

NLP: SENTIMENT- ANALYSIS

ANALYSIS OF TWEETS ABOUT APPLE AND GOOGLE

JAMAAL SMITH

FLATIRON SCHOOL

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EXECUTIVE SUMMARY

- Sentiment analysis, especially via Twitter data, can provide an organization with useful insights into how their organization is being perceived by the public in real-time.
- For this analysis, over 9000 tweets containing sentiments toward Apple and Google will be examined and classification models will be constructed to predict how a person feels about either company based on their tweets.
- Through this analysis, we should be able to learn whether these tweets were collected over a period of time or at a single data point such as a product launch or conference. If on a rolling-basis, this analysis will highlight long-held feelings that the public has about either company. If at a single point in time, these tweets will signify how the public is responding to a company action.

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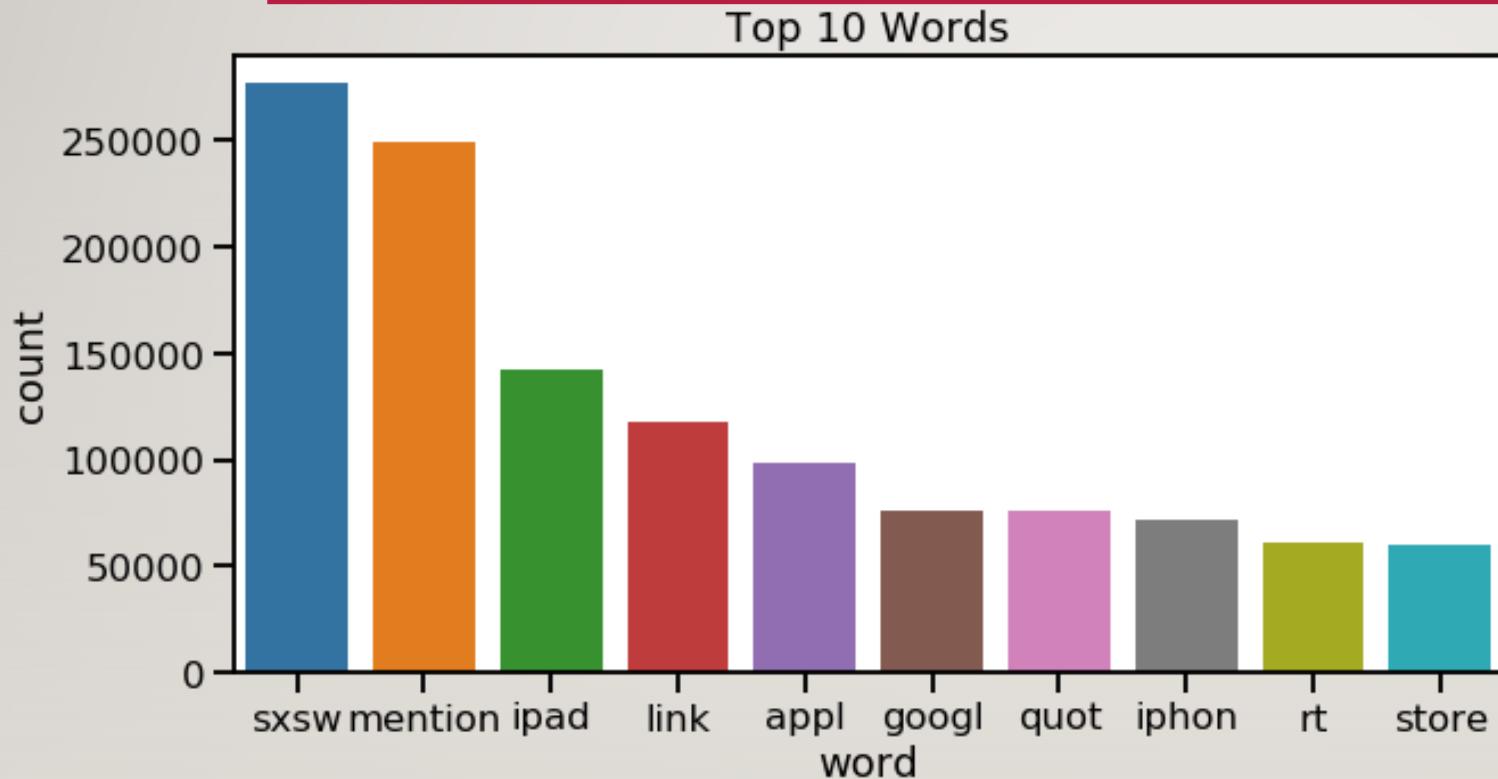
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WHEN WERE THESE TWEETS COLLECTED?



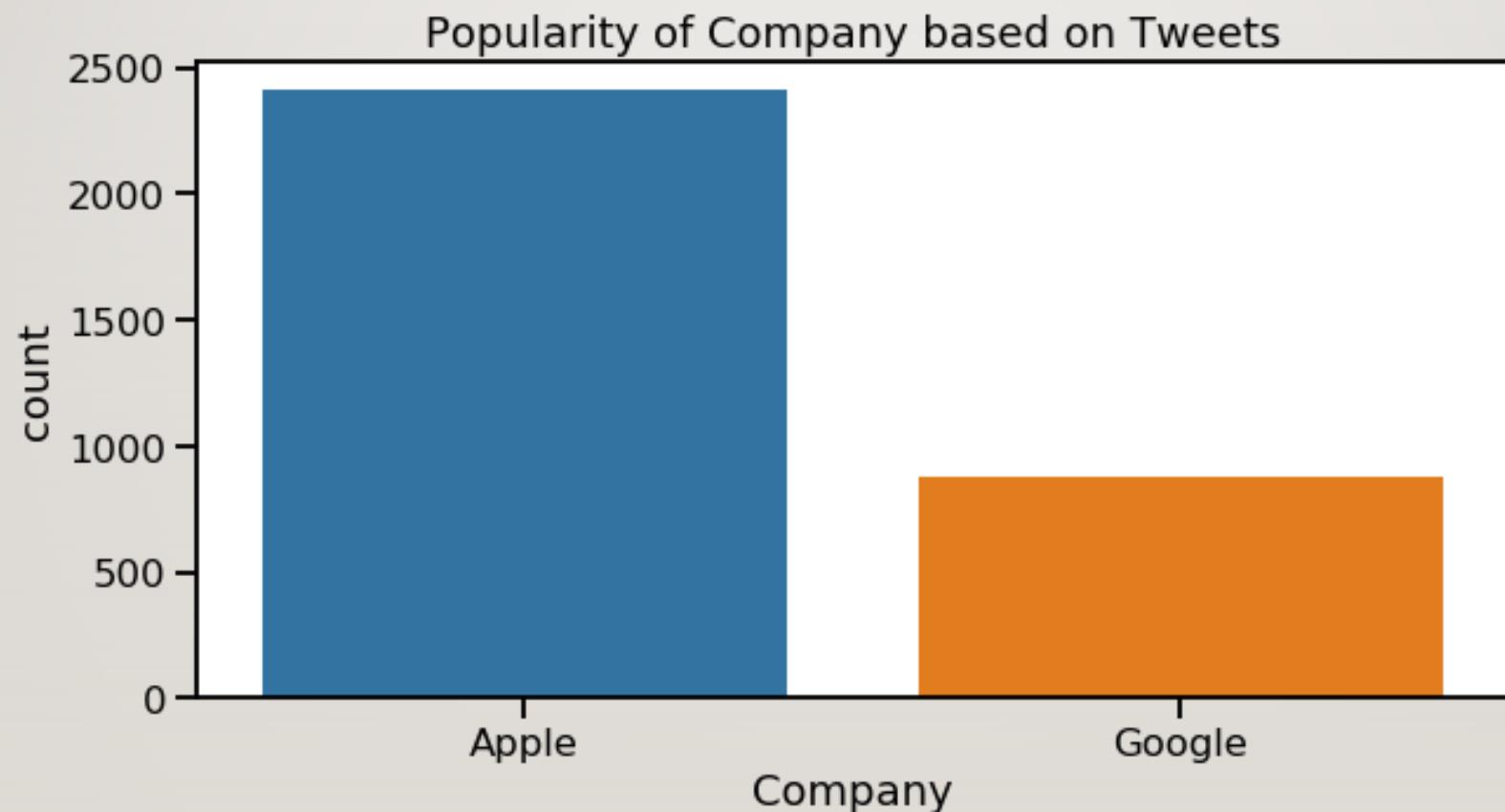
- Tweets were collected at a SXSW festival. A google of SXSW and iPad revealed that Apple launched iPad2 in 2011 at SXSW.
 - This is also confirmed by one of the most popular tweets being in relation to Google's Marissa Mayer who also presented about Google's advancements in location-based services.

COMMON WORDS DURING 2011 SXSW

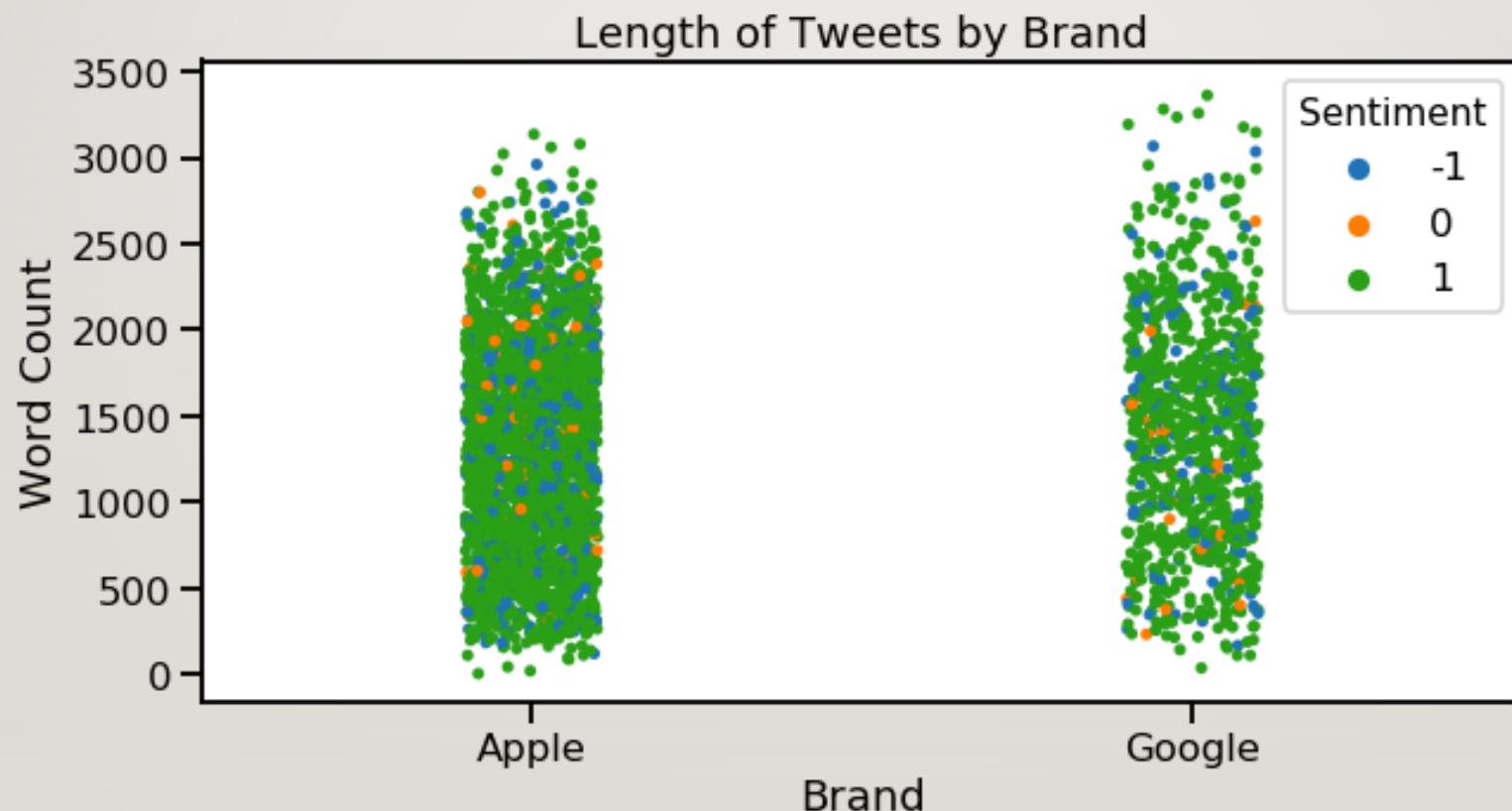


- Again, the presence of ipad, appl, and iphone amongst the top 10 words highlights how popular this launch was in 2011.
- The presence of store could suggest that events for the launch could have been at store venues
- Google's presence in this list also suggests that the company had its followers in attendance for its events.

APPLE'S TWITTER PRESENCE WAS NOTABLE DURING THE 2011 SXSW FESTIVAL



RELATIONSHIP BETWEEN TOP 4 FEATURE VARIABLES AND ACCOUNT LENGTH/CHURN



PREDICTING SENTIMENT & BRAND WITH NAÏVE BAYES CLASSIFICATION MODEL

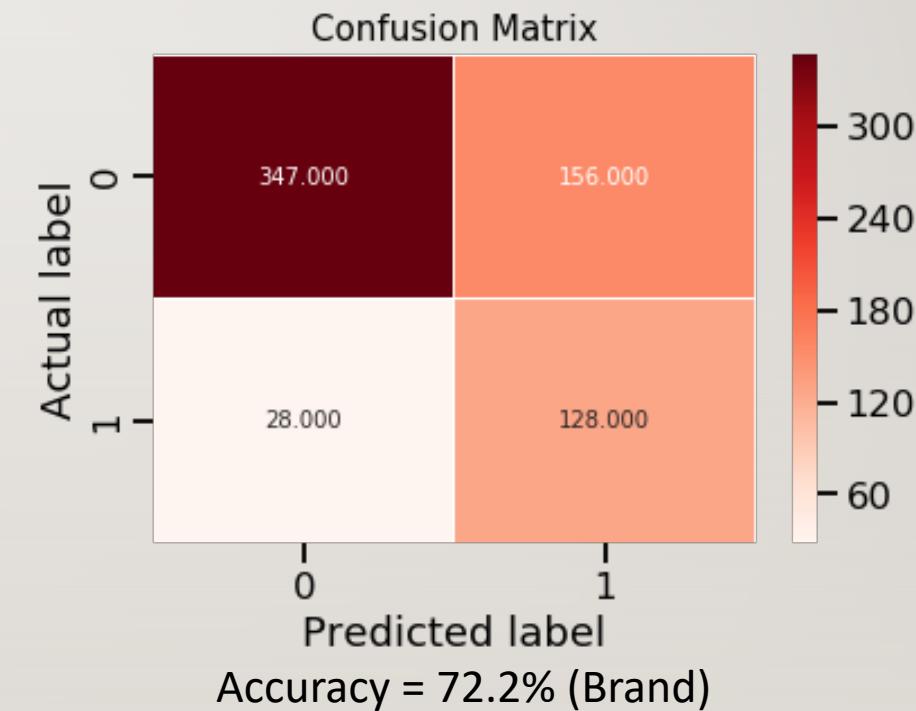
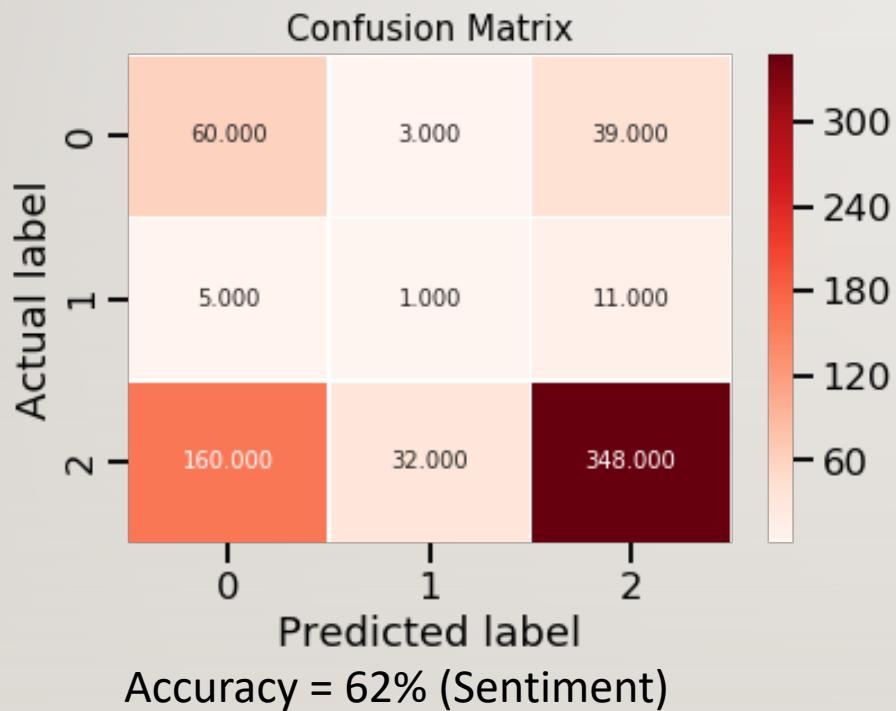


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- Our machine learning model was able to produce an accuracy rate at predicting a tweet's of only 62%. Utilizing a Recurrent Neural Network model allowed us to predict a tweet's sentiment with an accuracy of 80%
 - We can collect data from similar events so that we can build out our data set and provide more training data for the neural network. While sentiment was the primary focus of the neural network, we can also build a neural network that can classify the company/brand name.
- Further analysis can be done to provide a detailed accounting of the commonly associated words with each company/brand. For companies, that seek customer engagement like Apple's, understanding how Apple fans view their products can assist them with positioning themselves in their space.
- Further analysis can be done to understand the amount of mentions and retweets that can be attributed to each company. While Apple had more twitter frequency, if Google fans retweet and mention Google related materials, this can also help improve the data set.

INSIGHTS FROM TWEET ANALYSIS

- The popularity of the iPad2 launch at SXSW definitely contributed to more tweets during this period related to Apple. Despite not having the same type of product launch, events held by Google and presentations by individuals such as Marissa Mayer helped Google remain relevant.
- Individuals that tweeted about Google had lengthier tweets than their Apple counterparts. This is especially for tweets with negative sentiments related to Google. On the flip side, when individuals wrote lengthy tweets related to Apple, they were most likely to share a positive sentiment.
- While the iPad2 launch was the big mover for Apple, Google also garnered traction with what appears to be an app that has something to do with location-based services. This information can be gleaned from the word map. The word map also can inform us that lots of tweets were commenting on events in Downtown Austin, making mention of pop-up and other forms of temporary shops. As far as sentiments, the word maps that tweeters often used when discussing affinity to items were: cool, great, update, and major. With this in mind, these were probably what Apple strove to create in the public during its public build-up of the iPad2 launch.
- Ultimately the success each company achieved at the 2011 SXSW festival can only be determined when one knows what their marketing goal was. For Apple, if their goal was to create buzz and positive initial reviews for the iPad2, it appears that they accomplished this goal. For Google, if they wanted to impress avid tech goers with their latest developments with apps and other research, they may have also been successful based on the wordcloud.

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THANK YOU

- Thank you for your time today and for allowing me to assist your organization with it's market research needs.
- At this moment, I would also like to thank my colleagues who assisted me along the way with completing this analysis.
- I look forward to following up with further analysis as discussed on the previous slide and any other areas that you would like additional color on moving forward.