In [1]:

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

import seaborn as sns
import warnings
warnings.filterwarnings("ignore")
```

In [2]:

```
df=pd.read_csv("AB_NYC_2019.csv")
```

In [3]:

```
df.head()
```

Out[3]:

	name	host_id	host_name	neighbourhood_group	neighbourhood	latitude	long
0	Clean & quiet apt home by the park	2787	John	Brooklyn	Kensington	40.64749	-73.9
1	Skylit Midtown Castle	2845	Jennifer	Manhattan	Midtown	40.75362	-73.9
2	THE VILLAGE OF HARLEM....NEW YORK !	4632	Elisabeth	Manhattan	Harlem	40.80902	-73.9
3	Cozy Entire Floor of Brownstone	4869	LisaRoxanne	Brooklyn	Clinton Hill	40.68514	-73.9
4	Entire Apt: Spacious Studio/Loft by central park	7192	Laura	Manhattan	East Harlem	40.79851	-73.9

In [4]:

```
df.isnull().sum()
```

Out[4]:

```
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
```

In [5]:

```
df.isnull().sum()*100/len(df)
```

Out[5]:

```
name                             0.032723
host_id                          0.000000
host_name                        0.042949
neighbourhood_group              0.000000
neighbourhood                    0.000000
latitude                         0.000000
longitude                        0.000000
room_type                        0.000000
price                            0.000000
minimum_nights                   0.000000
number_of_reviews                0.000000
last_review                     20.558339
reviews_per_month               20.558339
calculated_host_listings_count   0.000000
availability_365                 0.000000
dtype: float64
```

In [6]:

```
y=df["last_review"].mode()
y
```

Out[6]:

```
0    23-06-2019
Name: last_review, dtype: object
```

In [7]:

```
df["last_review"].fillna("2018-09-23",inplace=True)
```

In [8]:

```
df["last_review"]=pd.to_datetime(df["last_review"])
```

In [9]:

```
y=df["reviews_per_month"].mean()
y
```

Out[9]:

```
1.3732214298586884
```

In [10]:

```
df["reviews_per_month"].fillna(y,inplace=True)
```

In [11]:

```
df.isnull().sum()
```

Out[11]:

```
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                        0
reviews_per_month                  0
calculated_host_listings_count     0
availability_365                   0
dtype: int64
```

In [12]:

```
df.dropna(inplace=True)
```

In [13]:

```
df.isnull().sum()
```

Out[13]:

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

In [14]:

```
df.drop("host_id",axis=1,inplace=True)
```

In [15]:

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 48858 entries, 0 to 48894
Data columns (total 14 columns):
 #   Column                          Non-Null Count  Dtype
---  ------                          --------------  -----
 0   name                            48858 non-null  object
 1   host_name                       48858 non-null  object
 2   neighbourhood_group             48858 non-null  object
 3   neighbourhood                   48858 non-null  object
 4   latitude                        48858 non-null  float64
 5   longitude                       48858 non-null  float64
 6   room_type                       48858 non-null  object
 7   price                           48858 non-null  int64
 8   minimum_nights                  48858 non-null  int64
 9   number_of_reviews               48858 non-null  int64
 10  last_review                     48858 non-null  datetime64[ns]
 11  reviews_per_month               48858 non-null  float64
 12  calculated_host_listings_count  48858 non-null  int64
 13  availability_365                48858 non-null  int64
dtypes: datetime64[ns](1), float64(3), int64(5), object(5)
memory usage: 5.6+ MB
```

1.provide all the information about airbnb newyork bookings which is available whole year

In [16]:

```
y=df.groupby("availability_365")
k=y.get_group(365)
k
```

Out[16]:

	name	host_name	neighbourhood_group	neighbourhood	latitude	longitude
0	Clean & quiet apt home by the park	John	Brooklyn	Kensington	40.64749	-73.97237
2	THE VILLAGE OF HARLEM....NEW YORK !	Elisabeth	Manhattan	Harlem	40.80902	-73.94190
36	Clean and Quiet in Brooklyn	Vt	Brooklyn	Bedford-Stuyvesant	40.68876	-73.94312
38	Country space in the city	Harriet	Brooklyn	Flatbush	40.63702	-73.96327
97	Upper Manhattan, New York	Elliott	Manhattan	Harlem	40.82803	-73.94731
...	...	...	...	...	...	...
48744	A BEAUTIFUL SPACE IN HEART OF WILLIAMSBURG	Simon And Julian	Brooklyn	Williamsburg	40.71091	-73.96560
48844	West Village Studio on quiet cobblestone street	Will	Manhattan	West Village	40.73620	-74.00827
48868	Heaven for you(only for guy)	Diana	Brooklyn	Gravesend	40.59118	-73.97119
48880	The Raccoon Artist Studio in Williamsburg New ...	Melki	Brooklyn	Williamsburg	40.71232	-73.94220
48887	Garden Jewel Apartment in Williamsburg New York	Melki	Brooklyn	Williamsburg	40.71232	-73.94220

1294 rows × 14 columns

There are 1294 bookings availbale whole year

2.how many neighbourhood_group are available describe name and the count

In [17]:

```
df["neighbourhood_group"].value_counts()
```

Out[17]:

```
Manhattan        21643
Brooklyn         20089
Queens            5664
Bronx             1089
Staten Island      373
Name: neighbourhood_group, dtype: int64
```

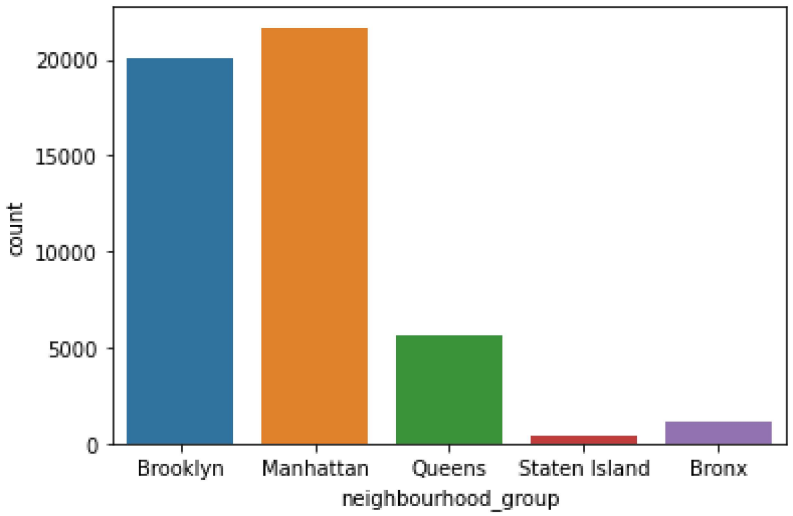
3.graphical representation of neighbourhood_group

In [18]:

```
sns.countplot(data=df,x='neighbourhood_group' )
```

Out[18]:

```
<AxesSubplot:xlabel='neighbourhood_group', ylabel='count'>
```



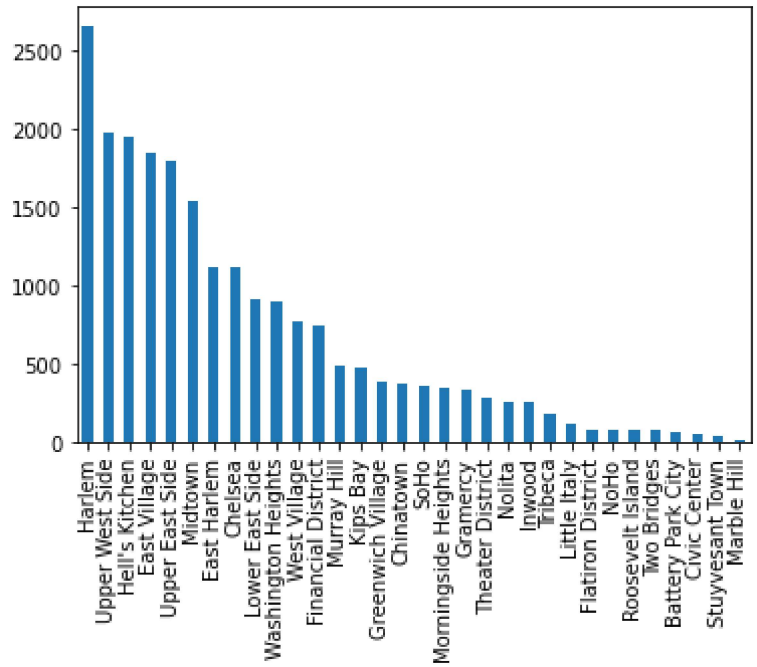
4.which neighbourhood belongs to brooklyn(with graph representation)

In [19]:

```
df[df["neighbourhood_group"]=="Manhattan"]["neighbourhood"].value_counts().plot(kind="bar")
```

Out[19]:

<AxesSubplot:>



harlem has highest count of booking in brooklyn

5.categorize room type

In [32]:

```
df["room_type"].value_counts()
```

Out[32]:

```
Entire home/apt    25393
Private room       22306
Shared room         1159
Name: room_type, dtype: int64
```

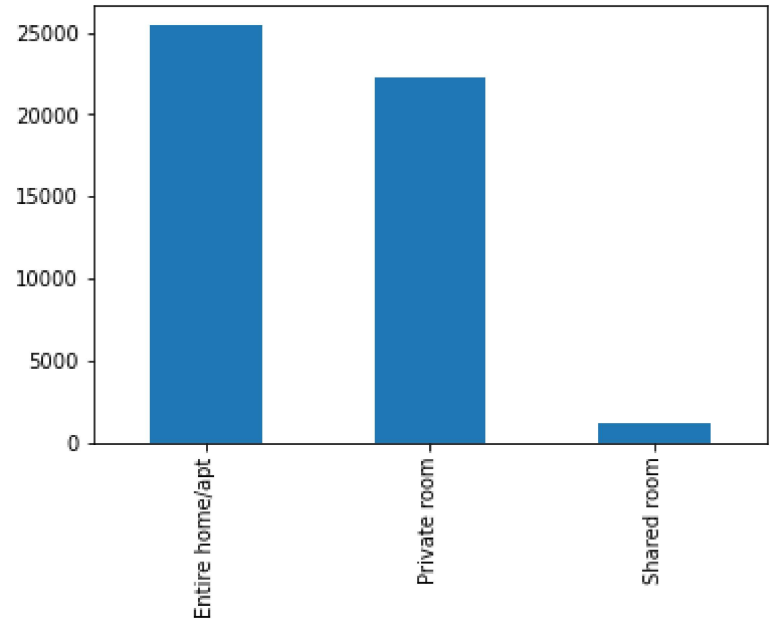
graphical representation of above query

In [55]:

```
df["room_type"].value_counts().plot(kind="bar")
```

Out[55]:

<AxesSubplot:>

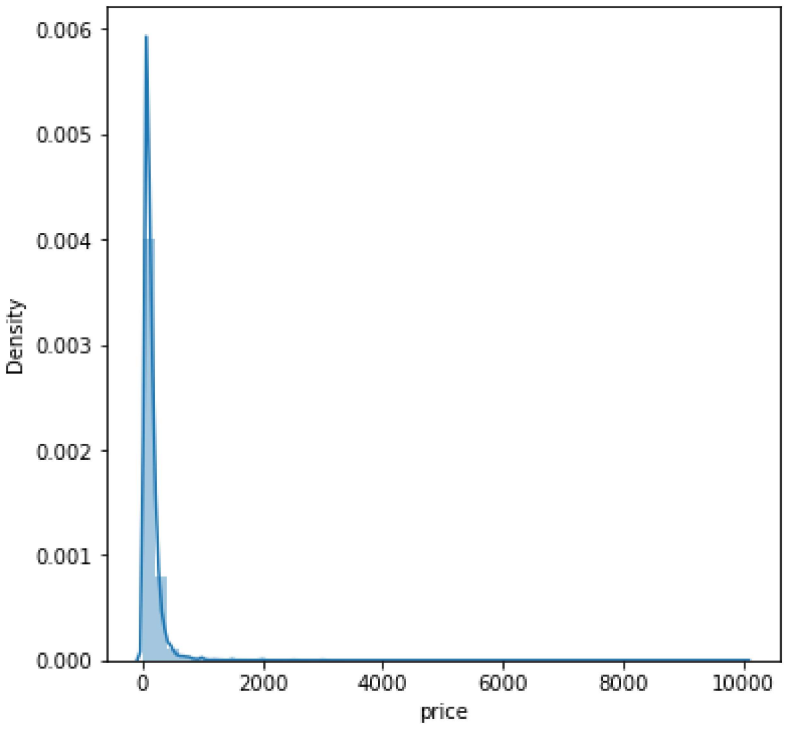


maximum bookings is for entire home or apartment minimum booking are for shared room

6.visualize price column

In [26]:

```
plt.figure(figsize=(6,6))
sns.distplot(df["price"])
plt.show()
```



the given data is rightskewed outliers present in the righ side

In [ ]:

```
7.highest price bookings
```

In [49]:

```
t=df["price"].max()
y=df.groupby("price")
k=y.get_group(t)
k
```

Out[49]:

	name	host_name	neighbourhood_group	neighbourhood	latitude	longitude	room
9151	Furnished room in Astoria apartment	Kathrine	Queens	Astoria	40.76810	-73.91651	F
17692	Luxury 1 bedroom apt. - stunning Manhattan views	Erin	Brooklyn	Greenpoint	40.73260	-73.95739	hor
29238	1-BR Lincoln Center	Jelena	Manhattan	Upper West Side	40.77213	-73.98665	hor

```
8.minimum price
```

In [51]:

```
t=df["price"].min()
y=df.groupby("price")
k=y.get_group(t)
k
```

Out[51]:

	name	host_name	neighbourhood_group	neighbourhood	latitude	longitude	r
23161	Huge Brooklyn Brownstone Living, Close to it all.	Kimberly	Brooklyn	Bedford-Stuyvesant	40.69023	-73.95428	
25433	★Hostel Style Room | Ideal Traveling Buddies★	Anisha	Bronx	East Morrisania	40.83296	-73.88668	
25634	MARTIAL LOFT 3: REDEMPTION (upstairs, 2nd room)	Martial Loft	Brooklyn	Bushwick	40.69467	-73.92433	
25753	Sunny, Quiet Room in Greenpoint	Lauren	Brooklyn	Greenpoint	40.72462	-73.94072	
25778	Modern apartment in the heart of Williamsburg	Aymeric	Brooklyn	Williamsburg	40.70838	-73.94645	
25794	Spacious comfortable master bedroom with nice ...	Adeyemi	Brooklyn	Bedford-Stuyvesant	40.68173	-73.91342	
25795	Contemporary bedroom in brownstone with nice view	Adeyemi	Brooklyn	Bedford-Stuyvesant	40.68279	-73.91170	
25796	Cozy yet spacious private brownstone bedroom	Adeyemi	Brooklyn	Bedford-Stuyvesant	40.68258	-73.91284	
26259	the best you can find	Qiuchi	Manhattan	Murray Hill	40.75091	-73.97597	
26841	Coliving in Brooklyn! Modern design / Shared room	Sergii	Brooklyn	Bushwick	40.69211	-73.90670	
26866	Best Coliving space ever! Shared room.	Sergii	Brooklyn	Bushwick	40.69166	-73.90928	

```
9.minimum reviews
```

In [53]:

```
t=df["number_of_reviews"].min()
y=df.groupby("number_of_reviews")
k=y.get_group(t)
k
```

Out[53]:

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

10037 rows × 14 columns

```
10.highets number_of_reviews
```

In [54]:

```
t=df["number_of_reviews"].max()
y=df.groupby("number_of_reviews")
k=y.get_group(t)
k
```

Out[54]:

	name	host_name	neighbourhood_group	neighbourhood	latitude	longitude	room_type
11759	Room near JFK Queen Bed	Dona	Queens	Jamaica	40.6673	-73.76831	Private roon

In [ ]: