Where should one open a bubble tea shop in Singapore?

Applied Data Science Capstone by IBM/Coursera

Introduction

Bubble tea is a drink that is immensely popular in Southeast Asia, and has experienced a resurgence in popularity in recent years [1][2]. Although there was a lull in the expansion of the industry, it is now seeing a revival with new chains from China such as The Alley and Heytea entering the market. Globally, the bubble tea market is expected to reach 3.2 billion by 2023 [3], with Asia Pacific projected to be the second fastest growing region for the market. In this project, I will examine where a businessman, hoping to capitalize on this growing market, should open a bubble tea shop in Singapore. I will utilize foursquare API data to locate bubble tea shops in Singapore, and utilize demographic data to identify potential customers. Lastly, I will create a Bubble Tea Opportunity Index to show where the best subzones to open bubble tea shops are. Further detail can be found in the methodology section.

Data

While Singapore utilizes postal codes, there is a lack of granular public data (see Wikipedia [4]). However, the Singapore government splits the country up in 55 planning areas and 324 subzones from planning and statistical purposes. Hence, for the purpose of this project, I will be utilizing geographic data of the 324 subzones to represent neighbourhoods in Singapore. Geographic coordinates of each subzone are downloaded from a public Tableau map, where a csv file was generated, where I named it subzone.csv [5].

A kml file of the subzones was also downloaded from a government database [6]. This was then converted to a geojson file named sg_subzone.geojson.

Foursquare API data is used to identify clusters and density of bubble tea shops in the various subzones in Singapore.

Demographic data (2018) for each subzone was downloaded from a public database from the Singapore government [7]. Since it was an xlsx file, I pre-cleaned it via excel to only include subzone name and the proportion of 20-39 year olds living in each subzone, as bubble tea is found to be most popular among this age group [8]. The csv file is named popdata.csv.

Methodology

First, I will utilize foursquare API data to locate bubble tea shops in different subzones in Singapore. I will then count the number of shops in each subzone, which indicates the level of competition in each subzone.

Following this, I will utilize demographic data to identify subzones with a higher proportion of potential customers.

Additionally, I will also utilize demographic data and overlap the two, to examine if there are regions that have a higher proportion of youths (which tend to drink more bubble tea) but have a lower proportion of bubble tea shops, which would indicate an opportunity to open a bubble tea shop. According to a report on the bubble tea market [4], the target demographic are youths in their 20s to late 30s. Hence, I will be

identifying the number of 20-39 in each subzone as an indicator of the amount of potential customers in each zone.

To complete the visualization, I will create a Bubble Tea Opportunity Index. This is done by first dividing the maximum number of bubble tea shops found in any subzone by the number of shops in an individual zone (so that the lower the number of shops, the higher the value as it indicates lower competition), and multiplying that value by the number of 20-39 found in each subzone. This value is then normalized to create an index from 0 to 1, where 0 indicates no opportunities while 1 indicates a huge opportunity to open bubble tea shops in that area.

Results

The code I used can be found [here](#).

The following map was created:
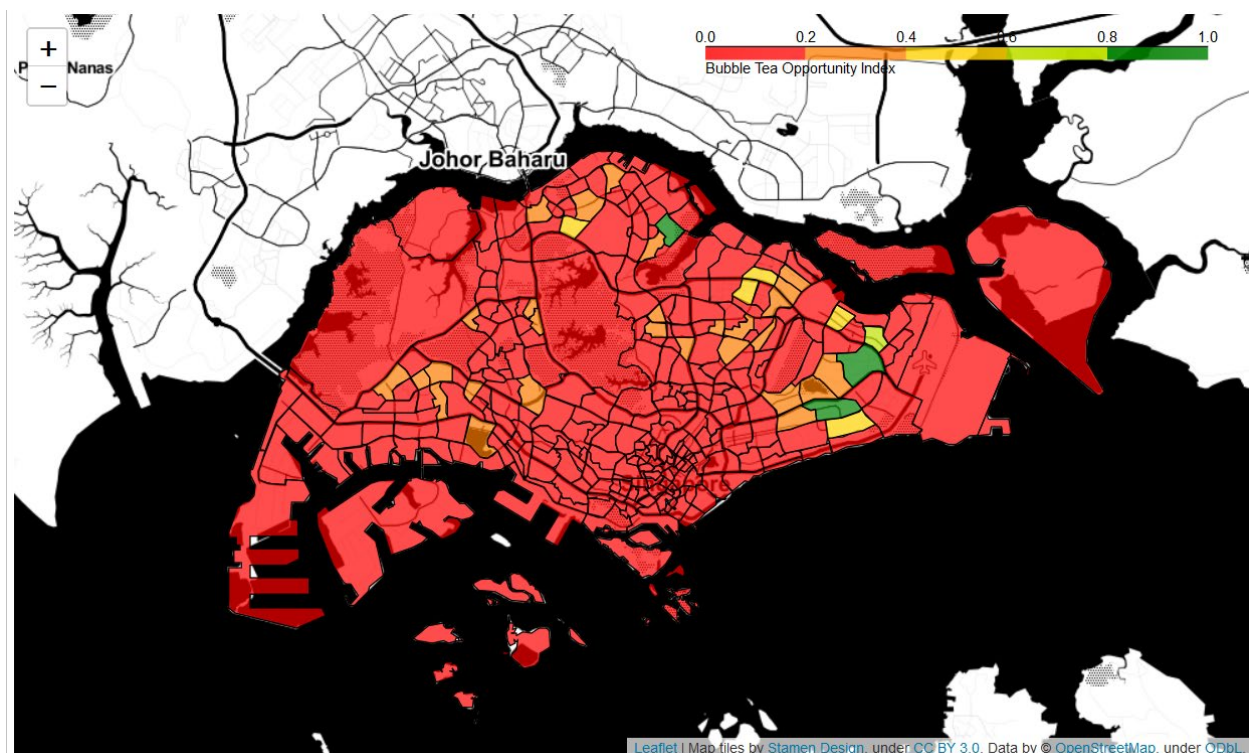
Discussion

Our analysis shows that there are several areas where the opportunity to open bubble tea shops still exist in Singapore. This can be seen by the color coding of each subzone according to the index. Additional information could also be easily seen via the tooltips.

These subzones that have the highest index values include the Bedok North, Tampines East and Yishun East. Other than these prime areas, other subzones with lower index values were also found, such as Pasir Ris Drive. In essence, the map would provide a quick overview for any businessman looking to enter the bubble tea industry in Singapore.

There are certain limitations to our analysis. For one, only residential data was used. Given the small size of Singapore, where people work is also highly relevant. However, such data was not included as I was unable to find it in any public database. This can be added in future iterations of the index.

Additionally, we can also add other factors that might affect potential business to the index. For instance, it is quite likely that places with a higher proportion of entertainment venues such as arcades may be places of higher potential, since people are more likely to spend time around the area and may thus buy more bubble tea.

Conclusion

The purpose of this project was to identify areas in Singapore that is best for a new bubble tea shop. This was accomplished via a choropleth map showing a Bubble Tea Opportunity Index. By gathering data from Foursquare API as well as various public databases, we were able to create an index that showed the best areas in Singapore to open a bubble tea shop. Further improvements can be made by adding more variables to the index, so that it is more comprehensive.

References

1. https://www.mintel.com/blog/foodservice-market-news/milk-tea-craze-bubbles-up-in-southeast-asia

2. https://www.straitstimes.com/videos/consuming-singapore-the-obsession-with-bubble-tea

3. https://www.alliedmarketresearch.com/press-release/bubble-tea-market.html

4. https://en.wikipedia.org/wiki/Postal_codes_in_Singapore

5. https://public.tableau.com/profile/solomon.teo#!/vizhome/FacebookCheckin/SubZone

6. https://data.gov.sg/dataset/master-plan-2014-subzone-boundary-web

7. https://data.gov.sg/dataset/resident-population-by-planning-area-subzone-age-group-and-sex-2015

8. https://static1.squarespace.com/static/56e85bd540261db9be8c125b/t/56eba2a827d4bdff1f7e3083/1458283178494/Target+Market+Project+-+Final+-+Jon+Field.pdf