THE BATTLE OF NEIGHBORHOODS

VANCOUVER VS TORONTO

COURSERA CAPSTONE PROJECT

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INTRODUCTION

- This project aims to compare the neighborhoods in two major cities Vancouver and Toronto.
- A multinational company headquartered in New York is planning for the growth of the company in Canadian provinces, and is thus in search of a place for its office.
- The company has two options available i.e. Either Vancouver (British Columbia province) or Toronto (Ontario province).
- The company needs to determine better of the two cities for setting up the office and which would have better living standards for its employees.

DATA SOURCES USED

- The location data for Vancouver as well as Toronto has been taken through web scraping and through pandas Dataframes.
- Various libraries have been used such as:

1. Numpy
2. Pandas
3. Geopy
4. Folium
5. Json
6. Matplotlib
7. Requests
8. Beautiful Soup
9. Sklearn

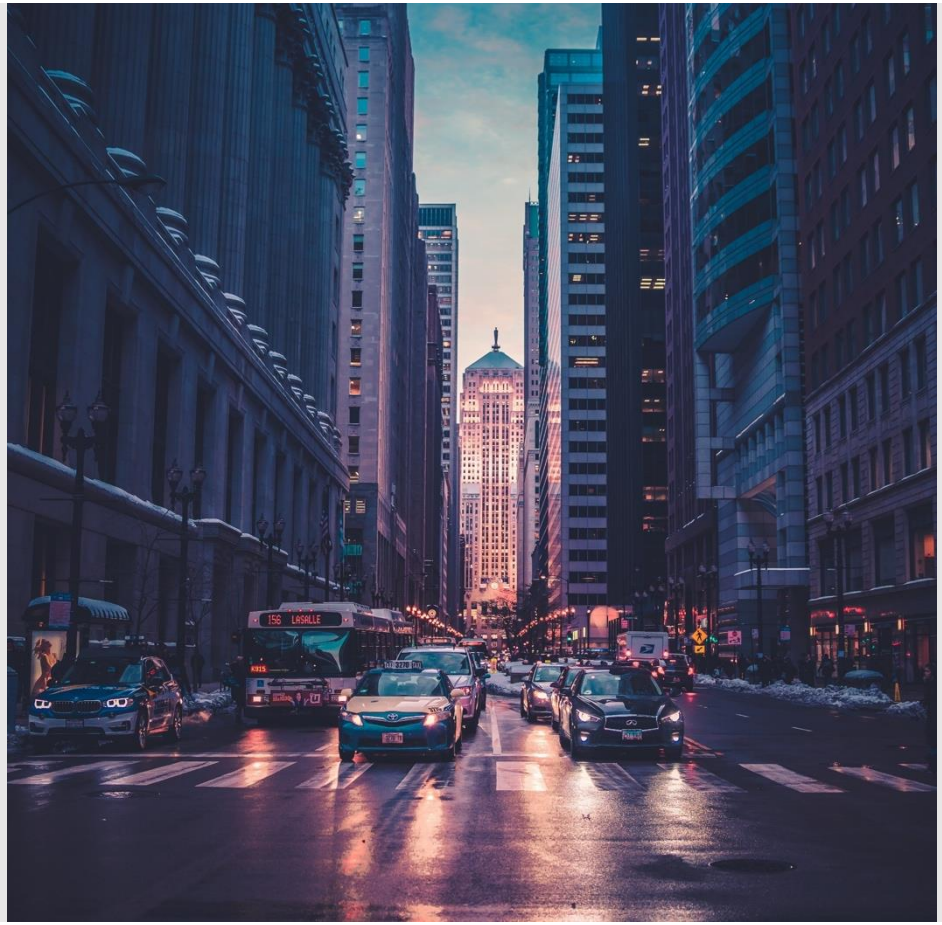
METHODOLGY

- The data has been stored in Pandas dataframe and analyzed extensively.
- Geopy library is used for fetching latitudes and longitudes.
- Matplotlib and Folium have been used for visualization.
- Beautiful Soup has been used to fetch data for web scraping of data for the project.
- Unsupervised Machine Learning Algorithm KMeans has been used to cluster various neighborhoods based on venues so that conclusions can be drown out easily.

RESULTS: COMPARISON

DOWNTOWN VANCOUVER

- KMeans clustering algorithm to cluster neighborhoods in Vancouver.
- Cluster 0 has 6 neighborhoods where the most common venues are coffee-shops, various restaurants, parks and toy stores and many other places.
- Cluster 1 has only 1 neighborhood which has many restaurants but no fitness center i.e. gym and even a pharmacy.
- Cluster 2 also has only 1 neighborhood with many coffee-shops and restaurants but no fitness centers at all.



CENTRAL TORONTO

- KMeans clustering algorithm to cluster neighborhoods in Toronto.
- Cluster 0 has only 1 neighborhood where the most common venues are coffee-shops, various restaurants.
- Cluster 1 has 7 neighborhoods with parks, stores , various restaurants and sports centers.
- Cluster 2 also has only 1 neighborhood with many restaurants, gym and less alternatives to eat at restaurants.

RESULTS: COMPARISON

DOWNTOWN VANCOUVER

- Total 302 venues in 8 Downtown Vancouver neighborhoods.
- All the 3 clusters of neighborhoods have plenty of eateries but most of the services are present in cluster 0.
- Cluster 2 and 3 have no parks, gyms, toy stores.
- Cluster 2 and Cluster 3 have only Japanese and sushi restaurants as places to eat whereas cluster 0 has many other alternatives.

CENTRAL TORONTO

- Total 111 venues in 9 Central Toronto neighborhoods.
- All the 3 clusters of neighborhoods have plenty of eateries but most of the services are present in cluster 1.
- Cluster 0 and 2 have no parks, gyms, toy stores, pharmacy and pet stores.
- Cluster 0 and Cluster 2 have many less facilities as compared to cluster 1.

DISCUSSION

- Both the cities of Vancouver and Toronto provided very similar results.
- 8 neighborhoods in Vancouver, 9 neighborhoods were compared and analyzed in Toronto.
- 302 venues in Vancouver and 111 in Toronto.
- Venue categories - coffee shops, different kinds of restaurants and places to eat, entertainment, parks etc.
- Most of the neighborhoods were clustered in one cluster (6 in Vancouver and 7 in Toronto) with the remaining two clusters having 1 each.

CONCLUSION

- The data analysis has produced very similar results for the two cities in terms of variety of venues and homogeneity.
- There are more venues in Downtown Vancouver (302) as compared to Central Toronto (111).
- our recommendation to the multi national company (MNC) will be to locate the new office in one of the neighborhoods shown in cluster 0 in Downtown Vancouver, since they are most closely fitting the requirements of having an easy access to places to eat, to have good fitness, refreshment and recreational activities as well as stores related to basic necessities.

THANK YOU!

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