

Open a restaurant in Hong Kong

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1. Introduction:

My report is for those who are planning to start a new restaurant in Hong Kong. I'll try to provide as many suggestions on what all factors need to be considered while starting a new venture for investors.

1.1 Business Problems

Hong Kong is a famous tourist place where housing a wide choice of restaurants that offer cuisines from all over the world.

As a result, the Hong Kong Food and Beverage industry is robust, with a strong market for the restaurant business. In order to set up a restaurant in Hong Kong investors will need to comply explore the different factors which could effect the business possibly.

So in my report I am going to focus on problems one might face while open a restaurant. Location, the type of restaurant will be the most important factor that I'd like to consider. We will use our data science powers to generate a few most promising districtss based on this criteria. Advantages of each district will then be clearly expressed so that best possible final location can be chosen by stakeholders. As result, I will later concentrate on the districts and different type of restaurant, where the busiest venues of Hong Kong can be found to be optimal place to open the restaurant potentially.

2. Data

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

1. Top 10 Population Density in Hong Kong
2. The type und number of restaurant in each district in Hong Kong.

2.1 Methodology

From the website [1] we can define the Information of each district in Hong Kong. such as Population, Area per district, so that we can calculate the population density of each district in oder to plot the diagram of it.

From the website [2] we got the districts' latitude and longitude, data all downloaded or scraped from multiple sources were combined into one table.

let's use Foursquare Location to print districts along with the top 5 most common venues, through comparison will show us the best districts to start a restaurant.

2.2 all districts in Hong Kong.

	District	Areakm2	Population
0	Central and Western	12.44	244,600
1	Eastern	18.56	574,500
2	Southern	38.85	269,200
3	Wan Chai	9.83	150,900
4	Sham Shui Po	9.35	390,600
5	Kowloon City	10.02	405,400
6	Kwun Tong	11.27	641,100
7	Wong Tai Sin	9.30	426,200
8	Yau Tsim Mong	6.99	318,100
9	Islands	175.12	146,900
10	Kwai Tsing	23.34	507,100

Table 1. Area and population of each district in Hong Kong

From the website [1] i scraped the original information of all districts in Hong Kong. In order to know which district have most potential for business, I calculate the density of each district, see table 2.

	District	Areakm2	Population	Density
0	Central and Western	12.44	244600.0	19662.379421
1	Eastern	18.56	574500.0	30953.663793
2	Southern	38.85	269200.0	6929.214929
3	Wan Chai	9.83	150900.0	15350.966429
4	Sham Shui Po	9.35	390600.0	41775.401070

Table 2. Population density of each district

To see more clearly, I made a bar cart of top 10 population density of district in Hong Kong, see table 3. In this project, I will focus on the 5 districts, where have high population density.

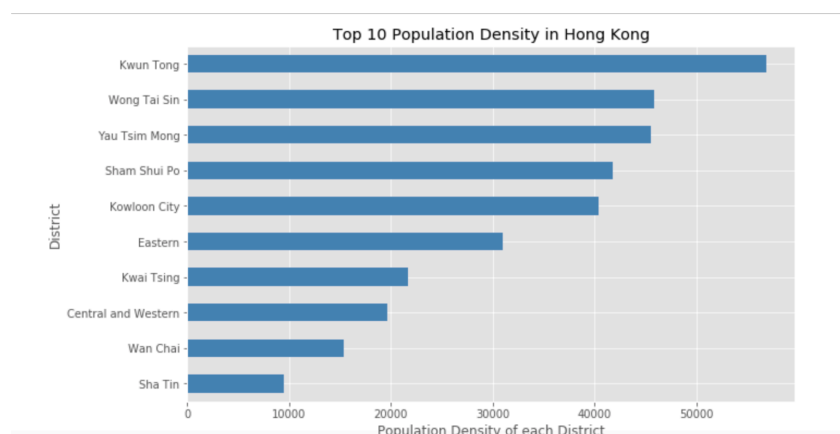


Table 3. Top 10 Population Density district in Hong Kong

From the table 3 we can figure out the 5 districts:

- Kwun Tong
- Wong Tai Sin
- Yau Tsim Mong
- Sham Shui Po
- Kowloon City

From the website [2] we got the districts' latitude and longitude, data all downloaded or scraped from multiple sources were combined into one table 4.

	District	Area km ²	Population	Density	Latitude	Longitude
0	Islands	175.12	146900.0	838.853358	22.21037	114.02880
1	Tai Po	136.15	307100.0	2255.600441	22.45084	114.16422
2	North	136.61	310800.0	2275.089671	22.49471	114.13812
3	Sai Kung	129.65	448600.0	3460.084844	22.38154	114.27039
4	Yuen Long	138.46	607200.0	4385.382060	22.44557	114.02229
5	Tsuen Wan	61.71	303600.0	4919.786096	22.37463	114.11510
6	Tuen Mun	82.89	495900.0	5982.627579	22.39691	113.97441
7	Southern	38.85	269200.0	6929.214929	22.24725	114.15884
8	Sha Tin	68.71	648200.0	9433.852423	22.38716	114.19523
9	Wan Chai	9.83	150900.0	15350.966429	22.27968	114.17169
10	Kwai Tsing	23.34	507100.0	21726.649529	22.35488	114.08401

Table 4. details of districts in Hong Kong

3. Exploratory Data Analysis

3.1 Analyzing Districts

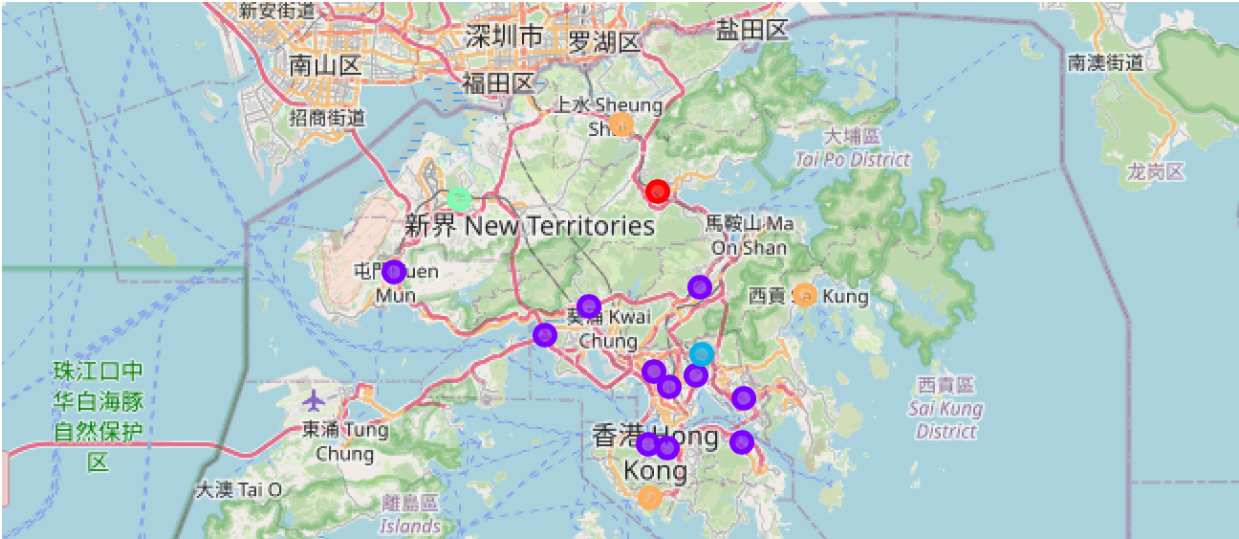
I utilized the Foursquare API [3] to explore the districts and segment them. I designed the limit as **100 venue** and the radius **500** meter for each district from their given latitude and longitude informations. Table 5 consist of venues name, category, latitude and longitude informations from Forsquare API. In summary of this data **673** venues were returned by Foursquare and the number of unique categories is **149**.

	District	District Latitude	District Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Islands	22.21037	114.0288	允升甜品	22.210678	114.028509	Dessert Shop
1	Islands	22.21037	114.0288	Hometown Teahouse	22.208929	114.030470	Asian Restaurant
2	Islands	22.21037	114.0288	Valor (啡寮)	22.210610	114.028661	Coffee Shop
	Islands	22.21037	114.0288	Cheung Kee (張記魚蛋粉麵)	22.207660	114.028851	Chinese Restaurant
4	Islands	22.21037	114.0288	Tung Wan Beach (Tung Wan Beach 東灣海灘)	22.209158	114.030702	Beach
5	Islands	22.21037	114.0288	甘永泰魚蛋	22.208597	114.029076	Snack Place

Table 5. Venues information from Forsquare API

3.2 create map of clusters

I used python **folium** library to visualize geographic details of Istanbul and its boroughs and I created a map of Hong Kong with districts superimposed on top. I used latitude and longitude values to get the visual as below, we can see, the most common cluster is cluster 1.



3.3 Analyzing the cluster 1

Cluster 1 - Most common venues: Chinese Restaurant , Fast Food Restaurant,Cafe

In [159]: HongKong_merged.loc[HongKong_merged['Cluster Labels'] == 1, HongKong_merged.columns[[0] + list(range(5, HongKong_merged.shape[1]))]]

9	Wan Chai	114.17169	1	Café	Cantonese Restaurant	Coffee Shop	Japanese Restaurant	Hong Kong Restaurant	Middle Eastern Restaurant	Clothing Store	Burger Joint	Bakery	Hotel
10	Kwai Tsing	114.08401	1	Bus Station	Mobile Phone Shop	Scenic Lookout	Pizza Place	Yoga Studio	Flea Market	Furniture / Home Store	Fried Chicken Joint	French Restaurant	Food Court
11	Eastern	114.22422	1	Chinese Restaurant	Park	Japanese Restaurant	Hong Kong Restaurant	Restaurant	Cantonese Restaurant	French Restaurant	Harbor / Marina	Dessert Shop	Indian Restaurant
12	Kowloon City	114.19149	1	Thai Restaurant	Dessert Shop	Chinese Restaurant	Café	Coffee Shop	Fast Food Restaurant	Bakery	Halal Restaurant	Asian Restaurant	Cha Chaan Teng
13	Sham Shui Po	114.16216	1	Noodle House	Dessert Shop	Chinese Restaurant	Shopping Mall	Dumpling Restaurant	Italian Restaurant	Ramen Restaurant	Snack Place	Cha Chaan Teng	Hong Kong Restaurant
14	Yau Tsim Mong	114.17258	1	Coffee Shop	Cha Chaan Teng	Chinese Restaurant	Dessert Shop	Noodle House	Sporting Goods Shop	Beer Bar	Market	Bakery	Steakhouse
16	Kwun Tong	114.22581	1	Chinese Restaurant	Café	Coffee Shop	Japanese Restaurant	Cha Chaan Teng	Fast Food Restaurant	Cantonese Restaurant	Restaurant	Sushi Restaurant	Climbing Gym

As we can see, the most common venues in cluster 1 are: Chinese Restaurant , Fast Food Restaurant, Cafe.

4. Results and Discussion

From the **data preparation** we can figure out the top 5 population density in Hong Kong:

- * 1. Kwun Tong
- * 2. Wong Tai Sin
- * 3. Yau Tsim Mong
- * 4. Sham Shui Po
- * 5. Kowloon City

From the **clusters**, we can figure out the most common venues in each district.

- * 1. Kwun Tong : Chinese Restaurant, Café, Japanese Restaurant, Fast Food Restaurant
- * 2. Wong Tai Sin : Fast Food Restaurant, Chinese Restaurant
- * 3. Yau Tsim Mong : Chinese Restaurant, Cha Chaan Teng, Noodle House, Beer Bar
- * 4. Sham Shui Po: Noodle House, Shopping Mall, Chinese Restaurant, Italian Restaurant
- * 5. Kowloon City: Thai Restaurant, Chinese Restaurant, Halal Restaurant, Fast Food Restaurant
Bakery

5. Conclusion

Purpose of this project was to give the investors suggestions to open a restaurant in Hong Kong. In which district and the type of restaurant were the core questions that i will discuss.

In conclusion, It is noticable that Cluster 1 is the most viable clusters to built business, i will suggest investors focus on Cluster 1. Besides, in Cluster1, there have 4 of the top 5 population density districts in Hong Kong, which are Kwun Tong, Yau Tsim Mong, Sham Shui Po and Kowloon City.

For the Kwun Tong and Yau Tsim Mong district, i will suggest to open a Tai Restaurant, because there have lots of chinese restaurants and japanese restaurants, it seems like asian food here is very popular.

For the Sham Shui Po and Kowloon City district, the type of restaurant is diverse, noodle is very popular, so for the investors to set up a japanese Restaurant will be a gut choice.

References:

- [1] https://en.wikipedia.org/wiki/Districts_of_Hong_Kong
- [2] <https://www.latlong.net>
- [3] <https://developer.foursquare.com>