

## 1.Introduction

Coffee is the second most popular beverage after water. Not surprisingly coffee performs a very important social function and plays a vital role in building social relationships.

Given the pleasurable experience of coffee consumption, coffee shops have become social places for people to hangout, talk, write, read, and study

Coffee shops have therefore become icons of urban neighborhoods. The growing success of coffee shops is increasingly attracting the attention of restaurants so much so that creating a coffee shop vibes has become a favourite strategy for restaurant owners to get a steady stream of sales and customers.

This popularity implicates that in the main urban areas there are already a high number of coffee shops but due to their high profitability is one of most attractive businesses to open.

By this report will try to answer the question, where to open a coffee shop in Toronto using as base those neighborhoods with a lower number of this kind of business.

## 2. Data sources

I used basically the 3 following data sources:

The list of canadian Zip Codes and neighbourhoods that we can find in Wikipedia:  
[https://en.wikipedia.org/wiki/List\\_of\\_postal\\_codes\\_of\\_Canada:\\_M](https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M)

The list of canadian Zip Codes with their latitudes and longitudes that we can find in:  
[http://cocl.us/Geospatial\\_data](http://cocl.us/Geospatial_data)

API Foursquare: I will make calls to get venues, restaurants to complete the analysis and answer the question.

### 3. Applied Methodology

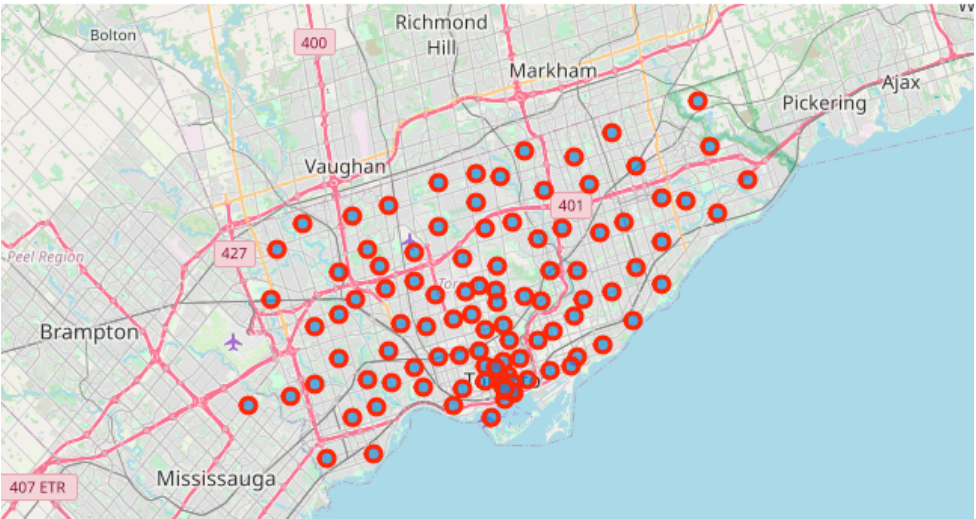
a) I merged the dataset with the zip codes and the neighbourhoods to have a dataset with all these fields.

	Postal Code	Borough	Neighbourhood
0	M1B	Scarborough	Malvern, Rouge
1	M1C	Scarborough	Rouge Hill, Port Union, Highland Creek
2	M1E	Scarborough	Guildwood, Morningside, West Hill
3	M1G	Scarborough	Woburn
4	M1H	Scarborough	Cedarbrae

b) Then I merged this table with the one imported from Geospatial to get the coordinates:

	Postal Code	Borough	Neighbourhood	Latitude	Longitude
0	M1B	Scarborough	Malvern, Rouge	43.806686	-79.194353
1	M1C	Scarborough	Rouge Hill, Port Union, Highland Creek	43.784535	-79.160497
2	M1E	Scarborough	Guildwood, Morningside, West Hill	43.763573	-79.188711
3	M1G	Scarborough	Woburn	43.770992	-79.216917
4	M1H	Scarborough	Cedarbrae	43.773136	-79.239476

c) At this point I was able to put all the neighborhoods in Toronto on a map to have a first general view:



d) Find how the coffee shops in Toronto are spread:

By retrieving from API Foursquare the streets around the Toronto coordinates [43.7, -79.3] setting a radius of 500 km to get later the 100 main venues. Finally, we will retrieve all the businesses settled in those venues where I have been able to check the number of coffee shops to continue the analysis.

e) Find the frequency of coffee shops by Neighbourhood to see which ones we should discard and in which ones we should to take a closer look:

	Neighborhoods	Coffee Shop
3	Bayview Village	0.076923
5	Berczy Park	0.050000
6	Birch Cliff, Cliffside West	0.100000
7	Brockton, Parkdale Village, Exhibition Place	0.050000
8	CN Tower, King and Spadina, Railway Lands, Har...	0.108108
9	Caledonia-Fairbanks	0.153846
12	Central Bay Street	0.071429
14	Church and Wellesley	0.052632
17	Commerce Court, Victoria Hotel	0.048780
18	Davisville	0.060606
19	Davisville North	0.051282
20	Del Ray, Mount Dennis, Keelsdale and Silverthorn	0.052632
21	Don Mills	0.066667
22	Dorset Park, Wexford Heights, Scarborough Town...	0.200000
23	Downsview	0.038462
27	Fairview, Henry Farm, Oriole	0.064516
29	Forest Hill North & West, Forest Hill Road Park	0.125000
30	Garden District, Ryerson	0.048780
33	Harbourfront East, Union Station, Toronto Islands	1.000000
34	High Park, The Junction South	0.166667

- f) Then I set 3 clusters applying KMeans and incorporated them to the table with frequency of the coffee shops by neighborhood:

	Neighborhoods	Coffee Shop	Cluster Labels
3	Bayview Village	0.076923	2
5	Berczy Park	0.050000	2
6	Birch Cliff, Cliffside West	0.100000	0
7	Brockton, Parkdale Village, Exhibition Place	0.050000	2
8	CN Tower, King and Spadina, Railway Lands, Har...	0.108108	0
9	Caledonia-Fairbanks	0.153846	0
12	Central Bay Street	0.071429	2
14	Church and Wellesley	0.052632	2
17	Commerce Court, Victoria Hotel	0.048780	2
18	Davisville	0.060606	2
19	Davisville North	0.051282	2
20	Del Ray, Mount Dennis, Keelsdale and Silverthorn	0.052632	2
21	Don Mills	0.066667	2
22	Dorset Park, Wexford Heights, Scarborough Town...	0.200000	0
23	Downsview	0.038462	2
27	Fairview, Henry Farm, Oriole	0.064516	2
29	Forest Hill North & West, Forest Hill Road Park	0.125000	0
30	Garden District, Ryerson	0.048780	2
33	Harbourfront East, Union Station, Toronto Islands	1.000000	1
34	High Park, The Junction South	0.166667	0

- g) With these results, I have been able to check those clusters with fewer coffee shops. I added the coordinates to visualize where the opportunities are on the map.

	Neighborhoods	Coffee Shop	Cluster Labels
3	Bayview Village	0.076923	2
5	Berczy Park	0.050000	2
6	Birch Cliff, Cliffside West	0.100000	0
7	Brockton, Parkdale Village, Exhibition Place	0.050000	2
8	CN Tower, King and Spadina, Railway Lands, Har...	0.108108	0
9	Caledonia-Fairbanks	0.153846	0
12	Central Bay Street	0.071429	2
14	Church and Wellesley	0.052632	2
17	Commerce Court, Victoria Hotel	0.048780	2
18	Davisville	0.060606	2
19	Davisville North	0.051282	2
20	Del Ray, Mount Dennis, Keelsdale and Silverthorn	0.052632	2
21	Don Mills	0.066667	2
22	Dorset Park, Wexford Heights, Scarborough Town...	0.200000	0
23	Downsview	0.038462	2
27	Fairview, Henry Farm, Oriole	0.064516	2
29	Forest Hill North & West, Forest Hill Road Park	0.125000	0
30	Garden District, Ryerson	0.048780	2
33	Harbourfront East, Union Station, Toronto Islands	1.000000	1
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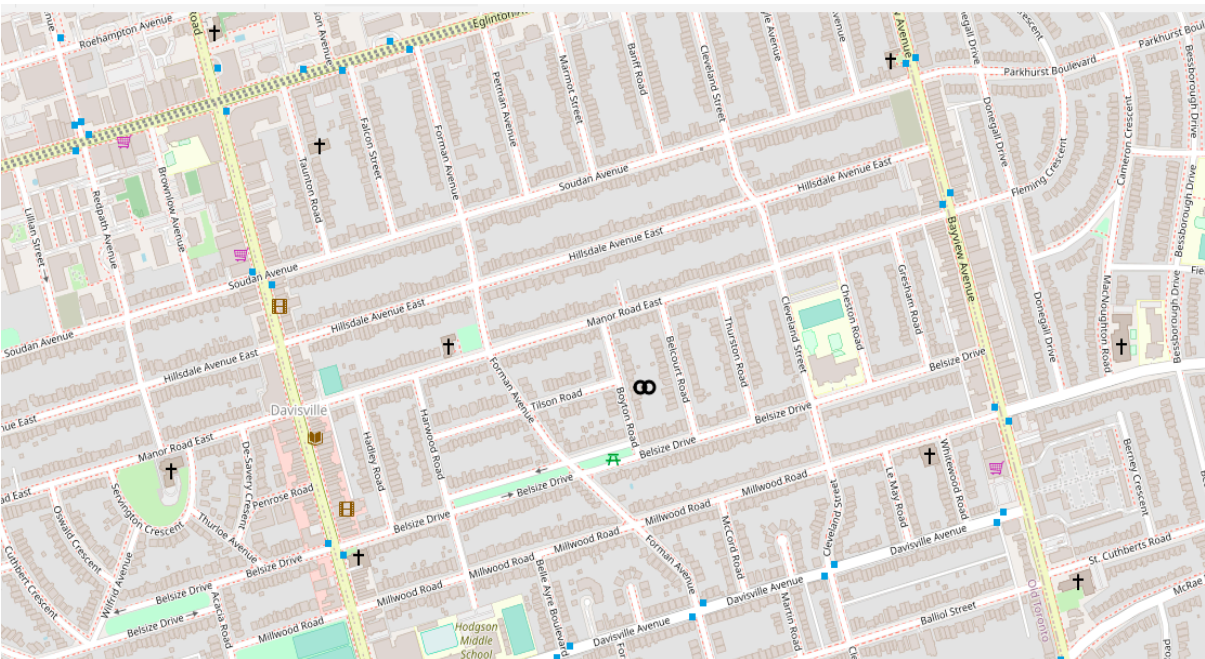
## 4. Results

After clustering the different neighborhoods we can conclude that the cluster 1 is the one where there is less competition so should be our first option.

	Neighborhoods	Coffee Shop	Cluster Labels
3	Bayview Village	0.076923	2
5	Berczy Park	0.050000	2
6	Birch Cliff, Cliffside West	0.100000	0
7	Brockton, Parkdale Village, Exhibition Place	0.050000	2
8	CN Tower, King and Spadina, Railway Lands, Har...	0.108108	0
9	Caledonia-Fairbanks	0.153846	0
12	Central Bay Street	0.071429	2
14	Church and Wellesley	0.052632	2
17	Commerce Court, Victoria Hotel	0.048780	2
18	Davisville	0.060606	2
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23	Downsview	0.038462	2
27	Fairview, Henry Farm, Oriole	0.064516	2
29	Forest Hill North & West, Forest Hill Road Park	0.125000	0
30	Garden District, Ryerson	0.048780	2
33	Harbourfront East, Union Station, Toronto Islands	1.000000	1
34	High Park, The Junction South	0.166667	0

In this area there are only two Starbucks so there is a room of opportunity to open a cozy small coffee shop to try to differentiate our new business from the competition.

	Neighborhood	Coffee Shop	Cluster Labels	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
33	Harbourfront East, Union Station, Toronto Islands	0.5	1	43.704608	-79.381752	Starbucks	43.707485	-79.381479	Coffee Shop
80	Toronto Dominion Centre, Design Exchange	0.5	1	43.704608	-79.381576	Starbucks	43.707485	-79.381479	Coffee Shop



## 5. Discussion section

- a) The cluster 1 is the one with lowest level of competitiveness but looking neighborhoods located in other clusters there are other opportunities where the frequency of coffee shops is relatively low, such as:

- a) Davisville
- b) Davisville North
- c) Del Ray
- d) Mount Dennis
- e) Keelsdale
- f) Bayview Village
- g) Fairview

In all these neighborhoods the frequency of coffee shops is under 0.1.

- b) A common pattern across all the cluster and neighborhoods is the high number of Starbucks so, in case of opening a new coffee shop we should assess the strategy to differentiate ourselves from them. Assessing a most personalized service or to try to compete by lower prices would be part of the strategic plan.

	Neighborhood	Coffee Shop	Cluster Labels	Neighborhood Latitude	Neighborhood Longitude		Venue	Venue Latitude	Venue Longitude	Venue Category
3	Bayview Village	0.068966	0	43.704608	-79.385975	★	Starbucks	43.705923	-79.389548	Coffee Shop
3	Bayview Village	0.068966	0	43.704608	-79.385975		Second Cup	43.704344	-79.388659	Coffee Shop
5	Berczy Park	0.073171	0	43.704608	-79.373306	★	Starbucks	43.705190	-79.374760	Coffee Shop
5	Berczy Park	0.073171	0	43.704608	-79.373306		Second Cup	43.706093	-79.375216	Coffee Shop
5	Berczy Park	0.073171	0	43.704608	-79.373306		Creeds Coffee Bar	43.706094	-79.375255	Coffee Shop
7	Brockton, Parkdale Village, Exhibition Place	0.058824	0	43.704608	-79.428191	★	Starbucks	43.700598	-79.427433	Coffee Shop
12	Central Bay Street	0.062500	0	43.704608	-79.387383	★	Starbucks	43.705923	-79.389548	Coffee Shop
12	Central Bay Street	0.062500	0	43.704608	-79.387383		Second Cup	43.704344	-79.388659	Coffee Shop
14	Church and Wellesley	0.047619	0	43.704608	-79.383160		Second Cup	43.704344	-79.388659	Coffee Shop
17	Commerce Court, Victoria Hotel	0.075000	0	43.704608	-79.379817	★	Starbucks	43.705190	-79.374760	Coffee Shop
17	Commerce Court, Victoria Hotel	0.075000	0	43.704608	-79.379817		Second Cup	43.706093	-79.375216	Coffee Shop
17	Commerce Court, Victoria Hotel	0.075000	0	43.704608	-79.379817		Creeds Coffee Bar	43.706094	-79.375255	Coffee Shop
18	Davisville	0.054054	0	43.704608	-79.388790	★	Starbucks	43.705923	-79.389548	Coffee Shop
18	Davisville	0.054054	0	43.704608	-79.388790		Second Cup	43.704344	-79.388659	Coffee Shop

## 6. Conclusion section

Most of the Coffee shops are in cluster 2 which is around so the competitiveness in that cluster makes it less appealing.

In terms of Cluster the number 1 is the most appealing so neighbourhood such as Harbourfront East, Union Station, Toronto Islands, Toronto Dominion Centre and Design Exchange should be taken into consideration as potential places to open a new coffee shop.

Cluster 0 could be a good opportunity as there are not several coffee shops in these neighborhoods.

Clusters apart, there are some neighbourhoods where the frequency of coffee shops is quite low: Davisville, Davisville North, Del Ray, Mount Dennis, Keelsdale, Bayview Village or Fairview. So, these streets should be part of the analysis too

About 1 out of 2 coffee shops is a Starbucks so we have to consider not only the best area but the kind of features we have to implement to differentiate our coffee shop from this international franchise.