

# Analysis of the Impacts of Storms in the US

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## 1: Synopsis

The basic goal of this assignment is to explore the NOAA Storm Database and answer some basic questions about severe weather events in the United States between 1950 and 2011.

## 2: Data Processing

Load packages, download the file, and load data into variable

```
library("data.table")
library("ggplot2")
library("dplyr")
library("gridExtra")

fileUrl <- "https://d396qusza40orc.cloudfront.net/repdata%2Fdata%2FStormData.csv.bz2"

download.file(fileUrl, destfile = paste0(getwd(), '/repdata%2Fdata%2FStormData.csv.bz2'), method = "curl")

csv <- read.csv("repdata%2Fdata%2FStormData.csv.bz2")

storm <- as.data.table(csv)

# summarize by event type
fatalities <- arrange(aggregate(FATALITIES ~ EVTYPE, data=storm, sum),desc(FATALITIES),EVTYPE)[1:10,]
injuries <- arrange(aggregate(INJURIES ~ EVTYPE, data=storm, sum),desc(INJURIES),EVTYPE)[1:10,]
```

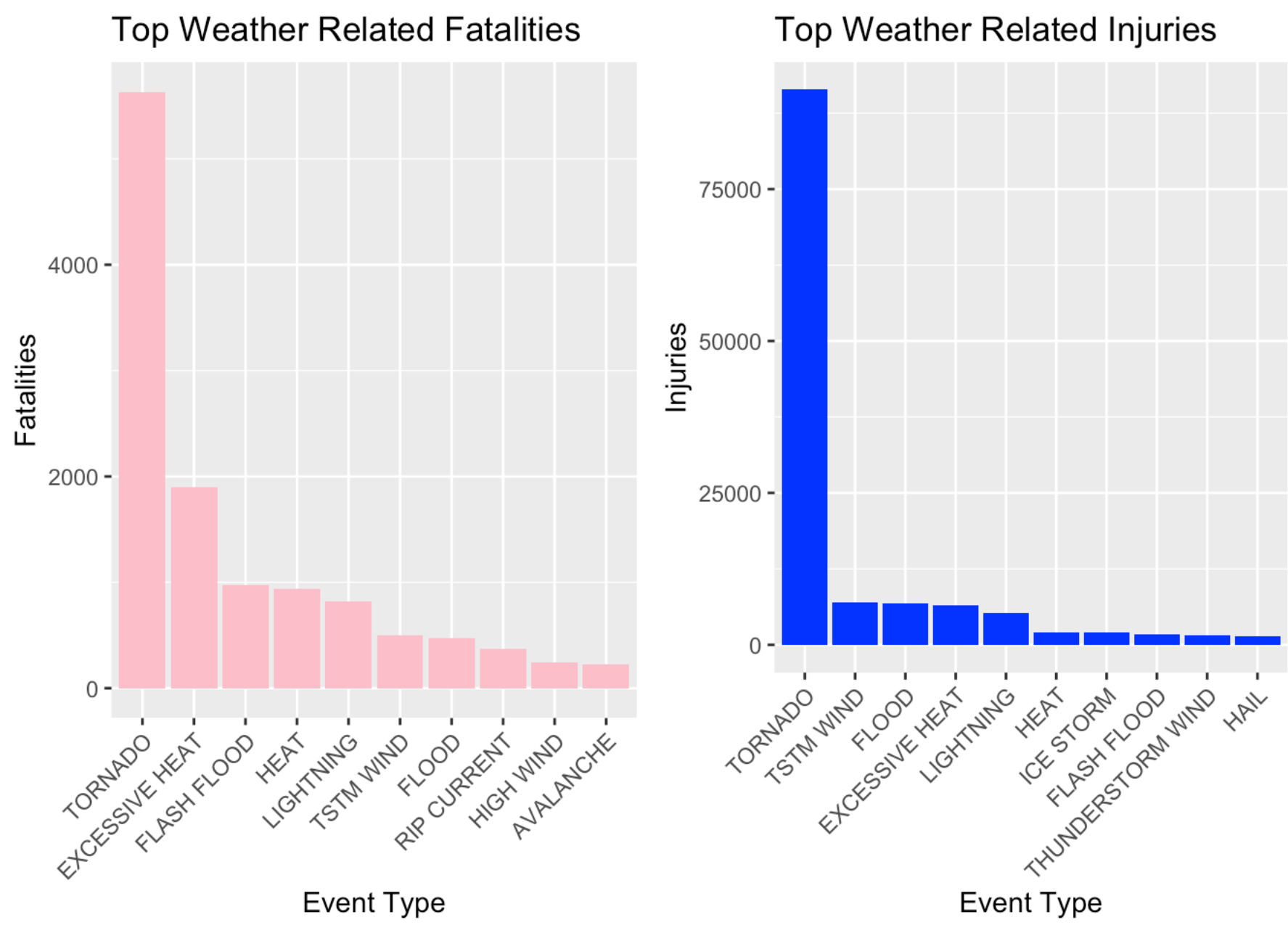
## 3: Results

Question 1: Across the United States, which types of events are most harmful with respect to population health?

```
# create chart of top 10 fatalities by event type
fatalitychart <- ggplot(fatalities, aes(x = reorder(EVTYPE, -FATALITIES), y = FATALITIES))
fatalitychart = fatalitychart + geom_bar(stat = "identity", fill = "pink", width = NULL)
fatalitychart = fatalitychart + ylab("Fatalities")
fatalitychart = fatalitychart + xlab("Event Type")
fatalitychart = fatalitychart + theme(axis.text.x = element_text(angle=45, hjust=1))
fatalitychart = fatalitychart + ggtitle("Top Weather Related Fatalities")

# create chart of top 10 fatalities by event type
injurychart <- ggplot(injuries, aes(x = reorder(EVTYPE, -INJURIES), y = INJURIES))
injurychart = injurychart + geom_bar(stat = "identity", fill = "blue", width = NULL)
injurychart = injurychart + ylab("Injuries")
injurychart = injurychart + xlab("Event Type")
injurychart = injurychart + theme(axis.text.x = element_text(angle=45, hjust=1))
injurychart = injurychart + ggtitle("Top Weather Related Injuries")

# arrange charts side by side
grid.arrange(fatalitychart, injurychart, ncol=2, nrow=1)
```



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

```
# summarize the top 10 property and crop damage
propdamage <- arrange(aggregate(PROPDMG ~ EVTYPE, data=storm, sum),desc(PROPDMG),EVTYPE)[1:10,]
cropdamage <- arrange(aggregate(CROPDGMG ~ EVTYPE, data=storm, sum),desc(CROPDGMG),EVTYPE)[1:10,]

# create chart of top 10 causes of property damage by event type
propdmgchart <- ggplot(propdamage, aes(x = reorder(EVTYPE, -PROPDMG), y = PROPDMG))
propdmgchart = propdmgchart+ geom_bar(stat = "identity", fill = "green", width = NULL)
propdmgchart = propdmgchart+ ylab("Property Damage")
propdmgchart = propdmgchart+ xlab("Event Type")
propdmgchart = propdmgchart+ theme(axis.text.x = element_text(angle=45, hjust=1))
propdmgchart = propdmgchart+ ggtitle("Top Weather Related Property Damage Source")

# create chart of top 10 causes of crop damage by event type
cropdmgchart <- ggplot(cropdamage, aes(x = reorder(EVTYPE, -CROPDGMG), y = CROPDGMG))
cropdmgchart = cropdmgchart + geom_bar(stat = "identity", fill = "purple", width = NULL)
cropdmgchart = cropdmgchart + ylab("Crop Damage")
cropdmgchart = cropdmgchart + xlab("Event Type")
cropdmgchart = cropdmgchart + theme(axis.text.x = element_text(angle=45, hjust=1))
cropdmgchart = cropdmgchart + ggtitle("Top Weather Related Crop Damage Source")

# arrange charts side by side
grid.arrange(propdmgchart, cropdmgchart, ncol=2, nrow=1)
```

