

Finding the best Italian restaurant for people who travel to Toronto

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June 8, 2020

1. Introduction

With the development of economy and society, more and more people like to travel on holidays. Toronto, Canada is an international city which located in the east of Canada, near the border between the United States and Canada. Toronto has very magnificent natural and cultural landscapes. Lots of Americans like to go to Toronto on holidays, but there are also many inconvenient to travel in a strange city. Especially how to find your favorite foods in a strange city? In this project, I will answer that question. This project will help those who like Italian cuisine to find their favorite restaurants in Toronto.

2. Business Problem

Toronto is an international city with a population of over 3 million. Therefore, it is very difficult to find a favorite restaurant. In this project, I will use the data science knowledge I have learned to answer the following questions:

- How many Italian restaurants in Toronto?
- Where could we find these Italian restaurants?
- Which neighborhood would I recommend finding the best Italian restaurant and why I recommend it?

3. Data

I will use the following data to finish this project:

Toronto City data that contains list Post Code, Boroughs and Neighborhoods.

Data source: https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M

Toronto City data that contains Post Code, latitude and longitude.

Data source: http://cocl.us/Geospatial_data

From above, I can get the number of boroughs and neighborhoods of Toronto, CA and their latitude and longitude information.

Italy restaurants in each neighborhood of Toronto, CA.

Data source: ****Foursquare API****

I will use the Foursquare API to analyze the Italian restaurants in Toronto, such as: the quantity, distribution, and ratings of the restaurant, etc.

4 Methodology section

4.1 Boroughs and Neighborhoods in Toronto.

I will use two data sources to create a table which contains the information of boroughs and neighborhoods in Toronto. The picture below is part of this table.

	Borough	Neighborhood	Latitude	Longitude
0	North York	Parkwoods	43.753259	-79.329656
1	North York	Victoria Village	43.725882	-79.315572
2	Downtown Toronto	Regent Park, Harbourfront	43.654260	-79.360636
3	North York	Lawrence Manor, Lawrence Heights	43.718518	-79.464763
4	Downtown Toronto	Queen's Park	43.662301	-79.389494
5	Etobicoke	Islington Avenue, Humber Valley Village	43.667856	-79.532242
6	Scarborough	Malvern, Rouge	43.806686	-79.194353
7	North York	Don Mills	43.745906	-79.352188
8	East York	Parkview Hill, Woodbine Gardens	43.706397	-79.309937
9	Downtown Toronto	Garden District, Ryerson	43.657162	-79.378937

Fig.1 the borough, neighborhood, latitude and longitude of Toronto CA.

The Toronto city have **10** boroughs and **103** neighborhoods.

4.2 The number of Italian restaurants in Toronto and their distribution.

In this part, I will create the data flow by using **foursquare API**. Then, I will extract number, and distribution of Italian restaurants in Toronto.

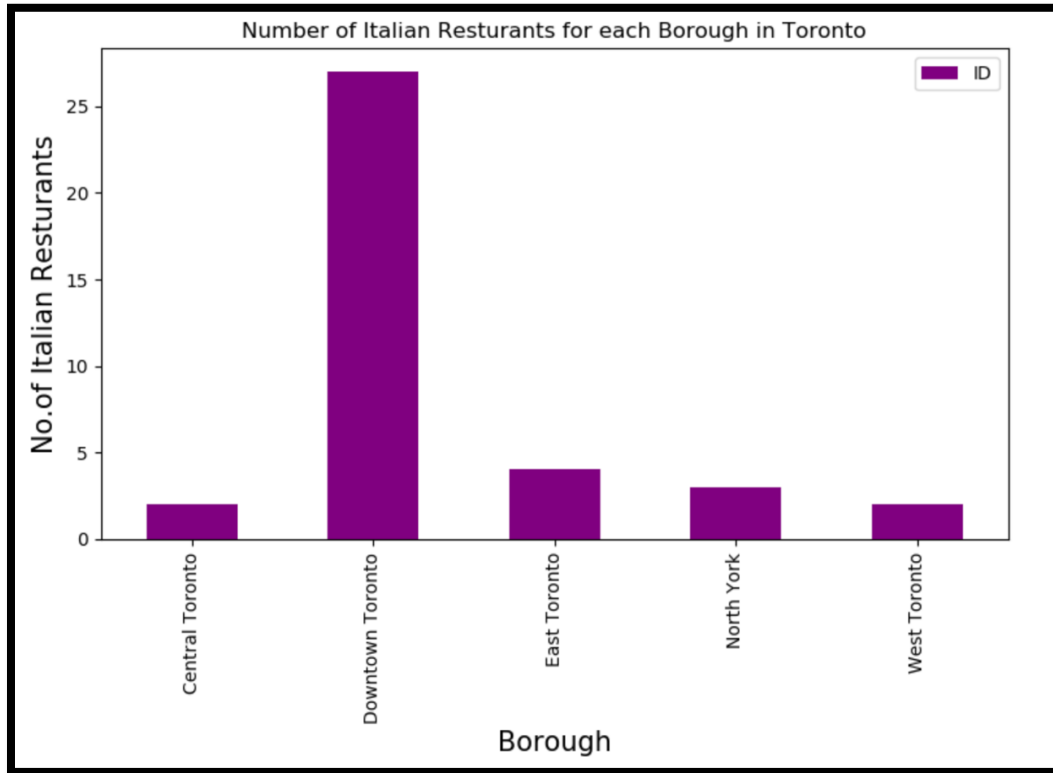


Fig.2 Number of Italian restaurants for each borough in Toronto

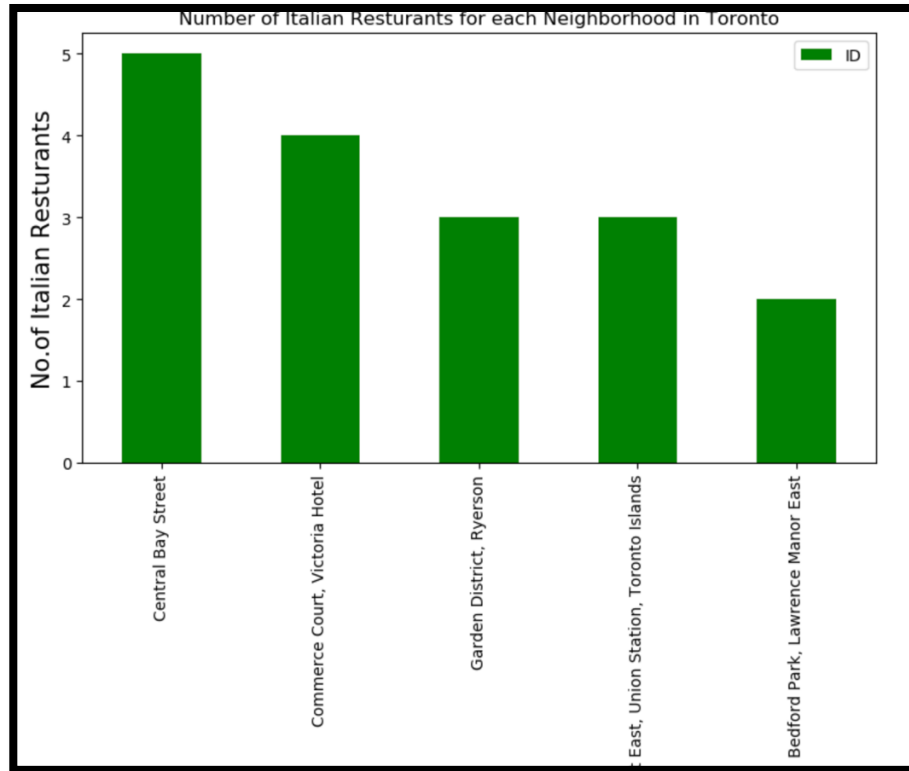


Fig. 3 Number of Italian restaurants for each neighborhood in Toronto

4.3 the name, rating, likes and tips of Italian restaurants in Toronto.

Using the similar Data processing methods, I got the detail information of Italian restaurants in Toronto.

	Borough	Neighborhood	ID	Name	Likes	Rating	Tips
0	Downtown Toronto	Queen's Park	4a8355bffa964a520d3fa1fe3	Mercatto	56.0	7.8	26.0
1	Downtown Toronto	Garden District, Ryerson	4d306dd82748b60c62b6dba0	Trattoria Mercatto	105.0	7.4	82.0
2	Downtown Toronto	Garden District, Ryerson	52f6816f11d24a43115dc834	Scaddabush Italian Kitchen & Bar	171.0	7.5	70.0
3	Downtown Toronto	Garden District, Ryerson	4afcc52df964a520b82522e3	Donatello Restaurant	20.0	7.3	19.0
4	North York	Don Mills	4bdaff7463c5c9b67bcb2568	Sorento Restaurant	9.0	8.2	8.0
5	Downtown Toronto	St. James Town	4b49183ff964a520a46526e3	Terroni	278.0	8.1	95.0
6	Downtown Toronto	Central Bay Street	4a8355bffa964a520d3fa1fe3	Mercatto	56.0	7.8	26.0
7	Downtown Toronto	Central Bay Street	4afcc52df964a520b82522e3	Donatello Restaurant	20.0	7.3	19.0
8	Downtown Toronto	Central Bay Street	52f6816f11d24a43115dc834	Scaddabush Italian Kitchen & Bar	171.0	7.5	70.0
9	Downtown Toronto	Central Bay Street	54fb2f8d498e724a96c14f91	Tosto	20.0	6.5	17.0

Fig.4 The detail information of Italian restaurants in Toronto.

Then, I plot the average score of Italian restaurants in each borough.

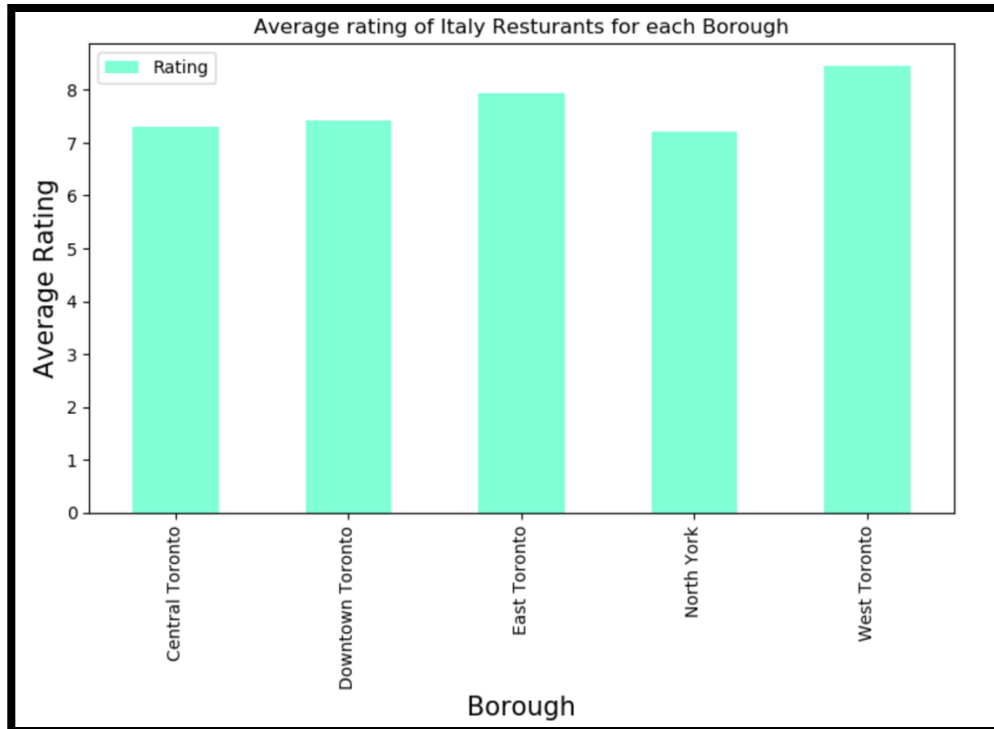


Fig.5 The average rating of Italian restaurants for each borough.

4.5 The map of Italian restaurants in Toronto

Finally, using folium, I visualize all Italian restaurants with a rating greater than 8.0 on the Toronto map.

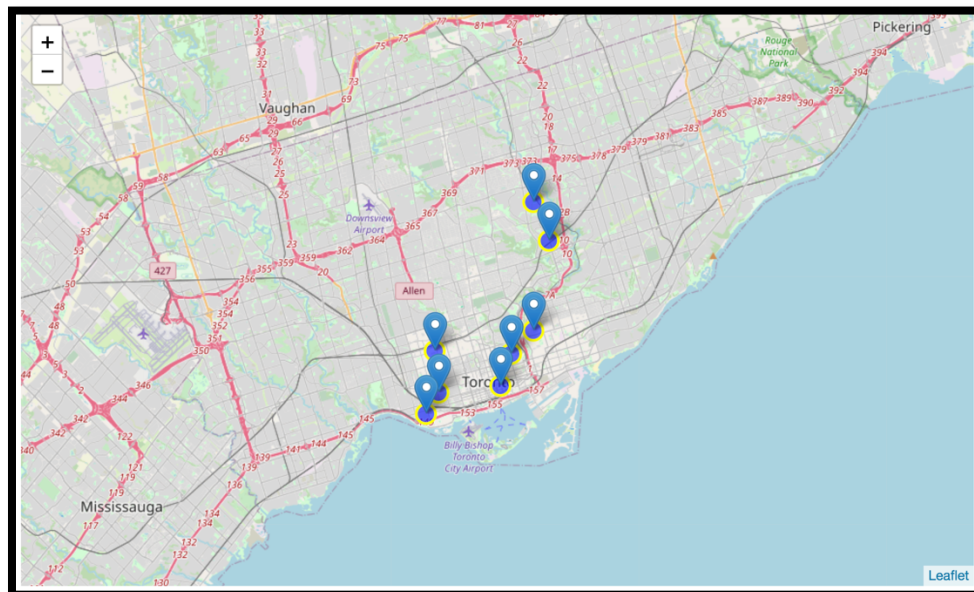


Fig.6 The map of Italian restaurants with a rating greater than 8.0.

5. Results

Based on the above analysis, we can know the followings:

- There are **10** boroughs and **103** neighborhoods in Toronto.
- The North York borough has **24** neighborhoods, the second largest borough is Downtown Toronto, it has 19 neighborhoods.
- There are **38** Italian restaurants in Toronto, **Downtown Toronto** has the **largest** number of Italian restaurants. There are 24 Italian restaurants in this borough, only 14 Italian restaurants at the other boroughs of Toronto.
- Central Bay Street, the neighborhood with the most Italian restaurants, has a total of five restaurants, Commerce Court, Victoria Hotel neighborhood and Garden District and Ryerson neighborhoods, have 4 and 3 Italian restaurants, respectively.
- The Little Portugal, Trinity neighborhood of West Toronto borough has the **highest average rating** Italian restaurants, the average rating is **8.7**. followed by St. James Town, Cabbage town neighborhood, Downtown Toronto borough and The Danforth West, Riverdale, East Toronto borough, the average rating are 8.6 and 8.5 respectively.

6. Discussion

I will defiantly recommend **downtown** Italian restaurants for travelers. Firstly, downtown Toronto is the borough with **the most Italian restaurants**. secondly it has **the second highest rated Italian restaurant**, people can have more choices in downtown. Then, I would recommend Ufficio Italian restaurant which located in the Little Portugal, Trinity neighborhoods, because Ufficio is the **highest rating** Italian restaurant in Toronto.

7. Conclusion

In this project, using the data science knowledge I learned, I conducted an exploration of Italian restaurants in Toronto, Canada. Combined various factors such as geographic location and ratings, I successfully recommended Italian restaurants for tourists who like Italian restaurants. This project can not only provide assistance to those tourists, but can also be further applied to other fields, such as: finding the best schools and parks in Toronto, etc., to provide assistance to other stakeholders.

However, this project has its limitation. For example: The ratings of restaurants are very subjective, and people do not necessarily like restaurants with high ratings.