Coursera Capstone - REPORT

Content

1. Introduction

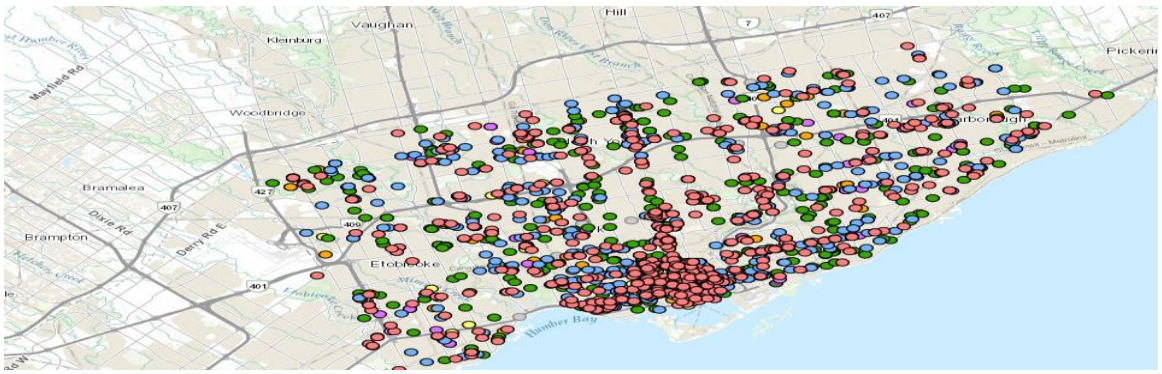
To start any new business by investing huge money is not a simple task. The role of data scientists is to give an appropriate suggestion by understanding the current scenario and advice the skiable location for the business. This analysis contains amenities in the neighbourhood, such as international cuisine restaurants, cafes, food shops and entertainment. When any local person is stressed then they think towards the process to find a suitable place for native food in neighbourhood. Hence, it is essential to work on such type of problem where is scope for establishing the Indian restaurants. Of course, there are alternatives to achieve the answer using available Google and Social media tools, but data scientist used better data analysis tools to solve the problem. The challenge to resolve is being able to find a suitable location, similar characteristics and benefits to establish an Indian restaurant in Toronto. Therefore, in order to set a basis for comparison the analysis is done for the new business.

- Finding food service location such a bars and restaurants
- Unit located within walking distance from a public transport in Toronto
- Area with amenities and venues similar to the ones described for current

This is identified as a relevant project for a person or entity considering moving to start Indian restaurant since the approach and methodologies used here are applicable in all cases. The use of FourSquare data and mapping techniques combined with data analysis will help resolve the key questions arisen. Lastly, this project is a good practical case toward the development of Data Science skills.

2. Data Section

This section we identify neighbourhood of many places which are popular to Toronto. Foursquare is used to identify the venues around the area of residence which are then shown that are shown in Toronto map. It serves as a reference for comparison with the desired future location to start a new business in Toronto. The map given below. This map will help us to identify population areas and places of business.



Data

we have used data sources majorly Wikipedia page for extracting the required data towards developing our model to take decision to identify suitable location for starting indian style restaurant.

The URL used is https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M

Data Based on defining the problem, many factors identified that influence our decision of starting new business. For this we have identified number Indian restaurants in the city followed by existing Bar in the neighbourhood and also number of other restaurants in the neighbourhood. We have decided to use regularly spaced grid of locations, cantered around city centre, to define our neighbourhoods. Following data sources will be needed to extract/generate the required information:

- centres of candidate areas will be generated algorithmically and approximate addresses of centres of those areas will be obtained using Google Maps API reverse geocoding

- number of restaurants and their type and location in every neighbourhood will be obtained using Foursquare API

- coordinate of Toronto centre will be obtained using Google Maps API geocoding of well-known Toronto location

The data will be used as follows: Use Foursquare and geopy data to map top 10 venues for all Toronto neighbourhoods and clustered in groups. Use of foursquare and geopy data to map the location of subway metro stations, separately and on top of the above clustered map in order to be able to identify the venues and amenities near each metro station, or explore each subway location separately.

3. Methodology

The methodology of identifying the Indian restaurants we identified that the number of restaurants are very less in Toronto. There are many bars and restaurants around city but the Indian restaurants only in very few in most locations. This gives a scope to start Indian restaurant in many locations where only one or two restaurants are available

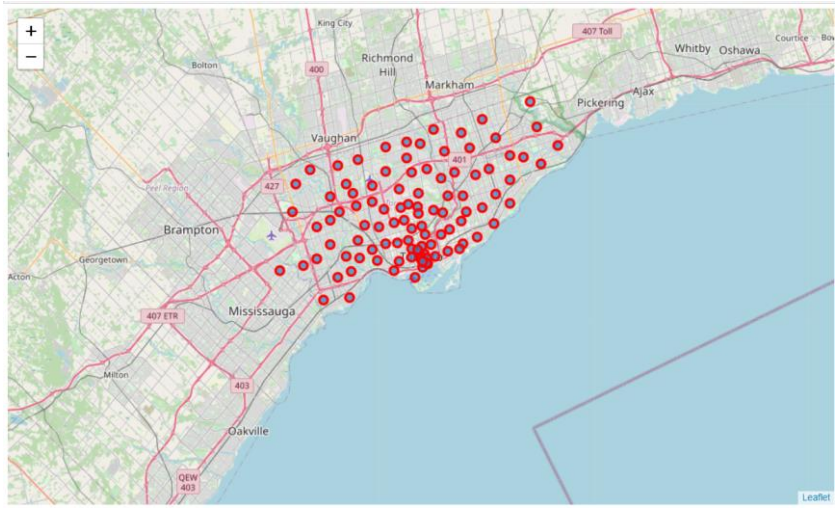
Data frame with postal code information of locations from Toronto

```
In [0]: df.dropna(axis=0, how='any', thresh=None, subset=None, inplace=False)
        df.head(10)
```

Out[51]:

	Postalcode	Bourough	Neighbourhood
2	M3A	North York	Parkwoods
3	M4A	North York	Victoria Village
4	M5A	Downtown Toronto	Regent Park, Harbourfront
5	M6A	North York	Lawrence Manor, Lawrence Heights
6	M7A	Downtown Toronto	Queen's Park, Ontario Provincial Government
8	M9A	Etobicoke	Islington Avenue
9	M1B	Scarborough	Malvern, Rouge
11	M3B	North York	Don Mills
12	M4B	East York	Parkview Hill, Woodbine Gardens
13	M5B	Downtown Toronto	Garden District, Ryerson

Mapping the coordinates from the dataframe resulted in getting the venues of Toronto



4. Results

Later we tried to find Indian restaurants in the city

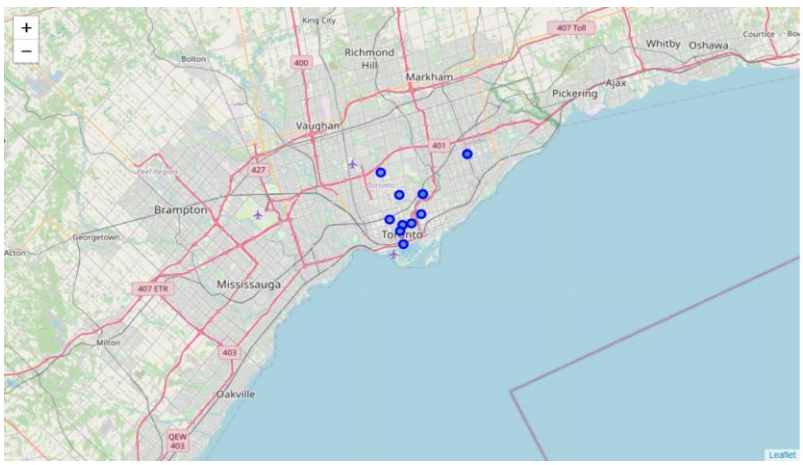
- Indian Restaurants which are present in Toronto are listed in this dataframe

```
In [0]: indian_res
```

Out[30]:

	Neighbourhood	Neighbourhood Latitude	Neighbourhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
46	Dorset Park, Wexford Heights, Scarborough Town...	43.757410	-79.273304	Kairali	43.754915	-79.276945	Indian Restaurant
48	Dorset Park, Wexford Heights, Scarborough Town...	43.757410	-79.273304	Karaikudi Chettinad South Indian Restaurant	43.756042	-79.276276	Indian Restaurant
344	Thorncliffe Park	43.705369	-79.349372	Iqbal Kebab & Sweet Centre	43.705923	-79.351521	Indian Restaurant
352	Thorncliffe Park	43.705369	-79.349372	Hakka Garden	43.704578	-79.349770	Indian Restaurant
397	The Danforth West, Riverdale	43.679557	-79.352188	Sher-E-Punjab	43.677308	-79.353066	Indian Restaurant
505	Davisville	43.704324	-79.388790	Marigold Indian Bistro	43.702881	-79.388008	Indian Restaurant
560	St. James Town, Cabbagetown	43.667967	-79.367675	Butter Chicken Factory	43.667072	-79.369184	Indian Restaurant
626	Church and Wellesley	43.665860	-79.383160	Kothur Indian Cuisine	43.667872	-79.385659	Indian Restaurant
991	Central Bay Street	43.657952	-79.387383	Colaba Junction	43.660940	-79.385635	Indian Restaurant
1184	Harbourfront East, Union Station, Toronto Islands	43.640816	-79.381752	Indian Roti House	43.639060	-79.385422	Indian Restaurant
1410	Bedford Park, Lawrence Manor East	43.733283	-79.419750	The Copper Chimney	43.736195	-79.420271	Indian Restaurant
1433	The Annex, North Midtown, Yorkville	43.672710	-79.405678	Roti Cuisine of India	43.674618	-79.408249	Indian Restaurant

By mapping the coordinates of the locations in Folium we got the geo-map of those location



5. Conclusion

This methodology of identifying the Indian restaurants we identified that the number of restaurants are very less in Toronto. There are many bars and restaurants around city but the Indian restaurants only in very few in most locations. This gives a scope to start Indian restaurant in many locations where only one or two restaurants are available

6. Decision Taken

After performing data analysis, it is evident that there are very less hotels of Indian style are available in Toronto. Hardly there are 10 Indian restaurants. But there the community assets map shown in the clearly shows that there is thick population in Toronto including many Asian country people as for the sources. There many bars around the city and many food courts are identified. This indicates that decision taken to start an Indian restaurant is wise and successful idea as per the data analysis done.