Storm Analysis (Reproducible Research Propject 2)

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3/14/2018

Data

This project involves exploring the U.S. National Oceanic and Atmospheric Administration's (NOAA) storm database. This database tracks characteristics of major storms and weather events in the United States, including when and where they occur, as well as estimates of any fatalities, injuries, and property damage.

```
stormData <- as.data.table(read.csv("StormData.csv.bz2"))
stormData$EVTYPE <- with(stormData, as.factor(EVTYPE))
events <- unique(stormData$EVTYPE)
stormData$EVTYPENUM <- match(stormData$EVTYPE, events)
stormData$POP.HEALTH <- stormData$FATALITIES + stormData$INJURIES
stormData$TOTALDMG <- stormData$PROPDMG + stormData$CROPDMG
```

Health

Across the United States, which types of events are most harmful with respect to population health? From the data provided by the NOAA, we combined fatalities and injuries in order to look at overall population health.

```
statsByEvent <- stormData %>% group_by(EVTYPENUM) %>% arrange(desc(POP.HEALTH))
statsByEvent <- statsByEvent %>% summarise(Total = sum(POP.HEALTH), Fatalities = sum(FATALITIES), Injur

statsByEvent <- cbind(statsByEvent, Event = events[statsByEvent$EVTYPENUM])
head(statsByEvent[order(statsByEvent$Total, decreasing = T),c("Event", "Total")], n=10)
```

```
##                Event Total
## 1            TORNADO 96979
## 99    EXCESSIVE HEAT  8428
## 2          TSTM WIND  7461
## 36             FLOOD  7259
## 15         LIGHTNING  6046
## 27              HEAT  3037
## 20       FLASH FLOOD  2755
## 65         ICE STORM  2064
## 16 THUNDERSTORM WIND  1621
## 8       WINTER STORM  1527
```

According to the numbers, tornadoes are much more dangerous than any other single event (over 11 times more deadly than the next most dangerous event: excessive heat).

Damage

Across the United States, which types of events have the greatest economic consequences? From the data provided by the NOAA, we combined property damage with crop damage in order to look at economic consequences from storms.

```
statsByDamage <- stormData %>% group_by(EVTYPENUM) %>% arrange(desc(TOTALDMG))
statsByDamage <- statsByDamage %>% summarise(Total = sum(TOTALDMG), PropDmg = sum(PROPDMG), CropDmg = su
statsByDamage <- cbind(statsByDamage, Event = events[statsByDamage$EVTYPENUM])
head(statsByDamage[order(statsByDamage$Total, decreasing = T),c("Event", "Total")], n = 10)
```

```
##                 Event     Total
## 1             TORNADO 3312276.7
## 20        FLASH FLOOD 1599325.1
## 2           TSTM WIND 1445168.2
## 3                HAIL 1268289.7
## 36              FLOOD 1067976.4
## 16  THUNDERSTORM WIND  943635.6
## 15          LIGHTNING  606932.4
## 10 THUNDERSTORM WINDS  464978.1
## 46          HIGH WIND  342014.8
## 8        WINTER STORM  134699.6
```

Once again we see that tornadoes are the most disruptive storms across the United States. In terms of economic impact, they have twice the impact than the next most dispuptive storm (flashh floods).