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BE AWARE Research Area

The research project focuses on counties in Texas with different flood types and investigates the flood-related fatalities that have occurred in Texas from January 1996 to December 2016. For each fatal flood event, we examined the date, location, flood types, and whether vehicles were involved. We also examined the age and gender for each flood victim. This is to understand which areas need better drainage systems.

Motivation or Background

Floods pose a serious problem in Texas and lead to considerable loss of lives and property in the state. Population is growing along with flood-inducing topography and urbanization, floods are leading to very dangerous situations that can lead to fatalities. With this research, there is a lot of data from National Oceanic Atmospheric Administration (NOAA) for fatalities in Texas counties. By looking at each event and the victims involved we can come up with a better understanding of how to address fatalities due to flooding in Texas counties.

Objectives

1. Retrieve data from National Oceanic Atmospheric Administration (NOAA) website for all counties in Texas regarding fatalities due to different flood types.
2. Sort out the information in Excel program regarding the number of fatalities, the location, age and whether a vehicle was involved or not, etc.

Methodology

The data was obtained from National Oceanic Atmospheric Administration (NOAA) going back to 1996 for records on the flood-related fatalities that happened in Texas, covering events that involved: coastal flooding, flooding, flash flooding, heavy rain, hurricane, rip current, and tropical storm. The data was put into Excel spreadsheet sorted out by year, month, date, time, flood type, the number of deaths, gender, age group, the event occurred, the vehicles involved, and fatality location. The data is analyzed to examine a relationship with the data by constructing graphs.

Results

The data for fatalities in Texas under different flood types were compiled. Looking at figure 1 all events were considered looking only at the time of day. Figure 2 illustrates the outcomes of flood all events that occurred. Figure 3 shows the gender of the victims. Figure 4 shows the ages of the victims. Figure 5 describes the locations of the flood fatalities. Figure 6 highlights the flood types that caused the fatality and the number of victims. Figure 7 counts the fatalities each year for all events.

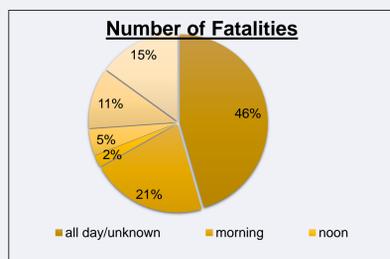


Figure 1

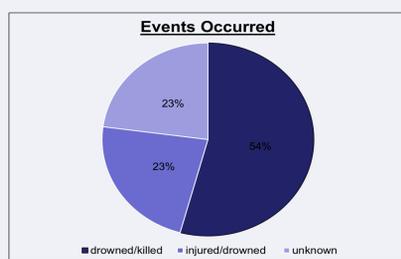


Figure 2

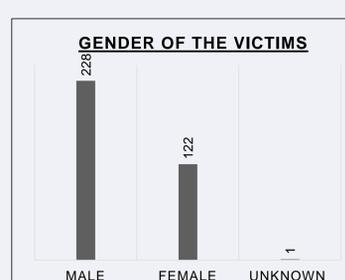


Figure 3

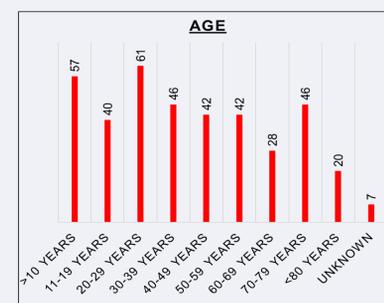


Figure 4

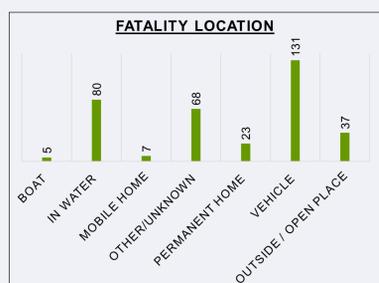


Figure 5

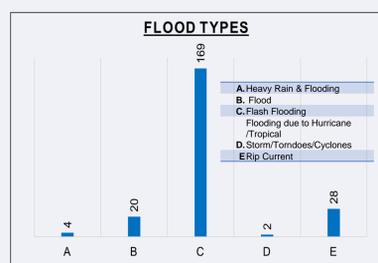


Figure 6



Figure 7

Fig. 1 The figure above shows the times of day the fatalities happen. Most fatalities happen all day to unknown times. With morning coming in second and nights in third.

Fig.2 The most common event that occurs to the victims is being drowned or killed.

Fig. 3 This shows out of all the fatalities males are most affected

Fig. 4 Adults are the ones that are most affected then elderly people come in second both adult and elderly very high.

Fig.5 This figure shows where the fatalities occur where the victims were found, vehicles being the most common.

Fig. 6 Flash flooding and rip current have the most fatalities both types are spontaneous/unpredictable.

Fig. 7 Showing all the fatalities that happened in each year due to different types of floods. Note: In 2011 there was no fatalities due to floods since it was the driest year the fatalities were from rip currents

Skills and Experience

- Analyze data from NOAA
- Entered data on Microsoft Excel
- Analyzes data on spreadsheet
- View relationships and pattern of graphs.



Figure 8

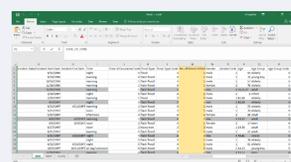


Figure 9

Fig. 8 NOAA web site for the data on fatalities

Fig. 9 Microsoft Excel data table with more detail

What I Learned

- With the information, I have gathered I learned about all the flood types. Flash flood is the leading flood type that cause fatalities by 76% in Texas maybe due to being spontaneous and predictable.
- When people commute to and from work being the time of day night and morning is when a lot of fatalities occur, that could be due to poor visibility.
- Most fatalities are in vehicles being 46% and water being 28% shows that about three quarters of the victims went into the water intentionally.
- Results show that 65% of deaths are for males, and we can assume this is from males demonstrating riskier behavior in flood conditions.
- In 2011 there was no death recorded that involve floods, only for rip currents there was fatalities. That is because there was an exceptional drought in 2011.

Future Plans

The future plans are to spread the awareness about floods and to take safety precautions on roads, not to underestimate flooded roads.

References

- National Oceanic and Atmospheric Administration Storm Events Database
- National Weather Service (NWS). (2017). "Storm data operation manual. National weather service instruction 10-1605." (<http://www.weather.gov/directives/sym/pd01016005curr.pdf>).

Acknowledgments

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