

**Coursera Capstone Project Report:**  
**The Battle of Neighborhoods**

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# Introduction

Some consider New York City to be the capital City of the world. It is undoubtedly one of the most popular cities, with people from all over the world. There are several businesses around NYC, and several of them are the coffee shops. Coffee acts as a fuel for people to maintain the super busy lifestyle.

The project is done for the client “Cuppa-Bliss Inc” since they wanted to open a new branch of their coffee shops in New York city. We were asked to find out the top 5 neighborhoods where they could open a new shop.

# Data

The data required is the location of the coffee shops in each neighborhood. To gather the information we used the following data:

1. Neighborhoods information from the JSON file provided at <https://ibm.box.com/shared/static/fbpwbovar7lf8p5sgddm06cgipa2rxpe.json>
2. Four squares location/ venues data to find how many coffee shops are there in each neighborhood.

## Methodology

With the data as described above, we did the data preparation first. Along with the JSON file, we used four squares to find how many coffee shops are there. We needed to filter the neighborhoods with more no. of Coffee shops, and got a list of neighborhood with only one coffee shop available. Also, the client mentioned that they would not want to open the coffee shop where there is a Starbucks in the area. We also needed to exclude the areas with Starbucks on the analysis.

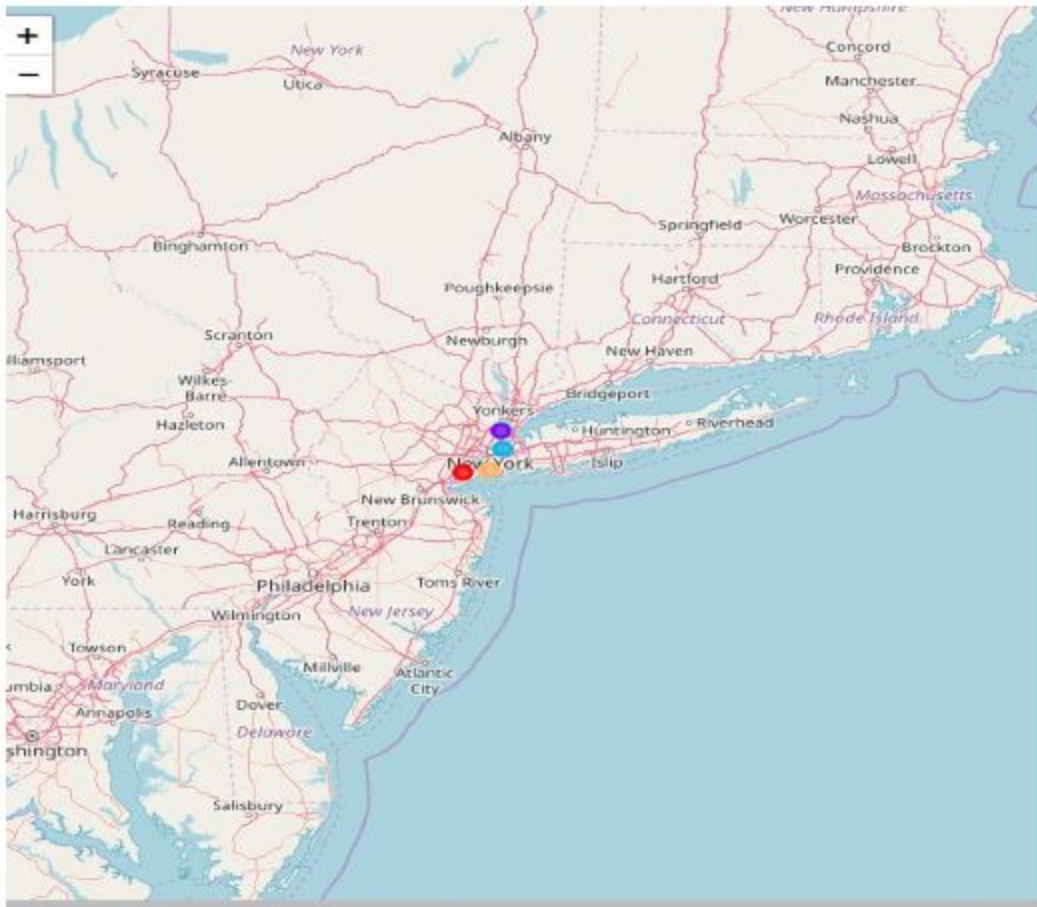
This is the perfect example of Clustering. We need to analyze the data of the neighborhoods, and assign them to the clusters. On few clustering algorithms we examined, we decided to go with the K Means algorithm. According to one article in Wikipedia - *“**k-means clustering** aims to partition  $n$  observations into  $k$  clusters in which each observation belongs to the cluster with the nearest **mean**, serving as a prototype of the cluster.”*

# Results

We got the following result :

	Borough	Neighborhood	Latitude	Longitude	Cluster Labels
0	Bronx	Kingsbridge	40.881687	-73.902818	3
8	Brooklyn	Bensonhurst	40.611009	-73.995180	4
16	Manhattan	Inwood	40.867684	-73.921210	1
18	Queens	Woodside	40.746349	-73.901842	2
20	Staten Island	New Springville	40.594252	-74.164960	0

The map to show the clusters:



## Discussion

Before applying K-means algorithm we also looked at other clustering algorithms including DBSCAN. Although they are both incremental and they have their own pros and cons, we decided to go with K means algorithm, the no. of clusters chosen was 5, and K means was much faster, easier to implement than DBSCAN for this dataset.

## Conclusion

As per the analysis, we advised the client “Cuppa-Bliss Inc” to open the coffee shop at Kingsbridge neighborhood in Bronx.