



Coursera Capstone Project

Date: July 2021



Introduction/Business Problem

- In the Yonkers city of New York, there is a lack of data as to which region populates the most restaurants.
- This can hurt food enthusiasts who want to settle there as well as those who prefer eating a diverse meal at restaurants, since they have no way of knowing the optimal place to settle for the most restaurants if they wish to be able to access the most amount of restaurants near their region.

Data

- The data would contain the restaurants located in Yonkers including the names and latitudes and longitude location of each restaurant.
- The data would be extracted using Foursquare API, and it would be used to solve the problem by having it modified and clustered to locate which region is optimal for having the most restaurants.

Data example:

id	name	categories	referralid	hasPerk	location.address	location.lat	location.lng	location.labeledLatLngs	location.distance	...	location.state	location.country	location.formattedAddress	delivery.id
0	56d1b284b5d241a2cb590df	Margarita's Restaurant Lounge	[[{"id": "4bf58dd8d48988d1c1941735", "name": "M..."}]]	v-	332 South Broadway	40.922106	-73.895851	[[{"label": "display", "lat": 40.9221058, "lng": ...}]]	1392	...	NY	United States	[332 South Broadway, Yonkers, NY 10705]	NaN
1	4beaeb7ca9900f475a1f11740	Kam Fung Restaurant Chinese Food Take Out	[[{"id": "4bf58dd8d48988d145941735", "name": "C..."}]]	v-	112 Elm St	40.933846	-73.891800	[[{"label": "display", "lat": 40.93384552001953, "lng": ...}]]	1801	...	NY	United States	[112 Elm St, Yonkers, NY 10701]	NaN
2	4e4defc6b41b70bef959ea5	Silvio's Italian Restaurant	[[{"id": "4bf58dd8d48988d110941735", "name": "I..."}]]	v-	351 S Broadway	40.921458	-73.896273	[[{"label": "display", "lat": 40.921458, "lng": ...}]]	1421	...	NY	United States	[351 S Broadway, Yonkers, NY 10705]	2510749 https://www.se
3	52228e4211d2eb3cc5e70ad	Al Viah Restaurant	[[{"id": "4bf58dd8d48988d119941735", "name": "H..."}]]	v-	NaN	40.923159	-73.859466	[[{"label": "display", "lat": 40.92315901953162, "lng": ...}]]	1700	...	NY	United States	[Yonkers, NY]	NaN
4	4e2f6f04d16ae5d00231eac	Sal's	[[{"id": "4bf58dd8d48988d1c1941735", "name": "S..."}]]	v-	209 Nepperhan	40.914675	-73.882758	[[{"label": "display", "lat": ...}]]	1899	...	NY	United States	[209 Nepperhan Ave, Yonkers, NY 10705]	NaN

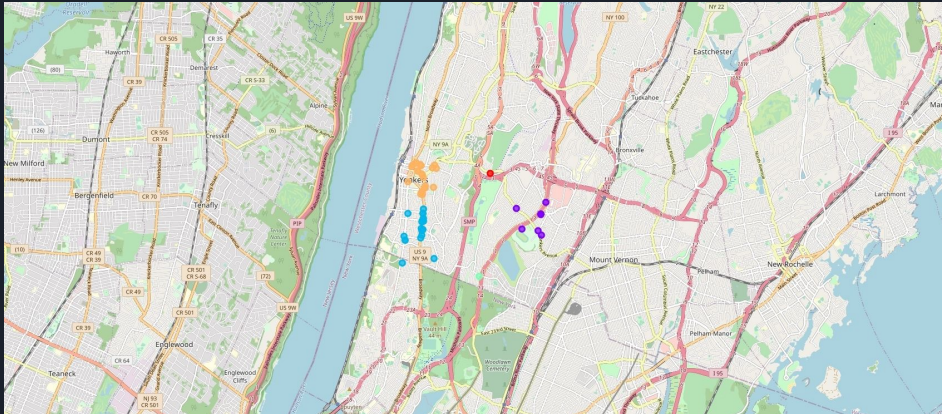


Methodology

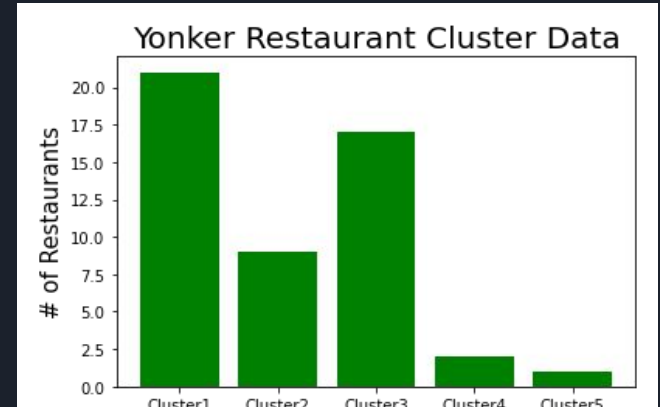
- The data of the restaurants in Yonkers was collected through by using Foursquare API
- The data was modified and cleaned to fit the following processes
- The machine learning algorithm uses was K Means clustering in order to group the data to locate each cluster in the area
- The optimal area, or area with the highest amount of restaurants, was determined and located
- The data was plotted with matplotlib to visualize the data
- The data was mapped using folium to visualize the data

Results

- Cluster 1 had the restaurants
- Cluster 1 had 21 restaurants
- The locations of cluster 1 were from (40.927764963320655, -73.90048221372605) to (40.9351692199707, -73.89179992675781)



The map visualizing the restaurant locations throughout Yonker



This is a map visualizing the data for each cluster



Discussion

- Cluster 1 is the most optimal place of residence for food enthusiasts and the like
- Cluster 1 is between (40.927764963320655, -73.90048221372605) to (40.9351692199707, -73.89179992675781).
- This area has 21 restaurants.



Conclusion

- The answer to which area should be the most optimal place of residence for food enthusiasts is from (40.927764963320655, -73.90048221372605) to (40.9351692199707, -73.89179992675781).
- The findings of this project may be used to better the lives of those who wish to reside in this area who are also interested in restaurants.
- It can also be used to better understand the advantages and disadvantages of living in different areas within this region.