Methodologies and Assumptions

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Important: The projections or other information generated by the Monte Carlo simulation regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect actual investment results, and are not guarantees of future results. Monte Carlo is an analytical method used to simulate random returns of uncertain variables to obtain a range of possible outcomes. Such probabilistic simulation does not analyze specific security holdings, but instead analyzes the identified asset classes within a strategy (in this case the asset classes included in a TD Ameritrade Investment Management, LLC [TD Ameritrade Investment Management] model portfolio) and identified cash flows. The simulation generated is not a guarantee or projection of future results, but rather, an analysis of the likelihood that you may be able to achieve your stated goals and a tool to identify a range of potential wealth outcomes that could be realized. The Monte Carlo simulation is hypothetical in nature and is for illustrative purposes only.

Results may vary with each use and over time.

Capital Market Assumptions

All simulations use capital market assumptions, developed by Morningstar Investment Management LLC, a registered investment advisor and subsidiary of Morningstar, Inc., which use the idea that asset class returns can be decomposed into underlying sources of returns, identified by “building blocks,” or structural drivers of the returns. Morningstar Investment Management’s capital market assumptions are developed and monitored by the Global Capital Markets Subcommittee (part of Morningstar’s Investment Management group’s Global Investment Policy Committee) which is composed of senior investment professionals across the group’s investment teams in North America, Europe, and Asia. The subcommittee develops, reviews, and enhances the capital market assumptions on an ongoing basis. Morningstar Investment Management analyzes the available opportunity set of asset classes and constructs long-term expected returns, standard deviations, and correlation coefficients for each.

Asset class returns are not directly based on historical returns. Rather, they represent assumptions that take into account, among other things, historical returns and an assumed degree of fluctuation around those returns. The capital market assumptions use a supply-side building-block approach to forecast equity returns. The supply-side model is based on the idea that equity returns can be decomposed into underlying economic and corporate fundamentals. This approach separates the expected return of each equity asset class into four key return drivers: inflation, total yield, growth, and change in valuation. For fixed-income asset classes, a building-block approach is used to forecast returns. The key inputs into the fixed-income model are inflation, real rate, term spread, and credit spread.

Capital market forecasts for each year are developed for each asset class by using a combination of historical data, current market information, and forward-looking assumptions about items such as the path of future interest rates and spreads. Non-normal return properties such as skewness and kurtosis are also evaluated. Annual returns are classified and averaged by asset class based on Morningstar Investment Management’s historical data. The assumed inflation rate is based on historical data. These forecasts are not attempts to predict the market, but rather attempts to ascertain the markets’ expectations (that is, to determine what the markets themselves are forecasting). Standard deviations, correlations, yield, and capital gains for each asset class are based on Morningstar Investment Management’s historical data. Capital market assumptions are updated annually. Capital market forecasts are assumptions which involve known and unknown risks, uncertainties, and other factors which may cause the actual results to differ materially and/or substantially from any future results, performance, or achievements expressed or implied by those projections for any reason. Past performance does not guarantee future results.

Assumptions and Limitations—Expected Return (Best/Worst/Average Year)

In the Goal Forecasting Tool, when providing your personal and financial information to TD Ameritrade Investment Management, the expected return and best/worst/average hypothetical return information is derived from the underlying asset classes represented in a strategic asset allocation based on a model portfolio. The returns are for illustrative purposes only. A Selective Core ETF or an Essential model portfolio (depending on your selection of advisory service) is used for all calculations, actual results will vary. The expected return information seen on the Portfolio page are based on your selected managed portfolio. After logging in to your account, the expected return and best/worst/average hypothetical return information is based on the chosen managed portfolio.

In order to calculate expected return and best/worst/average hypothetical return information, Morningstar Investment Management LLC uses capital market assumptions at the asset class level to assess how the model portfolio is expected to perform. The calculations are determined using Monte Carlo simulations and the assumption that the returns are a non-normal distribution.

The expected returns shown on the Portfolio page represent the 20-year weighted average expected returns of the underlying asset classes used in each portfolio’s strategic asset allocation.

The best and worst hypothetical returns are represented by the 95th percentile and 5th percentile in the return distribution created by the Monte Carlo simulations.
All calculations use asset class returns of the particular allocation parameters. The calculations in the risk tolerance step do not include taxes, advisory fees, fund expenses, or other fees and expenses which, if included, would reduce the performance shown. The calculations in the Portfolio Step are of your selected TD Ameritrade Investment Management model portfolio for a given risk level, not returns on actual investments and are net of the model portfolios composite weighted advisory fee. All calculations are provided through an agreement with Morningstar Investment Management LLC. The calculations are based on a forward-looking estimate of asset class return, risk, and correlation of return behavior between asset classes. Therefore, the calculations can be affected by subjectivity. The calculations are based on TD Ameritrade Investment Management model portfolios and on the estimated expected return, standard deviation, and correlations between the underlying asset classes of the model portfolio. The calculations do not consider or favor other individual securities that may have characteristics similar to or superior to those being analyzed. Future results for all asset classes may materially differ from those assumed in the tool's calculations.

The expected returns are estimated returns and do not guarantee that a portfolio will achieve or exceed the return value shown. Each portfolio's performance may differ significantly from the performance shown.

Note: Although prudent assumptions have been applied, the rate of return and risk for an investment cannot be predicted with certainty, nor can correlation coefficients between investments. There is no guarantee that income or gain realized will be repeated. Past performance is no guarantee of future results. Further, security implementation decisions may have a significant effect on risk and return results. The returns and risks identified in the illustrations in no way represent a guarantee that the portfolio will produce a particular result. There is no guarantee that the expected return, standard deviation, or correlation indicated for the current asset allocation will be achieved over the investing horizon. Principal value and investment return will fluctuate, so that an investor's investment, over time, may be worth more or less than the original investment.

Limitations
The accuracy of any analysis is contingent upon the appropriateness and accuracy of the assumptions. Not all potentially relevant details about your personal or financial situation were collected or considered in the analysis. Unexpected changes in your situation and in market conditions may change actual results.

The analysis applies projections of risk, return, and correlation at an asset-class level. Security implementation decisions may result in significantly different outcomes.

Assumptions and Limitations—Expected Outcomes, Expected Probability, and Projection Chart

All expected outcomes, expected probability, and projection information are powered by Morningstar® Wealth Forecasting EngineSM. The Morningstar Wealth Forecasting Engine ("WFE") utilizes intellectual property and research from Morningstar Investment Management LLC, and is a sophisticated software component that helps allow financial institutions to construct and simulate comprehensive savings and investment strategies for all stages of an investor’s financial life. Its primary purpose is to help investors better understand, in a personalized way, the risks of investing and the probability of reaching a financial goal. WFE combines simulated future economic scenarios with an assumed asset allocation and anticipated cash flows to create a forecast for retirement. And while WFE cannot predict future investment performance, by simulating hypothetical future economic scenarios, it can help you manage uncertainty and realistically assess the likelihood that your retirement assets will last throughout your lifetime.

Information Provided by You
Information that you provided about yourself, and your financial goals are key assumptions for the calculations and projections. It is important that you review the information you provided to verify the accuracy of these assumptions and update them as required. Even small changes in assumptions can have a substantial impact on the results shown. The information provided by you should be reviewed periodically and updated when either the information or your circumstances change.

Probability Score & Target Amount
Based on the information you provide, a target amount will be generated for you. The probability score is classified as "Good" or "Low." A "Good" probability score indicates you have a 70% chance or greater of success based on the simulations from the Morningstar® Wealth Forecasting EngineSM. A "Low" probability score indicates you have a less than 70% chance of success based on the simulations from the Morningstar® Wealth Forecasting EngineSM.

Other Assumptions
The annual inflation rate assumed is 2.20%.
Tax, Medicare, and Social Security assumptions are excluded from the Goal Forecasting Tool analysis.

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