Analyzing Hot Zones of Terrorism in the World

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Importing and Cleaning Data › Exploratory Data Analysis › Deriving Conclusions

```python
import pandas as pd
import warnings
warnings.simplefilter(action="ignore", category=FutureWarning)
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
%matplotlib inline

df=pd.read_csv('globalterrorismdb.csv',low_memory=False)
df
```

	eventid	iyear	imonth	iday	approxdate	extended	resolution
0	197000000001	1970	7	2	NaN	0	NaN
1	197000000002	1970	0	0	NaN	0	NaN
2	197001000001	1970	1	0	NaN	0	NaN
3	197001000002	1970	1	0	NaN	0	NaN
4	197001000003	1970	1	0	NaN	0	NaN
...	...	...	...	...	...	...	...
181686	201712310022	2017	12	31	NaN	0	NaN
181687	201712310029	2017	12	31	NaN	0	

```
       NaN
181688 201712310030  2017    12    31      NaN        0
       NaN
181689 201712310031  2017    12    31      NaN        0
       NaN
181690 201712310032  2017    12    31      NaN        0
       NaN


        country        country_txt  region ... addnotes  \
0            58  Dominican Republic       2 ...      NaN
1           130              Mexico       1 ...      NaN
2           160         Philippines       5 ...      NaN
3            78              Greece       8 ...      NaN
4           101               Japan       4 ...      NaN
...         ...                 ...     ... ...      ...
181686      182             Somalia      11 ...      NaN
181687      200               Syria      10 ...      NaN
181688      160         Philippines       5 ...      NaN
181689       92               India       6 ...      NaN
181690      160         Philippines       5 ...      NaN

                                                   scite1  \
0                                                     NaN
1                                                     NaN
2                                                     NaN
3                                                     NaN
4                                                     NaN
...                                                   ...
181686  "Somalia: Al-Shabaab Militants Attack Army Che...
181687  "Putin's 'victory' in Syria has turned into a ...
181688  "Maguindanao clashes trap tribe members," Phil...
181689  "Trader escapes grenade attack in Imphal," Bus...
181690  "Security tightened in Cotabato following IED ...

                                                   scite2  \
0                                                     NaN
1                                                     NaN
2                                                     NaN
3                                                     NaN
4                                                     NaN
...                                                   ...
181686  "Highlights: Somalia Daily Media Highlights 2 ...
181687  "Two Russian soldiers killed at Hmeymim base i...
181688                                                NaN
181689                                                NaN
181690  "Security tightened in Cotabato City," Manila ...

                                                   scite3  \
0                                                     NaN
1                                                     NaN
```

```
2                                                          NaN
3                                                          NaN
4                                                          NaN
...                                                        ...
181686   "Highlights: Somalia Daily Media Highlights 1 ...
181687   "Two Russian servicemen killed in Syria mortar...
181688                                                     NaN
181689                                                     NaN
181690                                                     NaN

                               dbsource  INT_LOG  INT_IDEO  INT_MISC  INT_ANY
related
0                                  PGIS        0         0         0        0
NaN
1                                  PGIS        0         1         1        1
NaN
2                                  PGIS       -9        -9         1        1
NaN
3                                  PGIS       -9        -9         1        1
NaN
4                                  PGIS       -9        -9         1        1
NaN
...                                 ...      ...       ...       ...      ...
...
181686   START Primary Collection           0         0         0        0
NaN
181687   START Primary Collection          -9        -9         1        1
NaN
181688   START Primary Collection           0         0         0        0
NaN
181689   START Primary Collection          -9        -9         0       -9
NaN
181690   START Primary Collection          -9        -9         0       -9
NaN

[181691 rows x 135 columns]

df.rename(columns={'iyear':'Year','imonth':'Month','extended':'Extende
d','iday':'Day','country_txt':'CountryName',
                  'provstate':'State',
'country':'CountryCode','region':'RegionCode','city':'City','latitude'
:'Latitude',

'longitude':'Longitude','region_txt':'RegionName','attacktype1_txt':'A
ttackType','target1':'Specific_Target',

'nkill':'Killed','nwound':'Wounded','summary':'Summary','gname':'Group
','targtype1':'TargetCode',

'targtype1_txt':'Target_type','weaptype1_txt':'Weapon_type','weaptype1
```

```python
                                ':'WeaponCode','motive':'Motive'},
                inplace=True)

df=df[['Year','Month','Day','Extended','CountryCode','CountryName','St
ate','RegionCode','RegionName','City','Latitude',

'Longitude','AttackType','Killed','Wounded','Specific_Target','TargetC
ode','Target_type','Summary','Group',
        'WeaponCode','Weapon_type','Motive']]

df.sample(4)
```

```
        Year  Month  Day  Extended  CountryCode CountryName  \
96785   2010      6    4         0          167      Russia
89994   2008     12   21         0          153    Pakistan
9003    1979      8    3         0          185       Spain
7108    1978     12   11         0          209      Turkey

                              State  RegionCode
RegionName  \
96785            Kabardino Balkariya          9               Eastern
Europe
89994    North-West Frontier Province        6                 South
Asia
9003                  Basque Country         8               Western
Europe
7108                         Ankara         10  Middle East & North
Africa

            City  ...  Killed  Wounded  \
96785   Tyrnyauz  ...     0.0      0.0
89994     Bannu   ...     2.0      0.0
9003      Bilbao  ...     NaN      NaN
7108      Ankara  ...     0.0      0.0

                                         Specific_Target
TargetCode  \
96785                 A bridge was targeted in the attack.        19

89994   A government workshop was targeted in the inci...       2

9003                        Basque Independence Party            2

7108                                   Consulate                 7


                Target_type  \
96785          Transportation
89994     Government (General)
9003      Government (General)
```

```
       7108          Government (Diplomatic)

                                                       Summary  \
       96785   06/04/2010: On Friday evening at 2030, in the ...
       89994   12/21/2008: On Sunday, in Bannu, North-West Fr...
       9003                                               NaN
       7108                                               NaN


                                      Group WeaponCode Weapon_type  \
       96785                        Unknown          6  Explosives
       89994   Tehrik-i-Taliban Pakistan (TTP)        6  Explosives
       9003           Spanish National Action        13     Unknown
       7108                        Unknown          6  Explosives

                                                      Motive
       96785   The specific motive for the attack is unknown.
       89994   The specific motive for the attack is unknown.
       9003                                             NaN
       7108                                             NaN

       [4 rows x 23 columns]
```

```python
df['RegionName'].value_counts()
```

```
Middle East & North Africa     50474
South Asia                     44974
South America                  18978
Sub-Saharan Africa             17550
Western Europe                 16639
Southeast Asia                 12485
Central America & Caribbean    10344
Eastern Europe                  5144
North America                   3456
East Asia                        802
Central Asia                     563
Australasia & Oceania            282
Name: RegionName, dtype: int64
```

```python
plt.figure(figsize = (20,5))
sns.barplot(df['RegionName'].value_counts()
[:12].index,df['RegionName'].value_counts()[:12].values)
plt.xticks(rotation = 90)
```

```
(array([ 0,  1,  2,  3,  4,  5,  6,  7,  8,  9, 10, 11]),
 [Text(0, 0, 'Middle East & North Africa'),
  Text(1, 0, 'South Asia'),
  Text(2, 0, 'South America'),
  Text(3, 0, 'Sub-Saharan Africa'),
  Text(4, 0, 'Western Europe'),
  Text(5, 0, 'Southeast Asia'),
  Text(6, 0, 'Central America & Caribbean'),
```

```
Text(7, 0, 'Eastern Europe'),
Text(8, 0, 'North America'),
Text(9, 0, 'East Asia'),
Text(10, 0, 'Central Asia'),
Text(11, 0, 'Australasia & Oceania')])
```
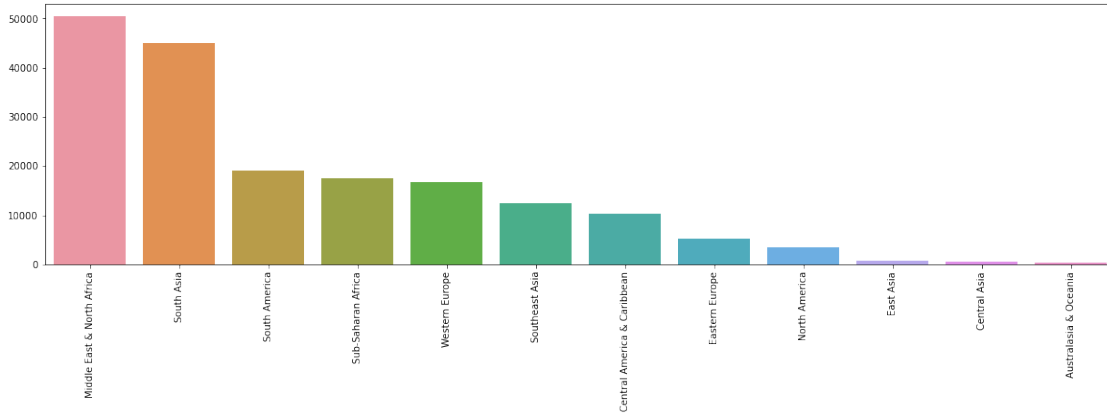


```
pd.crosstab(df.Year, df.RegionName).plot(kind='line',figsize=(20,5))
plt.grid()
```
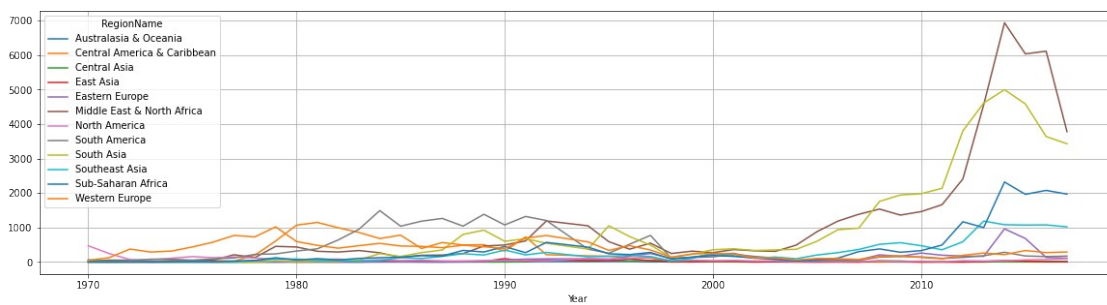


```
df['CountryName'].value_counts()
```

```
Iraq                     24636
Pakistan                 14368
Afghanistan              12731
India                    11960
Colombia                  8306
                          ...
Antigua and Barbuda          1
Andorra                      1
Falkland Islands             1
Vatican City                 1
International                 1
Name: CountryName, Length: 205, dtype: int64
```

```
plt.figure(figsize = (20,5))
sns.barplot(df['CountryName'].value_counts()
[:20].index,df['CountryName'].value_counts()[:20].values)
plt.xticks(rotation = 90)
```

```
(array([ 0,  1,  2,  3,  4,  5,  6,  7,  8,  9, 10, 11, 12, 13, 14,
15, 16,
        17, 18, 19]),
 [Text(0, 0, 'Iraq'),
  Text(1, 0, 'Pakistan'),
  Text(2, 0, 'Afghanistan'),
  Text(3, 0, 'India'),
  Text(4, 0, 'Colombia'),
  Text(5, 0, 'Philippines'),
  Text(6, 0, 'Peru'),
  Text(7, 0, 'El Salvador'),
  Text(8, 0, 'United Kingdom'),
  Text(9, 0, 'Turkey'),
  Text(10, 0, 'Somalia'),
  Text(11, 0, 'Nigeria'),
  Text(12, 0, 'Thailand'),
  Text(13, 0, 'Yemen'),
  Text(14, 0, 'Spain'),
  Text(15, 0, 'Sri Lanka'),
  Text(16, 0, 'United States'),
  Text(17, 0, 'Algeria'),
  Text(18, 0, 'France'),
  Text(19, 0, 'Egypt')])
```
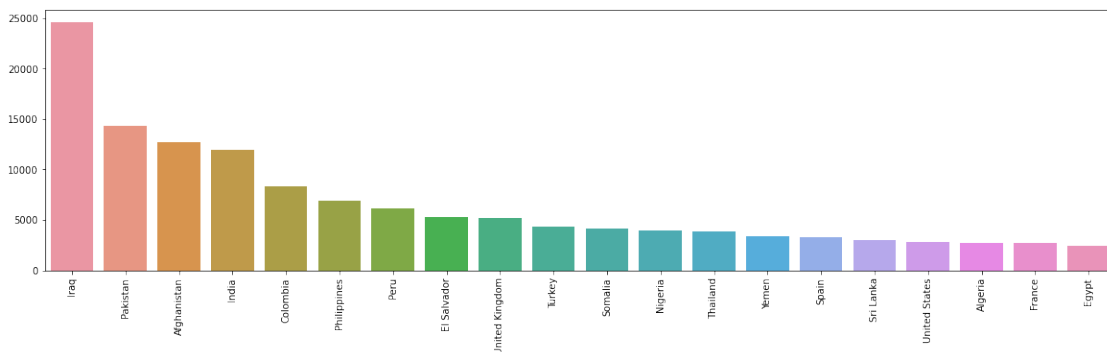


```
df['State'].value_counts()

Baghdad             7645
Northern Ireland    4498
Unknown             4290
Balochistan         3710
Saladin             3411
                    ...
Mallakaster            1
Trat (Province)        1
Kurchaloyevsky         1
Jamtland               1
Sahara                 1
Name: State, Length: 2854, dtype: int64
```

```
plt.figure(figsize = (20,5))
sns.barplot(df['State'].value_counts()
[:20].index,df['State'].value_counts()[:20].values)
plt.xticks(rotation = 90)
```

```
(array([ 0,  1,  2,  3,  4,  5,  6,  7,  8,  9, 10, 11, 12, 13, 14,
15, 16,
         17, 18, 19]),
 [Text(0, 0, 'Baghdad'),
  Text(1, 0, 'Northern Ireland'),
  Text(2, 0, 'Unknown'),
  Text(3, 0, 'Balochistan'),
  Text(4, 0, 'Saladin'),
  Text(5, 0, 'Al Anbar'),
  Text(6, 0, 'Nineveh'),
  Text(7, 0, 'Sindh'),
  Text(8, 0, 'Khyber Pakhtunkhwa'),
  Text(9, 0, 'Diyala'),
  Text(10, 0, 'Lima'),
  Text(11, 0, 'Jammu and Kashmir'),
  Text(12, 0, 'Federally Administered Tribal Areas'),
  Text(13, 0, 'San Salvador'),
  Text(14, 0, 'Antioquia'),
  Text(15, 0, 'Punjab'),
  Text(16, 0, 'Kirkuk'),
  Text(17, 0, 'Santiago Metropolitan'),
  Text(18, 0, 'Banaadir'),
  Text(19, 0, 'West Bank')])
```
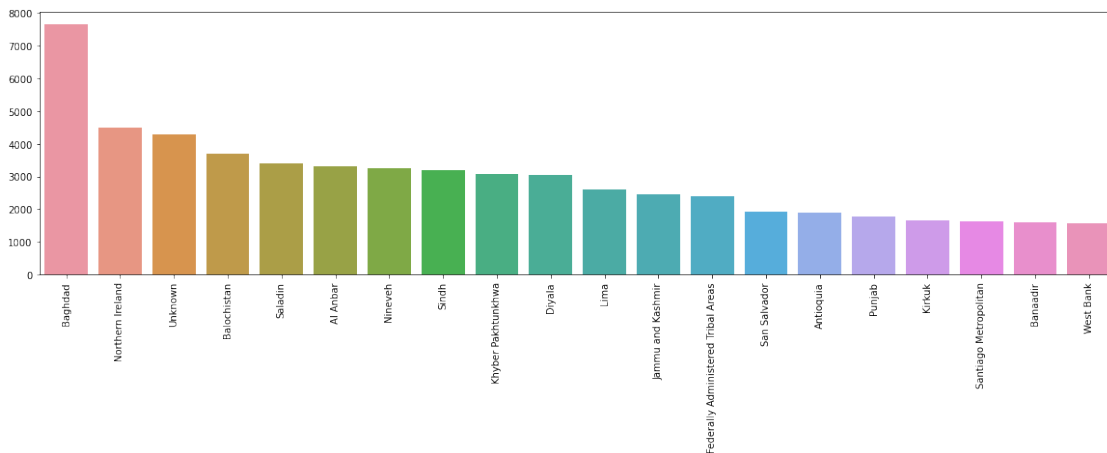


```
df['City'].value_counts()
```

```
Unknown          9775
Baghdad          7589
Karachi          2652
Lima             2359
Mosul            2265
                 ...
```

```
Woo                         1
Charaipung Bimalapur        1
Katrom                      1
Liumbale                    1
Naaran                      1
Name: City, Length: 36674, dtype: int64
```

```python
plt.figure(figsize = (20,5))
sns.barplot(df['City'].value_counts()
[:20].index,df['City'].value_counts()[:20].values)
plt.xticks(rotation = 90)
```

```
(array([ 0,  1,  2,  3,  4,  5,  6,  7,  8,  9, 10, 11, 12, 13, 14,
15, 16,
        17, 18, 19]),
 [Text(0, 0, 'Unknown'),
  Text(1, 0, 'Baghdad'),
  Text(2, 0, 'Karachi'),
  Text(3, 0, 'Lima'),
  Text(4, 0, 'Mosul'),
  Text(5, 0, 'Belfast'),
  Text(6, 0, 'Santiago'),
  Text(7, 0, 'Mogadishu'),
  Text(8, 0, 'San Salvador'),
  Text(9, 0, 'Istanbul'),
  Text(10, 0, 'Athens'),
  Text(11, 0, 'Bogota'),
  Text(12, 0, 'Kirkuk'),
  Text(13, 0, 'Beirut'),
  Text(14, 0, 'Medellin'),
  Text(15, 0, 'Benghazi'),
  Text(16, 0, 'Peshawar'),
  Text(17, 0, 'Quetta'),
  Text(18, 0, 'Guatemala City'),
  Text(19, 0, 'Baqubah')])
```
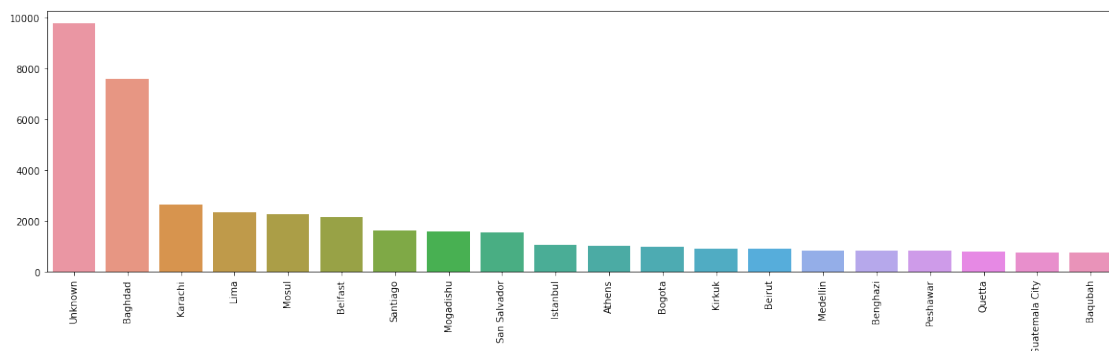


```python
df_st1=df[df['CountryName']=='Iraq']['State']
plt.figure(figsize = (20,5))
sns.barplot(df_st1.value_counts()[:5].index,df_st1.value_counts()
[:5].values)
```

<AxesSubplot:>
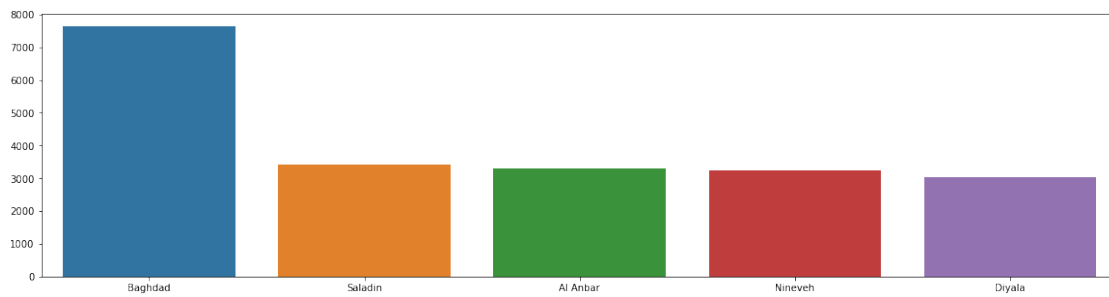

```
df_st2=df[df['CountryName']=='India']['State']
plt.figure(figsize = (20,5))
sns.barplot(df_st2.value_counts()[:5].index,df_st2.value_counts()
[:5].values)
```

<AxesSubplot:>
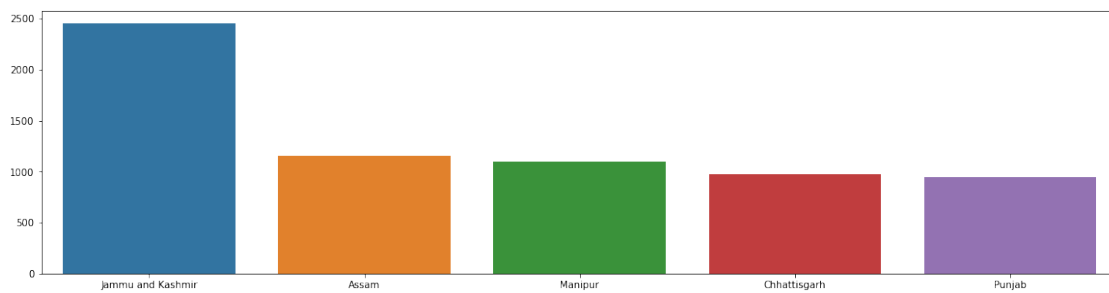

```
df_st3=df[df['CountryName']=='United States']['State']
plt.figure(figsize = (20,5))
sns.barplot(df_st3.value_counts()[:5].index,df_st3.value_counts()
[:5].values)
```

<AxesSubplot:>
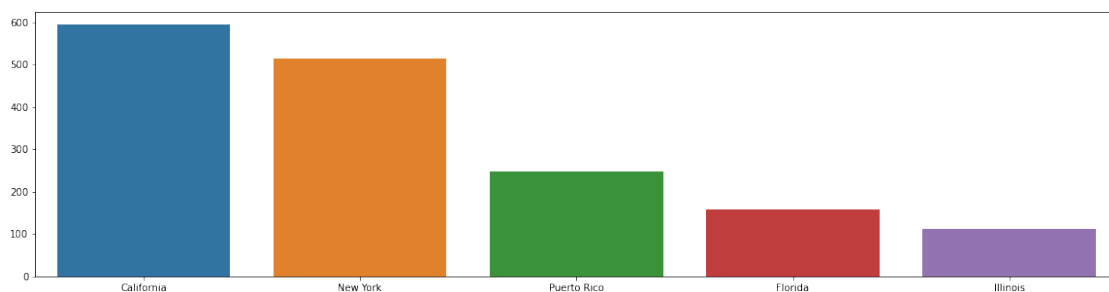

```
df_st4=df[df['CountryName']=='Pakistan']['State']
plt.figure(figsize = (20,5))
sns.barplot(df_st4.value_counts()[:5].index,df_st4.value_counts()
[:5].values)
```

<AxesSubplot:>
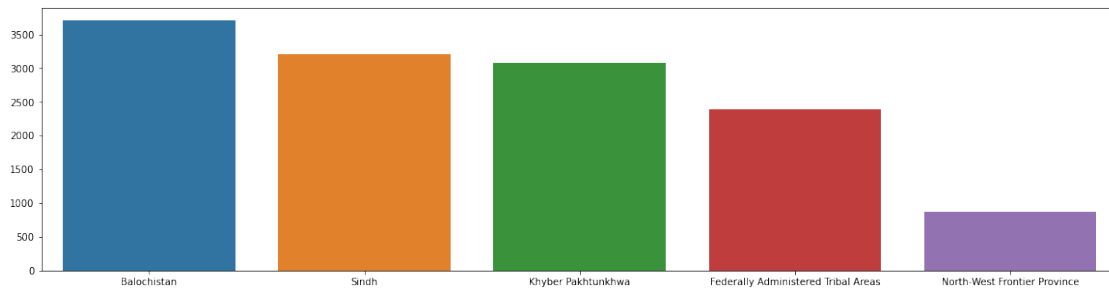
```
df_st5=df[df['CountryName']=='Afghanistan']['State']
plt.figure(figsize = (20,5))
sns.barplot(df_st5.value_counts()[:5].index,df_st5.value_counts()
[:5].values)
```

<AxesSubplot:>
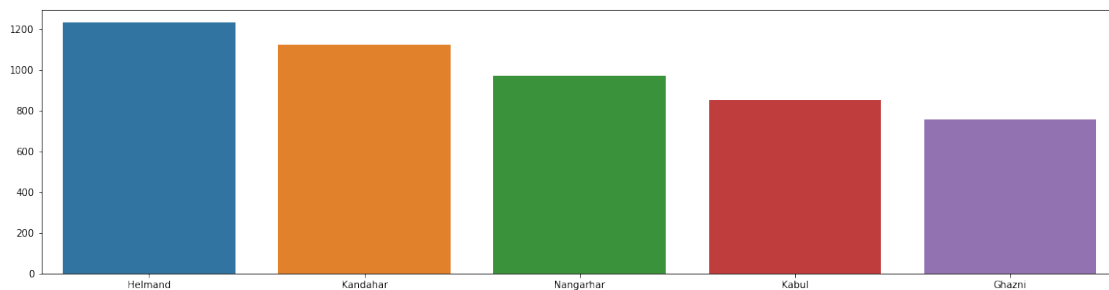

```
df_st6=df[df['CountryName']=='Colombia']['State']
plt.figure(figsize = (20,5))
sns.barplot(df_st6.value_counts()[:5].index,df_st6.value_counts()
[:5].values)
```

<AxesSubplot:>
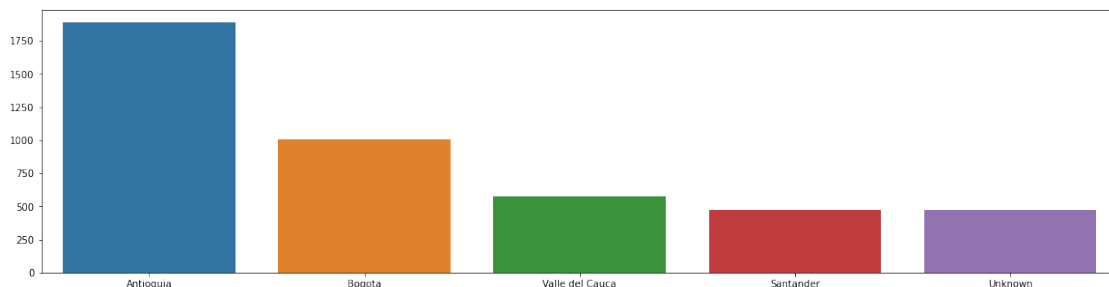

```
plt.figure(figsize = (20,10))
sns.countplot('Year',data=df)
plt.xticks(rotation = 90)
```

```
(array([ 0,  1,  2,  3,  4,  5,  6,  7,  8,  9, 10, 11, 12, 13, 14,
15, 16,
        17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31,
32, 33,
        34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46]),
```

```
[Text(0, 0, '1970'),
 Text(1, 0, '1971'),
 Text(2, 0, '1972'),
 Text(3, 0, '1973'),
 Text(4, 0, '1974'),
 Text(5, 0, '1975'),
 Text(6, 0, '1976'),
 Text(7, 0, '1977'),
 Text(8, 0, '1978'),
 Text(9, 0, '1979'),
 Text(10, 0, '1980'),
 Text(11, 0, '1981'),
 Text(12, 0, '1982'),
 Text(13, 0, '1983'),
 Text(14, 0, '1984'),
 Text(15, 0, '1985'),
 Text(16, 0, '1986'),
 Text(17, 0, '1987'),
 Text(18, 0, '1988'),
 Text(19, 0, '1989'),
 Text(20, 0, '1990'),
 Text(21, 0, '1991'),
 Text(22, 0, '1992'),
 Text(23, 0, '1994'),
 Text(24, 0, '1995'),
 Text(25, 0, '1996'),
 Text(26, 0, '1997'),
 Text(27, 0, '1998'),
 Text(28, 0, '1999'),
 Text(29, 0, '2000'),
 Text(30, 0, '2001'),
 Text(31, 0, '2002'),
 Text(32, 0, '2003'),
 Text(33, 0, '2004'),
 Text(34, 0, '2005'),
 Text(35, 0, '2006'),
 Text(36, 0, '2007'),
 Text(37, 0, '2008'),
 Text(38, 0, '2009'),
 Text(39, 0, '2010'),
 Text(40, 0, '2011'),
 Text(41, 0, '2012'),
 Text(42, 0, '2013'),
 Text(43, 0, '2014'),
 Text(44, 0, '2015'),
 Text(45, 0, '2016'),
 Text(46, 0, '2017')])
```
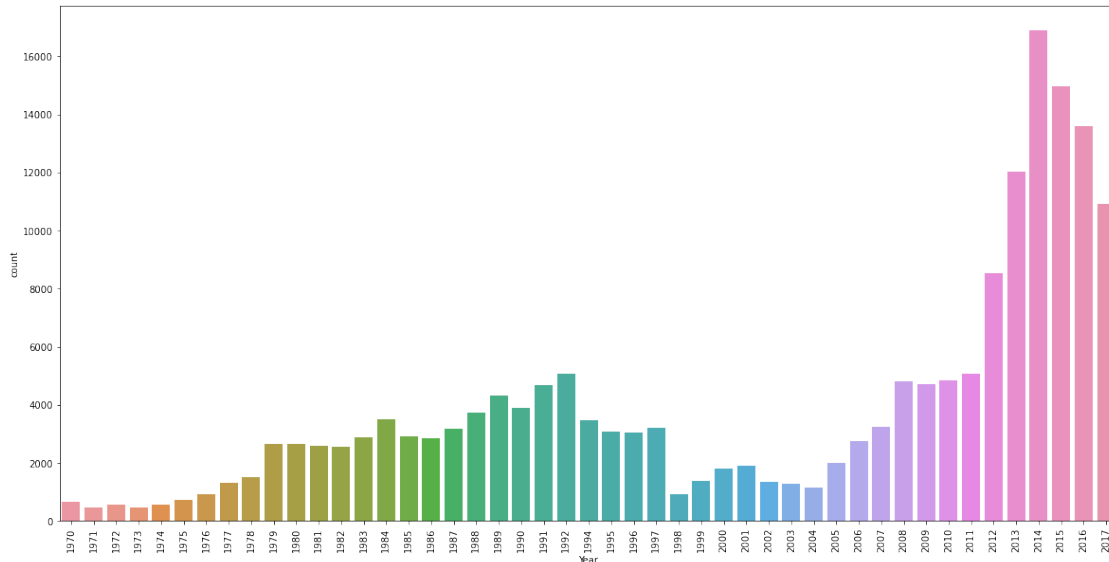
```python
plt.figure(figsize = (20,6))
sns.countplot(df['AttackType'],order =
df['AttackType'].value_counts().index)
plt.xticks(rotation = 90)
```

```
(array([0, 1, 2, 3, 4, 5, 6, 7, 8]),
 [Text(0, 0, 'Bombing/Explosion'),
  Text(1, 0, 'Armed Assault'),
  Text(2, 0, 'Assassination'),
  Text(3, 0, 'Hostage Taking (Kidnapping)'),
  Text(4, 0, 'Facility/Infrastructure Attack'),
  Text(5, 0, 'Unknown'),
  Text(6, 0, 'Unarmed Assault'),
  Text(7, 0, 'Hostage Taking (Barricade Incident)'),
  Text(8, 0, 'Hijacking')])
```
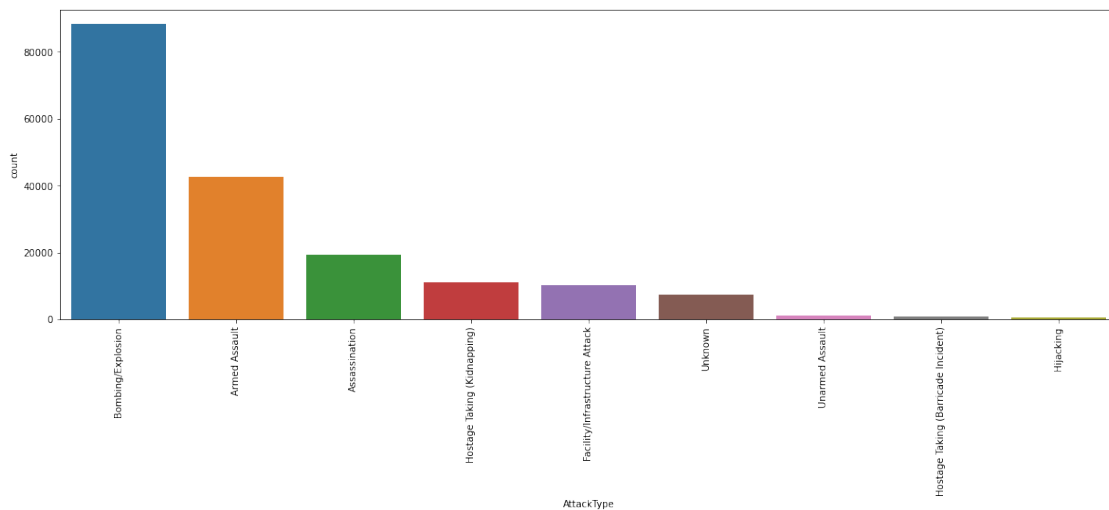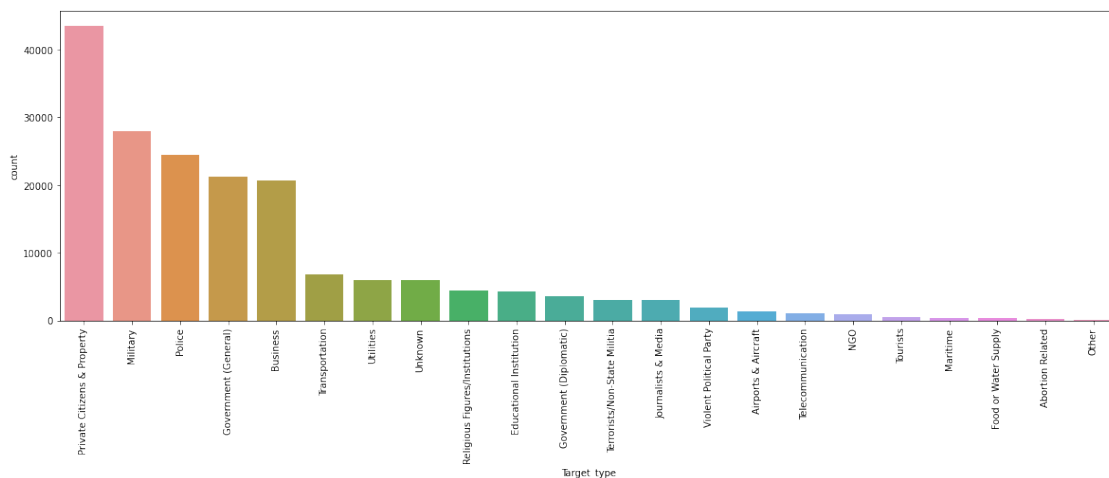
```
plt.figure(figsize = (20,6))
sns.countplot(x="Target_type", data=df,
order=df["Target_type"].value_counts().index)
plt.xticks(rotation = 90)
```

```
(array([ 0,  1,  2,  3,  4,  5,  6,  7,  8,  9, 10, 11, 12, 13, 14,
15, 16,
        17, 18, 19, 20, 21]),
 [Text(0, 0, 'Private Citizens & Property'),
  Text(1, 0, 'Military'),
  Text(2, 0, 'Police'),
  Text(3, 0, 'Government (General)'),
  Text(4, 0, 'Business'),
  Text(5, 0, 'Transportation'),
  Text(6, 0, 'Utilities'),
  Text(7, 0, 'Unknown'),
  Text(8, 0, 'Religious Figures/Institutions'),
  Text(9, 0, 'Educational Institution'),
  Text(10, 0, 'Government (Diplomatic)'),
  Text(11, 0, 'Terrorists/Non-State Militia'),
  Text(12, 0, 'Journalists & Media'),
  Text(13, 0, 'Violent Political Party'),
  Text(14, 0, 'Airports & Aircraft'),
  Text(15, 0, 'Telecommunication'),
  Text(16, 0, 'NGO'),
  Text(17, 0, 'Tourists'),
  Text(18, 0, 'Maritime'),
  Text(19, 0, 'Food or Water Supply'),
  Text(20, 0, 'Abortion Related'),
  Text(21, 0, 'Other')])
```
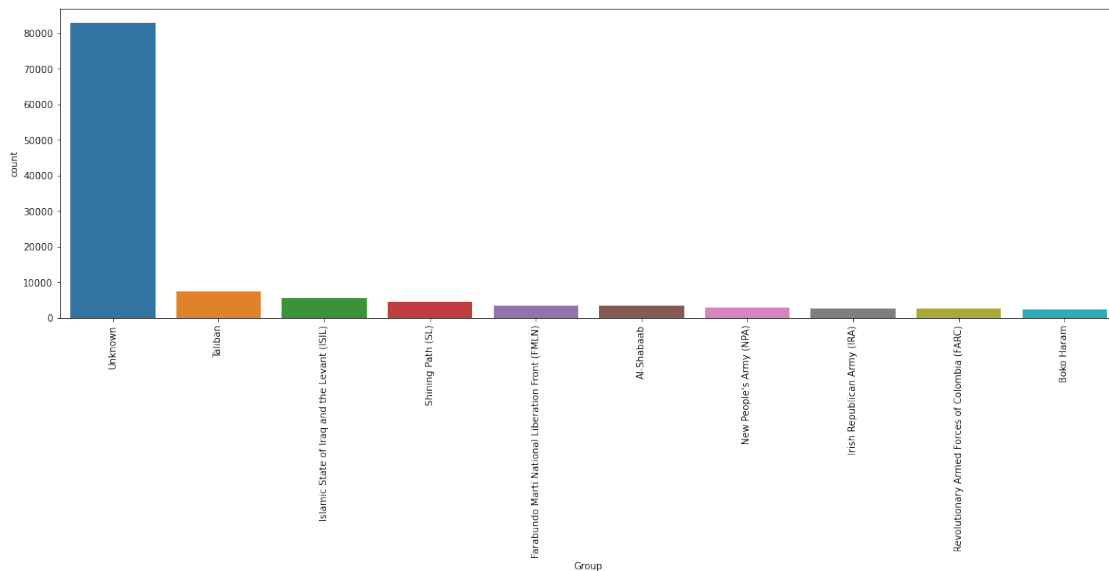


```
plt.figure(figsize = (20,6))
sns.countplot(x="Group", data=df, order=df["Group"].value_counts()
[:10].index)
plt.xticks(rotation = 90)
```

```
(array([0, 1, 2, 3, 4, 5, 6, 7, 8, 9]),
 [Text(0, 0, 'Unknown'),
  Text(1, 0, 'Taliban'),
  Text(2, 0, 'Islamic State of Iraq and the Levant (ISIL)'),
  Text(3, 0, 'Shining Path (SL)'),
  Text(4, 0, 'Farabundo Marti National Liberation Front (FMLN)'),
  Text(5, 0, 'Al-Shabaab'),
  Text(6, 0, "New People's Army (NPA)"),
  Text(7, 0, 'Irish Republican Army (IRA)'),
  Text(8, 0, 'Revolutionary Armed Forces of Colombia (FARC)'),
  Text(9, 0, 'Boko Haram')])
```



```
plt.figure(figsize = (20,6))
sns.countplot(df['Weapon_type'],order =
df['Weapon_type'].value_counts()[:15].index)
plt.xticks(rotation = 90)

(array([ 0,  1,  2,  3,  4,  5,  6,  7,  8,  9, 10, 11]),
 [Text(0, 0, 'Explosives'),
  Text(1, 0, 'Firearms'),
  Text(2, 0, 'Unknown'),
  Text(3, 0, 'Incendiary'),
  Text(4, 0, 'Melee'),
  Text(5, 0, 'Chemical'),
  Text(6, 0, 'Sabotage Equipment'),
  Text(7, 0, 'Vehicle (not to include vehicle-borne explosives, i.e.,
car or truck bombs)'),
  Text(8, 0, 'Other'),
  Text(9, 0, 'Biological'),
  Text(10, 0, 'Fake Weapons'),
  Text(11, 0, 'Radiological')])
```
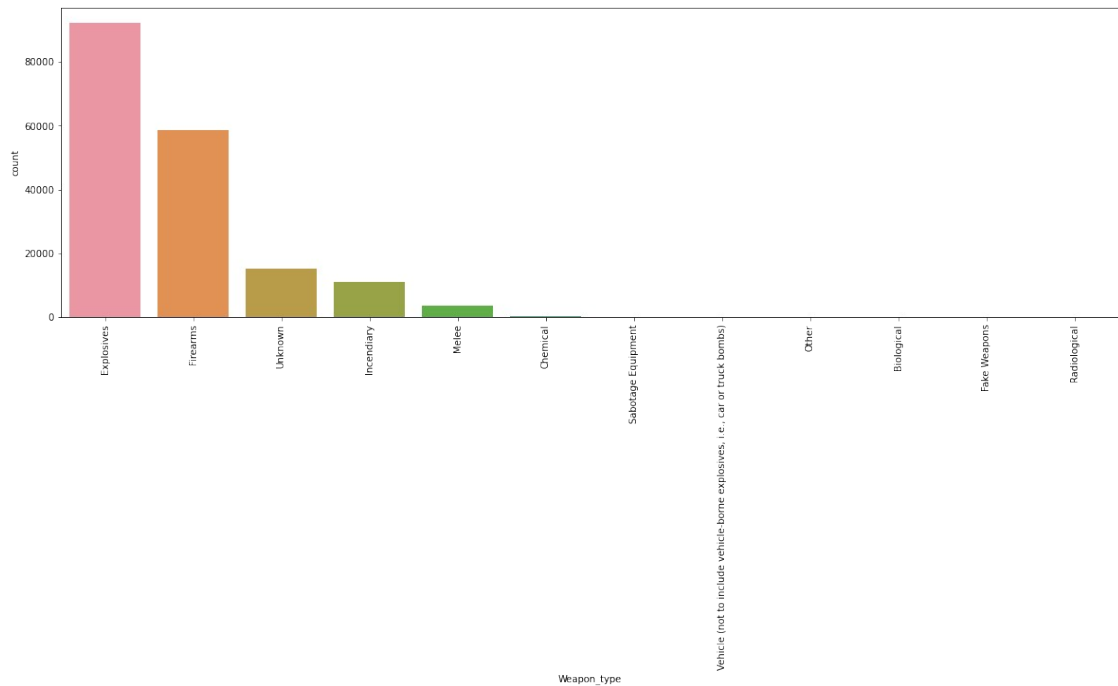
Conclusions drawn from this EDA:

1. Most affected region is Middle East & North Africa and least affected region is Australasia & Oceania.

2. Terrorists activities spiked after 2010.

3. Top Most affected countries are - Iraq , Pakistan ,Afghanistan ,India and Colombia and the least affected country is Vatican City.

4. Top 3 most affected states are - Baghdad, Northern Ireland, Balochistan.

5. Baghdad and Karachi are the most affected cities worldwide.

6. Jammu n Kashmir is the most affected state in India and Srinagar the most affected City.

7. Explosives and Firearms are the most used weapons by terrorists group.

8. Private Citizens, Property, Military, Police and the Government are the most targeted victim groups.

9.Terrorists mostly attack by bombing , explosives or by armed assaults and least by Hijacking.

10. Amongst the top 10 affected countries in the world, 5 countries are Asian.

Highest number of attacks happened in 2014 and least happened in 1971.

The most active terrorist group in the world is currently TALIBAN.