Predicting Restaurant Review Sentiment from Yelp Reviews

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Rating Yelp Reviews

-Leaving a review on Yelp is the most common way to rate a restaurant.

-A review consists of a text review as well as a star rating in the range of (1-5).

-Sentiment prediction can add to or replace star rating.

Why is it important to predict review sentiment?

-Sentiment prediction on a text review adds clarity of meaning.

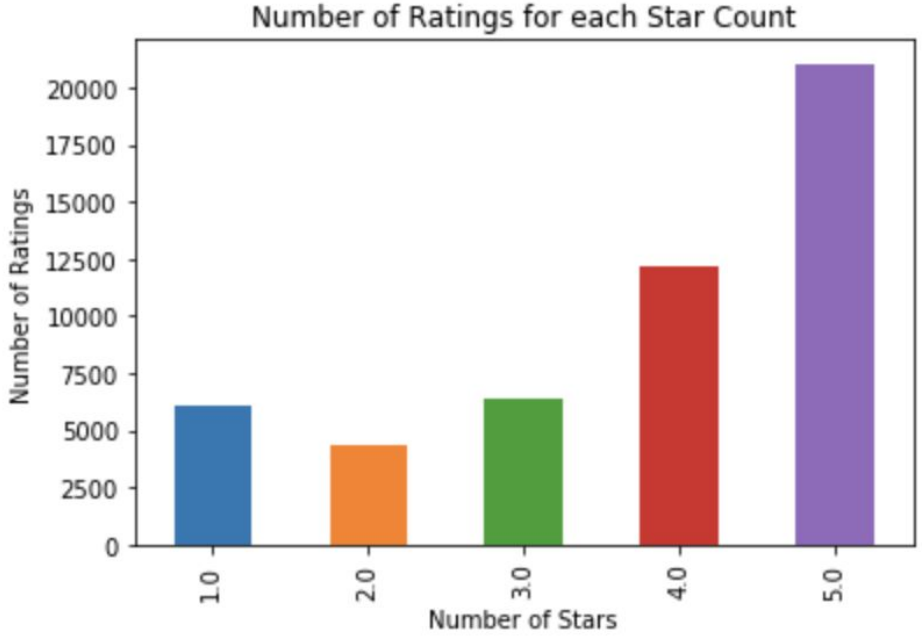
-Another metric can be added to the review.

-More conversational style of reviews with sentiment analysis.

Background on Data Set

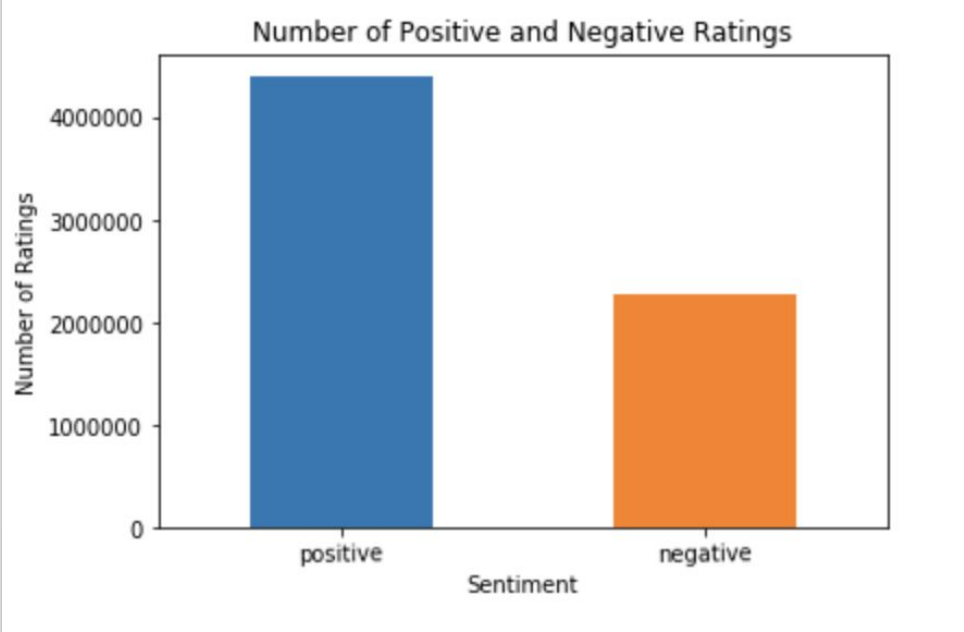
-Contains 5.2 million reviews from 174,000 businesses in 11 metropolitan areas.

-Subsetted to a random sample of 50k reviews of restaurants in Las Vegas.



Data Wrangling

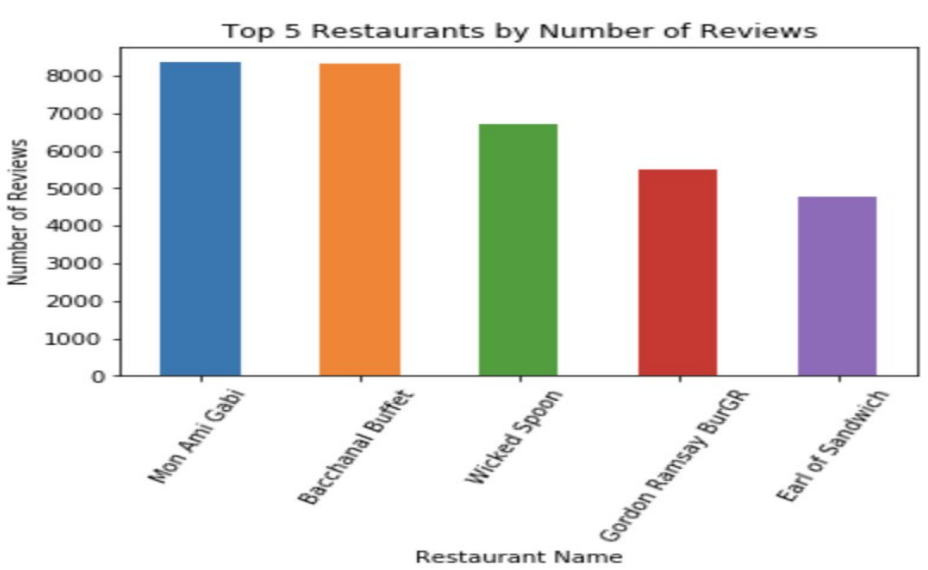
-Imbalanced data
-Imbalance reduced with relabeling
-Missing values accounted for
-Outliers explored

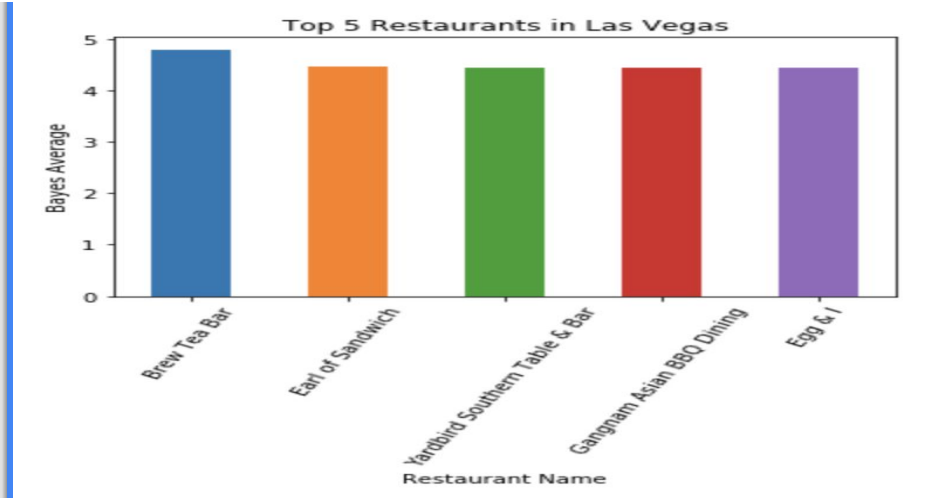


Ranking Restaurants

-Number of Reviews

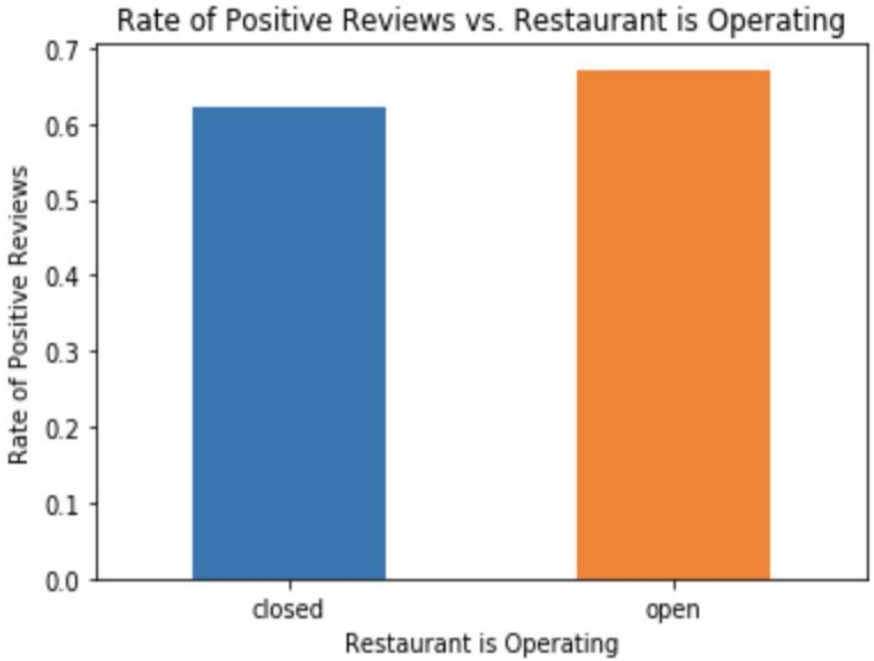
-Bayesian Average





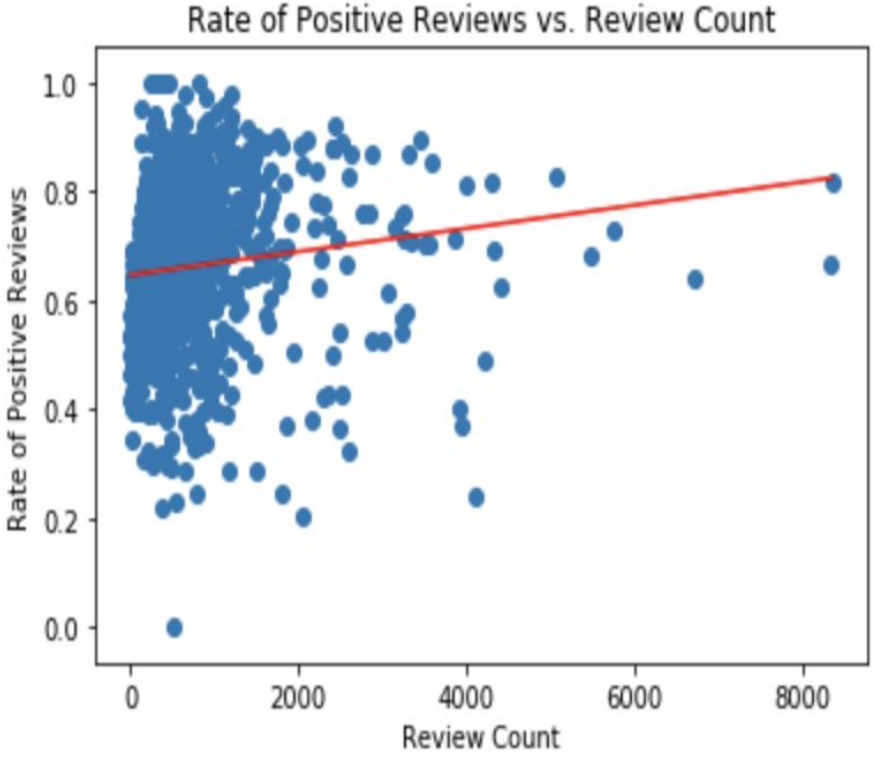
Restaurant Operation

-Open vs Closed
-Negative Reviews affect closure
-Might be a useful predictor



Restaurant Review Count

-Review count is a measure of popularity
-Weak correlation to rate of positive sentiment



Price Range

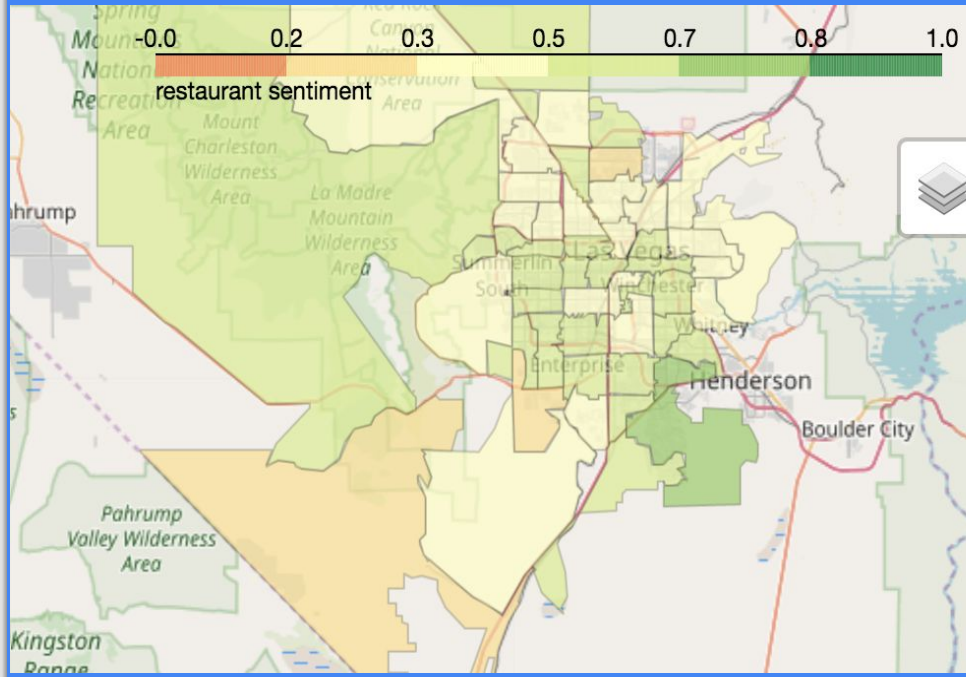
-Price Range has four options: (1-4).

-Highest rate of positive reviews is in price range (4).

Geographic Representation

-Heat map of positive review rate by zip code in Las Vegas

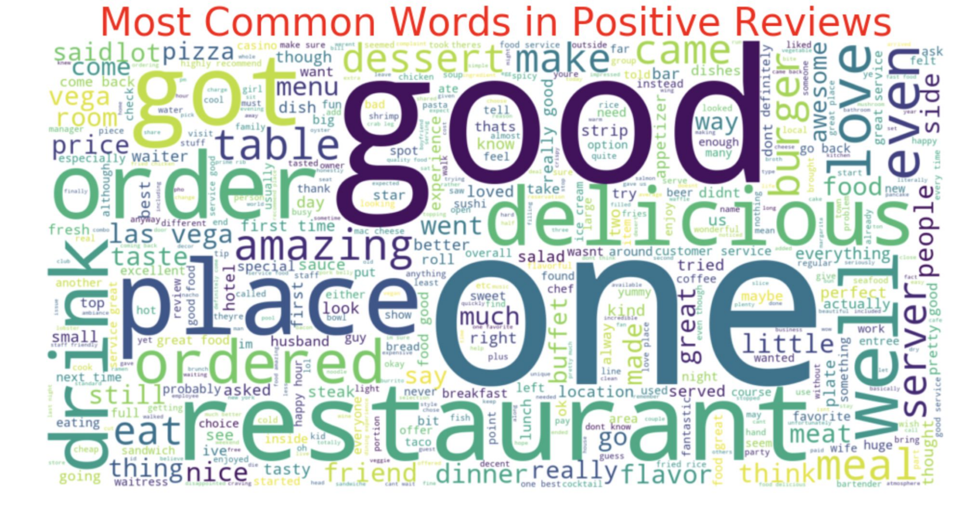
--Too many zip codes to hot one encode



TextBlob

-Finds sentiment polarity for each review

--Wordcloud visualizes most common words in positive reviews



Word2Vec

-Neural network that trains with the words in the data set to create vector representations of each word

-Size 300 was used for word vectors and stop words were not removed

Great:

```
[('fantastic', 0.8009390234947205),
 ('wonderful', 0.773438036441803),
 ('fabulous', 0.7601549625396729),
 ('terrific', 0.7351025342941284),
 ('excellent', 0.7282377481460571),
 ('awesome', 0.7204433679580688),
 ('phenomenal', 0.6875117421150208),
 ('amazing', 0.6724933385848999),
 ('exceptional', 0.6698110103607178),
 ('outstanding', 0.6648397445678711)]
```

Awful:

```
[('terrible', 0.8226549625396729),
 ('horrible', 0.8048520684242249),
 ('alright', 0.7285017371177673),
 ('disgusting', 0.7106912136077881),
 ('subpar', 0.7092010974884033),
 ('sucked', 0.6660960912704468),
 ('gross', 0.6531112790107727),
 ('lousy', 0.6510778665542603),
 ('stellar', 0.646142303943634),
 ('lacking', 0.6347830295562744)]
```