Data Analysis of New York City Short Term Rental Airbnb Data

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Summary:

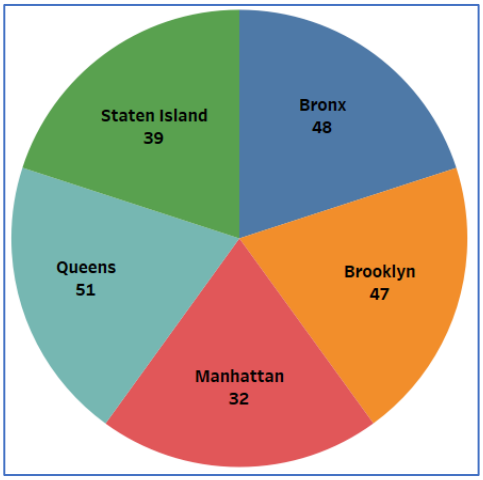
The analysis of the New York City short-term rental data provides valuable insights into popular neighbourhoods, preferred property types, highly priced areas, and peak demand times. The findings reveal that the boroughs of Brooklyn and Manhattan are not only the most popular among residents but also command higher prices in the rental market. Additionally, it is observed that Entire Homes or Apartments are the most commonly preferred property types among renters. Furthermore, the peak time of demand occurs in the month of June when there is a significant surge in rental activity. These insights can be used by investors and individuals to make informed decisions about their rental property investments and optimize their rental strategies.

Context:

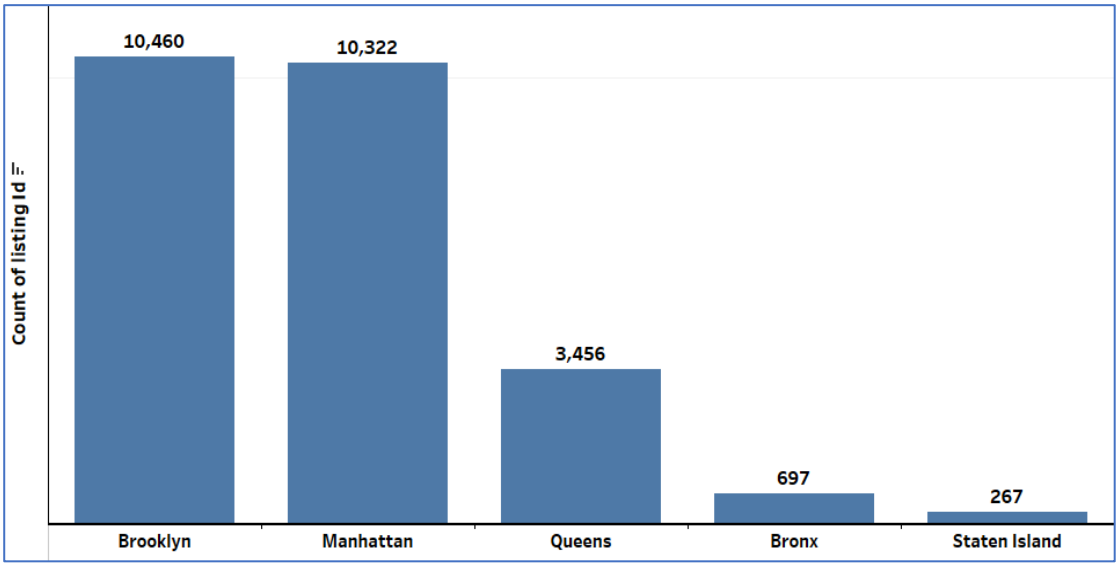
The context of this analysis is the examination of short-term rental data in New York City. The purpose is to gain insights about popular neighbourhoods, preferred property types, highly priced areas, and peak demand times. The analysis aims to provide valuable information to investors, property owners, and individuals interested in the New York City rental market. By understanding the trends and patterns in the data, stakeholders can make informed decisions about their rental properties, identify potential investment opportunities, and optimize their rental strategies to meet the demands of the market.

Results:

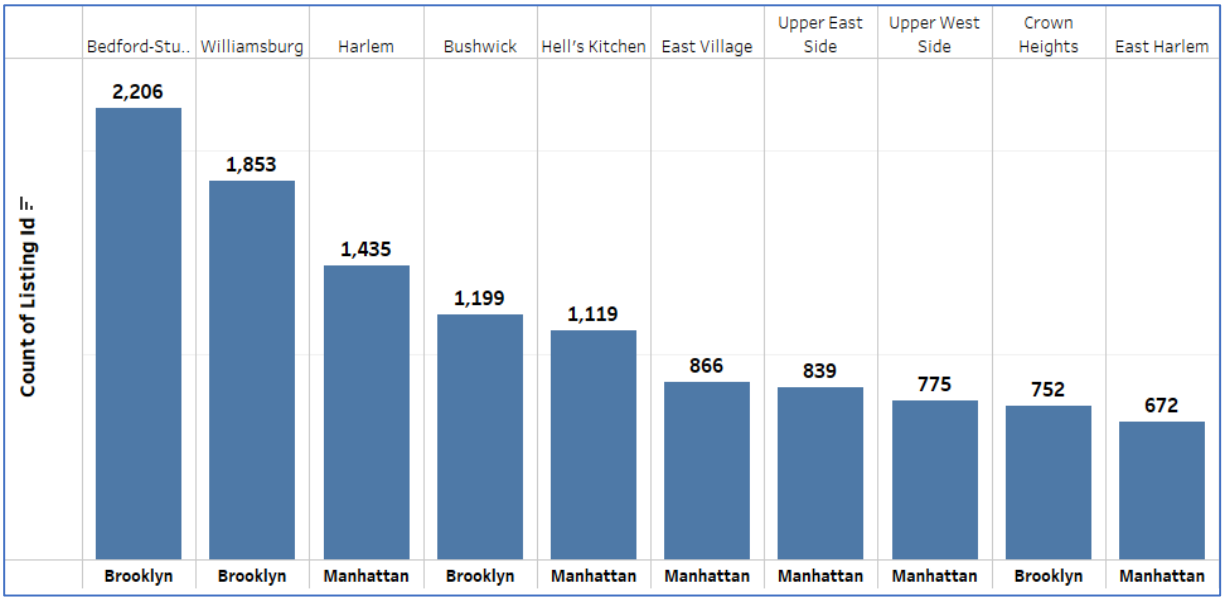
1. There are 5 boroughs in New York City namely Brooklyn, Manhattan, Queens, Bronx and Staten Island. In these boroughs, there are over 216 neighbourhoods and 7363 hosts.



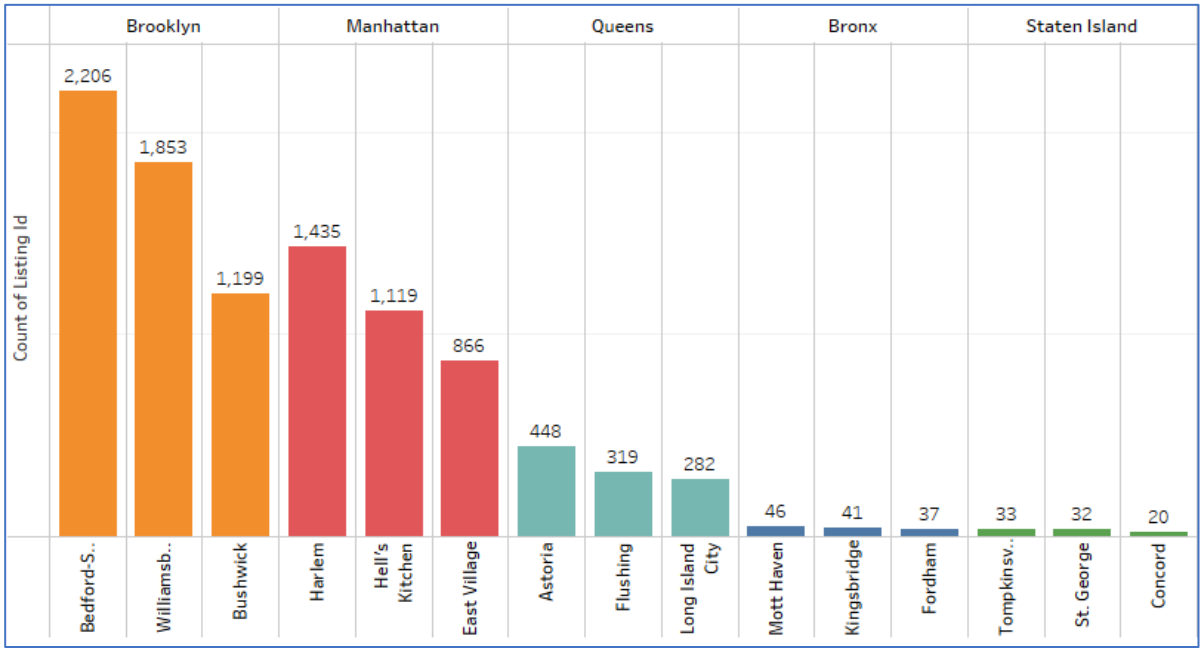
2. The most popular boroughs for rental are Brooklyn and Manhattan with over 10460 and 10322 listing respectively. Least popular borough is Staten Island with only 267 listing.



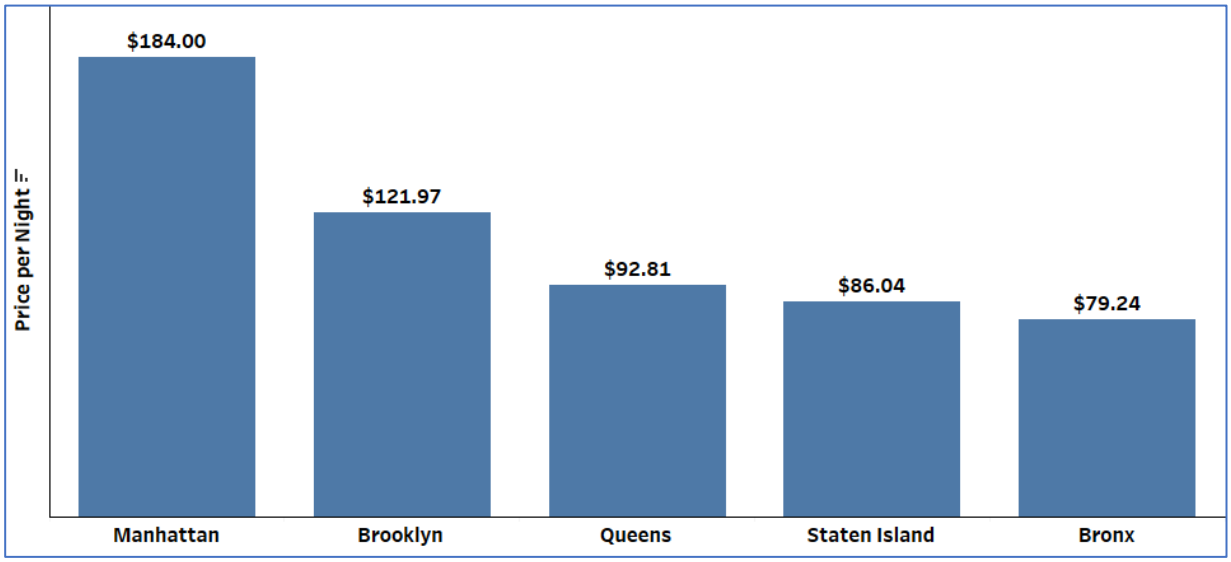
3. The result shows top 10 most popular neighbourhoods in the NYC boroughs. It has been observed that all 10 neighbourhoods belong to either Brooklyn or Manhattan as these are the most popular boroughs in NYC. Bedford Stuyvesant is the most popular neighbourhood in Brooklyn borough with 2206 listing.



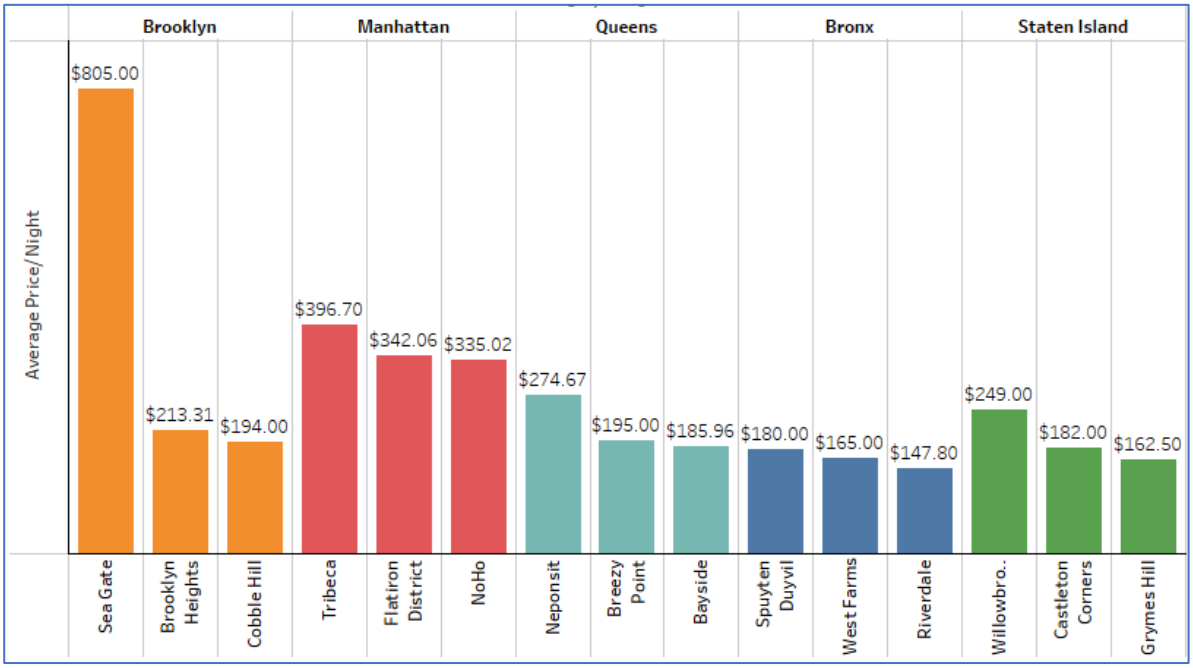
4. This result shows the top 3 neighbourhoods in each borough with highest listing. Bedford Stuyvesant is the most popular neighbourhood in Brooklyn, Harlem in Manhattan, Astoria in Queens, Mott Haven in Bronx and Tompkinsville in Staten Island.



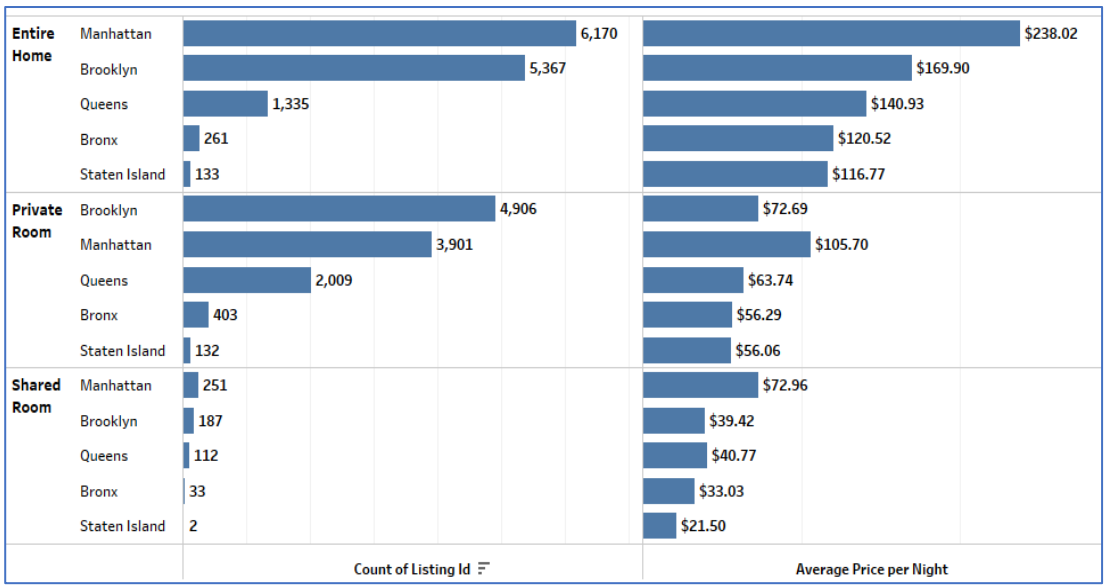
5. The highest average rental price borough is Manhattan with rent price of $184 followed by Brooklyn with rent price of $121.97.



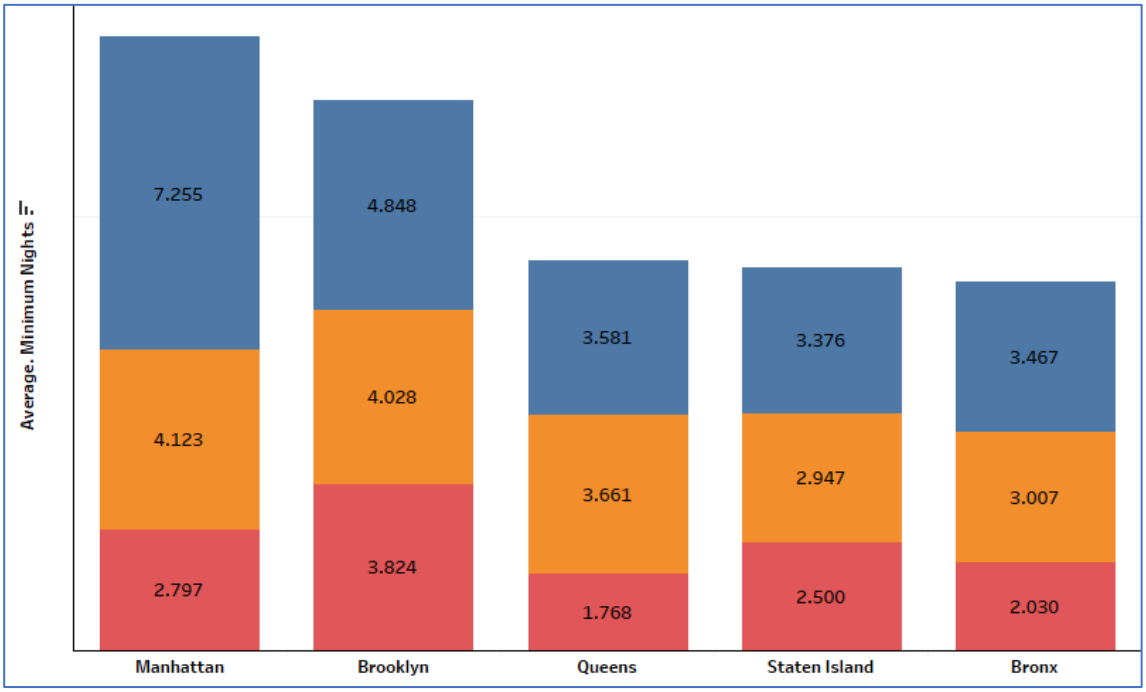
6. This result shows the highly average rental price neighbourhood from each borough. It has been observed that the Sea Gate from Brooklyn borough has the highest average rental price of $805, Tribeca from Manhattan has highest rental price of $396.70, Neponsit from Queens highest rental price $195, Spuy ten Duyvil from Bronx with $180 and Willowbrook from Staten Island with $249.



7. This result shows the most popular property type with average rental price. It has been observed that there is high listing for Entire Home or Apartment followed by Private Room and least listing for Shared Room. Also, the average rental price is highest for Entire Room as compared to other property type. Variation in the number of listing and average rental price can be observed according to the popularity of boroughs.



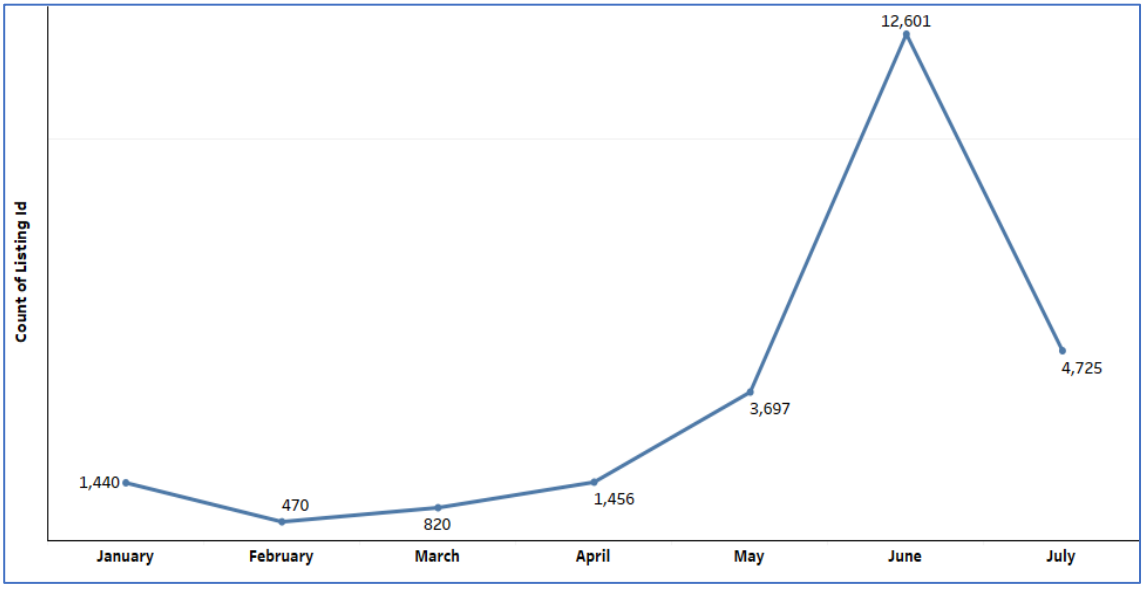
8. This result shows an average number of minimum nights stay in respective boroughs. The graph's colour variation indicates the type of property, with blue representing Entire Homes, orange representing Private Rooms, and pink representing Shared Rooms. The analysis reveals that the maximum length of stay is typically 7 nights, while the minimum length of stay is 2 nights across the different property types and boroughs.



9. The chart displays the distribution of property types across different boroughs. It shows that the Brooklyn and Manhattan boroughs have maximum number of Entire Home and Private Rooms which are the most popular property types.

	Entire Home	Private Room	Shared Room
Bronx	261	403	33
Brooklyn	5,367	4,906	187
Manhattan	6,170	3,901	251
Queens	1,335	2,009	112
Staten Island	133	132	2

10. The line chart illustrates the changes in listing counts over the course of the year. In terms of demand, there is an initial increase after April, followed by a decrease starting in July. The month of June stands out as the peak period with the highest number of listings. This surge in listings during June could be attributed to the summer season and the vacation period, which typically leads to increased housing demand.



Recommendation:

1. Investors looking to make profitable Short-Term Rental Property investments are advised to consider investing in the boroughs of Brooklyn or Manhattan. These boroughs are highly popular and known for their higher property prices, making them potentially lucrative options for investment.
2. Given that the most popular property types among residents are Entire Homes and Private Rooms, investors can focus their investments in these property types. These property types tend to attract higher demand and offer potential for greater profitability.
3. The months of May, June, and July are identified as the most demanding periods for real estate investment, with the potential for maximizing profits. Investors should consider targeting these months for their investment activities to take advantage of increased market activity and potentially higher returns.

Appendix:

SQL Queries:

1. What is the most common room type in NYC Airbnb listings?

```
SELECT room_type,
       Count(*) AS room_count
FROM   room_types
GROUP  BY room_type
ORDER  BY 2 DESC
```

Output:

```
room_type         room_count
entire home/apt   13266
private room           11356
shared room       587
```

2. What is the average price of a listing by room type?

```
SELECT   room_type,
         Round(Avg(price),2)
FROM     prices p
JOIN     room_types rt
ON       p.listing_id=rt.listing_id
GROUP BY 1
ORDER BY 2 DESC
```

```
OUTPUT:
room_type         average_price
entire home/apt   197.17
private room           81.67
shared room       53.65
```

3. Which borough has the highest average price per month?

```
SELECT   borough,
         Round(Avg(price_per_month)::numeric,2) AS average_pric
e_per_month
FROM     prices p
JOIN     room_types rt
ON       p.listing_id=rt.listing_id
GROUP BY 1
ORDER BY 2 DESC
```

```
OUTPUT:
borough           average_price_per_month
manhattan    5596.69
brooklyn          3710.06
queens       2823.09
staten island     2617.20
bronx        2410.25
```

4. How many listings of each room type are in each borough?

```
SELECT borough,
       room_type,
       Count(*) AS num_listing
FROM   prices p
       JOIN room_types rt
         ON p.listing_id = rt.listing_id
GROUP  BY 1,
          2
ORDER  BY 1
```

5. How many listings in each room type category have a price of over $500 per night?

```
SELECT   room_type,
         Count(*)
FROM     prices p
JOIN     room_types rt
ON       p.listing_id=rt.listing_id
WHERE    p.price>500
GROUP BY 1
ORDER BY 1

OUTPUT:
room_type         num_listing
entire home/apt   395
private room      19
shared room 1
```

6. What is the distribution of listing prices by neighborhood?

```
SELECT neighbourhood,
       Min(price)            AS minimum_price,
       Max(price)            AS maximum_price,
       Round(Avg(price), 2) AS average_price
FROM   prices
GROUP  BY 1
ORDER  BY 2
```

7. What is the estimated amount of revenue generated by hosts in each borough?

```
SELECT   borough,
         Count(host_name)                AS num_hosts,
         Sum(p.price * booked_days_365) AS revenue_generated
FROM     prices p
JOIN     reviews r
ON       p.listing_id=r.listing_id
GROUP BY 1

OUTPUT:
borough          num_hosts      revenue_generated
queens       3455           58404083
brooklyn         10458          279130240
staten islan     267            3443919
manhattan    10318          393420567
bronx        696            9324180
```

8. What is the average price per month for listings in each neighborhood?

```
SELECT neighbourhood,
       Round(Avg(price_per_month) :: NUMERIC, 2) AS average_pri
ce_per_month
FROM   prices p
       join reviews r
         ON p.listing_id = r.listing_id
GROUP  BY 1
ORDER  BY 2 DESC
```

9. How many listings have no reviews?

```
SELECT   p.listing_id,
         Count(last_review) AS review_count
FROM     prices p
JOIN     reviews r
ON       p.listing_id=r.listing_id
GROUP BY 1
HAVING   Count(last_review) IS NULL
ORDER BY 2 DESC

OUTPUT: 0
```

10. How do the estimated book days correlate with the price of an Airbnb listing in New York City?

```
SELECT Corr(price, booked_days_365)
FROM   prices p
       JOIN reviews r
         ON p.listing_id = r.listing_id
```

11. What is the average price per room type for listings that have at least 100 reviews and are available more than 200 days a year?

```
SELECT   room_type,
         Round(Avg(price),2)
FROM     prices p
JOIN     room_types rt
ON       p.listing_id=rt.listing_id
JOIN     reviews r
ON       rt.listing_id=r.listing_id
WHERE    number_of_reviews>=100
AND      availability_365>200
GROUP BY 1

OUTPUT:
shared room 59.19
entire home/apt 179.54
private room     85.41
```

12. How many hosts have more than one listing, and what's the maximum number of listings by a single host name?

```
SELECT   host_name,
         Count(listing_id)
FROM     reviews
GROUP BY 1
HAVING   Count(listing_id)>1
ORDER BY 2 DESC with cts AS
         (
                  SELECT   host_name,
                           count(listing_id) AS num_of_listing
                  FROM     reviews
                  GROUP BY 1
                  HAVING   count(listing_id)>1
                  ORDER BY 2 DESC)SELECT Count(*)            AS
 host_count,
       Max(num_of_listing) AS max_num_listing
FROM   cts

OUTPUT:
2930 215

SELECT Count(host_name),
       Max(calculated_host_listings_count)
FROM   reviews
WHERE  calculated_host_listings_count>1

OUTPUT:
10443 327
```

13. Determine the top 5 hosts who have the highest price_per_month for their listings, considering only hosts who have at least 10 listings.

```
SELECT host_name,
       Max(price_per_month)
FROM   reviews r
       JOIN prices p
         ON r.listing_id = p.listing_id
WHERE  calculated_host_listings_count >= 10
GROUP  BY 1
ORDER  BY 2
LIMIT  5
```

14. Find the neighborhood(s) that have the highest variance in listing prices.

```
SELECT neighbourhood,
       Round(Variance(price), 2)
FROM   prices
GROUP  BY 1
HAVING Round(Variance(price), 2) IS NOT NULL
ORDER  BY 2 DESC
```

15. Calculate the average price_per_month for each neighborhood, taking into account only listings where the host has a minimum_nights value that is higher than the average minimum_nights value across all listings.

```
SELECT neighbourhood,
       Round(Avg(price_per_month) :: NUMERIC, 2)
FROM  (SELECT *,
              Avg(minimum_nights)
                over(
                  PARTITION BY neighbourhood) AS avg_minimum_ni
ghts
       FROM   prices p
              join reviews r
                ON p.listing_id = r.listing_id) AS s1
WHERE  minimum_nights > avg_minimum_nights
GROUP  BY 1
```

Tableau Link:

https://public.tableau.com/app/profile/snehal.gaikwad/viz/NYC_ShortTermRentalInsights/Story1