

IBM Applied Data Science Capstone Week 5

**The Battle of Neighbourhoods:
Where to Open a Japanese Restaurant in Singapore?**

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April 2020

BUSINESS PROBLEM

- Singapore has a total of 7,679 food establishments where 2,712 of them were restaurants
 - Tough decision for new restaurant owner to decide where to open a new restaurant that would yield profit
- Objective
 - To analyse and recommend the best location in Singapore to open a Japanese Restaurant
- Target Audience
 - Entrepreneurs with the intention to open a food establishment in Singapore

DATA

1. Names of Train Station

- Retrieved from Singapore's public data
- Establish the possible estates for food establishment

2. Coordinates of locations

- The geographical coordinates obtained using Python Geocoder package

3. Venue data nearby locations

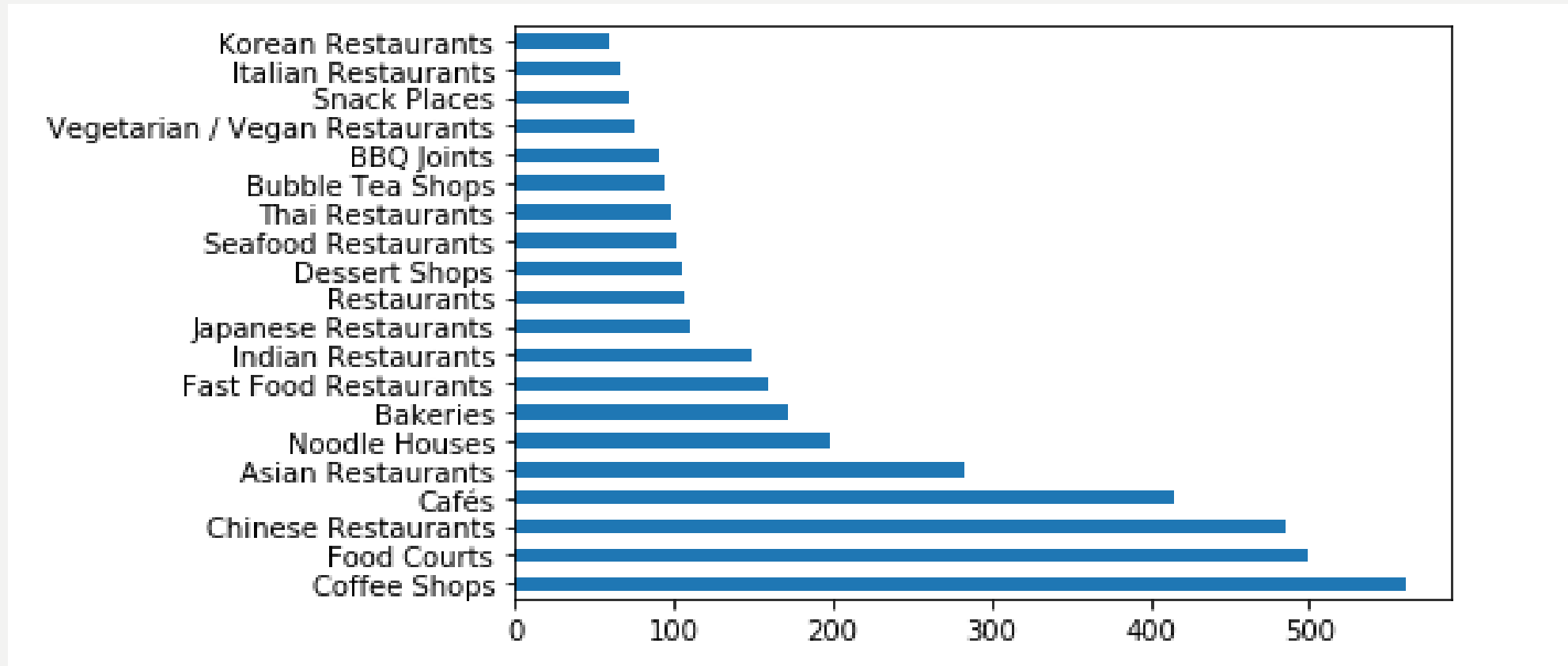
- Obtained using Foursquare API to allow target audience to better understand the potential competitors

METHODOLOGY

- Load CSV obtained from Singapore's public data with Pandas
 - Remove stations that are not connected to major rail lines
 - Remove duplicated stations
 - Retain only column with names of stations
- Obtain geographical coordinates using Geocoder package
- Plot map using Folium package
- Search for food establishments within 500 meters of each location using food category ID
- Perform k-Means clustering

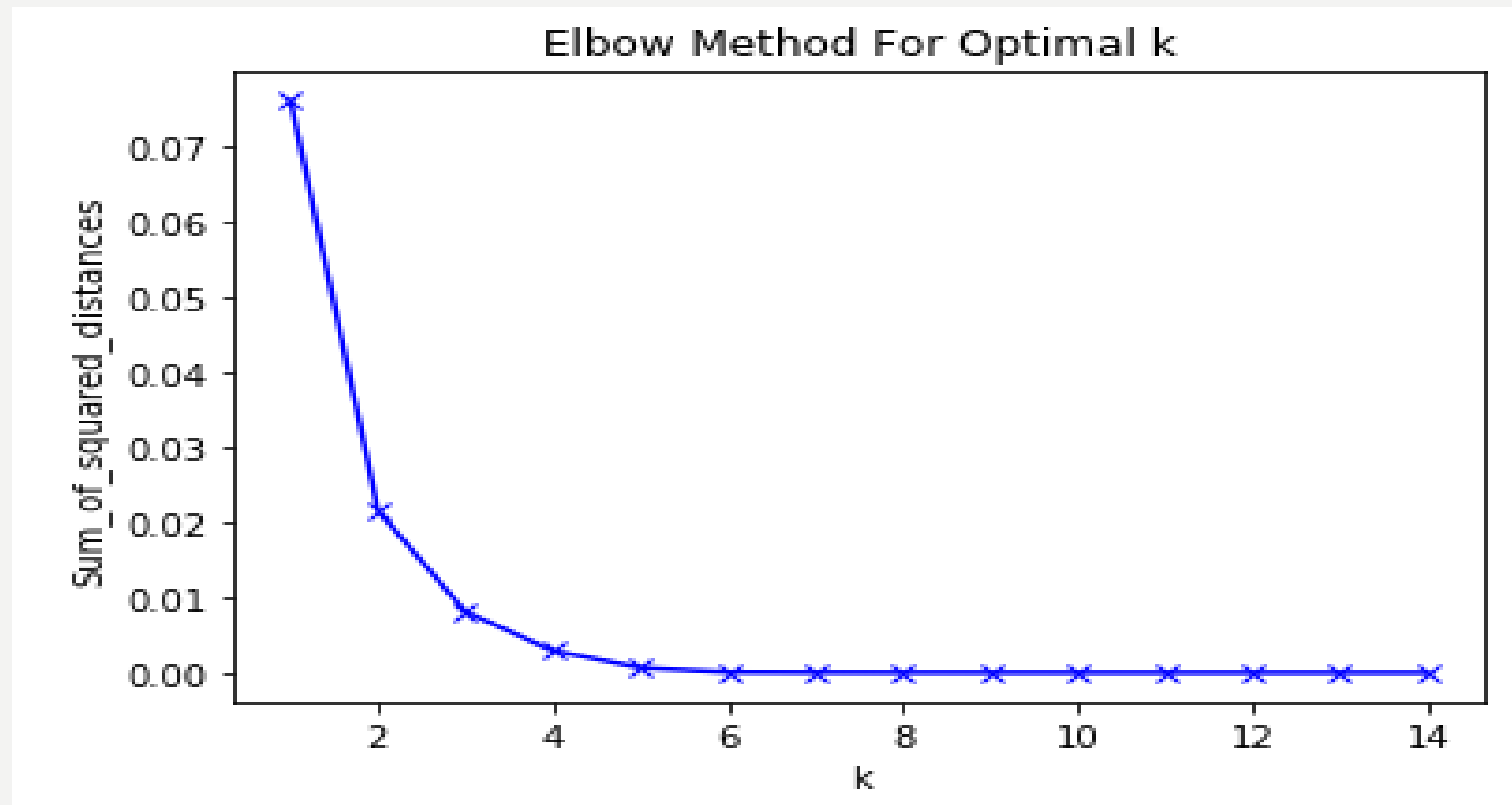
METHODOLOGY - ANALYSIS

- The top 20 categories of food establishments were illustrated in the bar graph



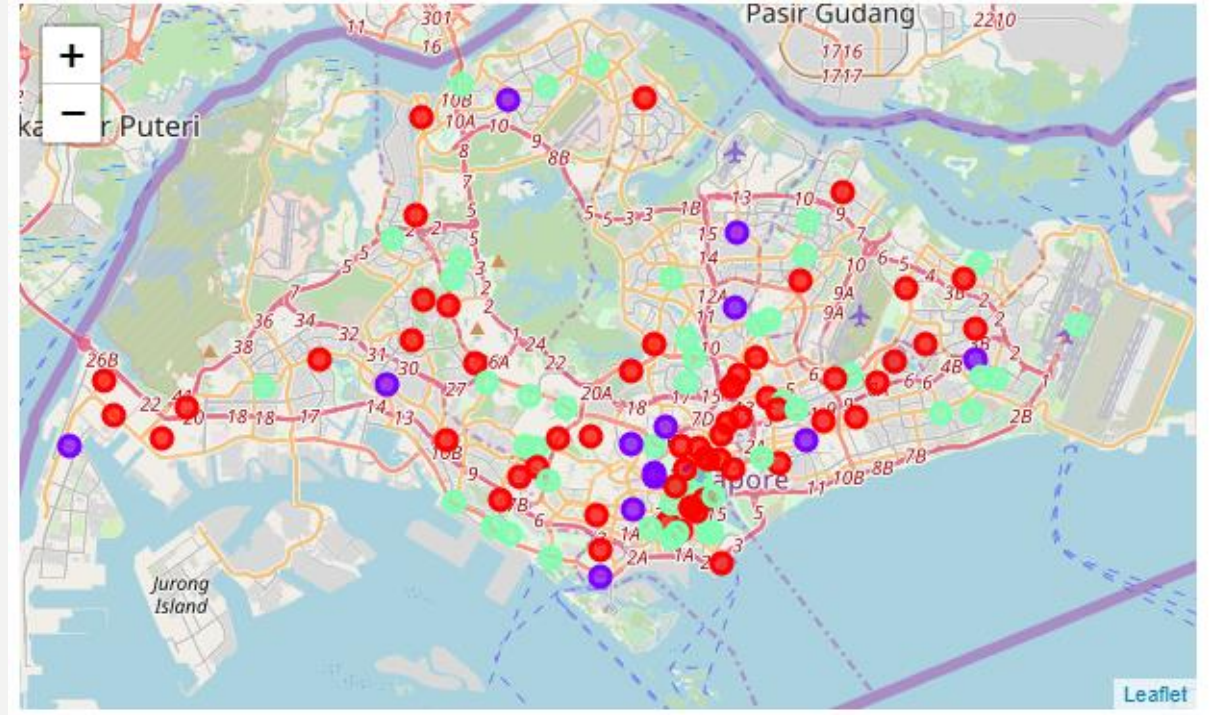
METHODOLOGY - ANALYSIS

- The optimal value for k , 3, was obtained using the elbow method



RESULTS

- Three clusters were inferred to be:
 1. Cluster 0 (Red): No Japanese Restaurants within the vicinity
 2. Cluster 1 (Purple): Most number of Japanese Restaurants, in relative to cluster 0 and cluster 2, within the vicinity
 3. Cluster 2 (Green): Lesser number of Japanese Restaurants, in relative to cluster 1, within the vicinity



DISCUSSION

- Japanese Restaurants were the tenth most common food establishments within the vicinity of the locations studied
 - Entrepreneurs planning to set up a Japanese Restaurant would expect to face competition from other established brands

Recommendation

- Opening a Japanese Restaurant in cluster 0 would be the most appropriate option
 - May face the least amount of competition
 - Fresh option for the population in cluster 0 where no Japanese Restaurants had been established.

DISCUSSION

- Limitation of study
 - The number of venue recommendations obtained from Foursquare was limited, hence, it may not necessarily be the most representative of the available venues
 - Therefore, the recommendation and analysis provided in this study should serve only as a reference
- Future studies
 - Take the price of rental into consideration to provide a more holistic view of the problem.
 - Beneficial to also study the rating of the nearby food establishments and the human traffic of each location

CONCLUSION

- The most viable location for a Japanese Restaurant to be established in Singapore was studied
- Recommended for entrepreneurs to consider setting up a Japanese Restaurant in cluster 0
- As the study was based on limited data, the recommendation and analysis provided in this study should serve only as a reference

REFERENCES

Train Station Chinese Names (<https://data.gov.sg/>)

Hawkers and Food Establishments statistics (<https://www.singstat.gov.sg/find-data/search-by-theme/industry/hawkers-and-food-establishments/latest-data>)