

Coursera Capstone:

The Battle of the Neighbourhoods

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1. Introduction/Business Problem

1.1 Background

A client has contacted us looking for the best location to open a Japanese grocery store in Toronto. The grocery store would sell not only food, but also small products such as toys, skincare products, cosmetics, and cleaning supplies imported from Japan. As of 2010, Toronto has about 20,000 Japanese Canadians and there are more Japanese people residing in Toronto to study and work¹. Other than Japanese, a great number of people from different cultures have shown their interest in Japanese cultures and are willing to try Japanese foods and products.

1.2 Problem

This project intends to find the best place to start up a Japanese grocery store based on the location where most people would go if they want to explore Japanese culture (e.g. Japanese cultural centers, Japanese towns) and the location of existing Japanese stores.

1.3 Audience

The target audience of this project would be our client, other people who would like to open a Japanese grocery store, and people who would like to explore Japanese culture in Toronto. With this work, audiences could easily find the right place to visit if they want to explore Japanese culture.

2. Data Collection and Description

2.1 Data sources

- To find out the types (i.e. restaurants and grocery stores) and locations (i.e. latitude and longitudes) of existing Japanese venues in Toronto, we explored these venues via FourSquare API (<https://foursquare.com/>). However, information on which boroughs and neighborhoods these venues belonging to were missing.
- To split these venues into boroughs and neighborhoods, information was found from List of postal codes, borough, and neighborhood of Toronto, via https://en.wikipedia.org/w/index.php?title=List_of_postal_codes_of_Canada:_M&direction=prev&oldid=926287641

2.2 Data cleaning

Data extracted from API, including the name, category, address, latitude, longitude, and postal codes of existing Japanese venues in Toronto was combined into a table with their boroughs and neighborhoods. Due to the limitation as a regular personal user of FourSquare, only 50 venues were extracted. After discarding the redundant venues, 49 venues remained.

3. Method

Figure 1. shows all Japanese venues in Toronto (information extracted from FourSquare). Most venues aggregate in one or two areas. To further split these venues into several groups, k-means clustering ($k=12$) based on the location (latitude and longitude) was applied. A large k-value was chosen instead of a small k-value because venues colonize. It would be hard to narrow down the area if a small k-value was used.



Figure 1. A map of Toronto with blue markers as Japanese venues.

4. Result

4.1 k-means clustering

After clustering using k-means, two clusters with most venues outstood. There are around 15 venues in each of these clusters (Table 1). Closely looking at these two clusters, we found that venues from these two clusters are from Downtown Toronto, specifically, from Harbourfront East, Toronto Islands, Union Station, St. James Town, Design Exchange, Toronto Dominion Center, Central Bay Street, Ryerson, Garden District, and Church and Wellesley. Since these k-mean clusters were grouped based on latitude and longitude, venues with NaN boroughs or neighborhoods were wither in Downtown Toronto or very close to Downtown Toronto.

Table 1. Venue counts in each cluster (k =12)

Cluster	0	1	2	3	4	5	6	7	8	9	10	11
Venue Counts	14	2	1	1	1	1	4	4	1	16	3	3

4.2 Data grouping

Venues were grouped into competitors or non-competitors based on their category. Keywords used to define competitor venues are "Grocery", 'grocery', 'Gift' , 'gift', 'shop' and 'Shop'.

4.3 Data visualization

Venues considered as potential competitors including gift shops, grocery stores, cosmetic shops, and more, were highlighted from other Japanese venues in Figure 2.

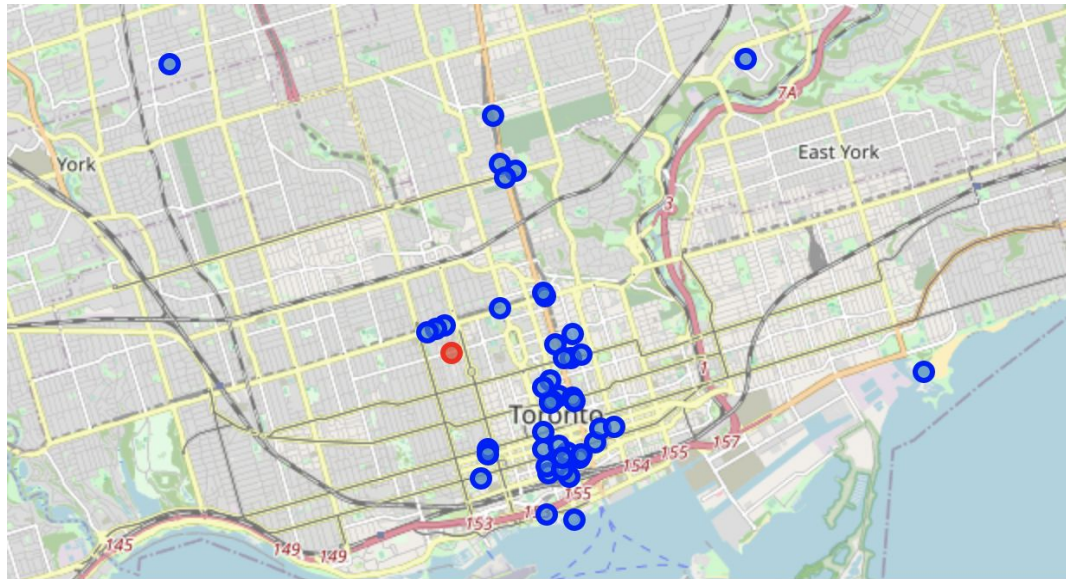


Figure 2. A map of Toronto with red markers as competitor Japanese venues and blue markers as non-competitor Japanese venues.

5. Discussion

Japanese venues were explored using the FourSquare API. Unfortunately, only 50 venues could be called as a personal free FourSquare user. This limitation makes the results less comprehensive. Among the 50 venues called, more than 60% of them were in the downtown area. To alert the client better not to open a grocery store close to the existing competitor stores, venues were split into two groups: competitor and non-competitor. Competitor venues were highlighted in red (Figure 2). However, no competitor venue exists in the two major clusters where most Japanese venues locate. This suggests the client could open a Japanese grocery in Downtown Toronto without competing with other Japanese grocery stores.

6. Conclusion

In this study, Japanese venues in Toronto were analyzed regarding their type and location. At least 60% of Japanese venues locate in Downtown Toronto, suggesting downtown Toronto is the base of Japanese venues. In this sense, if anyone would like to explore Japanese culture in Toronto, downtown would be a good choice. Meanwhile, opening a Japanese grocery store that sells food and Japan imported products in this area would be ideal, as Japanese culture lovers might wander in this area and more likely to check out the store.

Reference

¹Ruprecht, Tony. *Toronto's Many Faces*. Dundurn, November 8, 2010. ISBN 1554888859, 9781554888856. p. [238](#)