

## Terms of Reference

### 1. Project Name

Exploratory and Regression Analysis of Worldwide Governance Indicators (WGI) and Human Development Index (HDI)

### 2. Overview

The sixteenth SDG (Sustainable Development Goal) aims at bringing peace, justice and strong institutions by “promoting peaceful and inclusive societies for sustainable development, providing access to justice for all and building effective, accountable and inclusive institutions at all levels.”<sup>1</sup> A key concept in the measurement of the level of development of institutions in a country is **governance**. It “consists of the traditions and institutions by which authority in a country is exercised. This includes the process by which governments are selected, monitored and replaced; the capacity of the government to effectively formulate and implement sound policies; and the respect of citizens and the state for the institutions that govern economic and social interactions among them.”<sup>2</sup>

In this project, my aim is to exploratorily analyze the governance indicators provided by World Bank via visualizations and compare these indicators with respect to the UNDP Human Development Index (HDI) with regression analysis.

### 3. Background

The **Worldwide Governance Indicators (WGI) project** reports aggregate and individual governance indicators for over 200 countries and territories over the period 1996–2021, for six dimensions of governance: (1) Voice and Accountability, (2) Regulatory Quality, (3) Political Stability and Absence of Violence/Terrorism, (4) Rule of Law, (5) Government Effectiveness, and (6) Control of Corruption.<sup>3</sup>

The **Human Development Index (HDI)**, on the other hand, is a summary measure of average achievement in key dimensions of human development: a long and healthy life, being knowledgeable and having a decent standard of living.<sup>4</sup>

### 4. Key Objectives & Research Questions

Objectives:

- Analyze the effect of Worldwide Governance Indicators on the Human Development Index (Main objective)
- Visually explore the relationship between each of the indicators over the years and by country

Research Questions:

- What are the key governance indicators for the level of human development? How and to what extent are they related?

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<sup>1</sup> <https://sdgs.un.org/goals/goal16>

<sup>2</sup> <https://info.worldbank.org/governance/wgi/>

<sup>3</sup> <https://info.worldbank.org/governance/wgi/>

<sup>4</sup> <https://hdr.undp.org/data-center/human-development-index#/indicies/HDI>

## 5. Methods and Workflow

The methods will mainly be visualization and regression analysis. Visualization will include both the governance indicators and HDI for each country and over the years, and a correlation matrix between them. Regression analysis is going to analyze the effect of governance indicators over HDI.

In terms of the workflow, I will first read and clean both datasets. Then, I will create tables and plots demonstrating highest-ranking and lowest-ranking countries' WGI and HDI levels over the years. Lastly, I will merge the datasets to create a correlation matrix between governance indicators and HDI, and apply simple and multiple regression analyses with HDI as the dependent variable and governance indicators as explanatory variables.

## 6. Dataset(s)

There will be two datasets: (1) The Worldwide Governance Indicators (WGI) Dataset, and (2) Human Development Index (HDI) Dataset.

WGI dataset covers 214 countries over the period 1996 to 2021. The HDI Dataset covers 191 countries over a period of 1990 to 2021. The detailed descriptions of each variable in these datasets can be found in their respective documentations.<sup>5,6</sup> For the purpose of this project, I will only focus on the levels of each governance indicator (see section 3. Background) for each country over the years in WGI dataset and HDI for each country over the years in HDI dataset.

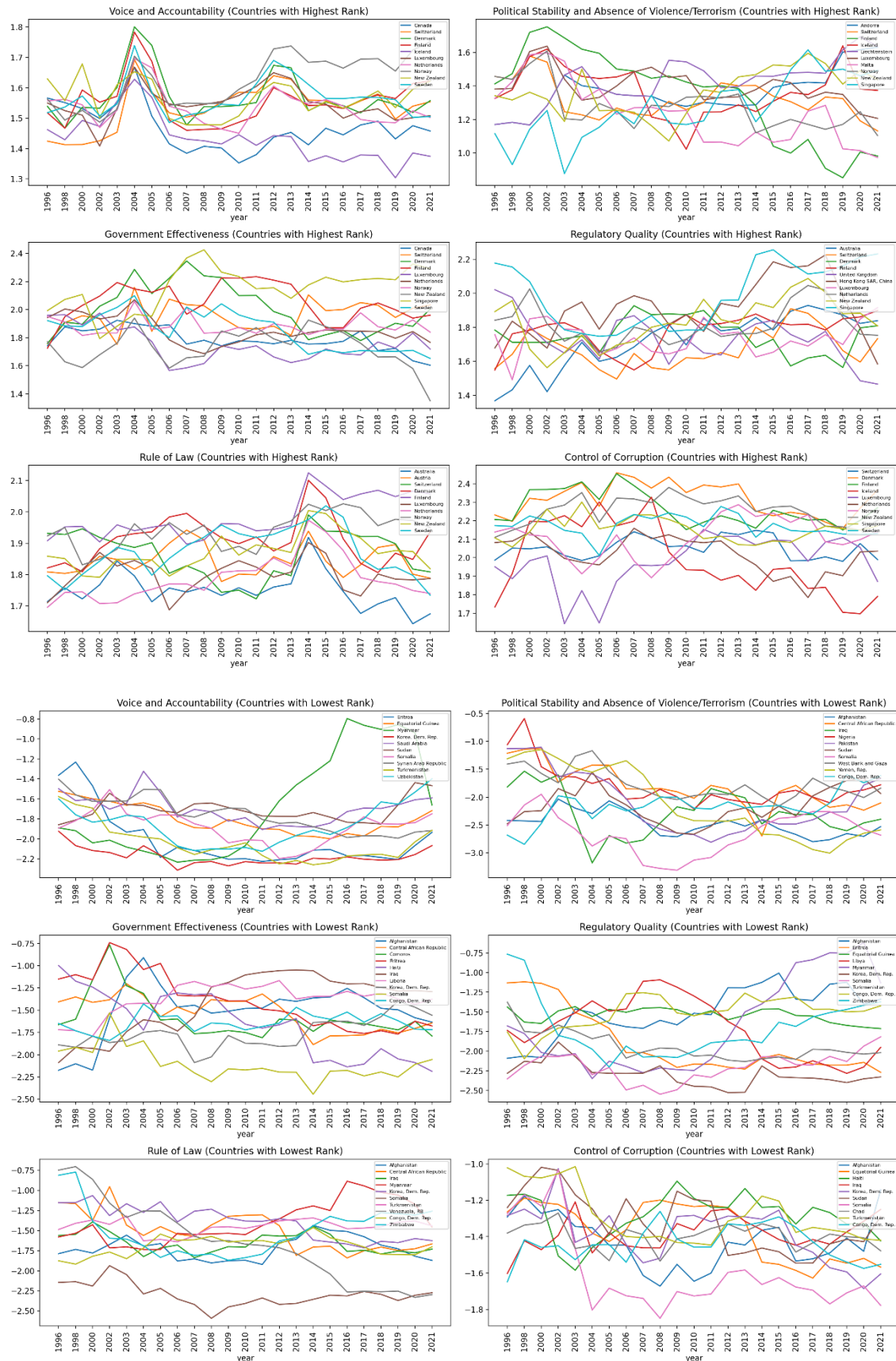
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<sup>5</sup> WGI Documentation: <https://info.worldbank.org/governance/wgi/Home/Documents>

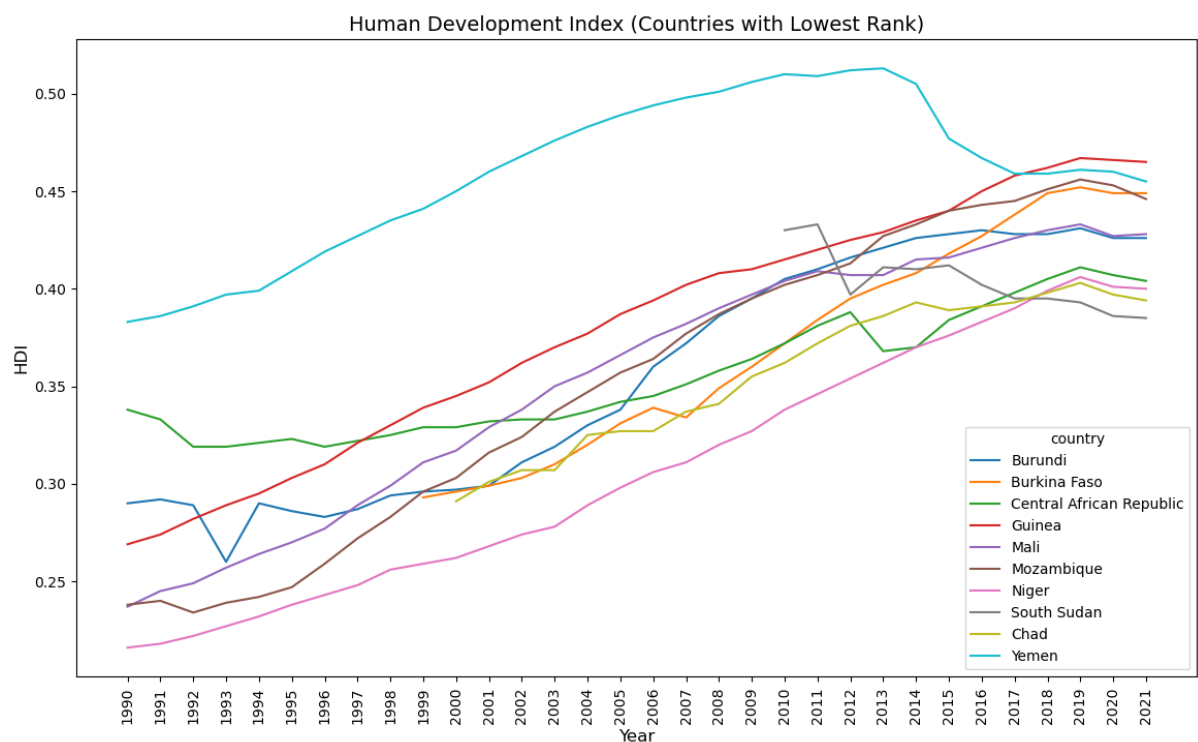
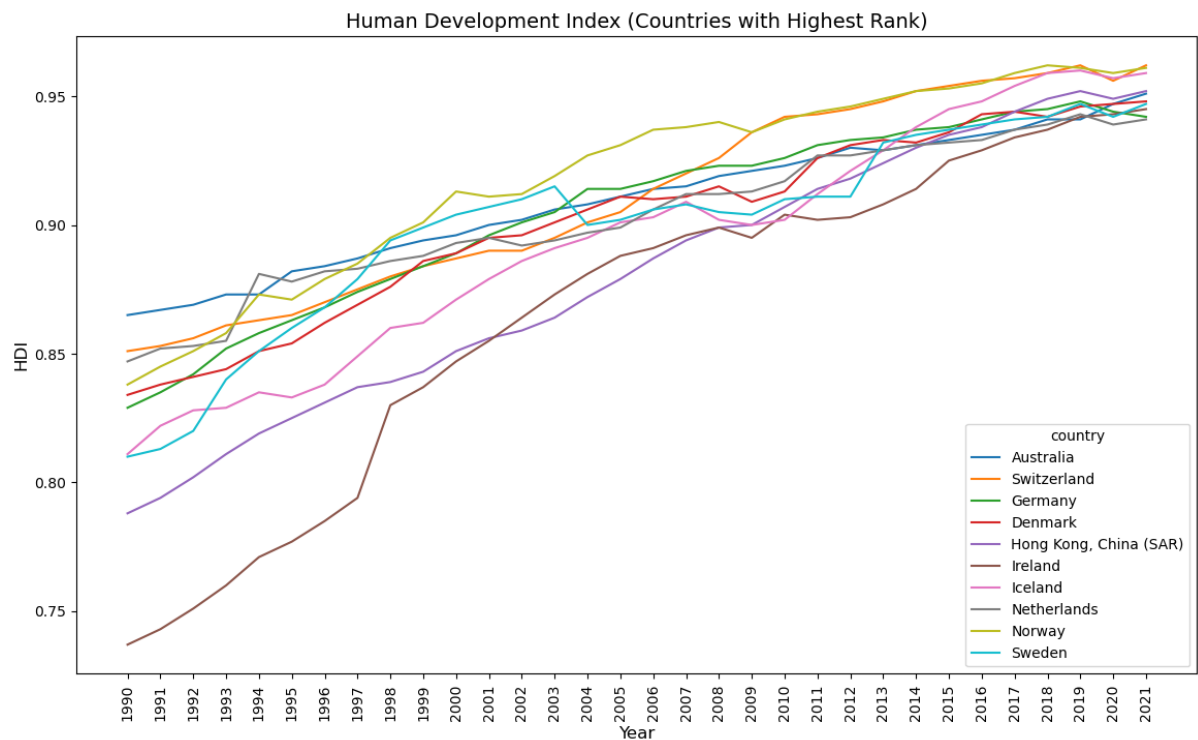
<sup>6</sup> HDI Documentation: <https://hdr.undp.org/data-center/documentation-and-downloads>

## 7. Deliverables

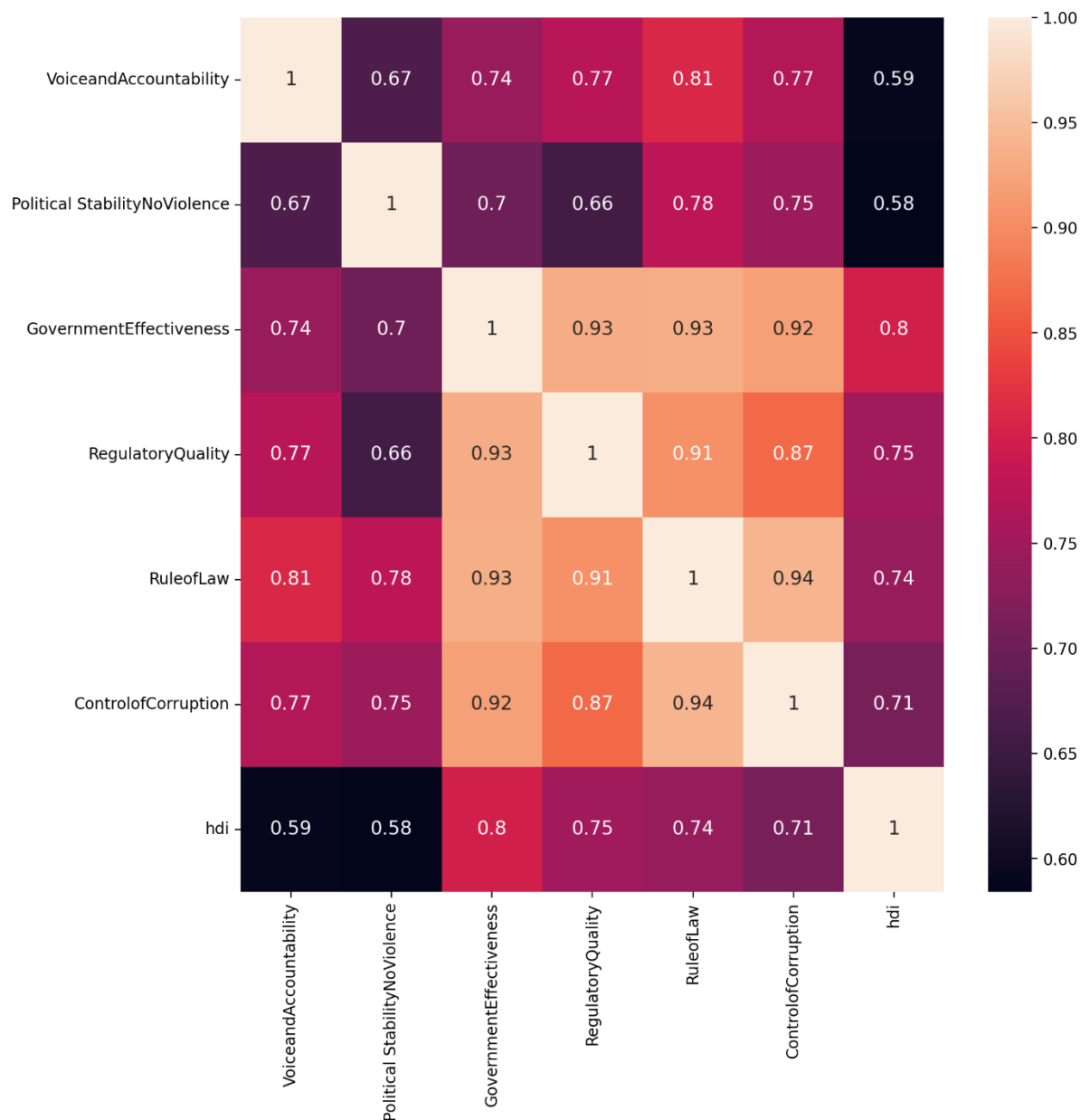
- Worldwide Governance Indicators (WGI)



- Human Development Index (HDI)



- Correlation Matrix for WGI and HDI



- OLS Regression Results

#### OLS Regression Results

<b>Dep. Variable:</b>	hdi	<b>R-squared:</b>	0.647
<b>Model:</b>	OLS	<b>Adj. R-squared:</b>	0.646
<b>Method:</b>	Least Squares	<b>F-statistic:</b>	871.5
<b>Date:</b>	Mon, 27 Feb 2023	<b>Prob (F-statistic):</b>	0.00
<b>Time:</b>	13:33:06	<b>Log-Likelihood:</b>	2651.2
<b>No. Observations:</b>	2858	<b>AIC:</b>	-5288.
<b>Df Residuals:</b>	2851	<b>BIC:</b>	-5247.
<b>Df Model:</b>	6		
<b>Covariance Type:</b>	nonrobust		

	coef	std err	t	P> t	[0.025	0.975]
<b>const</b>	0.6899	0.002	383.301	0.000	0.686	0.693
<b>VoiceandAccountability</b>	-0.0006	0.003	-0.186	0.853	-0.007	0.006
<b>Political StabilityNoViolence</b>	0.0156	0.003	5.092	0.000	0.010	0.022
<b>GovernmentEffectiveness</b>	0.1496	0.007	21.906	0.000	0.136	0.163
<b>RegulatoryQuality</b>	0.0097	0.006	1.723	0.085	-0.001	0.021
<b>RuleofLaw</b>	-0.0034	0.007	-0.469	0.639	-0.018	0.011
<b>ControlofCorruption</b>	-0.0358	0.006	-6.374	0.000	-0.047	-0.025

<b>Omnibus:</b>	84.614	<b>Durbin-Watson:</b>	1.944
<b>Prob(Omnibus):</b>	0.000	<b>Jarque-Bera (JB):</b>	95.527
<b>Skew:</b>	-0.393	<b>Prob(JB):</b>	1.81e-21
<b>Kurtosis:</b>	3.430	<b>Cond. No.</b>	10.2

Notes:

[1] Standard Errors assume that the covariance matrix of the errors is correctly specified.