

Capstone Project

Airbnb Bookings Analysis - EDA

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Contents

- Introduction
- Problem Statement
- Key Objectives
- Data Summary
- Data Description
- Data Preparation
- Exploratory Data Analysis
- Challenges faced
- Conclusion





airbnb

Introduction

What is Airbnb?

- **Airbnb, Inc. is an American company that operates an online marketplace for lodging, primarily homestays for vacation rentals, and tourism activities.**
- **Airbnb does not own any of the listed properties; instead, it profits by receiving commission from each booking. The company was founded in 2008 by Brian Chesky, Nathan Blecharczyk and Joe Gebbia.**

Problem Statement

- Airbnb generates a lot of data -data that can be analyzed and used for security, business decisions, understanding of customers' and providers' (hosts) behavior and performance on the platform, guiding marketing initiatives, implementation of innovative additional services and much more.
- Data analysis on millions of listings provided through Airbnb is a crucial factor for the company.

Key Objectives

- ❑ What can we learn about different hosts and areas?
- ❑ What can we learn from predictions?
- ❑ Which hosts are the busiest and why?
- ❑ Traffic among different areas
- ❑ Finding price difference at different localities

Data Summary

- **Data set-** Airbnb NYC 2019 -contains observations of bookings done in 5 neighbourhood groups in New York City through Airbnb.
- **Rows**-48895
- **Columns**-16
- **Room types** – Entire homes/apt, private rooms, shared rooms
- **Neighbourhood groups**:-Manhattan, Queens, Staten Island, Bronx, Brooklyn

Data Description

id: unique reference number for each different hotel.

name: name of different hotels of various neighborhood groups.

host_id: unique reference id of each individual host.

host_name: name of host hosting different hotels.

neighbourhood_group: aggregate group of neighborhood cities of some particular regions.

neighbourhood: cities present in NYC.

latitude: latitude is a geographic coordinate that specifies the north-south position of a point on the Earth's surface. Latitude is an angle which ranges from 0° at the Equator to 90° at the poles.

Data Description continued...

longitude: Longitude is a geographic coordinate that specifies the east–west position of a point on the Earth's surface, or the surface of a celestial body.

room_type: Different room types available for booking, which contains Private room, Entire home/apt, Shared room.

price: price per each night stay of different room types at various hotels.

minimum_nights: minimum nights booked in particular hotel.

number_of_reviews: count of reviews got for each hotel.

Data Description continued...

last_review: date of last review got by a customer to a particular hotel.

reviews_per_month: count of reviews getting per month of a particular hotel.

calculated_host_listings_count: It represents total number of listings made by a specific host. In some cases, the properties are same but some of the other features differ like(room_type).

availability_365: number of available days for booking in a year

Data Preparation

1. Basic data exploration:

Using *describe()* and *info ()* and size functions of pandas. Gone through a basic exploration of data before entering into EDA.

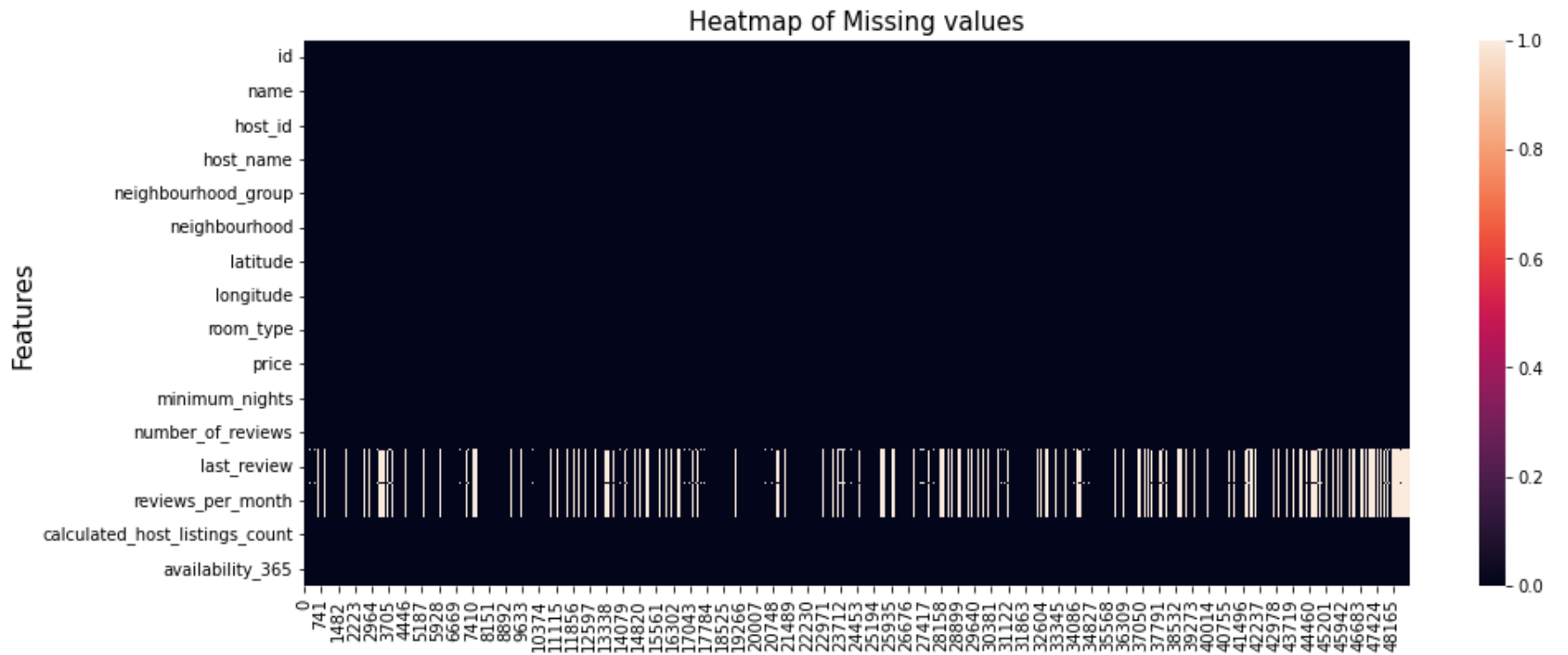
2. Dropping unnecessary data:

Columns like “*reviews_per_month*” has 10052 missing values but this feature is important for analysis while the other column “*last_review*” and “*id*” we can drop it.

3. Verifying Data quality:

We have gone through whole data and checked null values and reviewed any missing data or wrong data.

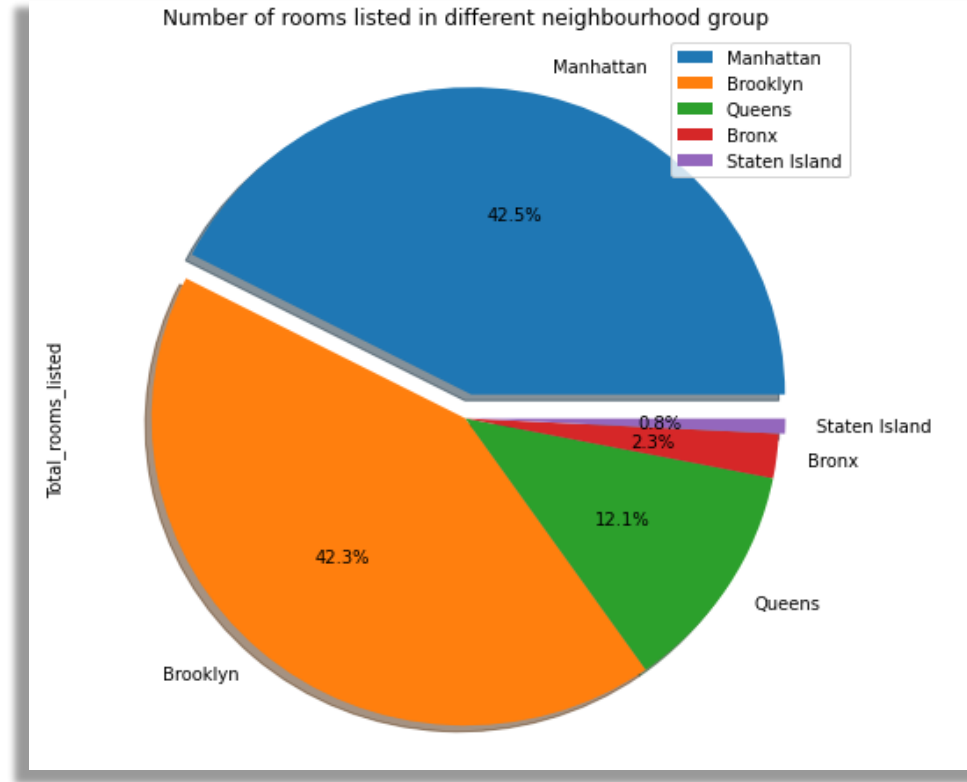
Heatmap of missing values



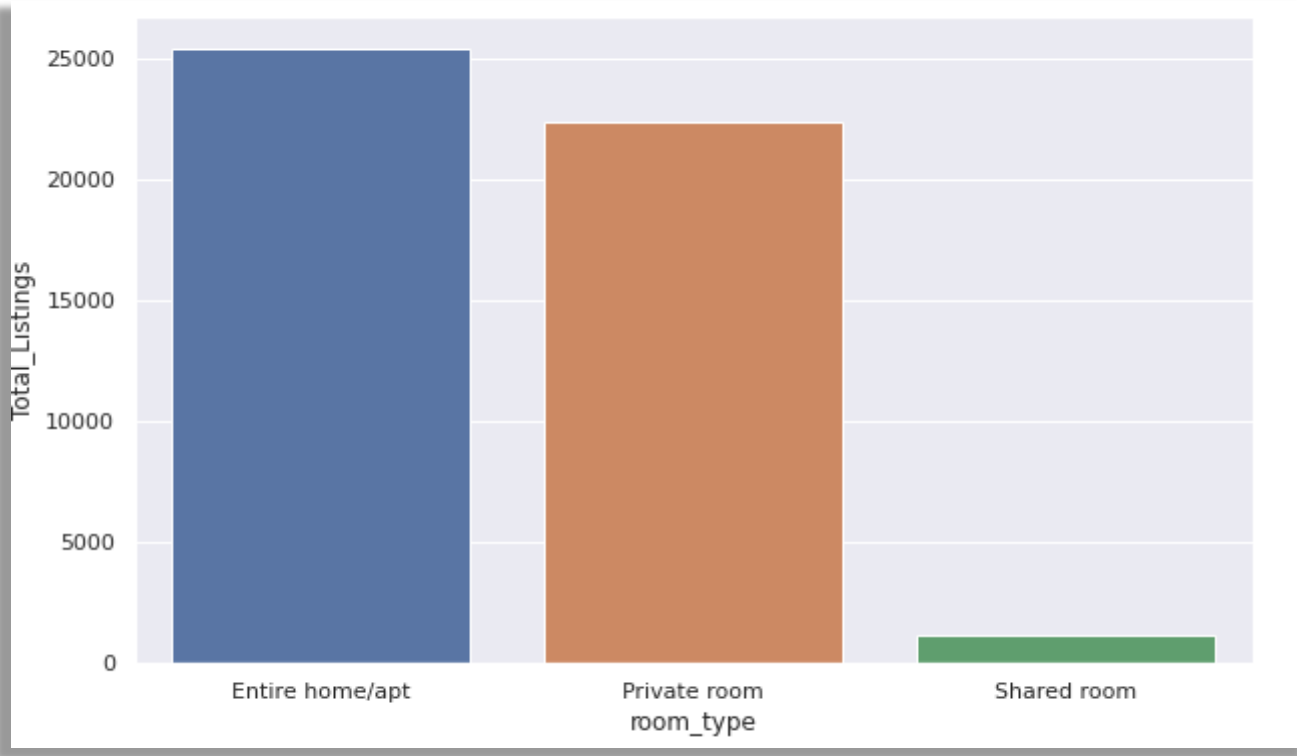
Why EDA ?

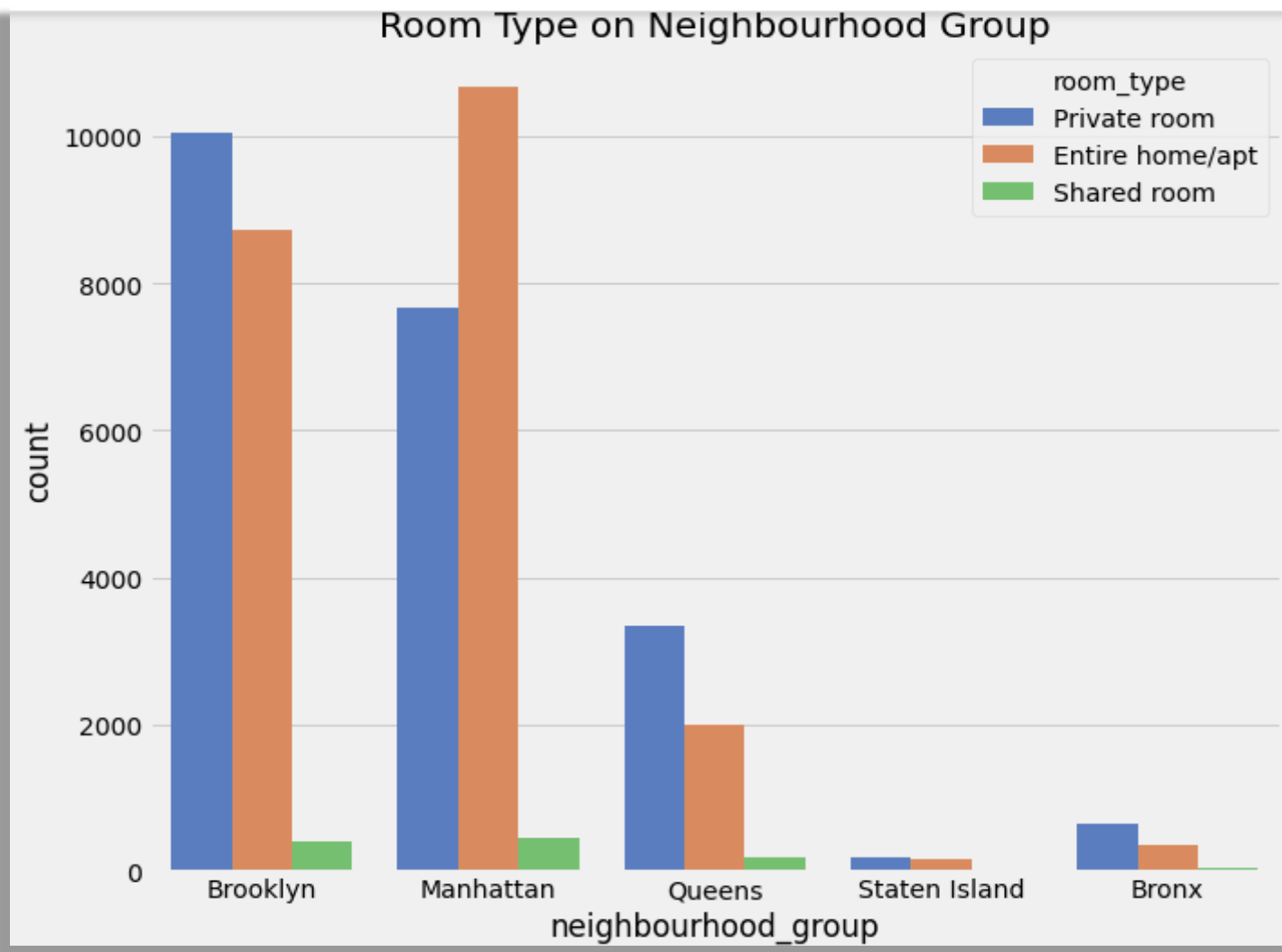


Number of listing in neighbourhood group

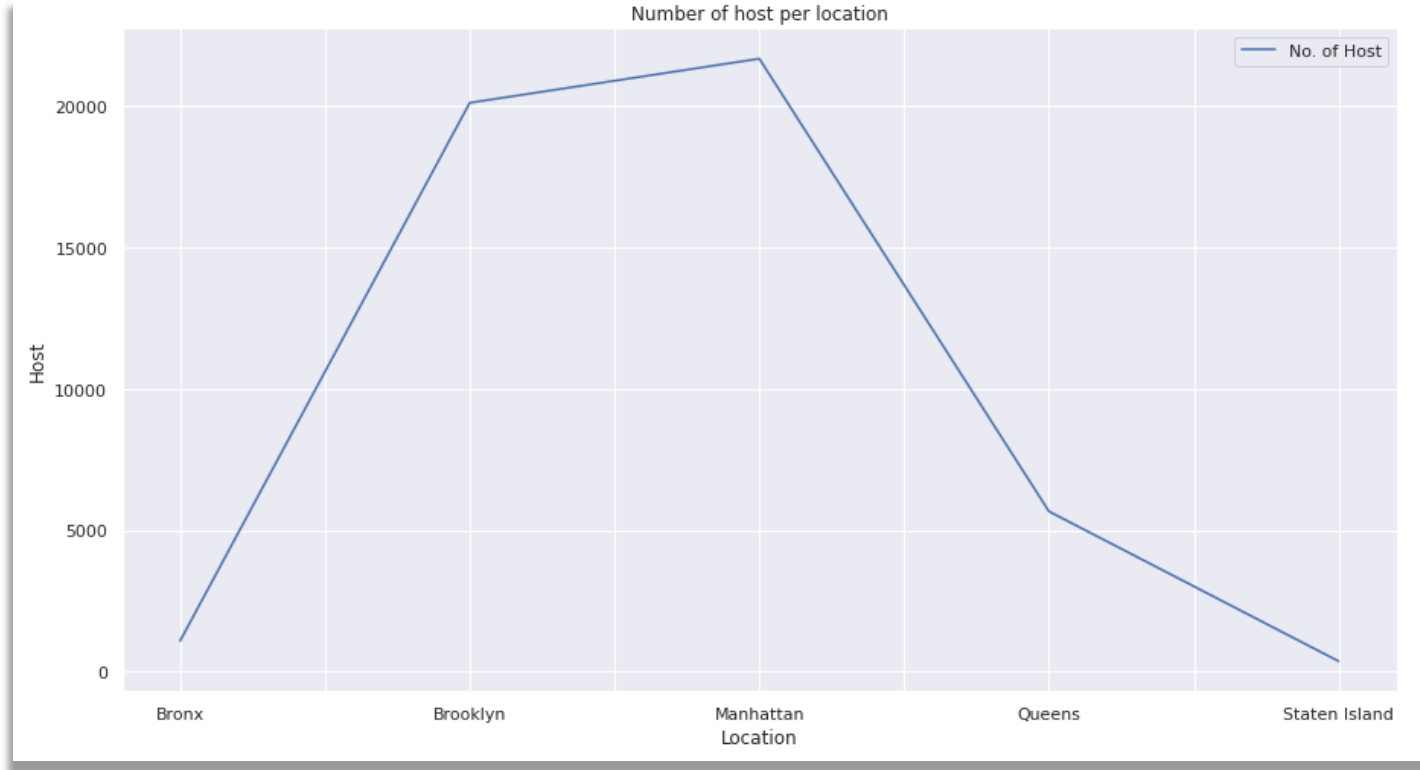


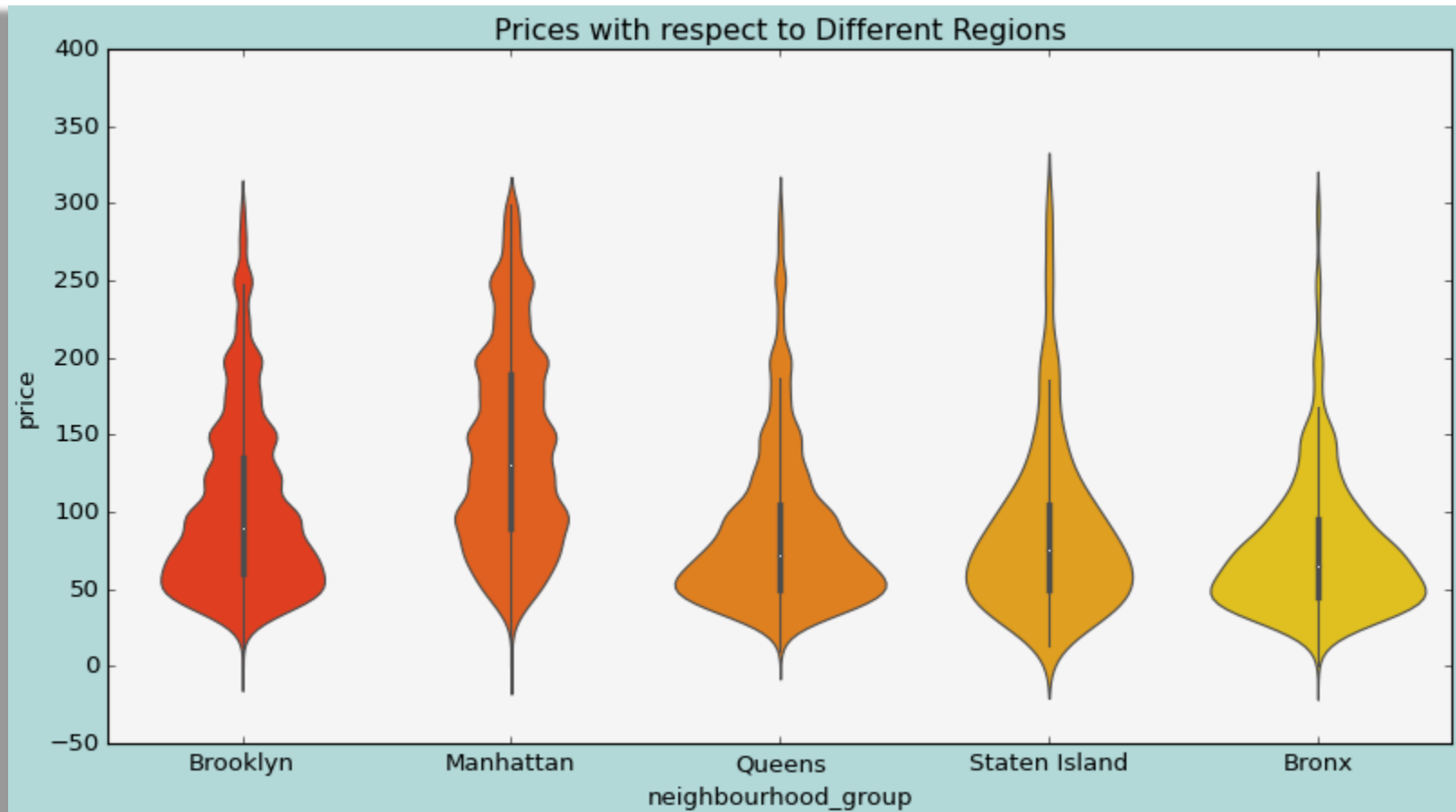
Room Types with most listing

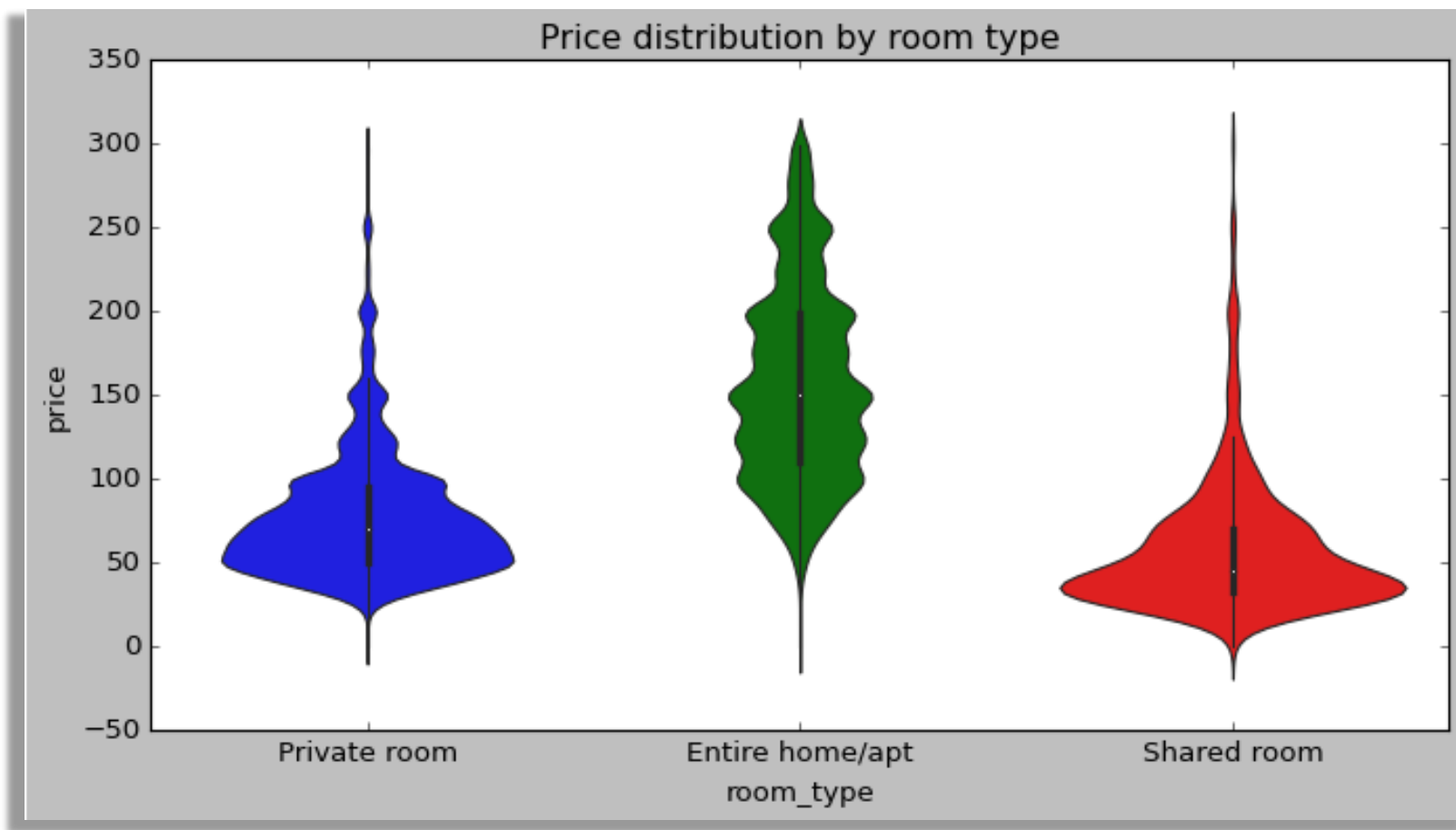




No of Hosts Per Location



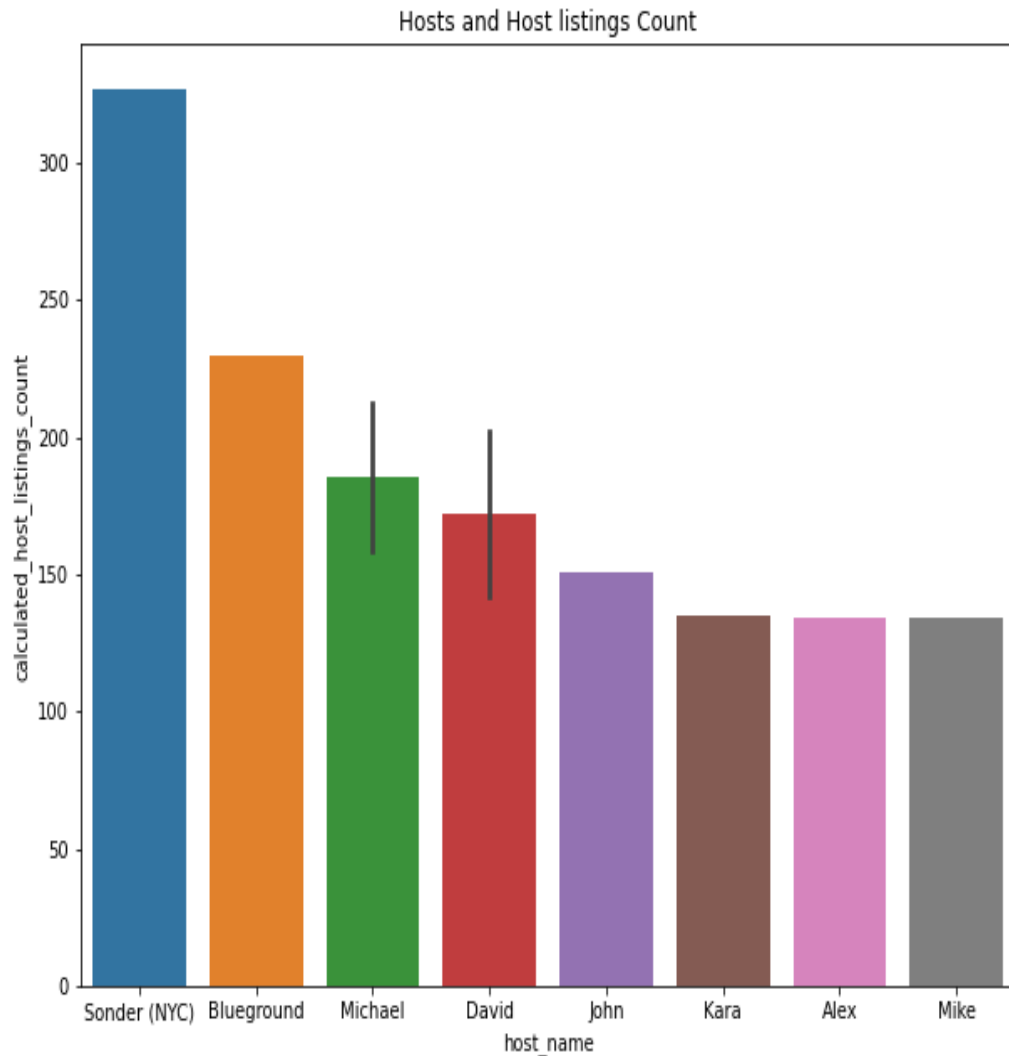




Top Hosts and their listings count

Most Host:

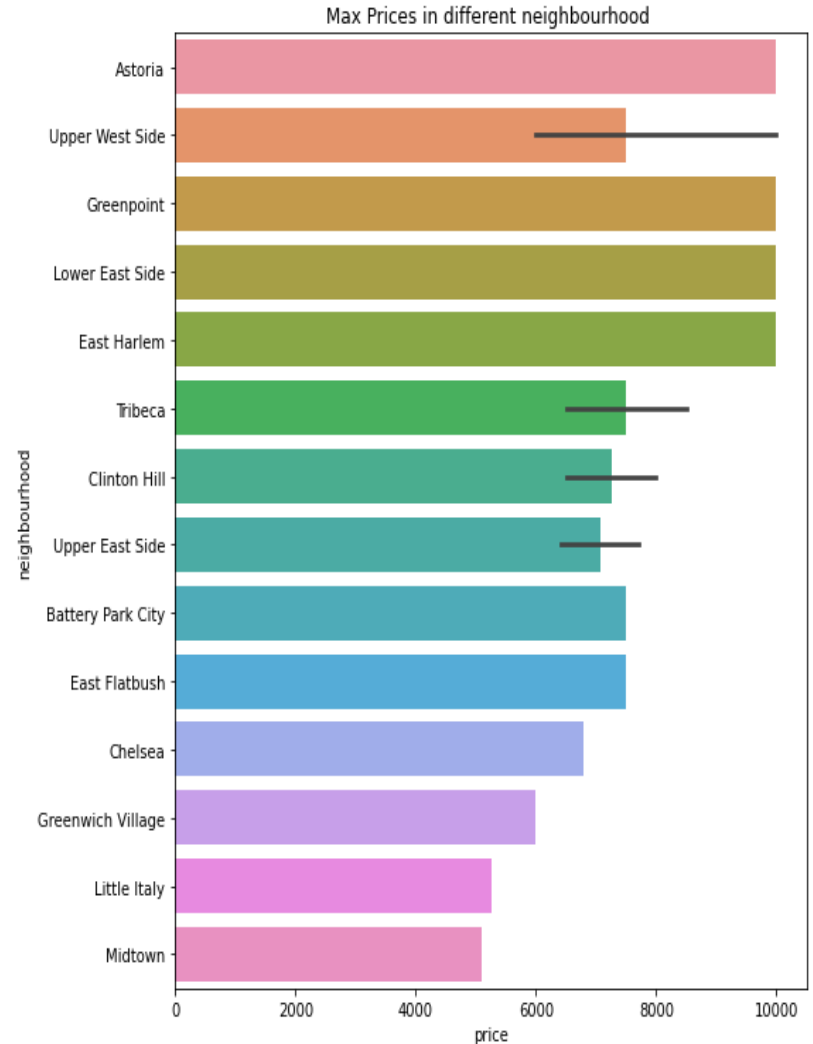
1. Manhattan and Brooklyn



Max prices in different neighborhood

The highest price is 10,000 \$

Minimum price is 5000\$



Costliest And Cheapest

Costliest

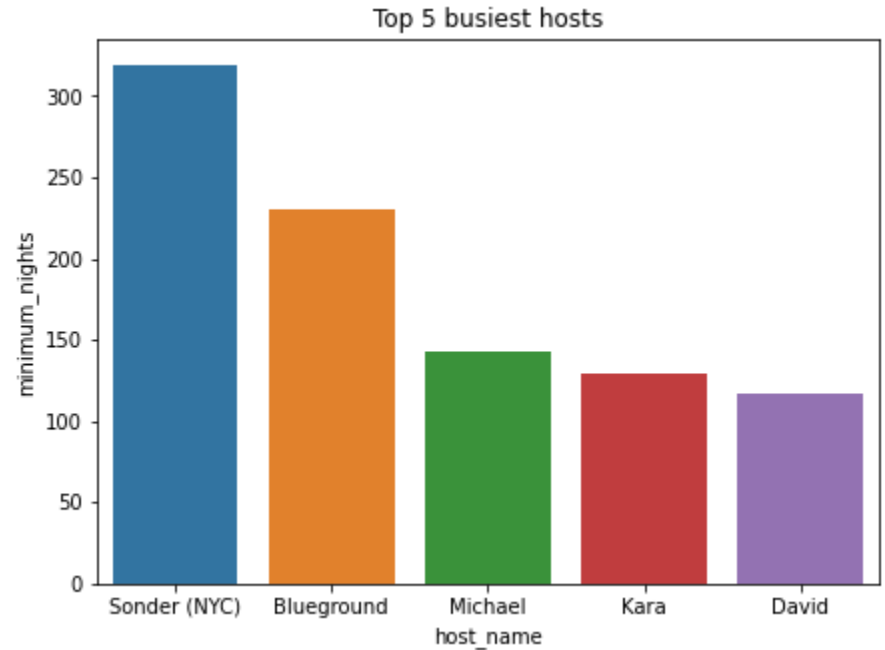
name	neighbourhood_group	host_name	price
Luxury 1 bedroom apt. -stunning Manhattan views	Brooklyn	Erin	10000
1-BR Lincoln Center	Manhattan	Jelena	10000
Furnished room in Astoria apartment	Queens	Kathrine	10000
Victorian Film location	Staten Island	Alissa	5000
"The luxury of Comfort"	Bronx	Kathy	2500

Cheapest

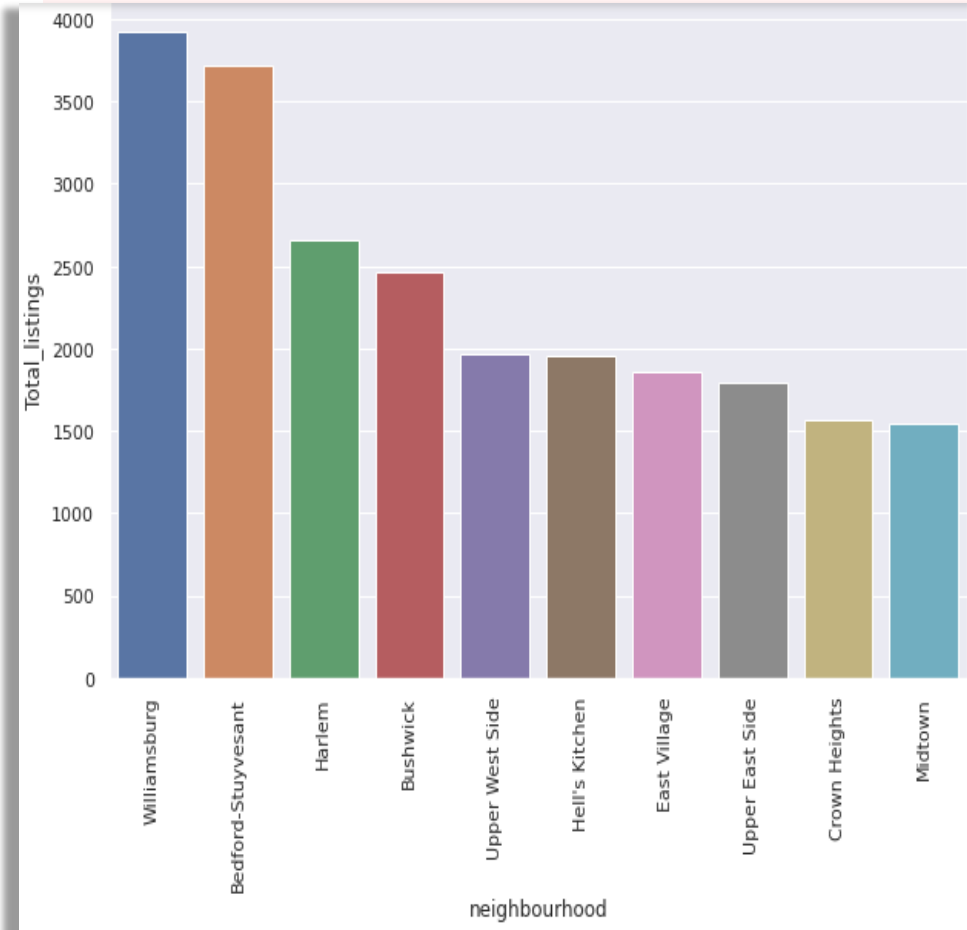
neighbourhood_group	name	host_name	price
Bronx	Bronx Apart	Luz	10
Brooklyn	Newly renovated, fully furnished room in Brooklyn	Katie	10
Manhattan	Large furnished 2 bedrooms- - 30 days Minimum	Sally	10
Queens	IT'S SIMPLY CONVENIENT!	Maria	10
Staten Island	Happy Home 3	Raquel	13

Finding Busiest Host

All 5 busiest host are from manhattan

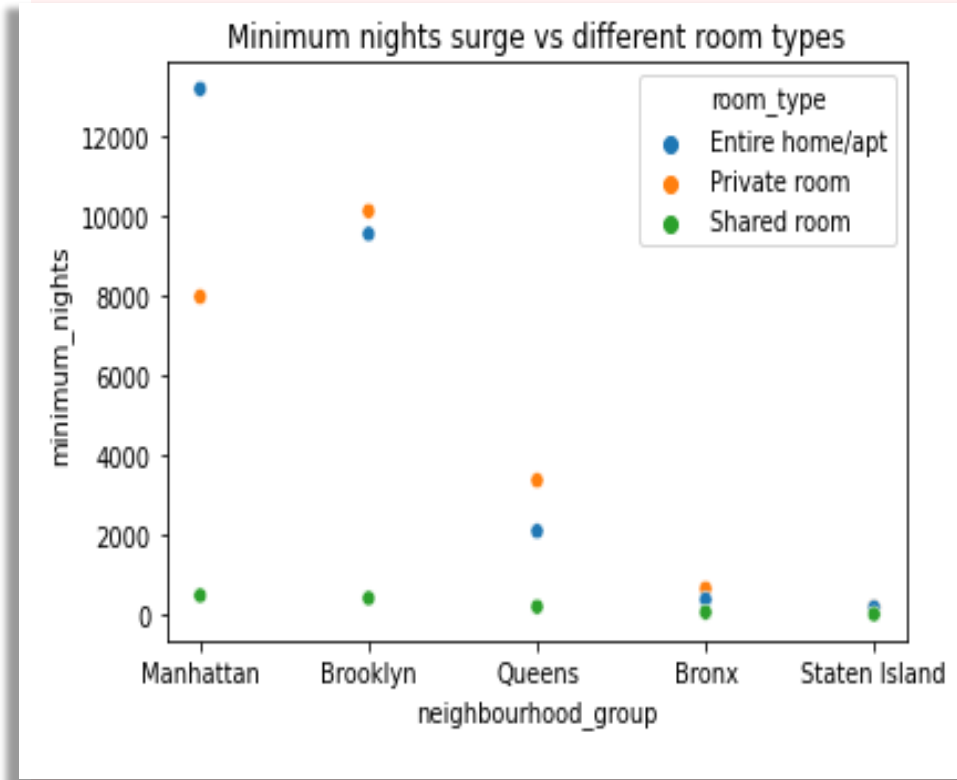


Top 10 neighbourhood on the basis of no of listings in entire NYC

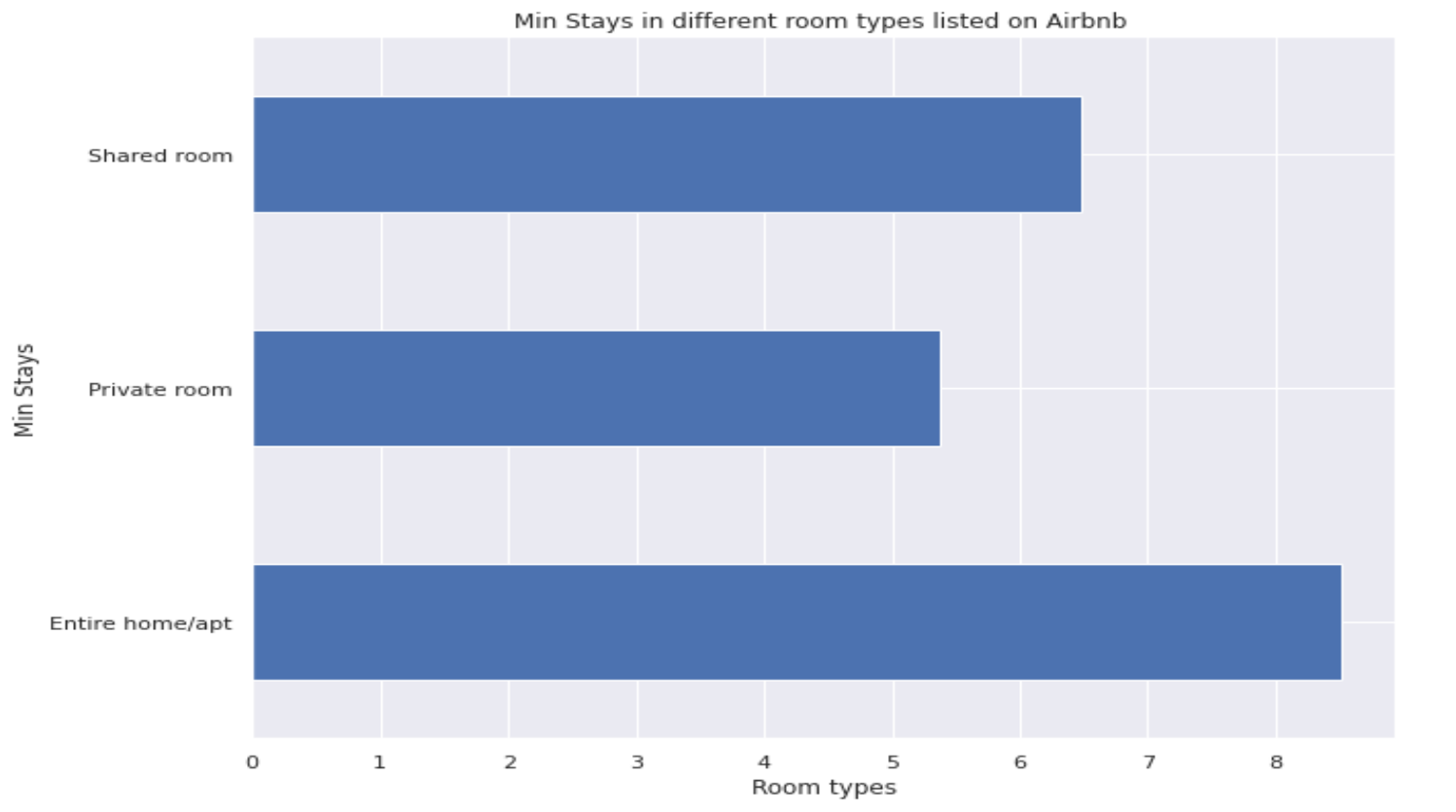


Traffic among different room types and different neighborhood

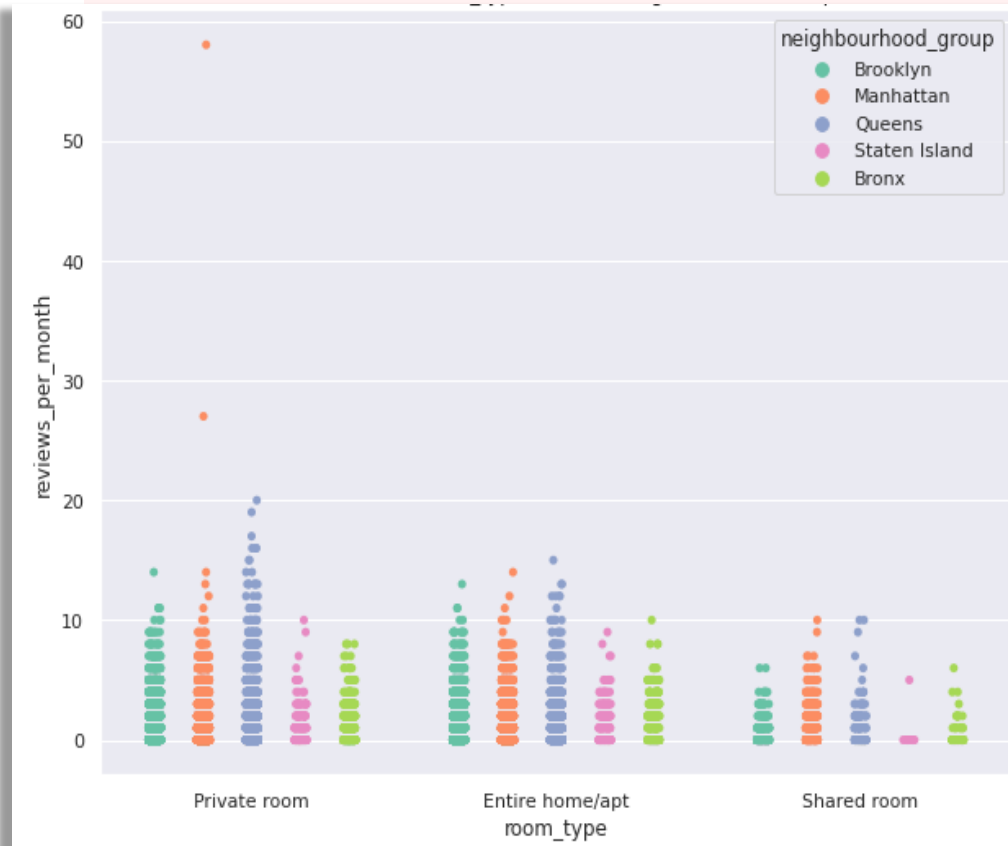
- In Manhattan, people are preferring "Entire Home/apt"
- In Brooklyn, Queens and Bronx people are preferring private rooms
- In staten island, people are having equal preference



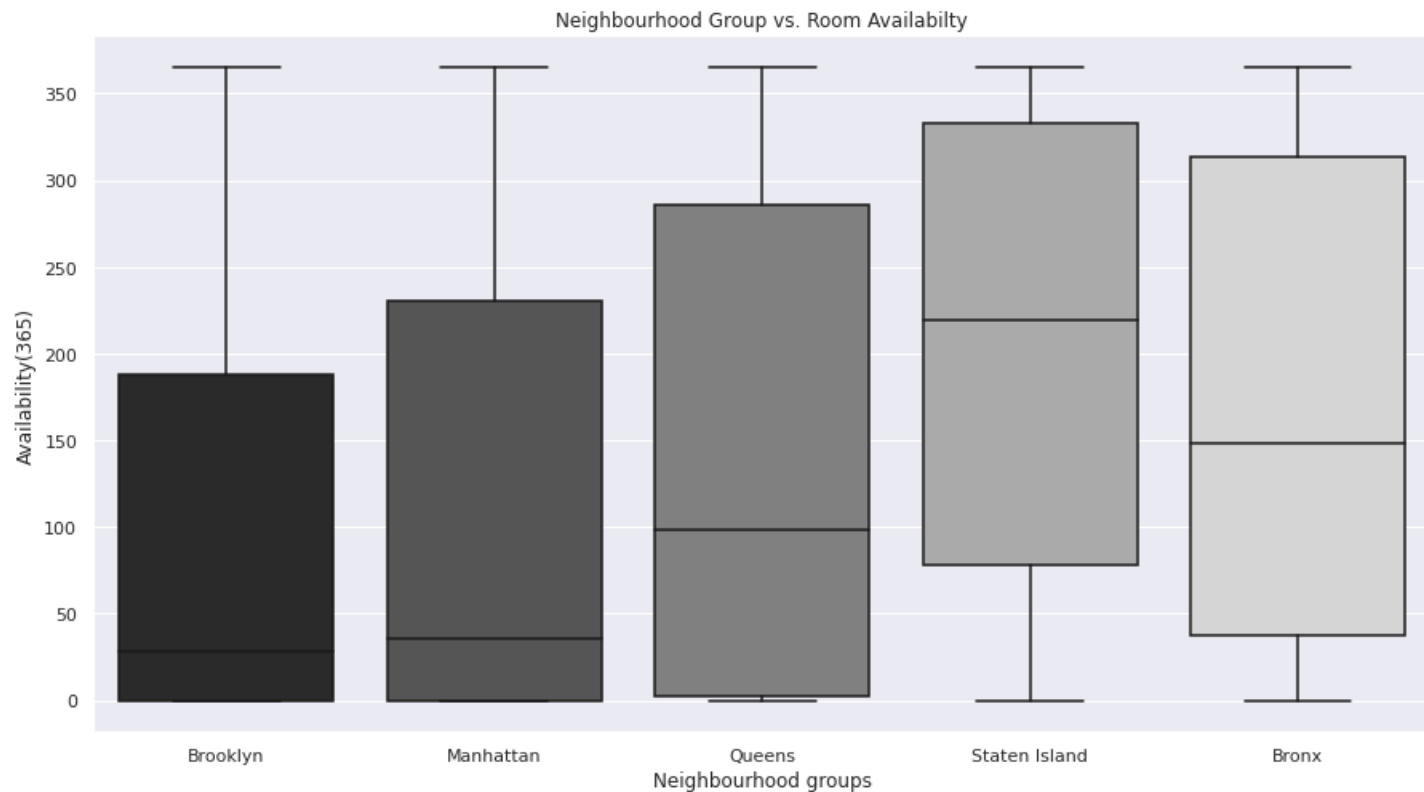
Average Night Stayed



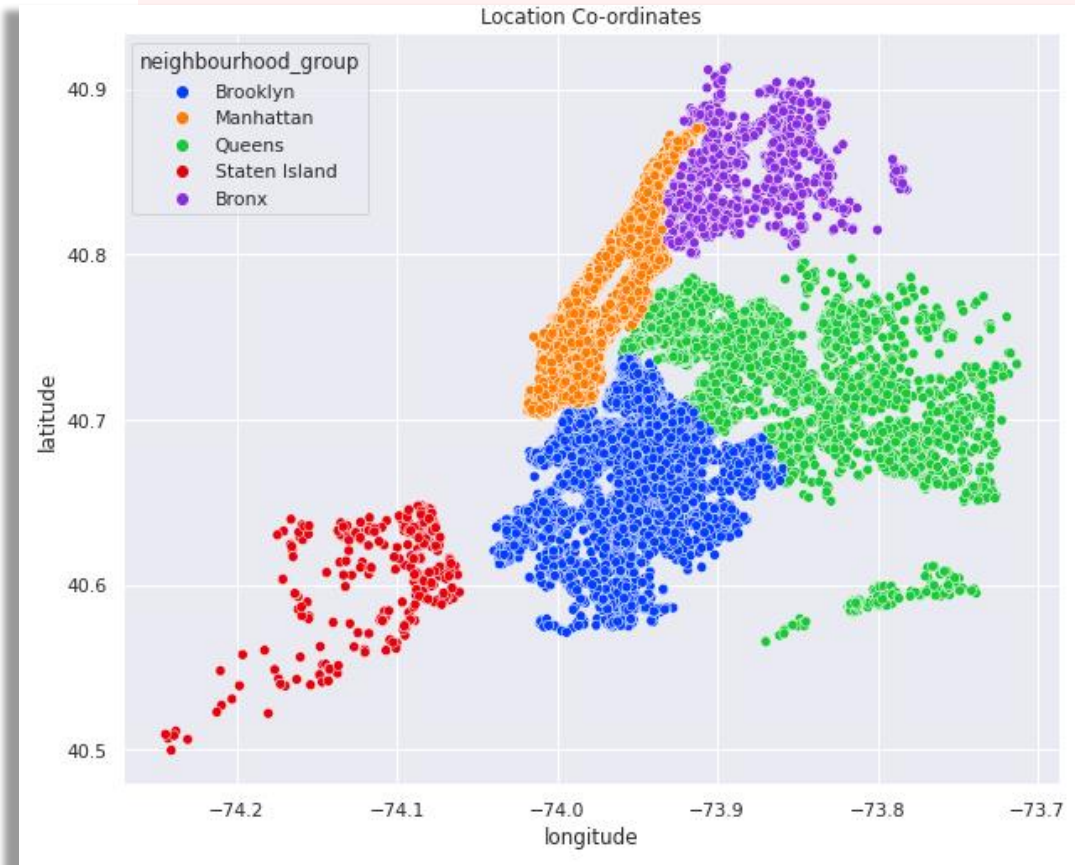
Most Reviewed Room Types



Availability 365



Latitude and Longitude !



Types of Rooms with latitude and longitude



Challenges faced

- Verifying quality of such huge data and looking for error values.
- Dropping down irrelevant data and making the whole data getting ready for full pledged data analysis.
- Understanding and visualizing complex numerical data, and communicating business solutions.
- Analysing and solving various queries and presenting clear cut outputs.

Conclusion

- Entire home/apt is the most expensive and yet get the most traffic. Private room is second highest in terms of booking which suggests people value their privacy.
- Manhattan is found to have high listed neighbourhood group more listings in entire NYC, followed by Brooklyn.
- Brooklyn, Manhattan & Queens are highest as well as lowest renting neighbourhood groups
- Manhattan is the most expensive Neighbourhood group and Brooklyn gets the most traffic.

Conclusion

- Staten Island seems to be more available throughout the year
- Manhattan has more listed properties followed by Brooklyn
- Manhattan is leading in all three roomtypes on average price across NYC
- Sonder(NYC) is the most successful host, who only caters in Manhattan and only lists apartments and private rooms.

Thank You