Food Trucks: Location, Location, Location

Introduction

With the rise of food trucks, owners / chefs must do their research to determine the best location for operating their food truck. Some experts venture to say location is even more important than the menu. An advantage of the food truck is the ability to rove; however, understanding the food truck scene in New Orleans will be important to determining which neighborhood is the best location to attract eager customers.

Food trucks have come a long way since the first covered wagon was parked in front of a local newspaper office in Providence, RI in 1972 (Engber, 2014). Although food trucks have been around well before the 21st century, the food truck phenomenon didn't start until 2008 in LA (Restaurant Engine, n.d.). The rise of the food truck can be attributed to social media to help build fan base as well the economic downturn and recession in 2008.

Food truck nation continues to thrive in part as a result of a society in search of instant gratification and time constraints. Food trucks offer diverse food and offer people opportunity to try new food. New markets are presenting themselves at rapid rates. No longer are food trucks only found at fairs and outside downtown offices, you can find them outside airports, schools, markets and even special events such as weddings, birthday parties and public gatherings.

The size of the food truck industry was expected to be approximately $985M in 2019 (Saxe, 2018). The food truck industry has a lower level of investment required compared to a brick-and-mortar restaurant, which can make this a more affordable business opportunity. Immigrants, women, and LGBTQ entrepreneurs account for a surprising number of truck and cart owners. Mobile food businesses also provide an opportunity for people to fulfill their side hustles or who want something other than a 9 to 5 job, since they can be packed up at the end of the day. This means that the food truck industry appeals to a wide audience but understanding where to locate the truck will be helpful to their profitability. The purpose of the analysis was to determine which neighborhood would be a top candidate to place a food truck.

Methodology

Data included a list of neighborhoods in New Orleans along with their geographical coordinates (https://en.wikipedia.org/wiki/Neighborhoods_in_New_Orleans, 2019). Location data were explored using FourSquare API. These data include venue types within a 1000m radius of the neighborhoods. The number of venues for each venue category was analyzed to determine the average number of venues per neighborhood. Example features that can be extracted from the data include 'Venue', 'Venue Latitude', 'Venue Longitude', and 'Venue Category'. To address the current business problem, we are particularly interested in the venues categorized as Food Trucks.

Using Jupyter Notebooks, the following wikipedia page was scraped using BeautifulSoup to obtain the neighborhood, latitude and longitude in the Latitude and Longitude of Neighborhoods table: https://en.wikipedia.org/wiki/Neighborhoods_in_New_Orleans. The data were transferred into a pandas data frame like the one shown in Table 1.

	Neighborhood	Longitude	Latitude
0	U.S. NAVAL BASE	-90.026093	29.946085
1	ALGIERS POINT	-90.051606	29.952462
2	WHITNEY	-90.042357	29.947200
3	AUDUBON	-90.121450	29.932994
4	OLD AURORA	-90.000000	29.924440

Table 1. Pandas Data Frame

The dataset was explored for missing data and returned no missing data. A map of New Orleans was generated and explored using the folium library package, showing the location of the 72 neighborhoods. The number of venues returned by Foursquare API was limited to 100 within a 1,000m radius. For each of the venues, the category was added to the data frame.

The number of venues per neighborhood was explored as were the venue categories across the neighborhoods. One-hot encoding was used to assign a 0/1 to indicate the presence or absence of each venue category for each neighborhood. The rows are grouped by neighborhood to obtain the mean frequency of occurrences for each category.

An unsupervised learning method, K-Means clustering, was used to assign each data point to one of the K groups based on the similarity of the features. For this analysis, the primary feature of focus was frequency of occurrence of food trucks.

<div align="center">Results</div>

A K-Means cluster analysis was run to group neighborhood in New Orleans, LA based on their similarity of frequency of food trucks. The analysis with varying values of K, where the final model selected was K = 5. Based on the frequency of occurrence for food truck, cluster 2 and 4 have a small food truck presence whereas cluster 3 and 1 have a larger frequency. Cluster 0 does not have a food truck presence. See Figure 1.
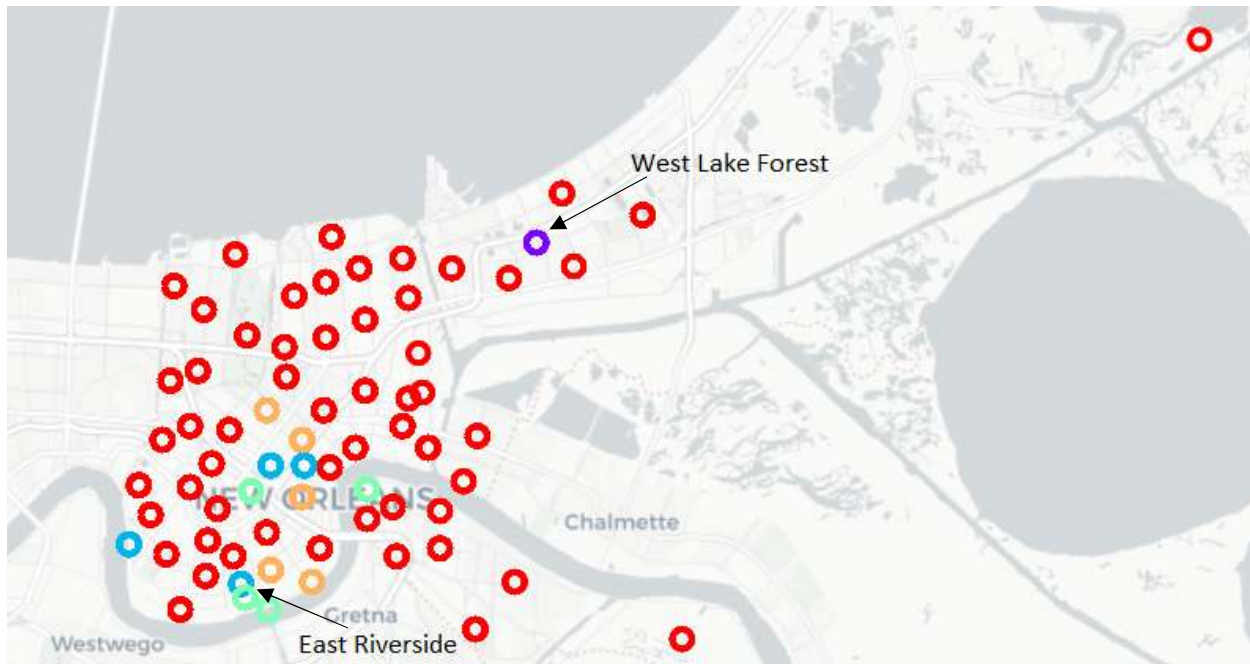
Figure 1. Classification of Neighborhoods by Frequency of Food Trucks in New Orleans, LA.

Legend:

🟥	Cluster 0
🟪	Cluster 1
🟦	Cluster 2
🟩	Cluster 3
🟧	Cluster 5

West Lake Forest had the highest occurrence of food trucks at 7% followed by East Riverside at 4%. One of the more well-known neighborhoods in New Orleans such as The French Quarter and City Park, did not have a food truck presence.

Conclusion

Based on the analysis, I would recommend East Riverside as a good location to park a food truck. It has a small presence of other food trucks, which indicates that food truck enthusiasts may frequent this neighborhood. However, it may be important to bring a new flavor to the neighborhood. Further research of each of the clusters is warranted to understand competing venues, demographics, safety of neighborhoods, and other factors that contribute to the success of a food truck business.

A review of crime statistics showed that many of the neighborhoods identified as safe neighborhoods such as Lakeshore-Lake Vista, Lakewood, Lakeview, Audubon, and Black Pearl did not have a food truck presence whereas West Lake Forest, a neighborhood identified as having high crime rate, had the highest presence of food trucks (SmarterTravel!, 2020).

As a frequent traveler to New Orleans, I have never purchased food from a food truck or recall noticing food trucks. However, after reviewing the results, I am not surprised, given I spend most of my time in the neighborhoods without a food truck presence.

<div align="center">References</div>

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