M5 Final Document

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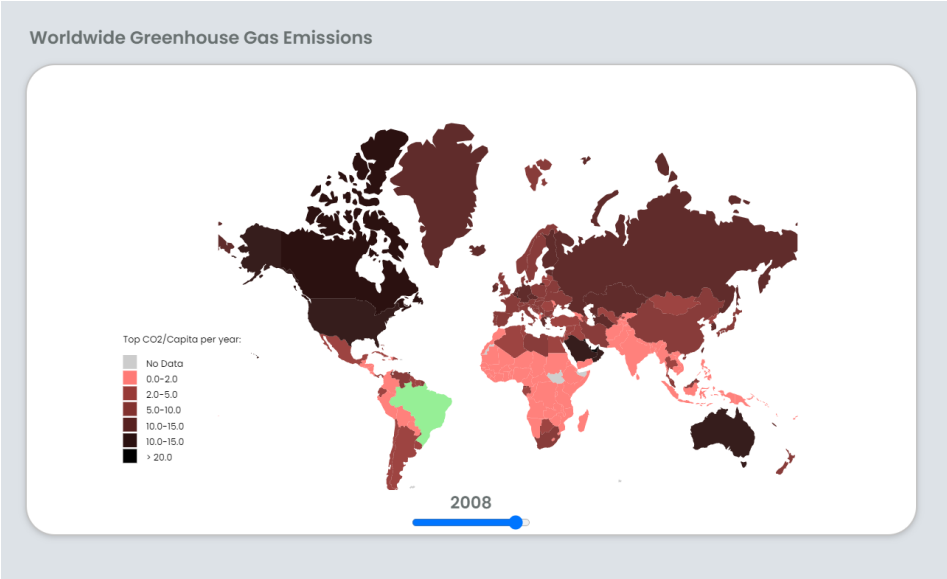
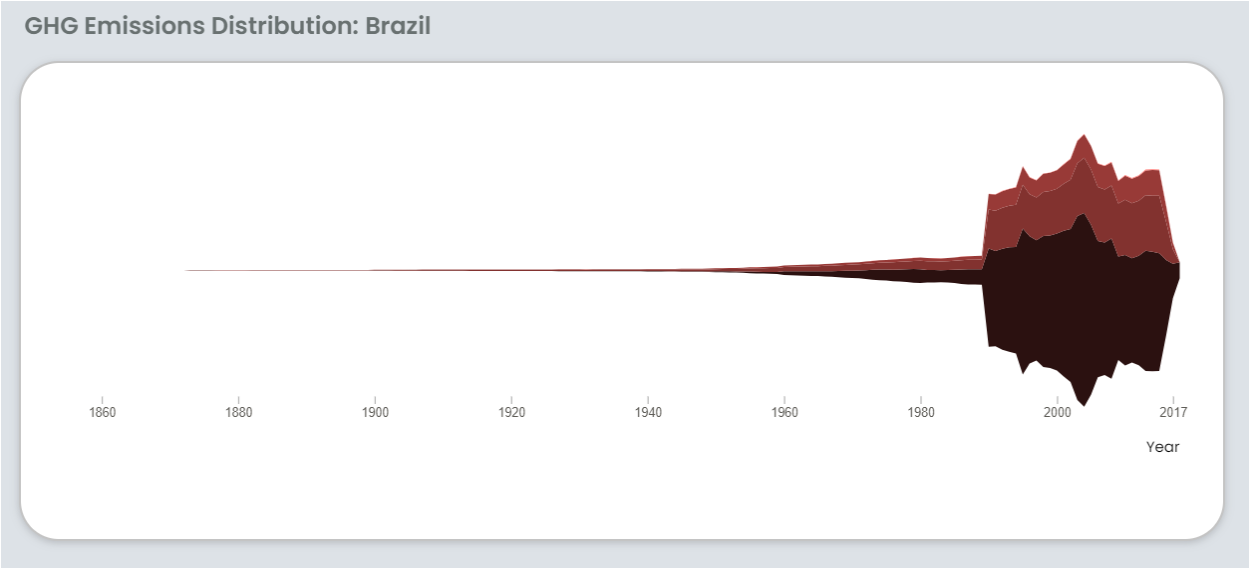
Summary of Dataset Characteristics

The dataset we used for this visualization was extracted from Kaggle. The data includes 174 variables that range from the years 1850 to 2018, country, sector, gas, unit, and source. The set had 217 entries. The sectors included agriculture, bunker field, energy, industrial processes, land-use change/forestry, and waste. For the earlier years and smaller countries, many of the data entries had null values. This made the processing and visualizing of the data difficult because with certain countries we did not have enough data to populate our charts and graphs.

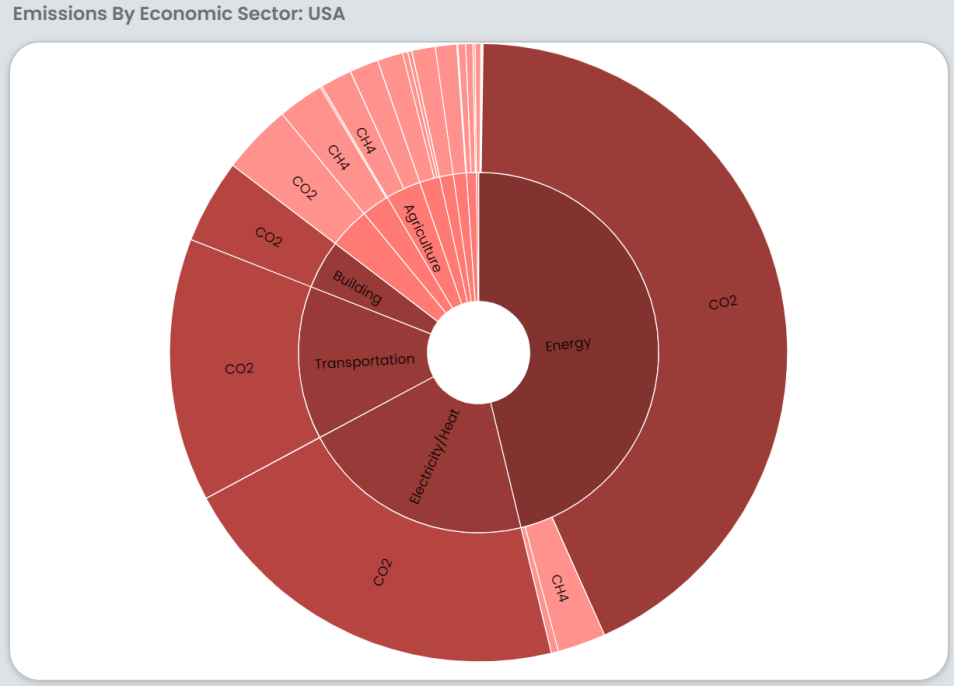
Images of the Visualization:



This is the dynamic map that shows the worldwide greenhouse gas emissions per country. We focused on Carbon dioxide (CO2) since it makes up the vast majority of greenhouse gas emissions. The slider was added to animate GHG emissions per country from 1900 to 2016. The country selected in green populates the two visualizations beneath it.



This is the streamgraph that represents the quantity of each greenhouse gas from 1850 to 2018 for the specified country. Each stream, differentiated by color, represents a different greenhouse gas, and the changing height of each stream encodes the quality for that year.



This is the sunburst diagram that breaks down a country's greenhouse gas emissions for a select year. The inner circle represents the specific sector and the outer circle is the type of greenhouse gas that that sector emits. When the user hovers over any of the specific areas of the visualization, more details about the sector/greenhouse gas emitted by that sector show up below the diagram.

Group Member Contributions:

Anna:

- Sunburst Diagram

Amin:

- World Map

Christina:

- Stream Graph Chart

We all worked together to piece the visualizations into the final static html page.

Discussion/Reflection:

Some interesting questions came up for our team about this visualization. We wondered if we should've combined our dataset with newer data in order to provide the most relevant information about climate change. This is a global issue that increases in severity every year; adding more recent years to the visuals could be a future addition.

Implementation mostly went according to plan. The map visualization had to use a different dataset as there was not enough data in our original dataset to populate it. Additionally, the sunburst diagram stayed about the same from the initial design. We lost a little bit of interaction with the sunburst diagram because there weren't as many levels in the data that would've justified further interaction. The design did diverge with our Stream Graph Chart. Initially it was going to be a visualization that would've required some more intense and expansive D3 knowledge. Instead of creating the scatterplot visual of the density of certain molecules, we decided to represent the density over time for specific countries with the stream graph.

The only substantial roadblocks were the preprocessing of data that each of us had to do for our parts. Luckily we planned ahead for this, so our data was preprocessed well before the visualization had to be presented.

The team worked well together. We all pulled our weight and we each were able to produce working visualizations.We understood that most of us were relatively new and unfamiliar with D3. In order to prepare for the presentation, we worked together to combine each of our parts. Overall, as a team we communicated and produced work we are proud of.