Capstone Project - 1

Global Terrorism Analysis

Team Members

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Introduction

Definition of Terrorism

"The calculated use of unlawful violence or threat of unlawful violence to inculcate fear; intended to coerce or to intimidate governments or societies in the pursuit of goals that are generally political, religious, or ideological"

- The objective is to perform Exploratory Data Analysis on global terrorism dataset to find out the hot zone of terrorism
- Exploratory data analysis is nothing but analyzing the given data and finding the trends, patterns and making some assumption

Steps Involved in Exploratory Data Analysis

1. Data Collection

- Global Terrorism Database (GTD) is an open-source database including information on terrorist attacks around the world from 1970 through 2017.

2. Data Cleaning

- Removing missing values, outliers, and unnecessary rows/ columns.
- Re-indexing, renaming & reformatting our data.

3. Univariate/Bivariate Analysis

- Analyzing data for one/ two variables

4. Data Visualization & Analysis of Data

Data Summary

Target Type: Type of target involved in the attack. It consists of categorical values like private citizens, military, police, government officials, transportation, education, religious institution, airports, etc.

Attack Type: The type of attack happened. It consists of categories like explosion, armed assault, assassination, kidnapping, unarmed assaults.

Killed: Number of people killed in any event.

Wounded: Number of people wounded in any event.

Weapon Type: Type of weapon used in the attack. Weapon type contains values like firearms, explosives, melee, vehicles etc.

Data Summary(Continued)

Region: Name of the region where the attack happened. Region consists values like East Asia, South Asia, Western Europe, etc

Latitude: latitude of the location.

Longitude: longitude of the location.

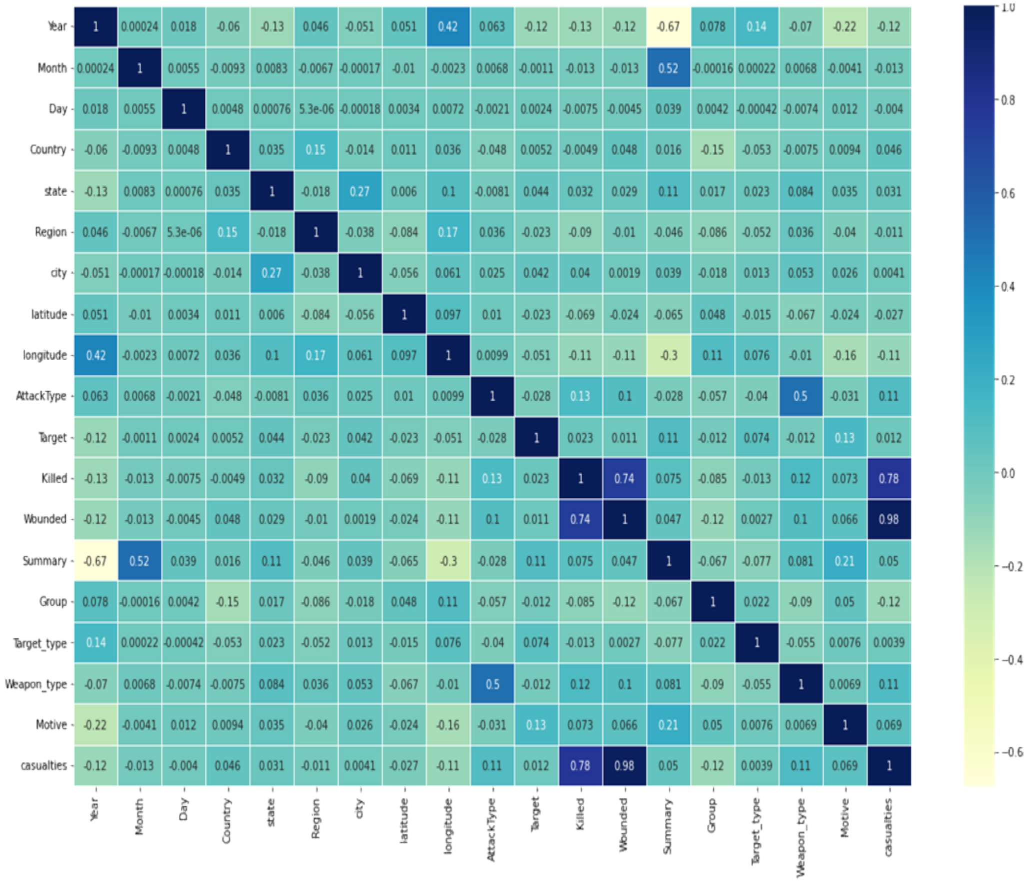
Group: Name of group involved in terrorist attacks.

Country: Name of country where attack done.

Day, Month, Year: Calendar details of the events.

Casualties: It containing the sum of the values of total people killed and wounded.

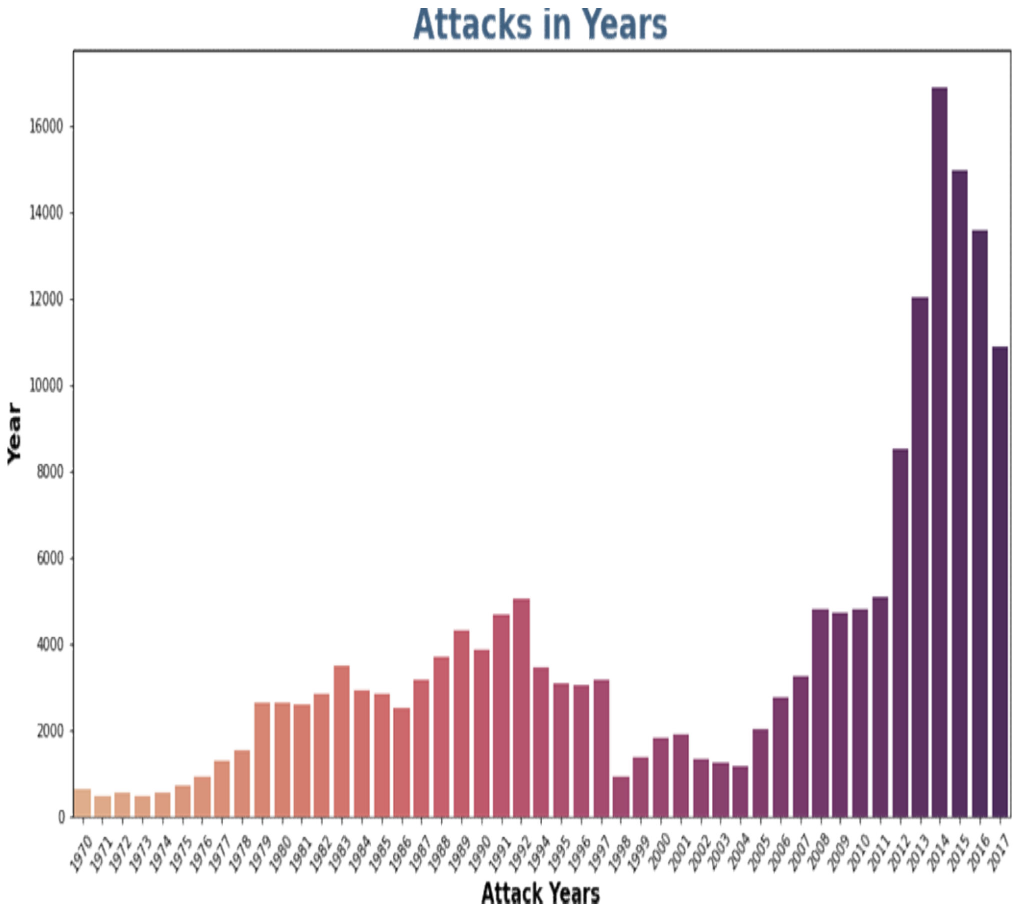
Correlation Matrix



	Year	Month	Day	Country	state	Region	city	latitude	longitude	AttackType	Target	Killed	Wounded	Summary	Group	Target_type	Weapon_type	Motive	casualties
Year	1	0.00024	0.018	-0.06	-0.13	0.046	-0.051	0.051	0.42	0.063	-0.12	-0.13	-0.12	-0.67	0.078	0.14	-0.07	-0.22	-0.12
Month	0.00024	1	0.0055	-0.0093	0.0083	-0.0067	-0.00017	-0.01	-0.0023	0.0068	-0.0011	-0.013	-0.013	0.52	-0.00016	0.00022	0.0068	-0.0041	-0.013
Day	0.018	0.0055	1	0.0048	0.00076	5.3e-06	-0.00018	0.0034	0.0072	-0.0021	0.0024	-0.0075	-0.0045	0.039	0.0042	-0.00042	-0.0074	0.012	-0.004
Country	-0.06	-0.0093	0.0048	1	0.035	0.15	-0.014	0.011	0.036	-0.048	0.0052	-0.0049	0.048	0.016	-0.15	-0.053	-0.0075	0.0094	0.046
state	-0.13	0.0083	0.00076	0.035	1	-0.018	0.27	0.006	0.1	-0.0081	0.044	0.032	0.029	0.11	0.017	0.023	0.084	0.035	0.031
Region	0.046	-0.0067	5.3e-06	0.15	-0.018	1	-0.038	-0.084	0.17	0.036	-0.023	-0.09	-0.01	-0.046	-0.086	-0.052	0.036	-0.04	-0.011
city	-0.051	-0.00017	-0.00018	-0.014	0.27	-0.038	1	-0.056	0.061	0.025	0.042	0.04	0.0019	0.039	-0.018	0.013	0.053	0.026	0.0041
latitude	0.051	-0.01	0.0034	0.011	0.006	-0.084	-0.056	1	0.097	0.01	-0.023	-0.069	-0.024	-0.065	0.048	-0.015	-0.067	-0.024	-0.027
longitude	0.42	-0.0023	0.0072	0.036	0.1	0.17	0.061	0.097	1	0.0099	-0.051	-0.11	-0.11	-0.3	0.11	0.076	-0.01	-0.16	-0.11
AttackType	0.063	0.0068	-0.0021	-0.048	-0.0081	0.036	0.025	0.01	0.0099	1	-0.028	0.13	0.1	-0.028	-0.057	-0.04	0.5	-0.031	0.11
Target	-0.12	-0.0011	0.0024	0.0052	0.044	-0.023	0.042	-0.023	-0.051	-0.028	1	0.023	0.011	0.11	-0.012	0.074	-0.012	0.13	0.012
Killed	-0.13	-0.013	-0.0075	-0.0049	0.032	-0.09	0.04	-0.069	-0.11	0.13	0.023	1	0.74	0.075	-0.085	-0.013	0.12	0.073	0.78
Wounded	-0.12	-0.013	-0.0045	0.048	0.029	-0.01	0.0019	-0.024	-0.11	0.1	0.011	0.74	1	0.047	-0.12	0.0027	0.1	0.066	0.98
Summary	-0.67	0.52	0.039	0.016	0.11	-0.046	0.039	-0.065	-0.3	-0.028	0.11	0.075	0.047	1	-0.067	-0.077	0.081	0.21	0.05
Group	0.078	-0.00016	0.0042	-0.15	0.017	-0.086	-0.018	0.048	0.11	-0.057	-0.012	-0.085	-0.12	-0.067	1	0.022	-0.09	0.05	-0.12
Target_type	0.14	0.00022	-0.00042	-0.053	0.023	-0.052	0.013	-0.015	0.076	-0.04	0.074	-0.013	0.0027	-0.077	0.022	1	-0.055	0.0076	0.0039
Weapon_type	-0.07	0.0068	-0.0074	-0.0075	0.084	0.036	0.053	-0.067	-0.01	0.5	-0.012	0.12	0.1	0.081	-0.09	-0.055	1	0.0069	0.11
Motive	-0.22	-0.0041	0.012	0.0094	0.035	-0.04	0.026	-0.024	-0.16	-0.031	0.13	0.073	0.066	0.21	0.05	0.0076	0.0069	1	0.069
casualties	-0.12	-0.013	-0.004	0.046	0.031	-0.011	0.0041	-0.027	-0.11	0.11	0.012	0.78	0.98	0.05	-0.12	0.0039	0.11	0.069	1

- **Displays Correlation coefficient between variables**
- **Label Encoding Technique**
- **Attack type & Weapon Type are correlated with each other**

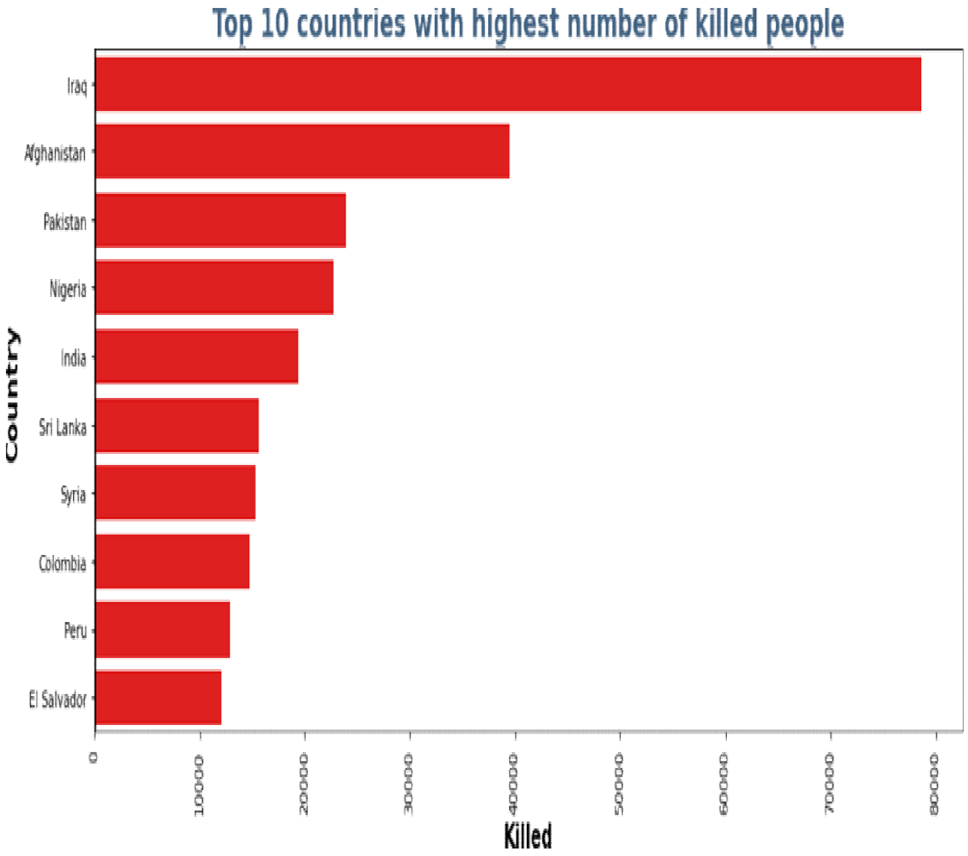
Terrorist Activities Each Year



Evolvement of Terrorism

- Low Terrorist Activities : 1970 to 1977
- Moderate Terrorist Activities : 1978 to 1997
- Again Low Terrorist Activities : 1998 to 2005
- High Terrorist Activities: 2006 to 2017

Top 10 Countries with Highest Numbers of Killed People



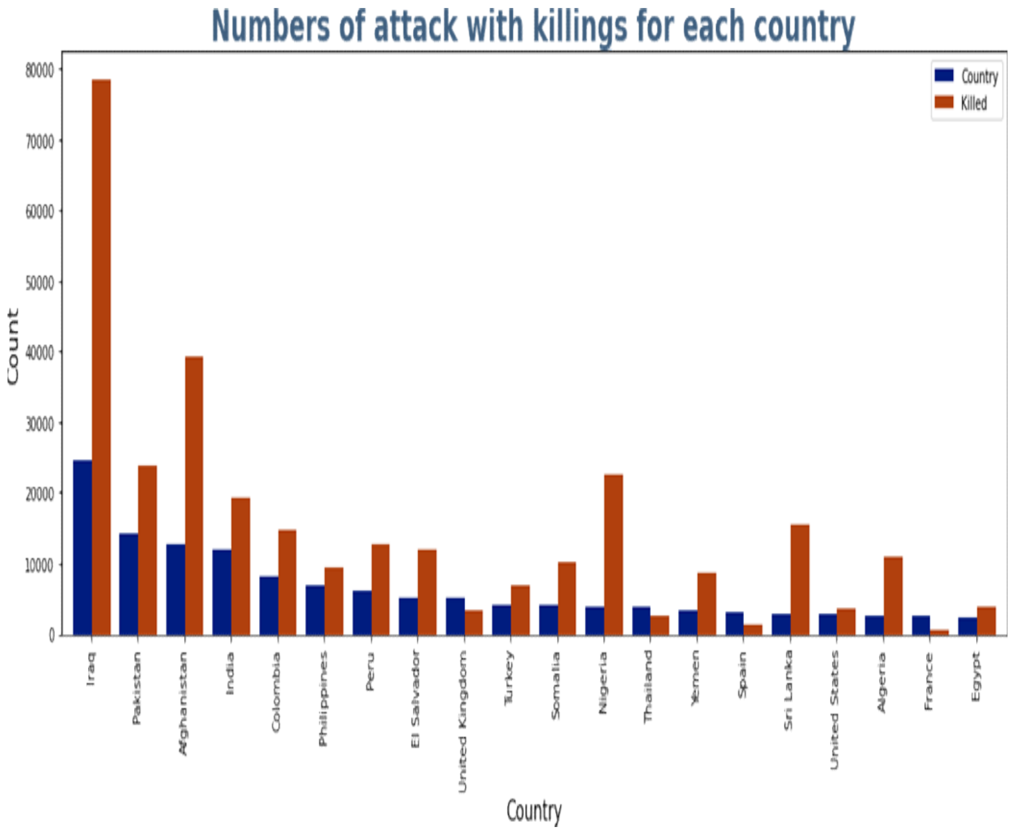
- **Iraq – Highest Killing**

(Approximately 80k Killings)

- **Followed by Afghanistan**

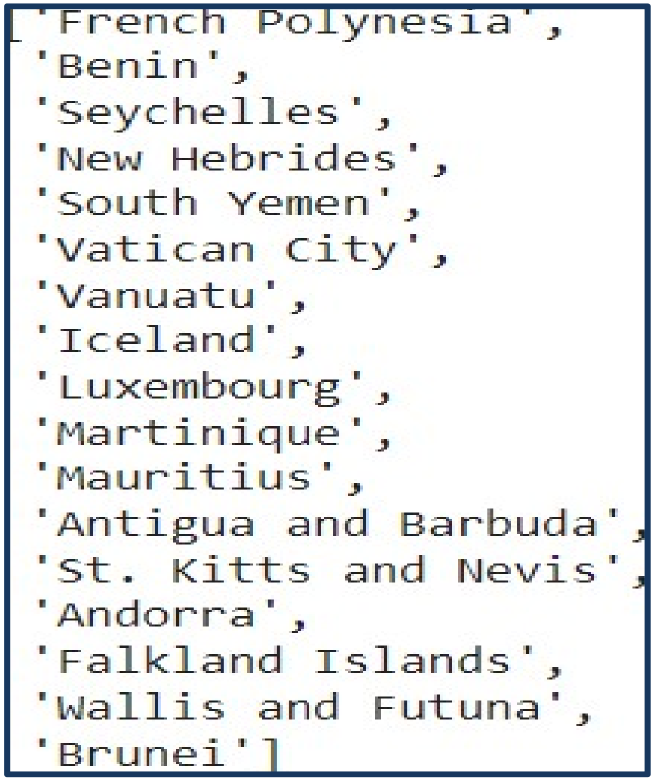
(Approximately 40k+ Killings)

Number of attack with killings for each country



- Iraq : Most Attacks + Most Killings
- Pakistan & Afghanistan : Approx. same number of attacks but different number of killings
- Philippines, Peru and the United Kingdom : Approx. same number of attacks & different number of killing

Safest Countries From Terrorist Attack i.e. Zero Killing



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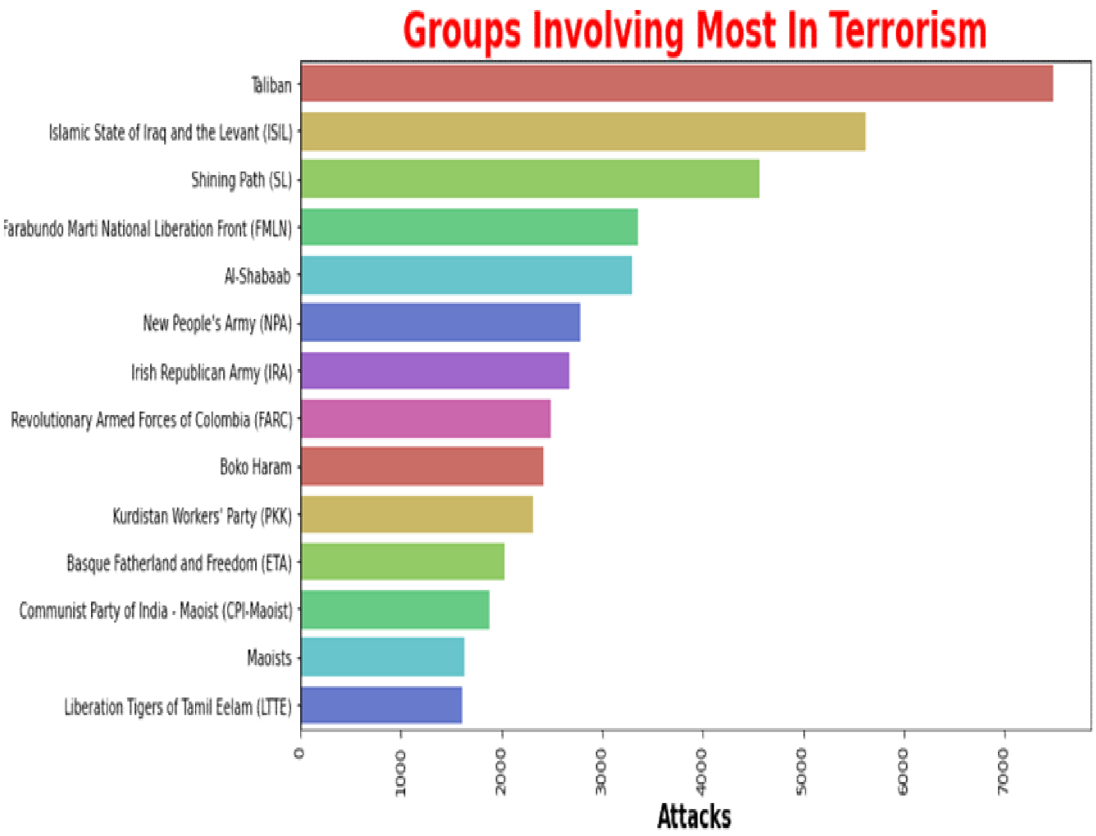
['French Polynesia',
 'Benin',
 'Seychelles',
 'New Hebrides',
 'South Yemen',
 'Vatican City',
 'Vanuatu',
 'Iceland',
 'Luxembourg',
 'Martinique',
 'Mauritius',
 'Antigua and Barbuda',
 'St. Kitts and Nevis',
 'Andorra',
 'Falkland Islands',
 'Wallis and Futuna',
 'Brunei']
```

Most Involved Groups in Terrorism Activity



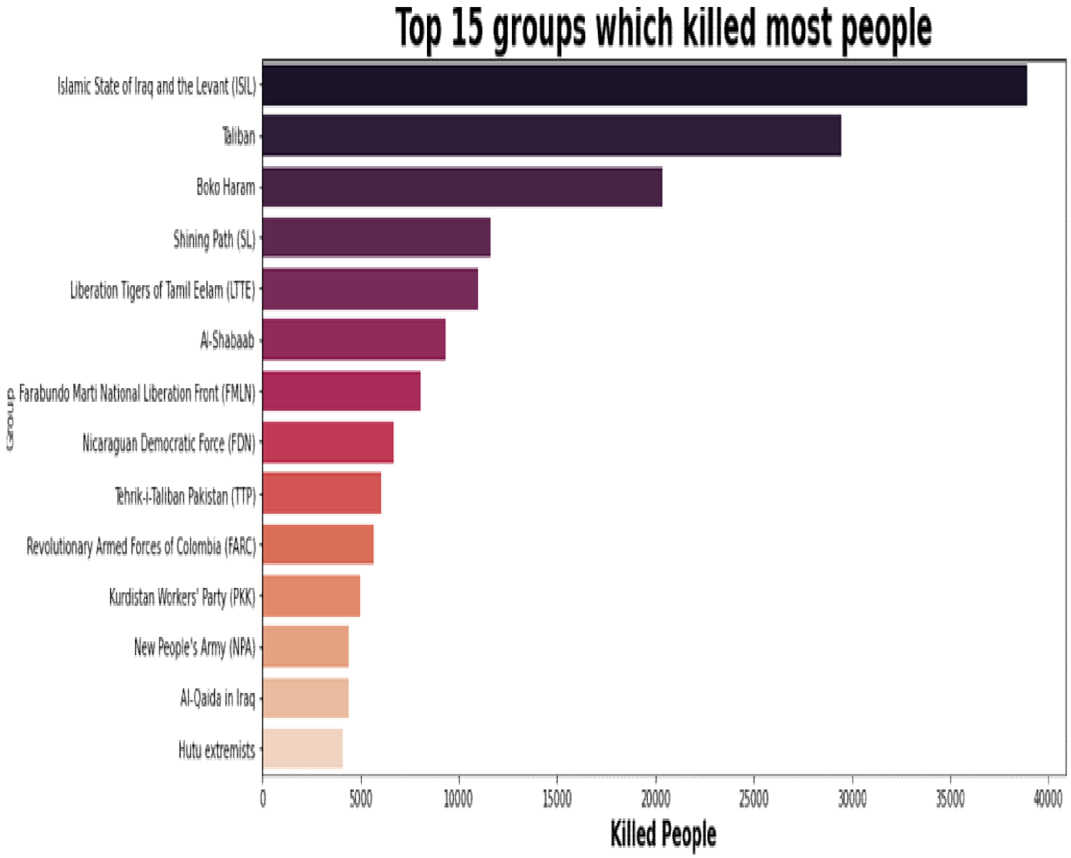
- **Major Contributors:**

1. Taliban

2. ISIL

(North Africa & Middle East)

Top 15 Groups which killed Most People



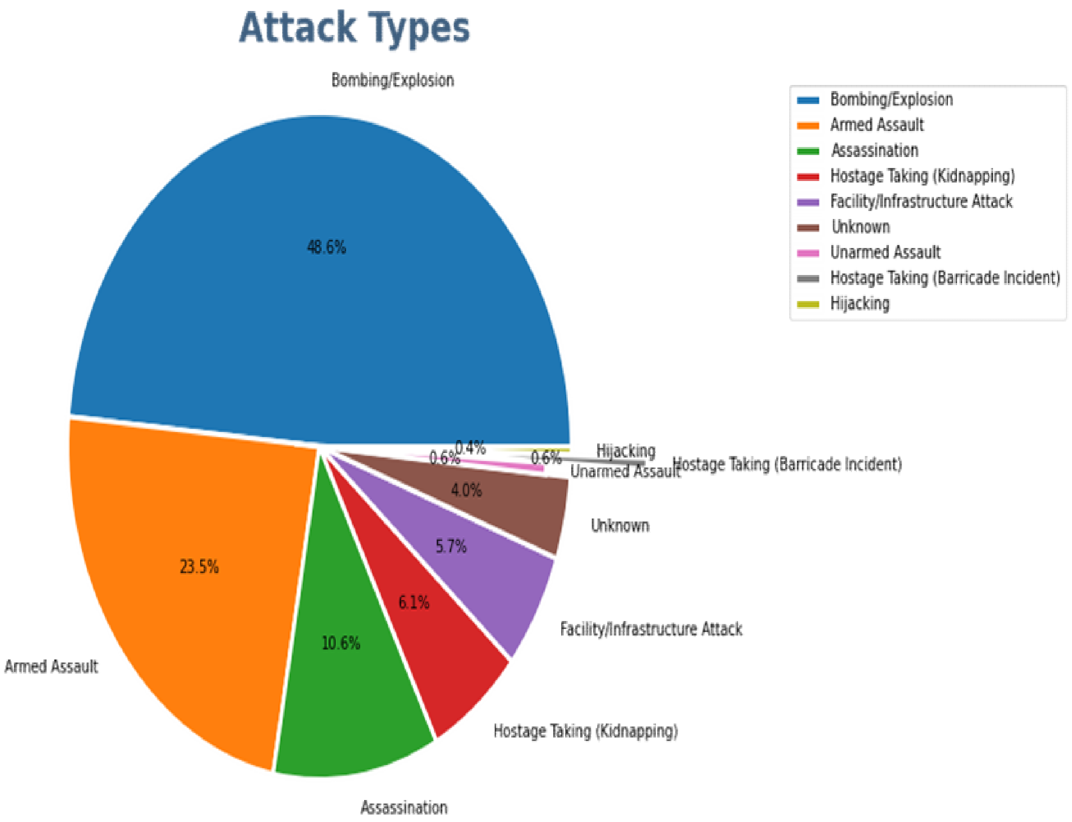
- **Major Contributors:**

1. Taliban (Approx.40k killings)

2. ISIL (Approx.30k killings)

3. Boko Haram (Approx.20k killings)

Type of Attack



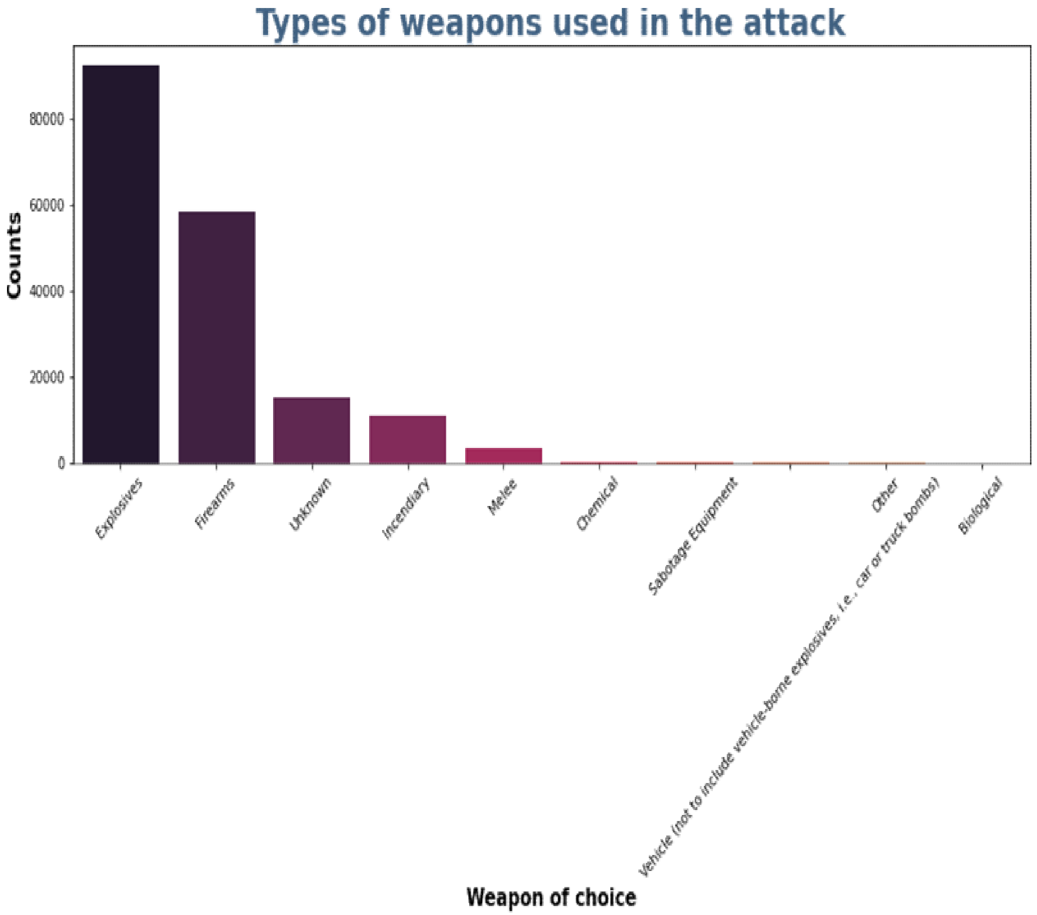
- **Most Preferred Attack Types**

1. **Bombing/Explosion (48.6%)**
2. **Armed Assault (23.5%)**

- **Least Preferred Attack Types**

1. **Hijacking (0.4%)**
2. **Unarmed Assault (0.6%)**

Types of weapons used in attacks

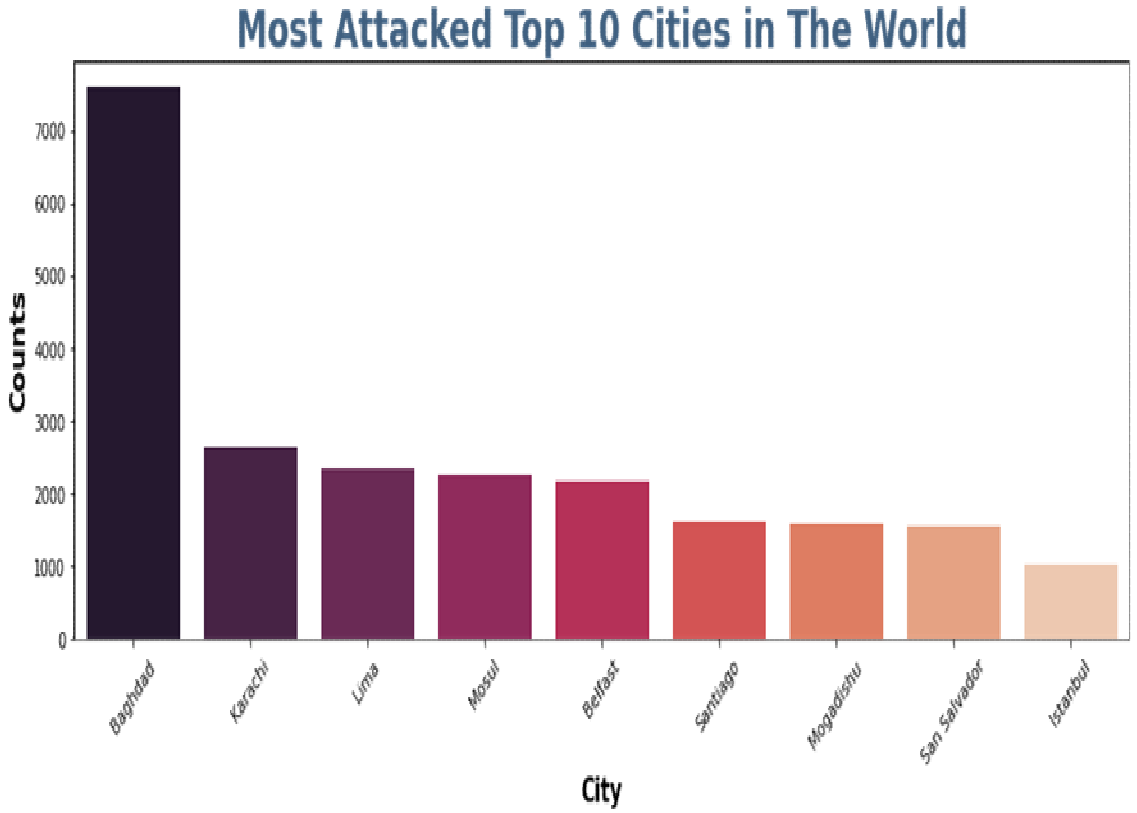


- **Most Preferred Type of Weapon**

1. Bombing/Explosives (8k+)

2. Fire Arms (Approx. 6k)

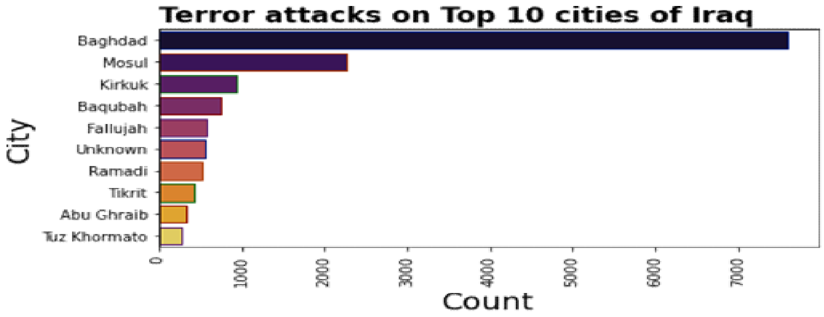
Most Attacked Top 10Cities

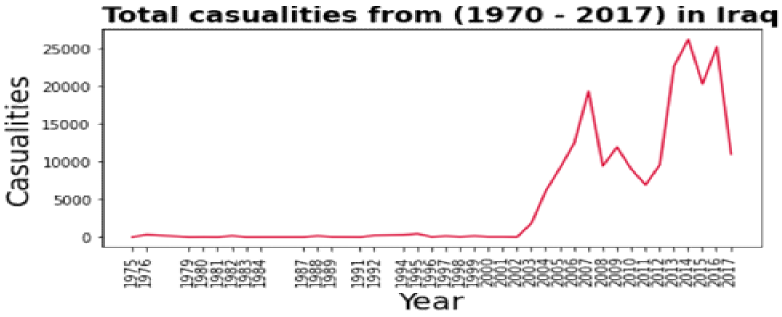


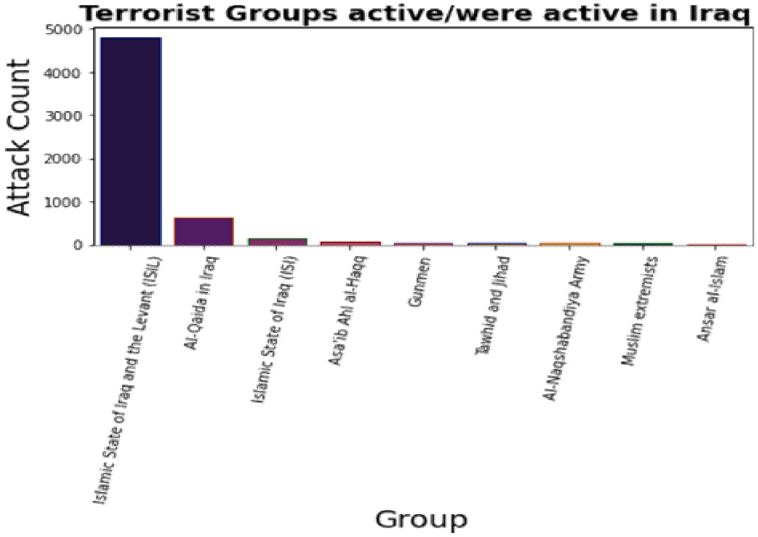
- **Baghdad (7k+ Attacks)**
- **Most Attacked cities are either capital of country or densely populated city**

Country wise Analysis

Country- Iraq

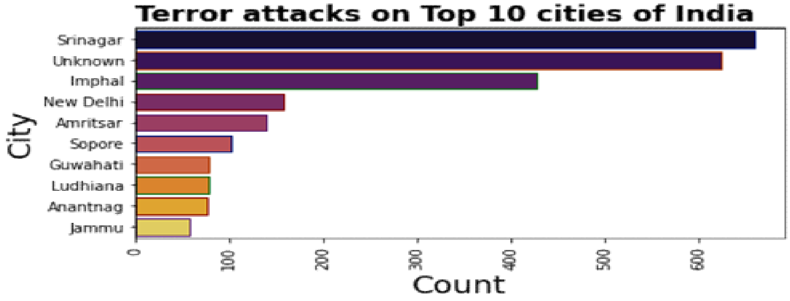

Terror attacks on Top 10 cities of Iraq

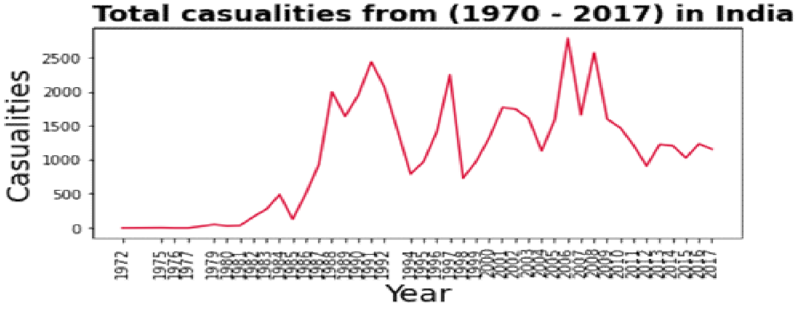

Total casualities from (1970 - 2017) in Iraq

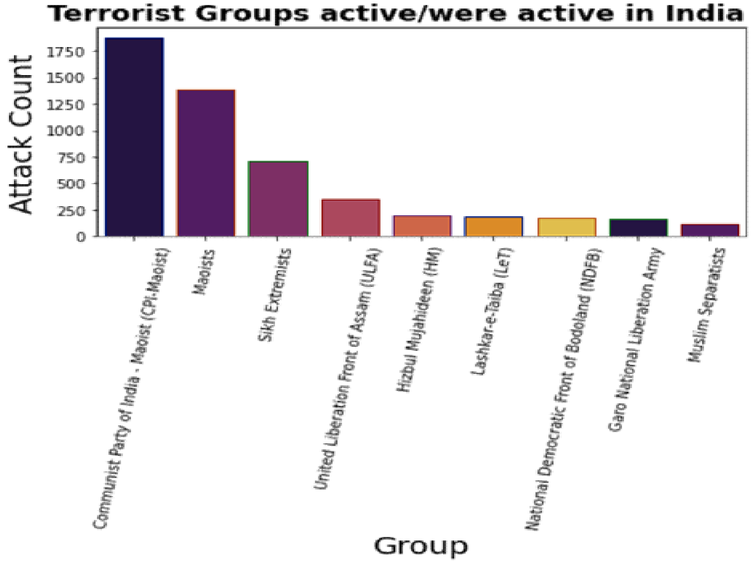

Terrorist Groups active/were active in Iraq

Country wise Analysis(Continued)

Country- India


Terror attacks on Top 10 cities of India

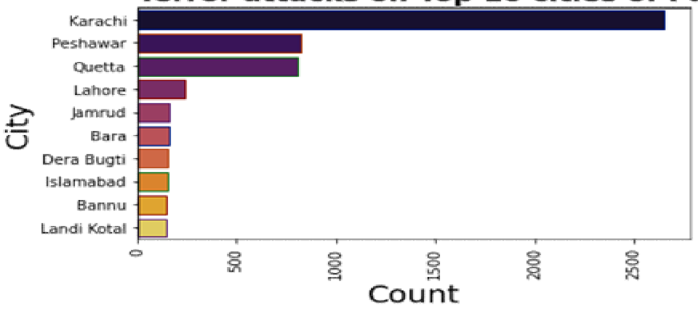

Total casualities from (1970 - 2017) in India


Terrorist Groups active/were active in India

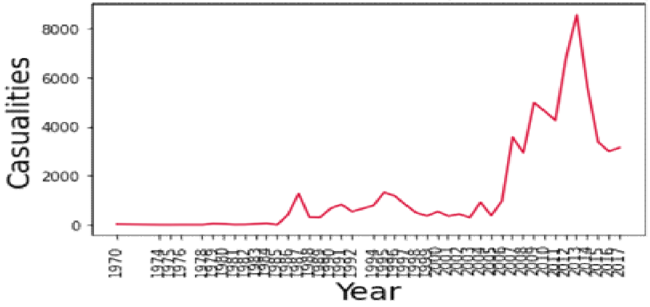
Country wise Analysis (Continued)

Country- Pakistan

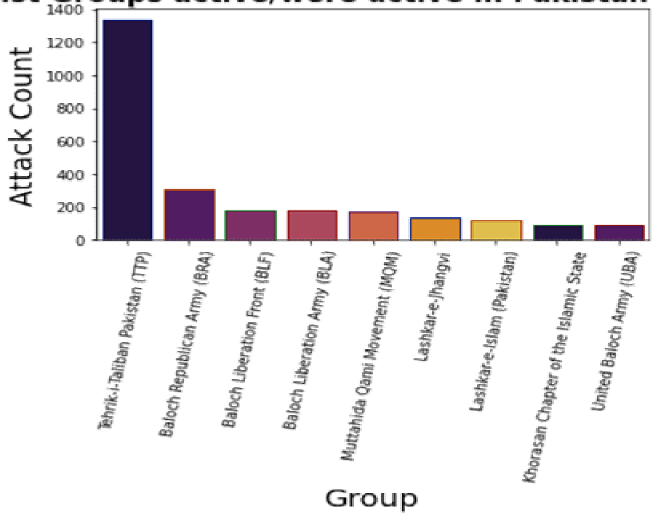
Terror attacks on Top 10 cities of Pakistan



Total casualities from (1970 - 2017) in Pakistan



Terrorist Groups active/were active in Pakistan



Challenges

- Data Cleaning
- Individual Studies lead to different conclusions.
- Lack of Clarity in Data

Conclusion

- #Terrorist attacks were increase from 2002-2004. 2014 where many attacks were happened
- Most affected country by terrorism : ‘Iraq’
- Most active terrorist group in the world: ‘Taliban’
- Most Preferred Target of Terrorist: 1.Private Citizens 2.Property military
- Concluded that explosives were used in around 48.6% of the attacks, followed by Armed Assault accounted for 23.5% of the attacks.

Thank You