed allocations

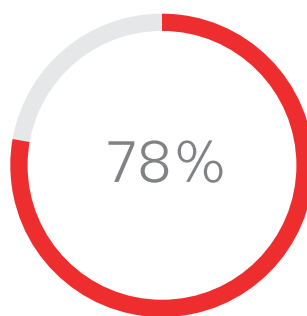
Underlying the improvements in portfolio construction is the rising prominence of professionally managed allocations. Participants with professionally managed allocations have their entire account balance invested in a single target-date or balanced fund or a managed account advisory service.

At year-end 2019, 62% of all Vanguard participants were solely invested in an automatic investment program—compared with just 7% at the end of 2004 and 25% at year-end 2009. Fifty-four percent of all participants were invested in a single target-date fund; another 3% held one other balanced fund; and 5% used a managed account program. These diversified, professionally managed investment portfolios dramatically improve diversification compared with the portfolios of participants who make their own choices. Among new plan entrants (participants entering the plan for the first time in 2019), nearly 9 in 10 were solely invested in a professionally managed allocation.

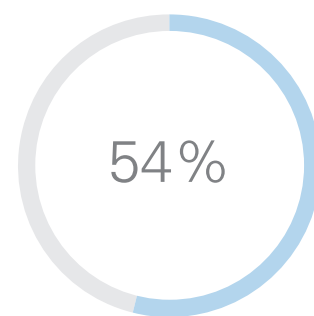
Because of the growing use of target-date options, we anticipate that by 2024, 8 in 10 Vanguard participants will be solely invested in an automatic investment program.



Automatic enrollment plans  
default participants into  
a balanced investment strategy



Participants using  
target-date funds



Participants are pure  
target-date fund investors

*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 the target-date fund is not guaranteed at any time, including on or after the target date.*

## Increased use of target-date funds

Ninety-four percent of plan sponsors offered target-date funds at year-end 2019, up from 79% of plans in 2010. Nearly all Vanguard participants (98%) are in plans offering target-date funds. Seventy-eight percent of all participants use target-date funds. Two-thirds of participants owning target-date funds have their entire account invested in a single target-date fund.

An important factor driving the 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 PPA continue to influence adoption of target-date funds. That said, voluntary choice is still important, with about 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 were steady in 2019. The estimated plan-weighted participation rate was 83%, up from 76% in 2010 (see Methodology on page 112). The participant-weighted participation rate was 76% in 2019, up slightly from 72% in 2010. Plans with automatic enrollment have a 92% participation rate, compared with a participation rate of just 61% for plans with voluntary enrollment. Between 2010 and 2019, plans with automatic enrollment have had steadily rising participation rates. However, as more plans adopt automatic enrollment, the remaining pool of plans with voluntary enrollment has seen participation rates deteriorate.

The average deferral rate was 7.0% in 2019, essentially the same as it was in 2010. The median deferral rate was 6.0% in 2019—unchanged for as long as we have been tracking this metric.

These statistics reflect the level of employee-elective deferrals. Most Vanguard plans also make employer contributions. Including both employee and employer contributions, the average total participant contribution rate in 2019 was 10.7% and the median was 10.0%. These rates have remained fairly stable for the past 15 years.

When including nonparticipants, employees who are hired under automatic enrollment plans save an average of 10.3%, considering both employee and employer contributions. Employees hired under a voluntary enrollment design save an average of 6.6%, due to significantly lower participation.

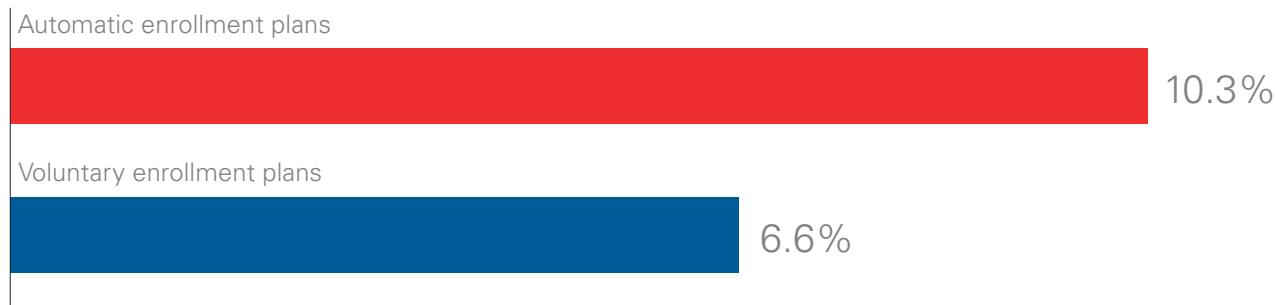
## Roth 401(k) adoption

At year-end 2019, the Roth feature was adopted by 74% of Vanguard plans, and 12% of participants within these plans had elected the option. We anticipate steady growth in Roth adoption rates, given the feature's tax diversification benefits. However, all plan sponsors with automatic enrollment default to traditional pre-tax savings.

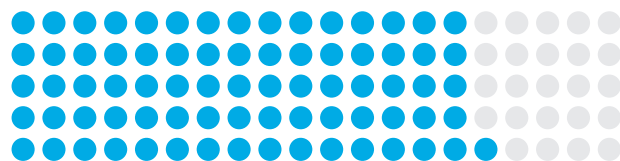
## Account balances

In 2019, the average account balance for Vanguard participants was \$106,478; the median balance was \$25,775. In 2019, Vanguard participants' average and median account balances increased by 16% from 2018. Two factors are driving the changes in participant account balances. The first is the rising adoption of automatic enrollment, which results in more individuals saving but also leads to a growing number of smaller balances. The second factor driving these changes is the 30% increase in the U.S. equity markets in 2019.

### Average employee total savings



## 76% of participants have a balanced strategy



### Participant portfolio construction

Participant portfolio construction has improved dramatically over the past 15 years, with 76% of participants having a balanced strategy in 2019, compared with 37% in 2004. Three percent of participants hold no equities and 4% of participants have more than 20% allocated toward company stock. In 2004, 13% of participants had no equities and 19% of participants held a concentration in company stock.

### Participant trading muted

During 2019, 7% of DC plan participants traded within their accounts, while 93% did not initiate any exchanges. On a net basis, there was a shift of 1.3% of assets to fixed income in 2019, with most traders making small changes to their portfolios.

Over the past decade, we have observed a decline in participant trading. 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 2019.

### Drop in company stock exposure

A shift away from company stock holdings first observed in 2006 continued into 2019. Among plans offering company stock, the percentage of participants holding a concentrated position of more than 20% of their account balance continued its fall from 31% in 2010 to 15% in 2019. In addition, the number of plans actively offering company stock to participants continued its decline from 11% in 2010 to 8% in 2019. As a result, 4% of all Vanguard participants held concentrated company stock positions in 2019, compared with 10% at year-end 2010.

### Loan activity flat

There was a modest decline in new loans issued in 2019. Thirteen percent of participants had a loan outstanding in 2019, compared with 17% in 2014. The average loan balance was \$9,900. Only about 1% of aggregate plan assets were borrowed by participants.

### Hardship withdrawals

During 2019, 3% of participants took a hardship withdrawal, up from 2% in 2018. The Bipartisan Budget Act of 2018 introduced changes to the provisions for hardship withdrawals.

### Most assets preserved for retirement

Participants separating from service largely preserved their assets for retirement. During 2019, about one-third of all participants could have taken a distribution because they had separated from service in the current year or prior years. Most of these participants (80%) 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, 96% of all plan assets available for distribution were preserved and only 4% were taken in cash.

Plan sponsors are continually looking for ways to help retirees within the plan. Sixty-two percent of plans allow retirees to take installments, 32% of plans allow for partial withdrawals, and just 2% of plans set an age restriction of when term-deferred participants must leave the plan.

### Estimated data

Some charts in this edition contain "2019 estimated" data. For an explanation, please see the Methodology section on page 112.

Defined contribution (DC) retirement plans are the centerpiece of the private-sector retirement system in the United States. More than 100 million Americans are covered by DC plan accounts, with assets now in excess of \$8.8 trillion.

# 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.** Plan contributions are essential to retirement savings adequacy. Employee participation rates, participant deferral rates, and the value of employer contributions all affect plan contributions. Participant deferral behavior is increasingly influenced by employers' automatic enrollment and automatic escalation 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 participants decide to contribute to a retirement savings plan, their most important decision is how to allocate their holdings among the major asset classes.

As with deferral decisions, many investment decisions are increasingly influenced by employer-established defaults. The growing use of all-in-one portfolio strategies such as target-date funds and managed account programs also plays a role. 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 most Vanguard DC plan participants have seen their retirement savings grow over one- and five-year periods.

**Figure 1.** Highlights at a glance

<b>Vanguard recordkeeping statistics</b>	<i>How America Saves 2020</i> reference	2015	2016	2017	2018	2019
Number of participant accounts (millions)		3.9	4.4	4.6	5.0	5.0
Number of plans (thousands)		1.9	1.9	1.9	1.9	1.8
Median participant age		46	45	45	44	44
Median participant tenure		7	6	6	7	6
Percentage male		59%	58%	58%	57%	57%
Median eligible employee income (thousands)		\$66	\$58	\$62	\$61	\$62*
Median participant income (thousands)		\$73	\$69	\$73	\$70	\$71*
Median nonparticipant income (thousands)		\$44	\$34	\$33	\$34	\$34*

## 1. Accumulating

### Plan design—page 15

Plans offering immediate eligibility for employee contributions	Figure 3	66%	68%	68%	69%	70%*
Plans requiring one year of service for matching contributions	Figure 3	23%	24%	24%	23%	22%*
Plans providing an employer contribution	Figure 6	95%	96%	95%	96%	96%*
Plans with automatic enrollment	Figure 16	41%	45%	46%	48%	50%
Plans with automatic enrollment with automatic annual increases	Figure 19	70%	67%	66%	66%	68%
Plans offering catch-up contributions	Figure 42	97%	98%	98%	98%	98%
Plans offering Roth contributions	Figure 43	60%	65%	68%	71%	74%
Plans offering after-tax contributions	Figure 44	18%	18%	17%	18%	19%

### Participation rates—page 30

Plan-weighted participation rate	Figure 24	81%	81%	81%	82%	83%*
Participant-weighted participation rate	Figure 24	78%	71%	72%	77%	76%*
Voluntary enrollment participant-weighted participation rate	Figure 31	64%	56%	60%	60%	61%*
Automatic enrollment participant-weighted participation rate	Figure 31	92%	92%	91%	92%	92%*
Participants using catch-up contributions (when offered)	Figure 42	15%	14%	16%	14%	15%*
Participants using Roth (when offered)	Figure 43	13%	13%	11%	11%	12%*
Participants using after-tax (when offered)	Figure 44	8%	8%	8%	8%	8%*

### Employee deferrals—page 36

Average participant deferral rate	Figure 33	6.9%	6.8%	7.0%	7.0%	7.0%*
Median participant deferral rate	Figure 33	6.0%	6.0%	6.0%	6.0%	6.0%*
Percentage of participants deferring more than 10%	Figure 34	20%	20%	21%	21%	21%*
Voluntary enrollment plan average participant deferral rate	Figure 40	7.3%	6.8%	7.2%	7.1%	7.0%*
Automatic enrollment plan average participant deferral rate	Figure 40	6.7%	6.8%	6.9%	6.9%	7.0%*
Participants reaching 402(g) limit (\$19,000 in 2019)	Figure 41	13%	13%	15%	12%	12%*
Average total contribution rate (participant and employer)	Figure 45	10.8%	10.4%	10.8%	10.7%	10.7%*
Median total contribution rate (participant and employer)	Figure 45	10.0%	9.7%	10.0%	9.9%	10.0%*

### Account balances—page 48

Average balance	Figure 50	\$96,288	\$96,495	\$103,866	\$92,148	\$106,478
Median balance	Figure 50	\$26,405	\$24,713	\$26,331	\$22,217	\$25,775

## 2. Managing

### Asset and contribution allocations—page 55

Average plan asset allocation to equities	Figure 57	71%	71%	73%	71%	73%
Average plan contribution allocation to equities	Figure 58	74%	74%	75%	76%	77%
Average plan asset allocation to target-date funds	Figure 57	26%	28%	33%	35%	37%

\* These figures are estimated for 2019 as the data required to compute them will not be available until December 2020.

(Continued)

**Figure 1.** Highlights at a glance**2. Managing (continued)**

	<i>How America Saves 2020 reference</i>	2015	2016	2017	2018	2019
<b>Asset and contribution allocations—page 55</b>						
Average plan contribution allocation to target-date funds	Figure 58	46%	49%	54%	57%	59%
Participants with balanced strategies	Figure 88	70%	71%	74%	75%	76%
Extreme participant asset allocations (100% fixed income or equity)	Figure 86	12%	10%	8%	9%	8%
<b>Plan investment options—page 60</b>						
Average number of funds offered	Figure 62	18.1	17.9	18.0	17.7	17.4
Average number of funds used	Figure 62	2.8	2.7	2.5	2.5	2.4
Plans offering an index core	Figure 67	54%	57%	61%	63%	64%
Participants offered an index core	Figure 68	67%	70%	72%	73%	70%
Percentage of plans designating a QDIA	Figure 69	77%	80%	79%	84%	86%
Among plans designating a QDIA, percentage target-date fund	Figure 69	95%	96%	96%	97%	97%
Plans offering target-date funds	Figure 78	90%	92%	92%	93%	94%
Participants using target-date funds (when offered)	Figure 81	70%	74%	75%	79%	80%
Plans offering managed account program	Figure 73	25%	27%	30%	32%	37%
Participants offered managed account program	Figure 73	57%	53%	55%	57%	63%
Participants with professionally managed allocations	Figure 75	48%	53%	58%	59%	62%
Participants using a single target-date fund	Figure 75	42%	46%	51%	52%	54%
Participants using a single risk-based balanced fund	Figure 75	2%	3%	3%	3%	3%
Participants using a managed account program	Figure 75	4%	4%	4%	4%	5%
Plans offering company stock	Figure 73	10%	9%	9%	8%	8%
Participants using company stock	Figure 73	14%	12%	10%	9%	9%
Participants with >20% company stock	Page 84	7%	6%	5%	4%	4%
<b>Investment returns—page 86</b>						
Average 1-year participant total return rate	Figure 94	(0.4%)	8.3%	18.0%	(5.3%)	22.4%
Average 1-year participant personal return rate	Figure 94	(0.8%)	8.2%	17.4%	(7.0%)	21.2%
<b>Trading activity—page 90</b>						
Participant-directed trading	Figure 98	9%	8%	8%	8%	7%
Recordkeeping assets exchanged to equities (fixed income)	Figure 98	(0.8%)	(1.5%)	(0.3%)	(1.1%)	(1.3%)
<b>3. Accessing</b>						
<b>Plan loans—page 95</b>						
Plans offering loans	Figure 103	78%	79%	80%	78%	78%
Participants with an outstanding loan (when offered)	Figure 105	16%	16%	15%	13%	13%
Recordkeeping assets borrowed	Page 96	1%	1%	1%	1%	1%
<b>Plan withdrawals—page 99</b>						
Plans offering hardship withdrawals	Figure 109	84%	84%	85%	85%	88%
Participants using withdrawals (when offered)	Figure 110	3%	3%	3%	3%	4%
Recordkeeping assets withdrawn	Figure 110	1%	1%	1%	1%	1%
Participant account balance withdrawn	Figure 110	32%	32%	30%	34%	35%
<b>Plan distributions and rollovers—page 102</b>						
Terminated participants preserving assets	Figure 119	85%	82%	84%	81%	80%
Assets preserved that were available for distribution	Figure 119	97%	97%	98%	96%	96%
<b>Participant access methods—page 108</b>						
Participants not contacting Vanguard during the year	Figure 120	36%	36%	36%	36%	34%
Participants registered for website account access	Figure 124	72%	70%	73%	73%	76%
Participant account transactions processed via the web	Figure 125	86%	88%	88%	90%	91%

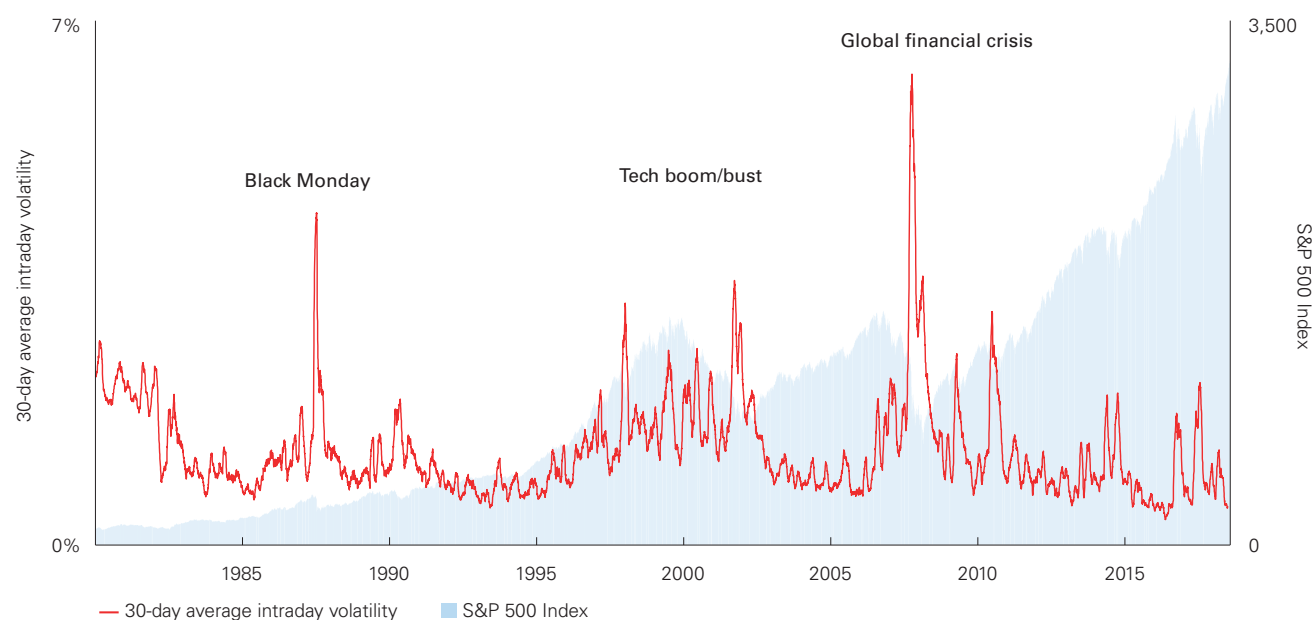
# Market overview

In 2019, stock prices increased by 30% for the year (Figure 2).<sup>1</sup> Low volatility was prevalent, with only 15% of trading days seeing a change in stock prices of  $\pm 1\%$ . Similarly, less than 1% of trading days had a change in stock prices of  $\pm 3\%$ .

During the global financial crisis, stock prices were exceptionally volatile.<sup>2</sup> In 2008, 16.6% of trading days had a change in stock prices greater than  $\pm 3\%$ .

The comparable figure was 8.8% in 2009, 3.2% in 2010, and 4.8% in 2011. However, in 2012, 2013, and 2014, no trading days exhibited this level of volatility. In 2015, 1.2% of trading days had a change in stock prices greater than  $\pm 3\%$  and in 2016, 0.8% did. In 2017, no trading days exhibited this level of volatility. Historically, 1.0% of stock market trading days are associated with a change in stock prices of greater than  $\pm 3\%$ .

**Figure 2.** S&P 500 daily volatility and close



Source: Vanguard calculations, using data from Bloomberg.

*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.*

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

<sup>2</sup> Intraday volatility is calculated as daily range of trading prices [(high-low)/opening price] for the S&P 500 Index.



## SECTION ONE

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### ACCUMULATING PLAN ASSETS

Historically, employees have had to decide whether to participate in the plan and at what rate to save. Employers are now increasingly making these decisions for employees 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 their employer-sponsored DC plan.

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 (4) plans with no employer contributions. 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 2019, 7 in 10 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. As a result, 8 in 10 employees qualified for immediate eligibility in 2019 (estimated; see the Methodology section on page 112).

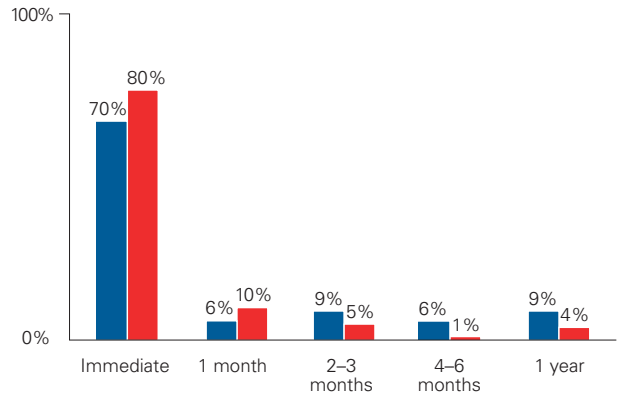
At the other extreme, 9% of plan sponsors required one year of service from eligible employees before they could make employee-elective contributions to their plan. Smaller plans were more likely to impose the one-year wait. As a result, only 4% of total eligible employees were subject to this restriction.

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 more common for employer contributions, presumably because employers want to minimize compensation costs for short-tenured employees.

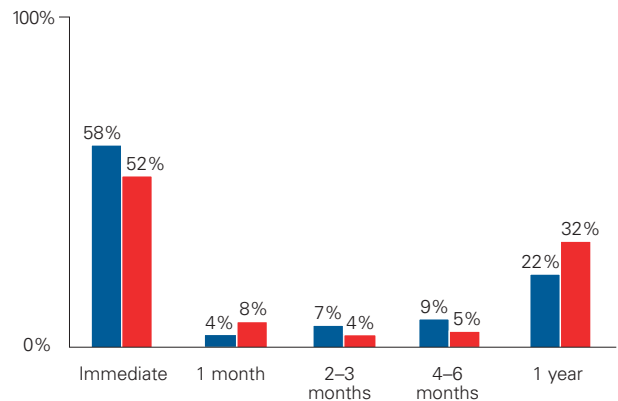
**Figure 3.** Eligibility, 2019 estimated

*Vanguard defined contribution plans permitting employee-elective deferrals*

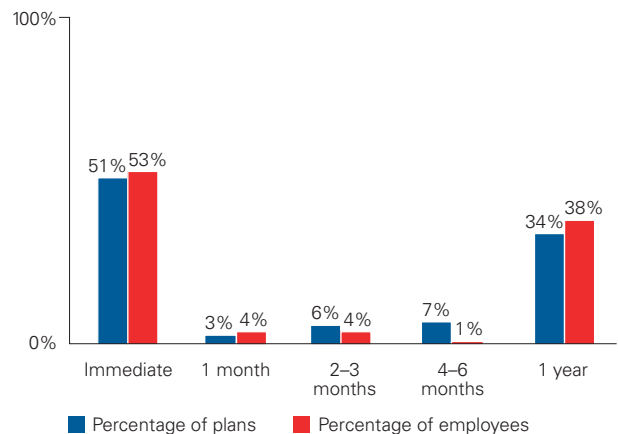
Employee-elective contributions



Employer matching contributions



Other employer contributions



Source: Vanguard 2020.

The proportion of plans permitting immediate eligibility for employee-elective contributions has risen over the past ten years (Figure 4).

Slightly more than one-half of plans offered immediate eligibility in 2010; in 2019, 70% did. Because larger plans are more likely to offer immediate eligibility for employee-elective contributions, 80% of participants in 2019 were in plans offering immediate eligibility. Similar trends are observed for both employer matching contributions and other employer contributions.

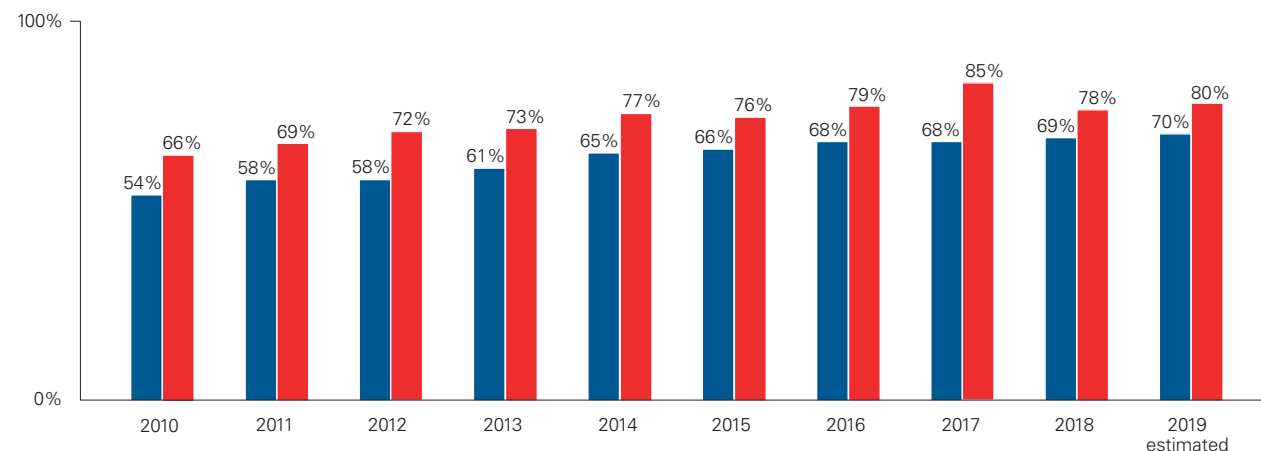
## Vesting

In 2019, nearly half of plans immediately vested participants in employer matching contributions, and 4 in 10 participants were enrolled in these plans (Figure 5). Smaller plans are more likely to use longer vesting schedules. Three in 10 plans with employer matching contributions use a 5- or 6-year graded vesting schedule, and 1 in 6 participants with employer matching contributions is in such a plan.

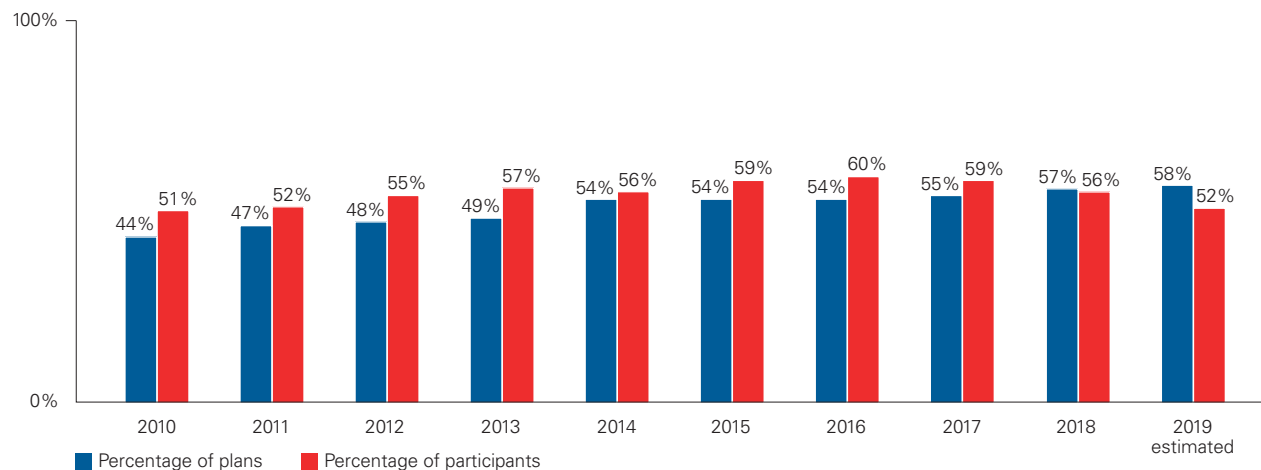
**Figure 4.** Immediate plan eligibility trend

*Vanguard defined contribution plans permitting employee-elective deferrals*

Employee-elective contributions



Employer matching contributions



Source: Vanguard 2020.

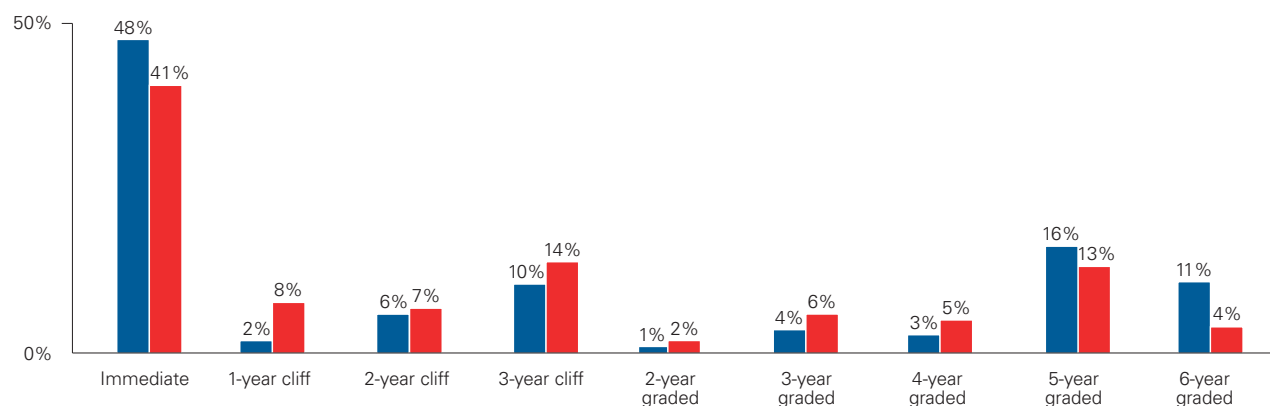
In 2019, 4 in 10 plans immediately vested participants for other employer contributions, such as profit-sharing or ESOP contributions. On the other hand, 35% of plans with other employer contributions are using a

5- or 6-year graded vesting schedule, and 3 in 10 participants receiving other employer contributions are in plans with these longer vesting schedules.

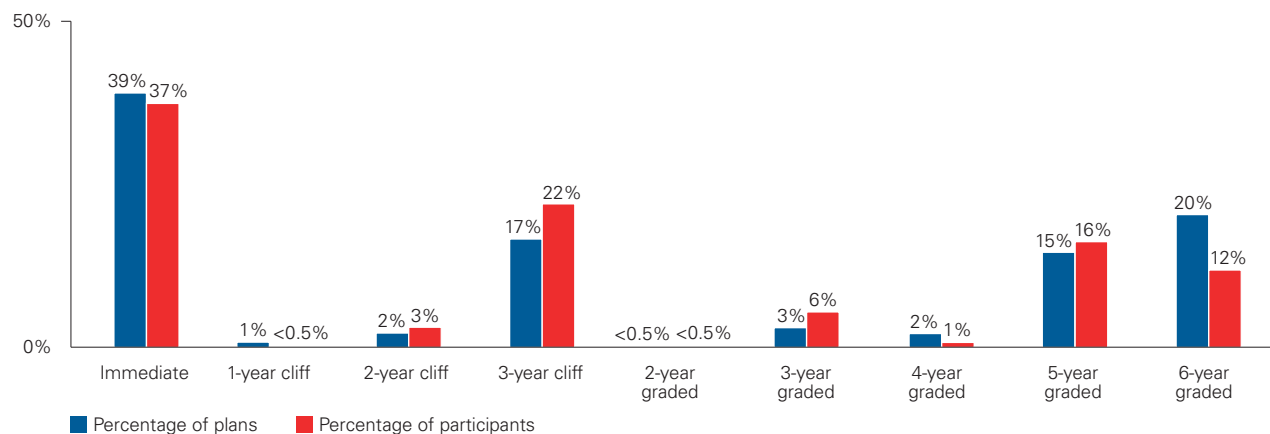
**Figure 5.** Vesting, 2019

*Vanguard defined contribution plans with employer contributions*

Employer matching contributions



Other employer contributions



Source: Vanguard 2020.

## Employer contributions

Half of Vanguard plans provided only a matching contribution in 2019, and 58% of participants were in such a plan (Figure 6).

One-third of plans, covering 4 in 10 participants, provided both a matching and a nonmatching employer contribution. Ten percent of plans provided only a nonmatching employer contribution, and 2% of participants were in this type of design. Finally, 4% of plans made no employer contributions of any kind in 2019, and 1% of participants were in such a plan.

As noted previously, eligibility for employer contributions is typically more restrictive than eligibility for employee-elective deferrals. In 2019, 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.

**Figure 6.** Types of employer contributions, 2019 estimated

*Vanguard defined contribution plans permitting employee-elective deferrals*

Type of employer contribution	Percentage of plans	Percentage of participants
Matching contribution only	51%	58%
Nonmatching contribution only	10	2
Both matching and nonmatching contribution	35	39
<b>Subtotal</b>	<b>96%</b>	<b>99%</b>
No employer contribution	4%	1%

Source: Vanguard 2020.

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 plan, an 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 2019, Vanguard administered more than 150 distinct match formulas for plans offering an employer match. Among plans offering a matching contribution in 2019, 7 in 10 (covering 60% of participants) provided a single-tier match formula, such as \$0.50 on the dollar on the first 6% of pay (Figure 7). Less common, used by 22% of plans (covering 31% of participants), were multi-tier 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 6% of plans (covering 8% of participants) had a single- or multi-tier 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. Among plans offering a match, about 1 in 5 provided exactly this match formula in 2019, covering 12% of participants.

**Figure 7.** Types of matching contributions, 2019 estimated

*Vanguard defined contribution plans with matching contributions*

Match type	Example	Percentage of plans	Percentage of participants
Single-tier formula	\$0.50 per dollar on 6% of pay	71%	60%
Multi-tier formula	\$1.00 per dollar on first 3% of pay; \$0.50 per dollar on next 2% of pay	22	31
Dollar cap	Single- or multi-tier formula with \$2,000 maximum	6	8
Other	Variable formulas based on age, tenure, or similar variables	1	1

Source: Vanguard 2020.

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 multi-tier match formulas, two-thirds of plans (covering 6 in 10

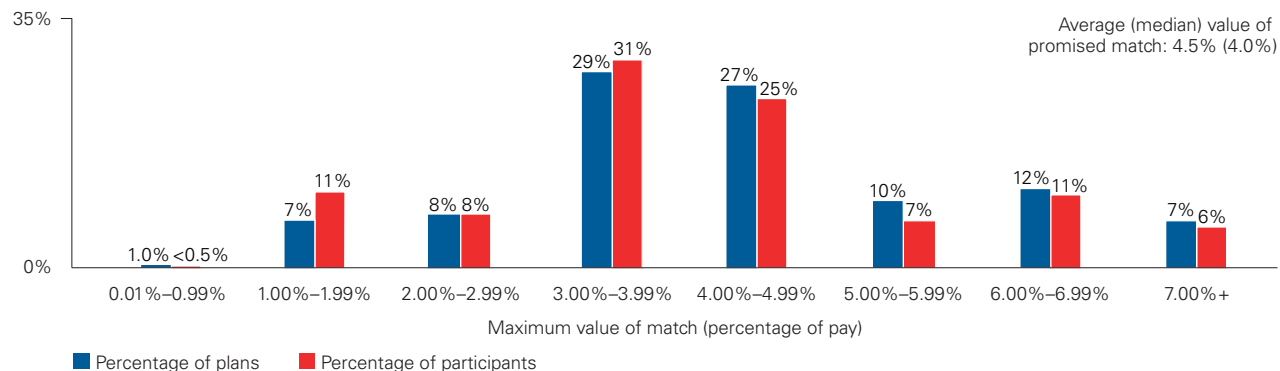
participants) promised a match of between 3.0% and 6.0% of pay (Figure 8). The average value of the promised match was 4.5% of pay; the median value, 4.0%.

After the 2009 recession, average promised matches remained relatively stable from 2010 through 2016.

Since 2016, average match rates have increased slightly through 2019. Median promised matches have remained stable since 2015 (Figure 9).

**Figure 8.** Distribution of promised matching contributions, 2019 estimated

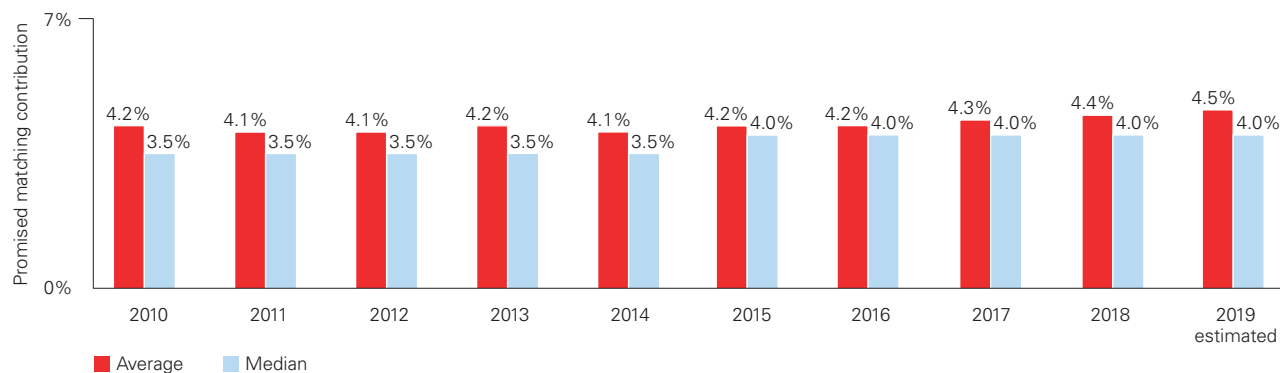
*Vanguard defined contribution plans permitting employee-elective deferrals with a single- or multi-tier match formula*



Source: Vanguard 2020.

**Figure 9.** Promised matching contributions

*Vanguard defined contribution plans permitting employee-elective deferrals with a single- or multi-tier match formula*



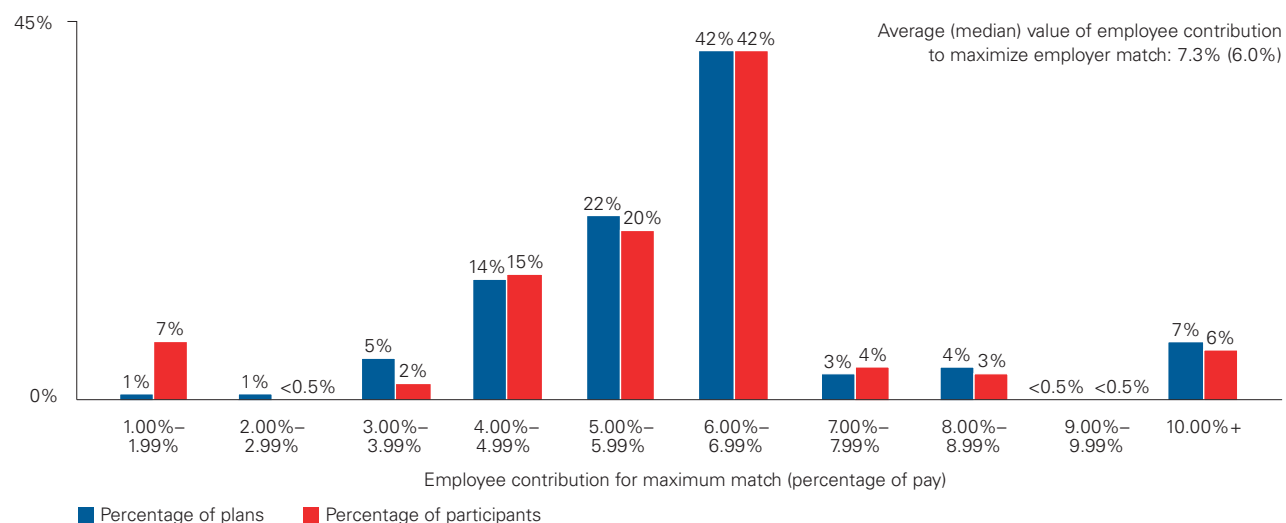
Source: Vanguard 2020.

Another way to assess matching formulas is to calculate the employee-elective deferral needed to realize the maximum value of the match. In 2019, about 8 in 10 plans (covering 81% of participants) required participants to defer between 4.0% and

7.0% of their pay to receive the maximum employer matching contribution (Figure 10). The average employee-elective deferral required to maximize the match was 7.3% of pay; the median value, 6.0%.

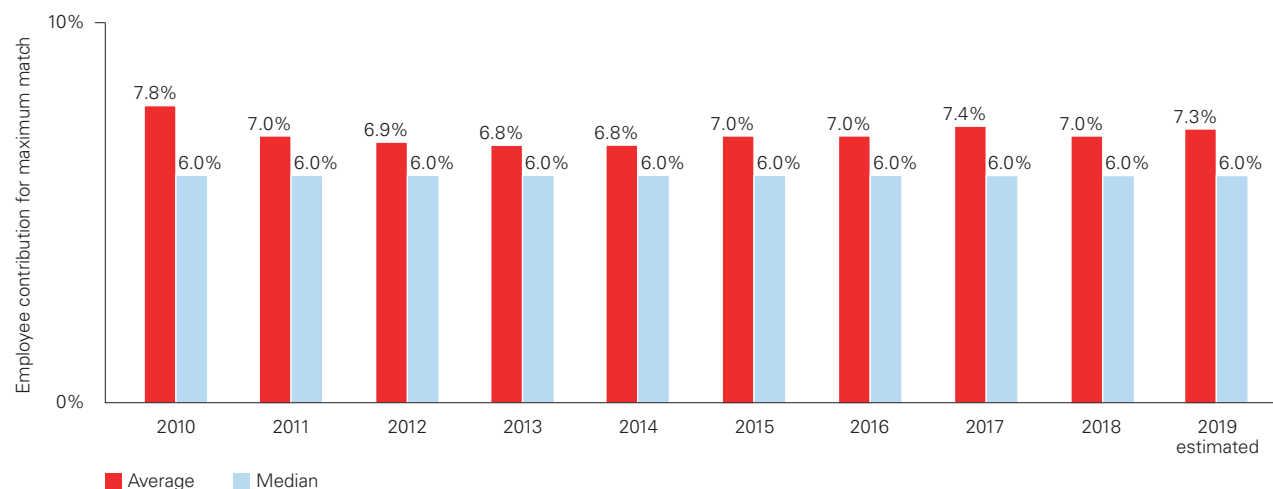
**Figure 10.** Employee contributions for maximum match, 2019 estimated

*Vanguard defined contribution plans permitting employee-elective deferrals with a single- or multi-tier match formula*



**Figure 11.** Employee contributions for maximum match

*Vanguard defined contribution plans permitting employee-elective deferrals with a single- or multi-tier match formula*



The average employee-elective deferral required to maximize the match has remained relatively stable since 2011, with an average between 6.8% and 7.4% (Figure 11). The required median deferral remained constant at 6.0%.

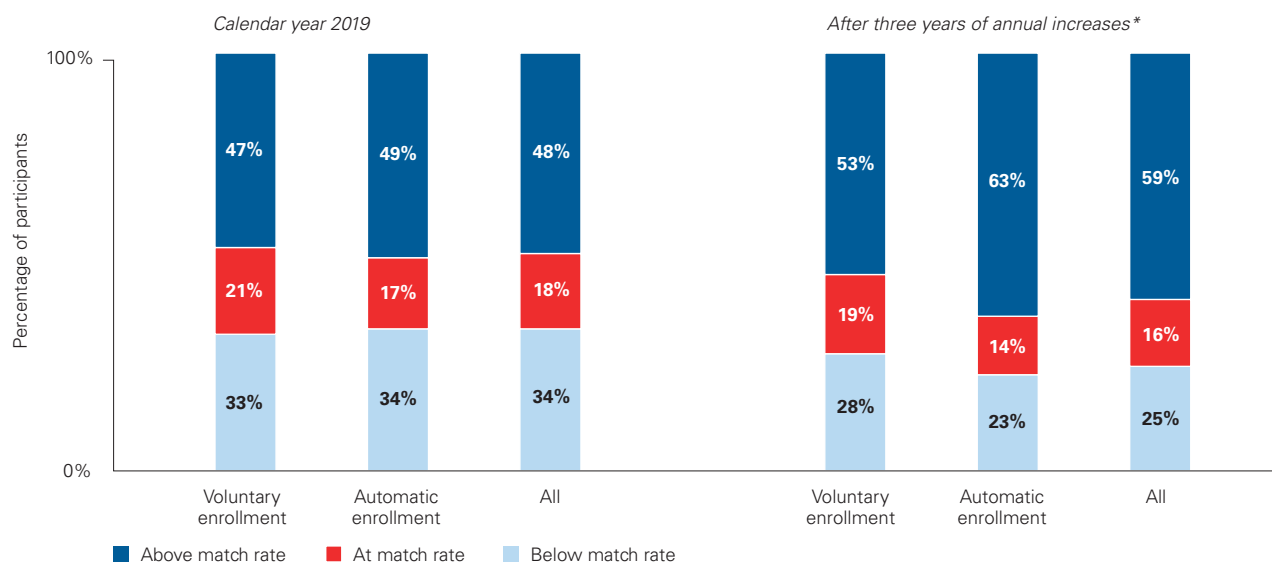
One strategy proposed to increase plan contributions in plans not opting for automatic enrollment is to “stretch the match.” When plan sponsors stretch the match, they apply an existing dollar match to a higher contribution rate. For example, instead of matching 100% on the first 4% of pay, they match 50% on the first 8% of pay. The idea is that the higher match threshold will encourage participants to contribute more to the plan. Our research finds that higher

match thresholds are typically associated with lower plan participation and lower employee contribution rates. Counterintuitively, stretching the match does not appear to lead to higher plan contribution rates.<sup>3</sup>

In 2019, two-thirds of participants received the full employer-matching contribution (Figure 12). Participants in automatic enrollment designs were as likely to receive the full employer match as were participants subjected to voluntary enrollment. However, after three years of automatic annual increases, participants in automatic enrollment designs are more likely to receive the full employer match. After three years of annual increases, three-quarters of all participants will be receiving the full employer match.

**Figure 12.** Maximizing the match

*Fraction of participants deferring at, above, or below plan-specific match level*



\* For participants in plans with automatic enrollment designs, annual increases are assumed only for those plans where the feature is offered and the participant has not opted out of the feature. For participants in voluntary enrollment designs, annual increases are assumed only for participants who have elected the option. The three-year projection assumes participants enrolled in annual increases do not opt out.

Source: Vanguard 2020.

3 For an in-depth analysis of stretching the match, see Young, Galina, and Jean A. Young, *Stretching the Match: Unintended Effects on Plan Contributions*, December 2018, Vanguard research, [institutional.vanguard.com](https://institutional.vanguard.com)

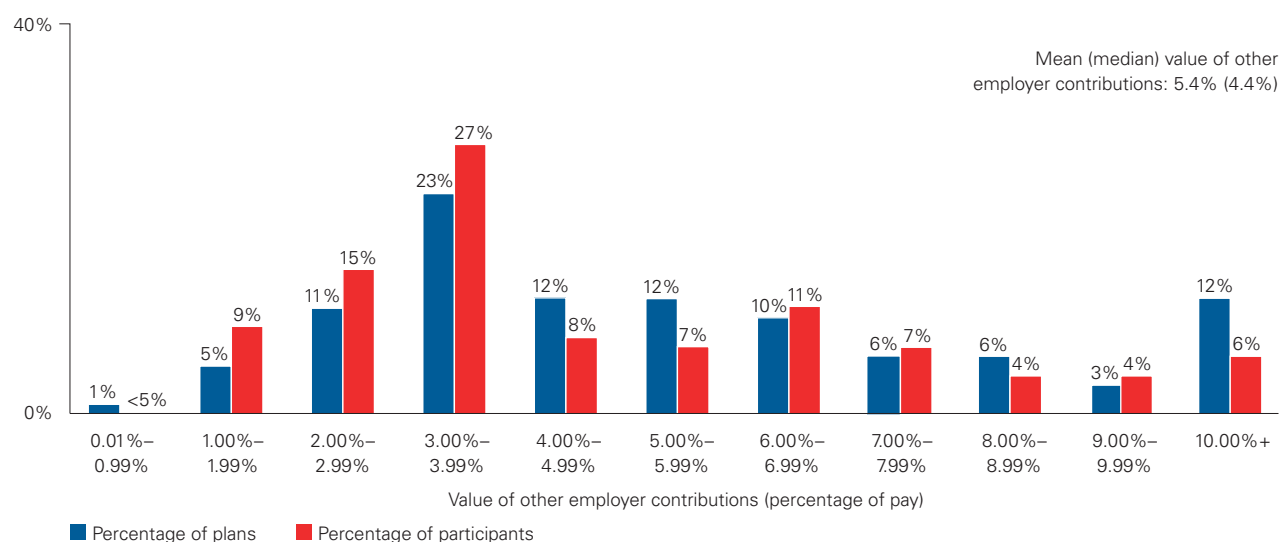
## Other employer contributions

As noted previously, in a minority of plan designs, employers may make another contribution to eligible employees' accounts 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 2019, 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 13). Among plans with a nonmatching employer contribution, the average contribution was equivalent to 5.4% of pay; the median contribution, 4.4% of pay. Between 2010 and 2019, the average value of other employer contributions remained stable (Figure 14).

**Figure 13.** Other employer contributions, 2019 estimated

*Vanguard defined contribution plans with other employer contributions*



Source: Vanguard 2020.

As previously noted, 35% of plans, covering 4 in 10 participants, provided both a matching and a non-matching employer contribution. In 2019, the median combined value of the promised match and the other employer contribution was 8.0% (Figure 15).

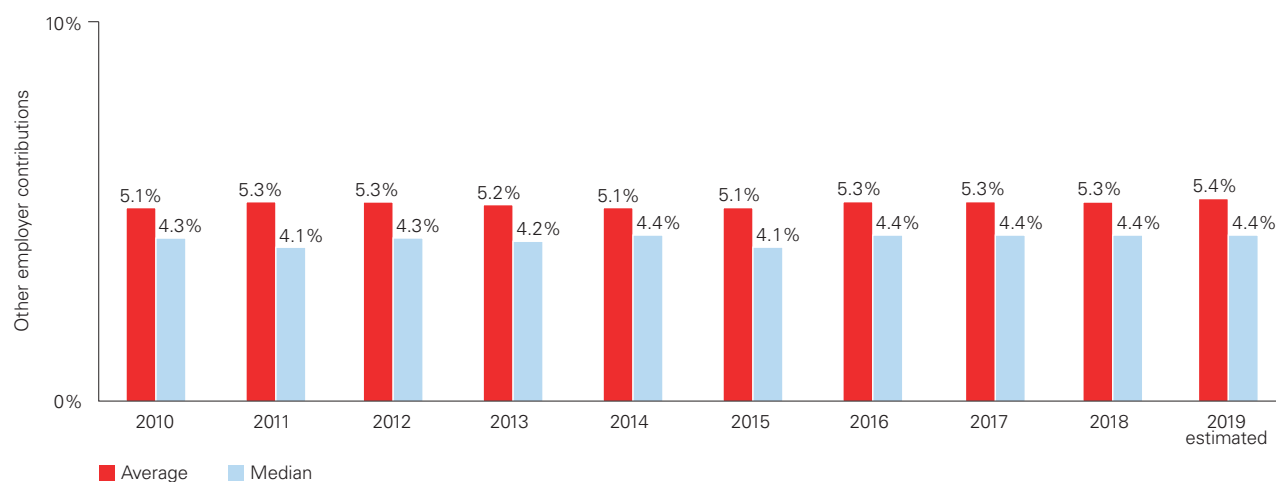
#### Maximum employee contribution limit

Many plans have incorporated expanded contribution limits authorized in the Economic Growth and Tax Relief Reconciliation Act of 2001 (EGTRRA).

More than 90% of DC plans have raised to 50% or more the maximum percentage of pay that employees can contribute to their plans.

**Figure 14.** Other employer contributions

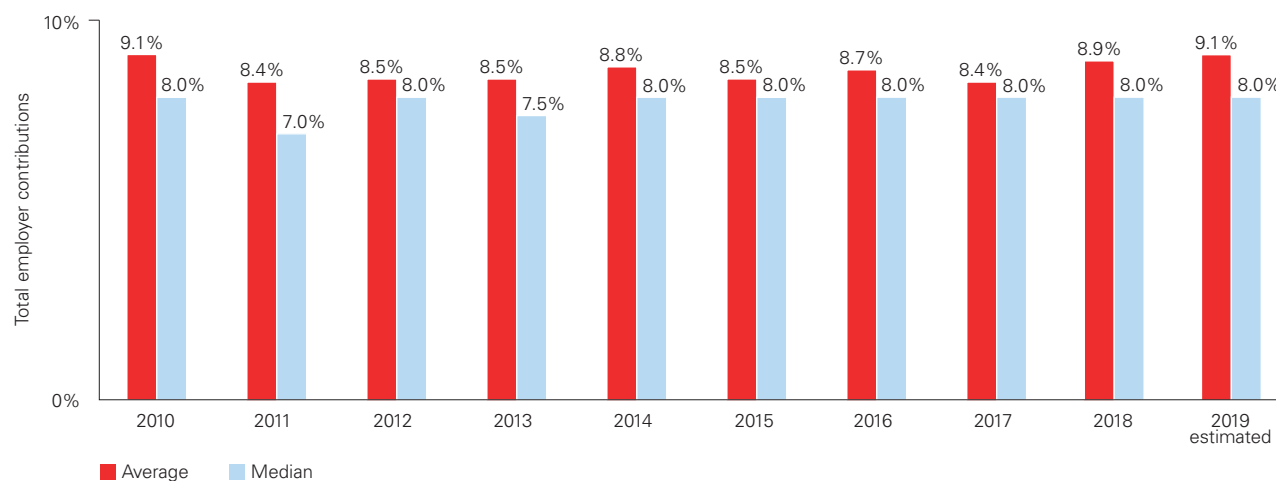
*Vanguard defined contribution plans with other employer contributions*



Source: Vanguard 2020.

**Figure 15.** Match and other employer contributions

*Vanguard defined contribution plans with both match and other employer contributions*



Source: Vanguard 2020.

## 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 planning for retirement. 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 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, 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 to increasing their contribution rates over time if they do join.

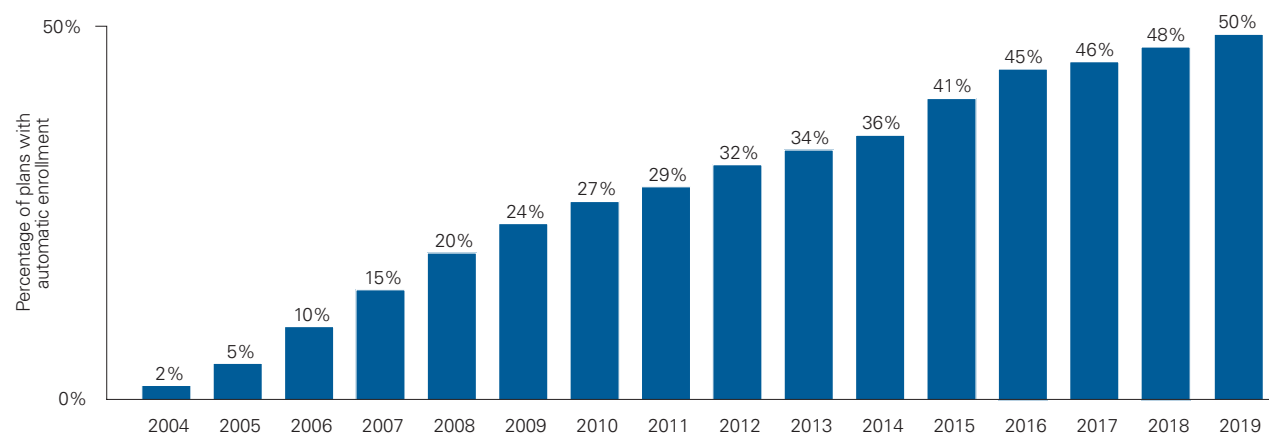
Automatic enrollment or autopilot plan designs reframe the savings decision. With an autopilot design, individuals are automatically enrolled into the plan, their deferral rates are automatically increased each year, and their contributions are automatically invested in a balanced investment strategy.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

As of December 2019, 50% of Vanguard plans permitting employee-elective deferrals had adopted components of an autopilot design (Figure 16). Larger plans are more likely to implement automatic enrollment, with more than 70% of larger plans using the feature. As a result, nearly two-thirds of participants are now in plans with autopilot designs, although automatic enrollment itself may only apply to newly eligible participants (Figure 17).

Approximately half of these plans have now “swept” eligible nonparticipants—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 2019, and by year-end 2019, two-thirds of plans with more than 500 participants had added the feature.

**Figure 16.** Automatic enrollment adoption

*Vanguard defined contribution plans with employee-elective contributions*



Source: Vanguard 2020.

**Figure 17.** Automatic enrollment design by plan size, 2019

*Vanguard defined contribution plans with automatic enrollment*

	Number of participants				
	All	<500	500–999	1,000–4,999	>5,000
Percentage of plans with employee-elective contributions offering	50%	32%	62%	72%	70%
Percentage of participants in plans offering	63%	41%	61%	73%	61%
<b>For plans offering automatic enrollment</b>					
Percentage of plans with automatic enrollment, automatic savings rate increases, and a balanced default fund	68%	61%	71%	71%	71%
Percentage of plans with automatic enrollment and a balanced default fund	31	37	29	28	29
Percentage of plans with automatic enrollment and a money market or stable value default fund	1	2	0	<0.5	0

Source: Vanguard 2020.

Among plans automatically enrolling employees, two-thirds were using all three features of an autopilot design. These plan sponsors automatically enrolled employees, automatically increased the deferral rate annually, and invested participants' assets in a balanced fund. Another one-third of plan sponsors automatically enrolled employees and invested participants' assets in a balanced fund but did not automatically increase participant deferral rates.

Automatic enrollment adoption also varies by industry group (Figure 18). Plans in the manufacturing industry were the most likely to adopt automatic enrollment, with 7 in 10 plans offering the design, while plans in the business, professional, and nonprofit industry were the least likely to automatically enroll employees.

Thirty-eight percent of these plans automatically enrolled participants at a 3% contribution rate (Figure 19). Sixty-eight percent of plans automatically increased the contribution rate annually. Ninety-nine percent of these plans were using a target-date or other balanced investment strategy as the default fund, with 98% choosing a target-date fund as the default. The design of automatic enrollment plans is improving. In 2019, 55% of plans chose a default of 4% or higher, compared with 2010 when only 28% did. In fact, 24% of plans chose a default of 6% or more—more than double the proportion of plans choosing 6% or more in 2010.

**Figure 18.** Automatic enrollment adoption by industry

*Vanguard defined contribution plans permitting employee-elective deferrals*

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Manufacturing	25%	30%	42%	50%	71%	75%	71%	67%	71%	71%
Agriculture, mining, and construction	24	25	20	24	35	39	42	49	48	48
Wholesale and retail trade	33	36	29	35	46	51	55	57	60	64
Transportation, utilities, and communications	24	28	26	32	38	44	50	51	55	55
Education and health	19	21	18	23	30	33	41	38	41	44
Media, entertainment, and leisure	7	7	8	11	15	20	26	24	27	28
Finance, insurance, and real estate	6	11	14	21	24	20	33	24	27	26
Business, professional, and nonprofit	8	9	8	10	15	14	20	22	20	19

Source: Vanguard 2020.

**Figure 19.** Automatic enrollment design trends

*Vanguard defined contribution plans with automatic enrollment*

Default automatic enrollment rate	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
1 percent	2%	2%	2%	2%	2%	1%	1%	1%	1%	2%
2 percent	13	13	13	12	10	8	7	8	6	5
3 percent	57	55	53	51	49	48	44	41	40	38
4 percent	11	11	12	13	15	16	15	15	15	15
5 percent	7	8	8	9	9	11	13	14	15	16
6 percent or more	10	11	12	13	15	16	20	21	23	24
<b>Default automatic increase rate</b>										
1 percent	68%	67%	67%	67%	68%	68%	65%	64%	64%	66%
2 percent	1	2	2	2	2	2	2	2	2	2
Voluntary election	16	16	17	17	18	20	24	25	26	26
Service feature not offered	15	15	14	14	12	10	9	9	8	6
<b>Default automatic increase cap</b>										
<6 percent	6%	5%	3%	3%	3%	2%	2%	3%	2%	1%
6 percent	22	22	21	20	18	16	14	14	13	13
7 to 9 percent	7	8	8	8	9	11	10	9	7	6
10 percent	37	38	39	41	42	42	44	44	46	47
11 to 20 percent	20	19	21	21	21	22	23	23	23	23
>20 percent	4	4	3	3	2	2	2	2	2	2
No cap	4	4	5	4	5	5	5	5	7	8
<b>Default fund</b>										
Target-date fund	89%	90%	91%	93%	95%	97%	97%	97%	98%	98%
Other balanced fund	8	7	6	5	3	2	2	2	1	1
<b>Subtotal</b>	<b>97%</b>	<b>97%</b>	<b>97%</b>	<b>98%</b>	<b>98%</b>	<b>99%</b>	<b>99%</b>	<b>99%</b>	<b>99%</b>	<b>99%</b>
Money market or stable value fund	3%	3%	3%	2%	2%	1%	1%	1%	1%	1%

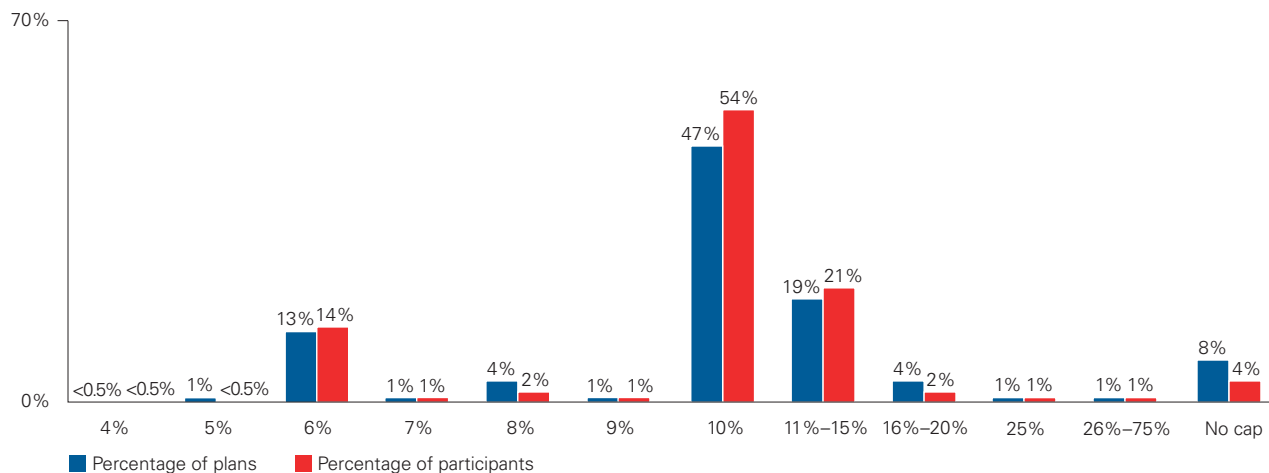
Source: Vanguard 2020.

Forty-seven percent of plans with automatic enrollment and annual increases cap the annual increase at 10%, and slightly more than half of annual-increase participants are capped at 10% (Figure 20).

However, about one-quarter of plans use caps between 11% and 25%. Eight percent of plans have no cap—likely an error. We recommend plan sponsors set the cap at a level where participants are saving 12% to 15% or more, factoring in employer contributions.

**Figure 20.** Automatic increase plan caps

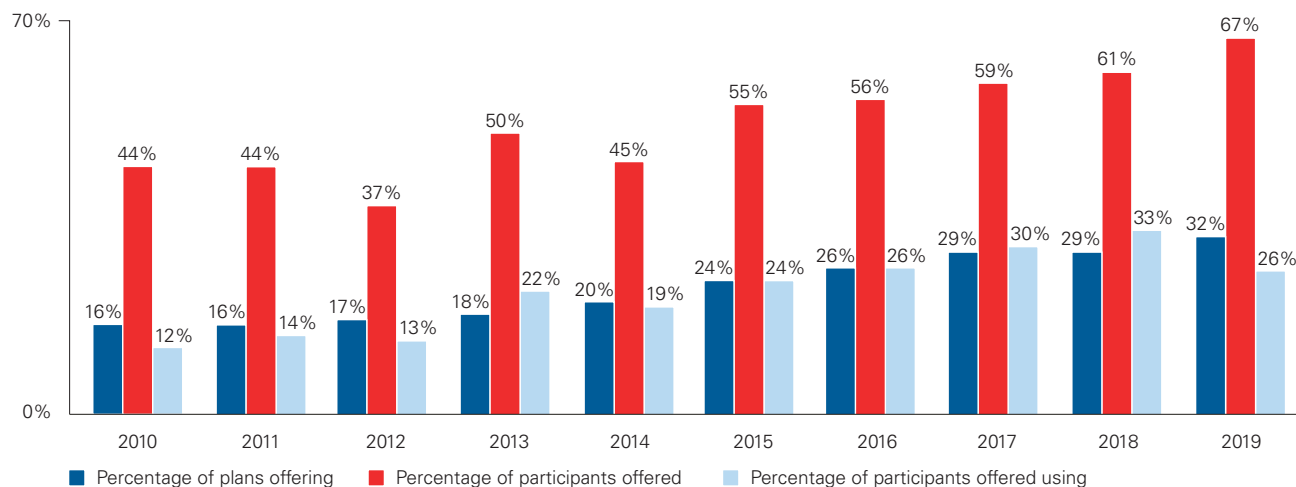
*Automatic enrollment plans with an automatic annual increase as of December 31, 2019*



Source: Vanguard 2020.

**Figure 21.** Voluntary annual increase adoption

*Voluntary enrollment plans with voluntary annual increase*



Source: Vanguard 2020.

Plan sponsors may also elect to offer automatic annual increases in plans with voluntary enrollment designs. Participants are then presented with the annual increase election at enrollment and when they change their employee-elective deferral rate. In 2019, 3 in 10 plans with voluntary enrollment offered an automatic annual increase option, and two-thirds of participants in these designs had access to the option (Figure 21). One-quarter of participants in these plans had elected automatic annual increases.

## Industry group

The distribution of eligible employees by industry group has evolved over time (Figure 22). Most notably, the proportion of eligible employees in the wholesale and retail trade industry group has nearly doubled, while the proportion in the manufacturing industry group has declined (Figure 23). Industry groups have different benefit and wage profiles. Both wages and the level of employer contributions impact plan participation and employee-elective deferral rates.

**Figure 22.** Distribution of eligible employees by industry group by year

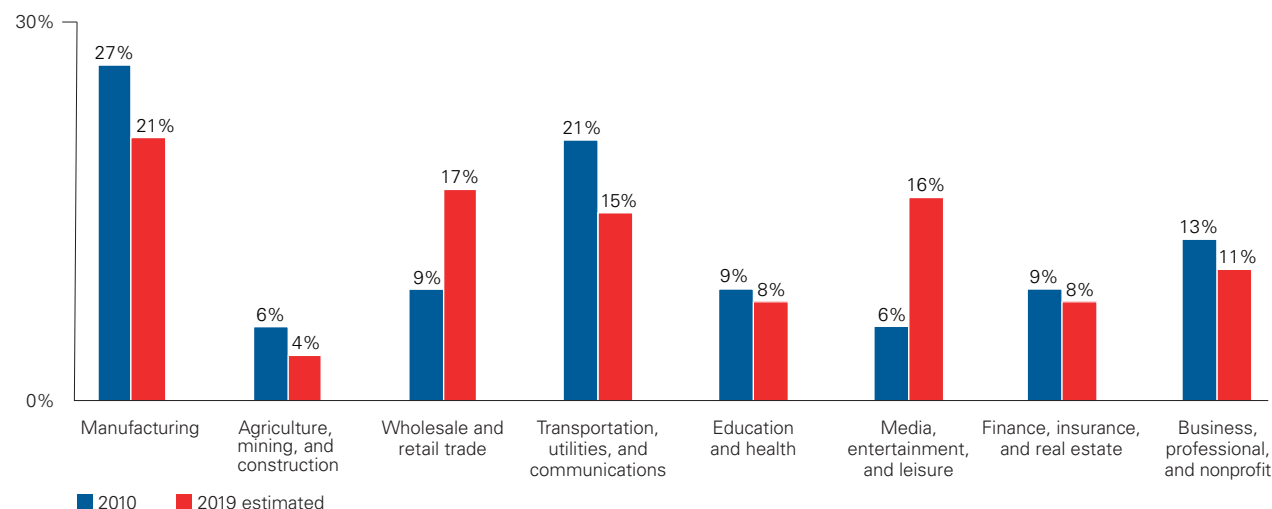
*Vanguard defined contribution plans permitting employee-elective deferrals*

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 estimated
Manufacturing	27%	25%	23%	25%	27%	23%	21%	24%	22%	21%
Agriculture, mining, and construction	6	7	6	6	5	5	3	4	4	4
Wholesale and retail trade	9	8	8	11	6	6	20	15	20	17
Transportation, utilities, and communications	21	21	22	22	22	21	14	12	11	15
Education and health	9	9	9	9	9	9	8	10	10	8
Media, entertainment, and leisure	6	7	8	6	9	15	13	16	15	16
Finance, insurance, and real estate	9	9	9	8	9	8	7	9	8	8
Business, professional, and nonprofit	13	14	15	13	13	13	14	10	10	11

Source: Vanguard 2020.

**Figure 23.** Distribution of eligible employees by industry group trend

*Vanguard defined contribution plans permitting employee-elective deferrals*



Source: Vanguard 2020.

## 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 2019, Vanguard's plan-weighted participation rate was 83% (estimated; see the Methodology section on page 112). It has risen by 7 percentage points since 2010 (Figure 24).

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, 76% of eligible employees are enrolled in their employer's voluntary savings program. This broader measure of plan participation rose between 2010 and 2015 from 72% to 78%, reflecting the adoption of automatic enrollment by larger plan sponsors. However, this measure fell in 2016 to 71%, reflecting a change in the underlying sectors these plans represent—specifically an increase in the proportion of employees in retail plans with low participation. Since 2017, this measure has modestly increased.

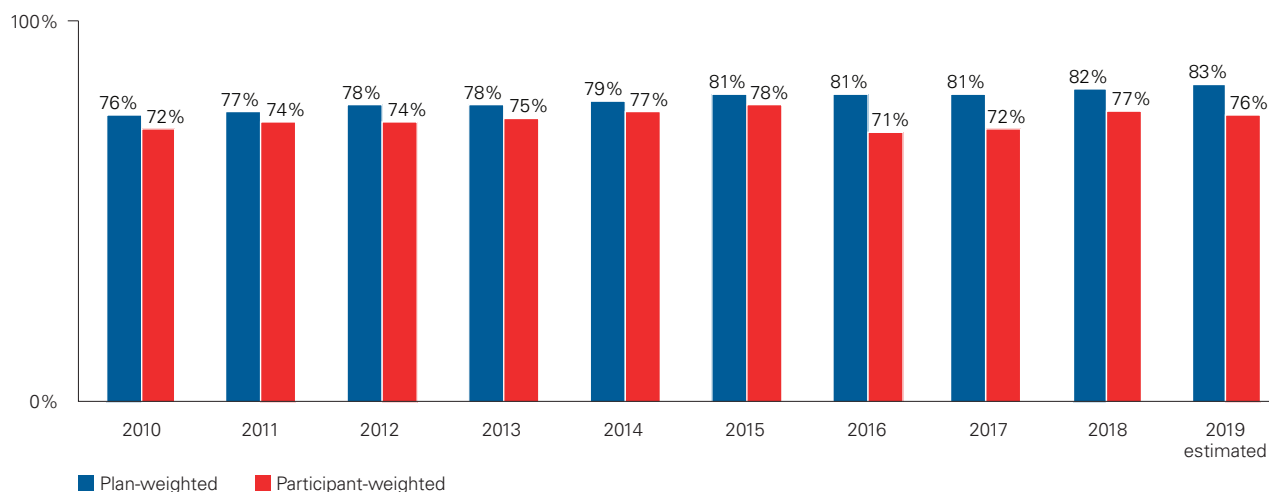
These two measures provide different views of employee participation in their retirement savings plans. The first measure indicates that in the average plan, about one-fifth of eligible employees fail to contribute. The second measure, however, shows that within the entire employee universe, about one-quarter 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.

## Distribution of participation rates

Participation rates vary considerably across plans (Figure 25). In 2019, 7 in 10 plans had a participation rate of 80% or higher, while only 6% of 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 26). One reason for lower participation rates at large companies may be 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 24.** Plan participation rates

*Vanguard defined contribution plans permitting employee-elective deferrals*



Source: Vanguard 2020.

**Figure 25.** Distribution of participation rates

*Vanguard defined contribution plans permitting employee-elective deferrals*

Percentage of plans

Plan participation rate	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 estimated
90%–100%	21%	24%	29%	31%	35%	40%	41%	44%	47%	49%
80%–89%	31	31	28	30	28	25	24	23	23	22
70%–79%	19	17	17	14	14	14	13	12	11	10
60%–69%	12	12	10	9	9	8	9	8	7	8
50%–59%	7	7	7	7	6	5	5	6	5	5
<50%	10	9	9	9	8	8	8	7	7	6
<b>Average plan participation rate</b>	<b>76%</b>	<b>77%</b>	<b>78%</b>	<b>78%</b>	<b>79%</b>	<b>81%</b>	<b>81%</b>	<b>81%</b>	<b>82%</b>	<b>83%</b>

Source: Vanguard 2020.

**Figure 26.** Participation rates by plan size

*Vanguard defined contribution plans permitting employee-elective deferrals*

Number of participants

Plan-weighted participation rate	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 estimated
<500	74%	75%	76%	76%	77%	79%	79%	80%	80%	81%
500–999	78	79	80	82	82	83	84	84	84	85
1,000–4,999	78	79	80	81	80	84	85	85	86	87
5,000+	78	80	81	81	74	82	77	78	82	82
<b>All plans</b>	<b>76%</b>	<b>77%</b>	<b>78%</b>	<b>78%</b>	<b>79%</b>	<b>81%</b>	<b>81%</b>	<b>81%</b>	<b>82%</b>	<b>83%</b>
<b>Participant-weighted participation rate</b>										
<500	68%	70%	70%	69%	72%	75%	73%	75%	72%	72%
500–999	74	76	77	78	77	77	73	77	79	80
1,000–4,999	69	70	72	72	73	80	78	81	82	83
5,000+	75	76	76	77	67	77	67	68	75	74
<b>All participants</b>	<b>72%</b>	<b>74%</b>	<b>74%</b>	<b>75%</b>	<b>77%</b>	<b>78%</b>	<b>71%</b>	<b>72%</b>	<b>77%</b>	<b>76%</b>

Source: Vanguard 2020.

Other possible reasons include the inherent difficulty of communicating across many locations in a large firm. 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 27). Income is one of the primary determinants of plan participation rates. Thirty-four

percent of eligible employees with income of less than \$15,000 contributed to their employer's DC plan in 2019, while 94% of employees with income of more than \$150,000 elected to participate. Even among the highest-paid employees, 6% of eligible workers still failed to take advantage of their employer's DC plan.

Participation rates were lowest for employees younger than 25. Only 5 in 10 employees under 25 made employee-elective deferrals to their employer's plan in 2019, while 8 in 10 eligible employees between ages 35 and 64 made such deferrals. Tenure also had a

**Figure 27.** Participation rates by participant demographics

*Vanguard defined contribution plans permitting employee-elective deferrals*

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 estimated
<b>All</b>	<b>72%</b>	<b>74%</b>	<b>74%</b>	<b>75%</b>	<b>77%</b>	<b>78%</b>	<b>71%</b>	<b>72%</b>	<b>77%</b>	<b>76%</b>
<b>Income</b>										
<\$15,000	23%	26%	30%	29%	29%	27%	33%	18%	38%	34%
\$15,000–\$29,999	50	51	52	51	54	48	48	45	54	55
\$30,000–\$49,999	69	70	71	71	75	75	69	68	71	71
\$50,000–\$74,999	76	75	75	76	79	80	77	79	82	82
\$75,000–\$99,999	83	82	82	82	83	84	85	84	86	86
\$100,000–\$149,999	87	86	86	88	88	88	89	90	91	91
\$150,000+	90	90	89	92	92	92	92	94	94	94
<b>Age</b>										
<25	44%	51%	52%	53%	57%	54%	42%	38%	51%	50%
25–34	68	69	70	71	74	74	69	70	75	75
35–44	74	74	75	76	79	79	75	76	80	80
45–54	77	78	78	79	81	81	76	78	81	81
55–64	76	78	79	80	82	83	77	79	82	82
65+	67	71	74	74	75	77	69	70	72	72
<b>Gender</b>										
Male	73%	74%	73%	75%	76%	77%	71%	71%	78%	77%
Female	71	75	74	77	77	79	71	73	78	78
<b>Job tenure (years)</b>										
0–1	56%	61%	61%	62%	67%	64%	56%	56%	63%	62%
2–3	66	69	71	72	75	78	72	72	77	78
4–6	72	72	73	75	79	81	76	78	82	82
7–9	76	76	78	78	79	81	76	80	83	83
10+	81	81	82	83	84	85	80	80	84	84

Source: Vanguard 2020.

significant influence on plan participation. In 2019, 62% of eligible employees with less than two years on the job participated in their employer's plan, while 8 in 10 employees with four or more years of tenure participated.

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 all income levels, women are more likely than men to join their employer's plan (Figure 28). For example,

**Figure 28.** Participation by income and gender, 2019 estimated

*Vanguard defined contribution plans permitting employee-elective deferrals*

	Female	Male	All
<\$15,000	44%	29%	34%
\$15,000–\$29,999	63	51	55
\$30,000–\$49,999	76	70	71
\$50,000–\$74,999	88	80	82
\$75,000–\$99,999	92	84	86
\$100,000–\$149,999	94	90	91
\$150,000+	95	94	94

Source: Vanguard 2020.

in 2019, 88% of women earning \$50,000 to \$74,999 participated in their employer's plan—compared with 80% of men in the same income group.

Participation rates also vary by industry group (Figure 29). Employees in the finance, insurance, and real estate industry group had the highest participation rates, with 9 in 10 workers participating in their employer's plan, while employees in the wholesale and retail trade group had the lowest participation rate at 54%.

**Figure 29.** Participation rates by industry sector, 2019 estimated

*Vanguard defined contribution plans permitting employee-elective deferrals*

	Plan-weighted	Participant-weighted
<b>Overall</b>	<b>83%</b>	<b>76%</b>
Finance, insurance, and real estate	88%	92%
Business, professional, and nonprofit	84	78
Manufacturing	84	86
Agriculture, mining, and construction	83	80
Transportation, utilities, and communications	83	79
Media, entertainment, and leisure	79	72
Education and health	79	84
Wholesale and retail trade	77	54

Source: Vanguard 2020.

### Impact of automatic enrollment on plan design

Reflecting increased adoption of automatic enrollment designs, there has generally been an improvement in participation rates between 2010 and 2019 among demographic groups that traditionally have lower voluntary participation rates. Employees subjected to an automatic enrollment feature have an overall participation rate of 92%, compared with a participation rate of 61% for employees hired under plans with voluntary enrollment (Figure 30).

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.

Between 2010 and 2019, plans with automatic enrollment have had rising participation rates (Figure 31). However, as more plans adopt automatic enrollment, the remaining pool of plans with voluntary enrollment have seen participation rates decline.

### 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 87% and the participant-weighted rate to 78% (Figure 32). In other words, across all Vanguard plans, more than three-quarters of employees either make their own contributions, receive an employer contribution, or both.

**Figure 30.** Participation rates by plan design, 2019 estimated

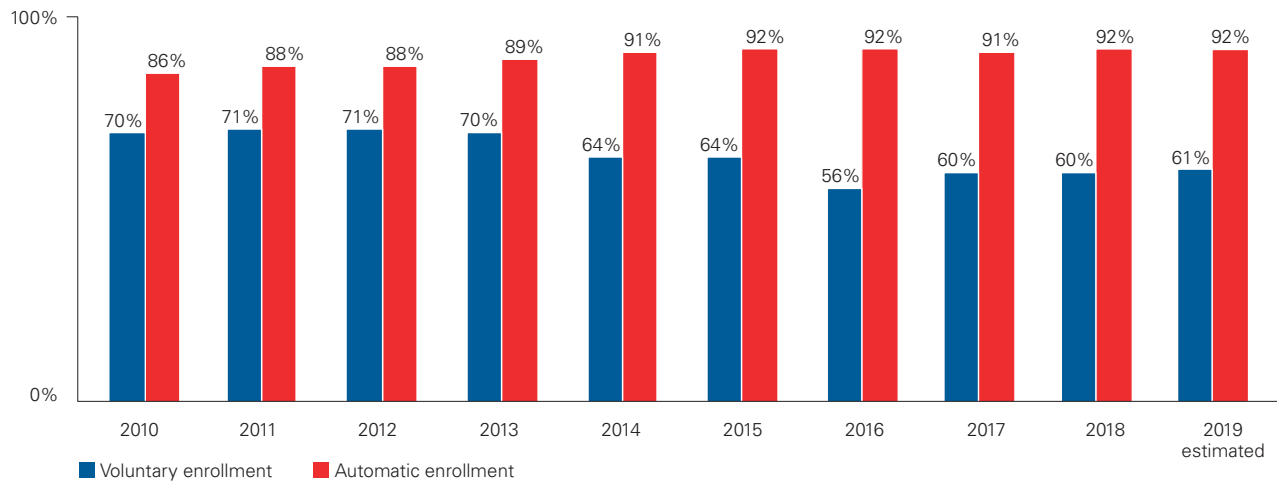
*Vanguard defined contribution plans permitting employee-elective deferrals*

	Voluntary enrollment	Automatic enrollment	All
All	61%	92%	76%
<b>Income</b>			
<\$15,000	22%	70%	34%
\$15,000–\$29,999	39	83	55
\$30,000–\$49,999	54	89	71
\$50,000–\$74,999	70	93	82
\$75,000–\$99,999	77	95	86
\$100,000–\$149,999	85	96	91
\$150,000+	91	97	94
<b>Age</b>			
<25	26%	84%	50%
25–34	55	92	75
35–44	66	92	80
45–54	69	92	81
55–64	71	93	82
65+	60	89	72
<b>Gender</b>			
Male	60%	92%	77%
Female	64	91	78
<b>Job tenure (years)</b>			
0–1	37%	86%	62%
2–3	59	93	78
4–6	68	95	82
7–9	73	95	83
10+	76	94	84

Source: Vanguard 2020.

**Figure 31.** Plan participation rates by plan design, participant-weighted trend

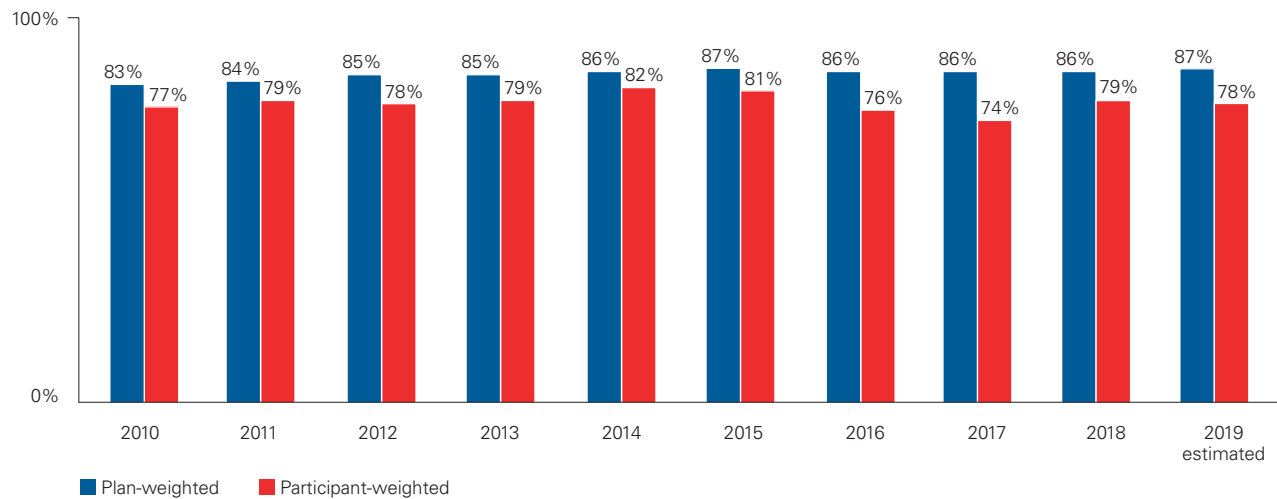
*Vanguard defined contribution plans permitting employee-elective deferrals*



Source: Vanguard 2020.

**Figure 32.** Aggregate plan participation rates

*Vanguard defined contribution plans permitting employee-elective deferrals*



Source: Vanguard 2020.

## Employee deferrals

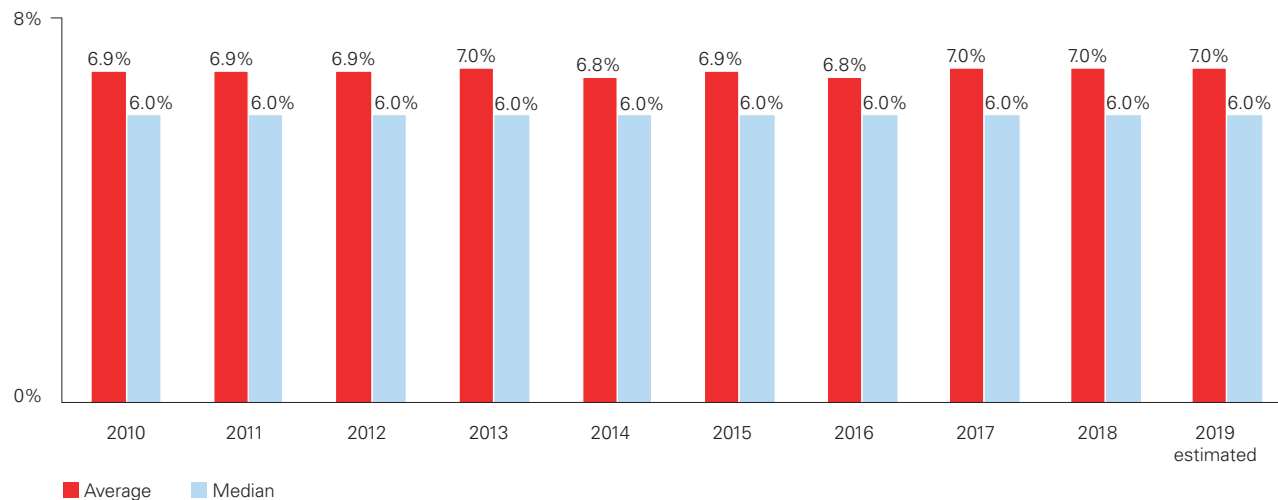
In a typical DC plan, employees are the main source of funding, while employer contributions play a secondary role. Thus, the level of participant deferrals is a critical determinant of whether the DC plan will generate an adequate level of retirement savings. Vanguard participants saved 7.0% of their income on average in their employer's plan in 2019 (Figure 33). 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 plans and are generally self-reported by plan sponsors.

Average and median deferral rates were fairly steady between 2010 and 2019.

**Figure 33.** Participant employee-elective deferral rates

*Vanguard defined contribution plans permitting employee-elective deferrals*



Source: Vanguard 2020.

### Distribution of deferral rates

Individual deferral rates vary considerably among participants (Figure 34). One in 5 participants had a deferral rate of 10% or higher in 2019, while 3 in 10 had a deferral rate of less than 4%. During 2019, only 12% of participants saved the statutory maximum of \$19,000 (\$25,000 for participants age 50 or older) (see page 42). In plans offering catch-up contributions, only 15% of participants age 50 or older took advantage of this feature in 2019 (see page 43).

Plan size has little effect on participant deferral rates (Figure 35). In 2019, plans with 5,000 or more participants had an average deferral rate of 6.9%—close to 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 other employer-funded retirement benefits as part of that package may dilute this effect.

**Figure 34.** Distribution of participant employee-elective deferral rates

*Vanguard defined contribution plans permitting employee-elective deferrals*

Percentage of participants

Deferral rate	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 estimated
0.1%–3.9%	28%	28%	29%	28%	30%	29%	30%	28%	28%	28%
4.0%–6.0%	23	25	23	23	23	22	22	22	22	22
6.1%–9.9%	27	27	28	29	28	29	28	29	29	29
10.0%–14.9%	15	14	14	14	13	14	14	15	15	15
15.0%+	7	6	6	6	6	6	6	6	6	6

Source: Vanguard 2020.

**Figure 35.** Participant employee-elective deferral rates by plan size

*Vanguard defined contribution plans permitting employee-elective deferrals*

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 estimated
Average—all plans	6.9%	6.9%	6.9%	7.0%	6.8%	6.9%	6.8%	7.0%	7.0%	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)										
<500	7.0%	6.9%	7.0%	7.0%	6.9%	7.1%	7.2%	7.3%	7.3%	7.4%
500–999	6.8	6.9	6.8	6.8	7.1	6.8	7.0	7.0	7.1	7.1
1,000–4,999	6.8	6.8	6.8	6.9	6.7	6.9	6.8	6.9	7.0	7.0
5,000+	7.0	6.9	6.8	7.0	6.8	7.0	6.8	7.0	6.9	6.9

Source: Vanguard 2020.

**Figure 36.** Employee-elective deferral rates by participant demographics*Vanguard defined contribution plans permitting employee-elective deferrals*

Average deferral rate	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 estimated
All	6.9%	6.9%	6.9%	7.0%	6.8%	6.9%	6.8%	7.0%	7.0%	7.0%
<b>Income</b>										
<\$15,000	5.5%	5.4%	5.4%	5.6%	6.3%	5.4%	4.6%	6.1%	5.0%	4.8%
\$15,000–\$29,999	4.9	4.8	4.7	4.8	4.9	4.6	4.6	4.7	4.7	4.6
\$30,000–\$49,999	5.8	5.8	5.7	5.8	5.8	5.7	5.7	5.4	5.5	5.5
\$50,000–\$74,999	7.1	7.0	6.9	7.0	6.9	6.9	6.9	6.7	6.8	6.8
\$75,000–\$99,999	8.4	8.2	8.1	8.1	7.9	8.0	7.9	7.9	8.0	8.0
\$100,000–\$149,999	8.7	8.7	8.6	8.8	8.7	8.8	8.7	8.8	8.9	8.9
\$150,000+	7.1	7.2	7.2	7.5	7.3	7.7	7.6	7.7	7.9	7.9
<b>Age</b>										
<25	4.2%	4.2%	4.0%	4.4%	4.1%	4.7%	4.8%	5.0%	4.7%	4.7%
25–34	5.7	5.6	5.4	5.8	5.5	5.9	5.9	6.1	6.1	6.1
35–44	6.4	6.1	6.3	6.4	6.3	6.4	6.3	6.5	6.5	6.6
45–54	7.3	7.2	7.2	7.3	7.2	7.3	7.0	7.2	7.2	7.3
55–64	8.6	8.6	8.5	8.6	8.5	8.6	8.3	8.5	8.5	8.5
65+	9.9	9.8	9.8	9.8	9.7	9.7	9.0	9.4	9.1	9.0
<b>Gender</b>										
Male	6.9%	6.9%	6.9%	7.0%	6.9%	6.9%	6.9%	7.0%	7.1%	7.1%
Female	6.9	6.9	6.8	7.0	6.8	6.9	6.6	6.8	6.6	6.7
<b>Job tenure (years)</b>										
0–1	4.8%	4.8%	4.7%	4.9%	4.6%	5.0%	5.0%	5.1%	5.0%	5.0%
2–3	6.3	6.3	6.0	6.3	6.2	6.5	6.3	6.6	6.4	6.4
4–6	6.8	6.8	6.8	7.0	7.0	7.1	6.9	7.3	7.1	7.1
7–9	7.0	7.0	7.0	7.2	7.2	7.4	7.2	7.6	7.6	7.6
10+	7.8	7.8	7.9	8.0	8.0	8.0	7.9	8.1	8.2	8.3
<b>Account balance</b>										
<\$10,000	3.8%	3.9%	3.8%	3.8%	3.8%	3.9%	3.9%	3.8%	3.9%	3.9%
\$10,000–\$24,999	5.7	5.9	5.8	5.9	6.1	6.4	6.4	6.2	6.6	6.5
\$25,000–\$49,999	6.8	6.8	6.7	6.9	6.9	7.4	7.5	7.2	7.6	7.6
\$50,000–\$99,999	8.2	8.1	7.8	7.7	7.7	8.1	8.2	8.2	8.5	8.5
\$100,000–\$249,999	9.8	9.8	9.6	9.2	9.1	9.3	9.1	9.2	9.5	9.5
\$250,000+	10.4	10.3	10.4	10.4	10.2	10.4	10.2	10.3	10.5	10.6

Source: Vanguard 2020.

### Deferral rates by employee demographics

As with plan participation rates, employee demographics have a strong influence on deferral rates (Figure 36). Income is the primary determinant of deferral rates, which generally rise with income. The statutory maximum contribution was \$19,000 (\$25,000 for participants age 50 and older), and a highly compensated employee was one who earned \$120,000 or more in 2018 (based on the prior year for 2019).

In 2019, participants with an income of less than \$30,000 had deferral rates in the 4.6%-to-4.8% range, while participants earning \$75,000 to \$99,999 had a deferral rate of 8.0%—a saving rate that is two-thirds higher. The deferral rate was 8.9% for participants earning between \$100,000 and \$150,000.

Age is another important variable influencing saving. In 2019, deferral rates were lowest for participants younger than 25. This group saved only 4.7% of

income. Deferral rates for participants ages 55 to 64 were nearly twice as high, averaging 8.5%. Deferral rates also rose directly with employee tenure.

Deferral rates also are correlated with account balances. Participants with account balances of less than \$10,000 had the lowest average deferral rate, 3.9% in 2019. As account balances rose, average deferral rates also rose. Overall, men and women appear to save at similar rates, with women generally saving at slightly higher rates (Figure 37).

Deferral rates also vary—by about half—by industry group (Figure 38). Participants in the business, professional, and nonprofit industry group had the highest average deferral rates in 2019, while participants in the wholesale and retail trade industry group had the lowest deferral rates.

**Figure 37.** Deferral rates by income and gender, 2019 estimated

*Vanguard defined contribution plans permitting employee-elective deferrals*

Average deferral rate

	Female	Male	All
<\$15,000	4.5%	5.8%	4.8%
\$15,000–\$29,999	4.5	5.0	4.6
\$30,000–\$49,999	5.7	5.5	5.5
\$50,000–\$74,999	7.0	6.8	6.8
\$75,000–\$99,999	8.3	7.8	8.0
\$100,000–\$149,999	9.0	8.6	8.9
\$150,000+	7.9	7.5	7.9

Source: Vanguard 2020.

**Figure 38.** Deferral rates by industry sector, 2019 estimated

*Vanguard defined contribution plans permitting employee-elective deferrals*

Average deferral rate

	Mean	Median
Overall	7.0%	6.0%
<b>Industry group</b>		
Business, professional, and nonprofit	7.4%	6.3%
Agriculture, mining, and construction	7.3	6.5
Transportation, utilities, and communications	7.3	6.0
Media, entertainment, and leisure	7.2	6.0
Manufacturing	7.1	6.0
Education and health	7.0	5.4
Finance, insurance, and real estate	6.9	6.0
Wholesale and retail trade	5.6	4.6

Source: Vanguard 2020.

**Figure 39.** Participant deferral rates by plan design, 2019 estimated

*Vanguard defined contribution plans permitting employee-elective deferrals*

Average deferral rate

	Voluntary enrollment	Automatic enrollment	All
All	7.0%	7.0%	7.0%
<b>Income</b>			
<\$15,000	5.5%	4.2%	4.8%
\$15,000–\$29,999	4.9	4.4	4.6
\$30,000–\$49,999	5.7	5.5	5.5
\$50,000–\$74,999	6.9	6.8	6.8
\$75,000–\$99,999	7.8	8.1	8.0
\$100,000–\$149,999	8.6	9.1	8.9
\$150,000+	7.7	8.1	7.9
<b>Age</b>			
<25	4.7%	4.7%	4.7%
25–34	5.8	6.2	6.1
35–44	6.5	6.6	6.6
45–54	7.2	7.3	7.3
55–64	8.4	8.7	8.5
65+	9.0	9.1	9.0
<b>Gender</b>			
Male	7.0%	7.0%	7.1%
Female	6.8	6.5	6.7
<b>Job tenure (years)</b>			
0–1	5.3%	4.9%	5.0%
2–3	6.6	6.3	6.4
4–6	6.6	7.4	7.1
7–9	7.0	8.0	7.6
10+	7.9	8.7	8.3
<b>Account balance</b>			
<\$10,000	4.0%	3.8%	3.9%
\$10,000–\$24,999	6.4	6.6	6.5
\$25,000–\$49,999	7.4	7.7	7.6
\$50,000–\$99,999	8.3	8.7	8.5
\$100,000–\$249,999	9.5	9.6	9.5
\$250,000+	10.5	10.6	10.6

Source: Vanguard 2020.

### Impact of automatic enrollment

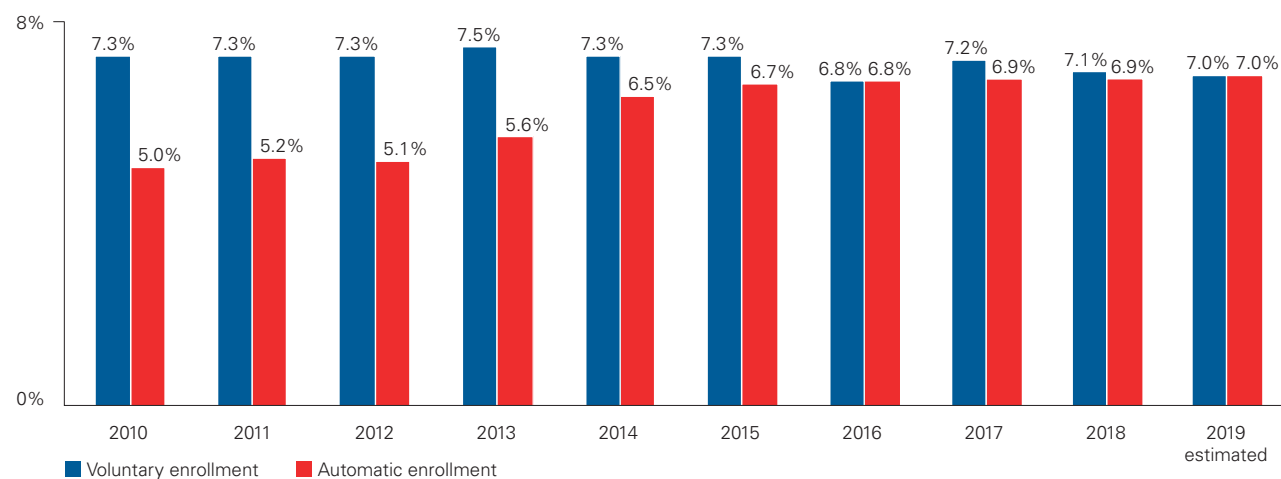
Participants joining a plan under an automatic enrollment feature had an average deferral rate of 7.0%, which is identical to the average deferral rate for participants in plans with voluntary enrollment (Figure 39).

In prior years, the gap between average deferral rates of participants in automatic enrollment and voluntary enrollment plans was wide (Figure 40). In 2010, this spread was 2.3 percentage points. However, it appears that automatic annual increases as well as higher default deferral rates have caused deferral rates to converge.

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.<sup>4</sup>

**Figure 40.** Participant employee-elective deferral rates by plan design, average trend

*Vanguard defined contribution plans permitting employee-elective deferrals*



Source: Vanguard 2020.

<sup>4</sup> For an in-depth analysis of automatic enrollment, see Clark, Jeffrey W., and Jean A. Young, *Automatic Enrollment: The Power of the Default*, February 2018, Vanguard research, [institutional.vanguard.com](https://institutional.vanguard.com)

## Maximum contributors

During 2019, 12% of participants saved the statutory maximum dollar amount of \$19,000 (\$25,000 for participants age 50 or older) (Figure 41). Participants who contributed the maximum dollar amount tended to have higher incomes, were older, had longer tenures with their current employer, and had accumulated substantially higher account balances.

Six in 10 participants with incomes of more than \$150,000 contributed the maximum allowed. Similarly, nearly half of participants with account balances of more than \$250,000 contributed the maximum allowed in 2019. Nearly one-fifth of participants older than 65 contributed the maximum.

**Figure 41.** Participants contributing the maximum by participant demographics, 2019 estimated

*Vanguard defined contribution plans permitting employee-elective deferrals*

<b>All</b>	<b>12%</b>
<b>Income</b>	
<\$15,000	1%
\$15,000–\$29,999	<0.5
\$30,000–\$49,999	<0.5
\$50,000–\$74,999	1
\$75,000–\$99,999	4
\$100,000–\$149,999	19
\$150,000+	57
<b>Age</b>	
<25	3%
25–34	7
35–44	12
45–54	14
55–64	17
65+	18
<b>Gender</b>	
Male	11%
Female	8
<b>Job tenure (years)</b>	
0–1	5%
2–3	11
4–6	13
7–9	15
10+	16
<b>Account balance</b>	
<\$10,000	<0.5%
\$10,000–\$24,999	2
\$25,000–\$49,999	6
\$50,000–\$99,999	11
\$100,000–\$249,999	19
\$250,000+	44
<b>Industry group</b>	
Media, entertainment, and leisure	23%
Business, professional, and nonprofit	16
Agriculture, mining, and construction	15
Education and health	12
Finance, insurance, and real estate	11
Manufacturing	9
Transportation, utilities, and communications	7
Wholesale and retail trade	4

Source: Vanguard 2020.

### Catch-up contributions

Nearly all Vanguard plans offered catch-up contributions in 2019. Catch-up contributions permit participants age 50 and older to contribute more than permitted for participants under age 50. Fifteen percent of age-50-and-older participants eligible for catch-up contributions took advantage of this feature in 2019 (Figure 42). Participants earning less than \$100,000 would need deferral rates higher than 20% of income in order to make catch-up contributions, suggesting that adoption of catch-up contributions by participants is actually quite strong.

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 and have accumulated substantially higher account balances.

Six in 10 participants with an income of more than \$150,000 made catch-up contributions. Similarly, 4 in 10 participants with account balances of more than \$250,000 made catch-up contributions in 2019.

**Figure 42.** Catch-up contribution participation rates by participant demographics, 2019 estimated

*Vanguard defined contribution plans permitting catch-up contributions*

Percentage of plans offering	98%
Percentage of participants offered	99%
Percentage of participants using if offered	15%
<b>Income</b>	
<\$15,000	1%
\$15,000–\$29,999	<0.5
\$30,000–\$49,999	1
\$50,000–\$74,999	2
\$75,000–\$99,999	6
\$100,000–\$149,999	23
\$150,000+	58
<b>Gender</b>	
Male	16%
Female	11
<b>Job tenure (years)</b>	
0–1	6%
2–3	13
4–6	15
7–9	16
10+	16
<b>Account balance</b>	
<\$10,000	<0.5%
\$10,000–\$24,999	2
\$25,000–\$49,999	6
\$50,000–\$99,999	9
\$100,000–\$249,999	15
\$250,000+	38
<b>Industry group</b>	
Agriculture, mining, and construction	26%
Business, professional, and nonprofit	23
Education and health	22
Media, entertainment, and leisure	20
Finance, insurance, and real estate	17
Manufacturing	12
Transportation, utilities, and communications	9
Wholesale and retail trade	7

Source: Vanguard 2020.

**Figure 43.** Roth participation rates by participant demographics, 2019 estimated

*Vanguard defined contribution plans permitting Roth contributions*

Percentage of plans offering	74%
Percentage of participants offered	89%
Percentage of participants using if offered	12%
<b>Income</b>	
<\$15,000	6%
\$15,000–\$29,999	8
\$30,000–\$49,999	9
\$50,000–\$74,999	13
\$75,000–\$99,999	16
\$100,000–\$149,999	16
\$150,000+	12
<b>Age</b>	
<25	13%
25–34	16
35–44	13
45–54	11
55–64	9
65+	6
<b>Gender</b>	
Male	14%
Female	11
<b>Job tenure (years)</b>	
0–1	11%
2–3	13
4–6	15
7–9	15
10+	11
<b>Account balance</b>	
<\$10,000	10%
\$10,000–\$24,999	14
\$25,000–\$49,999	14
\$50,000–\$99,999	14
\$100,000–\$249,999	13
\$250,000+	13
<b>Industry group</b>	
Transportation, utilities, and communications	17%
Business, professional, and nonprofit	16
Agriculture, mining, and construction	14
Media, entertainment, and leisure	13
Finance, insurance, and real estate	12
Manufacturing	11
Education and health	10
Wholesale and retail trade	9

**Figure 44.** After-tax participation rates by participant demographics, 2019 estimated

*Vanguard defined contribution plans permitting after-tax contributions*

Percentage of plans offering	19%
Percentage of participants offered	30%
Percentage of participants using if offered	8%
<b>Income</b>	
<\$15,000	3%
\$15,000–\$29,999	3
\$30,000–\$49,999	5
\$50,000–\$74,999	7
\$75,000–\$99,999	7
\$100,000–\$149,999	7
\$150,000+	15
<b>Age</b>	
<25	3%
25–34	7
35–44	9
45–54	9
55–64	9
65+	8
<b>Gender</b>	
Male	7%
Female	8
<b>Job tenure (years)</b>	
0–1	4%
2–3	7
4–6	9
7–9	9
10+	10
<b>Industry group</b>	
Agriculture, mining, and construction	22%
Media, entertainment, and leisure	13
Education and health	9
Finance, insurance, and real estate	8
Wholesale and retail trade	7
Transportation, utilities, and communications	7
Manufacturing	6
Business, professional, and nonprofit	5

Source: Vanguard 2020.

### Roth contributions

At year-end 2019, the Roth feature was offered by 74% of Vanguard plans and had been adopted by 12% of participants in plans offering the feature (Figure 43). Those who used this feature tended to be younger or higher-income participants.

Eighteen percent of plans offered Roth in-plan conversions, and 3% of participants with access to the option converted assets between 2010 and 2019.

### After-tax contributions

After-tax employee-elective deferrals are available to participants in 19% of Vanguard plans. The after-tax feature is more likely to be offered by large plans, and 3 in 10 participants have access to this feature.

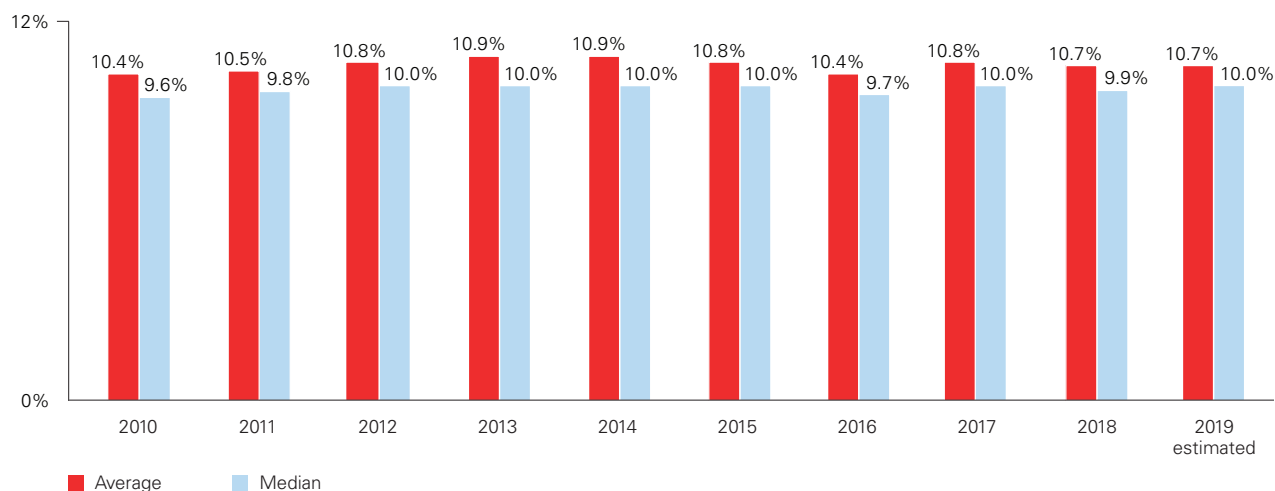
In 2019, only 8% of employees offered the after-tax deferral feature took advantage of it (Figure 44). Those who used the feature also tended to have higher incomes and longer tenures.

### Aggregate contributions

Considering both employee and employer contributions, the average total participant contribution rate in 2019 was 10.7% (estimated; see the Methodology section on page 112), and the median was 10.0% (Figure 45). These rates exclude eligible nonparticipants. Aggregate participant and employer contribution rates were fairly stable between 2010 and 2019.

**Figure 45.** Aggregate participant and employer contribution rates

*Vanguard defined contribution plans permitting employee-elective deferrals*



Source: Vanguard 2020.

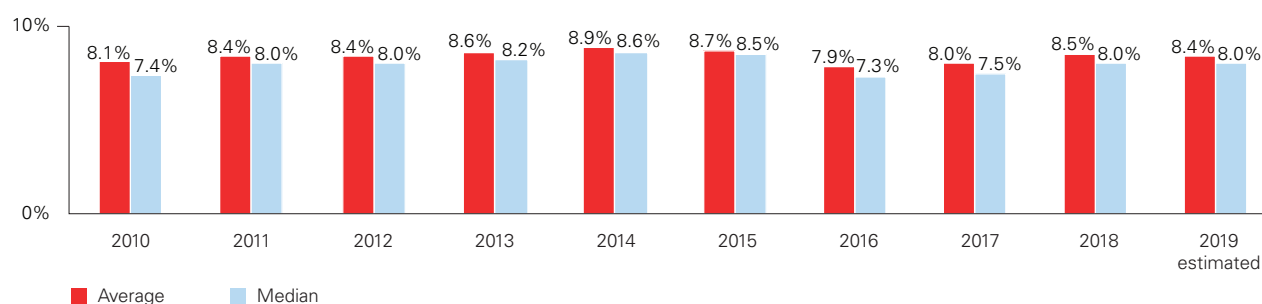
When eligible nonparticipants, with their 0% contribution rate, are included, the average aggregate contribution rate was 8.4% and the median was 8.0% (Figure 46). Aggregate employee and employer contribution rates generally rose between 2010 and 2015, reflecting the rising adoption of automatic enrollment, which results in fewer individuals deferring 0%. The decline in 2016 reflects a change in the underlying sectors these plans represent—specifically an increase in the proportion of retail plans with voluntary enrollment.

Participants joining a plan under an automatic enrollment feature had an average total contribution rate of 11.0%, compared with a total contribution rate of 10.3% for participants hired under voluntary enrollment (Figure 47).

Eligible employees hired under an automatic enrollment feature had an average total contribution rate of 10.3%, which is more than 50% higher than the rate of 6.6% for employees hired under voluntary enrollment (Figure 48). Plans with automatic enrollment had higher total contribution rates across all demographic variables, with the widest gaps for younger, less-tenured, and lower-income employees.

**Figure 46.** Aggregate employee and employer contribution rates

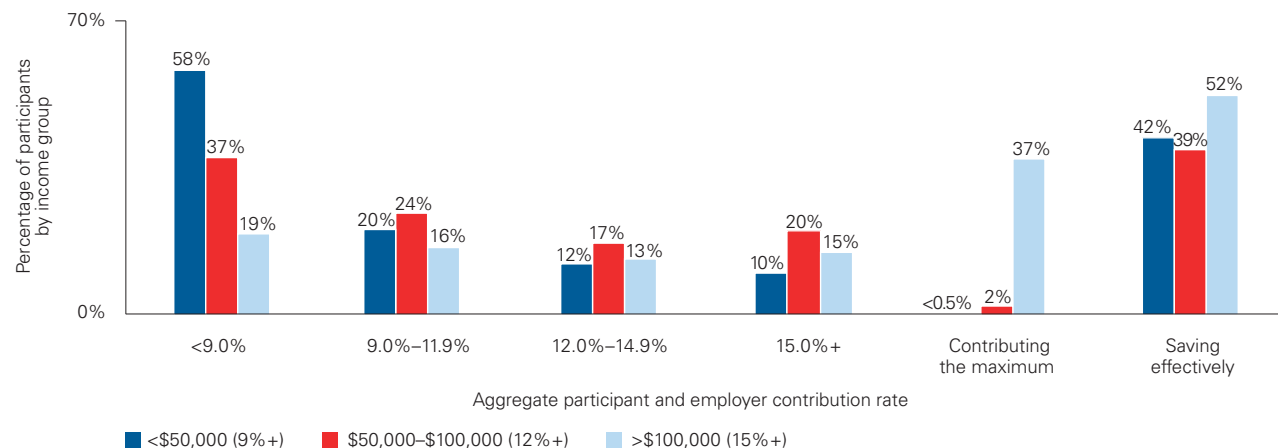
*Vanguard defined contribution plans permitting employee-elective deferrals*



Source: Vanguard 2020.

**Figure 49.** Distribution of aggregate participant and employer contribution rates, 2019 estimated

*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 2020.

### 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.

**Figure 47.** Aggregate participant and employer contribution rates by plan design, 2019 estimated

*Vanguard defined contribution plans permitting employee-elective deferrals*

	Voluntary enrollment	Automatic enrollment	All
<b>All</b>	<b>10.3%</b>	<b>11.0%</b>	<b>10.7%</b>
<b>Income</b>			
<\$15,000	7.4%	6.4%	6.9%
\$15,000–\$29,999	7.0	6.8	6.9
\$30,000–\$49,999	8.5	8.8	8.7
\$50,000–\$74,999	10.1	10.6	10.4
\$75,000–\$99,999	11.2	12.4	11.9
\$100,000–\$149,999	12.3	13.8	13.2
\$150,000+	12.2	13.6	13.0
<b>Age</b>			
<25	7.0%	7.7%	7.5%
25–34	8.9	10.1	9.7
35–44	9.8	10.7	10.3
45–54	10.6	11.5	11.1
55–64	12.0	13.1	12.6
65+	12.3	13.4	12.8
<b>Gender</b>			
Male	10.7%	11.3%	11.0%
Female	9.9	10.2	10.1
<b>Job tenure (years)</b>			
0–1	7.9%	8.0%	8.0%
2–3	10.0	10.3	10.2
4–6	10.2	11.8	11.2
7–9	10.3	12.8	11.6
10+	11.2	13.3	12.3
<b>Account balance</b>			
<\$10,000	6.3%	6.1%	6.1%
\$10,000–\$24,999	9.3	10.5	10.0
\$25,000–\$49,999	10.4	12.0	11.3
\$50,000–\$99,999	11.5	13.3	12.5
\$100,000–\$249,999	13.1	14.6	13.9
\$250,000+	15.0	16.2	15.7

Source: Vanguard 2020.

Four in 10 participants in 2019 had total employee and employer contribution rates that met those thresholds or reached the statutory contribution limit (Figure 49). For participants with lower wages, Social Security is expected to replace a higher percentage of income, and so a lower retirement saving rate may be appropriate. For higher-wage participants, Social Security replaces a lower percentage of income, and saving rates may need to be higher. In fact, higher-wage participants may not be able to achieve sufficient saving rates within the plan because of statutory contribution limits.

**Figure 48.** Aggregate employee and employer contribution rates by plan design, 2019 estimated

*Vanguard defined contribution plans permitting employee-elective deferrals*

	Voluntary enrollment	Automatic enrollment	All
<b>All</b>	<b>6.6%</b>	<b>10.3%</b>	<b>8.4%</b>
<b>Income</b>			
<\$15,000	1.6%	4.6%	2.4%
\$15,000–\$29,999	2.8	5.7	3.9
\$30,000–\$49,999	4.9	8.0	6.5
\$50,000–\$74,999	7.4	10.0	8.8
\$75,000–\$99,999	8.8	11.9	10.5
\$100,000–\$149,999	10.6	13.4	12.1
\$150,000+	11.2	13.3	12.4
<b>Age</b>			
<25	1.9%	6.5%	3.8%
25–34	5.1	9.4	7.4
35–44	6.8	10.0	8.4
45–54	7.7	10.8	9.3
55–64	8.9	12.4	10.6
65+	7.8	12.2	9.5
<b>Gender</b>			
Male	6.9%	10.6%	8.7%
Female	6.8	9.5	8.1
<b>Job tenure (years)</b>			
0–1	3.1%	7.0%	5.0%
2–3	6.2	9.7	8.2
4–6	7.2	11.3	9.4
7–9	7.8	12.3	9.9
10+	9.0	12.7	10.7

Source: Vanguard 2020.

## Account balances

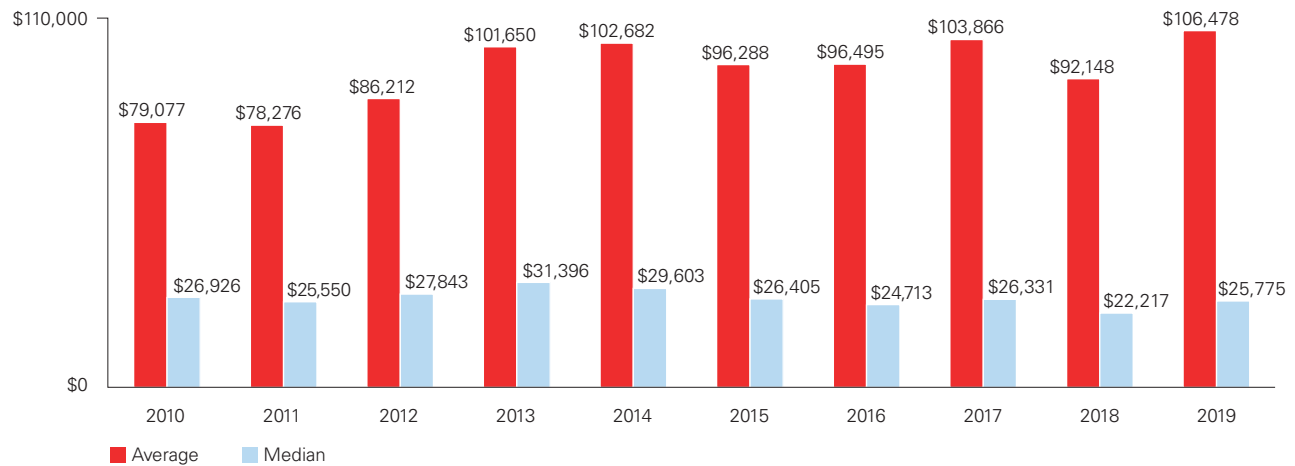
Account balances are a widely cited measure of the overall effectiveness of DC plans and are determined by contribution levels and investment performance over time.

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 50.** Account balances

*Vanguard defined contribution plans*



Source: Vanguard 2020.

**Figure 51.** Distribution of account balances

*Vanguard defined contribution plans*

Percentage of accounts

Range of balance	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
<\$10,000	31%	32%	31%	30%	31%	33%	34%	33%	36%	33%
\$10,000–\$19,999	13	13	12	12	11	12	12	11	12	12
\$20,000–\$39,999	15	14	14	14	13	13	13	13	13	13
\$40,000–\$59,999	9	9	9	8	8	8	8	8	7	8
\$60,000–\$79,999	6	6	6	6	6	5	5	5	5	5
\$80,000–\$99,999	5	4	4	4	4	4	4	4	4	4
\$100,000+	21	22	24	26	27	25	24	26	23	25

Source: Vanguard 2020.

### Average versus median balances

In 2019, the average account balance for Vanguard participants was \$106,478; the median balance was \$25,775 (Figure 50). In 2019, Vanguard participants' average and median account balances both increased by 16%. The average one-year participant total return was 22.4% in 2019 (see page 86).

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 51). One-third of participants had a 2019 account balance of less than \$10,000, while one-quarter 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 had balances below the average, and 25% had balances above). 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 had balances above the median, and half had balances below.

Average account balances also vary somewhat by plan size, with smaller plans having higher balances than larger plans (Figure 52). Automatic enrollment is one factor driving differences in average balances—larger plans have been much more likely to adopt automatic enrollment.

**Figure 52.** Account balances by plan size

*Vanguard defined contribution plans*

Number of participants

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
<b>Average</b>										
<500	\$98,825	\$100,806	\$111,799	\$133,126	\$141,332	\$136,610	\$143,869	\$162,703	\$150,290	\$179,355
500–999	\$76,219	\$76,679	\$86,615	\$101,835	\$104,972	\$99,203	\$103,460	\$120,009	\$111,008	\$128,887
1,000–4,999	\$75,038	\$76,613	\$85,385	\$99,389	\$101,376	\$98,101	\$100,827	\$110,189	\$101,414	\$116,238
>5,000	\$79,178	\$77,030	\$84,285	\$99,883	\$100,070	\$92,679	\$81,786	\$97,722	\$85,883	\$99,422
All plans	\$79,077	\$78,276	\$86,212	\$101,650	\$102,682	\$96,288	\$96,495	\$103,866	\$92,148	\$106,478
<b>Median</b>										
<500	\$33,129	\$33,225	\$36,388	\$41,195	\$41,848	\$37,792	\$38,685	\$42,705	\$37,699	\$44,528
500–999	\$28,582	\$28,345	\$30,627	\$34,348	\$33,447	\$29,147	\$29,789	\$34,943	\$31,919	\$34,728
1,000–4,999	\$26,427	\$23,217	\$29,283	\$32,603	\$30,710	\$28,425	\$27,768	\$29,678	\$26,340	\$29,987
>5,000	\$26,401	\$24,414	\$26,453	\$30,024	\$28,197	\$24,943	\$22,850	\$24,280	\$20,264	\$23,745
All plans	\$26,926	\$25,550	\$27,843	\$31,396	\$29,603	\$26,405	\$24,713	\$26,331	\$22,217	\$25,775

Source: Vanguard 2020.

### Change in account balances

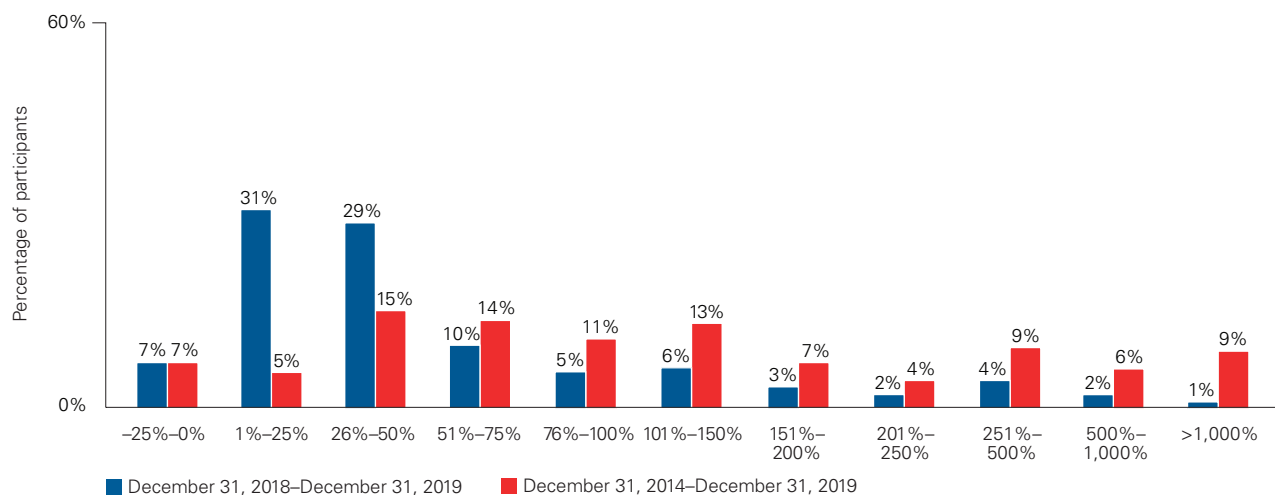
The change in average and median account balances in 2019 is the result of evolution in the participant base and market performance. When we examine continuous participants—those with an account balance in both December 2018 and December 2019—the median account balance rose by 31% (Figure 53). More than 9 in 10 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 2014 and December 2019, the median

account balance rose 96%, and 93% of continuous participants had a higher account balance in 2019 than in 2014.

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 mask the psychological impact of falling stock prices on participants.

**Figure 53.** 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, 2018– December 31, 2019	December 31, 2014– December 31, 2019
Median change	31%	96%
Percentage of participants with positive changes	93	93

Source: Vanguard 2020.

## Account balances by participant demographics

Median and average account balances vary considerably by participant demographics (Figure 54). Income, age, and job tenure are among the factors influencing account balances. 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 they are 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.

**Figure 54.** Account balances by participant demographics, 2019

*Vanguard defined contribution plans*

	All participants	
	Average	Median
<b>All</b>	<b>\$106,478</b>	<b>\$25,775</b>
<b>Income</b>		
<\$15,000	\$8,260	\$1,356
\$15,000–\$29,999	\$13,069	\$4,020
\$30,000–\$49,999	\$29,740	\$10,439
\$50,000–\$74,999	\$66,033	\$27,630
\$75,000–\$99,999	\$113,143	\$54,020
\$100,000–\$149,999	\$177,597	\$91,470
\$150,000+	\$298,851	\$154,989
Terminated	\$112,682	\$29,440
<b>Age</b>		
<25	\$5,419	\$1,817
25–34	\$26,839	\$10,402
35–44	\$72,578	\$26,188
45–54	\$135,777	\$46,363
55–64	\$197,322	\$69,097
65+	\$216,720	\$64,548
<b>Gender</b>		
Male	\$131,045	\$34,246
Female	\$88,393	\$22,434
<b>Job tenure (years)</b>		
0–1	\$13,448	\$2,772
2–3	\$29,824	\$11,496
4–6	\$54,320	\$25,550
7–9	\$89,663	\$46,739
10+	\$226,731	\$109,338

Source: Vanguard 2020.

Gender also influences current balances. Fifty-seven 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 tended to have lower incomes and shorter job tenure than men. However, as noted earlier in this report, women tended to save more than men at each respective income level.

A different picture emerges when account balances are compared based on income. When income is factored in, account balances are closer (Figure 55). For example, female participants with incomes between \$30,000 and \$99,999 had average account balances that are within 10% of their male counterparts.

### Balances by industry group

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 saving rates). Participants employed in the agriculture, mining, and construction industry group had average and median account balances that are about two to three times higher than some other industries (Figure 56). Participants employed in the wholesale and retail trade industry group had the lowest average and median account balances.

**Figure 55.** Account balances by income and gender, 2019

*Vanguard defined contribution plans permitting employee-elective deferrals*

Average	Female	Male	All
<\$15,000	\$7,481	\$11,834	\$8,260
\$15,000–\$29,999	\$13,071	\$15,419	\$13,069
\$30,000–\$49,999	\$32,402	\$31,166	\$29,740
\$50,000–\$74,999	\$65,704	\$71,677	\$66,033
\$75,000–\$99,999	\$110,901	\$122,441	\$113,143
\$100,000–\$149,999	\$171,614	\$199,272	\$177,597
\$150,000+	\$272,989	\$349,100	\$298,851
Terminated	\$94,706	\$132,681	\$112,682
<b>Median</b>			
<\$15,000	\$1,357	\$2,022	\$1,356
\$15,000–\$29,999	\$4,091	\$4,590	\$4,020
\$30,000–\$49,999	\$11,666	\$11,234	\$10,439
\$50,000–\$74,999	\$27,810	\$31,067	\$27,630
\$75,000–\$99,999	\$52,923	\$60,840	\$54,020
\$100,000–\$149,999	\$91,296	\$107,325	\$91,470
\$150,000+	\$148,446	\$190,227	\$154,989
Terminated	\$27,922	\$33,307	\$29,440

Source: Vanguard 2020.

**Figure 56.** Balances by industry sector, 2019

*Vanguard defined contribution plans*

	Average	Median
<b>All</b>	<b>\$106,478</b>	<b>\$25,775</b>
Agriculture, mining, and construction	\$161,065	\$39,869
Finance, insurance, and real estate	\$128,864	\$33,390
Business, professional, and nonprofit	\$127,647	\$28,830
Manufacturing	\$123,843	\$36,639
Transportation, utilities, and communications	\$95,476	\$23,519
Media, entertainment, and leisure	\$88,636	\$23,924
Education and health	\$81,374	\$19,586
Wholesale and retail trade	\$71,795	\$13,089

Source: Vanguard 2020.

## SECTION TWO

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### MANAGING PARTICIPANT ACCOUNTS

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



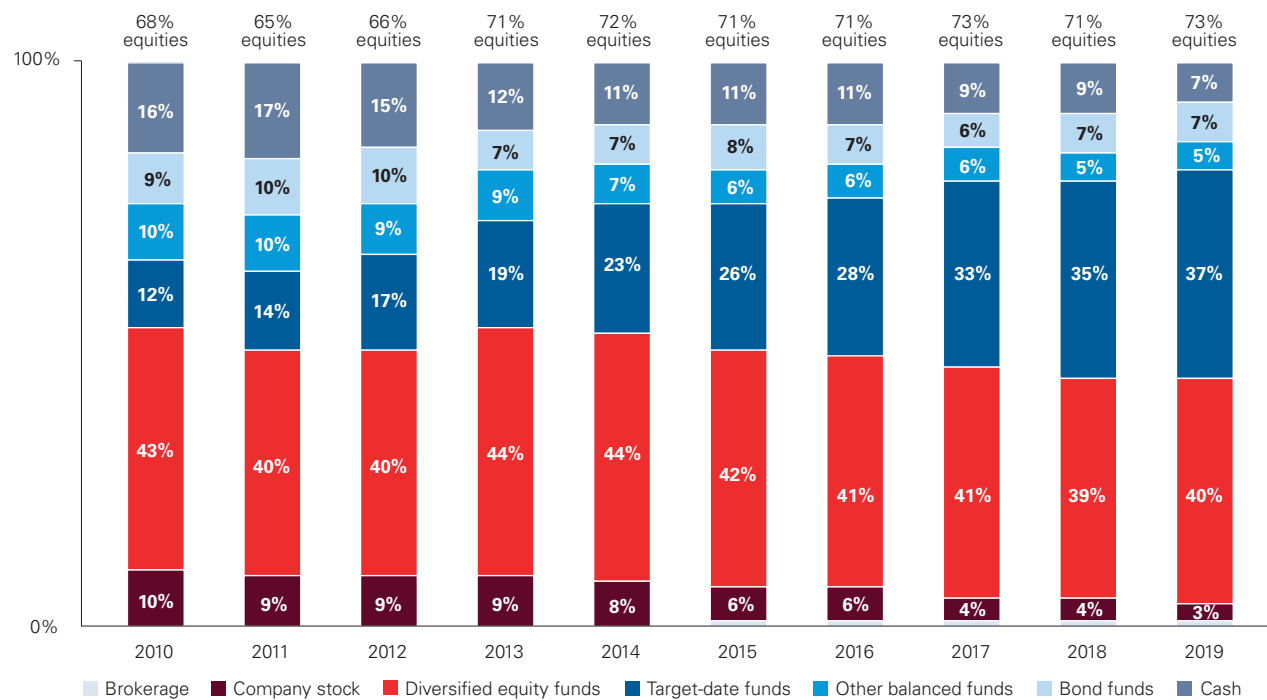
## Asset and contribution allocations

The percentage of plan assets invested in equities stood at 73% in 2019 (Figure 57). The allocation to equities includes the equity component of balanced strategies. The overall equity allocation is up from 68% in 2010, a shift of 5 percentage points, due to the rise in equity markets as well as improved participant portfolio construction.

In 2019, investments in balanced strategies reached 42%, including 37% in target-date funds and 5% in other balanced options. The growth of target-date funds in particular is dramatically reshaping DC plan investment patterns, increasing age-appropriate equity allocations and reducing extreme allocations.

**Figure 57.** Plan asset allocation summary

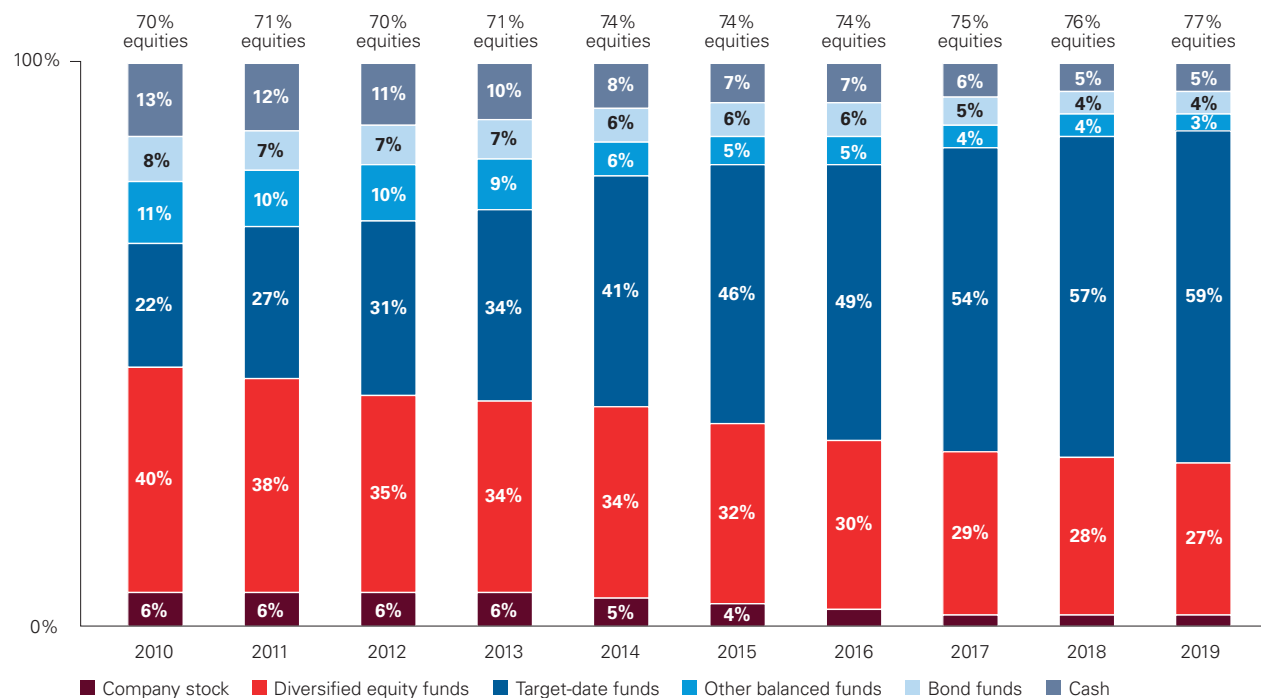
*Vanguard defined contribution plans*



Source: Vanguard 2020.

**Figure 58.** Plan contribution allocation summary

*Vanguard defined contribution plans*



Source: Vanguard 2020.

Seventy-seven percent of plan contribution dollars were invested in equities during 2019, and more than half (59%) of plan contribution dollars were invested in target-date funds (Figure 58).

#### Asset allocation by participant demographics

The average participant-weighted asset allocation to equities was 76% in 2019, and asset allocation decisions varied somewhat by participant demographics (Figure 59). In the past, higher-income participants tended to assume somewhat more equity market risk on average than lower-income participants. However, with the rising adoption of target-date funds, the differences are no longer discernible.

In 2019, all active participants, regardless of income level, had more than three-quarters of their average account balance allocated to equities; at the median, participants allocated 84% to equities.

Participants younger than 45 had the highest equity exposure, with 90% of plan assets, at the median, invested in equities in 2019. Equity allocations were lowest for participants older than 65, many of whom are currently retired or will soon retire. Participants older than 65 had a median equity allocation of 48%. The age-related variation in equity exposure has changed markedly because of the rising use of target-date funds (see page 76).

**Figure 59.** Asset allocation by participant demographics, 2019

*Vanguard defined contribution plans*

	Brokerage	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	1%	3%	40%	37%	5%	7%	7%		
Average participant-weighted	<0.5%	3%	19%	65%	5%	3%	5%	76%	84%
<b>Income</b>									
<\$15,000	<0.5%	5%	31%	50%	4%	5%	5%	79%	90%
\$15,000–\$29,999	<0.5	2	22	64	2	4	6	79	90
\$30,000–\$49,999	<0.5	3	26	55	4	4	7	78	87
\$50,000–\$74,999	<0.5	3	33	46	4	5	7	77	84
\$75,000–\$99,999	<0.5	3	38	42	4	6	7	77	84
\$100,000–\$149,999	<0.5	3	40	39	4	7	6	77	84
\$150,000+	1	3	44	34	4	8	6	78	84
Terminated	<0.5	4	40	32	5	7	11	73	83
<b>Age</b>									
<25	<0.5%	1%	14%	81%	2%	1%	1%	88%	90%
25–34	<0.5	3	21	70	2	2	1	87	90
35–44	<0.5	3	36	50	3	4	3	83	90
45–54	1	3	45	35	5	6	5	74	76
55–64	1	3	41	31	6	9	9	62	61
65+	1	4	36	24	7	10	17	48	48
<b>Gender</b>									
Male	1%	4%	41%	35%	5%	7%	8%	76%	84%
Female	<0.5	3	38	40	5	7	7	75	83
<b>Job tenure (years)</b>									
0–1	<0.5%	1%	22%	69%	2%	3%	3%	83%	90%
2–3	<0.5	1	22	68	2	3	2	81	90
4–6	<0.5	2	25	64	3	3	3	80	90
7–9	1	3	27	59	3	4	3	78	84
10+	1	4	44	30	6	8	9	69	76
<b>Account balance</b>									
<\$10,000	<0.5%	3%	8%	80%	4%	1%	3%	78%	90%
\$10,000–\$24,999	<0.5	4	13	72	4	2	4	78	87
\$25,000–\$49,999	<0.5	2	19	66	4	3	5	76	84
\$50,000–\$99,999	<0.5	3	25	58	4	4	6	75	83
\$100,000–\$149,999	<0.5	3	31	50	4	5	7	74	81
\$150,000–\$199,999	<0.5	3	34	45	4	5	7	73	80
\$200,000–\$249,999	<0.5	3	37	41	5	6	8	73	80
\$250,000+	1	4	47	27	5	8	8	72	77

Source: Vanguard 2020.

### Asset allocation by plan size and industry group

The average allocation to equities does not vary by plan size (Figure 60). However, among larger plans, there is a modest substitution of company stock holdings for other assets. Large plans are more likely than small plans to offer company stock and, as a result, certain large firms have significantly higher exposure to company stock as an asset class.

Company stock accounted for 3% of assets for all DC plans at Vanguard in 2019. Among large plans, 4% of assets were allocated to company stock at year-end 2019, compared with a 1%-or-less 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 84).

Balanced funds, including target-date funds, accounted for 42% of assets for all DC plans at Vanguard in 2019. Among smaller plans, 38% of assets were allocated to balanced funds at year-end 2019, compared with 42% among larger plans.

Overall, asset allocations vary somewhat by industry group (Figure 61). Participants in the business, professional, and nonprofit industry group have the most conservative allocations, while participants in the media, entertainment, and leisure industry group have the most aggressive allocations. Participants in the agriculture, mining, and construction industry group also have more aggressive allocations, including the highest allocations to company stock.

**Figure 60.** Asset allocation by plan size, 2019

*Vanguard defined contribution plans*

	Plan participants				All plans
	<500	500–999	1,000–4,999	5,000+	
Total equity asset-weighted	71%	71%	72%	73%	73%
Brokerage	2	1	1	<0.5	1
Company stock	<0.5	1	2	4	3
Diversified equity	45	41	40	39	40
Target-date funds	30	36	37	37	37
Other balanced funds	8	6	5	5	5
Bond funds	8	7	7	7	7
Cash	7	8	8	8	7

Source: Vanguard 2020.

**Figure 61.** Asset allocation by industry group, 2019

*Vanguard defined contribution plans*

	Brokerage	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	1%	3%	40%	37%	5%	7%	7%		
Average participant-weighted	<0.5%	3%	19%	65%	5%	3%	5%	76%	84%
<b>Industry group</b>									
Media, entertainment, and leisure	1%	3%	35%	46%	6%	5%	4%	80%	90%
Finance, insurance, and real estate	<0.5	3	41	35	4	8	10	77	87
Transportation, utilities, and communications	<0.5	6	44	27	7	7	9	77	86
Agriculture, mining, and construction	<0.5	7	33	38	4	6	11	77	84
Manufacturing	<0.5	4	38	40	4	6	8	76	84
Business, professional, and nonprofit	1	3	43	33	6	7	7	74	84
Wholesale and retail trade	<0.5	2	44	36	2	8	9	75	83
Education and health	2	<0.5	39	40	6	7	6	75	83

Source: Vanguard 2020.

## Plan investment options

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

### Number of options offered

The average Vanguard plan offered 27.2 investment options in 2019, essentially unchanged from 27.3 investment options in 2018 and 26.1 options in 2010 (Figure 62). When each distinct target-date (or target-risk) fund is counted as a single offering, the average number of investment options for 2019 was 17.4. By this measure, sponsors have dropped one investment option on a net basis since 2010—not the one additional option implied by the aggregate number.

The number of funds used by participants has declined. This is directly attributable to the growth of target-date funds. Counting a target-date or target-risk series as a single-fund offering, the median plan sponsor offered 16 investment options in 2019. In 2019, only 8% of plans offered more than 25 distinct investment options, while 11% of plans offered 10 or fewer (Figure 63).

### Types of options offered

Nearly all Vanguard DC plans offer an array of investment options covering four major investment categories: equities, bonds, balanced funds (including target-date and target-risk strategies), and money

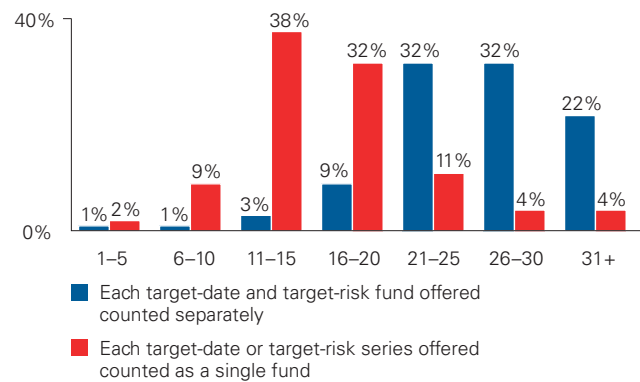
market or stable value options (Figure 64). Given most sponsors' desire to promote equity-oriented portfolios for retirement, diversified equity funds continued to be the most popular type of fund offered. Equity offerings typically included both indexed and actively managed U.S. stock funds, including large-, mid-, or small-capitalization stocks, as well as one or more international funds.

Virtually all plans offered international equity funds, but only one-third offered separate emerging markets funds. Many of the broader international funds already

**Figure 63.** Number of options offered, 2019

*Vanguard defined contribution plans*

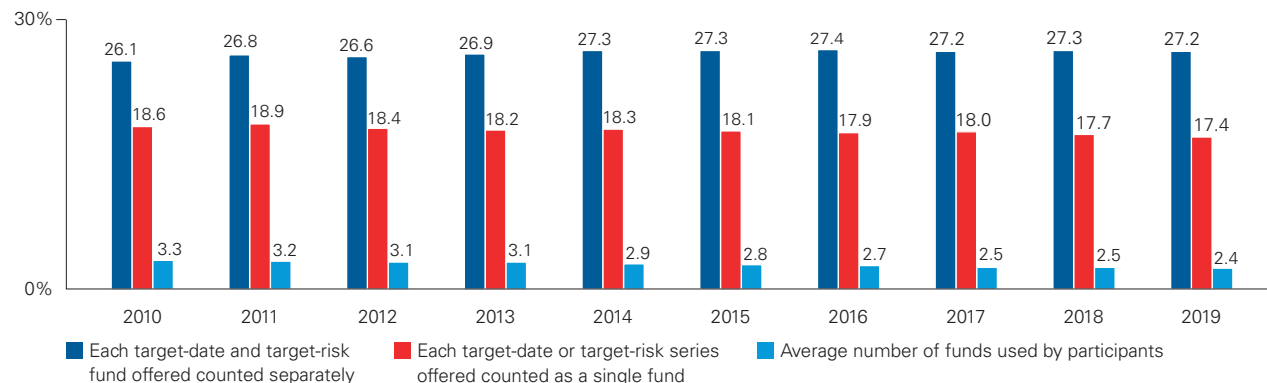
Percentage of plans offering



Source: Vanguard 2020.

**Figure 62.** Average number of investment options offered and used

*Vanguard defined contribution plans*



Source: Vanguard 2020.

**Figure 64.** Type of investment options offered, 2019

*Vanguard defined contribution plans*

	All	Number of participants			
		<500	500–999	1,000–4,999	5,000+
<b>Cash</b>	<b>98%</b>	<b>97%</b>	<b>&gt;99.5%</b>	<b>&gt;99.5%</b>	<b>99%</b>
Money market	63	66	60	59	64
Stable value/Investment contract	65	59	71	69	75
<b>Bond funds</b>	<b>98%</b>	<b>97%</b>	<b>99%</b>	<b>&gt;99.5%</b>	<b>99%</b>
Active	76	70	79	83	81
Index	88	87	87	88	95
Inflation-protected securities	34	33	30	35	39
Multisector	7	5	7	11	4
High-yield	18	19	18	17	17
International	18	19	20	18	13
Global	3	1	5	5	3
Emerging markets	1	1	1	<0.5	2
<b>Balanced funds</b>	<b>99%</b>	<b>98%</b>	<b>&gt;99.5%</b>	<b>&gt;99.5%</b>	<b>100%</b>
Traditional balanced	66	72	63	58	59
Target-risk	14	20	6	10	7
Target-date	94	89	98	99	99
<b>Equity funds</b>	<b>99%</b>	<b>98%</b>	<b>&gt;99.5%</b>	<b>100%</b>	<b>100%</b>
<b>Domestic equity funds</b>	<b>99%</b>	<b>98%</b>	<b>&gt;99.5%</b>	<b>100%</b>	<b>100%</b>
Large-cap index	96	95	98	97	94
Large-cap active	71	75	72	67	63
Large-cap value	88	89	87	89	83
Large-cap growth	90	90	89	91	88
Large-cap blend	98	97	99	100	97
Mid-cap index	79	76	84	83	78
Mid-cap active	53	55	50	54	44
Small-cap index	61	64	62	60	47
Small-cap active	34	41	34	24	27
Socially responsible	9	7	7	10	20
<b>International equity funds</b>	<b>97%</b>	<b>95%</b>	<b>98%</b>	<b>98%</b>	<b>99%</b>
Index international	74	69	73	80	83
Active international	82	78	87	85	84
Emerging markets	33	32	33	38	28
<b>Global equity funds</b>	<b>17%</b>	<b>22%</b>	<b>11%</b>	<b>14%</b>	<b>13%</b>
<b>Sector funds</b>	<b>36%</b>	<b>39%</b>	<b>34%</b>	<b>35%</b>	<b>26%</b>
<b>Company stock</b>	<b>8%</b>	<b>2%</b>	<b>5%</b>	<b>12%</b>	<b>30%</b>
<b>Self-directed brokerage</b>	<b>19%</b>	<b>16%</b>	<b>17%</b>	<b>19%</b>	<b>38%</b>
<b>Managed account program</b>	<b>37%</b>	<b>18%</b>	<b>44%</b>	<b>58%</b>	<b>69%</b>

Source: Vanguard 2020.

include emerging markets exposure, as do target-date and some balanced strategies. Thirty-six percent of plans offered sector funds, such as technology or health care funds (Figure 65). One in 5 plans offered a self-directed brokerage feature. Meanwhile, plan sponsor interest in target-date funds remains strong. At year-end 2019, 94% 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. Smaller plans are more likely to offer sector funds than are large plans.

## Tiering

Tiering is a clear, effective way to present plan investment choices to participants. Investment options are presented in categories or tiers. Typically, tiers are all-in-one options, such as target-date or risk-based balanced funds; an index core; and supplemental investment options. Many Vanguard plan sponsors tier their investment lineup.<sup>5</sup>

## All index

Money market, stable value, and company stock funds, by definition, are not indexed funds. Excluding these nonindexable options, only 3% of all Vanguard plans offer an all-index menu.

**Figure 65.** Types of sector options offered, 2019

*Vanguard defined contribution plans*

	All	Number of participants			
		<500	500–999	1,000–4,999	5,000+
<b>Sector funds</b>	<b>36%</b>	<b>39%</b>	<b>34%</b>	<b>35%</b>	<b>26%</b>
Real estate	32	33	31	33	26
Health care	9	12	9	6	4
Energy	5	7	4	4	4
Precious metals	3	4	1	2	2
Technology	3	3	4	2	1
Utilities	1	1	2	1	1
Natural resources	1	1	1	1	1
Financials	<0.5	<0.5	1	<0.5	1
Communications	<0.5	<0.5	1	0	1
Commodities	<0.5	<0.5	0	<0.5	1
Consumer	<0.5	<0.5	1	<0.5	1
Industrials	<0.5	0	<0.5	0	1

Source: Vanguard 2020.

<sup>5</sup> For an in-depth analysis of how plan sponsor fund-menu construction shapes participant portfolios, see Pagliaro, Cynthia A., and Stephen P. Utkus, *Choice Architecture and Participant Investment Decisions*, May 2018, Vanguard research, [institutional.vanguard.com](https://institutional.vanguard.com)

### 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. In our definition, a passive core, at a minimum, 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 2019, 64% of Vanguard plans offered at least four options within an index core (Figure 66). Because larger plans have been quicker to offer this approach, 7 in 10 Vanguard participants were offered an index core in 2019. In addition, many of these plans also offered a passive target-date fund to further simplify participant portfolio construction. Sixty-three percent of plans offered both an index core and passive

**Figure 66.** Index core offered, 2019

*Vanguard defined contribution plans*

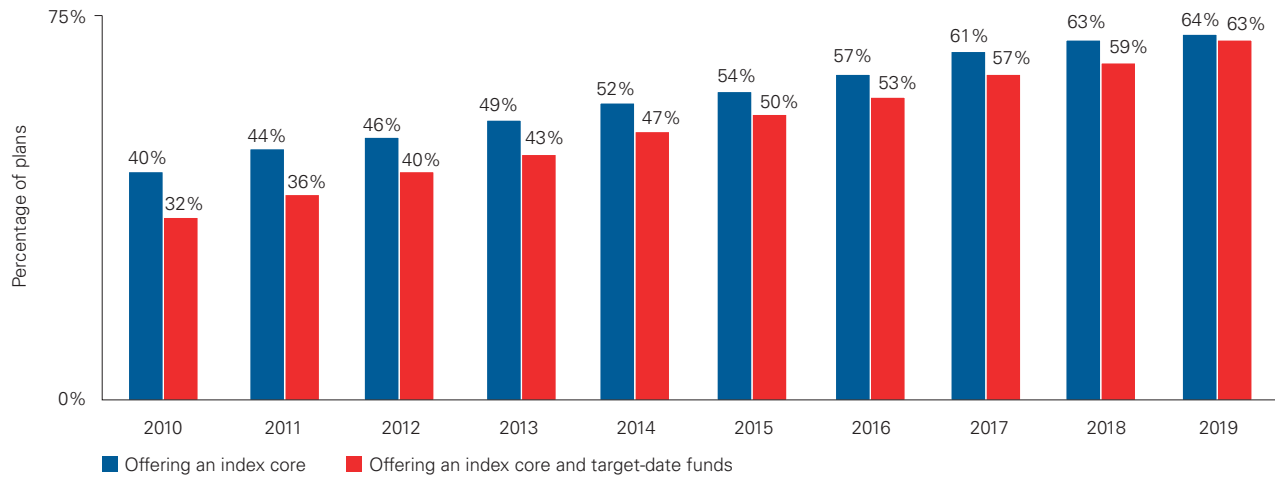
	All	Number of participants			
		<500	500–999	1,000–4,999	5,000+
Percentage of plans offering an index core	64%	60%	66%	68%	72%
Percentage of plans offering an index core and target-date funds	63	59	66	68	71
Percentage of participants offered an index core	70	63	66	69	71
Percentage of participants offered an index core and target-date funds	70	63	66	68	71

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 2020.

**Figure 67.** Index core offered trend, plans

*Vanguard defined contribution plans*

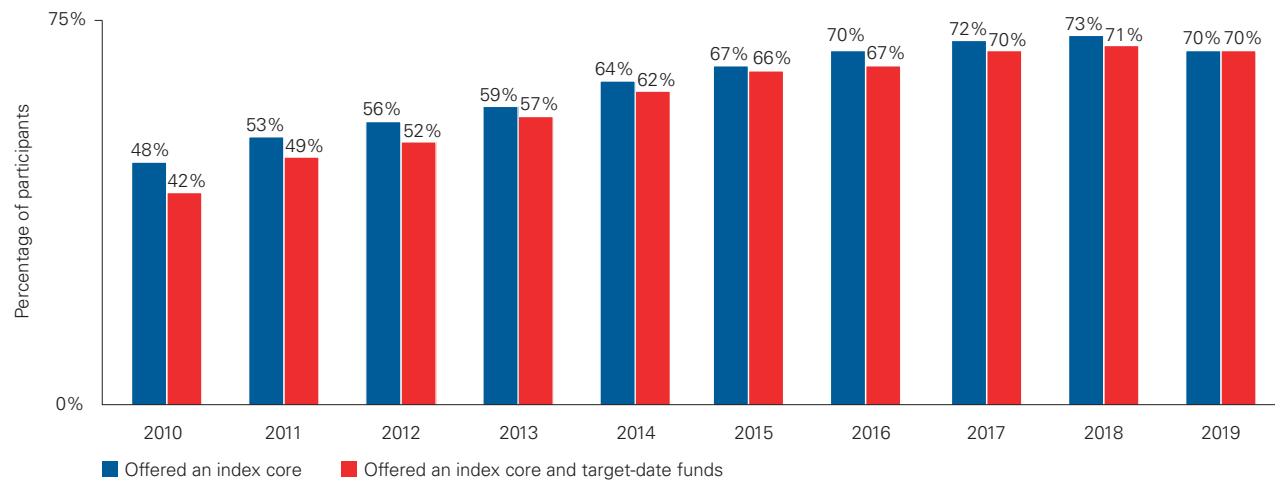


An index core includes broadly diversified index funds for U.S. stocks, U.S. bonds, and international stocks. At a minimum, the definition includes index funds for large-cap U.S. stocks, intermediate or long-term bonds, and developed markets.

Source: Vanguard 2020.

**Figure 68.** 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 2020.

target-date funds, and 7 in 10 participants had access to these fund lineups. In 2010, 4 in 10 plans offered an index core, and 3 in 10 offered both an index core and passive target-date funds (Figure 67). In 2010, half of participants were offered an index core, and 4 in 10 were offered both an index core and passive target-date funds (Figure 68).

### Default funds

Increasingly, participants are being directed into plan sponsor-selected default investments rather than making their own active investment choices. Default investing is becoming more important in response to concerns about participants' lack of investment knowledge, as well as the growing use of automatic enrollment. In response to these developments, the U.S. Department of Labor (DOL), acting under the Pension Protection Act of 2006 (PPA), deemed three types of default investments as eligible for special fiduciary protection. These options, known as qualified default investment alternatives (QDIAs), include target-date funds, other balanced funds, and managed account advisory services.

Nearly all Vanguard plans have designated a default fund, and 9 in 10 had selected a target-date or balanced fund option as the default option in 2019

(Figure 69). In 2010, about 2 in 10 plan sponsors had designated a money market or stable value fund as the default option (Figure 70).

Eighty-six percent of plans in 2019 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, 97% of designated QDIAs were target-date funds and 3% were balanced funds.

**Figure 69.** Default fund designations, 2019

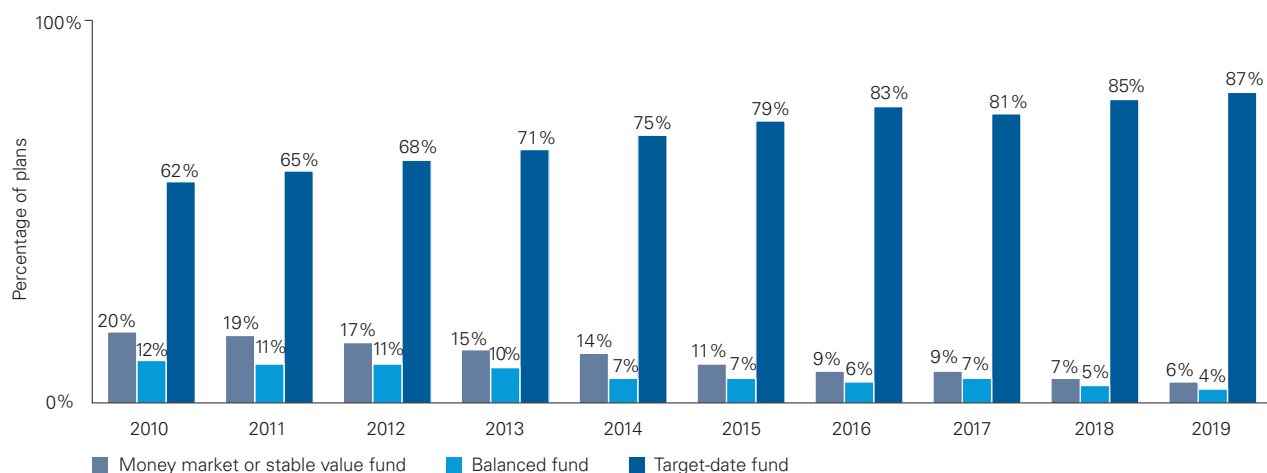
*Vanguard defined contribution plans*

	QDIA plans	Non-QDIA plans	All plans
<b>Among all plans</b>			
Target-date fund	83%	4%	87%
Balanced fund	3	1	4
Money market or stable value	0	6	6
<b>Total plans designating default</b>	<b>86%</b>	<b>11%</b>	<b>97%</b>
<b>Among plans designating a QDIA</b>			
Target-date fund	97%		
Balanced fund	3		
<b>Total plans designating a QDIA</b>	<b>100%</b>		

Source: Vanguard 2020.

**Figure 70.** Default fund designation trend

*Vanguard defined contribution plans*



Source: Vanguard 2020.

### Number of options used

Although sponsors tend to offer a large menu of investment choices, 62% of participants used only one fund (Figure 71). On average, Vanguard participants used 2.4 options in 2019, and the median participant used just 1.0 option—fewer than the 3.3 options used, on average, in 2010. And the median participant used just 2.0 funds in 2010.

One reason for this change is the growing number of single target-date fund investors. In 2019, 62% of participants held a single-fund option in their account. Eighty-eight percent of these participants were invested in a single target-date fund, and 4% were invested in either traditional balanced funds or target-risk funds (Figure 72). Since 2010, the percentage of single-fund investors holding cash investments has declined from 18% to 4% due to the growth of automatic enrollment, the availability of target-date funds, and a shift in default fund designations by employers.

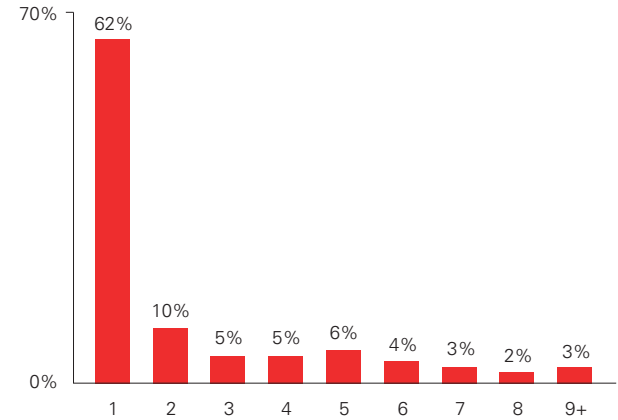
### Types of options used

Among the options offered by DC plans, which do participants actually use? In 2019, a balanced fund (including target-date and other balanced funds) was the most common participant holding (85% of participants), followed by a diversified domestic equity fund (31% of participants) (Figure 73). Among the balanced options held, target-date funds were overwhelmingly more likely to be held (80% of participants offered) than traditional balanced funds (18% of participants offered) or target-risk funds (6% of participants offered).

**Figure 71.** Number of options used, 2019

*Vanguard defined contribution plans*

Percentage of participants using

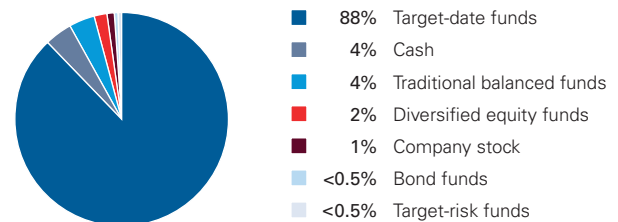


Source: Vanguard 2020.

**Figure 72.** Single-fund holders, 2019

*Vanguard defined contribution plans*

Percentage of single-fund participants using



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Percentage of participants holding a single fund	37%	41%	43%	44%	48%	51%	55%	59%	60%	62%
Percentage of single-fund participants using										
Cash	18%	16%	14%	11%	8%	7%	6%	5%	4%	4%
Bond funds	1	1	1	1	1	1	1	<0.5	1	<0.5
Traditional balanced funds	5	5	4	3	3	3	5	4	4	4
Target-risk funds	11	10	9	10	2	1	1	<0.5	<0.5	<0.5
Target-date funds	53	59	64	69	81	84	83	87	87	88
Diversified equity funds	7	5	4	4	4	3	3	2	2	2
Company stock	5	4	4	2	1	1	1	1	1	1

Source: Vanguard 2020.

**Figure 73.** Type of investment options offered and used, 2019

*Vanguard defined contribution plans*

	Percentage of plans offering	Percentage of participants offered	Percentage of participants offered using	Percentage of all participants using
<b>Cash</b>	<b>98%</b>	<b>&gt;99.5%</b>	<b>14%</b>	<b>14%</b>
Money market	63	64	7	4
Stable value/Investment contract	65	75	13	10
<b>Bond funds</b>	<b>98%</b>	<b>99%</b>	<b>18%</b>	<b>18%</b>
Active	76	82	8	<0.5
Index	88	94	14	13
Inflation-protected securities	34	36	3	1
Multisector	7	4	3	<0.5
High-yield	18	13	5	1
International	18	15	3	<0.5
Global	3	2	1	<0.5
Emerging markets	1	2	3	<0.5
<b>Balanced funds</b>	<b>99%</b>	<b>&gt;99.5%</b>	<b>85%</b>	<b>85%</b>
Traditional balanced	66	58	18	10
Target-risk	14	8	6	1
Target-date	94	98	80	78
<b>Equity funds</b>	<b>99%</b>	<b>&gt;99.5%</b>	<b>32%</b>	<b>32%</b>
<b>Domestic equity funds</b>	<b>99%</b>	<b>&gt;99.5%</b>	<b>31%</b>	<b>31%</b>
Large-cap index	96	93	23	21
Large-cap active	71	63	15	10
Large-cap value	88	89	10	9
Large-cap growth	90	92	14	13
Large-cap blend	98	97	22	22
Mid-cap index	79	74	14	10
Mid-cap active	53	38	8	3
Small-cap index	61	41	10	4
Small-cap active	34	26	8	2
Socially responsible	9	25	4	1
<b>International equity funds</b>	<b>97%</b>	<b>98%</b>	<b>19%</b>	<b>18%</b>
Index international	74	82	13	10
Active international	82	86	12	10
Emerging markets	33	27	7	2
<b>Global equity funds</b>	<b>17%</b>	<b>14%</b>	<b>9%</b>	<b>1%</b>
<b>Sector funds</b>	<b>36%</b>	<b>24%</b>	<b>7%</b>	<b>2%</b>
<b>Company stock</b>	<b>8%</b>	<b>27%</b>	<b>35%</b>	<b>9%</b>
<b>Self-directed brokerage</b>	<b>19%</b>	<b>31%</b>	<b>1%</b>	<b>&lt;0.5%</b>
<b>Managed account program</b>	<b>37%</b>	<b>63%</b>	<b>9%</b>	<b>5%</b>

Source: Vanguard 2020.

More than 90% of participants were offered a large-cap U.S. equity index fund, yet only one-quarter 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 1 in 5 participants chose to hold a bond fund, and about 1 in 6 also chose a money market or stable value cash investment.

Most Vanguard DC participants were offered a stand-alone international equity fund, but only one-fifth of participants chose to use one. Emerging markets funds were offered and used even less frequently; 3 in 10 participants had access to them, and only 7% 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 one-quarter of participants in 2019 and were also used infrequently; only 7% of participants offered these funds used them (Figure 74).

Three in 10 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 2019. In these plans, about 2% of plan assets were invested in the self-directed brokerage feature in 2019.<sup>6</sup>

**Figure 74.** Type of sector options offered and used, 2019

*Vanguard defined contribution plans*

	Percentage of plans offering	Percentage of participants offered	Percentage of participants offered using	Percentage of all participants using
<b>Sector funds</b>	<b>36%</b>	<b>24%</b>	<b>7%</b>	<b>2%</b>
Real estate	32	23	6	1
Health care	9	3	6	<0.5
Energy	5	3	3	<0.5
Precious metals	3	1	2	<0.5
Technology	3	1	4	<0.5
Utilities	1	1	2	<0.5
Natural resources	1	1	2	<0.5
Financials	<0.5	<0.5	<0.5	<0.5
Communications	<0.5	<0.5	<0.5	<0.5
Commodities	<0.5	<0.5	4	<0.5
Consumer	<0.5	<0.5	1	<0.5
Industrials	<0.5	<0.5	0	<0.5

Source: Vanguard 2020.

6 For an in-depth analysis of brokerage investors, see Young, Jean A., and Galina Young, *The Brokerage Option in DC Plans*, May 2018, Vanguard research, [institutional.vanguard.com](https://institutional.vanguard.com)

## 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 have their entire account balance invested in a single target-date, target-risk, or traditional balanced fund, or in a managed account advisory service.

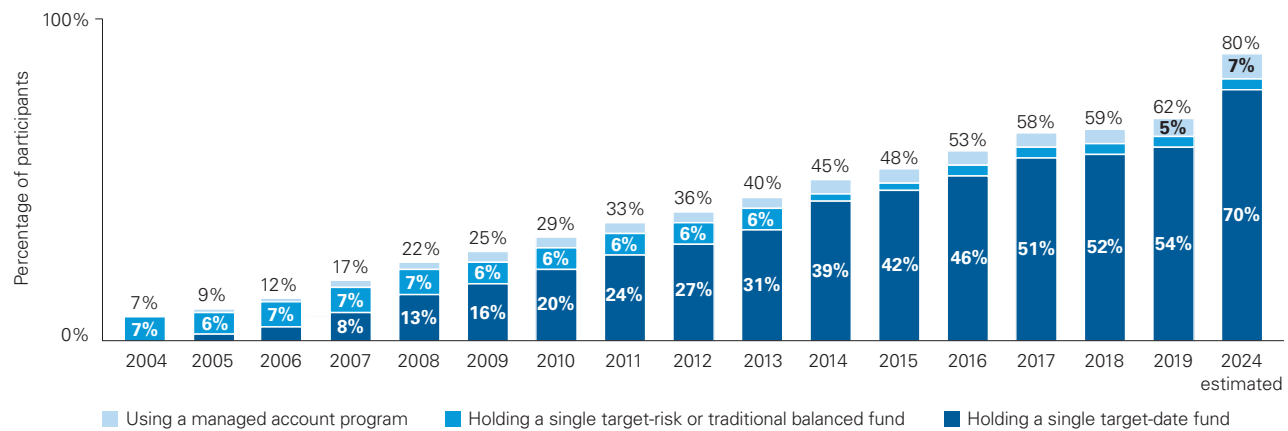
In 2019, 62% of Vanguard participants were invested in a professionally managed allocation (Figure 75).

Driving this development is the growing use of target-date funds. A total of 54% of participants were invested in a single target-date fund in 2019.

Among new plan entrants (those entering the plan for the first time), 83% of participants were invested in a single target-date fund (Figure 76). Because of the growing use of the target-date option, we anticipate that 80% of all participants will be solely invested in a professionally managed option by 2024. 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.

**Figure 75.** Participants with professionally managed allocations

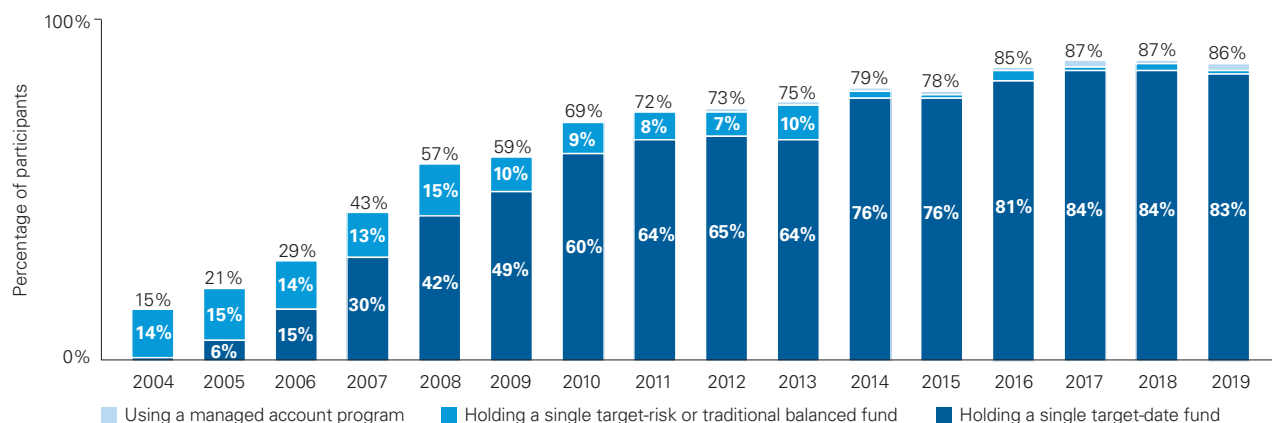
*Vanguard defined contribution plans*



Source: Vanguard 2020.

**Figure 76.** New plan entrants with professionally managed allocations

*Vanguard defined contribution plans*



Source: Vanguard 2020.

Users of the three types of professionally managed allocation strategies are quite distinct from nonusers. The three types of managed allocation investors also are quite different from one another (Figure 77). Participants who construct their own portfolios tend to be older and longer-tenured with higher average and median balances. Both single target-date fund and balanced fund investors are shorter-tenured with lower account balances. Single target-date fund

investors are more likely to be in an automatic enrollment plan and to have been defaulted into the fund. In contrast, managed account investors are older, longer-tenured, and have higher balances. Finally, some plan sponsors have opted to reenroll participants to the plan's QDIA. This most often occurs when changing providers. One percent of single target-date fund investors were reenrolled.

**Figure 77.** Demographic characteristics of participants with professionally managed allocations, 2019

*Vanguard defined contribution plans*

	All	All other participants	Single target-date fund	Single balanced fund	Managed account
Percentage of participants		38%	54%	3%	5%
Percentage male	57%	60%	53%	73%	58%
Median age	44	49	39	49	49
Median tenure	6	13	4	6	12
Average account balance	\$106,478	\$195,634	\$41,596	\$41,025	\$166,510
Median account balance	\$25,775	\$80,132	\$10,913	\$9,853	\$78,710
Percentage web-registered	76%	87%	68%	35%	94%
Percentage defaulted under automatic enrollment	31%		57%	7%	
Percentage defaulted under reenrollment	1%		1%	<0.5%	

Source: Vanguard 2020.

## 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. The percentage of plans offering target-date funds has grown from 79% in 2010 to 94% in

2019 (Figure 78). At year-end 2019, nearly all participants were in plans offering target-date funds. More than three-quarters of all participants had all or part of their account invested in target-date funds in 2019. Six in 10 of all contribution dollars were directed to target-date funds in 2019.

**Figure 78.** Use of target-date funds

*Vanguard defined contribution plans*

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Percentage of all plans offering target-date funds	79%	82%	84%	86%	88%	90%	92%	92%	93%	94%
Percentage of recordkeeping assets in target-date funds	12	14	17	19	23	26	28	33	35	37
Percentage of all contributions directed to target-date funds	22	27	31	34	41	46	49	54	57	59
Percentage of all participants offered target-date funds	86	87	88	90	97	98	97	97	97	98
Percentage of all participants using target-date funds	42	47	51	55	64	69	72	75	77	78

Source: Vanguard 2020.

*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 the target-date fund is not guaranteed at any time, including on or after the target date.*

**Figure 79.** Plan use of target-date funds

*Vanguard defined contribution plans offering target-date funds*

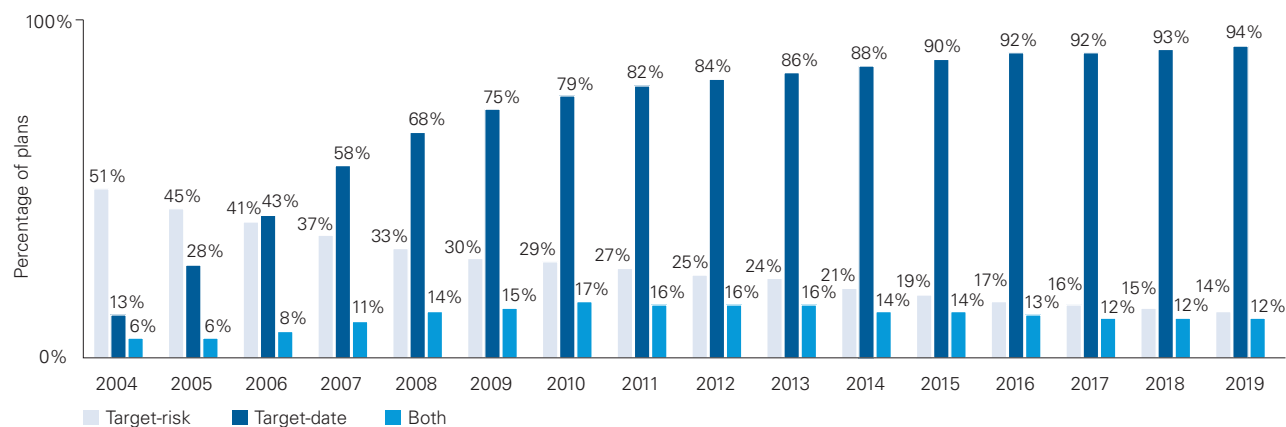
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Percentage of plan assets invested in target-date funds	15%	17%	19%	20%	24%	26%	29%	33%	35%	37%
Percentage of plan contributions invested in target-date funds	26%	31%	35%	38%	42%	47%	50%	55%	58%	60%
Distribution of percentage of plan assets in target-date funds										
<10%	38%	31%	25%	21%	16%	13%	11%	9%	7%	6%
10%–19%	32	34	34	31	28	26	22	19	16	14
20%–29%	14	17	20	23	25	25	25	23	23	20
30%–39%	6	7	8	10	11	13	15	18	18	20
40%–49%	3	4	4	5	7	8	9	10	12	13
50%+	7	7	9	10	13	15	18	21	24	27
Distribution of percentage of plan contributions to target-date funds										
<10%	17%	13%	9%	7%	6%	4%	4%	3%	2%	1%
10%–19%	25	20	17	14	10	8	7	6	4	4
20%–29%	25	25	23	21	17	14	10	8	8	7
30%–39%	16	19	21	22	22	18	17	14	12	9
40%–49%	7	10	13	16	17	21	20	19	18	16
50%+	10	13	17	20	28	35	42	50	56	63

Source: Vanguard 2020.

**Figure 80.** Trend in plan adoption of target-date and target-risk funds

*Vanguard defined contribution plans*

Percentage of plans offering



Source: Vanguard 2020.

Among plans offering the strategy, target-date options accounted for 37% of plan assets in 2019 (Figure 79). In these plans, 60% of all contributions in 2019 were directed to target-date funds.

Target-date funds are replacing target-risk funds, which maintain a static risk allocation (Figure 80). Since 2006, when the PPA was passed, the fraction of plans offering target-risk funds as an investment option declined from 41% of plans to 14% of plans. However, 12% 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.

## Participant use of target-date funds

Among participants using target-date funds, 60% of account balances were invested in these funds (Figure 81). These target-date participants directed 81% of their 2019 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 69% of all target-date investors in 2019. 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.

**Figure 81.** Participant use of target-date funds

*Vanguard defined contribution plan participants using target-date funds*

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Percentage of all participants offered target-date funds	86%	87%	88%	90%	97%	98%	97%	97%	97%	98%
Percentage of participants using target-date funds when offered	48%	54%	58%	61%	66%	70%	74%	75%	79%	80%
Percentage of participant account balances in target-date funds	41%	43%	46%	48%	50%	51%	53%	57%	58%	60%
Percentage of total participant and employer contributions in target-date funds	67%	71%	72%	74%	75%	76%	78%	80%	81%	81%
Distribution of percentage of participant assets in target-date funds										
1%–24%	24%	21%	19%	17%	15%	14%	13%	11%	11%	10%
25%–49%	11	10	10	10	9	9	8	8	8	8
50%–74%	8	8	8	8	7	7	6	5	5	5
75%–99%	8	8	7	7	7	7	7	7	6	6
100%	49	53	56	58	62	63	66	69	70	71
Distribution of percentage of total participant and employer contributions in target-date funds										
1%–24%	14%	11%	11%	9%	9%	8%	8%	6%	6%	6%
25%–49%	11	9	9	8	8	8	7	7	6	7
50%–74%	6	7	7	7	6	6	4	4	4	4
75%–99%	5	4	4	5	8	5	5	4	4	4
100%	64	69	69	71	69	73	76	79	80	79
Percentage of participants owning										
One target-date fund only	48%	52%	54%	56%	60%	62%	65%	67%	68%	69%
One target-date fund plus other funds	44	41	38	36	33	31	28	26	26	25
Two or more target-date funds only	2	1	2	2	2	2	2	2	2	2
Two or more target-date funds plus other funds	6	6	6	6	5	5	5	5	4	4

Source: Vanguard 2020.

**Figure 82.** Participant use of target-date funds by age

*Vanguard defined contribution plan participants using target-date funds*

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
<b>Distribution of pure target-date fund holders by age</b>										
<25	8%	8%	7%	7%	6%	6%	7%	7%	7%	7%
25–34	31	32	32	32	31	31	31	31	31	31
35–44	26	26	26	26	26	26	25	25	25	26
45–54	22	21	21	21	21	21	20	20	20	19
55–64	11	11	12	12	13	13	14	14	14	14
65+	2	2	2	2	3	3	3	3	3	3
<b>Distribution of mixed target-date fund holders by age</b>										
<25	2%	1%	2%	2%	2%	2%	2%	2%	2%	2%
25–34	20	19	18	18	17	17	17	17	17	17
35–44	27	27	26	26	26	25	25	25	25	25
45–54	30	30	30	29	29	28	28	27	27	26
55–64	18	20	20	21	22	23	23	23	23	23
65+	3	3	4	4	4	4	5	6	6	7
<b>Percentage of all participants holding a single target-date fund by age</b>										
<25	62%	69%	69%	71%	76%	77%	82%	85%	84%	84%
25–34	33	40	46	51	60	63	67	71	71	72
35–44	20	24	28	31	41	45	49	54	55	58
45–54	15	18	21	23	31	34	38	42	44	46
55–64	12	14	16	19	25	28	31	35	37	39
65+	9	11	13	15	20	23	25	28	30	32
<b>Percentage of all participants holding target-date funds with other options by age</b>										
<25	14%	12%	14%	14%	14%	15%	11%	9%	9%	9%
25–34	23	22	22	22	22	22	20	19	18	17
35–44	23	24	24	25	27	27	27	26	25	25
45–54	22	24	25	26	28	29	28	28	28	28
55–64	21	22	24	25	28	29	28	29	29	29
65+	15	17	18	20	22	24	24	24	25	25

Source: Vanguard 2020.

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-four percent of single target-date fund investors were younger than 45, compared with only 44% of mixed investors (Figure 82). Seventy-four percent of plan participants younger than 35 hold a single target-date fund.

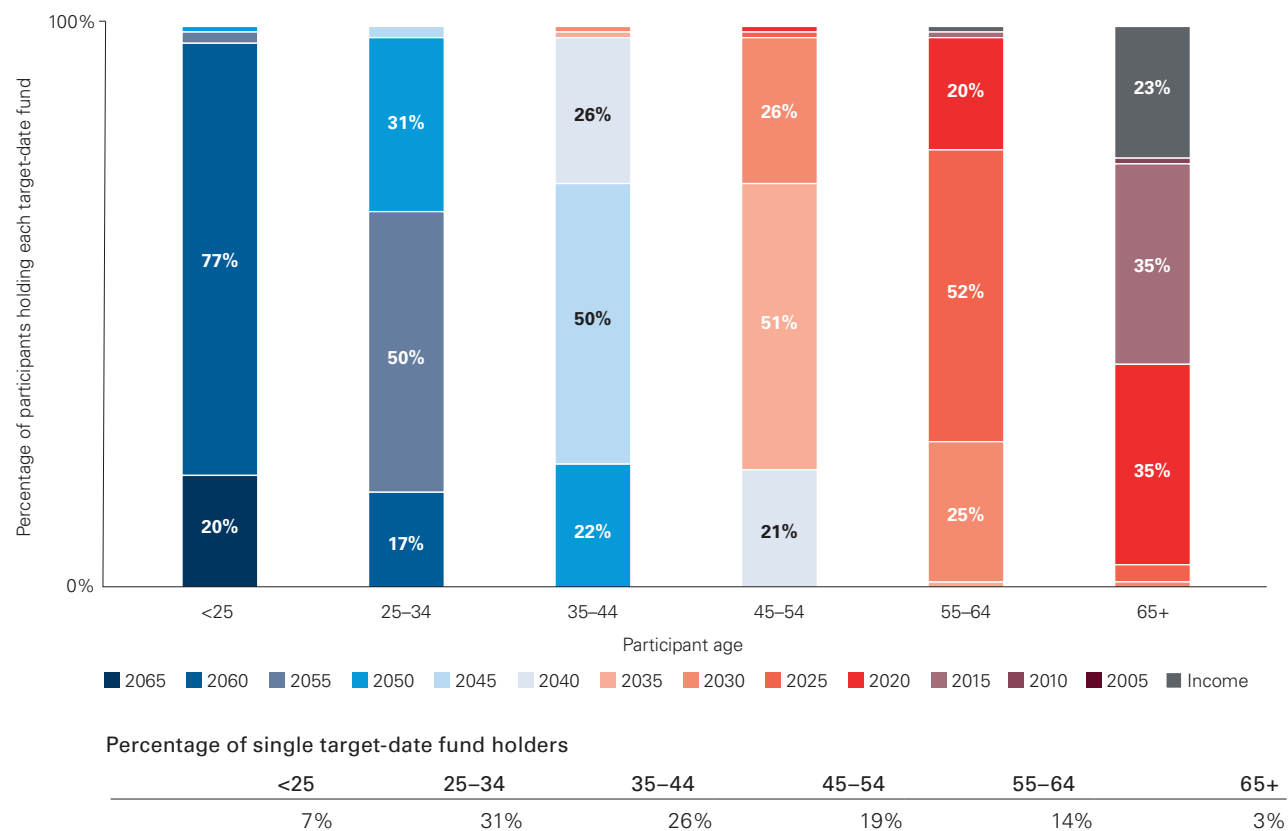
Mixed target-date investors arise through sponsor action as well as through participant choice. Sponsor actions leading to mixed investors include employer contributions in company stock; nonelective

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.

Single target-date fund investors appear to select, or are defaulted into, a target-date fund with an appropriate target date (Figure 83). Half of participants ages 25 to 34 are invested in a 2055 target-date fund, and most of the remaining participants are using either a 2050 or a 2060 target-date fund.

**Figure 83.** Target-date fund utilization by age, 2019

*Vanguard defined contribution plan participants holding a single target-date fund (54% of all participants)*



Source: Vanguard 2020.

Similarly, more than half of participants ages 55 to 64 are invested in a 2025 target-date fund, and most of the remaining participants are using either a 2020 or a 2030 target-date fund.

Automatic enrollment into a target-date fund default is one important factor explaining the increase in the number of pure target-date investors. However, a large percentage of pure investors select target-date options voluntarily. Of the 69% of participants who were pure investors in 2019, a large portion of them were in plans not offering automatic enrollment. Forty-two percent of pure investors were in plans where participants made the choice to select the fund (Figure 84).

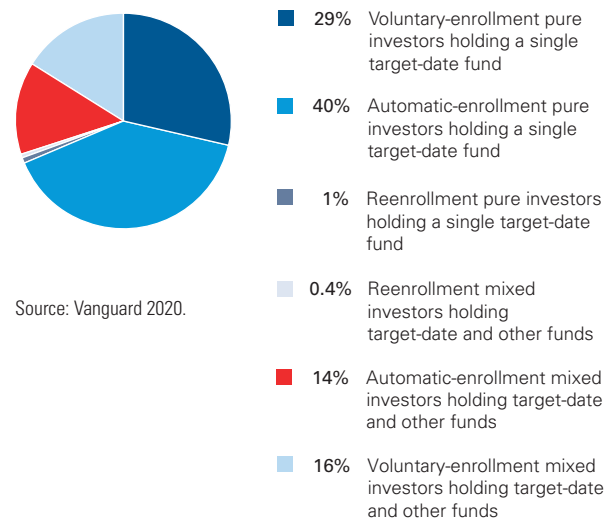
### Participant equity allocations

Equities are the dominant asset class holding of many plan participants. From an investment risk 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.

**Figure 84.** Plan design and target-date funds, 2019

*Vanguard defined contribution plan participants holding target-date funds*



Source: Vanguard 2020.

## 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-age participants holding the highest equity exposure, and older participants having equity exposure on par with younger participants (Figure 85). In 2019, the equity allocation among Vanguard DC participants is downward sloping by age. This phenomenon is tied directly to the growing use of

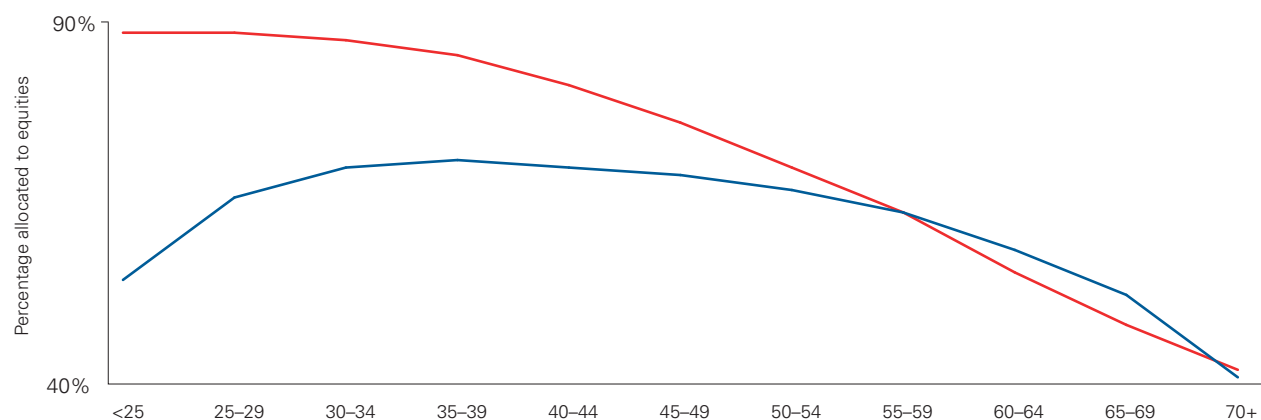
target-date funds, along with managed account advice, both of which provide for a declining equity exposure with age.

One development influencing this change is the growth of 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.

**Figure 85.** Trend in asset allocation by participant age

*Vanguard defined contribution plans*

Average equity allocation participant-weighted



Equity allocation by age	<25	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70+
2019	88%	88%	87%	85%	81%	76%	70%	64%	56%	49%	43%
2018	88	87	86	84	80	75	69	62	55	47	42
2017	88	87	86	84	81	76	71	64	57	50	43
2016	87	87	85	83	80	75	69	63	56	49	43
2015	88	87	85	83	80	75	70	64	57	50	43
2014	87	86	84	82	79	75	70	64	57	51	45
2013	85	83	80	79	76	73	68	63	56	51	44
2012	85	81	78	76	74	70	65	59	53	48	41
2011	84	79	76	75	73	69	64	59	52	48	40
2010	82	77	75	75	73	70	66	60	54	49	41
2009	77	73	72	72	71	68	64	58	53	48	40
2008	73	70	70	71	69	66	62	57	52	47	39
2007	67	69	72	73	72	70	68	63	59	54	44
2006	61	66	70	72	71	70	67	64	59	54	44
2005	57	64	69	71	70	69	67	64	59	53	43
2004	55	66	70	71	70	69	67	64	59	53	42

Source: Vanguard 2020.

A transition is underway 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 grow older because of 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 86). The percentage of participants with no allocation to equities has fallen by three-quarters, from 13% in 2006, when the PPA was passed, to 3% in 2019. At the other extreme, the percentage of participants investing exclusively in equities has fallen from 19% to 5% over the same period.

One of the benefits of target-date funds is the elimination of extreme equity allocations. Participants who construct their own portfolios tend to hold greater extremes in equity exposure (Figure 87, Panel D).

**Figure 86.** Distribution of equity exposure

*Vanguard defined contribution plans*

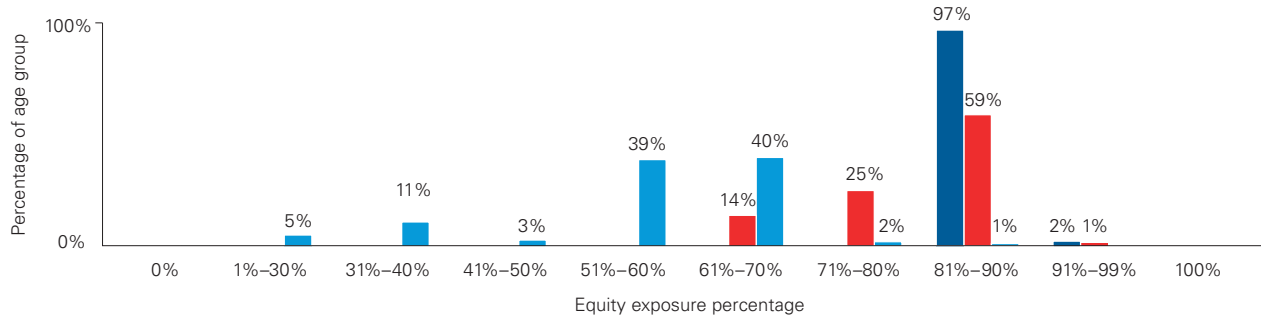
	0%	1%– 30%	31%– 40%	41%– 50%	51%– 60%	61%– 70%	71%– 80%	81%– 90%	91%– 99%	100%	Participant-weighted	
											Average	Median
Percentage of contributions to equities, 2019	3	2	3	2	6	12	12	48	6	6	77	84
Percentage of account balances in equities												
2019	3%	3%	4%	2%	7%	12%	13%	44%	8%	5%	76%	84%
2018	3	3	4	2	6	13	13	42	8	6	75	84
2017	3	4	3	3	6	9	18	40	9	5	75	84
2016	4	4	4	3	6	10	16	38	9	6	74	83
2015	5	4	2	3	7	10	12	40	10	7	74	83
2014	5	4	3	2	8	10	13	37	10	8	74	83
2013	6	5	6	2	6	12	12	33	10	8	72	82
2012	7	6	5	4	7	10	15	28	9	9	69	79
2011	8	7	5	4	7	10	14	26	9	10	68	79
2010	9	6	3	6	6	10	12	26	9	13	68	79
2009	11	6	3	6	7	11	11	22	9	14	66	76
2008	11	7	4	4	9	12	11	18	8	16	65	74
2007	11	5	2	6	5	11	11	19	13	17	68	80
2006	13	6	3	5	5	10	11	16	12	19	68	79
2005	13	6	3	6	6	10	9	14	12	21	67	78
2004	13	6	3	6	6	10	10	13	11	22	67	79

Source: Vanguard 2020.

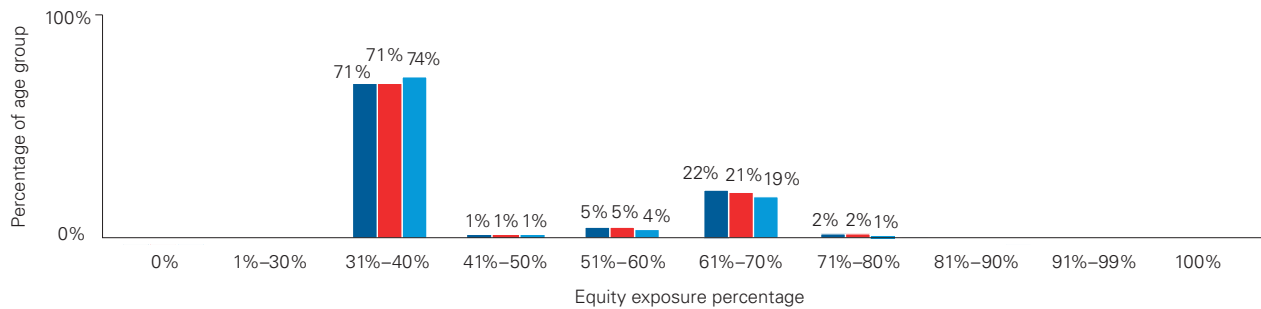
**Figure 87.** Distribution of equity exposure by investor type, 2019

*Vanguard defined contribution plan participants*

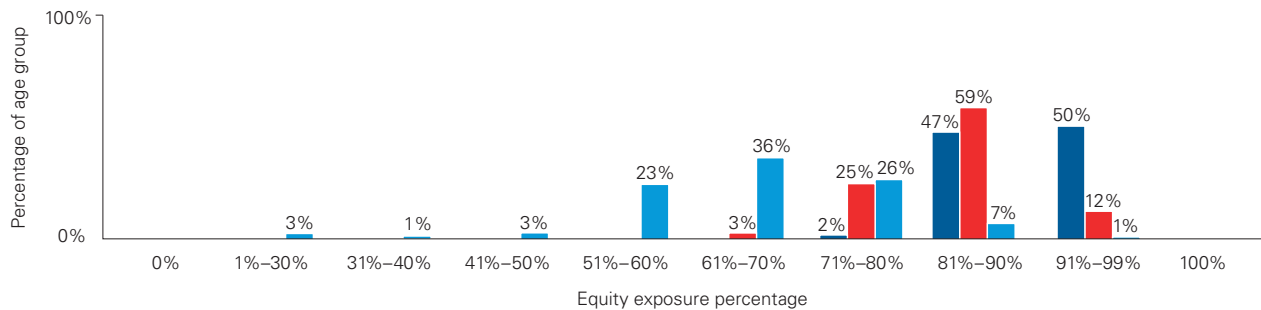
A. Single target-date participants (54% of all participants)



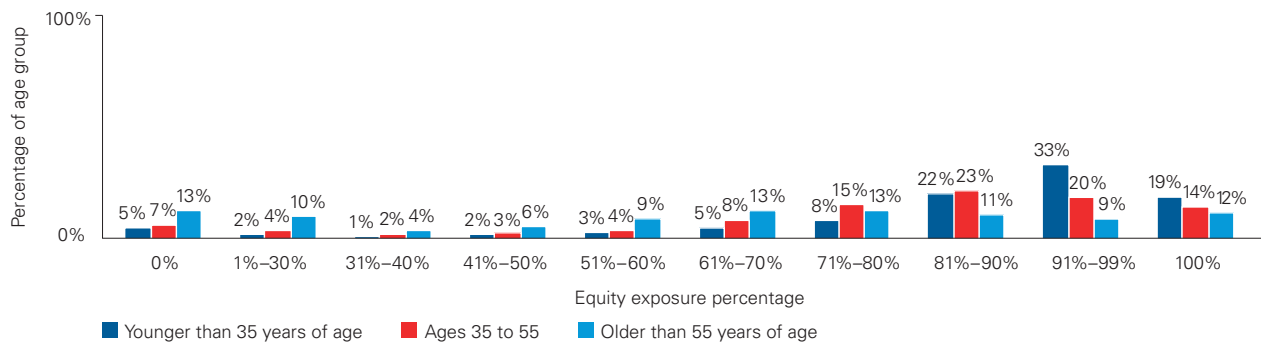
B. Single balanced fund participants (3% of all participants)



C. Managed account participants (5% of all participants)



D. All other participants (38% of all participants)



Source: Vanguard 2020.

Twenty-two percent of do-it-yourself investors hold extreme portfolios (8% with no equities, 14% with only equities).

Professionally managed investors cannot hold extreme positions because professionally managed options generally 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%-to-90% range.

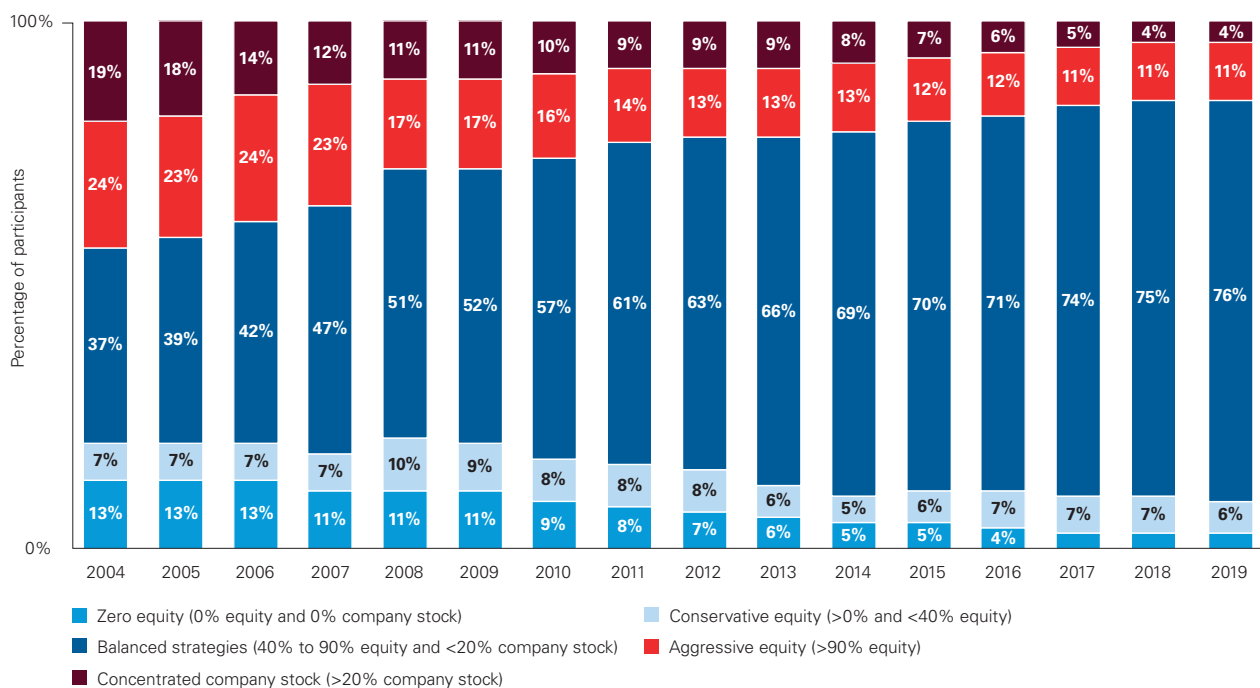
This phenomenon reflects two facts: (1) automatic enrollment into target-date funds typically applies to new hires who are disproportionately younger than

40; and (2) in voluntary enrollment plans, a single target-date fund is a popular strategy among new hires. Among pure target-date investors, there is also age-appropriate variation in the equity allocation.

This rising use of professionally managed allocations is also contributing to a reduction in portfolio construction errors (**Figure 88**). The fraction of participants holding broadly diversified portfolios rose from 42% in 2006 to 76% in 2019.

**Figure 88.** Participant portfolio construction

*Vanguard defined contribution plan participants*



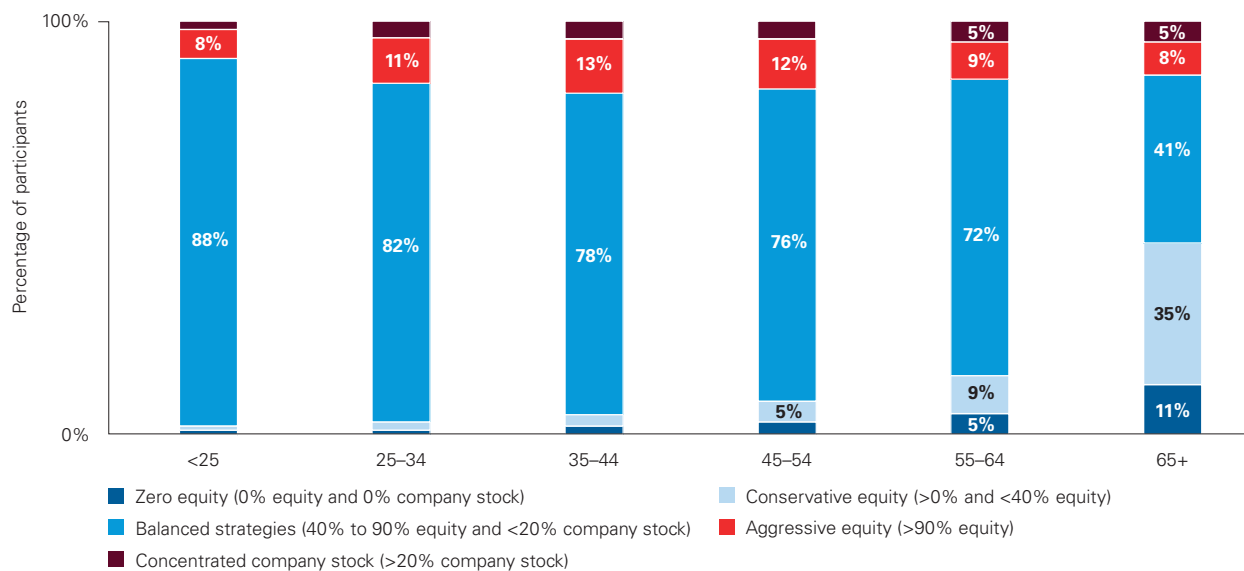
Source: Vanguard 2020.

The percentage of participants holding concentrated stock positions is one-quarter of the percentage from 2006. In addition, there have been reductions in all of the other extreme portfolios.

More than 8 in 10 participants under age 35 held balanced portfolios, compared with 7 in 10 participants ages 55 to 64 (Figure 89). Participants 65 or older hold more conservative equity allocations.

**Figure 89.** Participant portfolio construction by age, 2019

*Vanguard defined contribution plan participants*



Source: Vanguard 2020.

## Initial equity allocations

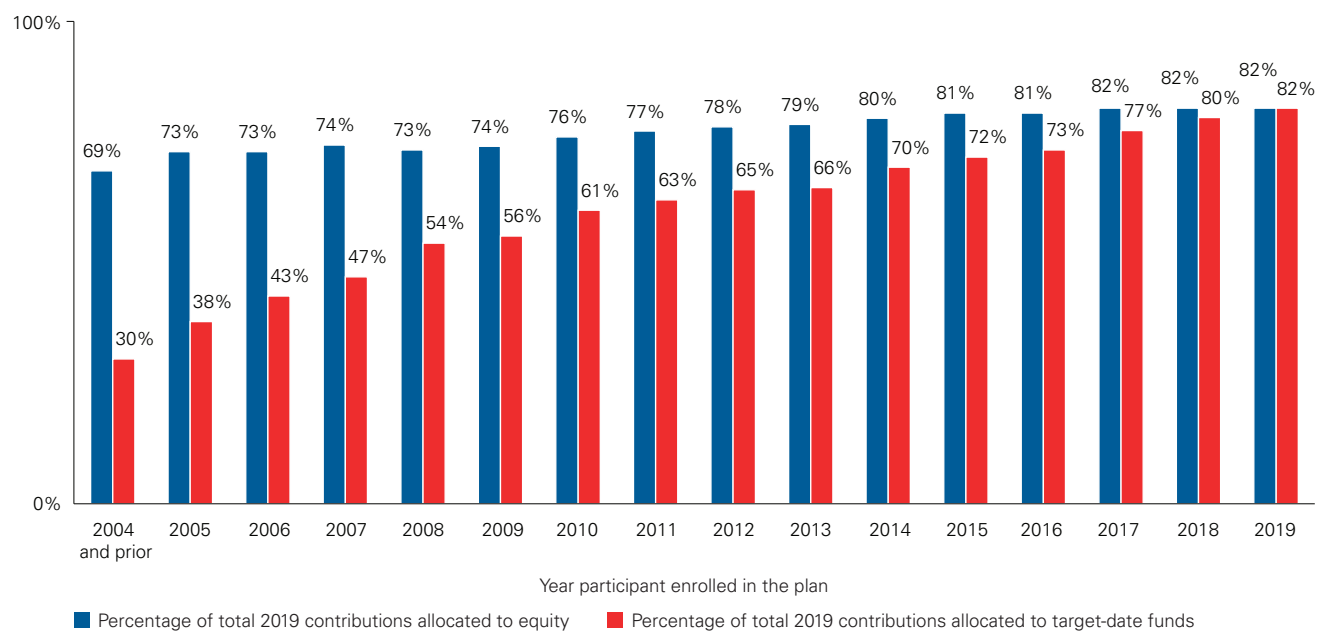
We analyzed how participants are currently allocating their contributions, based on the year they entered their employer's retirement plan.<sup>7</sup> Participants who enrolled before 2005 were allocating 69% of

contributions to equities (Figure 90). Participants who enrolled during 2019 were allocating 82% of their contributions to equities. New plan entrants in 2019 allocated 82% of their total contributions to target-date funds.

**Figure 90.** Current contribution allocation by plan entry date, 2019

*Vanguard defined contribution participants*

Contributions from January 1, 2019, through December 31, 2019



Distribution of all participants with contributions in 2019 by year of plan entry

2004 and prior	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
17%	2%	2%	2%	3%	2%	2%	3%	3%	4%	6%	6%	8%	10%	13%	17%

Source: Vanguard 2020.

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

## Advice

Many DC plan participants 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 their 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.<sup>8</sup>

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 for participants who want to manage their investments themselves. Four in 10 plans offer online advice, which assists participants in developing and managing optimal portfolios and continues to recommend portfolio changes over time (Figure 91).

Participants need to take action to implement online advice. Because large plans are more likely to offer advice, two-thirds of participants have access to the online advice service.

Managed account advice is for 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. Thirty-seven percent of plans offer managed account advice—and again, because larger plans are more likely to offer advice, more than 6 in 10 participants have access to the service.

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 55 and older who are in or nearing retirement if their plan sponsor authorizes the offer. Two-thirds of plans offer this service to their participants, and 7 in 10 participants in this age group have access to the program.

**Figure 91.** Advice offered, 2019

*Vanguard defined contribution plans*

	Number of participants				
	All	<500	500–999	1,000–4,999	5,000+
<b>Online advice</b>					
Percentage of plans offering online advice	39%	20%	44%	60%	71%
Percentage of participants offered online advice	65	26	43	62	69
Percentage of participants offered online advice accessing	5	6	5	5	5
<b>Managed account advice</b>					
Percentage of plans offering managed account advice	37%	18%	44%	58%	69%
Percentage of participants offered managed account advice	63	24	43	60	67
Percentage of participants offered managed account advice accessing	9	7	6	8	9
<b>Financial planning services</b>					
Percentage of plans offering financial plans	63%	59%	64%	65%	72%
Percentage of participants offered financial plans	68	63	69	69	68
Percentage of participants offered financial plans accessing	1	2	1	1	1

Source: Vanguard 2020.

<sup>8</sup> In 2019, the Vanguard Personalized Advice and Guidance suite expanded to include Advice from Vanguard and Advice from Financial Engines, a third-party advisor. Reporting on digital advice, advisor-based consultations, and financial planning with account management will be provided in 2021.

## Company stock

Company stock is more likely to be offered as an investment option by a large plan—3 in 10 Vanguard plans with 5,000 or more participants offered company stock, compared with only 2% of plans with fewer than 500 participants. In some plans that offer company stock, participants can choose whether or not to invest their own contributions in this option.<sup>9</sup>

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 2019, only 8% of Vanguard recordkeeping plans offered company stock as an investment option. However, because large plans are more likely to offer company stock, 27% of Vanguard recordkeeping participants had access to company stock in their employer’s plan. Among all Vanguard participants:

- 91% had no company stock investments in 2019—either because their employer did not offer company stock (73%) or because they chose not to invest in it (18%).
- 5% had company stock holdings of 1% to 20% of their account balance in 2019.
- 4% had concentrated positions exceeding 20% of their account balance as of 2019.

Among Vanguard plans actively offering company stock, 86% had 20% or less of plan assets invested in company stock (Figure 92). The remaining 14% had concentration levels of more than 20%.

**Figure 92.** Company stock exposure for plans and participants

*Vanguard defined contribution plans actively offering company stock*

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
<b>Balance of plan in company stock—percentage of plans</b>										
1%–20%	80%	75%	77%	78%	79%	82%	81%	81%	82%	86%
21%–40%	13	17	16	16	15	14	16	18	16	12
41%–60%	6	7	6	6	6	4	3	1	1	1
61%–80%	0	0	0	0	0	0	0	0	0	0
>80%	1	1	1	0	0	0	0	0	1	1
<b>Balance in company stock—percentage of participants</b>										
0%	43%	45%	45%	47%	50%	50%	55%	61%	64%	67%
1%–20%	26	25	24	22	22	22	21	20	17	18
21%–40%	12	12	13	14	14	13	12	10	8	7
41%–60%	6	5	5	7	6	8	6	5	4	3
61%–80%	3	3	3	4	3	2	2	1	2	1
>80%	10	10	10	6	5	5	4	3	5	4

Source: Vanguard 2020.

<sup>9</sup> For an in-depth analysis of company stock in DC plans, see Lamancusa, John A., and Jean A. Young, *Company Stock in DC Plans: A Decade Later*, December 2017, Vanguard research, [institutional.vanguard.com](https://institutional.vanguard.com)

In 2019, two-thirds of Vanguard participants 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, 1 in 6 participants in plans actively offering company stock had more than 20% of their account balance invested in company stock, and 4% had more than 80% of their account balance in company stock.

During 2019, the 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 10% in 2010 to 4% in 2019, and fewer plans are offering company stock.

Despite this shift, why do 1 in 6 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 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 2019, plans offering company stock as an investment option but making employer contributions in cash had an average of 9% of plan assets invested in company stock (Figure 93). Meanwhile, plans offering company stock as an investment option and making employer contributions in stock had an average of 27% of plan assets in company stock.

**Figure 93.** Impact of company stock employer contributions on asset allocation, 2019

*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
Percentage of plans		93%	6%	1%
Brokerage	1%	1%	<0.5%	<0.5%
Company stock	3	<0.5	9	27
Diversified equity funds	40	40	39	37
Balanced funds	42	44	37	23
Bond funds	7	7	7	7
Cash	7	8	8	6

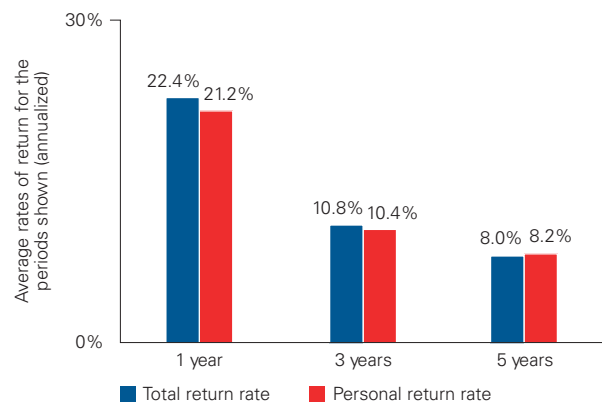
Source: Vanguard 2020.

## Investment returns

There are two categories of investment returns: total returns and personalized returns. Total returns reflect time-weighted investment performance and allow comparison with benchmark indexes. Personalized returns 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 returns can be compared with published benchmark indexes.

**Figure 94.** Participant rates of return, December 2019

*Vanguard defined contribution plans*



### Market returns ended

December 31, 2019	1 year	3 years	5 years
60/40 Balanced*	20.8%	10.0%	7.6%
70/30 Balanced*	22.8	10.9	8.3
S&P 500	31.5	15.3	11.7
Bloomberg Barclays US Aggregate	8.7	4.0	3.0
FTSE Global All Cap ex US	21.7	9.8	6.1

*Past performance is no guarantee of future returns.*

*The performance of an index is not an exact representation of any particular investment, as you cannot invest directly in an index.*

\* Balanced composites based on S&P 500 and Bloomberg Barclays US Aggregate Indexes for periods and percentages shown; rebalanced monthly.

Source: Vanguard 2020.

## Participant returns

Because of robust markets in 2019, average total and personal returns for DC participants were 22.4% and 21.2%, respectively, for the one-year period ended December 31, 2019 (Figure 94). Reflecting positive U.S. equity markets, average personal returns for DC participants were 10.4% across the three-year period and 8.2% for the five-year period ended December 31, 2019.

Five-year participant total returns averaged 8.0% per year, or 47.0% cumulatively (personalized total returns rose 8.2% per year, or 48.0% cumulatively).

## Distribution of returns

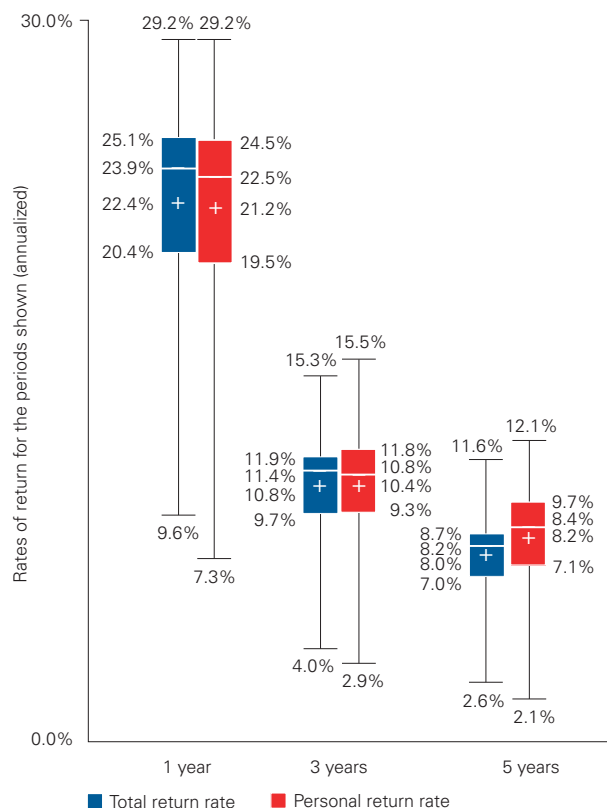
As of December 2019, five-year personalized annual returns were positive for nearly all Vanguard DC plan participants. There was wide variation in returns among participants (Figure 95). Participants in the fifth percentile had five-year personalized returns of 2.1% per year in 2019. At the other extreme, participants above the 95th percentile had five-year personalized returns greater than 12.1% per year. The variation in returns is largely due to the variation in participant asset allocations and their individual account holdings.

Participants with managed allocations—notably target-date funds and managed account advisory services—had less dispersion in outcomes. Total five-year returns for single target-date investors ranged from 5.7% for the 5th percentile to 8.5% for the 95th percentile, a difference of approximately 3 percentage points (Figure 96). For the single balanced fund and managed account participants, the 5th-to-95th percentile differences were approximately 3 to 4 percentage points as well. The managed account is a customized portfolio approach, and thus results are, accordingly, more dispersed than with target-date funds.

By comparison, among all other participants, realized returns for those making their own choices ranged from 2.0% per year for the 5th percentile to 12.8% for the 95th percentile, a difference of 11 percentage points.

**Figure 95.** Variation in participant total and personal return rates, 2019

Vanguard defined contribution plans

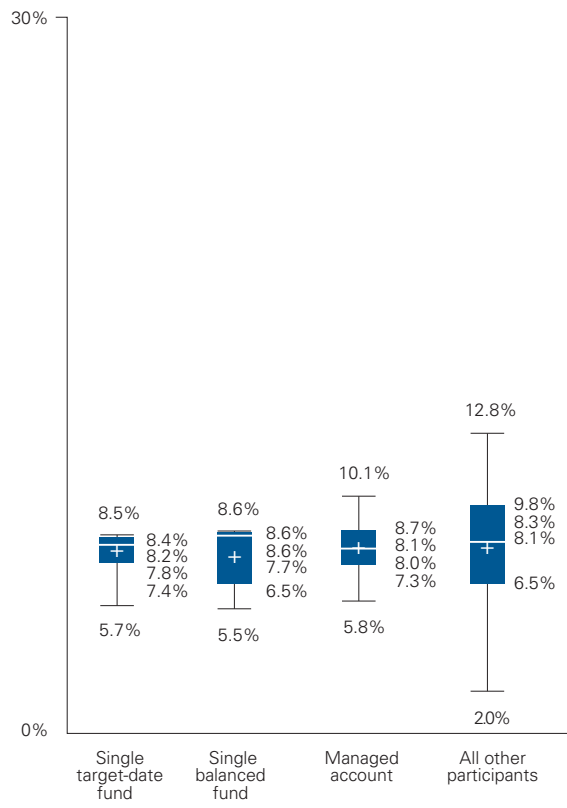


Note: Based on 4.3 million observations for one year; 3.0 million for three years; and 2.0 million for five years.

Source: Vanguard 2020.

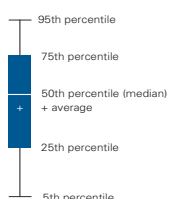
**Figure 96.** Distribution of 5-year total returns by strategy, 2019

Vanguard defined contribution plans



Note: Based on 737,000 observations for single target-date fund investors; 24,000 for balanced fund investors; 160,000 for managed account investors; and 1.1 million for all other participants.

Source: Vanguard 2020.



### 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 95 is: For the one-year period, 5% of participants had total return rates (TRR) greater than 29.2%; 25% had TRRs greater than 25.1%; half had TRRs greater than 23.9%; 75% had TRRs greater than 20.4%; 95% had TRRs greater than 9.6%; and 5% had TRRs less than 9.6%. The average one-year TRR was 22.4%.

### Dispersion of outcomes

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

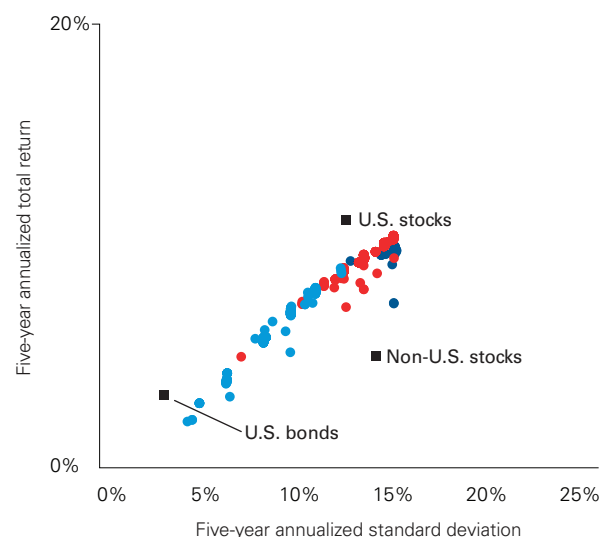
During the five-year period ended December 31, 2019, outcomes for single target-date investors were distributed among major market indexes (**Figure 97, Panel A**), with upward sloping reflecting a positive equity risk premium. These results are consistent with the fact that most of the target-date portfolios in our sample are a specific combination of indexed U.S. equities, international equities, U.S. bonds, and international bonds. In the target-date scatterplot, younger participants (represented by dark blue dots and in long-dated portfolios) are to the right of the chart; older participants (represented by light blue dots and in near-dated portfolios) are to the left.

The figure includes about 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 invested in a limited set of target-date portfolios, which means that the range of portfolio outcomes is also limited. For example, if a plan offered 16 target-date options, then 1,000 participants invested solely in a single target-date fund would have 16 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 97, Panel B**). Managed account investors are more dispersed, reflecting the customized nature of managed account advice (**Figure 97, Panel C**). The greatest dispersion of risk/return outcomes is among participants making their own investment choices (**Figure 97, Panel D**). Over time, because of the growing use of professionally managed allocations in DC plans, this population is expected to decline.

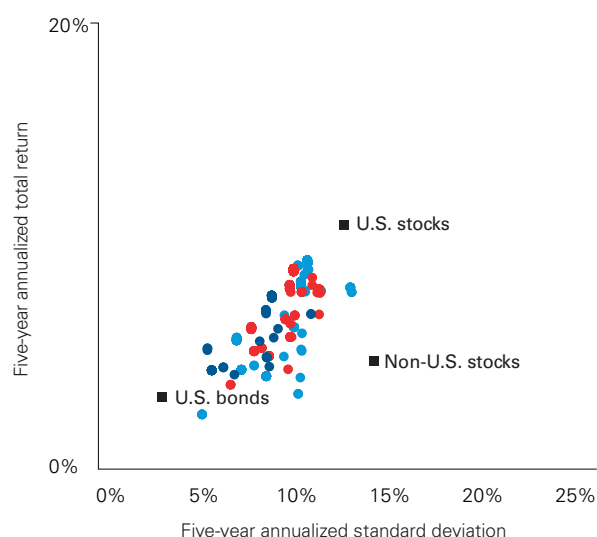
**Figure 97.** Risk and return characteristics 2015–2019

*Defined contribution plan participants for the five-year period ended December 31, 2019*

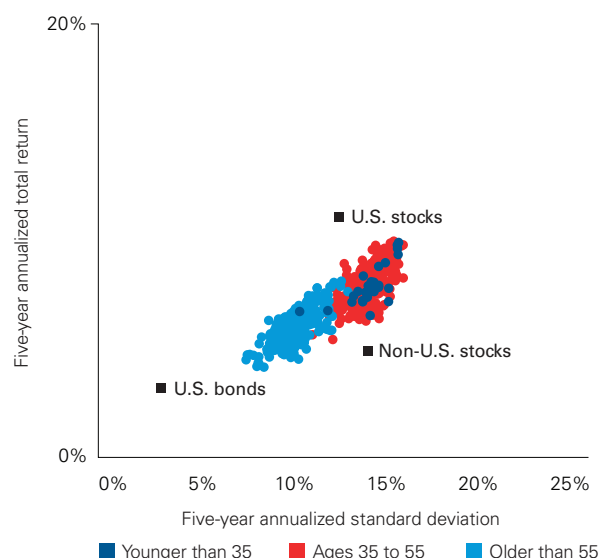
A. Single target-date fund participants



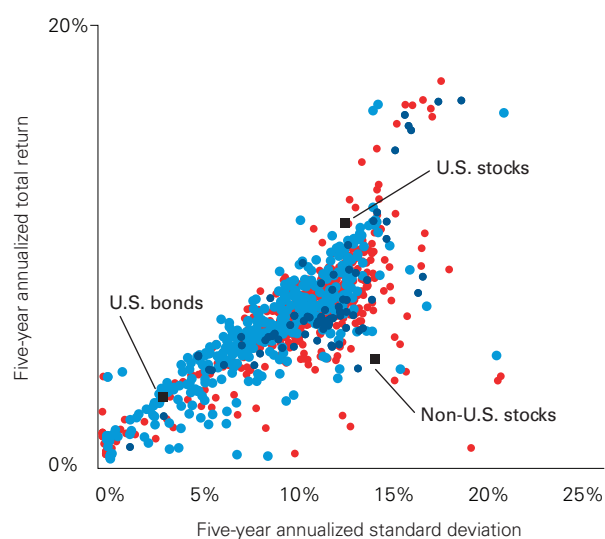
B. Single balanced fund participants



C. Managed account participants



D. All other participants



Note: Includes 1,000 random samples of participant accounts drawn from respective samples. Excludes 1/2% top and 1/2% bottom outliers for both risk and return, for a net sample of 980 observations.

Source: Vanguard 2020.

## 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.

## Volume of exchanges

U.S. equity markets were up in 2019, interspersed with some volatile days (Figure 98). Only 12% of participants made one or more portfolio trades or exchanges during the year, down from 20% in 2004.

It is important to note that 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).

When participants using the managed account program are excluded, only 7% of participants initiated an exchange. As in prior years, most participants did not trade. Not only did participant trading activity remain low during 2019, trading activity between 2010 and 2019 was lower than the trading activity between 2004 and 2008.

**Figure 98.** Participant trading summary

*Vanguard defined contribution plans*

	Percentage of participants		Percentage of average recordkeeping assets		Dollar flows (in billions)		S&P 500 Index volatility			
	Percentage trading including managed account investors	Percentage with participant-directed exchanges	Percentage traded	Percentage moved to equities (fixed income)	Dollars traded	Dollars moved to equities (fixed income)	Up 3% or more	Down 3% or more	Up 1% or more	Down 1% or more
2019	12%	7%	10.0%	-1.3%	\$50.7	(\$7.0)	0.4%	0.0%	9%	6%
2018	12	8	11.6	-1.1	\$56.3	(\$5.6)	0.4	2.0	13	13
2017	12	8	10.6	-0.3	\$48.6	(\$1.5)	0.0	0.0	2	2
2016	12	8	11.4	-1.5	\$44.7	(\$6.0)	0.4	0.4	10	9
2015	13	9	10.7	-0.8	\$40.9	(\$3.0)	0.4	0.8	17	12
2014	14	10	11.6	-0.6	\$41.8	(\$2.3)	0.0	0.0	8	8
2013	13	10	14.0	0.2	\$44.8	\$0.5	0.0	0.0	9	7
2012	12	9	12.6	-1.7	\$36.2	(\$4.9)	0.0	0.0	12	8
2011	11	10	14.8	-2.5	\$40.6	(\$6.9)	2.4	2.4	19	18
2010	12	10	13.4	-1.1	\$32.5	(\$2.8)	1.2	2.0	15	14
2009	13	11	14.1	-0.6	\$29.0	(\$1.2)	4.4	4.4	25	21
2008	16	14	16.6	-3.9	\$39.7	(\$9.3)	9.1	7.5	24	29
2007	15	14	14.7	-1.5	\$36.2	(\$3.7)	0.4	0.0	12	13
2006	14	13	12.7	-0.6	\$27.0	(\$1.3)	0.0	0.0	6	5
2005	19	18	13.0	-0.7	\$23.6	(\$1.3)	0.0	0.0	6	6
2004	20	20	14.6	-0.2	\$22.5	(\$0.3)	0.0	0.0	8	8

Source: Vanguard 2020.

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 2019, traders exchanged the dollar equivalent of 10% of average DC recordkeeping assets at Vanguard. On a net basis, 1.3% of assets were shifted from equities to fixed income in 2019, compared with a 1.1% shift from equities to fixed income in 2018.

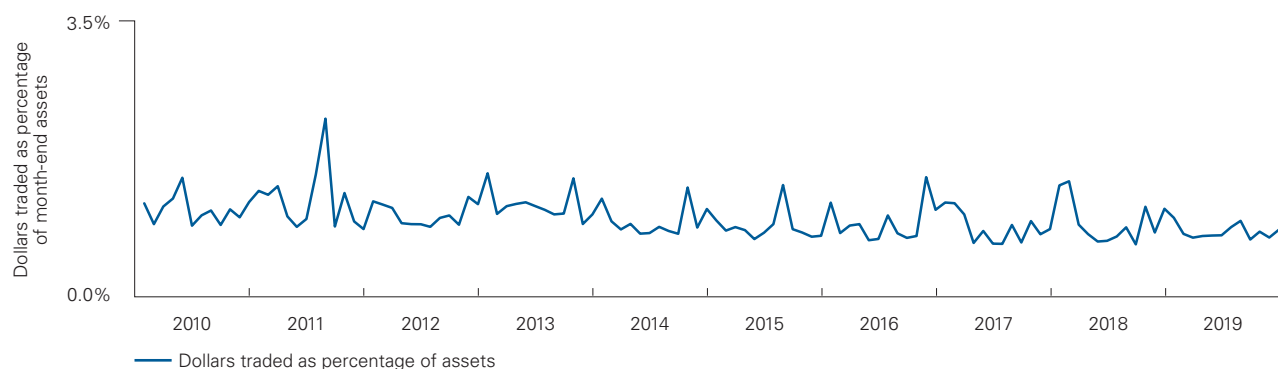
Since 2010, dollar-trading levels have generally remained stable, with the exception of periods of high market volatility (Figure 99). The most notable spike in dollars traded occurred in August 2011 during the U.S. debt crisis.

#### Direction of money movement

Summary statistics may sometimes portend that all participant trading is in one particular direction. However, in any given month, participants who trade are trading meaningful dollar amounts both in and out of equities (Figure 100). Even in volatile markets, as some traders shift their portfolios toward fixed income assets, there are others who shift toward equities.

**Figure 99.** Trading activity, January 2010–December 2019

*Vanguard defined contribution plan participants*

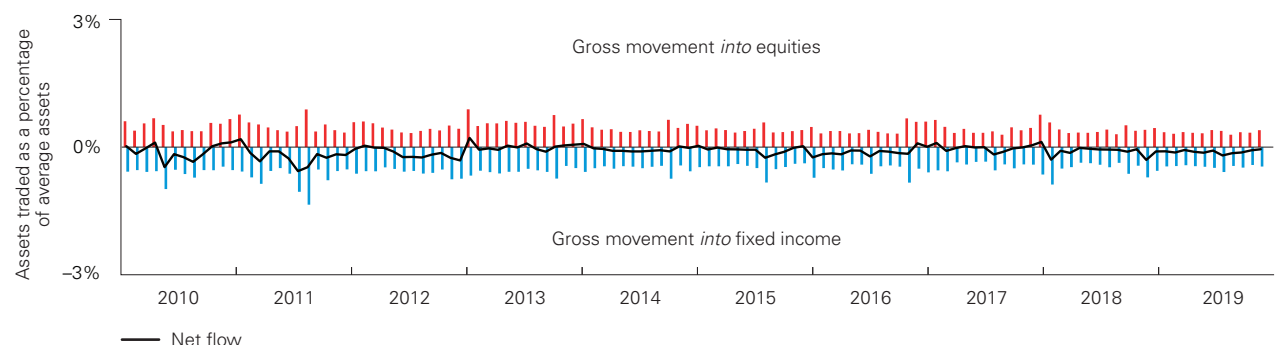


Source: Vanguard 2020.

**Figure 100.** Direction of money movement, January 2010–December 2019

*Vanguard defined contribution plan participants*

Money movement as a percentage of average assets



Source: Vanguard 2020.

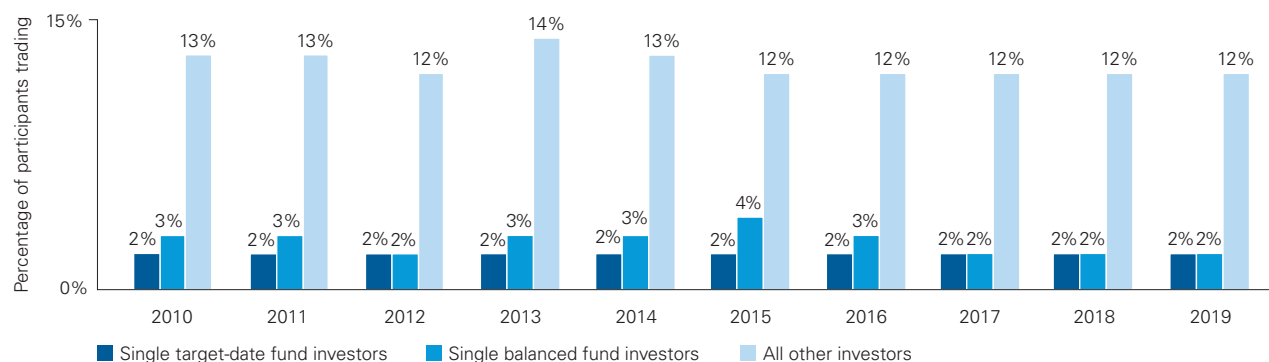
During the past decade, the net movement of money among participants trading in their accounts has been generally toward fixed income investments. Nonetheless, even at the height of market volatility, there were significant gross flows toward equities among some participants.

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 101). Women traded about 40% less frequently than men. Participants holding only target-date funds trade very infrequently, and women are more likely than men to hold a single target-date fund. (Figure 102).

**Figure 101.** Participant trading by investor type

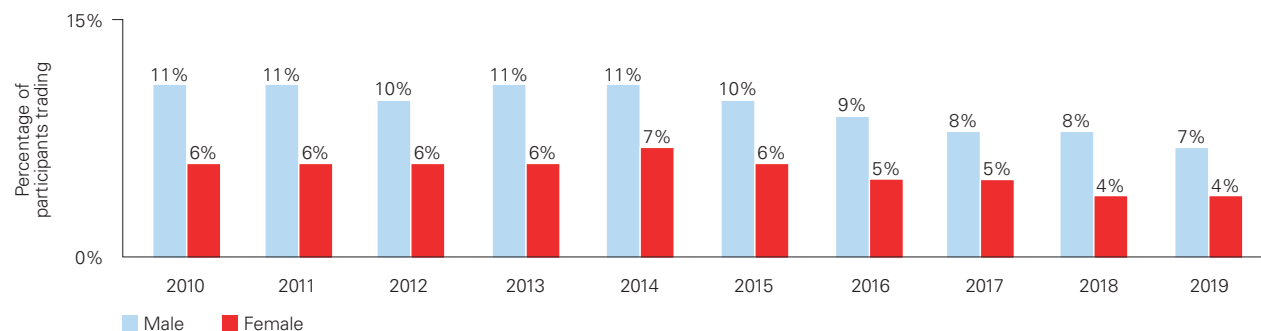
*Vanguard defined contribution plan participants*



Source: Vanguard 2020.

**Figure 102.** Participant trading by gender

*Vanguard defined contribution plan participants*



Source: Vanguard 2020.

## SECTION THREE

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### 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 a rollover when they change jobs or retire.



## Plan loans

Plan loans give DC participants access to their plan savings before retirement without incurring income taxes or tax penalties. 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 in plans accepting employee contributions and less common for employer-funded DC plans, such as money purchase or profit-sharing plans.

Offering loans appears to beneficially affect retirement savings, raising contribution rates above what they would otherwise be. Yet loans also come with risks. Cash that has been borrowed earns fixed income rather than equity market returns. Also, participants who leave their employer must typically repay any loan balance immediately—or risk paying taxes as well as a penalty and incurring a reduction in retirement savings by the amount of the loan outstanding.<sup>10</sup>

### Loan availability

Loans are widely offered by employee-contributory DC plans. In 2019, 78% of Vanguard 401(k) plans permitted participants to borrow from their plan and 88% of active participants had access to a loan feature (Figure 103). Loan availability depends 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 participants incurring loan-related expenses. Most plans allow participants to have only one loan outstanding. In 2019, 54% of Vanguard 401(k) plans offering loans permitted only one loan at a time. Thirty-seven percent of plans allowed two, and 9% of plans allowed three or more.

Some plan sponsors impose loan-issuance waiting periods to discourage repetitive loans. In 2019, 3% of plans required a waiting period after a loan was paid off before a new loan could be taken by the participant, most commonly one month. Two percent of plans imposed a waiting period between any new loan issuance once a loan had been taken, most commonly one year. Finally, one-third of plan sponsors permitted participants terminating with an outstanding loan to continue to repay the loan. Only 7% of participants terminating with an outstanding loan took advantage of this feature.

**Figure 103.** Plan loans, 2019

#### *Vanguard defined contribution plans*

Percentage of plans offering loans	78%
Percentage of participants in plans offering loans	88%
<b>Plans offering loans</b>	
Number of loans permitted	
1 loan	54%
2 loans	37
3 or more loans	9
<b>Plans imposing a loan waiting period</b>	
Waiting period after a loan is paid off before a new loan may be issued	3%
Waiting period after a loan is issued before another loan is permitted	2%
<b>Interest rate</b>	
Prime	13%
Prime plus 1%	71
Prime plus 2%	12
Prime plus other rates	4
<b>Plans permitting terminated participants to continue loan repayment</b>	33%

Source: Vanguard 2020.

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

### Loan use by participant demographics

Only 13% of participants had a loan outstanding at year-end 2019 (Figure 104).<sup>11</sup>

On average, the outstanding loan account balance equaled 10% of the participant's account balance, excluding the loan, and the average participant had borrowed about \$9,900 (Figure 105). 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 do represent participant and plan assets. Only about 1% of aggregate plan assets were borrowed by participants at year-end 2019.

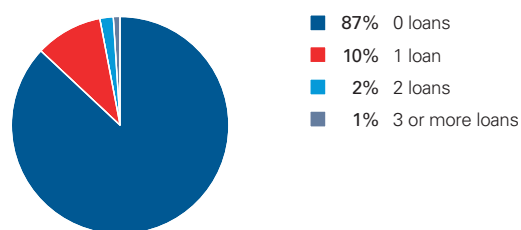
Loans are sometimes criticized as a form of revolving credit for younger, lower-income workers. While that may be partly true, loan use by age follows a hump-shaped profile, with loan use highest among participants in their prime working years. Among workers ages 35 to 54, loan use averaged about 17% in 2019. Men and women used loans at about the same rate.

Income appears to have a greater influence on loan use than age does. In 2019, 1 in 4 participants with incomes between \$30,000 and \$99,999 had a loan, while only 12% of participants with household incomes of more than \$150,000 did. This difference reflects liquidity constraints among those with low wealth and income—i.e., higher-income households have less need for borrowing because of their higher income or other savings.

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 account balances. Only 7% of participants in this group had a loan, but the loan accounted for 45% of their account balance on average.

**Figure 104.** Participant loan use, 2019

*Vanguard defined contribution plans offering loans*



Source: Vanguard 2020.

<sup>11</sup> 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 105.** Participant loan demographics, 2019

*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	13%	10%	\$9,936	\$100,049	\$109,985	\$107,422
<b>Income</b>						
<\$15,000	4%	20%	\$3,277	\$16,255	\$19,532	\$21,143
\$15,000–\$29,999	13	18	3,023	16,598	19,620	12,603
\$30,000–\$49,999	24	15	5,142	33,713	38,855	28,470
\$50,000–\$74,999	28	13	8,534	66,002	74,536	66,054
\$75,000–\$99,999	25	11	11,633	109,192	120,825	114,426
\$100,000–\$149,999	19	9	14,984	170,406	185,390	179,264
\$150,000+	12	7	18,528	277,077	295,606	301,849
Terminated	1	10	10,248	103,328	113,576	112,797
<b>Age</b>						
<25	3%	26%	\$2,435	\$9,486	\$11,920	\$5,295
25–34	9	21	6,002	28,963	34,965	26,626
35–44	16	14	9,932	69,401	79,334	73,165
45–54	18	9	11,542	124,025	135,566	138,316
55–64	13	7	11,120	166,815	177,935	201,926
65+	4	6	9,192	147,949	157,141	219,442
<b>Gender</b>						
Female	13%	11%	\$9,099	\$83,536	\$92,635	\$89,122
Male	14	9	10,684	117,011	127,695	133,245
<b>Job tenure (years)</b>						
0–1	3%	22%	\$5,262	\$23,458	\$28,720	\$12,647
2–3	10	20	4,904	23,977	28,881	29,389
4–6	14	19	7,068	38,110	45,178	52,584
7–9	16	15	9,724	62,902	72,625	84,411
10+	17	8	12,516	154,058	166,574	221,150
<b>Account balance</b>						
<\$10,000	7%	45%	\$2,357	\$5,277	\$7,634	\$3,200
\$10,000–\$24,999	15	32	5,406	16,762	22,168	16,496
\$25,000–\$49,999	17	26	9,455	36,185	45,640	35,990
\$50,000–\$99,999	18	18	12,942	71,729	84,681	71,866
\$100,000–\$149,999	17	12	15,085	122,755	137,840	122,888
\$150,000–\$199,999	16	9	16,150	173,103	189,254	173,420
\$200,000–\$249,999	16	7	16,587	223,378	239,965	223,670
\$250,000+	11	4	17,852	478,815	469,668	590,886

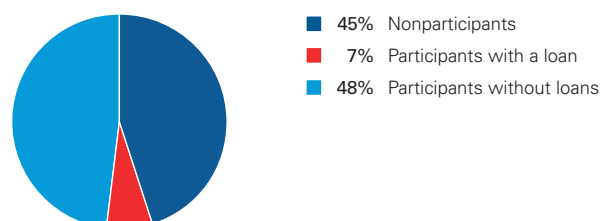
Source: Vanguard 2020.

Participants with loans outstanding in 2019 appeared to have accumulated slightly more in retirement savings than those without loans. However, participants with loans who are older, longer-tenured, and have higher income and balances appeared to have lower retirement savings accumulations when compared with participants without loans. These differences in part reflect the interplay of demographic differences in terms of age, income, and tenure between borrowers and nonborrowers.

About 8% of participants who earn less than \$30,000 had a loan outstanding. However, earlier in this report, we noted that participation rates are lowest among this group, with only 45% of these workers joining their plan. Arguably, participants who earn between \$15,000 and \$30,000 but have borrowed from their retirement savings (7% of these workers) are better off than those employees who earn between \$15,000 and \$30,000 and do not participate in their employer plan (Figure 106).

**Figure 106.** Participation and loans, 2019

*All employees earning between \$15,000 and \$30,000*



Source: Vanguard 2020.

**Figure 107.** Participant loans by industry sector, 2019

*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	13%	10%	\$9,936	\$100,049	\$109,985	\$107,422
<b>Industry group</b>						
Transportation, utilities, and communications	19%	11%	\$9,423	\$84,694	\$94,117	\$98,056
Agriculture, mining, and construction	17	8	12,961	157,346	170,307	161,847
Manufacturing	17	9	9,638	106,950	116,587	127,338
Finance, insurance, and real estate	16	10	11,321	112,793	124,114	132,015
Wholesale and retail trade	15	11	8,264	76,929	85,193	70,869
Education and health	10	13	9,687	75,231	84,918	82,050
Media, entertainment, and leisure	8	11	9,372	86,047	95,419	88,862
Business, professional, and nonprofit	6	8	11,245	139,975	151,220	126,813

Source: Vanguard 2020.

## Loan use by industry group

Loan use varies significantly by industry group (Figure 107). Participants in the business, professional, and nonprofit industries used 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 has generally declined since 2010 (Figure 108). There appears to be a pronounced seasonality to loan-taking, with borrowing typically peaking in the summer months. The reasons for this pattern are not well understood. Loan use may have increased in 2010 because of lingering effects of the global financial crisis.

## Plan withdrawals

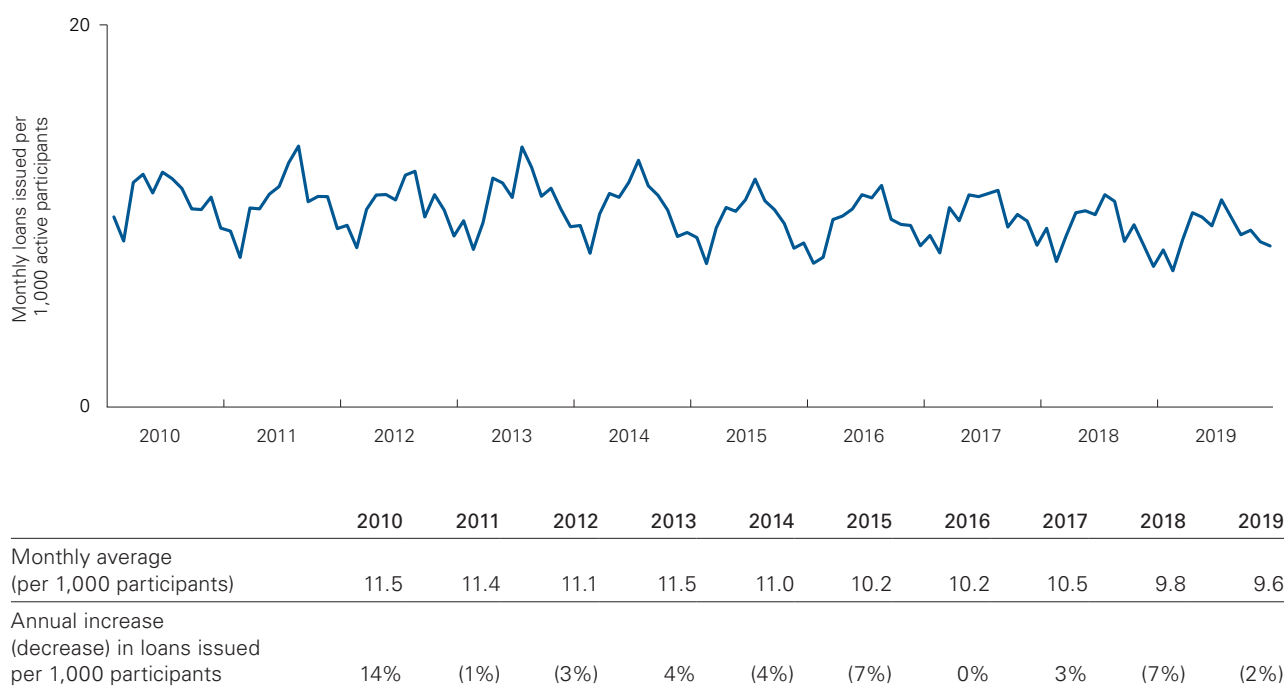
Plan withdrawals give participants access to their plan savings before a job change or retirement. Withdrawals are optional plan provisions and availability varies from plan to plan. They can be broadly classified into two categories—hardship and nonhardship withdrawals.

Hardship withdrawals give participants access to 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, medical expenses, and purchase of a first home.

Nonhardship withdrawals include both post-age-59½ withdrawals and other withdrawals. Post-age-59½ withdrawals give participants age 59½ and older access to 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 or after-tax contributions, or roll over assets while they are working.

**Figure 108.** Loan origination trend

*Vanguard defined contribution active participants in plans offering loans*



Source: Vanguard 2020.

Among all Vanguard DC plans in 2019, 88% allowed hardship withdrawals and 88% allowed plan withdrawals for those who have reached age 59½ (Figure 109). In 2019, less than 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 110).

About one-quarter of withdrawals were for hardship and three-quarters for nonhardship reasons. Assets withdrawn totaled 1% of Vanguard recordkeeping assets. Of the participants who took withdrawals, 92% took the money in cash, withdrawing, on average, 20% of account savings. They had a median age of 52. Meanwhile, 8% of participants taking withdrawals rolled over their assets from the plan to an IRA.

A major contributor to this is likely participants older than 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 61, and, on average, they rolled over about 78% of their account balance. These participants rolling over assets accounted for half of the assets being withdrawn.

Figure 109. Plan withdrawals, 2019

Vanguard defined contribution plans

Percentage of plans offering	
Hardship withdrawals	88%
Withdrawals after age 59½	88

Source: Vanguard 2020.

In the aftermath of the 2008 global financial crisis, the rate of new nonhardship withdrawals, such as post-age-59½ in-service or other withdrawals, has grown by nearly 50% between 2010 and 2019 (Figure 111). Nonhardship withdrawals also have a seasonal pattern and often spike in the first quarter of the year—likely due to the withdrawal of employer profit-sharing contributions, which are frequently made early in the calendar year.

From 2010 to 2018, the rate of new hardship withdrawals remained relatively consistent while remaining at a low absolute level of 2% of participants. In 2019, hardship withdrawal activity increased to 3% of participants. The Bipartisan Budget Act of 2018 introduced changes to the provisions for hardship withdrawals. These changes were designed to ease restrictions for participants needing access to their qualified retirement plan assets because of an immediate financial need. Changes include eliminating the six-month suspension, not requiring a loan before taking a hardship withdrawal, and modifications to the determination method.

Figure 110. Use of all plan withdrawals, 2019

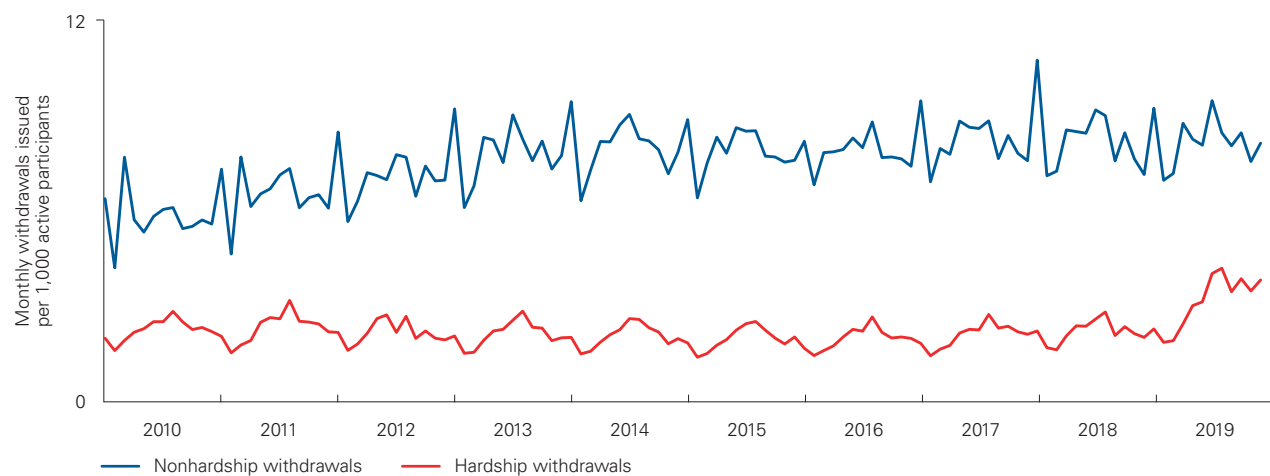
Vanguard defined contribution plans

	All	Cash	Rollover
Percentage of participants using	3.7%	3.4%	0.3%
Percentage of assets withdrawn	1.1	0.5	0.6
Percentage of participant account assets withdrawn	34.8	20.3	78.1
Median age	53	52	61

Source: Vanguard 2020.

**Figure 111.** In-service withdrawal trend

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



Source: Vanguard 2020.

Monthly average per 1,000 active participants	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Nonhardship withdrawals	5.6	6.4	7.0	7.8	8.0	7.9	7.8	8.2	8.3	8.2
Hardship withdrawals	2.2	2.2	2.1	2.0	2.0	1.9	1.9	2.0	2.1	3.1

Annual increase (decrease) per 1,000 active participants	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Nonhardship withdrawals	12%	14%	9%	11%	3%	(1%)	(1%)	5%	1%	(1%)
Hardship withdrawals	0	0	(5)	(5)	0	(5)	0	5	5	48

Source: Vanguard 2020.

Plan withdrawals are used infrequently in the aggregate. However, 4 in 10 participants who took a withdrawal in 2019 had also taken plan withdrawals in 2018, and about 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 savings in the plan or rolling savings 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).

Leakage from the retirement system—the spending of plan savings before retirement—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. Balances of less than \$1,000 may be distributed to the terminated participant. Most plans have adopted these provisions—only 3% of plans allow participants to remain in the plan when balances are less than \$1,000 (Figure 112). In some cases, the sponsor may allow participants to retain a balance of \$1,000 or more in the plan—16% of plans permitted these balances to remain in the plan.

**Figure 112.** Frequency of automatic distributions, 2019

*Vanguard defined contribution plans*

	Number of participants				
	All	<500	500–999	1,000–4,999	5,000+
<b>Percentage of plans</b>					
Remain in plan (no automatic distribution)	3%	4%	3%	3%	4%
Automatic cash-out if balance is <\$1,000, remain in plan if balance is higher	16	14	14	16	26
Automatic cash-out if balance is <\$1,000, rollover if balance is \$1,000+ or <\$5,000	81	82	83	81	70
<b>Percentage of participants offered</b>					
Remain in plan (no automatic distribution)	3%	3%	3%	3%	2%
Automatic cash-out if balance is <\$1,000, remain in plan if balance is higher	25	14	14	15	30
Automatic cash-out if balance is <\$1,000, rollover if balance is \$1,000+ or <\$5,000	72	83	83	82	68

Note: This analysis excludes approximately 100 403(b) plans and approximately 375,000 participants in those plans. Most 403(b) plan sponsors retain the right to execute these automatic distributions within their plan documents. However, because of the multiprovider environment many 403(b) plans operate within, and the coordination required to process these distributions, most 403(b) plan sponsors do not process these distributions.

Source: Vanguard 2020.

**Figure 113.** Distribution options, 2019

*Vanguard defined contribution plans*

	Number of participants				
	All	<500	500–999	1,000–4,999	5,000+
<b>Percentage of plans</b>					
Deferral	100%	100%	100%	100%	100%
Deferral only to age 65	2	3	2	2	2
Deferral only to age 70	<0.5	<0.5	<0.5	0	1
Installments other than RMDs	62	58	62	64	79
Annuity	13	14	10	9	15
Annuity grandfathered source only	7	7	7	8	5
Ad hoc partial distributions	32	19	31	42	66
<b>Percentage of participants offered</b>					
Deferral	100%	100%	100%	100%	100%
Deferral only to age 65	1	3	2	3	1
Deferral only to age 70	5	1	<0.5	0	7
Installments other than RMDs	73	59	61	65	76
Annuity	14	14	10	8	15
Annuity grandfathered source only	1	2	2	1	1
Ad hoc partial distributions	61	24	32	46	68

Source: Vanguard 2020.

Most sponsors permitted 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. However, 2% of sponsors required terminated participants to leave the plan by age 65 or age 70 (Figure 113).

Six in 10 sponsors allowed participants to establish installment payments and 2 in 10 offered an annuity option for at least a portion of the plan assets. Thirteen percent of plans offered an annuity as a general distribution option, while 7% of plans offered an annuity for a grandfathered source only, these annuity features are mostly associated with plan assets relating to a prior money purchase plan.

Finally, 1 in 3 plan sponsors permitted terminated participants to take partial ad hoc cash distributions. This feature has more than doubled in the past five years as only 13% of plans offered this feature in 2014. Sixty-one percent of participants now have the ability to take a partial ad hoc distribution. 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 account balance. 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

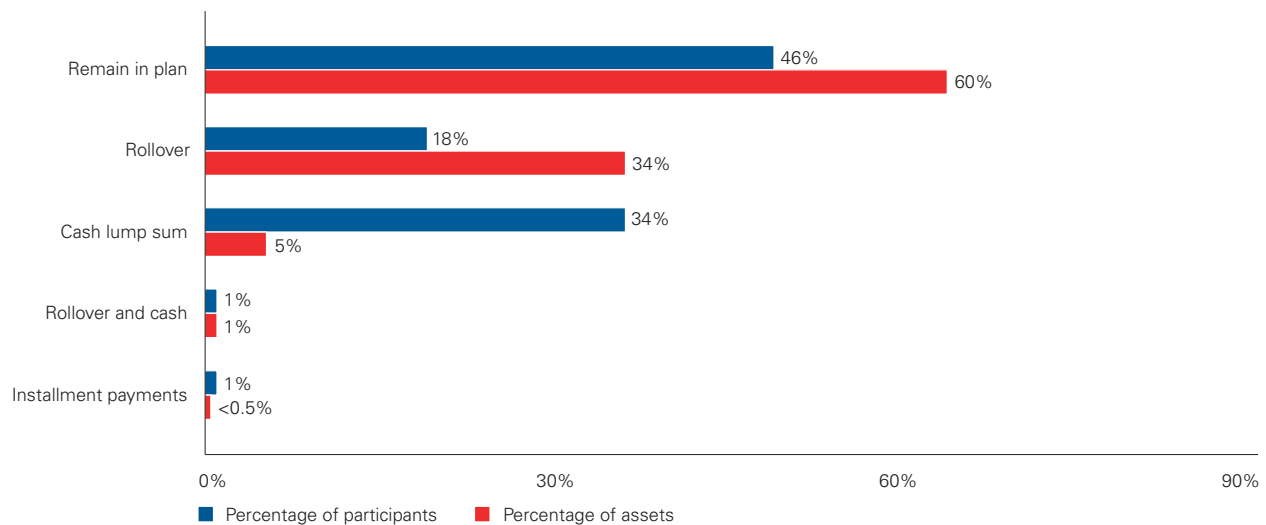
Plan distributions can occur somewhat frequently as participants change jobs or retire, and they represent a large portion of total plan and participant assets. In 2019, 11% of participants left their employer and were eligible for a distribution. Their assets totaled 6% of Vanguard recordkeeping assets. Two-thirds of participants terminating employment preserved their assets, either retained in the prior employer's plan, were rolled over to an IRA, or were rolled over to a new employer's plan (Figure 114). One-third took a cash distribution. Ninety-four percent of the assets available for distribution were preserved for retirement. The percentage of participants choosing to take cash and presumably spending their savings has been fairly stable (Figure 115).

These figures differ from other reported statistics on plan distributions because they include participants who chose to retain their assets in their prior employer's plan when they changed jobs or retired. Among participants who took a distribution from their plan, more took cash distributions (34%) than rolled over their assets to another plan or IRA (18%). 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.

**Figure 114.** Plan distributions, 2019

*Vanguard defined contribution plans*

Participants with termination dates in 2019



Source: Vanguard 2020.

**Figure 115.** Trends in distribution of plan assets

*Vanguard defined contribution plans*

Participants with termination dates in the given year

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
<b>Percentage of participants choosing</b>										
Remain in plan	48%	49%	48%	49%	49%	51%	50%	51%	48%	46%
Rollover	22	21	21	22	22	20	19	18	18	18
Installment payments	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1
<b>Participants preserving assets</b>	<b>70%</b>	<b>70%</b>	<b>69%</b>	<b>71%</b>	<b>71%</b>	<b>71%</b>	<b>69%</b>	<b>69%</b>	<b>66%</b>	<b>65%</b>
Cash lump sum	28%	28%	29%	28%	28%	28%	30%	30%	33%	34%
Rollover and cash	2	2	2	1	1	1	1	1	1	1
<b>Percentage of assets available for distribution</b>										
Remain in plan	55%	54%	53%	54%	53%	56%	59%	61%	56%	60%
Rollover	37	38	39	39	40	37	35	34	37	34
Installment payments	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
<b>Assets preserved for retirement</b>	<b>92%</b>	<b>92%</b>	<b>92%</b>	<b>93%</b>	<b>93%</b>	<b>93%</b>	<b>94%</b>	<b>95%</b>	<b>93%</b>	<b>94%</b>
Cash lump sum	6%	5%	5%	5%	5%	5%	5%	4%	6%	5%
Rollover and cash	2	3	3	2	2	2	1	1	1	1

Source: Vanguard 2020.

### 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 2019, 40% of participants in their 20s chose to cash out their plan assets, compared with 22% of participants in their 60s (Figure 116). In terms of assets, 87% of assets owned by participants in their 20s and 97% 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. Thirty-eight percent of participants with balances of less than \$1,000 kept their balance in a tax-deferred account (Figure 117). 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 118). While participants in their 40s did overwhelmingly preserve their assets for retirement, at most asset levels they were slightly more likely than most other age groups to cash out their DC plan when changing jobs or retiring.

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 116.** Plan distribution behavior by age, 2019

*Vanguard defined contribution plans*

Participants with termination dates in 2019

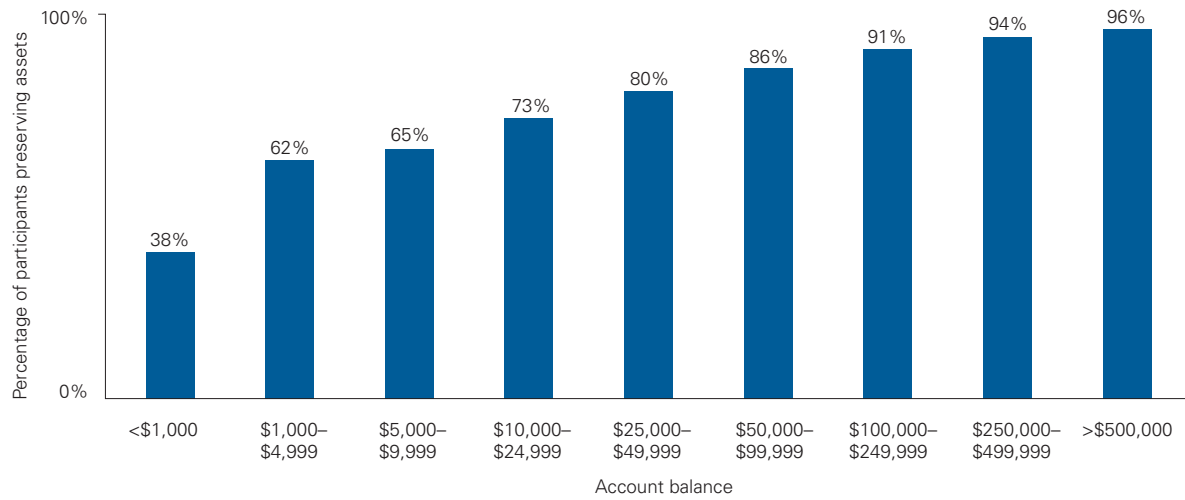
	20s	30s	40s	50s	60s	70s	Total
<b>Percentage of participants choosing</b>							
Remain in plan	46%	49%	47%	48%	43%	19%	46%
Rollover	14	15	16	21	33	30	18
Installment payments	<0.5	<0.5	<0.5	<0.5	1	21	1
<b>Participants preserving assets</b>	<b>60%</b>	<b>64%</b>	<b>63%</b>	<b>69%</b>	<b>77%</b>	<b>70%</b>	<b>65%</b>
Cash lump sum	40%	35%	36%	29%	22%	29%	34%
Rollover and cash	<0.5	1	1	1	1	1	1
<b>Percentage of assets available for distribution</b>							
Remain in plan	69%	70%	67%	62%	53%	30%	60%
Rollover	18	20	24	32	44	62	34
Installment payments	<0.5	<0.5	<0.5	<0.5	<0.5	2	<0.5
<b>Assets preserved for retirement</b>	<b>87%</b>	<b>90%</b>	<b>91%</b>	<b>94%</b>	<b>97%</b>	<b>94%</b>	<b>94%</b>
Cash lump sum	13%	10%	8%	5%	2%	5%	5%
Rollover and cash	<0.5	1	1	1	1	1	1

Source: Vanguard 2020.

**Figure 117.** Plan distribution behavior by account balance, 2019

*Vanguard defined contribution plans*

Participants with termination dates in 2019



Source: Vanguard 2020.

**Figure 118.** Plan distribution behavior by age and account balance, 2019

*Vanguard defined contribution plans*

Participants with termination dates in 2019



Source: Vanguard 2020.

A more optimistic picture of plan distribution behavior emerges if we analyze the total plan assets available for distribution at any given time. During 2019, one-third 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 20% of participants eligible for a cash distribution took one, while the vast majority (80%) continued to preserve their plan assets for retirement (Figure 119). In terms of assets, 96% 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 4% of assets were distributed in cash.

## Access methods

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, the website, and mobile applications.

Participant 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 2019, 34% of plan participants never contacted Vanguard regarding their plan account (Figure 120). However, 66% did contact Vanguard—a ratio that has improved from 2010, when only 53% of participants contacted Vanguard (Figure 121). One reason for this may be the broad adoption of the website and mobile options; another may be the strong equity markets, which may have 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 electronically.

**Figure 119.** Alternative view of distribution of plan assets

*Vanguard defined contribution plans*

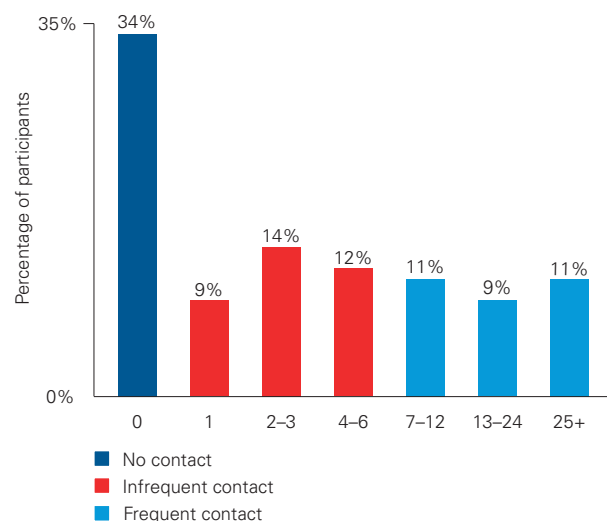
All terminated participants with access to plan savings in the given year

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
<b>Percentage of participants choosing</b>										
Remain in plan	65%	68%	67%	68%	68%	69%	67%	68%	65%	63%
Rollover	14	13	13	14	14	13	12	12	12	13
Installment payments	2	2	2	3	3	3	3	4	4	4
<b>Participants preserving assets</b>	<b>81%</b>	<b>83%</b>	<b>82%</b>	<b>85%</b>	<b>85%</b>	<b>85%</b>	<b>82%</b>	<b>84%</b>	<b>81%</b>	<b>80%</b>
Cash lump sum	18%	16%	16%	14%	14%	14%	17%	15%	18%	19%
Rollover and cash	1	1	2	1	1	1	1	1	1	1
<b>Percentage of assets available for distribution</b>										
Remain in plan	75%	75%	75%	76%	76%	77%	78%	80%	76%	78%
Rollover	20	20	20	20	20	19	18	17	19	17
Installment payments	1	1	1	1	1	1	1	1	1	1
<b>Assets preserved for retirement</b>	<b>96%</b>	<b>96%</b>	<b>96%</b>	<b>97%</b>	<b>97%</b>	<b>97%</b>	<b>97%</b>	<b>98%</b>	<b>96%</b>	<b>96%</b>
Cash lump sum	3%	3%	3%	2%	2%	2%	2%	1%	3%	3%
Rollover and cash	1	1	1	1	1	1	1	1	1	1

Source: Vanguard 2020.

**Figure 120.** Participant contact frequency, 2019

*Vanguard defined contribution plans*



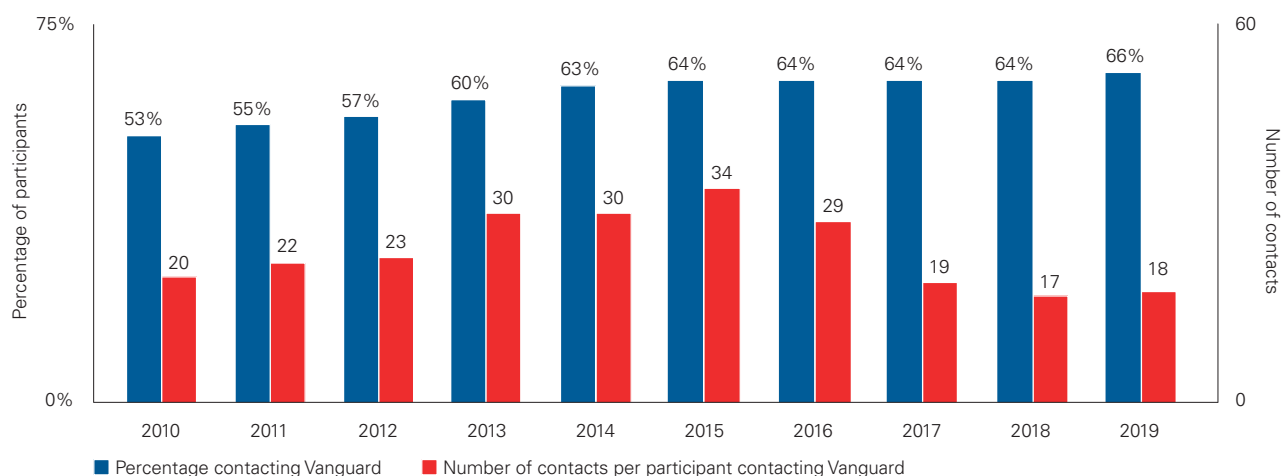
Source: Vanguard 2020.

About one-third of 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, a mobile application, or the website. Three in 10 participants contacted Vanguard frequently. This group, using all channels, contacted Vanguard monthly, if not more often. This level of contact may seem high, but keep in mind, for those using a mobile application or the website, 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 one-quarter of all Vanguard participants—contacted Vanguard 67% more often when compared with the entire participant population.

**Figure 121.** Participant contact trend

*Vanguard defined contribution plans*



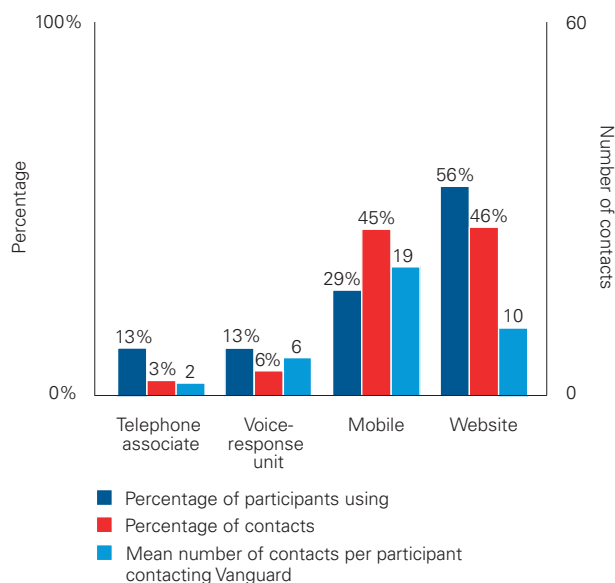
Source: Vanguard 2020.

## 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 website. When measured in terms of total participant use, the website remained the most widely used channel in 2019—56% used the website, compared with 13% who used telephone associates (Figure 122). Introduced between 2009 and 2011, mobile applications were used by 29% of participants. In terms of total contacts, the website and mobile access dominate with 91% of total contacts. Website interactions accounted for 46% of all participant contacts and mobile access accounted for 45% of all contacts. However, while participants using the website as a contact method averaged about ten website interactions per year, participants using mobile applications averaged almost twice as many contacts per year. Each distinct logon is counted as a unique contact event.

**Figure 122.** Account access methods, 2019

*Vanguard defined contribution plans*



Source: Vanguard 2020.

**Figure 123.** Account access trend

*Vanguard defined contribution plans*

Percentage of participants contacting Vanguard via . . .

	2010	2019	Change
Website, mobile, telephone associate, or voice response	53%	66%	25%
Website	44	56	27
Mobile		28	
Telephone associate	20	13	(35)
Voice-response unit	9	13	44
Participants registered for website access	64	76	19

Source: Vanguard 2020.

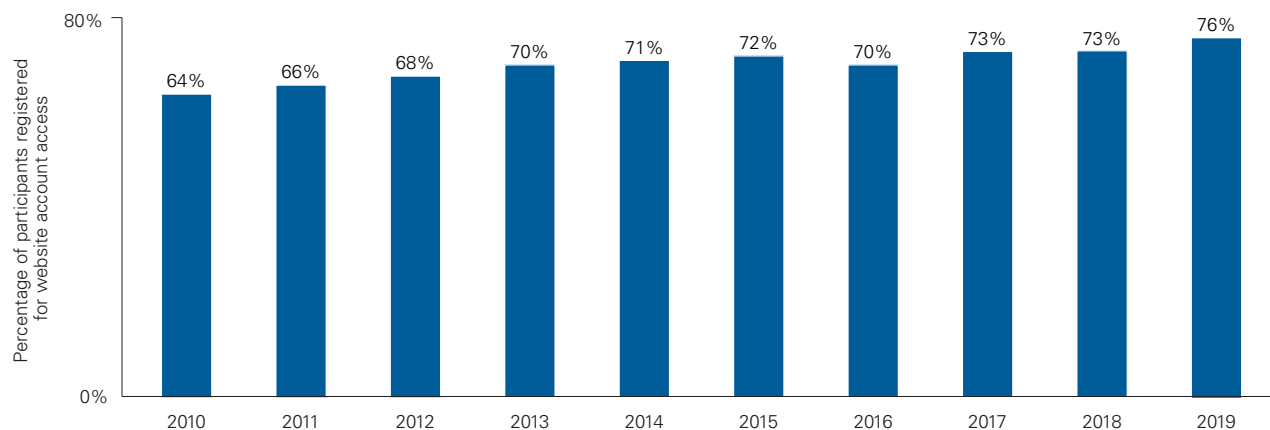
The portion of participants selecting the website as an access channel has grown by 27% since 2010 (Figure 123). During this interval, the portion of participants selecting a phone associate as an access channel has declined by 35%. Given current trends, the dominance of the website and mobile applications as contact channels is likely to continue. We also expect the adoption of mobile applications to continue to grow over the next few years.

Participant registration for website access to their DC plan account has fueled this growth. Seventy-six percent of participants were registered for the website in 2019, about 20% more than in 2010 (Figure 124).

Increasingly, participants are choosing the website as the preferred access channel for transactions, as 72% of all transactions were processed via the website during 2019, and another 19% were processed via mobile devices (Figure 125). Moreover, more than 90% of all exchanges, payroll deferral, and contribution allocation changes occurred on the website or mobile devices.

**Figure 124.** Website access trend

*Vanguard defined contribution plans*

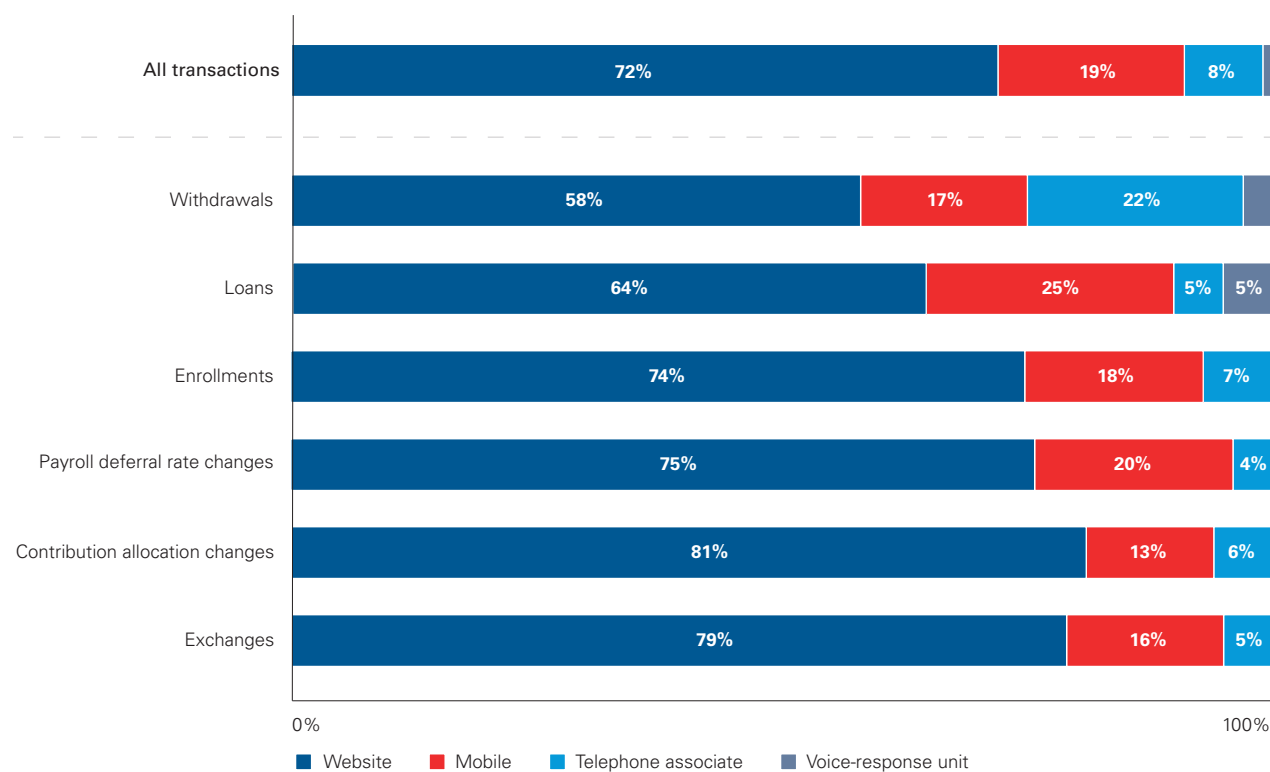


Source: Vanguard 2020.

**Figure 125.** Participant channel utilization, 2019

*Vanguard defined contribution plans*

Percentage of transactions processed by channel



Source: Vanguard 2020.

## Methodology

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

**Defined contribution clients.** This universe consists of about 1,800 qualified plans, 1,500 clients, and 5 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, 2019.

**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. Selected plan design features are also derived from this data. For the 2019 analysis, the subset is composed of plans that complete their testing by March and represents approximately one-third of the clients for whom we perform testing. Plans that complete their testing by March generally have lower participation rates and generally include plans with concerns related to passing testing. When all plans have completed their testing by the end of 2020, the participation rates improve. Plan design features derived from this data also improve.

Based on the trends experienced over previous years, we have estimated participation and deferral rates for 2019. The estimations use a combination of linear extrapolation and subjective estimation. The same approach is applied to plan design features derived from this data. We will continue to restate these results in the following year based on the final compliance testing results.

The 2018 restated analysis includes approximately 1,000 plans and 2.6 million 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 come from this subset of plans.

## How America Saves: Small Business Edition

We also make available *How America Saves: Small Business Edition*, a benchmarking analysis for the small-business plans for which we provide service. Launched in 2011, the Vanguard Retirement Plan Access™ (VRPA) offer is a comprehensive service for retirement plans with less than \$20 million in assets. Ascensus, LLC—a nationally recognized recordkeeping firm—provides the administration of these plans on Vanguard’s behalf. Through VRPA, we served an additional 13,400 plan sponsors with more than 606,000 participants as of year-end 2019.

## Industry benchmark data supplemental to How America Saves

Industry benchmarking based on the data behind *How America Saves* is available for the following industries on the [institutional.vanguard.com](http://institutional.vanguard.com) website.

- Ambulatory health care services
- Architecture and engineering
- Construction
- Finance
- Information firms
- Insurance
- Legal services
- Manufacturing
- Mining, oil, and gas extraction
- Retail trade
- Technology
- Transportation and warehousing
- Unions
- Utilities
- Wholesale trade

## Acknowledgments

Thank you to the following Vanguard crew members who made this publication possible:

### Data analysis:

Daniel C. Proctor  
Galina Young

### Authors:

Brian T. Alling  
Jeffrey W. Clark  
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### Editor:

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