The Economic Cost of Happiness: Analyzing Inflation and World Happiness Index

SCHOOL OF DATA SCIENCE AND SOCIETY

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Introduction

How do economic inflation and positive factors like GDP per capita affect national happiness levels?

Happiness is a quality that is very difficult to quantify. However, we believe that it can be quantified through variables such as inflation and GDP per capita. We seek to discover how does economic inflation and positive factors such as GDP per capita affect national happiness levels.

Hypothesis:

- Higher inflation is associated with lower happiness scores.
- Positive factors (GDP per capita, social support, etc) are associated with higher happiness scores.

Dataset:

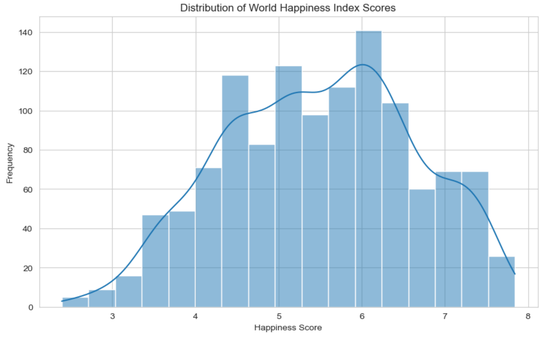
- Kaggle – World Happiness Index + Inflation Dataset
- Key variables: Happiness Score, Inflation (CPI), GDP per Capita, Social Support, Healthy Life Expectancy at birth. Freedom to Make Life Choices, Generosity, Perceptions of Corruption

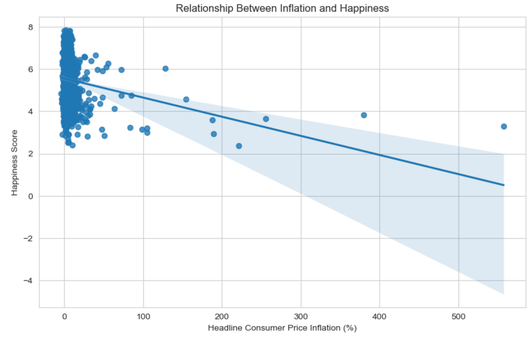
Limitations:

- Missing data (especially inflation in low-income countries)
- Cultural bias in happiness measurements

Results

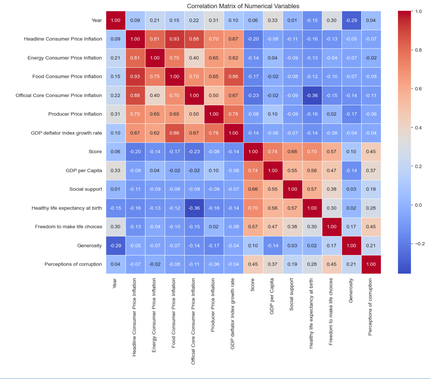
The World Happiness Index scores are approximately normally distributed (see figure below), indicating minimal skewness and reducing concerns about distributional bias. No extreme outliers were detected, so no additional data adjustments were required.





Although the correlation isn't strong, there is a clear negative correlation between the Headline Consumer Price Inflation and the Happiness Score. This means as inflation increases, happiness decreases.

The correlation matrix reveals mostly weak associations among predictors; however, GDP per capita has a strong positive correlation with Happiness (r = 0.74). This association suggests that higher national income levels are closely linked to higher self-reported well-being.



Methods

Data Preparation:

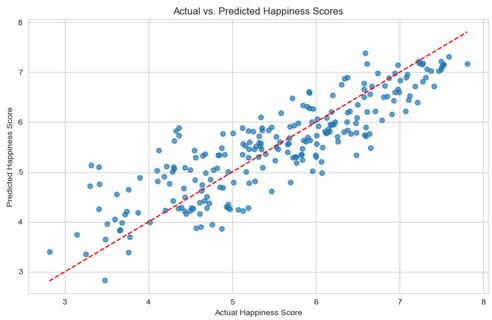
- Dropped rows missing values -> 1200 rows.
- No further scaling needed (all variables were continuous and numeric).

Model:

- Multiple Linear Regression using the Ordinary Least Squares Method (OLS) with 7 predictors
  - model selected for simplicity and appropriateness for exploring linear relationships.
- R^2 = 0.7418 -> 74.18% of variation in Happiness explained by predictors

Coefficients

- Inflation: -0.0027 -> Economic instability leads to lower happiness
- GDP per Capita: 0.8534 -> More spending power leads to higher happiness
- Social Support: 0.6510 -> Stronger support networks lead to higher happiness
- Healthy Life Expectancy at birth: 1.4796 -> Better healthcare leads to higher happiness
- Freedom to Make Life Choices: 1.2490 -> More personal autonomy leads to higher happiness
- Generosity: 0.9563 -> More communal support leads to higher happiness
- Perceptions of Corruption: 1.1050 -> More government corruption leads to higher happiness



Conclusion

Conclusion:

- Even modest inflation diminishes well-being; controlling inflation is a social as well as economic goal.
- Investments that raise GDP per capita, health, and social support amplify happiness.
- Rethink solely growth-centric policy: multidimensional well-being matters.

Limitations & Future Work

- Cross-cultural bias in self-reported happiness.
- Possible nonlinear or lagged effects not captured.

Overfitting and/or Underfitting:

With seven predictors and ~1,200 samples, overfitting is unlikely, and an R^2 of 0.74 suggests solid explanatory power, so the model is neither over- nor under-fit.

Reference

Agra Fintech. “World Happiness Index and Inflation Dataset.” Kaggle.com, 2015, www.kaggle.com/datasets/agrafintech/world-happiness-index-and-inflation-dataset?resource=download. Accessed 26 Apr. 2025.