timeVisualizer

July 11, 2023

1 PAGE VIEW TIME SERIES VISUALIZER

[1]:
```
import matplotlib.pyplot as plt
import pandas as pd
import seaborn as sns
from pandas.plotting import register_matplotlib_converters
register_matplotlib_converters()
```

[2]:
```
df = pd.read_csv("fcc-forum-pageviews.csv", parse_dates=True, index_col="date")
```

1.1 Data Summary

[3]:
```
df.head()
```

[3]:
```
            value
date
2016-05-09   1201
2016-05-10   2329
2016-05-11   1716
2016-05-12  10539
2016-05-13   6933
```

[4]:
```
df.shape
```

[4]:
```
(1304, 1)
```

1.2 Data Cleaning

[5]:
```
df = df[(df["value"] > df["value"].quantile(0.025)) & (df["value"] <␣
↪df["value"].quantile(0.975))]
df.shape
```

[5]:
```
(1238, 1)
```

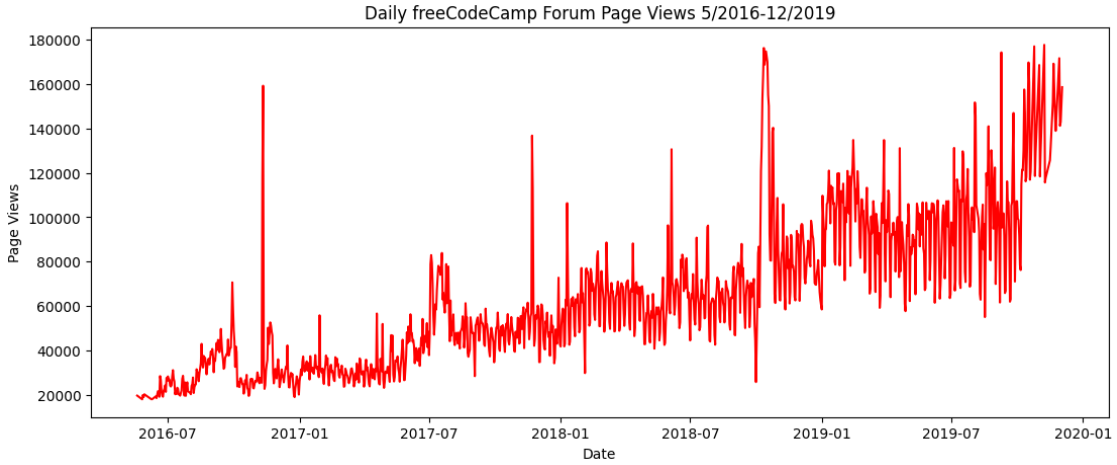
1.3 Page Visit Number Graphic

[6]:
```
fig = plt.figure(figsize=(13,5))

plt.plot(df, color = "r")

plt.title("Daily freeCodeCamp Forum Page Views 5/2016-12/2019")
plt.xlabel("Date")
plt.ylabel("Page Views")

plt.show()
```



1.4 Grouping data by year and monhtly view values

[7]:
```
df_bar = df.copy()
df_bar['year'] = df_bar.index.year
df_bar['month'] = df_bar.index.strftime('%B')
df_bar = df_bar.groupby(['year', 'month'])['value'].mean().unstack()
months = ['January', 'February', 'March', 'April', 'May', 'June', 'July',␣
 ↪'August', 'September', 'October', 'November', 'December']
df_bar = df_bar.reindex(columns=months)
df_bar
```

[7]:
```
month        January       February          March          April            May  \
year
2016             NaN            NaN            NaN            NaN   19432.400000
2017    32785.161290   31113.071429   29369.096774   30878.733333   34244.290323
2018    58580.096774   65679.000000   62693.774194   62350.833333   56562.870968
2019   102056.516129  105968.357143   91214.483871   89368.433333   91439.903226

month          June          July        August     September        October  \
```

```
year
2016   21875.105263  24109.678571   31049.193548  41476.866667   27398.322581
2017   43577.500000  65806.838710   47712.451613  47376.800000   47438.709677
2018   70117.000000  63591.064516   62831.612903  65941.733333  111378.142857
2019   90435.642857  97236.566667  102717.310345  97268.833333  122802.272727

month       November       December
year
2016    40448.633333   27832.419355
2017    57701.566667   48420.580645
2018    78688.333333   80047.483871
2019   143166.428571  150733.500000
```

1.5 Monthly page views by years

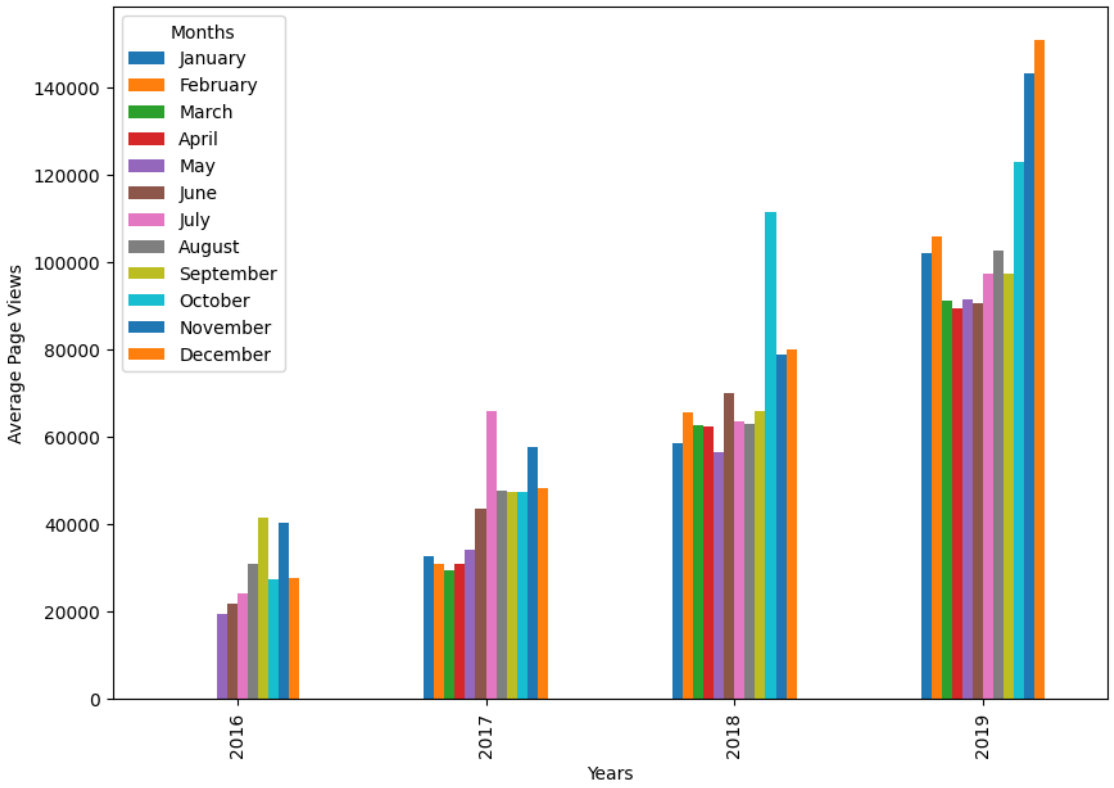
[8]:
```
#ax = df_bar.plot(kind='bar', figsize=(10, 7))
#ax.set_xlabel('Years')
#ax.set_ylabel('Average Page Views')
#ax.legend(title='Months', loc='upper left')

#plt.show()

fig = plt.figure(figsize=(10, 7))
ax = fig.add_subplot(111)

df_bar.plot(kind='bar', ax=ax)
ax.set_xlabel('Years')
ax.set_ylabel('Average Page Views')
ax.legend(title='Months', loc='upper left')

plt.show()
```



[9]:
```
df_box = df.copy()
df_box.reset_index(inplace=True)
df_box['year'] = [d.year for d in df_box.date]
df_box['month'] = [d.strftime('%b') for d in df_box.date]
df_box.head()
```

[9]:

	date	value	year	month
0	2016-05-19	19736	2016	May
1	2016-05-26	18060	2016	May
2	2016-05-27	19997	2016	May
3	2016-05-28	19044	2016	May
4	2016-05-29	20325	2016	May

1.6 Year Wise and Month wise view values

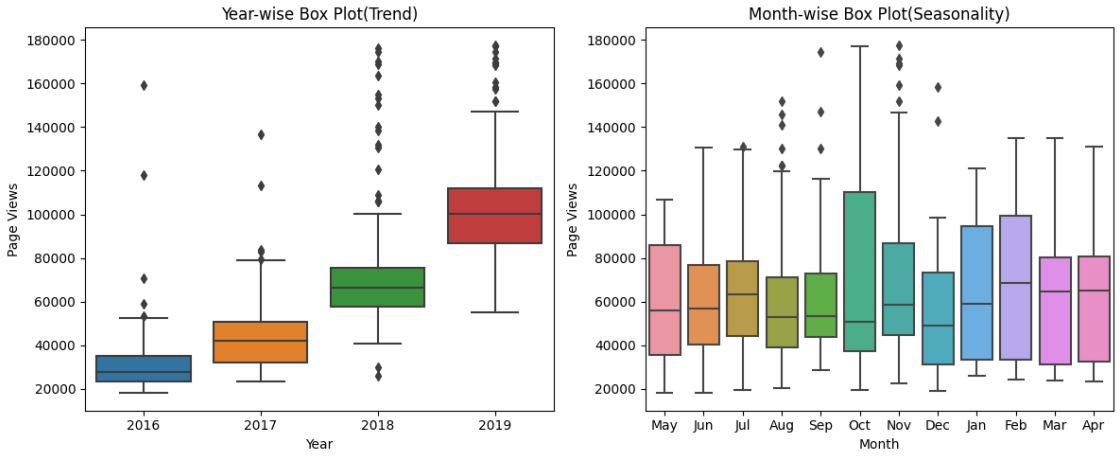
[10]:
```
fig, axes = plt.subplots(nrows=1, ncols=2, figsize=(12, 5))

# first box plot
sns.boxplot(data=df_box, x="year", y="value", ax=axes[0])
axes[0].set_xlabel('Year')
axes[0].set_ylabel('Page Views')
axes[0].set_title("Year-wise Box Plot(Trend)")
```

```
# second box plot
sns.boxplot(x='month', y='value', data=df_box, ax=axes[1])
axes[1].set_xlabel('Month')
axes[1].set_ylabel('Page Views')
axes[1].set_title("Month-wise Box Plot(Seasonality)")

plt.tight_layout()

plt.show()
```



[ ]: