

Where to open a new Japanese restaurant in Vancouver?



The Battle of the Neighborhoods -Applied Data Science Capstone by IBM/Coursera

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1. INTRODUCTION

1.1. Background

The popularity of Japanese restaurants and food in Vancouver is undeniable. From California rolls in sushi places, Ramen in West End, green tea desserts and fluffy cheesecake, the presence of this diverse type of cuisine has a huge impact in the city and seems to be everywhere, but we would like to know in which neighborhoods it is less present than others.

1.2. Problem

A restaurant owner wants to open a second location for his Japanese restaurant, but he noticed that there are a lot of them around the city, so he would like to know in which neighborhood it would be ideal to open.

The two main criteria will be the median income of the neighborhood, as we want to make sure the surrounding neighbors will have enough money to spend in restaurants, and the most common types of venues, as we would like to make sure there aren't too many Japanese restaurants already or too many restaurants in general.

2. Data Acquisition and cleaning

Based on definition of our problem, factors that will influence our decision are:

- Top 5 neighborhoods with more income in Vancouver.
- Number of existing Japanese or sushi restaurants in the neighborhood.
- Most common types of venues in the neighborhoods.

2.1. Data Sources

1) Vancouver Local Areas (Neighborhoods)

We downloaded the following .csv file from the City of Vancouver Open Data Portal (<https://opendata.vancouver.ca/explore/dataset/local-area-boundary/export/?location=12,49.2474,-123.12402>) This file contains the names of the neighborhoods in the city, but also the central coordinates of each neighborhood. We can clean the data by dropping some columns and changing the data type to float to read the coordinates during the analysis.

2) Census Local Area profiles 2016

We downloaded the following csv file from the City of Vancouver Open Data Portal (<https://opendata.vancouver.ca/explore/dataset/census-local-area-profiles-2016/information/>) This file contains the names of neighborhoods, spoken languages, income, demographics and other data. We cleaned the data to contain income information only.

2) Foursquare API venues (Japanese Restaurants)

From the Foursquare API we used the get nearby venues from Neighborhoods in order to identify the presence of Japanese and sushi restaurants, but also to identify which are the most frequent categories of venues per neighborhood.

2.2. Data Cleaning

The data was downloaded from the websites, we used the drop method to eliminate any information that wasn't of interest for this study. We also proceeded to convert the fields to the correct data type in order to use geographic coordinates and concatenate the two neighborhoods dataframes in order to have all the information in one dataframe.

2.3. Neighborhood selection

In order to reduce the number of calls to Foursquare API we decided to select the five neighborhoods with the highest income to proceed with the neighborhoods analysis.

By doing this we are presuming that one of the criteria to open a new restaurant is having clients that have money to spend.

	index	MAPID	Name	Lat	Long	Area	income
15	19	SHAU	Shaughnessy	49.245681	-123.139760	Shaughnessy	118668
21	11	WPG	West Point Grey	49.268401	-123.203467	West Point Grey	82042
2	0	DS	Dunbar-Southlands	49.237962	-123.189547	Dunbar-Southlands	78117
7	1	KERR	Kerrisdale	49.223655	-123.159576	Kerrisdale	77248
16	4	SC	South Cambie	49.245556	-123.121801	South Cambie	65459

3. Methodology

- 3.1. Created a request at Foursquare to retrieve venues by proximity of 1000 meters in the 5 highest income neighborhoods.
- 3.2. Processed data frames to determine how many Japanese or Sushi restaurants each neighborhood has.
- 3.3. Calculated the frequency of other venues in order to determine if there are other types of restaurants in the area.

4. Results

After processing our data, we have found that only 3 of our 5 highest income neighborhoods in Vancouver have Japanese or Sushi Restaurants. On the other

hand Sushi Restaurants are the most popular type of venue in West Point Grey and the 4th most common venue in South Cambie.

	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
Neighborhood						
Dunbar-Southlands	1	1	1	1	1	1
South Cambie	2	2	2	2	2	2
West Point Grey	3	3	3	3	3	3

	Neighborhood	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	9th Most Common Venue	10th Most Common Venue
0	Dunbar-Southlands	Grocery Store	Coffee Shop	Gym	Liquor Store	Café	Baseball Field	Sandwich Place	Restaurant	Pub	Gym / Fitness Center
1	Kerrisdale	Bus Stop	Café	Golf Course	Chinese Restaurant	Grocery Store	Bubble Tea Shop	Supermarket	Pool	Bakery	Pizza Place
2	Shaughnessy	Garden	Park	Coffee Shop	Bubble Tea Shop	Burger Joint	Event Space	Dessert Shop	Gym	Grocery Store	Greek Restaurant
3	South Cambie	Coffee Shop	Garden	Park	Sushi Restaurant	Bank	Chinese Restaurant	Sandwich Place	Outdoor Sculpture	Bubble Tea Shop	Café
4	West Point Grey	Sushi Restaurant	Park	Bank	Beach	Harbor / Marina	Department Store	Irish Pub	Hostel	Gym	Garden

The highest income Neighborhood is Shaughnessy and it doesn't have any Japanese or Sushi Restaurant, it is also the Neighborhood with less restaurant venues in its most common venues, which means a good business opportunity.

5. Discussion

It would be great to see the reason behind this distribution of venues, as some neighborhoods are mostly residential and have smaller commercial areas, which means the price of commercial rent is higher. It would be nice to add the price of commercial rent to the study to think in more information and to be able to make a better recommendation for a new Japanese Restaurant.

This type of analysis helps a lot to discover patterns that are not visible while walking through the areas. It is easy to conclude that there are a lot of Japanese restaurants in a city like Vancouver, the distribution doesn't seem equal but it's hard to come to conclusions without this type of process.

6. Conclusion

Our recommendation is to open a Japanese Restaurant in either Shaughnessy or in Kerrisdale neighborhoods. Shaughnessy neighborhood is the highest income neighborhood and has no sushi or Japanese restaurants. Kerrisdale is the 4th highest income neighborhood in Vancouver and it also doesn't have any Japanese or sushi restaurants, but it has more restaurants than Shaughnessy.