

# Endowment Management for Camps

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# Endowment overview

- Your endowment should be a strategic asset for the current and future generations of campers
- Typical withdrawal rates are from 4.5% to 5.9%\*
  - Often this is calculated relative to a three-year moving average of the balance\*
  - This range is related to the IRS [5% rule](#) for foundations
- Typical risk allocation among university endowments\*\*:

| Time period | US Bonds | US Equities | Non-US Equities | Total Equity |
|-------------|----------|-------------|-----------------|--------------|
| 1974-1993   | 44%      | 50%         | 6%              | 56%          |
| 1994-2008   | 36       | 35          | 28              | 64           |
| 2009-2021   | 28       | 56          | 16              | 72           |

\* Brown et al., 2014, “How University Endowments Respond to Financial Market Shocks,” *American Economic Review*. See also <https://www.case.org/resources/endowment-faqs-colleges-and-universities>.

\*\* Ennis, 2021, “Endowment performance,” *Journal of Investing*.

# Payout policies



- What to prioritize?
  - a) Using endowment to smooth out camp revenue fluctuations in response to external factors?
  - b) Maintain a minimum level of endowment to provide future income?
- Economic theory suggests (a)
- Universities behave in line with (b)\*



# Outline of presentation

- Liquidity needs
- A brief history lesson
- Fixed percent spending rule
- Conclusion



# Liquidity needs

- If you have \$100,000 set aside for emergency repairs or other unforeseen contingencies, this money should not be invested in risky assets
- Make sure your account is under the FDIC insurance cap and open other accounts if need be or invest in money market funds or Treasuries
- If you have a money market fund, make sure the fund invests in government securities and has no surprises (like commercial paper)
  - The yield pickup from investing in riskier money market funds is too small to take the risk
- We wrote about liquidity management in a recent [research piece](#)
  - [Contact us](#) if you would like to discuss this further



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# A brief history lesson

- To analyze safe withdrawal rates from your endowment, we need to have a sense of the historical *returns* and *risk* of stocks and bonds
- We base our analysis on 150 years of stock and bond data from [macrohistory.net](https://macrohistory.net)
  - U.S. stocks and government bonds returns averaged 10.5% and 4.8% respectively
- But knowing the average returns is not enough – we also need a sense of the risk-level of these assets
  - A common measure of risk is “volatility,” which measures how much stock and bond returns can be expected to fluctuate around their average values in a given year
  - The volatilities for stock and bonds returns have been 17.8% and 7.8% respectively
- We also need to know the degree to which stocks and bonds tend to comove
  - A common measure of comovement is “correlation”
  - The correlation between the asset classes has been 6.3%
- We combine this information with [forward-looking estimates](#) of return, risk, and comovement
- Our final assumptions are shown in the table to the right

|                   | Stocks | Bonds |
|-------------------|--------|-------|
| Projected returns | 8%     | 4%    |
| Volatility        | 17.8%  | 7.8%  |
| Correlation       | 5%     |       |



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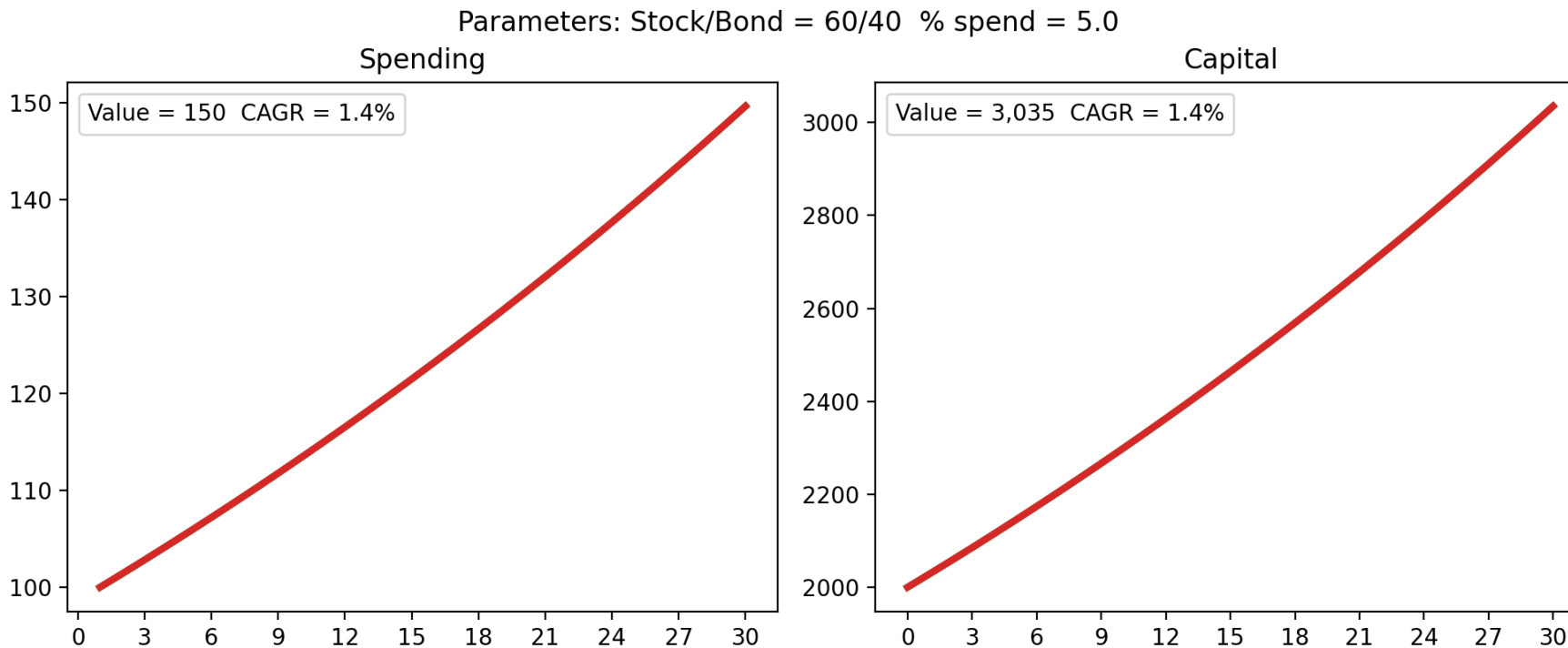


# Fixed percent spending rule

- Let's analyze the following case using QuantStreet's [endowment tool](#):
  - 5% annual withdrawal rate relative to the starting endowment value in each year
  - 60% stock and 40% bond allocation ([market assumptions](#))
  - \$2,000,000 starting level and zero endowment contributions
- Generally, endowments do not pay taxes ([details](#))
- We can see what happens to spending and endowment growth if the endowment grows every year at the average return
  - Average return:  $60\% \times 8\% + 40\% \times 4\% = 6.4\%$
  - If we spend 5% out of the return every year, the endowment grows at 1.4%



# This is what happens if the endowment earns the average return every year.



- The 5% rule works just fine if things behave in-line with the average
- However, this is misleading
- The reason is that we are not accounting for the market's unpredictable ups and downs

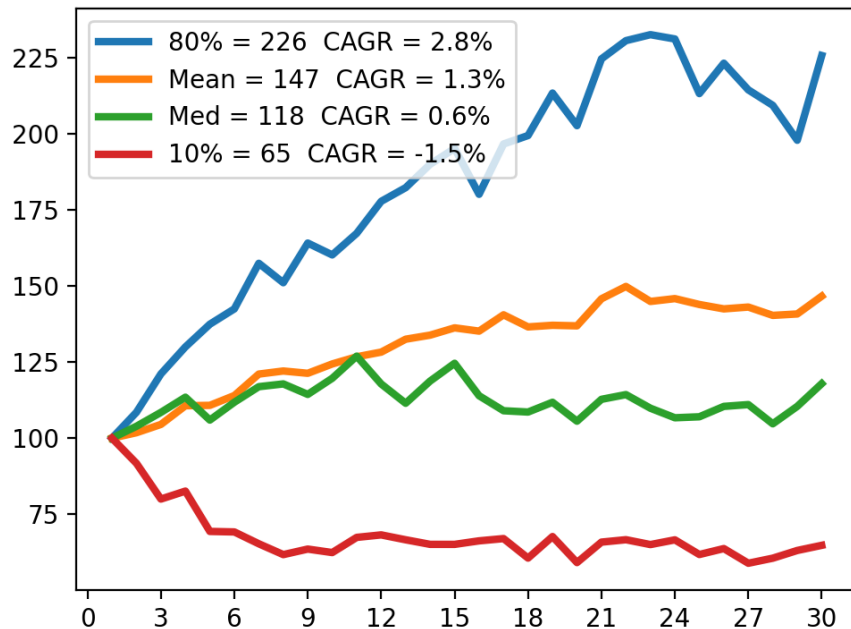
# We can account for market uncertainty by *simulating* the range of possible outcomes.



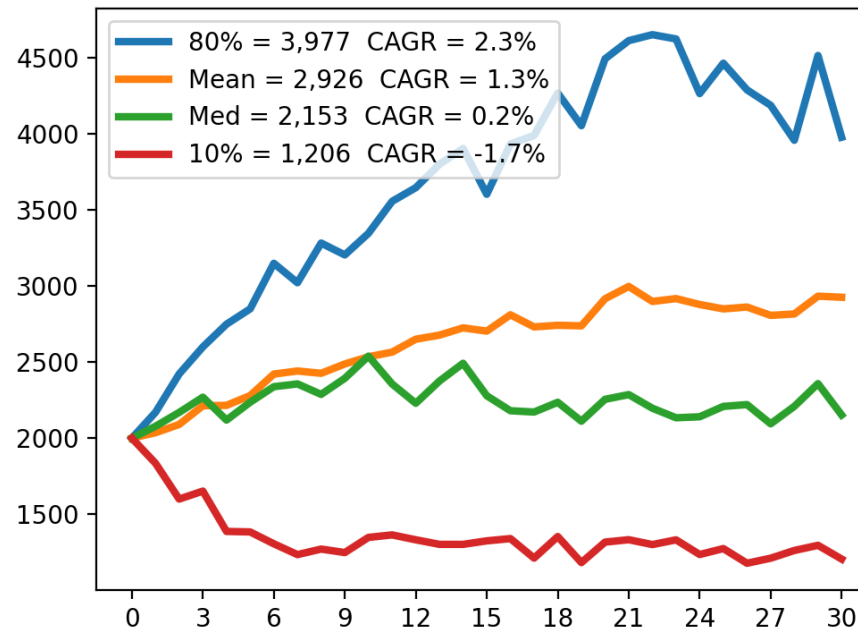
- The range of possible outcomes is dramatically bigger than looking just at the average
- Boards should think about not depleting the endowment at least 90% of the time
- A 5% spending rule is probably too aggressive

Parameters: Stock/Bond = 60/40 % spend = 5.0

Spending



Capital

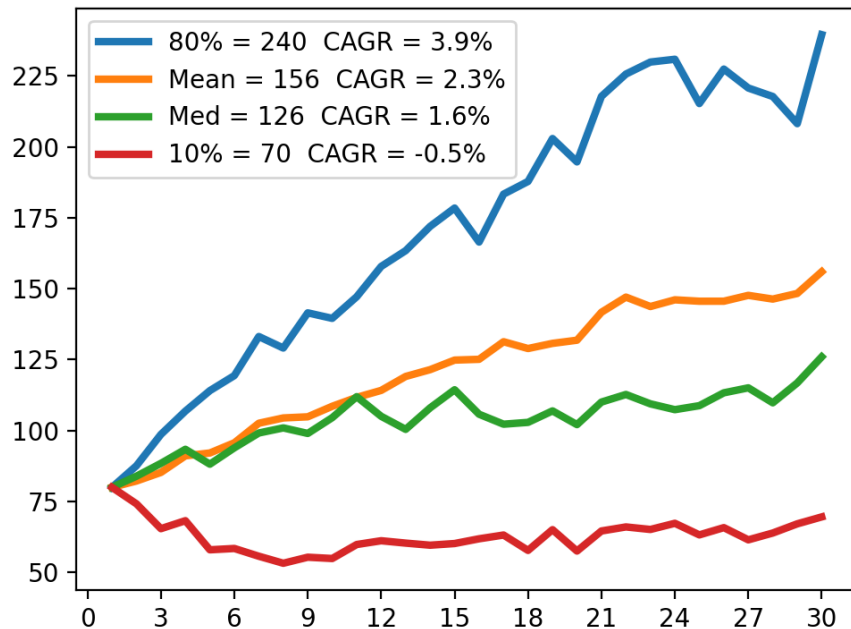


# We can try instead simulating outcomes using a 4.0% spending rule.

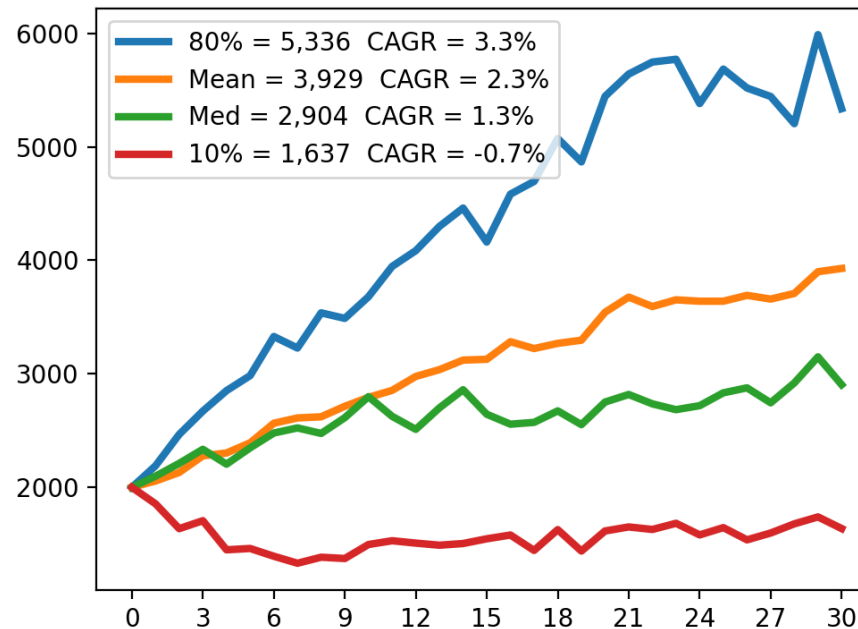


Parameters: Stock/Bond = 60/40 % spend = 4.0

Spending



Capital



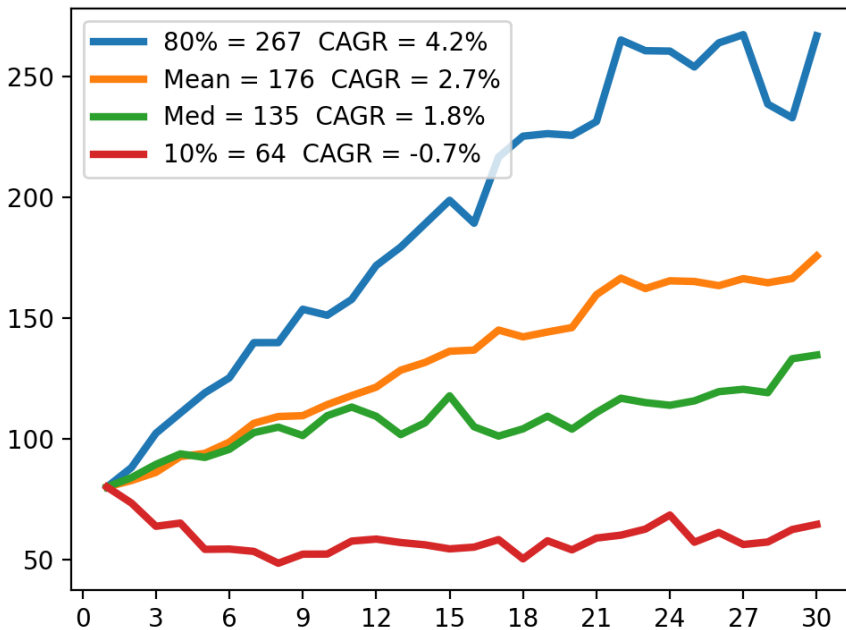
- This looks better as the 1-in-10 bad case outcomes leaves the endowment at \$1.6mm after 30 years
- But it still results in a depletion in the 1-in-10 bad case

# We can try allocating a large fraction of the portfolio to stocks: 70% stocks and 30% bonds

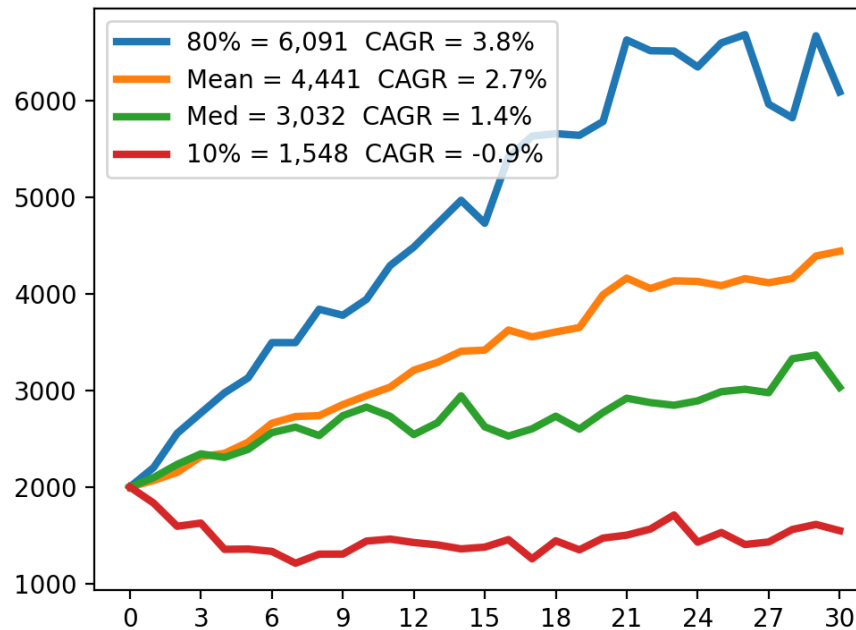


Parameters: Stock/Bond = 70/30 % spend = 4.0

Spending



Capital



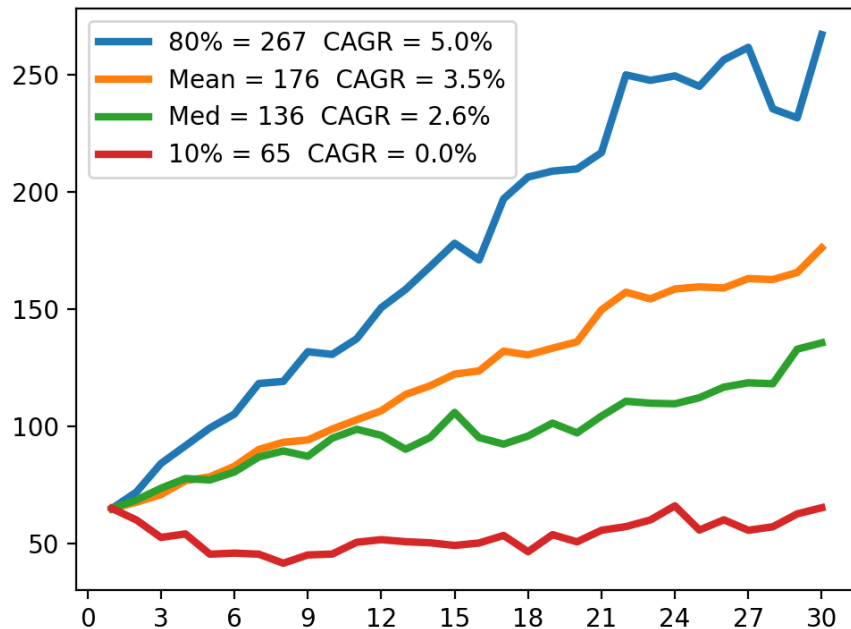
- A higher stock allocation makes the good and average scenarios look better
- But the 1-in-10 bad case outcome gets a little worse
- This happens because stocks have higher average returns than bonds
- But they are also riskier
- The 4% spend rate may still be too aggressive



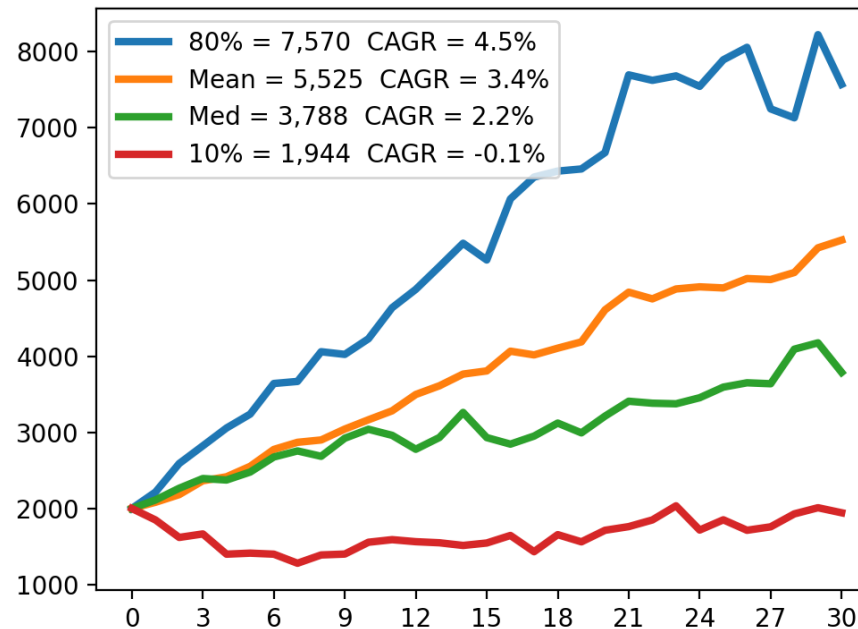
# A more conservative rule is to spend 3.2% of the endowment's value every year.

Parameters: Stock/Bond = 70/30 % spend = 3.2

Spending



Capital



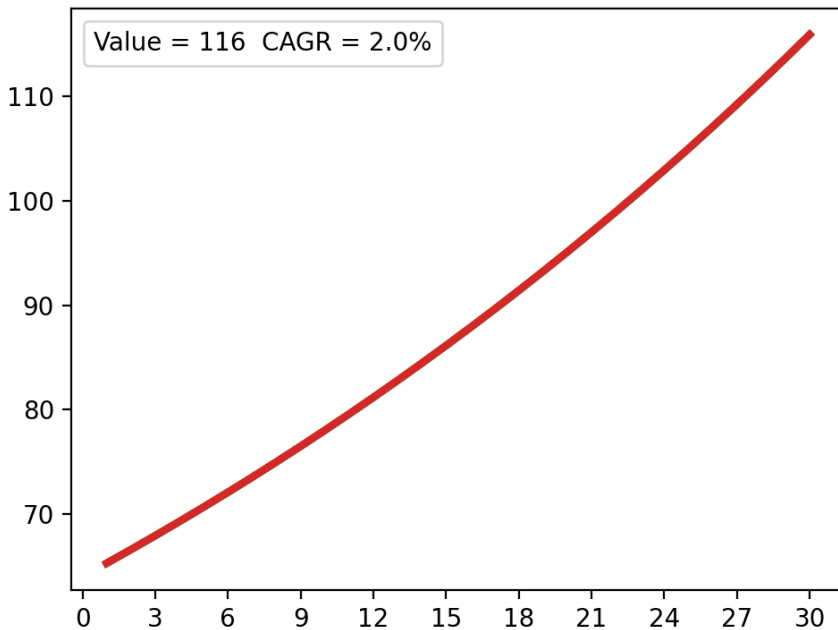
- This leads to faster endowment and spending growth over time
- And in the 1-in-10 bad case outcome the portfolio does not get depleted
- Interestingly, the spending from endowment after 30 years is *higher* in this case than under the 4% spend rule
- This happens because the endowment is allowed to grow more over time



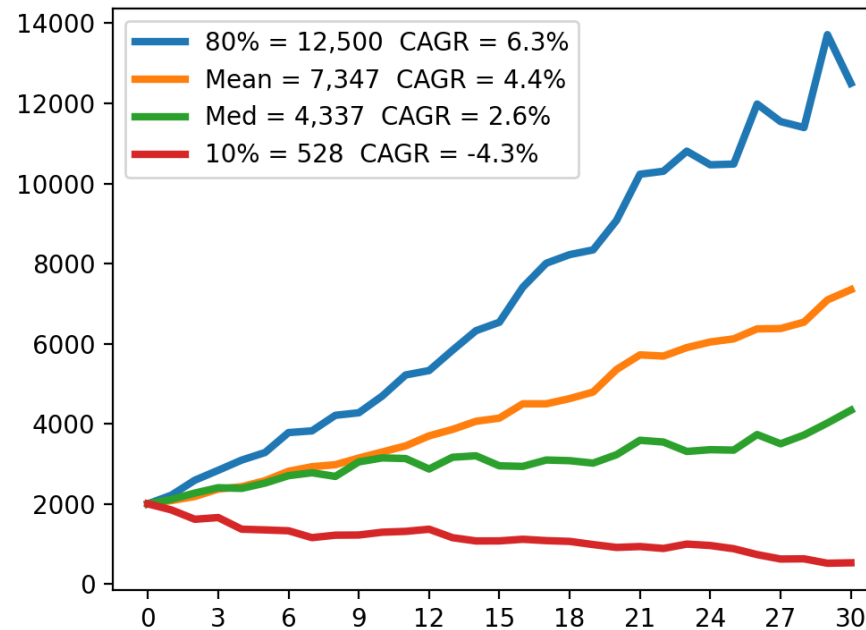
# A very imprudent rule is to spend a fixed and growing percent of the endowment every year.

Parameters: Stock/Bond = 70/30 fixed spend

Spending



Capital



- This assumes a starting spend of \$64,000 (3.2%) which grows at 2% per year
- 1 out of 10 times this comes close to depleting the endowment by year 30
- Spending needs to adjust with the level of the endowment to maintain the endowment



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# Conclusion

- A simulation-based approach can allow camps to strategically employ their endowment to sustain present and future growth
- There is a trade-off between higher present spending and depletion of future resources
  - A fixed spending rule, while providing a steadier income flow, is riskier for capital preservation
- This analysis should be updated regularly to account for:
  - Endowment's current size
  - Current asset return and volatility assumptions
  - Liquidity considerations and imminent spending needs
  - Other considerations specific to your camp
- [Contact us](#) to discuss your specific situation

# Caveats



- Our market return, volatility, and correlation assumptions may be too sanguine relative to what will really occur
- The simulation may not properly account for large tail risks so real results may be worse than simulated ones



# QuantStreet's endowment tool

## QuantStreet

### Wealth and Expenditure Simulation Tool

|                             |                              |                          |                        |
|-----------------------------|------------------------------|--------------------------|------------------------|
| Starting wealth (thousands) | Fraction allocated to stocks | Annual spend from wealth | Capital gains tax rate |
| 2000 - +                    | 0.60 - +                     | 0.050 - +                | 0.000 -                |

### Income

|                            |               |                  |
|----------------------------|---------------|------------------|
| Current Income (thousands) | Income growth | Income stop year |
| 0 - +                      | 0.000 - +     | 30 -             |

### Expense

|                             |                |                   |
|-----------------------------|----------------|-------------------|
| Current Expense (thousands) | Expense growth | Expense stop year |
| 0 - +                       | 0.000 - +      | 30 -              |

Run Simulation

Save

Load

Default

- QuantStreet's endowment tool allows you to customize this analysis and experiment with different spending/allocation rules

[\(back\)](#)



# Equity and bond distributional assumptions

- Based on 150 years of data ([macrohistory.net](https://macrohistory.net)), U.S. stocks and government bonds (maturity around 10 years) have averaged 10.5% and 4.8% returns respectively
- The volatilities have been 17.8% and 7.8% respectively
- The correlation between the asset classes has been 6.3%
- In *The State of Retirement Income: 2022* report, Morningstar has the assumptions given in the table below
- There is also the [Horizon survey](#) of capital market assumptions and [Blackrock's tool](#)
- To be conservative, we use the following assumptions:

|                   | Stocks | Bonds |
|-------------------|--------|-------|
| Projected returns | 8%     | 4%    |
| Volatility        | 17.8%  | 7.8%  |
| Correlation       | 5%     |       |

([back](#)) ([back](#))

Return and inflation statistics for USA

|                  | eq_tr        | bond_tr      | bill_rate    | cpi_yoy      | eq_vol       | bond_vol     | bill_vol     | e_b_cor       | cpi_vol      |
|------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|--------------|
| 1870:1889        | 0.072        | 0.046        | 0.049        | -0.018       | 0.148        | 0.033        | 0.009        | 0.459         | 0.022        |
| 1890:1909        | 0.092        | 0.023        | 0.039        | -0.001       | 0.171        | 0.022        | 0.002        | 0.363         | 0.02         |
| 1910:1929        | 0.111        | 0.034        | 0.038        | 0.035        | 0.18         | 0.031        | 0.002        | 0.509         | 0.076        |
| 1930:1949        | 0.074        | 0.041        | 0.019        | 0.018        | 0.253        | 0.051        | 0.011        | 0.166         | 0.061        |
| 1950:1969        | 0.144        | 0.01         | 0.032        | 0.022        | 0.169        | 0.052        | 0.018        | -0.294        | 0.019        |
| 1970:1989        | 0.127        | 0.092        | 0.086        | 0.06         | 0.167        | 0.12         | 0.029        | 0.4           | 0.028        |
| 1990:2009        | 0.1          | 0.079        | 0.043        | 0.026        | 0.189        | 0.113        | 0.02         | -0.232        | 0.011        |
| 2010:2020        | 0.126        | 0.066        | 0.006        | 0.017        | 0.083        | 0.116        | 0.007        | -0.42         | 0.008        |
| <b>1870:2020</b> | <b>0.105</b> | <b>0.048</b> | <b>0.041</b> | <b>0.02</b>  | <b>0.178</b> | <b>0.078</b> | <b>0.026</b> | <b>0.063</b>  | <b>0.044</b> |
| <b>1946:2020</b> | <b>0.12</b>  | <b>0.059</b> | <b>0.044</b> | <b>0.035</b> | <b>0.16</b>  | <b>0.103</b> | <b>0.035</b> | <b>-0.031</b> | <b>0.029</b> |

Sources: QuantStreet, macrohistory.net

Exhibit 4 Projected 30-Year Asset-Class Return % and Standard Deviations

| Broad Asset Class | Asset Class                | Portfolio Weighting % | Expected 30-Year Return %<br>(Arithmetic) | Expected 30-Year Standard Deviation %<br>(Annual) |
|-------------------|----------------------------|-----------------------|-------------------------------------------|---------------------------------------------------|
| Equity            | Large Growth U.S. Stocks   | 30                    | 9.65                                      | 19.06                                             |
|                   | Large Value U.S. Stocks    | 30                    | 8.96                                      | 15.81                                             |
|                   | Small Growth U.S. Stocks   | 10                    | 10.58                                     | 24.71                                             |
|                   | Small Value U.S. Stocks    | 10                    | 12.40                                     | 20.60                                             |
|                   | Foreign Stocks             | 20                    | 10.00                                     | 18.32                                             |
| Bond              | U.S. Investment-Grade Bond | 80                    | 4.51                                      | 5.39                                              |
|                   | Foreign Bond               | 20                    | 5.12                                      | 9.03                                              |
| Cash              | U.S. Treasury Bill         | 100                   | 2.69                                      | 1.74                                              |
| Inflation         |                            |                       | 2.84                                      |                                                   |

Source: Morningstar.



# The foundation 5% rules

- The 5% rule applies to foundations

“to prevent [them] from simply receiving gifts, investing the assets and never spending any funds on charitable purposes”\*
- Roughly speaking the rule means that

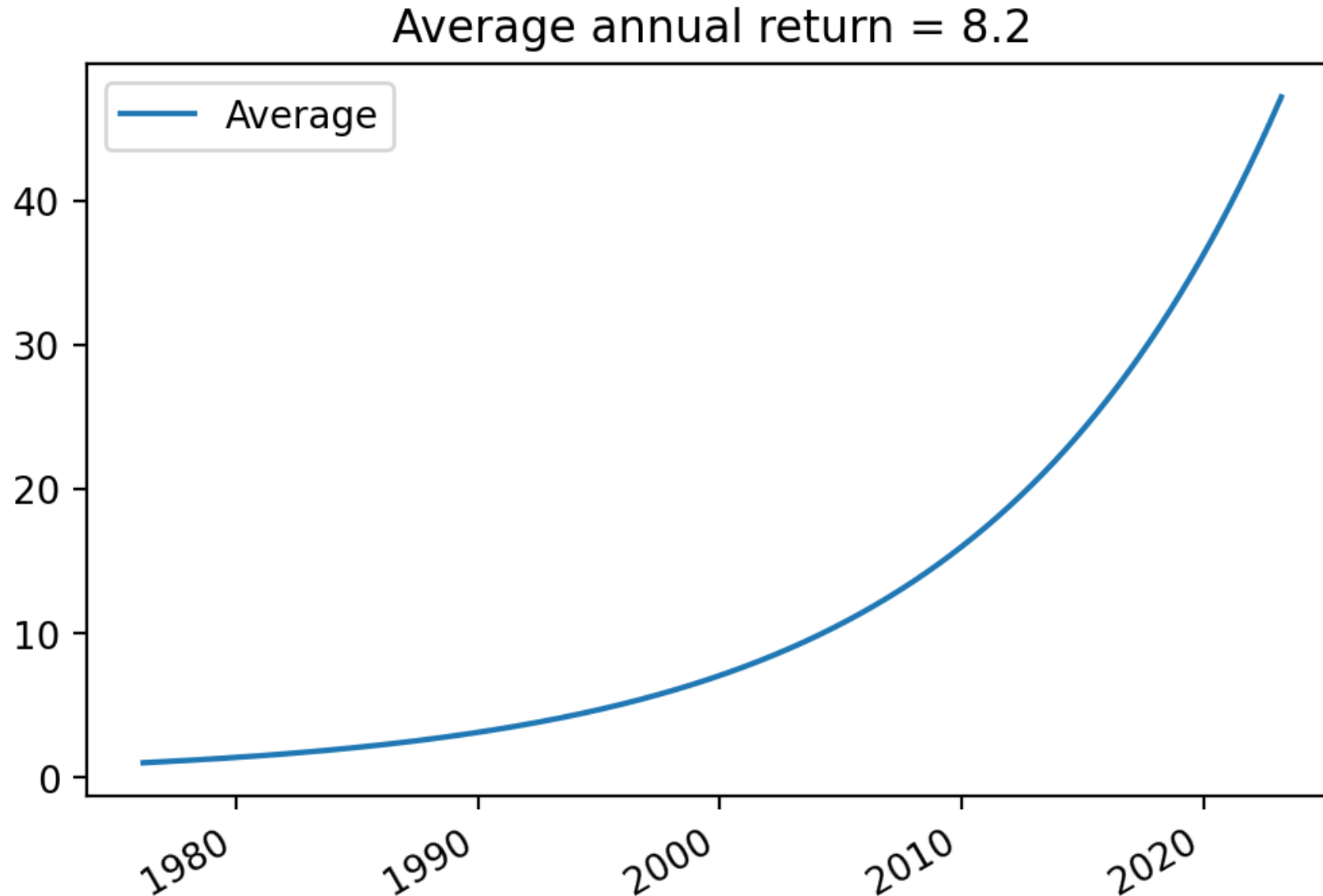
“Each year every private foundation must make eligible charitable expenditures that equal or exceed approximately 5 percent of the value of its endowment”
- The rule does not apply to endowments at non-profits [verify with your legal counsel]

“The 5% payout guideline was instituted in 1981 by the IRS. While it applies only to private foundations, it was broadly adopted by most non-profit organizations as a sensible baseline for spending.”\*\*

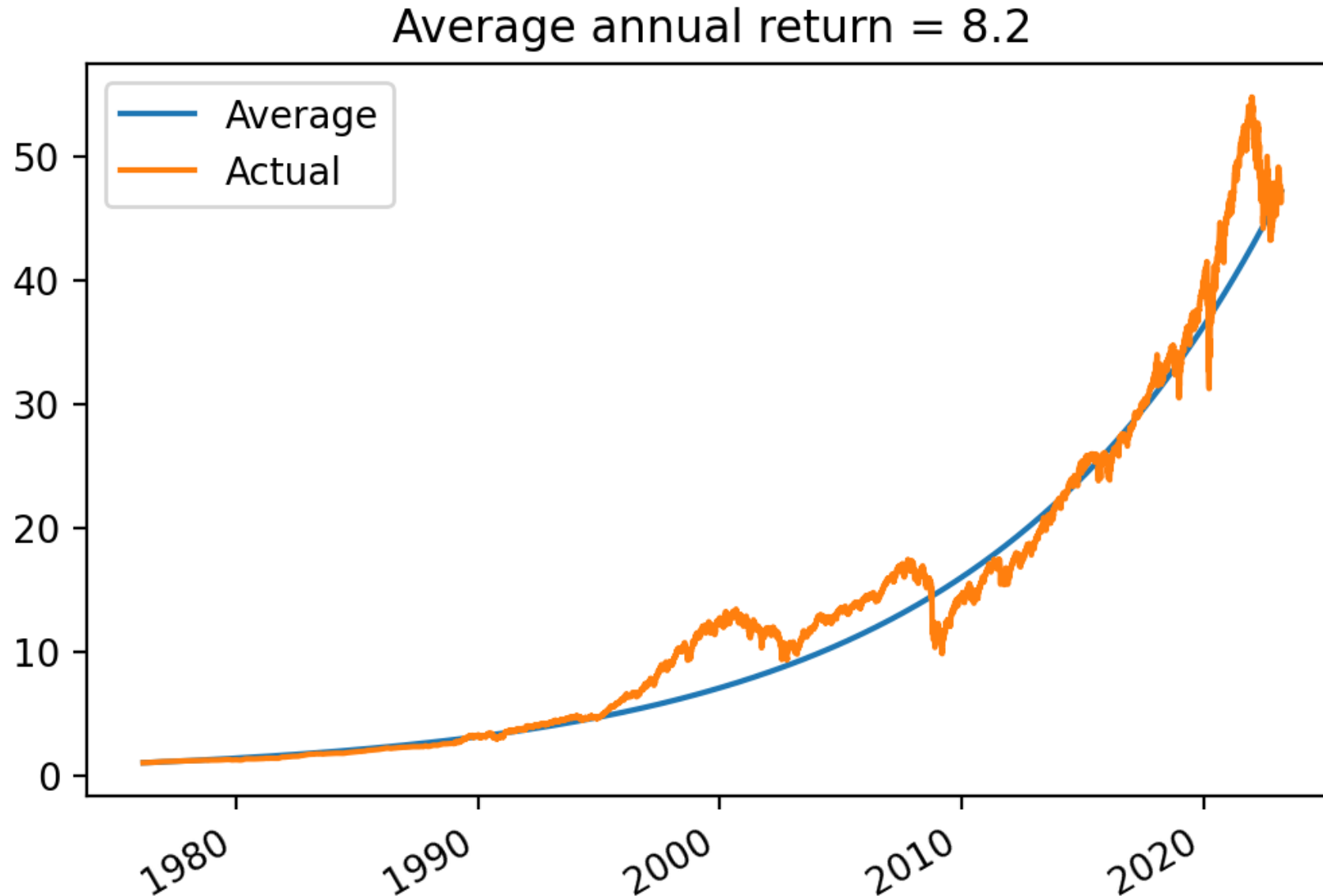
\*From the Council of Foundations [“The Five Percent Minimum Payout Requirement”](#)

\*\*From Mark Dixon, 2017, [“Endowments should rethink the 5% rule,”](#) Pensions&Investments

This shows what happens to a \$1 investment over time when the investment earns the average stock market return.



The orange line shows the actual stock market return since the 1970s. There is a lot of volatility that the average does not capture.





# Q & A

<https://quantstreetcapital.com/contact/>

[hello@quantstreetcapital.com](mailto:hello@quantstreetcapital.com)

212-537-3877

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