

PEER-GRADED ASSIGNMENT: CAPSTONE PROJECT - THE BATTLE OF NEIGHBORHOODS

GREEK RESTAURANT IN NEW YORK CITY
BY
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INTRODUCTION / BUSINESS PROBLEM

In the project we presented a guide on how to choose the best location in New York City to open a Greek Restaurant.

The choice took into account the number of Greek restaurants (positive indicator) and the number of general type restaurants (negative indicator) in each New York City neighborhood.

For example if there exists a neighborhood where one out of ten restaurants are Greek then people in this area seem to be very interested in Greek food and may be a good place to open a business.

This presentation contains very useful information and accurate results .

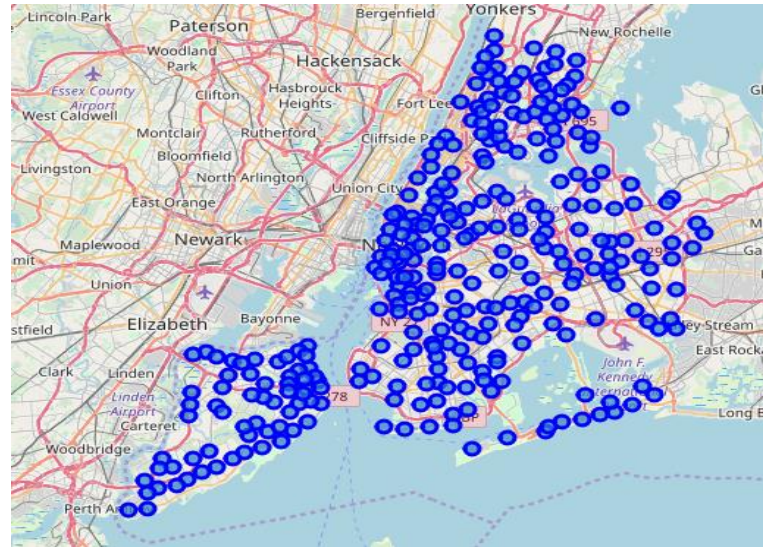


DATA

The data used for this project was New York neighborhoods data and FourSquare data. After downloading, importing and wrangling and visualizing the data we present its final form.

Neighborhoods data sample:

	Borough	Neighborhood	Latitude	Longitude
0	Bronx	Wakefield	40.894705	-73.847201
1	Bronx	Co-op City	40.874294	-73.829939
2	Bronx	Eastchester	40.887556	-73.827806
3	Bronx	Fieldston	40.895437	-73.905643
4	Bronx	Riverdale	40.890834	-73.912585



DATA

FourSquare data sample:

	Borough	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Bronx	Wakefield	40.894705	-73.847201	Cooler Runnings Jamaican Restaurant Inc	40.898283	-73.850478	Caribbean Restaurant
1	Bronx	Wakefield	40.894705	-73.847201	Dunkin Donuts	40.890631	-73.849027	Donut Shop
2	Bronx	Wakefield	40.894705	-73.847201	SUBWAY	40.890656	-73.849192	Sandwich Place
3	Bronx	Wakefield	40.894705	-73.847201	Pitman Deli	40.894149	-73.845748	Food
4	Bronx	Wakefield	40.894705	-73.847201	Central Deli	40.896846	-73.844415	Deli / Bodega

Greek type of restaurants are also contained in this dataframe.

9	Brooklyn	Bay Ridge	40.625801	-74.030621	Elia Restaurant	40.623090	-74.031156	Greek Restaurant
10	Brooklyn	Bay Ridge	40.625801	-74.030621	Blue Door Souvlakia	40.624567	-74.030311	Greek Restaurant
11	Brooklyn	Bay Ridge	40.625801	-74.030621	Plaka Taverna	40.622486	-74.028465	Greek Restaurant

DATA ANALYSIS

We create for each neighborhood a number (pointer) which represents the suitability of this neighborhood to host a Greek restaurant.

This number is the quotient of Greek type restaurants and general type restaurants in the neighborhood, multiplied by 100 (or the percentage of Greek restaurants versus general type restaurants in the neighborhood).

We can see the results below :

	Neighborhood	Greek Venues	Venues	pointer
0	Astoria	9	87	10.344828
1	Astoria Heights	1	11	9.090909
2	Bay Ridge	5	79	6.329114
3	Bay Terrace	1	20	5.000000
4	Bayside	5	55	9.090909
6	Boerum Hill	1	74	1.351351
7	Carnegie Hill	1	69	1.449275
8	Carroll Gardens	1	69	1.449275

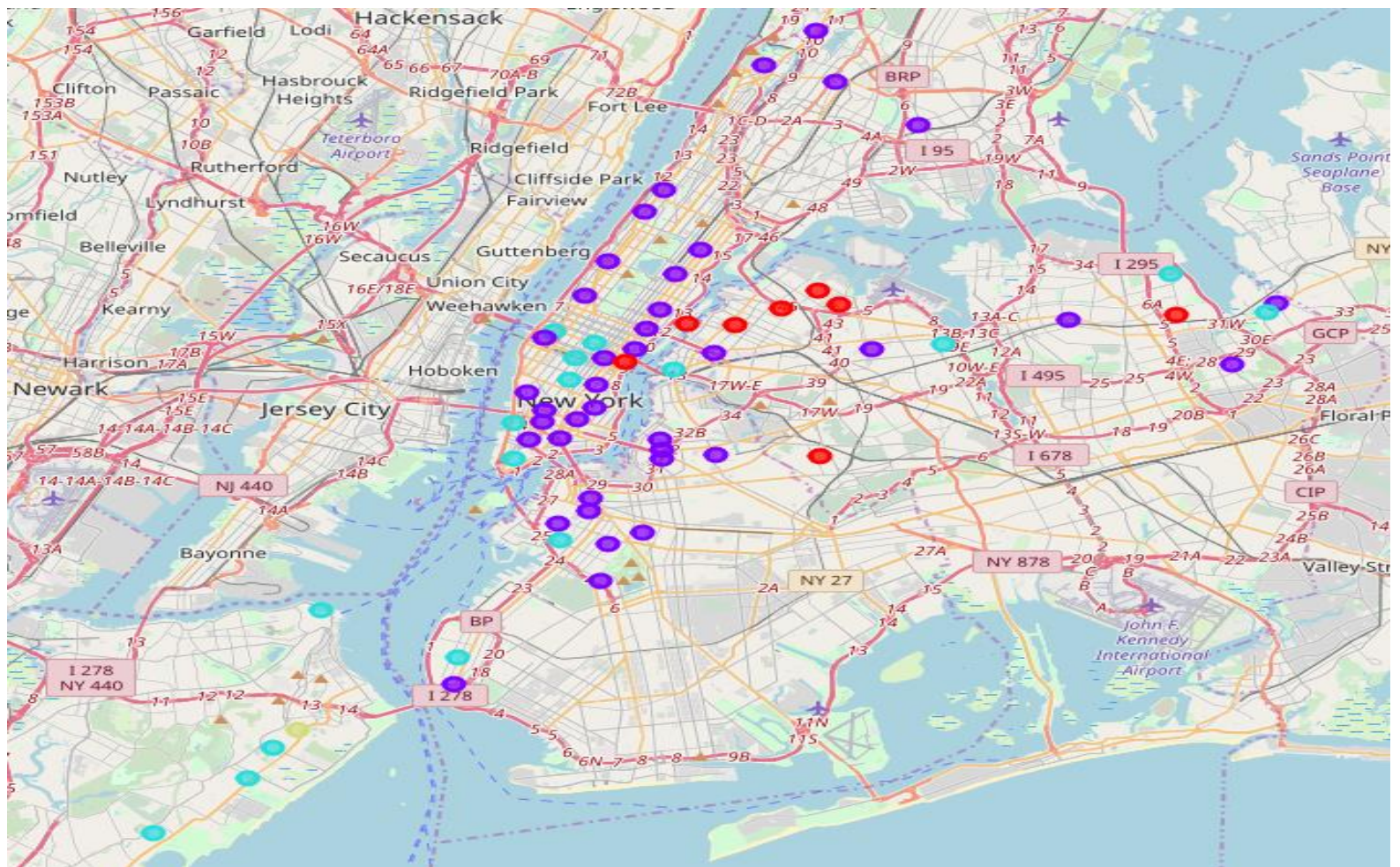
CLUSTERING

We use kmeans (machine learning tool) to cluster our neighborhoods based on the suitability to open a Greek restaurant.

We will train the model with the pointer data. We can see a resulting dataframe sample with cluster labels.

	Borough	Neighborhood	Latitude	Longitude	Greek Venues	Venues	pointer	Cluster Labels
5	Bronx	Kingsbridge	40.881687	-73.902818	1	55	1.818182	1
16	Bronx	Fordham	40.860997	-73.896427	1	69	1.449275	1

Finally in the following slide we create a map presenting the clustered neighborhoods in colors.



RESULTS

According to our model, if someone wants to open a Greek restaurant he should consider the following:

- **Green** is by far the most suitable neighborhood (outlier).
- **Red** are very good results.
- **Light blue** are good results too.
- **Purple** are not so good neighborhoods to try your luck.
- Finally neighborhoods not showing in the above map are the worst choice.



RESULTS

- In *Manhattan*, **Midtown** and **South** neighborhoods are more suitable places to open a Greek restaurant but there is a lot of antagonism because there are so many types of restaurants in these neighborhoods.
- We wouldn't recommend *Bronx* for starting a business.
- In *Brooklyn* a good choice is **Gowanus** and nearby neighborhoods, but a better one is **Bay Ridge**.
- In the Southeast part of *Staten Island*, **Dongan Hills**, **Grant City**, **Bay Terrace** and especially **Old Town** are very good neighborhoods to start a Greek restaurant business.
- Finally *Queens* seems to be the most suitable Borough. There is an obvious trend in Greek restaurants in **Astoria** and neighborhoods near it. With a simple web search we found out that Astoria is the Greek cultured neighborhood of New York city since it was the home of the first Greek immigrants. So the most suitable neighborhoods to open a Greek restaurant in Queens and we could say in all of New York city are by far neighborhoods close to **Astoria**, and also **Bayside**, **Bay Terrace** and **Douglaston**.