Coursera Capstone

IBM Applied Data Science Capstone

Opening a Restaurant in Toronto, Canada

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Business Problem

- Location of the restaurant is one of the most important decisions that will determine whether the restaurant will be a success or a failure
- Objective: To analyse and select the best locations in the city of Toronto, Canada to open a new shopping mall
- Business question
  - In the city of Toronto, Canada, if a person is looking to open a new restaurant, where would you recommend that they open it?

Data

- Data required
  - List of neighbourhoods in Toronto
  - Latitude and longitude coordinates of the neighbourhoods
  - Venue data, particularly data related to restaurants

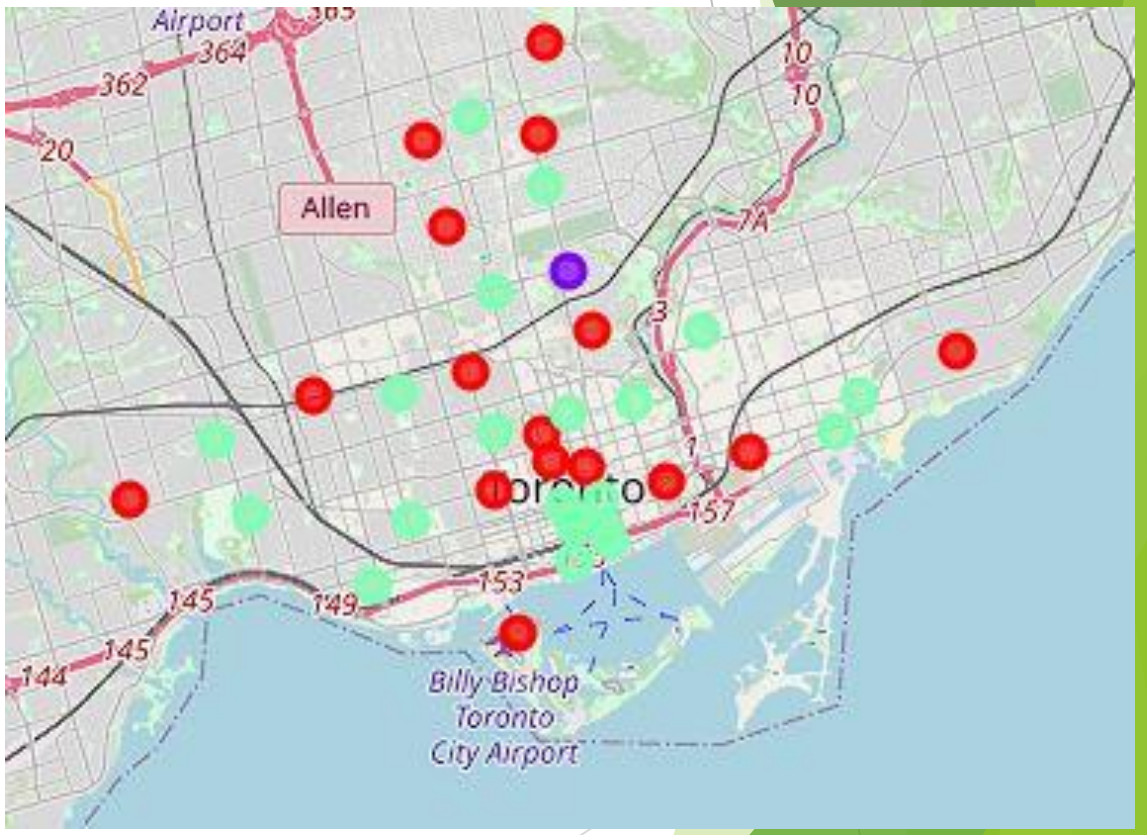
- Sources of data
  - Wikipedia page for neighbourhoods (https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M.)
  - CSV file containing the geographical coordinates of neighborhoods (http://cocl.us/Geospatial_data)
  - Geocoder package for latitude and longitude coordinates
  - Foursquare API for venue data

Methodology

- Web scraping Wikipedia page for neighbourhoods list
- Get latitude and longitude coordinates using Geocoder
- Use Foursquare API to get venue data
- Selecting neighborhoods in only the Toronto Area
- Group data by neighbourhood and taking the mean of the frequency of occurrence of each venue category
- Filter venue category by Restaurant
- Perform clustering on the data by using k-means clustering
- Visualize the clusters in a map using Folium

Results

- Categorized the neighbourhoods into 3 clusters :
  - ➢Cluster 0: Neighbourhoods with low number to no existence of restaurants
  - ➢Cluster 1: Neighbourhoods with high concentration of restaurants
  - ➢Cluster 2: Neighbourhoods with moderate number of restaurants



Discussion

- Highest number in cluster 1 and moderate number in cluster 2
- Cluster 0 has very low number to no restaurants in the neighbourhoods
- Results are based solely on the frequency of occurrence of restaurants, to specifically select an area, we need more information.

Recommendations

- Open new restaurants in neighbourhoods in cluster 0 with little to no competition
- Can also open in neighbourhoods in cluster 2 with moderate competition if have unique selling propositions to stand out from the competition
- Avoid neighbourhoods in cluster 1, already high concentration of restaurants and intense competition

Conclusion

- Answer to business question: The neighbourhoods in cluster 0 are the most preferred locations to open a new restaurants
- Findings of this project will help the relevant stakeholders to capitalize on the opportunities on high potential locations while avoiding overcrowded areas in their decisions to open a new restaurants

Thank you!

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