



STORY TELLING CASE STUDY : AIRBNB

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INSIGHTS FROM THE AIRBNB DATA ANALYSIS

KEY RECOMMENDATIONS TO : Head of Acquisitions
and Operations, NYC & Head of User Experience, NYC

Key Findings :

- Which type of hosts to acquire more and where?
- What are the neighborhoods we need to target?
- What is the pricing ranges preferred by customers?
- The various kinds of properties that exist w.r.t. customer preferences.
- Adjustments in the existing properties to make it more customer-oriented.
- What are the most popular localities and properties in New York currently?
- What is the average preferred price of neighborhood group to the location?
- Distribution of room type across neighborhood groups.
- Most Preferred room type.
- Top 10 hosts with most listings & as per most reviews



Appendix :

- Data Assumptions
- Data Source
- Data Dictionary
- Data Methodology
- Data Visualizations



OBJECTIVE :

- Our goal is to improve business strategies and estimate customer preferences to revive the business in the post-COVID period.
- Understand critical pre-COVID period insights from the Airbnb NYC business.
- Make recommendations to concerned department on how to prepare for post pandemic changes.
- Improve our shared understanding about our customers.
- Provide early recommendations to our marketing and operations teams.



BACKGROUND :

What is Airbnb ?

Airbnb is a marketplace where travelers get to stay at the property listed on the site by the local hosts. Airbnb is a community built on sharing. It is based on an aggregator business model where the company collects the data about a specific good/service providers, make the providers their partners, and sell their services under its brand.

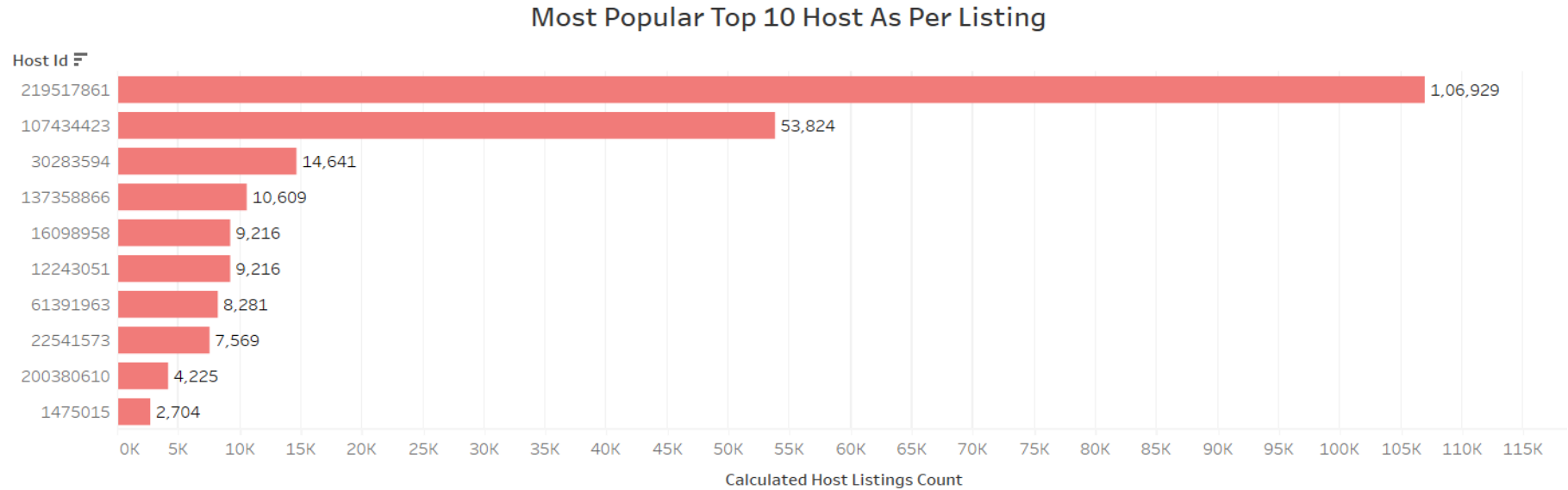
Problem Background :

For the past few months, Airbnb has seen a major decline in revenue due to COVID situation. Now that the restrictions have started lifting and people have started to travel more, Airbnb wants to make sure that it is fully prepared for this change.

So, analysis has been done on a dataset consisting of various Airbnb listings in New York.



Most Popular Hosts As Per Listing



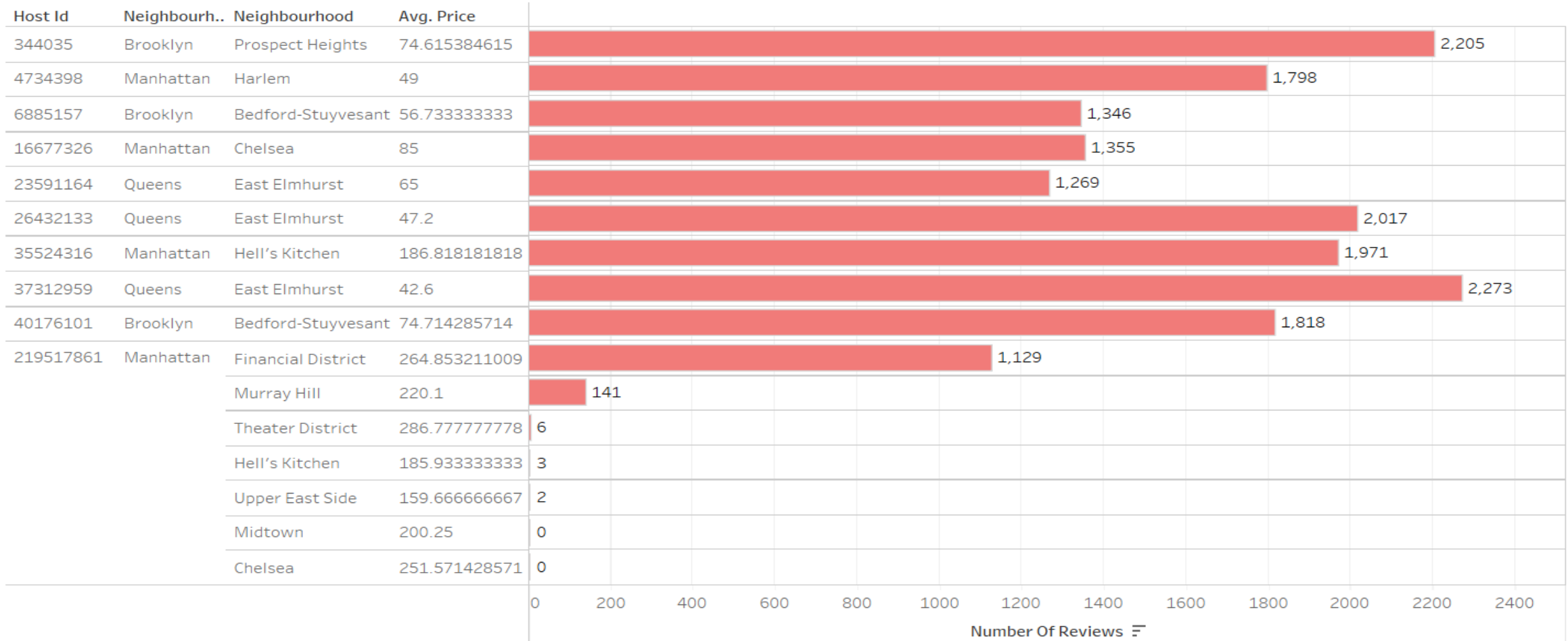
Total Hosts – 37,457

Host with id **219517861** is the most popular as per total sum of listing count & host with id 107434423 is second most popular.



Most Popular Hosts As Per Total Reviews

Top 10 Hosts As Per Total Reviews Across Neighbourhood





Top 10 Hosts As Per Total Reviews Across Neighbourhood

Host Id	Neighbourh..	Neighbourhood	Avg. Price	
344035	Brooklyn	Prospect Heights	74.615384615	2,205
4734398	Manhattan	Harlem	49	1,798
6885157	Brooklyn	Bedford-Stuyvesant	56.733333333	1,346
16677326	Manhattan	Chelsea	85	1,355
23591164	Queens	East Elmhurst	65	1,269
26432133	Queens	East Elmhurst	47.2	2,017
35534316	Manhattan	Upper West Side	100.010101010	1,071

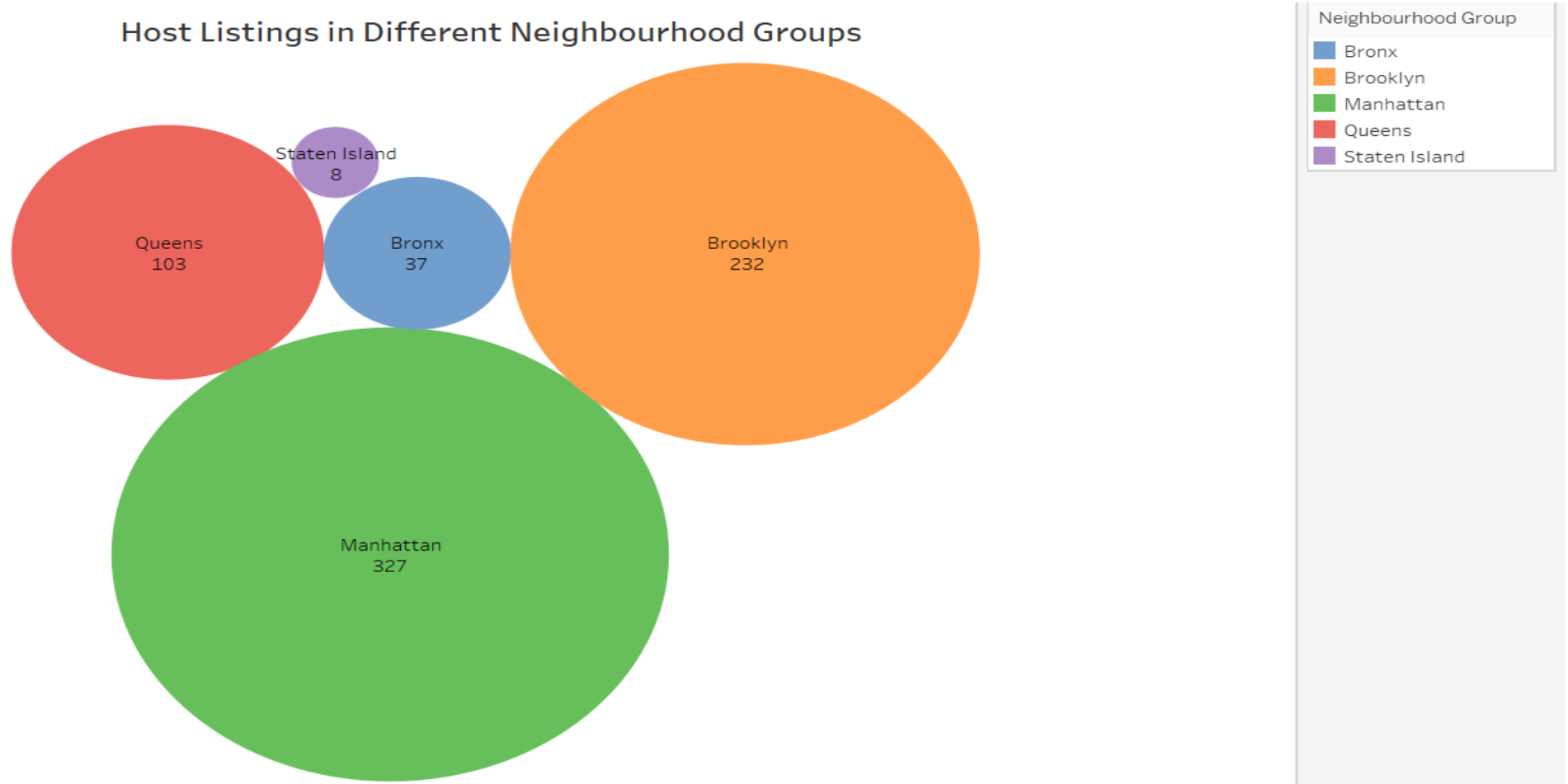
Host with id **344035** is the most popular across neighbourhood as per total reviews received as 2,205 & belongs to Prospect Heights area in Brooklyn location.

Average Price offered by the most popular host with id 344035 is approx. **75\$ per night** which is quiet reasonable.

Host with id 4734398 is the second most popular as per total reviews as 1,798 & belongs to Harlem area in Manhattan location having average price per night as 49\$.



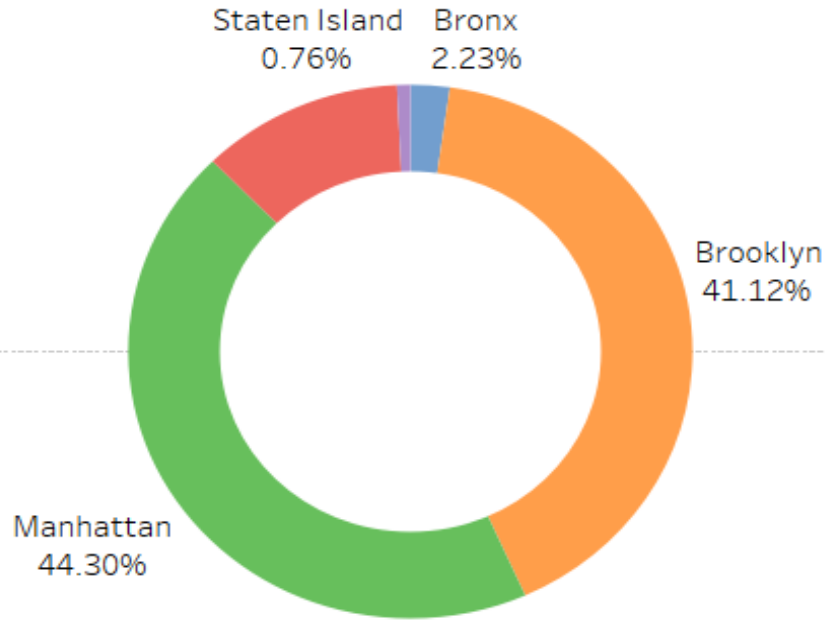
Maximum Host Listings In Different Neighbourhood Groups



Maximum Host Listings is present for **Manhattan** location

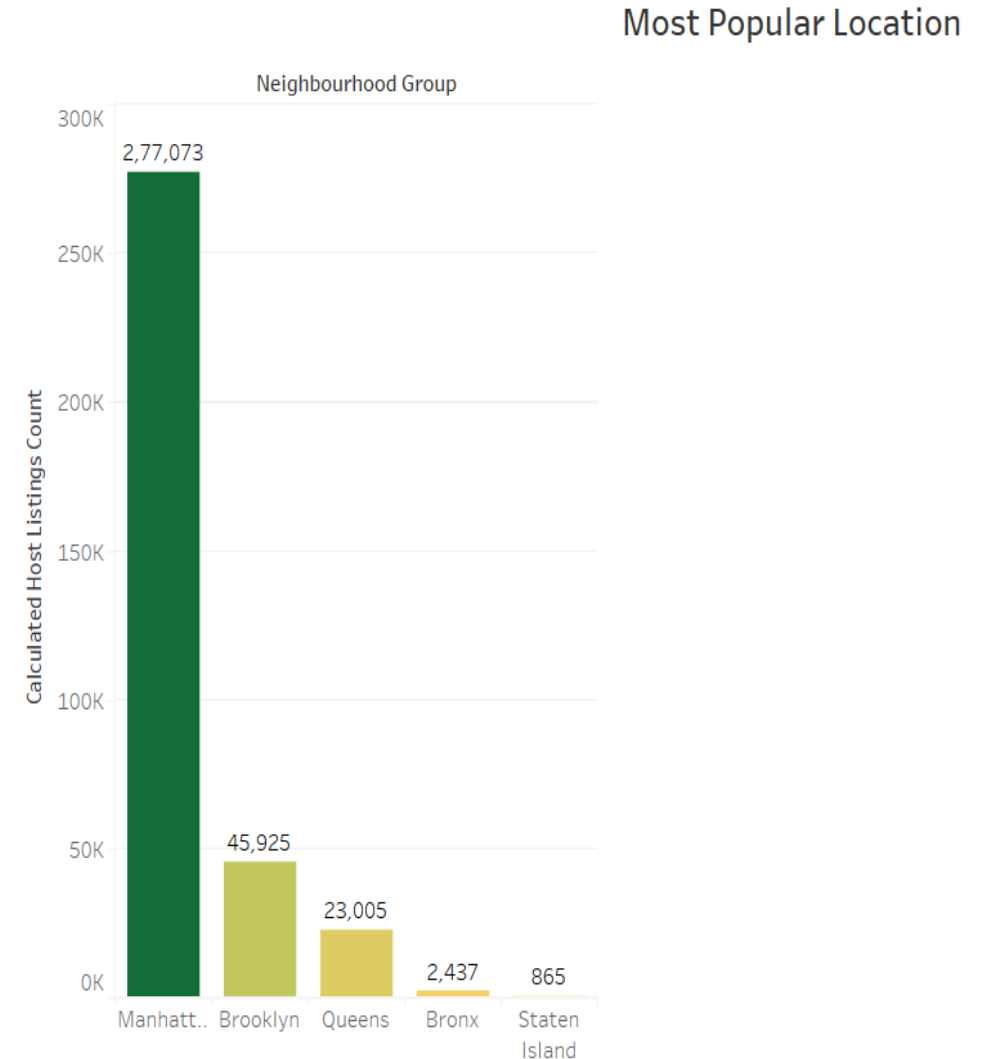


Total Neighbourhood By Neighbourhood Groups



Total Neighbourhood
in Neighbourhood
Groups = 221

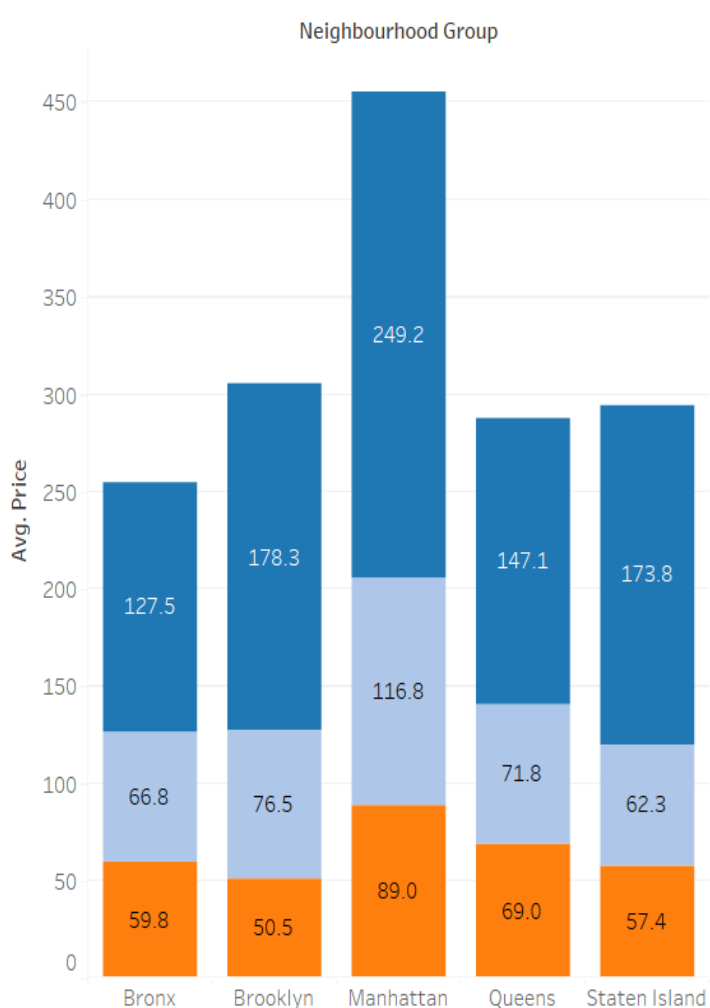
Manhattan & Brooklyn
constitute maximum
percentage of
neighbourhoods ~85%





Avg Price Across Neighbourhood Group Among Different Room Types

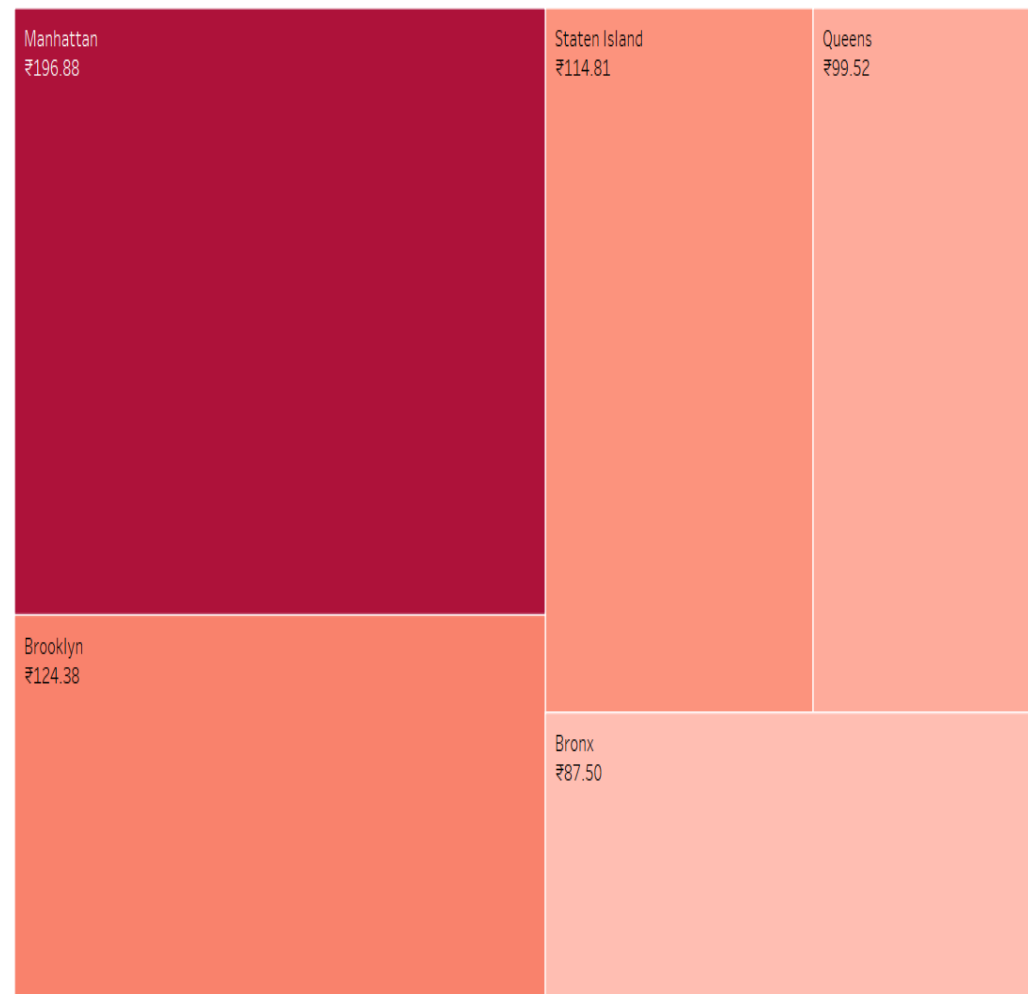
Avg Price Across Neighbourhood Group Among Different Room Types



Average price is highest for Entire home/apartment & maximum for the location **Manhattan**.

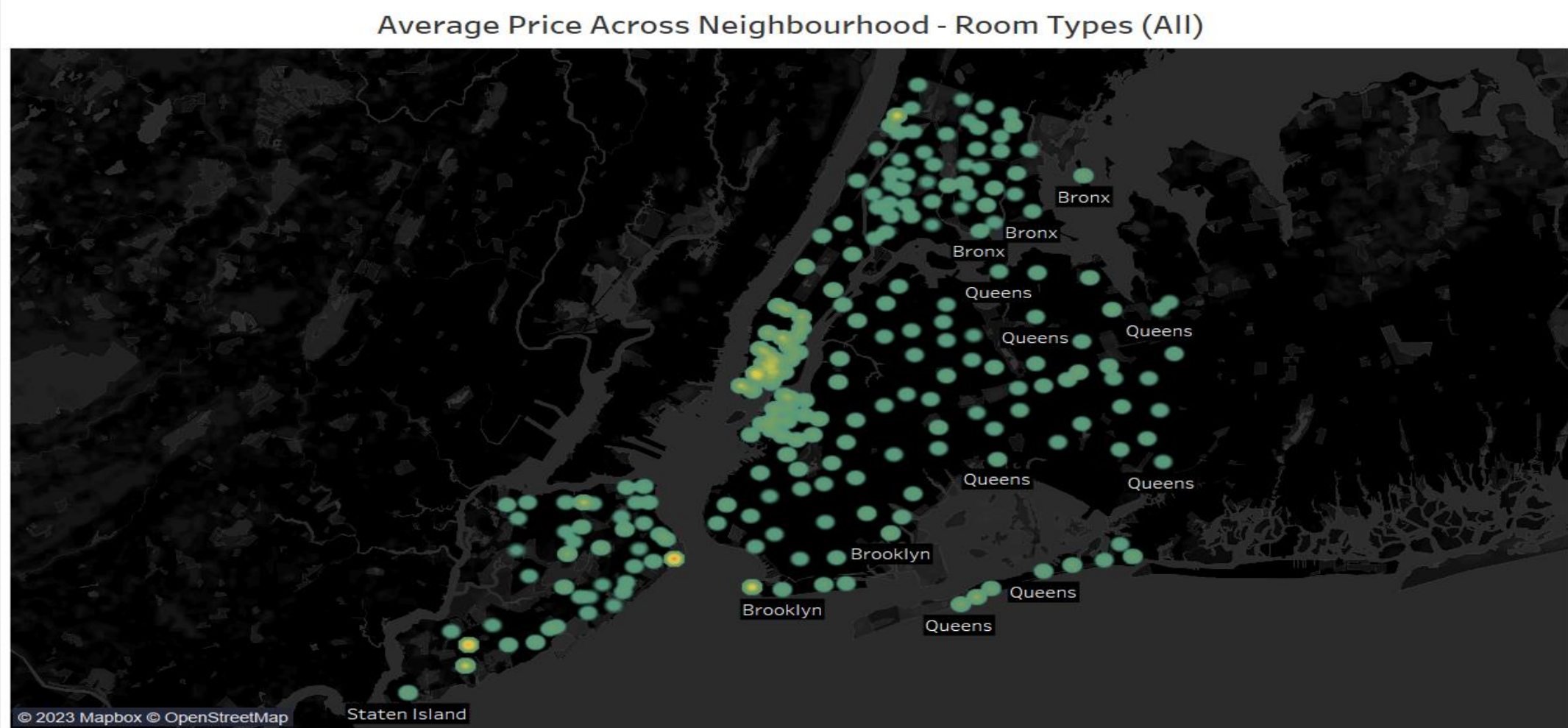
Least average price is for Shared rooms.

Average Price Across Neighbourhood Groups





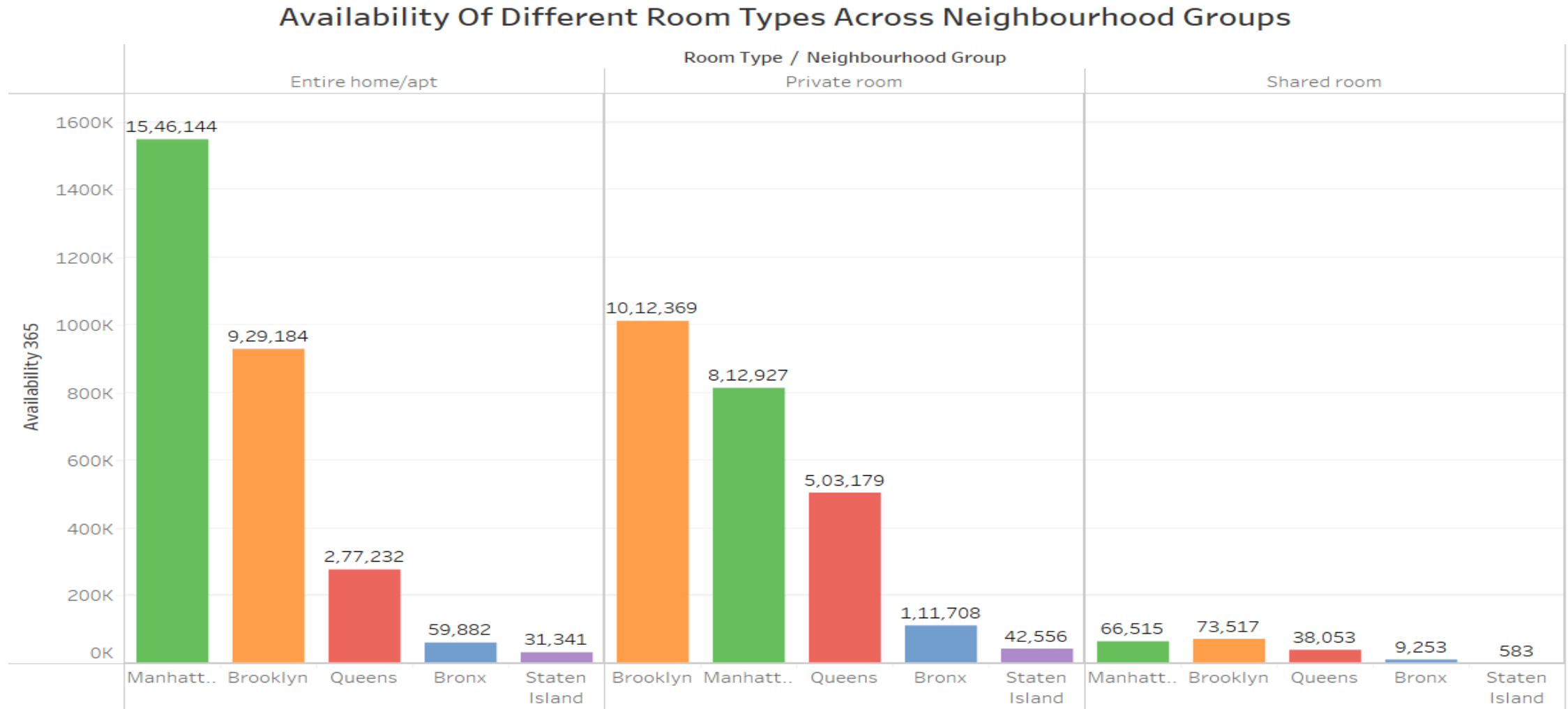
Distribution Of Avg Price Across Neighbourhood



Average price is maximum for the rooms in areas that are near sea soar / coastal area



Availability Of Room Types Across Neighbourhood Group

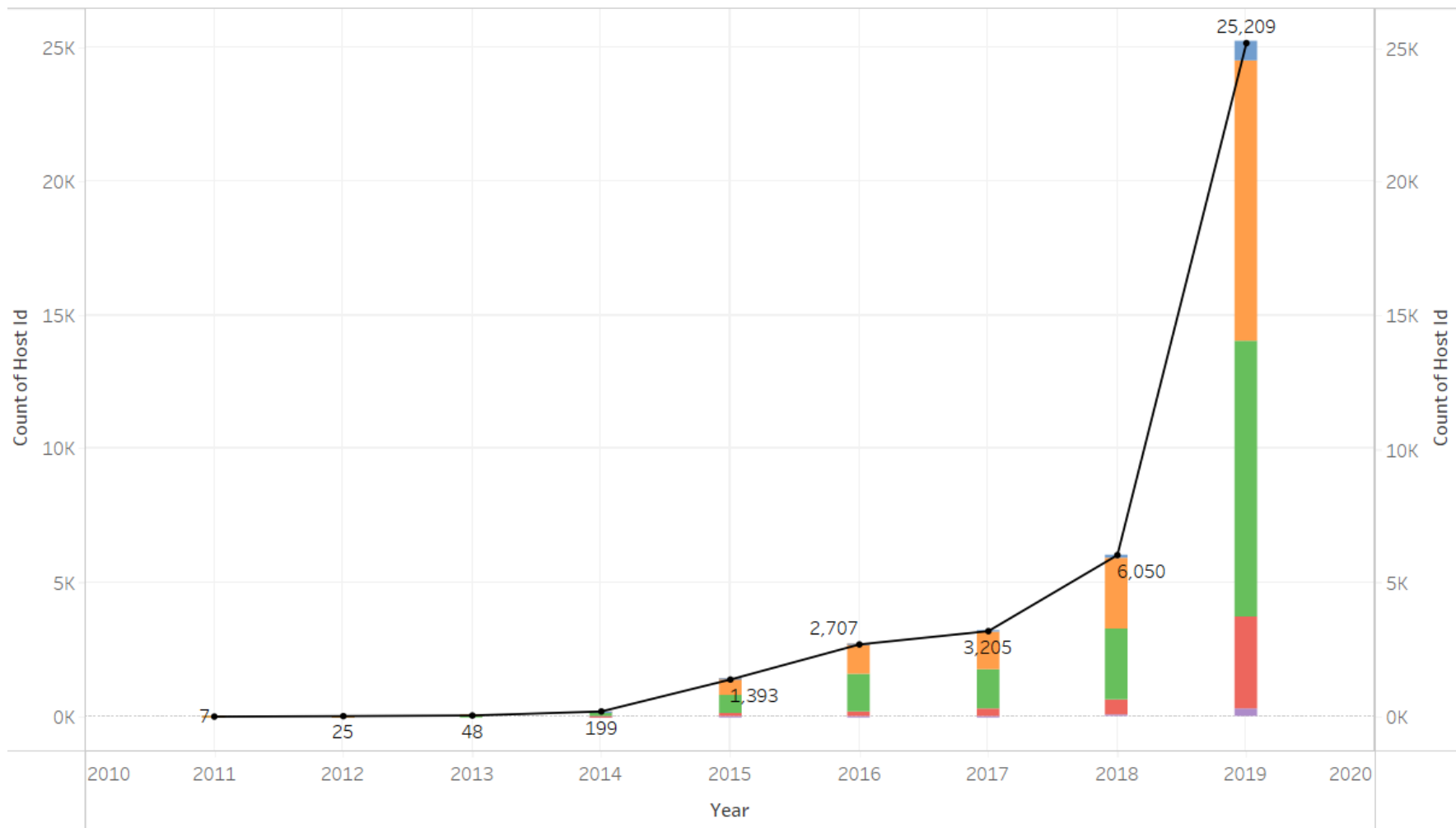


Maximum room type available is entire home/apt & for the location Manhattan followed by Brooklyn.



Total Bookings Over Years

Total Bookings By Year Across Neighbourhood Group For All Room Types



Neighbourhood Group

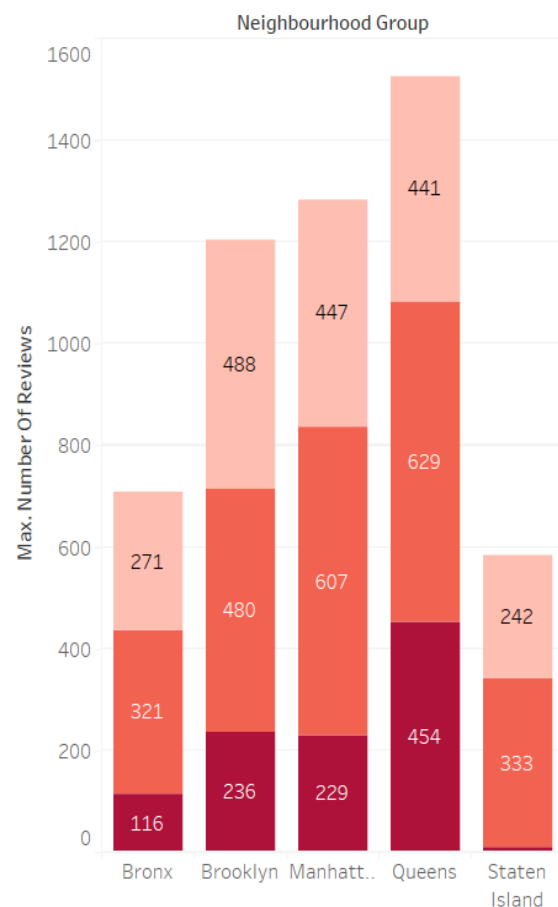
- Bronx
- Brooklyn
- Manhattan
- Queens
- Staten Island

Total bookings have significantly increased over years for all room types & most preferred locations are Manhattan & Brooklyn.



Reviews Per Month By Room Type & Neighbourhood Group

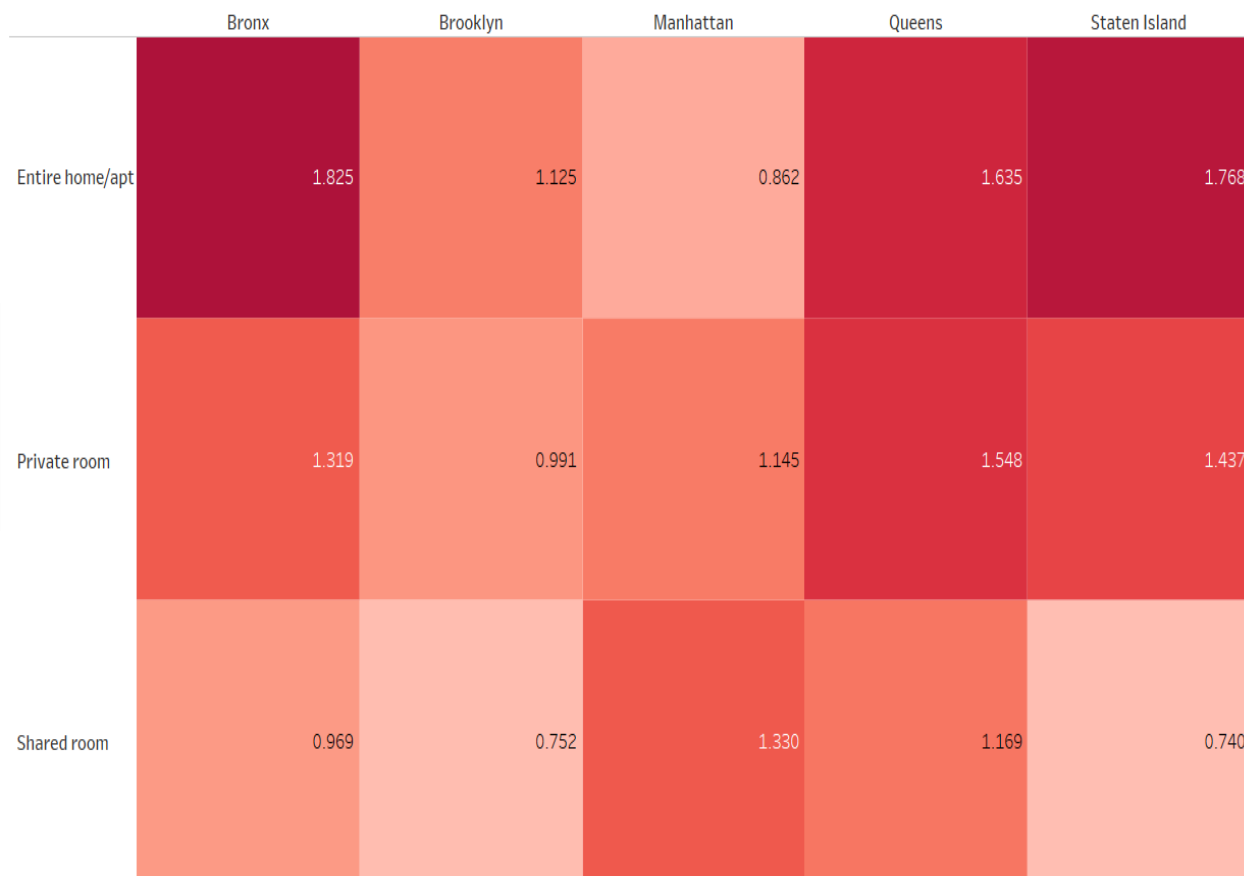
Maximun No. Of Reviews Across Neighbourhood Group - All Room Type



Maximum of no. of reviews are for private room for the location Queens followed by Manhattan.

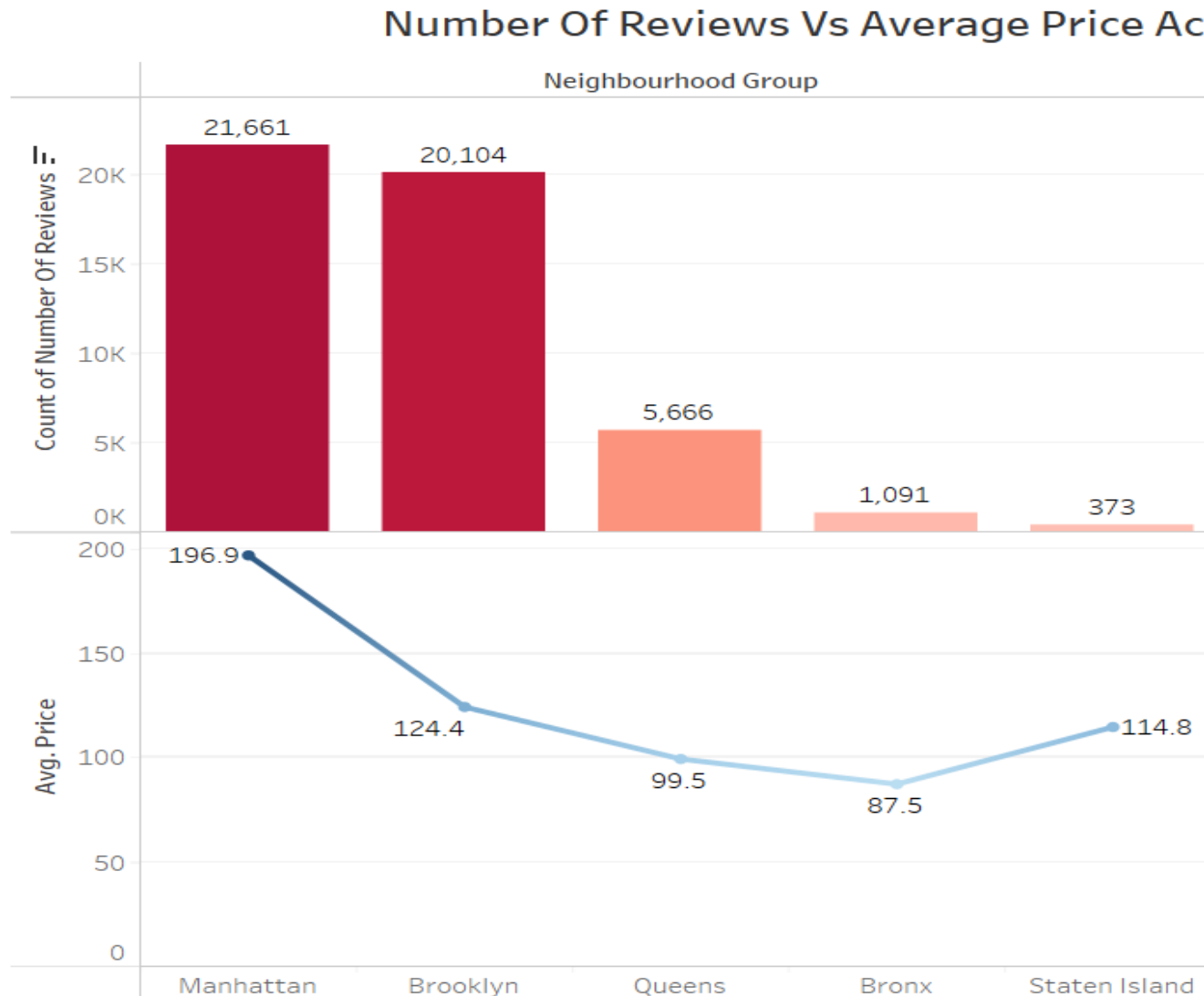
Maximum average reviews per month is for entire room/apt for the location Bronx followed by States Island

Average Reviews Per Month By Room Type & Neighbourhood Group





Comparing Avg Price & No. Of Reviews Across Neighbourhood Group

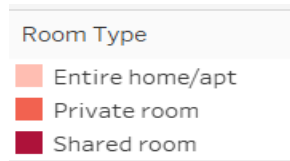
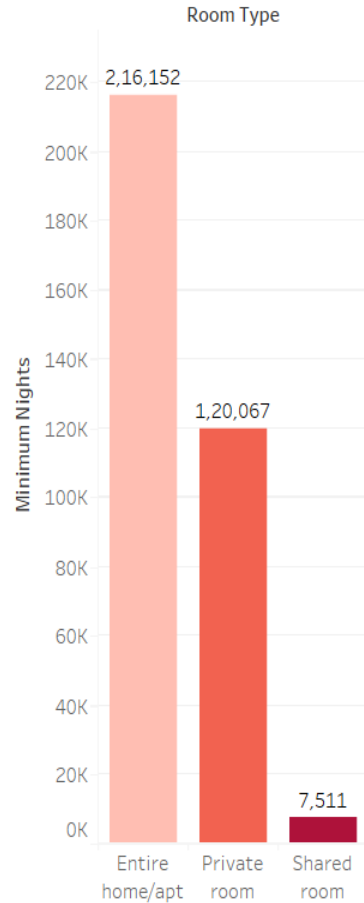


As we can observe that average price is maximum for Manhattan location followed by Brooklyn. Also the no. of reviews is also maximum for Manhattan neighbourhood group.



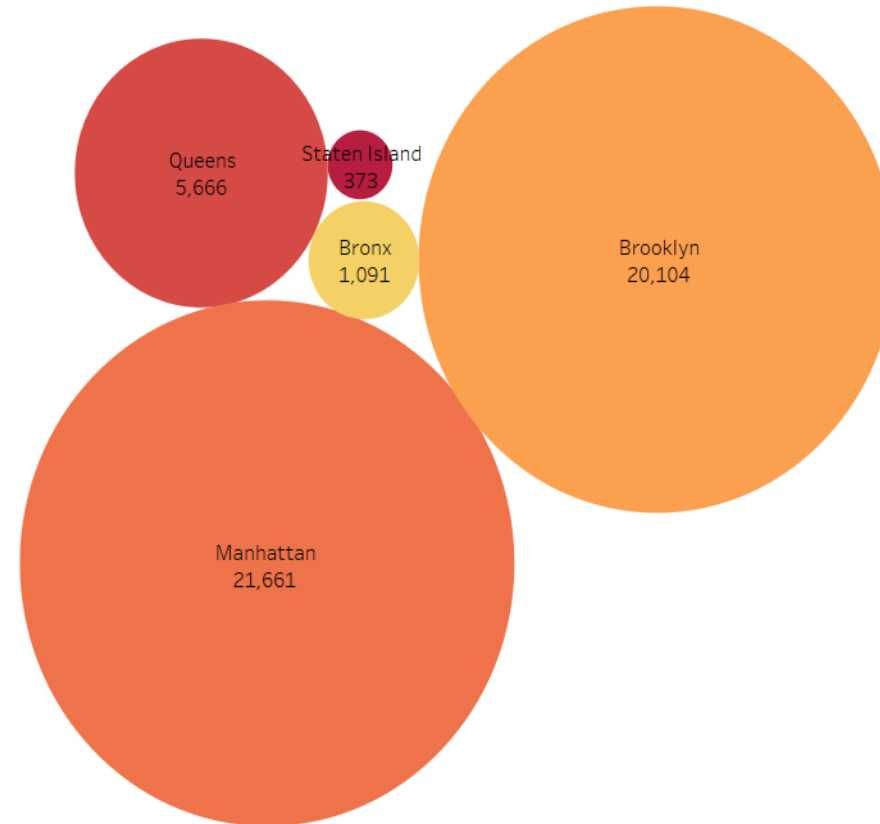
Minimum Night Stay For All Room Types Across Neighbourhood Groups

Minimum Night Stay Vs Room Type



Most min. night stayed room type is entire room & most preferred location for the same is Manhattan followed by Brooklyn.

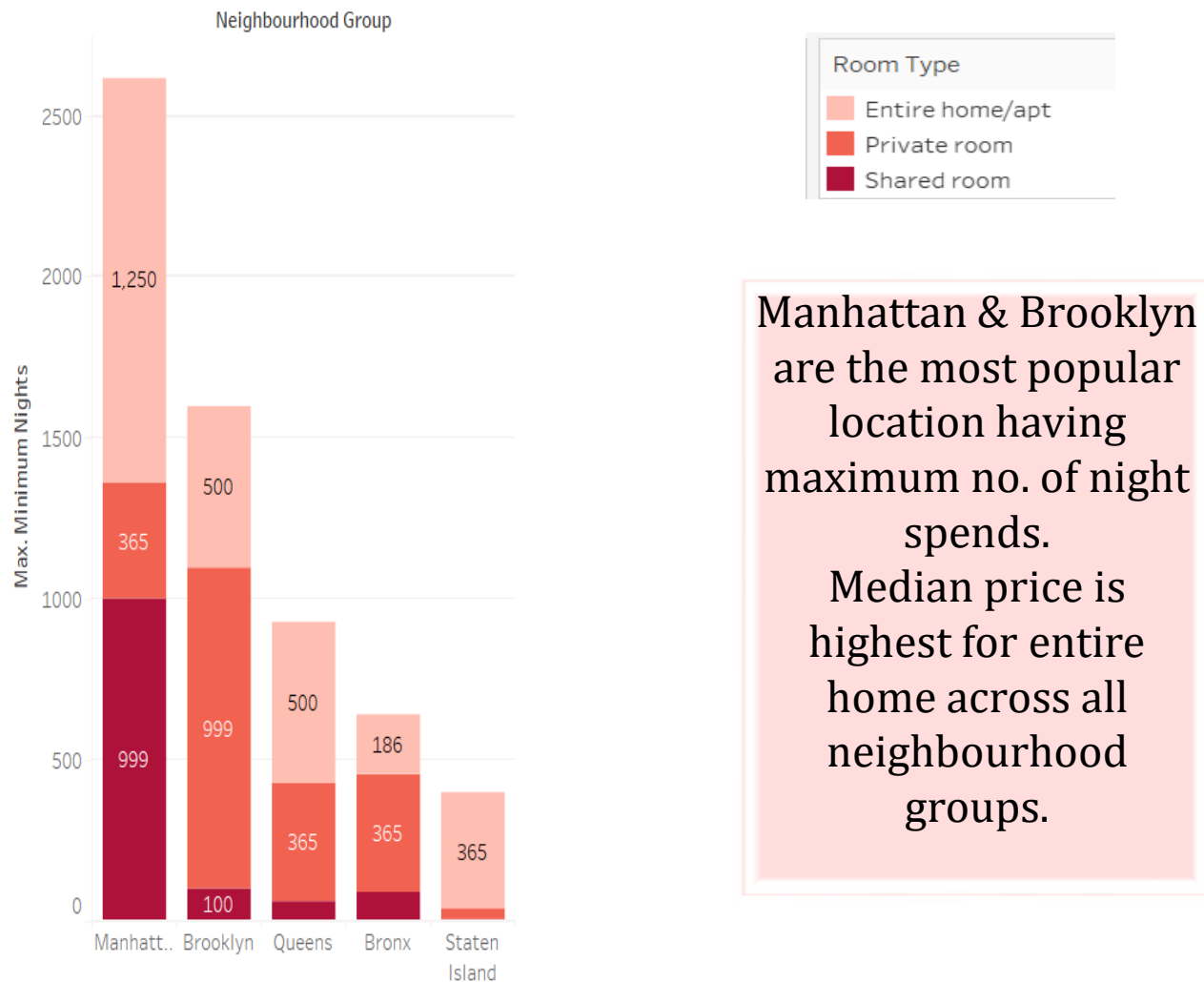
Minimum Night Stay Across Different Neighbourhood Group



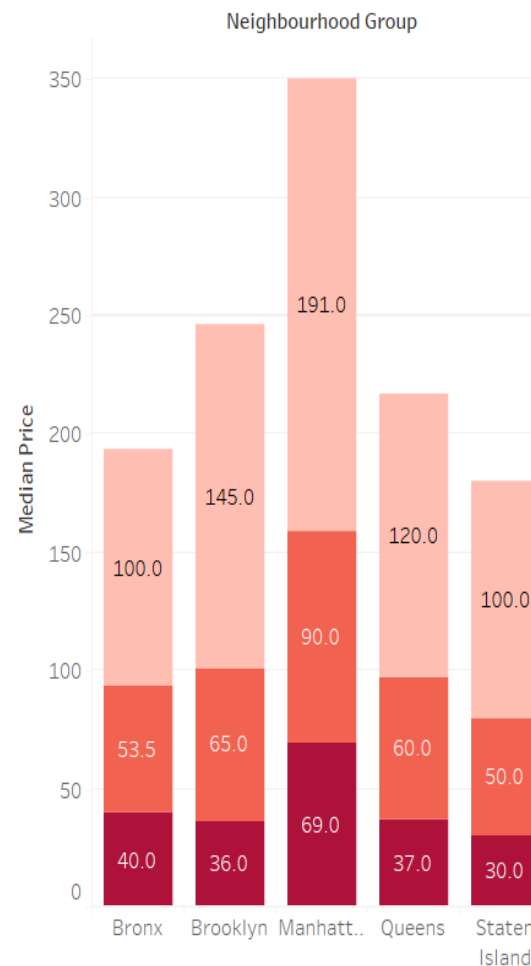


Max. No. Of Nights Spends VS Price Bracket Across Neighbourhood Groups

Maximum Number Of Night Spends In Neighbourhood Group



Price Bracket In Neighbourhood Groups





Key Recommendations & Action Items :

- **Manhattan** is the most popular location in New York for hosts to do Airbnb business followed by Brooklyn : As people preferred Manhattan to stay when in need for maximum no. of night stay in Entire apartments room type. Although the average prices are on higher side for this location still it's the most popular among travellers. Maximum Host listings is also for Manhattan only.
- Maximum room type available is **entire home/apt** & for the location Manhattan followed by Brooklyn.
- **Manhattan & Brooklyn** constitute maximum percentage of neighbourhoods ~85% .
- **Average price is highest for Entire home/apartment** & maximum for the location **Manhattan**.
- **Shared rooms** have fewer listings but are more affordable and have more availability, so they can be maximised.
- **Average price is maximum for the rooms in areas that are near sea / coastal area.**
- Host with id **219517861** is the most popular as per total sum of listing count & host with id 107434423 is second most popular.
- Host with id **344035** is the most popular across neighbourhood as per total reviews received as 2,205 & belongs to Prospect Heights area in Brooklyn location.



- **Average Price** offered by the most popular host with id 344035 is approx. **75\$ per night** which is quite reasonable & competitive.
- The no. of reviews is higher at lower priced properties as people are less likely to book expensive rooms.
- Most of the listed properties **are private rooms & complete homes/apt**, which also account for majority of the total price share.
- Expensive prime locations like Manhattan & Brooklyn can be targeted for non premium properties & location like Queens & Bronx for premium properties.
- Acquire Private rooms & entire home/apt since they are more popular room type having more no. of reviews per listings.



APPENDIX :

Data Assumptions :

- Assumed that pre-pandemic data was generating desired revenue.
- Assumed that the company does not wish to expand into new markets in New York.
- To learn about customer preferences, used the no. of reviews per listings as a popularity metric.
- Assumed no. of reviews provided to be use as a base measure to find customer preferences.
- Null values are assumed to have no effect on the analysis.



Data Source & Data Dictionary :

- New York Airbnb Dataset provided – AB_NYC_2019.csv
- Data Dictionary attached

Column	Description
id	listing ID
name	name of the listing
host_id	host ID
host_name	name of the host
neighbourhood_group	location
neighbourhood	area
latitude	latitude coordinates
longitude	longitude coordinates
room_type	listing space type
price	
minimum_nights	amount of nights minimum
number_of_reviews	number of reviews
last_review	latest review
reviews_per_month	number of reviews per month
calculated_host_listings_count	amount of listing per host
availability_365	number of days when listing is available for booking

Dataset Description



Data Methodology & Visualisations :

- Data understanding & pre processing is done in python using pandas library.
- Basic data cleaning & handling such as missing value imputation is also done with the help of pandas.
- After cleaning the data set its imported as excel file to do further analysis.
- Data analysis & visualisation is done using Tableau.

Methodology document attached for further reference: [Methodology.docx](#)



THANK YOU