



Twitter Sentiment

COVID-19 PANDEMIC



NLP for Twitter Sentiment of COVID-19 Pandemic

- Introduction
- Obtain Tweets
- Data
- Data Cleaning
- Sentiment
- Word relationships
- Wrap up and recommendations



Sentiment Analysis

- Identify customer needs
- Predictions
- Wider view of public opinion
- Provides for computer interpretation
- Provides reliable results

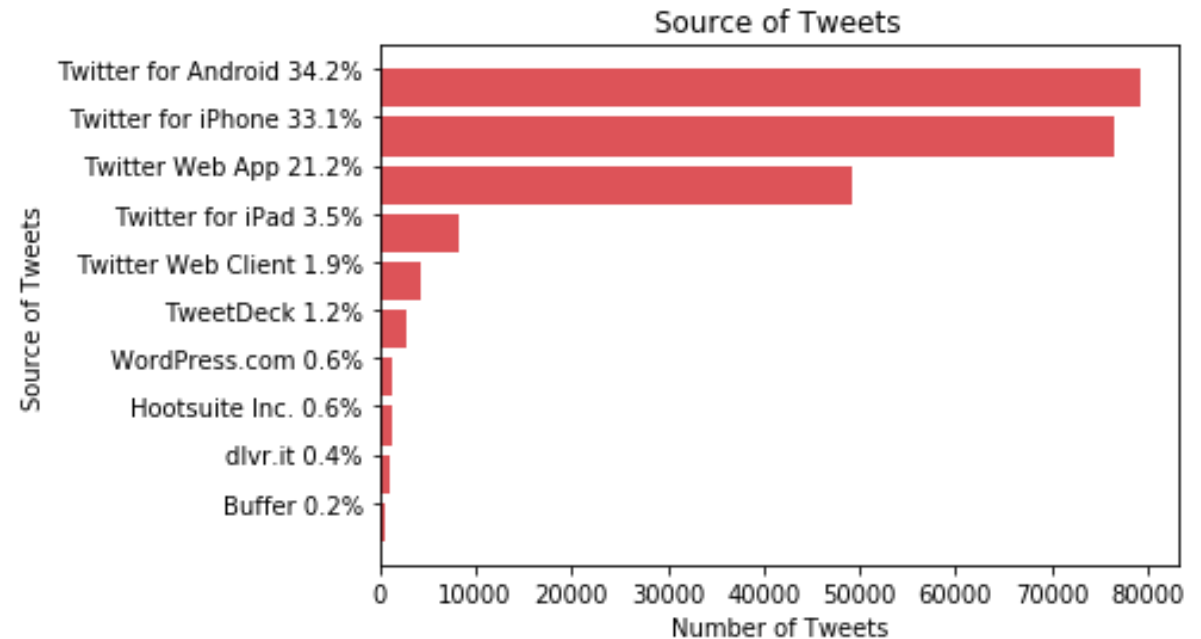
Get Tweets

- OBTAIN TWITTER PERMISSIONS
- BUILD TWEET COLLECTOR (STREAM LISTENER)
- SAVE TWEETS IN DATABASE (MONGODB)
- CONVERT TO MANAGEABLE FORMAT (DATAFRAME)

```
{
  "created_at" : "Thu Apr 06 15:24:15 +0000 2017" ,
  "id_str" : "850006245121695744" ,
  "text" : "1\ Today we\u2019re sharing our vision for the fu
  "user" : {
    "id" : 2244994945 ,
    "name" : "Twitter Dev" ,
    "screen_name" : "TwitterDev" ,
    "location" : "Internet" ,
    "url" : "https://dev.twitter.com/" ,
    "description" : "Your official source for Twitter Platform
  } ,
  "place" : {
  } ,
  "entities" : {
    "hashtags" : [
    ] ,
    "urls" : [
      {
        "url" : "https://t.co/XweGngmx1P" ,
        "unwound" : {
          "url" : "https://cards.twitter.com/cards/18ce53w
          "title" : "Building the Future of the Twitter API Pl
        }
      }
    ]
  }
}
```

The Data

- Source of tweets
- Tweets: 231,542
 - Avg Length: 123
 - Shortest: 1
 - Longest: 158
- Languages: 55/56
 - Mostly English: 157,423
 - Emojis: 5446



Cleaning








- Remove
 - @mentions and URLs
 - Odd characters
 - Common words
 - Random whitespace
- Convert
 - Lowercase
 - Words to root (lemmatization)

Comparison Cleaned Tweets	
Original	Cleaned
Act now and call on the President to take back his dangerous threat, and instead work to strengthen the @WHO by ful... https://t.co/KpKKo0p2nL	act call president take back dangerous threat instead work strengthen ful ...

Cleaning

- Also Convert
 - Emojis

Although some processors automatically interpret emojis

Emoji Conversion	
Before	After
	backhandindexpointingdown
	cryingface
	facewithtearsofjoy
	loudlycryingface
	raisedfist
	thinkingface
	thumbsup

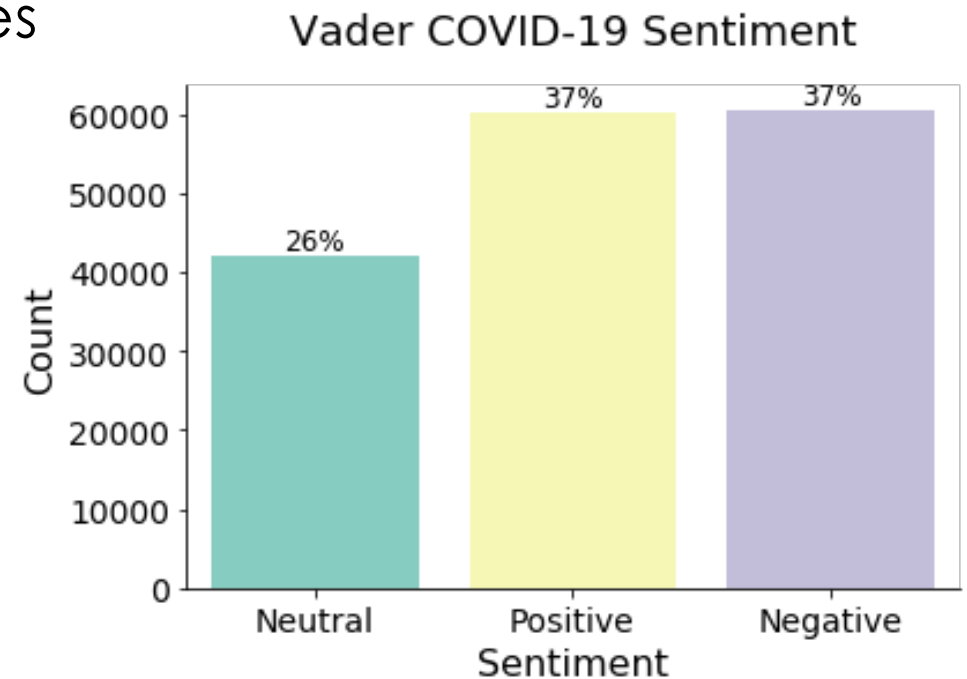
Sentiment – VADER Sentiment Analysis

- Words given sentiment values
 - Positive
 - Negative
 - Neutral
 - Combined

◆	neg ◆	neu ◆	pos ◆	compound ◆
0	0.000	1.000	0.000	0.0000
1	0.000	0.629	0.371	0.7096
2	0.365	0.506	0.129	-0.6369
3	0.000	0.000	1.000	0.2500
4	0.511	0.489	0.000	-0.9274

Sentiment – VADER Sentiment Analysis

- Words given sentiment values
 - Positive
 - Negative
 - Neutral
 - Combined
- Pandemic tweets
 - Nearly even



Top 20 Words	
word	count
people	15630
coronavirus	8417
death	7859
new	7248
trump	7169
one	6012
case	5955
thing	5903
home	5514
look	5062
like	5036
state	4973
health	4878
say	4831
today	4605
need	4578
together	4338
get	4219
time	4188
bad	4102

Top 20 Words



Word Relationship Values

- Assign similarity value:
 - Medication to hydroxychloroquine - 0.41
 - Pandemic to COVID - 0.15
- Most similar to:
 - China - CCP, Communist, threatens, Beijing, Chinese
 - Patient - hospital, hydroxychloroquine, treating, randomized
- Doesn't belong:
 - Pandemic, health, medication → pandemic
 - People, coronavirus, death → coronavirus

A large, horizontal, pink brushstroke with a rough, textured edge, centered on a white background. The stroke is wider on the left and tapers slightly towards the right.

Thank You!

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Additional Explorations

- ADDITIONAL WORD EMBEDDINGS TECHNIQUES
- PHRASE ANALYSIS WITH GENSIM
- RUN ANALYSIS WITH LESS CLEANED DATA
- RUN ANALYSIS WITH CLEANER DATA
- TRY OTHER MODELS