

# Portfolio Risk Analysis (sample)

TLDR: Calculate the risk characteristics for a portfolio, e.g. using easily downloaded portfolio information from Fidelity. In this example, I calculate the correlation, beta (relative to SP500), and Value at Risk

Download your Portfolio from Fidelity as a CSV:

The screenshot shows the Fidelity All accounts interface. The 'Positions' tab is active. At the top right, there is a 'More' dropdown menu with options like 'Settings', 'Print', and 'Download'. A red arrow points to the 'Download' button, which is highlighted with a red box. Below the toolbar, there is a table header with columns for 'Symbol', 'Last price', 'Today's gain/loss', 'Total gain/loss', 'Current value', '% of account', 'Quantity', and 'Cost basis'. The table is currently empty.

The result will be a CSV file called something like:  
`'Portfolio_Positions_MM-DD-YYYY.csv'`.

Convert the CSV to a clean data CSV:

You may need to install python and some libraries. Clean up the data to generate a new CSV as that file is not ready to be used for analysis:

`'python process_portfolio.py'`.

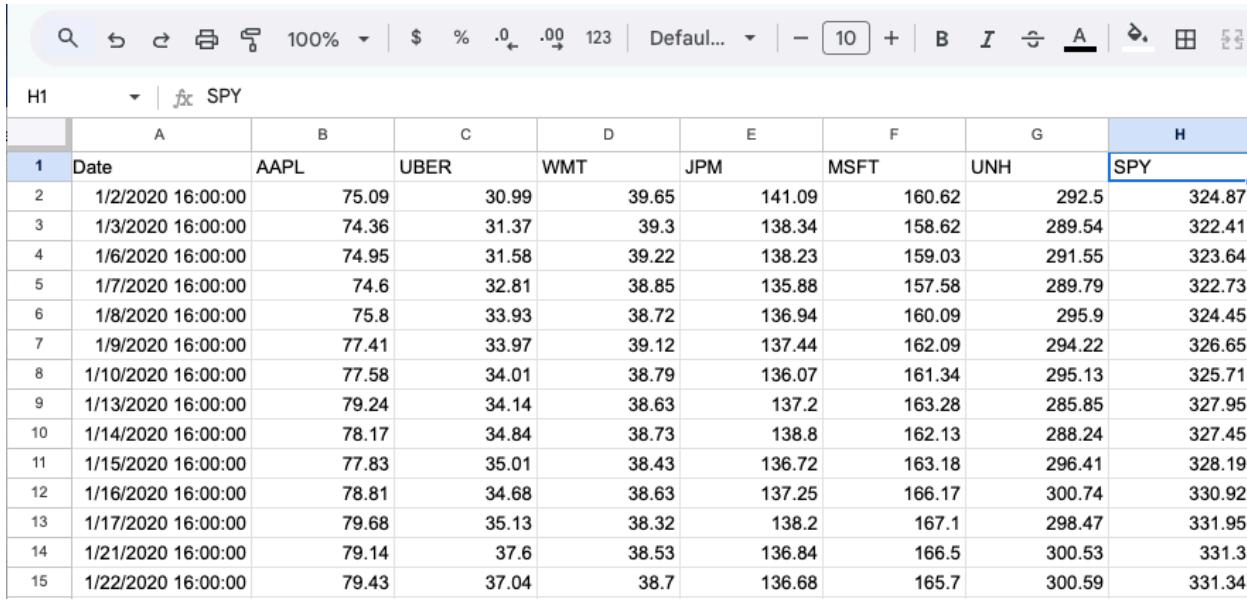
```
@MacBook-Air-6:~/Documents/python
~/Documents/python > python process_portfolio.py
Filtered data from 'Portfolio_Positions_Nov-09-2025.csv' has been written to 'portfolio.csv'.
~/Documents/python >
```

The terminal window shows the command `'python process_portfolio.py'` being run. The output indicates that the script has processed the input CSV file and generated a new CSV file named `'portfolio.csv'`. The terminal prompt is shown again at the end.

**MANUAL STEP - Create a CSV with historical price data for your portfolio (use gSheet [GoogleFinance](#) function):**

```
=GOOGLEFINANCE(A2,"price",DATE(YEAR(TODAY())-5,1,1),TODAY(),"daily")
```

See Example Output in: '[sample\\_history.csv](#):



The screenshot shows a Google Sheets spreadsheet titled 'H1' with a filter set to 'SPY'. The table has columns labeled A through H. Column A is 'Date', and column H is 'SPY'. The data spans from January 2, 2020, to January 22, 2020. The table includes data for AAPL, UBER, WMT, JPM, MSFT, and UNH.

	A	B	C	D	E	F	G	H
1	Date	AAPL	UBER	WMT	JPM	MSFT	UNH	SPY
2	1/2/2020 16:00:00	75.09	30.99	39.65	141.09	160.62	292.5	324.87
3	1/3/2020 16:00:00	74.36	31.37	39.3	138.34	158.62	289.54	322.41
4	1/6/2020 16:00:00	74.95	31.58	39.22	138.23	159.03	291.55	323.64
5	1/7/2020 16:00:00	74.6	32.81	38.85	135.88	157.58	289.79	322.73
6	1/8/2020 16:00:00	75.8	33.93	38.72	136.94	160.09	295.9	324.45
7	1/9/2020 16:00:00	77.41	33.97	39.12	137.44	162.09	294.22	326.65
8	1/10/2020 16:00:00	77.58	34.01	38.79	136.07	161.34	295.13	325.71
9	1/13/2020 16:00:00	79.24	34.14	38.63	137.2	163.28	285.85	327.95
10	1/14/2020 16:00:00	78.17	34.84	38.73	138.8	162.13	288.24	327.45
11	1/15/2020 16:00:00	77.83	35.01	38.43	136.72	163.18	296.41	328.19
12	1/16/2020 16:00:00	78.81	34.68	38.63	137.25	166.17	300.74	330.92
13	1/17/2020 16:00:00	79.68	35.13	38.32	138.2	167.1	298.47	331.95
14	1/21/2020 16:00:00	79.14	37.6	38.53	136.84	166.5	300.53	331.3
15	1/22/2020 16:00:00	79.43	37.04	38.7	136.68	165.7	300.59	331.34

The above shows 7 holdings and uses SPY (SP500) as the baseline measurement. It is a daily CLOSE price for the last 5 years.

See this Example Google Sheet

**Install Python and ability to run Notebook:**

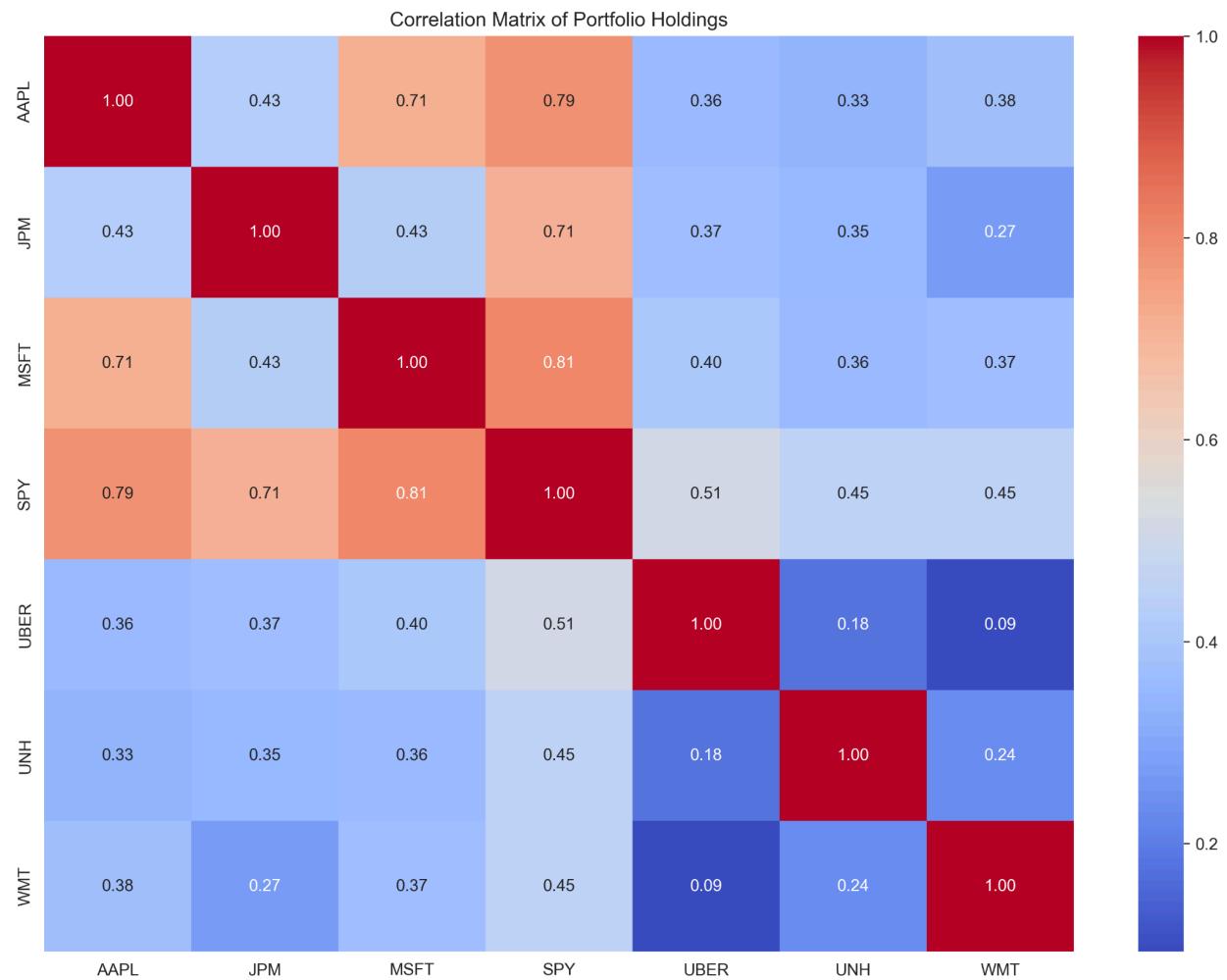
```
First, we import the necessary libraries. If you don't have them installed, you can  
install them using pip:
```

```
```  
pip install pandas yfinance numpy matplotlib seaborn
```

**BUT yFinance no longer allows you to download stock history?**

## Correlation Results:

As expected MSFT is somewhat correlated to APPL and Uber is not very correlated to WMT.



Annualized Volatility Calculations:

```
Annualized Volatility of Individual Stocks:  
UBER      0.525295  
UNH       0.335993  
AAPL      0.321269  
JPM       0.316129  
MSFT      0.297795  
WMT       0.229896  
SPY       0.209902  
dtype: float64
```

Beta Calculations:

```
Stock Betas relative to S&P 500 (SPY):  
          Beta  
UBER    1.277602  
AAPL    1.202929  
MSFT    1.143252  
JPM     1.070472  
UNH     0.724999  
WMT     0.491409
```

## Value at Risk (VaR) Calculations:

Daily Value at Risk (VaR) at 95% confidence level: -1.91%  
This means that on any given day, there is a 5% chance of losing -3,297.30 or more.