REPORT ON FIT3179 DATA VISUALIZATION ASSIGNMENT 2

Link to visualization: https://tongjetkit.github.io/FIT3179-A2/

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Number of Words: 1000

1 Domain

1.1 Description of Dataset – What?

The domain of the dataset (World Happiness Report up to 2023. (2023, September 9)) is a comprehensive evaluation of happiness index score and the factors influencing it including GDP per capita, healthy life expectancy and freedom on each country for every year. The data is sourced from Kaggle which is a dataset database for data scientist. The author of the dataset is from the World Happiness Report 2023 (11th ed.) which was written by a group of independent experts (The World Happiness Report. (2023, June 20)) and is a publication of the Sustainable Development Solutions Network, powered by the Gallup World Poll data. The happiness ranking in the dataset is based on individual's own assessment of their lives to the single-item Cantril Ladder life-evaluation.

1.2 Why?

The dataset is compiled for governments and any concerned individuals to assess the current state of happiness both globally and within our country which then will help determining the social and economic development of a country. Furthermore, it offers a reflective standpoint, allowing for comparisons with countries that achieve higher happiness scores, which can guide the development of improved strategies and actions. Ultimately, the dataset also pinpoints specific areas within the happiness factors that governments should focus on for improvement.

1.3 Data Preprocessing

After going through the datasets, I decided to preprocess the data by compiling all the data for each year into a file and add a Latitude and Longitude column for the dataset as well. Furthermore, the dataset includes entries with values of 0 and missing entries for particular years Despite conducting a comprehensive review of the report, I couldn't find any guidance on how to impute substitute values for these scenarios. Therefore, I made the decision to retain them, with the understanding that these values will be excluded from the visualization.

2 Idioms

2.1 Bump Chart

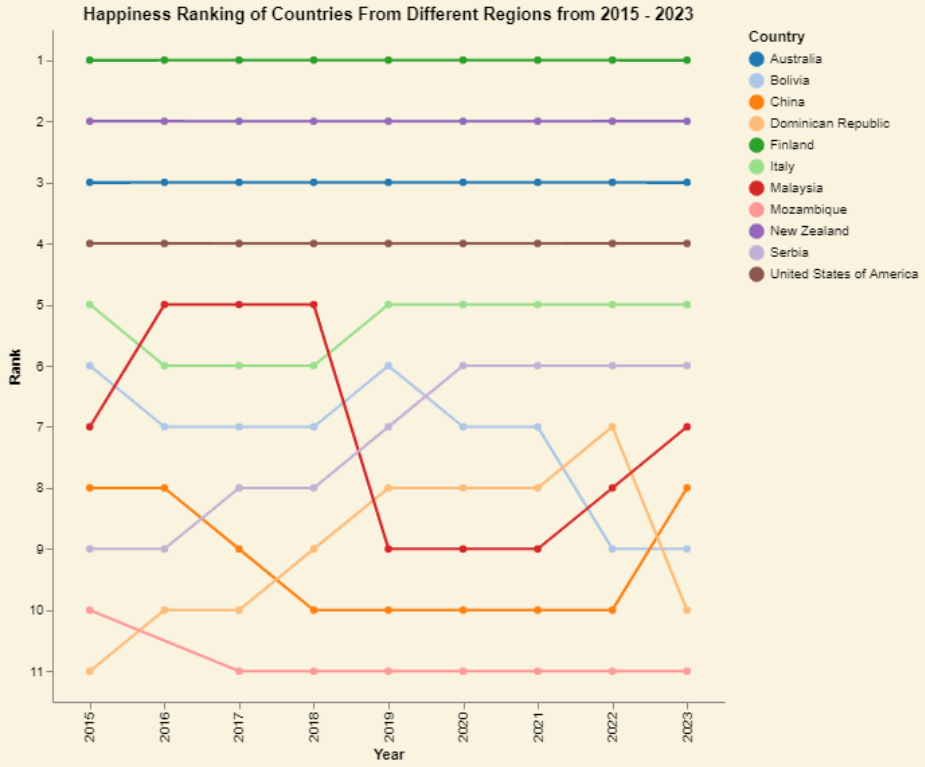

Figure 1: Bump Chart

To help visualize the data, I have created a visualization using Vegalite (Vegalite. (n.d.)) which can be seen using the link above. I have created a Bump Chart (Figure 1) to visualize the ranking of happiness score for some countries from 2015 to 2023. Governments can utilize this visualization to compare countries and gain insights to their performance over the years and pinpoint the reasons behind significant ranking changes for self-improvement. Readers can also hover over each point on the line to see the ranking and happiness score for each country at each year. The reader can also click on the legend itself to highlight the country while others will fade off. This will then help reader to read and understand the visualization better with some tooltip and filtering.

2.2 Scatterplot

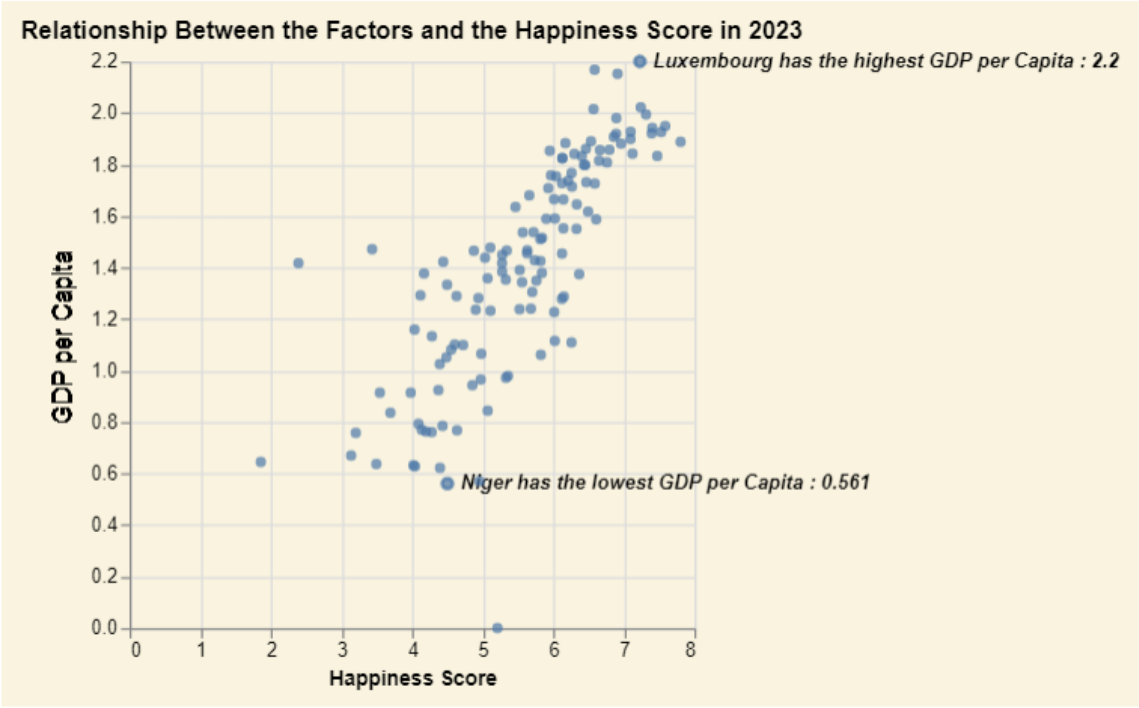

Figure 2: Scatterplot

Then to visualize the correlation between the factors and the happiness index score. I have created a scatterplot(Figure 2) as it visualizes relationships between 2 variables and the trend. This visualization will have data in 2023 as we are currently in 2023 so this data would better relate to us. It also helps show the distribution of factors and costs so governments can identify which factor affect the happiness score the most. For this scatterplot, I have added a dropdown box which readers can use to select the factor to visualize the correlation. Moreover, a tooltip is also added to each dot to display the happiness score and the factor value. Lastly, text annotations are also added to the scatterplot to identify the country with the highest and lowest factor value.

2.3 Choropleth Map

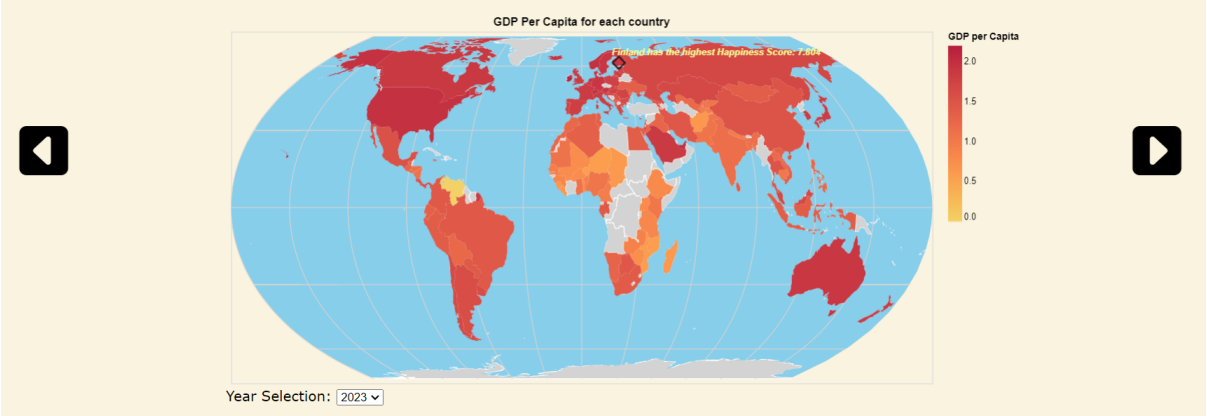

Figure 3: Choropleth Map

I've created choropleth maps (Figure 3) for each factor to visualize their global distribution, aiding in the identification of regional disparities. Readers can then further investigate to identify the cause through the explanation below. Readers can easily switch between years using dropdown boxes to track factor trends over time. Tooltips are also provided to show country names, years, and factor values. For unavailable data, grey fields with tooltips indicate their absence. Text annotations highlight the highest happiness country each year. A user-friendly slideshow is also created to allow readers to navigate these maps.

2.4 Stacked Bar Chart

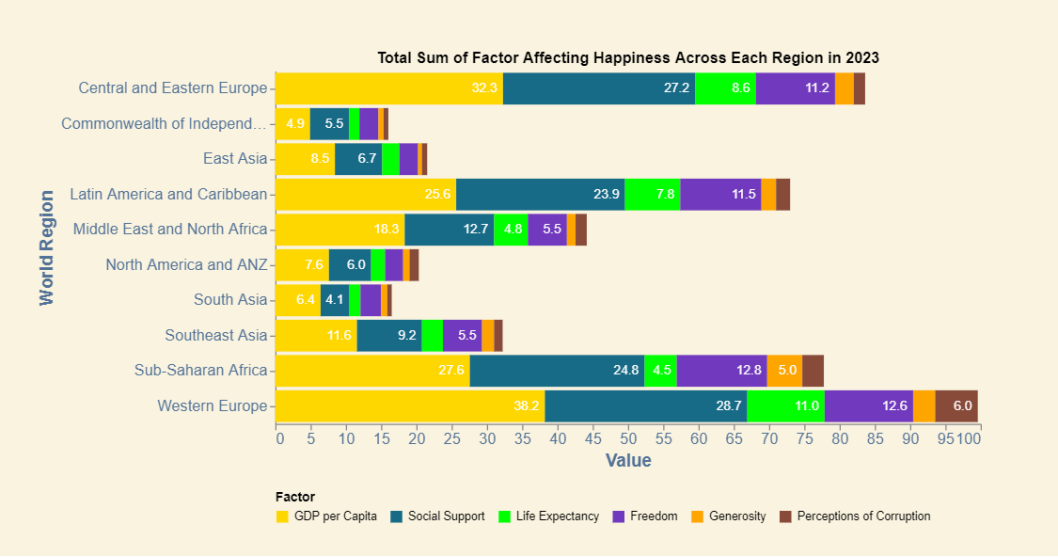

Figure 4: Stacked Bar Chart

Lastly, to help visualize the distribution of factors across different regions in 2023, I have created a stacked bar chart (Figure 4) that shows the total value for each factor for each region. This visualization will help readers to identify which factor contribute much to the happiness score and which region is the happiest. They can then get a further understanding through the explanation done below. I chose to view data in 2023 as we are currently in 2023 so this data would better relate to us. In this visualization, users can filter the factor to visualize by clicking on the legend which will then isolate the bar. Moreover, a tooltip is added for better clarity to show the value of each factor.

3 Design

3.1 Layout

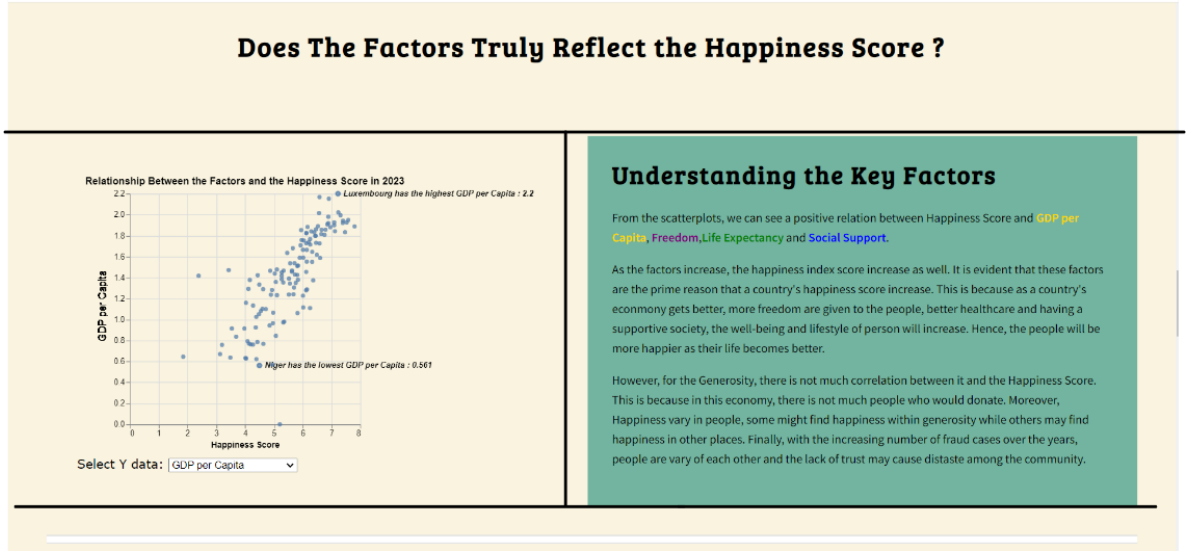

Figure 5: Sightlines

For the layout of the visualization, I opt for a vertical dashboard view so we can improve the user's readability by organizing the content which then can help reduce cognitive load. Moreover, vertical layouts are better in story telling so we can guide users through our visualization in a structured manner. Although a horizontal grid dashboard view would be sufficed as well however, to avoid cluttering the visualizations, I decided to use a vertical dashboard view instead. Moreover, it is much more space efficient organized. The dashboard is also symmetrical and balanced to improve readability so readers can view my visualization clearly. Minimal sight lines (Figure 5) are also used to align visualization to show connectivity. There are not many whitespaces used as a compact layout promotes visual cohesive to make it easier for readers to identify the relationship between the visualization elements so they can process information better.

3.2 Colours

Figure 6: Colour

For the colour, I use colours that correlates to happiness which are yellow orange and green (Figure 6). For the title of the website, it is highlighted in orange to accent from the beige background (Figure 6). The yellow colour is used for the word “happy” in the title (Figure 6). Light blue colour is used as the background of the text box to highlight the explanation (Figure 6). I also ensure that the colour used in the textbox is consistent. Furthermore, for the factors I use the same colours that are applied in the charts for consistency (Figure 6).

3.3 Figure Ground

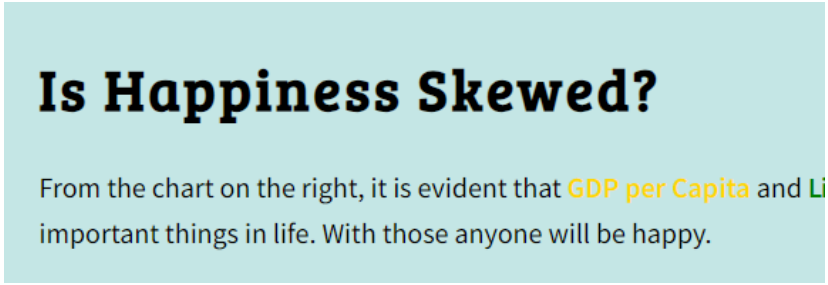

Figure 7: Figure Ground

To apply figure ground, I bold every title of each section to accentuate it (Figure 7). Besides that, I also increase the font size of the title while ensure the paragraph has a smaller font size. Any important words are also highlighted with another colour to accent it.

3.4 Typography and Storytelling

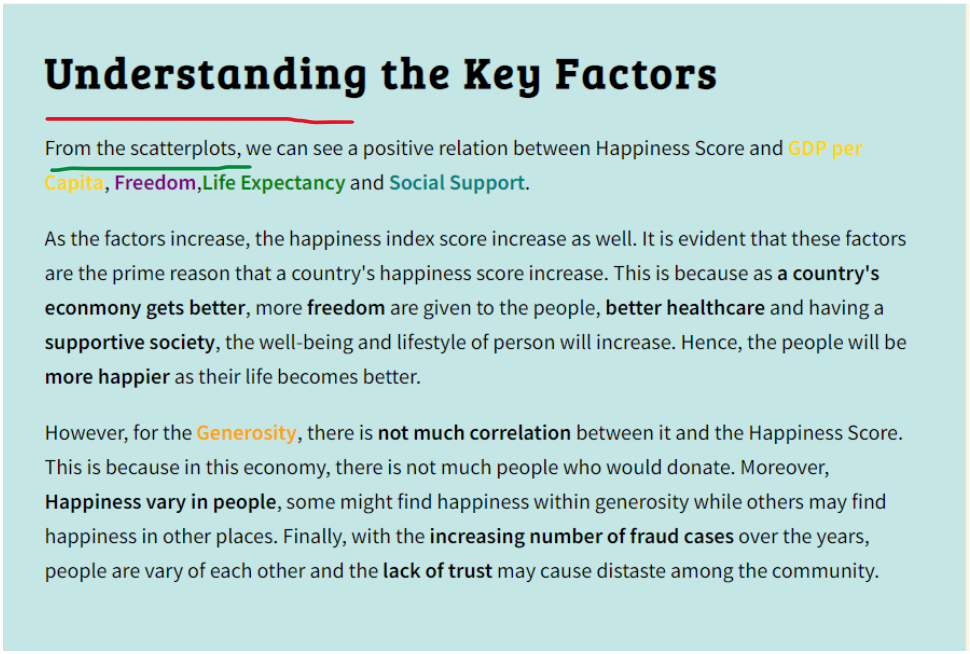

Figure 8: Typography

The typography (Figure 7) used in this visualization is Sans-Serif (Green) and Serif (Red). Sans-serif is used in paragraphs and details as it increases readability while Serif is used in titles. There is a mix used of Bold and Light font weight to differentiate between important and insignificant text. The storytelling used in this visualization is comic strip as there is a defined order of viewing the visualization. The reader should read the visualization from top to bottom.

References:

1) World Happiness Report up to 2023. (2023, September 9). Retrieved from https://www.kaggle.com/datasets/sazidthe1/global-happiness-scores-and-factors
2) The World Happiness Report. (2023, June 20). Retrieved from https://worldhappiness.report/
3) Vegalite. (n.d.). Retrieved from https://vega.github.io/vega-lite/

5 Design Sheet

by Tong Jet Kit