

The Evolution of Retirement-Income Adequacy Under ERISA With a Focus on Defined-Contribution Plans: A Review of the Status Quo, Counterfactual Evidence, and an Analysis of Changes for the Future

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Executive Summary

The Employee Retirement Income Security Act of 1974, henceforth referred to as ERISA, marked a significant milestone in safeguarding the retirement prospects of American workers. Its primary aim was to establish minimum standards for pension plans in the private industry and to provide protections for individuals in these plans. However, the evolving landscape of retirement planning, especially the shift from defined-benefit, or DB, to defined-contribution, or DC, plans has had profound implications for retirement-income adequacy. This paper explores these changes and their impacts, presenting a comprehensive analysis using the Morningstar Model of US Retirement Outcomes.

Key Findings

- A. Counterfactual Simulations: The elimination of DC participation and savings would drastically reduce the probability of a successful retirement, particularly for middle-income groups, as they heavily rely on these plans.
- B. Automatic Enrollment and Escalation: Transitioning from voluntary to automatic enrollment in DC plans, coupled with auto-escalation features, can significantly enhance retirement savings. For example, a shift to automatic enrollment with a 15% auto-escalation cap could increase average wealth ratios—defined as the ratio of projected wealth at retirement under a hypothetical scenario over projected wealth at retirement under our baseline scenario (which assumes status quo)—by 28.8%.
- C. Policy Proposals: The Automatic IRA Act of 2024, proposing automatic enrollment into IRAs with opt-out features and auto-escalation, could substantially improve retirement outcomes, with an aggregate average wealth ratio increase of 23.8%.

The findings highlight the critical importance of sustained participation in DC plans and the potential benefits of automatic enrollment and escalation features. Policy proposals like the Automatic IRA Act of 2024 could play a significant role in enhancing retirement security for a broader segment of the population. Addressing disparities in retirement readiness across different demographic groups and industries is essential for promoting retirement-income adequacy for all Americans.

This comprehensive analysis provides valuable insights for policymakers, plan sponsors, and individuals, emphasizing the need for thoughtful policy interventions and robust retirement plan designs to secure better retirement outcomes.

Introduction

The Employee Retirement Income Security Act of 1974 was a landmark piece of legislation aimed at protecting the interests of employees who participate in qualified retirement plans. While ERISA was instrumental in improving the security of retirement benefits, its impact on overall retirement-income adequacy is complex. ERISA established minimum standards for participation, vesting, benefit accrual, and funding of defined-benefit plans, thus enhancing the likelihood of workers receiving promised benefits. However, it has been argued that the regulatory burden and increased costs¹ (including premiums to the Pension Benefit Guaranty Corporation for plan termination insurance²) associated with these plans led to a shift toward defined-contribution plans.³

The increasing prevalence of defined-contribution plans (such as 401(k) plans) shifts the onus of retirement planning onto individuals and has caused some critics to suggest that this has contributed to a type of “retirement crisis.”⁴ While ERISA did not explicitly promote defined-contribution plans, the environment it created, combined with accounting and subsequent legislative changes,⁵ as well as demographic pressures,⁶ made these type of plans a more attractive option for many employers. This shift has had significant implications for retirement savings and income adequacy for American workers.

This paper starts with a review of retirement-income adequacy prospects for US workers by summarizing their likely probability of a successful retirement using the Morningstar Model of US Retirement Outcomes. We show how this is related to age cohort, career average income quartiles, gender and family status, race and ethnicity, industry, and future years in a defined-contribution plan. We then turn to the question of how different the prospects for retirement-income adequacy would be for today’s workers if individual account plans (defined-contribution and IRAs) did not exist. The counterfactual simulations we run show a massive decrease in the probability of a successful retirement, especially for the youngest cohort and those in the second- and third-career average income quartiles.

Moving back to the status quo, we then look at how much improvement US workers in aggregate would experience if the industry were able to deal with the vexing problem of incomplete coverage via the Automatic IRA Act of 2024. We find that the overall average increase in wealth ratios with a 30% opt-out is 23.8% with a median increase of 3.2%.

1 Refer to Husted (undated).

2 This is true even though it has been argued by some that the true cost to the system is much larger than the cost under the variable-rate premium system. See VanDerhei (1990) for additional detail.

3 In 1975, one third of all private pension plans filing the Form 5500 were defined-benefit plans. By 2000, this share fell to about 7%. Since then, the defined-benefit plan share has remained relatively stable. United States Department of Labor (2023). For a time-series analysis of these trends see VanDerhei and Olsen (1997). Note, however, that the number of defined-benefit plans relative to defined-contribution plans masks the importance of a relatively recent trend to freeze accruals for some or all of the participants. See Copeland and VanDerhei (2010) for additional information.

4 However, several simulation studies have shown that when realistic job turnover is considered, 401(k) plans produce superior results compared with final average defined-benefit plans for a majority of the sample population (see VanDerhei June 2013, VanDerhei December 2013, VanDerhei 2015, and VanDerhei February 2019).

5 For an analysis of defined-benefit plan sponsors’ reaction to the Pension Protection Act of 2006 (PPA) and Financial Accounting Standards Statement No. 158, see VanDerhei (July 2007). For an analysis of the impact of PPA on retirement income for 401(k) participants, see VanDerhei and Copeland (2008).

6 For an example of how some defined-benefit plan sponsors reacted to the perceived need to provide a retirement plan format that was more responsive to a younger workforce, see VanDerhei (1989).

The final portion of the simulation analysis in the paper focuses on a further evolution of 401(k)-plan design that has been in place at least since the Pension Protection Act of 2006: the move from voluntary to automatic enrollment. We analyze the impact of the remaining voluntary-enrollment plans converting to automatic enrollment as well as a universal adoption of auto-escalation among these plans. We find that simulating a transition from voluntary to automatic enrollment leads to an aggregate average wealth ratio increase of 16.3% (median: 0.5%) without escalation and a more substantial 28.8% increase (median: 8.0%) when escalation is factored in.

The final section of the paper focuses on future analysis on this topic using the Morningstar Model of US Retirement Outcomes.

A Review of the Status Quo

The Morningstar Model of US Retirement Outcomes is a sophisticated tool used to predict the financial outcomes of American households in retirement. By utilizing detailed data from a variety of sources, including the Survey of Consumer Finances, the model simulates various factors such as income, expenses, investments, and health to project retirement adequacy.

Key features of the model include:⁷

- × Comprehensive data input: Incorporates a wide range of household characteristics and financial information.
- × Stochastic modeling: Utilizes probability-based simulations for both the accumulation and decumulation periods.
- × Realistic behavior: Models household behavior, including savings rates, withdrawal patterns, and job turnover.
- × Longevity and health risks: Accounts for the impact of long-term-care expenses on retirement finances.
- × Tax implications: Calculates federal and state income taxes on retirement income.
- × Housing wealth: Considers the role of home equity in retirement planning.

The Model uses a retirement-funded ratio metric to assess financial sufficiency in retirement. This is calculated for each of 1,000 simulated life paths for each household. The numerator is the sum of real (that is, inflation-adjusted) income across all retirement years plus any leftover assets at the time of death, if applicable. The denominator is the sum of real expenses (also across all retirement years). This metric shows the magnitude of the shortfalls, with retirement-funded ratios that are well below 1, indicating significant shortfalls.

Using the Morningstar Model of US Retirement Outcomes in a previous publication,⁸ we found that baby boomers and Gen Xers are more likely to experience retirement shortfalls than other generations of

⁷ Please see the technical appendix of this paper for additional detail.

⁸ Look and VanDerhei (2024).

today's workers, assuming status quo for Social Security.⁹ We focused our analysis on cases wherein the retirement-funded ratio was less than 1 (as these are, by definition, a shortfall) and found that baby boomers and Gen Xers are more likely to run short of money than those in other generations. In particular, we found that 47% of Gen Xers, compared with 37% for Gen Z and 44% for millennials, are simulated to run short of money in retirement.

In Exhibit 1, we break those results down further by constructing age-specific average indexed monthly earnings, or AIME,¹⁰ quartiles as a proxy for preretirement career earnings. As expected, percentage of households with a retirement-funding ratio less than 1 decreases as the AIME value increases. For example, 66% of Gen Z households in the lowest income category are simulated to run short of money, but the percentage decreases to 43% for those in the second income category, 27% for those in the third income category, and only 14% for those in the highest income category.

The disparities by income category are more pronounced for millennials, with 78% of households in the lowest income category simulated to run short of money, 54% for those in the second income category, 32% for those in the third income category, and only 12% for those in the highest income category.

However, the gaps in retirement-income adequacy by income categories are largest for Gen X households, because workers in this age group are closer to retirement, meaning that existing savings gaps between income cohorts are a big driver of results. In this case, 86% of households in the lowest income category are simulated to run short of money compared with 53% for those in the second income category, 37% for those in the third income category, and only 11% for those in the highest income category.

⁹ The Model also has the ability to run sensitivity analysis on Social Security reform scenarios, but this will be addressed in a future publication.

¹⁰ Average indexed monthly earnings refer to a worker's average earnings, wherein wages are adjusted to account for differences in the standard of living over time. Social Security benefits are typically calculated using average indexed monthly earnings. Refer to <https://www.ssa.gov/oact/cola/Benefits.html>

Exhibit 1: Percentage of Americans Ages 20+ With Retirement-Funding Ratio Less Than Displayed Value by Generation and Age-Specific AIME Quartile

Retirement-Funding Ratios by AIME - Gen Z

Funded Ratio	1st	2nd	3rd	4th
0.5	0.28	0.12	0.05	0.02
0.6	0.37	0.18	0.08	0.04
0.7	0.45	0.23	0.11	0.05
0.8	0.52	0.30	0.16	0.08
0.9	0.59	0.36	0.21	0.10
1	0.66	0.43	0.27	0.14
1.1	0.74	0.56	0.39	0.22
1.2	0.80	0.66	0.50	0.30
1.3	0.85	0.73	0.58	0.36
1.4	0.87	0.78	0.65	0.43
1.5	1.00	1.00	1.00	1.00

Retirement-Funding Ratios by AIME - Millennials

Funded Ratio	1st	2nd	3rd	4th
0.5	0.32	0.12	0.04	0.01
0.6	0.44	0.19	0.08	0.02
0.7	0.55	0.27	0.12	0.04
0.8	0.65	0.36	0.18	0.06
0.9	0.72	0.45	0.24	0.08
1	0.78	0.54	0.32	0.12
1.1	0.85	0.69	0.48	0.22
1.2	0.90	0.78	0.61	0.33
1.3	0.92	0.84	0.70	0.41
1.4	0.94	0.88	0.76	0.49
1.5	1.00	1.00	1.00	1.00

Retirement-Funding Ratios by AIME - Gen X

Funded Ratio	1st	2nd	3rd	4th
0.5	0.37	0.06	0.02	0.00
0.6	0.50	0.12	0.04	0.01
0.7	0.62	0.20	0.09	0.01
0.8	0.73	0.31	0.17	0.03
0.9	0.81	0.42	0.26	0.07
1	0.86	0.53	0.37	0.11
1.1	0.90	0.67	0.57	0.27
1.2	0.93	0.76	0.71	0.43
1.3	0.94	0.81	0.79	0.54
1.4	0.95	0.84	0.83	0.63
1.5	1.00	1.00	1.00	1.00

Source: Authors' calculations using v1.0 of the Morningstar Model of US Retirement Outcomes under the assumption that household members retire at 65. Household members are assumed to claim Social Security at retirement age. Note that the funded ratio 1.5 category includes results in which the funded ratio is above 1.5.

In our previous publication, we also found that the probability of running short of money in retirement varied by:¹¹

- × Family status: For those between the ages of 20 and 64, about 55% of single females are projected to be at risk in retirement, compared with just 41% for couples and 40% for single males.
- × Race and ethnicity: For those between the ages of 20 and 64, approximately 61% of Hispanic Americans and 59% of non-Hispanic Black Americans are projected to run short of money in retirement. The results for non-Hispanic white Americans and non-Hispanic other Americans (which include Asian Americans) are significantly better, with only approximately 40% of both groups experiencing retirement shortfalls.
- × Industry: For those between the ages of 20 and 64, we found that the public sector is the most prepared for retirement, with only about 29% of workers in this industry projected to experience retirement shortfalls. The public sector is followed by the finance, insurance, and real estate industry, the miscellaneous services industry, and the manufacturing industry.¹²
- × Future years in a defined-contribution plan: For those between the ages of 20 and 64, we found that retirement-funding ratios were dramatically better for those who are simulated to participate in a DC plan for 20 or more years in the future. Specifically, we found that 57% of those not participating at all in a DC plan in the future may run short of money, compared with only 21% for those with 20 or more years of future participation in a DC plan.¹³

Counterfactual Evidence: What Would Happen If There Were No Individual Account Retirement Plans Available?

We employed a counterfactual simulation in an attempt to generate a first-order approximation of how much the results in the previous section would change in the absence of individual account retirement plans (defined-contribution plans and IRAs). The analysis began by eliminating all defined-contribution participation and savings. For households with a DC account in the simulation that lacked an existing post-tax balance, imputed post-tax balances were utilized. If an existing post-tax balance did exist, the larger of the existing and imputed amounts was applied. Both DC and Individual Retirement Account balances were set to zero for the entire simulation period. The probability of saving to an IRA was fixed at zero percent. However, post-tax contributions were modeled based on IRA contribution probabilities and IRA contribution amounts (which we assume are the IRS limits), simulating potential savings behavior in the absence of other retirement accounts. Preretirement withdrawals from post-tax accounts were modeled using IRA withdrawal probabilities.¹⁴

¹¹ We also analyzed how the probability of running short of money in retirement varied by educational level. For those between the ages of 20 and 64, 79% of those with no high school diploma were simulated to fall short, but the percentage decreased to 58% for those with a high school diploma or GED, and 51% for those with some college or associate's degree. The probability fell to 25% for those with a bachelor's degree or higher.

¹² See Exhibit 7 in Look and VanDerhei (2024) for more detail.

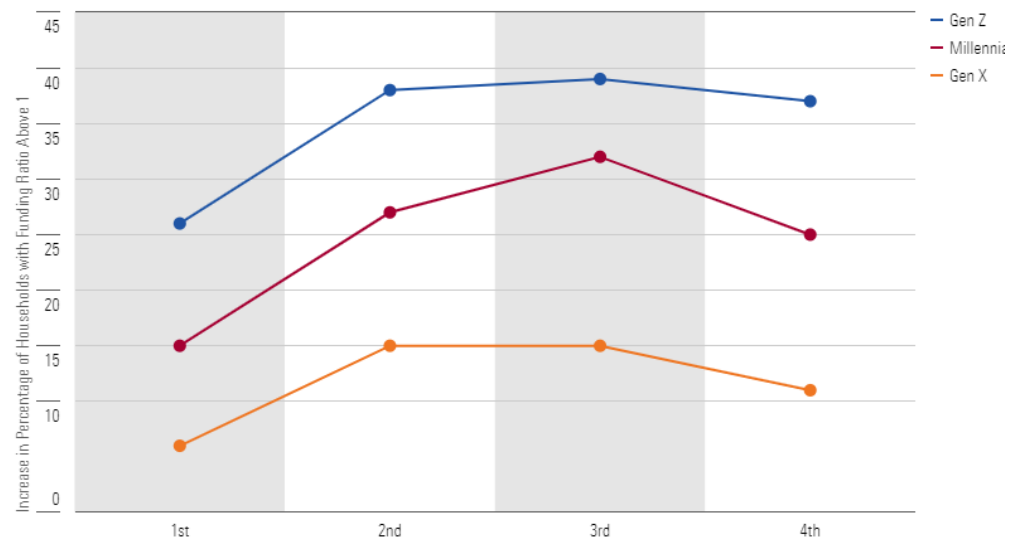
¹³ Even people with 20 or more years of future participation in a DC plan may undermine their retirement by, for example, taking preretirement withdrawals or cashing out upon job termination. This will be explored in more detail in future Morningstar Center for Retirement and Policy Studies publications analyzing (1) emergency savings arrangements and (2) auto-portability.

¹⁴ An expense adjustment factor, a proxy for the baseline run's expenses, was incorporated into the analysis.

When the results from this counterfactual simulation were compared with the status quo results in the previous section, we find that there are very significant differences in the simulated probability of running short of money in retirement by age cohort along with very interesting disparities by AIME quartile.

Exhibit 2 shows the impact of individual account retirement plans by graphing the increase in the probability of running short of money for each of the three generations as a function of AIME quartile. We see the same overall trend for each of the three generations, with those in the lowest income quartile having the smallest impact, presumably since they rely more on Social Security than their higher-income counterparts (this portion of the overall retirement income was not modified in the counterfactual simulation). Likewise, those in the highest income quartile experience less of an impact than those in the middle 50%, since a larger portion of their overall retirement-income resources would come from other sources in addition to individual account retirement plans, such as post-tax brokerage accounts.

Exhibit 2: Impact of Counterfactual Simulations Assuming no Defined-Contribution Plans or IRAs by Age Cohort and AIME Quartile



Source: Authors' calculations using v1.0 of the Morningstar Model of US Retirement Outcomes under the assumption that household members retire at 65. Household members are assumed to claim Social Security at retirement age.

Exhibit 2 also shows that Gen X households would have the smallest impact for each of the four income categories compared with their younger counterparts. Gen X households in the lowest income category would only suffer a 6% increase in the probability of running short of money compared with 15% for millennials and 26% for Gen Z households. Similarly, Gen X households in the second income category would have a 15% increase in the probability of running short of money in retirement compared with 27% for millennials and 38% for Gen Z households. A similar phenomenon is observed for both the third income quartiles (15% for Gen X households versus 32% for millennials and 39% for Gen Z households)

and fourth income quartiles (11% for Gen X households versus 25% for millennials and 37% for Gen Z households).

When aggregated across all four income categories, the probability of Gen X households running short of money in retirement would increase from 47% under the status quo to 59% in the counterfactual simulation with no individual account retirement plans. Millennials would have a worse situation with the aggregate probability increasing from 44% to 69%, while the Gen Z households would be faced with the prospect of an increase from 37% in today's environment to a devastating 72% without individual account retirement plans.

Exhibit 3 shows the impact of assuming no defined-contribution plans or IRAs on the probability of running short of money in retirement by education. We see that the loss of these individual account plans would have the smallest impact on those with no high school diploma (an increase of only 6% in the probability). However, the impact increases with the level of education, and for those with a bachelor's degree or higher, the probability of running short of money in retirement increases by 19%.

Exhibit 3: Impact of Assuming no Defined-Contribution Plans or IRAs on the Probability of Running Short of Money in Retirement by Education

No HS Diploma	High School Diploma or GED	Some College or Associate's Degree	Bachelor's Degree or Higher
6%	14%	15%	19%

Source: Authors' calculations using v1.0 of the Morningstar Model of US Retirement Outcomes under the assumption that household members retire at 65. Household members are assumed to claim Social Security at retirement age.

Exhibit 4 shows the impact by industry.¹⁵ Households in the agricultural sector would only experience a 7% increase in the probability of running short of money in the absence of defined-contribution plans and IRAs, whereas all other industries would have an increase of at least 17%, with the manufacturing industry having the largest impact at 23%.

Exhibit 4: Impact of Assuming no Defined-Contribution Plans or IRAs on the Probability of Running Short of Money In Retirement by Industry

Agriculture	Mining and Construction	Manufacturing	Wholesale and Retail Trade	Finance, Insurance, & Real Estate	Misc. Services
7%	17%	23%	17%	19%	20%

Source: Authors' calculations using v1.0 of the Morningstar Model of US Retirement Outcomes under the assumption that household members retire at 65. Household members are assumed to claim Social Security at retirement age.

¹⁵ We are not modeling public-sector plans in this analysis.

The impact by gender and family status is more uniform. Exhibit 5 shows an impact of 17% for males who are single at retirement as well as for couples. However, females who are single at retirement would only have a 13% increase in the probability of running short of money in retirement.

Exhibit 5: Impact of Assuming no Defined-Contribution Plans or IRAs on the Probability of Running Short of Money in Retirement by Gender and Family Status

Couple	Male	Female
17%	17%	13%

Source: Authors' calculations using v1.0 of the Morningstar Model of US Retirement Outcomes under the assumption that household members retire at 65. Household members are assumed to claim Social Security at retirement age.

Exhibit 6 shows the impact of assuming no defined-contribution plans or IRAs on the probability of running short of money in retirement by race and ethnicity. Both non-Hispanic whites and Hispanics would have an increase of 16%, and those in the non-Hispanic "other" category would have an increase of 17%. However, non-Hispanic Blacks would only have an increase of 13%.

Exhibit 6: Impact of Assuming no Defined-Contribution Plans or IRAs on the Probability of Running Short of Money in Retirement by Race and Ethnicity

Hispanic	Non- Hispanic Black	Non- Hispanic Other	Non- Hispanic White
16%	13%	17%	16%

Source: Authors' calculations using v1.0 of the Morningstar Model of US Retirement Outcomes under the assumption that household members retire at 65. Household members are assumed to claim Social Security at retirement age.

Overall, the results of the counterfactual analysis indicate that American workers would be significantly less prepared for retirement if individual account plans were not available.

Automatic IRA Act of 2024

In February of 2024, House Ways and Means Committee Ranking Member Richard E. Neal (D-MA) introduced the Automatic IRA Act of 2024¹⁶ to dramatically expand retirement coverage for millions of workers. The bill would require companies with more than 10 workers to automatically enroll employees in IRAs or similar plans unless they already provide a retirement plan.¹⁷

To more accurately model retirement outcomes, Roth IRA balances were transferred to pretax accounts within the account information file. This adjustment was necessary to accommodate the auto-IRA modeling process. With the exception of workers at an employer with fewer than 10 employees (based on Survey of Consumer Finances data), it was assumed that individuals without access to a DC plan would automatically enroll in a Roth IRA. To account for potential pretax IRA contributions in the absence of an auto-IRA, participants were modeled as continuing to contribute to pretax IRAs while

¹⁶ https://democrats-waysandmeans.house.gov/sites/evo-subsites/democrats-waysandmeans.house.gov/files/evo-media-document/NEAL_007_xml_signature.pdf

¹⁷ A previous version of this bill was analyzed by VanDerhei (2022).

adhering to overall IRA contribution limits. A default enrollment rate of 6% for the auto-IRA was established, with an escalation to 10% over time. Due to data constraints, it was assumed that all participants who did not opt out would increase their contribution by 1% annually until reaching the 10% cap. Opt-out rates of 30%, 45%, and 15% were tested. To simulate real-world behavior, preretirement withdrawals from the auto-IRA were modeled using 401(k) preretirement withdrawal probabilities and severities.¹⁸

Instead of showing the changes in the probability of running short of money in retirement as we did in the previous section, in this case we calculated pairwise wealth ratios at retirement age (assumed to be 65 in the baseline scenario). The first panel in Exhibit 7 shows the aggregated results of the auto-IRA proposal for Gen X and younger assuming a 30% opt-out rate. The results are categorized by future years in a defined-contribution plan and displayed as wealth ratio means and medians.¹⁹

Exhibit 7: Aggregated Wealth Ratio Results of the Auto IRA Proposal for Gen X and Younger by Future Years in a Defined-Contribution Plan

Scenario	No Years in a DC Plan	1 to 9 Years in a DC Plan	10 to 19 Years in a DC Plan	20+ Years in a DC Plan
Opt-out rate = 30%				
Mean	1.537	1.263	1.089	1.031
Median	1.110	1.062	1.022	1.008
Opt-out rate = 45%				
Mean	1.406	1.201	1.068	1.025
Median	1.029	1.020	1.008	1.004
Opt-out rate = 15%				
Mean	1.682	1.318	1.110	1.038
Median	1.240	1.105	1.037	1.014

Source: Authors' calculations using v1.0 of the Morningstar Model of US Retirement Outcomes under the assumption that household members retire at 65. Household members are assumed to claim Social Security at retirement age.

As expected, those simulated to have no future years in a defined-contribution plans have the largest increase in the wealth ratios with a mean increase of 53.7% and a median increase of 11.0%. Both the mean and median wealth ratios are monotonically decreasing as future years in a defined-contribution plan increase. Those who are simulated to have one to nine future years in a defined-contribution plan would have an average increase of 26.3% (with a median increase of 6.2%). For those with 20 or more future years in a defined-contribution plan, there would be little opportunity to benefit from the auto-IRA proposal, which is reflected in their wealth ratios with a mean increase of only 3.1% and a median

¹⁸ The expense adjustment factor was applied to approximate spending patterns observed in the baseline analysis.

¹⁹ The ratios were filtered at the 99th percentile when computing the means.

increase of 0.8%.²⁰ The overall average increase in wealth ratios with a 30% opt-out is 23.8% with a median increase of 3.2%.

There is considerable debate as to the appropriate opt-out assumption for these types of plans.²¹ Therefore, we ran a sensitivity analysis by including results for both a 45% opt-out rate (second panel in Exhibit 7) as well as a 15% opt-out rate (third panel in Exhibit 7). As expected, increasing the opt-out rate significantly decreases the wealth ratios for the households. For example, those with no future simulated years in a defined-contribution plan would have a mean increase of only 40.6%, as opposed to the 53.7% under the baseline assumption from a 30% opt-out. The overall average increase in wealth ratios with a 45% opt-out is 18.1% with a median increase of 1.1%.

If the opt-out-rate assumption is decreased to only 15 percent, the wealth ratios are significantly increased. In this case, those with no future simulated years in a defined-contribution plan would have a mean increase of 68.2%. The overall average increase in wealth ratios with a 15% opt-out is 29.5% with a median increase of 5.8%.

Exhibit 8 presents wealth ratio increases at retirement under varying opt-out-rate scenarios by gender and family status. For single males, the mean (median) increase is 29.2% (2.7%) at a 30% opt-out rate, rising to 32.0% (5.6%) at a 15% rate and decreasing to 22.3% (0.6%) at a 45% rate. Single females experience similar trends, with mean (median) increases of 27.9% (3.4%), 32.3% (7.2%), and 21.2% (0.8%), respectively. Couples show a mean (median) increase of 17.4% (3.4%) at a 30% opt-out rate, rising to 27.8% (5.2%) at a 15% rate, and declining to 13.2% (1.5%) at a 45% rate.

Exhibit 8: Aggregated Wealth Ratio Results of the Auto IRA Proposal for Gen X and Younger by Gender and Family Status

Scenario	Male	Female	Married
Opt-out rate = 30%			
Mean	1.292	1.279	1.174
Median	1.027	1.034	1.034
Opt-out rate = 45%			
Mean	1.223	1.212	1.132
Median	1.006	1.008	1.015
Opt-out rate = 15%			
Mean	1.320	1.323	1.278
Median	1.056	1.072	1.052

Source: Authors' calculations using v1.0 of the Morningstar Model of US Retirement Outcomes under the assumption that household members retire at 65. Household members are assumed to claim Social Security at retirement age.

²⁰ Those with 10 to 19 future years in a defined-contribution plan would have a mean increase of 8.9% and a median increase of 2.2%.

²¹ See VanDerhei (2022) for additional information.

Exhibit 9 compares wealth ratio increases at retirement for different racial and ethnic groups across varying opt-out rates. Hispanics see average (median) wealth ratio gains of 25.8% (2.9%) at a 30% opt-out rate, ranging from 19.6% (0.7%) to 32.0% (5.6%) for higher and lower opt-out rates. Non-Hispanic Black individuals exhibit similar patterns, with average (median) increases of 26.3% (4.0%) at a 30% opt-out rate. Non-Hispanic whites have lower average (median) increases, starting at 22.9% (3.1%) for a 30% opt-out rate.

Exhibit 9: Aggregated Wealth Ratio Results of the Auto IRA Proposal for Gen X and Younger by Race and Ethnicity

Scenario	Hispanic	Non-Hispanic Black	Non-Hispanic Other	Non-Hispanic White
Opt-out rate = 30%				
Mean	1.258	1.263	1.224	1.229
Median	1.029	1.040	1.029	1.031
Opt-out rate = 45%				
Mean	1.196	1.200	1.170	1.174
Median	1.007	1.013	1.011	1.011
Opt-out rate = 15%				
Mean	1.320	1.323	1.278	1.284
Median	1.056	1.072	1.052	1.056

Source: Authors' calculations using v1.0 of the Morningstar Model of US Retirement Outcomes under the assumption that household members retire at 65. Household members are assumed to claim Social Security at retirement age.

Exhibit 10 illustrates the impact of varying opt-out rates on wealth ratio increases at retirement for different generations. Gen Z households experience average (median) wealth ratio gains of 18.4% (6.1%) at a 30% opt-out rate, with this figure ranging from 14.1% (3.9%) to 22.7% (8.4%) under the 45% opt-out rate and 15% opt-out-rate scenarios, respectively. Millennials demonstrate similar trends, with average (median) increases of 24.2% (5.6%) at a 30% opt-out rate. Gen X households exhibit average (median) wealth ratio growth commencing at 20.7% (0.8%) for a 30% opt-out rate.

Exhibit 10: Aggregated Wealth Ratio Results of the Auto IRA Proposal for Gen X and Younger by Generation

Scenario	Gen Z	Millennials	Gen X
Opt-out rate = 30%			
Mean	1.184	1.242	1.207
Median	1.061	1.056	1.008
Opt-out rate = 45%			
Mean	1.141	1.186	1.155
Median	1.039	1.028	1.002
Opt-out rate = 15%			
Mean	1.227	1.298	1.258
Median	1.084	1.086	1.023

Source: Authors' calculations using v1.0 of the Morningstar Model of US Retirement Outcomes under the assumption that household members retire at 65. Household members are assumed to claim Social Security at retirement age.

Exhibit 11 compares wealth ratio gains at retirement across industries under a 30% opt-out rate. Results vary significantly, with the finance, insurance, and real estate industry showing the smallest average (median) increase at 19.2% (1.9%), while the wholesale and retail trade industry had the largest increase at 33.5% (9.8%).

Exhibit 11: Aggregated Wealth Ratio Results of the Auto IRA Proposal for Gen X and Younger by Industry

Scenario	Agriculture	Mining & Construction	Manufacturing	Wholesale & Retail Trade	Finance, Insurance, & Real Estate	Misc. Services
30% opt-out rate						
Mean	1.284	1.261	1.214	1.335	1.192	1.211
Median	1.021	1.036	1.032	1.098	1.019	1.032
45% opt-out rate						
Mean	1.217	1.198	1.164	1.256	1.148	1.160
Median	1.002	1.013	1.012	1.051	1.005	1.012
15% opt-out rate						
Mean	1.352	1.323	1.262	1.414	1.237	1.260
Median	1.046	1.061	1.056	1.150	1.036	1.056

Source: Authors' calculations using v1.0 of the Morningstar Model of US Retirement Outcomes under the assumption that household members retire at 65. Household members are assumed to claim Social Security at retirement age.

Impact of Automatic Enrollment and Auto-Escalation

One of the major problems with the original 401(k) plan designs was that they generally required eligible employees to opt in to coverage. A small number of plan sponsors started to experiment with a

fundamental change in plan design in which most, if not all, of the eligible employees would be automatically enrolled in a 401(k) plan with an option to opt out if they so desired.²² While this drastically improved the participation percentages,²³ there was still a problem with relatively low deferral percentages that plan sponsors chose as a default. The concept of auto-escalation where the participant's deferral rate would automatically increase by a set percentage (typically 1%) per year was adopted by some plan sponsors as a way to gradually increase the employee-contribution rate that was closer to a level thought to be necessary to provide adequate retirement income.²⁴

Even though several studies were conducted to show the likely impact of a change from the voluntary enrollment, or VE, to automatic enrollment,²⁵ or AE, it was not until the Pension Protection Act of 2006 removed certain obstacles (such as wage-garnishment restrictions) that this practice began to flourish. However, this practice is still not universal,²⁶ even though Secure 2.0 will require new 401(k) plans to adopt this design. This section analyzes the potential impact of all current 401(k) VE plans moving to an AE plan design. We also include an analysis in which we assume that all AE plans use auto-escalation to 15%.²⁷

For all analyses, an expense adjustment factor,²⁸ representing a proxy for the baseline run's expenses, was applied. In the first scenario, all VE plans were converted to AE plans. This involved adjusting plan-type probabilities used in contribution regressions by setting VE plan probabilities to zero and proportionally distributing the probability to AE plan types. In the second scenario, all VE plans were transformed into AE plans with an auto-escalation feature capping at 15%. Plan-type probabilities were modified as in the previous scenario. To ensure a minimum contribution rate, predicted contribution rates below 6% in the initial year were adjusted upward. Subsequently, contribution rates were compared with the auto-escalated rate in each year, with adjustments made as necessary to maintain the escalating contribution pattern.

Simulating a transition from voluntary to automatic enrollment indicates an aggregate average wealth ratio increase of 16.3% (median: 0.5%) without escalation and a more substantial 28.8% increase (median: 8.0%) when escalation is factored in. This change has no effect on individuals projected to leave the workforce before contributing to a defined-contribution plan. Exhibit 12 illustrates that those expected to participate in a plan for one to nine years would experience an average wealth ratio increase of 14.6% (median: 0.3%) without auto-escalation and 24.9% (5.5%) with auto-escalation to 15%. Participants with a projected 20 or more years of plan participation stand to benefit more significantly

22 See Madrian and Shea (2000) for early analysis of the potential benefits of this change in plan design.

23 According to Vanguard, the participant-weighted participation rate was 82% in 2023. Refer to Figure 24 of Vanguard's "How America Saves 2024" report: https://institutional.vanguard.com/content/dam/inst/iig-transformation/insights/pdf/2024/has/how_america_saves_report_2024.pdf

24 See Thaler and Benartzi (2004) for a groundbreaking study on this plan design and various EBRI simulation analyses on the likely impact on the general 401(k) population (VanDerhei 2007 and VanDerhei 2012).

25 See Holden and VanDerhei (2005) for a simulation analysis of the likely winners and losers under several different scenarios.

26 According to Vanguard's "How America Saves 2024" report, 59% of plans have adopted an automatic-enrollment feature. Refer to link in footnote 23.

27 See VanDerhei (2010) for earlier EBRI research on this topic.

28 This adjustment factor varies by household in the sample.

from plan design changes, resulting in average wealth ratio increases of 24.2% (median: 9.1%) without auto-escalation and 46.5% (29.3%) with auto-escalation.

Exhibit 12: Aggregated Results--Gen X and Younger--Means and Medians for Switch From VE to AE by Future Years in a Defined-Contribution Plan

Scenario	No Years in a DC Plan	1 to 9 Years in a DC Plan	10 to 19 Years in a DC Plan	20+ Years in a DC Plan
Without auto-escalation to 15%				
Mean	1.000	1.146	1.231	1.242
Median	1.000	1.003	1.040	1.091
With auto-escalation to 15%				
Mean	1.000	1.249	1.408	1.465
Median	1.000	1.055	1.193	1.293

Source: Authors' calculations using v1.0 of the Morningstar Model of US Retirement Outcomes under the assumption that household members retire at 65. Household members are assumed to claim Social Security at retirement age.

Exhibit 13 shows the impact of these plan design changes by gender and family status. For single males, average (median) wealth increases by 19.5% (0.3%) without auto-escalation and 33.7% (7.5%) with it. Single females see similar gains: 16.7% (0.2%) without, 30.0% (6.8%) with. Couples experience average (median) increases of 14.1% (0.8%) and 25.2% (9.3%), respectively.

Exhibit 13: Aggregated Results--Gen X and Younger--Means and Medians for Switch From VE to AE by Gender and Family Status

Scenario	Male	Female	Married
Without auto-escalation to 15%			
Mean	1.195	1.167	1.141
Median	1.003	1.002	1.008
With auto-escalation to 15%			
Mean	1.337	1.300	1.252
Median	1.075	1.068	1.093

Source: Authors' calculations using v1.0 of the Morningstar Model of US Retirement Outcomes under the assumption that household members retire at 65. Household members are assumed to claim Social Security at retirement age.

Exhibit 14 presents the differential effects of plan design changes on households of various racial and ethnic backgrounds. Hispanic households, for example, experience a notable increase in average

(median) wealth from 16.5% (0.4%) without auto-escalation to 30.2% (8.5%) with it. Similar gains are observed for non-Hispanic Black and non-Hispanic white households, with respective average (median) increases of 17.1% (0.5%) to 30.5% (8.9%) and 16.1% (0.5%) to 28.3% (7.8%).

Exhibit 14: Aggregated Results--Gen X and Younger--Means and Medians for Switch From VE to AE by Race and Ethnicity

Scenario	Hispanic	Non- Hispanic Black	Non- Hispanic Other	Non- Hispanic White
Without auto-escalation to 15%				
Mean	1.165	1.171	1.161	1.161
Median	1.004	1.005	1.004	1.005
With auto-escalation to 15%				
Mean	1.302	1.305	1.273	1.283
Median	1.085	1.089	1.065	1.078

Source: Authors' calculations using v1.0 of the Morningstar Model of US Retirement Outcomes under the assumption that household members retire at 65. Household members are assumed to claim Social Security at retirement age.

Exhibit 15 illustrates the varying impact of plan design changes across different age groups. For instance, auto-escalation significantly boosts wealth accumulation for Gen Z households, increasing average (median) wealth from 18% (4%) to 35% (19%). Millennials and Gen X also benefit, with average (median) wealth rising from 17% (2%) to 31% (13%) and from 13% (0.1%) to 22% (3%), respectively.

Exhibit 15: Aggregated Results--Gen X and Younger--Means and Medians for Switch From VE to AE by Age Cohort

Scenario	Gen Z	Millennials	Gen X
Without auto-escalation to 15%			
Mean	1.18	1.17	1.13
Median	1.04	1.02	1.00
With auto-escalation to 15%			
Mean	1.35	1.31	1.22
Median	1.19	1.13	1.03

Source: Authors' calculations using v1.0 of the Morningstar Model of US Retirement Outcomes under the assumption that household members retire at 65. Household members are assumed to claim Social Security at retirement age.

Exhibit 16 highlights the diverse effects of plan design changes across different industries. For example, auto-escalation has a minimal impact on the agriculture industry, increasing average (median) wealth modestly from 5% (less than 1%) to 10% (less than 1%). In contrast, manufacturing experiences the most substantial gains, with average (median) wealth soaring from 19% (1%) to 34% (13%).

Exhibit 16: Aggregated Results--Gen X and Younger--Means and Medians for Switch From VE to AE by Industry

Scenario	Agriculture	Mining & Construction	Manufacturing	Wholesale & Retail Trade	Finance, Insurance, & Real Estate	Misc. Services
No auto-escalation						
Mean	1.05	1.15	1.19	1.13	1.17	1.17
Median	1.00	1.01	1.01	1.00	1.01	1.01
With auto-escalation to 15%						
Mean	1.1	1.27	1.34	1.25	1.3	1.3
Median	1	1.07	1.13	1.06	1.08	1.1

Source: Authors' calculations using v1.0 of the Morningstar Model of US Retirement Outcomes under the assumption that household members retire at 65. Household members are assumed to claim Social Security at retirement age.

Summary

The landscape of retirement-income adequacy in the United States is undergoing significant transformation, and our analysis underscores the importance of understanding these shifts. Using the Morningstar Model of US Retirement Outcomes, we explored the status quo, identified disparities among various demographic groups, and examined potential changes to retirement-savings plans. Our findings indicate that baby boomers and Gen Xers are more likely to face retirement shortfalls than younger generations. The percentage of households with a retirement-funded ratio less than 1, a clear indicator of shortfalls, varies significantly by generation and income level. For instance, 47% of Gen Xers are projected to experience shortfalls compared with 37% for Gen Z and 44% for millennials. These disparities are even more pronounced when broken down by income categories. Lower-income households are at a greater risk of running short of money, highlighting the critical role of preretirement earnings in determining retirement adequacy.

The analysis also revealed stark differences in retirement readiness based on family status, race and ethnicity, industry, and participation in defined-contribution plans. Single females, Hispanic Americans, and non-Hispanic Black Americans are at a higher risk of retirement shortfalls. Furthermore, the public sector shows the highest preparedness for retirement, while industries like finance, insurance, real estate, and manufacturing display varying levels of readiness.

Our research underscores the significant impact of DC plans on retirement outcomes. Individuals with longer participation in DC plans are better positioned to avoid retirement shortfalls. For example, those with 20 or more years of future DC-plan participation are much less likely to run short of money compared with those with no future participation. This finding emphasizes the importance of sustained contributions to DC plans.

To better understand the role of individual account retirement plans, we employed a counterfactual simulation. This simulation aimed to approximate the impact of eliminating individual account retirement plans (DC plans and IRAs). The results showed significant differences in the probability of running short of money in retirement, particularly among middle-income groups who rely heavily on DC plans for their retirement savings.

We also examined the potential effects of the Automatic IRA Act of 2024 proposal. This proposal aims to automatically enroll individuals without access to a DC plan into IRAs, with an opt-out feature and auto-escalation. The simulation of this proposal showed significant increases in wealth ratios for participants, particularly for those simulated to have no future years in a DC plan. This suggests that such policy changes could significantly improve retirement outcomes for a broad segment of the population. Finally, we explored the potential benefits of transitioning from voluntary-enrollment plans to automatic-enrollment plans with auto-escalation features. Such changes could lead to substantial increases in wealth ratios at retirement. For example, transitioning to AE plans with a 15% auto-escalation cap could increase average wealth ratios by 28.8% (median: 8.0%). This demonstrates the powerful impact that thoughtful plan design can have on enhancing retirement security.

In conclusion, our analysis highlights the importance of continued participation in DC plans, the potential benefits of automatic enrollment and auto-escalation features, and the positive impact of policy proposals like the Automatic IRA Act of 2024. Addressing the disparities in retirement readiness across different demographic groups and industries is crucial for improving retirement outcomes for all Americans. As we look to the future, it is essential to consider these findings in shaping policies and plan designs that promote retirement-income adequacy and financial security.

By understanding and addressing these issues, we can help ensure that more Americans achieve a comfortable retirement, regardless of their income level, family status, race, or industry. The path forward requires thoughtful policy interventions, robust retirement plan designs, and a commitment to improving retirement outcomes for all. ■■■

Appendix: Future Analysis From the Model

In future research, we will explore the impact of broader economic factors and policy changes on retirement outcomes, focusing on topics such as:

- × The impact of various proposals to reduce/eliminate the tax incentives for 401(k) plans.
- × The impact of the Saver's Match on all households (whether or not they are eligible to participate in an employer-sponsored defined-contribution plan).
- × The impact of auto-portability to reduce leakage.
- × How net housing equity can be used to increase retirement-income adequacy.
- × The impact of annuities and the possibility of providing them as a default option in defined-contribution plans.
- × Social Security reform and the impact of potential benefit reductions on retirement-income adequacy.
- × Mandatory Rothification of employee 401(k) contributions.
- × The impact of alternative plan design modifications (including managed accounts).
- × The impact of needing long-term services and supports on retirement-income adequacy with and without long-term-care insurance.

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