

DSC640_Exercise6_2_Asumbaraju_python

August 6, 2021

```
[1]: import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
import math
import plotly
import plotly.figure_factory as ff
```

```
[2]: # import data from csv

cr_df = pd.read_csv('C:\BU\DSC640\wk9-10\ex6-2\crimeratesbystate-formatted.csv')
```

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

```
[3]:
```

	state	murder	forcible_rape	robbery	aggravated_assault	\
0	United States	5.6	31.7	140.7	291.1	
1	Alabama	8.2	34.3	141.4	247.8	
2	Alaska	4.8	81.1	80.9	465.1	
3	Arizona	7.5	33.8	144.4	327.4	
4	Arkansas	6.7	42.9	91.1	386.8	

	burglary	larceny_theft	motor_vehicle_theft
0	726.7	2286.3	416.7
1	953.8	2650.0	288.3
2	622.5	2599.1	391.0
3	948.4	2965.2	924.4
4	1084.6	2711.2	262.1

1 Histogram

```
[4]: cr_df_h = pd.melt(cr_df, id_vars="state", var_name="Crime", value_name =_
↳ 'CrimeRate')
cr_df_h["CrimeRate_Scale"] = cr_df_h["CrimeRate"].apply(lambda x: math.floor(x))
cr_df_h.tail()
```

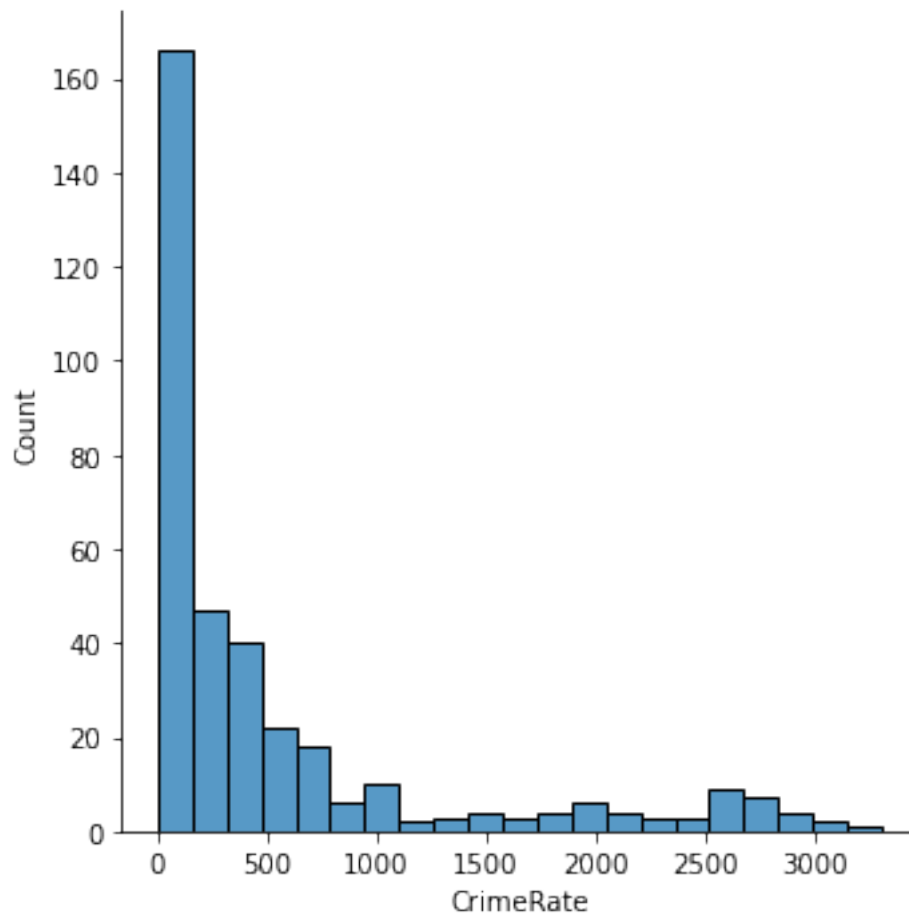
```
[4]:
```

	state	Crime	CrimeRate	CrimeRate_Scale
359	Virginia	motor_vehicle_theft	211.1	211
360	Washington	motor_vehicle_theft	783.9	783

361	West Virginia	motor_vehicle_theft	210.0	210
362	Wisconsin	motor_vehicle_theft	226.6	226
363	Wyoming	motor_vehicle_theft	145.1	145

```
[5]: sns.displot( cr_df_h["CrimeRate"] )
```

```
[5]: <seaborn.axisgrid.FacetGrid at 0x1b0afe0d6a0>
```



2 Box plots

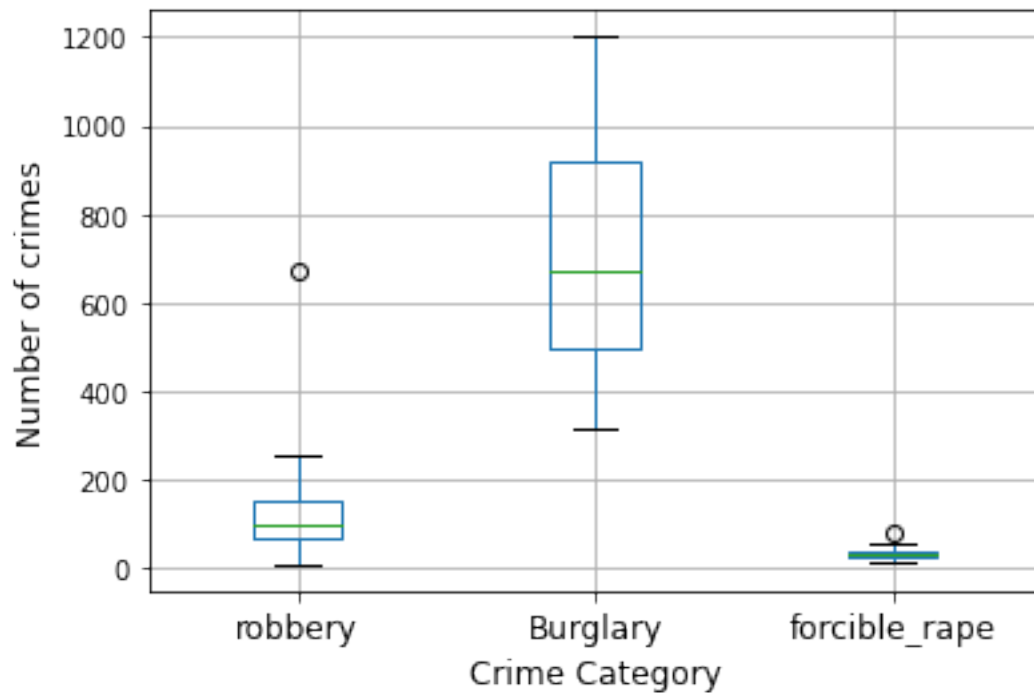
```
[8]: fig = plt.figure(figsize=(10, 7))
fig, ax = plt.subplots()
boxplot = cr_df.boxplot(column=['robbery', 'burglary', 'forcible_rape'],
    ↪return_type='axes')
plt.xticks(rotation=0, fontsize=12)
labels = [x.get_text() for x in ax.get_xticklabels()]
labels[0] = 'robbery'
```

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labels[1] = 'Burglary'
labels[2] = 'forcible_rape'
ax.set_xticklabels(labels)
plt.xlabel("Crime Category", size=12)
plt.ylabel("Number of crimes", size=12)
plt.show()

```

<Figure size 720x504 with 0 Axes>



3 bullet chart

```

[9]: data_cr=[
    {
        "state": "Alabama ",
        "crime": "murder",
        "3monthrate": [31.7, 42.5, 55.6],
        "crimethreshold": [40,50],
        "logicalpoint": [45]
    },
    {
        "state": "Alaska ",
        "crime": "murder",
        "3monthrate": [20.7, 31.5, 40.6],

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```

        "crimethreshold": [30,50],
        "logicalpoint": [40]
    },
    {
        "state": "Arizona ",
        "crime": "murder",
        "3monthrate": [150, 225, 300],
        "crimethreshold": [220,270],
        "logicalpoint": [250]
    },
    {
        "state": "Arkansas",
        "crime": "murder",
        "3monthrate": [1400, 2000, 2500],
        "crimethreshold": [1000, 1650],
        "logicalpoint": [2100]
    },
    {
        "state": "California ",
        "crime": "murder",
        "3monthrate": [350, 500, 600],
        "crimethreshold": [100,320],
        "logicalpoint": [550]
    },
    {
        "state": "Colorado ",
        "crime": "murder",
        "3monthrate": [3.5, 4.8, 5],
        "crimethreshold": [3.2, 10],
        "logicalpoint": [5]
    }
]

```

```

[15]: fig = ff.create_bullet(
        data_cr, titles='state',
        subtitles='crime',
        markers='logicalpoint',
        measures='crimethreshold',
        ranges='3monthrate',
        orientation='h',
        title='State wise Crime rate'
    )

fig.show()

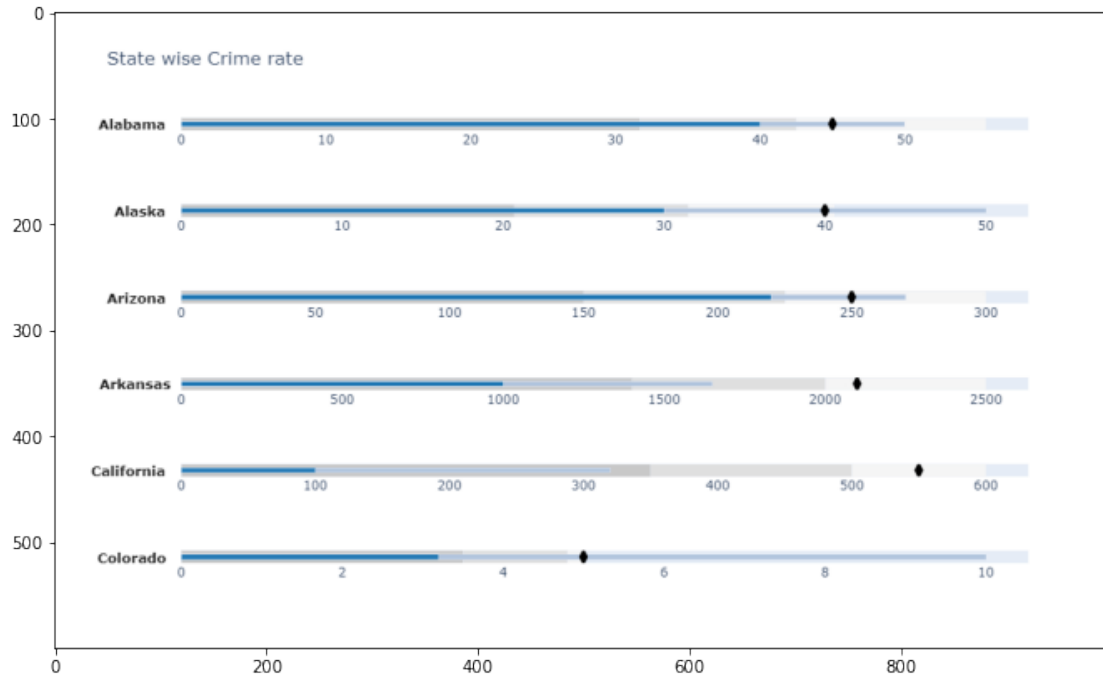
```

```

[11]: # for PDF download
fig = plt.figure(figsize =(20, 7))

```

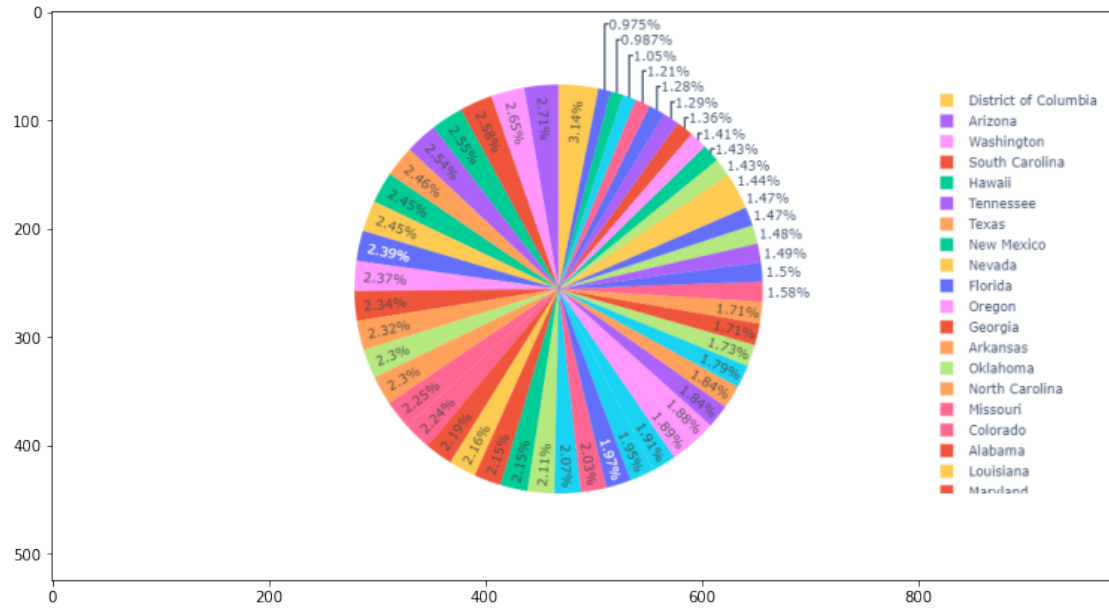
```
import matplotlib.image as mpimg
img = mpimg.imread('C:\BU\DSC640\wk9-10\images/bullet.png')
plt.imshow(img)
plt.show()
```



4 1 additional chart of my choice - pie chart

```
[14]: import plotly.express as px
df = cr_df_h
fig = px.pie(df, values='CrimeRate_Scale', names='state', color='state'
)
fig.show()
```

```
[13]: # for PDF download
fig = plt.figure(figsize=(20, 7))
import matplotlib.image as mpimg
img = mpimg.imread('C:\BU\DSC640\wk9-10\images/pie.png')
plt.imshow(img)
plt.show()
```



[]: