

# Expatriate Restaurants in Bangkok Neighborhoods

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## Introduction

I am a Canadian who spent about four years in Bangkok, and it took quite a while to get used to the food. Thai food is considered one of the best in the world, but if you are an expat who is used to a less spicy taste, then you will need a break occasionally. At least that is what I found.

Bangkok has over eight million people and over fifty regions or districts, from the near-rural outskirts like Thawi Watthana to the upscale downtown districts like Bang Rak. Nowadays most tourists travel by sky train, and it is convenient to know an area where one could get off at a stop and find a variety of international food of a particular region.

In this project, the focus is on non-Thai restaurants; what types are the most popular, and how clustering the food venues in each neighborhood can show the locations where one is most likely to find the type of international food of interest.

## Methodology

A summary of the project methodology is described below.

- Load and clean the Bangkok district and latitude, longitude data
- Use Numpy, Pandas, Forge, Foresquare, matplotlib, Folium
- Use Folium to generate a map of the 50 districts
- Use Foresquare to identify venues
- Explore the neighborhoods
- Modify the data to focus on non-Thai restaurants
- K-means clustering using 7 clusters to sort the neighborhoods
- Map the clusters
- Examine the clusters

## Data Acquisition and Cleaning

### Data Source and Cleaning

A list of the fifty districts in Bangkok was found and cleaned from Wikipedia at:

[https://en.wikipedia.org/wiki/List\\_of\\_districts\\_of\\_Bangkok](https://en.wikipedia.org/wiki/List_of_districts_of_Bangkok)

Snapshots from the web page are shown in Fig. – 1 and Fig. – 2. Raw data was fortunate to have both the districts and the latitude and longitude



District (Khet)	Map Nr	Post-code	Thai	Population	No. of Subdistricts (Khwaeng)	Latitude	Longitude
Bang Bon	50	10150	บางบอน	105,161	4	13.6592	100.3991
Bang Kapi	6	10240	บางกะปิ	148,465	2	13.765833	100.647778
Bang Khae	40	10160	บางแค	191,781	4	13.696111	100.409444
Bang Khen	5	10220	บางเขน	189,539	2	13.873889	100.596389
Bang Kho Laem	31	10120	บางคอแหลม	94,956	3	13.693333	100.5025
Bang Khun Thian	21	10150	บางขุนเทียน	165,491	2	13.660833	100.435833
Bang Na	47	10260	บางนา	95,912	2	13.680081	100.5918
Bang Phlat	25	10700	บางพลัด	99,273	4	13.793889	100.505
Bang Rak	4	10500	บางรัก	45,875	5	13.730833	100.524167
Bang Sue	29	10800	บางซื่อ	132,234	2	13.809722	100.537222
Bangkok Noi	20	10700	บางกอกน้อย	117,793	5	13.770867	100.467933

Fig. – 1. Snapshot of the Wikipedia web page

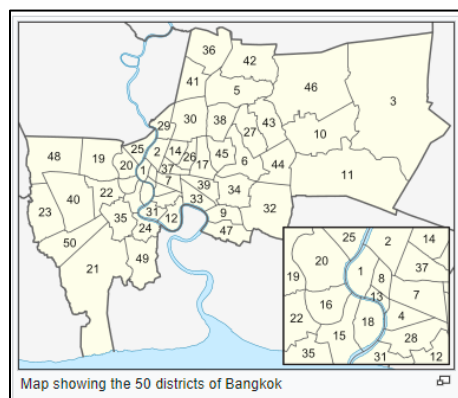
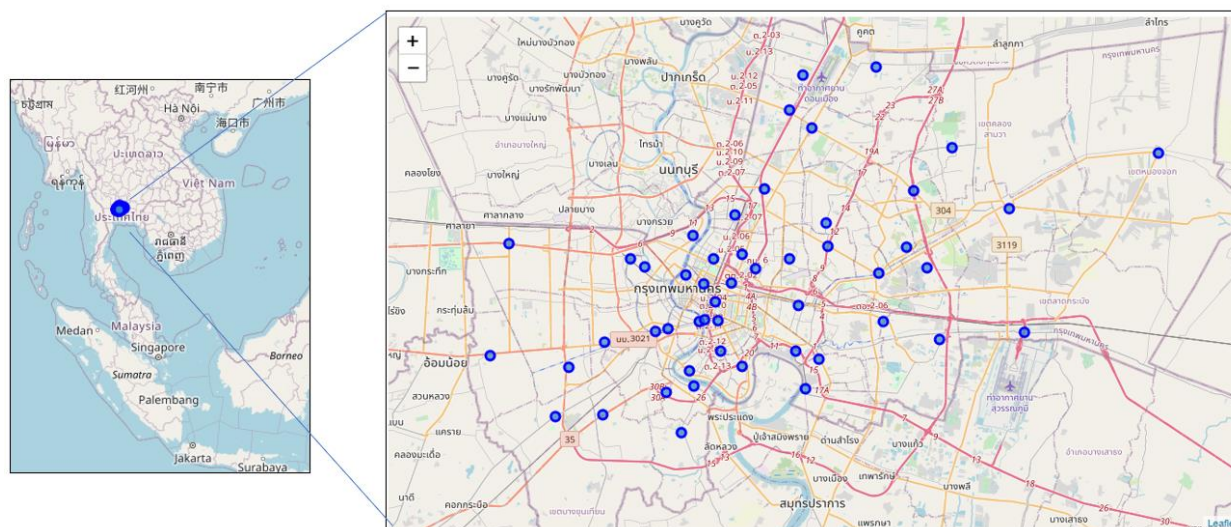


Fig. -2. The fifty districts of Bangkok

The data was cleaned to contain districts and locations only. Columns like postal code, population, and sub-districts are removed.

## Map of Bangkok's Districts

Folium is used to create a map of the fifty districts in Bangkok as shown in Fig. – 3.



**Fig. – 3. Map of the districts of Bangkok**

## Use Foursquare to find Venues in Each Districts

### Explore the First District, Ban Bon

Using my Foursquare credentials, I start by exploring the first district, Bang Bon. Nearby venues within 700 meters are returned in Table -1 and show both restaurants and other types of establishments.

	name	categories	lat	lng
0	ชาหนุมางหว่า	Thai Restaurant	13.657136	100.395230
1	Irashimase Japanese Restaurant	Japanese Restaurant	13.658358	100.401403
2	ส.สุขโขชนา	Chinese Restaurant	13.660358	100.404866
3	Lotus Express (โลตัส เอ็กซ์เพรส)	Convenience Store	13.657839	100.397243
4	Bussabar Steak House	Bar	13.656856	100.404690
5	ลาบร้อยเอ็ด เลือเคะ	Som Tum Restaurant	13.656436	100.404455
6	7-Eleven (เซเว่น อีเลฟเว่น)	Convenience Store	13.656440	100.394178
7	ก๋วยเตี๋ยวปลา แม่ชวนทอง	Noodle House	13.657938	100.396723
8	คำเกอ ก๋วยเตี๋ยวไก่	Asian Restaurant	13.661457	100.405019
9	Café Amazon (คาเฟ่ อเมซอน)	Coffee Shop	13.660836	100.405246

**Table -1. Venues found in Bang Bon District**

### Explore the Other Neighborhoods

As other neighborhoods are explored, the data set is modified to include

- Only Restaurants
- Removing Thai and Asian restaurants, as they are the most common and found in every district
- Investigate the “Fast Food” category to ensure it is typical American fast food

The rational for removing the Thai and Asian establishments is that the goal of this project is to find international places, since the local cuisine is readily available anywhere in Bangkok.

Fig. – 4. displays the top 200 restaurant types in Bangkok

### Most Frequent International Restaurants in Bangkok's 50 Districts

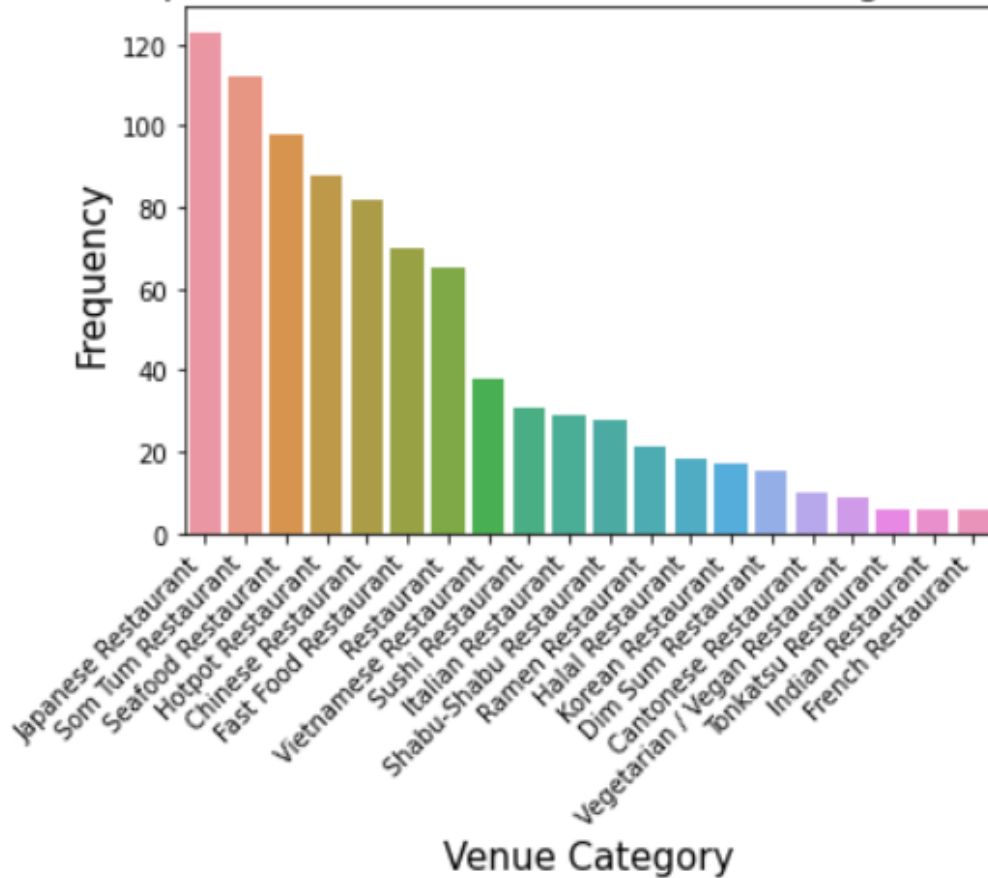


Fig. – 4. Top 20 Categories of Restaurants and their frequency

### Pandas Data Frame

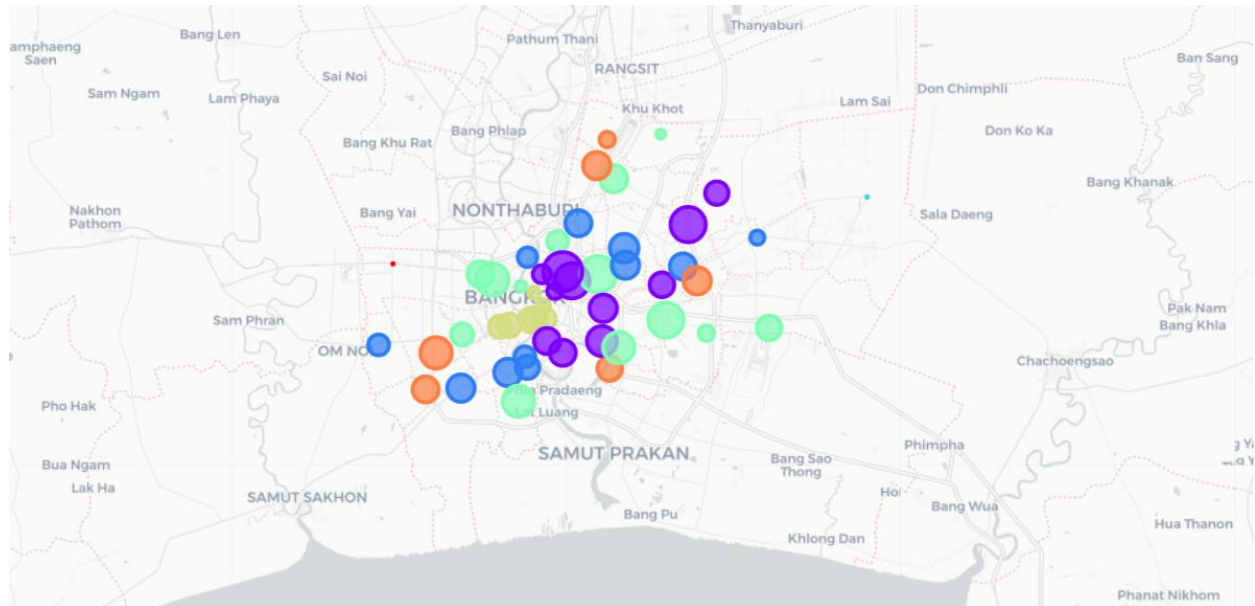
A Pandas data frame is created with the top ten most common venues per district. A snapshot of the first 5 are shown in Table -2.

	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	Bang Bon	Fast Food Restaurant	Japanese Restaurant	Chinese Restaurant	Som Tum Restaurant	Hotpot Restaurant	Cantonese Restaurant	Seafood Restaurant	Vietnamese Restaurant	Vegetarian / Vegan Restaurant	Satay Restaurant
1	Bang Kapi	Japanese Restaurant	Som Tum Restaurant	Vietnamese Restaurant	Fast Food Restaurant	Halal Restaurant	Chinese Restaurant	Japanese Curry Restaurant	Shabu-Shabu Restaurant	Seafood Restaurant	Hotpot Restaurant
2	Bang Khae	Fast Food Restaurant	Japanese Restaurant	Chinese Restaurant	Som Tum Restaurant	Hotpot Restaurant	Ramen Restaurant	Seafood Restaurant	Shabu-Shabu Restaurant	Restaurant	Australian Restaurant
3	Bang Khen	Hotpot Restaurant	Som Tum Restaurant	Vietnamese Restaurant	Japanese Restaurant	Seafood Restaurant	Shabu-Shabu Restaurant	Fast Food Restaurant	Ramen Restaurant	Restaurant	Halal Restaurant
4	Bang Kho Laem	Hotpot Restaurant	Chinese Restaurant	Seafood Restaurant	Dim Sum Restaurant	Vegetarian / Vegan Restaurant	Halal Restaurant	Restaurant	Japanese Restaurant	Indian Restaurant	Donburi Restaurant

**Table -2. Most common venues in each district. Only the first five are shown.**

## k-means Clustering

Seven clusters are used to determine the areas that have the highest frequency of specific international restaurants. Different cluster numbers were tried, but  $n=7$  had the best results in terms of a clear dominance of specific types of restaurants. The map of clusters is shown in Fig. – 5.



**Fig. – 5. Results of  $n=7$  k-means clustering of the 50 districts in Bangkok**

## Examination of the Clusters

The seven clusters reveal that each area has a preference to the type of restaurant that will be found.

### Cluster 0: The diverse mix

A small cluster, showing the most diversity in international choices and would be a good choice for a wide selection. Chinese, fast food, Indian, Halan, Mediterranean and European choices are available.

	Popu- lation	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
44	76351	Chinese Restaurant	Yoshoku Restaurant	Fast Food Restaurant	Indian Restaurant	Hotpot Restaurant	Halal Restaurant	Hainan Restaurant	Greek Restaurant	German Restaurant	French Restaurant

Table – 3. Districts in Cluster 0

### Cluster 1: Japanese

These are the areas if you want Japanese food; either the 1<sup>st</sup> or 2<sup>nd</sup> most common.

	Popu- lation	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
1	148465	Japanese Restaurant	Som Tum Restaurant	Vietnamese Restaurant	Fast Food Restaurant	Halal Restaurant	Chinese Restaurant	Japanese Curry Restaurant	Shabu-Shabu Restaurant	Seafood Restaurant	Hotpot Restaurant
15	130220	Japanese Restaurant	Som Tum Restaurant	Sushi Restaurant	Hotpot Restaurant	Korean Restaurant	Restaurant	Donburi Restaurant	Vegetarian / Vegan Restaurant	Shabu-Shabu Restaurant	Seafood Restaurant
17	107655	Japanese Restaurant	Chinese Restaurant	Restaurant	Hotpot Restaurant	Sushi Restaurant	Som Tum Restaurant	Dim Sum Restaurant	Italian Restaurant	French Restaurant	Halal Restaurant
19	88678	Japanese Restaurant	Fast Food Restaurant	Seafood Restaurant	Sushi Restaurant	Hotpot Restaurant	Som Tum Restaurant	Restaurant	Udon Restaurant	Shabu-Shabu Restaurant	Tonkatsu Restaurant
20	169489	Restaurant	Japanese Restaurant	Som Tum Restaurant	Seafood Restaurant	Hotpot Restaurant	Vietnamese Restaurant	Fast Food Restaurant	Italian Restaurant	Cantonese Restaurant	Donburi Restaurant
22	109041	Japanese Restaurant	Italian Restaurant	Sushi Restaurant	Chinese Restaurant	Korean Restaurant	Ramen Restaurant	Indian Restaurant	Vietnamese Restaurant	Eastern European Restaurant	Restaurant
31	72952	Japanese Restaurant	Som Tum Restaurant	Restaurant	Sushi Restaurant	Dim Sum Restaurant	Mexican Restaurant	Italian Restaurant	Cantonese Restaurant	Chinese Restaurant	Shabu-Shabu Restaurant
37	73035	Japanese Restaurant	Som Tum Restaurant	Italian Restaurant	Vietnamese Restaurant	Molecular Gastronomy Restaurant	Seafood Restaurant	Shabu-Shabu Restaurant	Hotpot Restaurant	Sushi Restaurant	Tonkatsu Restaurant
41	84916	Som Tum Restaurant	Japanese Restaurant	Italian Restaurant	Seafood Restaurant	Restaurant	French Restaurant	Modern European Restaurant	Cantonese Restaurant	Chinese Restaurant	Sushi Restaurant
48	81623	Japanese Restaurant	Italian Restaurant	Restaurant	Ramen Restaurant	Shabu-Shabu Restaurant	Vegetarian / Vegan Restaurant	Vietnamese Restaurant	Kaiseki Restaurant	Korean Restaurant	Greek Restaurant
49	81521	Seafood Restaurant	Japanese Restaurant	Restaurant	Sushi Restaurant	Som Tum Restaurant	Hotpot Restaurant	Hainan Restaurant	German Restaurant	Korean Restaurant	Ramen Restaurant

Table – 4. Districts in Cluster 1



## Cluster 2: Chinese Hotpot

1<sup>st</sup> to 3<sup>rd</sup> most common venues in this cluster are Chinese Hotpot.

	Popu- lation	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
4	94956	Hotpot Restaurant	Chinese Restaurant	Seafood Restaurant	Dim Sum Restaurant	Vegetarian / Vegan Restaurant	Halal Restaurant	Restaurant	Japanese Restaurant	Indian Restaurant	Donburi Restaurant
5	165491	Hotpot Restaurant	Seafood Restaurant	Restaurant	Japanese Restaurant	Som Tum Restaurant	Chinese Restaurant	Fast Food Restaurant	Sushi Restaurant	Vietnamese Restaurant	Cantonese Restaurant
7	99273	Chinese Restaurant	Japanese Restaurant	Hotpot Restaurant	Restaurant	Som Tum Restaurant	Seafood Restaurant	Dim Sum Restaurant	Cantonese Restaurant	Donburi Restaurant	Dumpling Restaurant
12	145830	Japanese Restaurant	Seafood Restaurant	Hotpot Restaurant	Chinese Restaurant	Halal Restaurant	Restaurant	Fast Food Restaurant	Vietnamese Restaurant	Dim Sum Restaurant	Som Tum Restaurant
13	160906	Hotpot Restaurant	Som Tum Restaurant	Japanese Restaurant	Seafood Restaurant	Chinese Restaurant	Fast Food Restaurant	Restaurant	Japanese Curry Restaurant	Korean Restaurant	Yoshoku Restaurant
14	158005	Hotpot Restaurant	Chinese Restaurant	Seafood Restaurant	Som Tum Restaurant	Restaurant	Halal Restaurant	Sushi Restaurant	Ramen Restaurant	Eastern European Restaurant	Hainan Restaurant
25	122182	Hotpot Restaurant	Japanese Restaurant	Chinese Restaurant	Som Tum Restaurant	Restaurant	Seafood Restaurant	Halal Restaurant	Italian Restaurant	Vietnamese Restaurant	Korean Restaurant
26	137251	Seafood Restaurant	Hotpot Restaurant	Halal Restaurant	Fast Food Restaurant	Shabu-Shabu Restaurant	Japanese Restaurant	Dim Sum Restaurant	Donburi Restaurant	Dumpling Restaurant	Chinese Restaurant
28	150218	Hotpot Restaurant	Restaurant	Sushi Restaurant	Fast Food Restaurant	Som Tum Restaurant	Ramen Restaurant	Japanese Restaurant	Chinese Restaurant	Dim Sum Restaurant	Donburi Restaurant
36	86695	Hotpot Restaurant	Chinese Restaurant	Seafood Restaurant	Dim Sum Restaurant	Japanese Restaurant	Ramen Restaurant	Halal Restaurant	Vegetarian / Vegan Restaurant	Restaurant	Sushi Restaurant
47	114768	Chinese Restaurant	Hotpot Restaurant	Japanese Restaurant	Seafood Restaurant	Som Tum Restaurant	Restaurant	Halal Restaurant	Vietnamese Restaurant	Korean Restaurant	American Restaurant

Table –5. Districts in Cluster 2

## Cluster 3: Generic Restaurants

In Thailand, the simple “restaurant” category are sit-down venues and have a large menu and variety of dishes; including Thai, American and European and Mediterranean.

	Popu- lation	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
27	157138	Restaurant	Yoshoku Restaurant	Japanese Curry Restaurant	Indian Restaurant	Hotpot Restaurant	Halal Restaurant	Hainan Restaurant	Greek Restaurant	German Restaurant	French Restaurant

Table –6. Districts in Cluster 3

## Cluster 4: North-Eastern food

“Som Tum” is the 1<sup>st</sup> or 2<sup>nd</sup> most popular in cluster 4. A spicy and delicious salad, which is technically Thai, these restaurants offer a menu from the North-Eastern region that includes Laos. Dishes are less spicy, delicate and include more vegetarian or freshwater-fish.

	Popu- lation	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
3	189539	Hotpot Restaurant	Som Tum Restaurant	Vietnamese Restaurant	Japanese Restaurant	Seafood Restaurant	Shabu-Shabu Restaurant	Fast Food Restaurant	Ramen Restaurant	Restaurant	Halal Restaurant
9	132234	Som Tum Restaurant	Japanese Restaurant	Seafood Restaurant	Hotpot Restaurant	Cantonese Restaurant	Chinese Restaurant	Vegetarian / Vegan Restaurant	Dim Sum Restaurant	Shabu-Shabu Restaurant	Halal Restaurant
10	117793	Som Tum Restaurant	Hotpot Restaurant	Chinese Restaurant	Seafood Restaurant	Japanese Restaurant	Ramen Restaurant	Shabu-Shabu Restaurant	Sushi Restaurant	Fast Food Restaurant	Halal Restaurant
18	78175	Som Tum Restaurant	Japanese Restaurant	Vietnamese Restaurant	Korean Restaurant	Seafood Restaurant	Hotpot Restaurant	Dim Sum Restaurant	Chinese Restaurant	Indian Restaurant	Fast Food Restaurant
24	163175	Som Tum Restaurant	Fast Food Restaurant	Japanese Restaurant	Seafood Restaurant	Italian Restaurant	Vietnamese Restaurant	Sushi Restaurant	Dim Sum Restaurant	Shabu-Shabu Restaurant	Hotpot Restaurant
30	129827	Japanese Restaurant	Som Tum Restaurant	Fast Food Restaurant	Hotpot Restaurant	Ramen Restaurant	Vietnamese Restaurant	Donburi Restaurant	Shabu-Shabu Restaurant	Seafood Restaurant	Chinese Restaurant
32	93482	Japanese Restaurant	Som Tum Restaurant	Vietnamese Restaurant	Italian Restaurant	Ramen Restaurant	Shabu-Shabu Restaurant	Fast Food Restaurant	Chinese Restaurant	Hotpot Restaurant	Dumpling Restaurant
33	57876	Som Tum Restaurant	Japanese Restaurant	Vietnamese Restaurant	Hotpot Restaurant	Fast Food Restaurant	Italian Restaurant	Seafood Restaurant	Dim Sum Restaurant	Donburi Restaurant	Dumpling Restaurant
35	160671	Som Tum Restaurant	Fast Food Restaurant	Restaurant	Seafood Restaurant	Vietnamese Restaurant	Halal Restaurant	Hotpot Restaurant	Chinese Restaurant	Dim Sum Restaurant	Donburi Restaurant
38	188123	Vietnamese Restaurant	Restaurant	Som Tum Restaurant	Italian Restaurant	Fast Food Restaurant	Yoshoku Restaurant	Hotpot Restaurant	Halal Restaurant	Hainan Restaurant	Greek Restaurant
42	115658	Som Tum Restaurant	Chinese Restaurant	Seafood Restaurant	Japanese Restaurant	Hotpot Restaurant	Italian Restaurant	Vietnamese Restaurant	Restaurant	Cantonese Restaurant	Fast Food Restaurant
43	106604	Som Tum Restaurant	Japanese Restaurant	Fast Food Restaurant	Hotpot Restaurant	Restaurant	Italian Restaurant	Chinese Restaurant	Sushi Restaurant	Shabu-Shabu Restaurant	Seafood Restaurant
46	116473	Som Tum Restaurant	Hotpot Restaurant	Japanese Restaurant	Fast Food Restaurant	Seafood Restaurant	Chinese Restaurant	Vietnamese Restaurant	Sushi Restaurant	Shabu-Shabu Restaurant	Ramen Restaurant

Table – 7. Districts in Cluster 4



## Cluster 5: Seafood

Tourists searching for seafood will find a lot of choices in these areas.

	Popu- lation	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
8	45875	Restaurant	Italian Restaurant	Som Tum Restaurant	Japanese Curry Restaurant	French Restaurant	Seafood Restaurant	Chinese Restaurant	Japanese Restaurant	Tonkatsu Restaurant	Dim Sum Restaurant
11	72321	Seafood Restaurant	Japanese Restaurant	Chinese Restaurant	Vegetarian / Vegan Restaurant	Som Tum Restaurant	Vietnamese Restaurant	Fast Food Restaurant	Hotpot Restaurant	Cantonese Restaurant	Dim Sum Restaurant
21	76446	Seafood Restaurant	Chinese Restaurant	Som Tum Restaurant	Japanese Restaurant	Shabu- Shabu Restaurant	Hotpot Restaurant	French Restaurant	Restaurant	Indian Restaurant	Italian Restaurant
29	53263	Seafood Restaurant	Japanese Restaurant	Molecular Gastronomy Restaurant	Japanese Curry Restaurant	Tonkatsu Restaurant	Som Tum Restaurant	Hotpot Restaurant	Restaurant	Hainan Restaurant	Greek Restaurant
34	51006	Seafood Restaurant	Som Tum Restaurant	Sushi Restaurant	Vietnamese Restaurant	Japanese Restaurant	Chinese Restaurant	Cantonese Restaurant	Cajun / Creole Restaurant	Dim Sum Restaurant	Donburi Restaurant
39	27452	Seafood Restaurant	Chinese Restaurant	Som Tum Restaurant	Japanese Restaurant	French Restaurant	Restaurant	Indian Restaurant	Italian Restaurant	Cantonese Restaurant	Tonkatsu Restaurant
45	119708	Chinese Restaurant	Seafood Restaurant	Satay Restaurant	Shabu-Shabu Restaurant	Vietnamese Restaurant	Fast Food Restaurant	Hotpot Restaurant	Indian Restaurant	Som Tum Restaurant	Cantonese Restaurant

Table – 8. Districts in Cluster 5

## Cluster 6: Fast Food

Mac Donald's, Burger King, KFC and more. If you really need a quick bang-for-the-buck taste from home, search no more!

	Popu- lation	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	105161	Fast Food Restaurant	Japanese Restaurant	Chinese Restaurant	Som Tum Restaurant	Hotpot Restaurant	Cantonese Restaurant	Seafood Restaurant	Vietnamese Restaurant	Vegetarian / Vegan Restaurant	Satay Restaurant
2	191781	Fast Food Restaurant	Japanese Restaurant	Chinese Restaurant	Som Tum Restaurant	Hotpot Restaurant	Ramen Restaurant	Seafood Restaurant	Shabu- Shabu Restaurant	Restaurant	Australian Restaurant
6	95912	Italian Restaurant	Fast Food Restaurant	Vietnamese Restaurant	Chinese Restaurant	Seafood Restaurant	Shabu- Shabu Restaurant	Korean Restaurant	Restaurant	Japanese Restaurant	Dumpling Restaurant
16	166261	Fast Food Restaurant	Restaurant	Japanese Restaurant	Som Tum Restaurant	Eastern European Restaurant	Shabu- Shabu Restaurant	Seafood Restaurant	Chinese Restaurant	Dim Sum Restaurant	Donburi Restaurant
23	109770	Fast Food Restaurant	Japanese Restaurant	Hotpot Restaurant	Som Tum Restaurant	Vietnamese Restaurant	Seafood Restaurant	Korean Restaurant	Restaurant	Dumpling Restaurant	Sushi Restaurant
40	89825	Japanese Restaurant	Fast Food Restaurant	Halal Restaurant	Chinese Restaurant	Hotpot Restaurant	Seafood Restaurant	Swiss Restaurant	Dim Sum Restaurant	Shabu-Shabu Restaurant	Donburi Restaurant

Table – 9. Districts in Cluster 6

## Discussion

Although Thai and Asian restaurants are obviously the most common in Bangkok, there is some variety in the international flavors. Experimenting, I found that seven clusters was the best and showed the most difference between neighborhoods. However, Cluster 0 and 3 only represent one district each, and both are suburbs, explaining possibly why they both have a wide variety of food types.

The Seafood clusters are near the river which is logical. Also, the Japanese restaurants are in the more upscale districts, which indicates that this is considered an exclusive treat.

## Conclusions

K-means clustering resulted in successfully showing where a certain type of international restaurant may be found in Bangkok. This project shows that the most common international foods are Japanese, Chinese, and American-style fast food. Also, more remote districts will have a variety of restaurants, or single restaurants with a diverse menu.