

Coursera Capstone – The Battle of Neighbourhoods

Introduction/Business Problem:

I have a client planning to open a new coffee shop in Toronto. Coffee is a necessity for many people in the city and there are already a multitude of options. Therefore, it is extremely important that my client is equipped with the right information to make the best decision in terms of location. The chosen neighbourhood will be the deciding factor between huge success or failure for the new coffee shop. If the new coffee shop is placed correctly, there is a higher chance of it attracting new customers and building a name for itself in the city. This could possibly lead to more locations being opened and replicated from this initial one. It is extremely important to my client that this first location is a success and worth the investment.

Data:

- Wikipedia – list of neighbourhoods in Toronto
- CSV file – latitude and longitude coordinates
- Wikipedia – Toronto demographics, neighbourhood populations
- Foursquare – venues in Toronto

We will use Wikipedia and Foursquare data to explore and analyze the different neighbourhoods in Toronto. We will start with basic analysis of the population in each area. We will then break down location data to find out if coffee shops are already established in the most populated Toronto neighbourhood, allowing the client to make an informed decision.

Methodology:

We need to explore, separate, and cluster neighbourhoods in Toronto to get an idea of the best location choice for the client. We started by looking at an overview of neighbourhoods in Toronto using the following Wikipedia link:

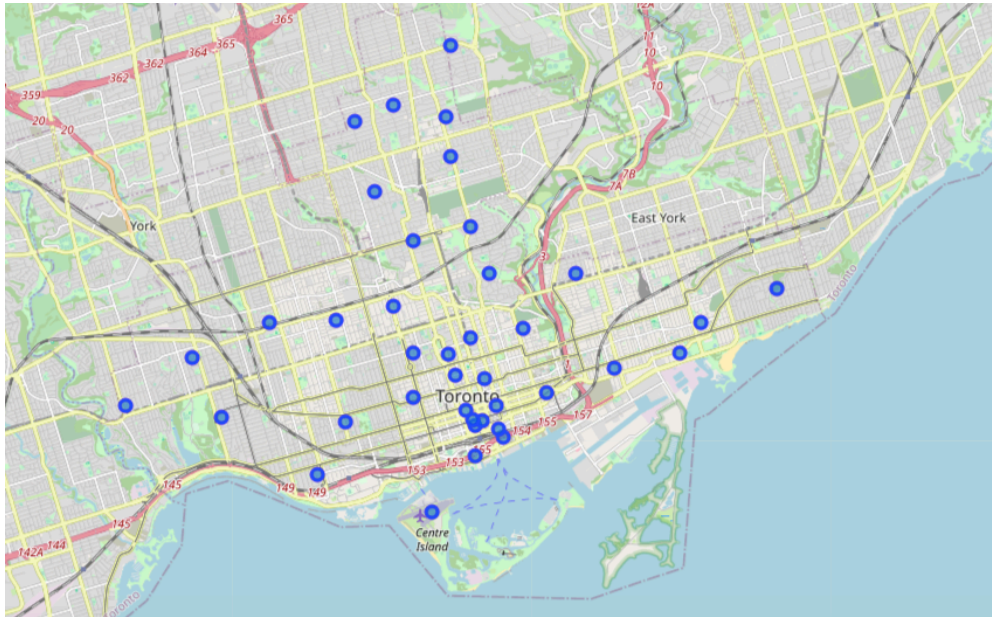
https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M. This link provided us with postal code, borough, and neighbourhood data in Toronto. Additionally, we used data from a CSV file: http://cocl.us/Geospatial_data. My team scraped the first data set and merged it with the CSV file data to add latitude and longitude coordinates for each neighbourhood. This data allowed for the creation of a map of Toronto, with its neighbourhoods marked, using Folium.

The next Wikipedia link used was:

https://en.wikipedia.org/wiki/Demographics_of_Toronto_neighbourhoods. This link provided information on the demographics of Toronto neighbourhoods. The key demographic used here was Population. The data was scraped and formatted to display the most populated Toronto neighbourhoods in a table.

Lastly, FourSquare API data was used. FourSquare was used for the most populated neighbourhood in Toronto – Old East York. It was also used for Toronto’s coordinates in general.

Results:



1. This is the map of Toronto neighbourhoods generated using the first Wikipedia link and CSV file. This will allow our client to see the big picture of Toronto and its many neighbourhood/location options.

	Neighbourhood	Population	Land Area	Density	Population %	Income	Commuting	Population Score
113	Old East York	52220	7.94	6577	-4.6	33,172	22.0	2.161626
170	Woburn	48507	13.34	3636	-1.5	26,190	13.3	2.007928
50	Elia (Jane and Finch)	48003	7.66	6267	-10.0	22,691	13.0	1.987065
86	L'Amoreaux	45862	7.15	6414	0.9	26,375	13.4	1.898439
1	Agincourt	44577	12.45	3580	4.6	25,750	11.1	1.845247
98	Malvern	44324	8.86	5003	1.5	25,677	13.6	1.834774
168	Willowdale	43144	7.68	5618	62.3	39,895	15.6	1.785929
44	Downsview	36613	16.13	2270	-5.0	26,751	14.4	1.515581
108	Newtonbrook	36046	8.77	4110	0.3	33,428	16.6	1.492110
139	Smithfield	34996	6.45	5426	-7.2	24,387	12.8	1.448645

2. This is the table returned using the second Wikipedia link (demographic data). The most populated Toronto neighbourhood is Old East York.

	categories	hasPerk	id	location.address	location.cc	location.city	location.country	location.crossStreet	location.distance	location.formattedAddress	li
0	'4bf58dd8d48988d1e0931735', 'name': 'C...	False	4b44fc77f964a520cc0026e3	427 University Avenue	CA	Toronto	Canada	NaN	340	[427 University Avenue, Toronto ON, Canada]	
1	'4bf58dd8d48988d1e0931735', 'name': 'C...	False	59f784dd28122f14f9d5d63d	245 Queen Street West	CA	Toronto	Canada	at St Patrick St	515	[245 Queen Street West (at St Patrick St), Tor...	
2	'4bf58dd8d48988d1e0931735', 'name': 'C...	False	4b0aaa8ef964a520272623e3	483 Bay St,Bell Trinity Square	CA	Toronto	Canada	Bell Trinity Square	130	[483 Bay St,Bell Trinity Square (Bell Trinity ...	
3	'4bf58dd8d48988d1e0931735', 'name': 'C...	False	4baa9f6cf964a520817a3ae3	401 Bay St.	CA	Toronto	Canada	at Richmond St. W	268	[401 Bay St. (at Richmond St. W), Toronto ON M...	
4	'4bf58dd8d48988d1e0931735', 'name': 'C...	False	53e8acc4498ee294fb100183	425 University Ave	CA	Toronto	Canada	Dundas	296	[425 University Ave (Dundas), Toronto ON M5G 1...	
5		False	4baa31def964a52037523ae3	350 Bay St - 7th Floor	CA	Toronto	Canada	NaN	488	[350 Bay St - 7th Floor, Toronto ON, Canada]	
6	'4bf58dd8d48988d1e0931735', 'name': 'C...	False	4c19447c4ff90f4765ac0f49	595 Bay St,Atrium On Bay	CA	Toronto	Canada	at Atrium on Bay	309	[595 Bay St,Atrium On Bay (at Atrium on Bay), ...	
7	'4bf58dd8d48988d1e0931735', 'name': 'C...	False	4ec514ec9911232436e364af	Yonge	CA	Toronto	Canada	Dundas	481	[Yonge (Dundas), Toronto ON M5B 2G9, Canada]	
8	'4bf58dd8d48988d1e0931735', 'name': 'C...	False	57b1d07b498e85a00ac8baa8	NaN	CA	NaN	Canada	NaN	222	[Canada]	
9	'4bf58dd8d48988d1e0931735', 'name': 'C...	False	509d036ee4b0912bf20c8abc	Bell Trinity Square	CA	Toronto	Canada	NaN	137	[Bell Trinity Square, Toronto ON, Canada]	

3. This table was the result of our call to FourSquare using Toronto's coordinates and the search query "coffee". Old East York's coordinates did not return any venues for "coffee".

Discussion:

There are a lot of important factors that will affect our client's decision to open a coffee shop in Toronto. It is obvious that there are a lot of neighbourhood options in Toronto, demonstrated by our map. The client should consider their home location vs. these neighbourhoods and pick somewhere that is not too inconvenient for a daily commute.

Based on the population research alone, the client should open the new coffee shop in Old East York. Old East York is the most populated neighbourhood in Toronto so there is a good chance the client will be able to attract new customers. It is important to consider other factors, however, such as culture, income level, and traffic or crime in the area. Another factor to consider could be the style of coffee shop, for example, if it's trendy, it might be better suited for the downtown core where people typically go for those experiences.

Lastly, when we called FourSquare API using Old East York's coordinates, no venues related to "coffee" appeared. Further research would be necessary to determine if this is a positive or negative attribute. On the positive side, there would not be a lot of competition. On the negative side, perhaps it means that coffee shops do not thrive in that neighbourhood.

Conclusion:

In conclusion, using Toronto neighbourhood and demographic data along with FourSquare API, we have found that Old East York is a good option for the new coffee shop. It would be important for our client to further consider other factors before officially deciding, however, Old East York would be a good starting point to research from.