Capstone Project-1
Global Terrorism Analysis

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Contents

Introduction

The Global Terrorism Database (GTD) is the most comprehensive unclassified database of terrorist attacks in the world. The National Consortium for the Study of Terrorism and Responses to Terrorism (START) 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.

Defining Problem Statement

- GTD Dataset Provided information about domestic & international terrorist attack around the world.

- It including information about more than 200000 events during 1970-2017.

- Our Task is to analyze the terrorist attacks during this 46-year period, which includes over 181691 incidents=rows of data. Each incidents described with almost 135 different variables.

Data Summary

Data Set Name :- Global Terrorism Data.csv

Rows – 181691

Features – 135

Some of the variables explained:

iyear: which contains the year in which the incident occurred.

Countrytxt: which identifies the country or location where the incident occurred

extended: The duration of an incident extended more than 24 hours (1) - Less than 24 hours (0).

multiple: The attack is part of a multiple incident (1) - Not part of a multiple incident (0).

suicide: The incident was a suicide attack (1) - There is no indication of a suicide attack (0).

attacktype: Assassination(1), Hijacking(2), Kidnapping(3), Barricade Incident(4), Bombing/Explosion(5), Armed Assault(6), Unarmed Assault(7), Facility/Infrastructure Attack(8), Unknown(9)

targtype: 22 categories ranging from Business(1), Government(general)(2), Police(3),...Utilities(21), Violent Political Parties(22)

natlty: Nationality of target/victim

individual: Whether the attack was carried out by an individual or several individuals known to be affiliated with a group or organization(1) or not affiliated with a group or organization(0)

claimed: A group or person claimed responsibility for the attack (1) - No claim of responsibility was made(0).

weaptype: 13 categories ranging from Biological(1), Chemical(2), Radiological(3),...Other(12), Unknown(13)

nkill: Total number of fatalities including all victims and attackers who died as a direct result of the incident.

nkillter: Limited to only perpetrator fatalities

nwound: Total number of injured victims and attackers

nwoundte: Total number of injured perpetrators

AI

Loading the Dataset

```
[ ] data.head(5)
```

	eventid	iyear	imonth	iday	approxdate	extended	resolution	country	country_txt	region	region_txt	provstate	city	latitude	longitude	specificity	vicinity	location	summary	crit1
0	197000000001	1970	7	2	NaN	0	NaN	58	Dominican Republic	2	Central America & Caribbean	NaN	Santo Domingo	18.456792	-69.951164	1.0	0	NaN	NaN	1
1	197000000002	1970	0	0	NaN	0	NaN	130	Mexico	1	North America	Federal	Mexico city	19.371887	-99.086624	1.0	0	NaN	NaN	1
2	197001000001	1970	1	0	NaN	0	NaN	160	Philippines	5	Southeast Asia	Tarlac	Unknown	15.478598	120.599741	4.0	0	NaN	NaN	1
3	197001000002	1970	1	0	NaN	0	NaN	78	Greece	8	Western Europe	Attica	Athens	37.997490	23.762728	1.0	0	NaN	NaN	1
4	197001000003	1970	1	0	NaN	0	NaN	101	Japan	4	East Asia	Fukouka	Fukouka	33.580412	130.396361	1.0	0	NaN	NaN	1

crit2	crit3	doubtterr	alternative	alternative_txt	multiple	success	suicide	attacktype1	attacktype1_txt	attacktype2	attacktype2_txt	attacktype3	attacktype3_txt	targtype1	targtype1_txt
1	1	0.0	NaN	NaN	0.0	1	0	1	Assassination	NaN	NaN	NaN	NaN	14	Private Citizens & Property
1	1	0.0	NaN	NaN	0.0	1	0	6	Hostage Taking (Kidnapping)	NaN	NaN	NaN	NaN	7	Government (Diplomatic)
1	1	0.0	NaN	NaN	0.0	1	0	1	Assassination	NaN	NaN	NaN	NaN	10	Journalists & Media
1	1	0.0	NaN	NaN	0.0	1	0	3	Bombing/Explosion	NaN	NaN	NaN	NaN	7	Government (Diplomatic)
1	1	-9.0	NaN	NaN	0.0	1	0	7	Facility/Infrastructure Attack	NaN	NaN	NaN	NaN	7	Government (Diplomatic)

Attribute Information:- Dtypes

AI

```
#data types
data.dtypes

eventid                int64
iyear                  int64
imonth                 int64
iday                   int64
approxdate             object
extended               int64
resolution             object
country                int64
country_txt            object
region                 int64
region_txt             object
provstate              object
city                   object
latitude               float64
longitude              float64
specificity            float64
vicinity               int64
location               object
summary                object
crit1                  int64
crit2                  int64
crit3                  int64
doubtterr              float64
alternative            float64
alternative_txt        object
multiple               float64
success                int64
suicide                int64
attacktype1            int64
attacktype1_txt        object
attacktype2            float64
attacktype2_txt        object
attacktype3            float64
attacktype3_txt        object
targtype1              int64
targtype1_txt          object
targsubtype1           float64
targsubtype1_txt       object
corp1                  object
target1                object
natlty1                float64
natlty1_txt            object
targtype2              float64
targtype2_txt          object
targsubtype2           float64
targsubtype2_txt       object
corp2                  object
target2                object
natlty2                float64
```

```
targtype2_txt          object
targsubtype2           float64
targsubtype2_txt       object
corp2                  object
target2                object
natlty2                float64
natlty2_txt            object
targtype3              float64
targtype3_txt          object
targsubtype3           float64
targsubtype3_txt       object
corp3                  object
target3                object
natlty3                float64
natlty3_txt            object
gname                  object
gsubname               object
gname2                 object
gsubname2              object
gname3                 object
gsubname3              object
motive                 object
guncertain1            float64
guncertain2            float64
guncertain3            float64
individual             int64
nperps                 float64
nperpcap               float64
claimed                float64
claimmode              float64
claimmode_txt          object
claim2                 float64
claimmode2             float64
claimmode2_txt         object
claim3                 float64
claimmode3             float64
claimmode3_txt         object
compclaim              float64
weaptype1              int64
weaptype1_txt          object
weapsubtype1           float64
weapsubtype1_txt       object
weaptype2              float64
weaptype2_txt          object
weapsubtype2           float64
weapsubtype2_txt       object
weaptype3              float64
weaptype3_txt          object
weapsubtype3           float64
```

Attribute Information:- Null Values

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```
#null values and its count
data.isna().sum()

eventid               0
iyear                 0
imonth                0
iday                  0
approxdate       172452
extended              0
resolution       179471
country               0
country_txt           0
region                0
region_txt            0
provstate           421
city                434
latitude           4556
longitude          4557
specificity           6
vicinity              0
location         126196
summary           66129
crit1                 0
crit2                 0
crit3                 0
doubtterr             1
alternative      152680
alternative_txt  152680
multiple              1
success               0
suicide               0
attacktype1           0
attacktype1_txt       0
attacktype2      175377
attacktype2_txt  175377
attacktype3      181263
attacktype3_txt  181263
targtype1             0
targtype1_txt         0
targsubtype1      10373
targsubtype1_txt  10373
corp1             42550
target1             636
natlty1            1559
natlty1_txt        1559
targtype2        170547
targtype2_txt    170547
targsubtype2     171006
targsubtype2_txt 171006
corp2            171574
target2          170671
natlty2          170863
natlty2_txt      170863
```

```
targsubtype3_txt 180594
corp3            180665
target3          180516
natlty3          180544
natlty3_txt      180544
gname                 0
gsubname         175801
gname2           179678
gsubname2        181531
gname3           181367
gsubname3        181671
motive           131130
guncertain1         380
guncertain2      179736
guncertain3      181371
individual            0
nperps            71115
nperpcap          69489
claimed           66120
claimmode        162608
claimmode_txt    162608
claim2           179801
claimmode2       181075
claimmode2_txt   181075
claim3           181373
claimmode3       181558
claimmode3_txt   181558
compclaim        176852
weaptype1             0
weaptype1_txt         0
weapsubtype1      20768
weapsubtype1_txt  20768
weaptype2        168564
weaptype2_txt    168564
weapsubtype2     170149
weapsubtype2_txt 170149
weaptype3        179828
weaptype3_txt    179828
weapsubtype3     179998
weapsubtype3_txt 179998
weaptype4        181618
weaptype4_txt    181618
```

```
#percentage of Null values
data.isna().sum()*100/len(data)

eventid           0.000000
iyear             0.000000
imonth            0.000000
iday              0.000000
approxdate       94.914993
extended          0.000000
resolution       98.778145
country           0.000000
country_txt       0.000000
region            0.000000
region_txt        0.000000
provstate         0.231712
city              0.238867
latitude          2.507554
longitude         2.508104
specificity       0.003302
vicinity          0.000000
location         69.456385
summary          36.396409
crit1             0.000000
crit2             0.000000
crit3             0.000000
doubtterr         0.000550
alternative      84.032781
alternative_txt  84.032781
multiple          0.000550
success           0.000000
suicide           0.000000
attacktype1       0.000000
attacktype1_txt   0.000000
attacktype2      96.524869
attacktype2_txt  96.524869
attacktype3      99.764435
attacktype3_txt  99.764435
targtype1         0.000000
targtype1_txt     0.000000
targsubtype1      5.709144
targsubtype1_txt  5.709144
corp1            23.418882
target1           0.350045
natlty1           0.858050
natlty1_txt       0.858050
targtype2        93.866510
targtype2_txt    93.866510
targsubtype2     94.119136
targsubtype2_txt 94.119136
corp2            94.431755
target2          93.934757
```

```
targtype3_txt    99.332747
targsubtype3     99.396228
targsubtype3_txt 99.396228
corp3            99.435305
target3          99.353298
natlty3          99.368708
natlty3_txt      99.368708
gname             0.000000
gsubname         96.758232
gname2           98.892075
gsubname2        99.911938
gname3           99.821675
gsubname3        99.988992
motive           72.171984
guncertain1       0.209146
guncertain2      98.923997
guncertain3      99.823877
individual        0.000000
nperps           39.140629
nperpcap         38.245703
claimed          36.391456
claimmode        89.497003
claimmode_txt    89.497003
claim2           98.959772
claimmode2       99.660963
claimmode2_txt   99.660963
claim3           99.824978
claimmode3       99.926799
claimmode3_txt   99.926799
compclaim        97.336687
weaptype1         0.000000
weaptype1_txt     0.000000
weapsubtype1     11.430396
weapsubtype1_txt 11.430396
weaptype2        92.775096
weaptype2_txt    92.775096
weapsubtype2     93.647456
weapsubtype2_txt 93.647456
weaptype3        98.974633
weaptype3_txt    98.974633
weapsubtype3     99.068198
weapsubtype3_txt 99.068198
weaptype4        99.959822
weaptype4_txt    99.959822
weapsubtype4     99.961473
weapsubtype4_txt 99.961473
weapdetail1      37.244553
nkill             5.676120
nkillus          35.470111
```

Data Processing

We've to removed unnecessary features, there are so many columns with all null values.

```
'''
Global Terrorism dataset having 135 columns and some of columns have most 99% null values,
thats not contribute in the analysis so we removed the null values and keep only neccessary columns from the dataset.
'''
columns_to_keep = ['Year','Month','Day','Country','State','Region','latitude','longitude','AttackType','Success','Target','Killed','Wounded','Summary','Group','Target_type',
                    'Weapon_type','Motive']

data = data[columns_to_keep]
```

```
#new extracted dataset
data.head()
```

|	Year	Month	Day	Country	State	Region	latitude	longitude	AttackType	Success	Target	Killed	Wounded	Summary	Group	Target_type	Weapon_type	Motive
0	1970	7	2	Dominican Republic	NaN	Central America & Caribbean	18.456792	-69.951164	Assassination	1	Julio Guzman	1.0	0.0	NaN	MANO-D	Private Citizens & Property	Unknown	NaN
1	1970	0	0	Mexico	Federal	North America	19.371887	-99.086624	Hostage Taking (Kidnapping)	1	Nadine Chaval, daughter	0.0	0.0	NaN	23rd of September Communist League	Government (Diplomatic)	Unknown	NaN
2	1970	1	0	Philippines	Tarlac	Southeast Asia	15.478598	120.599741	Assassination	1	Employee	1.0	0.0	NaN	Unknown	Journalists & Media	Unknown	NaN
3	1970	1	0	Greece	Attica	Western Europe	37.997490	23.762728	Bombing/Explosion	1	U.S. Embassy	NaN	NaN	NaN	Unknown	Government (Diplomatic)	Explosives	NaN
4	1970	1	0	Japan	Fukouka	East Asia	33.580412	130.396361	Facility/Infrastructure Attack	1	U.S. Consulate	NaN	NaN	NaN	Unknown	Government (Diplomatic)	Incendiary	NaN

```
#Size of new dataset
data.shape
```
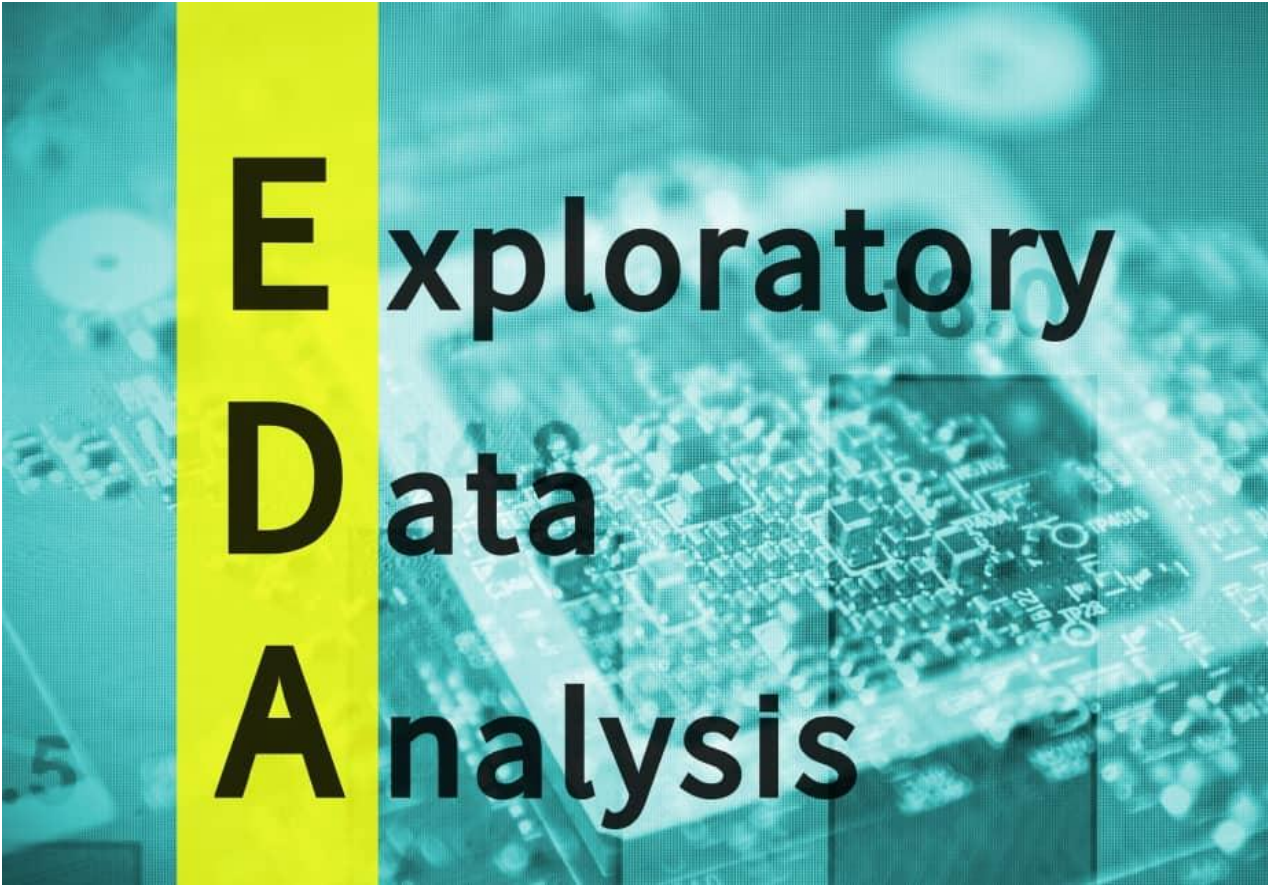
```
(181691, 18)
```

Descriptive Statistics

```
[ ]  #details about dataset
     data.describe()
```

	Year	Month	Day	latitude	longitude	Success	Killed	Wounded
count	181691.000000	181691.000000	181691.000000	177135.000000	1.771340e+05	181691.000000	171378.000000	165380.000000
mean	2002.638997	6.467277	15.505644	23.498343	-4.586957e+02	0.889598	2.403272	3.167668
std	13.259430	3.388303	8.814045	18.569242	2.047790e+05	0.313391	11.545741	35.949392
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	1.000000	0.000000	0.000000
50%	2009.000000	6.000000	15.000000	31.467463	4.324651e+01	1.000000	0.000000	0.000000
75%	2014.000000	9.000000	23.000000	34.685087	6.871033e+01	1.000000	2.000000	2.000000
max	2017.000000	12.000000	31.000000	74.633553	1.793667e+02	1.000000	1570.000000	8191.000000

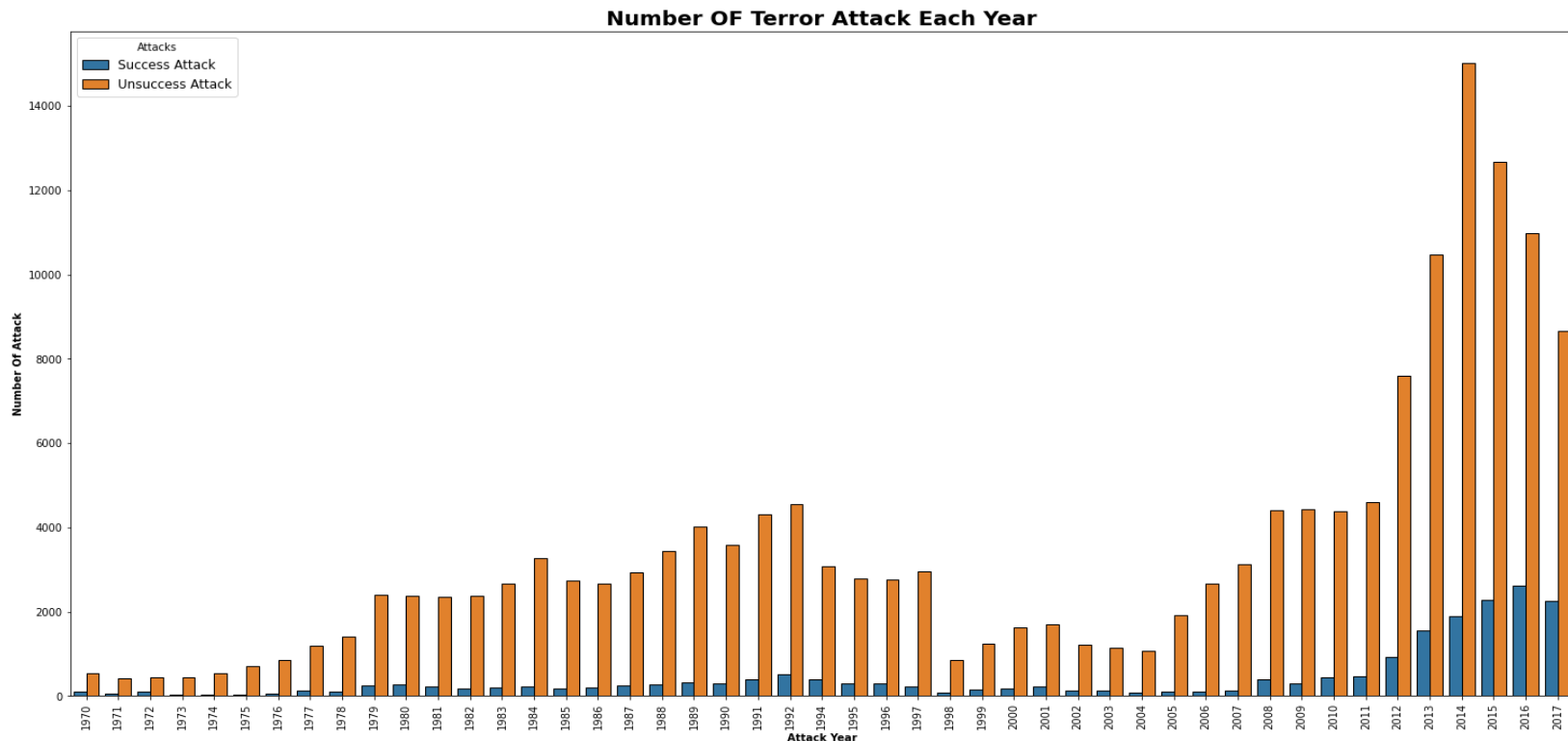# Extracting the correlation of the dataset using Heatmap
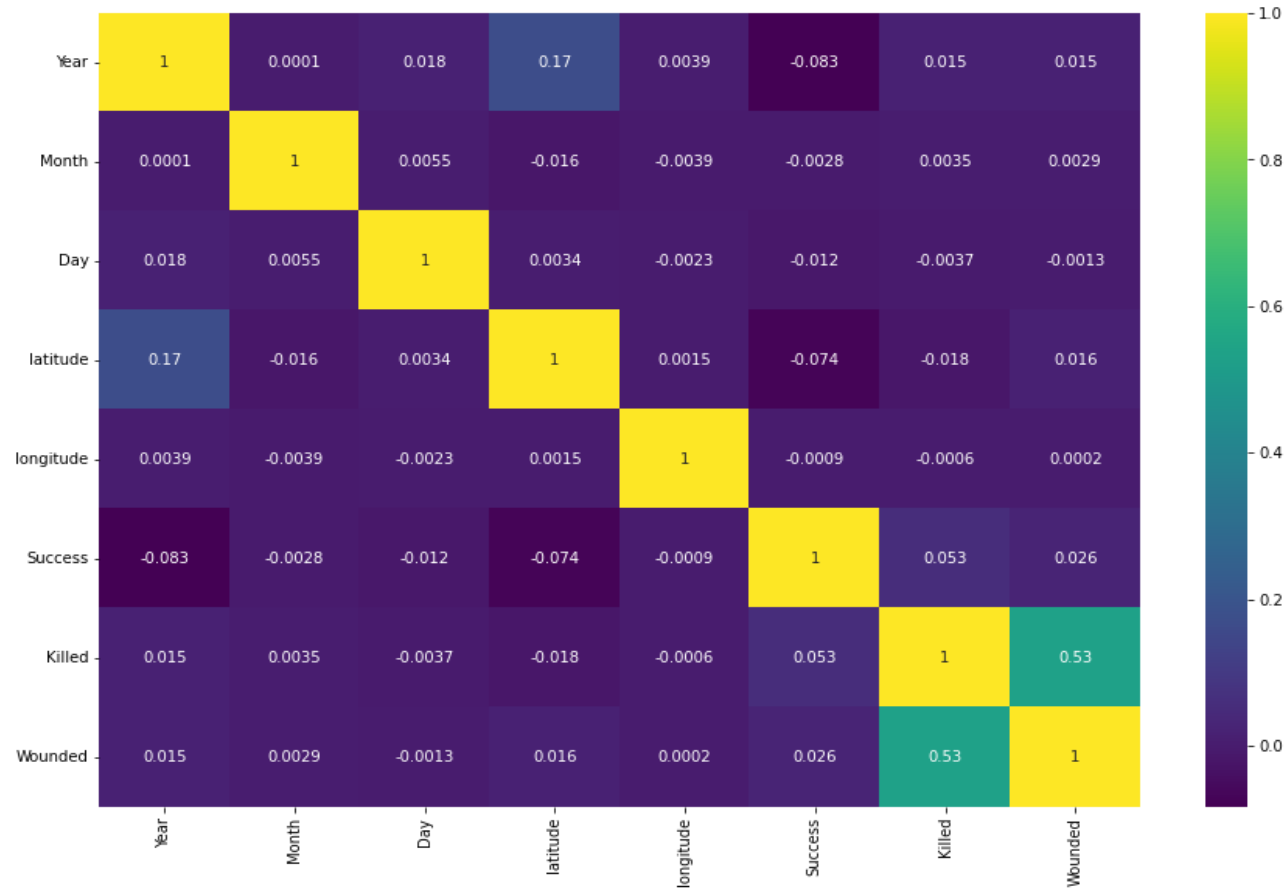
Terrorist Activities in Each Year
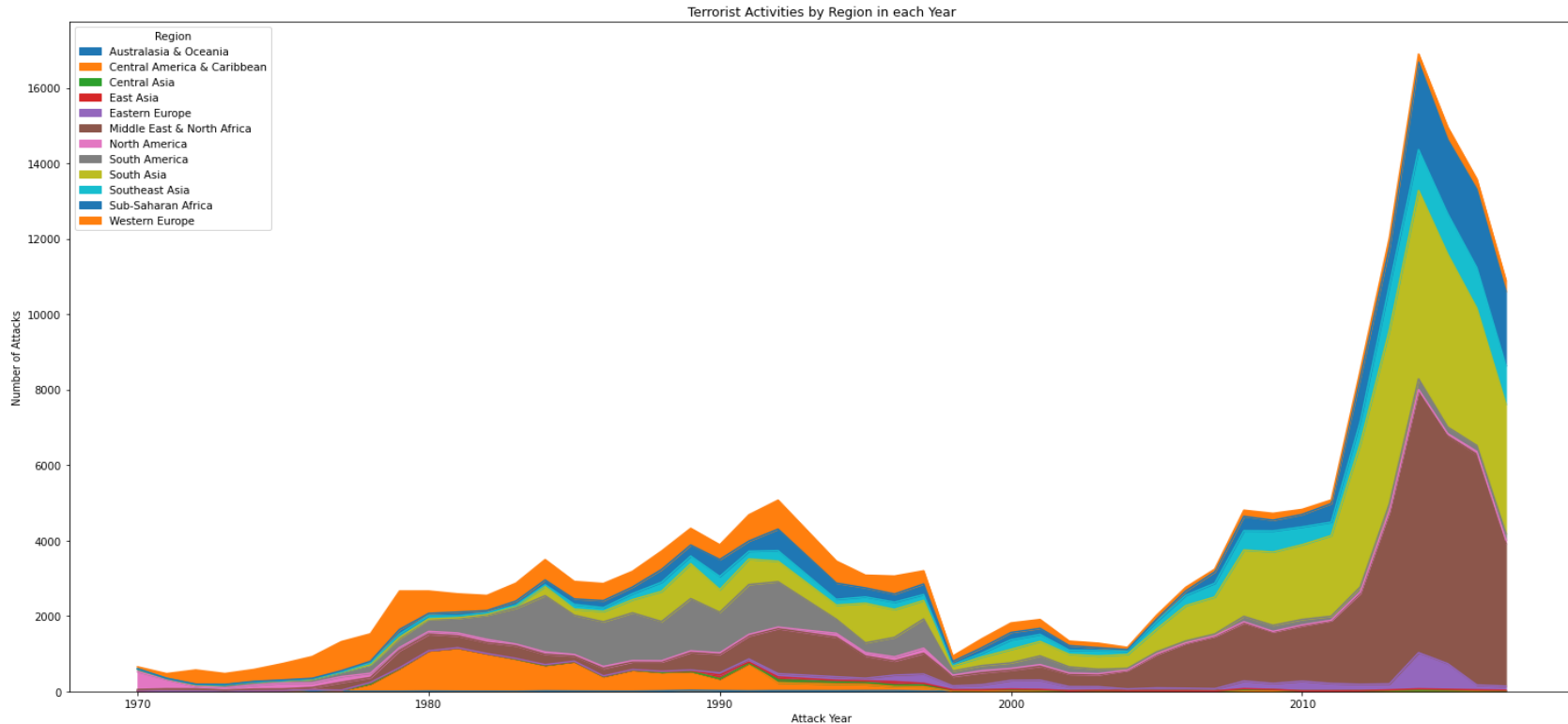
Number OF Terror Attack Each Year
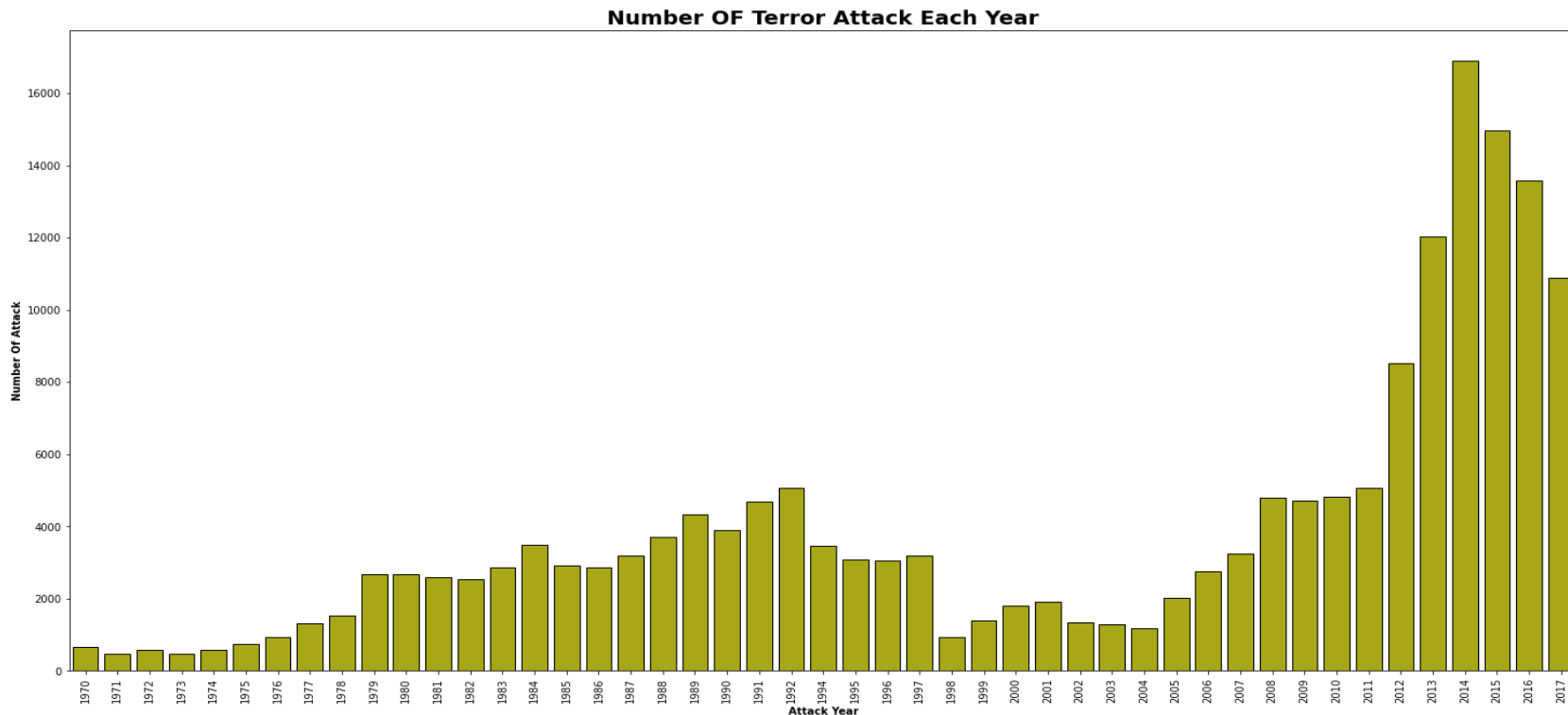
Observations tells us, in Year 2014 and 2015 has a larger Number of Terrorist Activities

EDA

AI

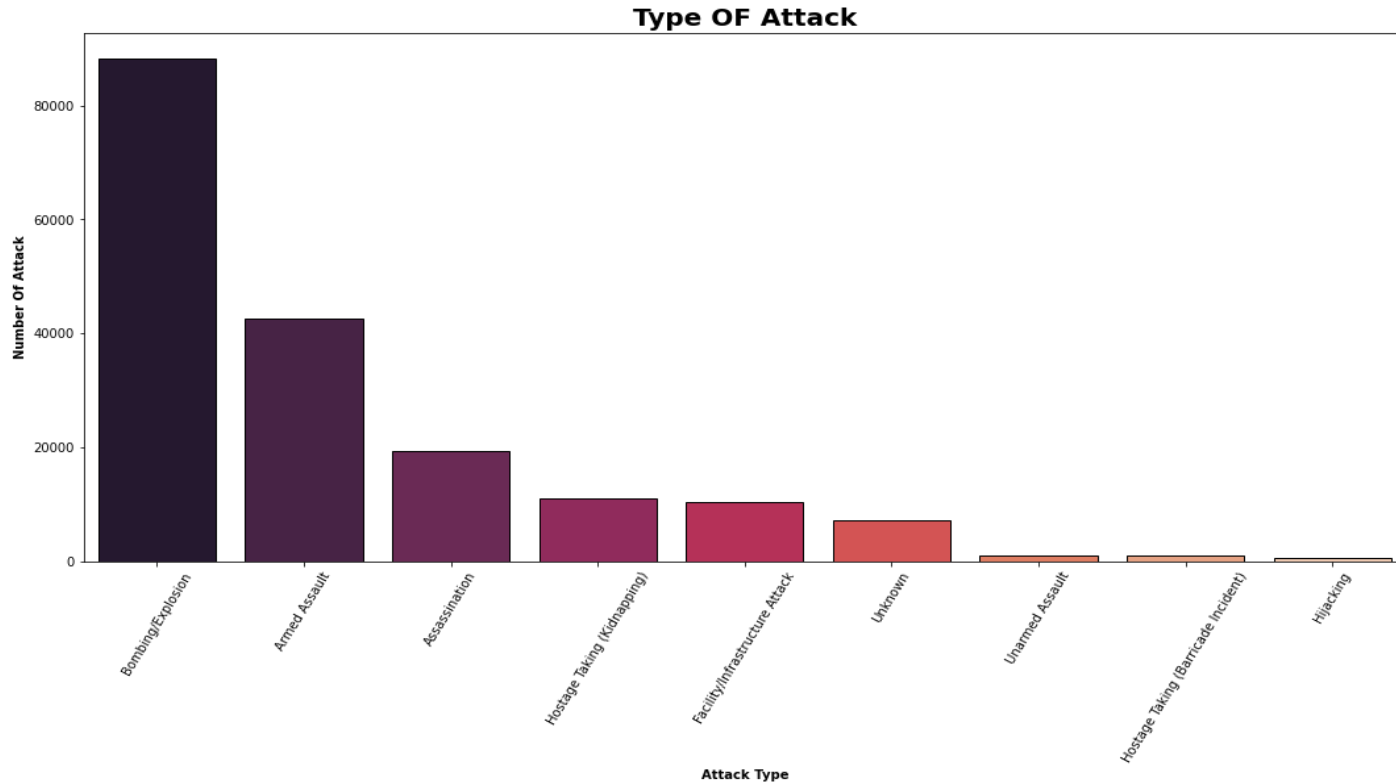# Number of Success Attacks Each Year

Number OF Terror Attack Each Year

From bar chart , in Year 2014 having large number of Terrorist Activities but in 2016 has Most successful Attacks done by terrorist.

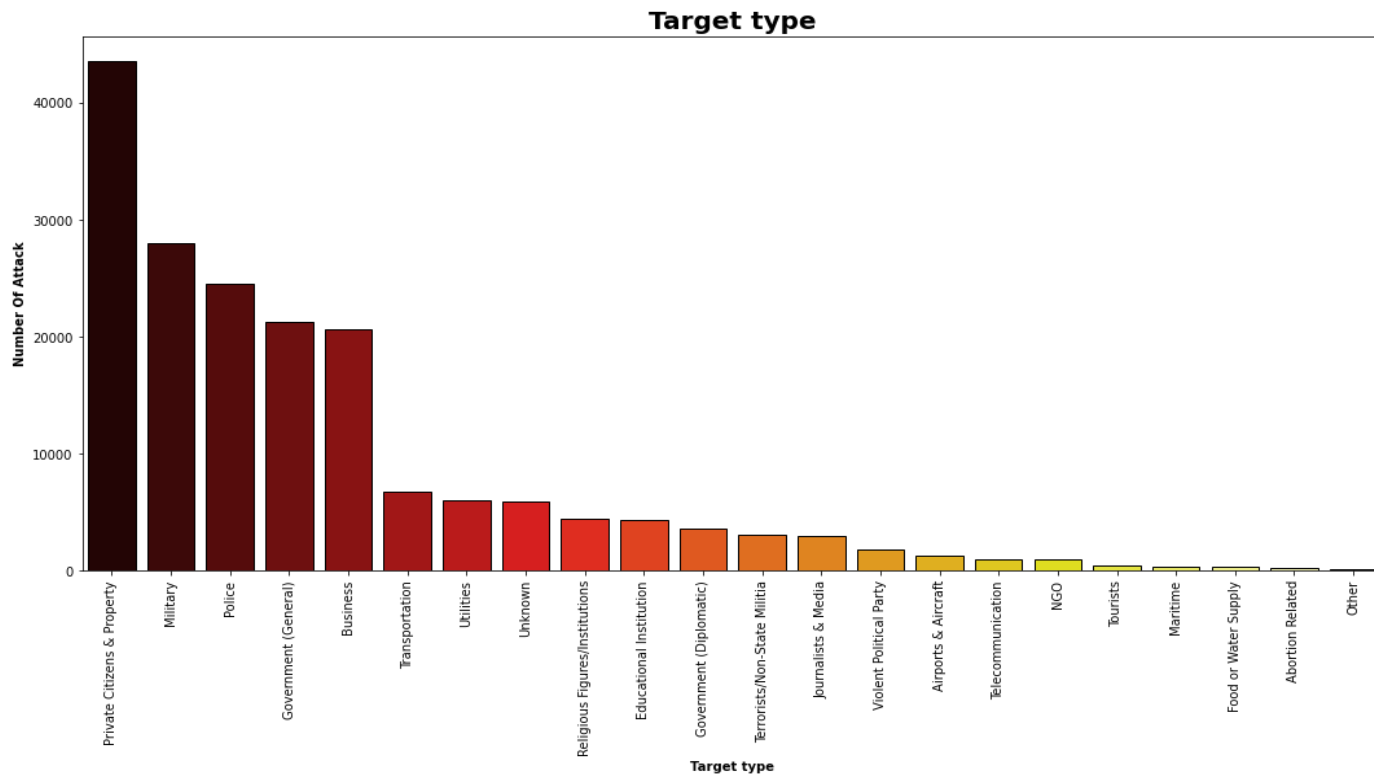# EDA

AI

Terrorist Activities by Region In Each Year

Terrorist Activities by Region in each Year

Region
- Australasia & Oceania
- Central America & Caribbean
- Central Asia
- East Asia
- Eastern Europe
- Middle East & North Africa
- North America
- South America
- South Asia
- Southeast Asia
- Sub-Saharan Africa
- Western Europe

Number of Attacks

Attack Year

Area chart shows , 'Middle East & North Africa' Region having Most attacks.

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Type of Attack

Type OF Attack

Number Of Attack axis: 0, 20000, 40000, 60000, 80000

Attack Type categories: Bombing/Explosion, Armed Assault, Assassination, Hostage Taking (Kidnapping), Facility/Infrastructure Attack, Unknown, Unarmed Assault, Hostage Taking (Barricade Incident), Hijacking

Most Of Attack are From Bombing/Explosion and Armed Assault
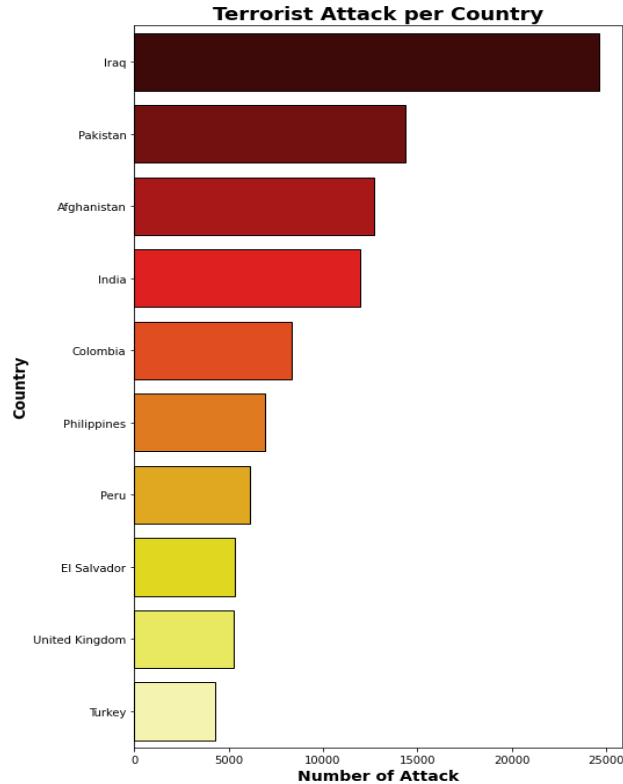
EDA

Type of Target

Target type

Main Target of Terrorist is Private Citizens & Property and Military.

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Most Active Terrorist Groups
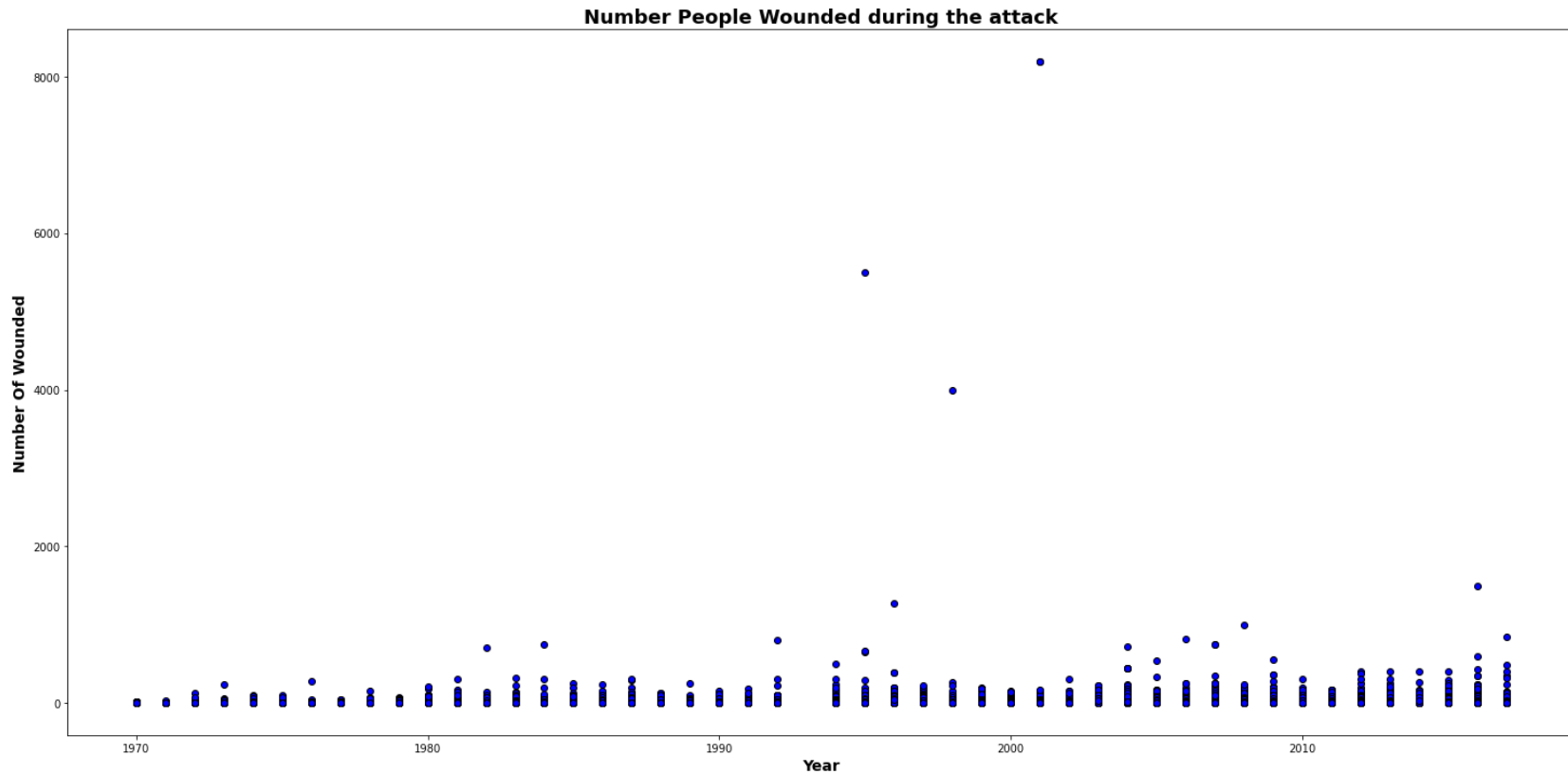
AI

Most Active Terrorist Organizations
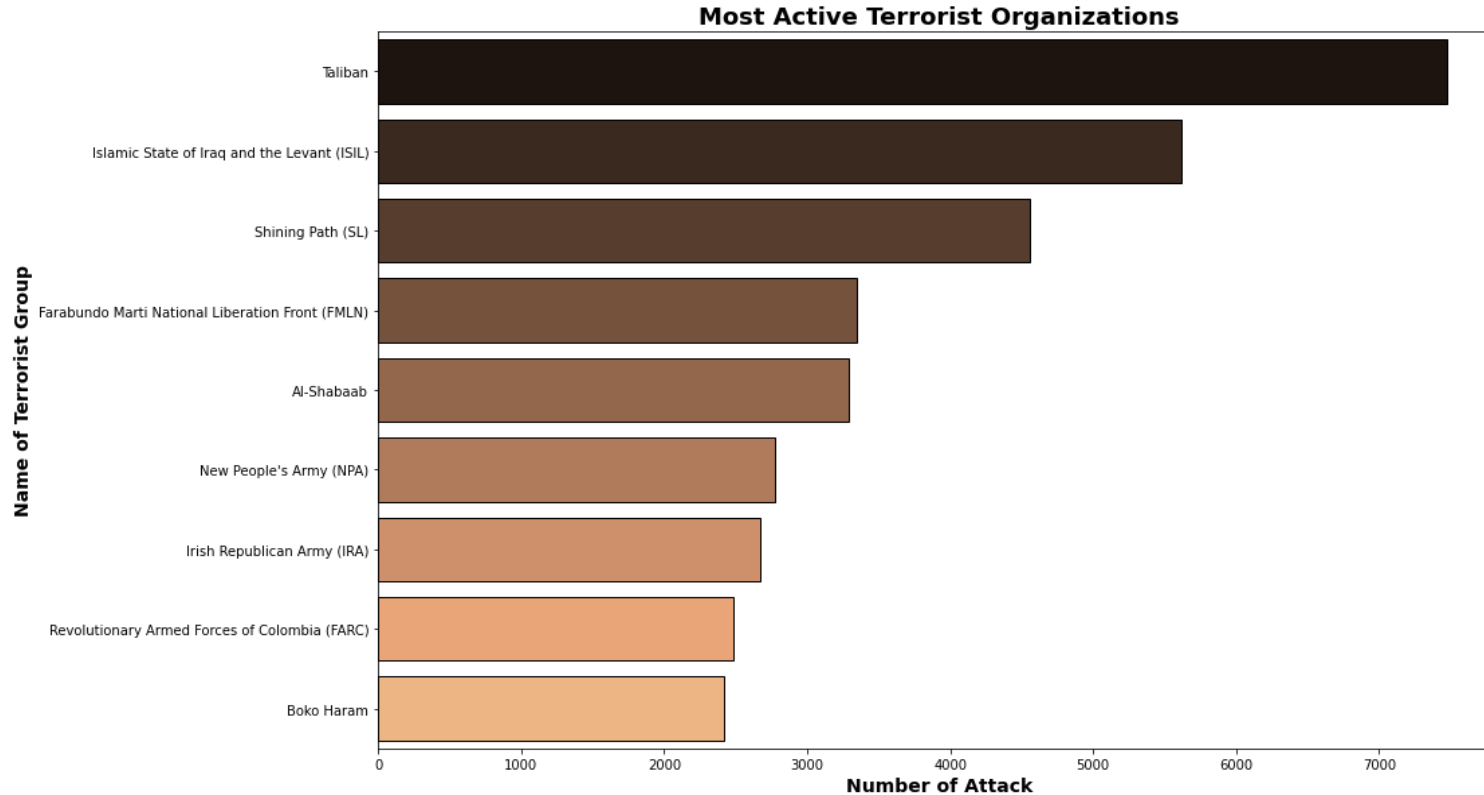
Taliban and ISIL are Most Active Terrorist Organization

EDA

Most Active Terrorist Groups

AI

Terrorist Attack per Country

Terrorist Attack per Region
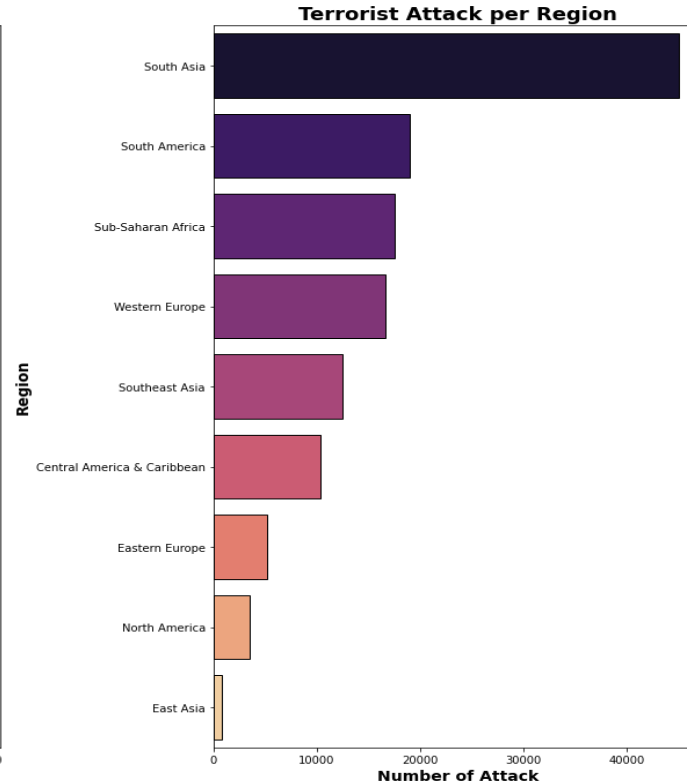
Maximum Terrorist Activities are in Iraq and is in South Asia region.

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Number People Killed during the attack

Number People Killed during the attack
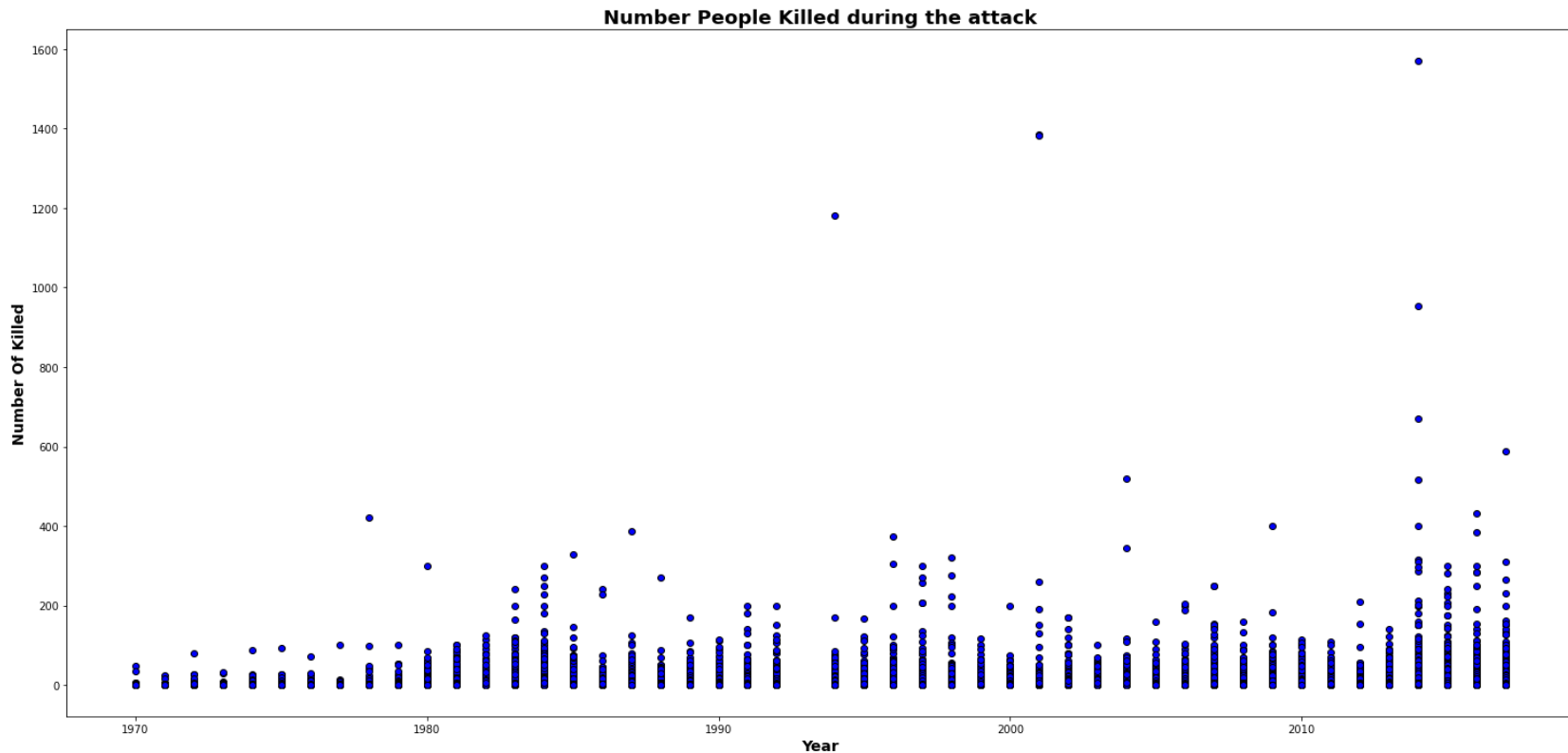
Maximum people died in terrorist attacks in 2014

Number People Wounded during the attack

Number People Wounded during the attack

Conclusion

- **Iraq ranked first on global terrorist activity followed by Pakistan, Afghanistan then India and so on.**

- **Most Targeted Areas are Private Citizens & Property, Military, Police and so on.**

- **Global Terror attack rise sharply from 2011 and Maximum Attacks are in 2014 and Maximum people where died in 2014.**

- **Taliban and ISIL are the most active terrorist Groups.**

References

1. https://www.start.umd.edu/gtd/

2. https://www.kaggle.com/

3. https://www.analyticsvidhya.com/

4. https://learn.almabetter.com/