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Data Viz Final

**Documentation of Data Visualization Project: Exploring Health Data**

Introduction: This project aimed to visualize and interpret health-related data, focusing on relationships between alcohol consumption, HDL (high-density lipoprotein) cholesterol levels, and fiber intake across different age groups. The dataset used for this analysis was built into R and was chosen for its potential to reveal insights into health and lifestyle choices, and for how concise it was. Observable was selected as the platform for implementing D3 visualizations due to its recommendation on the D3 website. I also appreciated its user-friendly interactive capabilities considering I am very new to Javascript.

Design Process: The initial design phase started with brainstorming and sketching basic layouts and chart types. Preliminary ideas included scatter plots and line charts. Being new to Javascript, I had many frustrations and failures along the way. For example, here is a bar chart I attempted early on:
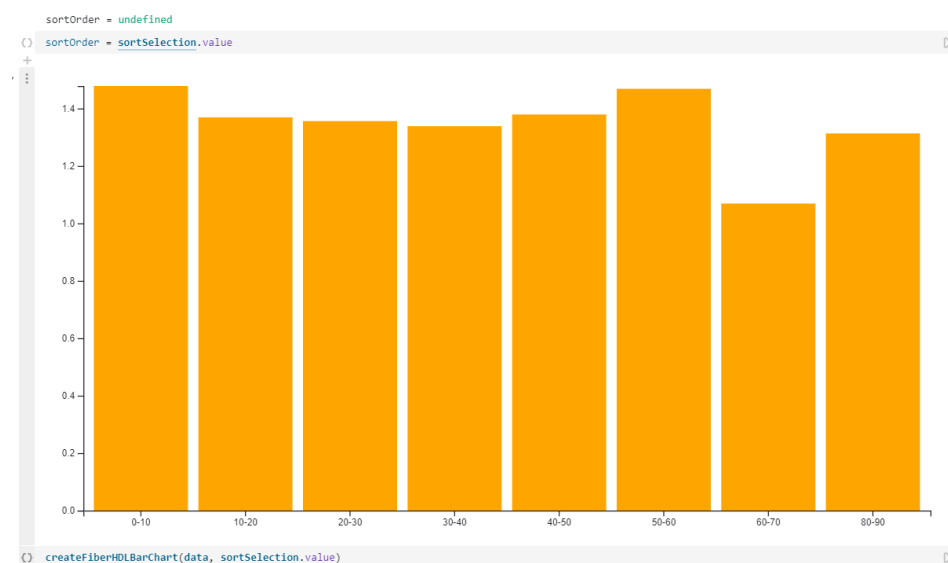
It was my first attempt at trying to make a dropdown button (it didn't end up actually sorting anything).

There was also this bar/scatter chart which did not really convey any data effectively:
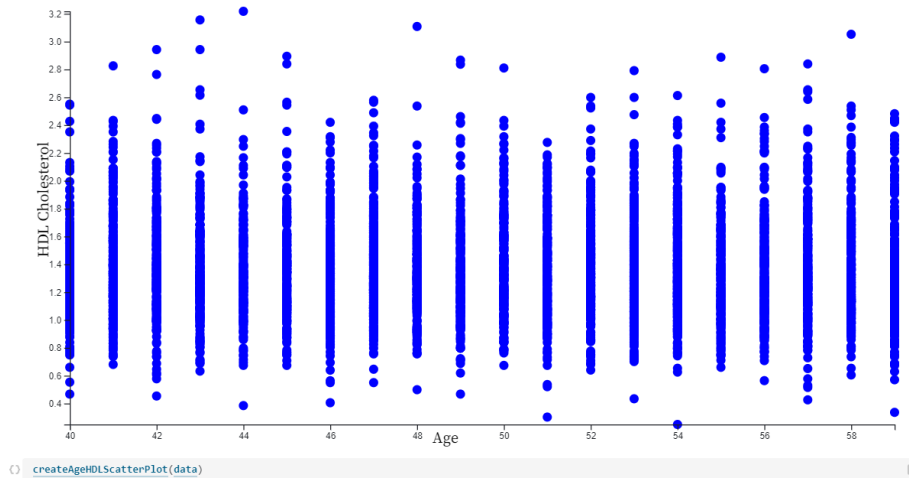
There is a whole graveyard of failed attempts on my Observable page.

As the project evolved, these attempts transformed into more refined visualizations as I got a bit more used to the platform and language.

Rationale of Design Choices:

Color Scheme: The color "steelblue" was chosen for its readability and its subtle association with health and medical themes, providing a professional and calming aesthetic to the data presentation. I chose to stay consistent throughout the 3 charts as I wanted to maintain visual integrity and not confuse users.

Layout and Structure: The visualizations were arranged to facilitate easy comparison and understanding. The layout was designed to guide the viewer through the data in a logical flow, starting with alcohol consumption versus HDL, moving to age and average total cholesterol, and concluding with fiber and HDL analysis. Sorting by age was chosen as the consistent filter because analysis I had done in R showed it to be the biggest inevitable predictor of climbing HDL (alcohol was the largest preventable predictor).

Interactive Elements: Interactive elements like dropdowns for age filtering were implemented to enhance data exploration. This allowed users to dynamically view data across different age groups, adding depth to the analysis. For the line chart I chose a tooltip so users could better see the exact data points.

Discoveries and Insights: Using the visualizations, several key insights were uncovered:

Alcohol Consumption vs. HDL: The scatter plot revealed a nuanced relationship between alcohol intake and HDL levels, varying significantly across age groups. It indicated that moderate alcohol consumption might correlate with higher HDL levels in certain age groups.

Age and Average Total Cholesterol: The line chart demonstrated that average total cholesterol levels tended to increase with age. This pattern highlighted the importance of cholesterol monitoring as part of health management in aging populations.

Fiber Intake and HDL: The final visualization, a scatter plot sorting data by age, suggested a positive correlation between fiber intake and HDL levels, reinforcing the role of dietary fiber in maintaining healthy cholesterol levels.

Implementation of Interactions: The dropdown menus for age filtering played a crucial role in dissecting these trends, allowing for a focused examination of each age group, as age is something we cannot control. This interaction provided a more personalized and detailed exploration of the data.

Conclusion: Overall, it was challenging and at times frustrating for me to attempt to learn a new platform and language, but I think in the end this project successfully utilized D3 visualizations to extract meaningful insights from health data. The interactive design enabled a deeper understanding of the relationships between lifestyle choices and health indicators across different age demographics and the process underscored the power of data visualization in uncovering hidden patterns and trends as learned in class.