

Capstone Project

Airbnb Bookings Analysis

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Objective

- **Searching for the total number of listings in New York**
- **To determine the average price for each available room type and neighborhood**
- **Finding the most active hosts throughout New York. (who have the most listings and the most reviews)**
- **Identify how price affects the number of places that are reviewed the most.**
- **View New York's price variation for different listings**

Problem Statement

For this project, we will analyze Airbnb's New York City(NYC) data for 2019.

NYC is not only the most famous city in the world but also a top global destination for visitors drawn to its museums, entertainment, restaurants and commerce.

We are primarily focused on discovering how key metrics impact the listing of properties on the platform. This will be achieved by exploring and visualizing the Airbnb NYC dataset using exploratory data analysis (EDA).

In order for Airbnb to succeed, it must analyze thousands of listings provided by its users.

Based on the location of every Airbnb listing, we will analyze its prices, room types, listing names, and other factors ...

What is Airbnb?

Airbnb (ABNB) is an online marketplace that connects people who want to rent out their homes with people who are looking for accommodations in specific locales.

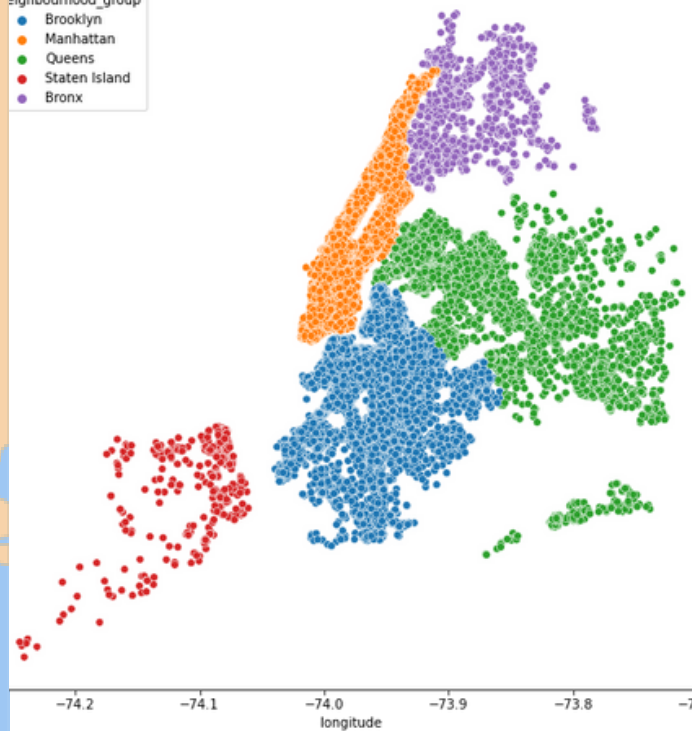
Airbnb stands for "Air Bed and Breakfast," a name that reflects the company's early origins—its co-founders invited paying guests to sleep on an air mattress in their living room to help cover the rent.

Map of New York



neighbourhood_group

- Brooklyn
- Manhattan
- Queens
- Staten Island
- Bronx



Understanding the Data

There are 49,000 observations with various types of field in our dataset.

List of field:

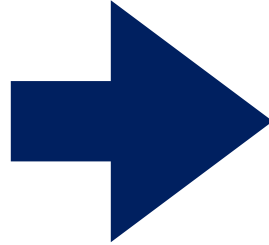
Id	Price
Name	Minimum_nights
Host_id	Number_of_reviews
Host_name	Last_review
Neighbourhood_group	Reviews_per_month
Neighbourhood Latitude	Calculated_host_listing_count
Longitude	availability_365
Room_type	

Treating NA

```

id          0
name        16
host_id     0
host_name   21
neighbourhood_group 0
neighbourhood 0
latitude    0
longitude   0
room_type   0
price       0
minimum_nights 0
number_of_reviews 0
last_review 10052
reviews_per_month 10052
calculated_host_listings_count 0
availability_365 0
dtype: int64

```



```

bmb_df.isnull().sum().sort_values(ascending = False)
id          0
host_id     0
host_name    0
neighbourhood_group 0
neighbourhood 0
latitude     0
longitude    0
room_type    0
price        0
minimum_nights 0
number_of_reviews 0
reviews_per_month 0
calculated_host_listings_count 0
availability_365 0
dtype: int64

```

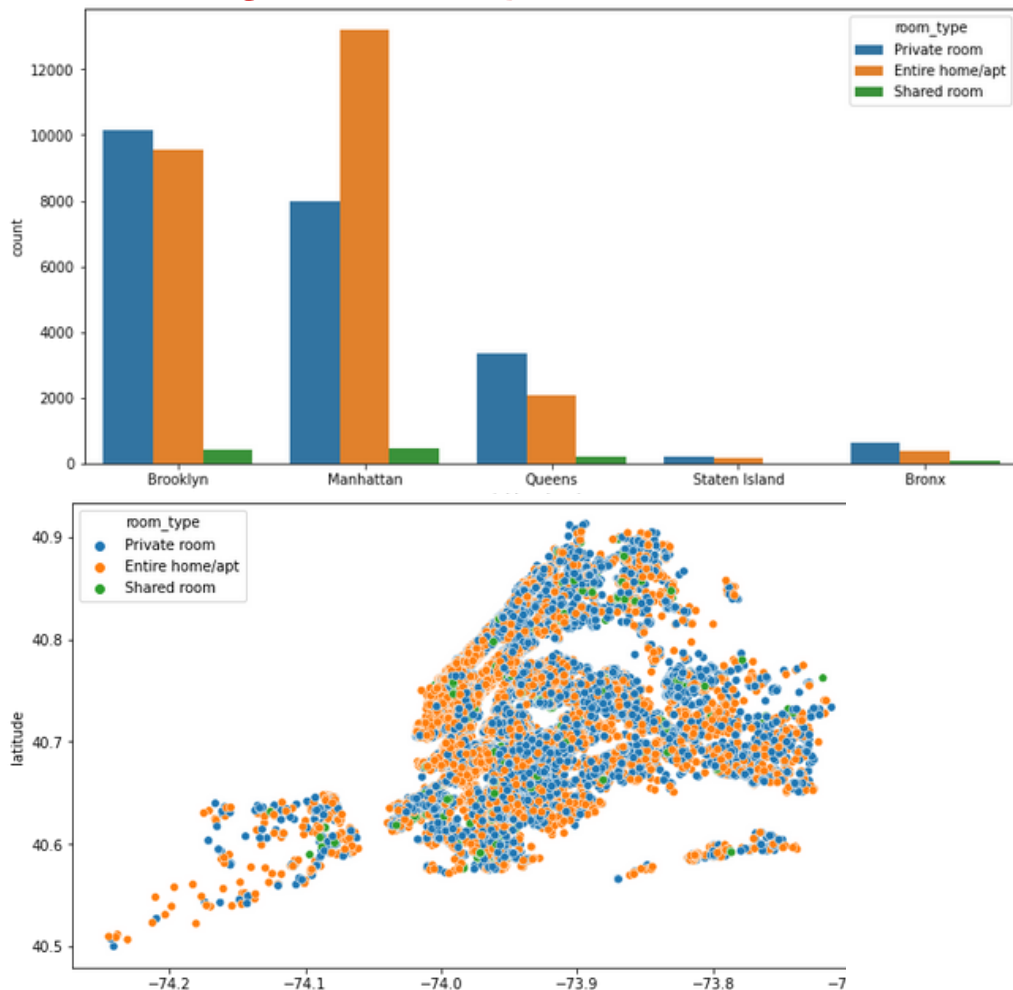
- Compared to the total records in this dataframe, column names 'name' and 'host_name' have very few null values. However, there are noticeable gaps in 'last_review' and 'reviews_per_month' columns.
- Due to its lack of relevance to our analysis, we drop the 'Name' and 'last_review' column here.

Throughout the analysis, I am trying to keep fewer columns, depending on what is most needed.

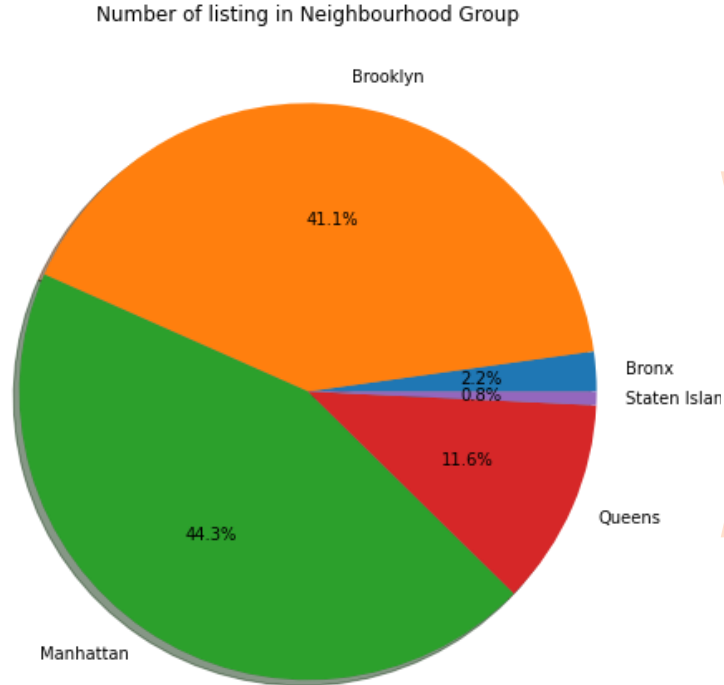
Number of Properties according to Room types



- Manhattan offers more home properties than any other city.
- The number of private room properties is usually higher than the number of residences except for Manhattan
- In all cities, there are very few properties with shared rooms



Number of listings offered by each neighborhood groups in New York

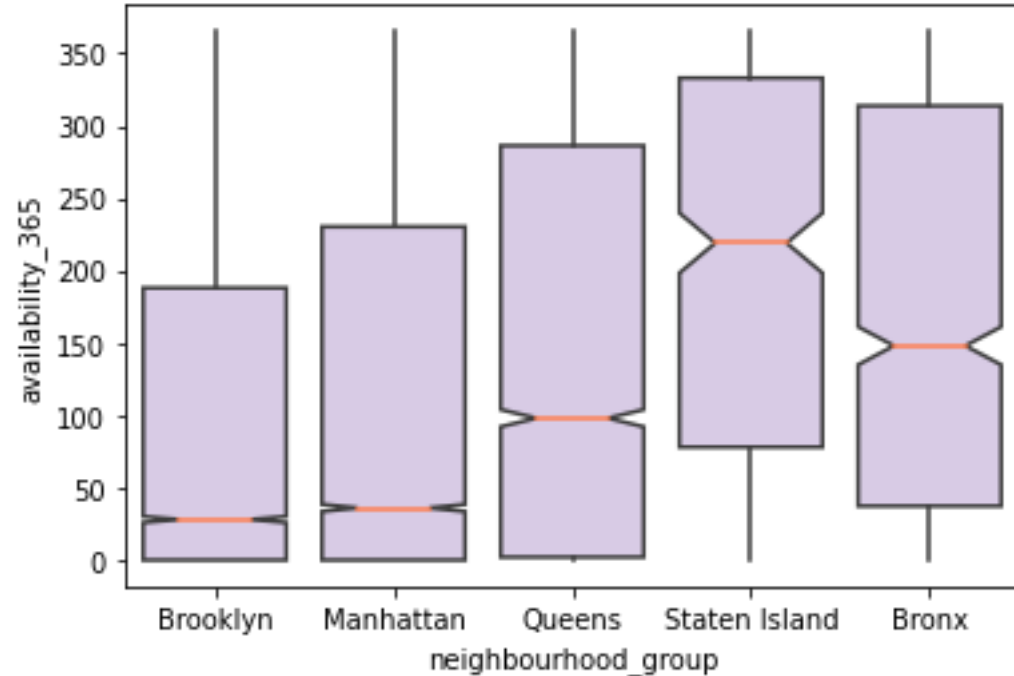


**THERE ARE MORE THAN 85% OF AIRBNB PLACES IN
MANHATTAN AND BROOKLYN,
BUT THERE ARE VERY FEW IN OTHER MAJOR CITIES.**

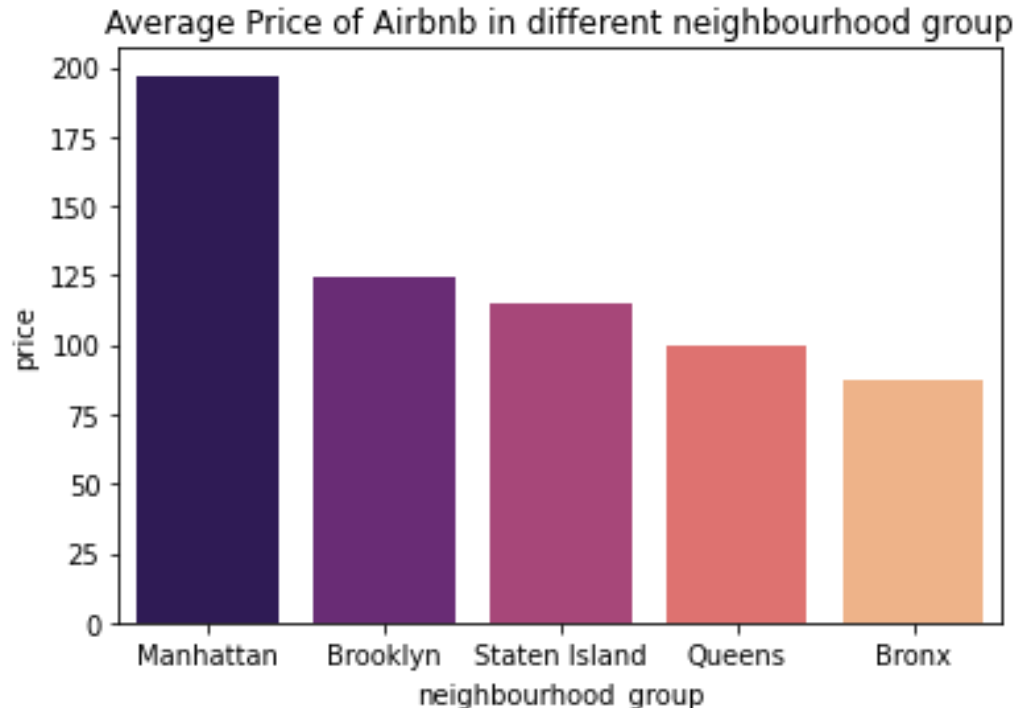
AVAILABILITY 365 days

The location on Staten Island is usually the most available throughout the year.

According to our analysis, Brooklyn, Manhattan and Queens have on average 0 to 100 days of availability per year for listings.



Average price/night in neighborhood groups

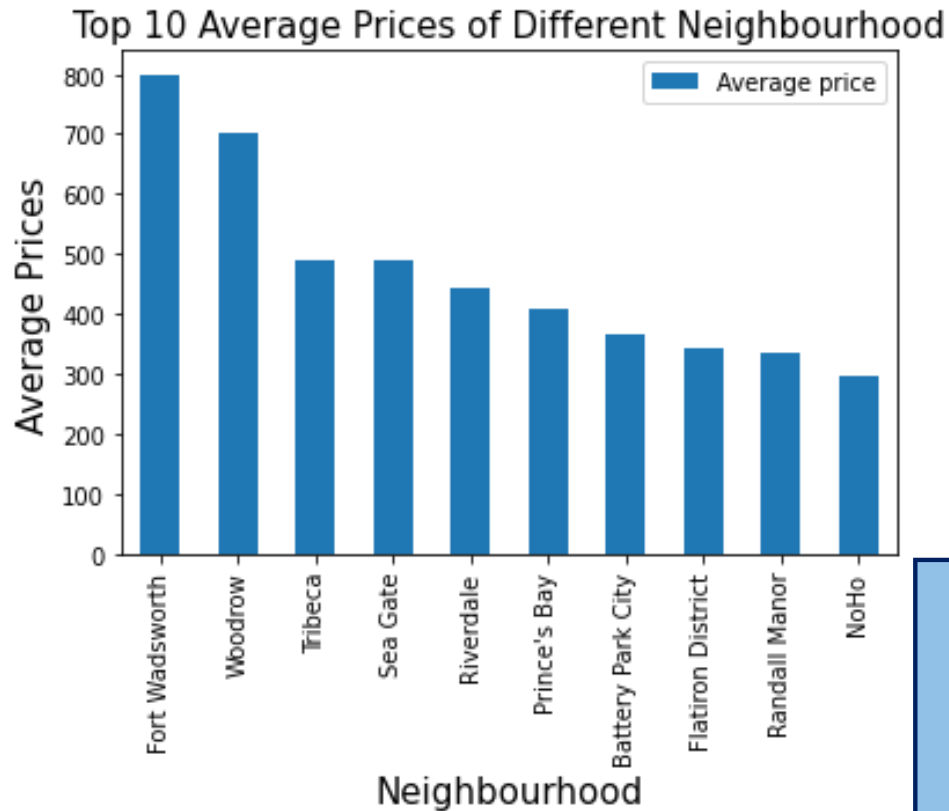


```
bnb_avgprice
```

	neighbourhood_group	price
0	Manhattan	196.895853
1	Brooklyn	124.398009
2	Staten Island	114.812332
3	Queens	99.536017
4	Bronx	87.508257

There is a higher average price in Manhattan than in any other neighborhood group. Listed properties are also plentiful

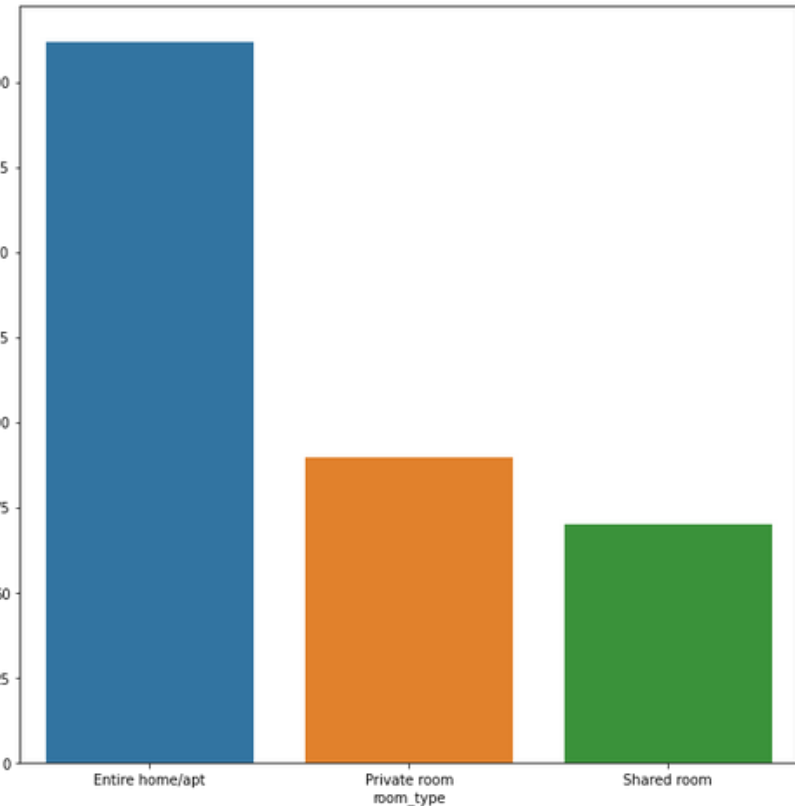
Top 10 highest listing neighbourhood



	neighbourhood	neighbourhood_group	Average price
0	Fort Wadsworth	Staten Island	800.000000
1	Woodrow	Staten Island	700.000000
2	Tribeca	Manhattan	490.638418
3	Sea Gate	Brooklyn	487.857143
4	Riverdale	Bronx	442.090909
5	Prince's Bay	Staten Island	409.500000
6	Battery Park City	Manhattan	367.557143
7	Flatiron District	Manhattan	341.925000
8	Randall Manor	Staten Island	336.000000
9	NoHo	Manhattan	295.717949

In the Staten Island neighbourhood group, Fort Wadsworth has the highest average price at \$800.

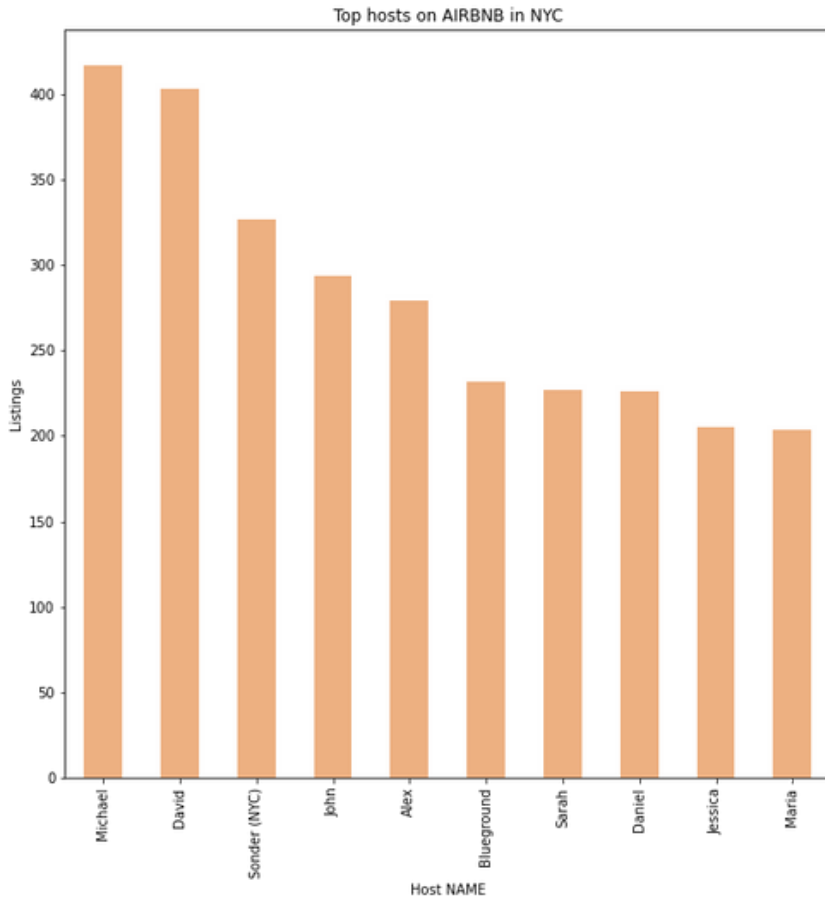
Average price for each room type



	room_type	price
0	Entire home/apt	211.813189
1	Private room	89.788698
2	Shared room	70.127586

There is a high demand for the entire home/apartment and the price is high compared to private rooms and shared rooms

Famous host/host with more properties

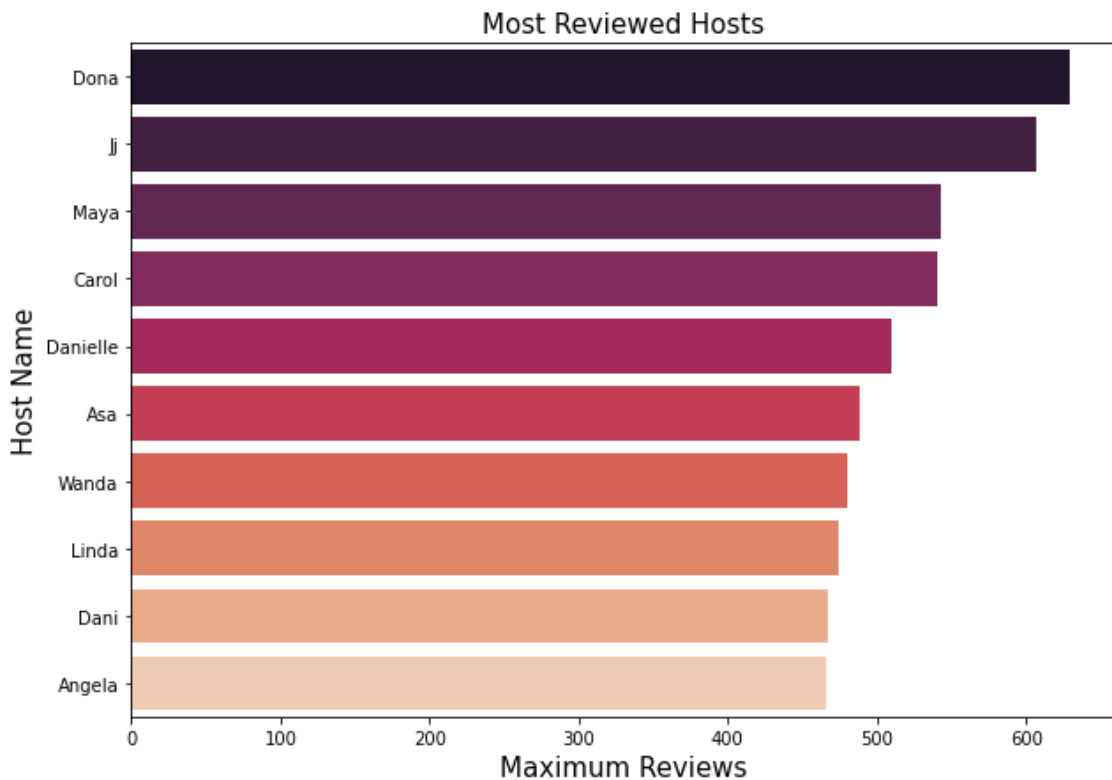


The top 10 hosts are ranked by the number of listings they have.

Michael	417
David	403
Sonder (NYC)	327
John	294
Alex	279
Blueground	232
Sarah	227
Daniel	226
Jessica	205
Maria	204

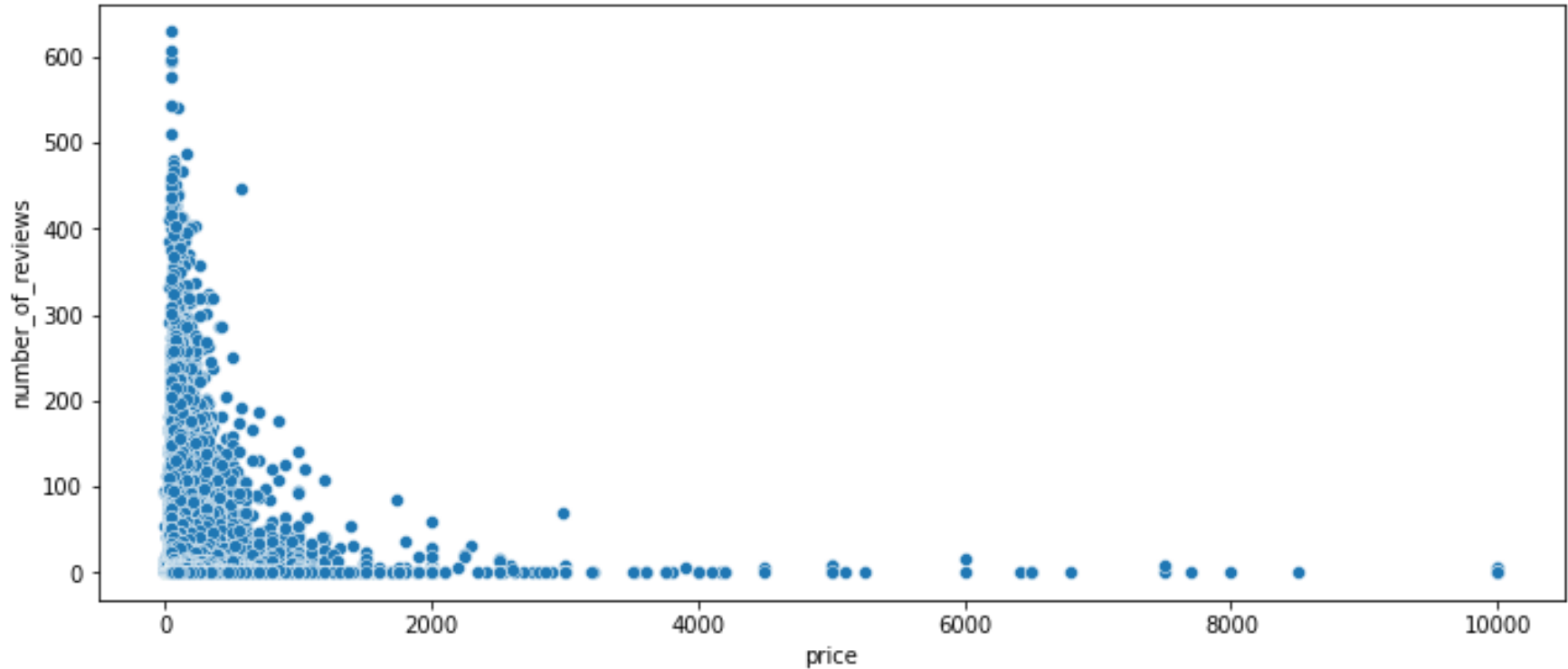
There are more than 414 listings from Michael in the dataset, making him the most popular host in the Newyork city.

MOST REVIEWED HOSTS IN NEWYORK



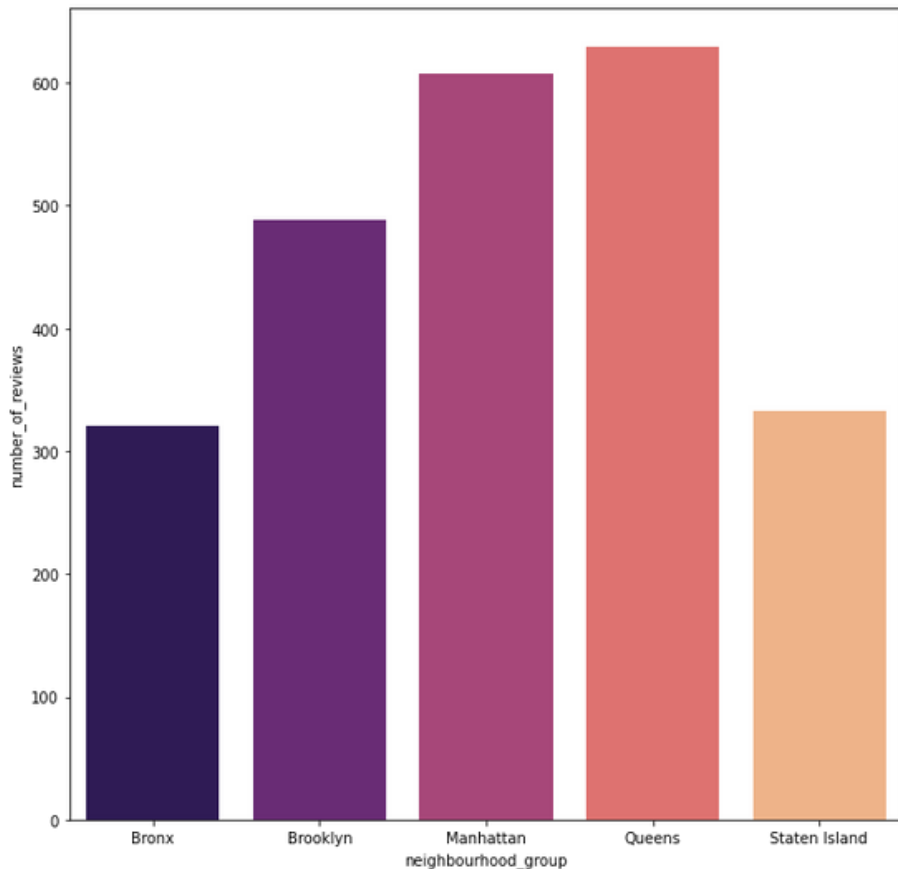
	host_id	host_name	number_of_reviews
23486	47621202	Dona	629
7362	4734398	Jj	607
21304	37312959	Maya	543
4367	2369681	Carol	540
18626	26432133	Danielle	510
13109	12949460	Asa	488
1864	792159	Wanda	480
4818	2680820	Linda	474
147	42273	Dani	467
17517	23591164	Angela	466

How the reviews are corelated with the price



Analysis of the above scatter plot shows that expensive listings have fewer reviews and less expensive listings have more reviews.

Most reviewed neighborhood group in NYC



	neighbourhood_group	number_of_reviews
0	Bronx	321
1	Brooklyn	488
2	Manhattan	607
3	Queens	629
4	Staten Island	333

New York City's Queens beat Manhattan in the rankings of most reviewed places, which is surprising note.

CONCLUSION

- Review counts are lower for expensive listings and higher for less expensive listings.
- Among the five boroughs, Staten Island has the highest average availability with 199 days, while Brooklyn has the lowest average availability with 100 days.
- There were most bookings for an entire home or apartment (25400), followed by rooms in private homes (22314).
- Manhattan and Brooklyn host more than 85% of Airbnb properties
- Price depends on neighborhood; it is high in Manhattan



Challenges Faced



Taking the time to read the dataset and understand some columns in it.

The business model of Airbnb was a key requirement for answering some of the questions.

Handling NaN values, null values and duplicates.

Visualizing the information in multiple ways.

Convey to the reader the results and trends contained in the dataset.



THANK YOU