Wildfire Occurrence Report - CSC 583

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# Team Project Proposal

Introduction and Background

Wildfires are estimated to cause an economic burden between $394 billion $893 billion in the United States.1 The geospatial and temporal analysis of wildfire occurrence data can provide important insights into the possible patterns and factors that influence these disasters. Data obtained through the U.S. Department of Agriculture (USDA)2 containing wildfire occurrence data reported in the United States from 1992 to 2020 will be analyzed in the hopes of gaining such insights. This Archive was compiled to support the National Fire Program Analysis (FPA) system, and includes essential elements for data visualization, such as discovery date, final fire size, and precise location.

Objective

Our objective is to conduct a geospatial and temporal analysis of wildfire occurrences to identify patterns, trends, and potential factors influencing wildlife occurrences in the United States. We will be analyzing the spatial distribution of wildfires over the 29-year period and identifying trends in wildfire occurrences over time utilizing various visualization techniques such as heatmaps, mosaics, and bar/line charts. In doing this, we aim to further investigate possible environmental factors and influences related to geographical locations, and ultimately hope to provide meaningful insights which can be utilized in prevention and containment strategies.

Project Activities

Through our analysis, we intend to gain valuable insights into the patterns, trends, and potential factors influencing wildfire occurrences across the United States. We will attempt to identify hotspots or regions with a higher concentration of wildfire events, which could help prioritize areas for preventative measures and resource allocation. This can be visualized with geospatial heat maps and density maps to highlight the regions of interest. Additionally, we may explore the spatial correlation between wildfire occurrences and factors such as topography, slope, aspect, or proximity to roads or water bodies.

We also plan to examine the temporal patterns of wildfire occurrences, such as seasonal, monthly, and annual trends, to better understand how wildfire distributions change over time. This will give valuable insights regarding seasonality and can better inform hiring practices for emergency personnel and state employees who manage parks and forests. This may be visualized with time series plots or line graphs illustrating fires over a given time-period and can potentially be layered on a histogram showing the distribution of fire occurrences.

Findings

By establishing an informed understanding of this data, we aim to reveal major geographic and temporal factors that could influence wildfire risks. In determining whether there are significant changes over time we may better inform preventative measures and resource allocation.

References

1 Joint Economic Committee Democrats. (2023, October). Climate-Exacerbated Wildfires Cost

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2 U.S. Department of Agriculture, Forest Service. (2013). Forest Inventory and Analysis National

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