BloodLytics: Visualising Blood Donation Statistics

Hemanth Sunkireddy, Bharath Gajawada, Jagankrishna

29 March 2024

1 Brief description of data

This datasets in bloodlytics, encompassing a wide range of information about different blood types, donations across different regions. Here's an elaboration on each aspect:

Figure 1: Blood type distribution all over the world

Global Blood Type Distribution: The dataset provides a comprehensive overview of the distribution of various blood types across different regions worldwide. The accompanying figure illustrates the percentage distribution of ABO and Rh blood types (including O+, A+, B+, AB+, O-, A-, B-, AB-) globally. This information is crucial for understanding the prevalence of different blood types in populations around the world, which is essential for medical research, transfusion medicine, and healthcare planning.

Figure 2: Blood donation distribution across India

Blood Donation Distribution in India: The dataset also includes detailed information on blood donation across various states and territories in India. Specifically, it focuses on data collected during the first half of 2021. The data is segmented into categories such as voluntary blood donations (from blood banks and donation camps), family blood donors, and replacement blood donations.

Furthermore, it provides a breakdown of donations by gender (male and female donors). This data is valuable for assessing blood supply dynamics, identifying areas of need, and informing strategies for blood donation drives and healthcare interventions in India.

2 Most important parts of data (rows, columns that need to be visualised)

- **For India Distribution of types of Blood Donation Data:**

  – **Rows:** Each row represents a state or territory in India.
  – **Columns:**
    * State/Territory: Name of the region in India.
    * Total Blood Units Collected: Total number of blood units collected in each state/territory.
    * Voluntary Donations (Male, Female): Number of blood units collected from voluntary donors, segregated by gender.
    * Family Donations (Male, Female): Number of blood units collected from family donors, segregated by gender.
    * Replacement Donations (Male, Female): Number of replacement blood units collected, segregated by gender.

- **For Global Blood Type Distribution:**

  – **Rows:** Each row represents a country or region in the world.
  – **Columns:**
    * Percentage Distribution of Blood Types: Percentage distribution of different ABO and Rh blood types.
    * Percentage of the ABO and Rh Blood type in the individual country.

3 The actual visual design for doing 2

- **Distribution of different types of Blood donations in World:**

  Choropleth Map of the World: Design: Use a world map where each country/region is shaded based on the percentage distribution of a selected blood type (e.g., O+, A-, AB+). Darker shades indicate higher percentages. Interactivity: Dropdown menu or filters to select different blood types for visualization.

  We have also implemented black and white theme of above choropleth. Black-and-white maps aid accessibility for color-blind viewers, ensuring inclusive data interpretation.

- **Choropleth Map of India:**

  Design: Use a map of India where each state/territory is shaded based on the total number of blood units collected. Darker shades indicate higher numbers. Interactivity: Tooltip displaying detailed information (total units collected, breakdown by donation type) upon hovering over each state. Horizontal Bar Chart of Different States: Design: Horizontal bar chart with states/territories along the y-axis and the total number of blood units collected along the x-axis. Each bar can be segmented into different colors representing voluntary, family, and replacement donations. Interactivity: Dropdown menu to select the type of donation (voluntary, family, replacement) to dynamically update the bar chart.

4 Principles thought

- Accessibility and clarity: Linear color scaling in black and white graph enhances clarity and accessibility, ensuring consistent and aesthetically pleasing representation of complex information.

- Storytelling: Blood Origins - Tracing the Evolution and Diversity of Blood Types and Donations in India Through Graphical Analysis.

- Interactivity: Interactive percentage adjustment enhances graph comprehension, tailoring insights to user preferences for improved understanding.

5 Why does your visualisation do what it is supposed to do?

- **Choropleth Map of India and Horizontal Bar Chart of Different States with Dropdown for Donation Type Selection:**

  The choropleth map effectively visualizes the total blood units collected across different states/territories in India. Darker shades represent higher numbers of blood units collected, allowing quick identification of regions with higher donation rates.

  - **Geographic Context:** The map provides a geographic context, enabling users to easily identify and compare donation rates across states/territories.
  - **Immediate Insight:** Users can quickly identify regions with high or low donation rates based on color intensity.
  - **Interactive Tooltip:** The tooltip provides detailed information about donation counts for each state/territory upon hovering, enhancing user engagement and understanding.

- **Choropleth Map of the World with Filters for Blood Type:**

– **Story telling:** The world map provides color shadings according to the selected blood type, as in case of the blood type O(O positive) world map scaling with 0 to 60 percentage, but for blood type A(A positive), world map scaling with 0 to 35 which gives more insights for a particular blood type in the world.

6 Phase 3 implementations:

- How Blood Donation is distributed for different types of operations, disease and surgeries?

- what is the impact of Covid-19 with the Blood Donation rates?

- What factors effect the Blood Donation rates?

- How social media impacts on the Blood Donation rates?

7 Link to the youtube Video:

https://youtu.be/nkydSQRsNBQ

8 Link to the code:

https://github.com/hemanth-sunkireddy/BloodLytics

9 Link to the website:

https://hemanth-sunkireddy.github.io/BloodLytics

10 Contributions

- Hemanth (2022101005) : Visuialization(distribution of blood types by countries), Data Collection ,

- Bharath (2022101044) : Visuialization(Geographical distribution of donations in India), Report, Youtube Video

- Jagankrishna (2022101002): User Interface (UI) for the Website and Report