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Retirement Goal Projections:

The retirement savings projections and retirement income projections generated in Guided Wealth Portfolios are based on each user’s inputs, taking into account the user's initial asset allocation, reported age, desired retirement age, current retirement savings, reported savings rate and risk tolerance. Additionally, the projected income in retirement takes into account the estimated lifespan of the user and income from Social Security. The projections for both the Current Path and Recommended Path portfolios are the result of a Monte Carlo simulation of the accumulation and growth of the user's assets over time. The validity of these projections is dependent upon the accuracy of the data entered by the user. Differences in account size, investment horizon, risk tolerance, asset allocation, timing of transactions, and market conditions prevailing at the time of investment may lead to different results, and you may lose money.

The retirement savings and income projections for the Current Path and the Recommended Path are generated using a Monte Carlo simulation, which is a statistical modeling technique that forecasts a set of potential future outcomes based on assumptions regarding rates of return, variability, and correlation we believe are associated with the relevant asset classes (see the Long-Term Capital Market Assumptions below). The Monte Carlo simulation uses 6,000 different simulations that run over each user’s investment horizon up to a maximum of 50 years. The projections are drawn from the median (50th percentile) outcome of these simulations.

The Monte Carlo simulation creates a large number of possible future portfolio returns. The middle return can be used as an illustration of one potential outcome but actual returns are likely to be better or worse. Therefore, it's often useful to plan for a range of possible outcomes. We sometimes reference the 15th and 85th percentiles of the simulated outcomes. The 15th percentile is a poor but possible outcome, where 15% of the simulated outcomes were at that level or worse, but 85% were better. The 85th percentile is an unusually good outcome. Only 15% of the simulated outcomes were better, but 85% were worse. Most of the simulated outcomes (70% of the total) fell between those two levels, creating a helpful range to look at when planning for retirement.
The projections assume annual retirement contributions and a default life expectancy of 90 years, which may be modified to up to 99 years by the user. The projected growth rate and the projected total value of the portfolio are not adjusted for inflation. In other words, the projected growth rate and value of the portfolio are presented in future dollars, without any downward adjustment for expected inflation, in order to be more representative of your portfolio value at the time of retirement. In contrast, the projected income in retirement calculation assumes an average inflation rate of 2.25% and is adjusted downward for inflation. In other words, the income projection is adjusted to today's dollars to help you better understand the purchasing power associated with such projected income.

The projected income in retirement assumes the median (50th percentile) outcome of the Monte Carlo simulation and a default estimated lifespan value of 90 years, which may be modified to up to 99 years by the user. The default value for projected income in retirement is 80% of the user's projected final earned-income. The projected income may be lower than this value in situations where it would cause the user's assets to fall below 10% of the projected portfolio value at retirement during decumulation. In this scenario, we find the maximum possible income that does not result in the user's assets falling below the threshold stated above.

A default suggestion for Social Security income is provided for the user in order to calculate projected income in retirement. This default suggestion assumes that the user's stated current income remains constant and the user's career spans 35 years. The projected income in retirement calculation assumes that the user begins receiving Social Security benefits at age 67.

The Current Path projections are based on the user's current asset allocation. This simulation does not base projections on the actual returns of particular securities in either the Current Path or the Recommended Path. Instead, the type of securities held in the Current Path or the Recommended Path determines the representative asset class portfolio exposure utilizing the Long-Term Capital Market Assumptions. For the Recommended Path, the projections assume changes in asset class allocations as an account progresses through the glide path to retirement. Once retirement is reached, any projection assumes that asset class portfolio exposure remains static at the last asset class allocation on the glide path.

In the Educational Tool, retirement savings and income projections assume annual rebalancing. These projections are presented on a gross basis and therefore do not take into account management fees, commission fees, taxes or other miscellaneous fees and expenses that you may incur through any other investment management or brokerage service, or through the Managed Service, which if included would reduce the portfolio's performance.

In the Managed Service, retirement savings assume quarterly rebalancing, are net of fund expenses, and are net of the annual management fee, which includes the advisory and program fees. Taxes and miscellaneous fees are not considered in these projections.

No representation is made that an investor will achieve results similar to those shown in projections or that GWP users have experienced such returns. Actual investment outcomes may vary with each use and over time. There can be no assurance that an asset class mix or any performance shown on the Site will lead to the projections shown or perform in any predictable manner. It should not be assumed that investors will experience returns in the future, if any, comparable to those shown or that all of GWP's users experienced such returns. The universe of investments recommended by GWP is limited to passive ETFs. Passive ETFs are generally index funds that seek to track a specific benchmark. Other investments may have characteristics similar or superior to those recommended by GWP.

IMPORTANT: The projections or other information generated by GWP regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect actual investment results and are not guarantees of future results.

Non-Retirement Goal Projections

For non-retirement goals, projections generated in Guided Wealth Portfolios are based on each user’s inputs, taking into account the user's initial asset allocation, time horizon, and risk tolerance. The validity of these projections is dependent upon the accuracy of the data entered by the user. Differences in account size, investment horizon, risk tolerance, asset allocation, timing of transactions, and market conditions prevailing at the time of investment may lead to different results, and you may lose money. Non-retirement goal projections are the result of a Monte Carlo simulation, which is a statistical modeling technique that forecasts a set of potential future outcomes based on assumptions regarding rates of return, variability, and correlation we believe are associated with the relevant asset classes (see the Long-Term Capital Market Assumptions below). The Monte Carlo simulation uses 6,000 different simulations that run over each user’s investment horizon up to a maximum of 50 years. The projections are drawn from the median (50th percentile) outcome of these simulations.

The Monte Carlo simulation creates a large number of possible future portfolio returns. The middle return can be used as an illustration of one potential outcome but actual returns are likely to be better or worse. Therefore, it’s often useful to plan for a range of possible outcomes. We sometimes reference the 15th and 85th percentiles of the simulated outcomes. The 15th percentile is a poor but possible outcome, where 15% of the simulated outcomes were at that level or worse, but 85% were better. The 85th percentile is an unusually good outcome. Only 15% of the simulated outcomes were better, but 85% were worse. Most of the simulated outcomes (70% of the total) fell between those two levels, creating a helpful range to look at when planning for retirement.

This simulation does not base projections on the actual returns of particular securities. Instead, the type of securities used in the major purchase glide path or general investing allocation determines the representative asset class portfolio exposure utilizing the Long-Term Capital Market Assumptions. Projections for major purchases assume changes in asset class allocations as an account progresses through the glide path. When the timeline for the goal has been reached, any projection assumes that asset class portfolio exposure remains static at the last asset class allocations on the glide path. Projections for general investing assume static asset class allocations as determined by LPL.

Major purchase and general investing projections utilize a time horizon determined by the user. Projections are not adjusted for inflation. In other words, the projected value of the portfolio is presented in future dollars, without any downward adjustment for expected inflation, in order to be more representative of your portfolio value at the end of the timeline. In the Managed Service, assets assume quarterly rebalancing, are net of fund expenses, and are net of the annual management fee, which includes the advisory and program fees. Taxes and miscellaneous fees are not considered in these projections.

No representation is made that an investor will achieve results similar to those shown in projections or that GWP users have experienced such returns. Actual investment outcomes may vary with each use and over time. There can be no assurance that an asset class mix or any performance shown on the Site will lead to the projections shown or perform in any predictable manner. It should not be assumed that investors will experience returns in the future, if any, comparable to those shown or that all of GWP's users experienced such returns. The universe of investments recommended by GWP is limited to passive ETFs. Passive ETFs are generally index funds that seek to track a specific benchmark. Other investments may have characteristics similar or superior to those recommended by GWP.

IMPORTANT: The projections or other information generated by GWP regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect actual investment results and are not guarantees of future results.

Long Term Capital Market Assumptions (As of February 2018)

The Monte Carlo simulations used in GWP are based on the BlackRock Multi-Asset Strategies group's long-term capital market assumptions regarding return, risk and correlation expectations for each asset class. (Correlation measures how asset classes move in relation to each other.) These assumptions are based jointly on historical asset class returns (as reflected by the indices described below), proprietary models, and BlackRock's subjective assessment of the current market environment and forecasts as to the likelihood of future events.

Capital Market Assumptions

Asset Class	Benchmark*	Annualized Assumed Return	Annualized Assumed Risk
Cash	Long-Term Risk Free Rate	1.99%	0.17%
Domestic Growth	Russell 1000 Growth Index	7.07%	15.59%
Domestic Value	Russell 1000 Value Index	7.39%	15.95%
Domestic Mid Cap	S&P 400 Mid Cap Index	7.70%	17.62%
Domestic Small Cap	S&P 600 Small Cap Index	8.00%	19.45%
Developed Markets	MSCI EAFE IMI Index	8.39%	18.25%
Emerging Markets	MSCI Emerging Markets IMI Index	8.46%	22.94%
Investment Grade Bonds	Bloomberg Barclays US Aggregate Bond Index	3.14%	4.63%
Intermediate Corporate Bonds	Bloomberg Barclays 5-10 Year Credit Index	3.64%	5.86%
High-Yield Bonds	Bloomberg Barclays Very Liquid High-Yield Bond Index	5.16%	8.62%

Source: BlackRock, February 2018

Correlation Assumptions

	Cash	Corporate Bonds	Developed Total	Domestic Growth	Domestic Mid Cap	Domestic Small Cap	Domestic Value	Emerging Total	High yield Bonds	Investment Grade Bonds
Cash	1	0.071	-0.261	-0.236	-0.254	-0.263	-0.218	-0.226	-0.076	0.162
Corporate Bonds	0.071	1	0.233	0.104	0.139	0.121	0.139	0.255	0.454	0.912
Developed Total	-0.261	0.233	1	0.828	0.87	0.864	0.871	0.866	0.665	-0.006
Domestic Growth	-0.236	0.104	0.828	1	0.957	0.937	0.963	0.753	0.623	-0.109
Domestic Mid Cap	-0.254	0.139	0.87	0.957	1	0.989	0.975	0.796	0.668	-0.089
Domestic Small Cap	-0.263	0.121	0.864	0.937	0.989	1	0.954	0.793	0.658	-0.107
Domestic Value	-0.218	0.139	0.871	0.963	0.975	0.954	1	0.786	0.653	-0.081
Emerging Total	-0.226	0.255	0.866	0.753	0.796	0.793	0.786	1	0.666	0.002
High yield Bonds	-0.076	0.454	0.665	0.623	0.668	0.658	0.653	0.666	1	0.169
Investment Grade Bonds	0.162	0.912	-0.006	-0.109	-0.089	-0.107	-0.081	0.002	0.169	1

Source: BlackRock, February 2018

* See below for a description of each index.

Long-term capital markets assumptions are subject to high levels of uncertainty regarding future economic and market factors that may affect actual future performance. There is no guarantee that the capital market assumptions will be achieved, and actual returns may be significantly higher or lower than those shown. Capital market assumptions should not be relied on as a forecast or prediction of future events, and they should not be construed as guarantees as to returns that may be realized in the future from any investment or asset class described herein.

Because of the inherent limitations associated with the use of retirement savings and income projections and illustrative asset allocations based on capital markets assumptions, investors should not rely exclusively on the asset allocations or funds shown in the tool when making an investment decision. The illustrative asset allocations and funds shown in the Site cannot account for the impact that economic, market, and other factors may have on an actual investment. The retirement savings and income projections shown in GWP do not reflect actual trading, liquidity constraints, certain fees and expenses, taxes and other factors that could impact an investor's realized future returns.

Past performance is no guarantee of future results.

Asset Class Indices:

Domestic Growth is based on the Russell 1000 Index, which is a diversified index made up of the 1,000 largest companies in the Russell 3000 Index.

Domestic Value is based on the Russel 1000 Value Index, which is a diversified index that seeks to track the investment results of an index composed of large- and mid-capitalization U.S. equities that exhibit value characteristics.

Domestic Mid Cap is based on the Russell Midcap Index, which is a diversified index made up of the 800 smallest companies in the Russell 1000 Index.

Domestic Small Cap is based on the S&P 600 Small Cap Index, which is a diversified index representing 600 smaller U.S. companies.

Developed Markets is based on the MSCI EAFE Index, which captures large, mid and small cap representation across Developed Markets countries around the world, excluding the US and Canada.

Emerging Markets is based on the MSCI Emerging Markets Index, which captures large, mid and small cap representation across Emerging Markets (EM) countries.

Taxable Bonds is based on the Bloomberg Barclays US Aggregate Bond Index is a broad-based flagship benchmark that is designed to measure the investment grade, US dollar-denominated, fixed-rate taxable bond market. The index includes Treasuries, government-related and corporate securities, MBS (agency fixed-rate and hybrid ARM pass-throughs), ABS and CMBS (agency and non-agency).

Taxable Intermediate Corporate Bonds is based on Bloomberg Barclays 5-10 Year Credit Index, which is an index that includes U.S. dollar-denominated, investment-grade, fixed-rate, taxable securities issued by industrial, utility, and financial companies, with maturities between 5 and 10 years.

Taxable High-Yield Bonds is based on the Bloomberg Barclays US Corporate High-Yield Bond Index, which measures the US-dollar denominated, high-yield (rated Ba1/BB+ or lower), fixed-rate corporate bond market.

Diversification:

The asset allocation and securities portfolios generated by GWP are constructed by LPL Research using the Long-Term Capital Market Assumptions above and Modern Portfolio Theory, which is a theory on how investors can construct portfolios to optimize returns based on a given level of market risk. The asset classes were selected to broadly reflect the types of core equity and fixed income exposures that are commonly included within diversified portfolios. Other asset classes not considered in the portfolios may have characteristics similar or superior to those included in this analysis. To estimate how your account might benefit from diversification, we determine the projected value of Your Current Path and Your Recommended Path at your retirement age using a Monte Carlo simulation. The difference (net of the annual management fee, which includes the advisory and program fees, for clients of the Managed Service) is reported as the “at retirement” dollar impact due to diversification. This projected performance does not represent the projected performance of the actual securities held in your current portfolio or to be held in your recommended portfolio. Rather, the Monte Carlo simulation is based on the fee-adjusted expected returns of the applicable asset classes in the Current Path and the Recommended Path (see the Long-Term Capital Assumptions). Diversification and asset allocation strategies do not guarantee low volatility, profit or protection against loss.

Performance Calculations:

Performance is provided on an aggregated basis for accounts that are householded for a particular goal. Your rate of return is calculated using the time-weighted rate of return method. The daily time-weighted rate of return formula is:

Daily Performance = [Closing Balance - Cash Flows) / (Opening Balance)] -1

Cash flows are transactions that add or remove assets from your account(s), such as contributions and withdrawals, and do not include fees charged. By excluding the impact of cash flows, the resulting performance calculation better represents the performance of the underlying investment strategy. The daily performance is linked together to produce longer time period performance figures visible in the user interface:

Period N Performance = [(1+Day 1) * (1+Day 2) * … * (1+Day N)] – 1

The performance calculation includes the effect of advisor management fees, program fees, and underlying ETF fees and expenses, and miscellaneous fees charged pursuant to the account agreement. Other rate-of-return calculations may yield different results.

Idle Cash Projected Returns Analysis:

GWP identifies any cash (currency or cash equivalent securities) held within an account aggregated or manually reported by a client or user. We take the aggregate amount of cash across all accounts in the portfolio and apply the Monte Carlo simulation methodology to estimate how the idle cash could grow if invested. For the Current Path projection, cash left uninvested is assumed to grow at an annual rate of 1.99%.

Tax Efficient Asset Placement:

GWP determines the percentage of your aggregated assets that are tax inefficient and would benefit from "tax sheltering" (e.g., fixed income) that are currently held in taxable accounts. Tax-efficient investing is designed to help optimize your portfolio by allocating less tax-efficient assets to tax-advantaged accounts. GWP analyzes your portfolio to identify what portion of your assets we consider to be tax-inefficient based on the type of securities you are holding. Accounts and assets that are not linked or entered in GWP are not considered in this analysis.

Tax Loss Harvesting Analysis:

GWP's tax loss harvesting strategy enables U.S. taxpayers to potentially offset capital gains with capital losses in order to reduce or eliminate federal and state income tax obligations. For more information on our tax loss harvesting strategy please see the FAQ.

GWP's automatic tax loss harvesting should not be interpreted as tax advice and there is no representation that the projected tax consequences will be obtained or that the tax loss harvesting strategy will result in any particular tax consequence. Users should consult with their personal tax advisors regarding the tax consequences of investing through GWP and engaging in this tax loss harvesting strategy, based on their particular circumstances. LPL Financial LLC and FutureAdvisor assume no responsibility for the tax consequences to any user of any transaction.

Portfolio Risk

The Educational Tool analyzes the user's portfolio risk by estimating annualized volatility. It assesses the user's portfolio at an asset allocation-level, and does not take into account information at the security-specific level, such as the individual securities the user holds. The inputs used in the computation are the user's current portfolio allocation and the assumed annual volatilities per asset class and assumed correlations between asset class returns used in the Capital Market Assumptions described above.

In order to compare the current risk level to the risk tolerance selected by a user, the Site also estimates the annualized volatilities of the recommended portfolio at each risk tolerance level (i.e., conservative, moderate and aggressive). It uses the recommended portfolio allocation as an input; the calculation is otherwise the same as described above with respect to the user's current portfolio risk.

In order to determine whether a user's portfolio risk level is considered "on target" or "off target," the Site computes the absolute difference between a user's current portfolio volatility and the recommended portfolio volatility at each risk tolerance level (i.e., conservative, moderate and aggressive). The risk tolerance level associated with the lowest absolute difference is deemed to be the current risk tolerance level.

A user's portfolio risk level is considered "off target" if: (i) the user's current risk tolerance level is different from the user's indicated risk tolerance; or (ii) the user's portfolio volatility is more than 1% above the volatility of the aggressive recommended portfolio; or (iii) the user's portfolio volatility is more than 1% below the volatility of the conservative recommended portfolio. Otherwise, the user is considered "on target."

Asset Allocation

A well-diversified portfolio is achieved by spreading your investment across asset classes so that your exposure to one asset type is limited. For each asset class, the Site calculates the percentage difference between the current portfolio weight and the recommended portfolio weight. This includes evaluating exposures to individual stocks. If the portfolio allocation deviates significantly from the target allocation, the user will receive a "thumbs down."

Fund Fees

The Site estimates the annual amount the user is currently paying in fund fees. This analysis covers only fund expense ratios and does not include any applicable advisory fees, trade commissions, loads, redemption fees or other miscellaneous fees and expenses. Note that actual results may vary if the user enrolls in the Managed Service, since certain current portfolio holdings may be retained in the Managed Service (and the related fund fees will continue to be incurred) if the costs or tax consequences are determined to exceed the benefits of the trade. ***If the user enrolls in the Managed Service, the user will pay fees that may in the aggregate be equal to or greater than the reduction in fund fees gained by enrolling in the Managed Service***.

GWP compares the weighted-average fund expense ratios of the user's existing holdings to the weighted-average expense ratio of the user's recommended portfolio. If the overall expense savings are greater than either $50 or a 10% reduction in fund fees, a negative check or a thumbs-down is displayed. Otherwise, a positive check or a thumbs-up is displayed. Third party fund expense ratio data is utilized for these calculations. Although each of LPL and FutureAdvisor believes the providers of this data are generally reliable, there could be errors that are beyond the control of LPL or FutureAdvisor in the information provided and such errors could compromise the quality of this calculation. Any individual stocks or other security types that are not subject to fund fees are weighted as not subject to fund fees in this calculation.

The Bottom Line - "Portfolio Health" or "Lower Risk"

Your portfolio "health" is displayed as either a dollar difference projecting higher returns or a lower risk benefit. The projected dollar difference is calculated based on the fee- adjusted expected returns of the applicable assets classes in the current portfolio versus those of the recommended portfolio as determined by our Monte Carlo simulation. The projected risk recommendation is calculated using the portfolio weights by asset class, and the capital market assumptions used by the Monte Carlo simulation. The projected risk recommendation leverages the same methodology as referenced in the Portfolio Risk section, above.

If the projected return of the recommended portfolio exceeds the projected return of the user's current portfolio, the Site will display the Monte Carlo simulation of both the user's current and recommended portfolio.

Alternatively, if the current portfolio projection exceeds the recommended portfolio projection and the user's risk is "off target" for being too aggressive, as measured using the risk methodology described above in the Portfolio Risk section, the user will see an image conveying that the current portfolio is too risky.

Lastly, if the current portfolio projections exceed the target portfolio projections, but the user's risk does not exceed the recommended portfolio risk, this section will not be included in the analysis.