

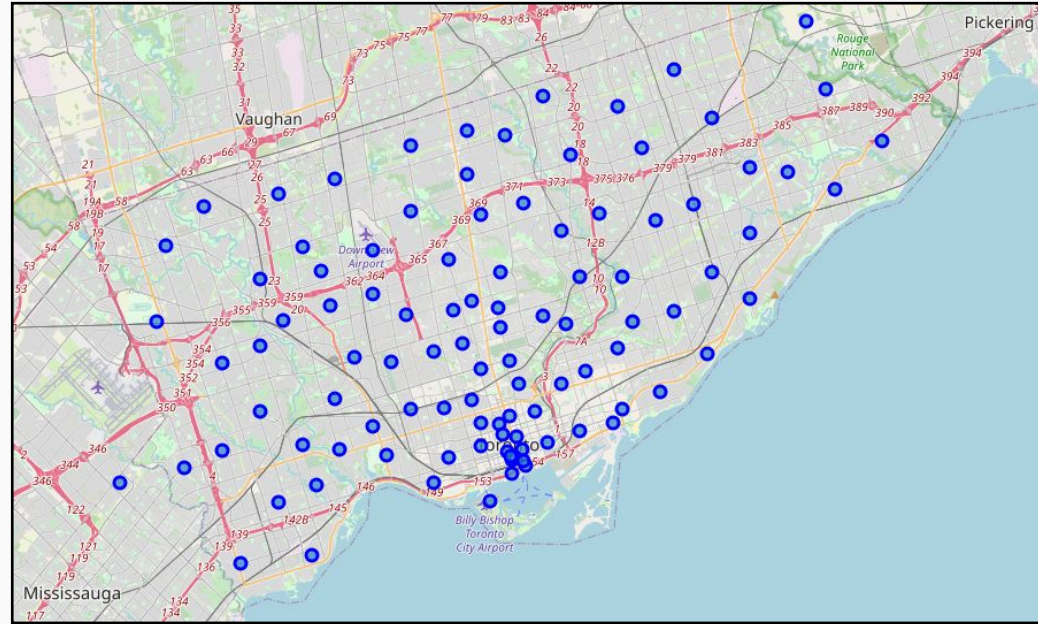
Opening a Restaurant in Toronto, Ontario

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Introduction

- Toronto is the capital city of the Canadian province of Ontario.
- It is the largest city in the country with a population of 2,734,571.
- Goal: compare Toronto neighborhoods to determine the best place for opening a new restaurant.



Map of Toronto neighborhoods

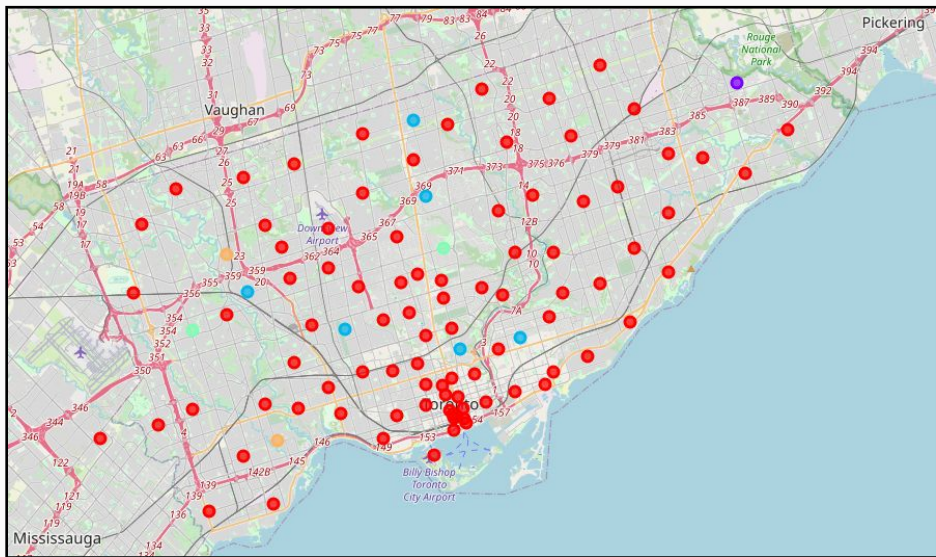
Data

- Information about the different neighborhoods and boroughs of Toronto was webscraped using the BeautifulSoup package from Wikipedia.
- Geospatial data providing the latitude and longitude coordinates for each neighborhood were from a csv file provided by the Coursera Applied Data Science Capstone course.
- Information on the current venues in each neighborhood was gathered using the Foursquare API. This provided the venue name, latitude and longitude, venue category and which neighborhood the venue was located in.
- Three neighborhoods did not have any data so they were removed from the dataset.
- The dataset was grouped by neighborhood and showed the frequency of each type of venue in that neighborhood. This was used to determine the top 10 types of venues in each neighborhood.

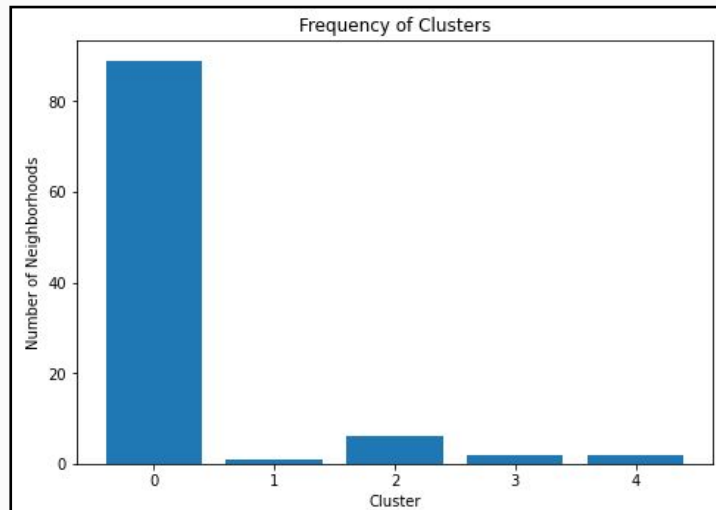
Methodology

- To determine the best location for a restaurant, neighborhoods were grouped using k means clustering.
- The goal is to determine which neighborhoods currently feature many restaurants which will support the addition of a new restaurant.
- The neighborhoods were split into five clusters based on the similarity of their venues.

Results



Map of neighborhoods clustered by venue similarity



Number of neighborhoods by cluster

Cluster zero

The largest cluster, contains various types of restaurants, shopping and leisure activities.

	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
0	North York	0	Food & Drink Shop	Fast Food Restaurant	Park	Yoga Studio	Discount Store	Distribution Center	Dive Bar	Dog Run	Doner Restaurant	Donut Shop
1	North York	0	Pizza Place	Coffee Shop	Portuguese Restaurant	Intersection	Hockey Arena	Dog Run	Dim Sum Restaurant	Diner	Discount Store	Distribution Center
2	Downtown Toronto	0	Coffee Shop	Café	Park	Bakery	Pub	Theater	Beer Store	Bank	Chocolate Shop	French Restaurant
3	North York	0	Clothing Store	Accessories Store	Vietnamese Restaurant	Miscellaneous Shop	Coffee Shop	Furniture / Home Store	Boutique	Construction & Landscaping	Ethiopian Restaurant	Escape Room
4	Queen's Park	0	Coffee Shop	Sushi Restaurant	Café	Diner	Yoga Studio	Park	Beer Bar	Smoothie Shop	Burrito Place	Sandwich Place

Cluster one

Only has one neighborhood and has a high frequency of fast food restaurants.

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
6 Scarborough	1	Fast Food Restaurant	Dim Sum Restaurant	Event Space	Ethiopian Restaurant	Escape Room	Electronics Store	Eastern European Restaurant	Dumpling Restaurant	Drugstore	Donut Shop

Cluster two

Has parks and other leisure activities.

	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
21	York	2	Park	Women's Store	Pool	Yoga Studio	Donut Shop	Diner	Discount Store	Distribution Center	Dive Bar	Dog Run
35	East York/East Toronto	2	Park	Convenience Store	Yoga Studio	Drugstore	Discount Store	Distribution Center	Dive Bar	Dog Run	Doner Restaurant	Donut Shop
52	North York	2	Park	Yoga Studio	Drugstore	Discount Store	Distribution Center	Dive Bar	Dog Run	Doner Restaurant	Donut Shop	Dumpling Restaurant
64	York	2	Park	Yoga Studio	Drugstore	Discount Store	Distribution Center	Dive Bar	Dog Run	Doner Restaurant	Donut Shop	Dumpling Restaurant
66	North York	2	Park	Convenience Store	Yoga Studio	Drugstore	Discount Store	Distribution Center	Dive Bar	Dog Run	Doner Restaurant	Donut Shop
91	Downtown Toronto	2	Park	Playground	Trail	Yoga Studio	Doner Restaurant	Diner	Discount Store	Distribution Center	Dive Bar	Dog Run

Cluster three

Has parks and other leisure activities.

	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
61	Central Toronto	3	Park	Bus Line	Swim School	Yoga Studio	Doner Restaurant	Discount Store	Distribution Center	Dive Bar	Dog Run	Donut Shop
77	Etobicoke	3	Park	Sandwich Place	Mobile Phone Shop	Bus Line	Yoga Studio	Doner Restaurant	Distribution Center	Dive Bar	Dog Run	Donut Shop

Cluster four

Has baseball fields and smaller shops.

	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
57	North York	4	Baseball Field	Yoga Studio	Donut Shop	Discount Store	Distribution Center	Dive Bar	Dog Run	Doner Restaurant	Drugstore	Farmers Market
101	Etobicoke	4	Baseball Field	Yoga Studio	Donut Shop	Discount Store	Distribution Center	Dive Bar	Dog Run	Doner Restaurant	Drugstore	Farmers Market

Final Recommendation

Based on the findings there are many great neighborhoods to locate a new restaurant in Toronto. My recommendation would be to place a new restaurant in one of the neighborhoods in cluster zero as there are many restaurants there already.