Group_2-EDA-Descriptive_stats-No_amenity_Data

April 26, 2023

[158]:
```
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
import numpy as np
```

[159]:
```
df_noAmenity = pd.read_csv("no_amenity.csv")
```

[160]:
```
df_noAmenity.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 35646 entries, 0 to 35645
Data columns (total 15 columns):
 #   Column                Non-Null Count  Dtype
---  ------                --------------  -----
 0   area                  33374 non-null  float64
 1   building_type         35465 non-null  object
 2   building_nature       35646 non-null  object
 3   image_url             17312 non-null  object
 4   num_bath_rooms        35646 non-null  object
 5   num_bed_rooms         35646 non-null  object
 6   price                 34578 non-null  float64
 7   property_description  18259 non-null  object
 8   property_overview     17553 non-null  object
 9   property_url          35621 non-null  object
 10  purpose               35632 non-null  object
 11  city                  35110 non-null  object
 12  locality              35046 non-null  object
 13  address               30507 non-null  object
 14  garage                35646 non-null  float64
dtypes: float64(3), object(12)
memory usage: 4.1+ MB
```

1 Area

[161]:
```
# area_desc = df_noAmenity['area'].describe(percentiles=[.25, .5, .75, .85, .
↪95, .99])
```

```
area_desc = df_noAmenity['area'].describe(percentiles=[.3, .6, .9, .99])
```

[162]:

```
area_desc
```

[162]:

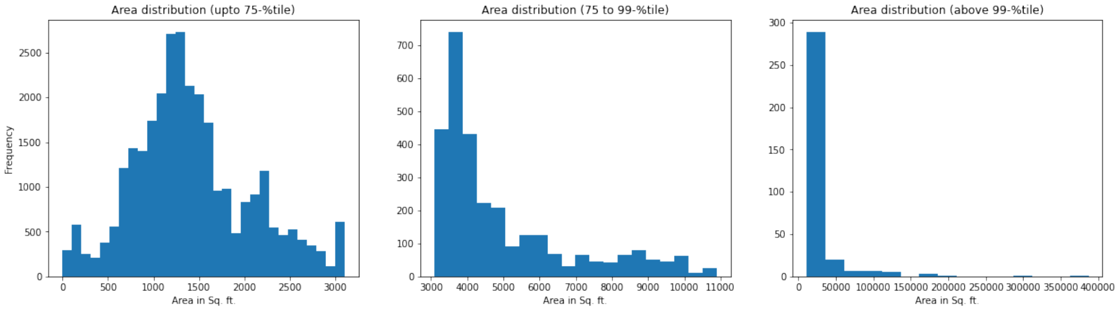
```
count     33374.000000
mean       1993.159806
std        4622.888250
min           0.000000
30%        1125.000000
50%        1400.000000
60%        1553.000000
90%        3100.000000
99%       10898.748000
max      387360.000000
Name: area, dtype: float64
```

1.0.1 Distribution of 'area' values:

[163]:

```
# subset data for areas upto 90 percentiles
area_90 = df_noAmenity[df_noAmenity['area'] <= area_desc['90%']]

# subset data for areas above 90 and upto 99 percentiles
area_90_99 = df_noAmenity[(df_noAmenity['area'] > area_desc['90%']) &␣
 ↪(df_noAmenity['area'] <= area_desc['99%'])]

# subset data for areas above 99 percentiles
area_99_100 = df_noAmenity[(df_noAmenity['area'] > area_desc['99%'])]

# Create a Figure and an Axes for a 2-column grid of subplots
fig, ax = plt.subplots(1,3)

# First plot
ax[0].hist(area_90['area'], bins=30)
ax[0].set_xlabel('Area in Sq. ft.')
ax[0].set_ylabel('Frequency')
ax[0].set_title('Area distribution (upto 75-%tile)')

# Second plot
ax[1].hist(area_90_99['area'], bins=20)
ax[1].set_xlabel('Area in Sq. ft.')
ax[1].set_title('Area distribution (75 to 99-%tile)')

# Third plot
ax[2].hist(area_99_100['area'], bins=15)
ax[2].set_xlabel('Area in Sq. ft.')
```

```
ax[2].set_title('Area distribution (above 99-%tile)')

# Adjust the size of the figure
fig.set_size_inches([20,5])

plt.show()
```



[164]:
```
# area['area'].value_counts()
```

[165]:
```
# What are the area values for properties with area above 99-%tile
# df_noAmenity[df_noAmenity['area'] >= area_desc['99%']]
```

[166]:
```
df_noAmenity[df_noAmenity['area'] <= 100].shape
# df_noAmenity[df_noAmenity['area'] < 10]['property_url']
```

[166]:
```
(293, 15)
```

2 Property descriptions: *building_type*, *building_nature*

2.1 (i) *building_type*

[167]:
```
df_noAmenity['building_type'].value_counts()
```

[167]:
```
Apartment                               26291
Office                                   2156
Building                                 1420
Land                                     1342
Shop                                     1060
Floor                                     885
Plot                                      809
Garage                                    457
Apartment/Flats                           378
Commercial Space                          249
```

```
House                              221
Duplex                              77
Office space                        52
Warehouse                           30
Factory                             19
Duplex Home                          7
Commerical - Other                   4
Independent House                    2
Showroom / Shop / Restaurant         2
Apartment, Commercial                2
Commercial property                  2
Name: building_type, dtype: int64
```

NOTE: There seems to be some repetitions of types. Let's combine the related values into unique types

[168]:

```
# Combine the related values into one

# The following types are combined into one
#
# Apartment: Apartment;  Apartment/Flats;  Apartment, Commercial
# Office:  Office;  Office space
# Commercial Space:  Commercial Space;  Commerical - Other;  Commercial property
# Shop:  Shop;  Showroom / Shop / Restaurant
# House:  House;  Independent House
# Duplex:  Duplex;  Duplex Home

# Create a new column
df_noAmenity['building_type_comb'] = df_noAmenity['building_type']

df_noAmenity['building_type_comb'] = np.
 ↪where(df_noAmenity['building_type_comb'].str.contains('Apartment'),
                                          'Apartment',␣
 ↪df_noAmenity['building_type_comb'])

df_noAmenity['building_type_comb'] = np.
 ↪where(df_noAmenity['building_type_comb'].str.contains('Office'),
                                          'Office',␣
 ↪df_noAmenity['building_type_comb'])

df_noAmenity['building_type_comb'] = np.
 ↪where(df_noAmenity['building_type_comb'].str.contains('Commercial'),
                                          'Commercial Space',␣
 ↪df_noAmenity['building_type_comb'])

# Correct the typo!
```

```
df_noAmenity['building_type_comb'] = np.
 ↪where(df_noAmenity['building_type_comb'].str.contains('Commerical'),
                                           'Commercial Space',␣
 ↪df_noAmenity['building_type_comb'])

df_noAmenity['building_type_comb'] = np.
 ↪where(df_noAmenity['building_type_comb'].str.contains('Shop'),
                                      'Shop', df_noAmenity['building_type_comb'])

df_noAmenity['building_type_comb'] = np.
 ↪where(df_noAmenity['building_type_comb'].str.contains('House'),
                                           'House',␣
 ↪df_noAmenity['building_type_comb'])

# Although a 'Duplex' is a special kind of 'House', let's keep it as a separate␣
 ↪type
df_noAmenity['building_type_comb'] = np.
 ↪where(df_noAmenity['building_type_comb'].str.contains('Duplex'),
                                           'Duplex',␣
 ↪df_noAmenity['building_type_comb'])
```

[169]:

```
df_noAmenity['building_type_comb'].value_counts()
```

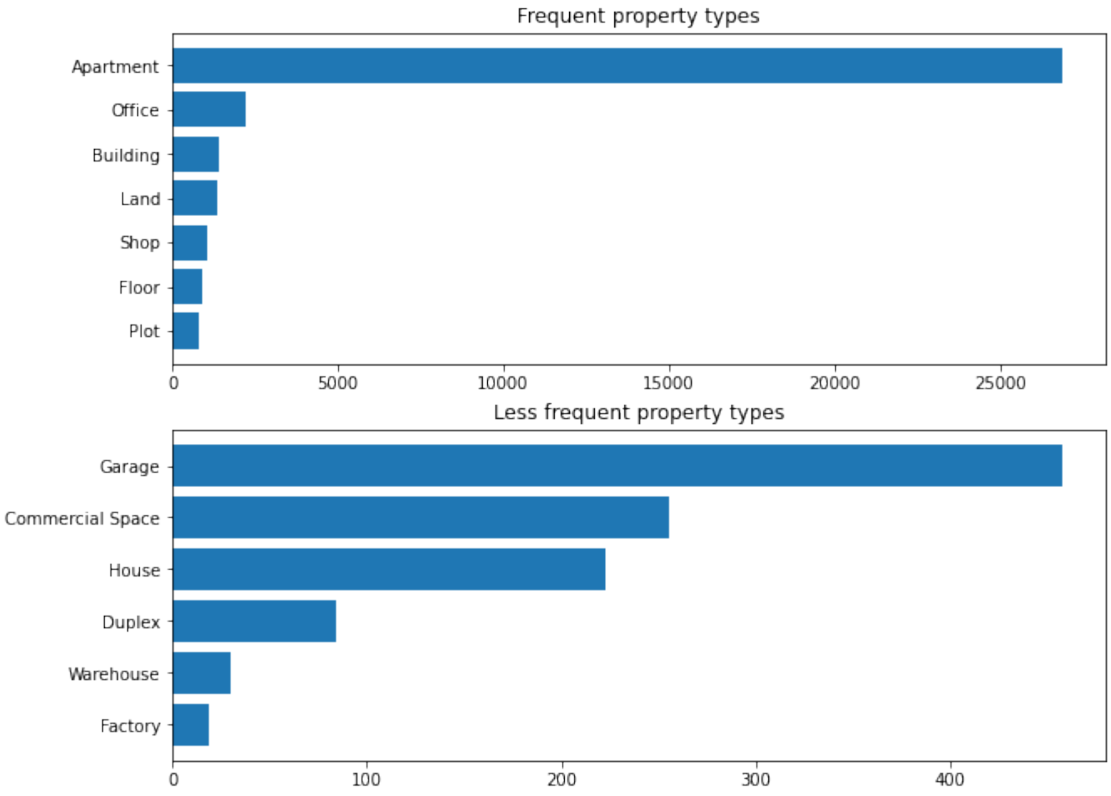
[169]:

```
Apartment           26852
Office               2208
Building             1420
Land                 1342
Shop                 1062
Floor                 885
Plot                  809
Garage                457
Commercial Space      255
House                 223
Duplex                 84
Warehouse              30
Factory                19
Name: building_type_comb, dtype: int64
```

[170]:

```
ind = 6

freq = df_noAmenity['building_type_comb'].value_counts()[ind::-1]
less_freq = df_noAmenity['building_type_comb'].value_counts()[-1:ind:-1]

fig, ax = plt.subplots(2,1)

# First plot
```

```
ax[0].barh(freq.index, freq)
ax[0].set_title('Frequent property types')

# # Second plot
ax[1].barh(less_freq.index, less_freq)
ax[1].set_title('Less frequent property types')

# Adjust the size of the figure
fig.set_size_inches([10,8])

plt.show()
```

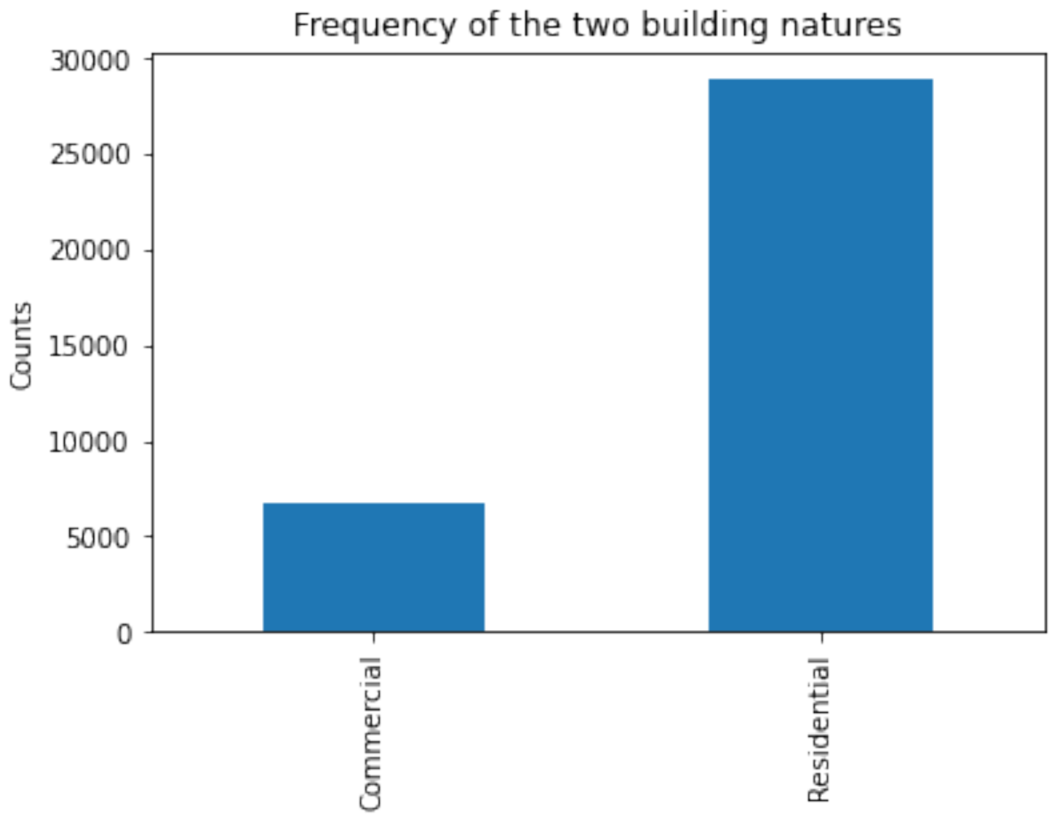


2.2 (ii) building_nature

[171]:
```
df_noAmenity['building_nature'].value_counts()
```

[171]:
```
Residential    28892
Commercial      6754
Name: building_nature, dtype: int64
```

```
[172]: df_noAmenity['building_nature'].value_counts().sort_index().plot(kind='bar')

       # Add labels and title
       plt.ylabel('Counts')
       plt.title('Frequency of the two building natures')
       plt.show()
```



3 Bathrooms & bedrooms

3.1 (i) Bathrooms

```
[173]: df_noAmenity['num_bath_rooms'].value_counts()[:10]
```

```
[173]: 0.0      15524
       3.0       8595
       2.0       5526
       4.0       3117
       1.0       1321
       5.0        620
```

```
 4 ba       170
3           148
6.0         145
 3 ba       142
Name: num_bath_rooms, dtype: int64
```

```
[174]: df_noAmenity['num_bed_rooms'].value_counts()[:10]
```

```
[174]: 3.0      16554
       0.0       8700
       2.0       5797
       4.0       2707
       1.0        657
       5.0        270
        3 bd      253
       3          183
        4 bd      117
       6.0         87
       Name: num_bed_rooms, dtype: int64
```

NOTE: The values are *'num_bath_rooms'* and *'num_bed_rooms'* are not numeric

Clean-up the columns and convert the values numeric

```
[175]: # Format the two columns
       df_noAmenity['num_bath_rooms'] = np.where(df_noAmenity['num_bath_rooms'].str.
        ↪contains(' ba'),
                                                  df_noAmenity['num_bath_rooms'].str.
        ↪split(' ')[1],
                                                  df_noAmenity['num_bath_rooms'])


       df_noAmenity['num_bed_rooms'] = np.where(df_noAmenity['num_bed_rooms'].str.
        ↪contains(' bd'),
                                                  df_noAmenity['num_bed_rooms'].str.
        ↪split(' ')[1],
                                                  df_noAmenity['num_bed_rooms'])
```

```
[176]: # df_noAmenity[df_noAmenity['num_bath_rooms'].str.contains(' ba')]
```

```
[177]: print(df_noAmenity['num_bath_rooms'].dtype)
       print(df_noAmenity['num_bed_rooms'].dtype)
```

```
object
object
```

```
[178]: df_noAmenity['num_bath_rooms'] = df_noAmenity['num_bath_rooms'].astype('float')
       df_noAmenity['num_bed_rooms'] = df_noAmenity['num_bed_rooms'].astype('float')
```

[179]:

```
print(df_noAmenity['num_bath_rooms'].dtype)
print(df_noAmenity['num_bed_rooms'].dtype)
```

```
float64
float64
```

[180]:

```
df_noAmenity['num_bath_rooms'].value_counts()
```

[180]:

```
0.0     15526
3.0      8743
2.0      5570
4.0      3613
1.0      1321
5.0       631
6.0       146
10.0       32
8.0        28
7.0        20
9.0         8
12.0        2
26.0        1
13.0        1
16.0        1
18.0        1
36.0        1
31.0        1
Name: num_bath_rooms, dtype: int64
```

[181]:

```
df_noAmenity['num_bed_rooms'].value_counts()
```

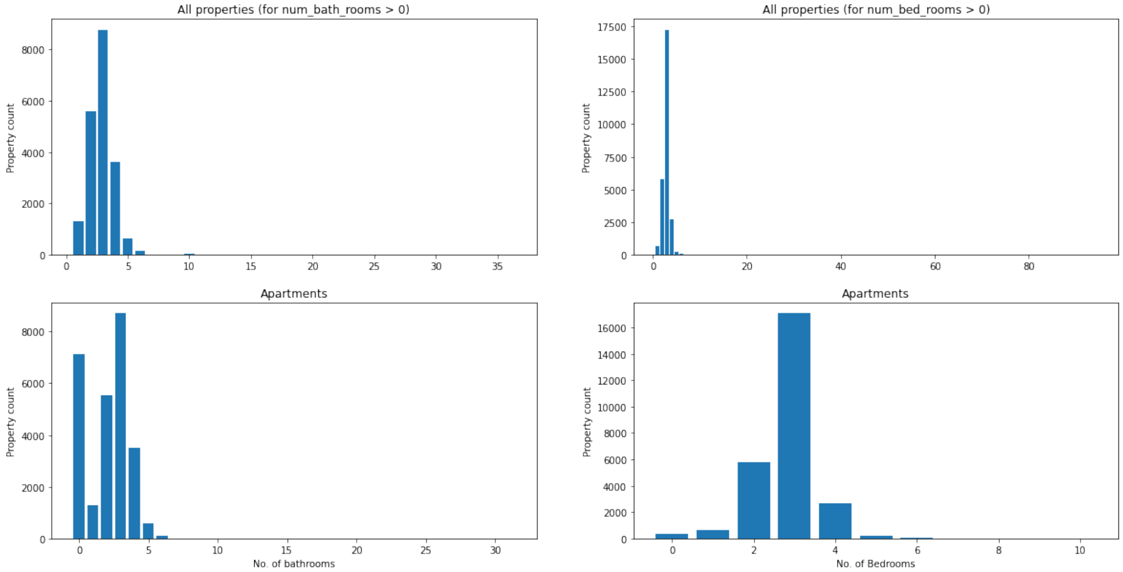
[181]:

```
3.0     17178
0.0      8702
2.0      5822
4.0      2755
1.0       657
5.0       273
6.0        87
7.0        46
8.0        26
10.0       18
12.0       10
9.0         9
18.0        7
24.0        6
21.0        5
14.0        4
16.0        4
```

```
36.0        3
20.0        3
11.0        3
25.0        3
15.0        2
13.0        2
19.0        2
32.0        2
17.0        2
56.0        2
22.0        1
33.0        1
46.0        1
94.0        1
30.0        1
50.0        1
42.0        1
75.0        1
23.0        1
29.0        1
60.0        1
48.0        1
40.0        1
Name: num_bed_rooms, dtype: int64
```

[182]:
```
nBathrooms = df_noAmenity[df_noAmenity['num_bath_rooms'] > 0]['num_bath_rooms'].
 ↪value_counts()
nBedrooms = df_noAmenity[df_noAmenity['num_bed_rooms'] > 0]['num_bed_rooms'].
 ↪value_counts()

nApBathrooms = df_noAmenity[(df_noAmenity['building_type_comb'] ==␣
 ↪'Apartment')]['num_bath_rooms'].value_counts()
nApBedrooms = df_noAmenity[(df_noAmenity['building_type_comb'] ==␣
 ↪'Apartment')]['num_bed_rooms'].value_counts()


# Create a Figure and an Axes for a 2-column grid of subplots
fig, ax = plt.subplots(2,2)

# Bathroom plot
ax[0, 0].bar(nBathrooms.index, nBathrooms)

# Add labels and title
ax[0, 0].set_ylabel('Property count')
ax[0, 0].set_title('All properties (for num_bath_rooms > 0)')
```

```
# Bedroom plot
ax[0, 1].bar(nBedrooms.index, nBedrooms)

# Add labels and title
ax[0, 1].set_ylabel('Property count')
ax[0, 1].set_title('All properties (for num_bed_rooms > 0)')


# Bathroom plot
ax[1, 0].bar(nApBathrooms.index, nApBathrooms)

# Add labels and title
ax[1, 0].set_xlabel('No. of bathrooms')
ax[1, 0].set_ylabel('Property count')
ax[1, 0].set_title('Apartments')


# Bedroom plot
ax[1, 1].bar(nApBedrooms.index, nApBedrooms)

# Add labels and title
ax[1, 1].set_xlabel('No. of Bedrooms')
ax[1, 1].set_ylabel('Property count')
ax[1, 1].set_title('Apartments')


# Adjust the size of the figure
fig.set_size_inches([20,10])
plt.show()
```



4 Price

```
[183]: # df_noAmenity.columns
```

```
[184]: df_noAmenity['price'].describe(percentiles=[.3, .6, .9, .99])
```

```
[184]: count    3.457800e+04
       mean     1.046375e+09
       std      1.301329e+11
       min      0.000000e+00
       30%      3.200000e+04
       50%      1.750000e+05
       60%      1.800000e+06
       90%      1.200000e+07
       99%      8.700000e+07
       max      2.400000e+13
       Name: price, dtype: float64
```

```
[185]: df_noAmenity[df_noAmenity['purpose'] == 'Sale']['price'].describe(percentiles=[.
        ↪3, .6, .9, .99])
```

```
[185]: count    1.445000e+04
       mean     2.483006e+09
       std      2.012964e+11
       min      1.000000e+00
       30%      5.200000e+06
       50%      7.000225e+06
       60%      8.150000e+06
       90%      2.100000e+07
       99%      4.093044e+09
       max      2.400000e+13
       Name: price, dtype: float64
```

```
[186]: df_noAmenity[df_noAmenity['purpose'] == 'Rent']['price'].describe(percentiles=[.
        ↪3, .6, .9, .99])
```

```
[186]: count    2.011900e+04
       mean     1.248472e+07
       std      8.867910e+08
       min      0.000000e+00
       30%      2.000000e+04
       50%      3.000000e+04
       60%      4.500000e+04
       90%      2.700000e+05
```

```
99%      1.500000e+06
max      1.000000e+11
Name: price, dtype: float64
```

[187]:
```
# df_noAmenity[df_noAmenity['purpose'] == 'Sale'].groupby('building_type_comb',␣
↪as_index=False)['price'].mean()
```

[188]:
```
# df_noAmenity[df_noAmenity['purpose'] == 'Rent'].groupby('building_type_comb',␣
↪as_index=False)['price'].mean()
```

Calculate mean prices for each building_type and for "Sale" and "Rent" separately

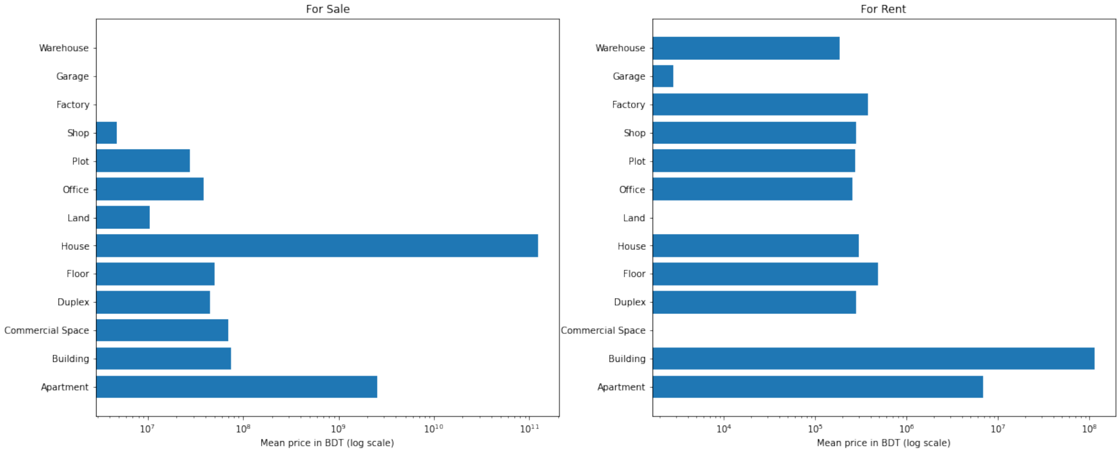
[189]:
```
# Calculate 'Sale' and 'Rent' means separately and merge
df_mean_price = pd.merge(df_noAmenity[df_noAmenity['purpose'] == 'Sale'].
↪groupby('building_type_comb', as_index=False)['price'].mean(),
         df_noAmenity[df_noAmenity['purpose'] == 'Rent'].
↪groupby('building_type_comb', as_index=False)['price'].mean(),
         on='building_type_comb', how='outer', suffixes = ['_sale', '_rent']).
↪fillna(0)
```

[190]:
```
df_mean_price
# df_mean_price.sort_values(by = ['price_sale'], ascending = False)
```

[190]:
```
   building_type_comb    price_sale    price_rent
0           Apartment  2.573413e+09  6.832983e+06
1            Building  7.466818e+07  1.138637e+08
2    Commercial Space  6.967286e+07  0.000000e+00
3              Duplex  4.528889e+07  2.824167e+05
4               Floor  4.999938e+07  4.800843e+05
5               House  1.241668e+11  3.016898e+05
6                Land  1.042472e+07  0.000000e+00
7              Office  3.907789e+07  2.561775e+05
8                Plot  2.765887e+07  2.708750e+05
9                Shop  4.774180e+06  2.803508e+05
10            Factory  0.000000e+00  3.767947e+05
11             Garage  0.000000e+00  2.784603e+03
12          Warehouse  0.000000e+00  1.842667e+05
```

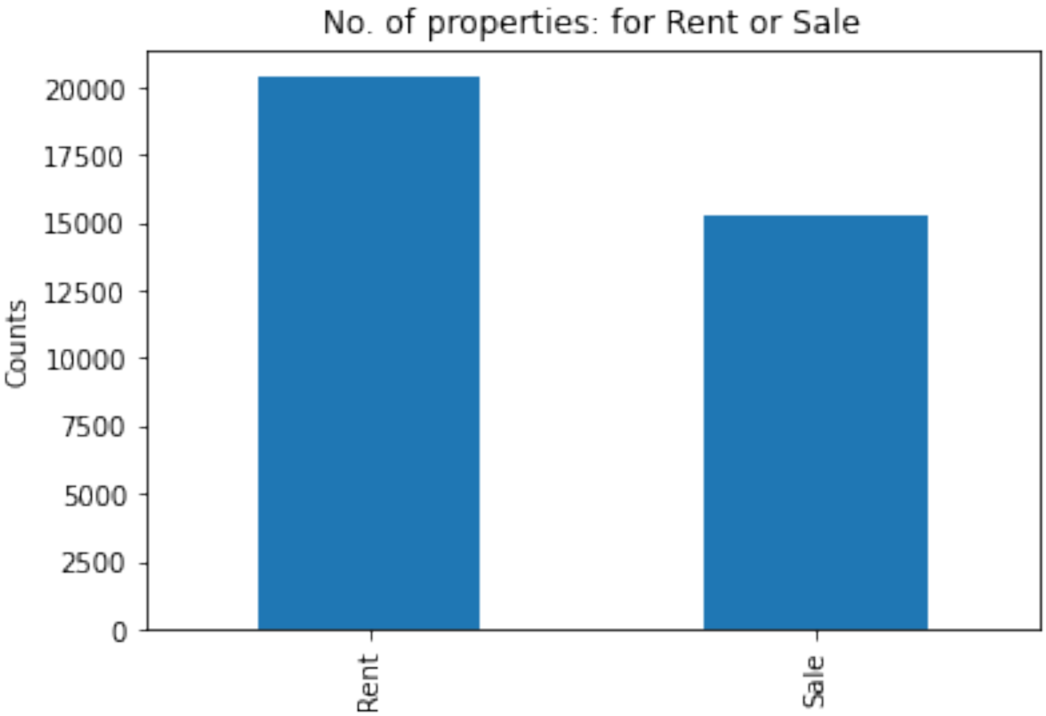
[191]:
```
fig, ax = plt.subplots(1,2)

# First plot
ax[0].barh(df_mean_price['building_type_comb'], df_mean_price['price_sale'])
ax[0].set_title('For Sale')
ax[0].set_xscale('log')
ax[0].set_xlabel('Mean price in BDT (log scale)')
```

```
# # Second plot
ax[1].barh(df_mean_price['building_type_comb'], df_mean_price['price_rent'])
ax[1].set_title('For Rent')
ax[1].set_xscale('log')
ax[1].set_xlabel('Mean price in BDT (log scale)')

# Adjust the size of the figure
fig.set_size_inches([20,8])

plt.show()
```



5 Purpose

[192]:
```
df_noAmenity['purpose'].value_counts().sort_index().plot(kind='bar')

# Add labels and title
plt.ylabel('Counts')
plt.title('No. of properties: for Rent or Sale')
plt.show()
```



```
[193]: df_noAmenity['building_type_comb'] = np.
        ↪where(df_noAmenity['building_type_comb'].str.contains('Apartment'),
                                                 'Apartment',␣
        ↪df_noAmenity['building_type_comb'])
```

6 City

```
[194]: df_noAmenity['city'].value_counts()
```

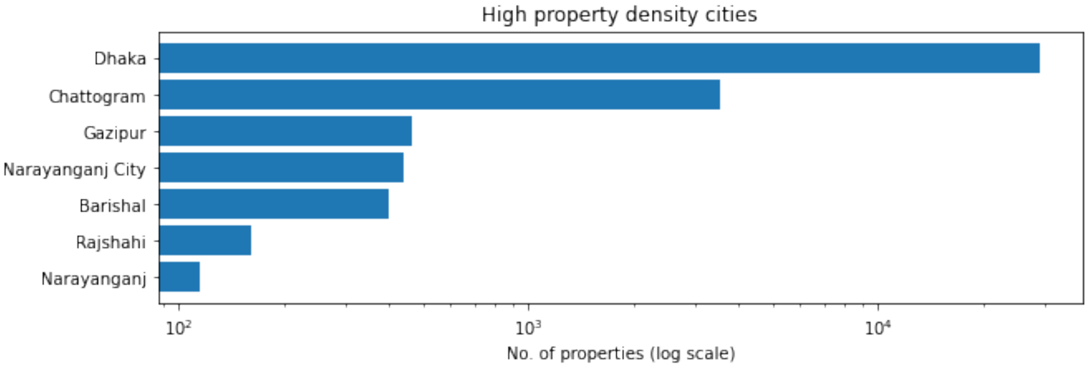
```
[194]: Dhaka                  29215
       Chattogram              3553
       Gazipur                  465
       Narayanganj City         441
       Barishal                 397
                              …
       Sunamganj                  2
       Jhalokati                  1
       Pirojpur                   1
       Gopalganj                  1
       Lakshmipur                 1
       Name: city, Length: 61, dtype: int64
```

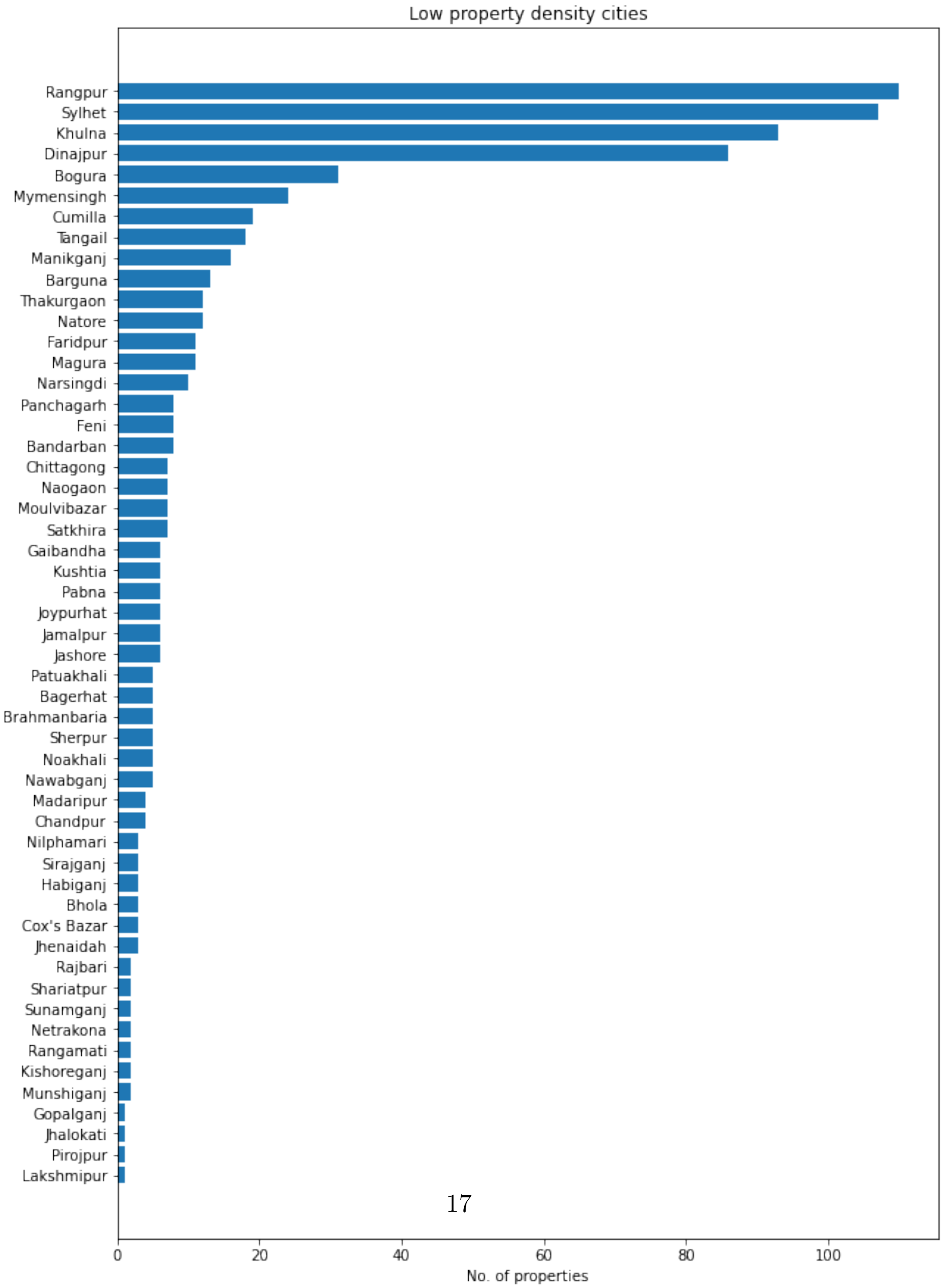
[195]:
```
# Correct the typo: ' Dhaka' -> 'Dhaka'

df_noAmenity['city'] = np.where(df_noAmenity['city'] == ' Dhaka', 'Dhaka',␣
 ↪df_noAmenity['city'])
```

[196]:
```
df_noAmenity['city'].unique()
```

[196]:
```
array(['Dhaka', 'Chattogram', 'Narayanganj City', 'Gazipur', 'Sylhet',
       nan, 'Chittagong', 'Narayanganj', 'Pabna', 'Khulna', 'Jhenaidah',
       'Rajshahi', 'Rangpur', 'Dinajpur', 'Kushtia', 'Bogura', 'Barishal',
       'Thakurgaon', 'Manikganj', 'Barguna', 'Mymensingh', 'Faridpur',
       'Narsingdi', 'Magura', 'Jamalpur', 'Feni', 'Madaripur', 'Jashore',
       'Noakhali', 'Cumilla', 'Nawabganj', 'Tangail', 'Satkhira',
       "Cox's Bazar", 'Gaibandha', 'Habiganj', 'Netrakona', 'Chandpur',
       'Sherpur', 'Moulvibazar', 'Naogaon', 'Pirojpur', 'Panchagarh',
       'Bandarban', 'Jhalokati', 'Bagerhat', 'Sirajganj', 'Shariatpur',
       'Sunamganj', 'Patuakhali', 'Natore', 'Bhola', 'Rajbari',
       'Joypurhat', 'Rangamati', 'Kishoreganj', 'Munshiganj',
       'Brahmanbaria', 'Nilphamari', 'Gopalganj', 'Lakshmipur'],
      dtype=object)
```

[197]:
```
ind = 6

freq = df_noAmenity['city'].value_counts()[ind::-1]
less_freq = df_noAmenity['city'].value_counts()[-1:ind:-1]

fig = plt.figure()
ax = fig.subplots(2, 1, height_ratios=[0.8, 4])

# First plot
ax[0].barh(freq.index, freq)
ax[0].set_title('High property density cities')
ax[0].set_xlabel('No. of properties (log scale)')
ax[0].set_xscale('log')

# # Second plot
ax[1].barh(less_freq.index, less_freq)
ax[1].set_title('Low property density cities')
ax[1].set_xlabel('No. of properties')
# ax[1].set_xscale('linear')

# Adjust the size of the figure
fig.set_size_inches([10,20])

plt.show()
```


High property density cities
Dhaka
Chattogram
Gazipur
Narayanganj City
Barishal
Rajshahi
Narayanganj
10^2
10^3
10^4
No. of properties (log scale)


Low property density cities
Rangpur
Sylhet
Khulna
Dinajpur
Bogura
Mymensingh
Cumilla
Tangail
Manikganj
Barguna
Thakurgaon
Natore
Faridpur
Magura
Narsingdi
Panchagarh
Feni
Bandarban
Chittagong
Naogaon
Moulvibazar
Satkhira
Gaibandha
Kushtia
Pabna
Joypurhat
Jamalpur
Jashore
Patuakhali
Bagerhat
Brahmanbaria
Sherpur
Noakhali
Nawabganj
Madaripur
Chandpur
Nilphamari
Sirajganj
Habiganj
Bhola
Cox's Bazar
Jhenaidah
Rajbari
Shariatpur
Sunamganj
Netrakona
Rangamati
Kishoreganj
Munshiganj
Gopalganj
Jhalokati
Pirojpur
Lakshmipur
0
20
40
60
80
100
No. of properties

7 Locality

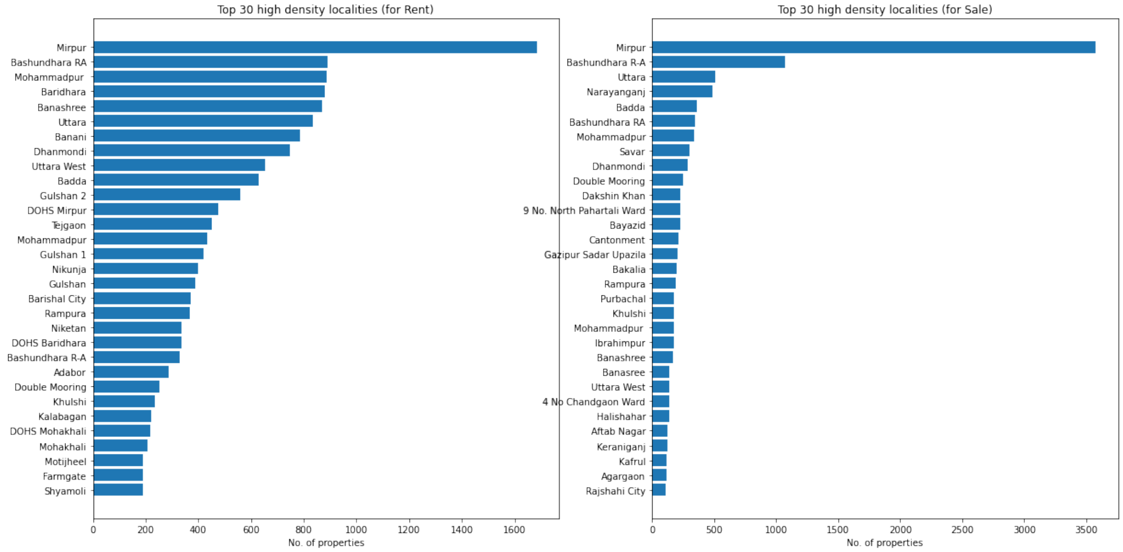
```
[198]: df_noAmenity['locality'].value_counts()[:10]
```

```
[198]: Mirpur             5262
       Bashundhara R-A    1405
       Uttara             1348
       Bashundhara RA     1236
       Mohammadpur        1064
       Dhanmondi          1035
       Banashree          1033
       Badda               987
       Baridhara           986
       Banani              890
       Name: locality, dtype: int64
```

```
[199]: df_noAmenity['locality'].unique()
```

```
[199]: array(['Khilgaon', 'Dhanmondi', 'Mirpur', 'Bashundhara R-A', 'Banasree',
              'Banani', 'Uttara', 'Sutrapur', 'Gulshan', 'Badda', 'Rampura',
              'Mohammadpur', 'Turag', 'Shyamoli', 'Ibrahimpur', 'Aftab Nagar',
              'Baridhara', 'Bashabo', 'Khulshi', 'Agargaon', 'Tejgaon',
              'Cantonment', 'Kalabagan', 'Adabor', '10 No. North Kattali Ward',
              'Kakrail', 'Eskaton', nan, 'Kathalbagan', 'Nikunja', 'Hazaribag',
              'Motijheel', 'Malibagh', 'Keraniganj', 'Bangshal', 'Shyampur',
              'Demra', 'Maghbazar', 'Muradpur', 'Double Mooring', 'Kuril',
              'Halishahar', '15 No. Bagmoniram Ward', 'Shiddheswari',
              'Shahjahanpur', 'Jatra Bari', 'Dakshin Khan', 'New Market',
              '9 No. North Pahartali Ward', '4 No Chandgaon Ward',
              'Uttar Lalkhan', 'Bayazid', 'Mohakhali', 'Banani Dohs',
              'Hatirpool', 'Lal Khan Bazaar', 'Purbachal', 'Sholokbahar',
              'East Nasirabad', 'Panchlaish', 'Kafrul',
              '33 No. Firingee Bazaar Ward', 'Bakalia', 'Lalbagh', 'Jamal Khan',
              '22 No. Enayet Bazaar Ward', 'Uttar Khan', 'Kazir Dewri',
              '16 No. Chawk Bazaar Ward', 'Savar', 'Narayanganj',
              '11 No. South Kattali Ward', 'Lalmatia',
              '7 No. West Sholoshohor Ward', 'Kotwali', '36 Goshail Danga Ward',
              'Niketan', 'Gazipur Sadar Upazila', 'Fatulla', 'Maniknagar',
              'Shantinagar', 'Mohakhali Dohs', 'Shegunbagicha', 'Kachukhet',
              'North Shahjahanpur', 'Jalalabad Housing Society', 'Joar Sahara',
              'Nadda', 'Taltola', 'Shahbagh', 'Khilkhet', 'Baridhara Dohs',
              'Zafrabad', 'Chandra', '29 No. West Madarbari Ward',
              '30 No. East Madarbari Ward', '31 No. Alkoron Ward',
'Shiddhirganj', 'Hathazari', 'Mugdapara', 'Dumni', 'Kamrangirchar',
'Railway Colony', 'Sreepur', 'Kalachandpur', 'Patenga',
'32 No. Andarkilla Ward', 'Zindabazar', 'Riaj Uddin Bazar',
'Banglamotors', 'Gulistan', 'Paribagh', 'Firojshah Colony',
'Sagorika Bscic Industrial Area', 'Ambarkhana',
'Bashundhara Riverview', 'North  Nandipara', 'South Banasree',
'Nandipara', 'Aftabnagar', 'Modhubag', 'Senpara Porbota', 'Bosila',
'East Rampura', 'Mugda', 'West Khulshi', 'Bashundhara R/A',
'West Rampura', 'Chawkbazar', 'Chandanpur', 'Bashundhara',
'Banglamotor', 'Mohammadpur ', 'Banashree', 'Bashundhara RA',
'Vatara ', 'Basabo', 'Paltan', 'Gandaria ', 'Jatrabari',
'Pallabi ', 'Gulshan 1', 'Wari', 'Uttara West', 'Karwan Bazar',
'Gulshan 2', 'Chattogram City', 'Farmgate', 'DOHS Mirpur',
'Lalbag', 'Uttara East', 'Gazipur Sadar', 'Dinajpur Sadar',
'Daskhinkhan', 'Rangpur City', 'Sylhet City', 'Kushtia Sadar',
'Bogura Sadar', 'Barishal City', 'Rajshahi City',
'Thakurgaon Sadar', 'Manikganj Sadar', 'Khulna City',
'Barguna Sadar', 'DOHS Mohakhali', 'DOHS Baridhara', 'Ramna',
'Moghbazar', 'Mugda Para', 'Sabujbag', 'DOHS Banani',
'Tejgaon I/A', 'Mymensingh City', 'Sher E Bangla Nagar ',
'Faridpur Sadar', 'Narsingdi Sadar', 'Airport', 'Kaliakair',
'Magura Sadar', 'Jamalpur Sadar', 'Chhagalnaiya', 'Rupganj',
'Kalkini', 'Shahbag ', 'Tongi', 'Belabo', 'Jashore Sadar',
'Noakhali Sadar', 'Hazaribag ', 'Kadamtali', 'Kallaynpur',
'Rupnagar', 'Nangalkot', 'Kamrangir Char', 'Chapainawabganj Sadar',
'Uttarkhan', 'Ghatail', 'Shah Ali', 'Kaliganj', 'Bhaluka',
'Satkhira Sadar', "Cox's Bazar Sadar", 'Tarakanda', 'Sakhipur',
'Gaibandha Sadar', 'Mirsharai', 'Chunarughat', 'Rajoir',
'Pabna Sadar', 'Tangail Sadar', 'Netrokona Sadar', 'Ranisankail',
'Cumilla City', 'Feni Sadar', 'Taltali', 'Chandpur Sadar',
'Bandar', 'Sitakunda', 'Sherpur Sadar', 'Dohar ', 'Sarishabari',
'Moulvibazar Sadar', 'Naogaon Sadar', 'Boalmari', 'Bhandaria',
'Panchagarh Sadar', 'Shyampur ', 'Singiar', 'Bandarban Sadar',
'Jaintiapur', 'Jhalakathi Sadar', 'Jhenaidah Sadar', 'Mongla',
'Sreemangal', 'Sirajganj Sadar', 'Shariatpur Sadar',
'Sunamganj Sadar', 'Patuakhali Sadar', 'Natore Sadar',
'Bagerhat Sadar', 'Chauddagram', 'Bhola Sadar', 'Sonargaon',
'Araihazar', 'Shajahanpur', 'Dhamrai', 'Rajbari Sadar',
'Dakshinsurma', 'Akkelpur', 'Digholia', 'Rajasthali', 'Lalpur',
'Bhairab', 'Bagha', 'Puthia', 'Rupsha', 'Fenchuganj', 'Debidwar',
'Fulbaria', 'Gajaria', 'Munshiganj Sadar', 'Botiaghata',
'Birampur', 'Pakundia', 'Bhashantek ', 'Shibpur', 'Kalapara',
'Tetulia', 'Kamarkhand', 'Fakirhat', 'Brahmanbaria Sadar',
'Nilphamari Sadar', 'Habiganj Sadar', 'Joypurhat Sadar',
'Ullapara', 'Chack Bazar', 'Banshkhali', 'Boalkhali', 'Karnafuli',
'Gopalganj Sadar', 'Muktagacha', 'Madaripur Sadar',
'Lakshmipur Sadar', 'Siddeshwari', 'Shahjadpur'], dtype=object)
```

```
[200]: ind = 30

       freq_rent = df_noAmenity[df_noAmenity['purpose'] == 'Rent']['locality'].
        ↪value_counts()[ind::-1]
       freq_sale = df_noAmenity[df_noAmenity['purpose'] == 'Sale']['locality'].
        ↪value_counts()[ind::-1]
       # less_freq = df_noAmenity['city'].value_counts()[-1:ind:-1]


       # freq = freq_sale

       fig = plt.figure()
       ax = fig.subplots(1,2)

       # First plot
       ax[0].barh(freq_rent.index, freq_rent)
       ax[0].set_title('Top 30 high density localities (for Rent)')
       ax[0].set_xlabel('No. of properties')
       # ax.set_xscale('log')

       # Second plot
       ax[1].barh(freq_sale.index, freq_sale)
       ax[1].set_title('Top 30 high density localities (for Sale)')
       ax[1].set_xlabel('No. of properties')
       # ax.set_xscale('log')

       # Adjust the size of the figure
       fig.set_size_inches([20,10])

       plt.show()
```


Top 30 high density localities (for Rent)
Mirpur
Bashundhara RA
Mohammadpur
Baridhara
Banashree
Uttara
Banani
Dhanmondi
Uttara West
Badda
Gulshan 2
DOHS Mirpur
Tejgaon
Mohammadpur
Gulshan 1
Nikunja
Gulshan
Barishal City
Rampura
Niketan
DOHS Baridhara
Bashundhara R-A
Adabor
Double Mooring
Khulshi
Kalabagan
DOHS Mohakhali
Mohakhali
Motijheel
Farmgate
Shyamoli
No. of properties
Top 30 high density localities (for Sale)
Mirpur
Bashundhara R-A
Uttara
Narayanganj
Badda
Bashundhara RA
Mohammadpur
Savar
Dhanmondi
Double Mooring
Dakshin Khan
9 No. North Pahartali Ward
Bayazid
Cantonment
Gazipur Sadar Upazila
Bakalia
Rampura
Purbachal
Khulshi
Mohammadpur
Ibrahimpur
Banashree
Banasree
Uttara West
4 No Chandgaon Ward
Halishahar
Aftab Nagar
Keraniganj
Kafrul
Agargaon
Rajshahi City
No. of properties