```
import pandas as pd
import numpy as np
import matplotlib
import matplotlib.pyplot as plt
import seaborn as sns
```

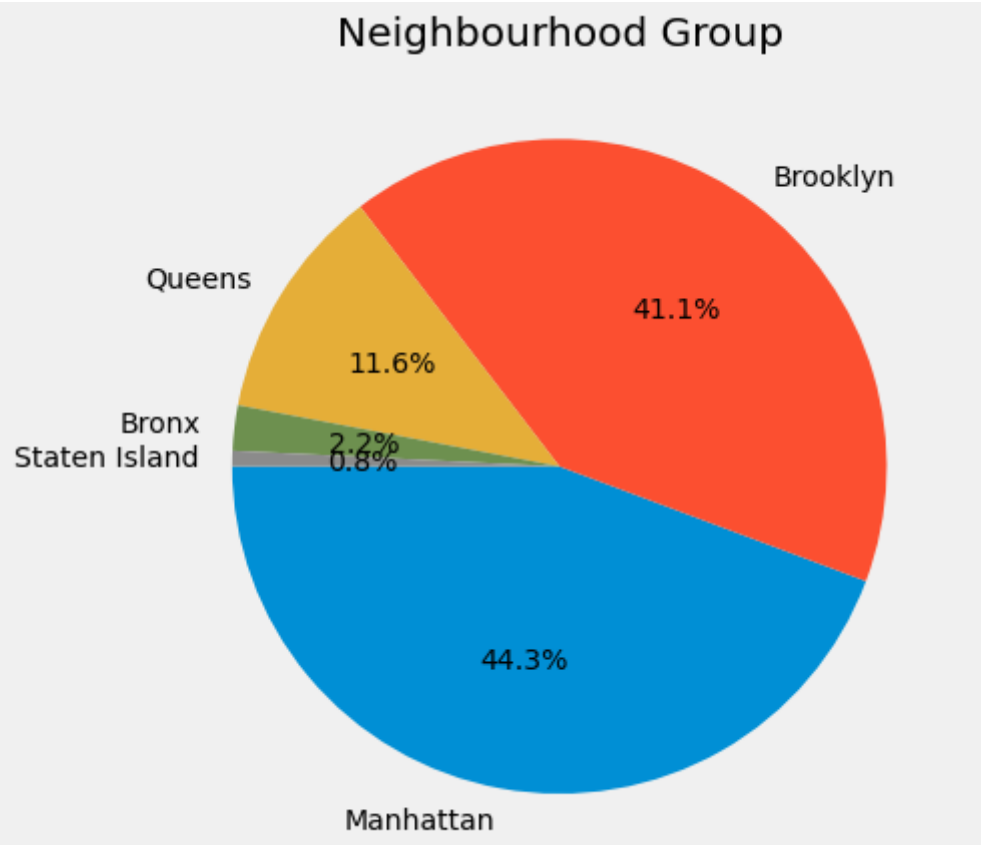
Data Profiling and Cleansing

```
air_bnb_df = pd.read_csv('/content/drive/MyDrive/Colab Notebooks/Airbnb NYC 2019.csv')
air_bnb_df.isnull().sum()
#dropping the unnecessary columns
air_bnb_df.drop(['last_review'], axis=1, inplace=True)
#replacing all null values in reviews_per_month with 0
air_bnb_df.reviews_per_month.fillna(0, inplace=True)
print(air_bnb_df.isnull().any())
```

```
id                                False
name                               True
host_id                           False
host_name                          True
neighbourhood_group               False
neighbourhood                     False
latitude                          False
longitude                         False
room_type                         False
price                             False
minimum_nights                    False
number_of_reviews                 False
reviews_per_month                 False
calculated_host_listings_count    False
availability_365                  False
dtype: bool
```

Q1-What can we learn about different hosts and areas?

```
plt.style.use('fivethirtyeight')
plt.figure(figsize=(13,7))
plt.title("Neighbourhood Group")
g = plt.pie(air_bnb_df.neighbourhood_group.value_counts(), labels=air_bnb_df.neighbourhood
plt.show()
```



Ans-The pie chart above shows that Airbnb Listings in Newyork are near Manhattan, and Brooklyn has the highest share of hotels. We also know that from this map of Neighborhood Group

Q2-What can we learn from predictions? (ex: locations, prices, reviews, etc)

```
Reviews_of_areas = air_bnb_df.groupby(['name','neighbourhood_group','price','minimum_night
Reviews_of_price = Reviews_of_areas.sort_values(by='price',ascending=False).head(200)
Reviews_of_price
```

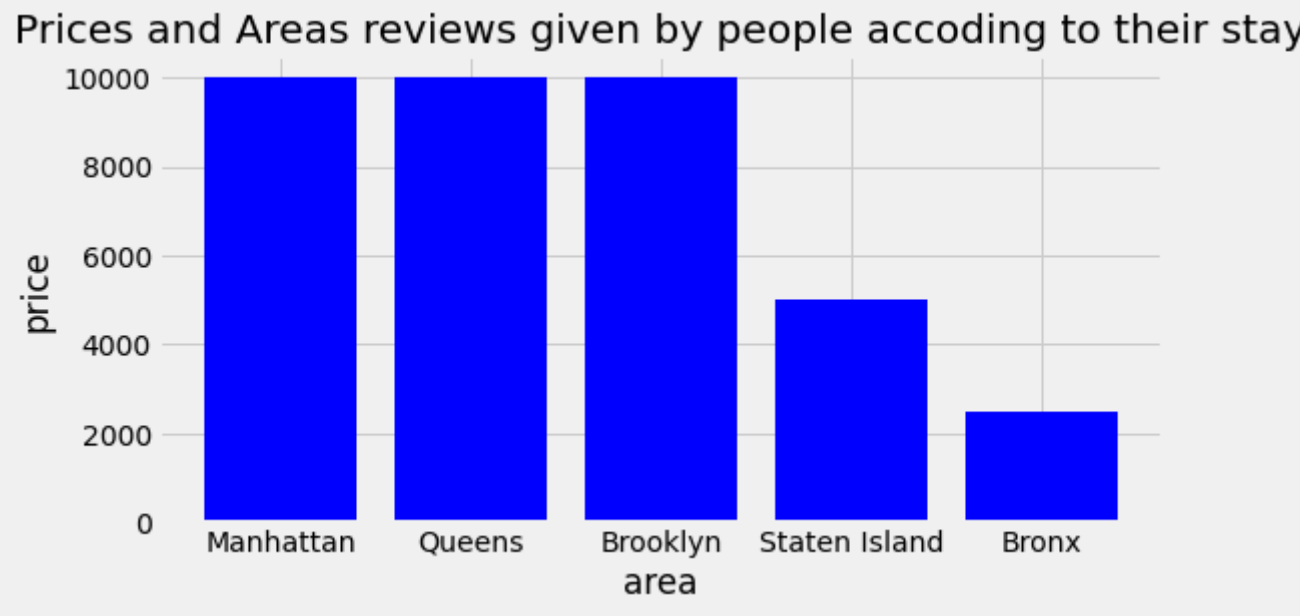
	name	neighbourhood_group	price	minimum_n
1112	1-BR Lincoln Center	Manhattan	10000	
20220	Furnished room in Astoria apartment	Queens	10000	

```
area = Reviews_of_price['neighbourhood_group']
price = Reviews_of_price['price']
```

```
figure_size = plt.figure(figsize = (8,4))

plt.bar(area , price, color = 'Blue',width = 0.8)

plt.xlabel('area')
plt.ylabel('price')
plt.title('Prices and Areas reviews given by people accoding to their stay')
plt.show()
```



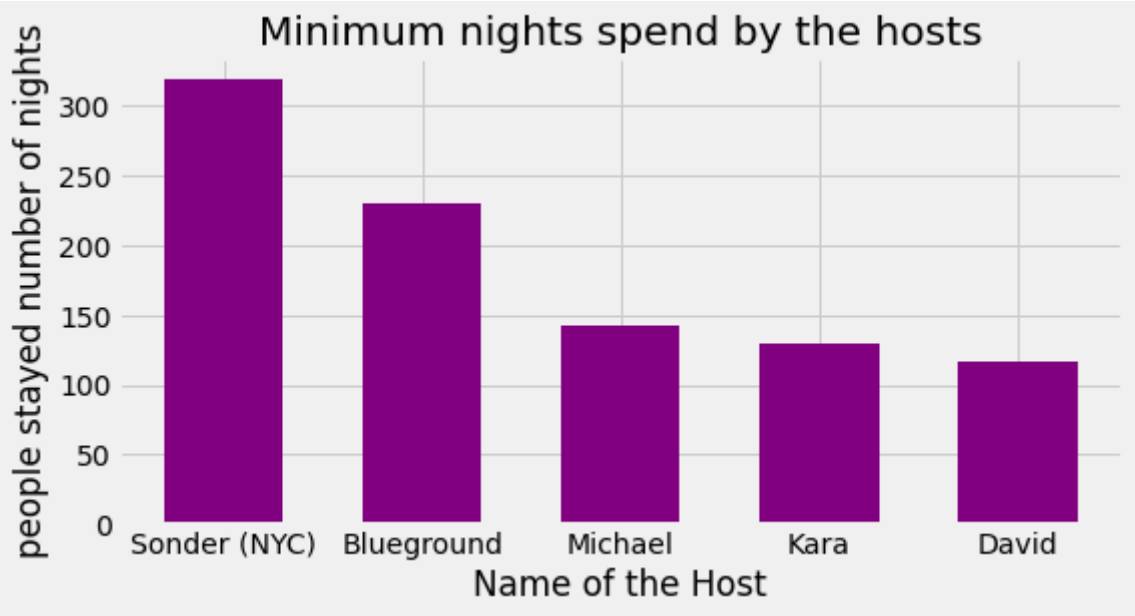
Ans-As shown as result in DataFrame that most of the people prefers to stay at the places where prices are low and most of them have taken Entire home/apt. But in "Queens" minimum number nights were stayed by people it means here people stays a bit longer most of them have taken private room.

Q3-Which hosts are the busiest and why?

```
busiest_hosts = air_bnb_df.groupby(['host_name','neighbourhood_group','room_type'])['minim
busiest_hosts = busiest_hosts.sort_values(by= 'minimum_nights',ascending=False).head()
busiest_hosts
```

	host_name	neighbourhood_group	room_type	minimum_nights
16549	Sonder (NYC)	Manhattan	Entire home/apt	319
2295	Blueground	Manhattan	Entire home/apt	230
12299	Michael	Manhattan	Entire home/apt	143
9190	Kara	Manhattan	Entire home/apt	129
4128	David	Manhattan	Entire home/apt	117

```
name = busiest_hosts['host_name']
stays = busiest_hosts['minimum_nights']
figure_size = plt.figure(figsize = (8,4))
plt.bar(name, stays, color = 'purple', width = 0.6)
plt.xlabel('Name of the Host')
plt.ylabel('people stayed number of nights')
plt.title('Minimum nights spend by the hosts')
plt.show()
```



Answer:- Most Busiest host among all is Sonder (NYC) after him Blueground, Michael, Kara, David and soo on...

Host is busy bcs maintaing there place ass you can see Manhattan is the most popular place and there Entire home/apt is prefered by most of the people.

Q4-Is there any noticeable difference of traffic among different areas and what could be the reason for it?

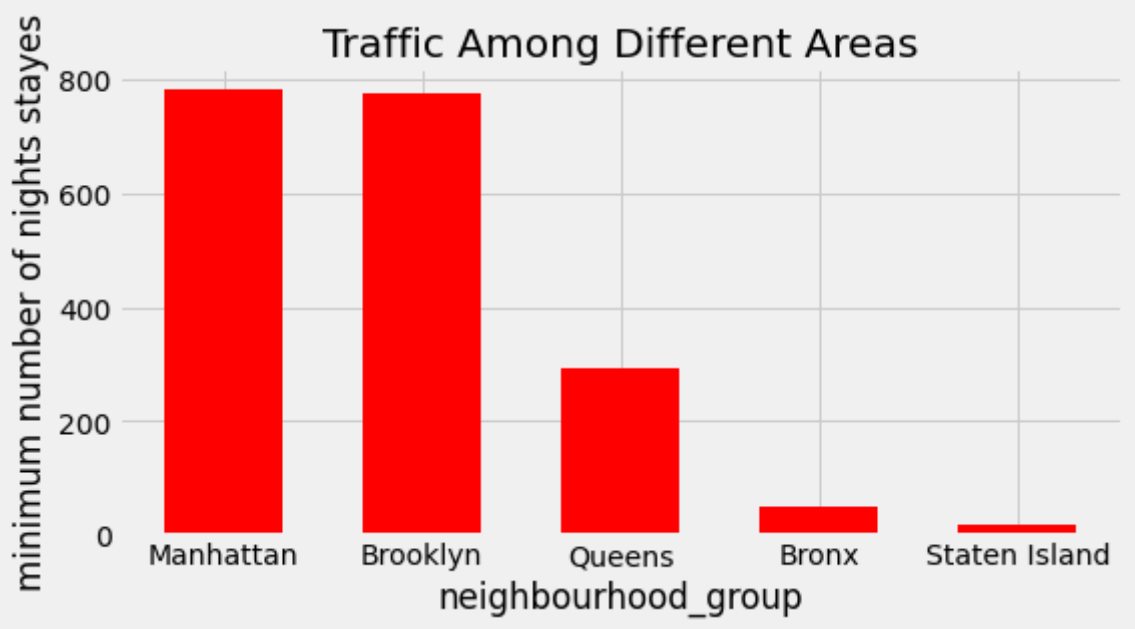
```
traffic_among_different_areas = air_bnb_df.groupby(['neighbourhood_group','price','room_ty
traffic_among_different_areas = traffic_among_different_areas.sort_values(by='minimum_nigh
```

```
traffic_among_different_areas
```

	neighbourhood_group	price	room_type	minimum_nights
1201	Manhattan	150	Entire home/apt	783
309	Brooklyn	50	Private room	774
1300	Manhattan	200	Entire home/apt	712
332	Brooklyn	60	Private room	708
525	Brooklyn	150	Entire home/apt	681
...	...	...	...	...
605	Brooklyn	198	Entire home/apt	15
1507	Manhattan	339	Entire home/apt	15
1515	Manhattan	345	Entire home/apt	15
1568	Manhattan	390	Entire home/apt	15
260	Brooklyn	32	Shared room	15

500 rows × 4 columns

```
Rooms = traffic_among_different_areas['neighbourhood_group']
stayed_minimum_nights = traffic_among_different_areas['minimum_nights']
figure_size= plt.figure(figsize = (8,4))
plt.bar(Rooms, stayed_minimum_nights, color = 'Red',width=0.6)
plt.xlabel('neighbourhood_group')
plt.ylabel('minimum number of nights stayes')
plt.title('Traffic Among Different Areas')
plt.show()
```

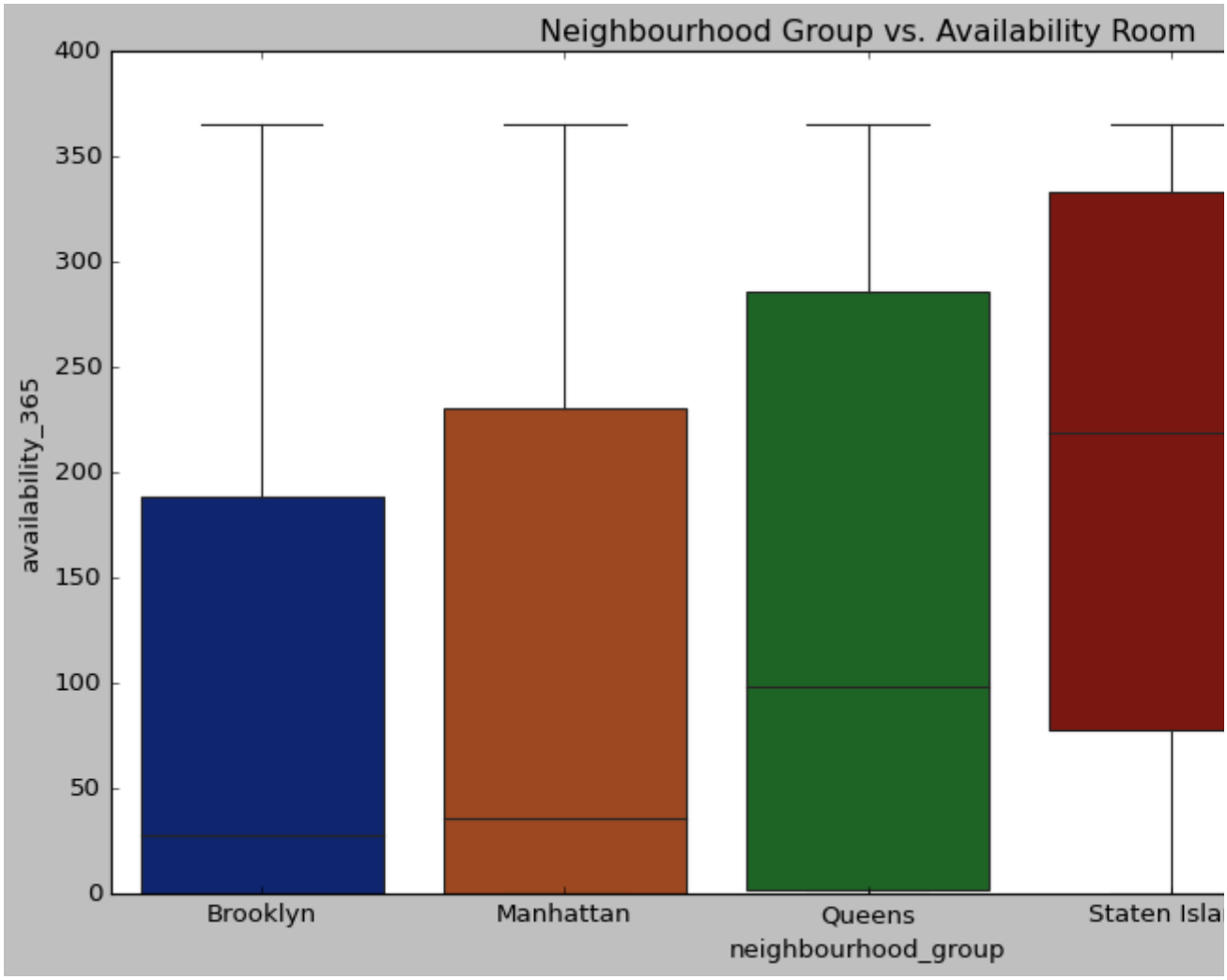


Answer:- In Table you can see that most of the people are prefering to stay Entire Home/apartment and they in Famous Manhattan and very few people are staying in private

room bcz of there less price in Brooklyn and queens and rest of the stays in shared room.

Q5-Neighbourhood Group vs. Availability Room

```
plt.style.use('classic')
plt.figure(figsize=(13,7))
plt.title("Neighbourhood Group vs. Availability Room")
sns.boxplot(data=air_bnb_df, x='neighbourhood_group',y='availability_365',palette="dark")
plt.show()
```

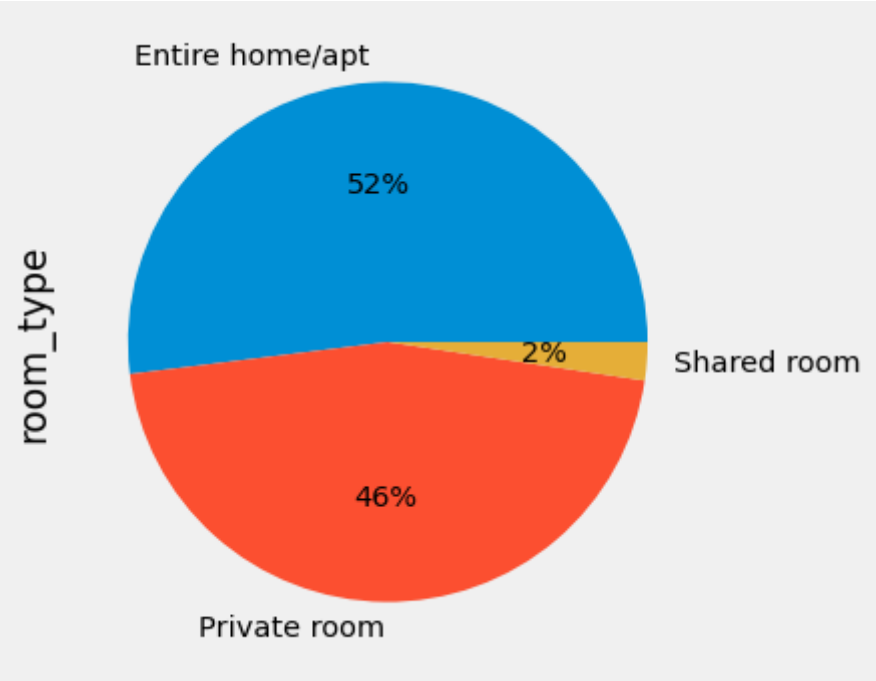


Ans-As shown in boxplot graph that in Brooklyn most of the properties are available between 0 to 200 little bit of number increased by manhattan and most diverse room availaibilitiy is of Queens

Q6Types of properties listed

```
air_bnb_df['room_type'].unique()
air_bnb_df['room_type'].value_counts()
fig = plt.figure(figsize=(5,5), dpi=80)
```

```
air_bnb_df['room_type'].value_counts().plot(kind='pie',  autopct='%1.0f%%', startangle=360
plt.show()
```

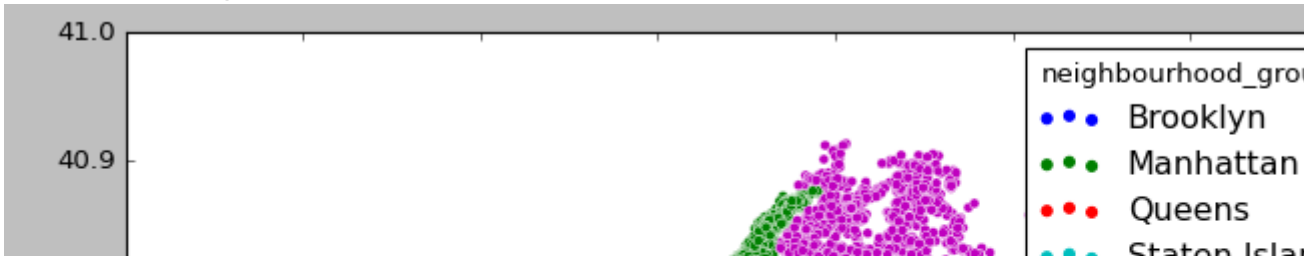


Most famous types of properties are Entire/apt and private room and shared rooms are very less as most of the people don't like to share their personal space.

Q7-Map of Neighbourhood group

```
plt.figure(figsize=(10,6))
sns.scatterplot(air_bnb_df.longitude,air_bnb_df.latitude,hue=air_bnb_df.neighbourhood_grou
plt.ioff()
```

```
/usr/local/lib/python3.7/dist-packages/seaborn/_decorators.py:43: FutureWarning: Pass
  FutureWarning
```



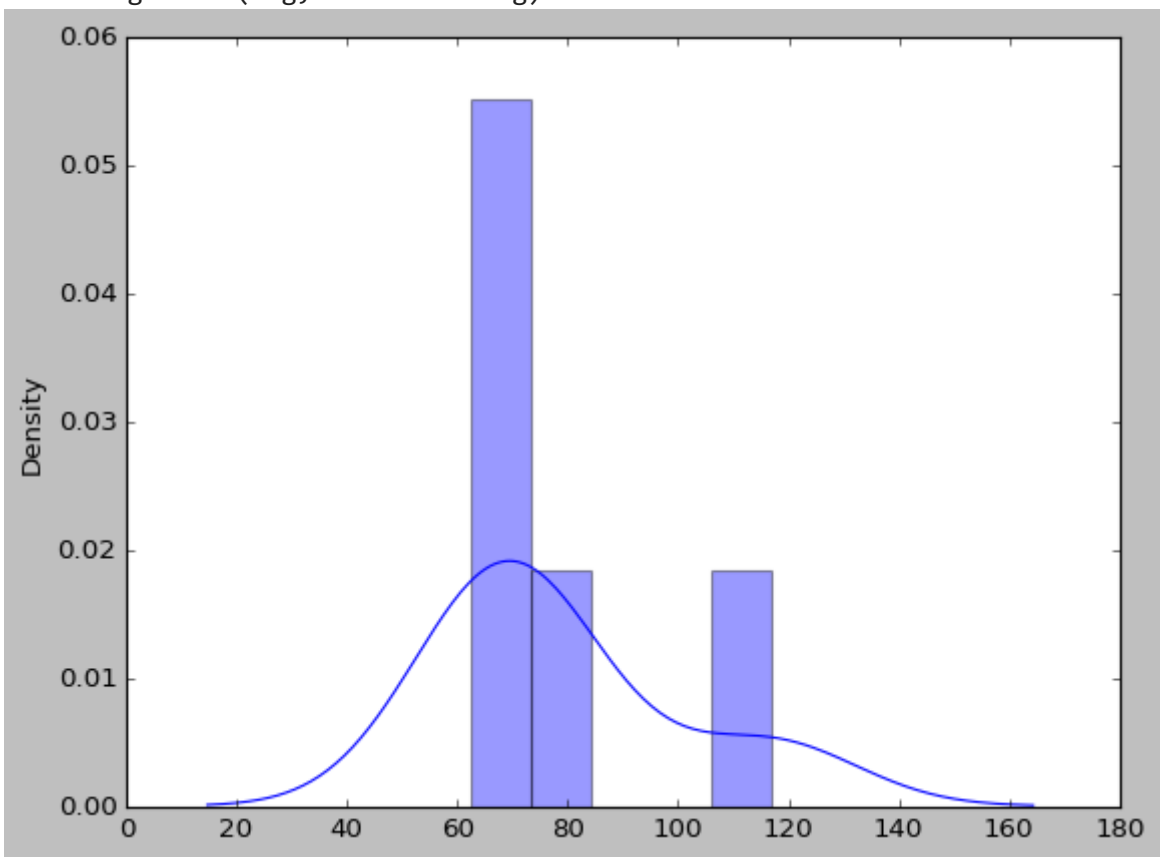
Ans-As shown in the graph the closeby areas i.e brooklyn,manhatten,queens are the most popular.

Q8-Price distribution in different types of rooms

Private rooms on average are priced from 60-120 dollars per night on an average depending upon the neighbourhood group it is located.

```
df1 = air_bnb_df[air_bnb_df.room_type == "Private room"][["neighbourhood_group","price"]]
d = df1.groupby("neighbourhood_group").mean()
sns.distplot(d)
plt.show()
```

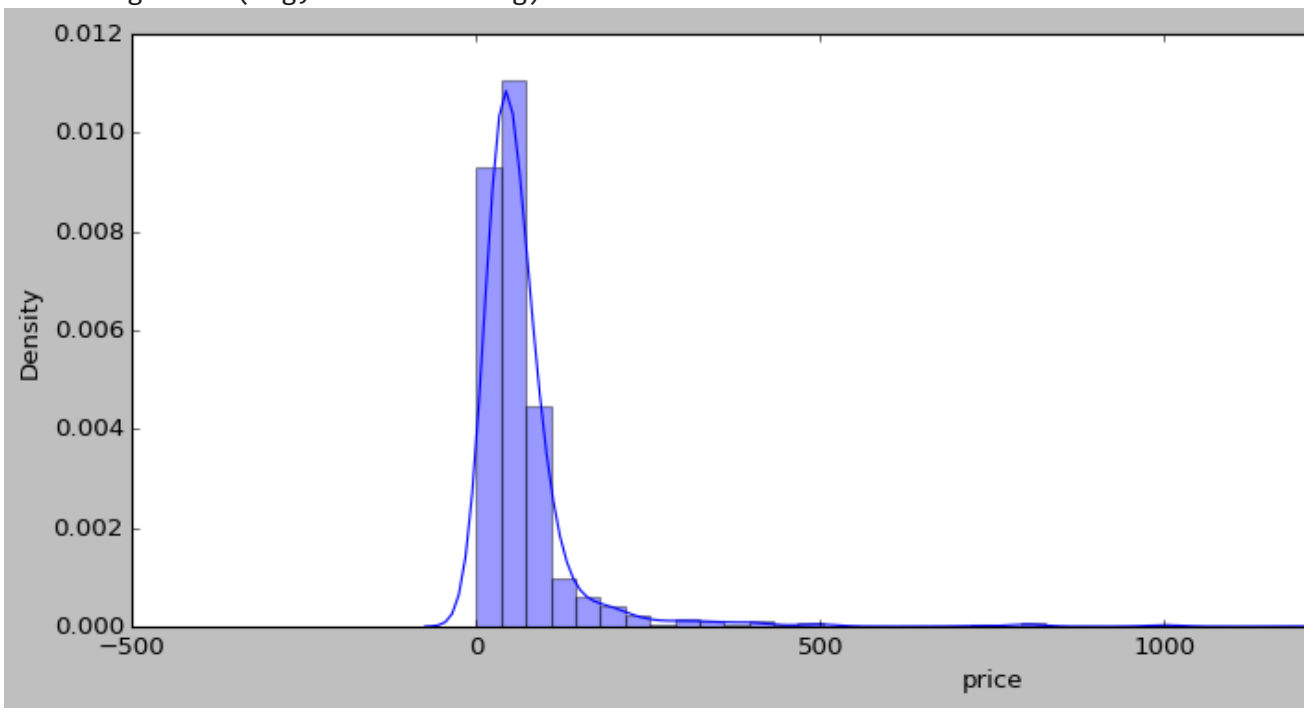
```
/usr/local/lib/python3.7/dist-packages/seaborn/distributions.py:2619: FutureWarning:
  warnings.warn(msg, FutureWarning)
```



Price Distribution of Shared rooms

```
df1 = air_bnb_df[air_bnb_df.room_type=='Shared room']['price']
f,ax = plt.subplots(figsize=(15,5))
ax = sns.distplot(df1)
plt.show()
```

```
/usr/local/lib/python3.7/dist-packages/seaborn/distributions.py:2619: FutureWarning:
  warnings.warn(msg, FutureWarning)
```

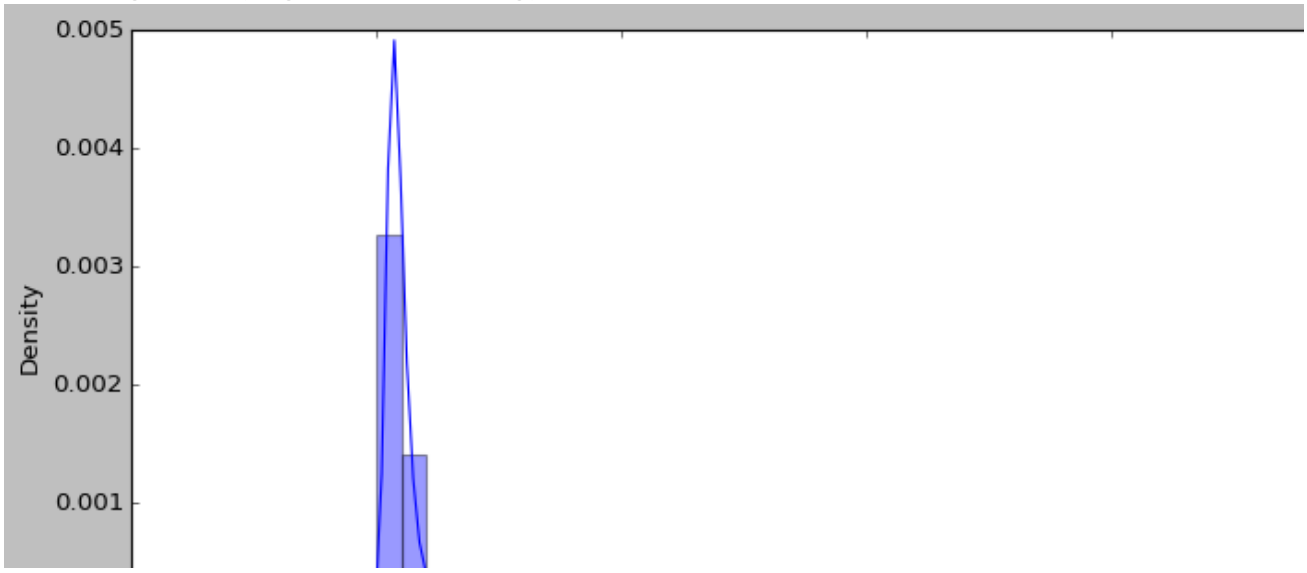


Most of the shared rooms have the price range between 50-70 dollars per night depending upon the neighbourhood groups.

Price Distribution of Entire home/apt

```
df1 = air_bnb_df[air_bnb_df.room_type=='Entire home/apt']['price']
f,ax = plt.subplots(figsize=(15,5))
ax = sns.distplot(df1)
plt.show()
```

```
/usr/local/lib/python3.7/dist-packages/seaborn/distributions.py:2619: FutureWarning:
  warnings.warn(msg, FutureWarning)
```



Most of the Entire home/apt are priced between 0 to 1000.

	price