GLOBAL TERRORISM VISUALIZATION

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1. Abstract

The frequency of natural disasters like earthquakes, volcanoes, etc. have remained broadly constant, but the number of terrorist activities have grown over the period. The aim of this project is to explore the terrorist events around the world. Terrorism has a major impact all over the world in terms of economy of the country, changing people's mindset and do many horrible things to humanity. Due to increased number of brains in the activities of terrorism, it has grown very strong the past few decades and it has been almost impossible to fight against them. People mostly think they dominate because of their guns and ammunitions but the major brain is the one who is misusing the technology in the wrong direction behind them. These great minds are obviously of technology and it is also a significant part of the increase in the global terrorism attacks across the globe. In this project we tried to visualize the pattern, area affected by terrorist, attacking types etc with help of different graph like bar chart, pie chart, time series graph, heat map, scatter plot etc.

2. Introduction

2.1 Background

According to a survey, about 218 million people are affected by calamities, natural and man- made, per annum and about 68000 people lose their lives every year. The frequency of natural disasters like earthquakes, volcanoes, etc have remained broadly constant, but the number of terrorist activities have grown over the period.

2.2 Objective

The aim of this project is to explore the terrorist events around the world. We will be making Interactive Plots and Dashboard using Tableau and Jupyter for the exploration easy and a website to visualize graphs. We will be using Global Terrorism Database which is an open-source database including information on terrorist attacks around the world from 1970 to 2018. The GTD includes systematic data on domestic as well as international terrorist incidents that have occurred during this time period and now includes more than 180,000 attacks.

2.3 Motivation

The problem we are addressing is economical. Terrorist attack mainly cause a great impact on the economy of the country in which it has taken place. Terrorism has a major impact all over the world in terms of economy of the country, changing people's mindset and do many horrible things to humanity. According to our study, most of the terrorist activities occur due to the economy strength of that particular country and all kinds of ransomamt.

2.4 Organization of the Project

The backbone of our project is a GTD database supplemented by Python, Tableau desktop, Matplotlib, Seaborn and Jupyter Notebook and a website to show all the graph related to terrorism. By taking advantage of Python and Tableau desktop, our team can take advantage of GTD's extensive node-tagging abilities while still being able to visualize the complex schema in the most affected parts around the world which are suffering terribly from terrorism.

3. Project Resource Requirements
3.1 Software Requirements/visualization tool

Tableau Desktop, Jupiter Notebook, Python, Browser(chrome, mozilla)

3.2 Hardware Requirements

Laptop with following specification:

For jupyter Notebook

- 1.6 GHz or faster processor
- 1 GB of RAM
- 1GB of disk + .5 CPU core

For Tableau Desktop:

- Microsoft Windows 7 or newer (32-bit and 64-bit)
- Microsoft Server 2008 R2 or newer
- Intel Pentium 4 or AMD Opteron processor or newer
- 2 GB memory
- 1.5 GB minimum free disk space
- 1366 x 768 screen resolution or higher

3.3 Libraries and language used

- **Python libraries like:**

- NumPy: NumPy is used for working with arrays. NumPy is short for "Numerical Python".

- Pandas: Pandas is used to analyze data. Cleaning data, formatting data

- Matplotlib: Matplotlib is a low-level graph plotting library in python that serves as a visualization utility.

- Seaborn: Seaborn is a library that uses Matplotlib underneath to plot graphs. It will be used to visualize random distributions.

- Mpl_toolkit: mpl_toolkit provide basic 3D plotting like (scatter, line, mesh) tools.

- Chart_studio: Chart Studio is an online plot maker tool made available by Plotly. It provides a graphical user interface for importing and analyzing data into a grid and using stats tools. Graphs can be embedded or downloaded. It is mainly used to enable creating graphs faster and more efficiently.

Languages like

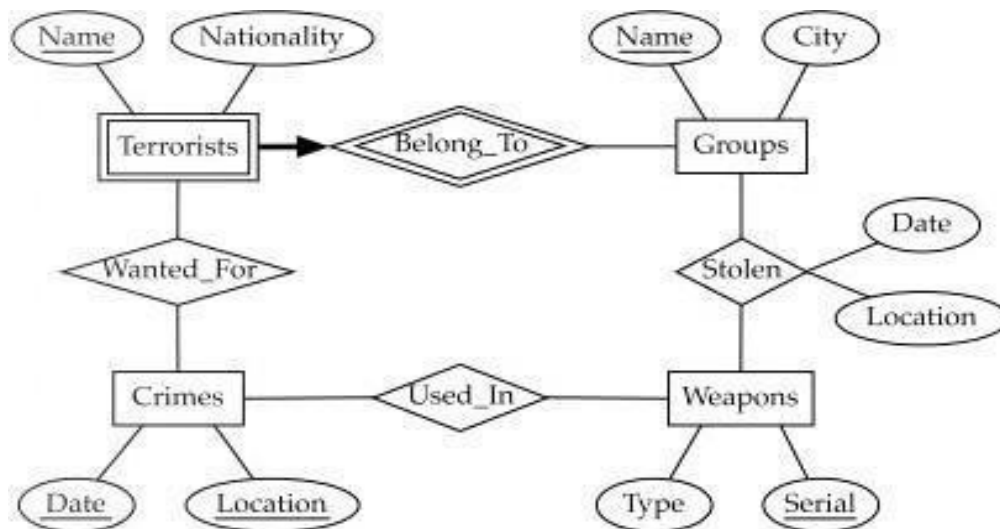Python

HTML

CSS

BOOTSTRAP

JAVASCRIPT

4. Literature Review

Sl. No.	Authors	Method	Purpose	Advantages	Limitations
1.	Shaorui Lei, Sean Chua, Eng Sen Kee Visualization of Terrorist Attacks	In this it makes use of calendar chart, tree maps, and bar chart which are dynamically linked to an interactive incident heat map for users to explore and visualize terrorist attacks in an easier manner.	To help the common users understand and gain insights from all the terrorist attacks that have happened before, we plan to visualize the attacks using simple charts and graphs	Tree map and calendar map gave insight which is easier to understand and find pattern in terrorist activity.	Some of the chart and bar graph is very complex due to lot of attributes to take care while doing visualization.
2.	Diego Muro Four Visualizations of socialization into violent extremism	The four models of radicalization presented here underline the different stages and levels involved in all processes of radicalization regardless of motivation (political, ethnic, religious).	To find out about the factors behind the adoption of radical ideas in the case of Islamist terrorism. Radicalization is best viewed as a process of change, a personal & political transformation	Four steps which might be cause of increase in radicalization are grievance, injustice, target attribution and distancing from community.	Radicalization towards violent extremism is a complex and multifaceted process that takes place at a variety of levels (individual, organizational and systemic).
3.	André Python Exploring terrorism database	Using different temporal patterns and spatial point patterns try to get insight of GTD (GLOBAL Terrorism Database)	This paper Assess the risk, provide complementary counterterrorism tools.	Data analysis and statistical modeling are used to Support theoretical and empirical work	Inherent subjectivity related to the concept of terrorism – No consensus on the definition.

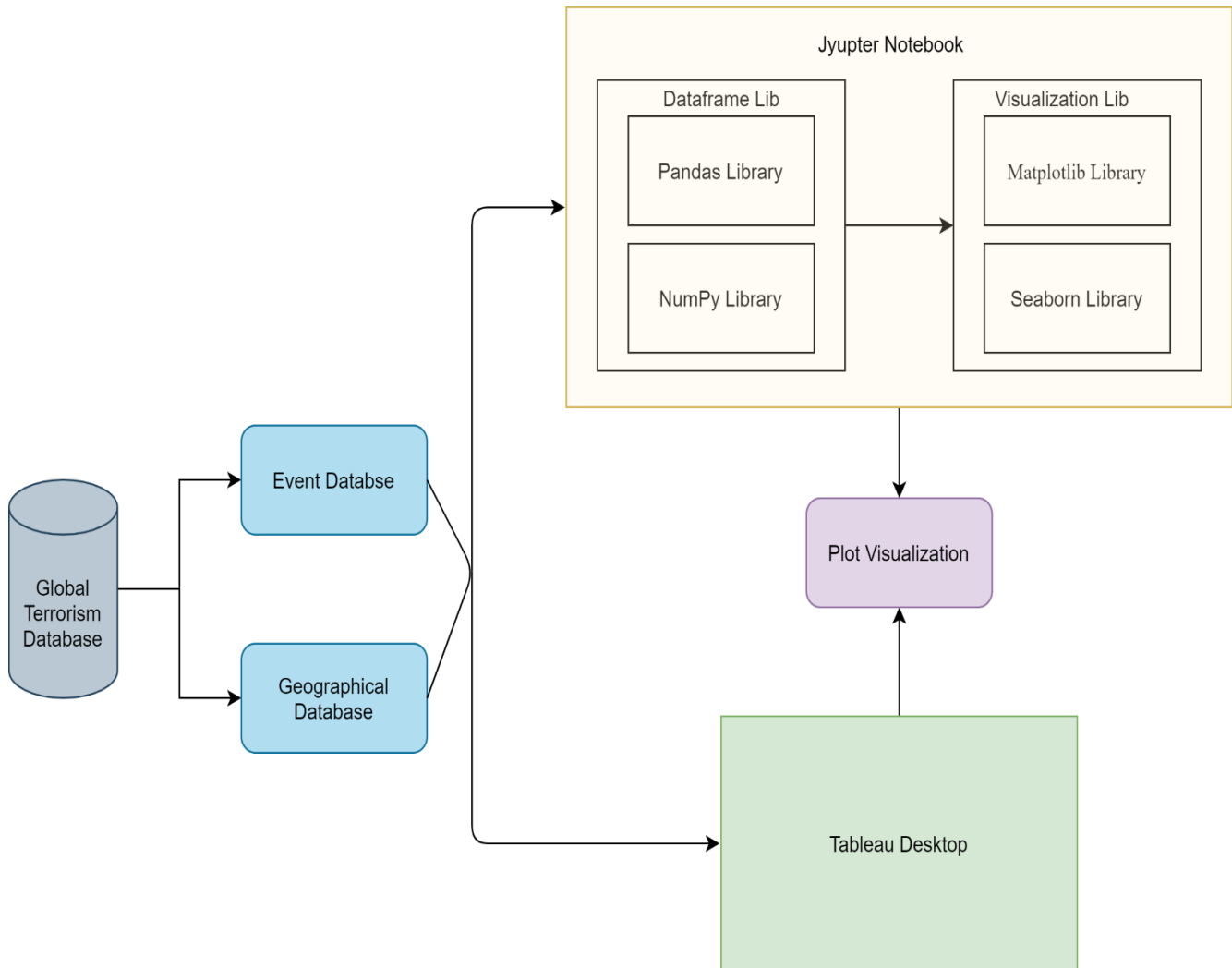|					
4.	Safiya Yahaya Jyothi Gupta NIGERIA: A GEOGRAPHIC LOOK AT TERRORIST ATTACKS	Boko Haram is a religious extremist group ranked as the deadliest terrorist group in the world in 2017 which operate throughout the Lake Chad in Nigeria.	To analyze the conflict between sedentary farmers and nomadic cattle herders in Nigeria. These herders are well armed and organized.	It gave us insight of Nigeria's complex problems & also on different extremist groups which were in action.	The data only takes into account events reported by newspapers or online outlets. So smaller incidents are not included.
5.	Matthew N O Sadiku	Data visualization techniques e.g. Line & Bar Chart, Scatter Plot & Pie Chart.	This paper presents a brief introduction to data visualization	Easy to use and understand techniques	Cannot be used for different type of data.
6.	JIAYING LIU1, TAO TANG2, WEI WANG1, BO XU1, XIANGJIE KONG	A Survey of Scholarly Data Visualization	This paper provides a comprehensive overview of related data visualization tools, existing techniques, as well as systems for the analyzing volumes of diverse scholarly	Many different data types are considered in this paper & the Data Sets are very diverse.	The types need to be constantly updated.
7.	K. Jayasudha; Dr.C.Chandra sekar	Data mining is the process of identifying valid and understandable patterns in the data set.	The aim of this study was to show the applications of data mining techniques in the field of accident investigation.	Association rules are proposed to use to discover the patterns and rules that cause the occurrence of accidents	It is beyond the scope of this study to determine which traffic crash excesses are due to poor roadway conditions.
8	Visualizing violence: legitimacy and authority in the 'war on terror'	This paper explores the relationship between visual representation and claims to legitimacy in the current George	The various ways in which the 'war on terror' has been represented through visual imagery relates directly to the	This paper states how terrorism is kept alive and who is giving financial support to them.	Lack of reliable data throughout the investigation process.

		W. Bush administration's 'war on terror'.	politics of the war and corollary claims to legitimacy and authority made by the Bush administration in its conduct of the war	• It also discuss legitimacy in the current George W. Bush administratio n's 'war on terror'	
9.	Nick cawton and Andrew moere The effect of Aesthetic on the usability of data visualizatio n.	This study is based on 11 different data visualization techniques.	This Paper attempts to fill this gap by investigating the relationship between aesthetic in data visualization and measures of effectiveness and efficiency,	The findings demonstrate a correlation between latency in task abandonment and erroneous response time	This study only investigates the correlation between task abandonment, erroneous response times and perceived aesthetics.
10.	Jae Hyun Kim Improved data visualizatio n techniques for analyzing macro-molecular structural changes	Data sets were then visualized as (1) RGB colors using three-index EPDs, (2) equiangular polygons using radar charts, and (3) human facial features using Chernoff face diagrams.	The empirical phase diagram (EPD) is a colored representation of overall structural integrity and conformational stability of macromolecules	Three new data visualization methods are presented in this work in the context of evaluating six different proteins in terms of conformation al stability as a function of pH & temperatures	To incorporate this technique it is very hard to visualize macronutrient s as this investigate at cellular.
11.	Jonathan Helfman Aggregate layout for data visualizatio n techniques	The method involves determining at least one aggregate function of a plurality of aggregate functions.	Aggregate values of the hierarchical dataset for each hierarchical depth level to be determined.	Current tree map solutions are able to show only a limited number of hierarchical levels at a time but with aggregate we can expand its scope.	Due to including aggregate function it might slow up visualization result little bit but its advantage will be much.

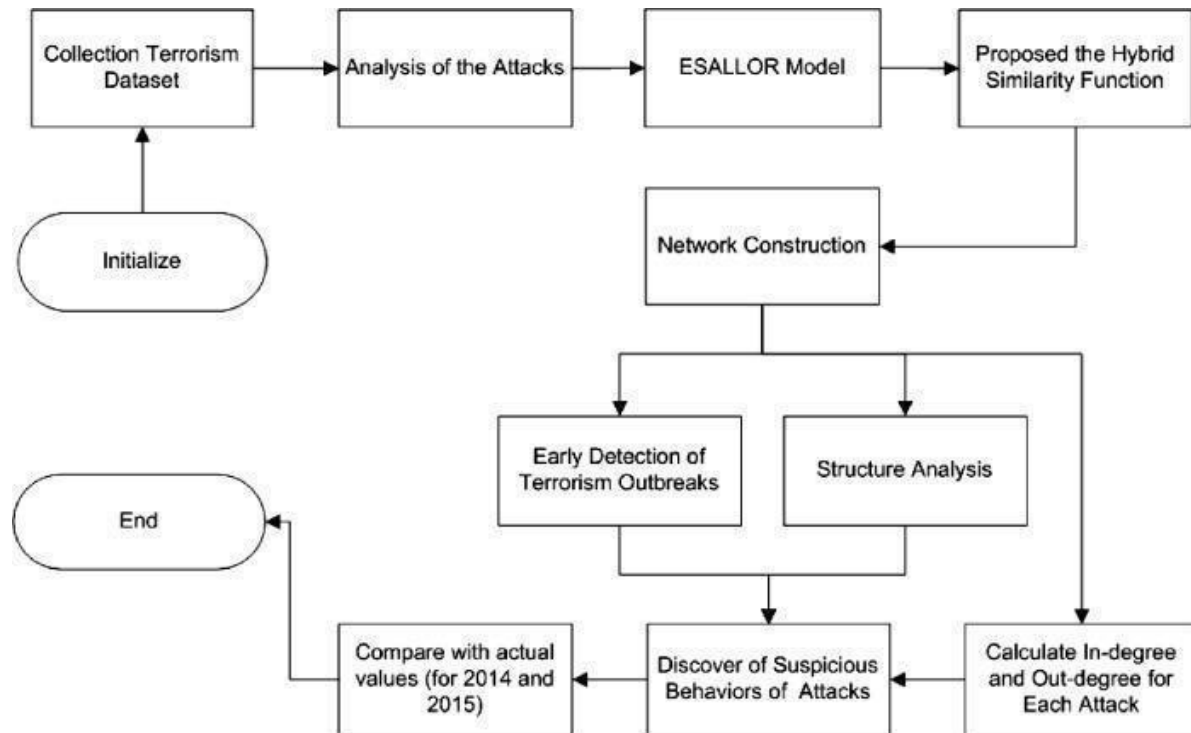|				
12.	William Wright, Eric hall System and method for large scale information analysis using data visualizatio n techniques	The system comprises a data reduction module for reducing the original data set to produce a reduced data set data resizing module	A data reduction module configured for reducing the original data set to produce a plurality of reduced data sets.	A vector module is used for transforming the reduced data set from a tabular format to a memory format.	The local network appears towards the bottom of the image and remote connections are placed above with their distance based on locality and criticality. Due to this local network might have less impact

4.1 ER Diagram

4.2 Proposed Methodology

Jyupter Notebook

Dataframe Lib

Pandas Library

NumPy Library

Visualization Lib

Matplotlib Library

Seaborn Library

Global Terrorism Database

Event Databse

Geographical Database

Plot Visualization

Tableau Desktop

4.3 ER to Relational Mapping

4.4 Tables and Constraints

Attribute	Datatype	Contraints
Event ID	INT	Primary key
iyear	number	Not null
imonth	number	Not null
iday	number	Not null
approxdate	date	Foreign key
extended	int	(1,0)
resolution	date	None
Country	Number	0-500
Country_txt	Varchar2	Not null
Region	INT	1-25
Region_txt	Varchar2	None
Prostate	Varchar	none

City	Varchar	None
Latitude	number	0-60
longitutde	number	0-180
Specificity	INT	(0,1)
Vicinity	INT	1-10
Location	Varchar2	NONE
Summary	Varchar2	none
Attacktype	Varchar2	Not null
targetype	Varchar2	None
Motive	Varchar2	none

5. Implementation Details and User Manuals

5.1 Introduction

We have used GTD (Global Terrorism Database), Using Pandas and NumPy library of python we have made data frame in Jupyter notebook and visualized using matplotlib and seaborn library of Python.

Matplotlib is a plotting library for the Python programming language and its numerical mathematics extension NumPy, and Seaborn is also a Python data visualization library based on matplotlib. It provides a high-level interface for drawing attractive and informative statistical graphics. Seaborn and Matplotlib are two of Python's most powerful visualization libraries. Seaborn uses fewer syntax and has stunning default themes and Matplotlib is more easily customizable through accessing the classes.

We have also plotted some graphs of various attacks in different region and affected statics using Tableau Desktop.

5.2 DATASET

- The Global Terrorism Database is the most comprehensive unclassified database of terrorist attacks in the world. The National Consortium for the Study of Terrorism and Responses to Terrorism makes the GTD available via this site in an effort to improve understanding of terrorist violence, so that it can be more readily studied and defeated. The GTD is produced by a dedicated team of researchers and technical staff.

- The GTD is an open-source database, which provides information on domestic and international terrorist attacks around the world since 1970, and now includes more than 200,000 events. For each event, a wide range of information is available, including the date and location of the incident, the weapons used, nature of the target, the number of casualties, and – when identifiable – the group or individual responsible.

  https://www.kaggle.com/START-UMD/gtd

- The data-type is static Data.
- Dataset types: Table
- The size of dataset is very large which include data of terrorism for all the country but in our project we are basically focusing on "Terrorism of India" and so we used only those data which is related to india.
- Data determination requires a structure in which the data determined can be stored and accessed, so in our case :
- The data is stored in csv format and
- Accessed using python panadas library using read_csv() method.
- The datatypes of data in this project is mainly Quantitative i.e
    - Integer
    - Float
    - Double

5.3 Visual idioms
- Bar chart/graph
- Stacked bar chart/graph
- Pie chart using tableau
- Scatter plot using tableau
- Heat map using jupyter
- Line chart
- Grouped bar chart
- Histogram
- Time series graph

5.4 Results

```
C:\Users\bhanuj>pip install pandas
Collecting pandas
  Downloading pandas-1.1.3-cp38-cp38-win_amd64.whl (8.9 MB)
     |████████████████████████████████| 8.9 MB 595 kB/s
Requirement already satisfied: pytz>=2017.2 in c:\users\bhanuj\appdata\local\programs\python\python38\lib\site-packages (from pandas) (2020.1)
Requirement already satisfied: python-dateutil>=2.7.3 in c:\users\bhanuj\appdata\local\programs\python\python38\lib\site-packages (from pandas) (2.8.1)
Requirement already satisfied: numpy>=1.15.4 in c:\users\bhanuj\appdata\local\programs\python\python38\lib\site-packages (from pandas) (1.19.2)
Requirement already satisfied: six>=1.5 in c:\users\bhanuj\appdata\roaming\python\python38\site-packages (from python-dateutil>=2.7.3->pandas) (1.15.0)
Installing collected packages: pandas
Successfully installed pandas-1.1.3

C:\Users\bhanuj>
```

[2]
```python
#pip install pandas
```

[3]
```python
import pandas as pd
import numpy as np
```

[4]
```python
df=pd.read_excel('C:\\Users\\bhanuj\\Documents\\Data visualization\\project\\global terrorism\\global_terr.xlsx')
```

[6]
```python
# df=pd.Dataframe(df,coumn=df.keys(),index=[0])
df.info(verbose=True, null_counts=True)
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 191464 entries, 0 to 191463
Data columns (total 135 columns):
 #   Column         Non-Null Count    Dtype
---  ------         --------------    -----
 0   eventid        191464 non-null   int64
 1   iyear          191464 non-null   int64
 2   imonth         191464 non-null   int64
 3   iday           191464 non-null   int64
 4   approxdate     10292 non-null    object
 5   extended       191464 non-null   int64
 6   resolution     4453 non-null     datetime64[ns]
 7   country        191464 non-null   int64
 8   country_txt    191464 non-null   object
 9   region         191464 non-null   int64
 10  region_txt     191464 non-null   object
 11  provstate      191462 non-null   object
 12  city           191038 non-null   object
 13  latitude       186884 non-null   float64
 14  longitude      186883 non-null   float64
 15  specificity    191463 non-null   float64
 16  vicinity       191464 non-null   int64
 17  location       60285 non-null    object
 18  summary        125340 non-null   object
 19  crit1          191464 non-null   int64
```

6.2.4

```python
df.drop(['approxdate','resolution','attacktype2','attacktype2_txt','attacktype3','attacktype3_txt','targtype2','targtype2_txt','targsubtype2','targsubtype2_txt',
'corp2','target2','natlty2','natlty2_txt','targtype3','targtype3_txt','targsubtype3','targsubtype3_txt','target3','natlty3','natlty3_txt','gsubname','gname2',
'gsubname2','gname3','gsubname3','guncertain2','guncertain3','claimmode','claimmode_txt','claim2','claimmode2','claimmode2_txt','claim3','claimmode3',
'claimmode3_txt','compclaim','weaptype2','weaptype2_txt','weapsubtype2','weapsubtype2_txt', 'weaptype3','weaptype3_txt','weapsubtype3','weapsubtype3_txt',
'weaptype4','weaptype4_txt','weapsubtype4','weapsubtype4_txt', 'propvalue','nhostkid','nhostkidus','nhours','ndays','divert','kidhijcountry','ransomamt',
'ransomamtus','ransompaid','ransompaidus','ransomnote','hostkidoutcome_txt','nreleased'],axis=1,inplace=True)
```

```python
df.info(verbose=True, null_counts=True)
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 191464 entries, 0 to 191463
Data columns (total 72 columns):
 #   Column        Non-Null Count    Dtype
---  ------        --------------    -----
 0   eventid       191464 non-null   int64
 1   iyear         191464 non-null   int64
 2   imonth        191464 non-null   int64
 3   iday          191464 non-null   int64
 4   extended      191464 non-null   int64
 5   country       191464 non-null   int64
 6   country_txt   191464 non-null   object
 7   region        191464 non-null   int64
 8   region_txt    191464 non-null   object
 9   provstate     191462 non-null   object
 10  city          191038 non-null   object
 11  latitude      186884 non-null   float64
 12  longitude     186883 non-null   float64
 13  specificity   191463 non-null   float64
 14  vicinity      191464 non-null   int64
 15  location      60285 non-null    object
 16  summary       125340 non-null   object
 17  crit1         191464 non-null   int64
 18  crit2         191464 non-null   int64
 19  crit3         191464 non-null   int64
```

6.2.5

```python
#correlation between columns
df.corr(method='pearson')
```

	eventid	iyear	imonth	iday	extended	country	region	latitude	longitude	specificity	...	nwoundte	property	propextent	ishostkid	ransom	hostkidoutcome	INT_
eventid	1.000000	0.999996	0.001181	0.017527	0.095556	-0.135198	0.396339	0.156480	0.543542	0.036440	...	0.032005	-0.284407	-0.150896	-0.013623	-0.241008	0.243028	-0.1297
iyear	0.999996	1.000000	-0.001368	0.017444	0.095544	-0.135178	0.396356	0.156522	0.543549	0.036416	...	0.031972	-0.284389	-0.150907	-0.013641	-0.240797	0.243006	-0.1297
imonth	0.001181	-0.001368	1.000000	0.006218	0.001702	-0.007690	-0.005320	-0.014546	-0.003126	0.007335	...	0.006515	-0.008046	0.000389	0.005355	-0.070013	0.013409	-0.0013
iday	0.017527	0.017444	0.006218	1.000000	-0.003968	0.003417	0.009168	0.003228	0.012156	-0.007351	...	-0.000147	-0.003798	-0.010276	0.005651	-0.000989	-0.002800	-0.0013
extended	0.095556	0.095544	0.001702	-0.003968	1.000000	-0.020598	0.043446	-0.028243	0.031580	0.057869	...	0.002926	-0.000936	0.028548	0.270956	-0.173116	0.248288	0.0714
country	-0.135198	-0.135178	-0.007690	0.003417	-0.020598	1.000000	0.151110	0.165616	-0.017287	-0.086873	...	-0.053654	0.038512	-0.025385	-0.012744	0.026231	0.009749	0.0619
region	0.396339	0.396356	-0.005320	0.009168	0.043446	0.151110	1.000000	0.289889	0.388039	-0.080271	...	-0.031354	-0.178070	-0.057900	-0.025154	-0.063613	0.193444	-0.0782
latitude	0.156480	0.156522	-0.014546	0.003228	-0.028243	0.165616	0.289889	1.000000	0.257940	-0.016778	...	0.026492	-0.083117	-0.052475	-0.017874	-0.023788	0.059136	-0.0956
longitude	0.543542	0.543549	-0.003126	0.012156	0.031580	-0.017287	0.388039	0.257940	1.000000	0.109629	...	0.022913	-0.166950	-0.073357	-0.009025	-0.117988	0.084854	-0.1254
specificity	0.036440	0.036416	0.007335	-0.007351	0.057869	-0.086873	-0.080271	-0.016778	0.109629	1.000000	...	0.052107	0.019640	0.041046	0.014093	-0.003140	0.030243	0.0753
vicinity	0.069588	0.069607	-0.007241	-0.004787	0.017055	-0.010956	0.072195	0.004239	0.055056	-0.055034	...	-0.004594	-0.017835	0.024793	0.003585	-0.065216	0.023728	0.0141
crit1	0.000675	0.000655	0.000336	0.010314	-0.013918	-0.009552	0.027259	0.022719	-0.003174	0.015881	...	0.006595	-0.009516	0.008084	-0.012881	0.020052	0.015670	0.0896
crit2	0.025203	0.025202	0.000647	-0.002605	0.001331	-0.038248	-0.013751	-0.005870	-0.004914	0.001145	...	-0.001284	-0.001322	0.006563	0.000228	-0.004399	-0.019653	-0.0237
crit3	-0.025025	-0.025022	0.000674	-0.005307	0.048428	-0.038730	-0.014621	0.000195	0.012072	-0.072871	...	-0.057954	0.024067	-0.236194	0.043336	-0.040110	-0.020269	-0.1382
doubtterr	0.305379	0.305410	-0.012420	0.002480	0.013270	0.035433	0.089306	0.066162	0.125099	0.043125	...	0.029606	-0.114735	0.008880	-0.029229	-0.059704	0.154137	0.2264
alternative	0.043188	0.043195	-0.004635	-0.007474	0.095902	0.054928	0.027252	0.034264	0.041684	-0.069418	...	-0.035365	0.004635	-0.222341	0.056025	-0.104992	0.001956	-0.1790
multiple	0.092730	0.092743	-0.003937	0.000115	-0.011862	-0.022565	0.012730	-0.025336	-0.002868	0.038133	...	0.008128	-0.031881	-0.065685	-0.050583	0.011143	0.111696	0.1233
success	-0.086950	-0.086945	-0.001289	-0.011758	0.076344	-0.037320	-0.028972	-0.071452	-0.052875	0.011708	...	-0.013012	-0.033144	0.042632	0.040892	-0.025310	0.014799	0.058
suicide	0.130289	0.130289	0.000216	0.003371	-0.034765	-0.049829	0.109618	0.067319	0.062329	-0.032932	...	0.001758	-0.069894	0.004590	-0.019400	-0.026703	0.040361	0.0603
attacktype1	0.084859	0.084830	0.010306	-0.003736	0.270336	-0.026461	0.010758	0.011919	0.015561	0.063902	...	0.036243	0.013371	-0.037814	0.163933	-0.086923	0.023939	0.0827
targtype1	0.076273	0.076278	-0.002139	-0.001269	0.011644	-0.015249	0.044290	-0.020868	0.027022	0.042741	...	-0.037118	0.008972	-0.032115	0.009966	-0.033130	0.082938	-0.0597
targsubtype1	0.046374	0.046371	0.001254	-0.004079	0.023664	-0.008964	0.034571	-0.040566	0.009362	0.038265	...	-0.033658	0.013108	-0.031208	0.017792	-0.028935	0.056073	-0.0317

6.2.6

[16] ▷ M↓

```python
import matplotlib.pyplot as plt
import seaborn as sns
plt.subplots(figsize=(15,6))
sns.countplot('iyear', data=df,palette='RdYlGn_r', edgecolor=sns.color_palette('dark',7))
plt.xticks(rotation=90)
plt.title('Number of terrorist Activities each year')
plt.show()
```
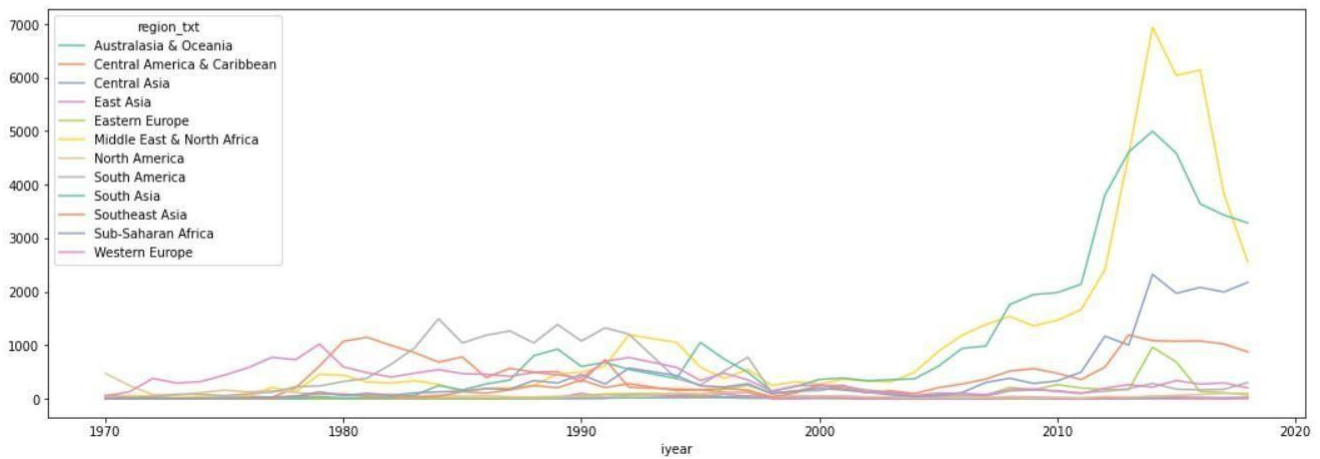
Number of terrorist Activities each year

6.2.7

[17] ▷ M↓
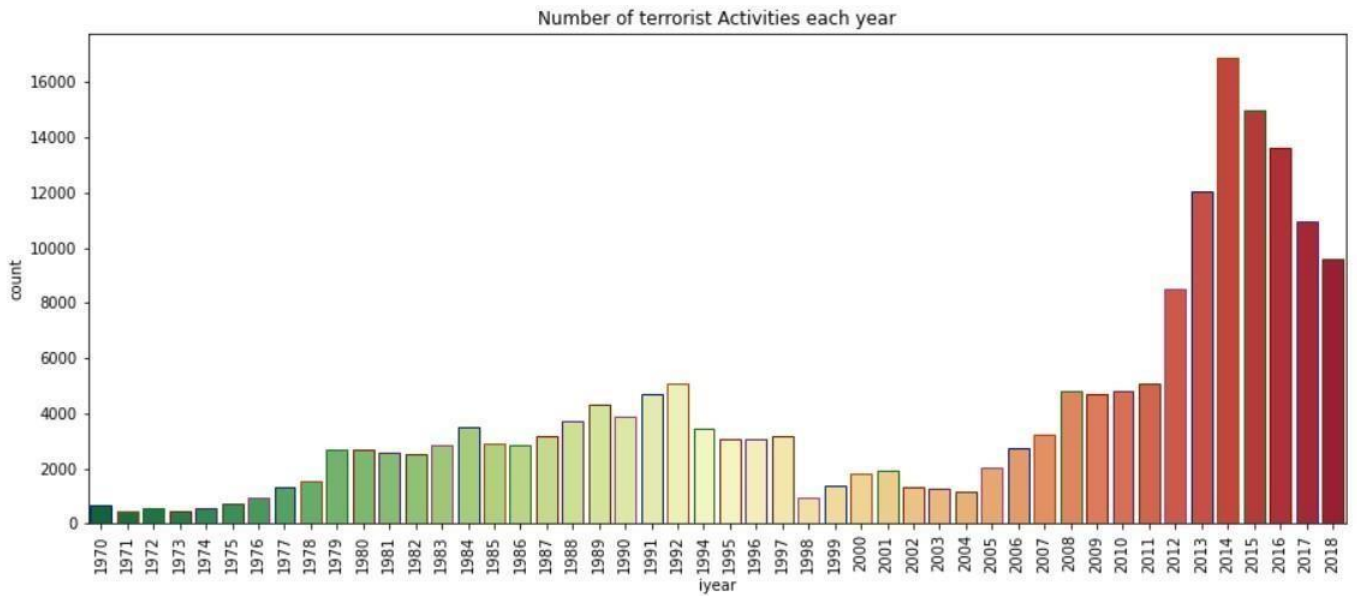
```python
terror_region=pd.crosstab(df.iyear,df.region_txt)
terror_region.plot(color=sns.color_palette('Set2',12))
fig=plt.gcf()
fig.set_size_inches(18,6)
plt.show()
```

6.2.8

```
plt.subplots(figsize=(15,6))
sns.countplot('attacktype1_txt',data=df,palette='inferno',order=df["attacktype1_txt"].value_counts().index)
plt.xticks(rotation=90)
plt.title('Attacking method by terrorist')
plt.show()
```


Attacking method by terrorist

6.2.9

▷ M↓
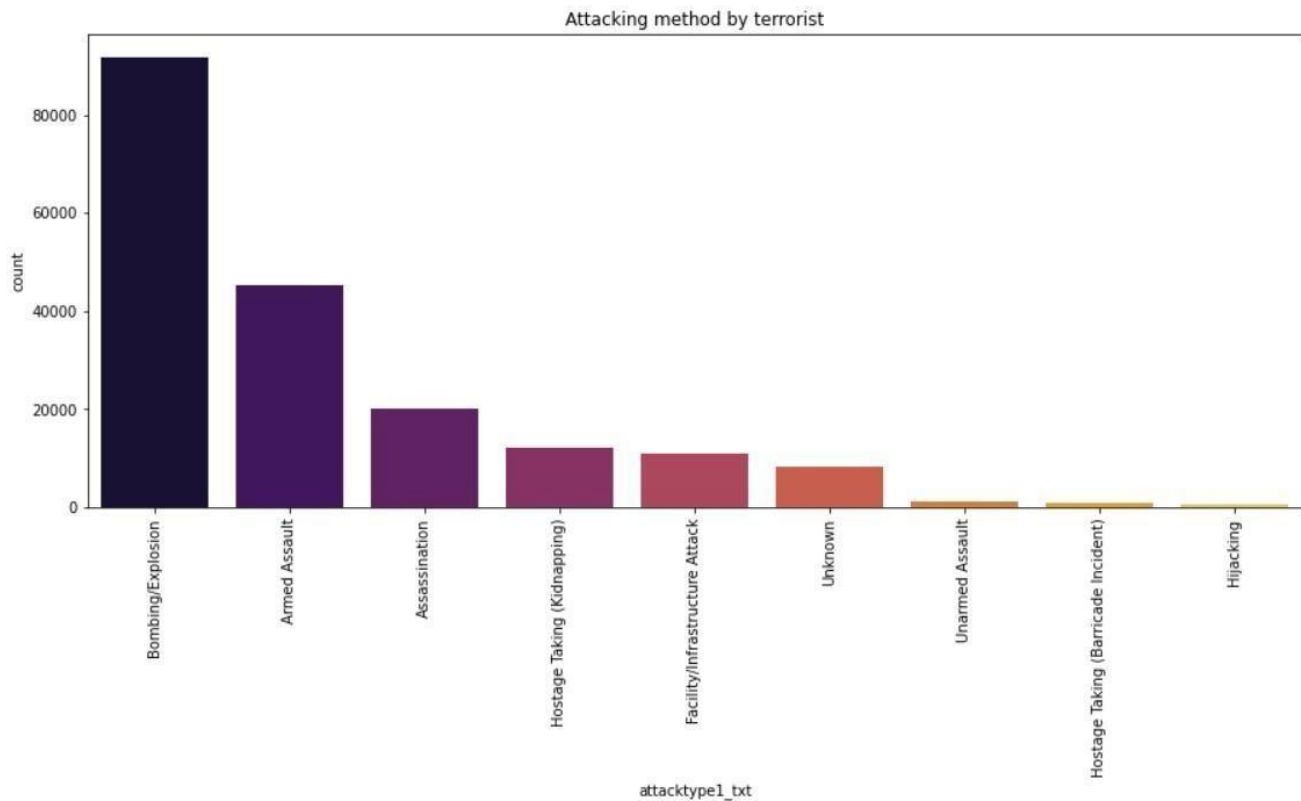
```python
plt.subplots(figsize=(15,6))
sns.countplot(df['targtype1_txt'],palette='inferno',order=df["targtype1_txt"].value_counts().index)
plt.xticks(rotation=90)
plt.title('Favorite targets')
plt.show()
```

6.2.10
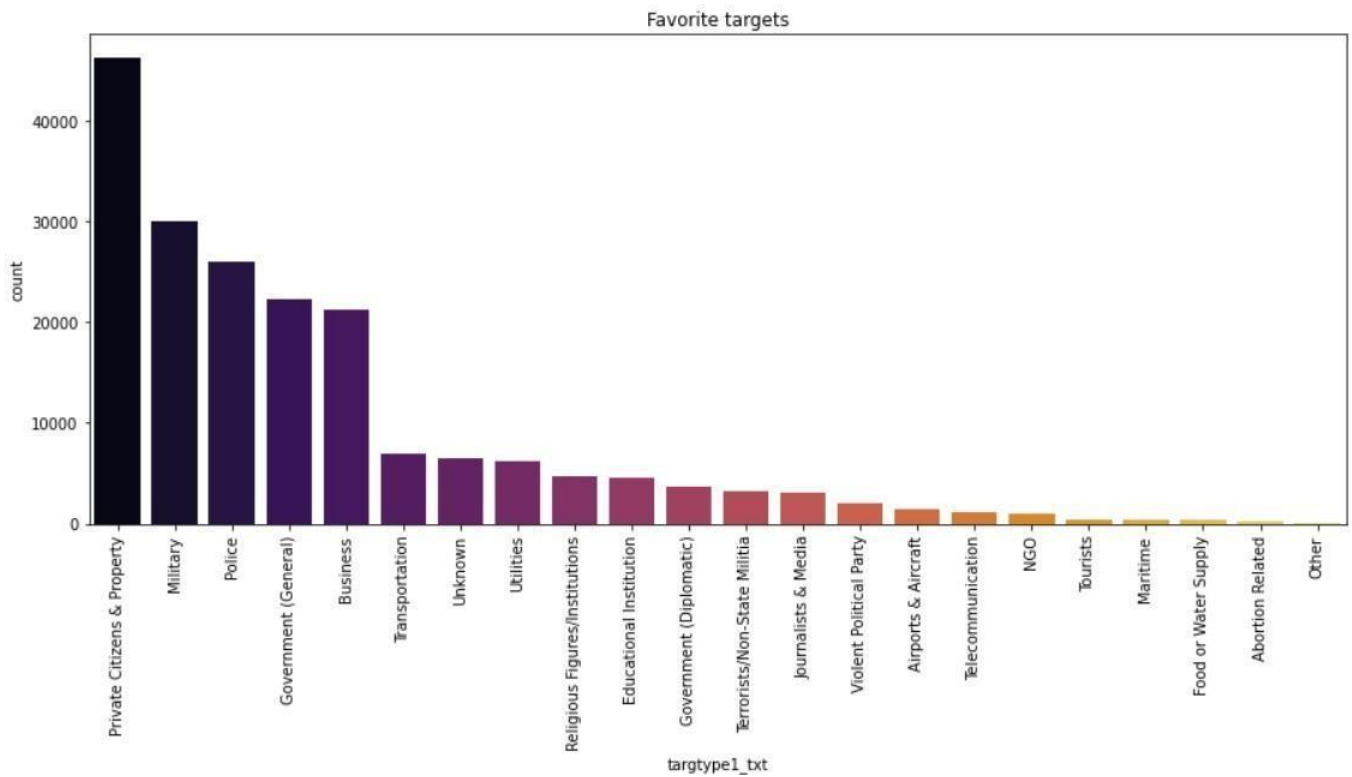
```
[23] ▷ M↓
    plt.subplots(figsize=(15,6))
    sns.countplot('region_txt',data=df,palette='RdYlGn_r', edgecolor= sns.color_palette('dark',7),order=df["region_txt"].value_counts().index)
    plt.xticks(rotation=90)
    plt.title('Attacking method by terrorist')
    plt.show()
```


6.2.11

```
[25] ▷ M↓
    pd.crosstab(df.region_txt,df.attacktype1_txt).plot.barh(stacked=True, width=1,color=sns.color_palette('RdYlGn_r',9))
    fig=plt.gcf()
    fig.set_size_inches(12,8)
    plt.show()
```
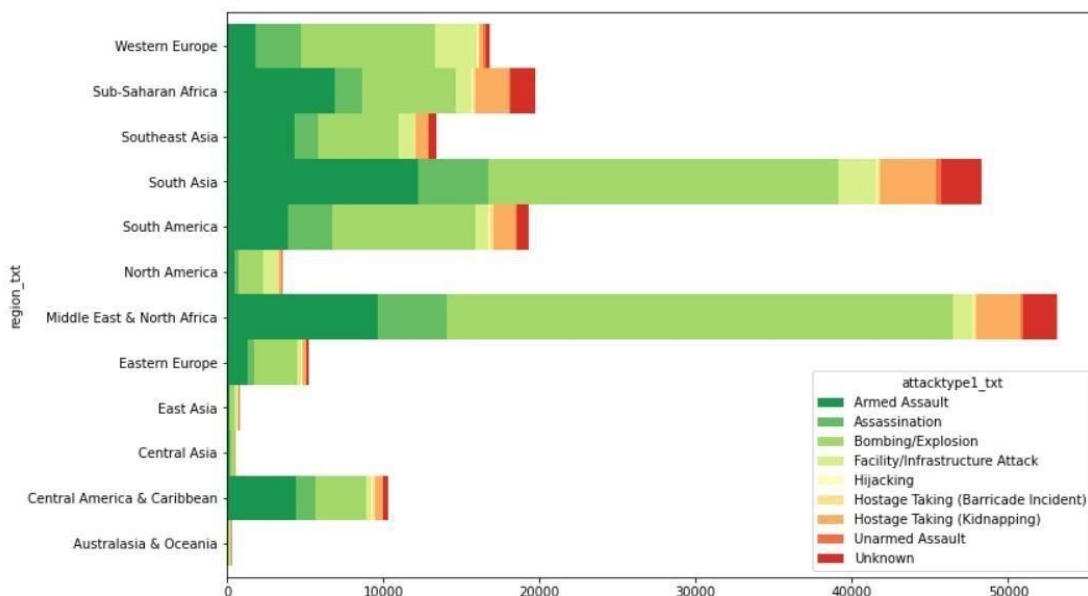
6.2.12

```
[27] ▷ M↓
    plt.subplots(figsize=(18,6))
    sns.barplot(df['country_txt'].value_counts()[:15].index,df['country_txt'].value_counts()[:15].values, palette='inferno')
    plt.title('top affected countries')
    plt.show()
```
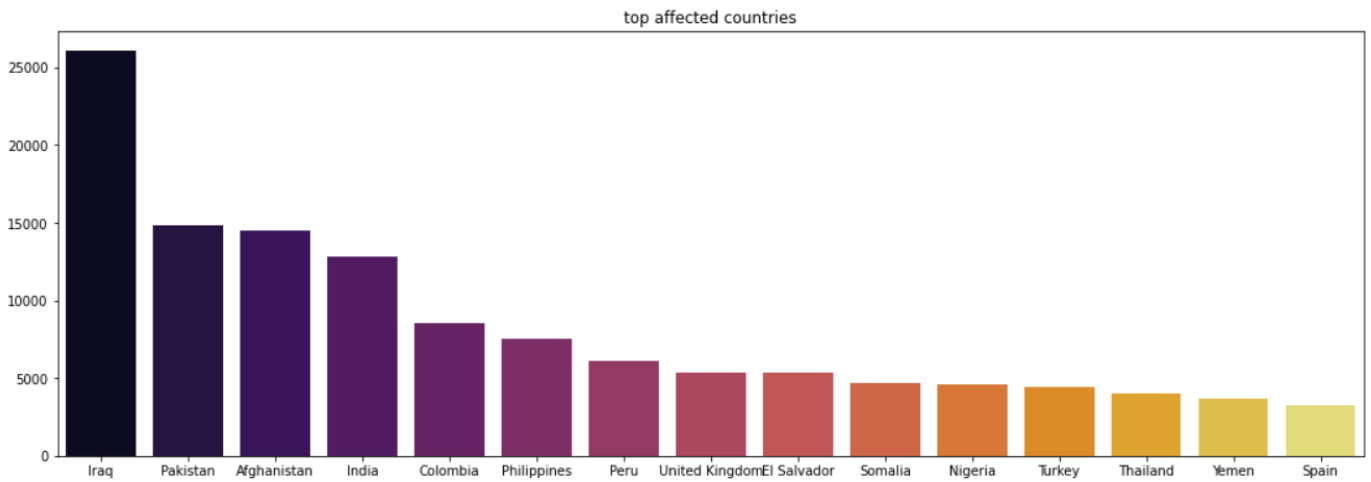

6.2.13

```
[29] ▷ M↓
    coun_terror=df['country_txt'].value_counts()[:15].to_frame()
    coun_terror.columns=["Attacks"]
    coun_kill=df.groupby('country_txt')['nkill'].sum().to_frame()
    coun_terror.merge(coun_kill,left_index=True,right_index=True,how='left').plot.bar(width=0.9)
    fig=plt.gcf()
    fig.set_size_inches(18,6)
    plt.show()
```
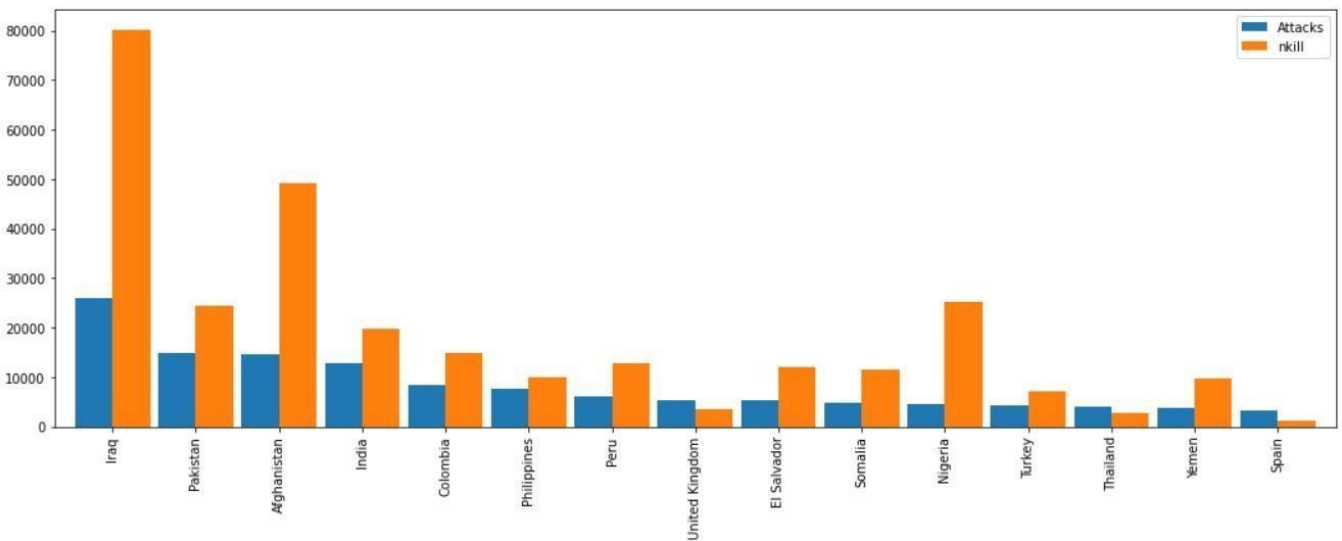
6.2.14

```
terror_india=df[df['country_txt'] == 'India']
f,ax=plt.subplots(1,2,figsize=(25,12))
ind_groups=terror_india['gname'].value_counts()[1:11].index
ind_groups=terror_india[terror_india['gname'].isin(ind_groups)]
sns.countplot(y='attacktype1_txt',data=ind_groups,ax=ax[0])
ax[0].set_title('Top Terrorist groups')
sns.countplot(y='attacktype1_txt',data=terror_india,ax=ax[1])
ax[1].set_title('Favorite attack types')
plt.subplots_adjust(hspace=0.3,wspace=0.6)
ax[0].tick_params(labelsize=15)
ax[1].tick_params(labelsize=15)
plt.show()
```
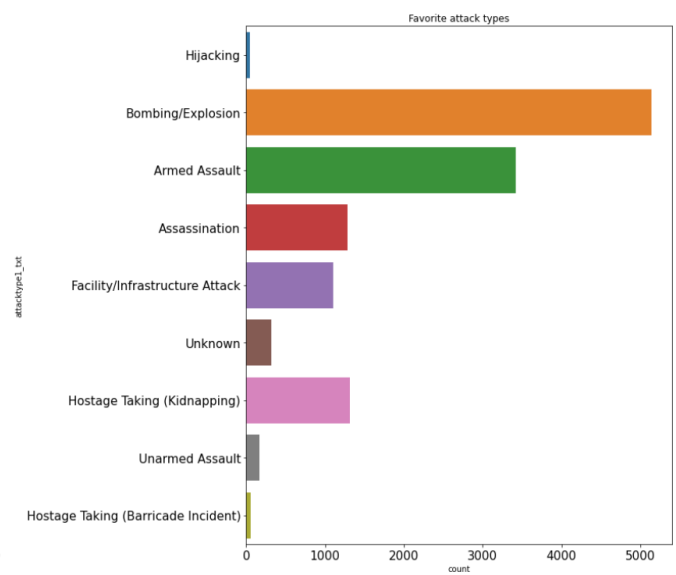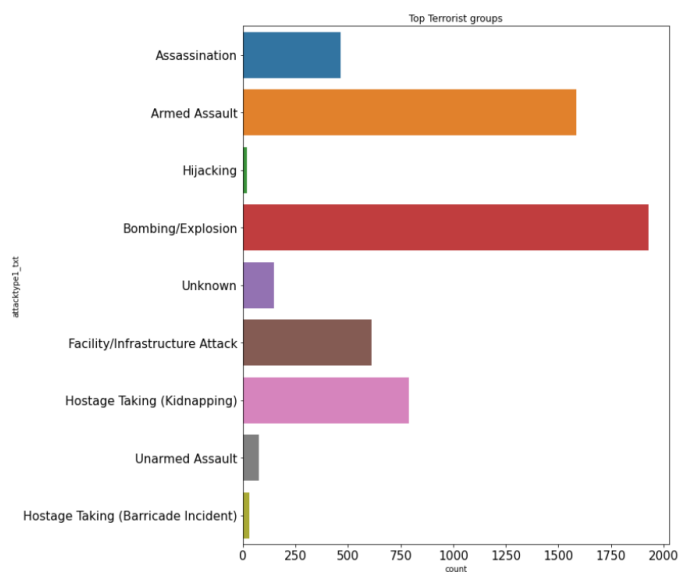
TABLEAU

6.2.15 Attack type of terrorists affecting the population:
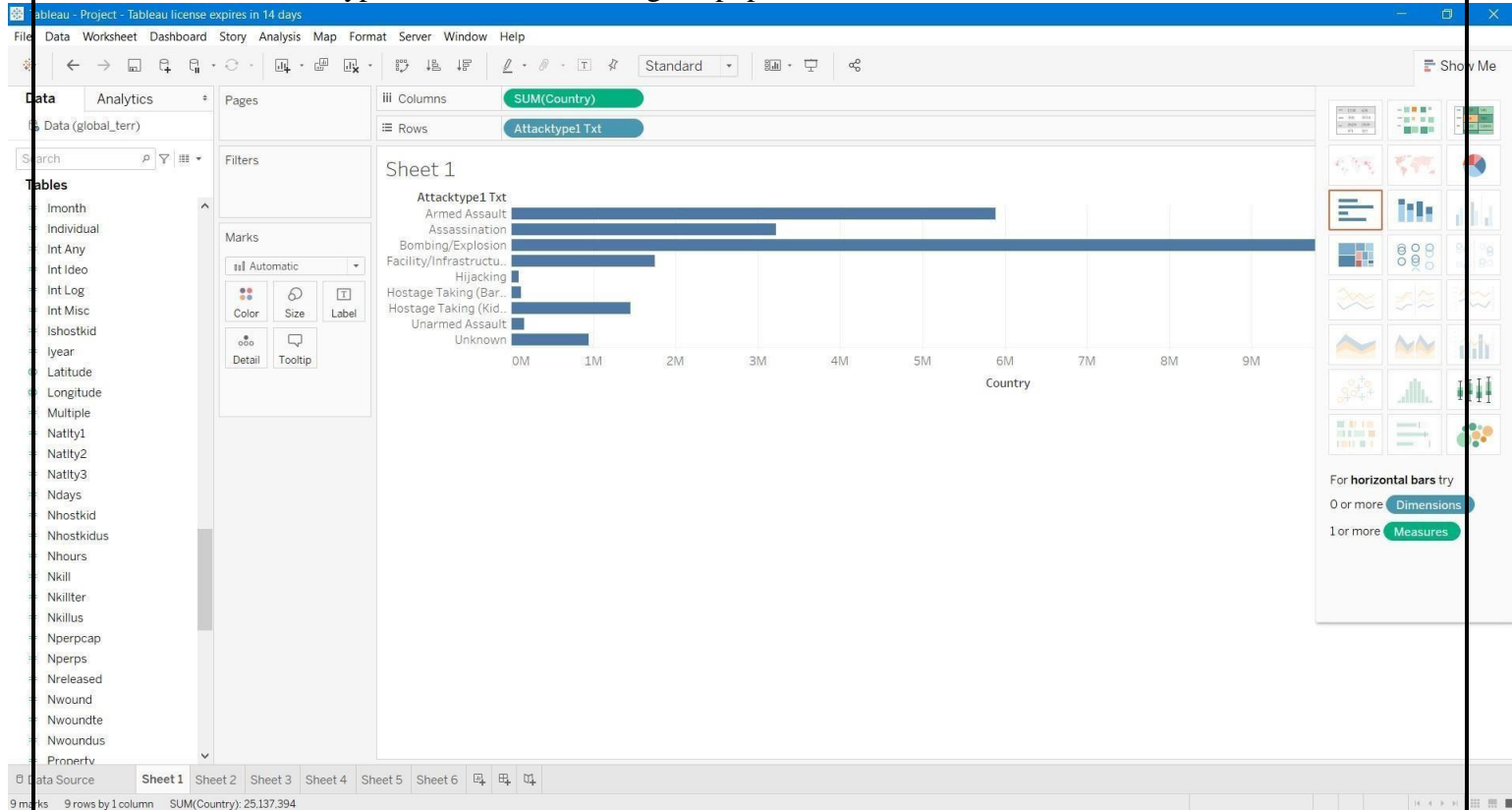
6.2.16: Number Of Records of terrorism in different parts of the world:
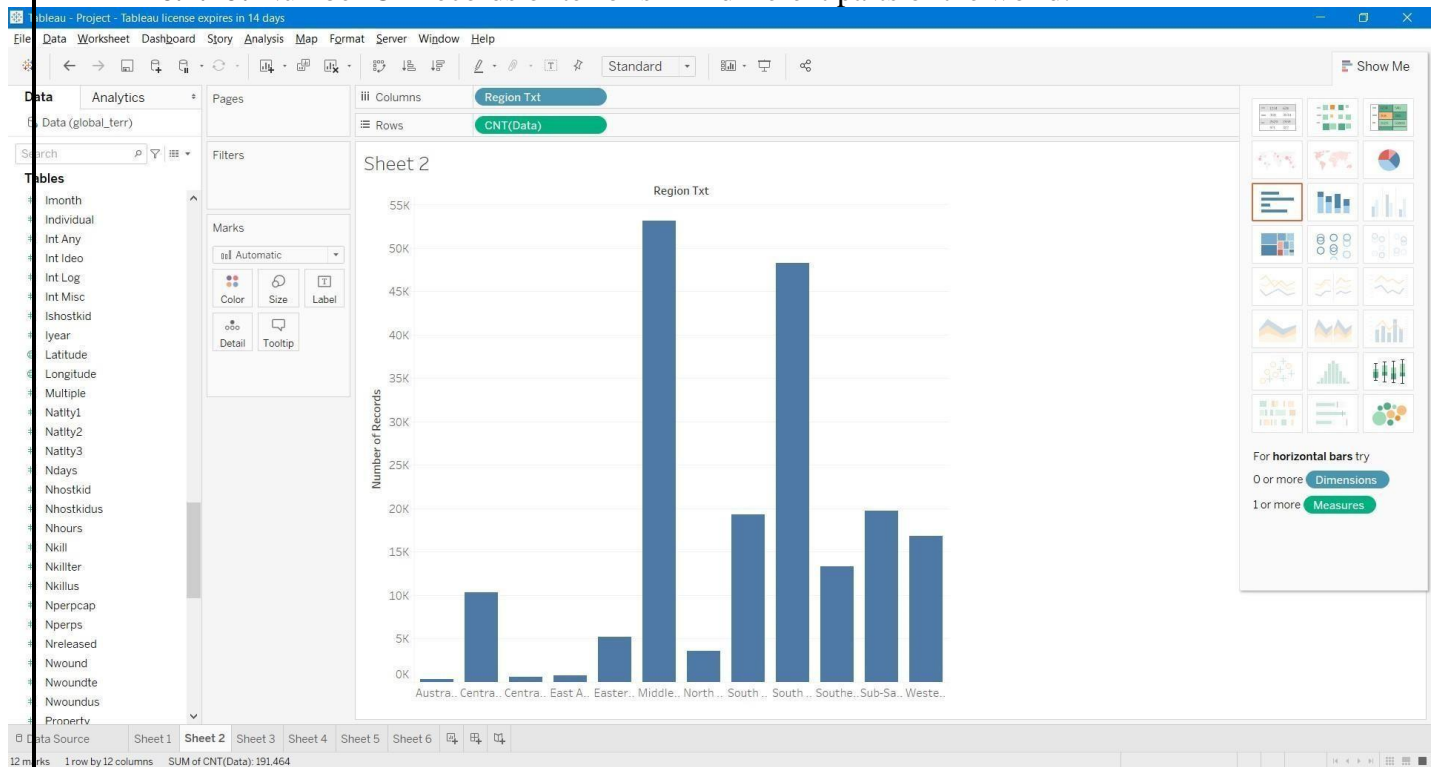
6.2.17: The total number of ransomamt taking placing in different countries across the world:
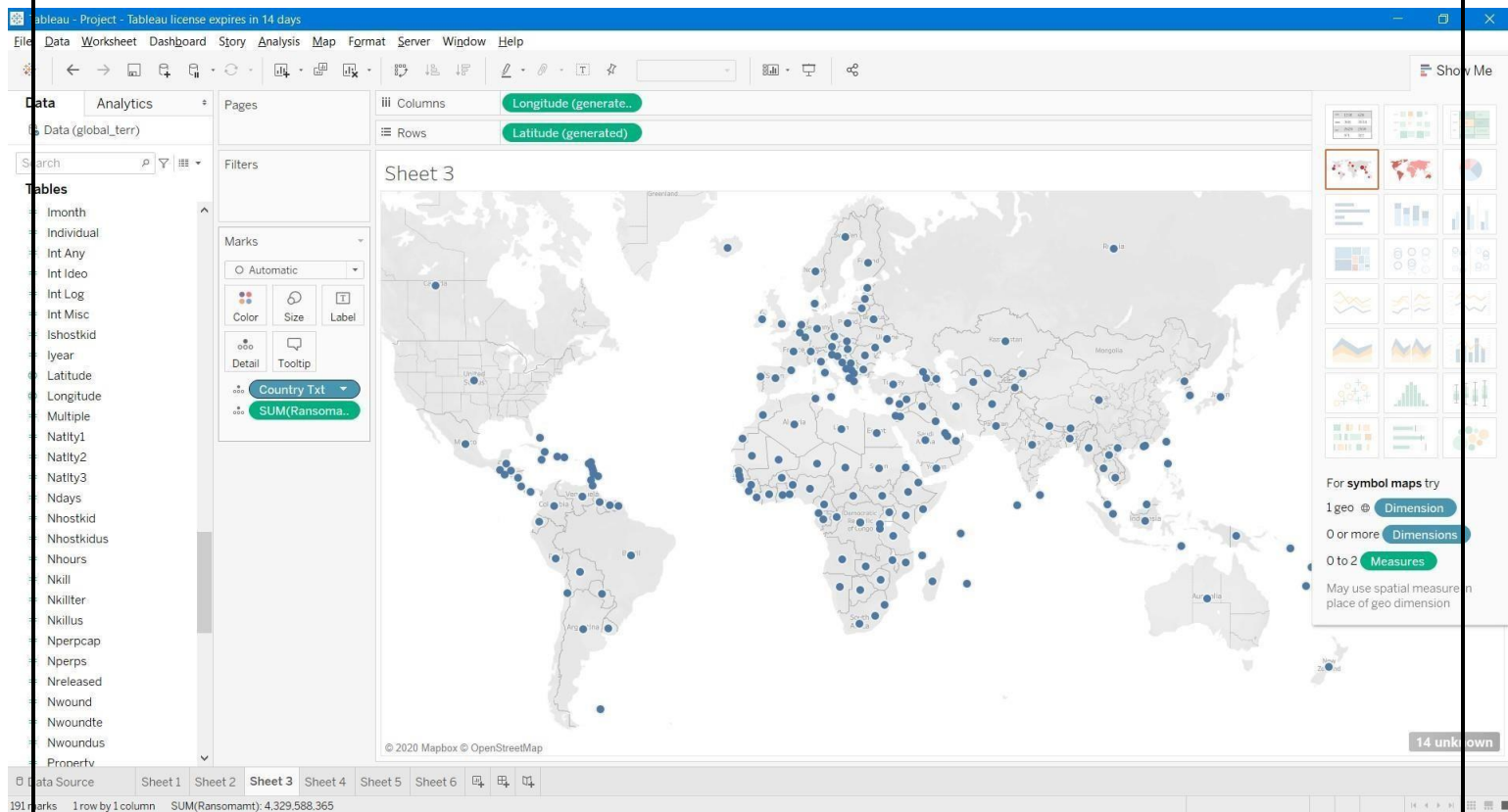
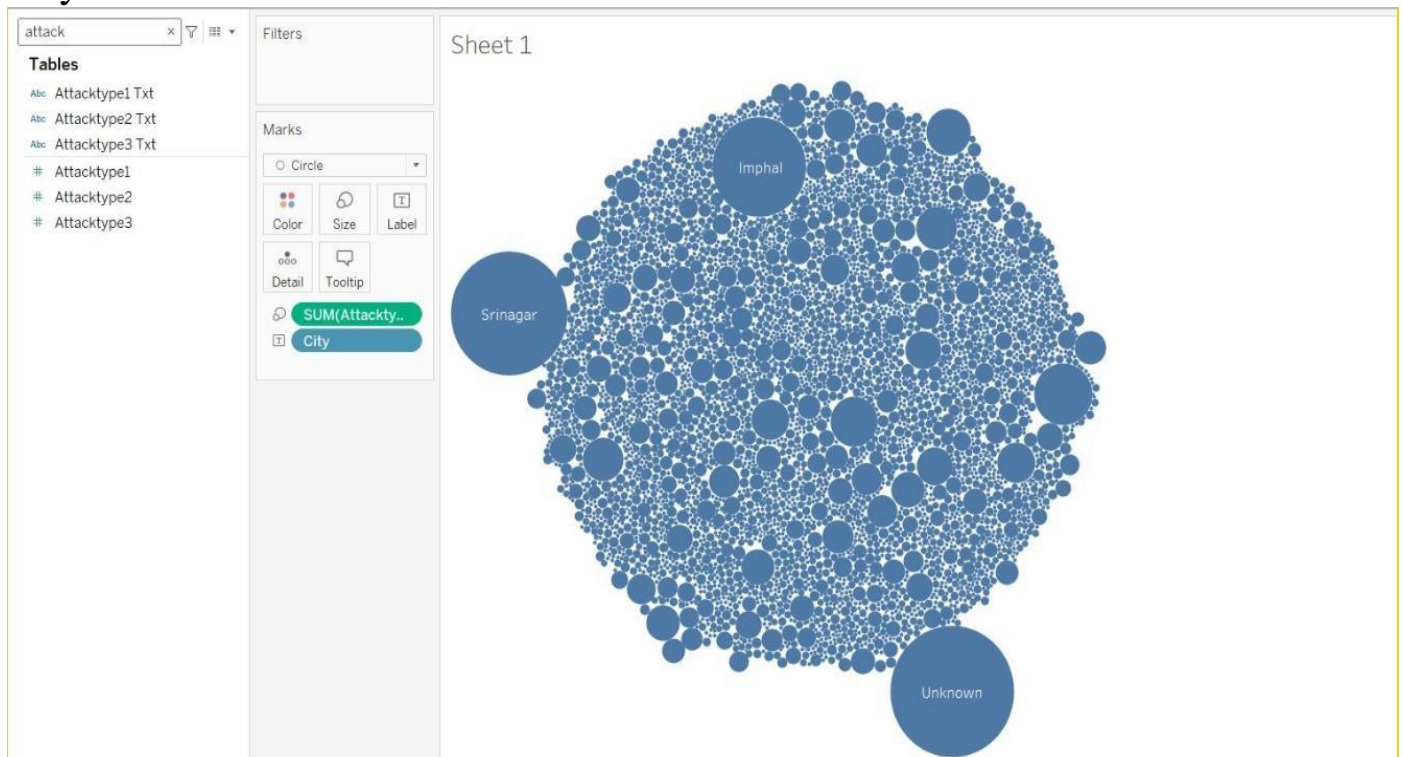**6.2.18:** The Number of people wounded in India In various states:
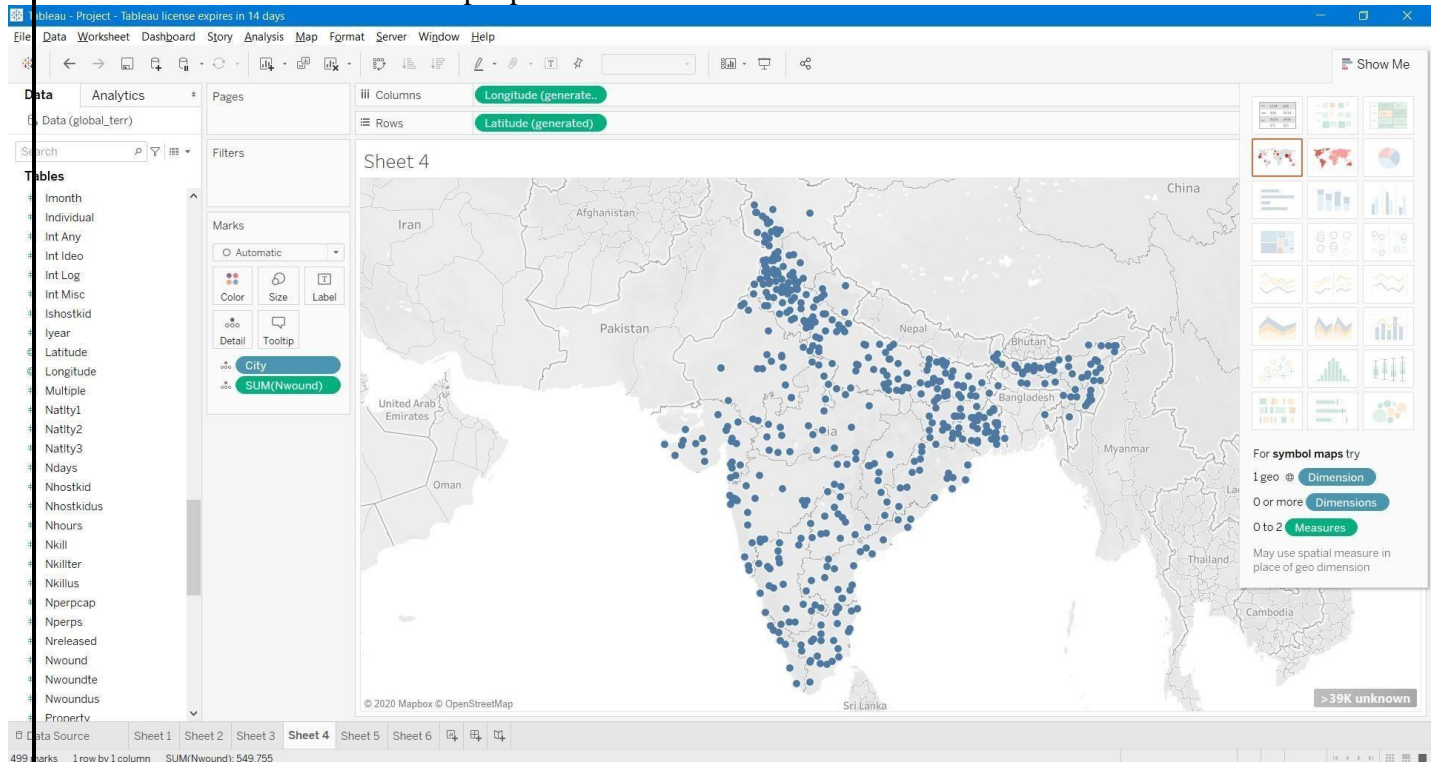
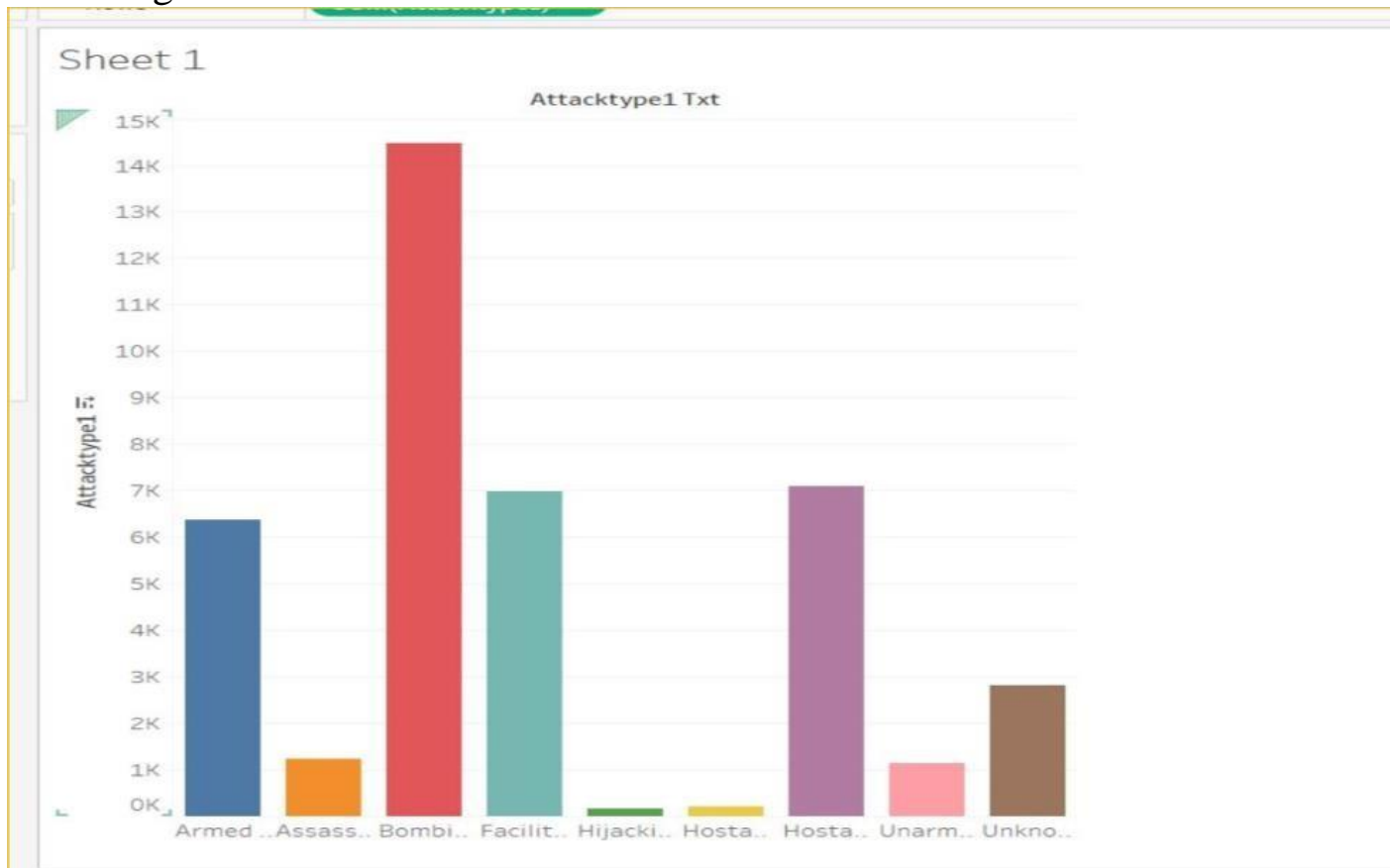**6.2.19:** Number of terrorist attacks taken place in different parts of India:
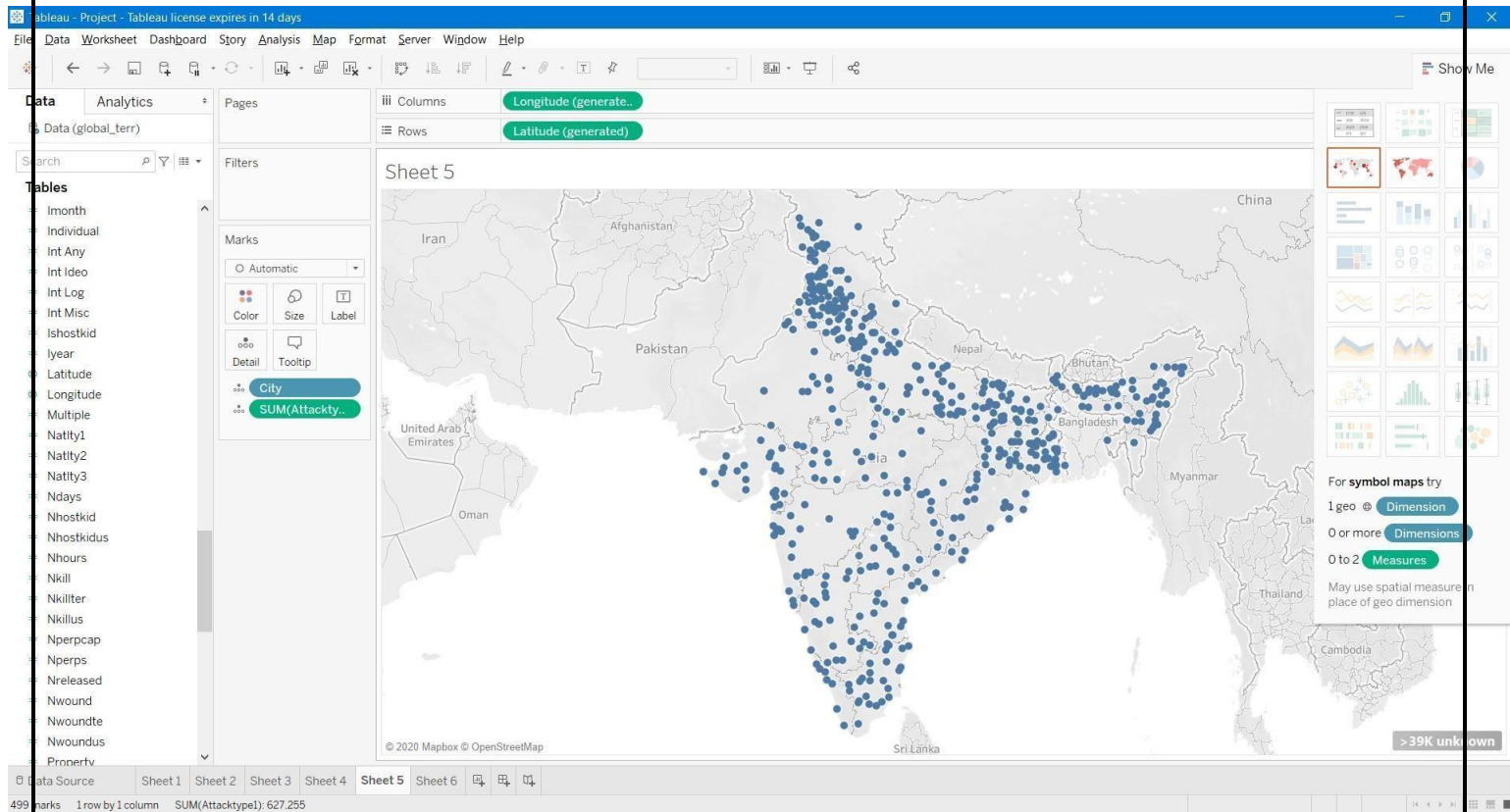
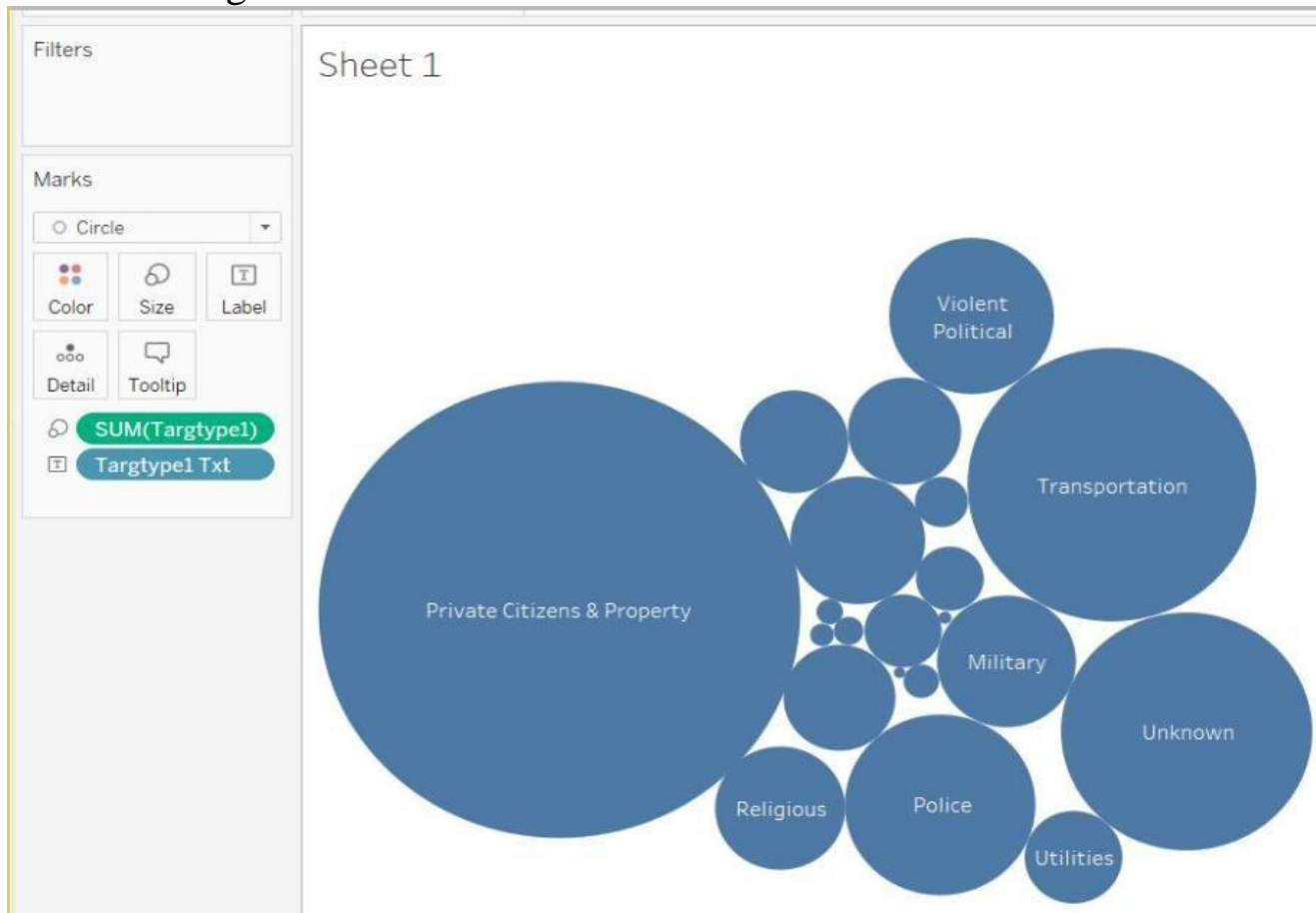**6.2.20:** Numbers of deaths in different countries across the globe:
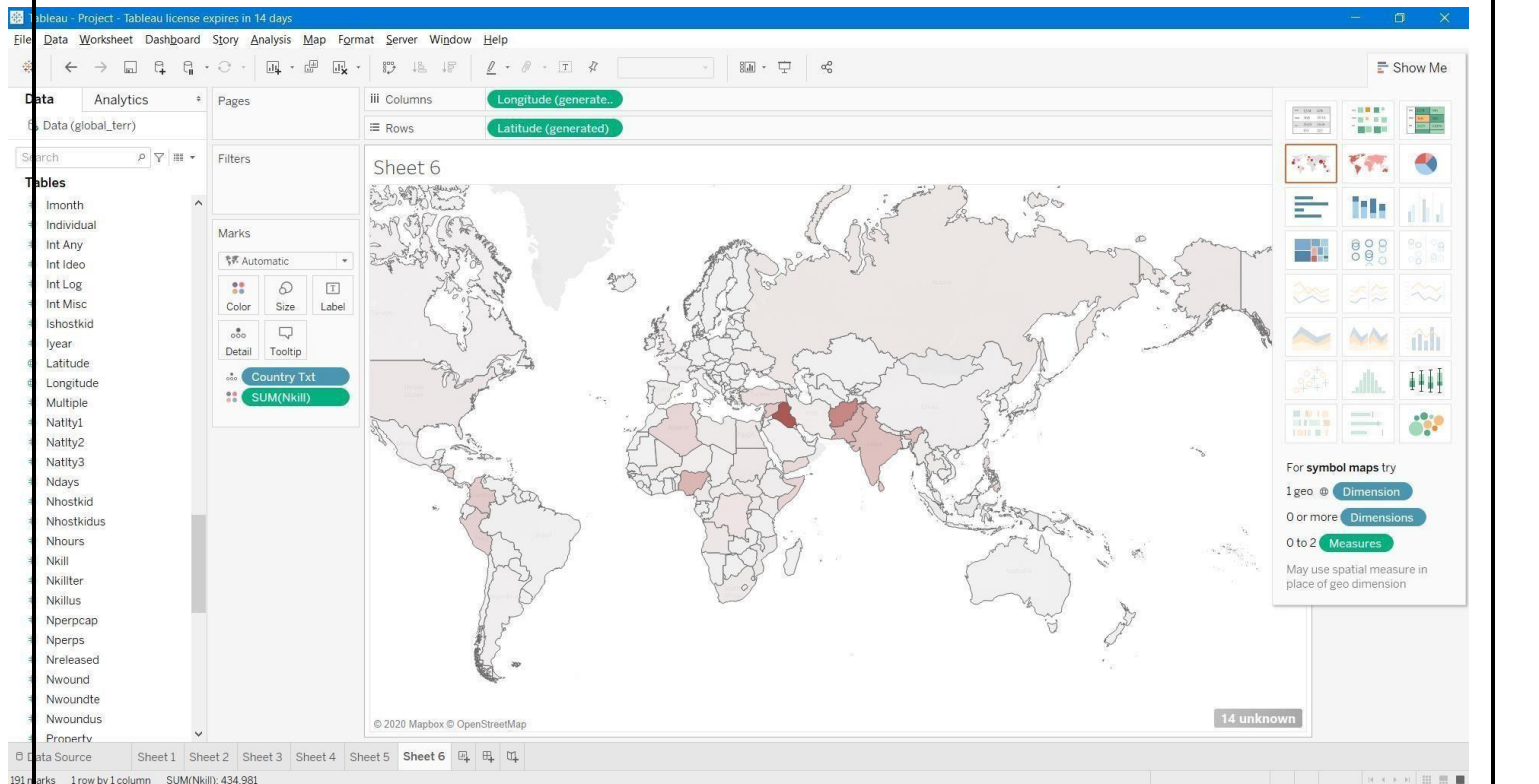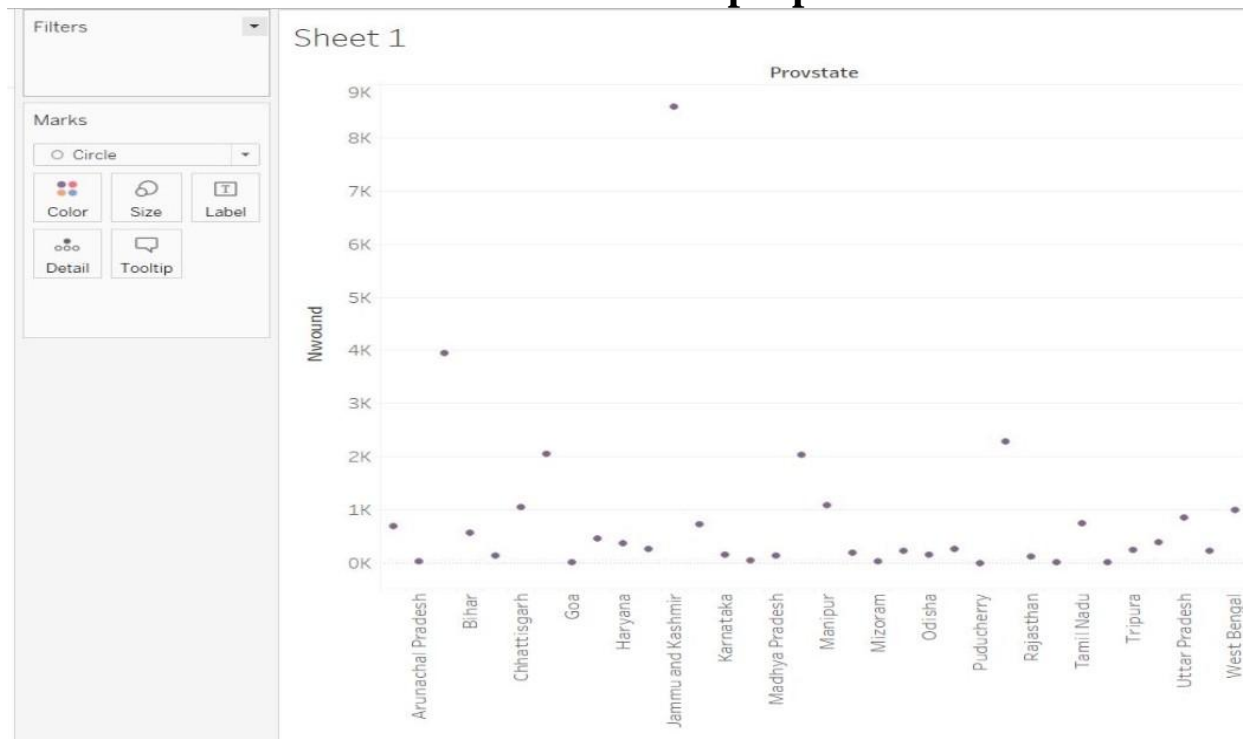
City with most terrorist attack:

Attacking methods of terrorist:

Favourite target area of terrorist:
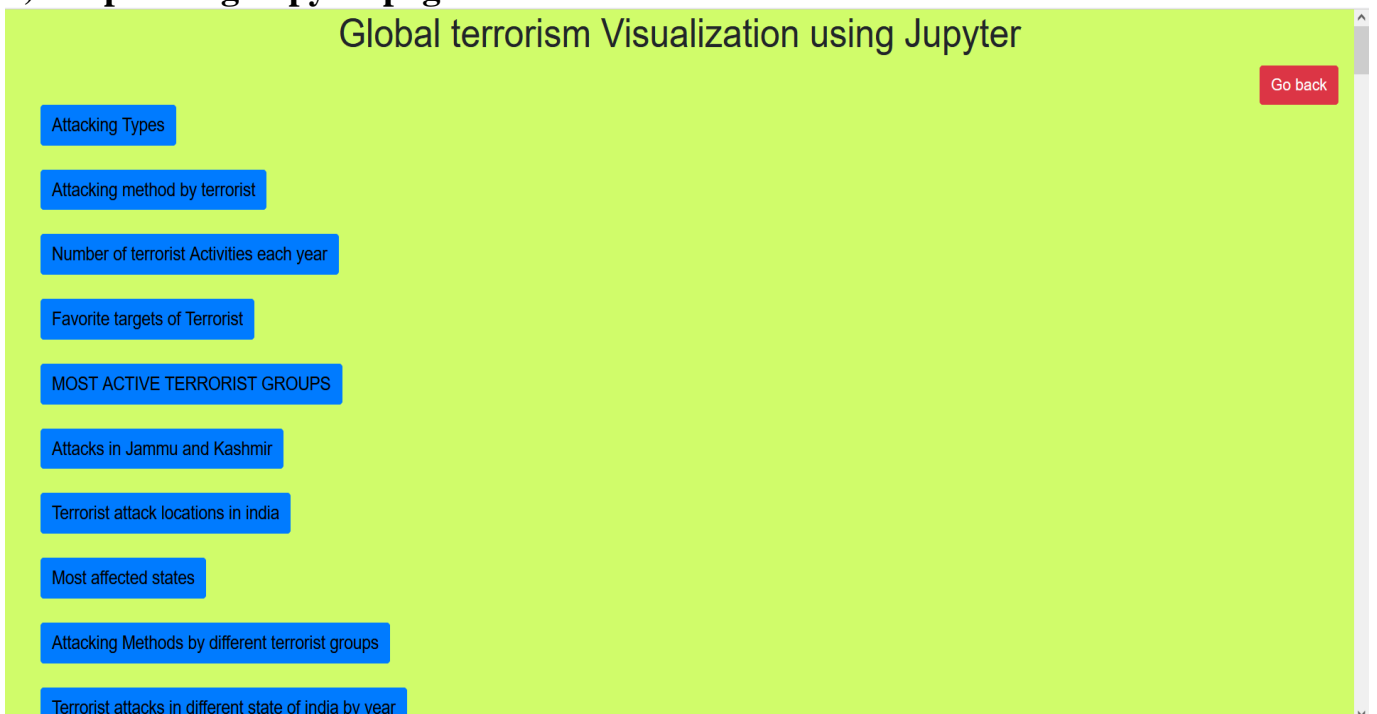

States with most wounded and affected people:

Website images

## i) Home page:

ii) Graph using Jupyter page:

Attacking Types

In this section we look at the different types of terrorist attacks India has suffered and how these attacks have evolved.

In this Graph we can see the frequency of different types of terrorist attacks in India. According to the data, Bombing/Explosion is by far the most used form of method followed by Armed Assault and Assassination. It can also be seen that Hijacking and Hostage taking is the least common method of terrorism in India as these types of attacks are more preventable by applying tough security measures.
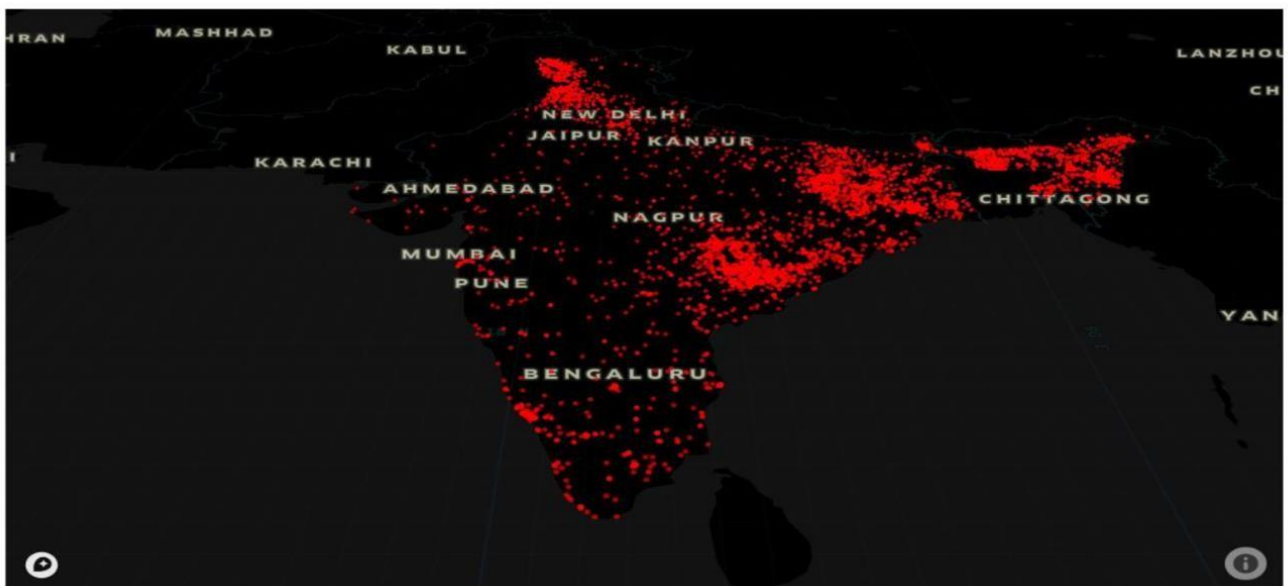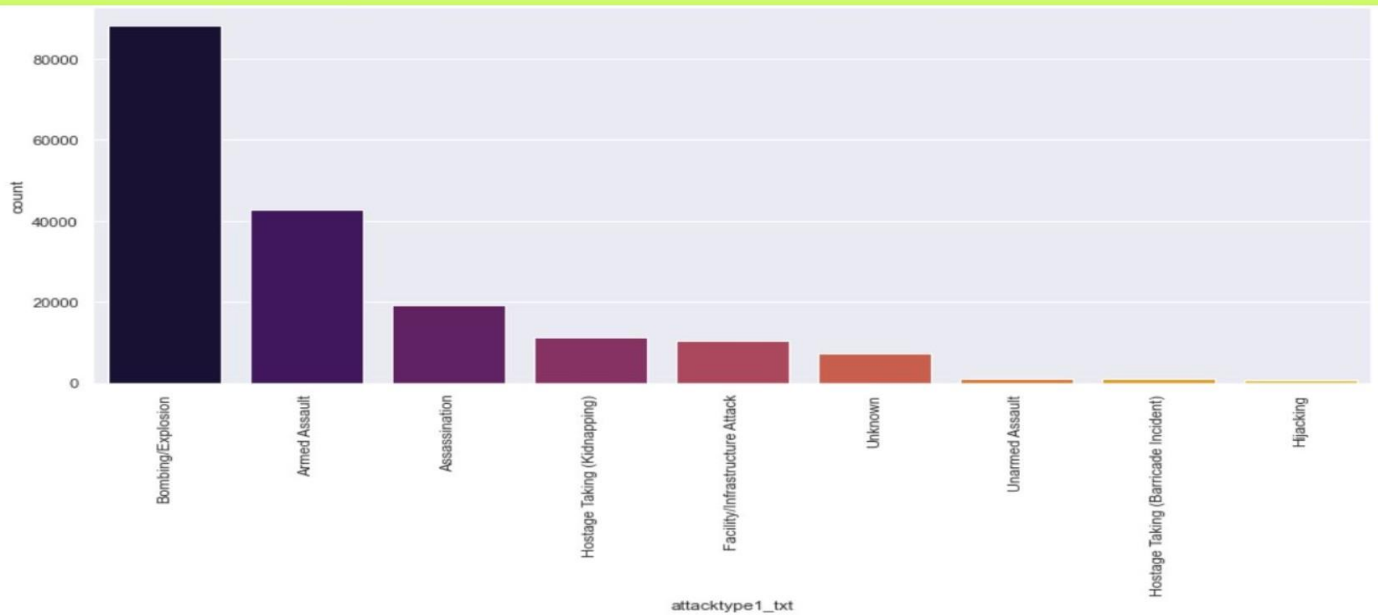
Attacks in Jammu and Kashmir

In this section we visaulize Number of attacks by terrorist group in state jammu and kashmir and the number of casualities.

This graph gives us an idea about the number of terrorist attacks in Jammu & Kashmir along with the name of the known terrorist groups and their number of casualties. We can see that, Hijbul Mujahideen and LET are the most prevalent in terms of total attacks. But the most important thing is that the vast majority of attacks here are often unaccounted for (Unknown Groups).

Grouped Bar Chart/Graph

iii) Webpage of tableau:

Global terrorism Visualization using Tableau

Go back

Number of kills by particular methods

city with most number of attacks

Attacking methods using stacked bar chart

Favorite targets of Terrorist

MOST ACTIVE TERRORIST GROUPS

states with most wonded and affected peopl

The total number of ransomamt taking placing in different countries across the world

The Number of people wounded in India In various states

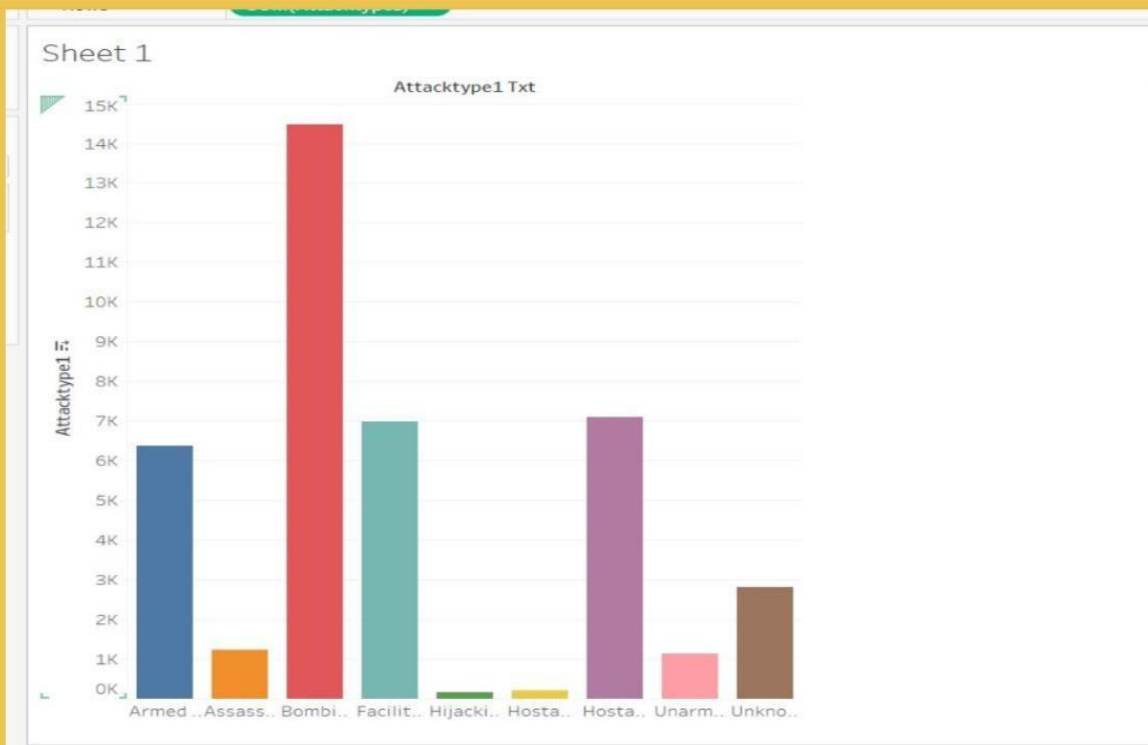Numbers of deaths in different countries across the globe

city with most number of attacks
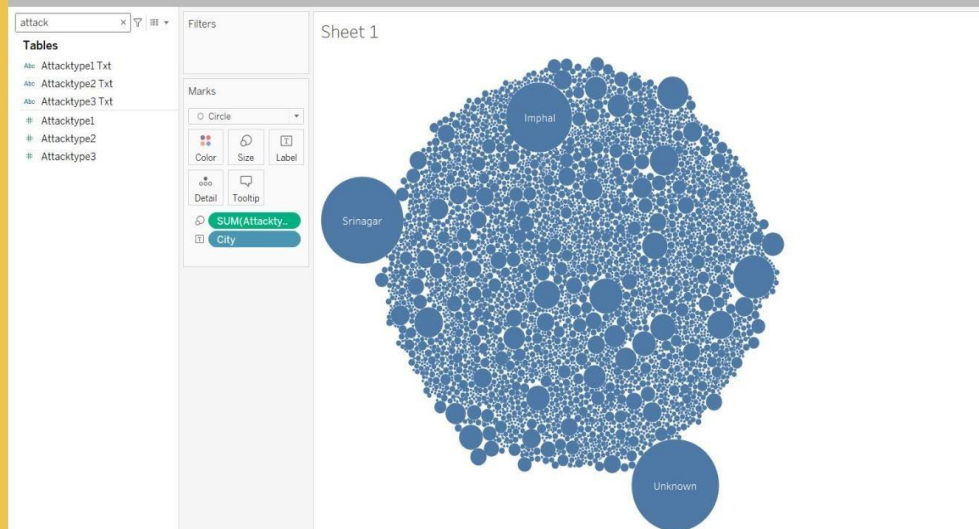
Favorite targets area of Terrorist
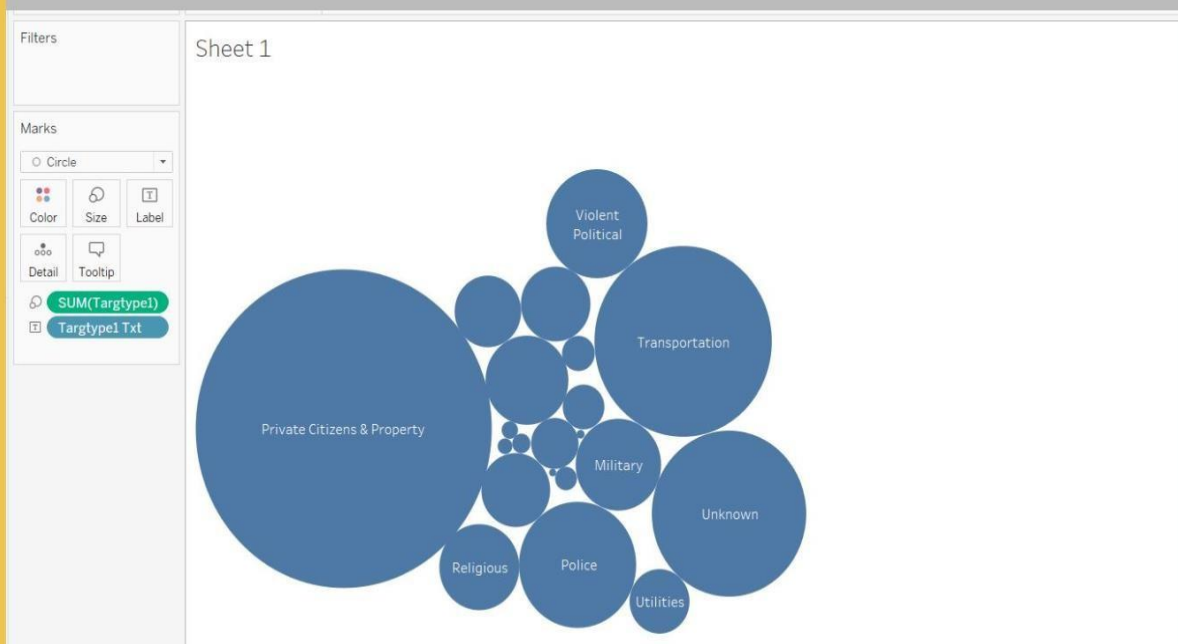
iv) attacking methods by terrorist

5.5 User Manuals

For the implementation of this project, you are supposed to meet the recommended system requirement, and Have Visual studio code and Tableau Desktop (you can try Free trial version) to be installed. In visual studio code install python and Jupyter Notebook Extension.

Then install Pandas, NumPy, Seaborn and Matplotlib python library.

Have you Global Terrorism database ready, you can download it from here: https://www.kaggle.com/START-UMD/gtd

Code for Jupyter notebook is provided in Appendix. Import it and run all the cells one and one and view the output (graph plot)

For Tableau desktop, From import database excel sheet then Use Drag and drop features and for every graph.

Now finally a website to summarize all the graph from jupyter, tableau so that normal people (without Computer science background) can also understand. our website is made on using Html, CSS, bootstrap, Javascript.

5.6 User requirements

Users have a variety of requirements for visualization software like different visualization styles, generic visualization and data analysis tools, and for the ability to tailor generic visualization software to meet the needs of specific visualization applications.

1) User can view the Number of terrorist activities each year by the help of bar chart.

2) User can learn about the Frequency and geographical regions where terrorist attacked happened.

3) Method of attacking or pattern of attack can also be viewed by users like(Bombing, kidnapping, Hijacking, Hostage tacking.

4) With the help of bar charts user can understand where is the Favorite target like (Military , police office, hospital, Bank, airport, Shopping malls etc) of terrorists.

5) User can learn and aware about Top affected countries by the terrorist activities. So when they visit that particular country then users can be aware about potential risk.

6) Users can visualize the Number of people wounded in India In various states due to terrorism.

7) Number of terrorist activities each year.

8) Most active terrorist group.

9) In this section we visualize Number of attacks by terrorist group in state jammu and Kashmir and the number of causalities.

10) we try to explain about the most affected indian states by terrorist activities.

11) we visualize all the Terrorist attacks in different state of india according to year

13) we can see the number of terrorist attacks along with the name of weapons or metho ds were used with respect to the given years. Here we have designed a Stacked bar chart to represent the Data in an orderly manner.

14) Time series graph for different attacking methods followed by terrorist in particular state of india.

15) Time series graph for different types of total attack(i.e attack count) by year.

This project was built with the purpose of helping the common people, news channel, research scholar so that they can use for study.

This project can also be used by various government and private agencies to visualize the pattern of terrorist attack. So that they can take necessary measures and steps to control it.Many properties, health, lives, infrastructures can be protected by the help of our project.

6. Conclusion and Future Work

6.1 Conclusion

Most of the models often concentrate on sharing the reports of the various terrorist attacks worldwide. This generally just helps the reader gain the knowledge of various attacks happening across the globe. But what actually they are not have been successful yet to visualize the data and present an interactive, user friendly website to present the data in an efficient manner so that various data scientists and even regular users in India can use this information to gain an idea about the detailed impact and history of terrorist activities in India and how it affects their country. We also believe that our work can help many data scientists and government agencies to make the correct decision regarding solving this problem. We also hope that regular users can gain some valuable insight due to our work and interact with the visualization techniques. Till now, there haven't been any decrease in the attacks which is mostly due to the technology advancement which is making them stronger day by day which is taking place due to corruption and lot of factors which lead to increase of the terrorist's activities across the globe.

6.2 Future Work

As we have designed an Interactive website to present this detailed information about the socio-economic impact of terrorism in India, we are planning to expand this project further by implementing the following steps:

a) Expand the project beyond India and collect more information to make a detailed analysis about worldwide impacts of terrorism.

b) Increase the functionality of this website by making it more interactive and detailed so the users can easily visualize the up to date information in a simple manner.

c) Make the website more popular by making the UI more user friendly so that Data Scientists along with regular users can be helped by this project.

d) Use even more complex data visualization techniques to further analyze the data about terrorism and predict how nature of terrorism will change in the future. We can also try to predict the future impact of terrorism on India as well as the world on economic and social factors.

e) We can also use machine learning techniques like Linear regression, logistic regression and Ml algorithm to predict the area of attack, types of attack and with the help of prediction we can minimize the terrorist activities in near future.

References

Author Daniel G. Arce , On the human consequences of terrorism, published by Springer on 1st August, 2018.

Author Rachel Pain, Connecting domestic violence and global terrorism, published by Sage journals on 4 February, 2014.

Authors Meagan Smith and Sean M. Zeigler, Terrorism before and after 9/11, published by Sage journals on December,2017.

Authors Johann Park and Valentina Bal, International Terrorism and the Political Survival of Leaders, published on 3rd November, 2015.

Authors Dongfag Hou, Khusrav Gaibulloev and Todd Sandler, Extended Data on Terrorist Groups 1970 to 2016, published by Sage Journals on 19th June, 2019.

Github Link for code: https://github.com/addifgh/data-visualization-MEENAKSHI-S-P-