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Retirement Methodology: MoneyBall or Monte Carlo?

A new look at the client experience

EXECUTIVE SUMMARY

In the early 2000s, the Oakland Athletics baseball team made a bold change to their scouting practices. Their goals were to improve their team by identifying undervalued players using statistical measures over traditional subjective analysis. This journey was well documented in Michael Lewis' book, ***Moneyball: The Art of Winning an Unfair Game***.

Similarly, as much as Monte Carlo analysis has evolved as a workable planning approach, its singular focus on probabilities of success and failure often ignores clients' perception of a retirement plan's success.

Looking beyond these probabilities—based on worries about losing money or not having enough to live on—and delivering strategies based on big-picture thinking may help you hit the ball out of the park in retirement planning.

Applying a moneyball approach to financial planning yields interesting insights

- Similar to a batting average in baseball, where success is defined by getting a hit, Monte Carlo analysis of retirement is defined by the ratio of success (having enough money) to failure (not having enough money). However, this one measure doesn't necessarily tell the whole story.
- When retirement planning emphasizes statistically based outcomes, there is a disconnect between how clients conceptualize retirement and the outcome that traditional planning options actually provide.
- Expanding solutions beyond traditional one-dimensional models may create a better client experience.

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KEY POINTS

CALCULATIONS

Relying on a one-dimensional calculation does not assure that clients will have confidence in their retirement plan or of achieving their goals.

CLIENT CONCERNS

Typical financial-planning software doesn't provide all the answers as it often leaves out some client concerns.

SUCCESS

Analyzing the entire retirement field of play gives you and your clients the big picture that can help lead to the success of a retirement plan.

WHAT IS MONEYBALL?

The methodology behind moneyball applies advanced statistics to find a more efficient path to a desired outcome. The term entered popular culture in 2003 when Michael Lewis published ***Moneyball: The Art of Winning an Unfair Game***. The book outlines the path Oakland Athletics manager Billy Beane forged to assemble a winning team. Beane theorized that traditional measures of success in baseball, such as batting averages, stolen bases, and subjective traits, did not characterize the true value that a player could provide to a baseball club.

In a league dominated by teams that could award lucrative contracts to high-profile players, it was tough for small-market teams to compete. By using advanced statistics, Beane believed he could gain an edge over cash-heavy, large-market ball clubs and build a roster that would go toe to toe with any other team in baseball.

A TALE OF TWO PLAYERS

Two individuals with similar statistics can have a vastly different impact on a team. Let's take a moment to paint an overly simplified illustration of Beane's theory. Imagine you are the general manager of a major league team, and at the upcoming draft, you are evaluating two different left fielders to fill a roster need. Imagine that prior to the draft, you have the one-dimensional information about each player shown in the ***Traditional Tools***. Would you choose ***player A*** or ***player B***?

Merely looking at this narrow scope of statistics—the probability of either player getting a hit every time he steps into the batter's box—doesn't tell the full story. Looking beyond the players' batting averages paints a much different picture for the team. In fact, an individual player's batting average usually doesn't equate to wins for the ball club. RBIs and on-base percentages are generally more reliable statistics for predicting a team's success. Would you choose a different player if you implemented the multidimensional information shown in the ***Moneyball Tools***?

Simply put, the traditional baseball establishment previously filled their roster based on how closely an individual looked like the image of a ballplayer. But, Beane played moneyball and chose players by evaluating a variety of measurements and leveraging those that most contributed to winning games.

TRADITIONAL TOOLS

YOU CHOOSE:
Which player would you put on your team?

Player A
Healthy: 12 full seasons
Batting average: .295

Player B
Healthy: 12 full seasons
Batting average: .295

MONEYBALL TOOLS

NOW CHOOSE:
Which player would you put on your team?

Player A
Over 1200 RBIs
400 home runs
40.1 wins above replacement

Player B
Under 550 RBIs
125 home runs
17.5 wins above replacements

MONTE CARLO SIMULATION

Beane built his roster based on a robust set of statistics that were highly correlated to winning baseball games. His methodology broadened the more traditional approach by looking past established, headline-driven statistics to build winning teams. In the financial-planning industry, the established methodology for evaluating financial plans has been the Monte Carlo simulation. This approach can be a useful tool for examining the validity of a retirement plan and uses traditional financial planning inputs and randomized market returns to test how likely an individual retirement plan is to fail (i.e., the client runs out of money). It also has advantages over deterministic models (i.e., straight line) for evaluating retirement plans because the randomized trials account for sequence-of-returns risk. However, just like evaluating a player based solely on one or two statistics can paint a misleading picture of what the player can do for a baseball team, overreliance on a single data point in a financial plan can lead to a faulty retirement picture. This may be a good reason to look at retirement planning as a whole new ballgame.

A TALE OF TWO PLANS

The paradigm around the vastly different impact two players with the same batting average can have on a team also exists in financial planning. Depending on the objectives of the client and which variables are analyzed to view a certain outcome, plans with similar probabilities of success can deliver two vastly different experiences for a client.[1] Much like a batting average measures the probability that a player will get a hit each time they step up to bat, many financial-planning tools focus on the statistical likelihood that a client won't run out of money when spending to meet retirement goals. Often, financial professionals create and deliver plans that look like those in the ***Traditional Tools*** table on this page, a one-dimensional approach reflecting only the Monte Carlo success probability. However, looking beyond commonly implemented statistics to achieve success can be applied to financial planning and yield interesting results.

For example, the ***Moneyball Tools*** table shows the same probabilities of success as ***Traditional Tools***, but with a multidimensional approach that reflects the importance of supporting a client's lifestyle in retirement.

What would you recommend for your client?

Ultimately, the question becomes: What does retirement success really mean? Historically, most financial-planning software applications have focused on measuring retirement success by minimizing the likelihood of financial ruin. Remaining solvent throughout retirement is an important goal, but there is also value in plans that place a

TRADITIONAL TOOLS

YOU CHOOSE:
Which plan is best for your client?

Plan A	**85%**
Plan B	**85%**

For illustrative purposes only.

MONEYBALL TOOLS

NOW CHOOSE:
Which plan is best for your client?

Plan A Investments

85% probability of success

20% of expenses covered by guaranteed income

20 years in retirement before plan fails in extreme bear market

$3mm shortfall in extreme bear markets

Player B Investments and guaranteed income*

85% probability of success

45% of expenses covered by guaranteed income

25 years in retirement before plan fails in extreme bear market

$1.5mm shortfall in extreme bear markets

This hypothetical example is for illustrative purposes only and is not indicative of the past or future performance of any specific product.

*Any guarantees are based on the claims-paying ability of the issuing company and do not apply to the principal amount or investment performance of a variable annuity's separate account or its underlying investments.

[1] Derek Tharp, Ph.D., CFP®, CLU®, RICP®, Kitses.com, "Making Monte Carlo Results More Relevant By Finding The Right Level Of Abstraction," April 7, 2021.

priority on protection of cash flow and help minimize the magnitude of failure. Adding a level of income protection may provide a better client experience and could be a preferred option for some clients. One source of income protection may come from the purchase of an annuity with an add-on living benefit.

SHORTCOMINGS OF MONTE CARLO

While a Monte Carlo analysis can illustrate the likelihood of meeting a specific spending or bequest goal, it is not necessarily a good predictor of a client's retirement experience, especially during market volatility. Just like a batting average doesn't capture every aspect of how a player contributes to winning baseball games, the simulation can't capture every nuance of the complexities present in a retirement plan.

For example, when used in isolation, Monte Carlo doesn't tell the entire story:

- **Cash flow.** Retirees often prefer plans where the cash flow is high, considering most retirees limit their spending to their income.[2]
- **Failure.** Not all failure is created equal. The magnitude and timing of failure matter very much from a client perspective.[3]
- **Dwindling assets.** Regardless of the probability of success, clients who see assets decline for multiple years will often adjust their plans, at which point the plan has failed to meet their spending goal.
- **Methodological concerns.** Monte Carlo is limited by its reliance on a normal distribution curve and an inability to model real bankruptcy threats to retirees, such as spending shocks caused by major out-of-pocket medical expenses, divorce, or sizable home repairs.

DEFINING SUCCESS

So, what should a plan be designed to solve? What does success look like? For Billy Beane and the Oakland A's, success was winning games. Rather than landing one star on the team, each player was evaluated on an array of statistics and selected on the basis of how they could contribute a unique value to the whole to help win baseball games.

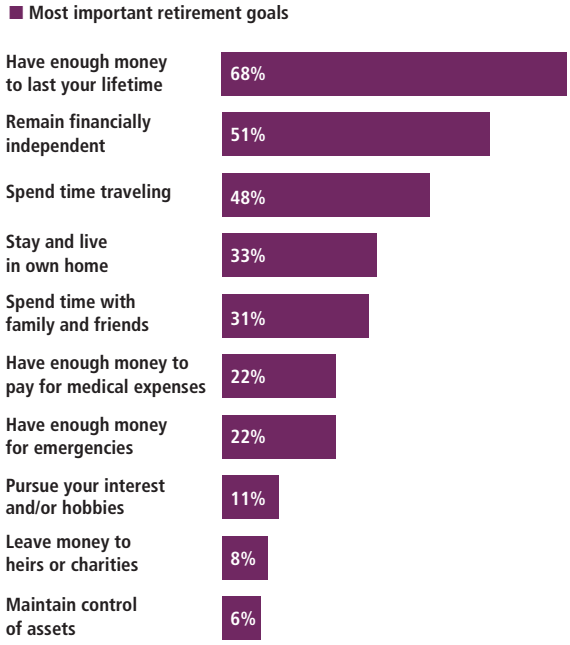
Comparable to a baseball game that can only have two outcomes (win or lose), retirees often think of retirement success as a binary proposition: Either they'll be okay or they won't. Most are not familiar with the concept of the Monte Carlo analysis until they enter a financial professional's office, and even then, they likely don't have a firm grasp of the abstract nature of probability of success. The client definition of success has nothing to do with probabilities.

What is an annuity?

Annuities are long-term, tax-deferred vehicles designed for retirement. The value of a variable annuity will fluctuate based on the performance of the underlying investments and may lose value. Earnings are taxable as ordinary income when distributed. Individuals may be subject to a 10% additional tax for withdrawals before age 59½ unless an exception to the tax is met.

Add-on living benefits are available for an extra charge in addition to the ongoing fees and expenses of the variable annuity and are subject to conditions and limitations.

MOST IMPORTANT CLIENT GOALS



Source: LIMRA, Institutional Retirement Reference Guide, Second Edition, 2022, pg.110. Based on 1,107 consumers between the ages of 50 and 75 with household investable assets of $100,000 or more.

[2] Lori Lucas, CFA®, EBRI, "Why Do People Spend the Way They Do in Retirement? Findings From EBRI's Spending in Retirement Survey," pp. 1, 15, 16, January 14, 2021.
[3] Goldman Sachs, Retirement Survey & Insights Report 2022, "Navigating the Financial Vortex. From Retirement Readiness to Retirement Income," August 31, 2022.

Clients determine success by how well a plan meets their most basic goals[4]:

- Having enough money to last an uncertain lifetime
- Remaining financially independent
- Staying and living in their own home

Most retirees may simply want to maintain their lifestyle free from the burden of showing up to work from nine to five every day.

THE DISCONNECT

Overall, the financial-planning industry has not adequately equipped many with the confidence needed to identify their own definition of success. Many clients have everything they need from a mathematical and statistical perspective yet still make needless lifestyle sacrifices. According to LIMRA, more than 40% of multimillion-dollar households live on less than $100,000 a year including their Social Security payments.[5] This is not because of a large bequest motive or an inherently frugal nature. The income-poor/asset-rich group is in fact "less confident that they will be able to live the retirement lifestyle they want and are more likely to think their savings may run out if they live to be age 90."[5]

If a client's retirement success is predicated on their ability to spend money confidently in retirement, cash flow—rather than assets—plays an important role. Research conducted by the Employee Benefits Research Institute suggests that retirees typically limit their spending to their income rather than dipping into capital assets.[6] Plans that favor systematic withdrawals at the expense of automated income and cash flow may be trading retirement success as defined by the client for the probability of success as defined by a software program.

Old-school baseball teams were focused on filling rosters with good baseball players as characterized by traditional measures, and they neglected to dig deeper to find players who didn't fit their mold but would be more effective in helping them win games. Similarly, we need to find ways to help clients plan for retirement with approaches that are grounded in the issues most relevant to the clients' definition of success.

KEY POINT

42%

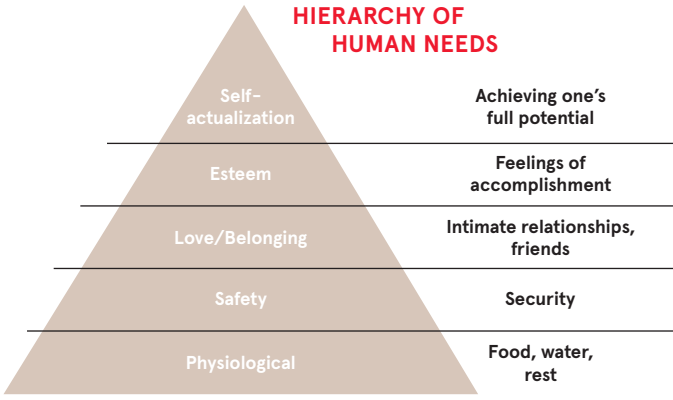
of multimillionaire retirees live on less than $100k per year.

[4] Secure Retirement Institute, The Retail Retirement Reference Guide, Fifth Edition, 2021.
[5] Ibid.
[6] Lori Lucas, CFA®, EBRI, "Why Do People Spend the Way They Do in Retirement? Findings From EBRI's Spending in Retirement Survey," pp. 1, 15, 16, January 14, 2021.

BRIDGING THE GAP

Since there is a gap between how many popular financial-planning software applications define success and how clients view success, financial professionals need to help clients understand how the two definitions are related.

Abraham Maslow's research in the field of psychology and the hierarchy of human needs can help illustrate this disconnect. Until a client is convinced that they will be able to cover their essential spending needs (e.g., housing, health, utilities, gas, and groceries), any conversation around nonessential lifestyle goals is premature. The physiological needs must be met first, followed closely by the need for safety and security. Only after meeting basic security needs will a client be more comfortable planning for or spending money on the experiences or lifestyle needs represented in the upper half of Maslow's pyramid.



Source: S. A. McLeod, Simply Psychology, "Maslow's Hierarchy of Needs," March 10, 2023.

Combining the framework of meeting basic needs with behavioral economics is compelling. Kahneman and Tversky's work in prospect theory illustrates the tendency to avoid risk when faced with uncertainty, often resulting in suboptimal decisions.[7]

Unfortunately, the transition from working full time is packed with uncertainty around nearly every aspect of retirement (e.g., "How much should I spend?" and "How long will I live?"). In the face of these uncertainties, retirees and those considering retirement often seek safety at the expense of fulfillment. Even when presented with an 85% probability of success, many focus only on the 15% probability of ruin.

Subjective data outside of risk tolerance is often overlooked during the planning process. Placing an emphasis on gathering qualitative data pertaining to client values and attitudes as they relate to investing and retirement can balance the void in planning software.

Fortunately, there are behavioral-based planning software tools to address this need by:

1. Capturing client concerns as part of the planning practice
2. Addressing these concerns within the financial plan
3. Stress-testing plans to field client concerns

[7] Daniel Kahneman and Amos Tversky, Econometrica Volume 47 Number 2, "Prospect Theory: An Analysis of Decision Under Risk," March 1979.

CAPTURING CONCERNS

Financial professionals often focus on input primarily composed of numbers such as retirement age, spending goals, and asset levels.

By fixating on only these data points, retirement worries are often overlooked in data gathering. To support these essential concerns and proposed strategies, financial professionals can consider integrating these fears into their data gathering and create a list of possible retirement risks[8] for their clients early in the planning process.

Based on the variety of goals clients need to plan for and levels of uncertainty they're faced with, this list might prove beneficial for clients to help them articulate their concerns and inform the conversation.

ADDRESSING CONCERNS

Once a client's fears are voiced and prioritized, the financial professional can address them head on. Since these uncertainties are emotional, a purely logical argument often falls flat. Telling a client there is a low probability of outliving their assets does little to assuage their fears since there is still a small chance of doing just that.

Given that financial professionals generally cite the number one concern of their clients is running out of money,[9] retirement plans should directly address this worry.

Today's leading financial-planning software models the tradeoffs between higher guarantees/lower growth potential and income/liquidity. Being able to point to a worst-case scenario that can still provide coverage for all basic needs represents an emotional relief for clients who fear running out of money.

CONSIDER THIS

RETIREMENT WORRY INVENTORY

Relying on a one-dimensional calculation does not assure that a plan will be successful.

- A reduction of Medicare benefit
- A reduction in Social Security income
- Significant healthcare costs
- Long-term-care costs
- Tax increases
- Inflation
- Outliving assets
- A prolonged stock market downturn
- Becoming widowed or losing a partner

[8] Secure Retirement Institute, The Retail Retirement Reference Guide, Fifth Edition, 2021.
[9] LIMRA, Institutional Retirement Reference Guide, Second Edition, 2022.

STRESS TESTING

After capturing and addressing concerns within the plan, it's time to stress test. Financial planning has often used stress tests to illustrate common areas of concern that lead to financial ruin, such as death during accumulation years or long-term-care spending.

Walking through Monte Carlo trials can easily illustrate with clients what running out of money might look like. Most financial-planning software programs can examine specific trials or at least highlight the shortfall presented at some edge cases (the 98th percentile trial, for example) to illustrate what failed paths might look like.

Depending on the software, you can either pinpoint a specific year for failure (e.g., the 20th year of retirement) or provide a reasonable estimate based on the size of the gap between financial needs and available dollars.

The point is, failed-path scenarios involving ill-timed sequences of returns or an inability to spend due to a major capital loss can be a useful tool to show a client that even under terrible market conditions, they can still have ample resources to cover their basic expenses. A small shortfall that occurs late in retirement may be much easier for a client to get comfortable with than a large shortfall in the early retirement years. In fact, many clients would likely prefer a plan that has a slightly lower probability of success (in Monte Carlo terms) if the failures could be resolved with small adjustments in spending over a plan with a higher probable success rate but a greater chance of catastrophic failure.[10]

With this possible preference in mind, let's go back to draft day and use your options as general manager of a major league team to further illustrate the concept around stress testing. Who would you rather recruit?

- A player with a 15% chance of a small decline in batting average and home runs late in their career
- A player with a 10% chance of a career-ending injury in the middle of their career

KEY POINT

A small shortfall that occurs late in retirement may be much easier for a client to get comfortable with than a large shortfall in the early retirement years.

[10] Michael Kitces, Kitces.com, "Is The Retirement Plan With The Lowest "Risk of Failure" Really The Best Choice?," March 1, 2012.

CONCLUSION

As the Oakland A's discovered, optimizing a roster for wins often means looking beyond headline statistics and the traditional image of a top-tier player to find criteria that matters most to the ultimate goal of the club: winning games. When financial-planning software places Monte Carlo analysis at the center of the plan, it can be easy to focus exclusively on the statistical probability of success and neglect the client's own perception of success. This could lead to a suboptimal retirement experience.

Be the catalyst in their journey. As general manager of your clients' retirement-planning process, it is your responsibility to look outside of just the Monte Carlo probability of success and include an expanded lineup of options in an effort to find solutions for their concerns. A plan that captures and addresses your clients' biggest worries can lead to a better outcome—in your relationship and in their retirement experience.

For financial professionals seeking more information, contact your Jackson® team.

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