

IBM DATA SCIENCE PROFESSIONAL CERTIFICATE CAPSTONE PROJECT

# OPENING AN INDIAN RESTAURANT IN TORONTO

Author: Preetish Juneja

---



1

---

1

<https://thehoneycombers.com/singapore/indian-restaurants-in-singapore-our-top-spots-for-curry-spice-and-everything-nice/>

---

---

## Introduction

I will be exploring the option of opening an Indian restaurant in the city of Toronto through this capstone project. I will be assuming that a successful chain of restaurants in India would like to open their restaurants in international venues so cost would not be an issue for them but rather the need to attract more customers which I would be giving high significance in this project. Therefore, I will be pursuing the project in hope to find the most suitable location based on the aforementioned conditions by the restaurant owner. I have developed these conditions while keeping in mind the factors researched on the internet regarding where restaurants usually like to locate and also after looking at the net worth of such successful restaurant chain owners. Therefore, this project would ultimately help such entrepreneurs to open international restaurants if they read the findings of my project.

## Datasets to be used

First of all, I will be using the dataset for postal codes in Toronto as used in the Week 3 assignment of the course<sup>2</sup>. I will be using this data and find their latitude and longitude coordinates as in the Week 3 assignment of the course. Furthermore, I will be exploring the trending locations in Toronto and other Indian restaurants in Toronto and use clustering to find the neighbourhood which would be the best place to open the first international restaurant of a well-known and successful restaurant chain in India. Therefore, using and analysing the aforementioned data, I will present my findings regarding the ideal location for the chain's new restaurant.

## Data Cleaning

---

<sup>2</sup> [https://en.wikipedia.org/wiki/List\\_of\\_postal\\_codes\\_of\\_Canada:\\_M](https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M)

---

The first step was to clean the dataset of “Toronto Postal Codes” to make sure that all Boroughs and Neighborhoods were defined and did not show “Not assigned” and to get it to the following format:

	<b>Postal Code</b>	<b>Borough</b>	<b>Neighborhood</b>
<b>0</b>	M3A	North York	Parkwoods
<b>1</b>	M4A	North York	Victoria Village
<b>2</b>	M5A	Downtown Toronto	Regent Park, Harbourfront
<b>3</b>	M6A	North York	Lawrence Manor, Lawrence Heights
<b>4</b>	M7A	Downtown Toronto	Queen's Park, Ontario Provincial Government
<b>...</b>	...	...	...
<b>98</b>	M8X	Etobicoke	The Kingsway, Montgomery Road, Old Mill North
<b>99</b>	M4Y	Downtown Toronto	Church and Wellesley
<b>100</b>	M7Y	East Toronto	Business reply mail Processing Centre, South C...
<b>101</b>	M8Y	Etobicoke	Old Mill South, King's Mill Park, Sunnylea, Hu...
<b>102</b>	M8Z	Etobicoke	Mimico NW, The Queensway West, South of Bloor,...

Then I imported the csv file containing all the latitude and longitude coordinates for the above neighborhoods:

---

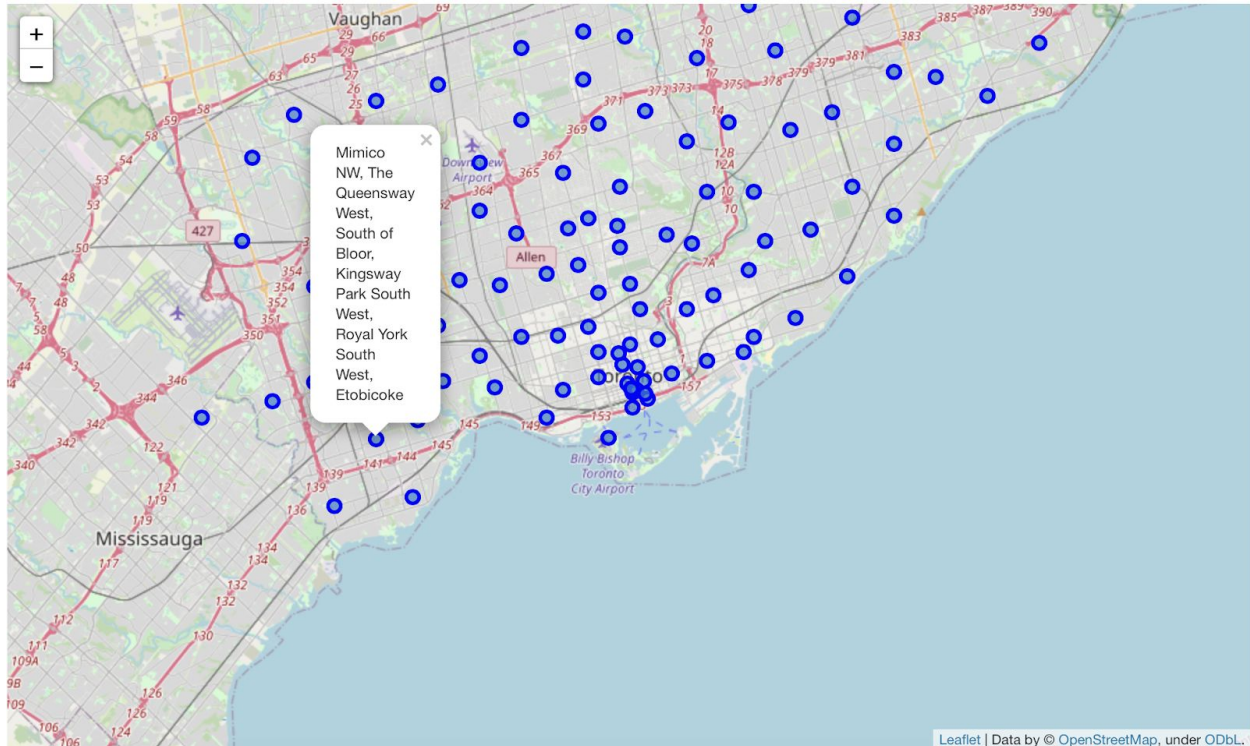
	Postal Code	Latitude	Longitude
<b>0</b>	M1B	43.806686	-79.194353
<b>1</b>	M1C	43.784535	-79.160497
<b>2</b>	M1E	43.763573	-79.188711
<b>3</b>	M1G	43.770992	-79.216917
<b>4</b>	M1H	43.773136	-79.239476
...	...	...	...
<b>98</b>	M9N	43.706876	-79.518188
<b>99</b>	M9P	43.696319	-79.532242
<b>100</b>	M9R	43.688905	-79.554724
<b>101</b>	M9V	43.739416	-79.588437
<b>102</b>	M9W	43.706748	-79.594054

Next I sorted the first table to get it to the same format as the second table and joined the two tables together:



	Postal Code	Borough	Neighborhood	Latitude	Longitude
0	M1B	Scarborough	Malvern, Rouge	43.806686	-79.194353
1	M1C	Scarborough	Rouge Hill, Port Union, Highland Creek	43.784535	-79.160497
2	M1E	Scarborough	Guildwood, Morningside, West Hill	43.763573	-79.188711
3	M1G	Scarborough	Woburn	43.770992	-79.216917
4	M1H	Scarborough	Cedarbrae	43.773136	-79.239476
...	...	...	...	...	...
98	M9N	York	Weston	43.706876	-79.518188
99	M9P	Etobicoke	Westmount	43.696319	-79.532242
100	M9R	Etobicoke	Kingsview Village, St. Phillips, Martin Grove ...	43.688905	-79.554724
101	M9V	Etobicoke	South Steeles, Silverstone, Humbergate, Jamest...	43.739416	-79.588437
102	M9W	Etobicoke	Northwest, West Humber - Clairville	43.706748	-79.594054

I made a map of all the neighborhoods in order to get accustomed to it for making the next map with only the Indian Restaurants:



The above map shows each location as popup when clicked on it

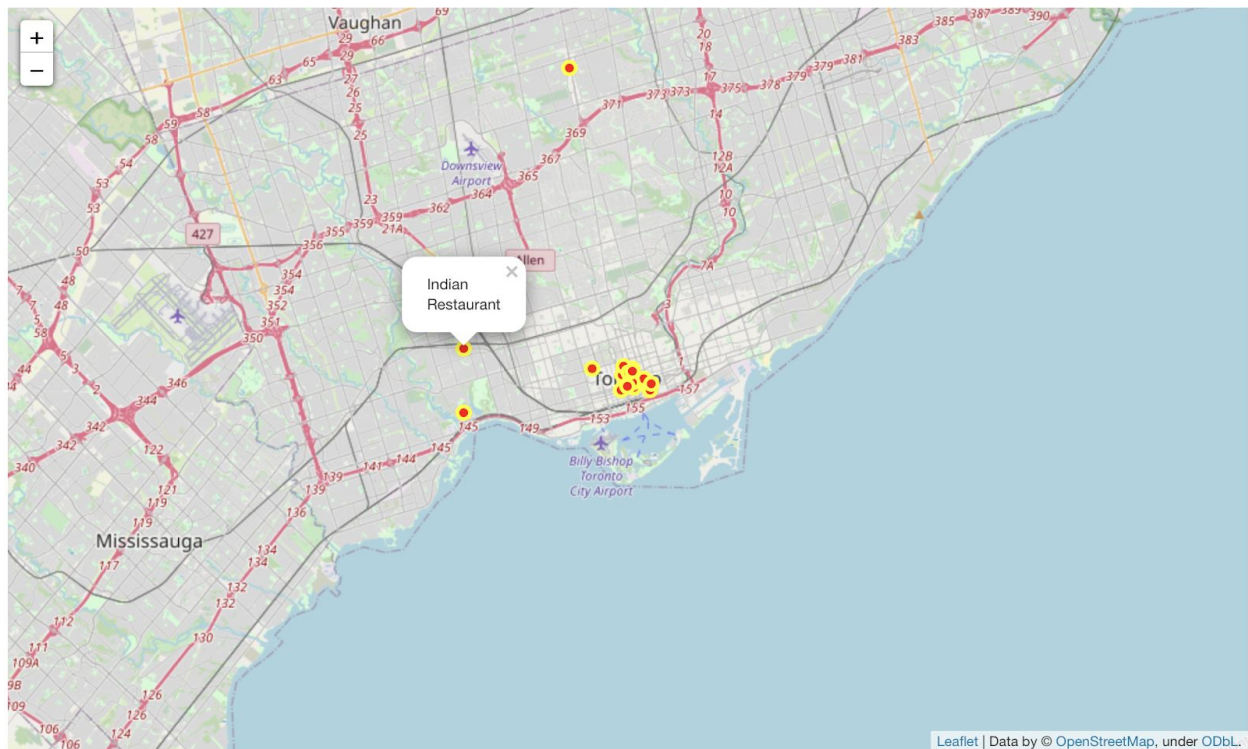
---

Next I imported data using FourSquare API and performed data cleaning on it to get it to the following format:

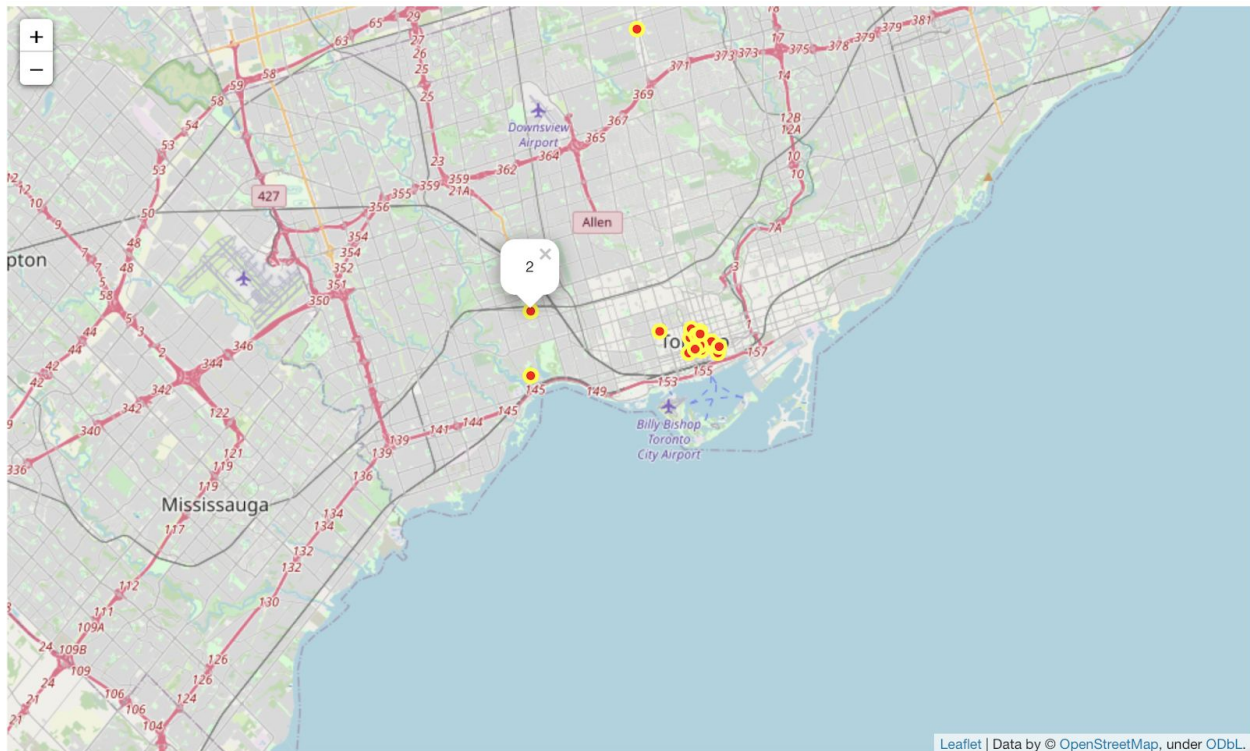
	name	categories	address	lat	lng	labeledLatLngs	distance	cc	city	state	country
0	Leela Indian Food Bar	Indian Restaurant	3108 Dundas St. West	43.665326	-79.473306	[{'label': 'display', 'lat': 43.66532602974136...	7381	CA	Toronto	ON	Canada

(Note: Full table too long, both horizontally and vertically)

I followed the same approach as before to create the map of all Indian restaurants:



Finally, I performed clustering of all these restaurants (based on their neighbourhood) to create a map with popups as their cluster numbers:



Cluster 0: Downtown Toronto\*

Cluster 1: North York\*

Cluster 2: West Toronto\*

\*(These are mentioned in the notebook as well)

Lastly, I performed additional analysis to find the number of restaurants in each cluster, based on which I will be giving my conclusion:

```
Clus_km
0      15
1       1
2       3
Name: Clus_km, dtype: int64
```

---

## Results

There are 3 main clusters of Indian restaurants in Toronto as per following:

Downtown Toronto: 15

North York: 1

West Toronto: 3

## Recommendations

As per the above results and the conditions set out by the restaurant chain owner in the beginning of the project, the best option for the owner would be **Cluster 2 (West Toronto)**. This is because Downtown Toronto has 15 Indian restaurants already making the environment very competitive hence reducing the number of customers whereas the owner wants a maximum number of customers. Furthermore, North York only has 1 Indian restaurant so the owner can't be sure whether the local people do or do not like Indian cuisine in that area. Whereas for West Toronto, since there are 3 Indian restaurants, there is fairly less competition (meaning potentially high numbers of customers) and also the owner can be fairly sure that the existence of 3 Indian restaurants there means that locals do enjoy Indian cuisine and the owner's new restaurant would be quite successful compared to other locations in Toronto.

## Conclusion

Therefore, it can be safely concluded that our restaurant owner should invest in building his new restaurant in West Toronto due to the reasons outlined previously in the "Recommendations" section of the report.

## Bibliography

1. <https://thehoneycombers.com/singapore/indian-restaurants-in-singapore-our-top-spots-for-curry-spice-and-everything-nice/>
2. [https://en.wikipedia.org/wiki/List\\_of\\_postal\\_codes\\_of\\_Canada:\\_M](https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M)