

# What is the Monte Carlo simulation?

The Probability of Success that you see in RightCapital is a result of a complex calculation called a **Monte Carlo simulation**. Here's the official definition...

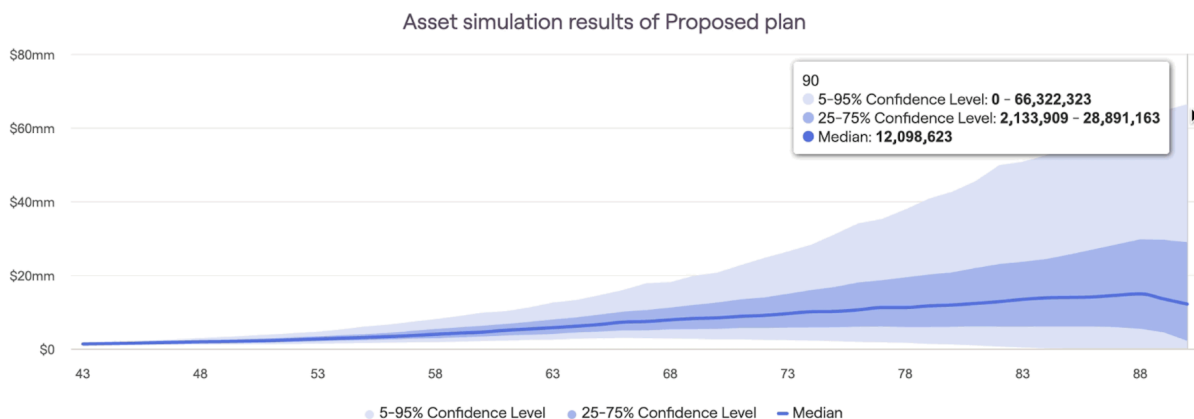
*"A Monte Carlo simulation is a model used to predict the probability of a variety of outcomes, when the potential for random variables is present."*

In your RightCapital financial plan, the "outcome" we are solving for is your invested assets, and the "random variable" is market volatility. Put simply, the Monte Carlo simulation calculates a **range of possible outcomes**, factoring in a wide array of potential market conditions that might occur over the course of your life.

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## How does it work?

In RightCapital, we calculate your Probability of Success by running your financial plan through 1,000 different trials. Each of these trials has a different, random level of **market volatility** factored in. You can think of each trial as a unique scenario, in which markets might perform very well, very poorly, or somewhere in between. The result of this calculation is a range of outcomes that grows wider over time. This can be best visualized using the Confidence chart in the Retirement Analysis section of your plan...



## How do I read the Confidence chart?

Most Monte Carlo simulations look something like the chart on page one. The y-axis of this chart represents invested assets, and the x-axis represents your age. The **light blue shaded area** represents 90% of all Monte Carlo trials, covering the widest range of possibilities. This means that there is a high likelihood that your invested assets will land somewhere in that range. But it can be hard to plan a lifestyle around such a large bandwidth! The **darker blue area** represents the middle 50% of trials, and is easier to plan around. This range includes less extreme outliers, and is still a likely outcome.

The solid blue line in the center is the **median trial** - possible, but likely not exact. The median perfectly splits the difference between the upper half of trials (with more optimistic market conditions) and the lower half (with less optimistic market conditions). You can think of the median trial as the least extreme outcome with the most “average” market performance, making it a valuable reference point within a financial plan.

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## How does this translate to Probability of Success?

The Confidence chart is, for all intents and purposes, a visual representation of the Probability of Success. Put simply...

*The Probability of Success represents the percentage of Monte Carlo trials that do not run out of money at any point during your lifetime.*

In the example shown on page one, approximately 800 of the 1,000 trials remain *above* the \$0 line for the duration of the plan. This translates to an 80% Probability of Success. The end-of-plan invested asset value for the median Monte Carlo trial will also be highlighted next to the Probability of Success...

