Study Report on Airbnb Listing in New York City in 2019

By Elizabeth Peiwen Li

DATASET OVERVIEW

This dataset is provided by Airbnb for study purposes.This dataset describes the listing activity and metrics in NYC, NY for 2019. The link for the dataset can be found here: https://www.kaggle.com/dgomonov/new-york-city-airbnb-open-data . The original source can be found here: http://insideairbnb.com/ .

There are 48898 observations and 16 attributes in total for the dataset. The columns include Airbnb Listing ID, Listing Name, Host ID, Host Name, Neighbourhood, Neighbourhood Group, Latitude, Longitude, Room Type, Price, Minimum Nights, Number of Reviews, Last Review, Review Per Month, Calculated Host Listing Count, and Booking Availability. The dataset covers listings in all neighborhood in New York City.

STUDY OBJECTIVES & GOALS

OBJECTIVES

- Study Airbnb Listing Supplies & Availabilities in New York City in 2019
- Study Airbnb Listing Demand & Popularities in New York City in 2019

GOALS

- Key Findings Summary
- Insights for Airbnb to Better Grow Business

PART 1 AIRBNB LISTING SUPPLIES & AVAILABILITIES OVERVIEW IN NEW YORK CITY IN 2019

- The majority of Airbnb listings are properties located in east side of New York

New York City is composed of five community boroughs: Bronx, Brooklyn, Manhattan, Queens and Staten Island. In 2019, among all five boroughs, 44.3% of Airbnb listings are in Manhattan, 41.12% of Airbnb listings are in Brooklyn, both together accounted for 85.42% of all listings in New York.
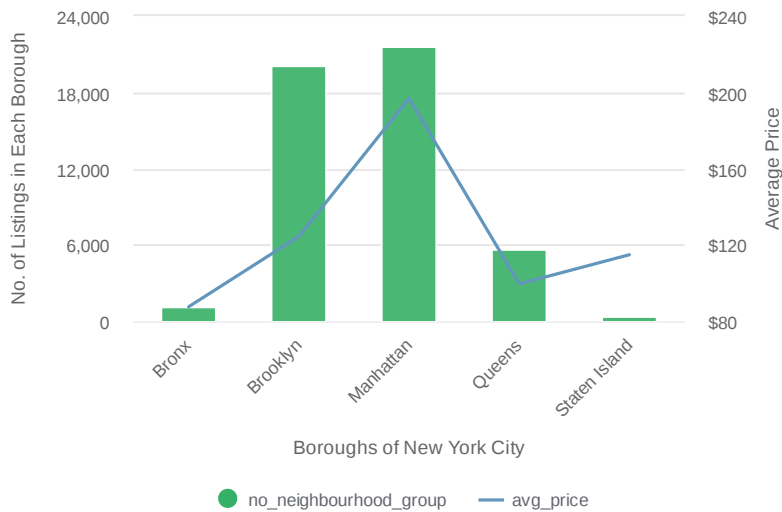Among Top 10 neighbourhood by the number of listings, there are 6 neighbourhood in Manhattan, and 4 neighbourhood in Brooklyn. Among them, both Top 1 and Top 2 neighbourhood are in Brooklyn. Williamburg ranked the Top 1 with 3,920 listings, and Bedford-Stuyvesant ranked Top 2 with 3,712 listings. Harlem in Manhattan ranked Top 3 with 2658 listings.

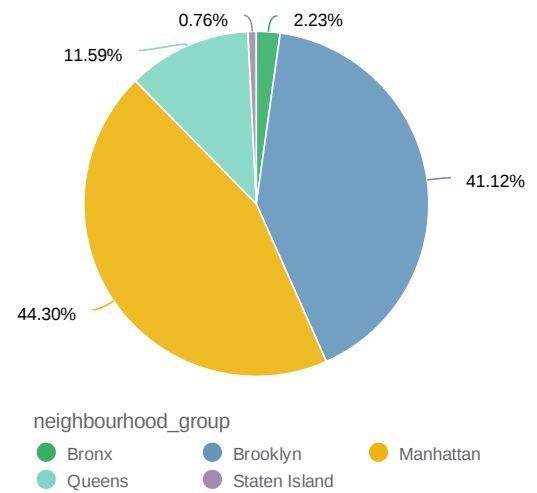- The average rental price per night in Manhattan is the highest, around $60 more than Brooklyn.

The average rental price per night in Manhattan is around $197 per night, ranking the highest among all five boroughs. The average rental price in Bronx is the lowest, only around $87. It is noticeable that the average rental price in Staten Island is around $115, higher than $100 in Queens, and close to $124 in Brooklyn, though the listing supplies in Staten Island is the lowest.

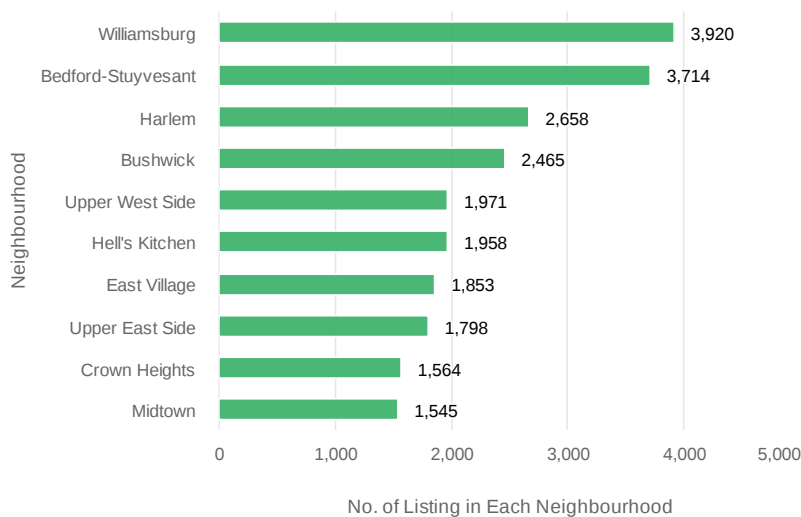# Study Report on Airbnb Listing in New York City in 2019
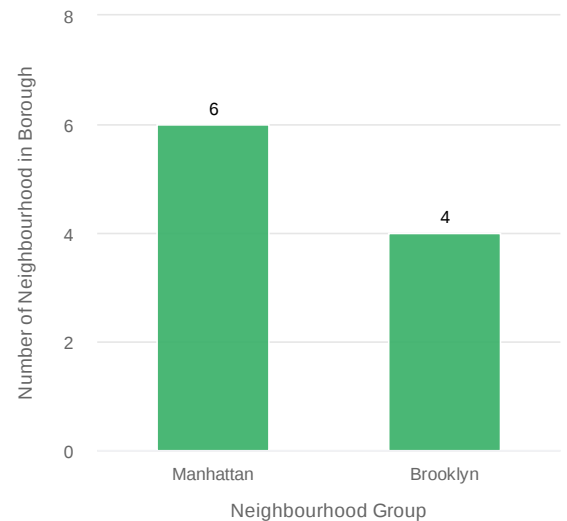
2019 Airbnb Listing in Each Borough of New York City

- no_neighbourhood_group
- avg_price

2019 Airbnb Listing in Each NYC Borough

2.23%
0.76%
11.59%
41.12%
44.30%

neighbourhood_group
- Bronx
- Brooklyn
- Manhattan
- Queens
- Staten Island

Top 10 Neighbourhood in New York City in Airbnb Listing in 2…

Neighbourhood	No. of Listing
Williamsburg	3,920
Bedford-Stuyvesant	3,714
Harlem	2,658
Bushwick	2,465
Upper West Side	1,971
Hell's Kitchen	1,958
East Village	1,853
Upper East Side	1,798
Crown Heights	1,564
Midtown	1,545

Distribution of Top 10 Neighbourhood by …

Neighbourhood Group	Number
Manhattan	6
Brooklyn	4

- Half of Airbnb listings supplies are listed for short term rental.

Around half of Airbnb listings are listed for short term rental with availability less than 60 days. Less than 10% of listings are available for whole year long term rental.

- Majority of Airbnb listings requires minimum booking nights less than or equal to 1 week.

Majority of Airbnb listings requires minimum booking nights less than or equal to 1 week, among them around 12720 listings only require minimum one night booking, which provides great flexibility to feed the needs for short term sight tour and business traveller. However, there are 733 listings required more than 1 month minimum booking for long term rental only.

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Airbnb Listing Supplies by Days

short_term_0_60	mid_term_60_180	long_term_180_330
25803	8819	8907

◀◀	◀	Page	1	of 1	▶	▶▶

Minimum Rental Days Requirement in Airbnb Listin…

min_1_night	short_2_7_rental	mid_30_rental	long
12720	28842	6586	

◀◀	◀	Page	1	of 1	▶	▶▶

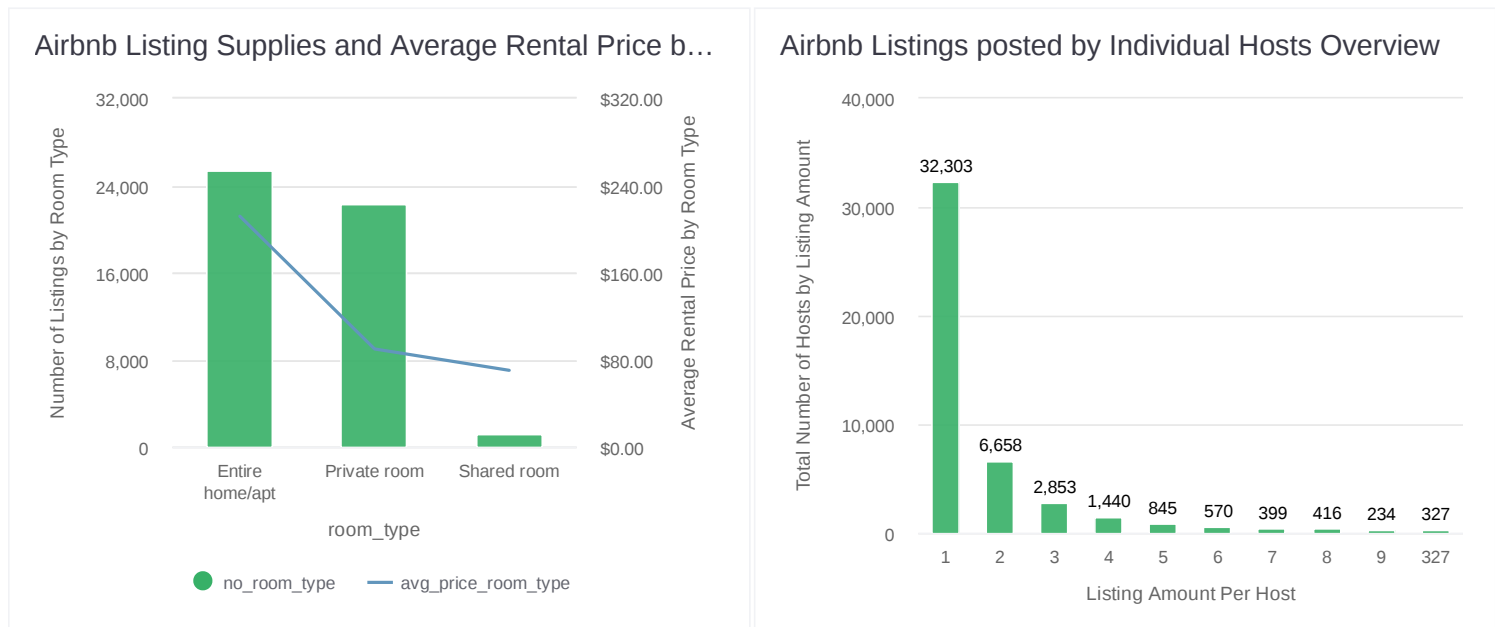- Majority listings are either entire home/apt or private room.

Around half of the listings with average rental price $212 per night, are offered to enjoy the entire home or apartment during the guests' stay. Only 1160 listings are the shared rooms with average rental price $70 per night.

- Majority listings are individual hosts instead of institutional hosts.

32303 out of total Airbnb hosts only posted only 1 listing in Airbnb.

- Only a few Institutional Hosts listed their managed rental properties in Airbnb in addition to their own rental website.

There are only 89 hosts which posted more than 10 listings in Airbnb. Among Top 10 Institutional Hosts by the number of listings, Sonder(NYC) ranked Top 1, with 327 listings. Sonder is an apartment-rental company that claims to combine the best parts of a hotel and a private home. It's one of several new hybrid companies combine elements of hotels and apartment rentals. We also should notice that, Vida Apartment with 52 listings in Airbnb, ranked Top 10, meaning that majority of apartment-rental companies didn't list rental services in Airbnb.

Airbnb Listing Supplies and Average Rental Price b…

Airbnb Listings posted by Individual Hosts Overview

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Top 10 Institutional Hosts by number of listings in Airbnb

Institutions (>10 Listin…

total_org_host	total_org
89	
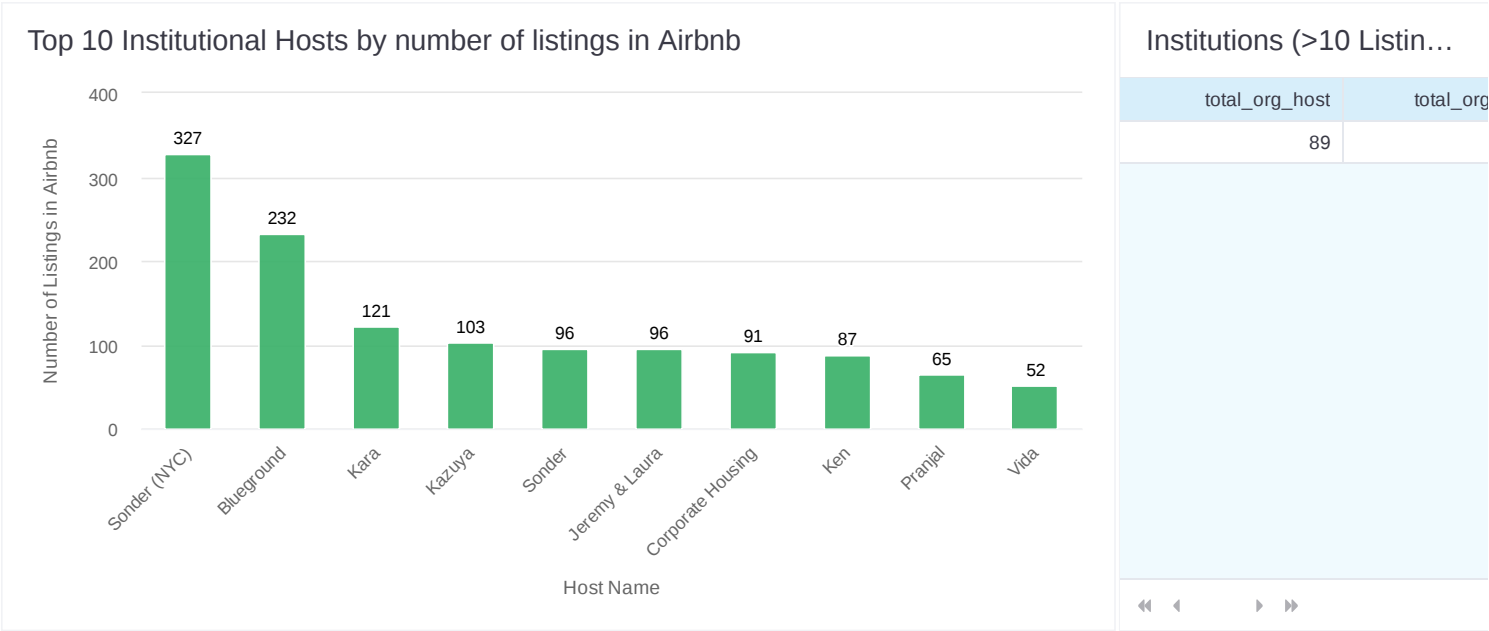
● Rental price per night is relatively stable and not greatly affected by the length of rental period.

The line chart below clearly shows us that the average rental price per night in New York City has no either linear or exponential relationship with the minimum nights required for per booking, that's to say, it is not easy to negotiate with the Airbnb host for a cheap deal for a long term rental.

Average Rental Price By Minimum Night
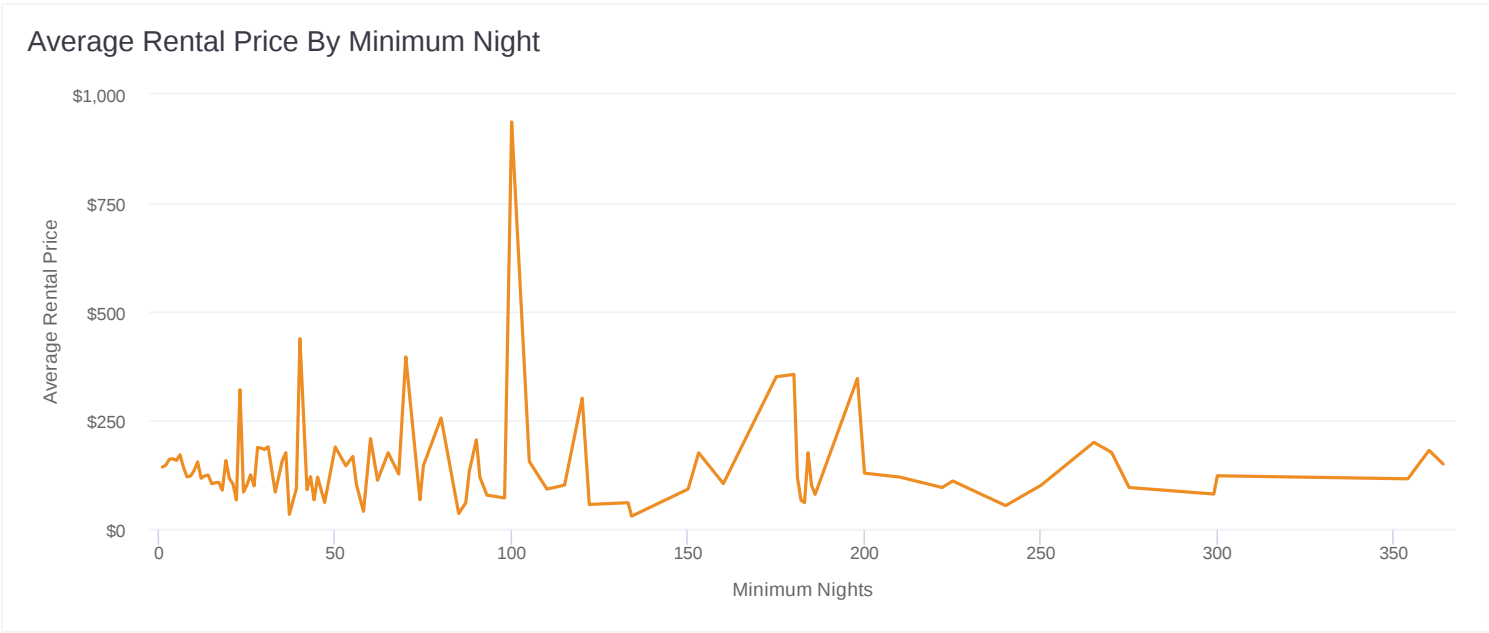
PART 2 AIRBNB LISTING DEMAND & POPULARITY OVERVIEW IN NEW YORK CITY IN 2019

This part will conduct SQL analysis study on Airbnb listing demand and popularity based on the attributes with review data in the dataset. The attributes include: review per month, lastest review, and number of review.

● Top 10 popular neighbourhood in Airbnb listings: golden locations with lower prices

Bedford-Stuyvesant and Willamsburg in Brooklyn and Harlem in Manhattan are the Top 3 popular neighbourhood in Airbnb listing in New York. Listings in Bedford-Stuyvesant, ranked Top 1, received close to 1500 reviews per month, and total number of
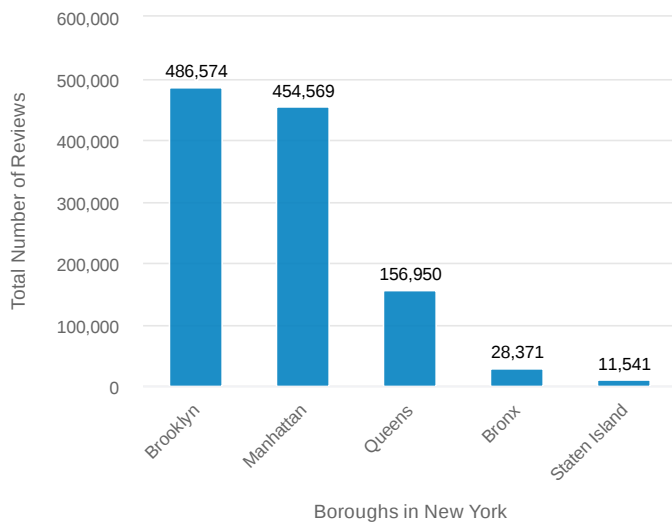
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over 110,000 review in 2019. However, the average rental price in Bedford-Stuyvesant is around $107, ranked 9th position in the Top 10 in terms of average rental prices, lower than $124 the average rental price in Brooklyn. Harlem, ranked Top 3 in both review per month and total reviews, has average rental price around $119 in 8th position in terms of average rental price, lower than $197, the average rental price in Manhattan. No wonder, these two neighbourhoods are the most popular neighbourhoods in their own borough.

Interestingly, it is noticeable that the average rental price in Hell's Kitchen is $190, ranked Top 1 in average rental price, however, Hell's Kitchen ranked 5th position in both review per month and total reviews.
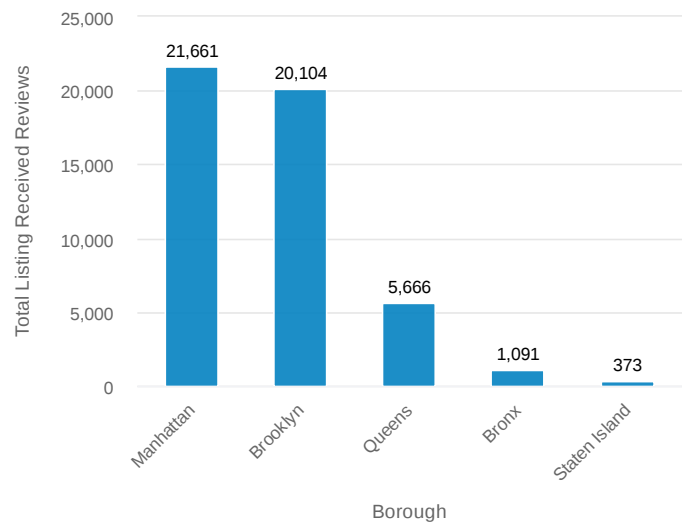
- Entire home is more popular than other room types.

For all the listings with more than 1 review per month, entire room/apartment type is most popular, indicating that traveller prefer to take the entire place due to privacy and safety considerations.
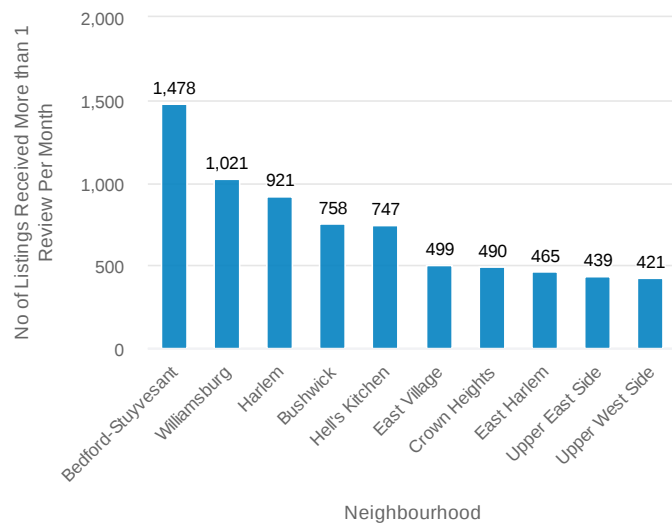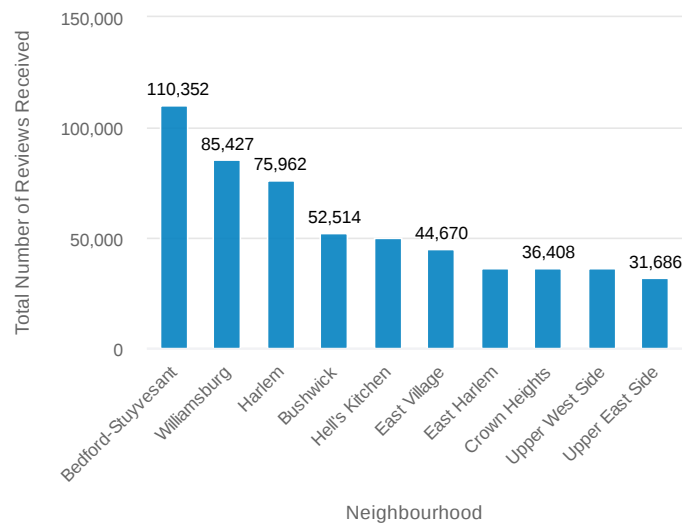
Total Number of Reviews in Each Borough

Total Listings Received Review in Each Borough
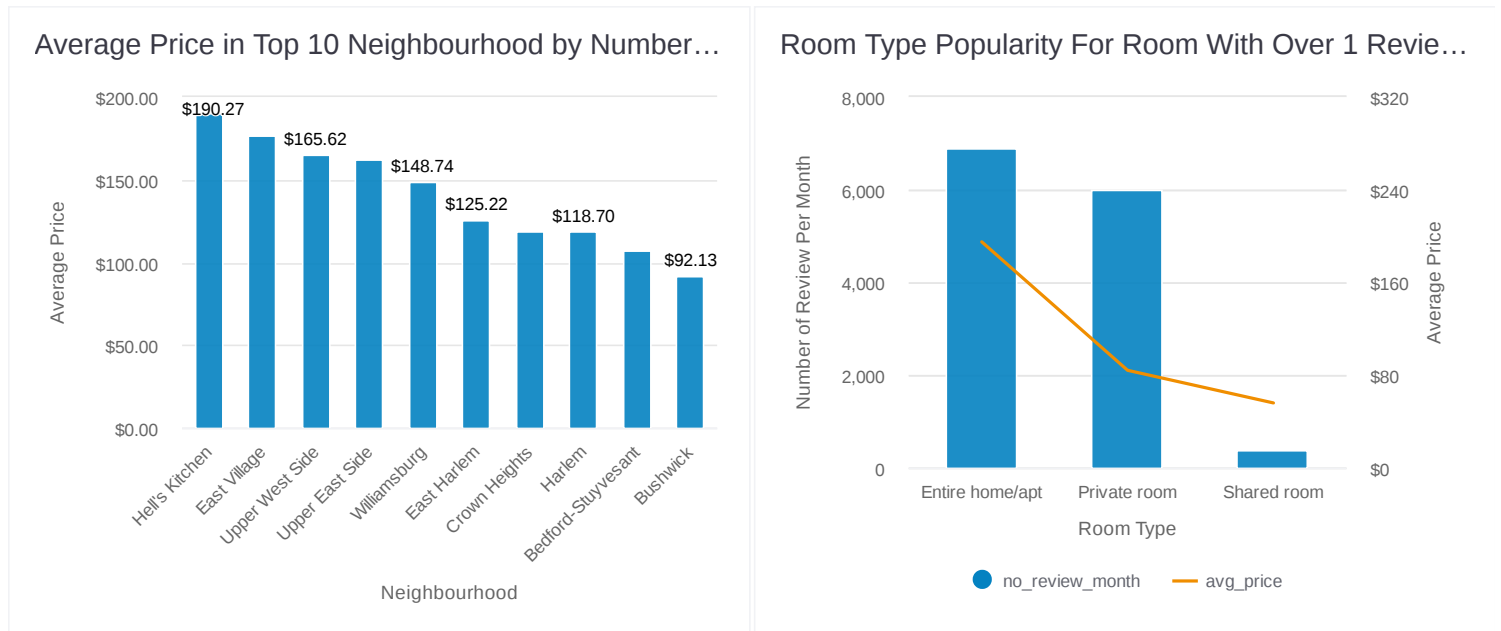

Top 10 Neighbourhood by Reviews Per Month

## Top 10 Neighbourhood by Total Number of Reviews…

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Average Price in Top 10 Neighbourhood by Number…

Room Type Popularity For Room With Over 1 Revie…

● More than half of Listings in New York have been booked in 2019.

The chart below shows us that more than half of listings has the latest reviews in 2019, meaning half of listings have been booked at least once in 2019. However, there are still many listings's reviews before 2019, though we cannot conclude that they haven't been booked in 2019, it worth the time to look into those listings to further find out why. Is it due to the inactive engagement between the hosts and the guests or due to inactive management of the listing, or simply because the listing itself is not attractive.

Latest Review in Airbnb Listings in New York City by Year
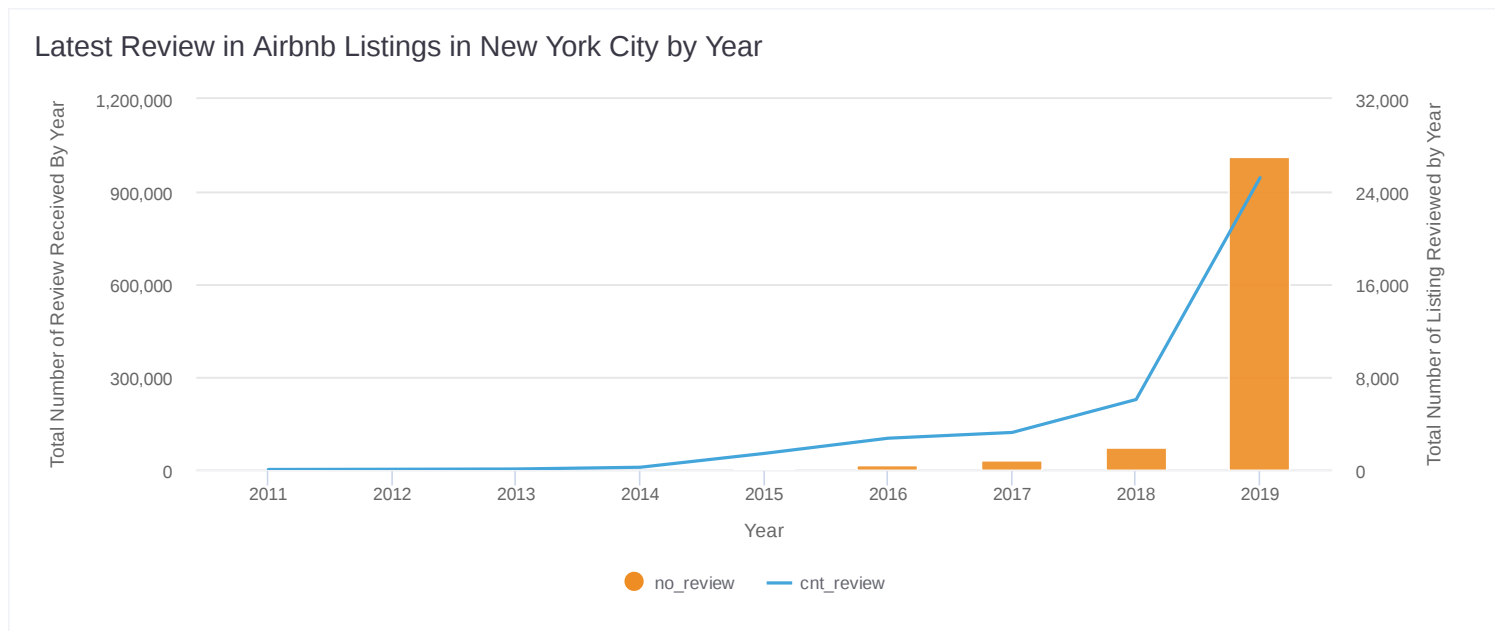
PART 3 KEY FINDINGS SUMMARY

1. Among all five boroughs in New York City, Brooklyn and Manhattan are the most popular boroughs in terms of both supplies and demands.
2. Among the Top 3 neighbourhood in terms of supplies and demand, Top 1 and Top 2 are in Brooklyn: Williamsburg and Bedford-Stuyvesant, Top 3 is in Manhattan: Harlem.

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3. Listings in good locations with lower prices are more popular. The average rental prices per night in the Top 3 are lower or close to the average rental price per night in that borough.
4. Half of Listings in Airbnb are for short rental, indicating that people perceive Airbnb is a place for posting temporary short term rental.
5. Majority listing hosts are individual people instead of companies.
6. Only few institutional hosts list their rental properties in Airbnb, indicating that property management companies or rental apartment companies still prefer choose to list their properties either in their own website or list in other long term rental website, for example, zillow, redfin, or apartments.com.
7. There are around half of listings with the latest reviews before 2019, which worth the time and efforts to further look into it.

PART 4 INSIGHTS FOR AIRBNB

1. Though Manhattan has the most listings than other boroughs in New York, Brooklyn has the most number of reviews, meaning higher popularity and demands in Brooklyn in New York City. For offline marketing and promotion, for example, flyers or promotion ads in taxies or ads stands on streets, Airbnb might consider invest more resources in Brooklyn.
2. Currently around half of listings are inactive, it is suggested that Airbnb comes strategies to periodically engage with their listing hosts, help them diagnose their problems or challenges, and help them succeed.
3. On top of current market positioning, Airbnb may consider the strategies to collaborate with the institutional hosts, including property management companies or rental companies for long term rental opportunities. One strategic advantage of Airbnb is that Airbnb already grows itself into an international brand. For people coming to other countries with long term rental needs, they might not know the local long term rental website or brands, then Airbnb might become their top choice to search.

APPENDIX: SQL QUERIES

Query 1 : Top 10 Neighbourhood in Listing
SELECT neighbourhood_group,neighbourhood,count(*) as no_neighbour
from elisa4321.ab_nyc_2019
group by neighbourhood_group,neighbourhood
order by count(*) DESC
limit 10

Query 2 : 2019 Airbnb Listing in New York City
select neighbourhood_group,count(*) as no_neighbourhood_group,avg(price)as avg_price
from elisa4321.ab_nyc_2019
group by neighbourhood_group

Query 3: Airbnb Listing Supplies and Average Price by Room Type
select room_type,count(*) as no_room_type, avg(price) as avg_price_room_type
from elisa4321.ab_nyc_2019
group by room_type

Query 4: Airbnb Listing Supplies by Days
SELECT sum(CASE
    WHEN availability_365 between 0 AND 60 then 1
    ELSE 0
  END) AS short_term_0_60,
  sum(CASE

```
      WHEN availability_365 between 60 AND 180 then 1
      ELSE 0
    END) AS mid_term_60_180,
  sum(CASE
      WHEN availability_365 between 180 AND 330 then 1
      ELSE 0
    END) AS long_term_180_330,
  sum(CASE
      WHEN availability_365 between 330 AND 365 then 1
      ELSE 0
    END) AS full_year
FROM elisa4321.ab_nyc_2019
```

Query 5: Average Rental Price By Minimum Nights
```
select minimum_nights, avg(price) as avg_price
from elisa4321.ab_nyc_2019
group by minimum_nights
having avg(price) <1000 and minimum_nights <365
order by avg(price) DESC
```

Query 6: Latest Reviews by Year
```
select neighbourhood_group, extract(year from last_review)as year, count(*) as cnt_review, sum(number_of_reviews) as no_review
from elisa4321.ab_nyc_2019
where last_review is not NULL
group by extract(year from last_review), neighbourhood_group
order by no_review DESC
```

Query 7: Listing Posted by Host Overview
```
select calculated_host_listings_count,count(*) as no_listing_host
from elisa4321.ab_nyc_2019
group by calculated_host_listings_count
order by count(*) DESC
limit 10
```

Query 8: Minimum Rental Days Requirement
```
select count(*)filter(where minimum_nights = 1) as min_1_night,
    count(*)filter(where minimum_nights between 2 and 7) as short_2_7_rental,
    count(*)filter(where minimum_nights between 8 and 30) as mid_30_rental,
    count(*)filter(where minimum_nights between 31 and 365) as long_31_365_rental
from elisa4321.ab_nyc_2019
```

Query 9:Room Type Popularity
```
select room_type, count(*) as no_review_month,avg(price) as avg_price
from (
select room_type, price
from elisa4321.ab_nyc_2019
```

group by room_type,reviews_per_month,price
having reviews_per_month >1) as foo
group by room_type
order by count(*) DESC

Query 10: Top 10 Host by Number of Listings
select host_name, count(*)as no_org_listing
from elisa4321.ab_nyc_2019
group by host_name,calculated_host_listings_count
having calculated_host_listings_count >10
order by count(*) DESC
limit 10

Query 11: Top 10 Neighbourhood by Number of Reviews
select neighbourhood, neighbourhood_group, count(*) as no_review_month,avg(price) as avg_price
from (
select neighbourhood,neighbourhood_group,price
from elisa4321.ab_nyc_2019
group by neighbourhood,neighbourhood_group,reviews_per_month,price
having reviews_per_month >1) as foo
group by neighbourhood_group,neighbourhood
order by count(*) DESC
limit 10

Query 12: Total Number Reviews by Borough
select neighbourhood_group,sum(number_of_reviews) as total_no_reviews, COUNT(number_of_reviews) as total_cnt_review
from elisa4321.ab_nyc_2019
group by neighbourhood_group
order by sum(number_of_reviews) DESC

Query 13: Total Number of Hosts with More than 10 Listings
select count(distinct host_name) as total_org_host, count(calculated_host_listings_count) as total_org_listing
from elisa4321.ab_nyc_2019
WHERE calculated_host_listings_count >10