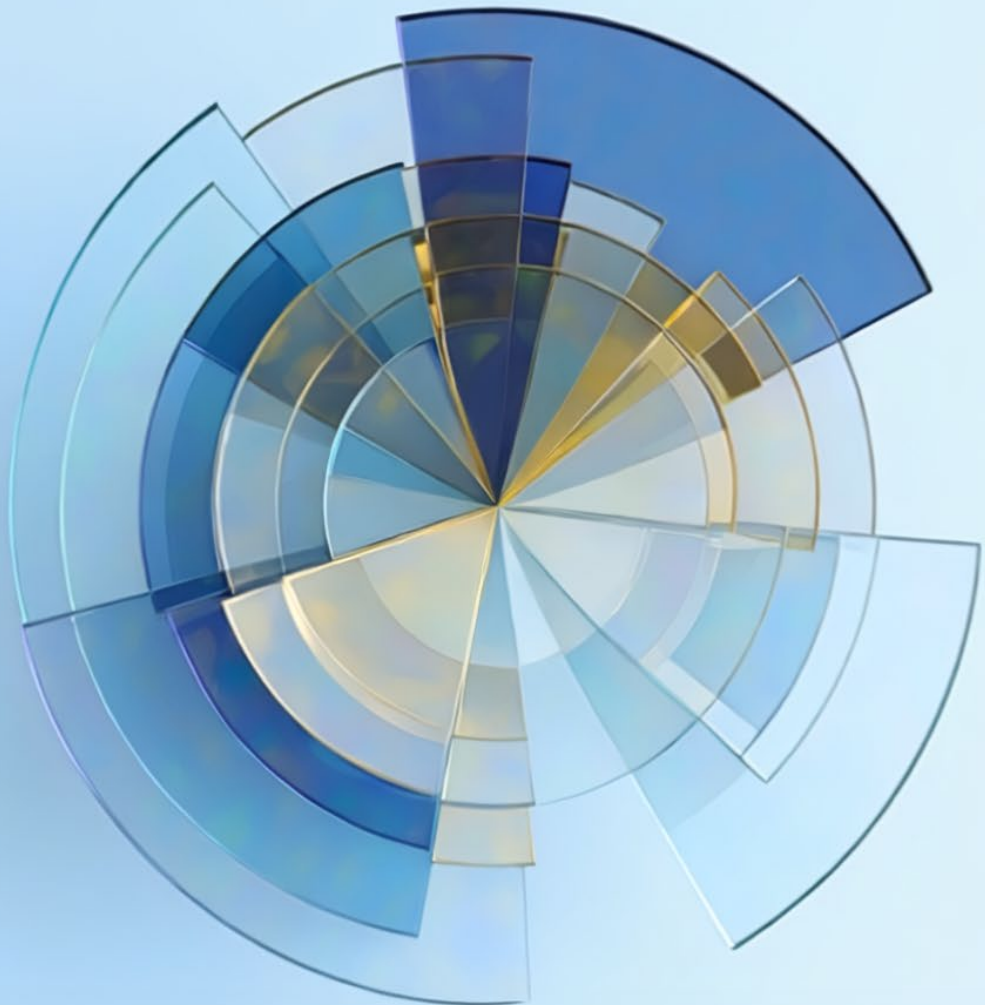


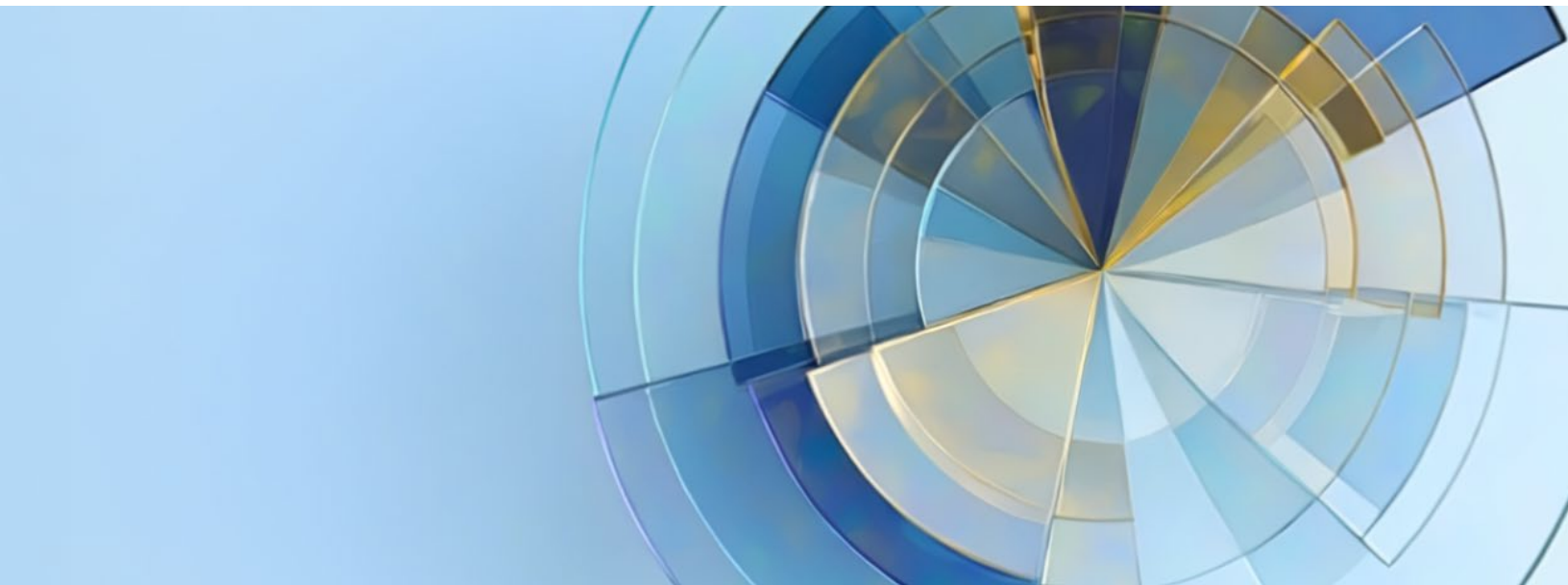


PGIM

SUCCESSFULLY FAILING

Why “Probability of Success” is the Wrong Metric
for Retirement Outcomes





INTRODUCTION

Ask most of the retirement industry whether a participant is on track, and the answer arrives as a single number: the probability of success. It is the modeled probability, based on Monte Carlo simulations,¹ of meeting or exceeding a target retirement income goal. It is familiar, it is easy to report, and it quietly shapes decisions about spending and asset allocation across the defined contribution (DC) landscape. But is it the right metric for determining retirement income guidance? The question matters because the choice of metric does not just change how outcomes are described; it also changes the spending guidance retirees receive, in some cases by 20% or more.

The problem is not that the metric is complicated. The problem is that it is too simple. Probability of success treats every outcome as binary. The goal is either met in its entirety, or it is not. That framing offers no context on the magnitude of a shortfall and no context on its timing. It cannot distinguish between missing a goal by \$1 and missing it by \$1 million. It cannot tell the difference between falling short in year 10 and falling short in year 30. For a measure meant to guide fiduciary decisions that span decades, that is a serious omission. When that omission is carried through into planning recommendations, the result can be a spending framework that is more conservative than would be considered optimal.

¹ The projections or other information generated by the Monte Carlo analysis regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect actual investment results and are not guarantees of future results.

SAME DATA, TWO VERY DIFFERENT STORIES

Consider a hypothetical goal of generating \$100 per year in income over a 10-year period. In Exhibit 1, that goal is evaluated across 10 simulated runs. In half of those runs, the goal is not fully met. That produces a 50% success rate: five successful runs divided by 10 trials. Taken on its own, a 50% success rate paints a grim picture. It is the kind of figure that would make any retiree deeply uncomfortable.

Now look at the same runs through a different lens. Across all 10 trials, 96% of the goal is accomplished on average. These two values, 50% and 96%, rest on identical underlying data. They simply describe it in sharply different ways. One suggests a coin flip. The other suggests a plan that very nearly delivers everything it set out to deliver. And if the same data can produce such different interpretations of retirement readiness, it should not be surprising that it can also produce very different conclusions about how much a retiree can afford to spend.

That gap is where probability of success fails. By ignoring the magnitude of the shortfall, it flattens meaningful information into a pass or fail verdict. And the distortion compounds over long horizons. Because retirement can easily last more than 30 years, a relatively minor shortfall late in retirement carries the same weight as a large shortfall early on. Treated identically, both drag the success rate down. The predictable result is excessively conservative guidance, including spending recommendations that in some cases may be 20% or more lower than what a more holistic outcomes framework would support. The same binary framing can also affect related decisions, such as asset allocation and portfolio construction.

Exhibit 1: Success Rates vs. Goal Completion

		Year										Pass or Fail?	% of Goal
		1	2	3	4	5	6	7	8	9	10		
Run#	1	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$90	0	99%
	2	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$80	\$80	0	96%
	3	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$70	\$70	0	94%
	4	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$60	\$60	\$60	0	88%
	5	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$50	\$50	\$50	0	85%
	6	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	1	100%
	7	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	1	100%
	8	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	1	100%
	9	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	1	100%
	10	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	1	100%
Average												50%	96%

Source: Author's calculations. For illustrative purposes only.

THE REAL PROBLEM ISN'T JUST THE METRIC

The problem with probability of success is not just the metric itself, but the broader planning framework that tends to accompany it. Treating outcomes as binary is the starting flaw, but it is usually paired with other modeling assumptions that can further understate how much a well-positioned retiree can safely spend.



GUARANTEED INCOME GETS LEFT OUT

Many Americans receive some form of guaranteed lifetime income, typically Social Security or a defined benefit pension, that establishes a minimum standard of living. A retirement portfolio therefore generates income on top of that floor, not instead of it. When models ignore this safety net, they misjudge the true consequence of a portfolio shortfall. Because guaranteed income provides a safety net, it may justify a higher withdrawal rate than a model would recommend if it looked at the portfolio in isolation.



SPENDING IS ASSUMED TO BE STATIC

Conventional models hold the income goal fixed, adjusting only for inflation. Retirees behave differently. They routinely adjust spending based on real-life needs and circumstances.



NEEDS AND WANTS SHOULD NOT BE TREATED ALIKE

A binary outcomes framework collapses all shortfalls into the same category of failure, but the real-world cost of falling short depends on where that shortfall lands.

Missing part of a travel budget (want) is not the same as missing part of a housing or healthcare budget (need). Ignoring that distinction can skew retirement income guidance toward unnecessary conservatism.

Together, these assumptions push in the same direction. A binary metric already obscures the magnitude and timing of shortfalls; ignoring guaranteed income and assuming static spending can make spending recommendations even more conservative. Once guaranteed income, spending flexibility, and a more realistic assessment of retirement outcomes are considered together, the resulting spending recommendation can be materially higher than one derived from probability-of-success thinking alone. For a related discussion of retirement spending that incorporates these considerations, see our work on [Guided Spending Rates](#).

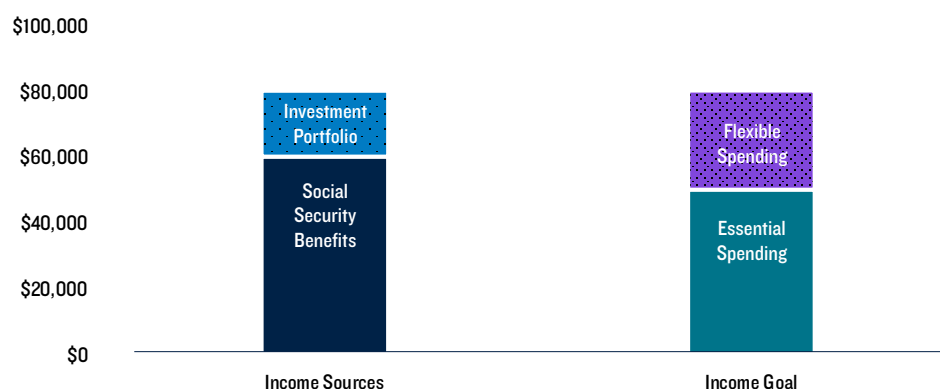
ALL SHORTFALLS ARE NOT EQUAL

Why does the magnitude of a shortfall matter so much? Because once guaranteed income and spending flexibility enter the picture, not every shortfall means the same thing. A retirement portfolio is only one part of the household income equation. For many retirees, spending is funded by a combination of guaranteed lifetime income and savings held in a DC plan, an IRA, or a taxable account. And that spending goal is not monolithic: it includes both essential and flexible spending.

Exhibit 2 depicts a retiree with an \$80,000 annual income goal, funded by a combination of Social Security benefits (\$60,000) and DC plan savings (\$20,000). The goal itself combines essential spending (\$50,000) and flexible spending (\$30,000). Now suppose the investment portfolio is fully depleted. Under a probability of success framework, that run is a failure, full stop. Yet if guaranteed income still covers the entire essential spending goal and part of the flexible spending goal, the lived outcome is far from catastrophic. The retiree absorbs a reduction in discretionary spending, not a collapse in their standard of living.

This is precisely the context a binary metric discards. Knowing the extent of a potential shortfall, and where it lands, is far more useful than a verdict on whether the goal was hit in full. It is also more useful when determining how much someone can afford to spend, because the answer depends not just on whether a shortfall occurs, but on what that shortfall would actually mean in lived terms.

Exhibit 2: A Total Wealth Perspective on Retirement



Source: For illustrative purposes only.

WHAT RETIREES MAKE OF THE NUMBERS

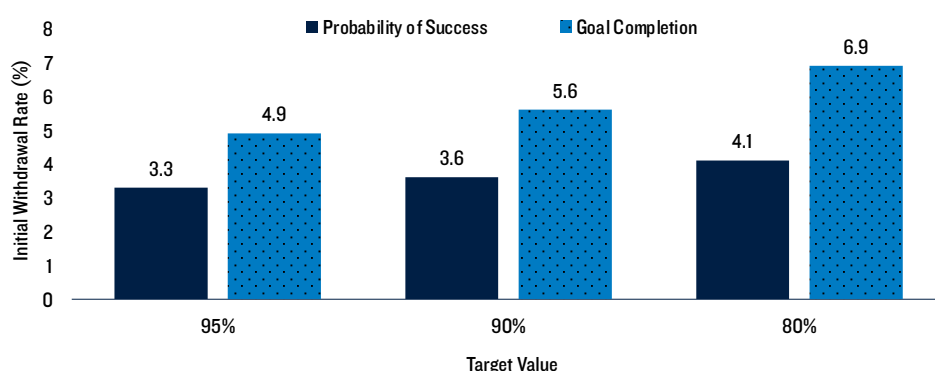
The distinction between these metrics is not just analytical. It also shapes how retirees hear and respond to the guidance built on them. To better understand consumer reactions, we commissioned a survey of more than 2,000 adults, with the analysis here focusing on respondents with at least \$100,000 in investable assets.² When asked which metric was more helpful in determining retirement spending, 47% selected goal completion percentage, 42% selected probability of success, and 11% were unsure. Interest in probability of success was generally higher among younger respondents, while goal completion was more popular among older respondents.

Respondents were also asked how comfortable they would feel implementing plans framed with different target values. For example, they were asked how comfortable they would feel if a financial advisor said their chance of success was 80%. The responses suggest that people felt similarly about implementing comparable target values across the two metrics. In other words, respondents were roughly as comfortable with a 75% probability of success as with a 75% goal completion percentage, even though those two measures can imply very different levels of sustainable spending. That is the practical consequence of framing: what sounds like the same level of comfort can lead to meaningfully different spending guidance.

CHANGING METRICS CHANGES RECOMMENDATIONS

The choice of metric does not just change how retirement outcomes are described. It can also materially change the spending guidance that follows. Exhibit 3 illustrates this point in a 30-year retirement scenario by estimating the appropriate initial withdrawal rate under different target values.

Exhibit 3: Initial Withdrawal Rate for a 30-Year Retirement Period Assuming Different Target Values

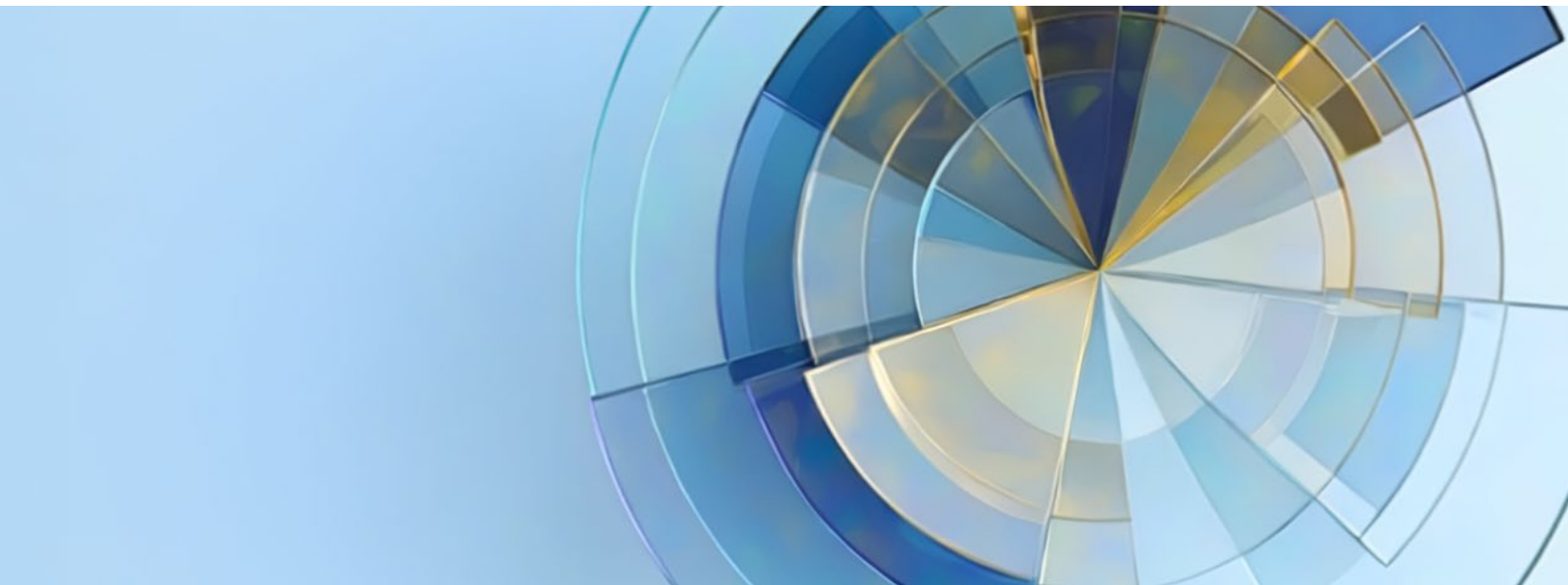


Source: Author's Calculations.

The differences can be substantial. For a given target value, using goal completion leads to a significantly higher withdrawal rate than using a comparable probability-of-success target. For example, if a retiree preferred a very conservative goal completion target of 95% and was comfortable with a probability-of-success target of 80%, the initial withdrawal rate under the goal completion approach would be about 4.9%, versus 4.1% under the probability-of-success approach, or roughly 20% higher. The differences are larger still when similar target values are compared directly.

In other words, this is not simply a debate about terminology. The metric used to define success can materially affect the amount of income a retiree is told they can safely spend.

² Morning Consult surveyed 2,121 adults in October 2025. The analysis discussed here focuses on the subset of 396 respondents with at least \$100,000 in investable assets.



THE TAKEAWAY

The probability of success endures because it is simple, familiar, and easy to report. But those are qualities of convenience, not rigor. It discards the very information that matters most: how close a retiree came to their goal, whether guaranteed income softened any shortfall, and whether that shortfall touched essentials or merely trimmed discretionary spending. More broadly, retirement outcomes are too varied to be captured cleanly by any single score used in isolation. Guaranteed income, spending flexibility, and time horizon all shape what a shortfall means in practice. That is precisely why a more holistic metric produces more useful guidance.

Much of the retirement industry's spending orthodoxy rests on outdated assumptions that produce recommendations more conservative than reality warrants. The question should not be whether a plan "passes or fails." It should be how much of the goal gets funded, and what any shortfall would cost the retiree living through it. That is the assumption most worth questioning.

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