CS-171 HW-7

1. Design Critique

1.1. Critique:

1.1.1. **The audience**: General Indian population and anyone who is interested in India, restaurants, Health experts, Entrepreneurs and even researchers. This visualization can be applied to any of these groups according to their need. Additionally, it can give valuable information to food producers such as farmers and livestock keepers to help them adjust their production in response to the population eating pattern.

1.1.2. **Objective**: the objective of this vizuation is as wide-ranging as its audience in my opinion. But the core objective is to answer the question , "**how does the eating pattern, specifically the distribution of vegetarian and non vegetarian population in India, vary across its regions and states**." Moreover, it could be applied to study the impact of traditions and religious values and how those values do shape how the people eat. Some other questions this visualization can answer are: Which state in India has highest proportion of Vegetarian people? Which one has the lowest? And any other question framed with interest of exploring the percentage breakdown of vegetarian and non vegetarian population across Indian states.

1.1.3. **Design elements and their contribution towards the objective**:

1.1.3.1. **Background map and State Initials**: This helps the audience to understand which specific region the current information (the proportion breakdown) is targeting and where that region in India

is. Though it is possible to question why it is necessary to show the geographical location but there can be ways that information can be useful. And hence, blurring it is a good probably given the fact that geography is not the main purpose of the vizuation.

1.1.3.2. **Colors:** This is a very useful encoding to make the vizuation and it helps the audience to read the proportions of the data easily. Moreover, the fact that green color encoding vegetarian and red color (meat looking) encoding non vegetarian is a good design choice and helps to emphasize the contrast.

1.1.3.3. **Circle**: all circles have same radius, which is a correct choice to show the breakdown of two items which always add up to 1 or 100%.

1.1.3.4. **The numbers and arrows:** These are also useful part of the design. Without the numbers it is hard to read the proportions just from the circle breakdown. However, the vizuation could have been done in a more efficient way that removes these addition elements -meaning both numbers and lines.

1.1.4. **Are the design elemtns effective**: Generally speaking all elements in the design come together to serve the objective. However, it is the choice that the designer made that some how necessitated the use of so many elements. With a choice of better vizuation, many of the design elements would not be necessary. For example, the lines, and the numbers and the map, all could be removed and one can make a more simpler design that

can serve the same goal. Doing so will result in a better data ink ratio. Currently the data ink ratio is very low because of all these unnecessary elements which could have been reduced with a better choice. Additionally, the inconsistency in position of the data can lead to confusion as well. In some of the circles, the inner part of the circle represents Vegetarain and the outer represents non vegetarian but in some others circles, the position is reversed and I personally do not see any importance with this inconsistency and it does only add confusion.

1.1.5. Overally the vizuation does answer the objective question well and I think it is a good success, except for some of design choices that negatively affect the data ink ratio. However, there are obvious inconsistencies. Some circles have numbers inside them, others do not,. Some circles go outside the state they are in. Some have the stat abbreviation inside the circle and others do not.

2. Graphical Integrity, Gestalt Principles, C.R.A.P. Principles

2.1. Graphical integrity

2.1.1. **Integrity**: This vizualization is lacks integrity because the shrinking rate/size does not reflect the actual decrease in the percentages of family doctors. The ranges (time) is not to scale. 1964-1975 is much larger than t 1975-1990.

2.1.2. Lie Factor: the lie factor is significant because the scale of the graphic does not correspond to the data being represented. This vizualization as a lie factor of 2.8 as per https://infovis-wiki.net/wiki/Lie_Factor, because the figure and scale are distorted.

2.1.3. Data ink ratio - first of all it is unnecessary to have a doctor drawing taking that much space and the vizuation has so much of ink that does not even help to represent the data, hence it has a very low data ink ratio. A much better way would have been just using a bar graph with percentages and time on axes. Moreover, the shapr black border is not really serving any purpose and removing it will also improve the data ink ratio.

2.1.4. Churt junk: As mentioned above, the border is totally unnecessary junk in the vizualization. Too oversized and unscaled drawing of the doctor. Addressing all these issues will result in a much better, neat and informative visualization.

2.2. Gestalt principles

2.2.1. Proximity: More similar things are closer to each other and less similar items are farther apart. Example meat are closer to each other than they are

to vegetables. Red wines in average are closer to each other than they are to the white wines.

2.2.2. Connection: Connection is used to show the pairing of the wines and foods.

2.2.3. Similarity: Red wines and meat having similar color helps to group them together. White wine and also the vegies have similar green color.

2.2.4. Continuity**:** Used to show the pairing of the food and best wine that goes with it, and makes it easy to follow and read.

2.3. C.R.A.P. design principles:

2.3.1. Contrast: different colors for different details,

2.3.2. Repetition: Repetition of colors throughout the visualization. Purple color representing health, green repsenting enviroment and other similar colors and their repetition makes it easy for the audience to read and compare different metrics across countries

2.3.3. Proximity: Similar informations are grouped together in such away tha makes the reading and interpretation easy. For example, the grouping of well-being detail.

2.3.4. Alignment: Very balanced placing of visual elements throughout. A good spacing. The map, regions with similar metrics, the paragraph and everything is well organized and neat.

3. **To show change over time, I think the best design choice are Multiple line graph (line graph from the viz vocab) with color encoding and scatter plot with color encoding as well.**

3.1. **Line graph**:

3.1.1. Question : how did sugar content in different food groups changed over time? Did any of the foods showed most to change compared to the others?

3.1.2. Design: X axis being the time, y axis representing the amount fo sugar, draw a line that connects points for each food group (cereal, bread). Each one has its own line colored. Put a legend which encodes the foods to a color.

3.1.3. Data: I believe I can several datasets from U.S. Department of Agriculture (USDA) and maybe other heath institutions or research centers.

3.1.4. Why the design: I think the multi line chart with color encoding is the most intuitive and easy to interpret graph for things that change over time.

3.1.5. How: As described above, different colors for different foods and line colors corresponding to the encoding. Give the color encoding as legend in the graph.

3.2. **Scatter plo**t;

3.2.1. Question: Here the same question as above can be answered. But I would use this one to get more generation information about how the eating habit is changing over time? Is there any specific model/ fit line? Or anything that can help do some regression or simple modeling.

3.2.2. Design: Make scatter plots with color encoding. Where points corresponding to the same food data have the color. Provide a legend. X axis has time and Y axis shows the sugar content.

3.2.3. Data: The same as above

3.2.4. Why the design: this is also the same reasoning as the line graph and it is easy for the audience to understand.

3.2.5. Encoding: Color and provide legend.