

Executive Summary

This preliminary report studies the provided dataset and examines the factors that could affect the rent prices for HDB flats in Singapore. As rental prices are determined by demand and supply forces, influence of each of the forces is examined. In terms of demand, it can be broken down to be the number of rent-seekers along with their income, their considerations such as the age of the flat, flat size, proximity to MRT station and other amenities such as primary schools, supermarkets, shopping centres, and their individual motivation behind renting. In terms of supply, the number of built HDB and completed private residential properties are considered.

The mentioned forces above are extracted from publicly available government data sources such as Singapore Department of Statistics websites (Singstats) and OneMap by simply downloading them or using Python and Application Programming Interface (API) to call for the data. Exploratory Data Analysis (EDA) and statistical tests are then employed to determine the significance of their influences on the rent.

1. Provided Dataset

The provided dataset contains 142,826 rental records from January 2021 to September 2024. There are a total of twenty-seven towns found. Reasonable number of records are recorded across the four years and twenty-seven towns, except Tengah in 2024. Overview of the data found that rents differ significantly across the towns, with the central scoring the highest annual average rent consistently across the four years. This suggests that the town played a significant factor in the rents. A time series analysis also showed that there is an increasing trend in rents across all towns, albeit the trend is less significant in the period from 2023 to 2024. This indicates that some events or human behaviour have changed as time passes.

2. Demand-related Forces

Due to the time constraint, this report shall only study the influence of the age of the flat, flat size, proximity to MRT station on the rents, and the population size as a function of the number of rent-seekers. Based on the provided dataset, there is observation that the larger the flat size, the higher the rental amount. This aligns with common sense expectation. It is also observed that newer flat commands higher rent in most of the towns except Kallang/Whampoa, Queenstown and Yishun. These three towns have average rents in old flats being as high as the new flats.

Based on the calculated walking time between the flat and the nearest MRT from OneMap, its influence on the rent is not clearly shown as the median and range of the rents do not differ significantly among the bins of walking time. There is also insufficient data to suggest that the annual rate of increase in the resident or non-resident population is a factor to the annual rental rate of change.

3. Supply-related Forces

The publicly available data on the number of completed HDB and private residential properties cover till 2023 and both recorded a rise from the period of 2021 to 2023. However, due to the relatively short period between 2021 and 2023 that is within the scope of the provided data, it is inconclusive to consider the influence of the supply of residential properties on the rents.

4. Conclusion

Based on the analysis conducted, some of the examined forces such as town, age of the flat, flat size are found to be key factors of the rents. Further analysis on longer time period may better determine the influence of some of the above-mentioned forces and other underlying factors may also discovered.