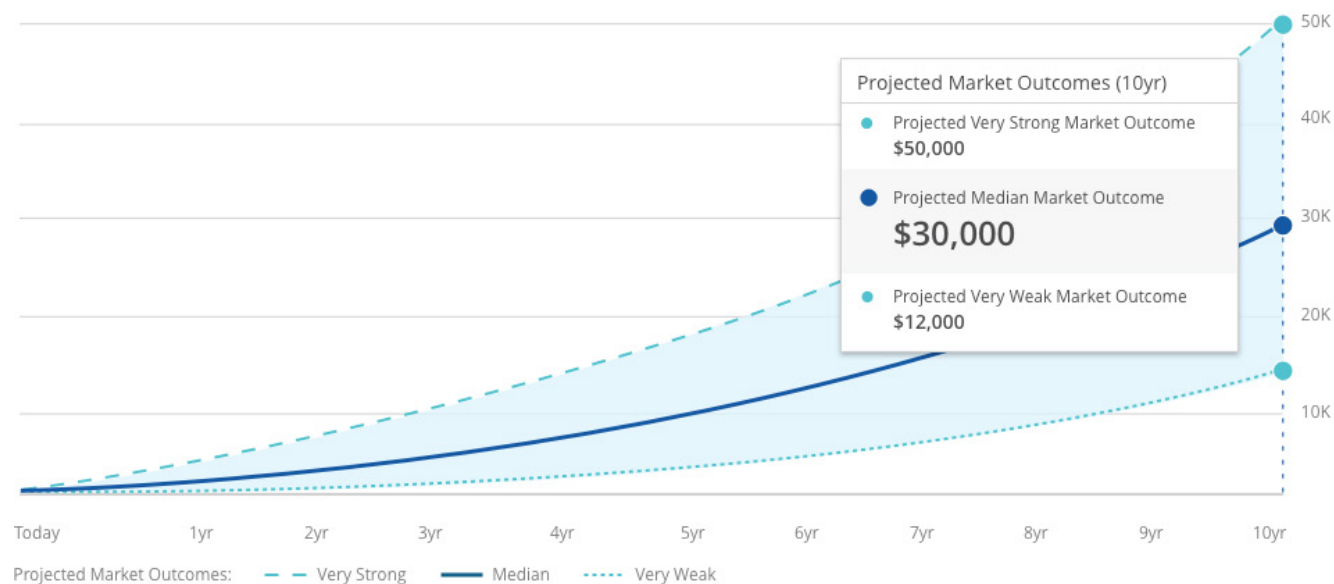


Morgan Asset Projection System (MAPS)®

WHAT IS MAPS?

At J.P. Morgan, we have developed MAPS, short for Morgan Asset Projection System, a proprietary patented tool which produces wealth projections for your portfolio based on your personal inputs. These wealth projections can help you visualize how changes to your personal inputs may impact expected outcomes over your time horizon, by combining your inputs with our time-tested market forecasts to create an estimated range of portfolio outcomes in dollars.

THIS CHART IS FOR ILLUSTRATIVE PURPOSES ONLY. THE PROJECTIONS SHOWN BELOW DO NOT REFLECT ANY ACTUAL MAPS PROJECTIONS OR RESULTS. YOUR MAPS PROJECTIONS WILL VARY AND BE BASED ON PERSONAL INPUTS.



MAPS utilizes a Monte Carlo simulation technique which incorporates multiple inputs (or variables) simultaneously to generate 10,000 potential portfolio paths. This technique is particularly useful when one or more of the inputs possess a significant amount of uncertainty, which is certainly the case for financial markets.

IMPORTANT: The projections or other information generated by the Morgan Asset Projection System (“MAPS”) regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect actual or estimated investment vehicle results and are not guarantees of future results. The results may vary with each use and over time. The return assumptions in MAPS do not reflect investment fees or expenses (except for those related to Alternatives investments which reflect average investment fees). Had the results reflected such expenses, the hypothetical projected performance would have been lower. When used in connection with J.P. Morgan Automated Investing, the MAPS return assumptions are reduced to reflect an annual 0.35% fee.

INVESTMENT AND INSURANCE PRODUCTS ARE:

- NOT FDIC INSURED
- NOT INSURED BY ANY FEDERAL GOVERNMENT AGENCY
- NOT A DEPOSIT OR OTHER OBLIGATION OF, OR GUARANTEED BY, JPMORGAN CHASE BANK, N.A. OR ANY OF ITS AFFILIATES
- SUBJECT TO INVESTMENT RISKS, INCLUDING POSSIBLE LOSS OF THE PRINCIPAL AMOUNT INVESTED

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WHAT IS MAPS? (CONTINUED)

To create the lines depicting very weak, median, and very strong market outcomes, MAPS ranks all 10,000 annual wealth values from lowest to highest. The annual wealth value equal to the top 5%, or 95th percentile, of all simulations, is drawn as a smoothed line labeled “very strong”. Next, the annual wealth value equal to the median, or 50th percentile, of all simulations, is drawn as a smoothed line labeled “median”. Finally, the annual wealth value equal to the bottom 5%, or 5th percentile of all simulations, is drawn as a smoothed line labeled “very weak”.

To summarize, MAPS generates thousands of hypothetical paths that the market could take. These help to give an idea of the range of potential outcomes based on today's assumptions.

Keep in mind – MAPS is just one of the many tools we provide to help you make informed investing decisions that get you one step closer to your personal financial goals.

What does MAPS consider when creating wealth projections?

At the center of the projection are your personal inputs, which can be updated to meet your goals:

1. Your portfolio's starting value, which is your portfolio's current market value.
2. Estimated recurring future contributions, based on the information you have provided.
3. Your target portfolio asset allocation, based on your selection or inputs.
 - a. By default, the target asset allocation assumes a constant mix over time for each risk profile
 - b. Within J.P. Morgan Automated Investing, some inputs may lead to a glide path portfolio in which the target asset allocation assumes a mix that adjusts over time¹

¹A glide path portfolio is available for investors who select retirement as their goal, are looking to invest for more than 10 years, and have either a Moderate, Growth or Aggressive risk profile. The target asset allocations of a glide path portfolio generally become more conservative as the client's designated retirement date approaches (i.e. more emphasis on fixed income and less on equity). For additional details around glide path portfolios, click [here](#).

Next, we layer in the J.P. Morgan Long-term Capital Market Assumptions, our in-house forecasts for 50+ different asset classes over the next 10 to 15 years. Based on an informed view of the different qualitative and quantitative factors that affect economies and markets today, these forecasts are forward-looking estimates of:

1. Returns for each asset class
2. Risk (or volatility) for each asset class
3. Correlation between asset classes (i.e. how likely are two asset classes to move in the same direction)

Why is MAPS important to you?

It is impossible to predict the future. Markets go up and down, and no one knows with 100% certainty how different markets will perform.

However, we can still create forward-looking estimates in the face of this uncertainty. Using our MAPS simulations, we can identify very weak, median, and very strong market outcomes and demonstrate how different market conditions can impact your portfolio.

The most valuable aspect of MAPS is helping you understand how your personal inputs can impact your portfolio's outcomes. While you can't control the markets, you can take actionable steps now to adjust your portfolio outcomes:

1. Increasing your portfolio's starting value – the more you add to your portfolio now, the more it can benefit from the power of compounding over time.
2. Increasing your contributions over time – adding even a small amount over time can give you a big boost later.
3. Modifying your asset allocation - adding more risk within your portfolio (in most cases, adding more equities and reducing fixed income) may project a higher portfolio ending value in a strong market environment, but could also project a lower portfolio ending value in a weak market environment.

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DISCLOSURES

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JPMorgan Chase Bank, N.A. Member FDIC

In using the MAPS, be aware that J.P. Morgan is not analyzing your investment portfolio, your individual circumstances, or considering or recommending what you should buy, hold, or sell in your account. Access to this tool may require a minimum account balance.

IMPORTANT: The projections or other information generated by the Morgan Asset Projection System (“MAPS”) regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect actual or estimated investment vehicle results and are not guarantees of future results. The results may vary with each use and over time. The return assumptions in MAPS do not reflect investment fees or expenses (except for those related to Alternatives investments which reflect average investment fees). Had the results reflected such expenses, the hypothetical projected performance would have been lower. When used in connection with J.P. Morgan Automated Investing, the MAPS return assumptions are reduced to reflect an annual 0.35% fee.

PROJECTION ASSUMPTIONS

MAPS uses the following assumptions when projecting portfolio values over time:

- Asset Class Returns and Volatility: leverage JP Morgan Long Term Capital Markets Assumptions, which are updated annually
- Inflation: Asset class return assumptions are in nominal terms and already incorporate inflation
- Tax Rates: Tax rates are not included in return assumptions or projections
- Product Fees: Product fees such as fund investment management fees or trading commissions are not included in projections, except for those related to Alternatives investments which reflect average investment fees
- Vehicle Fees: Vehicle fees such as ETF expense ratios are not included in return assumptions or projections, except for those related to Alternatives investments which reflect average investment fees
- J.P. Morgan Automated Investing: The annual advisory account fee of 0.35% is included in return assumptions or projections
- Asset Allocation: By default, the target asset allocation assumes a constant mix over time for each risk profile. Within J.P. Morgan Automated Investing, some inputs may lead to a glide path portfolio in which the target asset allocation is based on a mix that adjusts over time²

²A glide path portfolio is available for investors who select retirement as their goal, are looking to invest for more than 10 years, and have either a Moderate, Growth or Aggressive risk profile. The target asset allocations of a glide path portfolio generally become more conservative as the client's designated retirement date approaches (i.e. more emphasis on fixed income and less on equity). For additional details around glide path portfolios, [click here](#).

MAPS wealth projections are for informational purposes only and are calculated based on client-specific inputs (portfolio starting value, recurring contributions, and target asset allocation) and asset class-level statistics based on J.P. Morgan's Long Term Capital Market Assumptions. The asset class-level statistics represent the pre-tax average of the Monte Carlo return simulations for the relevant asset classes. These projection assumptions are not a guarantee, prediction, or projection of the future results; rather, they explain the assumptions used to create the wealth projection ranges generated within J.P. Morgan Automated Investing. See “Understanding J.P. Morgan Long Term Capital Market Assumptions” and “Understanding Long Term Estimates” for additional assumptions.

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DISCLOSURES (CONTINUED)

UNDERSTANDING J.P. MORGAN LONG TERM CAPITAL MARKETS ASSUMPTIONS

- The assumptions are informed by a process that carefully balances quantitative and qualitative inputs, both of which have been rigorously researched and continuously refined over the past two decades. The Assumptions Committee driving this process includes some of the most senior investors from our Global Investment Management and Global Wealth Management businesses and draws on the best thinking of our global network of asset class and market specialists.
- Investors and advisors around the world have come to rely on these assumptions to guide their strategic asset allocation and set realistic expectations for risks and returns over a 10- to 15-year time frame.
- The assumptions encompass more than 50 asset and strategy classes and are available in 10 base currencies. We believe they are one of the most established and comprehensive sets of capital market estimates in the industry.
- The assumptions are a core element of our framework for designing, building and analyzing solutions that are aligned with clients' specific investment needs. This is why, in an ever-changing market environment, we devote extensive effort and resources each year to developing an updated set of long-term estimates.

IMPORTANT INFORMATION: UNDERSTANDING LONG TERM ESTIMATES

Our investment management research incorporates our proprietary projections of the returns and volatility of each asset class over the long term, as well as estimates of the correlations among asset classes. Clearly, financial firms cannot predict how markets will perform in the future. But we do believe that by analyzing current economic and market conditions and historical market trends, and then, most critically, making projections of future economic growth, inflation, and real yields for each country, we can estimate the long-term performance for an entire asset class, given current and our estimated equilibrium levels. The "equilibrium" level shows the average or central tendency around which a market or macroeconomic variable such as yield or credit spread will tend to fluctuate over the long-term, because the level represents the value inherent in a given market. The return assumptions are based on our proprietary process of using a building block approach for each of the asset classes. For instance, the building blocks for equity consist of our projections on revenue and margin growth, dividend yield and buybacks, and change in valuations. The building blocks for fixed income consist of our projections for future yields and the change in bond prices. The estimates for alternatives are driven by our historical analysis and judgment about the relationship to public markets. It is possible – indeed, probable – that actual returns will vary considerably from this, even for a number of years. But we believe that market returns will always at some point return to the equilibrium trend. We further believe that these kinds of forward-looking assessments are far more accurate than historical trends in deciding what asset class performance will be, and how best to determine an optimal asset mix.

In reviewing this material, please understand that all references to return are not promises, or even estimates, of actual returns one may achieve. The assumptions are not based on specific products and, except as otherwise noted, do not reflect fees, such as investment management fees, oversight fees, transaction costs or other expenses that could reduce return. They simply show what the long-term return should be, according to our best estimates of current and equilibrium conditions.

For the purpose of this analysis **volatility** is defined as a statistical measure of the dispersion of return for a given allocation and is measured as the standard deviation of the allocation's arithmetic return. **Risk** (the denominator) is defined as the standard deviation (volatility) of the allocation's return less the risk free rate. The risk free rate utilized is J.P. Morgan's long-term assumption for Cash. **Correlation** is a statistical measure of the degree to which the movements of two variables, in this case asset class returns, are related. Correlation can range from -1 to 1 with 1 indicating that the returns of two assets move directionally in concert with one another, i.e. they behave in the same way during the same time. A correlation of 0 indicates that the returns move independently of each other and -1 indicates that they move in the opposite direction.

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DISCLOSURES (CONTINUED)

Investment Principles and Potential Conflicts of Interest

Conflicts of interest will arise whenever J.P. Morgan Chase & Co. or any of its affiliates (together, "J.P. Morgan") has an actual or perceived economic or other incentive in its management of clients' portfolios to act in a way that benefits J.P. Morgan. Conflicts will result, for example (to the extent the following activities are permitted in the account): (1) when J.P. Morgan invests in an investment product, such as a mutual fund, exchange-traded fund ("ETF"), structured product, separately managed account or hedge fund issued or managed by an affiliate, such as J.P. Morgan Investment Management Inc. ("JPMIM"); (2) when a J.P. Morgan entity obtains services, including trade execution and trade clearing, from an affiliate; (3) when J.P. Morgan receives payment as a result of purchasing an investment product for a client's account; or (4) when J.P. Morgan receives payment for providing services (including shareholder servicing, recordkeeping or custody) with respect to investment products purchased for a client's portfolio. Other conflicts will result because of relationships that J.P. Morgan has with other clients or when J.P. Morgan acts for its own account.

J.P. Morgan Automated Investing

When selecting ETFs for this program, this program's portfolio manager limits its selection to J.P. Morgan ETFs. As a result, this program's portfolio manager will choose J.P. Morgan ETFs even in cases where there are third party ETFs that are less expensive, or that have longer track records or superior historical returns. J.P. Morgan has a conflict of interest when it determines the portfolio's target asset classes, asset allocation goals or ongoing allocations, because it will allocate only to asset classes where J.P. Morgan ETFs are available.

The clients' portfolios will contain 100% J.P. Morgan ETFs. You should not invest in this program if you are not comfortable holding an investment portfolio that is comprised of 100% J.P. Morgan ETFs. It is important to note that J.P. Morgan will receive more overall fees when J.P. Morgan ETFs are used. Additionally, the J.P. Morgan ETFs in this program are not required to be reviewed or approved by the research process applicable to other programs for which J.P. Morgan Securities LLC ("JPMS") serves as investment adviser. Consequently, investment decisions regarding J.P. Morgan ETFs for the program will be different from, and may, in certain circumstances, be inconsistent with, the investment decisions made by J.P. Morgan for other advisory programs. Furthermore, the J.P. Morgan ETFs used in this program may or may not be approved for solicitation in the JPMS full service brokerage platform.

JPMIM or its affiliates may be sponsors or managers of ETFs and other registered funds ("J.P. Morgan Funds") that J.P. Morgan purchases for the client's portfolio. In such case, JPMIM or its affiliates receive a fee for managing the J.P. Morgan Funds. Because fees paid to JPMIM and its affiliates will be offset against the advisory account fee, J.P. Morgan will keep no more revenue when the client's portfolio is invested in J.P. Morgan Funds than when it is invested in third party funds.

All funds have various internal fees and other expenses, that are paid by managers or issuers of the funds or by the fund itself, but that ultimately are borne by the investor. J.P. Morgan may receive administrative and servicing and others fees for providing services to both J.P. Morgan Funds and third party funds, if applicable, that are held in the client's portfolio. These payments may be made by sponsors of funds (including affiliates of JPMIM) or by the funds themselves and may be based on the value of the funds in the client's portfolio. Funds or their sponsors may have other business relationships with J.P. Morgan outside of its portfolio management role or with the broker-dealer affiliates of J.P. Morgan, which may provide brokerage or other services that pay commissions, fees and other compensation.

J.P. Morgan has an incentive to allocate assets to new J.P. Morgan Funds to help it develop new investment strategies and products. J.P. Morgan has an incentive to allocate assets of the portfolios to a J.P. Morgan Fund that is small, pays greater fees to J.P. Morgan affiliates or to which J.P. Morgan has provided seed capital. In addition, J.P. Morgan has an incentive not to sell or withdraw portfolio assets from a J.P. Morgan Fund in order to avoid or delay the sale or withdrawal's adverse impact on the fund. Accounts managed by J.P. Morgan have significant ownership in certain J.P. Morgan Funds. J.P. Morgan faces conflicts of interest when considering the effect of sales or redemptions on such

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DISCLOSURES (CONTINUED)

funds and on other fund shareholders in deciding whether and when to redeem its shares. A large sale or redemption of shares by J.P. Morgan acting on behalf of its clients could result in the underlying J.P. Morgan Fund selling securities when it otherwise would not have done so, potentially increasing transaction costs and adversely affecting fund performance. A large sale or redemption could also significantly reduce the assets of the fund, causing decreased liquidity and, depending on any applicable expense caps, a higher expense ratio, or liquidation of the fund. These conflicts may be heightened by the collaboration of this program's portfolio manager and the portfolio managers of the J.P. Morgan Funds in designing portfolios for this program. J.P. Morgan has policies and controls in place to govern and monitor its activities and processes for identifying and managing conflicts of interest.

Please review the [JPMS](#) and [JPMIM](#) disclosure brochures for additional important information regarding this program and its conflicts of interest.

IMPORTANT INFORMATION

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Opinions and estimates offered constitute our judgment and are subject to change without notice, as are statements of financial market trends, which are based on current market conditions. We believe the information provided here is reliable, but do not warrant its accuracy or completeness. This material is not intended as an offer or solicitation for the purchase or sale of any financial instrument and should not be relied upon in isolation for the purpose of making any investment decision. References to future returns are not promises or even estimates of actual returns a client portfolio may achieve. Reference to specific securities, asset classes and financial markets are for illustrative purposes only and are not intended to be, and should not be interpreted as, recommendations. Any forecasts contained herein are for illustrative purposes only and are not to be relied upon as advice or interpreted as a recommendation.

Past performance is no guarantee of future results.

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