IBM Capstone Project Report
A place for a sushi restaurant in Toronto

Introduction/Business Problem

I imagine working with a company offering business analysis to others. Our current client is a person whose wish is to create his own sushi restaurant in Toronto. He does not have a preference about the location of his future restaurant but would like to have it placed in a strategic position, without any cost consideration at first. That is why he asked us to help him: finding the neighborhood in Toronto which is the most interesting considering both:

- Presence of potential clients
- Competition with similar restaurants

Data

To deal with this problem, I will be using the Foursquare location data. The idea is to make requests to get the venues in each of Toronto's neighborhoods. Then we will be able to work with them. To locate the neighborhoods and make Foursquare requests, I will first use the Wikipedia page listing these neighborhoods per postal codes, and Geocoder to get the coordinates I need. As an example of the whole process of data collection, let us consider the first neighborhood in the Wikipedia page: Parkwoods. I collect the name and postal code, which I use to find the coordinates of the neighborhood with Geocoder. Then with this postal code I can find all the venues nearby thanks to Foursquare's API. This goes right into a dataframe, and I must repeat the process for all neighborhoods.

Methodology

The main steps of my analysis are the following:

- **Wikipedia scraping** to get the list of neighborhoods in Toronto
- **Pandas processing** to convert it into a dataframe
- **Mapping of the boroughs** to have a first look at the data, thanks to Foursquare and Folium
- **Extracting and exploring the dataset** to obtain a list of all venues for each neighborhood, with their coordinates and category
- **Counting the restaurants and sushi restaurants in each borough** to build our model: the more restaurants, the higher the score, because there is a demand for these venues. The more sushi restaurants, the lower the score, because there is too much competition.
- **Final scoring and mapping** to order the neighborhoods by efficiency for the new restaurant and visualize them on a map

Results

Thanks to our analysis we narrowed all the possible locations for a new sushi restaurant to a few. The score attributed to every neighborhood shows that 3 of them seem over the others, with a score over 4/5. These places are indeed rich in restaurants, and thus in clients, but do not have many sushi restaurants yet. If our client is not interested by these 3 locations for any reason (financial for instance), we are able to give him an ordered list of the most interesting neighborhoods to install his restaurant.

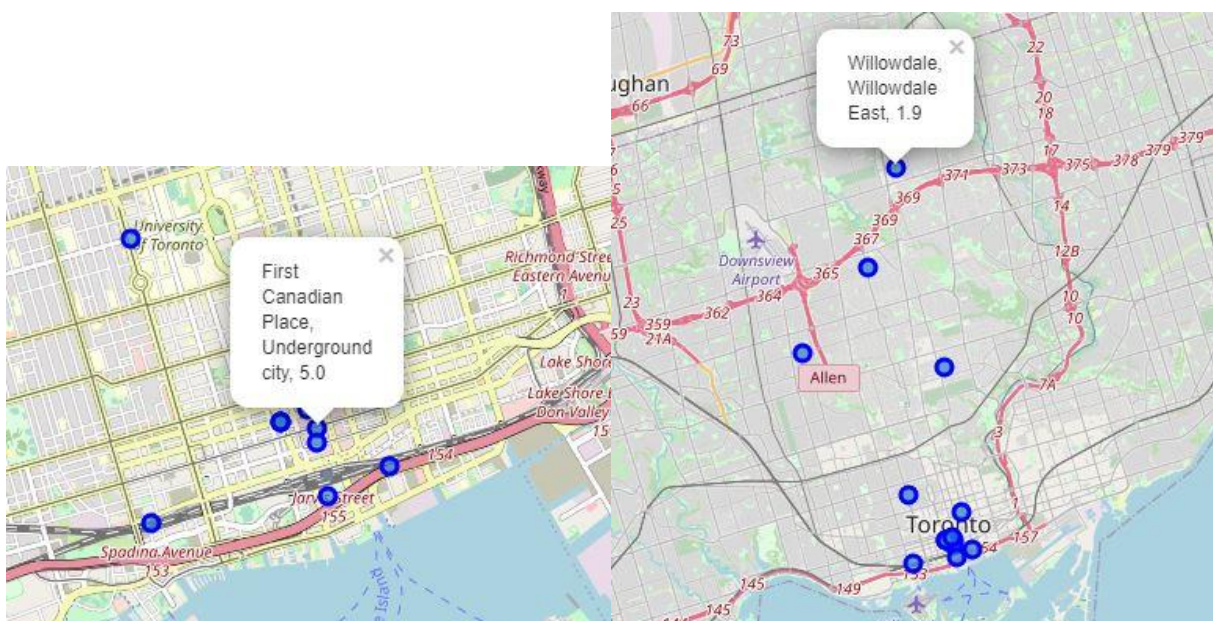|	Neighborhood	Sushi Count	Restaurants Count	index	Postal Code	Borough	Latitude	Longitude	Score
9	First Canadian Place, Underground city	1	27	157	M5X	Downtown Toronto	43.64828	-79.38146	5.0
21	Toronto Dominion Centre, Design Exchange	1	26	67	M5K	Downtown Toronto	43.64710	-79.38153	4.8
10	Garden District, Ryerson	1	23	13	M5B	Downtown Toronto	43.65736	-79.37818	4.3
4	CN Tower, King and Spadina, Railway Lands, Har...	1	18	139	M5V	Downtown Toronto	43.64082	-79.39956	3.3
2	Berczy Park	1	17	31	M5E	Downtown Toronto	43.64531	-79.37368	3.1
22	University of Toronto, Harbord	1	15	121	M5S	Downtown Toronto	43.66311	-79.40180	2.8
3	Business reply mail Processing Centre, South C...	2	28	168	M7Y	East Toronto	43.64869	-79.38544	2.6
5	Canada Post Gateway Processing Centre	2	28	114	M7R	Mississauga	43.64869	-79.38544	2.6
19	Stn A PO Boxes	2	28	148	M5W	Downtown Toronto	43.64869	-79.38544	2.6
18	Richmond, Adelaide, King	2	25	49	M5H	Downtown Toronto	43.64970	-79.38258	2.3
24	Willowdale, Willowdale East	1	10	91	M2N	North York	43.76714	-79.40707	1.9
1	Bedford Park, Lawrence Manor East	1	9	85	M5M	North York	43.73546	-79.41915	1.7
8	Davisville	1	8	120	M4S	Central Toronto	43.70340	-79.38596	1.5
12	Harbourfront East, Union Station, Toronto Islands	1	8	58	M5J	Downtown Toronto	43.64285	-79.38040	1.5
11	Glencairn	1	7	14	M6B	North York	43.70799	-79.44838	1.3

Discussion

As said earlier, there are 3 neighborhoods that seem very interesting for our client, namely:

- *First Canadian Place, Underground city*
- *Toronto Dominion Centre, Design Exchange*
- *Garden District, Ryerson*

But these locations are in the center of Toronto and it may be expensive to install a new restaurant there. That is why we can also propose to our client some locations that seem a bit less effective for his sushi restaurant but are further from the center. These are:

- *Willowdale, Willowdale East*
- *University of Toronto, Harbord*
- *CN Tower, King and Spadina, Railway Lands, Harbourfront West, Bathurst Quay, South Niagara, Island airport*

Conclusion

The detailed results make sense, showing that the best locations for a new restaurant are near the center of town, always without considering the costs. Nevertheless, we were able to find some locations that seem to be a good compromise between effectiveness and cost.

We truly hope that our analysis will help our client to find the perfect location for his restaurant.