

Baking a Withdrawal Plan 'Layer Cake' for Your Retirement Clients

by William P. Bengen, CFP®

Executive Summary

- In determining an appropriate withdrawal rate for a client, the planner must address "special situations" that can enhance or reduce the withdrawal rate. It's helpful to think of these special situations as layers in a cake. This paper, using three examples, shows how to "bake" such a cake.
- The foundation of the cake is the withdrawal scheme. Four possible withdrawal schemes are presented: (1) maintaining the same lifestyle throughout retirement, (2) declining discretionary spending, (3) performance-based withdrawals, and (4) annuity-like withdrawals.
- Four fundamental assumptions must be addressed that affect the withdrawal scheme chosen: the tax status of the portfolio, the client's time horizon, the asset allocation, and rebalancing. Additional enhancements or detractors from the basic withdrawal scheme include "success rates" based on historical returns, rebalancing intervals, and the desire to leave or not leave a legacy.
- Based on commonly accepted factors, the base withdrawal rate is 4.15 percent.
- A layer cake is built for a "moderate" client who chooses the lifestyle withdrawal scheme, along with factors such as a 94 percent success rate, the inclusion of small-company stocks, and less frequent rebalancing that boost his withdrawal rate to 5.1 percent.
- The "conservative" client wants to leave a legacy and assumes a longer than 30-year lifespan, reducing her withdrawal rate to 4 percent.
- The "aggressive" client assumes a shorter than 30-year lifespan, a performance-based withdrawal approach, and other factors that boost his withdrawal rate to 7.6 percent.

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In my new book, [Conserving Client Portfolios in Retirement](#),¹ I present a series of "special situations" that can enhance or reduce your client's retirement portfolio withdrawal rate. I have found it helpful to think of these special situations as layers in a cake, with the cake representing the client's overall retirement withdrawal plan. In this paper, I present an approach to "baking" such a cake for your client, by evaluating the applicability of each such layer to his or her unique needs. I illustrate my approach by developing withdrawal plans for three hypothetical clients.

To begin, I identify below the essential ingredients of our "recipe" for a withdrawal plan:

1. Withdrawal scheme (foundation layer)
2. Asset allocation
3. Success rate
4. Rebalancing interval
5. Superinvestor?
6. Desire to leave a legacy
7. Time horizon

The withdrawal scheme is the most important layer of the cake: it contributes by far the largest fraction of the final withdrawal rate. A withdrawal scheme is simply a statement of how each year's fundamental dollar withdrawal is computed. I have identified four primary withdrawal schemes:

Lifestyle scheme. The client seeks to maintain the same lifestyle throughout retirement. The first year's withdrawal is computed as an arbitrary percentage of the first year's beginning portfolio value. This dollar withdrawal amount is then augmented each year by an inflation adjustment, so that over time the real value of the client's dollar withdrawals remains constant.

Life-phase scheme. The client views retirement as consisting of several phases of gradually declining discretionary expenses, and therefore seeks to front-load withdrawals during the earliest phase of retirement. The real value of withdrawals declines during retirement via a pre-determined schedule.

Performance-based scheme. Each year's dollar withdrawal is computed as a percentage of each year's beginning portfolio value. As a result, the client's dollar withdrawals will increase from the prior year if the portfolio value has increased; conversely, dollar withdrawals decrease for years in which the portfolio value declines. As a consequence, both the real and nominal values of dollar withdrawals during retirement are unpredictable. Although such a scheme can significantly augment a client's dollar withdrawals during a stock bull market, it can have disastrous consequences during a secular bear market. A variation of this scheme employs a "floor" and a "ceiling" to the real value of the client's annual dollar withdrawal, which limits the fluctuation in the withdrawal amount.

Annuity-like scheme. The first year's dollar withdrawal is chosen by some arbitrary measure, and is then maintained at that level throughout retirement. Thus, the nominal value of the client's dollar withdrawals remains the same during retirement; the real value will fluctuate unpredictably. This scheme is identical in concept to a fixed immediate annuity. As an example, using my methodology,² I computed an initial withdrawal rate of almost exactly 5 percent for this scheme, assuming a 30-year time horizon, a tax-advantaged portfolio allocated 40 percent to large-company stocks (LCS), 20 percent to small-company stocks (SCS), and 40 percent to intermediate-term government bonds (ITGB), and a 100 percent success rate. Thus, if one can obtain a fixed immediate annuity with a first-year payout over 5 percent, it may make sense to choose the annuity over withdrawals from a managed portfolio. Of course, in exchange, the client must be willing to give up access to the portfolio principal.

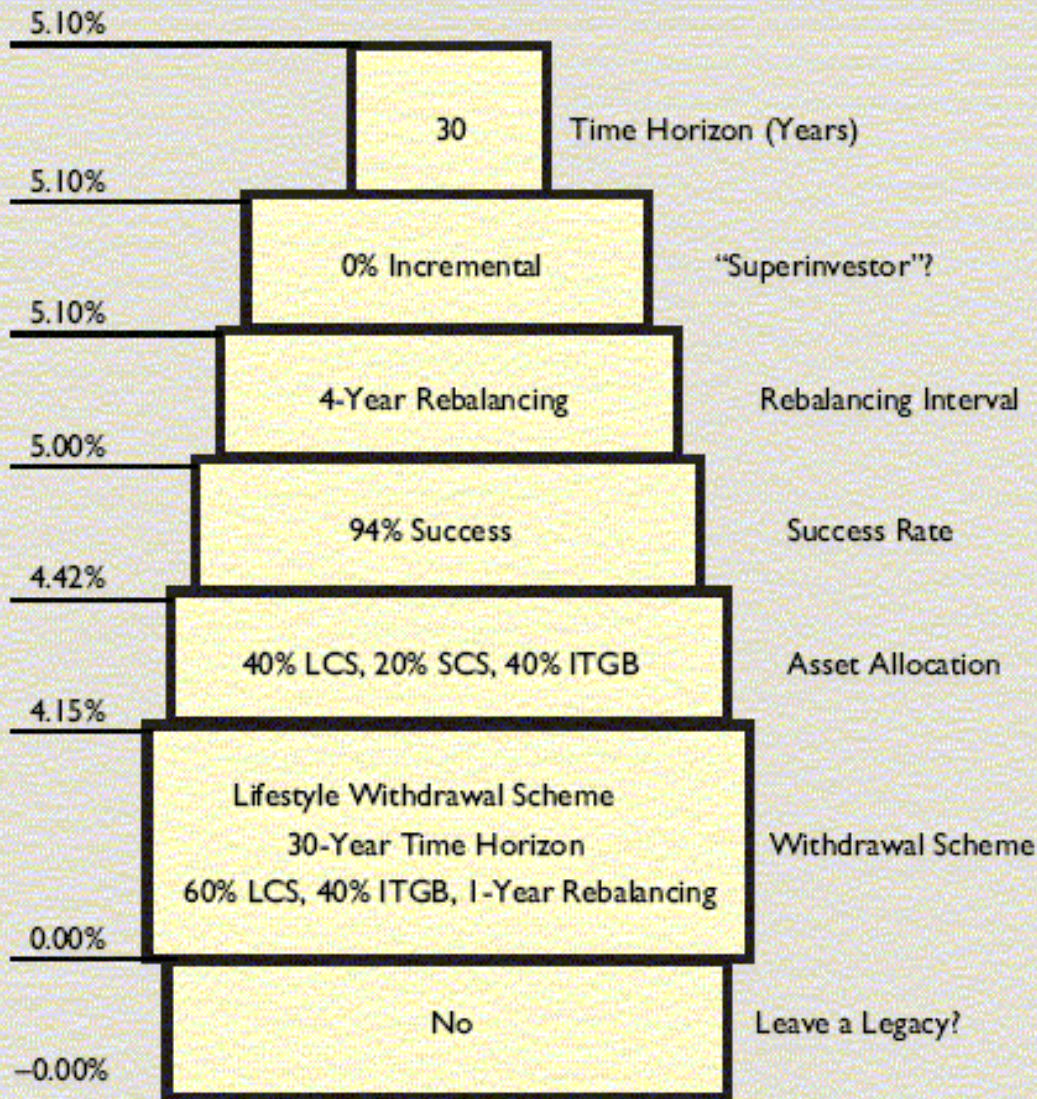
Let's examine how the "Layer Cake" concept can be applied to a particular client's situation.

Layer Cake for a 'Moderate' Client

In this context, *moderate* means a client who is willing to take moderate risks to increase his or her dollar withdrawals during retirement. I define moderate risk arbitrarily as accepting a probability of failure of the withdrawal plan of more than 5 percent but not more than 20 percent.

Figure 1 depicts the Layer Cake for a hypothetical moderate client. The contribution to the final withdrawal rate made by each layer appears, cumulatively, on the left side of the figure. Layers that reduce the withdrawal rate appear at the bottom of the cake, below the foundation layer. Let's examine each layer of the cake.

Figure 1: The Withdrawal Plan 'Layer Cake': Moderate Client (Tax-Advantaged Portfolio) Net Initial Withdrawal Rate: 5.1%



Withdrawal scheme. The second layer from the bottom is the "foundation layer," or withdrawal scheme. After consultation with his advisor, this client has chosen a Lifestyle withdrawal scheme, which provides a constant real value for withdrawals during retirement, adjusting the dollar withdrawal for inflation each year.

There are four fundamental assumptions associated with a withdrawal scheme that must be defined before an initial withdrawal rate can be computed. The first is the tax status of the portfolio. In this case (as in all other examples in this article), the portfolio is tax-advantaged—that is, either tax-deferred or tax-free. The second crucial element is the time horizon, which the client has selected as 30 years. This time horizon includes approximately 95 percent of all clients who retire at age 65. The asset allocation, the third factor, is 60 percent large-company stocks and 40 percent intermediate-term government bonds (no small-company stocks employed in this layer). Finally, rebalancing of the portfolio to the specified allocation is assumed at the end of each year.

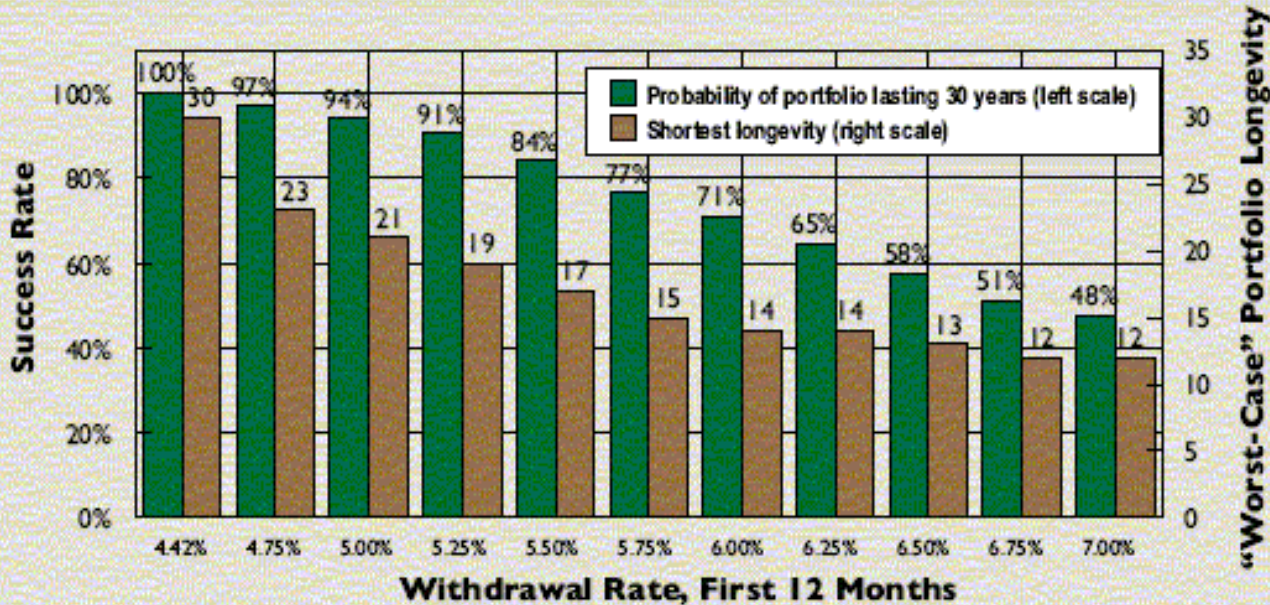
These four assumptions result in an initial withdrawal rate of 4.15 percent (of the portfolio value at the beginning of the first year). Per my methodology, an adjustment is made to the dollar withdrawal (made at the very end of the year) for inflation experienced during the year. For example, given a portfolio with a beginning value of \$1

million, and a Consumer Price Index of 3 percent for the year, the dollar withdrawal for the first year will be \$1 million x .0415 x 1.03 = \$42,745. Subsequent dollar withdrawals will be determined solely by adjusting this figure for inflation experienced each year.

Asset allocation. The introduction of small-company stocks can significantly enhance the withdrawal rate.³ This client, on the recommendation of his advisor, has elected to replace 20 percent of the allocation to large-company stocks in his portfolios with small-company stocks. This increases the initial withdrawal rate from 4.15 percent to 4.42 percent (see left side of Figure 1). Initial withdrawal rates as high as 4.58 percent could have been produced by completely replacing large-company stocks with small-company stocks, but this client was not comfortable with the level of volatility implied by such an allocation.

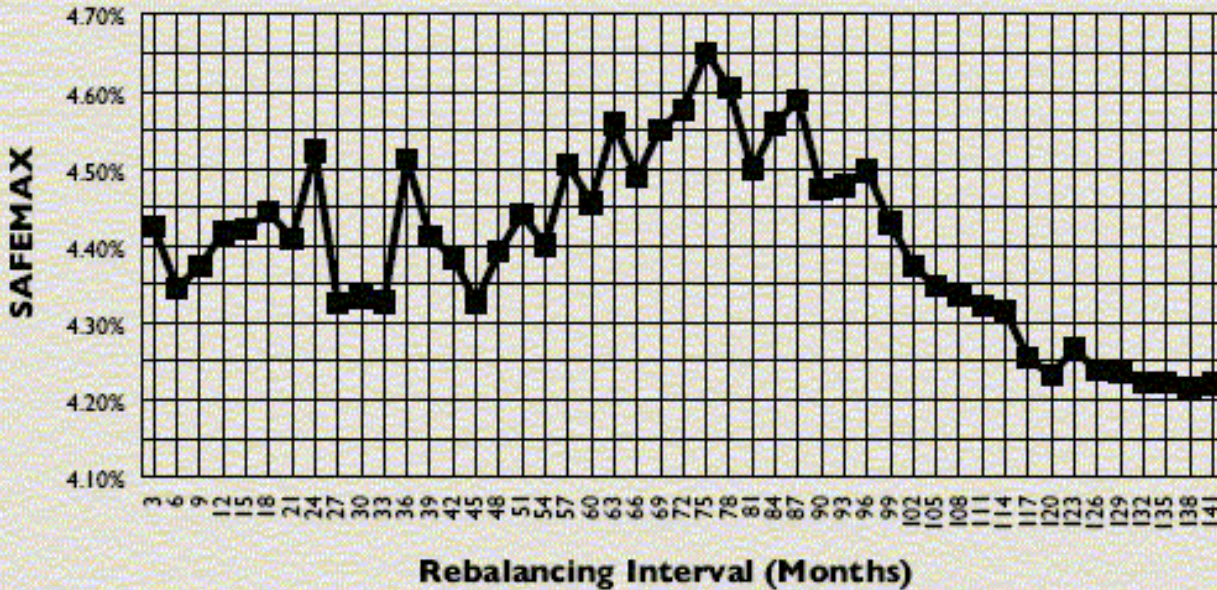
Success rate. This metric refers to the probability that the withdrawal scheme, as defined by the two layers immediately beneath it, will succeed, based on historical precedent. As shown in Figure 2, an initial withdrawal rate of 5 percent has been successful, historically, about 94 percent of the time. This was an acceptable success rate to the client, as it permitted a substantial increase in his initial withdrawal rate (from 4.42 percent to 5 percent). The converse metric, the failure rate, is only 6 percent, which falls within the definition of moderate risk.

Figure 2: Success Rate for 30-Year Portfolio Longevity
Tax-Advantaged Portfolio, 40% LCS, 20% SCS,
40% ITGB, Quarterly Retirement



Rebalancing interval. The foundation withdrawal scheme assumes rebalancing of the portfolio once a year, at the end of every year. An increase of almost a quarter-percentage-point in the withdrawal rate is afforded by increasing the rebalancing interval to 75 months, as shown in Figure 3. But longer rebalancing intervals imply possibly significant departures from the initial asset allocation and greater portfolio volatility. As a result, this client elected a rebalancing interval of 57 months, which still adds an increment of 0.10 percent to the withdrawal rate, but provides for somewhat lower volatility.

Figure 3: SAFEMAX Versus Rebalancing Interval
Tax-Advantaged, 40% LCS, 20% SCS, 40% ITGB,
30-Year Longevity, Lifestyle Withdrawal Scheme



Note that the term SAFEMAX in Figure 3, and in the remainder of this article, represents the highest initial withdrawal rate (or maximum "safe" withdrawal rate) for which all 200 test portfolios meet the required conditions. In the case of Figure 3, the primary condition is that, at the end of 30 years, all test portfolios have a terminal portfolio value greater than, or equal to, zero.

"Superinvestor." This term refers to the advisor's ability to consistently earn investment returns that significantly exceed historical precedent for a given asset class.⁴ The withdrawal scheme, our foundation layer, assumes that the investor will earn investment returns in each asset class that just match historical precedent. This client was satisfied with historical returns, which suggests a passive or indexed investment strategy. As a result, this layer had no effect on the withdrawal rate accumulated from lower layers.

Time horizon. This client was satisfied with the 30-year time horizon implicit in the foundation layer, so this layer did not affect his withdrawal rate.

Leave a legacy? This client was not concerned with leaving a legacy, so this factor did not affect his choice of withdrawal rate. For another client, we shall see how providing for a legacy will reduce the initial withdrawal rate, which is why this layer is depicted at the bottom of the cake, below the so-called foundation layer. Clearly, this is not a cake you would care to assemble in your kitchen!

Summing it up for the moderate client:

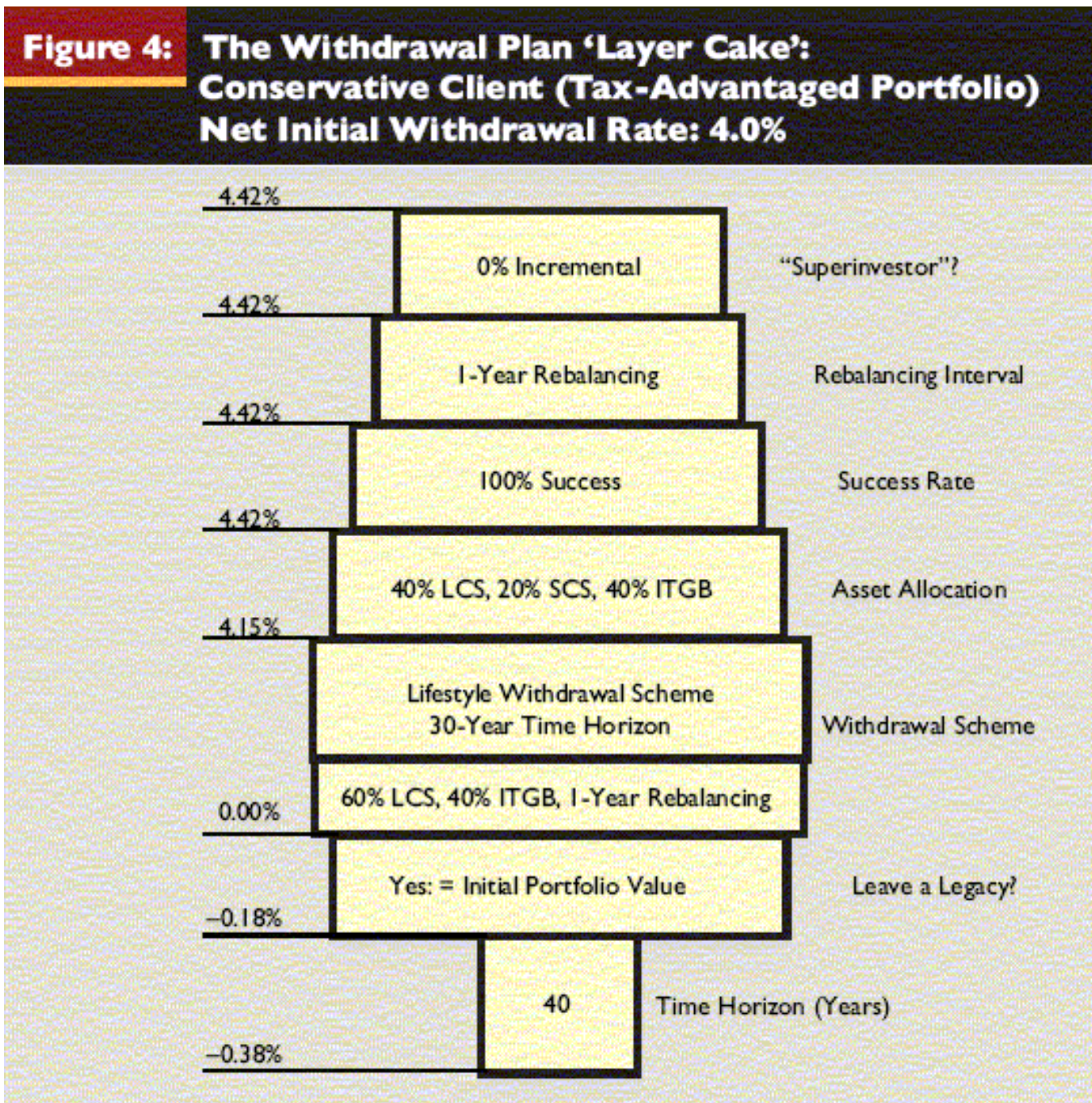
Foundation layer withdrawal rate	4.15%
Additions to withdrawal rate	+0.95%
Deductions from withdrawal rate	- 0.00%

Aggregated withdrawal rate	5.1%

Layer Cake for a 'Conservative' Client

The term *conservative* in this context means a client willing to take very little risk to increase his or her dollar withdrawals during retirement. I arbitrarily define very little risk as accepting a probability of failure of the withdrawal plan of no more than 5 percent.

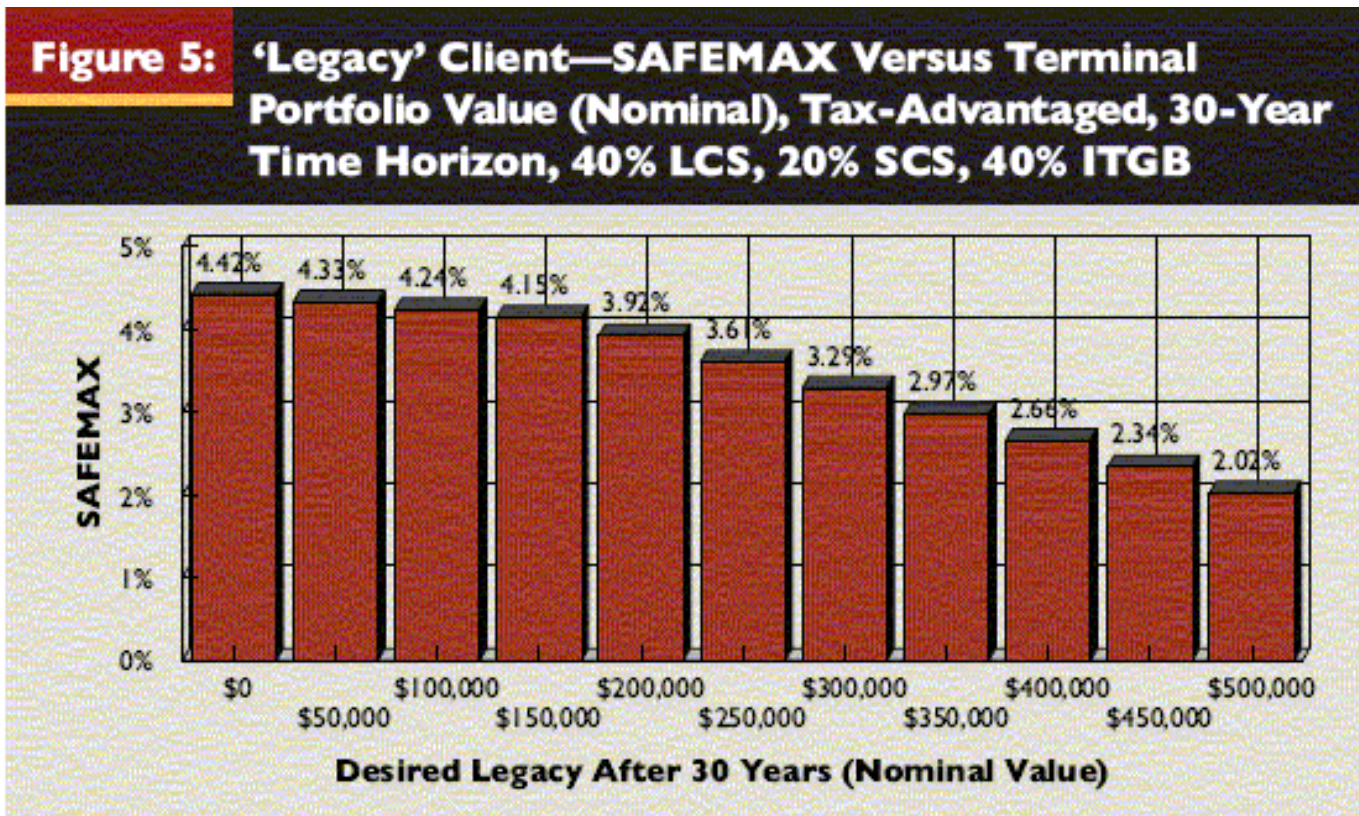
Figure 4 depicts the Layer Cake for a hypothetical conservative client. This client elects the same withdrawal scheme as the moderate client, resulting in a withdrawal rate of 4.42 percent. But unlike the moderate client, this client eschews all enhancements to the withdrawal rate that might be provided by higher layers, so there is no need to review them for this client. Instead, all the "action" in Figure 4 is concentrated in the two layers below the foundation layer.



Leave a legacy? For the purposes of this paper, a legacy is defined as the nominal value of the portfolio at the end of the time horizon. This client wants to leave a legacy at least equal to the beginning value of her portfolio. She recognizes that inflation might substantially reduce the purchasing power of that legacy, but since inflation is

very difficult to predict, she is content with her decision.

Figure 5 depicts the relationship between SAFEMAX and terminal nominal portfolio value for a 30-year time horizon. Assuming this client began with a \$100,000 portfolio, a 4.24 percent initial withdrawal rate will produce a "guaranteed" (by historical precedent) \$100,000 minimum portfolio value after 30 years. That value could, of course, be much higher. The 4.24 percent withdrawal rate constitutes a penalty of -0.18 percent, as shown in Figure 4.



Time horizon. This client has a history of long-lived forebears, so she elects to increase the time horizon from 30 years to 40 years. SAFEMAX, of course, declines with increasing time horizon.⁵ Accordingly, the initial withdrawal rate must be reduced by an additional 0.2 percent. The layer for "Time Horizon" appears below the foundation layer for this client in Figure 4, as it represents a deduction in the overall withdrawal rate.

Summing it up for the conservative client:

Foundation layer withdrawal rate 4.15%
 Additions to withdrawal rate + 0.27%
 Deductions from withdrawal rate - 0.38%

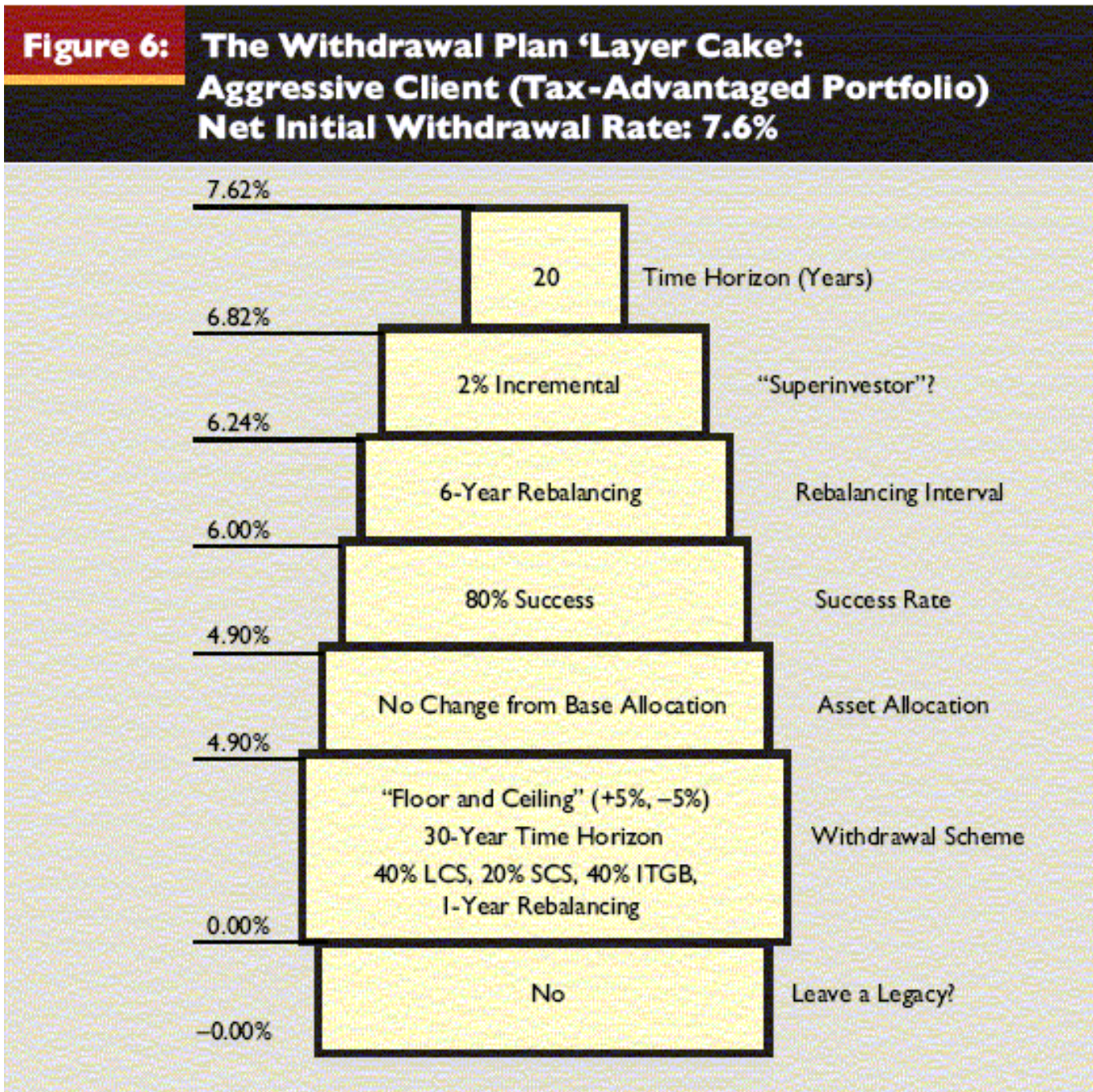
Aggregated withdrawal rate 4.0%

Layer Cake for an 'Aggressive' Client

Aggressive in this context means a client willing to take considerable risk to increase his or her dollar withdrawals during retirement. I arbitrarily define considerable risk as accepting a probability of failure of the withdrawal plan of more than 20 percent.

Figure 6 depicts the Layer Cake for a hypothetical aggressive client. This client does not tolerate any deductions

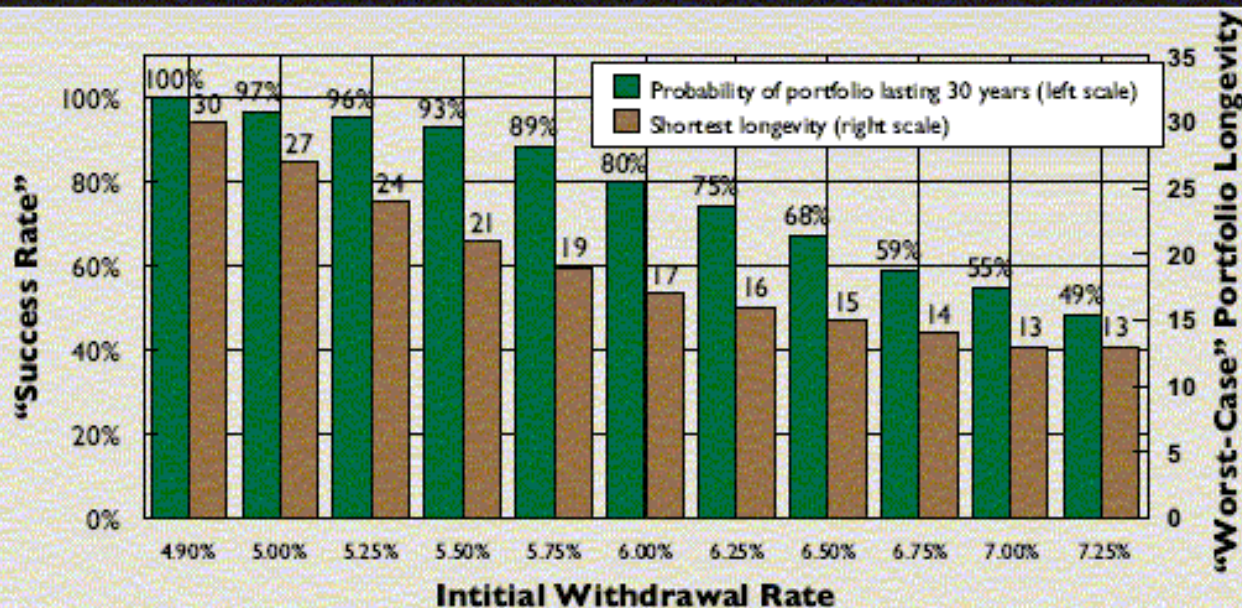
from his withdrawal rate—he wants to maximize his lifestyle! Thus, our focus is on the foundation layer and the layers above it.



Withdrawal scheme. After consulting his advisor, this client has chosen a performance-based withdrawal scheme, for which withdrawals are computed each year as a fixed percentage of the portfolio value at the start of each year. Because he does not want his lifestyle to fluctuate wildly with market gyrations, he elects to limit the real value of his dollar withdrawals to no more than 5 percent above their first-year value, and no more than 5 percent below their first-year value. I believe that this "floor and ceiling" (F&C) approach represents the best withdrawal scheme for all but the most conservative clients, as it generates a sizeable increase in the withdrawal rate at the price of small incremental risk.

The success rates for this F&C withdrawal scheme (assuming a 30-year time horizon) are depicted in Figure 7, for a variety of initial withdrawal rates. Initially, we choose the SAFEMAX of 4.90 percent, which is almost .05 percent higher than the SAFEMAX for the Lifestyle withdrawal scheme.

Figure 7: Success Rate for +5%/-5% F&C Method, Tax-Advantaged Portfolio, 30-Year Time Horizon, 40% LCS, 20% SCS, 40% ITGB



Asset allocation. Although a 100 percent commitment to small-company stocks would have increased the withdrawal rate, the client elected not to accept that level of volatility. Given the choices he makes below, this seems advisable.

Success rate. This client examined Figure 7 and decided that an 80 percent success rate for his withdrawal scheme was adequate for his purposes. As you can tell from Figure 7, this provides for a withdrawal rate of 6 percent, a sizeable increase. Since the corresponding failure rate is fully 20 percent, it is important for the advisor to explain to the client that in the event of a major bear market early in retirement, Draconian measures may be required to salvage his withdrawal plan. This client listened to this advice, and, being a congenial optimist, only smiled confidently.

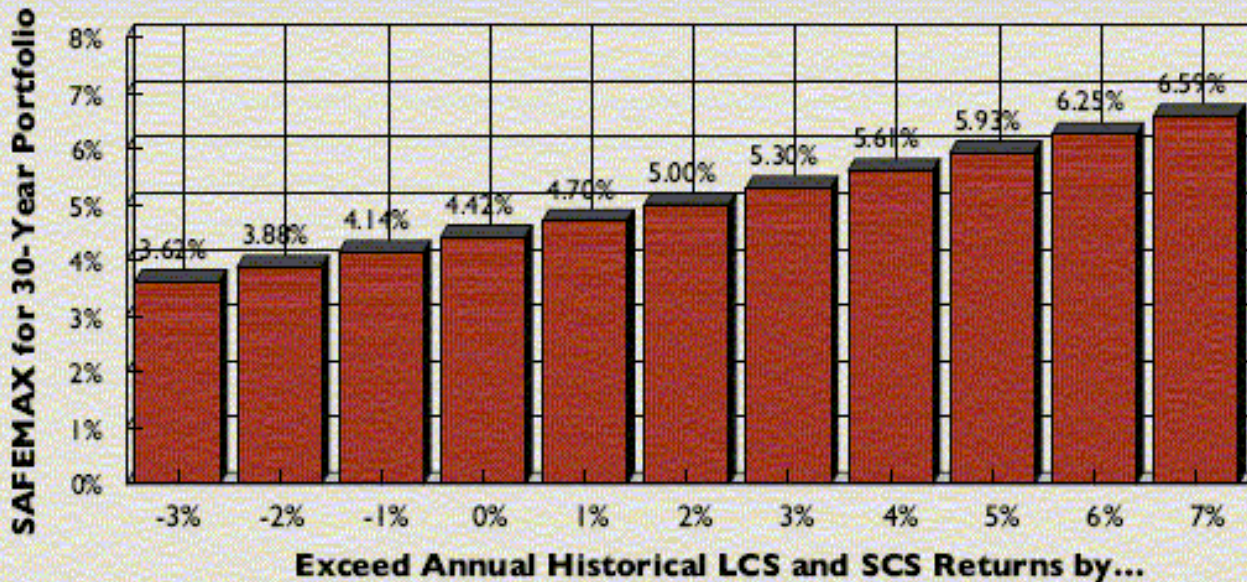
Rebalancing interval. The client was interested in using the rebalancing interval of 75 months, which adds an additional 0.24 percent to the withdrawal rate for 12-month rebalancing (see Figure 3). The advisor explained that although this approach theoretically does not entail any additional risk, in certain circumstances equities could temporarily rise from 60 percent to almost 90 percent of the portfolio allocation, as has happened in the past. This could represent a significant increase in volatility.

The client was not perturbed by these concerns, and ultimately decided on the 75-month rebalancing period.

Superinvestor. This particular client located an advisor who actively managed portfolios, and whose track record indicated she could add more than 2 percentage points to the annual returns of equities.

Figure 8 displays the relationship between SAFEMAX and equity returns. An advisor who used index funds exclusively for all the asset classes in the portfolio would presumably achieve 0 percent incremental returns, for which the SAFEMAX is the familiar 4.42 percent. An advisor who actively managed portfolios and exceeded the returns of large-company stocks and small-company stocks by two full percentage points each and every year (a hypothetical construct, of course) would add .58 percent to the withdrawal rate for the Lifestyle withdrawal scheme.

Figure 8: SAFEMAX for 'Superinvestor' and 'Subinvestor' Tax-Advantaged, 30-Year Longevity, 40% LCS, 20% SCS, 40% ITGB



Even though this client is using the F&C scheme, my experience in this research indicates that using the same .58 percent increment will give a reasonably accurate approximation, without having to create a separate Superinvestor chart for the F&C scheme. Thus, our aggressive investor assumes his advisor's investment skill will add approximately 0.6 percent to his initial withdrawal rate.

Time horizon. This client has a family history of poor longevity, and he personally indulges in behaviors that tend not to encourage long life. His philosophy is that he expects to enjoy life to its fullest, but does not expect that enjoyment to last a long time. Therefore, even though only 58 years old, this client has opted for a time horizon of only 20 years.

Applying our principle of approximate symmetry for different withdrawal schemes, the reduced time horizon adds 0.8 percent to the already bloated withdrawal rate. Note that for this client, unlike for the conservative client, time horizon sits atop the cake, not at the bottom, as it enhances the withdrawal rate.

Leave a legacy? No. This client lives only for himself, not for heirs. He says he would not be upset if he died just after having spent his last penny. The advisor, of course, is compelled to point out that such precision in planning should not be anticipated.

Summing it up for the aggressive client:

Foundation layer withdrawal rate	4.90%
Additions to withdrawal rate	+ 2.72%
Deductions from withdrawal rate	- 0.00%

Aggregated withdrawal rate **7.6%**

This client is the poker equivalent of being "all in."

Conclusions

Table 1 summarizes the results of the above analysis for our three hypothetical clients. Obviously, there is a wide disparity in the initial withdrawal rates we developed for each of them. Yet each client made rational choices based on the factors they considered most important to them, and the risks they were willing to assume.

Retiree	Initial Withdrawal Rate
Conservative	4.0%
Moderate	5.1%
Aggressive	7.6%

The role of the advisor in this process, of course, is providing the client with objective guidance based on knowledge of the past. As always, we must advise our clients that such knowledge is both a strength and a weakness. We can be certain of the past, but we can only speculate on the future, which may differ considerably from the past. Thus, the risks of any withdrawal plan can be only approximately assessed. Any attempt to project a high degree of precision in these calculations promises more than any professional can reasonably expect to deliver to his or her clients.

Endnotes

1. [Conserving Client Portfolios in Retirement](#), William P. Bengen, Denver, CO: FPA Press, 2006.
2. My methodology is explained in my book, as well as in my earlier papers in the *Journal of Financial Planning*. Essentially, it involves a stochastic reconstruction of the investment and inflation experience of 200 hypothetical investors who retired on the first day of each quarter from January 1, 1926, through October 1, 1975. The *Ibbotson Yearbook* (SBBI) is the source of all data on investment returns and inflation.
3. For more explanation on this subject, see [Conserving Client Portfolios in Retirement](#), Figure 3C.
4. An entire chapter in [Conserving Client Portfolios in Retirement](#) is devoted to the risks and rewards of active investing with regard to withdrawals.
5. For more exploration of this decline, see [Conserving Client Portfolios in Retirement](#), Table 4.1.