# World Happiness Report 2015 Analysis - Project 10

## 1. Introduction

This report analyzes the World Happiness Report 2015 dataset, which includes metrics such as GDP per Capita, Family support, Health (Life Expectancy), Freedom, Trust in Government, and Generosity. The aim is to understand factors that influence national happiness and predict happiness scores.

## 2. Key Questions

- Which countries are the happiest?  
- Is there a strong correlation between GDP per Capita and Happiness Score?  
- How do factors like Family, Health, Freedom, Trust impact Happiness?  
- Are there regional differences in happiness scores?

## 3. Tasks Performed

- Loaded and explored the 2015 Happiness dataset.  
- Identified the top 10 happiest countries.  
- Analyzed the correlation between GDP and Happiness Score.  
- Visualized happiness scores by region.  
- Built a Linear Regression model to predict Happiness Score.

## 4. Analysis Approach

The dataset was analyzed using pandas for data manipulation, matplotlib and seaborn for visualizations, and scikit-learn for building the regression model. Correlation analysis was performed to identify key influencing factors.

## 5. Findings

- Switzerland, Iceland, and Denmark were the top happiest countries.  
- GDP per Capita showed a strong positive correlation with Happiness Score (correlation coefficient ≈ 0.78).  
- Family, Health, and Freedom also had strong positive correlations with Happiness Score.  
- Western Europe was the happiest region on average.  
- Linear Regression model achieved an R² score of approximately 0.80 for predicting Happiness Score.

## 6. Conclusion

The analysis confirmed that economic prosperity, strong family support systems, good healthcare, and personal freedoms are key drivers of national happiness. Predictive modeling showed that these factors can effectively estimate a country's happiness score, providing valuable insights for policymakers aiming to improve citizen well-being.