Analysis of airbnb listings in New York City

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Introduction

Airbnb, Inc. is an American company that operates an online marketplace for lodging, primarily homestays for vacation rentals, and tourism activities. Airbnb provides a platform for hosts to accommodate guests with short-term lodging and tourism-related activities.[1]

New York City is the most diverse and populated city in the United States. The city is made up of 5 boroughs: Manhattan, Brooklyn, Queens, the Bronx and Staten Island, all of which were “grouped” together into a single city. It is widely recognized as the global center for the financial services industry. It’s also the heartbeat of the American media, entertainment (along with California), telecommunications, law and advertising industries. [2]

Problem statement

In January 2020, Airbnb saw 50.2 million website visits.

But with the onset of the pandemic, Airbnb was one of the many businesses in the travel industry to be hit hard.

During the COVID-19 pandemic, Airbnb bookings dropped as much as 96% in some cities.[1] Due to this, Airbnb has seen a major decline in revenue.

Objective

Now that the restrictions have started lifting and people have started to travel more, we have to make sure that it is fully prepared for this change.

The presentation will focus mainly on the following points:

- Get a better understanding about airbnb listings with respect to various parameters
- Understand the customer preferences
- Understand the customer booking trend

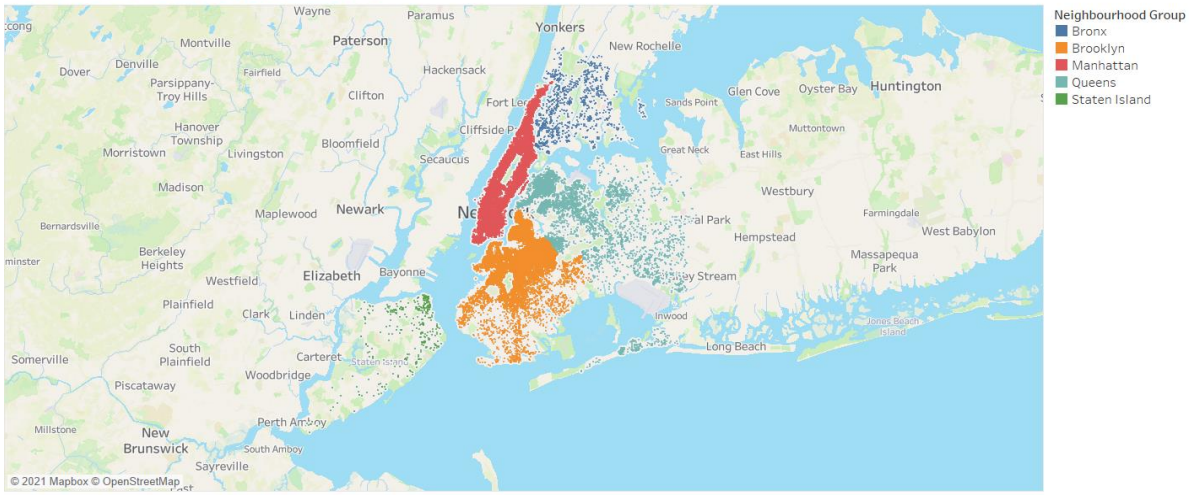
Key Insights

To understand some important insights we have explored the following questions:

- How are the airbnb listings spread out in NYC?
- What type of rooms do customers prefer?
- What could be the ideal number of minimum nights to increase customer bookings?
- Based on customer review:
  - Most preferred neighbourhood
  - Most preferred room type
- Who are the Hosts who have the highest listings w.r.t Neighbourhood?

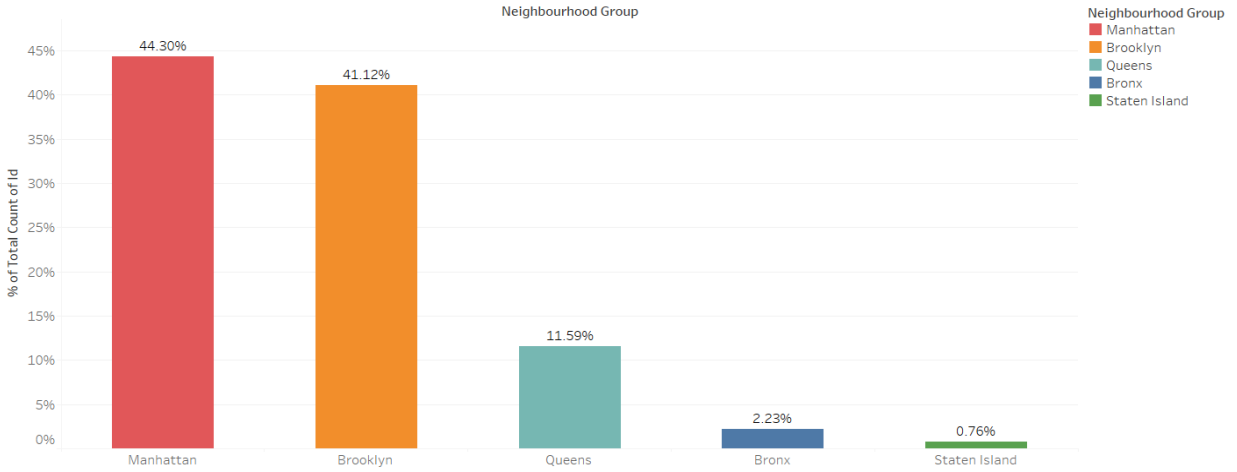
How are the airbnb listings spread out in NYC?

Areas where AirBnB is present in NYC



Map based on Longitude and Latitude. Color shows details about Neighbourhood Group.

Airbnb Listings concentration in NYC

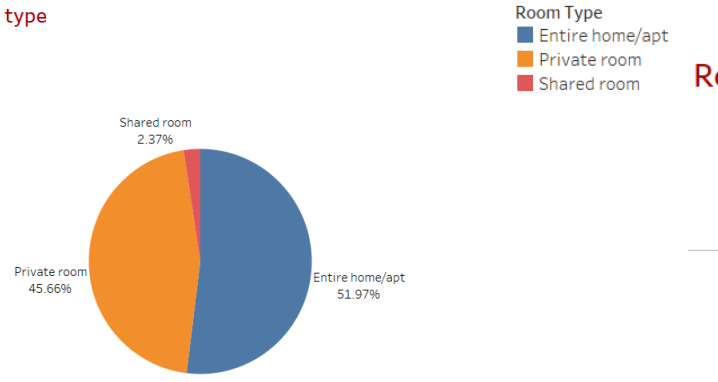


% of Total Count of Id for each Neighbourhood Group. Color shows details about Neighbourhood Group. The marks are labeled by % of Total Count of Id.

- We see that, airbnb has good presence in Manhattan, Brooklyn & Queens.
- Listings are maximum in Manhattan (44%) & Brooklyn (41%) owing to the high population density and it being the financial and tourism hub of NYC. Staten Island(~1%) has the least number of listings, due to its low population density and very few tourism destinations.

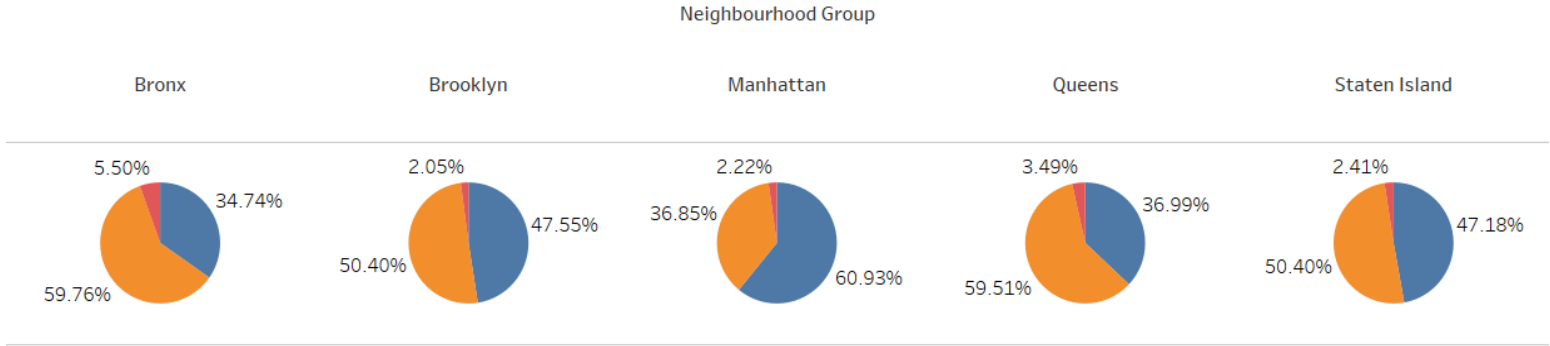
What type of rooms do customers prefer?

Customer preference for Room type



Room Type and % of Total Count of Host Id. Color shows details about Room Type. Size shows count of Host Id. The marks are labeled by Room Type and % of Total Count of Host Id.

Room type w.r.t Neighbourhood

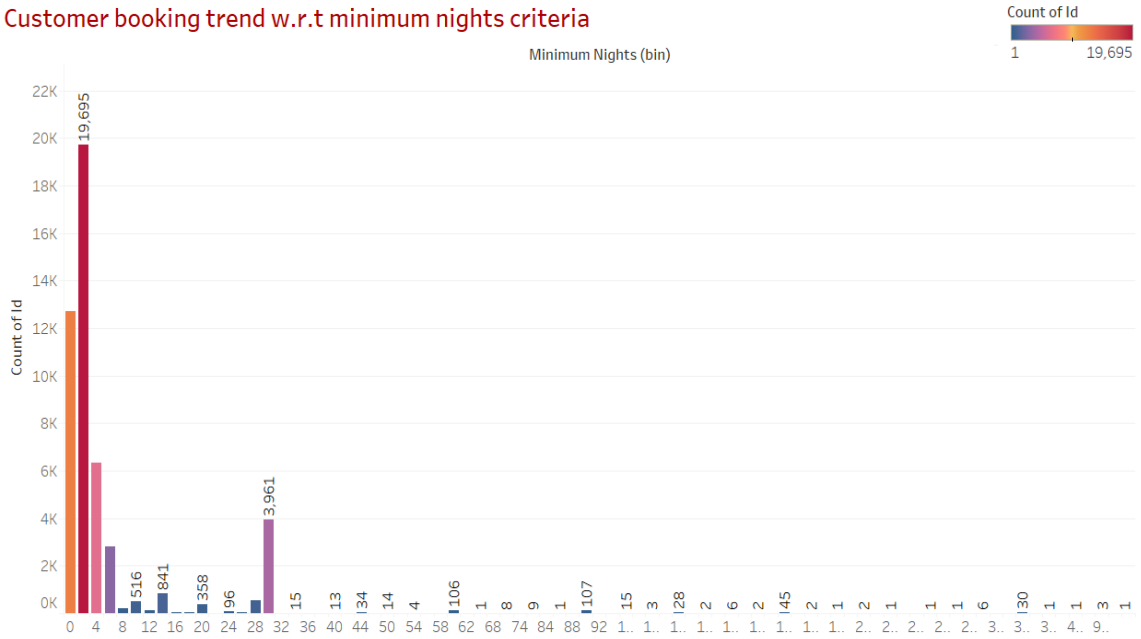


% of Total Count of Id broken down by Neighbourhood Group. Color shows details about Room Type. The marks are labeled by % of Total Count of Id.

- There are three types of rooms - Entire home/Apartment, Private room & shared room.
- Overall, customers appear to prefer private rooms (45%) or entire homes (52%) in comparison to shared rooms (2.4%). Airbnb can concentrate on promoting shared rooms with discounts to increase bookings and also acquire more private listings.
- Queens & Bronx contribute 60% each to private rooms, more than the combined ratio of 45%. Whereas, Manhattan has a higher contribution in entire home (61%), compared to the combined ratio of 52%.

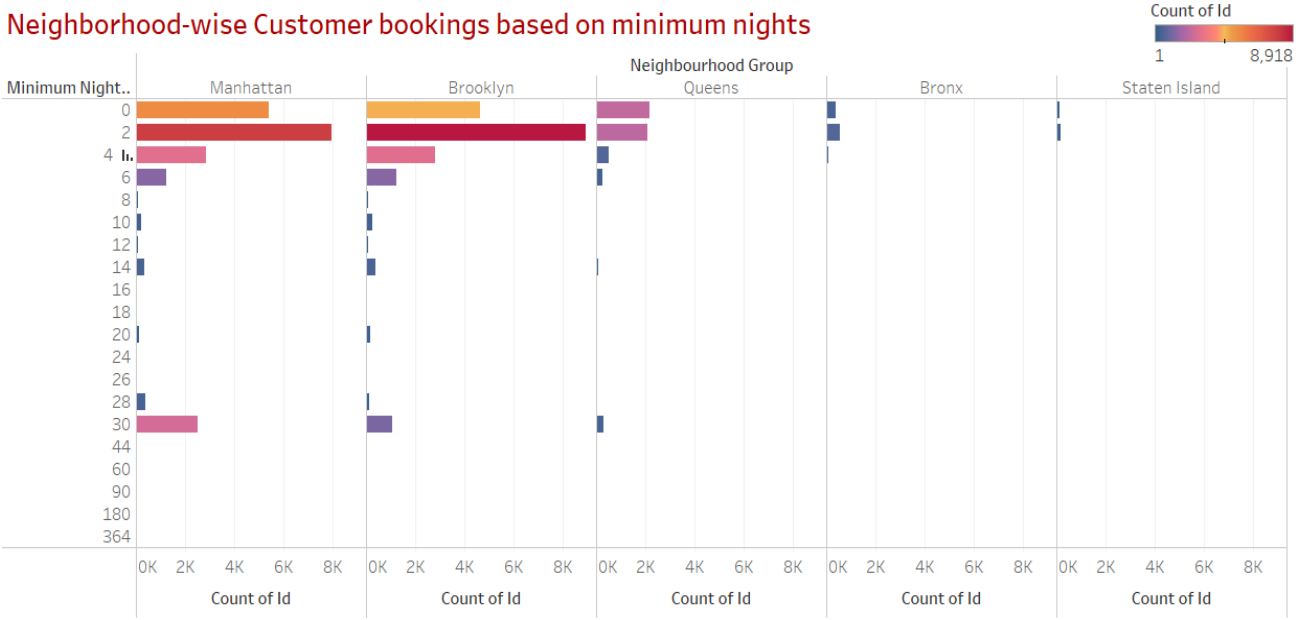
What could be the ideal number of minimum nights to increase customer bookings?

Customer booking trend w.r.t minimum nights criteria



Count of Id for each Minimum Nights (bin). Color shows count of Id. The marks are labeled by count of Id.

Neighborhood-wise Customer bookings based on minimum nights

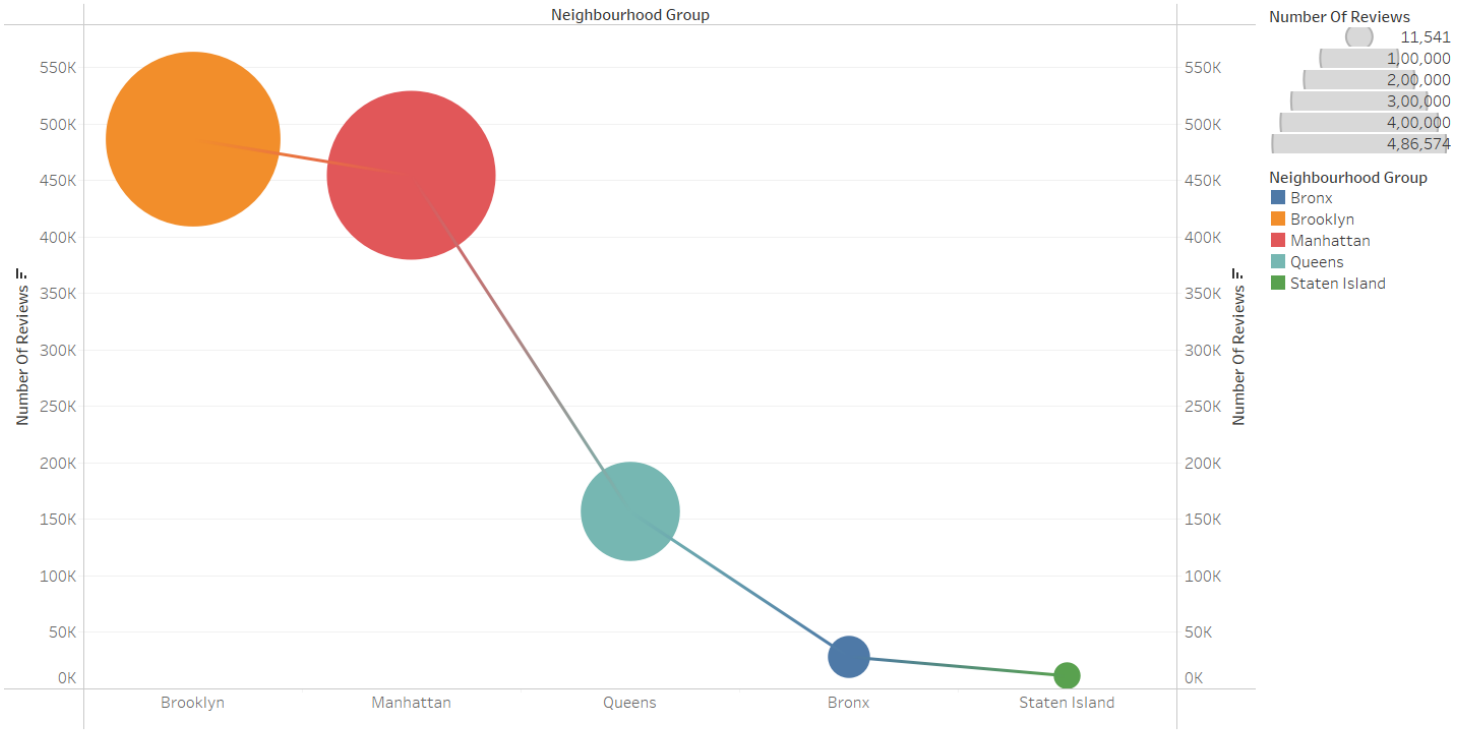


Count of Id for each Minimum Nights (bin) broken down by Neighbourhood Group. Color shows count of Id. Details are shown for Neighbourhood Group. The view is filtered on Minimum Nights (bin), which keeps 20 of 81 members.

- **The listings with Minimum nights 1-6 have the most number of bookings**.
- We can see a prominent spike in 30 days, this would be because customers would rent out on a monthly basis. After 30 days, we can also see small spikes at 60 & 90 days, this can also be explained by the monthly rent taking trend.
- Manhattan & Brooklyn have higher number of 30 day bookings compared to the others. The reason could be either tourists booking long stays or mid-level employees who opt for budget bookings due company visits.

Based on customer review: Most preferred neighbourhood

No. of reviews according to Neighbourhood

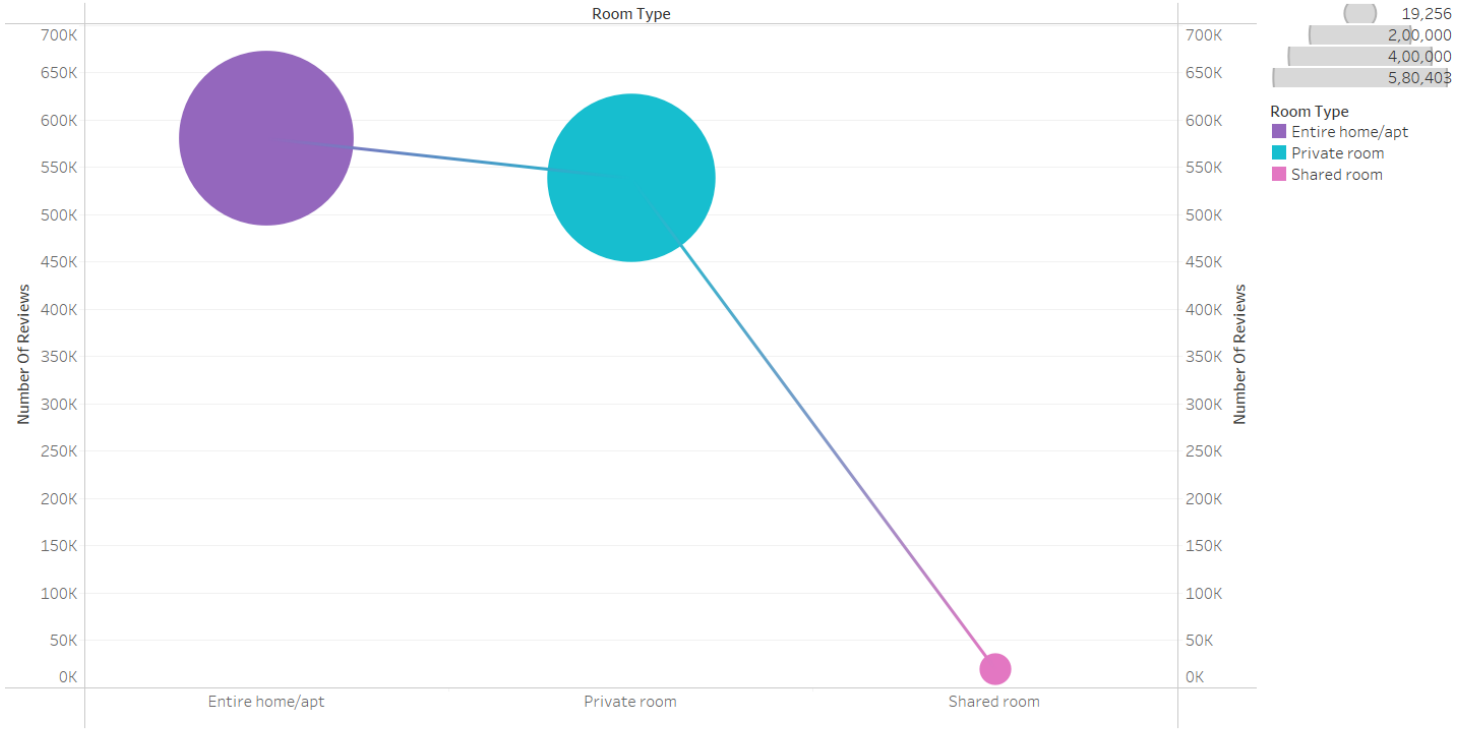


The trends of sum of Number Of Reviews and sum of Number Of Reviews for Neighbourhood Group. Color shows details about Neighbourhood Group. For pane Sum of Number Of Reviews: Size shows sum of Number Of Reviews.

- In line with our earlier observation, we see the maximum reviews in listings for Manhattan & Brooklyn, implying that more bookings happen in these neighbourhoods.
- The higher number of customer reviews also imply higher satisfaction in these localities.

Based on customer review: Most preferred Room type

No. of reviews according to Room type

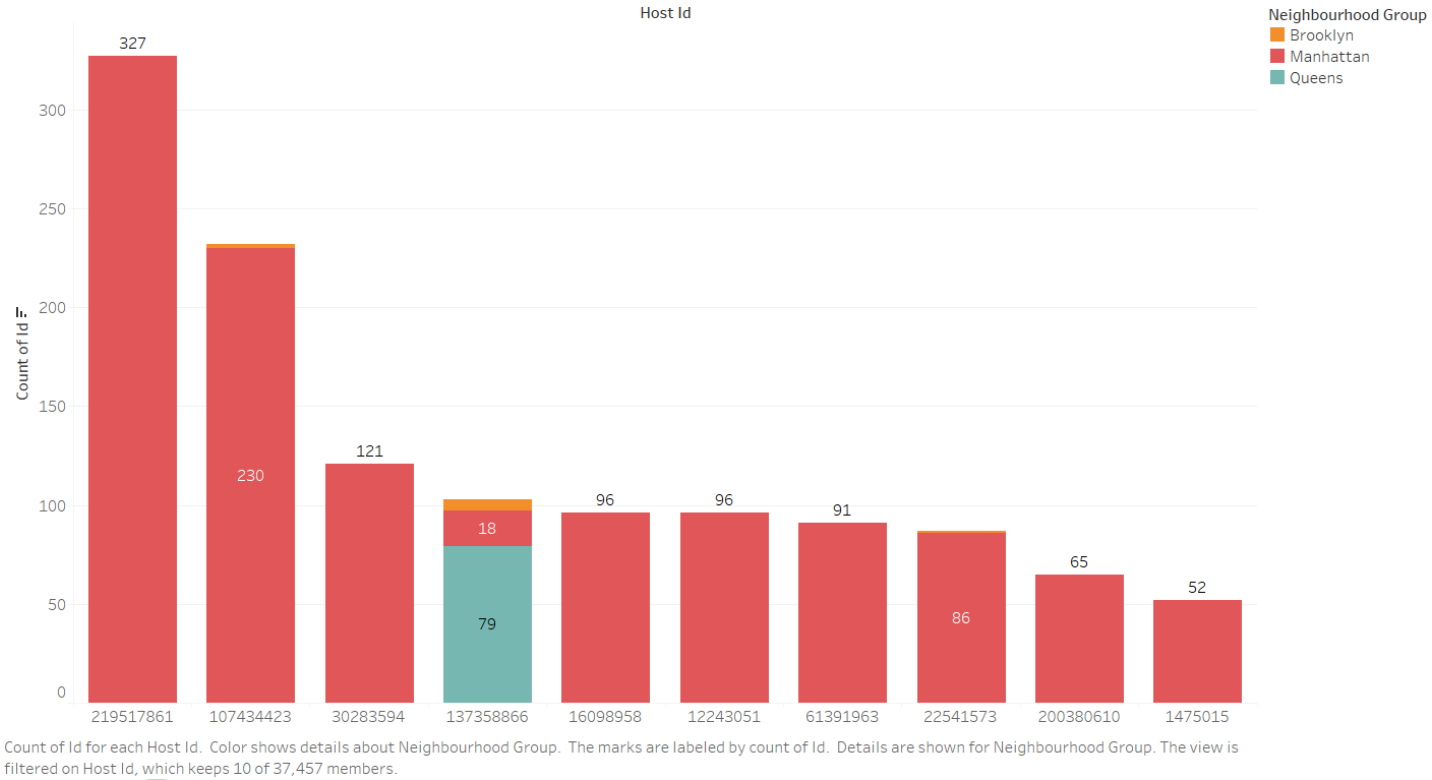


The trends of sum of Number Of Reviews and sum of Number Of Reviews for Room Type. Color shows details about Room Type. For pane Sum of Number Of Reviews: Size shows sum of Number Of Reviews.

- In line with our earlier observation, we see the maximum reviews in room types Entire home/apt & Private rooms.
- We can clearly infer now that customer do not prefer ‘Shared rooms’.

Who are the Hosts who have the highest listings w.r.t Neighbourhood?

Hosts with highest listings w.r.t to Neighbourhood



Count of Id for each Host Id. Color shows details about Neighbourhood Group. The marks are labeled by count of Id. Details are shown for Neighbourhood Group. The view is filtered on Host Id, which keeps 10 of 37,457 members.

- More experienced hosts know the market better.
- We observe a single host having multiple listings mainly in the Manhattan area. This is because Manhattan has the highest influx of tourists and financial enthusiasts visiting the city all year round.
- This makes it more profitable for the host to acquire properties in the same area.

Appendix

- About the data
  - The data contains the bookings made through Airbnb in NYC area.
  - It contains the following columns:
    - Id – Listing ID
    - Name – Name of Listing
    - Host_id – host ID
    - Host_name – Name of Host
    - Neighbourhood_group - Location
    - Neighbourhood - Area
    - Latitude & Longitude – Map co-ordinates
    - Room_type – Listing space type
    - Price – Price of listing
    - Minimum_nights – Amount of nights minimum
    - Number_of_reviews – number of reviews
    - Last_review – Lastest review
    - Reviews_per_month – number of reviews per month
    - Calculated_host_listings_count – no. of listings per host
    - Availability_365 – no. of days when listing is available for booking

Appendix

- Methodology
  - The data was analyzed through univariate and bivariate analysis.
  - The analysis and visualizations were done using Tableau considering various parameters.
  - The main parameters that have been taken into account for analysis are –
    - Geography based bookings
    - Bookings based on room type
    - Number of reviews
    - Minimum number of nights
  - Inferences have been made keeping in mind the above parameters
- Assumptions
  - As we are not aware about the nature of reviews, we have assumed that the properties which received higher number of reviews have a better customer liking.