# Goal-Based Investment Calculator

Tailors investment portfolios based on the probability of matching an investor’s periodic cash requirements

**Introduction:** The [Poppertech Investment Calculator](http://poppertechcalculator.azurewebsites.net/) determines the probability that a specific investor attains his or her investment goals. It requires as inputs a time series of cash flows, a set of investment predictions, initial investment amounts, and any constraints an investor wishes to impose upon feasible portfolios. Using a [Bayesian network](https://kuscholarworks.ku.edu/bitstream/handle/1808/161/CF99.pdf) , it simulates the probability of an investment portfolio meeting or exceeding the cash flows over time. Lastly, it calculates the portfolio that maximizes the probability of an investor reaching a goal via [Probabilistic Scenario Optimization](http://riskbooks.com/modern-portfolio-management-from-markowitz-to-probabilistic-scenario-optimisation).

**Benefits:**

* Tailors portfolios to the individual investor
  + Accounts for individual cash needs and investible amounts
  + Investor chooses investment predictions
  + Investor limits possible portfolio choices
    - Invest no more than $500,000 in stocks
* Aligns with the investor’s interest
  + Measure accuracy of investment forecasts objectively using [Proper Scoring Metrics](https://docs.lib.noaa.gov/rescue/mwr/078/mwr-078-01-0001.pdf)
  + Requires relatively basic mathematical knowledge to understand
  + [Code and algorithms](https://github.com/poppertech/Goal-based-Calculator) open source and transparent
* Reduces expenses
  + Scale single set of forecasts across many investors
  + Scale software

**Comparison to Roboadvisors (e.g.** [**Betterment**](https://www.betterment.com/resources/research/etf-portfolio-selection-methodology/) **or** [**Wealthfront**](https://research.wealthfront.com/whitepapers/investment-methodology/)**):**

* Technology focused on investor goals instead of portfolio
  + Investor success primary metric instead of portfolio reward and risk
* Eliminates unrealistic assumptions regarding individual and aggregate investor behavior
  + No risk tolerance assessment
  + No underlying assumptions about the rationality of human beings
* Incorporates expert analysis of investments and historical data
  + Not solely reliant on historical data
* Similar scalability
  + Expense should be comparable