ANALYSIS OF THE INAUSPICIOUS IMPACTS OF US STORMS ON HEALTH AND ECONOMY

Shubhendu Dash

08/07/2020

Synopsis

Tempests and other extreme climate occasions have gigantic effect on general wellbeing and monetary issues for districts and their occupants. Some of serious occasions can cause wounds property harm and even lead to death. This investigation present which kinds of occasions are generally hurtful concerning populace wellbeing and which have the best financial outcomes.

The objective of the task is to investigate the NOAA Storm Database and investigate the impacts of extreme climate occasions on both populace and economy.The database covers the timeframe among 1950 and November 2011.

The accompanying examination researches which sorts of extreme climate occasions are generally destructive on:

1. Health (injuries and fatalities)
2. Property and crops (economic consequences)

Information on the Data: Documentation

Data Processing

I'm going to use The U.S. National Oceanic and Atmospheric Administration's (NOAA) storm database which tracks characteristics of major storms and weather events in the United States. This dataset comes from the Internet.

Download file from the Internet:

```
dataset_USStorm <- "http://d396qusza40orc.cloudfront.net/repdata%2Fdata%2FStormData.csv.bz2"
download.file(url = dataset_USStorm, destfile = "StormData")
```

Read a file in table format

```
StormData <- read.csv(bzfile("StormData"),sep = ",",header=TRUE)
```

Property damage estimates were entered as actual dollar amounts (the variable PROPDMG). But they were rounded to three significant digits, followed by an alphabetical character signifying the magnitude of the number, i.e., 1.55B for $1,550,000,000. Alphabetical characters used to signify magnitude include "K"

for thousands, “M” for millions, and “B” for billions. So I created a new variable PROPDMGEXP2 and assigned conditionally “K” = 1000, “M” = 1000000, “B” = 1000000000, in other cases 1. These variables are multiplied in the next step.

```
table(StormData$PROPDMGEXP)
```

```
##
##             -      ?      +      0      1      2      3      4      5      6
## 465934      1      8      5    216     25     13      4      4     28      4
##      7      8      B      h      H      K      m      M
##      5      1     40      1      6 424665      7  11330
```

```
StormData$PROPDMGEXP2 <- 1
StormData$PROPDMGEXP2[which(StormData$PROPDMGEXP == "K")] <- 1000
StormData$PROPDMGEXP2[which(StormData$PROPDMGEXP == "M" | StormData$PROPDMGEXP == "m")] <- 1000000
StormData$PROPDMGEXP2[which(StormData$PROPDMGEXP == "B")] <- 1000000000
```

```
table(StormData$PROPDMGEXP2)
```

```
##
##      1   1000  1e+06  1e+09
## 466255 424665  11337     40
```

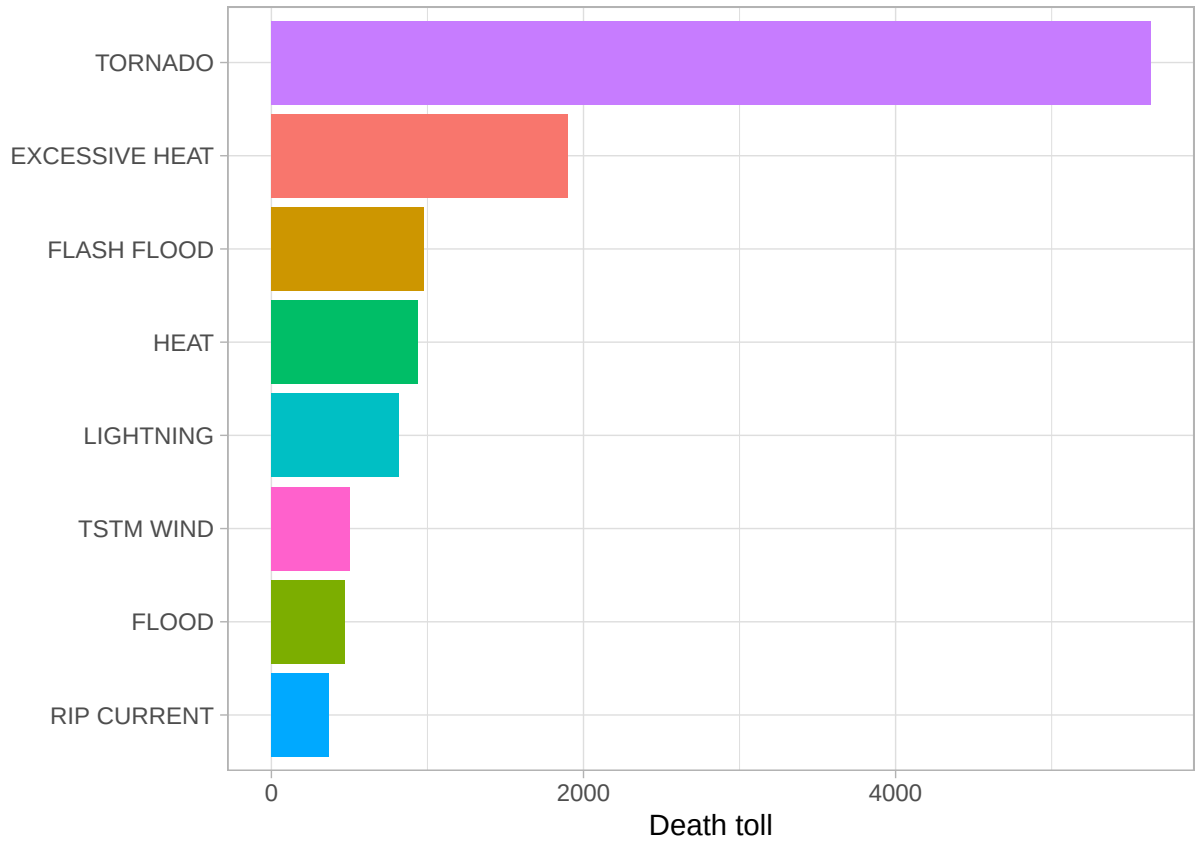
1. Across the United States, which types of events (as indicated in the EVTYPE variable) are most harmful with respect to population health?

Fatalities and injuries have the most impact on public health, so I will present what types of severe weather are the most dangerous.

1. The first plot presents a Death toll by Event type.

```
StormData %>%
      select(FATALITIES, EVTYPE) %>%
      group_by(EVTYPE) %>%
      summarise(SumFATALITIES = sum(FATALITIES)) %>%
      top_n(n = 8, wt = SumFATALITIES) %>%
      ggplot(aes(y = SumFATALITIES, x = reorder(x = EVTYPE, X = SumFATALITIES), fill=EVTYPE))+
      geom_bar(stat = "identity", show.legend = FALSE) +
      #geom_text(aes(label=SumFATALITIES), size = 4, hjust = 0.5, vjust = -0.1) +
      xlab(label = "") +
      ylab(label = "Death toll") +
      coord_flip() +
      theme_light()
```

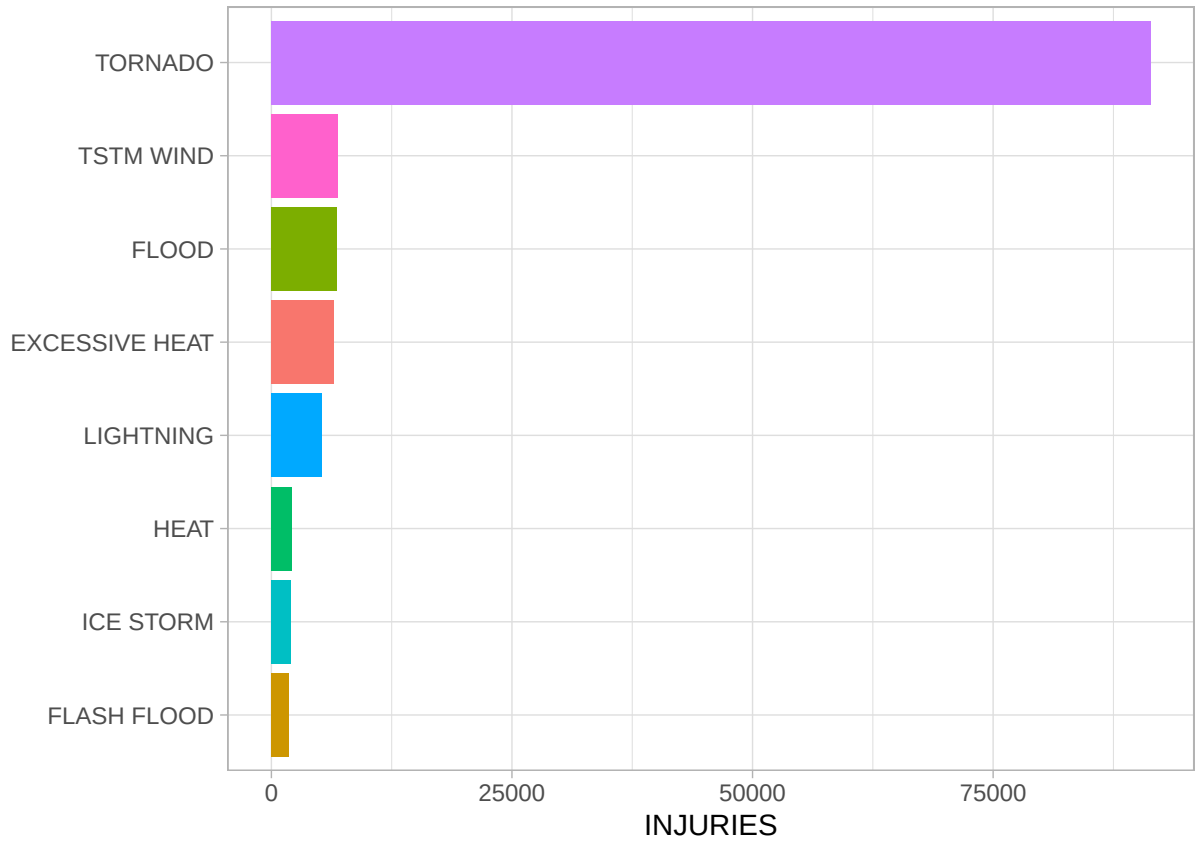
```
## `summarise()` ungrouping output (override with `.groups` argument)
```



2. The second plot presents Injuries by Event type.

```
StormData %>%
      select(INJURIES, EVTYPE) %>%
      group_by(EVTYPE) %>%
      summarise(SumINJURIES = sum(INJURIES)) %>%
      top_n(n = 8, wt = SumINJURIES) %>%
      ggplot(aes(y = SumINJURIES, x = reorder(x = EVTYPE, X = SumINJURIES), fill=EVTYPE))+
      geom_bar(stat = "identity", show.legend = FALSE) +
      #geom_text(aes(label=SumINJURIES), size = 4, hjust = 0.5, vjust = -0.1) +
      xlab(label = "") +
      ylab(label = "INJURIES") +
      coord_flip() +
      theme_light()
```

```
## `summarise()` ungrouping output (override with `.groups` argument)
```

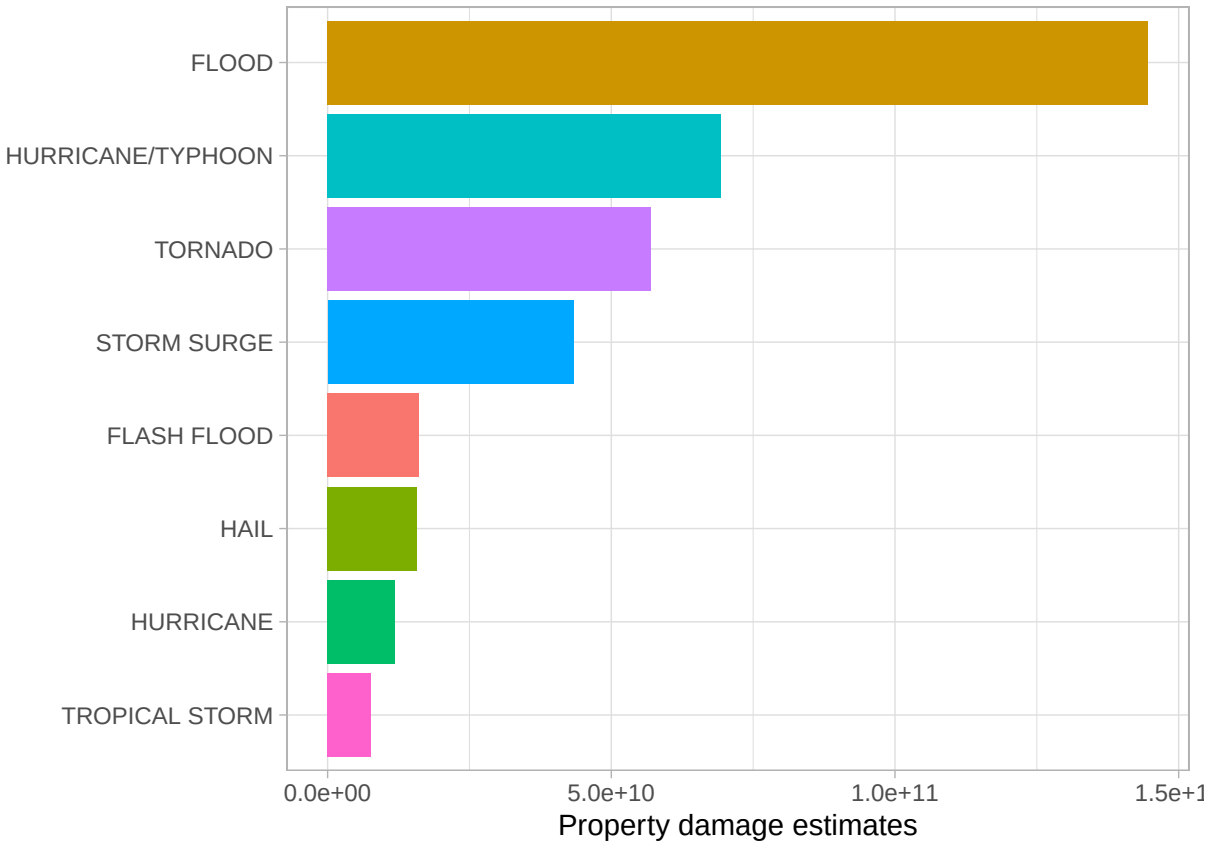


2. Across the United States, which types of events have the greatest economic consequences?

1. This plot shows Property damage estimates by Event type

```
StormData %>%
      select(PROPDMG, PROPDMGEXP2, EVTYPE) %>%
      group_by(EVTYPE) %>%
      mutate(SumPROPDMGEXP = (PROPDMG * PROPDMGEXP2)) %>%
      summarise(SumPROPDMGEXP2 = sum(SumPROPDMGEXP)) %>%
      top_n(n = 8, wt = SumPROPDMGEXP2) %>%
      ggplot(aes(y = SumPROPDMGEXP2, x = reorder(x = EVTYPE, X = SumPROPDMGEXP2), fill=EVTYPE))+
      geom_bar(stat = "identity", show.legend = FALSE) +
      #geom_text(aes(label=SumFATALITIES), size = 4, hjust = 0.5, vjust = -0.1) +
      xlab(label = "") +
      ylab(label = "Property damage estimates") +
      coord_flip() +
      theme_light()
```

```
## `summarise()` ungrouping output (override with `.groups` argument)
```



Conclusion

As should be obvious above flood has the best financial outcomes. Twister is the most unsafe to populace wellbeing in light of the fact that caused the most losses of life and wounds.