




STORM EVENTS

Project Presentation

Team : CSV- Pitchers



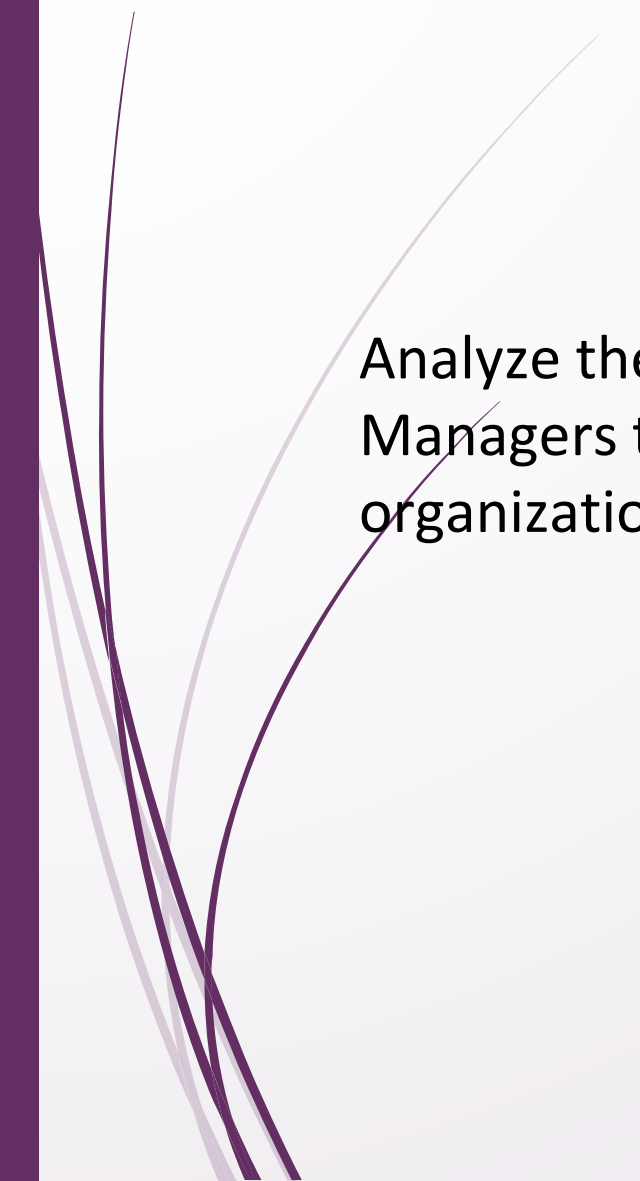
AGENDA

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

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



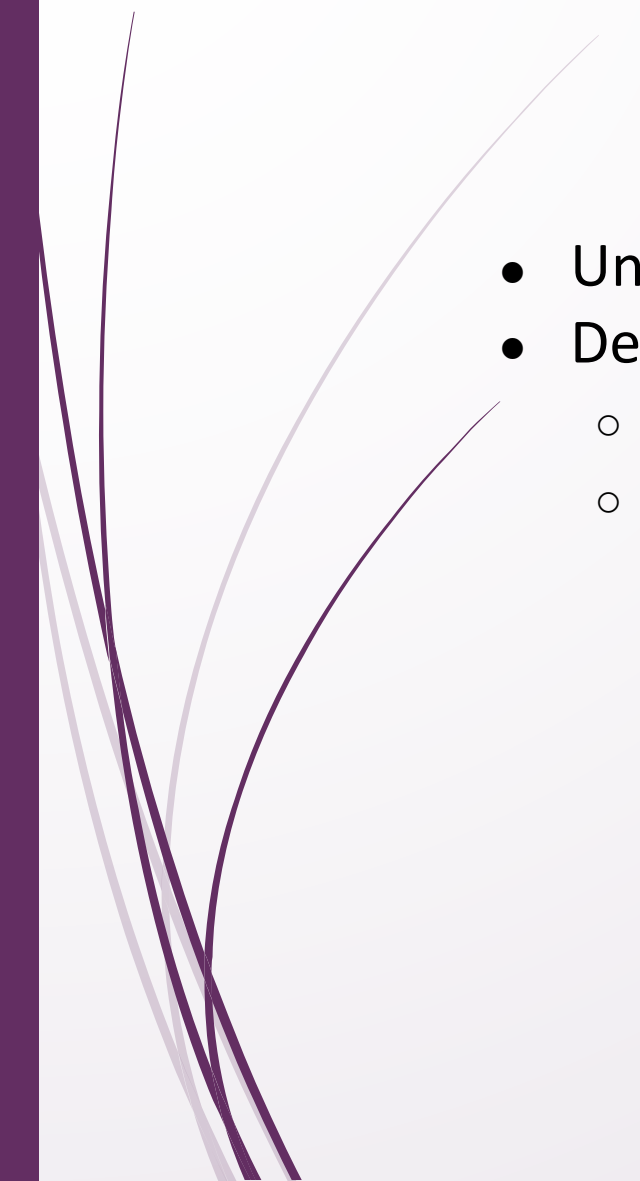
About Data

- 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/>

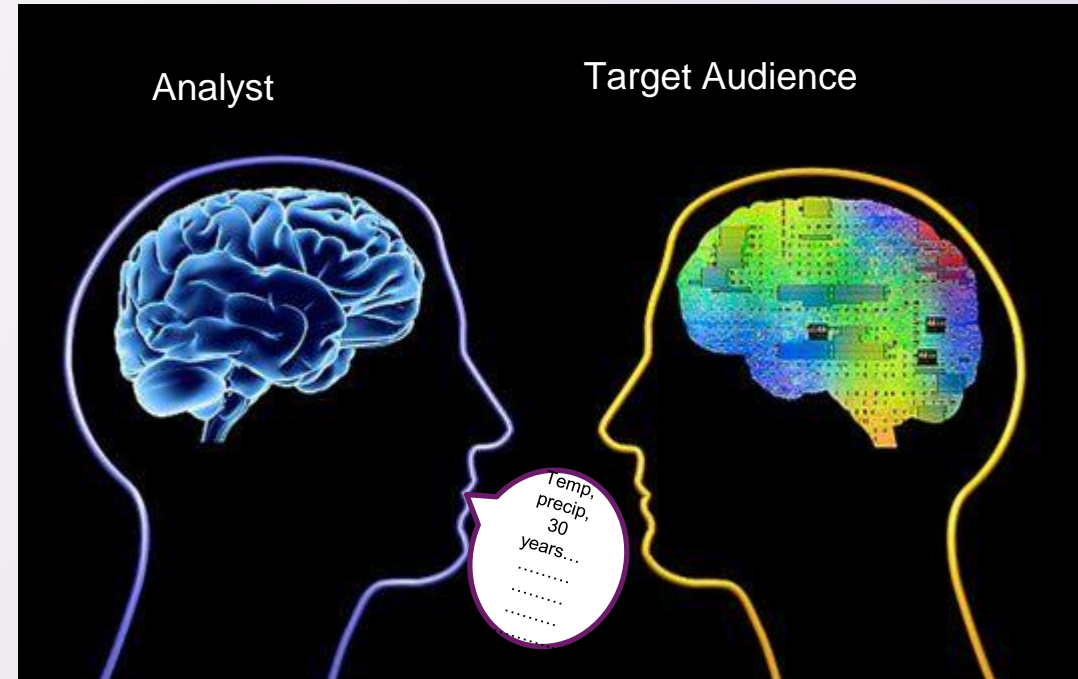


Challenges

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

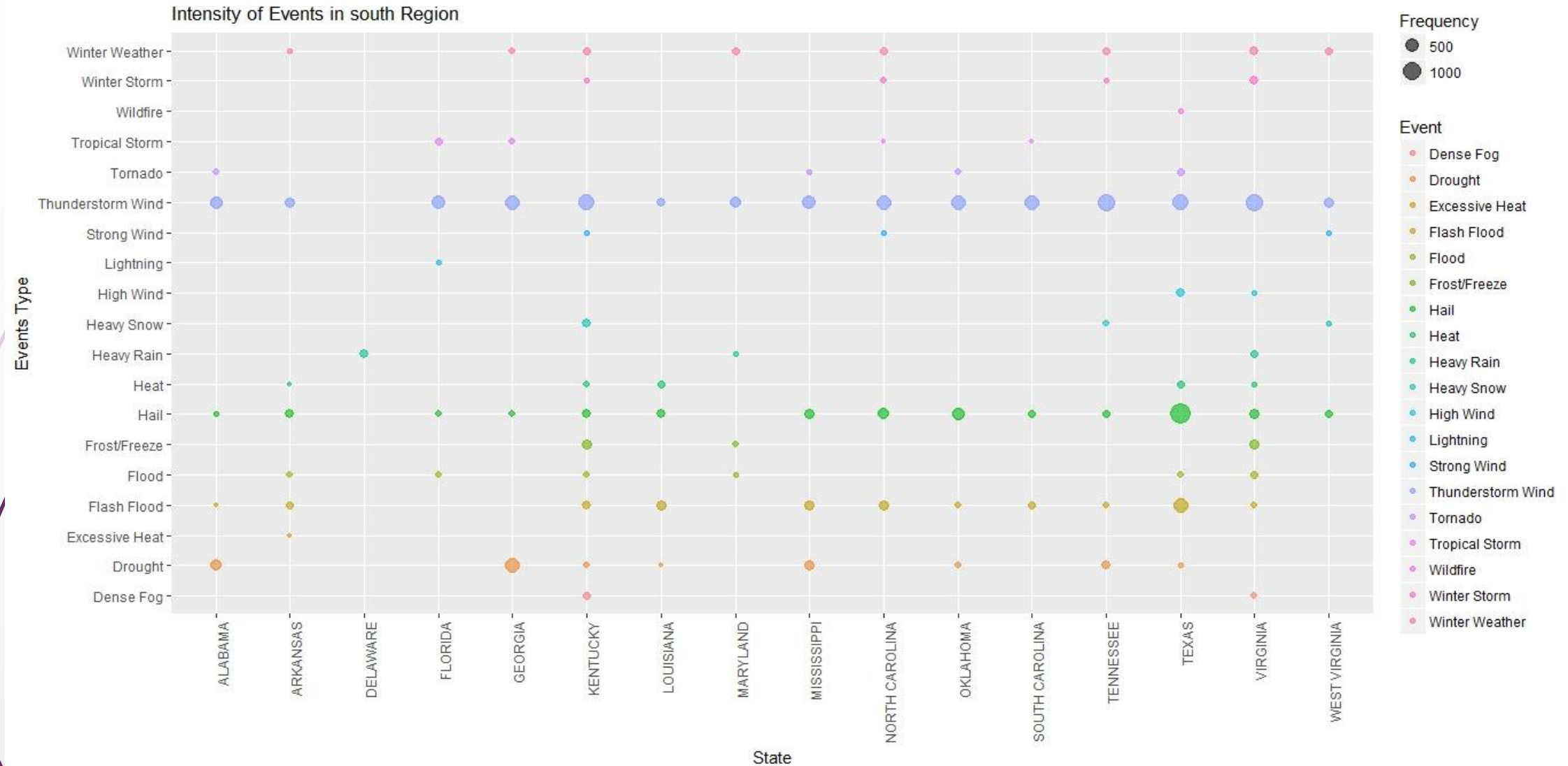
- Calculate company loss and expense reserves
 - Develop, recommend, and implement operational plans
 - Evaluate new products
 - Evaluate Claims
 - Perform annual Permissible Loss Ratio and Risk Analysis
- 



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



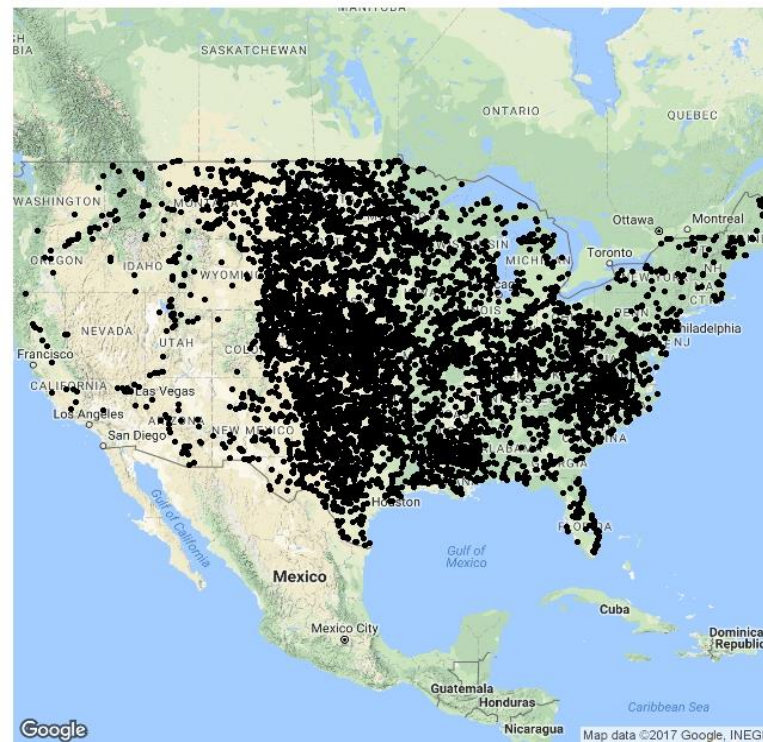
Plot Analysis and Interpretation- Region wise- South



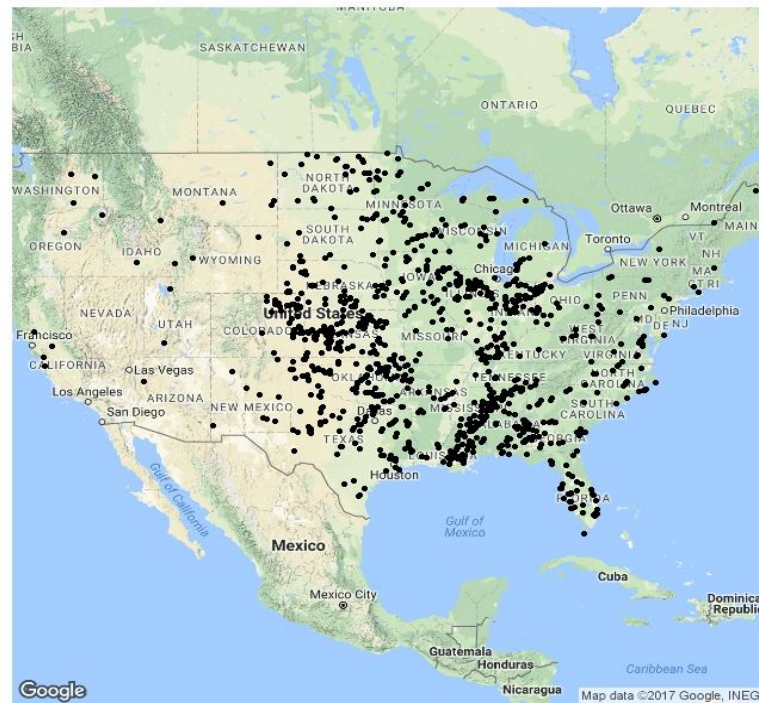
Abstract



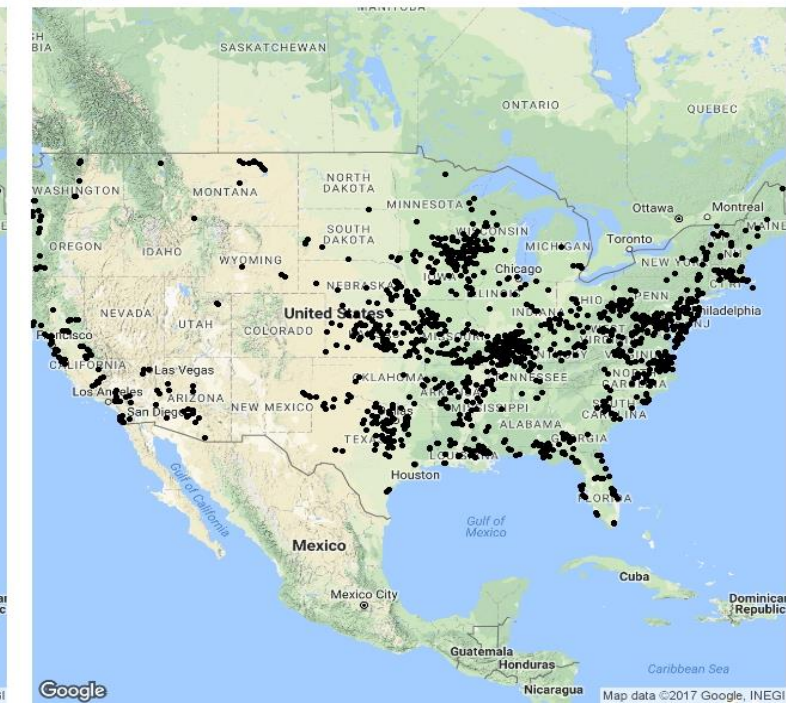
Hail Plot



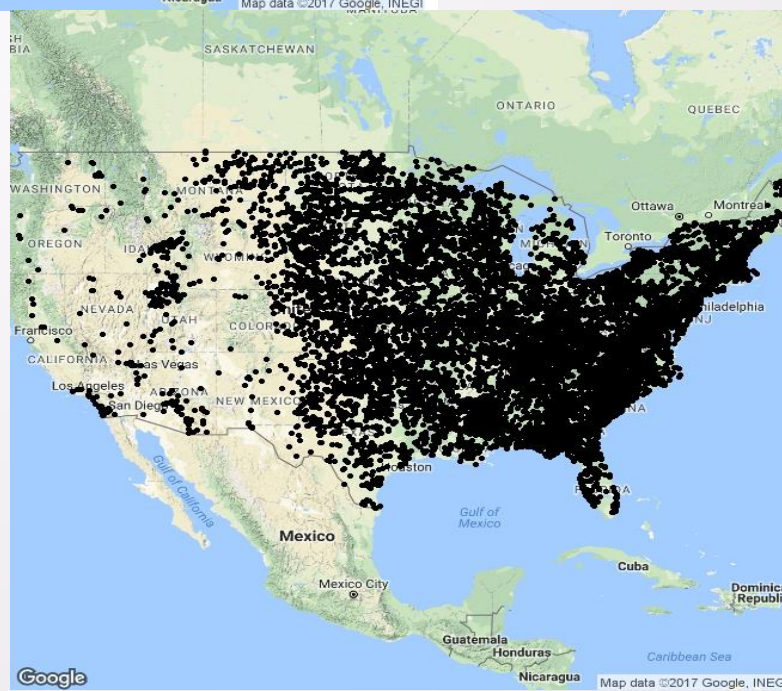
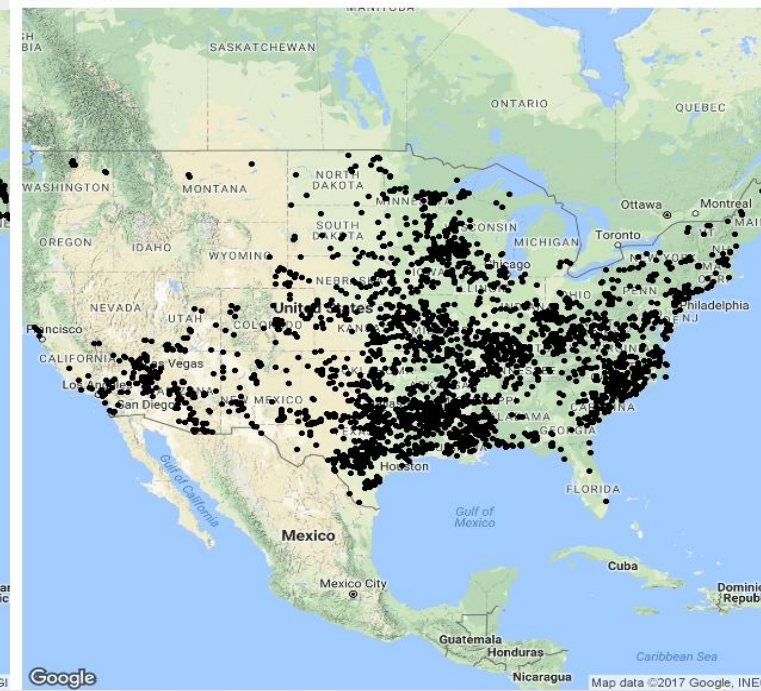
Hurricane Plot




Flood Plot



Flash Flood Plot

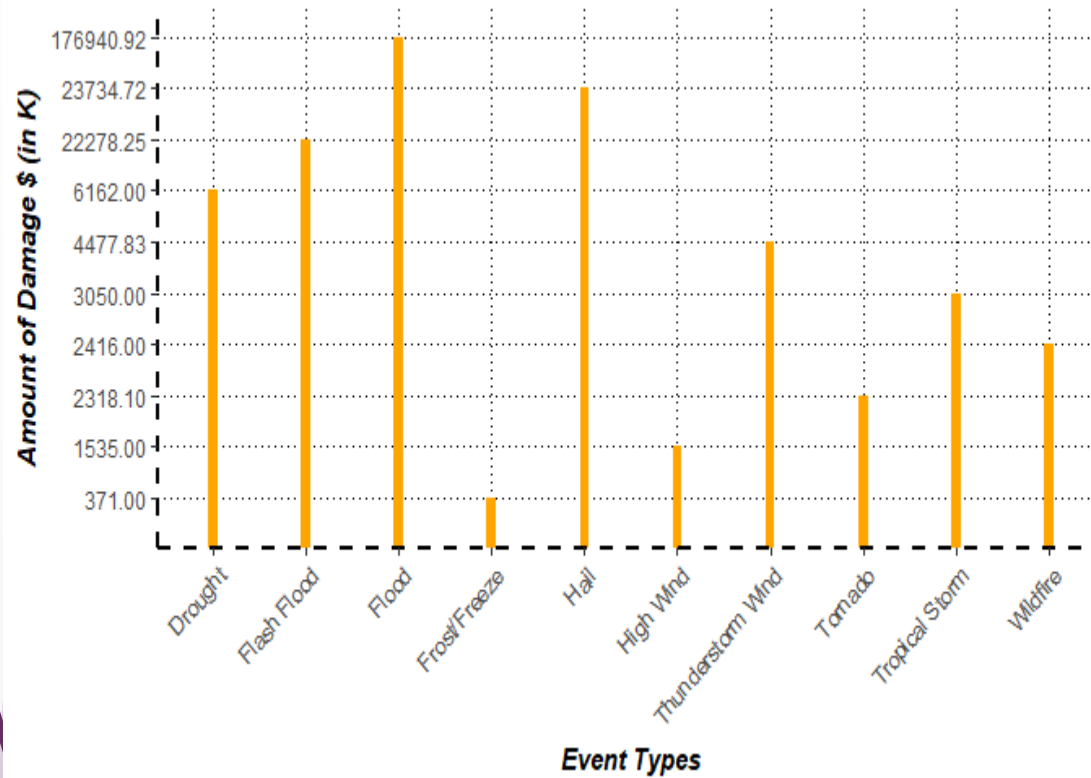




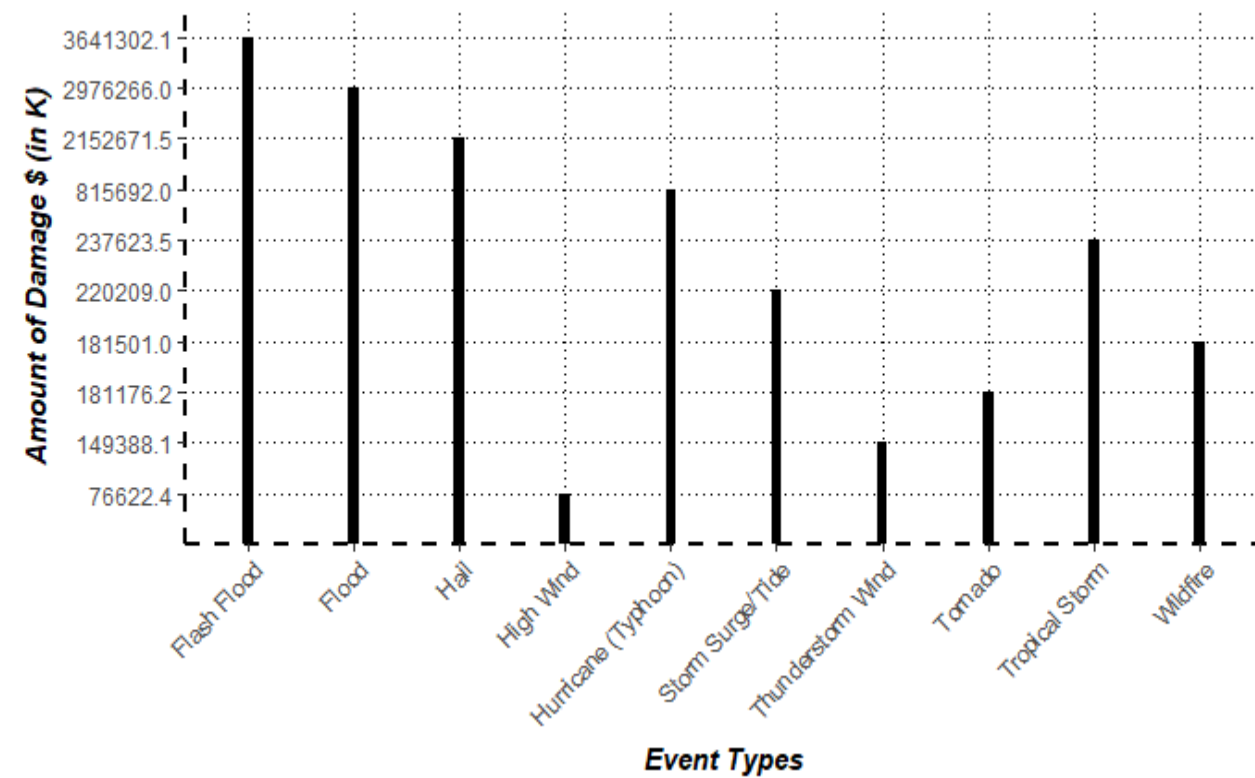
**What is the amount of damage (property & crops)
caused by each event in the year 2016?**

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

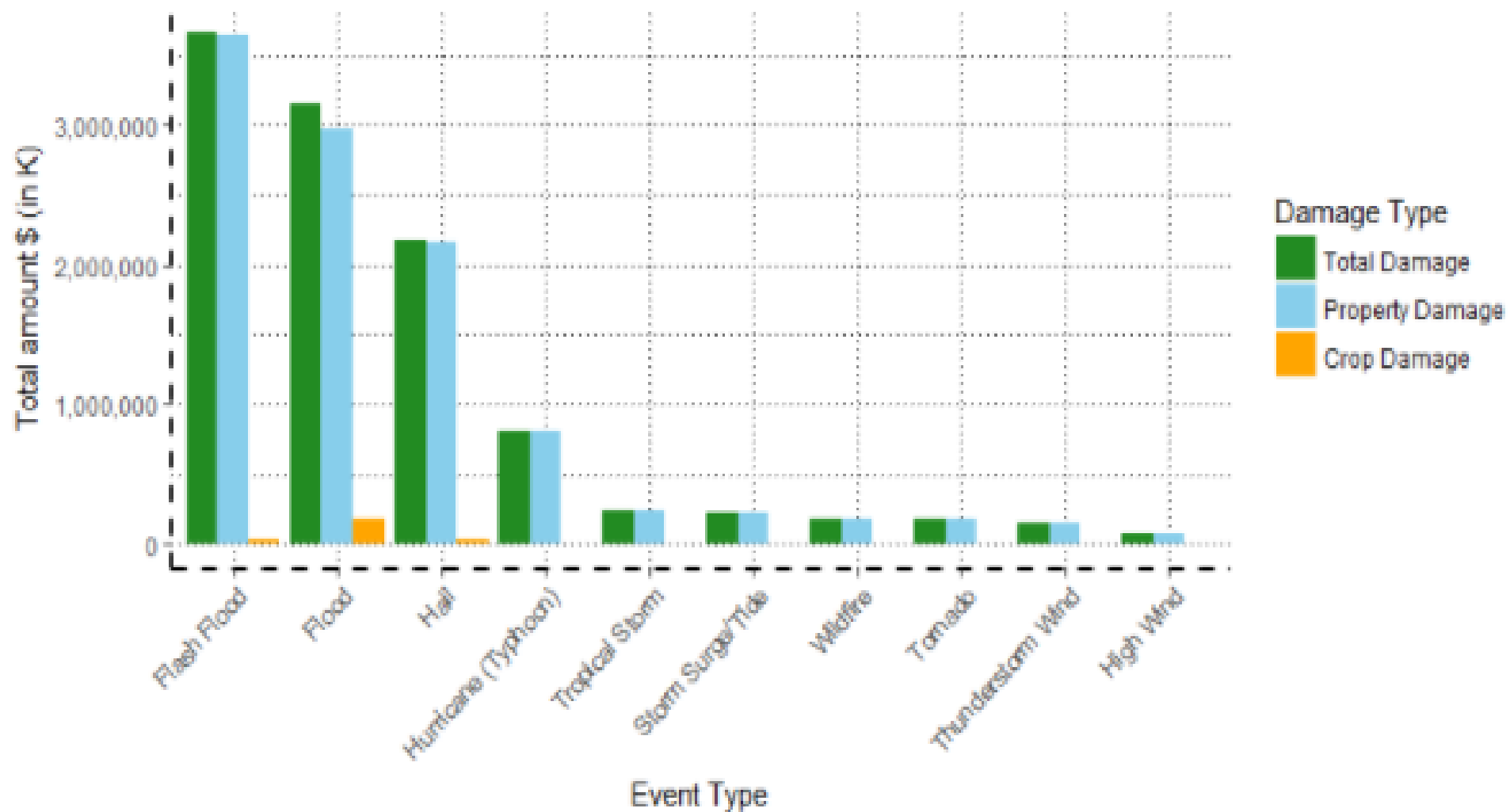
Damage of crops by events




Damage of property by events



Top ten harmful weather event types in 2016

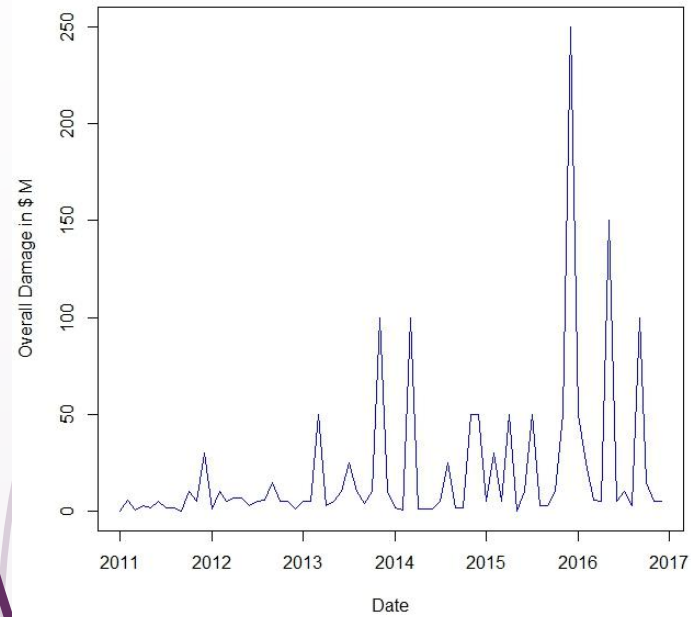


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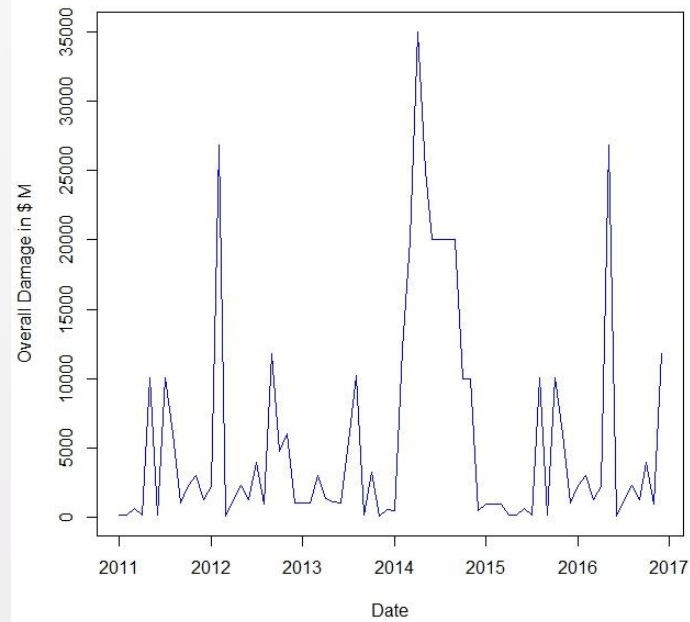
What is trend of top 4 events occurred in 2016 and their estimated amount of overall damage over the period 2011-2016?

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

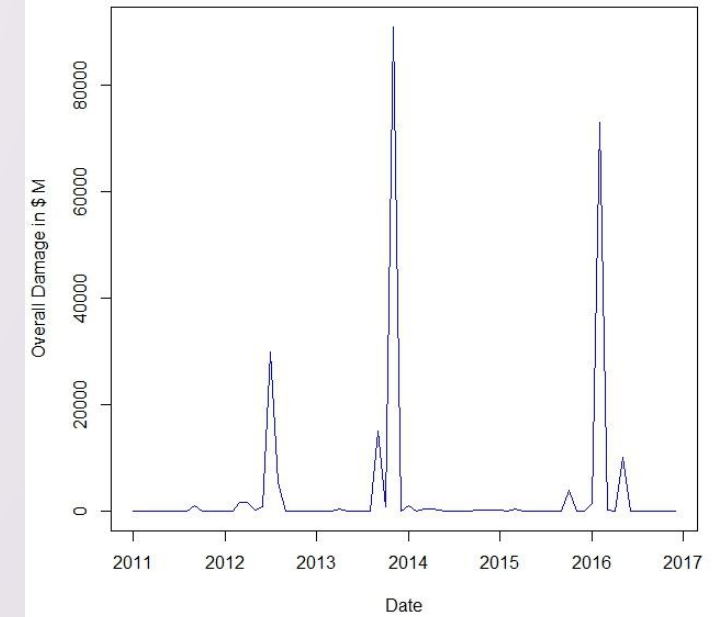
Time series of Hail



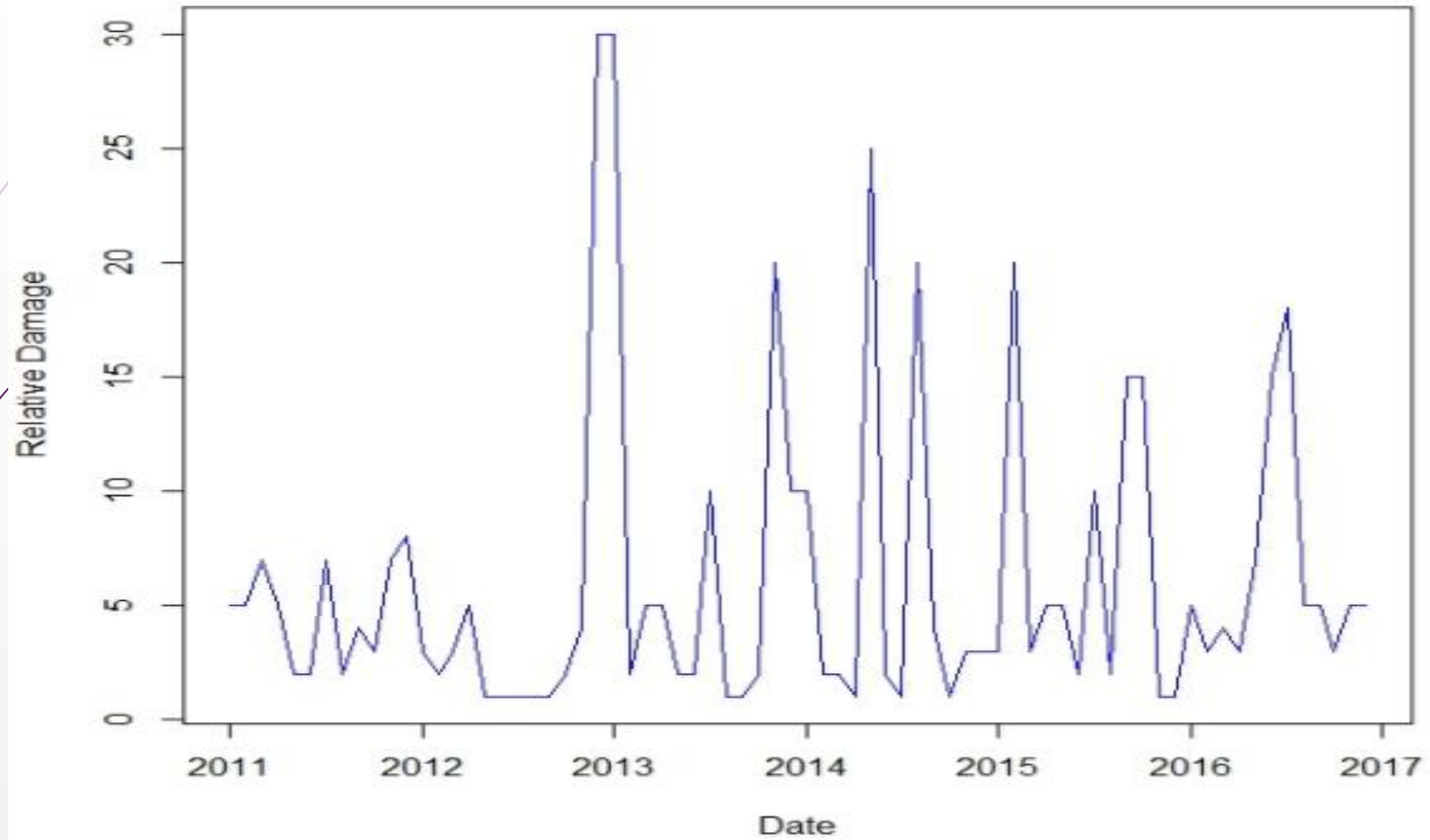
Time series of Hurricane




Time series of Tropical storm



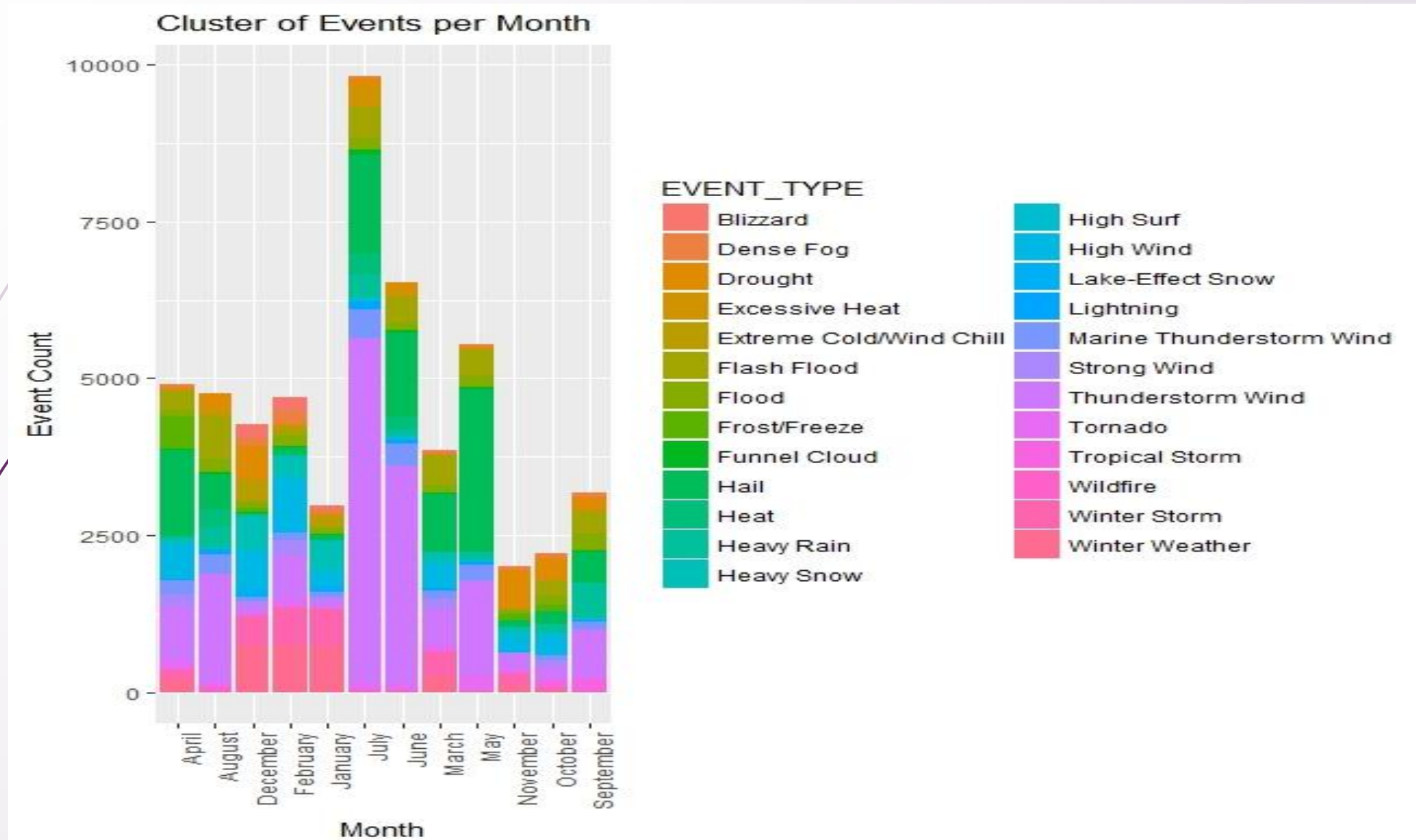
Time series of Thunderstorm



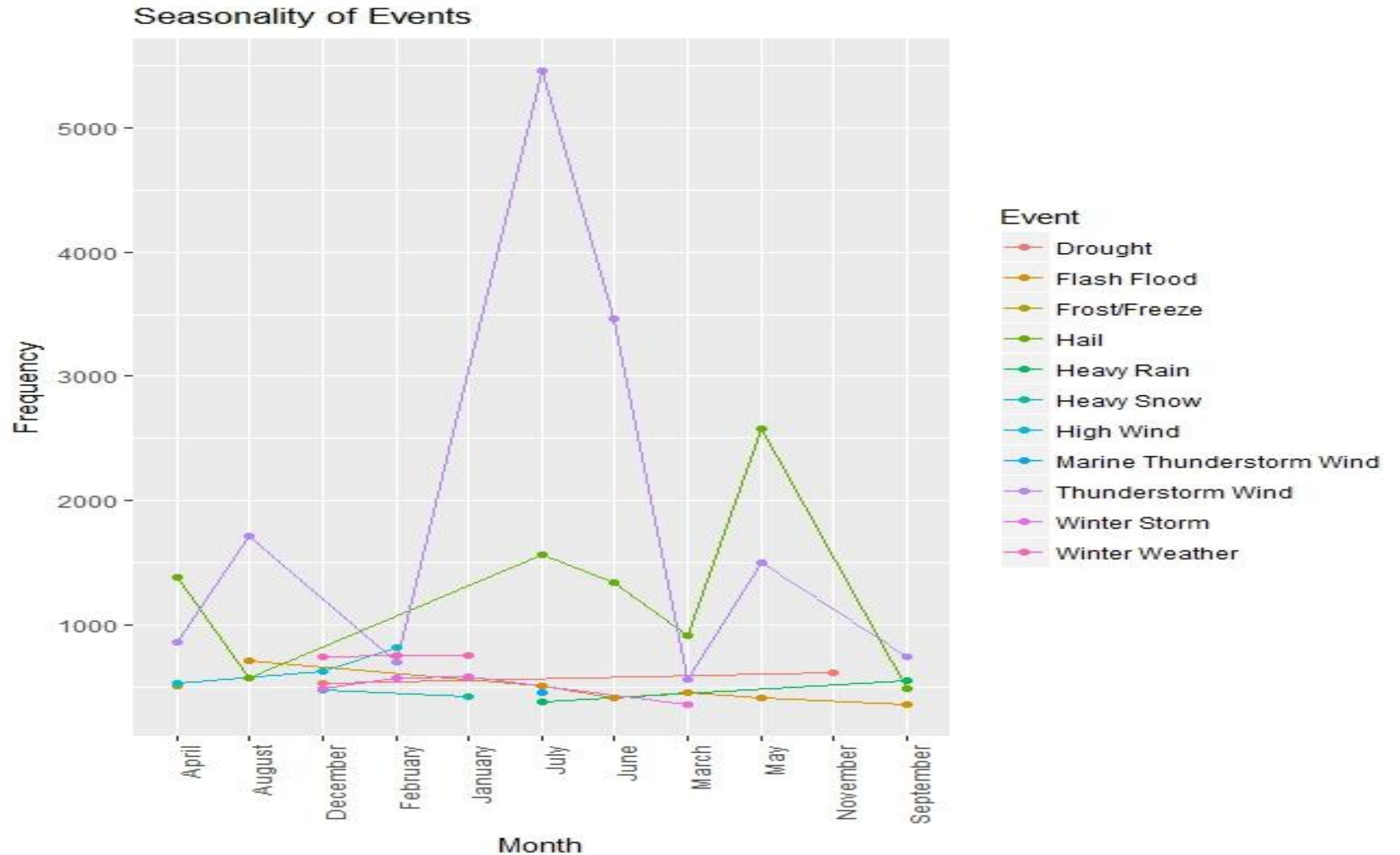
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What is the frequency of event occurrence on a monthly basis (month wise occurrence) in the year of 2016?

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



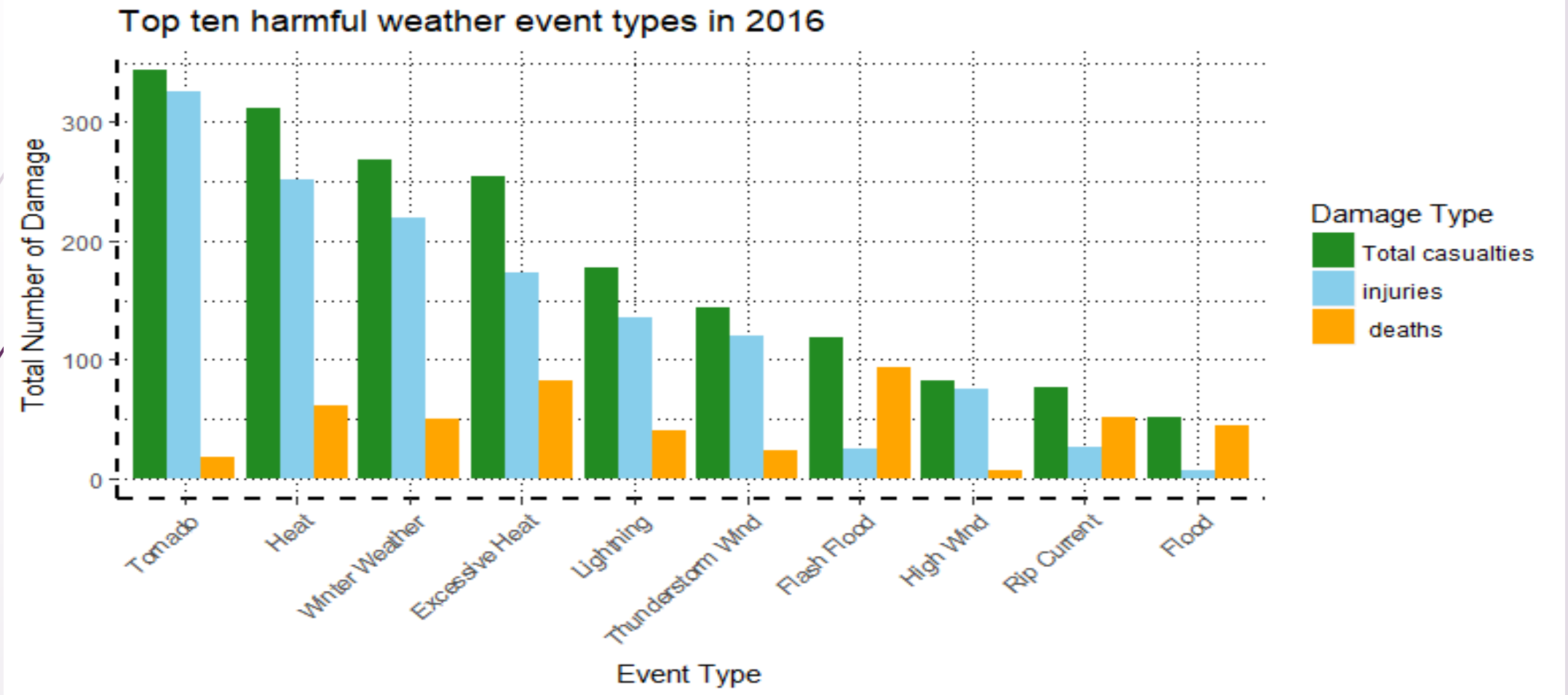
Plot Analysis and Interpretations- Seasonality wise






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


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





Takeaways


In 2016

- Tornado is the most devastating event type on the basis of casualties
 - 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
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Thankyou!
Questions ?