EndowCast

Private Foundation

Investment Portfolio Simulation Report

March 23, 2026

Prepared by EndowCast

INTERACTIVE ANALYSIS

http://localhost:3000/shared/44dcd2c0-2fb9-428e-ad4c-98755b8328f7

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This report presents a Monte Carlo simulation analysis of Private Foundation as of March 23, 2026, modeled over a 5-year projection horizon across 3 scenarios: Great Financial Crisis, Rate Shock 2022, Dot-Com Crash. It covers portfolio sustainability, spending policy, risk exposure, asset allocation, and rebalancing strategy. This analysis is for informational and planning purposes only and does not constitute investment advice.

INTERACTIVE ANALYSIS

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Executive Summary

Monte Carlo Analysis · 5-Year Horizon · 1,000,000 Simulations · As of March 23, 2026

Great Financial Cris		Rate Shock 2022		Dot-Com Crash	
Median Final Value	$261.52M	Median Final Value	$520.21M	Median Final Value	$416.11M
Annualized Return	-7.96%	Annualized Return	3.76%	Annualized Return	-0.31%
Annualized Volatility	25.30%	Annualized Volatility	10.34%	Annualized Volatility	15.22%
Sharpe Ratio	-0.37	Sharpe Ratio	0.22	Sharpe Ratio	-0.12
Sortino Ratio	-0.54	Sortino Ratio	-0.18	Sortino Ratio	-0.41
Max Drawdown	15.50%	Max Drawdown	11.71%	Max Drawdown	12.43%
CVaR (95%)	$172.70M	CVaR (95%)	$323.46M	CVaR (95%)	$268.03M
Tail Risk (20%+ Loss)	100.00%	Tail Risk (20%+ Loss)	41.23%	Tail Risk (20%+ Loss)	95.49%
Inflation Preservation	0.13%	Inflation Preservation	4.88%	Inflation Preservation	2.74%
Sustainable Spending Rate	4.18%	Sustainable Spending Rate	4.80%	Sustainable Spending Rate	4.59%
Eff. Annual Spend Rate	5.92%	Eff. Annual Spend Rate	4.88%	Eff. Annual Spend Rate	5.15%
Prob. of Depletion	0.00%	Prob. of Depletion	0.00%	Prob. of Depletion	0.00%
Risk Level	High	Risk Level	High	Risk Level	High

Key Findings

- *Across all 3 scenarios, the sustainable spending rate (4.18%–4.80%) falls below the current policy rate of 5.00%, suggesting the endowment may experience real purchasing power erosion over the 5-year horizon.*
- *All scenarios show an inflation preservation rate of 0.13%, meaning the endowment's real purchasing power is more likely to decline than be maintained under these capital market assumptions.*
- *Tail risk is elevated: under Great Financial Crisis assumptions, there is a 100.00% probability of a 20% or greater loss in nominal portfolio value over the horizon.*
- *Scenario assumptions drive materially different outcomes — the spread between the most and least favorable median terminal values is $258.68M (45.78% of initial endowment), underscoring sensitivity to the capital market environment.*
- *Disciplined rebalancing is estimated to add 6.02% ($15.75M) to median terminal value under Great Financial Crisis assumptions relative to a static, unrebalanced portfolio.*
- *In the worst 10% of simulated outcomes (P10), terminal values range from $202.37M (Great Financial Crisis) to $387.14M (Rate Shock 2022), providing the committee with a conservative planning floor for stress scenarios.*

Committee Briefing Notes

Interpretive summary for investment committee discussion · March 23, 2026

SPENDING POLICY

At the current 5.0% spending policy, the endowment is distributing an estimated $2.7M more per year than the median simulation suggests is sustainable over the 5-year horizon. Across all 3 scenarios, the sustainable spending rate ranges from 4.2% to 4.8%, equivalent to $23.6M–$27.1M per year. The gap between policy and sustainable rate averages 48 basis points. This gap is modest and may be within normal planning tolerance, though it warrants monitoring across future simulation cycles.

RISK ENVIRONMENT

The scenario assumptions produce elevated downside risk. The probability of a 20% or greater nominal loss ranges from 41.2% (Rate Shock 2022) to 100.0% (Great Financial Crisis) across scenarios. These probabilities reflect the severity of the historical stress scenarios applied, not a forecast of expected conditions. Importantly, the probability of full endowment depletion is zero across all scenarios modeled.

SCENARIO SENSITIVITY

The spread between the most favorable (Rate Shock 2022, $520.2M) and least favorable (Great Financial Crisis, $261.5M) median terminal values is $258.7M, or 45.8% of the initial endowment. This range reflects differences in capital market assumptions across scenarios rather than differences in portfolio construction, since all scenarios share the same asset allocation. The wide scenario spread indicates high sensitivity to the capital market environment. The committee may wish to weight scenarios by their perceived likelihood when forming a planning view.

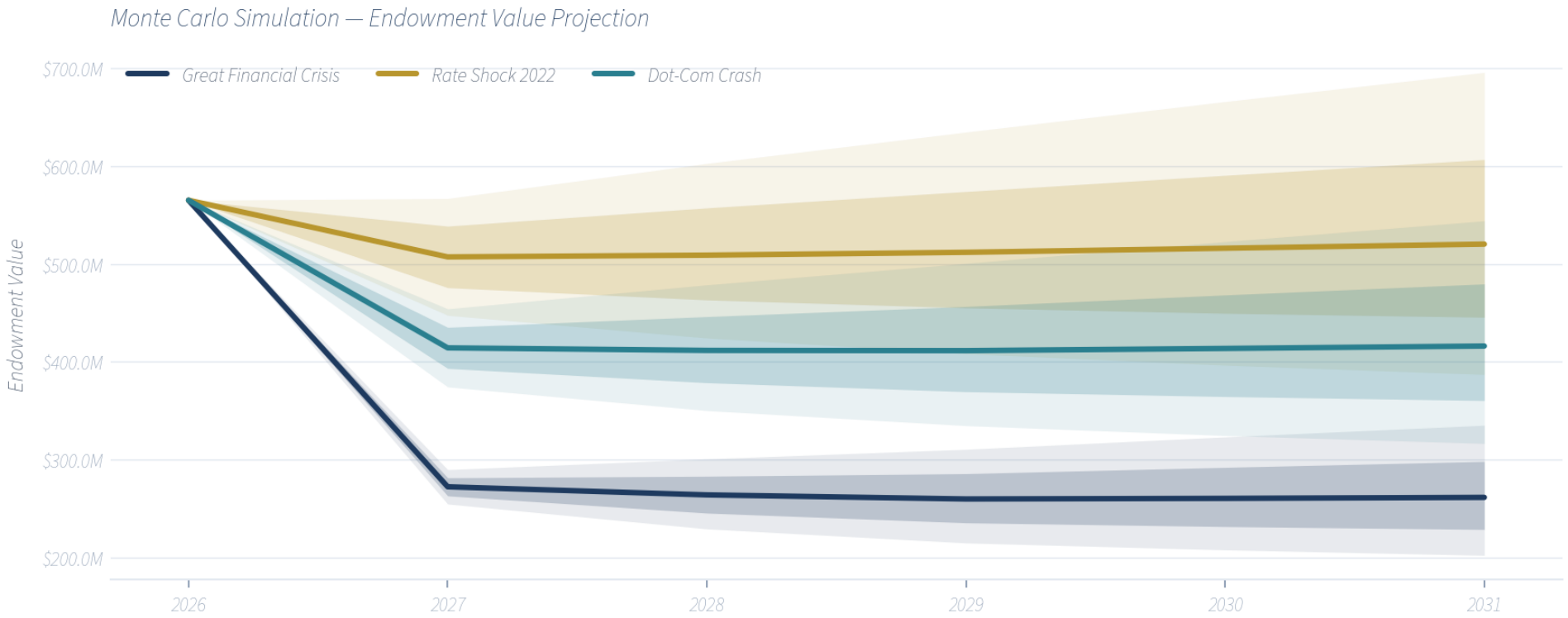
QUESTIONS FOR COMMITTEE CONSIDERATION

- *Does the current spending policy reflect the committee's long-term view on sustainable distributions, or should a smoothing methodology be modeled in a future simulation cycle?*
- *Does the committee's investment policy statement address the organization's tolerance for nominal portfolio loss under historically severe market conditions?*
- *Is the rebalancing strategy reflected in this analysis — Annual rebalancing for Great Financial Crisis — authorized under the current investment policy, and is it being implemented consistently?*
- *How does the committee weigh the 3 capital market scenarios relative to current economic conditions when forming a long-term planning assumption?*
- *Given that real purchasing power preservation falls below 50% in Great Financial Crisis, Rate Shock 2022, Dot-Com Crash, how does the committee think about the endowment's inflation protection mandate over the horizon modeled?*

Monte Carlo Simulation Results

Monte Carlo Simulation Results

Each projection shows the median (50th percentile), inner band (P25–P75), and outer band (P10–P90) across all simulations. Shaded bands represent the range of plausible outcomes under the given capital market assumptions.



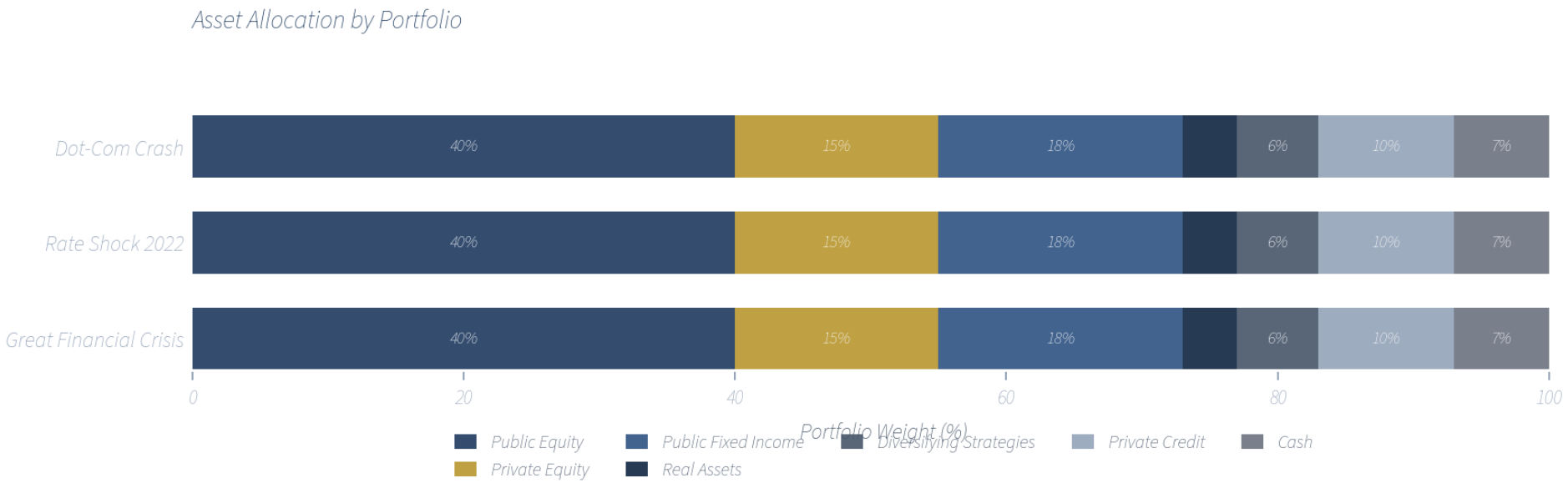
Final Value Percentiles

Percentile	Great Financial Crisis	Rate Shock 2022	Dot-Com Crash
P10 (Worst 10%)	*$202.37M*	*$387.14M*	*$316.66M*
P25	*$228.81M*	*$445.56M*	*$360.48M*
P50 (Median)	*$261.52M*	*$520.21M*	*$416.11M*
P75	*$298.28M*	*$606.57M*	*$479.52M*

P90 (Best 10%)	*$335.16M*	*$695.54M*	*$543.98M*

Asset Allocation

Asset Allocation



Allocation Detail

Asset Class	Great Financial Crisis	Rate Shock 2022	Dot-Com Crash
Public Equity	*40.0%*	*40.0%*	*40.0%*
Private Equity	*15.0%*	*15.0%*	*15.0%*
Public Fixed Income	*18.0%*	*18.0%*	*18.0%*
Real Assets	*4.0%*	*4.0%*	*4.0%*
Diversifying Strategies	*6.0%*	*6.0%*	*6.0%*
Private Credit	*10.0%*	*10.0%*	*10.0%*
Cash	*7.0%*	*7.0%*	*7.0%*

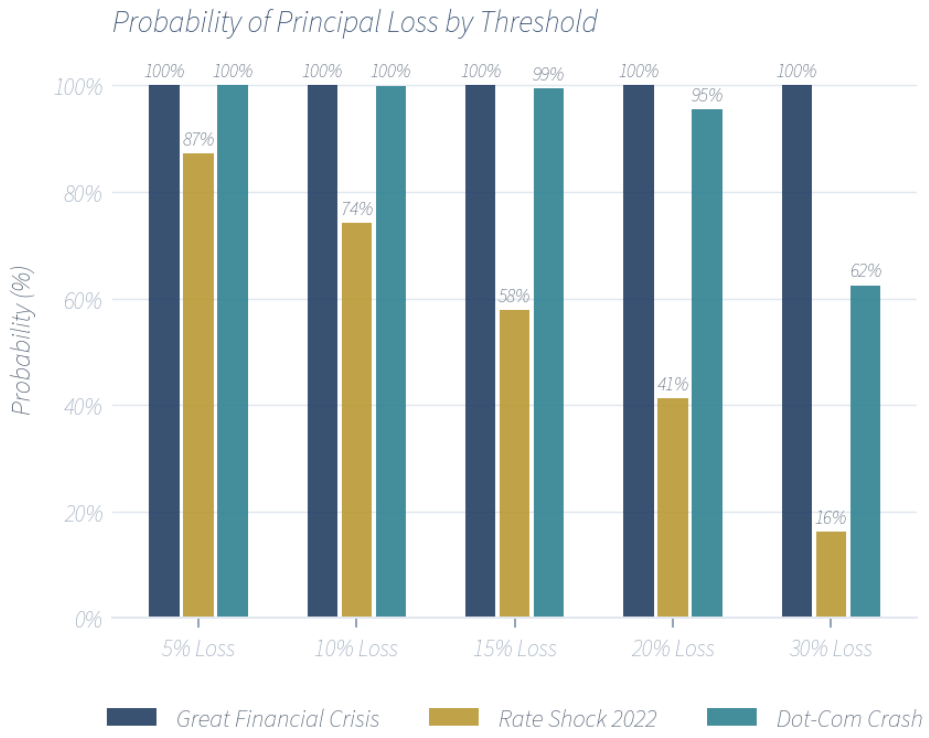
Capital Market Assumptions

Asset Class	Great Financial Crisis Return	Great Financial Crisis Vol	Rate Shock 2022 Return	Rate Shock 2022 Vol	Dot-Com Crash Return	Dot-Com Crash Vol
Public Equity	*8.00%*	*15.00%*	*8.00%*	*15.00%*	*8.00%*	*15.00%*
Private Equity	*12.00%*	*22.00%*	*12.00%*	*22.00%*	*12.00%*	*22.00%*
Public Fixed Income	*3.00%*	*4.00%*	*3.00%*	*4.00%*	*3.00%*	*4.00%*
Real Assets	*7.00%*	*10.00%*	*7.00%*	*10.00%*	*7.00%*	*10.00%*
Diversifying Strategies	*5.00%*	*9.00%*	*5.00%*	*9.00%*	*5.00%*	*9.00%*
Private Credit	*5.00%*	*8.00%*	*5.00%*	*8.00%*	*5.00%*	*8.00%*
Cash	*1.50%*	*0.50%*	*1.50%*	*0.50%*	*1.50%*	*0.50%*

Risk Analysis

Risk Analysis

Risk analysis quantifies downside exposure across several dimensions. CVaR (Conditional Value at Risk) measures the average portfolio value in the worst 5% of simulated outcomes. Max drawdown reflects the typical peak-to-trough decline. Tail risk is the probability of a ≥20% principal loss.



Detailed Risk Metrics

Metric	Great Financial Crisis	Rate Shock 2022	Dot-Com Crash
Overall Risk Level	*High*	*High*	*High*
Tail Risk (20%+ Loss)	*100.00%*	*41.23%*	*95.49%*
Real Value Preservation	*0.13%*	*4.88%*	*2.74%*

CVaR (95%)	*$172.70M*	*$323.46M*	*$268.03M*
Max Drawdown (Median)	*15.50%*	*11.71%*	*12.43%*
Annualized Volatility	*25.30%*	*10.34%*	*15.22%*

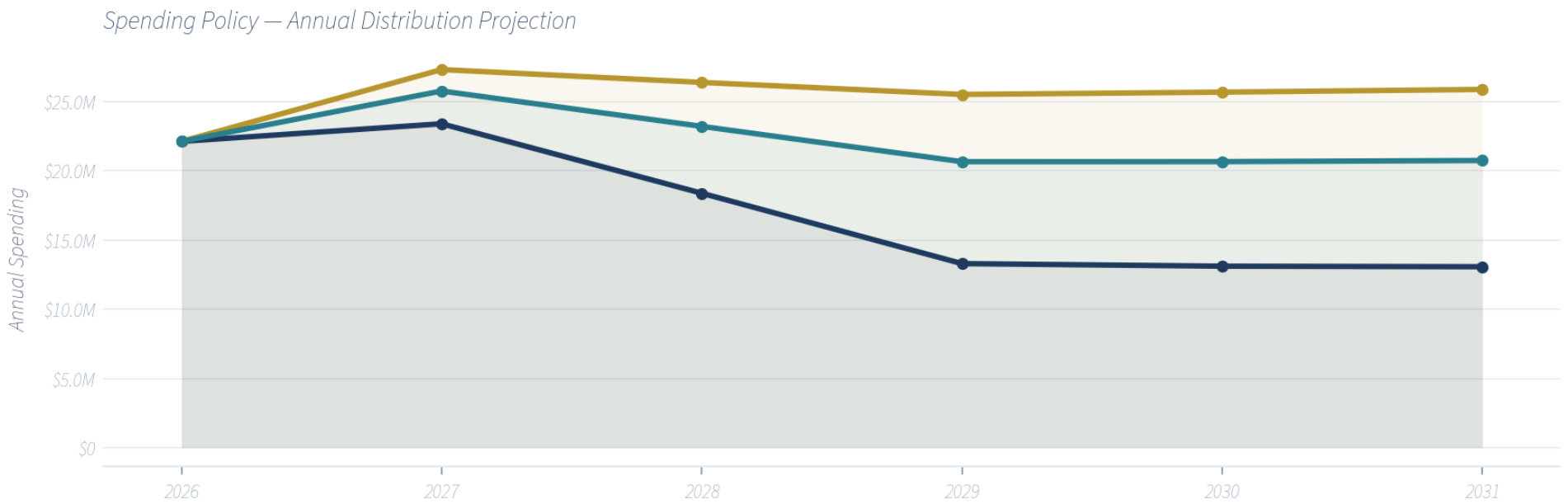
Probability of Principal Loss

Loss Threshold	Great Financial Crisis	Rate Shock 2022	Dot-Com Crash
5%+ Loss	*100.00%*	*87.23%*	*100.00%*
10%+ Loss	*100.00%*	*74.21%*	*99.96%*
15%+ Loss	*100.00%*	*57.77%*	*99.36%*
20%+ Loss	*100.00%*	*41.23%*	*95.49%*
30%+ Loss	*100.00%*	*16.14%*	*62.49%*

Spending Policy Analysis

Spending Policy Analysis

Spending projections reflect the median annual distribution under the configured policy. The sustainable rate is the spending rate that, in expectation, preserves the endowment's real purchasing power over the horizon.



Median Annual Spending Projection

Year	Great Financial Crisis	Rate Shock 2022	Dot-Com Crash
1	$22.10M	$22.10M	$22.10M
2	$23.37M	$27.29M	$25.74M
3	$18.36M	$26.36M	$23.18M
4	$13.28M	$25.49M	$20.64M
5	$13.09M	$25.66M	$20.64M

Sustainable Spending Summary

Metric	Great Financial Crisis	Rate Shock 2022	Dot-Com Crash
Policy Spending Rate	*5.00%*	*5.00%*	*5.00%*
Sustainable Rate	*4.18%*	*4.80%*	*4.59%*
Sustainable ($/yr)	*$23.63M*	*$27.11M*	*$25.93M*
Eff. Annual Spend Rate	*5.92%*	*4.88%*	*5.15%*
Inflation Preservation	*0.13%*	*4.88%*	*2.74%*

Rebalancing Strategy

Rebalancing Strategy

Rebalancing periodically restores the portfolio to its target weights. The strategy determines how often trades are triggered, the expected transaction cost, and the degree to which allocation drift is controlled.

Great Financial Crisis	Rate Shock 2022	Dot-Com Crash
Annual Rebalancing *Rebalanced back to target weights at the end of each year.* *Expected rebalances: 5* *Transaction cost: Moderate* *Benefits:* • *Maintains target allocation consistently* • *Disciplined buy-low, sell-high approach* • *Moderate transaction costs* • *Reduces concentration risk*	*Annual Rebalancing* *Rebalanced back to target weights at the end of each year.* *Expected rebalances: 5* *Transaction cost: Moderate* *Benefits:* • *Maintains target allocation consistently* • *Disciplined buy-low, sell-high approach* • *Moderate transaction costs* • *Reduces concentration risk*	*Annual Rebalancing* *Rebalanced back to target weights at the end of each year.* *Expected rebalances: 5* *Transaction cost: Moderate* *Benefits:* • *Maintains target allocation consistently* • *Disciplined buy-low, sell-high approach* • *Moderate transaction costs* • *Reduces concentration risk*

Rebalancing Impact Summary

Metric	Great Financial Crisis	Rate Shock 2022	Dot-Com Crash
Median Final Value	*$261.52M*	*$520.21M*	*$416.11M*
Without Rebalancing (Counterfactual)	*$245.77M*	*$517.69M*	*$406.39M*
P10 (with rebalancing)	*$202.37M*	*$387.14M*	*$316.66M*
P90 (with rebalancing)	*$335.16M*	*$695.54M*	*$543.98M*
Net Impact ($)	*$15.75M*	*$2.52M*	*$9.73M*
Net Impact (%)	*+6.02%*	*+0.48%*	*+2.34%*
Max Drift Prevented	*21.9%*	*21.9%*	*21.9%*

Stress Testing Scenarios

Stress Testing Scenarios

Stress tests model the impact of discrete adverse events layered on top of the base Monte Carlo simulation. Equity shocks apply a one-time return adjustment to a specific asset class in a given year; CPI shifts temporarily or permanently raise or lower the inflation assumption for a specified range of years.

Great Financial Crisis

Market Shocks (one-time return adjustments)

Asset Class	Shock (%)	Applied in Year
Public Equity	*-89.0%*	*1*
Private Equity	*-75.0%*	*1*
Public Fixed Income	*+18.0%*	*1*
Real Assets	*-30.0%*	*1*
Diversifying Strategies	*-10.0%*	*1*
Private Credit	*-45.0%*	*1*
Cash/Short-Term	*+10.0%*	*1*

Inflation (CPI) Shifts

CPI Delta (%)	From Year	To Year
-8.0%	*1*	*4*

Rate Shock 2022

Market Shocks (one-time return adjustments)

Asset Class	Shock (%)	Applied in Year
Public Equity	*-19.0%*	*1*
Private Equity	*-8.0%*	*1*
Public Fixed Income	*-13.0%*	*1*

Real Assets	*+5.0%*	*1*
Diversifying Strategies	*-5.0%*	*1*
Private Credit	*-5.0%*	*1*
Cash/Short-Term	*+3.0%*	*1*

Inflation (CPI) Shifts

CPI Delta (%)	From Year	To Year
+9.0%	*1*	*2*

Dot-Com Crash

Market Shocks (one-time return adjustments)

Asset Class	Shock (%)	Applied in Year
Public Equity	*-49.0%*	*1*
Private Equity	*-45.0%*	*1*
Public Fixed Income	*+12.0%*	*1*
Real Assets	*+3.0%*	*1*
Diversifying Strategies	*-10.0%*	*1*
Private Credit	*-20.0%*	*1*
Cash/Short-Term	*+4.0%*	*1*

Inflation (CPI) Shifts

CPI Delta (%)	From Year	To Year
-1.0%	*1*	*3*

Asset Class Correlation Matrix

Asset Class Correlation Matrix

The correlation matrix shows pairwise linear correlations between asset classes. Blue cells indicate negative correlation (diversification benefit); red cells indicate positive correlation. Values range from -1.00 (perfect inverse) to +1.00 (perfect co-movement). Diagonal cells represent each asset class correlated with itself (always 1.00).

Great Financial Crisis

Asset Class	PE	PE	PFI	RA	DS	PC	Cash
Public Equity	1.00	0.70	0.30	0.40	0.40	0.20	0.10
Private Equity	0.70	1.00	0.20	0.50	0.60	0.30	0.10
Public Fixed Income	0.30	0.20	1.00	0.50	0.10	0.10	0.20
Real Assets	0.40	0.50	0.50	1.00	0.30	0.20	0.10
Diversifying Strategies	0.40	0.60	0.10	0.30	1.00	0.40	0.10
Private Credit	0.20	0.30	0.10	0.20	0.40	1.00	0.10
Cash	0.10	0.10	0.20	0.10	0.10	0.10	1.00

Rate Shock 2022

Asset Class	PE	PE	PFI	RA	DS	PC	Cash
Public Equity	1.00	0.70	0.30	0.40	0.40	0.20	0.10
Private Equity	0.70	1.00	0.20	0.50	0.60	0.30	0.10
Public Fixed Income	0.30	0.20	1.00	0.50	0.10	0.10	0.20
Real Assets	0.40	0.50	0.50	1.00	0.30	0.20	0.10
Diversifying Strategies	0.40	0.60	0.10	0.30	1.00	0.40	0.10
Private Credit	0.20	0.30	0.10	0.20	0.40	1.00	0.10
Cash	0.10	0.10	0.20	0.10	0.10	0.10	1.00

Dot-Com Crash

Asset Class	PE	PE	PFI	RA	DS	PC	Cash
Public Equity	*1.00*	*0.70*	*0.30*	*0.40*	*0.40*	*0.20*	*0.10*
Private Equity	*0.70*	*1.00*	*0.20*	*0.50*	*0.60*	*0.30*	*0.10*
Public Fixed Income	*0.30*	*0.20*	*1.00*	*0.50*	*0.10*	*0.10*	*0.20*
Real Assets	*0.40*	*0.50*	*0.50*	*1.00*	*0.30*	*0.20*	*0.10*
Diversifying Strategies	*0.40*	*0.60*	*0.10*	*0.30*	*1.00*	*0.40*	*0.10*
Private Credit	*0.20*	*0.30*	*0.10*	*0.20*	*0.40*	*1.00*	*0.10*
Cash	*0.10*	*0.10*	*0.20*	*0.10*	*0.10*	*0.10*	*1.00*

Assumptions & Methodology

Assumptions & Methodology

Simulation Engine

EndowCast employs a full Monte Carlo simulation framework. Each scenario draws annual asset-class returns jointly from a multivariate normal distribution parameterised by the expected returns, volatilities, and cross-asset correlation matrix specified below. Spending withdrawals are applied at year-end. All projections are expressed in nominal terms unless otherwise noted.

Simulation Parameters

Parameter	Great Financial Crisis	Rate Shock 2022	Dot-Com Crash
Initial Endowment	*$565.00M*	*$565.00M*	*$565.00M*
Projection Horizon	*5 years (from 2026)*	*5 years (from 2026)*	*5 years (from 2026)*
Monte Carlo Runs	*1,000,000*	*1,000,000*	*1,000,000*
Spending Policy Rate	*5.00%*	*5.00%*	*5.00%*
Inflation Assumption	*2.50%*	*2.50%*	*2.50%*
Rebalancing Strategy	*Annual*	*Annual*	*Annual*

Capital Market Assumptions

Expected annual returns and volatilities are specified per asset class. Returns are arithmetic and expressed as decimals; correlations capture co-movement between asset classes within each portfolio.

Asset Class	Great Financial Crisis Return	Great Financial Crisis Vol	Rate Shock 2022 Return	Rate Shock 2022 Vol	Dot-Com Crash Return	Dot-Com Crash Vol
Public Equity	*8.00%*	*15.00%*	*8.00%*	*15.00%*	*8.00%*	*15.00%*
Private Equity	*12.00%*	*22.00%*	*12.00%*	*22.00%*	*12.00%*	*22.00%*
Public Fixed Income	*3.00%*	*4.00%*	*3.00%*	*4.00%*	*3.00%*	*4.00%*
Real Assets	*7.00%*	*10.00%*	*7.00%*	*10.00%*	*7.00%*	*10.00%*

Diversifying Strategies	*5.00%*	*9.00%*	*5.00%*	*9.00%*	*5.00%*	*9.00%*
Private Credit	*5.00%*	*8.00%*	*5.00%*	*8.00%*	*5.00%*	*8.00%*
Cash	*1.50%*	*0.50%*	*1.50%*	*0.50%*	*1.50%*	*0.50%*

Spending Policy

Each year the endowment distributes an amount equal to the spending policy rate applied to the prior year-end portfolio value (constant-percentage method). Distributions are funded pro-rata from all asset classes. The sustainable spending rate shown in this report is the rate at which the simulation's median outcome preserves the endowment's inflation-adjusted real value over the full horizon, computed as: Sustainable Rate = Policy Rate × (Median Final Value / Inflation-Adjusted Initial Value)$^{1/Years}$.

Risk Metric Definitions

Metric	*Definition*
CVaR (95%)	*Conditional Value at Risk: the average portfolio value across the worst 5% of simulated paths at the end of the horizon. A lower CVaR signals higher tail risk.*
Max Drawdown (Median)	*The median peak-to-trough decline across all simulated paths, expressed as a decimal fraction (e.g. 0.15 = 15% drawdown).*
Inflation Preservation	*Fraction of simulations in which the portfolio's real (inflation-adjusted) value at the end of the horizon exceeds its real value at inception.*
Tail Risk (20%+ Loss)	*Probability that the portfolio loses 20% or more of its initial nominal value by the end of the horizon.*
Sharpe Ratio	*Median annualised excess return (above the risk-free rate) divided by the median annualised volatility. Higher values indicate better risk-adjusted returns.*
Sortino Ratio	*Median annualised excess return above the spending rate (used as Minimum Acceptable Return) divided by the downside deviation. Penalises only harmful volatility below the spending threshold.*
Annualised Volatility	*Median standard deviation of annual portfolio returns across all simulations, expressed as a percentage.*
Sustainable Spending Rate	*The spending rate at which the median simulated portfolio exactly preserves its real (inflation-adjusted) value over the projection horizon.*
Effective Annual Spend Rate	*Average ratio of annual spending to portfolio value, computed year-by-year across the median simulation path.*