Automatic enrollment: The power of the default

Vanguard Research

February 2021

Jeffrey W. Clark and Jean A. Young

- The default decisions made by defined contribution (DC) plan sponsors under automatic enrollment have a powerful influence on participant saving and investment behavior. Among new hires, participation rates triple to 91% under automatic enrollment, compared with 28% under voluntary enrollment. Over time, 9 in 10 participants increase their deferral rates, either automatically or on their own, and more than three-quarters of participants remain exclusively invested in the default investment fund.

- Plan sponsors can use the inertia inherent in participant retirement savings decisions to improve retirement outcomes in DC plans. Strategies include increasing minimum default deferral rates, including an automatic increase feature with a cap of at least 10%, and periodically "sweeping" eligible nonparticipants into the default design.

Automatic enrollment is now a well-known strategy. Eligible employees are automatically enrolled in a DC plan at a given deferral rate, with the right to opt out of the arrangement at any time. Automatic enrollment is a pivotal strategy to improve retirement outcomes in DC plans in the United States and around the world.

In this report, we provide statistics, updated since our 2018 report, that are drawn from Vanguard recordkeeping data on the effects of automatic enrollment on participants' saving and investing behaviors. Our study is based on 813,918 newly hired eligible employees in 520 plans (**Figure 1**). Our data sample consists of newly eligible employees who were hired between January 1, 2017, and December 31, 2019, and who were still employed by the plan sponsor as of June 30, 2020.[1] The maximum period of our analysis therefore spans 42 months, or 3½ years.

We examine the effects of automatic enrollment on new hires because it is the most common way that the feature is first introduced into DC plans. Participants in the sample are younger, have shorter tenure (an average of about one year) than the general participant population, and have median account balances of $6,500. Our sample includes automatic enrollment plans with no annual increase feature and those with such a feature. Participants in plans with an annual increase feature have lower account balances than those in automatic enrollment plans with no increase feature, but they have higher account balances than those in voluntary enrollment plans. Participants in voluntary enrollment plans have lower wages than participants in automatic enrollment plans.

Among all plans in our sample that have an automatic enrollment feature, 7 in 10 have implemented automatic enrollment with automatic annual increases, and 3 in 10 have no automatic increases (**Figure 2**). However, 9 in 10 of the plans with no automatic increases permit participants to voluntarily sign up for them. All the plans in our sample selected a balanced investment strategy as the default investment, with 99% choosing target-date funds.[2]

Figure 1. Study sample

As of June 30, 2020

			Automatic enrollment plans			
		Voluntary enrollment plans	With an annual increase	With no annual increase	All	Total
Number of plans		139	265	116	381	520
Number of eligible employees hired between January 1, 2017, and December 31, 2019		280,630	306,947	226,341	533,288	813,918
Number of eligible employees hired between January 1, 2017, and December 31, 2019, and active as of June 30, 2020		154,326	164,657	147,368	312,025	466,351
Participation rate		28%	92%	90%	91%	70%
Participant demographic characteristics	Median participant account balance	$6,300	$6,400	$6,700	$6,500	$6,500
	Median employee income	$24,800	$37,500	$45,500	$40,300	$34,700
	Median employee age	30.2	32.6	33.7	33.1	32.1
	Median employee tenure (years)	0.6	0.6	0.8	0.7	0.7
	Percentage male	61%	63%	51%	59%	60%

Source: Vanguard, 2021.

1 We are examining a subset of the 5 million participants on our platform in plans for which we have completed compliance testing in 2017, 2018, and 2019. In addition, we limit our sample to plans where we also provide payroll deferral rate tracking. We also limit each plan's eligible population to 5% of our study sample in order to prevent very large plans from skewing our results. Four plans were subjected to the 5% random sample limit, and approximately 177,000 eligible employees from these organizations have been excluded from our analysis.

2 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.

Figure 2. Automatic enrollment plan features

As of December 31, 2019

		Automatic enrollment plans		
		With an annual increase	With no annual increase	All
Number of plans		265	116	381
Default deferral percentage for automatic enrollment	1%	<0.5%	3%	1%
	2%	4%	8%	5%
	3%	39%	24%	34%
	4%	19%	12%	17%
	5%	15%	16%	16%
	6%	22%	34%	26%
	7%	<0.5%	3%	1%
	Total	**100%**	**100%**	**100%**
Default deferral percentage-point increment for automatic increases	1%	98%		
	2%	2%		
	Voluntary election		91%	
	Feature not available		9%	
	Total	**100%**	**100%**	
Default fund	Target-date fund	99%	98%	99%
	Other balanced fund	1%	2%	1%
	Total	**100%**	**100%**	**100%**
Eligibility for elective employee contributions	Immediate	82%	79%	82%
	1 month	6%	4%	5%
	2–3 months	6%	13%	8%
	4–6 months	3%	4%	3%
	1 year	3%	0%	2%
	Total	**100%**	**100%**	**100%**
Number of plans with employer match		243	109	352
Eligibility for employer match	Immediate	72%	59%	68%
	1 month	5%	6%	5%
	2–3 months	6%	11%	8%
	4–6 months	5%	6%	5%
	1 year	12%	18%	14%
	Total	**100%**	**100%**	**100%**

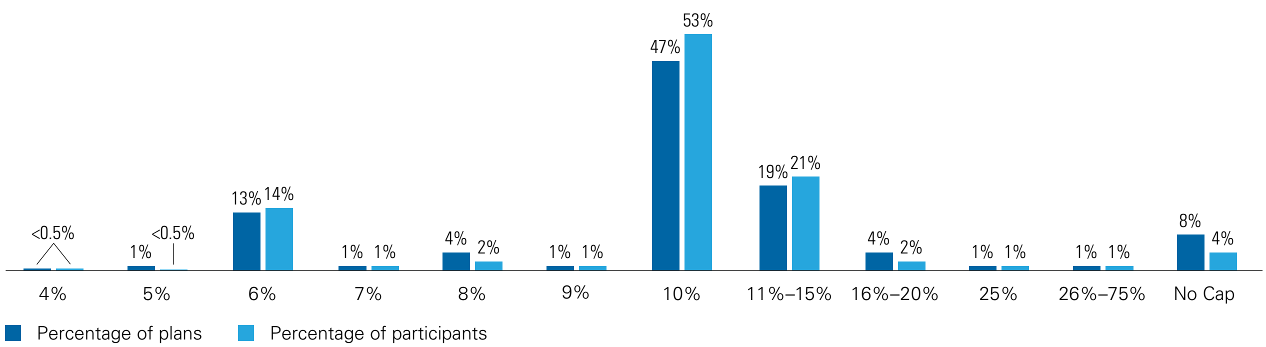
Source: Vanguard, 2021.

About two-thirds of plans implementing automatic enrollment without annual increases default participants to a salary deferral rate of 4% or higher.[3] Nearly half of plans implementing automatic enrollment with annual increases default participants to a deferral rate of 3% or less—but these plans do increase the deferral rate annually, typically by 1 percentage point per year. While plans without an automatic increase are more likely to default at higher rates, it's important to note that unless a plan offers very generous employer contributions, most participants likely need to defer more than 6%.

Among plans with automatic enrollment and annual increases, nearly half cap the annual increase at 10% (**Figure 3**). One-quarter of plans have a cap between 11% and 25%. Eight percent of plans have no cap—which is likely an error. We recommend that plan sponsors set the cap at a level where participants are saving 12% to 15% or more, factoring in employer contributions.

Figure 3. Automatic increase plan caps

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



Source: Vanguard, 2021.

3 Throughout this paper we use the terms deferral rate, contribution rate, and savings rate. Deferral rate refers to the percentage withheld from each employee paycheck. For example, a deferral rate of 6% for an individual earning the median wage of $34,700 paid biweekly translates to a biweekly employee deferral of $80 to the 401(k) plan. As employees may change their deferral rates at any time, we also compute employee contribution rates. If the individual moves from 6% to 10% midyear, that person's annual contribution rate would be 8%, or $2,782. Finally, many of the plan sponsors have employer matches or other nonmatching contributions. We are also able to compute the savings rate factoring in these employer contributions.

Interpreting our results

Throughout this report, we present results in two ways. The "average over the entire period" results are average results for the 2017–2019 period reported as of June 30, 2020. Because new hires in our sample enter the data set each month throughout this period, this "average period" statistic is the equivalent of reporting results after approximately 21 months.

We also report on results after a given calendar time period has passed, such as one, two, or three years. Each of these time-period statistics represents an average of multiple overlapping periods. For example, the results for "after one year" are an average of many different one-year periods: employees hired in January 2017 and evaluated in January 2018, those hired in February 2017 and evaluated in February 2018, and so on through the June 2019 to June 2020 group of new hires. Two- and three-year periods are structured in a similar way. There are 30 distinct groups of new hires in the one-year period, 18 for the two-year periods, and 6 for the three-year periods.

Participation rates

Automatic enrollment triples the participation rates among new hires. Over the entire period of our study, the participation rate for new hires was 91% under automatic enrollment versus 28% under voluntary enrollment (**Figure 4**). After three years, 92% of participants hired under automatic enrollment were still participating versus 29% of participants under voluntary enrollment.

Figure 4. Participation rates and automatic enrollment

Employees hired between January 1, 2017, and December 31, 2019, as of June 30, 2020

		Average over entire period	Point-in-time results after:		
			1 year	2 years	3 years
Plan participation rates	Number of eligible employees	466,351	363,390	114,757	31,274
	Voluntary enrollment	28%	25%	30%	29%
	Automatic enrollment all	91%	88%	90%	92%
	Automatic enrollment with no annual increase	90%	84%	88%	90%
	Automatic enrollment with an annual increase	92%	91%	91%	93%

Source: Vanguard, 2021.

Automatic enrollment raises plan participation rates most dramatically among young and low-income workers, groups for whom participation rates are traditionally very low under voluntary enrollment designs (**Figure 5**). Employees earning less than $15,000 had a participation rate of 82% under automatic enrollment versus 4% under voluntary enrollment. Similarly, 9 of every 10 employees younger than 25 were plan participants under automatic enrollment, versus fewer than 2 in 10 under voluntary enrollment.

Although the benefits are greatest for these demographic groups, even the affluent benefit from automatic enrollment. Among those earning more than $150,000 a year, new-hire participation rates are also higher under automatic enrollment than under voluntary enrollment.

Does plan design—specifically, the initial deferral rate—influence the likelihood that an employee will quit an automatic enrollment plan? We might expect that plans with initial deferral rates of 2% or 3% would see fewer employees quitting the plan, given that these lower

Figure 5. Participation rates by employee demographics over period

Employees hired between January 1, 2017, and December 31, 2019, as of June 30, 2020

		Voluntary enrollment	Automatic enrollment	Total
Number of eligible employees		154,326	312,025	466,351
Overall		28%	91%	70%
Income	<$15,000	4%	82%	27%
	$15,000–$29,999	18%	87%	59%
	$30,000–$49,999	35%	91%	74%
	$50,000–$74,999	47%	92%	81%
	$75,000–$99,999	58%	93%	85%
	$100,000–$150,000	72%	94%	91%
	$150,000+	79%	97%	95%
Age	<25	16%	90%	56%
	25–34	29%	92%	72%
	35–44	34%	91%	75%
	45–54	36%	91%	75%
	55–64	36%	91%	74%
	65+	18%	84%	58%
Gender	Male	28%	90%	68%
	Female	29%	91%	70%

Source: Vanguard, 2021.

deferral rates have little impact on take-home pay. Conversely, we might think that deferral rates of 5% or 6% would lead to a higher opt-out rate because of their larger impact.

Our results suggest that employee quit rates do not appear to vary in response to a plan sponsor's choice of the initial deferral rate (**Figure 6**). The participation rate among employees earning $15,000–$29,999 is around 85%—regardless of whether the initial deferral rate is 2% or 6%.

Figure 6. Opt-out rates by plan design over study period

Employees hired between January 1, 2017, and December 31, 2019, as of June 30, 2020

		Hired under automatic enrollment		
		All	Income $15,000– $29,999	Age 25–34
Number of eligible employees		312,025	47,804	116,789
Aggregate		9%	13%	8%
Default percentage for automatic enrollment	1%	*	*	*
	2%	15%	20%	13%
	3%	7%	7%	7%
	4%	10%	15%	8%
	5%	10%	16%	9%
	6%	9%	14%	9%
	7%	*	*	*
Value of employer match as a percentage of wages	0%	13%	18%	11%
	Greater than 0 but less than 3%	12%	10%	10%
	3 to 3.9%	6%	7%	6%
	4 to 4.9%	10%	16%	10%
	5% or more	10%	19%	9%
Type of employer contributions	Matching only	8%	10%	7%
	Match plus other employer contribution	11%	6%	9%
	Other employer contribution only	9%	12%	8%
	No employer contribution	*	*	*

* Cells with fewer than five plans are omitted.

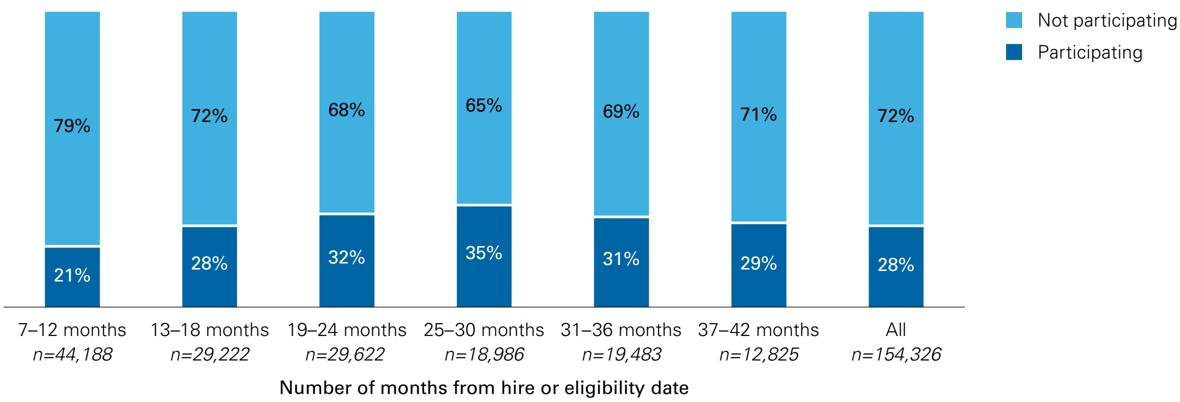
Source: Vanguard, 2021.

The effects of time vary depending on the plan design (**Figure 7**). With voluntary enrollment, there is a slight tendency for plan participation rates to rise with time. After three years, the average participation rate under voluntary enrollment is 29%, up from 21% initially. Participation rates stay quite high in automatic enrollment plans, remaining steady at 92% after the first six months and after three years.

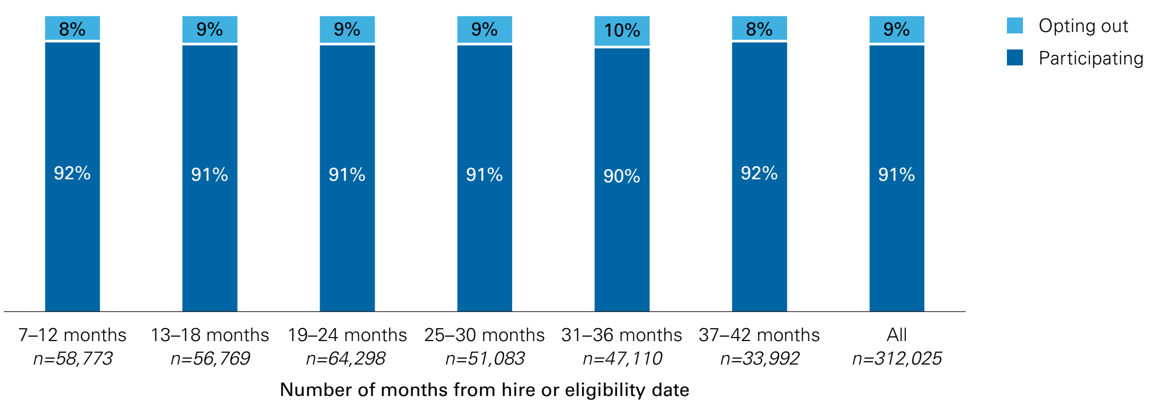
Figure 7. Participation rates over time

Employees hired between January 1, 2017, and December 31, 2019, as of June 30, 2020

a. Voluntary enrollment, percentage of employees



b. Automatic enrollment all, percentage of employees



Source: Vanguard, 2021.

In these participation rates for new hires, it is important to remember that we are reporting only on eligible employees who remain with the employer. Among new hires, employee turnover rates are quite high (**Figure 8**). Over our sample period, 4 in 10 eligible employees left the sample because of job change.[4]

Figure 8. Employee turnover rates

Employees hired between January 1, 2017, and December 31, 2019, as of June 30, 2020

	Average over entire period	Point-in-time results after:		
		1 year	2 years	3 years
Voluntary enrollment	45%	40%	53%	56%
Automatic enrollment all	35%	29%	42%	52%
Automatic enrollment with no annual increase	28%	22%	35%	44%
Automatic enrollment with an annual increase	40%	33%	48%	57%

Source: Vanguard, 2021.

4 Most job changes are a result of individual employees changing employers. However, a small fraction are a result of the sale of a division by an employer.

Contribution rates

We next consider the effects of automatic enrollment on plan contribution rates over time.

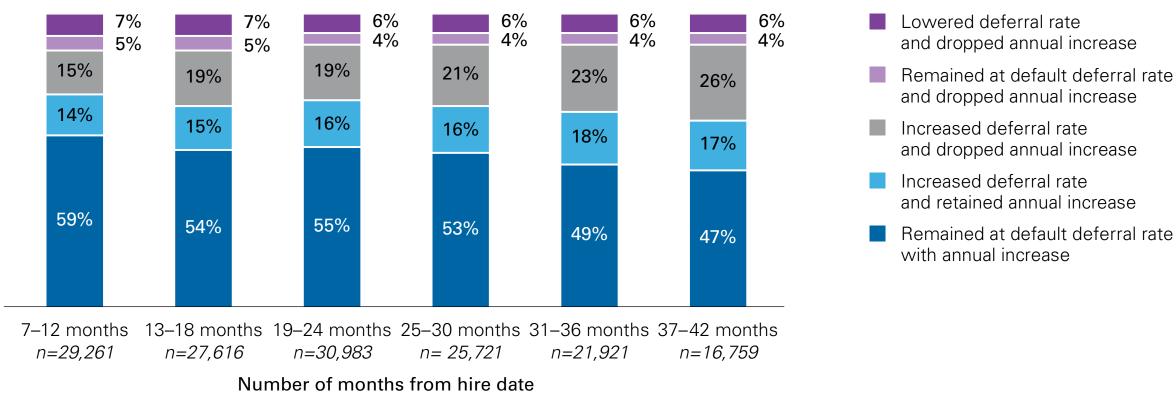
In automatic enrollment plans with no increase feature, the fraction of participants who remain at the default deferral rate set by the employer declines over time—from 50% after 12 months to 37% after three years (**Figure 9**, Panel B). One-third of participants have chosen to override the employer's default and raise deferral rates after three years, and another quarter have chosen to override the employer's default, raise their deferral rate, and sign up for a deferral rate increase. In total, more than 9 in 10 eligible participants after three years remain at the default deferral rate or higher.

A more complex dynamic is at work in automatic enrollment plans with an increase feature. Participants may choose to raise or lower their deferral rate while ending or continuing the automatic increase feature. After three years, about half of participants remain in the original automatic plan design, including the automatic increase feature (**Figure 9**, Panel A). Another 17% have increased their contribution rate while retaining the increase feature, for a total of two-thirds retaining the automatic increase feature. Another quarter have boosted contributions while dropping the auto-increase feature. So while half remain in the original deferral rate design, 9 in 10 participants have deferral rates above the initial default design.

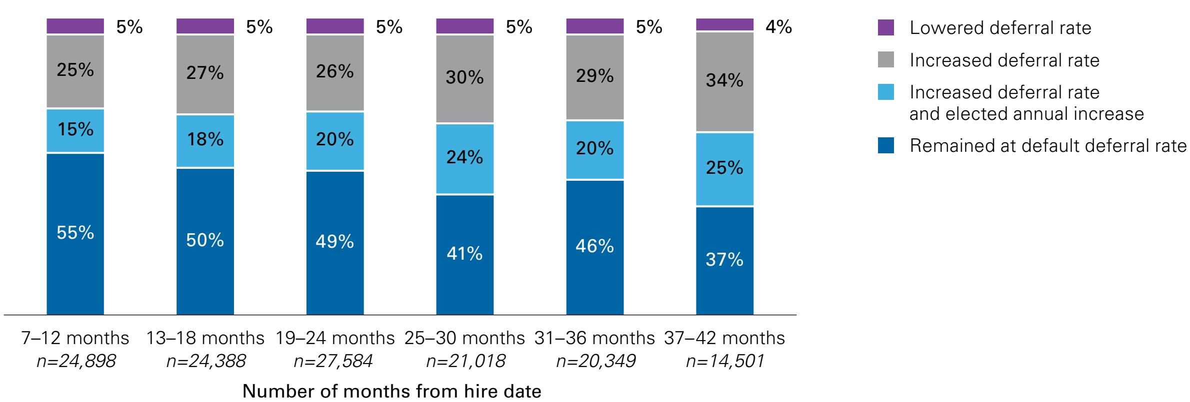
Figure 9. Participant contribution rates under automatic enrollment over time

Participants hired between January 1, 2017, and December 31, 2019, as of June 30, 2020

Panel A. Automatic enrollment with an annual increase, percentage of participants
n=152,261



Panel B. Automatic enrollment with no annual increase, percentage of participants
n=132,738



Source: Vanguard, 2021.

However, participants who override the default behave similarly, regardless of whether their plans have automatic increases. Participants who increase their deferral rate and do not use an automatic increase achieve a deferral rate of about 10% **(Figure 10)**. Those who increase their deferral rate and retain the automatic increase achieve a rate of about 12% after three years.

Eligible employee versus participant contributions

Default deferral rates do tend to be somewhat sticky, though less enduring than the overall effect of defaults on participation rates. One criticism of automatic enrollment is that, because employers set deferral rates too low, participants who would have voluntarily enrolled at a higher level instead remain at a reduced contribution rate.

Figure 10. Participant average contribution rates under automatic enrollment over time

Employees hired between January 1, 2017, and December 31, 2019, as of June 30, 2020

		7–12 months	13–18 months	19–24 months	25–30 months	31–36 months	37–42 months	All
Panel A. Automatic enrollment with an annual increase *n=164,657*	Lowered deferral rate and dropped annual increase	2.6%	2.6%	2.7%	2.6%	2.6%	2.5%	2.6%
	Remained at default deferral rate and dropped annual increase	4.4%	4.5%	4.8%	4.8%	5.0%	4.9%	4.7%
	Increased deferral rate and dropped annual increase	9.5%	9.4%	9.0%	9.1%	9.7%	9.7%	9.4%
	Increased deferral rate and retained annual increase	9.4%	10.1%	9.8%	10.7%	11.1%	12.1%	10.4%
	Remained at default deferral rate with annual increase	5.0%	5.1%	5.2%	5.6%	6.1%	6.5%	5.5%
Panel B. Automatic enrollment with no annual increase *n=147,368*	Lowered deferral rate	3.2%	3.4%	3.3%	3.3%	3.0%	2.8%	3.2%
	Increased deferral rate	10.2%	10.4%	10.0%	10.0%	9.5%	9.8%	10.0%
	Increased deferral rate and elected annual increase	5.0%	6.0%	6.6%	6.6%	6.2%	6.4%	6.3%
	Remained at default deferral rate	4.1%	4.0%	3.4%	3.5%	3.0%	3.3%	3.6%

Source: Vanguard, 2021.

Although this may be true for individual participants, in the aggregate, automatic enrollment still raises total contribution levels. In our sample, it is true that the average participant contribution rate for new hires in voluntary plans is slightly higher, at 7.0%, than the 6.4% rate for those in automatic enrollment plans (**Figure 11**). However, as plan sponsors adopt stronger defaults, these rates have begun to converge.

We also calculate contribution rates for the entire employee population—which includes both the plan participants and the nonparticipants, who contribute at 0%. When these zero-contributing employees are included, voluntary enrollment yields much lower contribution rates than automatic enrollment—1.9% versus 5.8% over the three-year period.

Figure 11. Contribution rates and automatic enrollment

Employees hired between January 1, 2017, and December 31, 2019, as of June 30, 2020

		Average over entire period	Point-in-time results after:		
			1 year	2 years	3 years
Annual increase feature	*n=*	*148,600*	*121,483*	*63,991*	*16,605*
	Remained in annual increase feature with no changes	50%	51%	48%	43%
	Remained in annual increase feature with an increase in deferral rate	16%	14%	18%	20%
	Remained in annual increase feature with a decrease in deferral rate	3%	4%	2%	2%
	Opted out with an increase in deferral rate	22%	21%	24%	27%
	Opted out with no deferral rate changes	4%	4%	4%	4%
	Opted out with a decrease in deferral rate	5%	6%	4%	4%
Average participant contribution rates	*n=*	*262,334*	*235,452*	*125,557*	*32,066*
	Voluntary enrollment	7.0%	6.8%	7.2%	7.6%
	Automatic enrollment all	6.4%	5.9%	6.6%	7.3%
	Automatic enrollment with no increase	6.0%	5.8%	6.1%	6.6%
	Automatic enrollment with an increase	6.7%	5.9%	6.9%	7.9%
Average employee contribution rates	*n=*	*290,102*	*348,569*	*174,921*	*44,023*
	Voluntary enrollment	1.9%	1.7%	2.1%	2.1%
	Automatic enrollment all	5.8%	5.1%	5.9%	6.7%
	Automatic enrollment with no increase	5.3%	4.8%	5.3%	5.9%
	Automatic enrollment with an increase	6.1%	5.4%	6.3%	7.3%

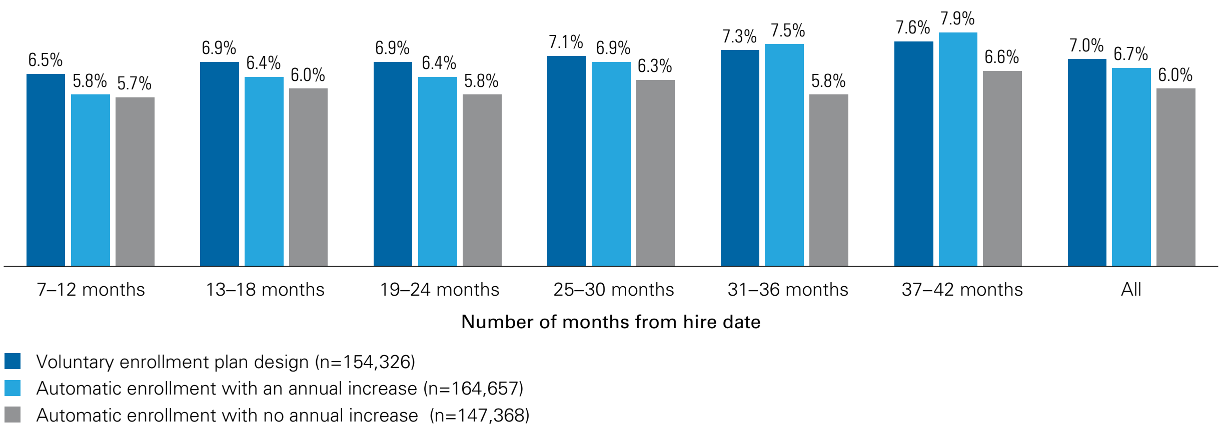
Source: Vanguard, 2021.

Over time, contribution rates generally rise among voluntary enrollment participants and participants automatically enrolled with an automatic increase (**Figure 12**). The same is true of the entire employee population, including zero-contributors. Most notable is the fact that among all eligible employees, automatic enrollment plus an automatic increase feature generally lead to higher employee contributions over time.

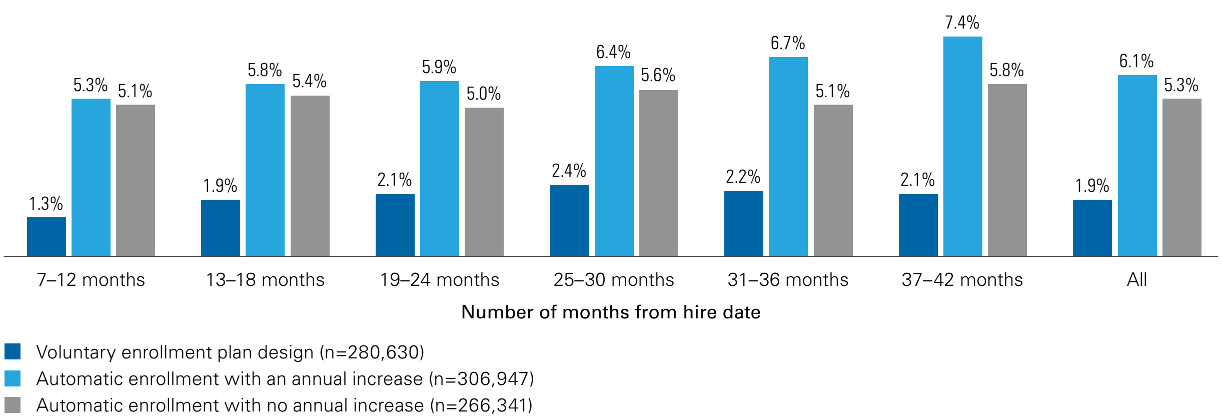
Figure 12. Employee average contribution rates over time

Employees hired between January 1, 2017, and December 31, 2019, as of June 30, 2020

a. Plan participants, average participant contribution rate



b. Eligible employees, average employee contribution rate



Source: Vanguard, 2021.

Default investment fund

We examine the impact of automatic enrollment on investment behavior. Averaged over our entire study period, participants in automatic enrollment plans are about 30% more likely to remain in the default investment option designated by the employer—86% of participants under automatic enrollment remain 100% invested in the default option, versus 66% of participants under voluntary enrollment who happen to have chosen to invest their entire account in the designated default (**Figure 13**).

The effects are sticky over time. After three years, about 8 in 10 participants are still directing 100% of their contributions to the default investment option, and another 17% are using the default investment in combination with other plan investment options (**Figure 14**).

Figure 13. Default fund option and automatic enrollment

Employees hired between January 1, 2017, and December 31, 2019, as of June 30, 2020
Employee elective sources only

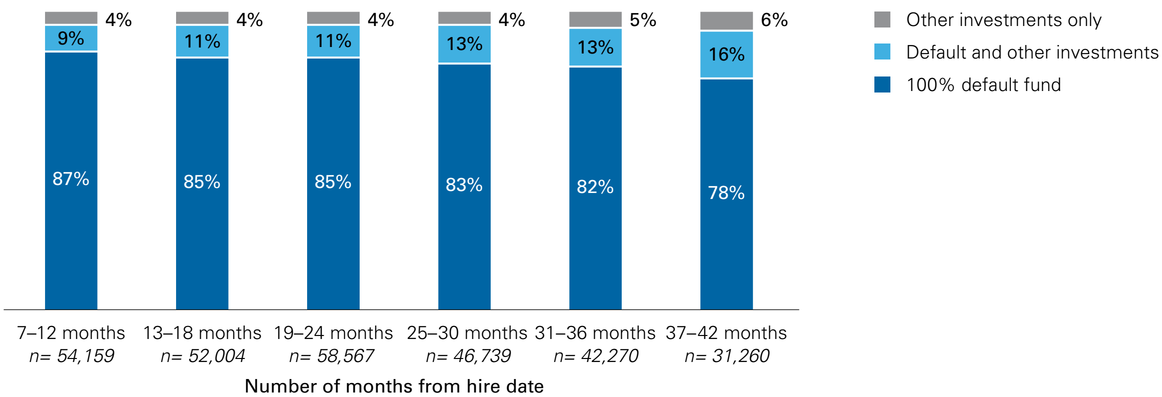
		Average over entire period	Point-in-time results after: 1 year	2 years	3 years
	n=	*392,521*	*315,334*	*150,222*	*35,725*
Voluntary enrollment	100% in default option	66%	67%	65%	62%
Automatic enrollment	100% in default option	86%	88%	84%	80%
	Partial investment in default option	10%	9%	12%	15%
	100% opted out of default option	4%	3%	4%	5%

Source: Vanguard, 2021.

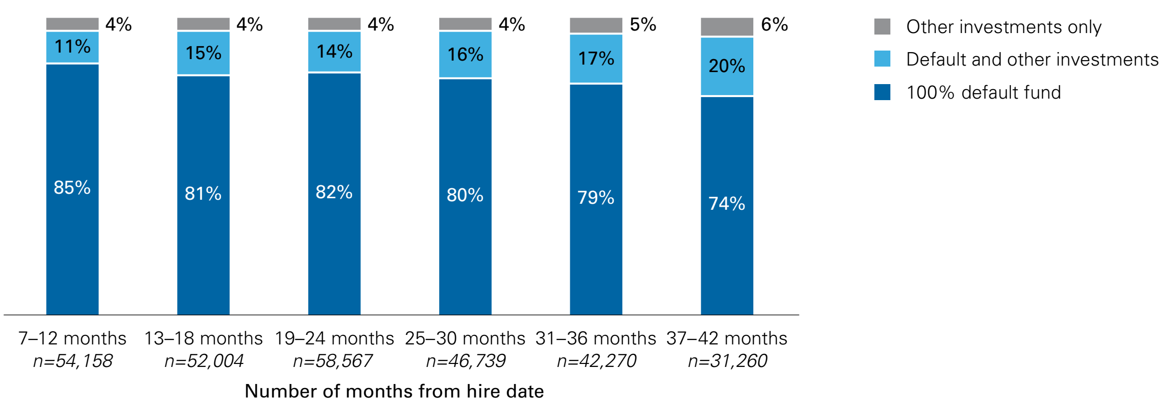
Figure 14. Default fund utilization over time

Participants hired between January 1, 2017, and December 31, 2019, as of June 30, 2020

a. Employee sources only, percentage of participants
n=284,999



b. Employer and employee sources, percentage of participants
n=284,999



Source: Vanguard, 2021.

Loans

Finally, we analyze the incidence of loans that participants take from their plan accounts. A longstanding question: Is automatic enrollment retirement savings offset by higher debt levels for participants automatically enrolled in the plan? While we do not have household balance sheets for these plan participants, we can examine the incidence of plan loans.[5]

Over the time period we observe, auto-enrolled participants are slightly more likely to have a loan outstanding than voluntarily enrolled participants (**Figure 15**). For example, after three years, 24% of auto-enrolled participants have loans versus 20% of voluntarily enrolled participants (a 17% relative difference).

The amounts borrowed by auto-enrolled participants follow a similar pattern. Overall, roughly three-quarters of participants do not borrow from their accounts during this period, regardless of plan design. Although the fraction of automatic enrollment participants with a loan is higher, it is important to keep in mind that automatic enrollment triples the participation rate compared with eligible employees in plans with voluntary enrollment designs. So while there are more participants with loans, there are still more eligible employees participating without a loan under automatic enrollment than in plans with voluntary enrollment designs.

Figure 15. Loans

Participants hired between January 1, 2017, and December 31, 2019, as of June 30, 2020

		Average over entire period	Point-in-time results after: 1 year	2 years	3 years
Percentage of participants taking loans	Voluntary enrollment	10%	13%	19%	20%
	Automatic enrollment	11%	13%	18%	24%
Voluntary enrollment	Average loan issuance amount	$5,190	$4,848	$4,877	$5,514
	Median loan issuance amount	$2,155	$2,029	$2,096	$2,500
Automatic enrollment	Average loan issuance amount	$5,175	$4,765	$4,852	$5,366
	Median loan issuance amount	$2,240	$2,056	$2,300	$2,700

Source: Vanguard, 2021.

5 For an analysis of how automatic enrollment retirement savings is offset by higher debt levels for these participants, see John Beshears, James J. Choi, David Laibson, Brigitte C. Madrian, and William L. Skimmyhorn, *Borrowing to Save? The Impact of Automatic Enrollment on Debt*, July 2019, at https://www.nber.org/papers/w25876. The authors find no significant change in debt, excluding auto loans and mortgages, which are secured debt used to acquire assets.

Implications

Automatic enrollment has emerged as a pivotal strategy to improve plan participation and employee saving rates in 401(k) and other DC retirement plans. Our analysis suggests that the default effect is strongest in influencing participation rates, with 9 in 10 automatically enrolled new hires remaining in their employer plan after three years. The default effect on portfolio choice is not quite as strong, with 8 in 10 participants contributing exclusively to the default option after three years and another 17% contributing to the default and other plan investment options. The default effect for an automatic increase feature is somewhat weaker as well. After three years, about two-thirds of eligible participants remain in the automatic escalation default, although a sizable minority raised contribution rates while ending the auto-increase feature.

Automatic enrollment raises the minimum, or "floor," contribution rate in a DC plan by replacing zero-contributors with participants saving generally at 4% or higher. Sponsors can seek to improve retirement outcomes through automatic enrollment combined with higher initial deferral rates, an automatic increase feature, and a total automatic increase cap of at least 10%.

Another important method to improve outcomes is to extend the automatic enrollment design from only new hires to all eligible nonparticipants. Plan sponsors should consider using the power of inertia by employing various types of sweeps, such as reenrollment, under-saver, and automatic increase sweeps.

This analysis underscores the importance of plan design defaults, the role of inertia in retirement savings decisions, and the impact of employer plan design decisions on retirement adequacy among DC plan participants. All things being equal, stronger default designs will help improve retirement outcomes because of the effect of inertia. Sponsors should seek to take advantage of this behavioral bias when designing their DC retirement programs.