CSE 564: Final Project
Visual Analysis of Crime and Disaster data

Name: Aditya Nandan Bhide (SBU ID: 113216565), Name: Niket Bhaumik Shah (SBU ID: 113274949)

Abstract

This project aims at exploring the impact of disasters on crime rates in the United States of America between the year 1979-2019. There have been various studies in this domain and it has been seen that although crime rates in the USA are gradually declining, occasional spikes are seen during years of severe disasters. Not only the severity of the disaster, but also its type plays a crucial role in determining whether crime rates are affected. Our project provides a visual representation on this subject to further reinforce this study.

Information about Data

For our project, we use the following 2 datasets:

1. USA state-wise and year-wise crime:

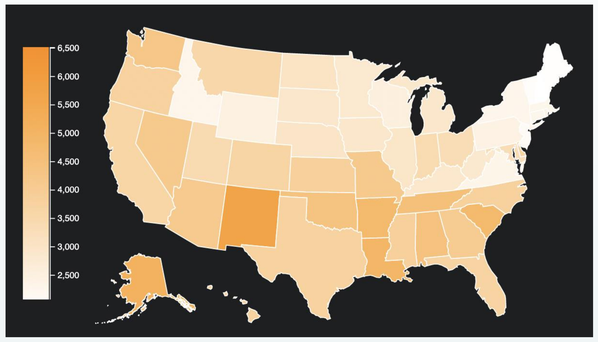
Source: https://crime-data-explorer.fr.cloud.gov/

2. The dataset name is "USA state-wise and year-wise natural disaster declaration"

Source: https://www.kaggle.com/

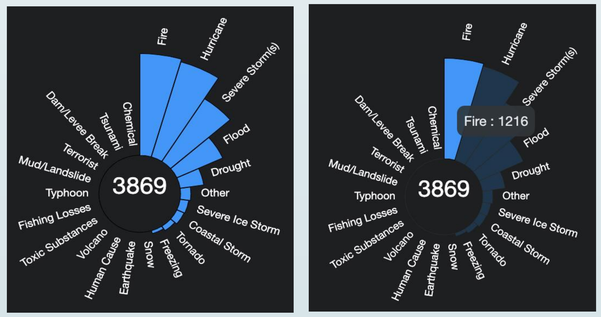
The data was preprocessed by removing noise. Certain attributes which either were not required or had missing values above a particular threshold were removed.

Choropleth Map



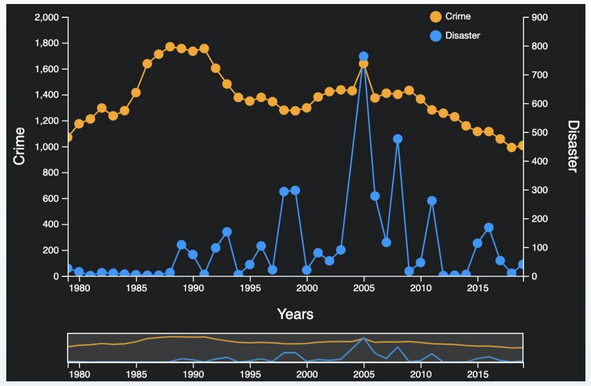
The choropleth map above provides a visual representation of the crime rates, for either all crimes or a selected crime, across all states of the USA. It helps us compare crime rates between different states. For the purpose of this project, we have also used this map to select a particular state for our visual analysis.

Radial Bar Chart



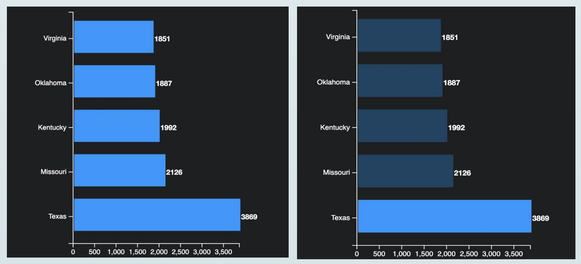
The radial bar chart has been used to represent the number of each type of disaster for the selected year and time period. For the purpose of this project, we have also used this chart to select a particular type of disaster for our visual analysis.

Multi-Scale Line Graph



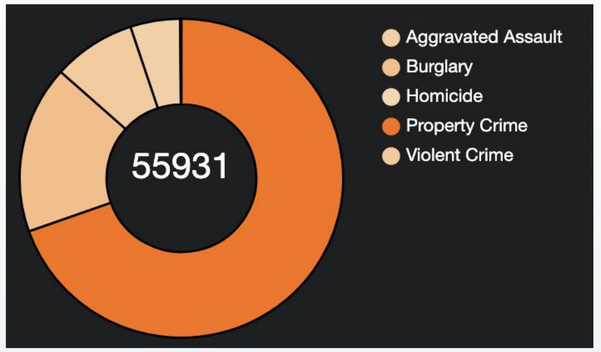
The multi-scale line graph has been used to represent the trend of crime rate and disasters for the given state and time period. It can also be filtered for a particular crime or particular disaster type or both. Hence, this provides us with the necessary tools to analyze the impact of disasters on crime rate. For the purpose of this project, we have also used this graph to select a time period for our visual analysis.

Horizontal Bar Graph



The horizontal bar graph shows 5 states with the highest occurrences of the disaster type selected for the selected state and time period. This helps us notice which state is possibly most impacted by disasters and we can further analyze it visually using the other plots.

Donut Chart



The Donut chart has been used to show the proportion of different types of crimes for the selected year and time period. For the purpose of this project, we have also used this chart to select a particular type of crime for our visual analysis.

Conclusion

Some of the observations we were able to derive from our project were:

1. In case of total crimes, the District of Columbia has the highest crime rate.

2. Of all the states, Texas faces the worst wrath of disasters in terms of the sheer volume of disasters.

3. Owing to its large coastal borders, the USA experiences numerous disasters such as storms, hurricanes(which are followed by floods), tornadoes, and coastal storms.

4. A rise of crime rates was seen in states which experienced hurricanes such as Hurricane Rita and Hurricane Maria.

Stony Brook University