Reviews Part I: Sentiment Analysis

In [267…
```python
import pandas as pd
from textblob import TextBlob
from wordcloud import WordCloud
import pandas as pd
import numpy as np
import re
import matplotlib.pyplot as plt
```

In [268…
```python
cols = ["comments"]
reviews= pd.read_csv("reviews.csv", usecols = cols)
reviews["comments"] = reviews["comments"].astype(str) #spliting the text into words
reviews.drop(reviews.index[10001:1043004], inplace=True)
reviews.head()
```

Out[268…

	comments
0	My girlfriend and I hadn't known Alina before ...
1	Alina was a really good host. The flat is clea...
2	Alina is an amazing host. She made me feel rig...
3	Alina's place is so nice, the room is big and ...
4	Nice location in Islington area, good for shor...

Preprocessing/Cleaning of the Data

In [269…
```python
#clean the text
#create a function to clean the comments

def CleanTxt(text):
    text = re.sub(r'@[A-Za-z0-9]+', '', text)
    text = re.sub(r'[^a-zA-Z0-9 ]', '', text)
    text = re.sub(r'#', '', text)
    text = re.sub(r'RT[\S]+', '', text)

    return text

#cheaning the text
reviews['comments'] = reviews['comments'].apply(CleanTxt)

#shows clean text
reviews.head()
```

Out[269…

	comments
0	My girlfriend and I hadnt known Alina before w...
1	Alina was a really good host The flat is clean...
2	Alina is an amazing host She made me feel righ...
3	Alinas place is so nice the room is big and cl...
4	Nice location in Islington area good for short...

In [270…
```python
new_reviews = reviews.copy()
```

Calculating the Subjectivty and Polarity using TextBlob

In [271…
```python
#CREATE A FUNCTION TO GET THE SUBJECTIVITY
def getSubjectivity(text):
    return TextBlob(text).sentiment.subjectivity

#create a function to get the polarity

def getPolarity(text):
    return TextBlob(text).sentiment.polarity

#create new columns
new_reviews['Subjectivity']= new_reviews['comments'].apply(getSubjectivity)
new_reviews['Polarity']= new_reviews['comments'].apply(getPolarity)

#shows new
new_reviews.head(10)
```

Out[271…

	comments	Subjectivity	Polarity
0	My girlfriend and I hadnt known Alina before w...	0.486742	0.264773
1	Alina was a really good host The flat is clean...	0.445833	0.306944
2	Alina is an amazing host She made me feel righ...	0.566266	0.280812
3	Alinas place is so nice the room is big and cl...	0.579915	0.397669
4	Nice location in Islington area good for short...	0.610000	0.457500
5	Im very happy to have been Alinas guest Weve h...	0.588010	0.337183
6	I stayed with Alina in her flat in London for ...	0.693981	0.545833
7	Alina was a perfect guest and her flat is abso...	0.666250	0.533750
8	Alinas flat is exceptional one brl have to sa...	0.626000	0.319111
9	The House is a piece of Art there are beautif...	0.730000	0.499167

Computing the Negative, Neutral and Positve Analysis

In [272…
```python
from tqdm.notebook import tqdm
```

In [273…
```python
#compute a function to compute the negative, neutral and postive analysis
with tqdm(total=new_reviews.shape[0]) as pbar:
    def getAnalysis(score):
        if score < 0:
            return 'Negative'
        elif score == 0:
            return 'Neutral'
        else:
            return 'Positive'
        pbar.update(1)


new_reviews['Analysis']= new_reviews['Polarity'].apply(getAnalysis)


#show dataframe
new_reviews
```

Out[273…

	comments	Subjectivity	Polarity	Analysis
0	My girlfriend and I hadnt known Alina before w...	0.486742	0.264773	Positive
1	Alina was a really good host The flat is clean...	0.445833	0.306944	Positive
2	Alina is an amazing host She made me feel righ...	0.566266	0.280812	Positive
3	Alinas place is so nice the room is big and cl...	0.579915	0.397669	Positive
4	Nice location in Islington area good for short...	0.610000	0.457500	Positive
...	...	...	...	...
9996	I had an experience with Anthonys flat Everyth...	0.551389	0.404167	Positive
9997	We had a great weekend staying in Anthonys apa...	0.495299	0.349573	Positive
9998	Everything was as Anthony had described and th...	0.559000	0.322333	Positive
9999	Anthony was a fantastic host from the moment ...	0.513333	0.305556	Positive
10000	My husband and I had a wonderful stay at Antho...	0.570173	0.315411	Positive

10001 rows × 4 columns

In [274…
```python
new_reviews['Analysis'].value_counts()
```

Out[274…
```
Positive    9119
Neutral      787
Negative      95
Name: Analysis, dtype: int64
```

In [275…
```python
new_reviews.loc[[3138, 4000], :]
```

Out[275…

	comments	Subjectivity	Polarity	Analysis
3138	This place isnt as described the actual apartm...	0.543750	-0.13125	Negative
4000	Maria was in constant communication with me an...	0.333333	0.00000	Neutral

Shows that most of the 10000 selected comments are postive, compared to negative and neutal comments

Plotting the subjectivity and polarity scatterplot

In [276…
```python
plt.figure(figsize =(8,6))
for i in range (0, new_reviews.shape[0]):
    plt.scatter(new_reviews['Polarity'][i], new_reviews['Subjectivity'][i], color = 'Green')

plt.title('Sentiment Analysis')
plt.xlabel('Polarity')
plt.ylabel('Subjectivity')
plt.show()
```

In [277…
```python
cols = [
    "amenities",
    "price",
    "review_scores_rating",
    "reviews_per_month"
]

listing = pd.read_csv("listings.csv", usecols=cols)
```

In [278…
```python
airbnb_reviews = pd.read_csv("reviews.csv")
```

In [279…
```python
new_airbnb_reviews = pd.concat([airbnb_reviews, listing], axis='columns')
```

In [280…
```python
new_airbnb_reviews.head()
```

Out[280…

	listing_id	id	date	reviewer_id	reviewer_name	comments	amenities	price	review_scores_rating	reviews_per_month
0	13913	80770	2010-08-18	177109	Michael	My girlfriend and I hadn't known Alina before ...	["Hot water", "Heating", "Coffee maker", "Buil...	$65.00	4.86	0.16
1	13913	367568	2011-07-11	19835707	Mathias	Alina was a really good host. The flat is clea...	["Hot water", "Heating", "Coffee maker", "TV w...	$75.00	4.79	0.61
2	13913	529579	2011-09-13	1110304	Kristin	Alina is an amazing host. She made me feel rig...	["Hot water", "Heating", "Coffee maker", "Iron...	$265.00	4.69	0.33
3	13913	595481	2011-10-03	1216358	Camilla	Alina's place is so nice, the room is big and ...	["Shampoo", "Carbon monoxide alarm", "Hot wate...	$150.00	NaN	NaN
4	13913	612947	2011-10-09	490840	Jorik	Nice location in Islington area, good for shor...	["Shampoo", "Washer", "Heating", "Coffee maker...	$29.00	4.78	0.91

In [281…
```python
new_airbnb_reviews.shape
```

Out[281…
```
(1043004, 10)
```

In [282…
```python
new_airbnb_reviews.dtypes
```

Out[282…
```
listing_id                int64
id                        int64
date                     object
reviewer_id               int64
reviewer_name            object
comments                 object
amenities                object
price                    object
review_scores_rating    float64
reviews_per_month       float64
dtype: object
```

In [293…
```python
new_airbnb_reviews["price"].min()
```

Out[293…
```
0.0
```

Reviews Part II: Comparing Prices to Reviews

Changing price into floats and removing $

In [283…
```python
# Remove $ from price before conversion to float
new_airbnb_reviews['price'] = new_airbnb_reviews['price'].str.replace("$", " ")
# Print header to make sure change was done
new_airbnb_reviews['price'].head()
```

```
/var/folders/0k/qsrs17bs5n1gr22p3vddn0xm0000gn/T/ipykernel_1374/2979416809.py:2: FutureWarning: The default val
ue of regex will change from True to False in a future version. In addition, single character regular expressio
ns will *not* be treated as literal strings when regex=True.
  new_airbnb_reviews['price'] = new_airbnb_reviews['price'].str.replace("$", " ")
```

Out[283…
```
0     65.00
1     75.00
2    265.00
3    150.00
4     29.00
Name: price, dtype: object
```

In [284…
```python
new_airbnb_reviews.price = new_airbnb_reviews.price.replace('[\$,]', '', regex=True).astype(float)
```

Plotting the Review score rating and Price using Matplotlib

In [285…
```python
import matplotlib.pyplot as plt

plt.scatter(new_airbnb_reviews['price'],new_airbnb_reviews['review_scores_rating'])
plt.xlabel('price $')
plt.ylabel('review score')
plt.title('Scatter plot of review rating vs. price')
plt.show()
```

Reviews III: Price vs Reviews_per_month Scatter Graph

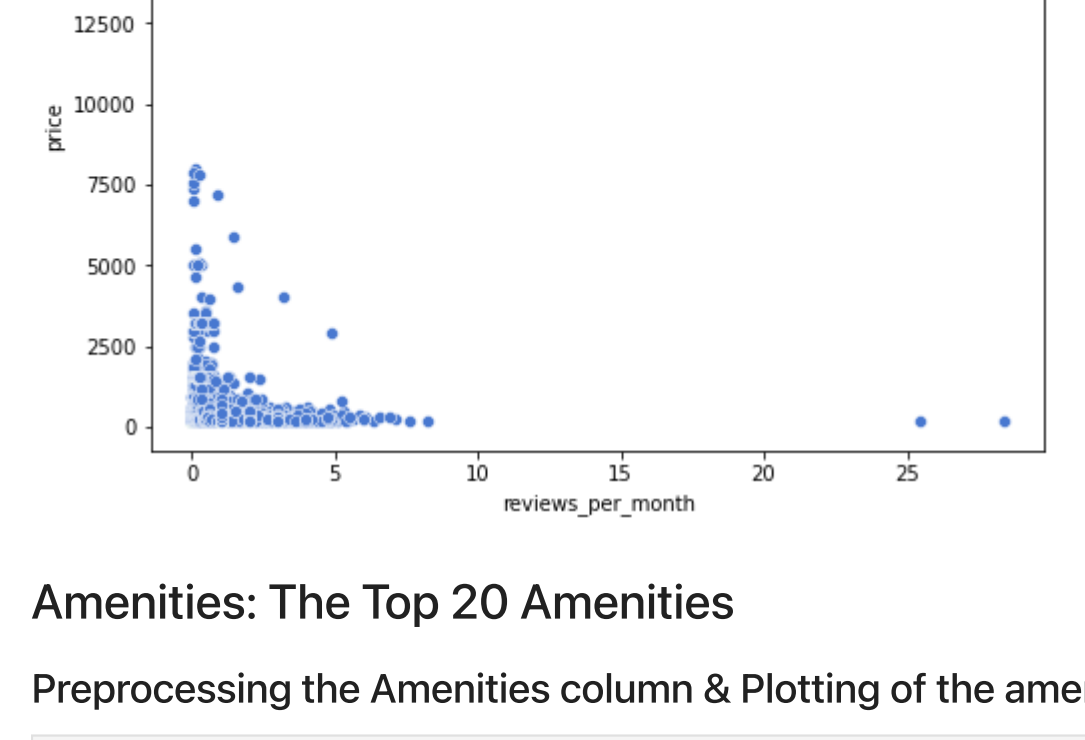
In [286…
```python
import seaborn as sns # ploting the data
```

In [287…
```python
sns.set_palette("muted")
x = 'reviews_per_month'
y = 'price'

title = 'Price relation to number of review per month for Properties under £175'
data_filtered = new_airbnb_reviews.loc[(new_airbnb_reviews['price'] < 175) & (new_airbnb_reviews['reviews_per_m
f, ax = plt.subplots(figsize=(8, 6))
sns.scatterplot(x=x, y=y, data=data_filtered)
plt.title(title)
plt.ioff()

title = 'Price relation to number of review per month for Properties more than £175'
data_filtered = new_airbnb_reviews.loc[new_airbnb_reviews['price'] > 175]
f, ax = plt.subplots(figsize=(8, 6))
sns.scatterplot(x=x, y=y, data=data_filtered)
plt.title(title)
plt.ioff()
```

Out[287…
```
<matplotlib.pyplot._IoffContext at 0x7f77b335fcd0>
```



Amenities: The Top 20 Amenities

Preprocessing the Amenities column & Plotting of the amenities using Matplotlib

In [288…
```python
new_airbnb_reviews = new_airbnb_reviews[new_airbnb_reviews['amenities'].notnull()] #AttributeError: 'float' obj
```

In [289…
```python
# Create an array of all unique amenities across all rows by splitting it
# measure the top 20 amenities
pd.Series(np.concatenate(new_airbnb_reviews['amenities'].map(lambda amns: amns.split(","))))\
    .value_counts().head(20)\
    .plot(kind='bar')
ax = plt.gca()
ax.set_xticklabels(ax.get_xticklabels(), rotation=45, ha='right', fontsize=12)
plt.show()
```