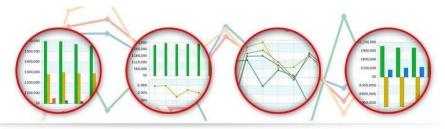
PortfolioAnalyst W H I T E P A P E R



PortfolioAnalyst: Retirement Planner

Overview

The Retirement Planner is a tool that may help improve your understanding of your Retirement Outlook. The tool considers your personal retirement preferences, current and future employment expectations, any potential additional monthly retirement income sources, your current monthly expenses, and general market performance assumptions. Using information you provide and accounts you choose to include, the Retirement Planner will generate your Retirement Outlook to help you plan for your future.

User Details

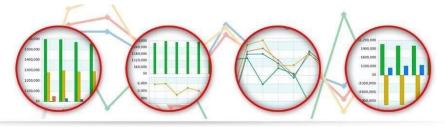
The Retirement Planner tool utilizes user data when generating a Retirement Outlook. User data may be prefilled from existing user/account information or manually entered by the user. Some prefilled user data may be changed and in doing so may affect the Retirement Outlook.

Retirement Plan Information

Field	Definition
Name	Name is the user's name, which is prefilled from existing user/account data and is not an editable field.
Age	Age is the user's age, which is prefilled from existing user/account data and is not an editable field.
Base Currency	The currency used throughout the Retirement Planner, which is prefilled from existing user/account data and is not an editable field. Accounts using a currency other than the base currency will have their figures converted to the base currency.
Retirement Status	Use this field to define whether you are retired or not. The field is defaulted to "Not Retired" but may be changed by the user at any time.
Desired Retirement Age	Use this field to define the age at which you would like to retire. The value must be supplied by the user and can be changed by the user at any time.
Retirement Plan End Date (Year)	The retirement plan end date is the year in which you would like the retirement plan to end. The value is provided by the end user and can be changed by the user at any time.
Expected Average Annual Inflation Rate	The average inflation rate you expect before and during retirement. The default value for the field is 3% and may be changed by the user at any time.
Total Annual Compensation	The user's total annual compensation (salary, bonus, commissions, etc.). The field is pre-filled using existing user/account data and may be changed by the user at any time.
Expected Average Annual Compensation Growth Rate	This is the average annual rate at which the user expects their total compensation to grow. The field defaults to 3% and may be changed by the user at any time.
Expected Effective Tax Rate in Retirement	The effective tax rate the user expects to pay on taxable distributions during retirement. The field defaults to 20% and may be changed by the user at any time.



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Additional Monthly Retirement Income

Field	Definition
Other Income (Non-Taxable)	Any non-taxable income the user will receive during retirement. The default value is 0 and may be changed by the user at any time.
Other Income (Taxable)	Any taxable income the user will receive during retirement. The default value is 0 and may be changed by the user at any time.

Current Monthly Expenses

Field	Definition
Essential Expenses	The user's monthly expenses that are classified as essential. The default value is 0 and may be changed by the user at any time.
Discretionary Expenses	The user's monthly expenses that are classified as discretionary. The default value is 0 and may be changed by the user at any time.
Other Expenses	The user's monthly expenses that are not classified as essential or discretionary. The default value is 0 and may be changed by the user at any time.

Market Performance Assumptions

Field	Definition
Below-Average Annual Market Return	The user's expectation for below-average annual market returns. The field defaults to 4.5% and may be changed by the user at any time.
Average Annual Market Return	The user's expectation for average annual market returns. The field defaults to 7.0% and may be changed by the user at any time.
Above-Average Annual Market Return	The user's expectation for above-average annual market returns. The field defaults to 9.5% and may be changed by the user at any time.

Account Details

The Retirement Planner tool allows users to include or exclude both Interactive Brokers accounts and External Accounts. The tool currently supports brokerage, bank, and other asset account types. Before an account may be included in the view, the account will need to be configured. Depending on the type of account that you are included will determine what information we will need to collect.

IBKR Accounts

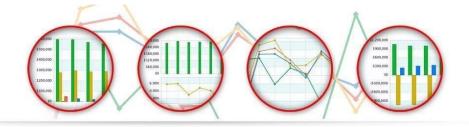
This panel shows all of your possible IBKR accounts that may be included in your Retirement Plan.

External Accounts

This panel shows all of your possible External accounts that may be included in your Retirement Plan.



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Account Configuration

Before being able to include an account in your Retirement Plan, you must configure the account and select to have it included in the plan. Depending on the type of account, you will need to make some simple assumptions to better project the accounts impact throughout the Retirement Plan.

Brokerage Accounts

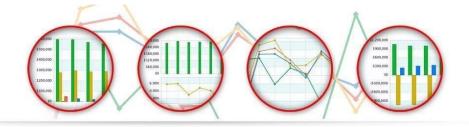
Question	Additional Information
Are distributions during retirement taxable?	We ask this question to determine if we should deduct taxes from distribution during retirement.
What is the contribution type?	We ask this question to determine how the user will be contributing to the account before retirement. • Amount > Annual Contribution Amount The amount that will be contributed to the account annually. • Percent > Percent of Total Annual Compensation The percentage of total annual compensation that will be contributed to their account.

Bank Accounts

Question	Additional Information
Are distributions during retirement taxable?	We ask this question to determine if we should deduct taxes from distribution during retirement.
What is the contribution type?	We ask this question to determine how the user will be contributing to the account before retirement. • Amount > Annual Contribution Amount The amount that will be contributed to the account annually. • Percent > Percent of Total Annual Compensation The percentage of total annual compensation that will be contributed to their account.
What is the interest rate?	We ask this question to determine the interest the checking or savings account receives so that we can project the account growth throughout the retirement plan.



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Other Asset Accounts

Question	Additional Information
What is the expected average annual appreciation?	We ask this question to determine the average annual appreciation or depreciation a user would expect to see for their other asset account.
How will you utilize this asset?	We ask this question to determine how the other assets will be used: • Sell the asset Monthly expense adjustment as a result of the sale • Take a loan against the asset • We ask about loan amount as a percentage of the asset value to determine how your expenses are impacted at the time of the sale. • We ask about monthly expenses adjustment because of the sale to determine how your expenses are impacted at the time of the sale.
Which Other Asset Account will be liquidated last?	Users can designate only one of their Other Asset accounts to be liquidated last. By designating an Other Asset account as liquidate last, the Other Asset account would be utilized only after all other possible accounts have been tapped.

Retirement Outlook

The Retirement Outlook consists of an interactive chart/graph along with a corresponding table to better depict the users retirement picture. Within the Retirement Outlook, you may choose between an Asset Value view and a Retirement Income view.

The Asset Value view will show the user how the account values grow before retirement, the value of all accounts at retirement, and how withdrawals from the accounts affects the value of all accounts throughout retirement. Users can adjust the Period to focus on specific time ranges within their retirement plan.

The Market Performance dropdown allows users toggle between their various market performance assumptions to see how it affects their retirement outlook. Users can also chose to turn Inflation Adjusted to "No" so that you can see your retirement plan without the impact of inflation.

Chart/Graph

Within the Retirement Outlook, you may choose between an Asset Value view and a Retirement Income view. We will use flags within the chart to depict important Retirement Plan events.

Asset Value

The Asset Value view will show the user how the account values grow before retirement, the value of all accounts at retirement, and how withdrawals from the accounts affects the value of all accounts throughout retirement.

Retirement Income

The Retirement Income view will compare their yearly retirement income to their yearly expenses during retirement. When the Retirement Income view is selected, the period start date will always be from the users designated retirement date (year).



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Table

Regardless of the view selected, the table will display to users a detailed yearly breakdown of various retirement figures.

- Year
- Age
- Starting Value
- Contributions
- Distributions
- Weighted Return
- Ending Value
- Total Retirement Income
- Total Expenses

- Surplus/Deficit
- Total Compensation
- Compensation Growth Rate
- Inflation Rate
- Distribution Income
- Additional Other Income
- Starting Other Assets Value
- Other Assets Sale & Loan Proceeds
- Ending Other Assets Value

Methodology and Assumptions

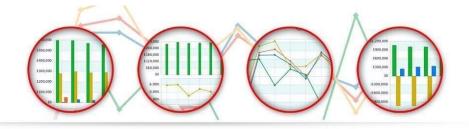
Within the Retirement Planner tool, we make various assumptions to assist with projecting the users Retirement Outlook.

General Assumptions

Factor	Assumption
Inflation	The inflation rate will remain constant through the retirement plan.
Monthly Expenses	We estimate user expenses during retirement by adjusting the current monthly expenses for inflation through the end of the retirement plan.
Compounding	Monthly compounding is used throughout the length of the retirement plan.
Interest Rate	When including a Bank-type account, we assume the provided interest rate remains constant throughout the retirement plan.
Weighted Return	The weighted return considers each account's individual expected return and account size to show the combined assumed return for all accounts that are included in the retirement plan.
Annual Appreciation	The appreciation rate provided for an Other Asset-type account remains constant throughout the retirement plan.
Starting Value	The total value of all Brokerage, Bank and Other Asset accounts, plus any Other Asset sales or loan proceeds.
Ending Value	Total ending value of all Brokerage, Bank and Other Asset accounts, plus any Other Asset sales or loan proceeds. Ending Value = (Starting Value + Contributions – Distributions) + (Starting Value + Contributions – Distributions) * (Market Performance Assumption (for bank/brokerage account types) OR Interest Rate (when selected for bank accounts) OR Annual Appreciation Rate (for Other Asset accounts))



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Not Retired

Factor	Assumption
Total Compensation	The compensation provided by the user will grow annually in January at the provided annual compensation growth rate. Compensation will be set to zero once retired.
Compensation Growth Rate	The compensation growth rate is used to determine how the user's total compensation grows each year prior to retirement.
Contributions	 Contributions will stop once retirement starts. Percent Contributions Are added monthly to the respective account as a percentage of total monthly compensation (Total Compensation / 12)
	 Amount Contribution Amount contributions are made once annually in January.

Retired

Factor	Assumption
Additional Monthly Retirement Income	Additional monthly retirement income grows annually by the expected inflation rate: Taxable The net income to be used to cover expenses is calculated by [taxable income amount – (taxable income amount * effective tax rate)] Non-Taxable No taxes are withdrawable from non-taxable income Non-distribution Income Applied first to cover expenses before any distribution income or sale/loan proceeds
Market Return	Market return for Brokerage accounts in retirement is equal to inflation.
Distributions	Distributions occur only during retirement and only up to the amount needed to cover expenses. Account Priority - Withdrawals are taken first from taxable accounts, then taxdiffered accounts, then non-taxable accounts, then Other Asset accounts, and then Other Asset Last Resort accounts. Taxes - If an account is configured such that distributions are taxable, the total net distribution is calculated by [distribution amount – (distribution amount * effective tax rate)]
Other Asset Sales	If selected, an Other Asset will be sold to cover expenses when all other higher priority accounts have been withdrawn to zero and additional income is needed to cover the total expenses. The sales proceeds will then be used to cover expenses when available.
Other Asset Loans	If selected, a loan against an Other Asset will take place to cover expenses when all other higher-priority accounts have been withdrawn to zero and additional income is needed to cover the total expenses. The loan proceeds will then be used to cover expenses when available.
Taxes	Both Distributions (when configured such that withdrawals are taxable) and Other Income (taxable) are taxed at the users specified Expected Effective Tax Rate in Retirement. The Net Income is then used to cover retirement expenses. NOTE – Taxes are not deducted from the sale proceeds when selling an Other Asset account type.

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