Expercise_Chart_Python

October 26, 2020

#
Week 7-8 - Assignment
Prepare - Scatterplots, Bubble Chart & Density Plot
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0.0.1 Introduction: Assignment Details

You need to submit 3 scatterplots, 3 bubble charts and 3 density plot charts using Tableau or PowerBI, Python and R using the data below (or your own datasets). You can also submit using D3. You can choose which library to use in Python or R, documentation is provided to help you decide and as you start to play around in the libraries, you will decide which you prefer.

0.0.2 Source Data

https://content.bellevue.edu/cst/dsc/640/datasets/ex4-2.zip

[1]:
```
# Impprt required libraries/packages
import numpy as np
import pandas as pd
import squarify
import matplotlib.pyplot as plt
import seaborn as sns

# configure display of graph
%matplotlib inline
```

0.0.3 Load data into a dataframe

[2]:
```
# load the csv file as a data frame
crime_rate_raw = pd.read_csv('crimerates-by-state-2005.csv')
crime_rate = crime_rate_raw[(crime_rate_raw['state']!='United States')]

# summarize the shape of the dataset
print("Crime Rate by State Data:\n")
print("Dataset Shape: ",crime_rate.shape)
# see the sample of the data
print("Sample Data: ")
```

```
crime_rate.head()
```

```
Crime Rate by State Data:

Dataset Shape:  (51, 9)
Sample Data:
```

[2]:

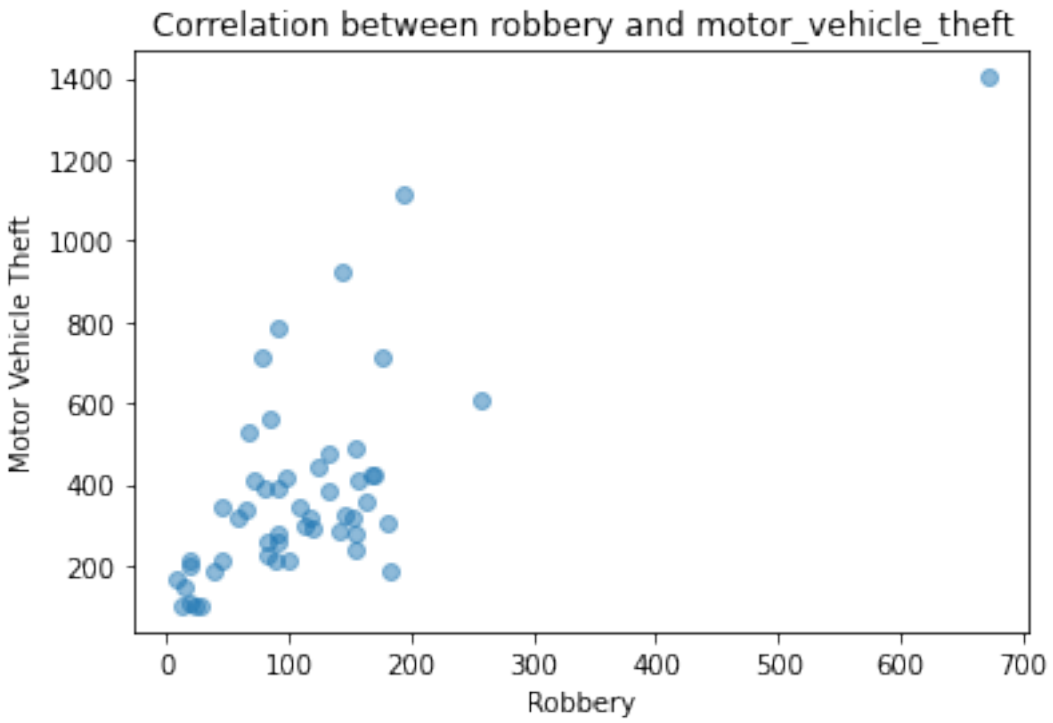
	state	murder	forcible_rape	robbery	aggravated_assault	burglary	\
1	Alabama	8.2	34.3	141.4	247.8	953.8	
2	Alaska	4.8	81.1	80.9	465.1	622.5	
3	Arizona	7.5	33.8	144.4	327.4	948.4	
4	Arkansas	6.7	42.9	91.1	386.8	1084.6	
5	California	6.9	26.0	176.1	317.3	693.3	

	larceny_theft	motor_vehicle_theft	population
1	2650.0	288.3	4545049
2	2599.1	391.0	669488
3	2965.2	924.4	5974834
4	2711.2	262.1	2776221
5	1916.5	712.8	35795255

0.1 Scatterplot

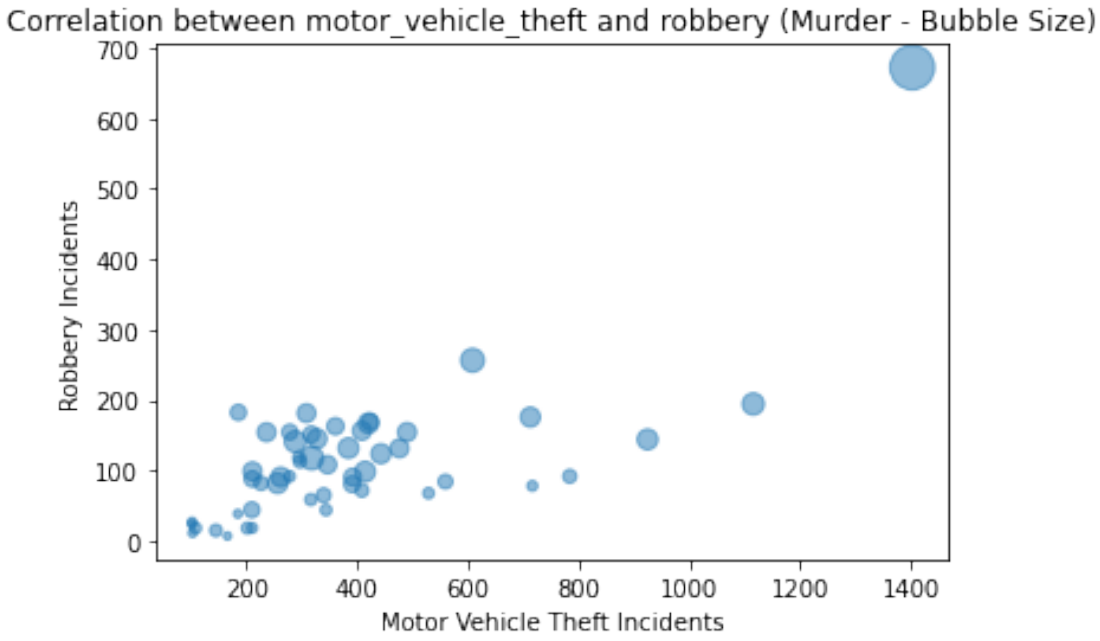
[3]:
```
# Create a scatter plot showing correlation between robbery and␣
 ↪motor_vehicle_theft

plt.scatter(crime_rate['robbery'], crime_rate['motor_vehicle_theft'],alpha=0.5)
plt.title('Correlation between robbery and motor_vehicle_theft')
plt.ylabel('Motor Vehicle Theft')
plt.xlabel('Robbery')
plt.show()
```



0.2 Bubble Chart

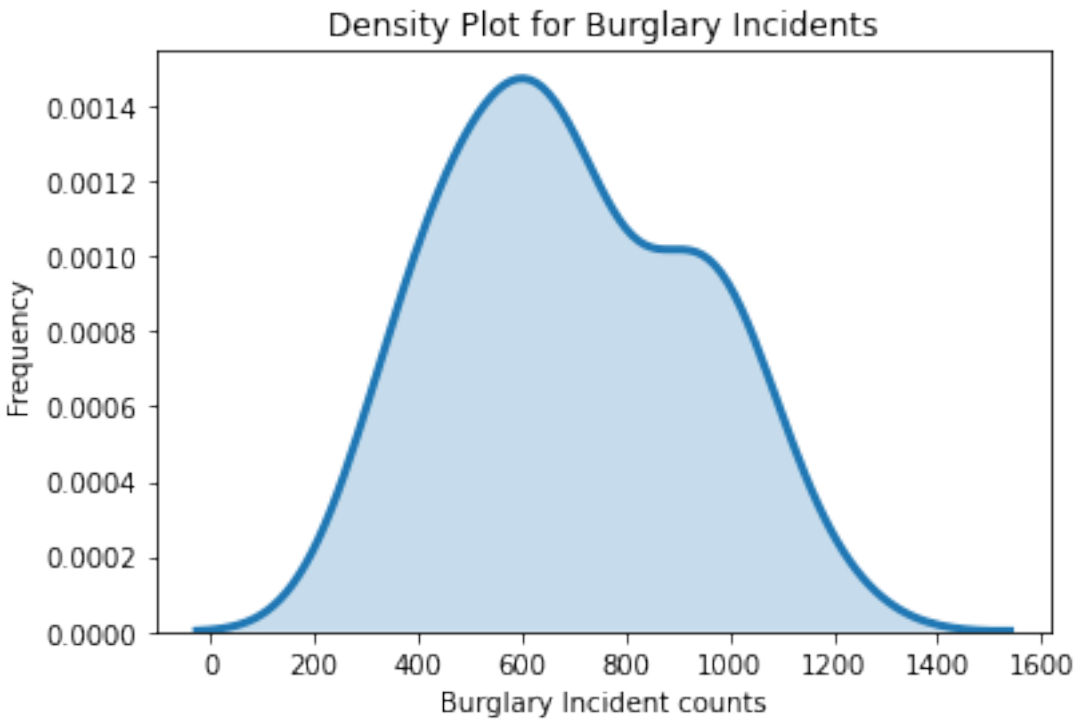
[4]:
```
# Create a bubble plot showing correlation between motor_vehicle_theft and␣
 ↪robbery,
# and using murder for the size of the bubble
plt.scatter(crime_rate['motor_vehicle_theft'], crime_rate['robbery'],␣
 ↪s=crime_rate['murder']*10,alpha=0.5)
plt.title('Correlation between motor_vehicle_theft and robbery (Murder - Bubble␣
 ↪Size)')
plt.xlabel('Motor Vehicle Theft Incidents')
plt.ylabel('Robbery Incidents')
plt.show()
```



0.3 Density Plot

[5]:
```
# Plotting distribution of burglary incidents

sns.distplot(crime_rate['burglary'], hist = False, kde = True,
                 kde_kws = {'shade': True, 'linewidth': 3})
plt.title('Density Plot for Burglary Incidents')
plt.xlabel('Burglary Incident counts')
plt.ylabel('Frequency')
plt.show()
```


Density Plot for Burglary Incidents
Frequency
0.0014
0.0012
0.0010
0.0008
0.0006
0.0004
0.0002
0.0000
0
200
400
600
800
1000
1200
1400
1600
Burglary Incident counts

[ ]: