DSC640_Exercise3_2_Asumbaraju

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1 DSC640

2 Exercise 3.2

3 scatter plot, bubble chart, density plot

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[2]:
```
# import libraries
import matplotlib.pyplot as plt
import pandas as pd
import plotly.express as px
import plotly.io as pio
import numpy as np
import seaborn as sns
```

4.1 Load data into the dataframe

[3]:
```
crimes_df = pd.read_csv("C:\BU\DSC640\wk5-6\ex4-2/crimerates-by-state-2005.csv")
```

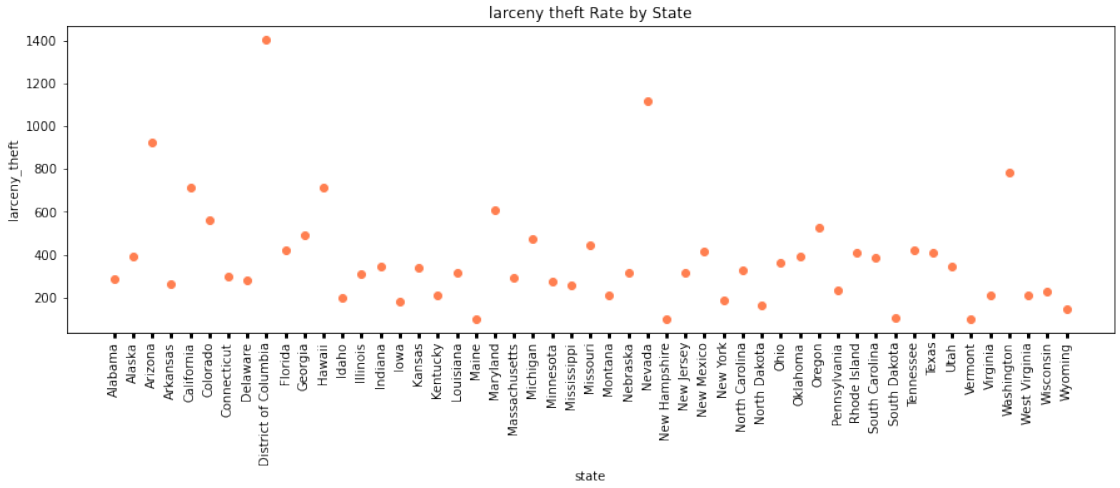
[4]:
```
crimes_df = crimes_df.iloc[1: , :] # delete record for "united states"
crimes_df.head()
```

[4]:

	state	murder	forcible_rape	robbery	aggravated_assault	burglary	larceny_theft	motor_vehicle_theft	population
1	Alabama	8.2	34.3	141.4	247.8	953.8	2650.0	288.3	4545049
2	Alaska	4.8	81.1	80.9	465.1	622.5	2599.1	391.0	669488
3	Arizona	7.5	33.8	144.4	327.4	948.4	2965.2	924.4	5974834
4	Arkansas	6.7	42.9	91.1	386.8	1084.6	2711.2	262.1	2776221
5	California	6.9	26.0	176.1	317.3	693.3	1916.5	712.8	35795255

4.2 scatter plot

[5]:
```
fig = plt.figure(figsize=(15,5))
plt.scatter(crimes_df.state, crimes_df.motor_vehicle_theft,c='coral')
plt.title("larceny theft Rate by State")
plt.ylabel("larceny_theft")
plt.xlabel("state")
plt.tick_params(axis='x', which='major', width=3)
spacing = 0.200
fig.subplots_adjust(bottom=spacing)
plt.xticks(crimes_df.state,rotation=90)
plt.show()
```



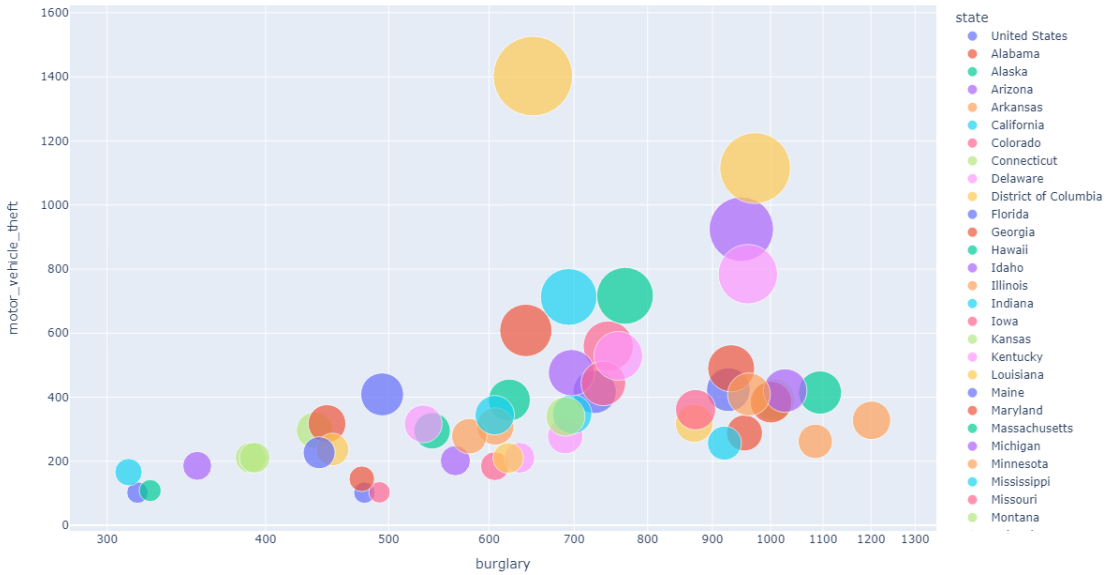
4.3 bubble charts

[50]:
```
fig = px.scatter(crimes_df, x="burglary",␣
↪y="motor_vehicle_theft",size="motor_vehicle_theft", color="state",␣
↪hover_name="state", log_x=True, size_max=60)

image_bytes = fig.to_image(format='png', width=1200, height=700, scale=1)

from IPython.display import Image
Image(image_bytes)
```

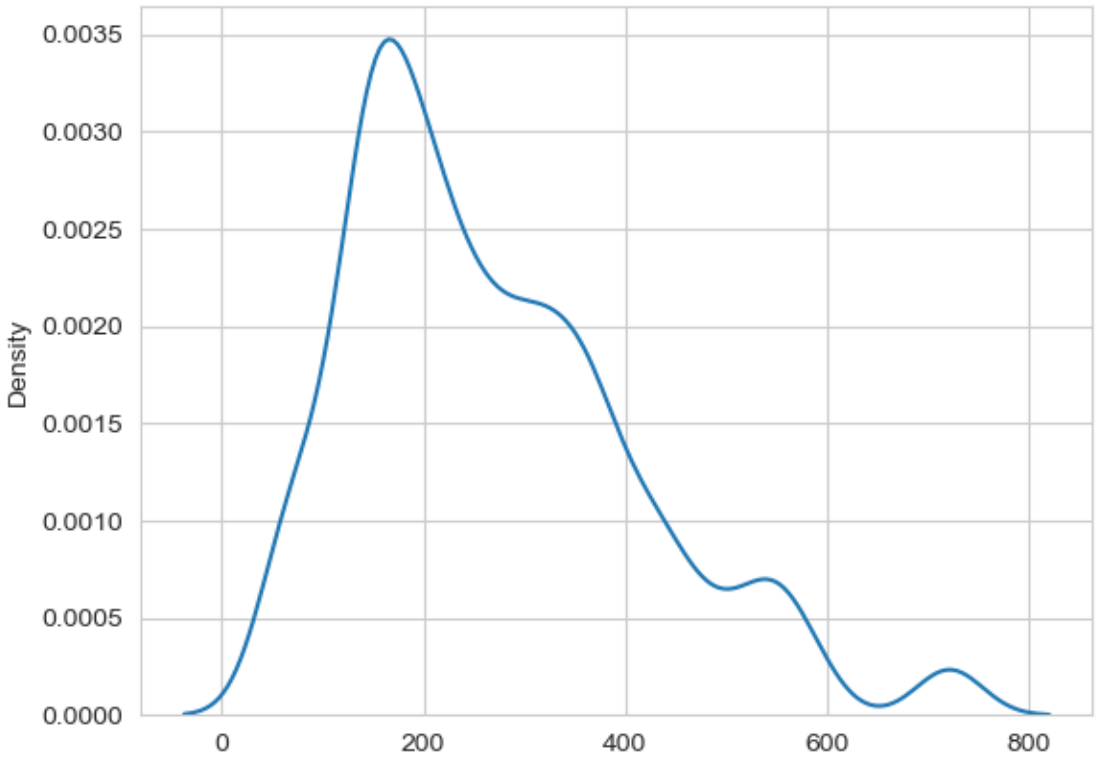
[50]:



4.4 density plot charts

[42]:
```
data =crimes_df["aggravated_assault"]
sns.set_style('whitegrid')
sns.kdeplot(np.array(data), bw_adjust=0.5)
```

[42]: <AxesSubplot:ylabel='Density'>


0.0035
0.0030
0.0025
0.0020
0.0015
0.0010
0.0005
0.0000
Density
0
200
400
600
800