**Sample Wealth Advisors**

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Prepared 2026-05-09

# Retirement plan: forecast comparison

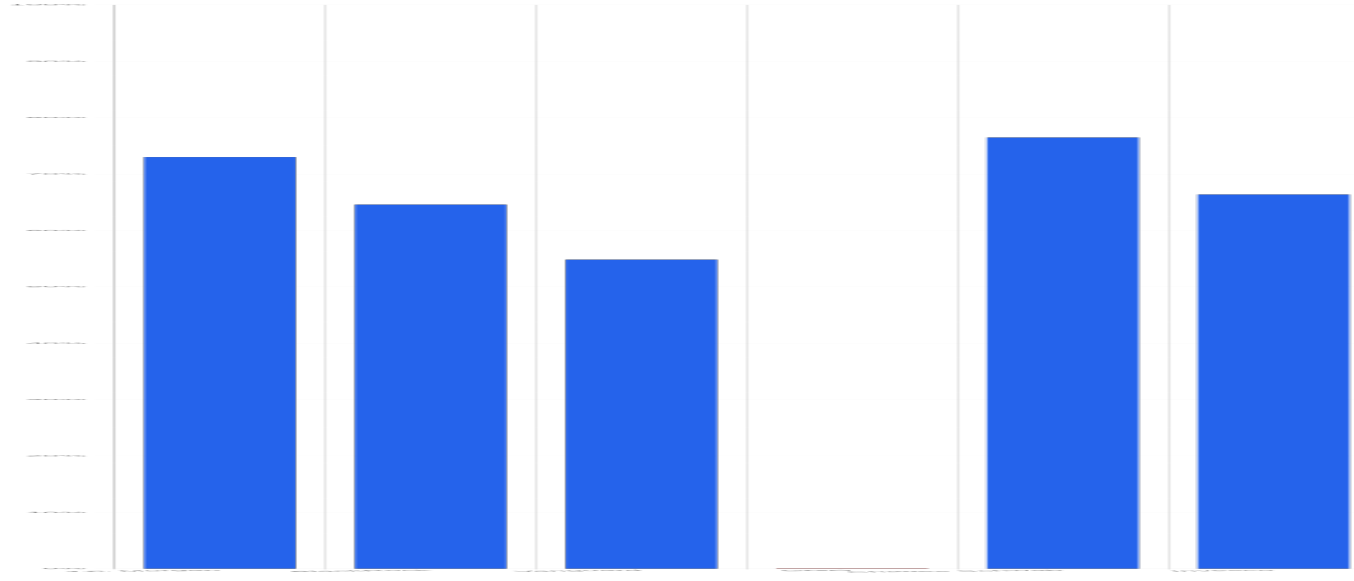
Client: Sample Client · Scenario: FIRE bridge to 65

This report runs the same retirement plan through six publicly-published Capital Market Expectations to show how the plan performs under each forecast. Results below.

### Plan parameters

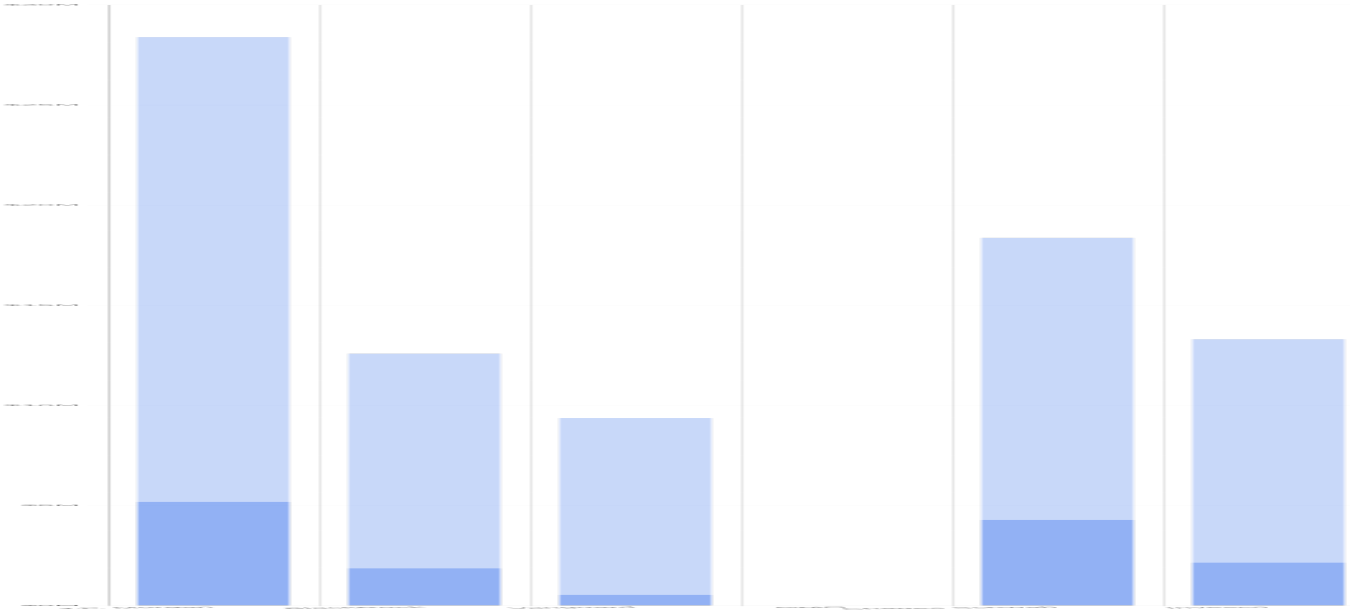
| | |
|---|---|
| Current age | 50 |
| Retirement age | 50 |
| End age | 95 |
| Starting balance | $2,000,000 |
| Monthly contribution | $0 |
| Monthly withdrawal (initial) | $7,000 |
| Inflation indexing | 2.5% / year (CPI-anchored, deterministic) |
| Allocation preset | balanced (45% / 15% / 40% / 0% / 0%) |
| Simulations / forecast | 10,000 |
| Sampling regime | Pseudo-random (Mersenne Twister) |

### 30-year success rate by forecast



## Terminal balance distribution

Stacked bars show the 10th (light) – median – 90th (light) percentile of the simulated e



## Numerical detail

| Forecast | Success | p10 terminal | p50 terminal | p90 terminal |
|---|---|---|---|---|
| J.P. Morgan | 73.0% | $0 | $5.17M | $28.39M |
| BlackRock | 64.6% | $0 | $1.85M | $12.59M |
| Vanguard | 54.8% | $0 | $530K | $9.36M |
| GMO | 0.1% | $0 | $0 | $0 |
| Charles Schwab | 76.5% | $0 | $4.27M | $18.37M |
| Invesco | 66.4% | $0 | $2.14M | $13.30M |

### Interpretation

0 of 6 published forecasts produce a 95%+ 30-year success rate for this plan. Median terminal balance varies 5174730.6× across forecasts, suggesting the plan's binary survival outcome is robust but the legacy / bequest outcome is sensitive to the forecast assumption. Forecasts producing meaningfully lower terminal balances may warrant a more conservative withdrawal rate or an allocation review.

# Methodology

## Simulation engine

Monte Carlo retirement simulation written in C, deployed as an AWS Lambda container. Returns are modeled with correlated lognormal asset paths via Cholesky decomposition of the published correlation matrix. Withdrawals are inflation-adjusted at a 2.5% deterministic CPI rate consistent with the post-1990 anchored inflation regime. Each simulation runs the full month-by-month portfolio path for the plan horizon.

## Sampling regime

This report uses pseudo-random (Mersenne Twister) sampling rather than the engine's faster Sobol quasi-Monte Carlo default. Pseudo-random produces unbiased estimates of tail probabilities, which is appropriate when the report's interpretation depends on success rates rather than expected medians. Cross-regime validation has been performed: success rates are stable to within 1.5 percentage points across QMC, scrambled QMC, and pseudo-random sampling.

## Volatility & correlation matrix

All forecasts evaluated in this report use the J.P. Morgan published volatility series (US equity 15.2%, international equity 18.0%, bonds 5.0%, real estate 15.0%, cash 1.0%) and the J.P. Morgan published 5×5 correlation matrix. Holding these constant across runs isolates the effect of each forecast's return assumption — the input that varies most across publicly-available CMEs.

## Inflation model

Deterministic 2.5% CPI applied uniformly to withdrawal indexing across all runs. The QuantCalc engine also exposes AR(1), regime-switching, and bootstrap inflation models; advisors who require stochastic inflation in a fiduciary context can re-run with those settings via the public app.

# Forecast citations

Each return assumption is sourced from a publicly available publication or widely-reported public financial press. QuantCalc does not source from paywalled or registration-gated portals.

**J.P. Morgan**

As published in J.P. Morgan's Long-Term Capital Market Assumptions (annual). am.jpm

**BlackRock**

As reported in Morningstar's annual Capital Market Expectations roundup (Christine Benz, Experts Forecast Stock and Bond Returns: 2026 Edition) and other public financial press.

**Vanguard**

As published in Vanguard's Economic and Market Outlook (annual). corporate.vanguard

**GMO**

Headline figures from GMO's 7-Year Asset Class Forecasts (quarterly), as widely reported in financial press (Reuters, Bloomberg, FT). Note: GMO publishes real returns; values used here are converted to nominal by adding a 2.5% inflation assumption.

**Charles Schwab**

As published in Schwab's Long-Term Capital Market Expectations on the consumer-facing Learn page. schwab.com/learn.

**Invesco**

As published in Invesco's Capital Market Assumptions (annual). invesco.com!' Insights

# Disclosures

### Non-affiliation

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### Not financial advice

This report is a simulation output for educational and analytical purposes. It is not personalized financial, tax, or legal advice. The recommendations contained in any client-facing document produced from this report are the sole responsibility of the issuing advisor; QuantCalc neither reviews nor endorses such recommendations.

### Fiduciary process notes

Use of forward-looking forecasts in retirement plan stress-testing is consistent with industry practice for projection-based planning. The cross-forecast comparison shown in this report can support a fiduciary's documentation of process — specifically, evidence that the plan was evaluated against multiple credible market views rather than a single house assumption. This report does not establish a fiduciary or advisory relationship between QuantCalc and any individual; the issuing advisor retains all such responsibilities.

### What this analysis does not model

Sequence-of-returns risk beyond i.i.d. monthly sampling. Tax drag on withdrawals (no Roth / traditional / taxable account distinction in this report). Healthcare cost shocks or long-term care events. Behavioral changes (dynamic withdrawal rules). Time-varying volatility, fat-tailed return distributions, or crisis-correlation regimes. The full QuantCalc engine supports several of these (stochastic inflation, fat tails, regime switching); they were not enabled for this report.

# Reproducibility

Any reviewer can reproduce the numbers in this report. The full simulation engine is documented publicly at quantcalc.app/methodology.html, and a related research piece with open data (CC0) demonstrating the same six-forecast comparison is published at quantcalc.app/research/4-percent-rule-cme-stress-test/. Re-running with the parameters listed on page 1 of this report will produce identical numbers (modulo random-seed differences in the pseudo-random regime).

### Engine version

QuantCalc backend 2.0.0 (C / Lambda container).

### Report attribution

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