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Research Area

The objective of this research is to collect data relating to the impact of flood related fatalities in the United States, whilst identifying groups with a higher propensity for fatalities during these events. The data used for this research was provided by The National Oceanic and Atmospheric Administration (NOAA) between January 1996 to March 2017. Forty-eight states were included in our data set; Texas being excluded because it is the topic of another study, and Rhode Island because there were no reported flood related deaths at the time of the data sets.

Motivation or Background

The motivation for this study is to reduce the number of flood-related deaths. Our data shows that from January 1996, to March 2017, that there were 1,592 fatalities related to flooding events in the United States (excluding Texas). The number of fatalities during flooding events and additional naturally occurring calamities can be reduced if we study who is at risk, along with educating those at most risk of these catastrophes. This research project assesses information on flood fatalities reported by NOAA to identify what age group, gender and activity puts people at risk during flooding events.

Objectives

The objective of this research was to transfer data from the NOAA *Storm Data* database to an Excel document in order to extract information on those most at risk. After the data is compiled, it can then be analyzed by other researchers so that they may identify any potential trends present. We can then educate the public based on the information which may lead to reducing the number of fatalities during a flooding event.

Methodology

PROGRAMS USED

Microsoft Excel:

A spreadsheet developed by Microsoft for Windows, Mac OS X, and iOS. It features calculation, graphing tools, pivot tables, and Visual Basic macro programming.

NOAA Storm Events Database:

A database developed by the National Oceanic and Atmospheric Administration; that records significant weather phenomenon from January 1950 to April 2017. It features information on the location, time, property damage, death/injury toll, and crop damage caused by a weather event.

Information was collected from the NOAA Storm Events Database and entered into a Microsoft Excel document. Calculations were done to assess which groups and what activities put people a risk during flooding events.

Results

The results from our research conclude that men are twice as likely over females to perish in a flood event in the United States. The age group most susceptible during flooding events are people between the ages of 50 and 59; while, people between 20 and 29 make up the second group. Most deaths involved a vehicle or involved an individual being swept by flowing flood waters. The majority of fatalities occurred at night between 9:00 PM to 4:59 AM (potentially due to the low visibility of flood waters during the event). A vast number of fatalities were the result of people driving into barricaded areas; while many died due to hydroplaning into waterways. In less common occurrences some casualties were the outcome of falling trees either while driving or walking. It is advisable to avoid visible flood waters, and to stay inside a secure buildings during a flood. The further away the building is from flood waters, large trees and hills the better. Finally, people should not venture out at night if there is a flood, and if they find the need to drive somewhere, then drive slowly and abide by any posted barricades.

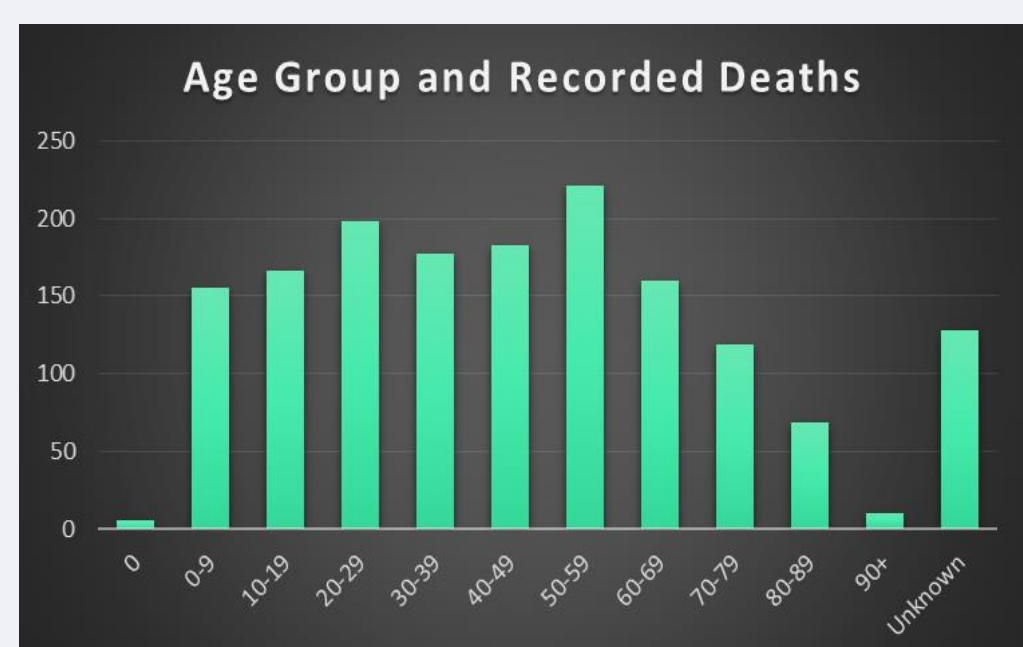


Figure 1
Recorded deaths from flooding events by age group

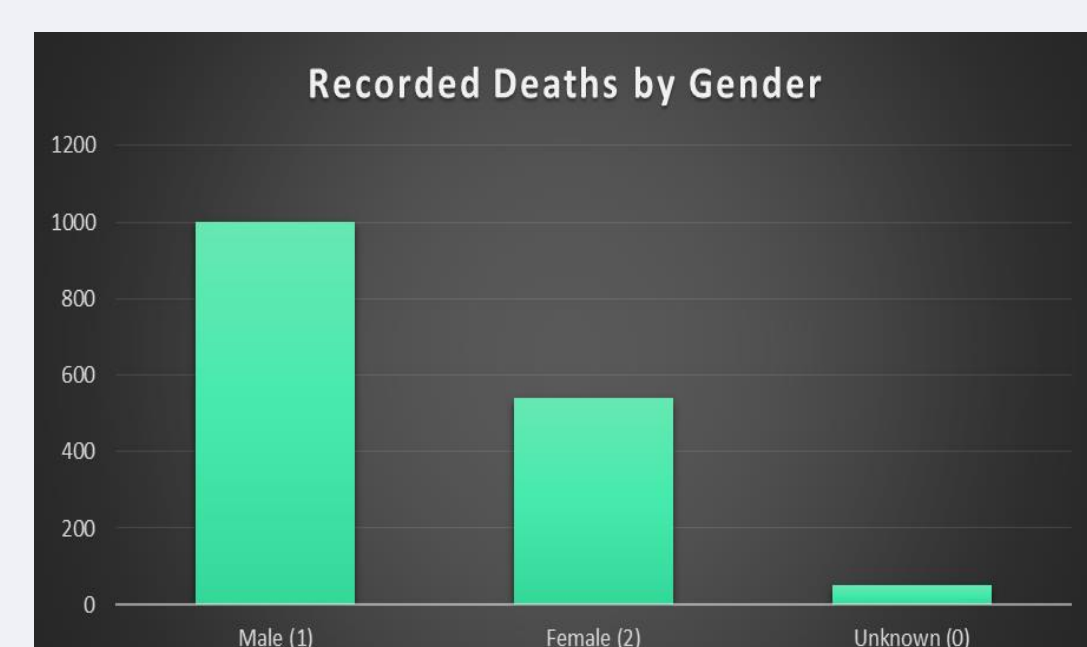


Figure 2
Recorded deaths from flooding events by gender

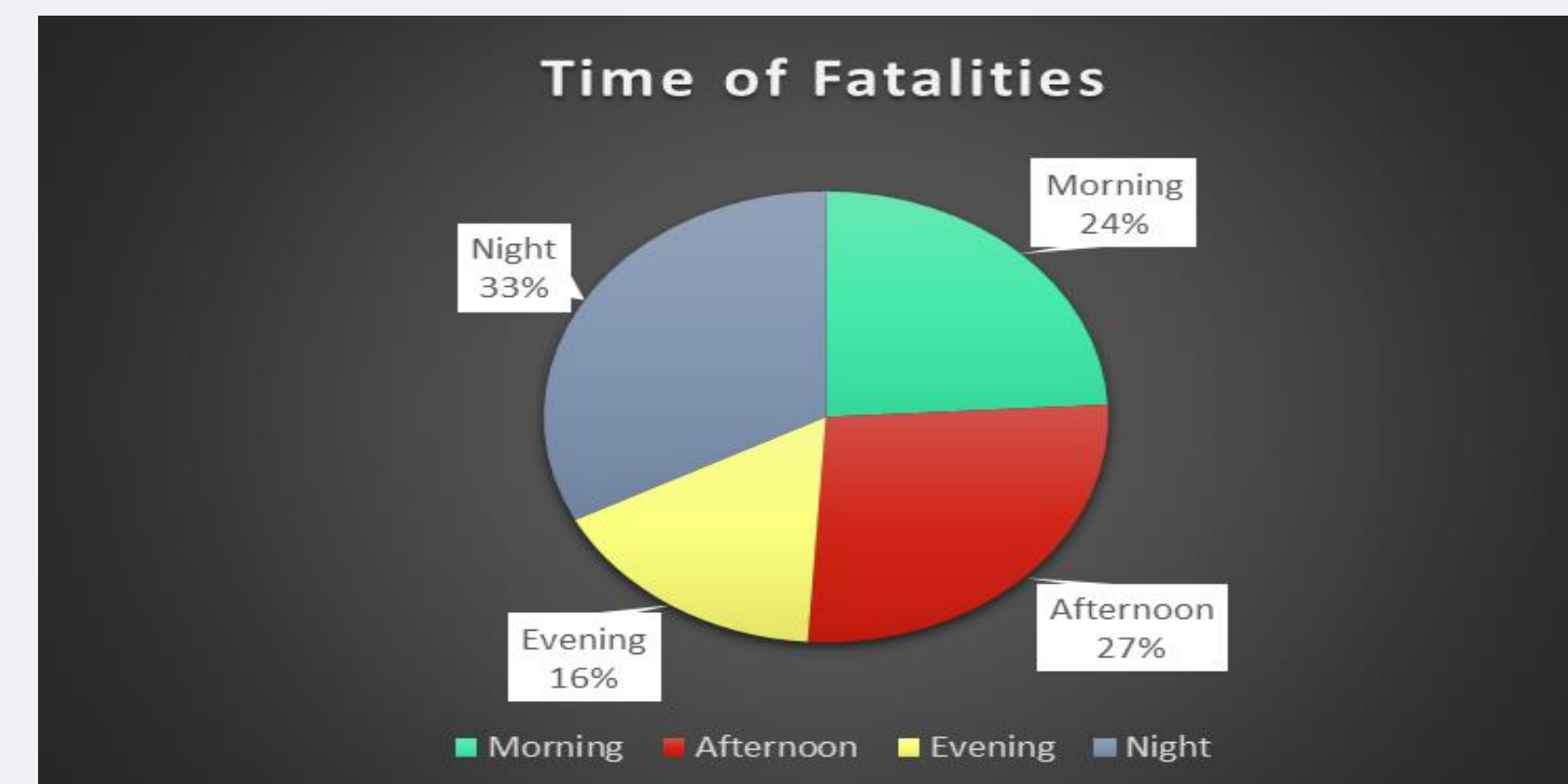


Figure 3
Recorded time of flood related fatalities

Skills and Experience

- Program calculations on Microsoft Excel
- Creating an extensive Microsoft Excel Spreadsheet
- Acquiring information from a Database and assessing trends
- Finding solutions to reduce fatalities during a flood event

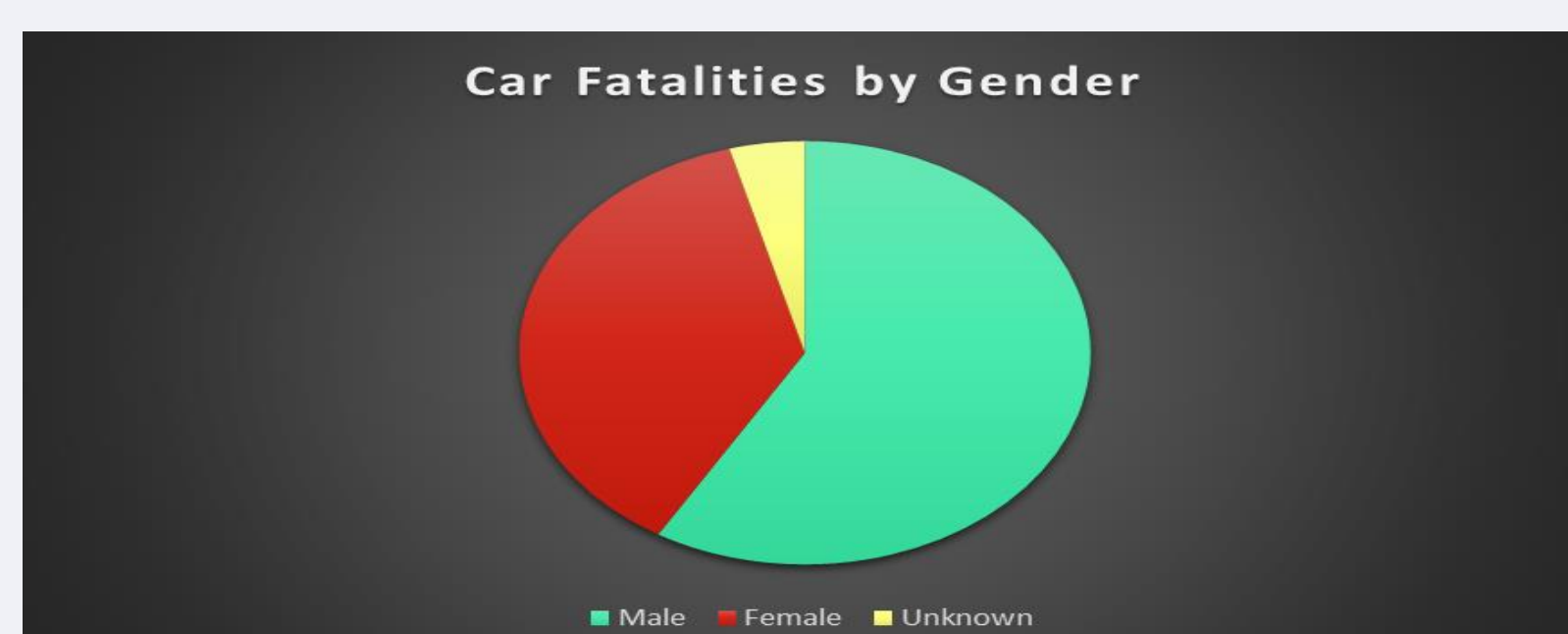


Figure 4
Gender of victims during flooding events

What I Learned

I learned how to collect data, program calculations and create charts in Microsoft Excel to assess trends in data. I learned about who is most at risk during flood events and how to reduce the risk of fatalities during a flood event.



Figure 5
Location of death during flooding events

Future Plans

Future plans will be to further educate the public on what to do in case of a flood. We will continue to collect data to learn more about who is at risk of dying during a flood event and how to further reduce fatalities.

Acknowledgments

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References

- National Oceanic and Atmospheric Administration Storm Events Database
- National Weather Service (NWS). (2007). "Storm data operation manual. National weather service instruction 10-1605." (<http://www.weather.gov/directives/sym/pd01016005curr.pdf>).