The Global State of Democracy
A visual and computational exploration of the Global State of Democracy Index

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Introduction

The *Global State of Democracy Index* dataset is compiled by the International Institute for Democracy and Electoral Assistance, measuring 29 aspects of democracy over 163 countries on a scale from 0-1. For this project, I used this dataset to explore some key features of democracy through machine learning and data visualization.

Interactive Access

Much of the work from this project was designed to be interactive. Use the QR code in Figure 1 to access further information about these visualizations and to have the chance to interact as desired.
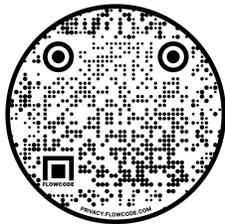
Figure 1: QR Code

Future Work

In the future, there is much more that could be investigated with this dataset. I would like to examine the positive impacts of participatory engagement or evaluate how much media integrity is related to other aspects of democracy. More rigorous work could be done around the effect of religious freedom on other fundamental rights. I would especially want to collaborate with a political scientist or expert in democracy on this work, especially to assess and improve the comparative measure of democracy.

Acknowledgements

Special thanks to Benjamin Roller for his insight and guidance throughout this project.

Key Results

Comparative Measure of Democracy

One primary outcome of this work was creating an overall measure of democracy based on the *Global State of Democracy* dataset. The dataset itself forms no single aggregate measure of democracy, but rather decides to focus on creating scores for 5 primary domains and multiple subdomains of democracy. I used k-means clustering to aggregate a single democracy score, based on the cluster outputs. This is the first democracy score to utilize machine learning and offers a unique perspective as it focuses on comparisons between countries rather than any human-defined standard.
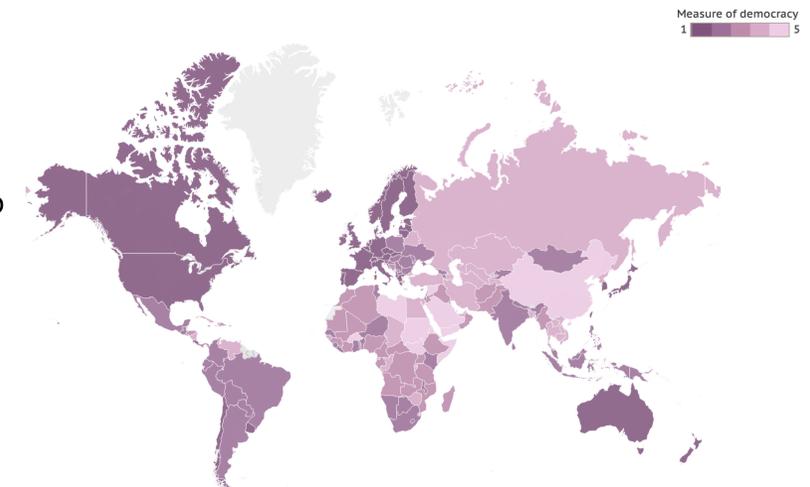
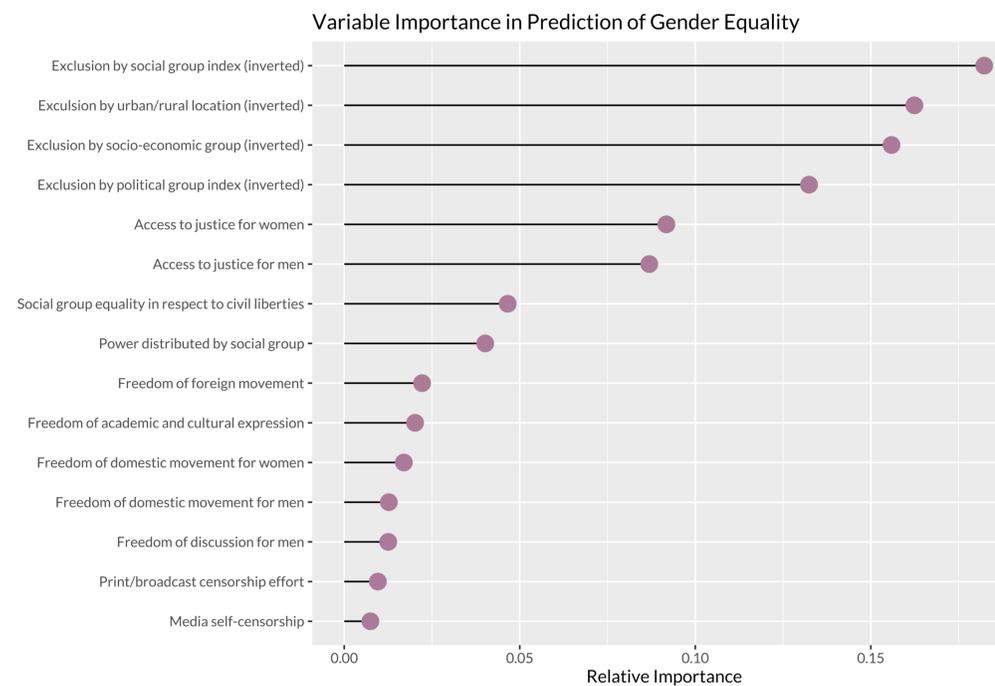Figure 2: Comparative measure of democracy

Variable Importance in Prediction of Gender Equality

Figure 3: Assorted aspects of democracy are predictive of gender equality

Predictors of Gender Equality

One feature in the *Global State of Democracy Index* measures the gender equality in countries on a continuous scale between 0 and 1. I used decision tree analysis to determine which indicators were the most predictive of gender equality. Given the indicators listed in Figure 3, a decision tree can predict with 76.7% accuracy which of the following bins the gender equality score will fall into: [0.0, 0.4], (0.4, 0.6], (0.6, 0.8], or (0.8, 1.0]. Figure 3 shows the relative importance of each indicator.

Religion & Other Fundamental Rights

I was curious to see how religious freedom related to other fundamental rights, so I created an interactive visualization with Tableau to encourage exploration of these relationships. The user can select which fundamental right to view on the y-axis and can hover over bubbles representing each country (sized based on country population and colored based on region), to see the details for that country. The visualization can also be animated to watch changes over time, or the user may select a year to investigate statically. Figure 4 shows an example of this visualization, configured to show Freedom of Association and Assembly versus Freedom of Religion in 2019. You can find this visualization online and interact with it by scanning the QR code in Figure 1.

Religion & Rights: Freedom of Association and Assembly
Freedom of religion is positively correlated with other fundamental rights
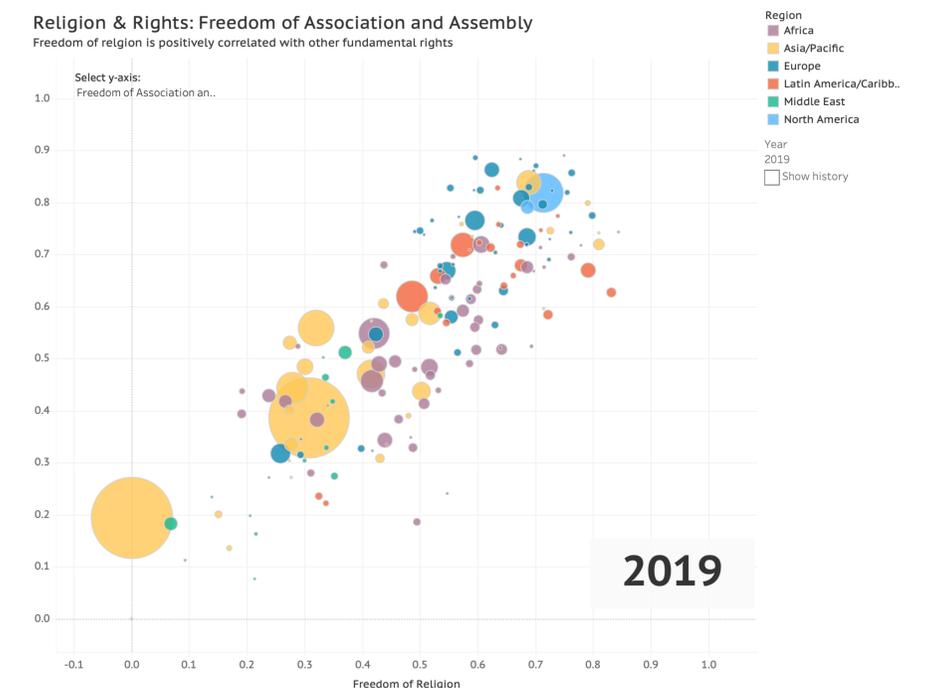
Figure 4: Freedom of Association and Assembly versus Freedom of Religion in 2019