Management Summary: Corruption Perceptions Index (CPI) Prediction (2012–2023)

Goal: Identify which characteristics of European countries help predict their perceived corruption level (CPI).

Key Takeaways:

- **Strongest Predictors of CPI:**

    - *Economic Prosperity* (GDP per Capita, Unemployment)
    - *Well-Being Indicators* (Life Ladder, Healthy Life Expectancy, Positive Affect)
    - *Governance Factors* (Political Stability)

- A higher GDP per capita and stronger social indicators (e.g. health, happiness) consistently align with higher CPI scores (i.e., less perceived corruption).

- Political stability and social freedoms (e.g. Freedom to Make Life Choices) also correlate strongly with *better* CPI outcomes.

Why These Insights Make Sense

- **Economic Prosperity:** Wealthier countries often have more transparent institutions and greater resources for anti-corruption policies, explaining the positive correlation with CPI.

- **Well-Being and Health:** Citizens with higher life satisfaction and health measures typically experience stronger public services and governance, thus perceive corruption to be lower.

- **Political Stability & Governance:** In politically stable environments, legal frameworks and accountability structures tend to be stronger, which reduces perceived corruption.

Figure 1: Linear Regression — Actual vs. Predicted CPI.
As shown above, our linear regression model's predictions generally track actual CPI values well, though some variance exists.
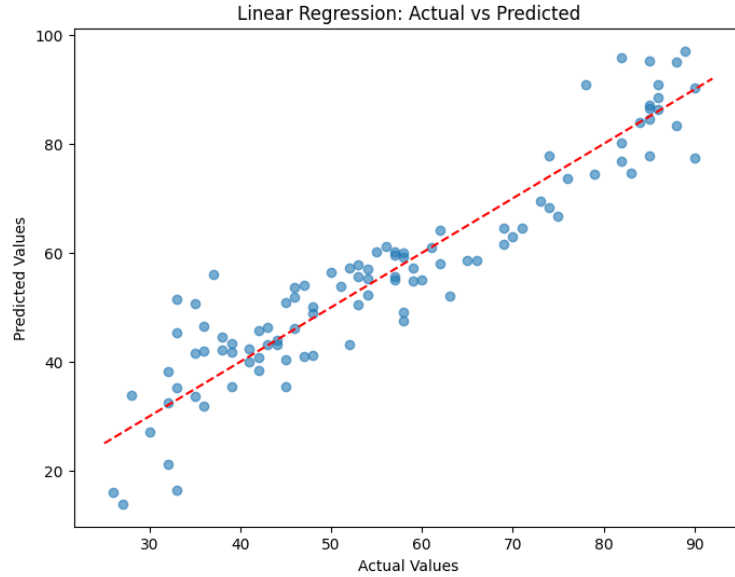
Linear Regression Baseline Metrics:

Figure 1: Red line is a perfect 1:1. Points close to the line indicate accurate predictions.

Metric	Training	Testing
MSE	44.890	45.517
MAE	5.528	5.301
R^2	0.857	0.865

- *Mean Squared Error (MSE):* On average, the squared difference between predicted and actual CPI.

- *Mean Absolute Error (MAE):* On average, how many CPI points off are our predictions?

- *R^2:* Proportion of CPI variance explained by the model. A higher value means better explanatory power.

Group Name: 48

Members: Agostinho Gonçalves Margarida Maria (12142151),
Bensack Sergej (12427512), Pilgram Marcus (11804252),
Karbeutz Gerhard (12014883)