Aim :-

In our role as security or defense analysts, we've been assigned the responsibility of examining the data and deriving insights regarding the prevalence and characteristics of documented terrorist incidents worldwide. This analysis aims to address the following inquiries:

How has the frequency of terrorist activities evolved over time? Are there specific regions exhibiting trends that deviate from the global norms?

Is there a correlation between the number of incidents and the number of casualties? Are there any noteworthy anomalies or exceptional cases within this relationship?

What are the prevailing tactics employed in these attacks? Do these methods vary across different regions or time periods?

About Dataset : -

The Global Terrorism Database (GTD) is an open-source repository that contains comprehensive data on over 180,000 terrorist attacks worldwide spanning from 1970 to 2017. This database encompasses both domestic and international terrorist incidents and is managed by researchers associated with the National Consortium for the Study of Terrorism and Responses to Terrorism (START), which is based at the University of Maryland.

Import Libraries

```python
In [13]:  import math          #This module provides access to the mathematical functions
          import numpy as np
          import pandas as pd
          import seaborn as sns
          import plotly.offline as py
          import plotly.graph_objs as go
          import matplotlib.pyplot as plt

          import warnings
          warnings.filterwarnings('ignore')
```

Load and Explore the dataset

```python
In [19]:  ##Load the data set
          terr = pd.read_excel(r'D:\DatSets\Terrorism_Data_Analysis\terrorism.xlsx')
```

```python
In [22]:  terr.shape
```

```
Out[22]:  (181691, 135)
```

In [20]:
```python
# Display the first 5 rows of the dataset
terr.head()
```

Out[20]:

	eventid	iyear	imonth	iday	approxdate	extended	resolution	country	country_txt	region
0	197000000001	1970	7	2	NaN	0	NaT	58	Dominican Republic	
1	197000000002	1970	0	0	NaN	0	NaT	130	Mexico	
2	197001000001	1970	1	0	NaN	0	NaT	160	Philippines	
3	197001000002	1970	1	0	NaN	0	NaT	78	Greece	
4	197001000003	1970	1	0	NaN	0	NaT	101	Japan	

5 rows × 135 columns

In [21]:
```python
# Display the last 5 rows of the dataset
terr.tail()
```

Out[21]:

	eventid	iyear	imonth	iday	approxdate	extended	resolution	country	country_txt
181686	201712310022	2017	12	31	NaN	0	NaT	182	Somalia
181687	201712310029	2017	12	31	NaN	0	NaT	200	Syria
181688	201712310030	2017	12	31	NaN	0	NaT	160	Philippines
181689	201712310031	2017	12	31	NaN	0	NaT	92	India
181690	201712310032	2017	12	31	NaN	0	NaT	160	Philippines

5 rows × 135 columns

In [27]: `terr.columns`

Out[27]:
```
Index(['eventid', 'iyear', 'imonth', 'iday', 'approxdate', 'extended',
       'resolution', 'country', 'country_txt', 'region',
       ...
       'addnotes', 'scite1', 'scite2', 'scite3', 'dbsource', 'INT_LOG',
       'INT_IDEO', 'INT_MISC', 'INT_ANY', 'related'],
      dtype='object', length=135)
```

In [30]:
```
#Renaming the columns
terr.rename(columns={'iyear':'Year','imonth':'Month','iday':'Day','country_txt':'Count
                     'region_txt':'Region','attacktype1_txt':'AttackType','target1':'T
                     'nwound':'Wounded','summary':'Summary','gname':'Group','targtyp
                     'weaptype1_txt':'Weapon_type','motive':'Motive'},inplace=True)
```

In [32]:
```
#As there are too many columns in dataset, we are taking only important columns from t
terrorism = terr[['Year','Month','Day','Country','state','Region','city','latitude','l
                  'Wounded','Target','Summary','Group','Target_type','Weapon_type','Moti
```

In [34]: `terrorism.head(2)`

Out[34]:

	Year	Month	Day	Country	state	Region	city	latitude	longitude	AttackType	K
0	1970	7	2	Dominican Republic	NaN	Central America & Caribbean	Santo Domingo	18.456792	-69.951164	Assassination	
1	1970	0	0	Mexico	Federal	North America	Mexico city	19.371887	-99.086624	Hostage Taking (Kidnapping)	

In [35]:
```
#Cheching the null values
terrorism.isnull().sum()
```

Out[35]:
```
Year              0
Month             0
Day               0
Country           0
state           421
Region            0
city            434
latitude       4556
longitude      4557
AttackType        0
Killed        10313
Wounded       16311
Target          636
Summary       66129
Group             0
Target_type       0
Weapon_type       0
Motive       131130
dtype: int64
```

In [36]: `terrorism.info()`

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 181691 entries, 0 to 181690
Data columns (total 18 columns):
 #   Column       Non-Null Count    Dtype
---  ------       --------------    -----
 0   Year         181691 non-null   int64
 1   Month        181691 non-null   int64
 2   Day          181691 non-null   int64
 3   Country      181691 non-null   object
 4   state        181270 non-null   object
 5   Region       181691 non-null   object
 6   city         181257 non-null   object
 7   latitude     177135 non-null   float64
 8   longitude    177134 non-null   float64
 9   AttackType   181691 non-null   object
 10  Killed       171378 non-null   float64
 11  Wounded      165380 non-null   float64
 12  Target       181055 non-null   object
 13  Summary      115562 non-null   object
 14  Group        181691 non-null   object
 15  Target_type  181691 non-null   object
 16  Weapon_type  181691 non-null   object
 17  Motive        50561 non-null   object
dtypes: float64(4), int64(3), object(11)
memory usage: 25.0+ MB
```

In [37]: `terrorism.describe()`

Out[37]:

	Year	Month	Day	latitude	longitude	Killed	
count	181691.000000	181691.000000	181691.000000	177135.000000	1.771340e+05	171378.000000	16!
mean	2002.638997	6.467277	15.505644	23.498343	-4.586957e+02	2.403272	
std	13.259430	3.388303	8.814045	18.569242	2.047790e+05	11.545741	
min	1970.000000	0.000000	0.000000	-53.154613	-8.618590e+07	0.000000	
25%	1991.000000	4.000000	8.000000	11.510046	4.545640e+00	0.000000	
50%	2009.000000	6.000000	15.000000	31.467463	4.324651e+01	0.000000	
75%	2014.000000	9.000000	23.000000	34.685087	6.871033e+01	2.000000	
max	2017.000000	12.000000	31.000000	74.633553	1.793667e+02	1570.000000	8

In [39]: `terrorism['Year'].value_counts(dropna=False).sort_index()` *#DropNA doesnot calculate th*

Out[39]:
```
1970        651
1971        471
1972        568
1973        473
1974        581
1975        740
1976        923
1977       1319
1978       1526
1979       2662
1980       2662
1981       2586
1982       2544
1983       2870
1984       3495
1985       2915
1986       2860
1987       3183
1988       3721
1989       4324
1990       3887
1991       4683
1992       5071
1994       3456
1995       3081
1996       3058
1997       3197
1998        934
1999       1395
2000       1814
2001       1906
2002       1333
2003       1278
2004       1166
2005       2017
2006       2758
2007       3242
2008       4805
2009       4721
2010       4826
2011       5076
2012       8522
2013      12036
2014      16903
2015      14965
2016      13587
2017      10900
Name: Year, dtype: int64
```

Data Visualization

People Killed and Wounded In Each Year

In [41]:
```python
terrorism.head(2)
```

Out[41]:

	Year	Month	Day	Country	state	Region	city	latitude	longitude	AttackType	K
0	1970	7	2	Dominican Republic	NaN	Central America & Caribbean	Santo Domingo	18.456792	-69.951164	Assassination	
1	1970	0	0	Mexico	Federal	North America	Mexico city	19.371887	-99.086624	Hostage Taking (Kidnapping)	

In [46]:
```python
b =terrorism[["Year","Wounded"]].groupby("Year").sum()
b.head()
```

Out[46]:

	Wounded
Year	
1970	212.0
1971	82.0
1972	409.0
1973	495.0
1974	865.0

In [49]:
```python
b.plot(kind='bar', color='orange',figsize=(16,6))
plt.title('Year Wise Wounded')
plt.xlabel('Years',fontsize=15)
plt.ylabel('No Of Wounded')
plt.xticks(fontsize=12)
plt.show()
```
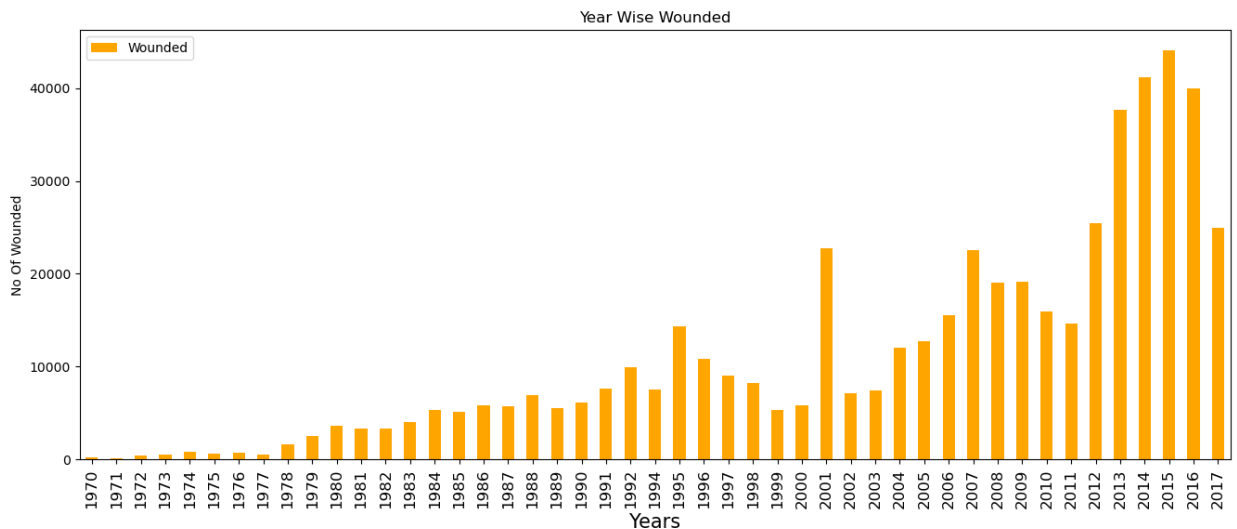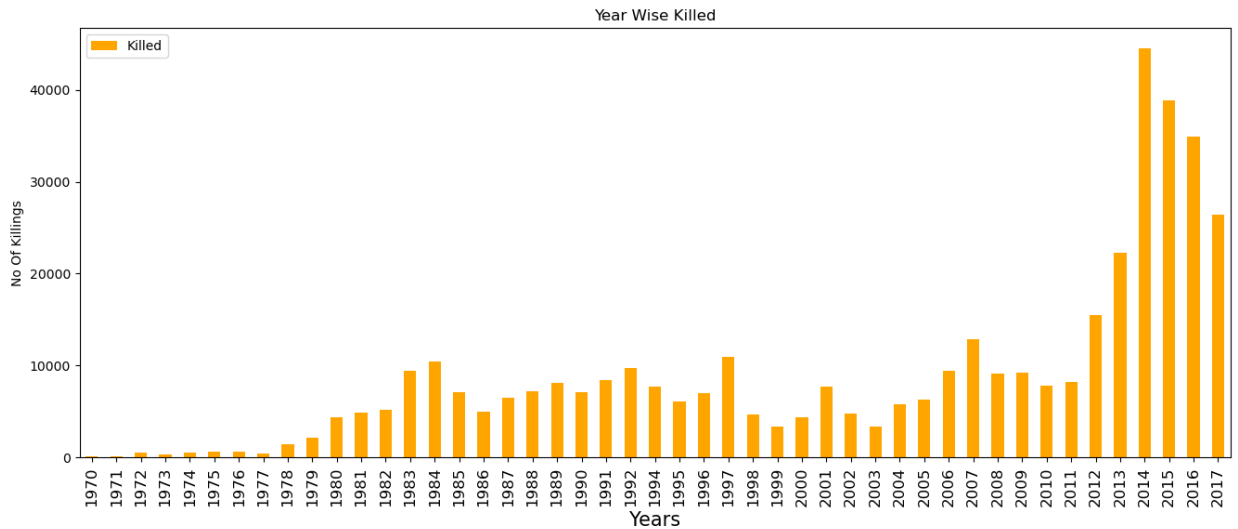

In [50]:
```python
c =terrorism[["Year","Killed"]].groupby("Year").sum()
c.head()
```

Out[50]:

	Killed
Year	
1970	174.0
1971	173.0
1972	566.0
1973	370.0
1974	539.0

In [51]:
```python
c.plot(kind='bar', color='orange',figsize=(16,6))
plt.title('Year Wise Killed')
plt.xlabel('Years',fontsize=15)
plt.ylabel('No Of Killings')
plt.xticks(fontsize=12)
plt.show()
```
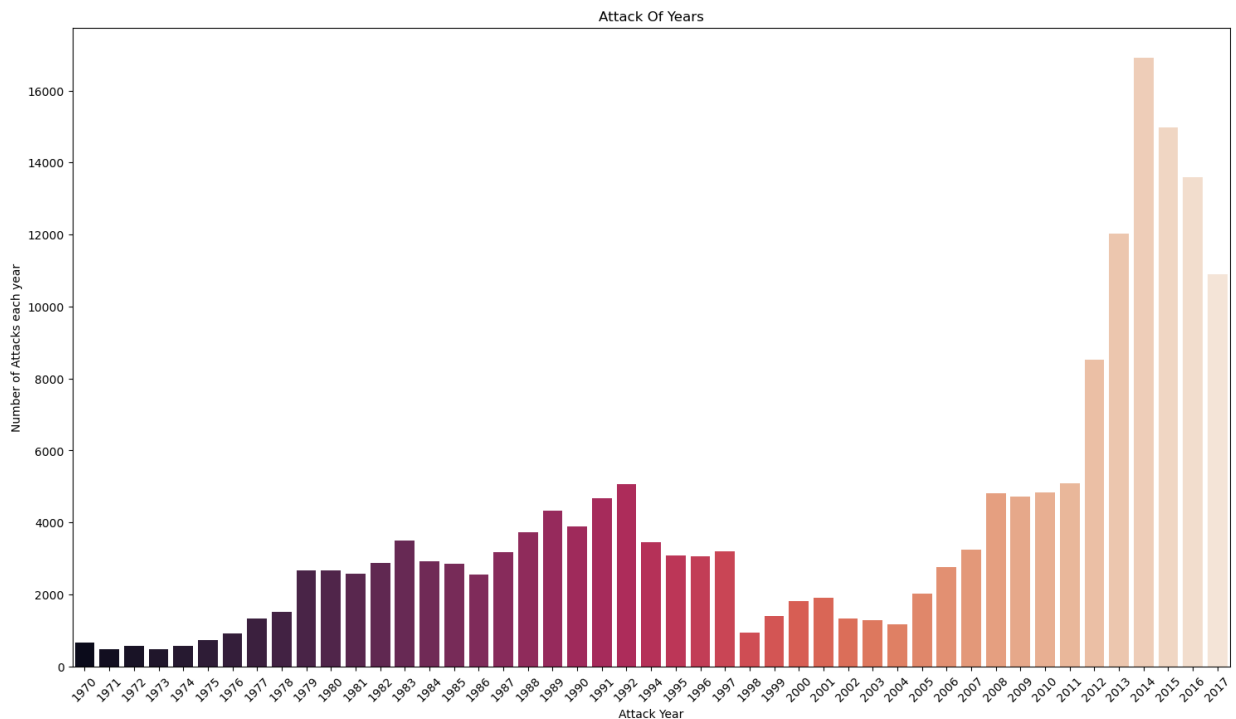

Number of Terrorist Activities each Year

In [53]:
```python
terrorism.head(2)
```

Out[53]:

	Year	Month	Day	Country	state	Region	city	latitude	longitude	AttackType	K
0	1970	7	2	Dominican Republic	NaN	Central America & Caribbean	Santo Domingo	18.456792	-69.951164	Assassination	
1	1970	0	0	Mexico	Federal	North America	Mexico city	19.371887	-99.086624	Hostage Taking (Kidnapping)	

In [58]:
```python
x_year = terrorism['Year'].unique()
y_count_years = terrorism['Year'].value_counts(dropna = False).sort_index()
plt.figure(figsize = (18,10))
```

```
sns.barplot(x = x_year,
            y = y_count_years,
            palette = 'rocket')
plt.xticks(rotation = 45)
plt.xlabel('Attack Year')
plt.ylabel('Number of Attacks each year')
plt.title('Attack Of Years')
plt.show()
```



```
In [60]:  plt.subplots(figsize=(15, 6))
          sns.countplot(x='Year', data=terrorism, palette='RdYlGn_r', edgecbbolor=sns.color_pale
          plt.xticks(rotation=45)
          plt.title('Number Of Terrorist Activities Each Year')
```

Out[60]: Text(0.5, 1.0, 'Number Of Terrorist Activities Each Year')
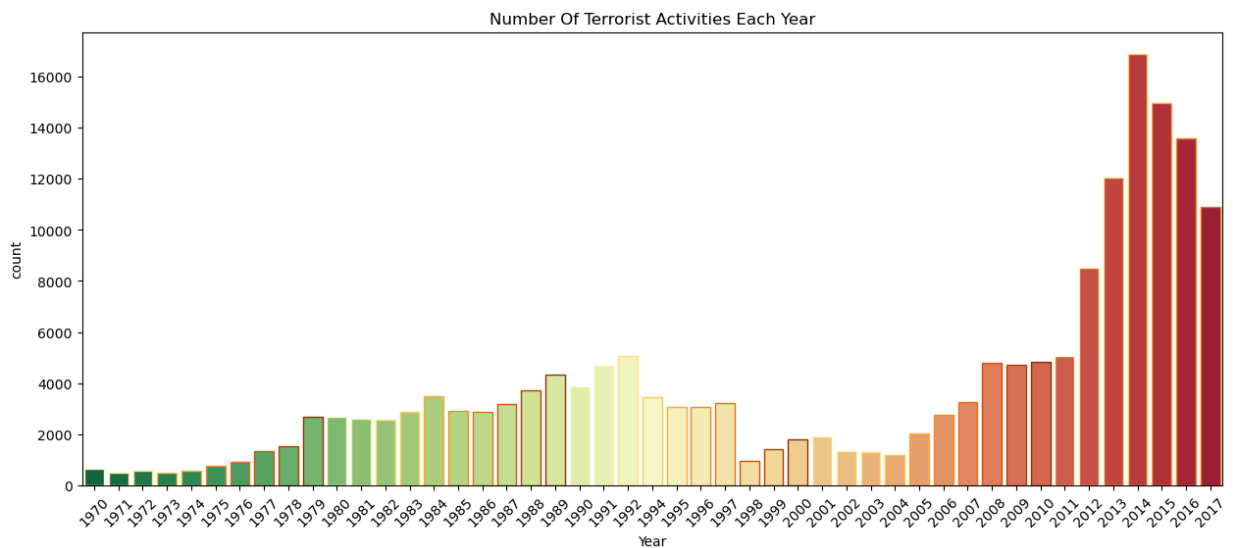
Terrorist Activities by Region in each Year through Area Plot

In [61]:
```python
pd.crosstab(terrorism.Year, terrorism.Region).plot(kind='area',figsize=(15,6))
plt.title('Terrorist Activities by Region in each Year')
plt.ylabel('Number of Attacks')
plt.show()
```
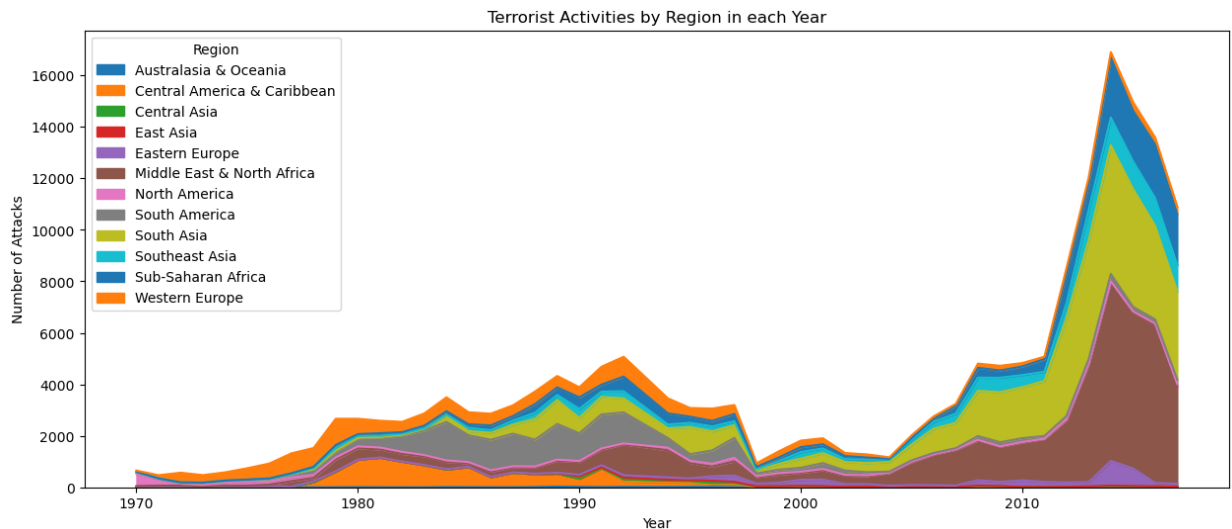

In [62]:
```python
terrorism['Wounded'] = terrorism['Wounded'].fillna(0).astype(int)
terrorism['Killed'] = terrorism['Killed'].fillna(0).astype(int)
terrorism['casualities'] = terrorism['Killed'] + terrorism['Wounded']
```

Values are sorted by the top 40 worst terror attacks as to keep the heatmap simple and easy to visualize

In [65]:
```python
a1 = terrorism.sort_values(by='casualities',ascending=False)[:40]
heat=a1.pivot_table(index='Country',columns='Year',values='casualities')
heat.fillna(0,inplace=True)
heat.head()
```

Out[65]:

Year	1982	1984	1992	1994	1995	1996	1997	1998	2001	2004	2005	2006	2007
Country													
Afghanistan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chad	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1
Ethiopia	0.0	0.0	500.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
France	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
India	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1005.0	0.0

Top 10 Countries affected by Terror Attacks

In [66]:
```python
terrorism.head(2)
```

Out[66]:

	Year	Month	Day	Country	state	Region	city	latitude	longitude	AttackType	K
0	1970	7	2	Dominican Republic	NaN	Central America & Caribbean	Santo Domingo	18.456792	-69.951164	Assassination	
1	1970	0	0	Mexico	Federal	North America	Mexico city	19.371887	-99.086624	Hostage Taking (Kidnapping)	

In [69]:
```python
attk =terrorism['Country'].value_counts().head(10)
attk
```

Out[69]:
```
Iraq              24636
Pakistan          14368
Afghanistan       12731
India             11960
Colombia           8306
Philippines        6908
Peru               6096
El Salvador        5320
United Kingdom     5235
Turkey             4292
Name: Country, dtype: int64
```

In [72]:
```python
plt.figure(figsize=(10,5))
sns.barplot(x=attk.index, y=attk.values,palette='YlOrRd')
plt.title('Top Countries Affected')
plt.xlabel('Countries')
plt.ylabel('Count')
plt.xticks(rotation= 90)
plt.show()
```

Top Countries Affected
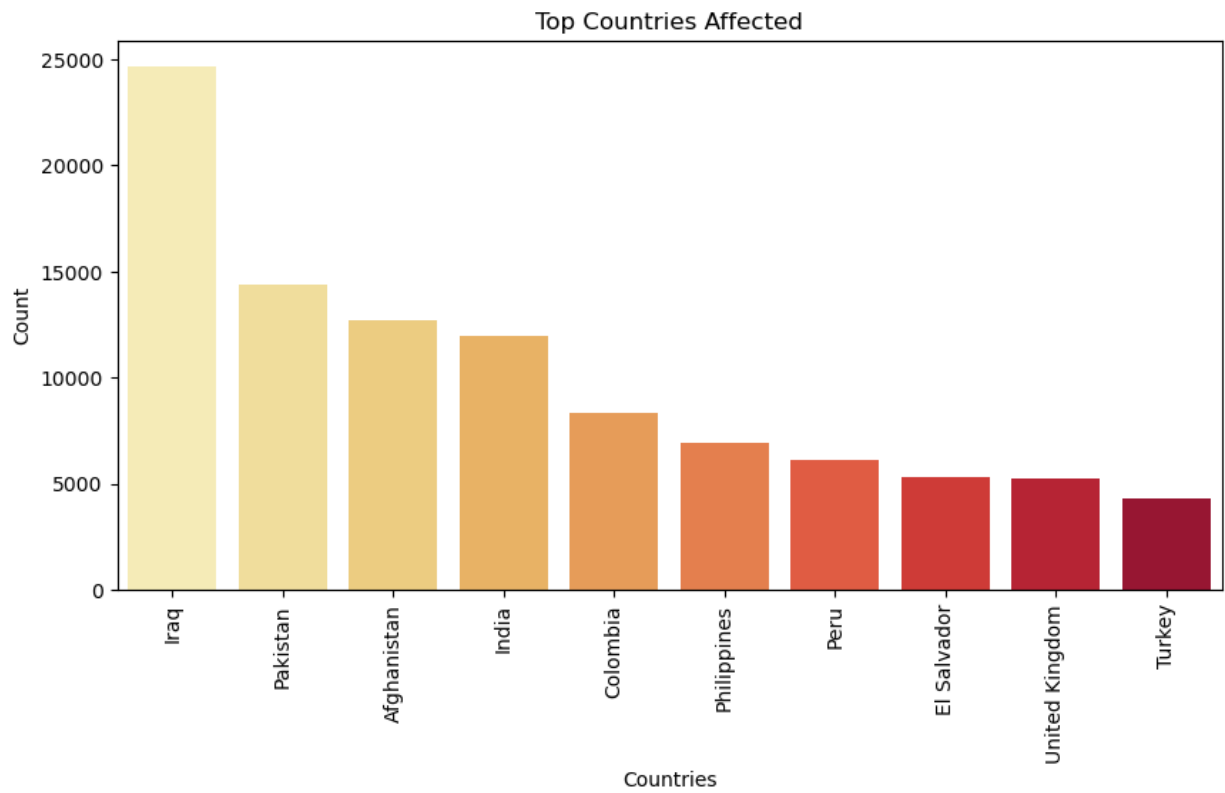
People Killed and Wounded In Each Region

```
In [73]: aa=terrorism[["Region","Killed"]].groupby("Region").sum().sort_values(by="Killed",asce
         aa
```

Out[73]:

	Killed
Region	
Middle East & North Africa	137642
South Asia	101319
Sub-Saharan Africa	78386
South America	28849
Central America & Caribbean	28708
Southeast Asia	15637
Eastern Europe	7415
Western Europe	6694
North America	4916
East Asia	1152
Central Asia	1000
Australasia & Oceania	150

```
In [74]: ab=terrorism[["Region","Wounded"]].groupby("Region").sum().sort_values(by="Wounded",as
         ab
```

Out[74]:

	Wounded
Region	
Middle East & North Africa	214308
South Asia	141360
Sub-Saharan Africa	52856
Southeast Asia	26259
North America	21531
Western Europe	18332
South America	16704
Eastern Europe	12045
East Asia	9213
Central America & Caribbean	8991
Central Asia	2009
Australasia & Oceania	260

In [75]:
```python
fig=plt.figure()
ax0=fig.add_subplot(1,2,1)
ax1=fig.add_subplot(1,2,2)

#People Killed
aa.plot(kind="bar",color="indigo",figsize=(15,6),ax=ax0)
ax0.set_title("People Killed in each Region")
ax0.set_xlabel("Regions")
ax0.set_ylabel("Number of People Killed")

#People Wounded
ab.plot(kind="bar",color="green",figsize=(15,6),ax=ax1)
ax1.set_title("People Wounded in each Region")
ax1.set_xlabel("Regions")
ax1.set_ylabel("Number of People Wounded")

plt.show
```

Out[75]:   `<function matplotlib.pyplot.show(close=None, block=None)>`