6103 — Data Mining — Team 7

"Global Greenhouse Gas Emissions Analysis"

By Yash Manish Doshi, Sai Pavan Mekala, Harshavardana Reddy & Erica Zhao

Proposal:

We propose an extensive analysis of annual country-level greenhouse gas (GHG) emissions data spanning two decades (2001-2021), covering sectors, sub-sectors, and gases, including or excluding land-use effects. By aggregating this data across regions, our project aims to provide valuable insights into historical emissions, future projections, and country-specific climate commitments. This project will focus on various critical aspects, including sectoral contributions, income-based disparities, temporal trends, and country-specific analyses, addressing key questions such as outlier identification and successful methane emissions reduction. Additionally, we'll compare the highest and lowest emitting countries in 2021. The project's findings will play a pivotal role in shaping targeted GHG mitigation efforts worldwide, supporting the global fight against climate change.

SMART Questions:

1. *Which industries contribute the most to greenhouse gas (GHG) emissions, in the dataset. How does this differ between countries with high incomes and those with low incomes?*

2. *What has been the pattern of GHG emissions from 2001 to 2021 and which country has shown the greatest deviation from this trend?*

3. *Among all the countries examined in the dataset, which ones have achieved a reduction in methane emissions between 2011 and 2021 indicating efforts in mitigation?*

4. *In terms of emissions, how do the top 10% highest emitting countries, in 2021, compare to the bottom 10% and what factors could explain this discrepancy?*

Proposed Modeling Methods

1. **Comparative Analysis**
2. **Correlation Analysis**
3. **Disparity Analysis**

Dataset Link:

https://climatedata.imf.org/datasets/72e94bc71f4441d29710a9bea4d35f1d_0/explore

Github:

https://github.com/kolanharsha9/Intro-to-Data-Mining-Project