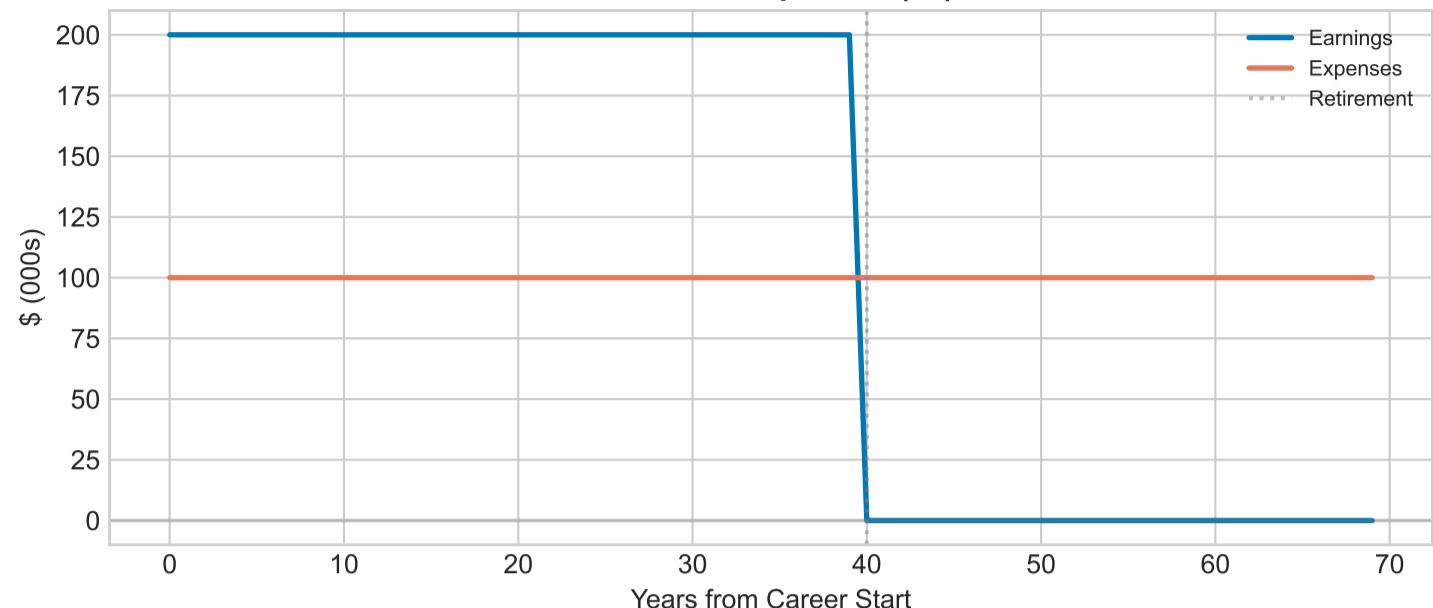
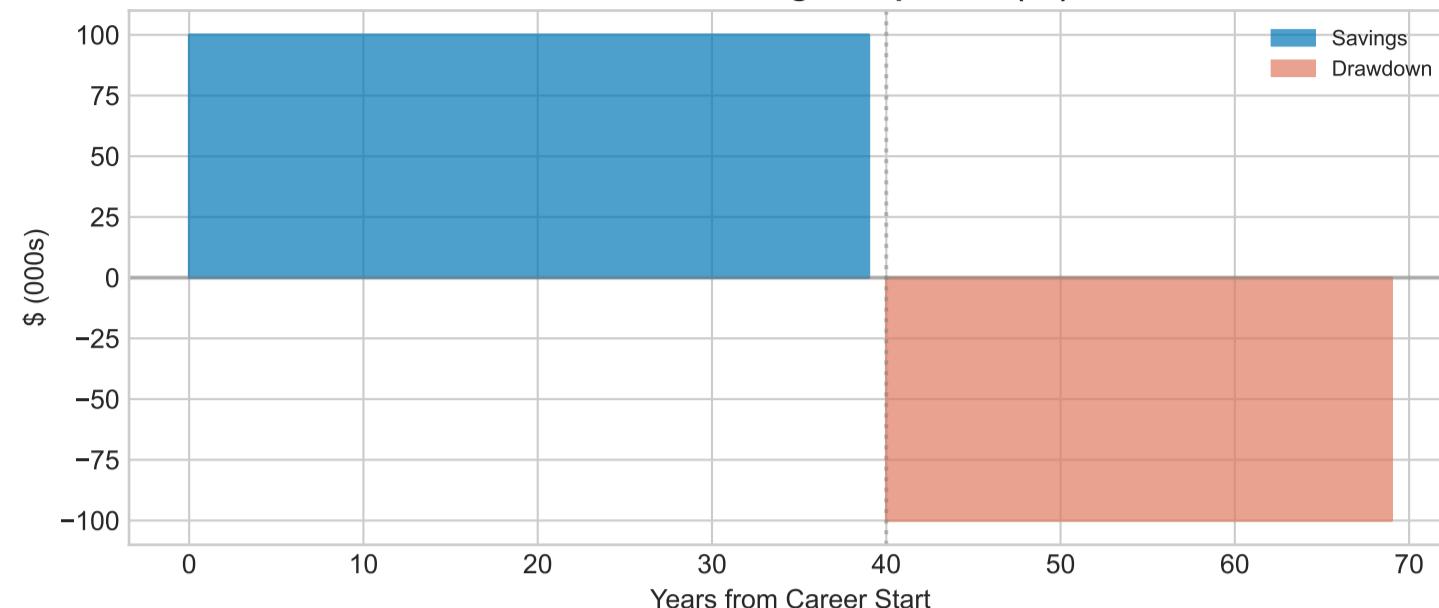


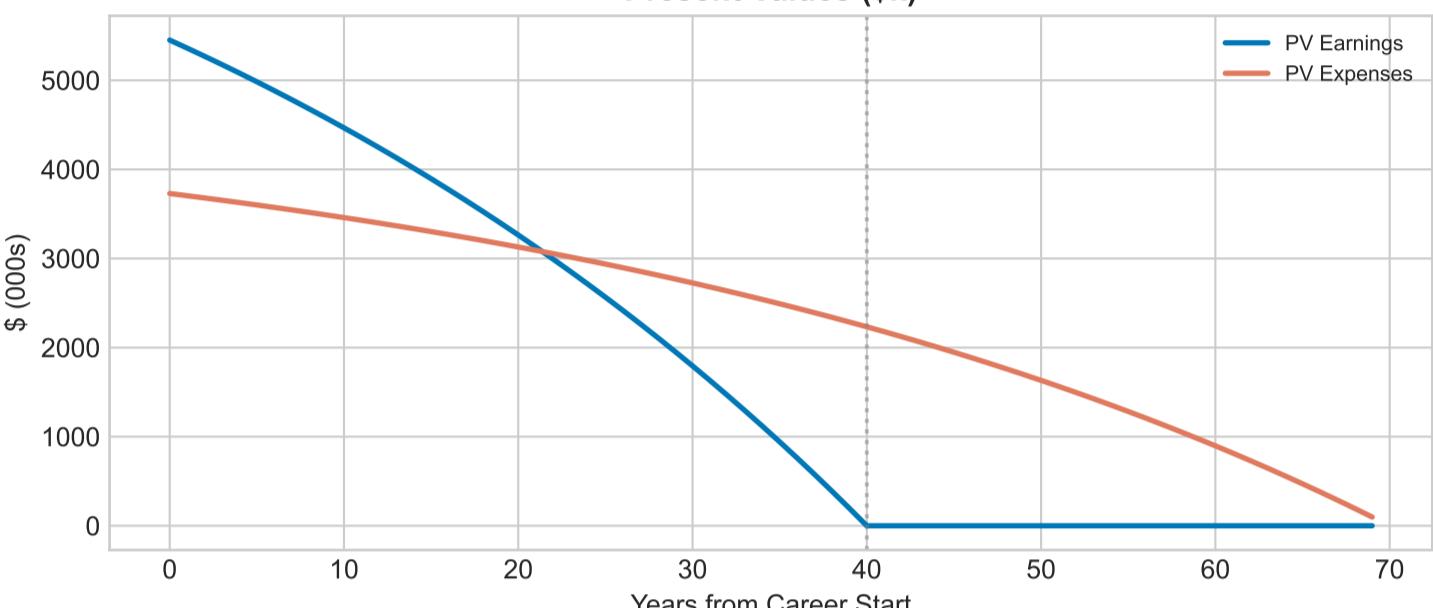
Income & Expenses (\$k)



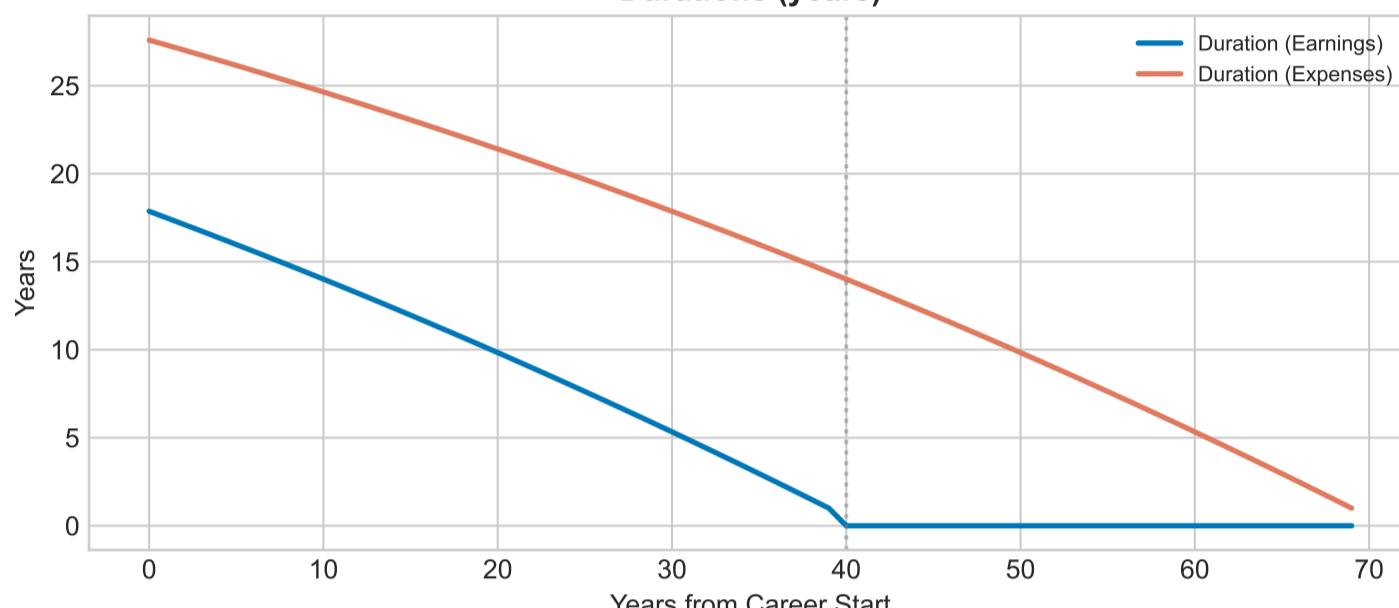
Cash Flow: Earnings - Expenses (\$k)



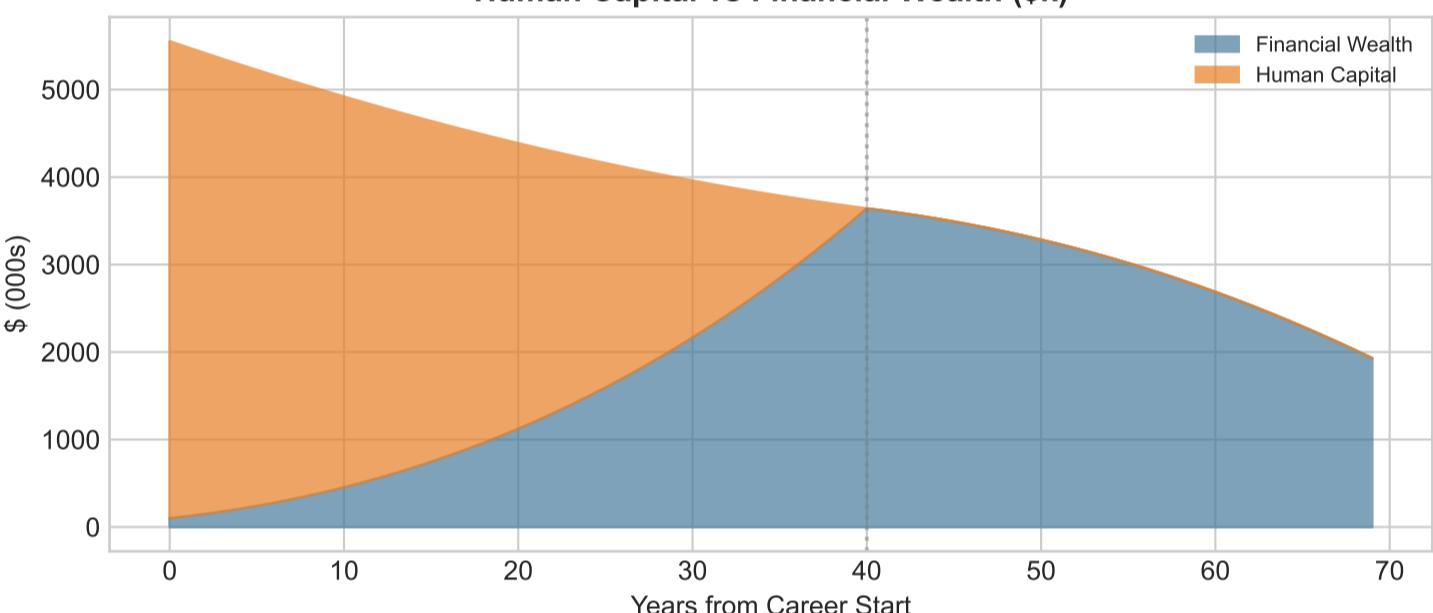
Present Values (\$k)



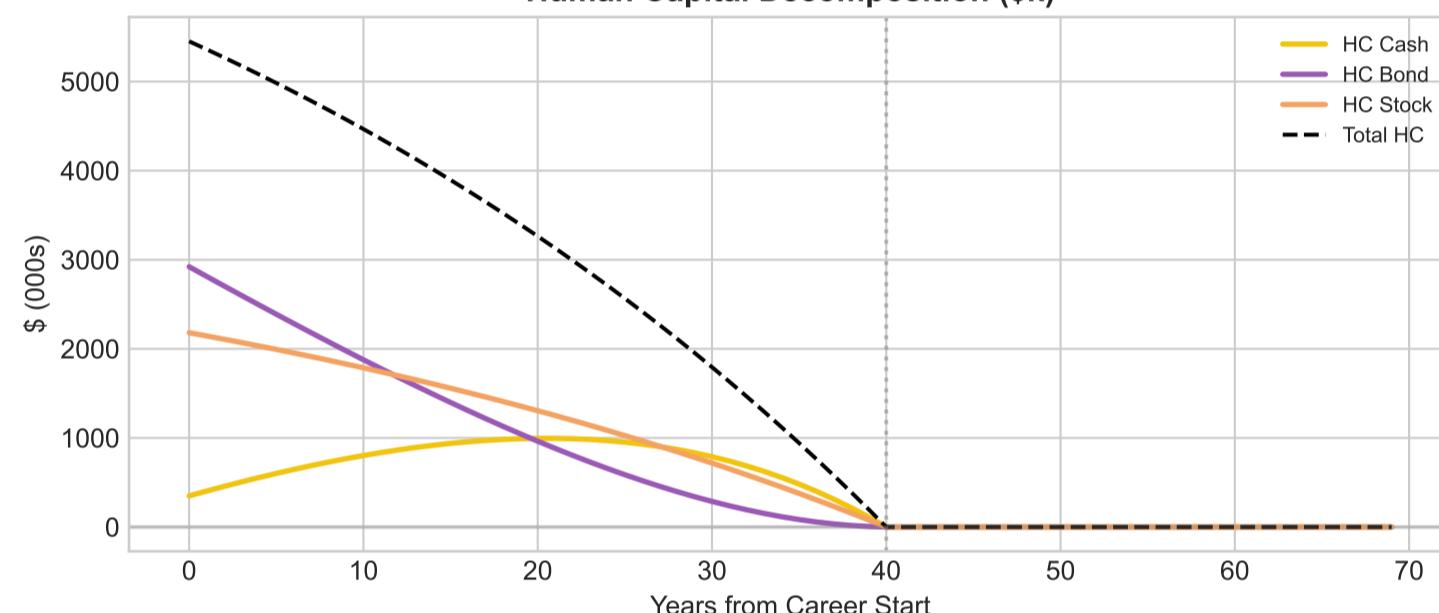
Durations (years)



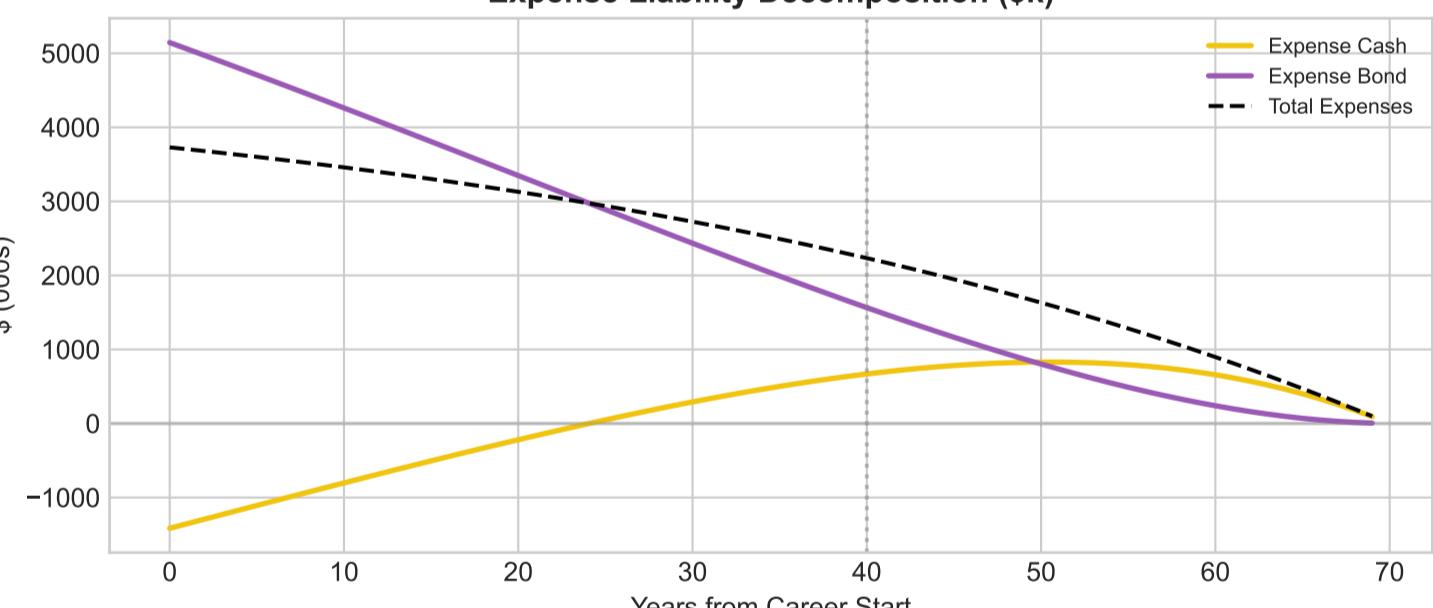
Human Capital vs Financial Wealth (\$k)



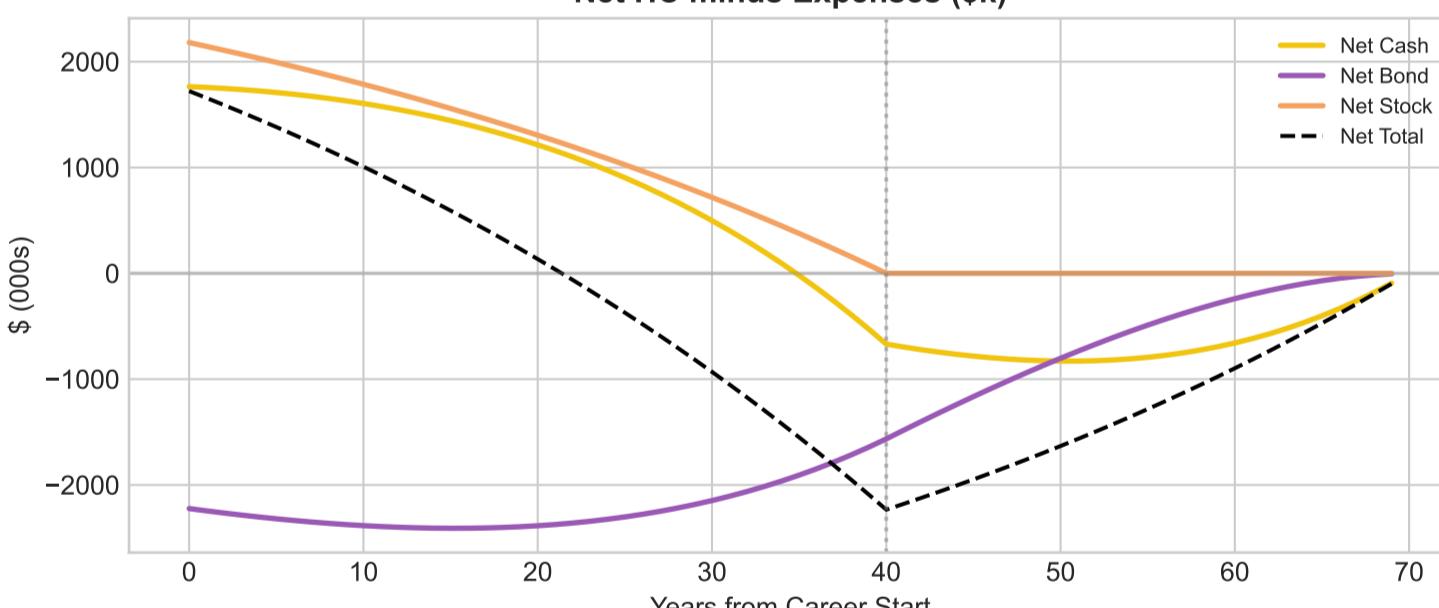
Human Capital Decomposition (\$k)



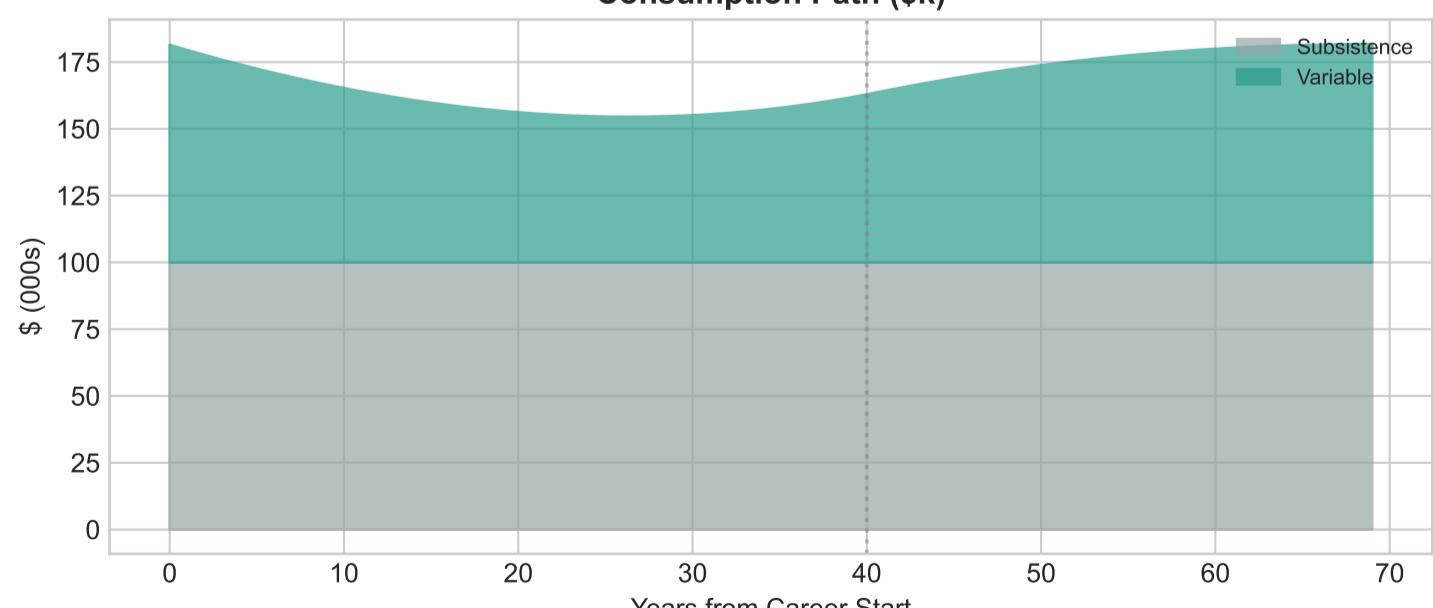
Expense Liability Decomposition (\$k)



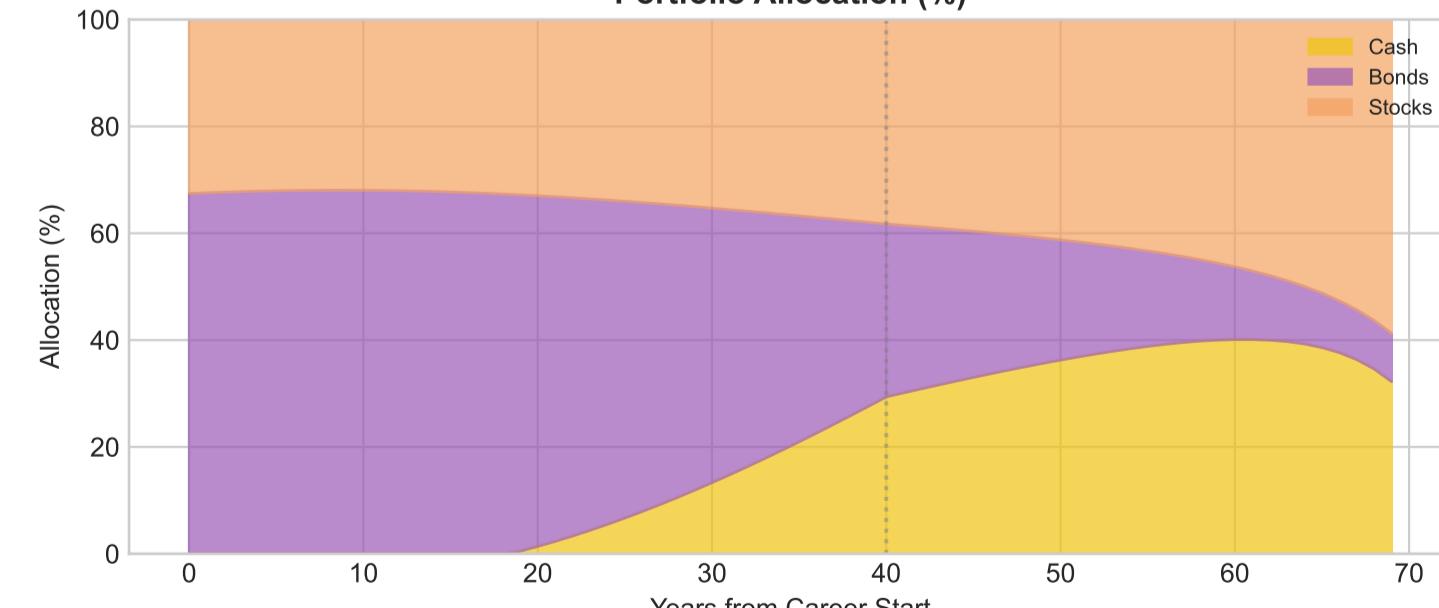
Net HC minus Expenses (\$k)



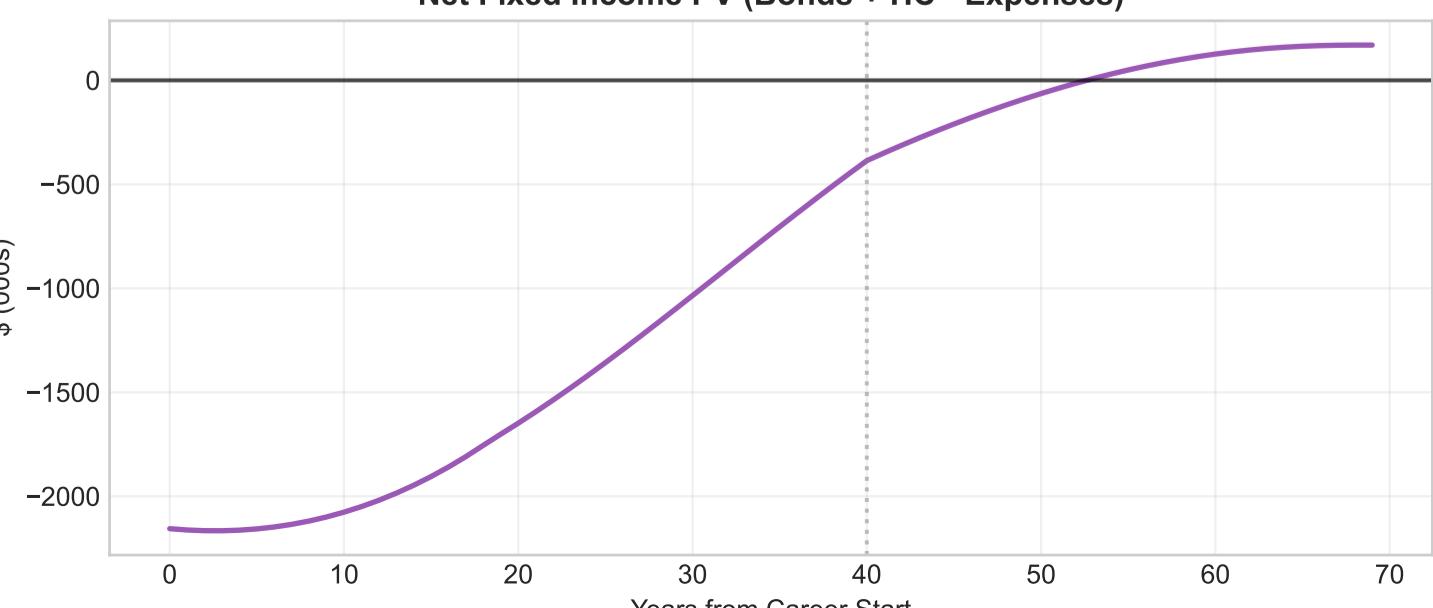
Consumption Path (\$k)



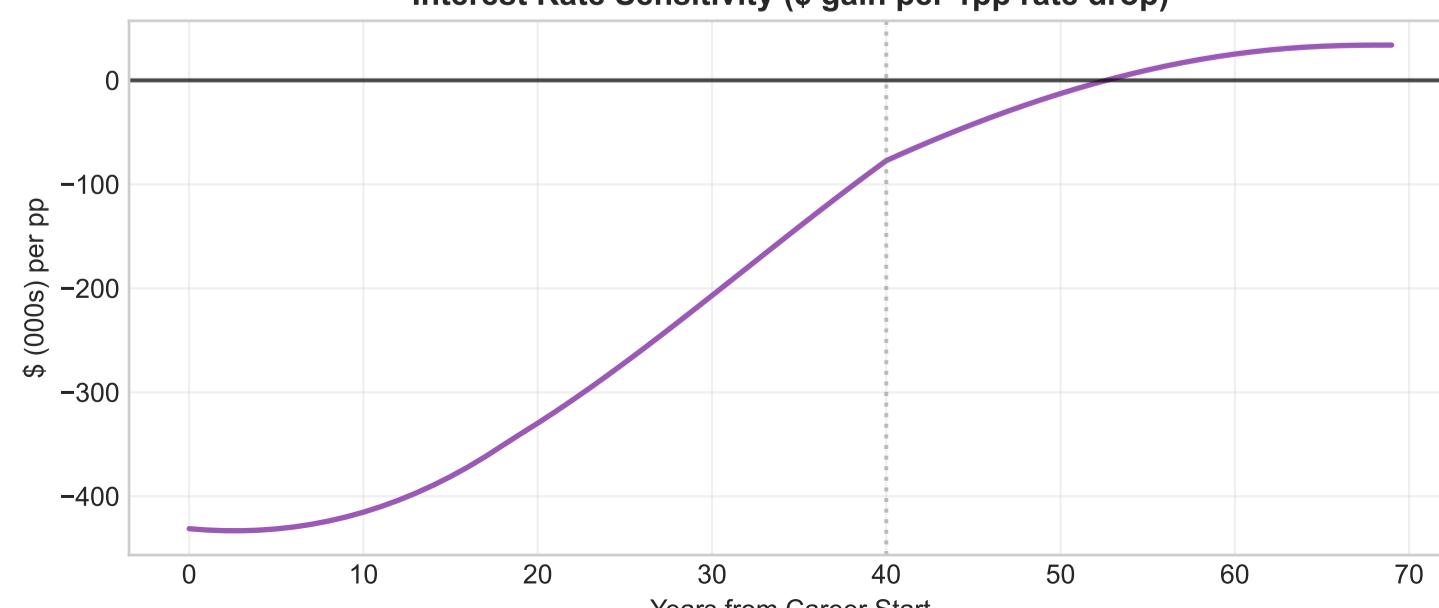
Portfolio Allocation (%)

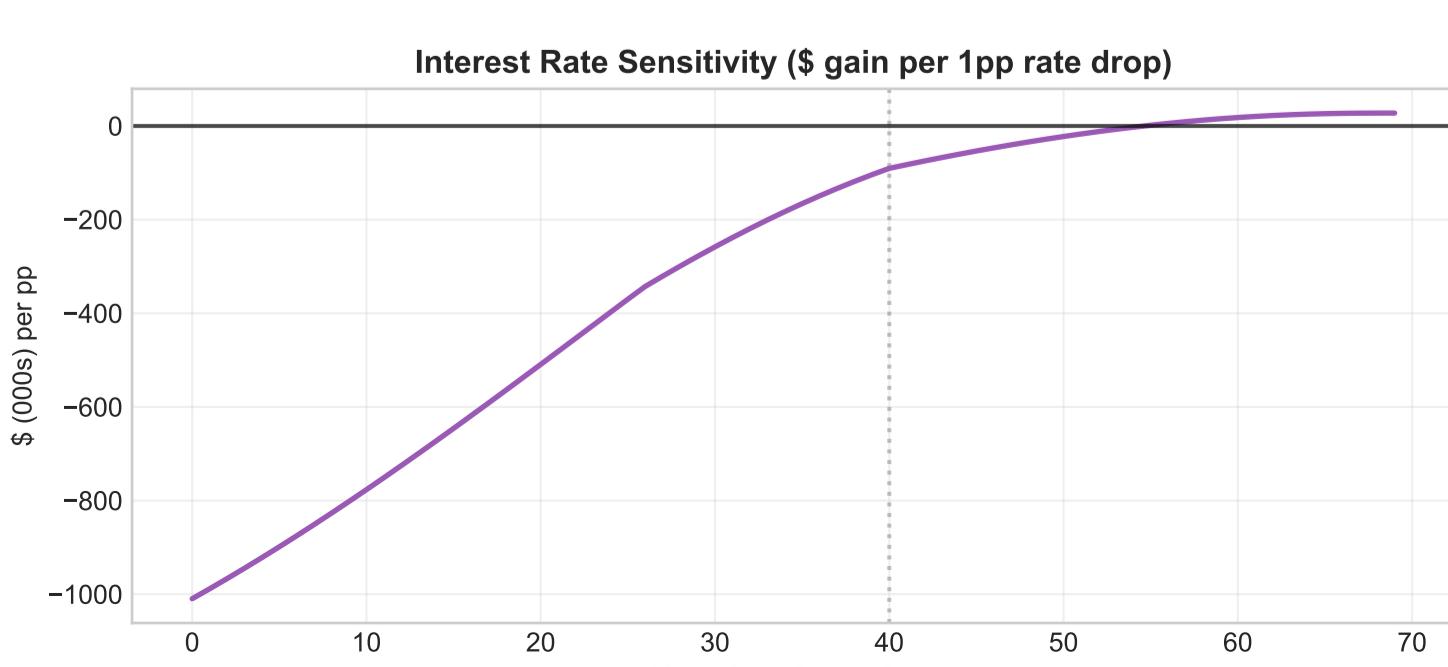
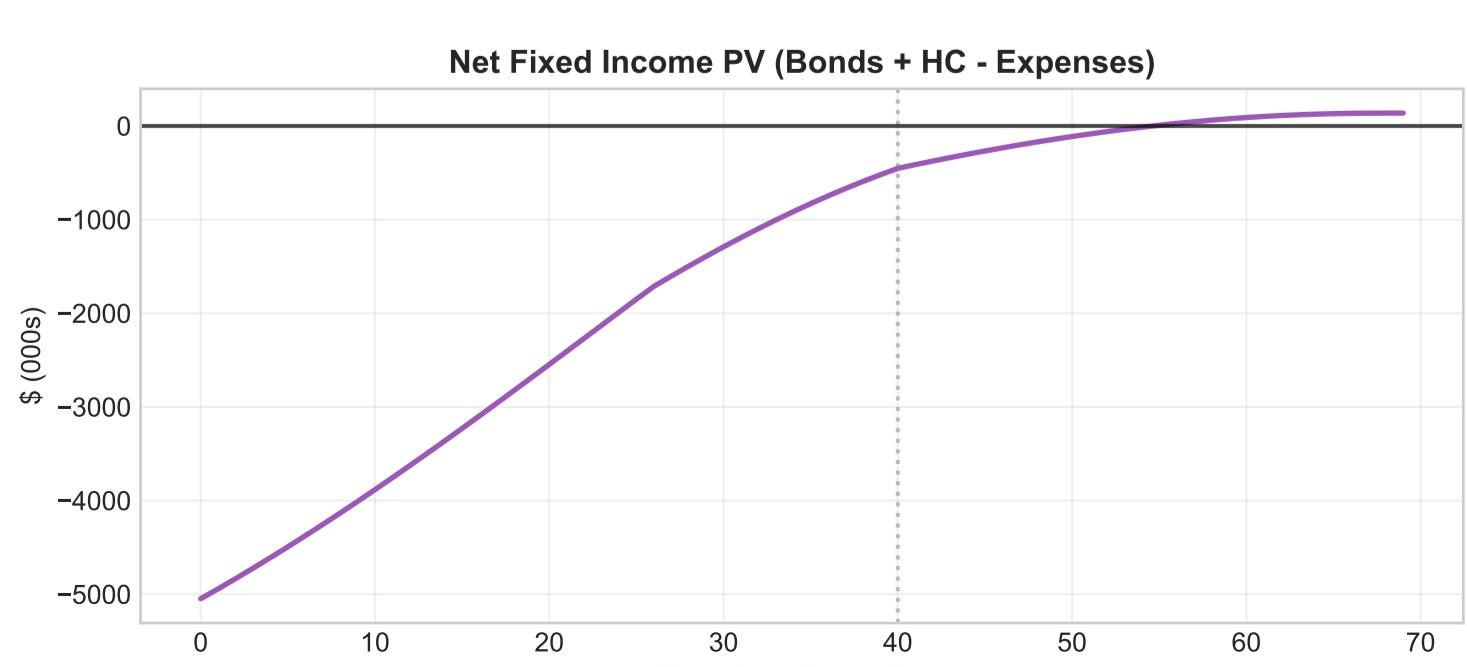
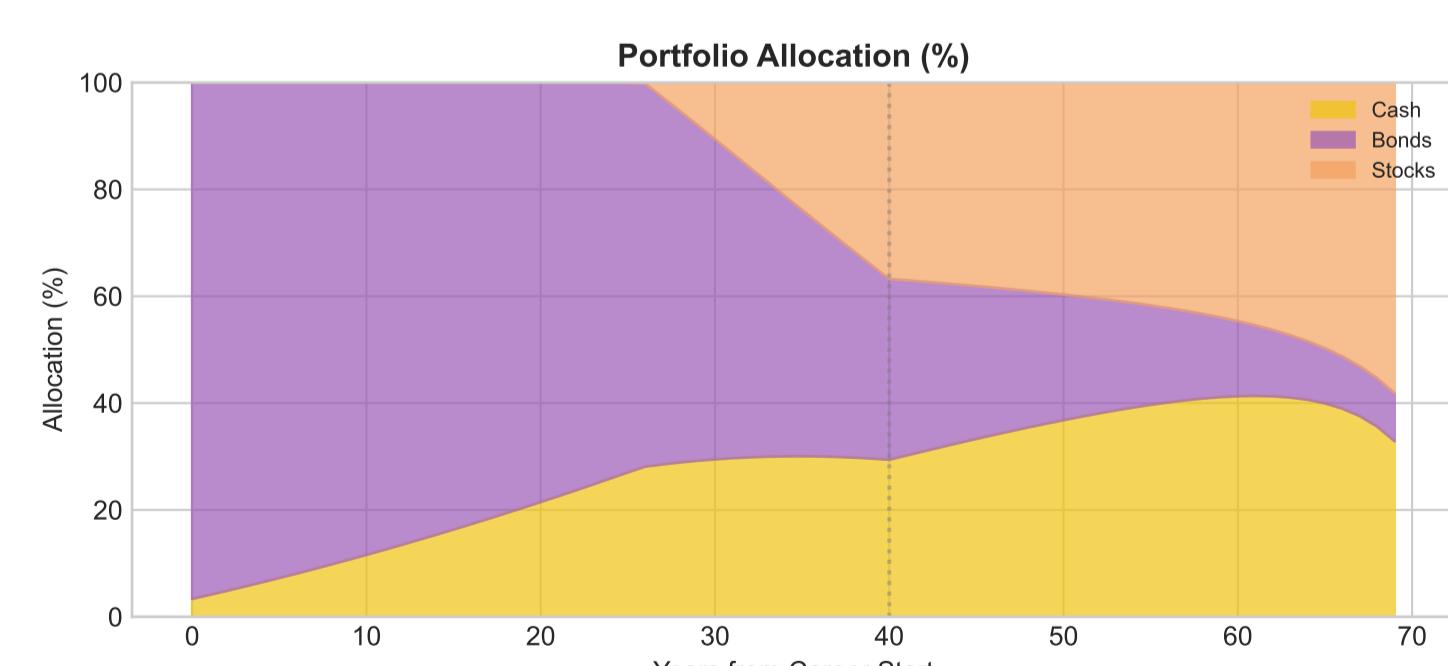
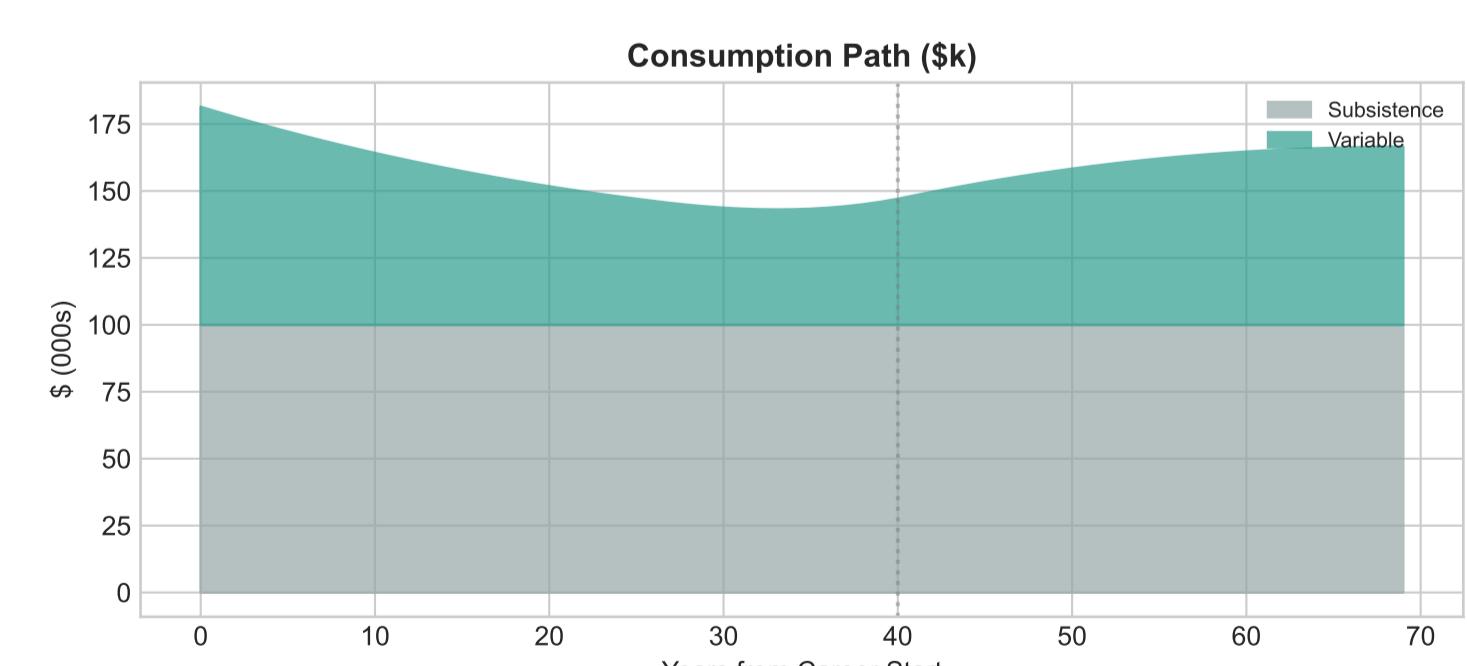
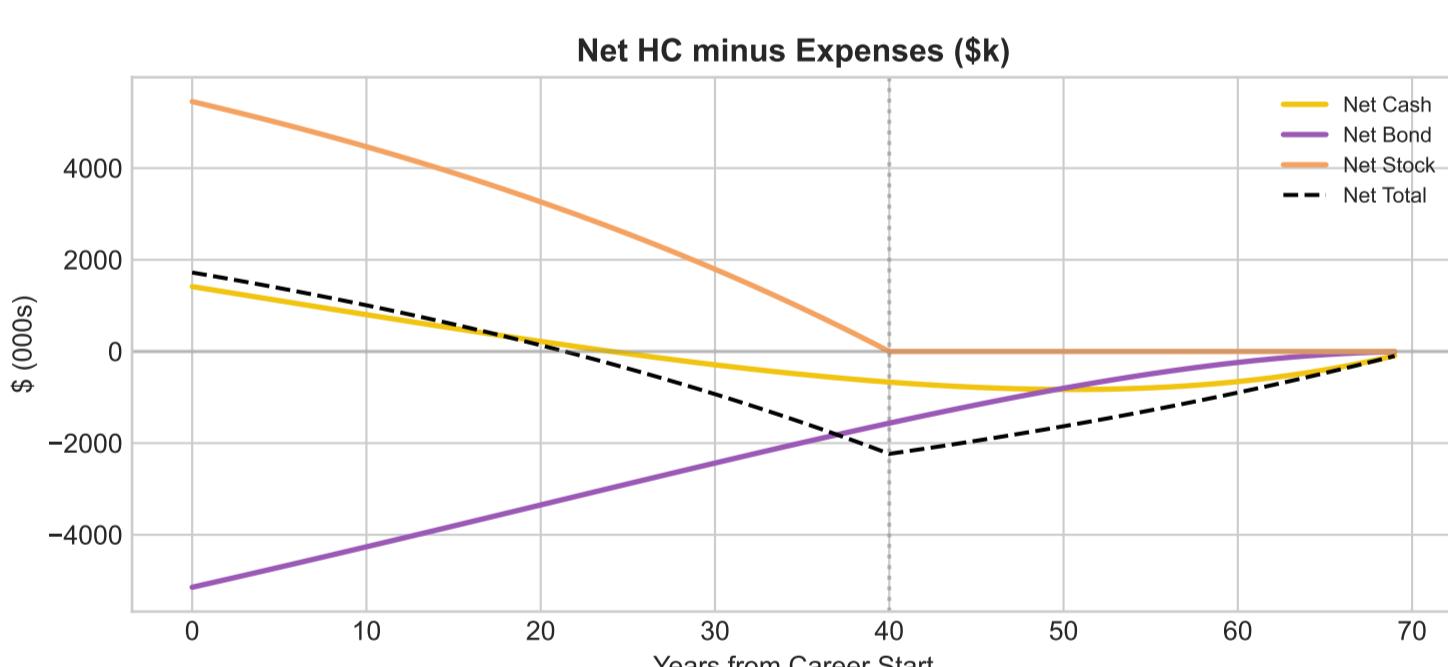
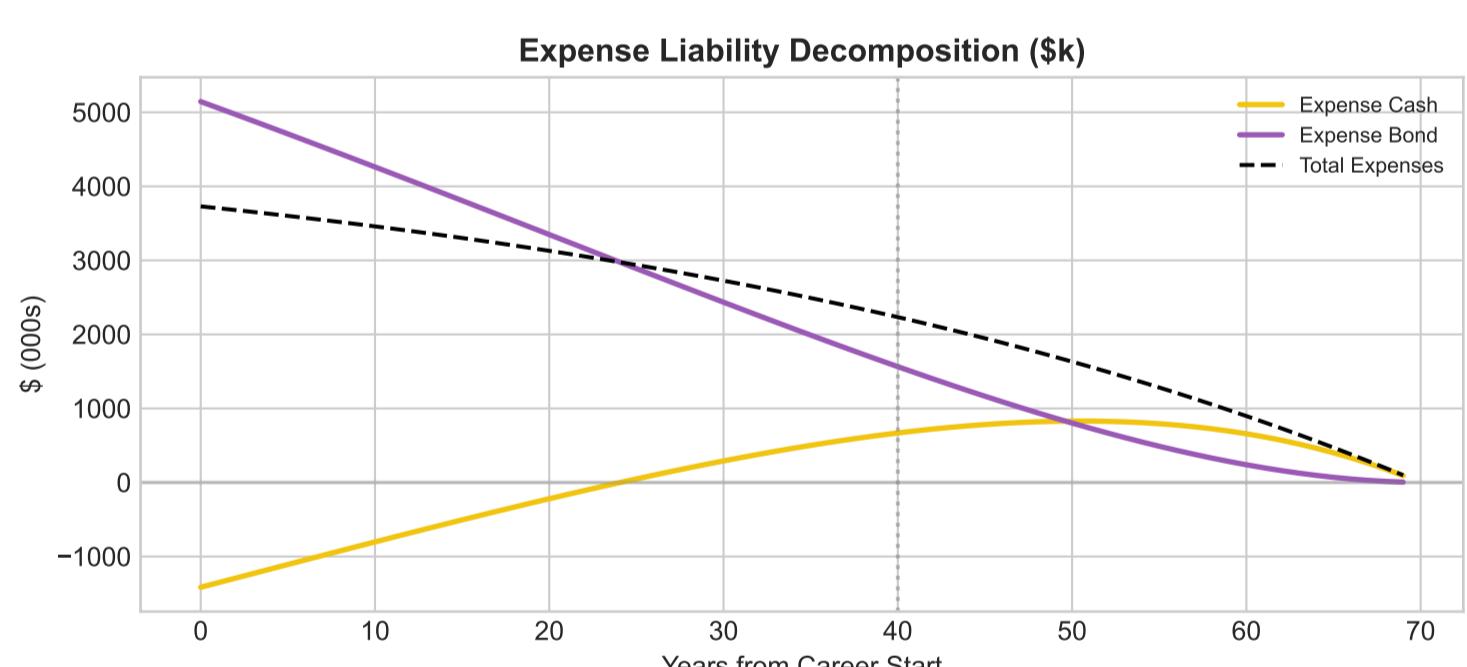
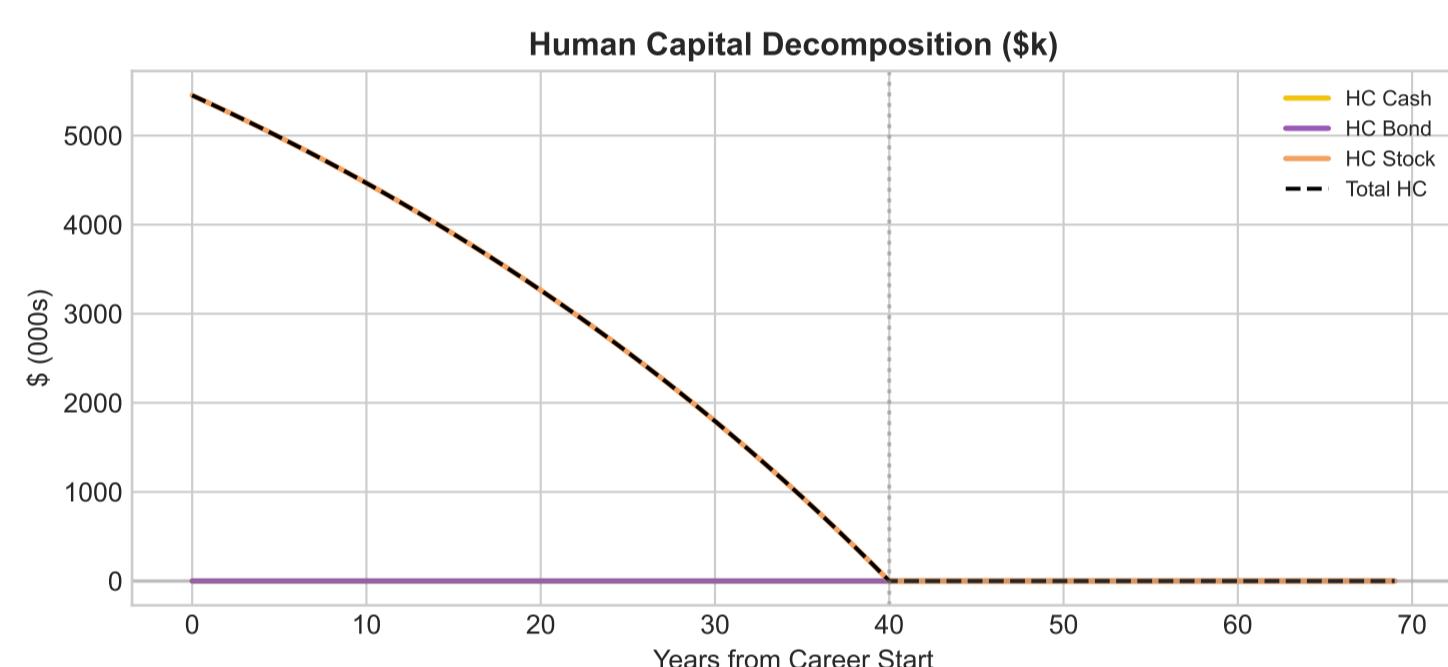
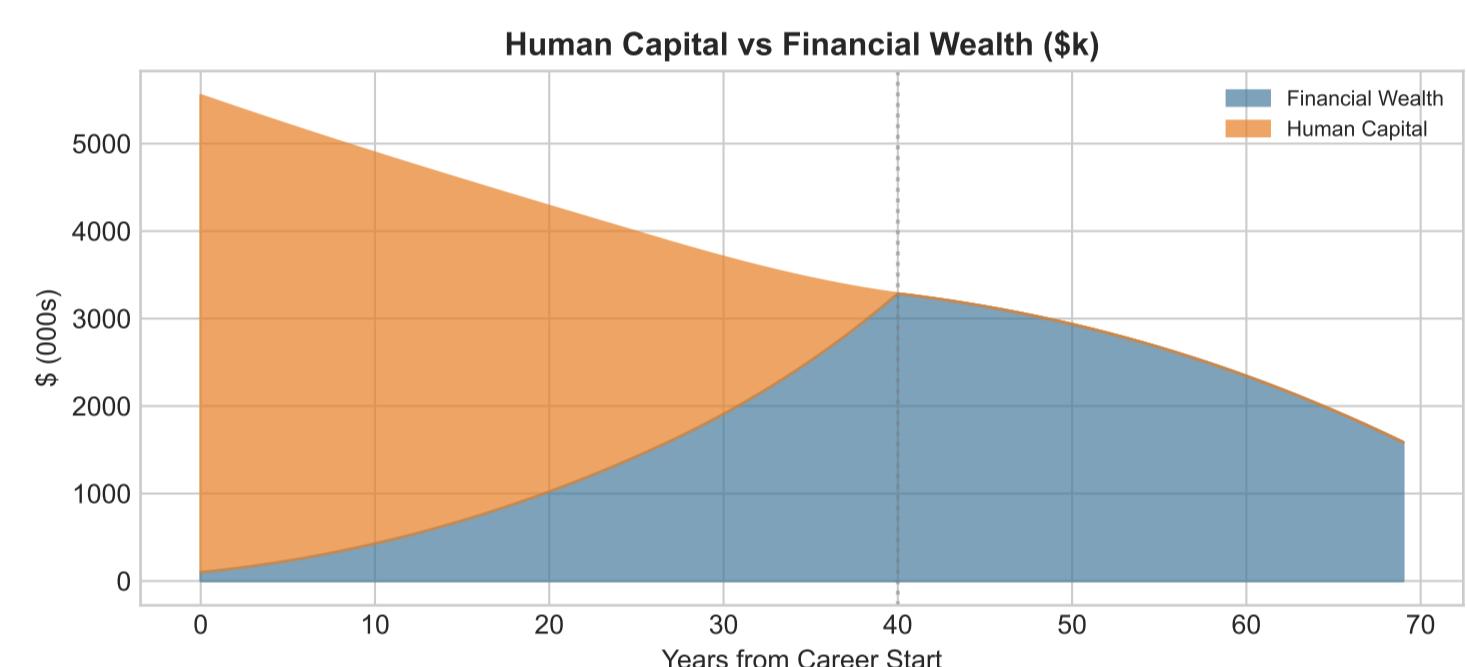
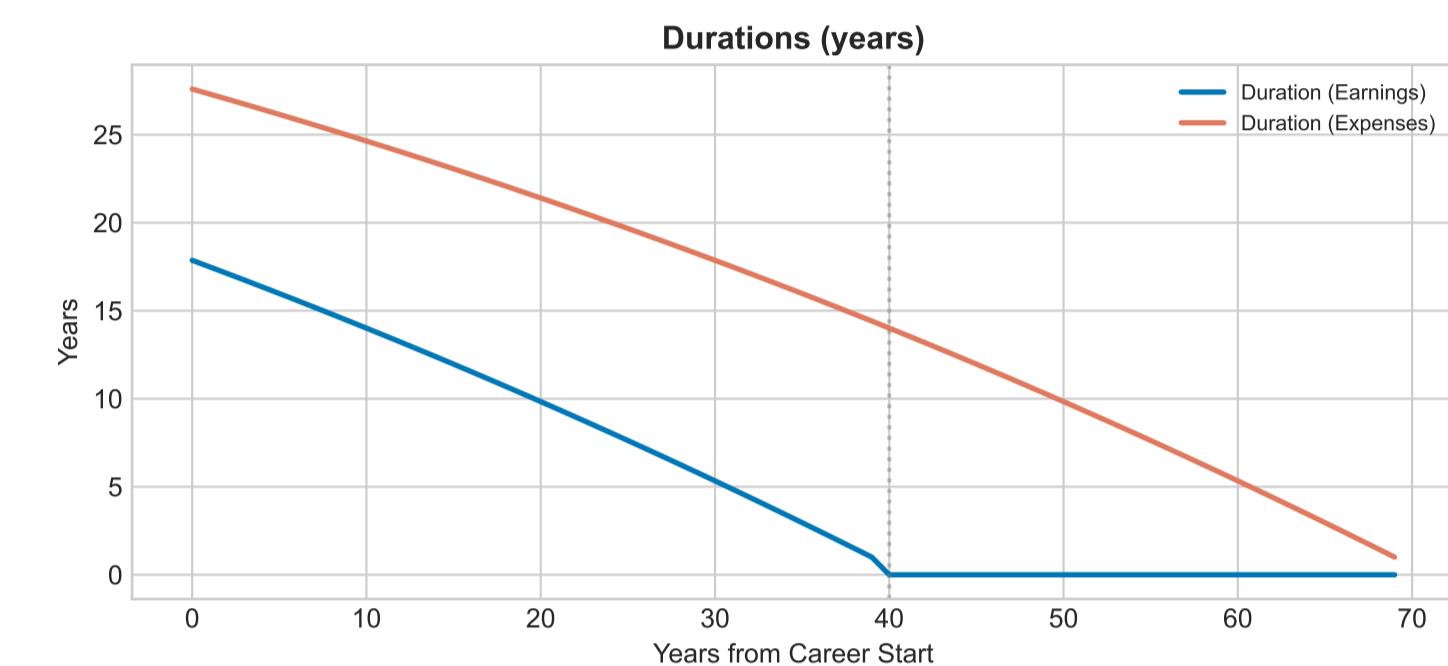
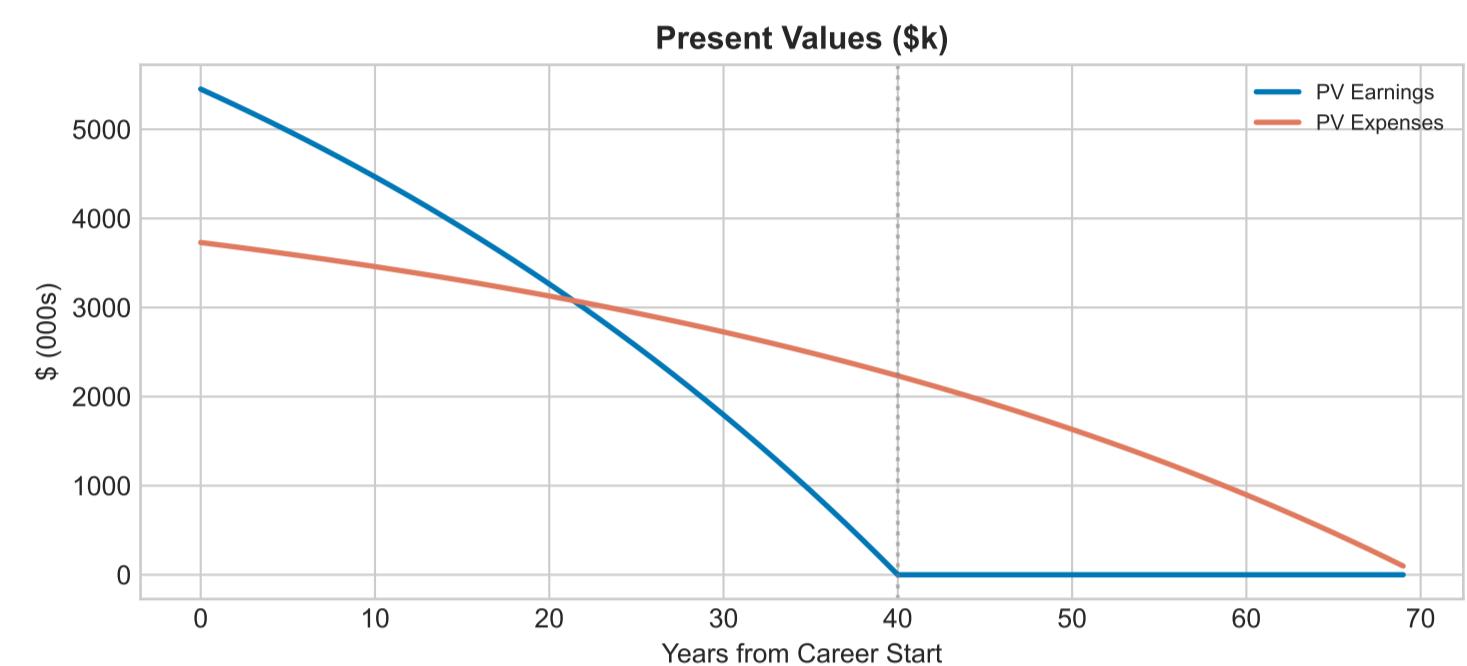
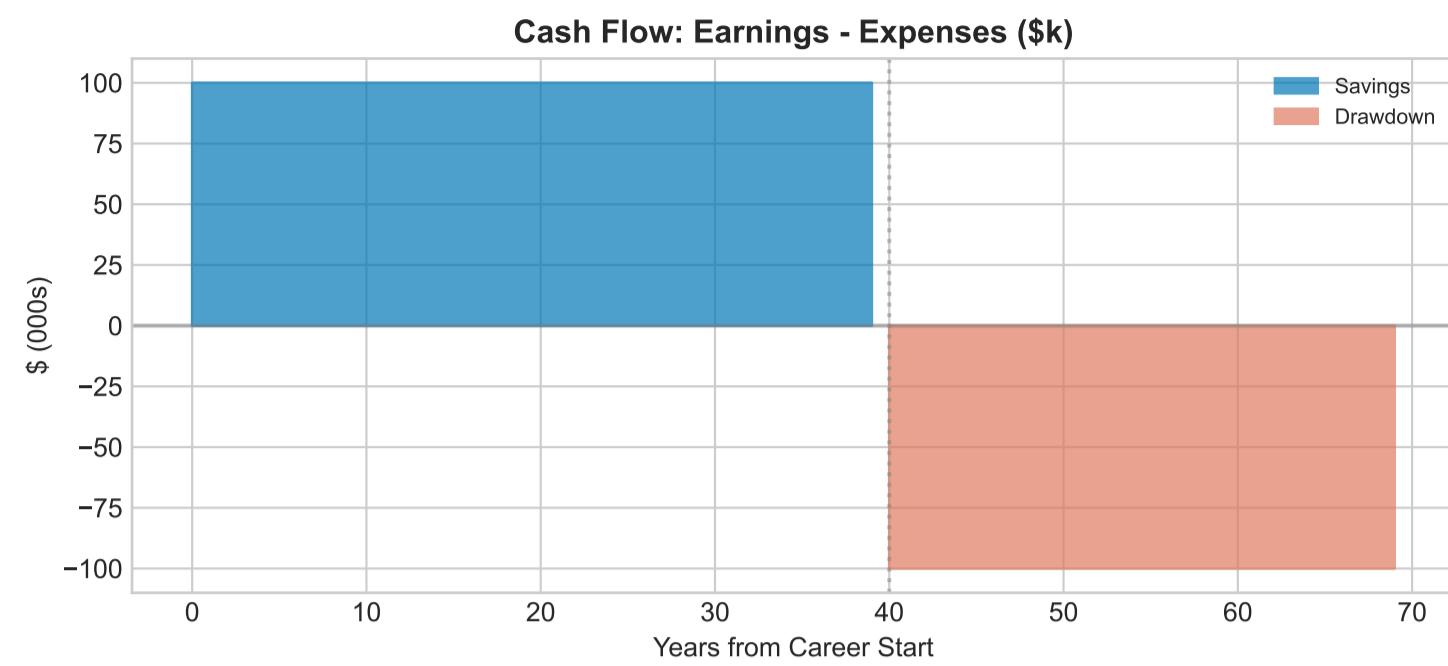
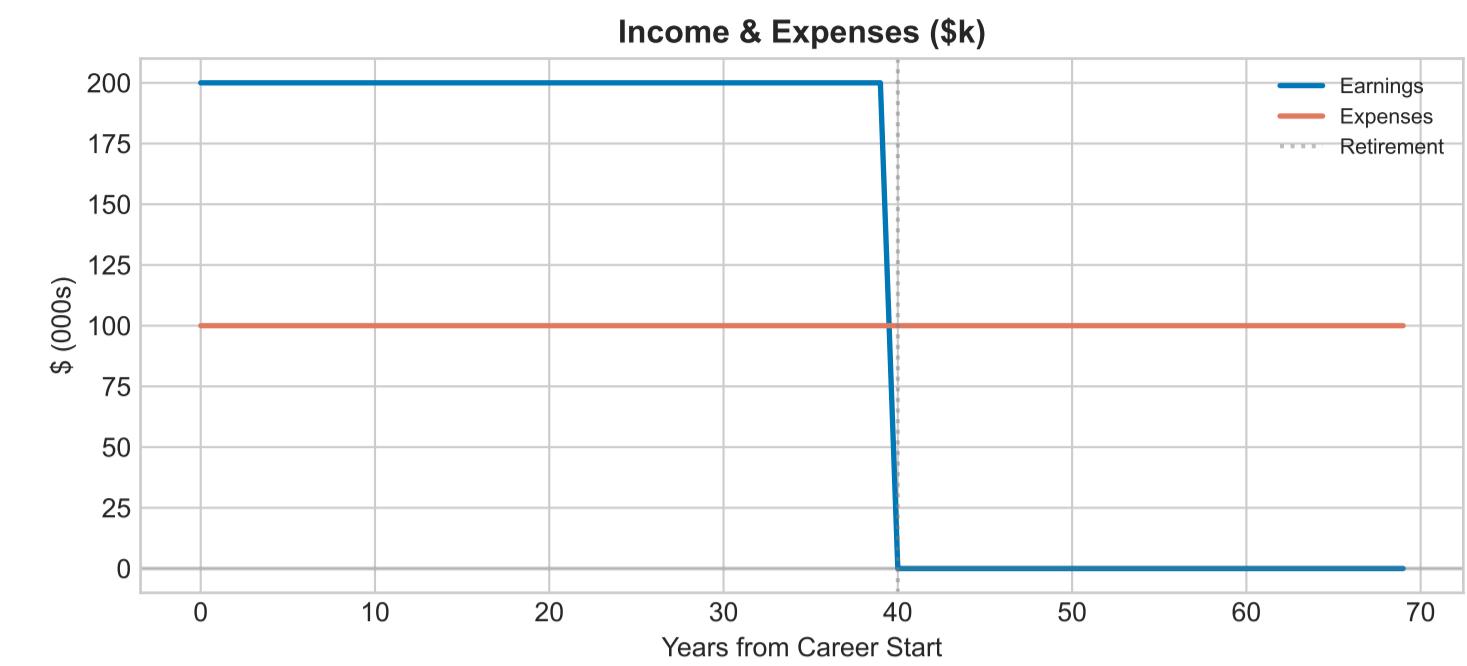


Net Fixed Income PV (Bonds + HC - Expenses)



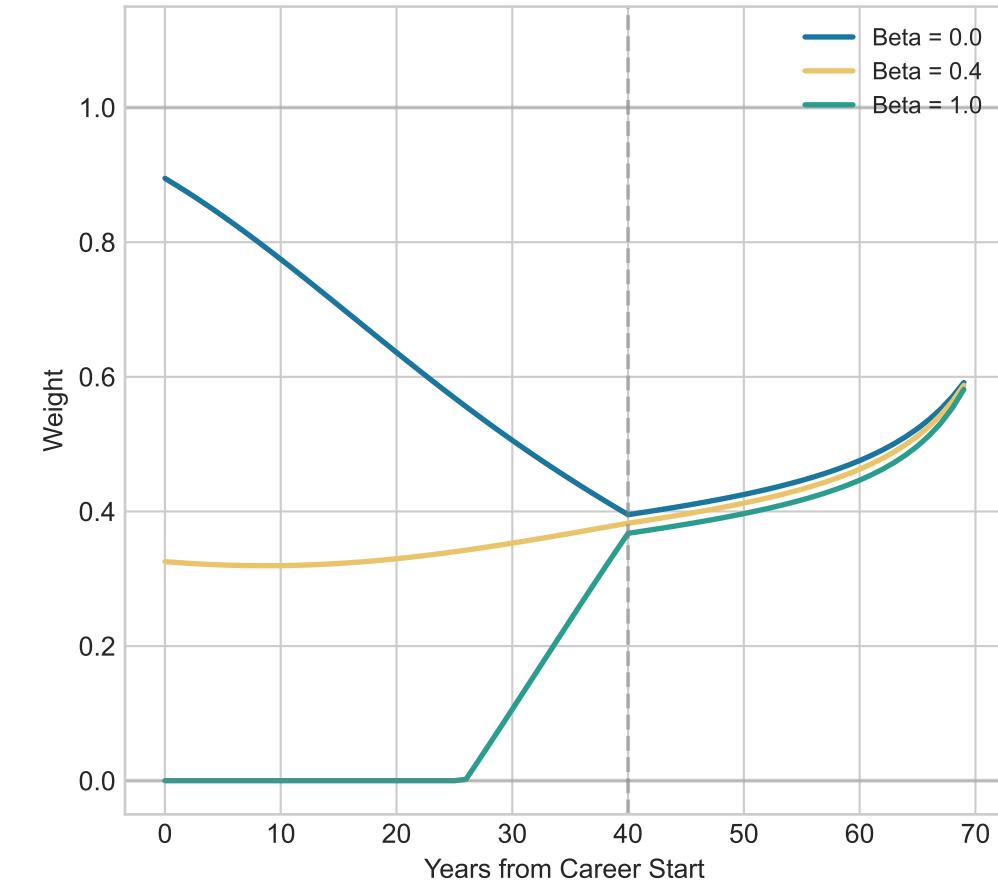
Interest Rate Sensitivity (\$ gain per 1pp rate drop)



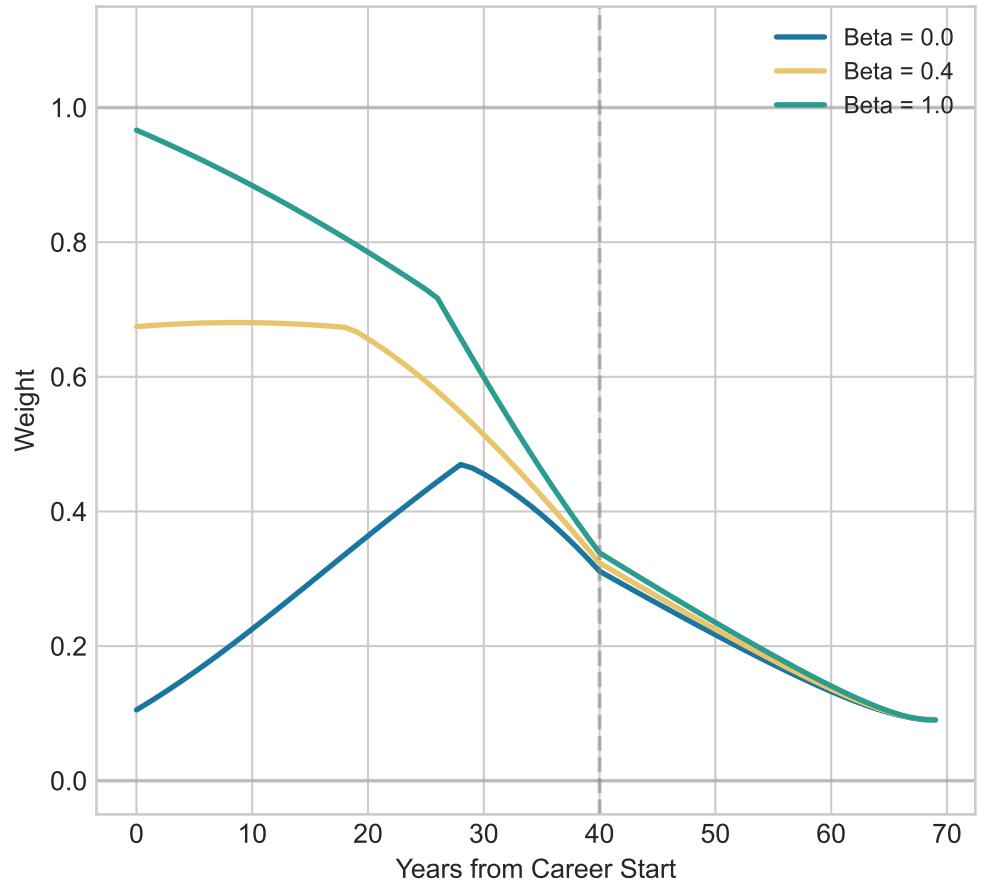


Effect of Stock Beta on Portfolio Allocation & Human Capital

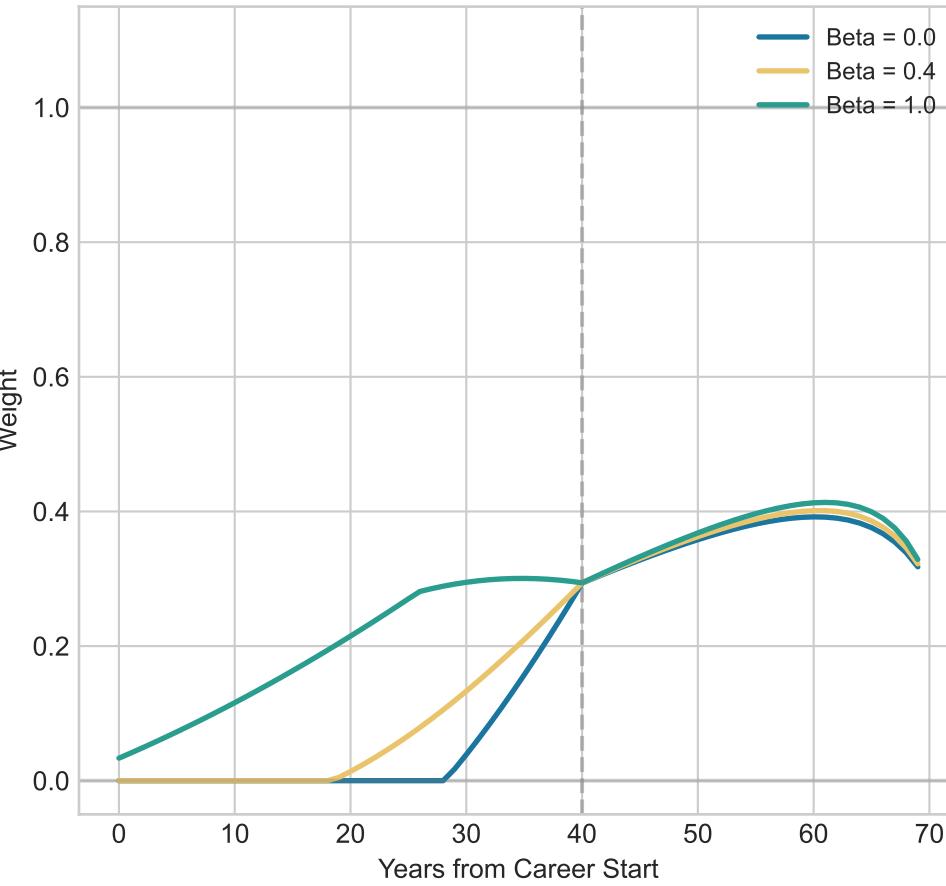
Stock Weight by Beta



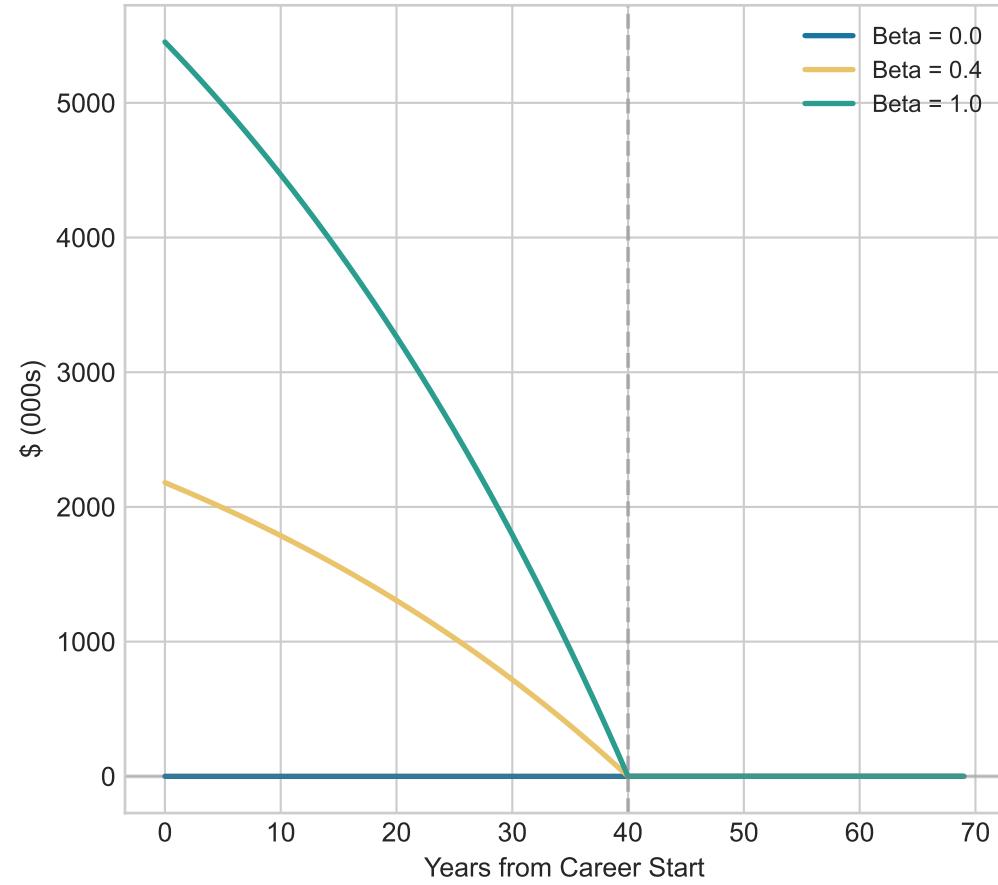
Bond Weight by Beta



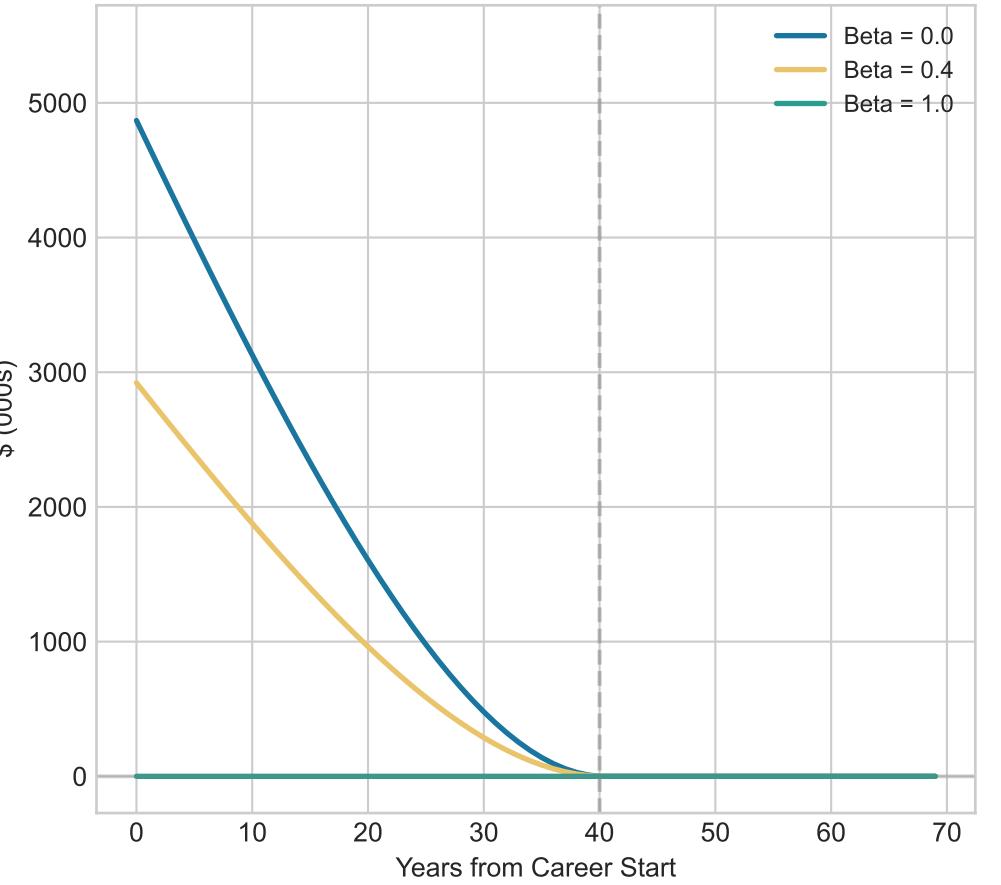
Cash Weight by Beta



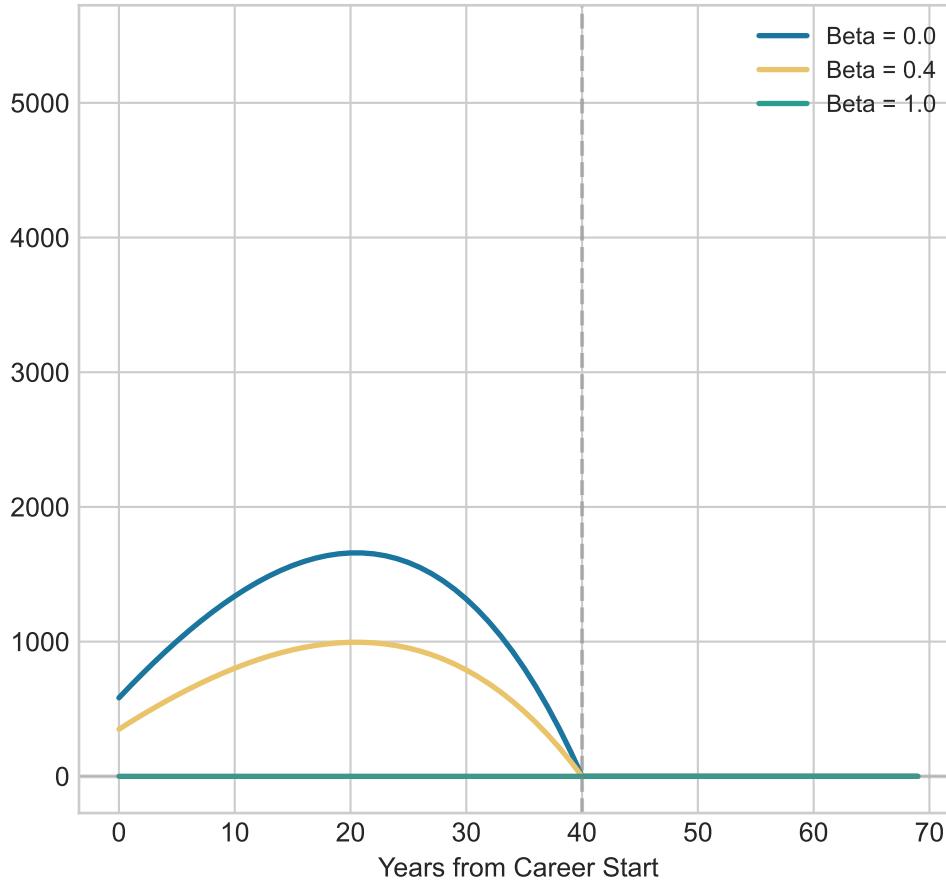
Stock Component of Human Capital



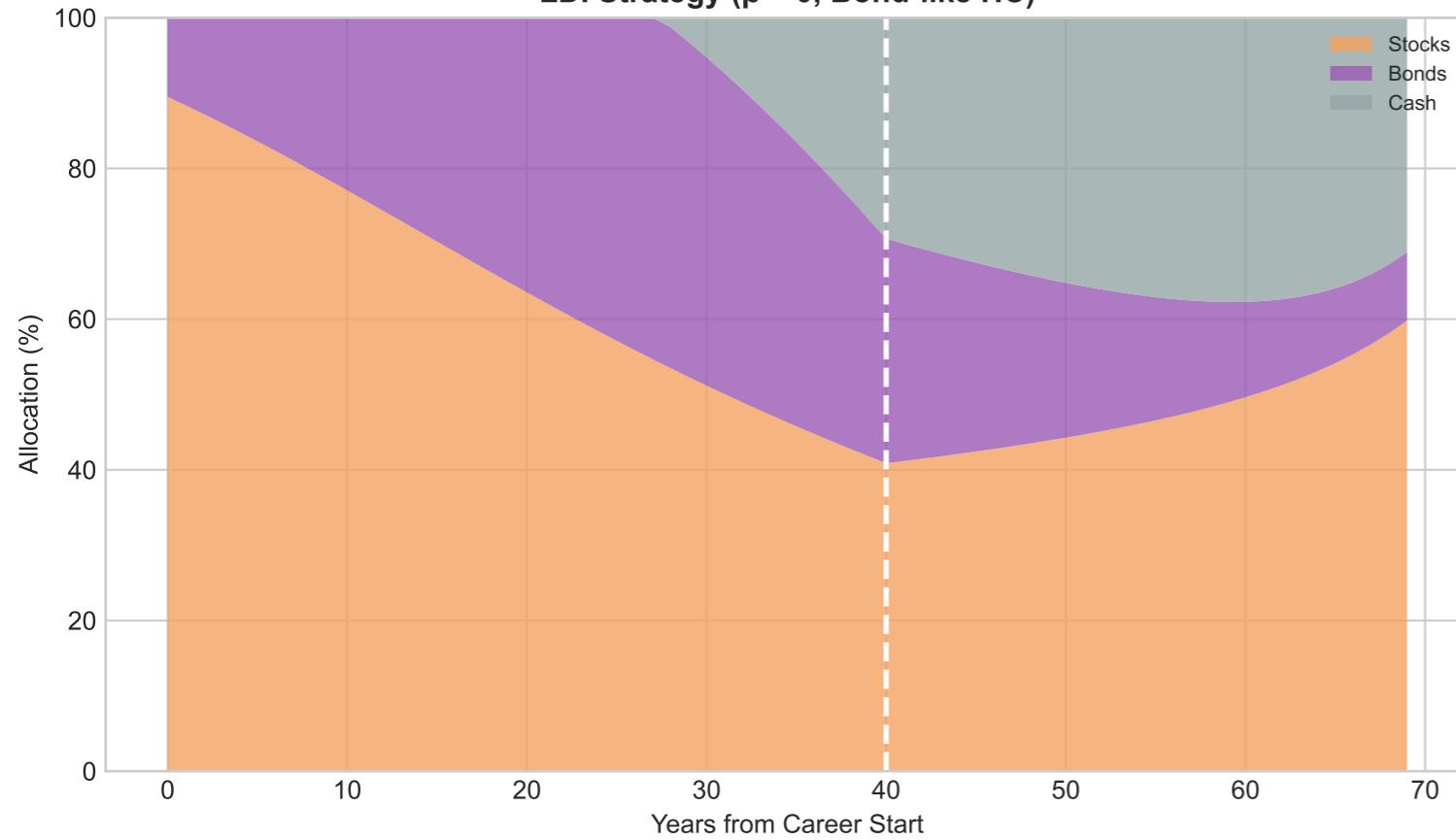
Bond Component of Human Capital



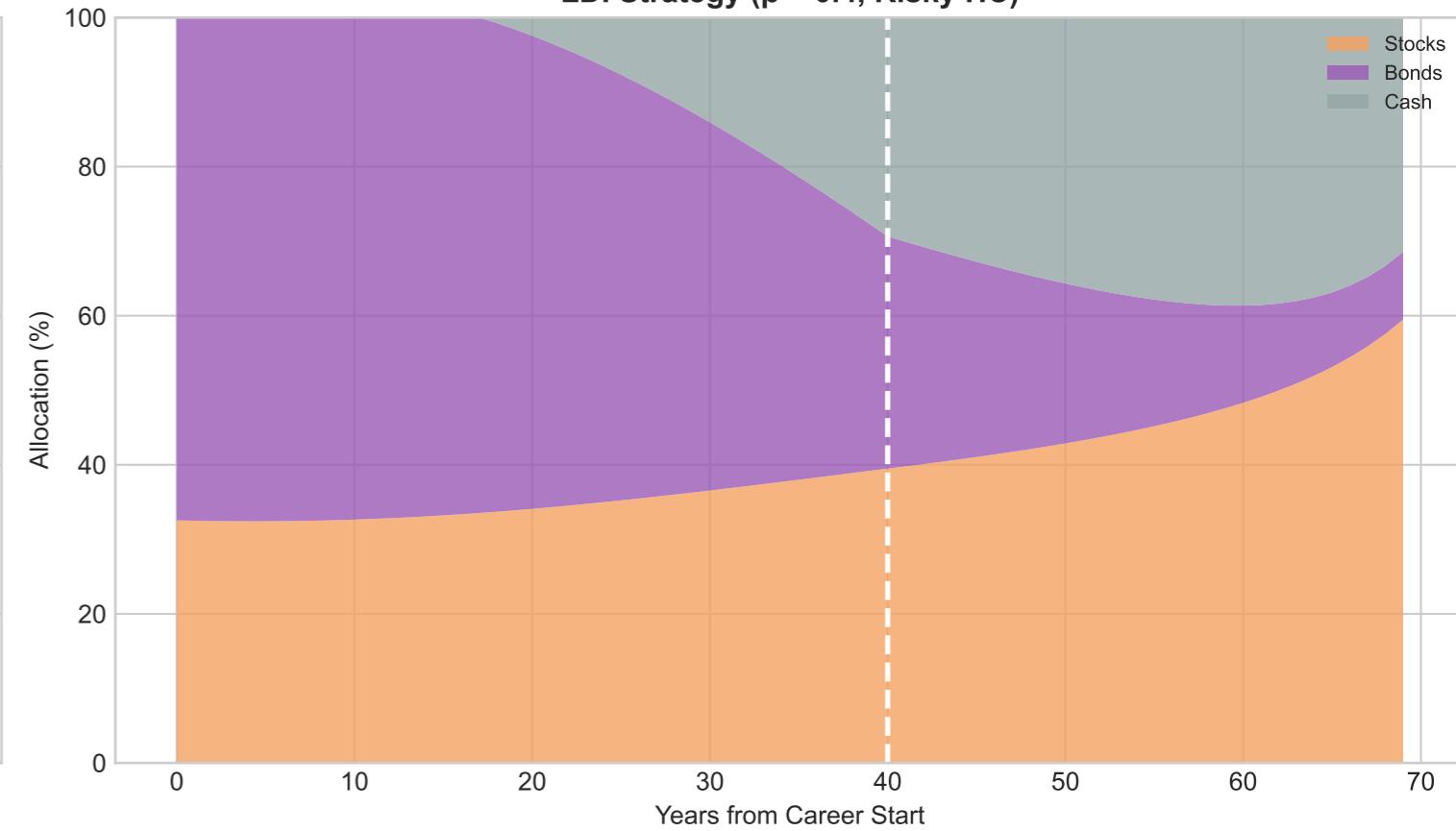
Cash Component of Human Capital



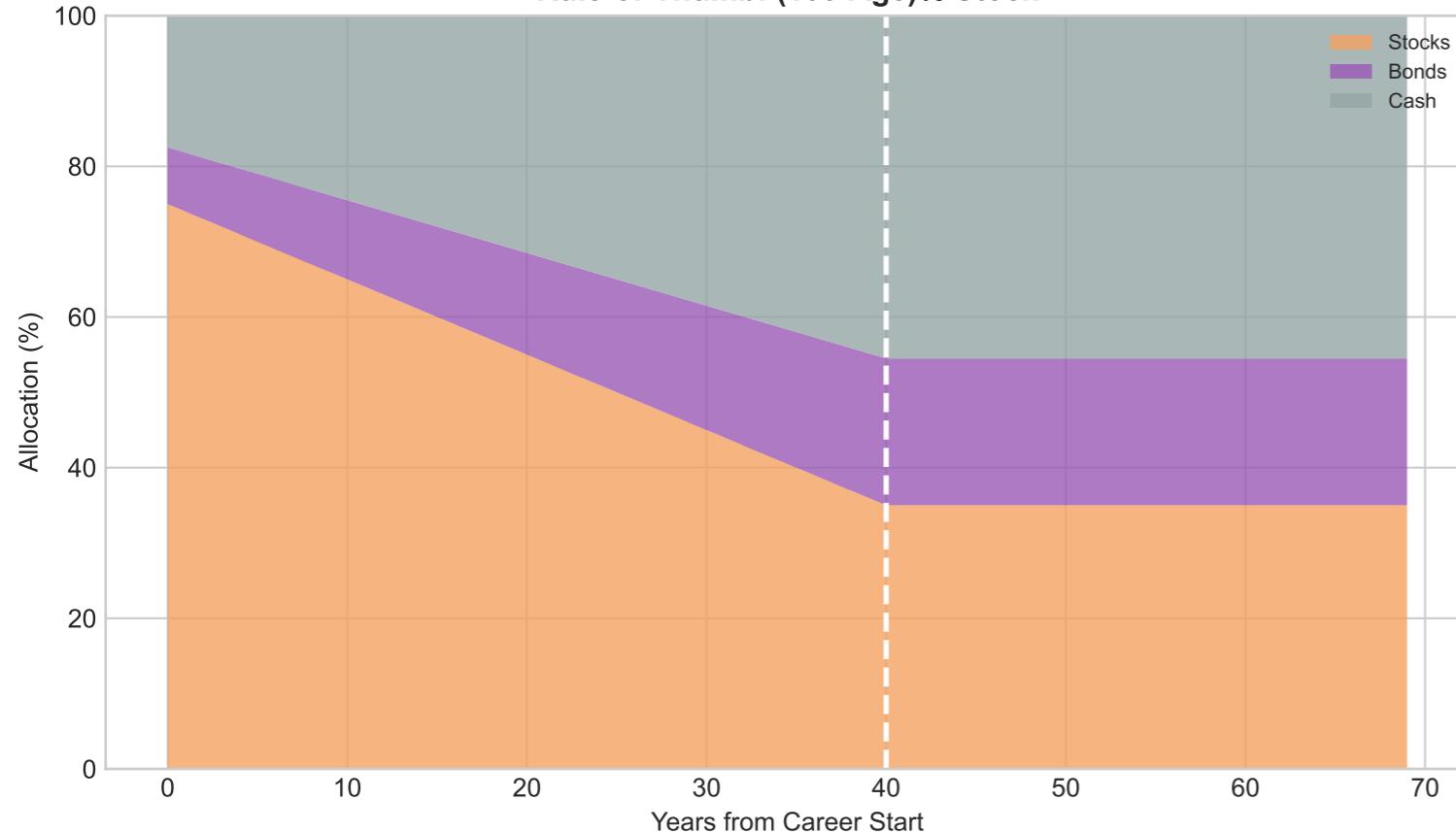
LDI Strategy ($\beta = 0$, Bond-like HC)



LDI Strategy ($\beta = 0.4$, Risky HC)



Rule-of-Thumb: (100-Age)% Stock



Portfolio Allocation Summary

LDI Strategy adapts allocation based on:

- Human capital composition (β)
- Net worth (HC + FW - Expenses)
- Mean-variance optimal weights

When $\beta = 0$ (bond-like human capital):
→ HC acts like a bond, so financial portfolio tilts toward stocks

When $\beta = 0.4$ (risky human capital):
→ HC has stock exposure, so financial portfolio reduces stock allocation

Rule-of-Thumb ignores human capital:

- Stock weight = $(100 - \text{age})\%$
- Same allocation regardless of β

Lifecycle Investment Strategy Parameters

Age Parameters:

- Career Start: 25
- Retirement Age: 65
- Planning Horizon: 95

Income Parameters:

- Initial Earnings: \$200k
- Earnings Growth: 0.0%

Expense Parameters:

- Base Expenses: \$100k
- Retirement Expenses: \$100k

Initial Wealth: \$100k

Economic Parameters:

- Risk-Free Rate: 2.0%
- Equity Premium: 4.0%
- Stock Volatility: 18%
- Risk Aversion (gamma): 2.0

Human Capital:

- Stock Beta: 0.00
- Bond Duration: 20.0 years

Target Allocation (Mean-Variance Optimization):

- Stocks: 61.7%
- Bonds: 9.2%
- Cash: 29.0%