Capstone Project

The Battle of Neighborhoods in Singapore Report

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1. Introduction

1.1 Background

Singapore is known as the "Garden City" since the country reached independence in 1965. According to 2018 global peace index, Singapore is considered the 8th safest place in the world. Besides that, the streets are clean and there's a wide variety of cuisine to choose from as it is multi-cultural society. All of these factors attract many expats to work and live in Singapore.

1.2 Problem

The cost of living in Singapore is one of the highest in the world. However, the housing cost at a non-mature estate is cheaper than mature estate. One of the new entrants is Punggol where there's rapid development of the area. There are LRTs built around the Punggol area and this study aims to find the best neighborhood in Punggol situated near the LRT with the most attractions nearby so that any expats can afford.

1.3 Interest

Expats who are considering to relocate to Singapore will be interested to explore the neighborhoods around Punggol area and its common attractions around each neighborhood.

2. Data Acquisition and Cleaning

2.1 Data Acquisition

The data will come from 2 sources. The first data will be from OneMap.sg where all the LRT stations data will be extracted. The dataset will contain the following columns:

- Address
- Blk No
- Building
- Latitude
- Longitude
- Postal
- Road Name
- Search Value
- Station
- Station Name

The second source of data will be via foursquare API where we will query all the attractions through the venues endpoint. No cleaning up is required.

2.2 Data Cleaning

The data preparation for each of the 2 data sets will be done separately.

For the OneMap.sg dataset, most of the columns will be dropped.

The columns that we need will be:
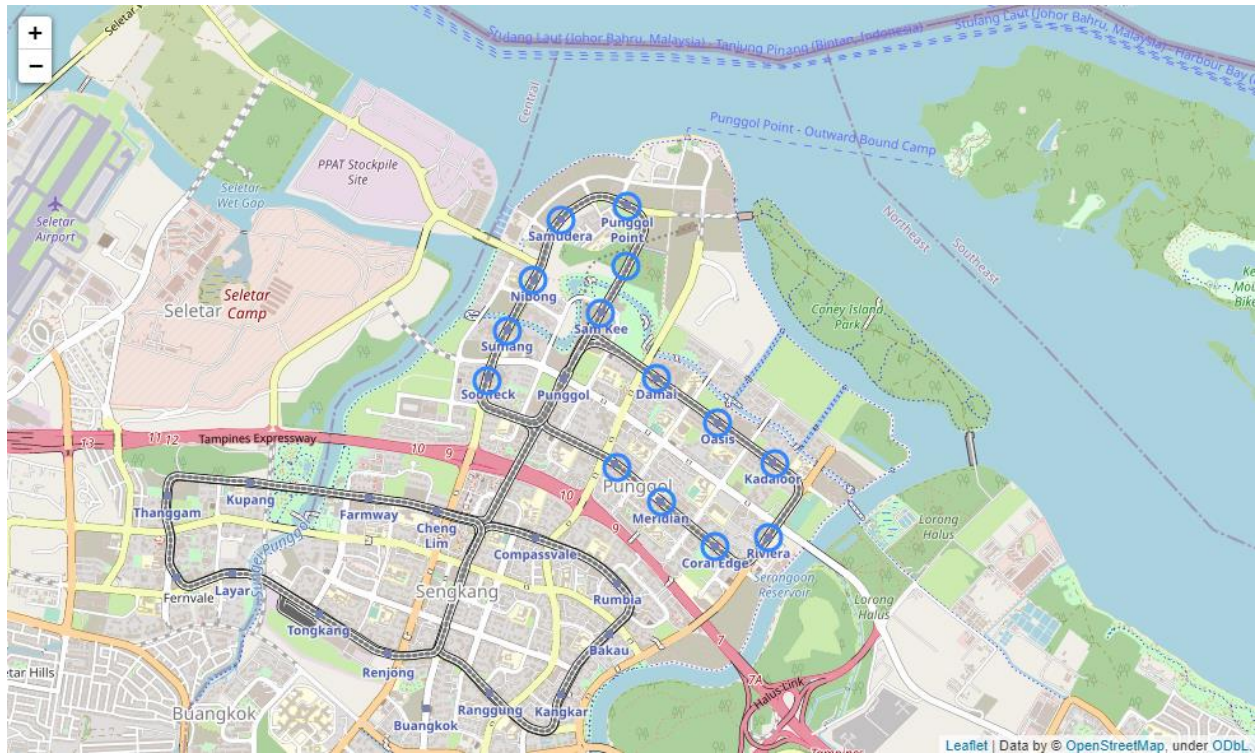
- Latitude
- Longitude
- Station Name
- Station

For FourSquare API, we will retrieve the following columns to form the dataset.

- Venue Name
- Venue Latitude
- Venue Longitude
- Venue Category

3. Methodology

3.1 Exploratory Data Analysis

Below is the summary of all the LRT stations in Punggol and its location by using Folium Map

3.2 Inferential Statistical Testing

Foursquare API was queried using the data set retrieved from OneMap.sg to gather all the categories associated with the neighborhood close to the LRT stations.

	Station	Station Name	Latitude	Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	PE1	Cove	1.399282	103.905962	Bus Stop 65079 (Blk 102C)	1.398968	103.904671	Bus Station
1	PE1	Cove	1.399282	103.905962	7-ELEVEN®	1.399662	103.903849	Convenience Store
2	PE2	Meridian	1.396912	103.908950	Master Crab @ Kopitiam	1.396699	103.908607	Chinese Restaurant
3	PE3	Coral Edge	1.393909	103.912581	Ice Talk Xpress	1.394152	103.912813	Dessert Shop
4	PE3	Coral Edge	1.393909	103.912581	McDonald's	1.393536	103.913326	Fast Food Restaurant
...	...	...	...	...	...	...	...	...
76	PW5	Nibong	1.411870	103.900314	Kimly Coffeeshop	1.411619	103.897677	Coffee Shop
77	PW6	Sumang	1.408452	103.898558	Jewel Bridge	1.409577	103.895859	Bridge
78	PW6	Sumang	1.408452	103.898558	Bangkok Street Mookata	1.410788	103.900187	BBQ Joint
79	PW6	Sumang	1.408452	103.898558	Sheng Siong Supermarket	1.411038	103.900166	Market
80	PW7	Soo Teck	1.405089	103.897210	食福 Shi Fu Eating House	1.405379	103.896750	Food Court

81 rows × 8 columns

4. Results

Based on the 14 LRTs, we noticed that the neighborhood with the most attraction is near Riviera LRT station. Sam Kee LRT station is the 2nd best while the Oasis LRT station is the 3rd best.

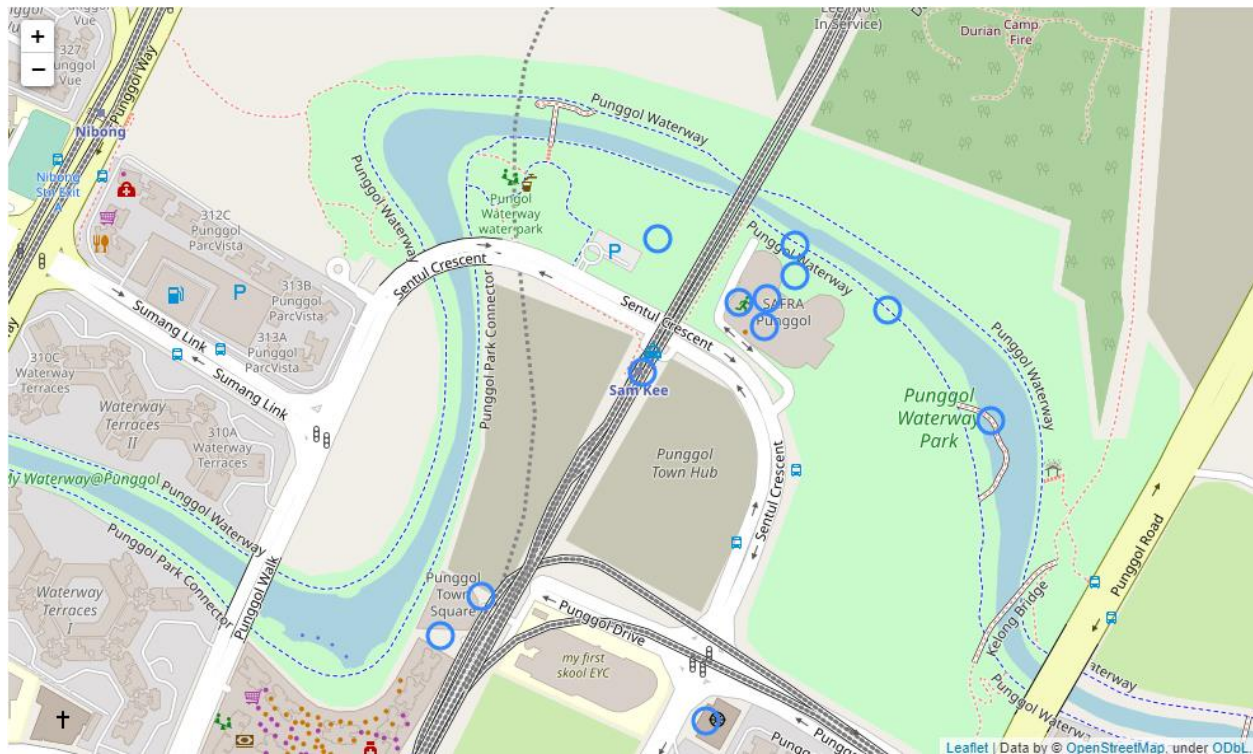| Station	Station Name	Total
PE4	Riviera	16
PW1	Sam Kee	12
PE6	Oasis	9
PE3	Coral Edge	7
PW2	Teck Lee	7
PE5	Kadaloor	5
PW5	Nibong	4
PW4	Samudera	3
PW6	Sumang	3
PE1	Cove	2
PE7	Damai	2
PE2	Meridian	1
PW3	Punggol Point	1
PW7	Soo Teck	1

4.1 Riviera LRT Station Analysis

There is a lot of entertainment facilities but it appears to be lacking supermarket.

Venue	Latitude	Longitude	Attractions
Punggol Promenade Riverside Walk	1.393244	103.917342	Trail
Big Fish Small Fish	1.393354	103.917749	Fish & Chips Shop
Punggol Golf Range	1.395727	103.917166	Golf Course
Whisk & Paddle	1.392919	103.917341	Café
Hai Bin Prawning	1.39243	103.916824	Fishing Spot
Container Eateries	1.393268	103.917669	Gastropub
Punggol Billiards	1.392766	103.916689	Pool Hall
Sing See Soon Floral & Landscape Pte Ltd	1.393469	103.915614	Flower Shop
McDonald's	1.393536	103.913326	Fast Food Restaurant
@PUNGGOL	1.392969	103.917187	Recreation Center
Sports Planet	1.392111	103.916398	Soccer Field
Uncle Leong Seafood 龍海鮮螃蟹王 (Uncle Leong Seafood)	1.392532	103.916922	Seafood Restaurant
KFC	1.395527	103.917361	Fast Food Restaurant
Frienzie Bar & Bistro	1.392769	103.91733	Gastropub
Banyan - Beer Garden	1.392346	103.916833	Beer Garden
Social Innovation Park	1.39424	103.916764	Park
Tots Milky Cafe	1.394461	103.914424	Café
Boost@Banks	1.393518	103.917869	Beer Bar
Cravings	1.392517	103.916477	Café
Futsal Pitch 1	1.392382	103.916361	Soccer Field
Bus Stop 65261	1.397122	103.914572	Bus Station

4.2 Sam Kee LRT Analysis

There is a upcoming plan to build a Punggol Town Hub. However, based on the analysis of the map, it doesn't appear to have any residential housing nearby,

Venue	Latitude	Longitude	Attractions
Punggol Waterway Park	1.410227	103.907	Park
i Darts LAVA	1.410514	103.9062	Sports Bar
McDonald's	1.410088	103.9059	Fast Food Restaurant
The Spa @ SAFRA Punggol	1.410827	103.905	Spa
MANEKINEKO	1.410295	103.9057	Music Venue
Heavenly Wang	1.410327	103.906	Café
Sam Kee LRT Station (PW1)	1.409703	103.9049	Light Rail Station
Jack's Place	1.410777	103.9062	Steakhouse

Venue	Latitude	Longitude	Attractions
Punggol Discovery Cube	1.407816	103.9035	Plaza
Starker Q	1.40748	103.9032	Bistro
Water Drop Teahouse 滴水坊	1.406765	103.9054	Tea Room
Watersports Promenade	1.409294	103.9078	Bridge

4.3 Oasis LRT Station Analysis

The main attraction for Oasis LRT is that the supermarket is nearby. However, it lacks of entertainment facilities

Venue	Latitude	Longitude	Attractions
NTUC FairPrice	1.403051	103.91342	Supermarket
Starbucks	1.402571	103.9129	Coffee Shop
McDonald's / McCafé	1.402539	103.91304	Fast Food Restaurant
Wave Bridge	1.403451	103.9135	Bridge
KFC	1.402961	103.91343	Fast Food Restaurant
Popular / UrbanWrite	1.402097	103.91347	Bookstore
Lao Jiang 老江 Superior Soup	1.402918	103.91335	Soup Place
Bus Stop 65319 (Oasis Stn)	1.402436	103.91236	Bus Stop
Rise & Grind Coffee Co	1.403183	103.91336	Coffee Shop
Yu Kee 友記 Specialties	1.402909	103.91333	Malay Restaurant
Community Plaza	1.401762	103.91466	Plaza

5. Discussion

The aim of the project is to assist expats in relocating to a non-mature estate in Punggol area in Singapore. The neighborhood with the greatest number of attractions along the LRT line in Punggol will definitely be more attractive for the expats as they can enjoy more facilities while keeping the cost of living low by living at a non-mature estate. However, based on the results, it appears that there is no one-size-fits-all solution. The selection of the neighborhood will be largely dependent on the user's preference and which attractions will be weighed the most.

6. Conclusion

This project helps the expats to get a better understanding of the neighborhoods in Punggol area with respect to the number of attractions available in each neighborhood. It is always encouraged to use technology to get insights about neighborhood so as to make better decisions. In future, the project can be extended to know which places have the lowest rental fee and yet have one of the most attractions nearby. It can also be extended to other neighborhoods around in Singapore as well too.