



Real Estate Analysis Project



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2024

Introduction

Objective and overview.

Methodology

Data collection

Data pre-processing(EDA)

Data visualization and Dashboard

Results and discussion

Conclusion

Data driven decision

Content

Introduction

01

What is Airbnb?

Short-term rentals, platforms
become a valuable source of
information for identifying
real estate investment
opportunities.



Objective :

Using data analysis to provide clear, evidence-based insights into the real estate market.

By analyzing trends and market data, we help investors make informed decisions, minimize risks, maximize returns

Informed decision



Questions:

What kind of room is more common in New York City Airbnb?

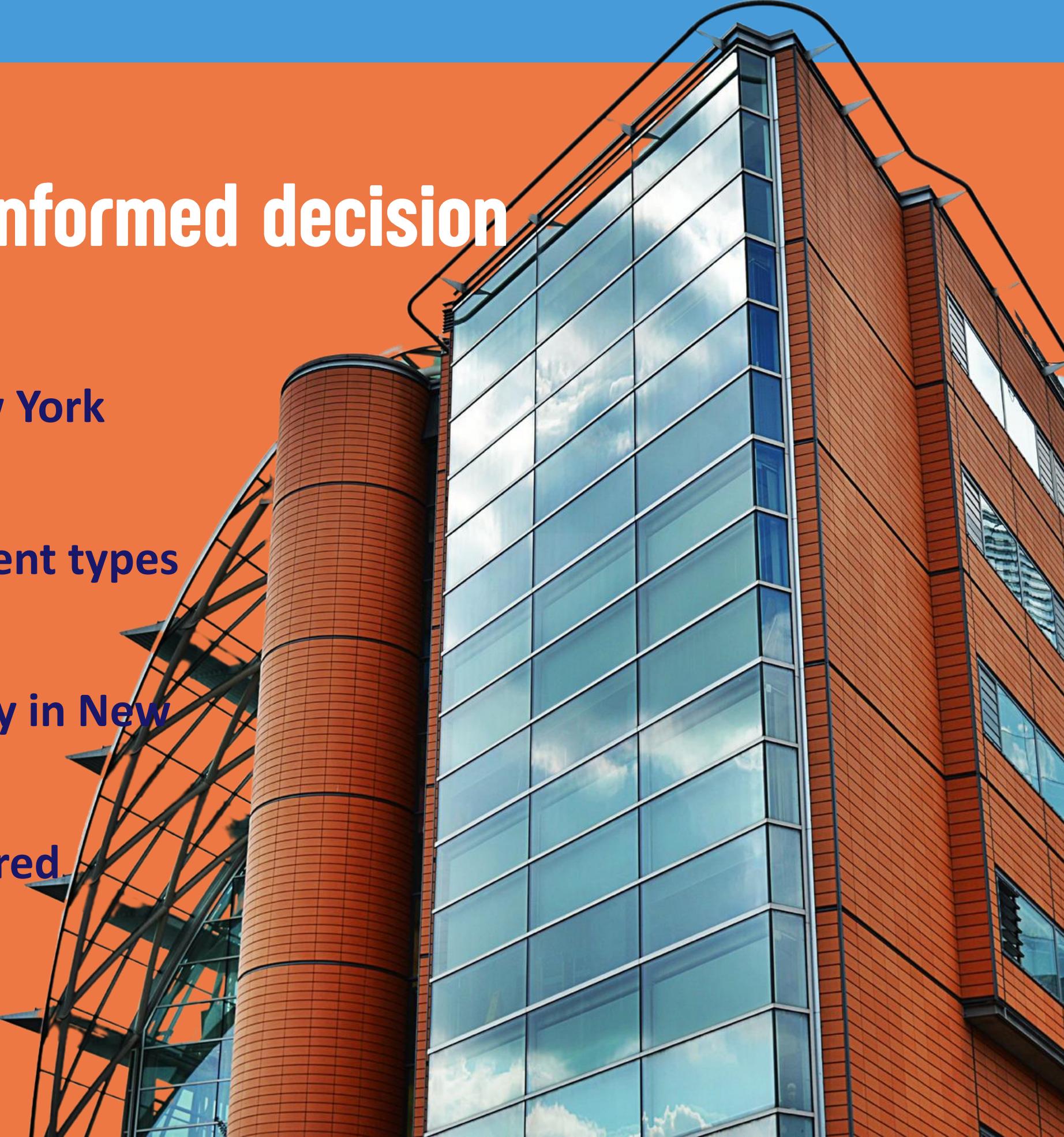
What is the price difference between different types of rooms?

What are the most expensive regions to stay in New York?

Which unit (private room/entire house/shared room)is better for investment

In Which neighborhood ?

Informed decision



Methodology

1-Data collection

Airbnb open data.

2-Data analysis

Data pre-processing

EDA

Analysis plan

Excel-python-R-SQL

3-Visualization

Python
Tableau.

1-Data collection



New York City Airbnb Open Data

Link: <https://www.kaggle.com/dgomonov/new-york-city-airbnb-open-data>

2-Data analysis

Dataset exploration

Dataset contains:

16 column

48895 rows

```
[29]: df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 48895 entries, 0 to 48894
Data columns (total 16 columns):
 #   Column           Non-Null Count  Dtype  
---  --  
 0   id               48895 non-null   int64  
 1   name              48879 non-null   object  
 2   host_id            48895 non-null   int64  
 3   host_name          48874 non-null   object  
 4   neighbourhood_group 48895 non-null   object  
 5   neighbourhood       48895 non-null   object  
 6   latitude            48895 non-null   float64 
 7   longitude           48895 non-null   float64 
 8   room_type           48895 non-null   object  
 9   price               48895 non-null   int64  
 10  minimum_nights     48895 non-null   int64  
 11  number_of_reviews   48895 non-null   int64  
 12  last_review         38843 non-null   object  
 13  reviews_per_month   38843 non-null   float64 
 14  calculated_host_listings_count 48895 non-null   int64  
 15  availability_365    48895 non-null   int64  
dtypes: float64(3), int64(7), object(6)
memory usage: 6.0+ MB
```

```
[23]: df.head(5)
```

	[23]: id	[23]: name	[23]: host_id	[23]: host_name	[23]: neighbourhood_group	[23]: neighbourhood	[23]: latitude	[23]: longitude	[23]: room_type	[23]: price	[23]: minimum_nights
0	2539	Clean & quiet apt home by the park	2787	John	Brooklyn	Kensington	40.64749	-73.97237	Private room	149	
1	2595	Skylit Midtown Castle	2845	Jennifer	Manhattan	Midtown	40.75362	-73.98377	Entire home/apt	225	
2	3647	THE VILLAGE OF HARLEM....NEW YORK!	4632	Elisabeth	Manhattan	Harlem	40.80902	-73.94190	Private room	150	
3	3831	Cozy Entire Floor of Brownstone	4869	LisaRoxanne	Brooklyn	Clinton Hill	40.68514	-73.95976	Entire home/apt	89	
4	5022	Entire Apt: Spacious Studio/Loft by central park	7192	Laura	Manhattan	East Harlem	40.79851	-73.94399	Entire home/apt	80	

```
df.describe().T
```

	count	mean	std	min	25%	50%	75%	max
id	48895.0	1.901714e+07	1.098311e+07	2539.00000	9.471945e+06	1.967728e+07	2.915218e+07	3.648724e+07
host_id	48895.0	6.762001e+07	7.861097e+07	2438.00000	7.822033e+06	3.079382e+07	1.074344e+08	2.743213e+08
latitude	48895.0	4.072895e+01	5.453008e-02	40.49979	4.069010e+01	4.072307e+01	4.076311e+01	4.091306e+01
longitude	48895.0	-7.395217e+01	4.615674e-02	-74.24442	-7.398307e+01	-7.395568e+01	-7.393627e+01	-7.371299e+01
price	48895.0	1.527207e+02	2.401542e+02	0.00000	6.900000e+01	1.060000e+02	1.750000e+02	1.000000e+04
minimum_nights	48895.0	7.029962e+00	2.051055e+01	1.00000	1.000000e+00	3.000000e+00	5.000000e+00	1.250000e+03
number_of_reviews	48895.0	2.327447e+01	4.455058e+01	0.00000	1.000000e+00	5.000000e+00	2.400000e+01	6.290000e+02
reviews_per_month	38843.0	1.373221e+00	1.680442e+00	0.01000	1.900000e-01	7.200000e-01	2.020000e+00	5.850000e+01
calculated_host_listings_count	48895.0	7.143982e+00	3.295252e+01	1.00000	1.000000e+00	1.000000e+00	2.000000e+00	3.270000e+02
availability_365	48895.0	1.127813e+02	1.316223e+02	0.00000	0.000000e+00	4.500000e+01	2.270000e+02	3.650000e+02

Data cleaning

No duplicates

Dropping irrelevant columns

Replace null values

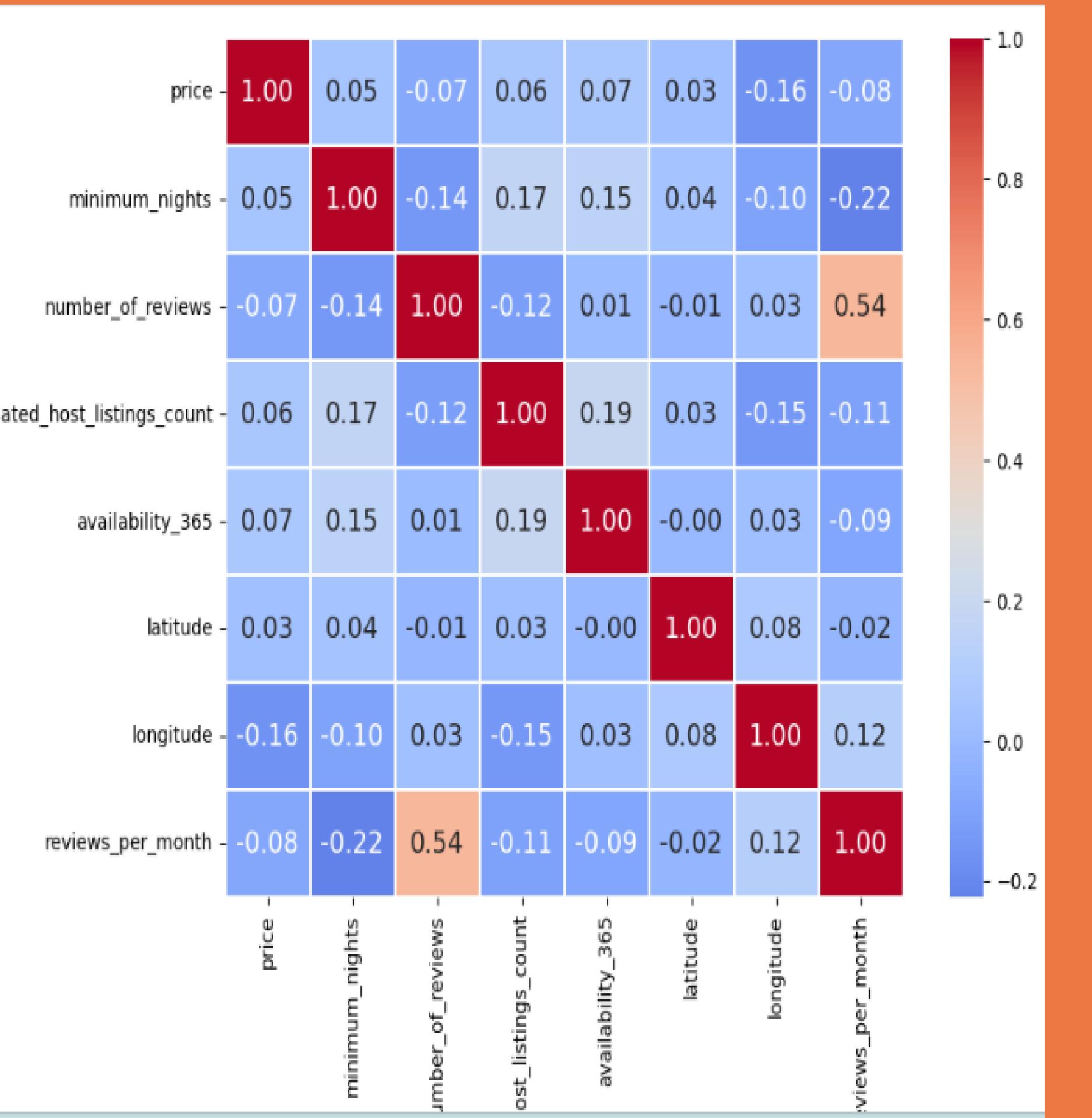
Check outliers

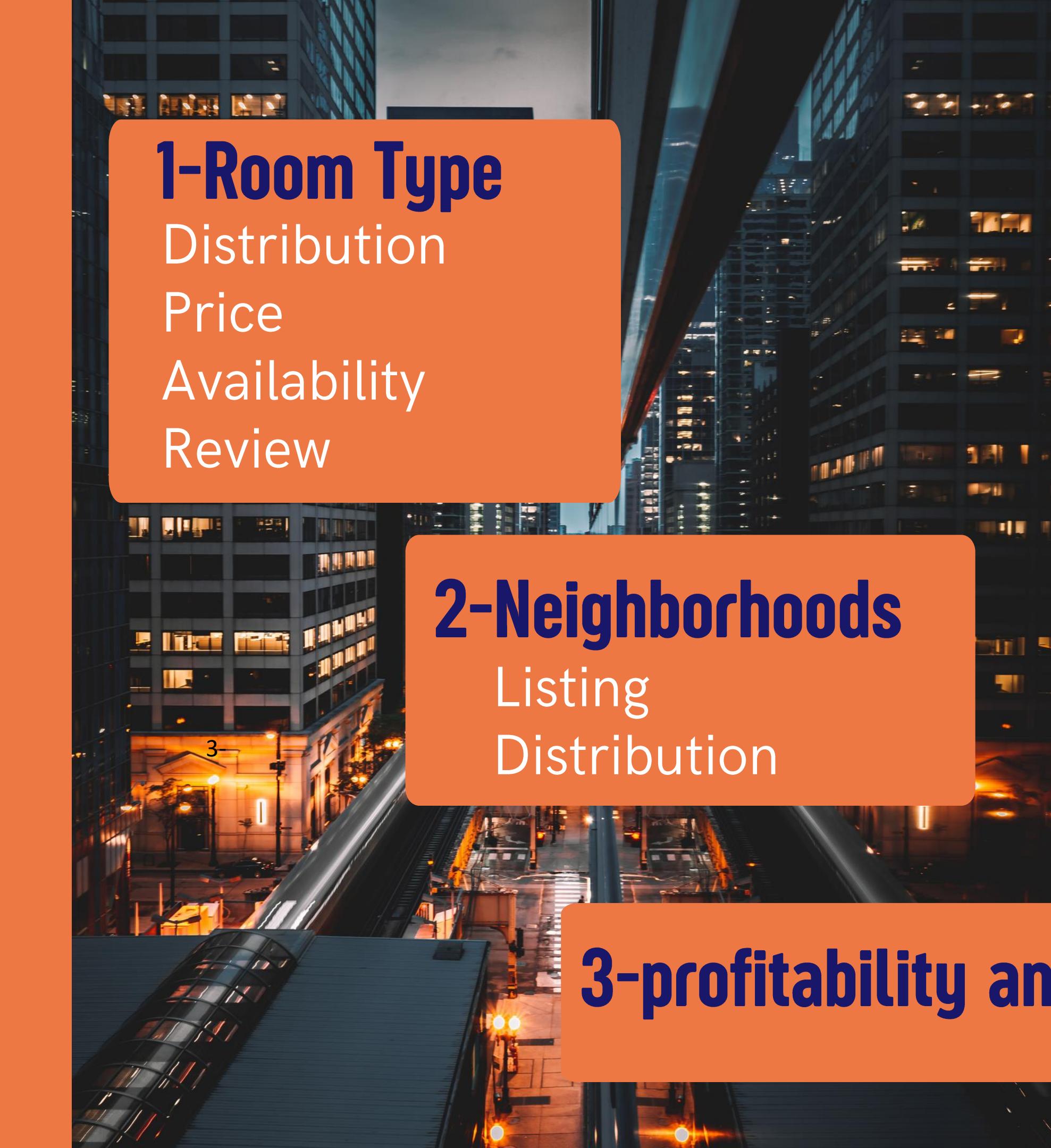


Correlation Matrix

No significant correlation bet. the price and other features

Review per month = Reviews/12





1-Room Type

Distribution

Price

Availability

Review

2-Neighborhoods

Listing

Distribution

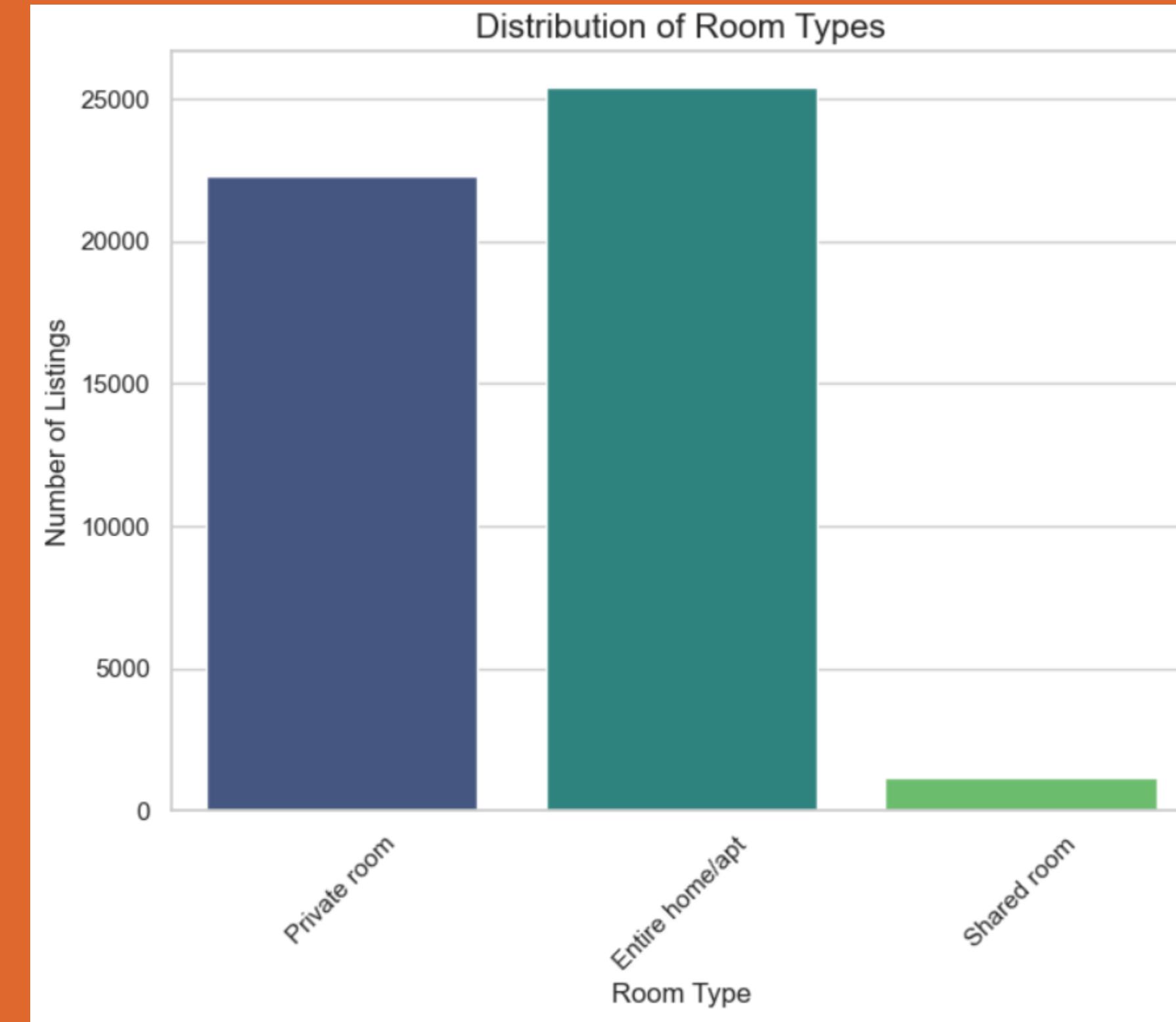
3-profitability analysis

Analysis plan

1-Room Type

A-Distribution

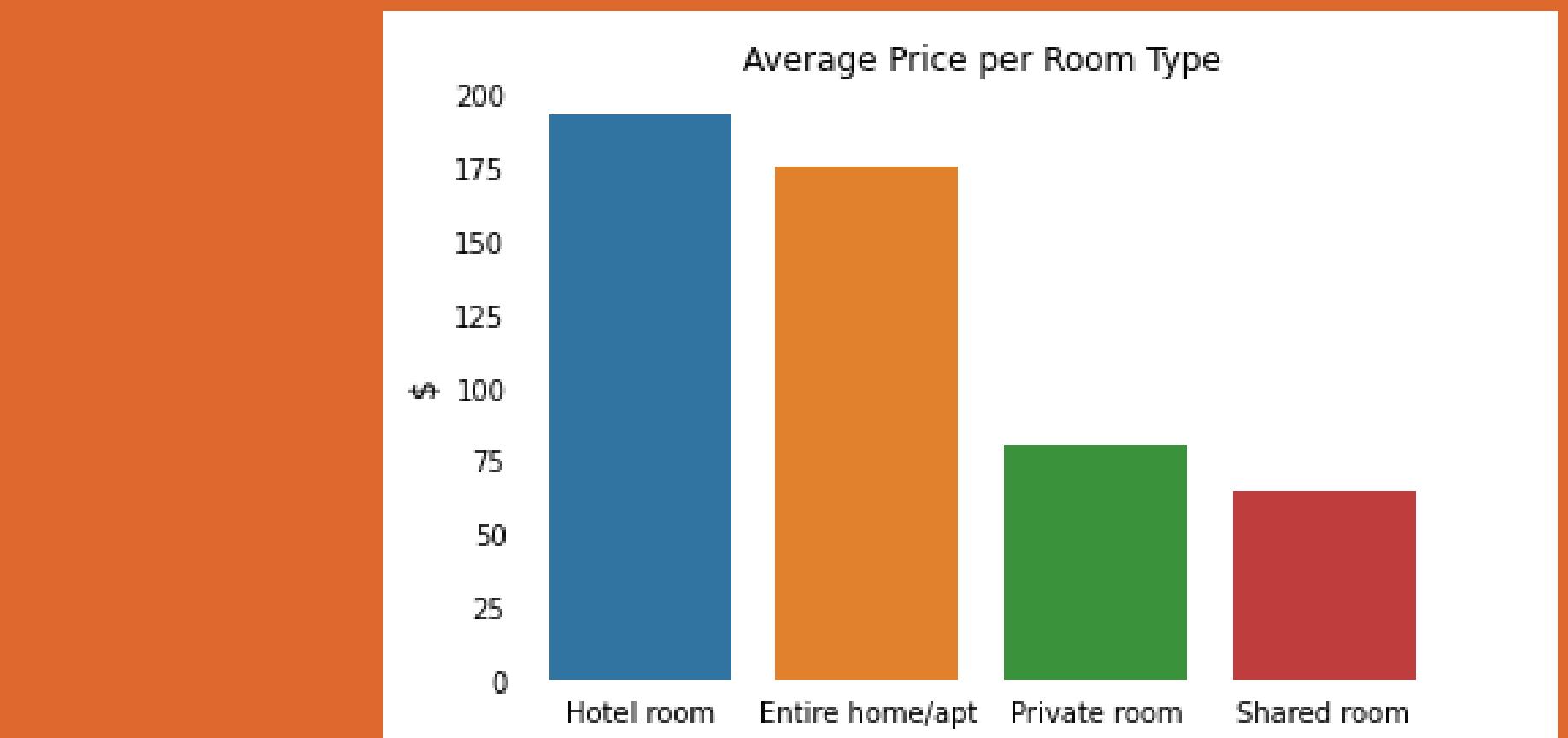
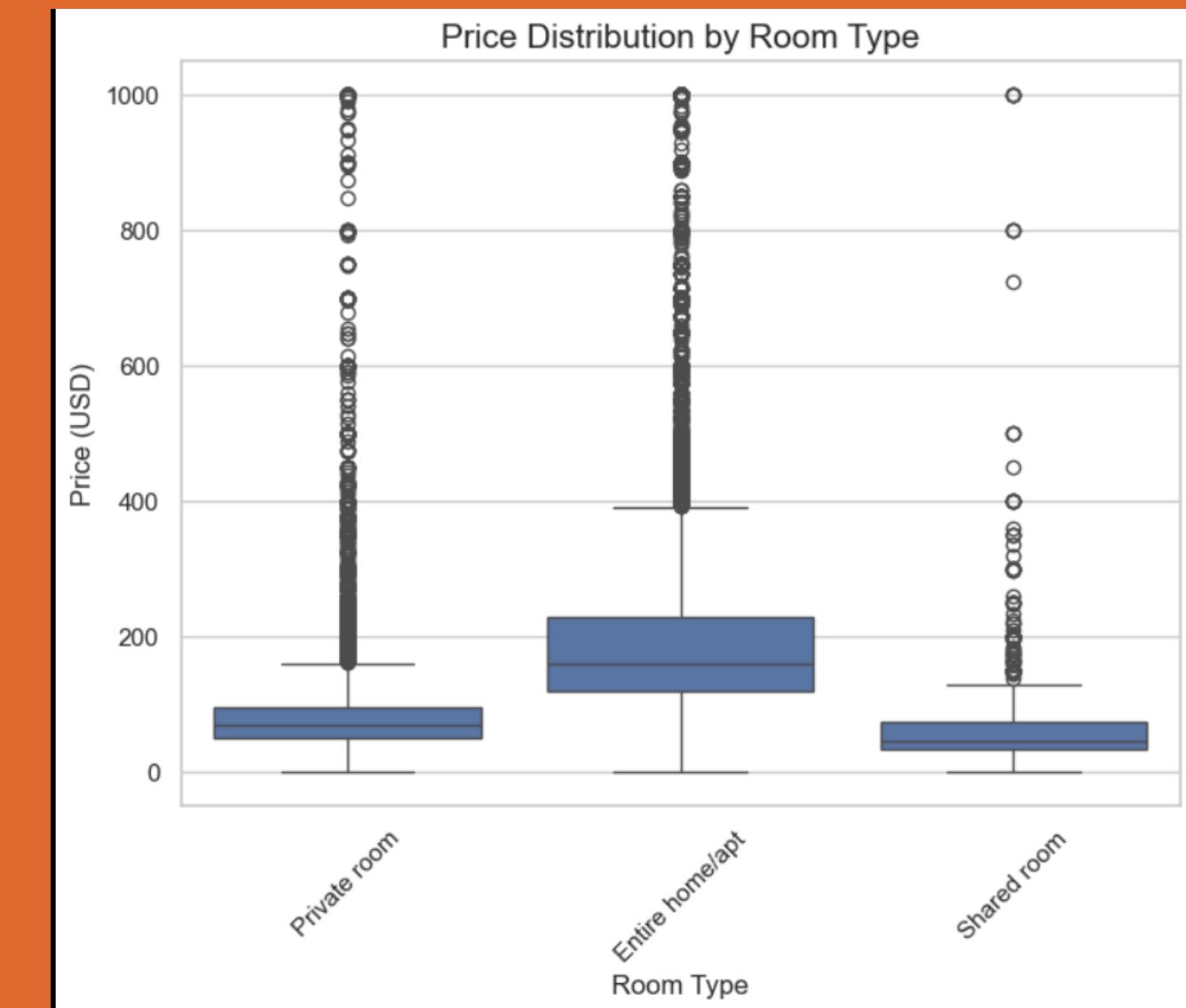
- Most hosts offer full properties rather than just a room in their home.
- Shared Rooms and Hotel Rooms make up a much smaller portion of the market



1-Room Type

B-price distribution

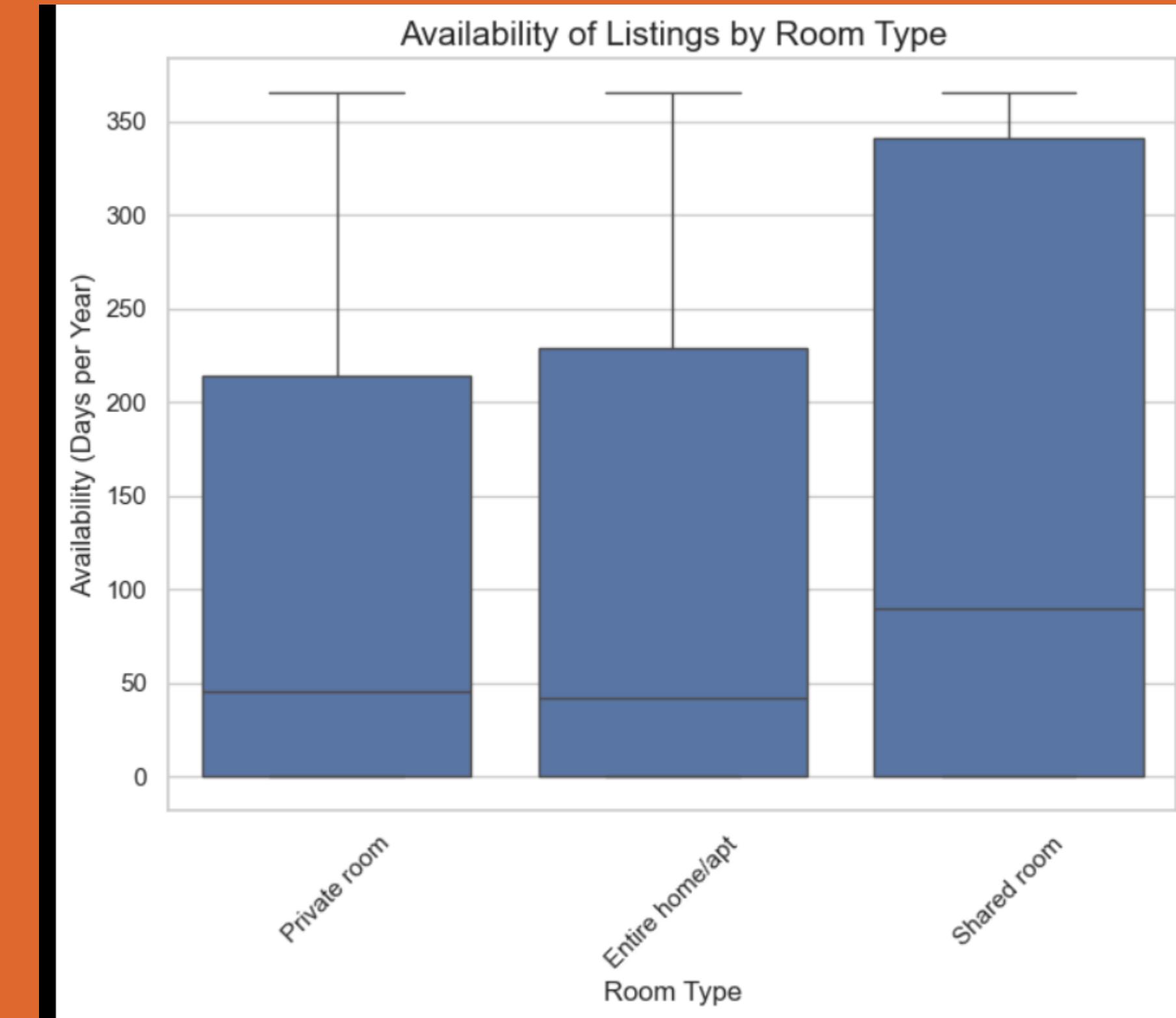
- Entire Home/Apartments have the highest price range reaching the upper limit of \$1,000
- Private Rooms more affordable, with variability in pricing
- Shared Rooms and Hotel Rooms are priced lower, but some Hotel Rooms can reach higher prices



1-Room Type

C-Availability listings

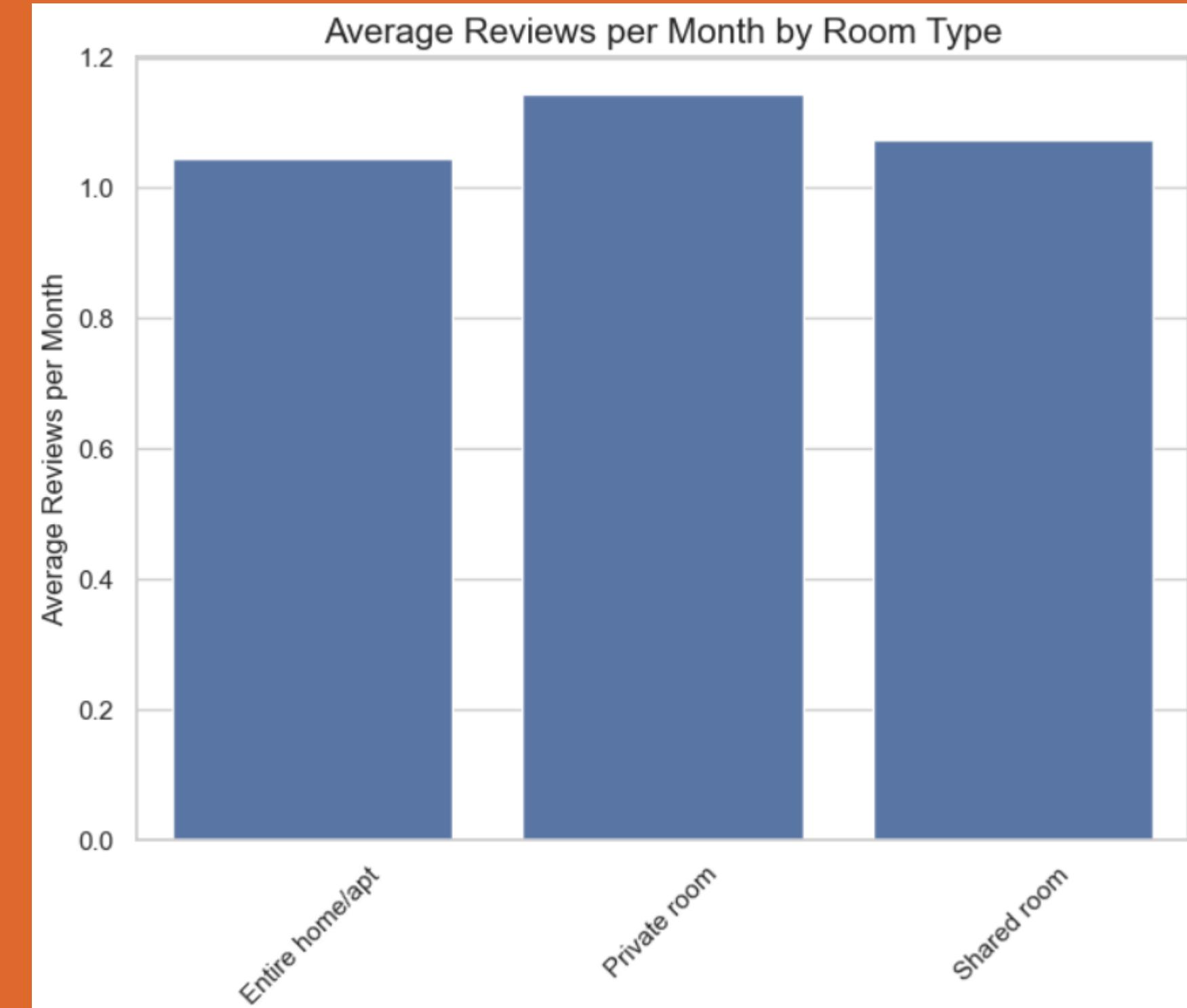
- Entire Home/Apartments show a wide range of availability, from very low to almost fully available throughout the year.
- Private Rooms and Shared Rooms have more consistent availability, but with fewer properties available for many days



1-Room Type

D-Demand

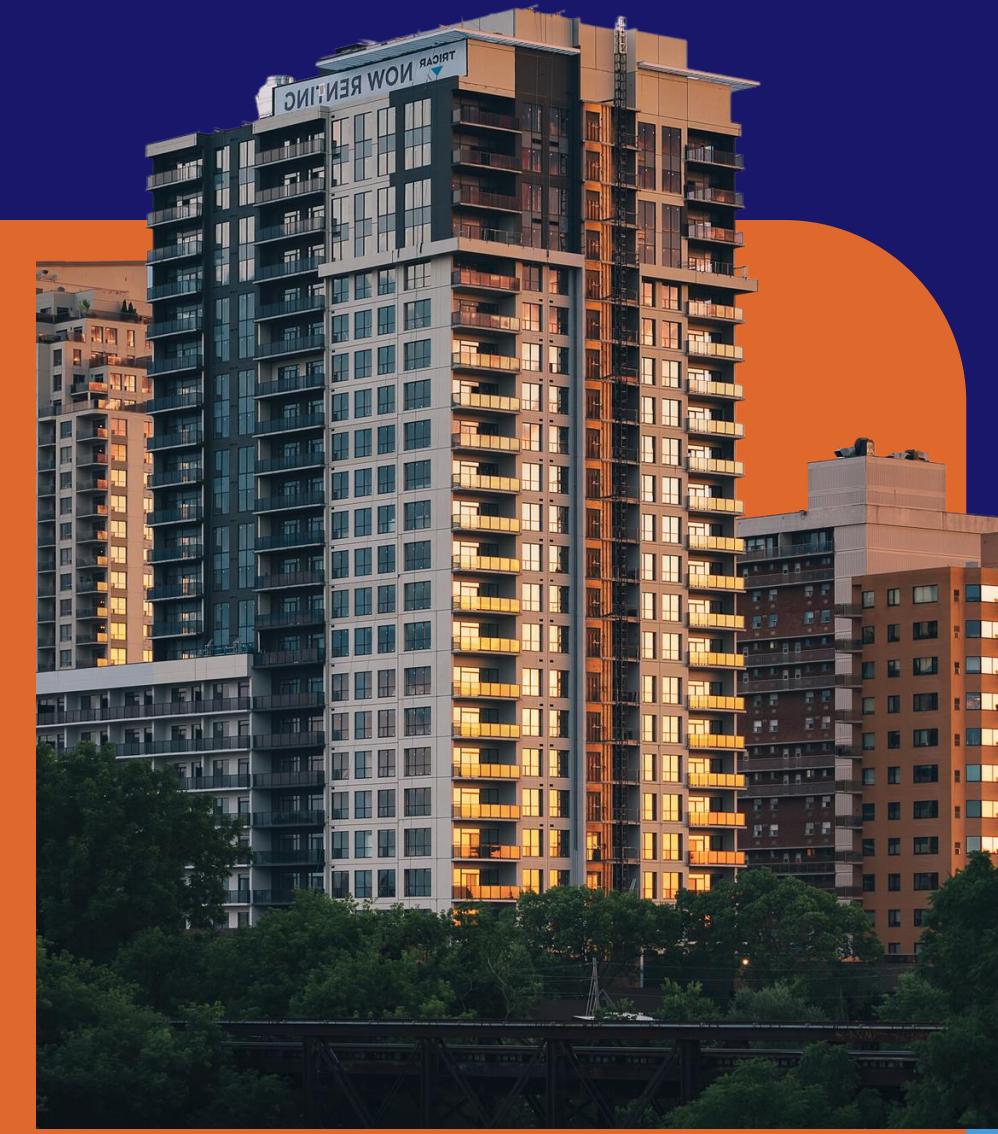
- Entire Home/Apartments generally receive more reviews per month, suggesting higher demand.
- Private Rooms and Shared Rooms also have consistent demand but at a lower rate.



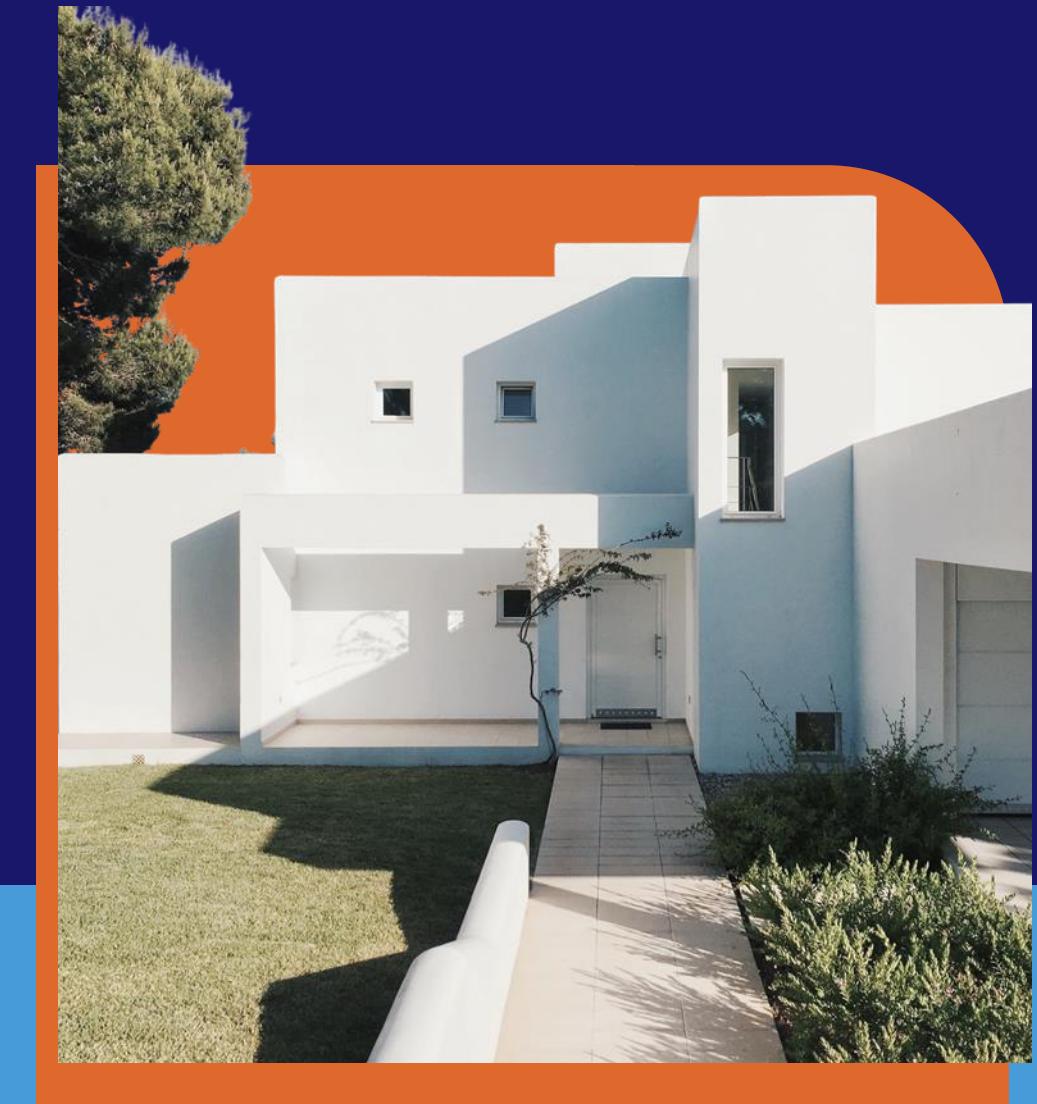
Insight



If your investment strategy prioritizes profit margins, investing in Entire Home/Apartments could be more lucrative, as they have higher price potential.



If you're targeting affordability and volume, Private Rooms may offer a good balance between availability and price.

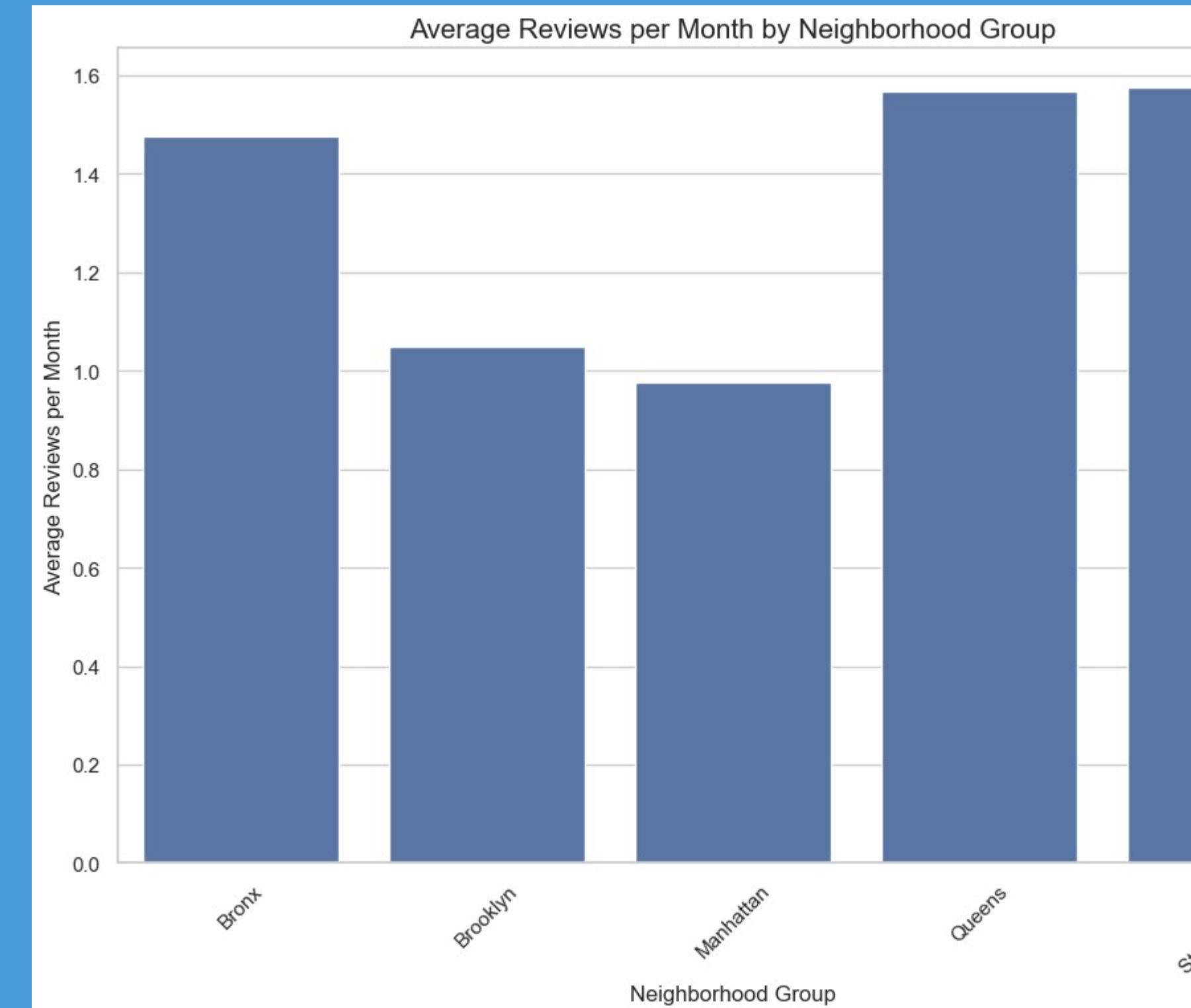
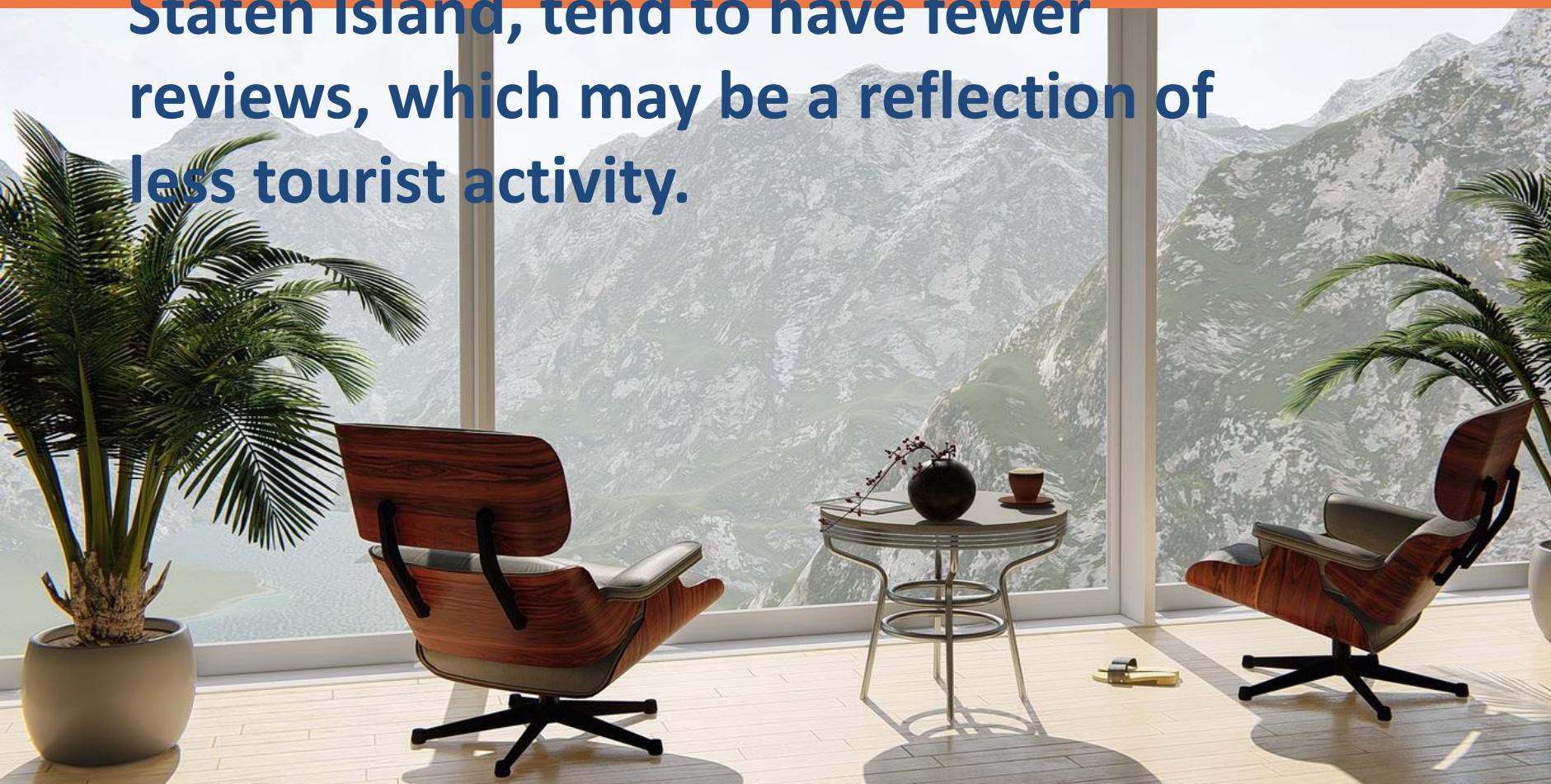


Entire Home/Apartments offers the potential for both higher availability and demand, but the seasonal nature of some listings may require careful planning

2-Neighborhoods

Reviews per Month

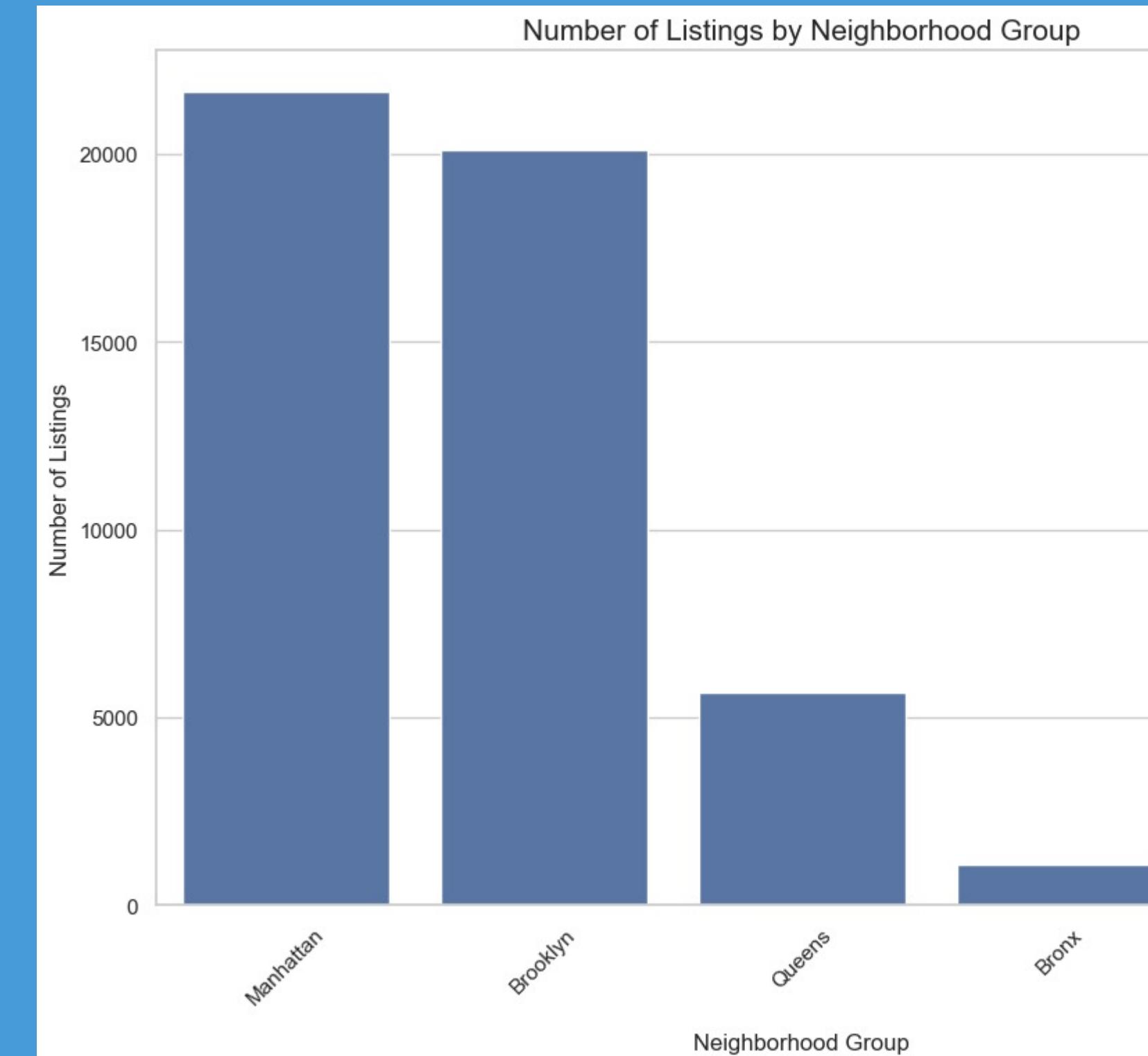
- Brooklyn and Manhattan lead in reviews per month, indicating higher demand in these areas.
- Neighborhoods with fewer listings, like Staten Island, tend to have fewer reviews, which may be a reflection of less tourist activity.



2-Neighborhoods

Number of Listings

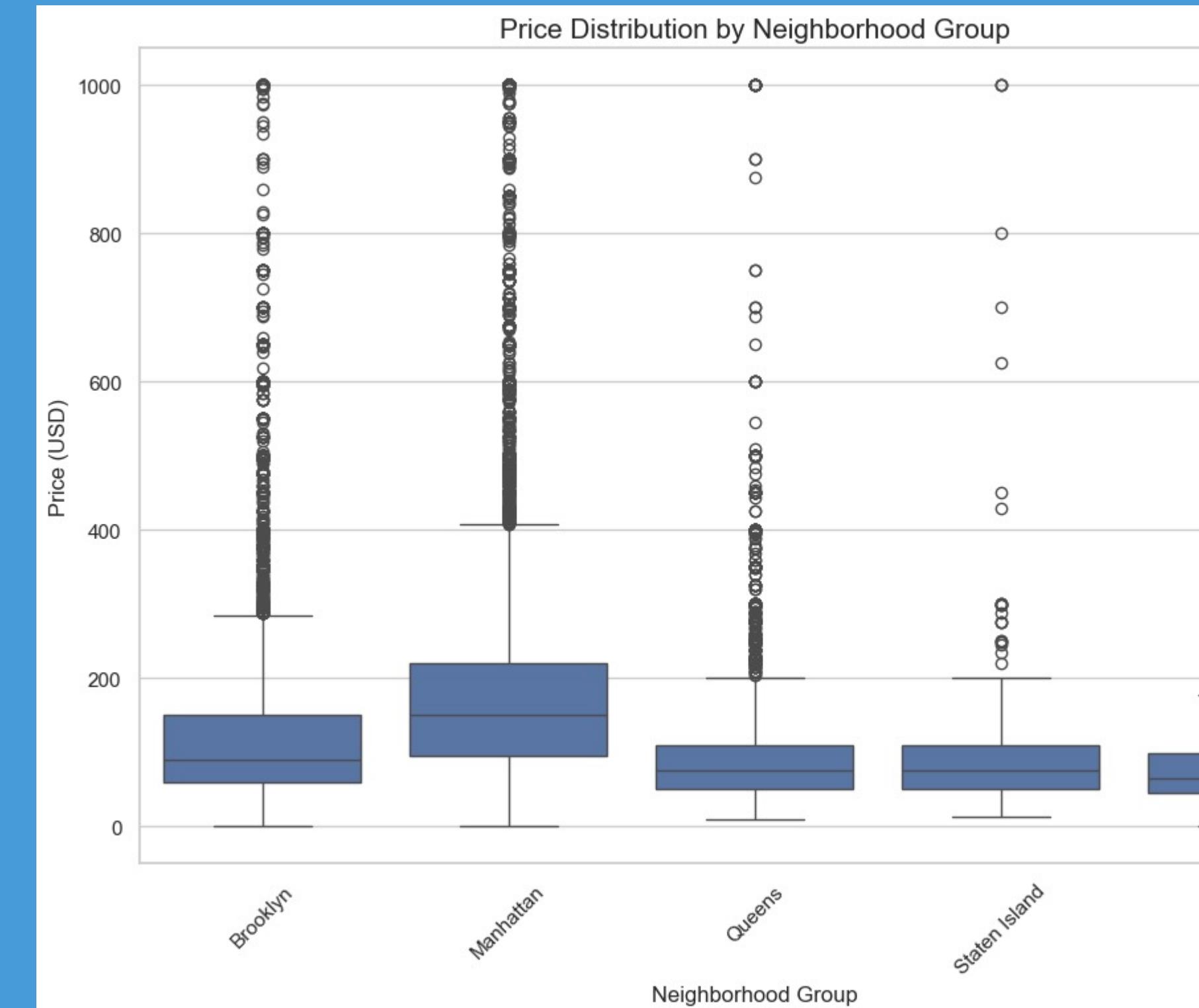
- Manhattan and Brooklyn have the highest number of listings, which is expected due to their central locations and popularity with tourists.
- Other neighborhoods, such as Queens, have fewer listings, but they may offer more affordable options..



2-Neighborhoods

Price distribution

- Manhattan has the highest price range
- This indicates that properties in Manhattan can attract high prices, especially for Entire Homes/Apartments.
- Brooklyn and Queens show a more moderate price range, which could be appealing for budget-conscious travelers.



Insight



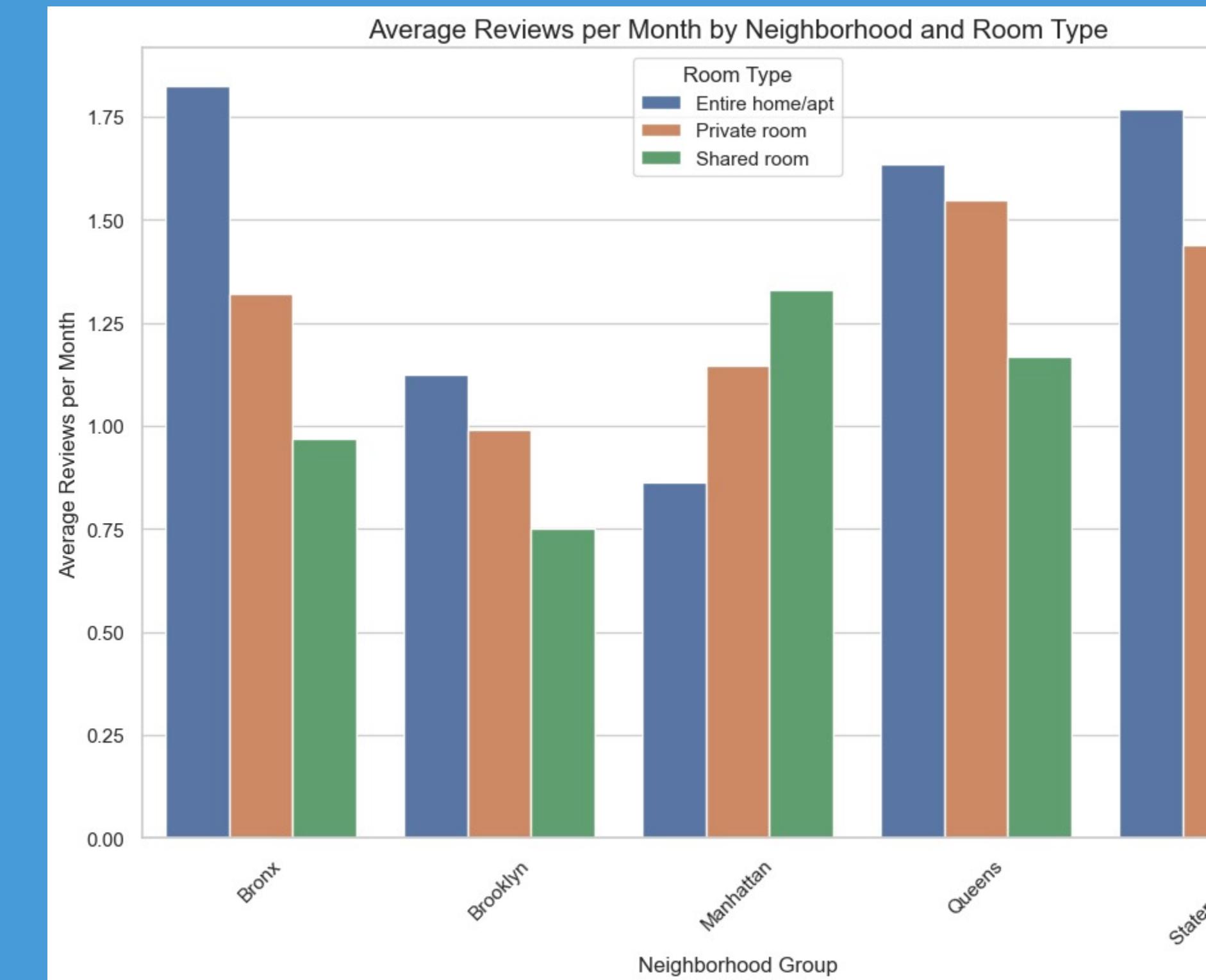
Properties in Manhattan can attract high prices, especially for Entire Homes/Apartments.



Brooklyn and Manhattan lead in reviews per month, indicating higher demand in these areas.

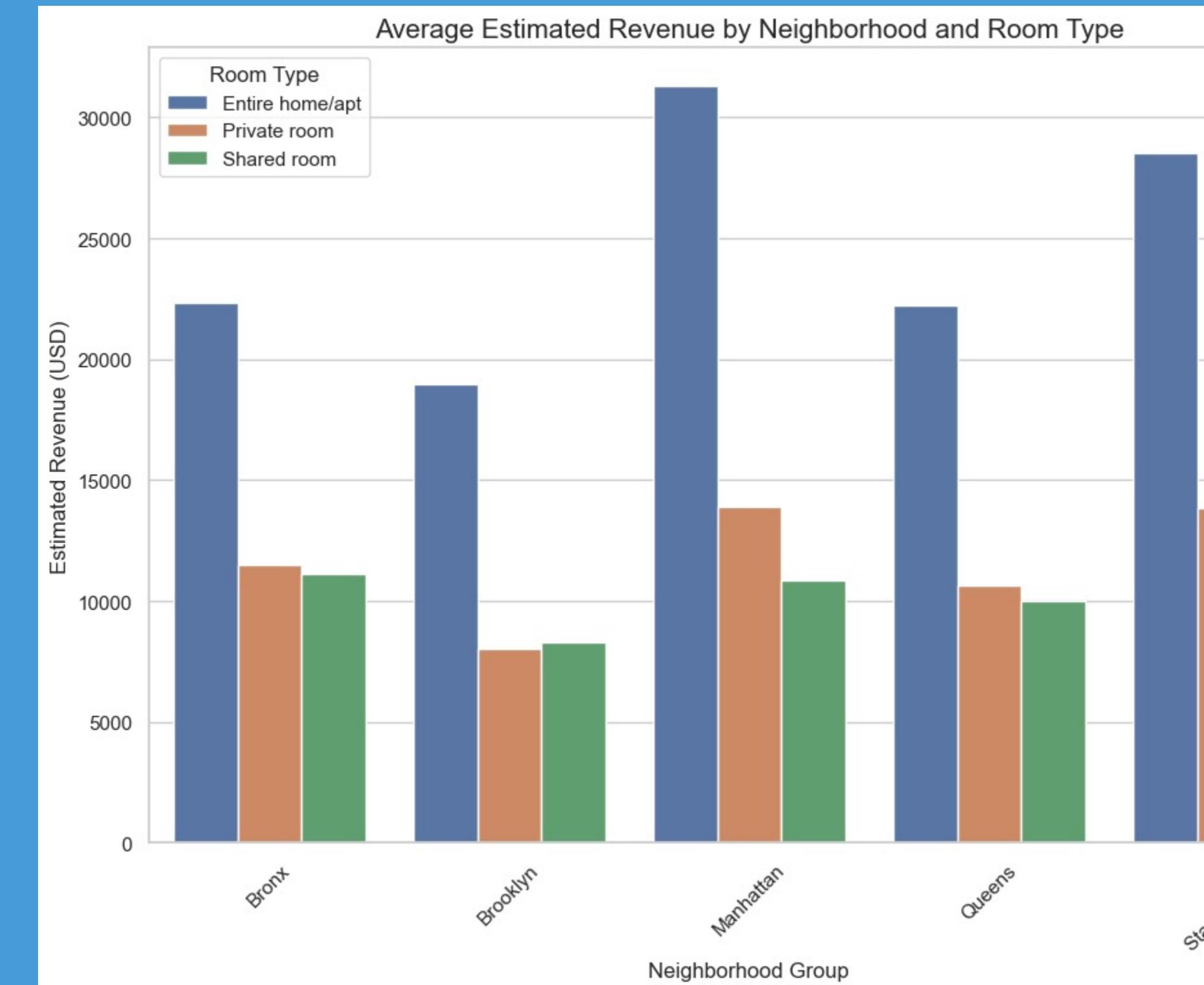
3-profitability

- Revenue estimation: We can estimate the revenue based on the price and availability of each listing.
- Demand: Listings with higher reviews per month suggest higher occupancy rates and demand..



3-profitability

- Demand Trends: Areas with a higher number of reviews per month, such as Brooklyn, suggest higher occupancy rates and consistent demand.
- This could indicate that investing in private rooms in Brooklyn might offer a balance of moderate prices, high occupancy, and stable revenue.



Insight



High-Revenue Areas:
Neighborhoods like Manhattan and Brooklyn are likely to generate higher revenue due to higher room prices and higher demand.



Entire homes/apartments generally show a higher potential for revenue compared to private rooms or shared rooms, especially in

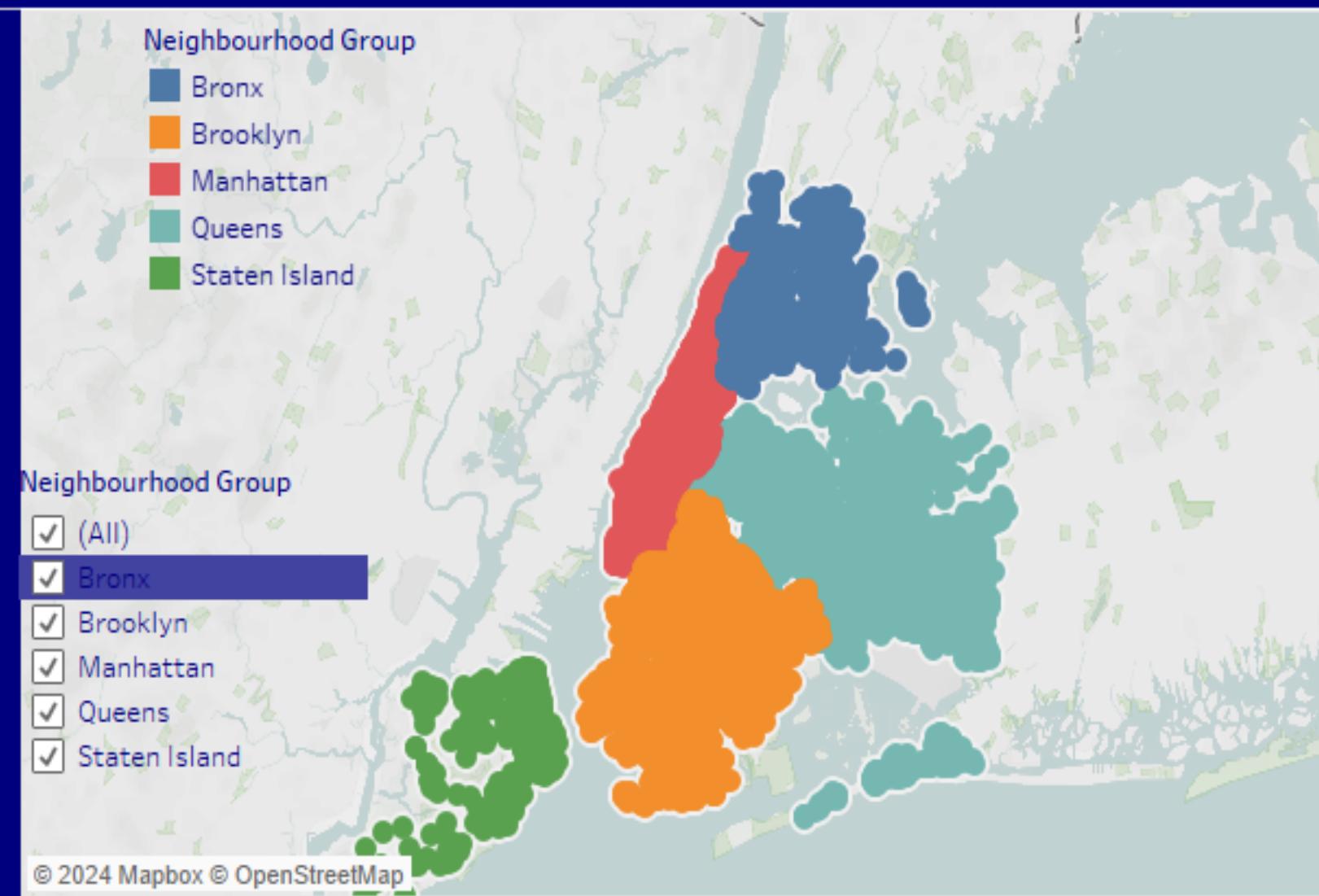


investing in private rooms in Brooklyn might offer a balance of moderate prices, high occupancy, and stable revenue.

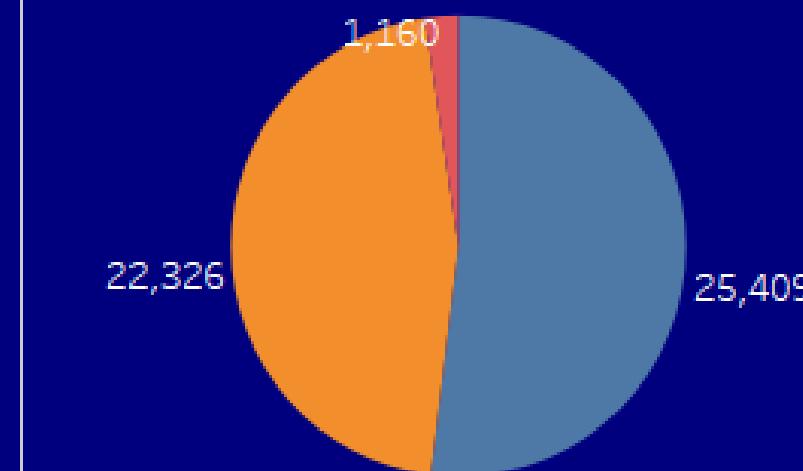
Dashboard

Real Estate Analysis

Geographical distribution



Room Type Distribution



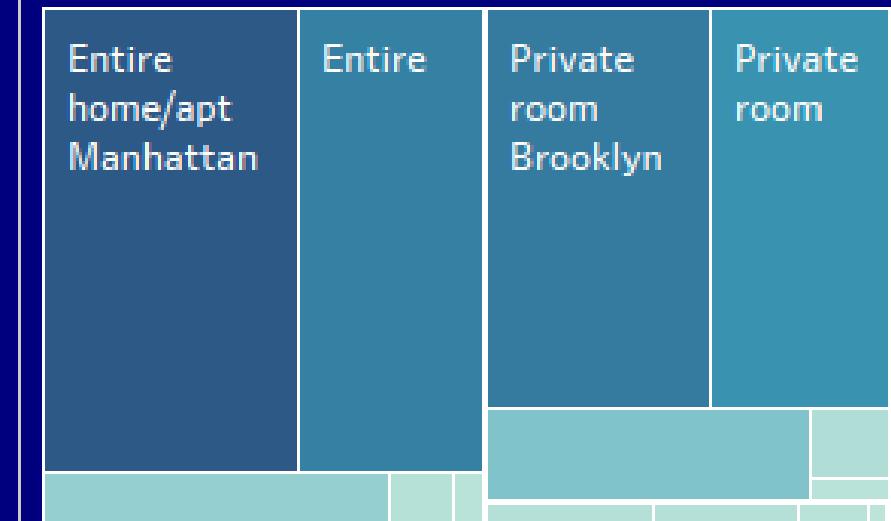
Room Type

- (All)
- Entire home/apt
- Private room
- Shared room

Neighbourhood Group

- (All)
- Bronx
- Brooklyn
- Manhattan
- Queens
- Staten Island

Room type Distribution



Neighbourhood Group

- (All)

Count of Room Type

- 9
- 13,199

Profitability

Navigate to 'Dashboard 2' (Alt+click to navigate)

Conclusion

For investment purposes:

Manhattan is ideal for high-revenue but potentially high-cost investments (entire homes or private rooms).

Brooklyn offers a balance between moderate prices and high demand, making it a good option for stable, consistent returns.

Answers:

Informed decision

Private rooms and entire apartments are the most common room types

Hotel rooms and entire apartments are usually more expensive than private and shared rooms;

Over 80% of the rooms are located in Manhattan and Brooklyn, which are also the most expensive regions

For investment purposes:

Manhattan is ideal for high-revenue but potentially high-cost investments (entire homes or private rooms).

Brooklyn offers a balance between moderate prices and high demand, making it a good option for stable, consistent returns.



Programs used

Data analysis

Excel

Python

R

SQL

**Visualization
& dashboard**

Tableau.

Any Questions?





The background image shows a panoramic aerial view of the Kuala Lumpur city skyline during sunset. The Petronas Twin Towers are prominent on the right, and the KL Tower is visible on the left. The city is densely packed with modern skyscrapers of various heights, set against a backdrop of hills and a cloudy sky.

Thank you