

Decision Rules and Portfolio Management for Retirees: Is the 'Safe' Initial Withdrawal Rate Too Safe?

by Jonathan T. Guyton

Executive Summary

- This paper establishes new guidelines for determining the maximum "safe" initial withdrawal rate, defined as (1) never requiring a reduction in withdrawals from any previous year, (2) allowing for systematic increases to offset inflation, and (3) maintaining the portfolio for at least 40 years.
- It evaluates the maximum safe initial withdrawal rate during the extreme period from 1973 to 2003 that included two severe bear markets and a prolonged early period of abnormally high inflation.
- It tests the performance of balanced multi-asset class portfolios that utilize six distinct equity categories: U.S. Large Value, U.S. Large Growth, U.S. Small Value, U.S. Small Growth, International Stocks, and Real Estate.
- Two portfolios (65 percent equity and 80 percent equity) are evaluated in conjunction with systematic Decision Rules that govern portfolio management, sources of annual income withdrawals, impact of years with investment losses and withdrawal increases to offset ongoing inflation.
- This paper finds that applying these Decision Rules produces a maximum "safe" initial withdrawal rate as high as 5.8 percent to 6.2 percent depending on the percentage of the portfolio that is allocated to equities.

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"How much income can I safely take from my investment portfolio?" is one of the most critical and complex questions on which a financial planner must advise a client.

Its importance stems from the significant difference it can make in a client's standard of living in retirement. An income variance of just a few hundred dollars each month in either direction can have a large impact on the discretionary income a client has available for travel, hobbies, and entertainment—not to mention activities with family and friends. It is these expense areas that often contribute much of the "quality" to a client's quality of life. If the withdrawal rate is set too high, a client could be forced to dramatically (and painfully) lower their living standard at some future date or, in the worst case, outlive their resources. If set too low, they could end up denying themselves the financial resources for the very things that would give them a sense of fulfillment and meaning, perhaps leading to significant regrets in the future—all for naught.

This question's complexity stems from that word "safe." Safe from what? Financial planners have heard clients' answers to that question time and time again: "Running out of money"..."Living too long"..."Being forced to reduce my standard of living"..."A market crash"..."Needing to sell at the wrong time"..."Protecting me from the financial shocks of events like terrorist attacks." Unfortunately, the frequency with which this question is asked does not make it any easier to answer.

Clients share a core retirement goal: to maintain their standard of living free from worry about their future financial security. Of course, maintaining a living standard over a long period of time requires an ever-increasing annual income. Mindful of this, I define the *safe initial portfolio withdrawal rate*¹ as the maximum rate that can achieve these conditions:

1. Never requires a reduction in withdrawals from any previous year
2. Allows for systematic increases in withdrawals to offset inflation
3. Maintains the portfolio's ability to satisfy the first two conditions for at least 40 years

This paper tests these conditions against the extreme period from 1973–2003 (two severe bear markets and a prolonged early period of abnormally high inflation) by employing a balanced multi-asset-class portfolio in conjunction with systematic decision rules to govern the management of investment portfolios, funding sources for annual income withdrawals, impact of years with investment losses, and increases in withdrawals to offset ongoing inflation. This analysis finds that applying these Decision Rules produces a "safe" initial withdrawal rate that ranges from 5.8 percent to 6.2 percent depending on the percentage of the portfolio that is allocated to equity asset classes—rates significantly higher than most published research has previously recommended.

The Perfect Retirement Planning Storm

For some time, financial planners have known the shortcomings of applying a simplistic stochastic approach to the question of the safe withdrawal rate. The use of Monte Carlo or random number generation techniques has revealed a simple but powerful truth: because it is inevitable that a retiree's portfolio will experience both positive and negative investment returns over the years, it would be far better for the good years to occur earlier in retirement than later. (Ironically, the exact opposite is true during the accumulation phase of a client's financial lifetime.)

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 their retirement lifetime?

In fact, 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).

To illustrate, consider three clients, each beginning their retirement by withdrawing \$50,000 from their portfolio in the first year, each increasing their withdrawals annually by the prior year's rate of inflation and each living for 40 years.

- Client 1 experiences three percent inflation each and every year.
- Client 2 and Client 3 both experience three percent inflation during 30 of the 40 years, and eight percent inflation in the other 10 years, increasing their average annual inflation rate to 4.2 percent, 40 percent higher than Client 1. Total withdrawals for Client 1 are \$3,770,000.
- Client 2 experiences three percent inflation each year except for the last ten years, when yearly inflation is eight percent. Total withdrawals rise to \$4,222,000—12 percent higher than Client 1—but a much smaller differential than the average annual inflation rates would suggest.
- Client 3 experiences annual inflation of eight percent in the first ten years and three percent thereafter. Total withdrawals jump to \$5,860,000—a whopping 55 percent higher than Client 1 (and an even greater difference than the average inflation rates would suggest).

Clearly, as in many other things, timing matters! Thus, we can imagine the "perfect retirement planning storm" that would put the maximum pressure on a portfolio required to sustain a retirement income that meets the three conditions of a safe withdrawal rate:

- A significant bear market occurs at the outset of a client's retirement
- An abnormally high period of inflation occurs in the early years of a client's retirement
- A second significant bear market occurs sometime in the second half of a client's retirement

Of course, we need not merely imagine such a "storm." For people who retired in 1973, this is the economic landscape against which their retirement years were set: The 1973–1974 bear market, the abnormally high inflation of the mid-1970s to early 1980s; and the 2000–2002 bear market. But while this has clearly been unfortunate for them, it affords us a great real-life opportunity to re-visit the question of the safe initial portfolio withdrawal rate.

Previous Answers...

In three significant papers published in this journal in the 1990s, William P. Bengen, CFP®, provided the financial planning profession with great insight into this question (Bengen [1994](#), [1996](#), [1997](#)). I recommend his writings to the reader. But because they are so widely referenced and so relevant to the research and conclusions that follow, I summarize his key assumptions and methodology as follows from his 1997 paper:

- The safe withdrawal rate was defined as "the highest initial withdrawal rate that guarantees 30 years of portfolio longevity for all retirement dates, assuming the client increases initial withdrawals each year by the actual inflation rate experienced."
- The recommended range of equities in the asset allocation was 50–75 percent.
- The equity allocation was phased down by one percent each year during retirement.
- Historical data were used to examine periods from 1926–1995.
- For retirement periods extending beyond 1995, average historical rates of return were used for both equities and bonds. The final 30-year period considered was 1976–2005.

Bengen's conclusions that are relevant to this paper follow:

- The safe initial withdrawal rate for pre-tax portfolios is 4.1 percent when all the equities are U.S. large-cap stocks.
- When 30 percent of the equities are invested in U.S. small-cap stocks, the safe pre-tax withdrawal rate rises to 4.3 percent (an increase Bengen called "significant").

In addition, Bengen raised the question of how a client unfortunate enough to have retired at the start of the 1973–1974 bear market would have fared over the next 30 years. He used average historical return data (which proved to be slightly higher than actual returns) for the seven remaining years after 1995. A careful reading of his work reveals that an initial withdrawal rate of 4.3 percent could have been sustained for 30 years, but that the portfolio would have then been exhausted.

...And Some Common Misconceptions

Clients (and many financial planners) routinely equate the concept of a maximum safe *initial* withdrawal rate with that of a maximum withdrawal rate in *any* given year. But there is a significant difference! Furthermore, this latter rate is commonly assumed to be fixed throughout the withdrawal period. It is not.

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

Consider the client who retired January 1, 1973. Using Bengen's data, an initial pre-tax portfolio withdrawal rate of 4.3 percent and assuming that the entire year's withdrawal was taken on January 1, Table 1 summarizes the fluctuations in the yearly withdrawal rate during the 1973–1974 bear market.

TABLE 1

Variation in Yearly Withdrawal Rates (Retirement Commencing 1/1/73)

Year	1/1 Value	Inflation	Withdrawal	WD Rate	Return	12/31 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, *yet it was required to support a 7.3 percent withdrawal in just its third year*. So, imagine the surprise of my retired clients who watched their portfolio values decline during the 2000–2002 bear market and wondered whether they should reduce their withdrawals to keep their rate at roughly four percent (of their depressed 2002 portfolio values) when I responded that—on the contrary—it was fine if their current withdrawal rates approached six percent or even seven percent!

Modern Portfolio Theory and Portfolio Decision Rules

Financial planners routinely employ multiple asset classes when constructing the equity portion of client investment portfolios. Doing so provides significant advantages when identifying the assets to use in funding a client's portfolio withdrawal requirements each year. It also allows a client to hold a higher overall allocation to equities than a portfolio that uses just one or two equity asset classes. The additional diversification can produce a higher long-term expected return without increasing the volatility.

I considered the impact that a balanced multi-asset class portfolio might have on the safe initial withdrawal rate. Specifically, the following equity asset classes (with their respective index proxies) were employed in constructing portfolios:

- U.S. Large Cap Value (Russell 1000 Value)
- U.S. Large Cap Growth (Russell 1000 Growth)
- U.S. Small Cap Value (Russell 2000 Value)
- U.S. Small Cap Growth (Russell 2000 Growth)
- International Equities (MSCI EAFE)
- Real Estate (NAREIT through 1987; Wilshire REIT thereafter)

Because the Russell indexes did not exist until 1979, I used retail no-load mutual funds from well-known fund families to obtain performance data for 1973–1978 in the four U.S. equity classes as follows: Vanguard Windsor Fund, Vanguard Morgan Growth Fund, Pennsylvania Mutual Fund, and Vanguard Explorer Fund.

In addition, as a proxy for fixed income, I used the Lehman Brothers Aggregate Bond Index from its creation in 1987 and the Babson Bond Fund in the years prior. Cash was represented by the Franklin Money Market fund from its 1977 inception, and the 91-day T-bill rate before that.

Two distinct, diversified, multi-asset class equity allocations were analyzed: 65 percent equities and 80 percent equities. The following portfolio construction rules were employed to build the retiree's investment portfolio:

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

TABLE 2

**Target Portfolio Allocations
(Exclusive of the Year 1
Withdrawal)**

Asset Class	65% Equities	80% Equities
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 Equities	15%	20%
Real Estate (REITs)	6%	10%

Diversifying a portfolio across eight different asset classes requires several decision-making standards regarding how to fund each of the yearly withdrawals. Therefore, management of the portfolio—including the strategy to determine the source(s) of the yearly withdrawals—was conducted in accordance with the following Portfolio Management Decision Rule:

- Following years in which an equity asset 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, (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 so long as cash or fixed income assets were sufficient to fund the withdrawal requirement.

The impact of applying these portfolio decision rules in conjunction with the diversified multi-asset class equity allocation in Table 2 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 (the criteria in the Bengen articles) increased from 4.3 percent to 4.7 percent for the 65 percent equity portfolio, and to 5 percent for the 80 percent equity portfolio. 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 percent for the 65 percent equity portfolio, and reached 10.5 percent for the 80 percent 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 performing 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 1,000 basis points 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 decision rules above that provided the structure for taking advantage of these occurrences.

Ultimately, of course, the client is responsible for determining the characteristics of a withdrawal plan that qualifies as "safe." And with ever-increasing life expectancies, 30 years of withdrawals may well indeed not be long enough. For this reason, the withdrawal rates that would accommodate several additional outcomes were considered:

1. Sufficient assets after 2003 to fund inflation-adjusted withdrawals for the remainder of the 40 years between 1973 and 2012, assuming a conservative average annual return of three percent above inflation

from 2004–2012

2. Sufficient remaining assets after 2003 (\$2,200,000) to equal 50 percent of the portfolio's purchasing power in 1973
3. Sufficient remaining assets after 2003 (\$4,400,000) to equal 100 percent of the portfolio's purchasing power in 1973.

The resulting safe initial withdrawal rates for these outcomes, as well as to fund the original 30-year period (the Bengen criteria) appear in Table 3.

January 1, 1973, Retirement Date		
Desired Portfolio Outcome	65% Equities	80% Equities
Portfolio Lasts 30 Years	4.7%	5.0%
Portfolio Funds 40 Years*	4.4%	4.7%
12/03 Value = 1/2 Original Purch. Power	4.2%	4.5%
12/03 Value = Original Purch. Power	3.6%	3.9%

*Assumes a return of 7.4% per year in excess of inflation for 2000–2012

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

Withdrawal Decision Rules

The criteria for sustaining a safe initial withdrawal rate include the stipulation that the retiree receive an annual increase in the retiree's income that matches the prior year's rate of inflation. This criterion is certainly appealing, given clients' desire to maintain their standard of living. But it does produce an unfortunate consequence: the initial withdrawal amount must be low enough to both support the abnormally high inflation of the initial ten years for the remainder of retirement, and so that the equity assets have an opportunity to recover following the seven particularly difficult years (1973, 1974, 1990, 1994, 2000, 2001, and 2002) when most or all of the equity asset classes generated negative returns.

If the client was willing to forgo an inflationary adjustment to his or her portfolio withdrawal following a particularly difficult year with no make-up of that adjustment in the future could the safe initial withdrawal rate be increased by a meaningful amount? To assess this possibility, the following two-part Withdrawal Decision Rule was applied in conjunction with 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 impact on the safe initial withdrawal rate was again significant. In the 65 percent equity portfolio, it rose from 4.4 percent to 5.4 percent when the desired outcome was to sustain the income stream for 40 years. In the 80 percent equity portfolio, the safe rate rose from 4.7 percent to 5.8 percent. When the desired outcome became the preservation of the portfolio's original 1973 purchasing power, the safe initial rate increased from 3.6 percent to 4.4 percent in the 65 percent equity portfolio; in the 80 percent equity portfolio, it improved from 3.9 percent to

5.0 percent.

Somewhat offsetting these improvements was the reality that portfolio withdrawals were "frozen" ten times under this decision rule—about 30 percent of the time with each portfolio. In addition, total withdrawals through 2002 were 9–13 percent lower than without the rule. Comparisons of the impact of this rule appear in Table 4.

January 1, 1973, Retirement Date		
Resulting Outcome	65% Equities	80% Equities
"Safe" Initial WD Rate to Fund 40 Years*	5.4%	5.8%
"Safe" Initial WD Rate Preserves Purchasing Power	4.4%	5.0%
Total WDs After 30 Years Without Rule	\$3,329,000	\$3,755,000
Total WDs After 30 Years with Rule	\$3,038,000	\$3,263,000
Number of Times WDs "Frozen" with Rule	10	10
Average Annual WD Increase Without Rule	4.93%	4.93%
Average Annual WD Increase with Rule	3.16%	3.16%

*Withdrawal amount of 2% per year in excess of inflation for 2004–2012

There is an interesting trade-off taking place. Under the above decision rule, the client receives 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 ten years during the period when inflation was abnormally high.

Again, clients must ultimately choose the withdrawal plan that best meets their needs, but the availability of an option that could provide significantly higher withdrawals in the early (more active) years of retirement will certainly be appealing.

It would not be surprising, however, if clients were attracted to the higher safe initial withdrawal rate while also desiring a withdrawal decision rule with less potential to produce income freezes. To assess this possibility, the following Withdrawal Decision Rule was applied in conjunction with the portfolio 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 (which I will call Withdrawal Rule 2 to distinguish it from Withdrawal Rule 1 discussed above), it would be possible for a client to receive a withdrawal increase following a year in which the portfolio's ending value fell below its beginning value. This would not have been permitted under Withdrawal Rule 1.

Rule 2 provides a definite improvement over Rule 1. The number of freezes declines from ten to six, and the percentage of years with a withdrawal freeze drops from 33 percent to just 20 percent. 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 Rule 2 during the 25 years between these two bear markets. As shown in Table 5, it is also significant that total withdrawals during the period were 9.4 percent higher under Rule 2 with the 65 percent equity portfolio than they were under Rule 1. Moreover, under the 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 percent equity portfolio, total withdrawals increased 5.9 percent relative to

Rule 1. The higher increase in total withdrawals with the 65 percent equity portfolio is due to its avoiding the 1982 freeze that the 80 percent equity portfolio experienced.

Resulting Outcome	65% Equities	80% Equities
"Safe" Initial WD Rate to Fund 40 Years*	5.1%	5.7%
"Safe" Initial WD Rate Preserves Purchasing Power	4.2%	4.8%
Total WDs After 30 Years Without Rule	\$3,329,000	\$3,755,000
Total WDs After 30 Years with Rule	\$3,322,000	\$3,456,000
Number of Years WDs "Frozen" with Rule	6	6
Average Annual WD Increase Without Rule	4.93%	4.93%
Average Annual WD Increase with Rule	3.87%	3.62%

But do these improvements come with an equally high price? It appears not. The safe initial withdrawal rate declines only slightly in each case when compared with Rule 1 in Table 4. And although the crossover point for annual income occurs in 1975 with the 65 percent equity portfolio, there is less than a 2 percent difference in yearly income from that point until the income freeze that occurs in 1991. With the 80 percent equity portfolio, the crossover occurs in 1982; at that point the annual withdrawal without Rule 2 is 7.3 percent higher. That differential remained until the 1991 freeze. Because Rule 2 offers so much improvement over Rule 1 with so very little compromise, Rule 2 will be employed in this paper's remaining analyses.

What About Inflation?

As demonstrated 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. This is exactly what occurred during our "perfect retirement planning storm": the average annual inflation rate in the first ten years (1973–1982) was 8.73 percent compared with 3.96 percent in the second ten years, and 2.62 percent in the final ten years. Overall, annual inflation averaged 4.93 percent during the 30 years from 1973–2002.

Is it possible that clients would be willing to forgo abnormally high inflation adjustments by agreeing to place a cap on their annual withdrawal increases in exchange for a sufficiently large rise in the safe initial withdrawal rate? To assess this possibility, the following Inflation Decision Rule was applied in conjunction with the portfolio decision rules presented previously:

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

Yet again, the results are striking. There were nine different years in which the six percent 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 percent to 5.1 percent with the 65 percent equity portfolio, and from 4.7 percent to 5.4 percent with the 80 percent equity portfolio.

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 percent to 4.2 percent with the 65 percent equity portfolio, and from 3.9 percent to 4.7 percent with the 80 percent equity portfolio.

Suppose, however, that a client is willing to abide by both the Withdrawal Decision Rule ("no withdrawal increases in years following an investment loss") and the Inflation Decision Rule. If the client's objective is to maximize his or her withdrawal stream over 40 years, the combined effect of these two rules boosts the safe initial rate to 5.8 percent with the 65 percent equity portfolio, and to 6.2 percent with the 80 percent equity portfolio. When the objective is to maintain the portfolio's original purchasing power through 2003, the safe rate becomes 4.8 percent with the 65 percent equity portfolio, and 5.3 percent with the 80 percent 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 percent and 80 percent equity portfolios.

January 1, 1973, Retirement Date		
Resulting Outcome	65% Equities	80% Equities
To Sustain Withdrawals for 40 Years*		
"Safe" Initial Rate: No Rules Applied	4.4%	4.7%
"Safe" Initial Rate: Inflation Rule Only	5.1%	5.4%
"Safe" Initial Rate: WD Rule #2 Only	5.1%	5.7%
"Safe" Initial Rate: WD Rule #2 and Inflation Rule	5.8%	6.2%
To Preserve Purchasing Power After 31 Years		
"Safe" Initial Rate: No Rules Applied	3.6%	3.9%
"Safe" Initial Rate: Inflation Rule Only	4.2%	4.7%
"Safe" Initial Rate: WD Rule #2 Only	4.2%	4.8%
"Safe" Initial Rate: WD Rule #2 and Inflation Rule	4.8%	5.3%

*Assumes a return of 7% per year in excess of inflation for 2003-2012

Conclusion

This paper has re-examined the question of the "safe" portfolio withdrawal rate that can be sustained throughout a lengthy period of retirement. Its analysis was conducted using the "perfect storm" planning scenario of a January 1, 1973, retirement date in order to test the extremely challenging historical combination of two severe equity market downturns and an extended period of abnormally high inflation at the outset of the portfolio withdrawals.

It has demonstrated that, even if faced with such conditions, when financial planners employ a balanced and diversified multi-asset class portfolio in conjunction with systematic decision rules pertaining to portfolio management, withdrawals, and inflation, the safe initial withdrawal rate increases significantly over previously published results. Depending on the client's target portfolio outcome and the decision rules employed, these increases were as high as 35 percent for a 65 percent equity portfolio and 44 percent for an 80 percent equity portfolio when compared with previously published research.

By incorporating these decision rules into their work, financial planners can significantly enhance their ability to help clients attain their desired living standard and have the resources to enjoy a meaningful and fulfilling retirement.

Endnote

1. The author is applying for U.S. patent protection to cover the process of determining an investment portfolio's "safe" initial withdrawal rate by using the decision rules presented in this paper.
2. A portfolio containing 10 percent cash, 40 percent fixed income and 50 percent diversified across the fixed equity asset classes was also evaluated. Applying all the Decision Rules, the "safe" initial withdrawal rate was 5.4 percent to sustain the portfolio for 40 years and 4.3 percent to preserve the purchasing power of

the portfolio's original principal.

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