**Objective:**

The presentation will focus mainly on the following points:

- Get a better understanding about Airbnb listings with respect to various parameters
- Understand the pricing relation to various parameters
- Recommendations to improve quality of new acquisitions and customer experience.

**Exploratory Data Analysis:**

- To understand some important insights we have explored the following questions:
    1. Customer preference for neighborhood & room type
    2. Property demand based on minimum nights offered
    3. Price range preferred by customers
    4. Understanding Price variation with respect to Room Type & Neighborhood
    5. Understanding Price variation with respect to Geography
    6. Top reviewed properties

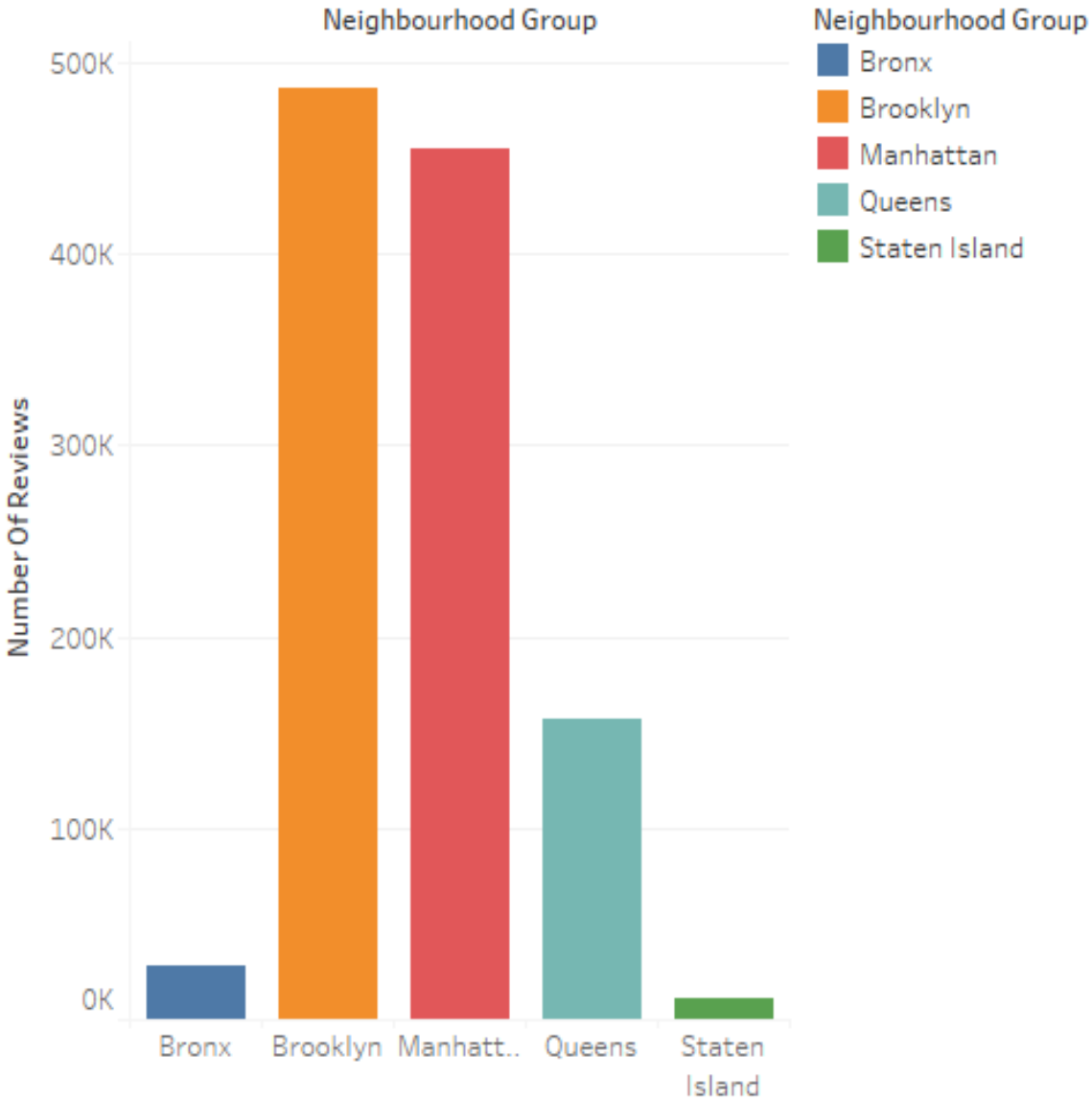
**Methodology:**

- The analysis and visualizations were done using Tableau considering various parameters.
- The analysis was done keeping in mind the business side of the project.
- The presentation is comparing various parameters of customer preference with respect to price.
- The following parameters were considered –
    a. Customer experience: Neighborhood, Room type & minimum nights offered
    b. Price variation: Volume of customer booking, Room type, Neighborhood, Number of reviews & Geography.

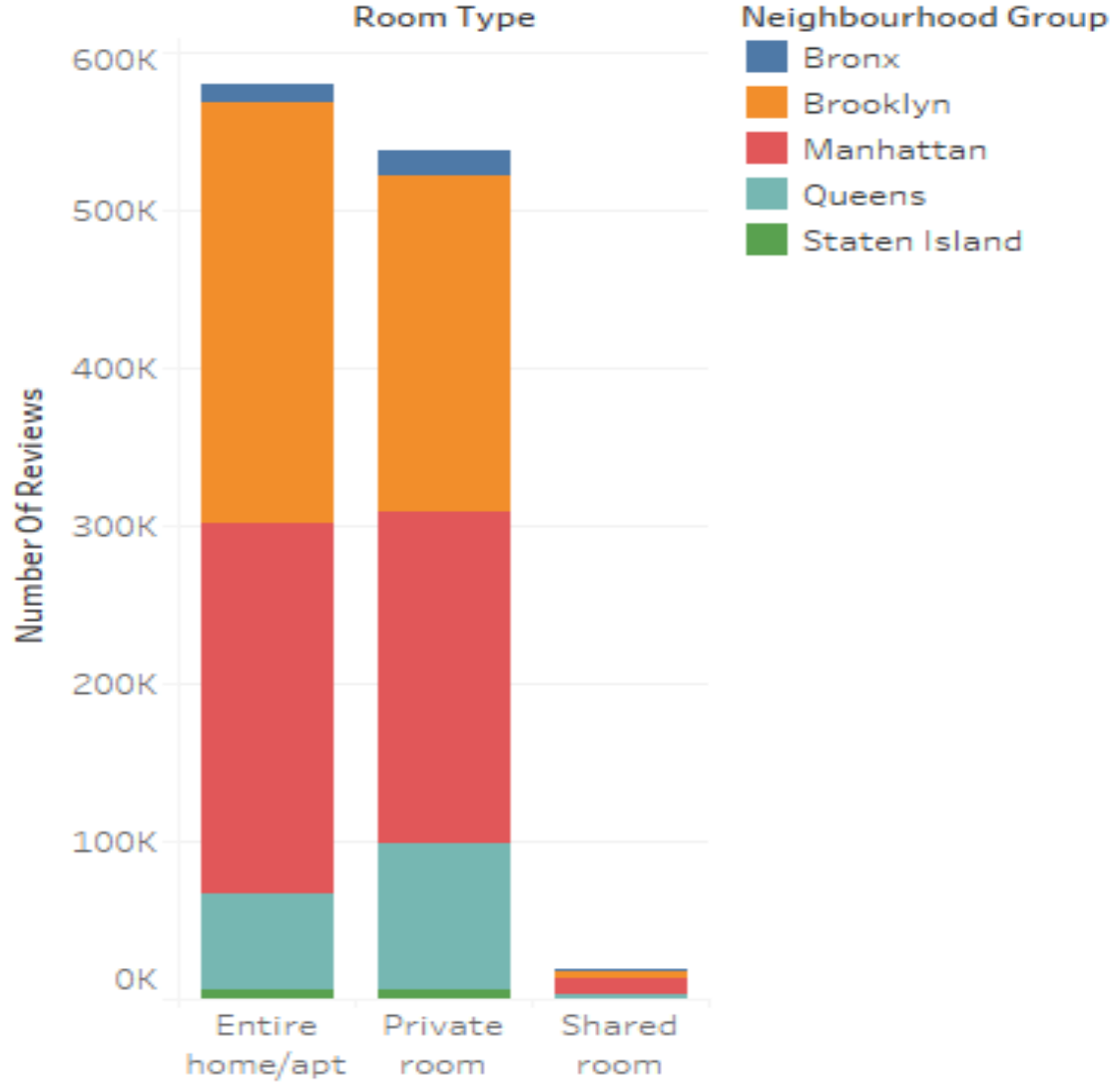
**Explanation for EDA:**

**1. Customer preference for neighborhood & room type**

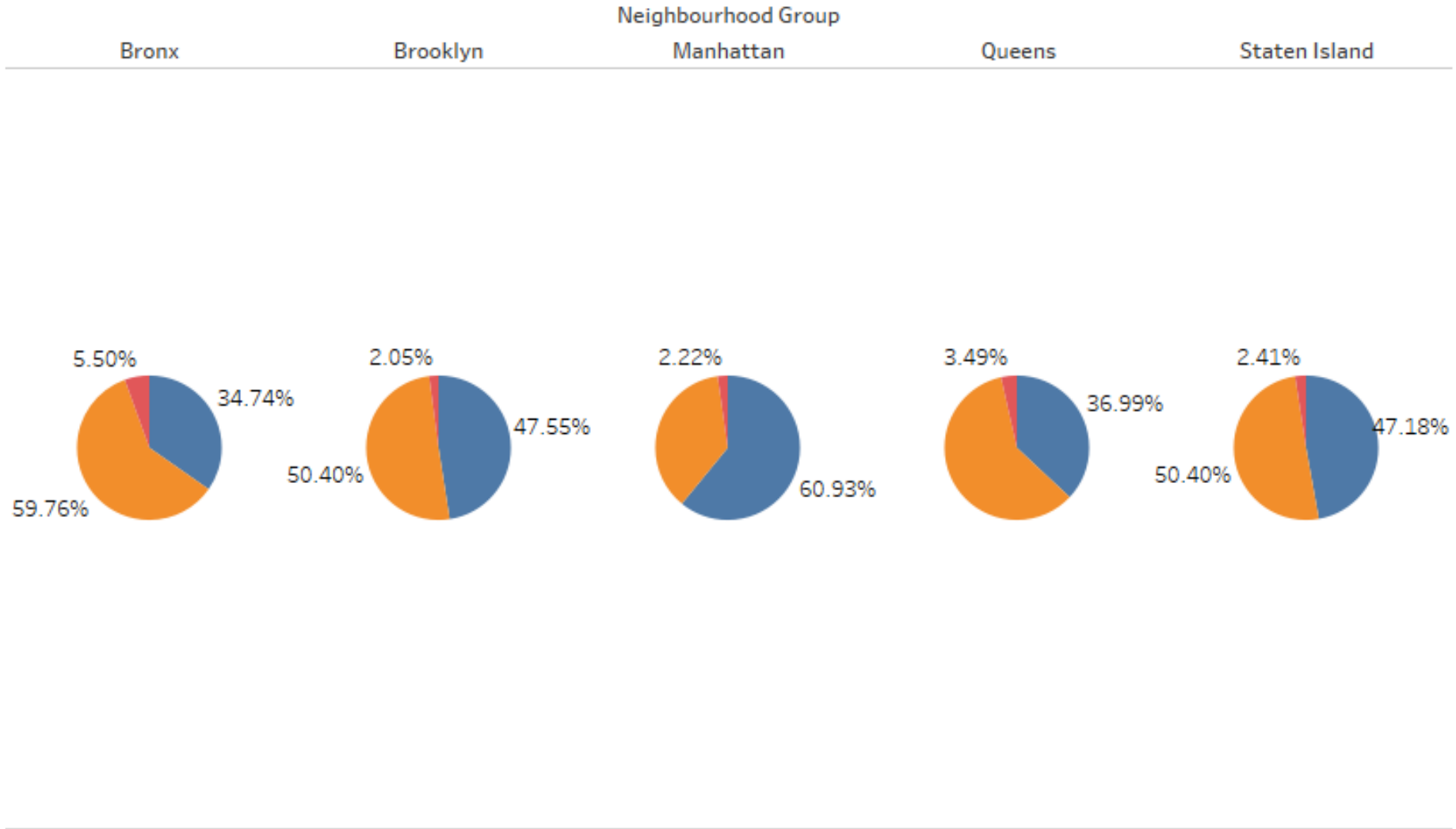
We have explore the customer preference w.r.t volume and experience. The customer review parameter was chosen, as it is one of the most important factors to boost future bookings and listings. The number of reviews a customer gives for a particular listing directly implies the likability of the listing. The two different parameters were taken for comparison: neighborhood & room type. The parameters taken for analysis are: Room type, Neighborhood group, SUM(Number of reviews




Sum of Number Of Reviews for each Neighbourhood Group. Color shows details about Neighbourhood Group. The view is filtered on Neighbourhood Group, which keeps Bronx, Brooklyn, Manhattan, Queens and Staten Island.




Sum of Number Of Reviews for each Room Type. Color shows details about Neighbourhood Group. The view is filtered on Neighbourhood Group, which keeps Bronx, Brooklyn, Manhattan, Queens and Staten Island.




% of Total Count of Room Type broken down by Neighbourhood Group. Colour shows details about Room Type. The marks are labelled by % of Total Count of Room Type.

**Inference:**

- There are three types of rooms - Entire home/Apartment, Private room & shared room. Customers prefer private rooms or entire homes in comparison to shared rooms.

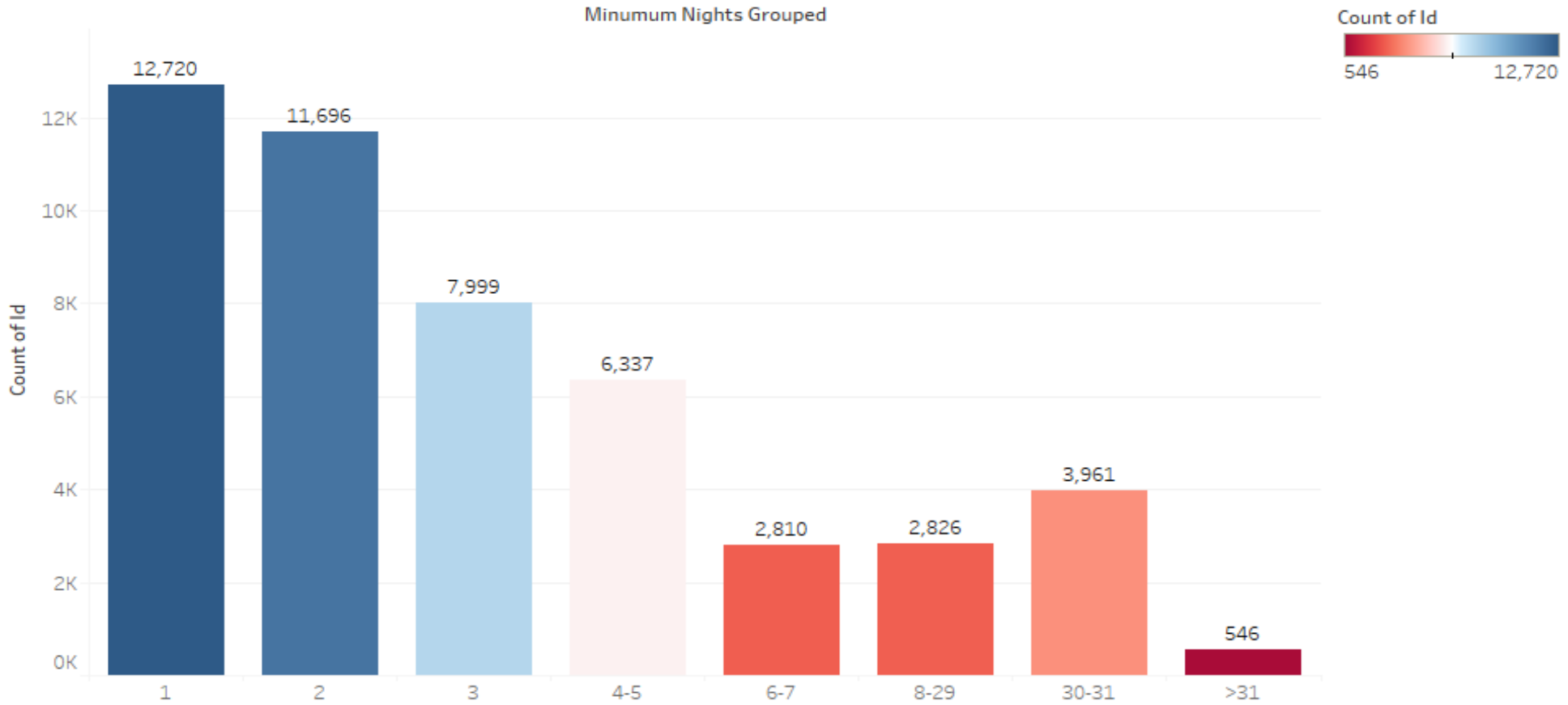
- In addition, we can see maximum reviews in listings for Manhattan & Brooklyn, implying that more bookings happen in these neighborhoods. (The higher number of customer reviews imply higher satisfaction).

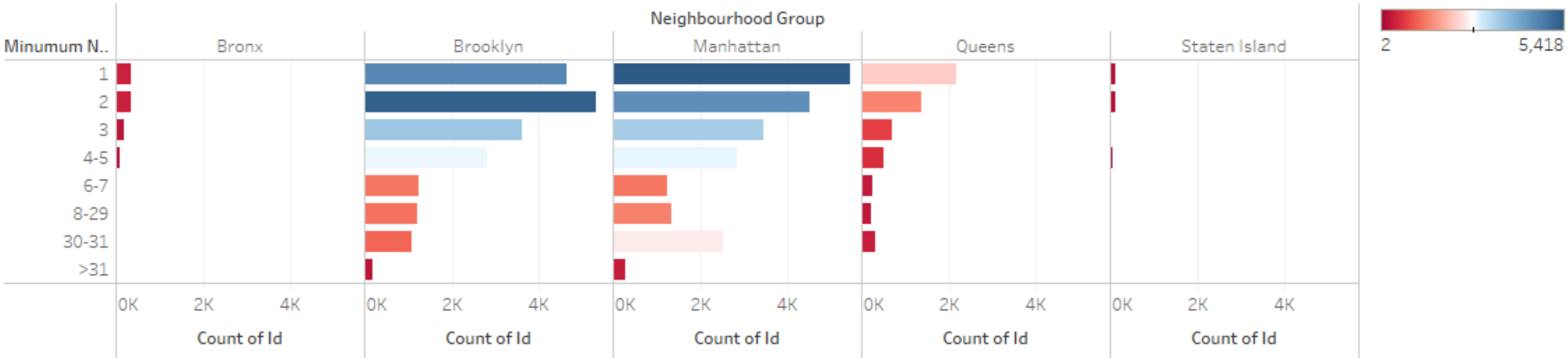
**Recommendation:**

1. Airbnb can concentrate on promoting shared rooms with targeted discounts to increase bookings.
2. New acquisitions can be explored to acquire ‘private rooms’ in Manhattan and Brooklyn and ‘entire homes’ in Bronx and Queens.

## 2. Property demand based on minimum nights offered

- We wanted to observe the customer booking pattern and demand of property based on the minimum number of stay nights. This was chosen to understand for what type of stay customers use Airbnb, short-stay or long-stay. Here, we took into account the volume of booking and the neighborhood - wise volume of booking.
- The parameters taken into account were: CNT(Id), Minimum Nights (This was binned, with a bin size of 2 for easier visualization) & Neighborhood Group.






Count of Id for each Minumum Nights Grouped broken down by Neighbourhood Group. Colour shows count of Id.

**Inference:**

- 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 prefer renting out on a monthly basis. After 30 days, we can also see small spikes at 60 & 90 days, this can be explained by the monthly rent-taking trend.

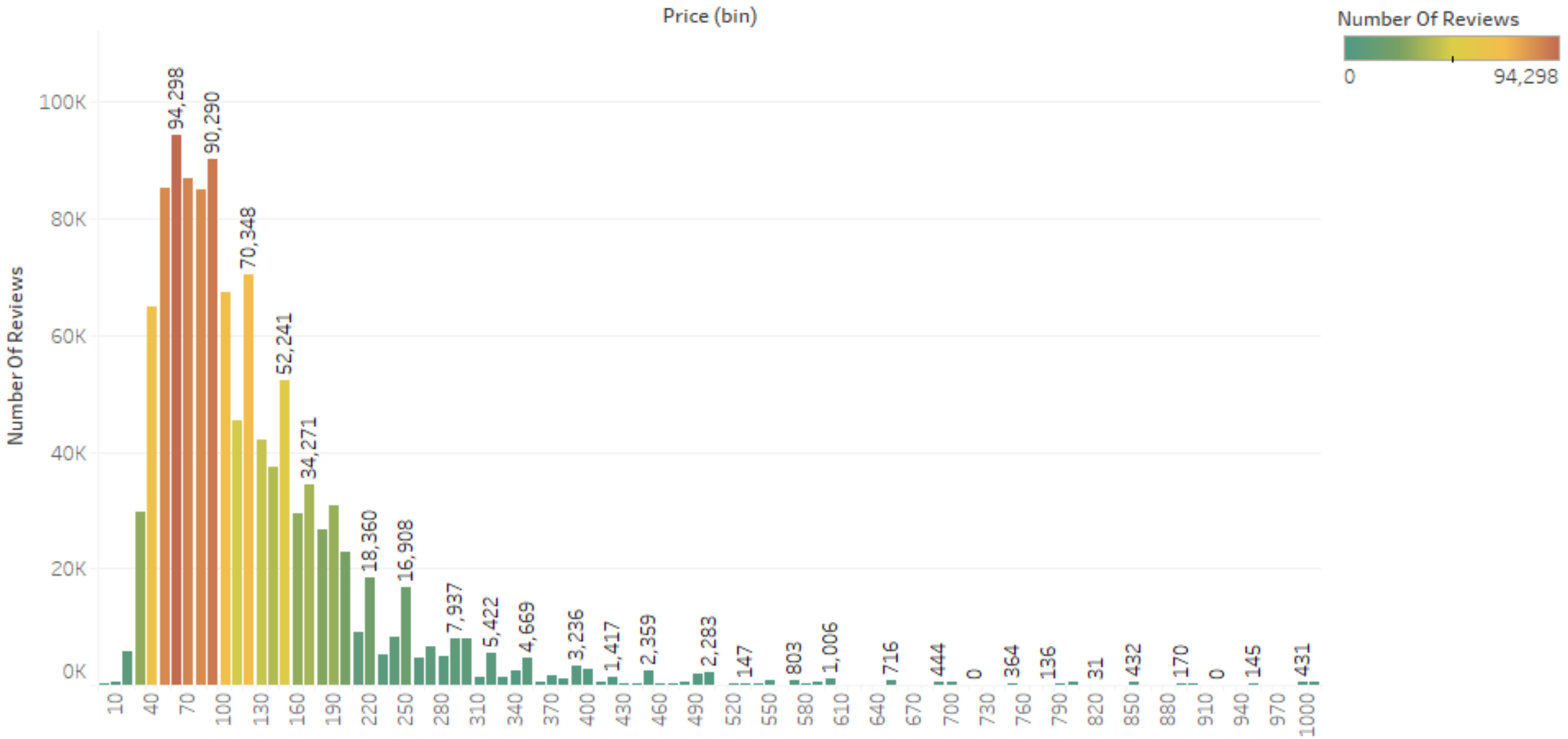
**Recommendation:**

- More number of hosts & listings with monthly rental duration (30-60-90) can be acquired. We see a good potential in the 30-day rental window. Manhattan & Brooklyn have higher number of 30 day bookings compared to the others, these areas can be further targeted.
- Also, weekly or bi-weekly rentals can also be acquired as these can be used customers stranded in NYC for quarantine purposes.

**3. Price range preferred by customers**

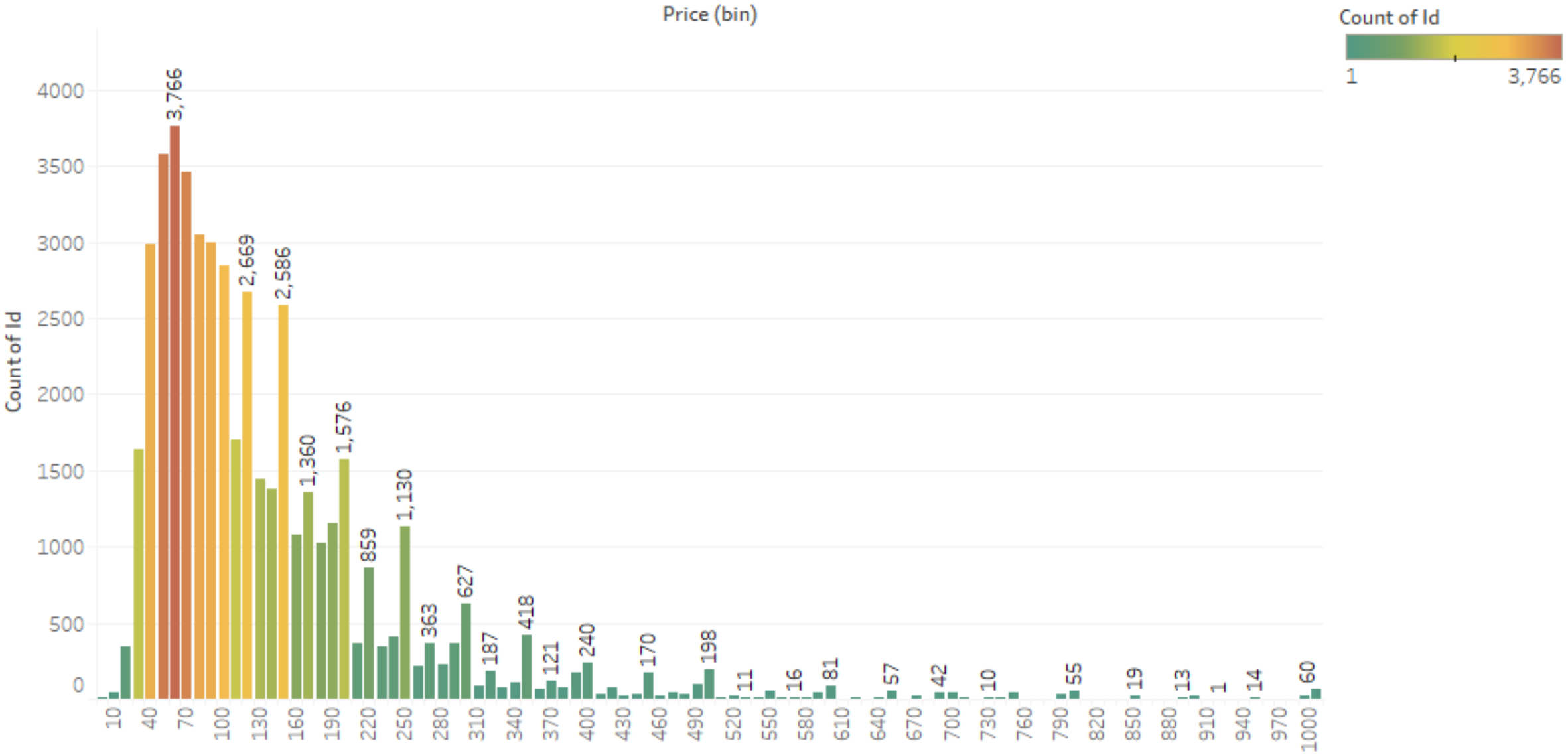
- For any business to operate it has to have a fair understanding of the customer-buying pattern. So we have tried to understand the most preferred price range for customers. Using this we can try to improve the listings in the price range preferred by the customer.
- We have considered the volume of booking and number of reviews in a particular price range. For easy visualization, we have binned the Price with a bin size of 10. Also owing to the enormous value range, we have observed the variation until $1000. As there was very little data beyond this, we decided to filter it.

# Price variation with respect to reviews




Sum of Number Of Reviews for each Price (bin). Colour shows sum of Number Of Reviews. The marks are labelled by sum of Number Of Reviews.The view is filtered on Price (bin), which has multiple members selected.

# Preferred price by customers




Count of Id for each Price (bin). Colour shows count of Id. The marks are labelled by count of Id.The view is filtered on Price (bin), which has multiple members selected.

- **Inference:**

  1. We have taken pricing preference based on two parameters – volume of bookings done in a price range and number of reviews in a price range. From both the graphs, the favorable price range is $40 - $190. This is the price range most preferred by most customers.

- **Recommendation:**

  New acquisitions and expansion can be done in the price range of $40 - $190 as it satisfies both parameters of volume of customer traffic and customer satisfaction.

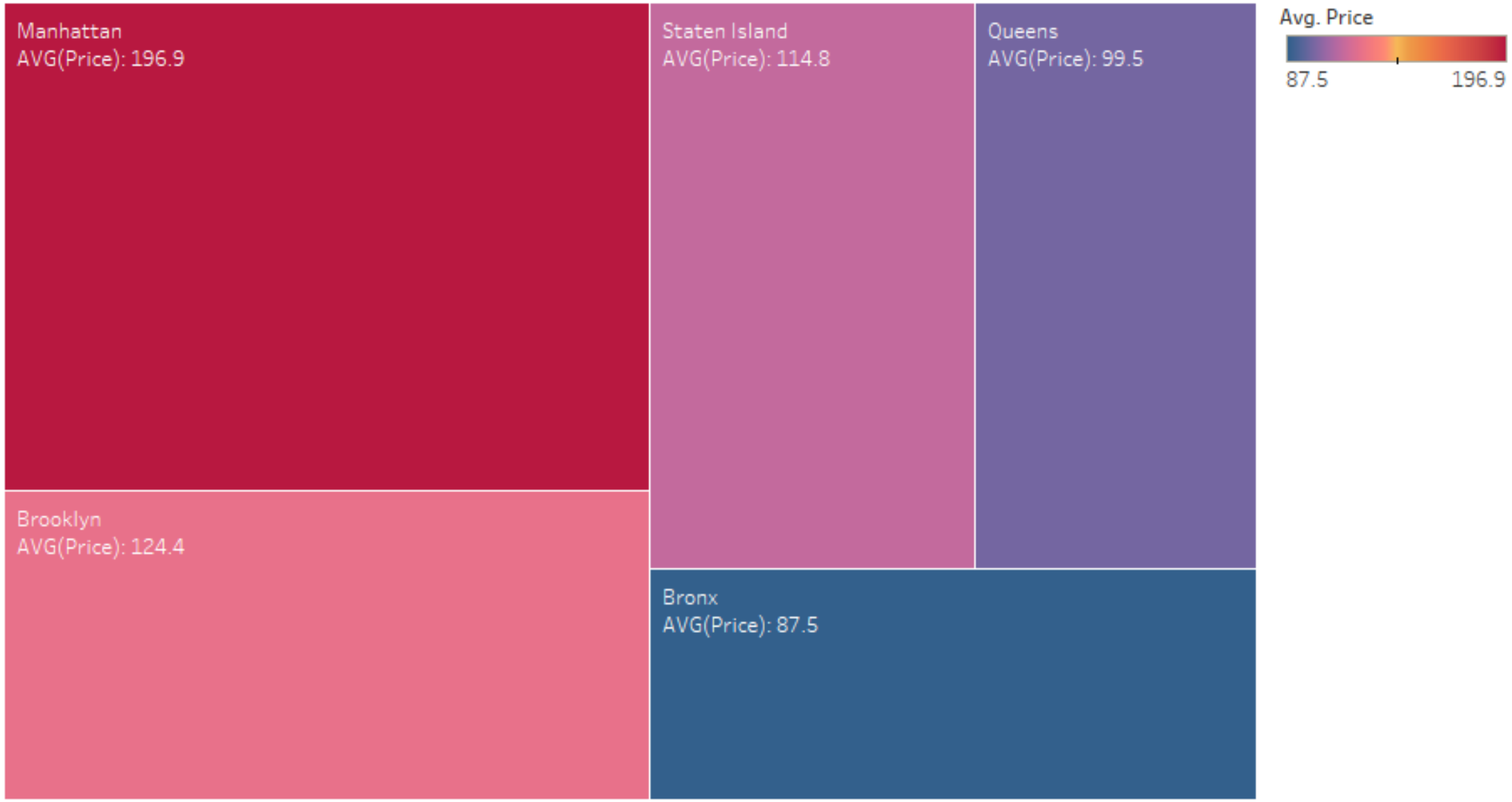
**4. Understanding Price variation with respect to Room Type & Neighborhood**

Now that we have obtained the optimum price range for listings, let us explore which neighborhoods and room types fit in this category. We have created two graphs to explore this question:

**Tree map**: We wanted to understand the average price distribution in the 5 boroughs of NYC. The tree map was created with Avg(Price) for ‘size’ and ‘color’.

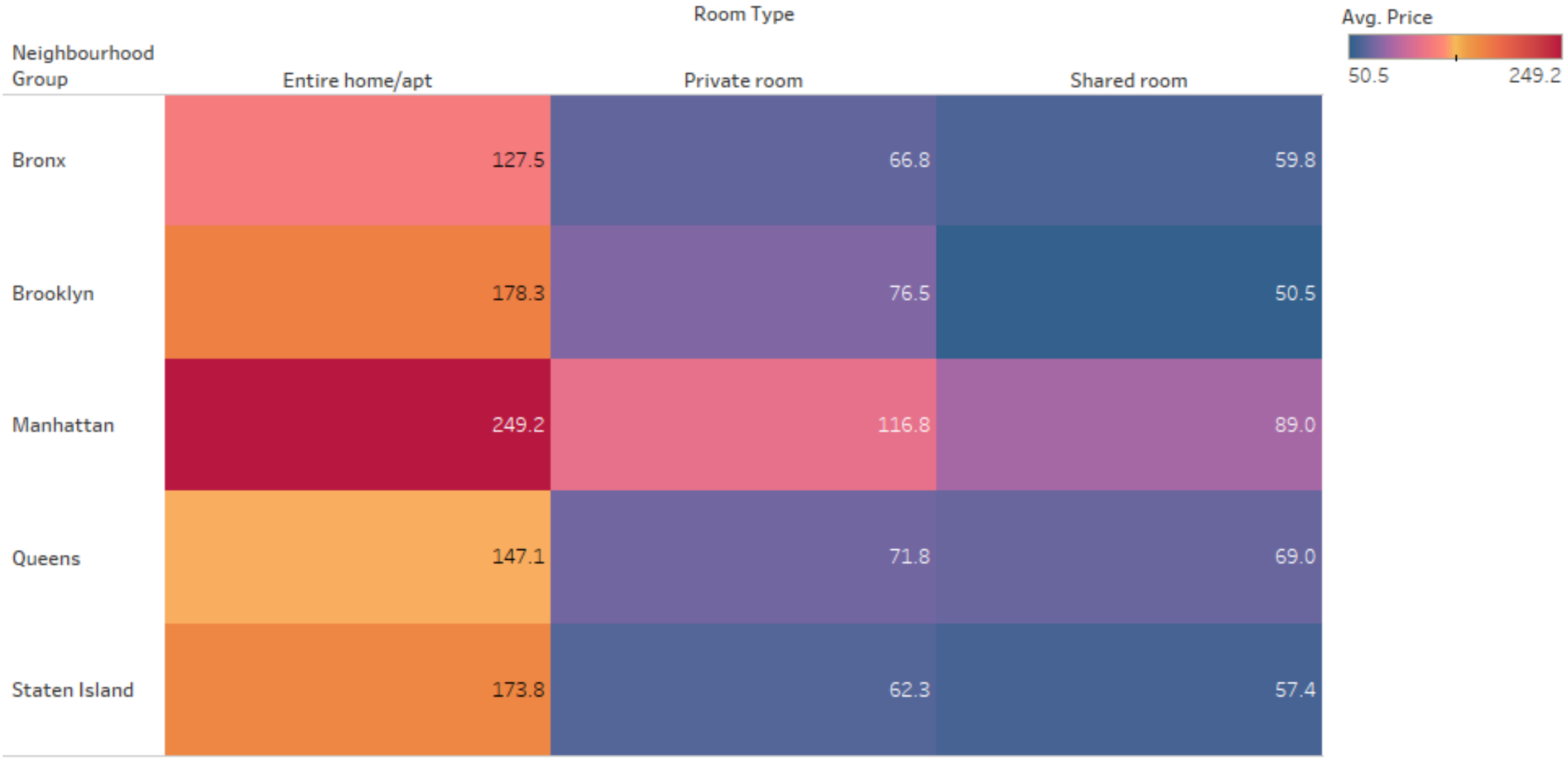
**Highlight table**: As the comparison table containing the room type and neighborhood mainly consisted of numbers we decided to go ahead with highlight table to display the highest and lowest values.

# Average price in each neighbourhood




Neighbourhood Groupandaverage of Price. Colour shows average of Price. Size shows average of Price. The marks are labelled by Neighbourhood Groupandaverage of Price.

# Average price in each neighbourhood with respect to room




Average of Price broken down by Room Type vs. Neighbourhood Group. Colour shows average of Price. The marks are labelled by average of Price.

- **Inference:**

    1. Manhattan appears to have the highest average price of $196.9. The 'Entire home/apt' room type in Manhattan is the most expensive at $250, much higher than the overall average.

    2. 'Shared Room' type is the cheapest in Brooklyn.

- **Recommendation:**

    1. In line with the earlier recommendation, we observe that ‘private rooms’ of Manhattan & Brooklyn and ‘entire homes’ in Bronx and Queens Fall in the favorable price range ($40-$190).

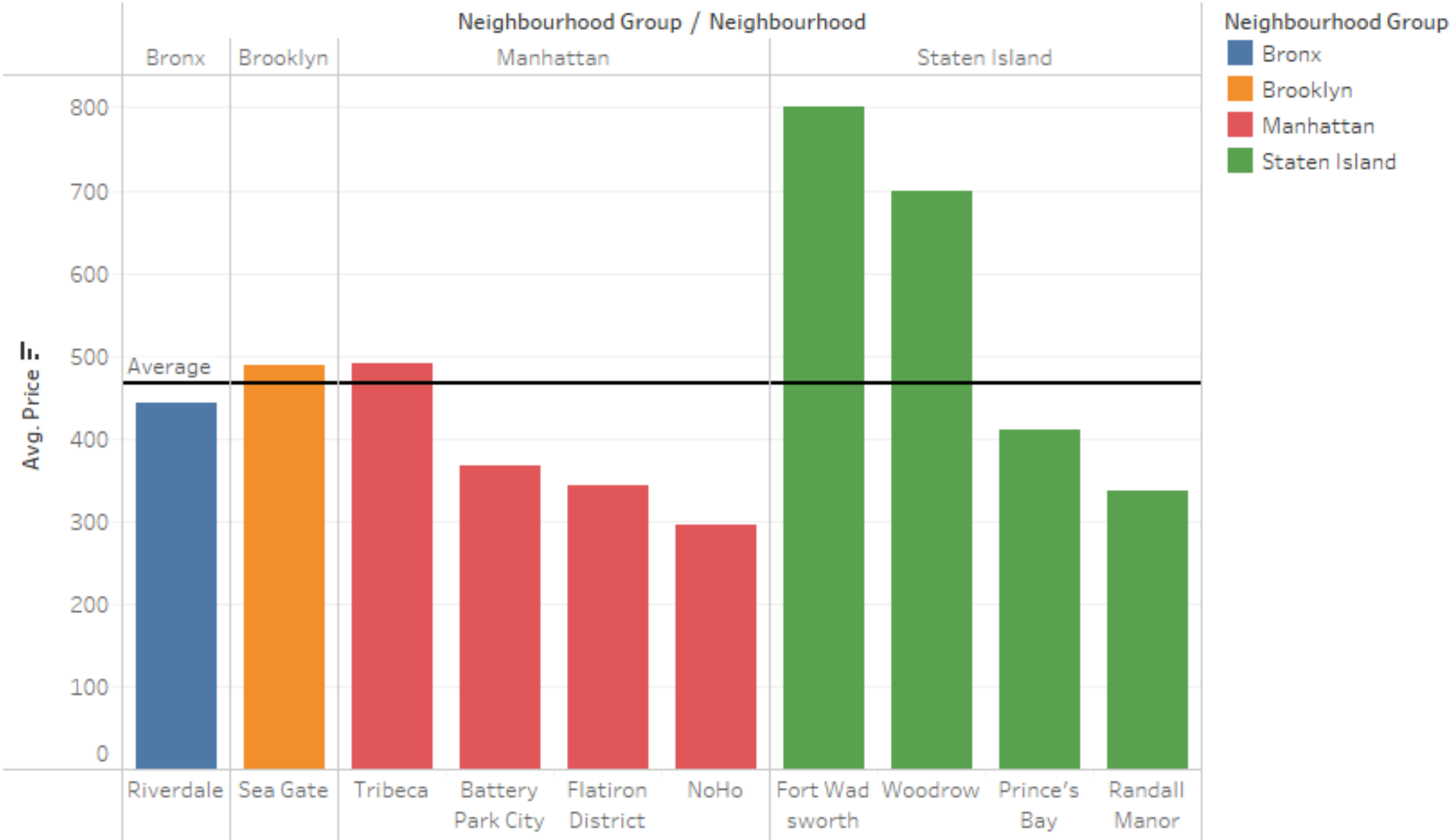
    2. Brooklyn has an average price of $124. As there are already many listings available in Manhattan, Brooklyn can be considered for expansion.

## 5. Understanding Price variation with respect to Geography

- We had earlier explore the price variation with respect to location. We now deep dive to understand how it varies across difference areas/geographies.
- We wanted to understand if the geography played a part in rising prices. For this, we plotted a geographical map to understand the price density and variation
- To further correlate our finding, we took the top 10 neighborhood with maximum average price. We used the findings in this to confirm our observation obtained from the geographical map.

# Price density and variation


Map based on Longitude and Latitude. Colour shows average of Price. Size shows average of Price. The marks are labelled by Neighbourhood Group.




Average of Price for each Neighbourhood broken down by Neighbourhood Group. Colour shows details about Neighbourhood Group.The view is filtered on Neighbourhood, which has multiple members selected.

- **Inference:**

  1. The map displays the price variation, which appears to be distributed uniformly in the inland areas. We see spike in prices in coastal cities, owing to better view from stays and easy ferry reachability. When we zoomed in, we also observed higher pricing near colleges or important monuments/landmarks.

  2. The bar graph confirms our inference, as we observe that the top 10 neighborhoods according to price are those that are situated near the sea or are next to important institutions/companies/landmarks.

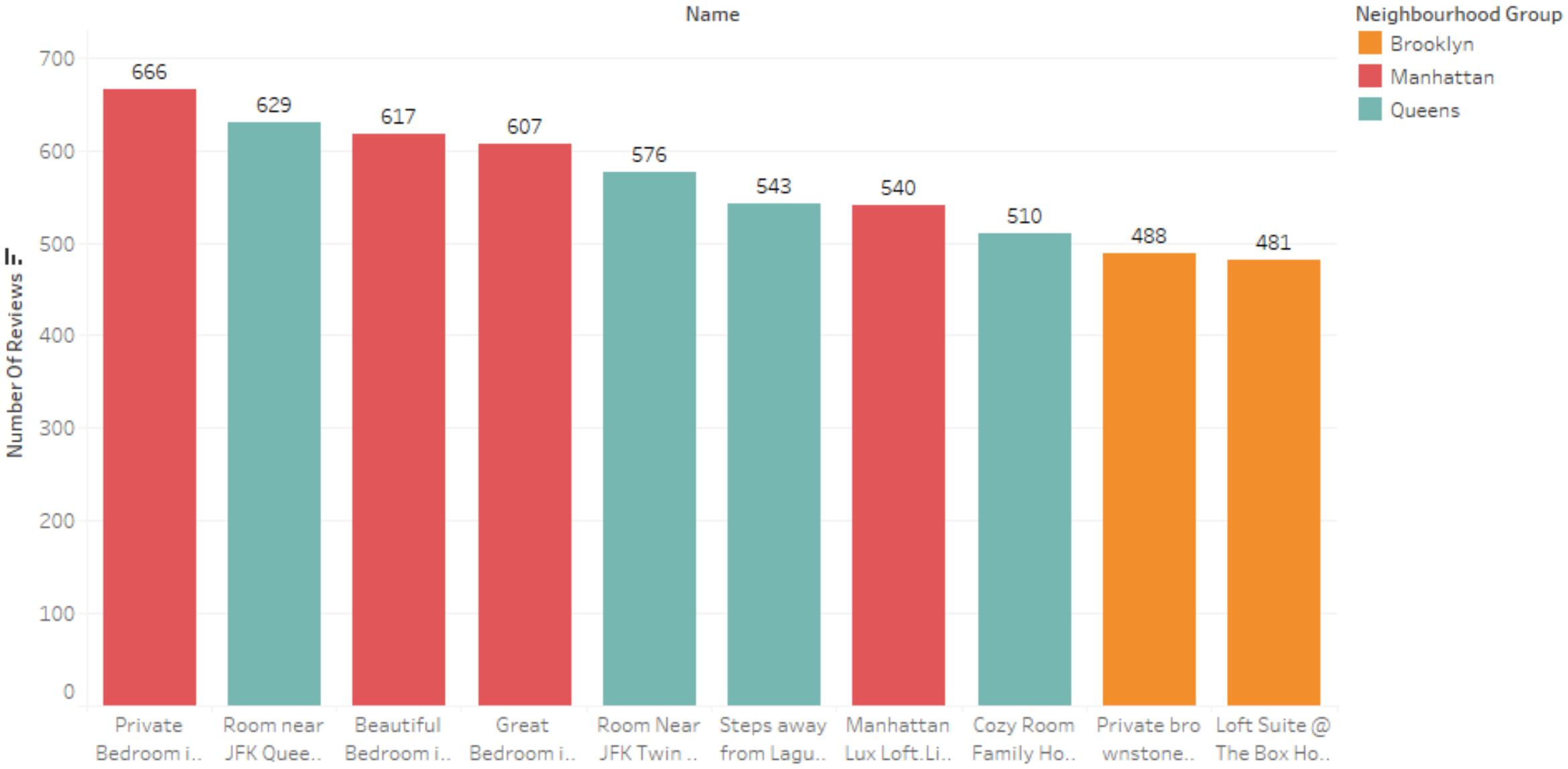
- **Recommendation:**

  Increasing acquisitions and new properties in coastal regions can increase customer bookings.

## 6. Top reviewed properties

- We have gotten various insights in the above questions regarding price range or neighborhood. To confirm and correlate our observations, we have visualized the Top 10 most reviewed properties. This would give us an overall idea of whether our analysis agrees with the customer preference. We have taken the “name” of the listings and calculated how many reviews each listing received.

# Top 10 property as per reviews




Sum of Number Of Reviews for each Name. Colour shows details about Neighbourhood Group. The marks are labelled by sum of Number Of Reviews.The view is filtered on Name, which has multiple members selected.

- **Inference:**

  1. Manhattan, Brooklyn and Queens have the most liked properties (most reviewed).

  2. the most reviewed property “Private Bedroom in Manhattan”, though it appears to be steeply priced still has managed to get the maximum number of reviews making it the most favorable property in NYC.

- **Recommendations Consolidated:**

  1. Promotion of shared rooms with targeted discounts to increase bookings.

  2. More number of hosts & listings with monthly rental duration (30-60-90) can be acquired. We see a good potential in the 30-day rental window. Manhattan & Brooklyn have higher number of 30-day bookings compared to the others; these areas can be further targeted.

  3. Weekly or bi-weekly rentals can also be acquired, as these can be used customers stranded in NYC for quarantine purposes.

  4. New acquisitions and expansion can be done in the price range of $40 - $190 as it satisfies both parameters of volume of customer traffic and customer satisfaction.

  5. New acquisitions can be explored to acquire ‘private rooms’ in Manhattan and Brooklyn and ‘entire homes’ in Bronx and Queens.

  6. Brooklyn has an average price of $124. As there are already many listings available in Manhattan, Brooklyn can be considered for expansion.

  7. Increasing acquisitions and new properties in coastal regions can increase customer bookings.

# Thank You