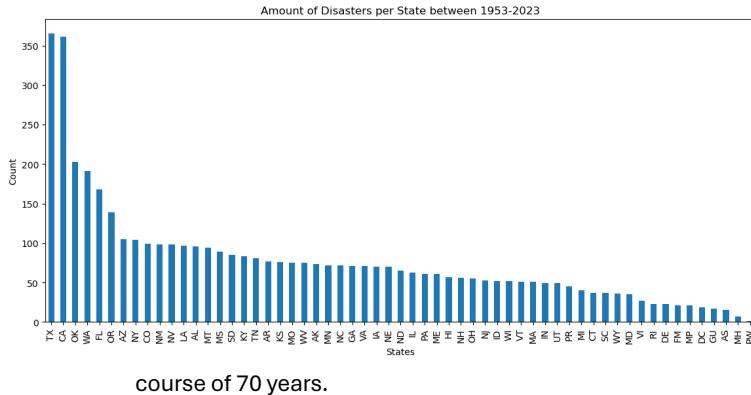


Data Analysis of United States Disasters Between 1953-2023

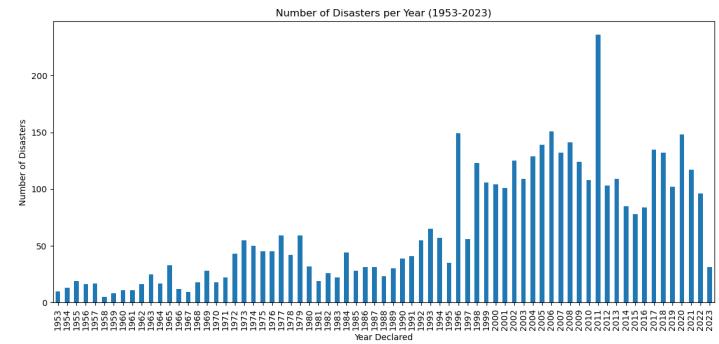
Introduction: Presented here is a public dataset analyzed from Kaggle originally sourced from the Federal Emergency Management Agency (FEMA). This dataset summarizes all federal declared disasters that occurred in the United States between 1953 and 2023. Various data charts are used to present data concerning time and location of incidents across the US.



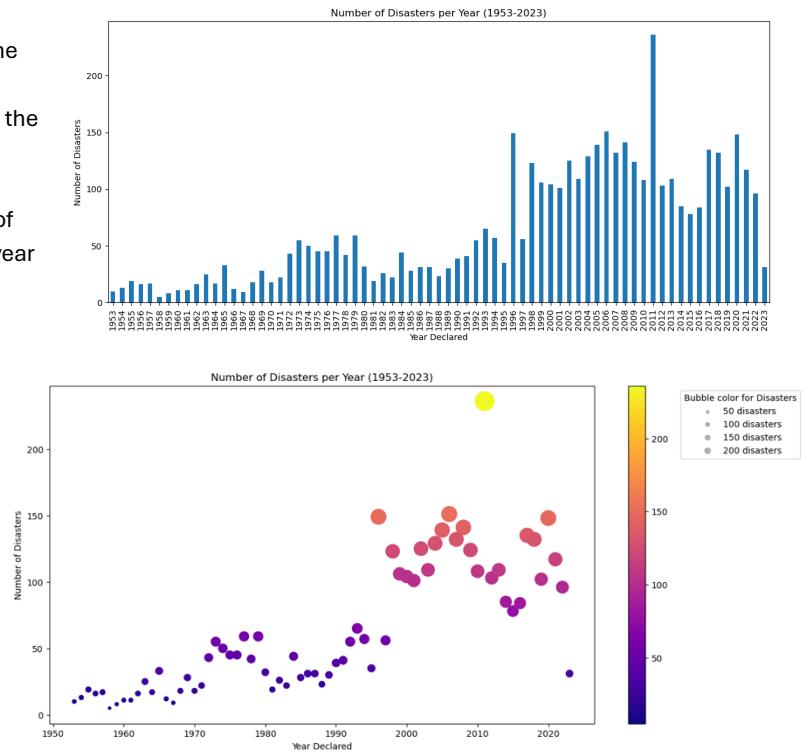
Legend: Figure 1 shows bar graph that represents the amount of disasters per state. All 50 states are represented. The X axis shows tick for each state and the Y axis shows the count for the disasters. Bar graph color is standard.

Key Findings:

- The higher the bar for the state the more disasters occurred within that state over the course of 70 years.
- Large states like Texas and California experience more disasters while smaller states experience less disasters. This could be due to having a larger land size, degree of population or specific climate of that state.

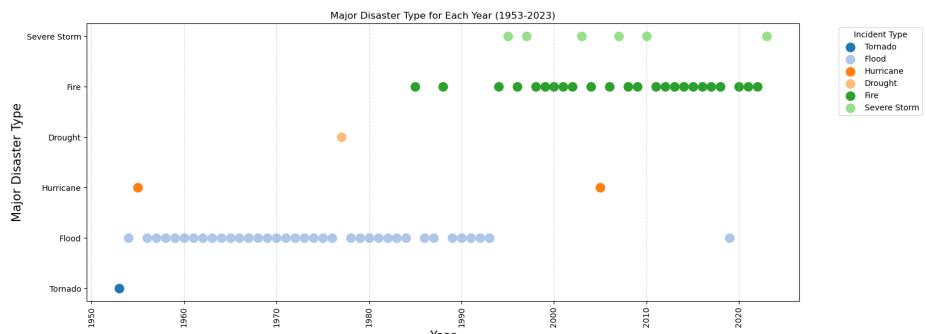


Legend: Figure 2 shows a scatter plot depicting the amount of disasters per year. Where bubble size correlates with amount of disasters. X axis shows the year by decade. Y axis shows the number of disasters. Color bar shows that the range is from small volume of disasters “blue” to high volume of disasters “yellow”. A bar graph with the X axis as year and Y axis as number of disasters is included to visualize of the exact year.



Key Findings:

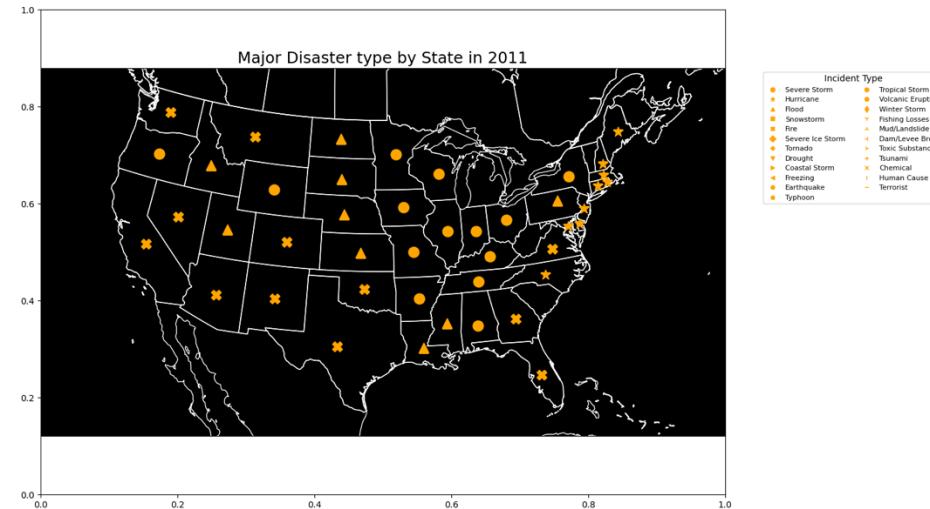
- The higher the bar for the state the more disasters occurred within that state over the course of 70 years.
- As time more forward, we are experiencing more disasters. This may be to numerous factors such as increase in pollution, terrain evolution and the gain/loss of entire ecosystems.



Key Findings:

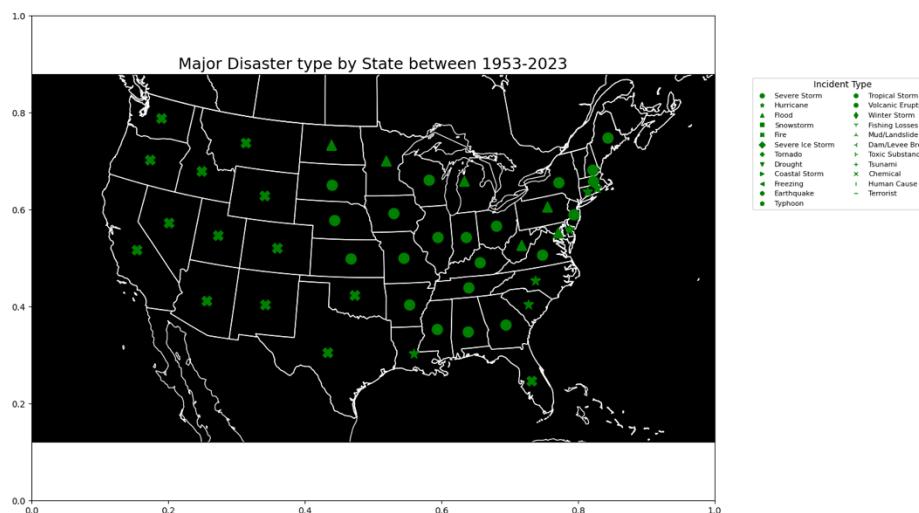
- Over the course of 70 years, there are different disasters that occur more frequently, likely due to changes in economy, population and climate change.
- As the world moves forward, we are experiencing a different type of disaster.

Legend: Figure 4 represents a map plot depicting the major disasters for each state in 2011. The legend at the side depicts a shape for each type of disaster. Each shape is depicted in orange and borders/coastlines are white to contrast against the black background.



Key Findings:

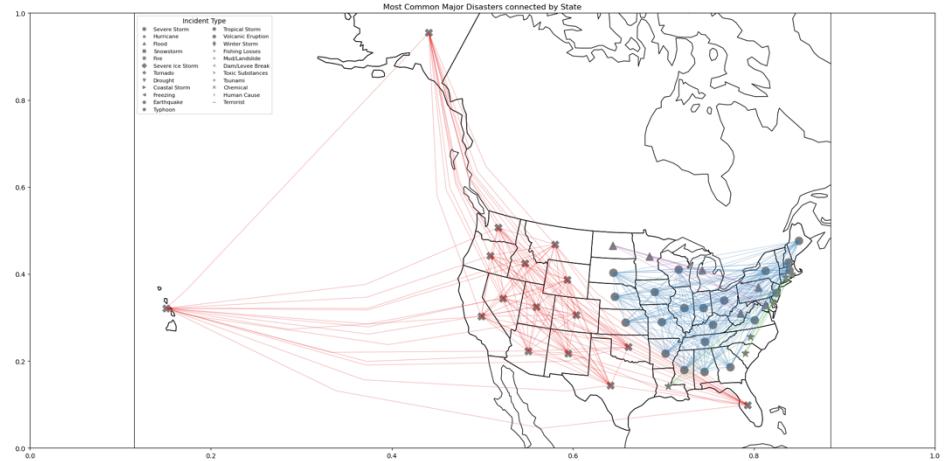
- There are common disasters in states with close proximity to each other indicating that similar climates between states results in similar disasters.
- Some disasters are not correlated with proximity and occurs across the entire landscape of the US.
- So, while there are regional patterns, some areas in the US vary in disasters regardless of location or climate similarity .



Legend: Figure 5 represents a map plot depicting the major disasters for each state in between 1953 and 2023. The legend at the side depicts a shape for each type of disaster. Each shape is depicted in green and borders/coastlines are white to contrast against the black background.

Key Findings:

- There is a change in major disasters for some states even from between 1953-2023. So even though some states may experience a disaster more frequently in the 2000s vs the 1900s does not mean that that particular disaster occurred the most.
- This indicated that some states go through changes as the years go on and multiple contingencies need to be put in place to be prepared for future disasters.



Legend: Figure 6 represents a map plot depicting the major disasters for each state in between 1953 and 2023 along with edges connections for states with similar major disaster types. The legend at the side depicts a shape for each type of disaster. Each shape is depicted in grey and boarders/coastlines are black to contrast against the white background.

Key Findings:

- There is a distinct difference in disasters between East coast and West coast.
- The connecting edges give a visual as to which states have similar disasters.
- Based on the location of the state there is also connections in the North and South regions.

Data Analysis: Data was cleaned in Microsoft Excel and Jupyter via Python. Multiple columns were removed for clarity and conciseness. Duplicated rows were deleted to obtain accurate data points. Data aggregated and state level frequency was obtained. Color maps were used to color markers on the map. PlateCarree edges were used to draw connections between states. Multiple Python libraries and dataframes were used to analyze data (numpy, pandas, cartopy, seaborn matplotlib).

Significant Statement: While this dataset reveals importance for traveling and safety regulations for an entire country, a deeper dive into the data can reveal more key insights as to what is actual causing the occurrence of these disasters. When we observe the spatial and temporal patterns of the disasters, we can prepare policy plans and risk management. Seeing how disasters change across region and time and comparing them to other datasets such as climate change, fatalities, population migration and industry hubs can highlight vulnerabilities in our country's infrastructure.

Project Links:

Kaggle Dataset: <https://www.kaggle.com/datasets/headsoretails/us-natural-disaster-declarations>

Github Repository: <https://github.com/EzeKingston/Data-Analysis-of-US-Disaster-Declarations-1953-2023/blob/main/Data%20Analysis%20of%20US%20Disaster%20Declarations%20between%201953-2023>