The battle of Neighborhoods

An Italian adventure in Toronto

Introduction

- Toronto is the provincial capital of Ontario and the most populous city in Canada: according to World Population Review, it had an estimated population of just over 2.8 million in 2016, which makes it the 4th most populous city in North America

- It is also one of the most multicultural and multiracial cities in the world, since 51.1% of the resident of the city proper belonged to a visible minority group

- The heterogeneity of the population can be seen as an opportunity for foreign entrepreneurs wanting to open a restaurant in this city, given the high population and the potential high demand of ethnic food consumption

Business Case

- For this study, let's assume that an Italian Entrepreneur (in this story Vincenzo) tells us he is interested in opening an Italian restaurant in Toronto. Despite he is confident of his entrepreneurial ability, Vincenzo asks us to analyse the supply and demand in the restaurant industry of the city, and if we can suggest him which neighbourhoods are the best to open an Italian restaurant

- According to CMA database Italians represent 8.3% of the population in Toronto: a huge Italian community could represent a good customer base but it potentially implies an existing supply of Italian restaurants, meaning a though concurrency for our client.
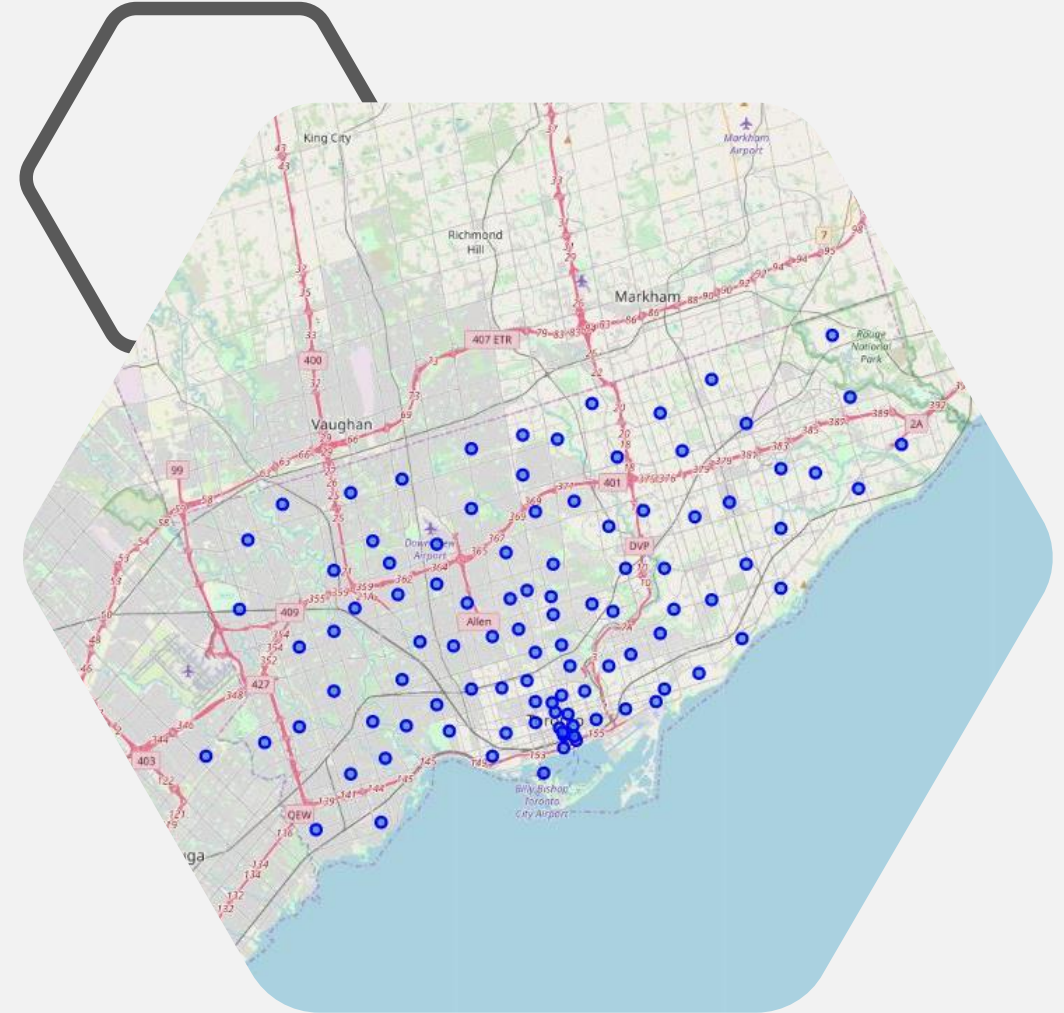
Data

- For this study we firstly need to ger information about the boroughs and neighbourhoods of Toronto, that we will scrape from the Wikipedia Page from which we will obtain the data of the boroughs of Toronto, its neighbourhoods and the respective postal codes.

- We need the latitude and longitude for each neighbourhood of Toronto (Geospatial Data).

- Data of the Venues are obtained by the Foursquare API.

- We will take a list of the Best 10 Italian Restaurants of Toronto according to *Il Gambero Rosso website.*
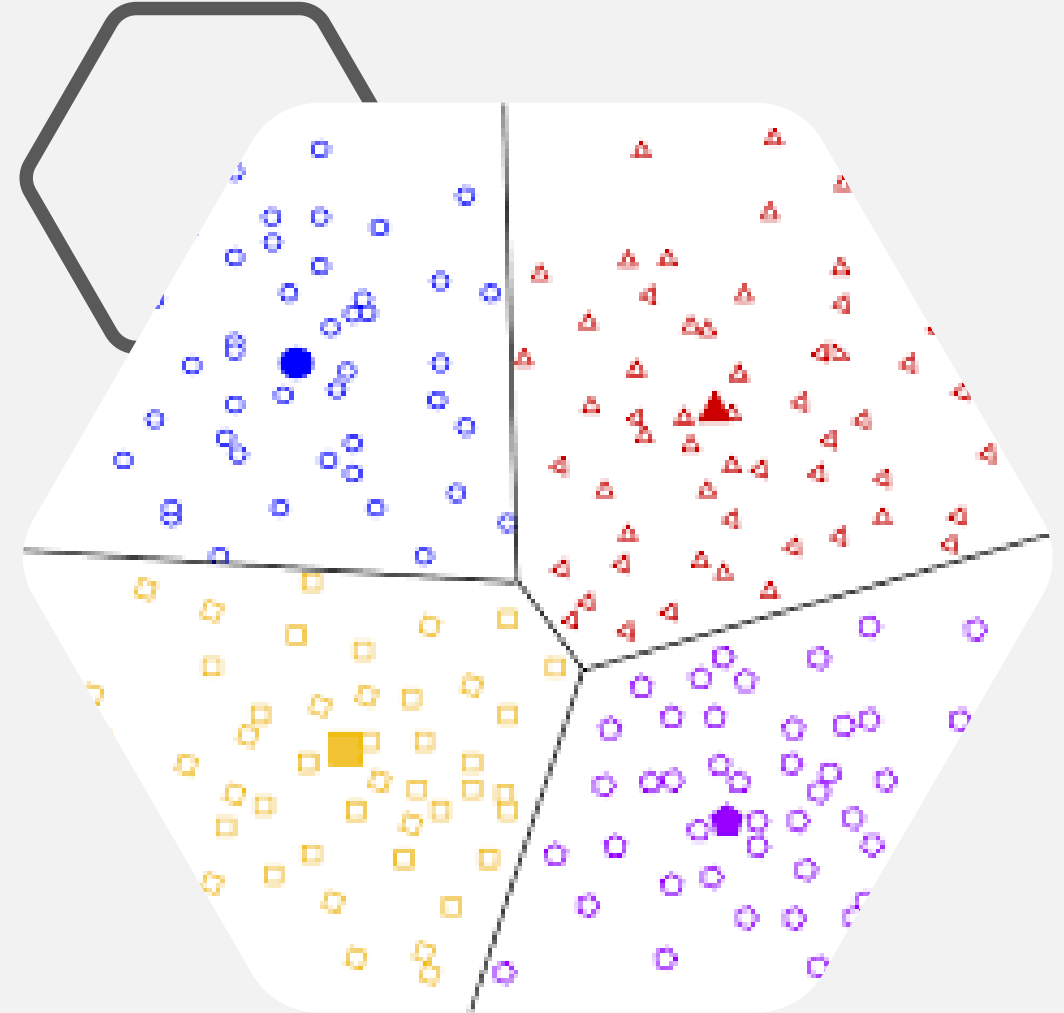
Methodology (1/2)

- We scrape the data related to the Borough and Neighbourhoods of Toronto from the Wikipedia Page mentioned in the data section. To do that, we use the *BeautifulSoup* Python library, which allows to pull data out of HTML an XML files.

- We clean our dataset by excluding all the rows for which the Borough is not assigned. To proceed in our data analysis, we also combine into one row the neighbourhoods separated with a comma.

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- The Geospatial Data allows us to have a first Graphical Representation of the Neighbourhoods in Toronto. Using the *Geopy* Library, we are able to represent them in an interactive map.

Methodology (2/2)

Once we obtained this data, we analyse each Borough:

- For each Borough, we create a Dataframe.
- We use the Foursquare API to get the top venues for each neighbourhood of the Borough.
- We report the top 5 most common venues of each neighbourhood, along with their frequency.
- We then consider only the neighbourhoods that have Italian Restaurant as one of the Top 5 venues.

- If the Borough analysed contains neighbourhoods with Italian Restaurant in its Top 5 venues, we then apply a K-means clustering to the Borough by creating 5 clusters for each of them, in order to profile the potential client of the restaurants.

Results (1/4)

- On a Total of 98 Neighbourhoods analysed in the Dataset, 9 of them (approximately 9.20%) have "Italian Restaurants" in the top 5 venues list.

Borough	Analysed Neighborhoods	Neighborhoods With Italian Restaurants in the top 5 Venues
Scarborough	15	1
North York	24	1
East York	5	0
East Toronto	5	0
Downtown Toronto	18	5
West Toronto	6	1
Queen's Park	1	1
Mississauga	0	0
Etobicoke	11	0
Central Toronto	9	0
York	4	0
Total	98	9

Results (2/4)

- Scarborough

Clarks Corners,Sullivan,Tam O'Shanter	
Venue	Frequency
Pizza Place	0.18
Fast Food Restaurant	0.09
Chinese Restaurant	0.09
Italian Restaurant	0.09
Thai Restaurant	0.09

- North York

Bedford Park,Lawrence Manor East	
Venue	Frequency
Italian Restaurant	0.09
Coffee Shop	0.09
Greek Restaurant	0.04
Butcher	0.04
Grocery Store	0.04

- West Toronto

Runnymede,Swansea	
Venue	Frequency
Pizza Place	0.09
Café	0.09
Sushi Restaurant	0.06
Coffee Shop	0.06
Italian Restaurant	0.06

- Queen's Park

Queen's Park	
Venue	Frequency
Coffee Shop	0.24
Park	0.05
Gym	0.05
Art Gallery	0.03
Italian Restaurant	0.03

- Downtown Toronto

Cabbagetown,St. James Town	
Venue	Frequency
Restaurant	0.07
Coffee Shop	0.07
Italian Restaurant	0.04
Market	0.04
Pub	0.04

Central Bay Street	
Venue	Frequency
Coffee Shop	0.14
Italian Restaurant	0.06
Café	0.05
Ice Cream Shop	0.05
Burger Joint	0.04

Design Exchange,Toronto Dominion Centre	
Venue	Frequency
Coffee Shop	0.14
Café	0.08
Hotel	0.06
Restaurant	0.04
Italian Restaurant	0.04

Harbourfront East,Toronto Islands,Union Station	
Venue	Frequency
Coffee Shop	0.11
Aquarium	0.05
Hotel	0.05
Café	0.04
Italian Restaurant	0.04

St. James Town	
Venue	Frequency
Coffee Shop	0.07
Restaurant	0.05
Café	0.05
Hotel	0.05
Italian Restaurant	0.04

Results (3/4)

Clusters Analysis

- Given the scarcity of the of Neighborhoods with Italian Restaurants in the top 5 venues, the Cluster analysis has reported consistent results only for Downtown Toronto and Scarborough

	Borough	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
1	Downtown Toronto	0	Coffee Shop	Restaurant	Market	Pub	Italian Restaurant	Bakery	Pizza Place	Café	Breakfast Spot	Butcher
2	Downtown Toronto	0	Coffee Shop	Japanese Restaurant	Gay Bar	Sushi Restaurant	Restaurant	Café	Gastropub	Fast Food Restaurant	Hotel	Pub
3	Downtown Toronto	0	Coffee Shop	Park	Café	Pub	Bakery	Theater	Mexican Restaurant	Restaurant	Breakfast Spot	Gym / Fitness Center
4	Downtown Toronto	0	Coffee Shop	Clothing Store	Cosmetics Shop	Fast Food Restaurant	Café	Middle Eastern Restaurant	Restaurant	Diner	Ice Cream Shop	Italian Restaurant
5	Downtown Toronto	0	Coffee Shop	Hotel	Café	Restaurant	Italian Restaurant	Cocktail Bar	Cosmetics Shop	Breakfast Spot	Beer Bar	Gastropub
6	Downtown Toronto	0	Coffee Shop	Cocktail Bar	Cheese Shop	Bakery	Seafood Restaurant	Farmers Market	Beer Bar	Steakhouse	Café	Italian Restaurant
7	Downtown Toronto	0	Coffee Shop	Italian Restaurant	Ice Cream Shop	Café	Sandwich Place	Burger Joint	Chinese Restaurant	Indian Restaurant	Sushi Restaurant	Middle Eastern Restaurant
8	Downtown Toronto	0	Coffee Shop	Café	Steakhouse	Bar	Thai Restaurant	Burger Joint	Asian Restaurant	Cosmetics Shop	American Restaurant	Hotel
9	Downtown Toronto	0	Coffee Shop	Hotel	Aquarium	Café	Italian Restaurant	Sporting Goods Shop	Brewery	Pizza Place	Scenic Lookout	Bakery
10	Downtown Toronto	0	Coffee Shop	Café	Hotel	Restaurant	Italian Restaurant	Gastropub	Bar	Gym	Bakery	American Restaurant
11	Downtown Toronto	0	Coffee Shop	Hotel	Café	Restaurant	American Restaurant	Bakery	Deli / Bodega	Seafood Restaurant	Gastropub	Steakhouse
15	Downtown Toronto	0	Coffee Shop	Restaurant	Café	Beer Bar	Seafood Restaurant	Hotel	Cocktail Bar	Fast Food Restaurant	Art Gallery	Breakfast Spot
16	Downtown Toronto	0	Coffee Shop	Café	Hotel	Restaurant	Steakhouse	Asian Restaurant	Bar	Seafood Restaurant	Deli / Bodega	American Restaurant

	Borough	Cluster Labelstwo	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
2	Scarborough	1.0	Intersection	Breakfast Spot	Medical Center	Electronics Store	Pizza Place	Rental Car Location	Spa	Mexican Restaurant	Fried Chicken Joint	Fast Food Restaurant
3	Scarborough	1.0	Coffee Shop	Insurance Office	Korean Restaurant	History Museum	Hakka Restaurant	Grocery Store	General Entertainment	Furniture / Home Store	Fried Chicken Joint	Fast Food Restaurant
4	Scarborough	1.0	Thai Restaurant	Athletics & Sports	Bakery	Bank	Hakka Restaurant	Fried Chicken Joint	Caribbean Restaurant	Vietnamese Restaurant	Department Store	History Museum
6	Scarborough	1.0	Coffee Shop	Playground	Discount Store	Department Store	Vietnamese Restaurant	History Museum	Hakka Restaurant	Grocery Store	General Entertainment	Furniture / Home Store
7	Scarborough	1.0	Bus Line	Bakery	Intersection	Metro Station	Soccer Field	Park	Bus Station	Fast Food Restaurant	Discount Store	Electronics Store
9	Scarborough	1.0	Skating Rink	General Entertainment	Café	College Stadium	Vietnamese Restaurant	Coffee Shop	History Museum	Hakka Restaurant	Grocery Store	Furniture / Home Store
10	Scarborough	1.0	Indian Restaurant	Vietnamese Restaurant	Pet Store	Latin American Restaurant	Light Rail Station	Chinese Restaurant	Bar	Discount Store	Hakka Restaurant	Grocery Store
11	Scarborough	1.0	Middle Eastern Restaurant	Auto Garage	Bakery	Sandwich Place	Breakfast Spot	Vietnamese Restaurant	College Stadium	Hakka Restaurant	Grocery Store	General Entertainment
12	Scarborough	1.0	Skating Rink	Furniture / Home Store	Breakfast Spot	Lounge	Vietnamese Restaurant	Coffee Shop	Hakka Restaurant	Grocery Store	General Entertainment	Fried Chicken Joint
13	Scarborough	1.0	Pizza Place	Fast Food Restaurant	Thai Restaurant	Italian Restaurant	Shopping Mall	Bank	Fried Chicken Joint	Chinese Restaurant	Pharmacy	Noodle House
15	Scarborough	1.0	Fast Food Restaurant	Chinese Restaurant	Nail Salon	Pizza Place	Thrift / Vintage Store	Japanese Restaurant	Electronics Store	Coffee Shop	Pharmacy	Grocery Store

- Downtown Toronto is very attractive for the restaurant sector, since the most Attractive venues are represented by Cafés and ethnic restaurants. A typical customer of the Borough has a very diversified taste in terms of restaurants. Vincenzo should be very aware of the tough concurrency.

- The cluster analysis for Scarborough shows us that the clients of this borough have more diversified interests w.r.t the ones of Downtown Toronto. On a comparative analysis, we see a lower number of restaurants in the top most common venues, meaning lower concurrency for Vincenzo.

Results (4/4)

Top 10 Restaurants in Toronto Analysis

Name	Number of Tips	Comments
Famiglia Baldassarre	1	In addition to selling fresh pasta for take home, Baldassarre also offers lunch Tuesday-Friday using their pasta and gelato.
Giulietta	4	So good! The service was impeccable, great spritz cocktail menu and the food is outstanding. Try the Fennel salade, tartare and truffle braised goat.
Il covo	2	Fresh, creative food & a brilliant wine program to match. Presentation top notch and the service perfection. Make a reso. Aim for 3-5 dishes per person. The beef in liquorice, clams with lemonquat…
Terroni Bar Centrale	34	love the vibe on the main floor. Great light streaming in. A very Italian feel. Must try the spicy tuna tartar and any and all pastas. To see more pics have a look at my instagram @Joannasable
Speducci Mercato	3	They have wild boar salami and a range of deli choices.
Pizzeria Defina	25	This place ticks all the right boxes, friendly staff, great food, good vibes and good atmosphere. Sure to go again soon and take friends with 😁
Pizza e Pazzi	31	Making Every Sunday Family Special !**Join us for Sunday Lunch 3 Course set menu !**Sundays are for relaxing, so let us do the cooking !
La bettola di Terroni	36	Consistently great food. The classic fungi salad is a must and always a pizza. The rest can change. Do go, a Toronto institution
Ardo Restaurant	8	Had the achiugge (grilled anchovies on crostini) and ARDO salsiccia (perfect tomatoes and amount of spice).Extremely attentive and friendly service. Owner/chef and waiters were exceptional.
L'unità	14	Amazing food and service. It has a really friendly atmosphere but can get loud with the hum of conversation. Great caesar salad and amazing pork loin with seasonal veggies. Nice wine list

- According to the table, customers love to have a good wine list, they search for a friendly service, top food presentation and Italian specialities like pasta, pizza and dishes with Italian Names.

GAMBERO ROSSO

Discussion

- Data Limitations: All the data of the Venues come from the Foursquare API, therefore some important data on existing venues could be lost during the data collection.

- This missing data could have a strong impact on the definition of both the top 5 venues for each neighbourhood as well as in defining the clusters.

- Further studies could consider the same problem presented in this report and download data from more data provider, in order to have more reliable results.

- It also should be interesting to have a full access of the tips for each analysed venue, in order to have a better idea of what makes unique the top restaurants in Toronto.

Conclusions

- In order to provide Vincenzo a potential location for his restaurant, we considered the demand and supply of Italian Restaurants in the city, by considering the distribution of Italian Restaurants across the Borough of Toronto.
- Scarboroug, North York, Downtown Toronto, West Toronto, Queen's Park as the best Boroughs to open his restaurant.
- We restrict the potential location to 9 Neighbourhoods.
- The Cluster analysis give us reliable results only for Downtown Toronto and Scarborough. Downtown Toronto is a popular Borough for Ethnic Restaurants meaning a high level of competition for Vincenzo, while customer in Scarborough have more diversified interests.
- The analysis of the 10 best Italian Restaurants in Toronto suggest that Vincenzo should offer a good wine list, a friendly service, top food presentation and Italian specialities like pasta, pizza and dishes with Italian Names.

Thank you

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