

7PAM2000-0105-2022 – APPLIED DATA SCIENCE 1

ASSIGNMENT 2: STATISTICS AND TRENDS

RURAL AND URBAN LAND ELEVATION ANALYSIS

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GITHUB Repository: https://github.com/Hrushikesh-7/AppliedDataScience_Assignment2.git

ABSTRACT:

The objective of this analysis is to comprehend how elevation impacts infrastructure development, agricultural productivity, and disaster risk in both rural and urban areas. By examining these factors, organizations can provide recommendations and solutions to help communities adapt to and mitigate the effects of land elevation. Land elevation is an important factor that can significantly impact rural and urban communities. The analysis of land elevation data can provide valuable insights into the risks and vulnerabilities associated with different types of land use. However, one of the challenges in analysing land elevation data is the scarcity of comprehensive and diverse data sets. Efforts should be made to collect more data and improve the accuracy of land elevation measurements to enable more informed decision-making and policy development. Additionally, land preservation and reforestation efforts can help mitigate the negative impacts of decreasing land elevation, particularly in rural areas.

Dataset Links:

<https://data.worldbank.org/indicator/AG.LND.EL5M.UR.ZS>

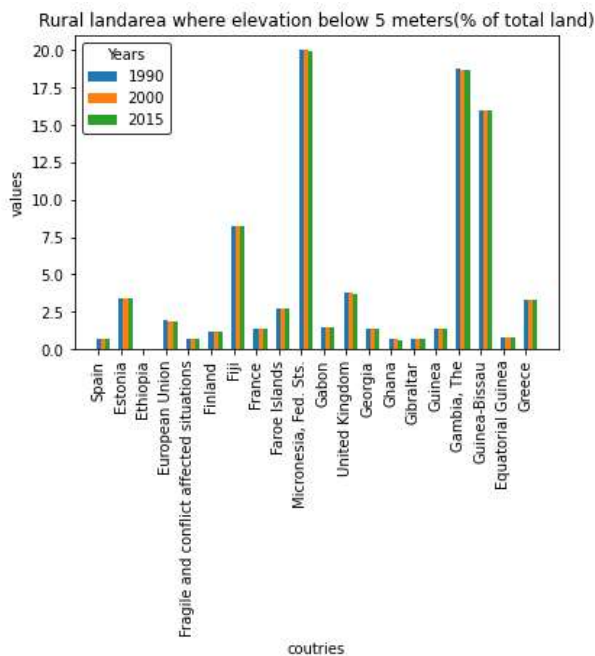
<https://data.worldbank.org/indicator/AG.LND.EL5M.RU.K2>

<https://data.worldbank.org/indicator/AG.LND.EL5M.RU.ZS>

Introduction

This analysis examines the global variability of land elevation and its potential sensitivity to sea level rise. Using a comprehensive dataset, the study analyzes the distribution of elevation across different regions. The differences in land elevation across countries can have significant implications for land management and development policies, highlighting the necessity for further research to gain better insights of the underlying factors that contribute to these differences. The analysis of land elevation and its effects on rural and urban populations is an important topic that is studied by various organizations. This analysis typically involves collecting data on the percentage of land area in sq. kilometers that are situated above or below a certain elevation, such as 5 meters.

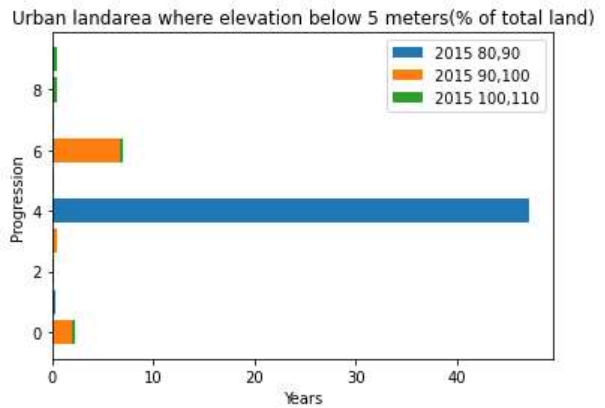
A combined plot of Rural land area where elevation is below 5 meters (% of total land area) in 1990 2000 2015.



The reduction of rural land elevation below 5 meters can be attributed to various factors such as deforestation, development, and town settlements. These activities can result in changes to the landscape, including the removal of trees and vegetation, and the flattening of hills and mountains to make way for buildings and infrastructure. As a result, the land can decrease, which can have significant impacts on the environment and the people who live in these areas. To combat the negative impacts of decreasing rural land preservation and reforestation efforts should be pursued. These measures can help restore vegetation and reduce the loss of soil, which can improve the

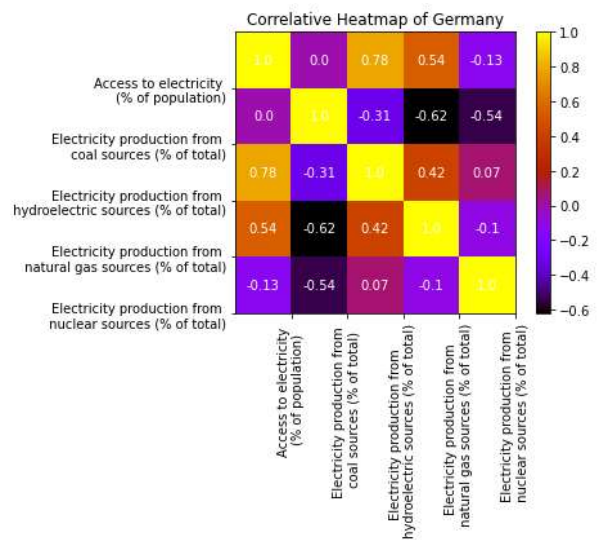
land's ability to absorb carbon and combat the effects of climate change.

A horizontal stacked bar graph of urban area where elevation is below 5 meters (% of total land area) in 2015.



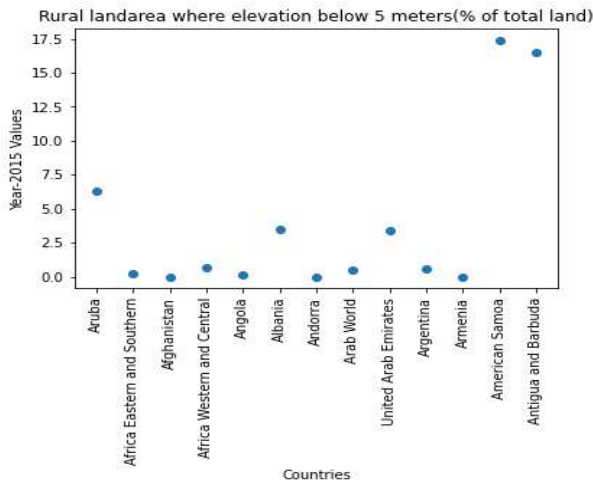
The horizontal stack chart displays the distribution of rural land in different sets of countries for the same year. However, the chart reveals significant unevenness in the distribution of rural land among these countries. Some countries have much larger areas of rural land compared to others, which may have implications for agricultural productivity, land management, and rural development policies.

A Correlative heatmap of Germany



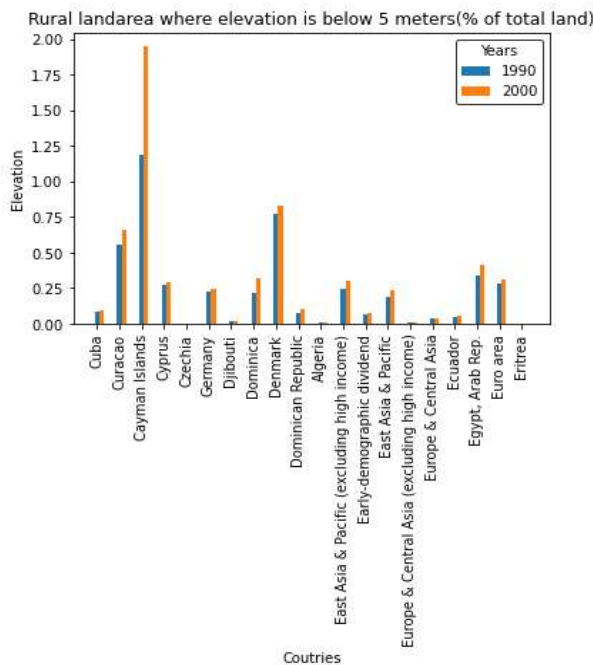
The heatmap shows that electricity production from nuclear sources has a moderate positive correlation with electricity production from natural gas sources, indicating that these two energy sources may complement each other in Germany's electricity production mix. Additionally, electricity production from nuclear sources has a moderately positive correlation with electricity production from hydroelectric sources.

A scattered graph showing rural land area where elevation is below 5m as a percentage of land area in 2015.



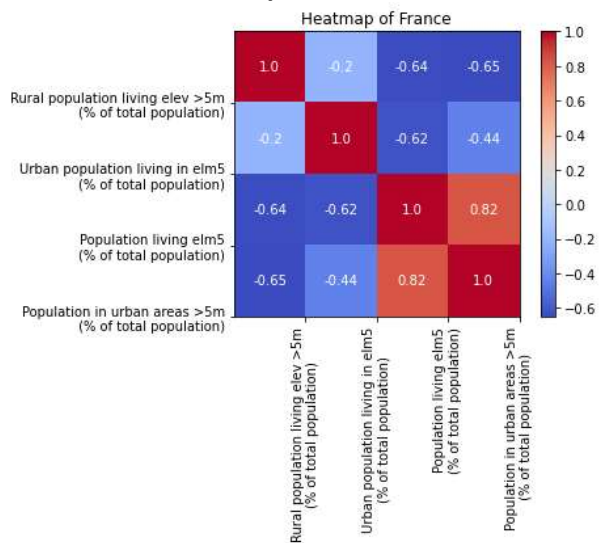
The scatter plot indicates that most of the countries with small or developing economies and total area have a relatively small area of rural land where the elevation is below 5 meters (% of total land area). This suggests that these countries may be more vulnerable to the impacts of land elevation, such as flooding and other natural disasters. Additionally, these countries may have limited resources to invest in infrastructure development or land management strategies that can help mitigate the effects of land elevation.

A combined bar graph comparing rural land area where elevation is below 5m as a percentage of land area between 1990 and 2015 for each country.



The interpreted combined bar graph above suggests that there are relatively few countries with significant urban land areas situated above 5 meters in elevation. This is likely because low-lying coastal areas are often more desirable for urban development because they are closer to ports, transportation routes, and other economic centers. Additionally, urban areas located at higher elevations may be more susceptible to environmental hazards such as landslides, earthquakes, or severe weather events. The plot's emphasis on urban land areas situated below 5 meters in elevation may also reflect a global trend towards urbanization, with more and more people moving to cities in search of employment, education, and better living standards. As a result, coastal urban areas with low elevations may be experiencing significant growth and development, while higher elevation areas may be less attractive for urbanization.

A correlation heatmap of France



A correlation heatmap was created for France based on the attributes 'Rural population living elev >5m (% of total population)', 'Urban population residing in elm5 (% of total population)', 'Population living elm5 (% of total population)', and 'Population in urban areas >5m (% of total population)'. The heatmap showed a strong positive correlation between urban populations living at elevations above 5 meters and the total population living at elevations above 5 meters. There was also a moderate positive correlation between rural populations living at elevations above 5 meters and the total population living at elevations above 5 meters. In contrast, there was a weak negative correlation between urban populations living at elevations above 5 meters and rural populations living at elevations above 5 meters.