Global Population and Economic Trends: 2000 – 2050- Gapminder Analysis

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Before I start...

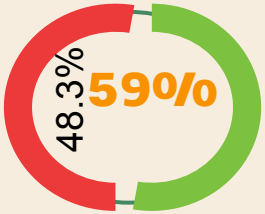
Reasons causing me to miss the deadline of project completion

	Forgot to save copy of .ipynb file before breakdown(this will be BIG lesson :)) (Long Live df.copy())	
	Instead of cleaning data used filters in every next functions took unnecessary computing power. Also had cluttered cleansing rather than one orderly.	
	Used complex coding lines with help of GPT, although understood line by line logic high level troubleshooting became challenging (Exactly as Matt mentioned).	
	- The merging process was not executed correctly, resulting in significant delays. - It was not the most optimal approach for this project. - However, this technique could be valuable for future projects.	

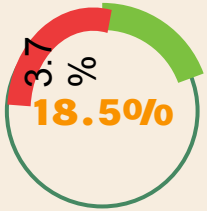
Introduction

Today analysis highlights the shifting demographic landscape, showcasing the fastest-growing and shrinking populations, as well as the relationship between economic growth and population trends. Through visualizations of historical and projected data from 2000 to 2050, we explore key insights into regional population shifts, economic development, and long-term sustainability challenges.

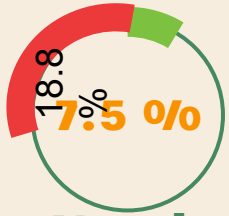
WORLD POPULATION & GDP DISTRIBUTION PER CONTINENTS



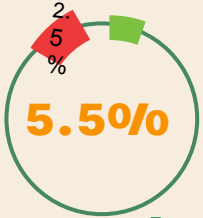
Asia



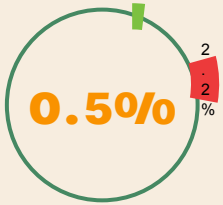
Africa



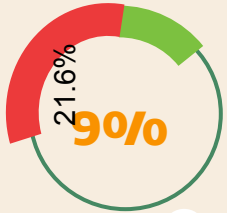
North America



South America



Australia & Oceania



Europe

Key Insights

- **Top 5 Countries with the Highest Population in 2050**
- India is projected to be the most populous country with 1.67 billion people, surpassing China.
- China follows with a population of 1.31 billion, indicating slower growth compared to previous decades.
- Nigeria emerges as the most populous African nation with a population of 377 million, reflecting rapid growth.
- The United States is expected to have 375 million people, maintaining its position as a leading global power.
- Pakistan reaches 368 million, highlighting continued population expansion in South Asia.
- 📌 Key Insight: India is set to overtake China as the world's most populous country by 2050, while Nigeria leads Africa's population boom.
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Key Insights📈

- **Top 5 Fastest Growing Countries (2000 - 2050)**
- Niger leads the world in population growth, expanding by 477.6%.
- Qatar follows with a 416.9% increase, likely driven by economic migration.
- Democratic Republic of the Congo sees a 346.5% rise, reflecting Africa's rapid demographic expansion.
- Chad and Angola experience similar surges, each growing by ~341%.
- 📌 Key Insight: African nations dominate population growth, while Qatar's rapid increase is fueled by immigration and economic factors.

Global Population Insights

USA

Expected to grow from todays 342m to 377M population by 2050

India

Will remain as most populous country in the World

Africa

African countries expecting to have highest population growth by 2050 and onwards

Key Insights📉

- **Bottom 5 Slowest Growing (or Shrinking) Countries (2000 - 2050)**
- Latvia is projected to lose 40.1% of its population.
- Lithuania follows closely with a 39.1% decline.
- Bulgaria, Bosnia and Herzegovina, and Ukraine also face population reductions exceeding -30%

Global Population Insights

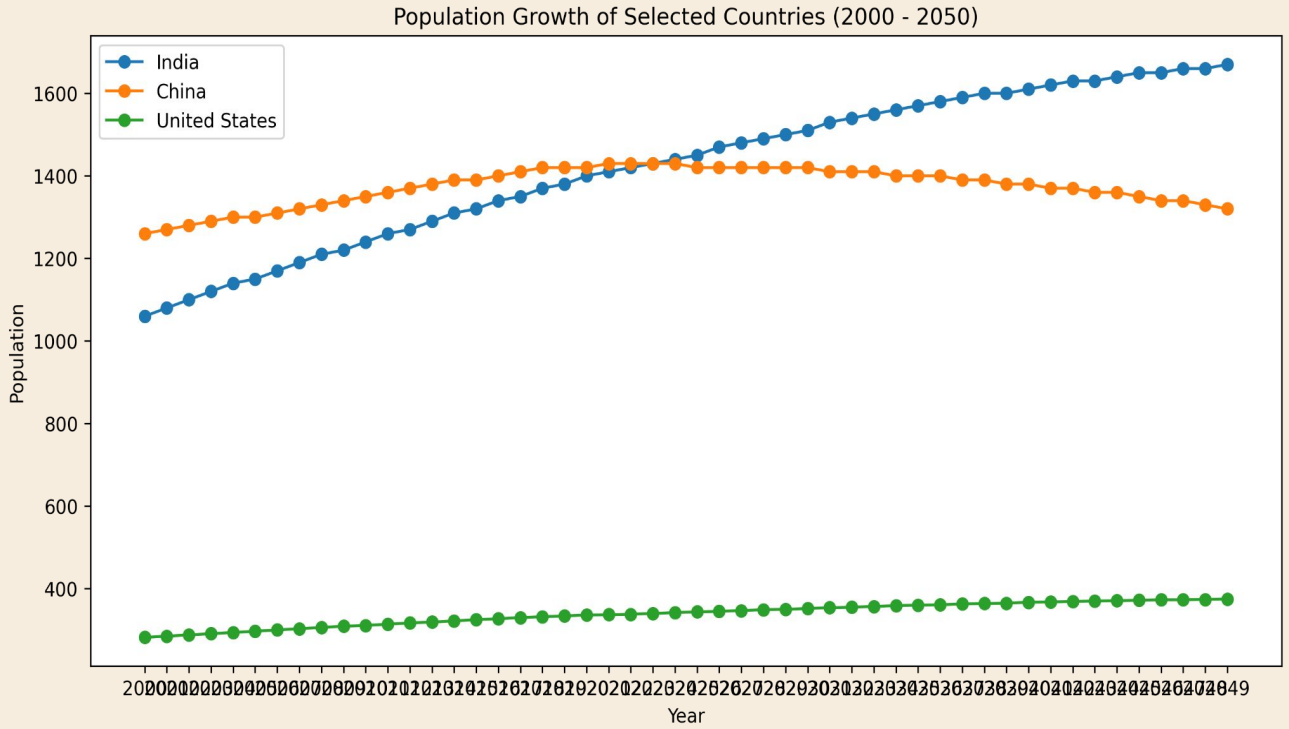
Population growth is projected to slow to 0.5% annually by 2050, down from 0.8% in 2025.

Eastern Europe's Population expected to decline by 30%

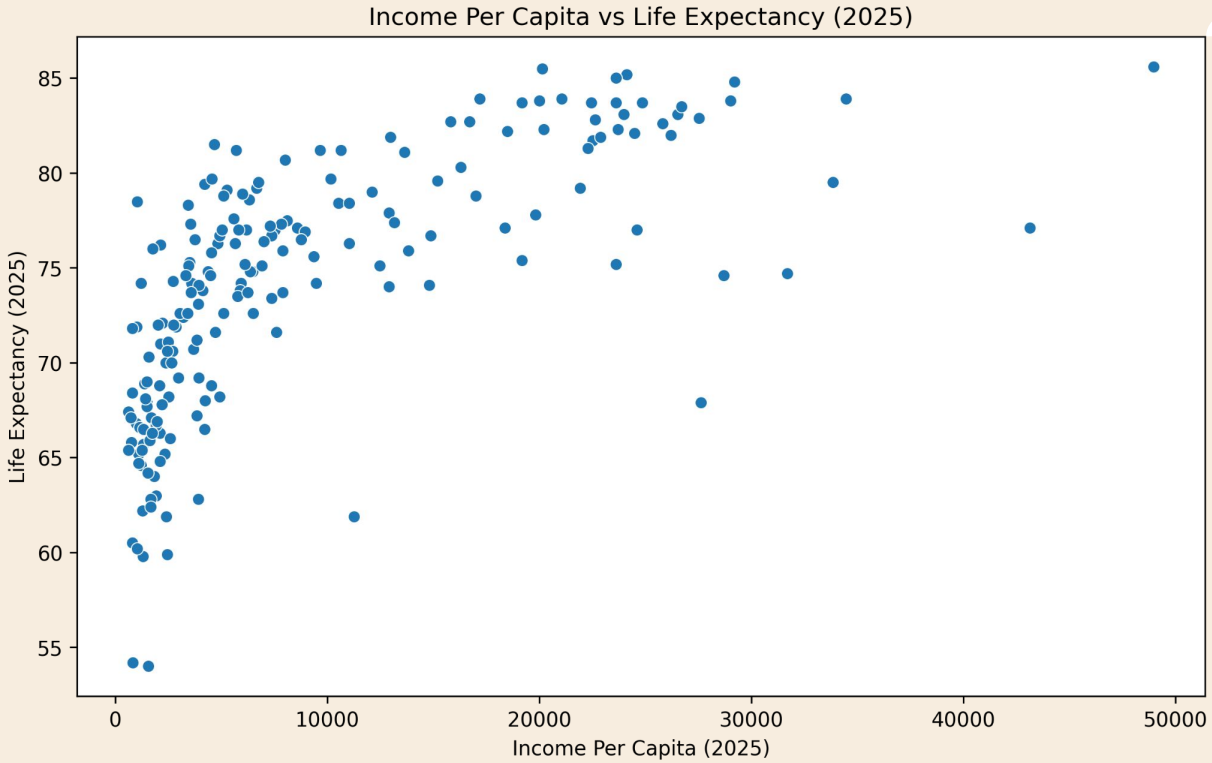
📌 Key Insight: Eastern European countries face severe population decline due to aging populations, low birth rates, and emigration trends.

All 15 former Soviet countries are projected to experience a population decline by 2050.

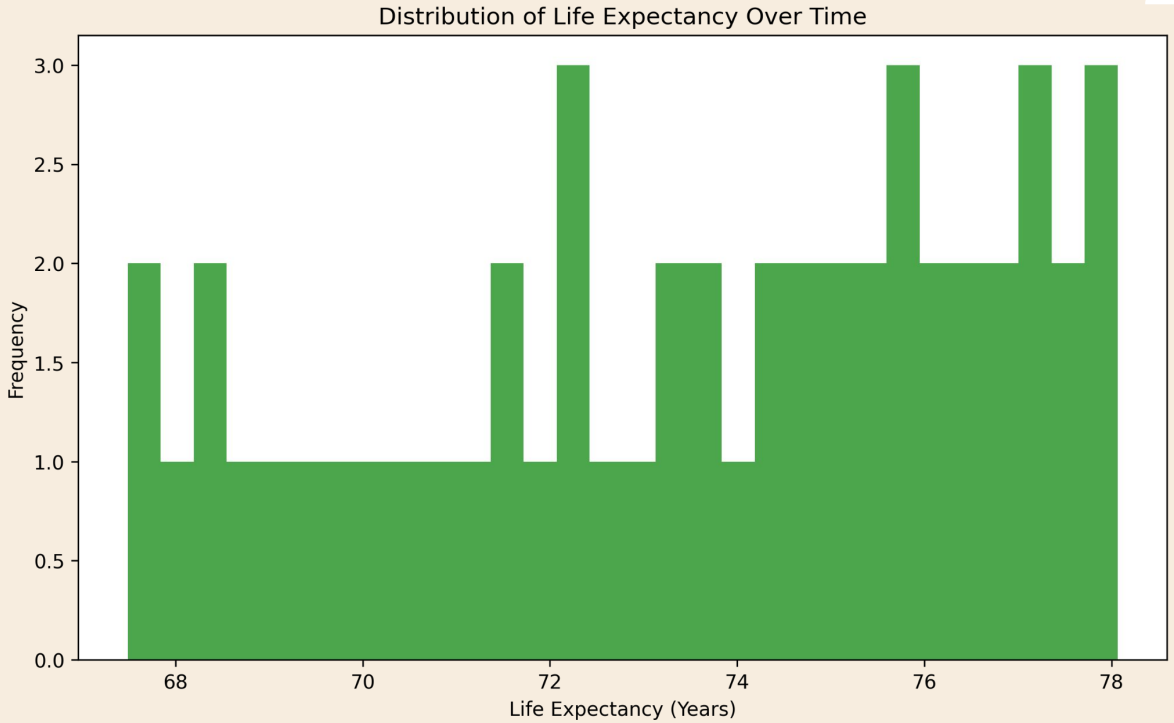
Plots


Population Growth of Selected Countries (2000 - 2050)
India
China
United States
Population
1600
1400
1200
1000
800
600
400
Year

Plots


Income Per Capita vs Life Expectancy (2025)
Life Expectancy (2025)
Income Per Capita (2025)
85
80
75
70
65
60
55
0
10000
20000
30000
40000
50000

Plots


Distribution of Life Expectancy Over Time
Frequency
3.0
2.5
2.0
1.5
1.0
0.5
0.0
68
70
72
74
76
78
Life Expectancy (Years)

Conclusions and Recommendations

Recommendations for Policymakers & Analysts

- 1️⃣Support Sustainable Population Growth
- ✅ Developed nations should implement pro-family policies (childcare benefits, tax incentives) to counteract aging populations.
- ✅ Rapidly growing African nations need infrastructure investment (education, jobs, healthcare) to sustain growth.
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- 2️⃣Address Economic Disparities
- ✅ Encourage diversification in resource-rich nations to prevent economic dependence on oil/gas.
- ✅ Support innovation & investment in declining economies to retain young talent and boost productivity.

Conclusions and Recommendations (Cont..)

- 3️⃣ Improve Healthcare Access
- ✅ Developing countries should focus on public health investment to increase life expectancy.
- ✅ Targeted vaccination campaigns & disease prevention programs could narrow longevity gaps.
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- 4️⃣ Address Workforce Shortages in Aging Nations
- ✅ Immigration policies should support skilled labor to compensate for workforce decline.
- ✅ Encourage remote work & digital economy to maintain economic growth despite population shrinkage.