Gauging Market Reaction Based on Tweet Sentiment

Why?

- I would like to see if I it is possible to create an application to test if public sentiment expressed on Twitter has an impact on a publicly traded company's value

  - If it turns out public sentiment has an impact, how much of an impact does it have? Is it positive or negative?

  - My current assumptions are that some companies' share prices are influenced heavily by public social media sentiment (especially celebrities) while others are remain somewhat stable with regards to media influence.

Proof of current assumption

[1] https://www.ogilvy.com/feed/11-tweets-that-turned-the-stock-market-upside-down/
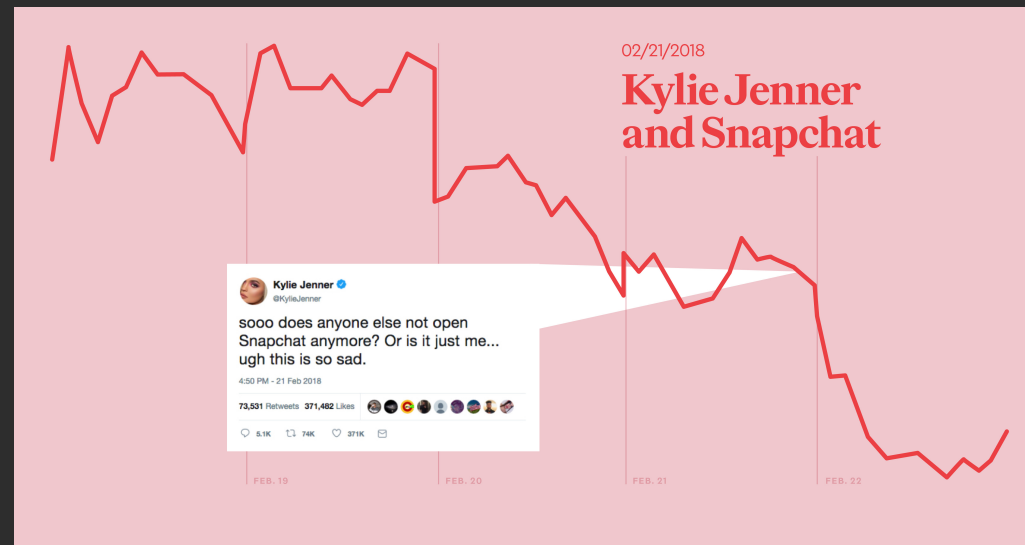
Data

- My plan involves gathering and analyzing two sets of data with corresponding dates:

    1. Stock market historical data for a certain company

    2. Historical tweet data which corresponds with the market history

Tools and Process

- APIs:
  - AlphaVantage – More granular finance data
  - YahooFinance- For finance data
  - TwitterAPI- For gathering tweets
- Algorithms:
  - To predict sentiment I will primarily use SVM and MNB models
  - I also will try Bernoulli which I feel could yield better results with binary input given the small size of each tweet sample (max 260 characters).
  - Finally, I will do simple linear regression comparing sentiment scores to stock returns and close prices.

Additional Goals

- In addition to stock price/returns I would also like to potentially look at reported revenue for a company compared to sentiment tweets about it.

  - EX: Look at a sample of tweets measuring sentiment compared to past quarter revenue trying to predict financial performance for the quarter.

- I am also interested in doing some topic modeling on the tweets to see what kind of topics influence stock price.