

# Comparative Analysis between Singapore and Hong Kong

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## 1 Introduction

### 1.1 Background

Singapore and Hong Kong have often been associated with one another due to their similarities and statuses as major financial and shipping hubs. Their economic success over the years attracted top talents to settle and work in the cities but also resulted in high standards of living - both cities are currently ranked among the most expensive cities in the world.



Figure 1: Prominent skylines of Singapore (left) and Hong Kong (right)



	Singapore	Hong Kong
Flag		
Official Languages	English, Malay, Mandarin, Tamil	Mandarin, English
Ethnic Groups	74.3% Chinese Singaporeans, 13.3% Malay Singaporeans, 9.1% Indian Singaporeans, 3.3% Others	92.0% Han Chinese, 2.5% Filipino, 2.1% Indonesian, 0.8% White, 0.5% Indian, 0.3% Nepalese, 1.6% Others
Area	725.1 km <sup>2</sup>	2,755 km <sup>2</sup>
Population (2018)	Total: 5,638,700 Density: 7,804/km <sup>2</sup>	Total: 7,482,500 Density: 6,777/km <sup>2</sup>
GDP (PPP) (2019)	Total: \$589.187 billion Per capita: \$103,717	Total: \$490.880 billion Per capita: \$64,928
Time Zone	UTC+8	UTC+8
Geographic Coordinates	Latitude: 1.3, Longitude: 103.8	Latitude: 22.3, Longitude: 114.2

Table 1: General Information of Singapore and Hong Kong (source: Wikipedia)

Business travellers and leisure seekers often compare the neighbourhoods, shopping belts and central business districts (CBDs) between the two cities. Depending on the individual's real-world experience, travel inclinations, hobbies and interests, etc., the resulting comparisons can vary widely.

*“As both are overcrowded urban enclaves with no natural resources, they have to continue to pursue pro-growth economic policies, and their people have to constantly work hard and remain highly entrepreneurial in order to “earn” their economic growth.”*

Extracted quote from a book titled “Singapore and Hong Kong: Comparative Perspectives on the Occasion of the 20th Anniversary of the Handover” by Institute of Advanced Studies, Nanyang Technological University, Singapore.

*“The beauty of Hong Kong for me is that one could witness a dilapidated 4 storied building which looks to be on the verge of collapsing if one were to even sneeze in its proximity, right next to a sprawling skyscraper and there would be nothing incongruous about that set-up. It just blends into the Hong Kong feel. Singapore on the other hand has its homogenous looking HDBs well laid out maintaining a presentable image which further epitomizes the orderly nature of the city.”*

Extracted quote from an online post by Akshobh Giridharadas, Journalist, Business Desk at Channel NewsAsia.

## **1.2 Problem**

The analysis done at the individual's level can be subjective and influenced by the individual's personal experience, opinions and length of stay in the city. It can also be limited in scope since it is atypical for an individual to travel to all areas in both cities, hence rendering a comprehensive analysis to be almost impossible.

This report aims to provide an objective and data-driven comparative analysis of both cities, by exploring the different districts within each city, finding clusters within each city and determining similarities/ uniqueness between the two cities.

## **1.3 Interested Parties**

Readers who are interested to gain another perspective on how the two cities are similar (or dissimilar) may find the contents useful. This may include people who are planning to visit the cities in the near future, either for business or leisure purposes, or are finding districts with certain amenities and facilities to stay in for extended periods of time.

## 2 Data

### 2.1 Data Sources

The following data sources are used for the analysis in this report.

Postal district	Postal sector (1st 2 digits of 6-digit postal codes)	General location
01	01, 02, 03, 04, 05, 06	Raffles Place, Cecil, Marina, People's Park
02	07, 08	Anson, Tanjong Pagar
03	14, 15, 16	<a href="#">Bukit Merah</a> , <a href="#">Queenstown</a> , <a href="#">Tiong Bahru</a>
04	09, 10	Telok Blangah, Harbourfront
05	11, 12, 13	Pasir Panjang, Hong Leong Garden, Clementi New Town
06	17	High Street, Beach Road (part)
07	18, 19	Middle Road, Golden Mile
08	20, 21	<a href="#">Little India</a> , <a href="#">Farrer Park</a> , <a href="#">Jalan Besar</a> , <a href="#">Lavender</a>
09	22, 23	Orchard, Cairnhill, River Valley
10	24, 25, 26, 27	Ardmore, Bukit Timah, Holland Road, Tanglin
11	28, 29, 30	Watten Estate, Novena, Thomson
12	31, 32, 33	Balestier, Toa Payoh, Serangoon
13	34, 35, 36, 37	Macpherson, Braddell
14	38, 39, 40, 41	Geylang, Eunos
15	42, 43, 44, 45	Katong, Joo Chiat, Amber Road
16	46, 47, 48	Bedok, Upper East Coast, Eastwood, Kew Drive
17	49, 50, 81	Loyang, Changi
18	51, 52	Simei, Tampines, Pasir Ris
19	53, 54, 55, 82	Serangoon Garden, Hougang, Punggol
20	56, 57	Bishan, Ang Mo Kio
21	58, 59	Upper Bukit Timah, Clementi Park, Ulu Pandan
22	60, 61, 62, 63, 64	Jurong, Tuas
23	65, 66, 67, 68	Hillview, Dairy Farm, Bukit Panjang, Choa Chu Kang
24	69, 70, 71	Lim Chu Kang, Tengah
25	72, 73	Kranji, Woodgrove, Woodlands
26	77, 78	Upper Thomson, Springleaf
27	75, 76	Yishun, Sembawang
28	79, 80	Seletar

Figure 2: Singapore Postal Districts (source: Wikipedia)

District	Chinese	Population <sup>[when?]</sup> [6]	Area (km <sup>2</sup> )	Density (/km <sup>2</sup> )	Region
Central and Western	中西區	244,600	12.44	19,983.92	Hong Kong Island
Eastern	東區	574,500	18.56	31,217.67	Hong Kong Island
Southern	南區	269,200	38.85	6,962.68	Hong Kong Island
Wan Chai	灣仔區	150,900	9.83	15,300.10	Hong Kong Island
Sham Shui Po	深水埗區	390,600	9.35	41,529.41	Kowloon
Kowloon City	九龍城區	405,400	10.02	40,194.70	Kowloon
Kwun Tong	觀塘區	641,100	11.27	56,779.05	Kowloon
Wong Tai Sin	黃大仙區	426,200	9.30	45,645.16	Kowloon
Yau Tsim Mong	油尖旺區	318,100	6.99	44,864.09	Kowloon
Islands	離島區	146,900	175.12	825.14	New Territories
Kwai Tsing	葵青區	507,100	23.34	21,503.86	New Territories
North	北區	310,800	136.61	2,220.19	New Territories
Sai Kung	西貢區	448,600	129.65	3,460.08	New Territories
Sha Tin	沙田區	648,200	68.71	9,433.85	New Territories
Tai Po	大埔區	307,100	136.15	2,220.35	New Territories
Tsuen Wan	荃灣區	303,600	61.71	4,887.38	New Territories
Tuen Mun	屯門區	495,900	82.89	5,889.38	New Territories
Yuen Long	元朗區	607,200	138.46	4,297.99	New Territories

Figure 3: Hong Kong Districts (source: Wikipedia)



Figure 4: OneMap REST API on Search (source: OneMap)

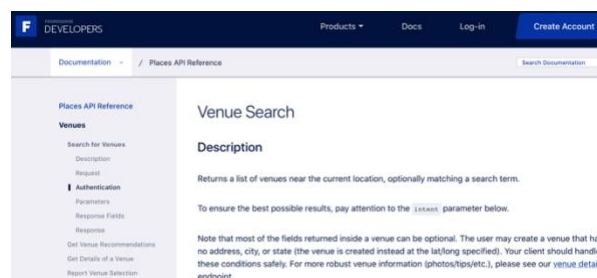


Figure 5: Foursquare Places API on Search (source: Foursquare)

## 2.2 Data Cleaning

For Singapore districts, the information provided by Wikipedia does not have corresponding information on geographic coordinates. The general locations listed for each district are used to determine the centroid for that district by invoking the OneMap REST API on Search and averaging their coordinates. It is assumed that simple averaging is acceptable since the general locations are close to each other within the district and hence the Earth can be treated as being relatively flat (i.e. negligible error when using planar coordinates, though it is more accurate to use complex calculation methods considering Earth's spherical surface).

For Hong Kong districts, the coordinates for each district are obtained from its own Wikipedia's page.

Separate CSV files are created to store the contents and coordinates of the districts.

## 2.3 Feature Selection

The Foursquare Places API on Search returns a list of venues in a district based on its coordinates, with details such as id, name, location and categories. One hot encoding is applied to "categories" and the results are used as features to find clusters within each city.

### **3 Methodology**

<To be completed in next part of assignment>

<Course instruction: Methodology section which represents the main component of the report where you discuss and describe any exploratory data analysis that you did, any inferential statistical testing that you performed, if any, and what machine learnings were used and why.>

### **4 Results**

<To be completed in next part of assignment>

<Course instruction: Results section where you discuss the results.>

### **5 Discussion**

<To be completed in next part of assignment>

<Course instruction: Discussion section where you discuss any observations you noted and any recommendations you can make based on the results.>

### **6 Conclusion**

<To be completed in next part of assignment>

<Course instruction: Conclusion section where you conclude the report.>