Stimulating Engagement through Negative Emotional Sentiment on Twitter

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Background/Description

- Twitter Introduction

- Trump as an initial subject

- Initial Collection *vs* Streaming Collection

Example Tweet 1:

Donald J. Trump @realDonaldTrump — Following

The Fake News is becoming more and more dishonest! Even a dinner arranged for top 20 leaders in Germany is made to look sinister!

8:59 PM - 18 Jul 2017

26,498 Retweets 105,544 Likes

💬 35K   🔁 26K   ♡ 106K

Example Tweet 2:

Donald J. Trump @realDonaldTrump — Following

Little Adam Schiff, who is desperate to run for higher office, is one of the biggest liars and leakers in Washington, right up there with Comey, Warner, Brennan and Clapper! Adam leaves closed committee hearings to illegally leak confidential information. Must be stopped!

7:39 AM - 5 Feb 2018

43,119 Retweets 142,216 Likes

💬 64K   🔁 43K   ♡ 142K

Defining Engagement

The amount in which users respond/interact with a tweet. There are several different quantifications that will be made to evaluate overall engagement of a tweet:

Initial collection:
➔ Total Favorites
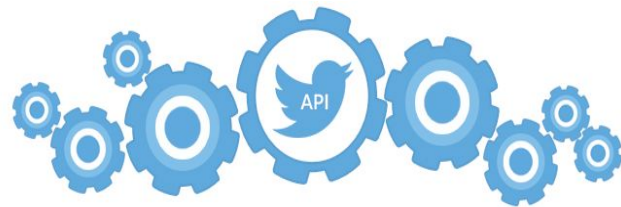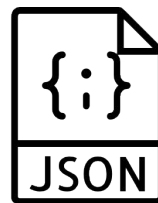➔ Total Retweets

Streaming collection:
➔ Reply count
➔ Followers gained
➔ Public mentions

Donald J. Trump ✓
@realDonaldTrump

Following ⌄

The Fake News is becoming more and more dishonest! Even a dinner arranged for top 20 leaders in Germany is made to look sinister!

8:56 PM - 18 Jul 2017

26,498 Retweets 105,544 Likes

💬 35K   ⟲ 26K   ♡ 106K   ✉

Research Questions

-How does using negative emotional sentiment when posting on Twitter affect ones engagement with others on the platform? [Favorites, Retweets, Reply Count, Followers Gained, Public Mentions]

-How does the *amount* of negativity used affect engagement?

-How do engagement effects of tweeting with negative sentiment compare to the effects of tweeting with positive sentiment?

Data Collection

Basic data statistics:

Total historical tweets collected: ~17 thousand

Total streaming tweets collected: ~6.5 million

Extractable information:

favorites, retweets

replies, followers gained, public mentions

Information Timeline:

Historical Data: **June 6, 2014 - Nov 01, 2017**

Streaming Data: **Feb 01, 2018 - Feb 25, 2018**

Basic Historical Tweet Statistics

June 16, 2014 - June 16, 2015

Pre-Campaign:

Average tweets per day: 21.3

Average 'favorites' per tweet: 4,702

Average 'retweets' per tweet: 1,583

June 17, 2015 - Nov 07, 2016

Campaign:

Average tweets per day: 13.0

Average 'favorites' per tweet: 8,706

Average 'retweets' per tweet: 3,105

Nov 08, 2016 - Nov 01, 2017

Presidency:

Average tweets per day: 6.8

Average 'favorites' per tweet: 85,603

Average 'retweets' per tweet: 19,709

Emotional Sentiment Scoring

Using MPQA Subjectivity Lexicon, tweets are scored using word association.

+1 (green)
-1 (red)

Example Tweet Positive [Score = +1]:

Donald J. Trump ✔
@realDonaldTrump

Following

Despite some very corrupt and dishonest media coverage, there are many great reporters I respect and lots of GOOD NEWS for the American people to be proud of!

8:05 PM - 17 Jan 2018

22,362 Retweets 111,973 Likes

16K   22K   112K

Example Tweet Negative [Score = -5]:

Donald J. Trump ✔
@realDonaldTrump

Following

This memo totally vindicates "Trump" in probe. But the Russian Witch Hunt goes on and on. Their was no Collusion and there was no Obstruction (the word now used because, after one year of looking endlessly and finding NOTHING, collusion is dead). This is an American disgrace!

9:40 AM - 3 Feb 2018

39,146 Retweets 141,773 Likes

96K   39K   142K

Emotional Sentiment Scoring

MPQA Examples -

len = *1*, **word1** = <u>*hideously*</u>, **pos1** = *adverb*, **priorpolarity** = negative   Score -= 1

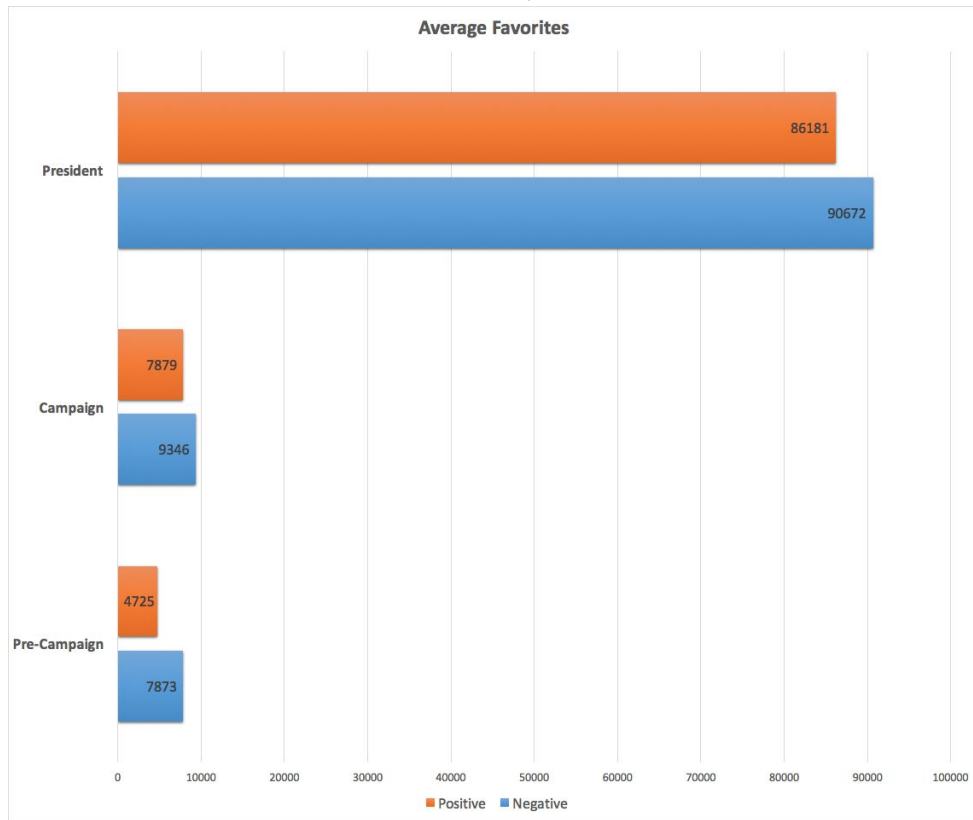**len** = *1*, **word1** = <u>*hideousness*</u>, **pos1** = *noun*, **priorpolarity** = negative   Score -= 1

len = *1*. **word1** = <u>*high*</u>, **pos1** =*adj*, **priorpolarity** = neutral   Score += 0

len = *1*, **word1** = <u>*high-powered*</u>, **pos1** = *adj*, **priorpolarity** = neutral   Score += 0

len = *1*, **word1** = <u>*high-quality*</u>, **pos1** = *adj*, **priorpolarity**= positive   Score += 1

len = *1*, **word1** = <u>*highlight*</u>, **pos 1**= *noun*, **priorpolarity**= positive   Score += 1

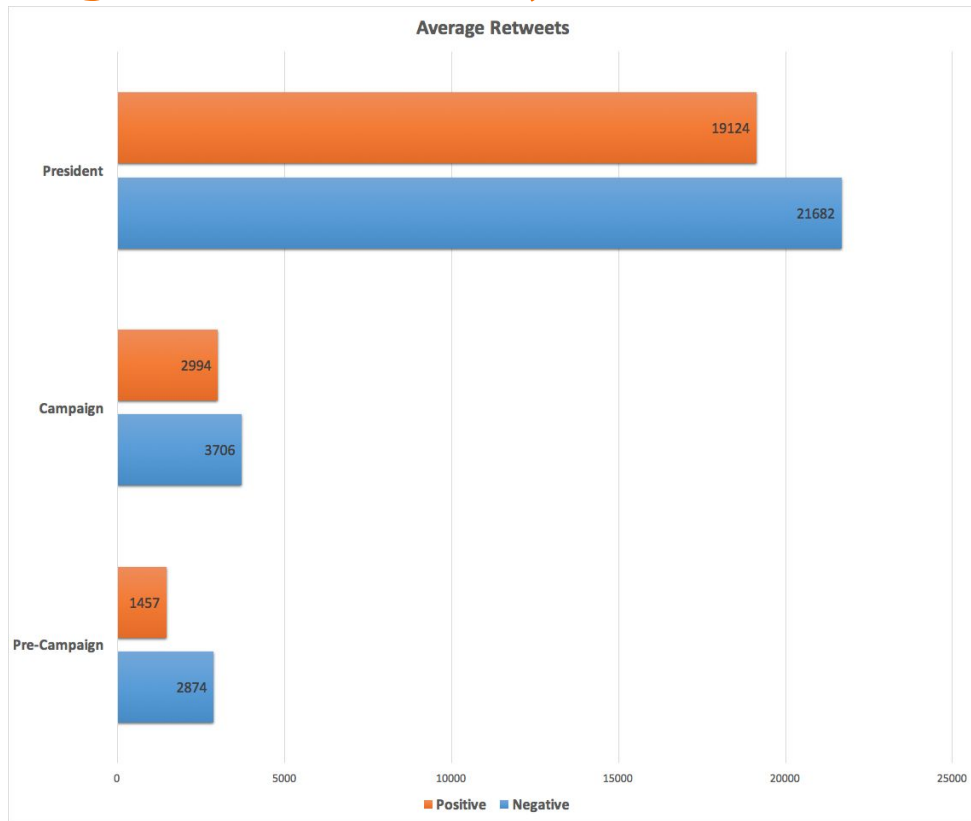# Average Favorites (all historical tweets)

Average Favorite Count:

Positive - 32,928

Negative - 35,963

Average *3,035* additional favorites when tweeting negatively

Average Retweets (all historical tweets)

Average Retweet Count:

Positive - 7,858

Negative - 10,378
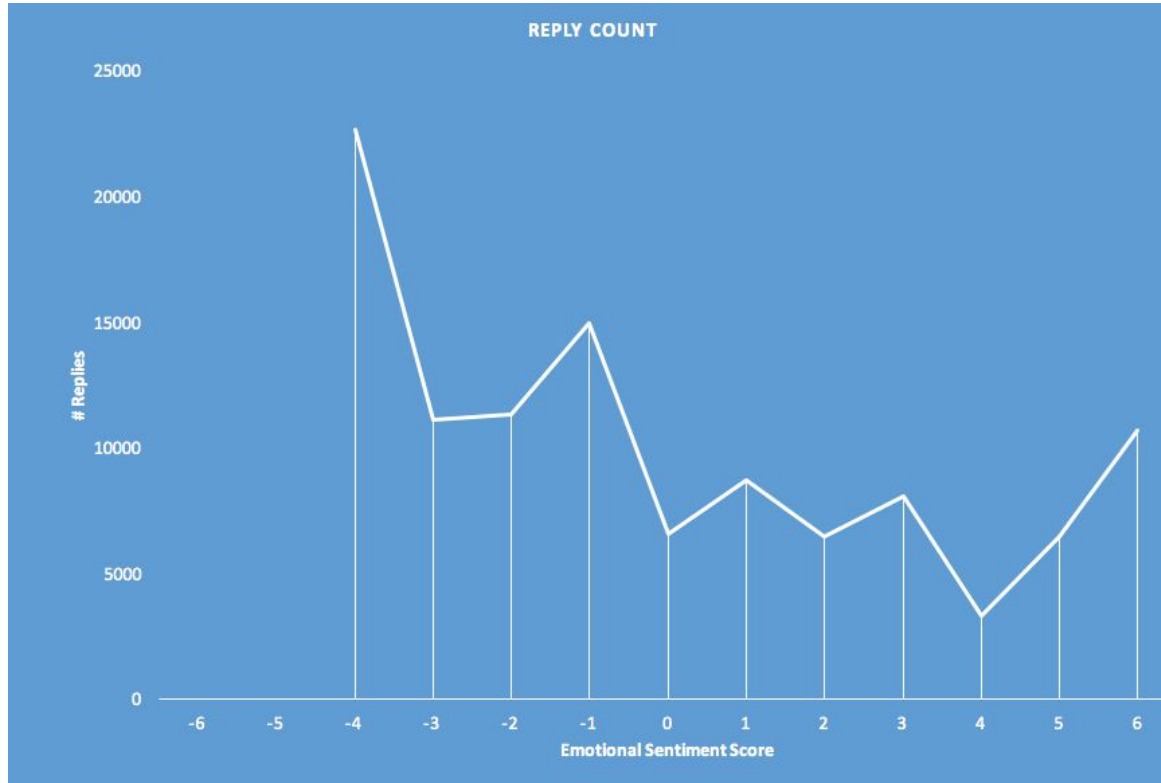
Average *2,520* additional retweets when tweeting negatively

Why do we care?

We can see Trump gets more favorites and retweets on negative tweets. Further investigation reveals additional beneficial engagement aspects of Trump's tweeting habits -

- Common knowledge that Trump is widely criticized for his negative/rude demeanor on Twitter

- Yet, increase in engagement is observable when using negative emotional sentiment
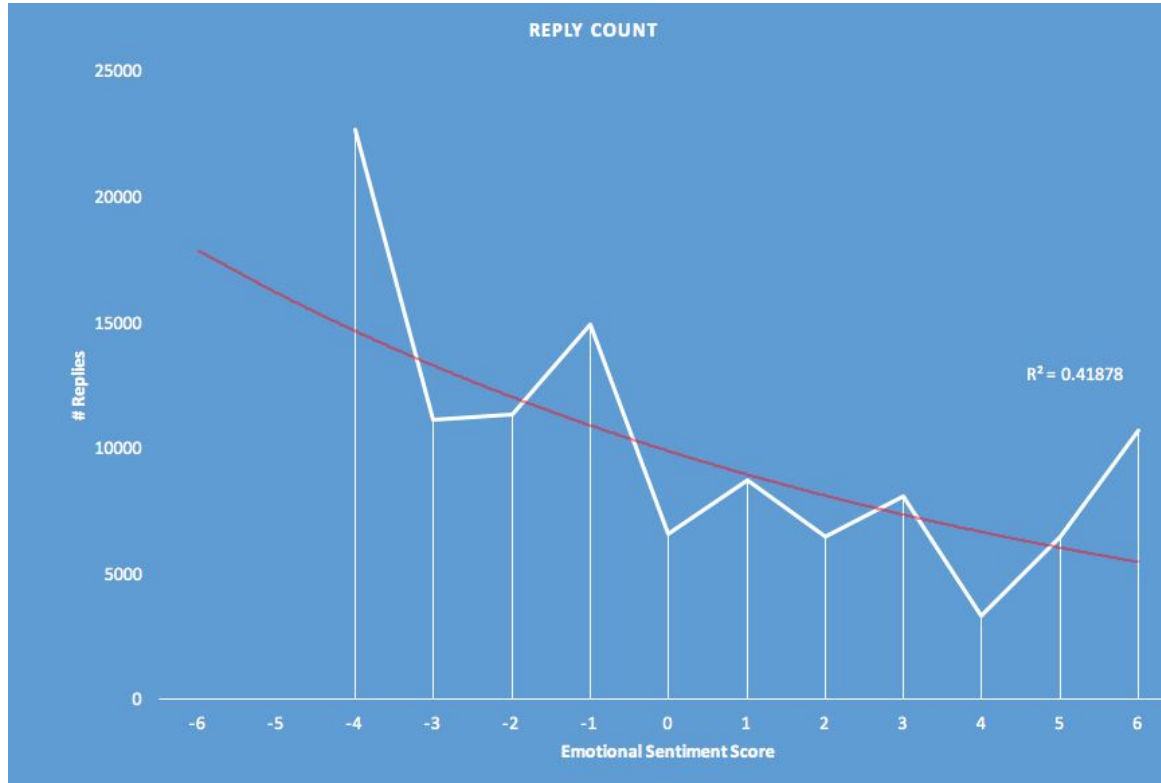
Average amount of replies vs. Emotional Sentiment

Average # Replies [24 hours after tweeting] to Tweets Using Positive Emotional Sentiment > 0: **7,821**

Average # Replies [24 hours after tweeting] to Tweets Using Negative Emotional Sentiment < 0: **20,002**

Average *12,181* additional replies in the 24-hour period after tweeting with negative emotional sentiment *vs* positive

Average amount of replies vs. Emotional Sentiment

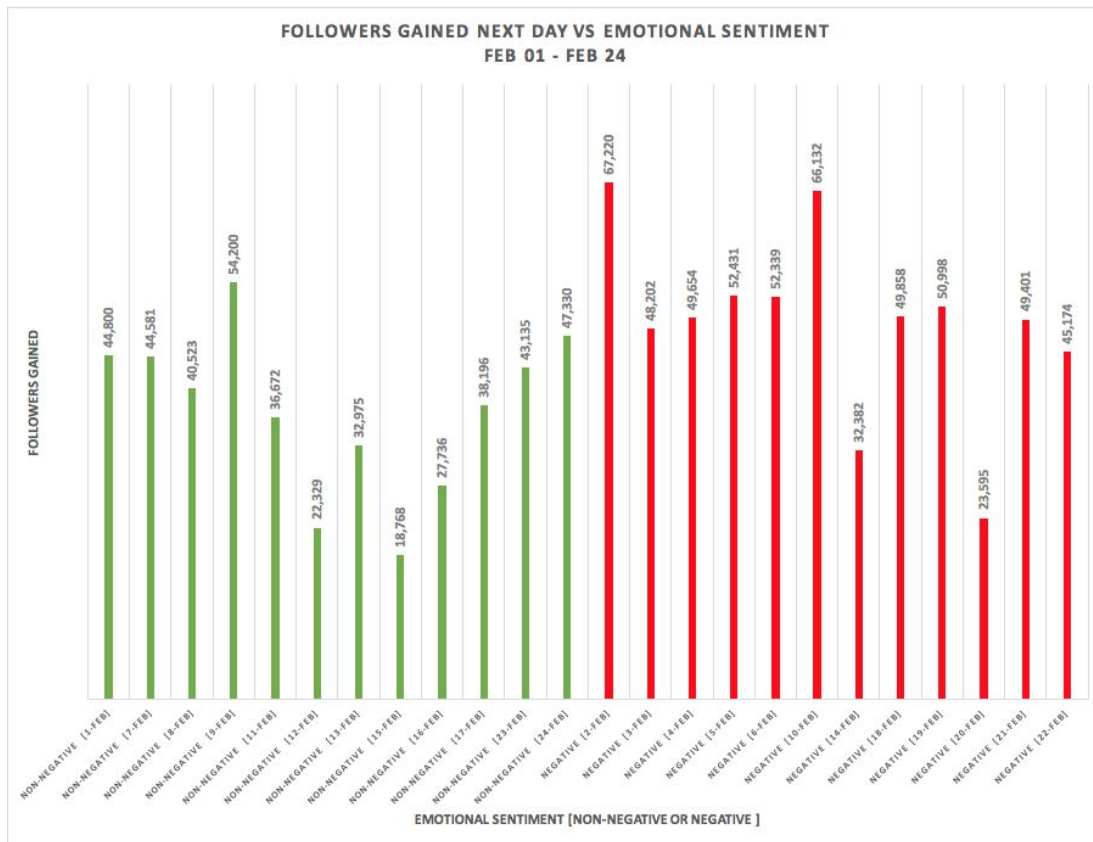Average # Replies [24 hours after tweeting] to Tweets Using Positive Emotional Sentiment > 0: **7,821**

Average # Replies [24 hours after tweeting] to Tweets Using Negative Emotional Sentiment < 0: **20,002**

Average *12,181* additional replies in the 24-hour period after tweeting with negative emotional sentiment *vs* positive

μ : Reply counts are the same for negative and positive sentiment tweets
p-value : 0.028

Followers Gained vs. Emotional Sentiment

FOLLOWERS GAINED NEXT DAY VS EMOTIONAL SENTIMENT
FEB 01 - FEB 24
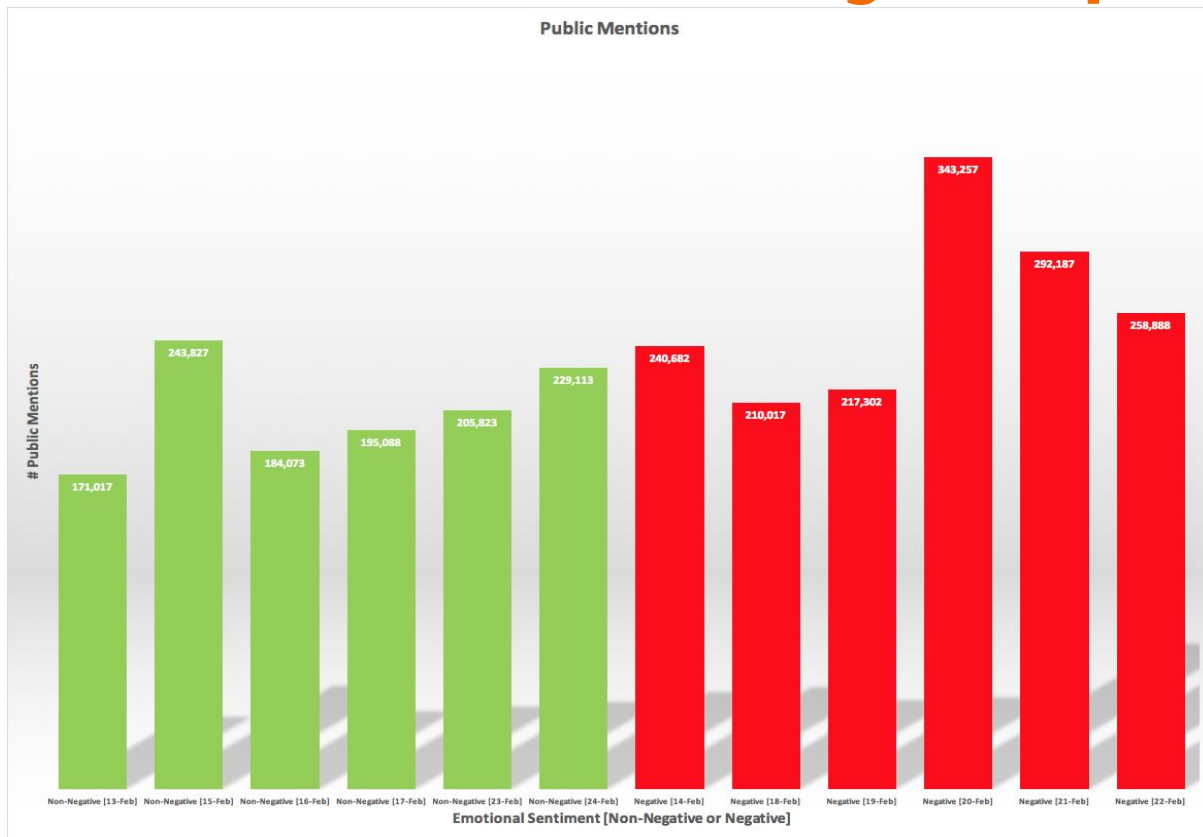
Average followers gained 24 hours after tweeting non-negatively: **37,603**

Average followers gained 24 hours after tweeting negatively: **48,948**

Average *11,345* additional followers gained over 24-hour period after Trump has tweeted with negative sentiment vs positive.

Public tweets mentioning Trump

Average public mentions made during a day of tweeting with exclusively non-negative sentiment: **204,823**

Average public mentions made during a day of tweeting with negative sentiment at least once: **260,388**

Average *55,565 additional* public mentions during a day where Trump has tweeted negatively at least once vs non-negatively.

Other subjects

@danieltosh (Daniel Tosh) [most recent 200 tweets]

Average favorites per negative tweet: **4,421**

Average retweets per negative tweet: **954**

Average favorites per positive tweet: **2,466**

Average retweets per positive tweet: **490**

Followers: 27.4 Million   31% Neg | 69% Pos

@Drake (Aubrey Graham) [most recent 200 tweets]

Average favorites per negative tweet: **27,046**

Average retweets per negative tweet: **30,819**

Average favorites per positive tweet: **21,450**

Average retweets per positive tweet: **18,242**

Followers: 36.7 Million   24% Neg | 76% Pos

@KingJames (Lebron James) [most recent 200 tweets]

Average favorites per negative tweet: **32,388**

Average retweets per negative tweet: **7,199**

Average favorites per positive tweet: **28,073**

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@realDonaldTrump (Donald Trump) [most recent 17,000 tweets]

Followers: 48.4 Million   30% Neg | 70% Pos

Future Work

Total Emotional Sentiment - Using absolute value of emotional scores - Ideal level of emotional sentiment maximizing engagement? Differences in combinations of positive & negative sentiments?

Emotional Sentiment of Replies & Public Mentions - Relationship between emotional sentiment of a user's tweets and the sentiment of public users replying to or mentioning the user.

Negative Emotion Benefit Ceiling - At what point does negativity in a tweet not add to beneficial engagement?

Questions?

Notes

Extraction Information:

       Tweepy 2.4.0 - Python wrapper for accessing Twitter API (tweets saved in JSON format)

       CouchDB 3.5.0 - Database structure to hold documents

       MPQA Subjectivity Lexicon [updated 2014] - Trusted lexicon of words and associated emotional sentiment