

NLP: SENTIMENT- ANALYSIS

ANALYSIS OF TWEETS ABOUT APPLE AND GOOGLE

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**Executive
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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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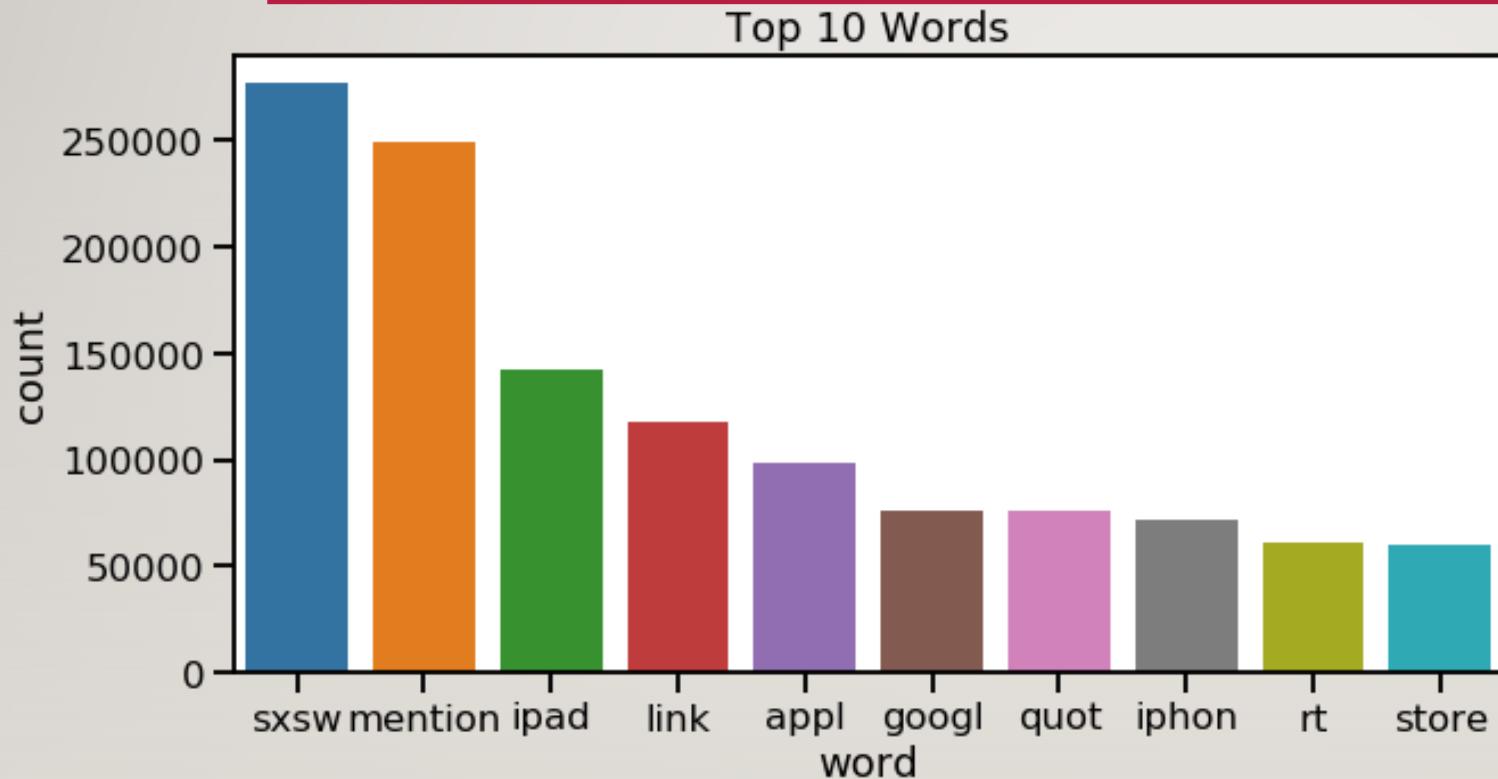
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WHEN WERE THESE TWEETS COLLECTED?



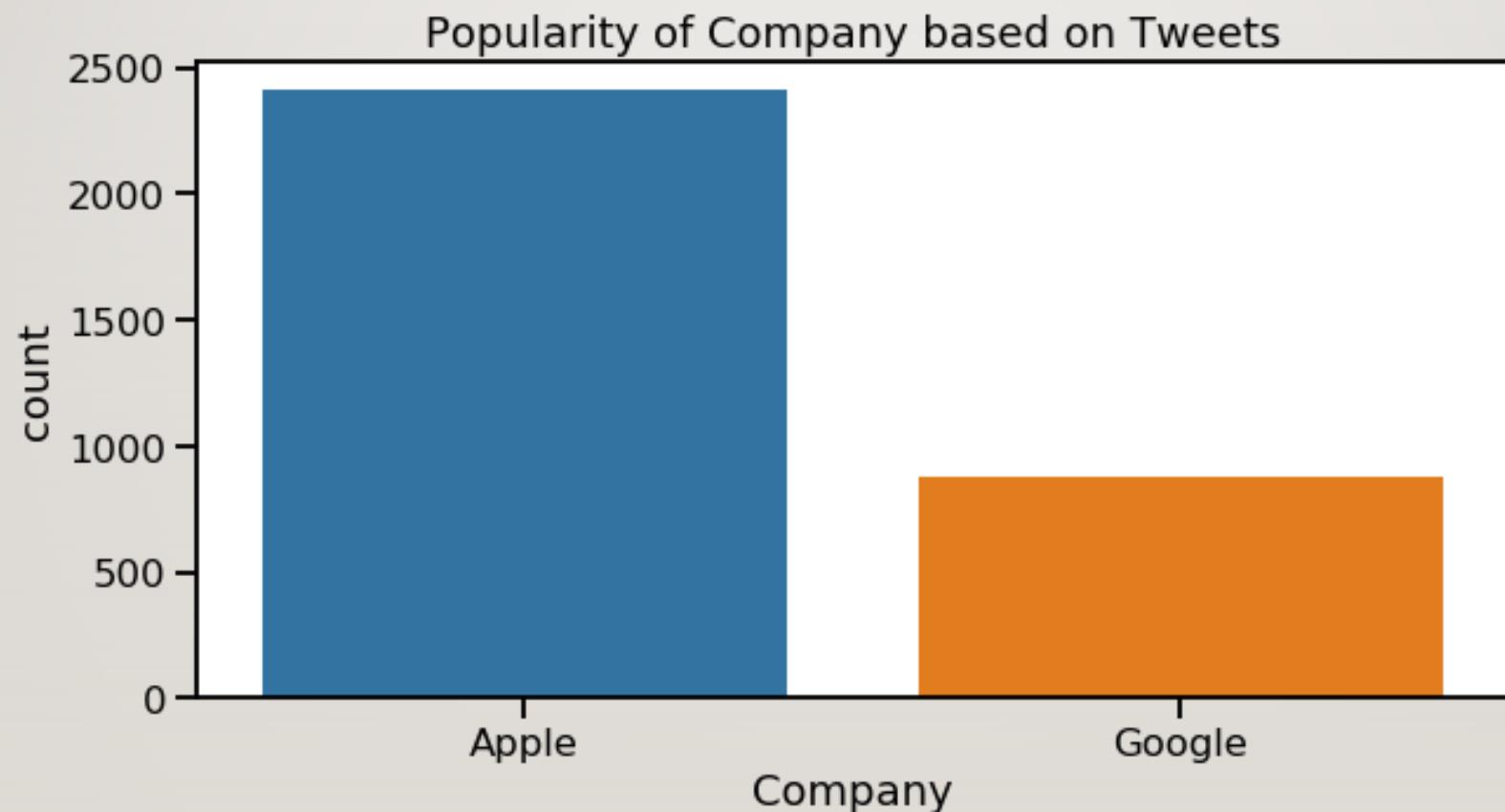
- Tweets were collected at a SXSW festival. A google of SXSW and iPad revealed that Apple launched iPad2 in 2011 at SXSW.
 - This is also confirmed by one of the most popular tweets being in relation to Google's Marissa Mayer who also presented about Google's advancements in location-based services.

COMMON WORDS DURING 2011 SXSW

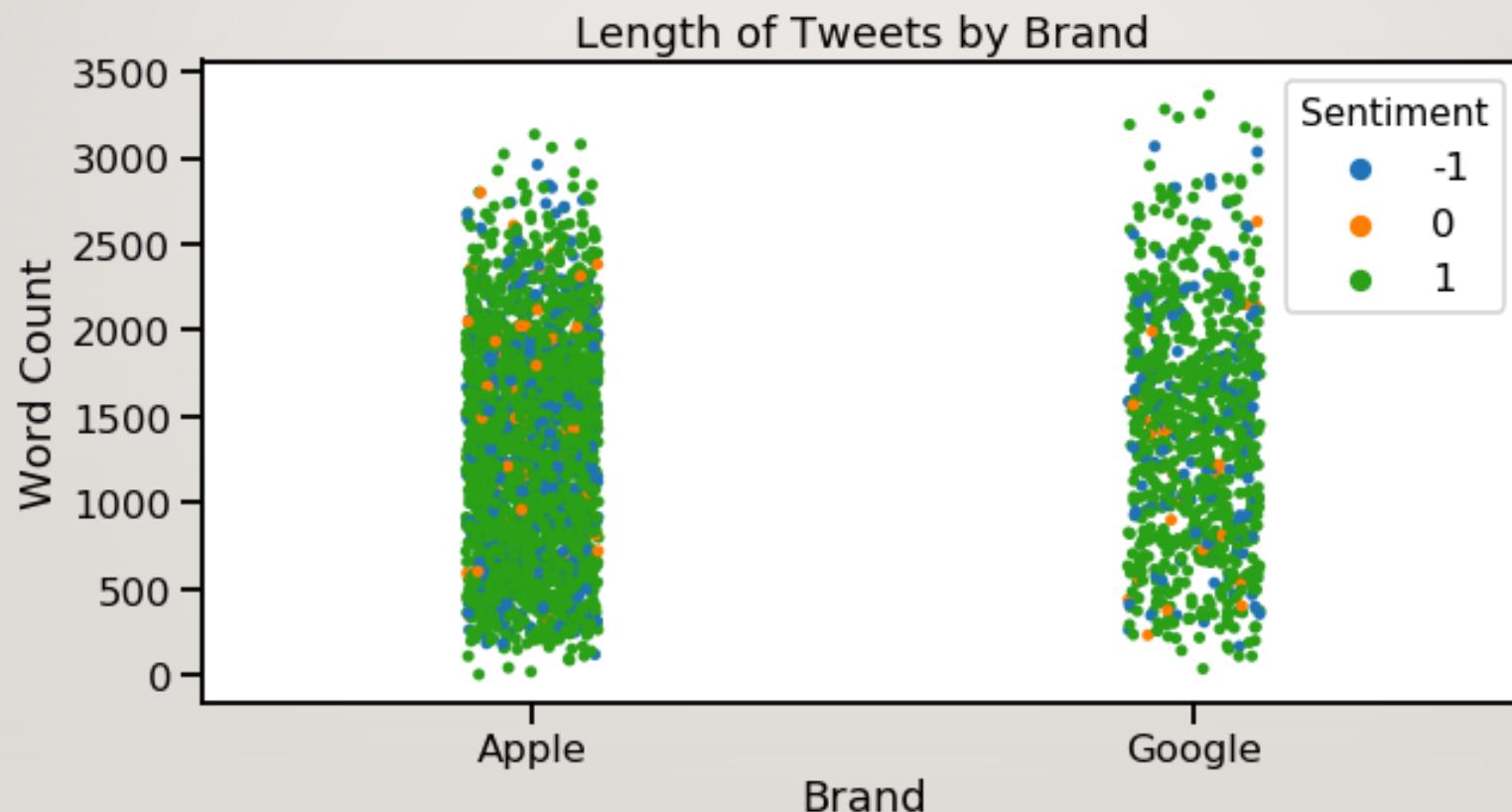


- Again, the presence of ipad, appl, and iphone amongst the top 10 words highlights how popular this launch was in 2011.
- The presence of store could suggest that events for the launch could have been at store venues
- Google's presence in this list also suggests that the company had its followers in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

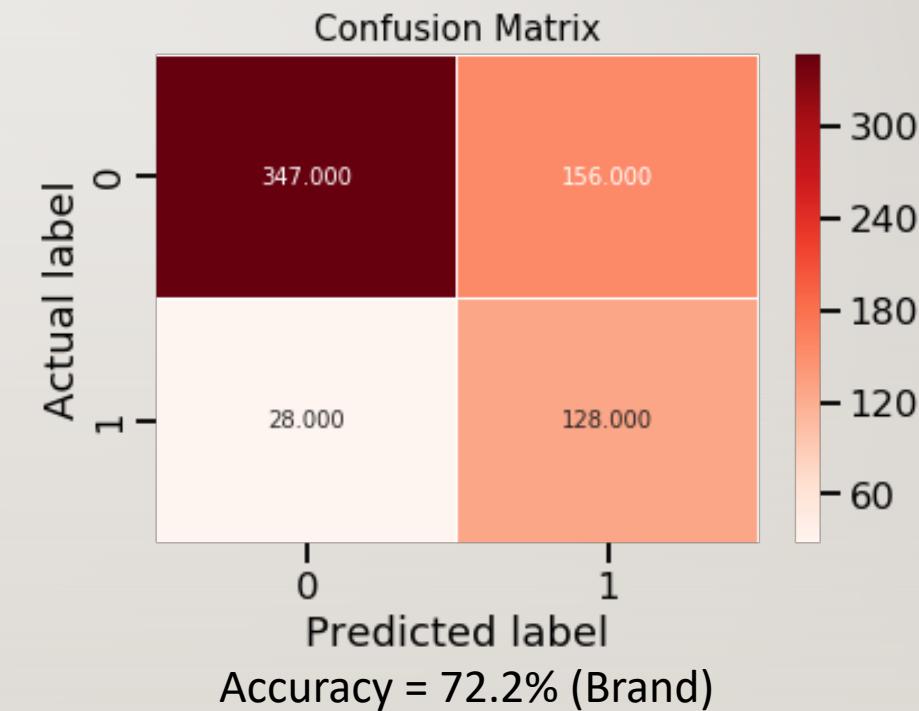
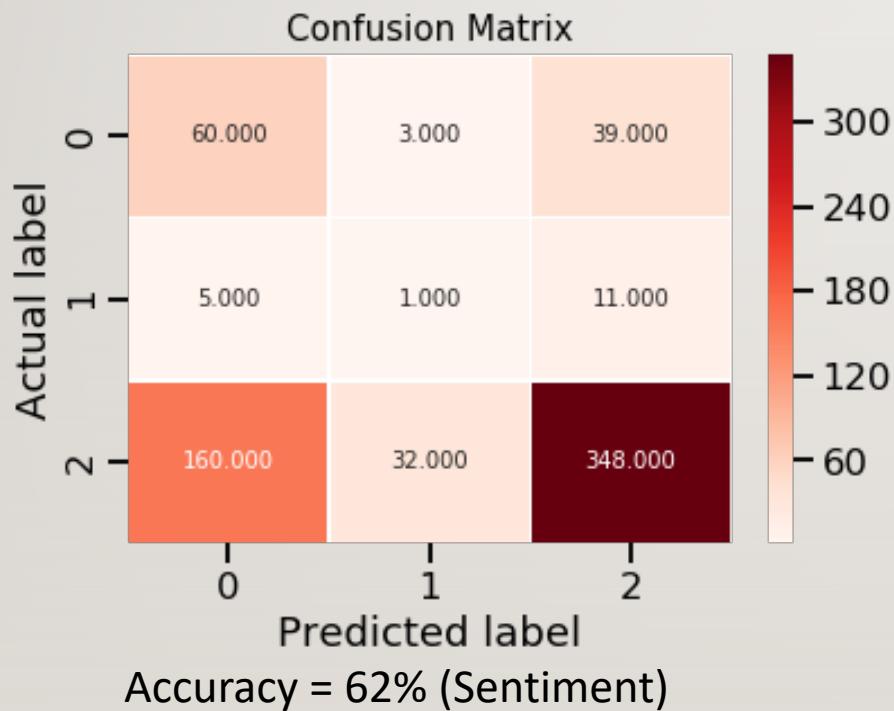


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NEXT STEPS

- 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.

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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.