

RiskGrades	A “successful” portfolio is one that can maintain a positive portfolio value—in other words, not run out of money—while supporting the specified annual withdrawal amount over the specified time period.
S&P Reports	
Sentiment Survey	
Glossary	Researchers typically simulate thousands of market scenarios, and a portfolio’s “success rate” is the percentage of times the portfolio survived (did not run out of money) all of the simulated scenarios.
INVESTMENT PROGRAMS	
Local Chapters	
Chapter Leader Tools	The idea is to determine the portfolio success rate for various initial withdrawal rates.
National Programs	But most of this research has centered on withdrawal rules that are quite static—that is, once your withdrawal rate is determined, that rate is used throughout the withdrawal period regardless of the performance of the underlying investment portfolio. The results from this research are clearly affected by the ‘automatic-pilot’ nature of those static assumptions.
Chapter Calendar	
COMMUNITY	
About AAI	Yet most retirees have the ability to modify their annual spending, at least to some degree.
Contact AAI	
FAQs	
BENEFITS	Would the ability to make small systematic modifications if investment performance is poor increase the safety of an investment portfolio and allow for slightly higher withdrawal rates?
Publishing Calendar	
How to Profit From AAI	
Member Benefits	<p>In addition, the previous research leaves individuals with a dilemma: What constitutes a “safe” portfolio success rate? One individual may feel “safe” with an initial withdrawal rate that allowed a portfolio to survive 90% of the market scenarios tested, while another individual may demand a portfolio to survive 98% of the market scenarios tested. But, of course, a higher success rate is associated with a much lower initial withdrawal rate.</p> <p>Yet most retirees would agree that downside protection is key. Would focusing on a real-life worst-case scenario help individuals better evaluate the trade-off between safety and withdrawal rates?</p> <p>I decided to extend the research by looking into decision rules that might help “tweak” the numbers.</p> <p>I tested several balanced, diversified portfolio mixes along with systematic decision rules that governed the management of the portfolio, annual withdrawals, the impact of years with investment losses, and increases in withdrawals to offset ongoing inflation.</p> <p>In addition, my research did not use market simulations to test the withdrawal rules, but rather focused on the extreme period from 1973 through 2003,</p>

consisting of two severe bear markets and a prolonged early period of abnormally high inflation—arguably one of the worst market environments facing retirees since the Great Depression.

The analysis found that applying certain decision rules could produce “safe” initial withdrawal rates that are significantly higher than most published research has previously recommended.

This article explores the results of that research, and introduces a number of possible decision rules that can help you determine a practical withdrawal rate—one that is between “not too much” and “not too little.”

What Is “Safe?”

The withdrawal question is complicated by the fact that many individuals have different definitions of “safe.”

Yet most individuals share a common retirement goal: They want to maintain their standard of living without worrying about their future financial security. This requires an annual income that constantly increases over time to keep pace with inflation.

To reflect this common goal, I define the “safe” initial portfolio withdrawal rate as the maximum rate that can achieve these three conditions:

- It never requires a reduction in withdrawals from any previous year;
- It allows for systematic increases in withdrawals to offset inflation; and
- It maintains the portfolio’s ability to satisfy the first two conditions for at least 40 years.

A Matter of Timing

For some time, financial planners have known the shortcomings of applying a simplistic approach to the question of the safe withdrawal rate. The main problem results from a simple but powerful truth: For those who are withdrawing from a portfolio, it is not just the average rate of return that is critical, but it is also the sequence of the returns you receive. To put it another way, it is inevitable that a retiree’s portfolio will experience both positive and negative investment returns over the years, but when an individual is making annual withdrawals, it is far better for the good years to occur earlier rather than later. (Ironically, the exact opposite is true when an individual is adding to their investment portfolio during their accumulation phase.)

Sadly, recent retirees have experienced anything but the perfect retirement income scenario. In fact, they have seen their portfolios subjected to the worst

bear market (as measured by the S&P 500) since the Great Depression. Indeed, they are quite right to be concerned about its impact on their future financial security.

But what if a significant bear market were to occur not once, but twice during a retirement lifetime?

Other economic conditions could be even worse. Since the safe initial withdrawal rate must include the ability to allow for income increases that systematically adjust for inflation, a short period of abnormally high inflation early in retirement could require the portfolio to produce a significantly larger amount of total withdrawals than if this high inflation had occurred later in retirement (or not at all).

Thus, we can imagine a “perfect retirement planning storm”—one that would put the maximum pressure on a portfolio that must meet my three conditions of a safe withdrawal rate—would be a period in which:

- A significant bear market occurs at the outset of retirement;
- An abnormally high period of inflation occurs in the early years of retirement; and
- A second significant bear market occurs sometime in the second half of retirement.

Of course, we need not merely imagine such a “storm.” For people who retired in 1973, this is the actual economic landscape against which their retirement years were set. But while this clearly seemed unfortunate for them, it affords us a great real-life opportunity to revisit the question of the safe initial portfolio withdrawal rate.

[Previous Answers](#)

A number of other research articles have discussed the safe withdrawal issue, most notably William P. Bengen’s major articles in the *Journal of Financial Planning*. [In the *AAIL Journal* see “Retirement Savings: Choosing a Withdrawal Rate That Is Sustainable,” by Carl Hubbard, Philip Cooley and Daniel Walz, February 1998]. In general, they have found:

- The recommended range of stocks in the asset allocation to allow portfolio “survival” typically ranges from 50% to 75%.
- Typically, the safe initial withdrawal rate for pretax portfolios is around 4% when all the equities are U.S. large-cap stocks; when smaller-cap stocks are introduced, usually the safe initial withdrawal rate increases modestly to about 4.5%.

[Common Misconceptions](#)

Before getting into my findings, I'd like to clear up some common misconceptions about the results of these prior studies. Many individuals routinely equate the concept of a maximum safe initial withdrawal rate with that of a maximum withdrawal rate in any given year, and that this latter rate is fixed throughout the withdrawal period.

These are incorrect!

The withdrawal rate in any given year may be defined as a percentage: total portfolio withdrawals during the year divided by the total portfolio value at the start of the year. Clearly, this percentage will vary from year to year.

This is illustrated in [Table 1](#), which shows what would have happened to an individual who retired January 1, 1973. Using the data from one research study, an initial pretax portfolio withdrawal rate of 4.3%, and assuming that the entire year's withdrawals are taken on January 1, [Table 1](#) summarizes the fluctuations in the *yearly* withdrawal rate during the 1973–1974 bear market.

Table 1. How Annual Withdrawal Rates Vary Using a 4.3% Initial Withdrawal Rate Rule: An Example for an Individual Retiring 1/1/1973

Year	Beginning Year Value (\$)	Inflation Rate (%)	Withdrawal Amount (\$)	Annual Withdrawal Rate (%)	Portfolio Return (%)	Ending Year Value (\$)
1973	100,000	8.8	4,300	4.3	-7.53	88,492
1974	88,492	12.2	4,678	5.3	-14.25	71,871
1975	71,871	—	5,249	7.3	—	—

We now know that this withdrawal plan was ultimately sustainable for 30 years. But you can see that, because of the disastrous bear market during the first few years, it was required to support a 7.3% withdrawal in just its third year.

Portfolio Management Rules

Financial planners routinely diversify among stock asset classes—large-cap growth and value stocks, small-cap growth and value stocks, international stocks and real estate—when building the stock portion of their client investment portfolios. Doing so provides significant advantages when identifying the assets to use in funding the withdrawal requirements each year. It also allows an individual to hold a higher overall allocation to stocks than a portfolio that uses just one or two stock asset classes. That's because the additional diversification provides the potential for higher long-term returns without increasing risk.

I considered the impact that a balanced multi-asset class portfolio might have on the safe initial withdrawal rate, using the following stock asset classes:

- U.S. large-cap value,

- U.S. large-cap growth,
- U.S. small-cap value,
- U.S. small-cap growth,
- International equities, and
- REITs (for real estate).

Two different exposures to stocks were analyzed: 65% stocks and 80% stocks. I also used the following portfolio construction rules:

- The first year's withdrawal is placed in cash.
- The remaining assets are allocated in accordance with the target allocation shown in [Table 2](#).

Table 2. Diversification Among Stock Classes: Target Allocations

Asset Class	65% Stock Portfolio	80% Stock Portfolio
Cash	10%	10%
Fixed Income	25%	10%
U.S. Large-Cap Value	13%	15%
U.S. Large-Cap Growth	13%	15%
U.S. Small-Cap Value	9%	10%
U.S. Small-Cap Growth	9%	10%
International Stocks	15%	20%
REITs	6%	10%

Diversifying a portfolio across eight different asset classes requires several decision-making standards concerning how to fund each of the yearly withdrawals. I used these Portfolio Management Decision Rules to see what impact they would have on "safe" initial withdrawal rates:

- Following years in which a stock class had a positive return that produced a weighting in excess of its target allocation, the excess allocation was "sold" and the proceeds invested in cash to meet future withdrawal requirements.
- Portfolio withdrawals were funded each year on January 1 in the following order:
 1. Cash from rebalancing any overweighted equity asset classes from the prior year-end,
 2. Cash from rebalancing any overweighted fixed-income assets from the prior year-end,
 3. Withdrawals from remaining cash,
 4. Withdrawals from remaining fixed-income assets, and
 5. Withdrawals from remaining equity assets in order of the prior year's performance.
- No withdrawals were taken from an equity asset class following a year in which it had a negative return as long as cash or fixed-income assets were sufficient to fund the withdrawal requirement.

Table 3 shows the resulting “safe” initial withdrawal rates using these Portfolio Management Decision Rules. The impact of applying these portfolio decision rules in conjunction with the diversified stock allocation was significant. Even when subjected to the three distinct aspects of the “perfect retirement planning storm,” the safe initial withdrawal rate to provide 30 years of income reached 4.7% for the 65% stock portfolio, and 5% for the 80% equity portfolio.

Table 3. The Portfolio Management Decision Rules: Safe Initial Withdrawal Rates

The maximum initial withdrawal rates that will sustain a portfolio, if the portfolio is managed using the Table 2 target allocations and the Portfolio Management Decision Rules, based on an individual retiring Jan. 1, 1973.

Desired Outcome	65% Stock Portfolio	80% Stock Portfolio
Portfolio lasts 30 years	4.7%	5.0%
Portfolio lasts an additional 10 years*	4.4%	4.7%
Ending value is ½ original value (adjusted for inflation)	4.2%	4.5%
Ending value equals original value (adjusted for inflation)	3.6%	3.9%

* Assumes a return of 3% per year in excess of inflation for years 2004–2012.

It is also worth noting that the withdrawal rate at the beginning of 1975 (the low point of the 1973–1974 bear market and just the third year of portfolio withdrawals) rose to 8.8% for the 65% equity portfolio, and reached 10.5% for the 80% equity portfolio!

Perhaps it is not surprising that the safe initial withdrawal rate rose by so great a degree with the inclusion of international equities and real estate. Of the 31 years of performance data since 1973, there were seven times when international equity was the top performer of the six equity asset classes, and another six times when real estate led the way.

In addition, the distinction between growth and value stocks for both U.S. large cap and U.S. small cap was quite important. The disparity between growth and value returns exceeded 10% in 17 different years for U.S. large cap and 16 years for U.S. small cap. Yet it is the presence of the three Portfolio Management Decision Rules above that provided the structure for taking advantage of these occurrences.

Different Desired Outcomes

Of course, different individuals have somewhat different ideas of what qualifies as “safe.” And with ever-increasing life expectancies, 30 years of withdrawals may well indeed not be long enough.

For this reason, I looked at the withdrawal rates that would accommodate several additional outcomes:

- Sufficient assets after 2003 to fund inflation-adjusted withdrawals for an additional 10 years (for a total of 40 years), assuming a conservative average annual return of 3% above inflation from 2004–2012.
- Sufficient remaining assets after 2003 (\$2,200,000) to equal 50% of the portfolio's purchasing power in 1973.
- Sufficient remaining assets after 2003 (\$4,400,000) to equal 100% of the portfolio's purchasing power in 1973.

Those results are also shown in Table 3.

For the remainder of this article, only the safe initial rates that will sustain 40 years of withdrawals (outcome 1) and preserve 100% of the portfolio's initial purchasing power (outcome 3) will be considered. In all cases, the Portfolio Management Decision Rules will be applied.

Withdrawal Decision Rules

The criteria for sustaining a safe initial withdrawal rate includes the stipulation that the retiree receive an annual increase in income that matches the prior year's rate of inflation.

This criterion is certainly appealing, given everyone's desire to maintain their standard of living. But it does produce an unfortunate consequence should a "perfect storm" occur early in retirement: The initial withdrawal amount must be low enough both to support the abnormally high inflation of the initial years for the remainder of retirement, and so that the equity assets have an opportunity to recover from the declines suffered in the bear market years.

But what if you were willing to forgo an inflationary adjustment to your withdrawal following a particularly difficult year, with *no make-up* of that adjustment in the future? Would that mean the safe initial withdrawal rate can be increased by a meaningful amount?

Withdrawal Decision Rule 1

To assess this possibility, I added the following two-part Withdrawal Decision Rule to the portfolio decision rules presented above:

- There is no increase in withdrawals following a year in which the portfolio's ending value is less than its beginning value.
- There is no make-up for a missed increase in any subsequent year.

The results are shown in [Table 4](#); again, the impact on the safe initial withdrawal rate was significant.

Table 4. Withdrawal Decision Rule 1: Safe Initial Withdrawal Rates

The maximum initial withdrawal rates that will sustain a portfolio, if withdrawal amount is frozen when the year-end value is less than the starting value, based on an individual retiring Jan. 1, 1973.

Desired Outcome	65% Stock Portfolio	80% Stock Portfolio
Portfolio lasts an additional 10 years (40 total)*	5.4%	5.8%
Ending value equals original value (adjusted for inflation)	4.4%	5.0%

Comparisons

Total withdrawals after 30 years:

<i>Without Rule 1</i>	\$3,329,000	\$3,755,000
<i>With Rule 1</i>	\$3,038,000	\$3,263,000
Number of times withdrawals frozen with Rule 1	10	10

Average annual increases in withdrawals:

<i>Without Rule 1</i>	4.93%	4.93%
<i>With Rule 1</i>	3.16%	3.16%

** Assumes a return of 3% per year in excess of inflation for years 2004–2012.*

In the 65% stock portfolio, it rose to 5.4% when the desired outcome was to sustain the income stream for 40 years; in the 80% stock portfolio for this desired outcome, the safe rate rose to 5.8%.

When the desired outcome became the preservation of the portfolio’s original 1973 purchasing power, the safe initial rate reached 4.4% for the 65% stock portfolio and 5.0% for the 80% stock portfolio.

It is important to realize that, although the initial withdrawal rates were able to increase, there was a price to pay. Offsetting these improvements was the reality that portfolio withdrawals were “frozen” 10 times under this decision rule—about 30% of the time with each portfolio.

In addition, total withdrawals through 2002 were 9% to 13% lower than without the rule.

There is an interesting trade-off taking place. Under the above decision rule, you will receive a higher annual income in the early years of retirement because of the higher initial safe withdrawal rate. But the freezes that occur eventually allow the yearly withdrawals (as well as the total withdrawals) to fall behind what would be received without the rule. This crossover point—the year in which annual withdrawals without the rule exceed those under the rule—occurs in 1982 with both portfolios. Note that this crossover point would have occurred far later had

the rule not caused three freezes in the first 10 years during the period when inflation was abnormally high.

Withdrawal Decision Rule 2

What if you are attracted to the higher safe initial withdrawal rate but also want a withdrawal decision rule with less potential to produce income freezes?

To assess this possibility, I tested the following Withdrawal Decision Rule along with the Portfolio Management Decision Rules presented previously:

- There is no increase in withdrawals following a year in which the portfolio’s total investment return is negative.
- There is no make-up for a missed increase in any subsequent year.

Note that under this rule (Withdrawal Rule 2), it would be possible for a withdrawal to be higher in a particular year even if the portfolio’s ending value fell below its value at the beginning of the prior year—this would not have been permitted under the previous rule (Withdrawal Rule 1).

As shown in [Table 5](#), Withdrawal Rule 2 provides a definite improvement over Withdrawal Rule 1. The number of freezes declines from 10 to six, and the percentage of years with a withdrawal freeze drops from 33% to just 20%.

Table 5. Withdrawal Decision Rule 2: Safe Initial Withdrawal Rates

The maximum initial withdrawal rates that will sustain a portfolio, if withdrawal amount is frozen when the prior year investment return is negative, based on an individual retiring Jan. 1, 1973.

Desired Outcome	65% Stock Portfolio	80% Stock Portfolio
Portfolio lasts an additional 10 years (40 total)*	5.1%	5.7%
Ending value equals original value (adjusted for inflation)	4.2%	4.8%

Comparisons

Total withdrawals after 30 years:

<i>Without Rule 2</i>	\$3,329,000	\$3,755,000
<i>With Rule 2</i>	\$3,322,000	\$3,456,000
Number of times withdrawals frozen with Rule 2	6	6
Average annual increases in withdrawals:		
<i>Without Rule 2</i>	4.93%	4.93%
<i>With Rule 2</i>	3.87%	3.62%

* Assumes a return of 3% per year in excess of inflation for years 2004–2012.

It should not be surprising that withdrawals were frozen twice during each of the bear markets (1973–1974 and 2000–2002). Thus, it is noteworthy that there were

only two freezes under Withdrawal Rule 2 during the 25 years between these two bear markets.

It is also significant that total withdrawals during the period were over 9% higher under Withdrawal Rule 2 with the 65% equity portfolio than they were under Withdrawal Rule 1. Moreover, under the Withdrawal Rule 2 safe initial withdrawal rate that will support a 40-year period, total withdrawals received after 30 years (2002) were virtually the same as without it! With the 80% equity portfolio, total withdrawals increased 5.9% relative to Withdrawal Rule 1. The higher increase in total withdrawals with the 65% equity portfolio is due to its avoiding the 1982 freeze that the 80% equity portfolio experienced.

Do these Withdrawal Rule 2 improvements come with the same high price as Withdrawal Rule 1?

It appears not.

The safe initial withdrawal rate declines only slightly in each case when compared with Withdrawal Rule 1 in [Table 4](#). And although the crossover point for annual income occurs in 1975 with the 65% equity portfolio, there is less than a 2% difference in yearly income from that point until the income freeze that occurs in 1991.

With the 80% equity portfolio, the crossover occurs in 1982; at that point the annual withdrawal without Withdrawal Rule 2 is 7.3% higher. That differential remained until the 1991 freeze.

Because Withdrawal Rule 2 offers so much improvement over Withdrawal Rule 1 with so very little compromise, I used Withdrawal Rule 2 for the remaining analyses.

Of course, you must ultimately choose the withdrawal plan that best meets your own needs, but the availability of an option that could provide significantly higher withdrawals in the early and more active years of your retirement may certainly be appealing.

Modified Rules for Inflation

As mentioned earlier, an abnormally high period of inflation that occurs early in the withdrawal period will have a disproportionately large impact on total portfolio withdrawals. This is because the inflationary increases must then be sustained year-in and year-out for the many remaining years of the withdrawal period.

To counter this, the initial withdrawal rate must begin at a lower level to

compensate for these inflation adjustments.

What if you are willing to forgo abnormally high inflation adjustments by agreeing to place a cap on your annual withdrawal increases in exchange for a sufficiently large rise in the safe initial withdrawal rate?

To assess this possibility, I added the following Inflation Decision Rule along with the Portfolio Management Decision Rules presented previously:

- The maximum inflationary increase in any given year is 6%.
- There is no make-up for a capped inflation adjustment in any subsequent year.

Again, the results are striking. There were nine different years in which the 6% cap affected the inflation adjustment, the last occurring for 1982.

If the desired outcome is to sustain withdrawals for 40 years, the Inflation Decision Rule allowed the safe initial withdrawal rate to rise from 4.4% to 5.1% for the 65% equity portfolio, and from 4.7% to 5.4% for the 80% equity portfolio (Table 6).

Table 6. Withdrawal and Inflation Decision Rules: How They Impact the "Safe" Initial Withdrawal Rate

The maximum initial withdrawal rates that will sustain a portfolio, if the indicated withdrawal and inflation rules are applied, based on an individual retiring Jan. 1, 1973

	65% Stock Portfolio	80% Stock Portfolio
Desired Outcome: Portfolio lasts 40 years		
No rules applied	4.4%	4.7%
Inflation Rule only applied: Maximum increase is 6%	5.1%	5.4%
Withdrawal Rule 2 only applied: Withdrawal frozen after a negative return year	5.1%	5.7%
Inflation Rule and Withdrawal Rule 2 applied	5.8%	6.2%
Desired Outcome: Ending value equals original value (adjusted for inflation)		
No rules applied	3.6%	3.9%
Inflation Rule only applied: Maximum increase is 6%	4.2%	4.7%
Withdrawal Rule 2 only applied: Withdrawal frozen after negative return year	4.2%	4.8%
Inflation Rule and Withdrawal Rule 2 applied	4.8%	5.3%

** Assumes a return of 3% per year in excess of inflation for years 2004–2012.*

If the desired outcome is to preserve the portfolio's original purchasing power through the end of 2003, the Inflation Decision Rule increased the safe initial withdrawal rate from 3.6% to 4.2% for the 65% equity portfolio, and from 3.9% to 4.7% for the 80% equity portfolio. Suppose, however, that you are willing to abide by both the Withdrawal Decision Rule 2 ("no withdrawal increases in years

following an investment loss”) and the Inflation Decision Rule?

If your objective is to maximize your withdrawal stream over 40 years, the combined effect of these two rules boosts the safe initial rate to 5.8% with the 65% equity portfolio, and to 6.2% with the 80% equity portfolio.

When the objective is to maintain the portfolio’s original purchasing power through 2003, the safe rate becomes 4.8% with the 65% equity portfolio, and 5.3% with the 80% equity portfolio.

Table 6 summarizes the results of the two target outcomes under various combinations of the Withdrawal and Inflation Decision Rules for both the 65% and 80% equity portfolios.

Conclusion

Happily, there is a point between “not too much” and “not too little” as far as retirement withdrawals are concerned, if you are willing to modify your withdrawals according to a few rules throughout your retirement years.

Using these withdrawal rules over one of the worst economic periods for retirees—the “perfect storm” planning scenario of a January 1, 1973, retirement date—it was possible to improve on initial withdrawal rates implied by previous research by using systematic decision rules pertaining to portfolio management, withdrawals, and inflation.

By incorporating these decision rules into your own investment portfolio management, you may be better able to both maintain your desired living standard and have the resources to enjoy a meaningful and fulfilling retirement.

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