Coursera Capstone – The battle of Neighborhood

Recommendation to open a new Indian cuisine restaurant in Toronto Neighbourhood

Introduction:

Toronto is the provincial capital of Ontario and the most populous city in Canada. It is also known as an international center of business, finance, arts, tourism, food and culture, and is recognized as one of the most multicultural and cosmopolitan cities in the world. This makes Toronto a place of ample business opportunities including food service industry.

Problem Description:

The diverse population of Toronto reflects its current and historical role as an important destination for immigrants to Canada. More than 50 percent of residents belong to a visible minority population group. This diversity is reflected in Toronto's ethnic neighborhoods, which include Chinatown, Corso Italia, Little India, Little Italy, Greektown, Koreatown, Little Jamaica etc. Hence there is a huge opportunity for food service industry to invest. This report will identify and recommend the kind of eatery restaurateurs can establish for a profitable engagement.

Data Description:

As we need to explore, segment and cluster the neighborhoods in the city of Toronto, the Toronto neighborhoods data is the key for this project. Neighborhood data is not widely available on the internet in the structured format, hence we need to scrap it through an existing Wikipedia page that has all the required information. We will also like to obtain the key information like below:

1: The latitude and longitude of the neighborhoods are retrieved using geocoding. The geometric location values are then stored into the initial data frame. Geo data is helpful to visualize the places for Toronto Neighborhoods.

Example of initial data with information.

```
toronto_df=dataframe.merge(geo_data,left_on="Postcode",right_on="Postal Code")
toronto_df.head()
```

	Postcode	Borough	Neighbourhood	Postal Code	Latitude	Longitude
0	M3H	North York	Bathurst Manor, Downsview North, Wilson Heights	M3H	43.754328	-79.442259
1	M4A	North York	Victoria Village	M4A	43.725882	-79.315572
2	M6K	West Toronto	Brockton, Exhibition Place, Parkdale Village	M6K	43.636847	-79.428191
3	M2J	North York	Fairview, Henry Farm, Oriole	M2J	43.778517	-79.346556
4	M1V	Scarborough	Agincourt North, L'Amoreaux East, Milliken, St...	M1V	43.815252	-79.284577

2: Population data is helpful to explore the places for Toronto neighbourhoods and the key feature to find out the places where we have south Asian population.

```
toronto_pop_df.head()
```

	Postcode	Borough_x	Neighbourhood	Latitude	Longitude	Population, 2016	Population density per square kilometre	South Asian	Chinese	Black	Arab	Southeast Asian	West Asian
0	M6K	West Toronto	Brockton, Exhibition Place, Parkdale Village	43.636847	-79.428191	29834	14280	5.88	2.65	10.05	0.63	1.78	0.68
1	M5K	Downtown Toronto	Design Exchange, Toronto Dominion Centre	43.647177	-79.381576	13826	9601	2.86	8.21	2.39	0.40	0.61	0.54
2	M5A	Downtown Toronto	Harbourfront	43.654260	-79.360636	76716	25823	17.93	13.09	9.55	2.25	2.32	1.80
3	M6S	West Toronto	Runnymede, Swansea	43.651571	-79.484450	10070	6333	2.43	3.62	2.14	0.20	0.50	0.25
4	M5C	Downtown Toronto	St. James Town	43.651494	-79.375418	15818	5273	8.28	35.59	4.71	2.56	0.79	3.03

3: The Venue data is another key factor for this project, which is found out by passing the required parameters to the foursquare API and creating another data frame to contain all the venue details along with the respective neighbourhood. We will also need to understand the type of these venues nearby (500 meters) in each of the neighbourhoods.

Example of venue data along with their type and categories in structured format to allow further computation:

```
Places_food .head()
```

	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category	Venue ID
0	Brockton, Exhibition Place, Parkdale Village	43.636847	-79.428191	The Abbott	43.637996	-79.430717	Café	4cdeecddf8a4a14330b8dabc
1	Brockton, Exhibition Place, Parkdale Village	43.636847	-79.428191	Caffino	43.639021	-79.425289	Italian Restaurant	4b632632f964a52085662ae3
2	Brockton, Exhibition Place, Parkdale Village	43.636847	-79.428191	Vogue Supper Club	43.636951	-79.425446	Restaurant	4ce8ba46f865370410eab2c4
3	Brockton, Exhibition Place, Parkdale Village	43.636847	-79.428191	Loco Burrito	43.637513	-79.422898	Burrito Place	4ce6bec9948f224ba0cbe55d
4	Brockton, Exhibition Place, Parkdale Village	43.636847	-79.428191	Uma Cafe	43.637016	-79.424048	Café	5137b53ce4b071af38d34174