Applied Data Science Capstone project

Good or bad idea to open a food supply supermarket in West Toronto neighborhood?

Prepared for Capstone project of IBM Data Science Certificate
Prepare by Shuqin Ouyang
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Executive Summary

Objective:

The main purpose of this capstone project is to help Toronto local businessman get better sense of business layout in west Toronto and help decide whether to invest on a supermarket store or not.

Goals:

Newcomers to Toronto should be able to utilize this report to analyze business pattern and make business decisions in West Toronto.

Methodology:

The most common venues have been generated using Foursquare API in West Toronto. And then the venues are being plotted and formed in clusters using K nearest neighbors. Each cluster got examined in detail later.

Introduction:

Facts: Nowadays, people consume a lot of products and goods for daily eating and are eating in more varieties. Since people scatter around the city, it is hard for suppliers to know the demand of food in a concrete way.

Hence, I would explore west Toronto to see how places cluster and whether the clusters formed in west Toronto can give some insight as to whether it is a good idea to set up food supply supermarket there or not.

Data Used:

Data Source:

1. **Foursquare data I obtained as a Foursquare developer : provides local or distant locations' information, such as popular places nearby, people's reviews of places as well as ratings.**

2. **Canada neighborhood information wikipedia page: wikipedia page provides detailed information about Toronto all neighborhood and their longitude and latitude. Foursquare is a platform that users can find local or distant locations' information, such as popular places nearby, people's reviews of places as well as ratings.**
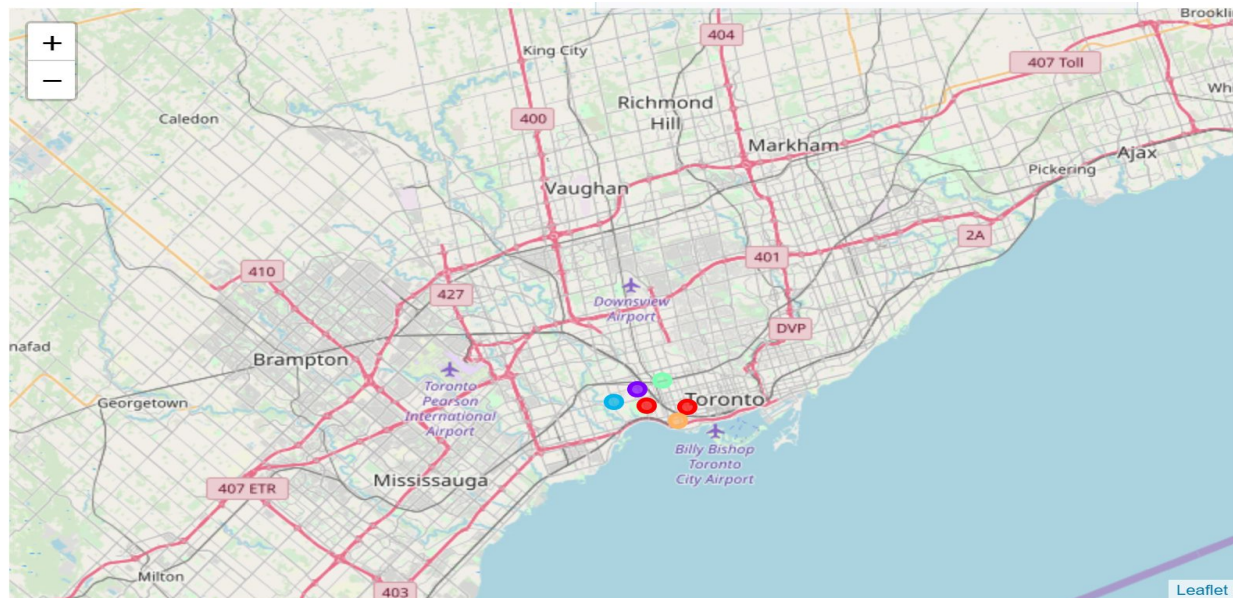
Methodology:

- Python webscrpping webpage
- KNN(K nearest neighbors)
- Python matplotlib visualization
- Foursqure API trending venues query call

Result:

- 5 clusters as supposed. First cluster has most common venue as bar and coffee shop, second cluster has most common venue as Mexican Restaurant, third cluster has most common venue as Pizza Place,fourth cluster has most common venue as bakery, fourth cluster has most common venue as coffee shop. All clusters are mainly food related and centered.

- Fourthermore, with further exploration, there is no trending venue in West Toronto.

Map

Cluster 1:

	Latitude	Cluster Labels	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
1	43.647927	0	Bar	Café	Restaurant	Coffee Shop	Vietnamese Restaurant	Vegetarian / Vegan Restaurant	French Restaurant	Asian Restaurant
4	43.648960	0	Coffee Shop	Gift Shop	Piano Bar	Cuban Restaurant	Dessert Shop	Dog Run	Movie Theater	Eastern European Restaurant

Cluster 2:

	Latitude	Cluster Labels	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
3	43.661608	1	Mexican Restaurant	Café	Bar	Grocery Store	Bookstore	Park	Fast Food Restaurant	Cajun / Creole Restaurant

Cluster 3:

	Latitude	Cluster Labels	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
5	43.651571	2	Pizza Place	Café	Coffee Shop	Sushi Restaurant	Bookstore	Italian Restaurant	Gym	Falafel Restaurant

Cluster 4:

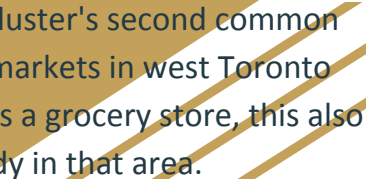|	Latitude	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue
0	43.669005	3	Bakery	Supermarket	Gym / Fitness Center	Brewery	Gas Station	Liquor Store	Fast Food Restaurant	Middle Eastern Restaurant

Cluster 5:

	Latitude	Cluster Labels	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
2	43.636847	4	Coffee Shop	Café	Breakfast Spot	Pet Store	Caribbean Restaurant	Climbing Gym	Burrito Place	Convenience Store

Discussion:

In the first sight of the result, West Toronto is a great place that has lots of restaurants and cafes gathering. This is supported byall 5 clusters main and common venue are linked to restaurants. It seems that this is the place that could be great for a supermarket to exist and work as supplier of great ingredients for local people and stores.

However, with detailed exploration, I found out that the fourth cluster's second common venue is supermarket. That means that there are existing supermarkets in west Toronto already. Furthermore, the second cluster's fourth common venue is a grocery store, this also shows there is some extent of ingredients supply already in that area.

Conclusion:

West Toronto has great gathering of restaurants and food places, with few supermarkets and grocery stores in 2 main clusters already.

But not all 5 clusters have supermarkets accessible, that means the competition in the other 3 clusters are none.

If the business person plans to open a food supply supermarket, he could open it in cluster 1, 3, 5, with each in latitude in 43.647927 and 43.648960 ,43.651571, and 43.636847, and longitude all in -79.3727924125372.