

ANALYSIS OF HOUSING BUSINESS OPPORTUNITY IN JAKARTA

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November 15th, 2020

1. Introduction

1.1. Background

Housing is always be an issue in a big city such as Jakarta, Indonesia. Jakarta is the largest city of Indonesia which also counted as a province. Jakarta is divided into 5 regions, i.e. Jakarta Pusat, Jakarta Utara, Jakarta Timur, Jakarta Selatan, and Jakarta Barat. With total population of 10,770,487 person according to 2019 census and annual population grew of 3.7%, the demand of housing is significant. In addition, Jakarta as capital city offer larger work opportunity which attract people from other part of Indonesia to transfer for work. Therefore, it is advantageous for government or residential building developer to evaluate the distribution of household and the available residential building.

1.2. Problem

Data that might contribute to determining the residential business opportunity might include number of household and number of residential building.

1.3. Interest

Government of Jakarta and residential building developer would be very interested in this analysis. Other entity that might interested in this analysis is investor.

2. Data acquisition and cleaning

2.1. Data sources

The list of districts and subdistricts of each region of Jakarta city are scarped from wikipedia site https://id.wikipedia.org/wiki/Daftar_kecamatan_dan_kelurahan_di_Daerah_Khusus_Ibukota_Jakarta. While the number of household based on data of year 2019 is obtained from data published by Statistics of DKI Jakarta Province (<https://jakarta.bps.go.id>).

The geopy library will be used to obtain the coordinate location of each sub-district. Then, the data of residential building will be extracted from Foursquare API within area with radius of 2 km from the coordinate of the subdistrict.

2.2. Data cleaning

Geopy library does not have coordinate data for one subdistrict. Therefore, this subdistrict will not be included in the further process. Duplicates will also be removed from the dataset.

3. Methodology

Province of DKI Jakarta consists of five regions and one regency. The analysis presented in this work will focused on the five regions, i.e. Central Jakarta, North Jakarta, East Jakarta, South Jakarta, and West Jakarta. In Indonesian language these regions are called Jakarta Pusat, Jakarta Utara, Jakarta Timur, Jakarta Selatan, and Jakarta Barat. Each of the region consist of several districts and each district is consist of subdistricts.

The venues of interest are obtained using the Foursquare API. The Foursquare API function extract venues that are located within an area with radius defined by the user. The center of the area of interest is also defined by the user. Using the coordinate of subdistricts, the venues inside the Foursquare venue categories “Residence” (category ID: 4e67e38e036454776db1fb3a) and “Professional & Other Places” (category ID: 4d4b7105d754a06375d81259) are extracted. Missing data and duplicates are removed from the data.

Then, the total number of residential building in each region will be compared with the number of households.

The hypothesis is that the demand of housing is high in the region that the number of households is high, and the number of residential building is low.

4. Results

DKI Jakarta consist of 44 districts and 260 subdistrict. The maps of DKI Jakarta with indication of location of its subdistrict is shown in Figure 1.

Total population of DKI Jakarta in year 2019 is 10,770,487 people. The population density distribution is shown in Figure 2. The highest population density is in Central Jakarta (Jakarta Pusat) followed by West Jakarta (Jakarta Barat).

The total number of household in DKI Jakarta is shown in Figure 3. The region with number of household above average are East Jakarta (Jakarta Timur), South Jakarta (Jakarta Selatan), and West Jakarta (Jakarta Barat).

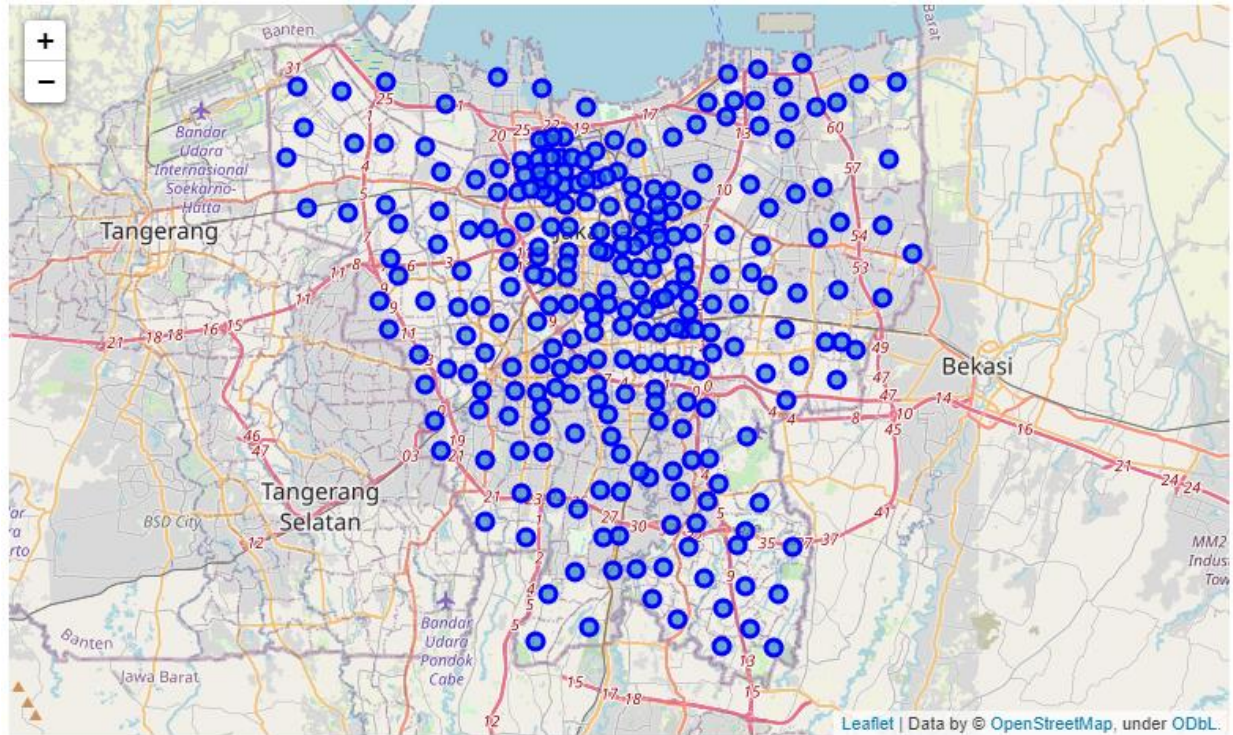


Figure 1. DKI Jakarta with its subdistricts.

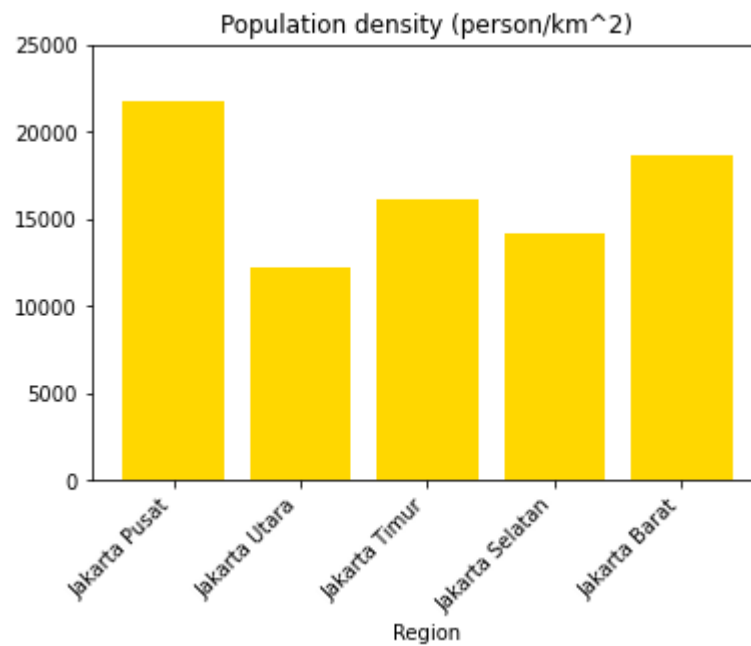


Figure 2. Population density of each region in the DKI Jakarta province

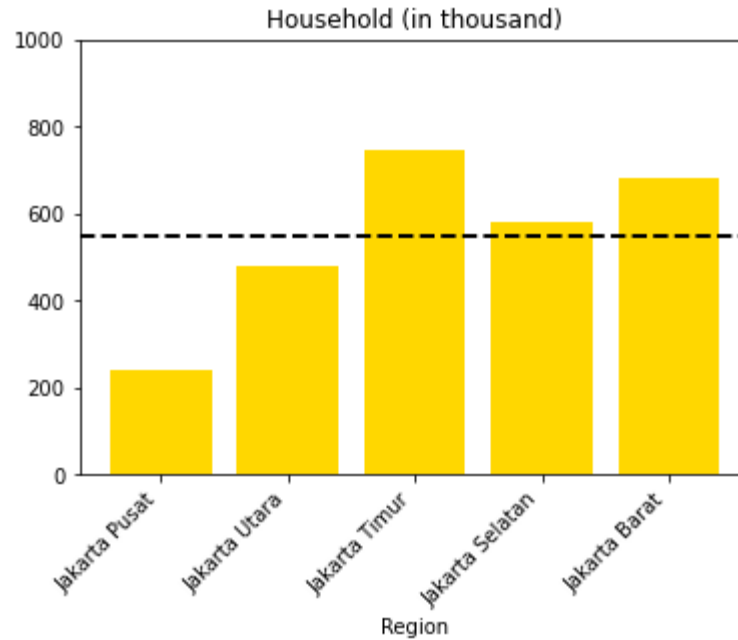


Figure 3. Number of household of each region in the DKI Jakarta province. The black dotted line shows the average value of the household.

The total number of residences building in DKI Jakarta is 3432. The coordinate of each building in each subdistrict is shown in Table 1.

Table 1. List of residential building with its coordinate

	SubDistrict	SubDistrict Latitude	SubDistrict Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Cempaka Putih Barat	-6.178733	106.862485	Sentosa Residence Jakarta™	-6.176731	106.864743	Residential Building (Apartment / Condo)
1	Cempaka Putih Barat	-6.178733	106.862485	Apartment Mediterania Kemayoran	-6.178106	106.858698	Residential Building (Apartment / Condo)
2	Cempaka Putih Barat	-6.178733	106.862485	The Green Pramuka, Tower Faggio	-6.187980	106.871143	Residential Building (Apartment / Condo)
3	Cempaka Putih Barat	-6.178733	106.862485	The Green Pramuka City	-6.188247	106.872218	Residential Building (Apartment / Condo)
4	Cempaka Putih Barat	-6.178733	106.862485	The Green Pramuka Apartment - Tower Chrysant	-6.188469	106.872447	Residential Building (Apartment / Condo)
...
3427	Srengseng	-6.206499	106.754106	Panti Asuhan Yatim Dan Dhu'Afa	-6.195976	106.742668	Housing Development
3428	Srengseng	-6.206499	106.754106	Taman Meruya Ilir	-6.198684	106.738970	Housing Development
3429	Srengseng	-6.206499	106.754106	Permata Mediterania	-6.222047	106.762390	Housing Development
3430	Srengseng	-6.206499	106.754106	Villa Kelapa Dua	-6.213339	106.766105	Assisted Living
3431	Srengseng	-6.206499	106.754106	Komplek DPR I Jakarta Barat	-6.207949	106.736936	Assisted Living

Based on the list, the residential building is grouped for each region to find the total number of residential building in the region (see Figure 4).

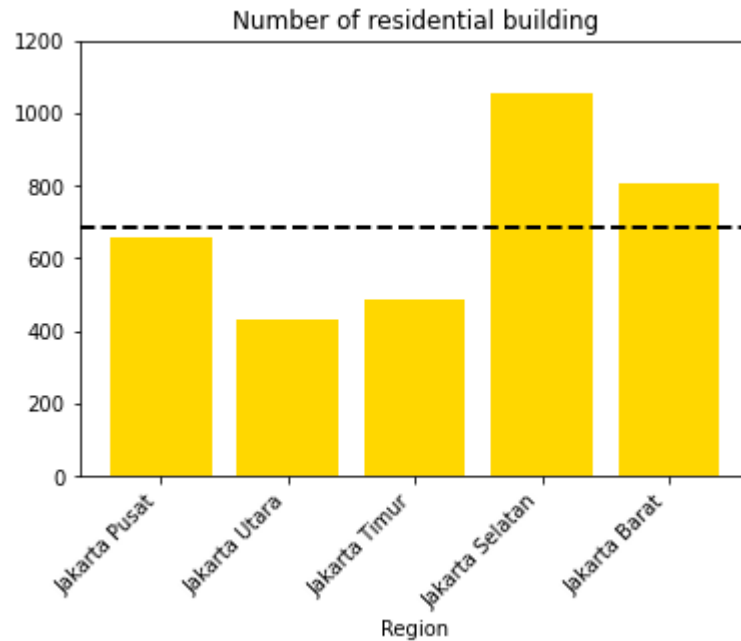


Figure 4. The number of residential building in each region of DKI Jakarta. The black dotted line shows the average number of residential building.

5. Discussion

The population density is a good measure to know the concentration of population however, this can bias the need of housing because based on Indonesian culture, young people will stay with their parents. Based on data in year 2019, 38% of the population in DKI Jakarta is in the age group 0 – 25 years old which means that they might not increase the demand of housing. Therefore, number of households is used as measure of housing demand.

Three regions in DKI Jakarta have number of households above average: East Jakarta (Jakarta Timur), South Jakarta (Jakarta Selatan), and West Jakarta (Jakarta Barat). While the regions with number of the residential building that are lower than the average are Central Jakarta (Jakarta Pusat), North Jakarta (Jakarta Utara), and East Jakarta (Jakarta Timur).

Based on the hypothesis, the region that might be promising for residential business is East Jakarta (Jakarta Timur) since it has number of households above average and the number of residential building below average.

Even though the result is promising, there are limitation of this work. The number of residential building extracted from Foursquare API is not reflecting the factual number of houses or apartment building. The reason is that the most of the residential building in Indonesia is single-family home

and not inside a real estate. This type of residential building in Foursquare API database is categorized as "Home (Private)", a subcategory of "Residence". Venues in this category are privacy sensitive which is not visible for public.

6. Conclusions

Based on the data extracted from Foursquare API and data obtained from Statistics of DKI Jakarta Province, the region that might be promising for residential business is East Jakarta (Jakarta Timur).