

Capstone Project

IBM Applied Data Science
Capstone

**Opening an Italian
Restaurant in
Toronto**

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Problem Statement

- We plan to open an Italian Restaurant in the Neighborhoods of Toronto
- Accordingly, we aim to decide on locations that will have the greatest possibility of success
- Business Question:
 - If a restaurateur plans on opening an Italian restaurant in Toronto where must he/she be guided to open one?

Data Definitions

Data required

- List of Neighborhoods in Toronto
- Latitudes and Longitudes of various locations
- Existing Restaurant locations along with venue data

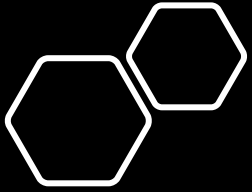
Sources of data

- Wikipedia page of Toronto neighborhoods
- Geocoder package for latitude and longitude
- Foursquare API for venue and location data.



Methodology

- Web scraping Wikipedia page for neighborhood data
- Pulling co-ordinate data from Geocoder
- Using the Foursquare API to get venue data based on coordinates
- Grouping y neighborhood and analyzing the frequency of locations within each venue
- Using k-means clustering to classify and group the data
- Visualizing the clusters by superimposing results on the map of Toronto



Results

- We found the most common venues in each neighborhood to get a better sense of the data
- After which we performed k-means clustering to find out the optimal number of 3 clusters for the data
 - Cluster 1: Had the least amount of Italian restaurants
 - Cluster 2: Had moderate number
 - Cluster 3: Had the highest incidence

Neighborhood	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
Berczy Park	Coffee Shop	Cocktail Bar	Seafood Restaurant	Restaurant	Cheese Shop	Bakery	Farmers Market
Brockton, Parkdale Village, Exhibition Place	Café	Breakfast Spot	Nightclub	Coffee Shop	Pet Store	Stadium	Bar
Business reply mail Processing Centre, South C...	Light Rail Station	Skate Park	Restaurant	Recording Studio	Fast Food Restaurant	Farmers Market	Auto Workshop
CN Tower, King and Spadina, Railway Lands, Har...	Airport Service	Airport Lounge	Coffee Shop	Harbor / Marina	Rental Car Location	Sculpture Garden	Boutique
Central Bay Street	Coffee Shop	Sandwich Place	Italian Restaurant	Café	Burger Joint	Bubble Tea Shop	Salad Place





Discussion & Recommendation

Discussion:

- Based on the clusters and the map, we can see that the greatest number of restaurants are clustered around the south side of Toronto near the downtown area
- We would advise to open an Italian restaurant in Cluster 1 given the low incidence of Italian

Recommendation:

- Opening an Italian restaurant in Cluster 1.
- This location would face the least amount of competition.
- It would be advisable to focus on the Summerhill, Davis-ville and Rosedale regions given the younger population and higher incidence and inclination to fine-dining.





Thank you!