

Storm_Data_Analysis

Devasena

24 August 2014

The goal of this work is to explore the NOAA Storm Database and answer some basic questions about severe weather events. Our data analysis addresses the following questions that might help government or municipal manager for preparing for severe weather events and who will need to prioritize resources for different types of events and hence includes identifying:

1. The type of events that are most harmful with respect to population health in the United States.
2. The type of events that have the greatest economic consequences.

In order to achieve the objective following steps have been followed:

Data Processing

```
storm_data<-read.csv("repdata-data-StormData.csv")
names(storm_data)    #This will show column names (variables) in the dataframe
```

Step 1: Loading the U.S. National Oceanic and Atmospheric Administration's (NOAA) storm database.

```
## [1] "STATE_" "BGN_DATE" "BGN_TIME" "TIME_ZONE" "COUNTY"
## [6] "COUNTYNAME" "STATE" "EVTYPE" "BGN_RANGE" "BGN_AZI"
## [11] "BGN_LOCATI" "END_DATE" "END_TIME" "COUNTY_END" "COUNTYENDN"
## [16] "END_RANGE" "END_AZI" "END_LOCATI" "LENGTH" "WIDTH"
## [21] "F" "MAG" "FATALITIES" "INJURIES" "PROPDMG"
## [26] "PROPDMGEXP" "CROPDGMG" "CROPDMGEXP" "WFO" "STATEOFFIC"
## [31] "ZONENAMES" "LATITUDE" "LONGITUDE" "LATITUDE_E" "LONGITUDE_"
## [36] "REMARKS" "REFNUM"
```

Results

Step 2: Types of events that are most harmful with respect to population health. From the storm data above, the event type can be found based on maximum number of injuries and maximum number of fatalities that are caused by that event as below:

```
#Based on maximum number of injuries
l = storm_data$INJURIES == max(storm_data$INJURIES)
l
```

```
## [1] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [12] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [23] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [34] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [45] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [56] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
```

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

```
## [99859] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [99870] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [99881] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [99892] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [99903] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [99914] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [99925] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [99936] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [99947] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [99958] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [99969] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [99980] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [99991] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## [ reached getOption("max.print") -- omitted 802298 entries ]
```

```
ex_df<-storm_data[1,]
ex_df$EVTYPE
```

```
## [1] TORNADO
## 985 Levels:    HIGH SURF ADVISORY  COASTAL FLOOD ... WND
```

```
#Based on maximum number of fatalities
f = storm_data$FATALITIES == max(storm_data$FATALITIES)
ex_df1<-storm_data[f,]
ex_df1$EVTYPE
```

```
## [1] HEAT
## 985 Levels:    HIGH SURF ADVISORY  COASTAL FLOOD ... WND
```

Step 3: Type of events that have the greatest economic consequences From the storm data, the event type can be found based on maximum damage to property and crop combined that is caused by that event as below:

```
in_df<-storm_data$PROPDGM + storm_data$CROPDGM #intermediate data frame
ec = in_df == max(in_df) #combined maximum damage to property and crops
ec_cons<-storm_data[ec,]
ec_cons$EVTYPE
```

```
## [1] THUNDERSTORM WIND FLASH FLOOD      FLASH FLOOD      WATERSPOUT
## 985 Levels:    HIGH SURF ADVISORY  COASTAL FLOOD ... WND
```