Retirement Analysis Using APIs

This document summarizes Assumptions and Findings for Retirement Planning. Plaid and Alpaca APIs were used as data sources.

Assumptions

- The transaction sample size was for the 90-day period from 2/28/2020 to 5/25/2020 using Plaid data
- The Monte Carlo simulation analysis is based on 2019 daily return data for a weighted portfolio of SPY (representing stocks with a weighting of 60%) and AGG (representing bonds with a weighting of 40%) using Alpaca data
- 500 Monte Carlo Simulations were run for a 30-year period of returns

Findings

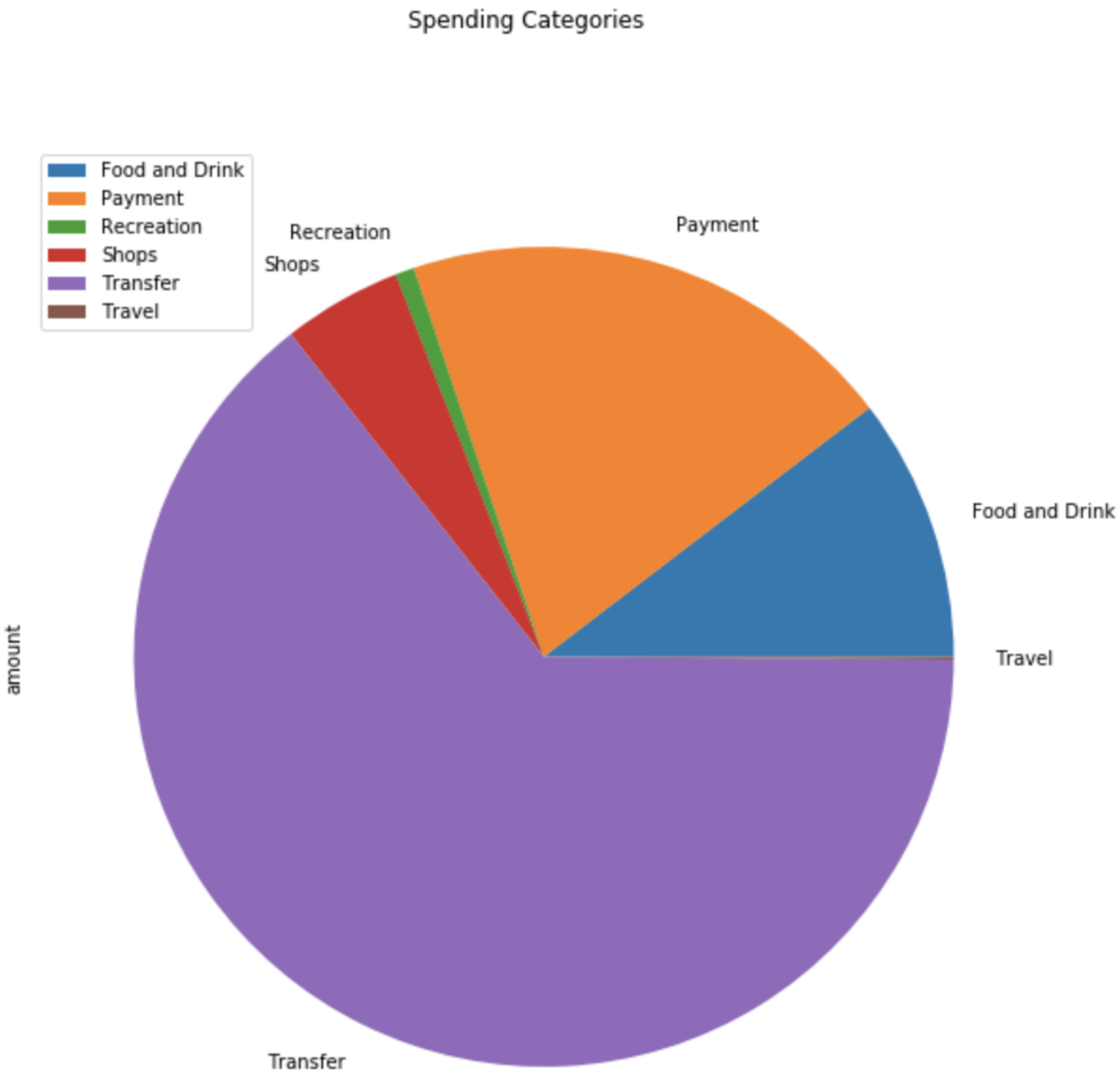
The following income data was provided by Plaid:

Income:

- The previous year's gross income was $7,285.
- The monthly income is: $500.
- The projected yearly gross income is: $7,389.

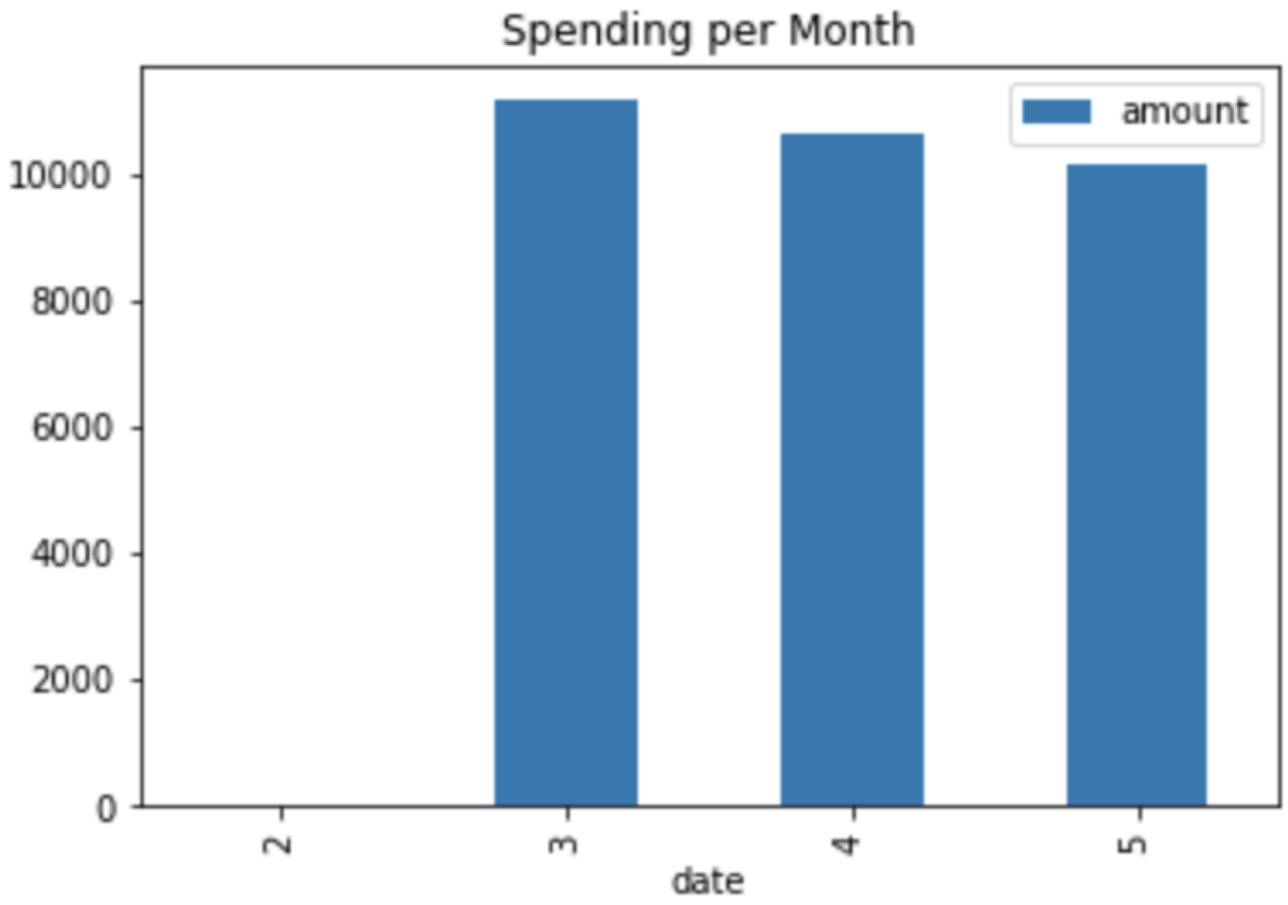
Expenses by Category

- Food and Drink: $3,317.19
- Payment: $6,310.50
- Recreation: $235.50
- Shops: $1,500.00
- Transfer: $20,537.34
- Travel: $35.19



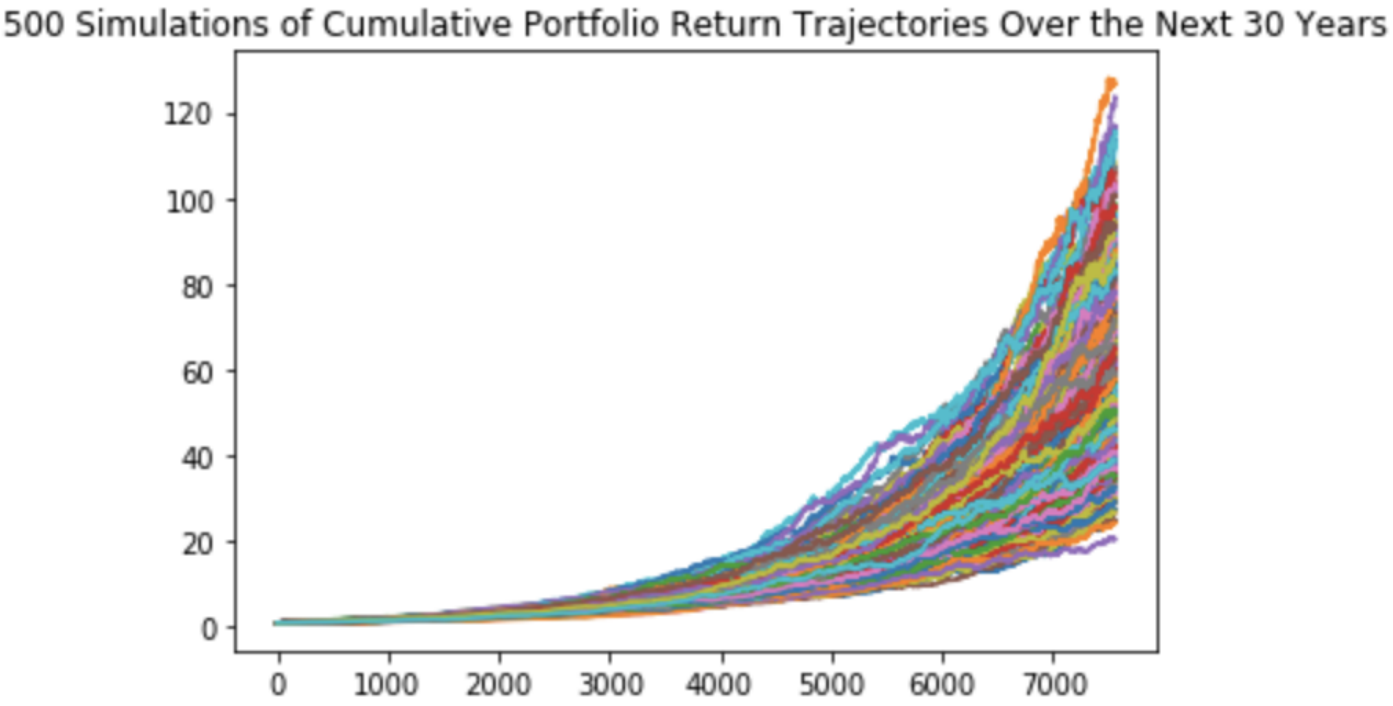
Expenses per Month

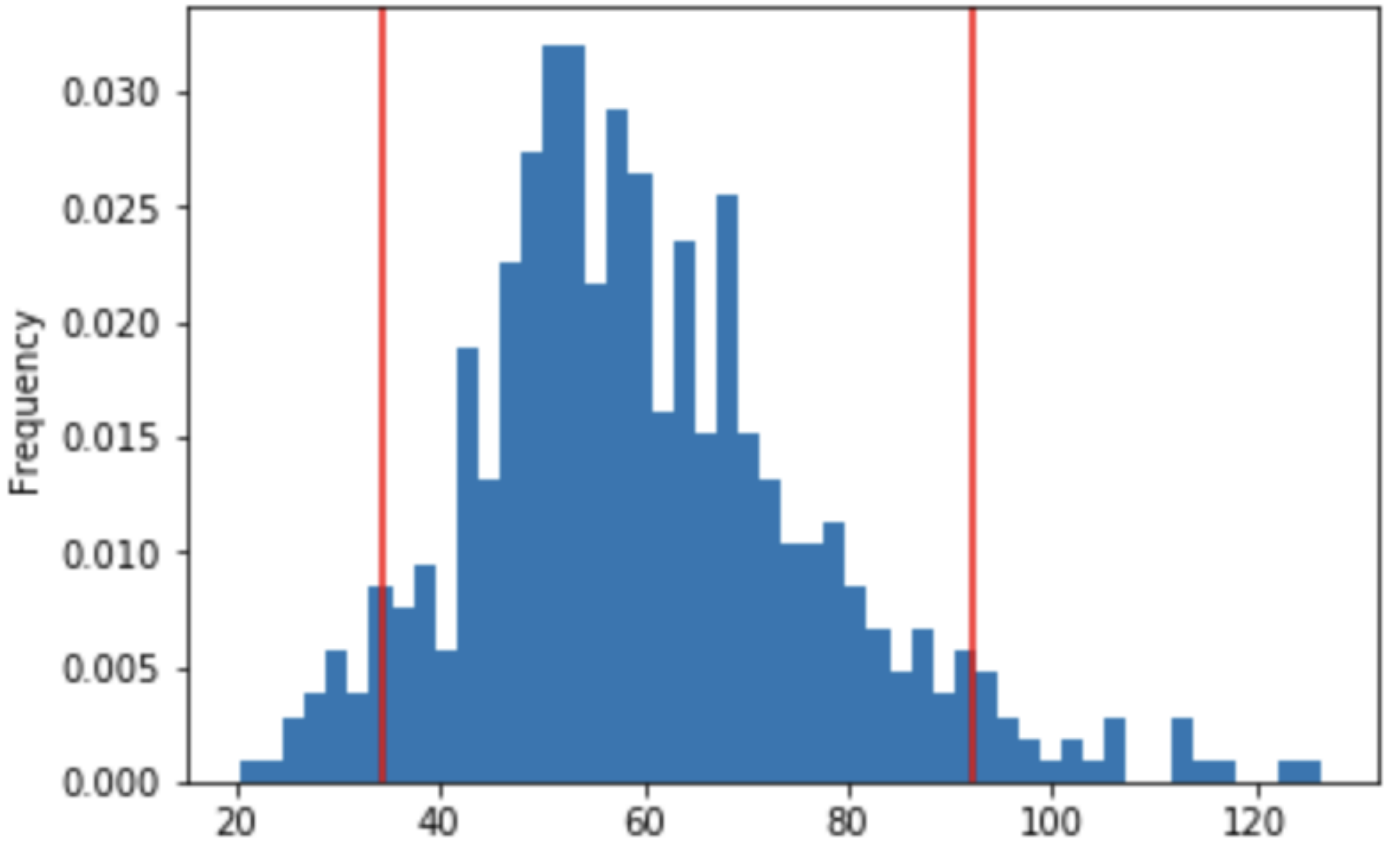
- February: $6.33
- March: $11,145.24
- April: $10,645.24
- May: $10,138.91



Retirement Analysis

Running 500 Monte Carlo simulations produces the following range of cumulative portfolio returns:





- The expected cumulative return for the 10th percentile is 41.26.
- The expected cumulative return for the 50th percentile is 57.74.
- The expected cumulative return for the 90th percentile is 82.33.

With a 90% confidence interval, expected cumulative returns will fall between the values of 34.496951 and 92.235803, denoted by the red vertical lines in the histogram above.

With an initial investment of $20,000:

- The expected portfolio return for the 10th percentile is $825,232.57.
- The expected portfolio return for the 50th percentile is $1,154,758.94.
- The expected portfolio return for the 90th percentile is $1,646,564.34.

Given the current projected annual income from the Plaid analysis, a 4% withdrawal rate from the retirement portfolio will result in $33,009.30 in retirement income which is sufficient.

By increasing the initial investment amount by 50%, a 4% withdrawal rate from the retirement portfolio will result in $49,513.95 in retirement income which is also sufficient.