The Battle of Neighborhoods IBM course final assignment

Helping entrepreneurs starting a business

Starting a business is a difficult feat, so if using the knowledge obtained in this IBM course, we can help an entrepreneur fulfill his objective with less risk

My idea for this project consist in find the feasibility of a new gymnasium in a specific Neighborhood in the city of Toronto

Obtaining the data

The fist part of the data was extracted from a table in a Wikipedia article using the Beautiful Soup library for Python.

Postal code ⇕	Borough ⇕	Neighborhood ⇕
M1A	Not assigned	
M2A	Not assigned	
M3A	North York	Parkwoods
M4A	North York	Victoria Village
M5A	Downtown Toronto	Regent Park / Harbourfront
M6A	North York	Lawrence Manor / Lawrence Heights
M7A	Downtown Toronto	Queen's Park / Ontario Provincial Government
M8A	Not assigned	
M9A	Etobicoke	Islington Avenue
M1B	Scarborough	Malvern / Rouge

Data before processing

- Data loaded in the python notebook with the latitude and longitude for every neighborhood
- The coordinates were extracted from a csv file

	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
5	M1J	Scarborough	Scarborough Village	43.744734	-79.239476
6	M1K	Scarborough	Kennedy Park / Ionview / East Birchmount Park	43.727929	-79.262029
7	M1L	Scarborough	Golden Mile / Clairlea / Oakridge	43.711112	-79.284577
8	M1M	Scarborough	Cliffside / Cliffcrest / Scarborough Village West	43.716316	-79.239476

Neighborhoods considered for the analysis of Downtown Toronto

```
Rosedale
St. James Town / Cabbagetown
Church and Wellesley
Regent Park / Harbourfront
Garden District, Ryerson
St. James Town
Berczy Park
Central Bay Street
Richmond / Adelaide / King
Harbourfront East / Union Station / Toronto Islands
Toronto Dominion Centre / Design Exchange
Commerce Court / Victoria Hotel
University of Toronto / Harbord
Kensington Market / Chinatown / Grange Park
CN Tower / King and Spadina / Railway Lands / Harbourfront West / Bathurst Quay / South Niagara / Island airport
Stn A PO Boxes
First Canadian Place / Underground city
Christie
Queen's Park / Ontario Provincial Government
```

Results

This is the "cluster gym", this cluster provide a lot of information, for example the neighborhood that is part of the cluster but doesn't has gymnasiums or other sport-like facilities is a good place to start looking for a place to start a new gymnasium.
We can observe stores (clothing, sports men's) in some neighborhoods; this can be a signal to considerate when starting our own business.

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

	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
2	Church and Wellesley	Sushi Restaurant	Coffee Shop	Japanese Restaurant	Restaurant	Yoga Studio	Men's Store	Hotel	Gay Bar	Gastropub	Pub
8	Richmond / Adelaide / King	Coffee Shop	Café	Restaurant	Gym	Thai Restaurant	Hotel	Clothing Store	Deli / Bodega	American Restaurant	Bookstore
10	Toronto Dominion Centre / Design Exchange	Coffee Shop	Hotel	Café	Restaurant	Japanese Restaurant	Salad Place	Italian Restaurant	Seafood Restaurant	American Restaurant	Sporting Goods Shop
11	Commerce Court / Victoria Hotel	Coffee Shop	Restaurant	Café	Hotel	Gym	American Restaurant	Seafood Restaurant	Deli / Bodega	Italian Restaurant	Japanese Restaurant

Conclusion

- Where to start our business is a difficult decision, but with the help of machine learning we can give a helping hand in giving hints and difficult to obtain information.

- Some patterns can be detected using machine learning, like combinations of different venues that are always together.

- The neighborhood of Toronto Dominion Centre / Design Exchange can be a good place to consider if you want to star a gymnasium business in Toronto.