



Visual Analytics Project



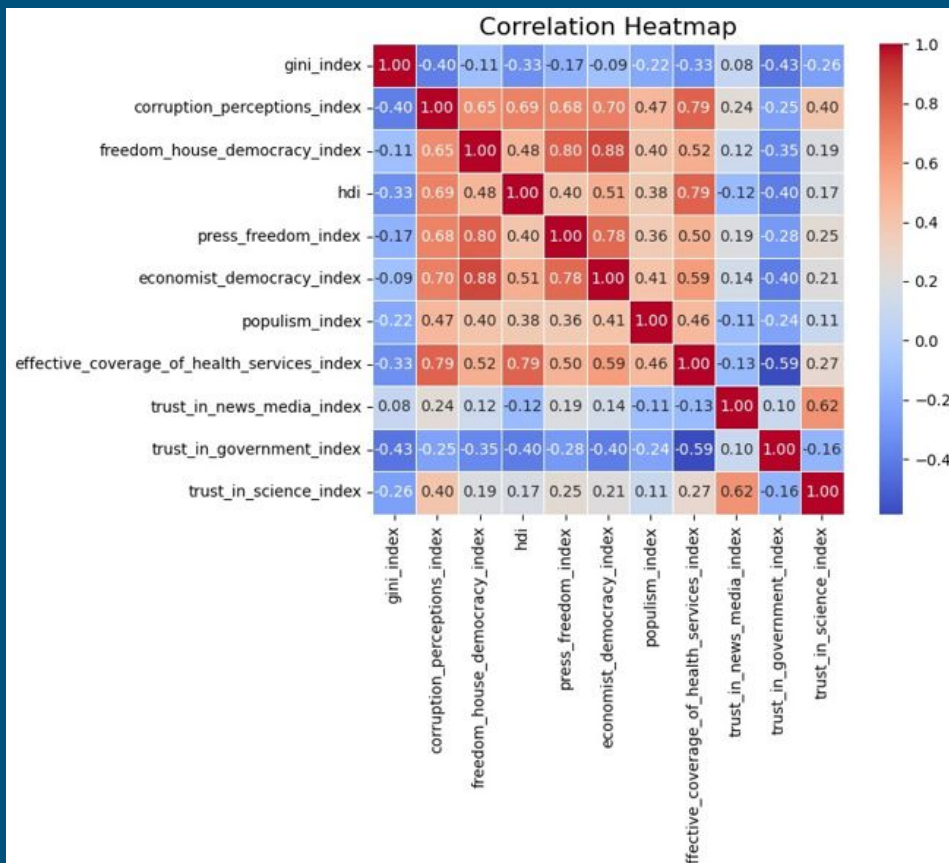
Introduction

- Members:
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- Objective:
 - Explore dataset to examine patterns and behavior in data
 - Create insightful visualizations to analyse dataset.

About Dataset

- 12 Columns (country, gini_index, corruption_perceptions_index, freedom_house_democracy_index, hdi, press_freedom_index, economist_democracy_index, populism_index, effective_coverage_of_health_services_index, trust_in_news_media_index, trust_in_government_index, trust_in_science_index)
- 128 countries

Correlation Heatmap

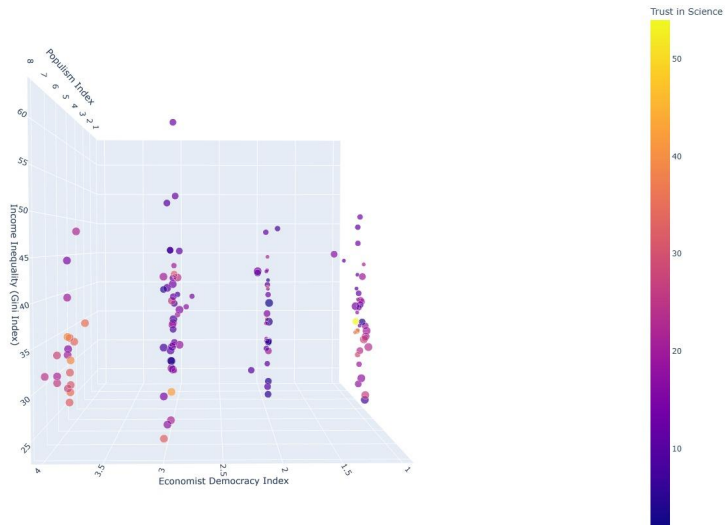


Observations

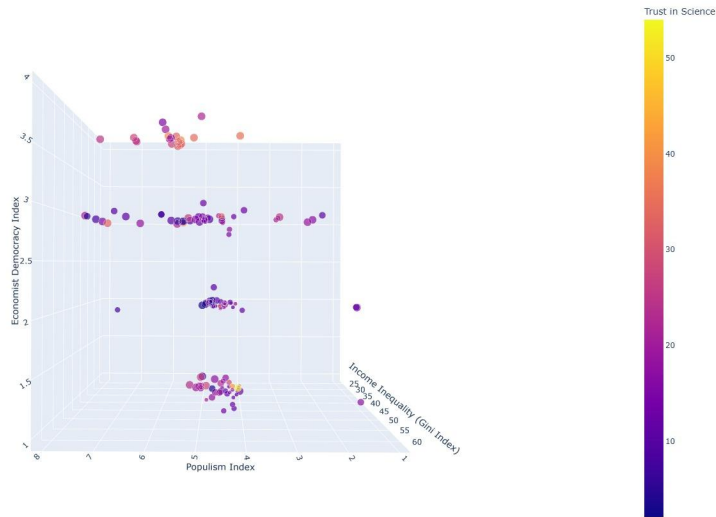
- Countries with higher inequality (Gini Index) have lower HDI (-0.33), higher corruption (-0.40), and lower trust in government (-0.43).
- Countries with lower corruption have more human development (0.69) and health coverage (0.79) and negatively lesser wealth inequality (-0.40).
- Countries with high human development (HDI) provide better health coverage (0.79), better democracy (0.48–0.88), and lower inequality.
- Trust in Government, News Media, and Science are deeply interconnected (0.59–0.62).
- Countries with populism are more likely to be corrupt (0.47) and are negatively with trust indices. Countries with higher inequality (Gini Index) have lower HDI (-0.33), higher corruption (-0.40), and lower trust in government (-0.43).

Economist democracy index vs populism index and Income Inequality.

3D Visualization of Democracy, Populism, and Inequality

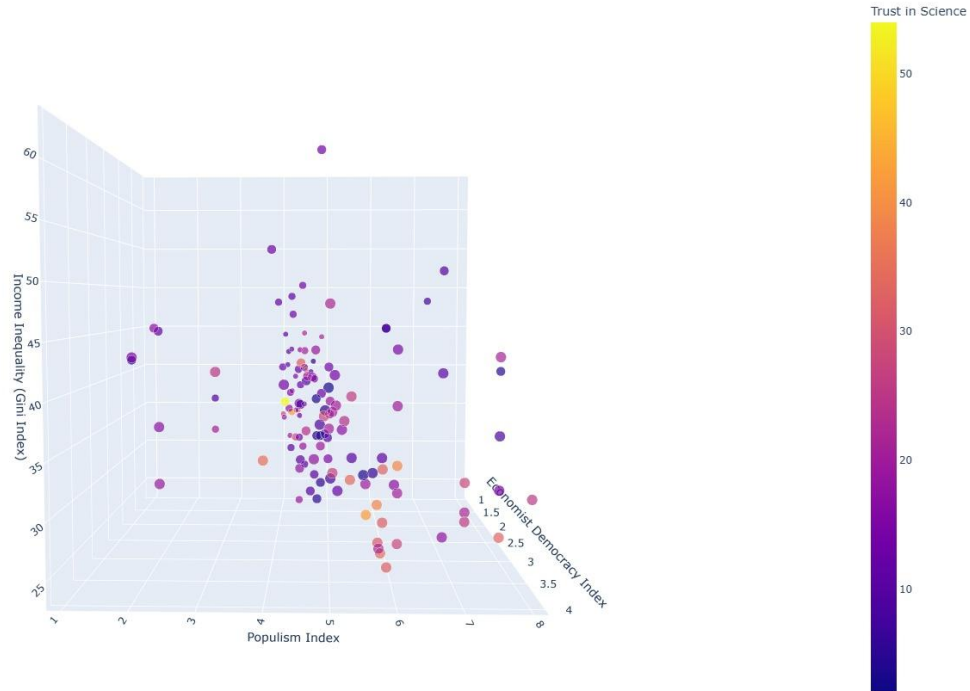


3D Visualization of Democracy, Populism, and Inequality



Income inequality(GINI) vs populism index

3D Visualization of Democracy, Populism, and Inequality

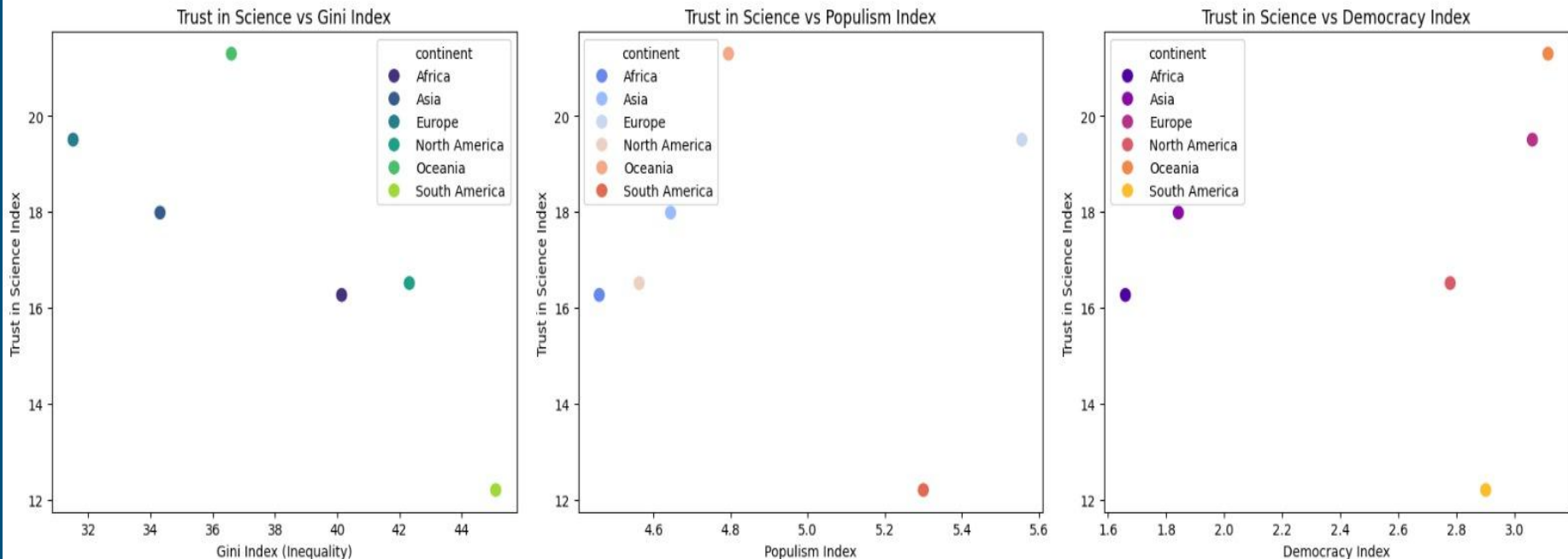


Observation

- From the first 2 images of the 3D scatter plot, there does not appear to be any immediate direct relationship between economic democracy index and populism index or inequality, prompting deeper narrative based exploration.
- From the third scatter plot, we can see that there is mild correlation between income inequality and populism index as most of the data clumps in the middle, but not enough to make safe predictions.

Science vs various factors.

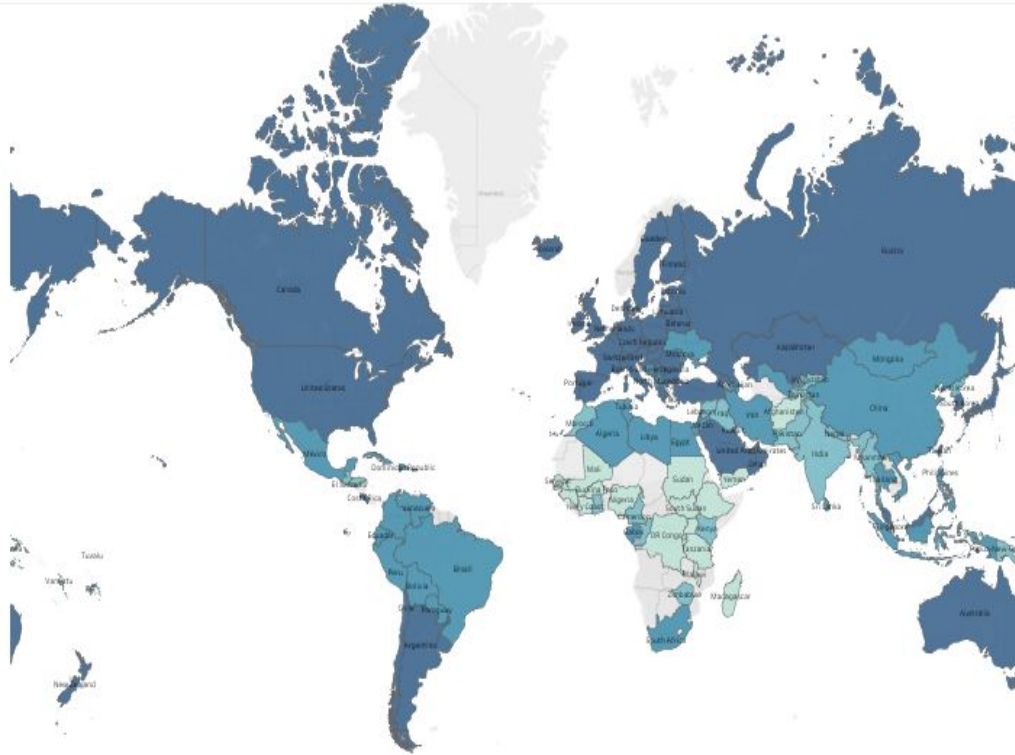
Trust in Science vs Various Factors



Observations

- Visualization made using Python
- Libraries used: seaborn, matplotlib, numpy and pandas libraries
- New subset was created to map the country with each continent belonged to.
- Trust in science index was compared with 3 indices and plotted using Matplotlib.
- On the continent scale however, these narratives and the relationships observed, however small, seem to have been obscured in the deep abstraction.
- Oceania has the highest trust in science index, while South America has the lowest.

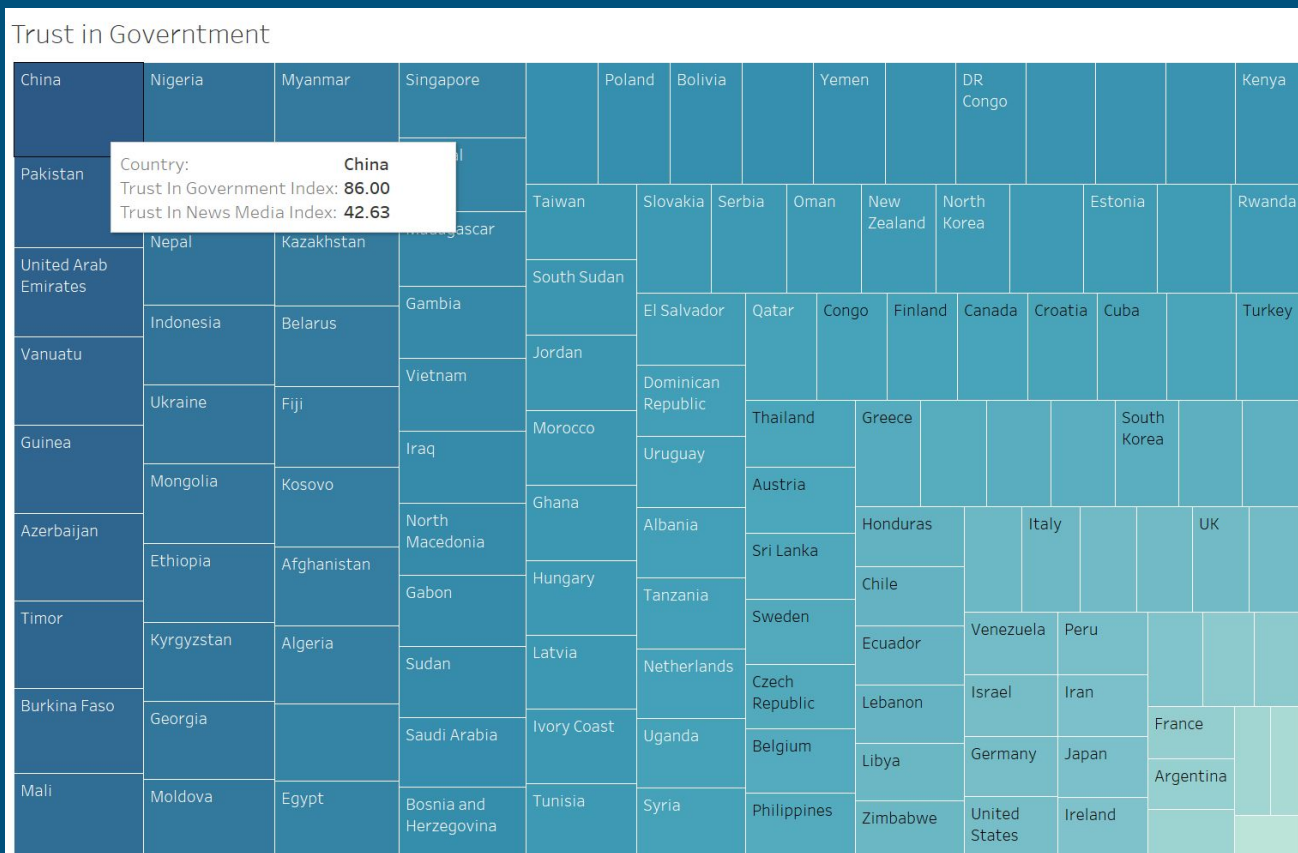
HDI by countries



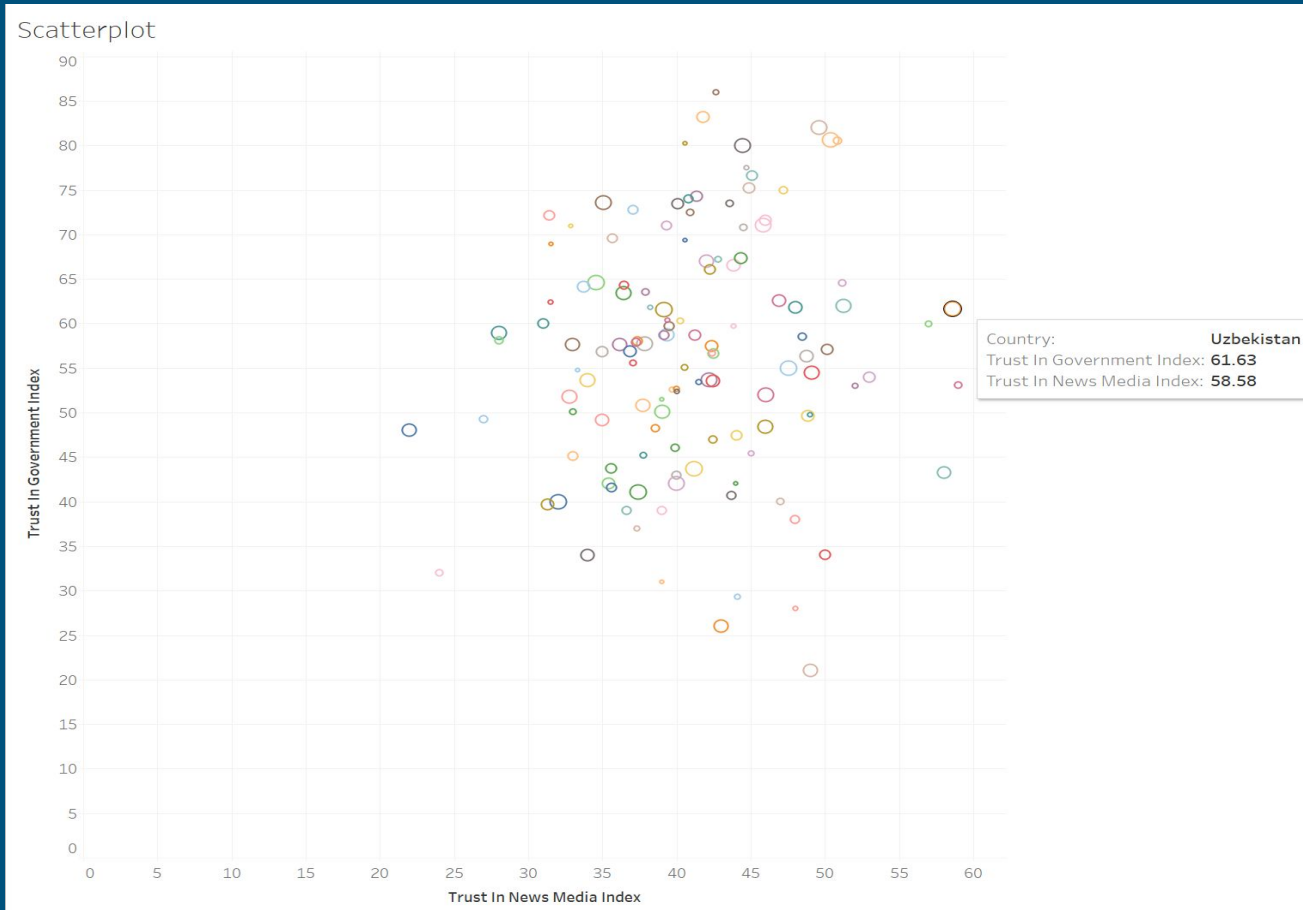
Observations

- European countries have the highest consistent HDI and gini index.
- African countries have lower HDI and gini index.

Heatmap (Trust in government and News media)



Scatterplot (Trust in government vs News media)

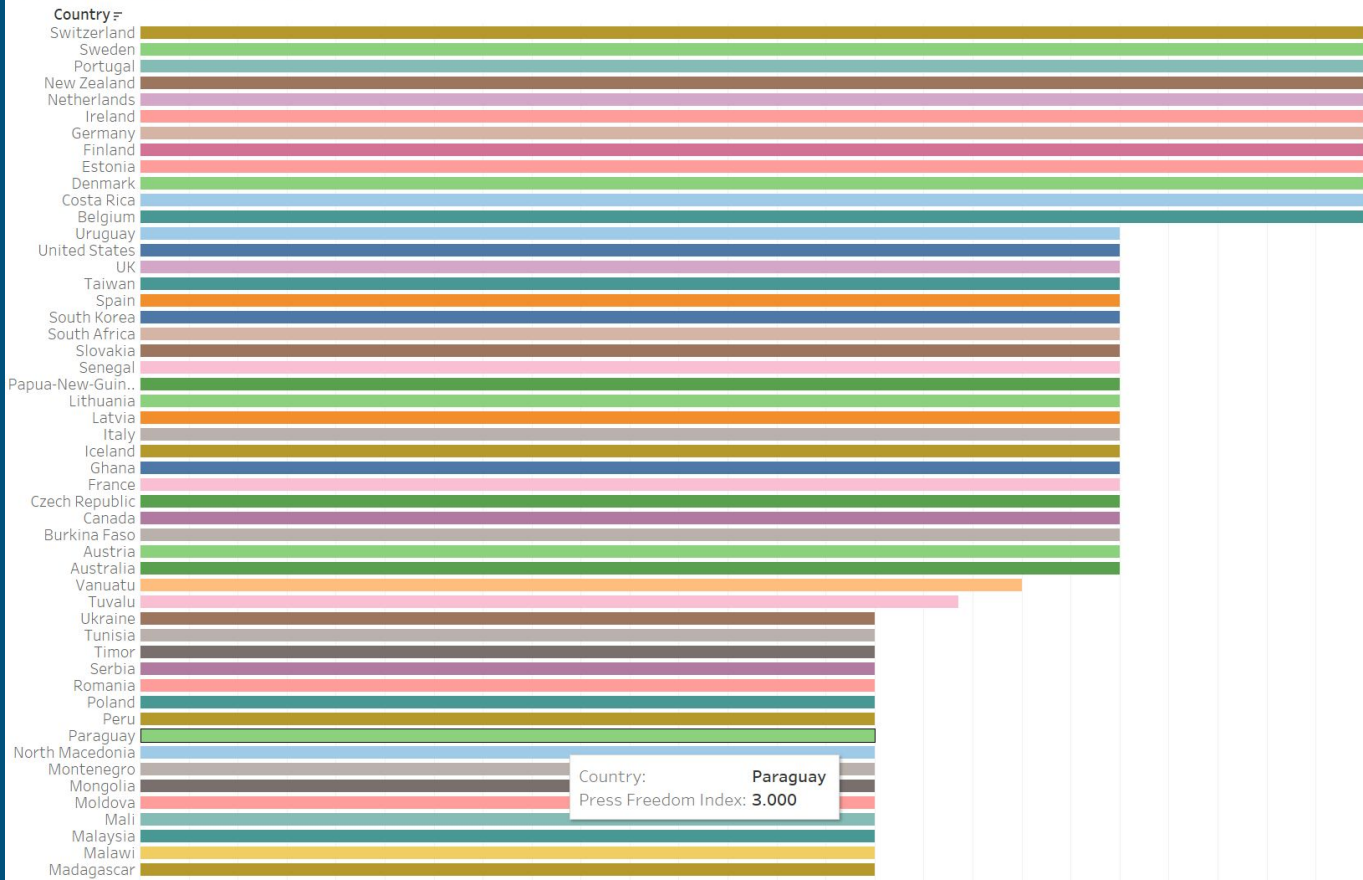


Observations

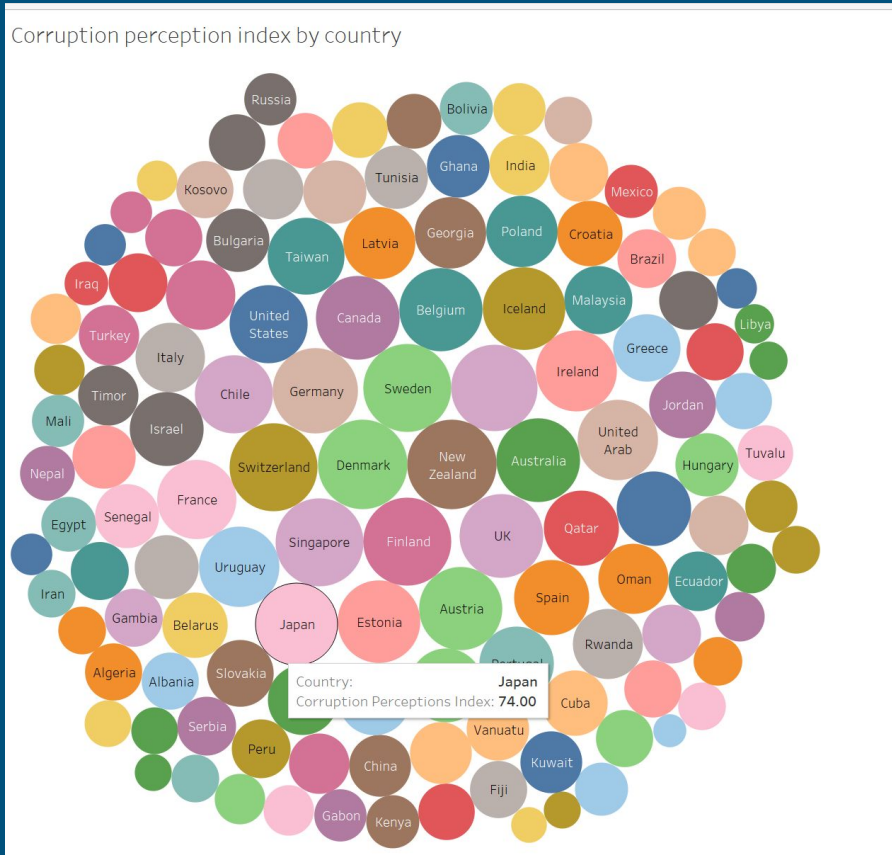
- China has the highest trust in their government.
- South Africa has the lowest trust in their government.
- Trends show that asian and african countries consistently have the highest trust in their government. China, Pakistan etc.
- More developed countries with better HDI and gini index have lower trusts in their government. Eg. USA, Germany etc.

Press freedom by country()

Press freedom by country



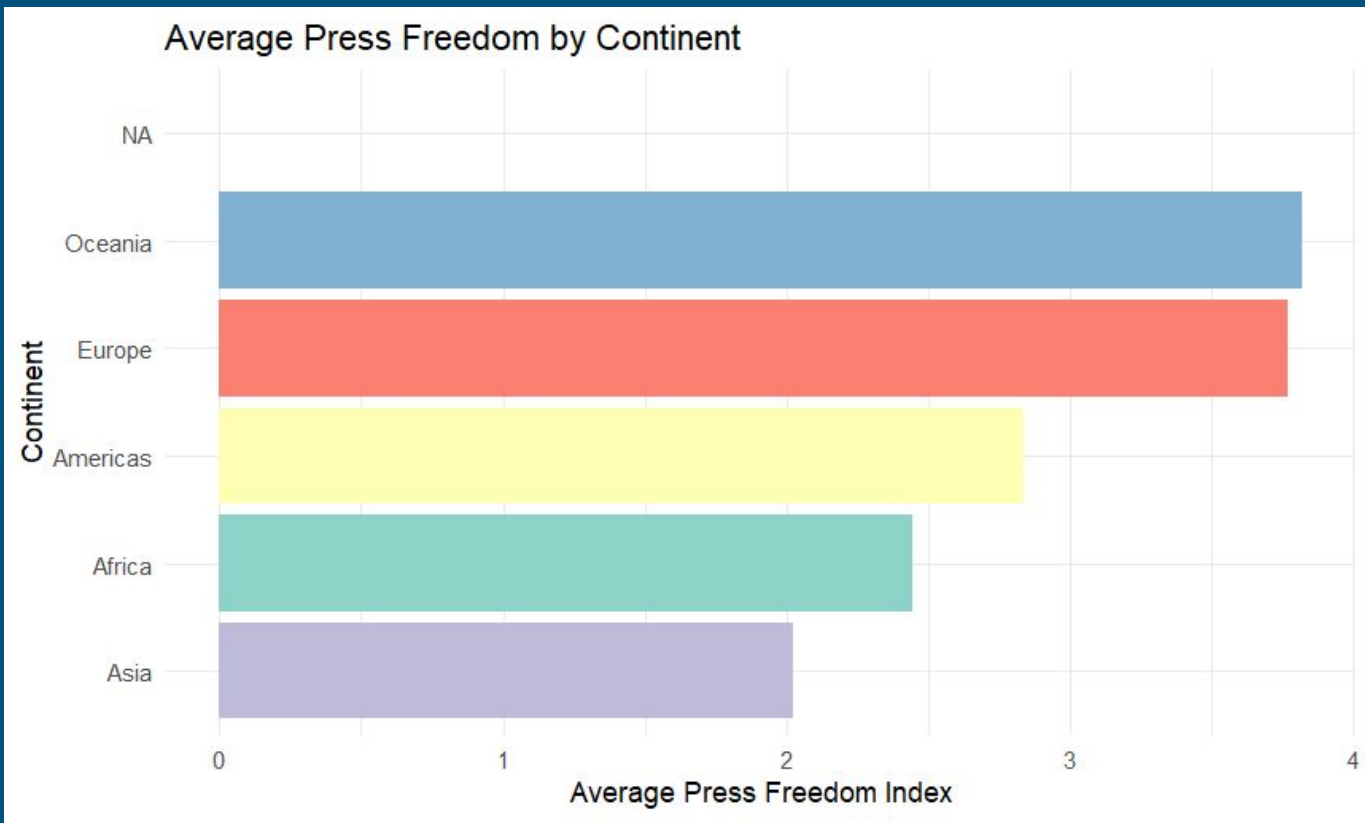
Bubble Plot(Corruption perception by country)



Observations

- New Zealand has one of the highest corruption perception index.(88)
- South Sudan had the lowest. (12)
- Countries with higher HDI's have higher corruption perception index.

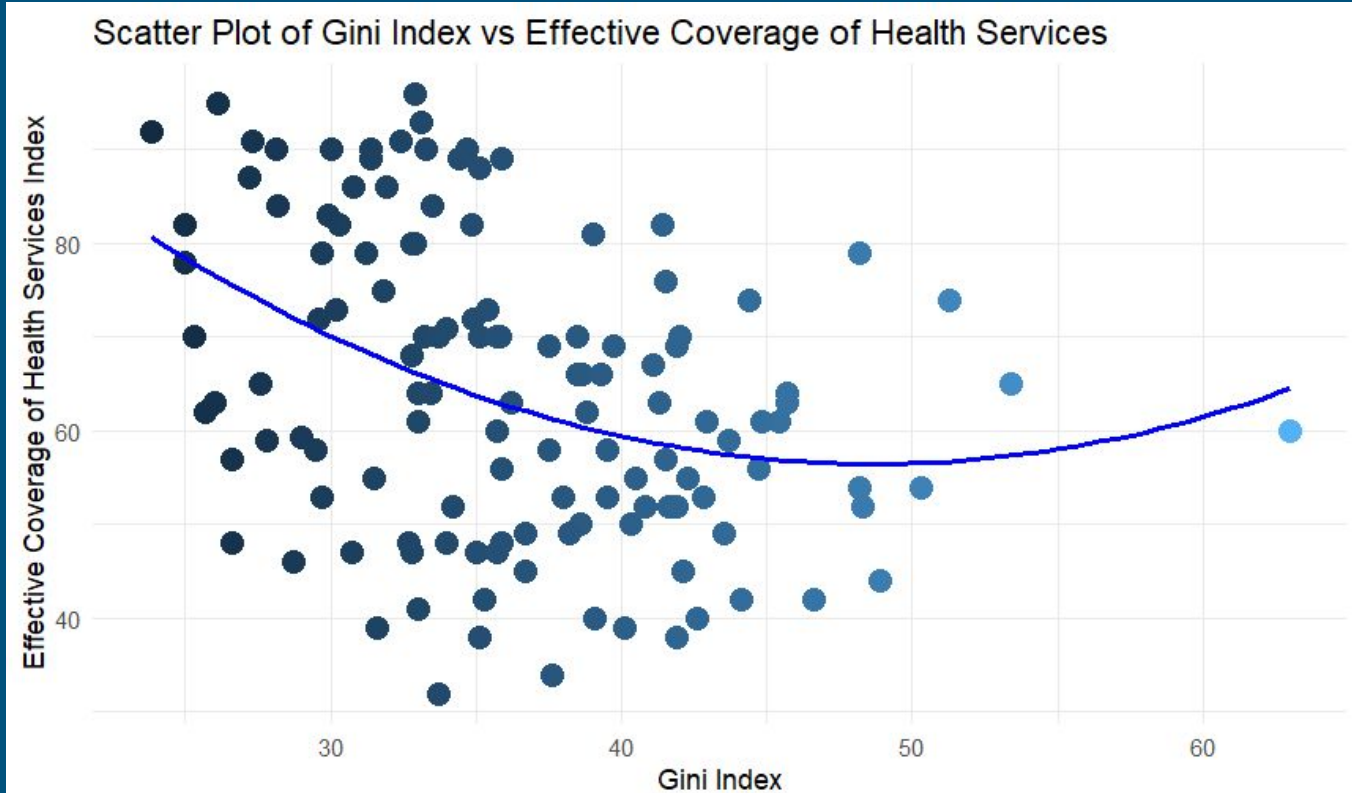
Press freedom by continent



Observations

- Visualization was made using R.
- Libraries used: Countrycode, ggplot2
- New column was created to show the continent each country belonged to.
Then found the average press freedom per continent.
- Oceania has the highest degree of freedom for the press.
- Asia has the most restricted press.

Gini vs Health Coverage



Observations

- For countries under a GINI index of 50, the effective health coverage reduces as wealth inequality decreases.
- On average, most countries have a GINI index in the range of 40 - 50.
- Most countries have an effective health coverage index of the range 50 - 80.

Tech stack



- Tableau
 - A very commonly used data visualization softwares in the world.
 - Easy drag and drop interface suitable for non coders.
 - Handles diverse data from multiple sources.
- Python
 - Versatile.
 - High integration.
 - Large support
 - High performance
- R
 - Simple
 - Good for statistical analysis and exploration
 - Good for advanced visualization



Tableau Visualizations

Type of Visualizations generated

- Map (HDI)
- Heatmap (Trust in Government)
- Scatterplot (Trust in News vs Trust in Government)
- Bubble Chart (Corruption perception index)
- Bar Chart (Press freedom by country)

R Visualizations

Type of Visualizations generated

- Bar chart
- Scatter plot with curve fitting

Python Visualizations

Type of Visualizations generated

- 3D scatter Plot
- 2D scatter plot
- Correlation Matrix



Thank you

