```python
import pandas as pd
import numpy as np
import seaborn as sns
import matplotlib.pyplot as plt
%matplotlib inline
import json

with open('dutch_tweets_chunk0.json', 'r') as f:
    data = json.load(f)

df = pd.read_json('dutch_tweets_chunk0.json')

dfs = []

# Loop through all the JSON files and load them into separate
DataFrames
for i in range(10):
    filename = f"dutch_tweets_chunk{i}.json"
    with open(filename, 'r') as f:
        data = pd.read_json(f)
        dfs.append(data)

# Concatenate all the DataFrames into a single DataFrame
df = pd.concat(dfs)

df.head()
```

```
                                           full_text  \
0  @pflegearzt @Friedelkorn @LAguja44 Pardon, wol...
1  RT @grantshapps: Aviation demand is reduced du...
2  RT @DDStandaard: De droom van D66 wordt werkel...
3  RT @DDStandaard: De droom van D66 wordt werkel...
4  De droom van D66 wordt werkelijkheid: COVID-19...

                                    text_translation
created_at  \
0  @pflegearzt @Friedelkorn @ LAguja44 Pardon wol...  2020-03-09
12:26:29
1  RT @grantshapps: Aviation demand is reduced du...  2020-03-09
12:26:34
2  RT @DDStandaard: The D66 dream come true: COVI...  2020-03-09
12:26:37
3  RT @DDStandaard: The D66 dream come true: COVI...  2020-03-09
12:26:37
4  The D66 dream becomes reality: COVID-19 super ...  2020-03-09
12:26:47

   screen_name                                        description  \
0  TheoRettich  I ❤science, therefore a Commie.   ☭ FALGSC: P...
1  davidiwanow  I tweet a lot but love to engage & converse. P...
2      EricL65                                               None
```

```
3      EricL65                                             None
4     EhrErwin  Budget-Life Coach. Time management Coaching. b...

                                   desc_translation  weekofyear
weekday  \
0  I ❤science, Therefore a Commie. ☭ FALGSC: Par...        11.0
0.0
1  I tweet a lot but love to engage and converse....        11.0
0.0
2                                              None        11.0
0.0
3                                              None        11.0
0.0
4  Budget-Life Coach. Time management coaching. h...        11.0
0.0

   day  month  ...                        point  latitude longitude
altitude  \
0  9.0    3.0  ...  (52.5001698, 5.7480821, 0.0)  52.50017  5.748082
0.0
1  9.0    3.0  ...  (52.3727598, 4.8936041, 0.0)  52.37276  4.893604
0.0
2  9.0    3.0  ...                         None       NaN       NaN
0.0
3  9.0    3.0  ...                         None       NaN       NaN
0.0
4  9.0    3.0  ...  (52.3727598, 4.8936041, 0.0)  52.37276  4.893604
0.0

        province  hisco_standard  hisco_code industry
sentiment_pattern  \
0      Flevoland            None        None    False
0.0
1  Noord-Holland            None        None    False
0.0
2          False            None        None    False
0.0
3          False            None        None    False
0.0
4  Noord-Holland            None        None    False
0.0

  subjective_pattern
0                0.0
1                0.0
2                0.0
3                0.0
4                0.0

[5 rows x 23 columns]
```

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 271342 entries, 0 to 27220
Data columns (total 23 columns):
 #   Column              Non-Null Count   Dtype
---  ------              --------------   -----
 0   full_text           271331 non-null  object
 1   text_translation    271328 non-null  object
 2   created_at          271334 non-null  object
 3   screen_name         271333 non-null  object
 4   description         223646 non-null  object
 5   desc_translation    223621 non-null  object
 6   weekofyear          271328 non-null  float64
 7   weekday             271322 non-null  float64
 8   day                 271328 non-null  float64
 9   month               271322 non-null  float64
 10  year                271322 non-null  float64
 11  location            151361 non-null  object
 12  point_info          134445 non-null  object
 13  point               134445 non-null  object
 14  latitude            134445 non-null  float64
 15  longitude           134445 non-null  float64
 16  altitude            254425 non-null  float64
 17  province            268237 non-null  object
 18  hisco_standard      69482 non-null   object
 19  hisco_code          69482 non-null   object
 20  industry            271342 non-null  bool
 21  sentiment_pattern   271342 non-null  float64
 22  subjective_pattern  271342 non-null  float64
dtypes: bool(1), float64(10), object(12)
memory usage: 47.9+ MB
```

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

```
False    201835
True      69480
Name: industry, dtype: int64
```

```
df.shape
```

```
(271342, 23)
```

```
df["screen_name"].value_counts().head(20)
```

```
s_akrati           1152
marco_kerkhofs      962
CoronaWorldStat     728
nieuwsbliknl        523
JeffreyMeursing     450
Queenoftheunse1     402
197winstonsmith     394
```

```
Andre3Verzaal       376
maryfloor           342
MonaSmitte          336
Watskeburtinmi1     332
Nelliejs501         326
OpenMarketingTV     300
Tweelingetje2V      282
marizsmn            261
fitasport1          252
elzet15             248
w12move             244
1_Vagabond          236
Omakoe2             234
Name: screen_name, dtype: int64
```

```
df.isna().sum()
```

```
full_text                  11
text_translation           14
created_at                  8
screen_name                 9
description             47696
desc_translation        47721
weekofyear                 14
weekday                    20
day                        14
month                      20
year                       20
location               119981
point_info             136897
point               136897
latitude               136897
longitude              136897
altitude                16917
province                 3105
hisco_standard         201860
hisco_code             201860
industry                    0
sentiment_pattern           0
subjective_pattern          0
dtype: int64
```

```
df['weekofyear'].unique()
```

```
array([11., 15., 30.,  6., 26., 19., 10., 32., 14., 18., 31.,  8.,
9.,
       28., 36.,  7., 27., 34., 20., 21., 16., 13.,  5., 38., 35.,
25.,
       17., 37., 22., 12., 33., 23.,  4., 24., 29., 39., nan])
```

```
df['year'].unique()
```

```
array([2020.,   nan,    6.,   11.])
```

```
df = df[df['year'] == 2020]
```

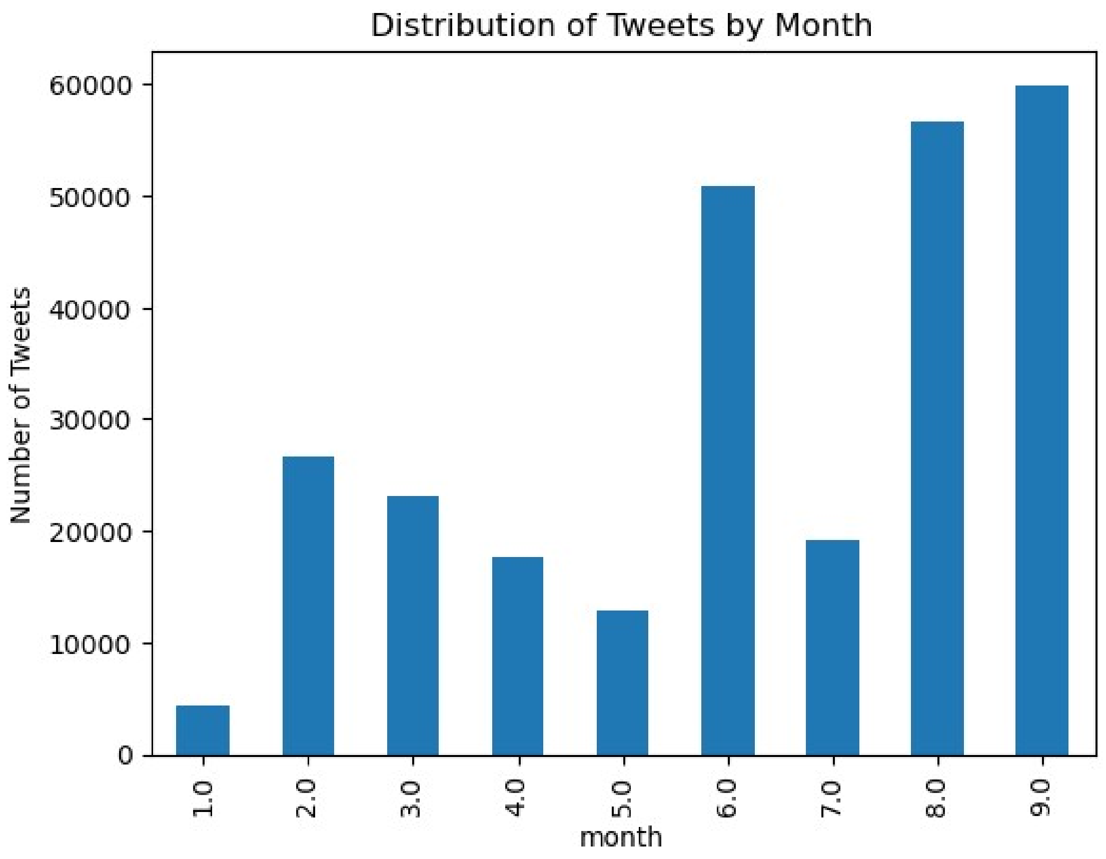
```
df['day'].unique()
```

```
array([ 9.,  8., 22.,  5., 24., 10.,  3., 31., 13., 30.,  4.,  2.,
19.,
       29., 12.,  1., 11., 23., 16., 20., 25., 28., 14.,  7., 27.,
18.,
        6., 15., 21., 26., 17.])
```

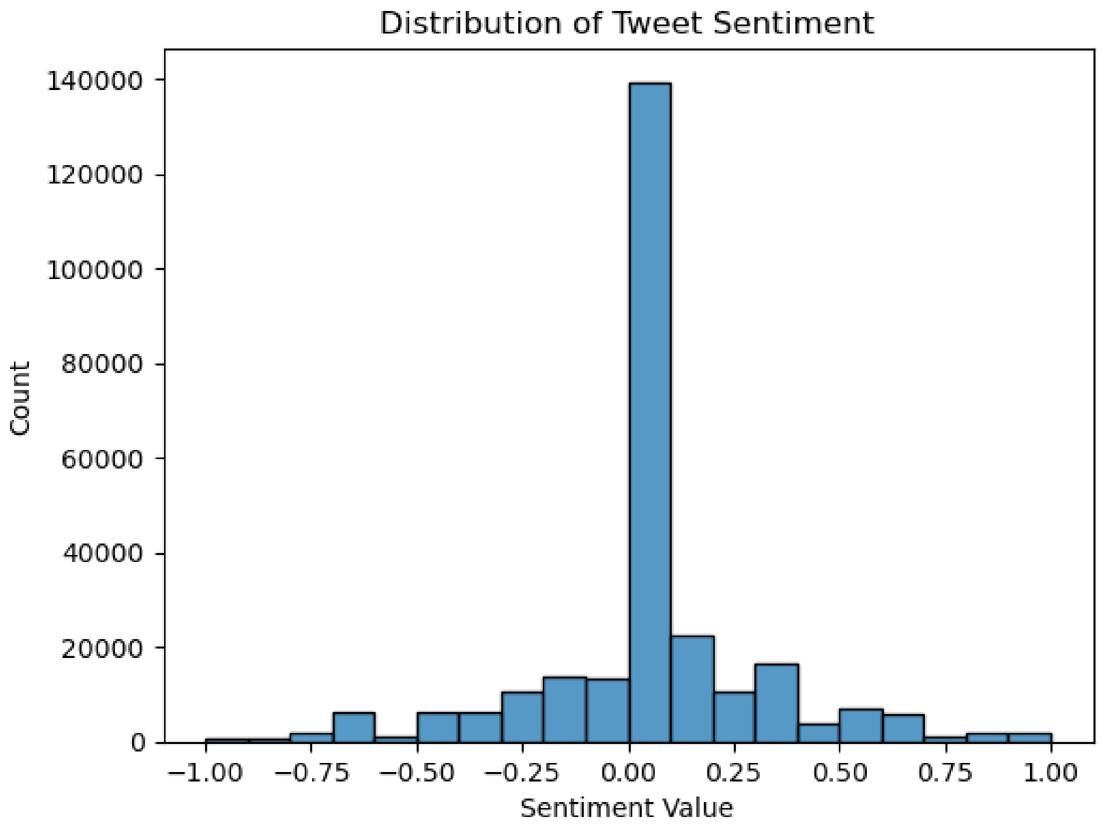
```
df['month'].unique()
```

```
array([3., 4., 7., 2., 6., 5., 8., 9., 1.])
```

```
tweets_by_day = df.groupby('month')['full_text'].count()

tweets_by_day.plot(kind='bar')
plt.title('Distribution of Tweets by Month')
plt.xlabel('month')
plt.ylabel('Number of Tweets')
plt.show()
```



```
sentiment_data = df.dropna(subset=['sentiment_pattern'])

sns.histplot(sentiment_data['sentiment_pattern'], bins=20)
plt.title('Distribution of Tweet Sentiment')
plt.xlabel('Sentiment Value')
plt.ylabel('Count')
plt.show()
```

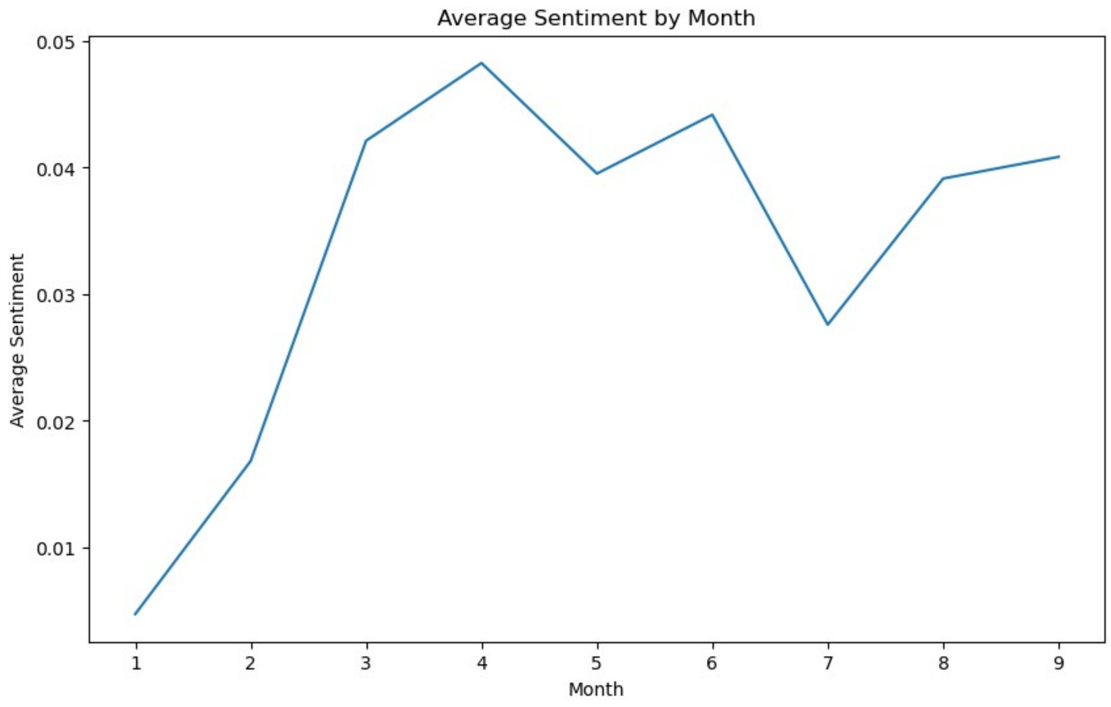


```
df['location'].value_counts().head(10)
```

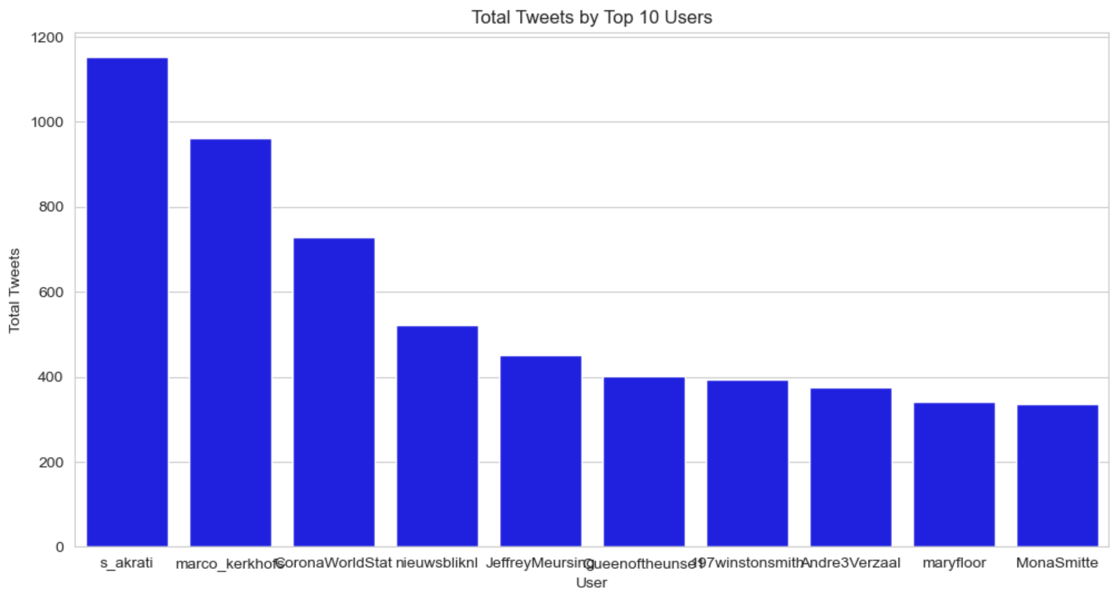
```
Amsterdam                        16134
The Netherlands                   9469
Netherlands                       8505
Nederland                         8493
Amsterdam, Nederland              4193
Amsterdam, The Netherlands        3957
The Hague, The Netherlands        1318
Belgium                           1291
België                            1260
Rotterdam                         1063
Name: location, dtype: int64
```

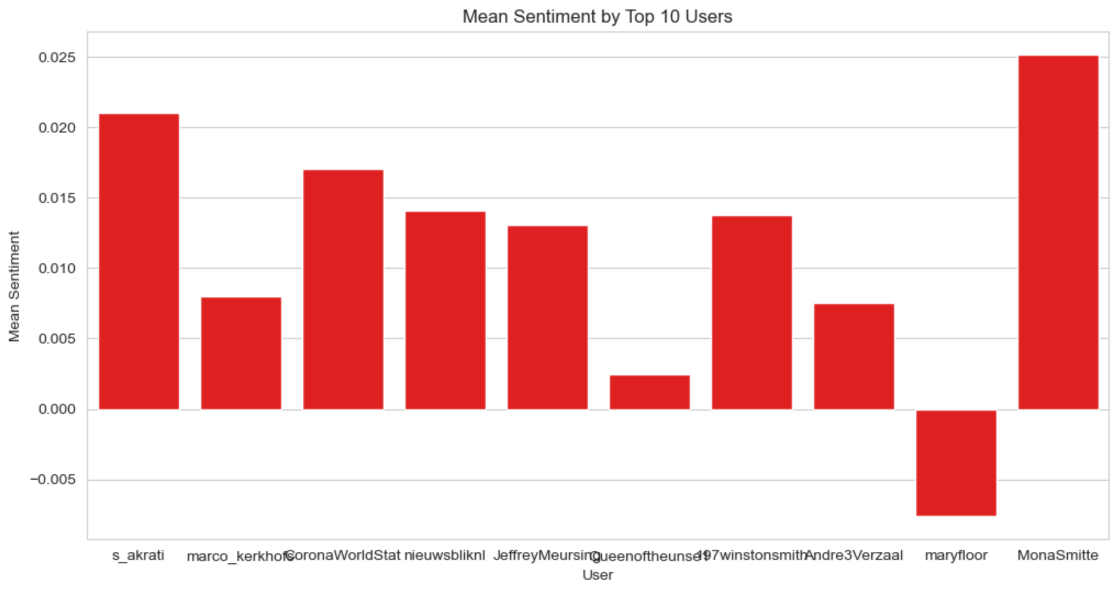
```
sentiment_by_month = df.groupby('month')['sentiment_pattern'].mean()

sentiment_by_month.plot(kind='line', figsize=(10, 6))
```

```
plt.title('Average Sentiment by Month')
plt.xlabel('Month')
plt.ylabel('Average Sentiment')
plt.show()
```



```
top_users =
df['screen_name'].value_counts().nlargest(10).index.tolist()

# Calculate the total number of tweets and the mean sentiment status
for each user
user_stats = []
for user in top_users:
    user_df = df[df['screen_name'] == user]
    total_tweets = len(user_df)
    mean_sentiment = user_df['sentiment_pattern'].mean()
    user_stats.append({'user': user, 'total_tweets': total_tweets,
'mean_sentiment': mean_sentiment})

# Convert the list of user stats into a pandas DataFrame
user_stats_df = pd.DataFrame(user_stats)

# Plot the results on a bar chart
plt.figure(figsize=(12,6))
sns.barplot(data=user_stats_df, x='user', y='total_tweets',
color='blue')
plt.ylabel('Total Tweets')
plt.xlabel('User')
plt.title('Total Tweets by Top 10 Users')
plt.show()

plt.figure(figsize=(12,6))
sns.barplot(data=user_stats_df, x='user', y='mean_sentiment',
color='red')
plt.ylabel('Mean Sentiment')
plt.xlabel('User')
plt.title('Mean Sentiment by Top 10 Users')
plt.show()
```

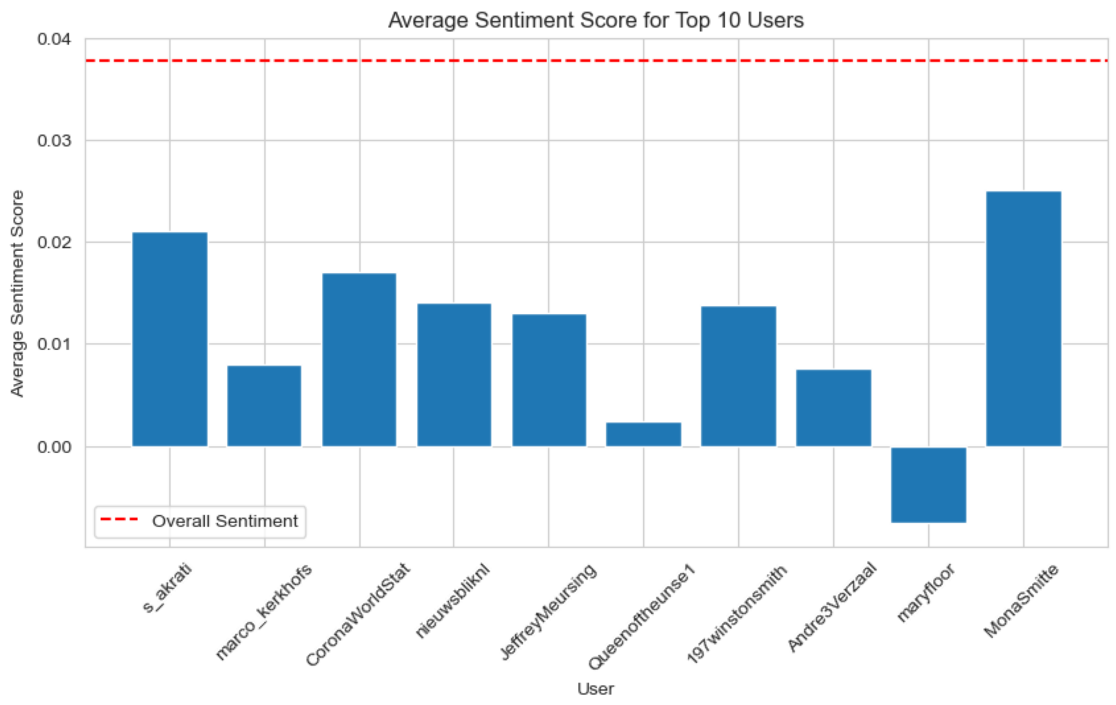




```
df['sentiment_pattern'].mean()
```

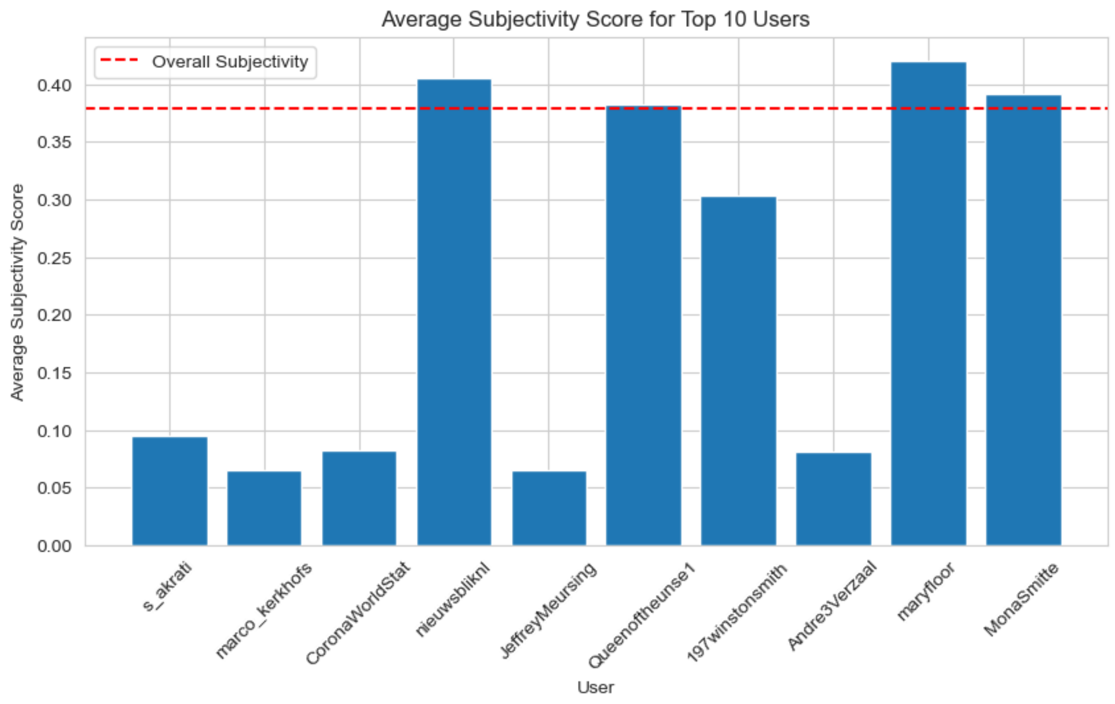
```
0.0377732429854865
```

```python
# Get the top 10 users with the most tweets
top_10_users = df['screen_name'].value_counts().nlargest(10)

# Calculate the average sentiment score for each user
user_sentiment = df.groupby('screen_name')['sentiment_pattern'].mean()

# Calculate the average sentiment score for all tweets
overall_sentiment = df['sentiment_pattern'].mean()

# Plot the results
plt.figure(figsize=(10,5))
plt.bar(top_10_users.index, user_sentiment[top_10_users.index])
plt.axhline(y=overall_sentiment, color='r', linestyle='--',
label='Overall Sentiment')
plt.xticks(rotation=45)
plt.xlabel('User')
plt.ylabel('Average Sentiment Score')
plt.title('Average Sentiment Score for Top 10 Users')
plt.legend()
plt.show()
```

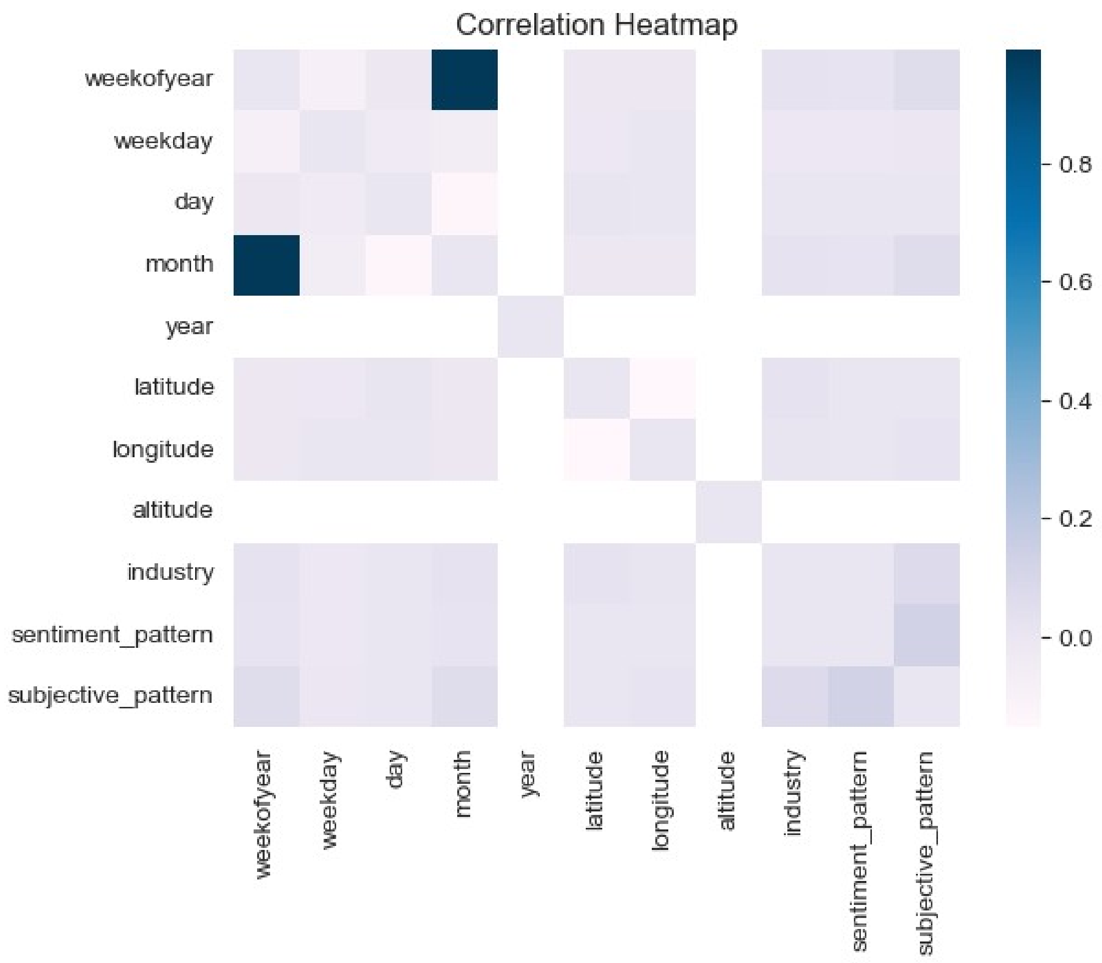


```python
# Get the top 10 users with the most tweets
top_10_users = df['screen_name'].value_counts().nlargest(10)

# Calculate the average subjective score for each user
user_subjectivity = df.groupby('screen_name')
['subjective_pattern'].mean()
```

```python
# Calculate the average subjective score for all tweets
overall_subjectivity = df['subjective_pattern'].mean()

# Plot the results
plt.figure(figsize=(10,5))
plt.bar(top_10_users.index, user_subjectivity[top_10_users.index])
plt.axhline(y=overall_subjectivity, color='r', linestyle='--',
label='Overall Subjectivity')
plt.xticks(rotation=45)
plt.xlabel('User')
plt.ylabel('Average Subjectivity Score')
plt.title('Average Subjectivity Score for Top 10 Users')
plt.legend()
plt.show()
```

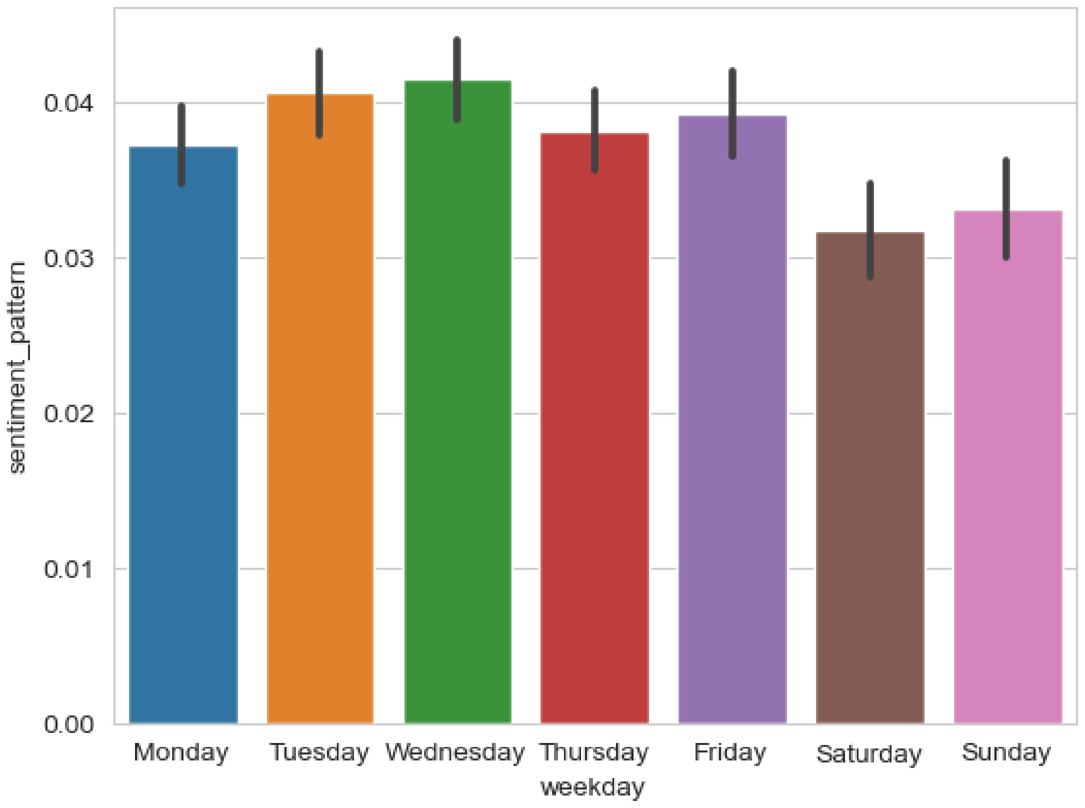


```python
corr_matrix = df.corr()

# Set the diagonal values to zero
for i in range(len(corr_matrix.columns)):
    corr_matrix.iloc[i, i] = 0

sns.heatmap(corr_matrix, cmap='PuBu')
plt.title('Correlation Heatmap')
plt.show()
```

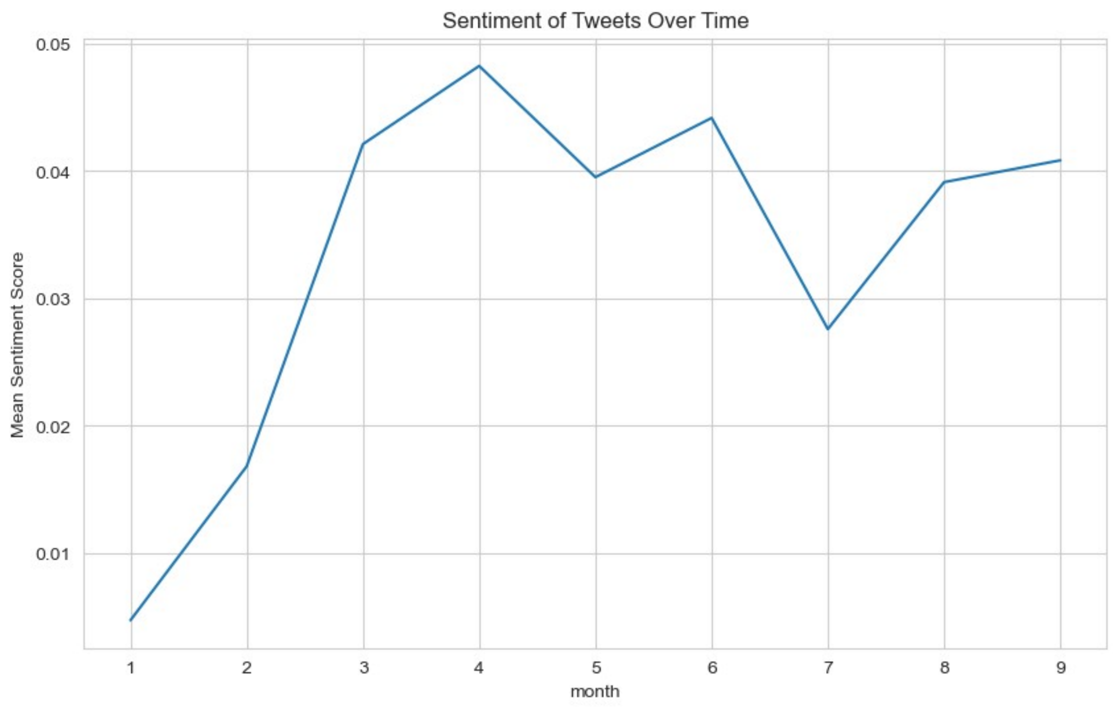


```
weekday_order = ['Monday', 'Tuesday', 'Wednesday', 'Thursday',
'Friday', 'Saturday', 'Sunday']

sns.barplot(x='weekday', y='sentiment_pattern', data=df,
order=weekday_order)
```

```
<AxesSubplot:xlabel='weekday', ylabel='sentiment_pattern'>
```



```
mean_sentiment_by_date = df.groupby('month')
['sentiment_pattern'].mean()

# Plot the mean sentiment scores over time
mean_sentiment_by_date.plot(figsize=(10, 6))
plt.xlabel('month')
plt.ylabel('Mean Sentiment Score')
plt.title('Sentiment of Tweets Over Time')
plt.show()
```



```python
# Create a dictionary to map numeric values to day names
day_dict = {0: 'Monday', 1: 'Tuesday', 2: 'Wednesday', 3: 'Thursday',
4: 'Friday', 5: 'Saturday', 6: 'Sunday'}

# Replace the numeric values with day names
df['weekday'] = df['weekday'].replace(day_dict)
```