Reproducible Research final project

mt

Saturday, September 26, 2015

Synopsis

This report estabilished for comparison between all events in USA. Events causes human and Economic resources damages. The simulation resaults shows high health and Econonmic damage rate in events like Tornado, Flash Floods and TSTM winds.

Data Processing

This project involves exploring the U.S. National Oceanic and Atmospheric Administration's (NOAA) storm database than could be downloaded from here: https://d396qusza40orc.cloudfront.net/repdata%2Fdata%2FStormData.csv.bz2

Here you will find how some of the variables are constructed/defined

National Weather Service Storm Data Documentation

https://d396qusza40orc.cloudfront.net/repdata%2Fpeer2_doc%2Fpd01016005curr.pdf

National Climatic Data Center Storm Events

https://d396qusza40orc.cloudfront.net/repdata%2Fpeer2_doc%2FNCDC%20Storm%20Events-FAQ%20Page.pdf

Simulation Results

With respect to population health data base could be separated via specific Events, also the Date variable could be repaired to be used in future analysis as bellow:

```
set.seed(123)
newd<-gsub(" ","",as.character(StormData$BGN_DATE))
newd<-gsub("0:00:00","",newd)
newd<-as.Date(newd,format='%m/%d/%Y')
StormData$BGN_DATE<-(factor(newd))
colnames(StormData)<-gsub("EVTYPE","Type.of.Events",as.character(colnames(StormData)))
DataSample<-tbl_df(StormData)
By_EVTYPE<-group_by(DataSample,Type.of.Events)
```

There are a lot of events that causes critical health effects thata we refer to top 20 Events as bellow:

```
## % latex table generated in R 3.2.0 by xtable 1.7-3 package
## % Sun Sep 27 00:04:54 2015
## \begin{table}[ht]
## \centering
## \begin{tabular}{rll}
##   \hline
```

```
##   & Type.of.Events & Total.Economic.Injureis \\
##    \hline
## 1 & TORNADO & 91346 \\
##   2 & TSTM WIND & 6957 \\
##   3 & FLOOD & 6789 \\
##   4 & EXCESSIVE HEAT & 6525 \\
##   5 & LIGHTNING & 5230 \\
##   6 & HEAT & 2100 \\
##   7 & ICE STORM & 1975 \\
##   8 & FLASH FLOOD & 1777 \\
##   9 & THUNDERSTORM WIND & 1488 \\
##   10 & HAIL & 1361 \\
##   11 & WINTER STORM & 1321 \\
##   12 & HURRICANE/TYPHOON & 1275 \\
##   13 & HIGH WIND & 1137 \\
##   14 & HEAVY SNOW & 1021 \\
##   15 & WILDFIRE & 911 \\
##   16 & THUNDERSTORM WINDS & 908 \\
##   17 & BLIZZARD & 805 \\
##   18 & FOG & 734 \\
##   19 & WILD/FOREST FIRE & 545 \\
##   20 & others & 6323 \\
##    \hline
## \end{tabular}
## \caption{Top 20 Most injuries by events}
## \end{table}


##        Type.of.Events Total.Economic.Injureis
## 1            TORNADO                   91346
## 2          TSTM WIND                    6957
## 3              FLOOD                    6789
## 4     EXCESSIVE HEAT                    6525
## 5          LIGHTNING                    5230
## 6               HEAT                    2100
## 7          ICE STORM                    1975
## 8        FLASH FLOOD                    1777
## 9  THUNDERSTORM WIND                    1488
## 10              HAIL                    1361
## 11       WINTER STORM                   1321
## 12  HURRICANE/TYPHOON                   1275
## 13         HIGH WIND                    1137
## 14        HEAVY SNOW                    1021
## 15          WILDFIRE                     911
## 16 THUNDERSTORM WINDS                    908
## 17          BLIZZARD                     805
## 18               FOG                     734
## 19  WILD/FOREST FIRE                     545
## 20            others                    6323
```

The Economic effects of Events sorted via PROPDMG in NOAA lists of variables that shows high impact of Tornado on Economic indexes.

```
## % latex table generated in R 3.2.0 by xtable 1.7-3 package
```
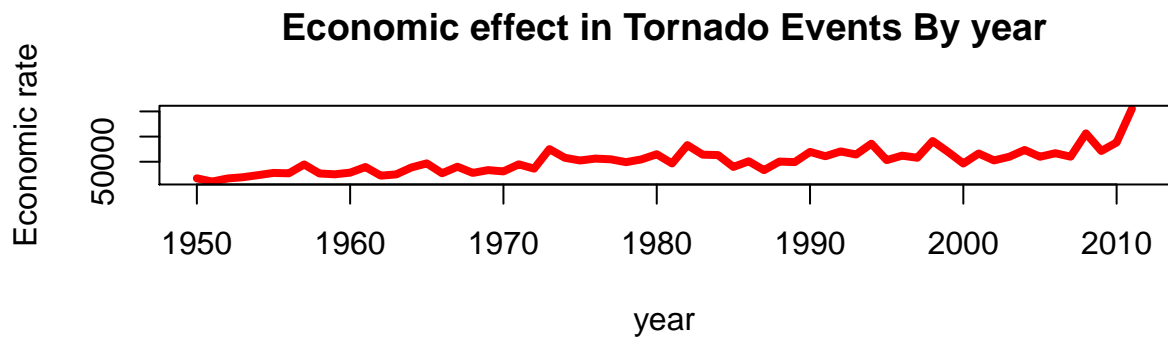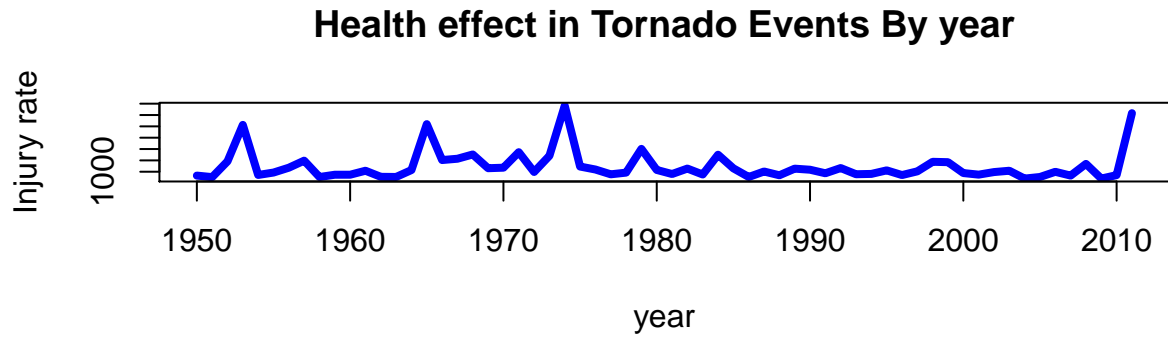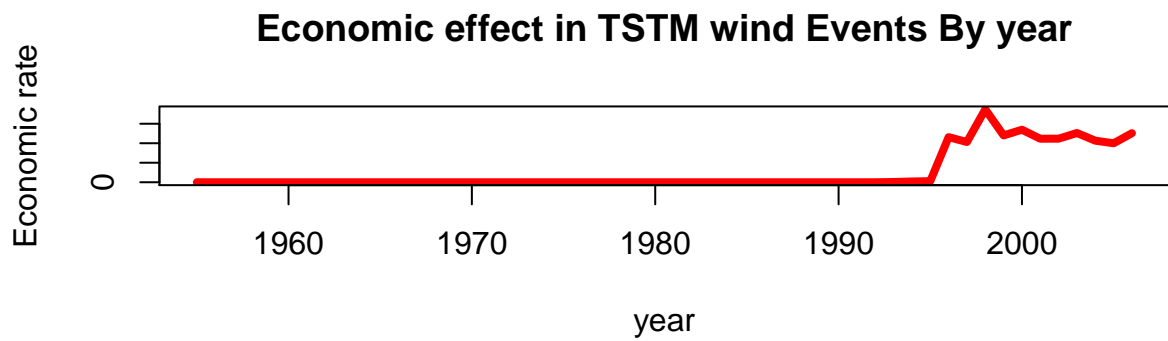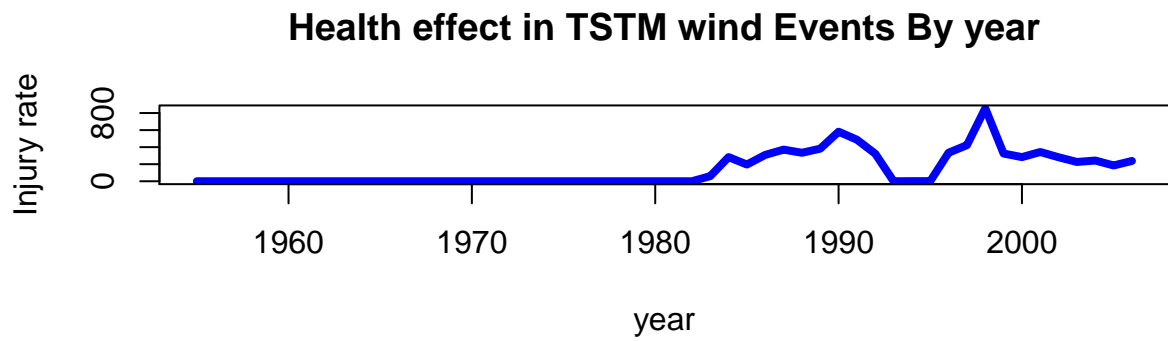
```
## % Sun Sep 27 00:04:54 2015
## \begin{table}[ht]
## \centering
## \begin{tabular}{rll}
##   \hline
##  & Type.of.Events & Total.Economic.Damage \\
##   \hline
## 1 & TORNADO & 3212258.16 \\
##   2 & FLASH FLOOD & 1420124.59 \\
##   3 & TSTM WIND & 1335965.61 \\
##   4 & FLOOD & 899938.48 \\
##   5 & THUNDERSTORM WIND & 876844.17 \\
##   6 & HAIL & 688693.38 \\
##   7 & LIGHTNING & 603351.78 \\
##   8 & THUNDERSTORM WINDS & 446293.18 \\
##   9 & HIGH WIND & 324731.56 \\
##   10 & WINTER STORM & 132720.59 \\
##   11 & HEAVY SNOW & 122251.99 \\
##   12 & WILDFIRE & 84459.34 \\
##   13 & ICE STORM & 66000.67 \\
##   14 & STRONG WIND & 62993.81 \\
##   15 & HIGH WINDS & 55625 \\
##   16 & HEAVY RAIN & 50842.14 \\
##   17 & TROPICAL STORM & 48423.68 \\
##   18 & WILD/FOREST FIRE & 39344.95 \\
##   19 & FLASH FLOODING & 28497.15 \\
##   20 & others & 385139.78 \\
##    \hline
## \end{tabular}
## \caption{Top 20 Economic Damaged events}
## \end{table}

##          Type.of.Events Total.Economic.Damage
## 1               TORNADO            3212258.16
## 2           FLASH FLOOD            1420124.59
## 3             TSTM WIND            1335965.61
## 4                 FLOOD             899938.48
## 5     THUNDERSTORM WIND             876844.17
## 6                  HAIL             688693.38
## 7             LIGHTNING             603351.78
## 8    THUNDERSTORM WINDS             446293.18
## 9             HIGH WIND             324731.56
## 10          WINTER STORM            132720.59
## 11           HEAVY SNOW            122251.99
## 12             WILDFIRE             84459.34
## 13            ICE STORM             66000.67
## 14          STRONG WIND             62993.81
## 15           HIGH WINDS                55625
## 16           HEAVY RAIN             50842.14
## 17       TROPICAL STORM             48423.68
## 18     WILD/FOREST FIRE             39344.95
## 19       FLASH FLOODING             28497.15
## 20               others             385139.78
```

Highest impact on Economic and people health demonstrated by Events like Tornado and TSTM winds:

Health effect in Tornado Events By year

Economic effect in Tornado Events By year

Health effect in TSTM wind Events By year

Economic effect in TSTM wind Events By year

Finally all events could be interpreted as one figure that shows the relationship between Economic Injury effects by type of events: