

# Cumulative-Killed-Shot Graphics 2014-2022

MCC

2022-06-09

```
library(readr)
library(lubridate)
library(ggplot2)
library(tidyverse)
library(knitr)

pagebreak <- function() {
  if(knitr::is_latex_output())
    return("\\newpage")
  else
    return('<div style="page-break-before: always;" />')
}
```

## Read Gun Violence dataframes

read\_gva\_data

```
read_gva_data <- function(i) {
  file_year = paste("~/Desktop/gun_violence_research/001_data/001A_ORIGINAL/gva-", i, ".csv", sep="")
  # print("=====")
  # print(file_year)
  gva_df <- read_csv(file_year,
    col_types = cols(`Incident ID` = col_skip(),
    `Incident Date` = col_date(format = "%B %d, %Y"),
    State = col_skip(), `City Or County` = col_skip(),
    Address = col_skip(), Operations = col_skip()))

  # Simplify Names & Order data frame by 'ID' (incident date)
  names(gva_df) <- c("ID", "Killed", "Injured")
  gva_df <- gva_df[order(gva_df$`ID`), ]

  ## Calculate Killed/Injured/Grand Totals
  date <- ymd(gva_df$`ID`)
  gva_df$Days <- yday(date) - 1 # so Jan 1 = day 0
  gva_df$Cum_Killed <- cumsum(gva_df$Killed)
  gva_df$Cum_Injured <- cumsum(gva_df$Injured)
  gva_df$Grand_Total <- gva_df$Cum_Killed + gva_df$Cum_Injured
  return(gva_df)
}
```

## Graphic of Cumulative Deaths vs Days for Given Year

graph\_deaths

```
graph_deaths <- function(gva_df, i){  
  #print("graph_deaths")  
  require(ggplot2)  
  plot(ggplot(gva_df, aes(x=gva_df$Days, y=gva_df$Cum_Killed)) +  
    geom_line() +  
    ggtitle("Cumulative Killed Per Year", subtitle = i) +  
    labs(x='Day No. of 365 Days', y="Cumulative Killed") +  
    geom_smooth(method = "lm"))  
}
```

## Regression Numbers For Killed vs Days for Given Year

calc\_regression\_killed

```
calc_regression_killed <- function(gva_df, i){  
  #print("calc_regression_killed")  
  #print(names(gva_df))  
  #fit simple linear regression model  
  model <- lm(gva_df$Cum_Killed ~ gva_df$Days)  
  print(paste("Regression Values For Year: ", i, sep=""))  
  print(model)  
}
```

## Cumulative Total Shot (Killed + Injured) vs Days For Given Year

graph\_total\_shot

```
graph_total_shot <- function(gva_df, i){  
  #print("graph_total_shot")  
  require(ggplot2)  
  plot(ggplot(gva_df, aes(x=gva_df$Days, y=gva_df$Grand_Total)) +  
    geom_line() +  
    ggtitle("Cumulative Shot (Killed + Injured) Per Year ",  
      subtitle = i) +  
    labs(x="Day No. of 365 Days", y="Cumulative Total Shot (Killed + Injured)") +  
    geom_smooth(method = "lm"))  
}
```

## Calculate Regression Numbers For Total Shot vs Days for Given Year

calc\_regression\_total\_shot

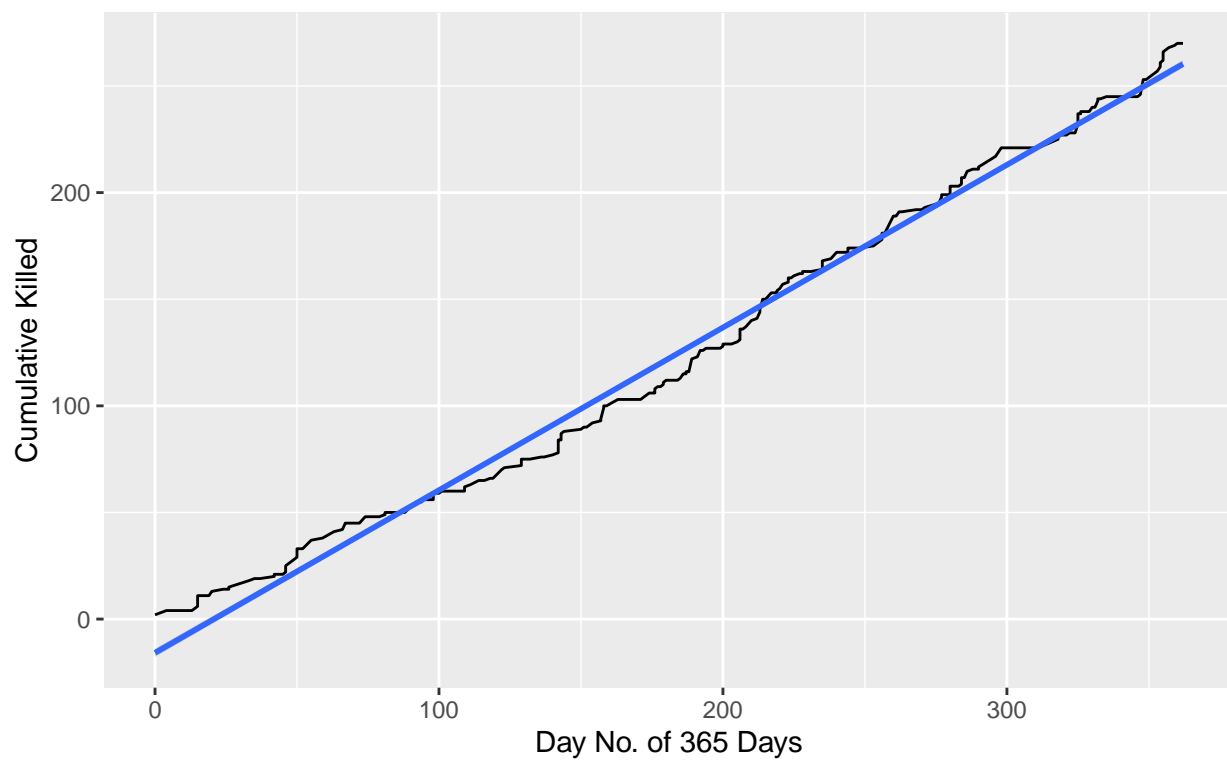
```
calc_regression_total_shot <- function(gva_df, i){  
  #print("calc_regression_total_shot")  
  #fit simple linear regression model  
  model <- lm(gva_df$Grand_Total ~ gva_df$Days)  
  print(paste("Regression Values For Year: ", i, sep=""))  
  print(model)  
}
```

## Main

```
for (i in 2014:2021) {  
  #print (i)  
  gva_df <- data.frame()  
  gva_df <- read_gva_data(i)  
  pagebreak()  
  graph_deaths(gva_df, i)  
  calc_regression_killed(gva_df, i)  
  graph_total_shot(gva_df, i)  
  calc_regression_total_shot(gva_df, i)  
}
```

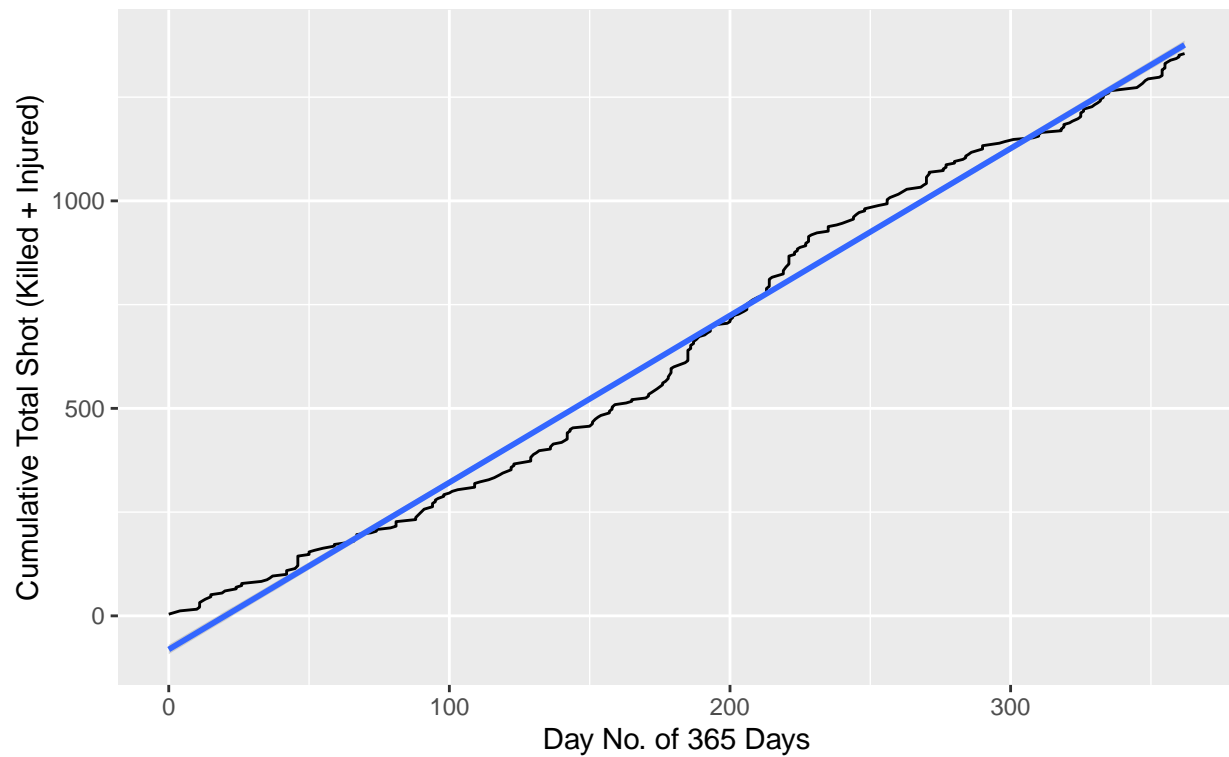
### Cumulative Killed Per Year

2014

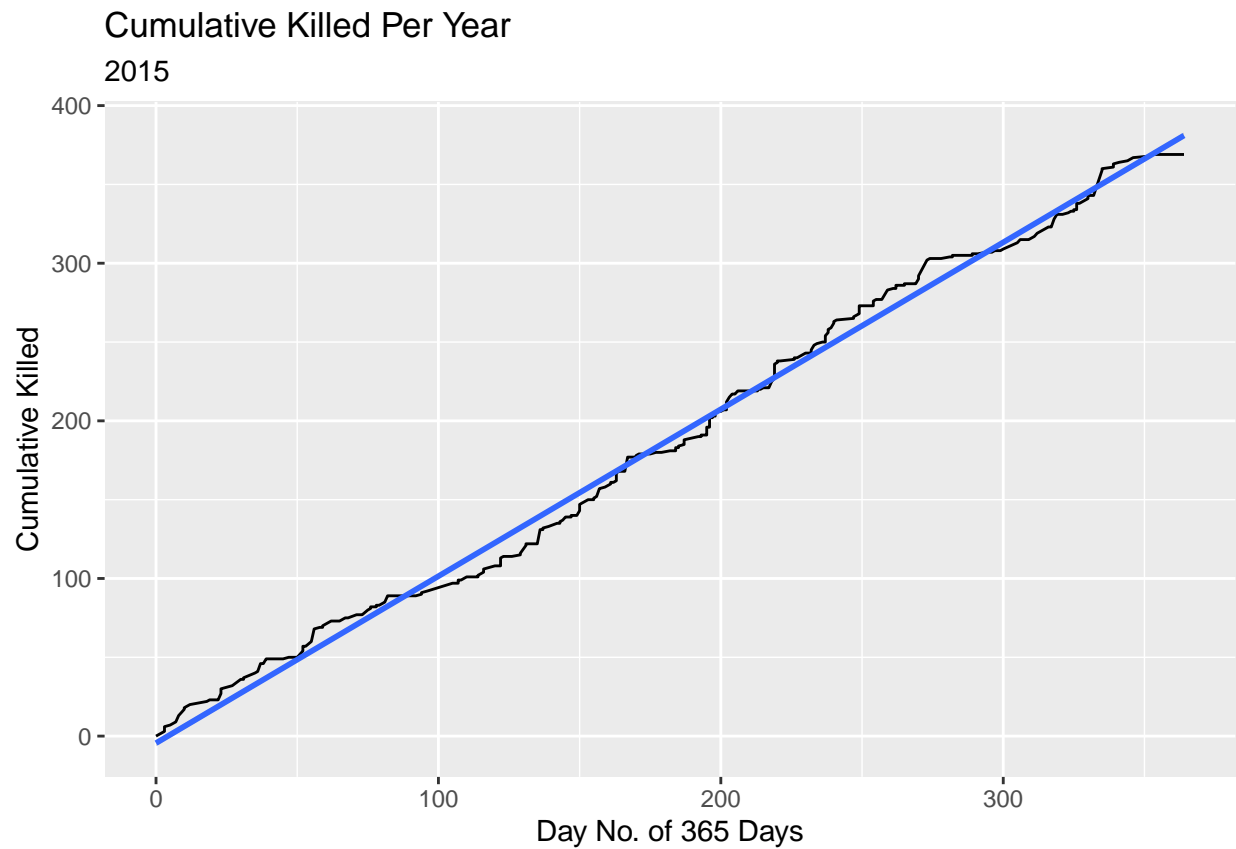


```
## [1] "Regression Values For Year: 2014"  
##  
## Call:  
## lm(formula = gva_df$Cum_Killed ~ gva_df$Days)  
##  
## Coefficients:  
## (Intercept)  gva_df$Days  
##      -15.8279      0.7628
```

# Cumulative Shot (Killed + Injured) Per Year 2014

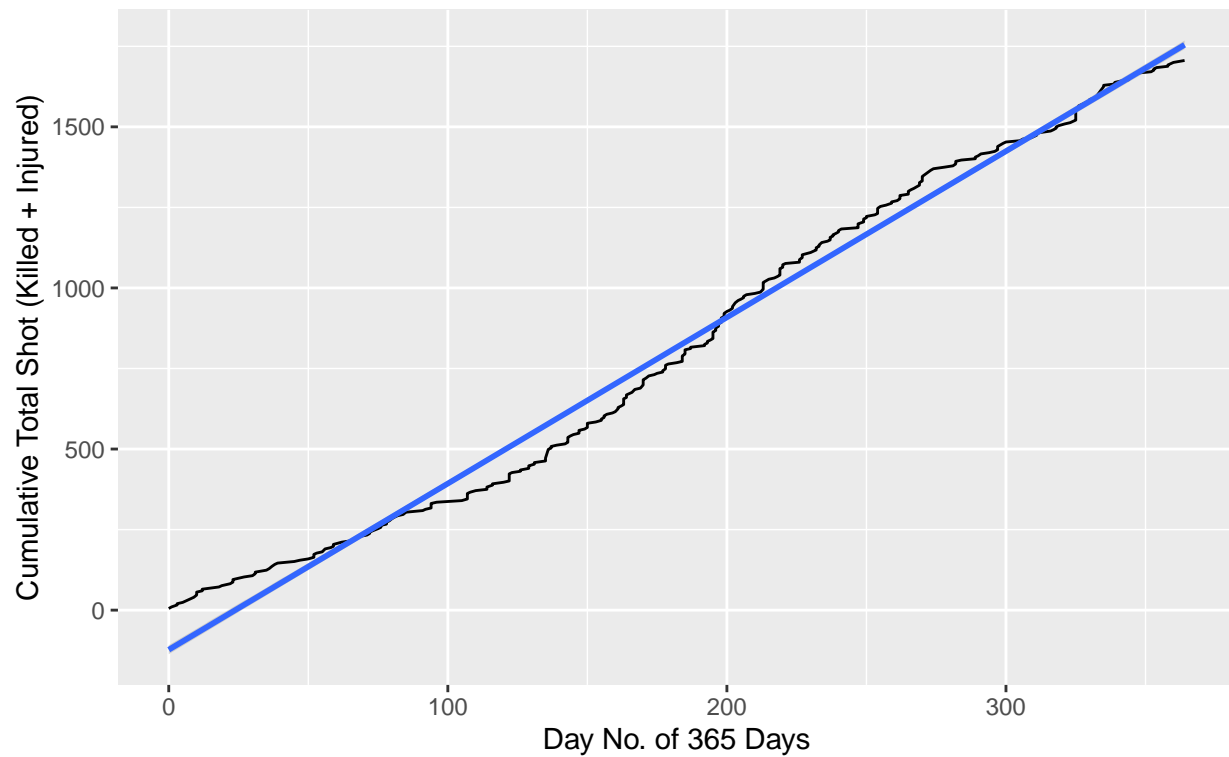


```
## [1] "Regression Values For Year: 2014"
##
## Call:
## lm(formula = gva_df$Grand_Total ~ gva_df$Days)
##
## Coefficients:
## (Intercept)  gva_df$Days
##      -81.016      4.024
```

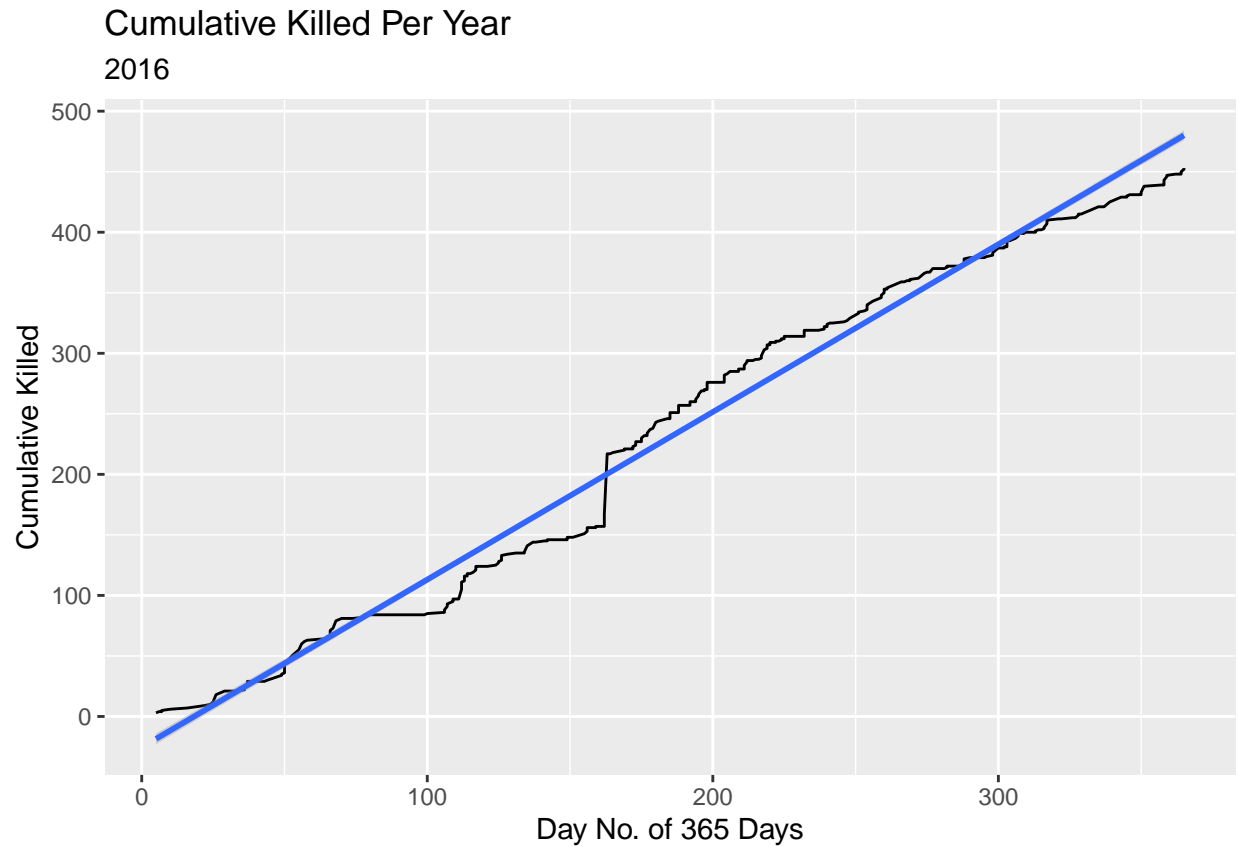


```
## [1] "Regression Values For Year: 2015"
##
## Call:
## lm(formula = gva_df$Cum_Killed ~ gva_df$Days)
##
## Coefficients:
## (Intercept)  gva_df$Days
##      -4.445      1.059
```

# Cumulative Shot (Killed + Injured) Per Year 2015

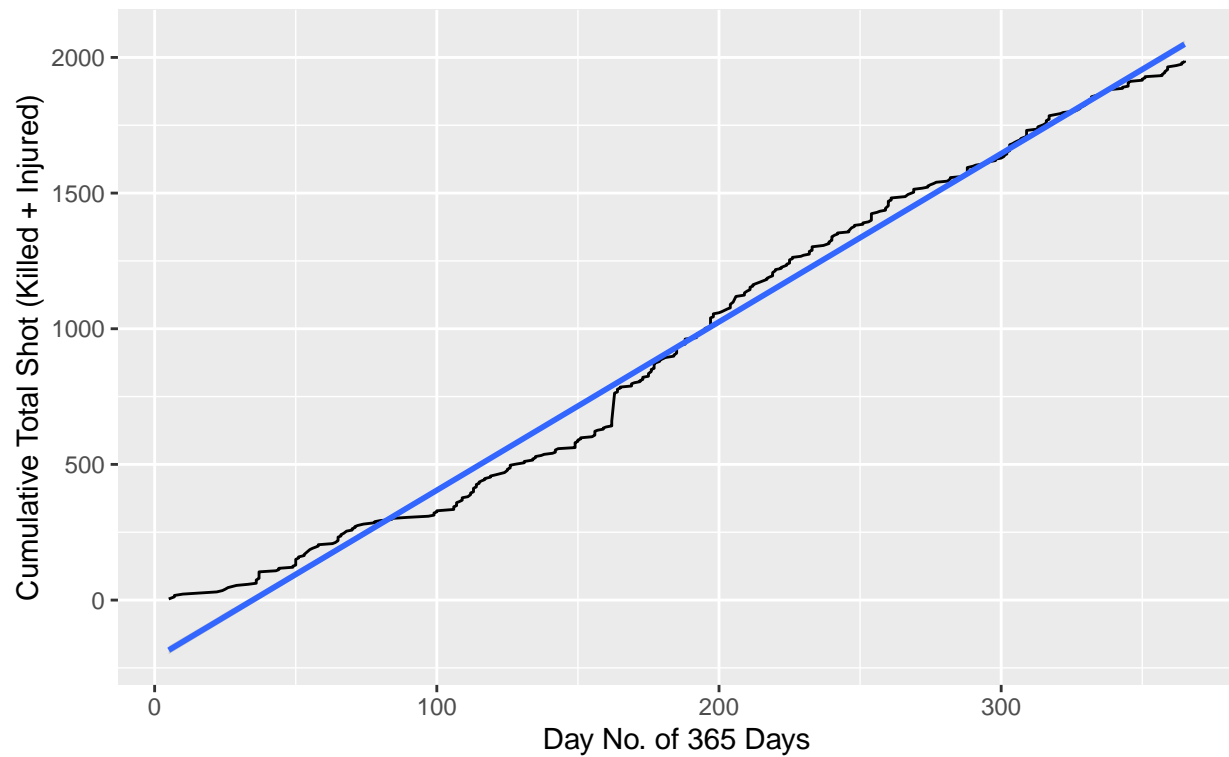


```
## [1] "Regression Values For Year: 2015"
##
## Call:
## lm(formula = gva_df$Grand_Total ~ gva_df$Days)
##
## Coefficients:
## (Intercept)  gva_df$Days
##      -122.869       5.158
```



```
## [1] "Regression Values For Year: 2016"
##
## Call:
## lm(formula = gva_df$Cum_Killed ~ gva_df$Days)
##
## Coefficients:
## (Intercept)  gva_df$Days
##      -25.412       1.385
```

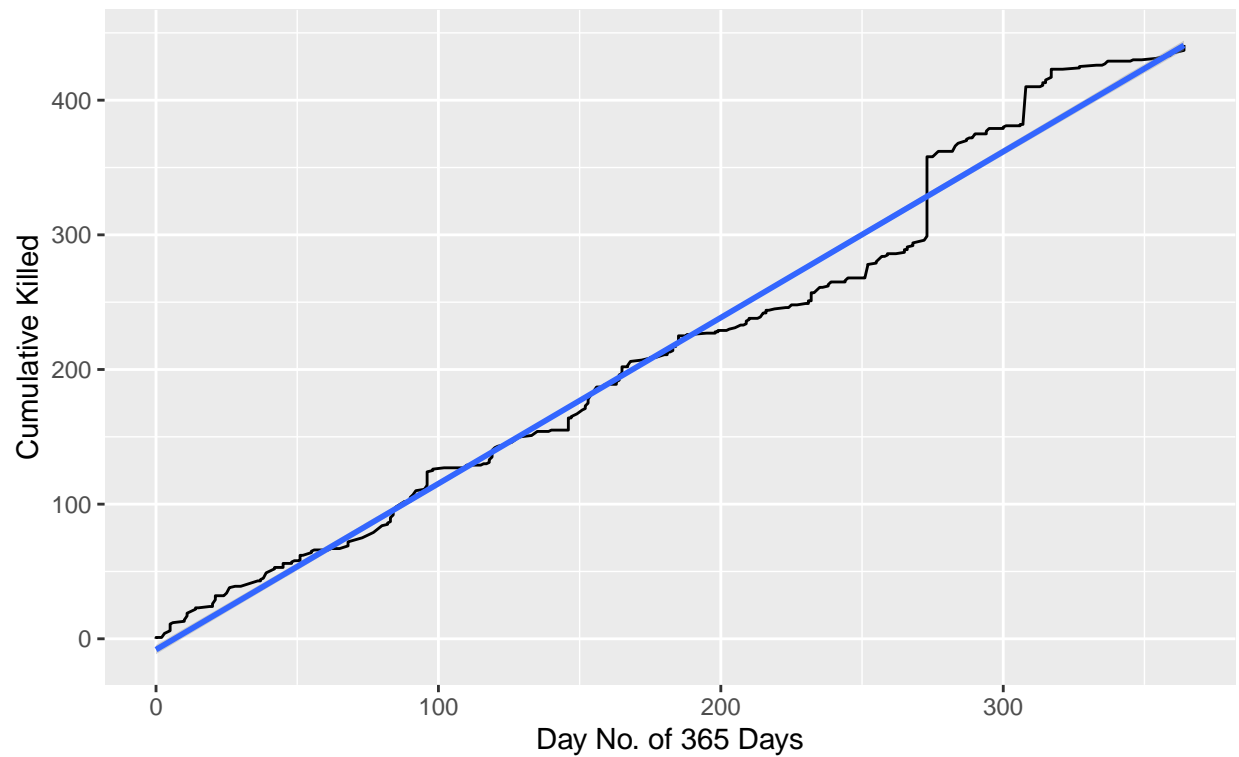
# Cumulative Shot (Killed + Injured) Per Year 2016



```
## [1] "Regression Values For Year: 2016"
##
## Call:
## lm(formula = gva_df$Grand_Total ~ gva_df$Days)
##
## Coefficients:
## (Intercept)  gva_df$Days
##      -215.696       6.204
```

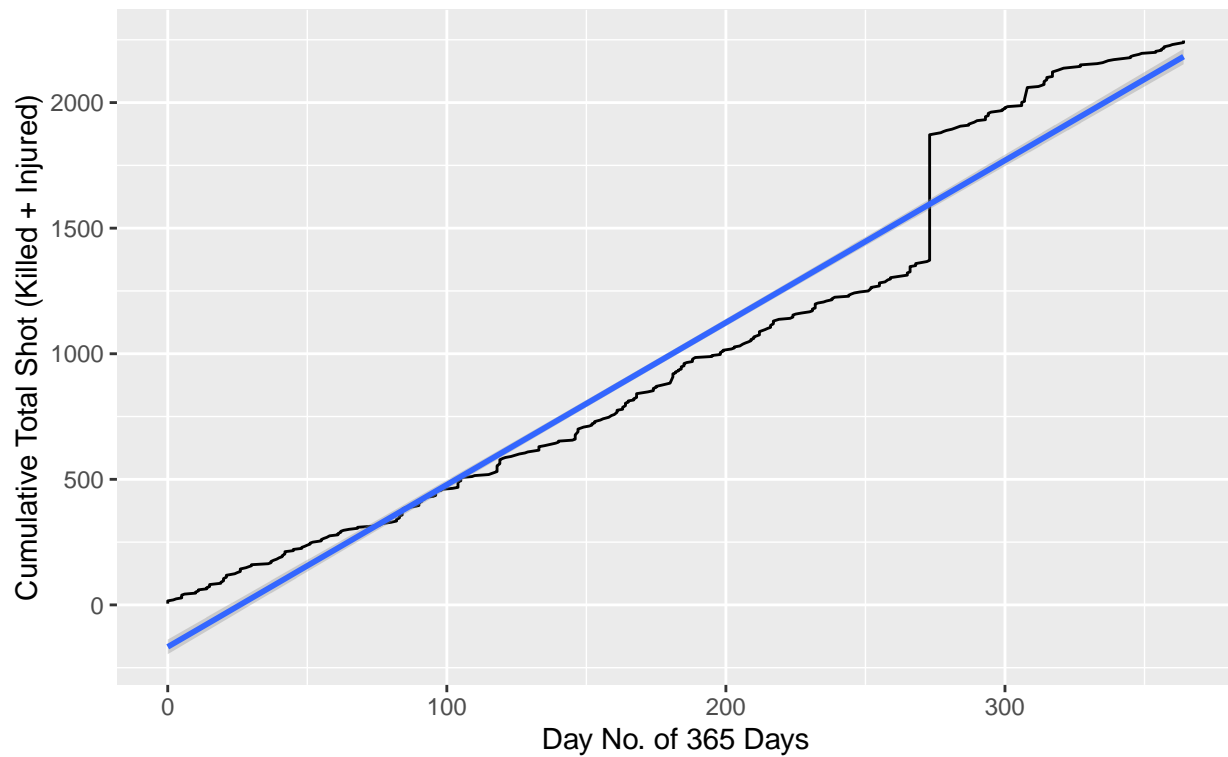


## Cumulative Killed Per Year 2017



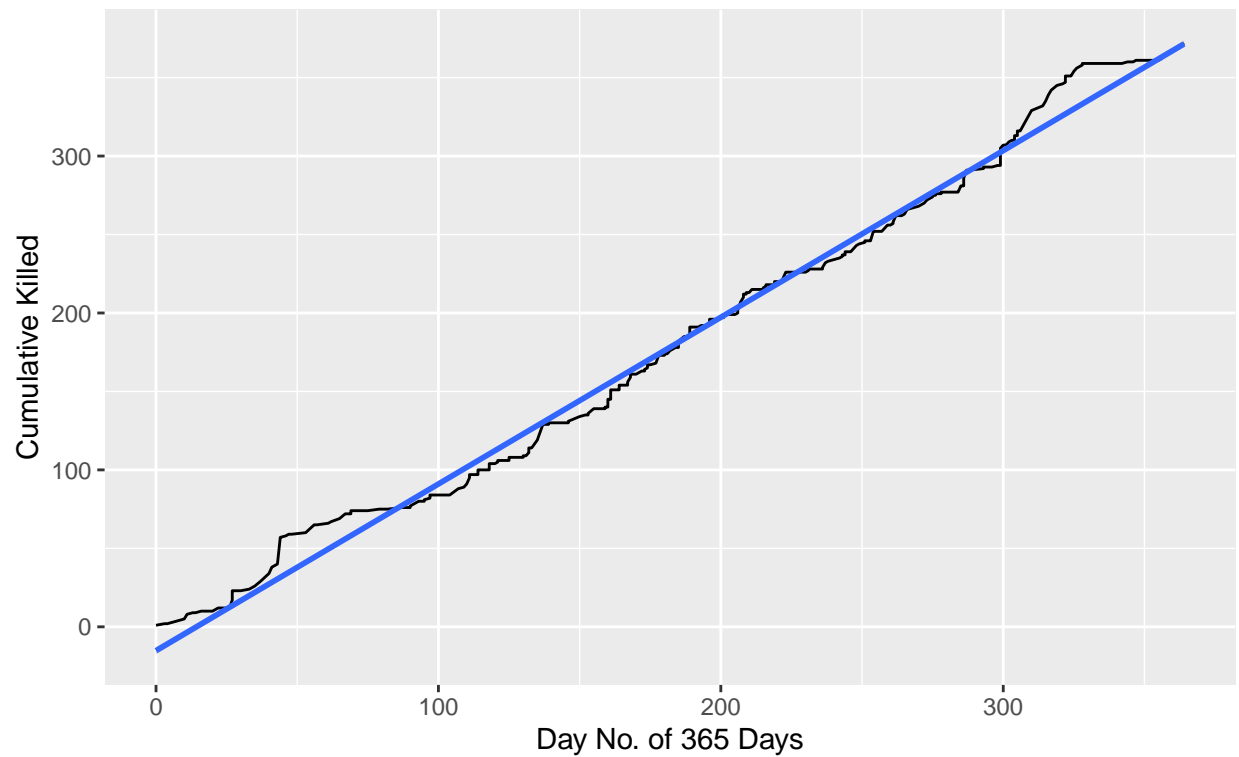
```
## [1] "Regression Values For Year: 2017"
##
## Call:
## lm(formula = gva_df$Cum_Killed ~ gva_df$Days)
##
## Coefficients:
## (Intercept)  gva_df$Days
##      -8.026      1.233
```

# Cumulative Shot (Killed + Injured) Per Year 2017



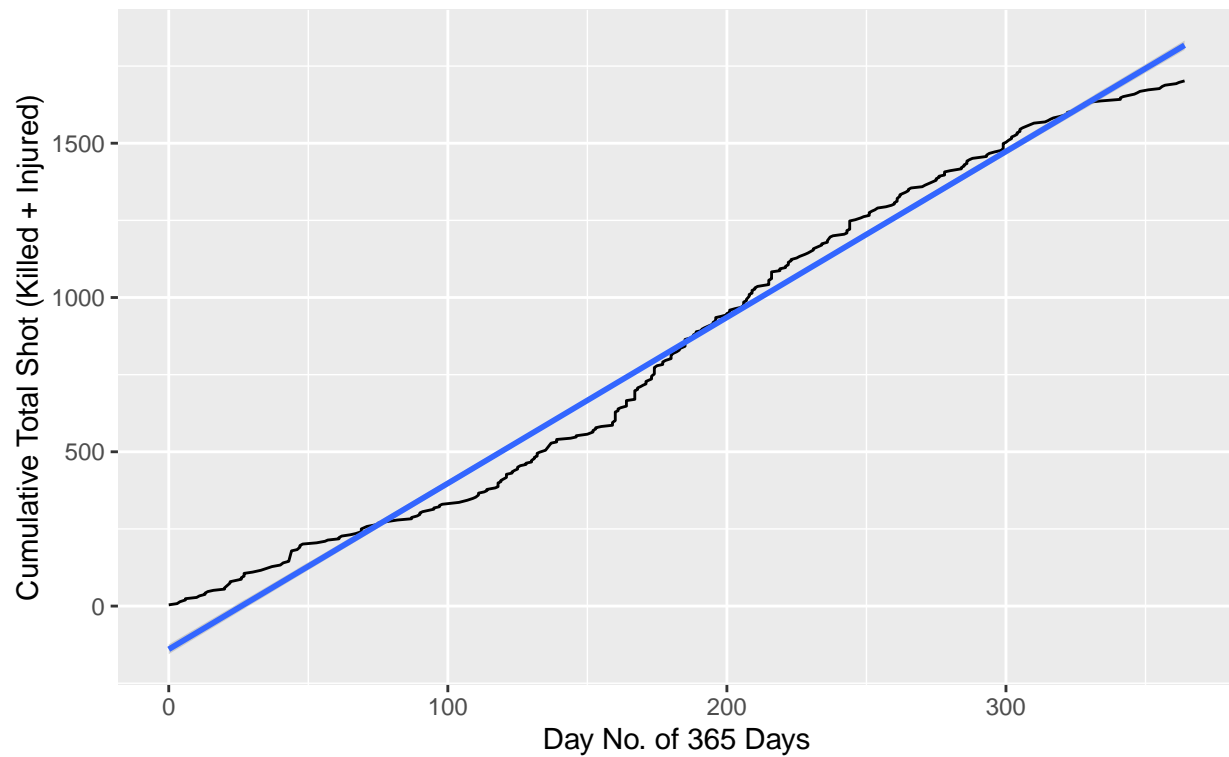
```
## [1] "Regression Values For Year: 2017"
##
## Call:
## lm(formula = gva_df$Grand_Total ~ gva_df$Days)
##
## Coefficients:
## (Intercept)  gva_df$Days
##      -167.138       6.457
```

## Cumulative Killed Per Year 2018



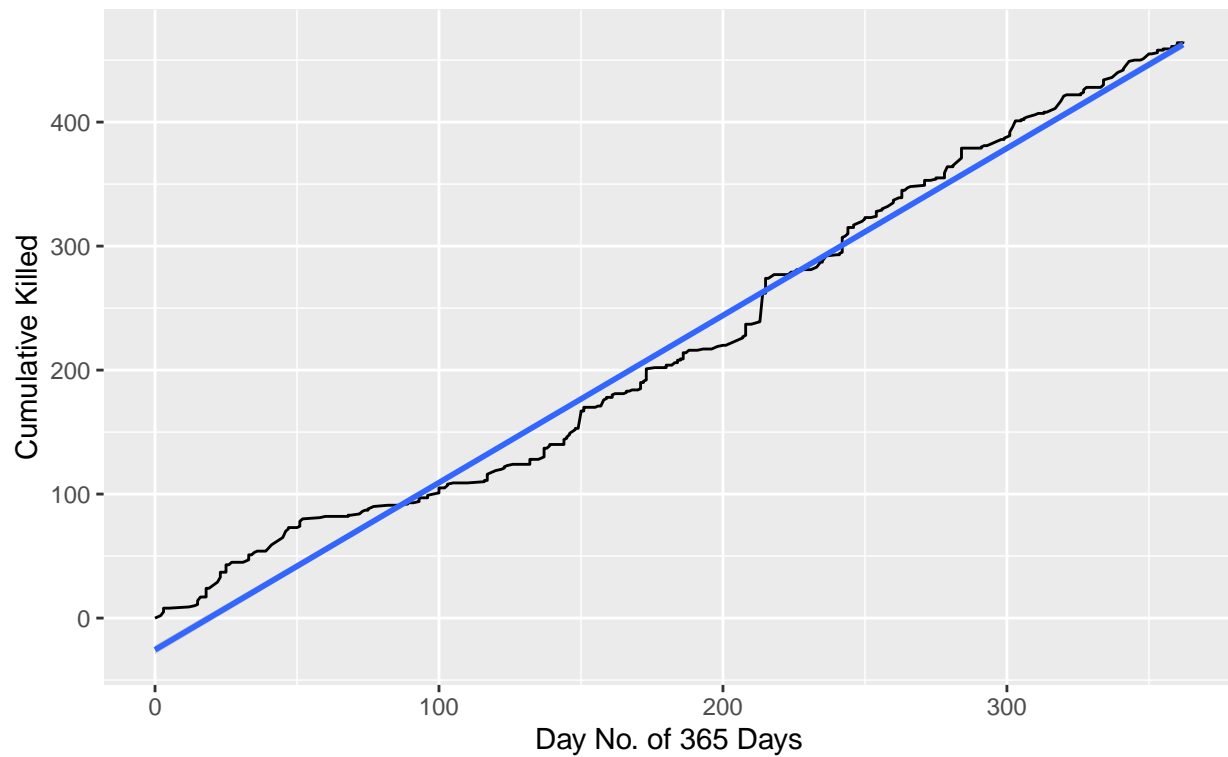
```
## [1] "Regression Values For Year: 2018"
##
## Call:
## lm(formula = gva_df$Cum_Killed ~ gva_df$Days)
##
## Coefficients:
## (Intercept)  gva_df$Days
##      -15.203       1.062
```

# Cumulative Shot (Killed + Injured) Per Year 2018



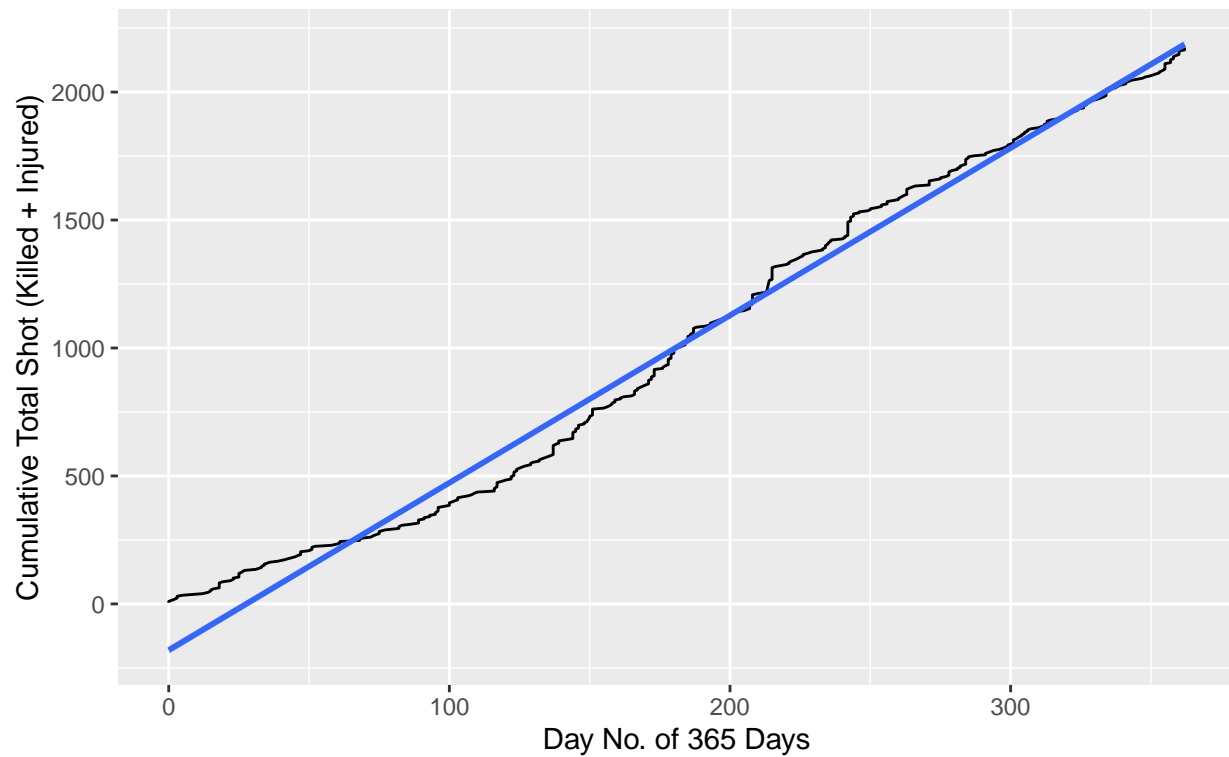
```
## [1] "Regression Values For Year: 2018"
##
## Call:
## lm(formula = gva_df$Grand_Total ~ gva_df$Days)
##
## Coefficients:
## (Intercept)  gva_df$Days
##      -140.031       5.378
```

## Cumulative Killed Per Year 2019



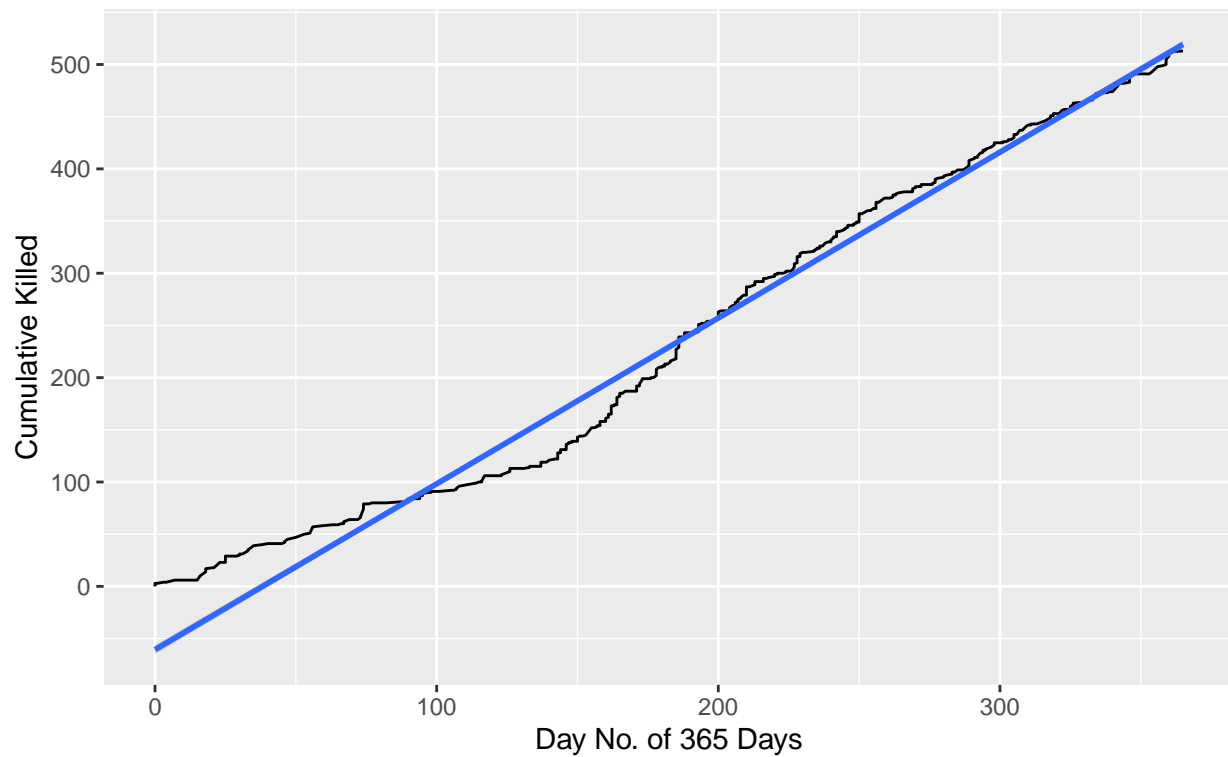
```
## [1] "Regression Values For Year: 2019"
##
## Call:
## lm(formula = gva_df$Cum_Killed ~ gva_df$Days)
##
## Coefficients:
## (Intercept)  gva_df$Days
##      -25.586       1.348
```

## Cumulative Shot (Killed + Injured) Per Year 2019



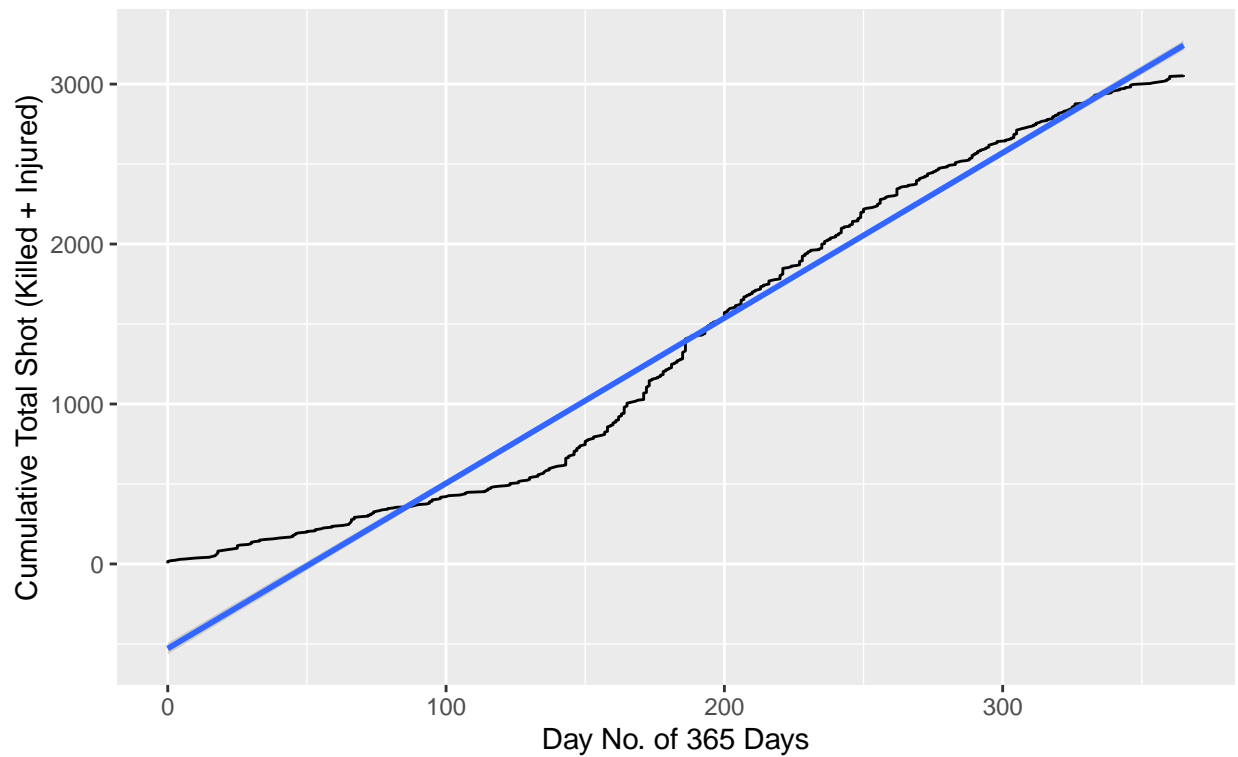
```
## [1] "Regression Values For Year: 2019"
##
## Call:
## lm(formula = gva_df$Grand_Total ~ gva_df$Days)
##
## Coefficients:
## (Intercept)  gva_df$Days
##      -180.71      6.54
```

## Cumulative Killed Per Year 2020



```
## [1] "Regression Values For Year: 2020"
##
## Call:
## lm(formula = gva_df$Cum_Killed ~ gva_df$Days)
##
## Coefficients:
## (Intercept)  gva_df$Days
##      -60.651       1.589
```

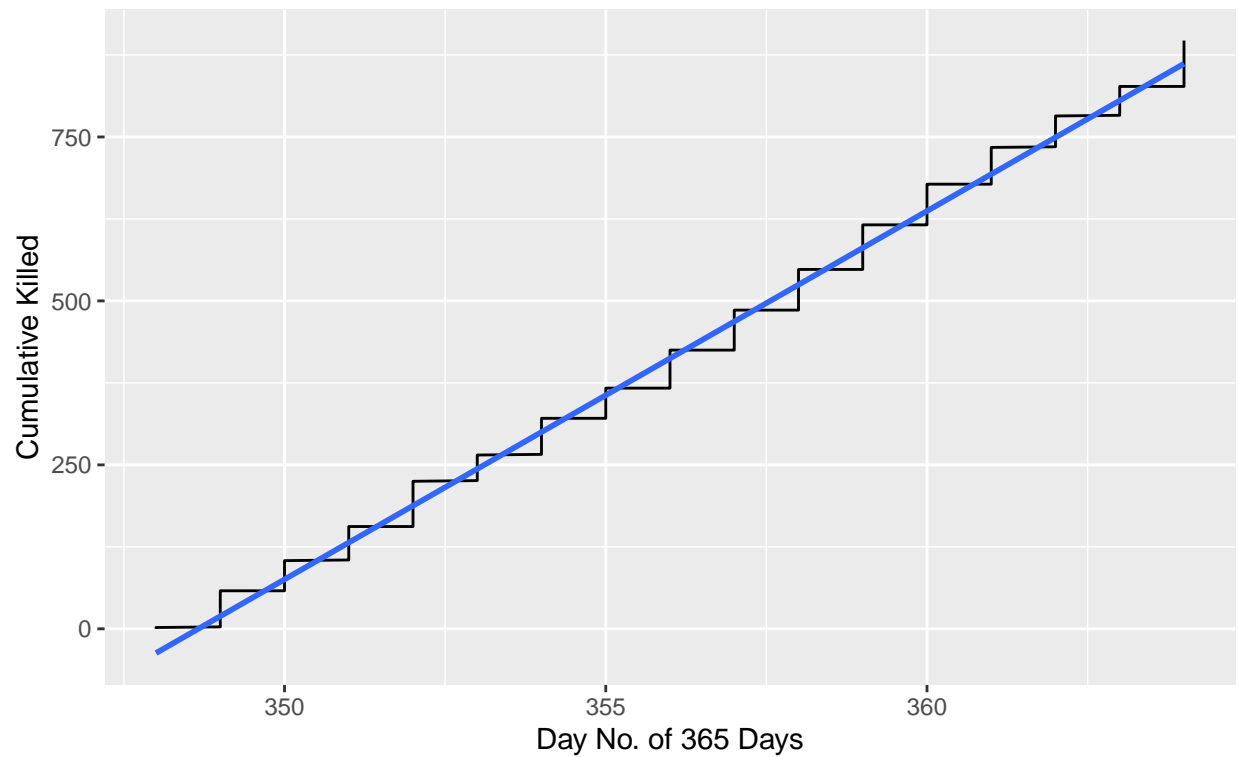
Cumulative Shot (Killed + Injured) Per Year  
2020



```
## [1] "Regression Values For Year: 2020"
##
## Call:
## lm(formula = gva_df$Grand_Total ~ gva_df$Days)
##
## Coefficients:
## (Intercept)  gva_df$Days
##      -529.08      10.33
```

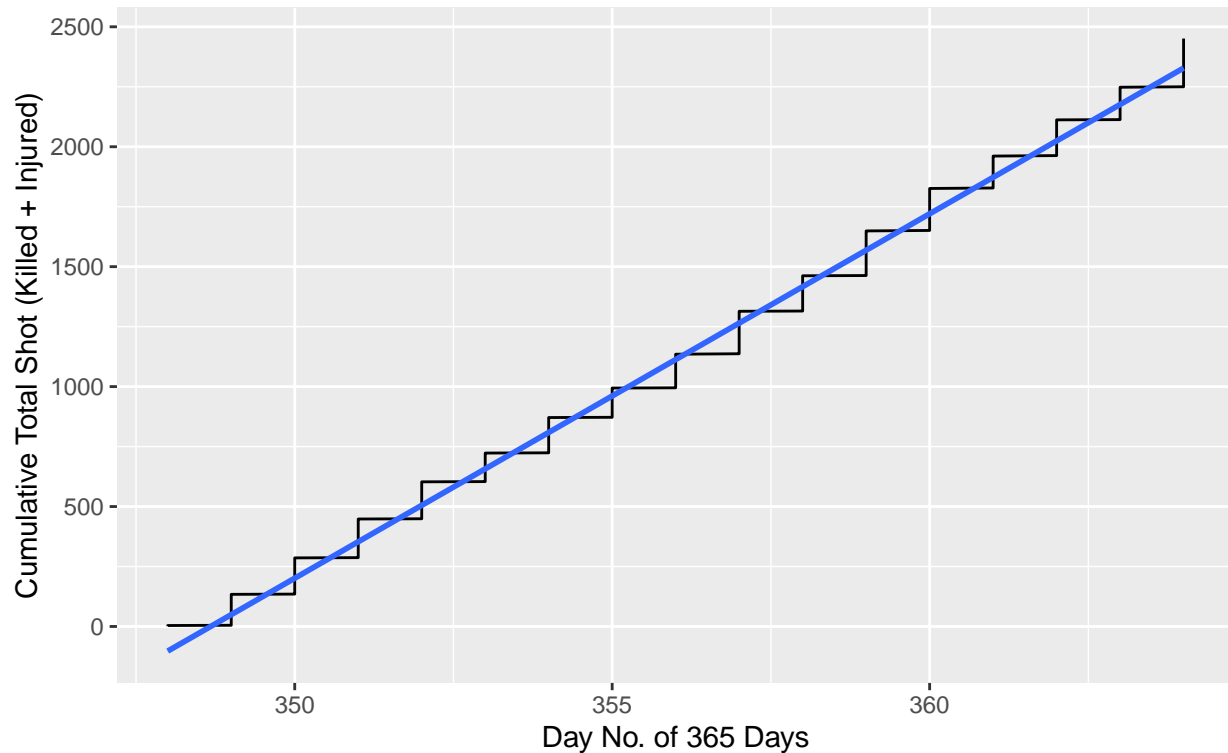


## Cumulative Killed Per Year 2021



```
## [1] "Regression Values For Year: 2021"
##
## Call:
## lm(formula = gva_df$Cum_Killed ~ gva_df$Days)
##
## Coefficients:
## (Intercept)  gva_df$Days
##   -19582.82      56.17
```

## Cumulative Shot (Killed + Injured) Per Year 2021



```
## [1] "Regression Values For Year: 2021"
##
## Call:
## lm(formula = gva_df$Grand_Total ~ gva_df$Days)
##
## Coefficients:
## (Intercept)  gva_df$Days
##      -52969.4       151.9
```

YEAR	Killed	Total	AVG
2014	0.7628257	4.024422	5.3
2015	1.059014	5.157974	4.9
2016	1.384732	6.204191	4.5
2017	1.232796	6.456688	5.2
2018	1.062215	5.377669	5.1
2019	1.348324	6.540035	4.9
2020	1.588776	10.33217	6.5
2021	56.16621	151.9159	2.7
		Avg	4.9