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| Applied Data Science Capstone |
| Final Report |
| Singapore vs Hong Kong – A Tale of Two Cities |

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# Introduction

## Background

Hong Kong and Singapore are the forerunners in the race to become ‘Asia’s World City’ and the competition is fierce. The cities often find themselves trying to win bids to host major sports and entertainment events and give each other a tough fight. Media articles are filled with tales of this rivalry and several factors are used to compare the two cities. Lifestyle advantages, cost of residence and quality of life for expats are often some of the decisive ones [1]

It is important to highlight how similar these cities are despite the competition and rivalry. The similarities in culture, economic structure and situation of living make it hard to believe these cities are in fact part of separate states. Both economies depend heavily on the financial services industry and fintech and are employed as the regional headquarters for several foreign companies operating in Asia [2]

Due to this similitude, migration between Hong Kong and Singapore is a very common occurrence. Locals and expats looking for better job opportunities in the region have been known to move between these cities, often several times in their career. Be it better schooling systems, improving economic situation or changing immigration policies, several dynamic factors can lead to a family deciding to move between these cities. In mid-2019, migration from Hong Kong to Singapore peaked due to the political turmoil in Hong Kong and the widespread and sometimes violent protests in the city. Migration consultants were employed by Hong Kong families to arrange their movement as smoothly as possible [3]

## Problem

When migrating from one city to another, people look at several factors in order to find a suitable district to live in. A big part of this search is a comparison of their current neighbourhood/district with others in the new city, to find similarities and settle in a place which has similar amenities and environment. For example, a family with school going children will want to move to a district with shorter distances to schools, family friendly housing estates and recreational facilities.

This research is a lot tougher than it seems. Simple search engine queries can contain incomplete or outdated information. Most blogs/articles focus on a general inter-city comparison which does not help much when it comes to comparing neighbourhoods with a precise level of detail. Comparison of neighbourhoods then ends up requiring several physical visits to the new city which results in additional overhead costs and stress.

## Project Aim

This project aims to evaluate the similarity between Hong Kong and Singapore by analysing how several factors make districts in these two cities similar. For families and expats thinking about switching their city or for migration consultants looking to provide recommendations to clients, this project will provide a detailed statistical analysis and recommend which district would be suitable to live in.

The project aims to make life easier for the migrating families and/or the consultants helping them rationally locate the right district to migrate to so they don’t end up having a tough or elongated adjustment period.

In practical terms, the project aims to carry out a cluster analysis of districts in the two cities and group them in terms of similitude. This way, the migrating party can locate a district which is similar to the district they currently live in and have a smoother transition.

# Data Acquisition, Cleaning and Relevance

## 2.1 Data Source

At first, data related to the districts and their location in both cities was obtained from Wikipedia and [GeoHack](https://tools.wmflabs.org/geohack/).

Then [Foursquare](https://foursquare.com/) API was then used to get venue data for all the districts in the two cities. The ‘search’ endpoint was used to get every single amenity/venue/facility in the respective districts.

## 2.2 Data Cleaning and Feature Selection

It was difficult to find latitude and longitude data for the two cities’ districts and hence several data sources were used to verify the information collected.

In addition, since some of Singapore’s districts do not have official names or identities and are just referred to as a group of popular neighbourhoods in the district, just one of the neighbourhoods was selected from these districts to get the latitude and longitude.

For each venue/facility found in the districts, we had the following features:

1. Name
2. Latitude
3. Longitude
4. Place Type (clinic, school, restaurant etc)
5. City

Only Name and Place Type are relevant data features for our analysis while the rest of the features are used for identification purposes only.

## 2.3 Data Relevance

The focus on venues and facilities in each district will help us determine which districts are similar in terms of the number and type of facilities found. This will help a migrating facility find a suitable district in terms of the amenities they need and will lead to a smoother migration for them.

# References

[1] How the Hong Kong vs Singapore thing got started, and why Lion City doesn’t indulge in such petty comparisons

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[2] Frenemy cities: a look at Hong Kong, Singapore's rivalry and partnership as Lion City marks key anniversary

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[3] Emigrating Hongkongers seek stability elsewhere, heading to Australia, Canada, Singapore

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