Wealth, Health, and Numbers: A 200-Year Global Perspective

An Exploratory Data Analysis of World Development Statistics

By: Abdulla Ebrahim & Waseem Mohammed

Where Should We Focus Our Efforts for Global Prosperity?

Problem Statement

Wealthier nations generally enjoy longer lives, confirming that economic growth is the essential foundation for human well-being. However, the relationship is not always straightforward: **at lower income levels, small increases in wealth can dramatically improve health outcomes.** Conversely, **at higher income levels, gains in longevity tend to plateau,** meaning that policy and public health systems become more critical than just raw wealth.

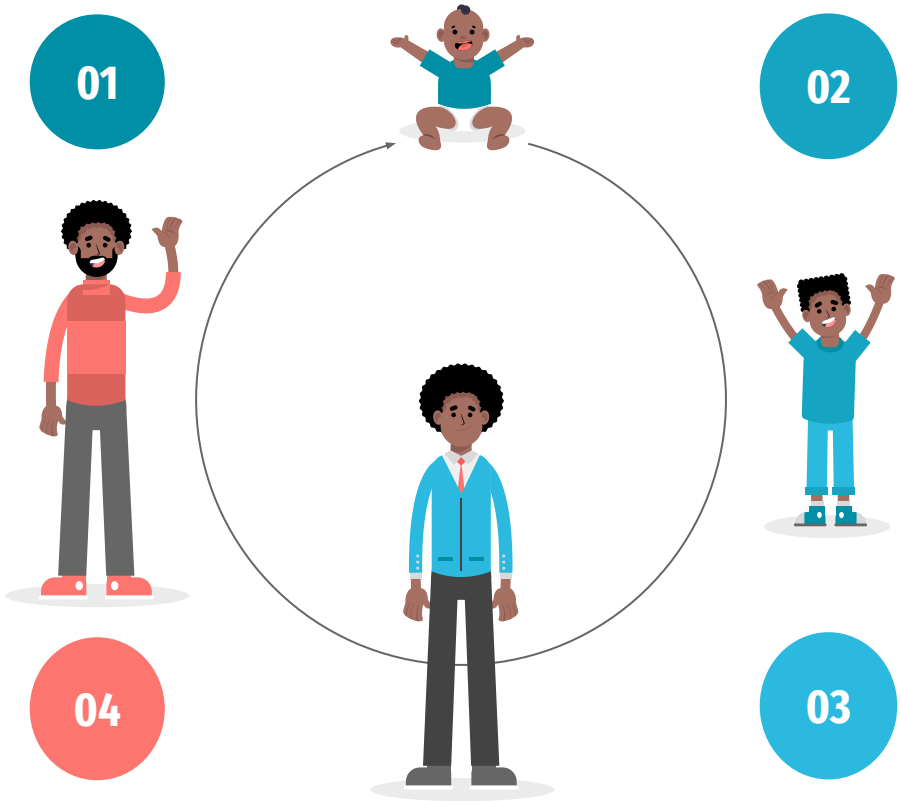
The Four Questions Guiding Our Analysis

01

How strongly are income and life expectancy related over time?

02

Do all regions follow the same pattern, or are there clear exceptions?



03

What role does population growth play in shaping these trends?

04

Can improvements in life expectancy be explained solely by income, or do other factors play a critical role?

Connecting the Dots: Our Data-Driven Approach

01

Exploratory Data Analysis

We analysed **summary statistics** and historical **trends** across years and countries. The core of our work involved using **scatter plots and bubble charts** to visually examine how a nation's wealth and scale directly relate to its citizens' health.

02

Data Cleaning & Preparation

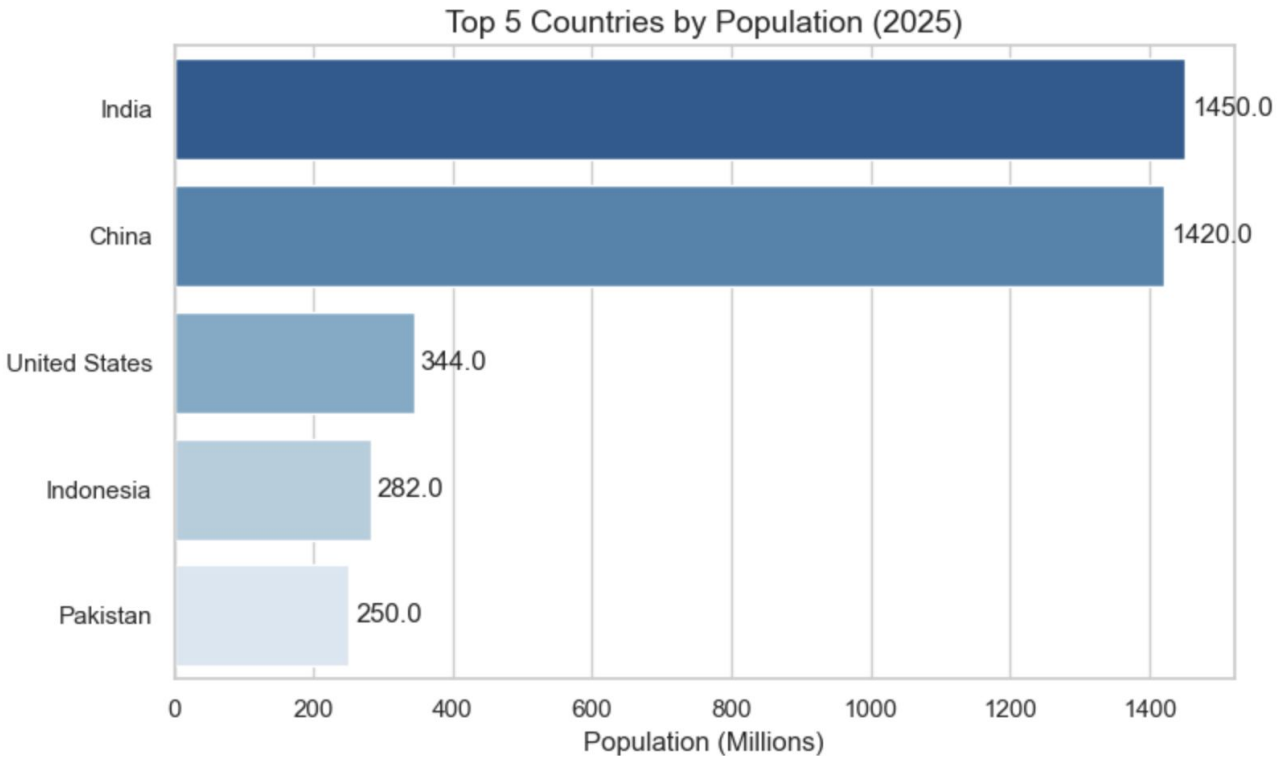
Before any analysis, we **combined multiple datasets** into one master file. We then **cleaned this data meticulously**, handling any missing values or duplicates and ensuring all information was **correctly formatted** for accurate historical comparison.

03

Visualization

Our analysis relied on creating powerful visualisations: **line plots** to show historical trends, **scatter plots** to establish the core relationship between wealth and health, and **bubble plots** to incorporate the effect of population size into our findings.

Top 5 Countries by Population (2025)



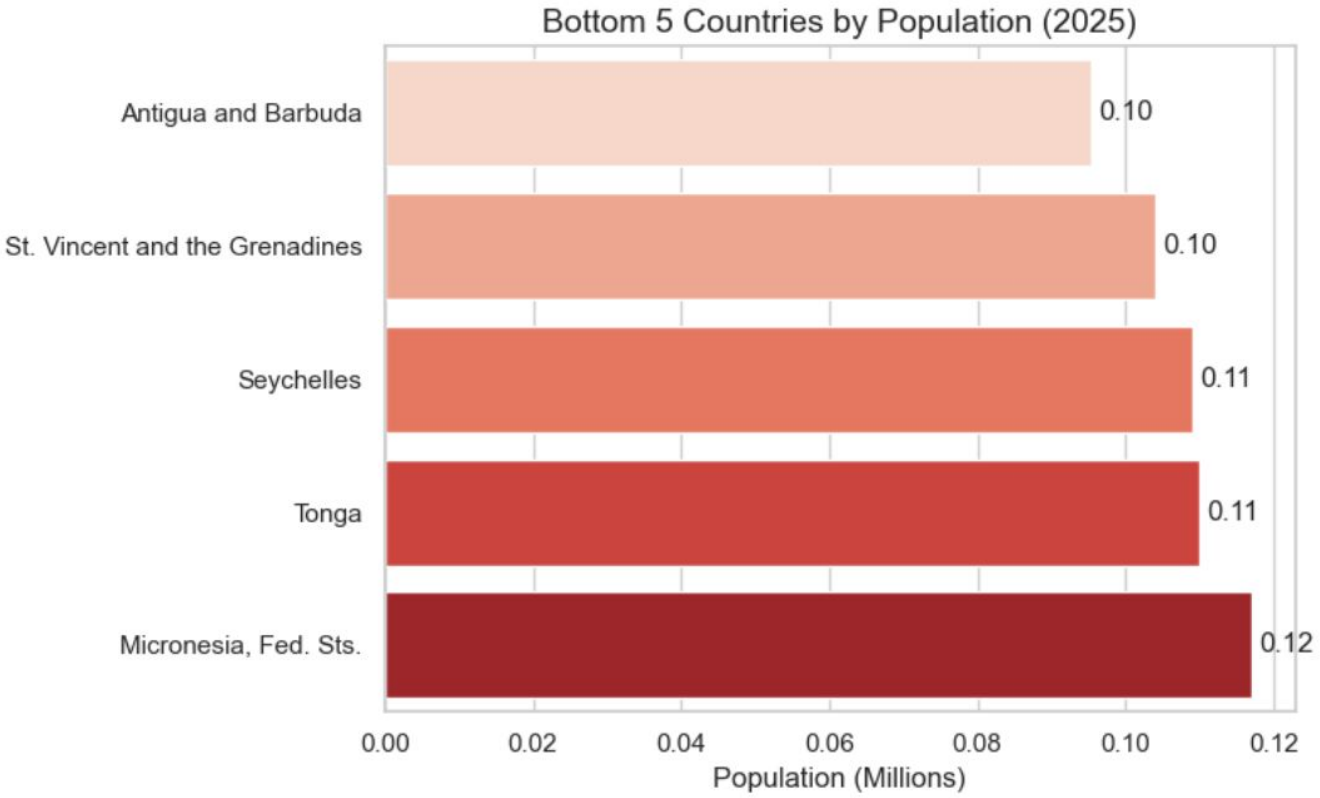
The Opportunity

These countries have huge labour forces and enormous internal consumer markets. Their scale is a key driver for global economic growth and a source of innovation.

The Challenge

The sheer size also means they face intense strain on infrastructure, severe resource demands, and massive issues of inequality. For instance, **India and China** must balance rapid economic expansion with urgent needs for environmental sustainability.

Bottom 5 Countries by Population (2025)



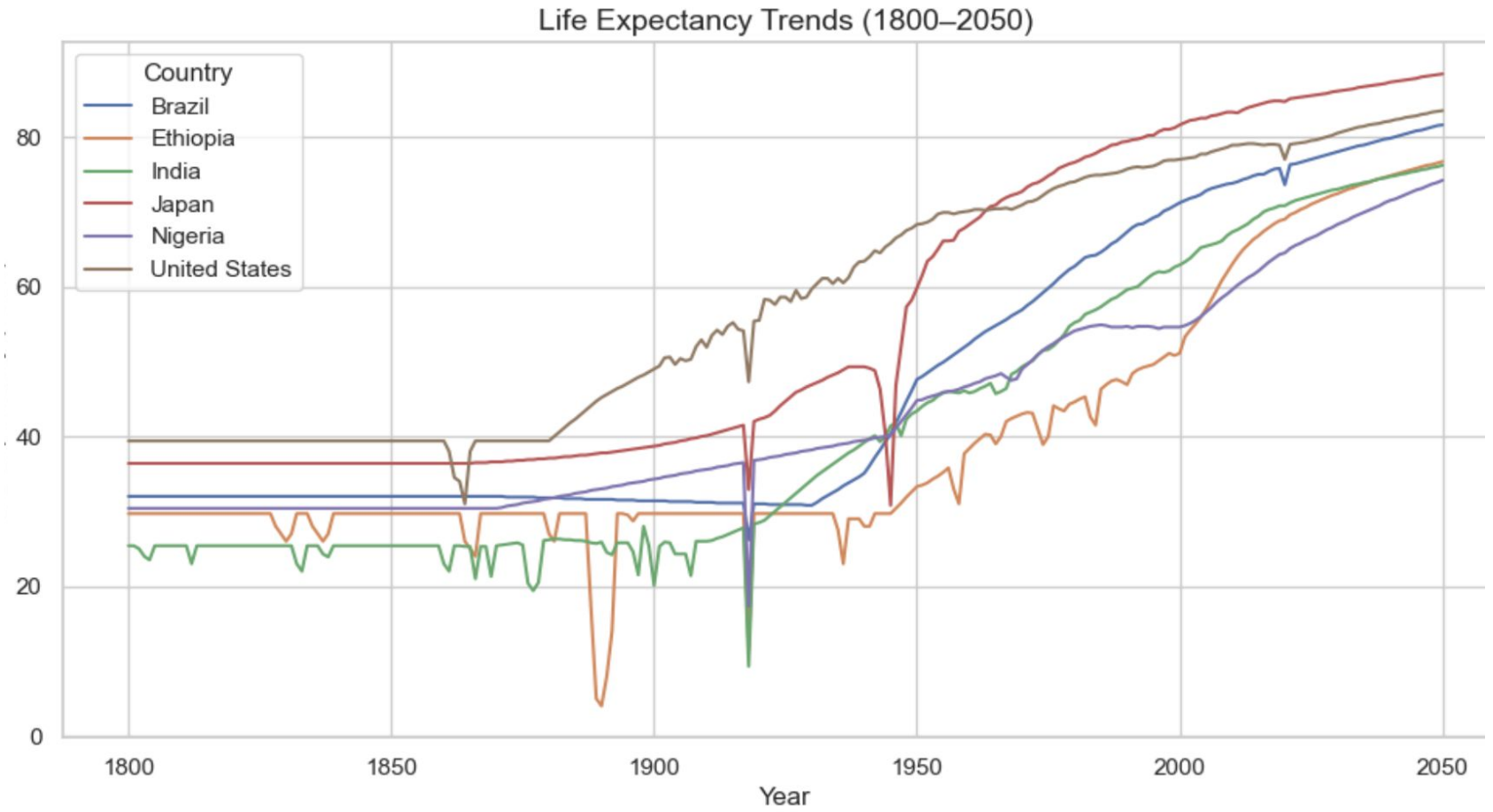
The Challenge

They have a **limited labour force, tiny domestic markets,** and are extremely vulnerable to **climate change**—a single storm can wipe out a large percentage of their GDP.

The Key Contrast

Large countries struggle with **internal inequality and managing scale**, while small nations struggle with **external vulnerability and lack of market power.** For our nonprofit, this means there's no single solution. A strategy for India will fail in Tonga, and vice versa.

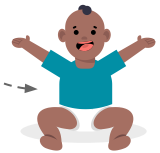
Life Expectancy Trends (1800-2050)

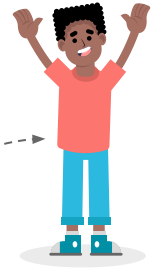


The Starting Line

Notice that in the 1800s, every country was in the same boat, with a very low life expectancy of roughly **25 to 40 years**.

01





02

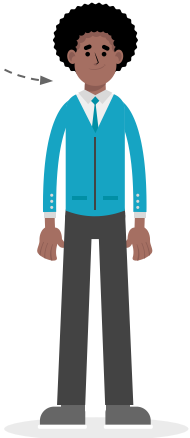
The Early Leaders

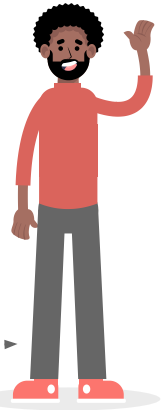
Around the turn of the 20th century, countries like the **USA and Japan** rapidly pulled ahead. Their success was driven by **industrialisation, advancements in medicine (like vaccines and antibiotics), and major public health initiatives** such as clean water and sanitation.

The Steady Improvers

Nations like **Brazil and India** show consistent improvement, but they lag behind the early leaders.

03





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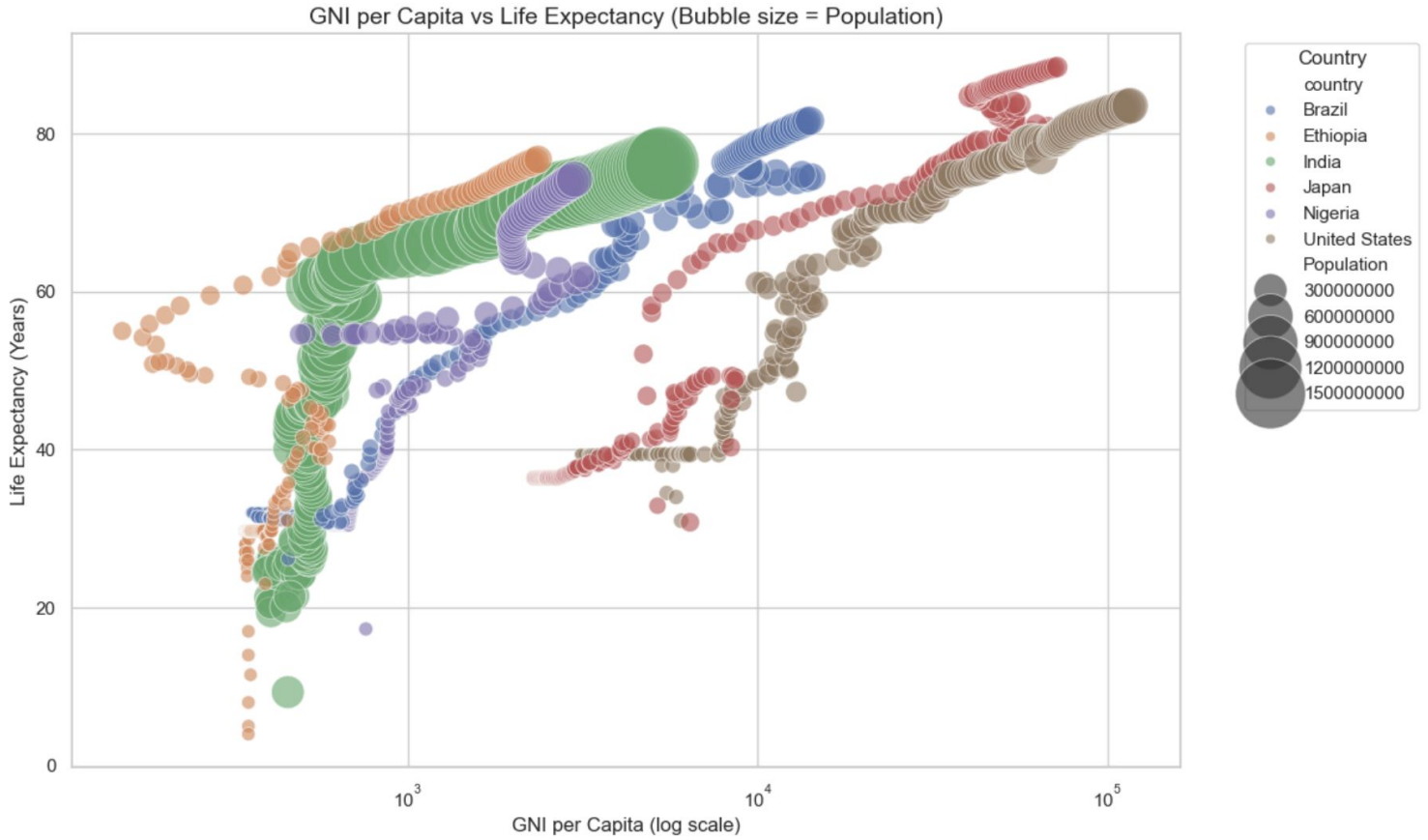
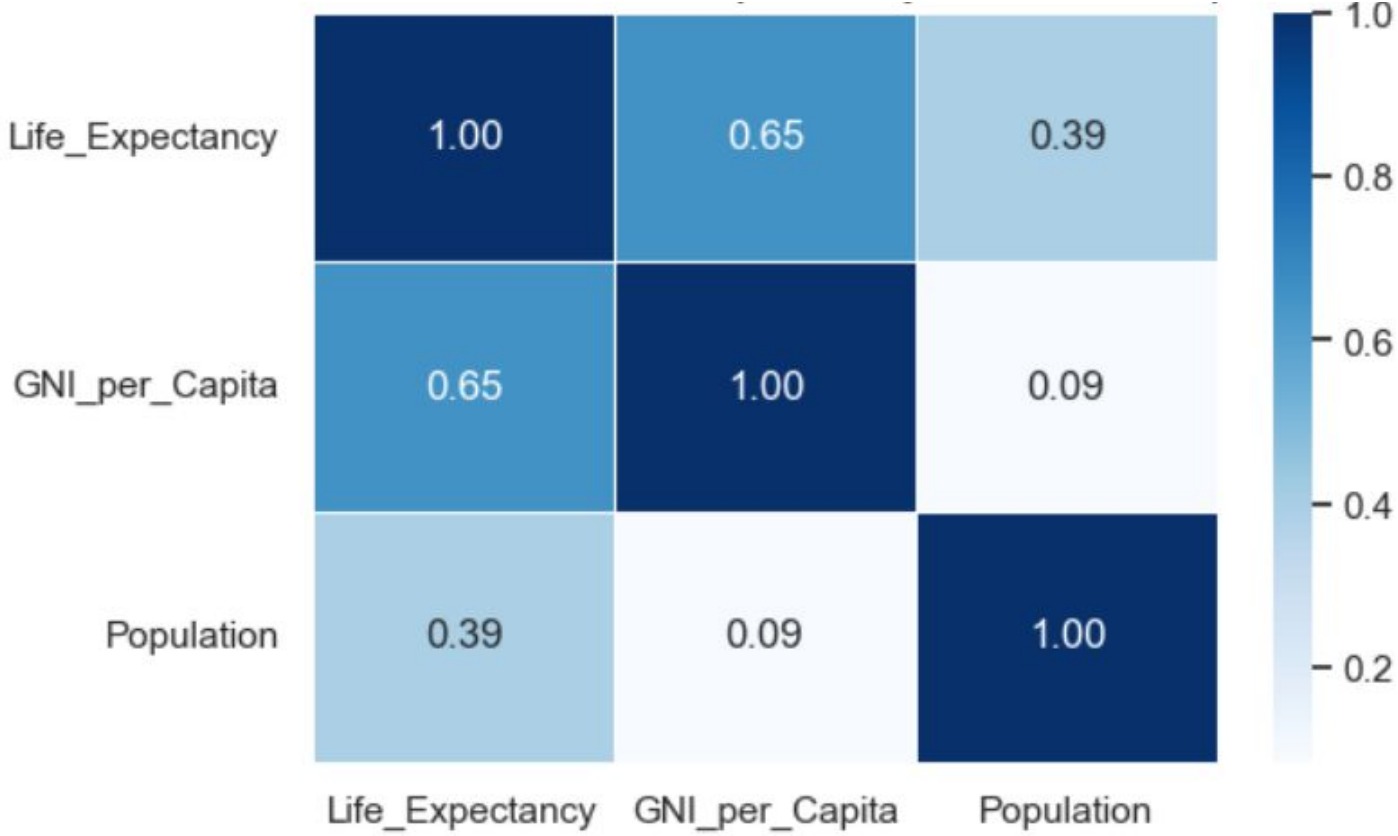
The Late Starters

Countries like **Nigeria and Ethiopia** show much slower improvement, only significantly picking up pace in the later half of the 20th century. Their delayed progress is directly linked to **poverty, the lasting effects of colonialism, and struggling healthcare infrastructure**.

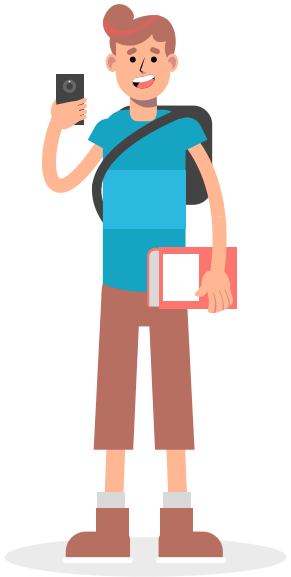
GNI per Capita vs Life Expectancy (Bubble size = Population)



Correlation Between Life Expectancy, GNI, and Population



GNI per Capita



A country's wealth (GNI per capita) and its citizens' health (life expectancy) are strongly linked; **higher income generally means longer life**.

At **lower income levels**, small increases in wealth result in **dramatic improvements in life expectancy**, making this a priority zone for targeted investment.

For very wealthy nations (above ~$20,000 GNI per person), the health gains **plateau**, meaning additional money does not significantly increase life span.

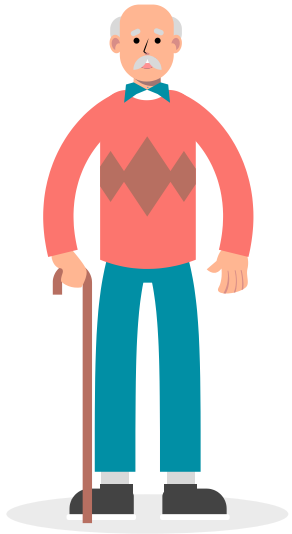
Vs

Life Expectancy

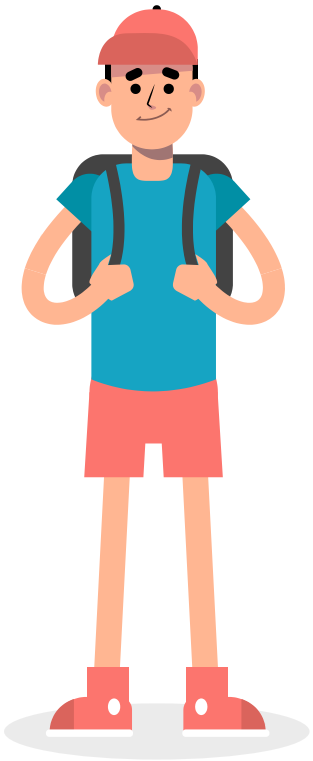
Aid and development efforts should focus on basic public health measures in low-income countries to generate the fastest, most effective gains.

In high-income nations, the focus must shift from simply generating wealth to **smart policy and system design** to achieve marginal gains in longevity.

This pattern proves that while money matters, **effective policy and social systems** ultimately dictate the health ceiling for any population.



Conclusion



01

Strong Correlation, Changing Rules:

We confirmed that wealth and health are strongly linked, but above a GNI of ~$30,000, extra wealth yields **diminishing returns**. Efficiency shifts from raw money to smart policy.

02

Scale Creates Complexity:

Fast-growing, large populations (like India and Nigeria) face unique challenges that slow the rise of average income, requiring highly **localised** policy interventions.

03

Early Investment Pays Off:

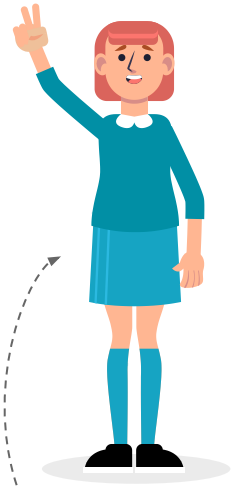
Countries that invested early in public health and education (like Japan and the USA) created a **long-term economic advantage**, proving that health drives wealth, not just the reverse.

Recommendations

01

Prioritize High-Impact Zone

Direct investment toward foundational public health and basic infrastructure in low-income countries, where the data proves returns on life expectancy are the **fastest and highest.**



02

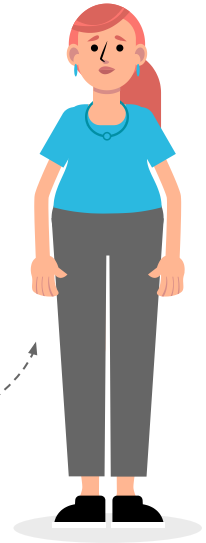
Customize Strategy

Avoid one-size-fits-all solutions. Tailor aid to address **internal inequality** in large nations and **external vulnerabilities** (like climate change risk) in small island nations.

03

Support Foundational Systems

Focus funding not just on quick fixes, but on strengthening local governance, healthcare access, and education systems to ensure progress is **sustainable** and resilient.



Thank you!

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