Methodology & Assumptions

AI Retirement Income Planner — Version 7

Prepared for management review · June 2026

> The planner is built on a **transparent, deterministic model** — every figure is computed from explicit, inspectable rules rather than opaque shortcuts. This document summarises the assumptions behind the projections so reviewers can judge their reasonableness. The user supplies current-year rate inputs (with an optional AI-assisted refresh), and the model applies them consistently across the plan.

Modeling approach

- **Phased timeline.** Retirement is divided into up to five phases at user-defined boundary ages (defaults align with milestones — 62, 65, 67, 72). A phase can be split automatically when Social Security begins mid-phase.
- **Month-by-month simulation.** Within each phase, balances compound and withdrawals/income are applied monthly; the same engine is reused for projections, Monte Carlo, backtesting, and stress testing.
- **Real vs nominal.** Results are shown both in nominal dollars and deflated to "today's money" using the general inflation rate.

Inflation & income growth

- **General inflation** deflates net income to real terms and inflates tax thresholds (below).
- **Cost-of-living growth** is applied per income source from its start age: US Social Security COLA, UK State Pension Triple Lock, Canada CPP/OAS, Australia Age Pension, and US pensions/disability — each with its own rate (a US pension may also be flat or track general inflation).
- **Healthcare inflation** can be set separately, reflecting that medical costs historically rise faster than CPI.

US federal income tax

- **Bracket inflation-adjustment.** Standard deduction, the age-65+ additional deduction, and the 10/12/22%+ brackets are inflated to each phase's midpoint, approximating annual IRS adjustments. Married-Filing-Jointly uses wider bands.
- **Social Security taxation.** The taxable share of benefits is derived from provisional income (other taxable income plus half of benefits), per the standard thresholds.
- **NIIT.** A 3.8% surtax on net investment income (taxable equity gains and taxable rental) above the MAGI threshold is modeled for US residents.
- **State income tax.** A flat effective-rate approximation, with optional exemptions for Social Security and for 401k/pension income (as several states provide).

Healthcare: ACA, Medicare & IRMAA

- **Pre-Medicare (ACA).** The model estimates marketplace premiums and flags subsidy eligibility (MAGI above 100% FPL), Silver-CSR eligibility (100–250% FPL), and the 400%-FPL subsidy cliff.
- **Medicare.** Part B and Part D premium estimates apply from age 65.
- **IRMAA.** The income-related Medicare surcharge uses a two-year MAGI lookback, so a high-income (or large-conversion) year is reflected in premiums two years later.

Withdrawals, RMDs & Roth

- **Drawdown order & basis.** Withdrawals are taken from 401k, cash, taxable equity, Roth, and (Australia) Super; equity sales track cost basis so only the gain is taxed.
- **RMDs.** Required Minimum Distributions are estimated from age 73 using an IRS Uniform-Lifetime-Table divisor, and the plan flags when a 401k withdrawal falls below the estimated minimum.
- **Roth.** Roth withdrawals are tax-free and excluded from MAGI; Roth conversions are taxed as ordinary income in the conversion year and raise MAGI (affecting ACA and IRMAA).

Expatriate & treaty handling

- **United Kingdom.** 401k distributions are taxable in both countries; UK tax is computed and a US Foreign Tax Credit prevents double taxation. US Social Security is taxed only in the US (treaty Article 17). US ACA/Medicare/IRMAA do not apply to UK residents.
- **Canada & Australia.** The local income-tax regime (plus the Australian Medicare Levy) replaces US federal tax for resident phases; CPP/OAS and the Age Pension are treated as ordinary income; Australian Super withdrawals are treated as tax-free post-preservation-age.
- **Other foreign residence.** US federal tax still applies to US-account withdrawals; US healthcare programs are excluded.

Survivor & longevity scenarios

- **Survivor ("widow's tax cliff").** On a first death, the household keeps the larger Social Security benefit, switches to single-filer brackets, and continues each US pension at a user-set survivor percentage — surfacing the income drop that often accompanies barely-lower expenses.
- **Monte Carlo.** Returns are drawn from a normal distribution each phase (with configurable stock/cash volatility and inflation uncertainty) to estimate the probability the plan stays solvent.
- **Historical backtest.** The plan is replayed against real US market sequences to show how it would have fared through past conditions.

Scope & limitations. This is an **educational planning aid, not financial, tax, or legal advice.** It models the figures a user enters and the rates they supply; tax law, benefit structures, and premiums change, so users are responsible for verifying current-year values (an in-app rate-research tool assists with this). Several elements are deliberate approximations (e.g. flat state tax, simplified treaty treatment) chosen for transparency and breadth. Always consult a qualified professional before making financial decisions.