

The perfect location for the perfect restaurant

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IBM Data Science Professional Certificate

Introduction

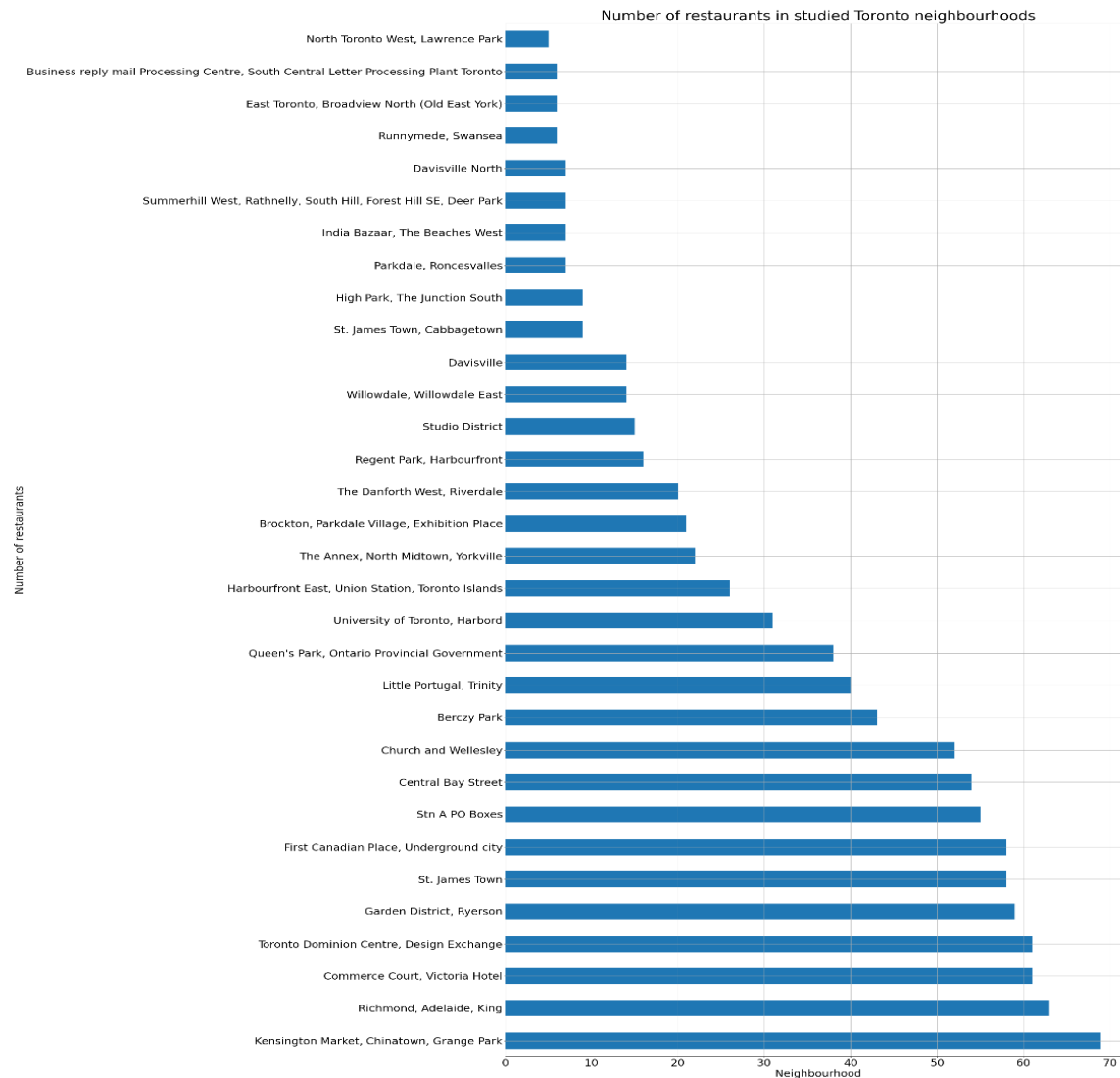
- ▶ An important restauration group is thinking about to open a restaurant in the city of Toronto. This group has developed different types of restaurants around the world and have the knowledge to set up any restaurant type: Italian, Belgian, Thai, Chinese, etc. However, their knowledge about Toronto area and their citizens likes is none.
- ▶ The idea is to define a data science methodology, that by using data from Foursquare API, makes possible to find:
 - Which type of restaurants better fits the customer likes in Toronto?
 - Where is the best location to set this new restaurant?

Data

- Wikipedia: List of postal codes of Canada. 'https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M'
- Geospatial data of these neighbourhoods. 'https://cocl.us/Geospatial_data'
- Using Foursquare API:
 - The recommended restaurants in each neighbourhood in an area of radius 750 meters and its name, latitude, longitude and venue category.
 - The likes that people give to each of these restaurants.

	Neighbourhood	Neighbourhood Latitude	Neighbourhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category	Venue likes
6	Regent Park, Harbourfront	43.65426	-79.360636	Roselle Desserts	43.653447	-79.362017	Bakery	48
7	Regent Park, Harbourfront	43.65426	-79.360636	Impact Kitchen	43.656369	-79.356980	Restaurant	51
8	Regent Park, Harbourfront	43.65426	-79.360636	Morning Glory Cafe	43.653947	-79.361149	Breakfast Spot	36
9	Regent Park, Harbourfront	43.65426	-79.360636	Souk Tabule	43.653756	-79.354390	Mediterranean Restaurant	53
10	Regent Park, Harbourfront	43.65426	-79.360636	Figs Breakfast & Lunch	43.655675	-79.364503	Breakfast Spot	55

Exploratory data analysis

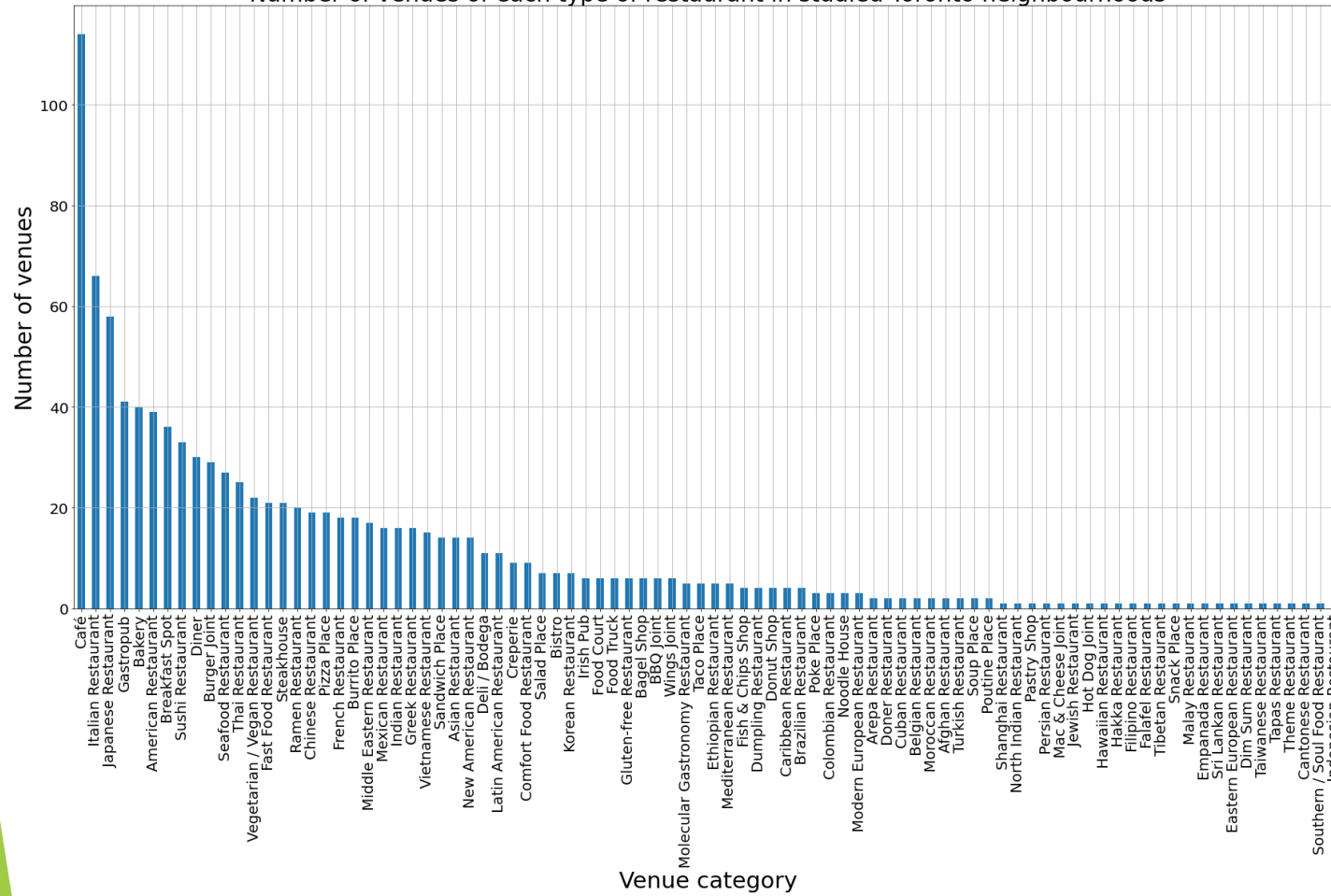


Neighbourhoods with more restaurants are:

- 'Kensington Market, Chinatown, Grange Park' with 69 restaurants.
- 'Richmond, Adelaide, King' with 63 restaurants.
- 'Commerce Court, Victoria Hotel' and 'Toronto Dominion Centre, Design Exchange' with 61 restaurants.

Exploratory data analysis

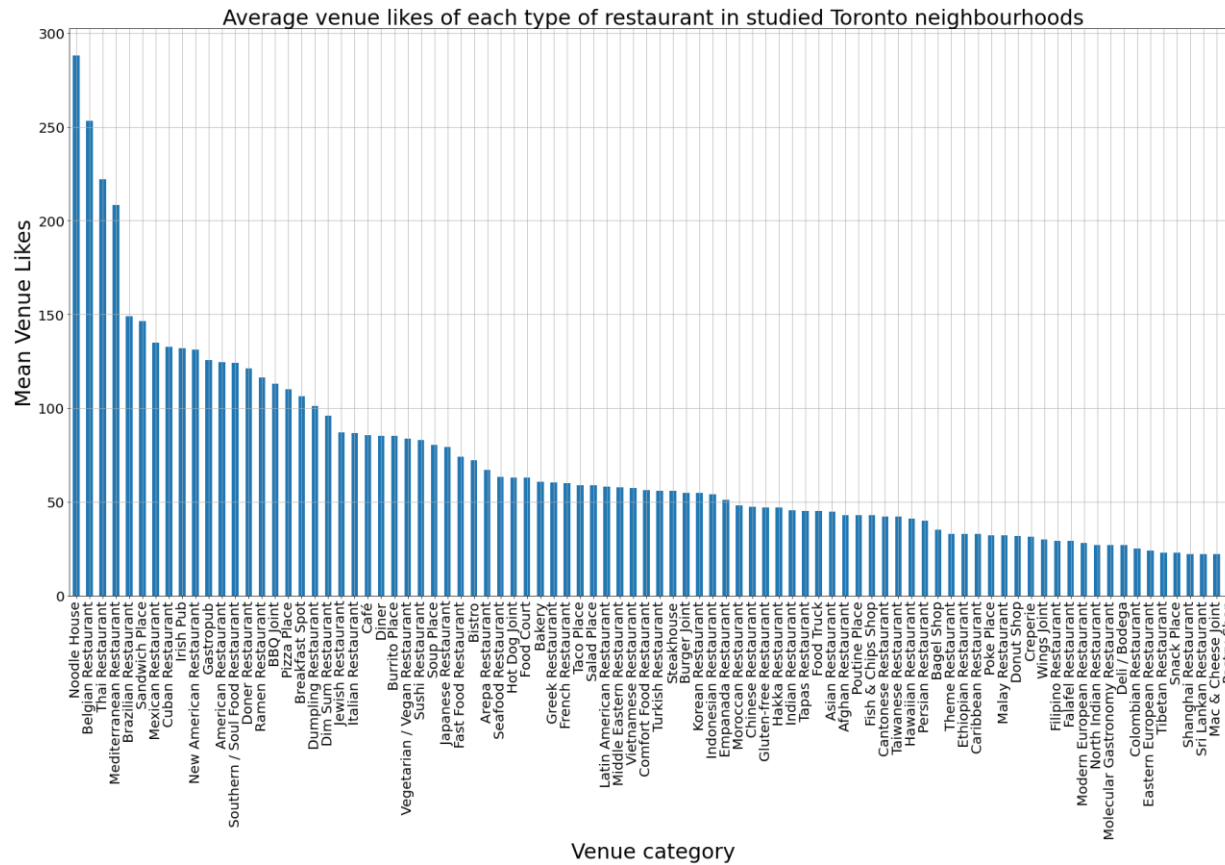
Number of venues of each type of restaurant in studied Toronto neighbourhoods



Most restaurant categories in Toronto are:

- 'Café' with 114 restaurants.
- 'Italian restaurant' with 66 restaurants.
- 'Japanese Restaurant' with 58 restaurants.

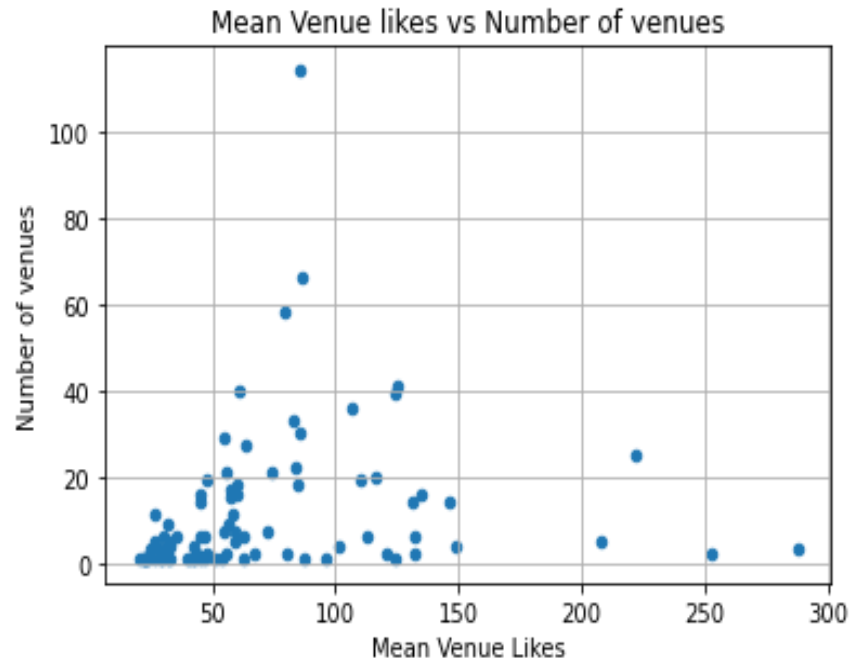
Exploratory data analysis



Restaurants that have more average likes per restaurant category are:

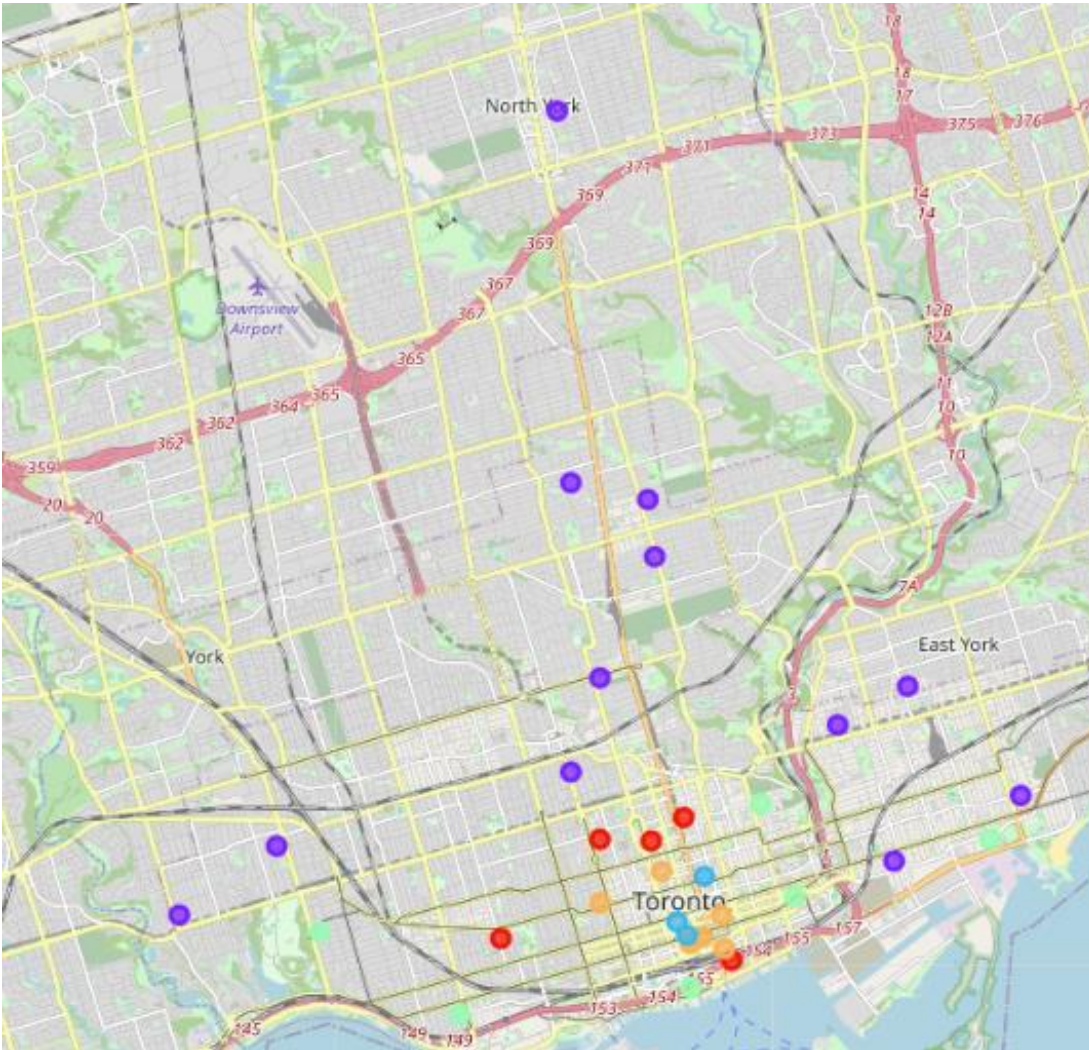
- ‘Noddle house’ with 288 likes.
- ‘Belgian restaurant’ with 253 likes.
- ‘Thai restaurant’ with 222 restaurants.

Exploratory data analysis



- Café is the most typical venue category (114 restaurants) with an average number of likes of 85.
- Noddle house, Belgian Restaurant and Mediterranean restaurant have an average number of likes of more than 200, whereas there are very few of them. (3, 2 and 5 respectively)
- Thai restaurants have an average number of likes higher than 200 while there are 25 of this type in Toronto.
- Gastro bar and American restaurants are 2 solid categories as they have 120 mean venue likes and 40 restaurants.

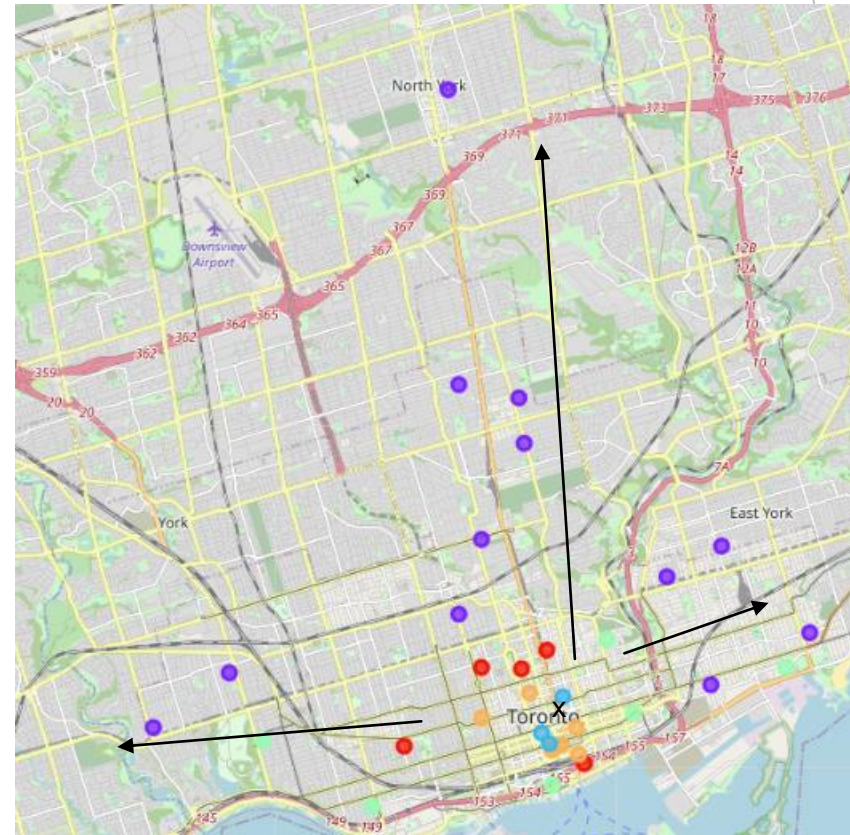
K-means clustering



- Cluster 0: (Red) Medium mean venue likes and medium number of venues.
- Cluster 1: (Purple) Low mean venue likes and low number of venues.
- Cluster 2: (Blue) High mean venue likes and high number of venues.
- Cluster 3: (Green) Medium mean venue likes and low number of venues.
- Cluster 4: (Orange) Medium mean venue likes and high number of venues.

Conclusion

- ▶ **Thai restaurant** are extraordinarily successful in Toronto. They have more than 200 likes per average and they are consolidated as there are more than 20 restaurants of these types.
- ▶ Going through k-means and the relationship between venue likes and number of restaurants, that **restaurants in cluster 2(blue) are potentially more successful than others**. When further from the centre in all directions, first the number of likes decreases (orange dots) and after, the number of restaurants in the area decreases (red dots).



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