Opening a New Bookstore in Toronto, Canada

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Applied Data Science Capstone

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Business Problem

- Opening new outlets to increase the market reach is one of the best methods to expand a business

- Selecting the new location of the outlet is one of the most important decision that will determine the success of the store.

- Our objective is to analyze the neighborhoods of city of Toronto, Canada and select the best neighborhoods to open a new bookstore

- Hence our business problem is: In Toronto, if a Bookstore wants to open a new outlet, where should they consider opening it?

Data

Data required

- List of neighborhoods in Toronto
- Latitude and longitude coordinates of the neighborhoods
- Venue data, particularly data related to shopping malls

Sources of data

- Wikipedia page for neighborhoods (https://en.wikipedia.org/wiki/List_of_neighbourhoods_in_Toronto)
- Geocoder package for latitude and longitude coordinates
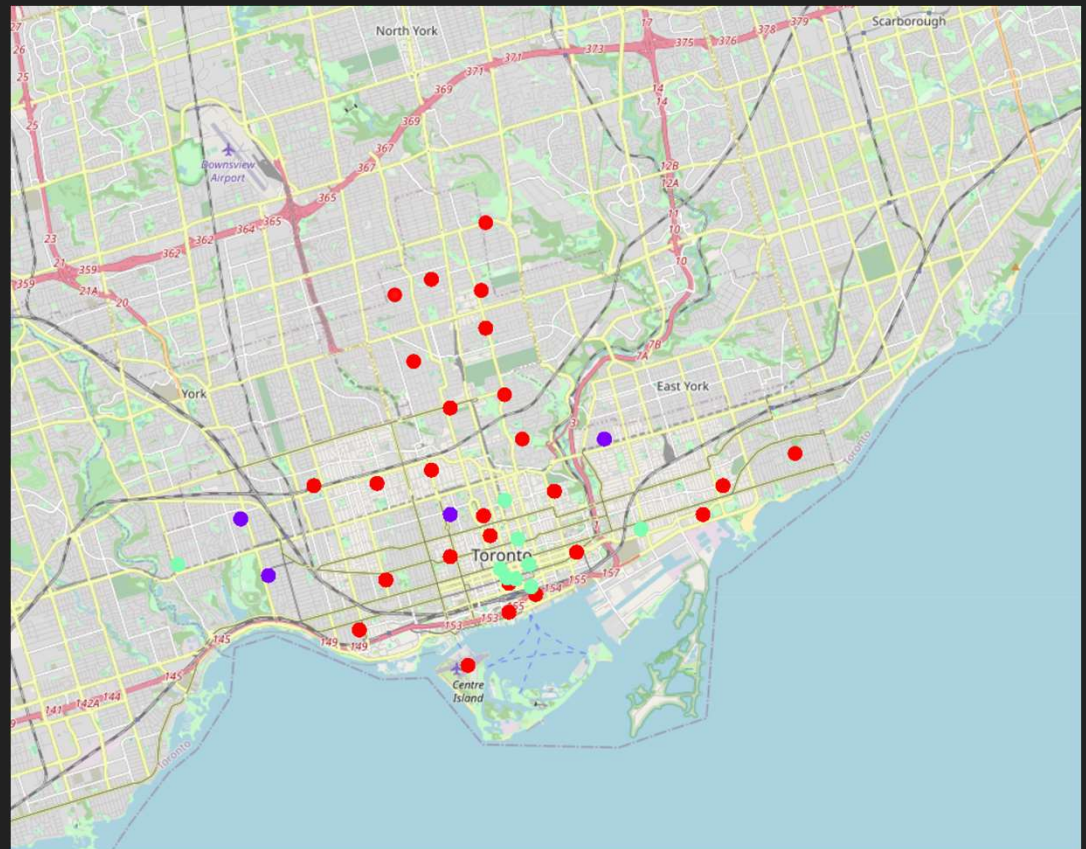- Foursquare API for venue data

Methodology

- Web scraping Wikipedia page for neighborhoods list

- Get latitude and longitude coordinates using Geocoder

- Use Foursquare API to get venue data

- Group data by neighborhood and taking the mean of the frequency of occurrence of each venue category

- Filter venue category by Bookstore

- Perform clustering on the data by using k-means clustering

- Visualize the clusters in a map using Folium

Results

The neighborhoods were classified into 3 clusters

- Cluster 0(Red): Neighborhoods with low number to no existence of Bookstores

- Cluster 1(Purple): Neighborhoods with high concentration of Bookstores

- Cluster 2(Mint green): Neighborhoods with moderate number of Bookstores

Discussion

○ Most of the bookstores are concentrated in the downtown area of Toronto, where academic institutions are situated like University of Toronto.

○ Bookstores were highest in cluster 1 and moderate in cluster 2.

○ Cluster 0 has very low number to no bookstores in the neighborhoods

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Recommendations

O Open new bookstores in neighborhoods in cluster 0 with little to no competition. Best suited for new bookstores

O Bookstores already having their brand value, can also open in neighborhoods of cluster 2

O As there are a lot of bookstores in neighborhoods of cluster 1, store owners should avoid these neighborhoods as there will be immense competition

References

- List of neighborhoods in Toronto. Wikipedia.

https://en.wikipedia.org/wiki/Category:Suburbs_in_Kuala_Lumpur

- Foursquare Developers Documentation. Foursquare.

https://developer.foursquare.com/docs

- Geospatial Coordinates of Toronto Neighborhoods

https://cocl.us/Geospatial_data