LESSON · PLANNING CONCEPTS

What Is Monte Carlo Analysis?

Most retirement calculators hand you a single number: an 87% chance your money lasts. Here's what's actually happening behind that number, what it can genuinely tell you, and why it can't predict the next market shock — or tell you what to do about one.

Read time: 6 minutes **Level:** Foundational **Includes:** Knowledge check

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What Is Monte Carlo Analysis?

The original Insight this lesson was built from.

Open almost any retirement calculator and, sooner or later, you'll see a number that looks like a confidence score: **"87% probability of success."** That number usually comes from something called a **Monte Carlo simulation** — a technique borrowed from statistics and physics, named after the casino, because it works by rolling the dice thousands of times and seeing how often you win.

How it actually works

STEP 1

Start with your plan

Your savings, your spending, your time horizon — the same inputs any retirement tool would ask for.

STEP 2

Generate hundreds or thousands of possible futures

Instead of assuming one fixed average return every year, the simulation draws a different random sequence of market returns for each "trial" — one trial might have a crash in year 2, another a crash in year 25, another no crash at all.

STEP 3

Run your plan through every one of those futures

In some trials, your money lasts to age 95 with plenty left over. In others, it runs out at 78. The simulation counts up how many trials succeeded versus failed.

STEP 4

Report the percentage that succeeded

If 870 out of 1,000 randomly-generated futures ended with money still on the table, you get your "87% probability of success."

What it genuinely gets right

Monte Carlo analysis is a real improvement over a flat "assume 7% every year" projection. Markets don't return the same amount every year — some years are down 20%, some are up 30% — and the *order* those returns arrive in matters enormously. A crash in your first few retirement years, while you're also withdrawing money, does far more damage than the same crash arriving at year 20. This is called **sequence-of-returns risk**, and Monte Carlo is one legitimate way to see how a plan holds up across many different orderings of good and bad years.

Where it breaks down

A percentage is not a forecast

"87% probability of success" sounds precise. It isn't a prediction that you personally have an 87% chance of being fine — it's a statement about how a mathematical model, built on assumptions about historical volatility and returns, behaved across randomly generated scenarios. Change the assumptions even slightly and the number moves substantially, often without you seeing why.

What the model can't see

- A specific, unprecedented event — a pandemic, a geopolitical shock, a new kind of crisis the historical data never experienced
- **When** a bad sequence will hit your own retirement, only that some simulated paths include one
- What you actually did to prepare — cash reserves, spending flexibility, or a structural income design outside the model's assumptions

What a "13% failure" doesn't tell you

- Whether that 13% means running out of money at 95 by $10, or at 80 by $400,000 — wildly different problems given the same headline number
- What to actually change today to move from 87% to somewhere safer
- Whether the failure happens because of the market, your spending, or both

The deeper issue: a probability score tells you the odds, but it doesn't hand you a plan. If you're in the unlucky 13%, "you had an 87% chance" is not useful information in the moment you actually need help.

Educational content only, not individualized investment, tax or legal advice.

Blueprint's approach: guardrails, not odds

Structure that doesn't need a probability score

Blueprint Tomorrow doesn't run a Monte Carlo confidence score, because a percentage doesn't tell a retiree what to actually do. Instead, every Blueprint is built around three purpose-built engines, so the plan is resilient by design rather than by odds:

Income Engine
Sized to your single highest-need year through age 99 — built to fund your paycheck without depending on market timing.

Liquidity Engine
Holds a full year of budgeted cash, so a bad market doesn't force a sale at the worst possible moment.

Growth Engine
Reinvests 100% of dividends, a deliberate backstop in case the Income Engine underperforms.

This is also why Blueprint's Results page shows a Before & After comparison rather than a percentage when an old 401(k), 403(b) or 457(b) is involved — a real dollar gap you can act on, not an abstract odds ratio.

How to read a Monte Carlo score, if you see one elsewhere

Questions worth asking any tool that shows you a percentage:

- [ ] What specific assumptions (average return, volatility, inflation) is the model using, and can I see them?
- [ ] Does "failure" mean running out of money by $1 or by $500,000 — and at what age?
- [ ] Does the tool tell me what to actually change, or just report the odds?
- [ ] Is the tool using my real budget, or a generic risk-tolerance-based allocation?

KNOWLEDGE CHECK

Test what you just learned

Answer three quick questions to test what you just learned.

1. What does a Monte Carlo "87% probability of success" actually measure?

> A. Your personal odds of a comfortable retirement
>
> B. How many randomly generated market scenarios, under the model's assumptions, ended with money remaining
>
> C. The historical average stock market return

2. Why can't Monte Carlo analysis predict the next market shock?

> A. It only draws from the assumptions and historical patterns built into the model, not unprecedented future events
>
> B. It always assumes the market goes up
>
> C. It only looks one year ahead

3. Why does Blueprint use engine-based guardrails instead of a Monte Carlo score?

> A. Guardrails are cheaper to calculate
>
> B. A percentage doesn't tell you what to actually do — a structural design built to survive does
>
> C. Monte Carlo isn't a real statistical method

Blueprint Tomorrow provides educational planning tools, not individualized investment, tax or legal advice. Nothing in this lesson is a recommendation to take any specific action with your investments. Past performance and simulated scenarios do not guarantee future results.