Sheet

New York City Airbnb Open Data - Exploratory Analysis and NLP

UC Davis | STA160 Group 7 | Midterm Project

- Vishnu Rangiah, 916562849, vrrangiah@ucdavis.edu
- Aditya Kallepalli, 915079375, arkallepalli@ucdavis.edu
- Rishi Bhuva, 915218518, rdbhuva@ucdavis.edu
- Ivan Yang, 915463046, igyang@ucdavis.edu

Introduction

In this report we will be analyzing Airbnb data from the Airbnb open new york city 2019 data set.

Airbnb is a platform that operates an online marketplace for lodging, primarily homestays for vacation rentals, and tourism activities. This platform is accessible through website or mobile app.

The data we are currently analyzing comes from : https://www.kaggle.com/dgomonov/new-york-city-airbnb-open-data

This dataset describes listing activity and metrics in New York City, New York for 2019. Through this dataset, we can get information regarding hosts, geographical availability and necessary metrics needed to make predictions and draw conclusions.

We will be performing our analysis using Python. In Section II, we will be cleaning, and preforming exploratory analysis on the data. Then we will explore the relationship between the names of each listing and the popularity of the listing using Natural Language Processing Methods in Section III.

NEXT STEPS: EDA, NLP, CONCLUSION

Importing Data Set

```
import matplotlib.pyplot as plt
import plotly.offline as py
import plotly.express as px
import pandas as pd
import numpy as np
import seaborn as sns
import re
import more_itertools as more
import string
from nltk.corpus import stopwords
from nltk.tokenize import word_tokenize

df = pd.read_csv('Airbnb_NYC_2019.csv')
```

```
df #Our original Dataset
```

	id	name	host_id	host_name	neighbourhood_group	neighbourhood	latitude	longitude	room_type
0	2539	Clean & quiet apt home by the park	2787	John	Brooklyn	Kensington	40.64749	-73.97237	Private room
1	2595	Skylit Midtown Castle	2845	Jennifer	Manhattan	Midtown	40.75362	-73.98377	Entire home/apt
2	3647	THE VILLAGE OF HARLEM....NEW YORK !	4632	Elisabeth	Manhattan	Harlem	40.80902	-73.94190	Private room
3	3831	Cozy Entire Floor of Brownstone	4869	LisaRoxanne	Brooklyn	Clinton Hill	40.68514	-73.95976	Entire home/apt
4	5022	Entire Apt: Spacious Studio/Loft by central park	7192	Laura	Manhattan	East Harlem	40.79851	-73.94399	Entire home/apt
...	...	...	...	...	...	...	...	...	...
48890	36484665	Charming one bedroom - newly renovated rowhouse	8232441	Sabrina	Brooklyn	Bedford-Stuyvesant	40.67853	-73.94995	Private room
48891	36485057	Affordable room in Bushwick/East Williamsburg	6570630	Marisol	Brooklyn	Bushwick	40.70184	-73.93317	Private room
48892	36485431	Sunny Studio at Historical Neighborhood	23492952	Ilgar & Aysel	Manhattan	Harlem	40.81475	-73.94867	Entire home/apt
48893	36485609	43rd St. Time Square-cozy single bed	30985759	Taz	Manhattan	Hell's Kitchen	40.75751	-73.99112	Shared room
48894	36487245	Trendy duplex in the very heart of Hell's Kitchen	68119814	Christophe	Manhattan	Hell's Kitchen	40.76404	-73.98933	Private room

48895 rows × 16 columns

```
print(df.shape)
```

```
(48895, 16)
```

Here we find that our dataset contains 48,895 rows which represent indivual listings in New York. We are also provided with 16 different columns which contain necessary factors needed for exploratory data analysis.

We can see these different columns below:

```
df.columns
```

```
Index(['id', 'name', 'host_id', 'host_name', 'neighbourhood_group',
       'neighbourhood', 'latitude', 'longitude', 'room_type', 'price',
       'minimum_nights', 'number_of_reviews', 'last_review',
       'reviews_per_month', 'calculated_host_listings_count',
       'availability_365'],
```

```
            dtype='object')
```

No. of Variables + Entries, Variable Names, and Data Types:

Data Types of Each Column

A brief analysis as to what data type each column is can be seen below:

```
df.dtypes
```

```
id                                int64
name                             object
host_id                           int64
host_name                        object
neighbourhood_group              object
neighbourhood                    object
latitude                        float64
longitude                       float64
room_type                        object
price                             int64
minimum_nights                    int64
number_of_reviews                 int64
last_review                      object
reviews_per_month               float64
calculated_host_listings_count    int64
availability_365                  int64
dtype: object
```

Data Cleaning

- Find outliers
- Get rid of listing that are too expensive

    - Why is the price so high: super bowl?
- Get rid of listing that do not have avalibility for 2019
- Possibly find potential negative and NA values
- The Airbnb calendar for a listing does not differentiate between a booked night vs an unavailable night, therefore these bookings have been counted as "unavailable". This serves to understate the Availability metric because popular listings will be "booked" rather than being "blacked out" by a host.
- avaliblity_365 : number of days the property is avalibly for rent

    - Data shows alot of properties of 0 days avalible
        - Why was it 0:
            - host didnt want to rent or host took off listing but it was still on sight
            - airbnb suspended listing

Our first line of action when analyzing this data is to properly clean the dataset. Having clean data will provide us with the highest quality of information needed and therefore will provide us with the most accurate predictions and

correlations. Our process for cleaning the dataset can be seen below:

We will first check the number of rows with missing values. We will then remove such rows depending on the missing variables.

```python
#Checking for null values
df.isnull().sum()
```

```
id                                  0
name                               16
host_id                             0
host_name                          21
neighbourhood_group                 0
neighbourhood                       0
latitude                            0
longitude                           0
room_type                           0
price                               0
minimum_nights                      0
number_of_reviews                   0
last_review                     10052
reviews_per_month               10052
calculated_host_listings_count      0
availability_365                    0
dtype: int64
```

As we can see, there are 4 variables with missing values. However, we've determined that all of these missing variables do not greatly affect our NLP modelling. Therefore, we've decided to keep these listings.

On the other hand, while combing through our main dataframe, we discovered that there are a number of listings with 0 available days to be rented as well as 0 total reviews.

```python
df[df.availability_365 == 0]
```

	id	name	host_id	host_name	neighbourhood_group	neighbourhood	latitude	longitude	room_type
4	5022	Entire Apt: Spacious Studio/Loft by central park	7192	Laura	Manhattan	East Harlem	40.79851	-73.94399	Entire home/apt
6	5121	BlissArtsSpace!	7356	Garon	Brooklyn	Bedford-Stuyvesant	40.68688	-73.95596	Private room
8	5203	Cozy Clean Guest Room - Family Apt	7490	MaryEllen	Manhattan	Upper West Side	40.80178	-73.96723	Private room
14	6090	West Village Nest - Superhost	11975	Alina	Manhattan	West Village	40.73530	-74.00525	Entire home/apt
20	7801	Sweet and Spacious Brooklyn Loft	21207	Chaya	Brooklyn	Williamsburg	40.71842	-73.95718	Entire home/apt
...	...	...	...	...	...	...	...	...	...
48550	36313048	Sunny room with private entrance in shared home	16883913	Tiffany	Queens	Ridgewood	40.69919	-73.89902	Private room
48731	36410519	Sunlight charming apt. in the heart of Brooklyn	121384174	Luciana Paula	Brooklyn	Park Slope	40.66716	-73.98101	Entire home/apt
48756	36419441	Murray Hill Masterpiece	273824202	David	Manhattan	Murray Hill	40.74404	-73.97239	Entire home/apt
48760	36420725	Sunnyside, Queens 15 Mins to Midtown Clean & C...	19990280	Brandon	Queens	Sunnyside	40.74719	-73.91919	Private room
48779	36424776	Queen size bedroom in two bed apt with great l...	13384464	Hollie	Brooklyn	Bedford-Stuyvesant	40.69617	-73.94198	Private room

17533 rows × 16 columns

The dataframe above consists of listings with zero availability. We chose to extract these listings from the dataframe we will analyze, because zero availablity means that the listings is not available at all. Therefore, this data would be irrelevant as we are want to perform analysis on listings that have availablity.

```
df[df.number_of_reviews == 0]

#We will remove entries with 0 days of availabilities and 0 reviews.
#We believe that these are faulty listings that were not completely removed from the AirBnB server.
#Most of these listings were not available under the main English website but were viewable in differ
```

	id	name	host_id	host_name	neighbourhood_group	neighbourhood	latitude	longitude	room_type	
2	3647	THE VILLAGE OF HARLEM....NEW YORK !	4632	Elisabeth	Manhattan	Harlem	40.80902	-73.94190	Private room	
19	7750	Huge 2 BR Upper East Cental Park	17985	Sing	Manhattan	East Harlem	40.79685	-73.94872	Entire home/apt	
26	8700	Magnifique Suite au N de Manhattan - vue Cloitres	26394	Claude & Sophie	Manhattan	Inwood	40.86754	-73.92639	Private room	
36	11452	Clean and Quiet in Brooklyn	7355	Vt	Brooklyn	Bedford-Stuyvesant	40.68876	-73.94312	Private room	
38	11943	Country space in the city	45445	Harriet	Brooklyn	Flatbush	40.63702	-73.96327	Private room	
...	...	...	...	...	...	...	...	...	...	
48890	36484665	Charming one bedroom - newly renovated rowhouse	8232441	Sabrina	Brooklyn	Bedford-Stuyvesant	40.67853	-73.94995	Private room	
48891	36485057	Affordable room in Bushwick/East Williamsburg	6570630	Marisol	Brooklyn	Bushwick	40.70184	-73.93317	Private room	
48892	36485431	Sunny Studio at Historical Neighborhood	23492952	Ilgar & Aysel	Manhattan	Harlem	40.81475	-73.94867	Entire home/apt	
48893	36485609	43rd St. Time Square-cozy single bed	30985759	Taz	Manhattan	Hell's Kitchen	40.75751	-73.99112	Shared room	
48894	36487245	Trendy duplex in the very heart of Hell's Kitchen	68119814	Christophe	Manhattan	Hell's Kitchen	40.76404	-73.98933	Private room	

10052 rows × 16 columns

The dataframe above consists of listings with zero number of reviews. We chose to extract these values from the data we want to analyze, because number of reviews is a factor that can tell us a lot about the popularity of the listing and is an important component to our Natural Language Processing Method which we will perform. Therefore, listings with zero number of reviews would be irrelevant data and not needed for our type of analysis.

Due to the drawbacks discussed regarding 0 days of availabilities and 0 number of reviews, it would be best to simply remove these entries in the dataset we want to work with. Below, we properly remove these listings.

```
df = df[df.availability_365 != 0] # Remove entries with 0 days of availabilities
```

```
df = df[df.number_of_reviews != 0] # Remove entries with 0 number of reviews
df.shape
```

```
(26155, 16)
```

Above, we can see the dimensions of our reduced dataframe, excluding values of avaiablity and number of reviews being 0.

Now, we will examine the price range of all AirBnB listings by separating these listings into quartiles to get a general insight for this column alone. Along with the 25, 50, 75 % quartile calculations, we can also get information such as the mean, standard deviation and the minimum and maximum value of our price category.

```python
quartiles = df[["price"]].describe()
quartiles

#From the initial quartile calculation, we see that there are listings with $0 as price.
#Inspecting listings with `price` = 0
```

	price
count	26155.000000
mean	149.885184
std	198.816962
min	0.000000
25%	70.000000
50%	109.000000
75%	175.000000
max	9999.000000

As observed in our quartile table above, there are interestingly listings that are $0. Our next course of action would be to pull up these listings and do further research.

```python
df.loc[lambda df: df.price == 0]  # Possibly explain why some listings in our data would be $0
```

	id	name	host_id	host_name	neighbourhood_group	neighbourhood	latitude	longitude	room_type	pr
23161	18750597	Huge Brooklyn Brownstone Living, Close to it all.	8993084	Kimberly	Brooklyn	Bedford-Stuyvesant	40.69023	-73.95428	Private room	0
25433	20333471	★Hostel Style Room | Ideal Traveling Buddies★	131697576	Anisha	Bronx	East Morrisania	40.83296	-73.88668	Private room	0
25778	20624541	Modern apartment in the heart of Williamsburg	10132166	Aymeric	Brooklyn	Williamsburg	40.70838	-73.94645	Entire home/apt	0
25794	20639628	Spacious comfortable master bedroom with nice ...	86327101	Adeyemi	Brooklyn	Bedford-Stuyvesant	40.68173	-73.91342	Private room	0
25795	20639792	Contemporary bedroom in brownstone with nice view	86327101	Adeyemi	Brooklyn	Bedford-Stuyvesant	40.68279	-73.91170	Private room	0
25796	20639914	Cozy yet spacious private brownstone bedroom	86327101	Adeyemi	Brooklyn	Bedford-Stuyvesant	40.68258	-73.91284	Private room	0
26841	21291569	Coliving in Brooklyn! Modern design / Shared room	101970559	Sergii	Brooklyn	Bushwick	40.69211	-73.90670	Shared room	0
26866	21304320	Best Coliving space ever! Shared room.	101970559	Sergii	Brooklyn	Bushwick	40.69166	-73.90928	Shared room	0

After multiple online searches of these listings, we've come up with mixed results of these listings' robustness. Listings such as Kimberly's seem to have been removed while all three of Adeyemi's listings are still up on AirBnB and running in 2021. Additionally, there isn't any way that we can revisit AirBnB's 2019 websites to verify these listings.

One possible reason for these $0 prices may have been a deliberate act by the hosts to temporarily remove the listing from the AirBnB market when these listings were webscraped. The additional fact that among these 0 USD listings, 3 and 2 of them belong to the same host may further indicate that it is a host-activated anomaly.

Either way, we will remove these listings just to minimize any possibility of accruing errors based on unknown anomalies.

Below, is the process of removing entries with the price = 0.

```
df = df[df.price != 0] # Remove listings that have $0 price.
quartiles = df[["price"]].describe() # See the statistics of price to further analyze
quartiles
```

	price
count	26147.000000
mean	149.931044
std	198.830086
min	10.000000
25%	70.000000
50%	109.000000
75%	175.000000
max	9999.000000

Above, we can see our new summary statistics with $0 of price removed.

```
plt.boxplot(x = df['price'], vert = False)
plt.title('Boxplot of listing prices')
plt.xlabel('listing')
plt.ylabel('prices')
```

```
Text(0, 0.5, 'prices')
```
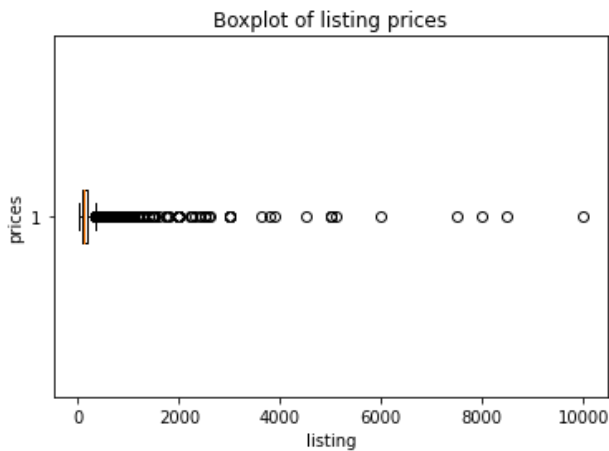

We can see that the data is quite skewed with multiple extremely high prices heavily affecting the data. Further research also shows that some of these data points are faulty listings, such as a 2012 Superbowl private room listing.

We will use the 1.5 Interquartile Range Test to determine outliers and store these listings in a different dataframe for further data analysis.

```
#Using the 1.5 Interquartile Range Test to determine outliers

IQR = np.percentile(df.price, 75)-np.percentile(df.price, 25)
lower_limit = np.percentile(df.price, 25)- 1.5*IQR
upper_limit = np.percentile(df.price, 75) + 1.5*IQR
print(lower_limit, upper_limit)
# Calculations for outliers within the price entry of data, used to deem what is considered "too expe
```

```
-87.5 332.5
```

Here, through the IQR test, we can calculate for outliers within the price entry of data. We can see that anything above the price of 332.5 dollars would be considered too expensive, and therefore would be an outlier. Since there technically cannot be any negative values for prices, we will fix the lower limit at 10 dollars which is the minimum value as seen in our quartile table.

```
#Since there technically cannot be any negative values for prices, we will fix the lower limit at $10

outliersdf = df.loc[lambda df: df.price > upper_limit]
outliersdf

# Dataset of what is considered too expensive, conduct plots to see analysis.
# Possibly explain why these listings would be considered expensive.

outliersdf.shape
```

```
(1607, 16)
```

Tidied Dataset

Below, we have cut all outliers and properly cleaned the dataset and can move on to exploratory data analysis. We can also see the dimensions of our cleaned up dataset.

```
tidydf = df.loc[lambda df: df.price <= upper_limit]
tidydf.shape
```

```
(24540, 16)
```

```
plt.figure(figsize = (12,12))
sns.heatmap(tidydf.corr(),annot=True) # Explain corr plot.
```

```
<AxesSubplot:>
```
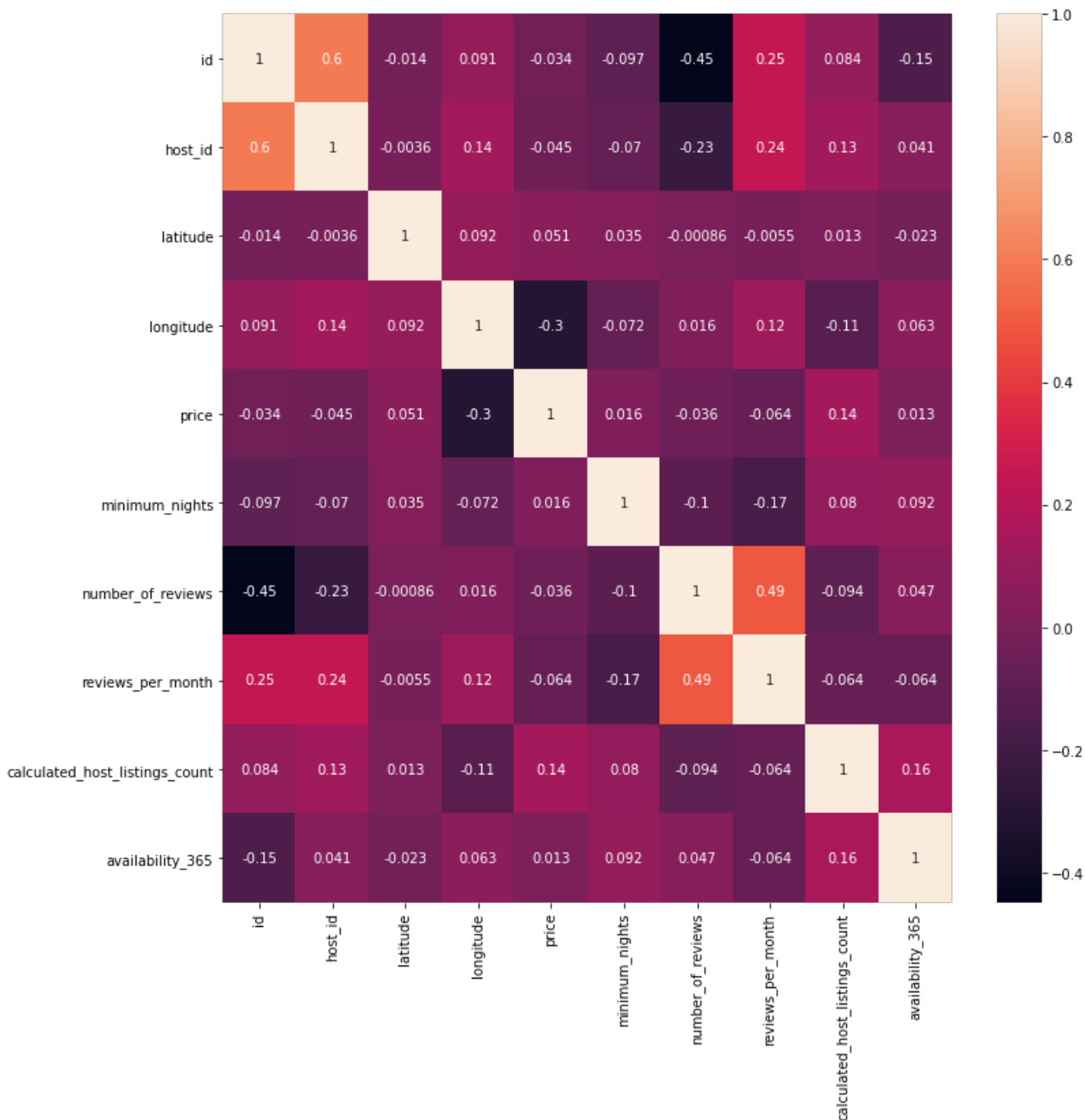
Here, we can see a proper correlation matrix between the variables within our dataset. According to this plot, we can see that the more lighter the color, the higher the correlation between each variable. Vice versa, we can see that the darker the number, the lower the correlation. From this plot, we can immediately see a high correlation of 0.6 between id and host_id. Along with this, it can be seen that number of reviews and reviews per month also have a higher correlation than others at 0.49. Along with positive correlations, we can also see negative correlations with id and number of reviews at -0.45 and with id and reviews per month at -0.45. We can also see a negative correlation between price and longitude at -0.3, although a positive correlation of 0.051 between price and latitude.

As id is a specific tag per listing, host_id is also a specific tag per host. Therefore, this positive correlation does seem to make sense as some hosts would have multiple listings under their name. Number of reviews and reviews per month also tend to have a positive correlation as each number of review contributes to a review per month and vice versa, therefore these two variables seem to have a direct relationship.

The lowest correlation we can see in this plot can be seen between both variables of reviews and id. The large negative

correlation between them does seem accurate, as each id is specific and randomly generated and does not relate at all to reviews at all. Another negative correlation that was interesting comes from price and longitude. As longitude tends to be west and east, it can be seen that pricein New York does not tend to have any sort of relationship with those specific directions. Although, price and latitude show a somewhat positive correlation, meaning that price is more correlated with listings that range from the north and south rather than the west and east.

Visualizations

We will plot some graphs with our tidied dataset to gain further insight, as well as to visualize any more abnormal data points for further cleaning. We will not be subsetting these outliers from the main tidied dataset as these variables will not be our main focus for our NLP analysis. However, we will generate graphs of these outliers for further analysis.

```
sns.set(style="darkgrid")
sns.countplot(y = 'room_type', data= tidydf)
plt.title('Room Type Popularity')
plt.xlabel('Count')
plt.ylabel('Room Type')
```
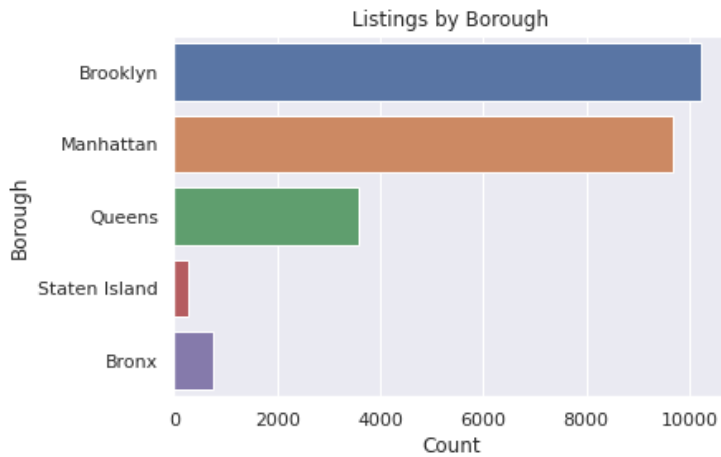
```
Text(0, 0.5, 'Room Type')
```
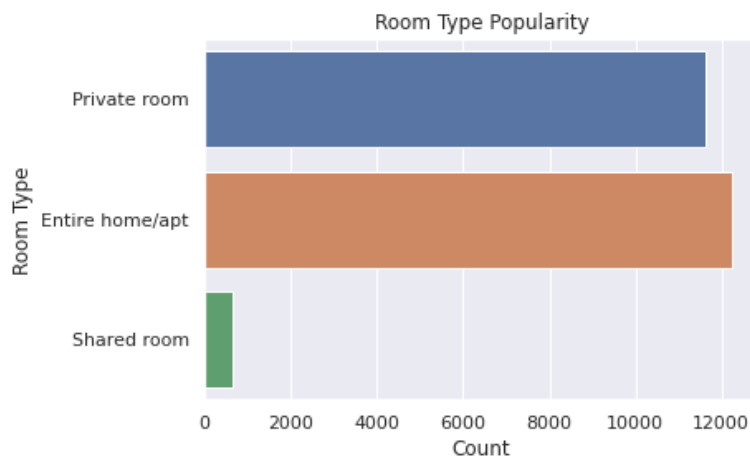

We can see that most listings are either private rooms or the entirety of the property. This indicates that most AirBnB customers may be looking for private accomodation rather than shared spaces.

```
sns.countplot(y = 'neighbourhood_group', data= tidydf).set_title("Listings by Borough")
plt.xlabel('Count')
plt.ylabel('Borough')
```

```
Text(0, 0.5, 'Borough')
```

Most listings are either in the boroughs of Brooklyn or Manhattan. This is logical given that these 2 boroughs contain the most attractions and activites in New York City. Staten Island has the lowest number of listings, which may be due to its geographical location being relatively inaccessible compared to the other boroughs.

```
dfn = df['neighbourhood'].value_counts()
sns.countplot(y='neighbourhood',data=tidydf, order=dfn.iloc[:10].index).set_title('Top 10 Neighborhoo
plt.xlabel('Count')
plt.ylabel('Neighborhood')
```

Text(0, 0.5, 'Neighborhood')
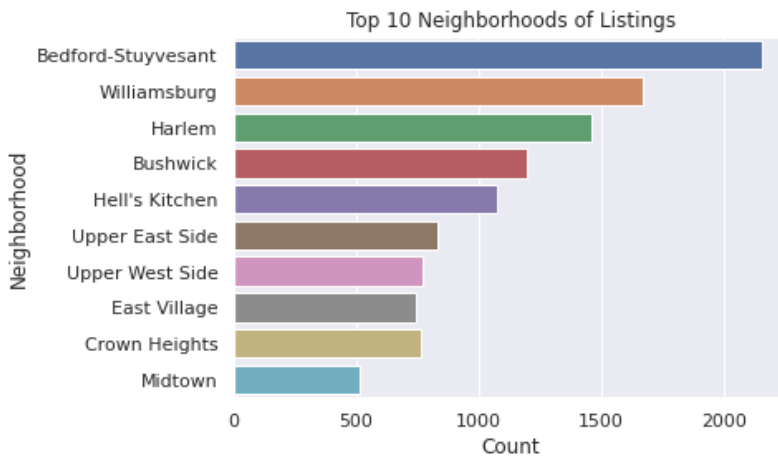
The top 4 neighborhoods of AirBnB listings are all in Brooklyn, with Bedford-Stuyvesant being the top neighborhood by quite a margin. The 5th to 8th most popular neighborhoods are in Manhattan. This may be due to affordability of Brooklyn compared to Manhattan.

Density Map of All Listings According to Price

https://geopandas.org/gallery/create_geopandas_from_pandas.html

```
!pip install contextily
```

```
Requirement already satisfied: contextily in /opt/python/envs/default/lib/python3.8/site-packages (1.
Requirement already satisfied: rasterio in /opt/python/envs/default/lib/python3.8/site-packages (from
Requirement already satisfied: joblib in /opt/python/envs/default/lib/python3.8/site-packages (from c
Requirement already satisfied: requests in /opt/python/envs/default/lib/python3.8/site-packages (from
Requirement already satisfied: matplotlib in /opt/python/envs/default/lib/python3.8/site-packages (fr
Requirement already satisfied: geopy in /opt/python/envs/default/lib/python3.8/site-packages (from co
Requirement already satisfied: mercantile in /opt/python/envs/default/lib/python3.8/site-packages (fr
Requirement already satisfied: pillow in /opt/python/envs/default/lib/python3.8/site-packages (from c
Requirement already satisfied: geographiclib<2,>=1.49 in /opt/python/envs/default/lib/python3.8/site-
Requirement already satisfied: cycler>=0.10 in /opt/python/envs/default/lib/python3.8/site-packages (
Requirement already satisfied: numpy>=1.15 in /opt/python/envs/default/lib/python3.8/site-packages (f
Requirement already satisfied: kiwisolver>=1.0.1 in /opt/python/envs/default/lib/python3.8/site-packa
Requirement already satisfied: pyparsing!=2.0.4,!=2.1.2,!=2.1.6,>=2.0.3 in /opt/python/envs/default/l
Requirement already satisfied: python-dateutil>=2.1 in /opt/python/envs/default/lib/python3.8/site-pa
Requirement already satisfied: six in /opt/python/envs/default/lib/python3.8/site-packages (from cycl
Requirement already satisfied: click>=3.0 in /opt/python/envs/default/lib/python3.8/site-packages (fr
Requirement already satisfied: certifi in /opt/python/envs/default/lib/python3.8/site-packages (from
Requirement already satisfied: click-plugins in /opt/python/envs/default/lib/python3.8/site-packages
Requirement already satisfied: attrs in /opt/python/envs/default/lib/python3.8/site-packages (from ra
Requirement already satisfied: snuggs>=1.4.1 in /opt/python/envs/default/lib/python3.8/site-packages
Requirement already satisfied: cligj>=0.5 in /opt/python/envs/default/lib/python3.8/site-packages (fr
Requirement already satisfied: affine in /opt/python/envs/default/lib/python3.8/site-packages (from r
Requirement already satisfied: chardet<5,>=3.0.2 in /opt/python/envs/default/lib/python3.8/site-packa
Requirement already satisfied: urllib3<1.27,>=1.21.1 in /opt/python/envs/default/lib/python3.8/site-p
Requirement already satisfied: idna<3,>=2.5 in /opt/python/envs/default/lib/python3.8/site-packages (
WARNING: You are using pip version 21.0.1; however, version 21.1.1 is available.
You should consider upgrading via the '/opt/python/envs/default/bin/python -m pip install --upgrade p
```

```python
import geopandas as gpd
import contextily as ctx

plt.figure(figsize=(15,30))
sns_map = sns.scatterplot(x='longitude', y='latitude', hue='price',s=20, data=tidydf)
ctx.add_basemap(sns_map, crs = 'EPSG:4326', source=ctx.providers.CartoDB.Positron)
sns_map.set_axis_off()
plt.title('Density Map of Airbnb Listings')
```

```
Text(0.5, 1.0, 'Density Map of Airbnb Listings')
```
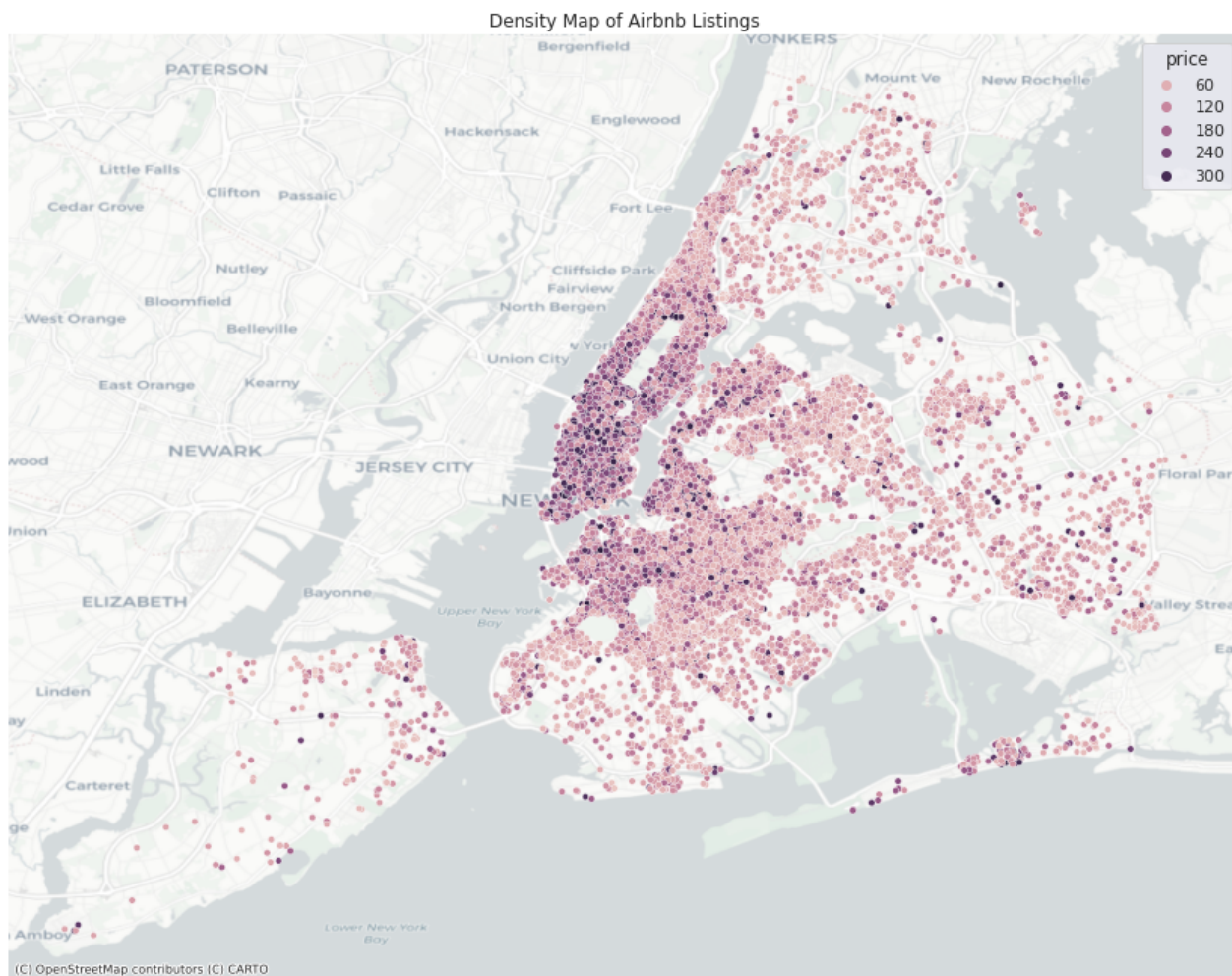
From the density map above, we can see that most of the listings are concentrated around the boroughs of Brooklyn and Manhattan. We can also observe that Manhattan has a higher density of expensive listings, and apart from standout anomalies, prices tend to be lower as listings become further from Manhattan.

Graphs in relation to price

```
ax = sns.violinplot(x="room_type", y="price", data=tidydf)
plt.title("Price Distribution According to Room Type")
plt.xlabel('Room Type')
plt.ylabel('Price')
```

```
Text(0, 0.5, 'Price')
```
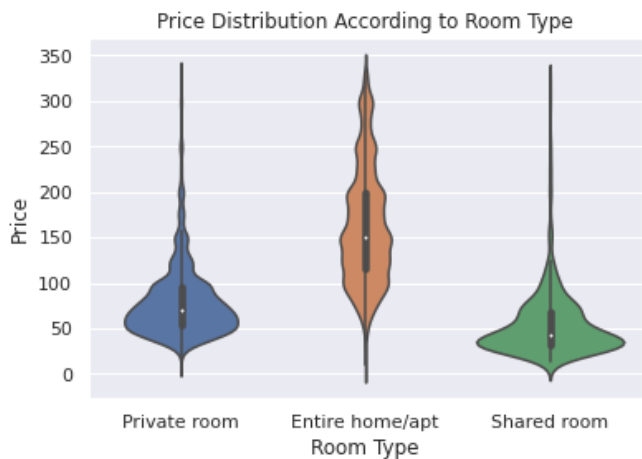
The plot above shows the distribution of price by room type. There is much variation in price within each room type. Through this violin plot, we can see that price greatly fluctuates between the type of room. It can be seen that entire home/apt listings tend to be more expensive than both private room and shared room, although private room is more expensive than a shared room. The logic behind the prices seem to make sense.

```python
px.histogram(tidydf, x = 'price', title = 'Price Distribution')
```

Price Distribution
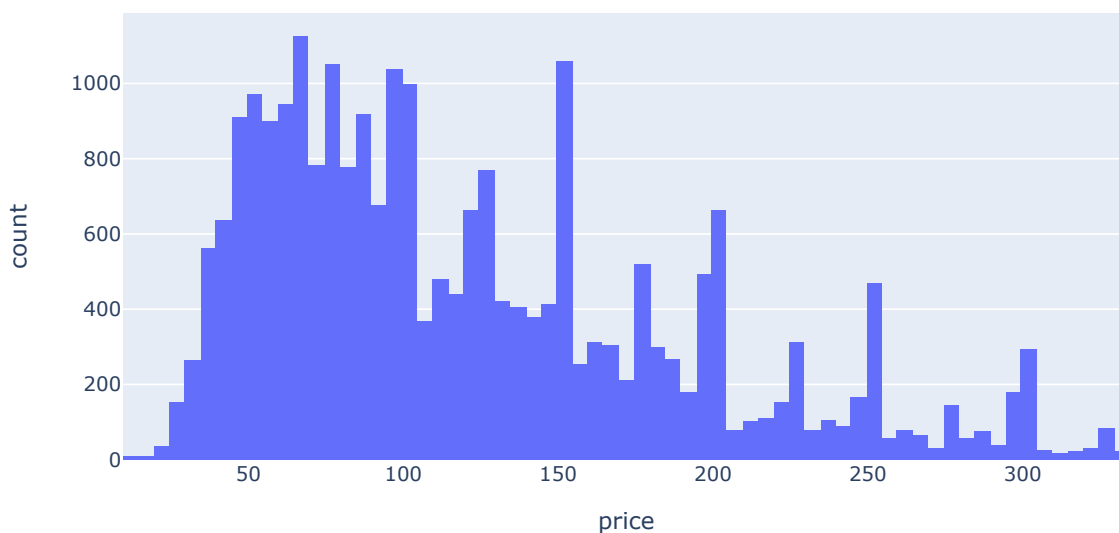
From the histogram above, we can see a left-skewed unimodal distribution. A majority of the listings hover around a price between 35 to 130 USD. However, there are significant spikes at 150, 200, 250, and 300 USD bins, as well as smaller spikes at 175, 225, 275, and 325 USD bins. We believe that this may be caused by human psychology where hosts may round their prices to the nearest 25 or 50 dollar for a more "aesthetically pleasing" price number.

```
#by room type and borough
sns.catplot(x='neighbourhood_group', y='price', data = tidydf, hue = 'room_type')
plt.title("Listing Prices Based on Boroughs and Room Types")
plt.xlabel("Borough")
plt.ylabel("Price")
```

Text(24.545238888888896, 0.5, 'Price')
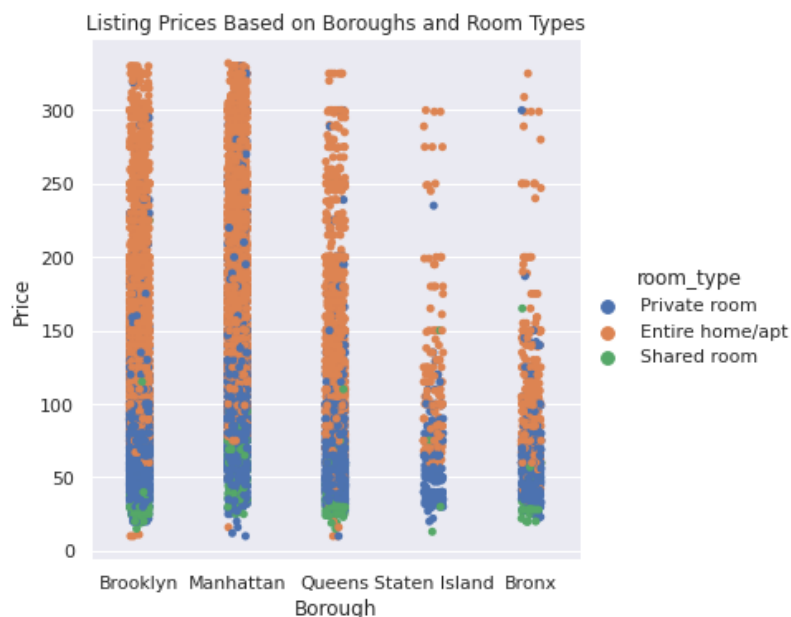
There is an obvious trend that shared rooms are the cheapest option in all boroughs, followed by private room and entire property. Additionally, Staten Island and the Bronx have a lot less listings above 150USD compared to Brooklyn and Manhattan. Additionally, as seen in our density map, Manhattan has the highest density of expensive listings compared to other boroughs.

```
plt.figure(figsize=(15,30))
sns_map_out = sns.scatterplot(x='longitude', y='latitude', hue='price',s=20, data=outliersdf)
ctx.add_basemap(sns_map_out, crs = 'EPSG:4326', source=ctx.providers.CartoDB.Positron)
sns_map_out.set_axis_off()
plt.title("Density Map of Outlier Airbnb Listings")
```

Text(0.5, 1.0, 'Density Map of Outlier Airbnb Listings')

Density Map of Outlier Airbnb Listings
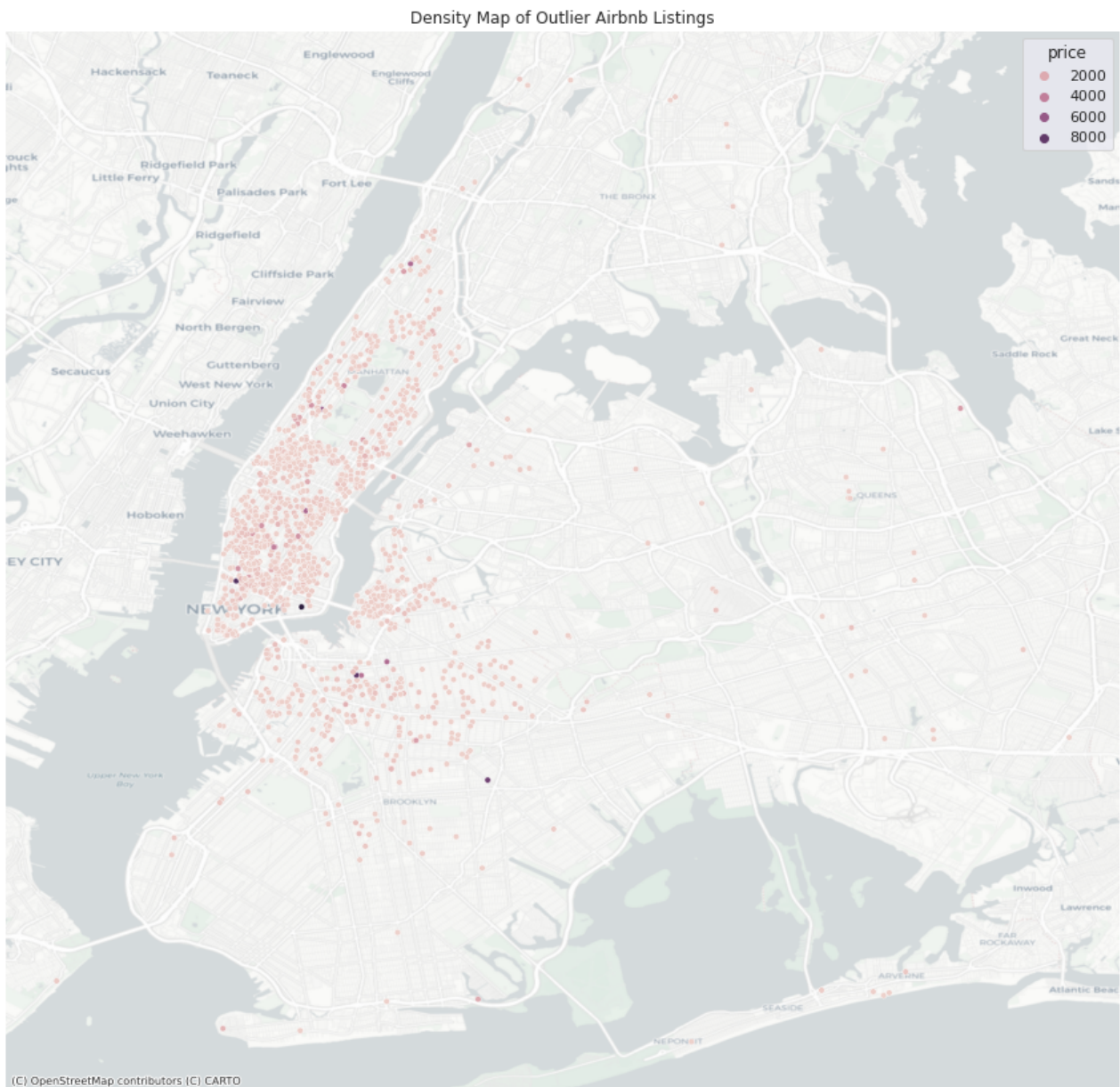
```
#learning about outlying prices according to room type
sns.catplot(x='room_type', y='price', data = outliersdf)
plt.title(" Catplot Price Distribution of Outliers According to Room Type")
plt.xlabel('Room Type')
plt.ylabel('Price')
```

```
Text(-8.665000000000006, 0.5, 'Price')
```

Catplot Price Distribution of Outliers According to Room Type
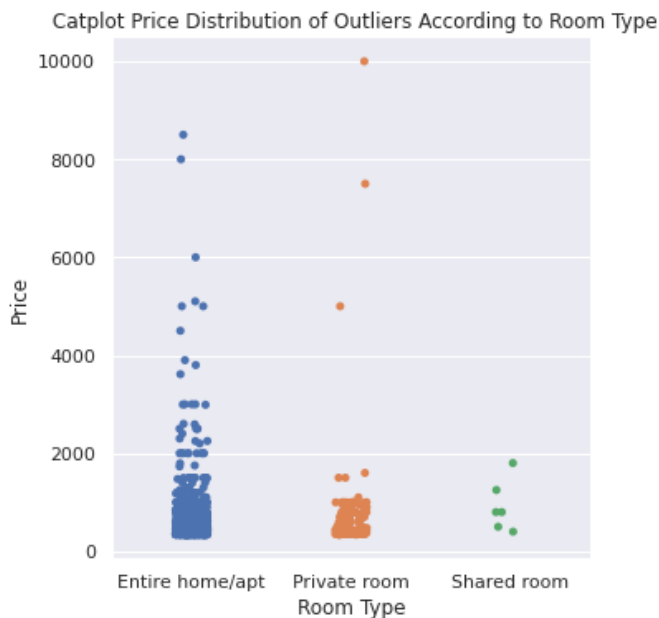
Most of the outlying expensive listings are either for entire properties or private rooms. Interestingly, the most expensive listing is a 10000USD private room in Queens. This is listing is now defunct, but we can infer that it might be a long term rental situation as the listing also indicates a minimum night requirement of 100 nights.

```
#learning about outliers according to neighborhood and room type
sns.catplot(x='neighbourhood_group', y='price', data = outliersdf, hue = 'room_type')
plt.title(" Catplot Price Distribution of Outliers According to Room Type & Neighborhood")
plt.xlabel('Neighborhood Group')
plt.ylabel('Price')
```
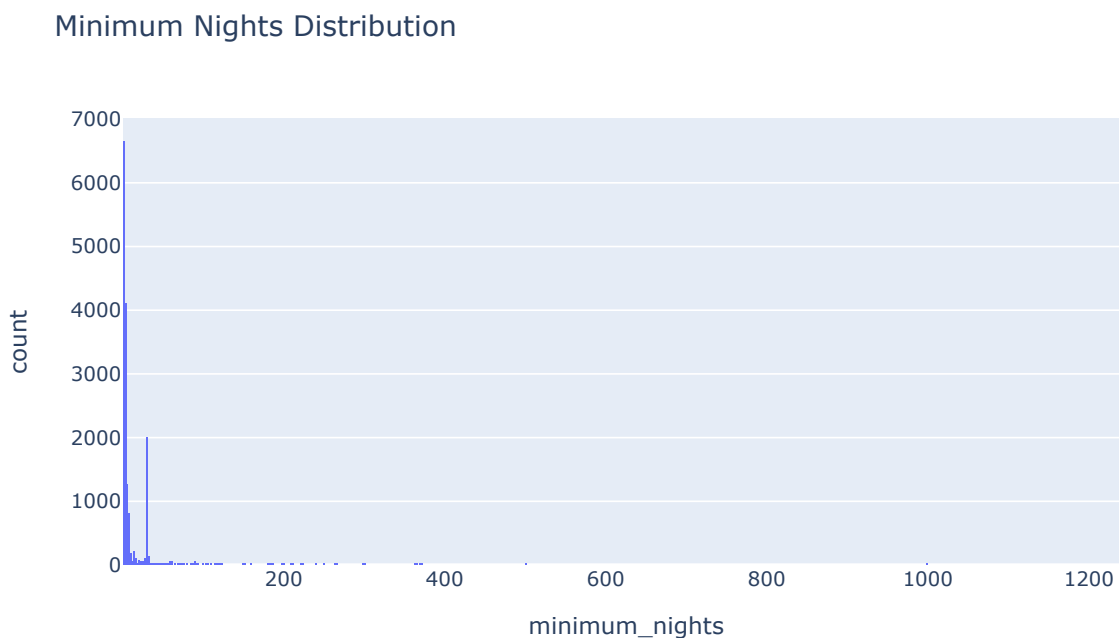
Text(29.56579444444445, 0.5, 'Price')

Catplot Price Distribution of Outliers According to Room Type & Neighborhood
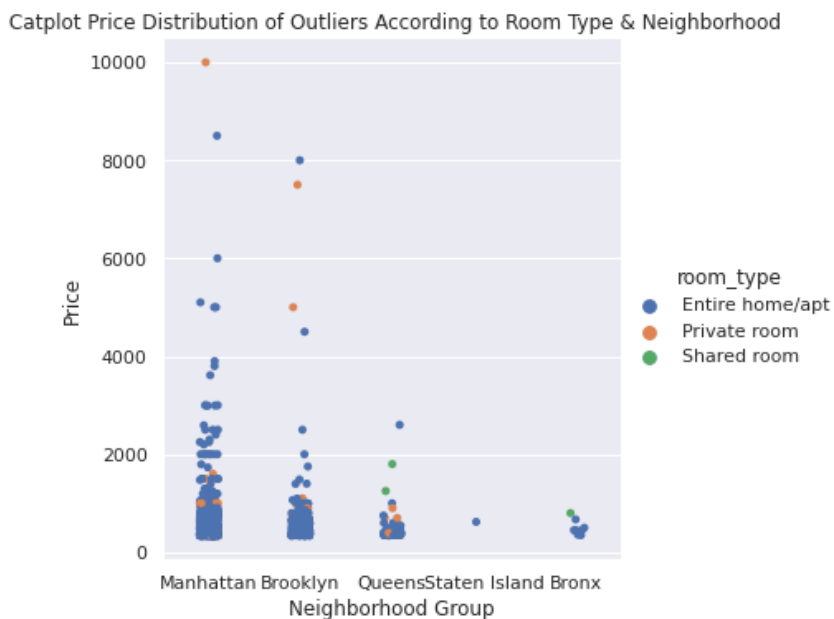
Graphs in relation to minimum nights

```
#sns.boxplot(x='minimum_nights', data=df)
px.histogram(tidydf, x = 'minimum_nights', title = 'Minimum Nights Distribution')
```

Minimum Nights Distribution


```
np.mean(tidydf.minimum_nights)
```

```
6.635819070904645
```

Most listings in 2019 NYC have a minimum night requirement between 1 to 7 nights, with an average minimum night requirement of 6.64 and 2 nights being the hightest. There is an apparent spike of listings with a minimum night requirement of 30 nights.

There seems to be multiple outliers, with one as extreme as 1250 minimum nights. This wide range of minimum night requirements allude to the existence of not just long term vacation rental properties but also potentially long term residence.

We will determine their outliers again using the 1.5 IQR test.

```
#Using the 1.5 Interquartile Range Test to determine outliers

IQR_mn = np.percentile(tidydf.minimum_nights, 75)-np.percentile(tidydf.minimum_nights, 25)
lower_limit_mn = np.percentile(tidydf.minimum_nights, 25)- 1.5*IQR
upper_limit_mn = np.percentile(tidydf.minimum_nights, 75) + 1.5*IQR
print(lower_limit_mn, upper_limit_mn)
# Calculations for outliers within the price entry of data, used to deem what is considered "too expe
```

```
-156.5 161.5
```

```
#Since there technically cannot be any negative values for min nights, we will fix the lower limit at
outliersdf_mn = tidydf.loc[lambda tidydf: tidydf.minimum_nights > upper_limit_mn]
outliersdf_mn.shape
```

```
(47, 16)
```

```
tidydf_mn = tidydf.loc[lambda tidydf: tidydf.minimum_nights <= upper_limit_mn]
tidydf_mn.shape
```

```
(24493, 16)
```

```
sns.catplot(x='neighbourhood_group', y='minimum_nights', data = tidydf_mn, hue='room_type')
plt.title('Distribution of Listings with Non-Extreme Minimum Night Values According to Borough and Ro
plt.xlabel('Borough')
plt.ylabel('Minimum Nights')
```

```
Text(24.545238888888896, 0.5, 'Minimum Nights')
```

Distribution of Listings with Non-Extreme Minimum Night Values According to Borough and Room Type
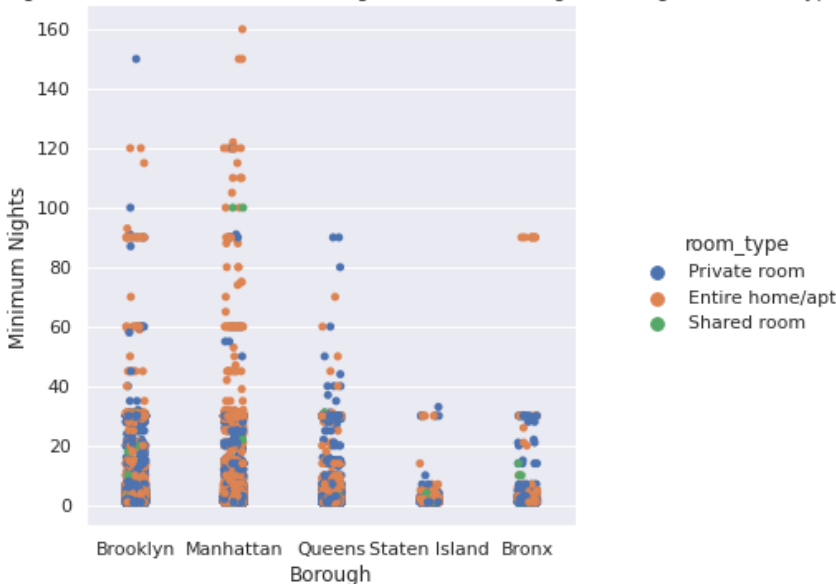
From the graph, it seems like Staten Island and the Bronx are not popular boroughs for long term rentals longer than 30 days. Further investigation of the few orange anomalies in the Bronx reveal that they are all from the same host, Sasha (Host ID: 2988712), who seems to have multiple 90-day listings around Claremont Village and Mount Hope in the Bronx.

Most longer term rentals in Brooklyn, Manhattan, and Queens are of entire properties. Interesting anomalies include the 90 day minimum night requirement listings for a shared room in Manhattan. Further investigation shows that these listings (Host IDs: 21628183 and 23184420) are both from LaGuardia Houses Public Housing Development looking for long term housemates. We believe that these listings are a result of hosts trying to bypass New York's legal barrier of subletting public housing for additional income, adding onto the high accessibility of AirBnB for anyone to put out a

listing.

```
sns.catplot(x='neighbourhood_group', y='minimum_nights', data = outliersdf_mn, hue='room_type')
plt.title('Distribution of Listings with Outlying Minimum Night Values According to Borough and Room
plt.xlabel('Borough')
plt.ylabel('Minimum Nights')
```

Text(27.055516666666662, 0.5, 'Minimum Nights')

As expected, most extreme values of minimum night requirement are from listings in Manhattan and Brooklyn, with Queens and the Bronx each only having 1 listing and Staten Island not having any. Both listings in Queens and the Bronx seem to be long term rental leasings, just like most of the other leasings in this plot.

Graph by Reviews Per Month

```
px.histogram(tidydf, x = 'reviews_per_month', title = 'Reviews Per Month Distribution')
```
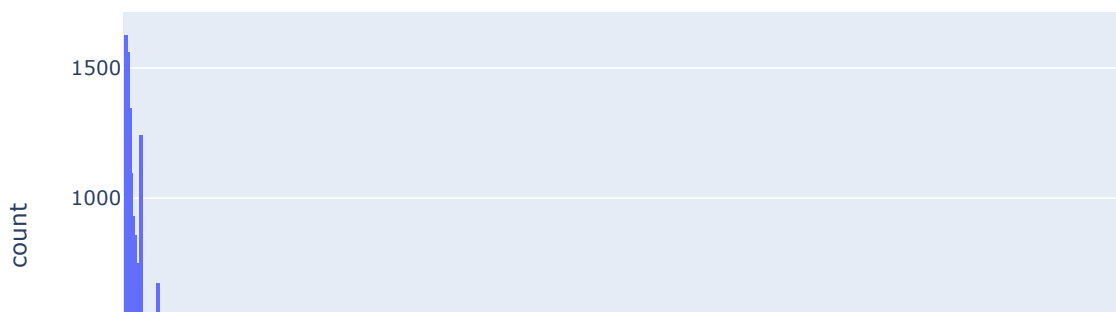
```
np.mean(tidydf.reviews_per_month)
```

```
1.8325264873675613
```

The number of reviews are heavily skewed to the left with listings getting an average of 1.83 reviews per month. There are obvious outliers, with a listing getting as many as 58.5 average reviews per month.

```
sns.catplot(x='neighbourhood_group', y='reviews_per_month', data = tidydf, hue='room_type')
plt.title('Distribution of Monthly Reviews by Borough and Room Type')
plt.xlabel('Borough')
plt.ylabel('Reviews per Month')
```

```
Text(22.03496111111111, 0.5, 'Reviews per Month')
```
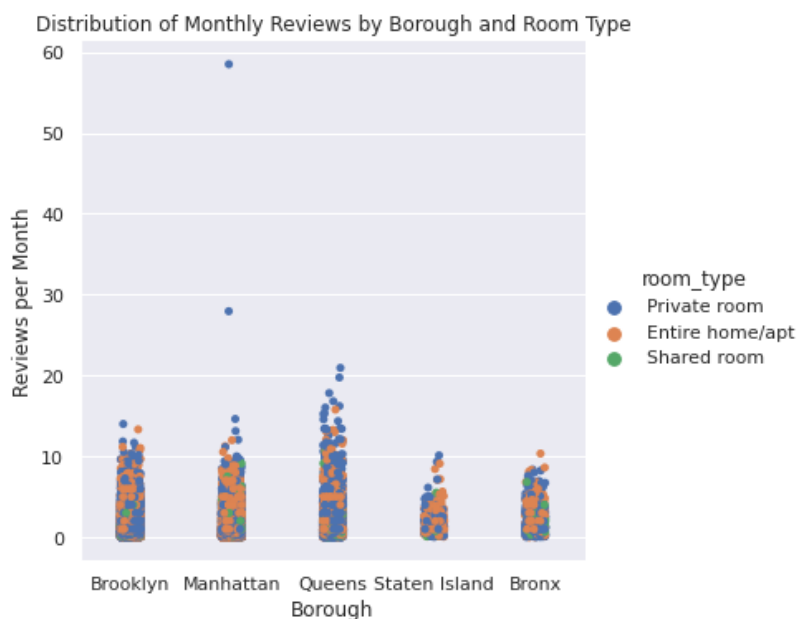

We can see that most boroughs have a similar pattern of reviews per month, with 2 anomalies in Manhattan. Further analysis reveals that both listings (ID: 32678719 and 32678720) are by the same host Row NYC (Host ID: 244361589) which is a hotel in New York City. They may have more reviews as they may be more attractive to customers as an established hotel chain. Additionally, they may have multiple rooms available under the same listing, which would explain why they have listings getting 58.5 reviews in a span of 30 or 31 days.

Graphs by Availabile Days out of 365 Days

```
px.histogram(df, x = 'availability_365', title = 'Distribution of Available Days out of 365 days')
```

Distribution of Available Days out of 365 days
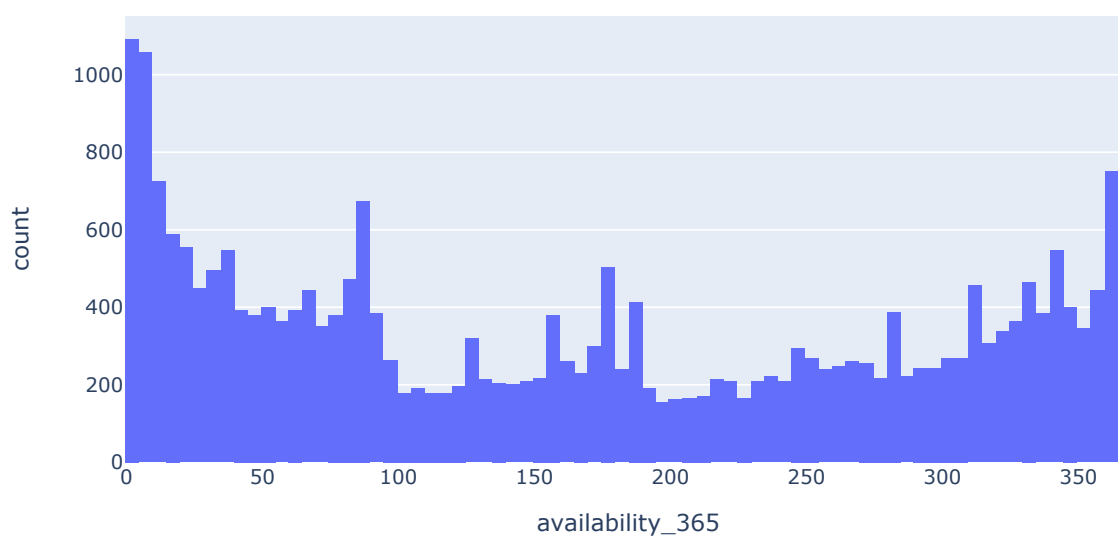
We can see a bimodal distribution with spkies at both ends. This tells us that on one extreme, most NYC hosts were not leasing out their place during 2019, or maybe for a duration not more than a week. On the other extreme, there were hosts that had listings available for almost the entire year of 2019.

```
sns.catplot(x='neighbourhood_group', y='availability_365', data = tidydf, hue='room_type')
plt.title('Distribution of Listings by Borough and Days of Availability')
plt.xlabel('Borough')
plt.ylabel('Availability 365')
```

```
Text(24.545238888888896, 0.5, 'Availability 365')
```
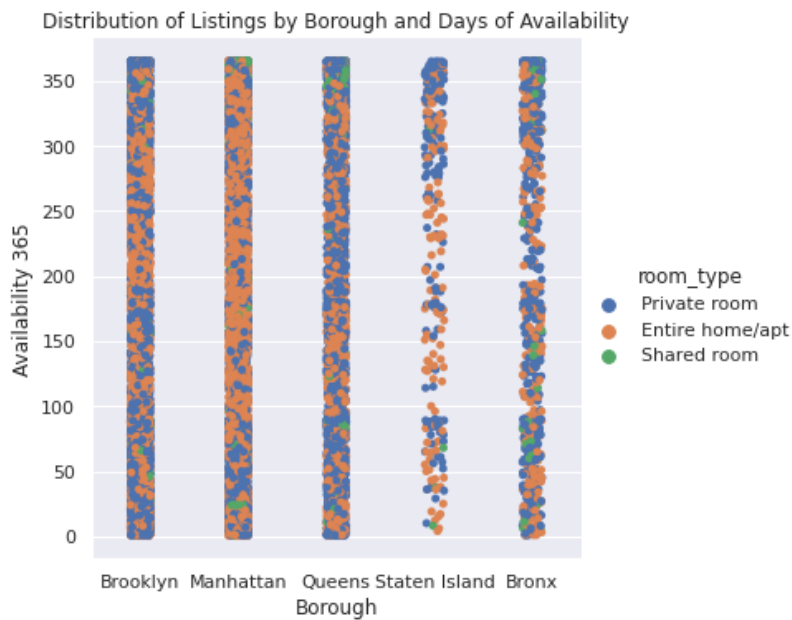
All boroughs had availabilities rangine from 0 to 365, with not much of a differentiation between room types. It is interesting to note that a majority of Staten Island listings were available for more days of the year compared to other boroughs.

NLP

- Use nlp libraries to clean names column
- Find relationship between popularity (reviews per month) and price vs the most frequnet words that appear in names
- Find relatinship between names which contain unique characters such as emojis and East Asain symbols and their locations

  - For example listing names with East Asian Characters might reveal where Chinatown when looking at their Map density Plot

We will be exploring the name feature of the Airbnb dataset in depth using NLP techniques. With the use of the popular NLP library spacy we are able to clean the listing names and extract relevant information from them such as the most frequnctly used words in listings as well as non english symbols used in the listings.

In our analysis of the names of the listings we provide visualizations to show the relationship of the name listings across price subgroups and popularity subgroups which we equated to be the number of reviews per month.

Additionally we explore the unique listing names which contain non english symbols and plot their locations to see if there is any correlation between the language used in the listing and the listing location. This correlation may be present in listing names which contain chinese characters and are potentially located in china town.

```
#Split Data based on number of reviews per month
df_r_low = df[df['reviews_per_month'].between(0, 0.45)] #25%
df_r_mid = df[df['reviews_per_month'].between(0.46, 1.23)] #50%
df_r_high = df[df['reviews_per_month'].between(1.24, 2.68)] #75%
df_r_extra = df[df['reviews_per_month'].between(2.69, 70)] #75%

#Split Data based on price quantiles
df_p_low = df[df['price'].between(0, 70)] #25%
df_p_mid = df[df['price'].between(70.01, 109)] #50%
df_p_high = df[df['price'].between(109.01, 175)] #75%
df_p_extra = df[df['price'].between(175, 9999)] #100%
```

```
quartiles_r = df[["reviews_per_month"]].describe()
quartiles_r
```

	reviews_per_month
count	26147.000000
mean	1.810063
std	1.805657
min	0.010000
25%	0.450000
50%	1.230000
75%	2.680000
max	58.500000

```
quartiles_p = df[["price"]].describe()
quartiles_r
```

	reviews_per_month
count	26147.000000
mean	1.810063
std	1.805657
min	0.010000
25%	0.450000
50%	1.230000
75%	2.680000
max	58.500000

```python
#Word cloud of names directly from the dataframe df
#includes names with punctuation and stopwords
df_nc = pd.read_csv('Airbnb_NYC_2019.csv')

from wordcloud import WordCloud

corpus = list(df_nc["name"].values)
clean_named = (' '.join(w for w in corpus if isinstance(w, str) ))

wordcloud = WordCloud(width = 1200, height = 600,
                background_color ='white',
                min_font_size = 10).generate(clean_named)

# plot the WordCloud image
plt.figure(figsize = (8, 8), facecolor = None)
plt.imshow(wordcloud)
plt.axis("off")
plt.tight_layout(pad = 0)
plt.savefig("wordcloud.jpg")
plt.show()
```


An initial analysis of our raw dataframe's listing names shows that the words with the most frequencies are neighborhood and borough names, type of room, and general location indicators. It would make sense that Brooklyn and Manhattan are some of the most frequent words because they are the 2 most popular boroughs as seen in our EDA. We can also infer that hosts use listing names to capitalize on different features of the property, from location indicators such as "heart" and "near", number of bedrooms, and different landmarks and neighborhood names. Additionally, it is interesting to note the many different variations of phrases containing "cozy", such as "cozy room", "cozy bedroom", etc.

```python
df.columns
```

```
Index(['id', 'name', 'host_id', 'host_name', 'neighbourhood_group',
       'neighbourhood', 'latitude', 'longitude', 'room_type', 'price',
       'minimum_nights', 'number_of_reviews', 'last_review',
       'reviews_per_month', 'calculated_host_listings_count',
       'availability_365'],
      dtype='object')
```

Why are we using the cleaned dataset for names

Reason: For the most part it takes out irrelevant listing which potenitally were not listing active in 2019. In terms of the focus of this report we ideally aim to see active listing in 2019 and compare the relationship between subgroups of price and popularity via number of review per month.

Reason: we only use the cleaned dataset because we want to only look at names that resemble the listing for airbnb in newyork during 2019. The cleaned data removes all the data that is invalid.

```
df.shape
```

```
(26147, 16)
```

Cleaning name column

```
#spacy used to clean names columns of punctuations and stop words
from spacy.lang.en import English
import spacy
spacy_stopwords = spacy.lang.en.stop_words.STOP_WORDS
```

```python
#Reviews per month comparison of word frequencies

from collections import Counter

dfs = [df_r_low, df_r_mid, df_r_high, df_r_extra] #list of dataframes

names_c = [] #list to store all the names per subgroup as one big string, should be list length of 4

nlp = English() #spacy tokenizer
nlp.Defaults.stop_words |= {"room", "bedroom", "apartment", "apt"} #added stop words

for i in dfs:
    names_low = i["name"].values
    clean_named = (' '.join(str(n).lower() for n in names_low) )
    name = nlp(clean_named) #tokinzed name
    filtered_name = []

    # filtering name from stop words
    for word in name:
        if word.is_stop==False and word.is_punct==False: #takes out punctuation
            filtered_name.append(word)

    name_clean = ' '.join([str(w).lower() for w in filtered_name])
    names_c.append(name_clean)


def plot_names(names):
    split_it = names.split()
    counts = Counter(split_it)
    # most_common() produces k frequently encountered
    most_occur = counts.most_common(20)
    most_df = pd.DataFrame(most_occur, columns =['Words', 'Freq'])
    plt.figure()
    sns.barplot(y="Words", x="Freq", data=most_df)

namesr = ["Low review rate", "Mid review rate", "High review rate", "Extra review rate"]

#CREATES THE PLOTS
for i in range(0,len(names_c)):
    plot_names(names_c[i])
    plt.title(namesr[i]+' popular word counts')
    plt.tight_layout()
    plt.savefig("fig_review"+str(i)+".jpg")
```
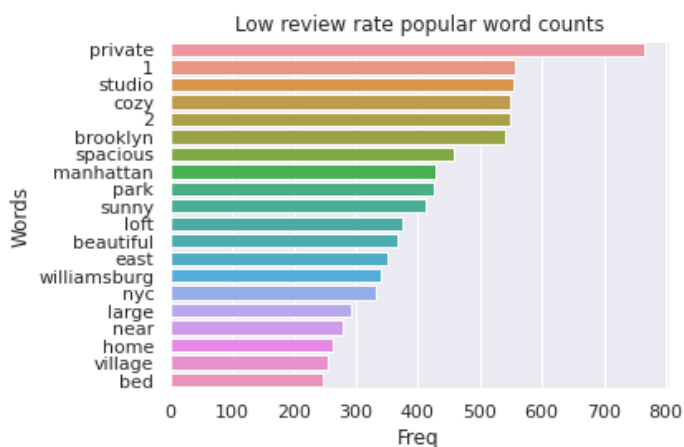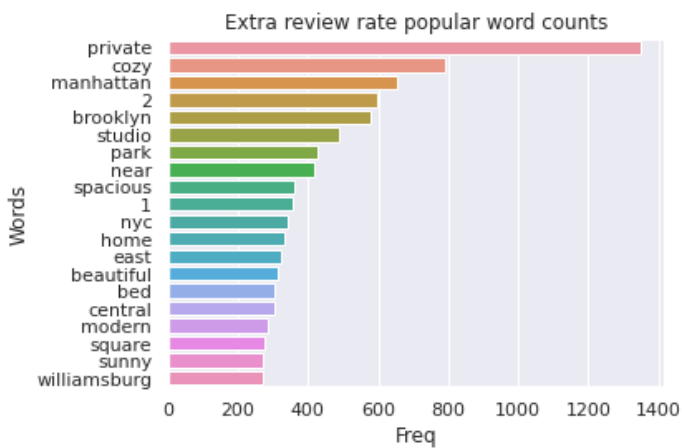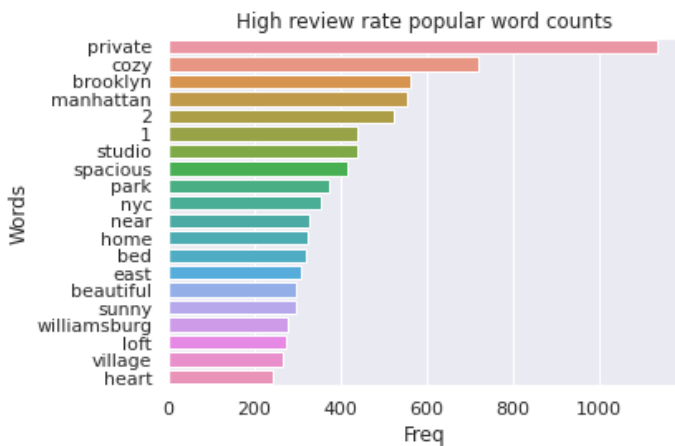

Low review rate popular word counts

Mid review rate popular word counts

High review rate popular word counts

Extra review rate popular word counts
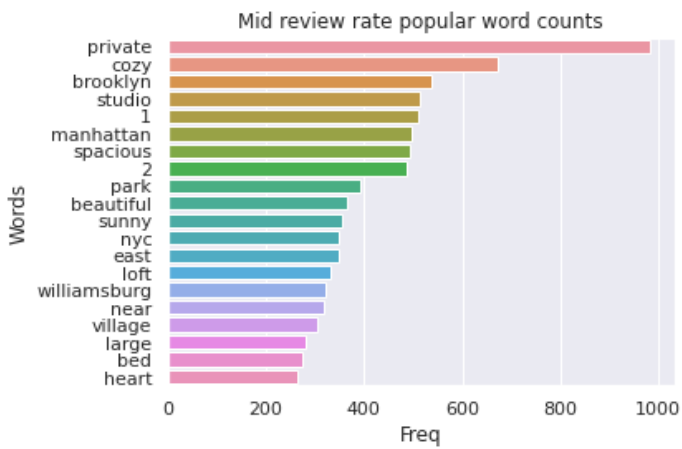
```python
#Price comparison of word frequencies

dfsp = [df_p_low, df_p_mid, df_p_high, df_p_extra]
names_cp = [] #list of all the names as strings

nlp = English()#spacy tokenizer

for i in dfsp:
    names_low = i["name"].values
    clean_named = (' '.join(str(n).lower() for n in names_low) )
    name = nlp(clean_named) #tokinzed name
    filtered_name = []

    # filtering name from stop words
    for word in name:
        if word.is_stop==False and word.is_punct==False: #takes out punctuation
            filtered_name.append(word)

    name_clean = ' '.join([str(w).lower() for w in filtered_name])
    names_cp.append(name_clean)


def plot_names(names):
    split_it = names.split()
    counts = Counter(split_it)
    # most_common() produces k frequently encountered
    most_occur = counts.most_common(20)
    most_df = pd.DataFrame(most_occur, columns =['Words', 'Freq'])
    plt.figure()
    sns.barplot(y="Words", x="Freq", data=most_df)

namesp = ["Low price group", "Mid price group", "High price group", "Extra price group"]


#CREATES THE PLOTS
for i in range(0,len(names_c)):
    plot_names(names_cp[i])
    plt.title(namesp[i]+' popular word counts')
    plt.tight_layout()
    plt.savefig("fig_price"+str(i)+".jpg")
```

Mid price group popular word counts

High price group popular word counts

Extra price group popular word counts
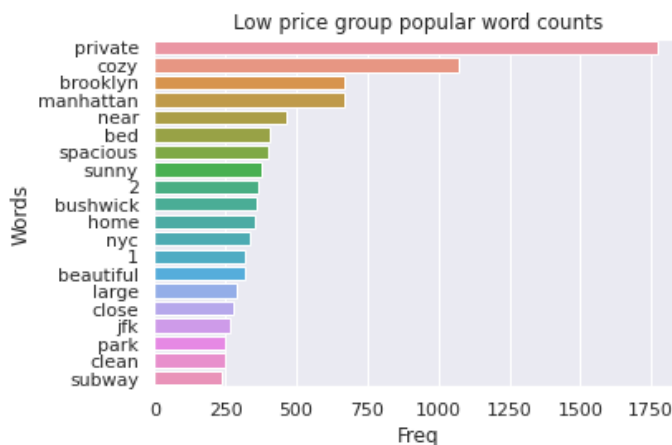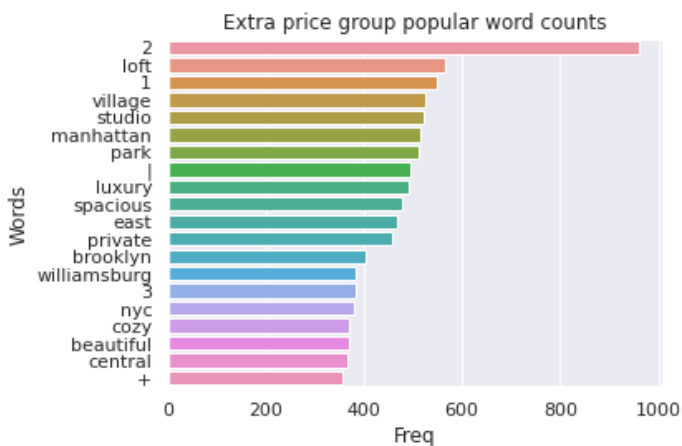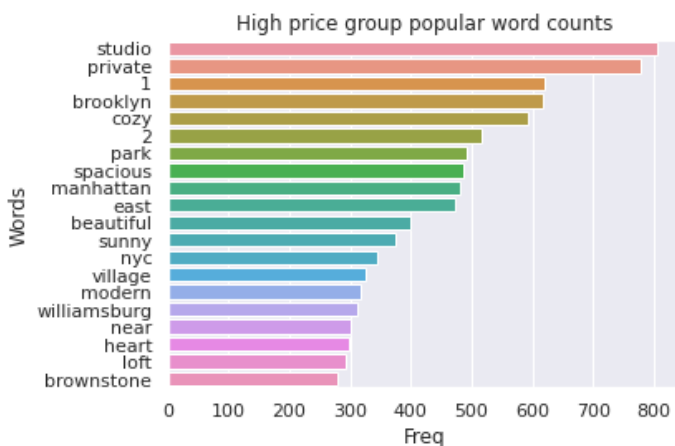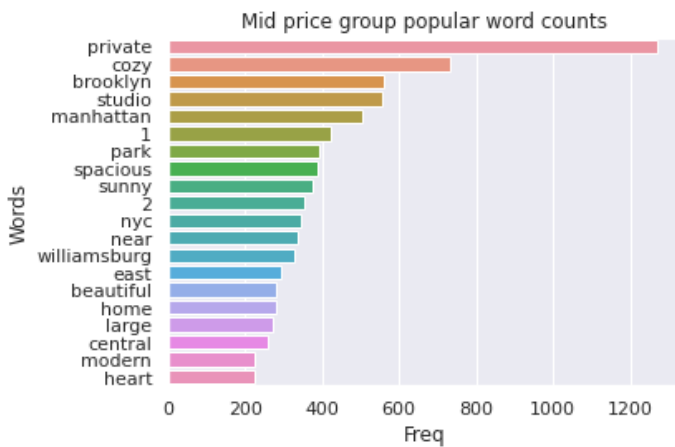
```python
from matplotlib.pyplot import figure

#Price stacked word counts

lowp = names_cp[0].split()
countlowp = Counter(lowp)
countlowp50 = countlowp.most_common(50)
lowpdf = pd.DataFrame(countlowp50, columns =['Words', 'Freq_low'])

midp = names_cp[1].split()
countmidp = Counter(midp)
countmidp50 = countmidp.most_common(50)
midpdf = pd.DataFrame(countmidp50, columns =['Words', 'Freq_mid'])

highp = names_cp[2].split()
counthighp = Counter(highp)
counthighp50 = counthighp.most_common(50)
highpdf = pd.DataFrame(counthighp50, columns =['Words', 'Freq_high'])

extp = names_cp[3].split()
countextp = Counter(extp)
countextp50 = countextp.most_common(50)
extpdf = pd.DataFrame(countextp50, columns =['Words', 'Freq_ext'])

asd1 = pd.merge(lowpdf,midpdf,on='Words',how='outer')
asd2 = pd.merge(asd1,highpdf,on='Words',how='outer')
asd3 = pd.merge(asd2,extpdf,on='Words',how='outer')

finaldf = asd3.fillna(0)
freqsum = finaldf['Freq_low']+finaldf['Freq_mid']+finaldf['Freq_high']+finaldf['Freq_ext']
finaldf['freq_sum'] = freqsum
fianldf = finaldf.sort_values(by=['freq_sum'], inplace=True, ascending=False)
finaldf = finaldf.head(20)
finaldf = finaldf.set_index('Words')
finaldf = finaldf.drop(['freq_sum'], axis=1)

finaldf.plot(kind='barh', stacked=True)
plt.title("Price Groups Stacked Popular Word Counts")
plt.tight_layout()
plt.savefig("pgStack.jpg")
```



```python
finaldf
```

	Freq_low	Freq_mid	Freq_high	Freq_ext
Words				
private	766.0	984.0	1134.0	1350.0
cozy	550.0	673.0	720.0	789.0
brooklyn	540.0	536.0	564.0	577.0
2	550.0	487.0	526.0	598.0
manhattan	429.0	497.0	554.0	653.0
studio	554.0	513.0	438.0	488.0
1	558.0	511.0	440.0	358.0
spacious	459.0	492.0	417.0	359.0
park	426.0	391.0	373.0	427.0
nyc	333.0	350.0	355.0	343.0
near	280.0	317.0	328.0	419.0
beautiful	366.0	366.0	297.0	313.0
sunny	413.0	355.0	296.0	270.0
east	351.0	347.0	307.0	322.0
williamsburg	340.0	320.0	279.0	269.0
home	263.0	246.0	323.0	334.0
loft	376.0	331.0	273.0	178.0
bed	247.0	275.0	321.0	305.0
village	255.0	305.0	268.0	202.0
large	292.0	282.0	241.0	202.0

```python
#Reviews stacked word counts

lowr = names_c[0].split()
countlowr = Counter(lowr)
countlowr50 = countlowr.most_common(50)
lowpdf = pd.DataFrame(countlowr50, columns =['Words', 'Freq_low'])

midr = names_c[1].split()
countmidr = Counter(midr)
countmidp50 = countmidr.most_common(50)
midpdf = pd.DataFrame(countmidp50, columns =['Words', 'Freq_mid'])

highr = names_c[2].split()
counthighr = Counter(highr)
counthighp50 = counthighr.most_common(50)
highpdf = pd.DataFrame(counthighp50, columns =['Words', 'Freq_high'])

extr = names_c[3].split()
countextr = Counter(extr)
countextp50 = countextr.most_common(50)
extpdf = pd.DataFrame(countextp50, columns =['Words', 'Freq_ext'])

asd1 = pd.merge(lowpdf,midpdf,on='Words',how='outer')
asd2 = pd.merge(asd1,highpdf,on='Words',how='outer')
asd3 = pd.merge(asd2,extpdf,on='Words',how='outer')

finaldf = asd3.fillna(0)
freqsum = finaldf['Freq_low']+finaldf['Freq_mid']+finaldf['Freq_high']+finaldf['Freq_ext']
finaldf['freq_sum'] = freqsum
fianldf = finaldf.sort_values(by=['freq_sum'], inplace=True, ascending=False)
finaldf = finaldf.head(20)
finaldf = finaldf.set_index('Words')
finaldf = finaldf.drop(['freq_sum'], axis=1)

finaldf.plot(kind='barh', stacked=True)
plt.title("Reviews Groups Stacked Popular Word Counts")
plt.tight_layout()
plt.savefig("rgStack.jpg")
```
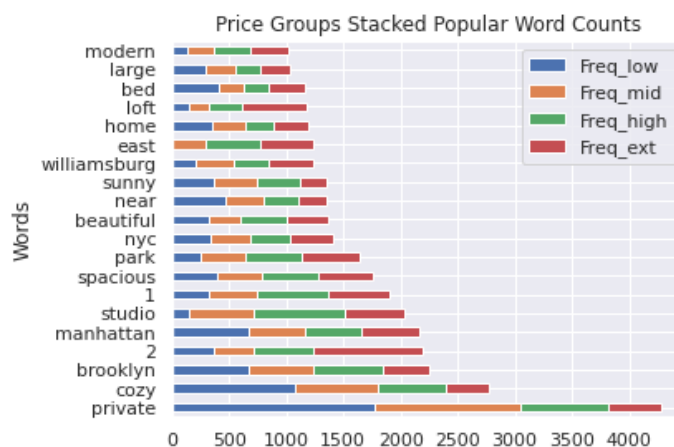


```python
finaldf
```

	Freq_low	Freq_mid	Freq_high	Freq_ext
Words				
private	766.0	984.0	1134.0	1350.0
cozy	550.0	673.0	720.0	789.0
brooklyn	540.0	536.0	564.0	577.0
2	550.0	487.0	526.0	598.0
manhattan	429.0	497.0	554.0	653.0
studio	554.0	513.0	438.0	488.0
1	558.0	511.0	440.0	358.0
spacious	459.0	492.0	417.0	359.0
park	426.0	391.0	373.0	427.0
nyc	333.0	350.0	355.0	343.0
near	280.0	317.0	328.0	419.0
beautiful	366.0	366.0	297.0	313.0
sunny	413.0	355.0	296.0	270.0
east	351.0	347.0	307.0	322.0
williamsburg	340.0	320.0	279.0	269.0
home	263.0	246.0	323.0	334.0
loft	376.0	331.0	273.0	178.0
bed	247.0	275.0	321.0	305.0
village	255.0	305.0	268.0	202.0
large	292.0	282.0	241.0	202.0

```
import nltk
nltk.download("punkt")
from nltk.tokenize import word_tokenize
import string
```

```
[nltk_data] Downloading package punkt to /home/datalore/nltk_data...
[nltk_data]   Unzipping tokenizers/punkt.zip.
```

Clean the names for Filtering Dataset

```
cleaned_names = []

for i in list(df["name"].values):
    text_tokens = word_tokenize(str(i).lower())
    clean_toks = [word for word in text_tokens if word not in nlp.Defaults.stop_words and word not in
    i = ' '.join([str(n) for n in clean_toks])
    cleaned_names.append(i)

cleaned_names
```

```
['clean quiet home park',
```

```
'skylit midtown castle',
'cozy entire floor brownstone',
'large cozy 1 br midtown east',
"large furnished near b'way",
'cute cozy lower east 1 bdrm',
'beautiful 1br upper west',
'central manhattan/near broadway',
'lovely 1 garden best area legal rental',
'wonderful guest manhattan singles',
'2 stops manhattan studio',
'perfect parents garden',
'chelsea perfect',
'hip historic brownstone backyard',
'cbg ctybgd helpshaiti rm 1:1-4',
'cbg helps haiti 2.5',
'cbg helps haiti rm 2',
'maison des sirenes1 bohemian',
'sunny prospect park',
'midtown pied-a-terre',
'spacious lovely furnished manhattan',
'modern 1 br nyc east village',
'room/double bed',
'spacious 1 luxe building',
'loft williamsburg area w/ roof',
'room/bunk beds',
'large b b style rooms',
'lovely 2 garden best area legal rental',
'cute artist home',
'lowereastside share shortterm 1',
'enjoy downtown nyc',
'beautiful sunny park slope brooklyn',
'1bdr w private bath lofty',
'west retreat',
'best bet harlem',
'entire central brooklyn neighborhood',
'1 stop fr manhattan private suite landmark block',
'charming brownstone 3 near pratt',
'fort greene brownstone',
'blue 2 brownstone 1350 monthly',
'cozy 1bd central park west new york city',
'original brooklyn loft',
'greenpoint place ...',
'beautiful manhattan',
'williamsburg 1',
'great location manhattan',
'best location nyc times square',
'greenpoint loft w/ roof',
'bright nolita w doorman/elevators/gym',
'cozy place',
'sunny spacious chelsea',
'2 upper east side-great kids',
'comfortable 4-bedroom family house',
'double w private deck clinton hill best area',
'heaven hells kitchen',
'sunny modern east village',
'haven loft entire floor windows bricks',
'large amazing east village',
'spaha loft enormous bright',
'lovely ev artist home',
'cool hell kitchen',
'harlem new york welcomes',
'blue trim guest house',
'charming east village flat',
'manhattan',
```

```
'little king queens',
'fort greene retreat park',
'beautiful meatpacking district loft',
'cozy 2 br williamsburg',
'spacious luminous upper west nyc',
'entire 2 large sunny',
'sunny spacious floor haven',
'private great deal lower east',
'perfect family small group',
'2 williamsburg bedford l stop',
'oh glorious spring',
'cozy williamsburg 3 br',
'sunny room+pvte office huge loft',
'spacious prospect heights',
'large parlor landmark home 1 block pratt',
'2-bed brownstone duplex garden',
'sunny artist home',
'light-filled classic central park',
'upper manhattan new york',
'cozy quiet 4 dooglers',
'stuydio modern light filled',
'loft bed near transportation-15min times sq',
'house henry 3rd flr suite',
'monkey retreat manhattan',
'2000 sf 3br 2bath west village private townhouse',
'williamsburg—steps subway private bath balcony',
'beautiful duplex',
'large 2 great groups',
'modern brooklyn apt. august sublet',
'1,800 sq foot luxury building',
'sunny 2-story brooklyn townhouse w deck garden',
'times square safe clean cozy',
'cozy 3 landmark home 1 block pratt',
'beautiful east village',
'park slope green guest house',
'2 br 2 bath duplex patio east village',
'nyc fabulous views manhattan eye',
'2 story family home williamsburg',
'comfortable uws 2-bd family-friendly brownstone',
'great large 1 br east village',
'eveland private bed living w/ entrance',
'sugar hill rest stop',
'3 story town house park slope',
'central park',
'large 1 br 3 br brooklyn q trn',
'modern spectacular views',
'garden studio upper east sid',
'secluded master beautiful huge',
'b b 1',
'accommodations galore 1',
'sunny new condo',
'stylish sleek near soho',
'unique charming small 1br les',
'central location',
'luminous beautiful west village studio',
'sanctuary east flatbush',
'en suite bathroom deck',
'flat macdonough',
'huge private floor waverly',
'modern greenpoint brooklyn',
'sun-drenched artsy modernist 1 bdrm duplex',
'fully furnished basement',
'flat macdonough garden',
'light filled williamsburg',
```

```
                'retreat williamsburg',
                'nyc zen',
                'cozy br wiliamsburg 3',
                'sunny old historical brooklyn townhouse',
                'sun filled classic west village',
                'lg rm historic prospect heights',
                'classic artist loft williamsburg',
                'great location spacious prospect park',
                'private bdrm/bathrm new elevator',
                'sunny clean 1 bdrm w. village',
                'great location williamsburg',
                'light airy upper east 1 bdr',
                'luxury brownstone boerum hill',
                'central park loft',
                'indie-chic share williamsburg',
                'w/ manhattan view longer stay',
                'private large sunny 1br w/w d',
                'luxurious condo dubmo view',
                'charming cozy midtown loft week ends',
                'parlor victorian townhouse',
                'house henry 2nd flr suite',
                'new york view',
                'sunny cozy brklyn townhouse',
                'view',
                'light+open+airy+rustic+modern loft',
                'west inn 2 east village',
                'brooklyn victorian style suite .....',
                'lovely west village studio',
                'accommodations galore 3 1-5 guests',
                'greenwich village stylish',
                'beautiful queens brownstone 5br',
                'closer columbia uni',
                'bright spacious luxury condo',
                'park slope haven 15 mins soho',
                'safe beautiful accomodation',
                'large private brownstone park slope',
                'new york city 1 bdrm near central park metro',
                'large comfy 1bdr w/character',
                'lux times square new building',
                'designer 1 br duplex w/ terrace- spectacular views',
                'lovely garden legal best area amenities',
                'lower east 57~/night',
                'prime location manhattan',
                'f excellent/pvt rm',
                'cozy studio parking spot',
                'clean convenient 2br',
                '3 floors luxury',
                'institute—heart williamsburg',
                'midtown west large alcove studio',
                'sml rm pr brst park sl great med/students',
                'city private penthouse',
                'cozy yankee stadium',
                'great private bathroom entrance',
                'private garden • new renovation',
                'modern comfort art infused landmark brownstone',
                'noho/east village private 1/2 bath',
                'sleek comfortable soho',
                'spacious williamsburg share w/ loft bed',
                'cozy east village railroad 1 bed',
                '1 loft w/ private roof deck',
                'city private comfy',
                'elegant nyc pad',
                'clean bright 1br cobble hill great location',
                'great new close',
```

```
'quiet clean retreat city',
'stylish large gramercy loft',
'brownstone-luxury 1 bd apt/nyc',
'private historic sugar hill',
'south slope green',
'17 flr manhattan views nr subway',
'spacious 1br adorable clean quiet',
'nice clean safe convenient 3br',
'franklin st flat trendy greenpoint brooklyn',
'artistic cozy spacious w/ patio sleeps 5',
'beautiful elegant 3 bed soho loft',
'spacious greenwich village',
'spaha studio monthly rental',
'city private luxury suite',
'private room/bath luxurious harlem',
'gem east village',
'accommodations galore 2',
'huge chelsea loft',
'exclusive private bath les',
'quiet clean midtown w. elevato',
'bk sweet suite w/kitchen fullbath',
'great east village rental',
'brownstone sundrenched beauty',
'special private ny',
'c private ferry',
'smallest house village',
'beautiful modern studio heart nyc',
'beautiful landmarked duplex',
'brooklyn guest w/ queen bed williamsburg',
'd private che p 2 explore nyc',
'safe cute near subway manhattan ny ny retro style',
'large cozy private',
'dominique ny mini efficiency wifi metro quiet',
'private large sunny floor w/w d',
'cottage village',
'bedroom1 rent 10min manhan',
'williamsburg near soho loftbed',
'brooklyn studio',
'bedroom2 rent 10min manh',
'crown heights garden',
'amazing sunny breezy home heart nyc',
'enjoy downtown nyc',
'charming uws treehouse',
'share home 75 1 bdrm/++ 2 brooklyn',
'charming east village 2 1 br',
'farmhouse williamsburg',
'bright+spacious williamsburg abode',
'suite sugar hill harlem private rm hosted',
'beautiful 1 park slope',
'charming carroll gardens',
'private brownstone brooklyn',
'east village loft piano patio',
'lower east magic',
'fantastic williamsburg',
'west harlem home base eco-apt',
'charming garden park slope',
'lovely modern garden',
'central park 1br sunny condo',
'cozy garden williamsburg',
'soha comfort-by nw central park',
'cozy upper west',
'cozy private',
'cozy brownstone inn discount',
'prewar penthouse w private terrace',
```

```
'designer 2.5 br loft carroll gardens subway',
'bright beautiful brooklyn',
'unique spacious loft bowery',
'nice renovated prime location',
'brooklyn writer nook',
'private large nyc',
'large sunny east village nyc',
'great large 3 br/2 bath duplex private patio',
'jazz uptown style sugar hill',
'bright lovely 1 bdrm les',
'beautiful bed west village 4 month special',
'gigantic private brooklyn loft',
'condo laundry unit',
'private cozy greenpoint',
'food music dream williamsburg',
'french garden cottage bedford',
'alcove studio w/ outdoor patio deck',
'luxury 3 bed/ 2 bath harlem w/ terrace',
'mini studio free wifi',
'brooklyn guest w/ king bed williamsburg',
'bright cozy chinatown studio',
'eveland place stay enjoy 5-   2bdrm',
'superior box house',
'hells kitchen garden eden',
'lovely 3 italianate brownstone w/garden',
'williamsburg huge private bath train',
'cozy east village ac',
'duplex w/ terrace box house hotel',
'loft w/ terrace box house hotel',
'spacious 3 duplex park slope',
'loft w/ terrace box house hotel',
'columbia castle 2 br',
'charming artist flat east village',
'beautiful 2',
'brooklyn cove studio w/ garden',
'ft. greene garden gem large convenient',
'williamsburg penthouse private roof cabana',
'superior box house',
'large studio -- heart east village',
'huge.bright.clean.safe private',
'garden 1br/1ba brownstone 2 blocks subway',
'modern spacious 2 br downtown manhattan',
'wonderful comfortable studio',
'maison des sirenes 2',
'modern safe clean bright astoria 2',
'vernon greene',
'beautiful bright ' s warm spacious 1.5br',
'spacious loft clinton hill',
'brooklyn waverly',
'lovely heart ny',
'groovy nyc chelsea pad',
'sunny bklyn jewel fort greene july aug 2019',
'manhattan neat nice bright',
'bienvenue',
'large brand new park slope 1br',
'uws brownstone near central park',
'artsy topfloor prime bedford williamsburg',
'2 br w/ terrace box house hotel',
'bohemian east village 2 bed haven',
'oceanfront rockaway',
'private 1-bedroom townhouse',
'bright great river view',
'tree lined block modern',
'sweet historic greenpoint duplex',
```

```
'riverside charm fire place',
'central nomad/chelsea loft studio',
'sunny 3br ideal family',
'ues quiet spacious 1 bdrm 4',
'comfortable ..',
'brooklyn- crown heights garden',
'cozy time square',
'large park slope townhouse duplex',
'lower east 2',
'sun-drenched hamilton hts jewel',
'stunning vacation',
'1 bdrm apt-weekend sublease',
'kitchenette',
'conveniently located sunny brooklyn heights',
'style stuyvesant heights',
'heart meatpacking chelsea',
'williamsburg right subway',
'spacious brooklyn loft 2',
'park slope spacious 2',
'nyc studio rent townhouse',
'  quiet gem w/roof deck ny hottest street  ',
'authentic new york city living',
'super big cozy private',
'☆massive duplex☆ 2br 2bth east village 9+ guests',
'luxe spacious 2br 2ba nr trains',
'city street view',
'cozy bright bk',
'forest hills minutes midtown manhattan',
'midtown cozy convenient',
'prime williamsburg',
'private spacious brooklyn',
'garden close manhattan',
'stunning arty 3200sf 3flr+3br townhome w/terrace',
'sunny spacious designer home',
'spacious sunny private',
'truly amazing oasis city',
'east village king-sized charmer',
'affordable furnished',
'architect brownstone',
'charming nolita',
'luxury horizon',
'three-bedroom house quiet neighborhood',
'beautiful duplex w/private garden',
'garage designer loft',
'best city area columbia u upper west c park',
'artsy 1 20 min 42nd grand central',
'astoria-private home nyc-',
'charming private east village',
'city semi private',
'cozy brownstone',
'female clean15min manhattan',
'greenpoint spacious loft',
'private e. village townhouse stay',
'harlem/hamilton heights cozy',
'incredible prime williamsburg loft',
'large loft style studio space',
'hancock town house -stuyvesant mews',
'entire heart williamsburg',
'clinton hill free coffee smile',
'private sunny williamsburg',
'purple 2/3 brownstone 1450 month',
'red brownstone 1355/mo',
'heart east village',
'sunny 15min manhattan lady',
```

```
'manhattan penthouse-max.12 guests',
'prime williamsburg 3 br deck',
'beautiful brooklyn oasis',
'cool spacious harlem artist flat',
'☆ studio east village ☆ bath ☆ sleeps 4 ☆',
'greenpoint loft le chez andrea',
'soho clean safe private peaceful',
'closer columbia uni2',
'lady curtain-divided',
'nice manhattan near central park subway',
'spacious quiet rm 20mins midtown',
'spacious modern studio manhattan',
'cbg 4tiny w/ huge window/ac',
'charming upper west',
'light-filled east village delight',
'sunny quiet legal homelike suite-pk slope south',
'spacious duplex brownstone',
'lovely vintage haven—heart uws',
'modern space charming pre-war',
'affordable cozy',
'creative vintage loft s. williamsburg',
'fort greene brooklyn',
'gorgeous 1 bdrm huge duplex',
'sunny cozy lower east',
'large quiet near columbia u',
'cozy pre-war harlem',
'spacious studio',
'elegant 2-br duplex union square',
'cosy sunny 1brm prospect heights',
'east village w rooftop',
'williamsburg home away home',
'brand new beautiful duplex garden',
'spacious alcove studio/ junior',
'high-end doorman bldg les',
'spring mulberry 2',
'ultra modern nyc garden',
'modern garden nyc',
'gorgeous entire manhattan townhouse',
'cozy studio upper east',
'historic classic central cozy village clean nyu',
'private flat apartment- special',
'williamsburg bedford ave',
'west village lrg clean sunny private bdrm',
'historic brooklyn studio',
"`` oasis '' bedford williamsburg",
'large sunny garden',
'hell kitchen funky 80 hideaway',
'chic modern high line luxury- new',
'family friends new york city',
'spacious comfy bk brownstone',
'large luxury upper east studio',
'chateau style brooklyn loft singles couples',
'lovely brooklyn brownstone 1br',
'beautiful grdn park slope',
'sun-drenched east village penthouse',
'columbus circle luxury bldg private bath',
'bright private williamsburg bedford l',
'spacious kid-friendly 15-20 mins midtown',
'large overlooking central park',
'cheerful comfortable',
'hospitality propsect pk-12 yrs hosting legally',
'prospect pk nyc 5 stops cozy clean legal',
'loft style williamsburg',
'2 beds bed-stuy',
```

```
'sunny large park slope',
'quiet jr alcove near times square',
'large elevator drman bldg',
'comfy cozy brooklyn close manhattan',
'modern hamilton heights',
'sunny space williamsburg',
'stylish east village flat',
'serene park slope garden',
'st. james pl garden studio 1block pratt gtrain',
'great spacious williamsburg',
'comfortable spacious private',
'modern condo midtown',
'ideal brooklyn brownstone',
'cozy oasis bushwick ny',
'private entrance private parking',
'yankee stadium oasis 2 stops manhattan',
'williamsburg exposed brick loft',
'bright modern charming housebarge',
'welcome brooklyn bed-stuy',
'sunnyside nyc/ ac room/ city views/ near midtown',
'greenpoint waterfront loft',
'2-bedroom share heart greenwich village',
'1 pre war',
'creative live-in artspace/birdsnest',
'new clean spacious bed breakfast',
'sunny calm victorian home',
'modern unique studio nyc',
'2 bed 2 bath central park west',
'luxury furnished 1 bedro bay ridge',
'haven upper west',
'wonderful studio brooklyn ny',
'cozy brooklyn hideaway',
'✿✿✿ country cottage city✿✿✿',
'✿✿✿ country cottage city✿✿✿',
'lovely bdr harlem manhattan',
'best deal hudson river',
'newly reno ’ d chic quiet exec 1br',
'large artist floorthru- greenpoint',
'gorgeous permago private fidi 1/2',
'cbg helps haiti rm 3',
'best deal chelsea 1 bdrm nyc',
'lovely',
'artsy loft-like harlem',
'harlem/manhattan classic',
'charming victorian home',
'brooklyn b b close manhattan',
'notorious b.n.b erhart',
'sunny cozy multileveled',
'sunny 2 williamsburg duplex w/ 3 beds',
'kitchenette 2',
'alpha-bet city entire floor large cool 2br -l.e.s',
"haven awaits `` emma place ''",
'spacious kid-friendly 2 br west village',
'great downtown manhattan',
'beautiful brownstone',
'1bdr hell kitchen hideaway',
'comfy room/coffee bagel/weekly discount',
'empirestate view-subway corner',
'zen yankee stadium pad 5 minutes manhattan',
'monthly rental',
'wonderfully inviting east village',
'turquoise one-bedroom soho',
'lovely pied-à-terre historic building',
'spacious furnished high fl beautiful views',
```

```
            'nyc studio heart times square',
            'rooms rent queens piano',
            'large sunny luxe prvt room/midtown',
            'spacious stunning harlem townhouse',
            'private great location',
            'large artsy w/ loft bed 4 dooglers',
            'stylish studio exclusive terrace',
            'les private 1',
            'williamsburg garden home 5 minutes manhattan',
            'huge modern 2-level brooklyn',
            'location location location liz',
            'astoria garden suite',
            'private fort green bk close city',
            'private near brooklyn museum',
            'notorious b.n.b wallace',
            'clinton hill 1 bed bright loft',
            'great studio w. village nyc',
            'notorious b.n.b swoon',
            '2br 20min soho',
            'williamsburg quiet comfy stay',
            'fabulous private',
            'ny/ big 2 near manhattan',
            'brooklyn brownstone',
            'big 1 central',
            'lovely large crown heights',
            'quality cozy studio subway',
            'scandinavian-apt 5. les',
            'loft suite box house hotel',
            '4 -2bathrm west village duplex townhouse',
            'nice area westside',
            'hancock small',
            'lenox harlem',
            'heart soul greenwich village',
            'prime williamsburg loft bedford',
            'private bdrm /bath 1 block ctrl prk',
            '+highly satisfactory les dwelling++',
            'spacious modern loft awesome neighborhood',
            'loft suite box house hotel',
            'loft suite box house hotel',
            'loft suite box house hotel',
            'kept private brighton beach',
            'large 1 furnished uws',
            'loft suite box house hotel',
            'loft suite box house hotel',
            'loft suite box house hotel',
            'loft suite box house hotel',
            'loft suite box house hotel',
            'duplex w/ terrace box house hotel',
            'loft w/ terrace box house hotel',
            '1 br w/ terrace box house hotel',
            'superior box house',
            'read 1st seprat fur br low',
            '2 br duplex box house hotel',
            '3br 2 bathroom condo bushwick',
            'blue owl vegetarian wburg w patio backyard',
            'cozy 2 20 min city',
            'nolita location location views free gym',
            'entire nyc queens 15 min times square',
            'luxury chelsea townhouse high line',
            'alchemy bnb artist loft',
            'sunny 2br steps train/restaurants 15 nyc',
            'zen den airport pickup jfk lga',
            'heart williamsburg brand new',
            'guest owner occupied home',
```

```
'spacious stylish chelsea',
'oceanview close manhattan',
'budget stay near transportation',
'newyork modern pre-war loftstudio',
'cozy artist duplex bedstuy charm',
'inspired historic downtown nyc',
'cozy clean lower east',
'spacious townhome brooklyn',
'chic stylish heart lowereastside nyc',
'landmark 2 west village nyc',
'2 charming brick townhouse',
'cozy clean great neighborhood',
'contemporary classic sanctuary hudson',
'comfortable manhattanville',
'private w/ queen bed rooftop',
'bright unique designer loft soho',
'beautiful studio central park',
'bed suite private garden',
'sunny 1 fort greene brooklyn',
'2 gem prime les location',
'home away home-room bronx',
'private clean pleasant spacious',
'charming hotel alternative mount sinai',
'sunny 2-bdrm child-friendly uptwn centrl park',
'hudson yards views highline park',
'brooklyn huge good vibes',
'stop midtown manhattan',
'private near l train bushwick',
'cozy new york city private',
'bed-stuy royal',
'super cute east village',
'greap studio 4ppl midtown',
'bedford av williamsburg ..',
'sleep wake near botanical gardens',
'tranquil heart brooklyn 2',
'easy comfortable studio midtown',
'huge luxury 1br near central park south 4 ppl',
'beautiful brownstone',
'1 bd manhattan ny entire 1 yr-6 months min',
'luxury designer downtown',
'spacious charming block greenpoint',
'guest authentic williamsburg factory loft',
'6 landmark west village townhouse',
'beautiful near central park',
'fantastic 1-bedroom basement',
'private clinton hill brooklyn',
'charming furnished studio-loft',
'lovely 2 backyard access',
'nights white satin slope',
'carlton brooklyn brownstone duplex w/ garden',
'comfortable manhattanville',
'beautiful lrg 1800 syle share',
'location wins east village',
'furnished rent manhattan',
'west village nyc sun-filled studio',
'huge amazing view',
'1 yellow block bnb/see net flix stay',
'cozy brownstone inn studio',
'beautiful private downstairs',
'kensington/ditmas park pied-a-terre',
"bath sunny town house 18 '' wall st",
'cozy charming boerum hill flat',
'park slope brooklyn sunny',
'spacious east village',
```

```
'stylish garden house trendy area',
'pre war park slope prospect park',
'charming best location',
'amazing 1 nyc view',
'charming brooklyn studio',
'bed stuy pride welcome brooklyn',
'lovely hell kitchen studio ...',
'cozy clean cobble hill brownstone',
'bright loft w skylight wburg',
'cozy beautiful doormen studio-',
'carroll gardens gem-2bd garden',
'perfect east village',
'2 rooms cottage nyc',
'zen minimalist w/garden- bedford l stop',
'bridges 2bd -whole',
'big luxury lincoln center area studio',
'brooklyn beauty large 2',
'gorgeous pvt west village',
'1 midtown west',
'sunny spacious',
'big funky art /music lovers outdoor patio',
'loft suite box house hotel',
'loft suite box house hotel',
'loft suite box house hotel',
'loft suite box house hotel',
'loft suite box house hotel',
'williamsburg huge sunny next2train',
'loft suite box house hotel',
'panoramic view central park nyc',
'e williamsburg yard',
'nice private beauty queens',
'private 2 br wburg bk',
'bright airy williamsburg',
'charming 1bd soho',
'feel like leave home',
'sunny greenpoint',
'furnished private half bath',
'sunny private featured film',
'best studio town',
'penthouse studio central park',
'2 br bedford grand',
'2 rooms private entrance bath',
'giant sunny private bath',
'prime location backyard outdoor shower unique',
'private artist home stapleton si',
'large sunny bay window',
'harlem/hamilton heights sunny',
'clinton hill duplex near pratt w/balcony',
'sunny 1 br west 80s central park',
'2 bd 2ba garden sleeps 6',
'comfortable',
'charming ridgewood soulful walk-up',
'comfortable well-appointed',
'2nd avenue houston/loftlike stu',
'share nyc trendy east village',
'historic brooklyn 2-bedroom',
'w/ outdoor space long term rental preferred',
'come bkln',
'huge 1200sf w harlem suite',
'huge sunny open loft brooklyn',
'cozy nook heart williamsburg',
'peaceful ...',
'cute historic loft',
'harlem range',
```

```
'amazing park slope duplex deck',
'private manhattan studio harlem/heights border',
'artist loft-mccarren park-williamsburg-brooklynnyc',
'elegant spacious family townhouse',
'large master williamsburg',
'central park fifth av met museum',
'lovely upper east yorkville 1 bdrm',
'cozy upper east studio',
'large cozy 2 landmark home 1 block pratt',
'nyc summer discount 1 br gramercy',
'awesome views central location',
'spacious manhattan near central park',
'entire sunny 2bd 15min nyc',
'creative director chinatown loft',
'hosting cozy eclectic milieu nyc visit',
'charming private new-york',
'cozy near times square',
'queen size sofa bed harlem',
'bklyn 6 beds 1 bathroom rental 2',
'bklyn 4 beds 1 bathroom rental 3',
'4 beds 2 bathrooms rental 1',
'stylish quiet nyc retreat',
'times square master',
'serenity amidst busy city',
'super clean columbus circle',
'unique private bathroom brownstone',
'times square house',
'beautiful beautiful new nyc',
'best west village/meatpacking space',
'arty 2 bed east village gem',
'artist 2br park slope w/backyard',
'spacious 2br near botanic garden',
'gorgeous brownstone park',
'exquisite spacious studio midtown',
'comfortable large',
'lower east 1bedroom nyc',
'large beautiful east village 1-bdrm',
'big near prospect park ny',
'manhattan best location midtown',
'sunny private right l train',
'beautiful manhattan loft',
'home away home',
'den zen denizen bushwick',
'1400sf manhattan view artistic loft',
'ingefära hus private williamsburg brooklyn',
'luxury 2bd/2bth huge patio',
'authentic designer loft/roof deck best williamsbrg',
'sunny retreat roof garden',
'enjoy staten island hospitality',
'cozy 2 bd midtown west',
'park slope sunny studio',
'cozy red private bathroom',
'cozy private bathroom outside garden',
'new york city- riverdale modern bedrooms unit',
'place stay close manhattan',
'great priv/bathrm eastside location 70 st',
'cozy sunny long/short term',
'place like home .........',
'cozy home vibrant manhattan',
'single',
'charming brownstone',
'williamsburg near soho .support artist living',
'times square sanctuary',
'designer studio luxury building',
```

```
'private cozy nolita',
'artistloft-mccarenpark-williamsburg',
'beautiful bedrooms briarwood ny',
'stylish designer studio piano',
'new york city seasons',
'new york host knows',
'block central park',
'park slope sweet large 2br duplex',
'light superhosted chill les',
'bright brooklyn flat w/park views 30 day minimum',
'eco-apt free yoga 2 new bedrooms best location',
'sunny ues 1.5 sleeps 6',
'large private near central park mount sinai',
'luxury manhattan duplex',
'artist loft+office prime williamsburg',
'private garden entry',
'luxe privé l.i.c garden',
'magazine soho studio loft read reviews',
'nolita private garden',
'family friendly williamsburg vacation',
'brownstone brooklyn nyc',
'brooklyn brownstone floor/garden prospectpark',
'family friendly steps subway large garden',
'private sunny near central park mount sinai',
'1 bdr sunny artsy 4 min walk beach',
"`` simple perfect soho ''",
'beautiful private balcony',
'3 br crown heights bklyn',
'brownstone sunny spacious fl',
'perfect nyc/williamsburg location',
'midtown east sutton area entire',
'finest gateway historic financial district',
'industrial brooklyn loft tree-lined windows',
'charm lush garden huge kitchen quiet',
'bright quiet 2 br park slope',
'cozy bright 1br avail east village',
'stylish loft w/lovely backyard',
'garden brownstone experience',
'gorgeous best location nyc',
'luxury 1 hells kitchen',
'luxury en-suite bath times sq/midtown w',
'chic spacious loft backyard',
'2br lux prospect heights',
'bright vibrant- bk experience',
'elegant uptown historic district garden',
'lovely 1 bdrm prospect heights',
'spacious sunny prime brooklyn',
'1 close jfk city',
'1 br studio duplex park slope/gowanus brooklyn',
'available new york city',
'sunny west village dream',
'sunny zen service huge studio',
'beautiful corner prewar williamsburg',
'tranquil artsy sunny',
'harlem',
'fantastic 2br brooklyn best area',
'big beautiful brooklyn park',
'perfect l train graham stop',
'private affordable 20 min nyc',
'classy 2.5 br brownstone w/ garden',
'upper duplex brooklyn brownstone',
'comfy minutes museums',
'best block nyc july 25-aug 18',
'great 1 br kips bay ny',
```

```
            '1 br book 1st write',
            'inq read 1 br rt subway',
            'spacious loft 5 min union square',
            'private entrance studio stylish duplex',
            'art music salon',
            'artfully decorated 2',
            'lavender joy duplex',
            "1 bdrm brownstone-west 70's-1 block central park",
            'serene ...',
            'brooklyn windsor terrace',
            'garden',
            'exciting lower east loft life',
            'cat-lovers',
            'union square  penthouse 2fl+terrace  east village',
            'sunny spacious 1-bedroom upper manhattan',
            'west village loft 1st floor',
            'central harlem comfy private bath',
            'cozy private williamsburg nyc',
            'bright spacious 2 bedroom/5 wroof deck',
            'great deal gramercy 1 bdroom /2beds',
            'perfect bedford l williamsburg location',
            'historic 3 eastern parkway',
            "w'burg 2 w/ yard laundry 5 mins l",
            'bright bedstuy gem',
            'curated 1br prettiest block les',
            'yahmanscrashpads',
            'ny home greenwich village',
            'studio lower east manhattan',
            'private new york',
            'spacious sunny loft best location',
            'beautiful sunny south harlem',
            'brooklyn one-bedroom right prospect park',
            'cozy place',
            'amazing private 1stop away nyc 1 block subway',
            '3re carriage house studio ctyd',
            '2re carriage house studio ctyd',
            'private spacious quiet',
            'great les chinatown',
            'sunny midtown east w/ loft',
            'brooklyn brownstone w/ beautiful garden',
            'mini loft williamsburg bkln-bedford',
            'rent beautiful sunnyside gardens holidays',
            'williamsburg 2b deck',
            'super cute junior 1br les',
            'great brand new 1 bed times sq',
            'beautiful brooklyn brownstone',
            'best double included wifi',
            'downtown floor loft',
            'perfect stylish williamsburg',
            'loft-like park slope 3bdr duplex',
            'modern 1br ocean brooklyn',
            'sunny brooklyn-close manhattan',
            'prime location stylish comfort',
            'south slope private',
            'lovely 1br midtown east metro',
            'cozy love nest prospect heights',
            '3 bdrm family friendly home central park slope',
            'stylish large 1bd chinatown/tribeca nyc',
            'bridges district chinatown nyc',
            'huge sunny artist loft +roof garden',
            'soho loft huge penthouse 1,200 sqft',
            '10min walk 15mins tourist spot',
            'classic brooklyn brownstone',
            'beautiful spacious 4 br brooklyn brownstone',
```

```
'carroll gardens carriage house',
'modern private condominium',
'hi traveler .. welcome',
'nyc 30 min subway brooklyn 2',
'trendy nest east village',
'beautiful bklyn brownstone',
'private bdrm bath-30-night min-weekly maid serv',
'private wooden house',
'w/pvt bathroom central park',
'sunny rm 1 air conditioner park express q train',
'park slope duplex backyard',
'spacious w extra',
'hip stylish williamsburg studio',
'sleek west village artist studio loft',
'1760 sq ft penthouse',
'charming retro uws',
'biggest small manhattan',
'charming s lovely bushwick block 25min- city',
'cozy lively east village',
'modern sunny 2',
'large sunny 1br east village',
'bronx near yankees harlem',
'ready private furnished w/wifi',
'artist ditmas pk 5 house',
'spacious upper west 1-bedroom',
'townhouse bklyn heights',
'brooklyn woodworker 3bdrm/2bth',
'cottage 1500 sqft privacy',
'cozy hella sunny convenient',
'boerum hill brownstone garden duplx',
'brownstone beauty deck',
'beautiful brand new chelsea studio',
'big bright beautiful',
'lovely brooklyn',
'gorgeous charming upper east private',
'3 duplex backyard',
'cozy quiet secret garden',
'nyc',
'cozy 2 bedrm amazing harlem',
'luxury loft creative fun',
'airy 1br nice area queens nr subway',
'guest art loft chelsea',
'tranquility convenience bklyn',
'convenient east village studio',
'cute quiet studio chelsea',
'yankee nest',
'greenpoint gypset retreat',
'comfortable private upper manhattan 2br',
'come stay super comfy cozy',
'ues jewel-private long term rental',
'lovely private south park slope',
'bright renovated 1br brownstone',
'1bedroom 70s uws brownstone charm',
'sunny charming 2 br brooklyn brownstone',
'1 br village 30 day+ stay',
'nice prospect park',
'little west village charm',
'large airy bright loft -williamsburg',
'spacious nolita 2 bd w/roof garden',
'large nyc chelsea studio king bed',
'beautiful prospect heights',
'upper west 1-bedroom',
'east village oasis 1bd',
'cozy 2bedroomapart 10min midtown',
```

```
 'manhattan superhost luxury 2 bdrm sleeps 6+',
 'stylish uptown westside',
 'entire loft best williamsburg',
 'lovely studio heart hells kitchen',
 'studio bushwick/ridgewood',
 'heart greenwich village near bleecker st',
 'clinton hill lux grill lawn',
 'comfortable private rent',
 'little guest flushing',
 'stunning downtown views',
 'chic one-bedroom',
 'sun fill spacious',
 'lrg1bdrm terrace w/ cent.park view',
 'historic sundrenched lower east',
 'brooklyn amazing 2bedrm luxury',
 'beautiful 2-bdrm brownstone',
 'feels like home park view',
 'kitchen private garden',
 'view skyline w roof deck perfect families',
 'gorgeous unique garden-terrace-apt',
 'clean private chelsea nyc',
 'great deal times sq./hk',
 'artist space creative nomads',
 'great east village location elevator rooftop',
 'entire 1 flat historic bedstuy',
 'bright airy loft bushwick',
 '800sqft huge terrace',
 '☆ 2br east village ☆ sleeps 5 best location ☆',
 'fabulous urban retreat 2bdr',
 'large spacious',
 'sunny private express train colleges',
 'luminous modern share young professionals',
 'spacious stylish 2 suite',
 'central park west/ 80s',
 'floor private prime williamsburg',
 'bright spacious manhattan',
 'stylish 1br quick midtown lga',
 'modern private 2 br near dt manhattan - 3 stops',
 'lovely big sunny manhattan',
 ...]
```

```python
#Finding non alphabet characters

specialC = []

#check to see if each name string can be encoded as ASCII characters if it cannot it is considered a

for i in list(df["name"].values):
    a = str(i)
    if a.isascii(): #checks if string is ASCII
        continue
    else:
        specialC.append(i)

len(specialC)
```

```
803
```

```python
specialC
```

```
['Williamsburg—Steps To Subway, Private Bath&Balcony',
 'The Institute—Heart of Williamsburg',
 'Private Garden Apt • New Renovation',
 'Eveland the Place to Stay & Enjoy a 5-   2bdrm',
 'Beautiful, Bright's, Warm & Spacious 1.5BR Apt',
 "  Quiet Gem w/roof deck on NY's Hottest Street  ",
 '☆Massive DUPLEX☆ 2BR & 2BTH East Village 9+ Guests',
 '☆ STUDIO East Village ☆ Own bath! ☆ Sleeps 4 ☆',
 'Lovely Vintage Haven—Heart of UWS',
 '❀❀❀ COUNTRY COTTAGE IN THE CITY❀❀❀',
 '❀❀❀ COUNTRY COTTAGE IN THE CITY❀❀❀',
 'Newly Reno'd Chic Quiet Exec 1BR',
 'Lovely pied-à-terre, in an historic building',
 'ingefära hus! Private room Williamsburg, Brooklyn',
 'LUXE Privé L.I.C. Apt & Garden',
 'UNION SQUARE  PENTHOUSE 2FL+TERRACE  EAST VIlLAGE',
 '☆ 2BR East Village ☆ Sleeps 5 | BEST LOCATION ☆',
 'Modern Private 2 BR Near DT Manhattan — 3 stops',
 'Garden Oasis in the    of NYC | Steps to Times Sq!',
 '☆☆New Discount☆☆ Beautiful Room / Next to Subway',
 '   of Williamsburg, Private Entrance',
 'FULLY Furnished Studio ♥ Manhattan',
 'Pied-à-Terre in Midtown Manhattan',
 '  Feel@HOME Brooklyn Clinton Hill   ',
 'BIG room in fun loft — heart of NYC',
 'Lovely BR In The ❤ Of Flushing! Free Metro Card',
 '★Beautiful Home Away From Home★',
 'Gorgeous PermaGO HOMES™ — FiDi — Room 2/2',
 'Chic  Park Slope Pied-à-terre',
 '★Private Room Overlooking the Park★',
 '☆☆New Discount☆☆ 10min to Manhattan',
 '"L l,x w w.    XThank &mftkn.  .',
 'LARGE light filled loft/apt! PRIME Williamsburg.  ',
 'Entire House in Brooklyn for 6, super good price¡¡',
 'Sunny 1 Bdrm    Private Bath    No Cleaning Fee',
 '★HUGE beautiful E. Villager 2nd Av★',
 '★★★★★- Lux Astoria |❤of NYC| Near subway/Manhattan',
 'East Village — 180° City View & Private Balcony',
 '☆ DESIGN Spacious ☆ 1 BR Sleeps 4 Brooklyn Museum',
 '   2 Beds Option + Private Bath, Sunshine Bushwick',
 'Amazing Room—Private Bath (100% LEGAL!)',
 'Ingefära Hus! One bedroom Williamsburg, Brooklyn',
 'Comfortable, spacious " 1 bedroom " apartment',
 'Artist's Pad on Prospect Park',
 'Charming Entire    apartment',
 '  Sunny Central Park North  ',
 'Quiet & Central West Village Artist's 2 Bedroom',
 'Artist's Pad Prospect Park',
 '☆ Central Park — Home Away From Home',
 'Spacious room in flushing ny   ',
 'Chic Designer's Room & 2 Beds in Manhattan LES',
 'Private oasis-charming gingerbread home!          ',
 'Charming Quiet Apartment in NYC (安静公寓)',
 '☆ PERFECT MANHATTAN LOCATION NEAR SUBWAY & CAFES!☆',
 '"No Place Like Home"\n1st Floor Suburban Apt.',
 '★ Convenience & Comfort Awaits!    Your Stay! ★',
 '★Unique two bedroom on 2nd Avenue★',
 'Cozy and Convenient — Spacious 1 Bedroom Apartment',
 'Forest Hills Villa 皇后区"曼哈顿"-森林小丘别墅!',
 'Master Bedroom 别墅二楼主卧房',
 'Basement 别墅的地下室',
 "Park Slope's - Pied à Terre (1-Bedroom Apt)",
 'Sharbell's vacation',
 'Attic Space - 三楼阁楼',
```

```
        'Double-deck bed room 别墅二楼卧房',
        '  of Wburg, Private Living+Entrance',
        'HEART of NEW YORK // ニューヨークの中心',
        '★3BR/2BA Amazing East Village Penthouse+Pvt Terr★',
        '法拉盛中心温馨两房两厅公寓。近一切。2 br close to everything',
        '1000 SQ FT Cobble Hill Übercharmer',
        'Huge, Cozy 1BR in the    of Harlem',
        '汤母小屋',
        '纽约之家(Sunnyhome7)',
        '"纽约之家 "独立洗手间PrivateBathroom',
        'The TriBeCa Apartment — Spacious Living with View',
        'Cozy Getaway in The ❤ of SoHo',
        '"纽约之家" 独立洗手间PrivateBathroom',
        'Traveler's Nest - Straight train from JFK Airport',
        '  Lovely Historic Brownstone Charm   LEGAL LISTING',
        '2 Flushing Sunny Garden View 舒适阳光房',
        'La Bohème/ Authentic NYC Experience',
        'Private Garden View — Eco Home — 3 Min to Subway!',
        'Modern Vibrant Large Cozy Bedroom* 正面能量',
        '近地铁及市中心,干净 NYC 30 min to Manhattan',
        'Large, Bright & Airy 2BR Loft in   of Williamsburg',
        'Cozy Artist Bedroom — Only a 3 Min Walk to Subway!',
        'Cozy 1Br Apt  of Upper East Side near Central Park',
        'Private Rm-Industrial Loft-Bushwick',
        'Charming Private Entrance — 30 Min to Manhattan!',
        'Lambe's Vacation Rentals- Maspeth, Queens',
        '  Harlem getaway w/ great amenities',
        '3)Cozy Sunny Warm Room  阳光温馨单房 停车容易',
        "♡Private Rm/Women's Safe Art Home♡",
        'Room With a View — Minimalist Respite in Bed-Stuy',
        'Brownstone@Central Park  Manhattan historic area',
        'Brooklyn corner loft! Great views+elevator   ',
        'Small Studio Private Suite by the Park近公園新小套房,鬧中取靜',
        'светлая комната с балконом',
        '✦Artsy Loft Master Suite✦Private Bath/High Ceiling',
        'City Island Sanctuary BR & Pvt Bath à la française',
        'Large Bedroom & Private Bath — 15 min fr Manhattan',
        '  Beautiful Artistic 2 Level Brownstone  LEGAL  ',
        'home, sweet home :-)  English, русский,  עברית',
        'International Meeting Place_Room 3•',
        'Modern • Sleek • Brooklyn',
        '✪ Friends & Family Downtown ✪ 2BR / 3 Bed ✪ Best !',
        '★ Hidden Gem. Spacious. Restaurants, Cafés Galore.',
        'Studio Close To LIJ, JFK.Private Entry,欢迎中国朋友来住',
        '纽约之家(PrivateBathroom4)',
        '纽约之家(SunnyHome6)',
        'Charming & Spacious, 2 bedrooms in  of Greenpoint',
        '๑ Spacious and chill studio 웃❤유',
        '  Charming and Quiet NYC Guestroom   ',
        '   Relaxing Guestroom by a Lovely Park     ',
        '••BEST Manhattan Downtown Location!••',
        'Stylish 2BR ★ Sleeps 6 ★ C.Park',
        '☆ Easy Access To The Best Of Brooklyn ☆',
        '  of Wburg, 2.5 Rms, Sep Entrances',
        'Peaceful Artist Bedroom—Just 30 Min to Manhattan!',
        'Private room in Queens, NY',
        '  FAB APT WITH PRIVATE GARDEN NEAR CENTRAL PARK!',
        '纽约之家 (Sunny Home2)',
        '纽约之家(Sunny Home1)',
        '☆ 3min walk to train station. Cute Room!',
        'Our home away from home \n"Cosy studio"',
        'Clinton Hill - pied-à-terre',
        'A quiet & cozy home for travelers—free st parking',
        'Luxury 2200ft² 4Bed in East Village',
```

```
'Charming Pied-à-terre à New York!',
'  PRIVATE ROOM   Female guest only',
'与众不同,方便停车。值得一试!',
'100% 5★ Reviews - Big 2-Bed 2-Bath - Central Wburg',
'Artist Apartment in Heart of West Village   ',
'Sunlit Red Hook Pied-à-terre',
'Prime Central Park West Pied à Terre',
'❀ Two-Floor Vibrant 2BR Sanctuary with Patio! ❀',
'★ HEBREWS 13:2 ★',
"Traveller's Flat - Hell's Kitchen",
'旅途中的家',
'Your Hudson Heights Hideaway ☺☺',
'Acogedora  habitación en el corazón de Manhattan',
'The Golden Hand in Harlem ☞ Bright + Modern 1BR',
'Unique artist's loft-heart of Wburg',
'Designer's Penthouse with Terrace and Skyline View',
'Bright Architectural Oasis w/Chef's Kitchen #10305',
'1 br apartment(3' to train)+access to coworking',
'❤ of Manhattan | Fantastic 1 Bedroom',
'• Eye Catching Views  | Luxurious 1 Bedroom •',
'Charming Studio-Columbus Circle/Hell's Kitchen',
'❤ of Midtown  | Rooftop Terraces +',
'Private Room in the    of Bushwick.',
'❋ SOHO Adorable Studio ❋ Downtown NYC!',
'Charming Designer's Studio in Prime Williamsburg',
'★ Master Bdrm | HBO, Netflix + Stocked Mini Fridge',
'  Gorgeous Townhouse Apt - 2 blocks from subway',
'Interfaith Retreat Guest Rooms (Śakti)',
'纽约之家(Sunny Home4)',
'Middle Size Room Super Convenient Area: ❤of Bklyn',
'❤ of Greenwich Village ~ Walk/Transit Score 100',
'(Room201)7分钟拉瓜迪机场,19分钟肯尼迪机场。皇后区法拉盛中心,地段超好。#201',
'★1000 ft²  designer loft in SOHO - Little Italy★',
'★STAY IN OUR MIDTOWN LUXURIOUS STUDIO SUITE★',
'★ Comfy Room ★ w/ Parking | Quiet Area | Near Park',
'Best "H.P TWIN Bed" 5 mins to LGA airport &US OPEN',
'Designer Basement Apt by the Park 新精緻近公園舒適含窗半地下公寓',
'RATED ★★★★★ IN THIS 2 BEDROOM PRESIDENTIAL SUITE',
'Private Suite · Sparkling Clean · Memory Foam',
'纽约之家(SunnyHome5)',
'Midtown East Pied-à-Terre',
'纽约之家(SunnyHome3)',
'BEACH BLOCK IN ♡ OF ROCKAWAY, NYC',
'Voted "Best of Williamsburg" / 1000 sqft Loft',
'Prívate Cozy Room',
'★1 BR DELUXE★ Near Grand Central Station -Midtown',
'Gigantic 2-Story Skylight Loft—2 Blocks To Subway',
'Master Bedroom— Murray Hill NYC',
'★ UES | Cozy bedroom near LGA, free coffee & tea!',
'Getaway  Romantic Retreat in a PRESIDENTIAL SUITE',
'★★LUXURY at a MIDTOWN RESORT★★',
'★★SLEEP ON CLOUD 9 IN OUR DOUBLE BED SUITE★★',
'LES 'GEM' - 1BR APARTMENT, GREAT LOCATION, STOCKED',
'EPIC VIEWS    Wyndham Midtown 45 at NYC Studio   ',
'In    of West Village- Entire Apt',
'Save$! Sleep Well! ❤NYC! Female Only!!!',
'Can't Beat this Location!!',
'Private Room for 2 in Midtown West ☆',
'Hudson Yards-Chelsea  ',
'豪华套间',
'Cozy Home in Harlem   ',
'The Perfect Pied-à-Terre for You!!!',
'   Beautiful/Spacious/Convenient BK Apartment!',
'★Hip ★Subway 1 min ★Backyard  ★3Beds ★Huge ★Duplex',
```

```
'Evergreen Upper Bed for Female Traveler 紐約民宿',
'NYC/ ☆ Prime Williamsburg ☆  w/ Private Patio',
'★City That Never Sleeps★ Hotel Room @ Midtown 45 ★',
'  POSH NYC RESORT - Midtown 45 - 2 Guests   ',
'Cozy Room In Williamsburg Near Trains  ',
'FLUSHING 停车方便。是你入住的最好选择。',
'home away from home :-) English, русский, עברית',
'The Gnome House " Oasis in the city "',
'⛵ Your Sweet Suite Spot ⛵',
'Room near park · 2 stops to Manhattan on N/D train',
'Brooklyn's lovely Luxurious Suite sleeps 5',
'  Bright, spacious apartment in the West Village  ',
'2 blocks to 2          ',
'Big Bright Room ✴ Lower East Side',
'❤ART of Chelsea | 1bd rm | Walk/bike everywhere!',
'      COZY Place by the Park for ONE       ',
'2BR "Café Brooklyn" w/private Courtyard in BedStuy',
'The Paris Room. Énorme! Private ROOF access!',
'✴ Sunny, Charming Brooklyn Apt - Next to Train ✴',
'Brooklyn Pied-à-Terre 2 Bed 31 day minimum',
'Spacious Artist Bedroom – 30 Min to Manhattan!',
'5m walk to L, Great Location    Priv. Bath/Balcony',
'✿ Stay Together in Style ✿ 2BR / 3 Bed ✿ Best Area',
'NYで人気の街ブルックリンパークスロープ で、暮らしてみませんか。',
'The    of SoHo: Adorable 2 br // event space',
'~UptownOasis~ Historic charm, HUGE room & privacy•',
'法拉盛summer家(C)closed to JFK&LGA&Citi Field#Parking',
'法拉盛summer家(B)closed to JFK&LGA&Citi Field#parking',
'★ NEW 2 BEDROOM APT NEXT TO CENTRAL PARK WEST★',
'简单的四房一厅两卫生间,位于北上远离开辆,走路四分钟到地铁站,交通便利\nSimple bigroom',
'*SPECIAL*\nCOZY WATERFRONT APARTMENT \n•SUPERHOST•',
'  Private, cozy & quiet room in Inwood Manhattan  ',
'Quiet Studio in the   of Hells Kitchen for 1 person',
'Heart of Queens 1   / Jackson Heights/Elmhurst',
'  Walk + Transit Score 97  8min to Yankee Std  ',
'《1》法拉盛市中心明亮干净的私人房间',
'温馨舒适双人房,双床,明亮大窗,电梯公寓(两个房间用一个卫生间)',
'HOTEL ROOM LIKE WITH AFFORDABLE RATE!!!   "C"',
'Inspiring & Motivational   ',
'《2》法拉盛市中心明亮干净的私人房间',
"☆☆☆Perfect Couple's Getaway☆☆☆",
'☆☆☆Authentic NYC Experience☆☆☆',
"☆☆☆Extravagant Couple's Escape☆☆☆",
"☆☆☆Luxurious Couple's Retreat☆☆☆",
'NYC Hells Kitchen 51St ﾐｯﾄﾞ ﾀｳﾝｳｴｽﾄｻｲﾄﾞ ',
"☆☆Hell's Kitchen, Central Park, Times Square☆☆",
'Cozy and GREAT Stay in the West Village heart   ',
'Welcoming home in the    of NYC!',
'Big room in Queens, close to all...皇后区大房, 近超市、地铁',
'★Comfy Bedroom in Convenient, awesome location!★',
'法拉盛中心公寓楼高层',
'3Beds/Kitchen/wifi/US Open唐人街电梯公寓/厨卫/网快/美网赛事',
'△PENN STATION ,Private room with Full kitchen△',
'The Absolute Best Location in NYC - Priv. Bedroom',
'纽约干净大房近地铁站',
'★2 mins to Subway B/Q, Great for budget travel★',
'Charming room in the heart   of Williamsburg!',
'Comfy private room in the heart   of Williamsburg!',
'Habitación ideal para viajeros',
'Heart Of Queens 2   / Jackson Heights/ Elmhurst',
"'' SMALL STUDIO ONLY FOR 2''",
'HOTEL ROOM LIKE!!!   WITH AFFORDABLE RATE!!!   "S"',
'Private Apt Renovated 2BR by Central Park & Cafés',
'♛ Private & Beautiful West Village Townhouse 2BR',
```

```
'Backpacker's Studio( Spring Deal!!)',
'Private room in midtown Manhattan曼哈顿中心 位于地狱厨房,位置棒棒',
'ღღღUltimate Broadway Experienceღღღ',
'ღღღSteps to Major Tourist Attractionsღღღ',
'法拉盛(Flushing)独立出入Basement套房出租。2房1卫 2Rooms/1Bath',
'Habitación ubicada céntricamente en la ciudad.',
'纽约三室一厅两全浴带独立厨房和停车位\nThree-Room Two Bath and Parking',
'Time Square - Hell's Kitchen',
'Dungeon heaven. SOHO loft-feel in Bklyn.            ',
'COMFY "Twin bed" NEXT-LGA AIRPORT/Pre Book-US OPEN',
'  Private Suite w Balcony   25 Mins to NYC',
'ॐ Private Room in Yoga Retreat Center - Brooklyn ॐ',
'¡AMAZING PENTHOUSE IN SOHO (Nolita-1BR)!',
"★ Comfy Couple's Getaway ★ Walk/Transit Score 85+",
'Comfy "sofa bed" next to LGA AIRPORT and #7 train',
'Bright & Beautiful Brooklyn Boudoir and more! ☺',
'近JFK 机场和地铁',
'★ Business Getaway ★ Cozy & Warm | Laptop Friendly',
'*Spacious* Artist's Home, mins to NYC, near train',
'House of Rain\n(Because I'm a pluviophile)',
'Large and in charge: pvt "dungeon" apt.          ',
'Entire PVT 3BR townhouse apt, Brooklyn.          ',
'Light-Filled Top Floor of 4BR Townhouse.         ',
'Comfy HP"TWIN BED" 5 mins to LGA-US OPEN & 7 train',
'The Enchanted Pearl Bed & Breakfast ',
'★ Warm NYC Getaway ★ | Walk/Transit Score 85+ |',
'2 BR Presidential for FAMILY Vacation ★ EPIC VIEWS',
"*Luxurious Manhattan's Midtown Resort* 2 Double's",
'EXTRAVAGANT RESORT In the    of Midtown 45 Resort',
'  Quiet room w/PRIVATE BATHROOM near Manhattan!  ',
'CENTRALLY LOCATED- Great for Families + Groups',
'☺Kinda feels JUST LIKE HOME! ☺ [BEST RATE]',
'Brklyn · 2 Cozy Bedrooms one with private bathroom',
'旅客之家',
'Superhost*Sunny/Private room in 2BR   Williamsburg',
'2017 Renovated Central Flushing, NYC法拉盛中心的新装修房Wifi',
'Brooklyn's finest pt. Deux',
'Söderläge - 3 bedrooms in Williamsburg, Brooklyn',
'Luxury Tiny house • Ohka',
'Prime Location of Flushing Queens 豪华卧室 旅途中的家 A',
'汤姆公寓',
'★ Cosy room in Brooklyn ★ 20-min to Manhattan',
'*Bushwick Charming Room* Great for Solo Travellers',
'*Luminous and vivid room in NYC*',
'Söderläge - Spacious full bedroom in Williamsburg',
'Prime Location of Flushing Queens 豪华卧室 旅途中的家 B',
'Spacious & Bright apt in Soho (Top 1% ♥ NYC pick)',
'Prime Location of Flushing Queens 豪华卧室 旅途中的家 C',
'Prime Location of Flushing Queens 豪华卧室 旅途中的家 D',
'Luxury Apartment Central Park - Hell's Kitchen',
'♔ Downtown Manhattan I Private Bedroom♔',
'♔ Fabulous Bedroom |★★★★★| ♔',
'Brand new, comfortable, refined, our first!全新,商务最佳',
'温馨双人房,步行地铁两分钟,',
'#2,单间双人房,(共用卫生间)',
'大双人房,共用卫生间,',
'ALL new modern apartment of 2 bedroom NYC style!  ',
'Beautiful Room ♡ of the Upper West Side',
'2 REAL Bed & Bath in Times Square/ Hell's Kitchen',
'Stunning Room, Perfect Location, Premium Bed ❤',
'Private Quiet Room in the BEST Location!! ❤',
'Café DuChill — now supporting ASPCA',
'☆Stylish Family + Group Friendly 3BR w/ Roof Patio',
'NYﾐｯﾄﾞﾀｳﾝ高級ｺﾝﾄﾞのﾘﾋﾞﾝｸﾞﾙｰﾑに宿泊',
```

```
'A&M Spacious Home Away For Vacationers—NYC',
'Heart of Queens 3     Private Bath-Jackson Hgts',
'★ 4BRs Family Groups★ Duplex ★Backyard ★ NYC 35min',
'☆☆☆Cosy Bedroom in The Heart of the City☆☆☆',
'Beautiful Room in Bushwick, Bk. (Hablo Español)',
'露西套房(Lucy Apt.)',
'佳源家庭旅馆',
'佳源家庭旅馆套房',
'Large, beautiful and elegant, clean studio舒适洁净的保证',
'Hazel's Place',
'纽约森林小丘简约文艺客舍',
'佳源家庭旅馆双床房间',
'Artful loft ★ NYC ★ Chelsea',
'East Village · Pied Á Terre · NYC',
'阳光之家',
'Sky Cabin in Hell's Kitchen! Steps to Times Square',
'One nice room on the Roosevelt Island; 罗岛一间卧室出租',
'Ideal Stay in NYC! ☆☆☆☆☆',
'Gramercy Park Pied à Terre',
'2000呎 法拉盛美丽豪华大套房',
'法拉盛温馨亲子房',
'法拉盛高档,奢华大套房(带按摩浴缸和淋浴的独立卫生间)',
'Chambre pour couple où personne seule',
'溫馨大套房',
'3 Minutes to Central Park ❤ of NYC!',
'The Skyline Loft — Incredible Views Near 2 Trains',
'5 ★★★★ Gorgeous suite only 1 block from subway!',
'Sunny and Cozy Private Chef's Room in East Village',
'East Williamsburg's Spacious Sun-drenched Apt.',
'Sunny Williamsburg Style in Prime Location    ',
'(☆☆☆☆☆) New ultra-modern 1 bedroom apartment',
'•HEART OF WILLIAMSBURG APARTMENT COZY&PRIVATE•',
'•COZY APARTMENT 5 MINS TO MANHATTAN•',
'(Room 102)法拉盛舒适轻奢套房',
'Söderläge - Spacious Queen bedroom in Williamsburg',
'Art Lover's Dream! Chelsea Delight!',
'✪Modern house @ Williamsburg | 15min to Manhattan✪',
'★Spacious 2 b/r apt | 3 beds + WiFi~Sleeps 1-6★',
'法拉盛中心近地铁舒适单房-Cozy room in flushing',
'Clinton Hill — Brooklyn's Best Nest',
'crème de la crème  - Luxurious 1 BR Grand Central',
'•COZY APARTMENT IN BEDFORD AREA, 5 MINS MANHATTAN•',
'★ Cosy room in Bushwick ★ 20-min to Manhattan',
'   Furnished One Bedroom with Terrace!! ★★★★★',
'Prívate room',
'15 to JFK/LGA 30 to Manhattan.Close to St John's',
'Habitación comoda',
'HUGE SOHO 3 BR LOFT★★★★★LES/FULL FLOOR ★★★★★',
'Backyard BK! Live like a NY'er in modern, new reno',
'BUENA UBICACIÓN CON DESAYUNO INCLUIDO',
'☆Cozy Brooklyn Condo 18 minutes from Manhattan☆',
'Great private room in Hell's kitchen\nTIMES SQUARE',
'Designer's Penthouse w/ private terrace',
'Bright and Beautiful Artists' Haven',
'Private Floor—Full Private Bath—3 Min to Subway!',
'★Spacious Private Room★ MANHATTAN + Close to Park!',
'★Private, Modern Apartment | Convenient Location★',
'••RARE Modern Apt For 2019 Next to Subway & JFK••',
'❋ Beautiful & Quiet ❋TIMES SQUARE ❋ 2 BDR Apt ❋',
'Luxurious 2-Story Home • Large Terrace • Views',
'Light-drenched 2-bedroom apt, prime location中国城',
'Gabby Suite  in the Heights\nSe habla Español',
'Your Room at Roselle's, Bronx',
'L'AFRIQUE, C'EST CHIC! - 2 Bedroom Apartment',
```

```
        '❤Private Master Bath | Express Train+Free Parking☆',
        '❤Private Home Express Subway Station+Free Parking☆',
        '♧ 1min to Center of Times Square & 42nd St. ♧',
        '2e chambre pour 1 personne où couple',
        'Flushing 旅游,探亲,留学生首选 private bedrm, bath, livingrm',
        'Queen Charlotte's in B'klyn  (accommodation for 1)',
        '★Minimalist Spacious Bright sunny room in Midtown★',
        '★ Clean/Trendy/Sunny room ★ in the center of NYC',
        'Marce's  Retreat- Perfection in NYC!',
        '温馨小屋',
        'Kiki's Place!',
        'Private room in Manhattan(2名個室)',
        'HUGE Luxury Upper East Side 1 Bedroom—Roof Access',
        '☆☆PRIVATE Bathroom☆☆2min to subway+huge living',
        '✔ Home Away From Home ✔ 100Mbps ✔ Transit Score 99',
        'Cozy Private Room in Flushing 法拉盛中心單人房间',
        'Renovated 1 BDR Apt~ Heart of Midtown Manhattan   ',
        'VERA'S PLACE JUST A STEP FROM SUBWAY',
        'Private apartment in ♡ of Williamsburg',
        'Cozy Private Room in Downtown Flushing法拉盛中心私人房间',
        'Sunny Bedroom with Private Bathroom/法拉盛中心私人房間獨立衛浴',
        'The Architect's Suite w/ Private Bath, Near Metro',
        '••Cozy Em's place••',
        '"San-Paraíso" 80s curated Retro 3 Bedroom LES Pad',
        '◈Hidden Midtown Gem◈ Perfect 5-Star Stay!',
        'Walter's place',
        '43rd Street "TIME SQUARE"\nSingle bed.',
        'Anita's Funky Master Bedroom on Ocean Parkway',
        'summer(A套房私享一层closed to JFK&LGA&Citi Field#parking',
        'Angie Suite  in the Heights\nSe habla Español',
        'Sisters Suite in theHeights\nSe habla Español',
        'TIGER'S REST',
        'El jardín del Edén',
        'Brooklyn — The Perfect Air BnB Experience',
        '∗SPACIOUS HOMEY∗ 2 BD Sleeps 6! Brooklyn NY',
        'Spacious  and Bright Studio in Hell's Kitchen',
        '"Studio" ideally located  across Golf Course',
        'Hiéroglyphe',
        'Art双层屋',
        '新一处客居(New place 1)',
        '新一处客居(Newplace2)',
        '新一处客居(New place3)',
        'Historic Strivers' Row with a View',
        'NY's Highest End Celebrity Building + Balconies!',
        'bushwick's cozy nook',
        'Maurice's Penthouse',
        '5min to Subway★20min to Manhattan★Large Bklyn Apt!',
        '❤ Bushwick / Room with SmartTV & Private bathroom',
        'Beautiful Spacious Artist's Home! ∗ close to train',
        '√ LUXURY NYC LOFT √ | Spa Amenities | Smart Home',
        'Private Master's bedroom in Gramercy, Manhattan',
        '❤ NYC/Bushwick New Private Room Size Queen ❤',
        'Luxury Couple's Retreat by The Park with Doorman',
        'Cozy Parkside Studio in the    of the East Village',
        'The Luna's apartment',
        'Cozy (☆) Room In Upper Manhattan  (❤)',
        '✦ NYC/Travelers. New Private Access Room Bed Full',
        '★Modern,Cozy 3BDR/2BA Getaway in Upper East!',
        'Artsy Manhattan Pied À Terre',
        'Luke's place',
        'Shared Apartment By Times Square Hell's Kitchen',
        'Hells Kitchen Pied-à-terre',
        '美国 家庭风----幸运纽约客 民宿',
        'Luxury house 皇后区豪华园林式独立别墅适合家庭出游理想住宿自由畅享私家空间',
```

```
'Surfin' Bird House Red at Rockaway Beach',
'Beautifully Renovated 3BD/2BA ☆ 1 Block to Subway',
'Modern Apartment☆5 Mins to Subway☆40 Mins to NYC☆',
'Alisha's Place-JFK 10 MINS, walk to subway & buses',
'Room with AC - Cozy Manhattan Apt. —Central Park',
'Leli's Modern Luxe Apartment',
'ALIA'S  Place -JFK- 7 mins- walk to subway & buses',
'Perfect Pied-à-Terre',
'♥♥♥ Entire House with Backyard & Superfast WiFi♥♥♥',
'"Comfort Inn" Queens. NON-SMOKERS ONLY.',
'Leli's Modern Pad - Queen Bedroom',
'Leli's Modern Pad - Double Room',
'3 Bedroom Apartment • 20 Minutes from Time Square',
'  Cozy clean room, 5 min walk to subway(Line R/M)',
'   Beautiful, Bright Room - Late Self Check-In    ',
'Cozy Em's Place 2 (3 people)',
'3 Level Loft♦♦♦Private Terrace W/views ♦♦♦Flatiron',
'vicky客栈2',
'vicky客栈3',
'vicky客栈5',
'Prime Bushwick Artist's Pad',
'Beautiful Renovated West Village Gem with Hästens',
'ONE Room ↵↵20mins to TimesSQ ☆彡  COZY, COZY, COZY',
'My Style法拉盛中心 靠近地铁站\n1 Queen bed room',
'▲Cozy Apartment at Union Square▲',
'• Spread Love it's the BK Way • Eco/Veg/Bio/Bckyrd',
'☆Nice Private Room Near Park & Train in MANHATTAN!',
'Ground Floor Retreat near BKLYN Children's Museum',
'Stay with PJ above a café, 1 block from the subway',
'★ UNBEATABLE★ 4Beds/Manhattan/NYC/TIME SQUARE',
'曼哈顿帝国大厦/Time square',
'曼哈顿/帝国大夏/ time square 【2】 ',
'  Private Suite for Friends Getaway Close to NYC',
'Budget Friendly Private Room in Brooklyn "L"',
'Charming Private Room Friends/Couples/Solo "M"',
'纽约多单元大厦',
'Delacroix's Studio',
'Che' Randall Deux\nSoBro\n10 minutes to Manhattan!',
'Prime Location of Flushing Queens 豪华卧室 旅途中的家 E',
'Prime Location of Flushing Queens 豪华卧室 旅途中的家 G',
'Sham's home',
'Exótico',
'★Private Guest Suite in a great location ★',
'Luxurious Hell's Kitchen Famous Vibrant NYC!',
'私人空间',
'☆ Secret Hideaway - Blocks from Times Square!',
"☆ Manhattan's Retreat - Blocks from Times Square!",
'☆ 2 Bedroom Apartment - Minutes from Times Square!',
'Christina's home',
'Perfect NYC Hell's Kitchen Duplex Apartment!',
'The Buchanan's',
'Art Gallery apartment in a Queens' Victorian house',
'The Elkins House - Truly Rare, Historic 5BR 3 Bath',
'★SPRING/ SUMMER SALE ALERT★ 10 MIN TO TIMES SQUARE',
'    NEW 2 level home 15min to the Beach   BOOK NOW',
'靠近机场交通购物两便利房间#1',
'Girls House -  "Dandelion" Single Bed 紐約民宿',
'Girls House - "Azalea" Loft Upper Bed 紐約民宿',
'Girls House - "Bauhinia" Lower Bed 紐約民宿',
'法拉盛步行7号地铁7分钟左右单房(共用卫生间)',
'LaGuardia Airport 15min•COZY8PPL•10min Ride to NYC',
'Étage au sein d'un duplex à Brooklyn',
'  3 BR Sleep 8 A+ Location by Shops + Subway to NYC',
'Private Sunny Room  — Murray Hill NYC',
```

```
"Gorgeous Artists'  loft ★ Prime location",
'Sunny cozy 1 bedroom- Designer's home',
'靠近机场交通方便明亮大房间#3',
'Cozy studio near the beach and St. John's hospital',
'Lola's Haven',
'PRIVATE BATH • AC • Yard • Historic Brownstone',
'2 bedrooms available• private garden • 2/5  train',
'HUGE 3 BDR Apt & 2 Baths ✶EAST VILLAGE✶',
'"For Heaven Cakes"',
'4min subway.free parking big private room温馨漂亮大睡房',
'2min bus 4 min subway.9min JFK private room干净舒适花园房',
'  Private Studio+Bath+Balcony, 15 mins to City',
'  2 Beds Option@Bushwick, 15 mins to Manhattan',
'   Welcome to the Chelsea Charmer  ',
'Bed room close to NYC₊with lots of sun light  ',
'PrivateRoom1/LGA&JFK&Citi field&法拉盛/BustoManhattan',
'한성 韓城 Han A (2FL)',
'한성 韓城 Han B (2F)',
'1Comfortable Shared Apt in Hell's Kitchen',
'CAMAROTE SOLO PARA MUJERES/HABITACIÓN COMPARTIDA',
'Bright & Cozy Private Room—Williamsburg, Brooklyn',
'★ Your Cozy Home I Taxi Service I Backyard ★',
'Luxury pied-à-terre in Carroll Gdns carriage hse',
'金色上房',
'Doris's Fresh House',
'한성 韓城 Han C (2F)',
'PrivateRoom2/LGA&JFK&Citi field&法拉盛/BustoManhattan',
'PrivateRoom/LGA&JFK&Citi field&法拉盛/BustoManhattan',
'2018 New 2br elevator condo, 法拉盛中心新大楼2卧,5分钟main st',
'Private Room that's comfortable and convenient',
'4min subway. Prime locations.  single sofa bed 单人间',
'"One of a kind" Penthouse \n獨一無二的紐約閣樓',
'Spacious Modern 1BR Living by NÔM Living',
'Exclusive ♥  | Bed-Stuy Sanctuary',
'Solo ♥ | Stuyvesant Sunshine',
'Luxurious Famous Hell's Kitchen!',
'   Union Square Duplex LOFT•••4 BEDS   MUST SEE !!!!',
'Comfortable & Sunny 1 Bdrm – Heart of Fort Greene',
'"Cabin" —Private Queen Bedroom in Jungly Apartment',
'Filomena's',
'New  Renovation cozy sweet apartment。3 FL',
'   3 APT in 1--Large groups Travel & stay together  ',
'Aiden's Red Door - Jr. Penthouse Suite',
'Natural Habitat | ♥ SUPER HOST ♥',
'★Private Rooftop★- Your Own Townhouse in NYC',
'Barrett's Family Home',
'Bright warmth 2min bus 4min subway 窗下凉台花园房。',
'"TIME SQUARE" 43rd Street\nBig Bedroom on 1st floor',
'TIME SQUARE" 43rd street\nPrivate room on 1st floor',
'Cozy Room Times Square – Hell´s Kitchen',
'HABITACIÓN COMPARTIDA PARA AVENTURERAS(Only Women)',
'★AMAZING★ 4Beds/TIME SQUARE/NYC/PERFECT FOR U',
"  It's Always Sunny At The Bleu Hauz   ",
'★Roof views/Quick to Times Sq/NY Presby/Columbia ★',
'Coney İsland beach',
'ONE Bed Room ↵↵20mins to Manhattan ☆彡 Wow! COZY!',
'"TIME SQUARE" 43rd street SINGLE BED',
'Barrett 's Family home',
'Cozy and spacious room in the heart of NYC  ',
'Don't miss it! Cozy Space is Available in Queens!',
'粉色上房',
'Cozy Artist's Apartment Bushwick',
'家庭式旅馆獨立衛生間套房K',
'THE     OF NYC AWAITS--ASK ABOUT MY SUMMER SALE',
```

```
'☆Prime Renovated 1/1 Apartment in Upper East Side☆',
'NYC★GREATVALUE★STEPSFROMTRAIN★QUEENtempurpedicBED',
'家庭式雙人房K',
'家庭式單間雙人床K',
'家庭式獨立衛生間套房G',
'家庭式雙床房G',
'Wall St Condo with Gym, Lounge & a 360° Rooftop',
'Warm little building 温馨小筑 따뜻한 작은 건물 D',
'*Brooklyn Brownstone Suite*Great Location*',
'New Kitchen&Bath : 5min ➜ Subway 20min ➜ TimeSQ',
'30min➜TimesSQ 3min➜Subway New New New Building',
'30min➜LGA  New&Clean Apt with Cozy Terrace Space',
'The Lover´s Apartment in Midtown Manhattan',
'Warm little building 温馨小筑 따뜻한 작은 건물 G',
'Cleo's Royale II',
'*Modern 2BDR WITH BIG PATIO in Upper East!*',
'  SPRING/SUMMER SALE- LARGE OUTDOOR PATIO  ',
'  $1.6 MILLION CHELSEA FLAT  LUXURY AND LOCATION!',
'Quiet Apartment in Times Square / Hell's Kitchen',
'Summertime in Brooklyn's Bedford-Stuyvesant',
'*Bright,Spacious 1BR near Empire State/5th Ave',
'Cozy Apartment in Hell's Kitchen',
''Age of Innocence' | Studio Apartment',
'Private Entire Studio 10min to LGA! 全独立套房十分钟法拉盛中心',
'☆Cozy bedroom in Midtown | 1min to 4 subway lines☆',
'☆Charming bedroom, 5min to Empire State Building☆',
'  PRIVATE Bathroom - Midtown | 5 min Grand Central  ',
'Spacious 6BR/2.5BA Apt – Washer & Dryer / 20% OFF!',
'Quarto privado em Astória.',
'Double Double Room · Empire CIty New York',
'Double Double Room · Broadway',
'New York Lovely Quiet Room near to Time's Square',
'▲Private Cozy Room at Madison Square Garden▲',
'Cool Vibes at Ace's High End Apt.',
'Luxurious Hell's Kitchen! Vibrant Famous NYC!',
'Cozy Cypress Suite Convenient To Train & JFK ×',
'New Listing, 5 ☆ Host!  Sunny, Quiet Lovely Flat!',
'  Luxury Studio with modern finishes  ',
'Shared place in Hell's Kitchen, Midtown West!',
'Sunny, Plant-filled Apt in Manhattan's Chinatown',
'纽约长岛市最新豪华网红楼王Jackson Park独立卧室出租!(出门就是地铁站!)',
'Espaço acolhedor e limpo próximo a Manhattan!',
''"Quincy Manor" in the heart of Bedford-Stuyvesant.',
'Elegant & Quiet & Convenient 紐約清雅居,地鐵公車便利,步行3分鐘到超市',
'幸福小屋',
'Watson's Loft',
'Cozy   LARGE BED   In the heart of NYC!',
'HOTEL ROOM LIKE "T"\nAFFORDABLE PRICE',
'Patty's Home',
''AROUND THE CORNER''  QUEENS, NY',
'Need temp room mate/ Private room in Manhattan(個室)',
'纽约客民宿',
'♥Private-Keyed Room #3 - Desk, closet, & King-bed♥',
'Spread love it's the Brooklyn way.',
'Stay in the   of Manhattan!',
'法拉盛花园独立屋Entire 3beds+Park mins go JFK Airport/NYC',
'Spacious 2 beds apt in Hell's Kitchen 5ppl',
'Queen Master BR 5min Walk from Major Attractions 웃',
'Sparkling Clean BR in Unbeatable Location 웃',
'ingefära hus! Two bedroom apt in Williamsburg, BK',
'*NEWLY RENOVATED* 2 BDR | SLEEPS 4 @ BROOKLYN',
'♥Private-Keyed Room #2 - Desk, closet, Queen-bed♥',
'♥Private-Keyed Room #1 - Desk, closet, Queen-bed♥',
'*Clean, Private Bedroom in Little Italy/Chinatown*',
```

```
'Master room  套房',
'Spring Room 春',
'Sunny, Private Bedroom in ♥ of Downtown (SOHO/LES)',
'  Sleeps 10   Rare 4 Bedroom    30 Mins to NYC   ',
'Cómodo apartamento familiar',
'Brooklyn's Finest in Fort Greene',
'Private Room with Desk & Closet ♥ Best Location',
'Bright 'n Clean private room close to L M train!!',
'Bohême à Williamsburg',
'Summer room  夏',
'Fall room  秋',
'Family House 旅行客栈',
'Pacheco's House.',
'✤ NEWLY RENOVATED ✤ TOP LOCATION ✤',
'Red Door Townhouse — Heart of The Upper East Side',
'Walk to Subway★15min to Manhattan★Min. to LGA/JFK',
'温馨的家',
'1718双个房',
'1718三人房',
'靓房',
'Cozy bedroom in South Harlem's restaurant row',
'What's better than "Glamping"  in NYC!!!',
'Big Gorgeous Room•A/C| Close NYC \nModern & Clean',
'Artsy, quiet haven in the Bronx's little Ireland',
'Beckoning "Bed-Stay" 2 BR Suite in Bed-Stuy',
'[NEWLY RENOVATED] -  SMACK DAB IN THE    of NYC',
'Habitación privada cerca aeropuerto la Guardia.',
"✳ FAB BROOKLYN ROOM ✳ PRIVATE ENSUITE, 2 BED'S ;-)",
'   SUPERCUTE BROOKLYN BEDROOM',
'CHARMING BEDROOM  HEART OF BROOKLYN',
'Cozy Shared Room In Hell's Kitchen Manhattan',
'Olive's Guest Quarters #1',
'温馨小宅,安静干净,环境优美!',
'Aiden's Red Door @ Crown Heights',
'  Unique space, private bath, close to subway!',
'★★ Spacious Single House | Close to Everything! ★★',
'Adorable walk-up on the high line—with views!',
'安静 干净 温暖的小屋',
'1860's Vanderbilt Mansion - 19th century details',
'★1800ft²/195m²★3-Levels★Deck★Walk Score 96★Office★',
'Astória Queens  Bedroom close to the Subway M  R .',
'Spacious designer's flat.',
'HOTEL ROOM LIKE "L"\nAFFORDABLE PRICE',
'★Single Room in Backpackers Accommodation★',
'Brooklyn Brownstone — BedStuy Garden Apartment',
'★ Private Room in great location near Times Square',
'CATALINA'S ROOM\n Close to JFK and LGA airport',
'DEMETRIO'S ROOM\nClose to JFK and LGA Airport',
'Comfy's Bedroom Close Subway',
'"Mi casa es tu casa" "My home is your home" NYC',
'MARCELO'S  ROOM \nClose to JFK airport and LGA',
"★Affordable Clean Private Room#1 in Hell' kitchen★",
'★ CLEAN/ELEGANT TWO BEDROOM APARTMENT ★',
'曼哈顿108街转租!',
'5 ★ Stay in Manhattan (Cozy & Family Friendly)',
'Habitación amplia , a 15 minutos del airport  LGA',
'★Warm + Welcoming BEDSTUY - Private2BR on J/M/Z★',
'★COLUMBUS CIRCLE★FULL FLOOR LOFT~5 Beds@BROADWAY',
'温暖的双人房间',
'HABITACIÓN COMPARTIDA PARA MUJERES AVENTURERAS!',
'MI CASA ES TÚ CASA',
'Zen Room in Artist's Apartment',
'★Spacious home in 2 unit house next to subway!★',
'Sunny Summer Space in Brooklyn's Stuyvesant East',
```

```
'Mi casa es tu casa, habitación 2',
'Queens SPACIOUS Bedroom, 1-3 people, 25 min to NYC',
'ONLY WOMEN/CAMAS PARA MUJER/HABITACIÓN COMPARTIDA',
'Couch(sofácama), only women, near LGA & Manhattan',
'Manhattan/帝国大夏/ time square【3】',
'Ash's Place in Hell's Kitchen',
'Bohemian Artist's Studio in Victorian Neighborhood',
'靠近机场,交通购物两便利大房间#1',
'An urban retreat from the city's hustle and bustle',
'Whimsical music room in an Artsy W'burg 3br',
'2 Bedroom/2 Bath Hell's Kitchen Gem with views.',
'★INCREDIBLE LOCATION★HELLO TIMES SQ & CENTRAL PARK',
'★ Discounted!!★ NEAR TIMES SQUARE',
'☆ Times Square- Home Away From Home',
'Very quiet two twin beds room 温馨双单人床小屋',
'★ Huge Three Bedroom Centrally Located ★',
'Mi casa es tu casa, Habitación 1',
'✳ Brand New & Quiet ✳ East Village ✳ 2BR Apt',
'Convenient room in Hell's Kitchen',
'Peaceful loft '2'',
'纽约曼哈顿中城临近高校舒适公寓-仅限女性入住',
'SUNNY PRIVATE ROOM & BACKYARD in ♥ WILLIAMSBURG',
'★ ♥ 1 Sunny apartment for family and friends ★ ♥ ♖',
'The Logan's Oasis - 8 min. to JFK & 20 min. to LGA',
'★Spacious bedroom in Midtown | Centrally Located★',
'Whole-floor 2Bdrm Apt in NYC's Theater District',
'5★ clean,  150ft² bedroom, 10min to Union Square',
'♖ Historic Modern Designer SoHo Sun Drenched Home!',
'Peaceful loft "3"',
'靠近机场交通方便双人房#3',
'1976 Chris Craft "Hudson"',
'步行9分钟到缅街中心的独立电梯房',
'步行9分钟到法拉盛缅街中心的电梯房,提供免费矿泉水可乐',
'哥伦比亚大学附近步行3分钟高档公寓主卧暑期降价转租',
'步行9分钟到法拉盛缅街中心的电梯房,提供免费矿泉水可乐',
'步行9分钟到法拉盛缅街中心的电梯房,提供免费矿泉水可乐',
'Modern elegant Studio in ♥ of West Village',
'☆ ♨  Cozy 2 ideal location| private entrance ☆ ♨',
'☆ RARE FIND ☆ PRIVATE PATIO ☆',
'"Epic" The highest apartment in New York',
'  PRIVATE ROOFTOP    LUXURY LIVING IN NEW YORK CITY!',
'  Modern NYC bedroom |5 minutes to Empire State  ',
'Modern house (2 BR Apt) • 30 Mins from Time Square',
'Magic★★Flat close to Brooklyn Bridge ★★',
'Not so Ordinary Lexington Pied-à-terre',
'Nice and cozy ♨ holiday apartment✿',
'Best Value   Memorable Vacation',
'Lucky journey 幸运旅程',
'温馨旅店(2)',
'  A Private Studio On Roof, Private bath + Deck',
'Family Place in  of Manhattan',
'Shared,Cozy Room İn Times Square 6',
"Private Room İn Hell's Kitchen 2",
'♥♥♥ Luxe 3bdrm + Parking 10 mins to Manhattan',
'★★Cute flat in ♥ of Manhattan★★',
'法拉盛中心地段单身客房',
'Gorgeous Apt close to   Times Square  ',
'Superb apartment in♥of Manhattan★',
'Evergreen Modern | ♥ Lovely Room for 2 ♥',
'  Stylish Apt in Trendy Location!!   ',
'Habitación compartida(Only Women), cerca Manhattan',
'   Oversized 4BR Loft In Prime Location!',
'OCEAN Room only for "1 lady"\nSolo Travelers !!!!!',
'Steps to Yankee Stadium    Minutes to Times Square',
```

```
    'Indépendant space in charming Williamsburg.',
    'One Of The Kind Loft 《Williamsburg》',
    '  Perfect 2-bdr close to Times Square   ',
    'Cozy NYC Studio in Hell's Kitchen/ Midtown West',
    '✴SOHO✴ Sunny & Spacious ➺ Sleeps 3 ÷',
    'Spacious Studio   in the heart of NYC',
    'Cozy Studio    Premium Location in the Village!',
    'Rento mi sofá cama , en mi apartamento. Vivo solo',
    'Beautiful place in  of Manhattan   Times Square',
    'Airy and bright artist's loft space in Fort Greene',
    '★★★Chic place in center of Manhattan★★★',
    '  Quiet Home in Center of Village',
    '★ AMAZING★  TIME SQUARE/ 2 Bedroom 3 Bed Apartment',
    'A sunny room within a catering studio's loft space',
    '离缅街步行9分钟的电梯独立房间,提供免费矿泉水可乐',
    '驿站',
    '★Official & Only 6★Star Airbnb w/ TempurPedic Bed',
    "Náser's on Lexington Ave 3bds /2ba",
    '离缅街步行9分钟的电梯单间,提供免费矿泉水可乐',
    'Best Value ❤ Memorable Vacation in NYC',
    'Manhattan ☻ Brooklyn | Best of Both  ',
    '안전하고 조용한 숙소',
    'Manhattan Lux ♔',
    'Best place to stay        with friends',
    'Studio w Laundry Minutes from Major Attractions ☆',
    'Cool palce ▓▓▓ for 2 people',
    '★ Easy Access to the Best of Brooklyn - Tree Top ★',
    '★ AMAZING★ TIME SQUARE/ 2 Bedroom 3 Bed APT',
    'Amazing West Village ⚐ Location is ♛NYC',
    'Best Memories  in    NYC',
    '★NYC Place with  Private Garden★sleep 4★',
    '中央公园旁的单间',
    '★★ 4Br 2Ba Getaway in Chelsea ★★',
    'NYC Traveler's dream',
    'Private Spacious Artist's Bedroom In Manhattan']
```

```python
import re

eastasian = []

def isEA(s):
    s = str(s)
    if len(re.findall(r'[\u4e00-\u9fff]+', s))>0: #Checks if string matches with any of the east asia
        return True
    return False

for i in specialC:
    a = str(i)
    if isEA(a): eastasian.append(i)

len(eastasian)

# sample = '法拉盛中心温馨两房两厅公寓。近一切。2 br close to everything'
# re.findall(r'[\u4e00-\u9fff]+', sample)
#japanese listings: 'NYで人気の街ブルックリンパークスロープ で、暮らしてみませんか。', 'NYミッドタウン高級コンドのリビングルームに宿泊',
```

163

```python
from emoji import UNICODE_EMOJI

emojiLists = []

def is_emoji(s):
    s = str(s)
    count = 0
    for emoji in UNICODE_EMOJI: #Checks if string matches with any of the emoji unicodes provided by
        count += s.count(emoji)
        if count > 1:
            return False
    return bool(count)

for i in specialC:
    a = str(i)
    if is_emoji(a): emojiLists.append(i)

len(emojiLists)
```

```
230
```

```python
eastasian_index = []
emoji_index = []

#Creates logical index lists which iterate through the list of names to check if a name contains an e
#We create two logical index lists using for loops

for i in list(df["name"].values):
    a = str(i)
    if is_emoji(a) and not a.isascii() : #must be contain an emoji
        emoji_index.append(True)
    else:
        emoji_index.append(False)


for i in list(df["name"].values):
    a = str(i)
    if isEA(a) and not a.isascii() : #must be contain an east asian symbols
        eastasian_index.append(True)
    else:
        eastasian_index.append(False)

df_eastasian = df[eastasian_index]
df_emoji = df[emoji_index]
```

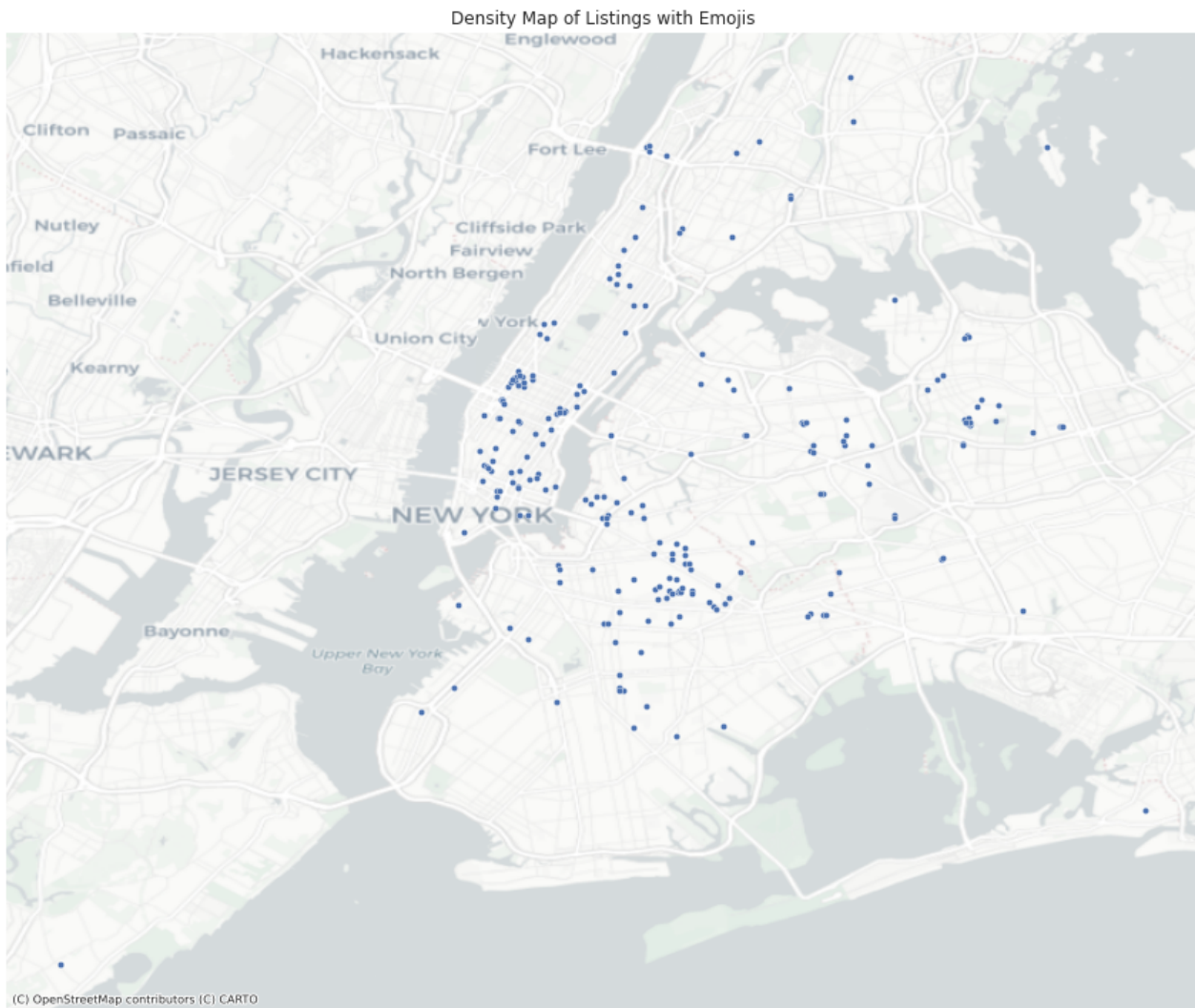Density Map of Listings with Emojis

```python
plt.figure(figsize=(15,30))
sns_map_emoji = sns.scatterplot(x='longitude', y='latitude',s=20, data=df_emoji)
ctx.add_basemap(sns_map_emoji, crs = 'EPSG:4326', source=ctx.providers.CartoDB.Positron)
sns_map_emoji.set_axis_off()
plt.title('Density Map of Listings with Emojis')
```
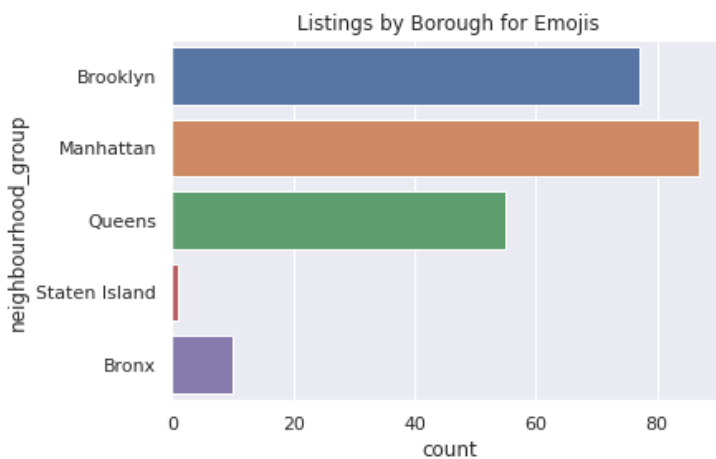
```
Text(0.5, 1.0, 'Density Map of Listings with Emojis')
```

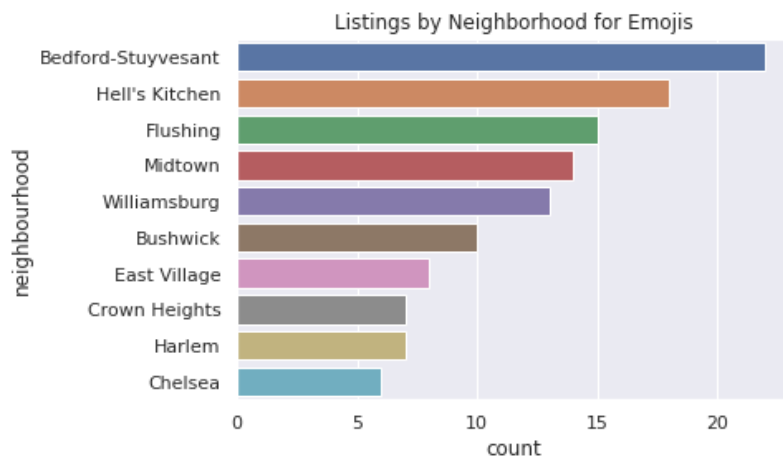Density Map of Listings with Emojis


```
sns.countplot(y = 'neighbourhood_group', data= df_emoji).set_title("Listings by Borough for Emojis")
```

```
Text(0.5, 1.0, 'Listings by Borough for Emojis')
```



```
sns.countplot(y = 'neighbourhood', data= df_emoji, order = df_emoji.neighbourhood.value_counts().iloc
```

```
Text(0.5, 1.0, 'Listings by Neighborhood for Emojis')
```


Listings by Neighborhood for Emojis

Density Map for Non-English Listings

```
plt.figure(figsize=(15,30))
sns_map_noneng = sns.scatterplot(x='longitude', y='latitude',s=20, data=df_eastasian)
ctx.add_basemap(sns_map_noneng, crs = 'EPSG:4326', source=ctx.providers.CartoDB.Positron)
sns_map_noneng.set_axis_off()
plt.title('Density Map of East Asian Language Listings')
```

```
NameError: name 'plt' is not defined
```

```
sns.countplot(y = 'neighbourhood_group', data= df_eastasian).set_title("Listings by Borough for East
```

```
Text(0.5, 1.0, 'Listings by Borough for East Asian Listings')
```


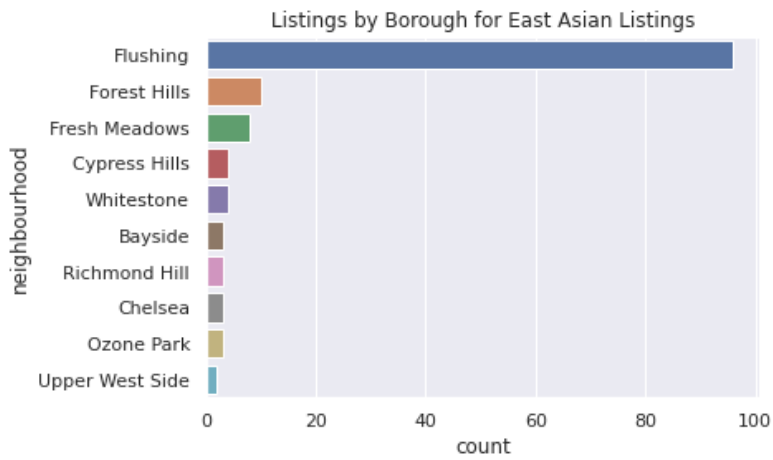Listings by Borough for East Asian Listings
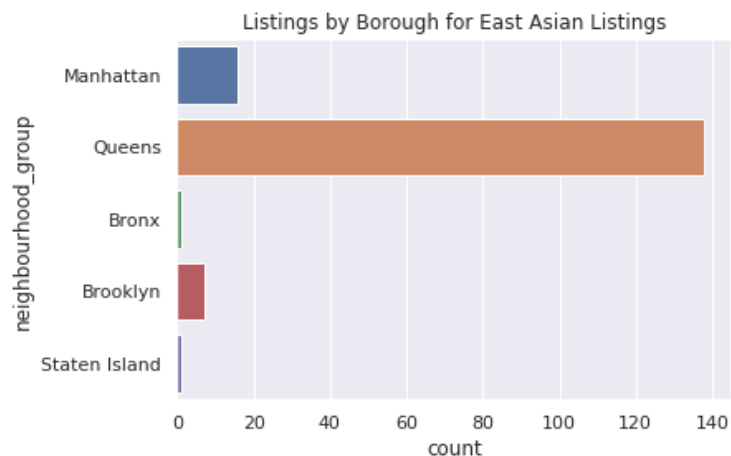
```
df_emoji[df_emoji.neighbourhood == "Hell's Kitchen"]
```

	id	name	host_id	host_name	neighbourhood_group	neighbourhood	latitude	longitude	room_type
16908	13461412	of Midtown | Rooftop Terraces +	3191545	Kyle	Manhattan	Hell's Kitchen	40.76245	-73.98767	Entire home/apt
24203	19502013	ლლლUltimate Broadway Experienceლლლ	112799848	Arthur	Manhattan	Hell's Kitchen	40.76708	-73.98912	Private room
25823	20653657	CENTRALLY LOCATED- Great for Families + Groups	147683950	Devin	Manhattan	Hell's Kitchen	40.76154	-73.99306	Entire home/apt
27106	21440605	☆☆☆Cosy Bedroom in The Heart of the City☆☆☆	126168966	Alex	Manhattan	Hell's Kitchen	40.76457	-73.99082	Private room
30219	23325238	Beautiful & Quiet TIMES SQUARE 2 BDR Apt	5201405	Rob	Manhattan	Hell's Kitchen	40.76155	-73.98687	Entire home/apt
34994	27735744	☆ Secret Hideaway - Blocks from Times Square!	209405908	Louis	Manhattan	Hell's Kitchen	40.75658	-73.99568	Private room
34997	27736749	☆ Manhattan's Retreat - Blocks from Times Square!	209405908	Louis	Manhattan	Hell's Kitchen	40.75655	-73.99535	Private room
40890	31801631	Queen Master BR 5min Walk from Major Attractio...	238324936	Marcel	Manhattan	Hell's Kitchen	40.76315	-73.98711	Private room
42976	33372038	Spacious designer's flat.	1499286	Andrey	Manhattan	Hell's Kitchen	40.76303	-73.99225	Entire home/apt
43252	33536886	★ Private Room in great location near Times Sq...	228151544	Rubens	Manhattan	Hell's Kitchen	40.76370	-73.99037	Private room
44195	34096836	An urban retreat from the city's hustle and bu...	257005399	Cassa Times Square Hotel	Manhattan	Hell's Kitchen	40.75603	-73.99511	Private room
44374	34203531	☆ Times Square- Home Away From Home	444275	Sara And Ronald	Manhattan	Hell's Kitchen	40.76521	-73.98986	Entire home/apt
44922	34473821	Whole-floor 2Bdrm Apt in NYC's Theater District	79461666	Stephen	Manhattan	Hell's Kitchen	40.76421	-73.99132	Entire home/apt
46020	35033921	Shared,Cozy Room İn Times Square 6	263880607	Ahmet	Manhattan	Hell's Kitchen	40.76509	-73.98795	Shared room
46428	35247268	Perfect 2-bdr close to Times Square	265271198	Alex	Manhattan	Hell's Kitchen	40.76495	-73.98784	Entire home/apt
46888	35475475	Beautiful place in of Manhattan Times Square	266828407	Alex	Manhattan	Hell's Kitchen	40.76183	-73.98948	Entire home/apt
46891	35480817	★★★Chic place in center of Manhattan★★★	266828681	Alex	Manhattan	Hell's Kitchen	40.75493	-73.99458	Entire home/apt
46937	35495582	★ AMAZING★ TIME SQUARE/ 2 Bedroom 3 Bed Apart...	266992480	Sam	Manhattan	Hell's Kitchen	40.76573	-73.98897	Entire home/apt

```
sns.countplot(y = 'neighbourhood', data= df_eastasian, order = df_eastasian.neighbourhood.value_count
```

Text(0.5, 1.0, 'Listings by Borough for East Asian Listings')



```
df_eastasian
print(len(df_eastasian))
```

163

```
df_eastasian[df_eastasian.neighbourhood == "Forest Hills"]
```

	id	name	host_id	host_name	neighbourhood_group	neighbourhood	latitude	longitude	room_type	pric
5624	4092826	Forest Hills Villa 皇后区 "曼哈顿"-森林小丘别墅!	21228368	Jessica	Queens	Forest Hills	40.71291	-73.84678	Entire home/apt	180
5652	4120182	Master Bedroom 别墅二楼主卧房	21228368	Jessica	Queens	Forest Hills	40.71293	-73.84915	Private room	70
5691	4140776	Basement 别墅的地下室	21228368	Jessica	Queens	Forest Hills	40.71146	-73.84677	Private room	65
6002	4393502	Attic Space - 三楼阁楼	21228368	Jessica	Queens	Forest Hills	40.71320	-73.84901	Private room	50
6004	4393628	Double-deck bed room 别墅二楼卧房	21228368	Jessica	Queens	Forest Hills	40.71233	-73.84848	Private room	55
27501	21660214	纽约森林小丘简约文艺客舍	22675680	Cecilia	Queens	Forest Hills	40.71825	-73.83502	Shared room	60
36310	28892979	4min subway.free parking big private room 温馨漂亮大睡房	196058543	美德	Queens	Forest Hills	40.71984	-73.83969	Private room	78
36311	28893129	2min bus 4 min subway.9min JFK private room干净舒...	196058543	美德	Queens	Forest Hills	40.72133	-73.83928	Private room	58
36941	29365401	4min subway. Prime locations. single sofa bed...	196058543	美德	Queens	Forest Hills	40.72192	-73.83931	Shared room	40
37582	29816922	Bright warmth 2min bus 4min subway 窗下凉台花园房。	196058543	美德	Queens	Forest Hills	40.71988	-73.83922	Shared room	35

```
sns.countplot(y = 'host_name', data= df_eastasian, order=df_eastasian.host_name.value_counts().iloc[:
```
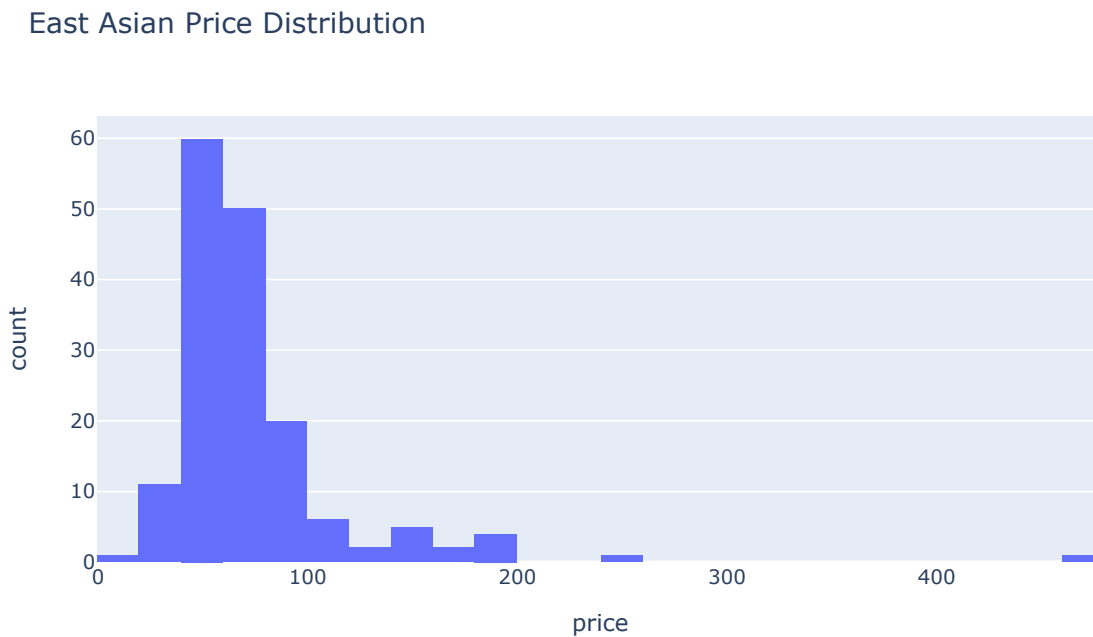
Text(0.5, 1.0, 'Dist. of Host Owners for Non English Listings')
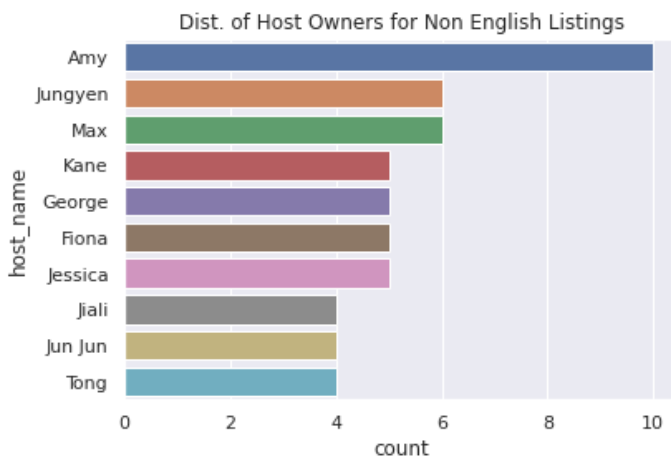
```
px.histogram(tidydf, x = 'price', title = 'Total Price Distribution')
```
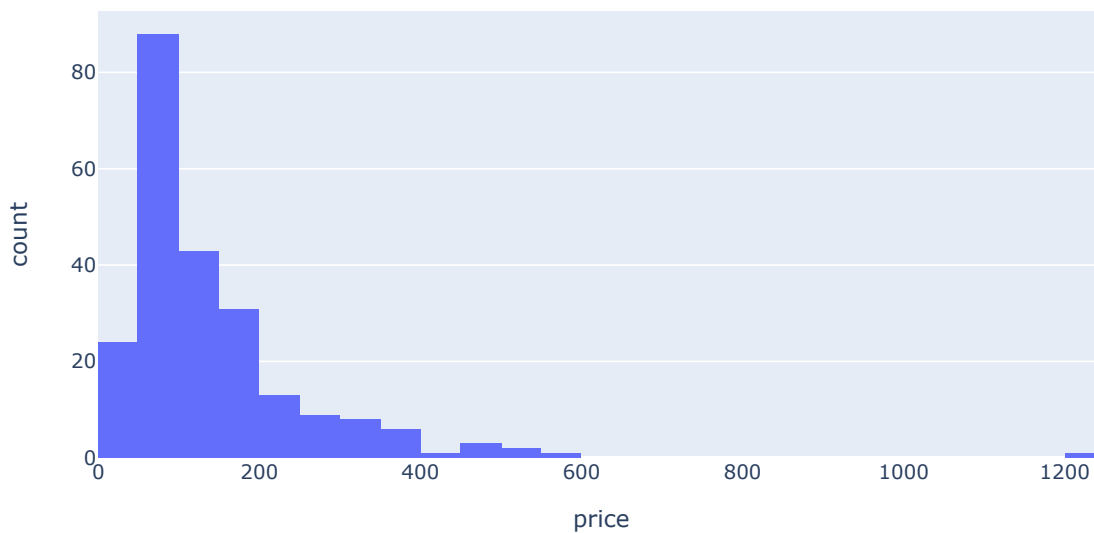
Total Price Distribution
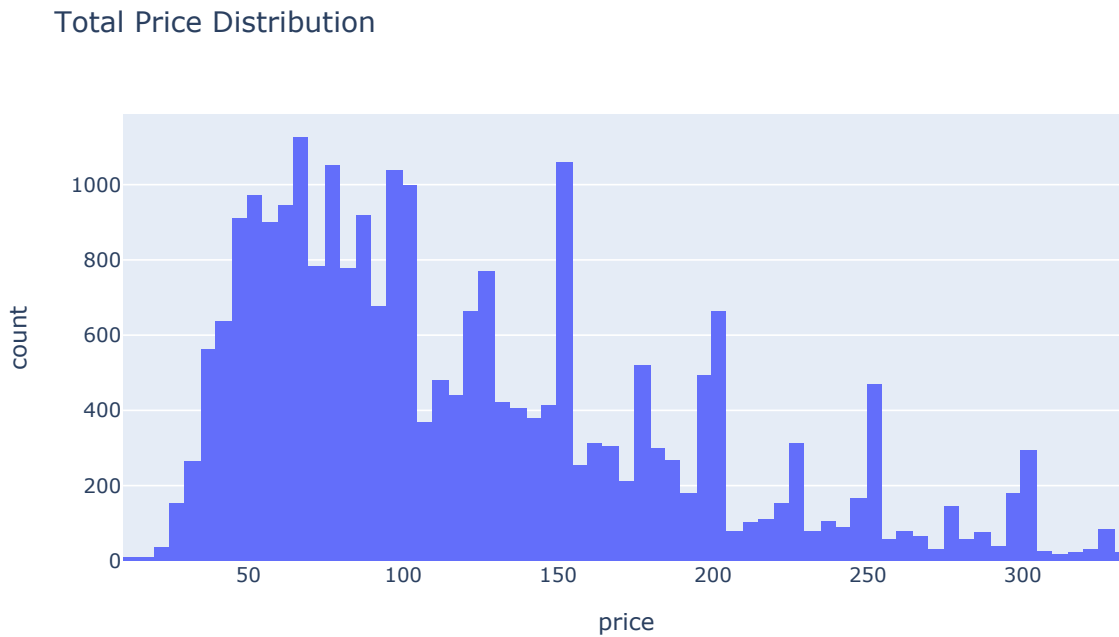

```
px.histogram(df_eastasian, x = 'price', title = 'East Asian Price Distribution')
```

East Asian Price Distribution


```
px.histogram(df_emoji, x = 'price', title = 'Emoji Price Distribution')
```

Emoji Price Distribution

Referenced Code

Dataset

- https://www.kaggle.com/dgomonov/new-york-city-airbnb-open-data

EDA

- https://geopandas.org/gallery/create_geopandas_from_pandas.html

NLP

- https://github.com/nick-ulle/teaching-notes/blob/master/sta141b/2018/discussion09.ipynb
- https://spacy.io/usage/spacy-101
- https://stackoverflow.com/questions/34587346/python-check-if-a-string-contains-chinese-character/34587637
- https://stackoverflow.com/questions/36216665/find-there-is-an-emoji-in-a-string-in-python3
- https://www.python-graph-gallery.com/12-stacked-barplot-with-matplotlib