

Report

Introduction

The Problem

In Toronto there is a lot of restaurants already and opening one in Toronto would be very hard without knowing the best location for it. To find the best place to start a new restaurant you need to work out where other restaurants are based and local amenities which would benefit the business. To recommend the best place to open first the location of all other restaurants must be considered. Then the distance from local towns and shopping centres need to be considered.

Background

The problems starts with the amount of money a business needs to make and how much it can make in a certain area. With such a vast array of restaurants in a city the new businesses need to establish where is best to open to give the best chances of the business making money and surviving. To do this we can look into

- the population of the area
- the diversity of the area
- what the local restaurants offer
- the pricing of local restaurants
- the cuisines offered
- local amenities
- etc

These are all important factors in giving a new business the best possible start.

Data

To get the list of neighborhoods and boroughs we can use
https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M.

To get the locations of these neighborhoods from http://cocl.us/Geospatial_data download the Geospatial_Coordinates.csv.

To get nearby venues use the foursquare api.

To solve the problem I will merge these three datasets to get the locations of each neighborhood with the longitude and latitude. This will then be used to locate the different places in Toronto to identify where the places are in relation to each other. Then the foursquare api can be used to locate different amenities like shopping centres, other restaurants etc to analyse if there is any gaps in the market for a new restaurant.

Methodology

There are 103 neighborhoods and 10 boroughs in Canada, 4 of which are Toronto boroughs. Taking these 4 boroughs and merging the data from the foursquare api the local venues in the areas can be seen.

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
0	Berczy Park	Coffee Shop	Cocktail Bar	Bakery	Cheese Shop	Café
1	Brockton / Parkdale Village / Exhibition Place	Café	Coffee Shop	Breakfast Spot	Performing Arts Venue	Bakery
2	Business reply mail Processing CentrE	Yoga Studio	Fast Food Restaurant	Comic Shop	Park	Pizza Place
3	CN Tower / King and Spadina / Railway Lands / ...	Airport Service	Airport Lounge	Airport Terminal	Airport	Boat or Ferry
4	Central Bay Street	Coffee Shop	Italian Restaurant	Sandwich Place	Café	Salad Place

These results can then be put into clusters using K-means with a cluster value of 5. This can be used to see the most common venues of each neighborhood.

	PostalCode	Latitude	Longitude	Borough	Neighborhood	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
37	M4E	43.676357	-79.293031	East Toronto	The Beaches	0	Health Food Store	Trail	Pub	Yoga Studio	Dessert Shop
41	M4K	43.679557	-79.352188	East Toronto	The Danforth West / Riverdale	1	Greek Restaurant	Coffee Shop	Italian Restaurant	Bookstore	Ice Cream Shop
42	M4L	43.668999	-79.315572	East Toronto	India Bazaar / The Beaches West	1	Pizza Place	Fast Food Restaurant	Park	Steakhouse	Sushi Restaurant
43	M4M	43.659526	-79.340923	East Toronto	Studio District	1	Café	Coffee Shop	American Restaurant	Bakery	Brewery
44	M4N	43.728020	-79.388790	Central Toronto	Lawrence Park	2	Park	Bus Line	Swim School	Diner	Event Space
45	M4P	43.712751	-79.390197	Central Toronto	Davisville North	1	Gym	Hotel	Department Store	Sandwich Place	Breakfast Spot
46	M4R	43.715383	-79.405678	Central Toronto	North Toronto West	1	Clothing Store	Coffee Shop	Yoga Studio	Sporting Goods Shop	Café
47	M4S	43.704324	-79.388790	Central Toronto	Davisville	1	Pizza Place	Sandwich Place	Dessert Shop	Coffee Shop	Sushi Restaurant
48	M4T	43.689574	-79.383160	Central Toronto	Moore Park / Summerhill East	4	Playground	Yoga Studio	Dessert Shop	Falafel Restaurant	Event Space
49	M4V	43.686412	-79.400049	Central Toronto	Summerhill West / Rathnelly / South Hill / For...	1	Coffee Shop	Pub	Pizza Place	Bank	Sushi Restaurant
50	M4W	43.679563	-79.377529	Downtown Toronto	Rosedale	2	Park	Playground	Trail	Department Store	Event Space
51	M4X	43.667967	-79.367675	Downtown Toronto	St. James Town / Cabbagetown	1	Coffee Shop	Chinese Restaurant	Pub	Italian Restaurant	Market
52	M4Y	43.665860	-79.383160	Downtown Toronto	Church and Wellesley	1	Coffee Shop	Sushi Restaurant	Japanese Restaurant	Restaurant	Yoga Studio
53	M5A	43.654260	-79.360636	Downtown Toronto	Regent Park / Harbourfront	1	Coffee Shop	Pub	Park	Bakery	Restaurant

These clusters can then be mapped using the geolocator and the longitude and latitude values.

After doing this we can remove the local venues which are not food venues to analyse which food venues are within each neighborhood.

	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
1	The Beaches	43.676357	-79.293031	The Big Carrot Natural Food Market	43.678879	-79.297734	Health Food Store
49	India Bazaar / The Beaches West	43.668999	-79.315572	The Burger's Priest	43.666731	-79.315556	Fast Food Restaurant
62	India Bazaar / The Beaches West	43.668999	-79.315572	KFC	43.666624	-79.315916	Fast Food Restaurant
80	Studio District	43.659526	-79.340923	eastside social	43.661289	-79.339155	Comfort Food Restaurant
109	Davisville North	43.712751	-79.390197	Summerhill Market North	43.715499	-79.392881	Food & Drink Shop
126	North Toronto West	43.715383	-79.405678	A&W	43.715149	-79.399944	Fast Food Restaurant
300	Church and Wellesley	43.665860	-79.383160	A&W	43.666415	-79.378235	Fast Food Restaurant
303	Church and Wellesley	43.665860	-79.383160	Noah's Natural Foods	43.668532	-79.385885	Food & Drink Shop
352	Regent Park / Harbourfront	43.654260	-79.360636	The Healthy Road	43.656265	-79.357119	Health Food Store
395	Garden District, Ryerson	43.657162	-79.378937	Crepe Delicious	43.654536	-79.380889	Fast Food Restaurant
413	Garden District, Ryerson	43.657162	-79.378937	Bourbon St. Grill	43.655135	-79.380823	Fast Food Restaurant
464	St. James Town	43.651494	-79.375418	Hogtown Smoke	43.649287	-79.374689	Food Truck
514	St. James Town	43.651494	-79.375418	Loaded Pierogi	43.647965	-79.373427	Comfort Food Restaurant
576	Berczy Park	43.644771	-79.373306	Loaded Pierogi	43.647965	-79.373427	Comfort Food Restaurant
691	Richmond / Adelaide / King	43.650571	-79.384568	The Burger's Priest	43.648643	-79.387539	Fast Food Restaurant
913	Toronto Dominion Centre / Design Exchange	43.647177	-79.381576	Assembly Chef's Hall	43.650579	-79.383412	Food Court

Results

The results of this analysis have shown that neighborhoods such as Rosedale have very little food venues, the top five venues are a park, playground, department store and event space. Using the list of neighborhoods with the five most common venues the best neighborhoods to start a restaurant can be found.

Once a location has been selected the type of restaurant can be suggested through the different types of local restaurants there are.

Venue	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue Latitude	Venue Longitude	Venue Category
A&W	3	3	3	3	3	3
Assembly Chef's Hall	3	3	3	3	3	3
Billy Bishop Café	1	1	1	1	1	1
Bourbon St. Grill	1	1	1	1	1	1
Chick-n-Joy	1	1	1	1	1	1
Crepe Delicious	1	1	1	1	1	1
FILM CAFE	1	1	1	1	1	1
FLOCK Rotisserie + Greens	1	1	1	1	1	1
Hogtown Smoke	3	3	3	3	3	3
KFC	1	1	1	1	1	1
Loaded Pierogi	3	3	3	3	3	3
Market 707	1	1	1	1	1	1
Noah's Natural Foods	1	1	1	1	1	1
Summerhill Market North	1	1	1	1	1	1
The Big Carrot Natural Food Market	1	1	1	1	1	1
The Burger's Priest	3	3	3	3	3	3
The Good Fork	1	1	1	1	1	1
The Healthy Road	1	1	1	1	1	1
West End Mamas	1	1	1	1	1	1
eastside social	1	1	1	1	1	1
IQ Food Co	2	2	2	2	2	2

From this table it can be seen that many of the restaurants are only in one neighborhood. This would mean that most restaurant cuisines would work for a new starting restaurant.

Discussion

The recommended restaurants would be any kind of cuisine but in an area such as Rosedale. This is because this area does not have any places to eat currently but has some good local amenities.

Conclusion

To conclude this report I would be to look at more data as this was based on a limited amount of data. This may identify a better area or a specific cuisine which the area is lacking.