

Exploring the Insights within the Global Happiness Index

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I. INTRODUCTION

i. Global Happiness Score

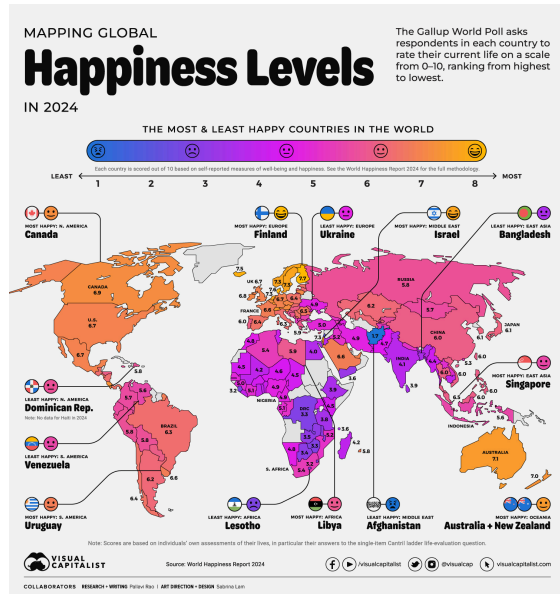
The Life Ladder score, also known as the World Happiness Score, is derived from the Gallup World Poll data. The score is typically calculated based on several key variables that reflect the well-being and quality of life in different countries. Here's a general outline of the formula and components involved in calculating the World Happiness Score:

Component	Description
Life Evaluations (Ladder Question)	Respondents rate their current life from 0 (worst) to 10 (best).
GDP per Capita	Natural logarithm of GDP per capita (PPP terms).
Social Support	Binary response to: "Do you have relatives or friends you can count on for help if needed?"
Healthy Life Expectancy	Life expectancy at birth.
Freedom to Make Life Choices	Binary response to: "Are you satisfied with your freedom to choose what you do with your life?"
Generosity	Donations to charity in the past month, adjusted for GDP per capita
Perceptions of Corruption	Perceived corruption in government and business.
Positive and Negative Affect	Average responses to questions about recent experiences of positive and negative emotions (e.g., laughter, enjoyment, sadness, and anger).

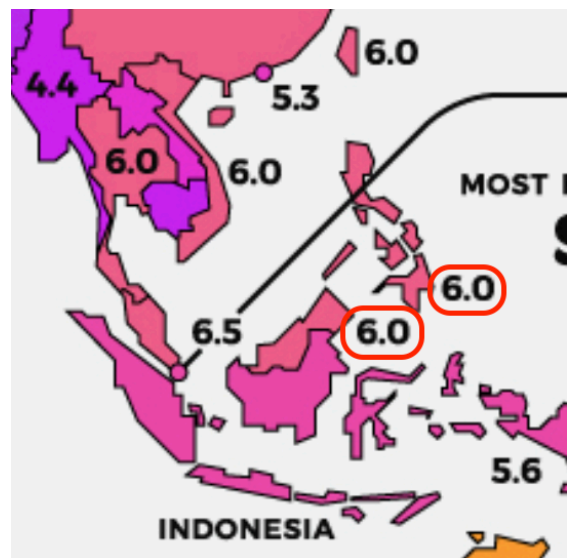
The World Happiness Score is calculated using a regression model that combines these variables to predict the happiness score for each country.

ii. Visualcapitalist's Global Happiness Levels Previous Visualisation

The following Figure 1 from Visualcapitalist presents the global happiness levels in 2024, as reported in the **World Happiness Report** (WHR). The static world map provides a visual representation of the happiness scores across different countries, with the color gradient indicating the relative happiness levels. The visualization aims to highlight the disparities in happiness levels worldwide and the factors that contribute to these variations. However, through our critical analysis, we identified several strengths and weaknesses in the original visualization that we aim to improve as detailed below.



(a): Global Overview World map of Happiness Levels in 2024



(b): Inconsistent Labeling example

Figure 1: Visualcapitalist Global Happiness Levels Report



Figure 2: Linear scale of Happiness score of each country by region

II. METHODS

i. Data Understanding and Cleaning

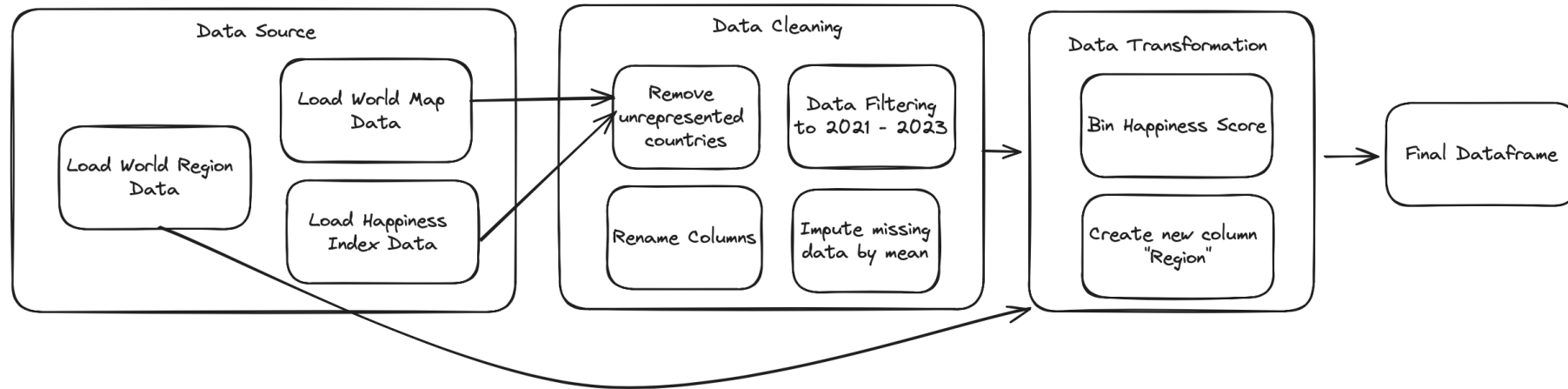


Figure 3: Data Prep Pipeline

ii. Create violin plot

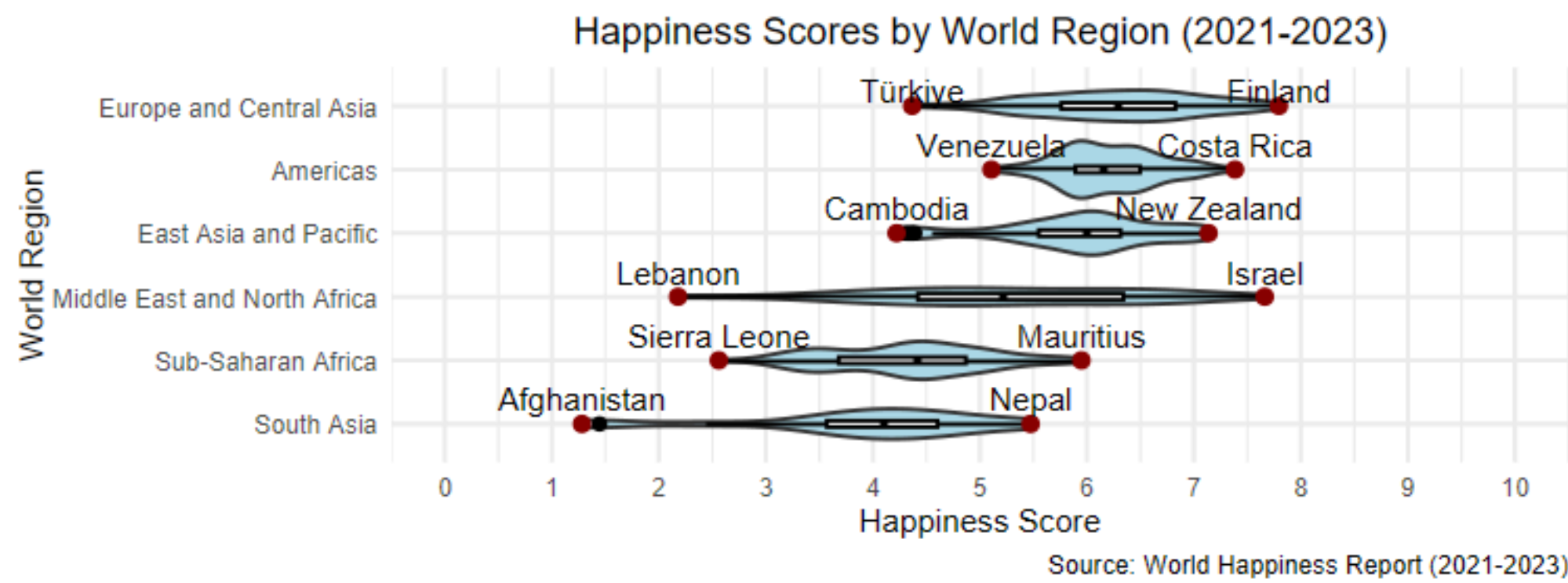


Figure 4: Violin Plot of Average Happiness Levels by World Region (2021-2023)

iii. World Map

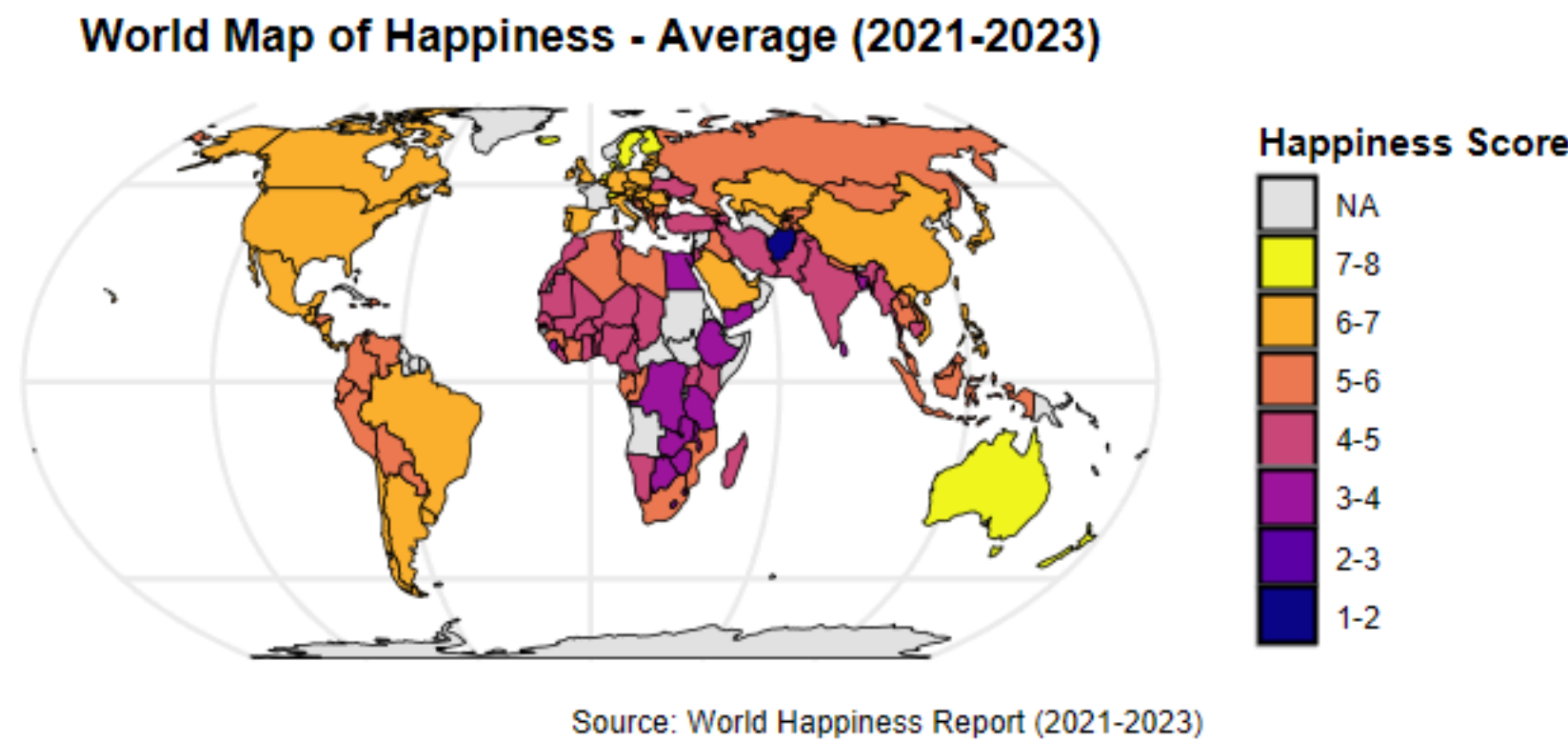


Figure 5: World Map of Average Happiness Levels (2021-2023)

iv. Distribution Chart of Scores

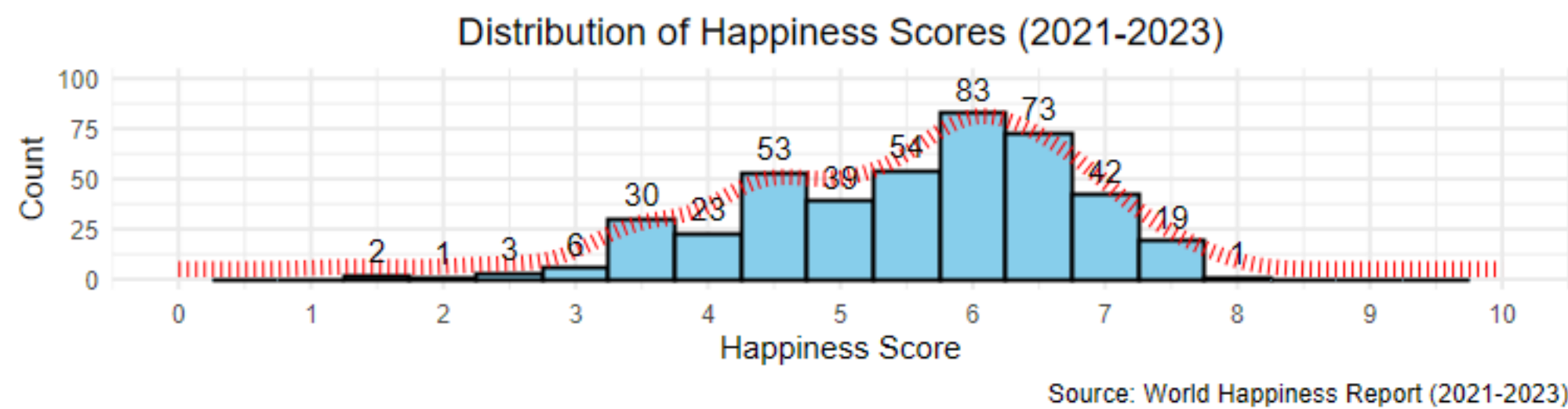


Figure 6: Distribution Histogram of Average Happiness Levels (2021-2023)

III. FINDINGS

Based on our analysis of the Global Happiness Index, we derived several key insights:

i. Regional Variations in Happiness

- The violin plot (Figure 4) highlights significant variations in happiness scores across different world regions from 2021 to 2023. Regions such as Europe and Central Asia show higher average happiness scores compared to regions like Sub-Saharan Africa and South Asia.
- The spread of happiness scores within regions also varies, with some regions displaying a wider range of scores, indicating greater disparity in happiness levels among countries in those regions.

ii. Geographical Distribution of Happiness

- The world map (Figure 5) visually represents the average happiness scores for different countries. Countries in Northern Europe, such as Finland and Denmark, are among the happiest, while countries in regions like Sub-Saharan Africa and South Asia tend to have lower happiness scores.
- The map helps to quickly identify areas of high and low happiness, showing a clear geographical trend.

iii. Distribution of Happiness Scores

- The histogram (Figure 6) shows the distribution of happiness scores for 2021-2023. The majority of countries have happiness scores between 4 and 6, with a smaller number of countries scoring above 7 or below 3.
- This distribution suggests that while there are a few very happy and very unhappy countries, most countries fall within a moderate range of happiness.

iv. Factors Contributing to Happiness

- The table in the Introduction section outlines various components contributing to the Global Happiness Score, such as GDP per capita, social support, healthy life expectancy, and freedom to make life choices. These factors collectively influence the happiness levels in different countries.
- Regions with higher scores in these components tend to have higher overall happiness scores, indicating the importance of these factors in achieving happiness.

IV. CONCLUSION

Our study on the Global Happiness Index reveals distinct regional and geographical patterns in happiness levels across the world. Northern European countries consistently rank among the happiest, while regions like Sub-Saharan Africa and South Asia face greater challenges in achieving higher happiness scores. The analysis underscores the importance of economic, social, and health-related factors in determining happiness levels. Policymakers and stakeholders can use these insights to develop targeted interventions aimed at improving the well-being and happiness of populations, particularly in regions with lower scores. The visualizations provide a clear and comprehensive understanding of global happiness trends, highlighting areas of strength and areas needing improvement.

V. ACKNOWLEDGEMENT