

TRILLIONS

Tuesday, December 3, 2019

By:

Shilpa Agrawal

Pedro Takenouchi

Carl Tondo

Maria Jose Siles Navarro.

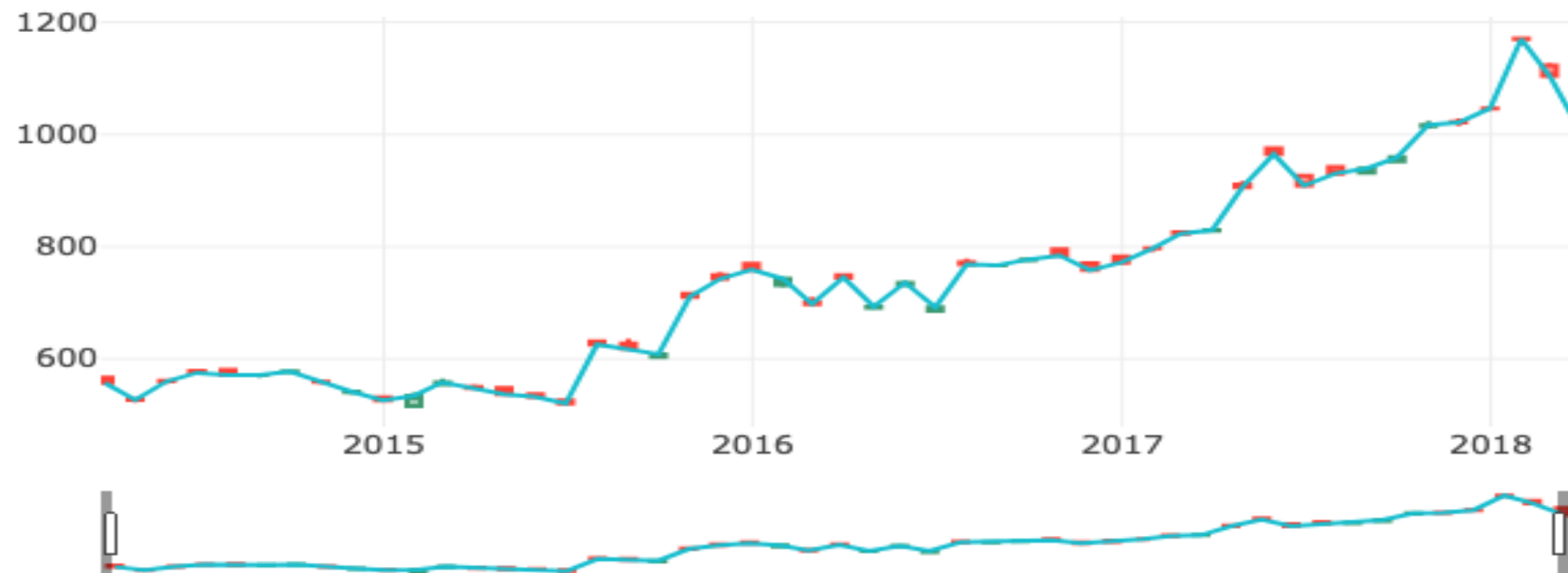
Columbia University
Data Analytics

COMPANY PROFILE

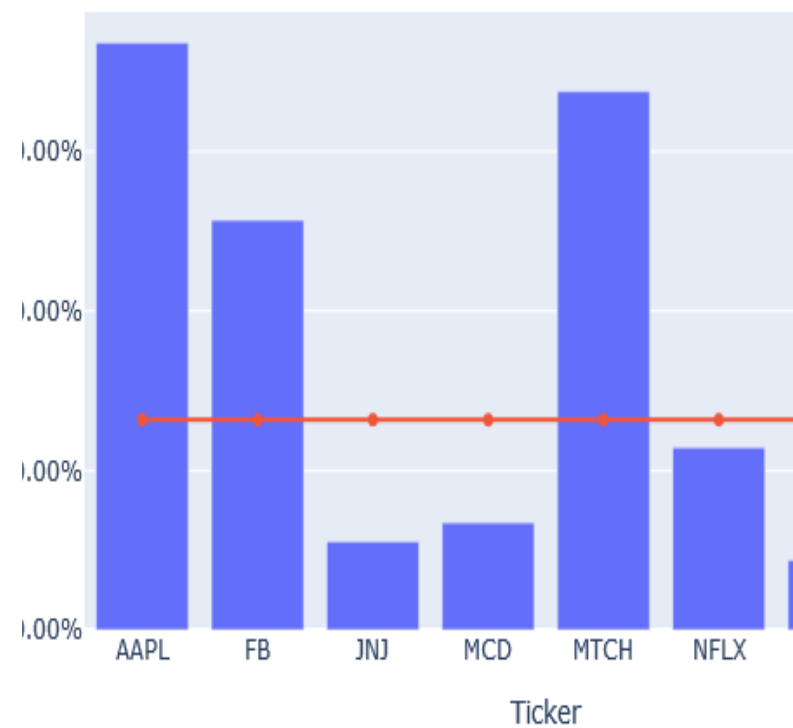
Alphabet is a holding company, with Google, the Internet media giant, as a wholly owned subsidiary. Google generates 99% of Alphabet revenue, of which more than 85% is from online ads. Google's other revenue is from sales of apps and content on Google Play and YouTube, as well as cloud service fees and other licensing revenue. Sales of hardware such as Chromebooks, the Pixel smartphone, and smart homes products, which include Nest and Google Home, also contribute to other revenue. Alphabet's moonshot investments are in its other bets segment, where it bets on technology to enhance health (Verily), faster Internet access to homes (Google Fiber), self-driving cars (Waymo), and more. Alphabet's operating margin has been 25%-30%, with Google at 30% and other bets operating at a loss.

STOCK PERFORMANCE

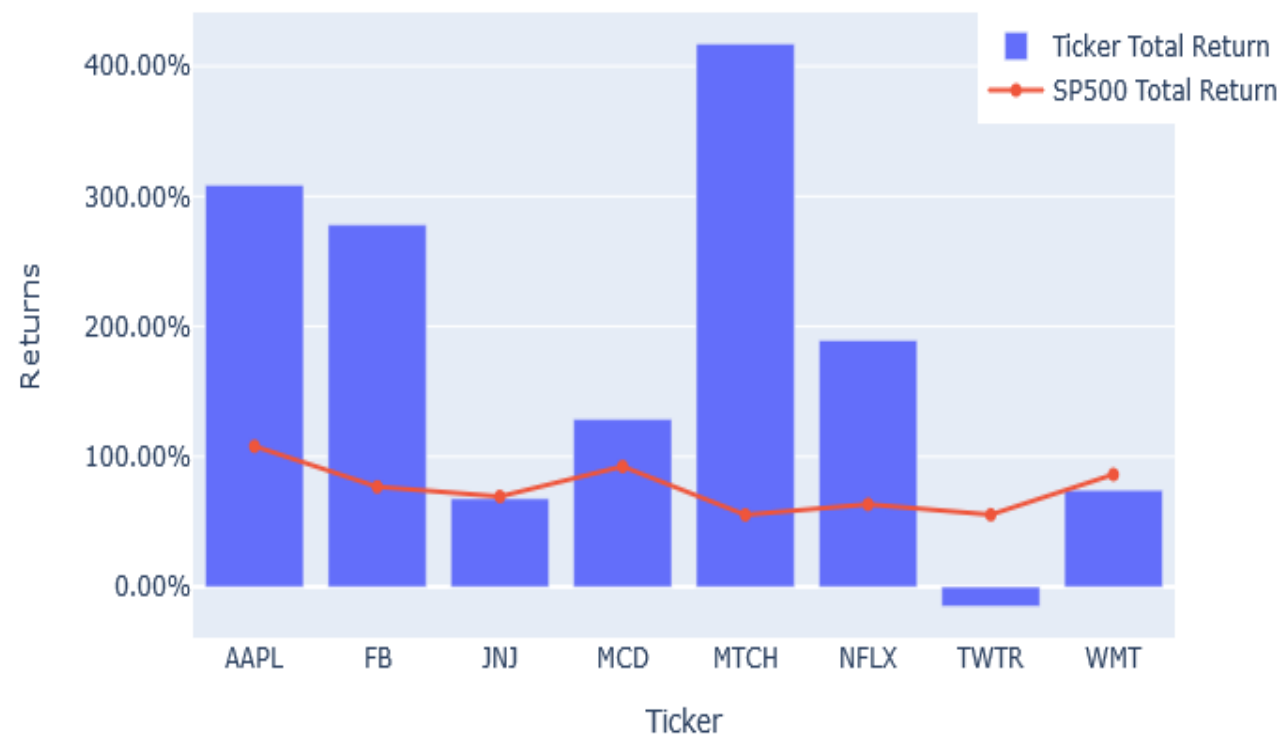
GOOG closing prices



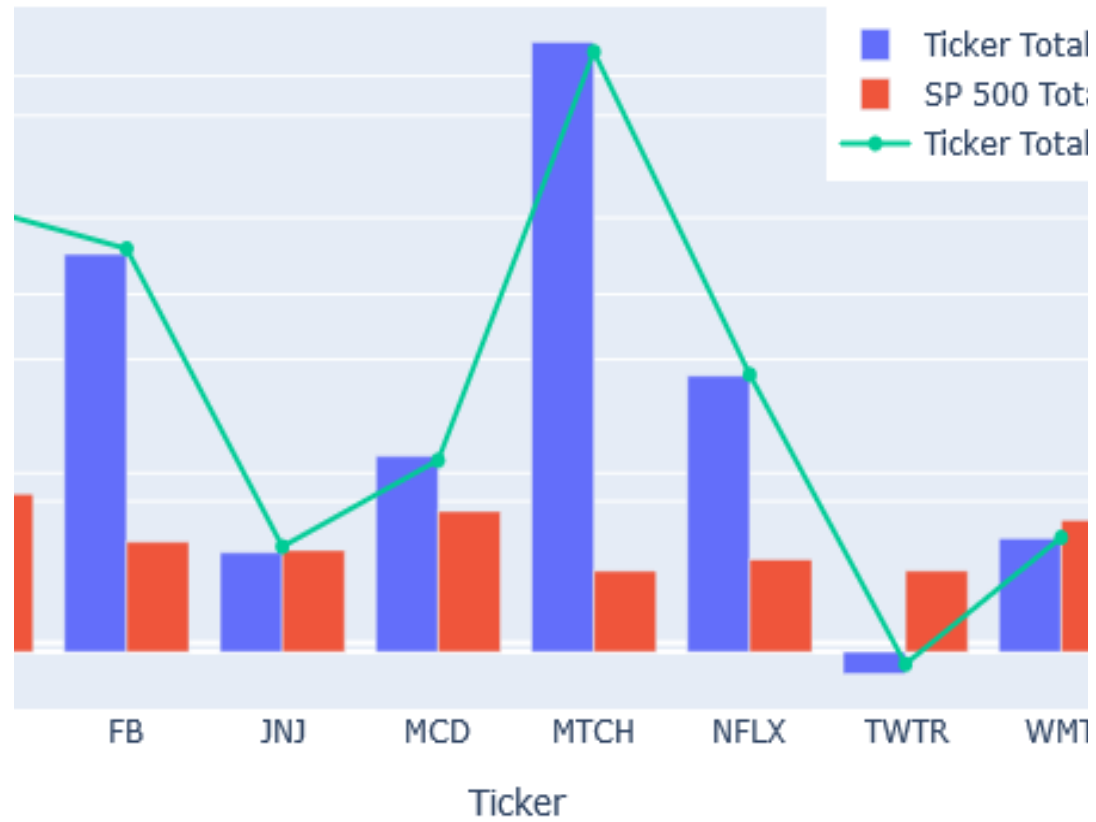
YTD Return vs S&P 500 YTD



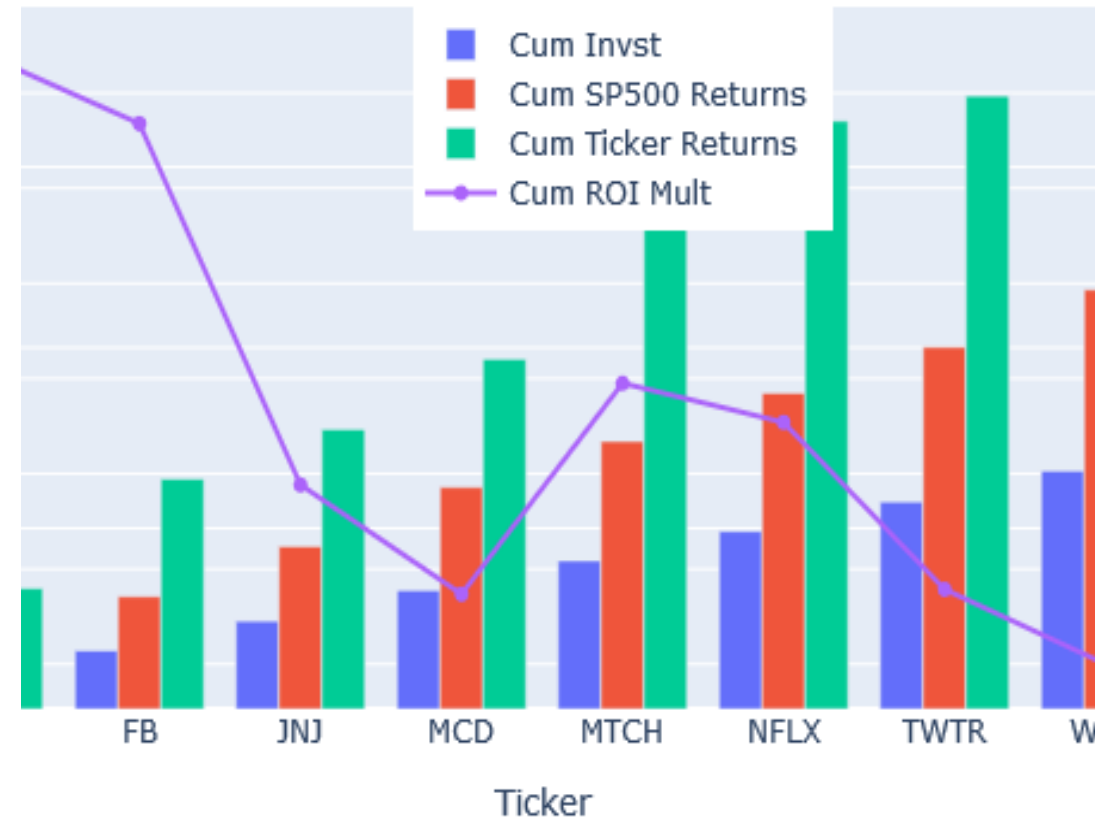
Total Return vs S&P 500



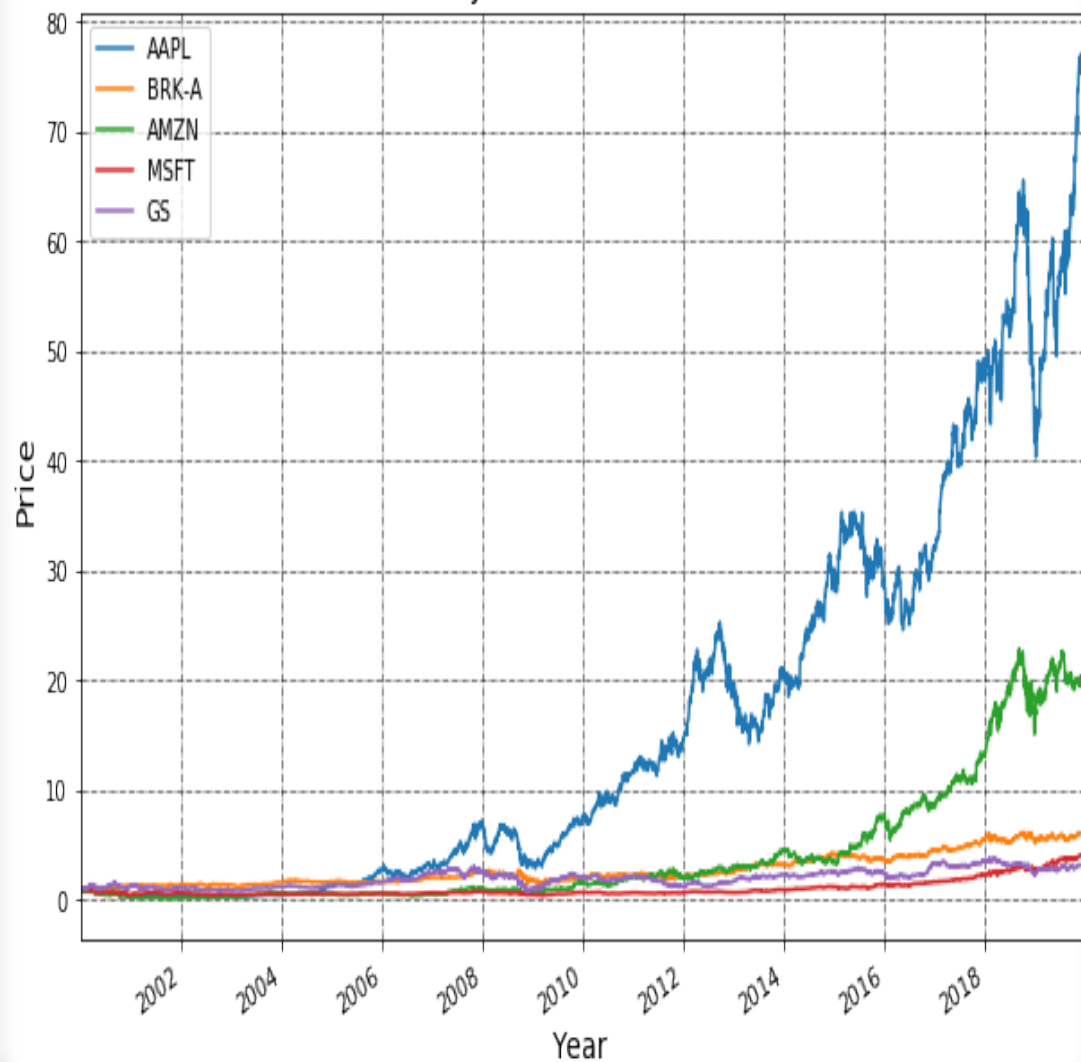
s) Total Return vs S&P 500



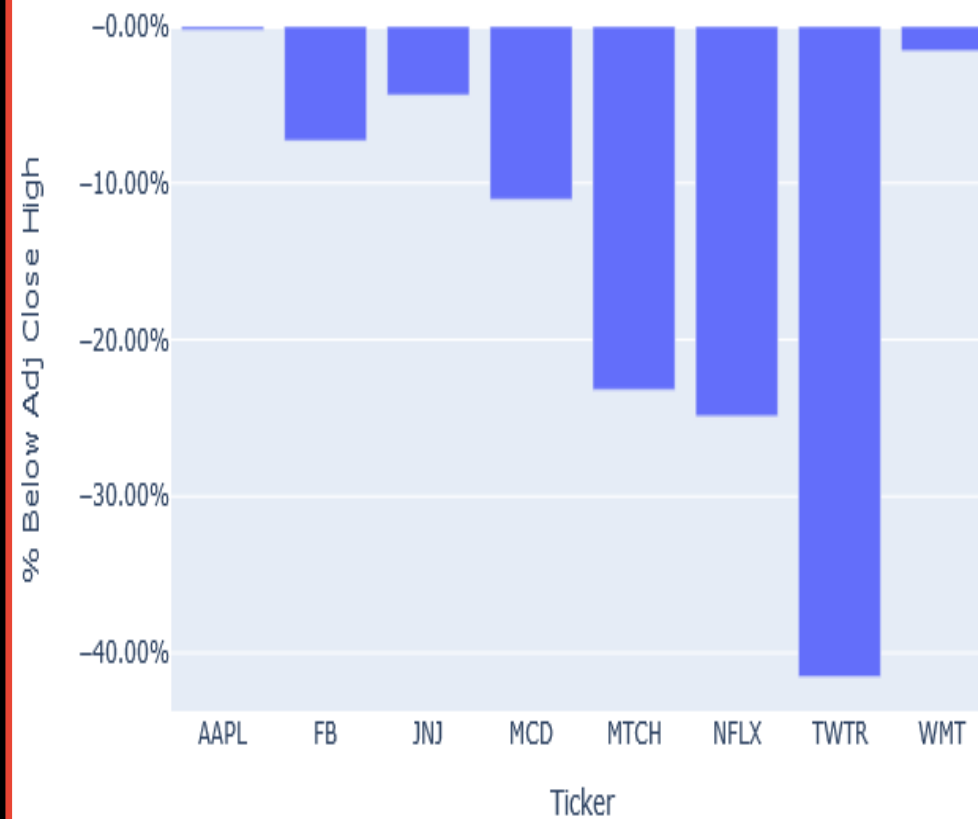
Relative Investments Over Time

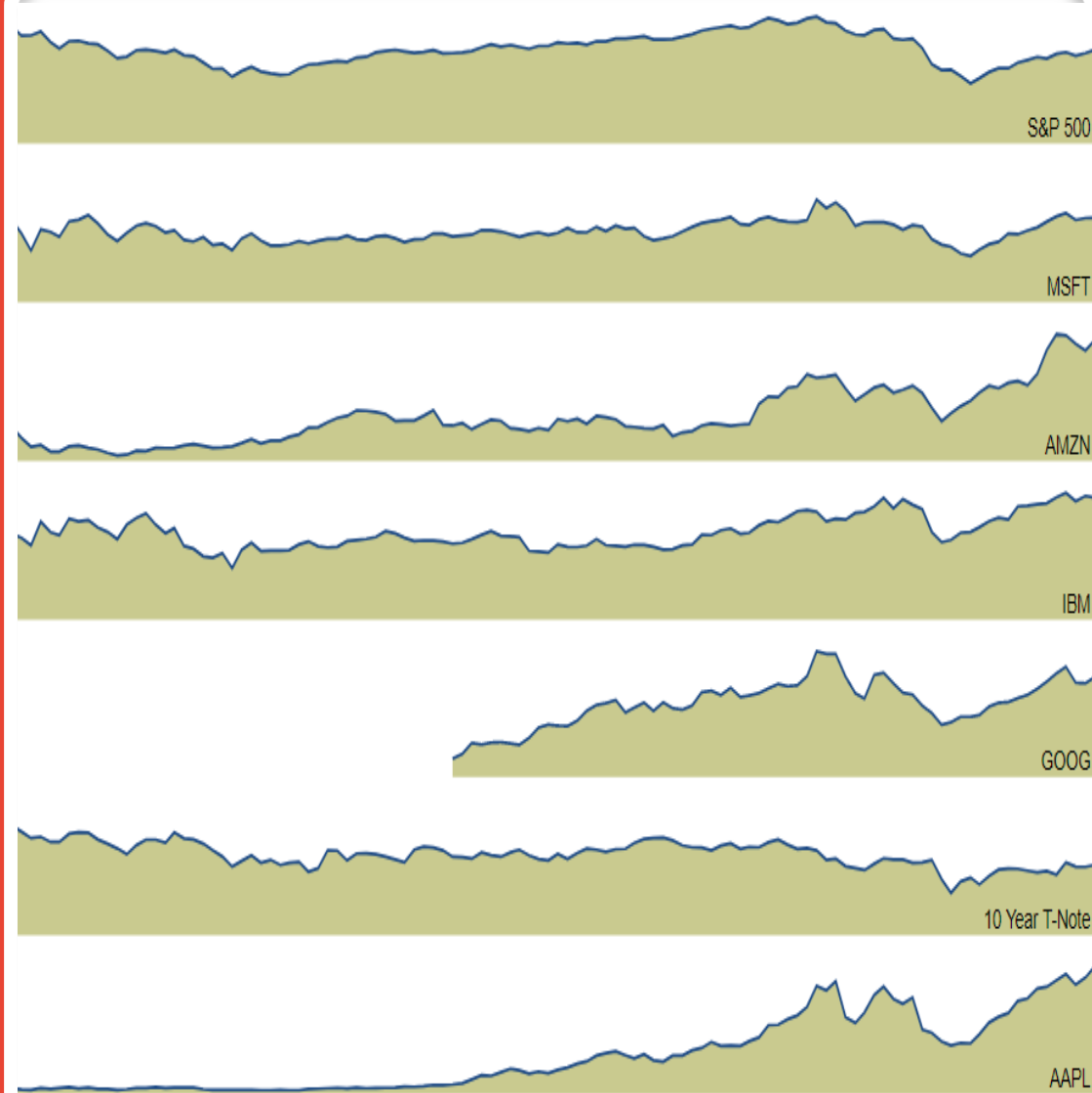
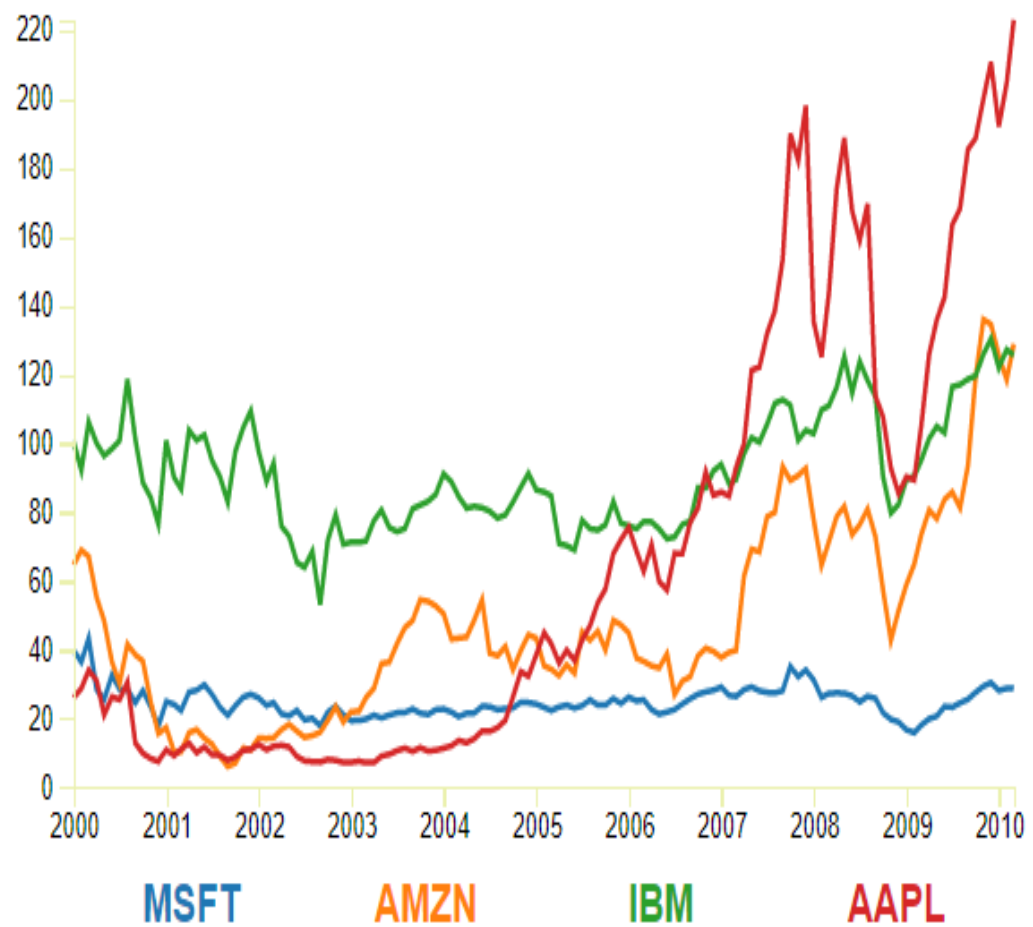


Adjusted Close Price

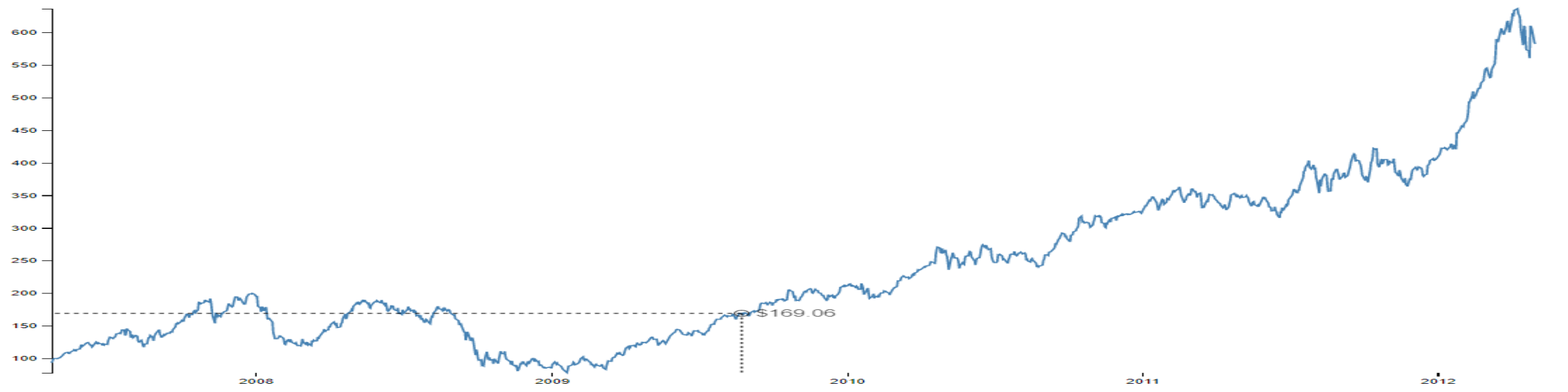
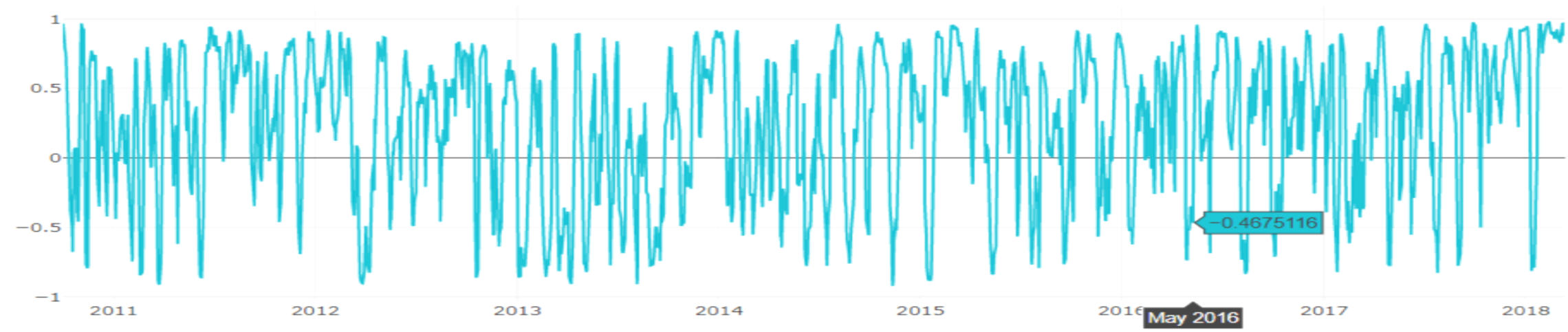


Adj Close % off of High





AAPL MSFT Correlation Plot



IBM closing prices



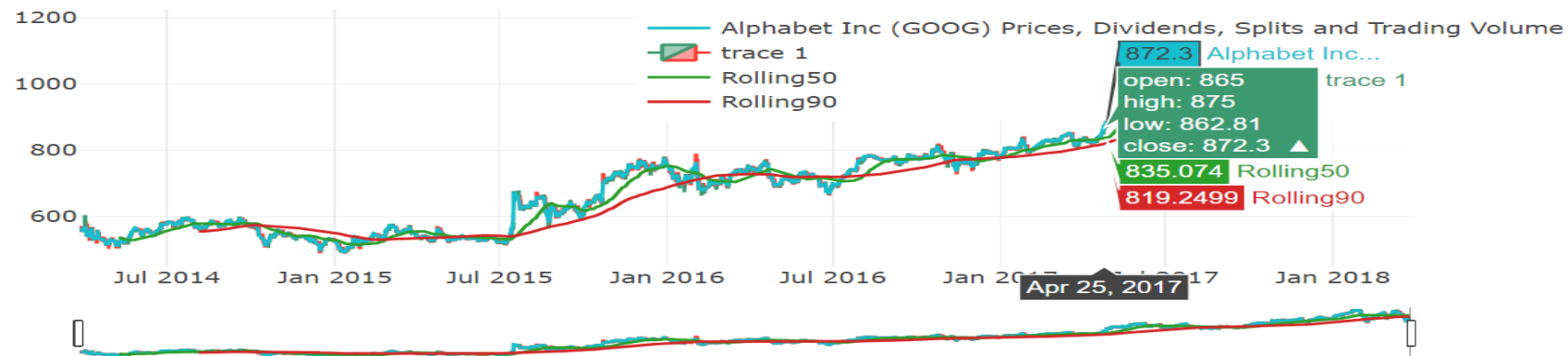
GOOG CHANGES

date	change
2015-07...	93.08
2018-05...	9.96
2018-09...	9.87
2017-09...	9.77
2017-08...	9.76
2016-05...	9.69
2017-09...	9.61
2017-04...	9.54
2014-12...	9.47
2016-07...	9.46
2015-07...	9.45
2019-10...	9.43
2016-05...	9.42

Stock

Plot Stock

GOOG closing prices



REFERENCES

D3 / Babel / Plotly (JavaScript)

- <https://bl.ocks.org/d3noob/f8b7f107ba25c21971851728520224cb>
- <https://bl.ocks.org/mbostock/1157787>
- <https://bl.ocks.org/d3noob/892237b3a71faf26c07b0563963c7b6e>
- <https://bl.ocks.org/micahstubbbs/e4f5c830c264d26621b80b754219ae1b>
- <https://www.freecodecamp.org/news/how-to-build-historical-price-charts-with-d3-js-72214aaf6ba3/>

Python – Plotly (Jupyter Notebook) – Stock Visualization and Analysis

- https://medium.com/@ishan.s_54240/stock-data-and-analysis-529aa9aee60
- <https://towardsdatascience.com/python-for-finance-stock-portfolio-analyses-6da4c3e61054>
- <https://www.kaggle.com/krtisaxena/stock-market-technical-indicators-visualization/comments#560477>
- <https://towardsdatascience.com/python-for-finance-stock-portfolio-analyses-6da4c3e61054>
- <https://medium.com/@samanamp/fetching-live-stock-market-data-with-python-and-alphavantage-7d0ff8a8d2e4>