

About Monte Carlo: What is a Monte Carlo Simulation?

Monte Carlo Simulation is a technique to calculate the uncertainty in a forecast of future events. Instead of using a single value for each variable in a model, say investment returns, it uses many values. A Monte Carlo "engine" runs the model over and over again, each time using a different value for each of the variables in the model. We call each run an "iteration" or "simulated lifetime". The outcomes are tabulated, and after a large number of iterations (we use 1,000 or 10,000 depending on the program), the forecast is shown not as a single value, but as a range of values. In other words, both uncertainty and probability are explicit.

The selection of the value for the variable for each iteration is random. But, the permitted values of the variable are not random. They are carefully constructed using the best knowledge as to how the variable behaves; which in our case, is stock indices. These random number simulations were originally developed by the US Government for the war effort, and nicknamed "Monte Carlo" after its similarities to the famous games of chance found in those popular gambling casinos. When personal computers were modernized to the point they could handle the millions of calculations, Monte Carlo simulations found their way into the business sector and in the last decade into the financial services sector.

(Portions of the above adapted from the montecarlosimulations.org website)

About Our Monte Carlo Algorithm:

Our software uses the linear-congruential method to generate pseudo-random numbers according to a specific mathematical formula called an algorithm. This algorithm is found in Microsoft Visual Basic's RND function. To ensure a different sequence each time a simulation is run, we first employ a Randomize statement, so the starting point or 'seed' number will always be different.

For full technical details of this algorithm, please see the Microsoft Knowledge Base Article 231847 at <http://support.microsoft.com/default.aspx?scid=KB;en-us;Q231847> .

MCP Premium's Monte Carlo method is unique, in that it is a "true randomizer" of possible returns. Where many other methods simply "shuffle" the actual historical returns into a different order, our method lets the user choose a historical time period, and then applies 2 standard deviations to the mean return of that time period, which creates the boundaries for randomization. This means we account for 95% of all possible outcomes around the mean, and each scenario is run at least 1,000 times. In the MCP Suite 2007 Professional version it is run 10,000 times, and for increased accuracy, we use the portfolio's IRR (or "Internal Rate of Return", which includes withdrawals or contributions) as the mean. Two Standard Deviations (95%), by the way, goes even beyond the 1 Standard Deviation (68%) values considered most "statistically significant" in finance.

The NASD approved the use of Monte Carlo as a client presentation method in February of 2005.