

The battle of Neighborhoods

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April 25, 2020

3rd party delivery services.

The third-party delivery industry has been growing exponentially in recent years due to technology adoption. Nowadays, this service industry is based on mobile apps in which a client orders a product from the business listed and a delivery man picks up the items from a store and transports it to the client's address while receiving part of the fee charged for the service.

3rd party delivery men.

Orders are mostly accepted by the delivery man closest to the business selected by the client, because this means he has to invest the least amount of resources to get to the item, hence, he keeps a bigger profit from the fee. In order to have a substantial income from this activity, the delivery man has to carefully select the area in which he should be located to accept more orders without having to spend too many resources to get to the selected items.

Project objective:

**This project will propose
standby spots for venues in
Manhattan, New York.**

Data

Merging data from https://cocl.us/new_york_dataset and Foursquare we obtained the following dataframe which includes the neighborhoods and venues from Manhattan, New York.

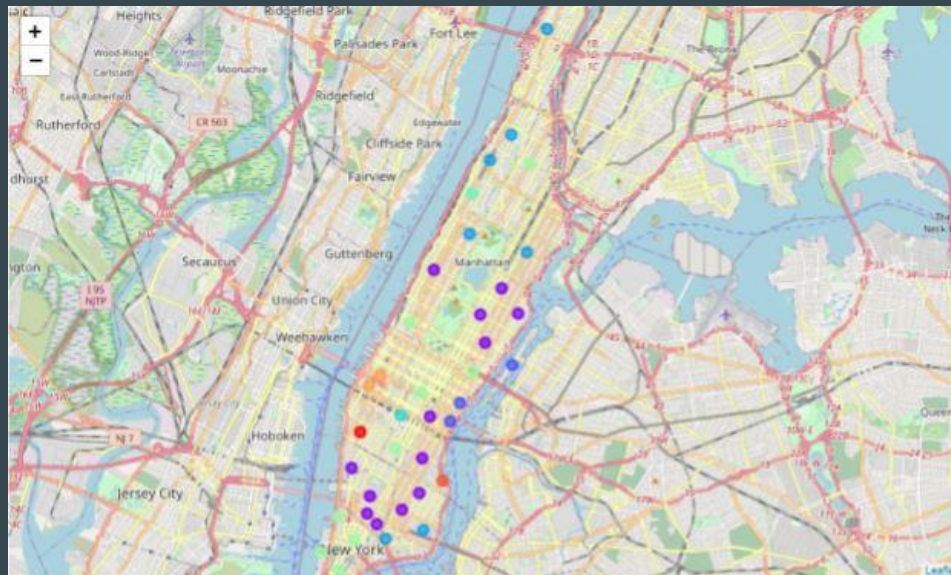
	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Marble Hill	40.876551	-73.91066	Arturo's	40.874412	-73.910271	Pizza Place
1	Marble Hill	40.876551	-73.91066	Bikram Yoga	40.876844	-73.906204	Yoga Studio
2	Marble Hill	40.876551	-73.91066	Tibbett Diner	40.880404	-73.908937	Diner
3	Marble Hill	40.876551	-73.91066	Starbucks	40.877531	-73.905582	Coffee Shop
4	Marble Hill	40.876551	-73.91066	Dunkin'	40.877136	-73.906666	Donut Shop

Neighborhood and venues dataframe head.

Methodology

The dataframe was used to create clusters based on the venues frequency. We chose the cluster with those neighborhoods that showed more restaurant density.

The map shows the different clusters generated for this analysis.

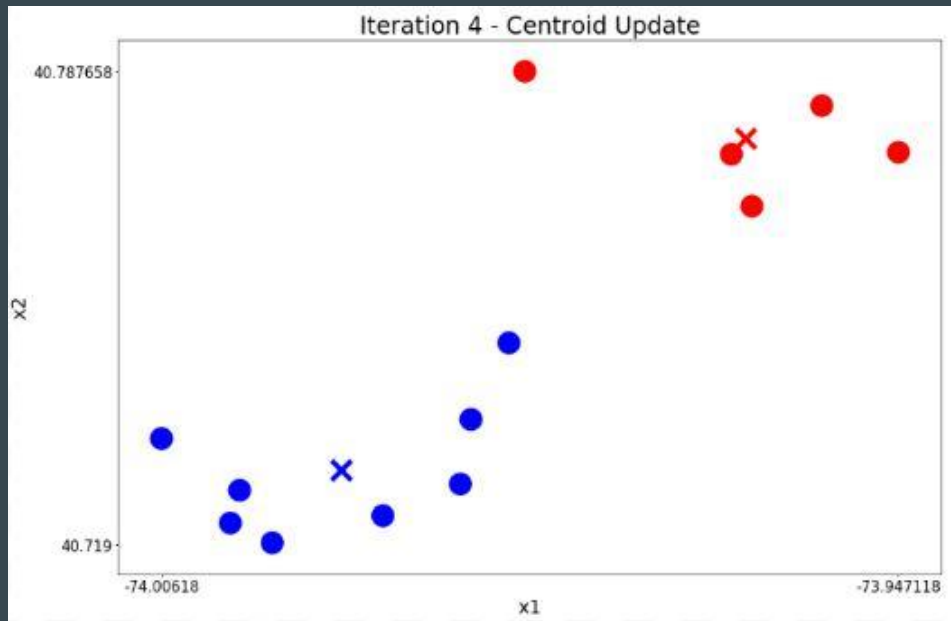


Map of neighborhood clusters based on venue frequency similarity.

Methodology

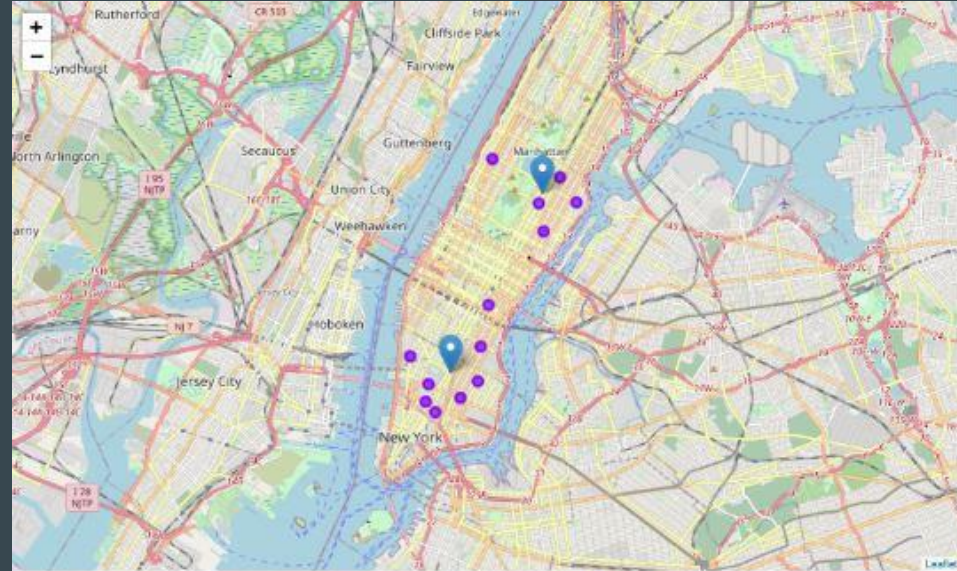
Standby spots are a result of creating centers for the neighborhoods selected in the cluster with highest restaurant density.

4 iterations for k-means were enough to determine the centers to 2 proposed clusters that were clearly defined from the previous map.



Results

The proposed standby spots can be visualized in this map. The delivery man would be in the spot with the closest distance to the venues in the area. This would allow him to accept more orders while spending the less resources to arrive to the venues selected by the clients.



Map with proposed standby spots for our delivery man.

Conclusion

Based on data extracted from New York area, focused on Manhattan, we determined a cluster of neighborhoods with the most restaurants density according to Foursquare API, standby spots were determined by K-means iterations of the selected cluster's venues. The result is 2 Standby spots that represent the perfect center of 2 restaurant clusters.
