REPORT

VISUALIZATION PROJECT

Abstract:

The NCD Portal Diseases Data Set is a collection of statistical data related to noncommunicable diseases (NCDs) from various countries. It includes information on factors such as tobacco use, physical inactivity, harmful alcohol use, diabetes, chronic respiratory diseases, cardiovascular diseases, and cancer. The data set provides valuable insights into the prevalence and impact of NCDs worldwide.

Visualization in World Map:

The data set is visualized using a choropleth map, which is a thematic map that represents the statistical data on a geographical map. The world map is divided into regions (countries) using TopoJson data. Each region is shaded or colored based on the value of the selected NCD indicator. The visualization allows users to dynamically change the selected NCD indicator and gender, updating the map in real-time.

Contributions:

- The NCD Portal Diseases Data Set provides a comprehensive collection of statistical data on various NCD indicators.
- The visualization using a choropleth map offers an intuitive way to understand the global distribution and variations of NCDs.
- The implementation provides a user-friendly interface that allows users to interact with the map and explore different NCD indicators.

Implementation Details:

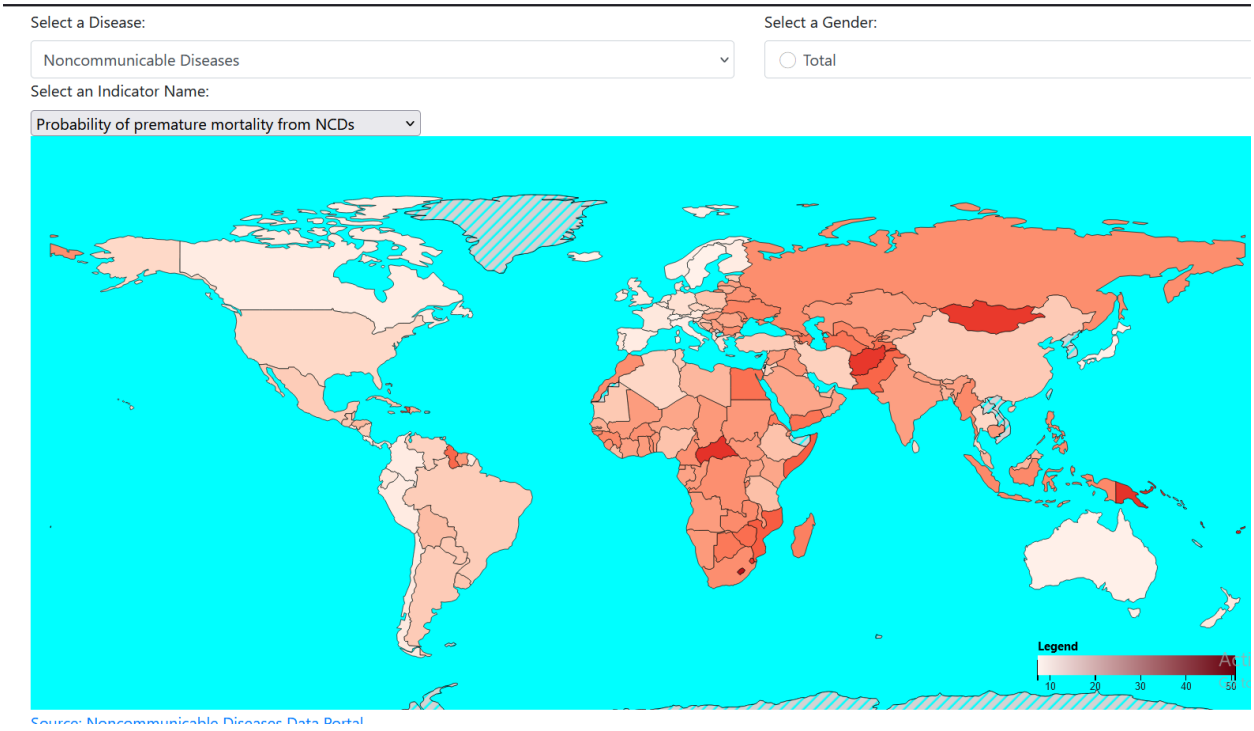
- The implementation uses D3.js, a JavaScript library for data visualization, to create and update the choropleth map.
- The TopoJson data of the world is loaded to define the boundaries of the countries.
- CSV files containing the statistical data for each NCD indicator are loaded and stored as arrays.
- The ChoroplethMap class is defined to handle map visualization and interaction.
- The class includes methods to initialize the map, update the map based on user input, and handle dropdown menu changes.
- The visualization dynamically changes based on user selections, updating the map and displaying relevant data in tooltips.
- The implementation handles challenges such as data processing, data filtering, and dynamic map updates based on user input.

Features:

- The choropleth map visualizes the NCD data set, allowing users to explore different NCD indicators and genders.
- The map provides tooltips with detailed information about each country's data when hovering over the regions.
- The interface includes dropdown menus for selecting the NCD indicator, gender, and specific indicators within each category.
- The map dynamically updates when the user selects different indicators, genders, or specific indicators within a category.

Project Screenshots and Description:

1. Default Page

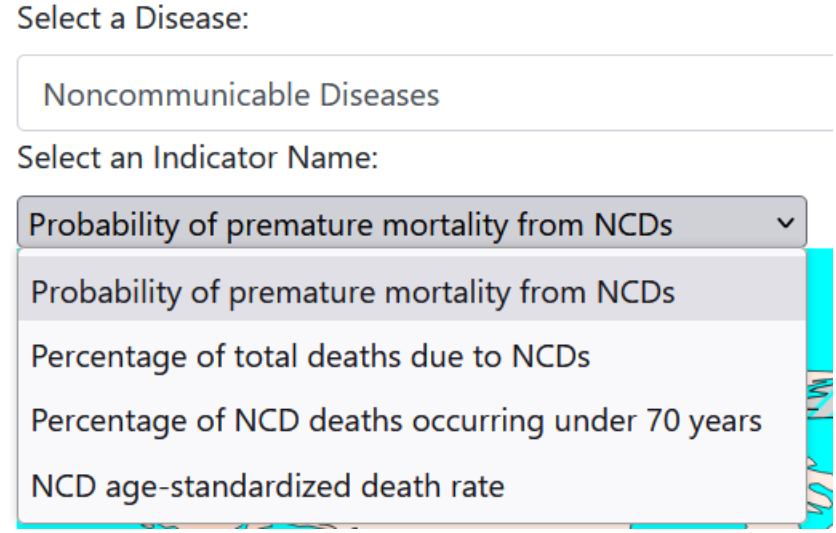


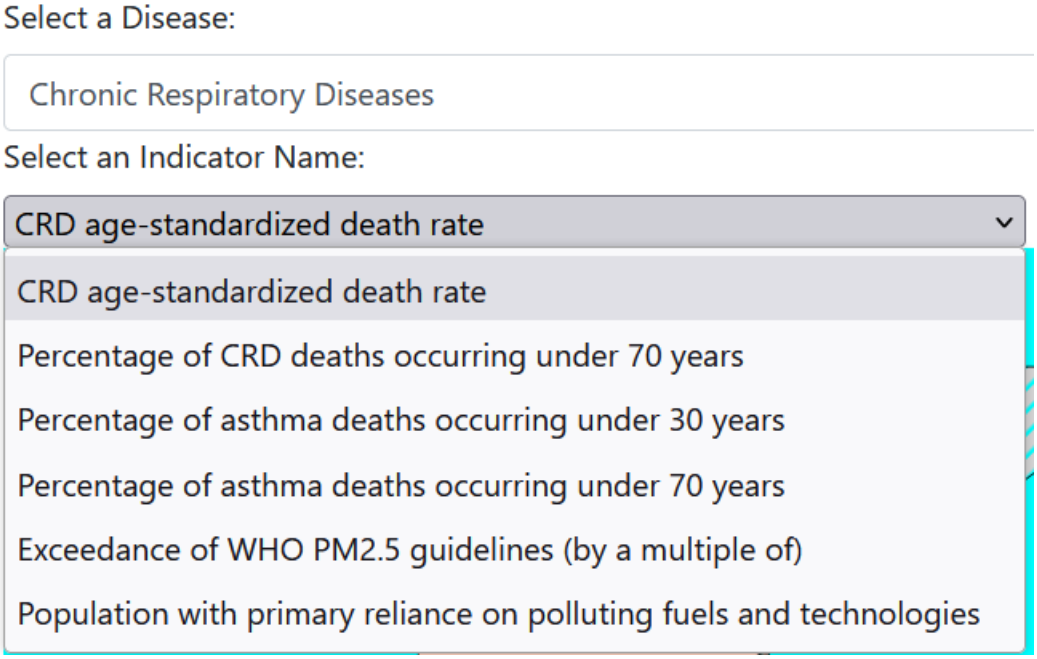
By default, the visualization is set to display data for "Non-Communicable Disease" (NCD), with the gender selected as "Total." The first indicator name available in the data will be used for analysis.

In the visualization, the oceans are colored using the "aqua" color scheme, providing a visually distinct representation. Additionally, countries that are not included in the selected disease data will be filled with striped lines, allowing for easy differentiation.

The legend accompanying the visualization dynamically shows the color scale with corresponding values. As the data changes, the legend adapts accordingly to reflect the updated information.

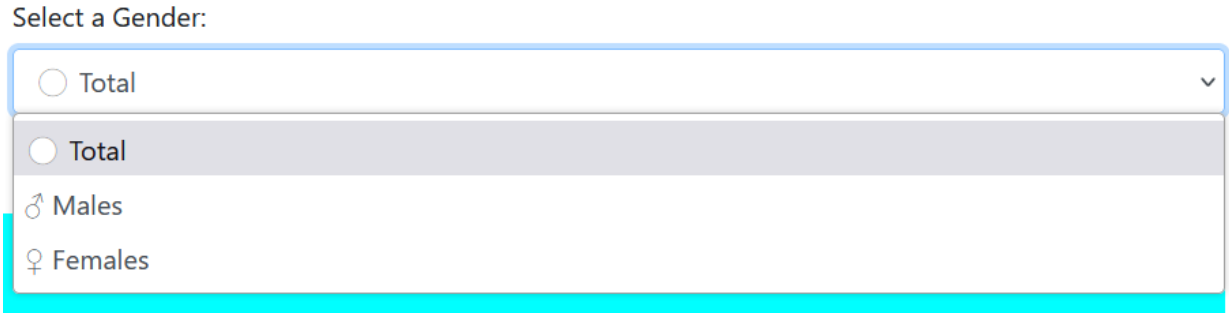
2. Indicator Name Drop Down Button





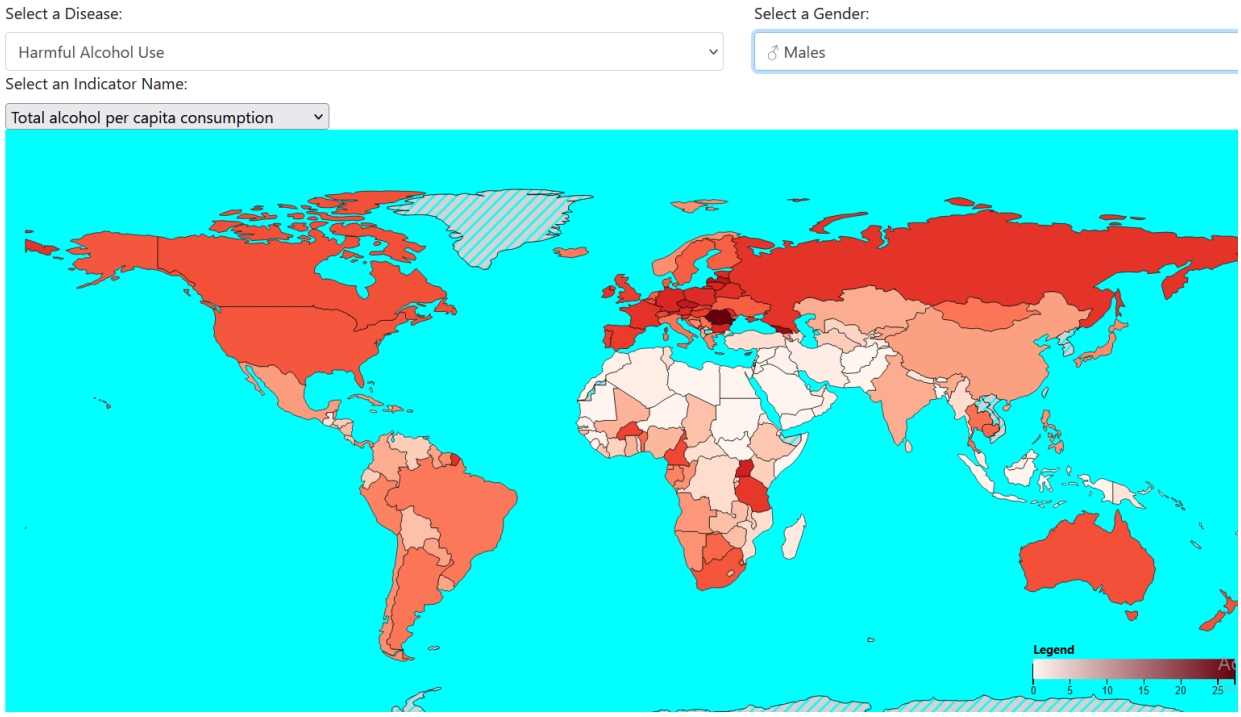
The Indicator Names in the visualization will dynamically change as the data changes, as the indicator name is a column in the dataset. This flexibility allows for specific information about different diseases for all countries to be accurately represented in the visualization.

3. Gender Drop down.

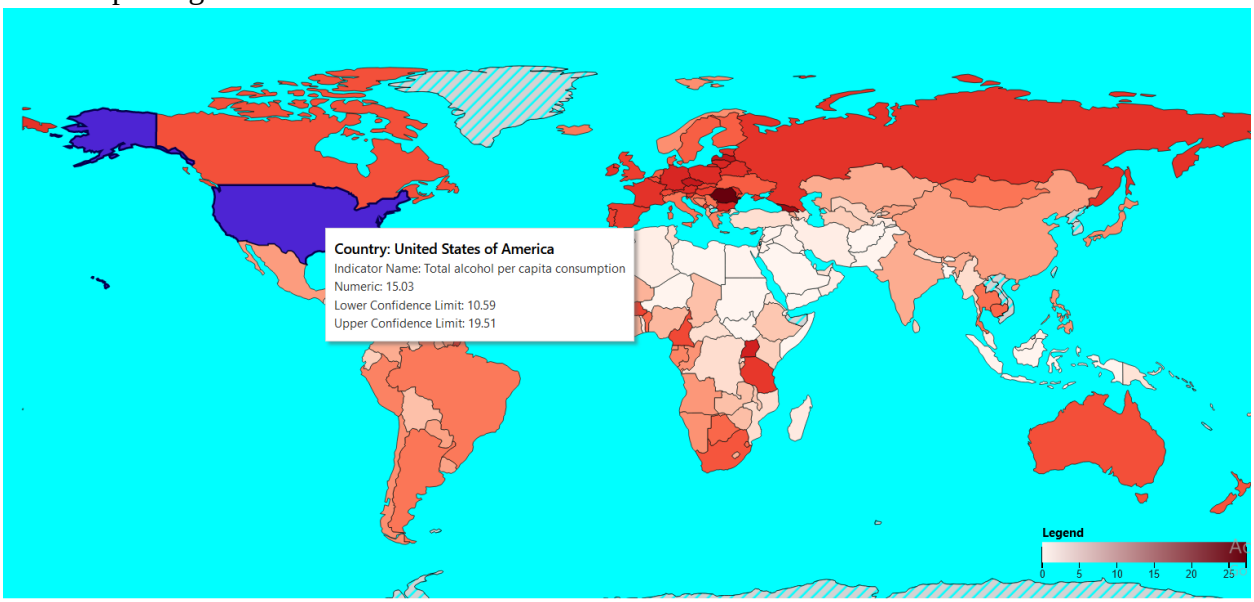


Unlike the Indicator Names Dropdown, it is Static and only 3 types of Genders are mentioned in the data set.

4. The color scale in the visualization represents the percentage or probability values (whichever is specified in the indicator name) for each country. It provides a clear visual representation of the data, allowing for easy comparison and analysis of the respective values across different countries.



5. In addition to the previous features mentioned, a tooltip has been implemented to provide detailed information about each country. When hovering over a specific country in the visualization, the tooltip will appear, displaying comprehensive information about that country. This includes relevant details and data points related to the selected disease, such as specific percentages, probabilities, or any other pertinent information available. The tooltip enhances the user experience by offering on-demand access to specific information while exploring the visualization.



Challenges:

- Processing and integrating multiple CSV files and ensuring data consistency and accuracy.
- Filtering and organizing the data based on selected indicators and genders.
- Creating a responsive and user-friendly interface for interacting with the map and dropdown menus.
- Handling the dynamic updates of the map in real-time based on user selections.
- Addressing potential performance issues when dealing with large datasets and complex visualizations.
- Handling inconsistencies in country names between the TopoJson file and the disease data file

References

This NCD Portal, which focuses on noncommunicable diseases (NCDs), serves as a valuable resource for researchers, policymakers, and public health professionals, providing access to critical data to inform evidence-based interventions and strategies. And their key risk factors, aiming to address the global impact of NCDs on public health.

NCDs, including cardiovascular diseases (heart disease and stroke), cancer, diabetes, and chronic respiratory diseases, account for nearly three-quarters of global deaths. The factors contributing to these diseases are multifaceted, encompassing social, environmental, commercial, and genetic influences. Notably, NCDs disproportionately affect low- and middle-income countries, with 86% of the 17 million people who die from NCDs annually under the age of 70 residing in these regions.

The Noncommunicable Diseases Data Portal offers users the ability to explore comprehensive information on NCDs and their key risk factors, organized by country. I recreated everything from scratch never fully used any source from internet.

Data Set Used:

1. Cancer: Detailed data related to various types of cancer, including incidence, prevalence, mortality rates, and associated risk factors
2. Cardiovascular diseases (CVDs): Comprehensive information on heart disease and stroke, including prevalence, mortality rates, risk factors, and preventive measures.
3. Chronic respiratory diseases (CRDs): Data focusing on respiratory conditions such as asthma, chronic obstructive pulmonary disease (COPD), and other related ailments.
4. Diabetes: Detailed statistics and insights into diabetes, including prevalence, risk factors, management, and complications
5. Harmful alcohol use: Information on the detrimental effects of alcohol misuse and its impact on NCDs.
6. Obesity and Unhealthy diet: Data related to obesity rates, unhealthy dietary patterns, and their association with NCDs.
7. Physical inactivity: Information highlighting the importance of physical activity and the risks associated with a sedentary lifestyle.
8. Tobacco use: Comprehensive data on tobacco consumption, the prevalence of smoking, and its link to NCDs

Data Fields:

1. Year: 2019
2. Country Name: Names of various countries where the data was collected (e.g., Afghanistan, Albania, Algeria, Andorra, Angola, etc.)
3. Region: Different regions representing larger geographical areas (e.g., African Region, Eastern Mediterranean Region, European Region, Global Region of the Americas, South-East Asian Region, Western Pacific Region)
4. Gender: Not provided in the data
5. Area: Not provided in the data
6. Numeric: Value indicating the exceedance of PM2.5 guidelines
7. Lower Confidence Limit: Lower bound of the confidence interval for the numeric value
8. Upper Confidence Limit: Upper bound of the confidence interval for the numeric value