

Final Report

Capstone Project - The Battle of Neighborhoods

Problem Statement:

Prospects of finding an Indian Restaurant in Toronto, Canada.

Toronto, the capital of the province of Ontario, is the most populous Canadian city. Its diversity is reflected in Toronto's ethnic neighborhoods such as Chinatown, Corso Italia, Greektown, Kensington Market, Koreatown, Little India, Little Italy, Little Jamaica, Little Portugal & Roncesvalles. One of the most immigrant-friendly cities in North America with more than half of the entire Indian Canadian population residing in Toronto it is one of the best places to find a good rated Indian restaurant.

In this project we will go through step-by-step process to make a decision where to find a good Indian restaurant.

Problems:

1. List and visualize all major parts of Toronto City that has great Indian restaurants.
2. what is best location in Toronto City for Indian Cuisine?
3. which areas have potential Indian Restaurant Market?
4. which all areas lack Indian Restaurants?
5. which is the best place to stay if you prefer Indian Cuisine?

Target Audience:

Who will be more interested in this project? What type of clients or a group of people would be benefitted?

1. Business personnel who wants to invest on an Indian restaurant in Toronto. This analysis will be a comprehensive guide to start or expand restaurants targeting the Indian crowd.
2. This analysis will give an idea, how beneficial it is to open a restaurant and what are the pros and cons of this business.
3. Indian crowd who wants to find neighborhoods with lots of option for Indian restaurants.
4. Business Analyst or Data Scientists, who wish to analyze the neighborhoods of Toronto using Exploratory Data Analysis and other statistical & machine learning techniques to obtain all the necessary data, perform some operations on it and, finally be able to tell a story out of it.

Data Sources:

- a) Used “List of Postal code of Canada: M” (https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M) wiki page to get all the information about the neighborhoods present in Toronto. This page has the postal code, borough & the name of all the neighborhoods present in Toronto.
- b) Used “https://cocl.us/Geospatial_data” csv file to get all the geographical coordinates of the neighborhoods.
- c) To get location and other information about various venues in Toronto Foursquare’s explore API has been used. Using the Foursquare’s explore API (which gives venues recommendations), all details about the venues up present in Toronto and collected their names, categories and locations (latitude and longitude) have been fetched.
- d) From Foursquare API (<https://developer.foursquare.com/docs>), I retrieved the following for each venue:
 - Name: The name of the venue.
 - Category: The category type as defined by the API.
 - Latitude: The latitude value of the venue.
 - Longitude: The longitude value of the venue.

Methodology:

1. Started the task by collecting the data about Canada from the Wikipedia page link

"https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M"

Out[11]:

	PostalCode	Borough	Neighbourhood
0	M1A	Not assigned	Not assigned
1	M2A	Not assigned	Not assigned
2	M3A	North York	Parkwoods
3	M4A	North York	Victoria Village
4	M5A	Downtown Toronto	Regent Park, Harbourfront

2. Removed all the cells having a Not Assigned Borough

Out[16]:

	PostalCode	Borough	Neighbourhood
0	M3A	North York	Parkwoods
1	M4A	North York	Victoria Village
2	M5A	Downtown Toronto	Regent Park, Harbourfront
3	M6A	North York	Lawrence Manor, Lawrence Heights
4	M7A	Downtown Toronto	Queen's Park, Ontario Provincial Government

3. Used "https://cocl.us/Geospatial_data" csv file to get all the geographical coordinates of the neighborhoods.

Out[21]:

	PostalCode	Latitude	Longitude
0	M1B	43.806686	-79.194353
1	M1C	43.784535	-79.160497
2	M1E	43.763573	-79.188711
3	M1G	43.770992	-79.216917
4	M1H	43.773136	-79.239476

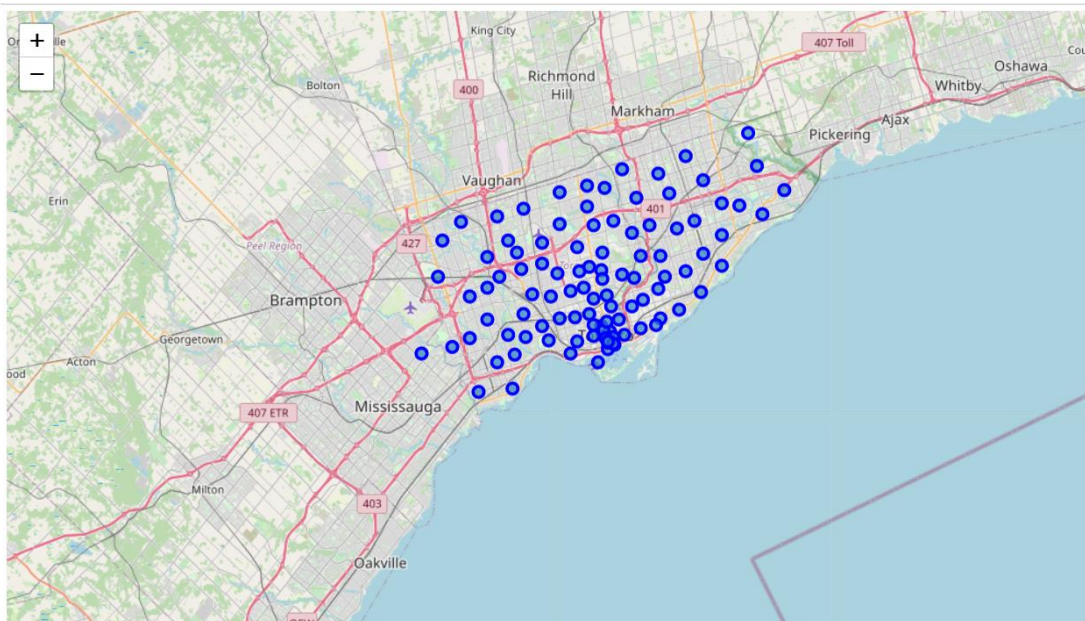
4. Got the actual data frame containing all the latitude and longitude values of all the neighborhoods of Canada.

Out[23]:

	PostalCode	Borough	Neighbourhood	Latitude	Longitude
0	M3A	North York	Parkwoods	43.753259	-79.329656
1	M4A	North York	Victoria Village	43.725882	-79.315572
2	M5A	Downtown Toronto	Regent Park, Harbourfront	43.654260	-79.360636
3	M6A	North York	Lawrence Manor, Lawrence Heights	43.718518	-79.464763
4	M7A	Downtown Toronto	Queen's Park, Ontario Provincial Government	43.662301	-79.389494

5. Created a Map of Toronto with neighborhoods superimposed on top

Out[26]:

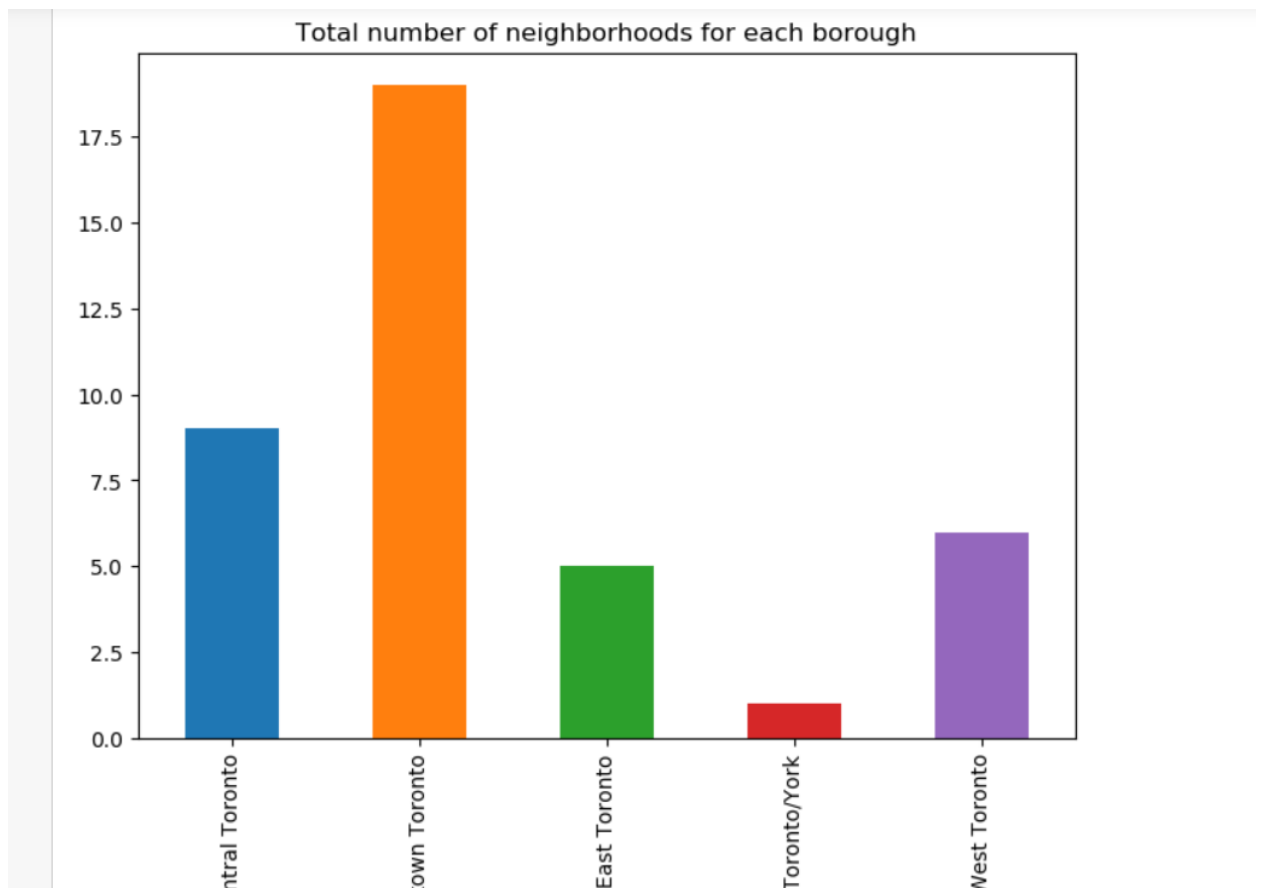


6. Got the list of all the neighborhoods of Toronto

Out[30]:

	PostalCode	Borough	Neighbourhood	Latitude	Longitude
0	M5A	Downtown Toronto	Regent Park, Harbourfront	43.654260	-79.360636
1	M7A	Downtown Toronto	Queen's Park, Ontario Provincial Government	43.662301	-79.389494
2	M5B	Downtown Toronto	Garden District, Ryerson	43.657162	-79.378937
3	M5C	Downtown Toronto	St. James Town	43.651494	-79.375418
4	M4E	East Toronto	The Beaches	43.676357	-79.293031

7. Created a bar graph to visualize the total number of neighborhoods for each borough

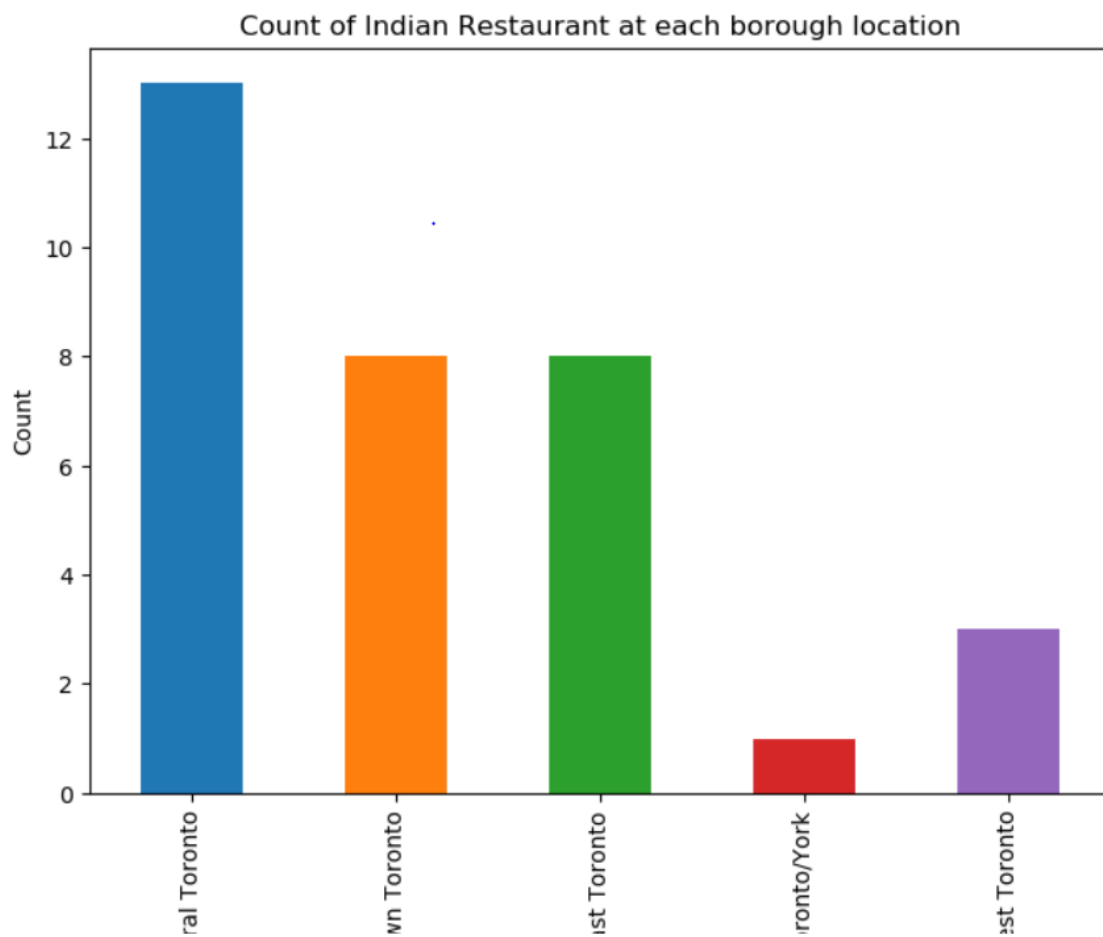


8. Got the list of all the Indian restaurants in Toronto city

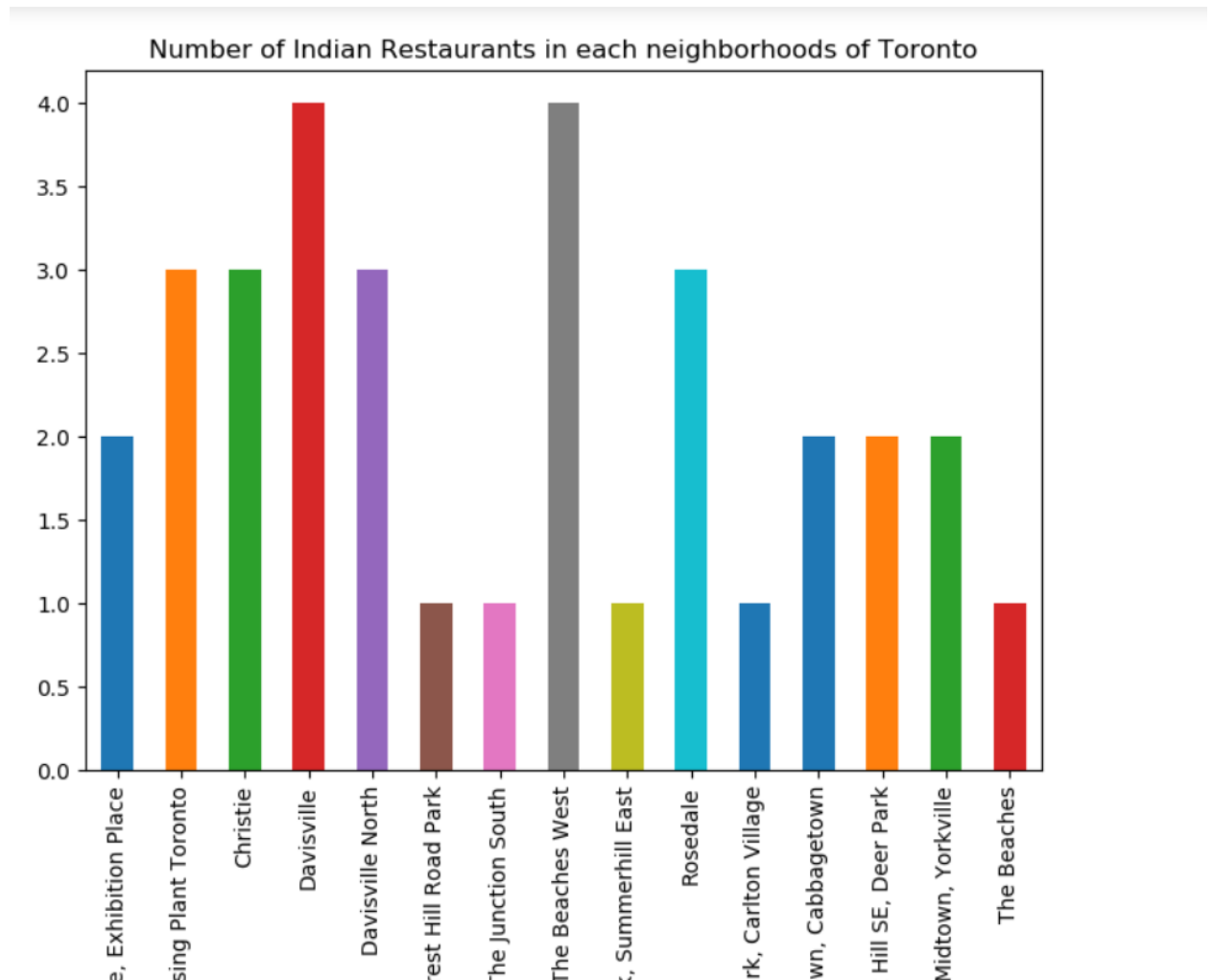
Out[38]:

	Borough	Neighborhood	ID	Name
0	East Toronto	The Beaches	4dcd7c6352b1f8915b7e7f7e	Delhi Bistro
1	Downtown Toronto	Christie	4adb969ef964a520332921e3	Banjara Indian Cuisine
2	Downtown Toronto	Christie	4c62c59ce1621b8dd0332453	Roti Cuisine of India
3	Downtown Toronto	Christie	52418b0b7e48222eea81d2d2	Pukka Restaurant
4	West Toronto	Brockton, Parkdale Village, Exhibition Place	4aecbbb0f964a520bcca21e3	Mother India

9. Created a bar graph to visualize the total number of Indian Restaurants for each borough



10.Created a bar graph to visualize the total number of Indian Restaurants for each neighborhood



11.Got the list of all the Indian Restaurant in Davisville neighborhood in Toronto

Out[43]:

	Borough	Neighborhood	ID	Name
18	Central Toronto	Davisville	5169d445e4b07de190b5c3d6	Marigold Indian Bistro
19	Central Toronto	Davisville	4b75c28af964a520ba222ee3	Kamasutra
20	Central Toronto	Davisville	4c51e0069d642d7f4aef50de	Eat Indian By Amaya
21	Central Toronto	Davisville	5650eed9498e376aac0c2478	Indian Street Food Co.

12. Got the list of all the Indian Restaurant in India Bazar, The Beaches West neighborhood in Toronto

Out[44]:

	Borough	Neighborhood	ID	Name
6	East Toronto	India Bazaar, The Beaches West	4ae0c7a8f964a520638221e3	Udupi Palace
7	East Toronto	India Bazaar, The Beaches West	4afc9816f964a520312422e3	Motimahal
8	East Toronto	India Bazaar, The Beaches West	4bac30a2f964a52018ea3ae3	Bombay Chowpatty
9	East Toronto	India Bazaar, The Beaches West	4d8d278a1d06b1f712942a3b	Gautama

13. List of all the Indian Restaurants in Davisville neighborhood with their corresponding likes , rating and tips

Out[81]:

	Name	Rating	Likes
1	Kamasutra	8.1	18
0	Marigold Indian Bistro	8.0	11
2	Eat Indian By Amaya	7.1	7
3	Indian Street Food Co.	6.8	9

14. List of all the Indian Restaurants in India bazar, The Beaches West neighborhood with their corresponding likes , rating and tips

Out[84]:

	Name	Rating	Likes
0	Udupi Palace	8.3	78
1	Motimahal	8.0	23
2	Bombay Chowpatty	7.1	7
3	Gautama	5.8	15

Result:

1. List of all the major parts of Toronto City that has great Indian restaurants:

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Out[91]: Neighborhood
Davisville 4
India Bazaar, The Beaches West 4
Business reply mail Processing Centre, South Central Letter Processing Plant Toronto 3
Christie 3
Davisville North 3
Rosedale 3
Name: ID, dtype: int64
```

2. Davisville and India Bazaar are the best locations in Toronto City for Indian Cuisine.

3. Davisville, India Bazaar, Business reply mail processing centre, Christie, Davisville North these are some areas having potential Indian Restaurant markets.

4. List of areas having lack Indian Restaurants:

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Out[94]: Neighborhood
Forest Hill North & West, Forest Hill Road Park 1
High Park, The Junction South 1
Moore Park, Summerhill East 1
Runnymede, The Junction, Weston-Pellam Park, Carlton Village 1
The Beaches 1
Brockton, Parkdale Village, Exhibition Place 2
St. James Town, Cabbagetown 2
Summerhill West, Rathnelly, South Hill, Forest Hill SE, Deer Park 2
The Annex, North Midtown, Yorkville 2
Name: ID, dtype: int64
```

5.India Bazaar, The Beaches West is the best place to stay in Toronto if someone loves Indian Cousins because the highest rated Indian Restaurant in Toronto “Udupi Palace” is situated here.

Conclusion:

There is always room for improvement and hence the above solution I have provided can also be improved for best results depending upon the data we have.