

World Happiness Report 2019





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What is it?

The World Happiness Report

- measures the **overall state of global happiness** by factoring in each country's status in *economy, health, social support, government trust, etc.*
- **ranks the countries** by how happy their citizens perceive themselves to be.
- first released in April 2012, based on the Gallup world poll



Why this topic?



**Useful way to measure
policy effectiveness**

**Quality of life among
countries**

**(ex. working opportunities,
migration, etc.)**

Dataset

World Happiness Report

<https://www.kaggle.com/unsdsn/world-happiness?select=2019.csv>

- *GDP per capita*
- *Social support*
- *Healthy life expectancy*
- *Freedom to make life choices*
- *Generosity*
- *Perceptions of corruption*



Scope and Limitation

Only 2019 World Happiness Report was used in the analysis.

Assumption

The dataset contained most of the necessary information needed hence minimal data cleaning was conducted.

Data Science question

WHAT
MAKES A
COUNTRY
HAPPY?

Guide:

1. What is the distribution of happiness scores around the world?
2. How does each happiness factor correlate with the overall score?
3. How does each happiness factor correlate with one another?
4. What are the most and least sources of happiness for the top and bottom 10 countries?

STEPS TO DATA ANALYSIS

1

DATA CLEANING

- Renamed Regions column to Continent
- Categorized the countries per Continent

2

PERFORM EDA AND APPLY ML

- Descriptive statistics
- Correlation of Factors
- Machine Learning - Linear Regression

3

PLOT AND VISUALIZE

- Relationship of the variables
- Visualize Machine Learning results

4

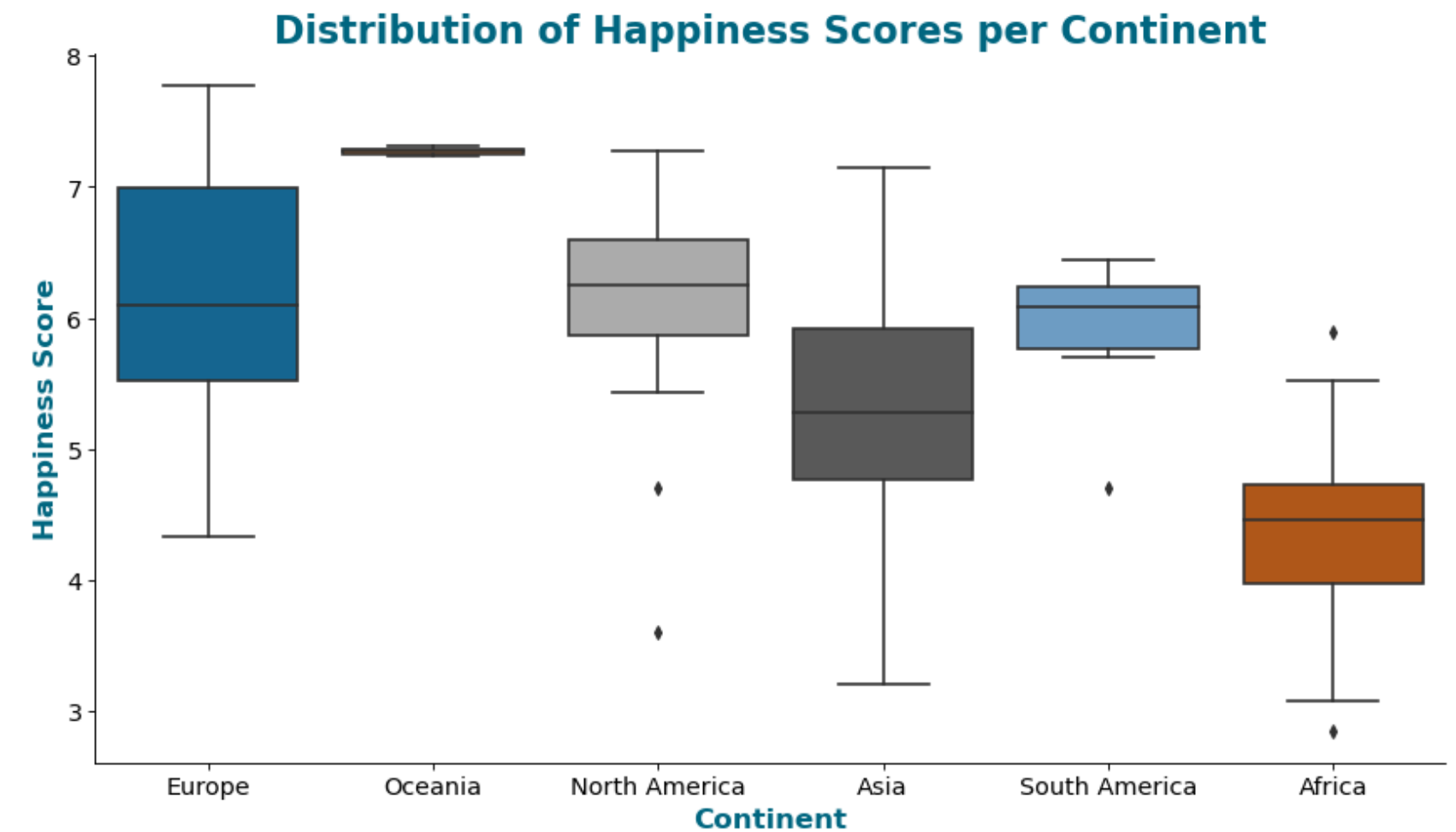
MINE INSIGHTS

- Understand patterns of the data
- Identify strong determinants
- Look for opportunities for recommendations

GENERAL ANALYSIS



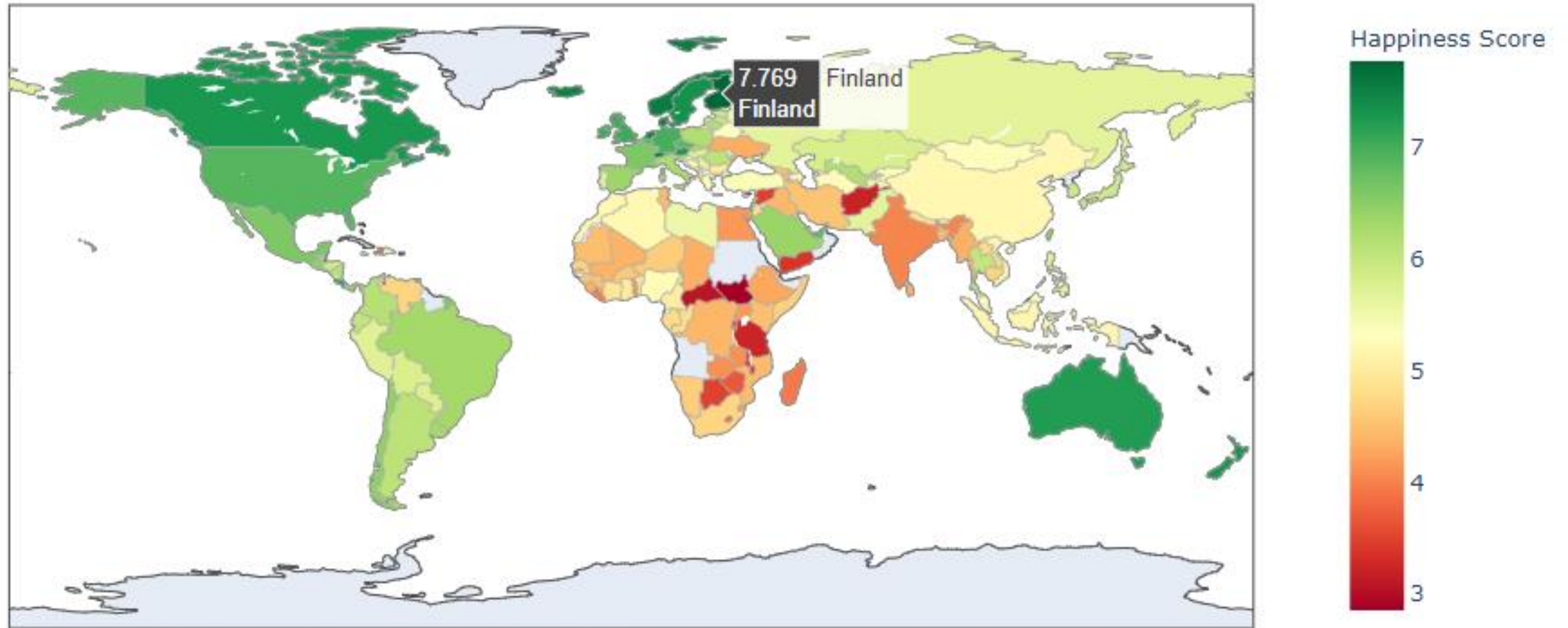
Happiness scores are spread among countries (bimodal distribution), and where the world average score is almost same value as the world's 50th percentile score.



Majority of European countries have a relatively higher score compared to the other continents, whereas majority of African countries are at a lower score.

GENERAL ANALYSIS

Happiness Score



GENERAL ANALYSIS

Correlation Matrix of the Happiness Factors



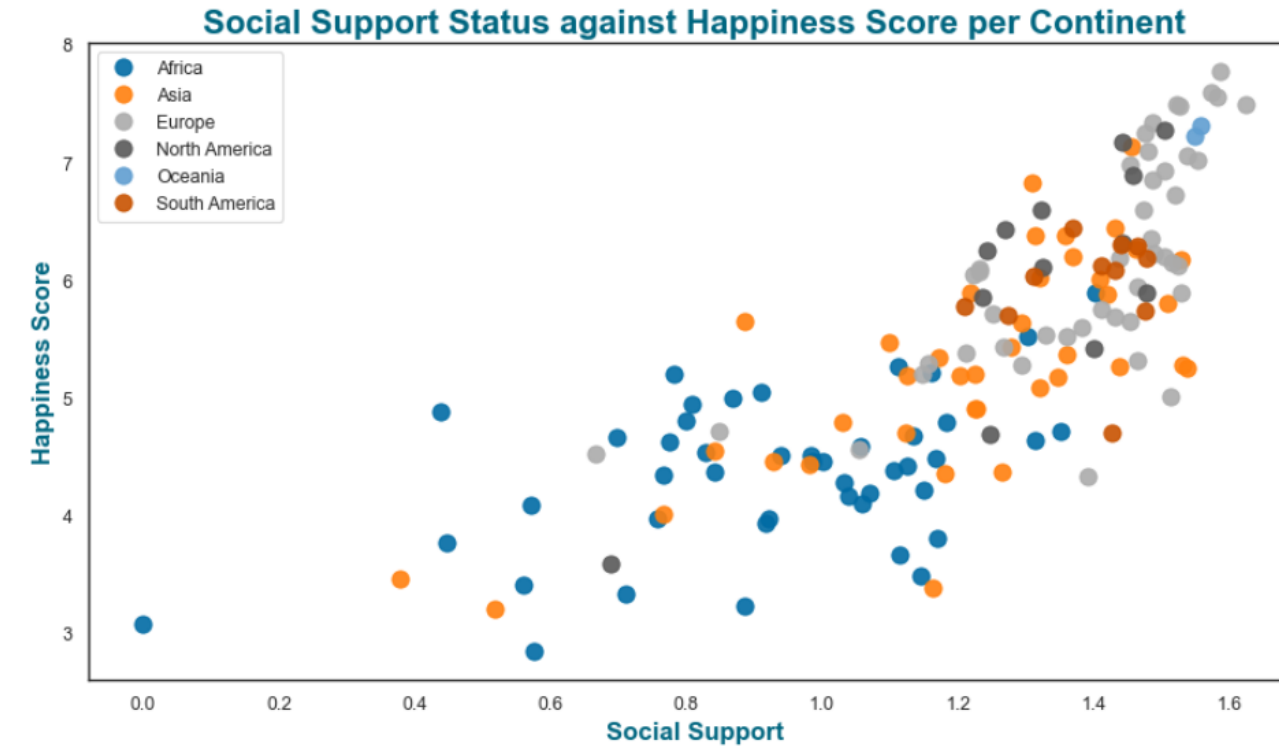
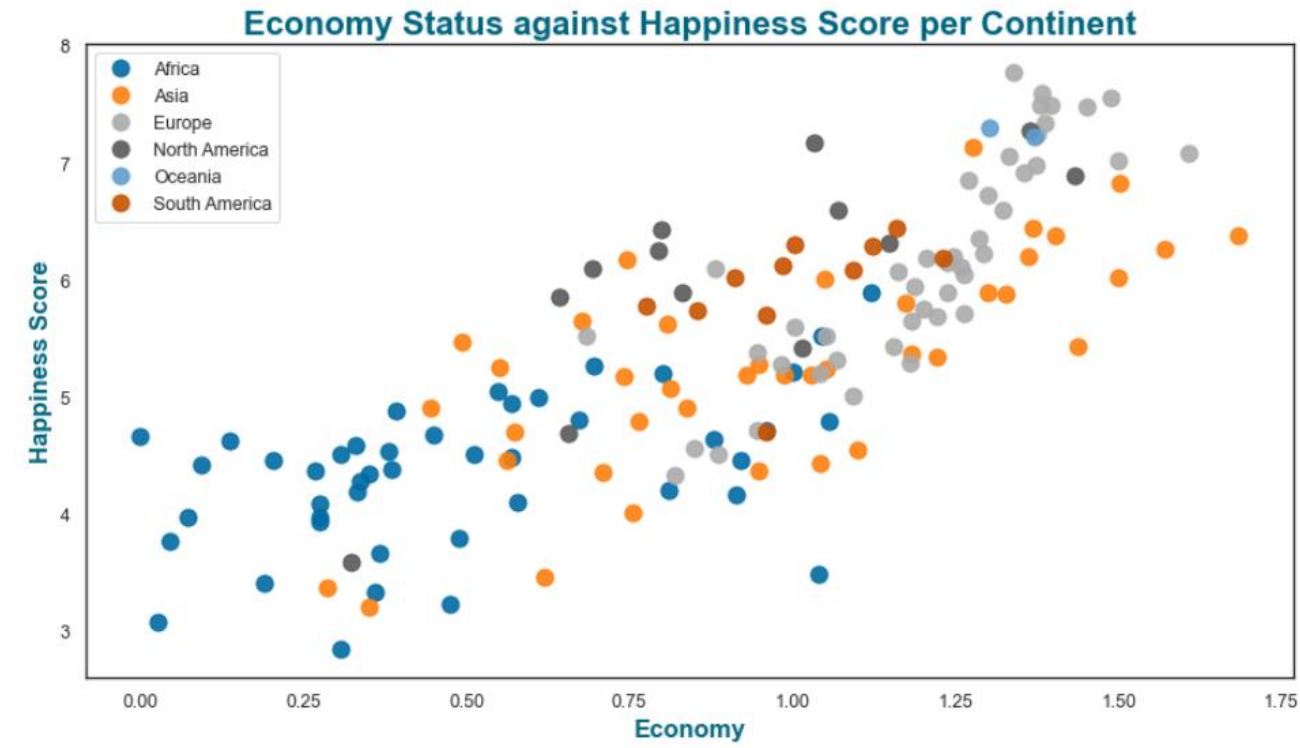
Economy, Social Support, and Healthy Life Expectancy have a strong degree of relationship with the Happiness Score.

As each factor increases, the overall Happiness Score increases as well.

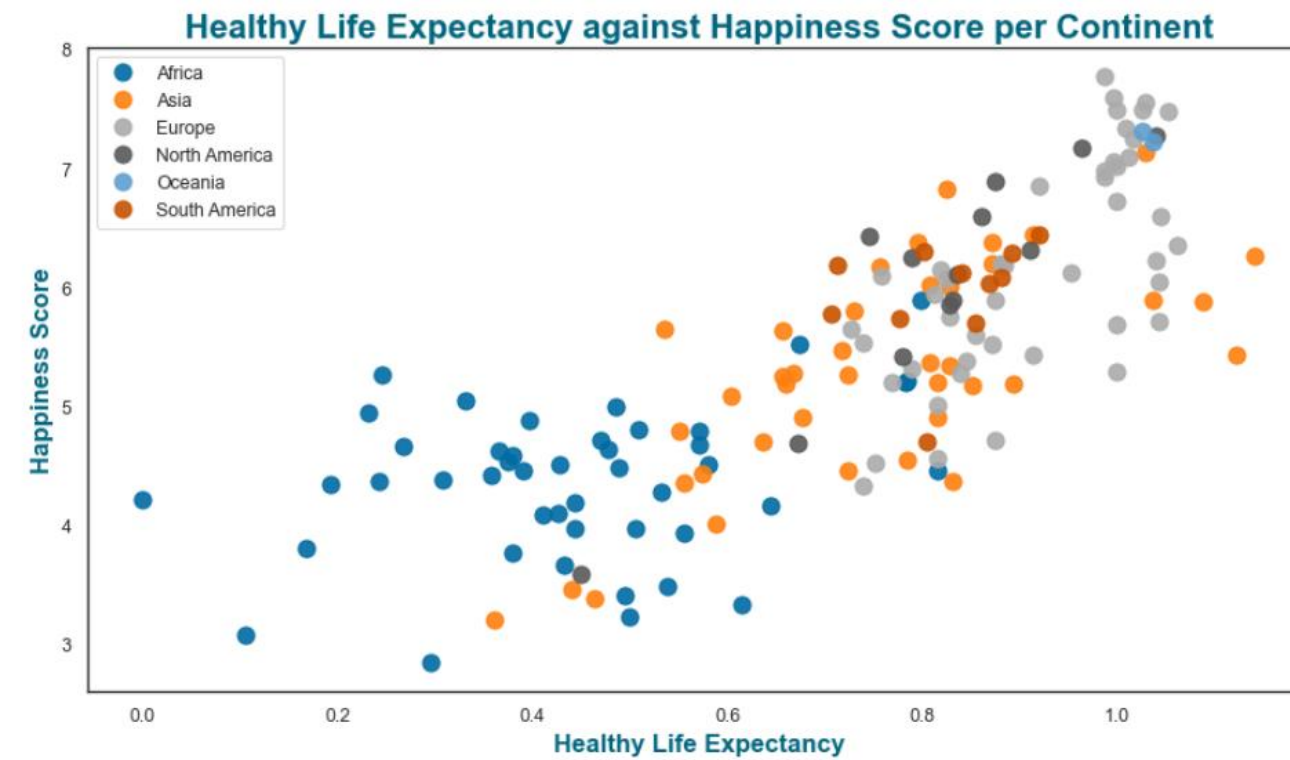
Factor to factor analysis shows strong degree of relationship between the following:

- Economy-Social Support
- Economy-Healthy Life Expectancy
- Social Support-Healthy Life Expectancy

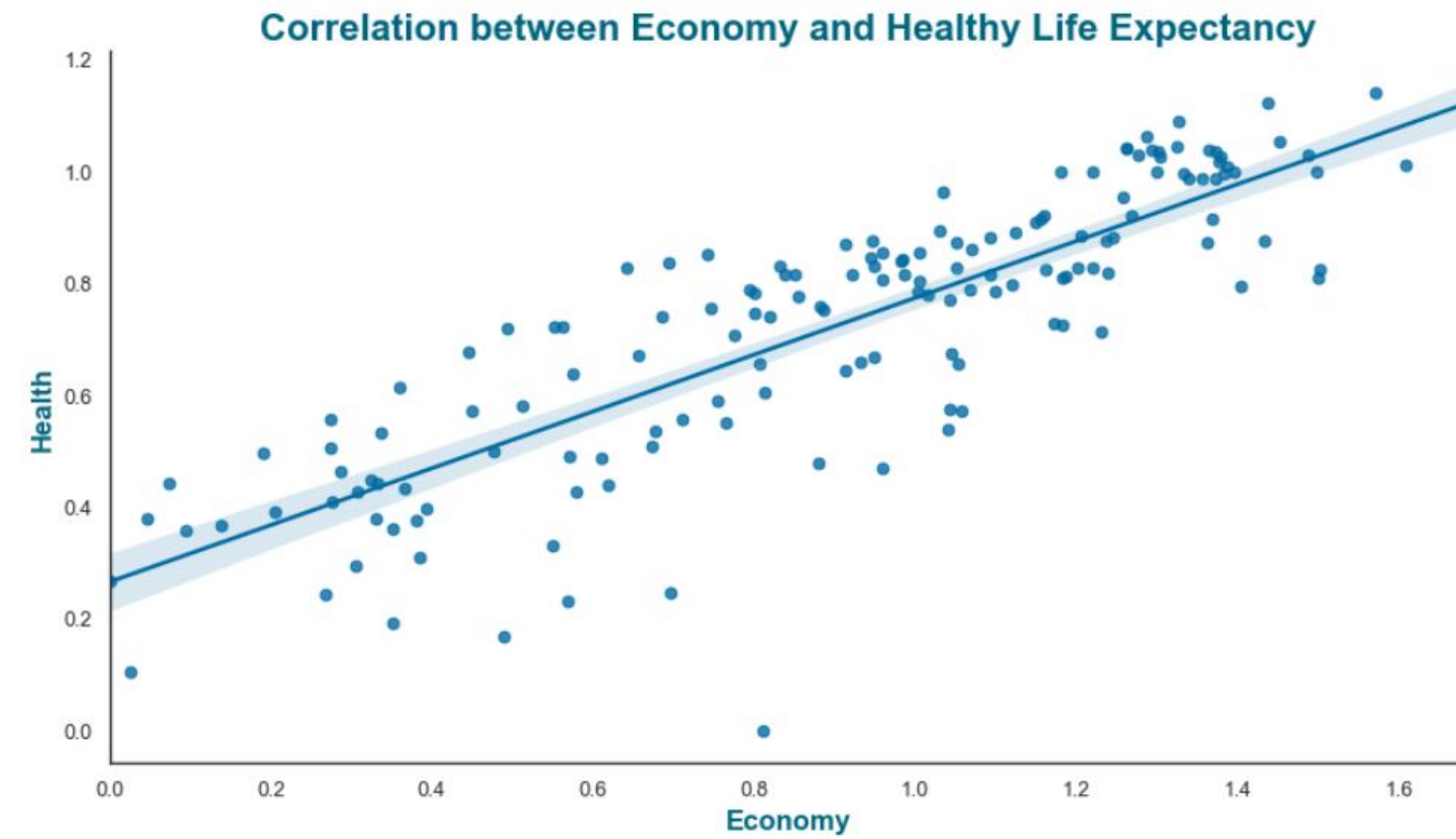
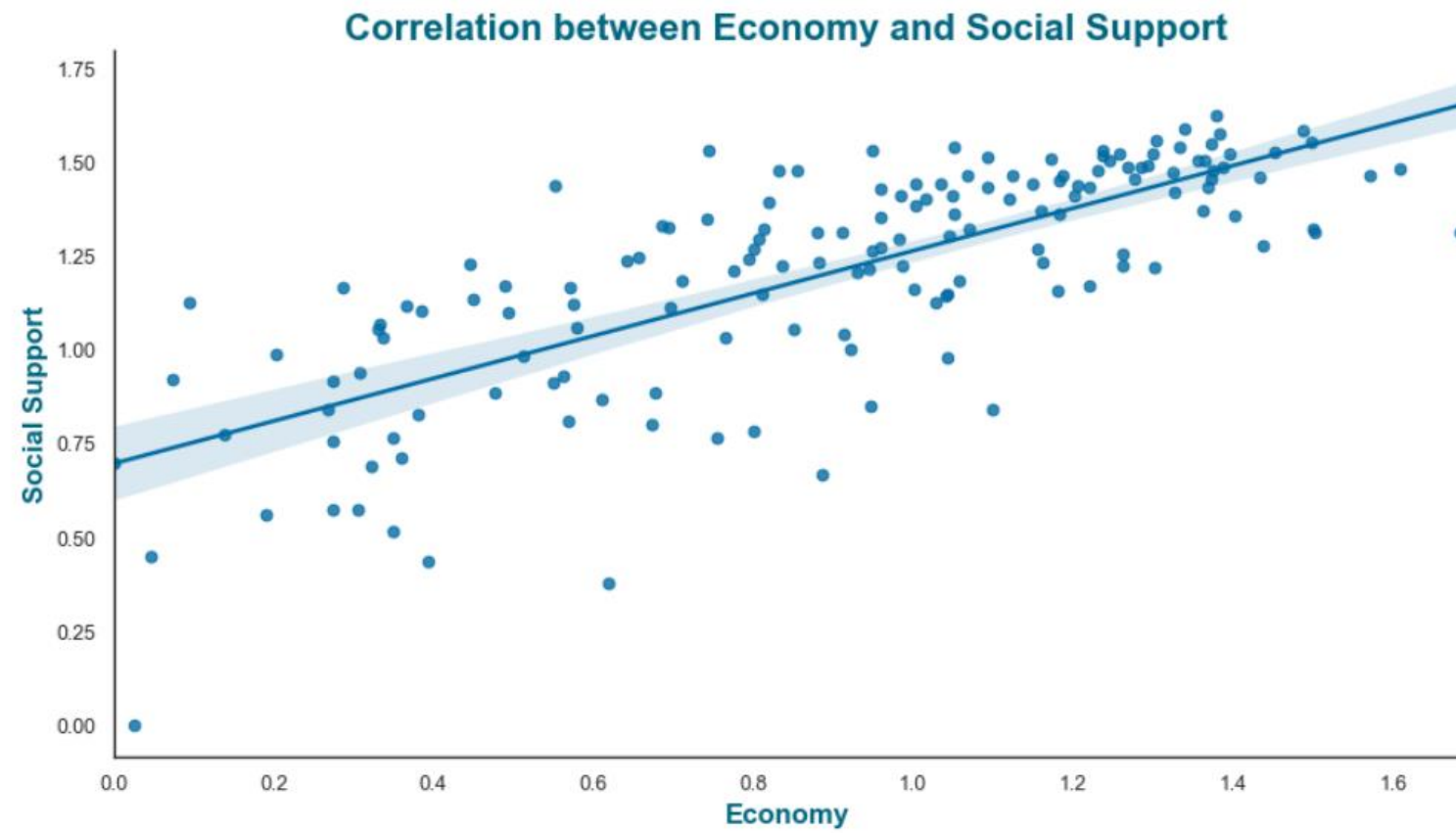
GENERAL ANALYSIS



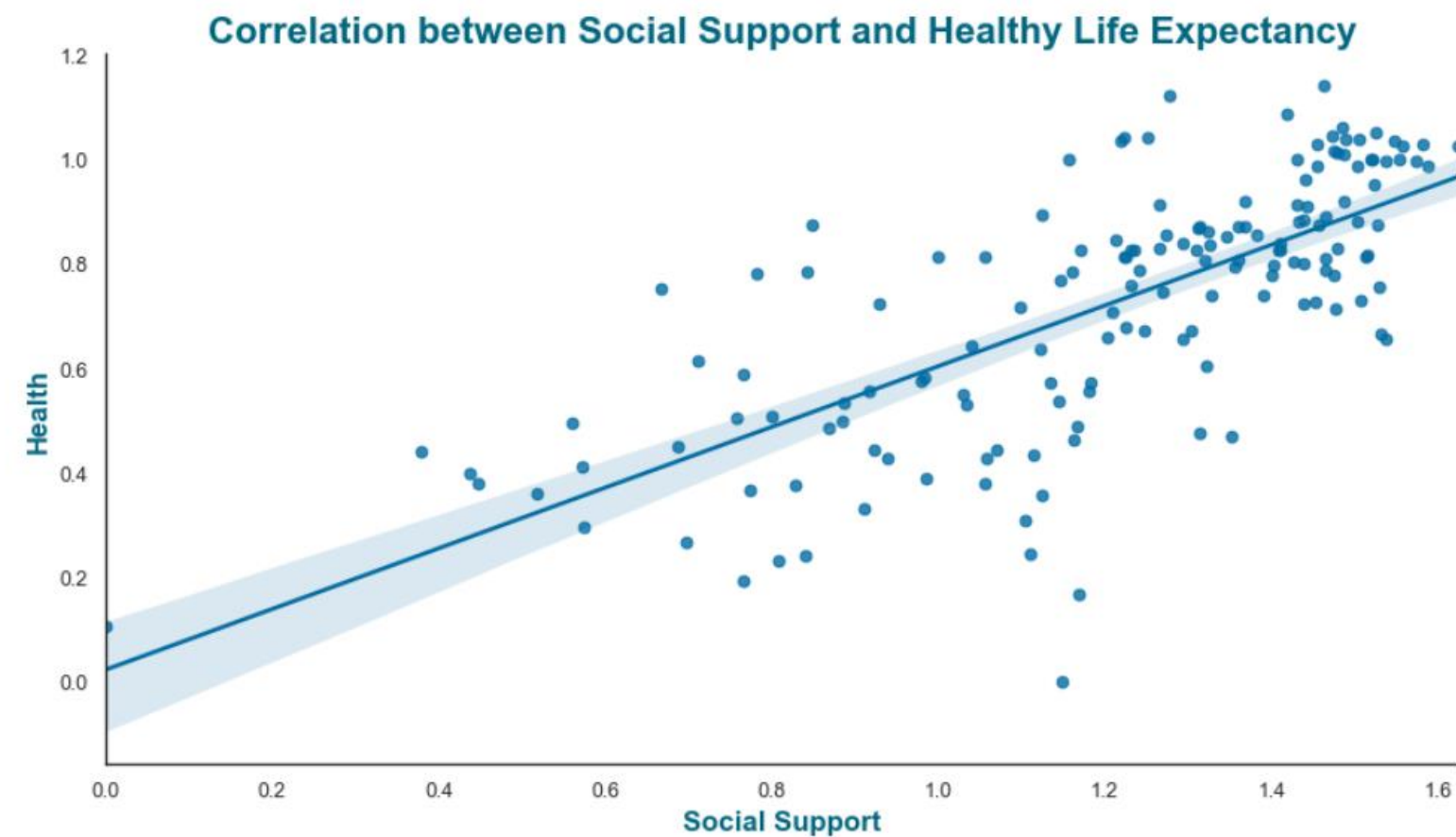
FACTOR TO
HAPPINESS SCORE



GENERAL ANALYSIS



FACTOR TO FACTOR

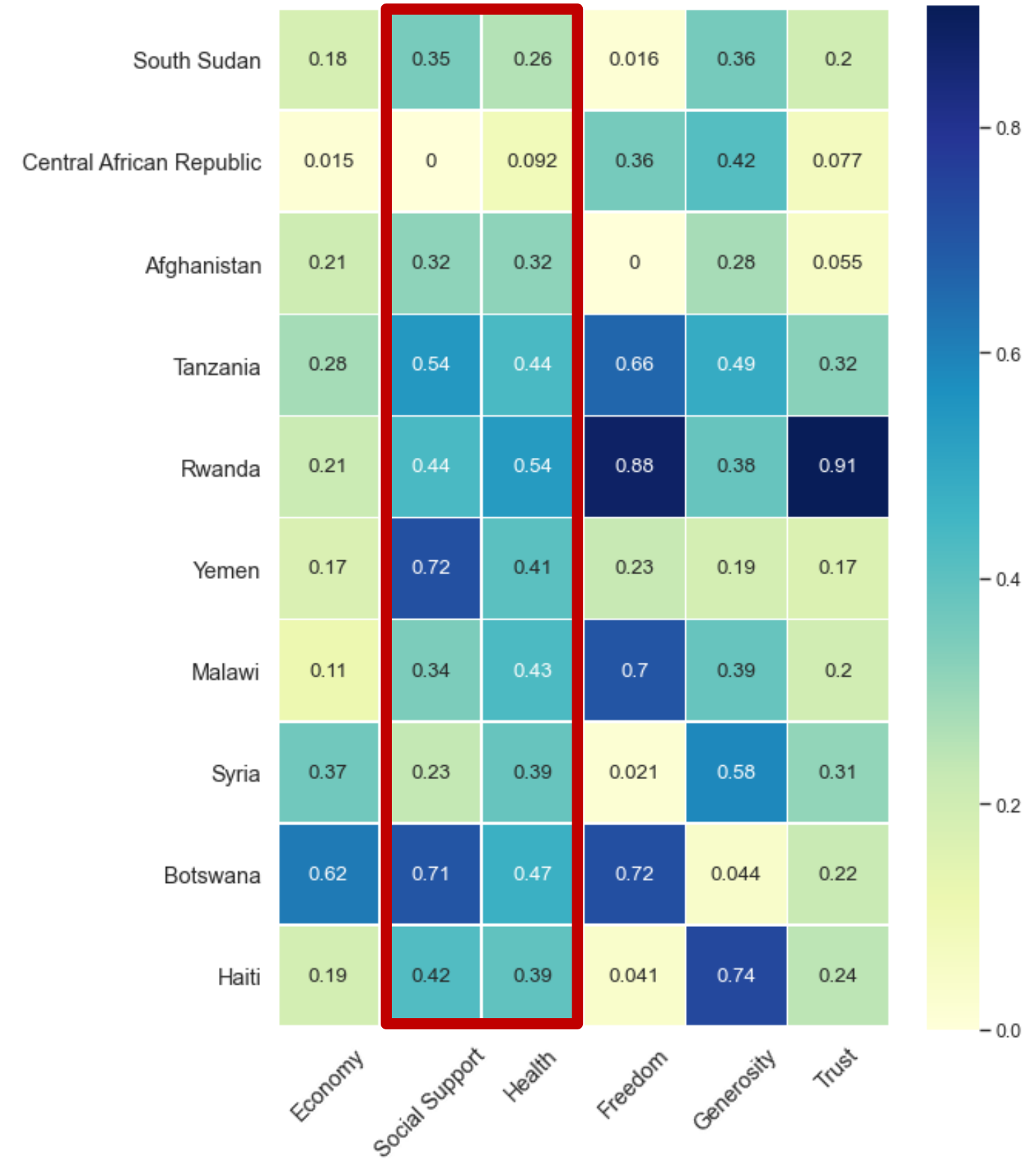


GENERAL ANALYSIS

Top 10 Countries

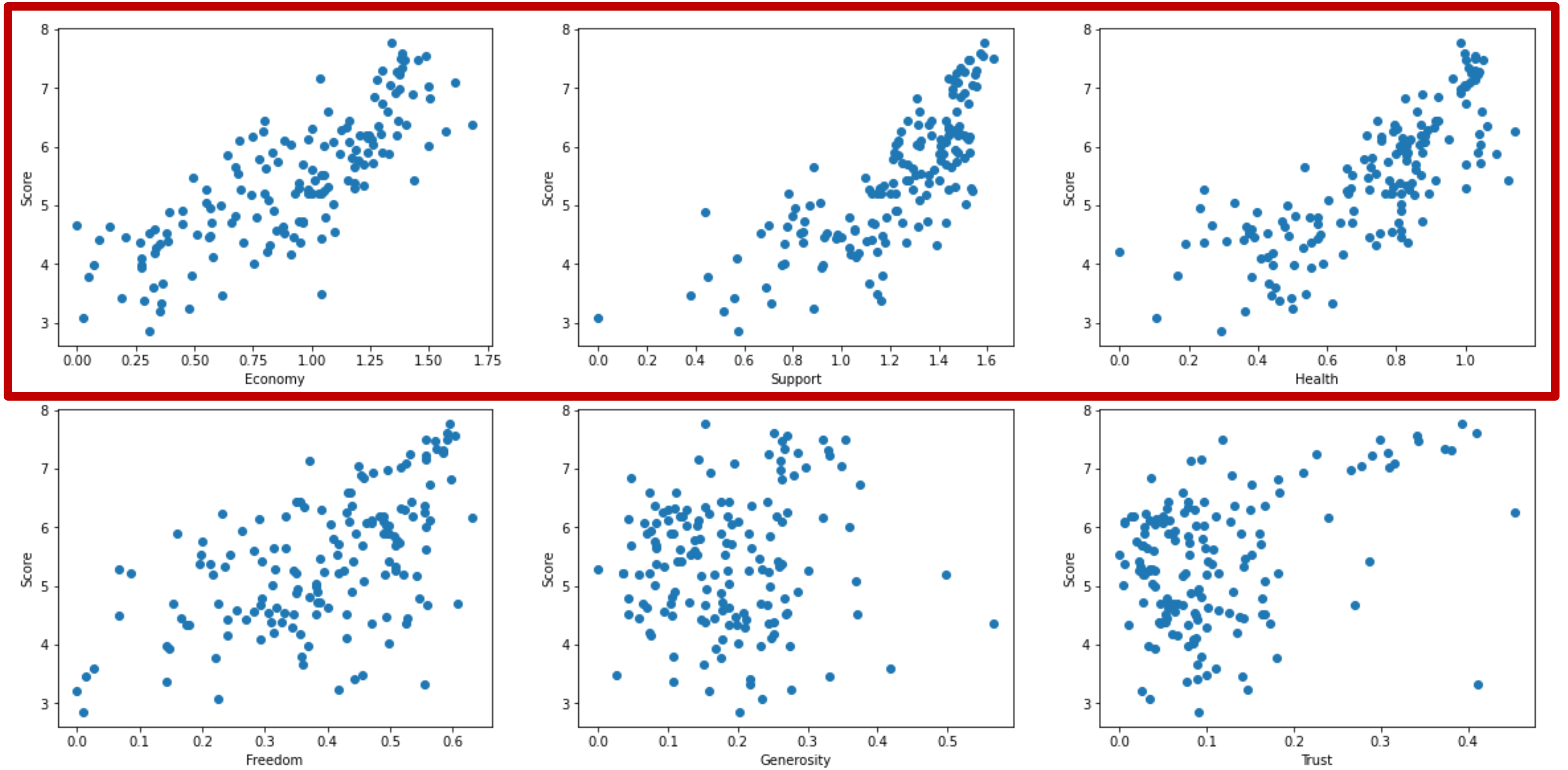


Bottom 10 Countries



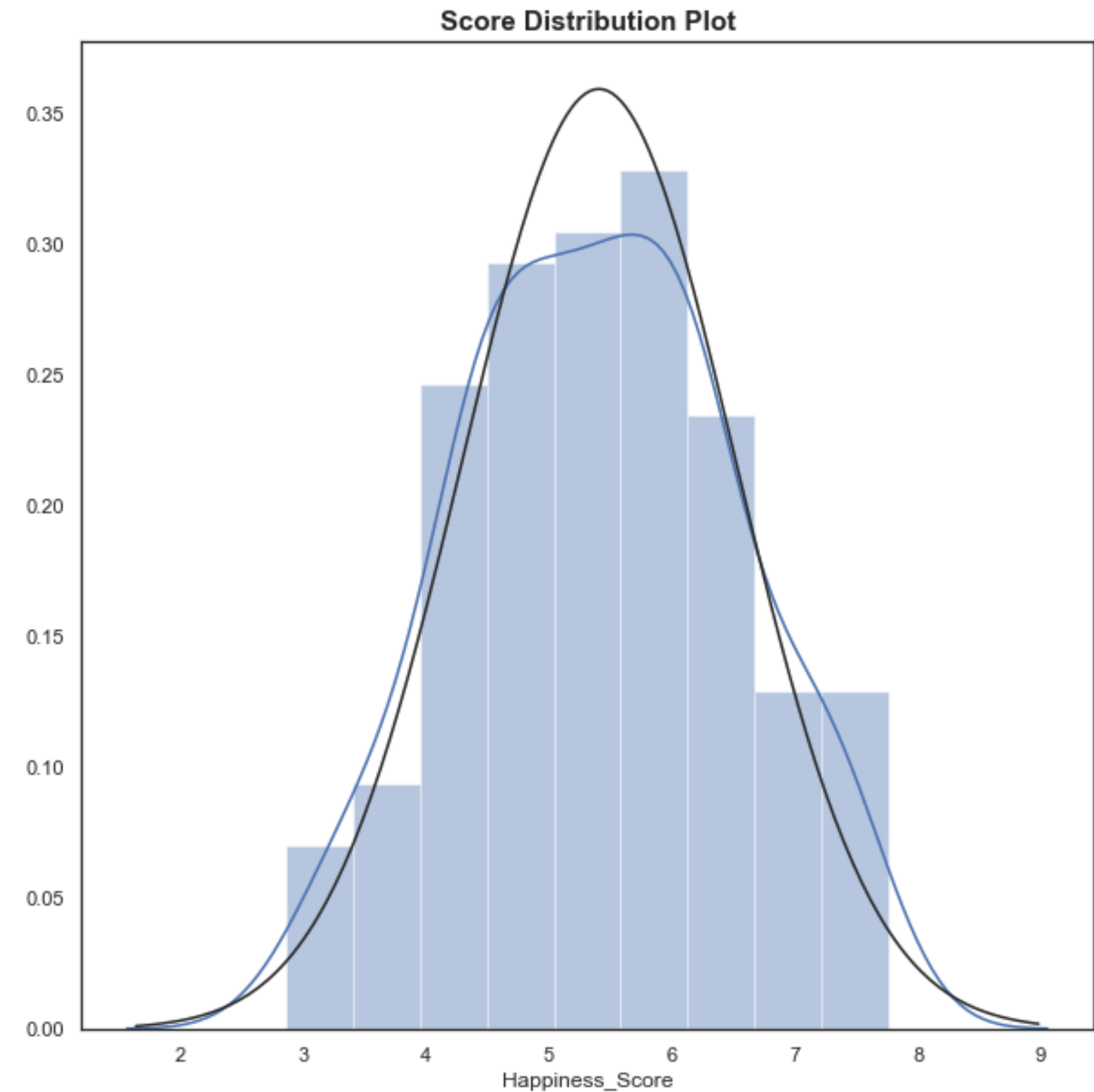
MACHINE LEARNING

Linear regression
model proved
correlation matrix
results



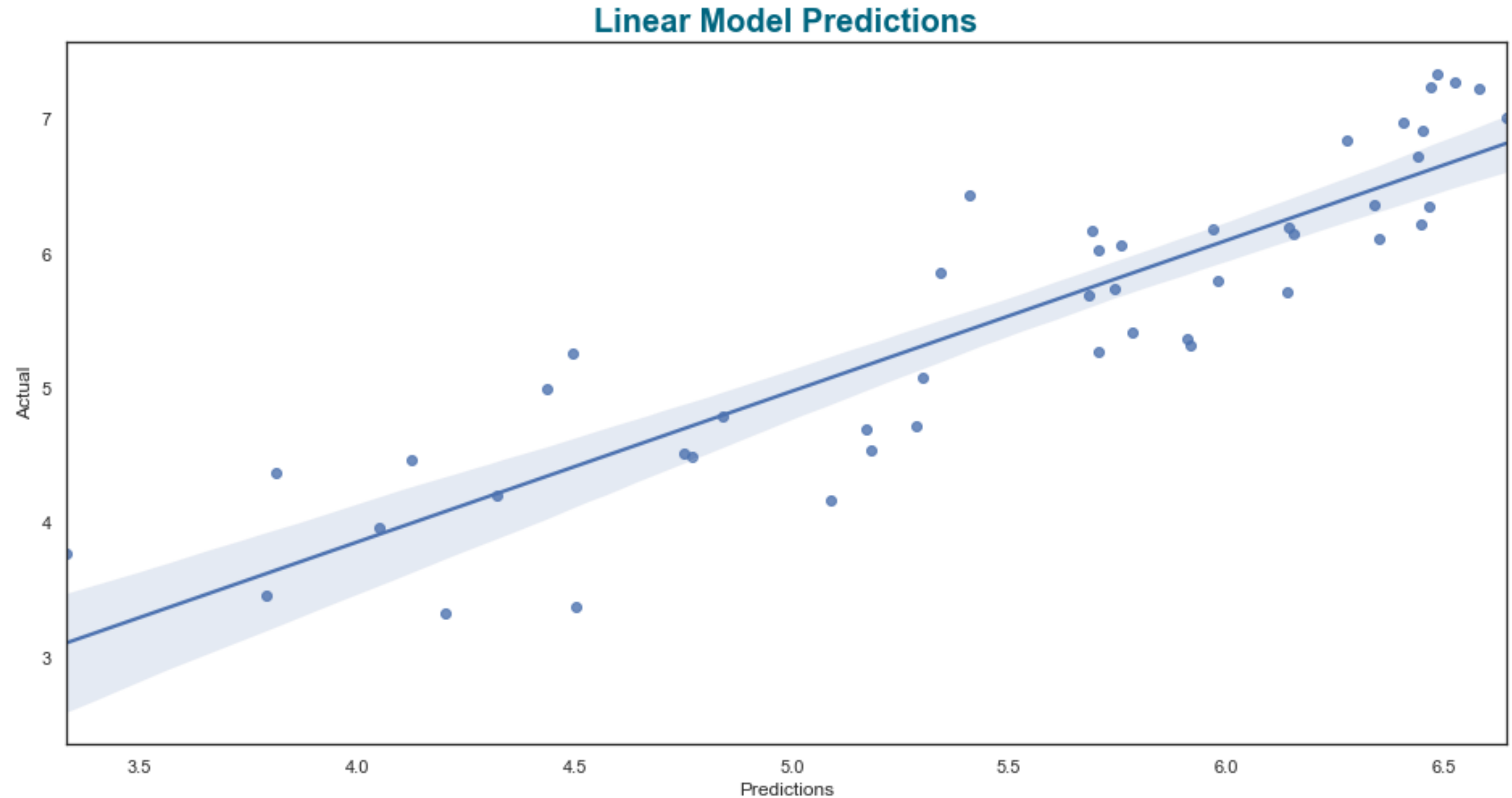
MACHINE LEARNING

Factors are normally distributed so we proceeded in building the model



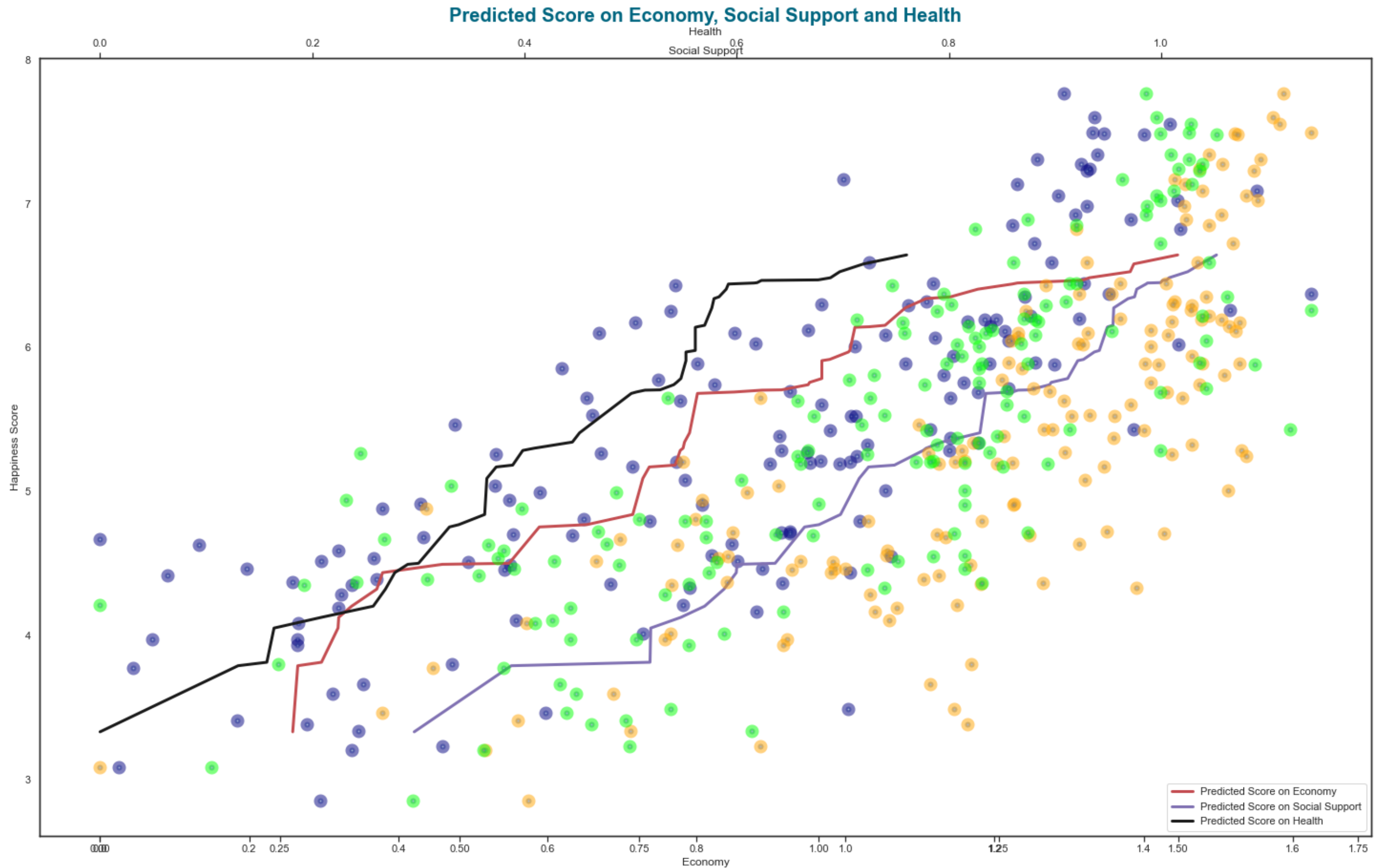
MACHINE LEARNING

- Data points are close to the regression line indicating a good fit
- Proved positive correlation with the three key factors
- R-squared values are close to 1 which suggests that the model has a fairly good fit



MACHINE LEARNING

Happiness Scores
using the predicted
linear model
resulted to a positive
outcome



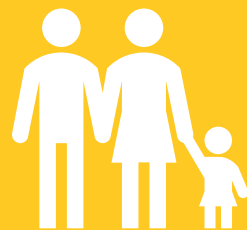
Insights & Conclusion



Economy, Social Support, and Healthy Life Expectancy hold major influence in determining a country's overall happiness score.



The three key factors are also highly correlated. Investment in one factor boosts the performance of another.



The Top 10 Countries, which are 80% European countries, have Social Support as the highest factor on happiness.



The Bottom 10 Countries, which are coming from South Asia and Africa, are affected by war, famine, and adverse events.

Recommendation



For future studies, variables related to environment, technology, education, and human security can be added.



Governments can give additional focus on key factors such as Economy, Social Support, and Healthy Life Expectancy to improve countries' overall well-being.

THE END

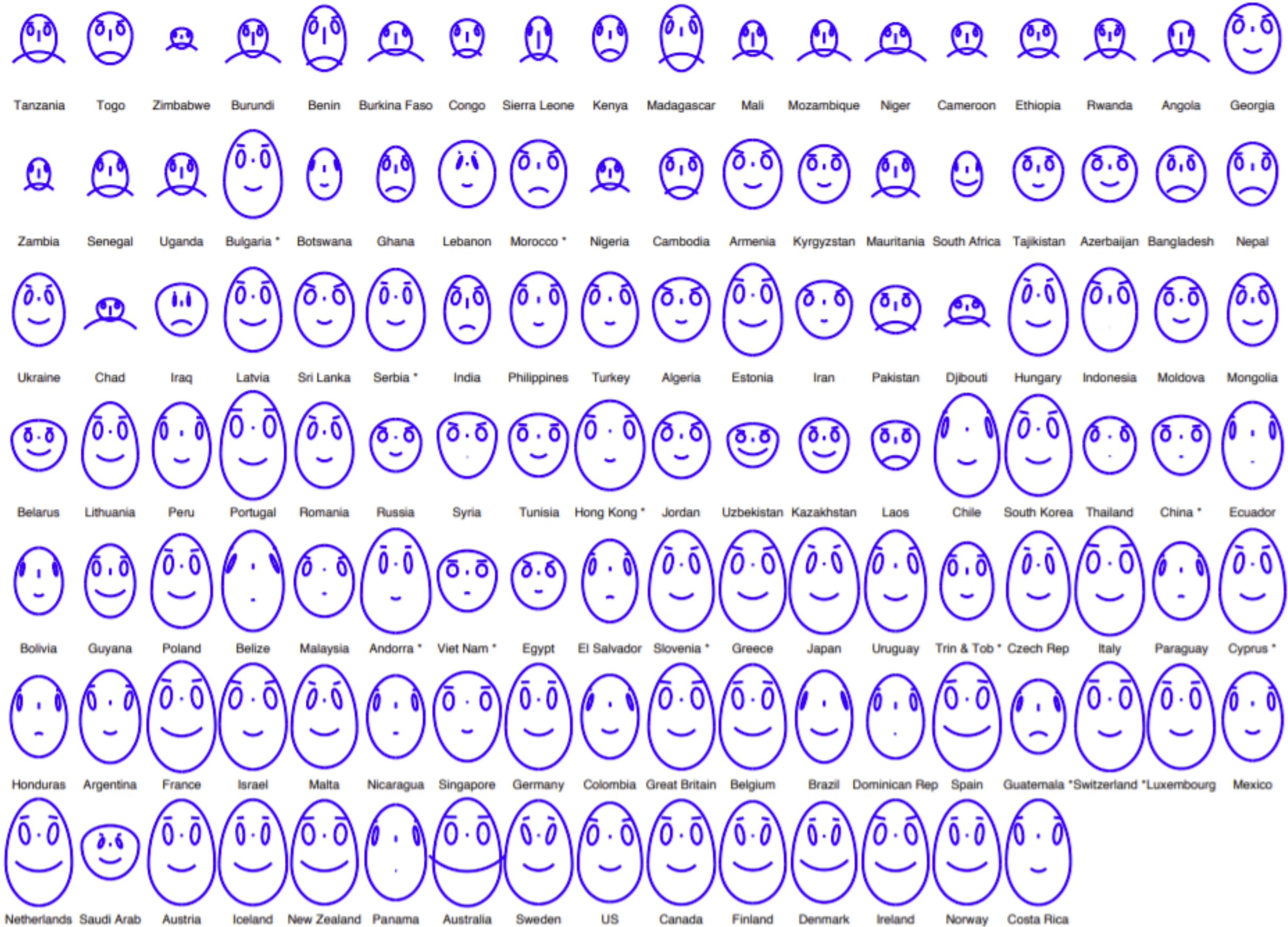


Table 27: Chernoff faces ordered by LS (* GAL value inferred from WVS)