



Analyzing President Trump's Economic and Financial Tweets

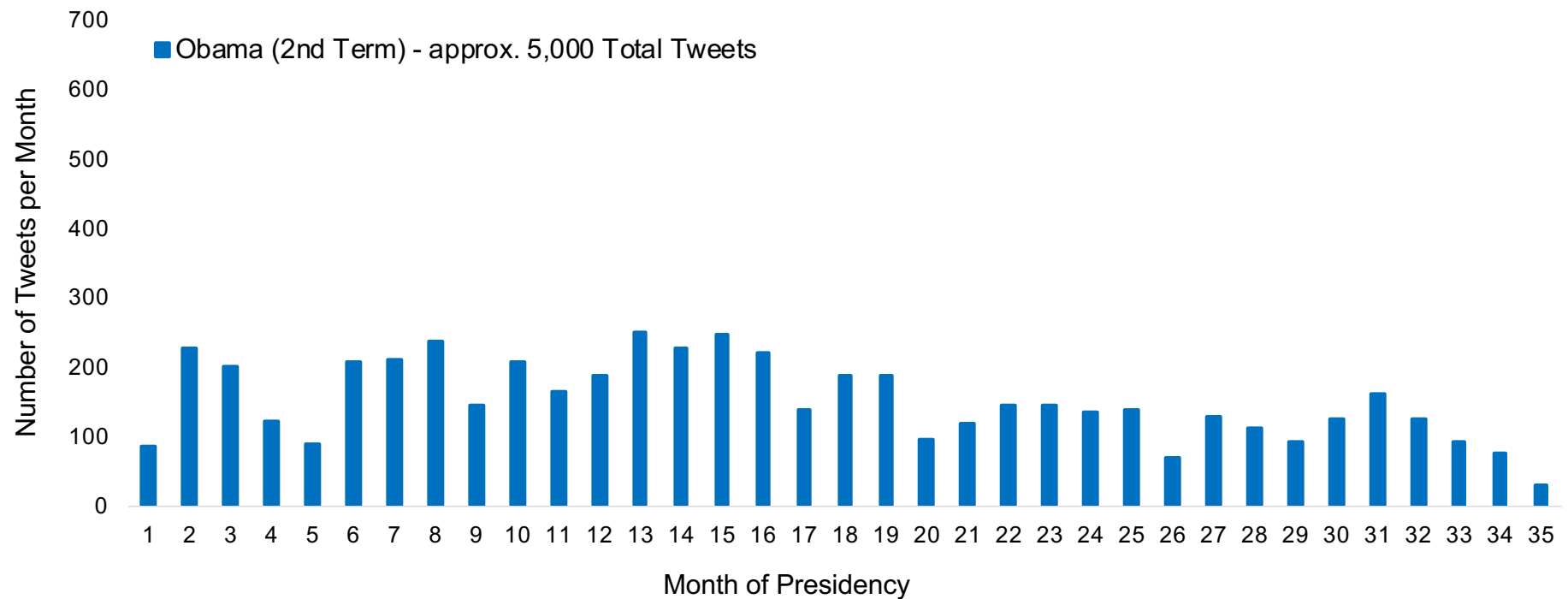
Linda Ju

Motivation:

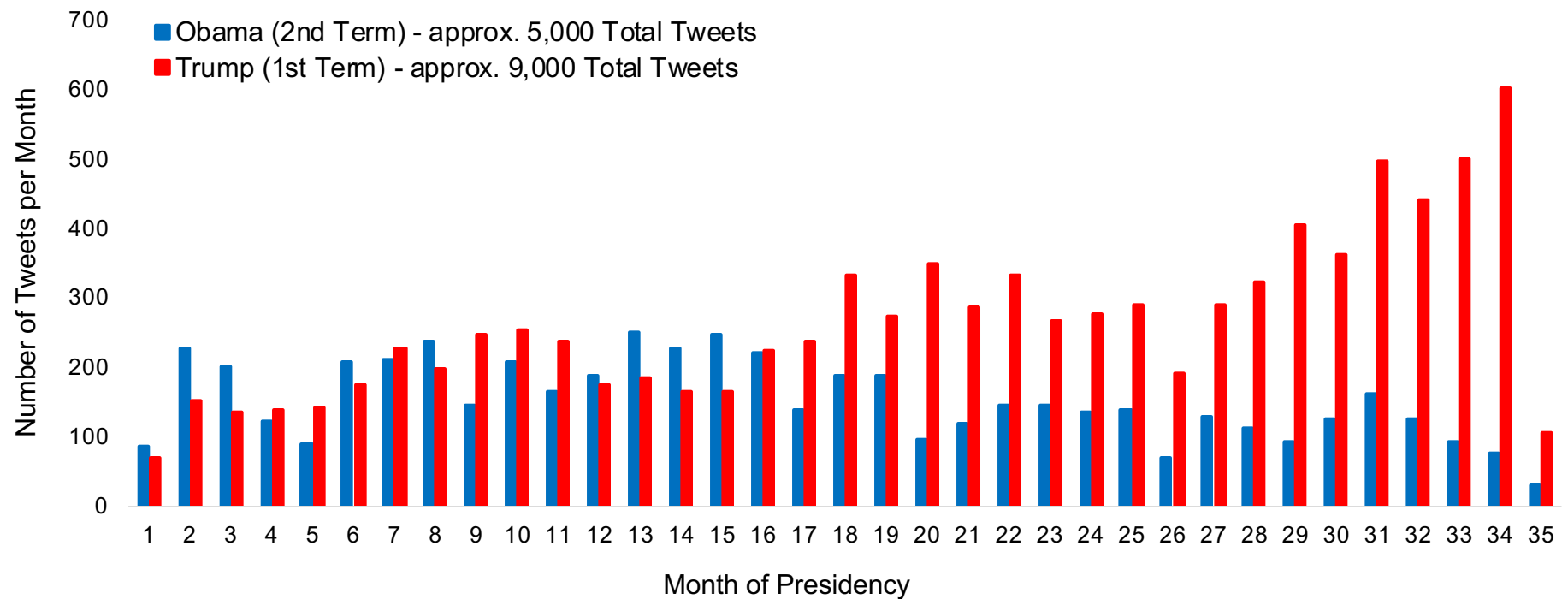
Increasing Use of Twitter from the Oval Office



Motivation: Increasing Use of Twitter from the Oval Office



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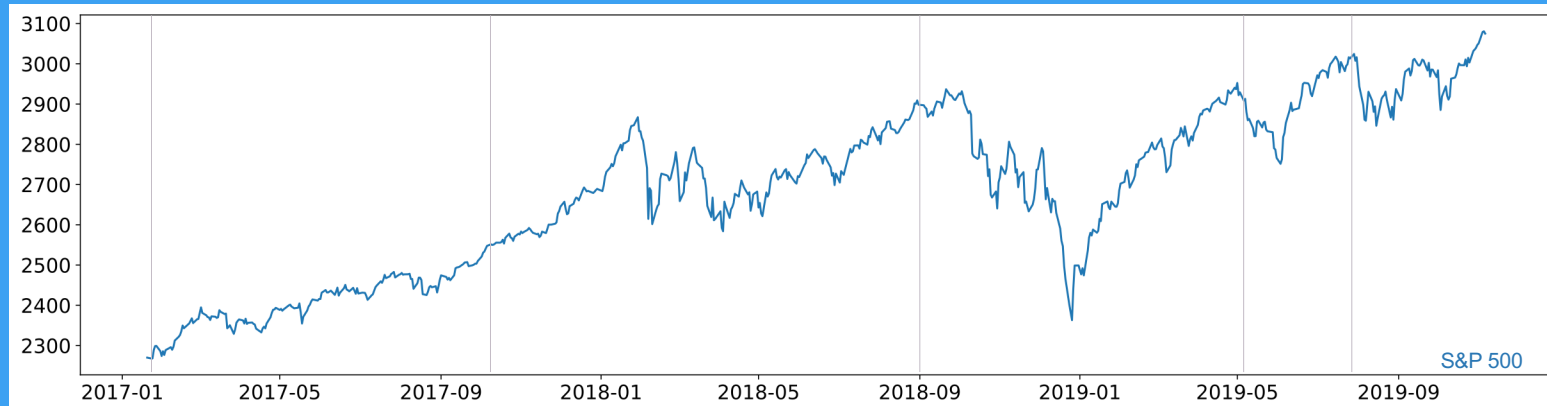


Methodology:

Tracking Trump's Tweets (Illustrative)



Methodology: Tracking Trump's Tweets (Illustrative)



Methodology: Tracking Trump's Tweets (Illustrative)



Results:

Top 10 Topics

Cluster	Topic	Top 5 Words	Number of Tweets
1	Elections / Platform	vote, crime, endorsement, military, strong	421
2	Making America Great	america, make, great, making, safe	431
3	Fake News	news, fake, media, cnn, people	786
4	Praising Hard Work	thank, working, hard, love, maga	549
5	Witch Hunt	hunt, witch, collusion, mueller, history	414
6	Trade / Tariffs	china, united, states, trade, korea	1,078
7	Border Wall	border, wall, democrats, security, want	809
8	Trump / Obama / Hillary	president, trump, obama, campaign, hillary	1,521
9	Issuing Praise	great, today, honor, congratulations, job	1,442
10	Economy	jobs, market, economy, time, tax	1,261
Total			8,712



Results:

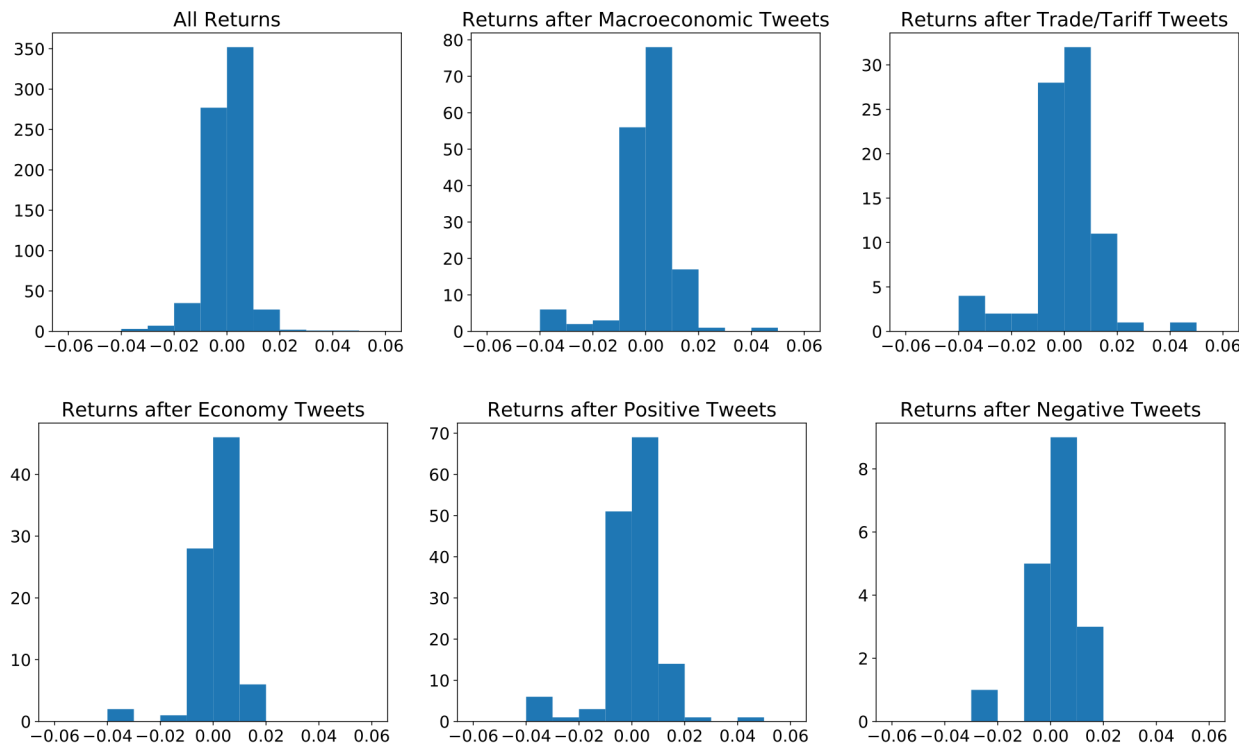
Macroeconomic Topics

Cluster	Topic	Top 5 Words	Number of Tweets
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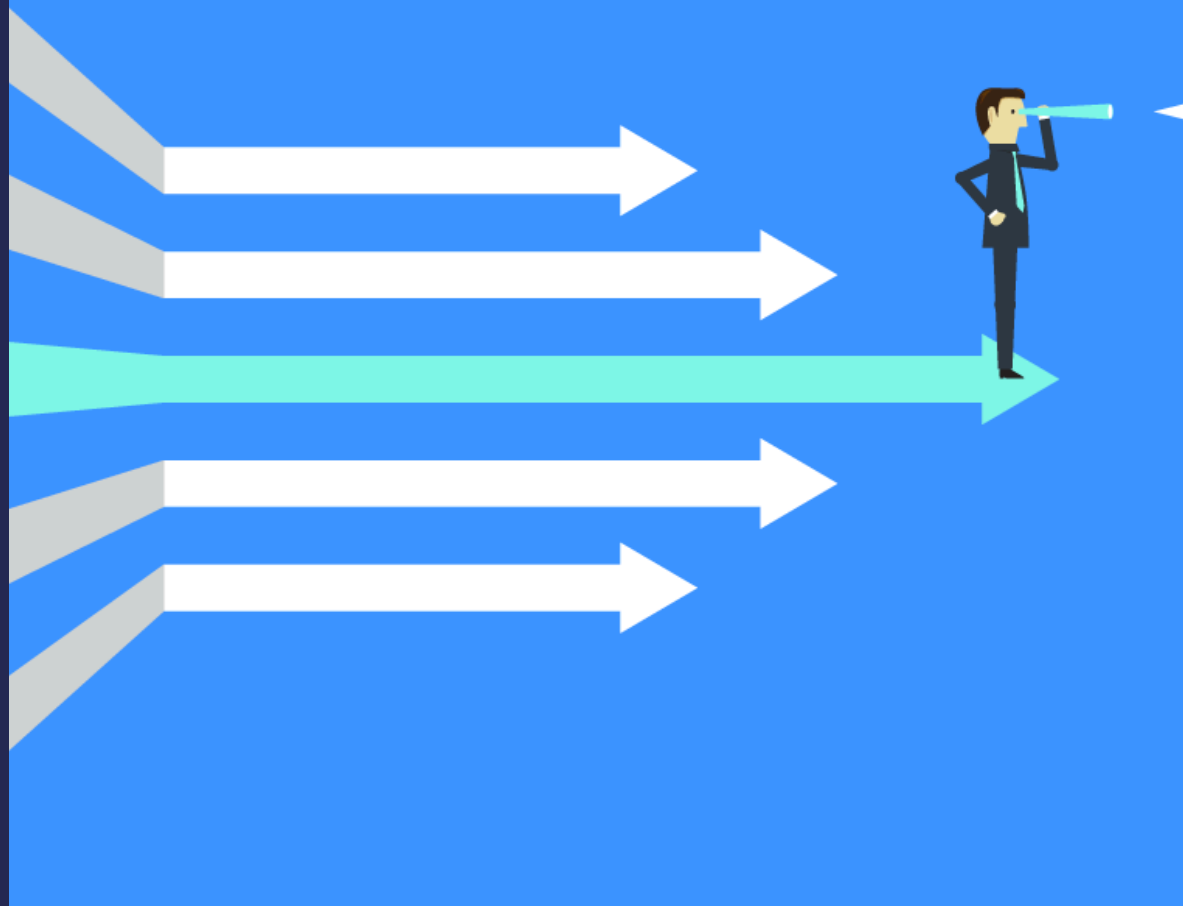
Conclusion:

S&P Returns Look Very Similar



Future Work: Areas of Improvement

- Calculate returns immediately (a few seconds) after tweet
- Analyze other financial indices or individual stocks
- Find patterns in any tweet before big financial movements





Donald J. Trump ✓

@realDonaldTrump



THANK YOU for listening to @LindaJu 's presentation! She is HAPPY to take any questions NOW! 🇺🇸 🇺🇸 🇺🇸 #NLTK #SKLearn #NLP

November 15, 2019 [Twitter for iPhone](#)

15.7K Retweets **59.2K** Likes



Appendix



Data

Natural Language Processing

- 12,042 total tweets and retweets from Jan 20, 2017 to Nov 6, 2019
 - 9,274 original tweets and 2,768 retweets which were removed
- Pre-processing
 - Removed numbers, links, #'s, @'s, emoji's, and punctuation
 - Lowercase
 - Removed stopwords
 - Tried stemming with LancasterStemmer()
 - Sentiment analysis with NLTK VADER
 - Removed extremely short tweets (less than 20 characters)
- 8,712 tweets after pre-processing



Return Calculation

Time of Tweet	Return Calculation
Before Market Open	Buy at today's open and sell at today's close
During Market Hours	Buy at today's close and sell at tomorrow's close
After Market Closes	Buy at tomorrow's open and sell at tomorrow's close



Unsupervised Learning

Tried Different Techniques

- Tried Different Techniques:
 - CountVectorizer and TfidfVectorizer
 - N-grams: (1,1), (1,2), (1,3), (1,4)
 - Topic Modeling: 10 components/clusters/topics
 - Latent Semantic Analysis (LSA) and Non-Negative Matrix Factorization (NMF)
 - K-means clustering
- Chosen Technique: TfidfVectorizer with NMF resulted in 81 tweets in cluster 6 and 83 in cluster 10, 146 positive and 18 negative
 - For each tweet, NMF gives how much of each of the 10 topics it belongs to. Take the max and assign each tweet to the corresponding cluster.
 - To be sure, only used tweet when the max was ≥ 0.10
 - Wanted to use tweets with strong sentiment: absolute value of compound ≥ 0.70



Results:

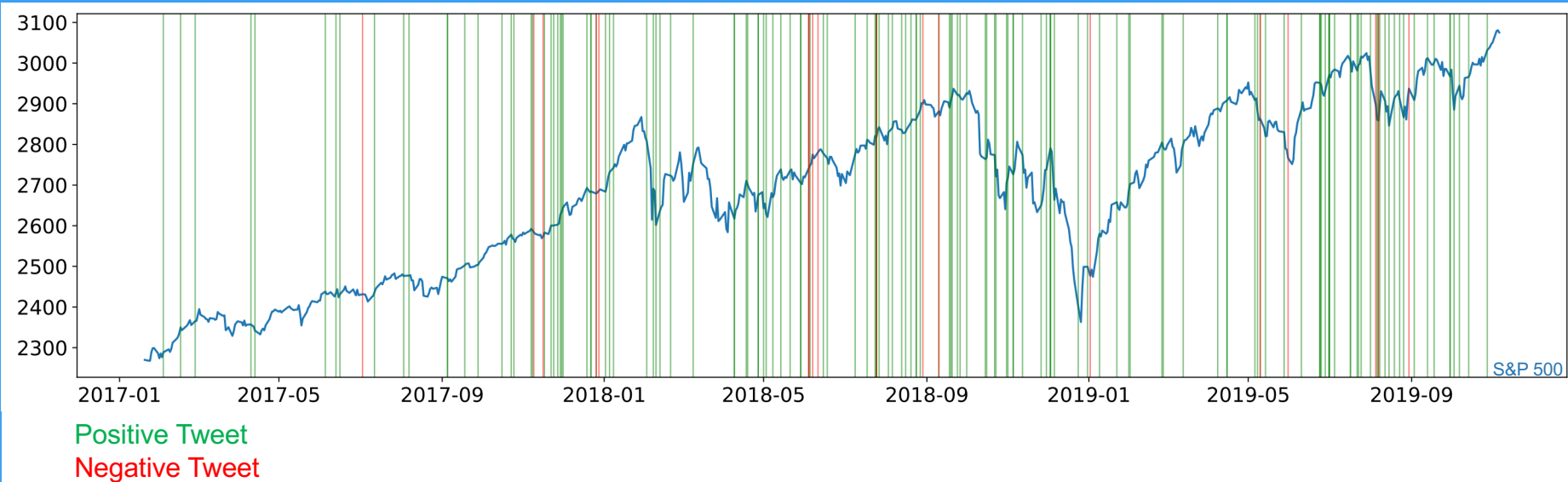
Macroeconomic Topics

Cluster	Topic	Top 5 Words	Number of Tweets
1	Elections / Platform	vote, crime, endorsement, military, strong	424
2	Making America Great	america, make, great, making, safe	434
3	Fake News	news, fake, media, cnn, people	786
4	Praising Hard Work	thank, working, hard, love, maga	549
5	Witch Hunt	hunt, witch, collusion, mueller, history	414
6	Trade / Tariffs	china, united, states, trade, korea	1,078 → 81
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9	Issuing Praise	great, today, honor, congratulations, job	1,442
10	Economy	jobs, market, economy, time, tax	1,261 → 83
Total			164



Results:

164 Macroeconomic Tweets in Context of S&P 500



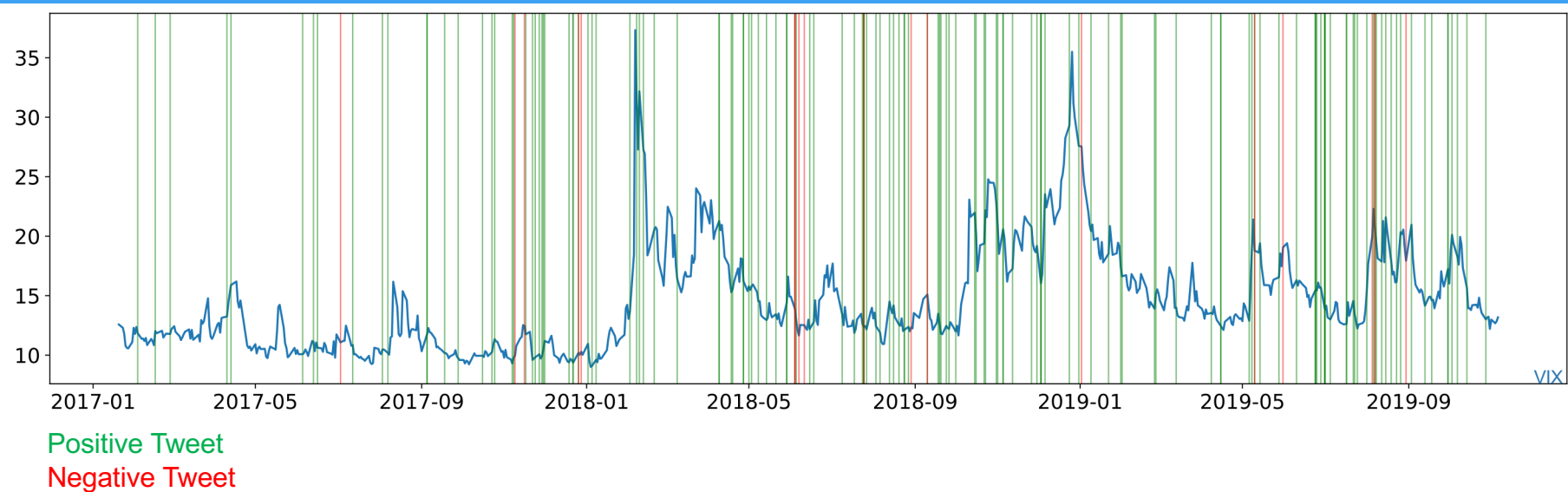
Results:

164 Macroeconomic Tweets in Context of S&P 500



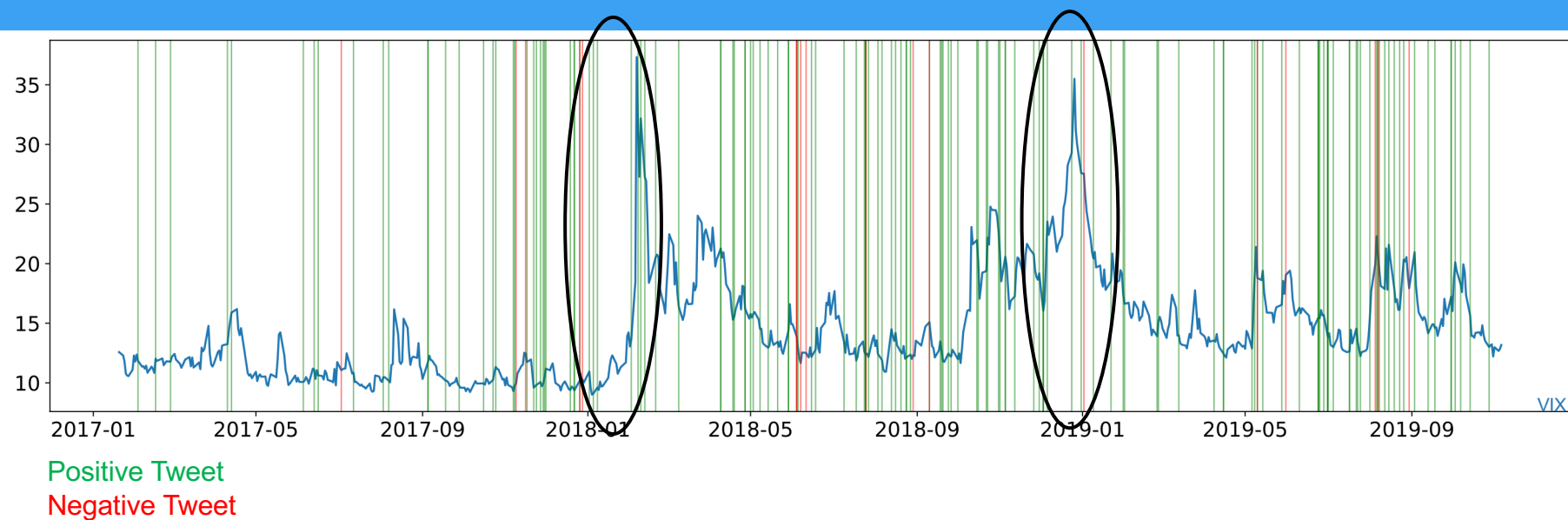
Results:

164 Macroeconomic Tweets in Context of VIX



Results:

164 Macroeconomic Tweets in Context of VIX



Conclusion:

VIX Returns Look Very Similar

