

Severe Weather Events Report

Loading required libraries

```
library(ggplot2)
```

Download the data

```
#fileUrl = "https://d396qusza40orc.cloudfront.net/repdata%2Fdata%2FStormData.csv.bz2"
#download.file(fileUrl, destfile = "../data//StormData.zip", method = "auto")
#stordDataDownloaded = date()
```

Loading the data

```
stormData = read.csv("../data//repdata_data_StormData.csv", sep = ",")
```

Summary of Storm Data

```
str(stormData)
```

```
## 'data.frame':   902297 obs. of  37 variables:
## $ STATE__      : num  1 1 1 1 1 1 1 1 1 1 ...
## $ BGN_DATE     : Factor w/ 16335 levels "1/1/1966 0:00:00",...: 6523 6523 4242 11116 2224 2224 2260 383
## $ BGN_TIME     : Factor w/ 3608 levels "00:00:00 AM",...: 272 287 2705 1683 2584 3186 242 1683 3186 318
## $ TIME_ZONE    : Factor w/ 22 levels "ADT","AKS","AST",...: 7 7 7 7 7 7 7 7 7 7 ...
## $ COUNTY      : num  97 3 57 89 43 77 9 123 125 57 ...
## $ COUNTYNAME: Factor w/ 29601 levels "", "5NM E OF MACKINAC BRIDGE TO PRESQUE ISLE LT MI",...: 13513
## $ STATE       : Factor w/ 72 levels "AK","AL","AM",...: 2 2 2 2 2 2 2 2 2 2 ...
## $ EVTYPE      : Factor w/ 985 levels " HIGH SURF ADVISORY",...: 834 834 834 834 834 834 834 834 834
## $ BGN_RANGE   : num  0 0 0 0 0 0 0 0 0 0 ...
## $ BGN_AZI     : Factor w/ 35 levels "", " N"," NW",...: 1 1 1 1 1 1 1 1 1 1 ...
## $ BGN_LOCATI: Factor w/ 54429 levels "", "- 1 N Albion",...: 1 1 1 1 1 1 1 1 1 1 ...
## $ END_DATE    : Factor w/ 6663 levels "", "1/1/1993 0:00:00",...: 1 1 1 1 1 1 1 1 1 1 ...
## $ END_TIME    : Factor w/ 3647 levels "", " 0900CST",...: 1 1 1 1 1 1 1 1 1 1 ...
## $ COUNTY_END : num  0 0 0 0 0 0 0 0 0 0 ...
## $ COUNTYENDN : logi  NA NA NA NA NA NA ...
## $ END_RANGE   : num  0 0 0 0 0 0 0 0 0 0 ...
## $ END_AZI     : Factor w/ 24 levels "", "E","ENE","ESE",...: 1 1 1 1 1 1 1 1 1 1 ...
## $ END_LOCATI: Factor w/ 34506 levels "", "- .5 NNW",...: 1 1 1 1 1 1 1 1 1 1 ...
## $ LENGTH     : num  14 2 0.1 0 0 1.5 1.5 0 3.3 2.3 ...
## $ WIDTH      : num  100 150 123 100 150 177 33 33 100 100 ...
## $ F          : int   3 2 2 2 2 2 2 1 3 3 ...
## $ MAG        : num  0 0 0 0 0 0 0 0 0 0 ...
## $ FATALITIES : num  0 0 0 0 0 0 0 0 1 0 ...
## $ INJURIES   : num  15 0 2 2 2 2 6 1 0 14 0 ...
```

```
## $ PROPDMG : num 25 2.5 25 2.5 2.5 2.5 2.5 2.5 25 25 ...
## $ PROPDMGEXP: Factor w/ 19 levels "", "-", "?", "+", ...: 17 17 17 17 17 17 17 17 17 17 ...
## $ CROPDMG : num 0 0 0 0 0 0 0 0 0 0 ...
## $ CROPDMGEXP: Factor w/ 9 levels "", "?", "0", "2", ...: 1 1 1 1 1 1 1 1 1 ...
## $ WFO : Factor w/ 542 levels "", " CI", "$AC", ...: 1 1 1 1 1 1 1 1 1 ...
## $ STATEOFFIC: Factor w/ 250 levels "", "ALABAMA, Central", ...: 1 1 1 1 1 1 1 1 1 ...
## $ ZONENAMES : Factor w/ 25112 levels "", "
## $ LATITUDE : num 3040 3042 3340 3458 3412 ...
## $ LONGITUDE : num 8812 8755 8742 8626 8642 ...
## $ LATITUDE_E: num 3051 0 0 0 0 ...
## $ LONGITUDE_: num 8806 0 0 0 0 ...
## $ REMARKS : Factor w/ 436774 levels "", "-2 at Deer Park\n", ...: 1 1 1 1 1 1 1 1 1 ...
## $ REFNUM : num 1 2 3 4 5 6 7 8 9 10 ...
```

Preprocessing the data

```
fatalities = tapply(stormData$FATALITIES, stormData$EVTYPE, sum)
injuries = tapply(stormData$INJURIES, stormData$EVTYPE, sum)
propertyDamage = tapply(stormData$PROPDMG, stormData$EVTYPE, sum)
cropDamage = tapply(stormData$CROPDMG, stormData$EVTYPE, sum)

consequences = data.frame(dimnames(fatalities), injuries, fatalities, propertyDamage)

consequences$health = consequences$injuries + consequences$fatalities
consequences$economic = propertyDamage + cropDamage
```

The most harmful weather with respect to population health: TORNADO Its harm can lead to a max of: 9.6979×10^4 injuries and fatalities

The most damaging weather events to the economy: TORNADO Its damage is maxed at: 3.3123×10^6