Battle of Neighborhoods

Author: Ibrahim Bishtawi

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Introduction

Opening and maintaining a restaurant is not an easy task. It requires proof of concept, dedicated staff, proper marketing, and strong financial understanding. To open a restaurant, you would first need to know the restaurant style and location. This project will first locate the top two restaurant venues in Toronto neighborhoods, then will locate a neighborhood that can open an Arabian sweet bakery.

Data sources

We will need a list of Toronto neighborhoods and their geographic locations. In addition, we require the Foursquare location data to provide the list of restaurants and ratings in each neighborhood. The list of Toronto neighborhoods can be found in Wikipedia, where we scraped the postal code, borough, and neighborhood [1]. The geographic locations can be downloaded from an online source [2].

Data Cleaning:

The neighborhood data first had to be parsed from Wikipedia into a data-frame indicating the postal code, borough, and neighborhood. After extracting the information into a data-frame the data-frame was checked to ensure the parsing step was successful and to remove any missing information. The list of neighborhoods and the geographic locations where merged together to give all neighborhoods in the data-frame geographic locations.

The foursquare location data provided a list of restaurants by inputting the data-frame created previously. The list of restaurants had to be cleaned to remove any category that is not helpful in the analysis stage such as cafeteria and restaurant. When the data cleaning stage is finished the received information had 89 neighborhoods and 88 restaurant categories.

Methodology section

There are different types of restaurants a person can open. However, not all restaurants can be successful. To open a successful restaurant the owner should study the neighborhood then decide to open a suitable restaurant for the area and their personal expertise. We will first visualize the neighborhood data in Toronto and ensure that we have a reasonable amount of data to be able to generalize the information received. Figure 1 illustrates the neighborhood data in Toronto. We can visualize that we have concentrated data in downtown Toronto and reasonable amount of information in surrounding areas.

Figure 1: Toronto Neighborhoods

Now that we have the neighborhood data, we can use Foursquare to explore each neighborhood and locate restaurants in each neighborhood. The data received from Foursquare was clustered using K-means. The cluster was based on venue category, Figure 2 illustrates the cluster result.
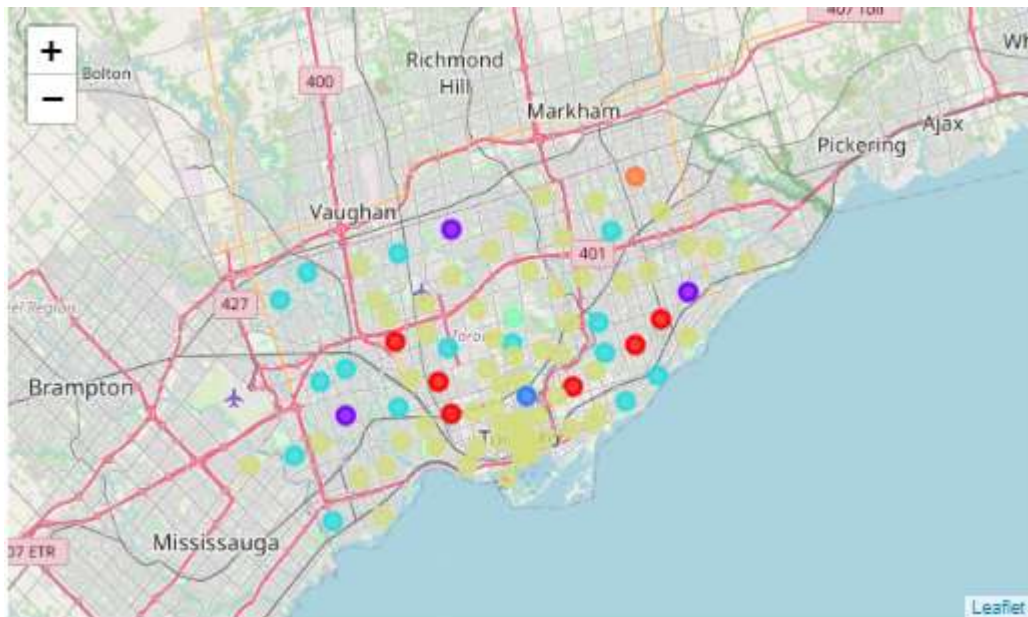

Figure 2: Restaurant Categories Cluster

Figure 3 is a result of one of the cluster categories. From Figure 3 we can conclude that the neighborhoods in this cluster are mainly bakeries. As there are not many good Arabian sweet

bakeries in Toronto. Therefore, I would like to open a bakery that specializes in Arabian sweet. Let's look into Dufferin as a potential candidate.

	Neighborhood	1st Most Common Venue	2nd Most Common Venue
21	Caledonia-Fairbanks	Bakery	Wings Joint
31	Dufferin, Dovercourt Village	Pizza Place	Bakery
35	East Toronto, Broadview North (Old East York)	Pizza Place	Bakery
38	Kennedy Park, Ionview, East Birchmount Park	Filipino Restaurant	Chinese Restaurant
44	Golden Mile, Clairlea, Oakridge	Bakery	Indian Restaurant
49	North Park, Maple Leaf Park, Upwood Park	Bakery	Deli / Bodega

Figure 3: Cluster Category

Exploring Dufferin further we found that there are 9 bakeries in 3 streets, where 3 bakeries have the same owner as illustrated in Figure 4. Figure 5 visualizes these bakeries. We can observe that they are located in three streets near each other.

	name	categories	id	lat	lng
3	Bake Shoppe	Bakery	4b7b1b7ef964a520c6512fe3	43.654213	-79.423590
16	Pancho's Bakery	Bakery	4fd8c3c2e4b09507d5b9af86	43.660146	-79.435488
23	Home Baking Co.	Bakery	539df284498e79c67475ac1c	43.658988	-79.439864
29	Prairie Boy Bread	Bakery	564751d0498e7c1ca8add664	43.653410	-79.427447
76	Nova Era Bakery	Bakery	4af332d9f964a520aeeb21e3	43.649419	-79.422177
82	Through Being Cool Vegan Baking Co.	Bakery	5249fa1e11d2ae4d13bfc0d8	43.658455	-79.442291
85	Nova Era Bakery	Bakery	4b76ad66f964a520ec572ee3	43.661228	-79.429478
86	Courense Bakery	Bakery	4b765ddff964a520a7492ee3	43.660906	-79.430863
96	Nova Era Bakery	Bakery	4ad4c061f964a520a8f720e3	43.655001	-79.420351

Figure 4: Bakeries in Dufferin

Figure 5: Bakeries in Dufferin Location

We can summarize each bakery in Figure 6.

Bakery	Speciality	Rating
Nova era	Portuguese	7.7
Bake Shoppe	Cakes, Cupcakes, and Macaroons	8.4
Prairie Boy Bread	French Breads	8.1
Pancho's Bakery	Churros	8.7
Home Baking Co	Tarts and Ice cream	6.9
Through Being Cool Vegan Baking Co.	Vegan	7.8

Figure 6: Summary of Bakeries in Dufferin

Results

Dufferin neighborhood includes 9 Bakeries that specialize in Portuguese, Cakes, French, Churros, Vegan, and Tarts. Three of the nine bakeries have good ratings, whereas, the other six have decent ratings. The reviews of each bakery highlight that they are only good in the products that they specialize in and not other types of products. The neighborhood has a decent variety of bakeries that attract different types of customers. However, the neighborhood does not have any bakery specializing in Arabian sweets.

Discussion

Dufferin neighborhood is a great place to start a new Bakery, as there are no Arabian sweets bakery in the area. The Dufferin neighborhood has Middle Eastern restaurants in the region, this can help the bakery attract customers. However, the area needs to be investigated in depth to see if neighborhood locals are interested in Arabian sweets.

Conclusion

This project segments and clusters Toronto neighborhoods based on the two most common restaurant categories in each neighborhood. From the given information we look into an area where we can start an Arabian sweet bakery. The bakery can be built in Dufferin. However, an in-depth research about the neighborhood locals is needed to ensure that the bakery will succeed in the region.

References

[1] Wikipedia https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M

[2] http://cocl.us/Geospatial_data