

In [1]:

```
# This Python 3 environment comes with many helpful analytics libraries installed
# It is defined by the kaggle/python Docker image: https://github.com/kaggle/docker-python
# For example, here's several helpful packages to load

import numpy as np # linear algebra
import pandas as pd # data processing, CSV file I/O (e.g. pd.read_csv)

# Input data files are available in the read-only "../input/" directory
# For example, running this (by clicking run or pressing Shift+Enter) will list all files under the input directory

import os
for dirname, _, filenames in os.walk('/kaggle/input'):
    for filename in filenames:
        print(os.path.join(dirname, filename))

# You can write up to 20GB to the current directory (/kaggle/working/) that gets preserved as output when you create a version using "Save & Run All"
# You can also write temporary files to /kaggle/temp/, but they won't be saved outside of the current session
```



Terrorist Activities Around The World

According to a survey, about 218 million people are affected by calamities, natural and man-made, per annum and about 68000 people loose their lives every year. The frequency of natural disasters like earthquakes, volcanoes, etc have remained broadly constant, but the number of terrorist activities have grown over the period.

The aim of this notebook is to explore the terrorist events around the world. Interactive Plots and Animations are used in this notebook, for making the exploration easy and more informative. This is my first try on **Folium**, which is a wrapper over the Leaflet.js API. Some things that we will explore are the trends in terrorism over the year, the terrorism prone areas, etc. Since it is a geographic dataset, you will see a lot of geomaps.

If you like this notebook, **Please Upvote**, as it keeps me motivated in doing better.

Note: I have only used first 5000 rows for folium maps. The reason is the notebook or script crashes a lot and it kills the kernel due to long execution time.

****Below is a Simple Tableau Dashboard, do have a look**

In [2]:

%%HTML

```

<div class='tableauPlaceholder' id='viz1512233423027' style='position: relative'
><noscript><a href='#'><img alt='Dashboard 1 ' src='https://public.table
au.com/static/images/RD/RDGKRRHB7/1_rss.png' style='border:
  none' /></a></noscript><object class='tableauViz' style='display:none;'><param
name='host_url' value='https%3A%2F%2Fpublic.tableau.com%2F' /> <param name='embe
d_code_version' value='3' /> <param name='path' value='shared/RDGKRRHB7' />
<param name='toolbar' value='yes' /><param name='static_image' value='https://
public.tableau.com/static/images/RD/RDGKRRHB7/1.png'
/> <param name='animate_transition' value='yes' /><param name='display_static_im
age' value='yes' /><param name='display_spinner' value='yes' /><param name='disp
lay_overlay' value='yes' /><param name='display_count' value='yes' /></object></
div>
    <script type='text/javascript'>
        var divEl
        element = document.getElementById('viz1512233423027');
        var vizE
        lement = divElement.getElementsByTagName('object')[0];
        vizEle
        ment.style.width='1020px';vizElement.style.minHeight='687px';vizElement.style.ma
        xHeight='1587px';vizElement.style.height=(divElement.offsetWidth*0.75)+'px';
        var scriptElement = document.createElement('script');
        scriptE
        lement.src = 'https://public.tableau.com/javascripts/api/viz_v1.js';
        vizElement.parentNode.insertBefore(scriptElement, vizElement);
    </
script>

```


Select Country and Year to Dig Down
Most Affected Cities(No. of Attacks)



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 - 1.7 Terror Activities in USA
 - 1.8 Motive Behind Attacks
 - 1.9 World Terrorism Spread(Animation)

In [4]:

```
import pandas as pd
import matplotlib.pyplot as plt
import matplotlib.patches as mpatches
import matplotlib.image as mpimg
from imageio import imread
import seaborn as sns
import numpy as np
plt.style.use('fivethirtyeight')
import plotly.offline as py
py.init_notebook_mode(connected=True)
import plotly.graph_objs as go
import plotly.tools as tls
from mpl_toolkits.basemap import Basemap
from PIL import Image
import folium
import folium.plugins
from matplotlib import animation, rc
import io
import base64
from IPython.display import HTML, display
import warnings
warnings.filterwarnings('ignore')
# from scipy.misc import imread
import codecs
from subprocess import check_output
print(check_output(["ls", "../input"]).decode("utf8"))
```



The Year 2017 has witnessed about 1045 terror attacks till now, which has claimed 6000+ lives. According to a survey, there is atleast 1 terrorist attack taking place each day somewhere around the world. One such noxious attack took place at Las Vegas on 1st October 2017, claiming 59 lives and injuring 500+ people.

Terrorism implies the use of violence to terrorise a population or government for certain political, religious or ideological purpose. The threat of terrorism has become a worldwide concern with several parts of the world reeling under frequent terrorist strikes. With little concern for human lives, terrorists continue to strike with impunity, leaving a trail of death and destruction, wherever they choose to inflict their blows.

In this dataset, we will be exploring the terror attacks over the world from 1970-2016, finding the most affected countries, the most notorious groups, their motives, etc.

In [5]:

```

terror=pd.read_csv('../input/gtd/globalterrorismdb_0718dist.csv',encoding='ISO-8
859-1')
terror.rename(columns={'iyear':'Year','imonth':'Month','iday':'Day','country_tx
t':'Country','region_txt':'Region','attacktype1_txt':'AttackType','target1':'Tar
get','nkill':'Killed','nwound':'Wounded','summary':'Summary','gname':'Group','ta
rgtype1_txt':'Target_type','weaptype1_txt':'Weapon_type','motive':'Motive'},inpl
ace=True)
terror=terror[['Year','Month','Day','Country','Region','city','latitude','longit
ude','AttackType','Killed','Wounded','Target','Summary','Group','Target_type','W
eapon_type','Motive']]
terror['casualties']=terror['Killed']+terror['Wounded']
terror.head(3)

```

Out[5]:

	Year	Month	Day	Country	Region	city	latitude	longitude	Atta
0	1970	7	2	Dominican Republic	Central America & Caribbean	Santo Domingo	18.456792	-69.951164	Ass
1	1970	0	0	Mexico	North America	Mexico city	19.371887	-99.086624	Hos Taki (Kid
2	1970	1	0	Philippines	Southeast Asia	Unknown	15.478598	120.599741	Ass

In [6]:

```
terror.isnull().sum()
```

Out[6]:

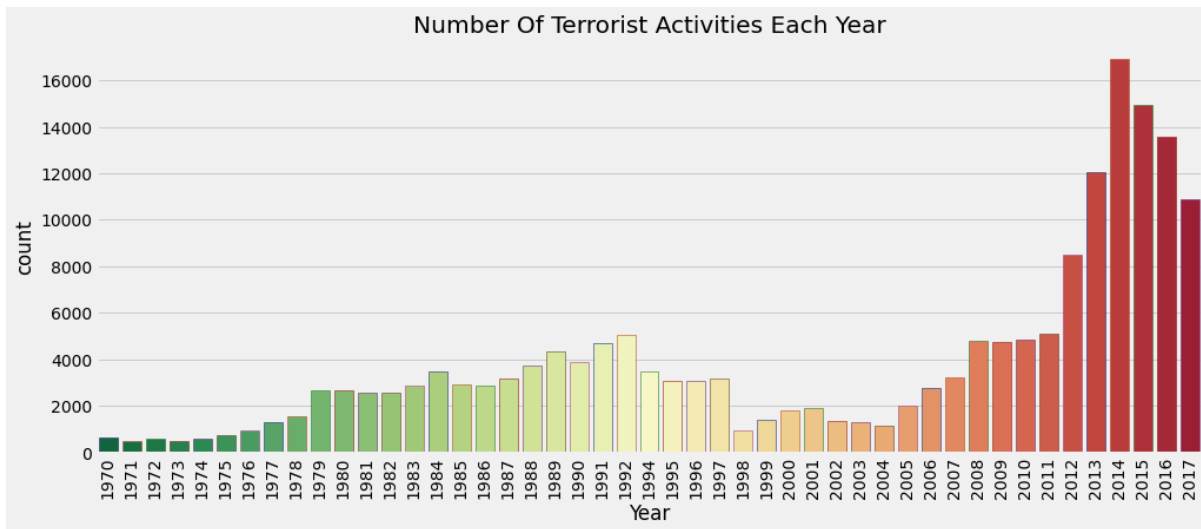
1.2 Some Basic Analysis

In [7]:

```
print('Country with Highest Terrorist Attacks:', terror['Country'].value_counts().index[0])
print('Regions with Highest Terrorist Attacks:', terror['Region'].value_counts().index[0])
print('Maximum people killed in an attack are:', terror['Killed'].max(), 'that too k place in', terror.loc[terror['Killed'].idxmax()].Country)
```

In [8]:

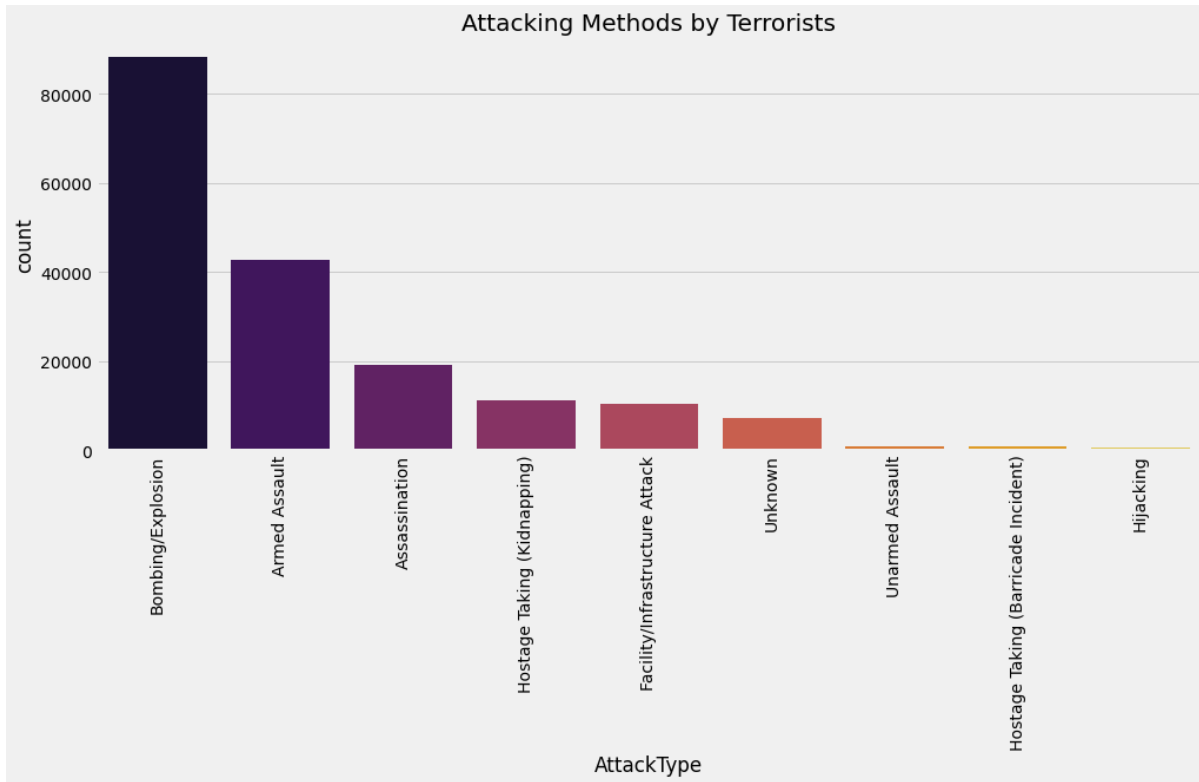
```
plt.subplots(figsize=(15,6))
sns.countplot('Year',data=terror,palette='RdYlGn_r',edgecolor=sns.color_palette('dark',7))
plt.xticks(rotation=90)
plt.title('Number Of Terrorist Activities Each Year')
plt.show()
```



Clearly the number of terrorist activities have gone up sharply after 2000.

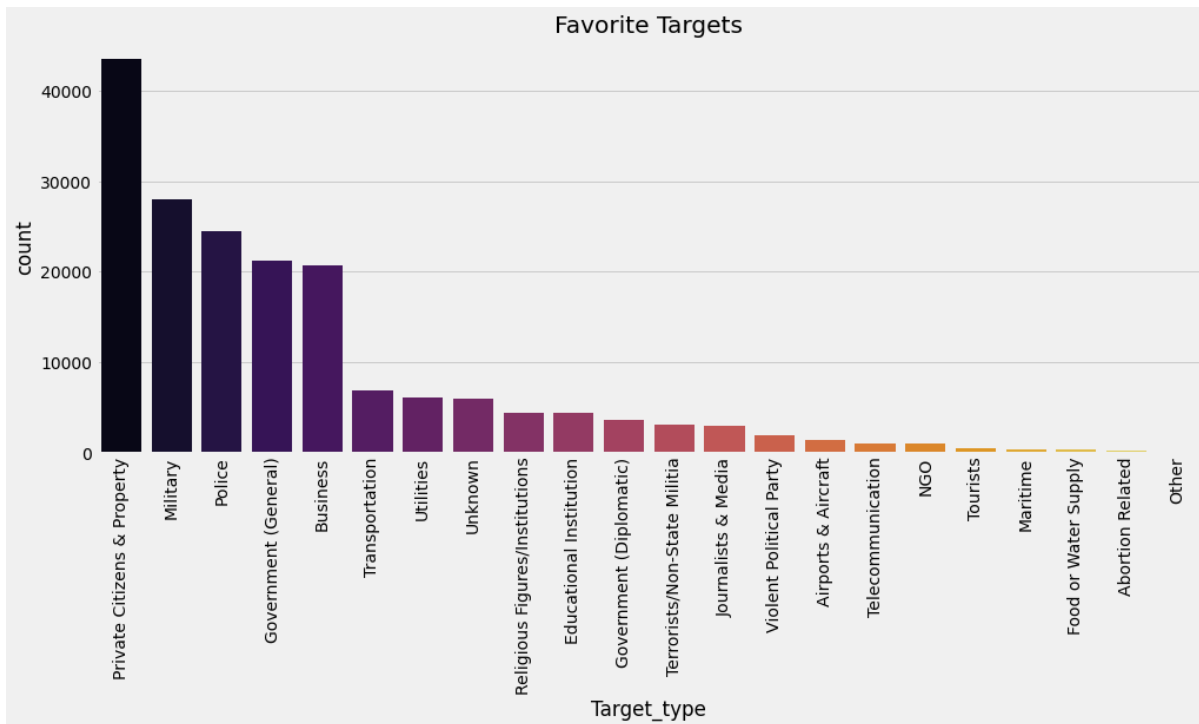
In [9]:

```
plt.subplots(figsize=(15,6))
sns.countplot('AttackType',data=terror,palette='inferno',order=terror['AttackType'].value_counts().index)
plt.xticks(rotation=90)
plt.title('Attacking Methods by Terrorists')
plt.show()
```



In [10]:

```
plt.subplots(figsize=(15,6))
sns.countplot(terror['Target_type'],palette='inferno',order=terror['Target_type']
].value_counts().index)
plt.xticks(rotation=90)
plt.title('Favorite Targets')
plt.show()
```



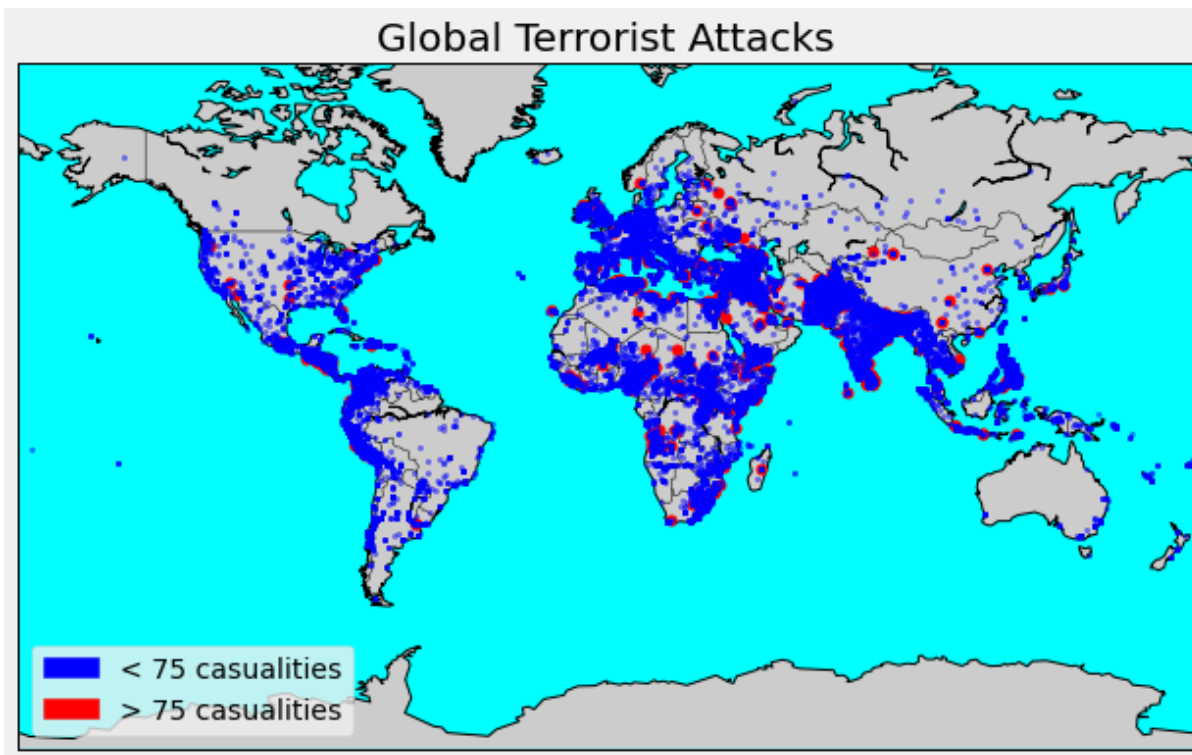
1.3 Global Terror Attacks

In [11]:

```

m3 = Basemap(projection='mill',llcrnrlat=-80,urcrnrlat=80, llcrnrlon=-180,urcrnrlon=180,lat_ts=20,resolution='c',lat_0=True,lat_1=True)
lat_100=list(terror[terror['casualties']>=75].latitude)
long_100=list(terror[terror['casualties']>=75].longitude)
x_100,y_100=m3(long_100,lat_100)
m3.plot(x_100, y_100,'go',markersize=5,color = 'r')
lat_=list(terror[terror['casualties']<75].latitude)
long_=list(terror[terror['casualties']<75].longitude)
x_,y_=m3(long_,lat_)
m3.plot(x_, y_, 'go',markersize=2,color = 'b',alpha=0.4)
m3.drawcoastlines()
m3.drawcountries()
m3.fillcontinents(lake_color='aqua')
m3.drawmapboundary(fill_color='aqua')
fig=plt.gcf()
fig.set_size_inches(10,6)
plt.title('Global Terrorist Attacks')
plt.legend(loc='lower left',handles=[mpatches.Patch(color='b', label = "< 75 casualties"),
                                     mpatches.Patch(color='red',label='> 75 casualties')])
plt.show()

```



The above basemap shows the places of attacks. The red circles are those that had more than 75 casualties(wounded+killed). Lets make an interactive map with Folium and get more information for each location.

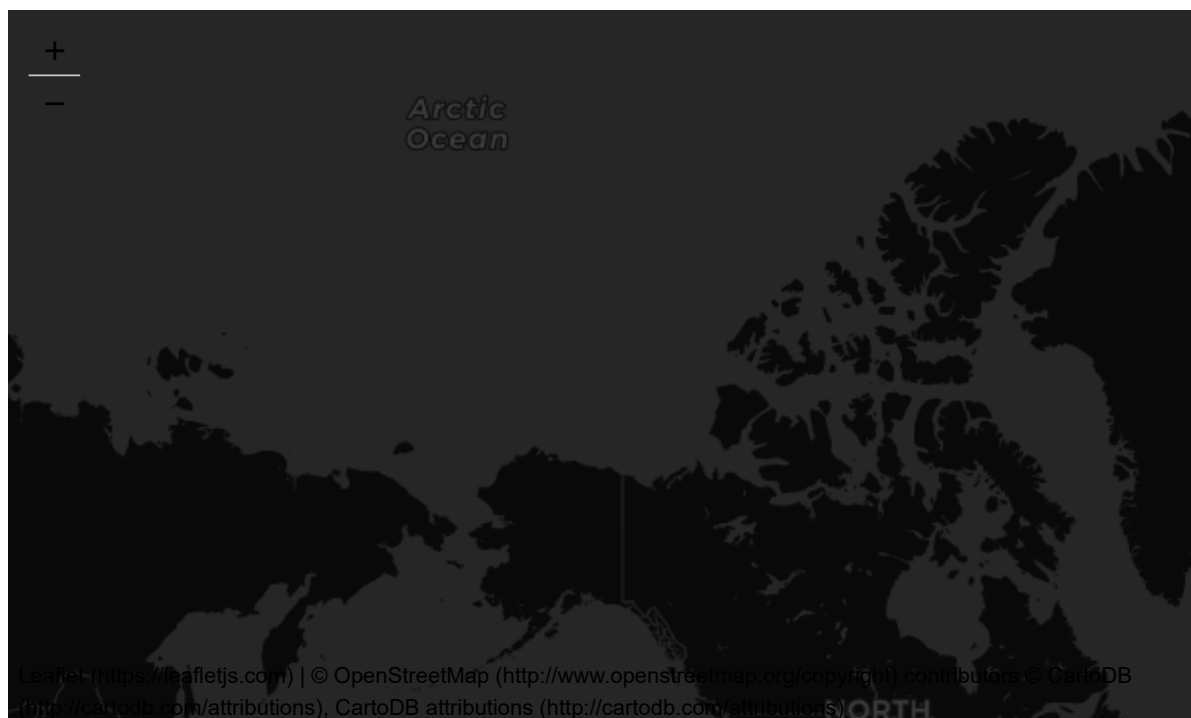
In [12]:

```

terror_fol=terror.copy()
terror_fol.dropna(subset=['latitude', 'longitude'], inplace=True)
location_fol=terror_fol[['latitude', 'longitude']][:5000]
country_fol=terror_fol['Country'][:5000]
city_fol=terror_fol['city'][:5000]
killed_fol=terror_fol['Killed'][:5000]
wound_fol=terror_fol['Wounded'][:5000]
def color_point(x):
    if x>=30:
        color='red'
    elif ((x>0 and x<30)):
        color='blue'
    else:
        color='green'
    return color
def point_size(x):
    if (x>30 and x<100):
        size=2
    elif (x>=100 and x<500):
        size=8
    elif x>=500:
        size=16
    else:
        size=0.5
    return size
map2 = folium.Map(location=[30,0], tiles='CartoDB dark_matter', zoom_start=2)
for point in location_fol.index:
    info='<b>Country: </b>'+str(country_fol[point])+'<br><b>City: </b>: '+str(city_fol[point])+'<br><b>Killed </b>: '+str(killed_fol[point])+'<br><b>Wounded</b>: '+str(wound_fol[point])
    iframe = folium.IFrame(html=info, width=200, height=200)
    folium.CircleMarker(list(location_fol.loc[point].values), popup=folium.Popup(iframe), radius=point_size(killed_fol[point]), color=color_point(killed_fol[point])).add_to(map2)
map2

```


Out[12]:

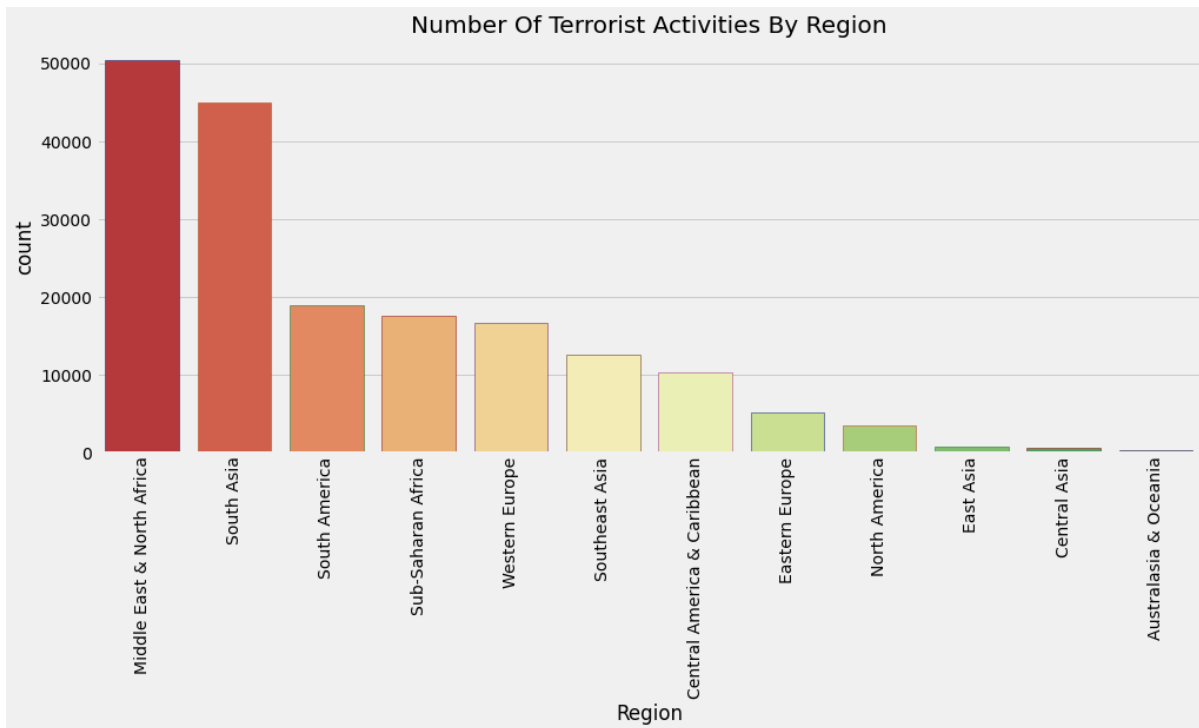


The color and size of each point is according to the number of people killed in the attack. Click on each point to get more information about the attack.

1.4 Terrorism By Region

In [13]:

```
plt.subplots(figsize=(15,6))
sns.countplot('Region',data=terror,palette='RdYlGn',edgecolor=sns.color_palette('dark',7),order=terror['Region'].value_counts().index)
plt.xticks(rotation=90)
plt.title('Number Of Terrorist Activities By Region')
plt.show()
```



Middle East and North Africa are the most terrorism prone regions followed by South Asia. The Australian Region have experienced very few terrorist events. Collectively we can say that The African and Asian Continent experience the highest terrorist attacks. But why are these regions prone to terrorism? Does this have any relation to the mindset of the people? or any other reason??

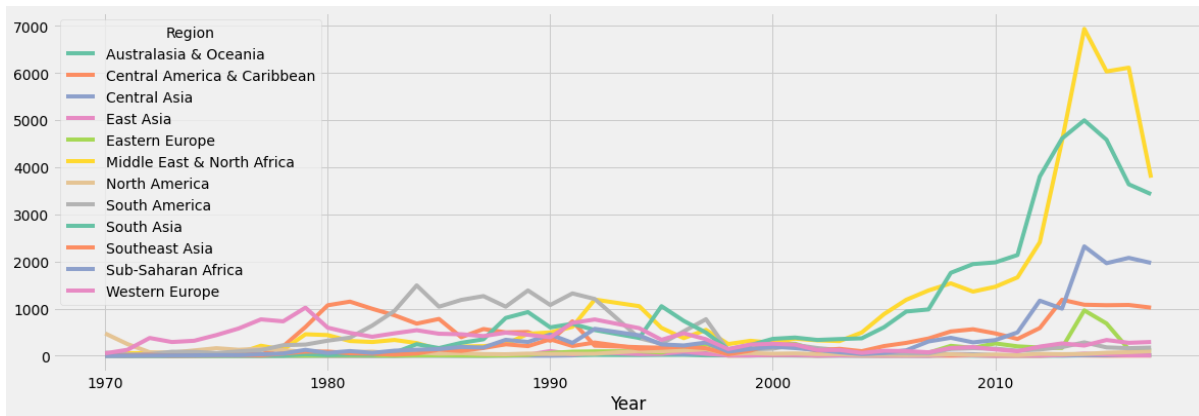
Trend in Terrorist Activities

In [14]:

```

terror_region=pd.crosstab(terror.Year,terror.Region)
terror_region.plot(color=sns.color_palette('Set2',12))
fig=plt.gcf()
fig.set_size_inches(18,6)
plt.show()

```

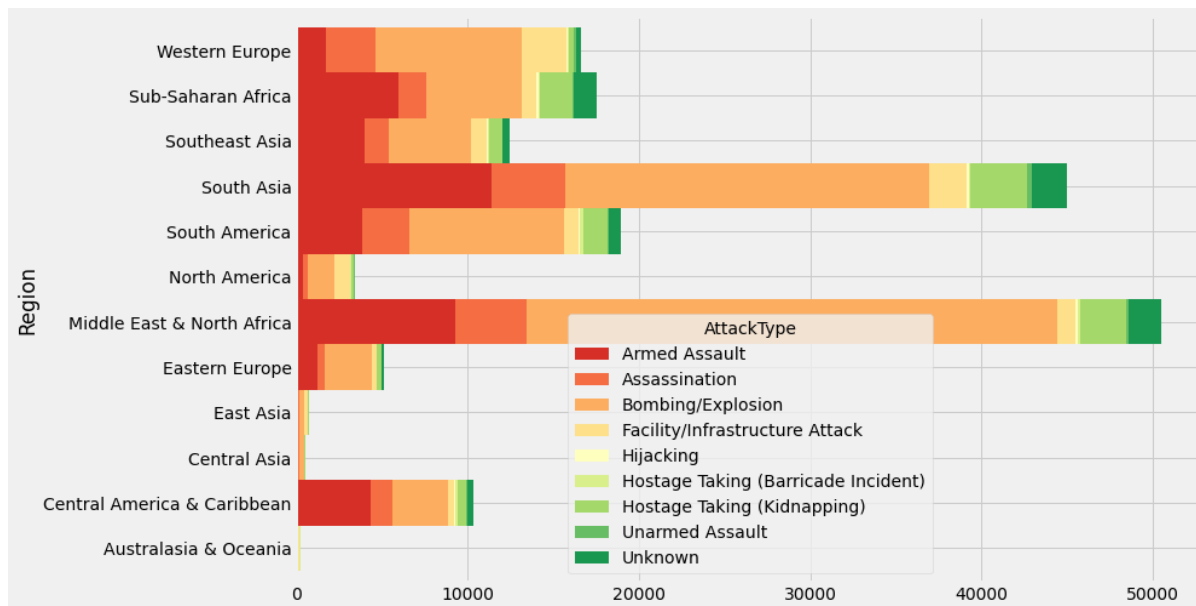


As seen already, Middle-East,North Africa,South Asia have seen a shoot in the number of terrorist activities over the years.

AttackType vs Region

In [15]:

```
pd.crosstab(terror.Region, terror.AttackType).plot.barh(stacked=True, width=1, color=sns.color_palette('RdYlGn', 9))
fig=plt.gcf()
fig.set_size_inches(12, 8)
plt.show()
```

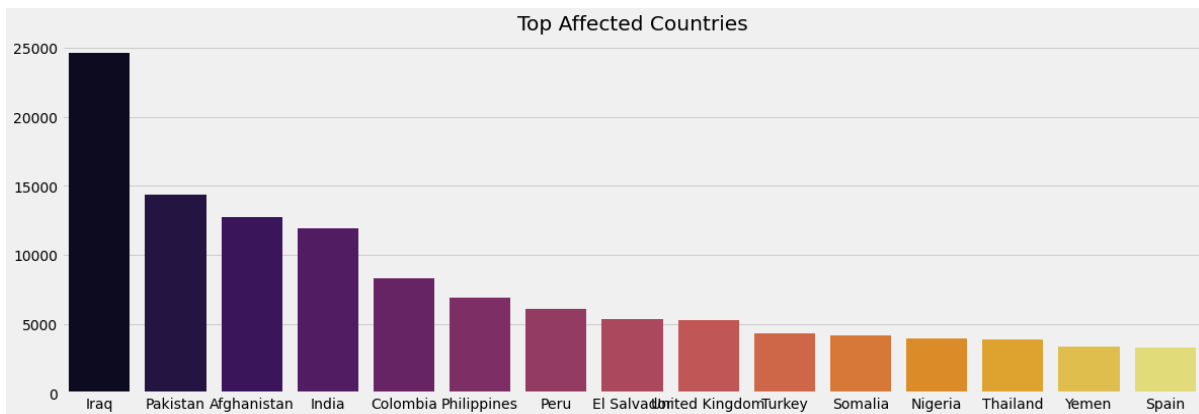


Bombing and Armed assaults, as seen above are the most prominent types of Attack irrespective of Regions.

1.5 Terrorism By Country

In [16]:

```
plt.subplots(figsize=(18,6))
sns.barplot(terror['Country'].value_counts()[:15].index, terror['Country'].value_
counts()[:15].values,palette='inferno')
plt.title('Top Affected Countries')
plt.show()
```



Iraq has witnessed a very large number of terrorist activities followed by Pakistan. One thing to note is the countries with highest attacks, are mostly densely populated countries, thus it will eventually claim many lives. Let's check

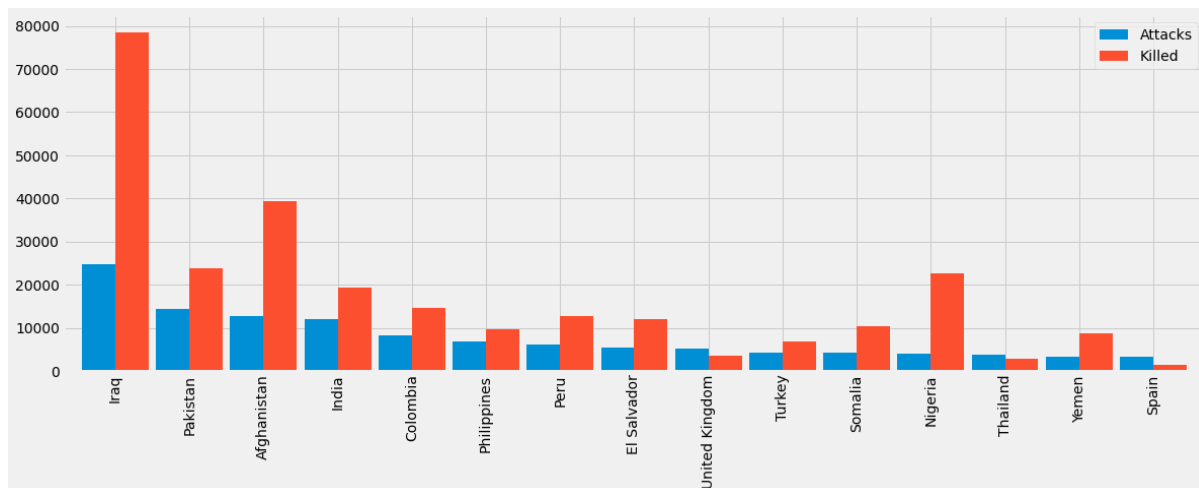
Attacks vs Killed

In [17]:

```

coun_terror=terror['Country'].value_counts()[ :15].to_frame()
coun_terror.columns=['Attacks']
coun_kill=terror.groupby('Country')['Killed'].sum().to_frame()
coun_terror.merge(coun_kill,left_index=True,right_index=True,how='left').plot.bar(
width=0.9)
fig=plt.gcf()
fig.set_size_inches(18,6)
plt.show()

```



amn!! Look at the **killed** bar for Iraq. The number of killed is almost 3 folds more than attacks for Iraq. Thus the densely populated theory holds good.

Total Terrorist Activites By Country

In [18]:

```

11=list(['Afghanistan', 'Albania', 'Algeria', 'American Samoa', 'Andorra','Angol
a', 'Anguilla', 'Antigua and Barbuda', 'Argentina', 'Armenia','Aruba', 'Australi
a', 'Austria', 'Azerbaijan', 'Bahamas, The',
'Bahrain', 'Bangladesh', 'Barbados', 'Belarus', 'Belgium', 'Belize','Benin', 'Be
rmuda', 'Bhutan', 'Bolivia', 'Bosnia and Herzegovina',
'Botswana', 'Brazil', 'British Virgin Islands', 'Brunei','Bulgaria', 'Burkina Fa
so', 'Burma', 'Burundi', 'Cabo Verde','Cambodia', 'Cameroon', 'Canada', 'Cayman
Islands',
'Central African Republic', 'Chad', 'Chile', 'China', 'Colombia','Comoros', 'Con
go, Democratic Republic of the','Congo, Republic of the', 'Cook Islands', 'Costa
Rica',"Cote d'Ivoire", 'Croatia', 'Cuba', 'Curacao', 'Cyprus','Czech Republic',
'Denmark', 'Djibouti', 'Dominica','Dominican Republic', 'Ecuador', 'Egypt', 'El
Salvador',
'Equatorial Guinea', 'Eritrea', 'Estonia', 'Ethiopia','Falkland Islands (Islas M
alvinas)', 'Faroe Islands', 'Fiji','Finland', 'France', 'French Polynesia', 'Gab
on', 'Gambia, The',
'Georgia', 'Germany', 'Ghana', 'Gibraltar', 'Greece', 'Greenland','Grenada', 'Gu
am', 'Guatemala', 'Guernsey', 'Guinea-Bissau','Guinea', 'Guyana', 'Haiti', 'Hond
uras', 'Hong Kong', 'Hungary','Iceland', 'India', 'Indonesia', 'Iran', 'Iraq',
'Ireland','Isle of Man', 'Israel', 'Italy', 'Jamaica', 'Japan', 'Jersey','Jorda
n', 'Kazakhstan', 'Kenya', 'Kiribati', 'Korea, North',
'Korea, South', 'Kosovo', 'Kuwait', 'Kyrgyzstan', 'Laos', 'Latvia','Lebanon', 'L
esotho', 'Liberia', 'Libya', 'Liechtenstein',
'Lithuania', 'Luxembourg', 'Macau', 'Macedonia', 'Madagascar','Malawi', 'Malaysi
a', 'Maldives', 'Mali', 'Malta','Marshall Islands', 'Mauritania', 'Mauritius',
'Mexico','Micronesia, Federated States of', 'Moldova', 'Monaco', 'Mongolia',
'Montenegro', 'Morocco', 'Mozambique', 'Namibia', 'Nepal','Netherlands', 'New Ca
ledonia', 'New Zealand', 'Nicaragua','Nigeria', 'Niger', 'Niue', 'Northern Maria
na Islands', 'Norway',
'Oman', 'Pakistan', 'Palau', 'Panama', 'Papua New Guinea','Paraguay', 'Peru', 'P
hilippines', 'Poland', 'Portugal','Puerto Rico', 'Qatar', 'Romania', 'Russia',
'Rwanda','Saint Kitts and Nevis', 'Saint Lucia', 'Saint Martin','Saint Pierre an
d Miquelon', 'Saint Vincent and the Grenadines',
'Samoa', 'San Marino', 'Sao Tome and Principe', 'Saudi Arabia','Senegal', 'Serbi
a', 'Seychelles', 'Sierra Leone', 'Singapore','Sint Maarten', 'Slovakia', 'Slove
nia', 'Solomon Islands',
'Somalia', 'South Africa', 'South Sudan', 'Spain', 'Sri Lanka','Sudan', 'Surinam
e', 'Swaziland', 'Sweden', 'Switzerland', 'Syria','Taiwan', 'Tajikistan', 'Tanza
nia', 'Thailand', 'Timor-Leste',
'Togo', 'Tonga', 'Trinidad and Tobago', 'Tunisia', 'Turkey','Turkmenistan', 'Tuv
alu', 'Uganda', 'Ukraine','United Arab Emirates', 'United Kingdom', 'United Stat
es','Uruguay', 'Uzbekistan', 'Vanuatu', 'Venezuela', 'Vietnam',
'Virgin Islands', 'West Bank', 'Yemen', 'Zambia', 'Zimbabwe']) #Country names

```

```

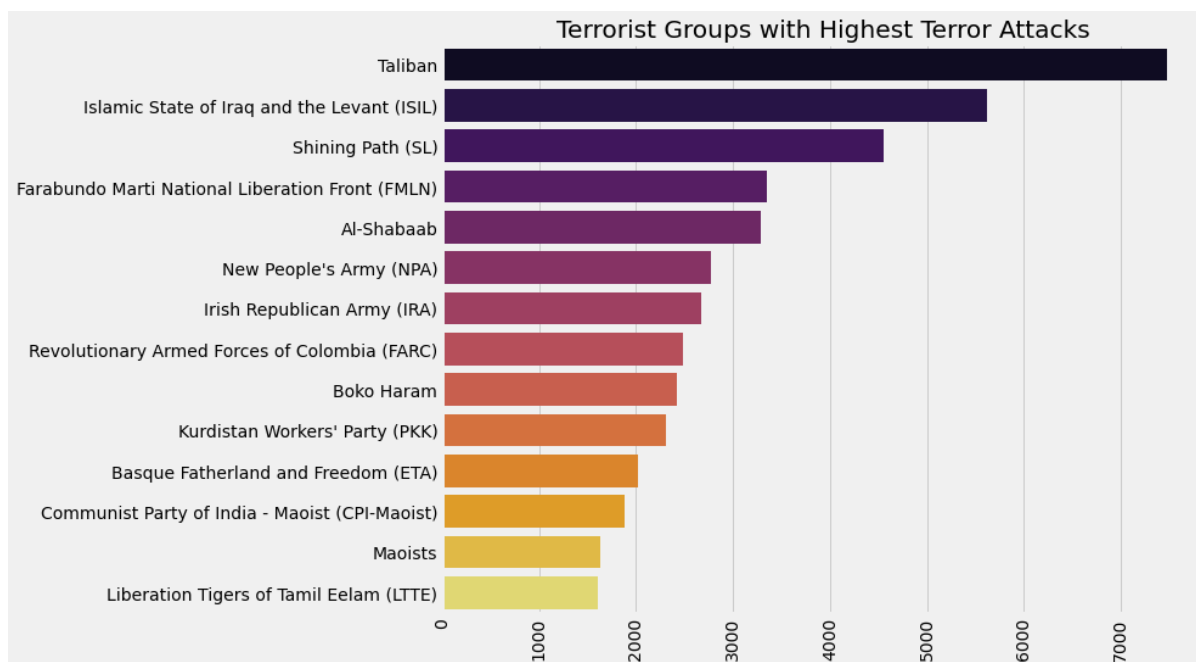
12=list(['AFG', 'ALB', 'DZA', 'ASM', 'AND', 'AGO', 'AIA', 'ATG', 'ARG', 'ARM', 'A
BW', 'AUS', 'AUT', 'AZE', 'BHM', 'BHR', 'BGD', 'BRB',
'BLR', 'BEL', 'BLZ', 'BEN', 'BMU', 'BTN', 'BOL', 'BIH', 'BWA', 'BRA', 'VGB', 'BR
N', 'BGR', 'BFA', 'MMR', 'BDI', 'CPV', 'KHM',
'CMR', 'CAN', 'CYM', 'CAF', 'TCD', 'CHL', 'CHN', 'COL', 'COM', 'COD', 'COG', 'CO
K', 'CRI', 'CIV', 'HRV', 'CUB', 'CUW', 'CYP', 'CZE', 'DNK', 'DJI', 'DMA', 'DOM',
'ECU', 'EGY', 'SLV', 'GNQ',
'ERI', 'EST', 'ETH', 'FLK', 'FRO', 'FJI', 'FIN', 'FRA', 'PYF', 'GAB', 'GMB', 'GE
O', 'DEU', 'GHA', 'GIB', 'GRC', 'GRL', 'GRD', 'GUM', 'GTM', 'GGY', 'GNB', 'GIN',
'GUY', 'HTI', 'HND', 'HKG',
'HUN', 'ISL', 'IND', 'IDN', 'IRN', 'IRQ', 'IRL', 'IMN', 'ISR', 'ITA', 'JAM', 'JP
N', 'JEY', 'JOR', 'KAZ', 'KEN', 'KIR', 'KOR',
'PRK', 'KSV', 'KWT', 'KGZ', 'LAO', 'LVA', 'LBN', 'LSO', 'LBR', 'LBY', 'LIE', 'LT
U', 'LUX', 'MAC', 'MKD', 'MDG', 'MWI', 'MYS', 'MDV', 'MLI', 'MLT', 'MHL', 'MRT',
'MUS', 'MEX', 'FSM', 'MDA',
'MCO', 'MNG', 'MNE', 'MAR', 'MOZ', 'NAM', 'NPL', 'NLD', 'NCL', 'NZL', 'NIC', 'NG
A', 'NER', 'NIU', 'MNP', 'NOR', 'OMN', 'PAK', 'PLW', 'PAN', 'PNG', 'PRY', 'PER',
'PHL', 'POL', 'PRT', 'PRI', 'QAT', 'ROU', 'RUS', 'RWA', 'KNA', 'LCA', 'MAF', 'SP
M', 'VCT', 'WSM', 'SMR', 'STP', 'SAU', 'SEN', 'SRB', 'SYC', 'SLE', 'SGP',
'SXM', 'SVK', 'SVN', 'SLB', 'SOM', 'ZAF', 'SSD', 'ESP', 'LKA', 'SDN', 'SUR', 'SW
Z', 'SWE', 'CHE', 'SYR', 'TWN', 'TJK', 'TZA',
'THA', 'TLS', 'TGO', 'TON', 'TTO', 'TUN', 'TUR', 'TKM', 'TUV', 'UGA', 'UKR', 'AR
E', 'GBR', 'USA', 'URY', 'UZB', 'VUT', 'VEN',
'VNM', 'VGB', 'WBG', 'YEM', 'ZMB', 'ZWE']) #Country Codes

```

1.5 Most Notorious Groups

In [19]:

```
sns.barplot(terror['Group'].value_counts()[1:15].values, terror['Group'].value_counts()[1:15].index, palette=('inferno'))  
plt.xticks(rotation=90)  
fig=plt.gcf()  
fig.set_size_inches(10,8)  
plt.title('Terrorist Groups with Highest Terror Attacks')  
plt.show()
```



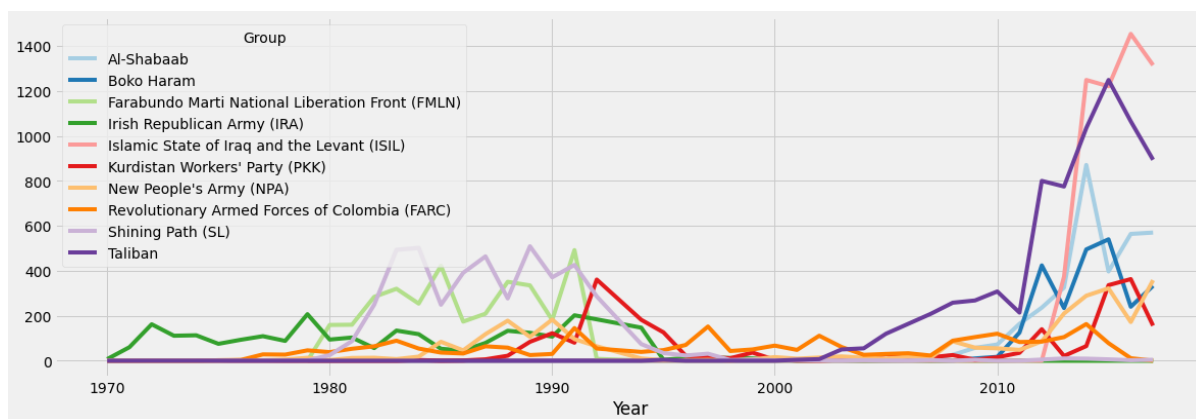
Activity of Top Terrorist Groups

In [20]:

```

top_groups10=terror[terror['Group'].isin(terror['Group'].value_counts()[1:11].index)]
pd.crosstab(top_groups10.Year, top_groups10.Group).plot(color=sns.color_palette('Paired', 10))
fig=plt.gcf()
fig.set_size_inches(18,6)
plt.show()

```

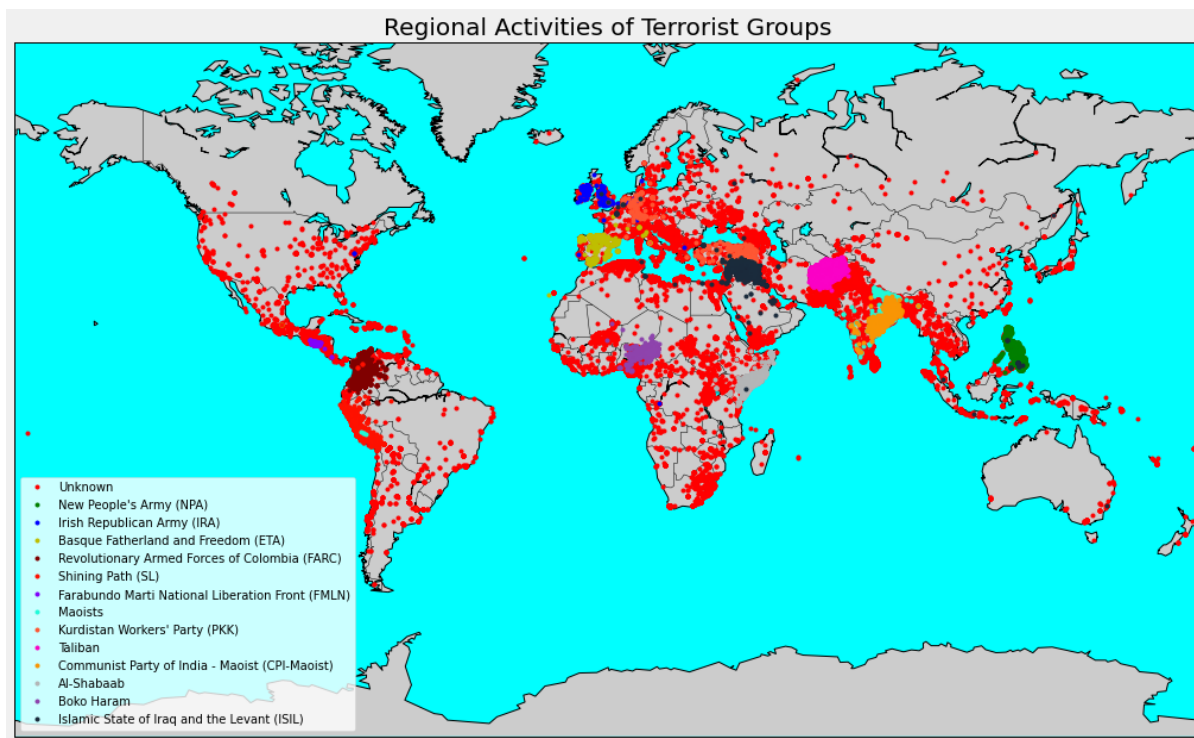


The Irish Republican Army (IRA), is the oldest terrorist group started back in the 1960-1970, maybe after the World War 2 due to the mass killing. However, it has probably stopped its activities in the late 90's. Some of the groups that have started lately in 2000's like the ISIL and Taliban, have shown a shoot in the number of attacks in the past years.

Regions Attacked By Terrorist Groups

In [21]:

```
top_groups=terror[terror['Group'].isin(terror['Group'].value_counts()[ :14].index
)]
m4 = Basemap(projection='mill',llcrnrlat=-80,urcrnrlat=80, llcrnrlon=-180,urcrnr
lon=180,lat_ts=20,resolution='c',lat_0=True,lat_1=True)
m4.drawcoastlines()
m4.drawcountries()
m4.fillcontinents(lake_color='aqua')
m4.drawmapboundary(fill_color='aqua')
fig=plt.gcf()
fig.set_size_inches(22,10)
colors=['r','g','b','y','#800000','#ff1100','#8202fa','#20fad9','#ff5733','#fa02
c6','#f99504','#b3b6b7','#8e44ad','#1a2b3c']
group=list(top_groups['Group'].unique())
def group_point(group,color,label):
    lat_group=list(top_groups[top_groups['Group']==group].latitude)
    long_group=list(top_groups[top_groups['Group']==group].longitude)
    x_group,y_group=m4(long_group,lat_group)
    m4.plot(x_group,y_group,'go',markersize=3,color=j,label=i)
for i,j in zip(group,colors):
    group_point(i,j,i)
legend=plt.legend(loc='lower left',frameon=True,prop={'size':10})
frame=legend.get_frame()
frame.set_facecolor('white')
plt.title('Regional Activities of Terrorist Groups')
plt.show()
```



The basemap clearly shows the regions of activity by the groups. ISIL is looks to be the notorious group in Iran and Iraq or broadly Middle-East. Similarly Taliban is concentrated in Afghanistan and Pakistan.

The Unknown markers, are maybe due to be an individual attack due to any resentment or personal grudges or any non-famous groups.

1.6 Terror Activities in India

In [22]:

```

terror_india=terror[terror['Country']=='India']
terror_india_fol=terror_india.copy()
terror_india_fol.dropna(subset=['latitude','longitude'],inplace=True)
location_ind=terror_india_fol[['latitude','longitude']][:5000]
city_ind=terror_india_fol['city'][:5000]
killed_ind=terror_india_fol['Killed'][:5000]
wound_ind=terror_india_fol['Wounded'][:5000]
target_ind=terror_india_fol['Target_type'][:5000]

map4 = folium.Map(location=[20.59, 78.96],tiles='CartoDB dark_matter',zoom_start
=4.5)
for point in location_ind.index:
    folium.CircleMarker(list(location_ind.loc[point].values),popup='<b>City: </b>
'+str(city_ind[point])+'<br><b>Killed: </b>'+str(killed_ind[point])+
    '<br><b>Injured: </b>'+str(wound_ind[point])+'<br><b>Tar
get: </b>'+str(target_ind[point]),radius=point_size(killed_ind[point]),color=col
or_point(killed_ind[point]),fill_color=color_point(killed_ind[point])).add_to(ma
p4)
map4

```

Out[22]:

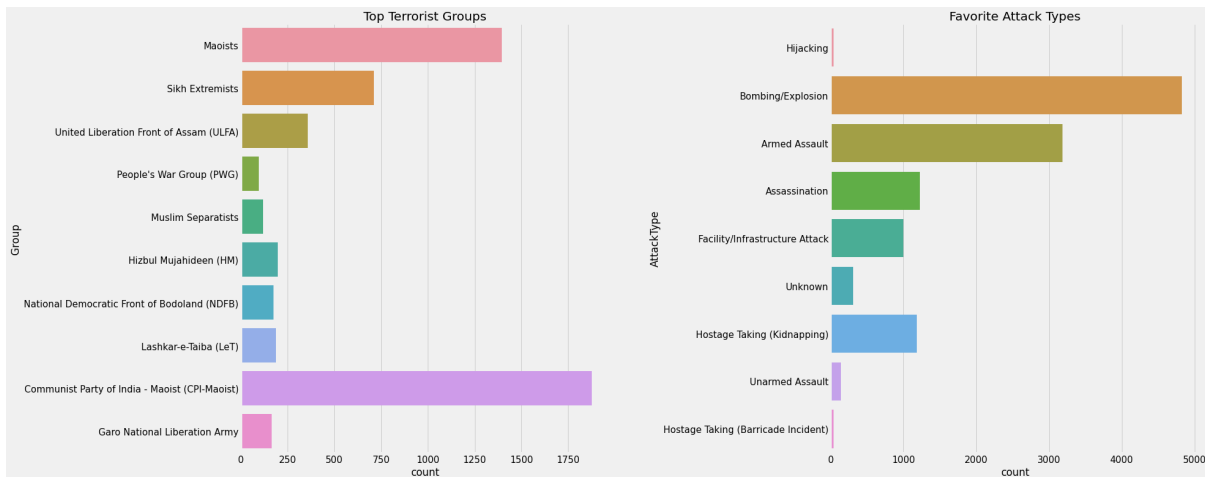


Click on markers for more information.

Most Notorious Groups in India and Favorite Attack Types

In [23]:

```
f,ax=plt.subplots(1,2,figsize=(25,12))
ind_groups=terror_india['Group'].value_counts()[1:11].index
ind_groups=terror_india[terror_india['Group'].isin(ind_groups)]
sns.countplot(y='Group',data=ind_groups,ax=ax[0])
ax[0].set_title('Top Terrorist Groups')
sns.countplot(y='AttackType',data=terror_india,ax=ax[1])
ax[1].set_title('Favorite Attack Types')
plt.subplots_adjust(hspace=0.3,wspace=0.6)
ax[0].tick_params(labelsize=15)
ax[1].tick_params(labelsize=15)
plt.show()
```



How did terrorism spread in India(Animation)

In [24]:

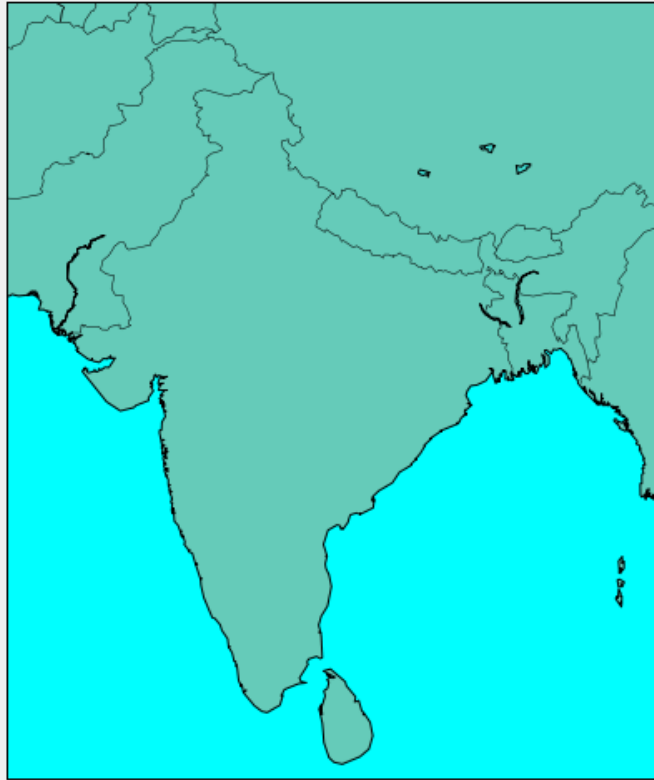
```

fig = plt.figure(figsize = (10,8))
def animate(Year):
    ax = plt.axes()
    ax.clear()
    ax.set_title('Terrorism In India '+'\n'+ 'Year:' +str(Year))
    m5 = Basemap(projection='lcc',resolution='l',llcrnrlon=67,llcrnrlat=5,urcrnr
lon=99,urcrnrlat=37,lat_0=28,lon_0=77)
    lat_gif=list(terror_india[terror_india['Year']==Year].latitude)
    long_gif=list(terror_india[terror_india['Year']==Year].longitude)
    x_gif,y_gif=m5(long_gif,lat_gif)
    m5.scatter(x_gif, y_gif,s=[killed+wounded for killed,wounded in zip(terror_i
ndia[terror_india['Year']==Year].Killed,terror_india[terror_india['Year']==Year]
.Wounded)],color = 'r')
    m5.drawcoastlines()
    m5.drawcountries()
    m5.fillcontinents(color='coral',lake_color='aqua', zorder = 1,alpha=0.4)
    m5.drawmapboundary(fill_color='aqua')
ani = animation.FuncAnimation(fig,animate,list(terror_india.Year.unique()), inte
rval = 1500)
ani.save('animation.gif', writer='imagemagick', fps=1)
plt.close(1)
filename = 'animation.gif'
video = io.open(filename, 'r+b').read()
encoded = base64.b64encode(video)
HTML(data=''''''.format(encode
d.decode('ascii'))))

```

Out[24]:

Terrorism In India Year:1972



The size of the marker is relative to the number of people killed + wounded.

The North-eastern and the Northern parts of India are the most terrorism prone areas. Jammu and Kashmir has witnessed highest attacks, and the numbers have gone up substantially since 1980's. The worst attack till date in India is the Mumbai Attack in 2006, which killed more than 200 people.

1.7 Terror Activities in USA

In [25]:

```

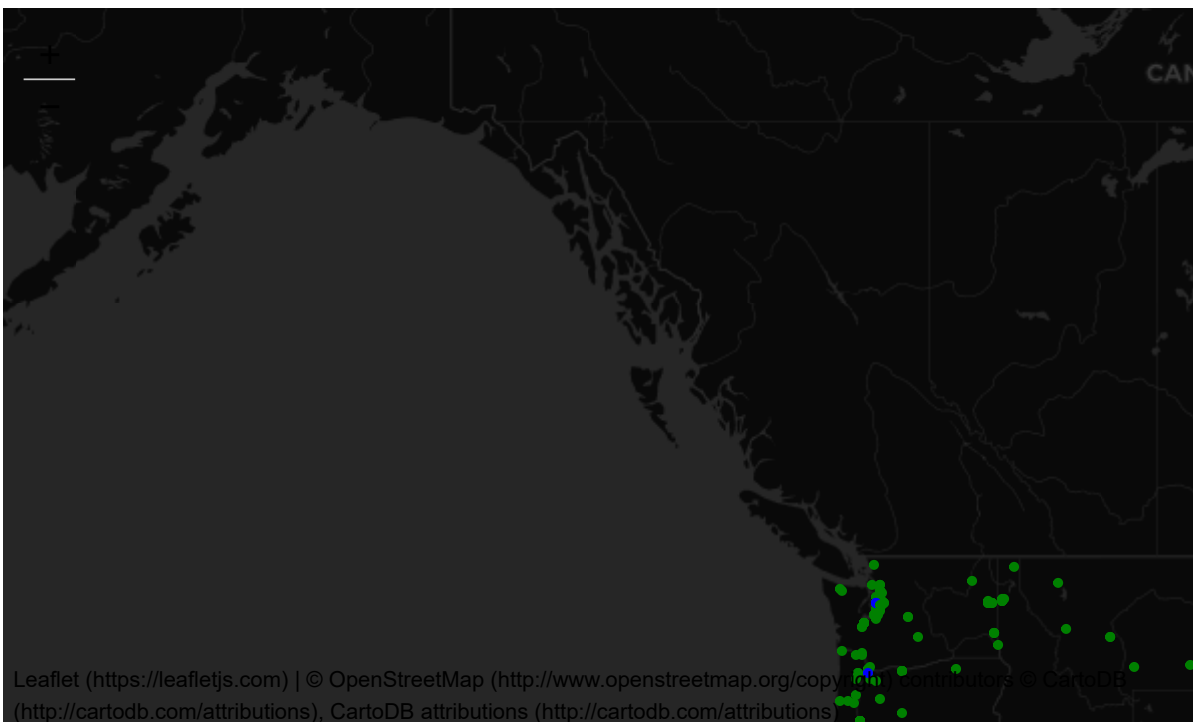
terror_usa=terror[terror['Country']=='United States']
terror_usa_fol=terror_usa.copy()
terror_usa_fol.dropna(subset=['latitude','longitude'],inplace=True)
location_usa=terror_usa_fol[['latitude','longitude']]
city_usa=terror_usa_fol['city']
killed_usa=terror_usa_fol['Killed']
wound_usa=terror_usa_fol['Wounded']
target_usa=terror_usa_fol['Target_type']

map5 = folium.Map(location=[39.50, -98.35],tiles='CartoDB dark_matter',zoom_start=3.5)
for point in location_usa.index:
    info='<b>City:</b>'+str(city_usa[point])+'<br><b>Killed</b>: '+str(killed_usa[point])+'<br><b>Wounded</b>: '+str(wound_usa[point])+'<br><b>Target</b>: '+str(target_usa[point])
    iframe = folium.IFrame(html=info, width=200, height=200)
    folium.CircleMarker(list(location_usa.loc[point].values),popup=folium.Popup(iframe),radius=point_size(killed_usa[point]),color=color_point(killed_usa[point])).add_to(map5)

```

map5

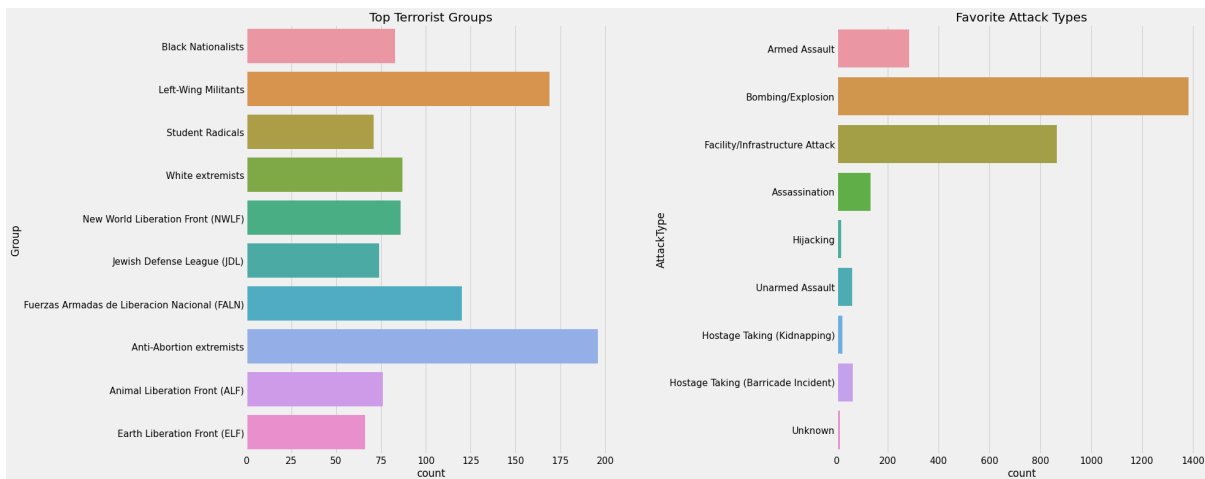
Out[25]:



Most Notorious Groups in USA and Favorite Attack Type

In [26]:

```
f,ax=plt.subplots(1,2,figsize=(25,12))
usa_groups=terror_usa['Group'].value_counts()[1:11].index
usa_groups=terror_usa[terror_usa['Group'].isin(usa_groups)]
sns.countplot(y='Group',data=usa_groups,ax=ax[0])
sns.countplot(y='AttackType',data=terror_usa,ax=ax[1])
plt.subplots_adjust(hspace=0.3,wspace=0.6)
ax[0].set_title('Top Terrorist Groups')
ax[1].set_title('Favorite Attack Types')
ax[0].tick_params(labelsize=15)
ax[1].tick_params(labelsize=15)
plt.show()
```



How did Terrorism Spread in USA(Animation)

In [27]:

```

fig = plt.figure(figsize = (10,8))
def animate(Year):
    ax = plt.axes()
    ax.clear()
    ax.set_title('Terrorism In USA '+'\n'+ 'Year:' +str(Year))
    m6 = Basemap(llcrnrlon=-119,llcrnrlat=22,urcrnrlon=-64,urcrnrlat=49,
        projection='lcc',lat_1=33,lat_2=45,lon_0=-95)
    lat_gif1=list(terror_usa[terror_usa['Year']==Year].latitude)
    long_gif1=list(terror_usa[terror_usa['Year']==Year].longitude)
    x_gif1,y_gif1=m6(long_gif1,lat_gif1)
    m6.scatter(x_gif1, y_gif1,s=[killed+wounded for killed,wounded in zip(terror
_usa[terror_usa['Year']==Year].Killed,terror_usa[terror_usa['Year']==Year].Wound
ed)],color = 'r')
    m6.drawcoastlines()
    m6.drawcountries()
    m6.fillcontinents(color='coral',lake_color='aqua', zorder = 1,alpha=0.4)
    m6.drawmapboundary(fill_color='aqua')
ani = animation.FuncAnimation(fig,animate,list(terror_usa.Year.unique()), interv
al = 1500)
ani.save('animation.gif', writer='imagemagick', fps=1)
plt.close(1)
filename = 'animation.gif'
video = io.open(filename, 'r+b').read()
encoded = base64.b64encode(video)
HTML(data='''''.format(encode
d.decode('ascii'))

```

Out[27]:



USA doesn't witness many terror attacks as compared to India. There are very few attacks that have claimed a very large number of lives. Also the number of casualties on an average is less as compared to that of India.

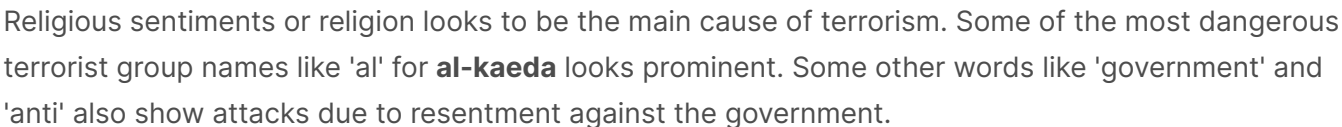
It has however witnessed one of the worst terrorist attacks in 2001 in New-York, which killed more than 1500 people.

1.8 Motive Behind Attacks

Motive simply means the reason for doing something. Now this reason may be anything, personal grudges, revolt against government, religious sentiments, etc. In this part we will try to analyse what are the main reasons behind the terrorist activities.

For this we will use NLTK for Natural Language Processing. The reason for using NLP is because if we simply take the count of words and make a wordcloud, many useless words like 'the','and','is', etc will have the highest count as they are very common in english language. Thus using NLTK, we can filter out these words and find other important words.

```
import nltk
book_mask = np.array(Image.open('../input/masksforwordclouds/book-logo-1.jpg'))
from wordcloud import WordCloud, STOPWORDS
motive=terror['Motive'].str.lower().str.replace(r'\|', ' ').str.cat(sep=' ')
words=nltk.tokenize.word_tokenize(motive)
word_dist = nltk.FreqDist(words)
stopwords = nltk.corpus.stopwords.words('english')
words_except_stop_dist = nltk.FreqDist(w for w in words if w not in stopwords)
wordcloud = WordCloud(stopwords=STOPWORDS,background_color='black',mask=book_mask).generate(" ".join(words_except_stop_dist))
plt.imshow(wordcloud)
fig=plt.gcf()
fig.set_size_inches(18,10)
plt.axis('off')
plt.show()
```



1.9 World Terrorism Spread(Animation)

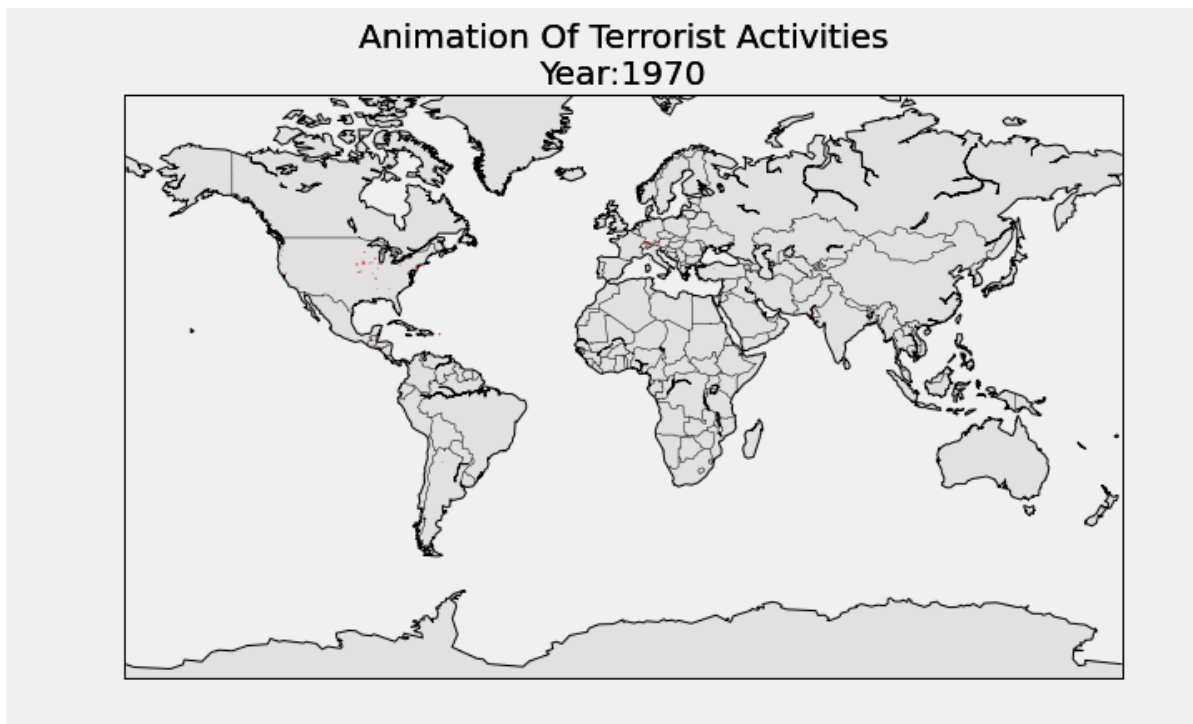
In [38]:

```

fig = plt.figure(figsize = (10,6))
def animate(Year):
    ax = plt.axes()
    ax.clear()
    ax.set_title('Animation Of Terrorist Activities'+'\n'+ 'Year:' +str(Year))
    m6 = Basemap(projection='mill',llcrnrlat=-80,urcrnrlat=80, llcrnrlon=-180,ur
crnrlon=180,lat_ts=20,resolution='c')
    lat6=list(terror[terror['Year']==Year].latitude)
    long6=list(terror[terror['Year']==Year].longitude)
    x6,y6=m6(long6,lat6)
    m6.scatter(x6, y6,s=[(kill+wound)*0.1 for kill,wound in zip(terror[terror['Y
ear']==Year].Killed,terror[terror['Year']==Year].Wounded)],color = 'r')
    m6.drawcoastlines()
    m6.drawcountries()
    m6.fillcontinents(zorder = 1,alpha=0.4)
    m6.drawmapboundary()
ani = animation.FuncAnimation(fig,animate,list(terror.Year.unique()), interval =
1500)
ani.save('animation.gif', writer='imagemagick', fps=1)
plt.close(1)
filename = 'animation.gif'
video = io.open(filename, 'r+b').read()
encoded = base64.b64encode(video)
HTML(data='''''.format(encode
d.decode('ascii'))))

```

Out[38]:



The size of the marker is relative to number of casualties(Killed+wounded).

It is visible that the Middle-East and Southern-Asia are the regions with highest terrorist activities, not only in numbers, but also in casualties. It is spreading largely across the globe but in the past few years, India, Pakistan and Afghanistan have witnessed an increase in such number of activities.

In []: