



THE BATTLE OF NEIGHBORHOOD

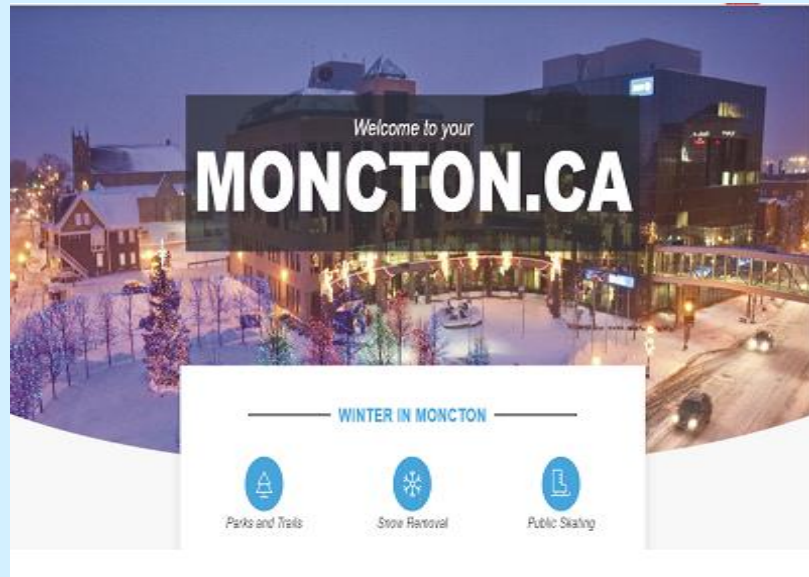
**MONCTON, NEW BRUNSWICK
CANADA**

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INTRODUCTION

BACKGROUND

Canada is the one of the largest country by landmass and it is divided into seven main regions namely. **The Atlantic region** which comprises of **New Brunswick, Nova Scotia, Prince Edward Island and Newfound Land**, are accepting large amount of immigrants to settle in their provinces.



New Brunswick (NB) is the only officially bilingual province that is giving a lot of opportunities to immigrants to settle in its province, while creating enabling environment for new companies to establish its business via moderate tax, mortgage and better amenities and social life to its new inhabitants. Many of the new immigrants are always faced with the decision of which city is the best to settle-in in terms of better education, amenities, community gathering, social life, multicultural society for bilingual speakers and so on.

Why Moncton?

Moncton is the city of choice because it is multicultural, diverse and serves as the financial hub of New Brunswick. It ranks among major cities thriving to boost the province financial wealth and economy GDP of Canada at large.

DATA SOURCE

The data file can be download from www.moncton.ca with geospatial coordinate of the areas. Based on definition of the problem, factors that will influence my decisions are:

1. The Demographics of Moncton and its neighborhood (Dieppe, Riverview, LSD)
2. Location of schools and educational facilities for students and working immigrants alike?
3. Which borough is the most vibrant neighborhood for settlers
4. Segmentation of the Borough
5. Are there any venues like Gyms, Entertainment zones, Parks etc. for recreational activities
6. Resources for business minded immigrants etc.

Following data sources will be needed to extract/generate the required information:

- Part 1: <http://open.moncton.ca/datasets/points-of-interest> : This dataset contains points representing specific locations within the City of Moncton such as municipal facilities, schools and hospitals
- Part 3: <https://catalogue-moncton.opendata.arcgis.com/datasets/points-of-interest/data>. : Co-ordinate of neighborhood download in JSON file (https://opendata.arcgis.com/datasets/f13ec4ddadde46f6b0875047b13ec333_0.geojson)

DATA EXPLORATION

- **Step 1: Data is loaded using the pandas read_csv libraries and unwanted columns filtered**

```
[133]: #Load data and store in dataframe df: Filter/ Drop column not needed

path = 'https://opendata.arcgis.com/datasets/f13ec4ddadde46f6b0875047b13ec333_0.csv?outSR=%7B%22latestWkid%22%3A2953%
df = pd.read_csv(path)
df = df.drop(['X', 'Y', 'NAMEFR', 'ADDRESSFR', 'PHONENUM', 'GlobalID'], axis=1)
df.head(5)
```

```
[133]:
```

	OBJECTID	CATEGORY	SUBCATEGORY	NAME	ADDRESS	POSTCODE	JURISDICTION
0	1	EDUCATION	SCHOOL ELEMENTARY D-2	Edith Cavell School	125 PARK ST	E1C 2B4	Moncton
1	2	EDUCATION	SCHOOL ELEMENTARY D-2	Sunny Brae Middle School	170 CURRY ST	E1A 3W1	Moncton
2	3	EDUCATION	SCHOOL ELEMENTARY D-2	Forest Glen School	43 KEENAN DR	E1A 3P8	Moncton
3	4	EDUCATION	SCHOOL POST-SECONDARY	Crandall University	333 GORGE RD	E1G 3H9	Moncton
4	5	EDUCATION	SCHOOL ELEMENTARY D-1	École Anna-Malenfant	500 CENTRALE ST	E1A 6J4	Dieppe

- **Step 2: Convert the categorical data into numbers by grouping feature patterns with boroughs. In the category of activities offered by each city, Community association, Sports, Education are offered more by the cities.**

2. Analyzing Individual Feature Patterns grouping with boroughs and using Histogram Visualization

```
[165]: grouped_test2 = df.groupby('JURISDICTION').count()[['CATEGORY', 'SUBCATEGORY', 'POSTCODE']]
```

```
[166]: grouped_test2
```

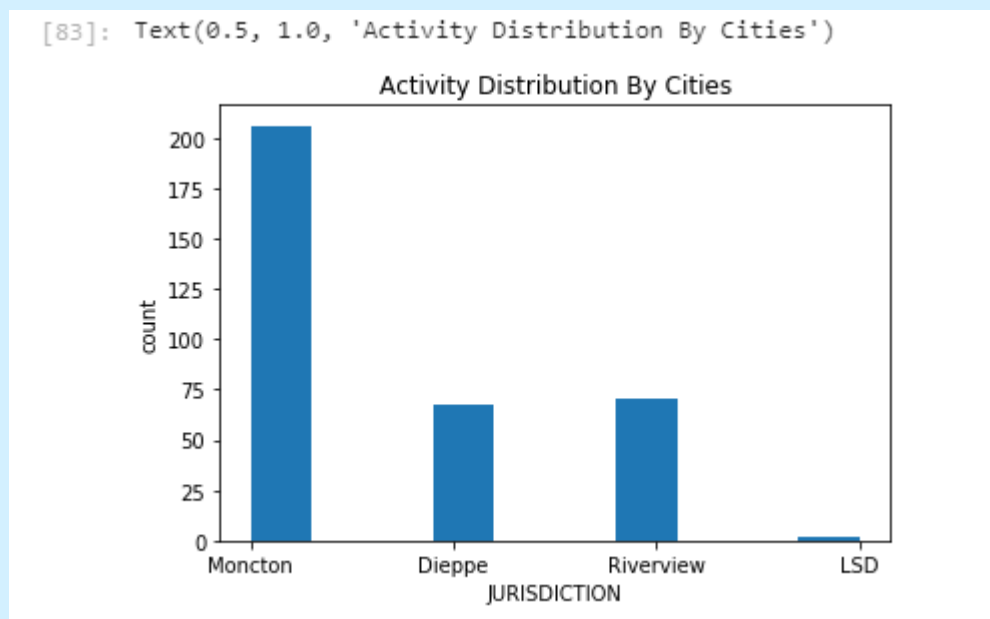
```
[166]:
```

	CATEGORY	SUBCATEGORY	POSTCODE
JURISDICTION			
Dieppe	67	67	54
LSD	2	2	2
Moncton	206	201	107
Riverview	70	69	23

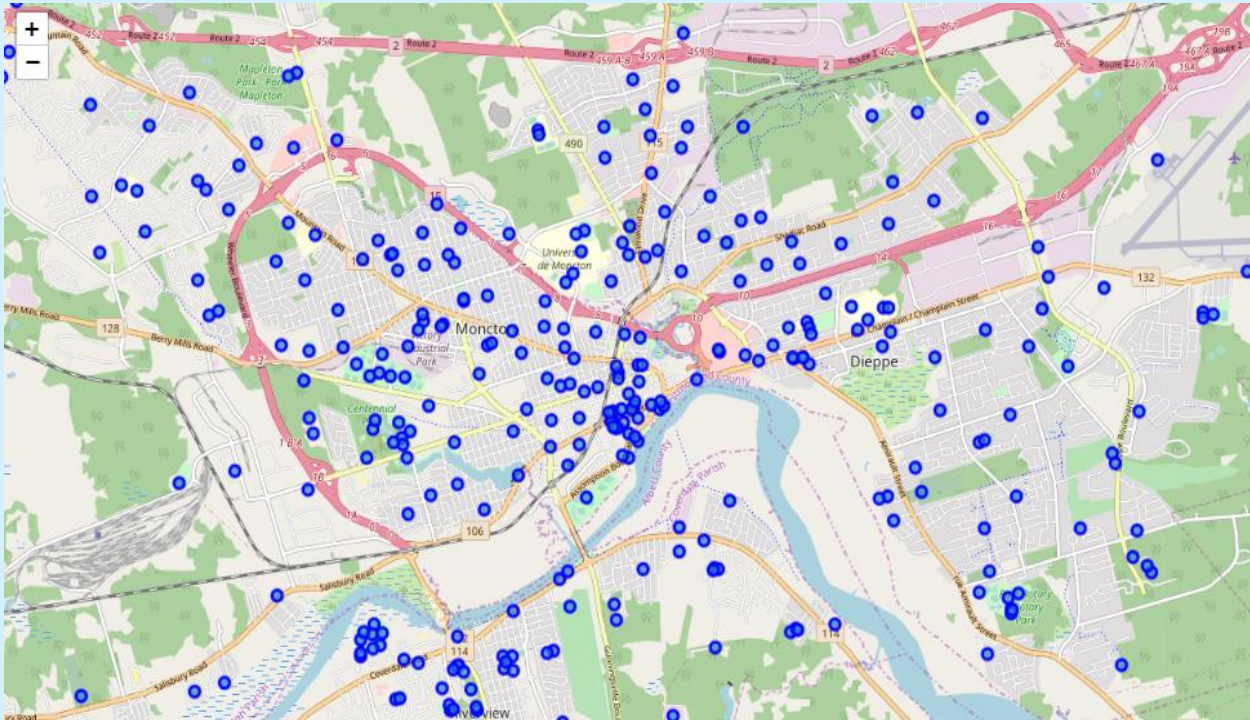
[154]:

CATEGORY	SUBCATEGORY
ATTRACTIONS	11
CEMETERY	8
COMMUNITY	153
CULTURE	1
EDUCATION	50
EMERGENCY	11
HEALTH	2
HERITAGE	6
MUNICIPAL	8
SHOPPING	4
SPORTS	55
THEATRE	1

- **Step 3: Plot the histogram of Cities, to visualize what distribution of Cities has the most activities. From the graph Moncton city has more for settlers**



DATA VISUALIZATION



- Fig 4.1: Geospatial coordinate Map of Moncton and cities using latitude and longitude values

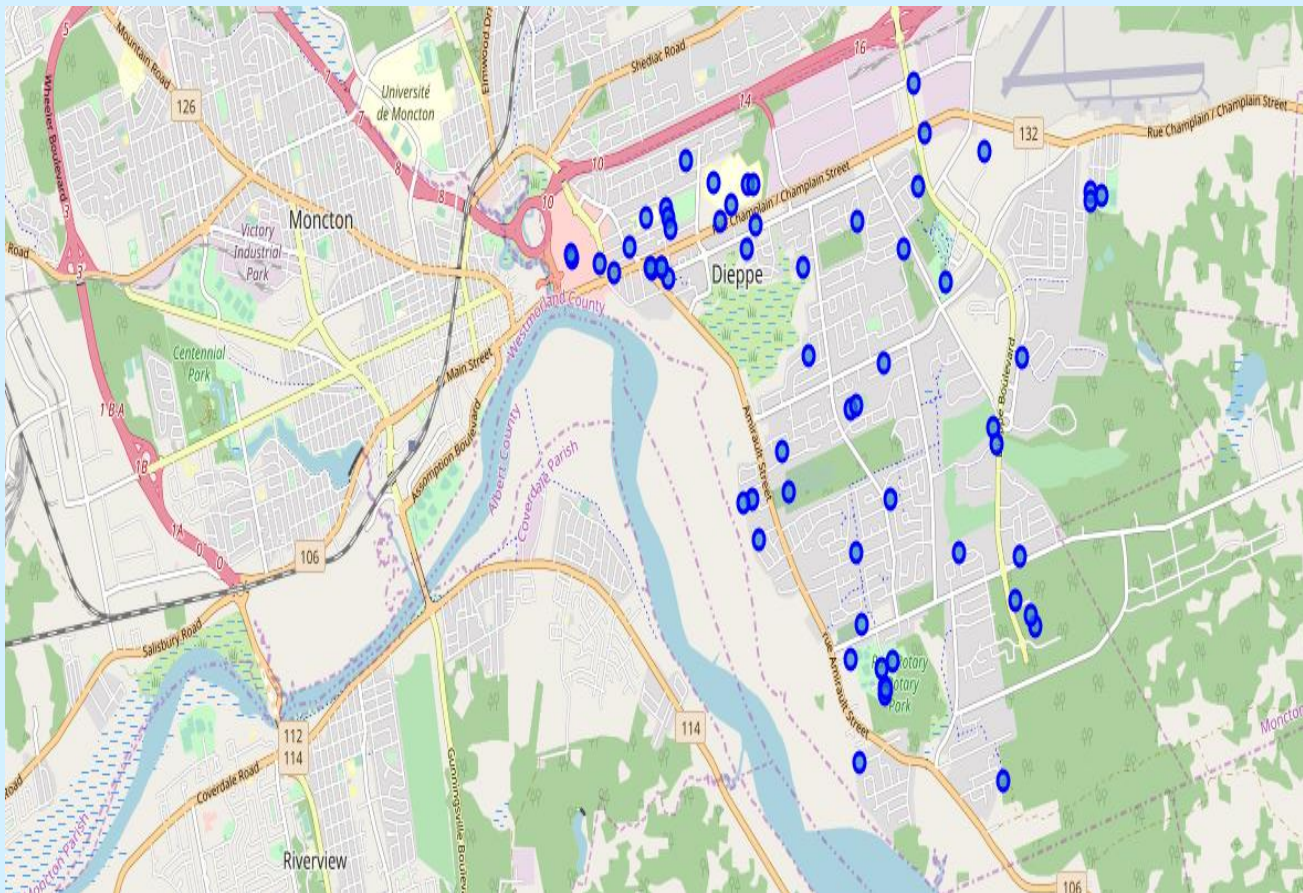
Mapping of Data

In the listed boroughs, Dieppe is chosen as a choice of all the boroughs to work on. It is accustomed by many who have visited it as a vibrant neighborhood with key indicators for accessing how viable it is to solve our problem description, for a city like Moncton, while comparing it with other large cities such as Toronto.

The Battle of Neighborhood Moncton (Week1 & 2)

[28]:	Borough	Neighborhood	Latitude	Longitude	[9]:	Borough	Neighborhood	Latitude	Longitude
0	Moncton	Edith Cavell School	46.091775	-64.787616	340	Moncton	CapitolTheatre Lot	46.088927	-64.779495
1	Moncton	Sunny Brae Middle School	46.107269	-64.777332	341	Moncton	Victoria Lot	46.091027	-64.776185
2	Moncton	Forest Glen School	46.121732	-64.773482	342	Moncton	Riverfront Park Lot	46.086284	-64.775204
3	Moncton	Crandall University	46.134658	-64.860973	343	Moncton	Moncton Market Lot	46.087236	-64.778162
4	Dieppe	École Anna-Malenfant	46.085724	-64.717850	344	Moncton	Robinson Lot	46.087432	-64.778823

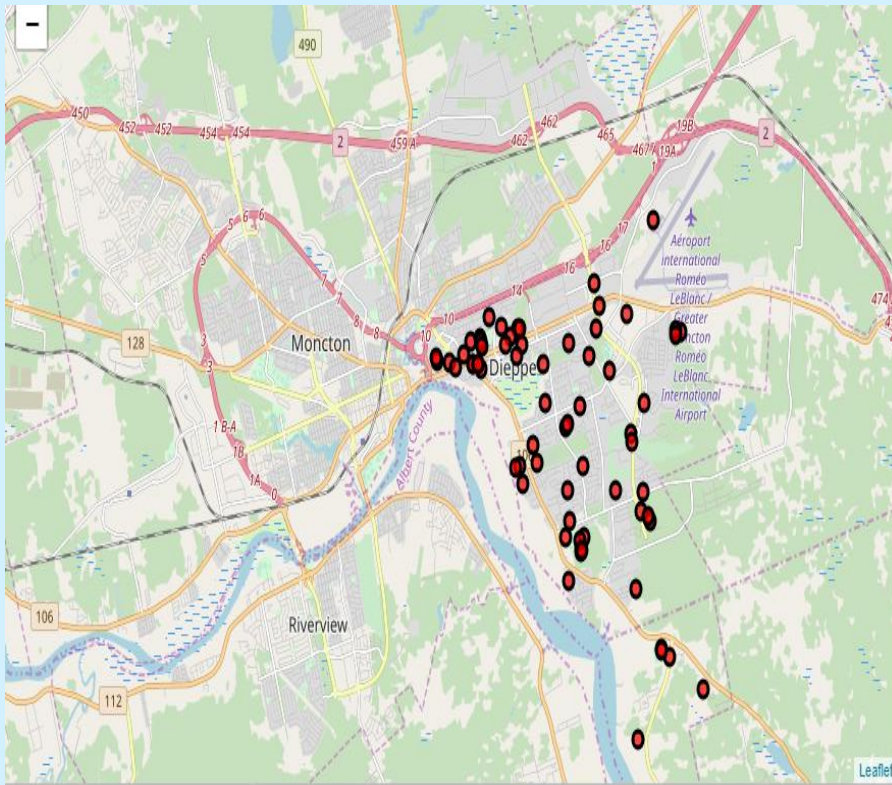
Confirm the dataset has all 4 boroughs and 345 neighborhoods.



Cluster Neighborhood

I run k-means to cluster the neighborhood into 5 clusters as a form of unsupervised learning machine based on the similarity of objects to each other.

I understand the domain knowledge of the dataset and datatype of features, and then choose the meaningful distance measurement



[54]:

	Borough	Neighborhood	Latitude	Longitude	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue
0	Dieppe	École Anna-Malenfant	46.085724	-64.717850	1.0	Bar	Yoga Studio	Clothing Store	Golf Course	Gas Station	Food	Fast Food Restaurant
1	Dieppe	Lou Macnarin School	46.097661	-64.732614	1.0	Yoga Studio	Korean Restaurant	Coffee Shop	Fast Food Restaurant	Spa	Concert Hall	Construction & Landscaping
2	Dieppe	École Mathieu-Martin	46.100219	-64.733820	1.0	Yoga Studio	Coffee Shop	Fast Food Restaurant	Korean Restaurant	Chinese Restaurant	American Restaurant	Art Gallery
3	Dieppe	École Amirault	46.069517	-64.717828	2.0	Skating Rink	Dessert Shop	Coffee Shop	Concert Hall	Construction & Landscaping	Convenience Store	Cosmetics Shop
4	Dieppe	CCNB Dieppe	46.100411	-64.739181	1.0	Coffee Shop	Fast Food Restaurant	Japanese Restaurant	Bike Shop	Cricket Ground	Concert Hall	Construction & Landscaping

Cluster 2

```
[57]: Dieppe_merged.loc[Dieppe_merged['Cluster Labels'] == 1, Dieppe_merged.columns[[1] + list(range(5, Dieppe_merged.shape[1]))]]
```

[57]:	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
	École Anna-Malenfant	Bar	Yoga Studio	Clothing Store	Golf Course	Gas Station	Food	Fast Food Restaurant	Farmers Market	Discount Store	Dessert Shop
	Lou Macnarin School	Yoga Studio	Korean Restaurant	Coffee Shop	Fast Food Restaurant	Spa	Concert Hall	Construction & Landscaping	Convenience Store	Cosmetics Shop	Dessert Shop
	École Mathieu-Martin	Yoga Studio	Coffee Shop	Fast Food Restaurant	Korean Restaurant	Chinese Restaurant	American Restaurant	Art Gallery	Golf Course	Gas Station	Food
	CCNB Dieppe	Coffee Shop	Fast Food Restaurant	Japanese Restaurant	Bike Shop	Cricket Ground	Concert Hall	Construction & Landscaping	Convenience Store	Cosmetics Shop	Yoga Studio
	École Sainte-Thérèse	Café	Pizza Place	Skating Rink	Concert Hall	Pharmacy	Bakery	Hotel	Discount Store	Dessert Shop	Clothing Store
	École Carrefour de l'Acadie	Yoga Studio	Korean Restaurant	Coffee Shop	Fast Food Restaurant	Spa	Chinese Restaurant	Concert Hall	Construction & Landscaping	Convenience Store	Cosmetics Shop
	Dieppe Fire Station #1	Yoga Studio	Fast Food Restaurant	Korean Restaurant	Coffee Shop	Clothing Store	Golf Course	Gas Station	Food	Farmers Market	Discount Store

Cluster 3

```
[58]: Dieppe_merged.loc[Dieppe_merged['Cluster Labels'] == 2, Dieppe_merged.columns[[1] + list(range(5, Dieppe_merged.shape[1]))]]
```

[58]:	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
3	École Amirault	Skating Rink	Dessert Shop	Coffee Shop	Concert Hall	Construction & Landscaping	Convenience Store	Cosmetics Shop	Cricket Ground	Yoga Studio	Chinese Restaurant
20	Club Rotary Lodge	Park	Construction & Landscaping	Business Service	Skating Rink	Fast Food Restaurant	Farmers Market	Discount Store	Dessert Shop	Chinese Restaurant	Cricket Ground
25	Arthur-J.-LeBlanc Centre	Park	Skating Rink	Gas Station	Food	Fast Food Restaurant	Farmers Market	Discount Store	Dessert Shop	Café	Cricket Ground
28	Vélodrome de Dieppe	Park	Skating Rink	Gas Station	Food	Fast Food Restaurant	Farmers Market	Discount Store	Dessert Shop	Café	Cricket Ground
31	St. Anselme Rotary Park	Park	Construction & Landscaping	Skating Rink	Food	Fast Food Restaurant	Farmers Market	Discount Store	Dessert Shop	Café	Cricket Ground

Cluster 4 ¶

```
[59]: Dieppe_merged.loc[Dieppe_merged['Cluster Labels'] == 3, Dieppe_merged.columns[[1] + list(range(5, Dieppe_merged.shape[1]))]]
```

[59]:	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
21	Club d'age d'or de St-Anselme	Park	Home Service	Art Gallery	Convenience Store	Cricket Ground	Coffee Shop	Concert Hall	Construction & Landscaping	Cosmetics Shop	Discount Store
27	Rotary Park Splash pad	Park	Business Service	Construction & Landscaping	Cricket Ground	Coffee Shop	Concert Hall	Convenience Store	Cosmetics Shop	Dessert Shop	Chinese Restaurant
33	Dover Park	Park	Home Service	Art Gallery	Convenience Store	Cricket Ground	Coffee Shop	Concert Hall	Construction & Landscaping	Cosmetics Shop	Discount Store
38	Thaddée	Convenience Store	Yoga Studio	Gym	Golf Course	Gas Station	Food	Fast Food Restaurant	Farmers Market	Discount Store	Dessert Shop
47	Avant-Garde	Home Service	Yoga Studio	Clothing Store	Golf Course	Gas Station	Food	Fast Food Restaurant	Farmers Market	Discount Store	Dessert Shop
48	Centrale	Home Service	Construction & Landscaping	Yoga Studio	Clothing Store	Golf Course	Gas Station	Food	Fast Food Restaurant	Farmers Market	Discount Store

Insight into Neighborhood

Cluster1: The first three most common venue are the Gas station, Yoga Studio & Gym. This means the neighborhood has a sense of life for recreational activities and ample gas station to have ones vehicle re-filled for mobility. While the food industry and farmer market are in the 5th, 6th, 7th most common venue, Restaurant business have 50% or more chances of surviving in this neighborhood.

Cluster 2. Interesting to note this neighborhood has a thriving business in the Fast-Moving Consumer Goods Industry. Restaurant, Fast-Food, Coffee Shop seems to dominate. If an entrepreneur desires to establish a restaurant in this neighborhood, he would likely meet stifled competition in the food industry. This is the business hub of Dieppe town as most common venue shows all form of categorical activities occurring in this neighborhoods.

Cluster 3. This is the Disney land of Moncton. It is glaring there are many recreational activities here such as parks and skating rink for family hang-out. Those that love to play cricket can have a playing ground.

Cluster 4: There is even distribution of activities in this neighborhood. From my perspective a lot of people would prefer an area that has all equal amenities for social life. All neighborhood in the fourth cluster has it all.

Cluster 5: Very few activities in this neighborhood.

Results and Discussion

The aim of this project is to help people who want to relocate to the safest borough in Moncton, New Brunswick. Immigrants as well as citizen aspiring to relocate to this area to choose the neighborhoods to which they want to settle based on the most common venues in it. For example if a person is looking for a neighborhood with Fast-Moving Consumer Good Industry and all activities we can see that Clusters 2 and 4 have restaurant, Cuisine and café as the most common venues. If a person is looking for a neighborhood with recreational and gas station in a close proximity then the neighborhoods in the first cluster is suitable. For a family I feel that the neighborhoods in Cluster 4 are more suitable as it has the most activities, these neighborhoods have common venues such as Parks, Gym/Fitness centers, Construction, Restaurants, Groceries stores and Cricket fields which is ideal for a family.

Conclusion

This project helps to have an insight into better understanding of the neighborhoods with respect to the most common venues in that neighborhood. It is always key in the use of technology to have idea and clear view of a place without having to travel miles to have a clear picture of the area i.e. finding out more about places before moving into a neighborhood. The predictor of this project includes taking other factors such as community integration to shortlist the borough based on safety and a predefined welfare of the dwellers.

THANK YOU!!!