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DS4200 Final Project - Spring 2024

Visualization Write-Up
Patterns and Trends in U.S. Wildfires over 24 Years

Website Link:
https://priyankadhikari.github.io/ds4200_project.github.io/

Wildfire Data (CSV) Link:
https://drive.google.com/file/d/1xvn08XvkuRIC3rOQ6f9QrQT7GWVO9yKn/view?usp=sharing

Static Visualizations

Map of Wildfire Sizes Across the U.S.

We made a map of wildfire sizes across the U.S., specifically representing fire sizes by acres within the final perimeter of the fire. Since the data set is focused on the U.S. and holds lots of geographic specific information, we figured a map would be a fitting visualization. A red color map is used to easily signify smaller fires (lighter red) to larger fires (darker red). While the dots are crowded since it's a large data set, the coloring is there so we can still clearly identify where the smaller, medium, and larger fires generally lie.

Line Chart of Wildfire Occurrences over the Years

A line chart would allow us to easily examine wildfire occurrences over the years (from 1992 to 2015). We placed the date (year) on the x-axis and wildfire (count) on the y-axis. Since we are utilizing Altair, it's important to note the restriction of having chosen a random 5000 data points as opposed to the whole data set. We chose to do a random approach instead of honing in on a particular state so that the data is more holistic. Running the randomization a couple of times we noticed that the general trend of peaks and lows stayed relatively the same so it didn't pose to be an issue. The red line helps make the line clearer and easily correspond with the color of fire.

Bar Chart of Wildfire Occurrences per State

We also wanted to visualize some of the data state by state. Therefore, we chose a bar chart to examine the number of fires by state, specifically utilizing D3. The way the chart is set up is with wildfire count on the x-axis and the states listed on the y-axis. It goes from the states with the most amount of fires on the top to the least amount of fires on the bottom clearly visualizing the wildfire amounts relative to other states. The color orange once again corresponds nicely with the topic of the data set (fires) and allows for the bars to clearly stand out.

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Interactive Visualizations

Bar Chart of Fire Causes Count for Selected State

In this interactive bar chart, we dissect the diverse causes of wildfires in a given state, showcased through Alabama as our example. This visualization is important for understanding localized fire causes and adapting prevention strategies accordingly. In the first part, the tooltip functionality highlights the tooltip feature of hovering over the 'equipment use' bar which reveals it as the cause of 3,144 wildfires. This instant insight allows for a quick and clear understanding of major wildfire drivers in the state. The interactive selection allows for a detailed analysis; the second part introduces an interactive selection tool that allows a deeper exploration into less frequent causes. Users can select and focus on specific segments of the data, such as 'powerline' and 'fireworks', as shown in the third part where these causes are zoomed in for detailed comparison. This functionality is particularly valuable for identifying and addressing less obvious but potentially critical fire causes.

State Selection Drop-Down

The state selection drop-down feature exemplifies the dynamic capabilities of our visualizations, enabling users to switch effortlessly between states to compare wildfire causes. The dropdown menu facilitates comparative analysis by being visible in the action with Massachusetts selected, allowing for an efficient comparison across states. While 'equipment use' and 'campfire' are predominant in Alabama, 'railroad' emerges as a significant cause in Massachusetts. This functionality underscores the geographic variability in wildfire causes and stresses the need for region-specific strategies.