

# HAS THE 4% RULE STOOD THE TEST OF TIME?

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You may have read about the 4% rule in finance articles or heard about it during conversations with friends and colleagues. The topic has been broached periodically in our discussions with clients. Often the general concept is familiar, but the specifics are blurry. Essentially, the idea of the 4% rule is to determine what percentage of the portfolio can be withdrawn each year without risking the depletion of the portfolio during an individual's lifetime. In this white paper, we explore William Bengen's original research and examine its potential application today, thirty years later. Is it a useful rule of thumb? Let's take a look.

## William Bengen's 1994 Research<sup>1</sup>

William Bengen's original article, "Determining Withdrawal Rates Using Historical Data," appeared in the October 1994 edition of *Journal of Financial Planning*. (For an in-depth understanding of Bengen's research, we suggest you read this article in full.) In it, he analyzed several different portfolio withdrawal rates in the context of historical market returns to understand how much clients could safely withdraw each year without running out of money. Let's briefly review the main assumptions underlying his research to dispel some common misconceptions.

Bengen's research reflected:

- **A 50/50 asset mix:** his hypothetical portfolio was made up of 50% common stocks and 50% intermediate-term U.S. Treasury notes.
- **An annual dollar figure for distribution, adjusted for inflation/deflation:** Using a 4% distribution as

an example, Bengen calculated 4% of the portfolio value in the first year of the experiment and withdrew this amount. This dollar figure was then adjusted for inflation in each subsequent year. In a deflationary year, the distribution amount would decrease from the previous year.

**The designated withdrawal percentage in Bengen's research was used once only—in the first year. Once the first year's dollar distribution was determined, it increased with inflation or decreased with deflation each year thereafter. We highlight this to dispel the misconception that the distribution was 4% of the portfolio value at the end of each year.**

<sup>1</sup>FPA Journal – The Best of 25 Years: Determining Withdrawal Rates Using Historical Data: <https://financialplanningassociation.org/sites/default/files/2021-04/MAR04%20Determining%20Withdrawal%20Rates%20Using%20Historical%20Data.pdf>

- Eight distribution rates ranging from 1% to 8%, **with the most attention paid to: 3%, 4%, 5%, and 6%.**
- Five possible asset allocation models, ranging from 0% to 100% stocks, **with the greatest attention paid to the 50% and 75% stock portfolios.**
- **A portfolio of tax-advantaged retirement assets.**
- **A maximum retirement period of 50 years.**
- **Historical returns:** Bengen tested the withdrawal rates using actual returns over 50-year periods beginning in 1926<sup>2</sup>.

In analyzing the results, Bengen observed that:

- A 3% withdrawal rate lasted 50 years in all test cases.
- A 4% withdrawal rate lasted 50 years in 41 of the 50 test cases and lasted at least 35 years in all cases.
- A 5% withdrawal rate lasted 50 years in 19 of the 50 test cases and lasted only 20 years in several cases.
- A 6% withdrawal rate lasted 50 years in only seven of the 50 test cases and ran out in less than 20 years in numerous cases.

Bengen concluded that for a 30-year time frame, his clients could safely withdraw 4% from their portfolio in year one followed by inflationary adjustments thereafter. Interestingly, in more recent research, he updated his safe withdrawal rate to 4.5%<sup>3</sup> and then to 4.7%<sup>4</sup>, using what he has coined the SAFEMAX approach.

**Bengen's research did not explicitly lay out the logistics of tax payments. In this white paper, therefore, we are assuming that the income-tax liability due upon each distribution is covered by that same distribution. In other words, if the total annual distribution is \$200K, income taxes might approximate \$40K, for example, leaving \$160K to cover living expenses.**

**Of the five asset allocation models tested, Bengen found the 50/50 and 75/25 asset mixes to be the most compelling, with the 75% stock allocation having a slight edge over the 50% stock allocation. Still, he recognized the role that an individual's personal risk tolerance has in arriving at the optimal asset allocation.**

### In-House Monte Carlo Testing

Intrigued, we decided to test various withdrawal rates using our wealth planning resources<sup>5</sup>. Our testing incorporated the following factors and assumptions:

- 1 We used time frames ranging from 20 to 35 years, covering the most common retirement spans.
- 2 We reflected first year withdrawal rates of 4.0%, 4.5%, 4.7%, and 5.0%.
- 3 In all scenarios, the portfolio was allocated 50% to stocks and 50% to intermediate-term Treasury notes.
- 4 Federal income taxes were incorporated into the analysis.
- 5 As highlighted in Figure 1, we ran a Monte Carlo analysis for each scenario. Each analysis runs 1,000 simulations reflecting randomized market returns. The definition of a successful simulation is to have liquid assets remaining at death. Monte Carlo results are categorized as follows:

■	High	80% – 100%
■	Medium	70% – 79%
■	Low	0% – 69%

We have set our Monte Carlo threshold of success at 80% or higher. This is a typical threshold in the industry, although some advisors have been known to set higher or lower thresholds.

<sup>2</sup>Bengen used actual data up to the year 1993, after which he used average annual return assumptions.

<sup>3</sup><https://www.fa-mag.com/news/choosing-the-highest--safe--withdrawal-rate-at-retirement-57731.html>

<sup>4</sup><https://www.fa-mag.com/news/creator-of-4--rule-says-new-withdrawal-target-is-4-7-71026.html>

<sup>5</sup><https://emoneyadvisor.com/>

FIGURE 1: MONTE CARLO RESULTS WITH A 50/50 ALLOCATION

Retirement Age	Age at Death	Time Frame in Years	Distribution Rate in Year One	Monte Carlo Probability of Success
65	85	20	4.0%	99%
65	85	20	4.5%	97%
65	85	20	4.7%	96%
65	85	20	5.0%	93%
60	85	25	4.0%	95%
60	85	25	4.5%	90%
60	85	25	4.7%	87%
60	85	25	5.0%	80%
60	90	30	4.0%	90%
60	90	30	4.5%	79%
60	90	30	4.7%	73%
60	90	30	5.0%	65%
60	95	35	4.0%	82%
60	95	35	4.5%	68%
60	95	35	4.7%	63%
60	95	35	5.0%	52%

As can be seen from the results, all four withdrawal rates meet our threshold of success for the 20- and 25-year time frames, but only the 4.0% withdrawal rate meets our threshold of success for the 30- and 35-year time frames. It should be noted that the 4.5% and 4.7% withdrawal rate results for the 30-year period fall into a gray area. Results in the 70-79% range are not ideal, but they are close enough to our minimum threshold to be less of a concern than results in the 50% and 60% range.

As noted, the results in Figure 1 reflect a 50/50 allocation. We also tested a 60/40 allocation (60% stocks, 40% intermediate-term Treasury notes) and saw largely similar results. Overall, we observed a small improvement in the Monte Carlo results in the 30- and 35-year time frames for the 60/40 allocation. The 60/40 results suggest that individuals could enhance their portfolio's upside potential without degrading the probability of success.

Remember that the capital market assumptions (annualized growth rates) used in tests like these are significant. The capital market assumptions that we use at First Manhattan are slightly more conservative than historical averages<sup>6</sup>.

## Takeaways

### Retirement Time Frame

As you can see from Bengen's research and our Monte Carlo testing, the retirement time frame is critically important, as it has an outsized impact on the probabilities of success. A longer time frame might be the result of early retirement, outliving one's life expectancy, or both. It is therefore critical to understand that a withdrawal rate's level of safety is a function of the expected time frame. Where a 4.0% withdrawal rate appears safe for a time frame of 35 years or less, a withdrawal rate of 3.0% or 3.5% might be warranted for a time frame beyond 35 years.

<sup>6</sup>2024 Capital Market Assumptions: The Path to Normalization | BNY Mellon Wealth Management

As you contemplate your potential retirement time frame, there are various factors to consider, including your expected retirement age, your life expectancy<sup>7</sup> (give thought to your family's health history), and potential developments in the medical field. If even the most modest projections of AI's potential to revolutionize the medical field are to be believed, retirement time frames could change drastically for Generation X and below. While most people wish for a long, healthy life, in the context of wealth planning the prospect of living longer than expected can be a source of anxiety. Many individuals are afraid of the possibility that they will outlive their assets, and it may not be adequate to rely on today's actuarial tables. This merits consideration as you devise your retirement plans.

As a point of reference<sup>8</sup>, a 65-year-old male has a life expectancy today of 19 years, to age 84. A 65-year-old female has a life expectancy today of 22 years, to age 87. If you want to add a buffer, consider adding five or ten years to these averages.

### Cash Flows, One-Time Expenses, and Long-Term Care Costs

One of the limitations of a safe withdrawal approach is that reality is often messier and more complicated than a model might predict. Clients' expenses are not always consistent from year to year. One-time or periodic expenses can impede even the most disciplined of budgets. Examples range from fixing the roof of your house to paying for a child's wedding. If we rely on a safe withdrawal rate for a standard year's spending, then how do we plan for those years in which there is an unusually large expense?

Long-term care costs<sup>9</sup> are liable to be one of the biggest and least predictable expenses in retirement. Adding to the challenge of planning for these costs is the fact that these expenses are typically incurred at the end of retirement. A large cost at the beginning of retirement can potentially be adjusted for, but retirees need to

leave sufficient assets for the end of life to cover these unpredictable costs, should the need for them arise.

An important factor in evaluating your distribution needs from the portfolio are inflows from other sources. Clients with large pensions or passive sources of income may not need to take significant withdrawals from their portfolio. If this is the case, a client can either increase spending or leave a larger legacy.

### The Risk of Underspending

While wealth planners and retirees spend a lot of time and energy thinking about the risk of overspending in retirement, another risk lurks under the surface. For some, there is a risk of underspending in retirement. Wealth planning is both art and science, given the almost endless assumptions underlying the forward-looking projections that we produce for clients. A balance must be struck between planning for the future and living in the present. Ultimately, clients guide us with respect to their goals and priorities. Sometimes a greater emphasis is placed on enjoying retirement, while at other times the focus is maximizing a legacy for the next generation. The conversations between wealth planner and client here are critical, to find the right spending balance.

### Adjusting Spending Based on Portfolio Value

A newer approach to retirement spending that has gained some traction is the guardrail approach, first introduced by Jonathan Guyton and William Klinger in 2006. At a high level, this approach, and other variations on this theme, involves a withdrawal rate that increases or decreases based on the performance of the underlying portfolio. Without delving into the mechanics, one drawback to this strategy is that many people struggle to a) understand what they are spending and b) reduce their spending if needed. While this strategy might work well for someone who is disciplined and willing to cut expenses later to spend more now, it will not work for everyone.

<sup>7</sup><https://www.livingto100.com/calculator>

<sup>8</sup><https://www.ssa.gov/oact/population/longevity.html>

<sup>9</sup><https://www.genworth.com/aging-and-you/finances/cost-of-care>

## Summary

It is our view that the 4% rule can be a useful barometer for retirement withdrawals if it is properly understood. It is important to think of any rule of thumb as a back-of-the-envelope estimate as opposed to a reliable calculation. No two situations are the same and rarely are clients' expenses fixed and entirely predictable from year to year. There are limitations to all forward-looking

projections because of the vast number of underlying assumptions involved. Yet a Wealth Analysis, tailored to your specific situation, which accounts for your goals, assets, liabilities, income, and spending, is more likely to provide a clear picture of your long-term portfolio withdrawal capacity than a general rule of thumb. It will incorporate the inevitable one-time or periodic spikes in spending owed to weddings, repairs, big international trips, or long-term care expenses.

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