CLIMATE CONFLUENCE: ANALYZING THE IMPACT OF CO2 EMISSIONS ON GLOBAL TEMPERATURE TRENDS

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INTRODUCTION

- - Examines how CO2 emissions influence global temperatures.

- - Utilizes datasets on CO2 emissions and global temperatures.

- - Aims to provide evidence for effective climate strategies.

- - Main Question: "How do CO2 emissions correlate with global temperature trends?"

DATA USED

- - **Dataset 1:** CO2 emission data from Our World in Data (GitHub).

- - **Dataset 2:** Temperature data from Figshare.

- - Data processed through ETL pipeline for analysis.

Figure: ETL Pipeline Diagram
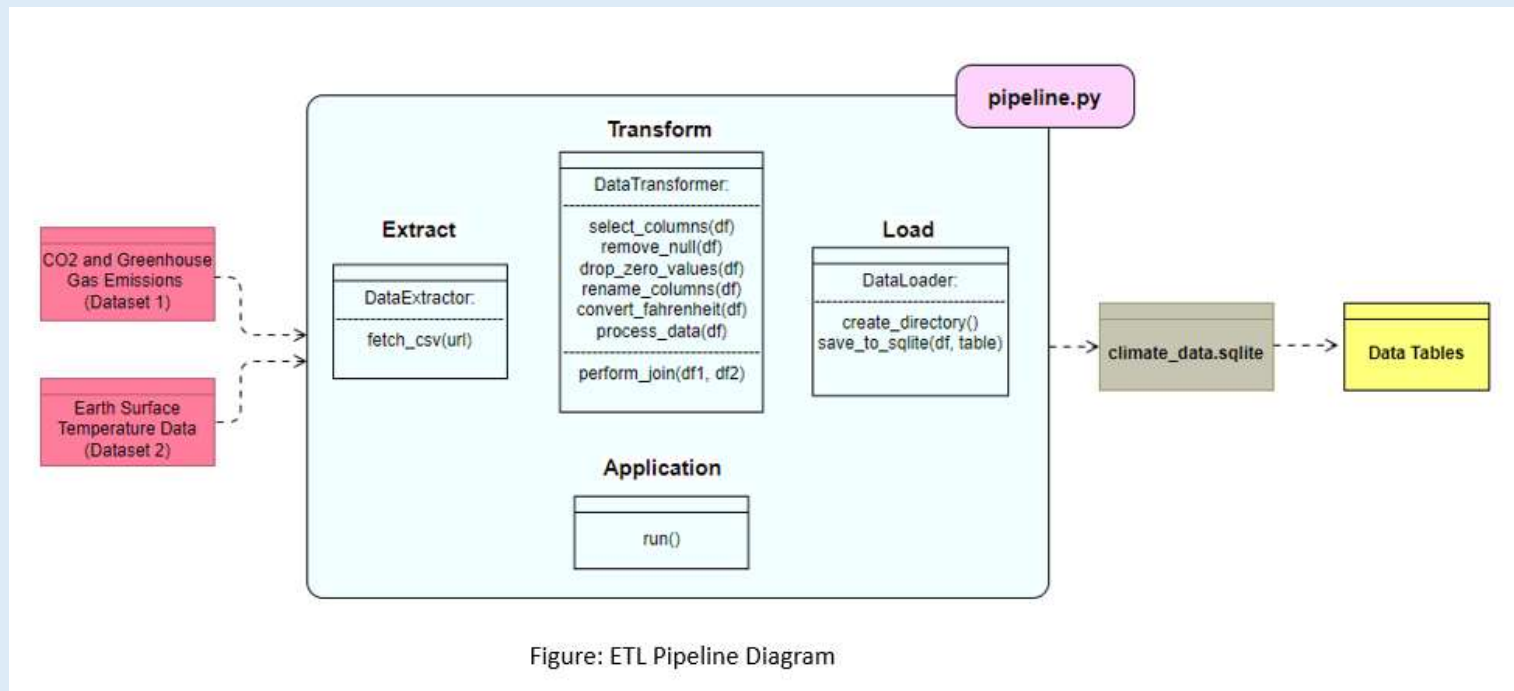
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DATA PIPELINE OUTPUT

- - Final data contains columns: country, year, CO2, and AverageTemperatureCelsius.

- - Represents CO2 emissions and average temperature for various countries over time.

- - Allows comprehensive analysis of CO2 emissions and temperature changes.

	country TEXT	year INTEGER	co2 REAL	AverageTemperatureCelsius REAL
1	Brazil	1901	2.103	19.804333333333336
2	Brazil	1902	2.506	20.158416666666664
3	Brazil	1903	2.44	19.913833333333333
4	Brazil	1904	2.62	19.166416666666667
5	Brazil	1905	2.799	19.901666666666667
6	Brazil	1906	3.206	19.973958333333332
7	Brazil	1907	3.451	19.568583333333333
8	Brazil	1908	3.594	19.626
9	Brazil	1909	3.609	19.368666666666666
10	Brazil	1910	4.199	19.509521739130435

Figure: Final data

CORRELATION ANALYSIS

- - Correlation Matrix: Shows Pearson correlation coefficients between year, CO2, and average temperature.

- - Moderate positive correlation (0.56) between year and CO2 emissions.

-   - Weak positive correlation (0.3) between year and average temperature.

- - Very weak positive correlation (0.15) between CO2 emissions and average temperature.

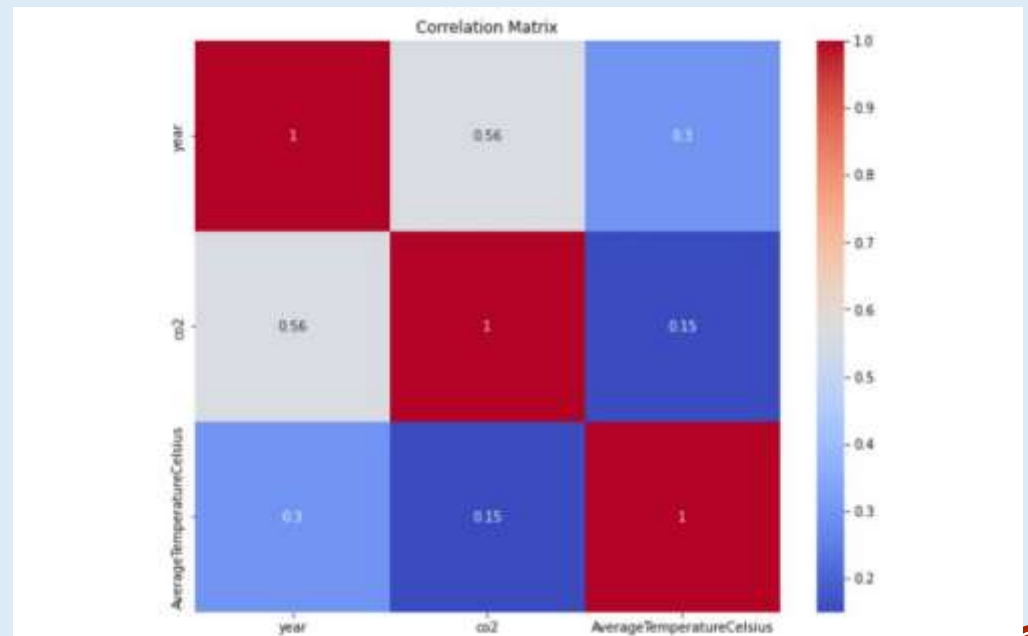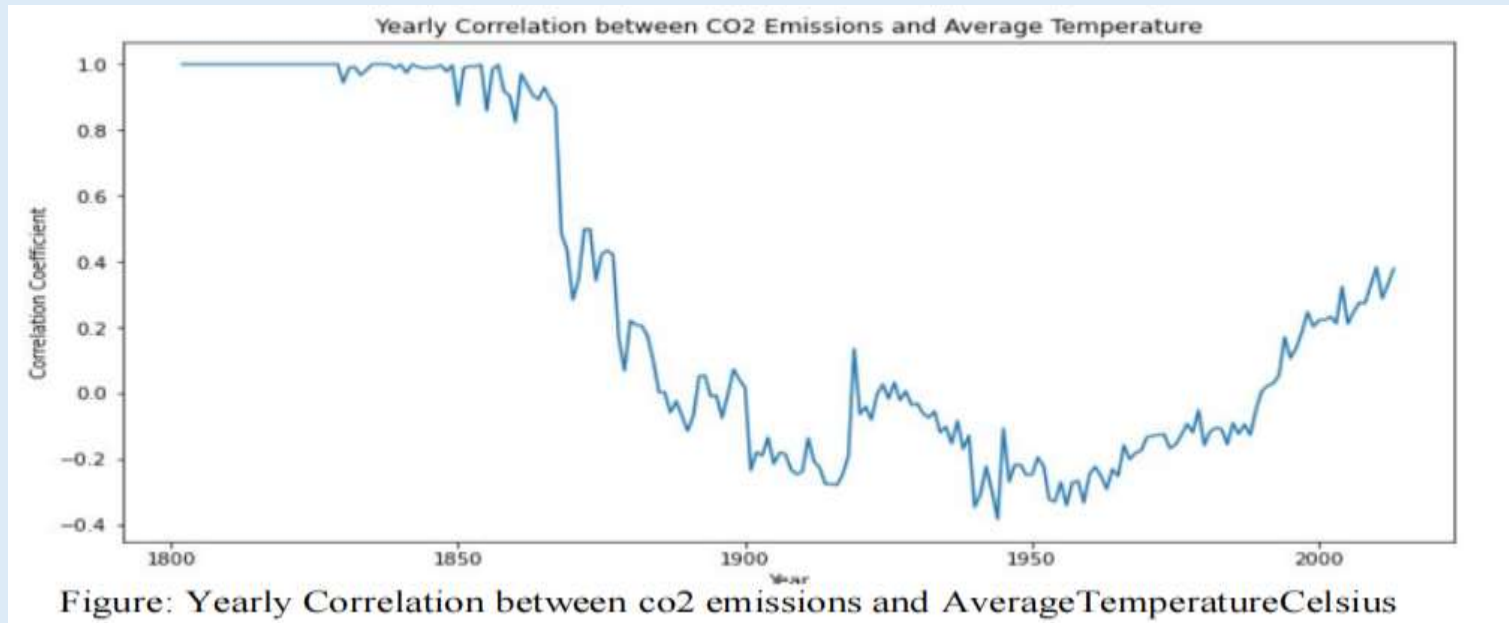- - Indicates CO2 emissions increase over time, but the link to temperature changes is weaker.

Figure: Correlation Matrix of *year, co2* and *AverageTemperatureCelsius* culumn

YEARLY CORRELATION

Figure: Yearly Correlation between co2 emissions and AverageTemperatureCelsius

- - Graph: Yearly correlation between CO2 emissions and average temperature from 1800s to 2000s.

- - High correlation in early 1800s.

- - Decline and fluctuation from mid-1800s to mid-1900s.

- - Increase from 1980s, indicating strengthening relationship between CO2 and temperature.

- - Highlights changes in the CO2-temperature link over time.

COUNTRY-WISE ANALYSIS

Figure: Facet Grid between CO2 emissions and average temperature for different countries.
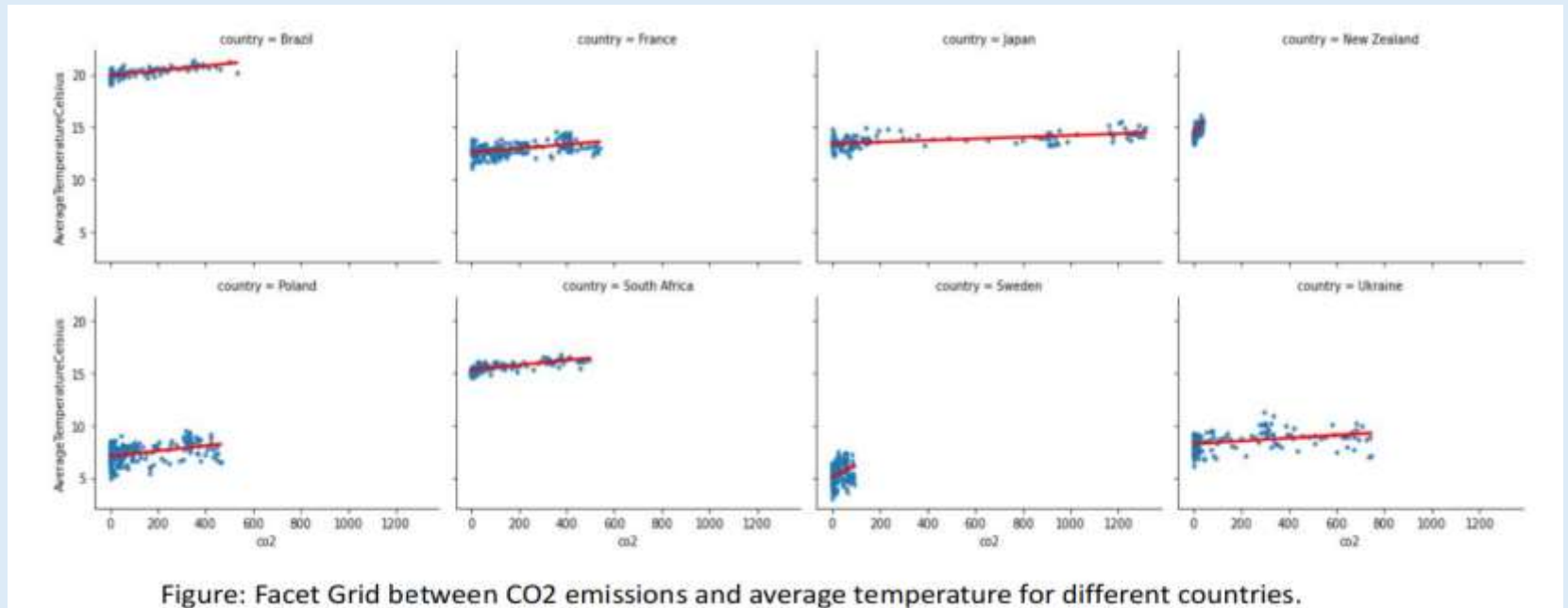
- - FacetGrid Plot: Visualizes CO2 emissions vs. average temperature for different countries.

- - Positive correlation in most countries.

- - Strength of correlation varies: strong in some (e.g., South Africa, Poland), weaker in others (e.g., Japan).

- - Shows variability in CO2-temperature relationship across regions.

CONCLUSION

- - Main finding: CO2 emissions correlate with global temperature trends, but not very strongly.

- - As CO2 emissions rise, global temperatures tend to increase.

- - Trend evident over time and across various countries.

- - Overall, higher CO2 emissions are associated with rising temperatures.

THANK YOU