Allocating Resources After a Major Weather Event

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Background and Scope

Import the Data

You may use an import function. If not using an import function, include the code used to import the data (it may be generated from the Import Tool)

```
Events = importData("StormEvents_2017_finalProject.csv");
```

```
Error using matlab.io.ImportOptions/readtable (line 667)
Unable to find or open 'StormEvents_2017_finalProject.csv'. Check the path and filename or file permissions.

Error in importData (line 50)
StormEvents2017finalProject = readtable(filename, opts);
```

Two States Most Impacted by Harvey

Clearly state the two states in order

```
data2 = Events;

AugSepData = data2(ismember(data2.Month,{'August','September'}),:);
AugSepData.Property_Cost(ismissing(AugSepData.Property_Cost)) = 0;

HarveyData = AugSepData(AugSepData.Begin_Date_Time >= '2017-08-17 00:00:00'...
    & AugSepData.End_Date_Time <= '2017-09-03 23:59:00',:);

statePropertyCost = groupsummary(HarveyData,"State","sum","Property_Cost");
statePropertyCost = sortrows(statePropertyCost,'sum_Property_Cost','descend')
```

```
% TEXAS , LOUISIANA (Top 2)

TopTwoStates = HarveyData(ismember(HarveyData.State,{'LOUISIANA','TEXAS'}),:);
```

Top two states impaced by Hurricane Harvey are:

- Texas
- Louisiana

Table of Events for Two Most Impacted States

Create and display a few rows of events that include only the two most affected states

```
EventsTopTwoStates = table(TopTwoStates.State, TopTwoStates.Event_Type);

% renaming variables
EventsTopTwoStates.Properties.VariableNames{'Var1'} = 'state';
EventsTopTwoStates.Properties.VariableNames{'Var2'} = 'event_Type';
EventsTopTwoStates
```

Visualizations

Figure of Event Types

Create a figure showing the type and number of occurances for events related to Harvey in the two states.

```
groupcounts(EventsTopTwoStates,"event_Type");

% This removes all categories with 0 occurrences from the state variable and event_type variabl
EventsTopTwoStates.state = removecats(EventsTopTwoStates.state);
EventsTopTwoStates.event_Type = removecats(EventsTopTwoStates.event_Type);

heatmap(EventsTopTwoStates,"state","event_Type")
```

Figure of Event Locations

Show the location of events in the two states. Be sure to use different markers for the two states

```
eventTexas = TopTwoStates(TopTwoStates.State=="TEXAS" , :);
eventLouisiana = TopTwoStates(TopTwoStates.State=="LOUISIANA", :);

geoplot(eventTexas.Begin_Lat,eventTexas.Begin_Lon,'*');
hold on
```

```
geoplot(eventLouisiana.Begin_Lat,eventLouisiana.Begin_Lon,...
    "Color","red","LineStyle","none","Marker","+","MarkerSize",10);
hold off
legend('Texas','Louisiana');

geolimits([26.5 37.8],[-106.9 -89.9]);
title('Event Locations');
```

Analysis

Three Counties with Most Events in State 1

Either type out, show in a table, or show in a clear visualization the three counties with the most events in state 1.

```
%mode(HarveyData.CZ_Name);
%heatmap(TopTwoStates, "CZ_Name","Event_Type")
TopTwoStates;

Texas = TopTwoStates(TopTwoStates.State == 'TEXAS',:);
%summary(Texas);

Texas.State = removecats(Texas.State);
Texas.CZ_Name = removecats(Texas.CZ_Name);

mode(Texas.CZ_Name);
county = groupsummary(Texas,"CZ_Name");

county = sortrows(county,'GroupCount','descend')
% Top 3 counties - HARRIS, GALVESTON and FORT BEND
```

Top 3 counties are:

- HARRIS
- GALVESTON
- FORT BEND

Three Counties with Most Events in State 2

Either type out, show in a table, or show in a clear visualization the three counties with the most events in state 2.

```
Louisiana = TopTwoStates(TopTwoStates.State == 'LOUISIANA',:);
%summary(Louisiana);

Louisiana.State = removecats(Louisiana.State);
Louisina.CZ_Name = removecats(Louisiana.CZ_Name);

county2 = groupsummary(Louisiana,"CZ_Name");
```

```
county2 = sortrows(county2,'GroupCount','descend')
% Top 3 counties - NATCHITOCHES, SABINE and RED RIVER
```

Top 3 counties are:

- NATCHITOCHES
- SABINE
- RED RIVER

Three Counties with Highest Property Cost in State 1

Either type out, show in a table, or show in a clear visualization the three counties with the highest property damage in state 1. *Be sure to include the dollar amount*.

```
TexasPropertyCost = groupsummary(Texas,"CZ_Name","sum","Property_Cost");
TexasPropertyCost = sortrows(TexasPropertyCost,'sum_Property_Cost','descend')

% Highest Property Cost - GALVESTON, FORT BEND and MONTGOMERY
```

Highest Property Cost:

- GALVESTON
- FORT BEND
- MONTGOMERY

Three Counties with Highest Property Cost in State 2

Either type out, show in a table, or show in a clear visualization the three counties with the highest property damage in state 2. *Be sure to include the dollar amount*.

```
LousPropertyCost = groupsummary(Louisiana,"CZ_Name","sum","Property_Cost");
LousPropertyCost = sortrows(LousPropertyCost,'sum_Property_Cost','descend')
% Highest Property Cost - CALCASIEU, BEAURGARD and ACADIA
```

Highest Property Cost:

- CALCASIEU
- BEAURGARD
- ACADIA

Conclusions and Recommendations

According to the analysis done in 'Two States Most Impacted by Harvey' it is found that **Texas** and **Louisiana** are the most impcated states by Hurricane Harvey.

In Texas, the insurance company should send their people to *GALVESTON, FORT BEND and MONTGOMERY* where highest property cost occured. They should also consider counties *HARRIS, GALVESTON and FORT BEND* where most most events happend by Harvey.

On the other hand, **in Louisiana**, counties *CALCASIEU, BEAURGARD and ACADIA* faced highest property cost. So the insurance company should pay their attention there. They should also consider *NATCHITOCHES, SABINE and RED RIVER* where most events happened by the hurricane.