

Airbnb Listing Analysis and Recommendation in Bangkok



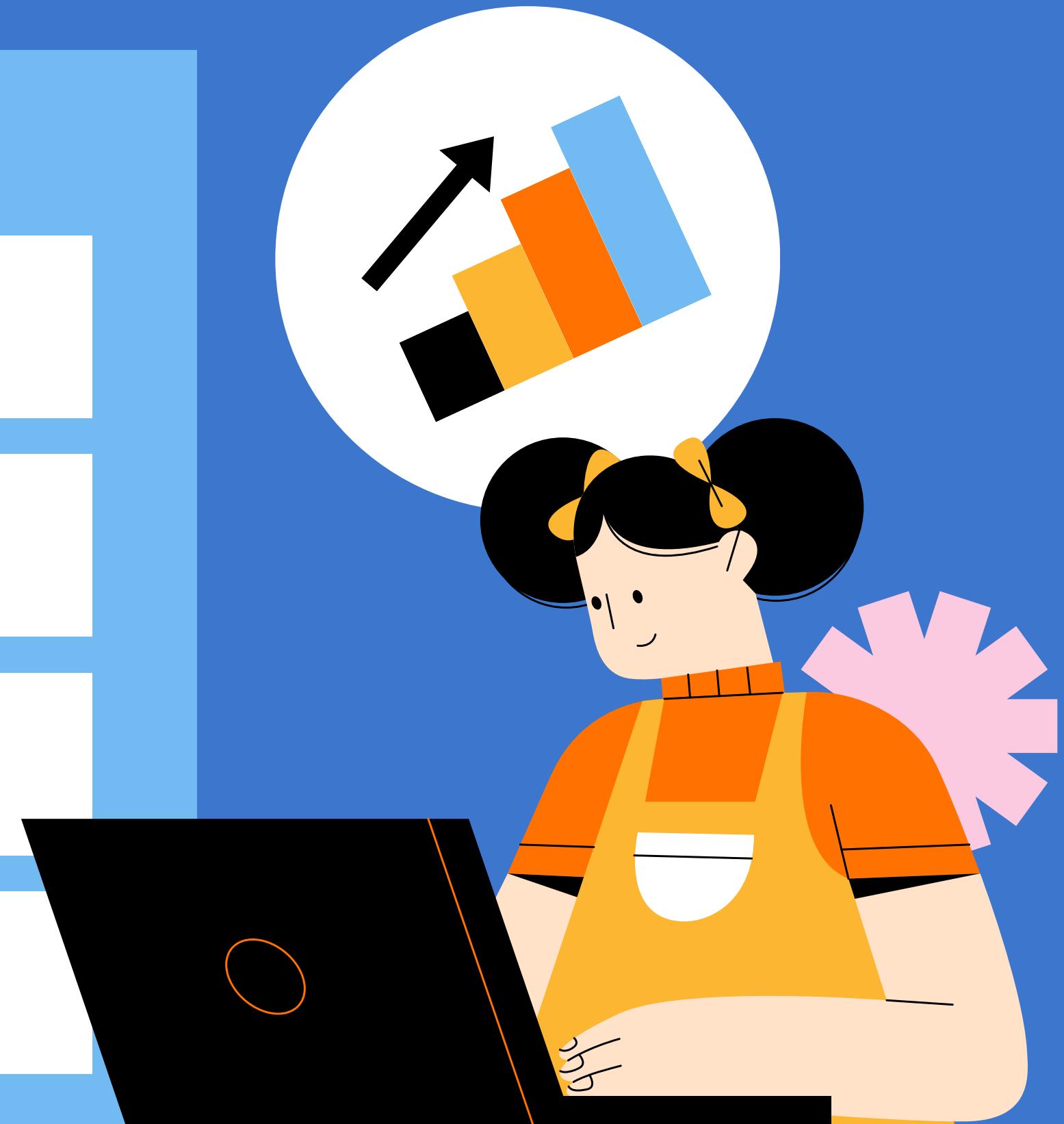
OUTLINE

Business Overview

Data Understanding

Exploratory Data Analytics

Conclusion



Business Overview

Business Background

Airbnb has revolutionized the short-term rental market by providing a platform that connects property owners with travelers seeking unique accommodations.

Reviews play a crucial role in the popularity of an Airbnb listing. According to Airbnb reports, approximately 70% of guests leave a review after their stay.

As a Chief Business Intelligence in **Andries Properties Corp**, my role is to provide insightful recommendations to property owners looking to list their properties on **Airbnb in Bangkok**. By data analytics and visualization, I provide insights, recommendations, and strategy to help property owners in Bangkok start to list their property in Airbnb.

Key Metrics of Analysis



Price



Reviews



Empty Ratio

Goal Statement

The objective of this analysis is to provide data-driven recommendations to answer the business statement above. By leveraging Airbnb listing in Bangkok data will provide:

- Identify the best **neighbourhood recommendation** based on best pricing data, the most popular neighbourhoods based on reviews data, and the least empty ratio.
- Determine the **most recommended room types** based on pricing data, the most popular neighbourhoods based on reviews data, and the least empty ratio.
- Analyze **pricing segmentation** to establish an optimal pricing strategy.



Data Understanding

The description of each column in the DataFrame (df) typically used in Airbnb Bangkok data analysis. The description includes the column name, data type, and an explanation of the information contained in each column

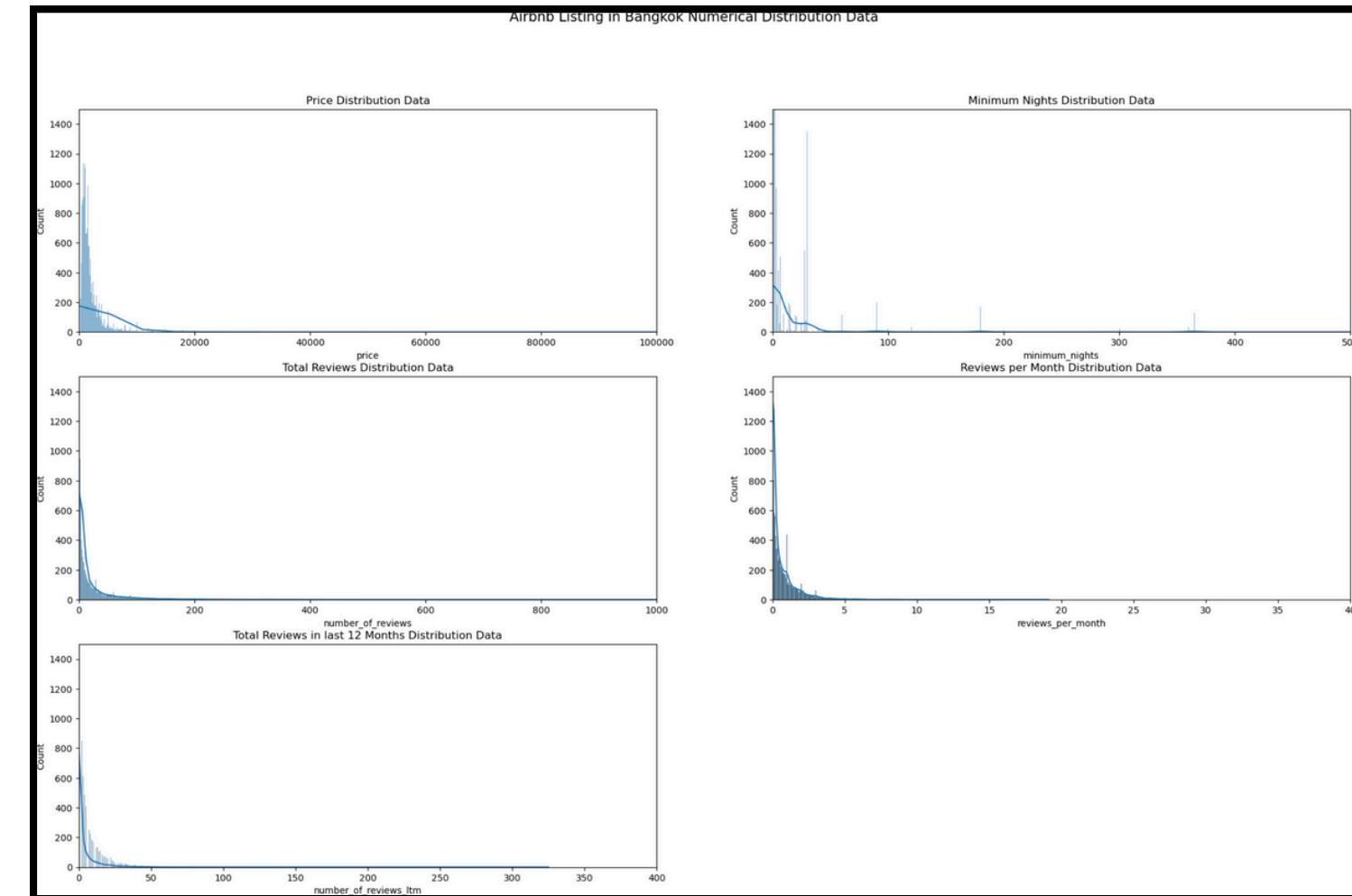
Column Name	Data Type	Description
<code>id</code>	Object	Airbnb's unique identifier for the listing.
<code>name</code>	Object	Name of the listing.
<code>host_id</code>	Object	Airbnb's unique identifier for the host/user.
<code>host_name</code>	Object	Name of the host (usually first name).
<code>neighbourhood</code>	Category	Geocoded neighborhood based on latitude and longitude.
<code>latitude</code>	Float	Latitude coordinate (WGS84 projection).
<code>longitude</code>	Float	Longitude coordinate (WGS84 projection).
<code>room_type</code>	Category	Type of room: Entire home/apt, Private room, Shared room, or Hotel.
<code>price</code>	Float	Daily price in local currency.
<code>minimum_nights</code>	Integer	Minimum number of nights required for booking.
<code>number_of_reviews</code>	Integer	Total number of reviews received.
<code>last_review</code>	DateTime	Date of the most recent review.
<code>reviews_per_month</code>	Float	Average reviews per month.
<code>calculated_host_listings_count</code>	Integer	Number of listings the host has in the current region.
<code>availability_365</code>	Integer	Number of days the listing is available in a year. Note: a listing may be unavailable because it has been booked by a guest or blocked by the host.
<code>number_of_reviews_ltm</code>	Integer	Number of reviews received in the last 12 months.
<code>recency</code>	Integer	Number of days since listing receive reviews from last review dates.
<code>revenue_at_least</code>	Integer	Number of revenue received by hosts based on <code>price</code> x <code>minimum_nights</code> x <code>number_of_reviews</code>
<code>empty_listing</code>	Integer	Identifier for listings which have 0 <code>number_of_reviews</code> (1) and listings which have more than 0 <code>number_of_reviews</code> .

Exploratory Data Analytics

Insight of Numerical Descriptive Statistic Data:

Data is distributed unevenly and form a right-skewed histogram plot, therefore the main central tendency of measurement using **median** as the main numerical data distribution reference and for data correlation test between 2 numerical data using **Spearman Test**

Numerical Descriptive Statistic Data

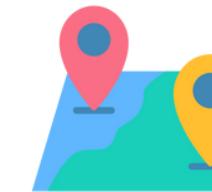


Exploratory Data Analytics

Insight of Airbnb Bangkok map visualization:



Total Airbnb Listings: 15,854



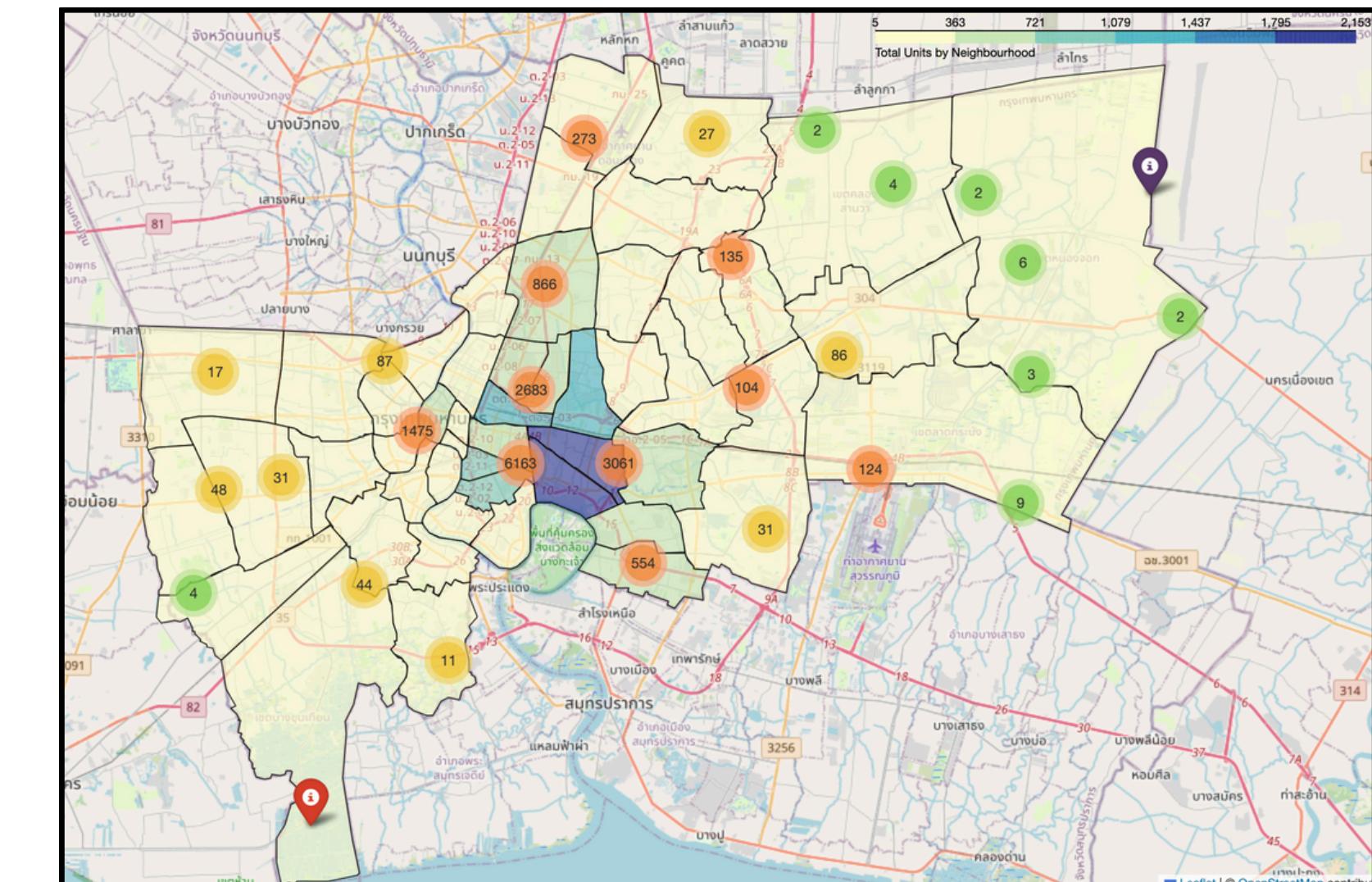
Total Neighbourhoods

50

Most of the Airbnb listings are located in the center of Bangkok considering the tourism and shopping areas in the downtown

Vadhana and Khlong Toei are 2 neighbourhoods with the most Airbnb listing in Bangkok with over than 2000 listings

Airbnb Bangkok Listing Map Visualization



Data Correlation Analysis



Exploratory Data Analytics

Insight Correlation of median_price and total units in every neighbourhood:



P-value:
0.038

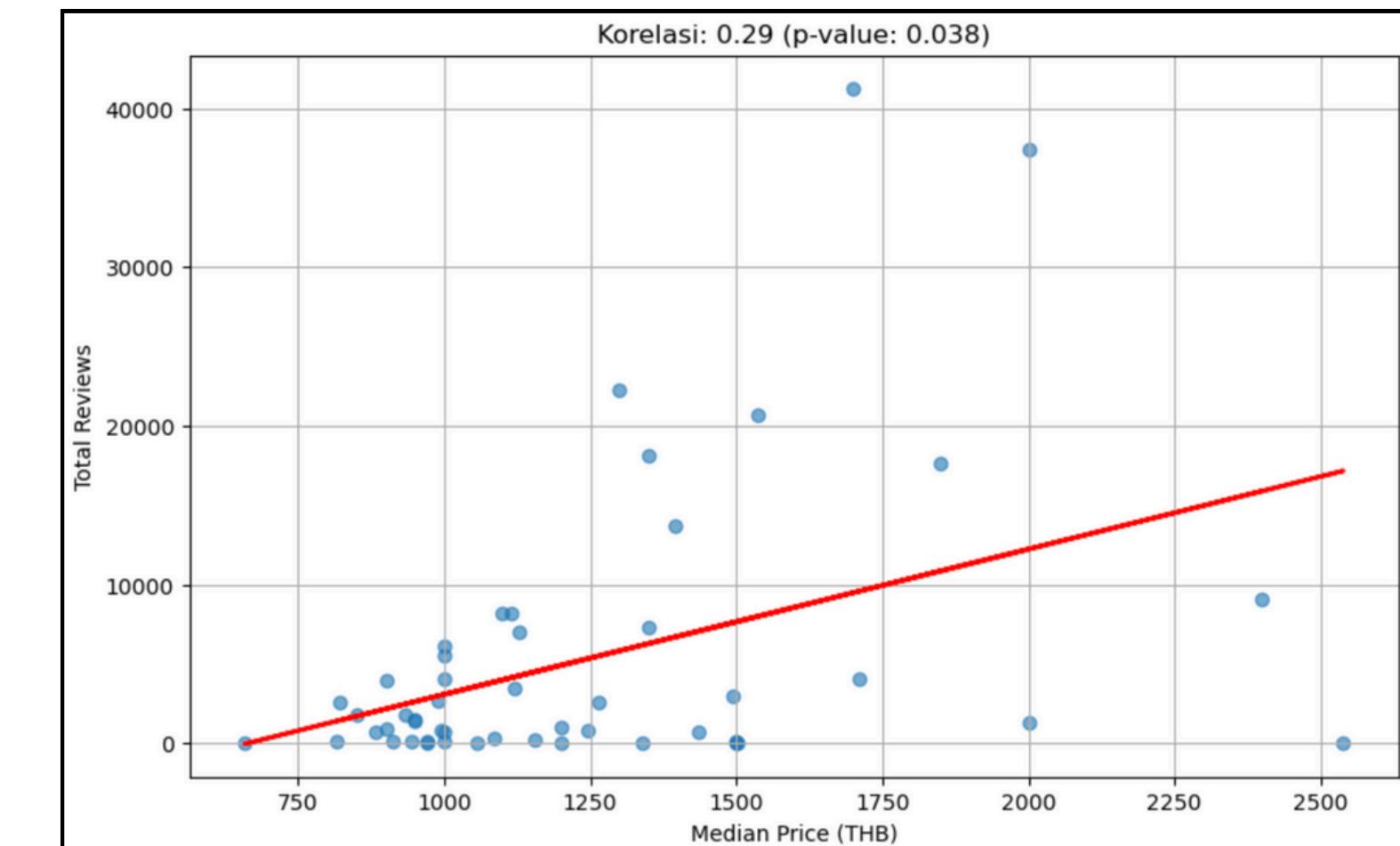
P-value < 0.05, then failed reject H0.
Therefore there is **enough evidence** and proof
to state that there is correlation between
median_price and number_of_reviews in every
neighbourhood



Correlation Coefficient:
0.29

Properties with a **higher** number of reviews
are associated with **higher** median prices.

Correlation number_of_reviews with
median_price in every neighbourhood



Exploratory Data Analytics

Insight Correlation of median_price and total units in every neighbourhood:



P-value:
0.017

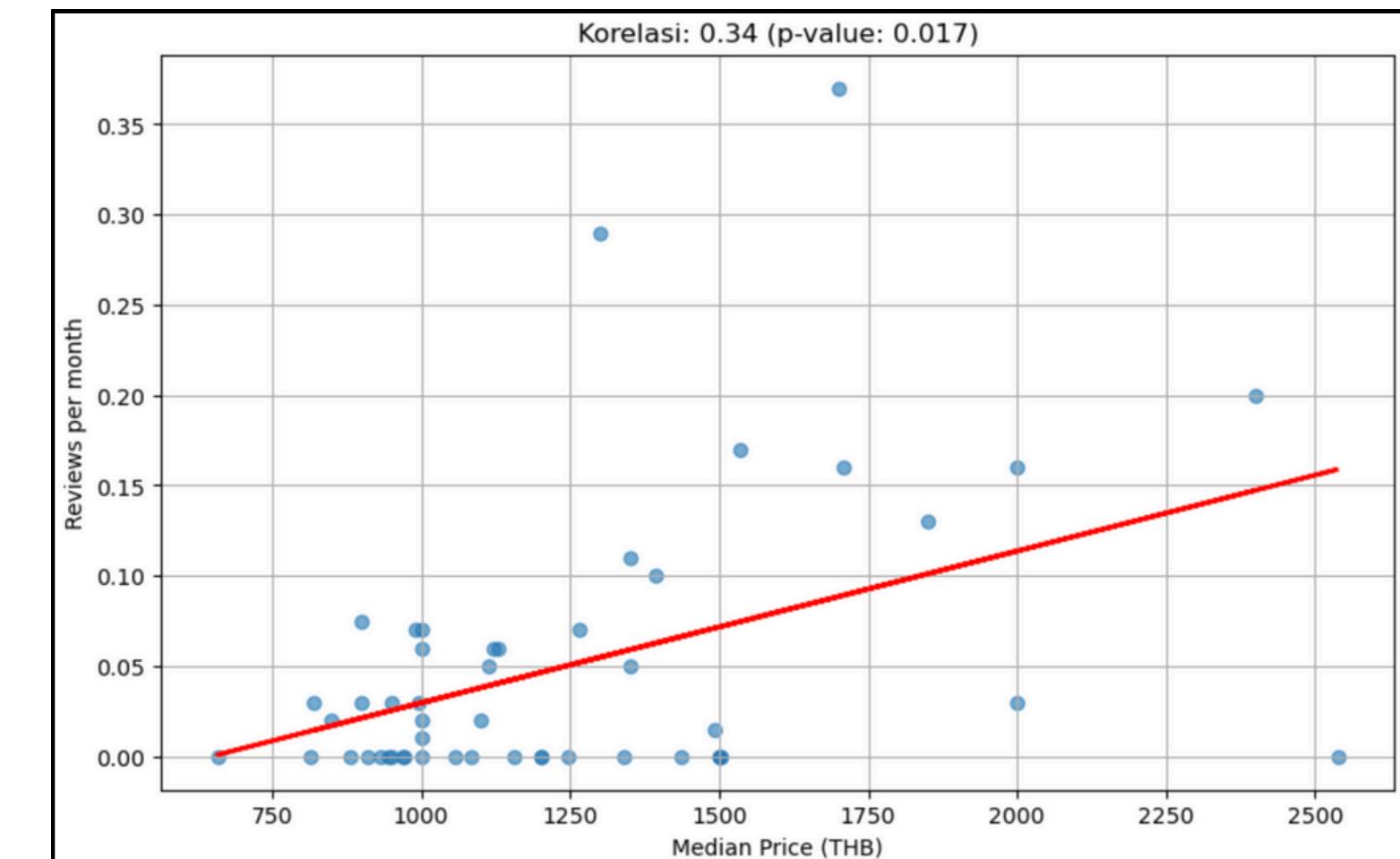


Correlation Coefficient:
0.34

P-value < 0.05, then failed reject H₀.
Therefore there is **enough evidence** and proof
to state that there is correlation between
median_price and reviews_per_month in every
neighbourhood

Properties with a **higher** reviews per month
are associated with **higher** median prices.

**Correlation reviews_per_month with
median_price in every neighbourhood**



Exploratory Data Analytics

Insight Correlation of median_price and total units in every neighbourhood:



P-value:
0.041

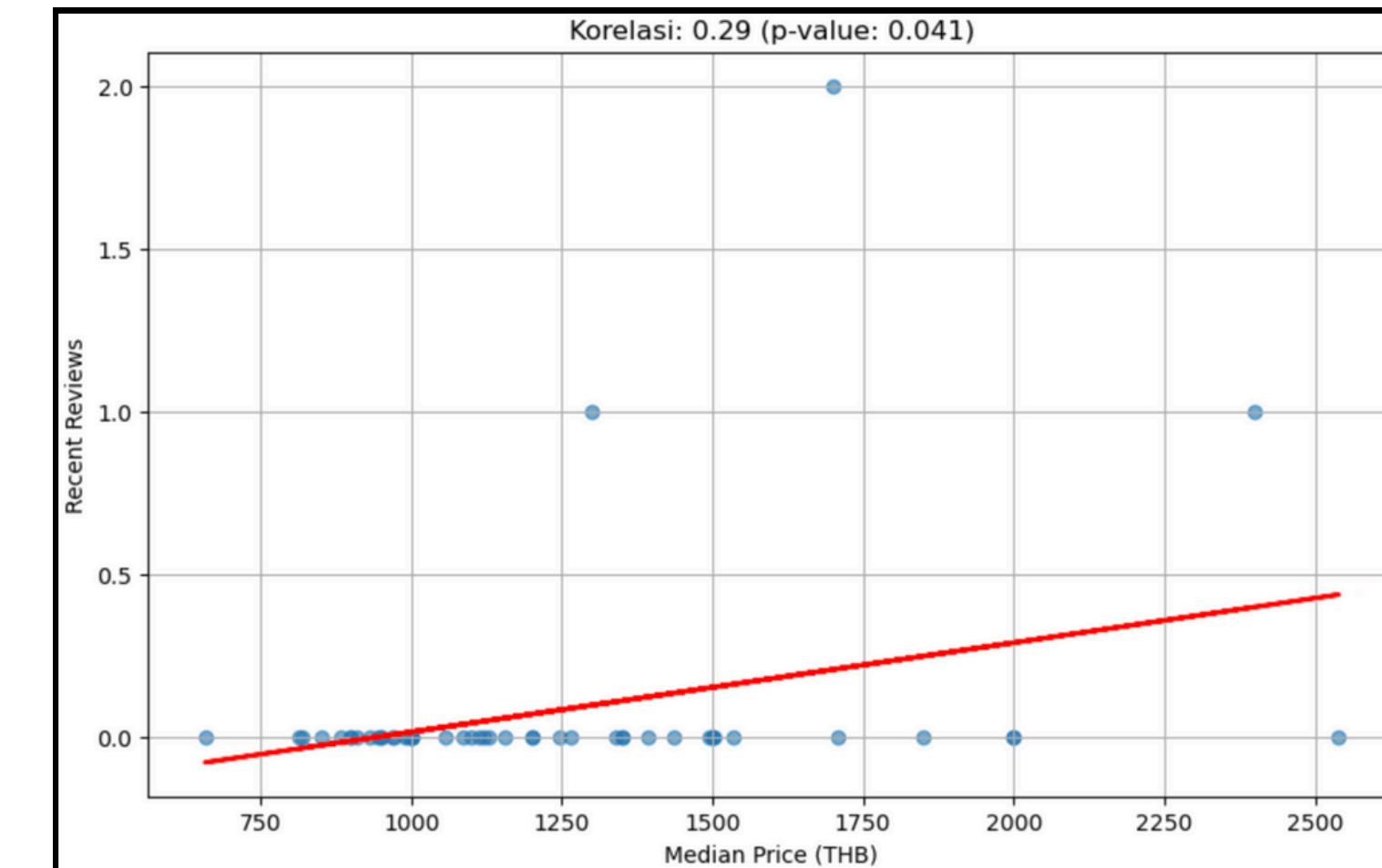


Correlation Coefficient:
0.29

P-value < 0.05, then failed reject H0.
Therefore there is **enough evidence** and proof
to state that there is correlation between
median_price and number_of_reviews_ltm in
every neighbourhood

Properties with a **higher** number of reviews in
last 12 months are associated with **higher**
median prices.

Correlation number_of_reviews_ltm with
median_price in every neighbourhood



Exploratory Data Analytics

Insight Correlation of median_price and total units in every neighbourhood:



P-value:
0.031

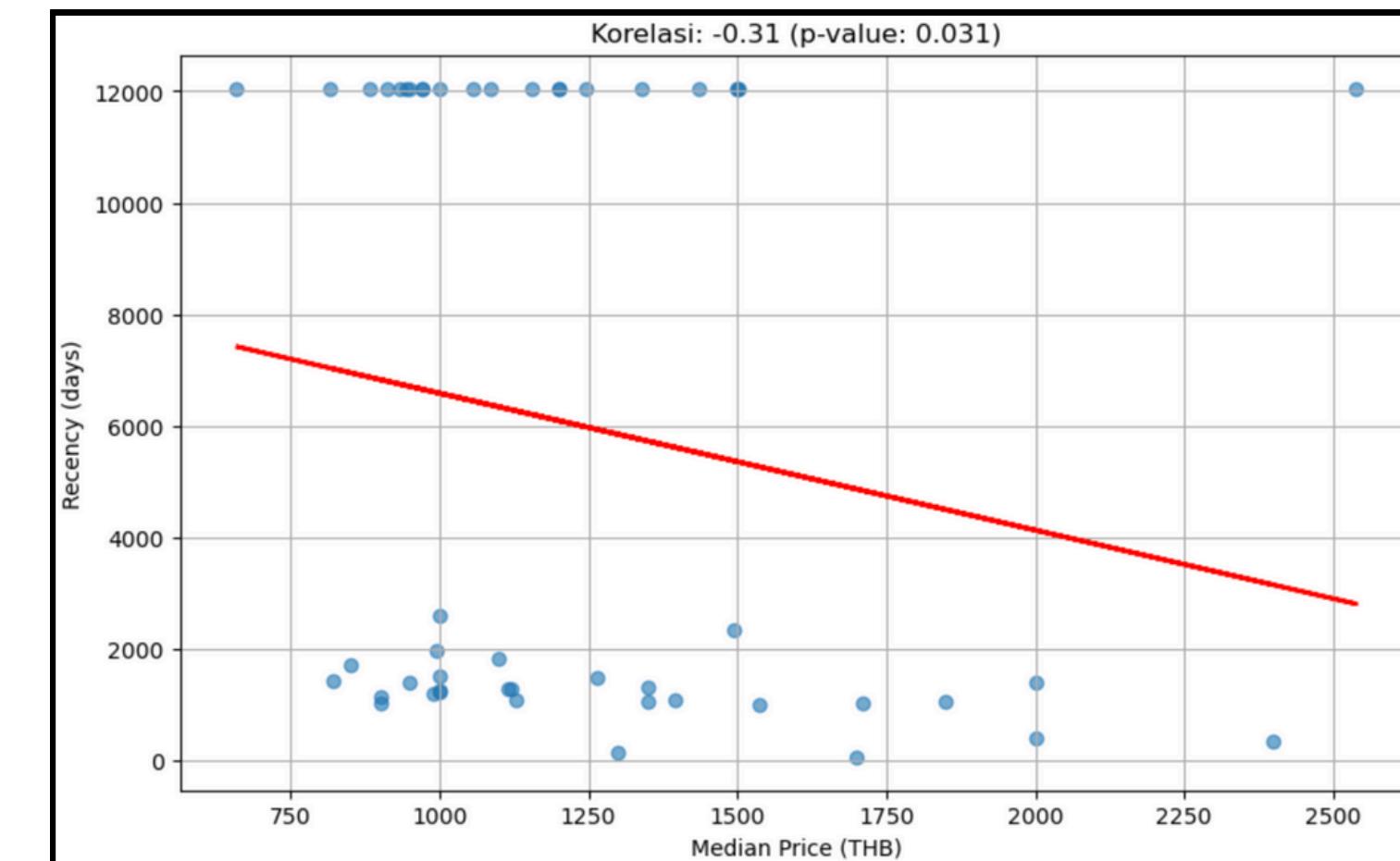


Correlation Coefficient:
-0.31

P-value < 0.05, then failed reject H₀.
Therefore there is **enough evidence** and proof
to state that there is correlation between
median_price and last_review in every
neighbourhood

The **more recent** reviews are associated with
higher median prices, where properties with
fresher feedback may command higher prices.

Correlation last_review with median_price in
every neighbourhood



Exploratory Data Analytics

Insight Correlation of median_price and total units in every neighbourhood:



P-value:
0.044

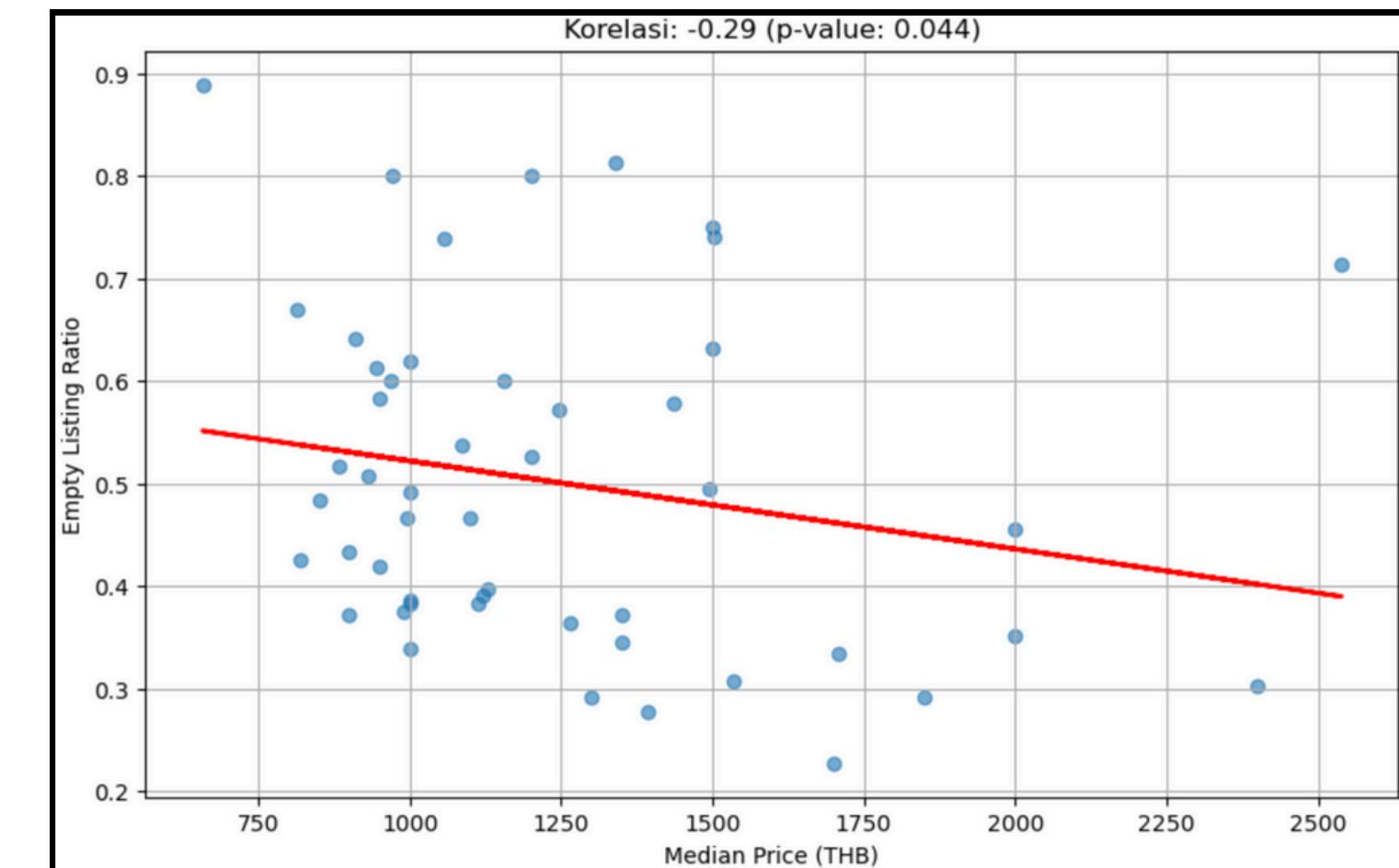


Correlation Coefficient:
-0.29

P-value < 0.05, then failed reject H₀.
Therefore there is **enough evidence** and proof
to state that there is correlation between
empty ratio and median_price in every
neighbourhood

The **least empty** listings are associated with
higher median prices, where properties with
higher occupancy may command higher
prices.

Correlation empty_ratio with median_price in
every neighbourhood





Analysis of Neighbourhood Recommendation

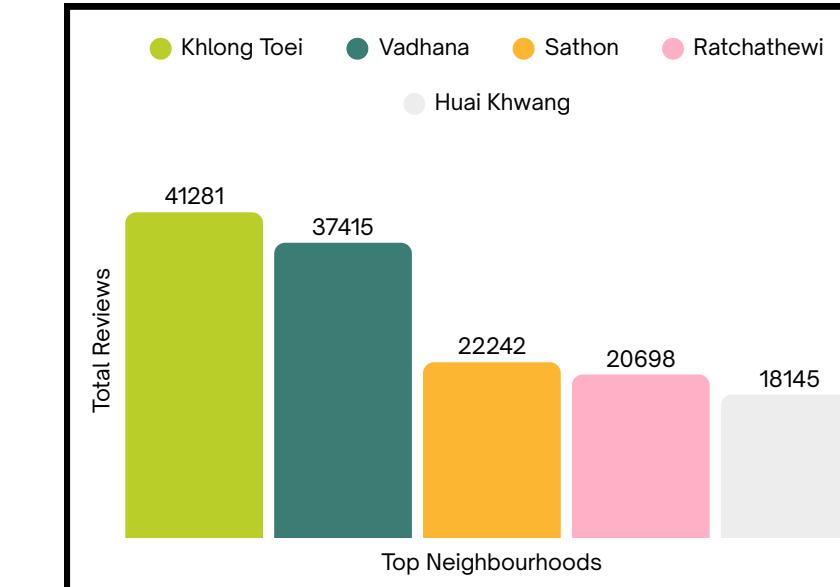


Exploratory Data Analytics

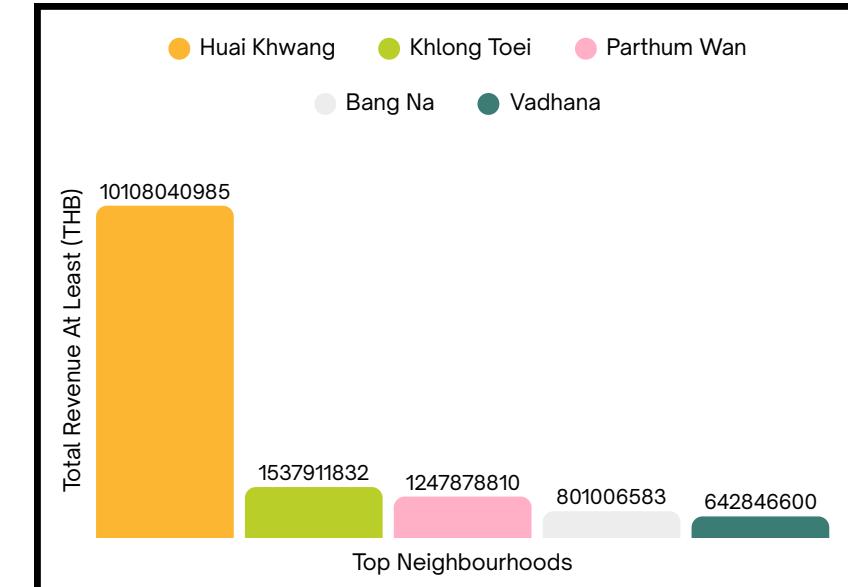
Insight of Pricing Neighbourhood Analysis:

- **Khlong Toei** has the highest total reviews (occupancy)
- **Revenue at least** is the way to get information related market capitalization prediction for each neighbourhood.
- **Huai Khwang** is neighbourhood with the highest revenue_at_least with more than THB 10 billion, with over 6 times larger than Khlong Toei which is the second highest with around THB 1.53 billion
- Higher median price does not mean the higher revenue due to there are another main factors (minimum nights and reviews/occupancy)
- **Khlong Toei** is the highest `median_revenue_at_least`, which mean the listings' revenue distribution is better than Huai Khwang
- **Top neighbourhood** recommendation based on pricing:
 - Huai Khwang due to highest total revenue
 - Khlong Toei due to highest median revenue

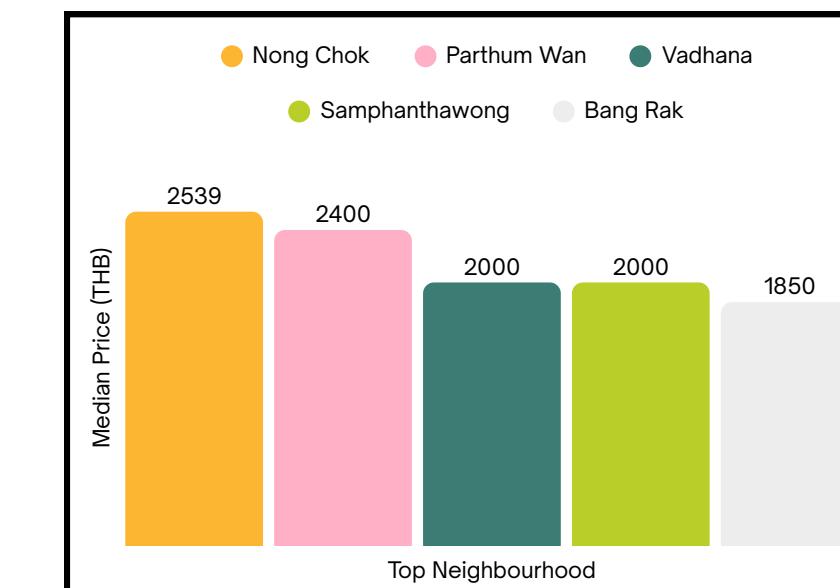
Top 5 Total Reviews (Occupancy)



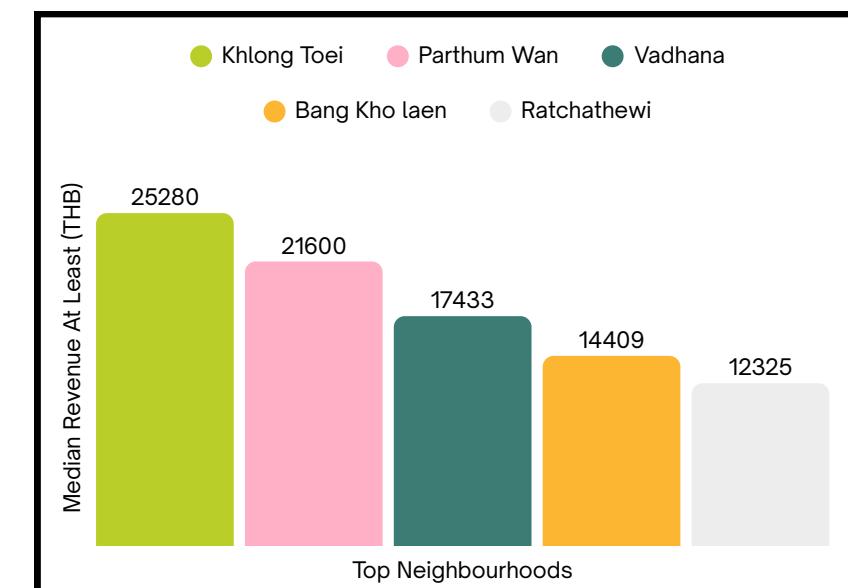
Top 5 Total Revenue At Least



Top 5 Median Price



Top 5 Median Revenue At Least



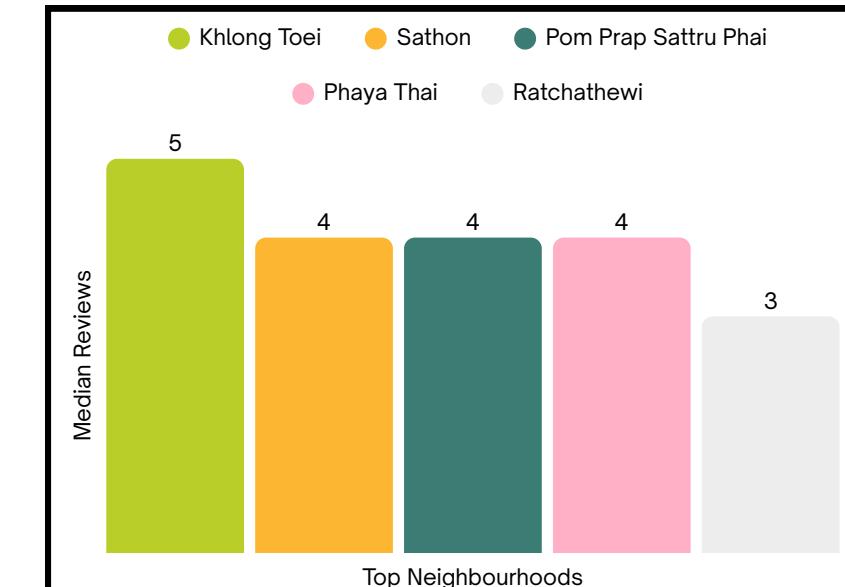
Exploratory Data Analytics

Insight of Popularity Neighbourhood Analysis:

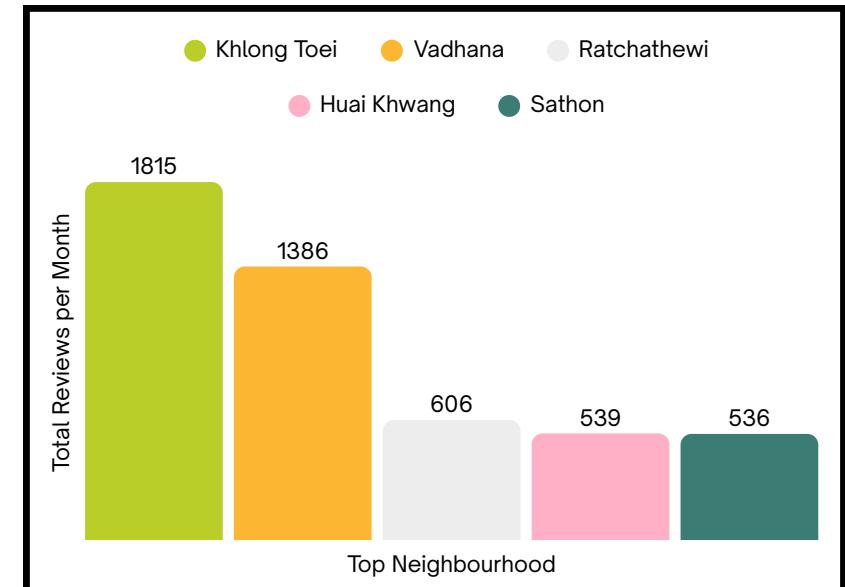
Khlong Toei is the neighbourhood which dominate the popularity analysis due to the top of:

- Median reviews per listing, means overall listings in Khlong Toei received high amount of reviews
- Total reviews per month, means overall listings in Khlong Toei received constant and continuous reviews every month
- Total recent reviews, means overall listings in Khlong Toei received the most reviews in the last 12 months
- Median last reviews, means overall listings in Khlong Toei received the most fresh reviews with median last reviews within 75 days.

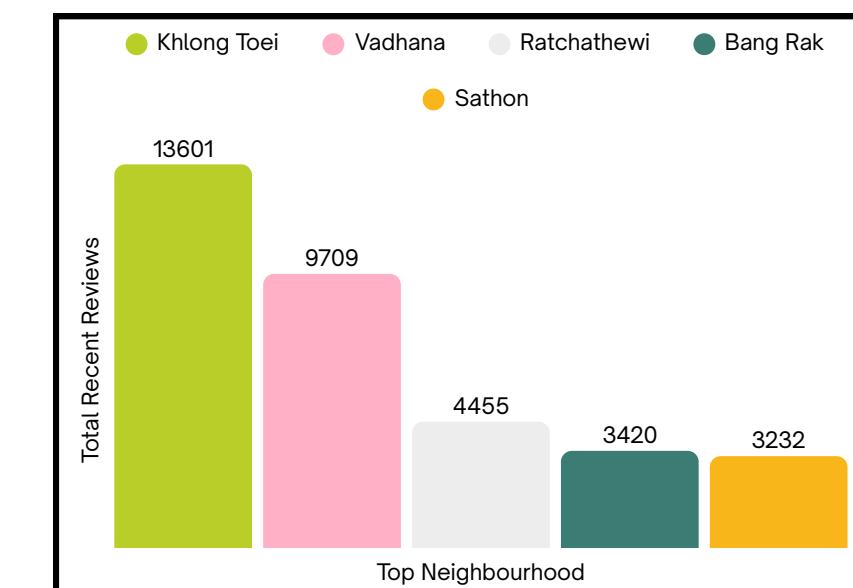
Top 5 Median Reviews per Listing



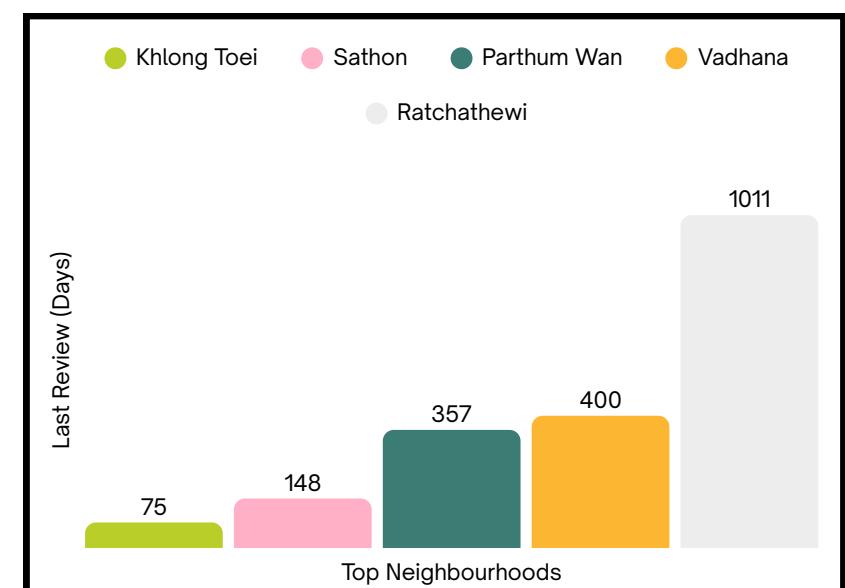
Top 5 Reviews per Month



Top 5 Total Recent Reviews



Top 5 Median Last Review

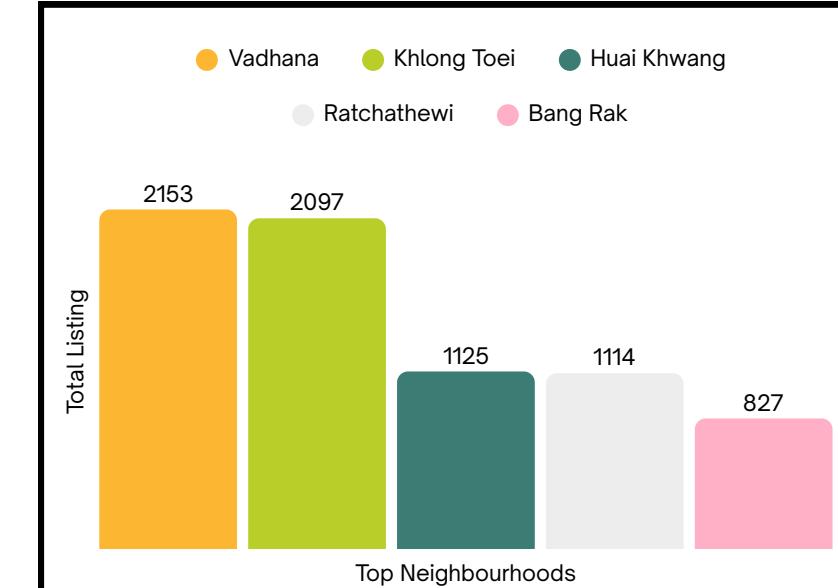


Exploratory Data Analytics

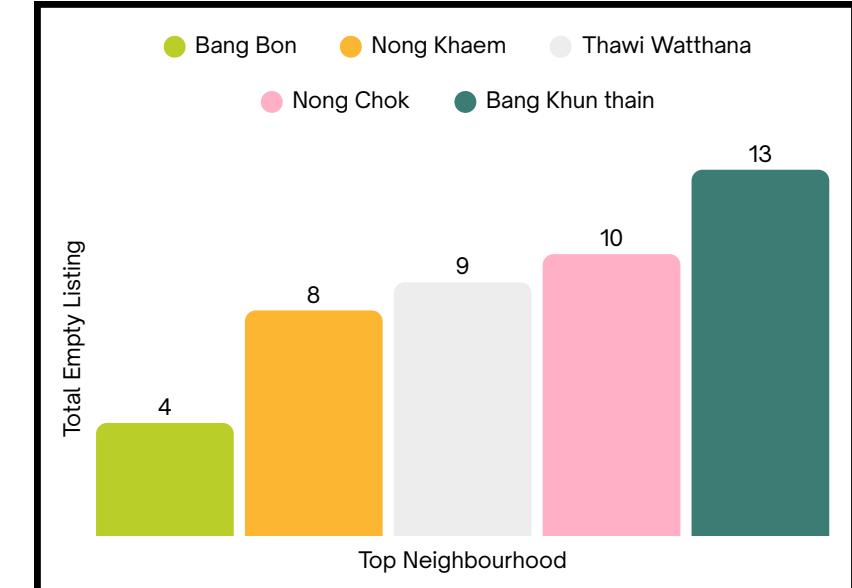
Insight of Empty Ratio Analysis:

- **Khlong Toei** is the least empty ratio of all neighbourhoods. Based on data with only 23% chance the listing will be empty
- Number of empty listings in every neighbourhood do not represent the empty ratio. It can be seen on the least empty listings neighbourhoods do not have the least empty ratio

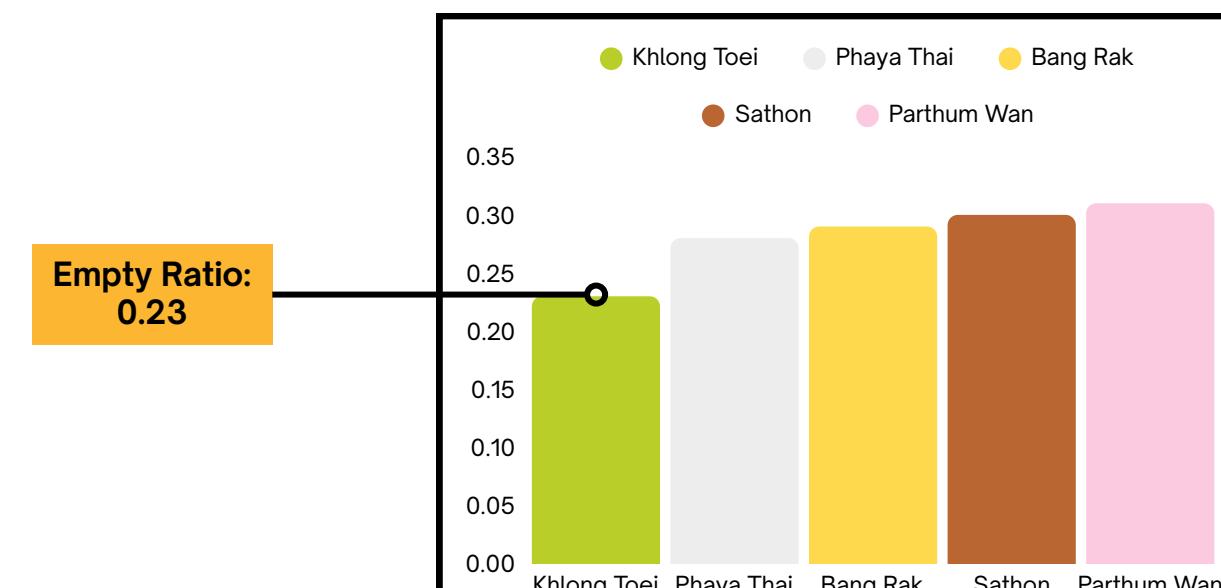
Top 5 Total Listings



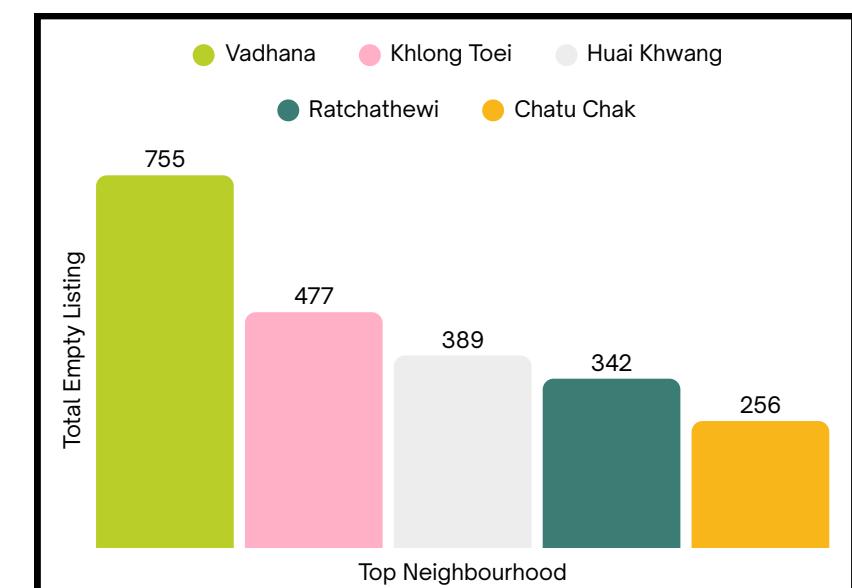
Least Total Empty Listing



Top 5 Empty Ratio



Most Total Empty Listing



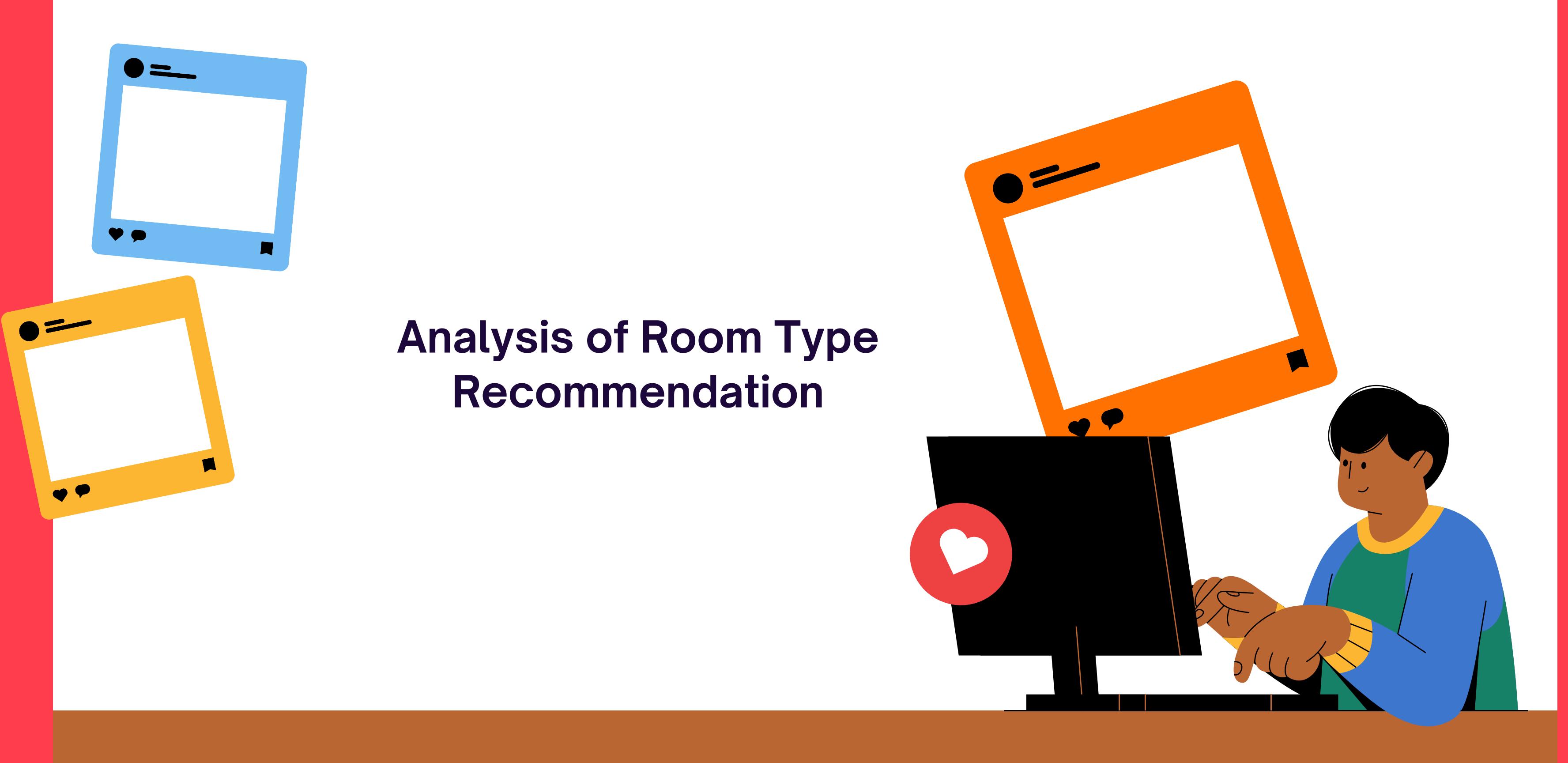
Conclusion



Recommended Neighbourhood: Khlong Toei



- **Khlong Toei** is the most recommended neighbourhood due to highest Popularity Neighbourhood Analysis and Empty Ratio Analysis and highly recommended in Pricing Neighbourhood Analysis calculation.
- **Khlong Toei** has the best recency analysis which the median data of last review only 75 days. And the correlation analysis has proved that with the lower recency days, the higher median_price



Analysis of Room Type Recommendation

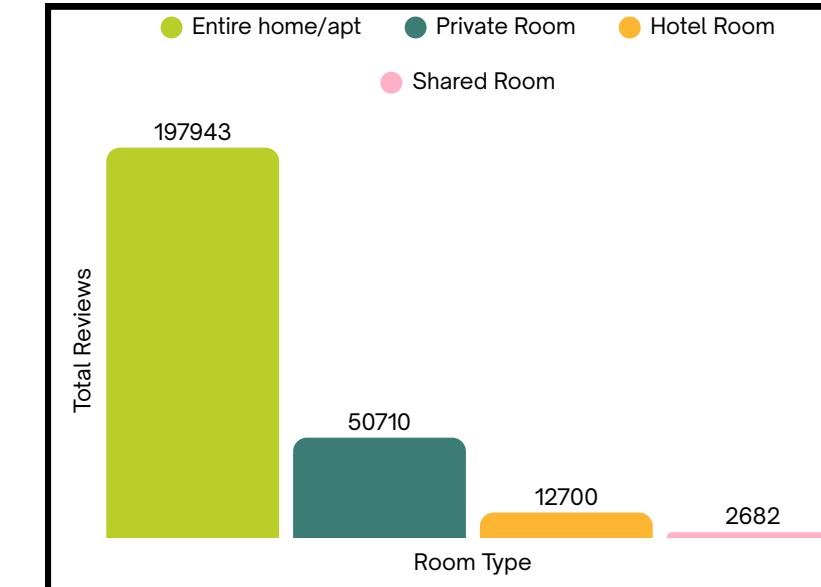


Exploratory Data Analytics

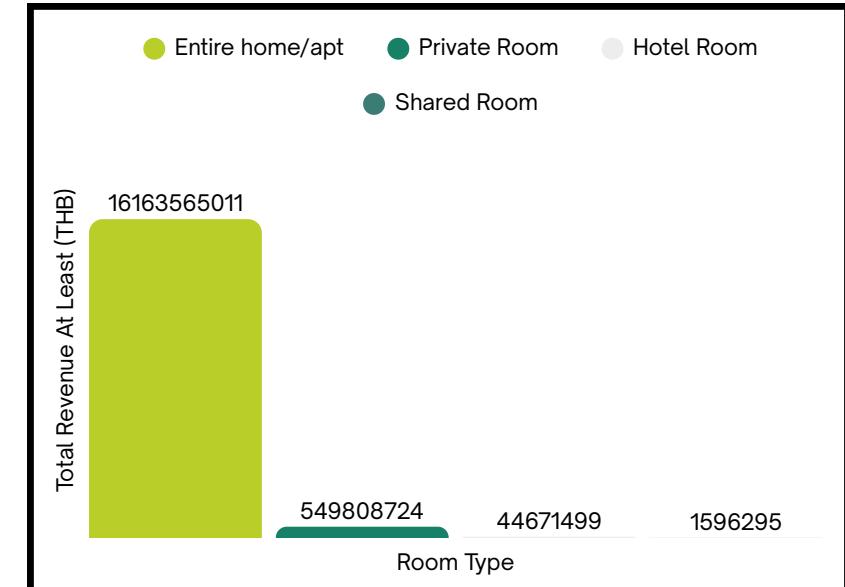
Insight of Pricing Room Type Analysis:

- **Entire home/apt** is leading in pricing and revenue based on room type and based on room type in every neighbourhood
- **Entire home/apt** is very versatile for property owner and guest due to comfort and large space and also has complete main facilities (bed, kitchen set, bathroom), therefore many guests can stay in entire home/apt for a long time.
- **Hotel room** has the highest median price due to the hotel's standard to have high cleaning standard, good customer service, dining service, room service.
- **Shared room** is the least revenue at least due to not every traveller wants to share privacy with other travellers.

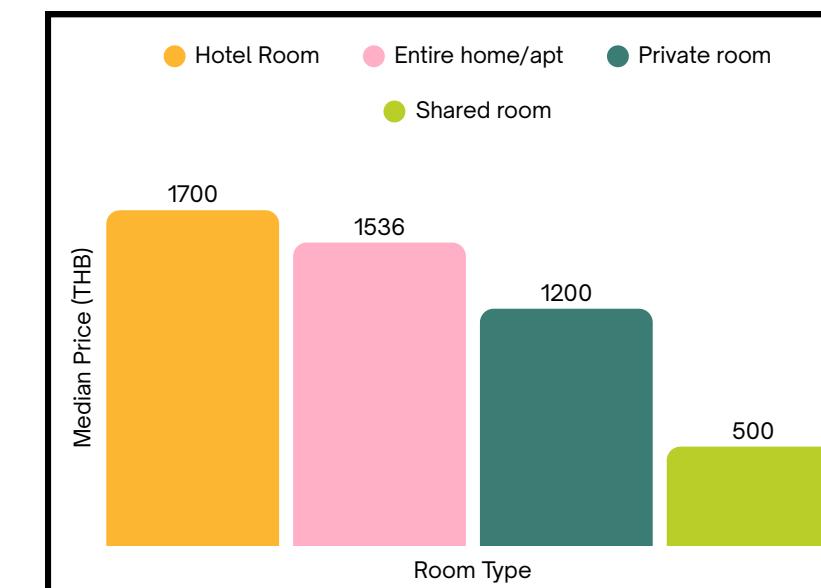
Total Reviews (Occupancy)



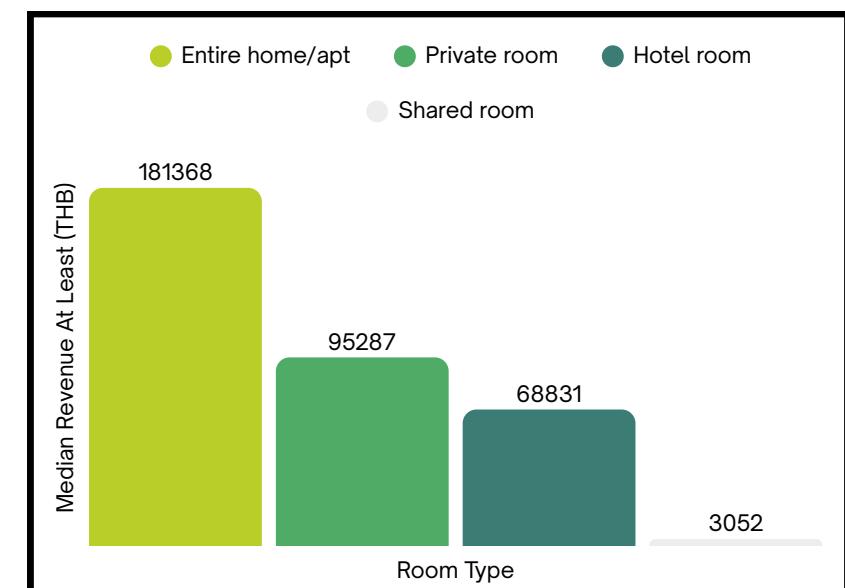
Total Revenue At Least



Median Price



Median Revenue At Least



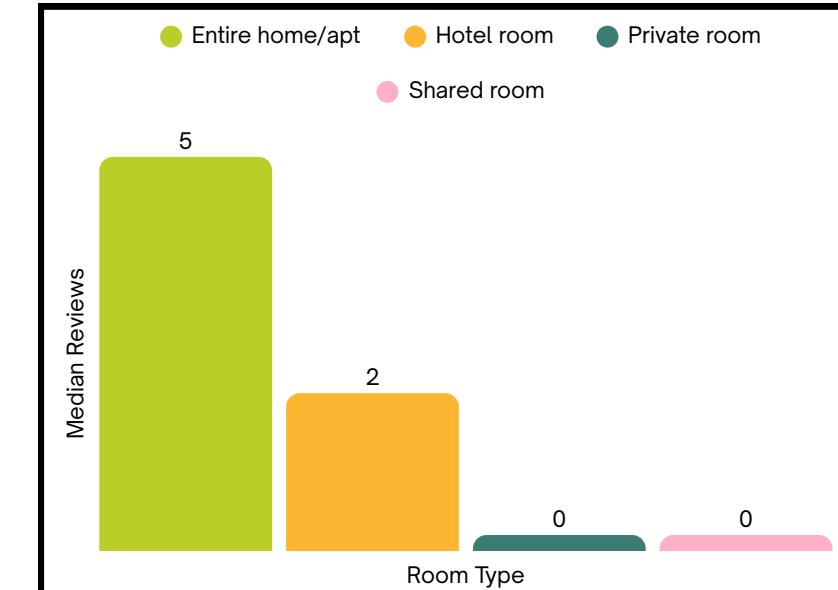
Exploratory Data Analytics

Insight of Popularity Room Type Analysis:

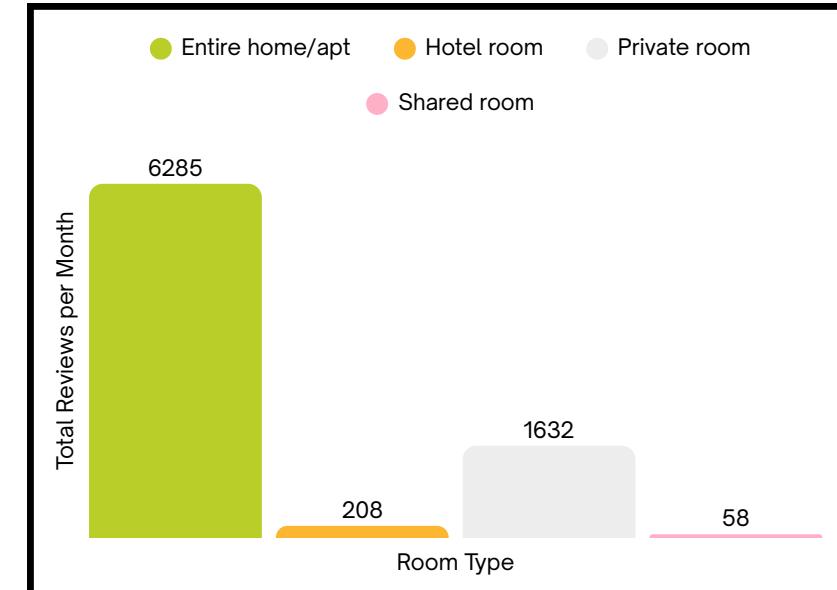
1. **Entire home/apt** is the room type which dominate the popularity analysis due to the top of:
 - Median reviews per listing, means overall Entire home/apt listings received high amount of reviews
 - Total reviews per month, means overall Entire home/apt listings received constant and continuous reviews every month
 - Total recent reviews, means overall Entire home/apt listings received the most reviews in the last 12 months
 - Median last reviews, means overall Entire home/apt received the most fresh reviews with median last reviews within 139 days.

2. **Private room** and **Shared room** has 0 Median Reviews and Median Last Review data due to more than 50% of private room and shared room do not have reviews and last review date data.

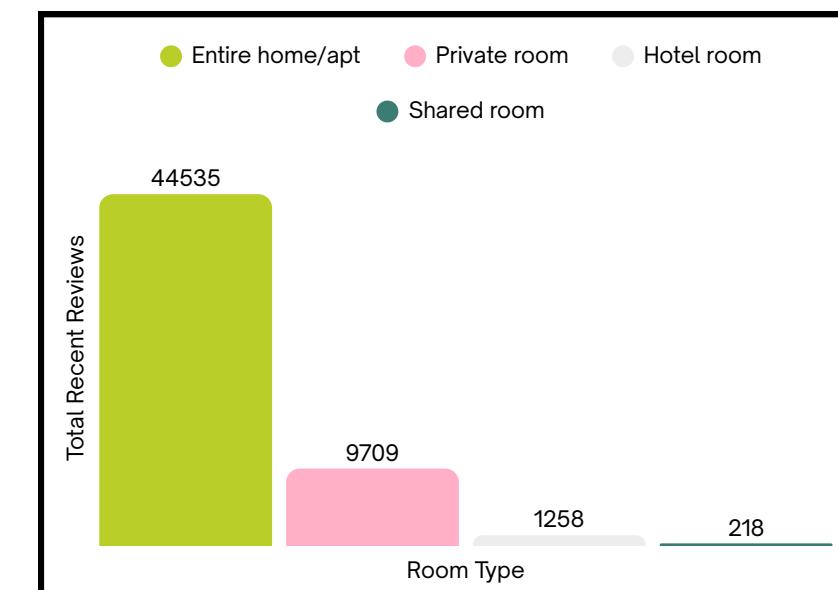
Median Reviews per Listing



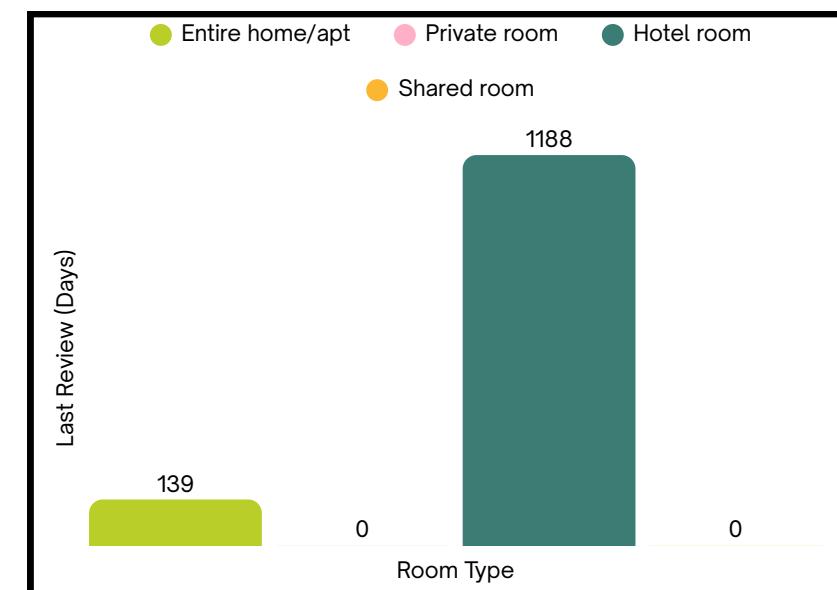
Total Reviews per Month



Total Recent Reviews



Median Last Review

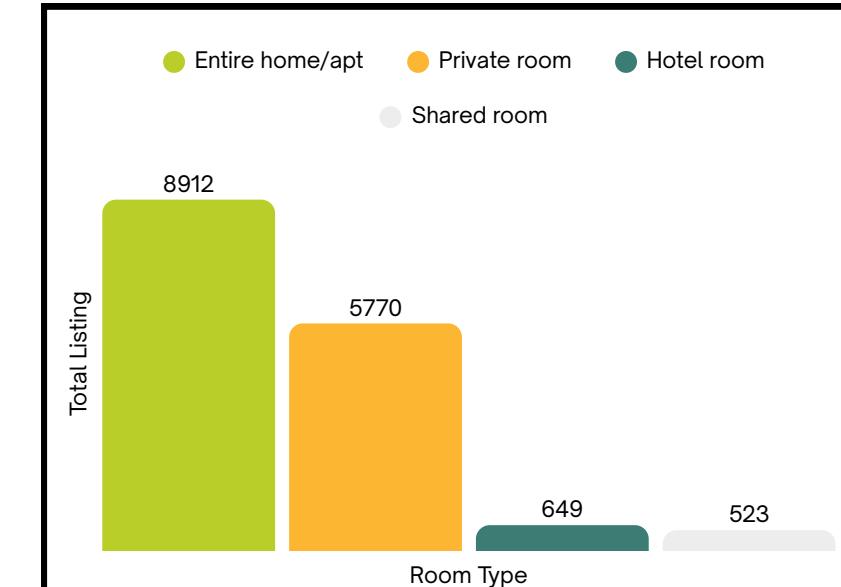


Exploratory Data Analytics

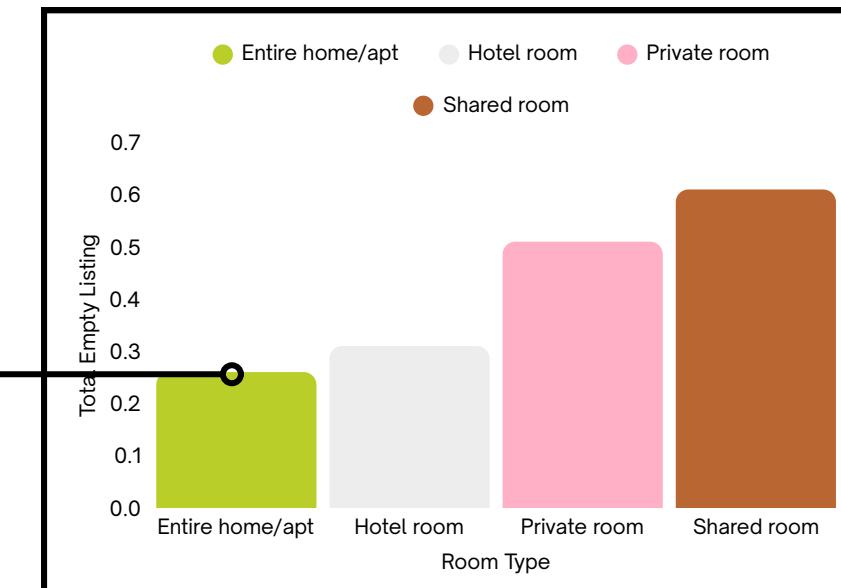
Insight of Empty Ratio Analysis:

- **Entire home/apt** is the least empty ratio of all room type based on data with only 26% chance the listing will be empty
- **Shared room** and **Private room** is the most empty ratio with 61% and 51% chance the listing will be empty. It also can be seen from popularity data which have 0 median reviews data.
- It can be seen from the top 50 based on room type in every neighbourhood, 28 of 50 are dominated by Entire home/apt

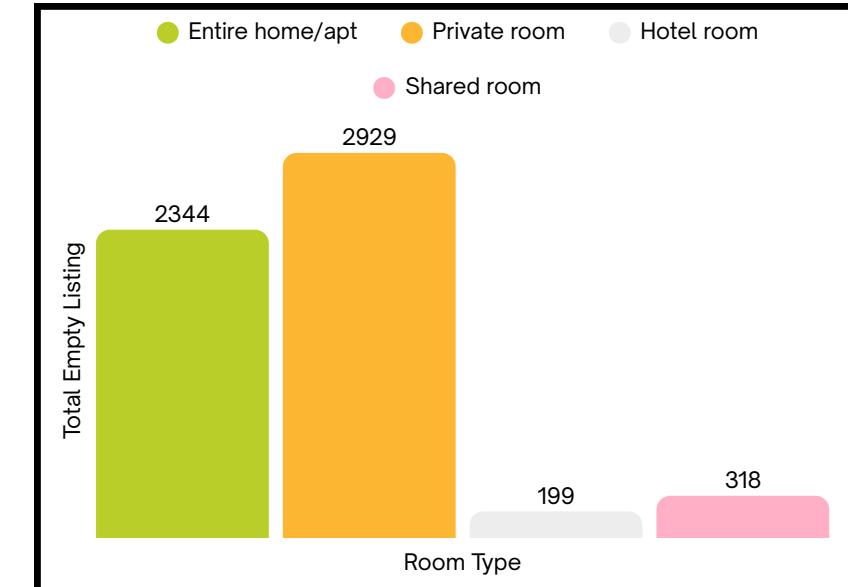
Total Listings



Empty Ratio



Total Empty Listing



Top 50 Empty Ratio by Neighbourhood

Empty Ratio:
0.26

Conclusion



Recommended Neighbourhood: Entire home/apt



- **Entire home/apt** becomes the most recommended room type to be listed based on Pricing Room Type Analysis, Popularity Analysis and Empty Ratio Analysis.
- **Entire home/apt** is the most appropriate choice because it is more comfortable and people tend to rent longer, thus providing greater revenue.
- **Entire home/apt** has the best recency analysis which the median data of last review with 139 days. And the correlation analysis has proved that with the lower recency days, the higher median price



Analysis of Pricing Strategy and Recommendation



Exploratory Data Analytics



Pricing Segmentation Using Quantile Thresholds (`0.3`, `0.6`, and `Upper Bound`)

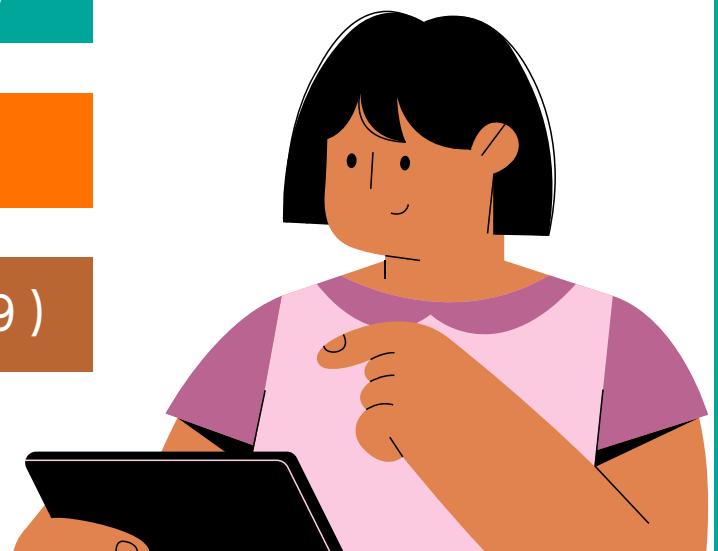
- The 0.3 quantile (THB 1329.5) represents the upper limit of the budget segment
- The 0.6 quantile (THB 1919) captures the transition into mid-to-high tier listings.
- The Upper Bound (THB 4355.875) separates outlier or luxury listings from the general market.

Suite Class (Price above THB 4355.875)

First Class (THB 1919 - THB 4355.875)

Business Class (THB 1329 - THB 1919)

Standard Class (Price below THB 1329)



Exploratory Data Analytics

Pricing Segmentation Strategy

			
SUITE CLASS	FIRST CLASS	BUSINESS CLASS	STANDARD CLAS
> 4355.875 THB	1919 - 4355.875 THB	1329.5 - 1919 THB	< 1329.5 THB
TARGET AUDIENCE	FARCE AUDIENCE	FACILITIES & FATEE	BADGETKADIENCE
<ul style="list-style-type: none">High-income travelers, business executivesluxury vacationers	<ul style="list-style-type: none">Families, couples, or professionals seeking comfort at competitive	<ul style="list-style-type: none">Solo travelars, business professionals with mid-range budgets	<ul style="list-style-type: none">Backpackers, students, budget-conscious travelers
FACILITIES & FEATURES	FACILITIES & FEATHRES	FACILITIES & FEATURES	BACII AMEENTURES
<ul style="list-style-type: none">Premium locations (e.g. Private pool, rooftop view, gym sauna)Concierge services and daily housekeepingLuxurious interior design	<ul style="list-style-type: none">BTS/MRT stations (e.g. On Nut, Phrakanon)Fully equipped kitchen modern furnitureDiscounts for weekly/monthly stays	<ul style="list-style-type: none">Ergonomic workspace with high-speed WiFiFlexible check-in/out options for short staysCompact and functional design	<ul style="list-style-type: none">Basic amenities, clean bed, AC, WI-FiShared kitchen or laundry facilitiesGroup discounts or long-term rental offers

The pricing segmentation helps property owners to have marketing efforts by targeting specific audiences based on their financial condition, needs, and travel preferences. This approach also supports customization of amenities and promotional strategies, making them more effective and aligned with each market segment.

Conclusion



Khlong Toei is the top recommended neighborhood for Airbnb investment in Bangkok due to its high popularity (total reviews, reviews per month), strong future potential (most reviews in the last 12 months, recent activity), and the highest median revenue, indicating strong and stable pricing performance.

Entire home/apt is the best room type for Airbnb in Bangkok, being the most popular across all neighborhoods (total reviews, reviews per month) and showing the strongest future potential (recent reviews, recent activity).

Price Segmentation

1. Suite Class
 - Target Audience: High-income travellers, business executives, luxury vacationers
2. First Class
 - Target Audience: Families, couples, or professionals seeking comfort at competitive prices
3. Business Class
 - Target Audience: Solo travelers, business professionals with mid-range budgets
4. Standard Class
 - Target Audience: Backpackers, students, budget-conscious travelers

THANK YOU

