Research Study: Impact of Air Pollution and Temperature Anomalies on GDP

1. Introduction

The goal of this study is to analyze the impact of air pollution and global temperature anomalies on economic growth (GDP). Using datasets from NASA (Temperature Anomalies), WHO (Air Pollution), and the World Bank (GDP), we aim to explore whether environmental factors significantly influence a country's economic performance.

2. Data Sources

- NASA Temperature Anomalies: Global temperature deviations over time (NASA Climate Data).
- WHO Air Pollution Data: Air pollution index for different countries (World Health Organization).
- World Bank GDP Data: Annual GDP values for countries (World Bank).

3. Research Question

- Does air pollution negatively impact GDP?
- Do rising temperature anomalies have a correlation with economic growth?

4. Data Preprocessing

- Renamed columns for consistency.
- Transformed World Bank GDP data from wide to long format.
- Merged datasets based on 'Country' and 'Year'.
- Handled missing values by dropping irrelevant columns.

5. Key Insights

- Higher pollution levels correlate with lower GDP.
- Rising temperature anomalies impact economic growth in certain regions.
- Countries with high pollution levels tend to experience slower economic growth.

6. Conclusion & Recommendations

- Conclusion: Based on statistical modeling, we find that pollution and temperature anomalies significantly impact GDP.

- Policy Recommendations:

  - Investment in clean energy to reduce air pollution.

  - Economic incentives for green technologies.

  - Global cooperation to mitigate climate change.