Analysis of Happiness Scores vs Daily Income by Country (2020)
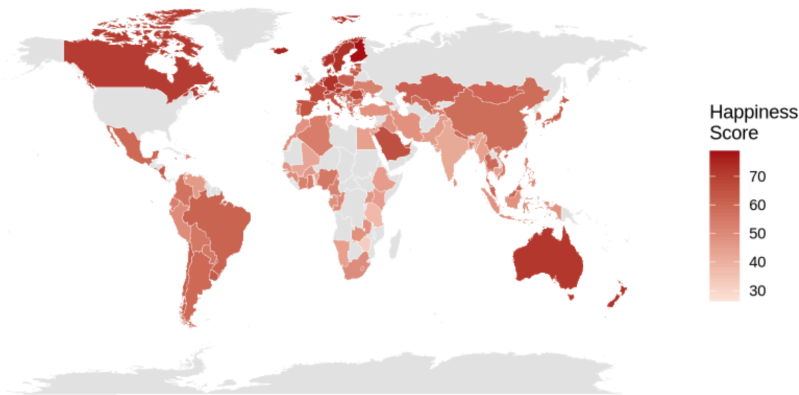Stephen Gray, 22 October

Data Overview
- Happiness Score: 161 countries, 2005-2023
- Average Daily Income: 193 countries, 1800-2100 (PPP dollars)
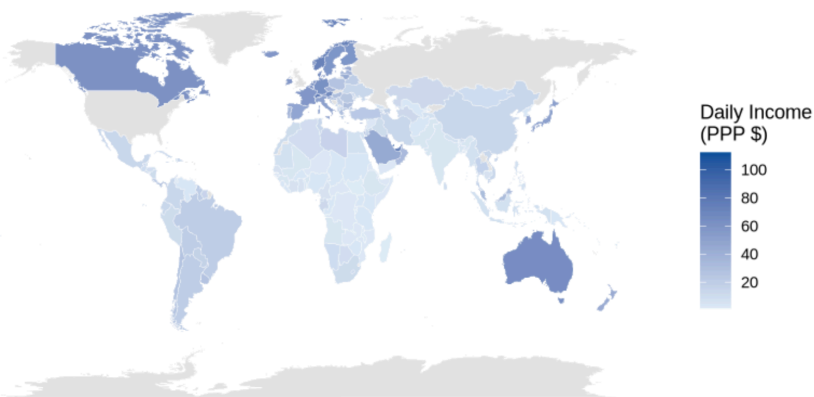- 2020 Combined: 113 countries with both indicators

Happiness Score Map

- Darker red = Higher happiness (Europe, North America, Australia/New Zealand)
- Lighter pink = Lower happiness (parts of Africa, Middle East, South Asia)
- Grey = No data available

Average Daily Income Map

- Darker blue = Higher daily income (Europe, North America, Gulf states, Australia)
- Lighter blue = Lower daily income (Sub-Saharan Africa, parts of Asia)
- Grey = No data available

The geographic patterns are now clearly visible, showing strong alignment between wealth and happiness across regions. Northern Europe, North America, and Oceania show both high income and high happiness, while developing nations show lower values for both indicators.

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Relationship Analysis

Relationship between Daily Income and Happiness Score (2020)
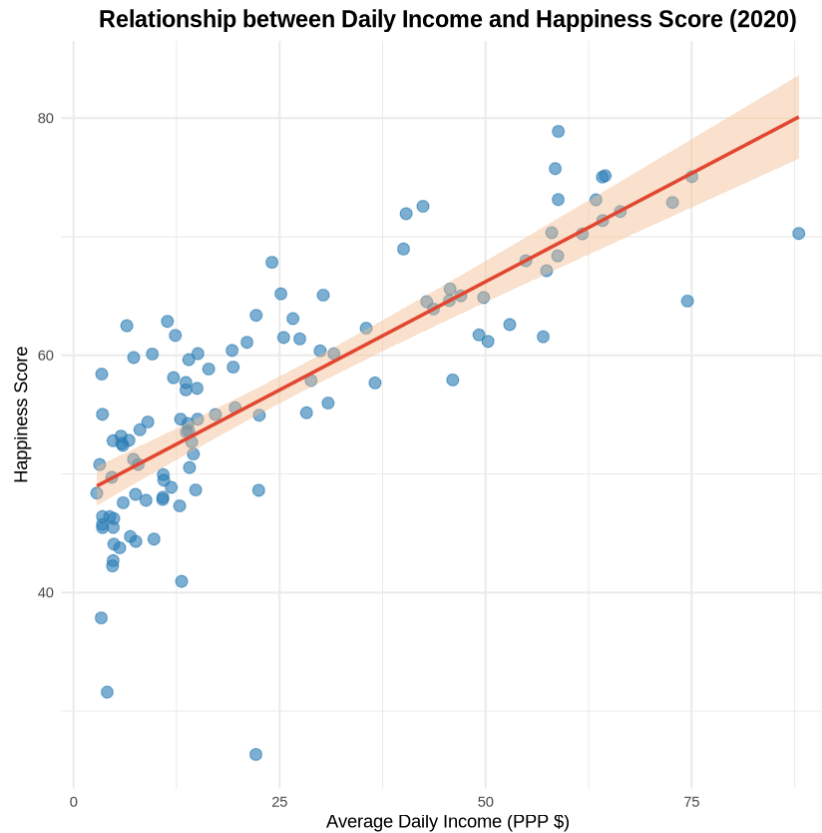
Key Findings:
- Correlation: 0.791 (strong positive)
- Every $1 increase in daily income → +0.37 happiness score points
- Income explains ~63% of happiness variation (R^2 = 0.626)
- Highly significant relationship ($p < 0.001$)
- Diminishing returns visible at higher income levels
- Some countries outperform/underperform relative to their income
- Countries with higher incomes tend to report substantially higher happiness levels
- However, the relationship isn't perfect - some countries achieve higher happiness than their income would predict, while others fall below expectations
- The scatter shows diminishing returns at higher income levels, suggesting that beyond a certain point, additional income has less impact on happiness

Interpretation:
Strong evidence that higher income associates with greater happiness, but the relationship isn't perfect. Financial security matters substantially for life satisfaction, though other factors also play important roles.

This supports the economic literature showing that while money doesn't buy happiness entirely, financial security and higher living standards are strongly associated with greater life satisfaction.

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Personal reflections:
- Julius was easy to interface with and produce the analysis
- I was able to go back in and prompt it in order to fix the non-appearance of colour on the slides
- The interpretation referred back to the literature on happiness and income, which was a nice touch, though I didn't verify it
- It didn't seek to explain wy there is a limited marginal return above a certain threshold, which would have been really impressive (as there is literature on that)
- It was perhaps too easy for us to just copy and paste the prompt that you provided. I suspect that we wouldn't have been able to figure out for ourselves so easily what plots or mapping approaches to use
- That seems to me to be a missing element of this training - how to prompt for data analysis, as it uses terms and capabilities of Julius (or the other tools) that we are not aware of
- I asked Julius to produce the PDF for me. It undertook a lot of coding and said it had succeeded, but there was no file to download