**Best location for a New Bubble Tea Joint in Singapore**

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**1. Introduction**

**1.1 Background**

Singaporeans' love affair with bubble has been well documented pre-pandemic as well as during the pandemic. Even with restrictions on dining-in hit drink stalls at hawker centres, food courts and restaurants hard, but bubble tea joints continue to enjoy roaring success evidenced by unending ques of customers and food delivery riders at bubble tea shops. As reported in The Straits Times, Nayuki, a Chinese bubble tea chain raised more than US$650 million in an initial public offering (IPO).

**1.2 Problem**

This project will explore the best location with high human traffic to set-up a bubble tea shop. The locations with high human traffic is usually located around Mass Rapid Transit (MRT) stations which is one of the 2 main modes of transportations in Singapore, with the other one being the bus. As such, we will explore the best location which would be one with the fewest number of bubble tea joints within the vicinity and closest to Singapore's Central Business District to set-up a bubble tea shop within walking distance (300m radius) from a MRT station.

**1.3 Interest**

People interested in investing in bubble tea joints would be interested to know the locations with the fewest bubble tea joints and their distance to Singapore’s Central Business District

**2. Data Acquisition and Cleaning**

**2.1 Data Sources**

For this project, I'll leverage Singapore MRTs' coordinate dataset from yxlee <https://www.kaggle.com/yxlee245/singapore-train-station-coordinates>. As this dataset contains both MRT and LRT, we'll need to remove LRT from the dataset before using it. I'll also be using the FourSquare API to obtain all the bubble tea joints within 300m radius from the MRT stations located in the Singapore MRTs' coordinates dataset. Features of interest will be venue, venue latitude, venue longitude, venue category data. I’ll also be obtaining Singapore’s coordinates as well as Singapore’s Central Business District’s (CBD) coordinates with foursquare API.

**2.2 Data Cleaning**

The data obtained from yxlee’s Singapore train station coordinates includes LRT coordinates which are not needed in the analysis. As such, we’ll be removing the LRT coordinates from the dataset.

As for the data obtained using Foursquare’s API, we’d need to obtain the category ID for bubble tea joints, which would be 52e81612bcbc57f1066b7a0c. Then we’d need to query for each of the MRT in the MRT dataset and obtain the bubble tea joints’ names, distance, address, latitude, longitude and append the MRT station that it’s closest to.

**3. Exploratory Data Analysis**

**3.1 Testing Query Output**

We’d first need to test the query output with a sample MRT station to formulate a loop to query the bubble tea joints for each MRT. We first test this using Jurong East MRT. After obtaining the output, the data shows that we can append each of the bubble tea joints’ name, distance from MRT, address, latitude and longitude. We then formulate a loop for the actual query.

**3.2 Analysis**

From the output data from the query, the data shows that there 16 MRT stations with the fewest number of bubble tea joints, which are, Kallang, Queenstown, Kent Ridge, Fort Canning, Geylang Bahru, Joo Koon, Braddell, Lakeside, Marina Bay, Bendemeer, Aljunied, Labrador Park, Bayfront, Beauty World and Marsiling as shown in Figure 1.

Chart, bar chart, histogram

Description automatically generated

Figure 1, Number of Bubble Tea Joints by MRT Station

Now that we have an idea of which MRT station has the fewest number of bubble tea joints, we proceed to calculate the distance between the 16 MRT stations and Singapore’s Central Business District (CBD). Using geodesic, the MRT station closest to CBD is Fort Canning MRT,

A picture containing graphical user interface

Description automatically generated

Figure 2, Distance of each MRT with only a single bubble tea joint to Singapore’s Central Business District (CBD)

Further visualising this with folium, the red dot indicates Singapore’s Central Business District (CBD) and Fort Canning MRT is labelled in blue.

Map

Description automatically generated

Figure 3. Folium map that indicates MRT stations (blue) and Singapore’s CBD (red)

**4.0 Conclusion**

The purpose of this project was to identify the best location for a new bubble tea joint that has the fewest number of bubble tea joints and is the closest to Singapore's Central Business District (CBD). By calculating and visualising bubble tea joints density with a bar chart and folium, we've identified 16 probable MRT locations for further analysis. After that, we proceeded to identify the coordinates for Singapore's CBD and calculated the distance between the 16 identified MRT locations and Singapore CBD and arrived at the conclusion that Fort Canning MRT is the best location based on fewest number of bubble tea joints and closest distance to Singapore's CBD. Final decision for the optimal bubble ta joint would need to take into consideration of additional factors such as real estate availably, prices, social and economics of the neighbourhoods closest to the MRTs.