Understanding and Analyzing Historical CO2 Emissions Data, and Predicting Future CO2 Emissions Data

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Abstract

This poster explores the analysis of historical emissions data, aiming to understand global trends, identify top-emitting countries, and predict future emissions. Utilizing a comprehensive dataset, we employ data cleaning techniques, exploratory data analysis, and predictive modeling to gain insights into the dynamics of global emissions.

Introduction & Background

In the face of escalating climate concerns, comprehending historical emissions patterns is imperative for informed decision-making. This study focuses on emissions data spanning several decades, investigating trends, variations, and the key contributors to global carbon emissions. By employing data preprocessing and exploratory analysis, we aim to uncover meaningful patterns in the historical emissions dataset.

Methods & Materials

Data Cleaning:

- Removal of irrelevant columns
- Handling missing values using a combination of dropping rows and imputation
- Renaming and reshaping the dataset for improved analysis

Exploratory Data Analysis:

- Visualizing total emissions over the years
- Identifying top-emitting countries
- Comparing emissions trends between selected countries

Predictive Modeling:

- Employing linear regression to predict future emissions
- Evaluating model performance using mean squared error and R^2 score

Analysis & Results

Total Emissions by Year:

- Visual representation of global emissions trends
- Highlighting significant fluctuations and patterns over time

Top 10 Emitting Countries:

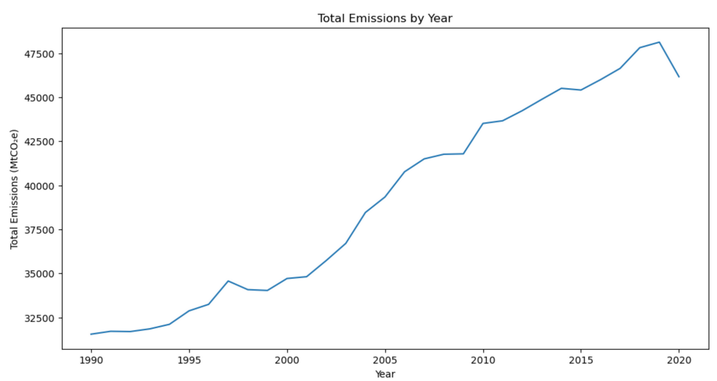
- Bar chart displaying the countries with the highest emissions in the latest year
- Insights into the distribution of emissions among top contributors

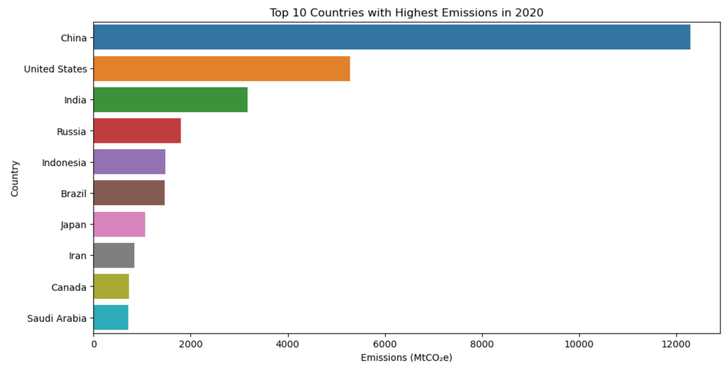
Emissions Comparison:

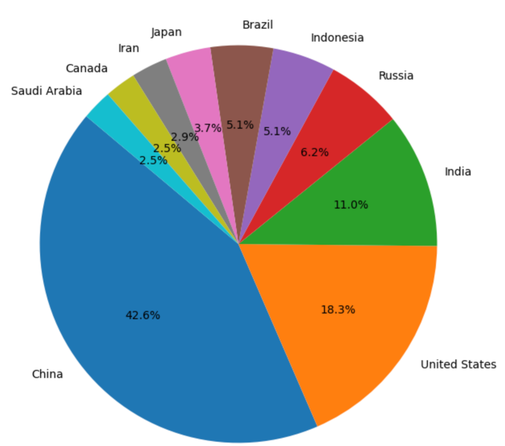
- Line chart comparing emissions trends among selected countries
- Identification of similarities and disparities in emissions patterns

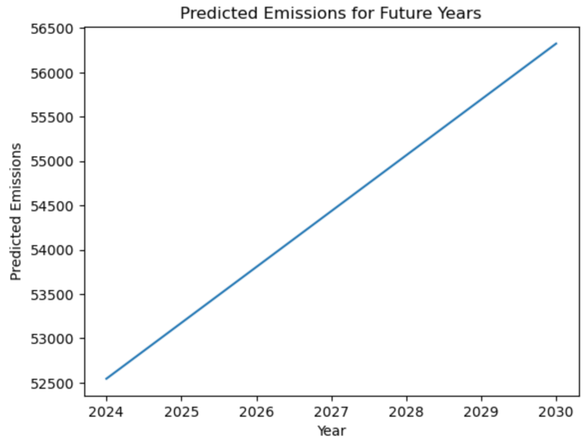
Predicted Future Emissions:

- Utilizing linear regression to forecast emissions for the upcoming years
- Insights into potential future global emissions trends









Discussion & Conclusion

This poster explores the analysis of historical emissions data, aiming to understand global trends, identify top-emitting countries, and predict future emissions. Utilizing a comprehensive dataset, we employ data cleaning techniques, exploratory data analysis, and predictive modeling to gain insights into the dynamics of global emissions.