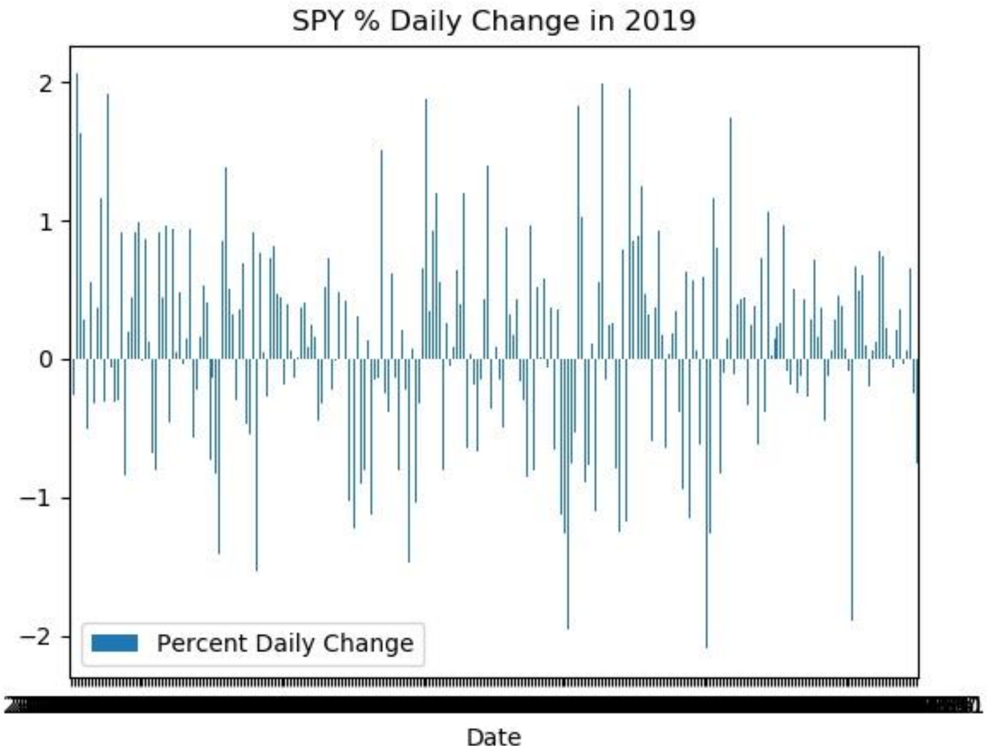
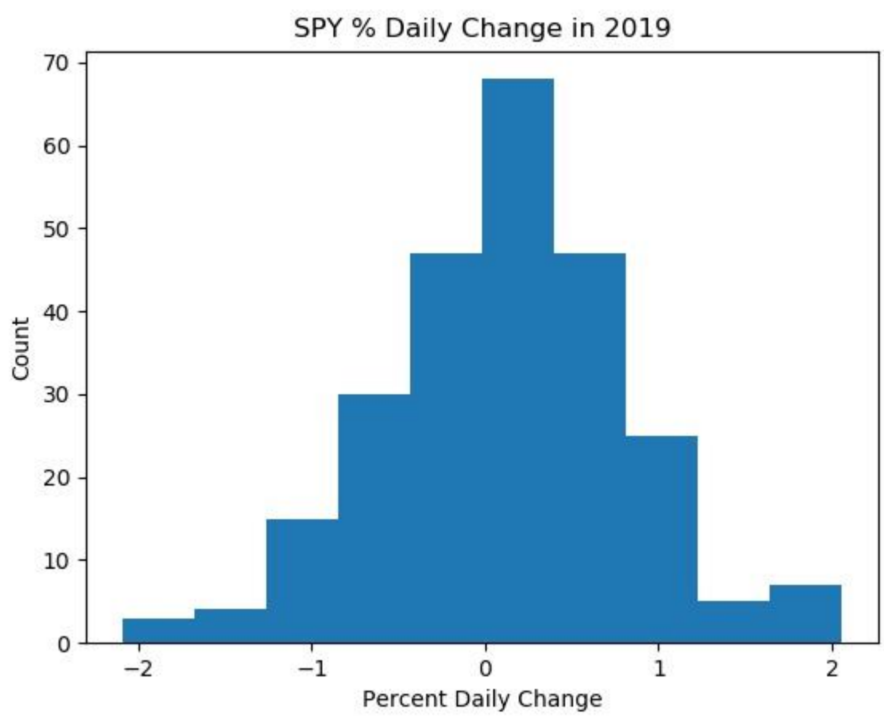
Andrew Ivanov

2019 Analysis of Amazon, Walmart, Square, SPDR Gold ETF, and Grayscale Bitcoin Trust.

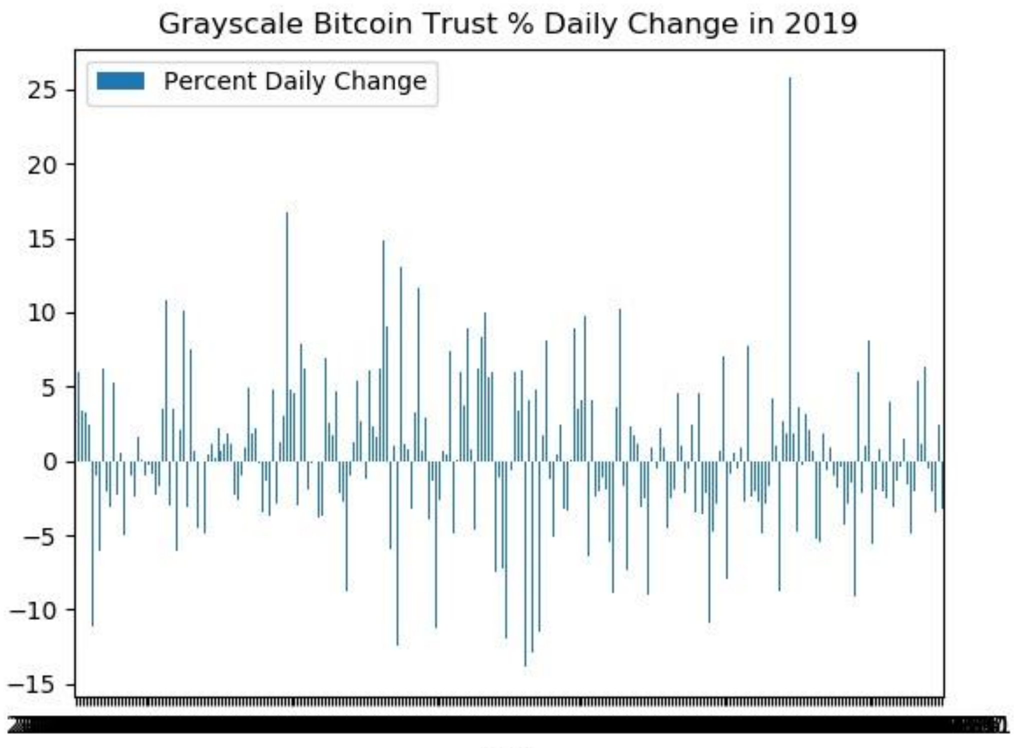
Using the Alpha Vantage API, I obtained the historical price data for the S&P 500, Amazon, Walmart, Square Inc, SPDR Gold Shares ETF, and Grayscale Bitcoin. I wanted to examine the daily and yearly price performance, daily volatility, and the correlation to the S&P 500 of the assets I selected.

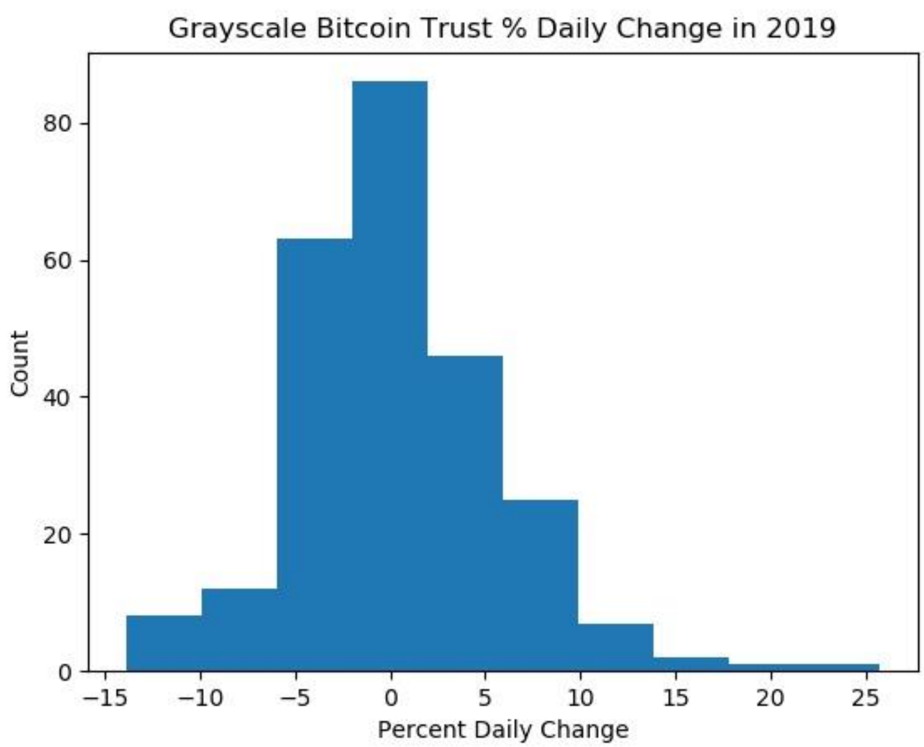
SPY


SPY % Daily Change in 2019
2
1
0
−1
−2
Percent Daily Change
Date

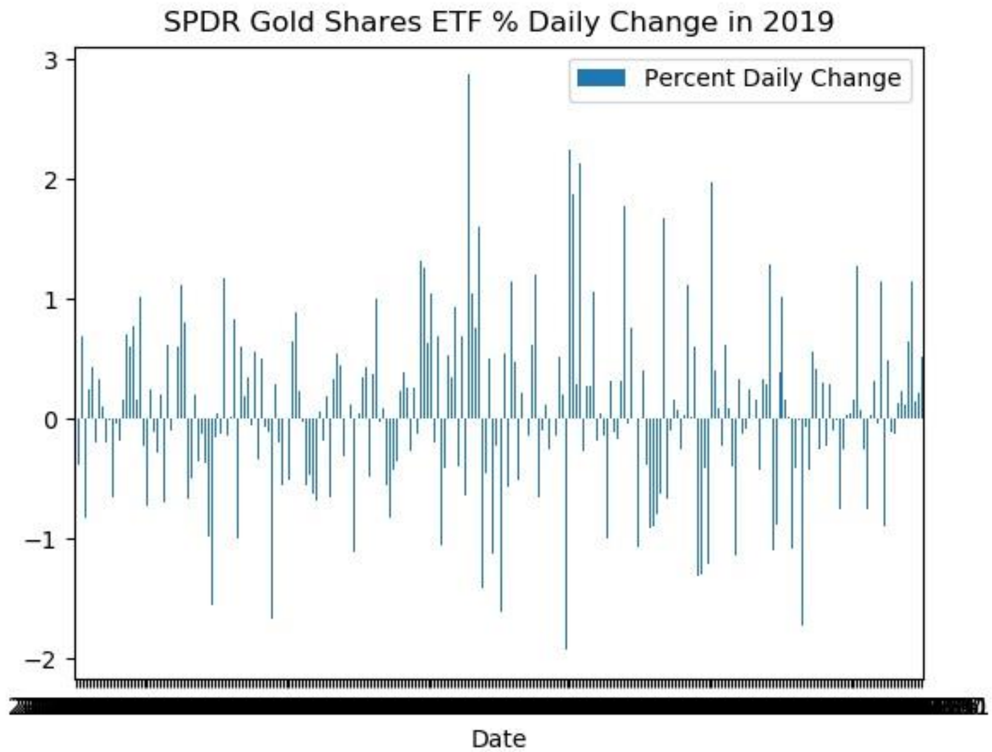

SPY % Daily Change in 2019
70
60
50
40
30
20
10
0
Count
−2
−1
0
1
2
Percent Daily Change

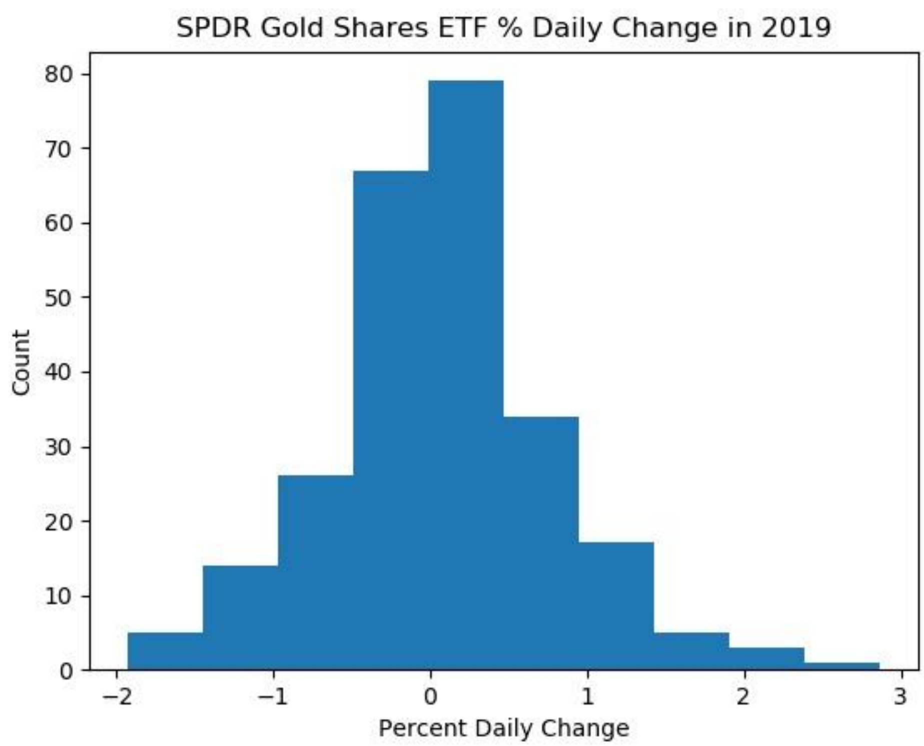
GrayScale Bitcoin Trust



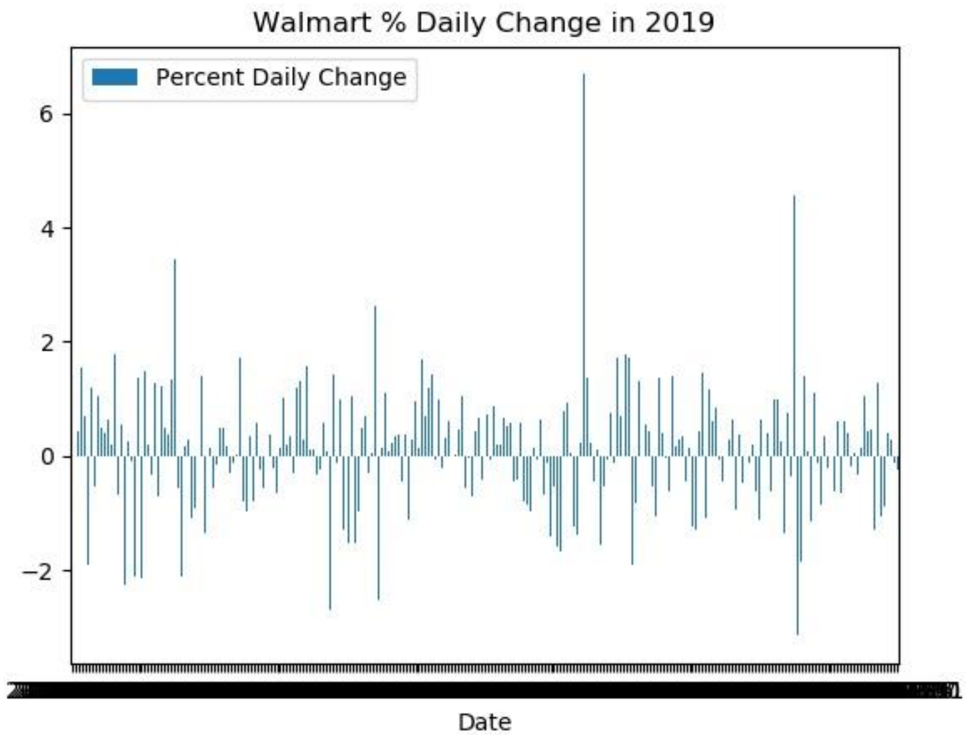


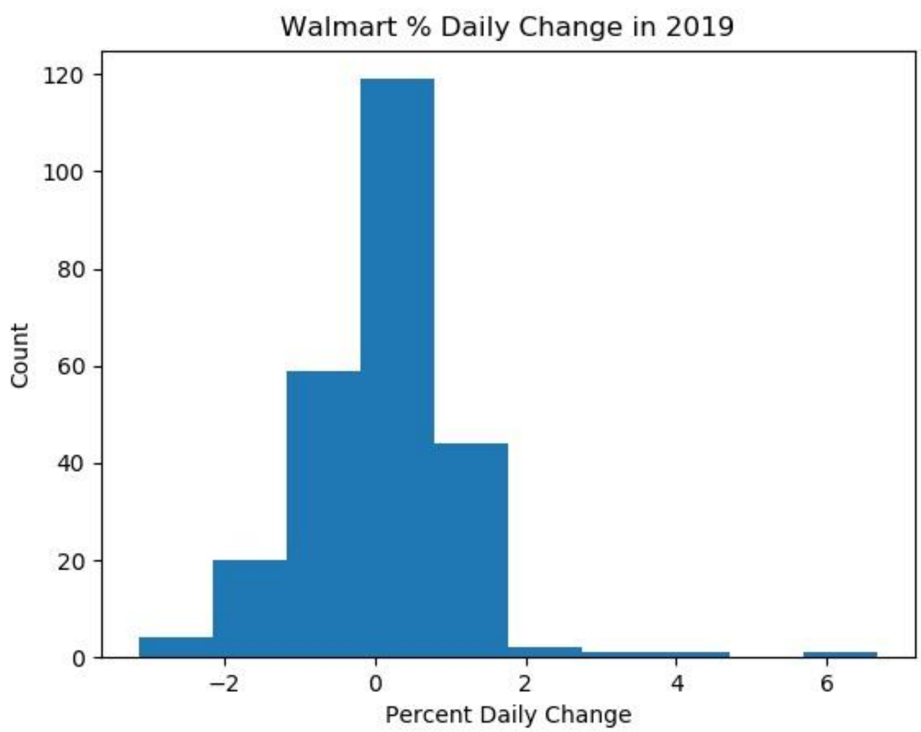
SPDR Gold Shares ETF



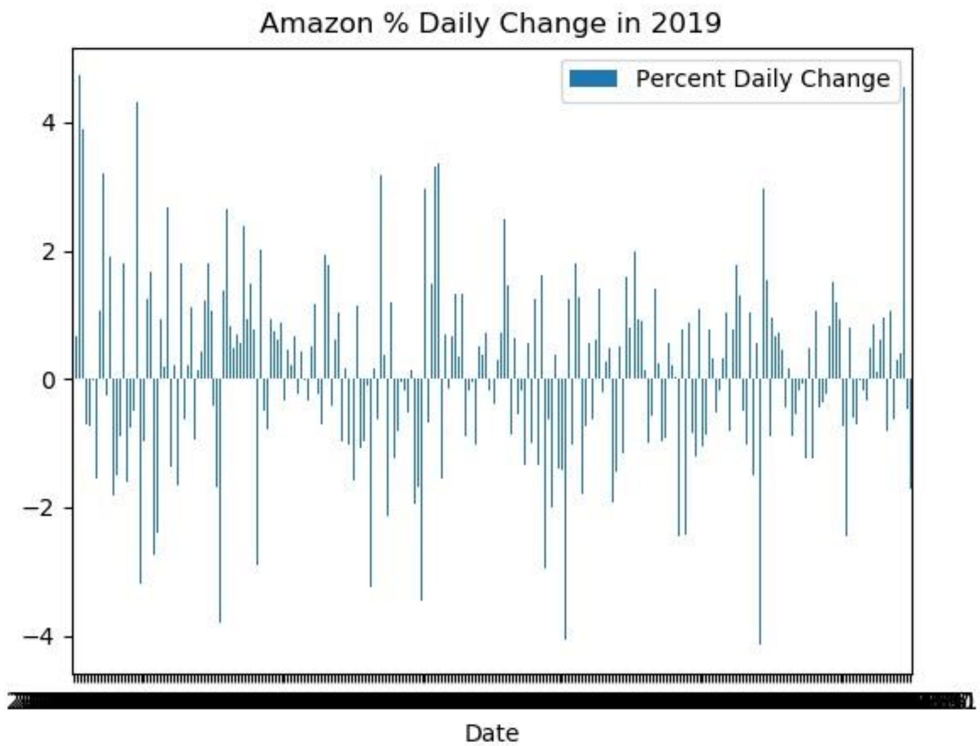


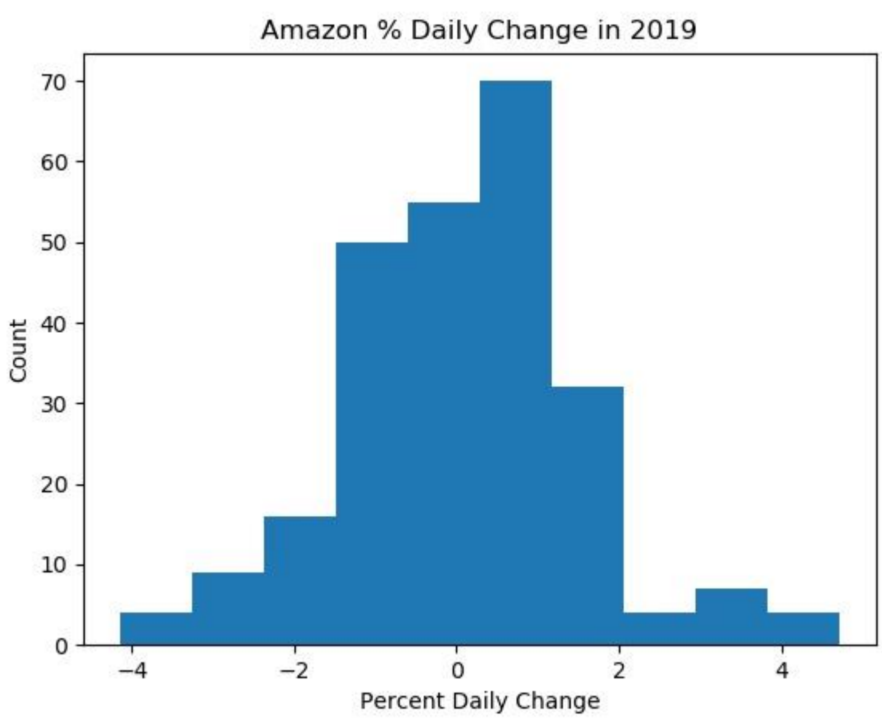
Walmart


Walmart % Daily Change in 2019
Percent Daily Change
6
4
2
0
−2
Date

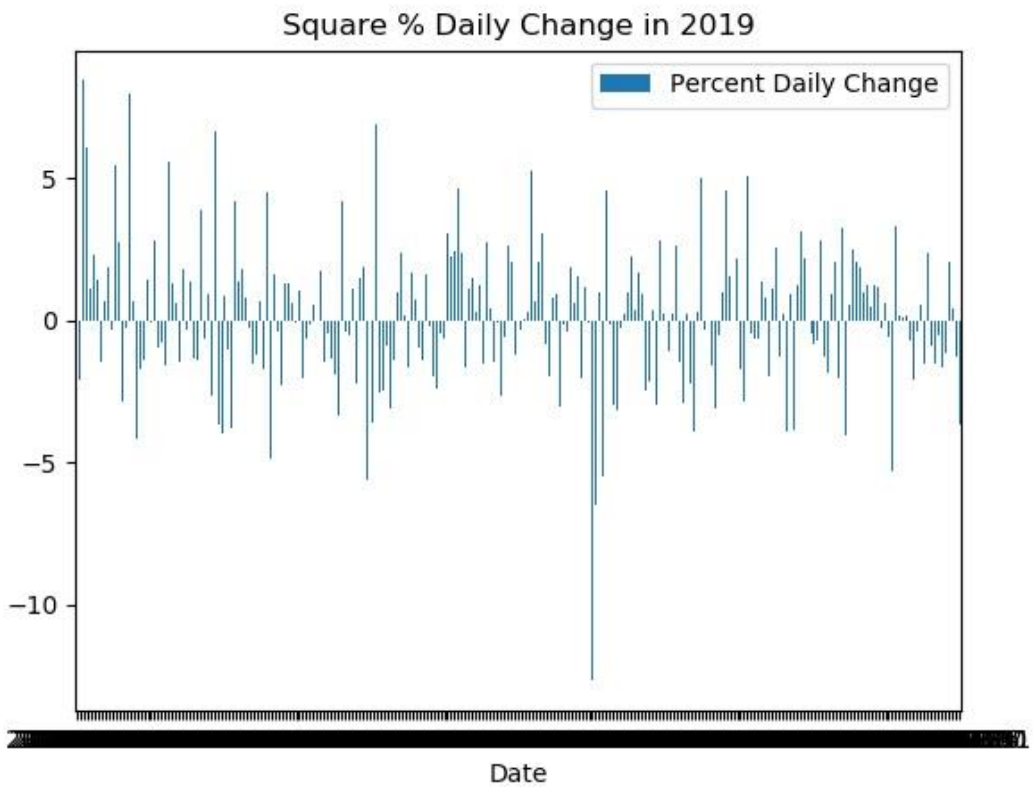

Walmart % Daily Change in 2019
120
100
80
60
40
20
0
Count
−2
0
2
4
6
Percent Daily Change

Amazon

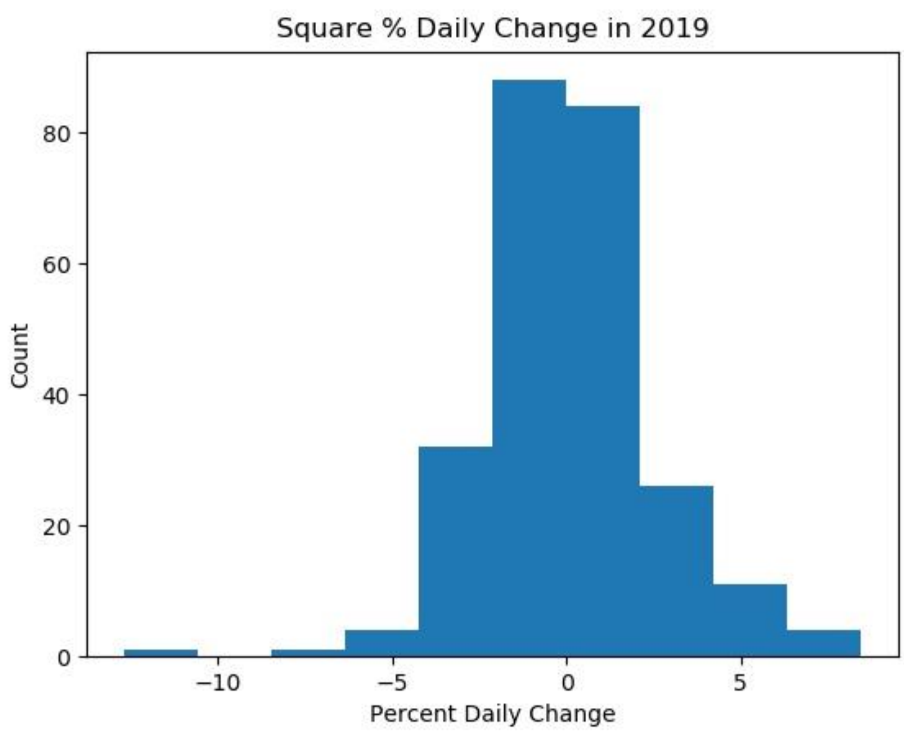

Amazon % Daily Change in 2019
Percent Daily Change
4
2
0
−2
−4
Date


Amazon % Daily Change in 2019
70
60
50
40
30
20
10
0
Count
−4
−2
0
2
4
Percent Daily Change

Square



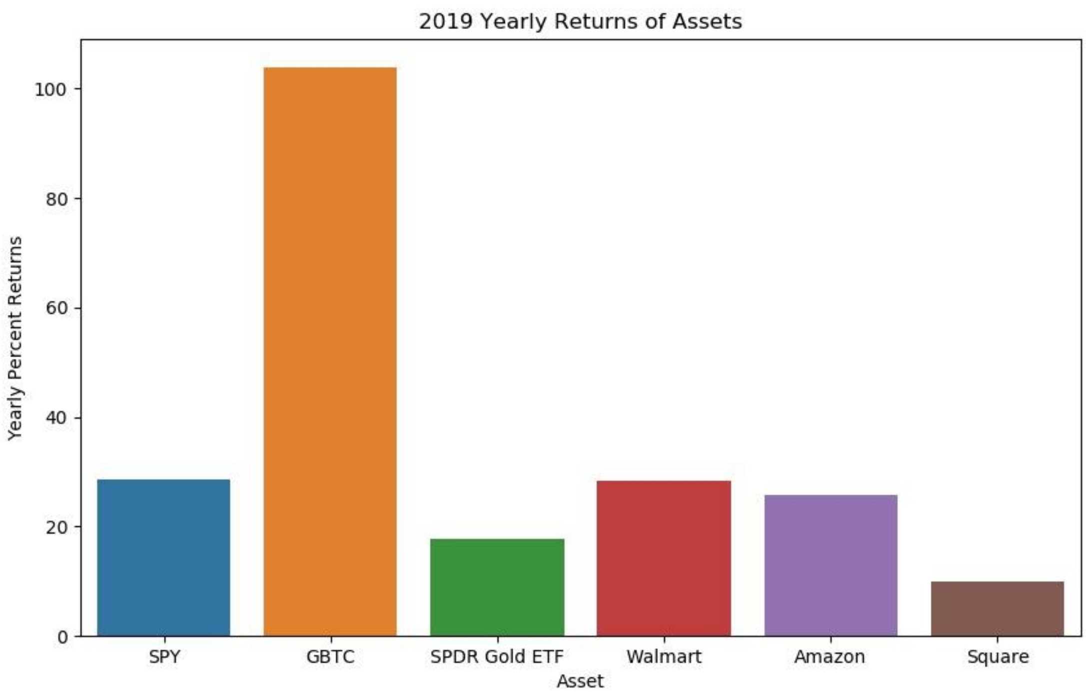
Square % Daily Change in 2019
Percent Daily Change
5
0
−5
−10
Date

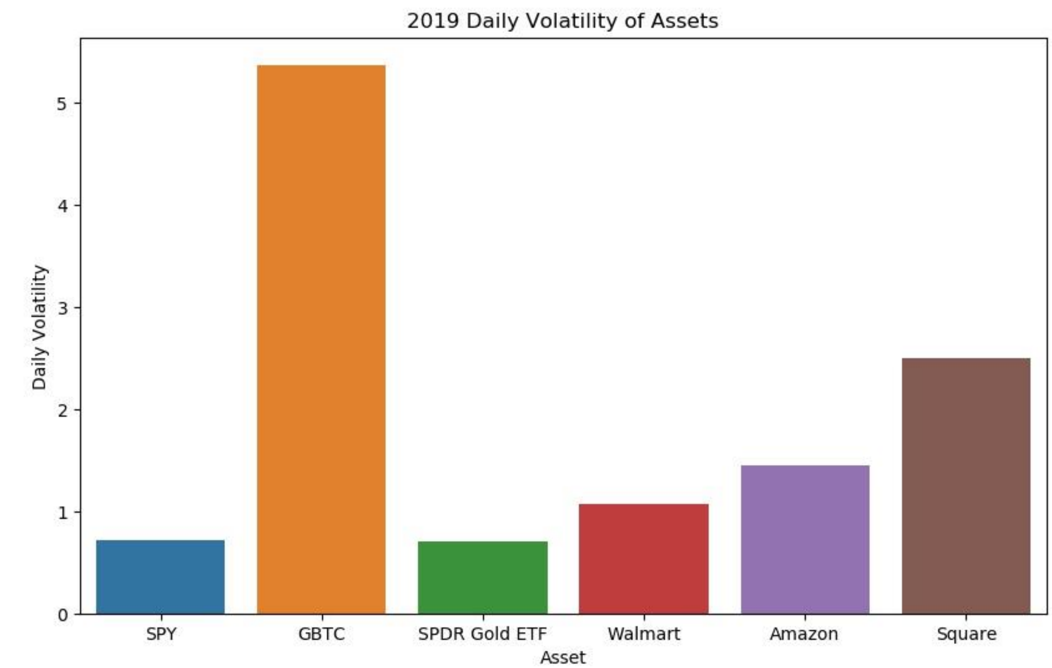


Square % Daily Change in 2019
80
60
40
20
0
Count
−10
−5
0
5
Percent Daily Change

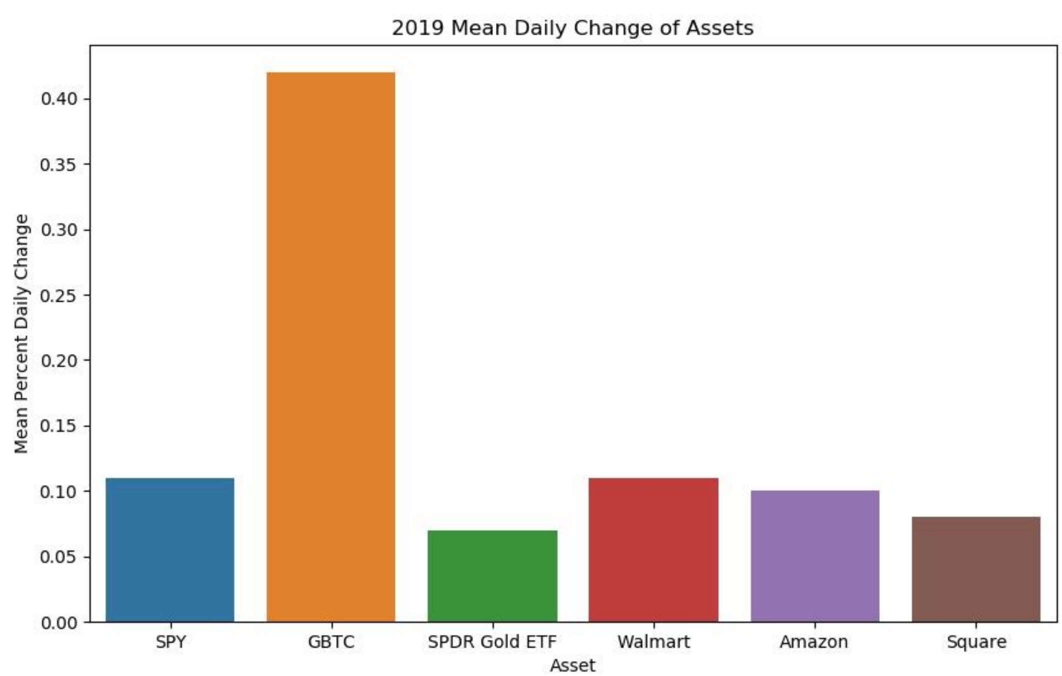
Comparing the performance of the six selected assets

	Asset	Mean Percent Daily Change	Daily Volatility	Yearly Percent Returns	Variance Percent Daily Change	Minimum Percent Daily Change	Maximum Percent Daily Change
0	SPY	0.11	0.72	28.65	0.52	-2.10	2.06
1	GBTC	0.42	5.37	103.85	28.83	-13.90	25.77
2	SPDR Gold ETF	0.07	0.71	17.78	0.51	-1.93	2.87
3	Walmart	0.11	1.07	28.21	1.14	-3.15	6.68
4	Amazon	0.10	1.45	25.72	2.10	-4.15	4.73
5	Square	0.08	2.50	10.02	6.26	-12.70	8.46

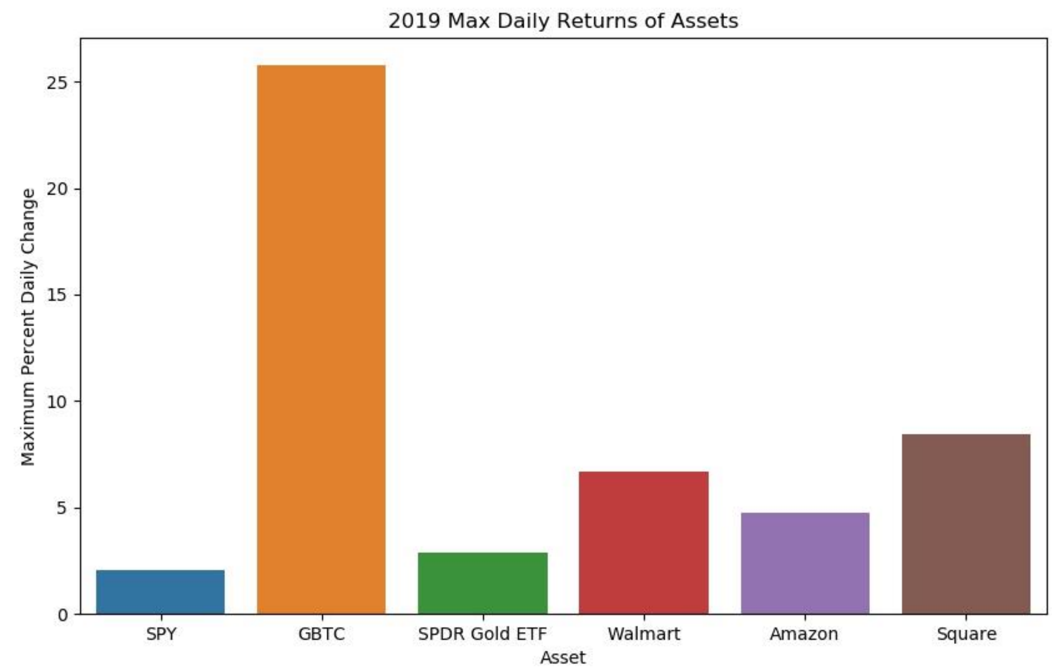


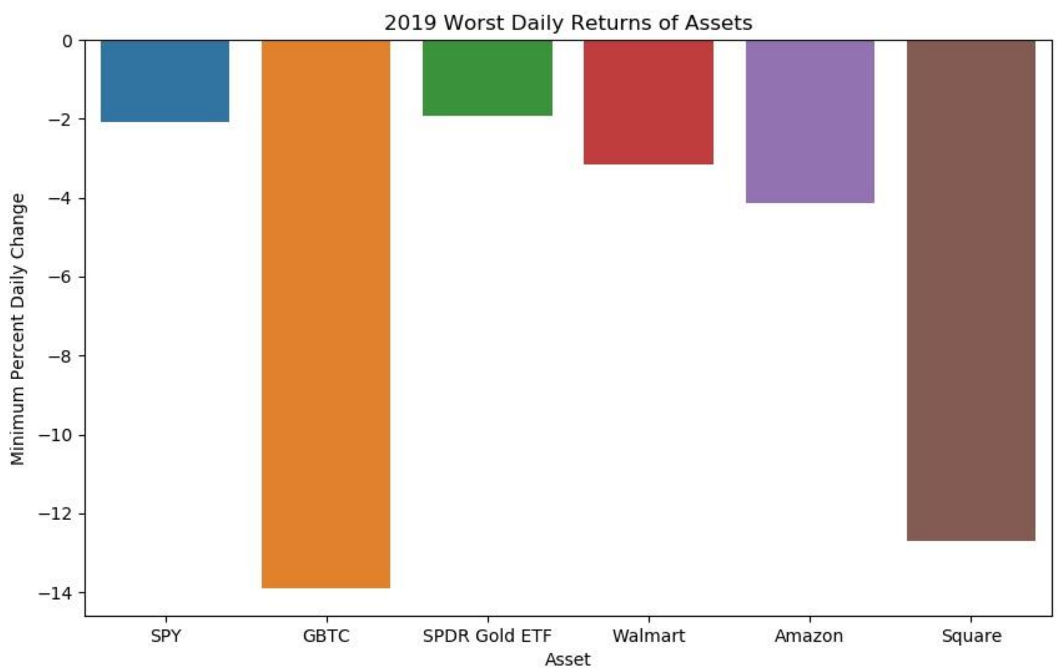


All of the assets have a higher daily volatility than the S&P 500, and GBTC has the largest daily volatility.



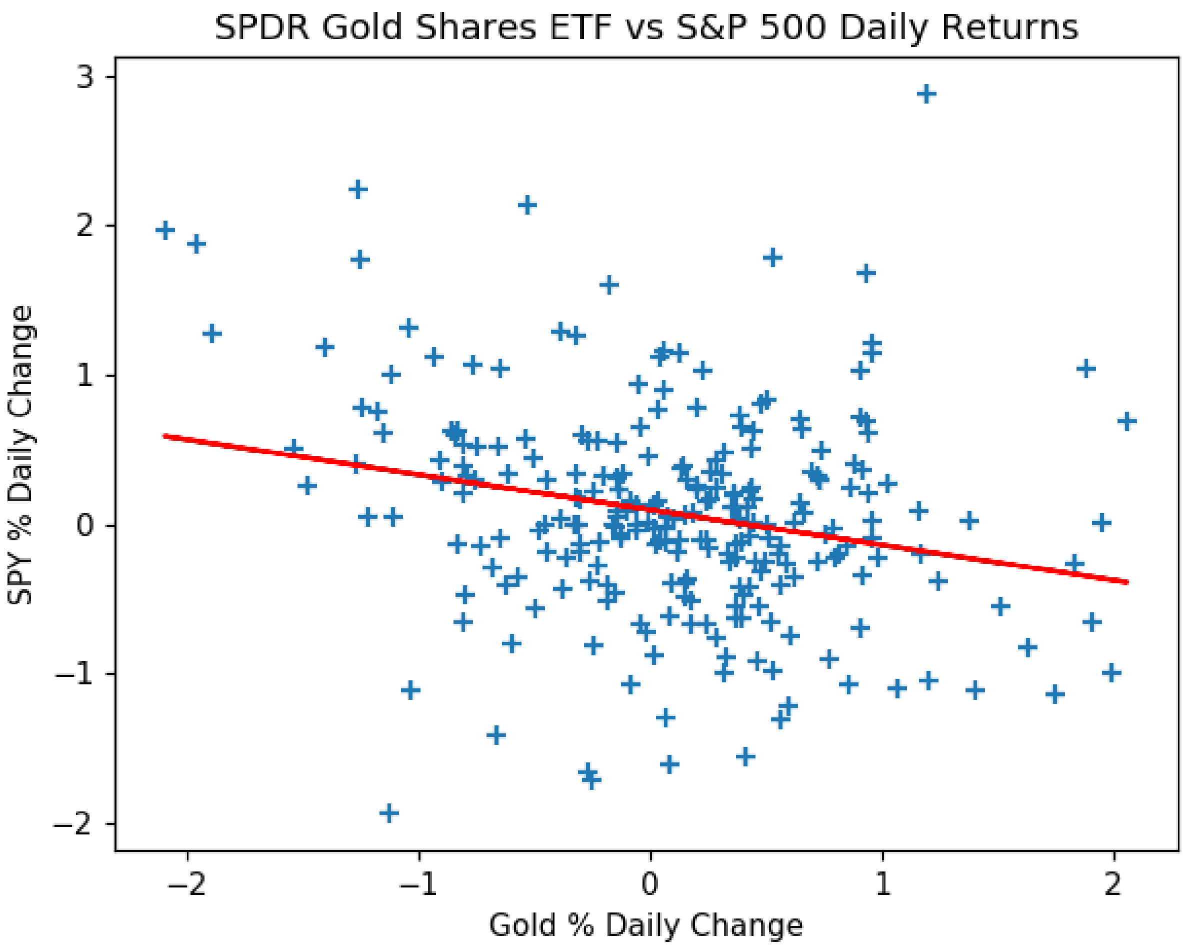
Only GBTC has a higher mean daily percent change than the S&P 500 with a 0.40% mean daily percent change. The other assets and the S&P 500 all have a mean daily percent change between 0.05 and 0.12.


2019 Max Daily Returns of Assets
Maximum Percent Daily Change
0
5
10
15
20
25
SPY
GBTC
SPDR Gold ETF
Walmart
Amazon
Square
Asset


2019 Worst Daily Returns of Assets
Minimum Percent Daily Change
0
−2
−4
−6
−8
−10
−12
−14
SPY
GBTC
SPDR Gold ETF
Walmart
Amazon
Square
Asset

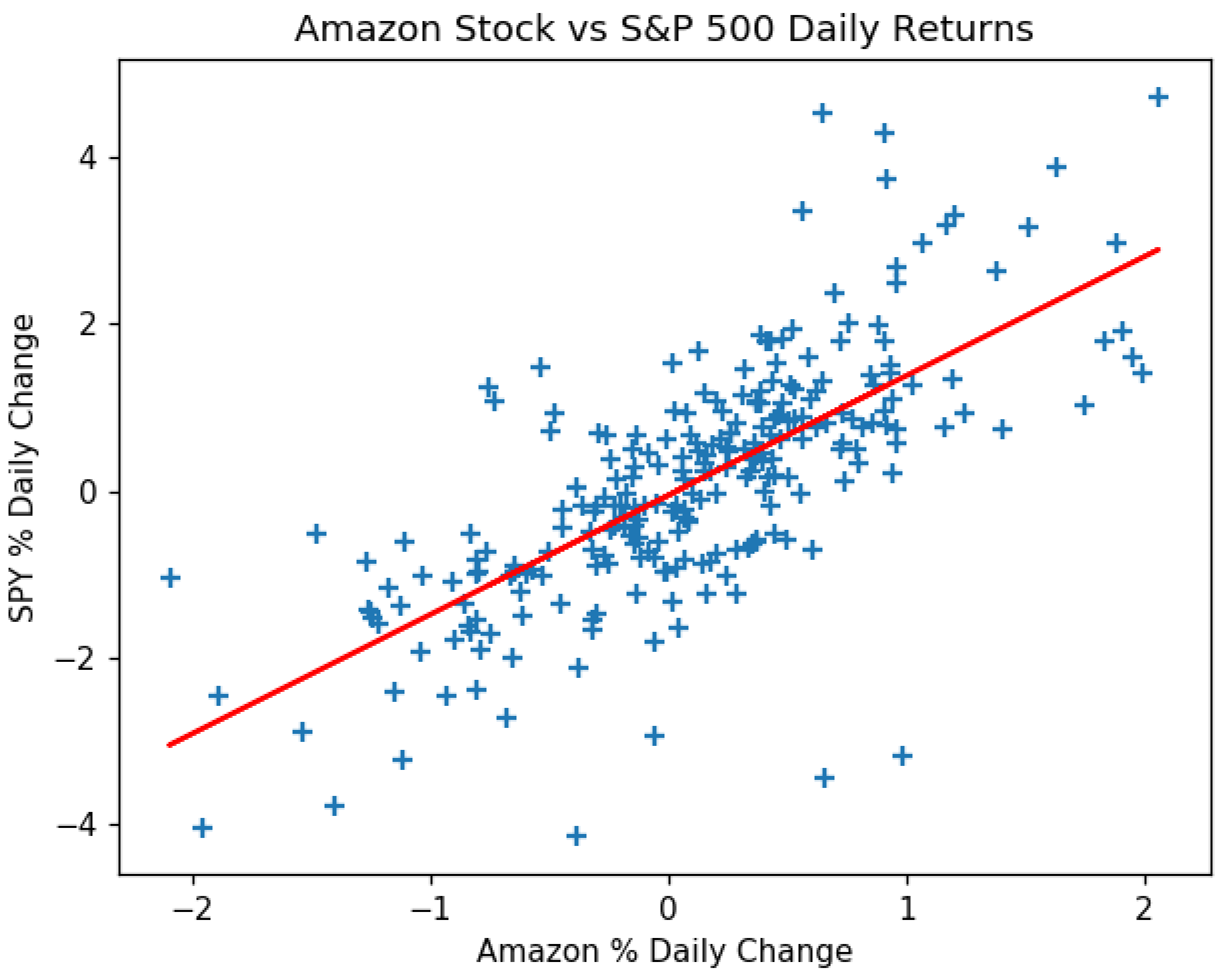
Using scikit-learn to perform five linear regressions for each of the five assets against the S&P 500.

Gold vs SPY



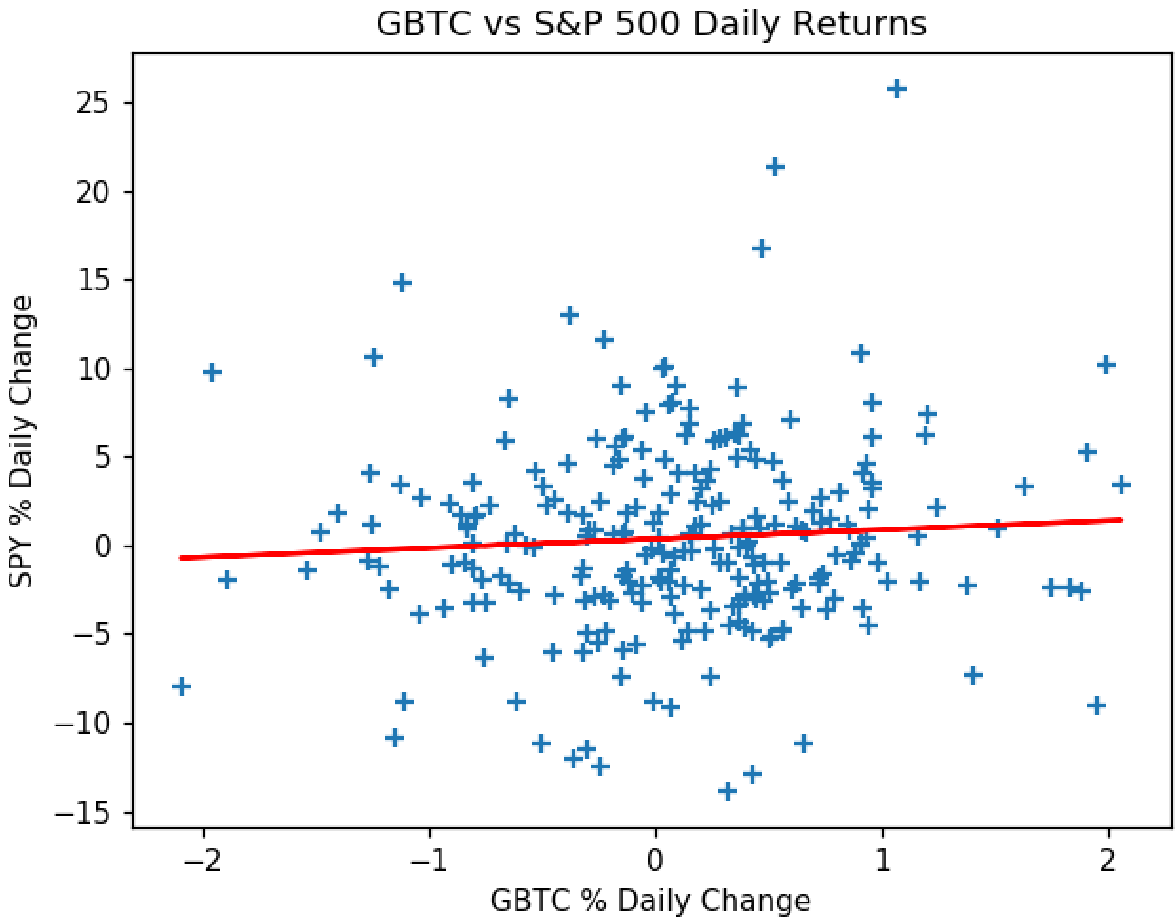

```
Regression Statistics for SPY against SPDR Gold Shares ETF
Intercept: 0.09424017751882593
Coefficient: [-0.23512399]
R squared: 0.056507130170804776
Mean Squared Error: 1.2710691630112476
```

Amazon vs SPY



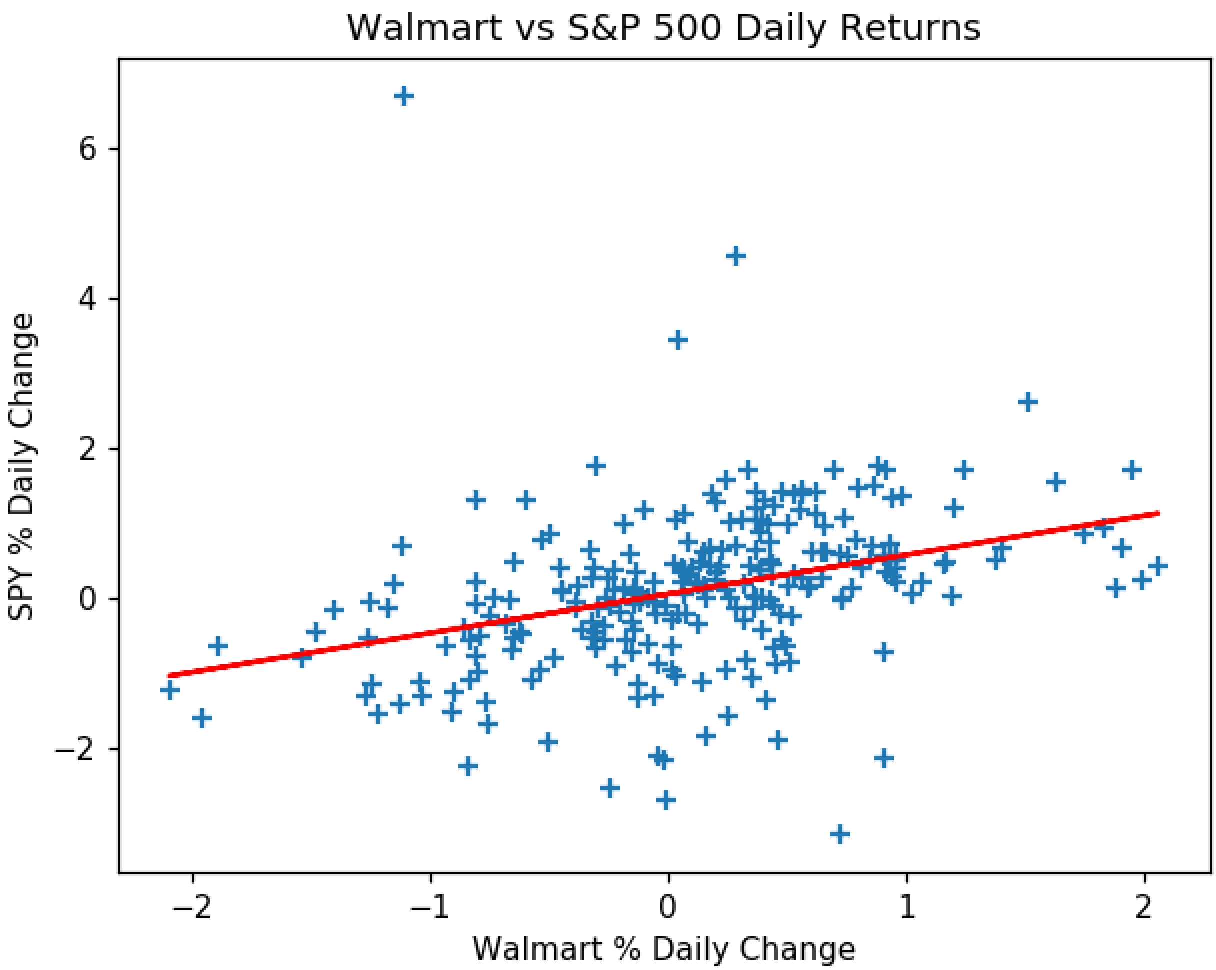

```
Regression Statistics for SPY against Amazon
Intercept: -0.05327138732827541
Coefficient: [1.43301406]
R squared: 0.5091413618742577
Mean Squared Error: 1.1237208710571176
```

Grayscale Bitcoin Trust vs SPY



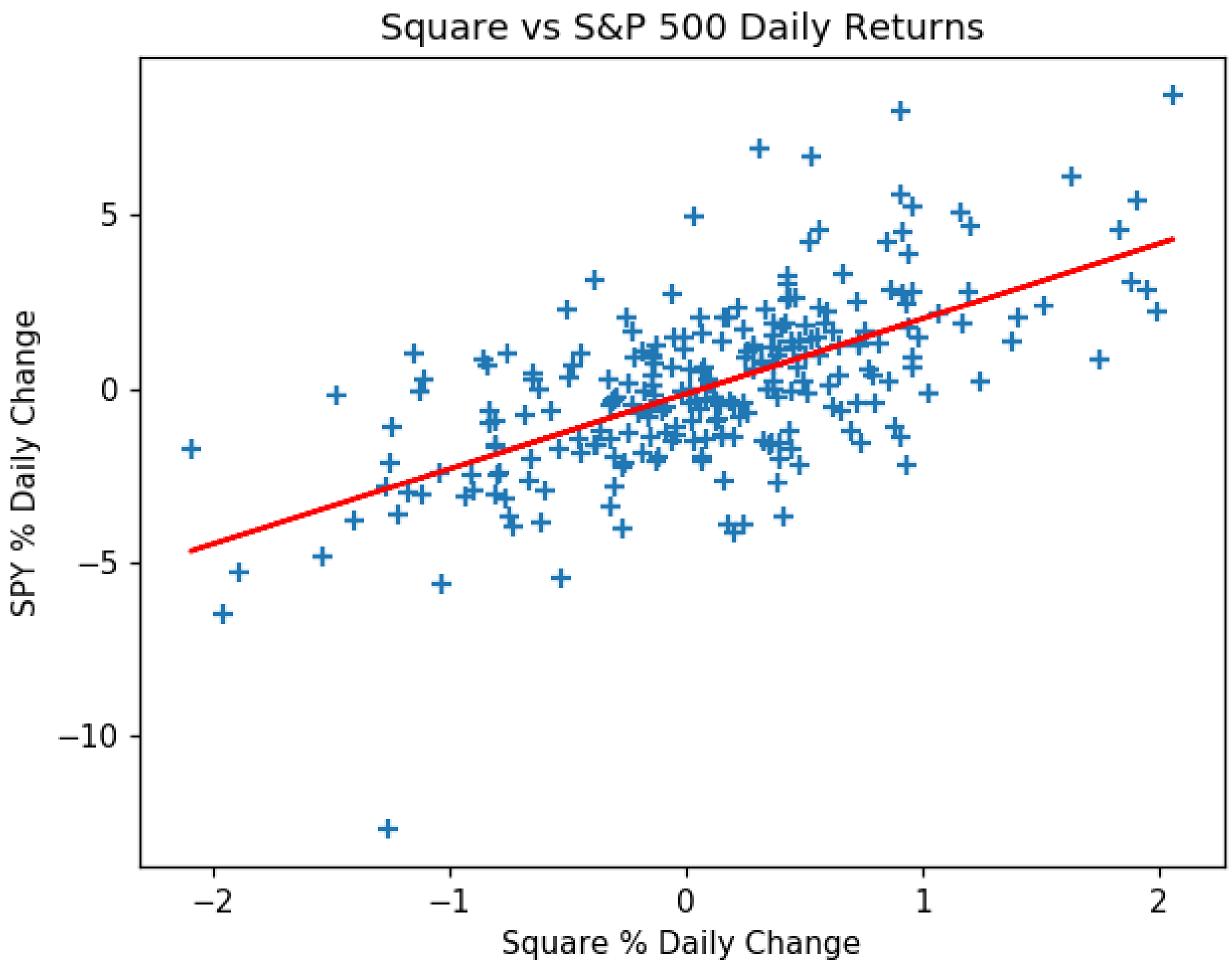

```
Regression Statistics for SPY against Grayscale Bitcoin Trust
Intercept: 0.36913015585594616
Coefficient: [0.51545494]
R squared: 0.004797429113174934
Mean Squared Error: 28.798590091216585
```

Walmart vs SPY




```
Regression Statistics for SPY against Walmart
Intercept: 0.05512604097115627
Coefficient: [0.52086115]
R squared: 0.12409192133569236
Mean Squared Error: 1.111889982597997
```

Square vs SPY




```
Regression Statistics for SPY against Square Inc
Intercept: -0.15351698406833536
Coefficient: [2.16058652]
R squared: 0.3884612405851683
Mean Squared Error: 4.5093220282222815
```

The asset most correlated with the S&P 500 was Amazon with an R^2 value of . 509 and the asset least correlated with the S&P 500 is the Grayscale Bitcoin Trust with an R^2 value of .005.