



Coursera

Applied Data Science Capstone

OPENING A NEW MALL IN JAKARTA CITY, INDONESIA

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Introduction

- ▶ Shopping mall is one of the heart and soul of communities, the foundation of retail economies, and a social sanctuary for teenagers everywhere.
- ▶ In Indonesia, amid rise of e-commerce shopping mall visitors no longer come to shopping malls primarily to buy next season's fashions; they go to socialize, to engage and be entertained. This is a **new trend** for malls to use as leisure venues.
- ▶ Head of the Indonesian Shopping Center Association (APPBI), Alexander Stefanus Ridwan said that **Shopping Mall boast interaction and shopping experience that could not be satisfied by e-commerce.**
- ▶ Indonesia is home to 321 shopping centers of various class and size. Therefore, Opening a shopping malls in Indonesia is one of the challenges which must be overcome by property developer with serious consideration, such as **location of the mall**. The location will drive the business will be success or failure.

Business problem

The objective of this capstone project is to **analyze and select the best locations in Jakarta**, Indonesia to open a new shopping mall. Using data science methodology and machine learning techniques like clustering, this project aims to provide solutions to answer the business question:

“In Jakarta, Indonesia, if a property developer is looking to open a new shopping mall, where would you recommend that they open it?”

Target Audience

- ▶ This project is particularly useful to **property developers and investors** looking to open or invest in new shopping malls in the capital city of Indonesia i.e. Jakarta.
- ▶ **Colliers senior associate director Ferry Salanto** said that, as long as landlords and retailers were willing to **adjust to the trends**, the growth of the occupancy rate would not be affected by online shopping.
- ▶ In order to thrive, Ferry suggested that mall construction projects take into account infrastructure and transportation accessibility in addition to catering to millennials.

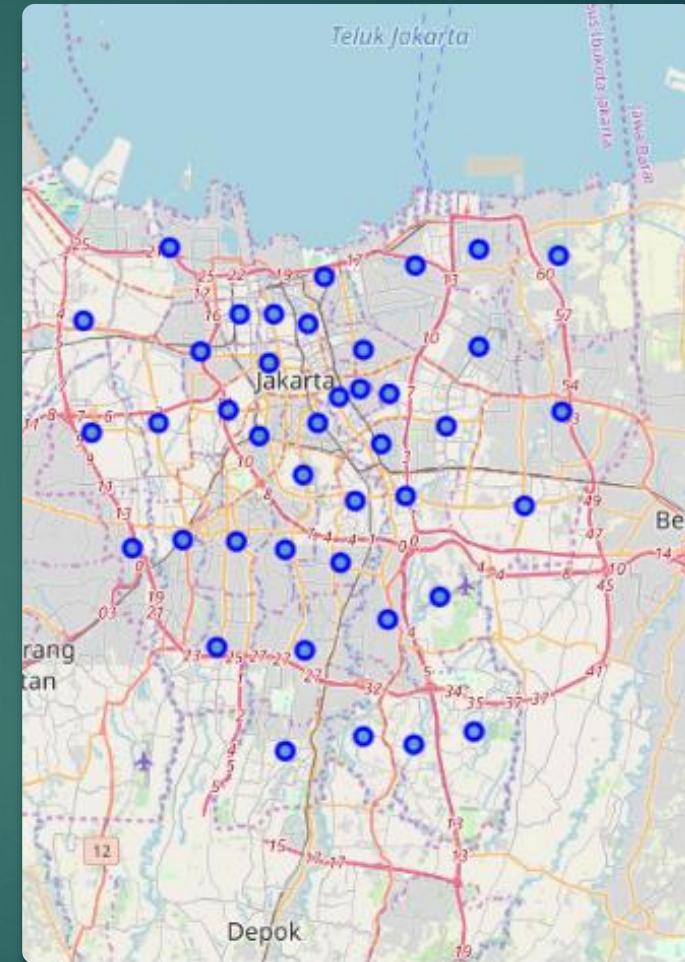
Data and Sources

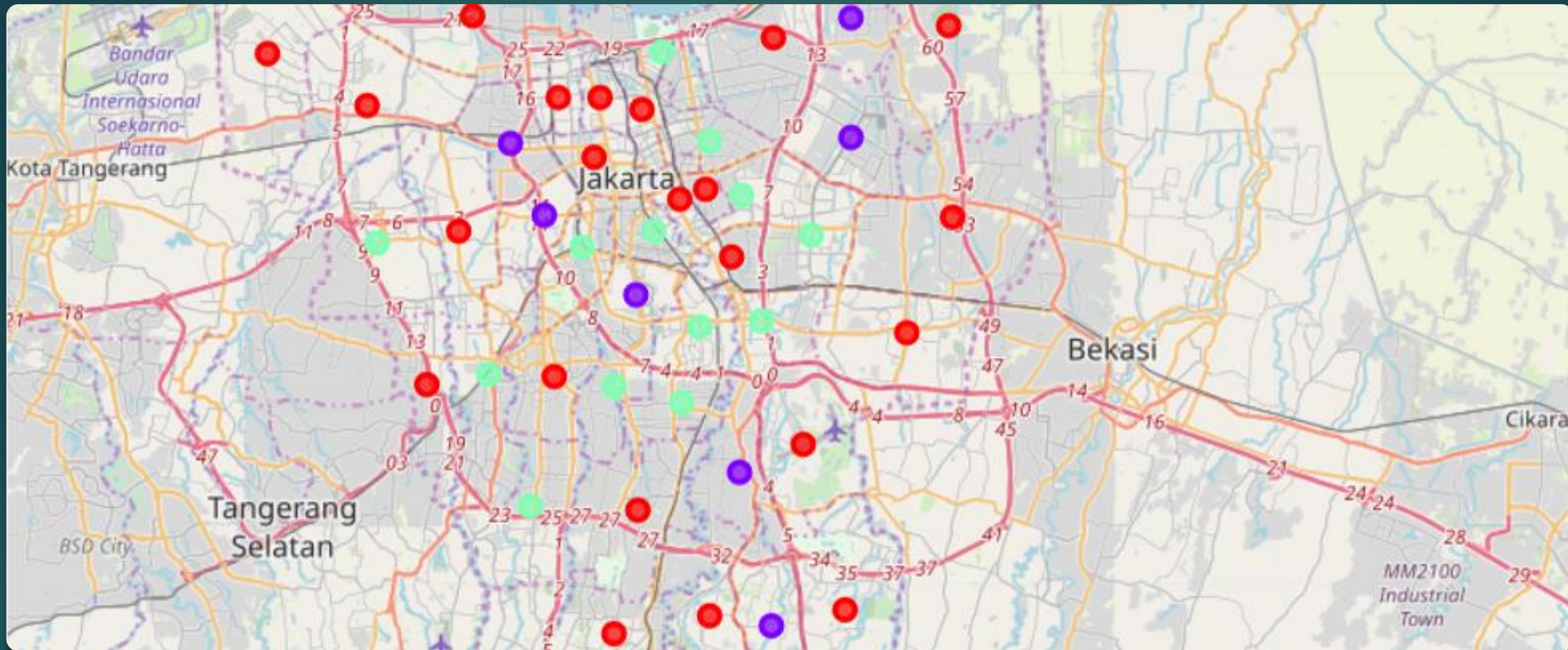
To solve the problem, we will need the following data:

- List of districts in Jakarta.
- Latitude and longitude coordinates of those districts based on Indonesian Census and Goggle Maps (manual) Calibration.
- Venue data, particularly data related to Shopping Mall.
- Data from census in Jakarta were scraped and longitude-latitude data were manually calibrated using Google Maps
http://data.jakarta.go.id/dataset/jumlahkecamatankelurahanrtwda_nkkdkijakarta/resource/1d5b0b_b0-3aa7-482a-9e65-fc03d466efac
- Foursquare API to get the venue data for those neighbourhoods. and the Shopping Malls category.

Methodology

- Populate the data into a pandas DataFrame.
 - Visualize the neighbourhoods in a map using Folium package.
 - Sanity check to make sure that the geographical coordinates data returned by Geocoder are correctly plotted in Jakarta City as shown in image
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- Next, we will use foursquare API to get the top 100 venues that are within a radius of 2000 meters
 - Analyse each neighbourhood by grouping the rows by neighbourhood and taking the mean of the frequency of occurrence of each venue category
 - Perform clustering on the data by using k-means clustering
 - Identify which neighbourhoods have higher concentration of shopping malls while which neighbourhoods have fewer number of shopping malls.





- Cluster 0: Neighbourhoods with low number to no existence of shopping malls
- Cluster 1: Neighbourhoods with high concentration of shopping malls
- Cluster 2: Neighbourhoods with moderate number of shopping malls

Discussion

- ▶ Most of the shopping malls are concentrated in the south area of Jakarta city
- ▶ Great opportunity and high potential areas to open new shopping malls as there is very little to no competition from existing malls in cluster 0
- ▶ Meanwhile, shopping malls in cluster 1 are likely suffering from intense competition due to oversupply and high concentration of shopping malls
- ▶ Therefore, this project recommends property developers to capitalize on these findings to open new shopping malls in neighbourhoods in **cluster 0 with little to no competition.**
- ▶ Property developers with unique selling propositions to stand out from the competition **can also open new shopping malls in neighbourhoods in cluster 2 with moderate competition.**
- ▶ Lastly, property developers are advised **to avoid neighbourhoods in cluster 1** which already have high concentration of shopping malls and suffering from intense competition.

Limitations, Suggestions and conclusion

- ▶ There are other factors such as population and income of residents that could influence the location decision of a new shopping mall
- ▶ This project made use of the free Sandbox Tier Account of Foursquare API that came with limitations as to the number of API calls and results returned
- ▶ The neighbourhoods in **cluster 0 are the most preferred locations** to open a new shopping mall.
- ▶ The findings of this project will help the relevant stakeholders to capitalize on the opportunities on high potential locations while avoiding overcrowded areas in their decisions to open a new shopping mall.