Big Companies and COVID-19

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Objective

In general, the stock market spent the last four years on an upward trajectory.

However, COVID-19 disrupted the economy in ways no one predicted.

Our plan: Evaluate two random stocks in five different industries to see if, and how they were impacted.

LOGISTICS	FedEx, UPS
RETAIL	Walmart, TARGET
AUTO INDUSTRY	TOYOTA, gm
AIRLINE	DELTA, Southwest
SOCIAL MEDIA	facebook, twitter

10

random companies in

5

different markets

Data Source

Yahoo Finance

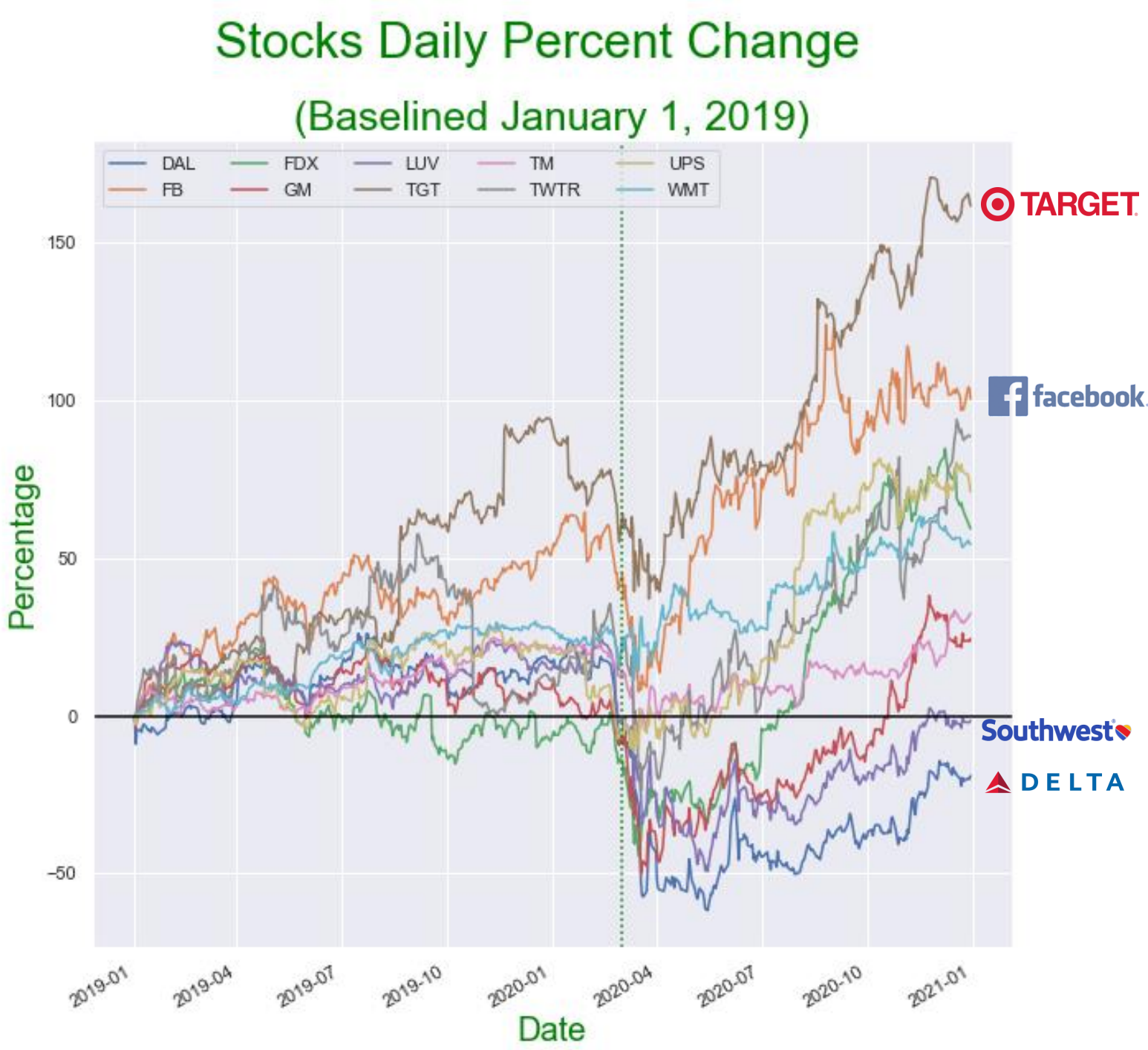
- Downloaded historical stock data for each company
  - Daily closing prices
- Sliced data into the required time periods

Analysis Process

- Determined time periods of interest
  - January 1, 2019 (overview) through December 31, 2020
  - January 1, 2019 to December 31, 2019
  - January 1, 2020 to December 31, 2020
  - Pre-COVID: January 1 to March 1, 2020
  - Post-COVID: March 1, 2020 to December 31, 2020
- Applied calculations
  - Regressions over several time periods during 2019 and 2020
  - Percentage daily change
- Created charts showing the results

How did each company fare?

Daily percent change comparisons based on January 1, 2019 stock closing prices



Regression Calculation Approach

- By default Yfinance returns data indexed by date column
- Reset.index created an additional index numerical column to enable mathematical calculations with the date column
- Linear regression was calculated using close price and date. To calculate linear regression, both values had to be numeric but since a date is not, we used .map(dt.datetime.toordinal)" to convert date to Gregorian ordinal to have sequence of number enabling calculating the linear regression.
- Also, since we needed to show the linear regression equation as text on the plot, we used "mdates.date2num(dt.datetime(date value))" to print to a specific location in the plot

Closing Prices | 2019 and 2020 Regression Review | Logistics

Plot for FDX and UPS between 01 January 2019 and 31 December 2020

Plot for FDX and UPS between 01 January 2019 and 31 December 2019

Plot for FDX and UPS between 01 January 2020 and 01 March 2020

Plot for FDX and UPS between 01 March 2020 and 31 December 2020

Closing Prices | 2019 and 2020 Regression Review | Retail

Plot for TGT and WMT between 01 January 2019 and 31 December 2020

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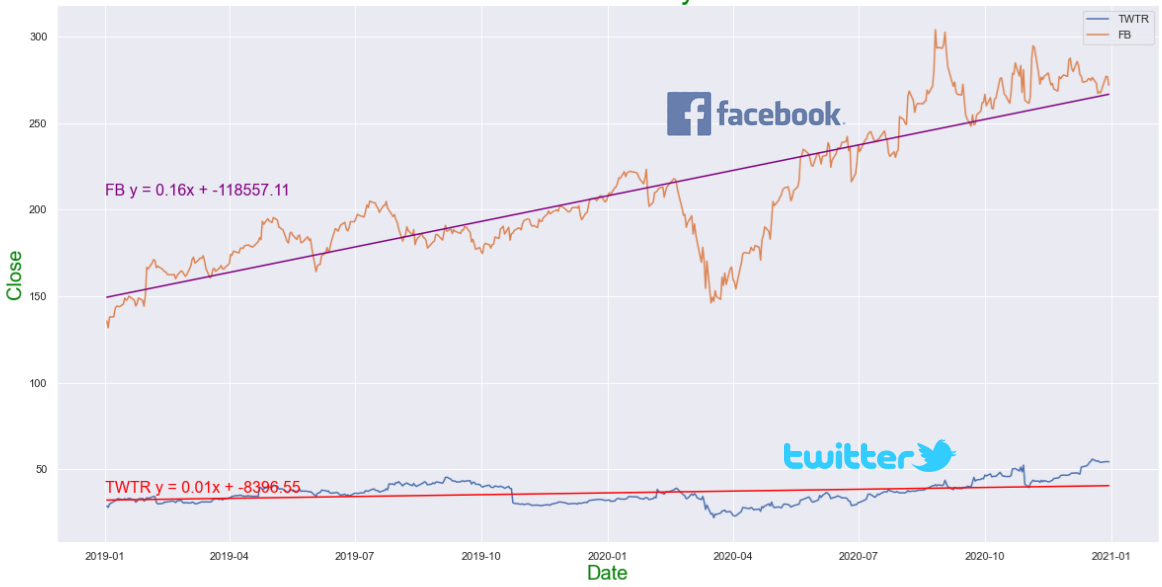
Plot for TGT and WMT between 01 January 2020 and 01 March 2020

Plot for TGT and WMT between 01 March 2020 and 31 December 2020

Closing Prices | 2019 and 2020 Regression Review | Social Media

Plot for TWTR and FB between 01 January 2019 and 31 December 2020



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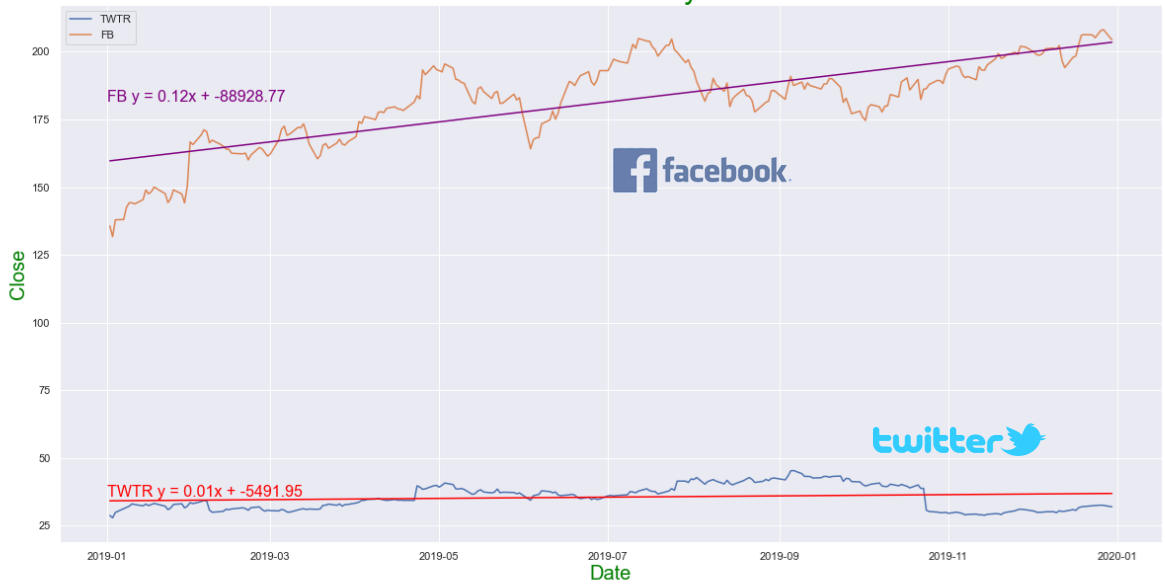
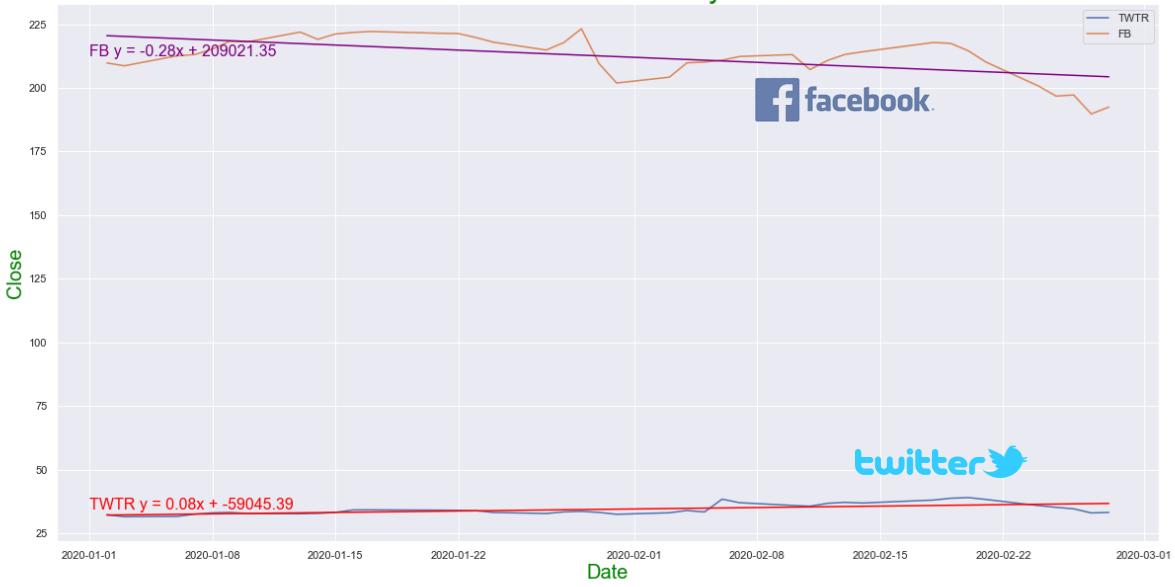
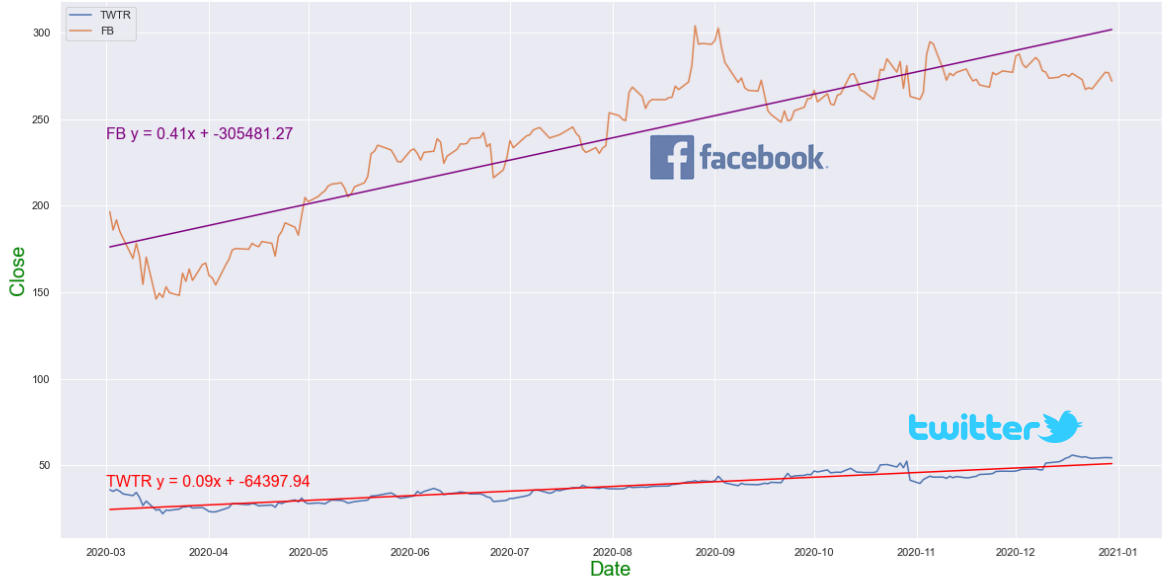


Plot for TWTR and FB between 01 January 2020 and 01 March 2020



Plot for TWTR and FB between 01 March 2020 and 31 December 2020



Closing Prices | 2019 and 2020 Regression Review | Auto Industry

Plot for GM and TM between 01 January 2019 and 31 December 2020

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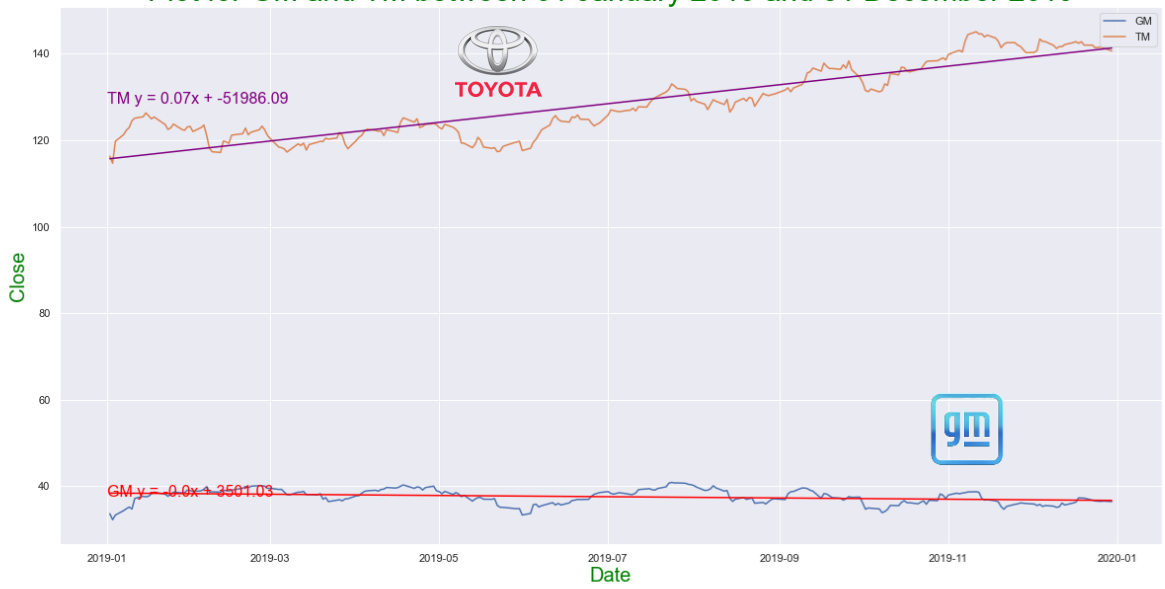
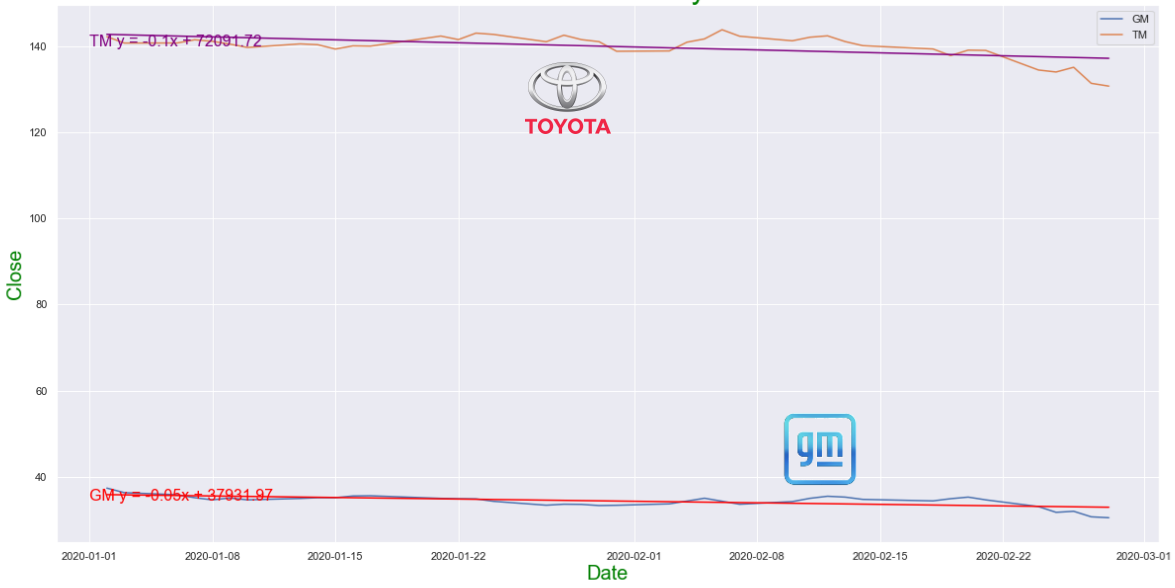
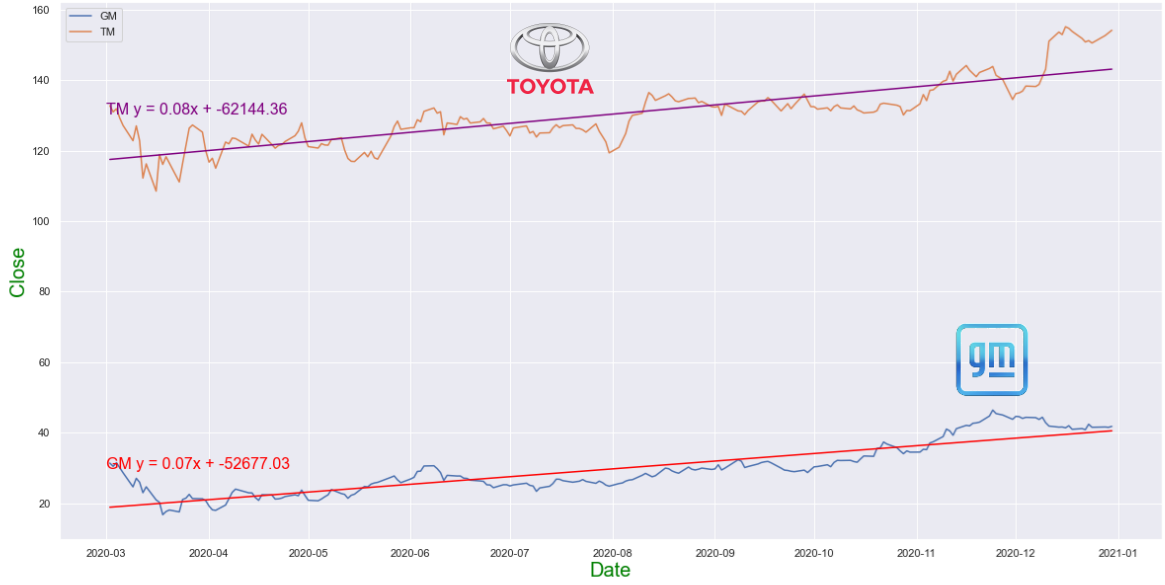


Plot for GM and TM between 01 January 2020 and 01 March 2020



Plot for GM and TM between 01 March 2020 and 31 December 2020



Closing Prices | 2019 and 2020 Regression Review | Airlines

Plot for LUV and DAL between 01 January 2019 and 31 December 2020

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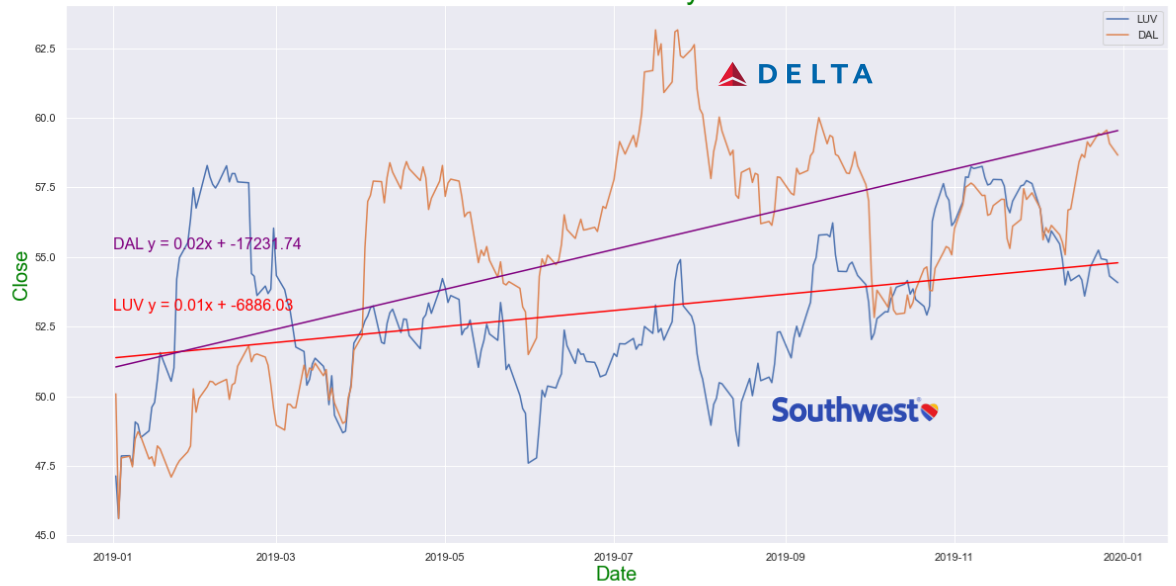
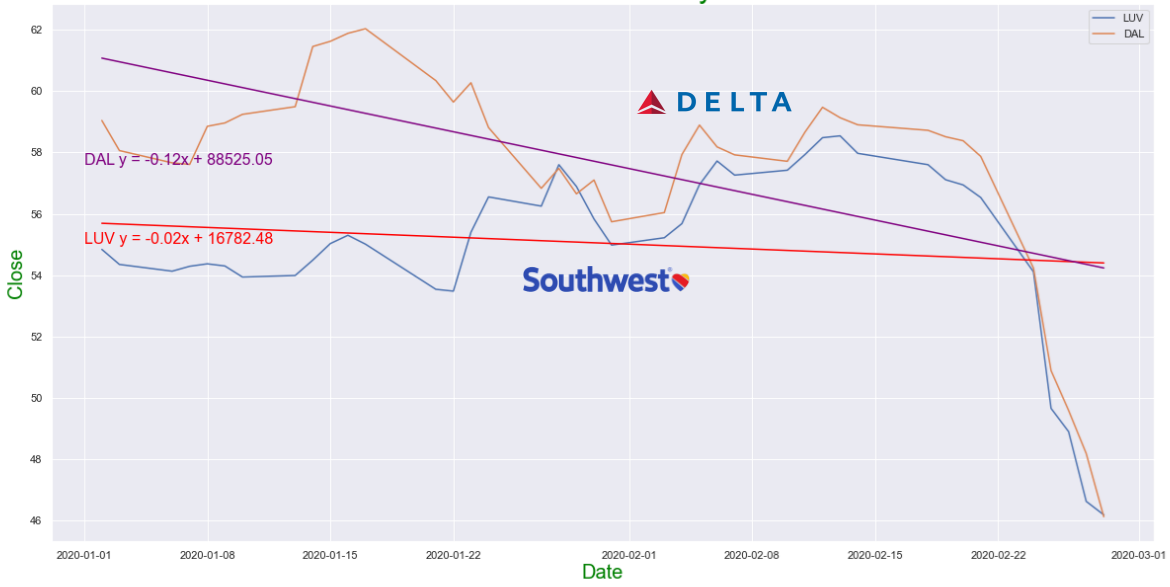
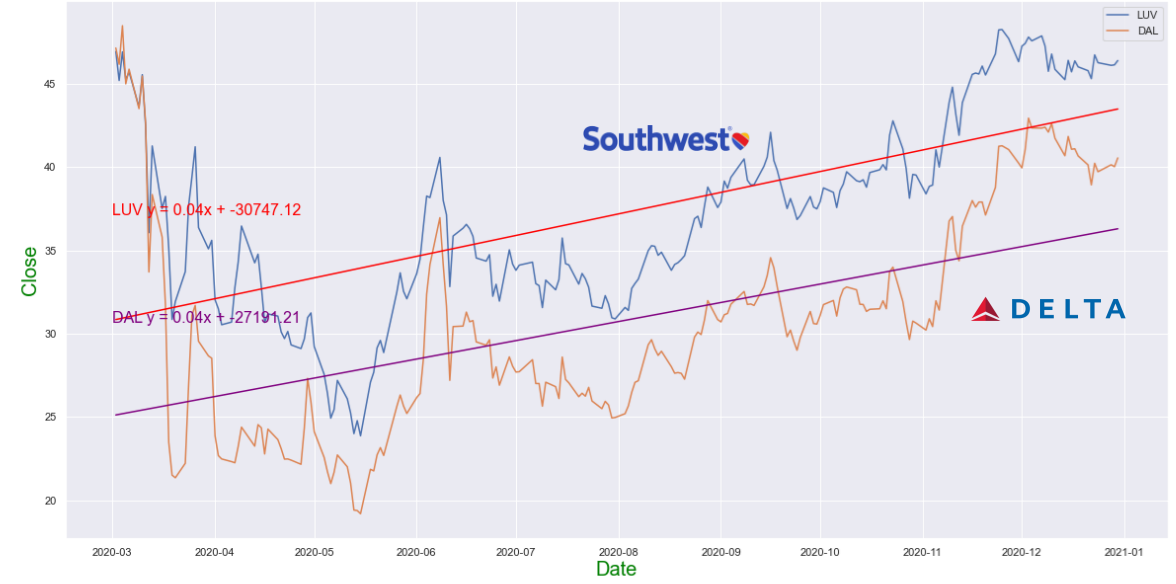


Plot for LUV and DAL between 01 January 2020 and 01 March 2020



Plot for LUV and DAL between 01 March 2020 and 31 December 2020



Closing Prices | 2019 through 2020 | Regression Overview

Plot for TGT and WMT between 01 January 2019 and 31 December 2020

Retail

Plot for FDX and UPS between 01 January 2019 and 31 December 2020

Logistics

Plot for TWTR and FB between 01 January 2019 and 31 December 2020

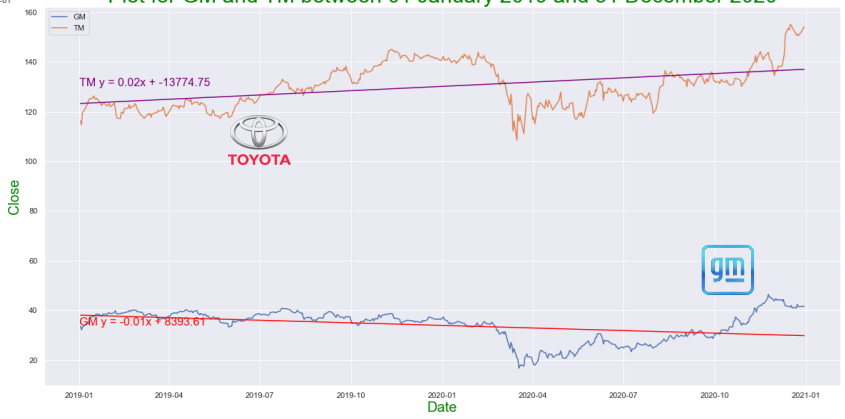
Social Media

Airlines

Plot for LUV and DAL between 01 January 2019 and 31 December 2020

Auto Industry

Plot for GM and TM between 01 January 2019 and 31 December 2020



Percentage Calculation Approach

- The original Yfinance dataframe was converted to daily closing prices by company using the pivot function
- A lambda function in combination with a deduction was applied to calculate the daily percent change
  - dataframe.apply(lambda x: (x / x[0] * 100)-100)
- For the plots, a baseline (0% change) line was added as well as a dotted green line indicating the COVID-19 pandemic announcement

Stock Price Daily Percent Change

(Baselined 01 January 2019, ending on 31 December 2020)

Stock Price Daily Percent Change

(Baselined 01 January 2019, ending on 31 December 2019)

Percent Change during different pre and post COVID time periods

(Baselined 01 January 2020, ending on 01 March 2020)

(Baselined 01 March 2020, ending on 31 December 2020)

Conclusion

1. Be smart enough to have most of your assets in cash when there's a crash*
2. Buy on the dip

**This is the hard part*

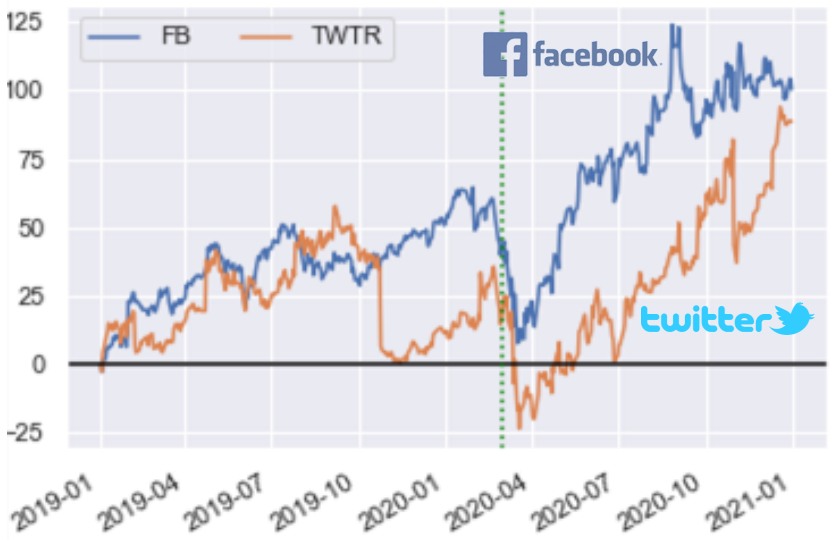
Final Conclusions

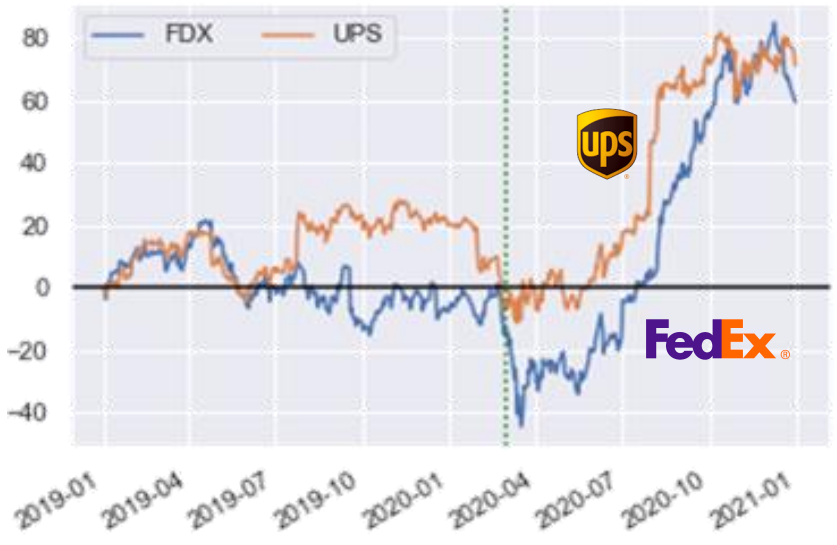
In 2019 the stock market was mostly doing well. The S&P 500 rose by 29% and the NASDAQ by 35%. Both are commonly accepted market indicators. The DOW ended the year with a 22% gain, making it the best year since 2017.

In 2020, the stock market continued to rise, until March 16th (which is referred to as Black Monday II). The stock market crashed due to the Covid-19 pandemic. Many investors panicked because the world didn't know what the pandemic could bring. Black Monday II caused a drop of 12% in global markets.

As our understanding of the Coronavirus improved, the stock market began to recover quickly. Most industries recovered their losses, and even made significant gains, except the airline industry, which is still suffering to this day.

IMPLICATIONS FOR THE STOCKS AND MARKETS REVIEWED





LATE 2020 BIG WINNERS

LATE 2020 STILL RECOVERING