

```
In [400...] import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
import csv
import warnings
warnings.filterwarnings('ignore')
```

```
In [401...] usecols = ['eventid', 'iyear', 'country_txt', 'region_txt',
'provstate', 'city', 'latitude', 'longitude', 'success',
'suicide', 'attacktype1', 'attacktype1_txt', 'gname', 'nperps',
'nkill', 'nkillter', 'nwound', 'nwoundte', 'property', 'targsubtype1_txt', 'targtype1_txt']
```

```
In [402...] terror = pd.read_csv("E://terror.csv", usecols=usecols, encoding = 'ISO-8859-1')
```

EDA

```
In [403...] terror.shape
```

```
Out[403...] (181691, 21)
```

```
In [404...] terror.columns
```

```
Out[404...] Index(['eventid', 'iyear', 'country_txt', 'region_txt', 'provstate', 'city',
'latitude', 'longitude', 'success', 'suicide', 'attacktype1',
'attacktype1_txt', 'targtype1_txt', 'targsubtype1_txt', 'gname',
'nperps', 'nkill', 'nkillter', 'nwound', 'nwoundte', 'property'],
dtype='object')
```

```
In [405...] terror.isna().sum()
```

```
Out[405...] eventid          0
iyear          0
country_txt    0
region_txt     0
provstate      421
city           435
latitude       4556
longitude      4557
success        0
suicide        0
attacktype1    0
attacktype1_txt 0
targtype1_txt  0
targsubtype1_txt 10373
gname          0
nperps         71115
nkill          10313
nkillter       66958
nwound         16311
nwoundte       69143
property       0
dtype: int64
```

```
In [406...] terror.attacktype1.unique()
```

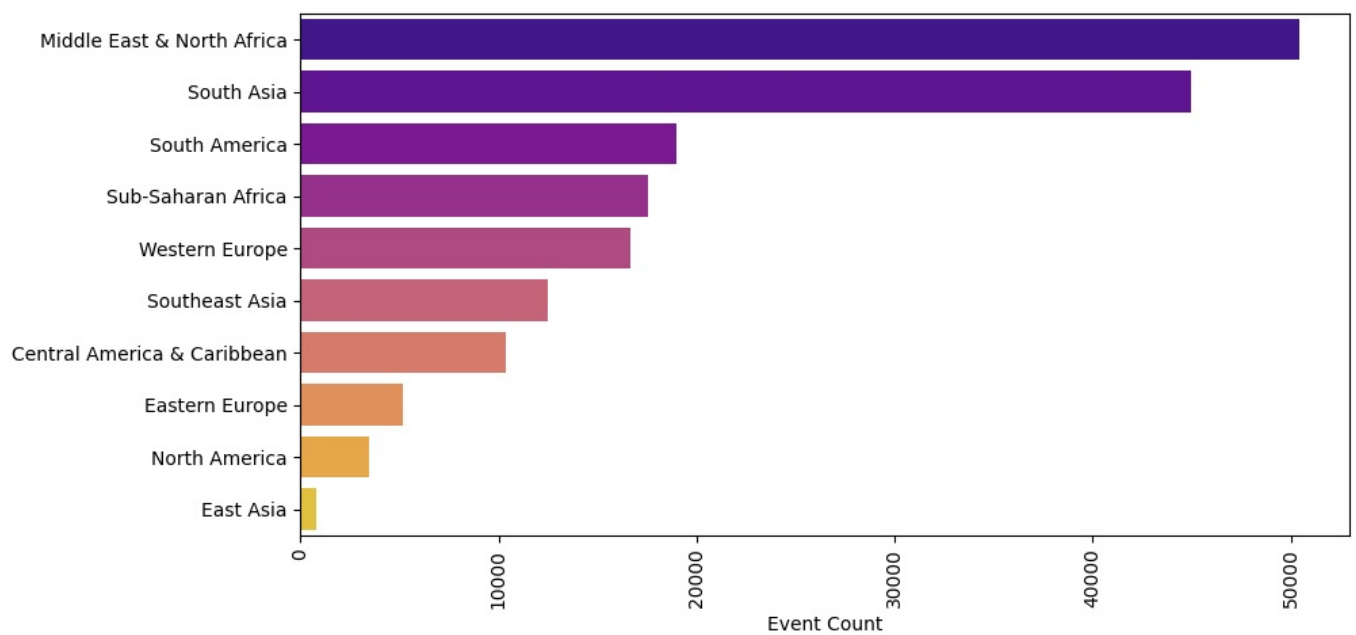
```
Out[406...] array([1, 6, 3, 7, 2, 4, 9, 8, 5], dtype=int64)
```

Regions With Most Terror Activities

```
In [407...] terror_reg = terror.groupby('region_txt')['eventid'].count().sort_values(ascending =False).reset_index()
```

```
In [408...] plt.figure(figsize =(10,5))
sns.barplot(y = terror_reg['region_txt'].head(10), x = terror_reg['eventid'].head(10), palette = 'plasma', hue =
plt.xticks(rotation =90)
plt.ylabel('')
plt.xlabel("Event Count")
```

```
Out[408...] Text(0.5, 0, 'Event Count')
```



Countries With Most Terror Activities

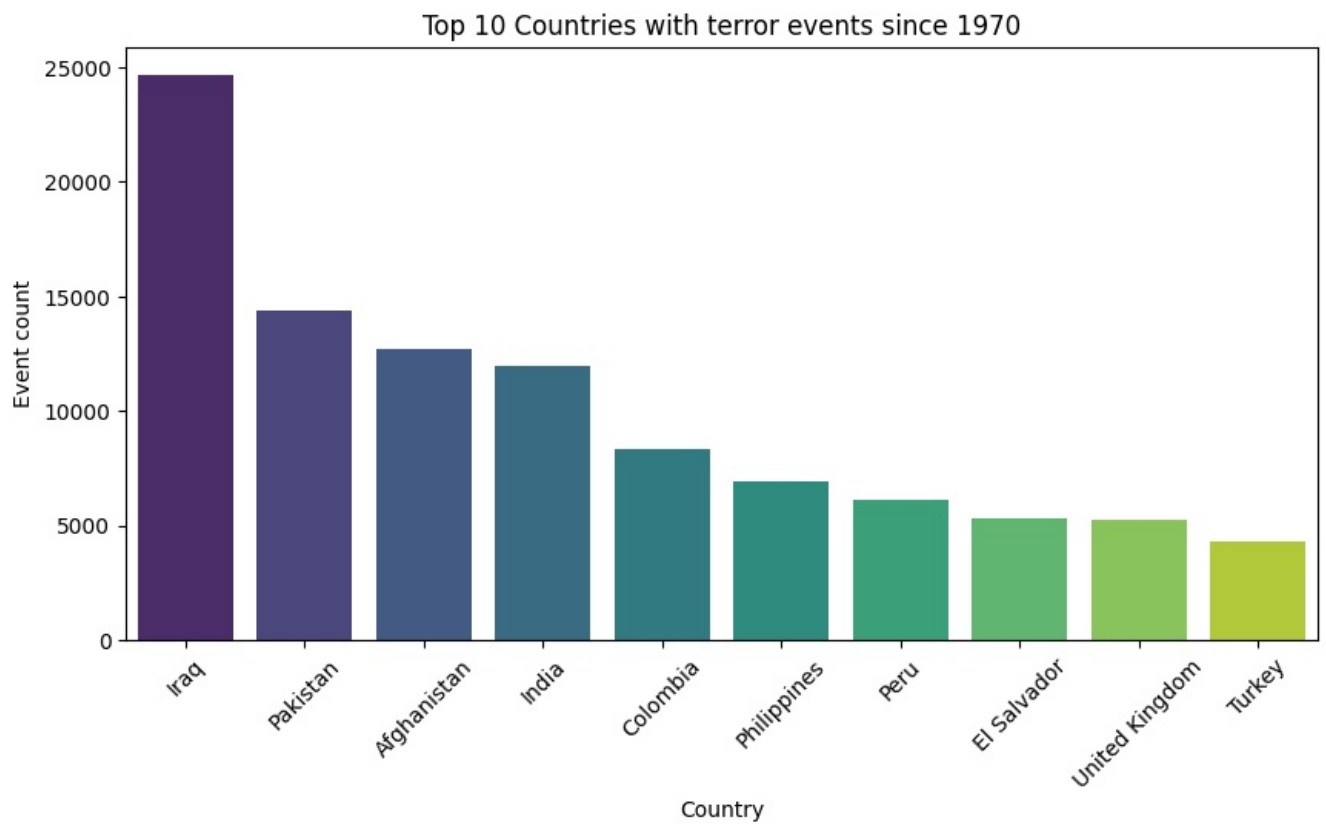
```
In [409.. terror = terror.dropna(subset = 'country_txt', axis = 0)
terror_count = terror.groupby('country_txt')['eventid'].count().sort_values(ascending = False).reset_index()
terror_count=terror_count.rename(columns = {"eventid": "event_count"})
terror_count.head()
```

```
Out[409..
```

	country_txt	event_count
0	Iraq	24636
1	Pakistan	14368
2	Afghanistan	12731
3	India	11960
4	Colombia	8306

```
In [410.. plt.figure(figsize =(10,5))
sns.barplot(x = terror_count['country_txt'].head(10), y = terror_count['event_count'].head(10),palette = 'virid.
plt.xticks(rotation = 45)
plt.xlabel("Country")
plt.ylabel("Event count")
plt.title("Top 10 Countries with terror events since 1970")
```

```
Out[410.. Text(0.5, 1.0, 'Top 10 Countries with terror events since 1970')
```



Iraq

```
In [411...] terror_iraq = terror[terror['country_txt']=="Iraq"]
```

```
In [412...] terror_iraq.head()
```

Out[412..

	eventid	iyear	country_txt	region_txt	provstate	city	latitude	longitude	success	suicide	...	attacktype1_
2854	197503010002	1975	Iraq	Middle East & North Africa	Nineveh	Mosul	36.354145	43.143570	1	0	...	Hijack
4385	197612150001	1976	Iraq	Middle East & North Africa	Baghdad	Baghdad	33.303566	44.371773	1	0	...	Bombing/Explos
4393	197612180001	1976	Iraq	Middle East & North Africa	Unknown	Penjwon	NaN	NaN	1	0	...	Hostage Tak (Kidnappi
4402	197612240001	1976	Iraq	Middle East & North Africa	Baghdad	Baghdad	33.303566	44.371773	1	0	...	Assassinat
8688	197906150001	1979	Iraq	Middle East & North Africa	Basra	Basra	30.510054	47.778095	1	0	...	Assassinat

5 rows × 21 columns

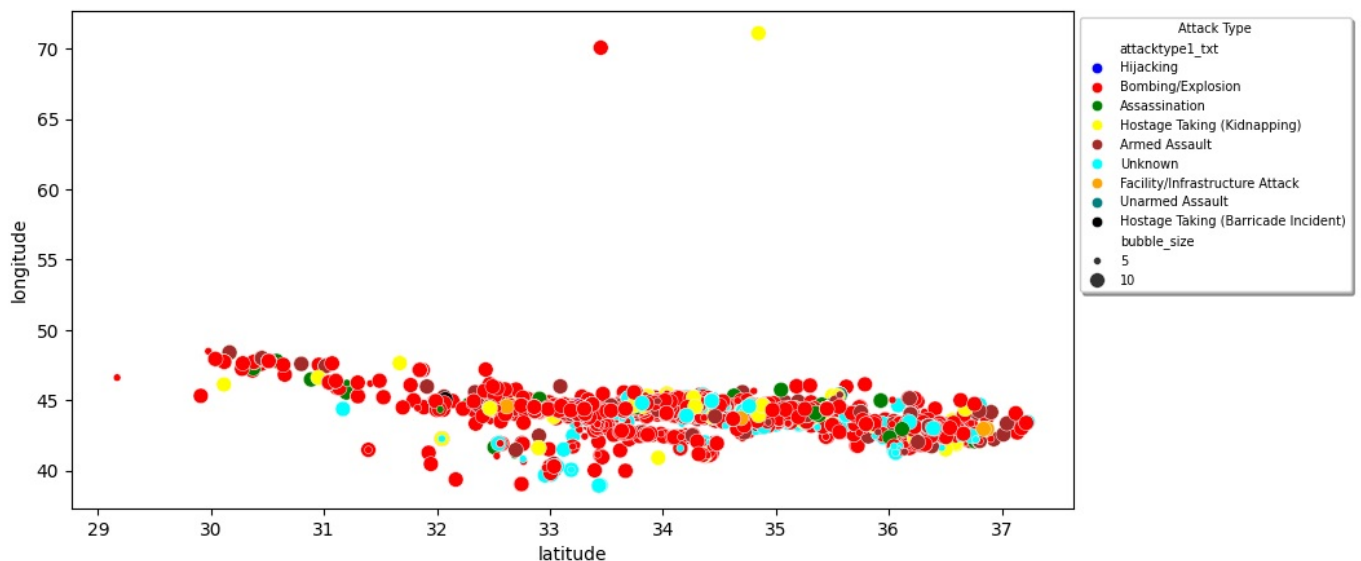
In [413.. terror_iraq=terror_iraq.dropna(subset = ['latitude', 'longitude'], axis = 0)

```

In [414.. terror_iraq = terror_iraq.copy()
terror_iraq['longitude'] = pd.to_numeric(terror_iraq['longitude'])
terror_iraq['latitude'] = pd.to_numeric(terror_iraq['latitude'])
data = terror_iraq
successful_size = 10
failure = 5
terror_iraq['bubble_size'] = terror_iraq['success'].apply(lambda x: failure if x == 0 else successful_size)
terror_iraq['attacktype1'] = terror_iraq['attacktype1_txt'].astype('category')
custom_palette = {'Bombing/Explosion': 'red', 'Hijacking': 'blue', 'Assassination': 'green', 'Hostage Taking (Kidnap)': 'yellow',
                  'Unknown': 'cyan', 'Facility/Infrastructure Attack': 'orange', 'Unarmed Assault': 'teal', 'Hostage Taking (Barricade Incident)': 'brown'}
plt.figure(figsize=(10,5))
sns.scatterplot(y='longitude', x='latitude', palette=custom_palette, hue='attacktype1_txt', data=data)
plt.legend(
    title='Attack Type',
    title_fontsize='7',
    loc='upper left',
    fontsize='7',
    bbox_to_anchor=(1,1),
    frameon=True,
    shadow=True,
)

```

Out[414.. <matplotlib.legend.Legend at 0x27a85747c50>



```

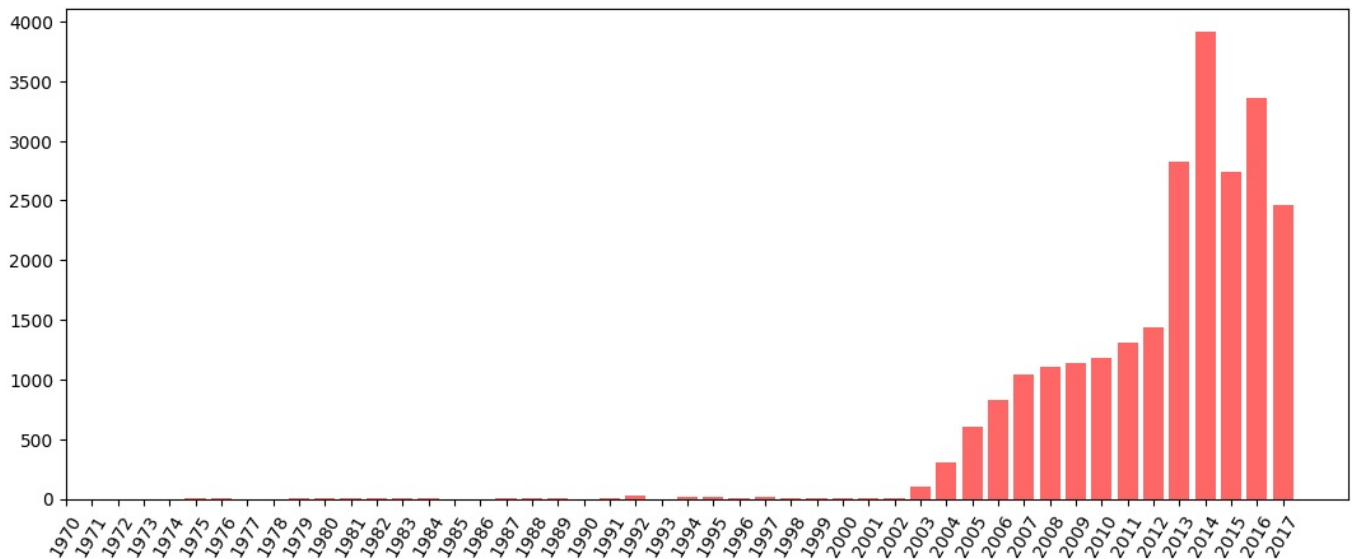
In [415.. terror_iraq_year = terror_iraq.groupby('iyear')['eventid'].count().reset_index()
terror_iraq_year.head()

```

```
Out[415...]
   iyear  eventid
0  1975        1
1  1976        2
2  1979        1
3  1980        6
4  1981        3
```

Year on Year Terror Activity Count

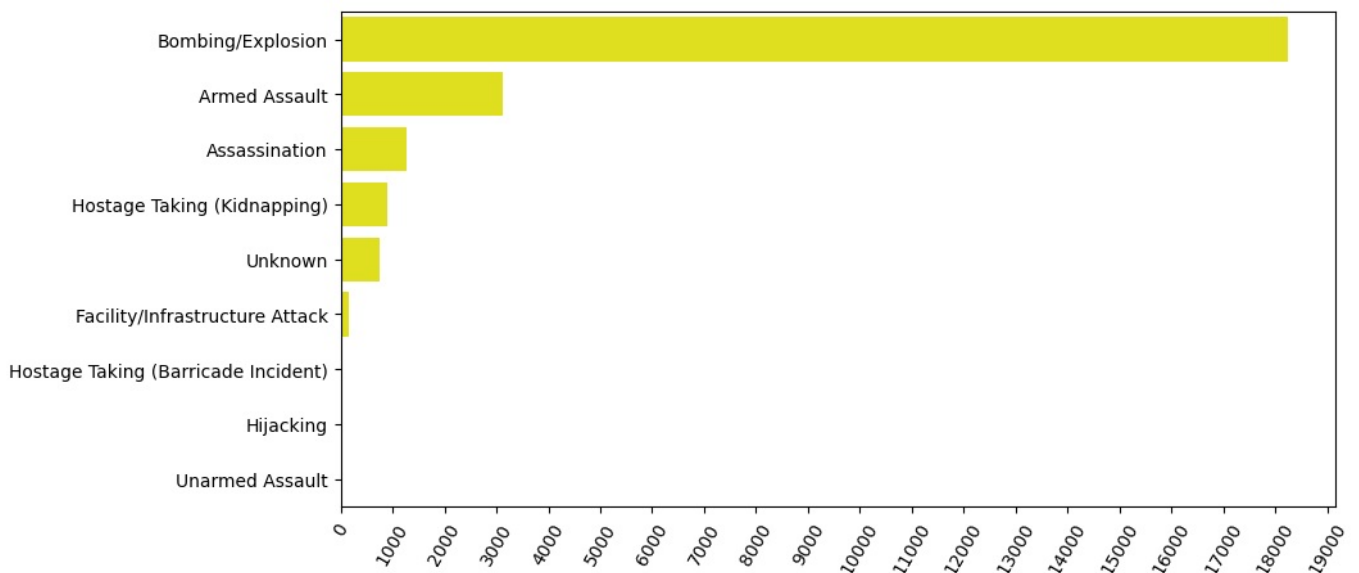
```
In [416...]
plt.figure(figsize = (13,5))
plt.bar(terror_iraq_year['iyear'], terror_iraq_year['eventid'], color = 'red', alpha = 0.6)
plt.xticks(range(1970,2018, 1), rotation = 60);
```



```
In [417...]
# %of different type of attacks
terror_iraq.attacktype1_txt.unique()
```

```
Out[417...]
array(['Hijacking', 'Bombing/Explosion', 'Assassination',
       'Hostage Taking (Kidnapping)', 'Armed Assault', 'Unknown',
       'Facility/Infrastructure Attack', 'Unarmed Assault',
       'Hostage Taking (Barricade Incident)'], dtype=object)
```

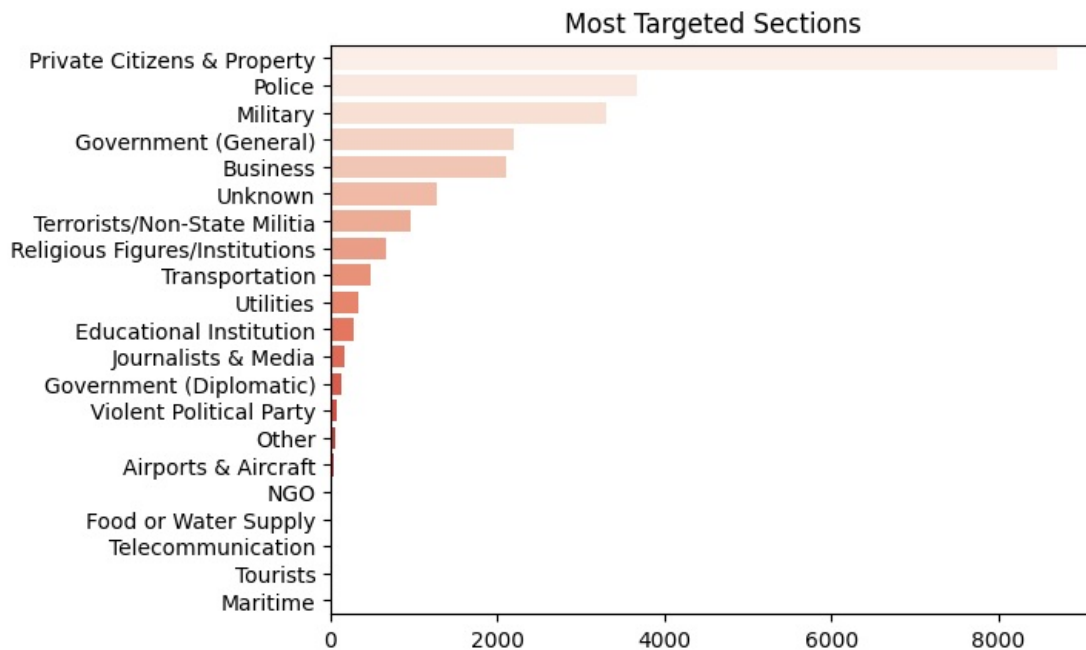
```
In [418...]
value_counts = terror_iraq['attacktype1_txt'].value_counts().reset_index()
value_counts.columns = ['attacktype1_txt', 'count']
plt.figure(figsize =(10,5))
sns.barplot(y = 'attacktype1_txt', x = 'count', data = value_counts, color = 'yellow')
#plt.xticks(rotation = 60 )
plt.xlabel('')
plt.ylabel('')
plt.xticks(range(0,20000,1000), rotation = 60);
```



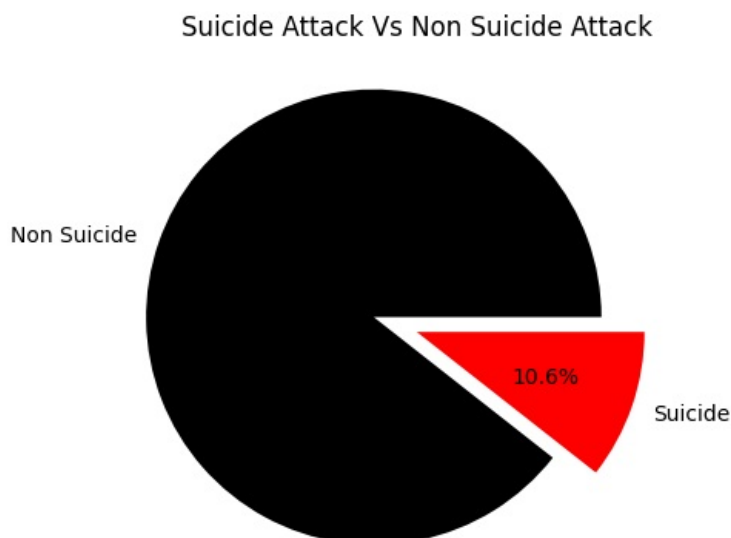
```
In [419...]
terror_iraq['attacktype1_txt'].value_counts()
```

```
Out[419... attacktype1_txt
Bombing/Explosion          18232
Armed Assault              3121
Assassination              1272
Hostage Taking (Kidnapping)  909
Unknown                    757
Facility/Infrastructure Attack 153
Hostage Taking (Barricade Incident) 24
Hijacking                  13
Unarmed Assault            6
Name: count, dtype: int64
```

```
In [420... count = terror_iraq['targettype1_txt'].value_counts().reset_index()
count.columns = ['Target', 'Count']
data = count
sns.barplot(x='Count', y='Target', data = count, palette = 'Reds', hue = 'Target' )
plt.xlabel('')
plt.ylabel('')
plt.title("Most Targeted Sections");
```



```
In [421... sizes = terror_iraq['suicide'].value_counts()
labels = ['Non Suicide', 'Suicide']
colors = ["Black", "Red"]
plt.pie(sizes, labels=labels, autopct = "%1.1f%%", explode = (0.2,0), colors= colors);
plt.title("Suicide Attack Vs Non Suicide Attack");
```



```
In [422... terror_iraq['suicide'].value_counts()
```

```
Out[422...] suicide
0    21893
1     2594
Name: count, dtype: int64
```

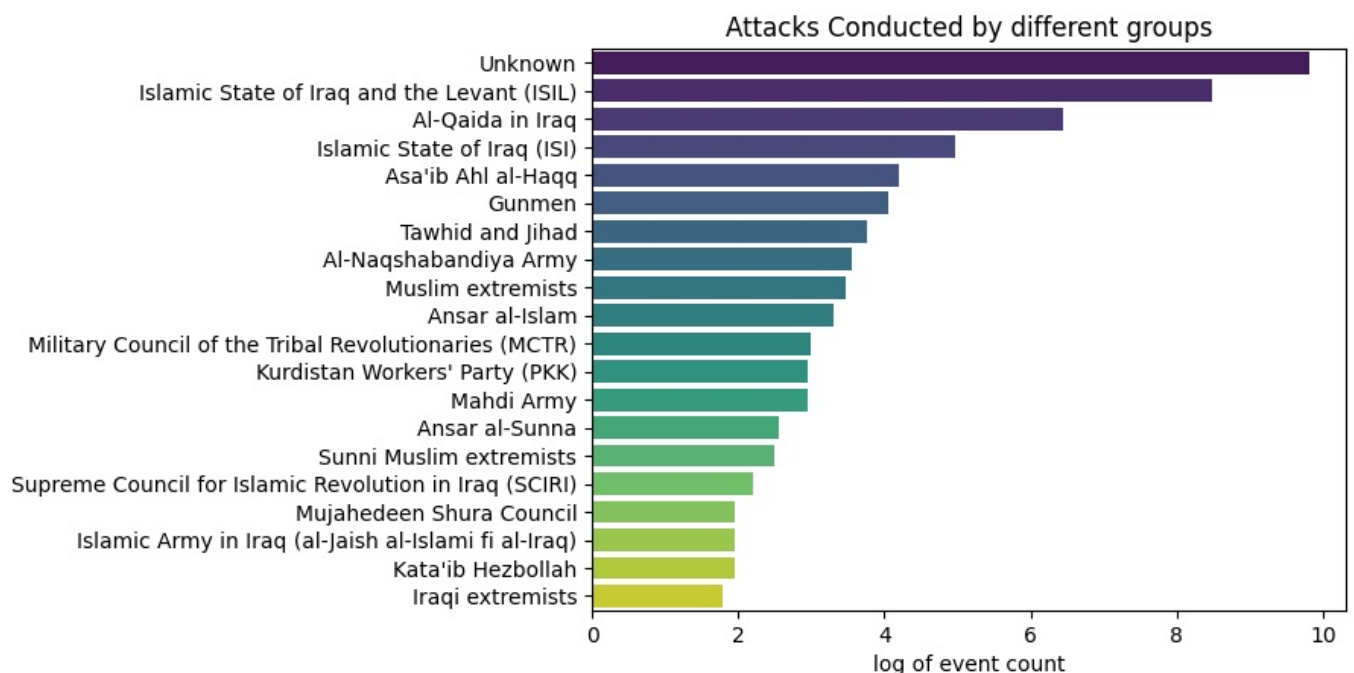
```
In [423...] terror_iraq['gname'].unique()
terror_iraq_gp = terror_iraq.groupby('gname')['eventid'].count().sort_values(ascending = False).reset_index()
terror_iraq_gp.head(20)
```

```
Out[423...]

```

	gname	eventid
0	Unknown	18427
1	Islamic State of Iraq and the Levant (ISIL)	4781
2	Al-Qaida in Iraq	629
3	Islamic State of Iraq (ISI)	145
4	Asa'ib Ahl al-Haqq	67
5	Gunmen	57
6	Tawhid and Jihad	43
7	Al-Naqshabandiya Army	35
8	Muslim extremists	32
9	Ansar al-Islam	27
10	Military Council of the Tribal Revolutionaries...	20
11	Kurdistan Workers' Party (PKK)	19
12	Mahdi Army	19
13	Ansar al-Sunna	13
14	Sunni Muslim extremists	12
15	Supreme Council for Islamic Revolution in Iraq...	9
16	Mujahedeen Shura Council	7
17	Islamic Army in Iraq (al-Jaish al-Islami fi al...	7
18	Kata'ib Hezbollah	7
19	Iraqi extremists	6

```
In [424...] import numpy as np
data = terror_iraq_gp.head(20)
data['eventid'] = np.log(data['eventid'])
sns.barplot(x = 'eventid', y = 'gname', palette = 'viridis', hue = 'gname', data = data)
plt.xlabel('log of event count')
plt.ylabel('')
plt.title('Attacks Conducted by different groups');
```

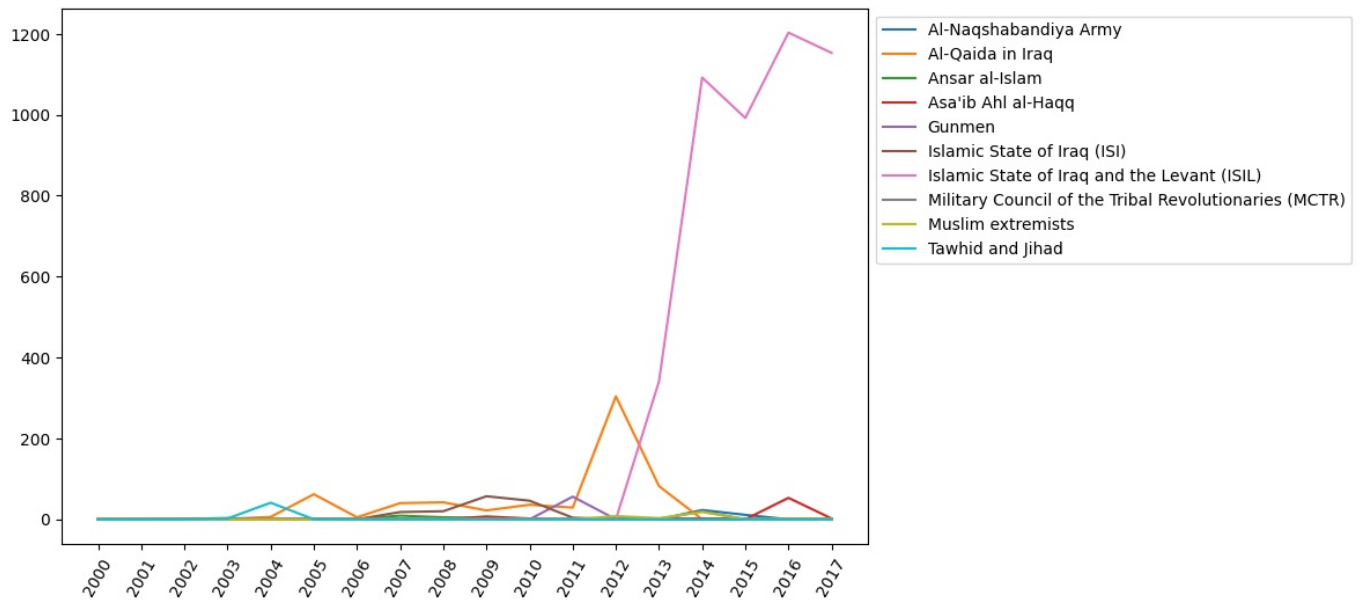


```
In [425...] terror_iraq_group10 = terror_iraq[terror_iraq['gname'].isin(terror_iraq['gname'].value_counts()[1:11].index)]
terror_activity = pd.crosstab(terror_iraq_group10.iyear, terror_iraq_group10.gname)
plt.figure(figsize =(9,6))
```

```

for column in terror_activity.columns:
    plt.plot(terror_activity[column], label = column);
plt.legend(loc='upper left', bbox_to_anchor=(1, 1))
plt.xticks(range(2000,2018,1),rotation = 60);

```



Cities Terror Activity Analysis

```

In [426...] terror_iraq_city = terror_iraq.groupby('city')['eventid'].count().reset_index().sort_values(by = "eventid",asc

```

```

In [427...] terror_iraq_city.head(10)

```

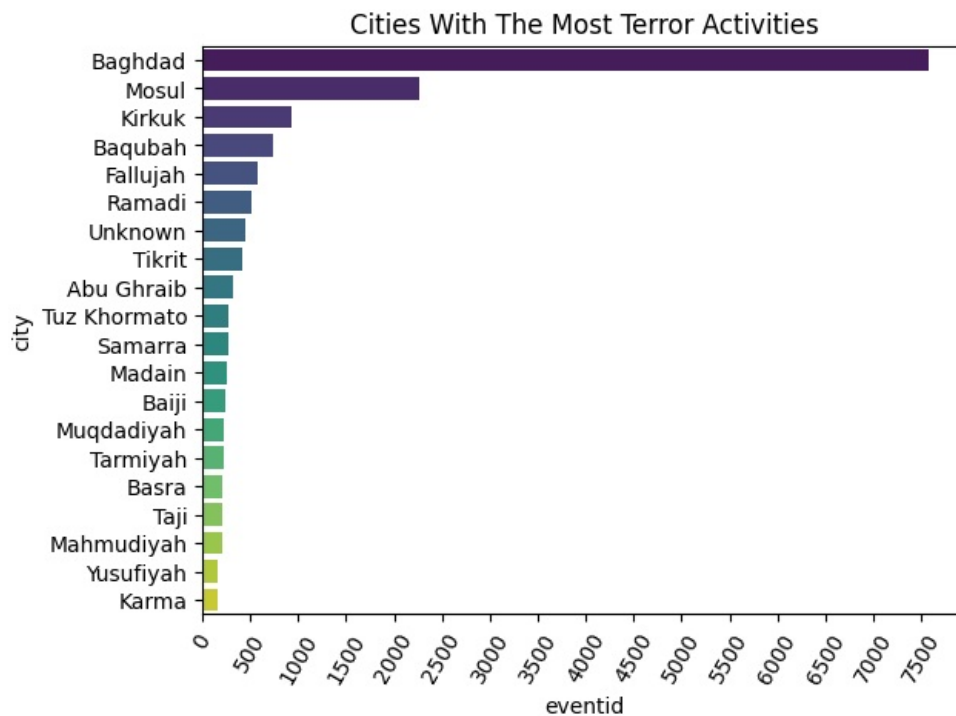
Out[427...]

	city	eventid
0	Baghdad	7585
1	Mosul	2265
2	Kirkuk	925
3	Baqubah	745
4	Fallujah	579
5	Ramadi	509
6	Unknown	446
7	Tikrit	418
8	Abu Ghraib	324
9	Tuz Khormato	277

```

In [428...] data = terror_iraq_city.head(20)
sns.barplot(y = 'city', x = 'eventid', data=data, palette = 'viridis', hue = terror_iraq_city['city'].head(20))
plt.title("Cities With The Most Terror Activities")
plt.xticks(range(0,8000,500), rotation = 60);

```

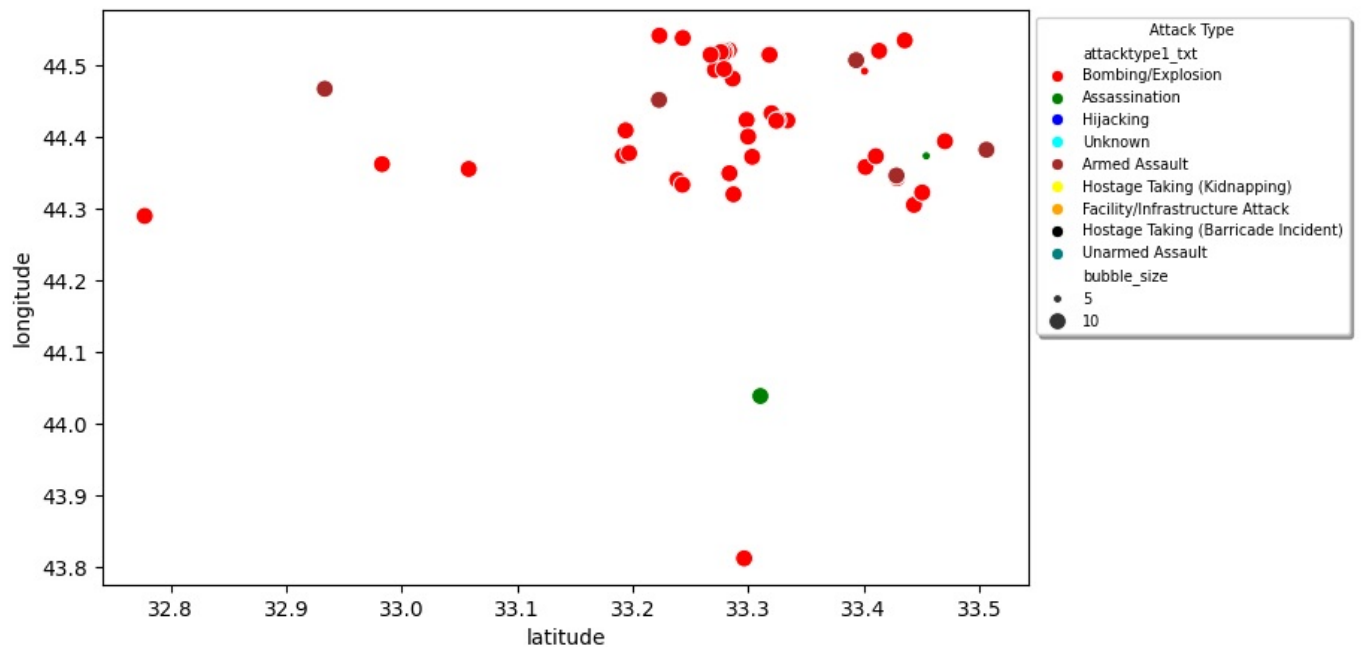
Baghdad

```
In [429...] terror_baghdad = terror_iraq[terror_iraq['city']=='Baghdad']
terror_baghdad.shape
```

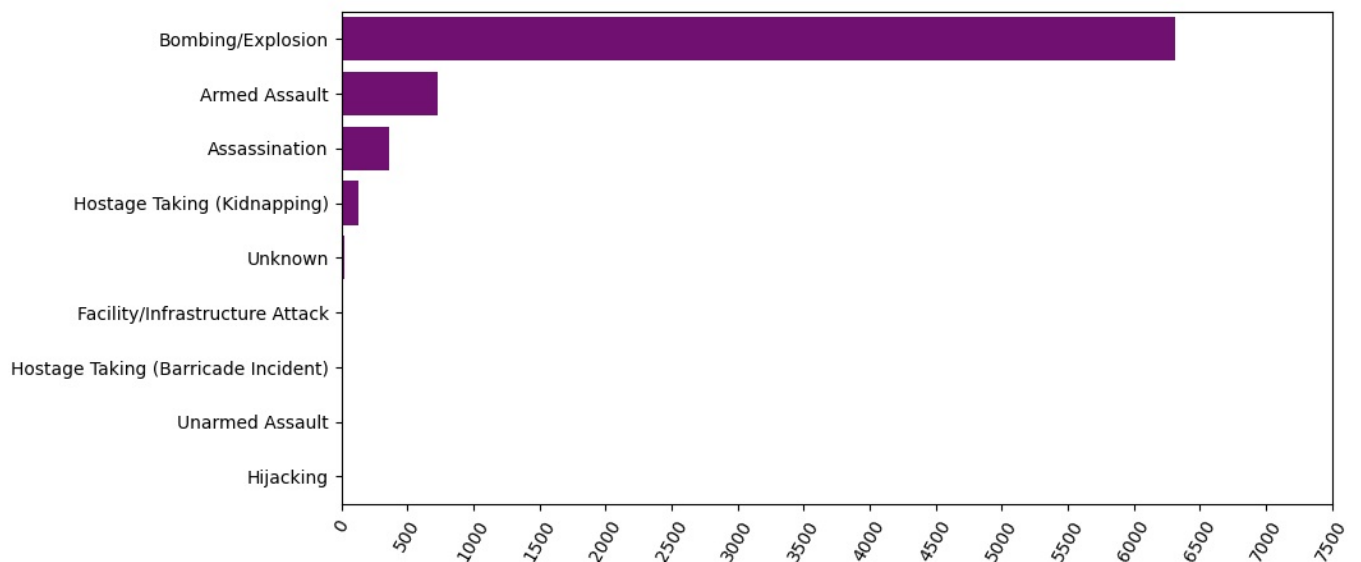
```
Out[429...] (7585, 22)
```

```
In [430...] terror_baghdad = terror_baghdad.copy()
terror_baghdad['longitude'] = pd.to_numeric(terror_iraq['longitude'])
terror_baghdad['latitude'] = pd.to_numeric(terror_iraq['latitude'])
data = terror_baghdad
successful_size = 10
failure = 5
terror_baghdad['bubble_size'] = terror_baghdad['success'].apply(lambda x: failure if x == 0 else successful_size)
terror_baghdad['attacktype1'] = terror_baghdad['attacktype1_txt'].astype('category')
custom_palette = {'Bombing/Explosion': 'red', 'Hijacking': 'blue', 'Assassination': 'green', 'Hostage Taking (Kidnapping)': 'red',
                  'Unknown': 'cyan', 'Facility/Infrastructure Attack': 'Orange', 'Unarmed Assault': 'teal', 'Hostage Taking (Kidnapping)': 'red'}

plt.figure(figsize=(8,5))
sns.scatterplot(y='longitude', x='latitude', palette=custom_palette, hue='attacktype1_txt', data=data)
plt.legend(
    title='Attack Type',
    title_fontsize='7',
    loc='upper left',
    fontsize='7',
    bbox_to_anchor=(1,1),
    frameon=True,
    shadow=True,
);
```



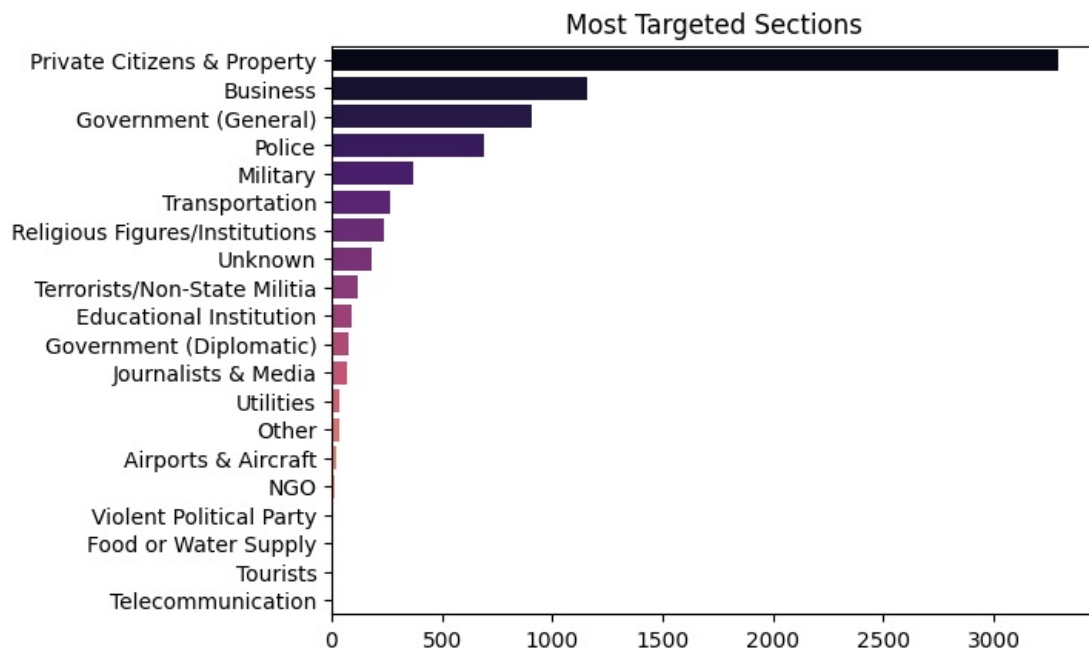
```
In [561]: value_counts = terror_baghdad['attacktype1_txt'].value_counts().reset_index()
value_counts.columns = ['attacktype1_txt', 'count']
plt.figure(figsize=(10,5))
sns.barplot(y = 'attacktype1_txt', x = 'count', data = value_counts, color = 'purple')
plt.xlabel('')
plt.ylabel('')
plt.xticks(range(0,8000,500), rotation = 60);
```



```
In [432]: terror_baghdad['attacktype1_txt'].value_counts()
```

```
Out[432]: attacktype1_txt
Bombing/Explosion      6313
Armed Assault          729
Assassination          366
Hostage Taking (Kidnapping) 133
Unknown                23
Facility/Infrastructure Attack 14
Hostage Taking (Barricade Incident) 4
Unarmed Assault         2
Hijacking               1
Name: count, dtype: int64
```

```
In [433]: count = terror_baghdad['targettype1_txt'].value_counts().reset_index()
count.columns = ['Target', 'Count']
data = count
sns.barplot(x='Count', y = 'Target', data = count, palette = 'magma', hue = 'Target' )
plt.xlabel('')
plt.ylabel('')
plt.title("Most Targeted Sections");
```



Pakistan

```
In [434...] terror_pak = terror[terror['country_txt']=="Pakistan"]
```

```
In [435...] terror_pak.head()
```

```
Out[435...]

```

	eventid	iyear	country_txt	region_txt	provstate	city	latitude	longitude	success	suicide	...	attacktype
585	197011010001	1970	Pakistan	South Asia	Sindh	Karachi	24.891115	67.143311	1	0	...	Assassin
2217	197402020001	1974	Pakistan	South Asia	Sindh	Karachi	24.891115	67.143311	1	0	...	Bombing/Expl
2705	197412090001	1974	Pakistan	South Asia	North-West Frontier Province	Peshawar	34.006004	71.537430	1	0	...	Bombing/Expl
2744	197500000001	1975	Pakistan	South Asia	Punjab	Rawalpindi	33.594013	73.069077	1	0	...	Bombing/Expl
2795	197502080001	1975	Pakistan	South Asia	North-West Frontier Province	Peshawar	34.006004	71.537430	1	0	...	Assassin

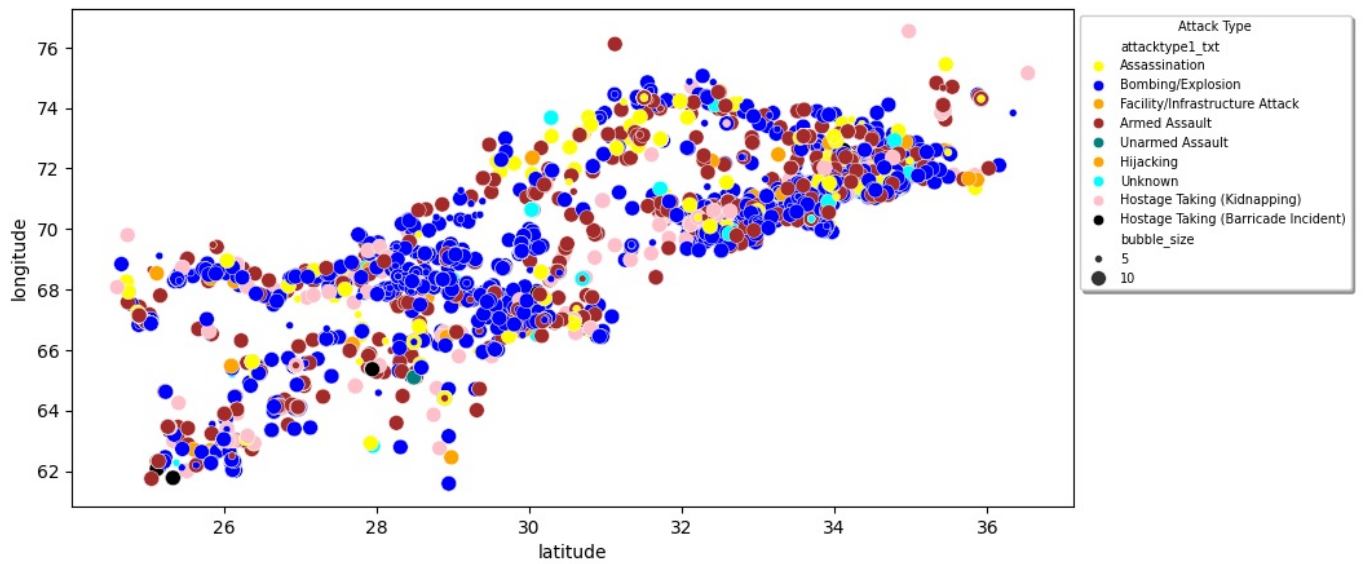
5 rows × 21 columns



```
In [436...] terror_pak = terror_pak.dropna(subset = ['latitude', 'longitude'], axis = 0)
```

```
In [437...]
terror_pak = terror_pak.copy()
terror_pak['longitude'] = pd.to_numeric(terror_pak['longitude'])
terror_pak['latitude'] = pd.to_numeric(terror_pak['latitude'])
data = terror_pak
successful_size = 10
failure = 5
terror_pak['bubble_size'] = terror_pak['success'].apply(lambda x: failure if x == 0 else successful_size)
terror_pak['attacktype1'] = terror_pak['attacktype1_txt'].astype('category')
custom_palette = {'Bombing/Explosion': 'blue', 'Hijacking': 'orange', 'Assassination': 'yellow', 'Hostage Taking (Kidnapping)': 'red', 'Unarmed Assault': 'teal', 'Hostage Taking (Hostage Taking)': 'cyan', 'Facility/Infrastructure Attack': 'Orange', 'Unarmed Assault': 'teal', 'Hostage Taking (Hostage Taking)': 'cyan'}
plt.figure(figsize=(10,5))
sns.scatterplot(y='longitude', x='latitude', palette=custom_palette, hue='attacktype1_txt', data=data)
plt.legend(
    title='Attack Type',
    title_fontsize='7',
    loc='upper left',
    fontsize='7',
    bbox_to_anchor=(1,1),
    frameon=True,
    shadow=True,
)
```

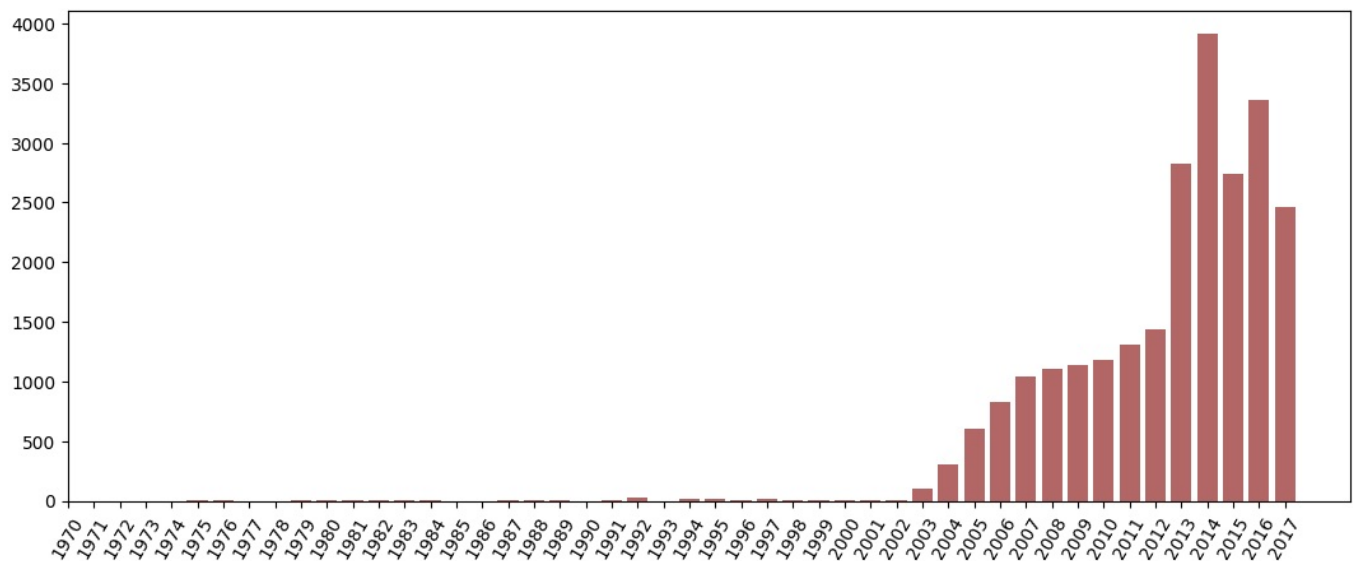
```
Out[437...] <matplotlib.legend.Legend at 0x27af16855e0>
```



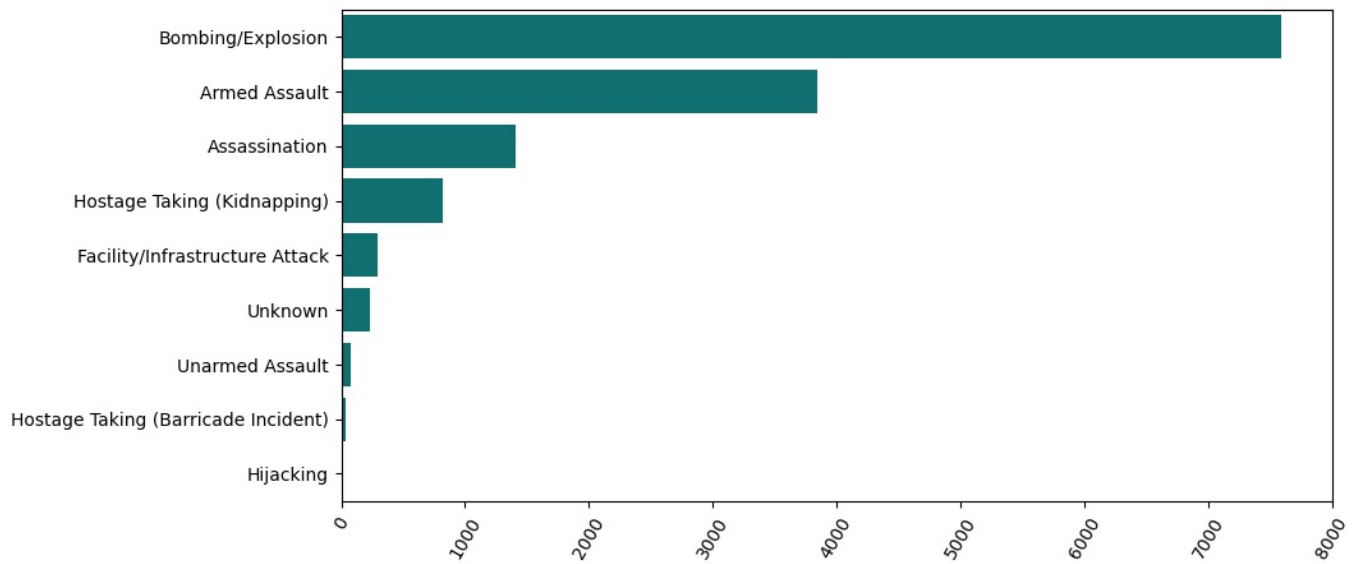
```
In [438.. terror_pak_year = terror_iraq.groupby('iyear')['eventid'].count().reset_index()
terror_pak_year.head()
```

```
Out[438.. iyear  eventid
0  1975         1
1  1976         2
2  1979         1
3  1980         6
4  1981         3
```

```
In [439.. plt.figure(figsize = (13,5))
plt.bar(terror_pak_year['iyear'], terror_pak_year['eventid'], color = 'maroon', alpha = 0.6)
plt.xticks(range(1970,2018, 1), rotation = 60);
```



```
In [559.. value_counts = terror_pak['attacktype1_txt'].value_counts().reset_index()
value_counts.columns = ['attacktype1_txt', 'count']
plt.figure(figsize =(10,5))
sns.barplot(y = 'attacktype1_txt', x = 'count', data = value_counts, color = 'teal')
#plt.xticks(rotation = 60 )
plt.xlabel('')
plt.ylabel('')
plt.xticks(range(0,9000,1000), rotation = 60);
```

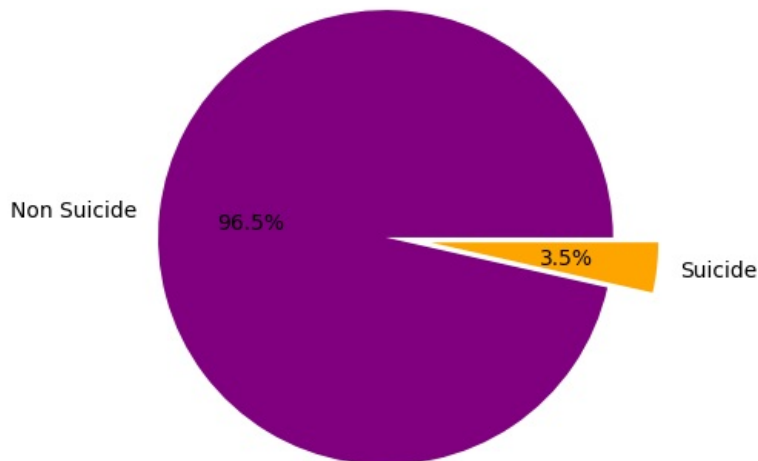


```
In [441]: terror_pak['attacktype1_txt'].value_counts()
```

```
Out[441]: attacktype1_txt
Bombing/Explosion      7588
Armed Assault          3845
Assassination          1403
Hostage Taking (Kidnapping)  819
Facility/Infrastructure Attack  298
Unknown                234
Unarmed Assault         77
Hostage Taking (Barricade Incident)  35
Hijacking               19
Name: count, dtype: int64
```

```
In [442]: sizes = terror_pak['suicide'].value_counts()
labels = ['Non Suicide', 'Suicide']
colors = ["purple", "orange"]
plt.pie(sizes, labels=labels, autopct = "%1.1f%%", explode = (0.2,0), colors= colors);
plt.title("Suicide Attack Vs Non Suicide Attack");
```

Suicide Attack Vs Non Suicide Attack



```
In [443]: terror_pak['suicide'].value_counts()
```

```
Out[443]: suicide
0      13811
1         507
Name: count, dtype: int64
```

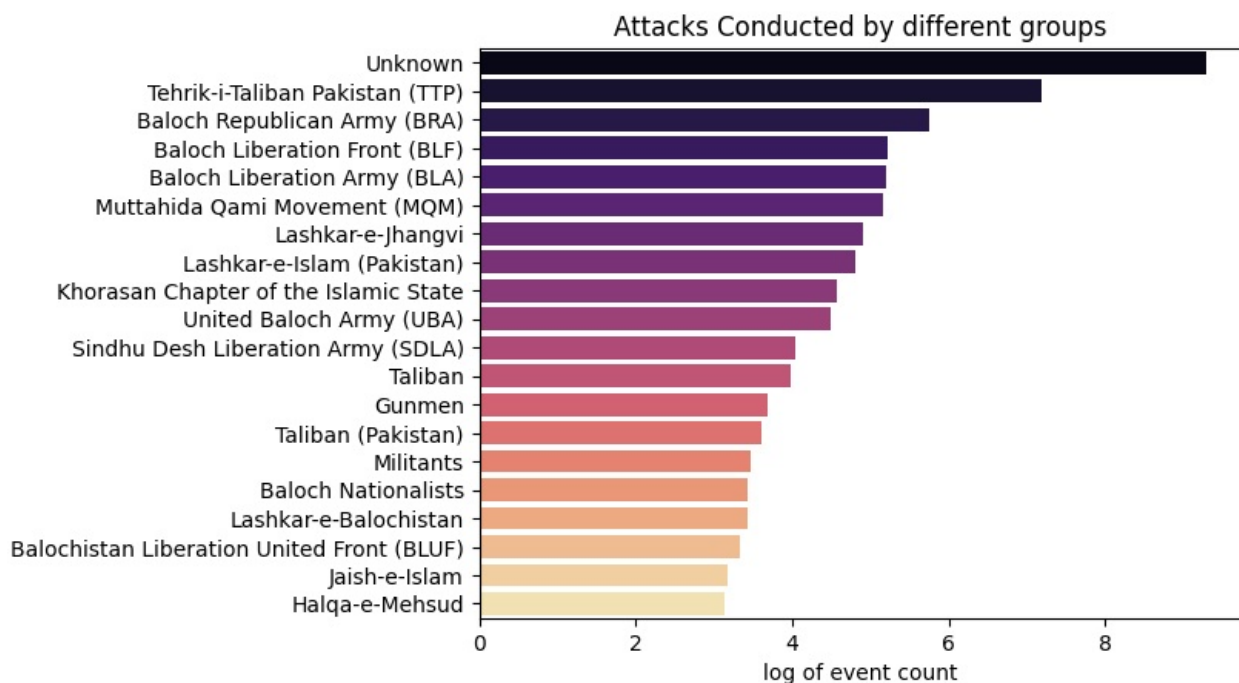
```
In [444]: terror_pak['gname'].unique()
terror_pak_gp = terror_pak.groupby('gname')['eventid'].count().sort_values(ascending = False).reset_index()
terror_pak_gp.head(20)
```

Out [444]...

	gname	eventid
0	Unknown	10852
1	Tehrik-i-Taliban Pakistan (TTP)	1333
2	Baloch Republican Army (BRA)	312
3	Baloch Liberation Front (BLF)	185
4	Baloch Liberation Army (BLA)	181
5	Muttahida Qami Movement (MQM)	174
6	Lashkar-e-Jhangvi	135
7	Lashkar-e-Islam (Pakistan)	123
8	Khorasan Chapter of the Islamic State	96
9	United Baloch Army (UBA)	89
10	Sindhu Desh Liberation Army (SDLA)	57
11	Taliban	54
12	Gunmen	40
13	Taliban (Pakistan)	37
14	Militants	32
15	Baloch Nationalists	31
16	Lashkar-e-Balochistan	31
17	Balochistan Liberation United Front (BLUF)	28
18	Jaish-e-Islam	24
19	Halqa-e-Mehsud	23

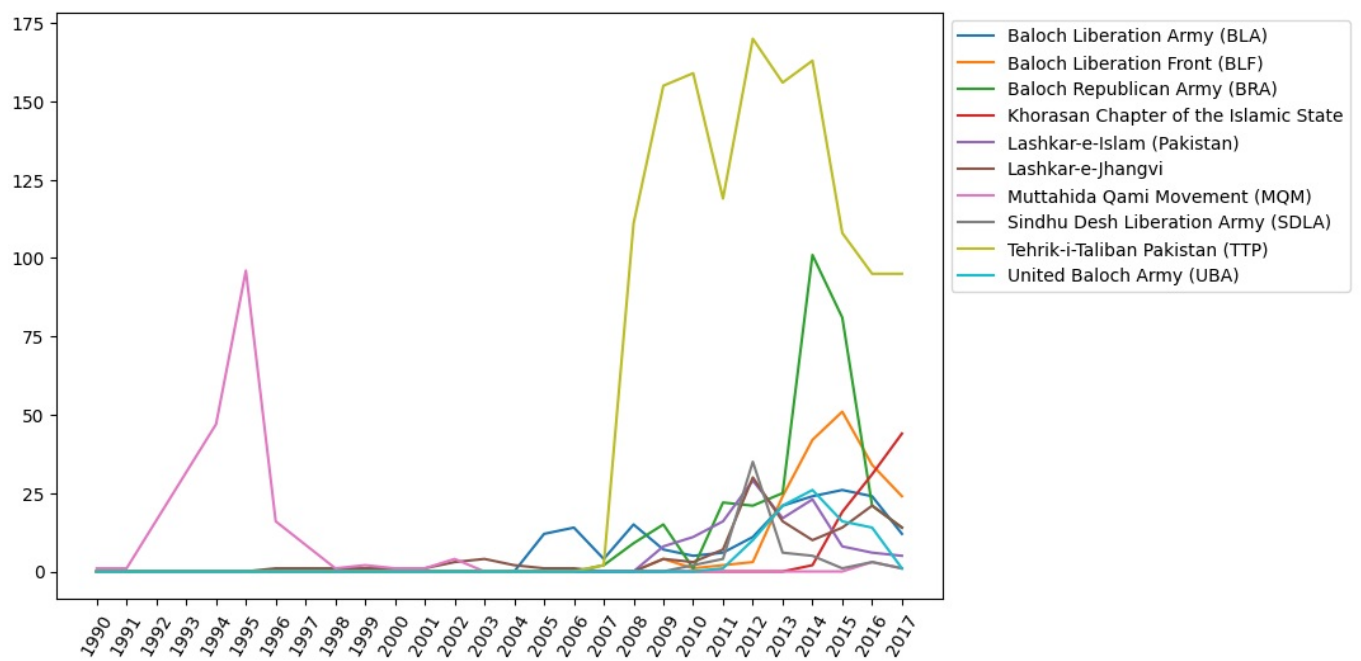
In [445]...

```
import numpy as np
data = terror_pak_gp.head(20)
data['eventid'] = np.log(data['eventid'])
sns.barplot(x = 'eventid', y = 'gname', palette = 'magma', hue = 'gname', data = data)
plt.xlabel('log of event count')
plt.ylabel('')
plt.title('Attacks Conducted by different groups');
```



In [448]...

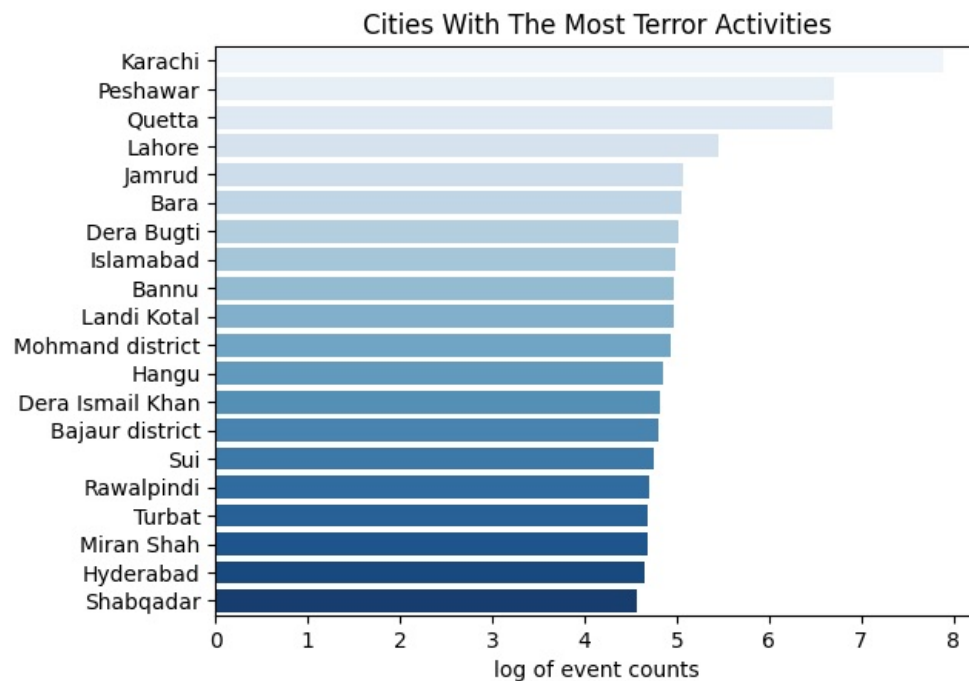
```
terror_pak_group10 = terror_pak[terror_pak['gname'].isin(terror_pak['gname'].value_counts()[1:11].index)]
terror_activity = pd.crosstab(terror_pak_group10.iyear, terror_pak_group10.gname)
plt.figure(figsize=(9,6))
for column in terror_activity.columns:
    plt.plot(terror_activity[column], label = column);
plt.legend(loc='upper left', bbox_to_anchor=(1, 1))
plt.xticks(range(1990,2018,1),rotation = 60);
```



Cities Terror Activity Analysis

```
In [447.. terror_pak_city = terror_pak.groupby('city')['eventid'].count().reset_index().sort_values(by = "eventid", ascending=True)
```

```
In [448.. data = terror_pak_city.head(20)
data['eventid'] = np.log(data['eventid'])
sns.barplot(y = 'city', x = 'eventid', data=data, palette = 'Blues', hue = terror_pak_city['city'].head(20))
plt.title("Cities With The Most Terror Activities");
plt.xlabel('log of event counts')
plt.ylabel('');
```

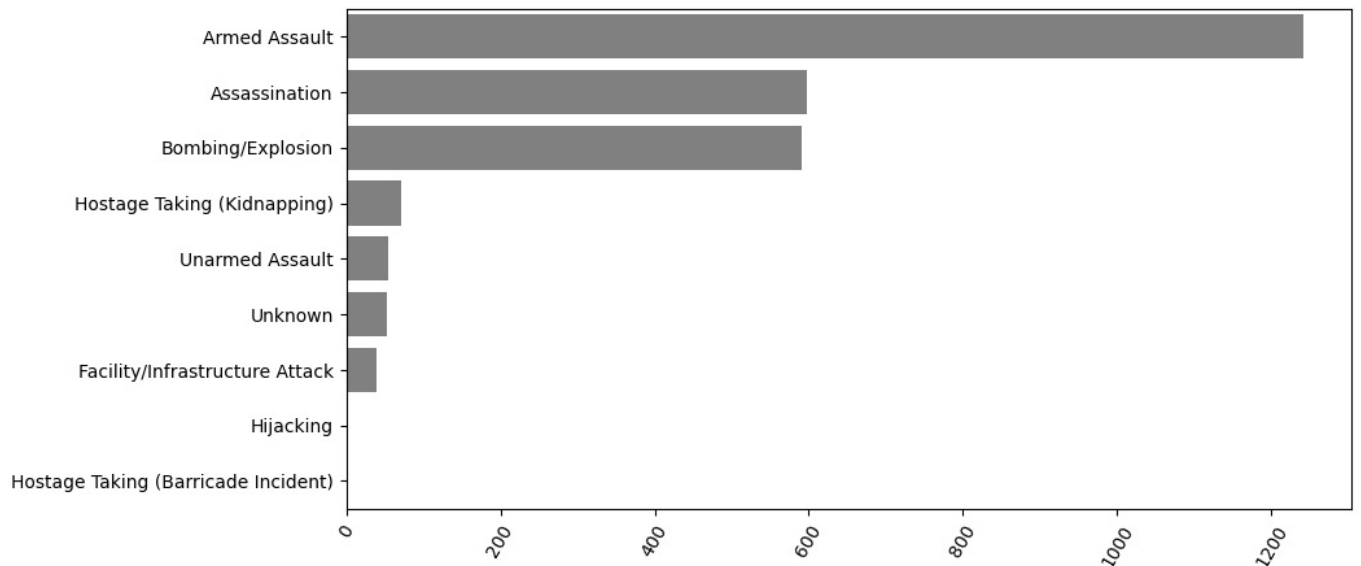


Karachi

```
In [449.. terror_karachi = terror_pak[terror_pak['city']=='Karachi']
terror_karachi.isna().sum()
```

```
Out[449.. eventid          0
         iyear          0
         country_txt    0
         region_txt     0
         provstate      0
         city           0
         latitude       0
         longitude      0
         success        0
         suicide        0
         attacktype1    0
         attacktype1_txt 0
         targtype1_txt  0
         targsubtype1_txt 213
         gname          0
         nperps        1104
         nkill         17
         nkillter      1092
         nwound        74
         nwoundte      1100
         property       0
         bubble_size    0
         dtype: int64
```

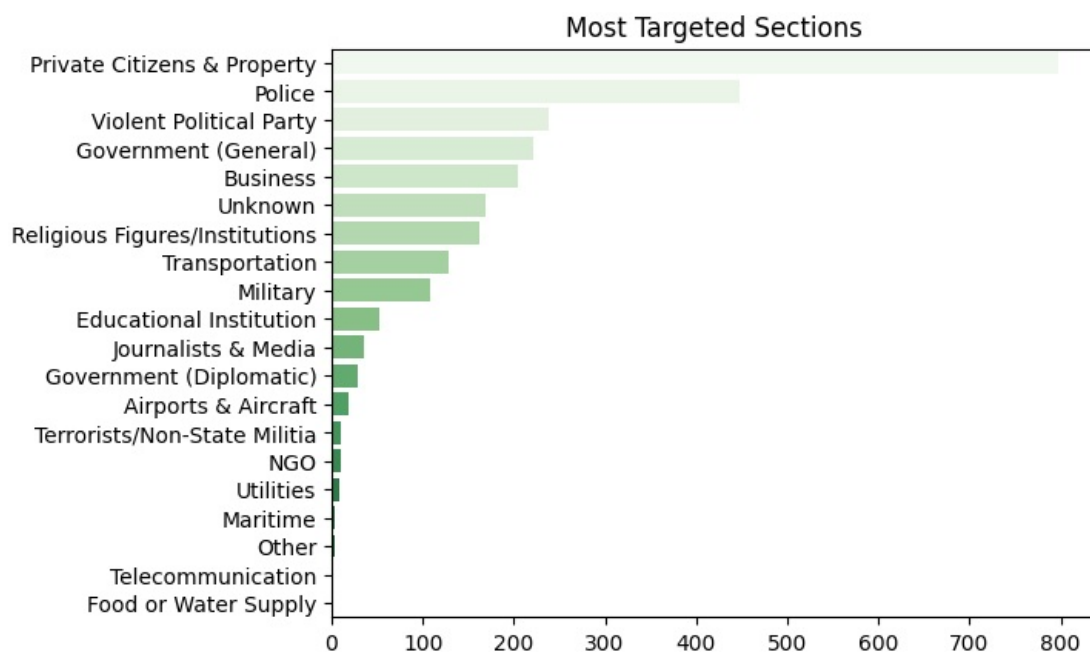
```
In [558.. value_counts = terror_karachi['attacktype1_txt'].value_counts().reset_index()
value_counts.columns = ['attacktype1_txt', 'count']
plt.figure(figsize=(10,5))
sns.barplot(y = 'attacktype1_txt', x = 'count', data = value_counts, color = 'grey')
plt.xlabel('')
plt.ylabel('')
plt.xticks(range(0,1400,200), rotation = 60);
```



```
In [452.. terror_karachi['attacktype1_txt'].value_counts()
```

```
Out[452.. attacktype1_txt
Armed Assault          1241
Assassination          597
Bombing/Explosion      590
Hostage Taking (Kidnapping) 72
Unarmed Assault        54
Unknown                52
Facility/Infrastructure Attack 40
Hijacking               3
Hostage Taking (Barricade Incident) 1
Name: count, dtype: int64
```

```
In [453.. count = terror_karachi['targtype1_txt'].value_counts().reset_index()
count.columns = ['Target', 'Count']
data = count
sns.barplot(x='Count', y = 'Target', data = count, palette = 'Greens', hue = 'Target' )
plt.xlabel('')
plt.ylabel('')
plt.title("Most Targeted Sections");
```

Afghanistan

```
In [463...] terror_afg = terror[terror['country_txt']=="Afghanistan"]
terror_afg.head()
```

```
Out[463...]

```

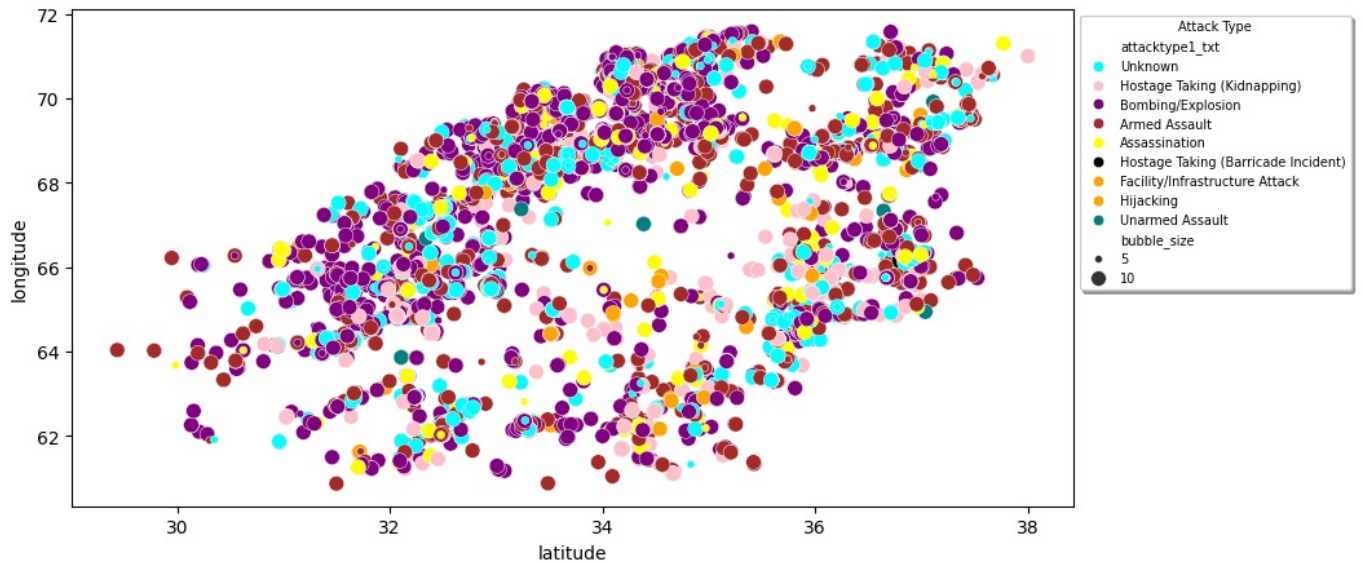
	eventid	iyear	country_txt	region_txt	provstate	city	latitude	longitude	success	suicide	...	attacktype1
1863	197305010002	1973	Afghanistan	South Asia	Kabul	Kabul	34.516895	69.147011	0	0	...	Unkr
7627	197902140010	1979	Afghanistan	South Asia	Kabul	Kabul	34.516895	69.147011	1	0	...	Hostage Tz (Kidnap)
9156	197908270005	1979	Afghanistan	South Asia	Ghazni	Ghazni	33.542622	68.415329	1	0	...	Bombing/Explc
9218	197909090001	1979	Afghanistan	South Asia	Herat	Herat	34.346722	62.197315	1	0	...	Armed As
31132	198705310003	1987	Afghanistan	South Asia	Unknown	Unknown	NaN	NaN	1	0	...	Unarmed As

5 rows × 21 columns

```
In [464...] terror_afg = terror_afg.dropna(subset = ['latitude', 'longitude'], axis = 0)
```

```
In [465...]
terror_afg = terror_afg.copy()
terror_afg['longitude'] = pd.to_numeric(terror_afg['longitude'])
terror_afg['latitude'] = pd.to_numeric(terror_afg['latitude'])
data = terror_afg
successful_size = 10
failure = 5
terror_afg['bubble_size'] = terror_afg['success'].apply(lambda x: failure if x == 0 else successful_size)
terror_afg['attacktype1'] = terror_afg['attacktype1_txt'].astype('category')
custom_palette = {'Bombing/Explosion': 'purple', 'Hijacking': 'orange', 'Assassination': 'yellow', 'Hostage Taking': 'red',
                  'Unknown': 'cyan', 'Facility/Infrastructure Attack': 'Orange', 'Unarmed Assault': 'teal', 'Hostage Taking (Kidnap)': 'red'}
plt.figure(figsize=(10,5))
sns.scatterplot(y='longitude', x='latitude', palette=custom_palette, hue='attacktype1_txt', data=data)
plt.legend(
    title='Attack Type',
    title_fontsize='7',
    loc='upper left',
    fontsize='7',
    bbox_to_anchor=(1,1),
    frameon=True,
    shadow=True,
)
```

```
Out[465...] <matplotlib.legend.Legend at 0x27a8375cc20>
```

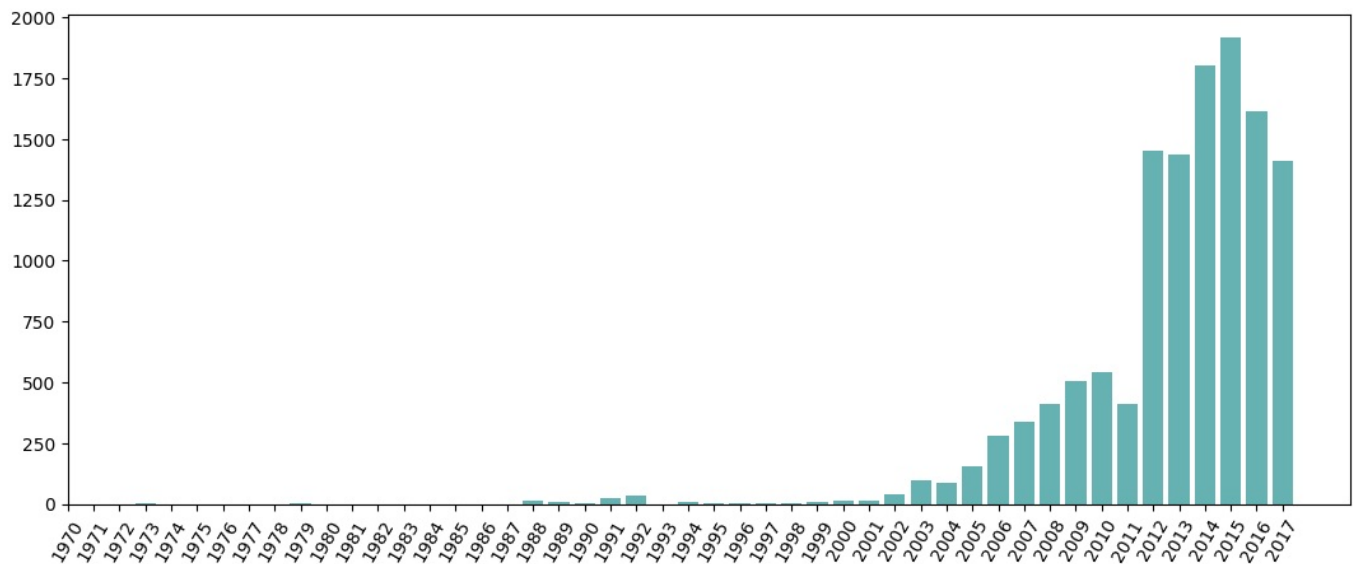


```
In [466]: terror_afg_year = terror_afg.groupby('iyear')['eventid'].count().reset_index()
terror_afg_year.head()
```

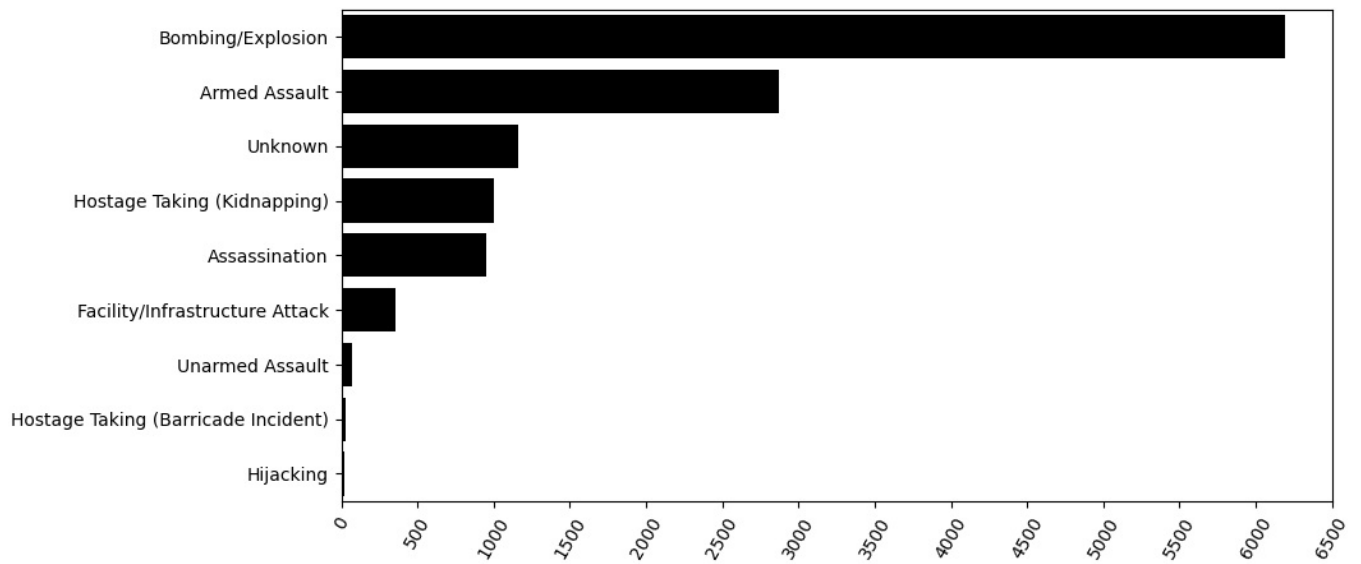
```
Out[466]:
```

	iyear	eventid
0	1973	1
1	1979	3
2	1988	11
3	1989	10
4	1990	2

```
In [467]: plt.figure(figsize = (13,5))
plt.bar(terror_afg_year['iyear'], terror_afg_year['eventid'], color = 'teal', alpha = 0.6)
plt.xticks(range(1970,2018, 1), rotation = 60);
```



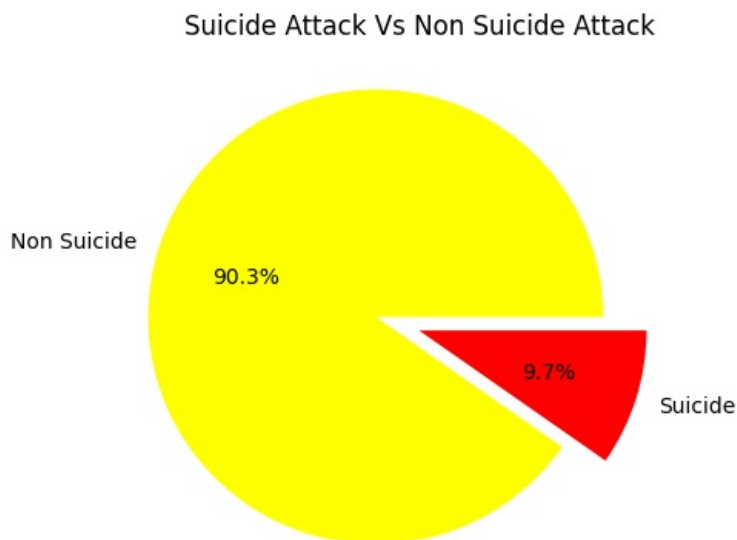
```
In [556]: value_counts = terror_afg['attacktype1_txt'].value_counts().reset_index()
value_counts.columns = ['attacktype1_txt', 'count']
plt.figure(figsize=(10,5))
sns.barplot(y = 'attacktype1_txt', x = 'count', data = value_counts, color = 'black')
#plt.xticks(rotation = 60 )
plt.xlabel('')
plt.ylabel('')
plt.xticks(range(0,7000,500), rotation = 60);
```



```
In [470]: terror_afg['attacktype1_txt'].value_counts()
```

```
Out[470]: attacktype1_txt
Bombing/Explosion      6190
Armed Assault          2869
Unknown                1161
Hostage Taking (Kidnapping) 1000
Assassination           951
Facility/Infrastructure Attack 353
Unarmed Assault         72
Hostage Taking (Barricade Incident) 27
Hijacking               16
Name: count, dtype: int64
```

```
In [471]: sizes = terror_afg['suicide'].value_counts()
labels = ['Non Suicide', 'Suicide']
colors = ["yellow", "red"]
plt.pie(sizes, labels=labels, autopct = "%1.1f%%", explode = (0.2,0), colors= colors);
plt.title("Suicide Attack Vs Non Suicide Attack");
```



```
In [472]: terror_afg['suicide'].value_counts()
```

```
Out[472]: suicide
0      11412
1       1227
Name: count, dtype: int64
```

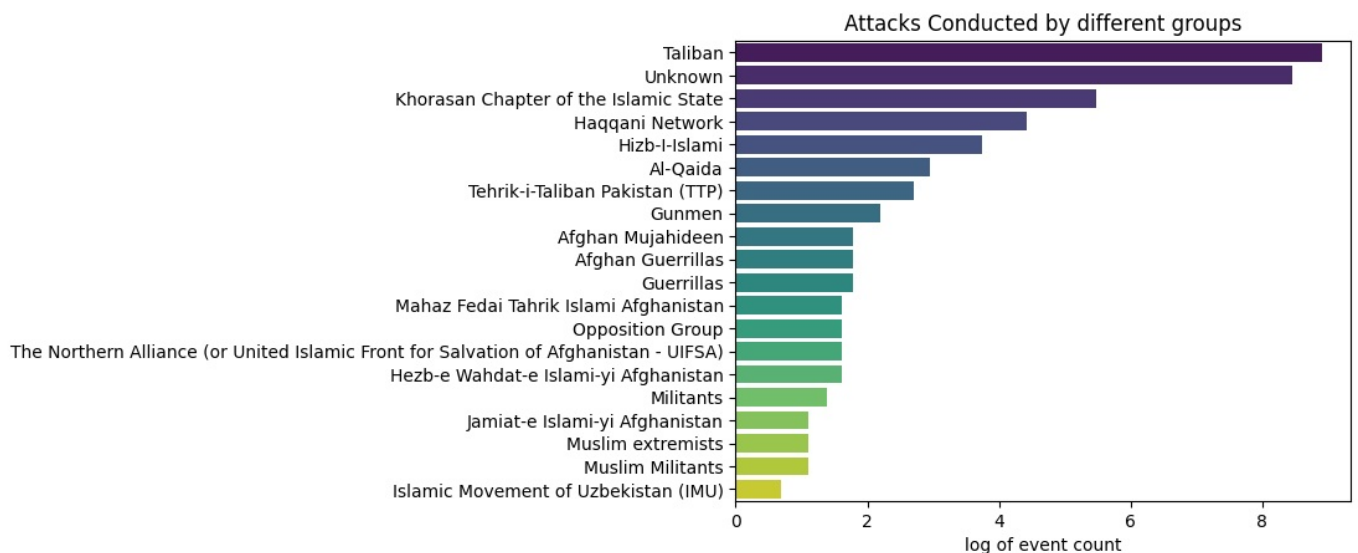
```
In [473]: terror_afg['gname'].unique()
terror_afg_gp = terror_afg.groupby('gname')['eventid'].count().sort_values(ascending = False).reset_index()
terror_afg_gp.head(20)
```

Out [473...

	gname	eventid
0	Taliban	7402
1	Unknown	4744
2	Khorasan Chapter of the Islamic State	241
3	Haqqani Network	84
4	Hizb-I-Islami	42
5	Al-Qaida	19
6	Tehrik-i-Taliban Pakistan (TTP)	15
7	Gunmen	9
8	Afghan Mujahideen	6
9	Afghan Guerrillas	6
10	Guerrillas	6
11	Mahaz Fedai Tahrik Islami Afghanistan	5
12	Opposition Group	5
13	The Northern Alliance (or United Islamic Front...	5
14	Hezb-e Wahdat-e Islami-yi Afghanistan	5
15	Militants	4
16	Jamiat-e Islami-yi Afghanistan	3
17	Muslim extremists	3
18	Muslim Militants	3
19	Islamic Movement of Uzbekistan (IMU)	2

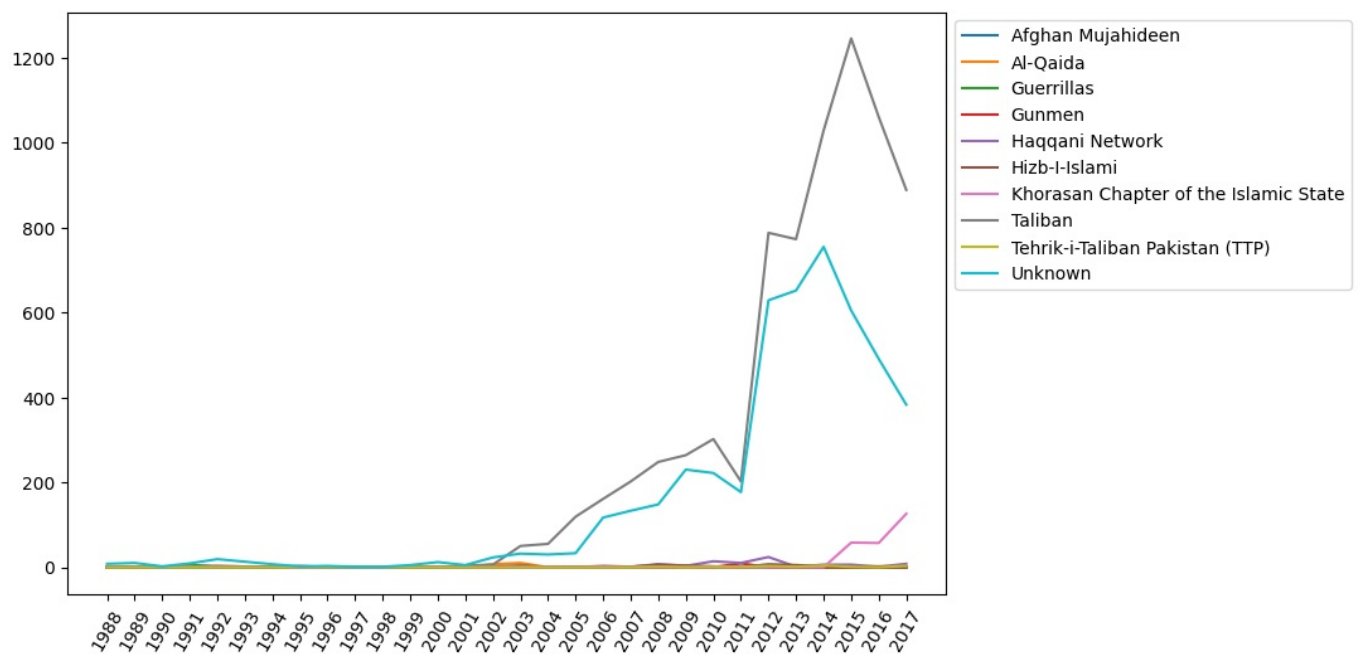
In [475...

```
import numpy as np
data = terror_afg_gp.head(20)
data['eventid'] = np.log(data['eventid'])
sns.barplot(x = 'eventid', y = 'gname', palette = 'viridis', hue = 'gname', data = data)
plt.xlabel('log of event count')
plt.ylabel('')
plt.title('Attacks Conducted by different groups');
```



In [483...

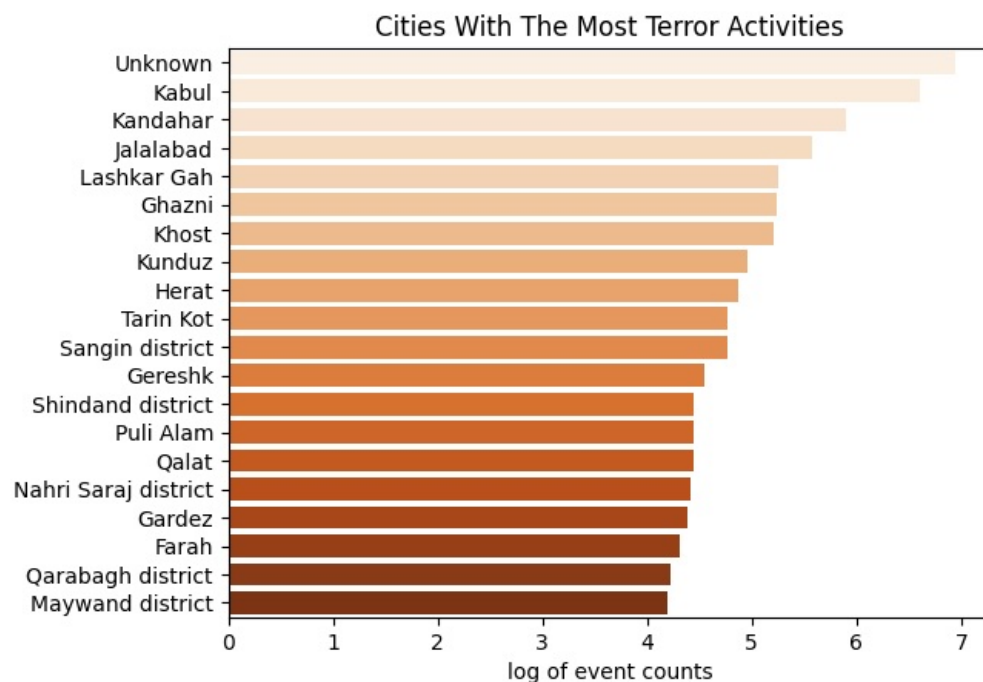
```
terror_afg_group10 = terror_afg[terror_afg['gname'].isin(terror_afg['gname'].value_counts()[0:10].index)]
terror_activity = pd.crosstab(terror_afg_group10.iyear, terror_afg_group10.gname)
plt.figure(figsize = (9,6))
for column in terror_activity.columns:
    plt.plot(terror_activity[column], label = column);
plt.legend(loc='upper left', bbox to anchor=(1, 1))
plt.xticks(range(1988,2018,1),rotation = 60);
```



Cities Terror Activity Analysis

```
In [485.. terror_afg_city = terror_afg.groupby('city')['eventid'].count().reset_index().sort_values(by = "eventid",ascen
```

```
In [487.. data = terror_afg_city.head(20)
data['eventid'] = np.log(data['eventid'])
sns.barplot(y = 'city', x = 'eventid', data=data, palette = 'Oranges', hue = terror_afg_city['city'].head(20))
plt.title("Cities With The Most Terror Activities");
plt.xlabel('log of event counts')
plt.ylabel('');
```

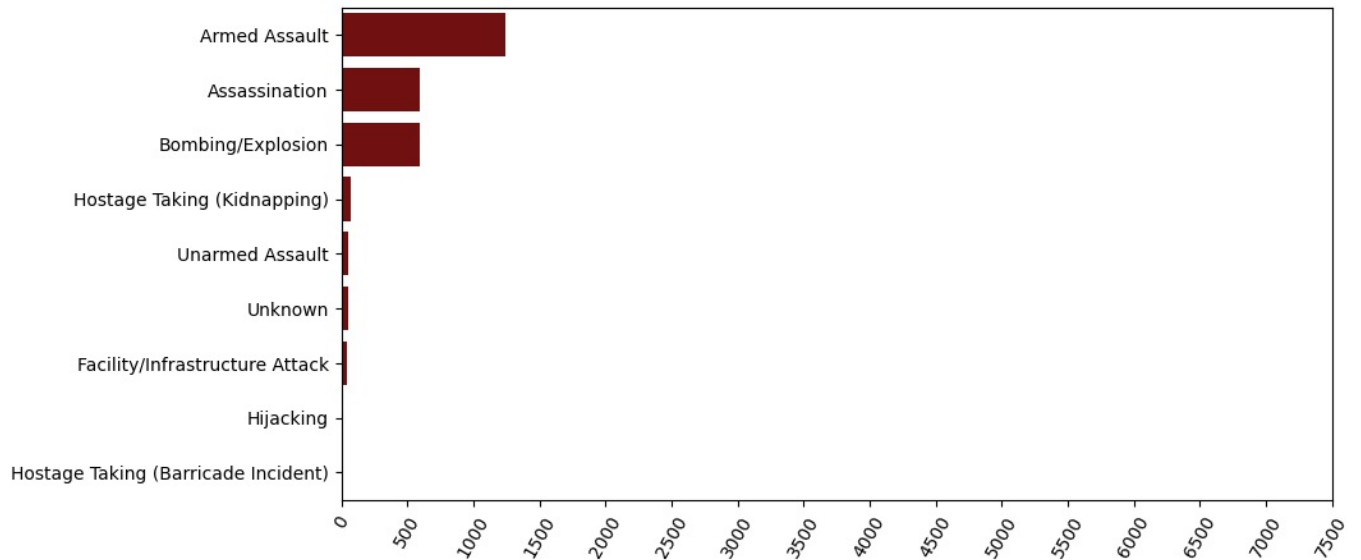


Kabul

```
In [492.. terror_kabul = terror[terror['city']=='Karachi']
terror_kabul.isna().sum()
```

```
Out[492... eventid          0
            iyear          0
            country_txt     0
            region_txt      0
            provstate       0
            city            0
            latitude        1
            longitude       1
            success         0
            suicide         0
            attacktype1     0
            attacktype1_txt 0
            targtype1_txt  0
            targsubtype1_txt 213
            gname           0
            nperps         1104
            nkill           17
            nkillter        1092
            nbound          75
            nboundte        1100
            property        0
            dtype: int64
```

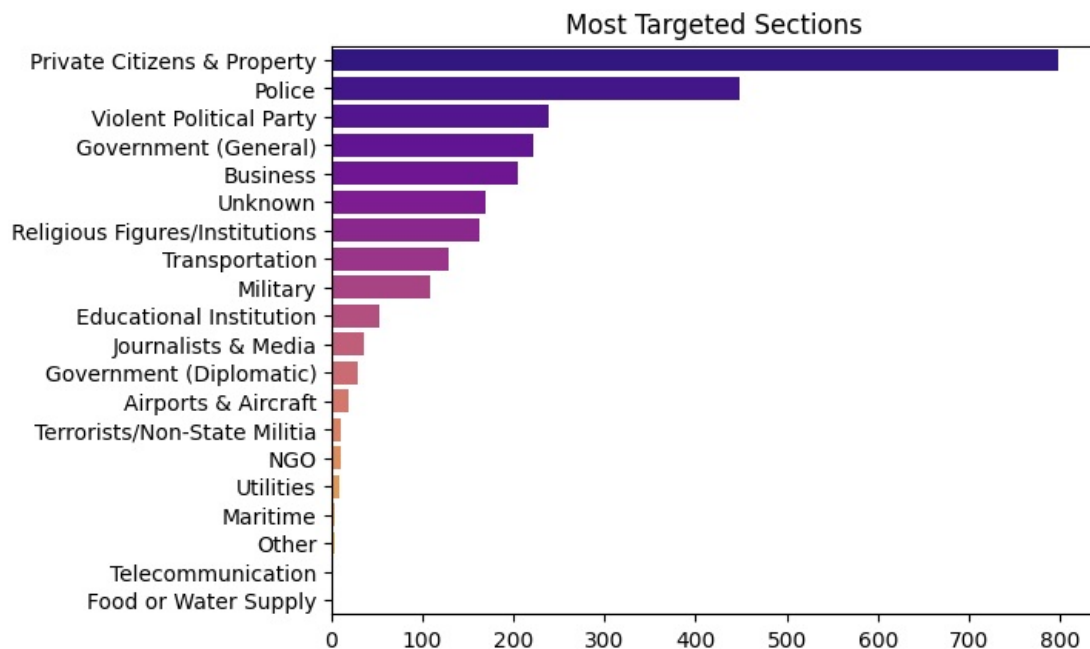
```
In [509... value_counts = terror_kabul['attacktype1_txt'].value_counts().reset_index()
value_counts.columns = ['attacktype1_txt', 'count']
plt.figure(figsize=(10,5))
sns.barplot(y = 'attacktype1_txt', x = 'count', data = value_counts, color = 'maroon')
plt.xlabel('')
plt.ylabel('')
plt.xticks(range(0,8000,500), rotation = 60);
```



```
In [504... terror_kabul['attacktype1_txt'].value_counts()
```

```
Out[504... attacktype1_txt
Armed Assault          1242
Assassination           597
Bombing/Explosion       590
Hostage Taking (Kidnapping) 72
Unarmed Assault         54
Unknown                52
Facility/Infrastructure Attack 41
Hijacking                3
Hostage Taking (Barricade Incident) 1
Name: count, dtype: int64
```

```
In [506... count = terror_kabul['targtype1_txt'].value_counts().reset_index()
count.columns = ['Target', 'Count']
data = count
sns.barplot(x='Count', y = 'Target', data = count, palette = 'plasma', hue = 'Target' )
plt.xlabel('')
plt.ylabel('')
plt.title("Most Targeted Sections");
```



India

```
In [507...] terror_ind = terror[terror['country_txt']=="India"]
terror_ind.head()
```

```
Out[507...]

```

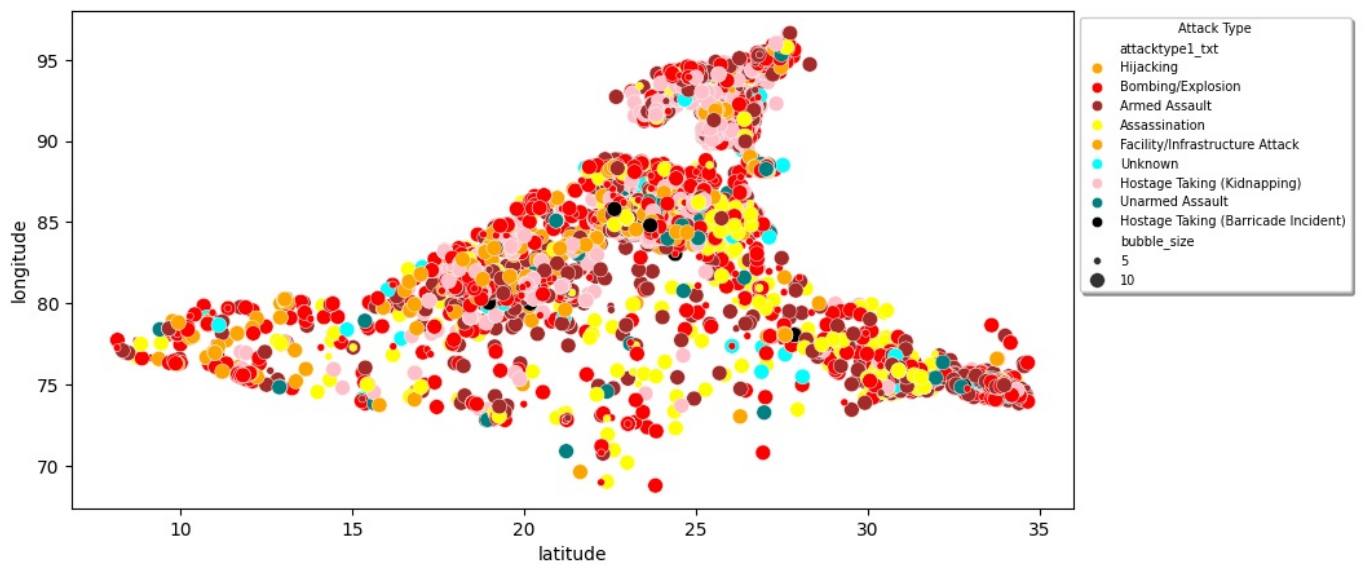
	eventid	iyear	country_txt	region_txt	provstate	city	latitude	longitude	success	suicide	...	attackty
1186	197202220004	1972	India	South Asia	Delhi	New Delhi	28.585836	77.153336	1	0	...	H
2764	197501190004	1975	India	South Asia	Bihar	Samastipur	25.863042	85.781004	1	0	...	Bombing/E
3857	197605260001	1976	India	South Asia	Delhi	New Delhi	28.585836	77.153336	1	0	...	Bombing/E
5327	197709280004	1977	India	South Asia	Maharashtra	Bombay	19.075984	72.877656	1	0	...	H
7337	197901130004	1979	India	South Asia	Assam	Unknown	26.200605	92.937574	1	0	...	Armed

5 rows × 21 columns

```
In [510...] terror_ind = terror_ind.dropna(subset = ['latitude', 'longitude'], axis = 0)
```

```
In [511...] terror_ind = terror_ind.copy()
terror_ind['longitude'] = pd.to_numeric(terror_ind['longitude'])
terror_ind['latitude'] = pd.to_numeric(terror_ind['latitude'])
data = terror_ind
successful_size = 10
failure = 5
terror_ind['bubble_size'] = terror_ind['success'].apply(lambda x: failure if x == 0 else successful_size)
terror_ind['attacktype1'] = terror_ind['attacktype1_txt'].astype('category')
custom_palette = {'Bombing/Explosion': 'red', "Hijacking": 'orange', 'Assassination': 'yellow', 'Hostage Taking (Kidnapping)': 'red',
'Unknown': 'cyan', 'Facility/Infrastructure Attack': 'Orange', 'Unarmed Assault': 'teal', 'Hostage Taking (Kidnapping)': 'red'}
plt.figure(figsize=(10,5))
sns.scatterplot(y='longitude', x='latitude', palette=custom_palette, hue='attacktype1_txt', data=data)
plt.legend(
    title='Attack Type',
    title_fontsize='7',
    loc='upper left',
    fontsize='7',
    bbox_to_anchor=(1,1),
    frameon=True,
    shadow=True,
)
```

```
Out[511...] <matplotlib.legend.Legend at 0x27a9ad8c5c0>
```

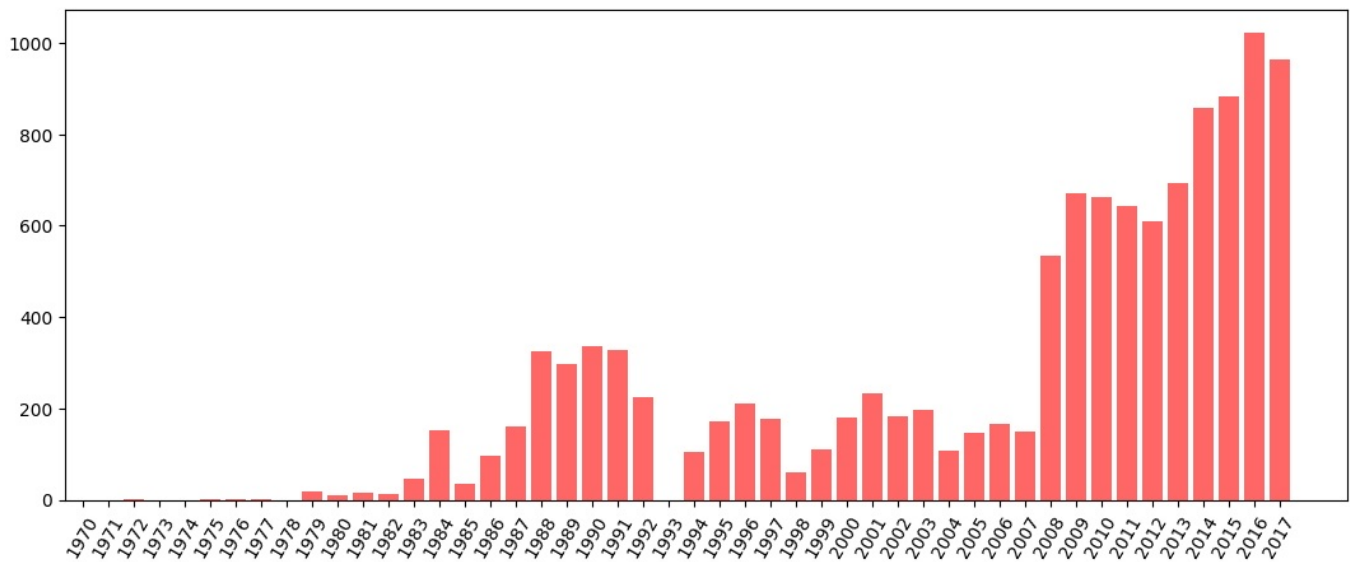



```
In [512]: terror_ind_year = terror_ind.groupby('iyear')['eventid'].count().reset_index()
terror_ind_year.head()
```

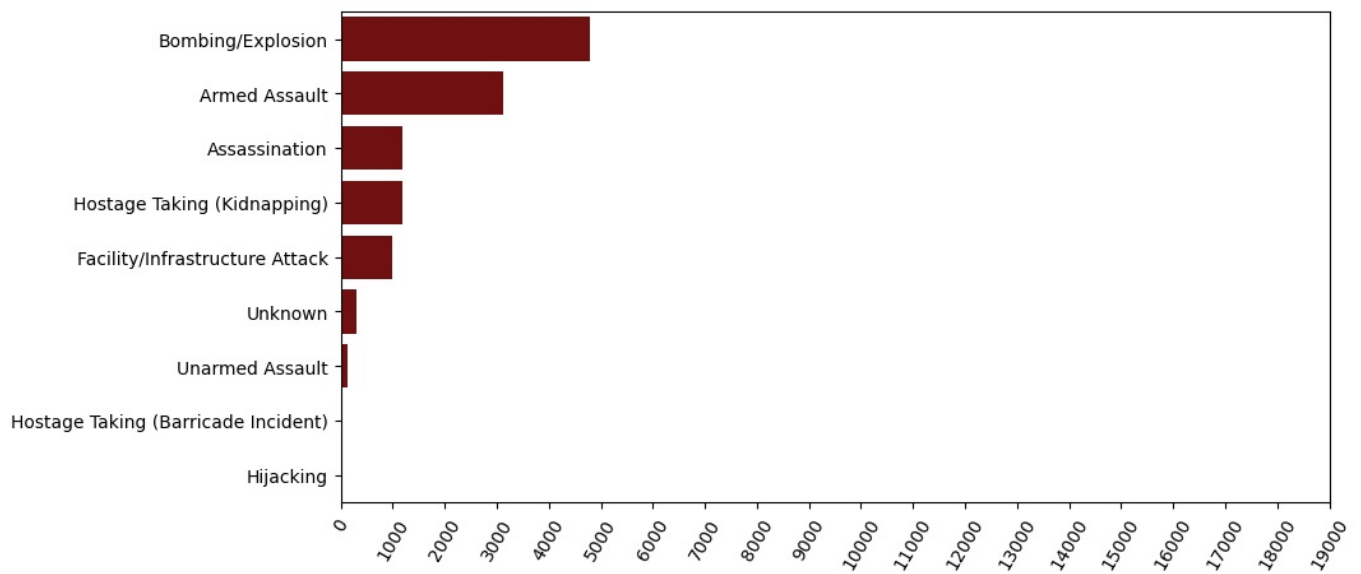
```
Out[512]:
```

	iyear	eventid
0	1972	1
1	1975	1
2	1976	1
3	1977	1
4	1979	19

```
In [513]: plt.figure(figsize = (13,5))
plt.bar(terror_ind_year['iyear'], terror_ind_year['eventid'], color = 'red', alpha = 0.6)
plt.xticks(range(1970,2018, 1), rotation = 60);
```



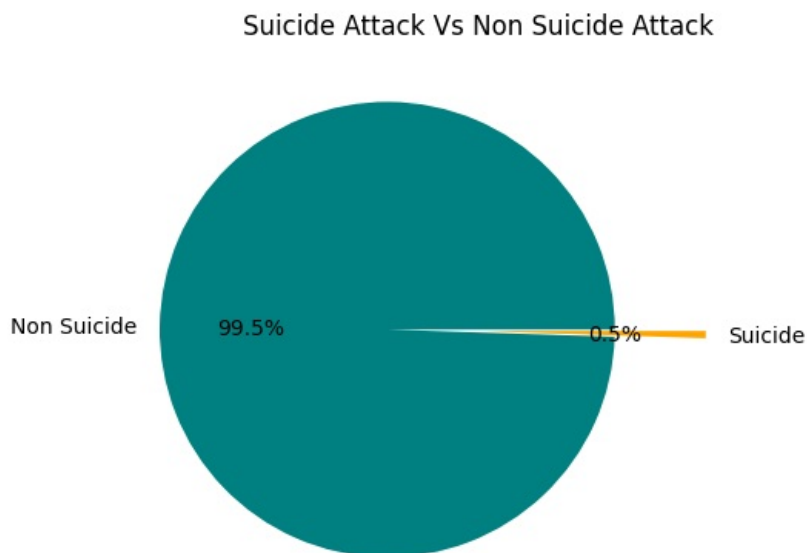
```
In [514]: value_counts = terror_ind['attacktype1_txt'].value_counts().reset_index()
value_counts.columns = ['attacktype1_txt', 'count']
plt.figure(figsize=(10,5))
sns.barplot(y = 'attacktype1_txt', x = 'count', data = value_counts, color = 'maroon')
#plt.xticks(rotation = 60 )
plt.xlabel('')
plt.ylabel('')
plt.xticks(range(0,20000,1000), rotation = 60);
```

```
In [516]: terror_afg['attacktype1_txt'].value_counts()
```

```
Out[516]: attacktype1_txt
Bombing/Explosion      6190
Armed Assault          2869
Unknown                1161
Hostage Taking (Kidnapping) 1000
Assassination           951
Facility/Infrastructure Attack 353
Unarmed Assault         72
Hostage Taking (Barricade Incident) 27
Hijacking               16
Name: count, dtype: int64
```

```
In [518]: sizes = terror_ind['suicide'].value_counts()
labels = ['Non Suicide', 'Suicide']
colors = ["teal", "orange"]
plt.pie(sizes, labels=labels, autopct = "%1.1f%%", explode = (0.4,0), colors= colors);
plt.title("Suicide Attack Vs Non Suicide Attack");
```



```
In [519]: terror_ind['suicide'].value_counts()
```

```
Out[519]: suicide
0      11741
1         60
Name: count, dtype: int64
```

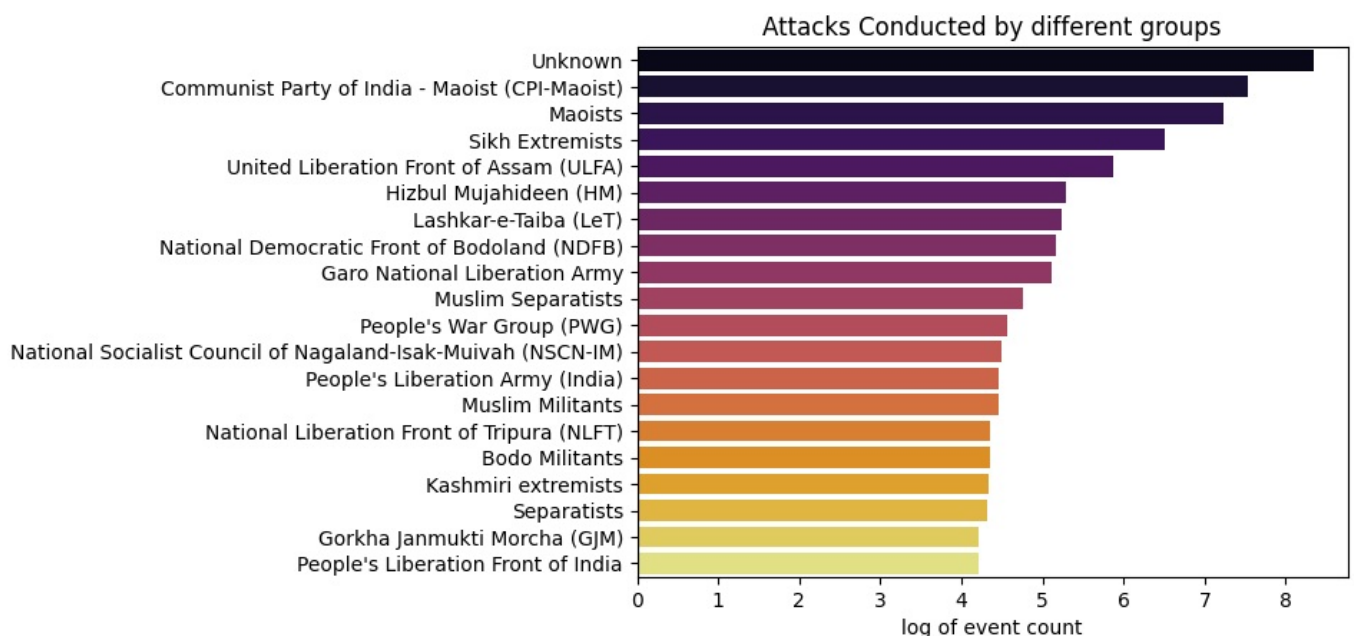
```
In [520]: terror_ind['gname'].unique()
terror_ind_gp = terror_ind.groupby('gname')['eventid'].count().sort_values(ascending = False).reset_index()
terror_ind_gp.head(20)
```

Out [520]

	gname	eventid
0	Unknown	4212
1	Communist Party of India - Maoist (CPI-Maoist)	1875
2	Maoists	1394
3	Sikh Extremists	668
4	United Liberation Front of Assam (ULFA)	357
5	Hizbul Mujahideen (HM)	198
6	Lashkar-e-Taiba (LeT)	187
7	National Democratic Front of Bodoland (NDFB)	174
8	Garo National Liberation Army	166
9	Muslim Separatists	117
10	People's War Group (PWG)	96
11	National Socialist Council of Nagaland-Isak-Mu...	89
12	People's Liberation Army (India)	87
13	Muslim Militants	86
14	National Liberation Front of Tripura (NLFT)	78
15	Bodo Militants	78
16	Kashmiri extremists	77
17	Separatists	75
18	Gorkha Janmukti Morcha (GJM)	67
19	People's Liberation Front of India	67

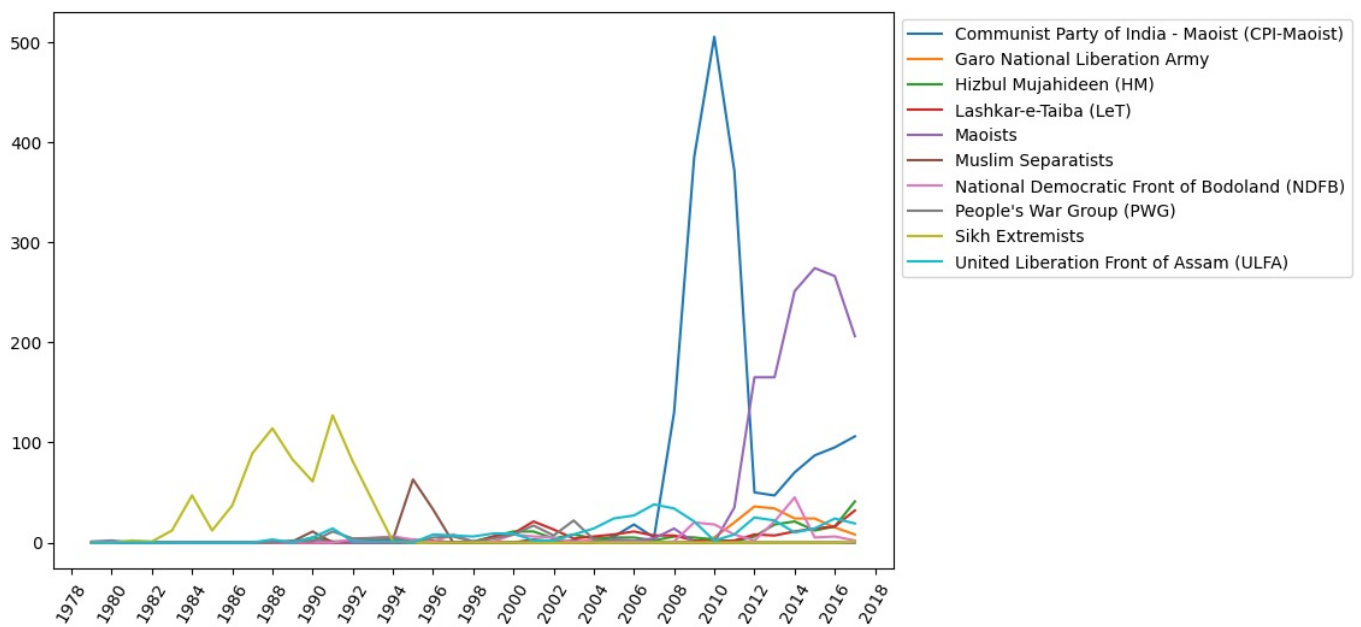
In [521]

```
import numpy as np
data = terror_ind_gp.head(20)
data['eventid'] = np.log(data['eventid'])
sns.barplot(x = 'eventid', y = 'gname', palette = 'inferno', hue = 'gname', data = data)
plt.xlabel('log of event count')
plt.ylabel('')
plt.title('Attacks Conducted by different groups');
```



In [528]

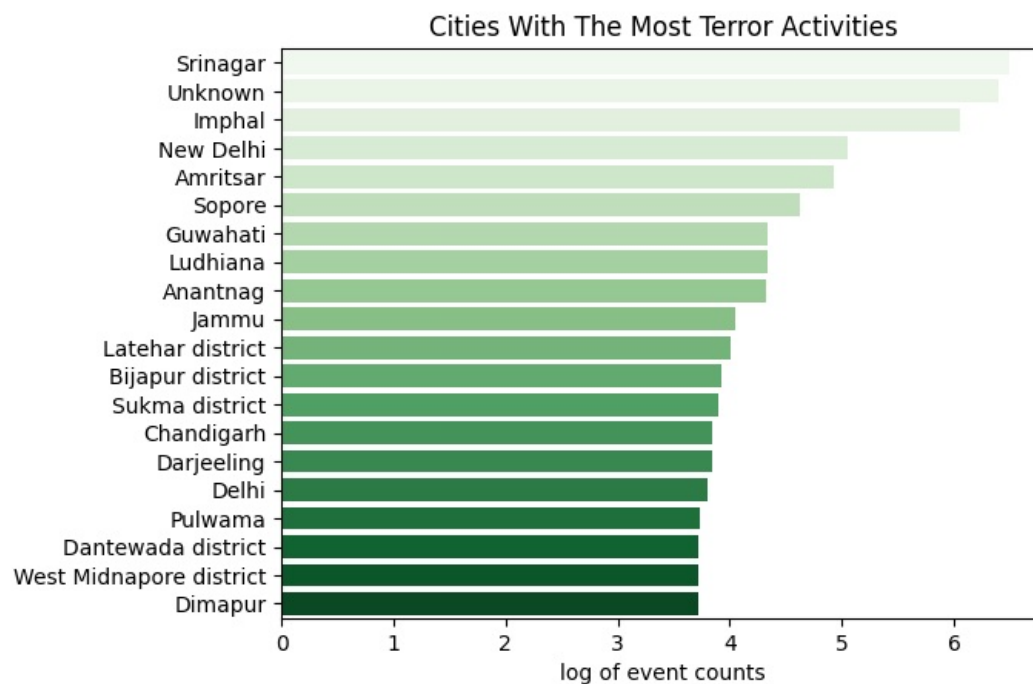
```
terror_ind_gp10 = terror_ind[terror_ind['gname'].isin(terror_ind['gname'].value_counts()[1:11].index)]
terror_activity = pd.crosstab(terror_ind_gp10.iyear, terror_ind_gp10.gname)
plt.figure(figsize = (9,6))
for column in terror_activity.columns:
    plt.plot(terror_activity[column], label = column);
plt.legend(loc='upper left', bbox_to_anchor=(1, 1))
plt.xticks(range(1978,2019,2),rotation = 60);
```



Cities Terror Activity Analysis

```
In [536.. terror_ind_city = terror_ind.groupby('city')['eventid'].count().reset_index().sort_values(by = "eventid", ascending=True)
```

```
In [537.. data = terror_ind_city.head(20)
data['eventid'] = np.log(data['eventid'])
sns.barplot(y = 'city', x = 'eventid', data=data, palette = 'Greens', hue = terror_ind_city['city'].head(20))
plt.title("Cities With The Most Terror Activities");
plt.xlabel('log of event counts')
plt.ylabel('');
```

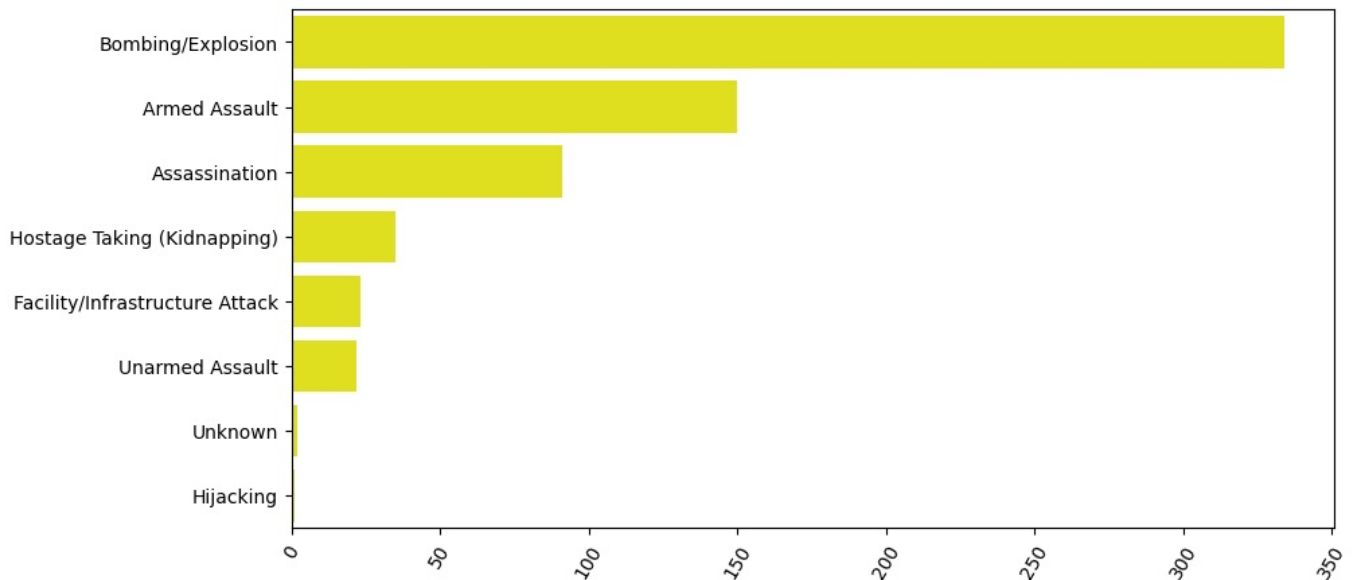


Srinagar

```
In [542.. terror_srinagar = terror[terror['city']=='Srinagar']
terror_srinagar.isna().sum()
```

```
Out[542.. eventid      0
          iyear      0
          country_txt 0
          region_txt  0
          provstate   0
          city        0
          latitude    0
          longitude   0
          success     0
          suicide     0
          attacktype1 0
          attacktype1_txt 0
          targtype1_txt 0
          targsubtype1_txt 46
          gname       0
          nperps      491
          nkill       14
          nkillter    352
          nwound      20
          nwoundte    364
          property    0
          dtype: int64
```

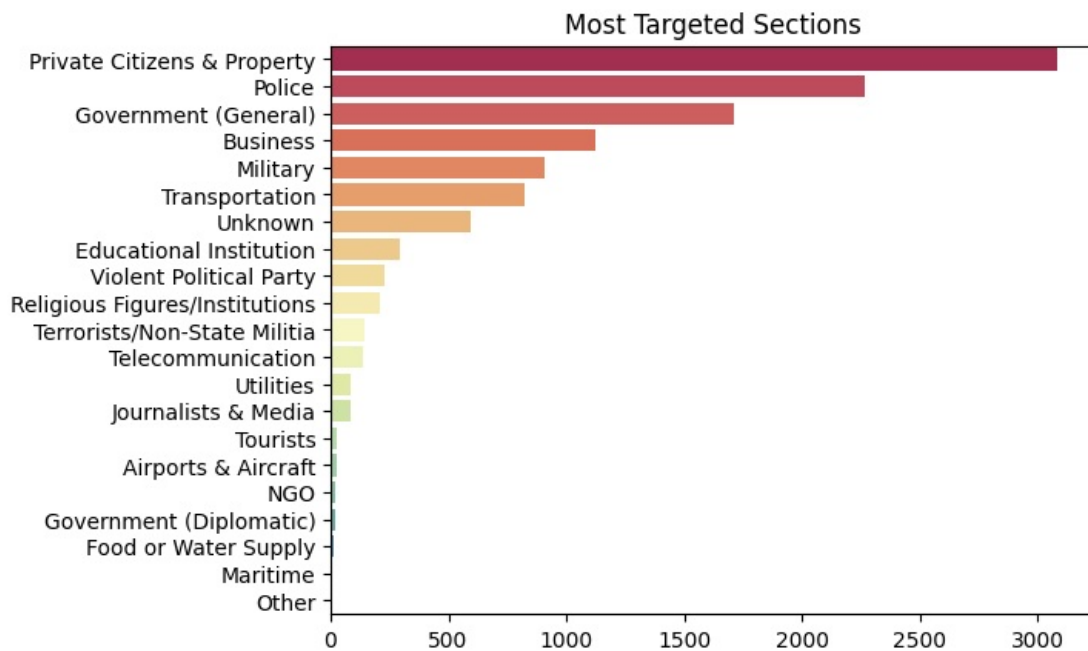
```
In [549.. value_counts = terror_srinagar['attacktype1_txt'].value_counts().reset_index()
value_counts.columns = ['attacktype1_txt', 'count']
plt.figure(figsize=(10,5))
sns.barplot(y = 'attacktype1_txt', x = 'count', data = value_counts, color = 'yellow')
plt.xlabel('')
plt.ylabel('')
plt.xticks(range(0,400,50), rotation = 60);
```



```
In [550.. terror_srinagar['attacktype1_txt'].value_counts()
```

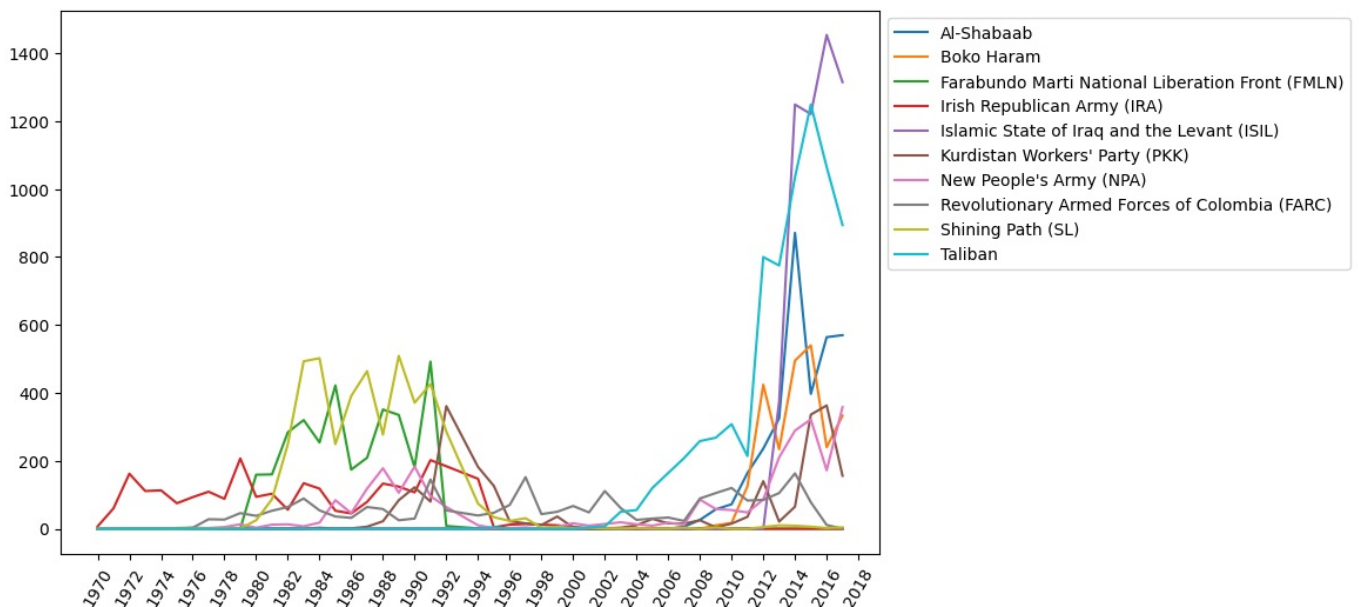
```
Out[550.. attacktype1_txt
Bombing/Explosion      334
Armed Assault          150
Assassination           91
Hostage Taking (Kidnapping) 35
Facility/Infrastructure Attack 23
Unarmed Assault        22
Unknown                2
Hijacking              1
Name: count, dtype: int64
```

```
In [552.. count = terror_ind['targtype1_txt'].value_counts().reset_index()
count.columns = ['Target', 'Count']
data = count
sns.barplot(x='Count', y = 'Target', data = count, palette = 'Spectral', hue = 'Target' )
plt.xlabel('')
plt.ylabel('')
plt.title("Most Targeted Sections");
```



Worldwide Analysis

```
In [588.. terror_world_gp10 = terror[terror['gname'].isin(terror['gname'].value_counts()[1:11].index)]
terror_activity = pd.crosstab(terror_world_gp10.iyear, terror_world_gp10.gname)
plt.figure(figsize=(9,6))
for column in terror_activity.columns:
    plt.plot(terror_activity[column], label = column);
plt.legend(loc='upper left', bbox_to_anchor=(1, 1))
plt.xticks(range(1970,2019,2),rotation = 60);
```



```
In [588.. world_attacks_kills = terror.groupby('country_txt')['nkill'].sum().reset_index()
worldwide_attacks = terror.groupby('country_txt')['eventid'].count().reset_index()
merged = pd.merge(world_attacks_kills, worldwide_attacks, on = 'country_txt')
merged=merged.rename(columns = {'country_txt' : 'Country', 'nkill' : 'killed_Count', 'eventid': 'Terror_Activity_Count'})
merged.head()
```

```
Out[588..
```

	Country	killed_Count	Terror_Activity_Count
0	Afghanistan	39384.0	12731
1	Albania	42.0	80
2	Algeria	11066.0	2743
3	Andorra	0.0	1
4	Angola	3043.0	499

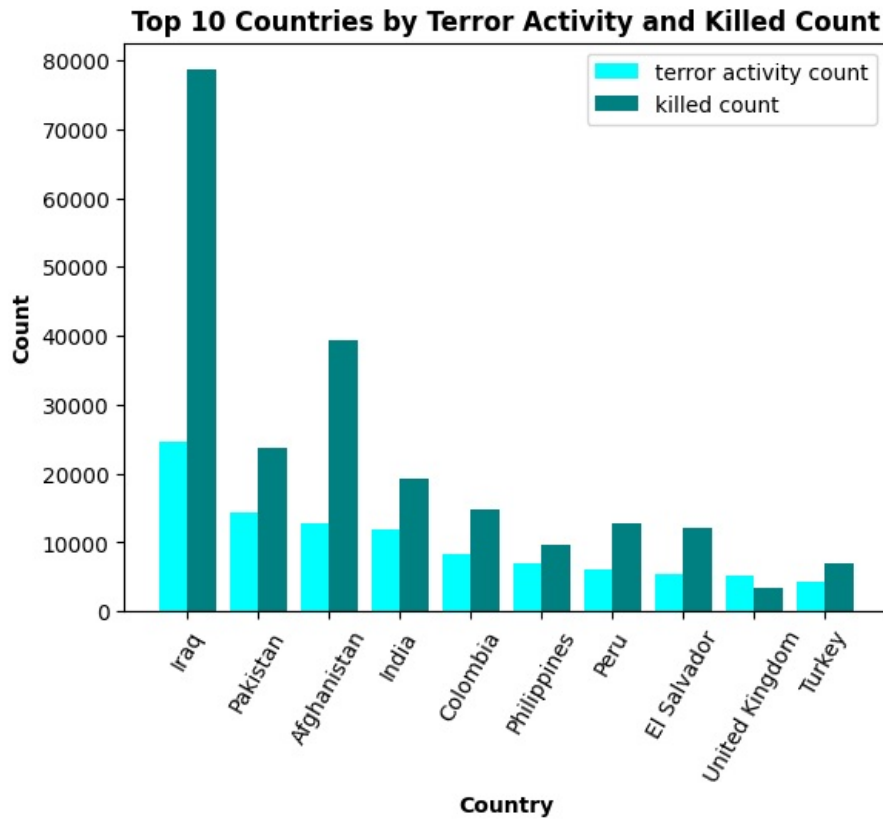
```
In [600.. bar_width = 0.4
merged = merged.sort_values(by = 'Terror_Activity_Count', ascending = False).reset_index(drop=True).head(10)
r1=np.arange(len(merged['Country']))
```

```

r2=[x+bar_width for x in r1]
plt.bar(r1, merged['Terror_Activity_Count'], width = bar_width, color = 'cyan', label = "terror activity count")
plt.bar(r2, merged['killed_Count'], width = bar_width, color = 'teal', label = "killed count")
plt.xticks([r + bar_width/2 for r in r1], merged['Country'], rotation=60);
plt.xlabel('Country', fontweight='bold')
plt.ylabel('Count', fontweight='bold')
plt.title('Top 10 Countries by Terror Activity and Killed Count', fontweight='bold')
plt.legend()

```

Out[600]: <matplotlib.legend.Legend at 0x27af173faa0>



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