Comprehensive Report

on

"Data Analytics and Data Visualization with Tableau"

(Summer Course)

Submitted by:

Name: **VIGHNESH M S**
SRN: **PES2UG19CS452**
SEM: **7TH**

Faculty Handling the Course:

Dr.Sudeepa Roy Dey
Dr.Prajwala TR
Prof.Ruby Dinakar

4th -9th, July 2022

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
PES UNIVERSITY, EC campus
(Established under Karnataka Act No. 16 of 2013)
Electronic City, Hosur Road, Bengaluru – 560 100, Karnataka, Ind

Table of Contents:

Data Analytics:

Dataset:

```
[ ] df
```

	City	Personal Revenge	Anger	Fraud	Extortion	Causing Disrepute	Prank	Sexual Exploitation	Political Motives	Terrorist Activities	...	Sale purchase illegal drugs	Developing own business	Spreading Piracy	Psycho or Pervert	Steal Information	Abetment to Suicide	Others	Total
0	Agra	5	0	19	0	0	0	0	0	0	...	0	0	0	0	0	0	46	70
1	Allahabad	0	0	222	11	8	0	0	0	0	...	0	0	0	0	0	0	0	241
2	Amritsar	2	0	5	0	0	0	2	0	0	...	0	0	0	0	0	0	0	9
3	Asansol	6	1	3	0	0	0	0	0	0	...	0	0	0	0	0	0	11	21
4	Aurangabad	5	2	51	0	0	0	21	0	0	...	0	0	0	0	0	0	0	82
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
63	Vadodara	0	0	9	0	2	0	0	0	0	...	0	0	0	0	0	0	1	12
64	Varanasi	28	29	124	5	27	39	36	2	0	...	0	0	18	0	0	0	127	448
65	Vasai Virar	1	0	16	0	0	0	1	1	0	...	0	0	1	0	0	0	9	29
66	Vijayawada	8	4	205	7	0	1	9	1	0	...	0	2	1	0	2	0	0	240
67	Vishakhapatnam	6	8	359	0	0	0	0	3	0	...	0	0	0	0	0	0	24	400

68 rows × 24 columns

Identify the nature of dataset whether it is monotonic:

```
[ ] df['City'].is_monotonic
False

[ ] df['Personal Revenge'].is_monotonic
False

[ ] df['Anger'].is_monotonic
False

[ ] df['Fraud'].is_monotonic
False

[ ] df['Extortion'].is_monotonic
False

[ ] df['Causing Disrepute'].is_monotonic
False

df['Political Motives'].is_monotonic
False

[ ] df['Prank'].is_monotonic
False
```

```
[ ] df['Terrorist Activities'].is_monotonic
False

[ ] df['Sale purchase illegal drugs'].is_monotonic
True

[ ] df['Developing own business'].is_monotonic
False

[ ] df['Spreading Piracy'].is_monotonic
False

[ ] df['Psycho or Pervert'].is_monotonic
False
```

Find correlation among the features using Pearson Correlations:

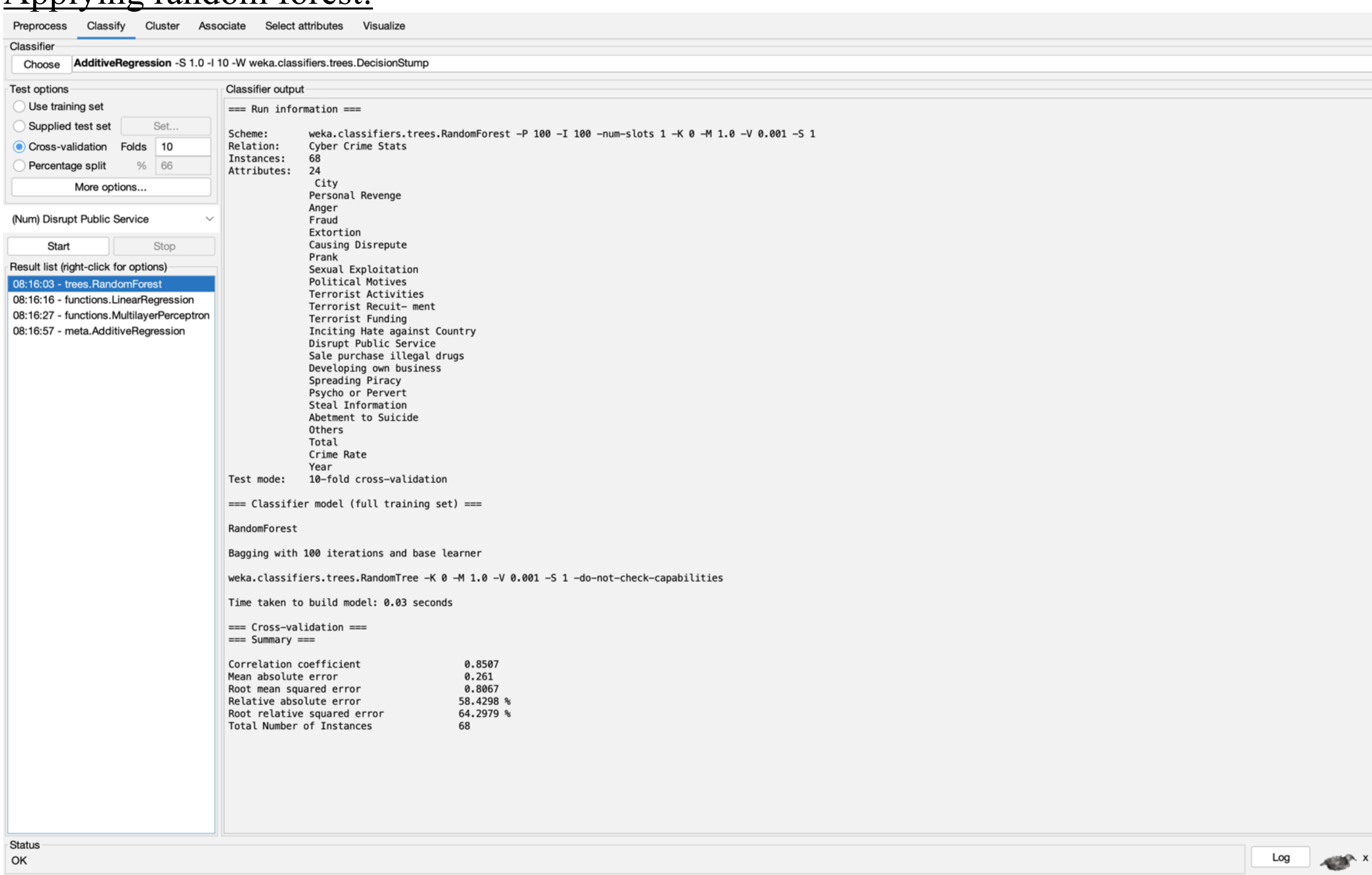
```
df.corr(method ='pearson')
```

	Personal Revenge	Anger	Fraud	Extortion	Causing Disrepute	Prank	Sexual Exploitation	Political Motives	Terrorist Activities	Terrorist Recuit- ment
Personal Revenge	1.000000	0.843807	0.334453	0.169108	0.059288	0.612099	0.618562	0.526043	0.126098	NaN
Anger	0.843807	1.000000	0.390607	0.181303	0.111092	0.815348	0.558858	0.425349	0.005801	NaN
Fraud	0.334453	0.390607	1.000000	0.483221	-0.034409	0.128187	0.077272	0.092752	-0.033169	NaN
Extortion	0.169108	0.181303	0.483221	1.000000	0.050817	0.182828	0.224344	0.069262	-0.057376	NaN
Causing Disrepute	0.059288	0.111092	-0.034409	0.050817	1.000000	0.165125	0.093221	0.013233	-0.028911	NaN
Prank	0.612099	0.815348	0.128187	0.182828	0.165125	1.000000	0.575660	0.203687	-0.012015	NaN
Sexual Exploitation	0.618562	0.558858	0.077272	0.224344	0.093221	0.575660	1.000000	0.296765	-0.042289	NaN
Political Motives	0.526043	0.425349	0.092752	0.069262	0.013233	0.203687	0.296765	1.000000	0.246493	NaN
Terrorist Activities	0.126098	0.005801	-0.033169	-0.057376	-0.028911	-0.012015	-0.042289	0.246493	1.000000	NaN
Terrorist Recuit- ment	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
Terrorist Funding	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
Inciting Hate against Country	0.360897	0.428698	0.017656	0.096788	0.133620	0.463623	0.398650	0.062692	-0.040672	NaN
Disrupt Public Service	0.716552	0.773469	0.137479	0.214998	0.210159	0.865925	0.664334	0.197199	-0.023218	NaN
Sale purchase illegal drugs	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
Developing own business	-0.018836	0.040850	0.149114	0.320940	-0.046642	-0.035246	0.005664	-0.033016	-0.022718	NaN
Spreading Piracy	0.732927	0.782035	0.151698	0.199807	0.203473	0.851620	0.662700	0.200766	-0.022777	NaN
Psycho or Pervert	-0.060308	-0.046792	-0.061418	-0.016735	0.083677	-0.030584	-0.058722	-0.040847	-0.014925	NaN
Steal Information	0.152727	0.058394	0.237429	0.227113	-0.046232	-0.012015	0.072738	0.054933	-0.014925	NaN
Abetment to Suicide	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
Others	0.726222	0.701346	0.290915	0.203209	0.110974	0.661209	0.563006	0.117976	-0.027256	NaN
Total	0.614392	0.670580	0.903391	0.508298	0.163081	0.458199	0.377425	0.195399	-0.029730	NaN
Crime Rate	0.554645	0.604937	0.894634	0.573967	0.170817	0.442149	0.377534	0.148711	-0.041824	NaN
Year	0.051287	0.117120	0.079642	0.029353	0.090698	0.058115	0.041538	0.057647	-0.122169	NaN

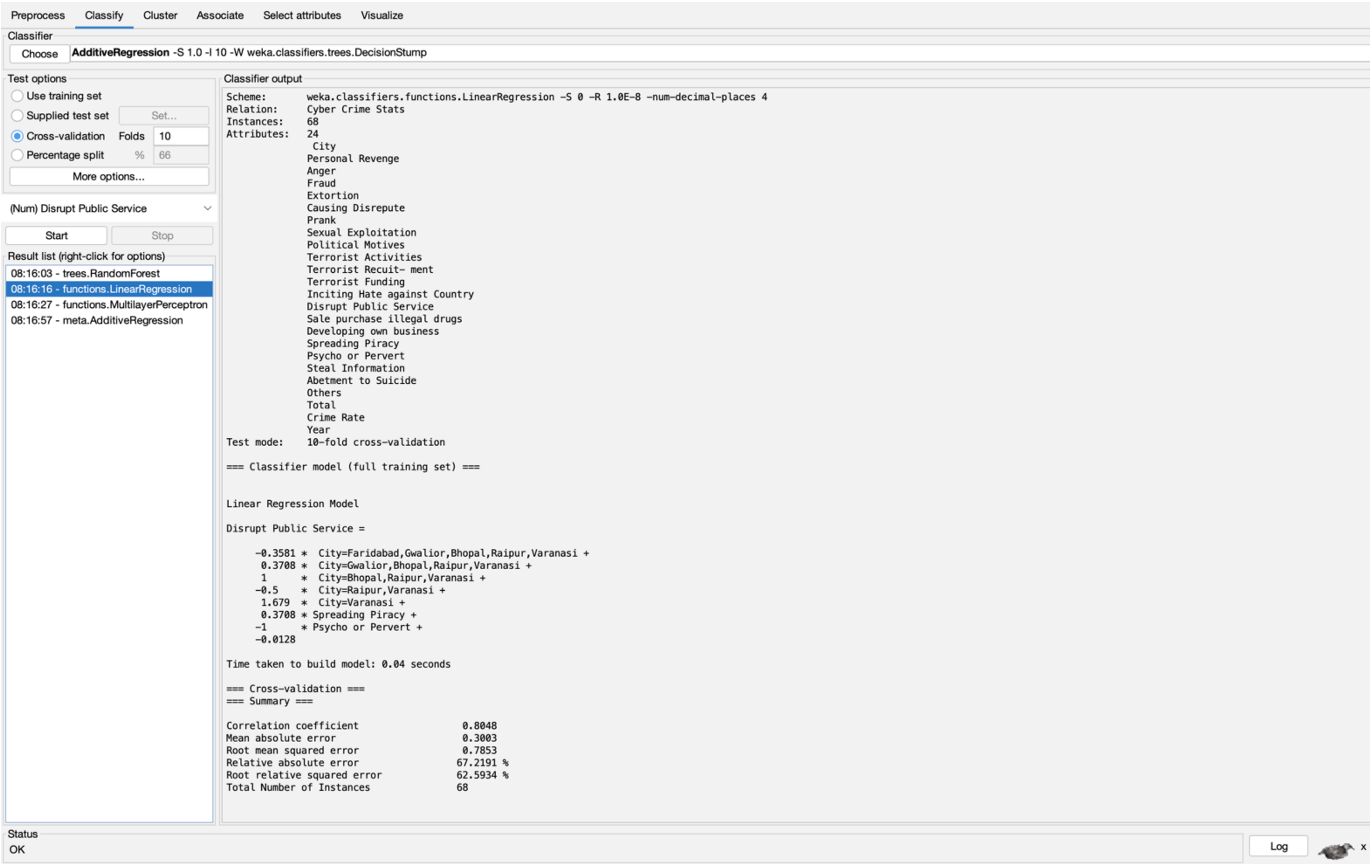
	...	Sale purchase illegal drugs	Developing own business	Spreading Piracy	Psycho or Pervert	Steal Information	Abetment to Suicide	Others	Total	Crime Rate	Year
Personal Revenge	...	NaN	-0.018836	0.732927	-0.060308	0.152727	NaN	0.726222	0.614392	0.554645	0.051287
Anger	...	NaN	0.040850	0.782035	-0.046792	0.058394	NaN	0.701346	0.670580	0.604937	0.117120
Fraud	...	NaN	0.149114	0.151698	-0.061418	0.237429	NaN	0.290915	0.903391	0.894634	0.079642
Extortion	...	NaN	0.320940	0.199807	-0.016735	0.227113	NaN	0.203209	0.508298	0.573967	0.029353
Causing Disrepute	...	NaN	-0.046642	0.203473	0.083677	-0.046232	NaN	0.110974	0.163081	0.170817	0.090698
Prank	...	NaN	-0.035246	0.851620	-0.030584	-0.012015	NaN	0.661209	0.458199	0.442149	0.058115
Sexual Exploitation	...	NaN	0.005664	0.662700	-0.058722	0.072738	NaN	0.563006	0.377425	0.377534	0.041538
Political Motives	...	NaN	-0.033016	0.200766	-0.040847	0.054933	NaN	0.117976	0.195399	0.148711	0.057647
Terrorist Activities	...	NaN	-0.022718	-0.022777	-0.014925	-0.014925	NaN	-0.027256	-0.029730	-0.041824	-0.122169
Terrorist Recuit- ment	...	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
Terrorist Funding	...	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
Inciting Hate against Country	...	NaN	-0.061906	0.527483	-0.040672	-0.040672	NaN	0.335441	0.218858	0.228531	-0.142678
Disrupt Public Service	...	NaN	-0.035339	0.978516	-0.023218	-0.023218	NaN	0.738249	0.492934	0.486001	0.047511
Sale purchase illegal drugs	...	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
Developing own business	...	NaN	1.000000	-0.018952	-0.022718	0.286242	NaN	0.138618	0.152193	0.194642	0.185952
Spreading Piracy	...	NaN	-0.018952	1.000000	-0.022777	0.028851	NaN	0.759021	0.507273	0.499939	0.087005
Psycho or Pervert	...	NaN	-0.022718	-0.022777	1.000000	-0.014925	NaN	-0.051404	-0.058893	-0.068654	0.122169
Steal Information	...	NaN	0.286242	0.028851	-0.014925	1.000000	NaN	-0.051404	0.195413	0.181204	0.122169
Abetment to Suicide	...	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
Others	...	NaN	0.138618	0.759021	-0.051404	-0.051404	NaN	1.000000	0.617755	0.584880	-0.018168
Total	...	NaN	0.152193	0.507273	-0.058893	0.195413	NaN	0.617755	1.000000	0.982679	0.089448
Crime Rate	...	NaN	0.194642	0.499939	-0.068654	0.181204	NaN	0.584880	0.982679	1.000000	0.095679
Year	...	NaN	0.185952	0.087005	0.122169	0.122169	NaN	-0.018168	0.089448	0.095679	1.000000

23 rows × 23 columns

Applying random forest:



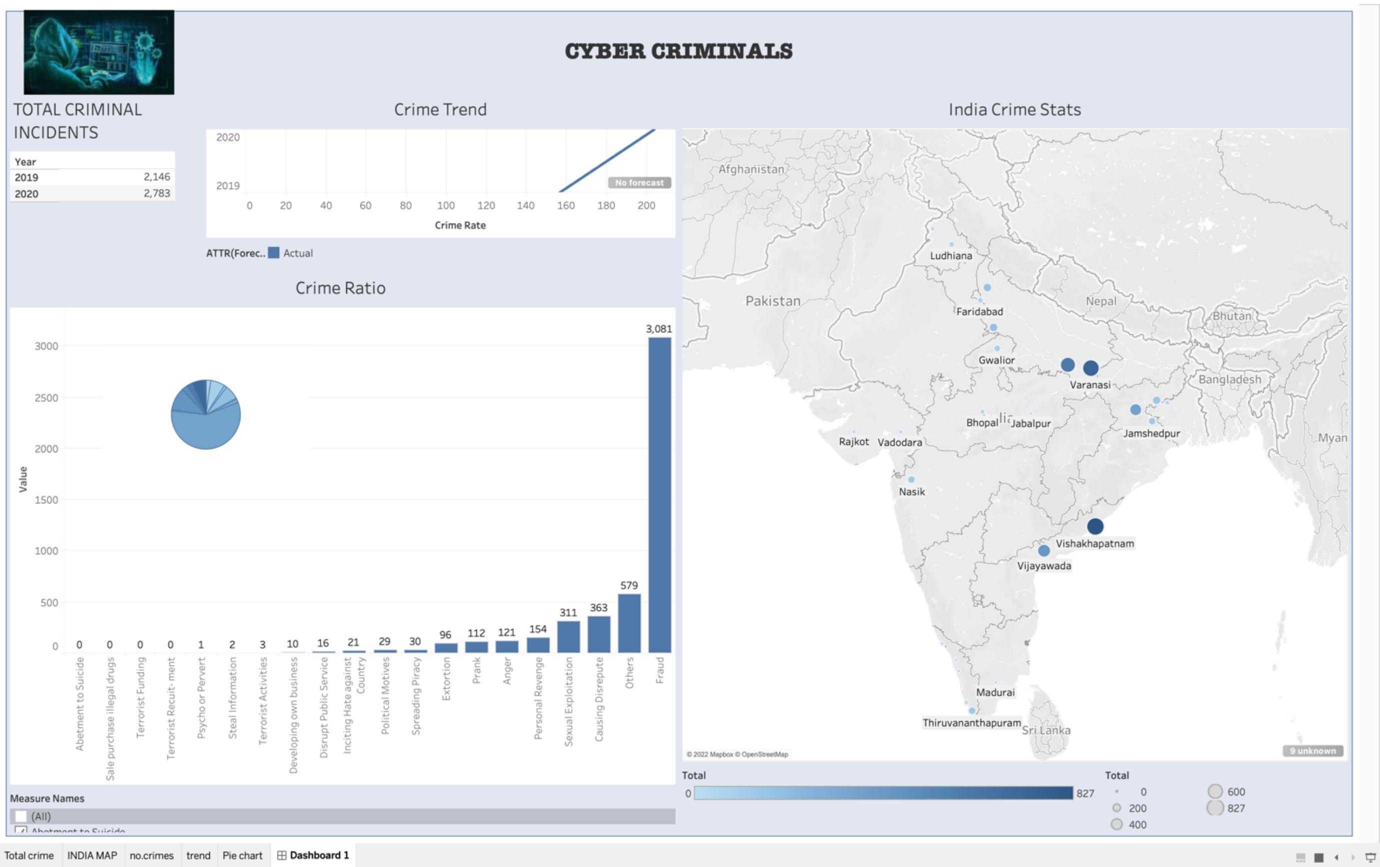
Applying Linear Regression:



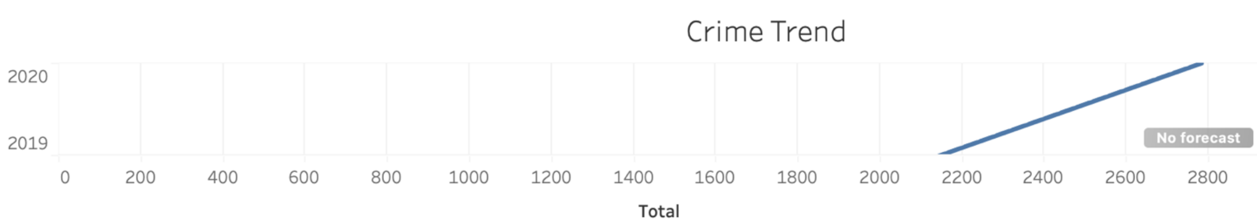
Applying Additive Regression:

Data Visualization:

Cyber Criminals:



The Trend and Forecast:

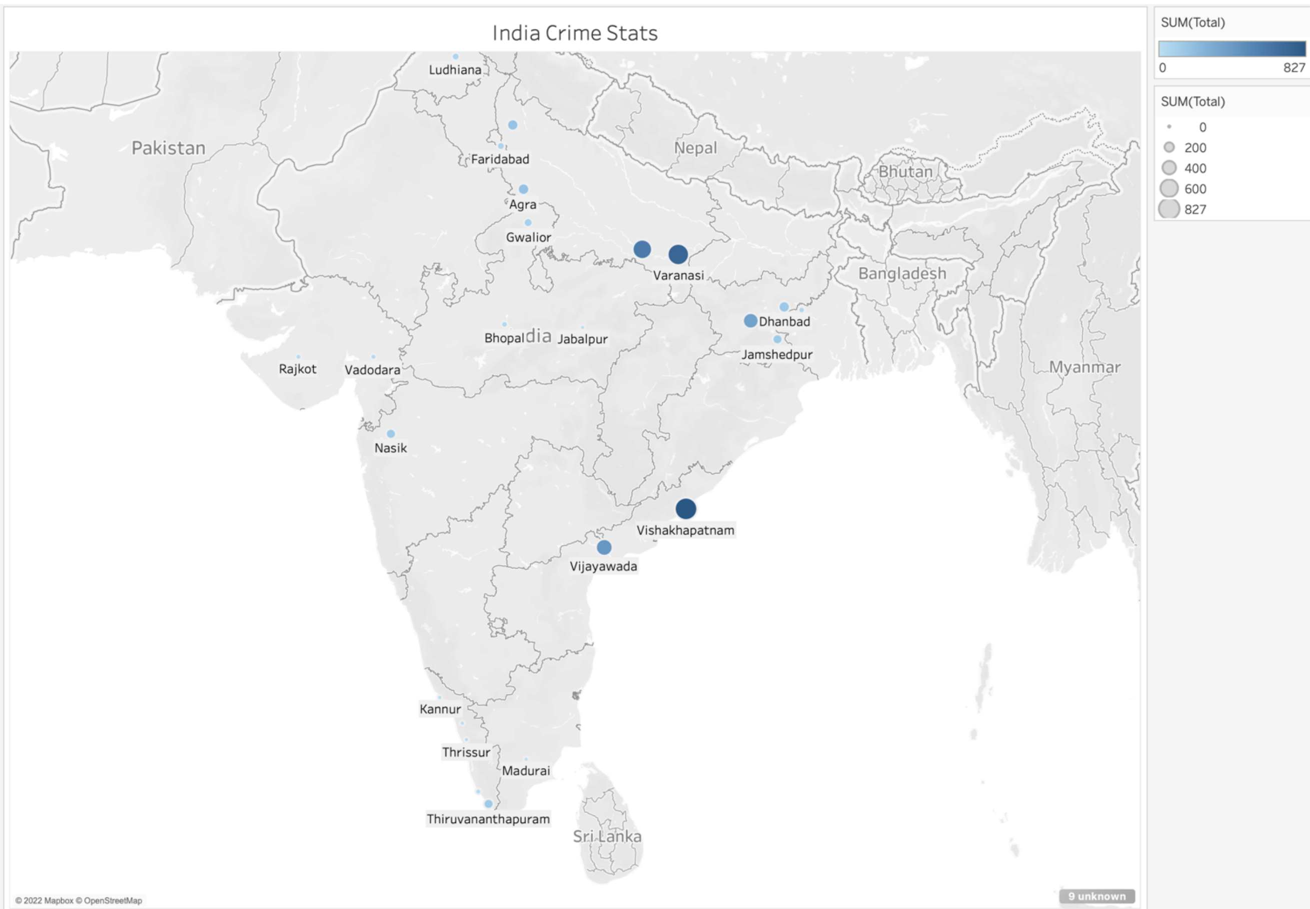


TOTAL CRIMINAL INCIDENTS:

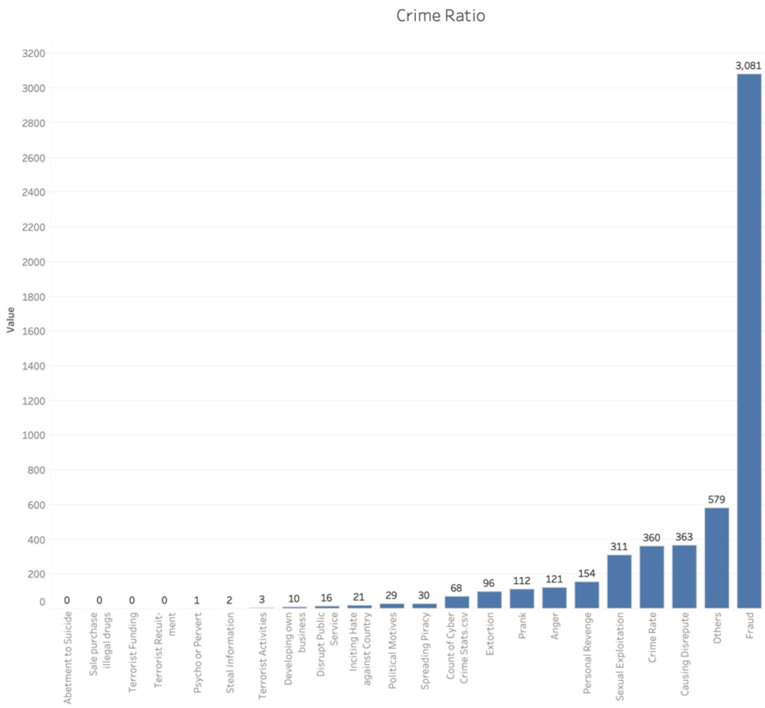
TOTAL CRIMINAL INCIDENTS

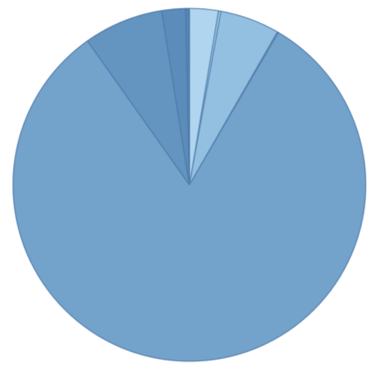
Year	
2019	2,146
2020	2,783

India Crime Stats:



Crime Ratio:





Insights:

Here we are trying to analyze the cyber crime data of the past couple of years.

- We can see that the cyber crime has increased from the year 2019 to 2020 in most of the cities accept for those cities which have incorporated cyber security measures and have spread the awareness.
- We can see the that the fraud is the highest committed cyber crime.
- People need to be made aware about the phonsi schemes and not to enter any phishing sites.
- The political crimes have been increased increasing as the year goes by, this is due to ability to not to trace back to the political parties for the scam.
- We need to increase women awareness as we can see the sexual exploitation has been increasing.