This is a web scraping assignment that is done on Krisha.kz. I scraped the flats where the ci
scraped were put up for sale. My final dataframe is consist of 2864 rows and 11 columns. I g

In [78]:

```
# importing libraries
import selenium
from selenium import webdriver
import pandas as pd
import requests

from selenium.webdriver.support.ui import WebDriverWait
from selenium.webdriver.support import expected_conditions as EC
from selenium.webdriver.support.ui import WebDriverWait as wait
from selenium.webdriver.common.by import By
import requests
from bs4 import BeautifulSoup
import re

import matplotlib.pyplot as plt
import seaborn as sns
%matplotlib inline
```

In [2]:

```
driver = webdriver.Chrome()
```

In [5]:

```
# doing scraping for one page
url = 'https://krisha.kz/a/show/664501426'
driver.get(url)

name = driver.find_element_by_xpath('/html/body/main/div[2]/div/div[1]/h1').text
location = driver.find_element_by_xpath('/html/body/main/div[2]/div/div[2]/div[1]/div[1
description = driver.find_element_by_xpath('/html/body/main/div[2]/div/div[2]/div[1]/di

try:
    author = driver.find_element_by_xpath('/html/body/main/div[2]/div/div[2]/div[1]/div
except:
    author = 'No Data'

price = driver.find_element_by_xpath('/html/body/main/div[2]/div/div[2]/div[1]/div[1]/d
price = str(price)
price = re.sub("[^0-9]", "", price)

# scraping the mobile number
headers = {'User-Agent' : 'Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36
r = requests.get(url, headers = headers)
soup = BeautifulSoup(r.content, 'lxml')
soup = str(soup)
phone = re.findall(r'phones(.+?)hasPhoto', soup)
phone = str(phone)
phone = re.sub("[^0-9]", "", phone)

print(name, location, description, price, author, phone)
```

```
3-комнатная квартира, 67 м², 2/5 этаж, Алатау 18 — Сейфуллина Тараз, Жамбылская обл. 1982 г.п. 16000000 No Data
```

In [24]:

```
# getting links for each flat in Taraz
flatlinks = []
for x in range(1, 146):
    r = requests.get(f'https://krisha.kz/prodazha/kvartiry/taraz/?page={x}')
    soup = BeautifulSoup(r.content, 'lxml')
    rawlinks = soup.find_all("div", { "class" : "a-card__header-left" })
    links = []
    for rawlink in rawlinks:
        rawlink=str(rawlink)
        rawlink = re.findall(r'a-card__title" href="(.+?)" target', rawlink)
        rawlink=str(rawlink)
        rawlink = rawlink.replace('[', '')
        rawlink = rawlink.replace(']', '')
        rawlink = rawlink.replace("'", '')
        flatlinks.append('https://krisha.kz' + rawlink)
        flatlinks = [ x for x in flatlinks if len(x) > 18 ]
print(flatlinks)
```

```
krisha.kz/a/show/661652986', 'https://krisha.kz/a/show/662940424', 'https://krisha.kz/a/show/661961289', 'https
705', 'https://krisha.kz/a/show/660297703', 'https://krisha.kz/a/show/28045555', 'https://krisha.kz/a/show/662
z/a/show/50124217', 'https://krisha.kz/a/show/50124726', 'https://krisha.kz/a/show/664478525', 'https://krisha
s://krisha.kz/a/show/664478469', 'https://krisha.kz/a/show/660650479', 'https://krisha.kz/a/show/663755070', 'h
3363283', 'https://krisha.kz/a/show/58539489', 'https://krisha.kz/a/show/56764035', 'https://krisha.kz/a/show/6
a.kz/a/show/53673791', 'https://krisha.kz/a/show/664198000', 'https://krisha.kz/a/show/663771017', 'https://kri
 'https://krisha.kz/a/show/660866162', 'https://krisha.kz/a/show/664331773', 'https://krisha.kz/a/show/5586446
ow/662967585', 'https://krisha.kz/a/show/661320095', 'https://krisha.kz/a/show/664009921', 'https://krisha.kz/a
s://krisha.kz/a/show/664197633', 'https://krisha.kz/a/show/57087147', 'https://krisha.kz/a/show/57603137', 'htt
3273', 'https://krisha.kz/a/show/47099364', 'https://krisha.kz/a/show/28314001', 'https://krisha.kz/a/show/663
z/a/show/664477480', 'https://krisha.kz/a/show/57303740', 'https://krisha.kz/a/show/54129212', 'https://krisha
ps://krisha.kz/a/show/660971385', 'https://krisha.kz/a/show/661368284', 'https://krisha.kz/a/show/15453988', 'h
1134313', 'https://krisha.kz/a/show/57659103', 'https://krisha.kz/a/show/56534912', 'https://krisha.kz/a/show/5
kz/a/show/662980822', 'https://krisha.kz/a/show/662271825', 'https://krisha.kz/a/show/663758271', 'https://kris
 'https://krisha.kz/a/show/661390924', 'https://krisha.kz/a/show/663281458', 'https://krisha.kz/a/show/5021459
ow/664007765', 'https://krisha.kz/a/show/56039063', 'https://krisha.kz/a/show/664196330', 'https://krisha.kz/a/
risha.kz/a/show/660609790', 'https://krisha.kz/a/show/664472807', 'https://krisha.kz/a/show/662367977', 'https
52', 'https://krisha.kz/a/show/56875931', 'https://krisha.kz/a/show/660080097', 'https://krisha.kz/a/show/6616
a/show/661914014', 'https://krisha.kz/a/show/664475783', 'https://krisha.kz/a/show/664329721', 'https://krisha
ps://krisha.kz/a/show/660439707', 'https://krisha.kz/a/show/662510634', 'https://krisha.kz/a/show/54527738', 'h
3888449', 'https://krisha.kz/a/show/664475534', 'https://krisha.kz/a/show/58154108', 'https://krisha.kz/a/show/
a.kz/a/show/664475404', 'https://krisha.kz/a/show/54621504', 'https://krisha.kz/a/show/664195618', 'https://kri
 'https://krisha.kz/a/show/664195551', 'https://krisha.kz/a/show/664475134', 'https://krisha.kz/a/show/5119981
ow/664329115', 'https://krisha.kz/a/show/58086036', 'https://krisha.kz/a/show/661133070', 'https://krisha.kz/a/
krisha.kz/a/show/57660792', 'https://krisha.kz/a/show/48361708', 'https://krisha.kz/a/show/662117935', 'https:
```

In [25]:

```
print('Total flat number: ' + str(len(flatlinks)))
```

```
Total flat number: 2881
```

In [26]:

```
# implementing final scraping
final = []
for flat in flatlinks:
    driver.get(flat)
    try:
        name = driver.find_element_by_xpath('/html/body/main/div[2]/div/div[1]/h1').tex
    except:
        name = 'No Data'

    try:
        location = driver.find_element_by_xpath('/html/body/main/div[2]/div/div[2]/div[
    except:
        location = 'No Data'

    try:
        description = driver.find_element_by_xpath('/html/body/main/div[2]/div/div[2]/d
    except:
        description = 'No Data'

    try:
        author = driver.find_element_by_xpath('/html/body/main/div[2]/div/div[2]/div[1]
    except:
        author = 'No Data'

    try:
        price = driver.find_element_by_xpath('/html/body/main/div[2]/div/div[2]/div[1]/
        price = str(price)
        price = re.sub("[^0-9]", "", price)
    except:
        price = 'No Data'

    try:
        condition = driver.find_element_by_xpath('/html/body/main/div[2]/div/div[2]/div
    except:
        condition = 'No Data'

    try:
        bathroom = driver.find_element_by_xpath('/html/body/main/div[2]/div/div[2]/div[
    except:
        bathroom = 'No Data'

    try:
```

```
    balcony = driver.find_element_by_xpath('/html/body/main/div[2]/div/div[2]/div[1
except:
    balcony = 'No Data'

try:
    floor = driver.find_element_by_xpath('/html/body/main/div[2]/div/div[2]/div[1],
except:
    floor = 'No Data'

try:
# scraping the mobile number
    headers = {'User-Agent' : 'Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebK
    r = requests.get(flat, headers = headers)
    soup = BeautifulSoup(r.content, 'lxml')
    soup = str(soup)
    phone = re.findall(r'phones(.+?)hasPhoto', soup)
    phone = str(phone)
    phone = re.sub("[^0-9]", "", phone)
    phone = phone[0:11]
except:
    phone = 'No Data'

try:
    area = driver.find_element_by_xpath('/html/body/main/div[2]/div/div[2]/div[1]/d
except:
    area = 'No Data'

dictionary = {
    'Name' : name,
    'Location' : location,
    'Floor' : floor,
    'Building method' : description,
    'Area' : area,
    'Condition' : condition,
    'Bathroom' : bathroom,
    'Balcony' : balcony,
    'Price' : price,
    'Author' : author,
    'Phone' : phone
}
final.append(dictionary)
```

In [67]:

```
# exporting our list to the dataframe
df = pd.DataFrame(final)
```

In [70]:

```
df.loc[df['Price'] == 'No Data', 'Price'] = 0
```

In [71]:

```
# changing Price column's data type to the integer
df['Price'] = df.Price.astype(int)
```

In [72]:

```
count = df.loc[df['Price'] == 0]
count
```

	Name	Location	Floor	Building method	Area	Condition	Bathroom	Balcony	Price	Au
2860	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	0	No

In [73]:

```
# droping that row with null values
df.drop(df[df['Price'] == 0].index, inplace = True)
```

In [74]:

```
# exporting our dataframe to excel files
df.to_excel(r'C:\Users\Ali Shalbayev\Desktop\Ali_Shalbayev_BDA1902_HW5\Full_Taraz.xlsx
```

In [75]:

```
df.to_csv(r'C:\Users\Ali Shalbayev\Desktop\Ali_Shalbayev_BDA1902_HW5\Full_Taraz.csv', 
```

In [92]:

```
# showing the dataframe
df
```

	Name	Location	Floor	Building method	Area	Condition	Bathroom	Balcony	Pri
0	3-комнатная квартира, 62 м², 5/5 этаж, Каратау...	Тараз, Жамбылская обл.	5 из 5	панельный, 1968 г.п.	62 м², жилая — 62 м², кухня — 8 м²	среднее	раздельный	балкон	125000
1	2-комнатная квартира, 46 м², 1/5 этаж, Желтокс...	Тараз, Жамбылская обл.	1 из 5	кирпичный, 1969 г.п.	46 м², жилая — 35 м², кухня — 5 м²	евроремонт	совмещенный	металлическая	900000
2	2-комнатная квартира, 54 м², 2/5 этаж, Байзак ...	Тараз, Жамбылская обл.	2 из 5	кирпичный, 1981 г.п.	54 м²	евроремонт	раздельный	балкон	135000
3	4-комнатная квартира, 100 м², 1/4 этаж, Желток...	Тараз, Жамбылская обл.	1 из 4	кирпичный, 1968 г.п.	100 м², жилая — 82 м², кухня — 7 м²	евроремонт	раздельный	металлическая	200000
4	3-комнатная квартира, 57 м², 3/4 этаж, улица К...	Тараз, Жамбылская обл.	3 из 4	кирпичный, 1969 г.п.	57 м²	евроремонт	совмещенный	балкон	159000
...	...	...	...	...	...	...	...	...	...
2876	2-комнатная квартира, 47 м², 2/5 этаж, 10микро...	Тараз, Жамбылская обл.	2 из 5	панельный, 1986 г.п.	47 м²	хорошее	раздельный	лоджия	117000
2877	3-комнатная квартира, 65 м², 4/5 этаж, Абая 132	Тараз, Жамбылская обл.	4 из 5	панельный, 1978 г.п.	65 м², жилая — 62 м², кухня — 8 м²	хорошее	раздельный	балкон	155000
2878	3-комнатная квартира, 56 м², 4/5 этаж, Толе би 91	Тараз, Жамбылская обл.	4 из 5	кирпичный, 1985 г.п.	56 м², жилая — 36 м², кухня — 10 м²	среднее	нет	No Data	111710

	Name	Location	Floor	Building method	Area	Condition	Bathroom	Balcony	Pri
2879	2-комнатная квартира, 44.3 м², 1/5 этаж, Мкр. 9	Тараз, Жамбылская обл.	1 из 5	панельный, 1979 г.п.	44.3 м²	хорошее	совмещенный	металлическая	830000
2880	2-комнатная квартира, 49.5 м², 2/5 этаж, Мкр. 11	Тараз, Жамбылская обл.	2 из 5	панельный, 1986 г.п.	49.5 м²	хорошее	раздельный	лоджия	970000

2880 rows × 11 columns

Summary statistics

In [82]:

```
from millify import millify
```

In [91]:

```
# showing the mean for the price in human readable format
millify(df['Price'].mean())
```

```
'14M'
```

In [85]:

```
# the same mean without using millify() function
df['Price'].mean()
```

```
13580336.688541668
```

In [89]:

```
# median for the price column
millify(df['Price'].median())
```

```
'13M'
```

In [90]:

```
# same thing
df['Price'].median()
```

```
12700000.0
```

In [97]:

```
# aggregating statistics
df['Price'].describe()
```

```
count    2.880000e+03
mean     1.358034e+07
std      6.905754e+06
min      1.500000e+06
25%      9.500000e+06
50%      1.270000e+07
75%      1.600000e+07
max      1.150000e+08
Name: Price, dtype: float64
```

In [ ]:

```
df['Floor'] = df['Floor'].astype(str).str[0]
```

In [219]:

```
df[['Floor', 'Price']].groupby('Floor').mean().sort_values(by = ['Price'], ascending =
```

Floor	Price
7	2.265385e+07
6	2.081739e+07
9	1.677273e+07
2	1.493332e+07
8	1.468462e+07
3	1.432984e+07
1	1.327462e+07
4	1.324855e+07
5	1.218574e+07

In [220]:

```
'Building method', 'Price']].groupby('Building method').mean().sort_values(by = ['Price'
```

Building method	Price
монолитный, 2010 г.п.	4.733333e+07
кирпичный, 2020 г.п.	4.250000e+07
кирпичный, 2021 г.п.	3.500000e+07
кирпичный, 2019 г.п.	3.417500e+07
кирпичный, 2018 г.п.	3.300000e+07
кирпичный, 2007 г.п.	3.057941e+07
1994 г.п.	2.966667e+07
монолитный, 2007 г.п.	2.850000e+07
кирпичный, 2014 г.п.	2.832500e+07
монолитный, 2013 г.п.	2.830000e+07

In [221]:

```
floors[['Building method', 'Price']].groupby('Building method').mean().sort_values(by =
```

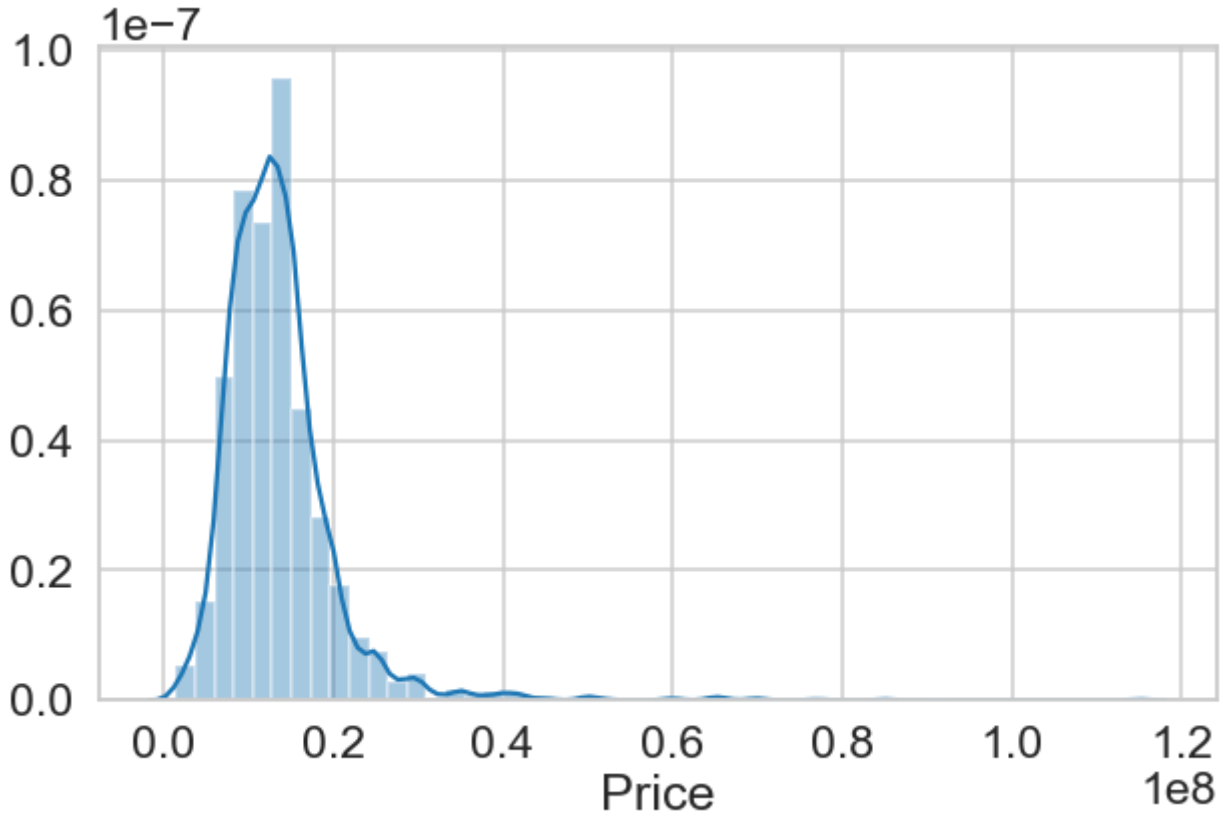
Building method	Price
кирпичный, 1957 г.п.	8400000.0
монолитный, 1967 г.п.	8250000.0
панельный, 2007 г.п.	8000000.0
панельный, 2015 г.п.	8000000.0
иное, 1960 г.п.	7500000.0
иное, 2017 г.п.	7000000.0
кирпичный, 1954 г.п.	7000000.0
2006 г.п.	5500000.0
1958 г.п.	5500000.0
кирпичный, 1950 г.п.	4250000.0

In [159]:

```
# distplot on prices
sns.set_style('whitegrid')
plt.figure(figsize=(10,6))

sns.set_context('talk', font_scale = 1.4)
sns.distplot(df['Price'], bins = 50, mean)
```

```
<matplotlib.axes._subplots.AxesSubplot at 0x1e1e68768b0>
```



In [161]:

```
df['Price'].mean()
```

```
13580785.496857543
```

In [162]:

```
df.shape
```

```
(2864, 11)
```

Conclusion

On doing the summary statistics we saw that the mean price for a flat in Taraz is quite low.

That definitely should be lower than most of the big cities in the country. We could see that m
each other. Which says that our distribution is symmetrical.

The next that I tried to consider is the relationship between the floor number and the price. I
the higher price will be. After implementing groupby function we see that 7th, 6th floors were
my hypothesis failed to be justified.

Then I tried to look for the correlation between price and building type where we can see the
building materials. After groupby method, I see that houses that were built since 2000s were
obvious actually.

```
In [ ]:
```