Capstone Project-1
Global Terrorism Analysis

Pratik M. Gumble

Point for Discussion

❑ **Problem Statement**

❑ **Dataset and data processing**

❑ **Exploratory Data analysis**

✓   **Correlation heatmap**

✓   **Terrorists activities 1970 to 2017**

✓   **Terrorists Groups**

✓   **Attacks Type , Weapon and Target**

✓   **Analysis of terrorist attacks by country, city and region.**

✓   **Terrorism analysis in India**

Problem Statement

As a data scientist to perform exploratory data analysis to uncover the underlying structure. The analysis and prediction of terrorist attacks on terrorist groups provide valuable information for antiterrorism and terrorism prevention operations, to improve the security and stability of social life.

Introduction

India in past faced many terrorist attacks, 2008 Mumbai attacks, Amaranth yatra attacks, Uri attacks, in most of the time in news channels we saw news about terrorist attacks in Jammu and Kashmir. Because of continuous bombardment of terrorist news, I had build strong interest in topic of terrorism as why this happen, which is the most suffered countries, terrorist organization, their technique used for terrorism. As a data scientist I starts working on that datasets.

Dataset

The Global Terrorism Database (GTD) is a database on terrorist attacks around the world from 1970 through 2016 containing over 150,000 observations. Researchers at the National Consortium maintain the database for the Study of Terrorism and Responses to Terrorism (START), headquartered at the University of Maryland.

Data Processing

After data inspection we found that there are 181691 rows × 135 columns available in the dataset so we only keep columns which required for analysis.

For proper understanding rename some columns used for analysis and drop other columns.

Variables used for Analysis

'Year': Year of terrorist attacks,

'Month': Month of terrorist attacks

'Day': Date of month of terrorist attacks

'Country': Country of terrorist attacks

'Region': Region of terrorist attacks

'City': City of terrorist attacks

'Latitude': Latitude of terrorist attacks

'Longitude': Longitude of terrorist attacks

'**Success':** Terrorist successful attacks

AI

Continue……

'Attack_Type': Type of terrorist attacks

'Summary': A brief statement or account of the main points of terrorist attacks.

'Target': A person, object, or place selected as the aim of an attack.

'Weapon_type': Weapon used in terrorist attacks

'Killed': Number of people killed in terrorist attacks

'Wounded': Number of people wounded in terrorist attacks

'Motive': Motive of terrorist attacks

'Terrorist_Group': Name of terrorist group

Dataset Description

	Year	Month	Day	Latitude	Longitude	Kills	Wound	Success
count	181691.000000	181691.000000	181691.000000	177135.000000	1.771340e+05	171378.000000	165380.000000	181691.000000
mean	2002.638997	6.467277	15.505644	23.498343	-4.586957e+02	2.403272	3.167668	0.889598
std	13.259430	3.388303	8.814045	18.569242	2.047790e+05	11.545741	35.949392	0.313391
min	1970.000000	0.000000	0.000000	-53.154613	-8.618590e+07	0.000000	0.000000	0.000000
25%	1991.000000	4.000000	8.000000	11.510046	4.545640e+00	0.000000	0.000000	1.000000
50%	2009.000000	6.000000	15.000000	31.467463	4.324651e+01	0.000000	0.000000	1.000000
75%	2014.000000	9.000000	23.000000	34.685087	6.871033e+01	2.000000	2.000000	1.000000
max	2017.000000	12.000000	31.000000	74.633553	1.793667e+02	1570.000000	8191.000000	1.000000

Exploratory Data Analysis

Exploratory Data Analysis refers to the critical process of performing initial investigations on data so as to discover patterns, to spot anomalies, to test hypothesis and to check assumptions with the help of summary statistics and graphical representations

Exploratory Data Analysis

Count plots and bar plots are two types of visualizations that Seaborn calls "categorical plots".

Categorical plots involve a categorical variable, which is a variable that consists of a fixed, typically small number of possible values, or categories.

These types of plots are commonly used when we want to make comparisons between different groups.
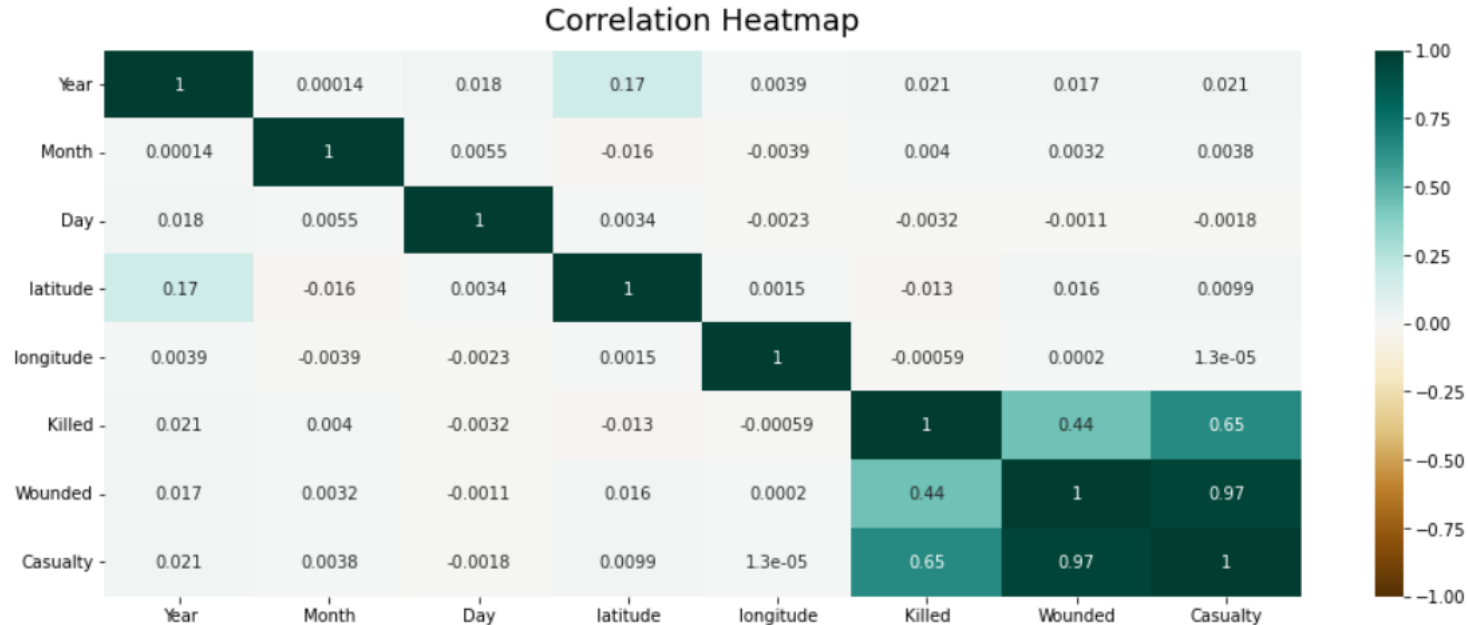
.

Success Rate of Terrorist Attacks
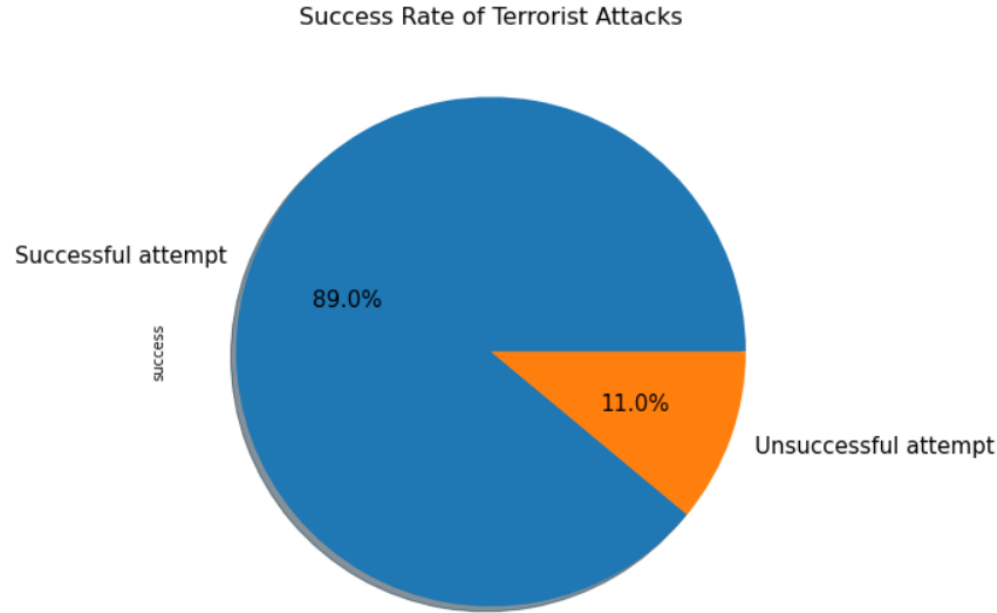
Correlation Heatmap

Correlation heatmaps are a type of plot that visualize the strength of relationships between numerical variables.
The above correlation graph shows only two features wound and kills are just correlated but not highly correlated.


Correlation Heatmap

Number of attacks in every year

We can see here that attacks slowly start to increase from 1970 until about 1997 where until 2004 we see a downward global trend in Terrorist incidents despite events like September 11, 2001.

In 2014 almost 16903 terrorist activities took place in only one year which was maximum up to 2017.
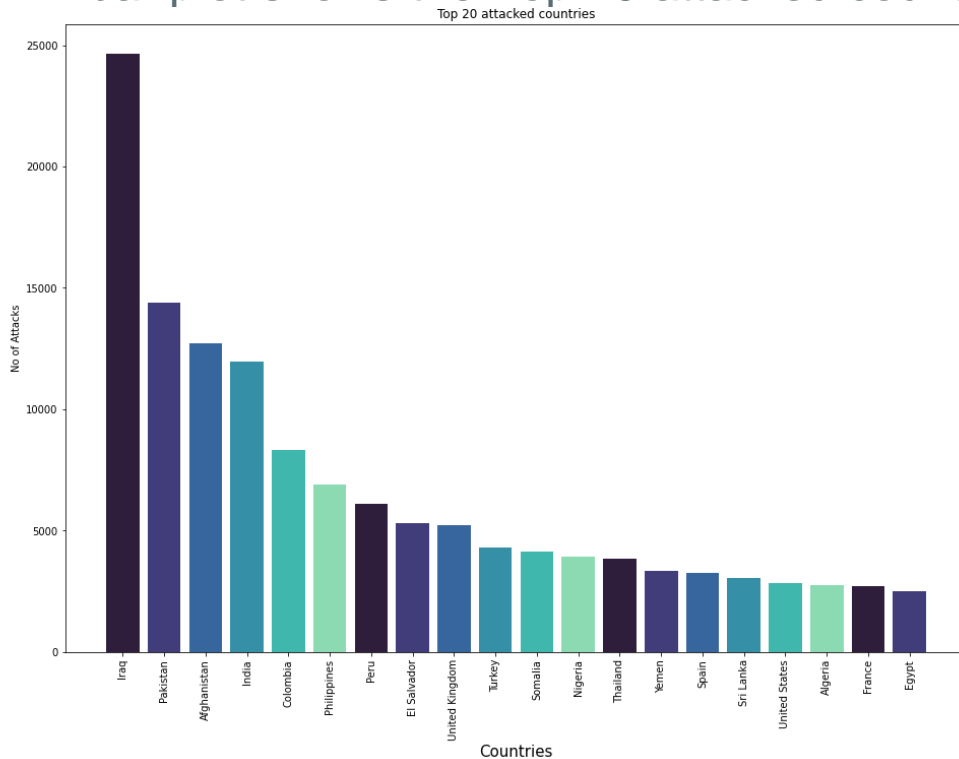
Statistical Analysis

Year	Number of Terrorist Activities
2014	16903
2015	14965
2016	13587
2013	12036
2017	10900
2012	8522
2011	5076
1992	5071
2010	4826
2008	4805

Graphical Representation

Year-Wise Attacks
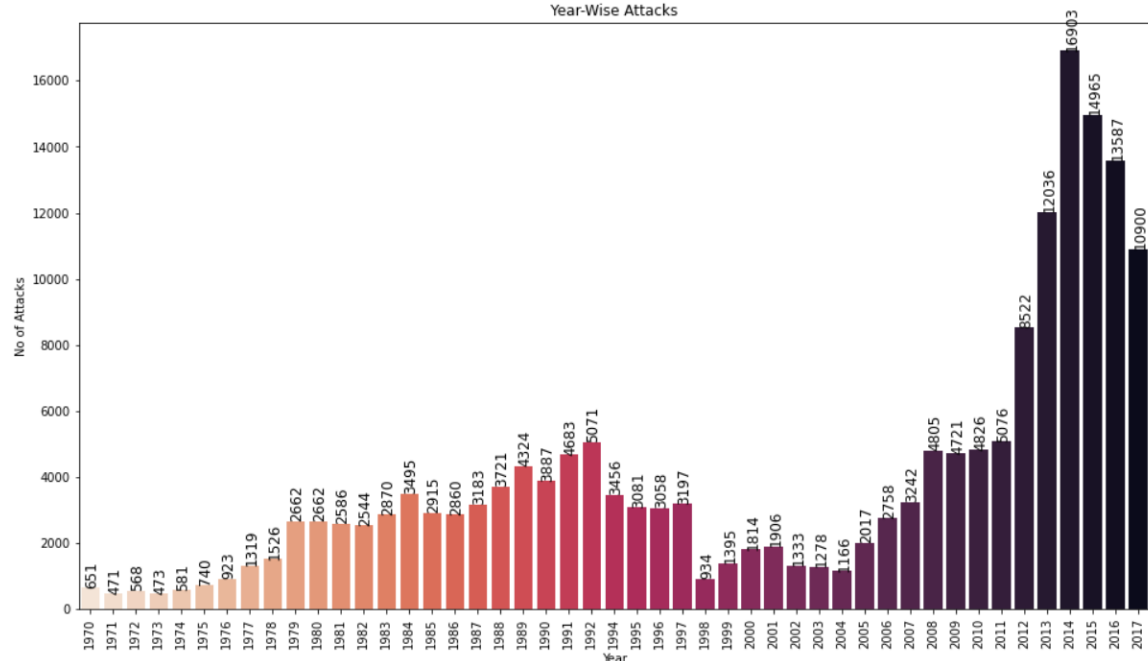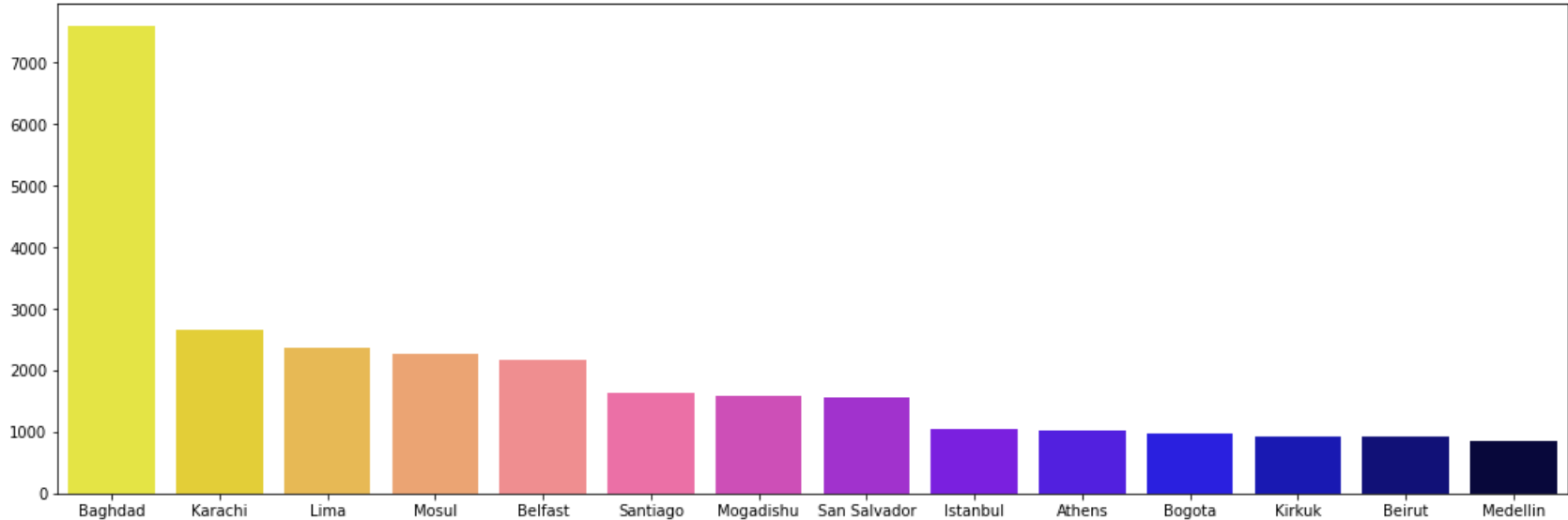
Attacks in various Countries and Regions
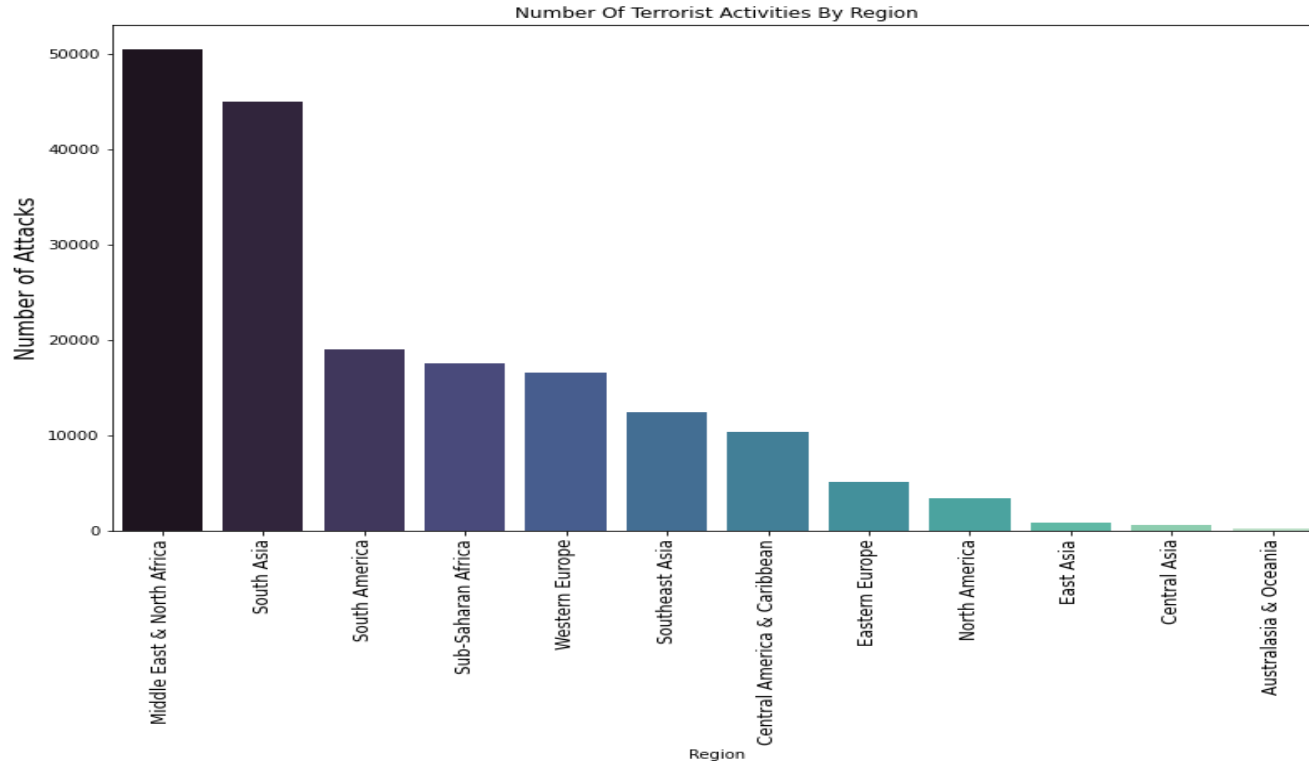

bar plot shows the Top 20 attacked countries

Hot zones of terrorism (by City)

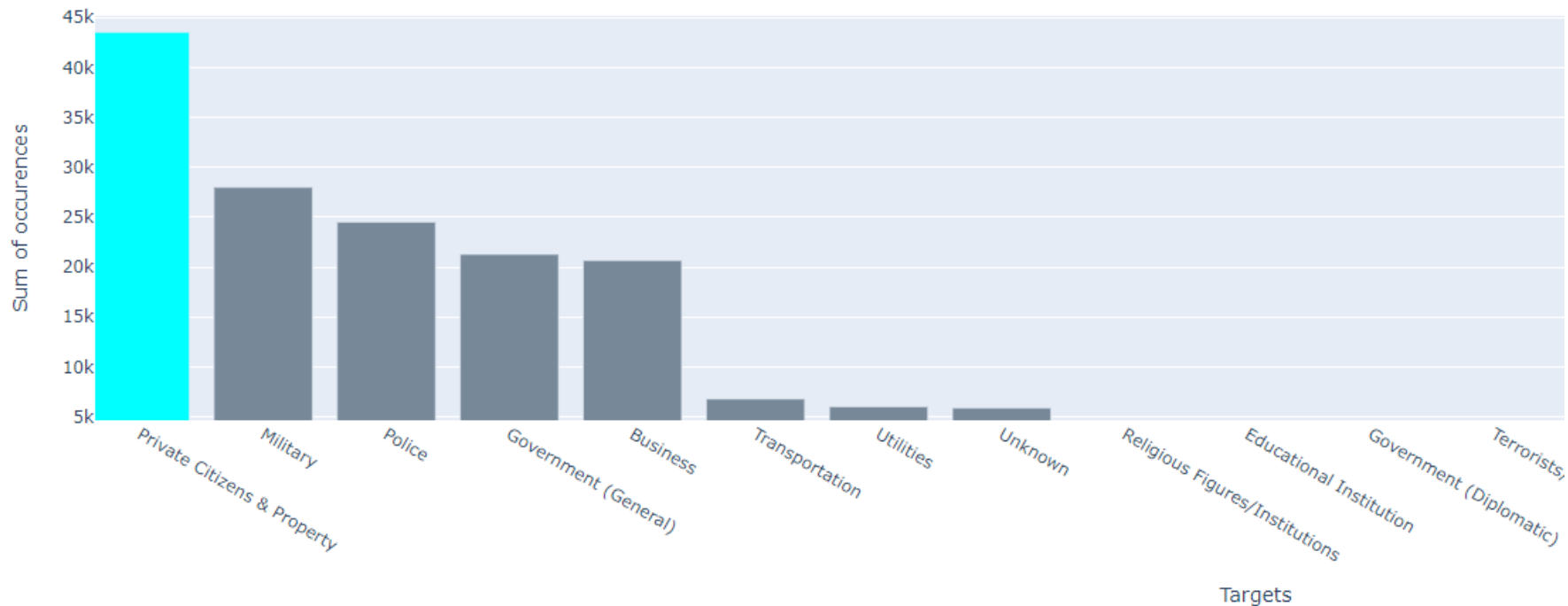- Graph Shows Cities affected by Terrorism most

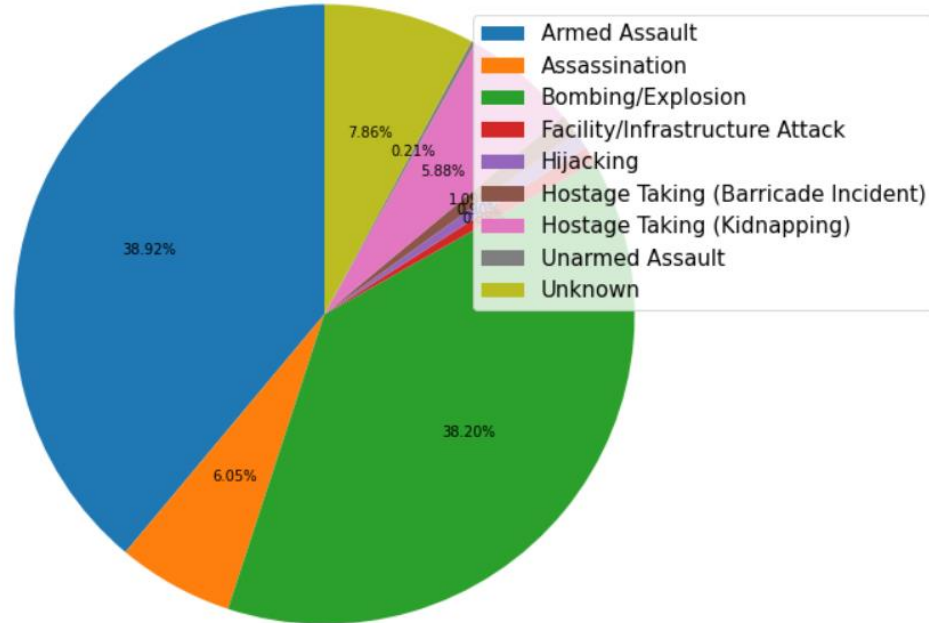Top Affected Cities

Which region has highest terrorist attacks?

Number Of Terrorist Activities By Region

Main targets of Terrorist

Type of terrorist attack that killed people

Types of terrorist attacks that cause deaths

Terrorist Group

Graph shows that there were unknown groups that take part in most of the terrorist activities.
While Taliban and ISIS was the biggest Terrorist Group which take parts in most of the terrorist activities.

Statistical Analysis

Terrorist Group	Number of Terrorist Activities
Unknown	82782
Taliban	7478
Islamic State of Iraq and the Levant (ISIL)	5613
Shining Path (SL)	4555
Farabundo Marti National Liberation Front (FMLN)	3351
Al-Shabaab	3288
New People's Army (NPA)	2772
Irish Republican Army (IRA)	2671
Revolutionary Armed Forces of Colombia (FARC)	2487
Boko Haram	2418

## Graphical Representation
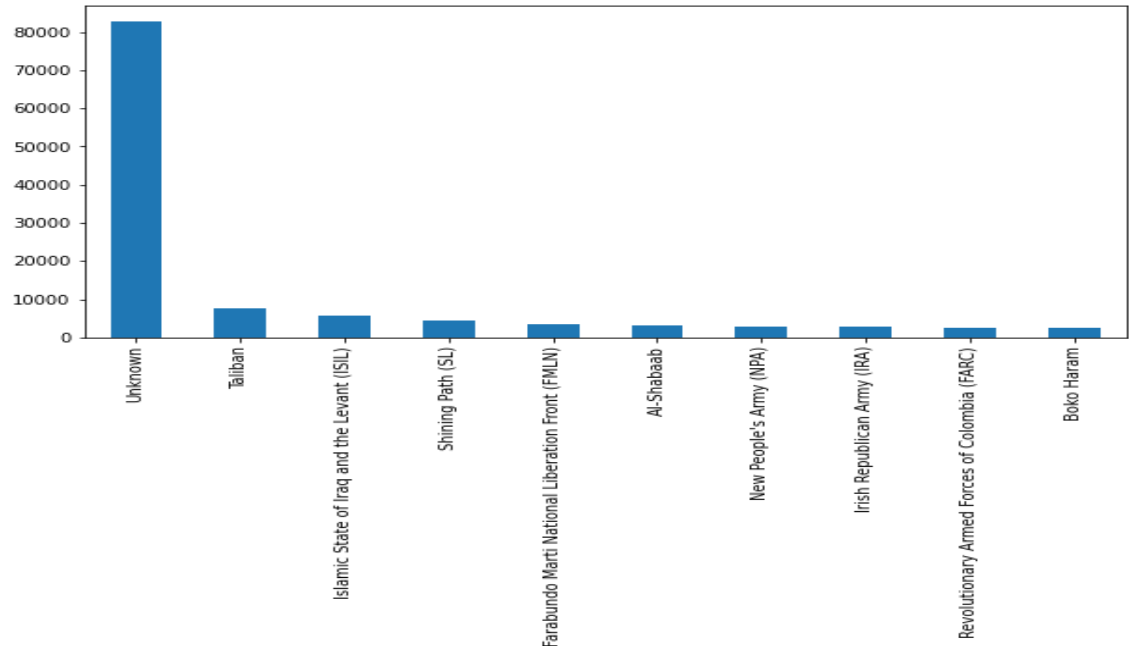
Terrorist Group with Region & Country

Year	Region	Country	Terrorist_Group	Kills	Attack_Type
2014	Middle East & North Africa	Iraq	Unknown	2710	2764
2013	Middle East & North Africa	Iraq	Unknown	2386	2421
2016	Middle East & North Africa	Iraq	Unknown	2063	2090
2013	South Asia	Pakistan	Unknown	1824	1872
2015	Middle East & North Africa	Iraq	Unknown	1721	1740
2014	South Asia	Pakistan	Unknown	1595	1632
2012	South Asia	Pakistan	Unknown	1279	1302
2017	Middle East & North Africa	Iraq	Unknown	1271	1284
2011	Middle East & North Africa	Iraq	Unknown	1209	1213
2015	South Asia	Afghanistan	Taliban	1184	1249
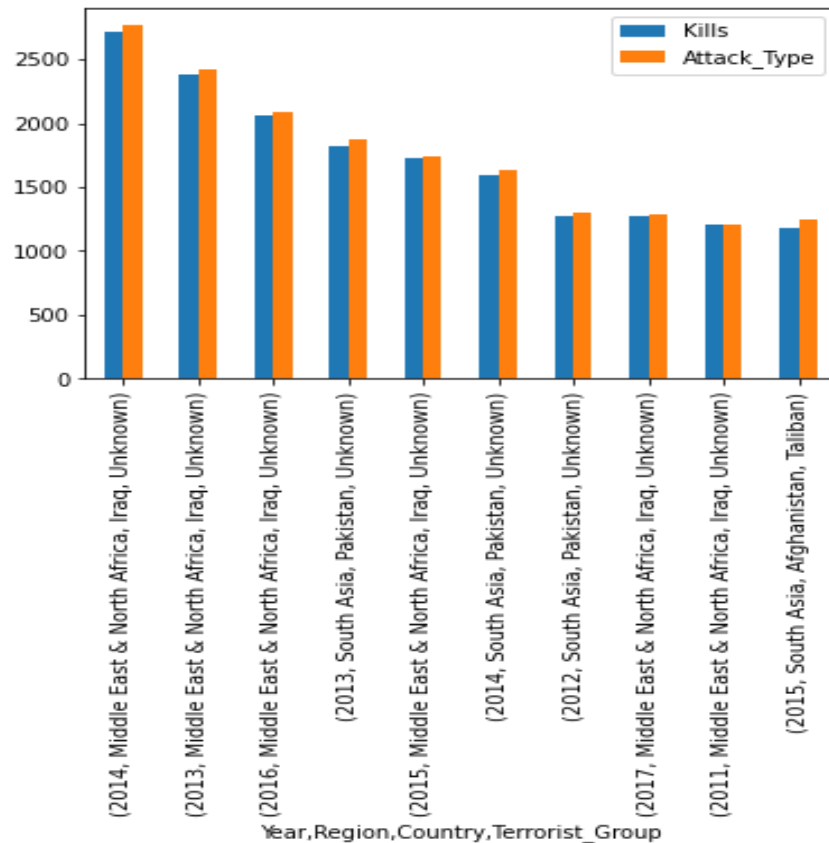
Attacks type

Bombing/Explosion and armed assault was mostly used by terrorist for terrorist attacks.

Attack Type	Number of Terrorist Activities
Bombing/Explosion	88255
Armed Assault	42669
Assassination	19312
Hostage Taking (Kidnapping)	11158
Facility/Infrastructure Attack	10356
Unknown	7276
Unarmed Assault	1015
Irish Republican Army (IRA)	2671
Hostage Taking (Barricade Incident)	991
Hijacking	659
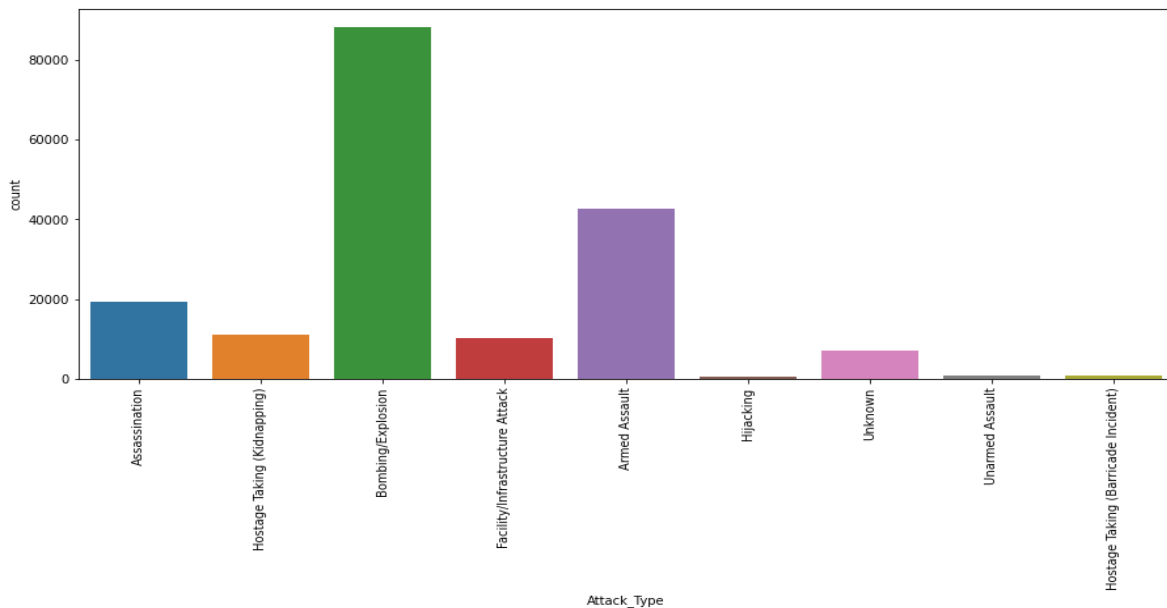
Weapon type

Explosives and firearms were mostly used by terrorist for terrorist attacks.

| Weapon Type	Number of Terrorist Activities
Explosives	92426
Firearms	58524
Unknown	15157
Incendiary	11135
Melee	3655
Chemical	321
Sabotage Equipment	141
Vehicle (not to include vehicle-borne explosives, i.e., car or truck bombs)	136
Other	114
Biological	35
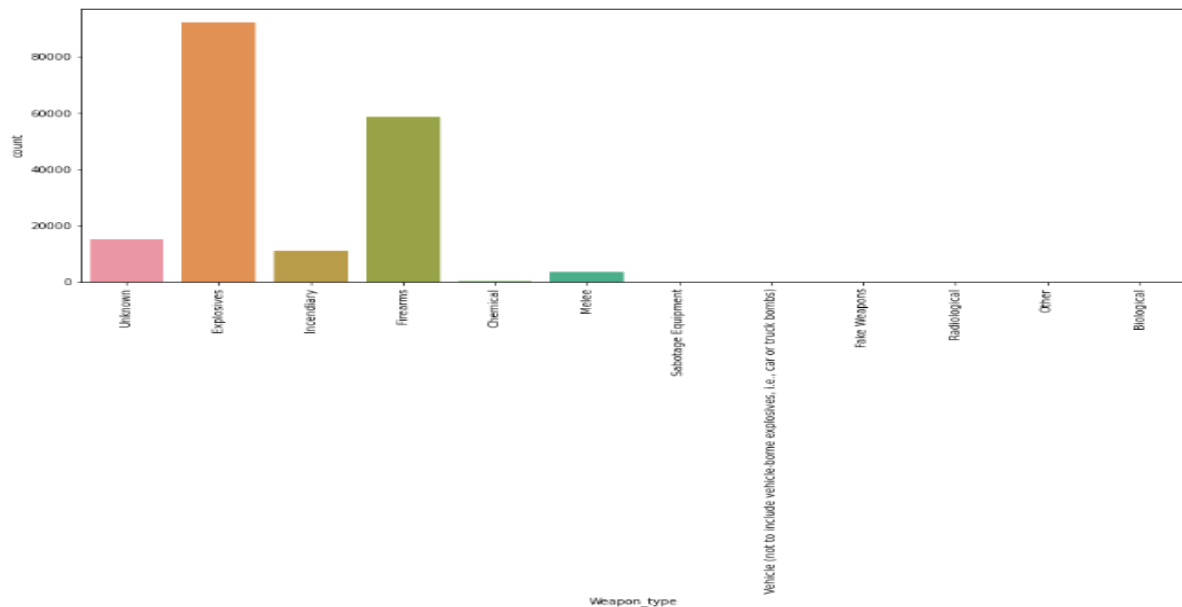
Target

Here we can see that in the past 47 years the overwhelming favoured form of target has been private citizens and property with it being the choice of terrorists more than twice that of government.

Types of targets attacked by the terror groups
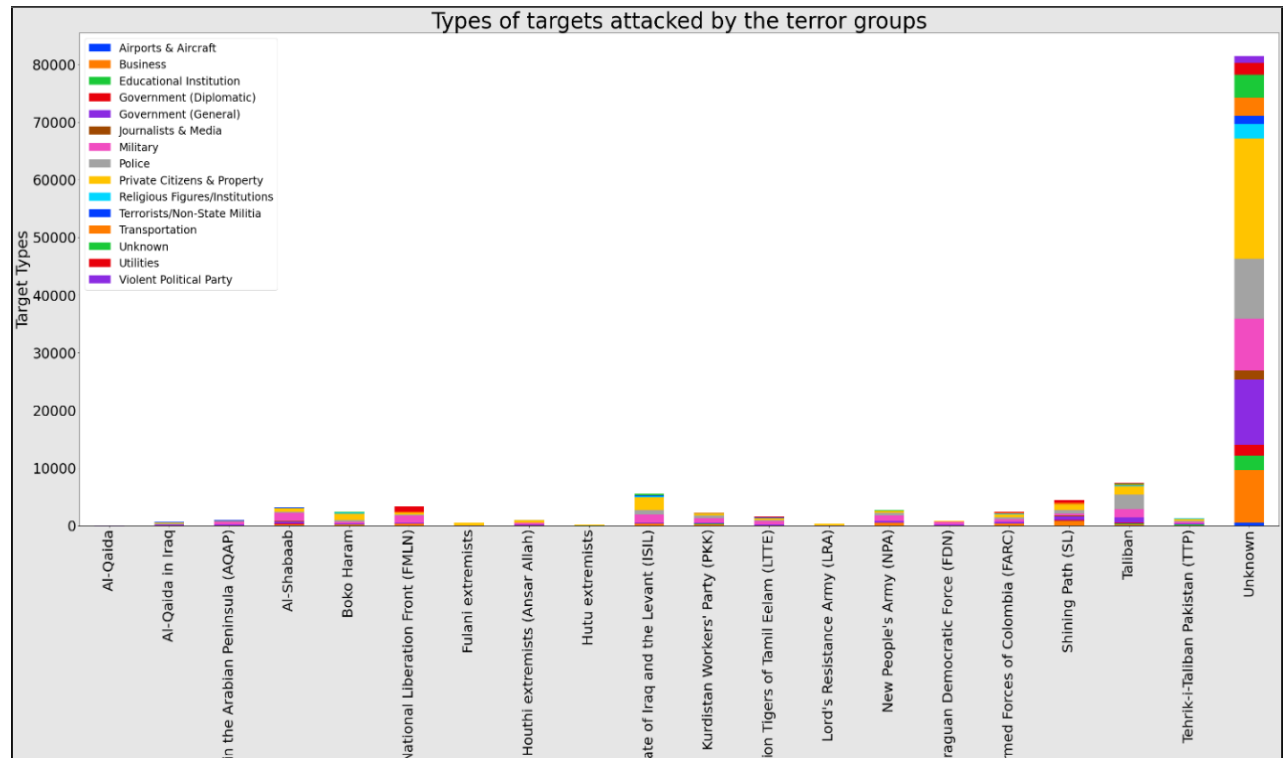
Target

| Year	Region	Country	Target	Kills	Attack_Type
2016	Middle East & North Africa	Iraq	Private Citizens & Property	1381	1458
2014	Middle East & North Africa	Iraq	Private Citizens & Property	1249	1307
2015	Middle East & North Africa	Iraq	Private Citizens & Property	997	1059
2013	Middle East & North Africa	Iraq	Private Citizens & Property	858	873
2017	Middle East & North Africa	Iraq	Private Citizens & Property	817	894
2014	Middle East & North Africa	Iraq	Police	738	770
2015	South Asia	Afghanistan	Police	687	707
2014	Middle East & North Africa	Iraq	Military	678	713
2013	Middle East & North Africa	Iraq	Police	658	662
2014	South Asia	Afghanistan	Police	593	610
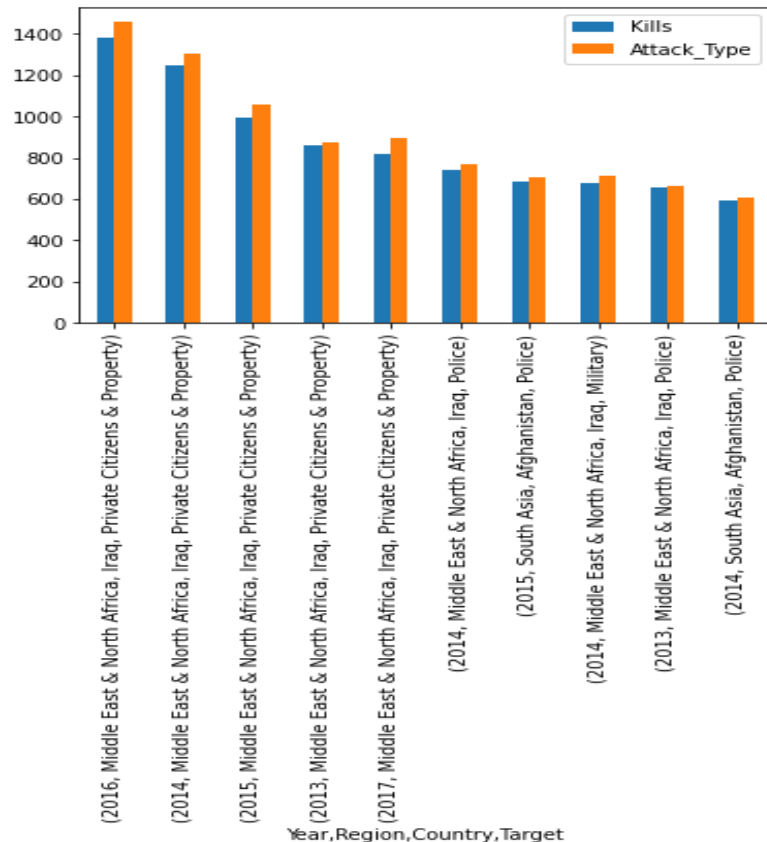
Analysis of terrorist attacks by country, city and region

In this chart, we see the number of attacks from terrorism by Country and Region with respect to number of peoples killed and number of terrorist attacks. Most of the terrorist attacks occurred in the Middle East & North Africa. Less than 2% of terrorist attacks were in Central Asia, East Asia, Central America and Caribbean the Americas and Australia and Oceania combined. While Iraq has suffered the maximum number of terrorist attacks of 8850 Belize has suffered the minimum number of terrorist attacks of 1.

Country	Region	Number of Terrorist Activities
Iraq	Middle East & North Africa	24636
Pakistan	South Asia	14368
Afghanistan	South Asia	12731
India	South Asia	11960
Colombia	South America	8306
Philippines	Southeast Asia	6908
Peru	South America	6096
El Salvador	Central America & Caribbean	5320
United Kingdom	Western Europe	5235
Turkey	Middle East & North Africa	4292

Countrywise terrorist attacks

Regionwise terrorist attacks
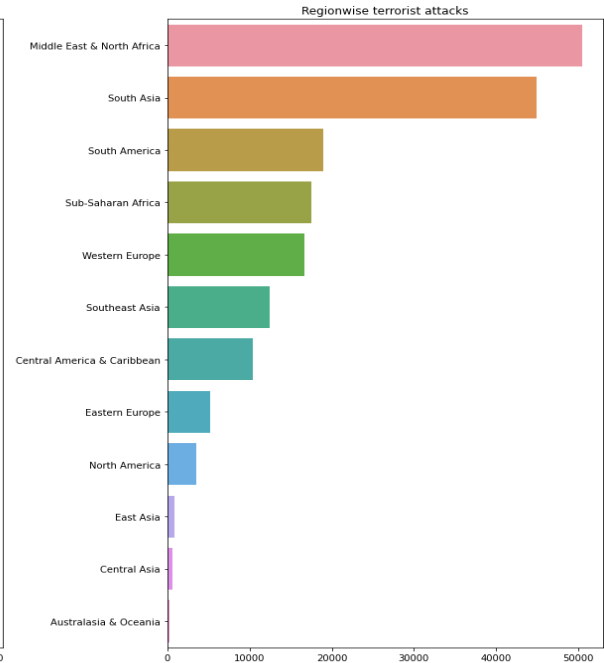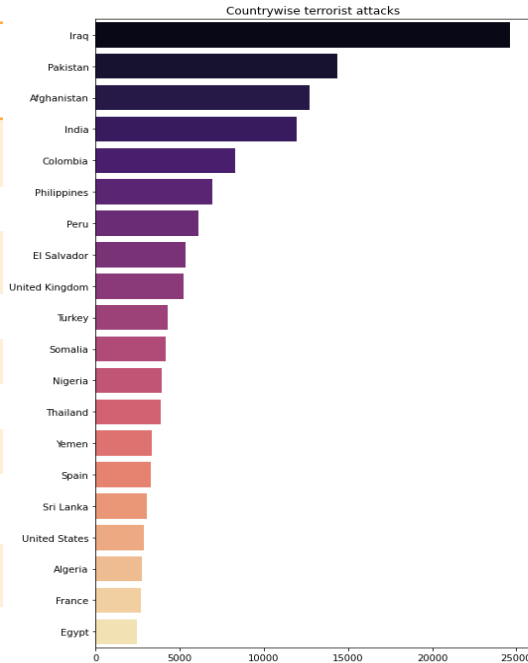
Analysis of terrorist attacks by country, city and region

This is also true when we look at the city, rather than the country. Bagdad and Mosul was most suffered cities of terrorist attacks. As we will see in the following section, not only is there a strong regional focus but this is also heavily concentrated in only a few cities within these regions.

| Year	Region	Country	City	Kills	Attack_Type
2015	Middle East & North Africa	Iraq	Baghdad	993	1000
2016	Middle East & North Africa	Iraq	Baghdad	970	986
2014	Middle East & North Africa	Iraq	Baghdad	889	898
2013	Middle East & North Africa	Iraq	Baghdad	629	639
1995	South Asia	Pakistan	Karachi	614	614
2010	Middle East & North Africa	Iraq	Baghdad	586	586
2011	Middle East & North Africa	Iraq	Baghdad	501	501
2009	Middle East & North Africa	Iraq	Baghdad	457	458
2008	Middle East & North Africa	Iraq	Baghdad	453	456
2017	Middle East & North Africa	Iraq	Mosul	447	479
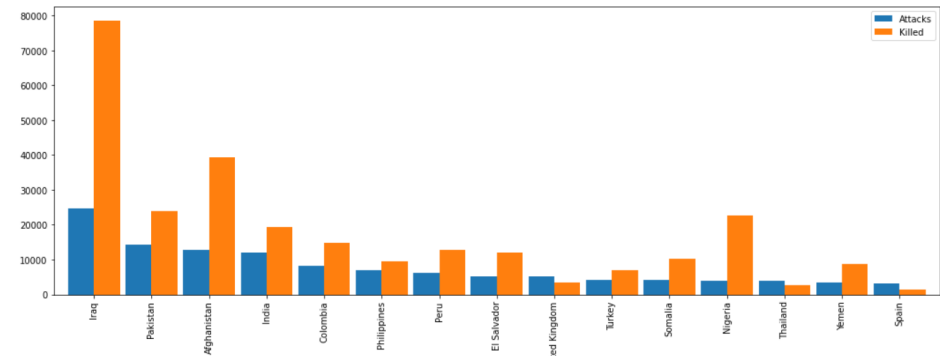
Highest Number of Death Casualties with Year due to Terrorist Attacks

Graph show that number of death casualties increases by number of years. From 2012-2017 , just 6 years it almost 42% of total death casualties from 70 years.

Year	Number of People Killed
2014	15881
2015	14160
2016	12809
2013	11685
2017	10285
2012	8314
2011	5048
1992	5048
2010	4821
2008	4740

Casualties every Year
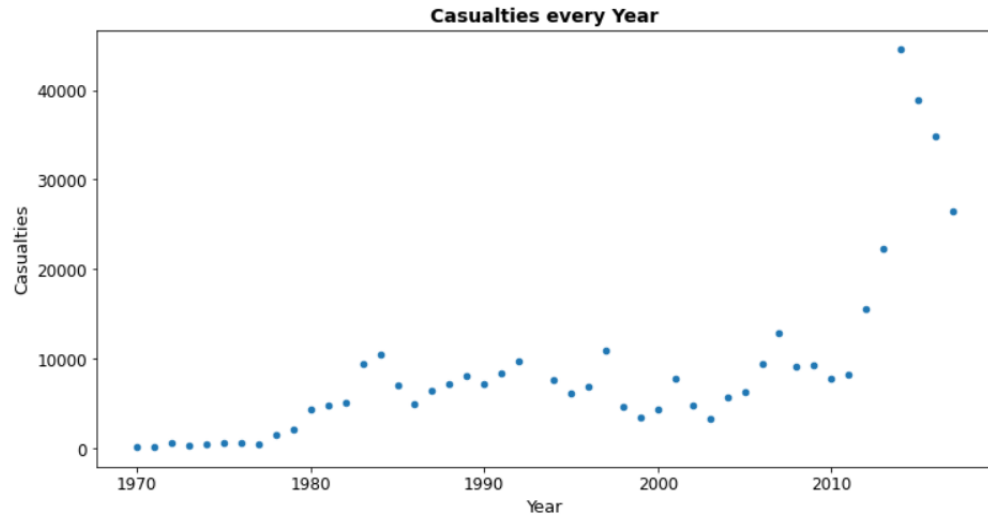
Terrorism Analysis in India

Terrorism in India, according to the Home Ministry, poses a significant threat to the people of India. Compared to other countries, India faces a wide range of terror groups. Terrorism found in India includes Islamic terrorism, separatist terrorism, and left-wing terrorism .India is one of the countries most impacted by terrorism.

India continues to face a number of terror attacks from Islamic groups in Kashmir, Sikh separatists in Punjab, and secessionist groups in Assam.

Terrorist Activities in India(1970-2017)

We can see here that attacks slowly start to increase from 1979 until about 1991 where until 2004 we see a downward global trend in Terrorist incidents despite events like September 11, 2001.
In 2016 almost 1025 terrorist activities took place in only one year which was maximum up to 2017.
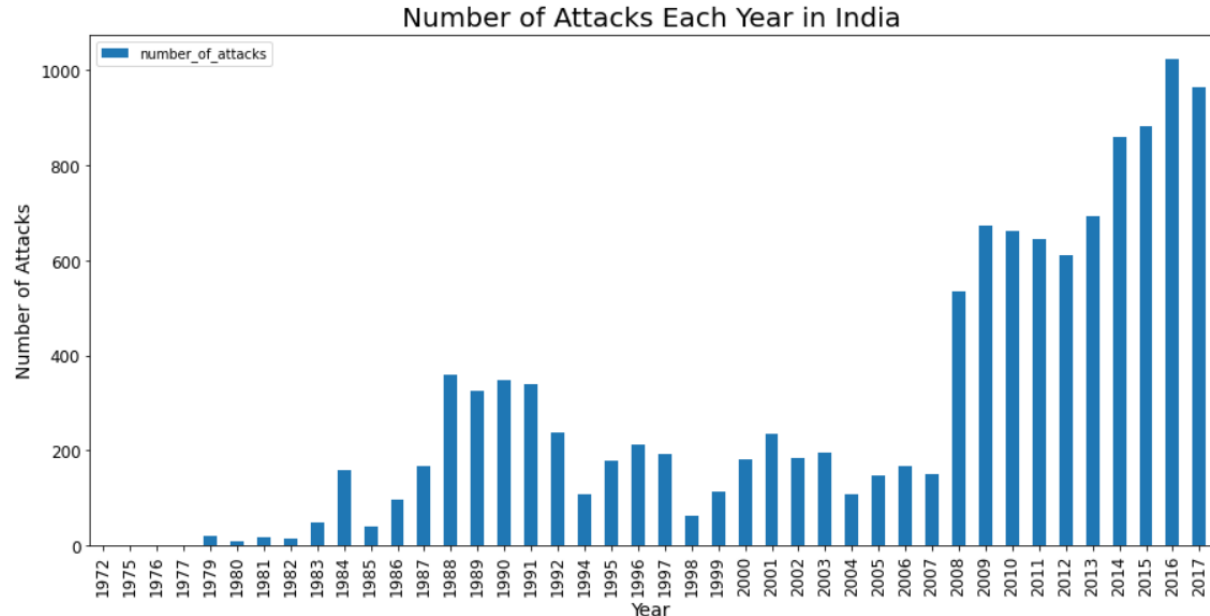
2016 Uri Attack

Four heavily-armed terrorists in 2016 attacked Indian Army's 12 Brigade headquarters in Uri town of Jammu and Kashmir

Statistical Analysis

Year	Number of Terrorist Activities
2016	1025
2017	966
2015	884
2014	860
2013	694
2009	672
2010	663
2011	645
2012	611
2008	534

Graphical Representation

Number of Attacks Each Year in India

Terrorism Analysis in India

From the chart it was clear that Communist Party of India-Moist(CPI-Moist) was biggest terrorist group in India and Jammu & Kashmir. While Kashmir and Punjab most suffered terrorist state in India. Jammu & Kashmir, Panjab and Assam was the India's states most impacted by terrorism during 1970 to 2017, most of which were perpetrated by the Hizbul Mujahideen (HM), Jaish-e Mohammad (JeM) and Lashkar-e-Taiba (LeT).

Groups	Killed
Communist Party of India - Maoist (CPI-Maoist)	1861
Maoists	1366
Sikh Extremists	703
United Liberation Front of Assam (ULFA)	350
Hizbul Mujahideen (HM)	199
Lashkar-e-Taiba (LeT)	186
National Democratic Front of Bodoland (NDFB)	172
Garo National Liberation Army	153
Muslim Separatists	118

Terrorist Groups with Highest No of Kills
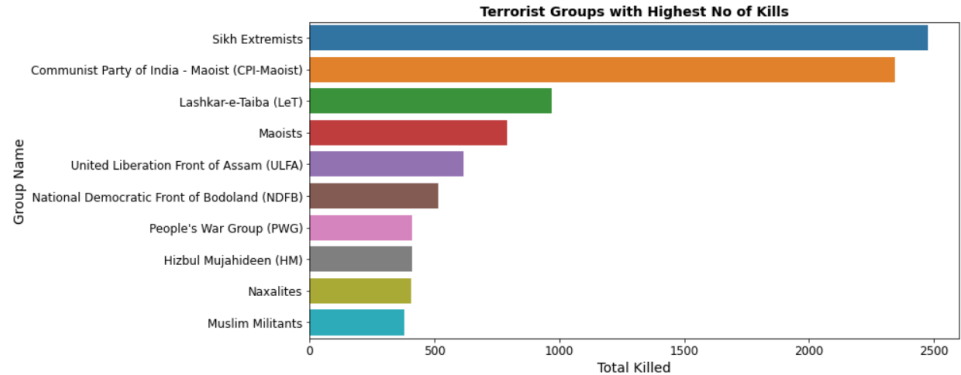
Terrorist Group with State & City

From the graph and statistical analysis it is clear that Jammu & Kashmir is most terrorist affected states by some unknown groups where as Punjab was mostly suffered in 1991 by Sikh extremists and Chattisgarth and Jharkhand, West Bengal mostly affected by Maoists.

More than half of the terrorist attacks in India in 2016,2017 took place in four states: Jammu and Kashmir at 19 per cent, Chhattisgarh at 18 per cent, Manipur at 12 per cent, and Jharkhand at 10 per cent.

Year	State	Terrorist_Group	Kills	Attack_Type
2017	Jammu and Kashmir	Unknown	172	172
2016	Jammu and Kashmir	Unknown	152	153
2016	Chhattisgarh	Maoists	151	154
2010	West Bengal	Communist Party of India - Maoist (CPI-Maoist)	138	138
2015	Chhattisgarh	Maoists	135	138
2017	Chhattisgarh	Maoists	117	118
2001	Jammu and Kashmir	Unknown	110	110
1991	Punjab	Sikh Extremists	93	93
2011	Jharkhand	Communist Party of India - Maoist (CPI-Maoist)	92	92
2009	West Bengal	Communist Party of India - Maoist (CPI-Maoist)	88	88

Terrorism Analysis in India

AI
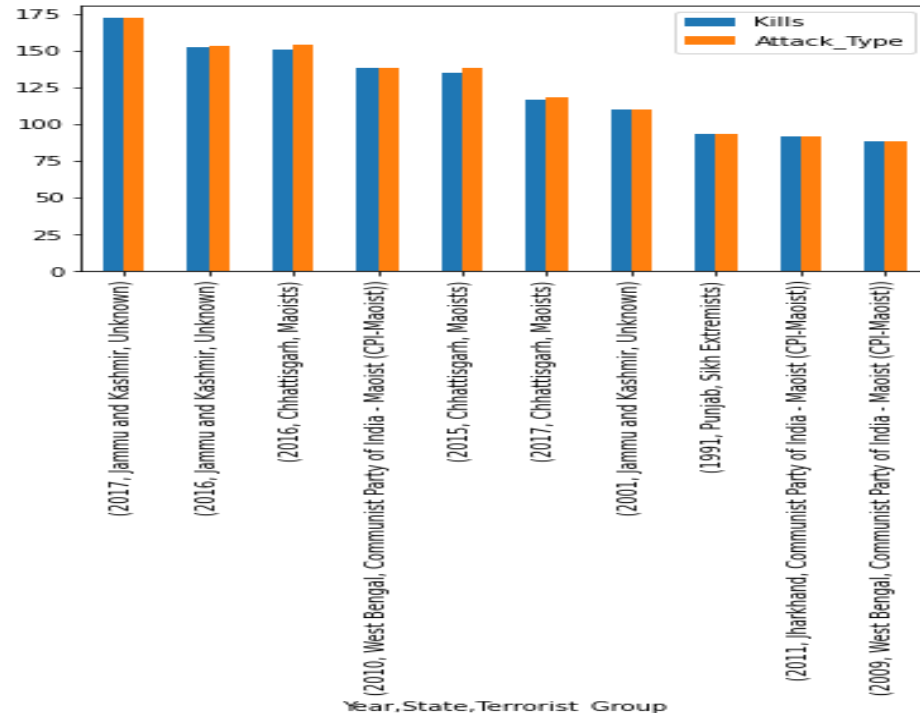
2016 major Terrorist attacks:
Pathannkot: Terrorist attack committed on 2 January 2016 by a heavily armed group which attacked the Pathankot Air Force Station, part of the Western Air Command of the Indian Air Force.

Uri: The 2016 Uri attack was an attack by four heavily armed insurgents on 18 September 2016, near the town of Uri in Indian administered Jammu and Kashmir.

Baramulla: On the midnight of the second and third of October 2016, militants attacked a camp of the Indian Army's 46 Rashtriya Rifles killing 3 soldiers

2017 major Terrorist attacks:
Sukma, Chhattisgarh
Maoists killed 25 CRPF personnel and injured seven in Sukma district of south Chhattisgarh. In retaliatory fire, 10 to 12 Maoists were shot dead.
Twelve CRPF personnel were killed when they "walked into an ambush," laid by Maoists in Sukma.

Terrorist Group with State & City

Terror attacks targeting minorities and non-locals in the Kashmir Valley have revived memories of the mass exodus of minority communities that took place in the early 1990s when targeted killings of civilians were carried out with the onset of terrorism state of Jammu and Kashmir.

Srinagar and Imphal was most suffered cities of terrorist attacks. As we will see in the following section, not only is there a strong regional focus but this is also heavily concentrated in only a few cities within these regions.

Year	State	City	Kills	Attack_Type
1990	Jammu and Kashmir	Srinagar	103	103
1984	Punjab	Unknown	71	73
2016	Manipur	Imphal	49	50
2009	Manipur	Imphal	48	48
1992	Jammu and Kashmir	Srinagar	46	46
1996	Jammu and Kashmir	Srinagar	43	55
2008	Manipur	Imphal	43	44
2012	Manipur	Imphal	41	42
1995	Jammu and Kashmir	Srinagar	39	39
2013	Manipur	Imphal	38	38
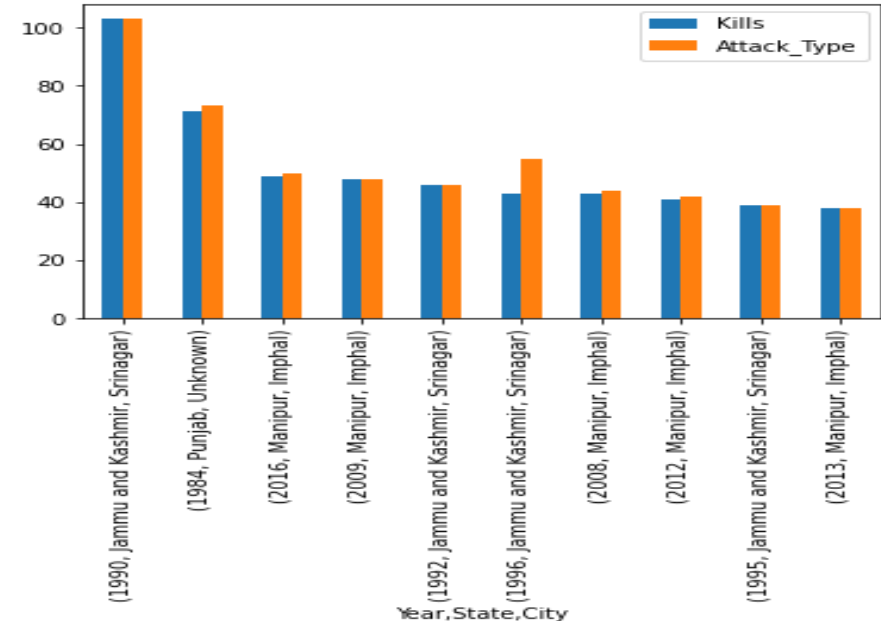
Conclusion

Attacks were more during 2014 it almost 16903 and then in 2015. When compared to attacks from 1970 onwards, the last 6 years scored a maximum i.e. 42 % with respect to terrorist attacks from 1970. But from 2014 onwards count started decreasing.

Most of the terrorist attacked carried out by unknown groups mostly in Iraq, Pakistan and Afghanistan. While Taliban and ISIS was the biggest Terrorist Group which take parts in most of the terrorist activities. Most of the attacks were attacked through explosives and then through firearms.

Iraq dominates all the countries and it has the highest number of attacks and then Pakistan, Afghanistan, and India follow it.

Also Baghdad dominates all the cities and it has the highest number of attacks and then Mosul, Karachi follow it.

The Middle East& North Africa leads 1st among all the regions and then South Asia takes 2nd place.
For most of the attacks, the target is Private Citizens& property and the next Military leads.
Most of the attacks were through either Bombing or Explosion.
In India, terrorist attacks more during 2016 it almost 1025 terrorist attacks but from 2016 count starts decreasing.

Conclusion

In India, terrorist attacks more during 2016 it almost 1025 terrorist attacks but from 2016 count starts decreasing.

Again in India most of the terrorist attacked carried out by unknown groups mostly in Jammu and Kashmir. While Maoists, Sikh Extremists, ULFA, Lashkar-e-Taiba (LeT) and Hizbul Mujahideen (HM) was the biggest Terrorist Group which take parts in most of the terrorist activities.

Jammu & Kashmir is most terrorist affected whereas Punjab, Chattisgarth and Jharkhand, West Bengal mostly affected by Maoists.

Srinagar and Imphal was most suffered cities of terrorist attacks.
In India also most of the attacks, the target is Private Citizens& property and the next Military leads.

Most of the attacks were through either Bombing or Explosion.