Allocating Resources After a Major Weather Event

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# Background and Scope

## Import the Data

To import the required file in the MATLAB workspace:

1. Double-click the file through your matlab window only, to import it, in our case it is (.csv) type file.
2. While we are working on (.csv) type file we can import the perticular column in our script, or we can import the file as it is.
3. After this we are all set to analyse our data.

## Two States Most Impacted by Harvey

To filter out the Harvey related events we created a variable ***HarveyRelatedEvents*** containing the data of events occured from "17th of Aug" to "3rd of Sept", by this we have successfully filtered out the duration of events in which the Harvey occured.

To filter the data for more accurate assumption we have filtered the state where Harvey occured and stored that in the variable ***HarveyEvents***. After this filtering we also removed the state with undefined entries in tthe ***HarveyEvents***.

Now to extract the state name from the table I first use the groupsummary() function to and then sort the table with respect to GroupCount in descending order. Then created two variables named state1 and state2 to store the first twi values of the sorted data.

HarveyRelatedEvents = StormEvents2017finalProject(StormEvents2017finalProject.Begin\_Date\_Time >= '2017-08-17 00:00:00' & StormEvents2017finalProject.Begin\_Date\_Time < '2017-09-03 23:23:01',:);

HarveyEvents = HarveyRelatedEvents(ismember(HarveyRelatedEvents.State,{'ARKANSAS','KENTUCKY','LOUISIANA','MISSISSIPPI','NORTH CAROLINA','TENNESSEE','TEXAS'}),:);

HarveyEvents = HarveyEvents(~ismissing(HarveyEvents.State),:);

HarveyState = groupsummary(HarveyEvents,'State');

HarveyState = sortrows(HarveyState,'GroupCount','descend')

State1 = HarveyState.State(1)

State2 = HarveyState.State(2)

## Table of Events for Two Most Impacted States

I named a variable ***EventsOnMostImpactedState*** to store a table containing inforation about the two states which are heavily affected by the harvey, I filltered the categorical variable state by applying conditional operation. The other useless categories of variable state were removed by the function ***removecats()*** and overted on the same table variable ***EventsOnMostImpactedState***

EventsOnMostImpactedState = HarveyEvents(HarveyEvents.State == State1 | HarveyEvents.State == State2,:);

EventsOnMostImpactedState.State = removecats(EventsOnMostImpactedState.State);

EventsOnMostImpactedState.Event\_Type = removecats(EventsOnMostImpactedState.Event\_Type)

# Visualizations

## Figure of Event Types

I used the heat map function to generate a figure of events perfectly explainig the data and giving a clear idea about the states affected by the harvey.

heatmap(EventsOnMostImpactedState,'State','Event\_Type')

## Figure of Event Locations

To show the location of the events, I first created two different variable to differentiate the Longitude and latitude of the states. Then used the geoscatter plot to plot the locations, now to plot them with different colour I used hod function to do this.

TEvent = EventsOnMostImpactedState.State == "TEXAS";

geoscatter(EventsOnMostImpactedState.Begin\_Lat(TEvent),EventsOnMostImpactedState.Begin\_Lon(TEvent))

hold on

LEvent = EventsOnMostImpactedState.State == "LOUISIANA";

geoscatter(EventsOnMostImpactedState.Begin\_Lat(LEvent),EventsOnMostImpactedState.Begin\_Lon(LEvent))

legend({'TEXAS Events','LOUISIANA Events'})

hold off

title('Location of events in both states');

# Analysis

## Three Counties with Most Events in State 1

The blow code creates a table contaning the name of the top three counties in state 1 with the most events in the descending order.

CountiesState1 = EventsOnMostImpactedState(EventsOnMostImpactedState.State == State1,:);

Counties = groupsummary(CountiesState1,"CZ\_Name");

Counties = sortrows(Counties,'GroupCount','descend');

Counties([1,2,3],:)

## Three Counties with Most Events in State 2

The blow code creates a table contaning the name of the top three counties in state 2 with the most events in the descending order.

CountiesState2 = EventsOnMostImpactedState(EventsOnMostImpactedState.State == State2,:);

Counties2 = groupsummary(CountiesState2,"CZ\_Name");

Counties2 = sortrows(Counties2,'GroupCount','descend');

Counties2([1,2,3],:)

## Three Counties with Highest Property Cost in State 1

Blow code creates a table names PropCosCounties containg the name of Top three counties of state 1 where highest property Cost occured in the descending order of Property Cost and lso contain the Total Property Cost data.

CountiesPropCosState1 = EventsOnMostImpactedState(EventsOnMostImpactedState.State == State1,:);

PropCosCounties = groupsummary(CountiesPropCosState1,"CZ\_Name","sum","Property\_Cost");

PropCosCounties = sortrows(PropCosCounties,'sum\_Property\_Cost','descend');

PropCosCounties(:,"GroupCount") = [];

PropCosCounties([1,2,3],:)

## Three Counties with Highest Property Cost in State 2

Blow code creates a table names PropCosCounties2 containg the name of Top three counties of state 2 where highest property Cost occured in the descending order of Property Cost and lso contain the Total Property Cost data

CountiesPropCosState2 = EventsOnMostImpactedState(EventsOnMostImpactedState.State == State2,:);

PropCosCounties2 = groupsummary(CountiesPropCosState2,"CZ\_Name","sum","Property\_Cost");

PropCosCounties2 = sortrows(PropCosCounties2,'sum\_Property\_Cost','descend');

PropCosCounties2(:,"GroupCount") = [];

PropCosCounties2([1,2,3],:)

# Conclusions and Recommendations

Analysis of the storm Data 2017 obtained in this Project tells that the insurance company send people to Harris, Galveston, Fort Bend and Montgomery of Texas and Natchotoches, Sabine, Red River, Calcasieu, Beauregard, Acadia from Louisiana.

Insurance company should take Galvenston and Fort Bend from Texas on top priorities as highest property cost and high number of Harvey Events occured there. As reference, This can be observed from the Analysis block where the table shows the record of top three counties with most events and hight property cost from state 1.