Project 2: Interactive Data

Dayin Chen (dc652), Katherine Tang (kat86), Sebastian Roubert (sr949)

A. **A description of the work done by each team member.**

Dayin: Formatted, cleaned, filtered data files in excel by year. Implemented date selection. Wrote description for project. Assisted in style.

Katherine: Stylize the entire page with CSS. Created the map, the details section categorizing each weather-type and the total cost of damage and fatalities, and the interaction functionalities connecting the two. Implemented the fast forward functionality. Retrieved and edited weather icons and created the weather icon legend for the map.

Sebastian: Binded data with elements and implemented mapping of weather icons to map for a single date. Parsed data.

B. **A description of the data.**

The main weather data comes from the data collection arm of the National Oceanic and Atmospheric Administration (NOAA): National Centers for Environmental Information (NCEI). The agency has been collecting data since 1950, but has only been recording all severe weather events since 1996. https://www.ncdc.noaa.gov/stormevents/ftp.jsp. We focused on data from 2015.

Important variables:

EPISODE_ID	Unique numeric identifier for episode. Example of episode: Hail on 1/8/2016 in Texas.
EVENT_ID	Unique numeric identifier for event. Example of event: Hail on 1/8/2016 in Phelps county in Texas.
EVENT_TYPE	Ex: Hail, Thunderstorm Wind, Snow, Ice
BEGIN_DATE_TIME	Time the event begins. Ex: 4/1/2012 20:48
END_DATE_TIME	Time the event ends. Ex: 4/1/2012 20:48
DAMAGE_PROPERTY	Monetary losses estimated for property damage. Ex: 10.00M
DAMAGE_CROPS	Monetary losses estimated for crop damage. Ex: 10.00K
SOURCE	Who reported the weather event. Ex: Trained Spotter
STATE	State the event began in. Ex: ALABAMA
STATE_FIPS	State FIPS corresponding to the event. Ex: 1

There were separate data files for each year, which were further separated into “details”, “locations”, “fatalities”. I.e. For each year there are three data files. For each details file, we had to alter the two

columns associated with property and crops damages, to convert them from 1.00K and 1.00M to 1000 and 1000000 respectively. We also filtered through the original data files so that the “details” files to not include any weather events that had a cost of 0; as a result none of these weather events are included or shown on the map. We merged the three files together to show fatalities for each event in each location.

In addition to the above datasets, we used the “us.json” file for the shapes of states to create the U.S. map.

C. **A description of the mapping from data to visual elements.** Describe the scales you used, such as position, color, or shape. Mention any transformations you performed, such as log scales.

For the map, we positioned it side-by-side next to an additional details section so that users would be able to easily interact and see more specific weather-related data for each state without having to scroll up and down the page. The map was also has an onclick, mouseover, and mouseout functionalities for each of the states on the map which allows the details box to display the information of each individual state when clicked on the map and make the interaction more user-friendly and easier to grasp..

The bar graph in the state details section uses a linear scale for the y-axis to display the numerical value of a specific type of weather occurrence and a band scale for the x-axis for all of the possible occurring weather types.

D. **The story**

For those of us who have never experienced extremely inclement weather, it may surprise us that so many severe weather events happen across the USA and the billions of dollars in damages they incur each year. Weather is extremely sporadic and unpredictable. Texas sustained the largest number of severe weather events and had the greatest number of fatalities last year. There was over 10 billion dollars in losses due to Hurricane Matthew from Florida to North Carolina. There was significant flooding in southern Louisiana in August, which resulted also in more than 10 billion dollars in losses. The increase in severe weather events over the past decades is alarming, statistically significant, and deserves regulatory attention with special focus on prevention with consideration of climate change.