

Finding the Possible Locations for a New Coffee Shop in Toronto

Sebastian Philip

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1. Introduction

A new group of coffee shop owners wants to set up a new shop in Toronto. Unable to decide the right spot to set up the shop, we'll use visualizations using folium to locate the existing coffee shops across different neighbourhoods in Toronto and select the place using map visualization where there are the least number of coffee shops. This will give us a brief idea about the possible locations where the coffee shop could be set up. We'll further investigate these locations by analyzing the venues nearby. Proximity to mass gathering venues such as parks, malls, stadiums etc. will have a greater advantage. Also proximity to similar businesses will also be taken into account.

2. Data

The data used are -

- List of boroughs from https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M and their associated neighbourhood. It will be downloaded and stored into 'table.csv' file
- Latitude and Longitude of each neighbourhood from "https://cocl.us/Geospatial_data"
- Merge the above two data
- The boroughs related to Toronto, i.e. East Toronto, West Toronto, Downtown Toronto, Central Toronto and their associated neighbourhoods are selected.
- Using Foursquare API, Venues near the neighbourhoods are located. From this all coffee shops are selected.
- All the coffee shops in the neighbourhoods are then plotted on the map.

Data Cleaning –

Unassigned values in the list of boroughs from Wikipedia page is dropped and merged with the geospatial data.

[9]:

	Postal Code	Borough	Neighborhood	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
...
98	M9N	York	Weston	43.706876	-79.518188
99	M9P	Etobicoke	Westmount	43.696319	-79.532242
100	M9R	Etobicoke	Kingsview Village, St. Phillips, Martin Grove ...	43.688905	-79.554724
101	M9V	Etobicoke	South Steeles, Silverstone, Humbergate, Jamest...	43.739416	-79.588437
102	M9W	Etobicoke	Northwest, West Humber - Clairville	43.706748	-79.594054

103 rows × 5 columns

We are only interested in East, West, Central and Downtown Toronto boroughs. So we select only the neighbourhoods belonging to these boroughs

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	Postal Code	Borough	Neighborhood	Latitude	Longitude
0	M4E	East Toronto	The Beaches	43.676357	-79.293031
1	M4K	East Toronto	The Danforth West, Riverdale	43.679557	-79.352188
2	M4L	East Toronto	India Bazaar, The Beaches West	43.668999	-79.315572
3	M4M	East Toronto	Studio District	43.659526	-79.340923
4	M7Y	East Toronto	Business reply mail Processing Centre, South C...	43.662744	-79.321558
5	M4N	Central Toronto	Lawrence Park	43.728020	-79.388790
6	M4P	Central Toronto	Davisville North	43.712751	-79.390197
7	M4R	Central Toronto	North Toronto West, Lawrence Park	43.715383	-79.405678
8	M4S	Central Toronto	Davisville	43.704324	-79.388790
9	M4T	Central Toronto	Moore Park, Summerhill East	43.689574	-79.383160
10	M4V	Central Toronto	Summerhill West, Rathnelly, South Hill, Forest...	43.686412	-79.400049
11	M5N	Central Toronto	Roselawn	43.711695	-79.416936

There are 39 neighborhoods in the boroughs of central, east, west and downtown Toronto.

3. Feature Selection

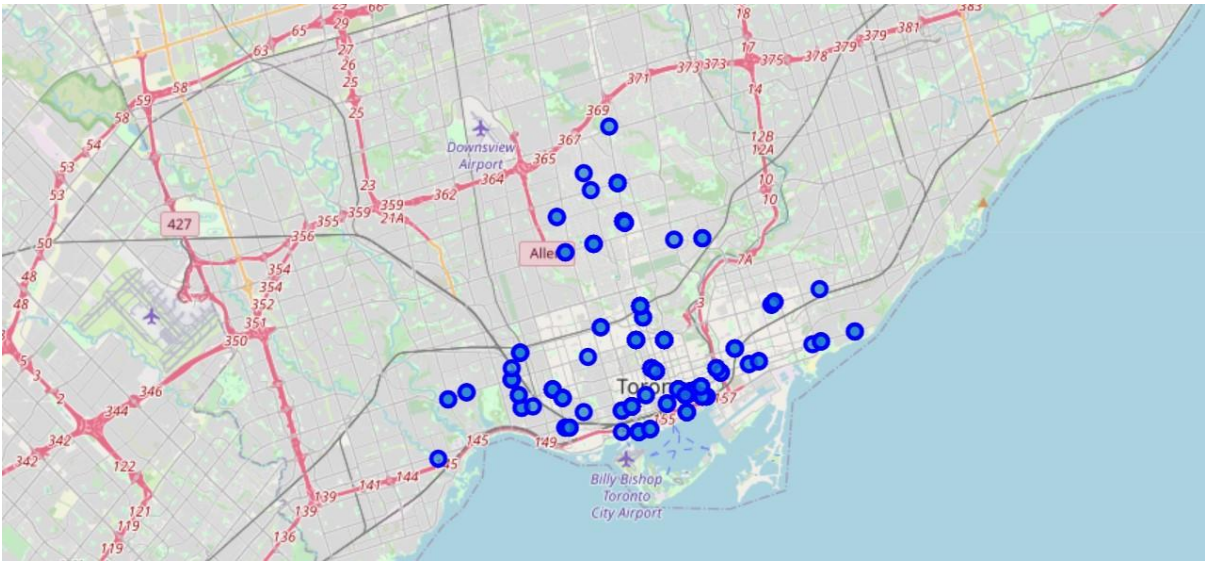
Withing a radius of 3000m we select all the nearby venues in the above 39 neighbourhoods. A total of 3900 venues were returned, with 199 unique categories. In that a total of 307 coffee shops along with their coordinates were located. –

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Venue Category
Coffee Shop      307
Park             250
Café            208
Italian Restaurant 133
Bakery          123
Restaurant       94
Brewery          66
Japanese Restaurant 60
Pizza Place      60
Sandwich Place   60
Name: Neighborhood, dtype: int64
```

	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
10	The Beaches	43.676357	-79.293031	The Remarkable Bean	43.672801	-79.287038	Coffee Shop
14	The Beaches	43.676357	-79.293031	Buds Coffee Bar	43.669375	-79.303218	Coffee Shop
37	The Beaches	43.676357	-79.293031	Press Books Coffee Vinyl	43.687672	-79.304457	Coffee Shop
70	The Beaches	43.676357	-79.293031	Pomarosa Coffee & Kitchen	43.683201	-79.325849	Coffee Shop
72	The Beaches	43.676357	-79.293031	Starbucks	43.668539	-79.307821	Coffee Shop
...
3807	Runnymede, Swansea	43.651571	-79.484450	Wibke's Espresso Bar	43.649132	-79.484802	Coffee Shop
3821	Runnymede, Swansea	43.651571	-79.484450	Starbucks	43.651395	-79.475990	Coffee Shop
3859	Runnymede, Swansea	43.651571	-79.484450	Outpost Coffee Roasters	43.656059	-79.454106	Coffee Shop

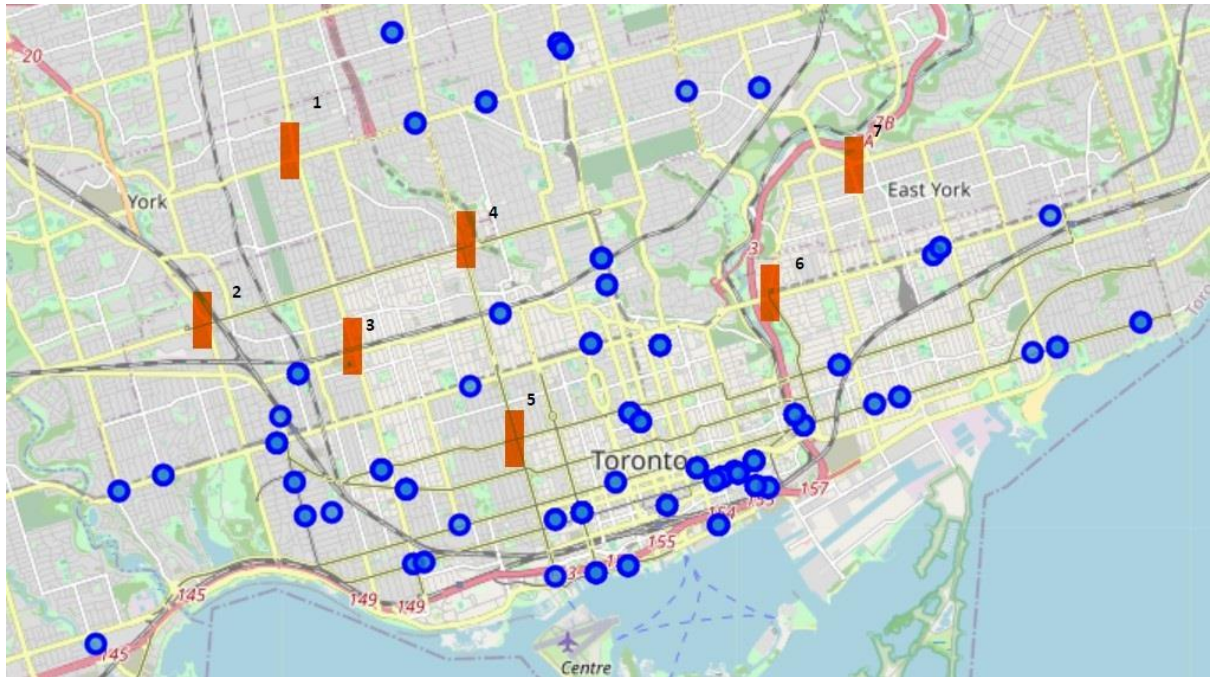
4. Data Analysis

The locations of above coffee shops are plotted on a map of Toronto using folium



5. Results

We can clearly see the gaps between the locations clearly indicating possible locations. These are marked in red and shown as below –



We have identified seven possible locations for the new coffee shop.

1. Dufferin Street Toronto
2. Old weston road
3. Dupont Street
4. St claire west
5. College Street
6. Danforth by valley
7. Donlands Avenue

Other aspects such as proximity to mass gathering venues such as parks, malls, stadiums etc. can be taken into account to select the best amongst these.