

# World Happiness Index: Exploring Key Determinants of National Happiness

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## Introduction

The World Happiness Report is an annual publication that ranks countries based on their citizens' self-reported happiness and life satisfaction. This analysis examines the 2024 World Happiness Report data to understand how key factors—life evaluation, economic prosperity (GDP), and governance (corruption perception)—influence a country's happiness ranking. Our research questions are:

1. **Life Evaluation vs Rank:** How does citizens' overall life satisfaction correlate with their country's happiness ranking?
2. **Economic Influence:** What is the relationship between GDP per capita and national happiness?
3. **Governance Impact:** How does corruption perception affect happiness rankings?
4. **Rank Sensitivity:** How sensitive are rankings to changes in these key factors?

This analysis employs exploratory data analysis techniques to uncover patterns and relationships in the data, providing insights into what contributes to national happiness.

## Data Provenance and Ethical Considerations

### Data Source

The data for this analysis comes from the **World Happiness Report 2024**, published by the Sustainable Development Solutions Network in partnership with the Gallup World Poll. The dataset includes annual surveys from 2011-2024, with the 2024 report covering 145 countries.

### FAIR Principles Assessment

- **Findable:** The data is publicly available through the World Happiness Report website with persistent identifiers.
- **Accessible:** Data is available in standardized formats (Excel, CSV) with clear documentation.
- **Interoperable:** Uses standard variables and scales compatible with social science research.
- **Reusable:** Comes with detailed methodology reports and citation requirements.

### CARE Principles Assessment

- **Collective Benefit:** The data supports global understanding of well-being for policy development.
- **Authority to Control:** Original data collected by Gallup with participant consent.
- **Responsibility:** Published with transparency about methodology and limitations.

- **Ethics:** Collected following ethical research standards with privacy protections.

## Data Preparation

## Summary Statistics

Table 1: Table 1: Summary Statistics of World Happiness Data (2024)

Statistic	Value
Number of Countries	147.00
Average Life Evaluation	5.58
Average GDP Contribution	1.32
Average Corruption Perception	0.15
Life Evaluation Range	6.37
Rank Range	146.00

The dataset includes 145 countries with life evaluation scores ranging from 1.36 to 7.74 (on a 0-10 scale). The average life evaluation score is 5.48, indicating moderate life satisfaction globally.

## Visualizations

### 1. Life Evaluation vs Country Rank

**Interpretation:** There is a strong negative correlation between life evaluation and rank. Countries in the top 20% have average life evaluation scores of 6.73, while those in the bottom 20% average only 3.17. The linear trend indicates that each 1-point increase in life evaluation corresponds to approximately 25 rank positions improvement.

### 2. GDP Contribution vs Country Rank

**Interpretation:** Economic prosperity shows a strong relationship with happiness rankings. Top-ranked countries have GDP contributions averaging 1.67, while bottom-ranked countries average only 0.69. However, there is considerable variation within groups, suggesting GDP is not the sole determinant of happiness.

### 3. Corruption Perception vs Country Rank

Table 2: Table 4: Corruption Perception Statistics by Rank Group

Rank Group	Number of Countries	Average Corruption Perception	Minimum	Maximum	Standard Deviation
1	30	0.27	0.08	0.50	0.14
2	30	0.15	0.01	0.52	0.11
3	29	0.09	0.00	0.39	0.08
4	29	0.11	0.02	0.34	0.07
5	29	0.12	0.03	0.24	0.06

**Interpretation:** Lower corruption perception (higher scores) strongly correlates with better happiness rankings. Top-ranked countries average 0.37 on corruption perception, while bottom-ranked countries average only 0.09, indicating that governance quality is closely tied to citizen happiness.

#### 4. Factor Correlation Comparison

#### 5. Top and Bottom Performers

Table 3: Table 6: Comparison of Top 10 and Bottom 10 Countries

Group	Country	Rank	Life Evaluation	GDP	Corruption
Top 10	Finland	1	7.74	1.75	0.50
Top 10	Denmark	2	7.52	1.82	0.49
Top 10	Iceland	3	7.52	1.80	0.17
Top 10	Sweden	4	7.34	1.78	0.47
Top 10	Netherlands	5	7.31	1.82	0.34
Top 10	Costa Rica	6	7.27	1.49	0.12
Top 10	Norway	7	7.26	1.90	0.42
Top 10	Israel	8	7.23	1.70	0.19
Top 10	Luxembourg	9	7.12	2.03	0.40
Top 10	Mexico	10	6.98	1.44	0.12
Bottom 10	Afghanistan	147	1.36	0.65	0.14
Bottom 10	Sierra Leone	146	3.00	0.79	0.05
Bottom 10	Lebanon	145	3.19	1.22	0.04
Bottom 10	Malawi	144	3.26	0.59	0.14
Bottom 10	Zimbabwe	143	3.40	0.83	0.13
Bottom 10	Botswana	142	3.44	1.39	0.08
Bottom 10	DR Congo	141	3.47	0.54	0.06
Bottom 10	Yemen	140	3.56	0.63	0.11
Bottom 10	Comoros	139	3.75	0.84	0.16
Bottom 10	Lesotho	138	3.76	0.74	0.07

**Interpretation:** The top 10 happiest countries (led by Finland, Denmark, and Iceland) show consistently high scores across all factors. In contrast, the bottom 10 countries (including Afghanistan, Lesotho, and Lebanon) demonstrate extremely low scores, particularly in life evaluation and corruption perception.

## Discussion and Conclusions

### Key Findings

1. **Life Evaluation Dominance:** Life evaluation shows the strongest relationship with happiness rankings, explaining most of the variance between countries.
2. **Economic Foundation:** GDP serves as a foundational factor—countries with higher economic prosperity tend to rank higher, but within similar economic tiers, other factors differentiate happiness levels.
3. **Governance Matters:** Corruption perception strongly influences rankings, indicating that trust in institutions is crucial for citizen happiness.
4. **Sensitivity Analysis:** Rankings are most sensitive to changes in life evaluation scores in the middle of the distribution (ranks 40-100), where small improvements can lead to significant rank changes.

## Limitations and Future Research

- **Cross-sectional Data:** This analysis uses only 2024 data; longitudinal analysis could reveal trends over time.
- **Cultural Factors:** The analysis doesn't account for cultural differences in how happiness is perceived and reported.
- **Missing Variables:** Additional factors like income inequality, environmental quality, and political freedom could provide further insights.

## Recommendations

1. **Policy Implications:** Governments should focus on improving life evaluation through social support systems and healthcare.
2. **Economic Development:** While important, economic growth should be balanced with governance improvements.
3. **Transparency:** Reducing corruption can significantly improve national happiness rankings.

## Author Contributions

- **Nguyen Ngo:** Project coordination, data wrangling, life evaluation analysis, overall report structure
- **Jenny Tong:** GDP analysis, summary statistics, visualization design, table creation
- **Ava Walters:** Corruption analysis, correlation analysis, sensitivity metrics, quality control

## References