Distribution solution for milk delivery to Restaurants/Cafes in Scarborough, Toronto

Capstone Project - Battle of the neighborhoods

Problem Statement

There is a milk contractor that wants to start distributing milk in all neighbourhoods of Scarborough, Toronto. This contractor wants timely delivery of milk to all major clusters of restaurants, cafes, bakeries and breakfast places every morning.

The contractor wants to build an efficient network of delivery with maximum 10 delivery trucks and yet cover all areas within time. The contractor wants to segment every probable customer (restaurant/cafe/bakery/breakfast place) into a group and operate each group as a separate entity for better and efficient customer service.

Python packages and Dependencies:

Pandas   -   Library for Data Analysis
NumPy   –   Library to handle data in a vectorized manner
 JSON   –   Library to handle JSON files
Geopy   –   To retrieve Location Data
Requests   –   Library to handle http requests
Matplotlib   –   Python Plotting Module
Sklearn   –   Python machine learning Library
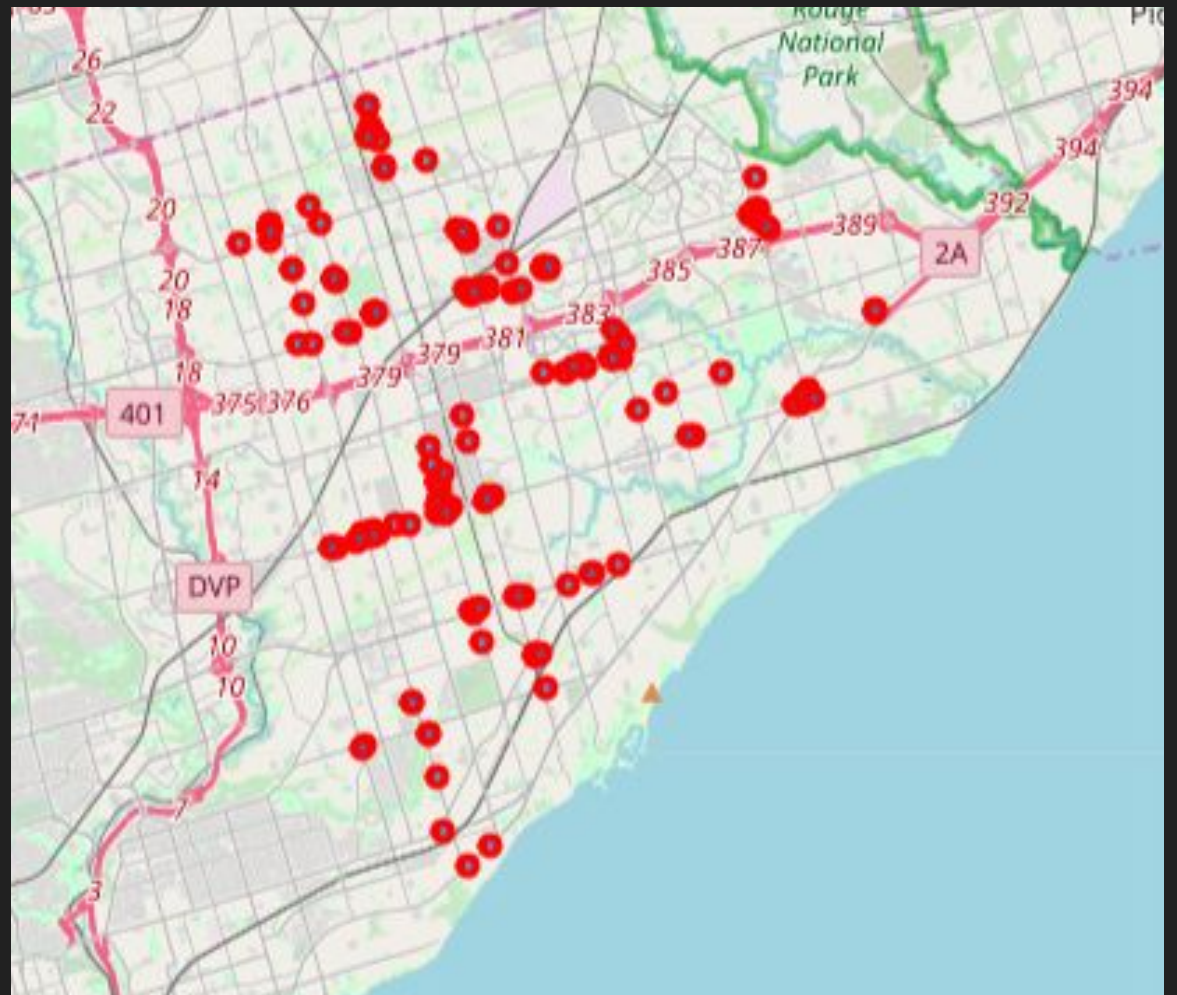Folium   –   Map rendering Library

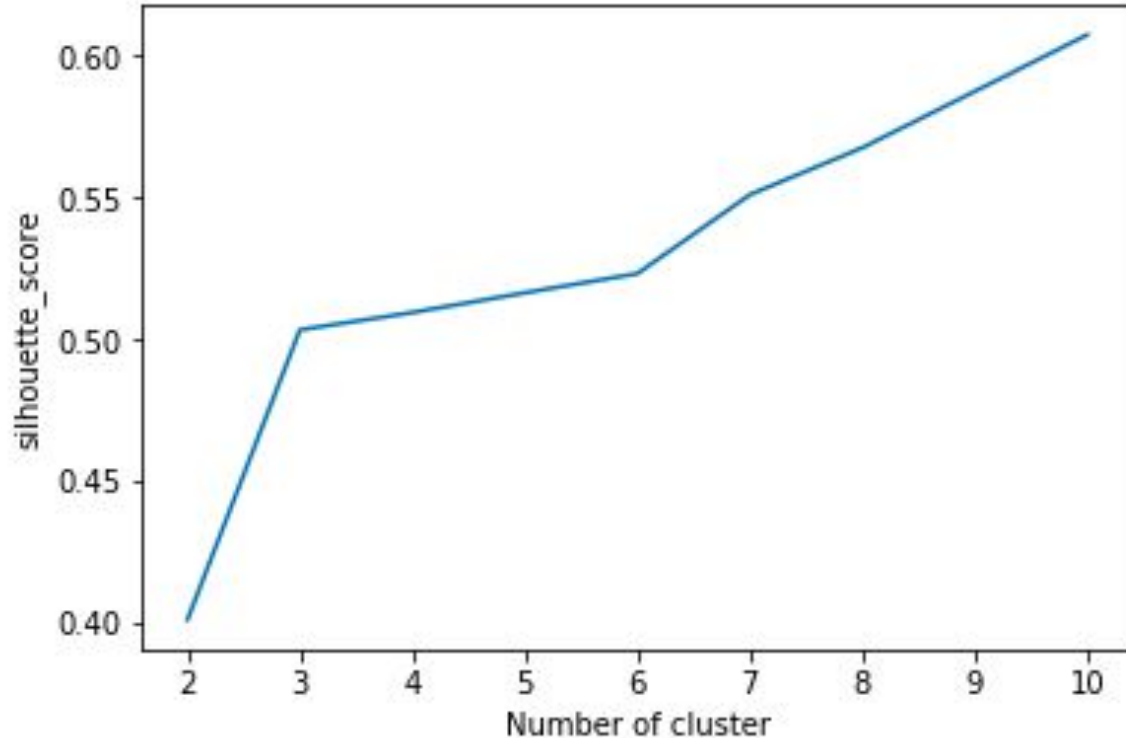Neighborhood Distribution :

Scarborough, Toronto
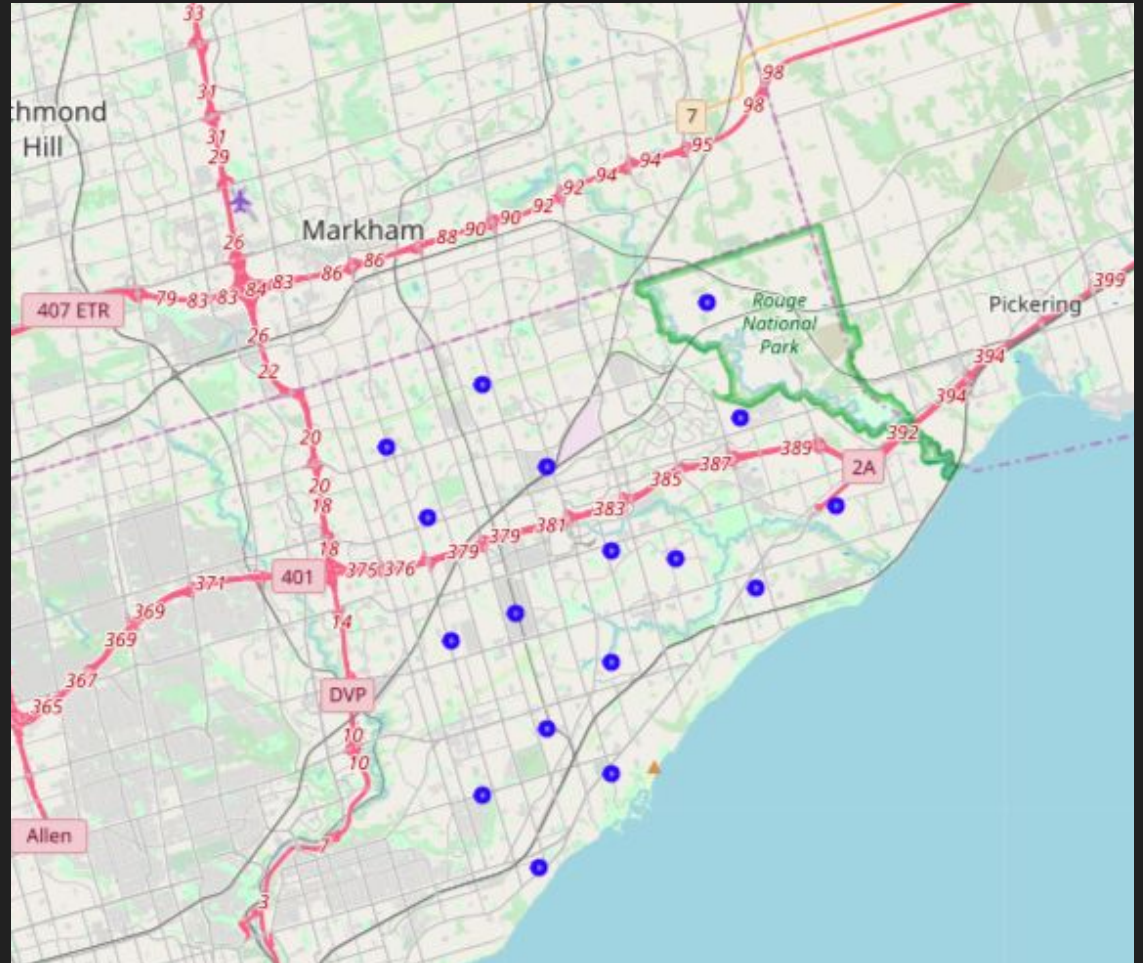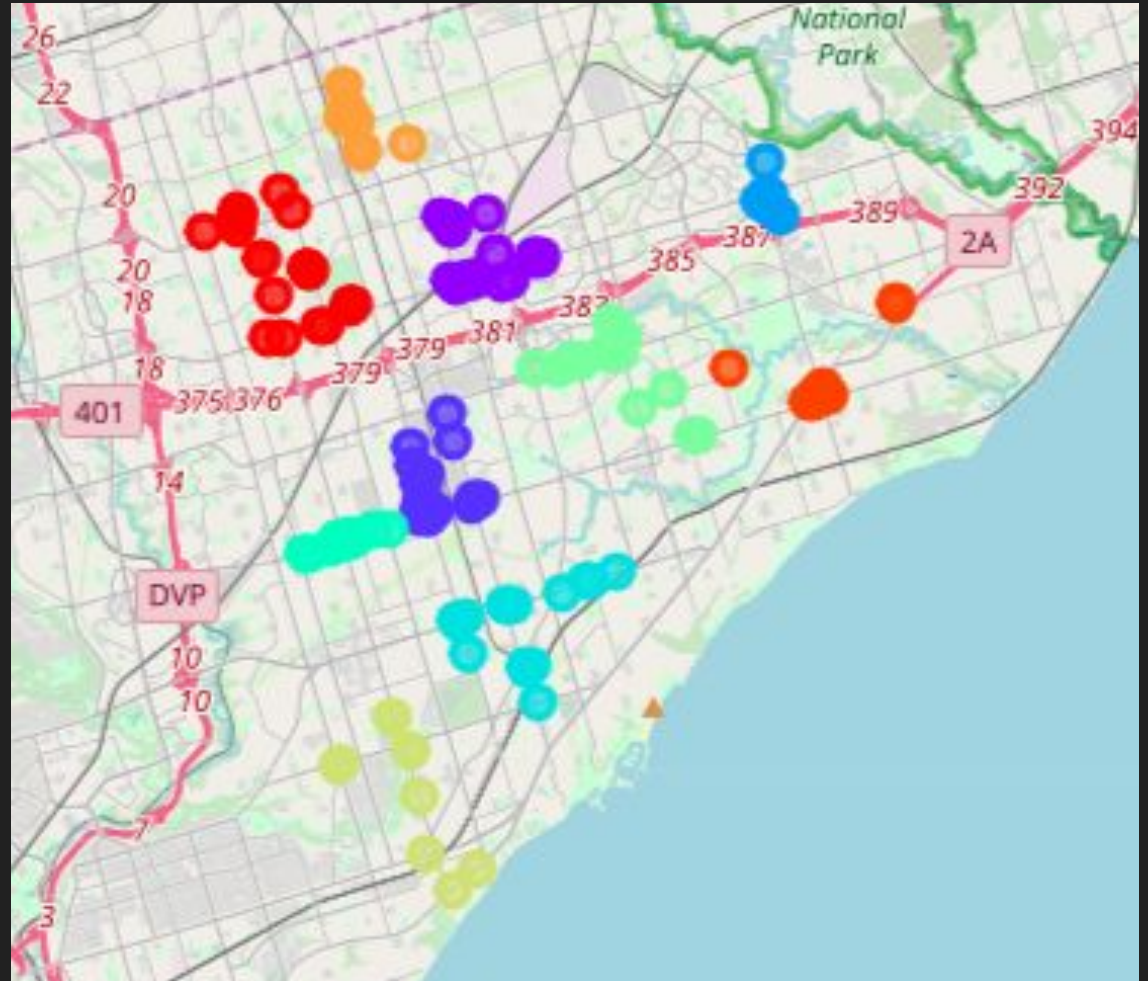
Venue Distribution :

Scarborough,
Toronto

Silhouette Coefficient scores

Scatter plot with number of clusters on the x axis

Venue Clusters :

K-Means Clustering

(with k = 10)

Conclusion

This Analysis concludes that the efficient number of clusters lie between 8-10.

The suggested no of clusters i.e. the number of delivery trucks is 10.

Each venue is assigned to one cluster and the deliveries can be sorted based on each cluster.