

1. The two-year adjusted close prices of the stocks in the portfolio were extracted, and their returns were then calculated by using the following formula:

$$\text{Returns} = \frac{\text{current adj. close price} - \text{previous adj. close price}}{\text{previous adj. close price}}$$

1 Year Returns							
Stock	MA	DOW	NVDA	AAPL	AMZN	LXRX	UNH
2/13/2023	-1.75%	-0.94%	5.43%	-0.42%	0.16%	0.44%	-0.51%
2/14/2023	-1.43%	-2.22%	-0.90%	1.39%	1.46%	-0.87%	-0.32%
2/15/2023	-0.28%	0.30%	-3.35%	-1.04%	-2.98%	0.00%	-0.79%
2/16/2023	0.16%	0.32%	-2.79%	-0.75%	-0.97%	6.58%	2.41%
2/17/2023	-0.68%	1.05%	-3.43%	-2.67%	-2.70%	-8.64%	-1.56%
2/21/2023	0.67%	-0.18%	0.48%	0.29%	1.28%	6.31%	-0.49%
2/22/2023	-0.05%	0.37%	14.02%	0.33%	0.03%	3.81%	0.57%
2/23/2023	-0.50%	1.43%	-1.60%	-1.80%	-2.42%	-8.98%	-1.50%
2/24/2023	0.59%	0.72%	0.92%	0.82%	0.28%	-2.69%	-0.21%
2/27/2023	1.67%	-0.21%	-1.21%	-0.34%	0.50%	3.69%	-1.53%
2/28/2023	1.50%	-2.07%	-2.23%	-1.42%	-2.19%	-2.22%	-0.15%
3/1/2023	-1.90%	-2.29%	2.71%	0.41%	-0.04%	-0.91%	0.52%
3/2/2023	-0.25%	0.82%	2.47%	3.51%	3.01%	22.94%	0.18%

Fig 1. Sample dataset of the stock returns

2. A descriptive statistical analysis was performed on each stock in the dataset.

1 Year Returns Statistics							
Stock	MA	DOW	NVDA	AAPL	AMZN	LXRX	UNH
A. Median	0.12%	0.03%	0.42%	0.07%	0.11%	-0.43%	-0.02%
A. Mean	0.11%	0.01%	0.52%	0.09%	0.24%	0.25%	0.03%
A. Max	2.60%	5.33%	24.37%	4.69%	8.27%	22.94%	7.24%
A. Min	-5.62%	-5.22%	-5.68%	-4.80%	-5.58%	-17.88%	-6.40%
A. Standard Deviation	1.02%	1.38%	2.91%	1.23%	1.93%	5.69%	1.32%
1%	-2.19%	-3.40%	-4.70%	-3.26%	-4.14%	-10.92%	-3.50%
5%	-1.65%	-2.22%	-3.24%	-1.72%	-2.71%	-8.39%	-1.76%
25%	-0.45%	-0.85%	-1.11%	-0.64%	-0.94%	-3.48%	-0.63%
75%	0.80%	0.88%	1.94%	0.80%	1.46%	3.64%	0.69%
95%	1.65%	2.11%	4.75%	1.95%	3.06%	9.93%	1.85%
99%	2.32%	3.56%	7.80%	3.34%	5.77%	15.54%	3.33%

Fig 2. Descriptive Statistics of the Actual Returns

- The Monte Carlo simulation was conducted by simulating 1,000 random returns based on the mean and standard deviation of the actual returns of the stocks.

Monte Carlo Simulation							
Trials	MA	DOW	NVDA	AAPL	AMZN	LXRX	UNH
1	0.23%	0.03%	-1.03%	-0.61%	1.96%	-3.66%	0.58%
2	1.18%	-0.62%	0.86%	-0.63%	0.70%	3.88%	0.25%
3	-0.24%	0.35%	0.20%	0.19%	-1.85%	-0.05%	-0.52%
4	-0.51%	-0.50%	-1.76%	-0.98%	-0.13%	-0.78%	-0.16%
5	1.93%	-2.93%	0.45%	0.42%	-0.77%	0.78%	1.33%
6	1.13%	0.20%	-1.79%	0.84%	2.54%	2.71%	2.18%
7	0.08%	1.64%	2.60%	0.13%	4.67%	-5.03%	0.11%
8	1.40%	-0.18%	2.03%	-0.39%	0.47%	-12.29%	2.21%
9	-0.04%	0.52%	-2.94%	-2.26%	-0.82%	1.14%	1.40%
10	1.12%	2.28%	3.71%	0.72%	4.80%	-0.90%	0.47%
11	-1.30%	1.56%	0.00%	-0.86%	1.69%	-4.22%	0.98%
12	-0.27%	0.17%	1.07%	2.48%	-1.14%	12.31%	0.35%
13	0.79%	0.00%	-0.01%	3.08%	-0.25%	4.00%	1.41%
14	-0.13%	0.37%	-0.36%	2.64%	0.54%	5.36%	0.55%
15	0.91%	0.78%	0.52%	-0.55%	0.94%	-3.73%	-0.38%

Fig 3. Sample dataset of the simulated returns

- The generated simulated returns follow a normal distribution, allowing for an accurate representation of the confidence intervals of the dataset.

Monte Carlo Simulation Statistics							
Stock	MA	DOW	NVDA	AAPL	AMZN	LXRX	UNH
A. Median	0.05%	-0.01%	0.55%	0.10%	0.20%	0.13%	0.06%
A. Mean	0.08%	0.04%	0.66%	0.07%	0.22%	0.12%	0.02%
A. Max	4.16%	4.37%	9.50%	4.63%	5.47%	17.90%	3.73%
A. Min	-3.34%	-4.19%	-7.95%	-4.04%	-7.11%	-17.74%	-4.02%
A. Standard Deviation	1.05%	1.38%	2.92%	1.22%	1.95%	5.38%	1.29%
1%	-2.38%	-2.98%	-6.10%	-2.85%	-4.34%	-13.43%	-3.16%
5%	-1.55%	-2.10%	-4.20%	-1.95%	-3.04%	-8.26%	-2.02%
25%	-0.58%	-0.88%	-1.14%	-0.73%	-1.09%	-3.48%	-0.89%
75%	0.75%	0.94%	2.61%	0.91%	1.61%	3.62%	0.95%
95%	1.80%	2.33%	5.74%	2.10%	3.47%	8.79%	2.15%
99%	2.75%	3.68%	7.28%	3.08%	4.44%	12.83%	2.96%

Fig 4. Descriptive statistics of the simulated returns

- The 1% and 99% confidence intervals of the simulated returns will be used as stop-loss and take-profit percentages.

Monte Carlo Simulation Statistics							
Stock	MA	DOW	NVDA	AAPL	AMZN	LXRX	UNH
A. Median	0.05%	-0.01%	0.55%	0.10%	0.20%	0.13%	0.06%
A. Mean	0.08%	0.04%	0.66%	0.07%	0.22%	0.12%	0.02%
A. Max	4.16%	4.37%	9.50%	4.63%	5.47%	17.90%	3.73%
A. Min	-3.34%	-4.19%	-7.95%	-4.04%	-7.11%	-17.74%	-4.02%
A. Standard Deviation	1.05%	1.38%	2.92%	1.22%	1.95%	5.38%	1.29%
1%	-2.38%	-2.98%	-6.10%	-2.85%	-4.34%	-13.43%	-3.16%
5%	-1.55%	-2.10%	-4.20%	-1.95%	-3.04%	-8.26%	-2.02%
25%	-0.58%	-0.88%	-1.14%	-0.73%	-1.09%	-3.48%	-0.89%
75%	0.75%	0.94%	2.61%	0.91%	1.61%	3.62%	0.95%
95%	1.80%	2.33%	5.74%	2.10%	3.47%	8.79%	2.15%
99%	2.75%	3.68%	7.28%	3.08%	4.44%	12.83%	2.96%

Fig 5. The 1% and 99% percentiles of the simulated returns

- The data was visualized to represent the distribution of simulated returns for each stock

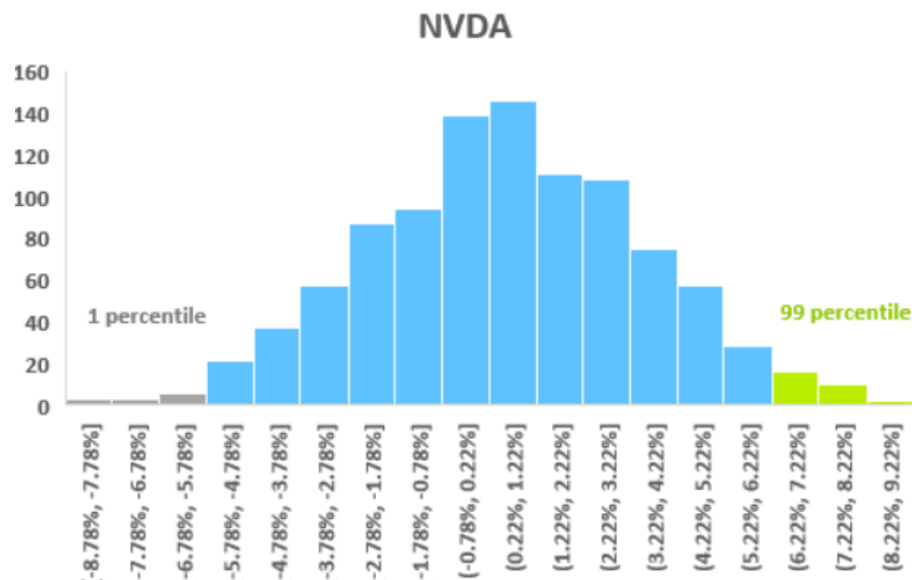


Fig 6. Histogram of simulated returns