

Deepening our Understanding of Savings Automation in Retirement and Non-retirement Contexts

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Abstract

Twenty years of research focusing on retirement savings demonstrate that automating components of the savings process can increase participation in retirement plans, contribution rates, and balances. We review the literature on these benefits and the potential negative consequences of automation, such as reduced liquidity. We also highlight areas of examined and unexamined heterogeneity, including prior work on the relationships among time preferences, savings automation, and financial health. Recent policies like the SECURE 2.0 Act of 2022 and a growing number of state auto-IRA programs are encouraging greater automation of both retirement savings and liquid emergency savings, and may provide new avenues for understanding the impacts of savings automation. We conclude by calling on researchers to further explore non-retirement and retirement savings automation, longitudinal outcomes of retirement success, and potential social wealth inequalities exacerbated by automation in employer plans.

Keywords: savings automation; retirement savings

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Savings are essential for weathering financial shocks and planning for the future. Although Americans' personal savings rates have varied substantially over the last 60 years, many people today lack sufficient savings. In 2023, only 57 percent of households in the United States had enough savings to cover at least three months of living expenses (Financial Health Network 2023). The Employee Benefit Research Institute (EBRI 2023) reports that only one in five Americans feels confident they will have enough money to live comfortably in retirement, and only 27 percent of retirees feel very confident they will live comfortably throughout their retirement years. These statistics suggest that a significant number of Americans are neither prepared for short-term shocks nor for retirement, which could lead to lower financial well-being, delayed retirement, and an increased strain on public pension and welfare systems.

For years, researchers have worked to identify barriers to saving, to test interventions to increase saving, and to examine the long-term benefits of those interventions. A common factor driving these interventions is automating part of the savings process. By 'automating,' we mean that an aspect of the savings process happens without the consumer needing to take action. The specific implementation of automation may vary, with different variations addressing different consumer tendencies.¹

In the retirement space, automation often includes **automatic enrollment** into a defined contribution retirement savings plan (see Beshears et al. 2010 for a brief overview). With automatic enrollment, employees are included in a program that deducts money from their paychecks and places it into a 401(k) or similar type of tax advantaged retirement account unless they opt out. Automatic enrollment of employees into retirement savings programs can boost

enrollment by as much as 86 percent (Derby et al. 2023) and push overall participation rates up to 91 percent (Vanguard Research 2021). Automatic enrollment is often paired with **automatic escalation**, which increases the amount deducted from paychecks over time. Hence, as time passes, savings contributions can rise. Both forms of automation increase savings in a way that requires little consumer effort.

To automate savings outside of employer provided retirement plans, consumers have to take some action. Depending on their financial institution's capabilities, consumers can set up **automatic transfers** from their paychecks or from one account to another, including automatic investment purchases, or opt for **automatic rebalancing** of investment account assets to achieve a given asset allocation. Using these means, the effort to save is greatly reduced because consumers make an automation decision once. As long as automation remains in place, consumers will continue to save with no additional effort required.

The 2022 Setting Every Community Up for Retirement Enhancement (SECURE) 2.0 Act is evidence that policymakers now recognize the power of automation. The Act aims to extend the reach of automation features to improve retirement savings by requiring that many retirement plans (including many new 401(k) and 403(b) plans, multiple employer plans, and pooled employer plans) automatically enroll employees in these plans. It also imposes default contribution rates at a minimum of 3 percent of salaries and automatic escalation of contributions at 1 percent annually, capping at 15 percent after 2025. The SECURE 2.0 Act may also boost Americans' liquid emergency savings, as it permits employers to automatically enroll employees into emergency savings accounts linked to their retirement plan.² Emergency savings accounts—perhaps especially emergency savings accounts with automatic transfers—may increase employees'

chances of weathering a financial shock and reduce the need to make costly withdrawals from retirement savings or take on debt.

Importantly, however, the regulatory requirements of the SECURE 2.0 Act do not apply to every employer-sponsored retirement plan, and do not guarantee retirement plans for every individual. For an increasing number of Americans working at jobs where retirement plans are not available—including some part-time workers and independent contractors—the corresponding benefits of expanded savings automation will not be realized. Given the emphasis on savings automation in the SECURE 2.0 Act, but also in recognition of the limitations of this intervention, our discussion aims to foster research and thinking regarding saving in the presence and absence of automation for different types of savings and consumer groups. To this end, we discuss:

- (1) The benefits of savings automation (see Reuter forthcoming) and recent findings that suggest a smaller, though still positive, benefit of automation.
- (2) Variation in the effects of automation by demographic and psychological characteristics, including an extension of previous work on time preferences.
- (3) The need for research examining non-retirement savings automation, long-term retirement outcomes, wealth inequalities, and the impact of policies like SECURE 2.0.

The Rationale for Savings Automation

As a behavioral intervention, savings automation can help consumers save more by circumventing several well-documented consumer tendencies, including status quo bias and present bias. Consumers show a tendency to maintain the status quo (Samuelson and Zeckhauser 1988), so those not currently saving may require strong motivation to start or processes that make saving easier. With automation, consumers can save with reduced effort, as they do not need to

repeatedly act. This reduction in effort is important for present-biased consumers, whose tendency to prioritize the present means they may never set aside the time or money to save for the future (Meier and Sprenger 2010; Ashraf et al. 2006) and may spend their income before making the decision to save. For those with disposable income available to save but who are present focused, the reduction in effort for saving introduced by automation may be especially helpful. Once the initial enrollment decision is made, people are unlikely to stop saving for the same reason it was difficult to start—inertia.

Automation may also lead to inattention that can be beneficial for long-term investments such as those used for retirement saving. Specifically, research on individual consumers finds that those who trade the most tend to have lower returns than those who adopt a ‘set it and forget it’ strategy with their investments (Barber and Odean 2001). In addition, investors are rarely successful at ‘timing’ the market—that is, buying low and selling high—thereby achieving superior returns (Barber and Odean 2013). For these reasons, both academic research and popular advice tend to suggest that people invest in passive indexes rather than actively managed funds (Choi 2022). Although there may be a downside to inattention inherent in automation (e.g., account abandonment; discussed below), in the context of trading, it may also help investors avoid overtrading and suboptimal market timing. The chapter by Reuter in this volume elaborates on the portfolio management mistakes targeted by investment-related interventions.

Savings Automation Benefits Participation, Contribution Rates, and Net Saving

Consistent with the behavioral rationale just discussed, recent research (summarized in Table 1) generally shows a positive relationship between automation interventions and consumer outcomes.³ For example, researchers find that automatic enrollment in employer-sponsored

retirement plans significantly increases employees' participation in those plans, contributions, and net savings (Beshears et al. 2022; Cribb and Emmerson 2021; Falk and Karamcheva 2023; Derby et al. 2023). Furthermore, automatic escalation helps raise contribution rates for automatically-enrolled participants (Vanguard Research 2021; Beshears et al. 2017). Although the literature on non-retirement savings is smaller, a quasi-experiment in the UK found that automatic enrollment increases this kind of saving (Berk et al. 2022). Automation also appears to be associated with greater non-retirement savings for those with very low income (Newmeyer et al. 2021).

Table 1 here

Not All Consequences of Savings Automation Are Positive

Despite the power of automating steps in the savings process, it is not necessarily a complete solution to savings challenges. In this section, we discuss ways in which initial participation rates or savings amounts typically examined in research (Table 1) may provide an overly simplistic view of the benefits of savings automation.

Automatic savings into retirement accounts could lead to saving too little or too much. Starting with the risk of saving too little, a potential challenge is that participants frequently perceive the default choice of contribution rate as a recommendation from their employer (Madrian and Shea 2001). This means that the path of least resistance in automation may include signing up at a lower contribution rate than what an individual might have selected without a default. Indeed, in a Vanguard study (2021) of newly hired employees eligible for 520 different retirement plans in 2017, 2018, and 2019, the average retirement contribution rate after three years for plans with no automatic enrollment (i.e., no default contribution rate) was 7.6 percent, in contrast to 6.6 percent for plans with automatic enrollment (and no automatic escalation). The average

contribution rate for plans with automatic enrollment was therefore lower, despite plan participants having higher median income than employees participating in the voluntary enrollment plans (Vanguard Research 2021). Only 3 percent of plans in this study had default contribution rates exceeding 6 percent (Vanguard Research 2021).

The problem of lower savings rates with automatic enrollment may be mitigated by pairing automatic enrollment with automatic savings escalation, which has been effective at increasing contribution rates (Thaler and Benartzi 2004; Benartzi and Thaler 2013). Automatic escalation is common in employer-provided retirement plans with automatic enrollment: Vanguard's (2021) study reported that seven in 10 plans with automatic enrollment included an automatic annual increase in contribution rates. Plans with both automatic enrollment and escalation had average contribution rates after three years of 7.9 percent, exceeding the 7.6 percent average contribution rate of plans without automatic enrollment. In addition, researchers examining data from 2017 to 2020 from a state-sponsored auto-IRA program, OregonSaves, demonstrated that increases in savings from the 5 percent default contribution rate to 6 and 7 percent occurred as a direct result of the program's one percent annual automatic escalation (Chalmers et al. 2021).

A second source of saving 'too little' could be that retirement plan participants select overly conservative portfolio allocations. To address the effort and knowledge barriers required for plan participants to choose appropriate investments and to rebalance them over time, many plans now automatically enroll participants in target date funds. These funds establish a combination of assets that automatically change to align the fund's risk level with the time remaining to an estimated retirement year. Target-date funds are nearly universally the default allocation for employers who use automatic enrollment for their retirement plans: in a Vanguard (2021) study, 99 percent of automatic enrollment plans had a target date fund as the default allocation. This is important

because their data also showed that the default portfolio investment is sticky: 86 percent of participants who were automatically enrolled remained entirely invested in the default option. For a more complete discussion of target date funds, please refer to the chapter by Reuter in this volume.

An alternative risk to the possibility of undersaving for retirement as a result of automation is that some consumers may save ‘too much,’ with a variety of downstream consequences. Recent literature has explored three outcomes: lower 401(k) balances through early withdrawals and loans, increased debt, and reduced contributions in subsequent jobs. Some early withdrawals from a 401(k) may not be the result of oversaving, but instead reflect the complexity of executing a rollover when people leave an employer, or an individual’s strategy to use a retirement account for precautionary savings. However, a traditional 401(k) can be a much more expensive option for precautionary savings than many other savings vehicles, as there are typically fees and penalties associated with early withdrawals.⁴ In a study of an employer’s implementation of automatic enrollment, Beshears et al. (2018) found that the share of plan participants who had taken at least one non-rollover withdrawal within eight years of being hired was higher for employees who were automatically enrolled in the retirement plan (58.6% of plan participants) vs. employees who were not automatically enrolled (43.2%).⁵

Another possible option for people who need to access their retirement accounts for liquidity is to take a loan from the account that is repaid over time. Vanguard (2021) reported a higher incidence of loans among those who were automatically enrolled (24%) versus those who enrolled voluntarily (20%). After taking withdrawals and loans into account, there is evidence that automatic enrollment continues to show an overall benefit to retirement savings. Beshears et al. (2018) claimed that after withdrawals and plan loans, 60 percent of savings remain, whereas Derby

et al. (2023) estimated that automatic enrollment increases net savings by 1.02 percentage points (37%).

There is also mixed evidence that automatic enrollment increases debt. Beshears et al. (2022) explored whether consumers with retirement savings respond to liquidity shocks through other forms of borrowing. They found no evidence that automatic enrollment increased borrowing for most types of credit, before and after automatic enrollment took effect, with the exception of auto loan and first mortgage balances under some model specifications. The net welfare effects for these types of loans are less clear, as auto and mortgage debt could be indicators of financial wellness. A study of automatic enrollment in the UK by Beshears et al. (2024) similarly found that it increased employees' likelihood of holding a mortgage and therefore mortgage debt, although there were no differences in auto loan balances. For other types of debt, the UK study differed from the US study in that unsecured debt such as personal loans and bank overdrafts did increase. However, measures of credit health actually improved over time, with credit scores increasing and loan defaults falling (Beshears et al. 2024).

Finally, we note that there are other ways for consumers to offset saving 'too much.' Choukhmane (2024) argued that job switchers who save too much respond by reducing retirement plan contributions in subsequent jobs. Hung et al. (2021) also documented that among workers who separate from their jobs and are eligible to keep their retirement savings in their previous employer's plan, those who were automatically enrolled into their plan are more likely to cash out their balances than those who had enrolled in an opt-in plan. More research is needed to understand the impact of job switching on savings over time, especially given that job switches frequently coincide with a temporary loss of income and withdrawn savings as consumers manage transitions between jobs.

The benefits of automation are effectively erased for consumers who forget about their savings altogether. Recent work suggests that automatic enrollment may increase account abandonment (Goodman et al. 2023). The problem appears to be concentrated among smaller accounts, which are more prevalent for those with lower incomes and for people of color (John et al. 2021a). Worryingly, Rosen and Sade (2022) examined interventions to help consumers find lost or forgotten accounts and they found that these interventions had little success. With estimates for abandoned savings as high as \$66 million (Goodman et al. 2023), institutions and consulting firms have begun to explore institution- and policy-level solutions. For example, policies could require automatic portability of retirement accounts from one employer to another. Alternatively, John et al. (2021b) discussed the benefits of a national retirement dashboard, which would consolidate information from all of a consumer's retirement plans in a single, centralized account.

Thus far, existing research on automation suggests that the net gain is still positive, though there may be some attenuation of retirement savings benefits due to the need to make withdrawals or to the increased odds of abandoning an account. The SECURE 2.0 Act and certain industry-driven campaigns encourage increased automation into emergency savings accounts (and non-retirement investment accounts). If successful, these efforts would increase the number of Americans who have emergency savings available during shocks, thereby limiting the need to draw down retirement savings.

The Benefits of Automation Vary Across Demographic Groups

Recent research shows that the effects of automatic enrollment in retirement saving vary across different types of consumers. The fifth column of Table 1 shows demographic subgroups examined by researchers, with gender, age, race, and education differences being the most often

explored. Overall, the literature is fairly consistent in finding that the effects of automatic enrollment are stronger for consumers who are traditionally in more vulnerable financial positions. For instance, Beshears et al. (2022) showed that the effects were larger for those with low incomes, younger individuals, and Black and Hispanic workers. Similarly, Cribb and Emerson (2021) found that the impact of automatic enrollment on pension participation was larger for those who typically had lower participation—younger employees and those with shorter job tenures. For example, automatic enrollment led to an estimated 35.8 percent increase in participation for those 40 years of age and above, compared to an estimated 54.3 percent increase for those age 22 to 39. Vanguard Research (2021) and Derby et al. (2023) both reported that automatic enrollment raised participation rates more for young and low-income workers, compared to older and higher-income workers. Falk and Karamcheva (2023) found that automatic enrollment led to a larger increase in participation and contribution rates among men than for women (e.g., a 13.9 percentage point increase in participation for men vs. a 11.2 percentage point increase for women). The effects of automatic enrollment were also larger for relatively lower-income workers (as measured by those in the bottom earnings tercile). Finally, younger consumers and those with lower incomes were slower to opt out of contribution rate defaults (Beshears et al. 2016).

Time Preferences and Implications for the Benefits of Automation

Little empirical work on savings automation to date has explored consumer heterogeneity beyond demographic subgroups. To supplement the literature, we examined one source of heterogeneity (Middlewood et al. 2018) by asking whether automation would be more helpful for relatively present-focused ‘doers’ as opposed to relatively future-focused ‘planners.’ This pattern was posited by Shefrin and Thaler (1988), who argued that behavioral constraints like savings

automation would be more effective for individuals who do not naturally have future-oriented tendencies. In what follows, we briefly review our earlier work and extend our literature review to include the most recent work on heterogeneity in how automation benefits consumers.

Previously, we used the Consumer Financial Protection Bureau's (CFPB) National Financial Well-Being Survey to test an implication of the behavioral life-cycle hypothesis (Shefrin and Thaler 1988) that a behavioral process like automation would be especially helpful for those with 'doer' tendencies. To measure automation, we used a survey question in which respondents confirmed whether they had "money automatically transferred" into a retirement savings account, a non-retirement savings account, both, or neither. The analysis examined consumers who automated their *non*-retirement savings; next, we expand that analysis to include retirement savings (Figure 1).

Insert Figure 1 here

We operationalized doer and planner tendencies using a measure that asked participants to indicate whether they would prefer to have \$816 now or \$860 in three months. Those who selected \$816, the smaller-sooner amount, were classified as 'doers,' whereas those who selected \$860, the larger-later amount, were classified as 'planners.'⁶ Combining this measure of present bias with the automation question resulted in four groups: doers who automate, doers that do not, planners who automate, and planners that do not.

We compared these four groups in terms of several financial health outcomes: financial well-being as defined by the CFPB Financial Well-Being Survey (CFPB 2015), self-reported liquid savings, self-reported ease in covering monthly expenses, and confidence in one's ability to raise \$2,000 in 30 days.⁷ Across the four metrics, the evidence was in line with expectations. Overall, planners on average had better financial health than doers. Furthermore, although

automation was helpful for both groups, the gap in financial health between those who did and did not automate was larger for doers. We interpreted this as evidence of the possibility that the benefits of non-retirement savings automation were larger for doers than for planners.

Next, we examine a similar set of outcomes for doers and planners who reported automatically transferring money into *retirement*-related savings accounts. Using the same data as discussed above, we found that 39 percent of the US population reported automating savings into a retirement savings account, and a similar proportion reported automating savings into a non-retirement savings account. A comparison of those with both types of accounts suggests that there are differences in automation behavior across accounts, with more than 20 percent of the US population choosing to automate deposits into one type of account but not the other. In other words, there is limited evidence of an ‘automater’ personality.

Insert Table 2 here

We then examined whether financial health outcomes were related to retirement savings automation and time preferences using the same analytical framework as previously employed. That is, we explored average outcomes for the four groups (doers and planners, who do or do not automate), controlling for individual demographic characteristics (e.g., income, age, employment status). Here, we omitted survey respondents who reported being retired, as it is not entirely clear how these respondents would answer a question about automating retirement savings.

Results showed that retirement savings automation is correlated with having greater liquid savings and being better able to absorb a shock, as demonstrated by the interaction between time preferences and automation (left panel of Figure 1). Planners had higher overall levels of both variables, but the gap between planners and doers was smaller for doers who also automated their retirement savings. These results held even when controlling for the decision to automate non-

retirement savings. This pattern suggests that retirement savings automation may be especially helpful for doers, who may struggle more than planners to save without the aid of interventions that circumvent their tendency to focus on the present rather than the future.

Unlike savings automation into a non-retirement account, however, there was no significant relationship between retirement automation and time preferences on financial well-being or perceived ease of covering monthly expenses (right panels of Figure 1). In addition, retirement-related outcomes like expected retirement age and social security claiming age were unrelated to automation and time preferences (not shown). However, the survey sample size for the two latter outcomes was smaller, as expected retirement age was only provided for non-retirees, and the social security claiming age is provided only for those age 61 to 71. Nevertheless, it is surprising that retirement savings automation does not relate to these and other long-term financial outcomes that one might expect to be improved by automation.

Goda et al. (2020) used matched survey and retirement plan data to estimate the relationship between time preferences (both present bias and discount rates) and retirement savings behavior. Under an automatic enrollment regime with three percent matching, the authors concluded that present-biased individuals were more likely to stick with the default. In our research, we find no relationship between time preferences and the decision to automate savings, for either retirement or non-retirement accounts.

Beyond Time Preferences? Understanding Further Heterogeneity in Automation

Time preferences are only one dimension by which automation effects may vary. Yet, as noted earlier, there is relatively little research on how the benefits of retirement savings automation vary by subgroup, particularly when looking beyond demographic characteristics. In this section,

we address other aspects of consumer psychology and structural factors that may represent interesting dimensions of heterogeneity.

Differences in financial skill, socialization, and knowledge. In Middlewood et al. (2018), we explored the characteristics of who was more likely to automate non-retirement savings. Results showed that those with higher financial skill measured using the CFPB 10-item financial skill scale (CFPB 2018), which included items such as, ‘I know when I need advice about my money,’ and, ‘I know how to make myself save’) were more likely to automate non-retirement savings. We also found that those with higher financial socialization (measured using positive responses to seven statements such as, ‘While growing up at home, did your family do any of the following? Discussed family financial matters with me.’) were more likely to automate non-retirement savings. When we examined retirement savings, automation was positively related to financial socialization and financial skill.

We found no relationship between automating savings into non-retirement accounts and financial knowledge, using a 10-item scale (Houts and Knoll 2020) with items such as, ‘If the interest rates rise, what should happen to bond prices?’ Perhaps surprisingly, automation into retirement accounts was negatively related to financial literacy in a regression that controlled for several other variables.⁸ Possibly, this negative relationship was due to the confounding effects of compliance with auto-enrollment in retirement plans among those with low levels of financial literacy. Mrkva et al. (2021) found that across several choice contexts, people with lower financial literacy were more likely to stick with default options; in the specific context of retirement savings, they showed that people with less financial sophistication and financial experience who were automatically enrolled into their employers’ retirement plans were less likely to change either the contribution amounts or the investment allocations to which they were assigned by default. Other

work comparing opt-in and automatic enrollment regimes seems to align, finding that financial literacy is more predictive of saving under opt-in regimes, while present bias is more predictive of saving under automatic enrollment (Goda et al. 2020).

Attitudes toward saving. The concept of ‘personal savings orientation’ (PSO) (Dholakia et al. 2016) adds more nuance to the relationship between financial literacy and savings behavior. This construct refers to the extent to which savings is a lifestyle and not merely goal oriented. Questions about PSO ask respondents to rate statements like, ‘The goal of saving money is always at the back of my mind,’ and, ‘Putting money into personal savings is a habit for me.’ In their research, Dholakia et al. (2016) found that financial literacy only predicted savings for those with a higher PSO. Newmeyer et al. (2021) built on this work to show that the relationship between automating savings and liquid savings varies significantly by PSO and income level.

Heterogeneity in Access to Accounts

Much research on automation focuses on retirement accounts and relies primarily on employer-sponsored plan data, whereas few studies explore how consumers pursue retirement savings outside of employer-based plans, and whether automated deposits into those accounts also yield the same retirement benefits. Many people lack access to employer-sponsored retirement programs and therefore must save for retirement on their own (Glasner 2023; John et al. 2022). This section explores ownership of retirement accounts and the implications of these differences.

We analyzed data from the CFPB’s National Financial Well-Being Survey to explore how ownership of retirement accounts varies across the US population. As shown in Table 2, 30 percent of the US population reported not having a retirement account in 2018.⁹ Table 3 highlights the different demographic composition of retirement account owners and nonowners. In particular,

account ownership is more prevalent among men, non-Hispanic, and White respondents, and those with higher levels of educational attainment. Account ownership is also more prevalent for those working full time, suggesting differences by employment status. Owners also report roughly double the amount saved (\$30,000 versus \$15,000), as well as less usage of products and services like prepaid cards or check cashing. These patterns are largely consistent with nonretirement account evidence (Middlewood et al. 2018).

Insert Table 3 here

Even though we analyze “retirement accounts,” defined by the survey respondents, heterogeneity in retirement account ownership shown in Table 3 could also reflect differences in who has access to *employer-sponsored* retirement plans. More Hispanic, Black, and Asian workers report not having access to an employer-sponsored retirement plans than do non-Hispanic White workers (John et al. 2022).¹⁰ In addition, only 30 percent of workers earning below \$37,000 a year have access to an employer plan, and of those with access, only 19 percent participate (Glasner 2023). Further compounding the retirement savings result, low income households face barriers to building and maintaining their retirement savings balances, as they switch jobs more frequently than high income households do, on average (US Government Accountability Office [GAO] 2023a). Low income households are also more likely to make early withdrawals from their employer-sponsored retirement plans (US GAO 2023b; Argento et al. 2015), potentially incurring a 10 percent tax penalty (IRS 2023) and income taxes.

To the extent that retirement account access and ownership are unevenly distributed across the US population and are correlated with existing wealth, increased automation into these accounts may exacerbate these underlying differences. In other words, retirement savings automation could help increase retirement security and net worth for those who use these accounts,

but it could leave behind those who are already the most financially insecure. With the advent of the SECURE 2.0 Act, as well as the extension of automation benefits to non-retirement savings through employer-sponsored programs, differential access could be an increasingly important source of disparity in overall savings amounts. There may be an opportunity to mitigate these disparities through state-sponsored auto-IRA programs such as OregonSaves, which automatically enroll certain workers who lack access to employer-sponsored retirement accounts into IRAs (for a discussion of research examining the OregonSaves program, see Reuters, this issue). These plans cover a limited but increasing number of workers to date.¹¹

Discussion

Our summary of the literature on automation as a savings intervention leaves many questions unanswered. We enumerate several below.

Is automating saving for retirement and non-retirement outcomes different? One question arising from our review and prior research is whether there are differences in the benefits of automation for retirement and non-retirement savings. Empirically, we found that the relationship between time preferences and savings automation holds for fewer outcomes for retirement savings compared to non-retirement savings. Specifically, the relatively positive relationship between automation and outcomes for impatient consumers was significant only for liquid savings and the ability to absorb a shock, but not financial well-being or ease in covering monthly expenses. At this juncture, we can only speculate on why these differences may occur. One factor may be the time horizon associated with the savings, with retirement being a long-term outcome for many consumers (Bruine de Bruin et al. 2024). Time horizons may affect the benefits of automation in two opposing ways. Automation is likely to have greater benefits for retirement savings accrual,

as this one-time fix permits workers to accumulate benefits over the lifecycle, as long as they do not opt out. Yet, automation may be less beneficial for those with significant liquidity constraints, who may respond to automation by taking early withdrawals from retirement accounts and paying tax penalties.

A second possible explanation for differences in the impact of automation between retirement and nonretirement accounts is how automation works. For many Americans, non-retirement savings are held in checking and savings accounts, nonbank fintech accounts (e.g., PayPal), or money market funds, and most of these accounts facilitate automate transfers. Possibly, automatic transfers that occur after workers receive their paychecks could affect budgeting and spending behavior, as consumers can observe the reduction in disposable income due to saving. This process can be contrasted with automatic enrollment and automatic escalation (more common in employer-sponsored retirement plans), and where money is not easily accessible prior to being saved. For consumers who attend less to account balances, automated transfers could result in overdraft and other fees due to insufficient funds. Future research should explore how the effects of automation differ across these different accounts, methods, and products.

Third, the automation of savings into non-retirement versus retirement accounts may also differ in intentionality. Employer-sponsored retirement saving is supported by institutional policies and practices such as employer matching of employee contributions, tax benefits, and encouragement by firm personnel departments. Future research should explore whether automation decisions made without such institutional support are more intentional on the part of consumers.

Ultimately, Table 1 shows only three papers examining automation in the context of nonretirement savings, as opposed to the 11 papers examining retirement savings. In the retirement

savings arena, most papers study enrollment into employer-sponsored retirement plans as opposed to brokerage accounts used for long-term savings or IRAs. It remains an open question of how to best encourage individual consumers to automate savings outside of employer-sponsored plans and whether state-level programs like OregonSaves could be a more promising solution.

Does automation of retirement savings lead to more successful retirement? Few authors to date have examined long-run longitudinal outcomes, as opposed to proximate behaviors (e.g., participation and initial contribution rates). The time span of data covered in Table 1 is, at most, 4.5 years postintervention—a long time compared to many intervention studies, but likely to be insufficient if one considers that the workers must save over their entire working lives. Furthermore, to our knowledge, little research on savings automation focuses on retirement well-being—arguably the ultimate aim of such retirement savings interventions. Our correlational results on financial well-being suggest no significant relationship between automation and consumers’ subjective sense of financial security. Therefore, although the interventions show promising results for crucial inputs to retirement savings (such as retirement account participation and contribution rates), it remains to be seen whether these benefits persist throughout retirement.

Conclusions

The retirement savings short-fall facing many American households is unlikely to abate. Household expenses have risen following the COVID-19 pandemic, after a period of inflation rates as high as 9.1 percent in June 2022 (Bureau of Labor Statistics [BLS] 2023a). Although the gap between wage growth and inflation is now narrowing, American workers are still feeling the repercussions of the highest price increases since 1981 (BLS 2022). With housing making up approximately one-third of Americans’ annual expenses (BLS 2023b), households are paying

significantly more for rent and mortgages, and wages have not increased at the same rate (National Low Income Housing Coalition 2023). Many households also carry substantial debt, the payments for which can interfere with households' ability to save. Student loan debt is also pervasive across age groups (US Department of Education 2023), and credit card balances have recently topped \$1 trillion (Federal Reserve Bank of New York 2023). Americans are also living longer (Medina et al. 2020), making retirement savings more important, even as the shift from defined benefit to defined contribution retirement plans has put more responsibility on individual consumers to save.

As a policy response, the SECURE 2.0 Act does help encourage retirement and non-retirement savings through savings automation programs. Our review of the literature, drawing on automation interventions predating the implementation of the SECURE 2.0 Act, paints a generally positive picture regarding the possible benefits of savings automation. In particular, automation appears to reliably increase participation rates and contributions into retirement accounts, and it is correlated with positive outcomes, particularly for people who tend to be present focused.

Nevertheless, the literature also suggests that an emphasis on near-term outcomes may be shortsighted, as automation can have long-term downsides. Individuals with automated savings may forget about their savings (Goodman et al. 2023) and make withdrawals from 401(k) accounts when facing financial shocks (Beshears et al. 2018). Not all Americans have access to employer-sponsored retirement accounts, especially those in low income and vulnerable groups, meaning that automation may exacerbate existing wealth disparities. Without the retirement savings infrastructure provided in many conventional full-time positions, policymakers and advocates may need to widen avenues for retirement savings outside the workplace. The rising number of state-sponsored auto-IRAs—15 states have enacted such programs as of May 2024 (Center for

Retirement Initiatives, 2024)—warrants further evaluation of this changing landscape and how to alleviate potential disparities.

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Disclosure

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Endnote

¹ Newmeyer et al. (2021) lists specific actions the authors consider automation.

² See section 801 of the Employee Retirement Income Security Act of 1974 (ERISA), which allows for “a pension-linked emergency savings account” and the ability to “automatically enroll an eligible participant in such account pursuant to an automatic contribution arrangement”. Furthermore, such accounts are not allowed to have any fees or charges for at least the first four withdrawals of funds in a plan year.

³ For a review of work published prior to 2015, and therefore not included in Table 1, see O’Neill (2007) and Burke, Hung, and Luoto (2015) and CFPB (2020).

⁴ There are no penalties for withdrawing contributions from a Roth 401(k), but few people use these plans. According to Fidelity, 80% of their plans offer a Roth 401(k) but only about 15% of those eligible make use of one (Fidelity, 2024).

⁵ Withdrawal rates may be higher for other types of automatic enrollment programs. Quinby et al. (2020) found that 20 percent of employees in the OregonSaves program—a state-sponsored auto-IRA—made at least one withdrawal during the 12-month study period, with an average withdrawal amount of \$1,000. The authors suggest that the structure of the program as a Roth IRA—in which contributions can be withdrawn without the 10% tax penalty—may mean that withdrawals are more likely relative to traditional defined-contribution plans. For a summary of the OregonSaves program and other auto-IRAs, see Pew Charitable Trusts (2021).

⁶ Such time-amount tradeoff questions are commonly used to assess whether someone is willing to defer gratification to earn higher rewards in the future (e.g., Hardisty, et al. 2013). As described in Middlewood, et al. (2018), the implied rate of return for this tradeoff is approximately 23.4%,

well above what one could expect to earn from investing. Therefore, selecting the smaller amount sooner suggests that the respondent prefers present consumption over future returns.

⁷ Our estimating equation was: $Y_i = \beta_0 + \beta_1 \text{Doer}_i + \beta_2 \text{Automated}_i + \beta_3 \text{Doer}_i * \text{Automated}_i + \gamma X_i + \varepsilon_i$, where Y_i represented one of the four financial welfare outcomes, Doer was a variable representing whether the respondent was classified as a doer (1/0), Automated represented whether the respondent automated savings (1/0), and X represented a vector of demographic characteristics (age, gender, income, education, race/ethnicity, and presence of children in the household).

⁸ These variables included time preferences, financial socialization, financial skill, gender, age, race/ethnicity, educational attainment, employment, and reports of having a retirement account from other questions in the survey. In addition to those patterns highlighted in the text, there were positive associations with income, working full time or part time, or being a homemaker. There were negative relationships with being Hispanic or retired.

⁹ The measure analyzed in this table does not distinguish between employer-sponsored retirement accounts and non-employer-sponsored retirement accounts.

¹⁰ Approximately 64 percent of Hispanic workers, 53 percent of Black workers, and 45 percent of Asian workers lack access to an employer-sponsored retirement plan, as compared to 42 percent of White (non-Hispanic) workers (John et al. 2022).

¹¹ More states are enacting auto-IRA programs to provide coverage for those who lack access to an employer-sponsored plan (Pew Charitable Trusts, 2022). There were 15 states that had enacted such programs as of May 2024 (Center for Retirement Initiatives, 2024), which have enrolled fewer than one million workers out of the 56 million who lack access to employer-sponsored retirement plans (Pew Charitable Trusts, 2023).

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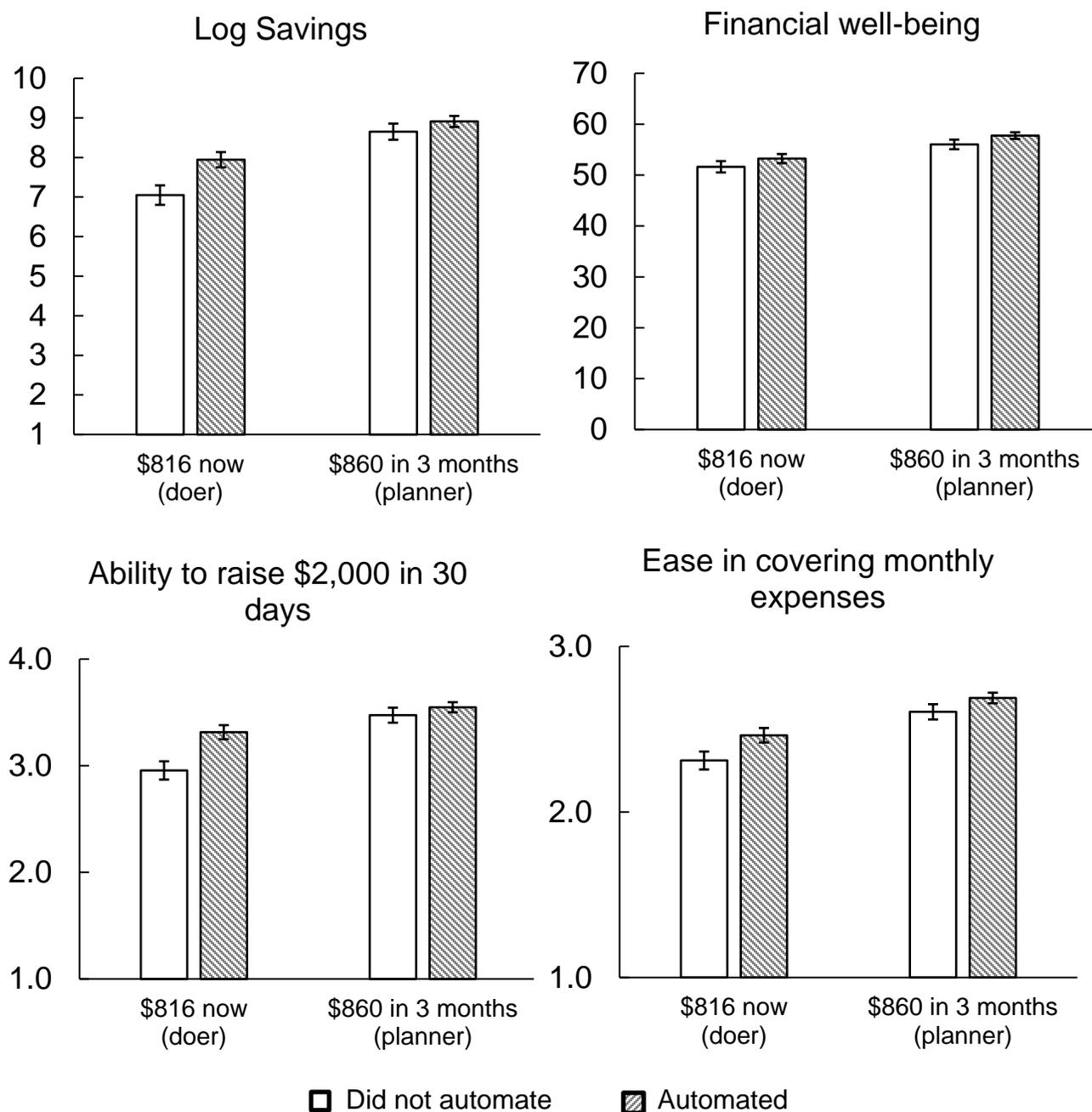


Figure 1. Financial welfare outcomes by doer and planner preferences and retirement savings automation

Note. Figure displays the means from unweighted regression analysis using a regression that also includes controls for non-retirement savings automation, time preferences, and demographic characteristics. ‘Doer’ refers to respondents who, in response to a survey question, reported preferring \$816 now over \$860 in three months. ‘Planner’ refers to those who preferred \$860 in

three months. Error bars show 95 percent confidence intervals around the means. Data analyzed is the CFPB's National Financial Well-Being Survey (<https://www.consumerfinance.gov/data-research/financial-well-being-survey-data/>).

Source: Authors' calculations; see text.

Table 1. Review of recent literature on savings automation and associated financial welfare outcomes

Authors	Behavioral constraint or strategy	Design or methodology	Outcomes examined	Subgroups examined for differential effectiveness of strategy (if any)	Selected results
Retirement					
Burke et al. (2015)	AE in DC plan	Survey data from Health and Retirement Survey (HRS), [2008 and 2010 survey waves] (employee AE is self-reported)	Participation, contribution, opt out from AE plans	<ul style="list-style-type: none"> ● Age ● Marital status ● Income ● Education ● Wealth 	AE is associated with an 11-percentage point increase in plan participation and is effective at encouraging lower income and less educated individuals to participate. Participants who opt-in are more likely than AE individuals to continue making contributions.
Goda et al. (2020)	AE in Thrift Savings Plan for employees of the U.S. Office of Personnel Management	Merged survey and administrative data. Survey collected in April 2017	Participation, contributions (including contributions at default rate)	<ul style="list-style-type: none"> ● Long term discounting ● Present bias ● Financial literacy ● Exponential growth bias 	AE increases savings among individuals with low financial literacy. Present bias predicts keeping the default contribution rate under AE.
Quinby et al. (2020)	AE in OregonSaves, an individual retirement	Administrative data [2018 to 2019] (no comparison group)	Participation, preretirement withdrawals	None	Participation rate in OregonSaves is estimated at 48-67%. Twenty percent of employees

	account (IRA) program				made at least one pre-retirement withdrawal (\$1,000 on average).
Chalmers et al. (2021)	AE in OregonSaves, an IRA program	Administrative data [2018 to 2020] (no comparison group)	Participation, contributions, amount saved, opt-out rates	<ul style="list-style-type: none"> ● Positive Balance ● Age 	Younger employees in larger firms are less likely to opt out of OregonSaves. Overall, 34.3% of workers had positive account balances.
Cribb and Emerson (2021)	AE in pension plan in the UK	Comparison of AE and non-AE employees in 4/2016 using panel survey data from annual survey of hours and earnings [data between 2012 and 2016]. All employees work for 'small employers,' or those with between two and 29 employees (in 2012).	Participation, contribution rates	<ul style="list-style-type: none"> ● Gender ● Earnings ● Age ● Years with employer 	AE increases pension participation to 70% (from 26%) among small employers. There are larger gains for younger employees and those with shorter job tenures.
Hung et al. (2021)	AE in company-sponsored DC retirement plans	Vanguard record-keeping data of employees hired between 2010 and 2013, excluding those in plans that changed from voluntary enrollment to AE after employees were hired.	Taking a cash distribution, rolling over balances, and aggregate retirement savings (net of distributions) after job separation	None	Workers who separate from their jobs and were automatically enrolled are 19 percentage points more likely to take a cash distribution than those who enrolled in an opt-in plan. Those in AE plans are more likely to have at least \$500 in retirement savings balances after job

Vanguard Research (2021)	AE in DC plan sponsors (voluntary enrollment plans versus AE plans)	Vanguard recordkeeping data [2017 to 2020]. Sample consists of newly hired, eligible employees between 1/1/2017 and 12/31/2019 who were still employed by the plan sponsor as of 6/30/2020.	Participation, contribution, default portfolio allocation, loans from the plan	<ul style="list-style-type: none"> ● Income ● Age ● Gender 	separation (by 42 percentage points). AE increases participation to 91%, compared to 28% under voluntary enrollment. 90% of participants increase contribution rates over time and 86% under AE remain invested in the default fund (compared to 66% of individuals in voluntary enrollment).
Beshears et al. (2022)	AE in TSP for civilian employees of the US Army	Comparison of pre-AE employees (hired 8/1/2009 to 7/31/2010) and post-AE employees (hired 8/1/2010 to 7/31/2011). Semiannual credit bureau data available 6/2007 to 12/2014.	Debt, auto debt, first mortgage debt, contributions, savings	<ul style="list-style-type: none"> ● Low income ● Age <30 ● High school education ● Black ● Hispanic ● Credit score <620 	AE increases cumulative contributions by 4.1% of annual salary. AE causes no significant change in credit scores, debt balances excluding auto debt and first mortgages.
Falk and Karamcheva (2023)	AE and employer match in TSP	Comparison of non-AE and AE employees hired before and after 8/2010. Administrative panel data from the TSP, which covers federal civilian workers [data available between 2008 and 2014].	Participation, contribution rates, portfolio allocations, balance, and balance-to-pay ratio	<ul style="list-style-type: none"> ● Education level ● Race ● Gender ● Earnings 	AE increased participation by 14%. It is associated with a larger increase in participation rates and contribution rates among men than women. The positive effect is stronger for bottom earning workers (vs. middle or top earners), less-educated

Derby et al. (2023)	AE in company-sponsored DC retirement plans	Comparison of AE and non-AE employees, with date of AE varying by employer; sample is 2 years pre-AE and 1 year post-AE. Administrative data [available between 2010 and 2016].	Participation, contributions, savings rate, withdrawals, and net savings	Firms with 4 years of pre auto-enrollment data and 4 years post auto-enrollment adoption	workers (vs. more-educated), and for Black and Hispanic workers (vs. white). AE increased the balance-to-pay ratio for these groups.
Beshears et al. (2024)	AE in the UK.	Comparison of AE and non-AE employees, with date of AE varying by employer. Sample covers approximately 649,000 individuals from 160,000 “small” employers (2-29 employees each) in the UK. Administrative data links pensions and credit files [3 cross sections in 2016, 2017, and 2018].	Pension savings, unsecured debt, having a mortgage, mortgage balance	<ul style="list-style-type: none"> ● Income ● Credit score ● Age 	<p>AE increases participation by 86% and contributions by 51%. Employees are 33% more likely to take a non-rollover withdrawal. The estimated increase in net savings (i.e., after accounting for withdrawals) is 37%.</p> <p>Each additional month after AE increases the average employee’s pension savings by £32-£38, unsecured debt by £7, the likelihood of having a mortgage by 0.05 percentage points, and mortgage balances by £118. The additional savings generated through AE are partially offset by increases in unsecured debt (by £7). The net savings effects of automatic enrollment seem</p>

Non-retirement

Middlewood et al. (2018)	Automation of deposits into non-retirement savings account	Survey data from Consumer Financial Protection Bureau's National Financial Well-Being Survey [collected between October and December of 2016].	Liquid savings, Financial Well-Being, confidence in ability to raise \$2,000, difficulty of paying bills	<ul style="list-style-type: none"> • Time preferences (“doer” vs. “planner”) 	more positive for higher-income, those with higher credit scores, and older individuals.
Newmeyer et al. (2021)	Automation of deposits into non-retirement savings account and liquid savings account	<p>Study 1: Survey data (Consumer Financial Protection Bureau's National Financial Well-Being Survey [collected between October and December of 2016] (no comparison group).</p> <p>Study 2: Survey data from SSI, a consumer panel.</p>	Reported saving (yes/no), amount of liquid savings	<ul style="list-style-type: none"> • Income level • Personal savings orientation (PSO) level 	<p>Impatient consumers have less liquid savings, lower financial well-being, less confidence in their ability to raise \$2,000, and more difficulty paying bills, compared to those with stronger planner preferences. These differences between consumers with doer and planner preferences largely disappear for those who automate savings deposits.</p> <p>Study 1: Savings automation is correlated with liquid savings for individuals with annual household income under \$200,000.</p> <p>Study 2: Savings automation is positively correlated with liquid savings for respondents</p>

Berk et al. (2022)	AE in payroll savings plan for new hires in the UK	Comparison of AE and non-AE employees hired before and after 11/1/2021. Administrative data [11/2020 to 6/2022].	Participation, amount saved	<ul style="list-style-type: none"> ● Age ● Gender ● Starting pay ● Role 	with annual household income of \$35,000 or less. For higher incomes, automation has no relationship with savings for those with low PSO levels and a negative relationship for those with high PSO levels.	AE increases participation in savings plan by 50 percentage points and balances by £68. Post-AE workers appear to follow a similar participation pattern regardless of age, gender, and starting pay.
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Note: AE = automatic enrollment. PSO = personal savings orientation. TSP = Thrift Savings Plan.

Source: Authors' compilations.

Table 2. Automation behavior in retirement and non-retirement savings accounts

		<u>Non-Retirement Savings Account</u>			Row Totals
		Do not automate	Automate	I do not have this	
<u>Retirement Savings Account</u>	Do not automate	20.69%	8.46%	1.17%	30.32%
	Automate	12.67%	23.32%	3.40%	39.39%
	I do not have this	3.94%	6.35%	20.00%	30.30%
	Column Totals	37.30%	38.14%	24.57%	100%

Note: $N = 6,246$. Table 2 shows the proportion of respondents providing each set of responses. Survey weights result in a sample that is representative of the US population. Data analyzed is the CFPB's National Financial Well-Being Survey (<https://www.consumerfinance.gov/data-research/financial-well-being-survey-data/>).

Source: Authors' calculations; see text.

Table 3. Demographic composition of retirement account owners and nonowners

	Nonowner	Owner	p-value
<i>Gender</i>			
Female	54%	45%	0.089
<i>Race</i>			
Non-Hispanic White	65%	73%	-0.080
Non-Hispanic Black	13%	10%	0.032
Non-Hispanic Other	6%	5%	0.003
Hispanic	17%	13%	0.045
<i>Education</i>			
Less than high school	13%	5%	0.082
High school degree	32%	23%	0.097
Some college	34%	29%	0.057
Bachelor's degree	12%	24%	-0.112
Graduate/professional degree	8%	21%	-0.124
<i>Employment Status</i>			
Self-employed	9%	8%	0.003
Work full time for an employer or the military	20%	47%	-0.264
Work part time for an employer or the military	12%	8%	0.036
Homemaker	9%	5%	0.035
Full-time student	8%	3%	0.054
Permanently sick, disabled, or unable to work	10%	3%	0.068
Unemployed or temporarily laid off	8%	3%	0.049
Retired	34%	28%	0.052
Missing	2%	2%	0.007
Log of imputed income	10.558	11.153	-0.595
Log of imputed savings	6.475	8.699	-2.224
Imputed savings (\$)	15,468	31,021	-15,553
Used reloadable card not linked with checking or savings account	11.8%	7.6%	0.042
Used nonbank service for cashing a check or purchasing a money order	9.4%	5.5%	0.038
Retirement date (1 = later than planned, 0 = early or on time)	6.2%	5.3%	0.008

Note. Table displays the proportion of participants who report that they “do not have” a retirement account (non-owners) versus that they automate or do not automate savings into a retirement account (owners). P-values represent t-tests of the differences in means. Data analyzed is the CFPB’s National Financial Well-Being Survey (<https://www.consumerfinance.gov/data-research/financial-well-being-survey-data/>).

Source: Authors’ calculations; see text.