World CO2 Emission Visualization

Group – Statistics 1

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**Project Overview:**

**What:** Our project is an interactive data visualization tool that displays the world’s carbon dioxide (CO2) emissions data from 1990 to 2018. It allows users to explore the trends and patterns of CO2 emissions over time by country and region. The data used in our visualization is sourced from the **U.S. Energy Information Administration (EIA).**

**Why:** Our goal is to raise awareness about the pressing issue of climate change and the significant role of CO2 emissions in contributing to it. We believe that by visualizing the data in an engaging and interactive way, we can help users better understand the scale and impact of CO2 emissions and encourage more informed discussions and actions toward them.

**How:** Our visualization tool is a webpage with an interactive world map of CO2 emissions. As the cursor moves over to any country, the country pops out a little and displays the CO2 emissions of that country. On the webpage, there is a dropdown menu of years that allows users to select a specific year and view the interactive world map of CO2 emissions of that year. In addition to the world map, we have also created several other visualizations to highlight key insights and trends in the data.

**Goals achieved from Phase 1B to Phase 2:**

**Phase 1B Goals:**

During Phase 1B, we focused on data collection and cleaning, as well as the initial prototyping of the visualization. Our goals were to:

* Collect and clean CO2 emissions data from the U.S. Energy Information Administration for the years 1990-2018.
* Develop an initial prototype of the world map visualization using D3.js.
* Implement a hover-over feature for the world map that displays the CO2 emissions of each country.

**Phase 2 Goals:**

In Phase 2, we aimed to refine and improve the visualization based on feedback from Phase 1B. Our goals were to:

* Create a dropdown menu of years that allows users to select a specific year to view.
* Expand the dataset to include CO2 emissions for all countries for each year from 1990 to 2018.
* Implement visualization of CO2 emissions over time for each country, as well as a global view of CO2 emissions over time.

**Current Phase Results:**

At the end of Phase 2, we successfully achieved our goals and produced a working world map visualization that allows users to select a year and view the CO2 emissions of each county. We also implemented additional visualizations of CO2 emissions over time for each country and a global view of CO2 emissions over time.

**Interactions:**

1. **Interactive world map of CO2 emissions:**

As the cursor moves over any country, the country pops out a little and displays the CO2 emissions of that country.

1. **Year dropdown menu:**

Allows users to select a specific year and view the interactive world map of CO2 emissions of that year.

**Here are the screenshots of the visualization of our project.**

Map

Description automatically generated with low confidence

Map

Description automatically generated

Chart

Description automatically generated

**Overall, we are pleased with the outcome of our project and believe it provides a valuable tool for understanding global CO2 emissions trends.**

**To Run the Code:**

**Software application:** To develop and run the code for the project, we used a software application called **WebStorm**. WebStorm is an **Integrated Development Environment** (IDE) for web development, which provides tools for writing and editing code, as well as running and debugging an application.

**Main file**: The main file for our webpage is called "**index.html**". This file contains the HTML code that creates the structure of our webpage, and links to the JavaScript and CSS files that add interactivity and styling.

**Opening file**: To open the **"index.html**" file in WebStorm, you first need to launch the application and select your project directory. Once your project is loaded, you can navigate to the "index.html" file in the project explorer and double-click to open it in the **WebStorm editor**.

**Running code**: Once any necessary changes are made to the code, we can run the code by clicking on the "Run" or "Play" button in the menu bar at the top of the **WebStorm application**. This starts a local server that hosts your webpage and allows you to view it in your browser.

**Viewing the webpage**: When we view the webpage in your browser, we should be able to see an interactive world map of **CO2 emissions**. As we move the cursor over each country, the CO2 emissions for that country should be displayed.

Overall, following these steps allowed us to develop, test, and run your code for our project, and view the **interactive world map of CO2 emissions**.

**References:**

[1] **U.S. Energy Information Administration (EIA).** (n.d.). International energy statistics: CO2 emissions from fuel combustion - by country.

Retrieved from https://www.eia.gov/international/data/world/featured-view/4.