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Defined contribution plans and generations

Vanguard Research

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- It may be that there are generational differences in saving and investment behavior arising from the unique life experiences that different demographic cohorts have been exposed to.
- Automatic enrollment and the rise of target-date funds are reshaping retirement plan outcomes for all generations. However, these innovations are having the greatest impact on millennials' retirement savings. In 2016, three-quarters of millennial plan participants had been exposed to automatic enrollment.
- Although millennials' income and job prospects have been shaped by the global financial crisis, those who are working are, in the aggregate, saving more because of automatic enrollment.
- Millennials have lived through two significant bear markets in equities. However, their allocation to equities is higher because they use target-date funds.
- In 2016, millennials were twice as likely to have been using professionally managed allocations, including target-date funds, than the early baby boomer cohort. More than half of the millennial generation held a single target-date fund at the end of 2016.

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

Introduction

Baby boomers were the first generation with access to defined contribution (DC) plans throughout a meaningful part of their working careers. Similarly, millennials are the first generation to have access to automatic enrollment and automatic investment solutions in DC plans throughout the early years of their working lives. In this paper, we highlight some of the generational differences we observe in our recordkeeping data over a 10-year period as a result of these changes. How have generational patterns of saving and investing changed in DC retirement plans? This is the question we will explore in this research paper.

Our general approach is to compare cohorts of individuals based on their ages in 2016 and 2006. For example, the millennial generation would have been ages 20 to 35 in 2016.[1] We compare these 2016 millennials with the population ages 20 to 35 in 2006. We make similar comparisons for the Generation X cohort (ages 36 to 51 in 2016), the late baby boomers (ages 52 to 61 in 2016), and the early boomers (ages 62 to 70 in 2016).

Our data are drawn from a subset of Vanguard recordkeeping clients for whom we perform nondiscrimination testing. It includes about 500 DC plans offered by the same set of companies in both 2006 and 2016, encompassing about 1 million eligible employees in each year (**Figure 1**). Over this period, the demographic characteristics of the population shifted only modestly. (See the Appendix for details on the changes, or rather, lack of changes, in population characteristics between 2006 and 2016.)

Figure 1. Study sample

	2006	2016
Number of plans	*506*	*506*
Plans with voluntary enrollment	88%	54%
Plans with automatic enrollment	12%	46%
Number of eligible employees	*1,012,167*	*1,043,871*
Distribution of eligible employees		
Age 20–35	29%	32%
Age 36–51	46	39
Age 52–61	22	23
Age 62–70	3	6

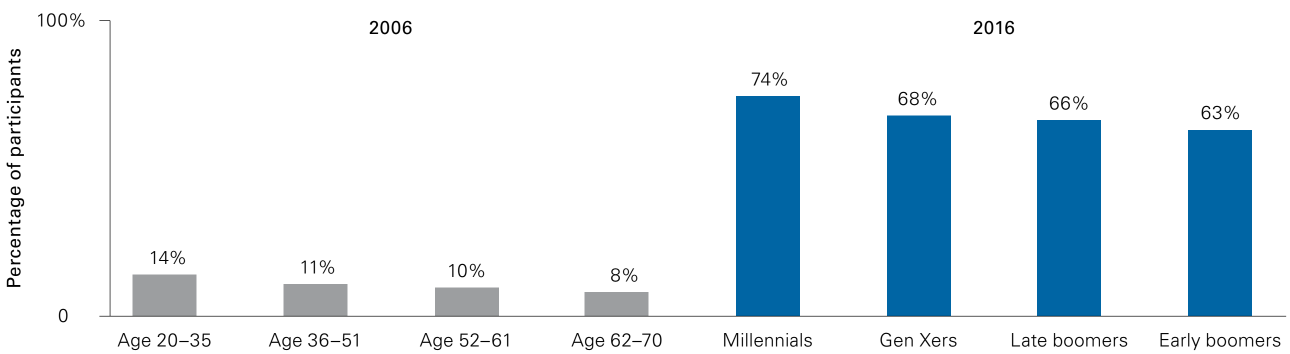
Source: Vanguard, 2018.

1 We use the generational definitions from Pew Research Center, "Millennials are the Largest Generation in the U.S. Labor Force," April 11, 2018, www.pewresearch.org. Currently, less than 0.5% of eligible employees are part of Generation Z, and less than 0.5% of eligible employees are part of the silent generation.

One dramatic shift during this period was the rising adoption of automatic enrollment. In 2006, only 12% of plans had adopted automatic enrollment, but by the end of 2016, 46% of plans had adopted the feature. About 6 in 10 plans implemented automatic enrollment for all eligible employees, by either "sweeping" the nonparticipants when automatic enrollment was initially adopted or at a later date. We define two separate populations of interest. Voluntarily enrolled participants are those who were hired under a voluntary enrollment design or, in an automatic enrollment plan, were hired before the plan adopted automatic enrollment. Automatic enrollment participants are those who were hired in a plan with new-hire automatic enrollment, or who were an existing eligible nonparticipant when the plan "swept" all eligible employees.

In terms of participants, about 10% of contributing participants had been subjected to an automatic enrollment plan design in 2006. By the end of 2016, nearly 70% of all contributing participants, including three-quarters of millennials, were in plans where they had been subjected to automatic enrollment (**Figure 2**).

Figure 2. Participants with employee-elective deferrals joining the plan under automatic enrollment



Notes: About 60% of the plans with automatic enrollment implemented it for all eligible employees, by either "sweeping" nonparticipants when automatic enrollment was initially adopted or at a later date. We are able to segregate individuals hired under a voluntary enrollment design and joining the plan before the implementation of automatic enrollment from those participants subjected to an automatic enrollment design. Participants in plans with automatic enrollment who were not subjected to automatic enrollment are included in the voluntary enrollment category.

Source: Vanguard, 2018.

Participation rates

Between 2006 and 2016, aggregate participation rates across our sample rose and did so much more dramatically among participants subjected to automatic enrollment (**Figure 3**). In 2006, the participation rate for our sample was 68%. Among all plans, it rose to 79% by 2016. But among automatic enrollment designs, the increase was dramatic, and participation reached more than 90%. This result reflects the powerful effects of automatic enrollment on plan participation.

All generational cohorts saw rising participation rates. However, millennials saw the largest increase. In 2006, 57% of individuals ages 20 to 35 participated in their plan. In 2016, this rate rose to 74%. However, in 2016, among voluntary enrollment designs, this rate declined to 47%. But among automatic enrollment designs, it reached 92%. That is a relative increase of over 80% compared with 2006.

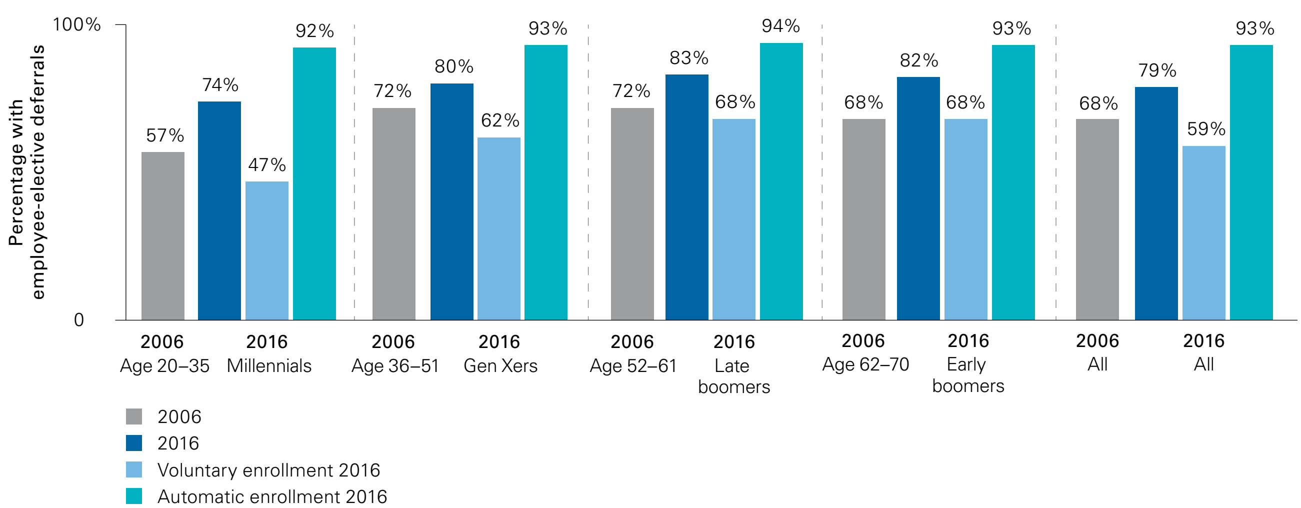
Two factors contribute to this larger millennial effect. One is that young participants typically have the lowest participation rates, so the impact of automatic enrollment is the largest in this group. The second is that 4 in 10 employers introduced automatic enrollment for new hires only, and millennials have a median tenure of just 3 years.

Deferral rates

The average employee-elective deferral rate among plan participants, or the amount withheld from participant paychecks, was 7.4% in 2006 (**Figure 4, Panel A**). This includes plan participants only, and so excludes those who are not saving (i.e., it excludes "zero percent" employee-elective deferral rates). In voluntary enrollment plans, the average deferral rate declined modestly to 7.2% in 2016. However, in automatic enrollment plans, it held steady at 7.4% in 2016. Our research shows that plan design defaults have a strong impact on participant behavior, and the most common default deferral rate in plans with automatic enrollment is 3%.[2] However, half of plans have chosen default deferral rates of 4% or higher.

A different picture emerges when we calculate an average deferral rate for all eligible employees, including those who are participating in the plan and those who are not (i.e., including the "zeros"). Overall employee-elective deferral rates rose between 2006 and 2016 and were highest in automatic enrollment designs in 2016 (**Figure 4, Panel B**). Millennials in automatic enrollment designs had the strongest gains. All generational cohorts in plans with voluntary enrollment designs saw a decline in contribution rates compared with 2006.

Figure 3. Participation rates: 2006 versus 2016

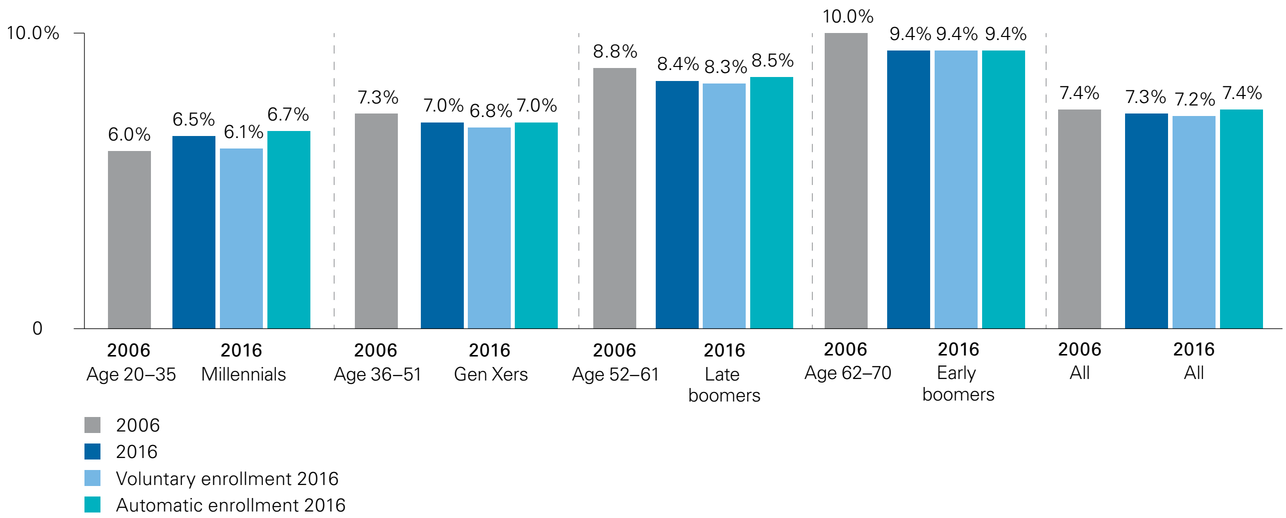


Source: Vanguard, 2018.

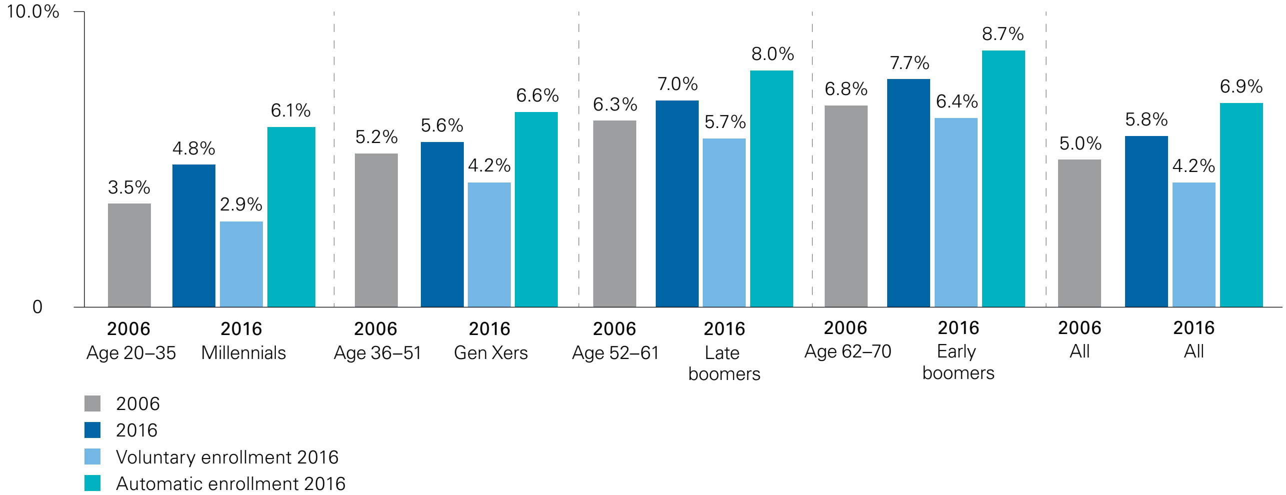
2 See Clark, Jeffrey W., and Jean A. Young, 2018. *Automatic Enrollment: The Power of the Default,* Vanguard research; available at institutional.vanguard.com.

Figure 4. Employee-elective deferral rates: 2006 versus 2016

Panel A: Participant employee-elective deferral rates (average)



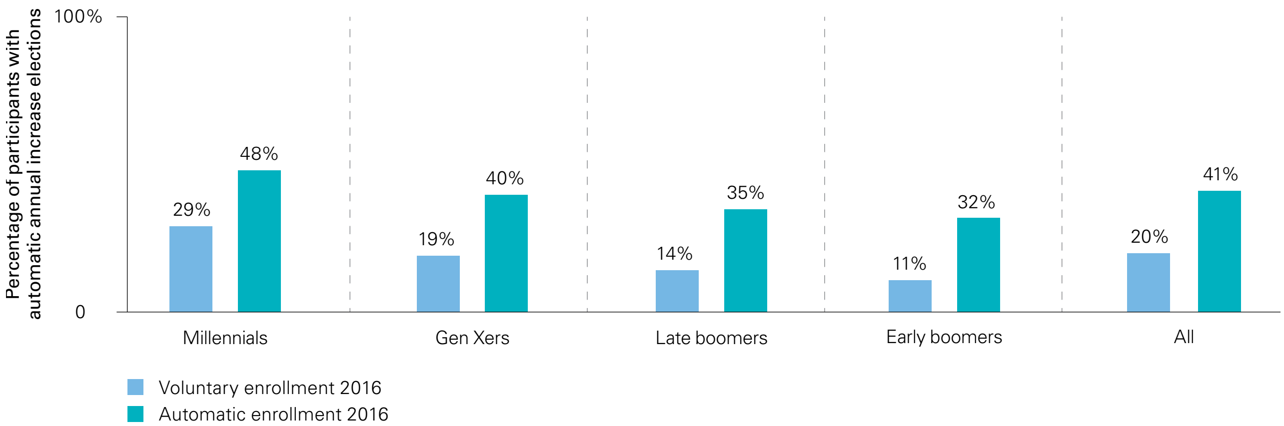
Panel B: Eligible employee-elective deferral rates (average)



Source: Vanguard, 2018.

Savings behavior may also be influenced by an automatic annual increase feature. In 2016, among voluntary enrollment plans, 20% of participants had chosen to sign up for such a service (**Figure 5**). There were some differences among generations, with millennials somewhat more likely to sign up than older generations. However, among automatic enrollment plans, twice as many participants were part of such an arrangement, and nearly half of millennials were enrolled in an auto-increase feature. The higher figure for automatic enrollment plans reflects the fact that sponsors have introduced the feature as part of automatic enrollment and the automatic increase feature is a default for two-thirds of these plans.

Figure 5. Automatic annual increase



Source: Vanguard, 2018.

One way to summarize these effects is to examine the distribution of deferral rates for all eligible employees (**Figure 6**). Again, this includes those who contribute and those who do not (i.e., individuals with a 0% employee-elective deferral rate). All cohorts have stronger employee-elective deferrals, but millennials again show the strongest gains. Here we also observe the shift because of automatic enrollment—fewer participants not contributing, and more participants with lower deferral rates.

Figure 6. Distribution of eligible employee-elective deferral rates

	0%	0.1%–3.9%	4.0%–6.0%	6.1%–9.9%	10.0%–14.9%	15%+
Age 20–35 2006	43%	20%	15%	14%	6%	2%
Millennials voluntary enrollment 2016	21	7	5	4	2	1
Millennials automatic enrollment 2016	5	18	12	15	7	3
Age 36–51 2006	28%	17%	17%	21%	12%	5%
Gen Xers voluntary enrollment 2016	16	7	6	8	4	1
Gen Xers automatic enrollment 2016	4	13	11	20	8	2
Age 52–61 2006	28%	12%	14%	22%	15%	9%
Late boomers voluntary enrollment 2016	13	5	6	9	6	3
Late boomers automatic enrollment 2016	4	8	10	20	11	5
Age 62–70 2006	32%	9%	12%	19%	16%	12%
Early boomers voluntary enrollment 2016	14	4	6	10	7	4
Early boomers automatic enrollment 2016	4	6	9	18	11	7

Source: Vanguard, 2018.

Incorporating employer contributions

We can also measure the sum of what the employee is contributing plus what the employer is contributing. We will refer to this as the aggregate contribution rate. More than 9 in 10 plans have an employer contribution.[3]

In 2006, the average participant aggregate contribution rate was 12.0%, and in 2016 it was 12.8% for participants subjected to automatic enrollment (**Figure 7, Panel A**). For participants joining under a voluntary enrollment design, the average participant aggregate contribution rate was 10.3% in 2016.

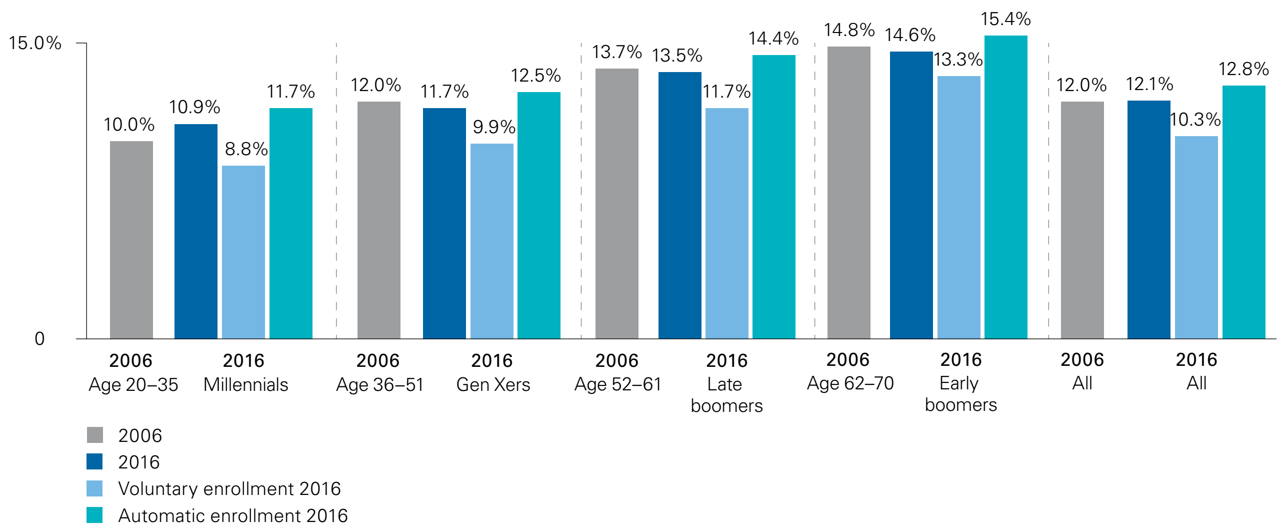
Including those employees not contributing to the plan, the eligible employee aggregate contribution rate was 8.5% in 2006 (**Figure 7, Panel B**). It reached 12.1% for employees subjected to automatic enrollment in 2016 and fell to 6.4% for eligible employees in a voluntary enrollment design.

Over the ten-year period, eligible employee aggregate contribution rates increased for all cohorts overall. Millennials saw the largest improvement, with aggregate contribution rates rising by a relative 79% for individuals subjected to automatic enrollment and falling by a relative 30% for individuals with voluntary enrollment.

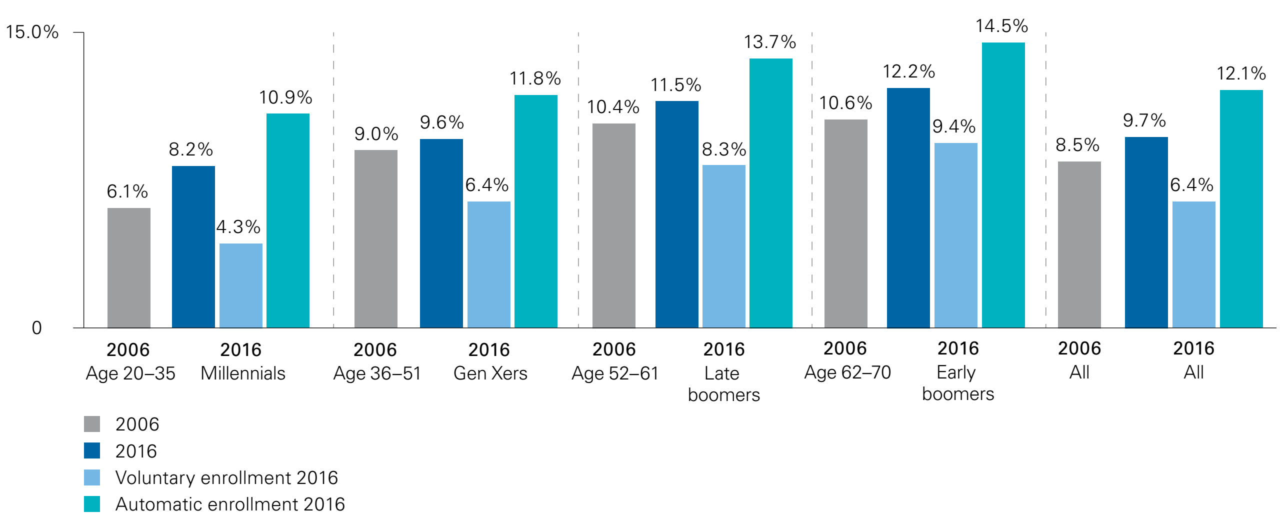
3 See *How America Saves 2017*, Vanguard research; available at institutional.vanguard.com. Ninety-four percent of plans had employer contributions in 2016. Eight in 10 plans had a matching contribution. Half of plans also had a nonmatching employer contribution, with 40% of plans having both matching and nonmatching employer contributions.

Figure 7. Aggregate employee-elective and employer contribution rate

Panel A: Participant employee-elective and employer contribution rate (average)



Panel B: Eligible employee-elective and employer contribution rate (average)



Source: Vanguard, 2018.

Account balances

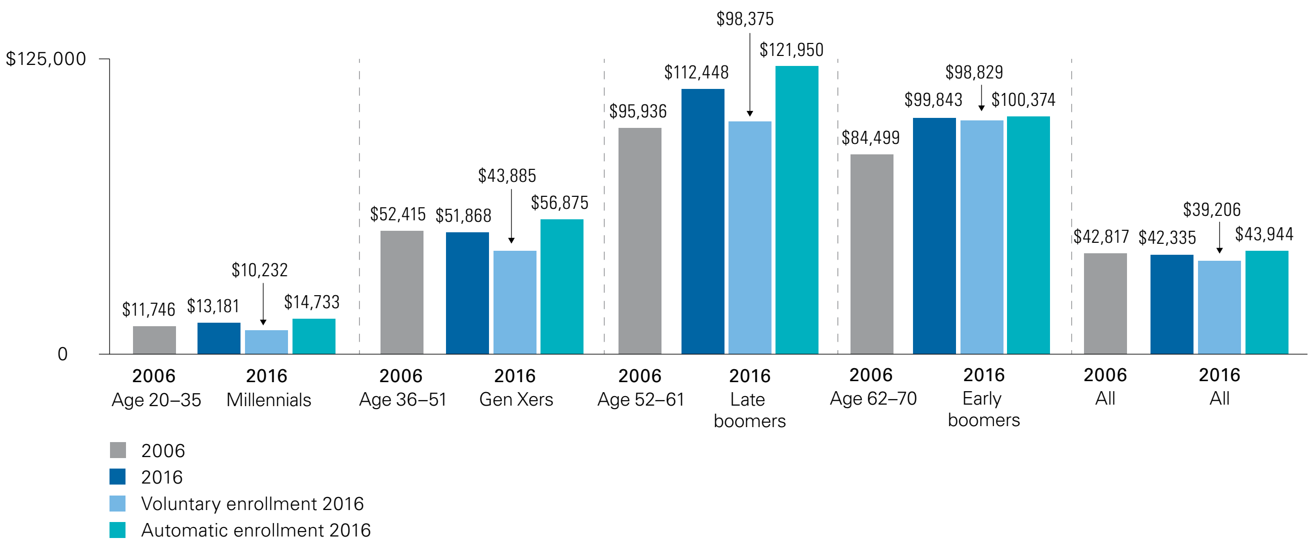
In this section, we compare account balances over time. All figures are in 2016 dollars—i.e., the 2006 values are adjusted for inflation.

Overall, the median participant account balance declined modestly between 2006 and 2016, from $42,817 in 2006 to $42,335 in 2016. However, results were mixed for our four cohorts and our two plan designs (Figure 8, Panel A). Reflecting higher contribution rates, older participants under automatic enrollment designs had median account balances that were about 20% higher in 2016 than in 2006.

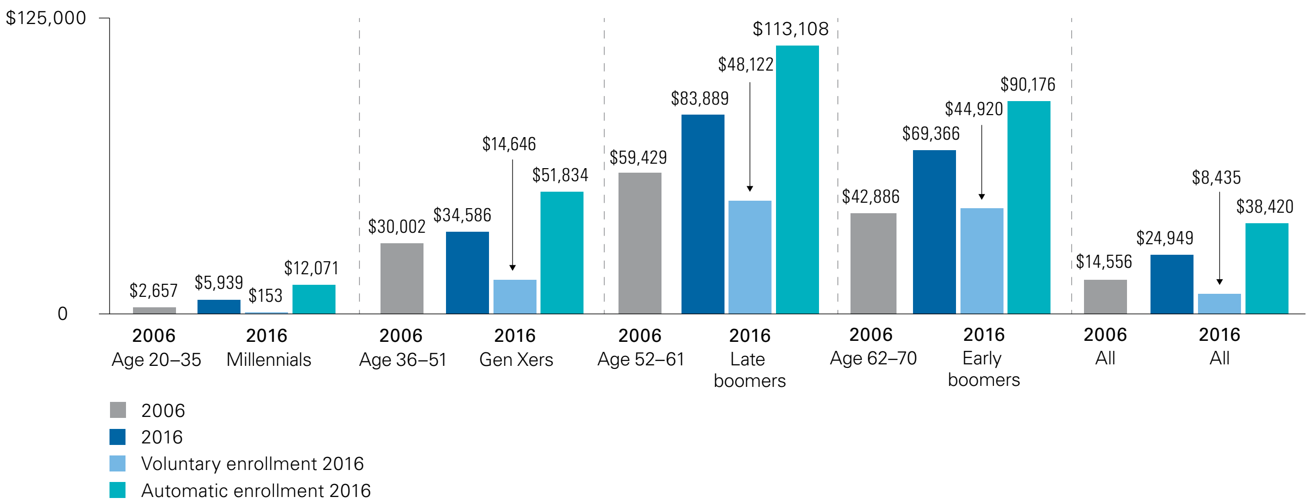
However, again, when you include both participants and eligible nonparticipants who are not contributing, a different perspective emerges. There was strong growth in employee account balances. At the median, overall employee account balances rose from $14,556 in 2006 to $24,949 in 2016. This is a relative growth of 71%. Millennial employees, under automatic enrollment designs, more than quadrupled their assets during this period compared with the same age cohort ten years earlier (Figure 8, Panel B). Gen Xers experienced only modest account balance gains during this period, while both boomer cohorts saw strong account balance growth.

Figure 8. Account balances: 2006 versus 2016

Panel A: Participant account balances (median $2016)



Panel B: Eligible employee account balances (median $2016)

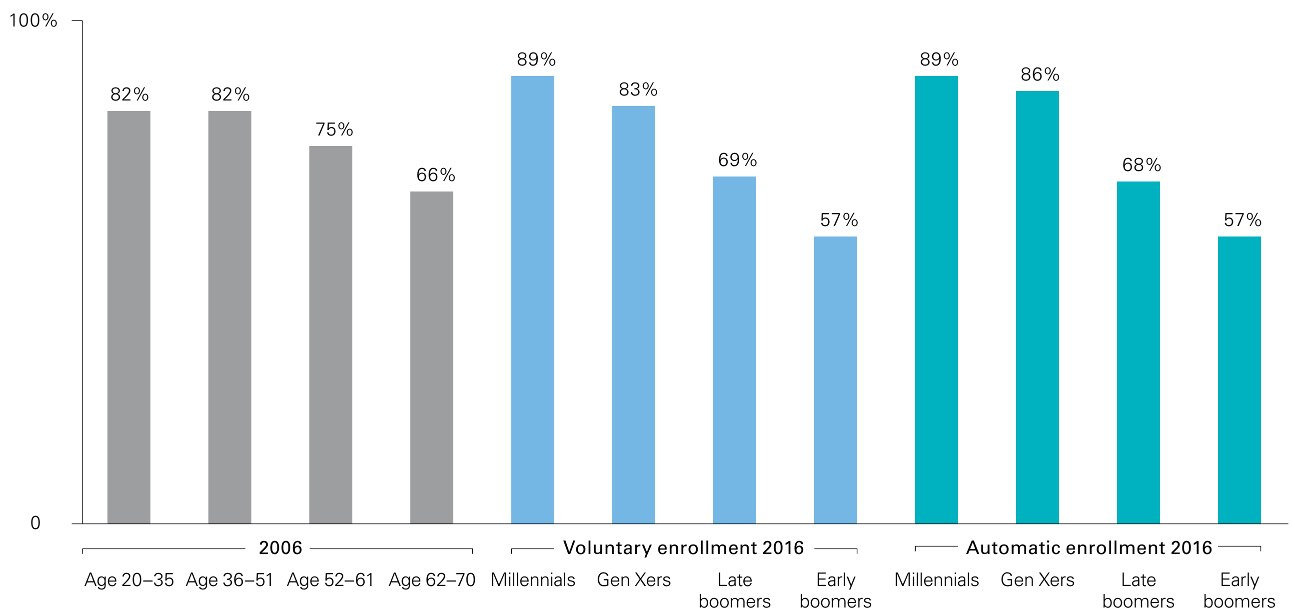


Note: 2006 account balances are adjusted to 2016 dollars.
Source: Vanguard, 2018.

Investments

In 2006, the median equity allocations were the same for the cohorts ages 20 to 35 and 36 to 51, at slightly more than 80% (**Figure 9**). The oldest cohort, ages 62 to 70, held a 66% equity allocation in 2006. The spread between youngest and oldest cohorts was only 16 percentage points. In 2016, there was much sharper differentiation in the equity allocation held by each generation. The millennial generation joining these plans under voluntary enrollment had a median equity allocation of 89%, compared with 57% for the early boomers—a 32 percentage point spread. For the millennial generation subjected to automatic enrollment, the median equity allocation was also 89%, compared with 57% for the early boomers—again, a 32 percentage point spread.

Figure 9. Participant-weighted equity allocation (median)

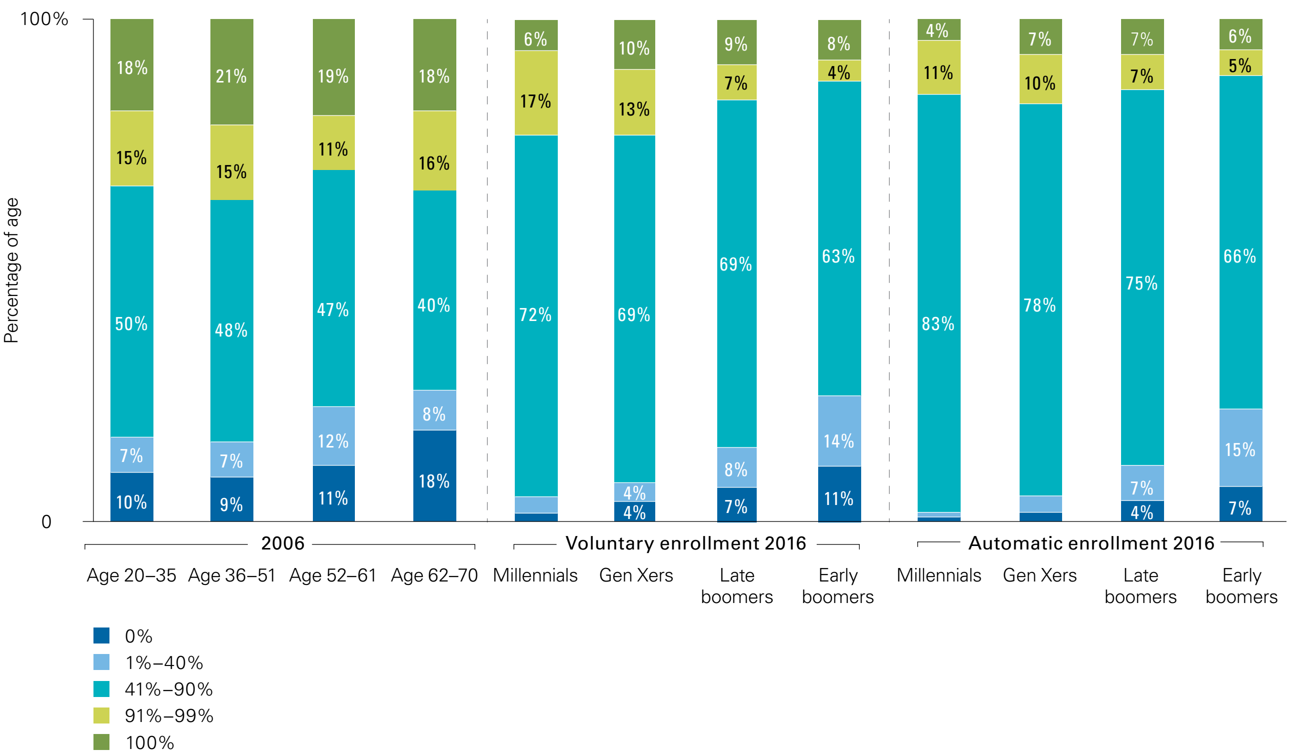


Source: Vanguard, 2018.

The distribution of equity exposure also shifted between 2006 and 2016 (**Figure 10**). In 2006, the distribution of equity exposure for the four age cohorts was fairly similar, but with the oldest cohort more likely to hold a zero-equity exposure. Twenty-eight percent of the youngest age group held extreme portfolios (defined as all equity and zero equity), and 36% of the oldest age group also held extreme portfolios. In 2016, only 8% of millennials in voluntary enrollment plans held extreme portfolios, and nearly three-quarters held portfolios with an equity allocation between 41% and 90%. Millennials in automatic enrollment designs fared even better—only 5% held extreme portfolios, and 83% held portfolios with an equity allocation between 41% and 90%.

Our research shows that the changing composition of DC plans is due to the behavioral effects arising from target-date fund usage. There is a strong default effect due to the funds being chosen as an automatic enrollment default. Moreover, target-date funds introduce a simplified portfolio choice heuristic (rule of thumb) in plans offering voluntary enrollment—namely, choice of portfolio based on retirement age.[4]

Figure 10. Distribution of equity exposure

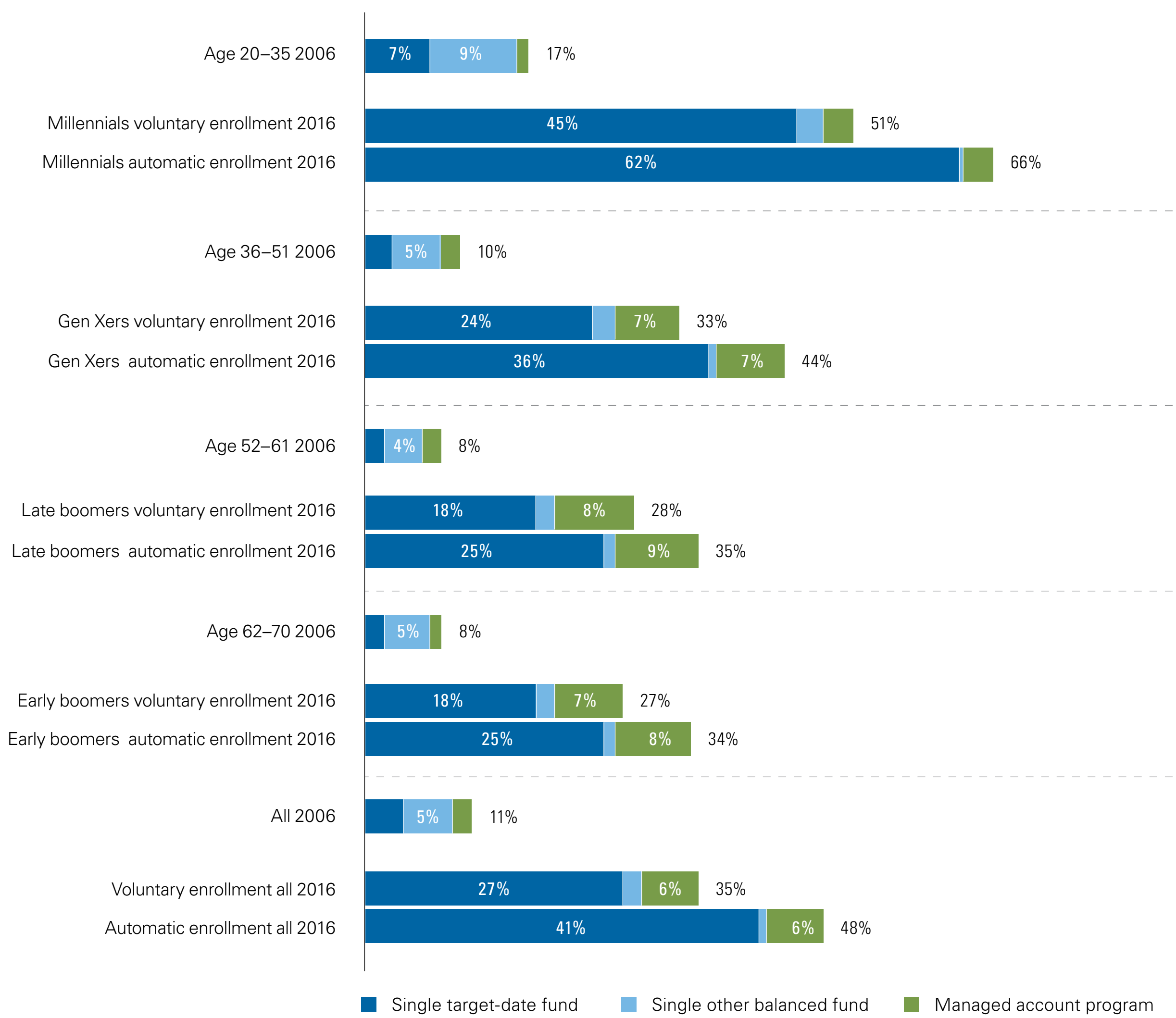


Source: Vanguard, 2018.

4 See Pagliaro, Cynthia A., and Stephen P. Utkus, 2017. *Indexing in Defined Contribution Plans 2006—2016*, Vanguard research; available at institutional.vanguard.com.

Target-date funds are the main type of professionally managed allocations in use within DC plans. Participants with professionally managed allocations have their entire account balance invested in a single target-date fund, a single target-risk or traditional balanced fund, or a managed account advisory service. In 2006, only 11% of all age cohorts were invested in a professionally managed allocation (**Figure 11**). By 2016, millennials were about twice as likely as boomers to have adopted professionally managed allocations. In 2016, 51% of millennial participants in voluntary enrollment plans and 66% in automatic enrollment plans were invested in a professionally managed allocation. Only 27% of early boomers in voluntary designs and 34% in automatic designs were using professionally managed allocations. In other words, 6 in 10 millennial participants have turned the portfolio construction task over to an investment professional vetted by the plan sponsor fiduciary. Importantly, our research shows that participants utilizing professionally managed allocations have better portfolio diversification than those participants constructing portfolios from the menu of plan options.

Figure 11. Adoption of professionally managed allocations



Source: Vanguard, 2018.

Implications

Survey data find that millennials are more risk-averse than both Gen Xers and late boomers.[5] Our data suggest that millennials may be behaving differently than other generational cohorts when it comes to retirement plan savings.

It may be that there are generational differences in saving and investment behavior arising from the unique life experiences of different demographic cohorts. Yet the data suggest that automatic enrollment and the rise of target-date funds have played substantial roles in changing DC saving and investment behavior. For example, while millennials' income and job prospects have been shaped by the global financial crisis, those who are working are, in the aggregate, saving more because of automatic enrollment. Although millennials have lived through two significant bear markets in equities, their allocation to equities is higher because they use target-date funds.

These effects are most pronounced for the youngest workers—namely, millennials—because employers have chosen to introduce automatic enrollment among new hires first. The greater dissemination of these techniques to existing employees will improve allocations and savings outcomes for older generations.

However, it is important to acknowledge that within all generational cohorts, some participants are doing better than others. At the end of the day, all participants are individuals, and participants within the various generational cohorts display a broad array of distinct retirement plan saving behaviors. All generational cohorts would be better off with higher saving rates and higher adoption of professionally managed allocations.

Appendix

Population demographics

Median eligible employee tenure (years)	2006	2016
Age 20–35	2	3
Age 36–51	8	9
Age 52–61	18	15
Age 62–70	14	17
All	7	6
Percentage male		
Age 20–35	66%	68%
Age 36–51	69	66
Age 52–61	73	67
Age 62–70	72	68
All	69	67
Median eligible employee income ($2016)		
Age 20-35	$51,368	$57,133
Age 36-51	$71,557	$78,210
Age 52-61	$76,118	$77,210
Age 62-70	$66,540	$74,012
All	$66,173	$67,958
Median eligible employee account balance ($2016)		
Age 20–35	$2,657	$5,939
Age 36–51	$30,002	$34,856
Age 52–61	$59,429	$83,889
Age 62–70	$42,886	$69,366
All	$14,556	$24,949

Note: 2006 income and account balances are adjusted to 2016 dollars.
Source: Vanguard, 2018.

5 See Holden, Sarah, Daniel Schrass, and Michael Bogdan, 2017, *Ownership of Mutual Funds, Shareholder Sentiment, and Use of the Internet, 2017,* ICI Research Perspective 23(7); available at www.ici.org/pdf/per23-07.pdf.

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