

# **Business in Toronto**

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04/07/2018

## **Introduction**

### Problem Understanding:

What Business to open in Toronto City?

### Business Understanding

As we know Toronto is a city in Canada and also it is very good for opening business. One can very profit by establishing a business at this place. Some things about the place:

Toronto, the capital of the province of Ontario, is a major Canadian city along Lake Ontario's north-western shore. It's a dynamic metropolis with a core of soaring skyscrapers, all dwarfed by the iconic, free-standing CN Tower. Toronto also has many green spaces, from the orderly oval of Queen's Park to 400-acre High Park and its trails, sports facilities and zoo.

Do you Know: Toronto is the largest population centre in Ontario by population (5,429,524).

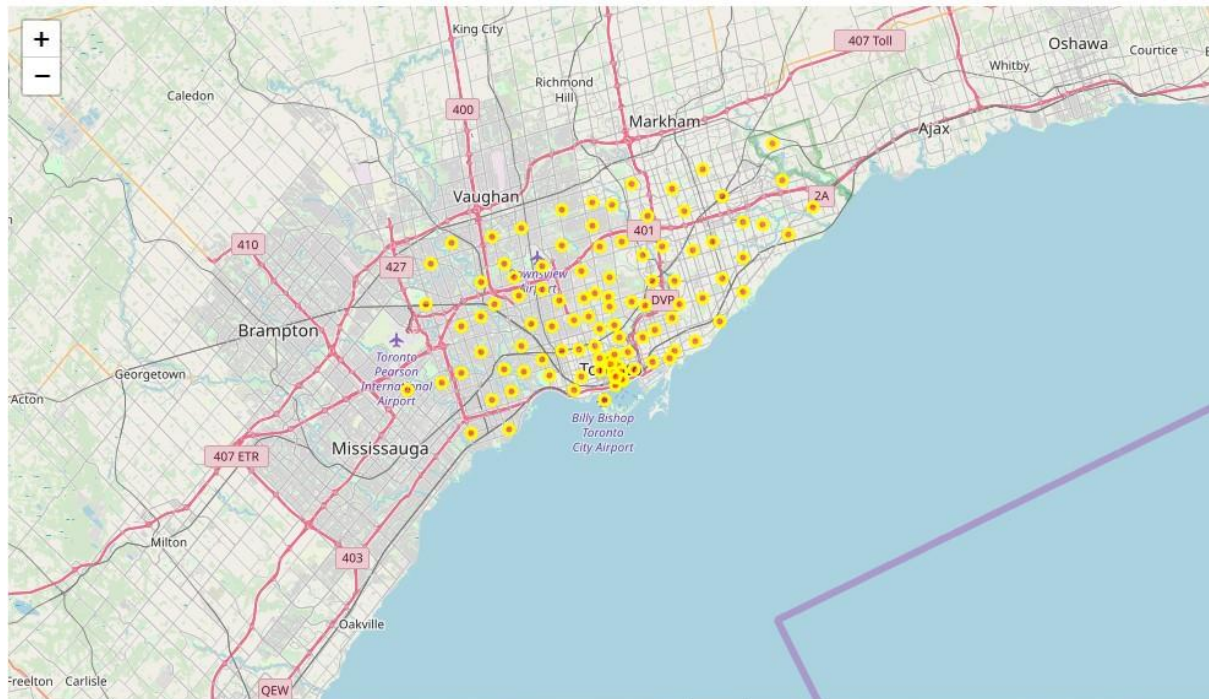
Now here we are dealing with the problem that how one can identify that he/she can open a business that can get profit and not available in the region for popularity. In this Case analysis we will analyse and visualize the data to find the solution for the same problem

### Analytical Approach

We will use the data from Wikipedia as Toronto data is not readily available and some json files to collect the data required and find out the least and the most frequent business in that area and after all the evaluation we will predict or give the result for the problem

## Data Collection

Plotting the Graph of Toronto on LL:



List of the Venues:

	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Parkwoods	43.753259	-79.329656	Brookbanks Park	43.751976	-79.332140	Park
1	Parkwoods	43.753259	-79.329656	KFC	43.754387	-79.333021	Fast Food Restaurant
2	Parkwoods	43.753259	-79.329656	Variety Store	43.751974	-79.333114	Food & Drink Shop
3	Victoria Village	43.725882	-79.315572	Victoria Village Arena	43.723481	-79.315635	Hockey Arena
4	Victoria Village	43.725882	-79.315572	Tim Hortons	43.725517	-79.313103	Coffee Shop
5	Victoria Village	43.725882	-79.315572	Portugril	43.725819	-79.312785	Portuguese Restaurant
6	Victoria Village	43.725882	-79.315572	Eglinton Ave E & Sloane Ave/Bermondsey Rd	43.726086	-79.313620	Intersection
7	Harbourfront, Regent Park	43.654260	-79.360636	Roselle Desserts	43.653447	-79.362017	Bakery
8	Harbourfront, Regent Park	43.654260	-79.360636	Tandem Coffee	43.653559	-79.361809	Coffee Shop
9	Harbourfront, Regent Park	43.654260	-79.360636	Toronto Cooper Koo Family Cherry St YMCA Centre	43.653191	-79.357947	Gym / Fitness Center
10	Harbourfront, Regent Park	43.654260	-79.360636	Body Blitz Spa East	43.654735	-79.359874	Spa
11	Harbourfront, Regent Park	43.654260	-79.360636	Morning Glory Cafe	43.653947	-79.361149	Breakfast Spot

## Number of Venues:

	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
Neighborhood						
Adelaide, King, Richmond	100	100	100	100	100	100
Agincourt	4	4	4	4	4	4
Agincourt North, L'Amoreaux East, Milliken, Steeles East	3	3	3	3	3	3
Albion Gardens, Beaumont Heights, Humbergate, Jamestown, Mount Olive, Silverstone, South Steeles, Thistletown	11	11	11	11	11	11
Alderwood, Long Branch	10	10	10	10	10	10
Bathurst Manor, Downsview North, Wilson Heights	18	18	18	18	18	18
Bayview Village	4	4	4	4	4	4
Bedford Park, Lawrence Manor East	25	25	25	25	25	25
Berczy Park	55	55	55	55	55	55
Birch Cliff, Cliffside West	4	4	4	4	4	4
Bloordale Gardens, Eringate, Markland Wood, Old Burnhamthorpe	6	6	6	6	6	6
Brockton, Exhibition Place, Parkdale Village	22	22	22	22	22	22
Business Reply Mail Processing Centre 969 Eastern	19	19	19	19	19	19
CFB Toronto, Downsview East	3	3	3	3	3	3
CN Tower, Bathurst Quay, Island airport, Harbourfront West, King and Spadina, Railway Lands, South Niagara	16	16	16	16	16	16
Cabbagetown, St. James Town	46	46	46	46	46	46

After the plotting of graph and collecting the venues we were required to find the venues with top and least frequency so one can set up the business:

## List of top Venues:

	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	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
0	Adelaide, King, Richmond	Coffee Shop	Café	Bar	American Restaurant	Thai Restaurant	Steakhouse	Bakery	Hotel	Cosmetics Shop	Gym
1	Agincourt	Lounge	Breakfast Spot	Sandwich Place	Chinese Restaurant	Electronics Store	Eastern European Restaurant	Empanada Restaurant	Dumpling Restaurant	Drugstore	Department Store
2	Agincourt North, L'Amoreaux East, Milliken, St...	Park	Asian Restaurant	Playground	Women's Store	Doner Restaurant	Dessert Shop	Dim Sum Restaurant	Diner	Discount Store	Dog Run
3	Albion Gardens, Beaumont Heights, Humbergate, ...	Grocery Store	Beer Store	Fried Chicken Joint	Fast Food Restaurant	Liquor Store	Pharmacy	Pizza Place	Sandwich Place	Coffee Shop	Video Store
4	Alderwood, Long Branch	Pizza Place	Gym	Pharmacy	Pub	Sandwich Place	Pool	Dance Studio	Skating Rink	Coffee Shop	Drugstore

Now as we can see business like Café, Coffee Shop, Asian restaurant etc. are the most common venues hence we are not going to recommend these for the site. After this we need to find which are the least frequent places here:

### Venues with Least frequency:

	Yoga Studio	Accessories Store	Adult Boutique	Afghan Restaurant	Airport	Airport Food Court	Airport Gate	Airport Lounge	Airport Service	Airport Terminal	...	Trail	Train Station	Vegetarian / Vegan Restaurant	Video Game Store	Video Store	View: Re
0	0	0	0	0	0	0	0	0	0	0	...	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	...	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	...	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	...	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	...	0	0	0	0	0	0

[illegible]

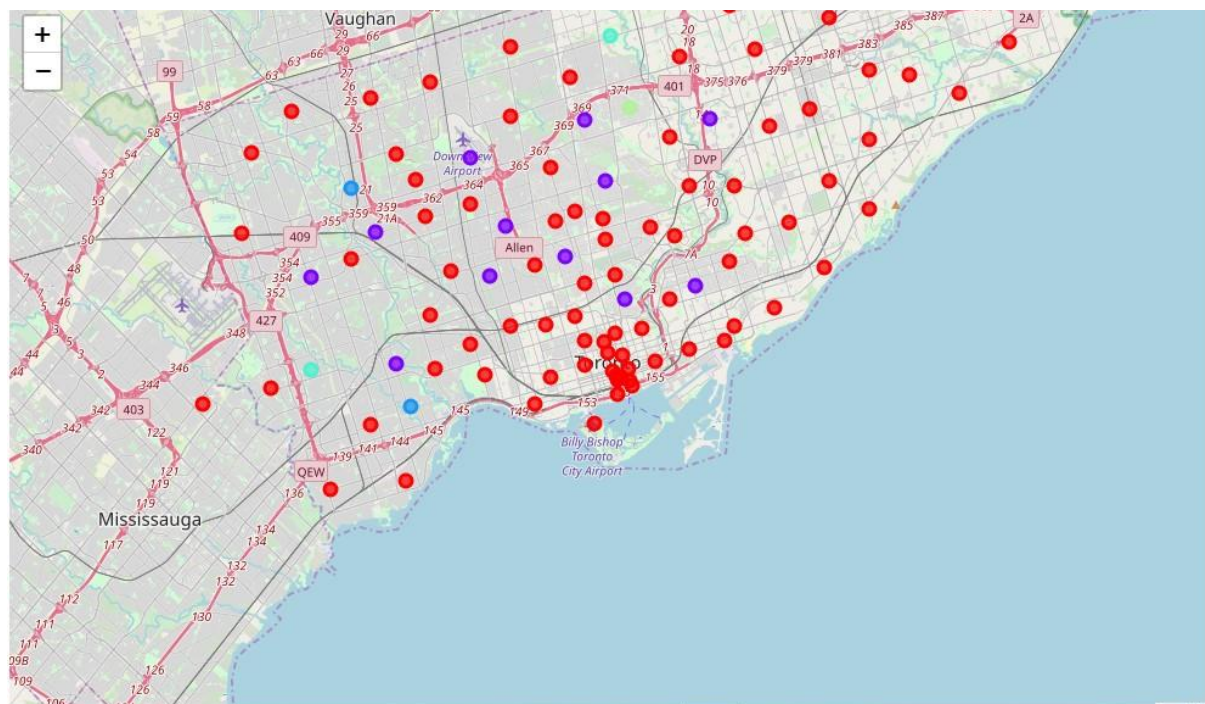
Now we have seen that business-like yoga accessories, Adult boutique etc. are the least common venues or business in the site

But the business Accessories Store, Vegetarian Restaurant, Women Store have a frequency of 0.01 hence maybe we do not prefer these.

Now after finding the data we need to cluster and segment these.

Here I have used  $k=5,6$  clusters:

After Clustering we have a graph like this:



Now we have made the clusters how about evaluating them:

	Borough	Cluster_Labelss	Cluster_Label	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
1	North York	0.0	0.0	0	Intersection	Coffee Shop	Hockey Arena	Portuguese Restaurant	Donut Shop	Dessert Shop
2	Downtown Toronto	0.0	0.0	0	Coffee Shop	Park	Pub	Bakery	Theater	Breakfast Spot
3	North York	0.0	0.0	0	Clothing Store	Furniture / Home Store	Women's Store	Coffee Shop	Event Space	Miscellaneous Shop
4	Queen's Park	0.0	0.0	0	Coffee Shop	Park	Gym	Japanese Restaurant	Sushi Restaurant	Smoothie Shop
6	Scarborough	0.0	0.0	0	Fast Food Restaurant	Print Shop	Deli / Bodega	Dessert Shop	Dim Sum Restaurant	Diner
7	North York	0.0	0.0	0	Gym / Fitness Center	Caribbean Restaurant	Café	Japanese Restaurant	Baseball Field	Electronics Store

	Borough	Cluster_Labelss	Cluster_Label	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
0	North York	2.0	1.0	1	Fast Food Restaurant	Park	Food & Drink Shop	Women's Store	Donut Shop	Dim Sum Restaurant	Diner
10	North York	2.0	1.0	1	Park	Pizza Place	Japanese Restaurant	Pub	Dog Run	Department Store	Dessert Shop
21	York	2.0	1.0	1	Park	Women's Store	Pharmacy	Fast Food Restaurant	Market	Doner Restaurant	Dessert Shop
35	East York	2.0	1.0	1	Convenience Store	Park	Coffee Shop	Drugstore	Dim Sum Restaurant	Diner	Discotheque
40	North York	5.0	1.0	1	Park	Other Repair Shop	Airport	Women's Store	Donut Shop	Dessert Shop	Dim Sum Restaurant
61	Central Toronto	2.0	1.0	1	Park	Bus Line	Swim School	Women's Store	Doner Restaurant	Dim Sum Restaurant	Diner
64	York	2.0	1.0	1	Park	Women's Store	Donut Shop	Dessert Shop	Dim Sum Restaurant	Diner	Discotheque
66	North York	2.0	1.0	1	Park	Bank	Convenience Store	Bar	Women's Store	Donut Shop	Diner
68	Central Toronto	2.0	1.0	1	Park	Jewelry Store	Sushi Restaurant	Trail	Electronics Store	Eastern European Restaurant	Dumpling Restaurant



#3

```
toronto_merged.loc[toronto_merged['Cluster_Labels'] == 2, toronto_merged.columns[[1] + list(range(5, toronto_merged.shape[1]))]]
```

	Borough	Cluster_Labelss	Cluster_Label	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
57	North York	1.0	2.0	2	Baseball Field	Drugstore	Dim Sum Restaurant	Diner	Discount Store	Dog Run	Doner Restaurant	Donut Shop
101	Etobicoke	1.0	2.0	2	Baseball Field	Drugstore	Dim Sum Restaurant	Diner	Discount Store	Dog Run	Doner Restaurant	Donut Shop

#4

```
toronto_merged.loc[toronto_merged['Cluster_Labels'] == 3, toronto_merged.columns[[1] + list(range(5, toronto_merged.shape[1]))]]
```

	Borough	Cluster_Labelss	Cluster_Label	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
11	Etobicoke	3.0	3.0	3	Bank	Women's Store	Donut Shop	Dim Sum Restaurant	Diner	Discount Store	Dog Run	Doner Restaurant
39	North York	0.0	3.0	3	Chinese Restaurant	Café	Japanese Restaurant	Bank	Women's Store	Diner	Discount Store	Dog Run

#5

```
toronto_merged.loc[toronto_merged['Cluster_Labels'] == 4, toronto_merged.columns[[1] + list(range(5, toronto_merged.shape[1]))]]
```

	Borough	Cluster_Labelss	Cluster_Label	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
45	North York	0.0	4.0	4	Cafeteria	Donut Shop	Dessert Shop	Dim Sum Restaurant	Diner	Discount Store	Dog Run	Doner Restaurant

### Result/Conclusion:

From the data analysing and visualization, we came to know that the business-like yoga and accessories, Acc. store, Adult Boutique, Afghan Restaurant, Vegetarian/Vegan Restaurant, Video game store, wine bar, Women's store had very low approx. equal to zero frequency. So, these types of business will be recommended on this site.

However, Acc. Store, Wine Bar and Women Store had a frequency of 0.01 hence rest will be much better option

Now the business-like Coffee shop, lounge, Park, grocery store, cafe, Asian restaurant, pharmacy etc (refer table) is not recommended as it is most commonly held business in the site.