Title: Dynamic SVG Graph Representation of Suicide Rates in Turkey from 2009-2022

Abstract:

This report delves into the process of dynamically creating a Scalable Vector Graphics (SVG) representation, specifically focusing on the visualization of the suicide rates in Turkey from the years 2009 to 2022. Through utilizing inline JavaScript functions for creating various SVG elements, the project effectively interprets and displays statistical data, offering insights through a graphical format. The report details the methodological approach, challenges encountered, and the innovative solutions applied in data representation.

1. Introduction:

The objective of this assignment was to develop an interactive representation of data through SVG elements, generated via JavaScript functions. The chosen data set revolves around the sensitive context of suicide rates in Turkey over 13 years. This time frame presents diverse challenges and demands a careful graphical representation to ensure accurate, respectful, and clear data visualization.

2. Methodology:

2.1. SVG Creation:
The process initiated with the dynamic creation of SVG elements within inline JavaScript, allowing for real-time data rendering. The project structure required the creation of a foundational SVG element and a viewport to accommodate the graphical components.

2.2. Graph Components:
The visualization comprises three primary functions, each responsible for creating different SVG elements: rectangles (bars), lines (for the graph grid or connections), and text labels.

- Rectangles: Each bar's representation depended on the data points, dictating the x, y coordinates, width, height, and color. Additionally, a rotation transformation was applied when necessary, primarily for the inversion of the bars.

- Lines: The lines connected different data points or helped in creating a grid for the graph, necessitating the start and end coordinates for dynamic drawing based on the data.

- Text: The text function added data labels, requiring the coordinates for positioning, content, rotation (especially for vertical representation), and font styling.

2.3. Data Integration:

Initially, the project intended to integrate with external data sources (CSV, Excel) by allowing users to upload files. This approach was streamlined later by hard-coding the specific data concerning the suicide counts, simplifying the data management process.

3. Data Representation:

3.1. Scaling and Layout:
The graph required a logical scale representation, especially on the Y-axis, to accommodate the maximum suicide count recorded. The peak was approximately 4120, thus the graph's maximum limit was set to 5000, equating to 200 units in the SVG coordinate system for a balanced representation. Spacing between columns was fixed at 30 units for clarity and distinction.

3.2. Iteration and Drawing:
The drawing process iterated through each data point, dynamically creating a rectangle with a height corresponding to the suicide count. However, a challenge arose with the SVG's coordinate system as the rectangles initially faced downward. An inversion was implemented by rotating these shapes by 180 degrees, ensuring an accurate visual representation.

3.3. Annotation and Styling:
Lines and text labels were drawn based on the rectangles' positions. Each year was marked, and the corresponding suicide count was rotated 90 degrees for better space utilization and readability. Each data point on the graph was anchored to an origin coordinate, simplifying the relative positioning calculations necessary for the elements.

4. Challenges & Solutions:

Orientation: The most prominent challenge was the inverted bars due to the SVG's coordinate specifications. The resolution involved a calculated rotation, adjusting the graphical elements to reflect the true nature of the data.

Data Integration: Initial phases considered using external data files, which was later deemed unnecessary. The decision to hard-code data streamlined the process, ensuring focus remained on the graphical representation.

Scaling: Accurate scaling was vital to avoid any misrepresentation. By setting logical proportional relations between the data and the graphical elements, the project maintained factual integrity in its display.

5. Conclusion:

The project successfully illustrates the sensitive data on suicide rates in Turkey from 2009 to 2022 through a dynamically generated SVG graph, showcasing the versatility of SVG elements and

JavaScript functions. While facing several challenges, strategic decisions regarding data integration, graphical transformations, and scaling ensured a clear, accurate, and respectful presentation of the statistics. This endeavor highlights the importance of adaptable data visualization tools in interpreting and understanding real-world issues.