Global Terrorism:1970-2015

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Project Report: Global Terrorist Dataset(GTD)

1 Introduction

1.1 Background

The GTD describe itself as the “most comprehensive unclassified data base on terrorist events in the world”. The GTD includes more than 83,000 bombings . It also includes more than 18000 assassinations and more than 11000 kidnappings. Variables required and encoding of data is done in a codebook. It is available as a PDF that can be downloaded from there.

1.2 Data Description

The entire data description is provided in the codebook that is provided.

The global terrorism data consists of terror data starting from 1970 to 2017, with a significant amount of data missing from the year 1993, due to certain issues.

The data considered here for analysis is from 1970 to 2015.

This data set of GTD has been taken from Kaggle website. The URL for the same is provided below:

https://www.kaggle.com/START-UMD/gtd

1.3 Problem Statement

The purpose of the study is to do analysis of the global terrorism data starting from 1970 to 2015..

2 Data Exploration

2.1 Load Packages

```
library(dplyr)
library(ggplot2)
library(reshape2)
library(readxl)
library(scales)
library(gtools)
library(data.table)
library(readxl)
library(lubridate)
library(plotly)
library(tidyverse)
library(gridExtra)
library(tidyr)
library(ggridges)
```

2.2 Read Data

```
gtd_12_15 = read.csv('D:/EDA/Data Sets/data-society-global-terrorism-data/dataset & codebook/gtd_12to15_52134.csv')

gtd_70_91 = read.csv('D:/EDA/Data Sets/data-society-global-terrorism-data/dataset & codebook/gtd_70to91_49566.csv')

gtd_92_11 = read.csv('D:/EDA/Data Sets/data-society-global-terrorism-data/dataset & codebook/gtd_92to11_no 93_55072.csv')

gtd_93 = read.csv('D:/EDA/Data Sets/data-society-global-terrorism-data/dataset & codebook/gtd1993_748.csv')

merge_file = rbindlist(list(gtd_12_15, gtd_70_91, gtd_92_11, gtd_93), fill = T)
```

2.3 Data Description

```
str(merge_file)
```

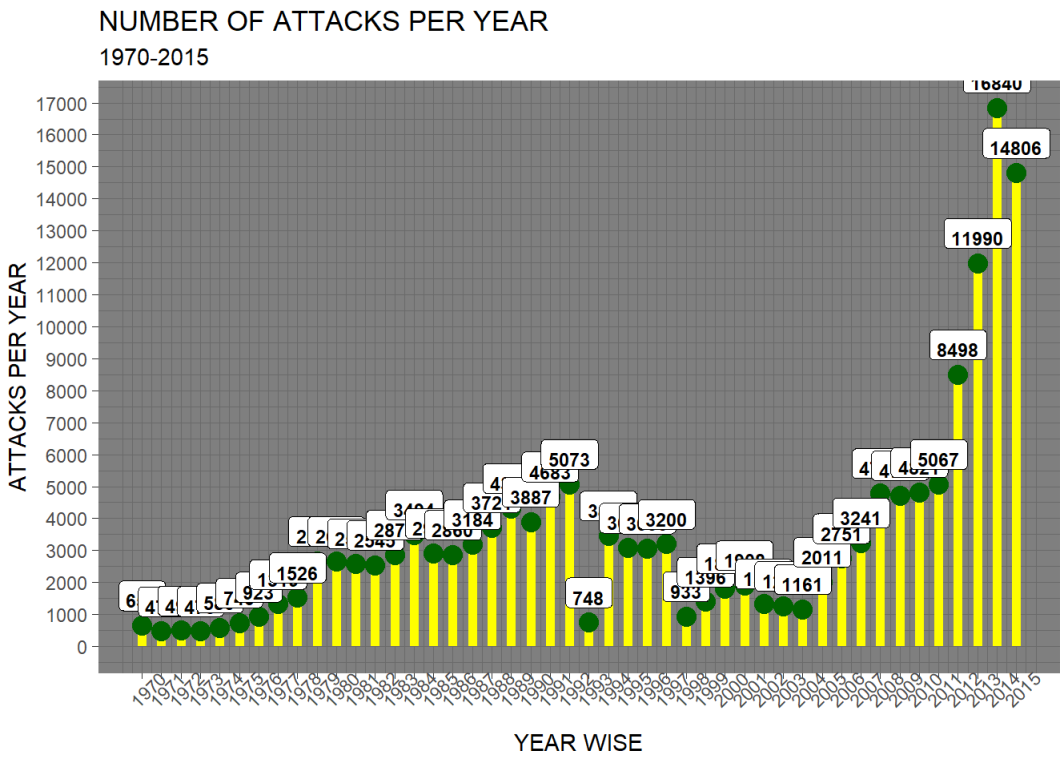
```
## Classes 'data.table' and 'data.frame':   157520 obs. of  137 variables:
##  $ eventid           : num  2.01e+11 2.01e+11 2.01e+11 2.01e+11 2.01e+11 ...
##  $ iyear             : int  2012 2012 2012 2012 2012 2012 2012 2012 2012 2012 ...
##  $ imonth            : int  1 1 1 1 1 1 1 1 1 1 ...
##  $ iday              : int  1 1 1 1 1 1 1 1 1 1 ...
##  $ approxdate        : Factor w/ 1434 levels "","2012-01-01 00:00:00",..: 1 1 1 1 1 1 1 1 1 2 ...
##  $ extended          : int  0 0 0 0 1 0 0 0 0 0 ...
##  $ resolution        : Factor w/ 2688 levels "","1/1/13","1/1/15",..: 1 1 1 1 26 1 1 1 1 1 ...
##  $ country           : int  153 104 153 104 153 153 95 4 4 153 ...
##  $ country_txt       : Factor w/ 209 levels "Afghanistan",..: 92 65 92 65 92 92 56 1 1 92 ...
##  $ region            : int  6 11 6 11 6 6 10 6 6 6 ...
##  $ region_txt        : Factor w/ 13 levels "Australasia & Oceania",..: 9 11 9 11 9 9 6 9 9 9 ...
##  $ provstate         : Factor w/ 2721 levels "Abia","Abkhazia",..: 93 697 93 697 93 305 832 372 444 305 .
..
##  $ city              : Factor w/ 31458 levels "Aab Kumri district",..: 10278 4299 11847 4299 9834 10782
10821 6155 10966 7343 ...
##  $ latitude          : num  30.209 -0.456 28.636 -0.456 28.467 ...
##  $ longitude         : num  67 39.6 69.2 39.6 67.3 ...
##  $ specificity       : int  1 1 1 1 1 1 1 2 2 1 ...
##  $ vicinity          : int  0 0 0 0 0 0 1 0 0 1 ...
##  $ location          : Factor w/ 35880 levels "","10 Km from Kalat",..: 3932 1 1 1 3820 3055 1 1 1 4438
...
##  $ summary           : Factor w/ 89447 levels "00/00/2012: Sometime between July 29 and August 4, 2012, a
n explosive device targeting a joint patrol of Austra"| __truncated__,..: 17 31 16 30 32 28 36 19 34 26 ...
##  $ crit1             : int  1 1 1 1 1 1 1 1 1 1 ...
##  $ crit2             : int  1 1 1 1 1 1 1 1 1 1 ...
##  $ crit3             : int  1 1 0 1 1 1 1 0 1 1 ...
##  $ doubtterr         : int  0 0 1 0 0 0 0 1 0 0 ...
##  $ alternative       : int  NA NA 1 NA NA NA NA 1 NA NA ...
##  $ alternative_txt   : Factor w/ 6 levels ".","Insurgency/Guerilla Action",..: 1 1 2 1 1 1 1 2 1 1 ...
##  $ multiple          : int  0 1 0 1 0 0 0 0 0 0 ...
##  $ success           : int  1 1 1 1 1 1 0 1 0 1 ...
##  $ suicide           : int  0 0 0 0 0 0 0 0 0 0 ...
##  $ attacktype1       : int  3 2 3 2 6 3 1 3 3 3 ...
##  $ attacktype1_txt   : Factor w/ 9 levels "Armed Assault",..: 3 1 3 1 7 3 2 3 3 3 ...
##  $ attacktype2       : int  NA NA NA NA NA NA NA NA NA NA ...
##  $ attacktype2_txt   : Factor w/ 10 levels ".","Armed Assault",..: 1 1 1 1 1 1 1 1 1 1 ...
##  $ attacktype3       : int  NA NA NA NA NA NA NA NA NA NA ...
##  $ attacktype3_txt   : Factor w/ 9 levels ".","Armed Assault",..: 1 1 1 1 1 1 1 1 1 1 ...
##  $ targtype1         : int  1 1 4 1 14 17 2 4 20 14 ...
##  $ targtype1_txt     : Factor w/ 23 levels "Abortion Related",..: 3 3 10 3 14 17 7 10 20 14 ...
##  $ targsubtype1      : int  2 2 39 2 67 94 18 37 NA 67 ...
##  $ targsubtype1_txt  : Factor w/ 111 levels ".","Affiliated Institution",..: 91 91 68 91 106 62 29 59 1 1
06 ...
##  $ corp1             : Factor w/ 29597 levels "101 Brigade",..: 8080 5227 2414 8080 6105 8080 4364 6083
8080 6105 ...
##  $ target1           : Factor w/ 80610 levels "1001st Brigade Patrol",..: 10077 1270 12656 1270 2886 9044
5264 14070 14035 2886 ...
##  $ natlty1           : int  153 104 153 104 153 153 95 422 NA 153 ...
##  $ natlty1_txt       : Factor w/ 213 levels ".","Afghanistan",..: 103 71 103 71 103 103 62 60 1 103 ...
##  $ targtype2         : int  NA NA NA NA NA NA NA NA NA NA ...
##  $ targtype2_txt     : Factor w/ 23 levels ".","Airports & Aircraft",..: 1 1 1 1 1 1 1 1 1 1 ...
##  $ targsubtype2      : int  NA NA NA NA NA NA NA NA NA NA ...
##  $ targsubtype2_txt  : Factor w/ 104 levels ".","Affiliated Institution",..: 1 1 1 1 1 1 1 1 1 1 ...
##  $ corp2             : Factor w/ 2365 levels "","5 Kanal TV",..: 1 1 1 1 1 1 1 1 1 1 ...
##  $ target2           : Factor w/ 4609 levels "","199th Armored Brigade Commander: Faisal Rajab",..: 1 1
1 1 1 1 1 1 1 1 ...
##  $ natlty2           : int  NA NA NA NA NA NA NA NA NA NA ...
##  $ natlty2_txt       : Factor w/ 156 levels ".","Afghanistan",..: 1 1 1 1 1 1 1 1 1 1 ...
##  $ targtype3         : int  NA NA NA NA NA NA NA NA NA NA ...
##  $ targtype3_txt     : Factor w/ 22 levels ".","Business",..: 1 1 1 1 1 1 1 1 1 1 ...
##  $ targsubtype3      : int  NA NA NA NA NA NA NA NA NA NA ...
##  $ targsubtype3_txt  : Factor w/ 86 levels ".","Bank/Commerce",..: 1 1 1 1 1 1 1 1 1 1 ...
##  $ corp3             : Factor w/ 357 levels "","Abdul Kaliq Shindandi Security Company",..: 1 1 1 1 1 1
1 1 1 1 ...
##  $ target3           : Factor w/ 645 levels "","39th Battalion Soldiers",..: 1 1 1 1 1 1 1 1 1 1 ...
##  $ natlty3           : int  NA NA NA NA NA NA NA NA NA NA ...
##  $ natlty3_txt       : Factor w/ 103 levels "."," "Afghanistan",..: 1 1 1 1 1 1 1 1 1 1
```

```
##  $ natlty3_txt       : Factor w/ 103 levels ".","Afghanistan",..: 1 1 1 1 1 1 1 1 1 1 ...
##  $ gname             : Factor w/ 3316 levels "313 Brigade (Syria)",..: 593 53 107 53 593 593 593 540 593
593 ...
##  $ gsubname          : Factor w/ 1000 levels "","10th Guadalupe Salcedo Front",..: 1 1 1 1 1 1 1 1 1 1 .
..
##  $ gname2            : Factor w/ 344 levels "","A'chik Matgrik Elite Force (AMEF)",..: 1 1 1 1 1 1 1 1 1
1 ...
##  $ gsubname2         : Factor w/ 44 levels "","101st Battalion",..: 1 1 1 1 1 1 1 1 1 1 ...
##  $ gname3            : Factor w/ 81 levels "","Ahrar al-Sham",..: 1 1 1 1 1 1 1 1 1 1 ...
##  $ ingroup           : int  -9 20036 20097 20036 -9 -9 -9 652 -9 -9 ...
##  $ ingroup2          : int  NA NA NA NA NA NA NA NA NA NA ...
##  $ ingroup3          : int  NA NA NA NA NA NA NA NA NA NA ...
##  $ gsubname3         : Factor w/ 7 levels "","Ahrar al-Sham",..: 1 1 1 1 1 1 1 1 1 1 ...
##  $ motive            : Factor w/ 11815 levels "","A'chik Tiger Force claimed responsibility for the inci
dent and stated that the attack was carried out as a mess"| __truncated__,..: 1 1958 1 1959 1 1 1895 1 1 1 .
..
##  $ guncertain1       : int  0 1 0 1 0 0 0 0 0 0 ...
##  $ guncertain2       : int  NA NA NA NA NA NA NA NA NA NA ...
##  $ guncertain3       : int  NA NA NA NA NA NA NA NA NA NA ...
##  $ nperps            : int  -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 ...
##  $ nperpcap          : num  0 0 0 0 0 0 0 0 0 0 ...
##  $ claimed           : int  0 0 1 0 0 0 0 1 0 0 ...
##  $ claimmode         : int  NA NA 10 NA NA NA NA 8 NA NA ...
##  $ claimmode_txt     : Factor w/ 12 levels ".","Call (post-incident)",..: 1 1 10 1 1 1 1 8 1 1 ...
##  $ claim2            : int  NA NA NA NA NA NA NA NA NA NA ...
##  $ claimmode2        : int  NA NA NA NA NA NA NA NA NA NA ...
##  $ claimmode2_txt    : Factor w/ 10 levels ".","Call (post-incident)",..: 1 1 1 1 1 1 1 1 1 1 ...
##  $ claim3            : int  NA NA NA NA NA NA NA NA NA NA ...
##  $ claimmode3        : int  NA NA NA NA NA NA NA NA NA NA ...
##  $ claimmode3_txt    : Factor w/ 9 levels ".","Call (post-incident)",..: 1 1 1 1 1 1 1 1 1 ...
##  $ compclaim         : int  NA NA NA NA NA NA NA NA NA NA ...
##  $ weaptype1         : int  6 6 6 6 5 6 6 6 6 6 ...
##  $ weaptype1_txt     : Factor w/ 12 levels "Biological","Chemical",..: 3 3 3 3 5 3 3 3 3 3 ...
##  $ weapsubtype1      : int  7 7 8 7 5 12 16 16 16 17 ...
##  $ weapsubtype1_txt  : Factor w/ 29 levels ".","Arson/Fire",..: 7 7 11 7 26 19 25 25 25 14 ...
##  $ weaptype2         : int  NA 5 NA 5 NA NA NA NA NA NA ...
##  $ weaptype2_txt     : Factor w/ 12 levels ".","Biological",..: 1 6 1 6 1 1 1 1 1 1 ...
##  $ weapsubtype2      : int  NA 2 NA 5 NA NA NA NA NA NA ...
##  $ weapsubtype2_txt  : Factor w/ 27 levels ".","Arson/Fire",..: 1 3 1 24 1 1 1 1 1 1 ...
##  $ weaptype3         : int  NA NA NA NA NA NA NA NA NA NA ...
##  $ weaptype3_txt     : Factor w/ 11 levels ".","Chemical",..: 1 1 1 1 1 1 1 1 1 1 ...
##  $ weapsubtype3      : int  NA NA NA NA NA NA NA NA NA NA ...
##  $ weapsubtype3_txt  : Factor w/ 23 levels ".","Arson/Fire",..: 1 1 1 1 1 1 1 1 1 1 ...
##  $ weaptype4         : int  NA NA NA NA NA NA NA NA NA NA ...
##  $ weaptype4_txt     : Factor w/ 6 levels ".","Explosives/Bombs/Dynamite",..: 1 1 1 1 1 1 1 1 1 1 ...
##  $ weapsubtype4      : int  NA NA NA NA NA NA NA NA NA NA ...
##  $ weapsubtype4_txt  : Factor w/ 17 levels ".","Arson/Fire",..: 1 1 1 1 1 1 1 1 1 1 ...
##   [list output truncated]
##  - attr(*, ".internal.selfref")=<externalptr>
```

3 Data Visualization and Interpretation

3.1 Number of Attacks per year

```
merge_file %>% group_by(iyear) %>% summarise(total_attacks = n()) %>%

  ggplot(aes(x = iyear, y = total_attacks)) +
  geom_segment(aes(x = iyear, y = 0, xend = iyear, yend = total_attacks), color = "yellow", size = 2) +
  theme_dark() +
  scale_x_continuous(breaks = seq(1970, 2015, by = 1)) +
  scale_y_continuous(breaks = seq(0, 20000, by = 1000)) +
  theme(axis.text.x = element_text(angle = 45), legend.position = "none") +
  geom_point(color = "darkgreen", size = 4) +
  geom_label(aes(label = total_attacks), colour = "black", fontface = "bold", size = 3, vjust = -0.5) +
  labs(title = "NUMBER OF ATTACKS PER YEAR", subtitle = "1970-2015", y = 'ATTACKS PER YEAR', x = 'YEAR WISE'
)
```

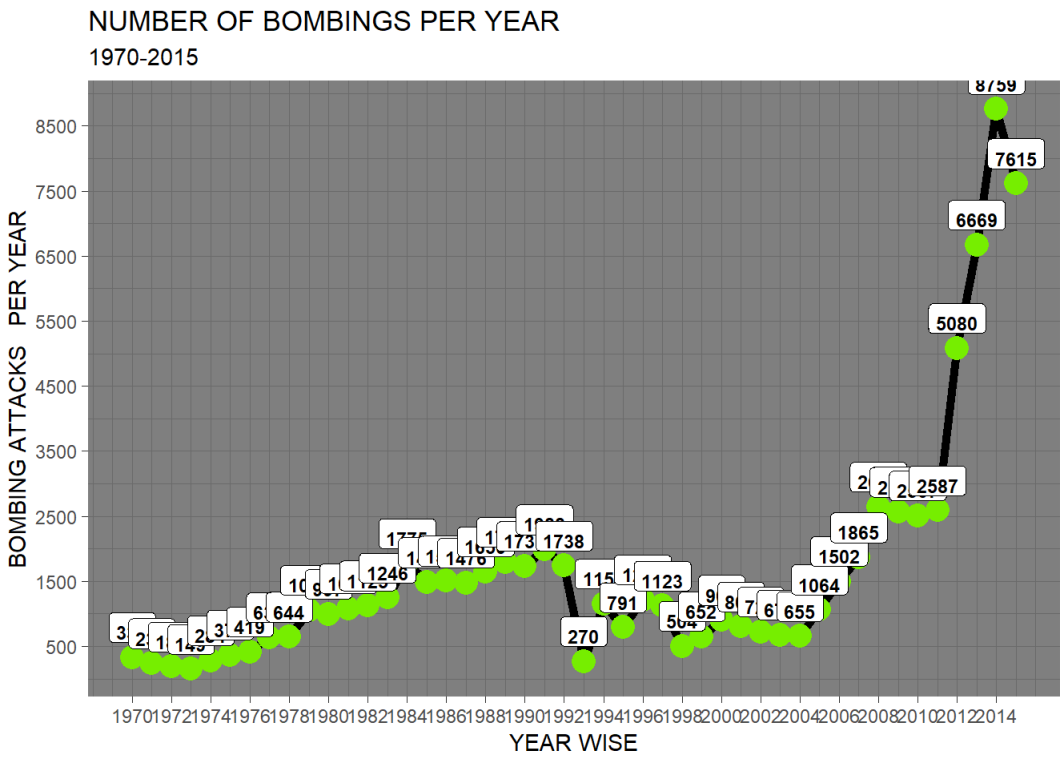


Conclusion:

- The total number of attacks witnessed with respect to YEAR is showing a major dip in 1998-2004.
- After 2005 there is a tremendous increase in the number of terrorist attacks across the world.
- If go by the figures provided in the GTD, 2014 was recorded to have maximum terrorist attacks.
- The major reason for this innumerable increase is because of the formation of the new terrorist groups i.e. Boko Haram, Fulani Militants and ISIL.
- Major affected population is the “Private Citizens”
- With increase in terrorism we are facing some more crisis:
    - Political Violence
    - Safety of nations

3.2 Number of Bombings per year

```
merge_file %>% filter(attacktype1 == 3) %>% group_by(iyear) %>% summarise(bombing_attacks = n()) %>%

  ggplot(aes(x = iyear, y = bombing_attacks)) + geom_line(stat = 'identity', size = 2) + theme_bw() +
  geom_point(color = "chartreuse2", size = 5) +
  theme(axis.text.x = element_text(angle = 90), legend.position = "none") +
  scale_x_continuous(breaks = seq(1970, 2015, by = 2)) +
  scale_y_continuous(breaks = seq(500, 10000, by = 1000)) +
  geom_label(aes(label = as.factor(bombing_attacks)), colour = "black", fontface = "bold", size = 3, vjust
= -0.5) +
  theme_dark() + labs(title = "NUMBER OF BOMBINGS PER YEAR", subtitle = "1970-2015", x = "YEAR WISE",
  y = "BOMBING ATTACKS   PER YEAR")
```

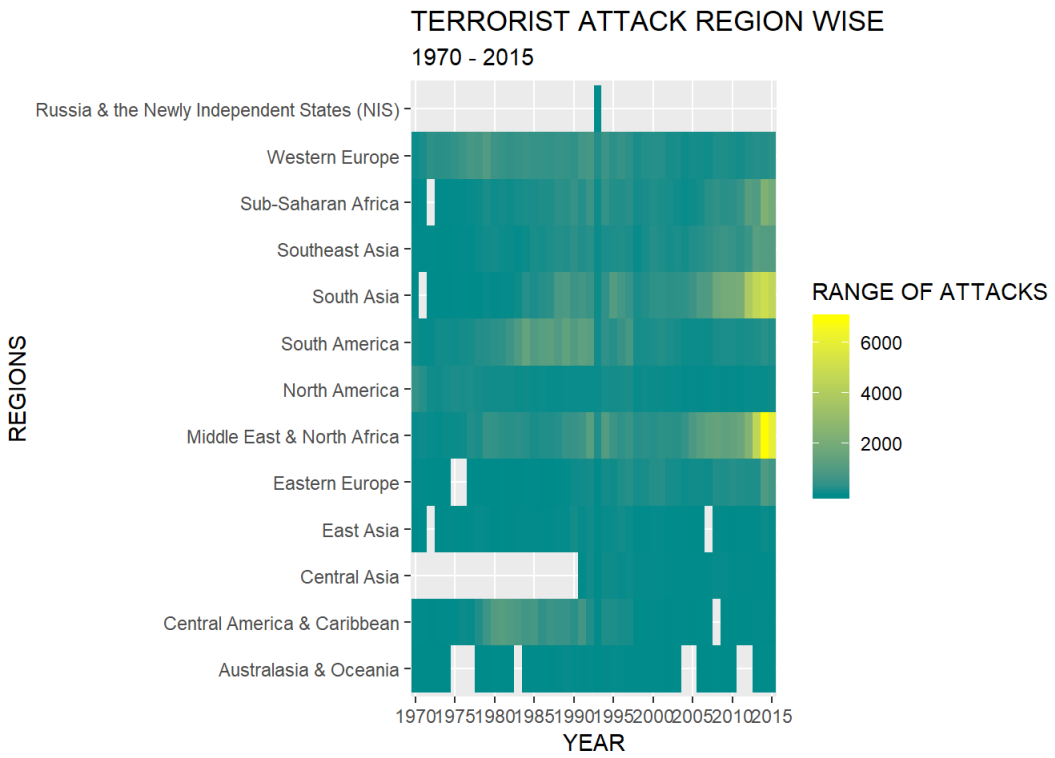


Conclusion:

- Due to evolution of modern technology which resulted in the invention of new weapons and upgradation of the bombs , usage of bombs has been increased enormously with the course of time.
- As we do not have the complete data for the year 1993 hence, it is showing a massive dip in the number of attacks done by the bombs.
- From 1970 to 1984 the graph is almost the linear.
- Maximum destruction by the terrorist bombing has been done in Year 2014.
- Besides, it's easier to kill more number of people in a single attempt through bombs.
- We see a strong correlation between the graph of no. of attacks per year and no. of bombings. The graphs show that most of the attacks involve bombings.

3.3 Terrorist attacks region wise per year

```
merge_file %>% group_by(iyear, region_txt) %>% summarise(Region_Attacks = n()) %>%

ggplot(aes(as.factor(iyear), region_txt)) + geom_tile(aes(fill = Region_Attacks)) +
  scale_x_discrete(breaks = seq(1970, 2015, 5)) +
  scale_fill_gradient(low = "darkcyan", high = "yellow") +
  labs(title = "TERRORIST ATTACK REGION WISE", subtitle = "1970 - 2015", x = "YEAR",y = "REGIONS",fill = 'R
ANGE OF ATTACKS')
```

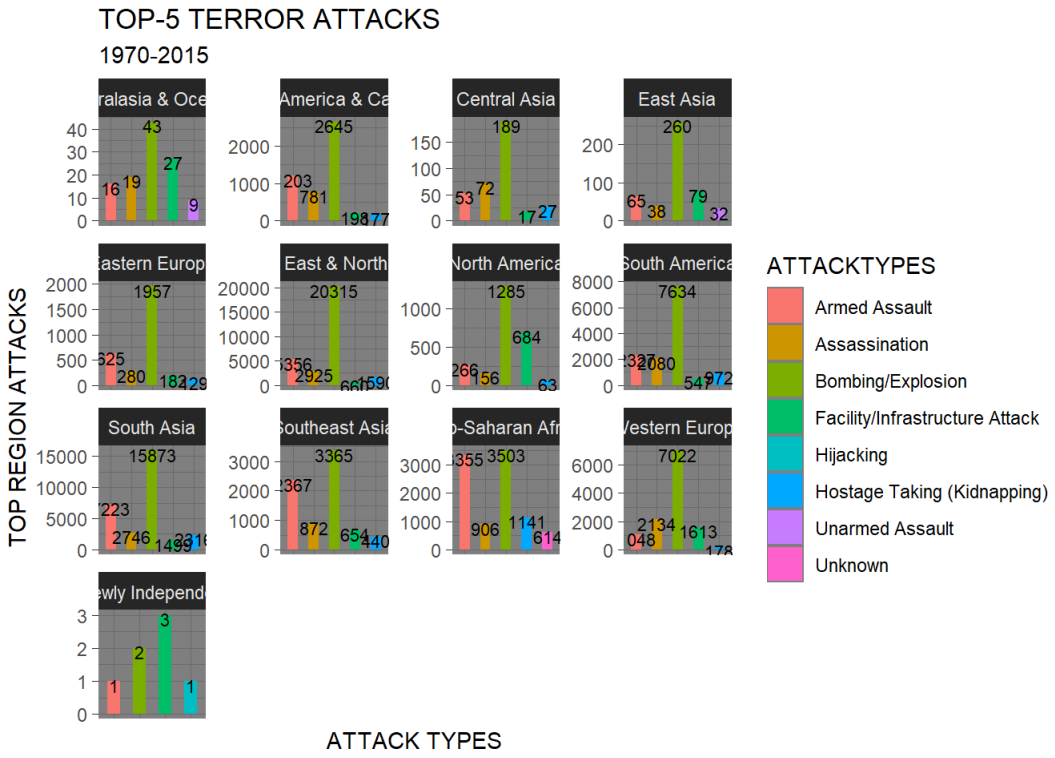


Conclusion:

- The major regions which has suffered the maximum impact of terrorist attack are:
  - Middle East and North Africa
  - South Asia
- The year in which there is a major impact on the economy and infrastructure, because of the terrorist attacks is 2014.
- These terrorist attacks are majorly led by the most famous terrorist groups:
  - ISIS
  - Tal-I-Ban
  - Al-Kai-Da

3.4 Top 5 type of error attack per region

```
merge_file %>% filter(attacktype1_txt != '.') %>% filter(doubtterr == 0) %>%
  group_by(region_txt, attacktype1_txt) %>%
  summarise(top_region_attacks = n()) %>%
  top_n(n = 5, wt = top_region_attacks) %>%
  arrange(-top_region_attacks) %>%
  ggplot(aes(x = as.factor(attacktype1_txt), y = top_region_attacks)) + theme_dark() +
  geom_bar(stat = "identity", aes(fill = attacktype1_txt), position = "dodge", width = 0.5) +
  geom_text(aes(label = top_region_attacks), size = 2.9, vjust = 0.8) +
  theme(axis.text.x = element_blank()) +
  theme(axis.ticks.x = element_blank()) +
  facet_wrap(~region_txt,scales="free") +
  labs(title = "TOP-5 TERROR ATTACKS", subtitle = "1970-2015", x = "ATTACK TYPES", y = "TOP REGION ATTACKS"
, fill = "ATTACKTYPES")
```

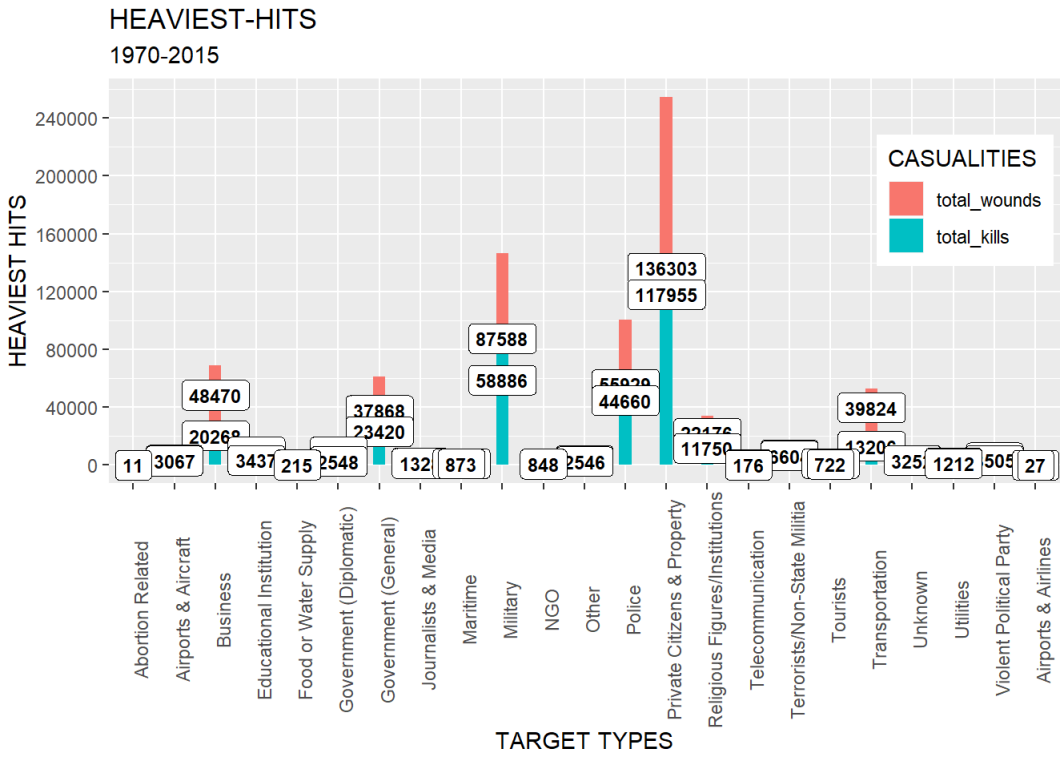


Conclusion:

- The deadly weapon used in the execution of the terrorist attacks is “Bombing/Explosion”.
- The major impact has been suffered by “Middle East and North Africa”.
- Bombing and Explosives has been evolved with the increased use of chemicals in the preparation of the Bombs.
- Newly Trending explosive attacks are the Nuclear Weapons which includes Nuclear Bombs as well.

3.5 Heaviest hit target types (Based on both killed and wounded)

```
p = merge_file %>% group_by(targtype1_txt) %>% summarise(total_wounds = round(sum(nwound, na.rm = T)),
                                                         total_kills = round(sum(nkill,na.rm = T)))

## Convert to long data

long = melt(p, id.vars = "targtype1_txt", variable.name = "casualities")

long %>% group_by(targtype1_txt, as.factor(casualities)) %>% arrange(-value) %>%

  ggplot(aes(x=targtype1_txt, y=value)) +
  geom_bar(aes(fill=as.factor(casualities)),width = 0.3, stat="identity", position="stack")+
  scale_y_continuous(breaks = seq(0,300000,by=40000))+
  theme(axis.text.x = element_text(angle = 90), legend.position = "none")+
  geom_label(aes(label= (as.factor(value))), colour = "black", fontface = "bold", size=3, vjust=0.5)+
  #geom_text(aes(label=value),check_overlap = TRUE, vjust=-5)+
  theme(legend.position = c(0.9, 0.7))+
  labs(title="HEAVIEST-HITS",subtitle="1970-2015", x="TARGET TYPES",y="HEAVIEST HITS",fill="CASUALITIES")
```

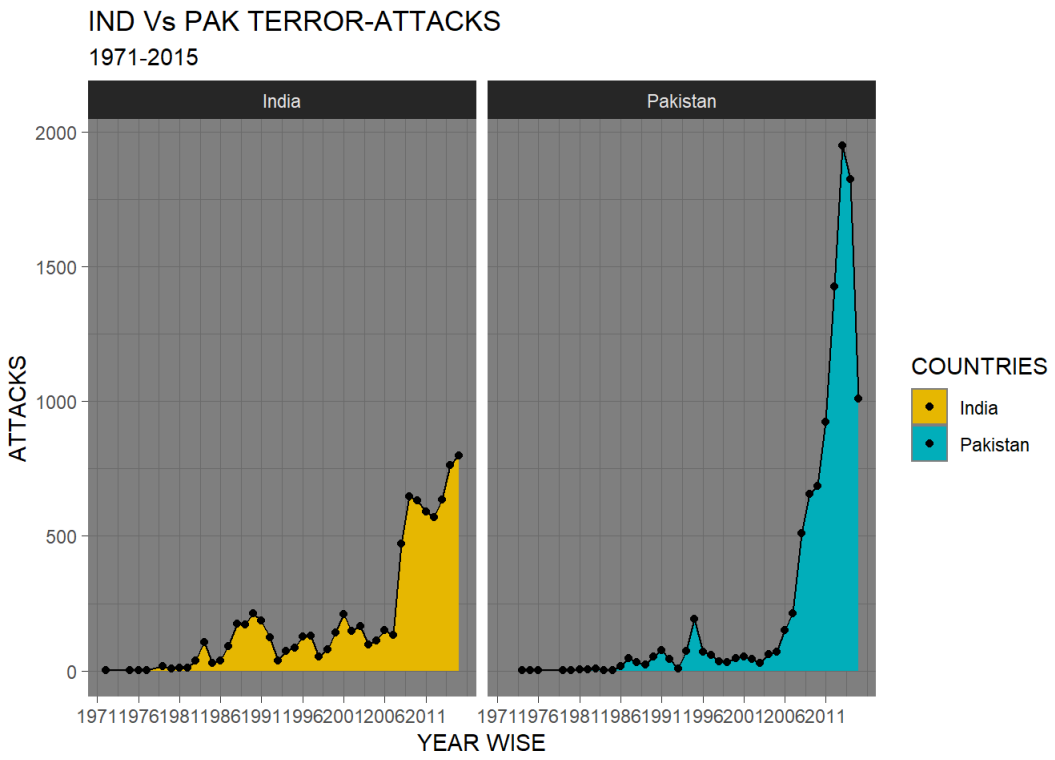


Conclusion:

- The private citizens and property have been the heaviest hit targets throughout. They have aimed at the common multitude.
- After that comes the military and then the police. Military, police and government institutions are targets that hit a country's established system the hardest. However, these targets are always heavily protected.
- Terrorist groups almost exclusively choose to strike soft targets. The intent of attacks on soft targets is to instil fear, inflict casualties as well as inflict psychological damage. And they also might want to avoid direct confrontation with the stronger and better equipped opponent.

3.6 Terrorist attacks in India and Pakistan in last 45 years

```
merge_file%>%group_by(country_txt, iyear)%>%filter(country_txt=='Pakistan'|country_txt=='India', doubtterr==
0) %>%
filter(iyear>(max(merge_file$iyear, na.rm = T)-45))%>%summarise(Year_wise=n()) %>%arrange(-Year_wise) %>%

ggplot(aes(x=iyear, y=Year_wise, fill=country_txt))+
geom_area(position = 'stack', alpha=.99)+geom_line()+theme_dark()+
scale_x_continuous(breaks = seq(1971,2015,5))+
scale_fill_manual(values = c("#E7B800","#00AFBB"))+
geom_point(aes(x=iyear))+
facet_grid(~country_txt)+
labs(title="IND Vs PAK TERROR-ATTACKS",subtitle="1971-2015", x="YEAR WISE",y="ATTACKS",fill="COUNTRIES")
```

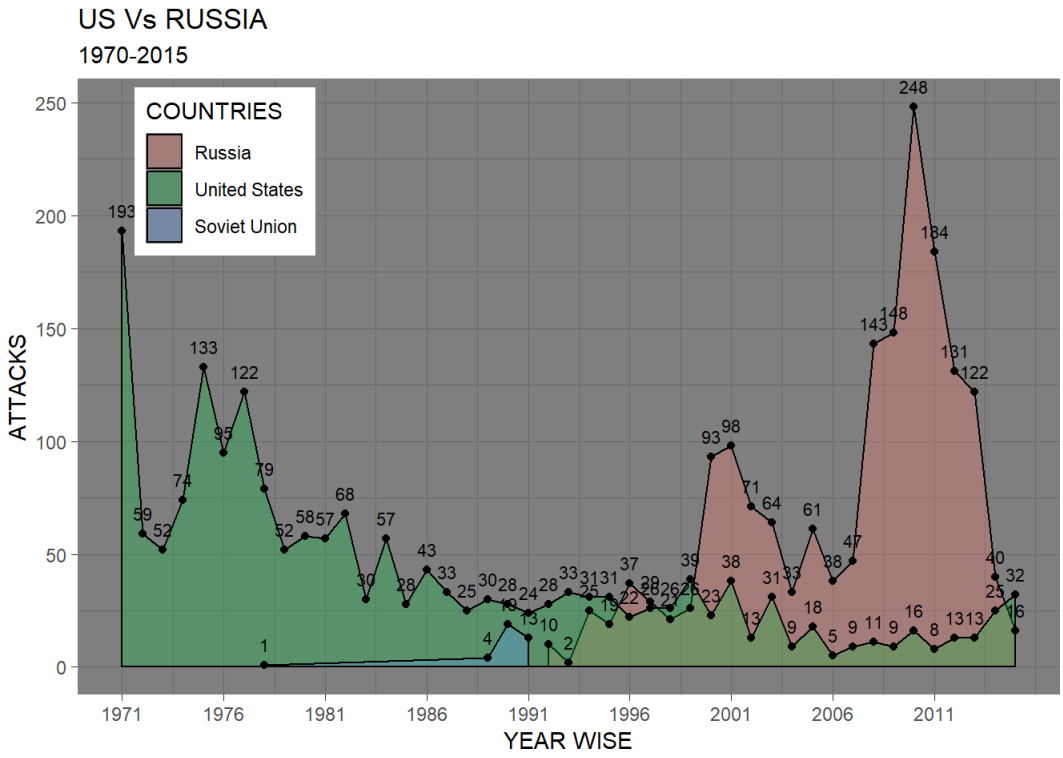


Conclusion:

- Initially attacks in India start before Pakistan.
- The no of attacks in Pakistan have clearly been more compared to India (more than twice the highest no of attacks in India). There has been a sharp rise in the attacks from 2006 to 2011.
- This is due to several factors such as the Soviet Afghan War, Jihad, Mujahedeen fighters trained by CIA carried out activities inside Afghanistan, well after war was over, Sunni Shia conflict, Kalashnikov culture that blew back, Zamindars made during British rule claimed their power, formation of Taliban, Lashkar-e-Taiba and Al- Quaida.

3.7 Terror attacks in United States vs Russian Federation/USSR in last 45 years

```
merge_file%>%group_by(iyear, country_txt)%>%filter(country_txt=='United States' | country_txt=='Soviet Union
' | country_txt=='Russia', doubtterr==0)%>%summarise(total_attacks=n())%>%
filter(iyear>(max(merge_file$iyear, na.rm = T)-45)) %>%

ggplot(aes(x=iyear, y=total_attacks, group=country_txt)) +
geom_density(alpha=0.3,aes(fill=country_txt), stat = 'identity') +
geom_text(aes(label=total_attacks),size=2.9, vjust=-1)+geom_point()+
theme_ridges()+theme_bw()+theme_dark()+
scale_x_continuous(breaks = seq(1971,2015,5))+
theme(legend.position = c(0.15,0.85))+
labs(title="US Vs RUSSIA",subtitle="1970-2015", x="YEAR WISE",y="ATTACKS",fill="COUNTRIES")
```

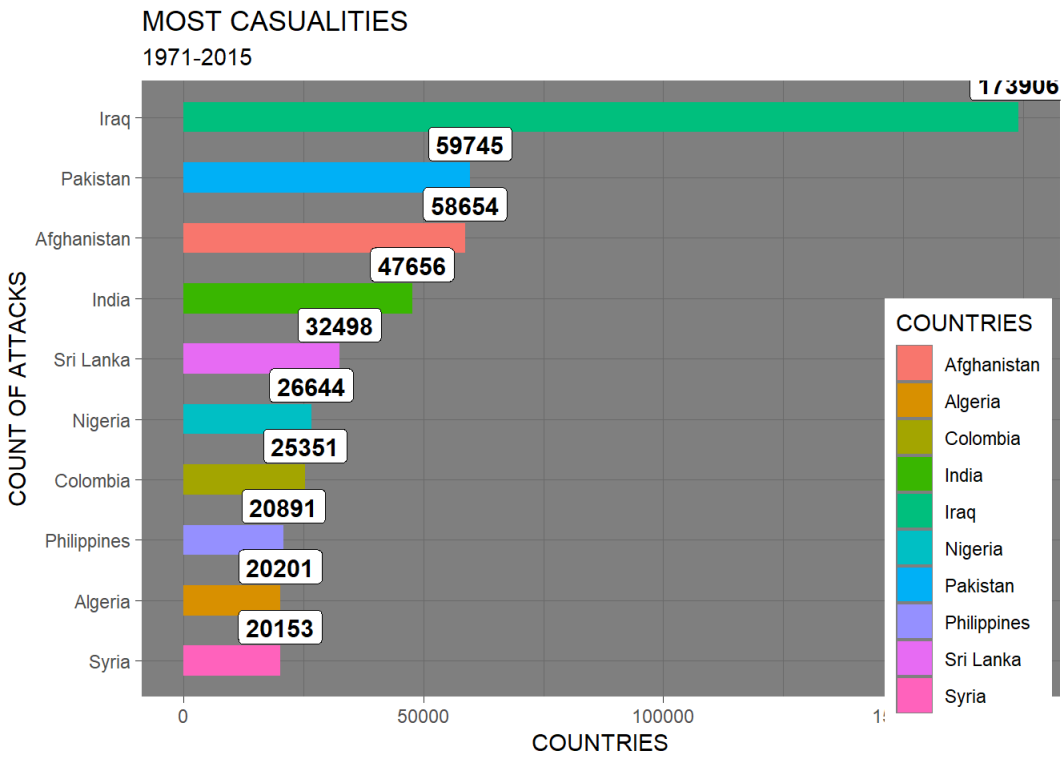


Conclusion:

- Terror attacks in the US have been on an unsteady decline from 1971 till the present.
- The USSR has no records of terror attacks till 1977, after which they faced their first recorded terror attack.
- Till the Soviet Union breakup, they were relatively protected from terrorist activities, in comparison with the US. However, the split lead to a huge increase in terror attacks in the newly formed state of Russia.
- Terrorist tactics such as hostage-taking most notably during Red Terror and Great Terror campaigns, against their own country's population. The end of 20th century witnessed apartment bombings, Moscow theatre hostage crisis, Chechnya incident and Dagestan incident.
- After mass execution by scalpings and several massacres, USA managed to check the attacks launched which is shown by the unsteady decline of the graph.

3.8 Where are there the most casualties?

```
merge_file%>%group_by(country_txt)%>%summarise(total_kills = round(sum(nkill,na.rm = T, nwound, na.rm=T)))%>
%
arrange(-total_kills)%>%head(10) %>%

ggplot(aes(x=reorder(country_txt,total_kills), y=total_kills))+
geom_bar(stat="identity", aes(fill=country_txt), width = 0.5)+theme_bw()+theme_dark()+
geom_label(aes(label= as.factor(total_kills)), colour = "black", fontface = "bold", size=4, vjust=-0.5)+
coord_flip()+
labs(title="MOST CASUALITIES",subtitle="1971-2015", x="COUNT OF ATTACKS",y="COUNTRIES",fill="COUNTRIES")+
theme(legend.position = c(0.9,0.3))
```

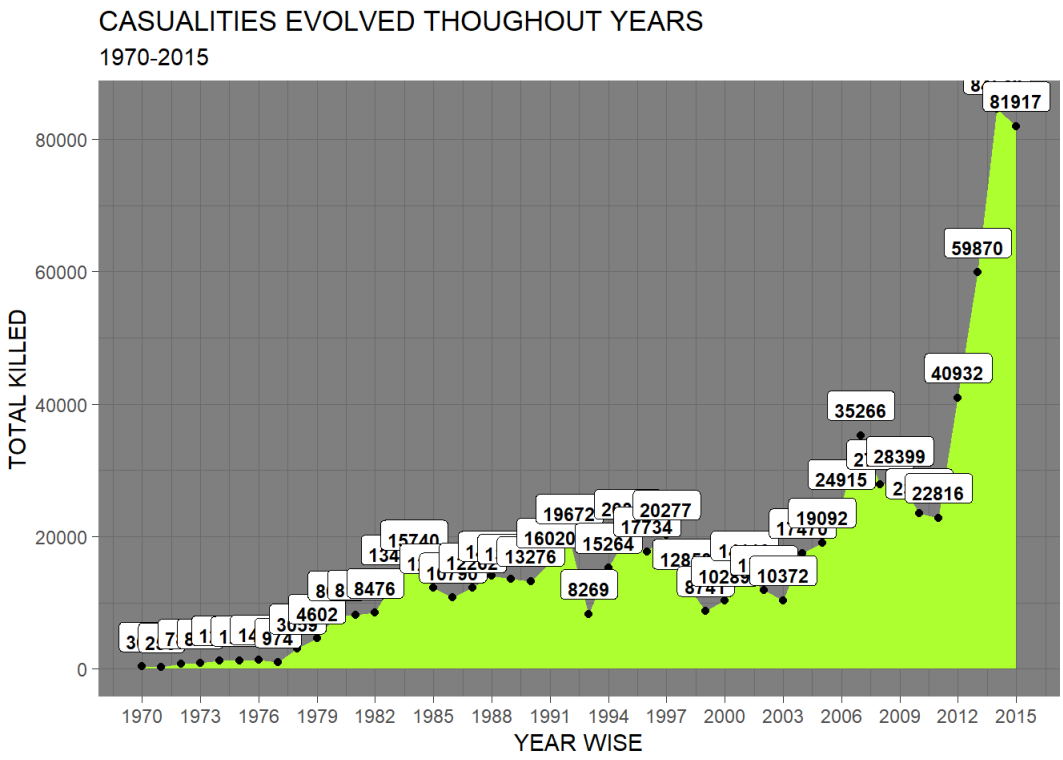


Conclusion:

- Maximum causalities that have been observed within the course of time is in Iraq.
- Iraq is the major target as per the following points:
  - Sudden rise of the most famous terrorist group ISIL.
  - Differences between the fundamentals of the Military and religious police.
- The major target attacked were:
  - Government Personals
  - Civilians

3.9 How have casualties evolved throughout the years?

```
merge_file%>%group_by(iyear)%>%summarise(total_kills = round(sum(nkill,na.rm = T, nwound, na.rm=T)))%>%

ggplot(aes(iyear, total_kills))+geom_area(fill="greenyellow")+geom_point()+
geom_label(aes(label= as.factor(total_kills)), colour = "black", fontface = "bold", size=3, vjust=-0.5)+
scale_x_continuous(breaks = seq(1970,2015,3))+theme_dark()+
labs(title="CASUALITIES EVOLVED THOUGHOUT YEARS", subtitle="1970-2015",x="YEAR WISE",y="TOTAL KILLED")
```



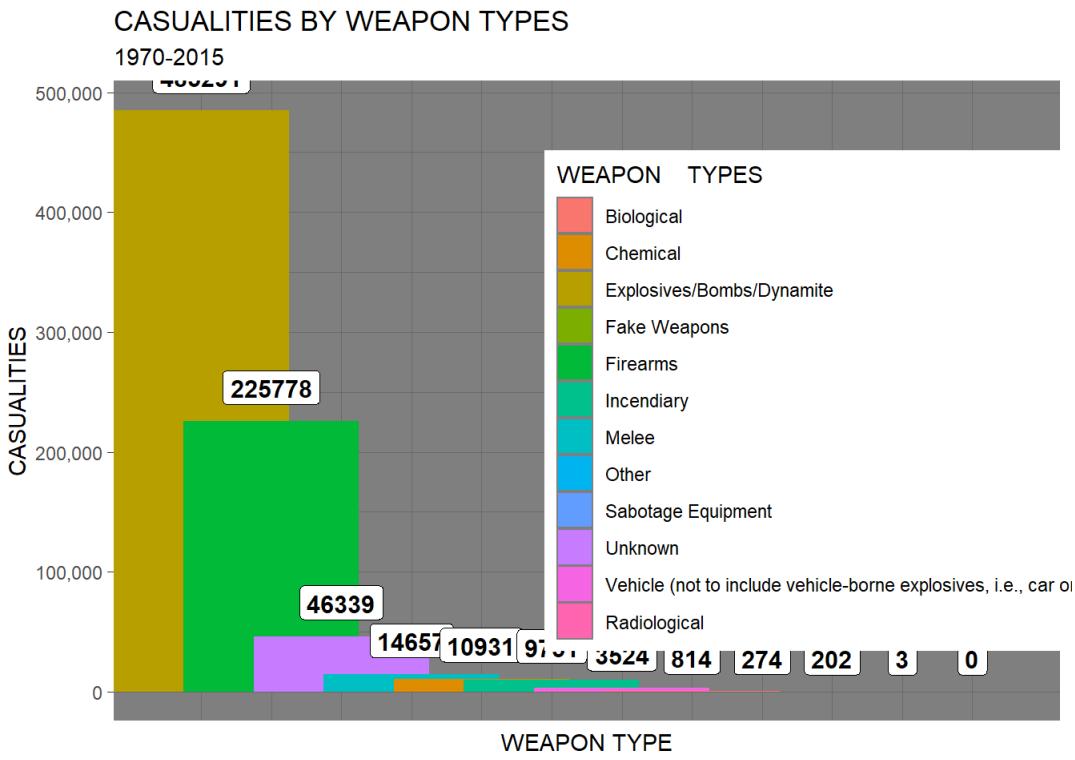
Conclusion:

- Linearity has been shown from Year 1970-1981 in human loss.
- Tremendous dip in Year 1993 due to the insufficient data.
- A major increase in the rate of causality is due to the formation of terrorist groups.
- The increase in the supplies of the armoury from different countries helped the terrorists groups to evolve from minor explosives to high-tech weaponries.

3.10 What are the casualties by weapon type?

```
merge_file%>%group_by(weaptype1_txt)%>%summarise(total_kills = round(sum(nkill,na.rm = T,nwound, na.rm=T)))%
>%
arrange(-total_kills)%>%

ggplot(aes(x=reorder(weaptype1_txt,-total_kills),y=total_kills))+
geom_bar(stat="identity", width = 2.5, aes(fill=weaptype1_txt))+
theme(axis.text.x=element_blank())+scale_y_continuous(labels = scales::comma)+
geom_label(aes(label= as.factor(total_kills)), colour = "black", fontface = "bold", size=4, vjust=-0.5)+
theme_bw()+theme_dark()+theme(legend.position = c(0.8,0.5))+
labs(title="CASUALITIES BY WEAPON TYPES", subtitle="1970-2015",x="WEAPON TYPE",y="CASUALITIES", fill= "WEAPO
N    TYPES")+theme(axis.text.x=element_blank(),axis.ticks.x=element_blank())
```

```
## Warning: position_stack requires non-overlapping x intervals
```

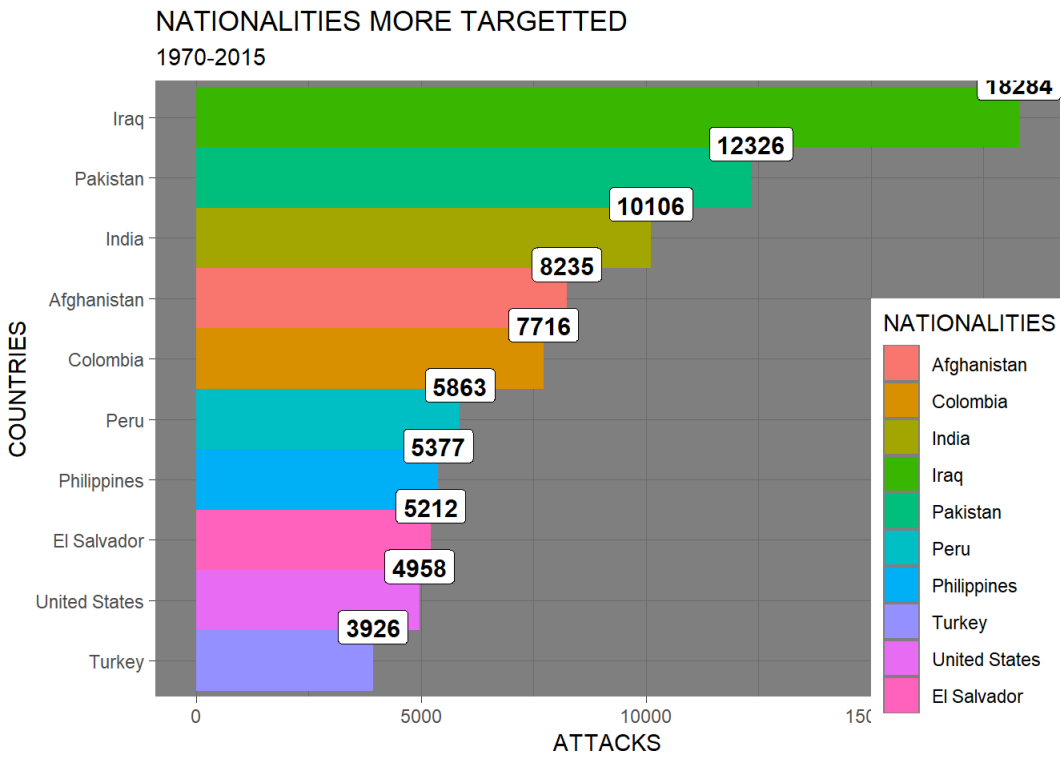


Conclusion:

- As we can conclude from the graph that heavy destruction has been made by Bomb/Explosives/Dynamite.
- The reason for this increase is due to the following reasons:
  - Most outnumbered weapon than other weapons used for heavy destruction
  - Can cause heavy damage to humans as well as mass destruction of infrastructure.
  - Can cover a large number of area hence, it is more economical.

3.11 Are certain nationalities more targeted? If yes, which one?

```
merge_file%>%filter(natlty1_txt != '.') %>%group_by(natlty1_txt)%>%summarise(total_attacks=n())%>%
arrange(-total_attacks)%>%head(10) %>%

ggplot(aes(x=reorder(natlty1_txt,total_attacks), total_attacks))+
geom_bar(stat="identity",aes(fill=natlty1_txt), width=1)+theme_bw()+
geom_label(aes(label= total_attacks), colour = "black", fontface = "bold", size=4,vjust=-0.5)+coord_flip()+t
heme_dark()+
labs(title="NATIONALITIES MORE TARGETTED", subtitle="1970-2015",x="COUNTRIES",y="ATTACKS", fill= "NATIONALIT
IES")+
theme(legend.position = c(0.9,0.3))
```

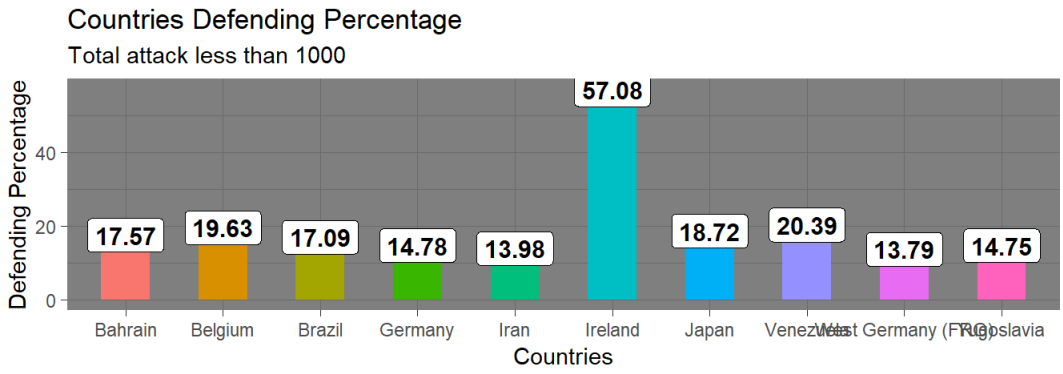


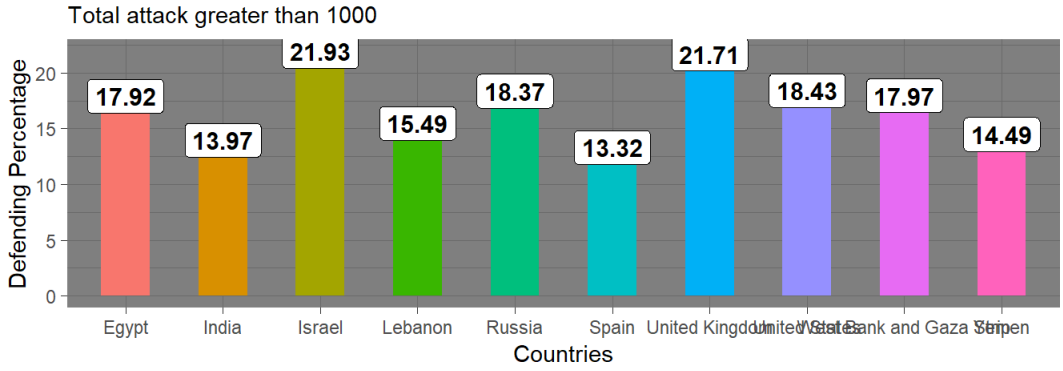
Conclusion:

- No, no specific nationality is targeted. Although we are getting Iraq as the answer, we have to consider the fact that Iraq is a war prone zone due to which the results of our queries are such. Hence, the conclusion.

3.12 Are some countries better at defending themselves against terrorist attacks? If yes, which is the safest country to live?

```
a=merge_file %>%group_by(country_txt)%>%filter(doubtterr==0) %>%
summarise(total_count=n(), total_defend=sum(success==0, na.rm=T), final=round(sum((total_defend/n())*100),2)
)%>%
filter(total_count>100 & total_count<1000) %>%
arrange(-final)  %>%head(10) %>%

  ggplot(aes(x=country_txt,y=final))+
  theme_dark()+theme(legend.position = "NULL")+
  geom_bar(stat = "identity", aes(fill=country_txt), width = 0.5)+
  labs(title="Countries Defending Percentage ",subtitle="Total attack less than 1000",
  x="Countries",y="Defending Percentage")+
  geom_label(aes(label= final), colour = "black", fontface = "bold", size=4, vjust=0.5)


b=merge_file %>%group_by(country_txt, region_txt)%>%filter(doubtterr==0) %>%
  summarise(total_count=n(), total_defend=sum(success==0, na.rm=T), final=round(sum((total_defend/n())*100),
2))%>%
  filter(total_count>1000 & total_count<11000) %>%
  arrange(-final) %>% head(10) %>%

  ggplot(aes(x=country_txt,y=final))+theme_dark()+
  theme_dark()+theme(legend.position = "NULL")+
  geom_bar(stat = "identity",aes(fill=country_txt), width=0.5)+
  labs(subtitle="Total attack greater than 1000",x="Countries",y="Defending Percentage")+
  geom_label(aes(label= final), colour = "black", fontface = "bold", size=4, vjust=0.5)


grid.arrange(a,b)
```





Conclusion:

- We can't compare 212 countries on the same grounds. Hence, the approach we have taken was on the basis of number of attacks that happened.

4 Implications

- This analysis establishes the fact that terrorism is widespread, across all countries.
- We can see that the 1970s, 1997 and 2003 have witnessed relatively less terror attacks. However, after 2003, there has been a significant increase in the number of terror attacks.
- Major number of attacks have taken place through bombings.