Coursera Capstone Project

Finding the Optimal Place to Open a Japanese Restaurant in Toronto

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Introduction

1.1 Background

Toronto is known as one of the most diverse cities in the world. This is reflected in its restaurant scene, as different cultures are represented in the cuisine around the city. For a new restaurant owner, this competitive landscape makes the location of their restaurant one of the most important factors behind potential success. Therefore, it is advantageous for a restaurant owner to pinpoint a location where they will have the least competition, but the most foot-traffic from potential customers.

1.2 Business Problem

In this project we will try to find the optimal place to open a Japanese restaurant in Toronto. The criteria for this location are:

1) The location is close to the center of Toronto to increase foot traffic
2) There are few high ranked Japanese restaurants nearby to reduce competition
3) The existing stores in the neighborhood are popular, indicating a popular neighborhood

Using data science, the most promising neighborhoods will be evaluated, and their information presented to stakeholders so they can make the decision as to the neighborhood that best suits them.

2 Data

Data on the location of different neighborhoods in Canada can be found here. Using a csv of the geospatial coordinates, the latitude and longitude of each of these locations can be determined. These results can be used to find neighborhoods close to the center of Toronto, which will be assumed to be town hall.

The FourSquare API will be used to retrieve the number of sushi restaurants located in each neighborhood. It will also be used to retrieve data detailing the popularity of the businesses in close proximity to the potential restaurant location and any further data needed for analysis of the neighborhood.

3 Methodology

3.1 Criteria 1 – Determining proximity to the centre of Toronto

To retrieve the location data of different neighborhoods, the Beautiful Soup library was used to scrape the website for the data. Once the latitude and longitude of each neighborhood were determined, the Haversine formula was used to determine the distance between the neighborhood and the centre of the city. In order to rank these neighborhoods, the data was be

sorted numerically. A points system was then implemented where the best neighborhoods were assigned the least points, and the worst neighborhoods were assigned the highest amount of points. At the end of this evaluation, the neighborhood with the lowest score can be assumed to be the most ideal.

3.2 Criteria 2 – Counting the number of nearby Japanese Restaurants

Using the FourSquare API allowed a query to be made about the Japanese restaurants within a 500m distance from the location of each neighborhood. Obtaining the delivered json file and cleaning it resulted in the number of Japanese Restaurants in each neighborhood. This was then added to the data frame containing all neighborhoods. The points system was applied accordingly so the neighborhoods with the least sushi restaurants were favoured.

The FourSquare API was also used to determine the average customer ranking of sushi restaurants. These average rankings were added to the data frame containing all the neighborhoods and used to contribute to the point system. Neighborhoods with a lower ranking were favoured as that indicates less competition.

3.3 Criteria 3 – Determining the popularity of each neighborhood

Each neighborhood was explored to determine the number of trending venues in the area. This was done using the FourSquare API to request the data. Additionally, a map was created using Folium to illustrate how these popular venues are dispersed around Toronto. This allows for better visualization of the “hotspots” for potential customers.

4 Results

	Postal Code	Borough	Neighborhood	Latitude	Longitude	Distance from city hall (km)	Number of Other Sushi Venues	new Score
0	M5H	Downtown Toronto	Richmond, Adelaide, King	43.650571	-79.384568	0.318454	5	11
1	M5C	Downtown Toronto	St. James Town	43.651494	-79.375418	0.639030	5	14
2	M5T	Downtown Toronto	Kensington Market, Chinatown, Grange Park	43.653206	-79.400049	1.372098	1	16
3	M5E	Downtown Toronto	Berczy Park	43.644771	-79.373306	1.219726	1	16
4	M7A	Downtown Toronto	Queen's Park, Ontario Provincial Government	43.662301	-79.389494	1.139276	2	16
5	M5V	Downtown Toronto	CN Tower, King and Spadina, Railway Lands, Har...	43.628947	-79.394420	2.850006	0	17
6	M4X	Downtown Toronto	St. James Town, Cabbagetown	43.667967	-79.367675	2.053917	0	17
7	M5A	Downtown Toronto	Regent Park, Harbourfront	43.654260	-79.360636	1.803665	0	17
8	M5X	Downtown Toronto	First Canadian Place, Underground city	43.648429	-79.382280	0.533808	9	17
9	M6G	Downtown Toronto	Christie	43.669542	-79.422564	3.665966	0	18

Figure 1: Cleaned and sorted dataset of the top 10 locations to open a Japanese restaurant

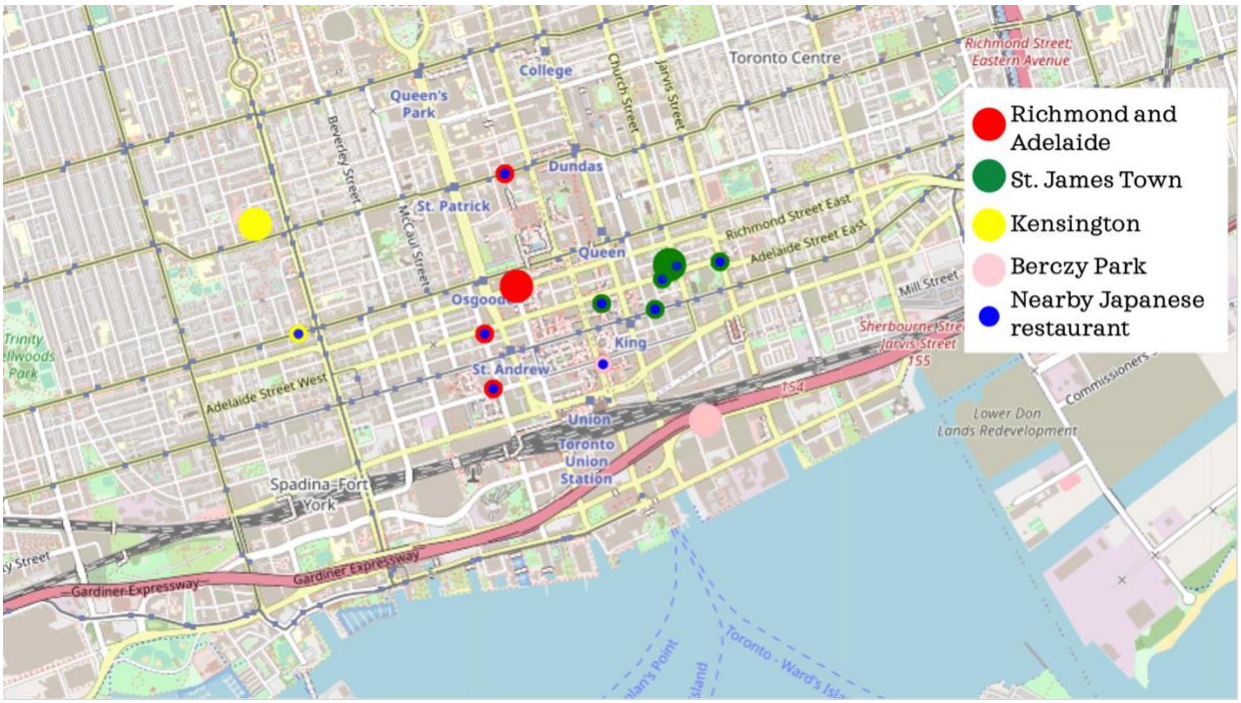

Figure 2: Map of the top 4 locations and the sushi restaurants found within

5 Discussion

The cleaned dataset shown in Figure 1 shows that there is no location that is both close to the center of the city and also has no other sushi restaurants in the vicinity. Both of these variables seem to be inversely related, meaning the selected location would have to be a combination of

the two factors. Using the points system, the top four locations were graphed on a map of Toronto. The two locations close to the center of Toronto (city hall) contain the most sushi venues. In contrast, Berczy Park is a bit farther, and Kensington is the farthest away. Research shows that despite its distance from city hall, Berczy Park's close proximity to Union Station allows it a good amount of foot traffic by its location. This is a mark in its favour, as the lack of nearby competition and potential customers would make it an ideal location.

6 Conclusion

In conclusion, Berczy Park is the recommended location to open a Japanese restaurant. This is because the low number of nearby Japanese restaurants numbers indicates there would be little competition in the area. Furthermore, there is great potential for customers due to the popularity of the area.

The Foursquare API provided limited information in terms of customer tips and trends within the area. Therefore, for future studies, it is recommended areas are explored in even greater detail to determine other areas that could benefit restaurant owners.