Pillow Palooza NYC Short-Term Rental Insights

Introduction: Pillow Palooza is a start-up for renting property offering short-term rental options for travellers and who wants to stay for a short term in different neighbourhood in New York city. This report focused on create insights for Pillow Palooza for searching target property, hosts , neighbourhood and keeping competitive pricing for growth and success in renting business. This report contains all the important insights to help pillow palooza to better understand the market to decide their business strategy. Pillow Palooza has collected data from various sources on Airbnb listings in New York City and this report based on the this collected data to gain insight into the market. This report contains all the visualization and insights on the short-term renting market.

Context: All the insights based on three datasets collected by Airbnb data, that is pricing, reviews, and room type in the form of csv files. For generating insights, we first clean all the datasets using python code and run SQL query later on this clean data sets to generate important results.

Cleaning datasets:

- First, we loaded all the three datasets using python panda's library for further cleaning.
- Pricing csv file contains important data variables like listing Id, price that is price per night in USD and neighbourhood-full that is name of the borough and neighbourhood where property located.
- Room- type contains important information like listing Id, property type as entire-home/apartment, private houses or shared room , and descriptions which is description about the listing property.
- Reviews csv file contains information about the listing Ids, hosts name and last review date of the property by client.

- After loading all data, we performed cleaning of data like removing unwanted strings like dollars from the pricing, changing data type and removing outliers for aggregate the price column, calculating price per month and add as column for generating monthly price for the properties. Then in room type dataset we cleaned the room type column, calculating the number of each type of property. Cleaning the date of last review column and generating the first and last reviews of the properties.

- Next after cleaning we merged all the three datasets(price, room type, reviews) into one file for further analysis. Then we checked all the null values in merged dataframe and remove all the null values. We also removed all the duplicates values from the dataframe.

Analysing data:

We added a new column 'borough' by breaking the neighbourhood full column and generate statistics by different boroughs that is Manhattan, Brooklyn, Queens, Bronx, and Staten Island. Then we categorized the property into ranges like budget, average, expensive and extravagant. Then we calculated the avg_price, avg_price per month by borough and property type. We calculated how much more, in dollars, the average cost of an Airbnb listing versus the private market and stored it as 'diffrence'. We also calculated the frequencies of each room type by boroughs. Then we created a dictionary called Airbnb-analysis with seven variables: avg_price, average_price_per_month, diffrence, room frequencies, first reviewed, last reviewed and prices by borough. All these variables are important analysis of Airbnb datasets and gaining insights for renting business.

Then After data wrangling and cleaning we did our further analysis using SQL queries. We investigated the following questions by SQL queries to gain important insights of data.

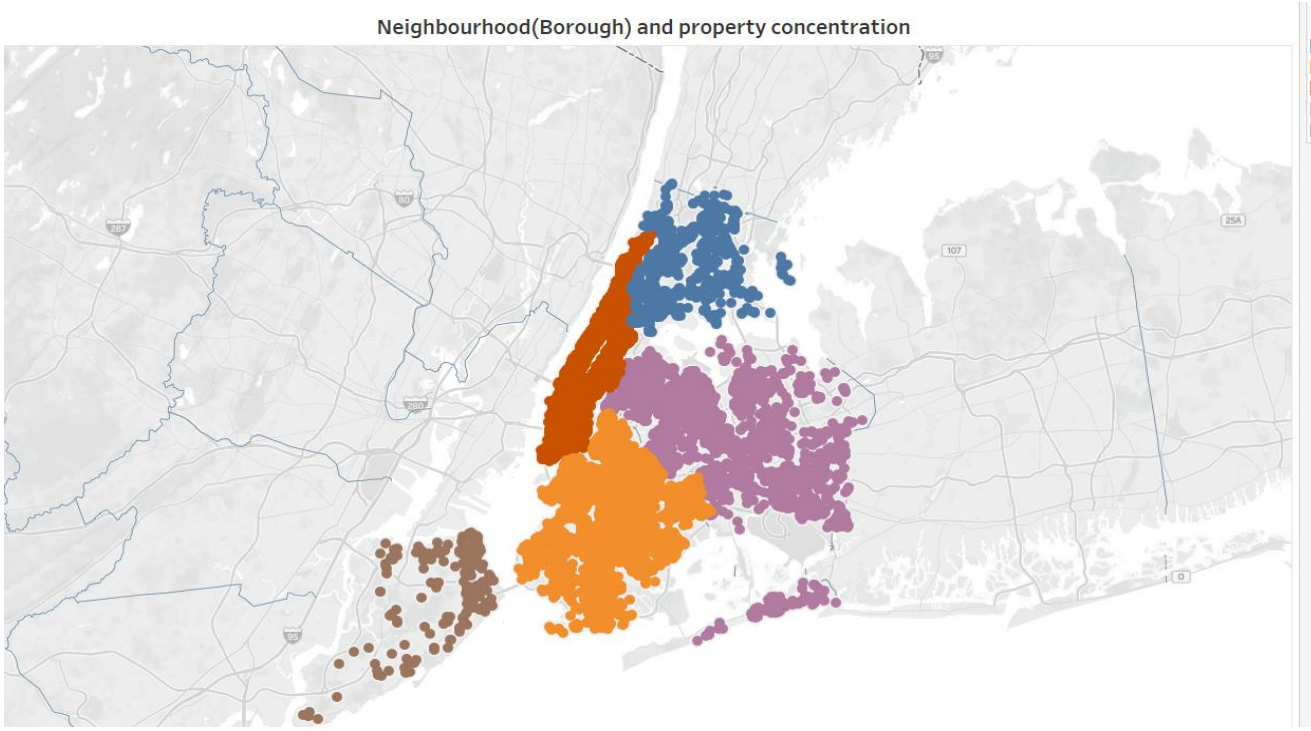
- What is the most common room type in NYC Airbnb listings?- This information gave us understanding the types of properties that are most popular among guests and may be useful for targeting certain types of listings for marketing or promotion.
- What is the average price of a listing by room type?- This information give us the average price for each room type and diffrence between each of them so it would help us to optimize our pricing for these properties.
- Which borough has the highest average price per month?- This will give us idea of the most expensive borough and target certain type of guests.
- How many listings of each room type are in each borough?- This will give us information about distribution of the properties in each borough and which listing ids are most popular among guests and make decision about pricing and marketing cost in different boroughs.
- How many listings in each room type category have a price of over $500 per night?- This information can be useful for understanding the market for higher-end Airbnb listings and identifying any trends or patterns in the data.
- What is the distribution of listing prices by neighbourhood?- This information can help us understand the range of prices in different neighbourhoods and identify any outliers or anomalies in the data.
- What is the estimated amount of revenue generated by hosts in each borough?- This information can help us understand which boroughs have the highest revenue potential for their hosts.
- What is the average price per month for listings in each neighbourhood?- This information can help us identify the most popular neighbourhoods for Airbnb listings in NYC and may be useful for targeting certain types of guests.
- What is availability of each room type in different borough?- This information will give us all the available property for our listing.
- What is the average number of booking days of each type of property in boroughs?- This information will give us which type of property got more booking in different boroughs, and help us to target those property for our listing and marketing.

Visualising Datasets and present Key Findings:

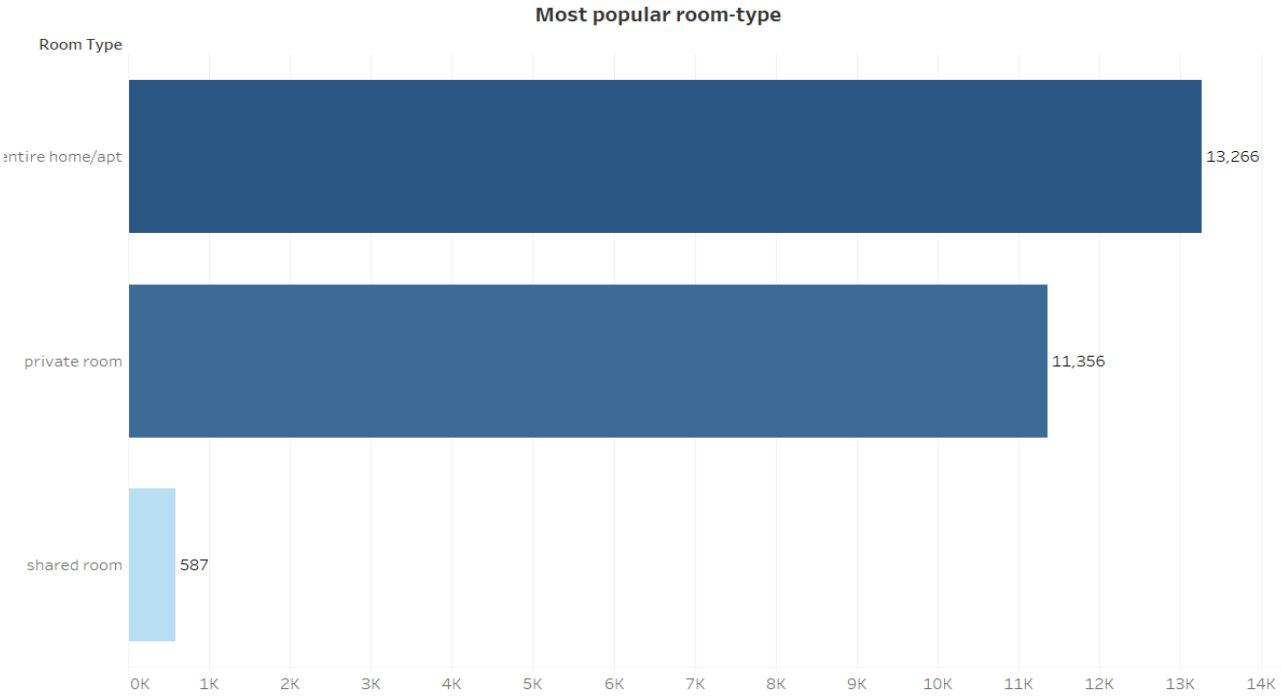
After doing the analysis of the above questions we created different visualisations in Tableau to present our data in a more interactive way.

Some of the important visualisations are :

- The below visualisation gives us insights of property concentration by different boroughs. From this insight we can see that most of the promising rented property is located mainly in Manhattan, Brooklyn, and Queens.

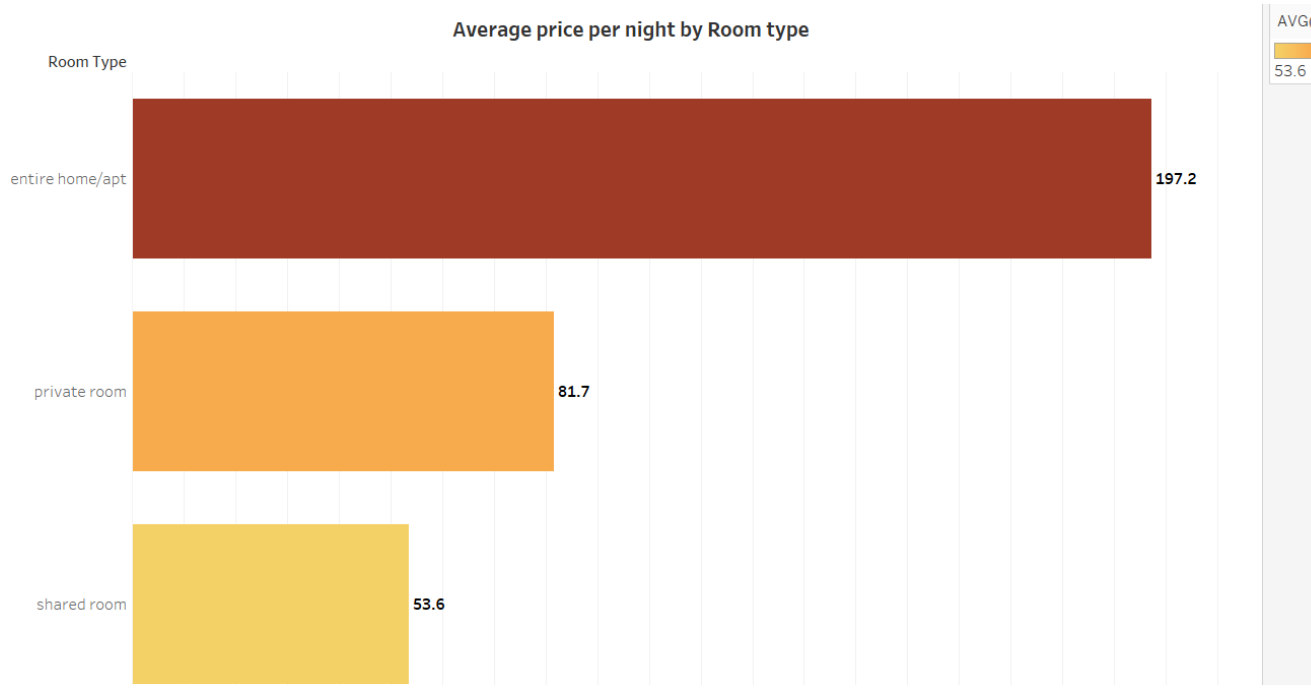


- The next visualisation shows us which is the most popular property type for customers. And we find that the most popular property is the entire home/apartment which is total 13266 in numbers.

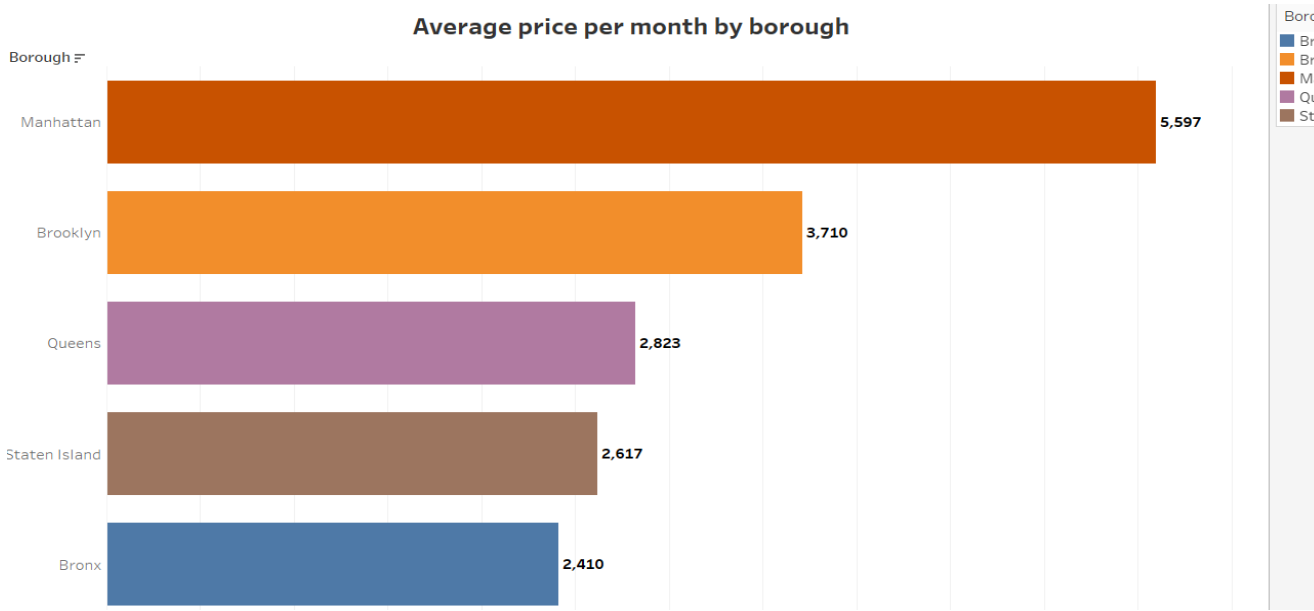


- The below visualisation shows the average price per night by Room Type. And entire homes/apartments are most expensive with an average price 197.2$. Average price for private and shared rooms are 81.7$ and 53.6$ respectively.

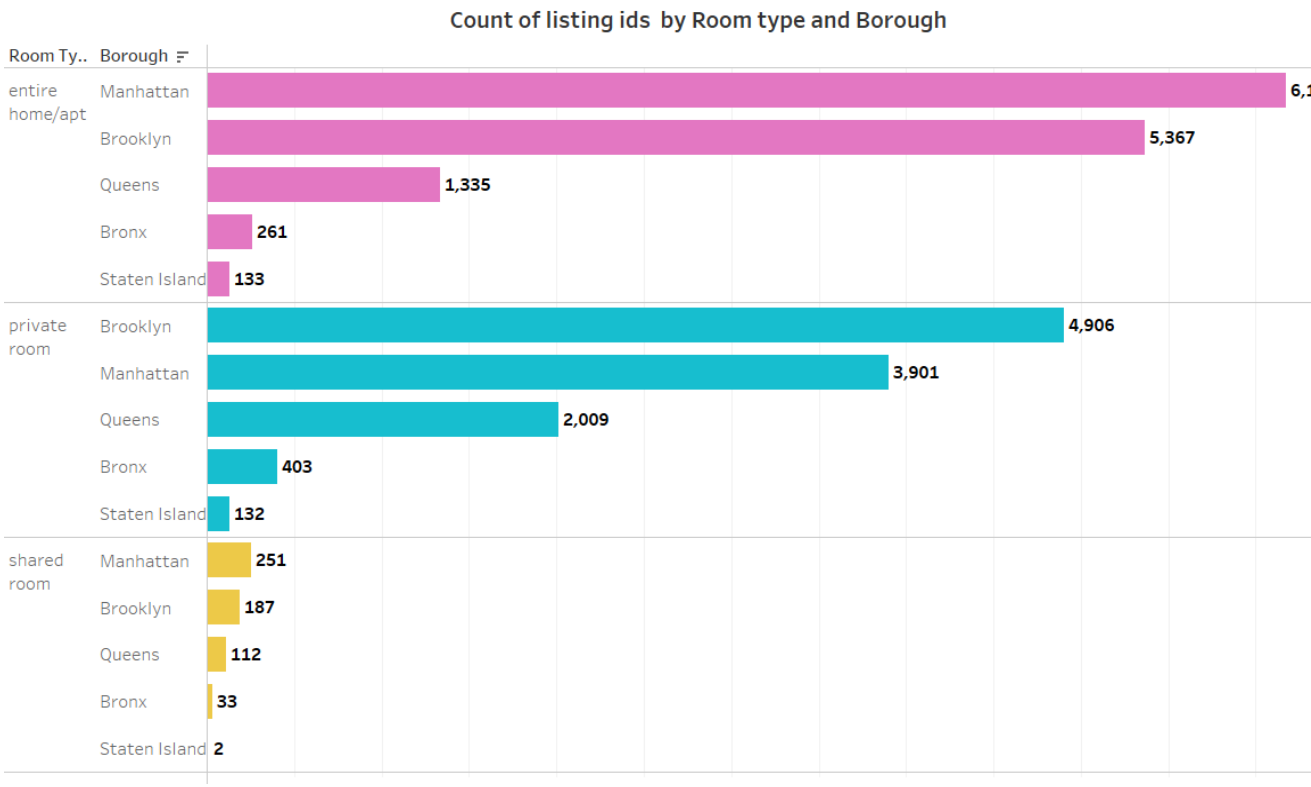
  .



This visualisation displays the average monthly price for each borough. And Manhattan has the highest average monthly price with $5,597. And the Bronx has the lowest monthly price with 2,410$.



- The next visualisation give us insight about the count of listing Ids by Room Type and Borough. For the entire home/apartment and shared room Manhattan has the most listing Ids. For private rooms Brooklyn has the most listing Ids. Overall, we can see that Manhattan and Brooklyn are the Borough which have most of the listing Ids for each room type. .



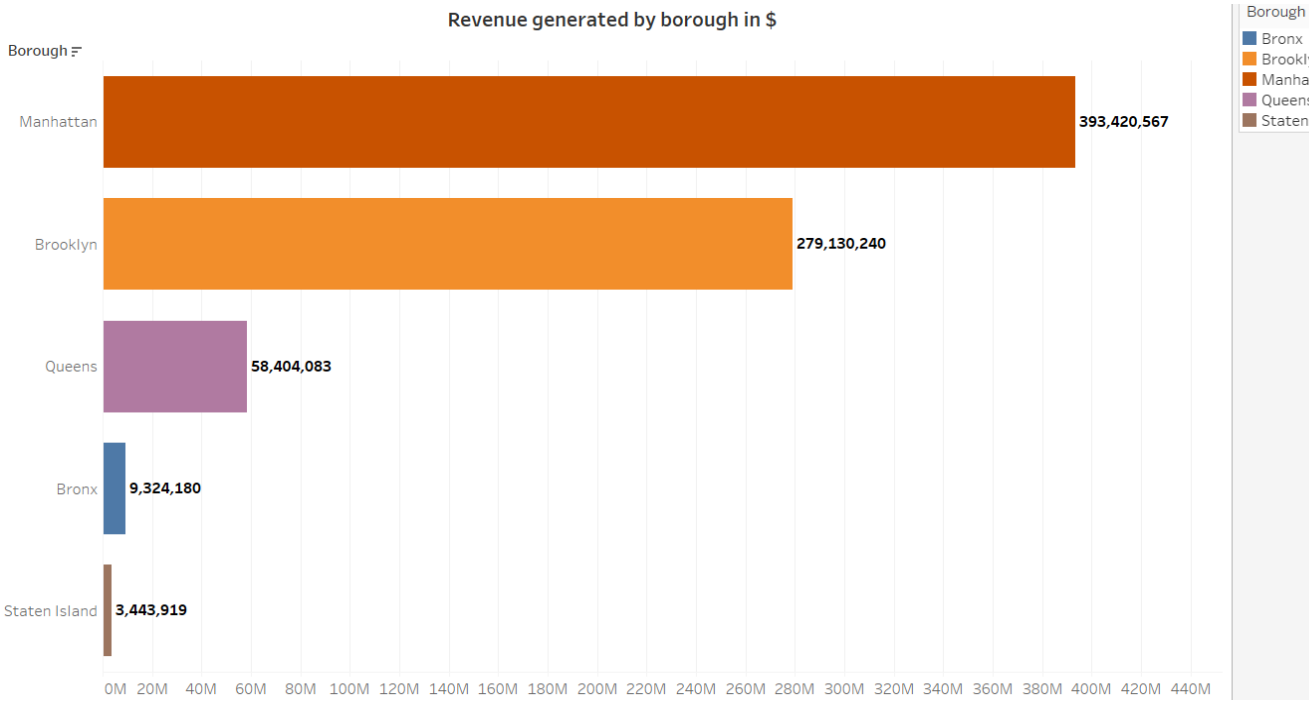
- The below visualisation shows number of listing Ids of the Properties which are over the 500$ price per night. And this is also showing that most of the properties which have the price over 500$ are entire homes/apartments. Also, we can see here some of the outliers which is a listing id in Brooklyn which has a price per night of 7500$ per night.

- The below visualization shows the distribution that is minimum, maximum, and average price per night in different borough. Manhattan has the highest average price; Brooklyn has the highest maximum price which is probably a outlier datapoint. And Bronx has the highest minimum price with 20$.

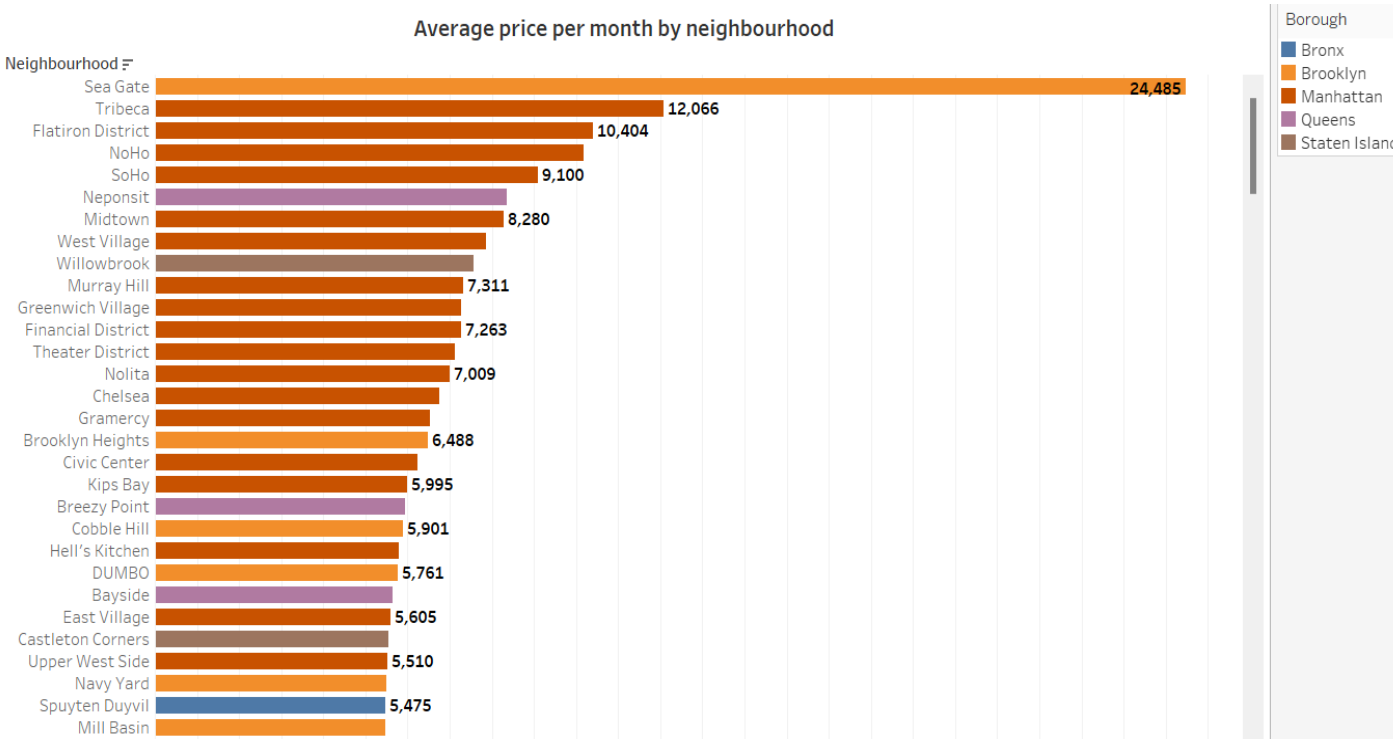
Distribution of price per night by borough

Borough	average_price	max_price	min_price
Bronx	79	670	20
Brooklyn	122	7,500	10
Manhattan	184	5,100	10
Queens	93	2,600	10
Staten Island	86	300	13

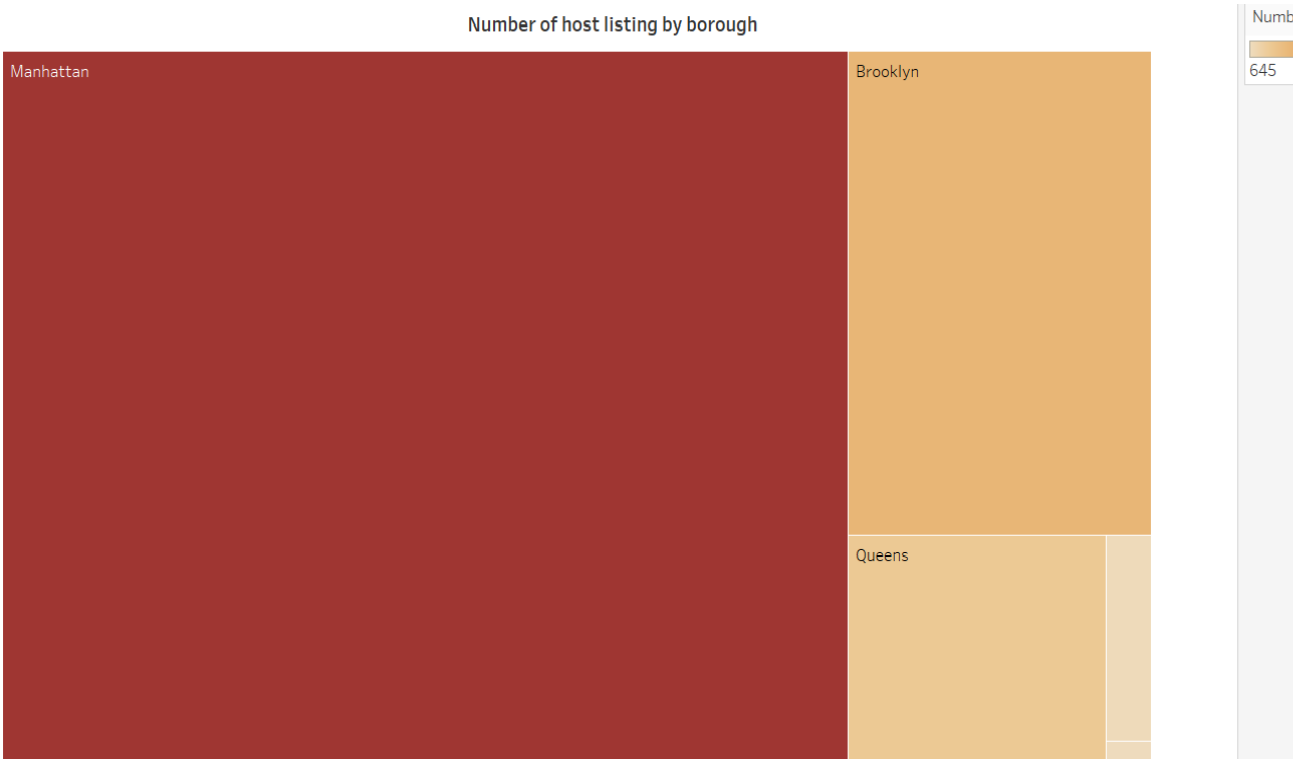
- The next visualization shows the Total revenue generated by hosts in different borough. The highest revenue generated by hosts in Manhattan. Which is around 393,420,567$. The minimum revenue generated by host in Staten Island which is 3,443,919$.



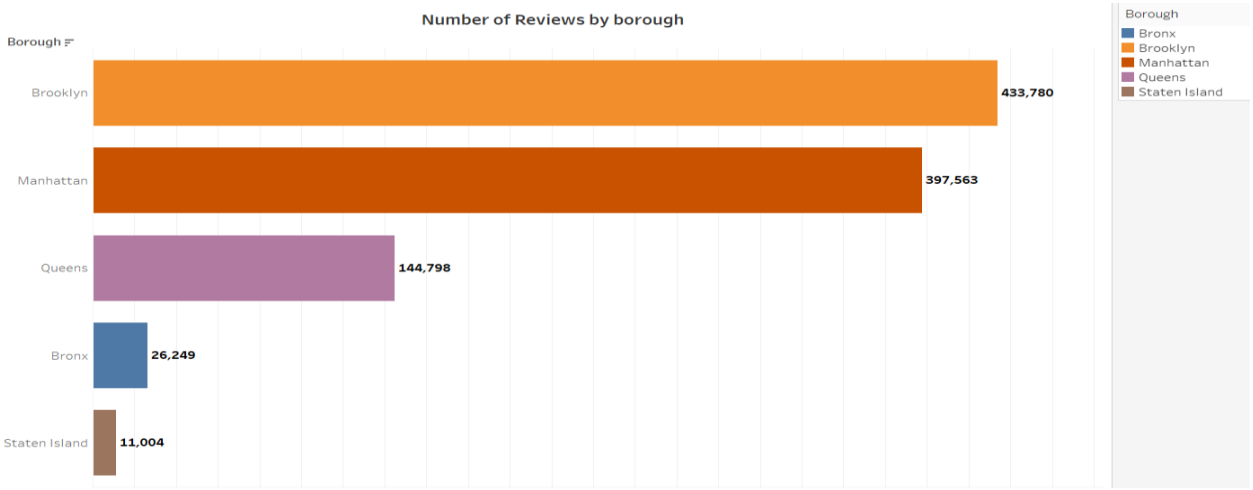
- This visualization shows the Average monthly price by different neighbourhoods and boroughs. The highest monthly price is in Seagate. Tribeca and Flatiron District come at second and third number.



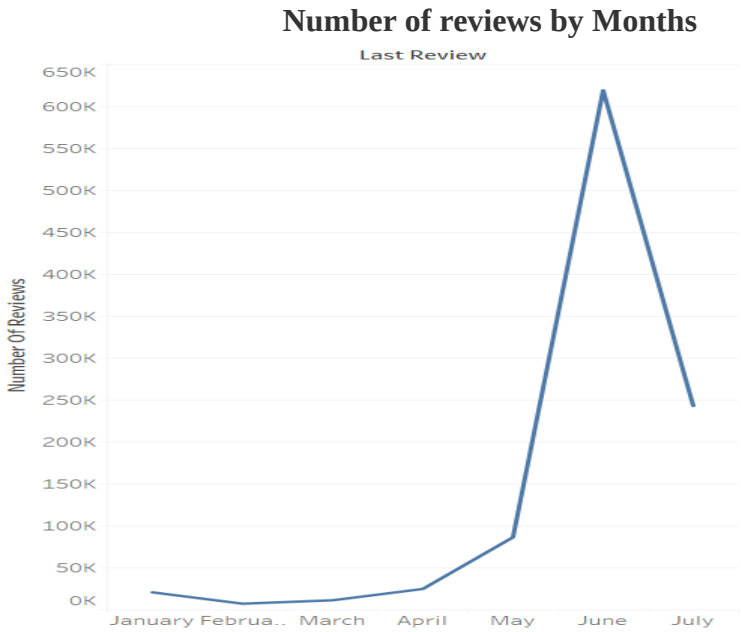
- The next visualisation shows the number of host listings in each of the boroughs and Manhattan has the highest number of hosts. And Staten Island has the least number of hosts.



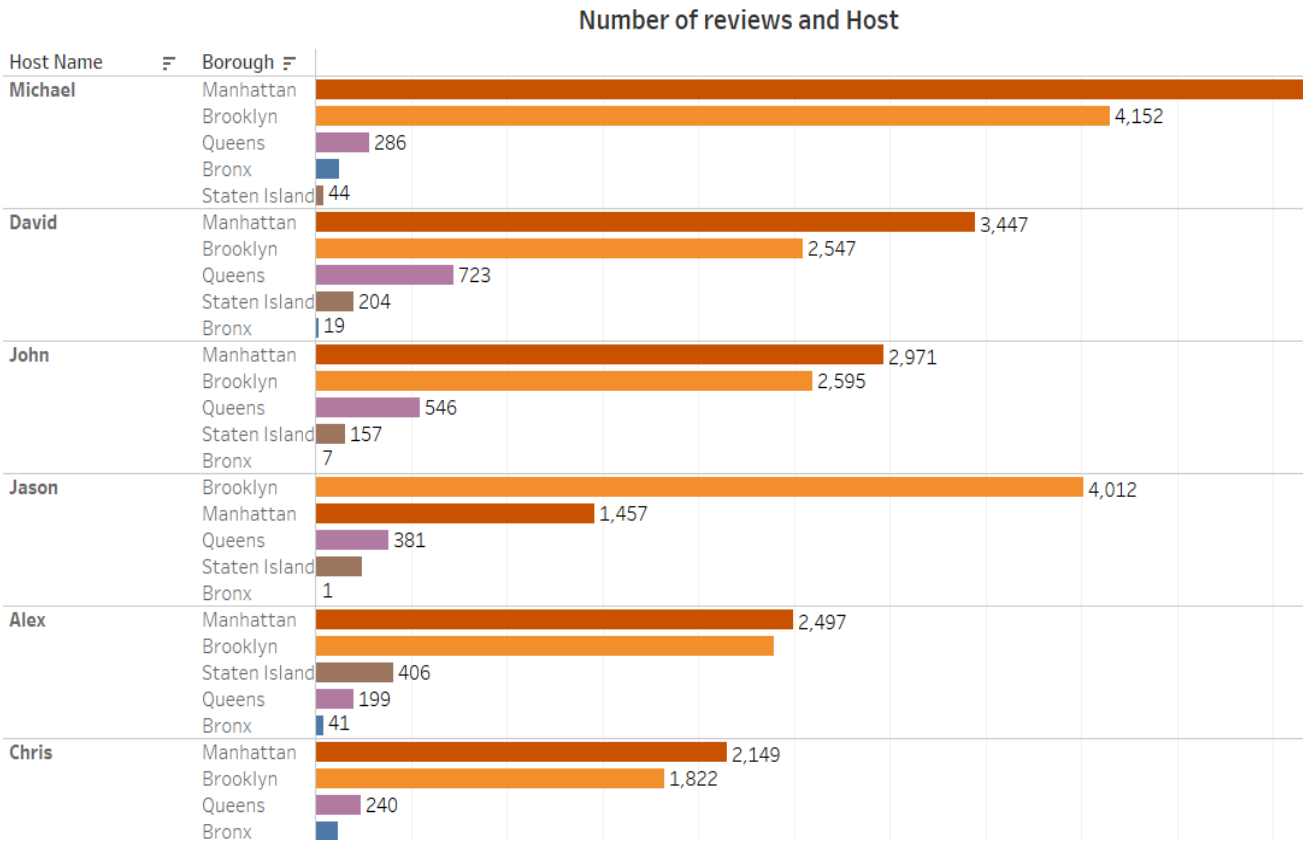
- The following visualization shows the number of reviews by borough. And Brooklyn got the maximum number of reviews which is around 433,780.



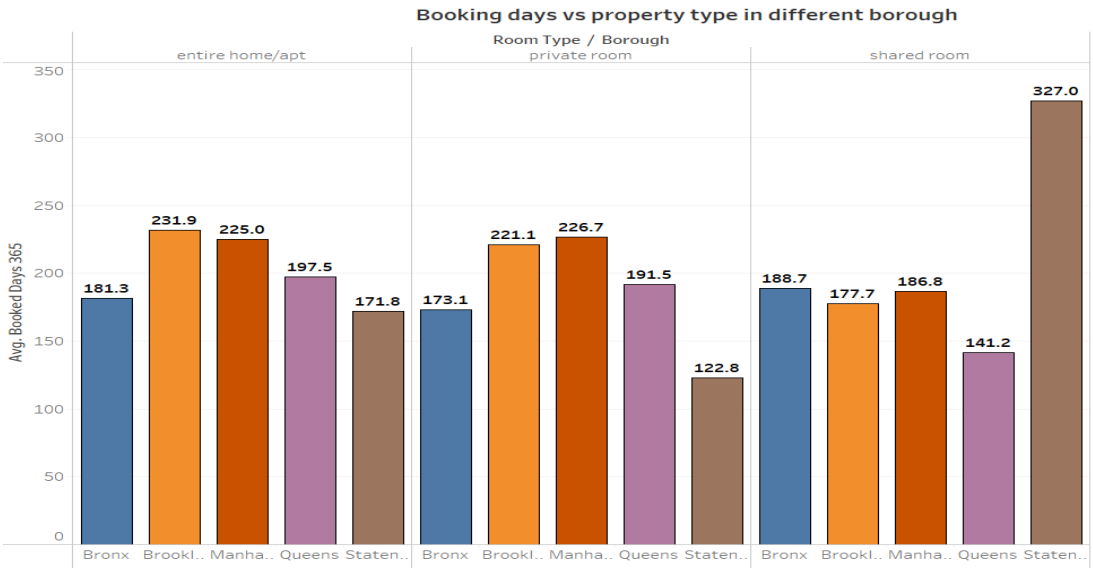
- The next visualisation shows the number of reviews got monthly. And June is the most popular month among guests for renting because it's got a high number of reviews during this period.



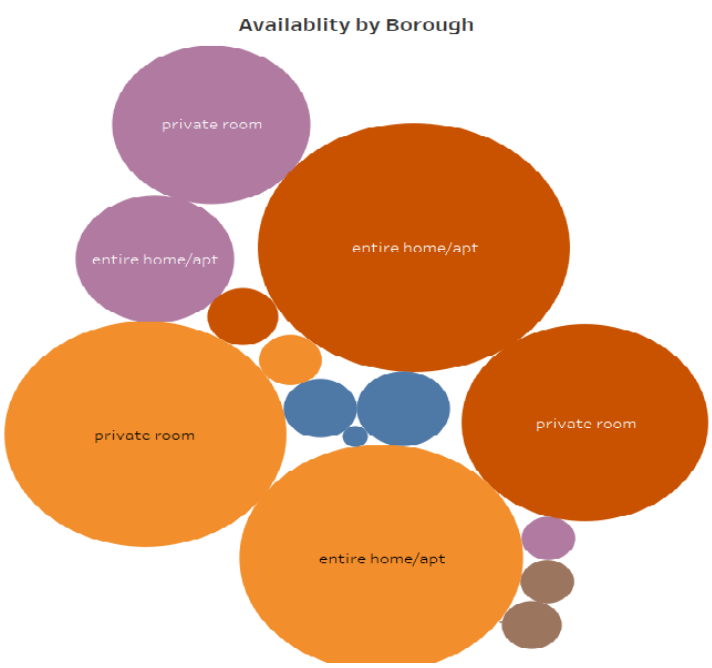
- The next visualization shows the Number of reviews got by host in different borough . Michael got the greatest number of reviews on his listing properties.



- The below visualization compare the average days booked in a year of each property type in different borough. Average booking days for entire home/apartment is highest in Brooklyn and for private room in Manhattan. The highest average booking days for shared rooms is in Staten Island.



- The below visualisation shows the Availability of listing Ids by each borough. Manhattan has the highest availability of the entire home/apartment and Brooklyn has the highest availability of private rooms.



Recommendations:

After all the detailed analysis of datasets we conclude the following recommendation for future growth and successfully launch of Pillow Palooza short term renting business.

- Most popular locations for renting accommodation are Manhattan and Brooklyn we could get more property and hosts in both the boroughs but for matching up with already presented competitors we should wisely optimize our price range for launching our business. On the other hand, we can try in other areas like Queens and Bronx for a new launch of business.
- The most popular property type for accommodation of guests is the entire home/apartment so, we should invest more in listing and marketing this kind of property.
- Highest average monthly price in Manhattan suggests that we should promote the listing ids in Manhattan to certain types of clients who can afford accommodation which are higher in prices.
- Private rooms are more popular in Brooklyn so we can promote and list ids for private property in Brooklyn and by contacting hosts which hold private property in this area.
- Staten Island has more shared rooms and this kind of property is popular among guests so we could do the marketing accordingly.
- Properties which have prices over 500$ per night are the entire home and apartment so we could range the prices of this kind of apartment accordingly.

- Average, max and min price per night in different boroughs suggests us to optimize the price in different boroughs using these statistics.
- Manhattan and Brooklyn are the most revenue generating areas for their hosts so we should include more listing ids in both the boroughs for growth in our business.
- The greatest number of hosts listed in Manhattan so we can those hosts which have a greater number of reviews and whose listing properties are popular among guests and offer them good prices for doing business with us.
- After analysing review's data, we can see that most reviews are given by guests in Brooklyn borough so we should encourage our guests in other areas to give a review which will help us to improve our service and promote marketing based on those reviews.
- Most of the reviews given in the month of June say that this period around the summer is most popular among the guests, so we should consider this during marketing and launching new offers in this period to attract more guests.
- Average booking days of each property type in different boroughs help us to decide which type of property is more popular in different boroughs and we should try to target those properties.
- If we investigate availability of different kinds of property in different boroughs, we see that entire homes/apartments are more available in Manhattan and private rooms are more available in Brooklyn so we could do listings of those properties accordingly.

Links for presentation and dashboards:

- Insights and Recommendations for Short-Term Rentals in New York (loom.com)
- Borough, Room type and Price Insights_new | Tableau Public
- Listing Ids, Revenue and Price statistics by borough_new | Tableau Public
- Host_review_insight_new | Tableau Public
- Booking Days, Availablity_new | Tableau Public
- Pillow_palooza_story_new | Tableau Public