**Client Retirement Dashboard Features and Analysis**

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On the left side there is a toolbar that can be customized. I’ve already set the default values based on the client profile provided. I went with what I saw was typical numbers for the assumptions (3% inflation rate, 6% ROI, 25% effective tax rate, retirement savings lasting till age 90, etc).

* There is a checkbox to include social security (it is not checked by default), when checked will bring up an option to input estimated annual social security.
* Retirement age is a slider that can be used to update the graphs in real time.
* Account balances, 401k contribution, and annual spending can be input to update the graphs in real time.
* Inflation rate, investment return %, and effective tax-rate % can be adjusted to update the graphs in real time.

The center of the screen should be three graphs:

1. **Projected Asset Growth (Current Age to Retirement Age):**

* Non-Qualified Account:  
  New Balance = Previous Balance × (1 + investment return)
* 401(k) Account:  
  New Balance = Previous Balance × (1 + investment return) + annual contribution
* Total Portfolio:  
  Total Balance = Non-Qualified Balance + 401(k) Balance

1. **Projected Retirement Account Balance (Post-Retirement):**

New Balance = Previous Balance × (1 + investment return) – (Spending ÷ (1 – tax rate))

Where spending increases each year by inflation:

New Spending = Previous Spending × (1 + inflation rate)

1. **Estimated Annual Spending Covered by Savings:**

New Spending = Previous Spending × (1 + inflation rate)

If Social Security is included:

Net Spending = max(0, Spending – Social Security)

At the bottom is a quick summary section to reference the calculations above:

* “**Social Security Not Included**” shows by default. If the social security checkbox is checked it will show “**Social Security Included**” and present the estimated annual social security income at retirement age adjusted by inflation.
  + Estimated SS Income = Input Amount × (1 + inflation rate) ^ years until retirement
* **Projected Portfolio at Retirement** (Age): sum of 401(k) and non-qualified accounts
* **Annual Spending at Retirement**: adjusted for inflation and net of social security (if checked)
* **Portfolio lasts until age**: the age when the client’s portfolio reaches $0, the last year before the balance hits zero
* At the very bottom it evaluates if the plan is on track by checking if the portfolio lasts until at least age 90. If the portfolio runs out before age 90, it shows a warning with suggestion to save more, retire later, or include social security. If the portfolio lasts beyond age 90, it shows a green message indicating the client is on track under current assumptions.

Additional user tools:

The dashboard is built using Streamlit which includes a few built in tools and customization options for the user by clicking on the three dots in the upper right hand corner.

* Rerun – refreshes app (same result as refreshing the page)
* Print – print friendly version of the page
* Settings – Appearance – enable or disable wide mode, edit the active theme, change colors (handy if you need to quickly change the color settings for a specific client right away. I am able to set default theme and appearance if needed.)

Based on the given parameters of our example client, who I’ll affectionately refer to as ‘Kyle Konvergent’ from now on, here’s the analysis:

* If Kyle wants to retire at age 67 currently being 55 years old, his portfolio will amount to $, 752,035. Annual Spending with inflation will grow to $171,091, making his balance last till age 83. Because the portfolio runs out before age 90, **Kyle may face a funding shortfall**.
* **Including Social Security**: If Kyle includes $30,000 annual social security, this reduces his longevity risk. His portfolio will last until age 90.
* **Without Social Security, Kyle will need to reduce his spending by 25%:** Kyle has $1.2 million in assets and earns $200,000 annually but spends $120,000 annually. Reducing his annual spending to $90,000 would increase the longevity of his portfolio.