



## A Response to “Odds on Imperfection: Monte Carlo Simulation”

By David B. Loeper, CIMA®, CIMC®  
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*Advisor Perspectives welcomes guest contributions. The views presented here do not necessarily represent those of Advisor Perspectives.*

*The following is in response to Eleanor Laise’s article, [Odds-On Imperfection: Monte Carlo Simulation](#), which appeared in the Wall Street Journal on May 2.*



Dear Ms. Laise:

Thank you for your recent article on how Monte Carlo Simulation is being misused within the financial services industry. As Chairman and CEO of Financeware, Inc., the leading vendor of such tools with tens of thousands of financial advisors as customers serving hundreds of thousands of investors, I appreciate your shedding light on the misrepresentations made by many in the financial services industry with these tools. From erroneous capital market assumption inputs causing garbage outputs, to fat tailed black swans curiously missing from the analysis, you picked up on several of the problems many within the financial services industry have highlighted with this mathematical modeling method.

Unfortunately, you missed the biggest misuse and played right into the hands of an industry focused not on the investor’s wealth but instead on their own.

Our industry suffers from a conflict of interest, perpetuated by your article, which results in scaring people into needlessly sacrificing their lifestyle, only to die on a death bed stuffed with money they could have spent. Unethical product vendors use the “odds of success” and “failure” to scare investors into maximizing how much they have in their portfolios (so they can collect more in fees) at the price of the investor spending as little as possible (sacrificing their lifestyle). Investors are pushed to take needless portfolio risks through excessively aggressive portfolio allocations to compensate for overly conservative assumptions, scary fat tails, or targeting *too high* a confidence level.

In reality, the result simulated IS NOT the “odds of success” as those you interviewed would like you to believe, but instead, the *odds of excess*.



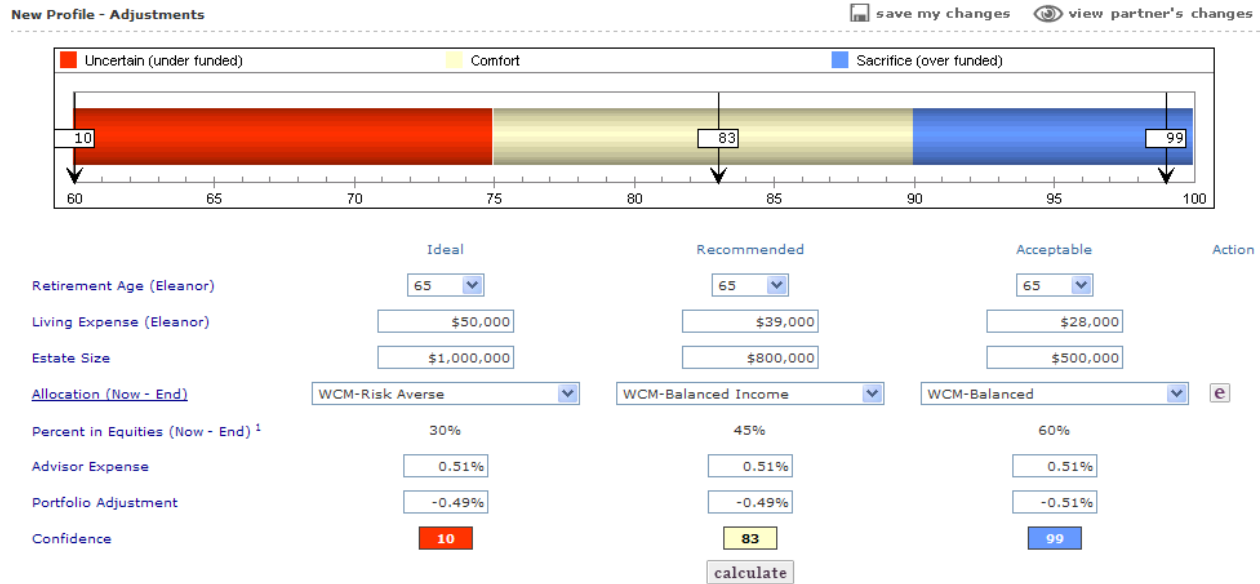
Likewise, the “odds of failure” assumes that regardless of what happens in the markets, NOTHING in the plan will ever change. A 12% portfolio decline could easily cause a drop in confidence level from 82% to 67%. Why should the focus be on last year’s confidence number or the original date of the analysis? Monte Carlo analysis is only useful if it is used on a continuous basis as a guide to know WHEN you should change your plan. For most people, even with simulations run at relatively high confidence levels, the odds are usually near 1 in 1,000 that the markets will be so well-behaved that they will avoid becoming over-or under-funded at some time over the course of their life. Think about the simple mathematical reality of this. **If it is possible to spend too much or have too little money, it must also be possible to spend too little or have too much money for a particular set of goals.** If you can be underfunded, it must also be possible to be overfunded.

The product vendors in financial services prey on an investor’s fears by forcing fatter tails into the analysis to scare the investor into a “prudent choice to save as much as you can now and live below your means.” *The industry emerges successful* at the price of *people needlessly sacrificing their lifestyles*. If you make the tails fat enough and target a confidence level high enough, you can force an answer out of the simulation engine for people to save all of their money and spend none of it. How’s that for success?!

Unlike some of the vendors you interviewed, our well-reasoned assumptions indeed anticipated the markets of last year (see [Financial Crisis or Anticipated Risk – Will the Dow Drop Below 2500?](#)). Also, unlike many of our competitors, we actually manage portfolios that match what is being modeled and put in writing to both advisors and our clients that we are a fiduciary to them. More importantly though, we don’t just measure a start and end date and assume nothing ever changes. We actually show clients that the odds are high that the markets will misbehave over the next year, three years and five years, causing them to be over- or underfunded.



Here is a simple sample client scenario at the end of 2007:

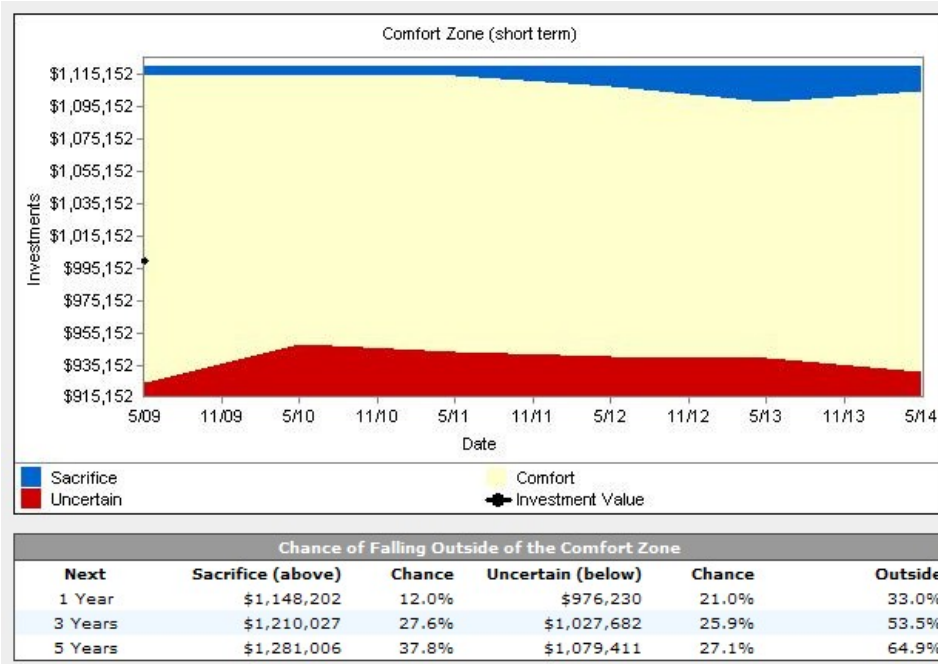


<sup>1</sup> Percent in Equities is calculated on the first allocation of the active time period (ie. Tax Status "All" or "Taxable").

A very high confidence level is possible by taking more risk with 60% equity exposure, limiting the spending to \$28,000 a year, and targeting an estate value of \$500,000. In 2008, our low cost indexed balanced portfolio with 60% in equities would have declined by 18%. A year later, the plan's confidence level would have declined from 99% to 98%. From a historical perspective, despite the 18% decline, the plan would still exceed these needlessly conservative goals if the Crash of 1929 and ensuing Great Depression started next month. The investor is left with a 90% chance of leaving TWICE the targeted estate goal and a 50% chance of leaving an estate that is three times what they are targeting.

Your article focused on encouraging this kind of sacrifice, which our discipline would purposely avoid.

Depending on the client's goals and priorities, we may have recommended a portfolio with less risk (our indexed balanced income portfolio was down around 12% in 2008), allowing the client to spend \$11,000 a year more and target an \$800,000 estate. With this recommendation we would have also warned the client of the risk of becoming underfunded AND overfunded and the portfolio values that would trigger a change to the plan. Becoming underfunded isn't a crisis if you are prepared for it and know what choices you would make to respond to it. The comfort zone chart and the table below shows the likelihood that the markets will misbehave, and the portfolio values that serve as an early warning system indicating that a change to the plan and new recommendation is needed.



A year later, following the events of 2008, our balanced income portfolio declined 12% and we would have offered new advice. Depending on the investor's priorities of spending, estate value and the desire to avoid investment risk, any of the three choices below (all with 83% confidence after the 2008 decline) might be recommended.

	<u>1 YEAR LATER</u>	<u>1 YEAR LATER #2</u>	<u>1 YEAR LATER #3</u>
<b>Retirement Age</b>			
Eleanor	Retired	Retired	Retired
<b>Retirement Need</b>			
Eleanor	\$33,000	\$39,000	\$37,500
<b>Target End Value</b>			
Today's Dollars	\$800,000	\$575,000	\$800,000
Actual Dollars	\$2,000,064	\$1,437,546	\$2,000,064
<b>Default Inflation Rate</b>	3%	3%	3%
<b>Investment Adjustment</b>	-1.00%	-1.00%	-1.00%
<b>Median Return</b>	7.63%	7.63%	8.60%
<b>Risk</b>			
Std. Deviation*	9.04%	9.04%	11.59%
Downside (95%-tile)**	-6.18%	-6.18%	-8.76%
*Standard deviation is a risk statistic used to measure the amount of volatility of the return observations around the portfolio's average return.			
**Downside represents the one year 95th percentile return. 95% of all one year returns simulated are better than this return and 5% are worse.			

Of course, the markets in 2009 might repeat the devastating markets of 2008. We always assume that uncertainty is present. But our use of Monte Carlo simulation in our



patent pending Wealthcare advice process does not coerce people into needlessly sacrificing their lifestyles. If the market downturn of 2008 was repeated for the next three years, we would ultimately get to that acceptable scenario with \$28,000 in spending, a \$500,000 estate and a balanced portfolio with 60% equities. There is a chance of four straight years like 2008, but is it really wise to sacrifice 28% of your spending and take 28% more investment risk to “be successful” if 2008 is repeated for four straight years?

The industry encourages people to sacrifice their lifestyles and take their maximum tolerance for investment risk, regardless of whether it is necessary or wise. Just think of how much money they would all have to invest!

Using Monte Carlo simulation in the manner we do enables people to make the most of their lives with comfort and confidence. Isn't this what the *Wall Street Journal* would suggest? Or, should investors live their lives planning on four straight 2008s?

Sincerely,

David B. Loeper, CIMA®, CIMC®  
Chairman & CEO  
Finaceware, Inc.

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