Research Study: Merging Climate, Pollution, and Economic Data

1. Introduction

This research study aims to investigate the relationships between air pollution, climate change, and economic growth by merging datasets from WHO, NASA, and the World Bank. By analyzing trends over time, we aim to identify potential correlations and impacts among these variables.

2. Research Questions

The following key research questions will be explored:

- How does air pollution (PM2.5 levels) correlate with economic growth (GDP)?
- Is there a significant relationship between climate change (temperature anomalies) and GDP changes over time?
- Do countries with higher pollution levels show greater temperature anomalies over the years?

3. Hypotheses

Based on existing literature and data patterns, we hypothesize the following:

- H1: Higher levels of air pollution (PM2.5) negatively impact GDP growth.
- H2: Temperature anomalies have a negative correlation with economic growth (higher anomalies leads to lower GDP).
- H3: Countries with higher pollution levels (PM2.5) experience more extreme temperature anomalies over time.

4. Data Sources

The datasets used in this study come from the following sources:

- WHO Air Pollution Data: Provides annual PM2.5 pollution levels per country.
- NASA GISTEMP Climate Data: Contains global temperature anomalies over time.
- World Bank GDP Data: Provides economic growth indicators by country and year.

5. Merging Strategy

To integrate these datasets effectively, we will use:

- Country Name and Year as common keys for merging WHO and World Bank data.

- Year as the merging key for integrating NASA climate data.

The final dataset will allow us to analyze trends and relationships across time and geography.