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Develop Business/Financial Planning

# 10 Bucket Strategies That Don't Work

By Jim Otar, CMT, CFP

May 13, 2013

**Bucket strategies are popular for building clients' retirement plans. However, no matter how they are designed—whether you're utilizing a single bucket or multiples, static or dynamic—they do not extend the life of the income stream. Is it time to kick the bucket?**

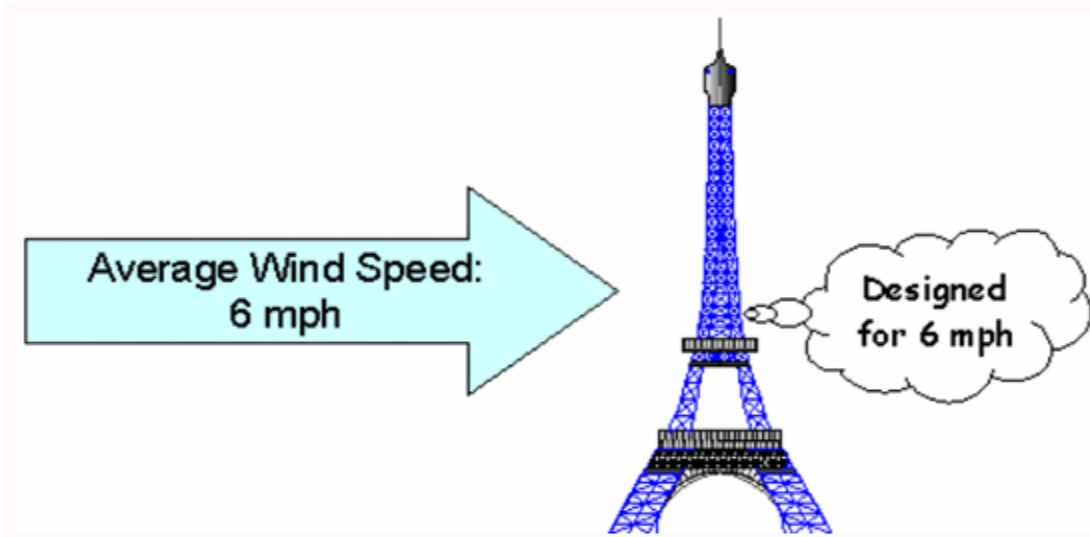
The other day I read that over 50% of advisors are following some form of a bucket strategy. I froze for a minute. It was a déjà vu moment for me. In the late 1990s, I read a similar article with a different twist: over 50% of advisors were using an average portfolio growth rate of 11% (or higher!) to prepare plans for their clients. I get suspicious when most advisors are following the same piper.

Could the same be said about today's bucket strategies? According to our research, bucket strategies do not offer the security and longevity clients are looking for—no matter what strategy is used. We analyzed 10 bucket scenarios, both static and dynamic, to determine the effectiveness—or lack thereof—of this latest retirement approach.

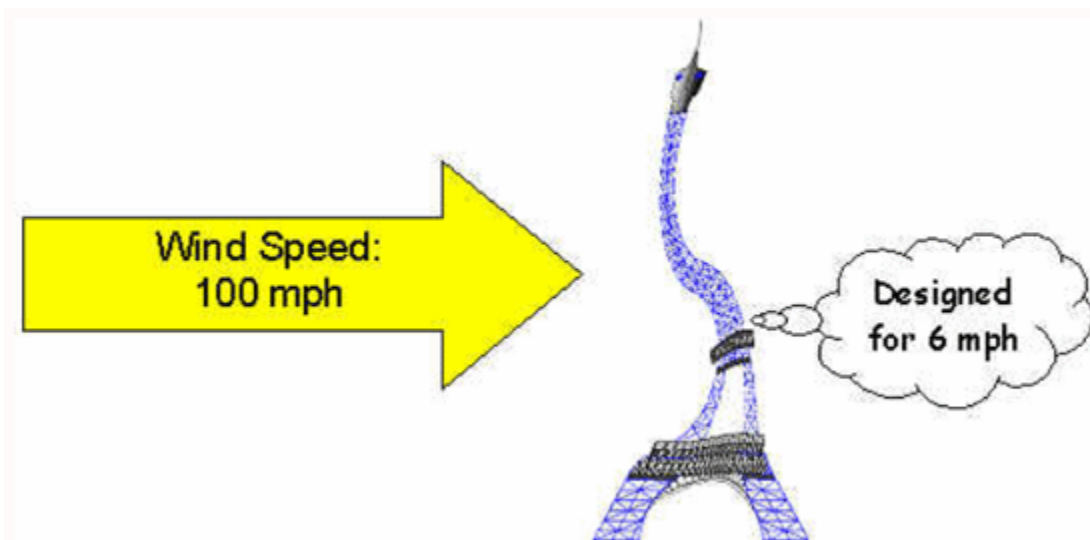
## Design criteria

When I changed my career from engineering to financial planning, I was appalled by the prevalent design practice of the times: Assume an "average" growth rate for the portfolio and then make a forecast of the retirement assets.

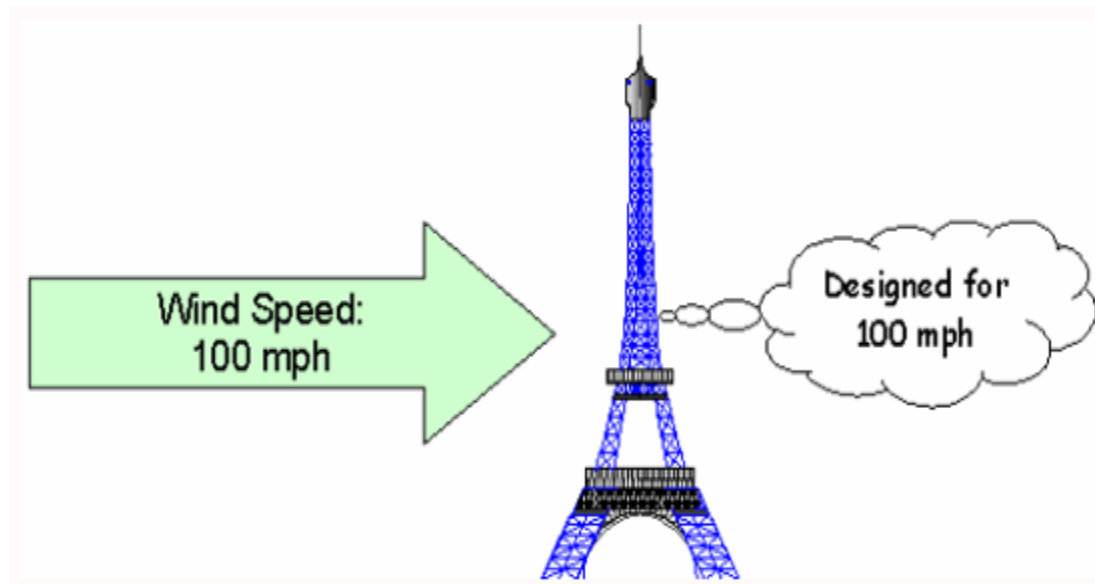
Just imagine for a moment that the average wind speed in Paris is 6 mph. Now, imagine they designed the Eiffel Tower to withstand that speed, because "that is the wind speed most of the time."



What happens when a hurricane hits? It will likely collapse:



In engineering, we do not design for the average. We design for the worst—and then some. Similarly, when I design a retirement plan, I make sure that it covers the worst-case scenario. While I fully agree with those who say that past events will not be repeated in the future, knowing that a plan can cover the worst of the past gives me more confidence in its robustness for the future.



## Methodology

In this analysis, we use only pure market history starting in 1900 and ending at the end of 2010. We call this "aftcasting"—as opposed to forecasting. We avoid using man-made simulators of any kind, generally known as [Monte Carlo simulators](#).

Aftcasting displays the outcome of all historical asset values of all portfolios since 1900 on the same chart as if a scenario started in each one of the years between 1900 and 2000. It gives a bird's-eye view of all outcomes. It provides the success and failure statistics with exact historical accuracy—as opposed to man-made simulation models—because it includes the actual historical equity performance, inflation rate, and interest rate, as well as the actual historical sequencing of all these data sets.

Let's look at some bucket scenarios.

## Three single-bucket scenarios

### Scenario 1: Buy and hold (base scenario)

Bob and Jane, both 65, are just retiring. In their investment portfolio, they have \$1 million in a mix of 50% equities and 50% fixed income/cash. As the equity proxy, we use the Dow Jones Industrial Average (DJIA) total return (index plus dividends) less 2% for portfolio expenses, fees, and other costs.

On the fixed-income side, we use the historical six-month CD rate plus 0.5% yield premium, net after expenses. This approximates a bond ladder with about a five- to six-year average maturity, held until maturity (no capital gains/losses).

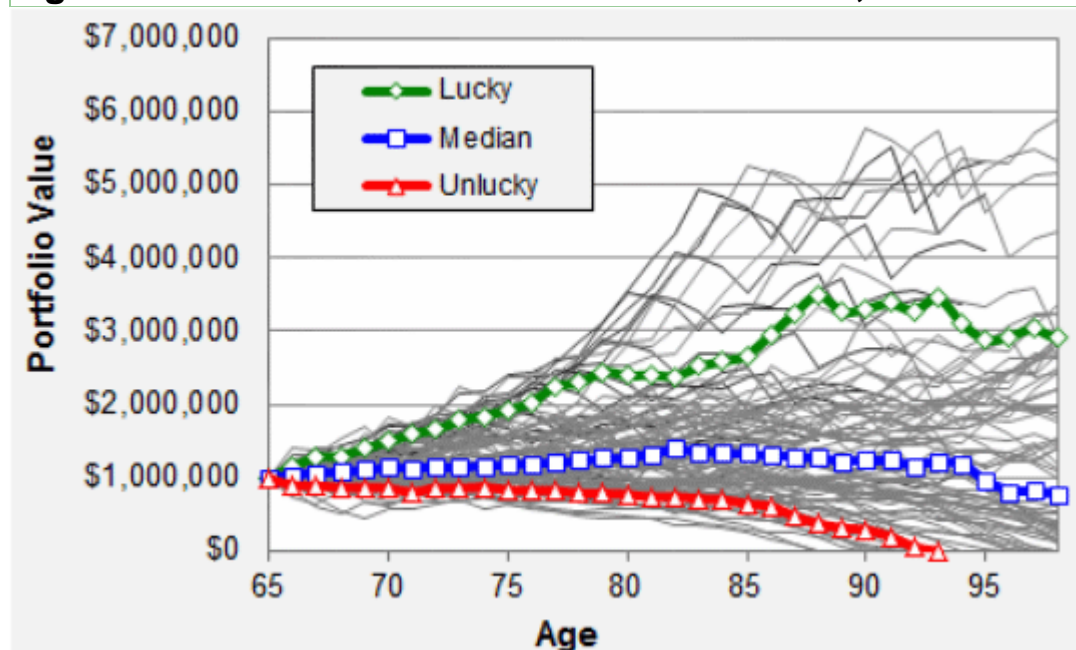
Bob and Jane plan on withdrawing \$45,000 annually, indexed to the CPI, for an initial

withdrawal rate of 4.5%, a number that William Bengen, the originator of the [4% rule](#), said he was comfortable with in a 2011 *Forbes* article.

Bob's primary concern is sustainability of his income stream for life. He is worried about outliving his money. He wants their assets to last until age 98. The probability of one of them living beyond that age is about 7%, which pretty well covers the longevity risk.

Figure 1 shows the aftcast of asset values. On this chart, we see the thin, gray aftcast lines. There is one line starting at the left vertical axis for each year since 1900. We define the bottom decile of all outcomes as the "unlucky" outcome, as represented by the red line. The top decile is the "lucky" outcome, as represented by the green line. The blue line is the median outcome, where half of the scenarios are better and half are worse.

**Figure 1: The Aftcast of Bob and Jane's Assets, Scenario 1**

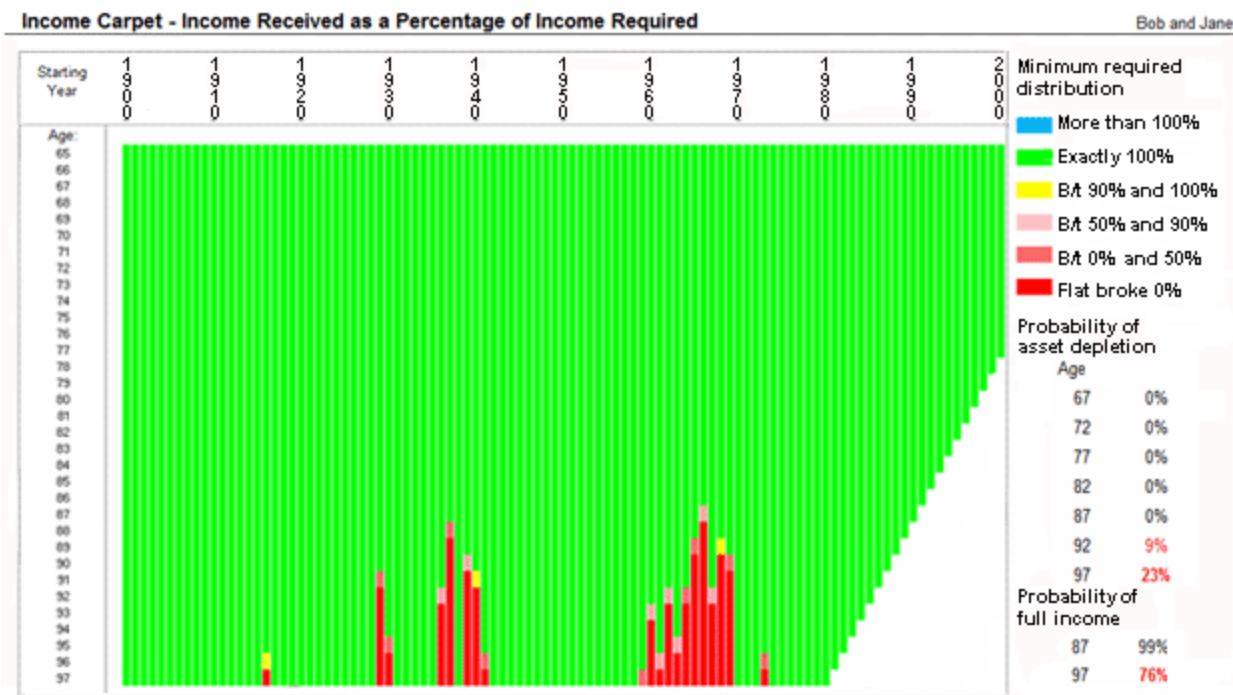


Source: Retirementoptimizer.com Inc.

While the asset chart in Figure 1 might be interesting to look at, our primary focus is on income. We show this on an income carpet (Figure 1a). The horizontal scale represents all starting years between 1900 and 2000. The vertical scale is the age.

Each "knot" of the income carpet shows the level of income received for that age at that starting year, as a percentage of total income required in real, inflation-adjusted dollars. Different colors indicate different ranges of percentages, as indicated in the legend to the right of the chart. In a nutshell, green is good, and red is bad.

**Figure 1a: Income Carpet, Scenario 1**



Source: Retirementoptimizer.com Inc.

The aftcast shows that there is a 23% chance that Bob and Jane might run out of income by age 97 based on actual market history. This does not meet our design criteria. "What?!" you might ask. "How can this happen? We have a 4.5% initial withdrawal rate as Mr. Bengen suggests, and the plan is still not adequate?"

Yes, that is correct, the plan is not adequate. The reason is simple: both the [Trinity study](#) and Bengen's study (the two significant studies on sustainable withdrawal rates) are based on calculated historical returns. They simply equated historical returns to what one can safely withdraw.

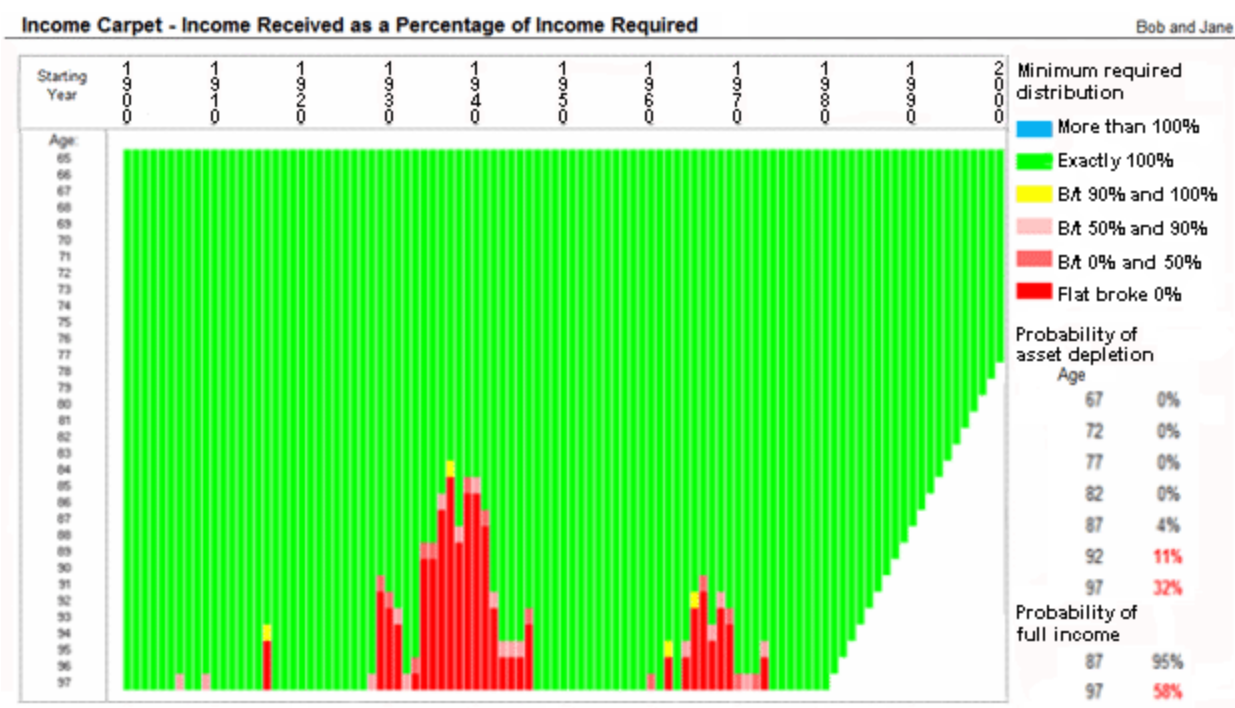
However, there is another layer in between. Portfolio management costs, advisor fees, trading costs, and all other expenses make the famous [4% rule](#) a little too optimistic. In our aftcast, we include these costs for more realistic results. Also keep in mind; the 4% rule applies to 30 years of withdrawals and here we have 32 years.

## Scenario 2: The age/equity formula

This scenario is a variation on the buy-and-hold strategy of Scenario 1. Instead of holding 50% equity in the portfolio for the rest of their lives, Bob and Jane hold a percentage of equity that is equal to 100 less their age. For example, at age 65, they have 35% equity and the remaining 65% is in fixed income/cash. At age 80, they have 20% equity, and so on.

With that scenario, we observe that the probability of depletion at age 97 is 32%—worse than our base scenario.

**Figure 2: Income Carpet, Scenario 2**



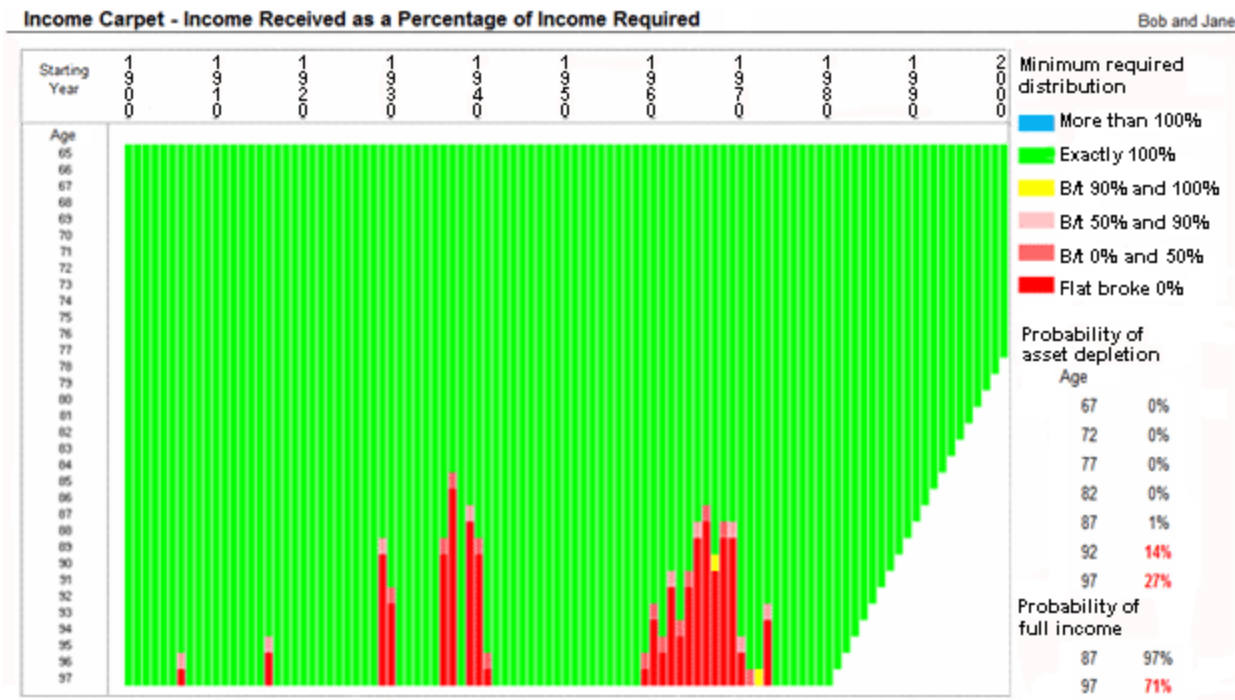
Source: Retirementoptimizer.com Inc.

**Scenario 3: Five-year asset dedication**

This is the same as the Scenario 1, except we have a new rule about asset allocation. Bob and Jane's asset mix is still 50% equities and 50% fixed income/cash. However, we never allow the fixed-income/cash portion of the portfolio to hold less than five years of income.

What does the aftcast say? The probability of depletion at age 97 is 27%, worse than our base scenario.

**Figure 3: Income Carpet, Scenario 3**



Source: Retirementoptimizer.com Inc.

## Multiple buckets

In scenarios 1 through 3, we analyzed one single bucket. For a true bucket strategy to be in place, you need more than one bucket.

Most strategies divide assets into different buckets at the beginning of retirement. Usually the first bucket is the most conservative, cash only. The last bucket is the most aggressive. The withdrawals are taken from the first bucket until it depletes. Once it is depleted, withdrawals are taken from the next bucket until that one depletes, and so on.

There are two types of buckets. The first kind is dynamic. With the dynamic buckets, the money can flow from one bucket to another, usually from a bucket with a more aggressive portfolio to a bucket that holds cash. The second type is static—no money flows between buckets.

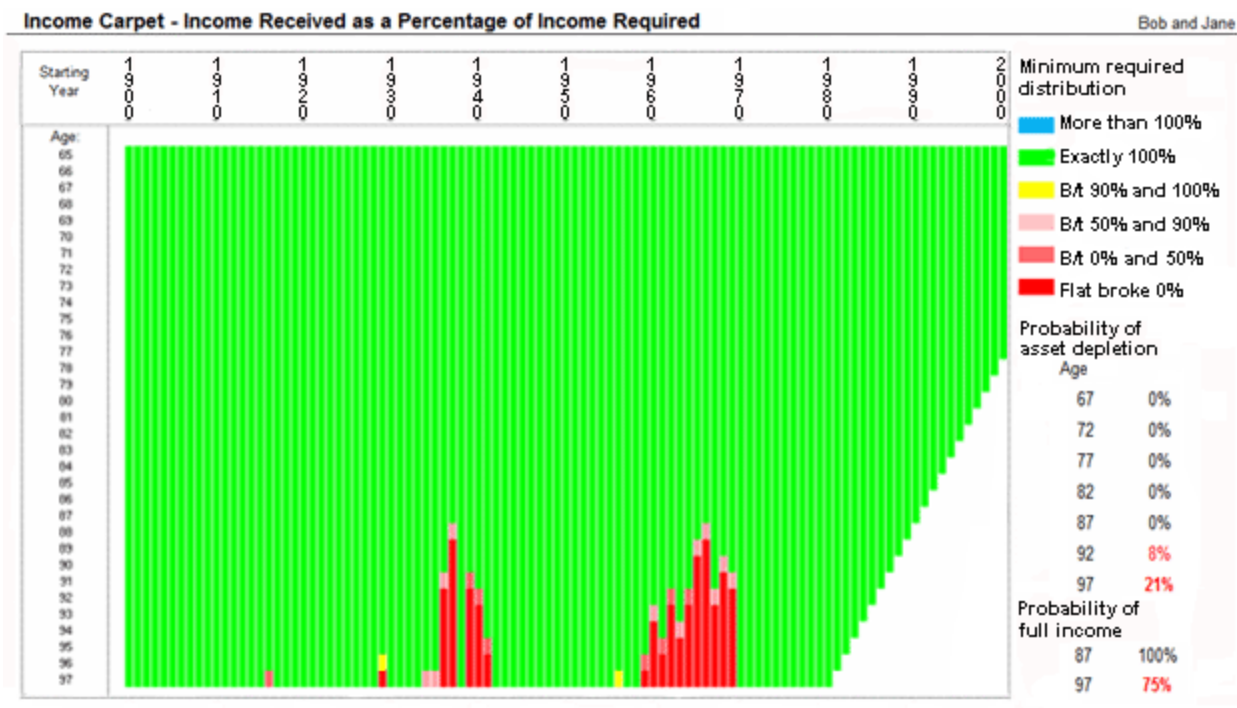
### Scenario 4: Static two-bucket strategy

Let's look at a simple, static two-bucket strategy. The first bucket holds five years of income, \$225,000 in cash and CDs. The second bucket holds the remaining \$775,000 with an asset mix of 50/50.

The income carpet is depicted in Figure 4. The probability of depletion at age 97 is 21%, slightly better than our base scenario, but in practice, the improvement is insignificant.

**Figure 4: Income Carpet, Scenario 4**





Source: Retirementoptimizer.com Inc.

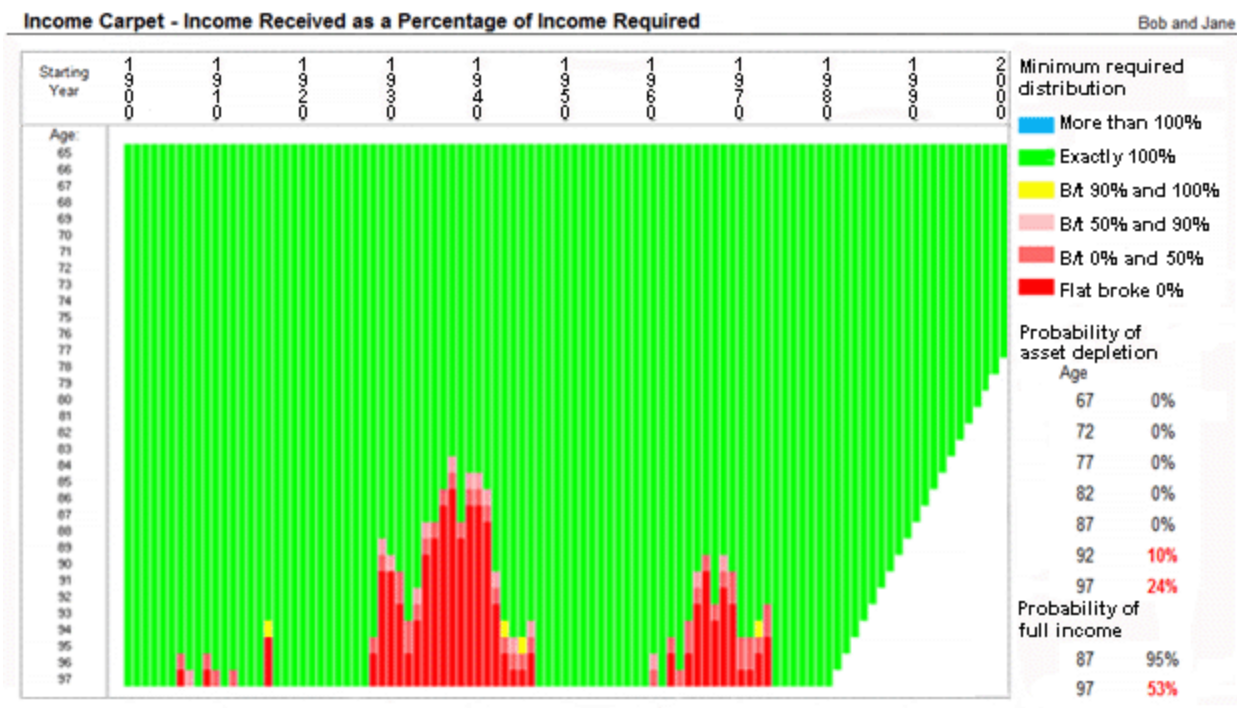
### Scenario 5: Dynamic two-bucket strategy

This is the same as Scenario 4 with the following exception: in any given year, if the equity portion of the Bucket 2 portfolio grows by more than 8%, we take that growth and add it to the cash bucket. So the buckets are dynamic.

The income carpet is depicted in Figure 5. The probability of depletion at age 97 is 24%, slightly worse than the standard buy-and-hold.

**Figure 5: Income Carpet, Scenario 5**





Source: Retirementoptimizer.com Inc.

### Scenario 6: Static three-bucket strategy

This scenario has three buckets. Bucket 1 holds five years of income, Bucket 2 holds an asset mix of 30% equity and 70% fixed income, and Bucket 3 holds 70% equity and 30% fixed income. There is \$225,000 in Bucket 1, and \$387,500 in each of buckets 2 and 3. All buckets are static, so we deplete Bucket 1 first, Bucket 2 second, and Bucket 3 last, with no money flows between the buckets.

The income carpet for this scenario is depicted in Figure 6. The probability of depletion at age 97 is 22%, almost the same as our base scenario.

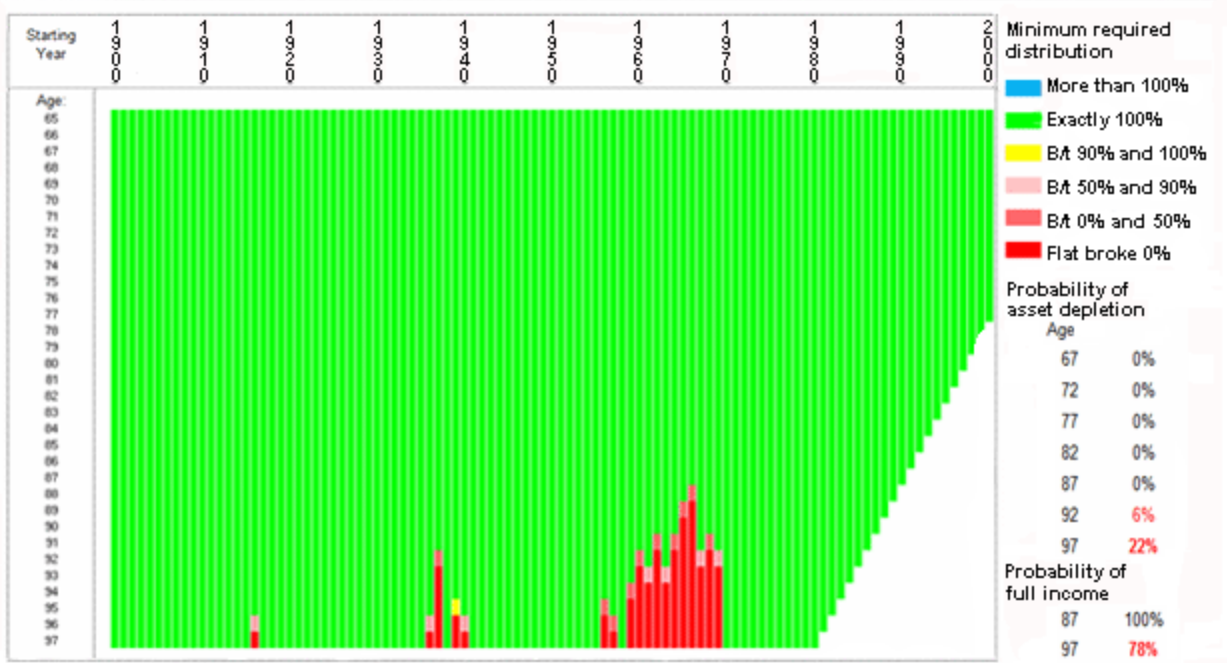
In the article where I first discovered this approach, the author defended his bucket strategy by writing that "systematic withdrawals lack the structure of a bucket strategy." Yes, this is certainly a correct statement. But the key question is not whether a strategy has structure or not. The key question is "Which strategy can provide a lifelong income?"

The numbers prove that this particular bucket strategy does not achieve that objective for this scenario.

**Figure 6: Income Carpet, Scenario 6**

**Income Carpet - Income Received as a Percentage of Income Required**

Bob and Jane



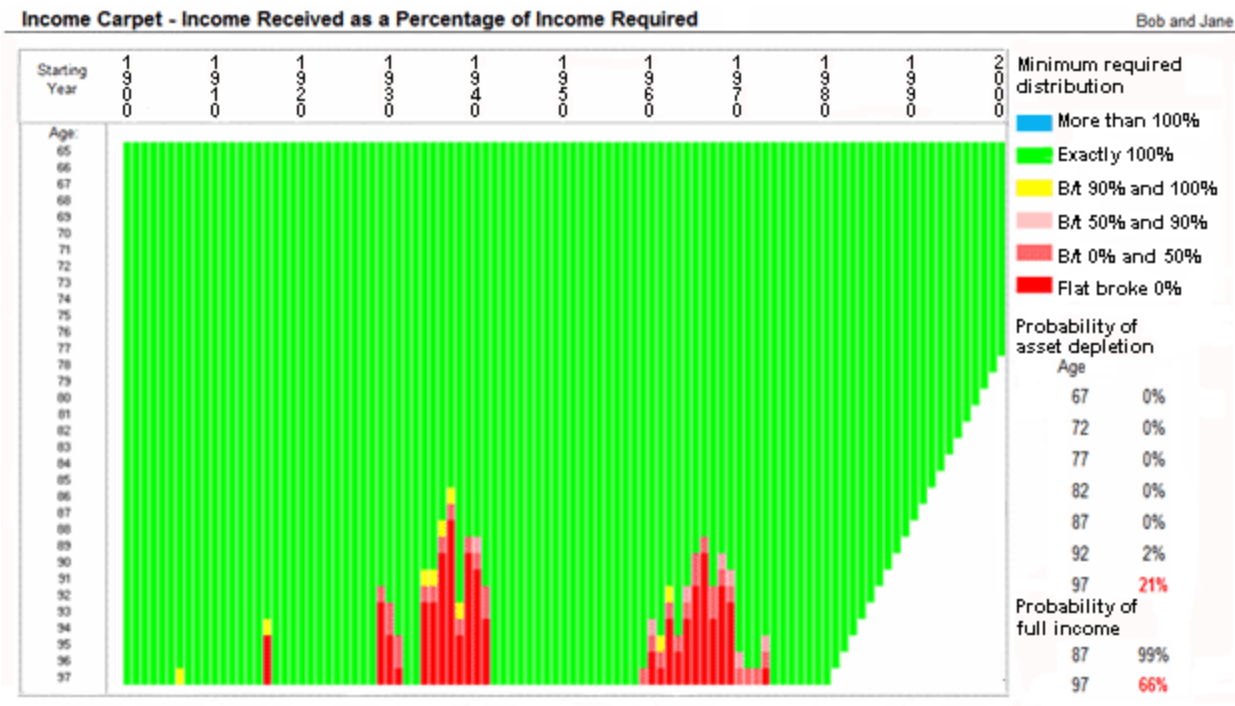
Source: Retirementoptimizer.com Inc.

### Scenario 7: Dynamic three-bucket strategy

This is the same as Scenario 6 except the buckets are dynamic. In any year, if the equity portion of the portfolio in buckets 2 and 3 grows by more than 8%, we take half of that growth and add that to the cash bucket.

The probability of depletion at age 97 is 21%, not much different from our base scenario.

**Figure 7: Income Carpet, Scenario 7**



Source: Retirementoptimizer.com Inc.

### Scenario 8: Static six-bucket strategy

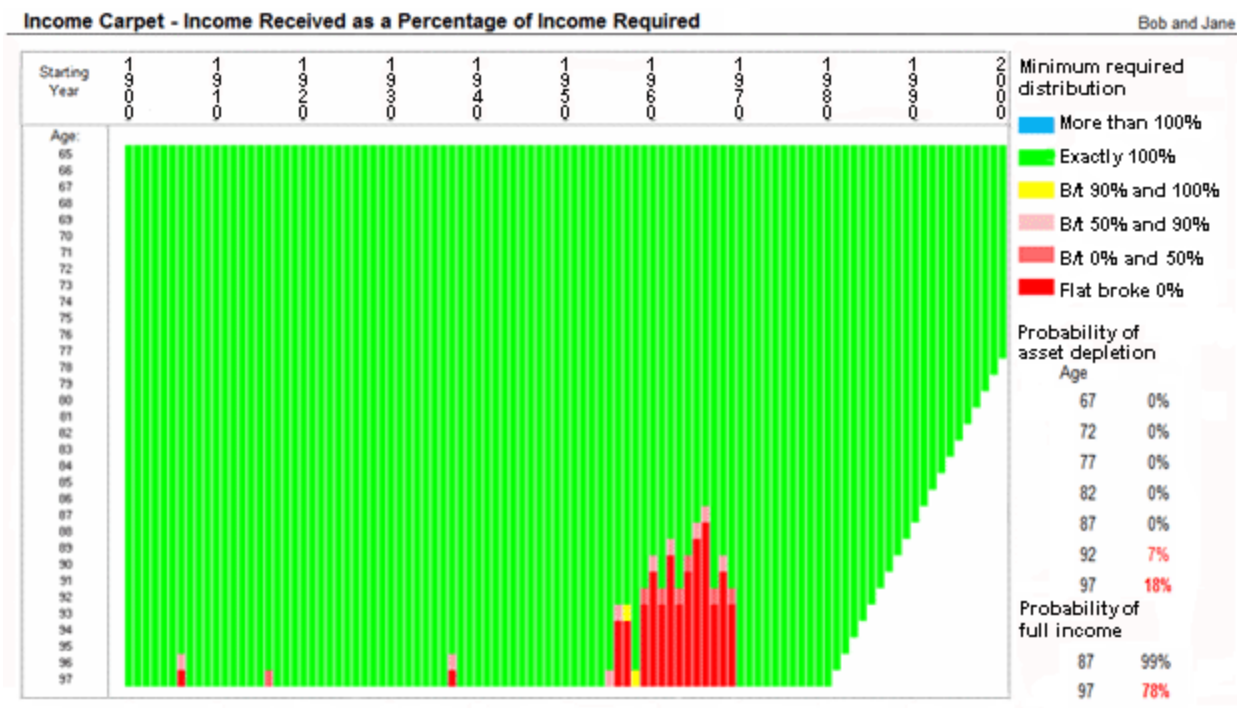
This is the most complicated bucket strategy that I have come across. It has six buckets! Bucket 1 is the cash bucket. It's the most conservative and first in line for income. Bucket 6 is the most aggressive and is to be used last.

Bucket 1 holds five years' worth of income: \$225,000 in CDs. Bucket 2 has \$200,000 invested in conventional bonds. Bucket 3 has \$175,000 invested in a 50/50 asset mix. Bucket 4 has \$150,000 invested in a 60/40 asset mix. Bucket 5 has \$135,000 with an 80/20 asset mix. Bucket 6 has \$115,000, all in equity. All buckets are static.

Wow, I get dizzy looking at all these buckets. It is so complicated that I would probably fall for it head first, if I didn't have a degree in engineering.

The outcome: the probability of depletion at age 97 is 18%, slightly better than our base scenario, but still unable to provide a lifelong income to Bob and Jane in all market extremes.

**Figure 8: Income Carpet, Scenario 8**



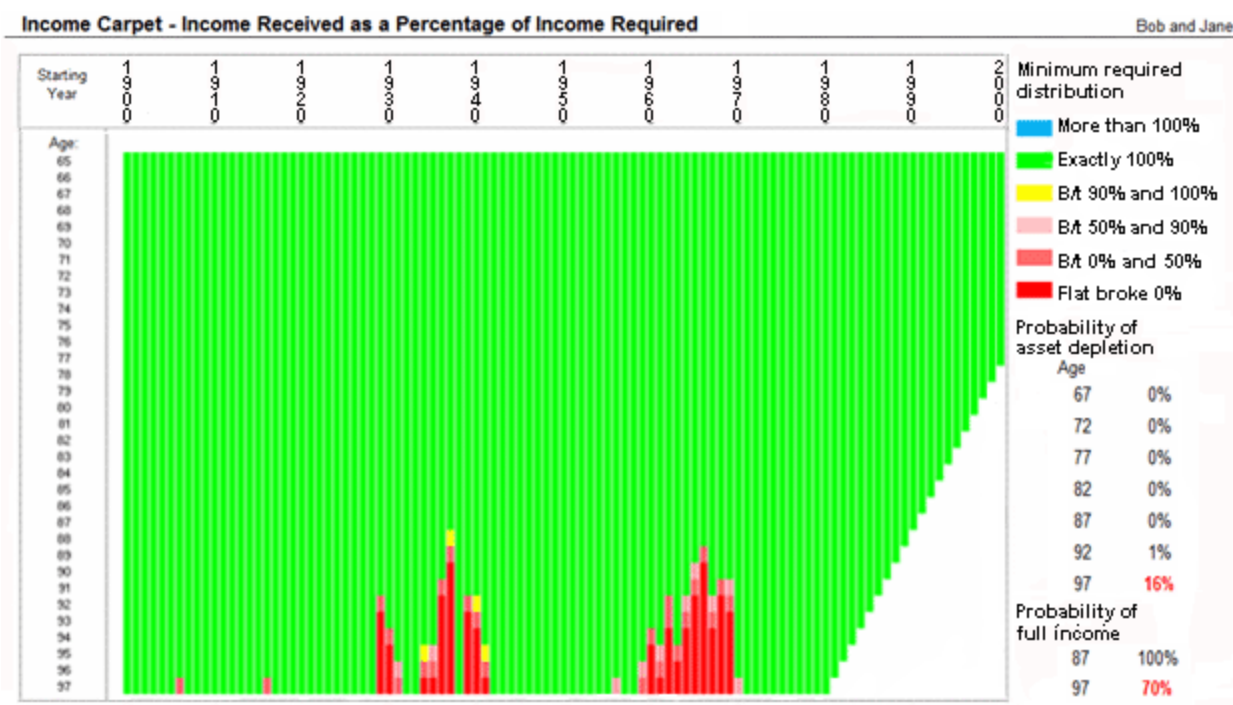
Source: Retirementoptimizer.com Inc.

### Scenario 9: Dynamic six-bucket strategy

This is the same as Scenario 8, except the buckets are dynamic. Each year, if equities in any bucket grow by more than 8%, we take one half of that growth and add it to the cash bucket.

The probability of depletion at age 97 is 16%, somewhat better than our base scenario.

**Figure 9: Income Carpet, Scenario 9**



Source: Retirementoptimizer.com Inc.

## Scenario 10: Dynamic age-collars buckets

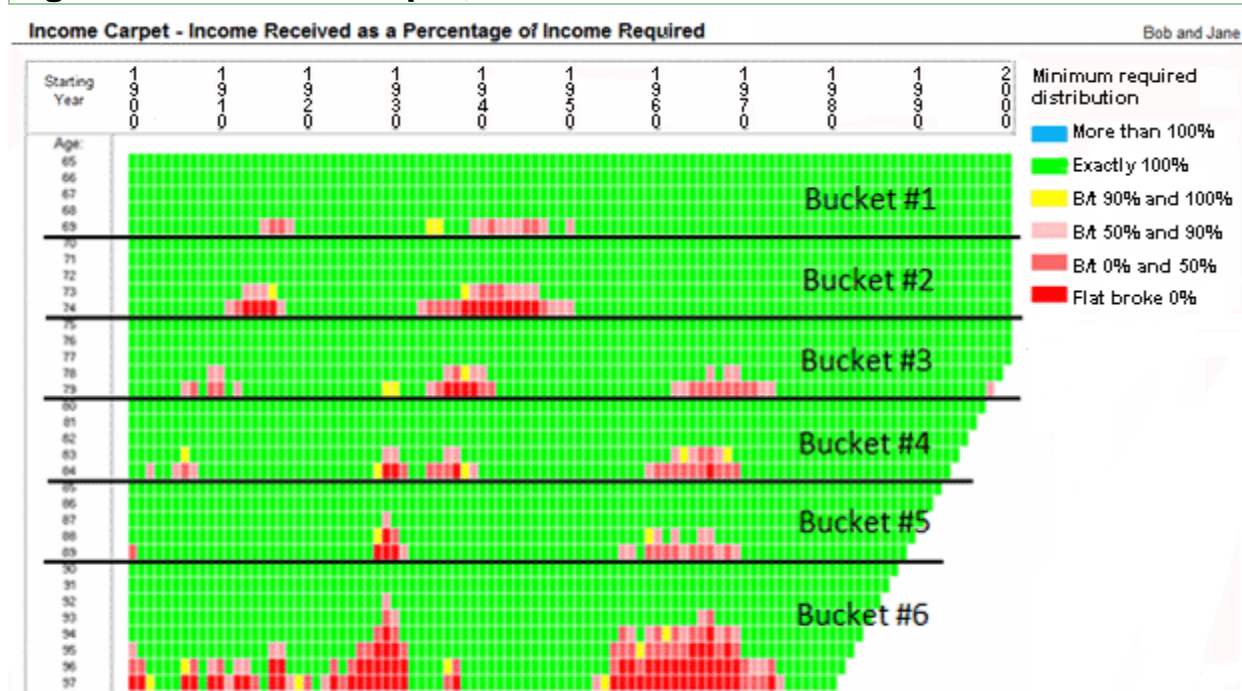
According to advocates for the six-bucket strategy, each bucket should provide income for a five-year interval. For example, Bucket 1 is supposed to provide income between ages 65 and 69 (inclusive), Bucket 2 between ages 70 and 74, and so on. I wanted to test this claim as part of my due diligence on bucket strategies.

Scenario 10 is identical to Scenario 9, with one exception: each bucket has age collars for withdrawals, so withdrawals can be made only between the specific ages for that bucket. All buckets are still dynamic: each year, if equities in any bucket grow by more than 8%, we take one half of that growth and add it to the cash bucket for that particular asset.

Can each bucket provide five years' worth of income as claimed? We observe on the income carpet (Figure 10) that in many instances, the non-green pixels indicate little or no income in the fifth year of each bucket. In some cases we see this shortfall appearing even in the fourth year.

Therefore, the claim that each bucket should be able to provide five years of income is incongruent with our historical observation.

In reality, the retiree will take this shortfall from the next bucket. Then he will eventually end up with the similar outcomes as in Scenario 8 or 9. Neither of these scenarios provided lifelong income in all extremes; therefore, they fail the design criteria outlined.

**Figure 10: Income Carpet, Scenario 10**

Source: Retirementoptimizer.com Inc.

## A simpler explanation

If all these scenarios and aftscasts confuse you, you are not alone. Here is a simpler analogy that we can all probably relate to.

Picture this: You and three of your buddies are playing poker. Everyone is hungry, and you order a large pizza. When the pizza comes, you notice that it's not sliced. You start to cut it in the classic pie-slice pattern:



But one of your buddies stops you and suggests, "If we cut slices lengthwise, we can each have more pizza to eat—like this:"





Which pattern of cuts fills you up more? Of course, it makes no difference. The pizza does not get larger just because you slice it this way or that.

The same goes for retirement assets and bucket strategies. For a given total asset size, once you exceed the sustainable withdrawal rate, it does not matter how many buckets you divide these assets into. The probability of running out of money will remain just about the same. No amount of buckets can create miracles. The luck factor overwhelms any of the potential benefits of the time segmentation that the bucket strategy might provide. The only reliable way of having lifelong income is through [pooling the risk](#) by means of annuities.

One of the assumptions with the bucket strategy is that if you delay withdrawals from the equity-laden buckets for as long as you can, it will eventually grow and provide a sufficient asset base for withdrawals. This is not always true.

There were three secular bullish trends during the last century, occupying about 43 years in total. According to our aftcasts, after the two-thirds mark of a typical secular bull market, it is almost always better to draw down income from the more aggressive equity buckets. That way, you ring the cash register while the going is hot, minimize money left on the table, and reduce the eventual risk of adverse [sequence of returns](#).

This strategy also reduces the eventual portfolio volatility and negative effects of reverse-dollar-cost-averaging when the bear market eventually arrives. You would also be preserving your fixed-income holdings for the eventual joyride on the yield curve when the Federal Reserve reduces interest rates after the equity market correction. Luckily, you don't need any convoluted bucket strategies or sophisticated market timing for that. A single bucket with proper asset allocation and occasional [rebalancing](#) will accomplish all of these objectives just as well.

And what if your client's withdrawals are below sustainable? We define this as the [green zone](#). Here, you don't need any complicated strategies or any annuities—almost anything will work.



## Conclusion

History clearly shows that the bucket strategies discussed in this article do not provide a noticeable improvement over the basic single-bucket [withdrawal strategy](#). To add insult to injury, many of these strategies require higher withdrawal rates than the 4.5% we used in our analysis.

Just like the many retirement plans that we handed out to our clients in the 1990s promoting high average growth rates, many advisors are setting themselves up for the next batch of failed plans for a whole new cohort of clients. While bucket strategies make for a better story to tell clients and appear to be sophisticated, always be aware that they do not add perceivable longevity to retirement withdrawals.

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