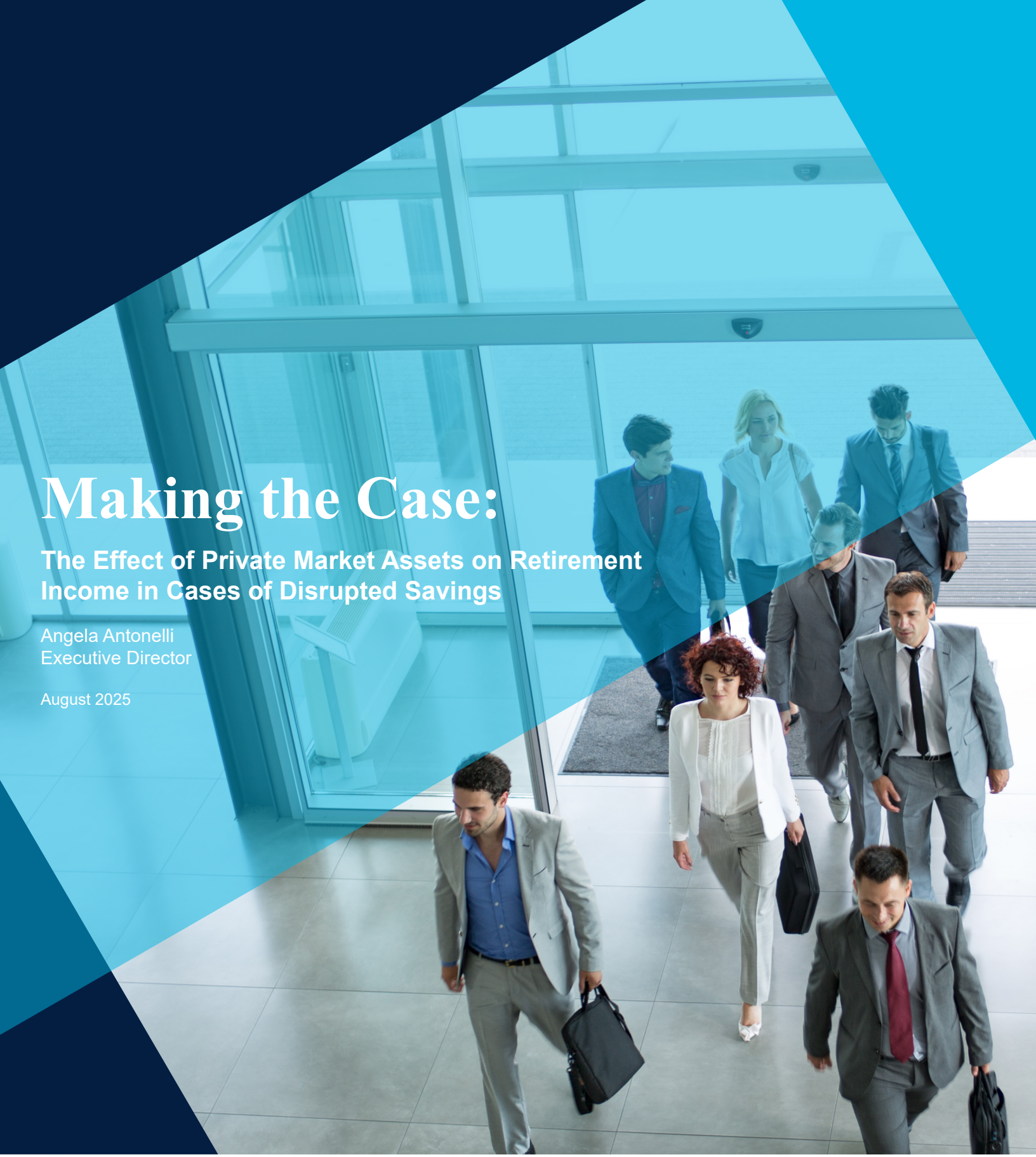

Making the Case:

The Effect of Private Market Assets on Retirement Income in Cases of Disrupted Savings

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Executive Director

August 2025

GEORGETOWN UNIVERSITY
McCourt School of Public Policy
CENTER FOR RETIREMENT INITIATIVES

In conjunction with

wtw

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Suggested Report Citation:

Angela M. Antonelli, "Making the Case: The Effect of Private Market Assets on Retirement Income in Cases of Disrupted Savings." Georgetown University Center for Retirement Initiatives in conjunction with WTW. 2025.

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Executive Summary

Introduction

Most U.S. workers today rely on a voluntary, employer-based retirement system that requires them to manage their own retirement readiness. Defined contribution (DC) plans require participants to determine how much to save, how to invest those savings, and how to manage their savings to generate income in retirement. While design innovations such as automatic enrollment and auto escalation have improved participation, persistent challenges continue to dampen the growth of retirement savings.

	2013		2024
Plans which automatically enroll participants	34%	⟷	61%
Plans which automatic annual savings rate increases	23%	⟷	42%
Median participant deferral rate	6.0%	⟷	6.8%
Median participant account balance in 2024 real dollars	$42.4k	⟷	$38.2k

Data from Vanguard, "How America Saves," 2018 and 2025. Inflation adjusted dollars from U.S. Bureau of Labor Statistics CPI Inflation Calculator.

It is no longer common for workers to remain at the same company throughout an entire career. In fact, workers can be expected to hold as many as seven jobs after the age of 24.[1] While this might appear to have its advantages, there also are some financial consequences that are only beginning to be better understood. For example, a recent Vanguard study shows that workers often fail to maintain the same rate of savings when starting a new job. By doing so, a worker is foregoing long-term income, with 55% of these individuals seeing a decrease in their savings rate, leading to a median savings rate decline of 2.4% for those who had been at their prior job for more than five years.[2] An individual's retirement readiness can also suffer setbacks because of the need to leave the workforce to care for children, an elderly family member, or a friend, or due to forced early retirement. Similarly, the lack of emergency savings can negatively affect retirement balances when workers are forced to tap their retirement savings using loans or hardship withdrawals.

The reality is there is no "average" U.S. worker. This study seeks to examine more closely different worker profiles or experiences — the job hopper, the caregiver or stay-at-home parent, the low- or moderate-income worker living paycheck to paycheck, and those forced to retire early — and how these experiences affect lifetime retirement savings and the ability to achieve a reasonable level of pre-retirement income replacement. Is it possible that the consideration of how retirement savings are invested could make a difference? Could the design of investments, such as adding a modest allocation to private market assets, also referred to as alternative assets, in DC plan target date funds (TDFs) help bridge the savings gap from career interruptions or financial stressors?

1. U.S. Bureau of Labor Statistics. (2023). Number of Jobs, Labor Market Experience, Marital Status, and Health for Those Born 1957–1964. Economic News Release NL SOY: Report No. USDL 23 145.
2. Greig, F., Hahn, K., & Tan, F. (2024). Job Transitions Slow Retirement Savings. Vanguard.

Previous CRI Research Findings

The Center for Retirement Initiatives (CRI), in partnership with WTW, examined the opportunities, challenges, and benefits of expanding the asset classes used in DC plan TDFs in two previous research reports. The first CRI study, published in 2018, used a substantial allocation to alternative assets in the TDF, reaching as high as 30% of the underlying portfolios allocation. The analysis concluded that a combination of alternative asset classes in a "diversified" TDF had the potential to improve a DC plan participant's annual retirement income by as much as 11% to 17%.[3]

The second study, published in 2022, focused on using a more modest level of exposure to alternative asset classes and refining those asset classes used within its alternatives allocation. The analysis concluded that even a modest allocation to alternative asset classes can generate improved retirement outcomes. In this analysis, the "Expanded TDF" allocation had the potential to improve a DC plan participant's annual retirement income by as much as 6% to 8% after fees.[4]

New Research Findings

This new 2025 analysis examines five unique DC plan participant profiles, differentiated by various life circumstances affecting their savings journeys. Assumptions about a variety of factors for each profile include starting salary, salary growth rate, savings rate, years in the workforce, and use of loans or hardship withdrawals. For each DC participant profile, the analysis models the savings in a plan's TDF and the ability of that savings pool to replace pre-retirement income.

The damage to long-term retirement savings due to career disruptions or financial stress is significant and allocations to private market assets can improve retirement outcomes.

There are two major findings from this analysis:
1) The damage to long-term retirement savings due to career disruptions or financial stress is significant when comparing the different DC participant profiles to the "average" DC participant; and 2) because of these savings setbacks, allocating to private market assets in the TDF could improve retirement outcomes for the different DC participant profiles from 7% to 8% net of all fees.

3. Antonelli, Angela M. (2018). "The Evolution of Target Date Funds: Using Alternatives to Improve Retirement Plan Outcomes." Center for Retirement Initiatives, McCourt School of Public Policy, Georgetown University, in conjunction with WTW.
4. Antonelli, Angela M. (2022). "Innovation in DC Plan Investments: Can Asset Diversification and Access to Private Markets Improve Retirement Income Outcomes?" Center for Retirement Initiatives, McCourt School of Public Policy, Georgetown University, in conjunction with WTW.

Background

In 2025, more than 4 million Americans will turn 65 — the largest number in U.S. history.[5] As the apex of the Baby Boomer generation enters their mid-60s and begins their retirement, the demographics of the workforce replacing them have never been so diverse. Since participation in employer-sponsored defined contribution (DC) plans has become the predominant path for American workers to save for retirement, understanding these demographics is an essential piece of our ability to help more people achieve their retirement goals.

While an increase in the use of features such as automatic enrollment and automatic escalation is expected to continue to boost workers' retirement savings, 42% of Gen X say they are not confident they can retire comfortably. The median Gen X worker is about 15 years from retirement with an income of $111,000, and has less than $93,000 in retirement savings. However, a closer examination of the data shows a larger range of financial conditions, with approximately 25% of Gen X households saying they have less than $25,000 in total saved for retirement, while more than 30% indicate they have $250,000 or more saved in their retirement accounts.[6, 7]

The Growth of TDFs and the Shift Toward Private Market Assets

Since the enactment of the Pension Protection Act in 2006 and the Department of Labor (DOL) allowing target date funds (TDFs) to be used as the default investment option, TDFs have been the DC industry's go-to default choice for providing a set-it and forget-it asset allocation investment option for DC retirement plan participants. Today, the widespread adoption of TDFs as the default investment for DC participants has pushed the assets invested in these strategies to more than $4 trillion as of year-end 2024,[8] accounting for approximately 25% of all assets[9] in the DC industry. With more than half of plan sponsors using automatic enrollment that defaults DC participants into a plan's TDFs[10] and an estimated 79% of DC participants remaining in their default investment[11] option, TDFs are steadily becoming the primary retirement savings investment for an expansive array of workers. Despite a goal of helping achieve successful retirement outcomes for a wider and wider range of DC plan participants, the underlying asset classes in the largest TDF providers have remained largely unchanged. The five largest TDF providers have less than 5% of allocations to asset classes other than traditional public equity and bonds as of December 31, 2024.

Increasingly, public securities represent a smaller share of overall investment assets available in capital markets. Assets allocated to private equity investments have grown from $600 billion at the turn of the century, to more than $8.2 trillion as of 2023.[12] It is estimated that as of June 30, 2023, total private market assets were $13.1 trillion.[13] As private markets have grown, public markets have shrunk. In 1996, there were more than 8,000 publicly listed companies in the U.S.; today, there are estimated to only be slightly above 4,000.[14] Public market returns are increasingly being driven by a smaller number of large companies, predominantly in the U.S. This concentration leads to increased risk centered around a select few names and leaves public market investors without the investment returns generated by these private market investments.

Private market allocations have been an important part of many pension plan asset allocations for well over a decade. Institutional scale has been leveraged to access meaningful allocations to the asset class, allowing pensions to optimize their risk adjusted return when seeking to enhance long-term outcomes. As access to these funds continue to expand, asset owners beyond the traditional large institutional investment pools are increasingly seeking to access the benefits of private market exposure. The largest of these entrants so far has been high-net-worth individuals; according to a Bain & Company analysis, private wealth accounts for 16% of assets under management within alternative investment funds as of 2023, but Bain & Company estimates that they will account for a quarter of the growth in investments within the asset class through 2033.[15] However, as access to private markets continues to grow, more and more savers within the U.S. also can have the opportunity to benefit from the diversifying exposure of private market assets.

For institutional DC plan sponsors considering private markets exposure within their investment lineup, there are additional factors that should be evaluated relative to traditional equity and bond offerings when assessing implementation options.

5. Lee, Z., & Rao, M. (2025). "Social Security Claiming Timing and Older Adults' Financial Wellbeing." Center for Retirement Initiatives, McCourt School of Public Policy, Georgetown University, CRI Working Paper No. 2025-01.
6. Transamerica Center for Retirement Studies. (2024). "The Multigenerational Workforce: Life, Work, and Retirement Survey Report." Transamerica Institute.
7. U.S. Census Bureau. (2023). Table A-1: Income and Earnings Summary Measures by Selected Characteristics: 2022 and 2023" (data table). In "Income in the United States: 2023" (p. 60–282).
8. Morningstar, Inc. (2024). "2024 Target-Date Strategy Landscape."
9. Investment Company Institute. (2025). Quarterly Retirement Market Data, Fourth Quarter 2024.
10. Vanguard. (2025). "How America Saves 2025."
11. Plan Sponsor Council of America. (2023). "66th Annual Survey of Profit Sharing and 401(k) Plans: Reflecting the 2022 Plan Year Experience."
12. Moss, W. (2025). "The Decline in U.S. Stocks to Choose from: What it Means for Investors." *Forbes*.
13. Dahlqvist, F., Green, A., Maia, P., Nee, A., Quigley, D., Sanghvi, A., Mangan, C., Spivey, J., Schneider, R., & Vickery, B. (2024). "McKinsey Global Private Markets Review 2024: Private Markets in a Slower Era." McKinsey & Company.
14. WTW. (2025). "The Shrinking Public Market: What Investors Need to Know."
15. MacArthur, H., Skolnik, O., De Mol, A., & Rainey, B. (2025). "This Time It's Different: The Strategic Imperative in Private Equity." Bain & Company.

Private market asset classes differ in terms of liquidity, average fee levels, and transparency into the underlying holdings, which require additional specialized knowledge and fiduciary oversight. Typically, these asset classes have only offered monthly to quarterly liquidity, which can be facilitated within a professionally managed TDF structure that considers these factors in its design. Lastly, access to private markets, and the specialized skills of the investment professionals needed, come with additional costs relative to more traditional asset classes. However, the private market access and expertise from investment professionals can potentially add greater value, net of all fees.

Prior CRI Research and Current Study Objective

In 2018 and 2022, the CRI explored whether incorporating alternative assets in TDFs could boost an individual's long-term retirement income. The research focused on professionally managed asset allocation portfolios of TDFs, due to their widespread adoption in DC plans and the need to re-evaluate the underlying asset classes embedded in TDFs, which have remained largely unchanged to date.

The 2018 analysis modeled a TDF with a substantial allocation to alternative assets, reaching as high as 30% of the underlying portfolio's allocation. The study concluded that a diversified TDF had the potential to improve a DC participant's annual retirement income by as much as 11% to 17%.[16]

In the 2022 analysis, the theoretical benefits modeled in the 2018 study were updated by refining the glidepath and simulating 5,000 retirement scenarios. This updated glidepath, called the "Expanded TDF" in the study, assumed a reduced exposure to alternative asset classes from the prior study, with the goal of demonstrating that even more modest and achievable exposure to alternative asset classes would improve outcomes for DC participants. The results showed strong quantitative support for including alternatives in TDFs, with a 6% to 8% improvement in retirement income, even after fees.[17]

The objective of this study is to better understand the role that allocations to private market assets can play in helping improve the retirement outcomes of DC plan participants invested in TDFs, examined through a range of DC participant profiles and financial conditions. The results of this new research are consistent with the prior two evaluations, continuing to demonstrate that allocations to private market assets in a DC participant's TDF investment can drive enhanced returns and improved retirement outcomes. This boost to retirement income becomes even more important because of the drag on long-term retirement savings due to career disruptions or financial stress.

16. Antonelli, Angela M. (2018). "The Evolution of Target Date Funds: Using Alternatives to Improve Retirement Plan Outcomes." Center for Retirement Initiatives, McCourt School of Public Policy, Georgetown University, in conjunction with WTW.
17. Antonelli, Angela M. (2022). "Innovation in DC Plan Investments: Can Asset Diversification and Access to Private Markets Improve Retirement Income Outcomes?" Center for Retirement Initiatives, McCourt School of Public Policy, Georgetown University, in conjunction with WTW.

2025 Study Methods and Analysis

For many American workers, the journey of saving for retirement is not a steady ascent up a gradual slope, but one involving disadvantaged starts, setbacks, unexpected breaks, and early endings that can lead to large discrepancies in the ability to replace their income needs effectively at the point of retirement. The consideration of how retirement savings are invested could help bridge the gap.

This study examines five DC retirement plan participant profiles more closely and assess how these experiences affect lifetime retirement savings and the ability to achieve a reasonable level of pre-retirement income replacement. Because TDFs are the predominant investment option in DC plans today, the outcome of including private market assets in the glidepath is an important consideration.

DC Plan Participant Profiles

This analysis examines five unique DC retirement plan participant profiles, differentiated by their life circumstances:[18]

The reality is that every individual faces different opportunities and challenges throughout a working life, and these circumstances will shape their financial future and retirement security. This study examines how life's unpredictable headwinds can affect one's ability to save for retirement.

- **The "Average" U.S. Worker**: Although there are great variations in the financial conditions of U.S. workers, the analysis for this study creates an "average" or midpoint of the population to serve as a baseline for comparison to the other DC participant profiles considered. This profile has an early career salary of $70,000,[19] with 2% annual growth across the first two decades[20] and they will defer 6% to 9% from their early to late career, respectively.[21] As a baseline for our analysis, they will not switch jobs, leave the workforce, or take an early retirement, nor will they take out any loans or make hardship withdrawals.
- **Family Caretakers**: This profile represents an individual who has multiple zero-earning years out of the workforce due to caretaker responsibilities, such as caring for children or parents. This individual leaves the workforce for five years in their early 30s to care for their children, before returning to the workforce and foregoing any real wage growth during the time they provided caregiving. They then leave the workforce again for three years in their early 50s to care for an elderly parent, resuming their careers in their mid-50s with another three years of lost real wage growth. This profile is pulled from studies of the U.S. workforce, notably the pattern for women savers — 14% of parents surveyed indicated that at least one parent spent more than five years out of the workforce after the birth of their first child.[22] It is also estimated that more than 40 million Americans act as unpaid caregivers every year, with the majority providing care for at least three years and with the average caretaker of an elderly adult being 50 years old.[23]
- **Lower-Income Workers**: This profile represents an individual living paycheck to paycheck in the 25th percentile of U.S. incomes, with an early career salary of $29,000.[24] While they still save consistently, they do so at a lower rate, with DC participants who are in the 10th to 35th percentile of incomes saving on average 1% less than the median DC plan participant.[25] This DC participant profile will defer 5% to 8% from their early to late career, respectively. These Americans are some of those most at risk of unexpected expense shocks, as well as under-contributing to their DC plans. When infrequent or unexpected sizable expenditures occur, they may choose to pay for these through small loans and hardship withdrawals from their 401(k) accounts. Data from EBRI[26] found that 55% of DC participants who took one loan during their five-year study period ended up taking a second loan during the same period, although the average loan balance of those who took out multiple loans was meaningfully lower than of those who took out only a single loan. Data from Vanguard shows that instances of multiple hardship withdrawals are also on the rise, with the most frequent reason being to avoid foreclosure or eviction.[27] The lower-income worker profile models an individual taking four loans and three hardship withdrawals throughout their career.

18. Full persona assumptions detailed in Appendix.
19. U.S. Census Bureau. (2023). "Table A-1: Income and Earnings Summary Measures by Selected Characteristics: 2022 and 2023 (data table). In "Income in the United States: 2023" (p. 60–282).
20. Federal Reserve Bank of Atlanta. (n.d.). "Wage Growth Tracker."
21. Vanguard. (2024). "How America Saves 2024."
22. Weiler Reynolds, B. (2019). "More than Half of Stay-at-Home Parents Stop Working Longer than Planned." Ladders.
23. U.S. Government Accountability Office. (2019). "Retirement Security: Some Parental and Spousal Caregivers Face Financial Risks" (GAO Publication No. GAO-19-382).
24. U.S. Bureau of Labor Statistics. (2023). "Number of Jobs, Labor Market Experience, Marital Status, and Health for Those Born 1957–1964." Economic News Release NL SOY; Report No. USDL 23 145.
25. Vanguard. (2024). "How America Saves 2024."
26. Employee Benefit Research Institute & Greenwald Research. (2024). "2024 Retirement Confidence Survey: Fact Sheet #2 – Expectations About Retirement."
27. Cann, M., Palumbo, M., Buck, C., & Clark, J. W. (2023). "How Americans Withstand Financial Hardships." Vanguard Institutional.

- **Job Hoppers**: This profile represents the frequent job switcher who relies on automatic plan design features to drive their preparedness for retirement. Despite the higher salary growth rate they receive from their opportunistic job switching, they reset to the automatic enrollment savings rate each time they accept a new job. This individual will have seven jobs throughout their career, which is the historical average for U.S. workers over the age of 24.[28] This number is likely to increase as career transience becomes more common. A 2024 study by Vanguard found that despite a salary increase, 55% of job switchers saw a decrease in their savings rate. In this study, 60% of job switchers kept the default savings rate given to them in their plan design. For those who had been at their prior job more than five years, this led to a median savings rate decline of 2.4%.[29] This is modeled in our DC participant profile by resetting the savings rate to a 3% automatic enrollment with each job switch and escalating on an annual basis to a cap of 9% where eligible, which aligns with the maximum savings rate of the "Average U.S. Worker" profile.
- **Unexpected Early Retirement**: Most U.S. workers say they expect to work until age 65 or beyond.[30] This profile, modeled through an early retirement at age 60, represents a sizeable portion of the U.S. workforce. This profile is pulled from studies of currently retired individuals, which show 59% of individuals indicating they left the workforce before the age of 65.[31] Many of these individuals found themselves unexpectedly out of the workforce, whether due to unanticipated medical issues or involuntary separation from their employers. Another study found 49% of workers who retired early say they did so because of a hardship such as a health problem or disability, with 32% indicating they retired due to changes at their company.[32]

Adjustments to Prior Methods

This paper analyzes the inclusion of three specific private market asset classes in hypothetical TDFs — private real assets ("real assets"), private equity, and private credit – that represent the investment chosen by each of these sample DC plan participants. These asset classes have been the frequent subject of thought leadership from both academia and industry researchers, given their unique historical return patterns and strong diversifying characteristics.

Allocations to these asset classes can improve long-term retirement income outcomes for DC plan participants, given their complementary set of exposures and differentiated return streams providing the benefit of increased diversification. More recently, prominent TDF providers have announced they are bringing solutions to market that include private assets in their glidepath allocations.

The 2025 study methods and analysis in this paper are broadly consistent with prior CRI research. The Enhanced TDF glidepath allocates to each of the asset classes, including allocations to private equity, private credit, and private real assets in the same weights as the "Expanded Glidepath" within the 2022 study. In addition, the 2025 study allocations across private equity, credit, and real assets aligns with the approaches of the recently announced target date fund solutions with embedded private markets investment exposure designed to be used within DC plans.[33,34]

In constructing this new analysis, we made the following adjustments to our methodology.

- **Refined real assets to consist of private real estate and infrastructure.** This change focuses real asset portfolio on the most diversifying subset of the asset class: private, unlisted assets. Such real assets have historically lower correlations to public equity markets, leading to lower volatility during periods of equity market uncertainty when included in portfolios.
- **Broader industry asset allocation universe**. The prior studies defined the "Typical TDF" as the average asset allocation glidepath taken from 20 of the largest TDF providers from a database maintained by WTW. For this research, the Typical TDF is defined as the asset allocations underlying the S&P Target Date Indices, which are constructed by conducting a survey of the broad TDF industry and aligning the underlying allocations to those of industry averages. The asset allocations of the S&P Target Date Indices are more representative of the TDF industry.

The 2025 study differs from the 2022 study by considering four DC participant profiles in addition to that of an average "baseline" DC participant. These DC participant profiles are based on some of the more common financial situations and saving behavior patterns recurring in DC plans.

28. U.S. Bureau of Labor Statistics. (2023). "Number of Jobs, Labor Market Experience, Marital Status, and Health for Those Born 1957–1964." Economic News Release NL SOY; Report No. USDL 23 145.
29. Greig, F., Hahn, K., & Tan, F. (2024). "Job Transitions Slow Retirement Savings." Vanguard.
30. Employee Benefit Research Institute & Greenwald Research. (2024). "2024 Retirement Confidence Survey: Fact Sheet #2 – Expectations About Retirement."
31. Transamerica Center for Retirement Studies. (2024). "Retiree Life in the Post-Pandemic Economy: 24th Annual Transamerica Retirement Survey." Transamerica Institute.
32. Employee Benefit Research Institute & Greenwald Research. (2024). "2024 Retirement Confidence Survey: Fact Sheet #2 – Expectations About Retirement."
33. Empower. (2025). "Empower to Offer Private Markets Investments to Retirement Plans." Empower press release.
34. State Street Global Advisors. (2025). "State Street Target Retirement IndexPlus, Providing Defined Contribution Investors Access to Both Public and Private Markets Exposures." State Street Institution press release.

Private equity is the ownership of non-publicly traded companies, typically offering investors access to early-stage, small and midsize companies, that have only raised capital thus far through the private markets. Private equity firms work strategically with these companies with the goal of increasing the company's value.

Private credit is the extension of credit to borrowers, by non-bank entities, such as investment management firms. It includes a diverse array of non-listed bonds and loans that are not traded on public exchanges, such as non-performing loans, asset-specific whole loans, specialty finance, and distressed corporate credit. Investors in these markets seek to take advantage of this illiquidity to seek higher returns.

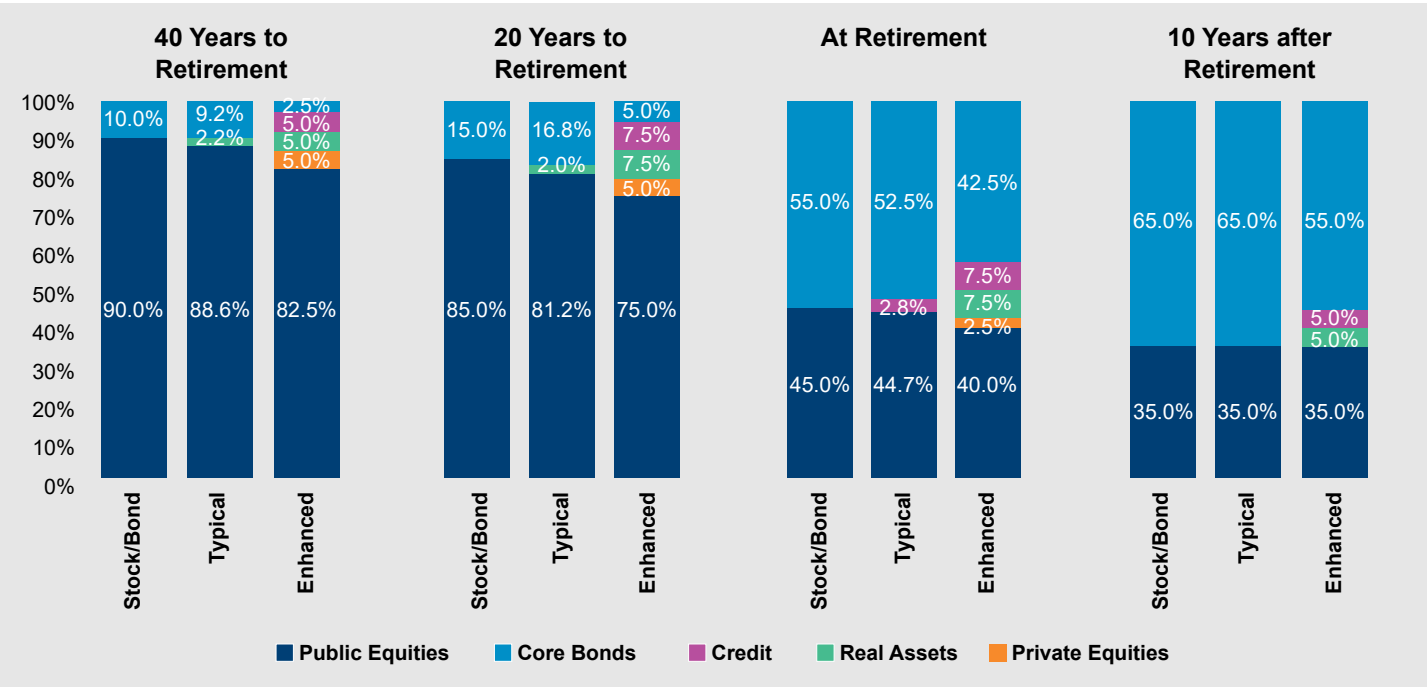
Real assets encompass a broad range of categories, such as real estate, infrastructure, natural resources, and commodities. They are the properties where people live, work, shop, and store goods; the infrastructure assets that provide power and water or enable transportation and communications; and basic natural resources such as food and heating oil.

Establishing the Representative TDF's Asset Allocation Portfolio

To evaluate the investment performance of a Typical TDF portfolio versus an Enhanced TDF portfolio that incorporates private market assets, the analysis compares the three glidepaths of similar prospective risk for all five DC participant profiles:

1. **Stocks and Bonds Only** — an allocation mix of global equity and aggregate bonds that matches the risk profile of the Typical TDF (defined below)
2. **Typical TDF (average across TDF industry)** — an allocation mix that includes very modest amounts of public real assets and public credit
3. **Enhanced TDF** — allocations to private equity, private real assets, and private credit.

FIGURE 1 / GLIDEPATHS — TYPICAL AND ENHANCED TDFS[35, 36]



35. See the Appendix for the TDF glide path asset allocation data in this chart.
36. Public equities in all three glide paths assumed to be consistent with the approximate global equity market cap.

Measuring Successful Retirement Outcomes

The success of retirement outcomes can typically be measured by a DC participant's likelihood of being able to convert their ending retirement savings balance, which they have accumulated through contributions and investments over the course of their career, into a consistent set of payments covering a portion of their pre-retirement income at retirement.

Retirement income projections were developed by simulating a DC participant's working life over 5,000 potential future paths. In each path, the worker's contributions to and withdrawals from the DC plan follow a pre-set path, while other key variables fluctuate around their expected values, such as salary growth, market returns, and inflation. At retirement, the DC participant has 5,000 unique ending DC balances, each of which is converted into a lifetime income amount using an annuity conversion factor based on simulated interest rates and a 3% annual cost of living adjustment.

All DC Participant Profiles Benefit from Exposure to Private Market Assets

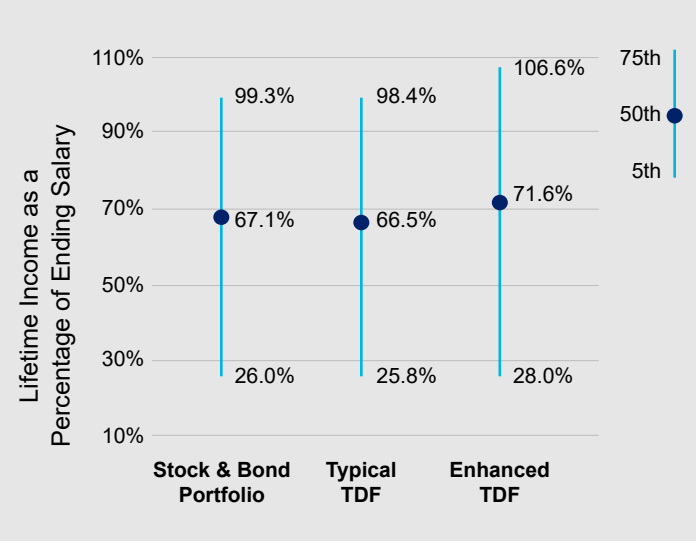
Each of our five DC participant profiles was modeled using this retirement income methodology.[37] The modeled lifetime income stream has been converted to show what percentage of their ending income each person could expect to replace with their DC retirement savings. Looking at people not as a part of an average, but as unique unrelated individuals with their own financial and behavioral circumstances, there is a continuation of the conclusions from the prior studies. Exposure to private market asset classes shifts the range of possible retirement outcomes upward, regardless of contribution patterns, but personal circumstances can have a large and detrimental impact on expected retirement outcomes.

The "Average" U.S. Worker

Figure 2 shows the percentage of income that can be replaced by converting this person's DC balance into a stream of income at retirement for each of the three glidepaths modeled. The results support two key observations.

The first is that the typical TDF does not provide meaningfully differentiated outcomes for DC participants above that of a simple portfolio of stocks and bonds, and in certain cases, may actually lead to marginally degraded outcomes, despite the wider selection of asset classes used. In the scenarios modeled, the Typical TDF saw an expected replacement ratio of 66.5% versus 67.1% from a simple Stock & Bond portfolio. Secondly, current modeling continues to support prior research findings: that for the average U.S. worker, the inclusion of private markets in the Enhanced TDF glidepath can meaningfully improve DC participant outcomes. For the "Average" U.S. Worker, using the Enhanced TDF glidepath resulted in an expected replacement of 71.6% of their ending salary in retirement, a 7.7% improvement from the expected income replaced by the Typical TDF.

FIGURE 2 / RANGE OF POTENTIAL REPLACEMENT RATIOS FOR THE "AVERAGE" U.S. WORKER



Replacement ratio assumes the asset value at retirement is converted into an immediate annuity

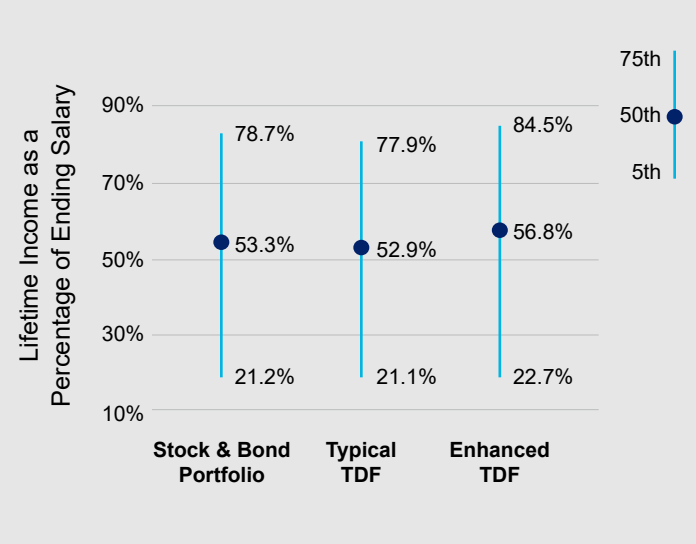
37. Expected returns are hypothetical and based on WTW's Capital Markets Assumptions as of April 1, 2025. See the Appendix for summary of source data and assumptions.

Family Caretakers

Figure 3 shows the percentage of income that can be replaced by converting this person's DC balance into a stream of income at retirement for all three scenarios modeled. Notably, those who leave the workforce see their expected income at retirement decrease by an amount commensurate with the percentage of years over the course of their career that they were not contributing. Paired with hardship withdrawals to cover life expenses, our family caretaker saw a 20.5% decrease in the percentage of income they could expect to replace in retirement with the median Typical TDF outcome. Maintaining a consistent and increasing level of saving is crucial in the accumulation period for driving positive retirement outcomes.

Family Caretakers who accumulate their retirement savings in the Stock & Bond Portfolio or the Typical TDF can expect a 53.3% and 52.9% of their ending income to be replaced respectively. However, the Enhanced TDFs provided better outcomes for those who saw multiple zero earning years, improving outcomes by 7.4% over the typical TDF in the 50th percentile case, with an expected income replacement ratio of 56.8%.

FIGURE 3 / RANGE OF POTENTIAL REPLACEMENT RATIOS FOR FAMILY CARETAKERS



Replacement ratio assumes the asset value at retirement is converted into an immediate annuity

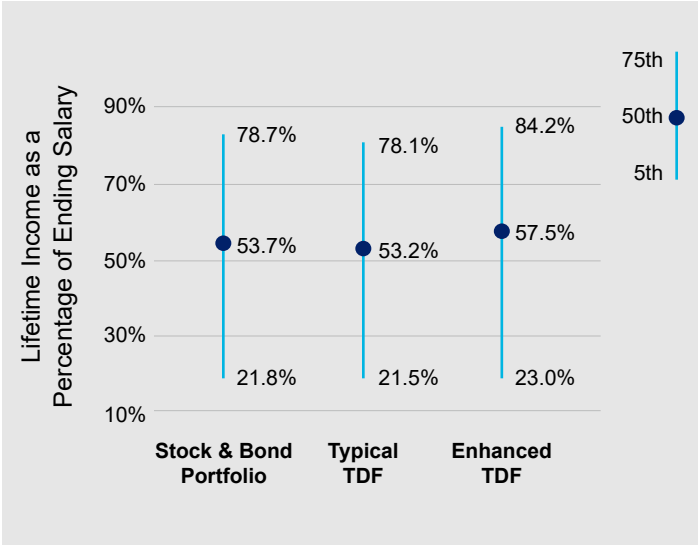
Lower-Income Workers

Figure 4 shows the percentage of income that can be replaced by converting this person's DC balance into a stream of income at retirement for all three scenarios modeled. Compared to the "Average" U.S. Worker, the Lower-Income Worker sees a 20.1% decrease in the median percentage of income they can expect to replace in retirement when investing in the Typical TDF. Given the lower expected ending salary, an individual who earns a lower income but defers consistently does not see this difference being driven specifically by the lower salary. Instead, for individuals living partly or fully paycheck-to-paycheck who are able to find the extra income to defer, approximately half of this decrease is driven by a slightly reduced savings rate (only 1% lower than the "Average" U.S. Worker).

This lack of surplus income to dedicate to savings after necessities also amplifies the negative impact of the unexpected expense shocks most individuals experience during their careers. If someone lacks an adequately funded emergency savings pool, these "emergency expenses" often necessitate using loans or hardship withdrawals to cover them, shrinking the size of the savings pool that investment returns are working on compounding.

For Lower-Income Workers, the Stock & Bond Portfolio sees an expected income replacement ratio of 53.7%, only slightly higher than the Typical TDF at 53.2%. The Enhanced TDF modeling sees an expected income replacement ratio of 57.5% with median DC participant outcomes increase by 8.1% over a typical TDF, with Low-Income Workers benefiting more in the expected outcome from the addition of private market assets versus the Average U.S. Worker.

FIGURE 4 / RANGE OF POTENTIAL REPLACEMENT RATIOS FOR LOWER INCOME WORKERS



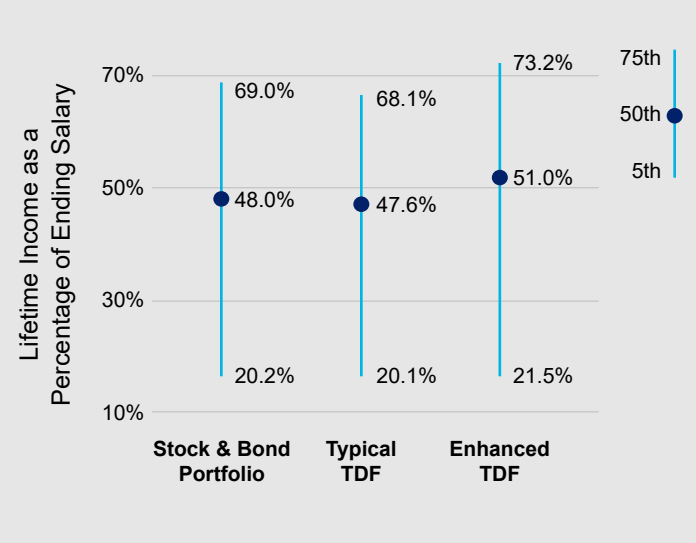
Replacement ratio assumes the asset value at retirement is converted into an immediate annuity

Job Hoppers

Figure 5 shows the percentage of income that can be replaced by converting this person's DC balance into a stream of income at retirement for all three scenarios modeled. It is clear from the modeling output that the damage to retirement outcomes occurs from periods of under-saving for retirement. Despite seeing significantly increased ending salary estimates (probably resulting in an increased capacity for savings), individuals who do not maintain their savings rates when switching jobs and instead allow auto-features to drive their savings rate see a 28.5% decrease in the amount of income they can expect to replace in retirement versus the "Average" U.S. Worker when both are investing in the Typical TDF portfolio. Many disengaged workers are inadvertently experiencing a potentially irreparable reduction in their potential retirement savings, despite seeing career success, due to the absence of auto-portability features when switching jobs.

Despite this variation in contribution amount throughout a DC participant's career, the Enhanced TDF still shifts the range of potential outcomes upward, although less so than for the "Average" U.S. Worker. DC participants invested in the Stock & Bond Portfolio or Typical TDF see an expected income replacement of 48.0% and 47.6% respectively, while Job Hoppers in the Enhanced TDF can expect to replace 51.0% of their ending salary in retirement.

FIGURE 5 / RANGE OF POTENTIAL REPLACEMENT RATIOS FOR JOB HOPPERS



Replacement ratio assumes the asset value at retirement is converted into an immediate annuity

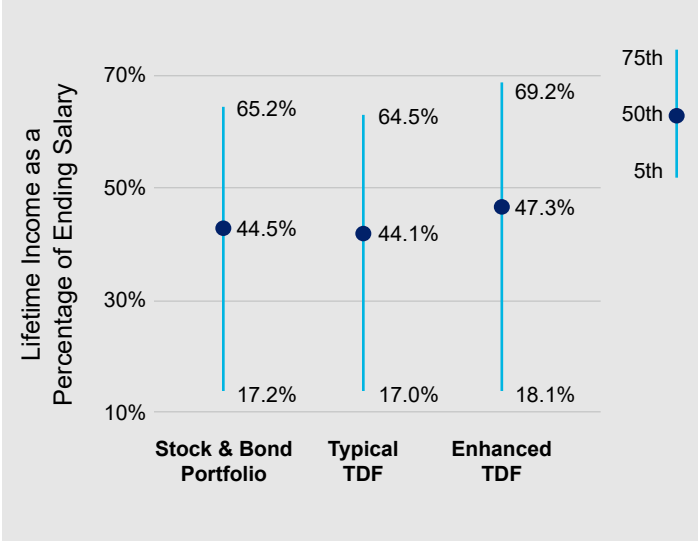
Unexpected Early Retirement

Figure 6 shows the percentage of income that can be replaced by converting this persona's DC balance into a stream of income at retirement for all three scenarios modeled. The impact for those who are forced to retire early can be large, with an individual invested in the Typical TDF portfolio expected to replace 44.1% of their ending salary, a decrease of 33.8% from the Average U.S. Worker retiring at 65. The disparity in outcomes is driven by five years of lost market returns and contributions, as well as the decrease in annuity crediting rates commensurate with five additional years of expected payments.

This modeling does not even account for the potential additional benefit that catch-up and super-catch-up contributions might have provided during that year period for DC participants who choose to take advantage of them.

For DC participants who are forced to retire early unexpectedly, the Enhanced TDF diminishes the sequence of return risk that could occur if the retirement and subsequent lump sum happens in a volatile year for the markets. DC participants investing in the Stock & Bond Portfolio and Typical TDF can expect a 44.5%- and 44.1%-income replacement ratio, respectively, while those invested in the Enhanced TDF see an improvement of 7.4% over that of the Typical TDF, with an expected income replacement ratio of 47.3%.

FIGURE 6 / RANGE OF POTENTIAL REPLACEMENT RATIOS FOR UNEXPECTED EARLY RETIREMENT



Replacement ratio assumes the asset value at retirement is converted into an immediate annuity

Private Market Assets Deliver a Range of Improved DC Participant Outcomes

As shown by the modeling of the five DC participant profiles, the Enhanced TDF improves retirement outcomes by 7% to 8% when compared to the Typical Stock & Bond TDF for all DC participant situations and behavior patterns.

Figure 7 shows the percentage improvement in outcomes at select percentiles delivered by the Enhanced TDF asset allocation, for both the "Average" U.S. Worker and the range of improvements seen in each of the DC participant profiles examined above. The results clearly demonstrate that the diversification offered by the private market asset classes allows for enhanced returns net of all fees and smoother accumulation of assets, which mitigates the sequence of return risks caused by the irregularity of each profiled worker's cash flows.

FIGURE 7 / RETIREMENT INCOME IMPROVEMENT OVER TYPICAL TDF OUTCOME ACROSS PERCENTILES

	"Average" U.S. Worker	Range of Improvement Across Participant Profiles
75th Percentile	8.3%	7.3% to 8.5%
50th Percentile	**7.7%**	**7.2% to 8.1%**
5th Percentile	8.5%	6.3% to 8.5%

Conclusion

As demonstrated by prior CRI research, and this analysis, even relatively modest exposure to private real assets, private credit, and private equity has the potential to boost outcomes by 7% to 8%, not just for the "average" DC participant but also across a range of more real financial savings patterns that DC participants too often find themselves in over the course of their working years. In the future, more and more DC retirement investment options will become available, including an increase in custom solutions integrating private market assets.

Policymakers should consider these findings regarding DC plan participants and their challenges in saving for retirement. The "average" U.S. worker is more an ideal than reality today, making it difficult for many to come close to replacing their pre-retirement income. Employers, as plan sponsors and fiduciaries, need to and should be free to consider and evaluate all tools and options available for improving DC participant retirement outcomes, including the potential incorporation of private market assets in DC plans through professionally managed solutions, such as TDFs.

References

Antonelli, Angela M. (2018). "The Evolution of Target Date Funds: Using Alternatives to Improve Retirement Plan Outcomes." Georgetown University Center for Retirement Initiatives, McCourt School of Public Policy, Georgetown University, in conjunction with Willis Towers Watson (WTW). https://cri.georgetown.edu/wp-content/uploads/2018/06/WTW71824_WHITE-PAPER_Georgetown-CRI-Target-Date_Jun-18_Final.vs2_626.pdf.

Antonelli, Angela M. (2022). "Innovation in DC Plan Investments: Can Asset Diversification and Access to Private Markets Improve Retirement Income Outcomes?" Center for Retirement Initiatives, McCourt School of Public Policy, Georgetown University, in conjunction with WTW. https://cri.georgetown.edu/wp-content/uploads/2022/12/report-asset-diversification.pdf.

Cann, M., Palumbo, M., Buck, C., & Clark, J. W. (2023). "How Americans Withstand Financial Hardships." Vanguard Institutional. https://institutional.vanguard.com/content/dam/inst/iig-transformation/insights/pdf/230478.18_TL_HAS_HardshipWithdrawal_BRO_Final.pdf

Dahlqvist, F., Green, A., Maia, P., Nee, A., Quigley, D., Sanghvi, A., Mangan, C., Spivey, J., Schneider, R., & Vickery, B. (2024). "McKinsey Global Private Markets Review 2024: Private Markets in a Slower Era." McKinsey & Company. https://www.mckinsey.com/~/media/mckinsey/industries/private%20equity%20and%20principal%20investors/our%20insights/mckinseys%20global%20private%20markets%20report/2024/mckinsey-global-private-markets-review-2024.pdf.

Employee Benefit Research Institute & Greenwald Research. (2024). "2024 Retirement Confidence Survey: Fact Sheet #2 — Expectations about Retirement." https://www.ebri.org/docs/default-source/rcs/2024-rcs/rcs_24-fs-2.pdf?sfvrsn=2647072f_1.

Empower. (2025). "Empower to Offer Private Markets Investments to Retirement Plans." Empower Press Center press release. https://www.empower.com/press-center/empower-offer-private-markets-investments-retirement-plans.

Federal Reserve Bank of Atlanta. (n.d.). "Wage Growth Tracker." https://www.atlantafed.org/chcs/wage-growth-tracker.

Greig, F., Hahn, K., & Tan, F. (2024). "Job Transitions Slow Retirement Savings." Vanguard. https://digital-assets.vanguard.com/corp/research/pdf/job_transitions_slow_retirement_savings.pdf.

Investment Company Institute. (2025). "Quarterly Retirement Market Data.

Kochhar, R. (2024). "The State of the American Middle Class: Who Is in it and Key Trends from 1970 to 2023." Pew Research Center." https://www.pewresearch.org/race-and-ethnicity/2024/05/31/the-state-of-the-american-middle-class/.

Lee, Z., & Rao, M. (2025). "Social Security Claiming Timing and Older Adults' Financial Wellbeing." Center for Retirement Initiatives, McCourt School of Public Policy, Georgetown University, Working Paper No. 2025-01. https://cri.georgetown.edu/wp-content/uploads/2025/03/CRI-WP-2025-01.pdf

MacArthur, H., Skolnik, O., De Mol, A., & Rainey, B. (2025). "This Time it's Different: The Strategic Imperative in Private Equity." Bain & Company. https://www.bain.com/insights/strategic-imperative-in-private-equity-global-private-equity-report-2025/.

Morningstar, Inc. (2024). "2024 Target-Date Strategy Landscape." https://assets.contentstack.io/v3/assets/blt4eb669caa7dc65b2/blt7edef09d13ac9102/6602a9a22fff927a9147f9bd/2024_Target-Date_Landscape.pdf.

Moss, W. (2025). "The Decline in U.S. Stocks to Choose from: What it Means for Investors." Forbes. https://www.forbes.com/sites/wesmoss/2025/02/03/the-decline-in-us-stocks-to-choose-from-what-it-means-for-investors/.

Plan Sponsor Council of America. (2023). "66th Annual Survey of Profit Sharing and 401(k) Plans: Reflecting the 2022 Plan Year Experience." https://opti-test.psca.org/industry-content/surveys/annual-401k-survey/.

References

State Street Global Advisors. (2025). “State Street Global Advisors Announces State Street Target Retirement IndexPlus, Providing Defined Contribution Investors Access to Both Public and Private Markets Exposures.” Business Wire.https://investors.statestreet.com/investor-news-events/press-releases/news-details/2025/State-Street-Global-Advisors-Announces-State-Street-Target-Retirement-IndexPlus-Providing-Defined-Contribution-Investors-Access-to-Both-Public-and-Private-Markets-Exposures/default.aspx.

Transamerica Center for Retirement Studies. (2024). “Retiree Life in the Post-Pandemic Economy: 24th Annual Transamerica Retirement Survey.” Transamerica Institute. https://www.transamericainstitute.org/docs/research/retirees/retiree-life-post-pandemic-economy-survey-report-2024.pdf.

Transamerica Center for Retirement Studies. (2024). “The Multigenerational Workforce: Life, Work, and Retirement Survey Report.” Transamerica Institute. https://www.transamericainstitute.org/docs/research/generations-age/multigenerational-workforce-life-work-retirement-survey-report-2024.pdf.

U.S. Bureau of Labor Statistics. (2023). “Number of Jobs, Labor Market Experience, Marital Status, and Health for Those Born 1957–1964.” https://www.bls.gov/news.release/pdf/nlsoy.pdf.

U.S. Census Bureau. (2023). “Table A-1: Income and Earnings Summary Measures by Selected Characteristics: 2022 and 2023” (data table). In “Income in the United States: 2023” (p. 60–282). https://www.census.gov/data/tables/2024/demo/income-poverty/p60-282.html.

U.S. Government Accountability Office. (2019). “Retirement Security: Some Parental and Spousal Caregivers Face Financial risk,” GAO Publication No. GAO-19-382. https://www.gao.gov/assets/gao-19-382.pdf.

Vanguard. (2024). “How America Saves 2024.” https://corporate.vanguard.com/content/dam/corp/research/pdf/how_america_saves_report_2024.pdf.

Vanguard. (2025). “How America Saves 2025.” https://institutional.vanguard.com/insights-and-research/report/how-america-saves-2025.html

Weiler Reynolds, B. (2019). “More than Half of Stay-at-Home Parents Stop Working Longer than Planned.” Ladders. www.theladders.com/career-advice/more-than-half-of-stay-at-home-parents-stop-working-longer-than-planned.

WTW. (2025). “The Shrinking Public Market: What Investors Need to Know.” https://www.wtwco.com/en-hr/insights/2025/02/the-shrinking-public-market-what-investors-need-to-know.

Appendix

Table 1: APRIL 1, 2025, CAPITAL MARKET ASSUMPTIONS

	1st year arithmetic mean	10th year arithmetic mean	10-year geometric returns	Annual standard deviation
Global equities — unhedged	9.5	9.3	7.7	18.0
Private equity	12.5	12.3	10.7	18.0
REITs	8.0	7.8	6.2	18.0
Infrastructure	8.0	7.8	6.8	15.1
Real estate	6.9	6.7	6.3	9.9
Infrastructure direct	8.4	8.1	6.8	17.1
Real assets[38]	7.6	7.4	6.9	10.6
Commodities	5.7	6.5	5.9	8.6
High yield	6.2	7.2	6.3	10.0
Emerging market debt	6.6	7.0	6.2	9.5
Bank loans	5.7	5.5	5.2	8.1
Private credit	6.7	7.1	6.6	8.1
Aggregate bonds	4.2	5.0	4.6	3.9
TIPS	4.9	4.9	4.8	5.3
Cash	4.0	3.8	3.8	2.9

All asset class assumptions above assume net-of-fee performance for large institutional investors. The asset class assumptions assume passive implementation, where possible. For asset classes where passive implementation is not possible, assumptions represent median net-of-fee results. According to Preqin data for all private equity funds, the average annual spread over public equity from 2014 to 2024 was 7.2%. Private Credit assumptions use public high yield and bank loans adjusted to account for downgrade and defaults not prevalent for private market debt issuance. Global equities represents the approximate global market cap of 62% U.S. large cap, 3% U.S. small cap, 25% developed non-U.S. equities, and 10% emerging market equities.

The increase in long-term expected return assumptions from the 2022 CRI paper are due to the increase in the interest rate environment. As cash rates have moved higher over the prior years the return premia of each asset class over cash has shifted upwards commensurately.

Table 2: TDF GLIDEPATH ASSET ALLOCATIONS: STOCKS/BONDS|TYPICAL TDF|ENHANCED

	40 Years to Retirement			20 Years to Retirement			At Retirement			10 Years after Retirement		
	Stock/ Bond	Typical TDF	Enhanced TDF	Stock/ Bond	Typical TDF	Enhanced TDF	Stock/ Bond	Typical TDF	Enhanced TDF	Stock/ Bond	Typical TDF	Enhanced TDF
Public Equities	90.0%	88.6%	82.5%	85.0%	81.2%	75.0%	45.0%	44.7%	40.0%	35.0%	35.0%	35.0%
Private Equities	0.0%	0.0%	5.0%	0.0%	0.0%	5.0%	0.0%	0.0%	2.5%	0.0%	0.0%	0.0%
Real Assets	0.0%	2.2%	5.0%	0.0%	2.0%	7.5%	0.0%	0.0%	7.5%	0.0%	0.0%	5.0%
Credit	0.0%	0.0%	5.0%	0.0%	0.0%	7.5%	0.0%	2.8%	7.5%	0.0%	0.0%	5.0%
Core Bonds	10.0%	9.2%	2.5%	15.0%	16.8%	5.0%	55.0%	52.5%	42.5%	65.0%	65.0%	55.0%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

38. Equal weights of Direct Real Estate, and Direct Infrastructure

Table 3: FULL DC PLAN PARTICIPANT PROFILE ASSUMPTIONS

Participant Profile Details	The Average U.S. Worker	Family Caretakers	Lower Income Workers	Job Hoppers	Unexpectedly Early Retirement
Starting Age	25	25	25	25	25
Starting Salary	$70,355	$70,355	$29,000	$73,873	$70,355
Contribution Path	Implied	Implied	Implied	Automatic Features	Implied
Starting Savings Rate				3.0%	
Auto Savings Rate Annual Increase				1.0%	
Savings Rate Auto Increase Cap				9.0%	
Contribution (Age 25)	6.0%	6.0%	5.0%		6.0%
Contribution (Age 45)	7.3%	7.3%	6.3%		7.3%
Contribution (Age 55)	8.9%	8.9%	7.9%		8.9%
Salary Growth Type	Real	Real	Real	Real	Real
Salary Growth (Age 25 to 45)	2.0%	2.0%	2.0%	3.0%	2.0%
Salary Growth (Age 45 to 65)	0.0%	0.0%	0.0%	0.0%	0.0%
Employer Match	50% on first 6%	50% on first 6%	50% on first 6%	50% on first 6%	50% on first 6%
Multiple Jobs	No	No	No	7 new jobs taken across career. Each job resetting persona to 3% automatic enrollment savings rate. Personas then automatically escalated on an annual basis until the cap of 9% where eligible. Job switches taken at ages 25, 28, 31, 34, 40, 45, and 50	No

Loan Usage	No loan usage	No loan usage	4 loans for $5,000 each paid back over 3 years, with interest, at ages 30, 34, 46, and 54	No loan usage	No loan usage
Hardship Withdrawals	No	3 hardship withdrawals at $5,000 each. Taken at ages 34, 42, and 50	3 hardship withdrawals at $5,000 each. Taken at ages 34, 42, and 50	No	No
Zero Earning Years	No	8 zero earning years in total. Taken from ages 32 through 36 and 50 through 52	No	No	5 zero earning years in total. Taken from ages 61 through 65
Early Retirement	No	No	No	No	Early retirement taken at age 60 with annuity conversion taking place at age 60 based upon the ending balance at age 60

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