Sentiment Analysis on Airbnb Reviews

Team 12: Nikita Agrawal, Rajani Goudar, Urvi Midha, Christine Olds, Prathyusha Pateel, Raniya Syeda

Problem

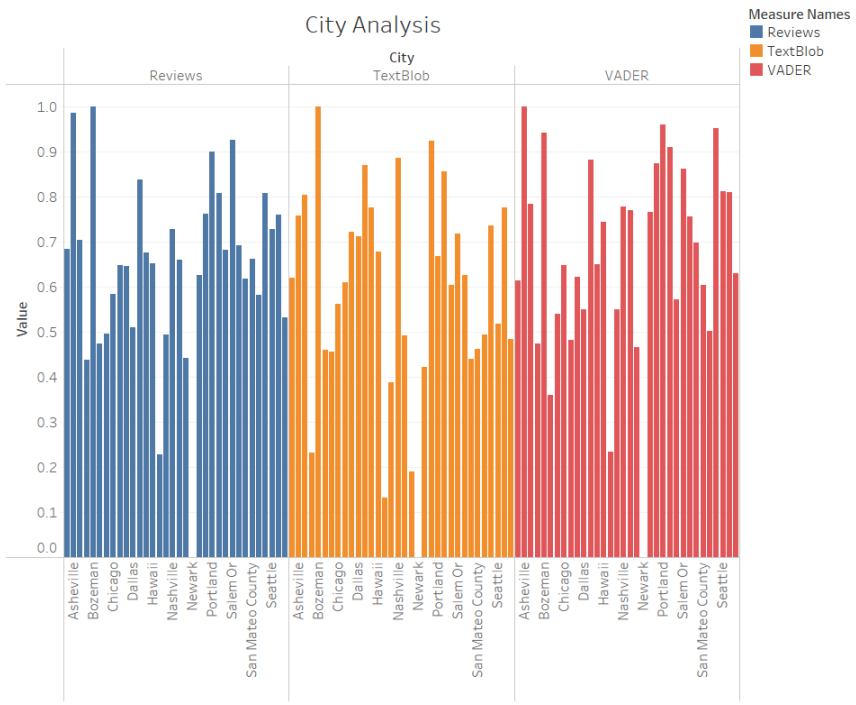
Vacationers searching for a place to stay are limited to a star-based review or reading through dozens, sometimes, hundreds of reviews.

Importance

Sentiment analysis scores allow a quick and user-friendly way to gather the overall sentiment of reviewers to ensure the safety and comfort of vacationers and their families.

Data

Data is scraped from “Inside Airbnb: Get the Data” using a Python script run on Google Colaboratory. The data includes reviews from over 200,000 listings in 34 cities across 20 states in the United States.



Sentiment Score Calculation

We utilized two sentiment analysis algorithms, VADER and TextBlob, to analyze reviews for each AirBnb listing. The algorithm assigned a score to each review, within the range [-1 to 1] where values representing a negative sentiment are negative and positive sentiment are positive. The scores were then averaged for each listing, calculating an overall sentiment score.

Experiments

As illustrated in the bar graph labeled “City Analysis”, VADER and TextBlob produced a similar distribution of sentiment analysis scores. The blue lines represent the average of star-based ratings left by reviewers for each city. The yellow lines are the average of the TextBlob analysis, and the red lines are the average of the VADER analysis.

We observed that VADER tended to assign more extreme scores, while TextBlob scored more conservatively around 0.

Statement	Sentiment	TextBlob Score	VADER Score
“I had a pleasant stay.”	Positive	0.3633	0.9399
“Reservation canceled. This is an automated response.”	Neutral	0	0
“Worst Airbnb we have set foot in.”	Negative	-0.1299	-0.9198

Results

The resulting interactive dashboard presents the user with a multitude of options to personalize their Airbnb search. Listings are displayed as dots assigned a color by the -1 [Red] to 1 [Green] color spectrum based on the sentiment score. The user has the option to filter the algorithm, sentiment score, state, and city to further personalize the search. We also experimented with a wordcloud output on a mouseover to show commonly used words in positive and negative comments.