

TITLE: Report on the relationship between economic prosperity and Life Expectancy across countries

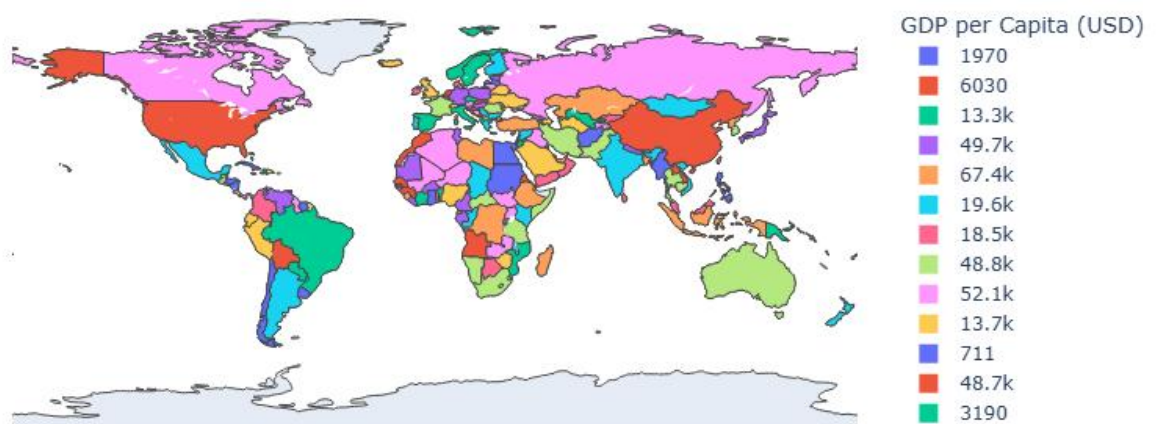
NAME: RODRIGUE NZE EYOO

DATE : 29/08/2025

World Maps

GDP per capita map: Shows economic prosperity across countries

GDP per Capita by Country (2020)



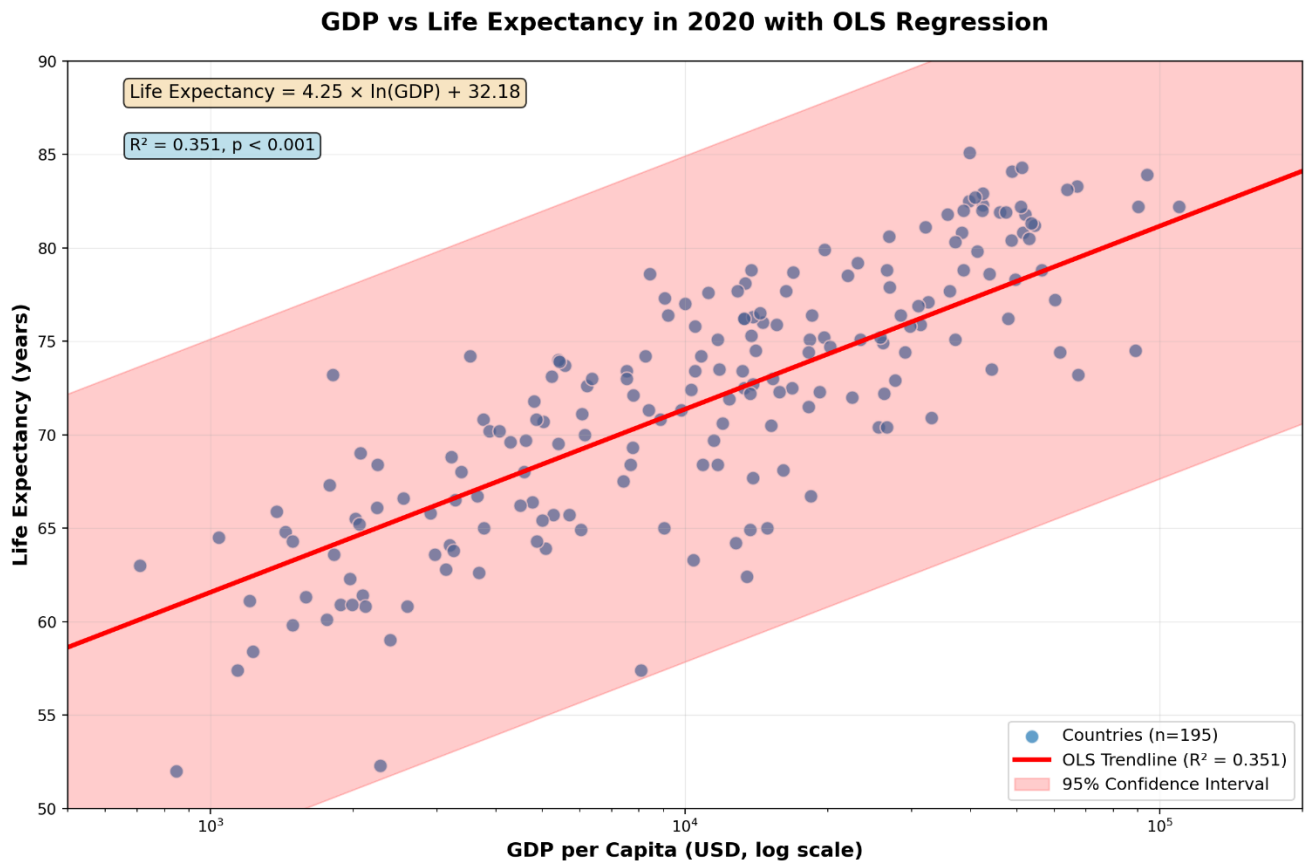
The GDP per capita map shows economic prosperity across countries

Life Expectancy by Country (2020)



The Life expectancy map shows health outcomes across countries (saved as `life_expectancy_world_map.html`)

Correlation Analysis

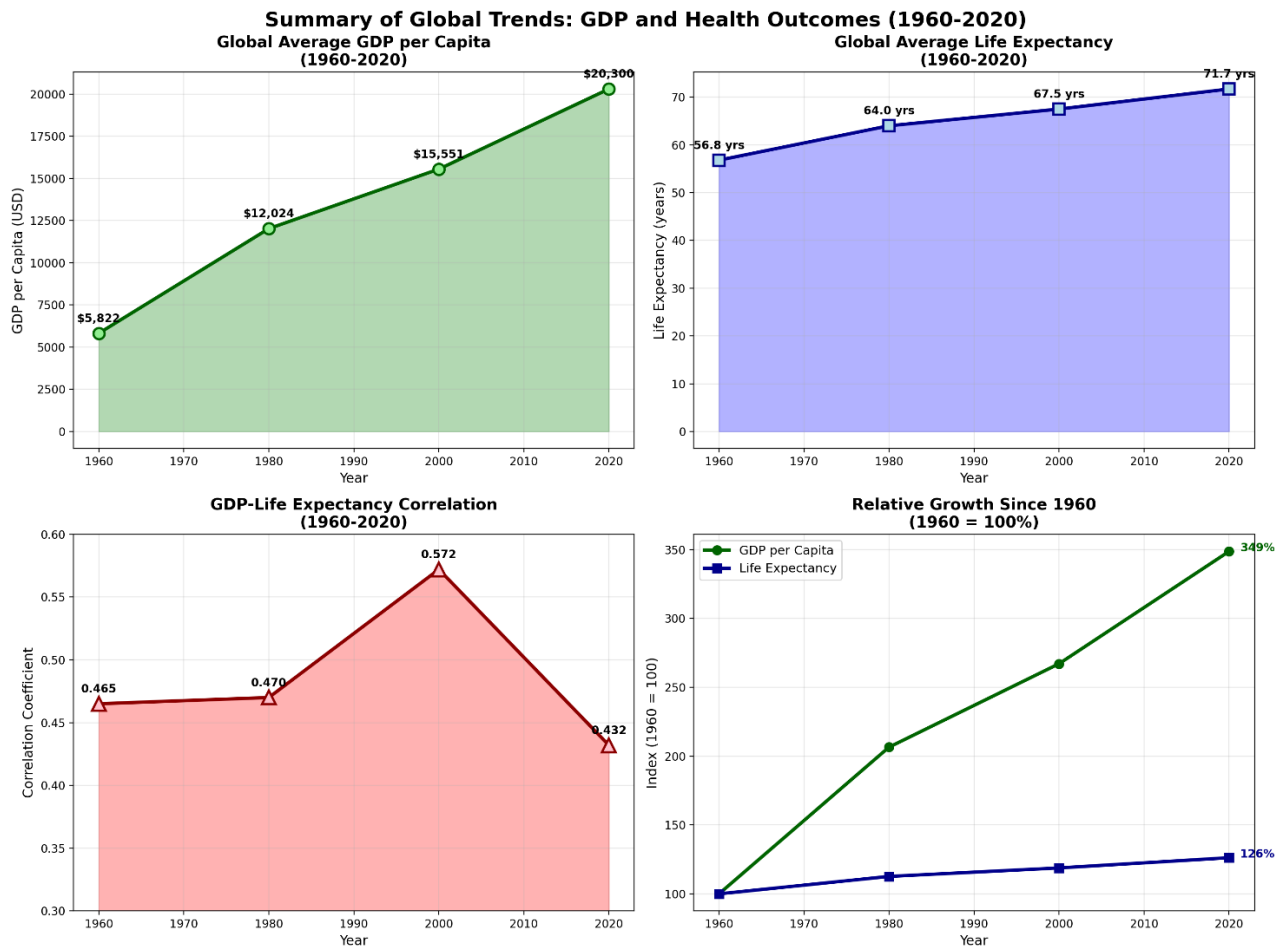


The 2020 data reveals several important patterns:

1. **Moderate Relationship:** With an R^2 of 0.351, GDP per capita explains about 35% of the variation in life expectancy across countries in 2020.
2. **Logarithmic Relationship:** The relationship follows a logarithmic pattern, meaning that each doubling of GDP per capita is associated with approximately 2.9 years increase in life expectancy ($4.25 \times \ln(2) \approx 2.9$).
3. **Diminishing Returns:** The relatively flat slope compared to earlier decades shows that additional wealth has diminishing returns on health outcomes in the modern era.
4. **Wide Variation:** The scatter around the trendline shows significant variation - some countries achieve high life expectancy with moderate GDP (efficient healthcare systems), while others have high GDP but relatively lower life expectancy.
5. **Confidence Interval:** The shaded area shows the 95% confidence interval, indicating the range where we can expect most countries to fall given their GDP level.

This visualization clearly demonstrates that while economic prosperity remains important for health outcomes, other factors like healthcare system efficiency, social policies, education, and governance play increasingly significant roles in determining life expectancy in the modern world.

GDP and Health Outcomes Over Time Analysis



The comprehensive time series analysis shows several important patterns:

- Economic Growth:** Global GDP per capita has increased dramatically, nearly quadrupling from \$5,822 in 1960 to \$20,300 in 2020.
- Health Improvements:** Life expectancy has steadily increased from 56.8 years to 71.7 years, representing significant global health progress.
- Changing Relationship:** The correlation between GDP and life expectancy peaked in 2000 (0.572) but has since declined to 0.432 in 2020, suggesting that other factors beyond economic wealth are becoming increasingly important for health outcomes.

The country analysis reveals diverse development patterns:

- **China** shows the most dramatic transformation with 1,754% GDP growth and nearly 50 years of life expectancy gains
- **India** achieved substantial economic growth (391%) with significant health improvements
- **Germany** and **Japan** show more modest but steady progress from already high baselines
- **Nigeria** demonstrates that economic growth doesn't always translate proportionally to health gains

My short reflection about the course:

What was easy.

Getting started was frictionless. Julius made it simple to turn plain-language prompts into workable code.

What was difficult.

Precision prompting and debugging were the real work.

What was surprising.

What surprised me was how effective was Julius to auto debug/autocorrect some discrepancies found in the dataset, like some numbers written with a K (for 1000) .

What I learned.

AI accelerates the mechanics of analysis, but quality still depends on my domain judgment. Effective habits included:

Overall, Julius didn't replace analytical thinking but amplified it.

I will also try to use Cursor to challenge my newly acquired R coding skills.