COURSERA CAPSTONE PROJECT: THE BATTLE OF NEIGHBORHOODS

Singapore Town Location Analysis – A Relocation Guide

A. Introduction

Singapore is one of the preferred destinations to do business in Asia, with its economy ranked as the world's most competitive economy, based on the latest 2019 World Economic Forum Global Competitiveness Report. Favorable factors contributing to Singapore's economic performance include an open economy, strong labor-employer relations, diverse cosmopolitan workforce, as well as government stability and responsiveness to change.

Singapore also offers the best quality of life in Asia, based on Mercer's 2019 Quality of Living Survey, which considers factors like political stability, healthcare, education, crime, recreation and transport. Foreign talents, accounting for ~40% of the workforce, have been attracted to this cosmopolitan island state, due to its vibrant economy, low personal income taxes, cultural diversity and high quality of living.

However, cost of living is a concern, with Singapore being rated as the world's most expensive city by the Economist Intelligence Unit's 2018 Worldwide Cost of Living Report. Furthermore, Singapore has a large population size for its size, with ~8,000 people per km^2. This makes Singapore 230 times denser than the United States, and more than 2,500 times denser than Australia.

As such, the goal of this analysis is to identify the most livable neighborhoods in Singapore for individuals looking to relocate to Singapore and those considering moving within Singapore. For the purpose of this exercise, we will define the most livable neighborhoods as having: (i) an affordable median rental price, (ii) a tolerable population density, (iii) a balanced mix of amenities in the neighborhood, and lastly (iv) a wide selection of good food options nearby.

B. Data Description

This analysis will require the use of the following data sources:

Singapore Median Rent by Town and Flat Type

Data on Singapore towns and corresponding median rental prices by town and flat type will be retrieved from Data.gov.sg (https://data.gov.sg), the government's one-stop access portal to publicly available datasets. Since Median Rent by Town and Flat Type data covers information from April 1, 2005 to December 31, 2019 on a quarterly basis, we will be using 2019-Q4 data for this analysis, as this is the most recent dataset. To simplify the analysis, the average rental price for each town will be determined by the average of the median rental price for 3-room, 4-room and 5-room flat types in that town.

Singapore Population Density by Town

Data on Singapore's population density by town will be obtained by scraping data from the Wikipedia page on 'New towns of Singapore' (https://en.wikipedia.org/wiki/New_towns_of_Singapore), which contains data on town name, total area (km^2), residential area (km^2), dwelling units, and population. Population density (people per km^2) by town will be obtained by dividing the town's population by total area of town.

Singapore Town Location Data

Singapore's geospatial data will be retrieved from Data.gov.sg (https://data.gov.sg). Master Plan 2019 Planning Area Boundary (No Sea) data provides indicative polygons of planning area boundary, and this GeoJSON data on Singapore's planning areas will enable visualization on maps. In parallel, geographic coordinates of town centers will be retrieved using Google Maps, with coordinates of MRT stations being used as the center for all towns for the purpose of this analysis.

Singapore Venue Information from Foursquare API

Foursquare API (https://foursquare.com/) will be used to explore the neighborhoods of each town. Using Foursquare API, we will understand the various venues in each neighborhood, to assess if there are a balanced mix of amenities and to determine the most common venue categories. In addition, we will also be using Foursquare API to retrieve venue ratings for each location. However, as venue ratings are a premium endpoint, we are limited to only 50 premium calls per day with a Personal account on Foursquare API. In view of this constraint, we will limit the analysis of ratings to only food venues, since this is where ratings will likely matter more.