# **STORM EVENTS**

# **Project Presentation**

Team: CSV-Pitchers

## **AGENDA**

- Objective
- About Data
- Challenges
- Research Question
- Target Audience
- Analysis and Interpretations
- Recommended Decisions

# **Objective**

Analyze the storm events data set for Property and Casualty Actuarial Managers to make recommendations and decisions for the organizations betterment.

#### **About Data**

- The National Centers for Environmental Information (NCEI) regularly receives Storm Data from the National Weather Service (NWS)
- This data set consists of state wise occurrence of Event type in USA like Tornado, Thunderstorm Wind and Hail, Marine strong wind, Hurricane, Flash flood, Heavy rain, Heavy snow, Funnel Cloud, Extensive Heat.
- This Data set also contain data values for locations, fatalities, injuries, damage, narratives and any other event specific information.

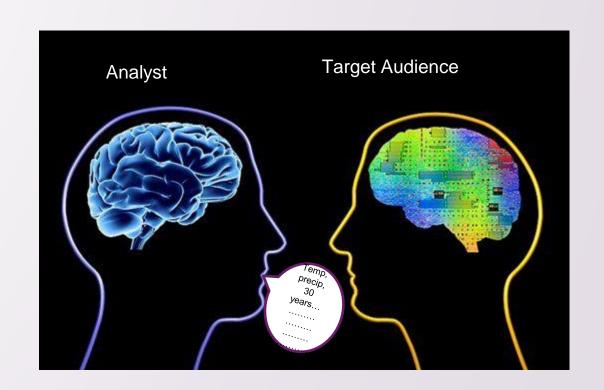
Dataset Source -https://www.ncdc.noaa.gov/stormevents/

# Challenges

- Understanding the data set
- Developing R scripts and Plots
  - Categorical data
  - No quantitative data (temperature)

# **Research Questions?**

- Frequency of events occurred across regions in the USA
- Trend of overall damages due to top 5 events in 2016 during 2011-2016
- Frequency of occurrence of storm events on monthly basis (season)
  - Total amount of damages (property and crop) in the year 2016
- Total amount of casualties in the year 2016



# **Target Audience**

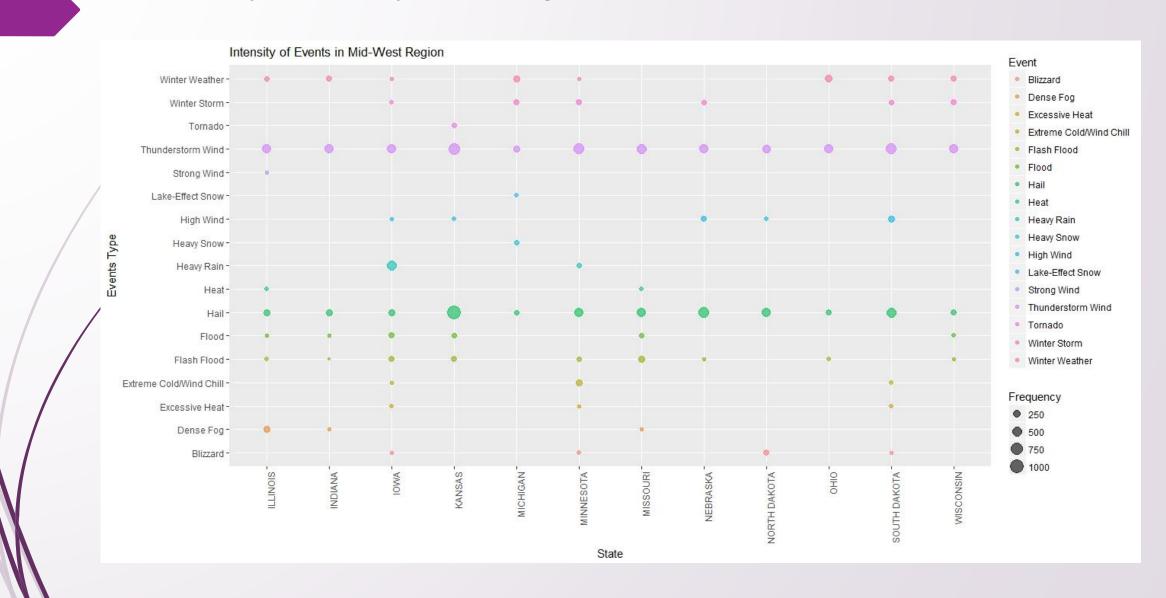
**Property and Casualty Actuarial Managers** 

#### Responsibilities:

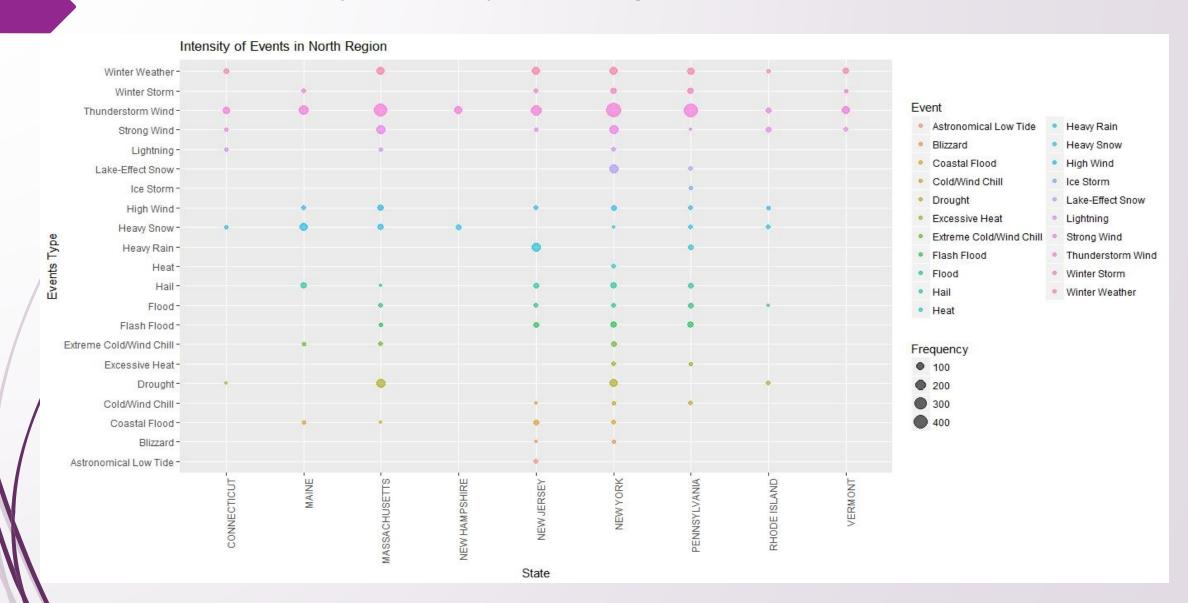
- Calculate company loss and expense reserves
- Develop, recommend, and implement operational plans
- Evaluate new products
- Evaluate Claims
- Perform annual Permissible Loss Ratio and Risk Analysis

Over the year 2016, frequency of occurrence of event type on the basis of location?

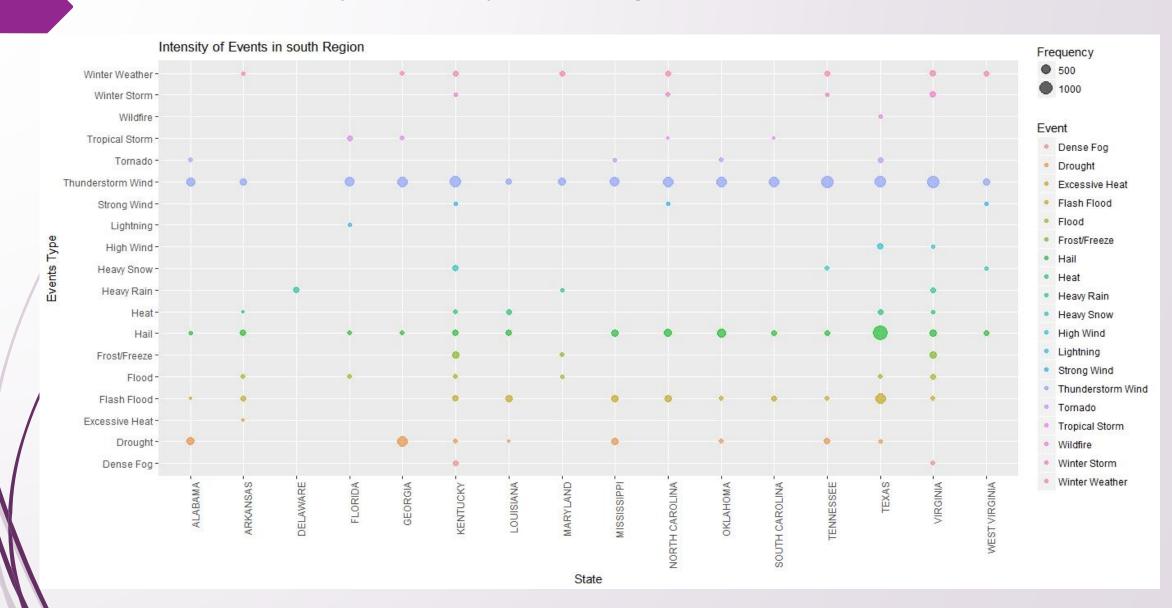
#### Plot Analysis and Interpretation- Region wise- Mid West



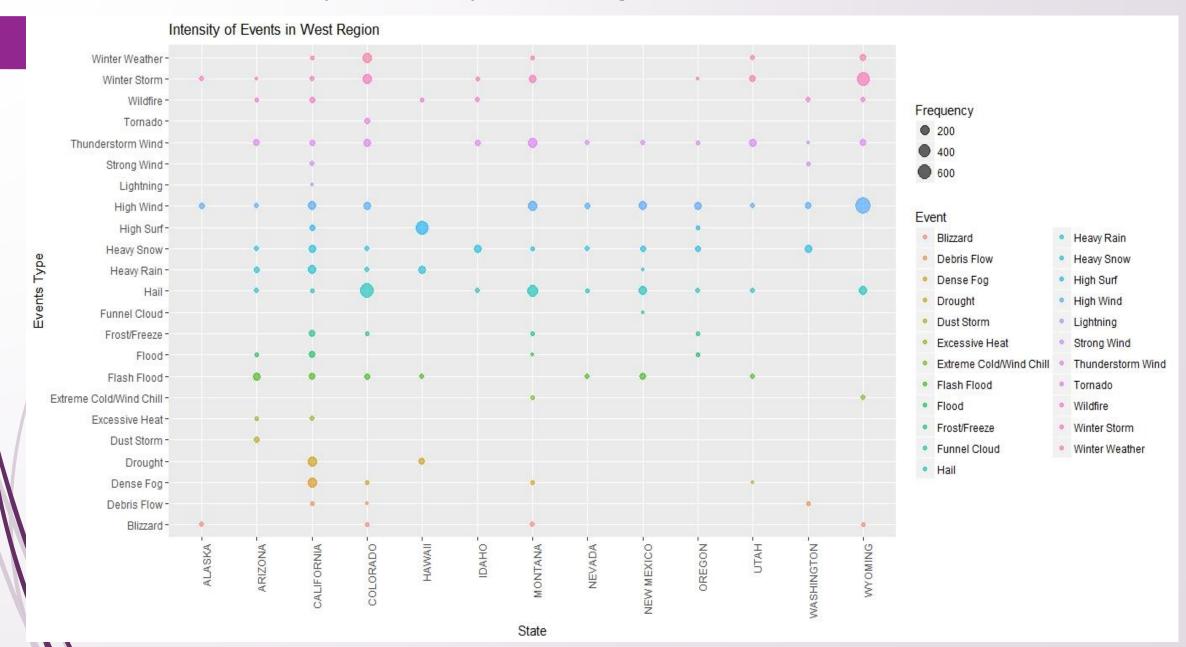
#### Plot Analysis and Interpretation- Region wise- North

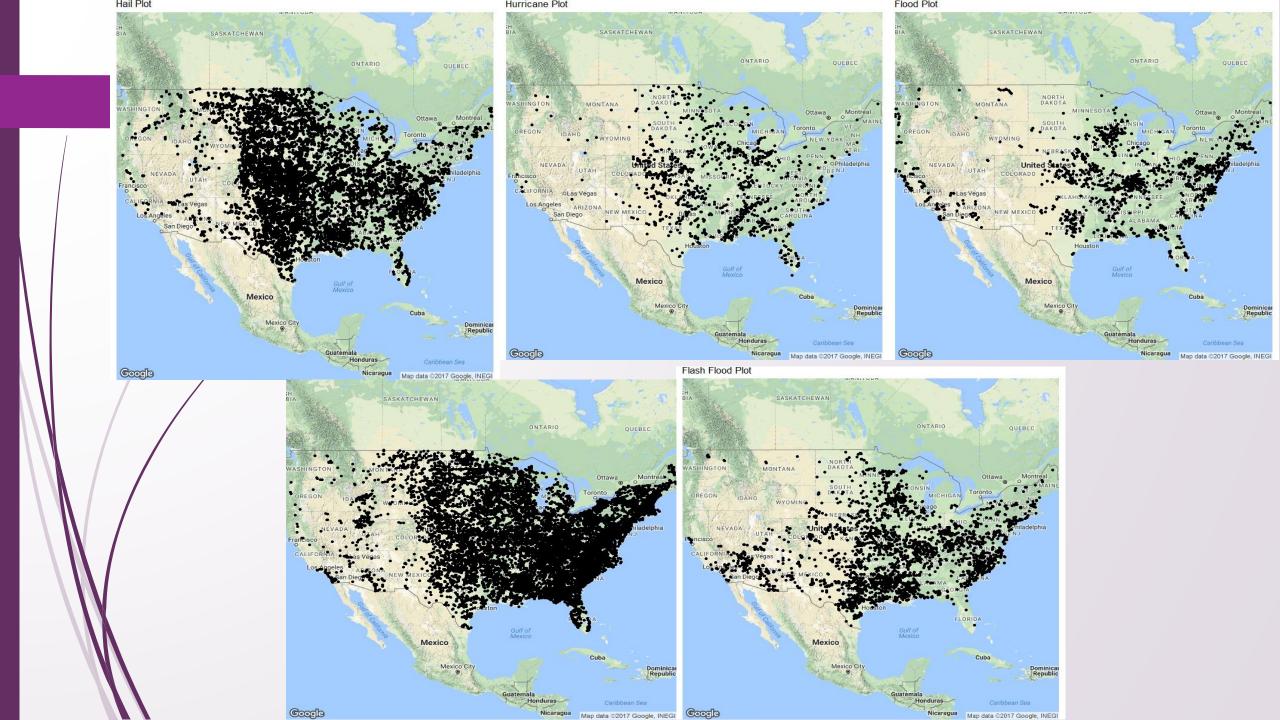


#### Plot Analysis and Interpretation- Region wise- South



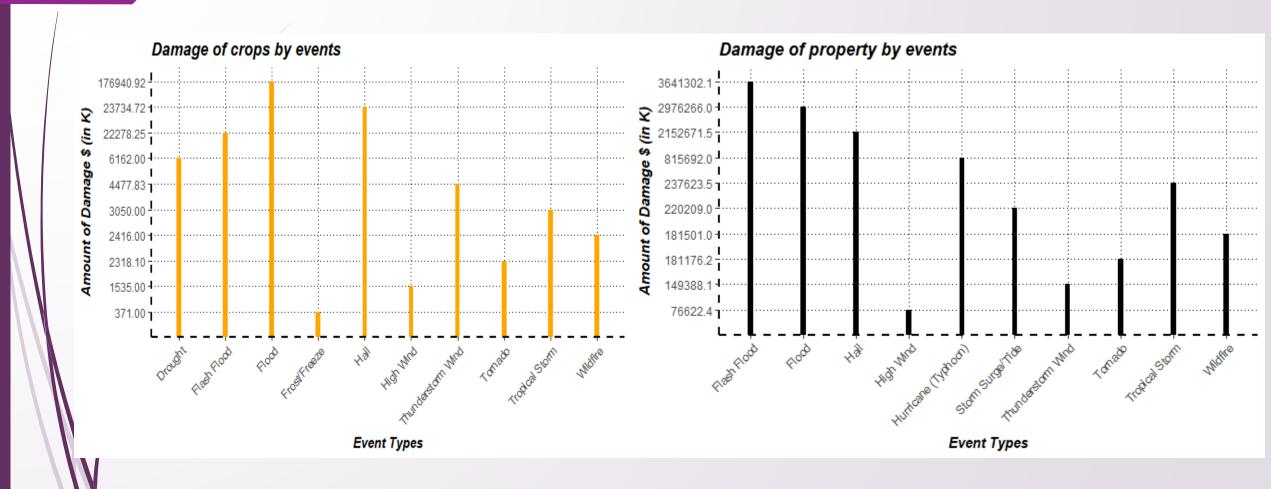
#### Plot Analysis and Interpretation- Region wise- West

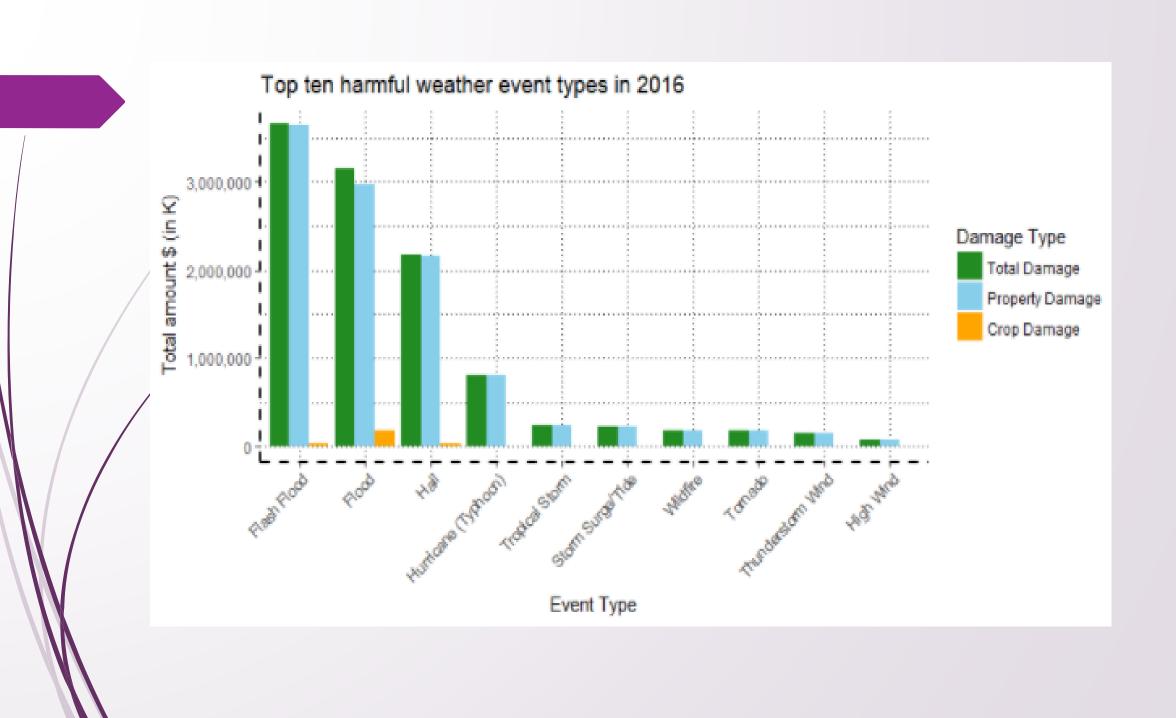




What is the amount of damage (property & crops) caused by each event in the year 2016?

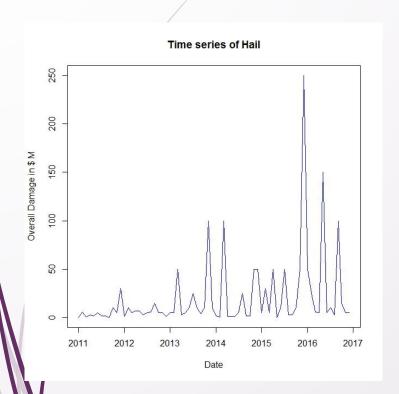
#### Plot Analysis and Interpretation- Damages Crop and Property by Storm events

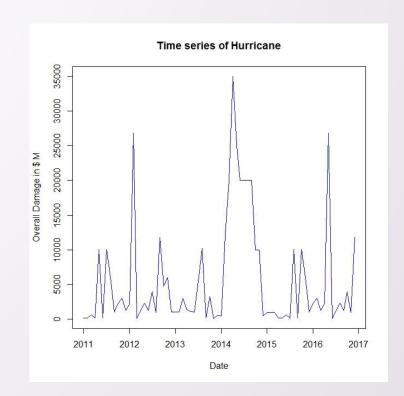


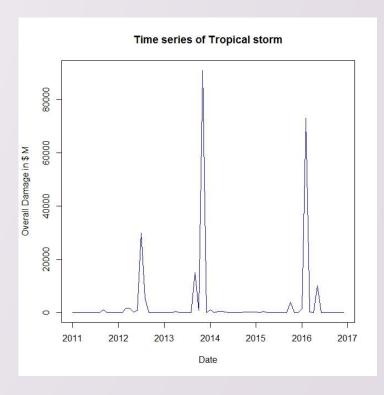


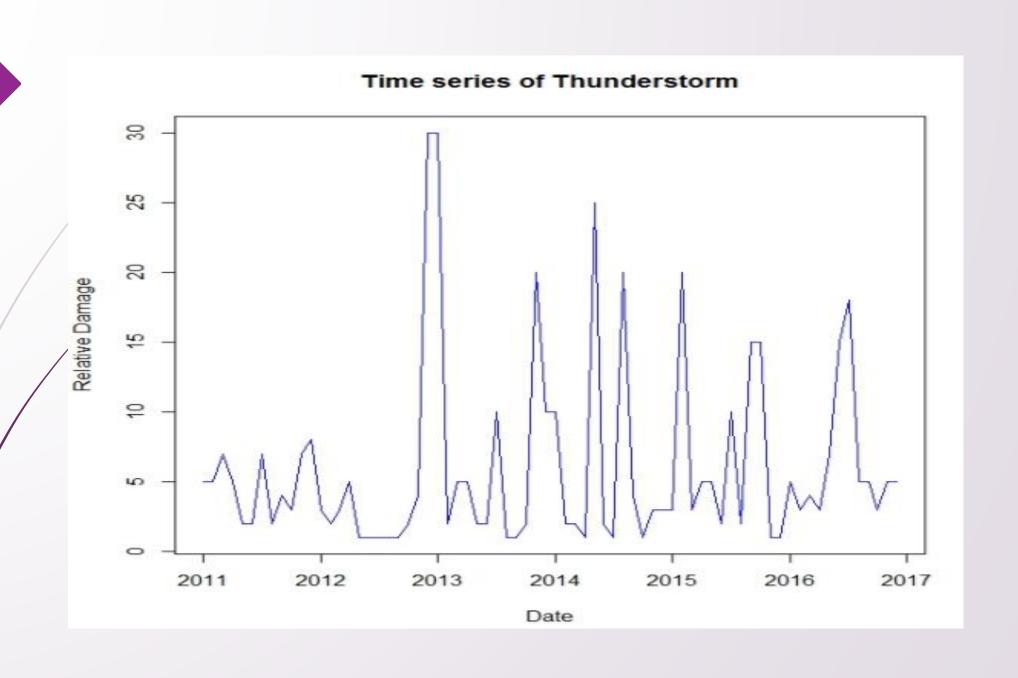
What is trend of top 4 events occurred in 2016 and their estimated amount of overall damage over the period 2011-2017?

#### Plot Analysis and Interpretation- Overall Damage by Storm Events in Time series



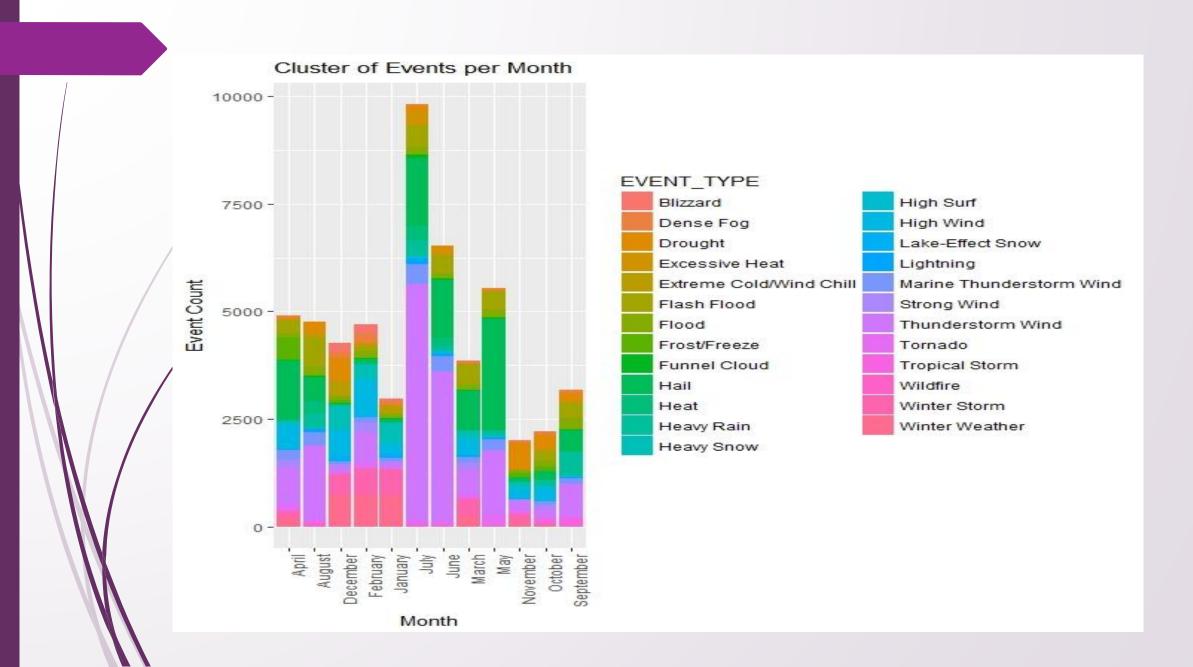




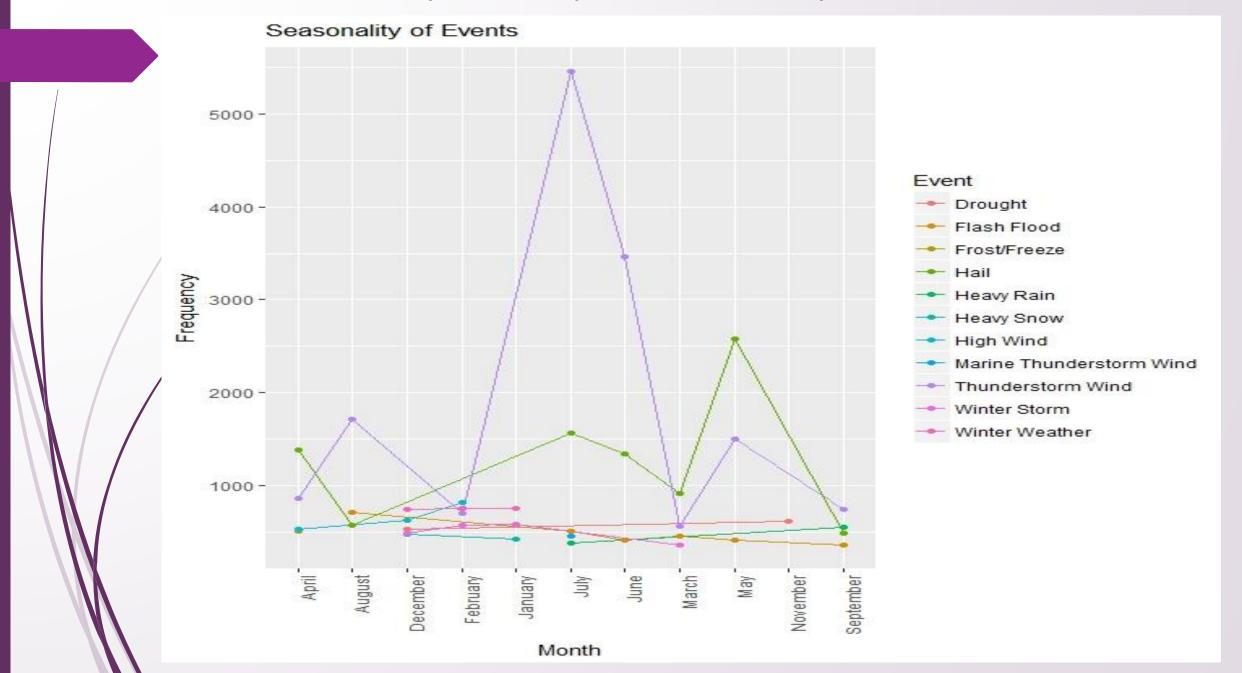


What is the frequency of event occurrence on a monthly basis (month wise occurrence) in the year of 2016?

#### Plot Analysis and Interpretations- Cluster Graph shows High frequency Storm events month wise

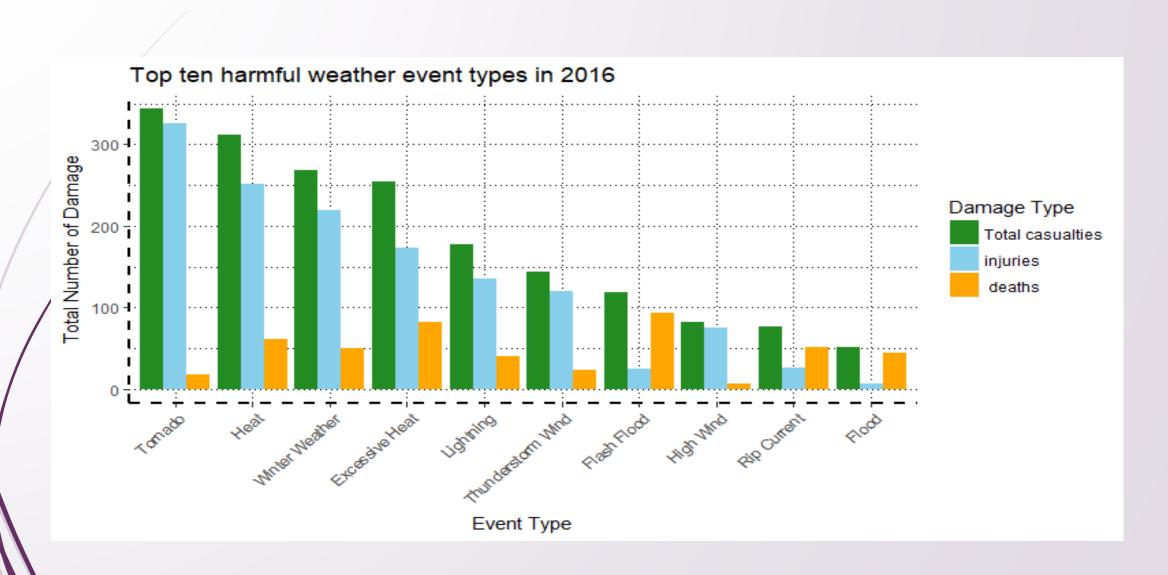


#### Plot Analysis and Interpretations- Seasonality wise



What is the amount causalities (injuries & deaths) caused by top 10 events occurred in the year 2016?

#### Plot Analysis and Interpretation- Bar Graph shows total causalities by Storm events



# **Takeaways**

#### In 2016

- Tornado is the most devastating event type on the basis of causalities
- Flash flood is the major cause of property damage
- Flood is the major cause for crop damage

### **Recommended Decisions**

Based on the analysis, the P&C Actuarial Managers need to

- Recommend changes to the existing products, premiums and their coverages
- Encourage support staff to
  - Evaluate credibility of claims
  - Implement operational plans

# Thankyou! Questions?