

# **Clustering Neighborhood in Kansas City, Missouri**

# Problem

- Identify the best neighborhoods in Kansas City to open a new restaurant serving American Cuisine.
- Those intending to open a new restaurant in Kansas City would be interested in this, as well as those living in the chosen neighborhoods.
- We will use data about how responsive the city is to 311 calls, as well as how much crime is in each neighborhood to determine which neighborhoods are most desirable.

# Data Acquisition

- Data was acquired from KC Open Data and Foursquare data
- I used 311 call center data, police crime report data, and nearby venue data to build my data set for comparing neighborhoods.

# Data Cleaning

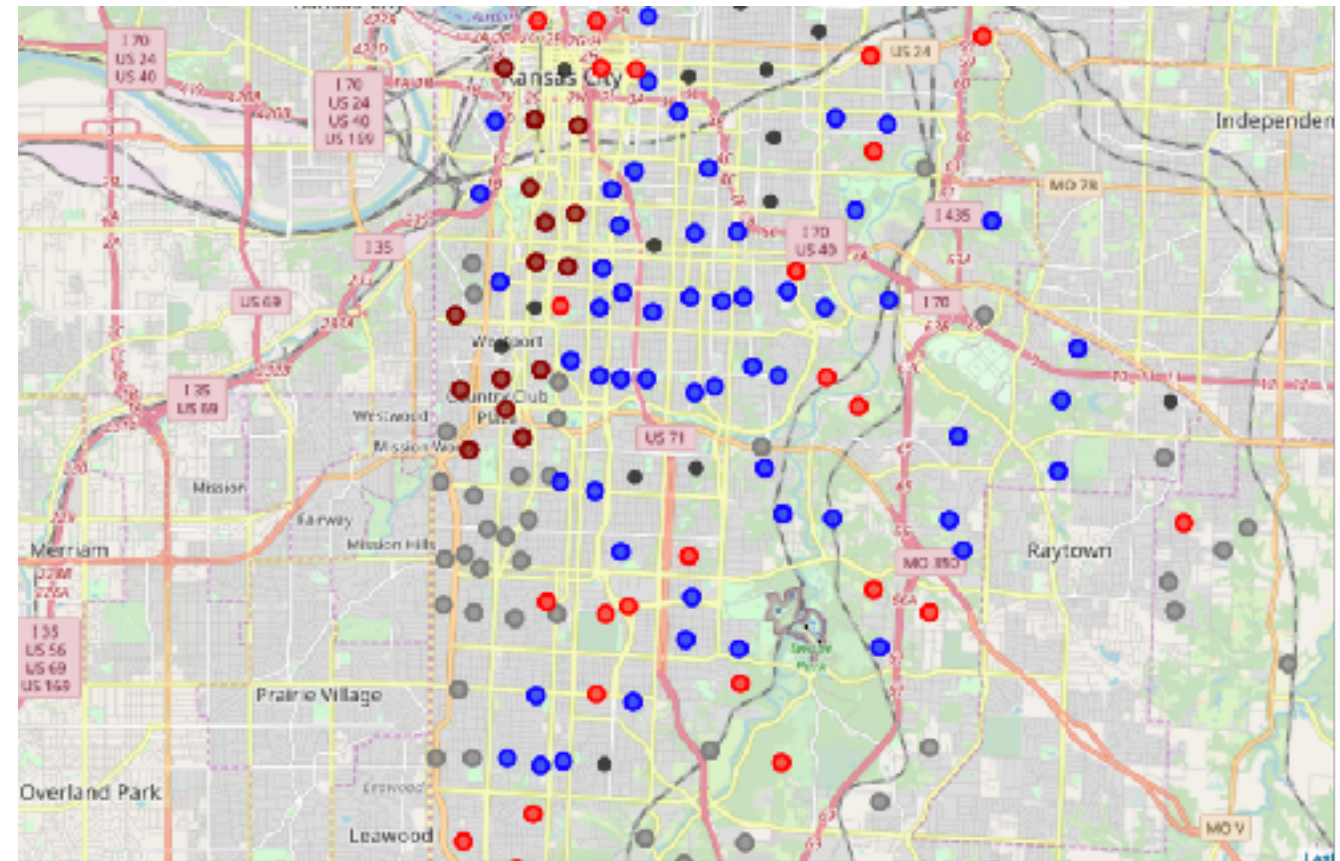
- The call center data was 1.3 million rows of calls. We only selected calls from 2018 which narrowed the data by quite a bit.
- Each call had a neighborhood specified so we grouped the calls by neighborhood and counted the total number and the number closed on time in each neighborhood.
- The police data had a latitude and longitude for each data point, but we had to write code to find which neighborhood each crime was reported in. After this we grouped by neighborhood and selected a few crimes against persons, and property crimes to consider.

# Methodology

- I used two different machine learning algorithms to cluster the neighborhoods
- First, I used k-means determining that 5 was the optimal number of clusters for that algorithm
- Secondly, I used agglomerative clustering.

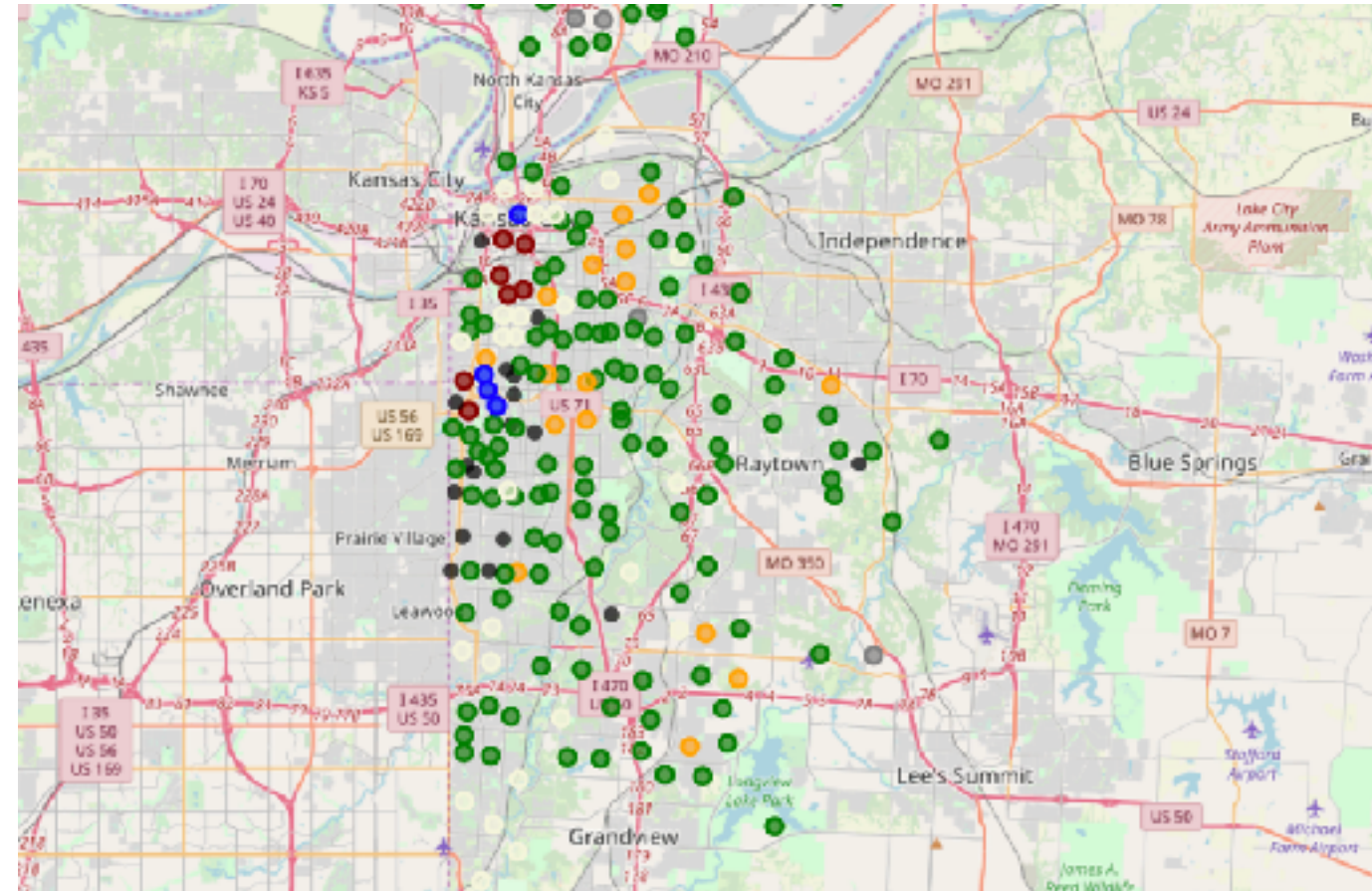
# K-Means Clustering

- The neighborhoods in grey were the most ideal for opening a new American restaurant according to the features studied using the k-means algorithm.



# Agglomerative Clustering

- The neighborhoods in green had the most desirable features according to the agglomerative clustering algorithm.



# Results and Discussion

- According to our results, those neighborhoods near the downtown and Country Club Plaza areas were most ideal for opening a restaurant.
- However, these areas are mainly residential areas



# Conclusion

- This model may have value to those attempting to open a new restaurant in Kansas City, and should be considering in addition to other relevant knowledge about the city when making a decision.