BREAKING THE 4% RULE

Conventional wisdom and a shifting economic landscape are changing retirement income planning.

For years, financial professionals informed their clients they could withdraw 4% a year from their nest egg and could still have a reasonable expectation their savings would last through retirement.[1] But in today's financial climate that's not necessarily the case.

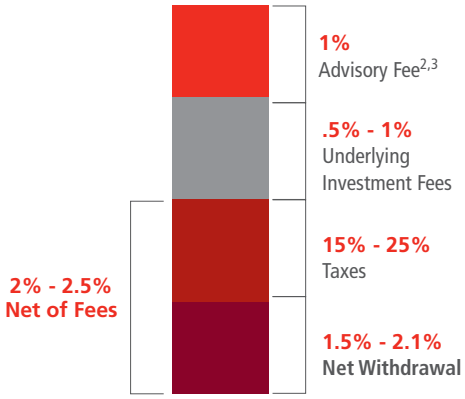
The 4% rule doesn't include potential fees you must pay these days for the investments you make and the advice you receive. It also does not account for the taxes you may owe. If you have a $1 million portfolio from which you want to take $40,000 a year in retirement, you'll need to withdraw more than 4%, which makes it more likely you could exhaust that portfolio.

Check out these charts for a more detailed explanation.

Chipping Away at 4%

$1 Million Portfolio Producing
$15,000 to $21,000 Annual Spendable Income

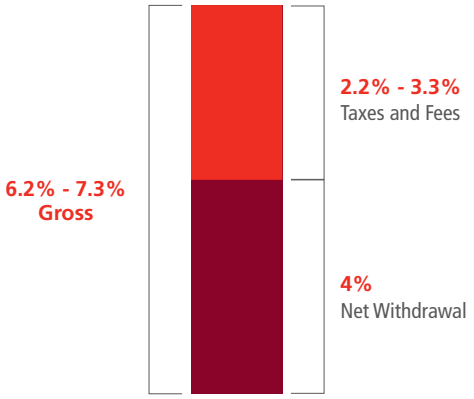
4% Rule Withdrawal



Assume a 1% advisory fee, and a 1/2-to-1% fee on underlying investments. Also assume a 15-to-25% tax rate. What's left is roughly 1.5-to-2.1% in annual spendable income.

Getting Your 4%

$1 Million Portfolio Producing
$40,000 Annual Spendable Income



You'll need a withdrawal rate above 6.2% to produce $40,000 in annual spendable income from a $1 million portfolio. And according to the numbers that popularized the 4% Rule, a yearly withdrawal between 6% and 7% is much more likely to fail.[4]

30-Year Retirement†

Likelihood increases with a correlation of withdrawal rate and portfolio mix[4].

Initial Withdrawal Amount	Stock / Bond* % Portfolio Allocation 100/0	80/20	60/40	40/60	20/80
3%	90%	93%	96%	97%	98%
4	77	79	80	80	74
5	60	60	56	46	28
6	44	40	32	19	5
7	31	25	16	6	0
8	20	14	7	1	0

More Likely

Less Likely**

The 4% rule is based on outdated calculations and historical scenarios. This chart is based on a Monte Carlo simulation study by T. Rowe Price in 2018.

* The following allocations include short-term bonds 60/40 is 60% stocks, 30% bonds, and 10% short-term bonds; 40/60 is 40% stocks, 40% bonds, and 50% short-term bonds; and 20/80 is 20% stocks, 50% bonds, and 30% short-term bonds.

**The likelihood of having at least $1 remaining in the portfolio at the end of the retirement period.

† **IMPORTANT:** The information regarding the likelihood of various investment outcomes is hypothetical in nature, does not reflect actual investment results, and is not a guarantee of future results. The simulations are based on a number of assumptions. There can be no assurance that the results shown will be achieved or sustained. The chart presents only a range of possible outcomes. Results may vary, and such results may be better or worse than the simulated scenarios. Clients should be aware that the potential for loss or gain may be greater than demonstrated in the simulations.

[1] William P. Bengen, "Determining Withdrawal Rates Using Historical Data," October 1994.
[2] Gordon Pye, Journal of Financial Planning 14 (4), "Adjusting Withdrawal Rates for Taxes and Expenses," 2001.
[3] Dana Anspach, "Find out the Cost of Hiring a Financial Planner," January 2019 .
[4] T. Rowe Price, "Modeling Future Uncertainty: Monte Carlo Analysis," September 2018 .

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To discuss retirement income options that may be better suited for today's challenges, contact your financial consultant.

Advanced Strategies communications are intended only to alert you to strategies that may be appropriate for the circumstances described. You should consult with a lawyer and/or tax specialist before adopting or rejecting any strategy that Advanced Strategies suggests. Only a lawyer and/or tax specialist, after thorough consultation, can recommend a strategy suited to anyone's unique needs.

Additional Monte Carlo Chart Disclosures

- Underlying long-term expected annual returns for the asset classes are not based on historical returns. Rather, they represent assumptions that take into account, among other things, historical returns. They also include our estimates for reinvested dividends and capital gains.
- These assumptions, as well as an assumed degree of fluctuation of returns around these long-term rates, are used to generate random monthly returns for each asset class over specified time periods.
- The monthly returns are then used to generate thousands of scenarios, representing a spectrum of possible return outcomes for the modeled asset classes. Success rates are based on these scenarios.

Material Limitations Include:

- The analysis relies on return assumptions, combined with a return model that generates a wide range of possible return scenarios from these assumptions. Despite our best efforts, there is no certainty that the assumptions for the model will accurately estimate asset class return rates going forward. As a consequence, the results of the analysis should be viewed as approximations, and users should allow a margin of error and not place too much reliance on the apparent precision of the results.
- Extreme market movements may occur more often than in the model.
- Some asset classes have relatively short histories. Actual long-term results for each asset class may differ from our assumptions, with those for classes with limited histories potentially diverging more.
- Market crises can cause asset classes to perform similarly, lowering the accuracy of our projected return assumptions and diminishing the benefits of diversification (that is, using many different asset classes) in ways not captured by the analysis. As a result, returns actually experienced by the investor may be more volatile than projected in our analysis.
- The model does not take into consideration short-term correlations among asset class returns ("correlation" is a measure of the degree in which returns are related to or dependent upon each other). It does not reflect the average duration of "bull" and "bear" markets, which can be longer than those modeled.
- Inflation is assumed to be constant, so variations are not reflected in our calculations.
- The analysis does not use all asset classes. Other asset classes may provide different returns or outcomes than those used.
- Taxes are not taken into account, nor are early withdrawal penalties.
- The analysis models asset classes, not investment products. As a result, the actual experience of an investor in a given investment product (e.g., a mutual fund) may differ from the range generated by the simulation, even if the broad asset allocation of the investment product is similar to the one being modeled. Possible reasons for divergence include, but are not limited to, active management by the manager of the investment product or the costs, fees, and other expenses associated with the investment product. Active management for any particular investment product—the selection of a portfolio of individual securities that differs from the broad asset classes modeled in the analysis—can lead to the investment product having higher or lower returns than the range in this analysis.

Model Portfolio Construction

Five model investment portfolios were designed by our investment professionals according to the principles of Modern Portfolio Theory, which is used to achieve effective diversification among different asset classes. An effectively diversified portfolio theoretically consists of all investable asset classes, including equities, bonds, real estate, foreign investments, commodities, precious metals, currencies, and others. Since it is unlikely that investors will own all of these assets, we selected the ones we believed to be the most appropriate for long-term investors. The asset classes used for the model portfolios are stocks, bonds, and short-term bonds. We did not consider real estate because of its illiquidity and the significant exposure many investors already have through homeownership. We believe the fixed income asset class we chose fairly represents the broad, liquid, domestic capital markets. We selected short-term, investment-grade bonds to provide stability and eliminated any explicit allocation to cash because we believe that the investor is best positioned to determine his/her own allocation to cash based on his/her near-term needs. The portfolios were constructed based on our analysis of the complementary behavior of asset classes over long periods of time, which enables us to identify investment mixes that offer greater efficiency through low correlation.

Modeling Assumptions

- The primary asset classes used for this analysis are stocks, bonds, and short-term bonds. An effectively diversified portfolio theoretically involves all investable asset classes, including stocks, bonds, real estate, foreign investments, commodities, precious metals, currencies, and others. Since it is unlikely that investors will own all of these assets, we selected the ones we believed to be the most appropriate for long-term investors.
- T. Rowe Price has analyzed a variety of retirement savings strategies using computer simulations to determine the likelihood of "success" (having at least one dollar remaining in the portfolio at the end of the retirement period) of each strategy, shown as a percentage in each grid. The initial withdrawal amount is the percentage of the initial value of the investments withdrawn in the first year where the entire amount is withdrawn on the first day of the year; in each subsequent year, the amount withdrawn is adjusted to reflect a 3% annual rate of inflation. The simulation success rates are based on simulating 10,000 possible future market scenarios and various retirement income strategies.
- Results of the analysis are driven primarily by the assumed long-term, compound rates of return of each asset class in the scenarios. Our corresponding assumptions, all presented in excess of 3% inflation, are as follows: for stocks, 4.90%; for bonds, 2.23%; and for short-term bonds, 1.38%.
- Investment expenses in the form of an expense ratio are subtracted from the return assumption as follows: for stocks, 0.70%; for bonds, 0.60%; and for short-term bonds, 0.55%. These expenses represent what we believe to be a reasonable approximation of investing in these asset classes through a professionally managed mutual fund or other pooled investment product.

The information provided in this tool is for general and educational purposes only, and is not intended to provide legal, tax or investment advice. This tool does not provide fiduciary recommendations concerning investments or investment management. Other T. Rowe Price educational tools or advice services use different assumptions and methods and may yield different outcomes. The results are not predictions, but they should be viewed as reasonable estimates. Source: T. Rowe Price Associates, Inc. (TRPA). T. Rowe Price Investment Services, Inc., Distributor (TRPIS). TRPA and TRPIS are affiliated companies.

This chart is for illustrative purposes only. Investors incur expenses when investing (i.e., commissions, advisory fees, and mutual fund expenses). Figures do not reflect the effects of taxes or transaction costs.

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