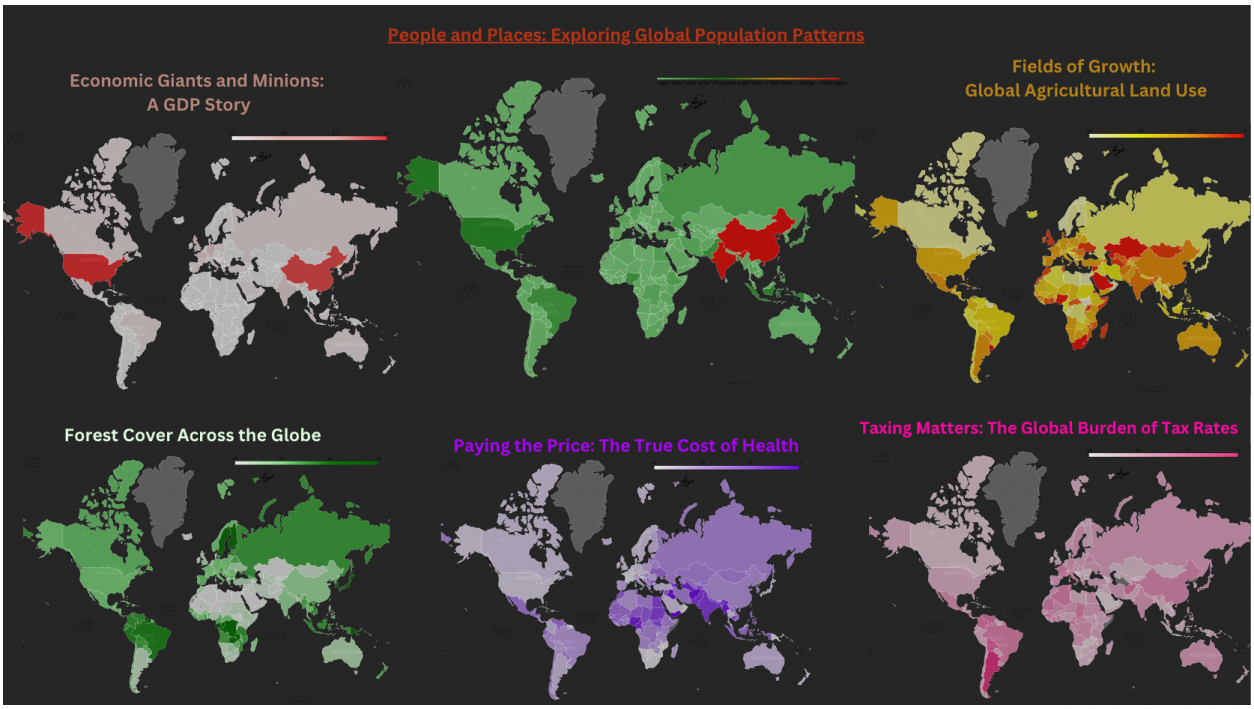
Information Visualization Project Report Analyzing Global Country Indicators

A Comprehensive Dataset Empowering Cross-Country Insights - Submitted

Visualizing Our World: Stories Told Through Data

This project explores diverse global patterns and trends using six key indicators, visualized through interactive world maps. Each map reveals compelling stories about human activity, environmental use, and economic policies worldwide.



Population: Total Population of the Country
The population map showcases the distribution of people across the globe. Heavily populated countries, such as China and India, are highlighted with vibrant colors, reflecting their status as global population hubs.
GDP: Economic Giants and Minions - The GDP map compares the total economic output of countries. Developed nations like the United States, China, and Germany dominate this visualization, while developing countries are shown with more subdued colors.
Agricultural Land (%): Fields of Growth - This map highlights the percentage of land dedicated to agriculture in each country. Regions like Sub-Saharan Africa and parts of Asia

show high agricultural land use, reflecting the dependence of their economies on agriculture.

Forested Area (%): Forest Cover Across the Globe

The forest cover map illustrates the proportion of a country's landmass covered by forests. Countries like Finland, Zambia, Brazil and the Democratic Republic of the Congo are highlighted for their vast rainforest regions, critical for biodiversity and climate regulation. On the other hand, arid or heavily urbanized regions show minimal forest cover.

Out-of-Pocket Health Expenditure (%): Paying the Price

This map depicts the burden of out-of-pocket health expenditures as a percentage of total health spending. Countries with high percentages, often in the developing world, signify limited access to universal healthcare systems, leading to significant financial strain on individuals. Wealthier nations typically show lower percentages, indicating comprehensive health coverage.

Total Tax Rate: Taxing Matters

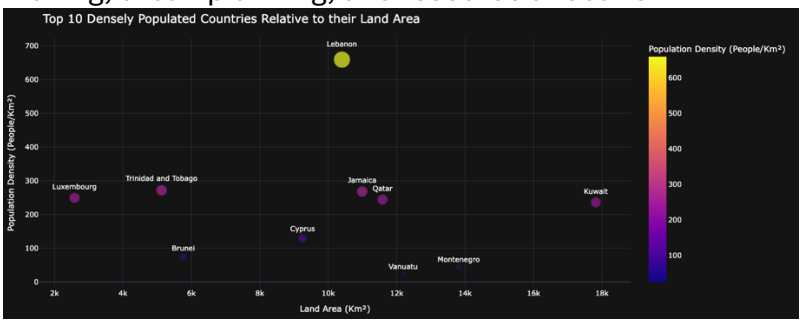
The tax rate map shows the total tax burden as a percentage of commercial profits. Nations with high tax rates are highlighted, illustrating the diverse fiscal policies employed across the globe. This map sparks insights into the trade-offs between government revenue generation and the ease of doing business.

Other Explorations with cross country data

Correlation Between Land Area and Population Density Across Countries

Objective:

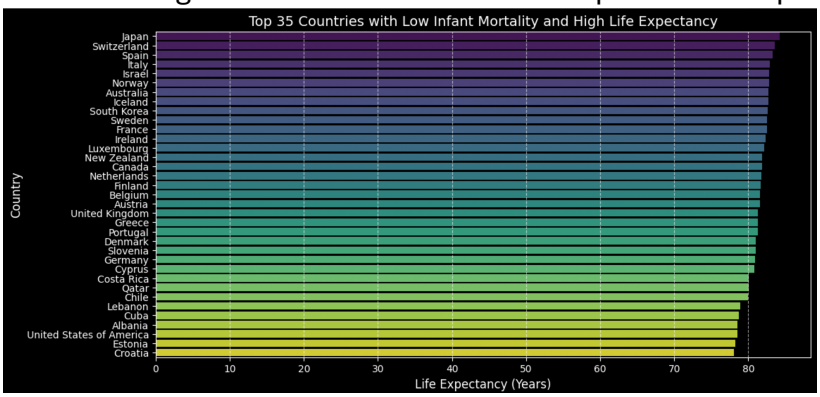
This graph examines the relationship between land area and population density for countries with relatively small land areas and high population densities. By analyzing the top 10 such countries, the report aims to provide insights into their spatial constraints and population distribution. Understanding these relationships can be crucial for policy-making, urban planning, and resource allocation.



Analysis of the Top 35 Countries with Low Infant Mortality and High Life Expectancy

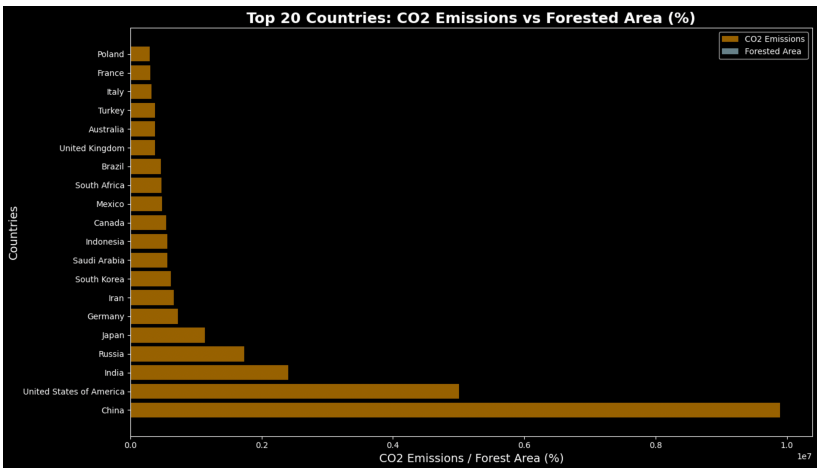
The **Top 35 Countries with Low Infant Mortality and High Life Expectancy** serve as models of success in healthcare and social policy. The combination of healthcare access, economic development, and social policies contributes to improved life expectancy and

lower infant mortality. Exploring the factors influencing this correlation can provide valuable insights into how countries can improve overall public health and well-being.



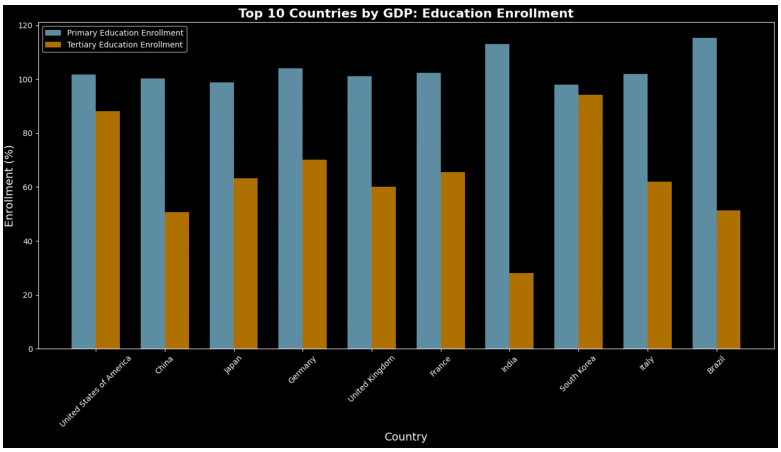
Comparing the environmental impact (CO2 emissions) and forest conservation efforts (Forested Area) among the leading nations.

Relationship: The relationship shows how CO2 emissions correlate with the percentage of forested area in the top 20 countries. It can help us understand if there's any direct or inverse relationship between emissions and forest cover.
The graph clearly shows that there's an intricate balance between a country's CO2 emissions and the amount of forested land it maintains.



Educational Enrollment and Human Capital Development

This dual visualization investigates the relationship between education and economic growth, using tertiary education enrollment rates, GDP, and life expectancy.
Bar Chart: A comparison of primary and tertiary enrollment rates among the top 10 GDP countries highlights disparities in educational priorities and development stages.
The bar chart contrasts primary and tertiary education rates, emphasizing the focus on advanced education in developed economies.



Data and Method: The analysis in this project utilized a diverse dataset comprising healthcare metrics, spatial distribution patterns, environmental indicators, and educational enrollment rates. Rigorous data cleaning steps, transformation steps, and visualization techniques were employed, and these are well-structured in my Python Notebook. To plot world maps, I used shapely, plotly, folium and geopandas. For other graphs to show correlations, I used seaborn and matplotlib.

Significance Statement: The presented figures address critical global challenges such as well-being, population dynamics, climate change, and education-driven economic growth. By shedding light on these interconnected themes, the analysis emphasizes the importance of data-driven approaches to guide policymaking, prioritize resource allocation, and foster sustainable development on a global scale.

GitHub link - https://github.com/shusritavenugopal/Global-Country-Information-Dataset-2023

Dataset from Kaggle - https://www.kaggle.com/datasets/nelgiriyewithana/countries-of-the-world-2023