Infant Mortality in Africa

By Mohamed Gaye

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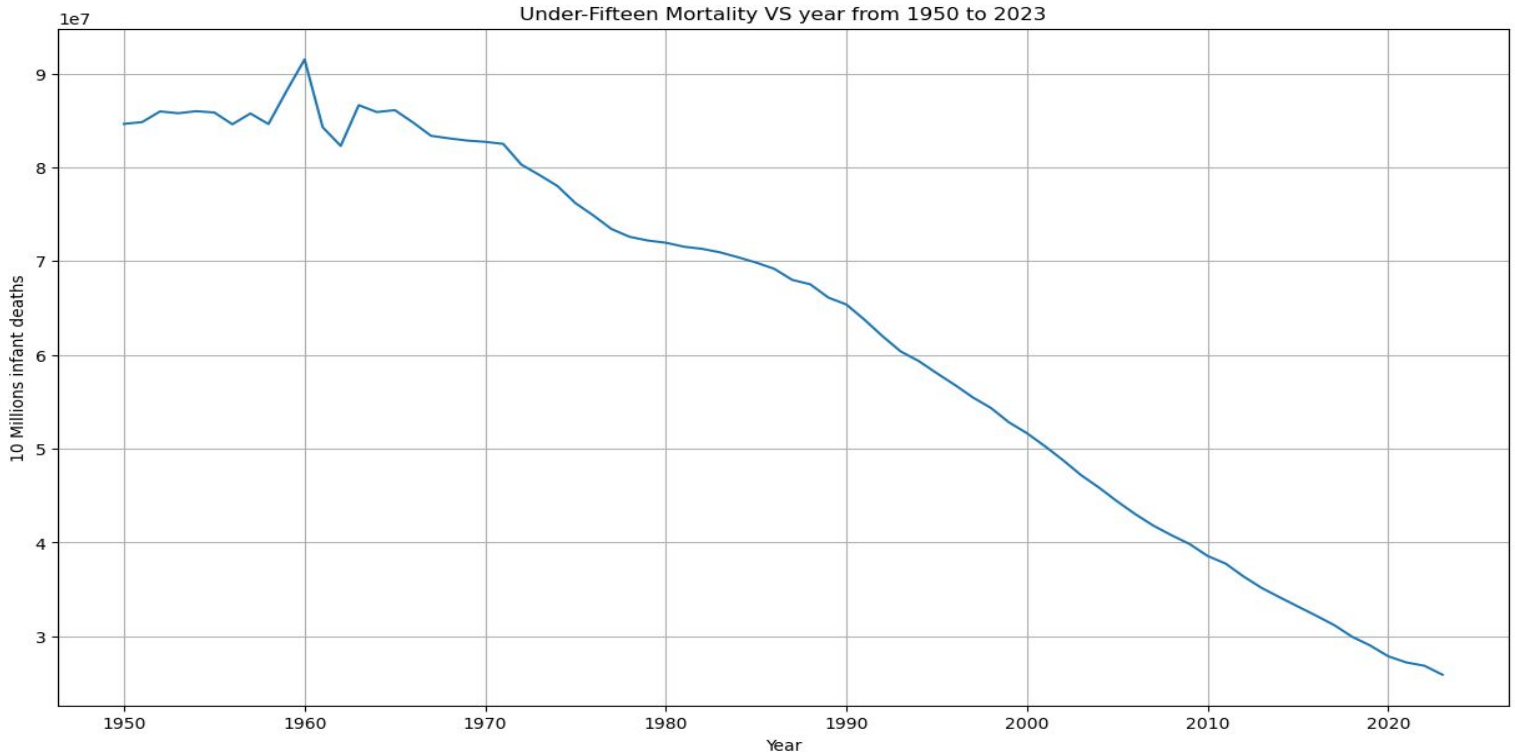
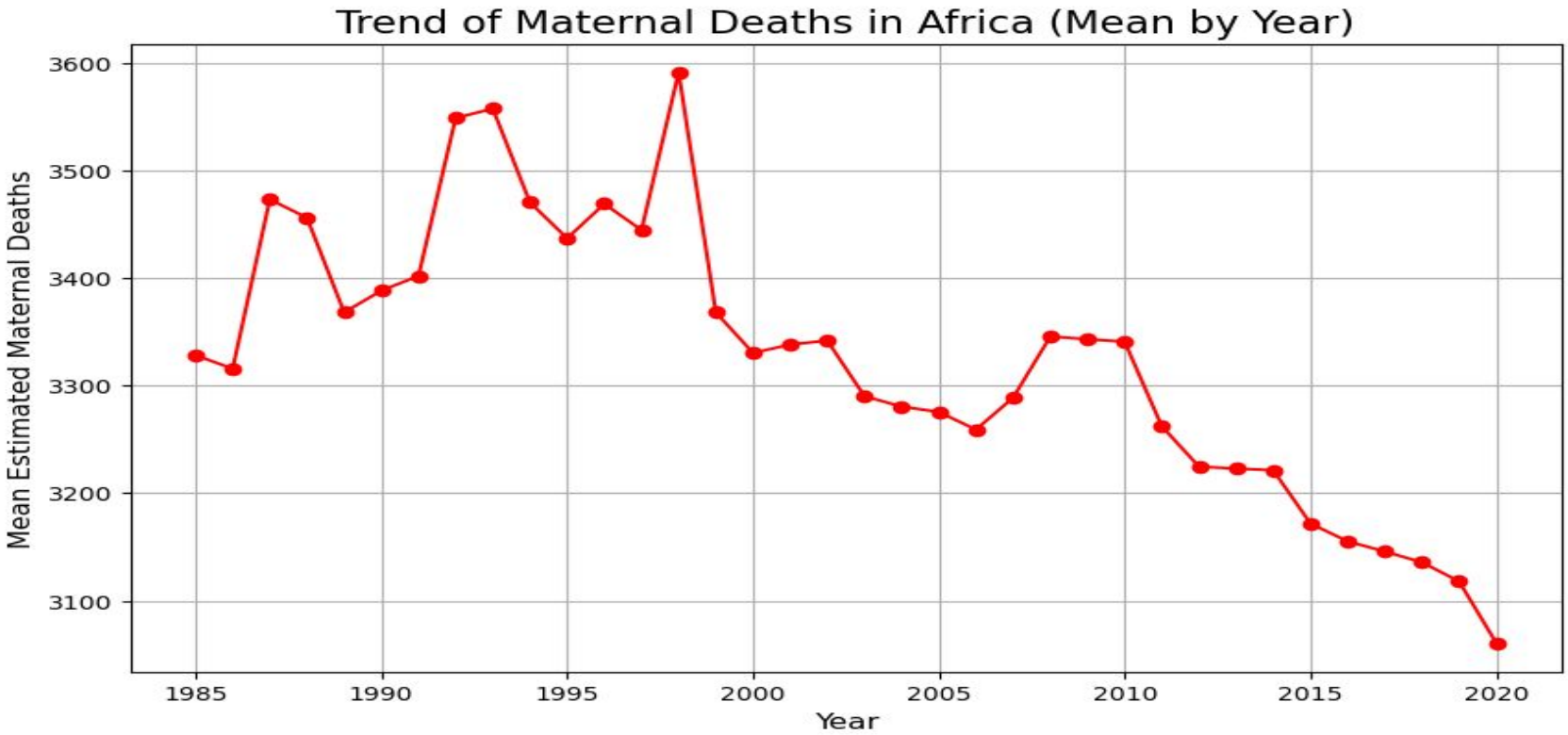
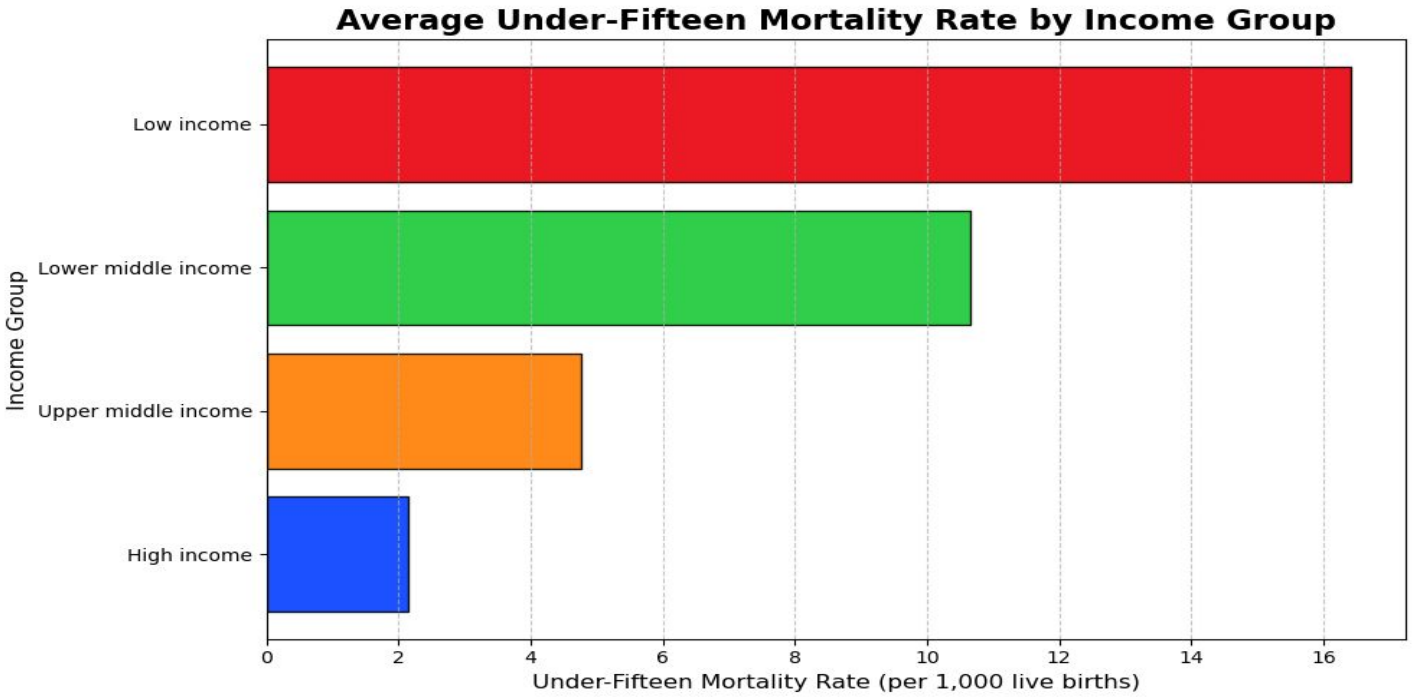


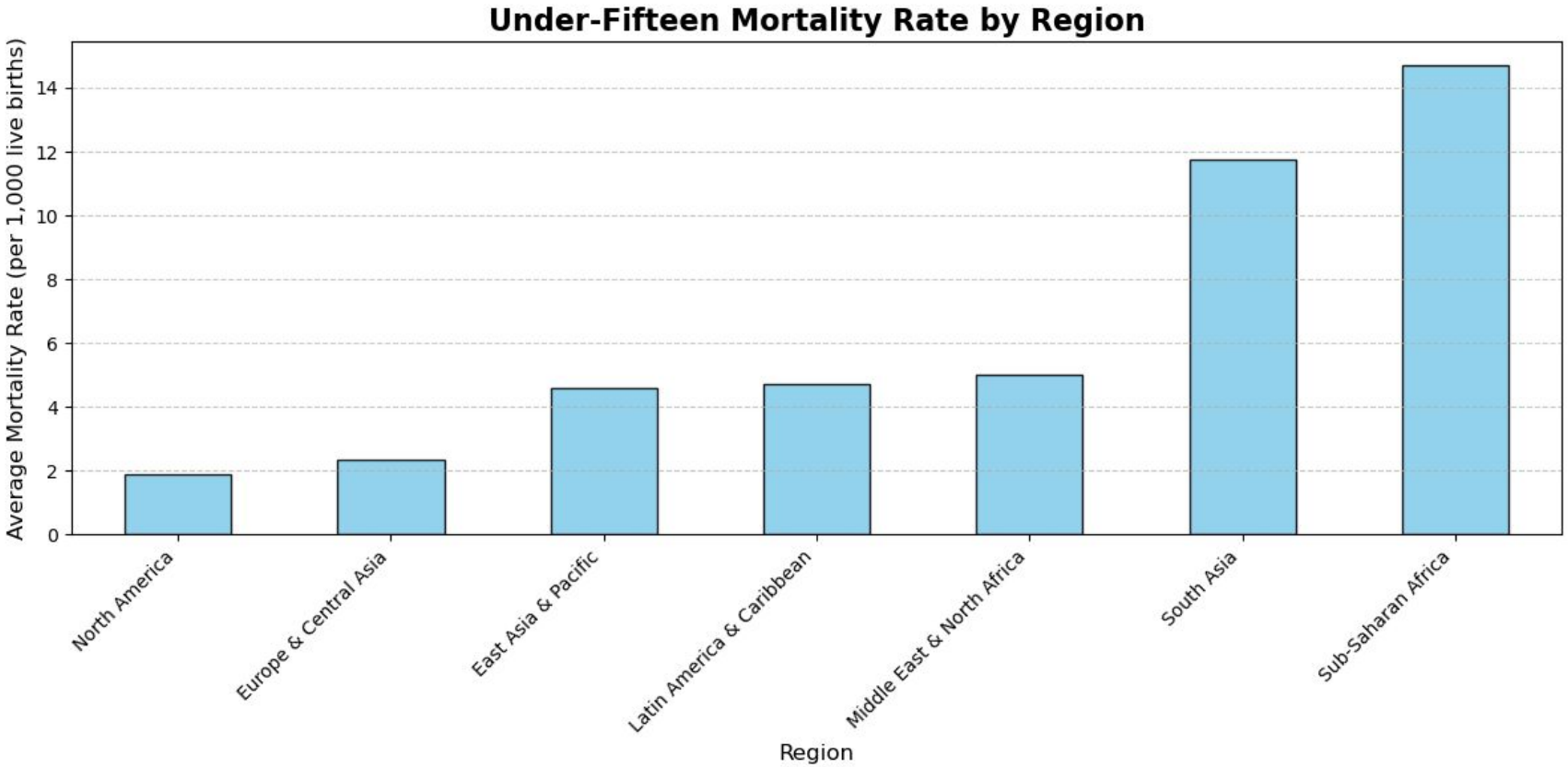
In 2022, 26.87 million children under the age of fifteen died, compared to 25.92 million in 2023.



In 2020, more than 2,000 women died during childbirth in Africa. This marks a clear transition from the high volatility observed between 1985 and 2005 to more stable and declining numbers from 2005 to 2020, reflecting improvements in maternal healthcare systems.



Countries with low income exhibit higher infant mortality rates, followed by lower middle-income countries. Upper middle-income and high-income countries show lower rates.



From a regional perspective, Sub-Saharan African (SSA) countries exhibit higher infant mortality rates, predominantly belonging to the low-income category.

Key Insights

Infant Mortality and Income Levels

Higher rates in low-income countries.
Declines as income levels rise (lower middle, upper middle, high-income countries).

Regional Perspective

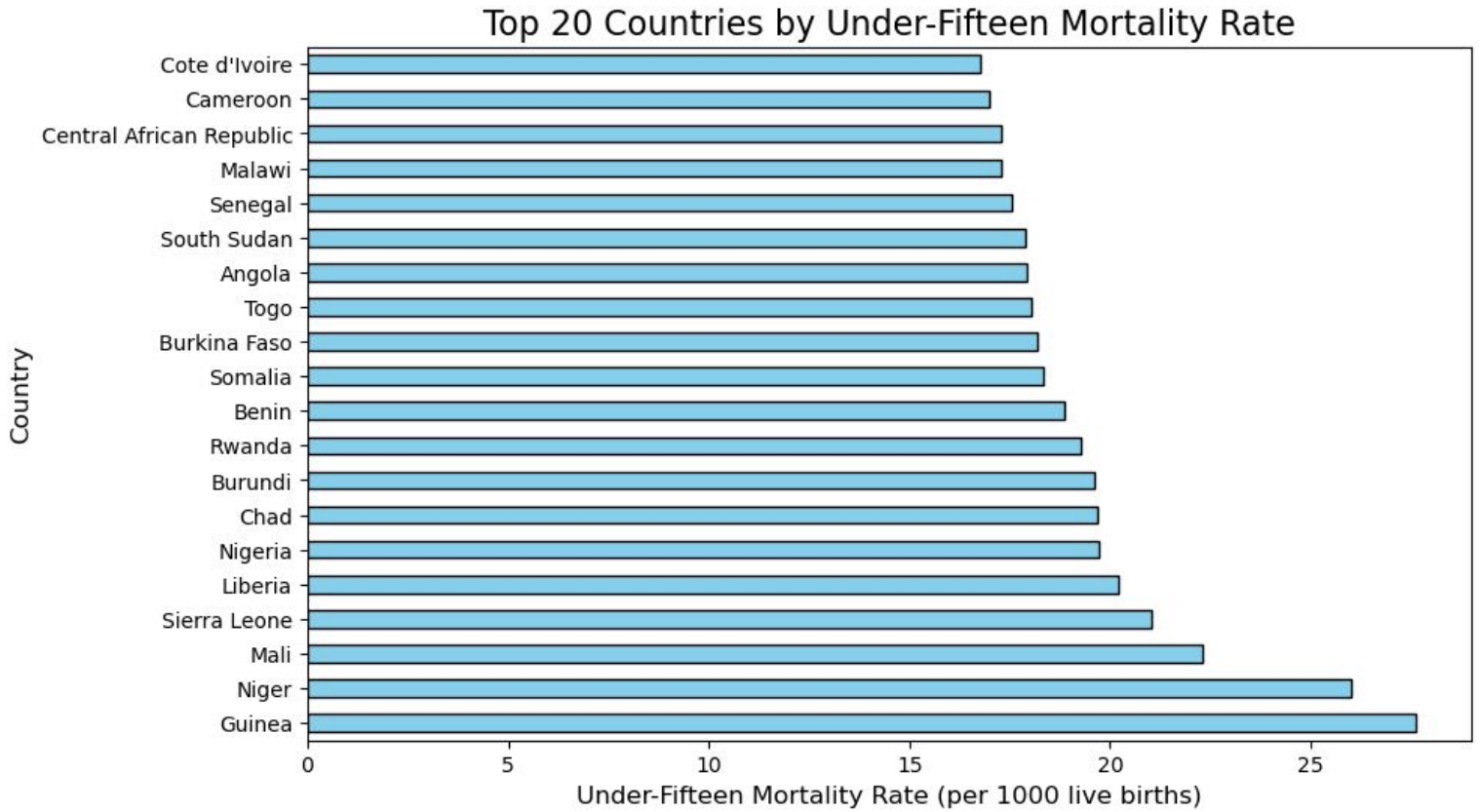
Sub-Saharan Africa has the highest infant mortality rates, driven by low-income prevalence.

Child Mortality Trends

26.87M deaths in 2022 → 25.92M in 2023.

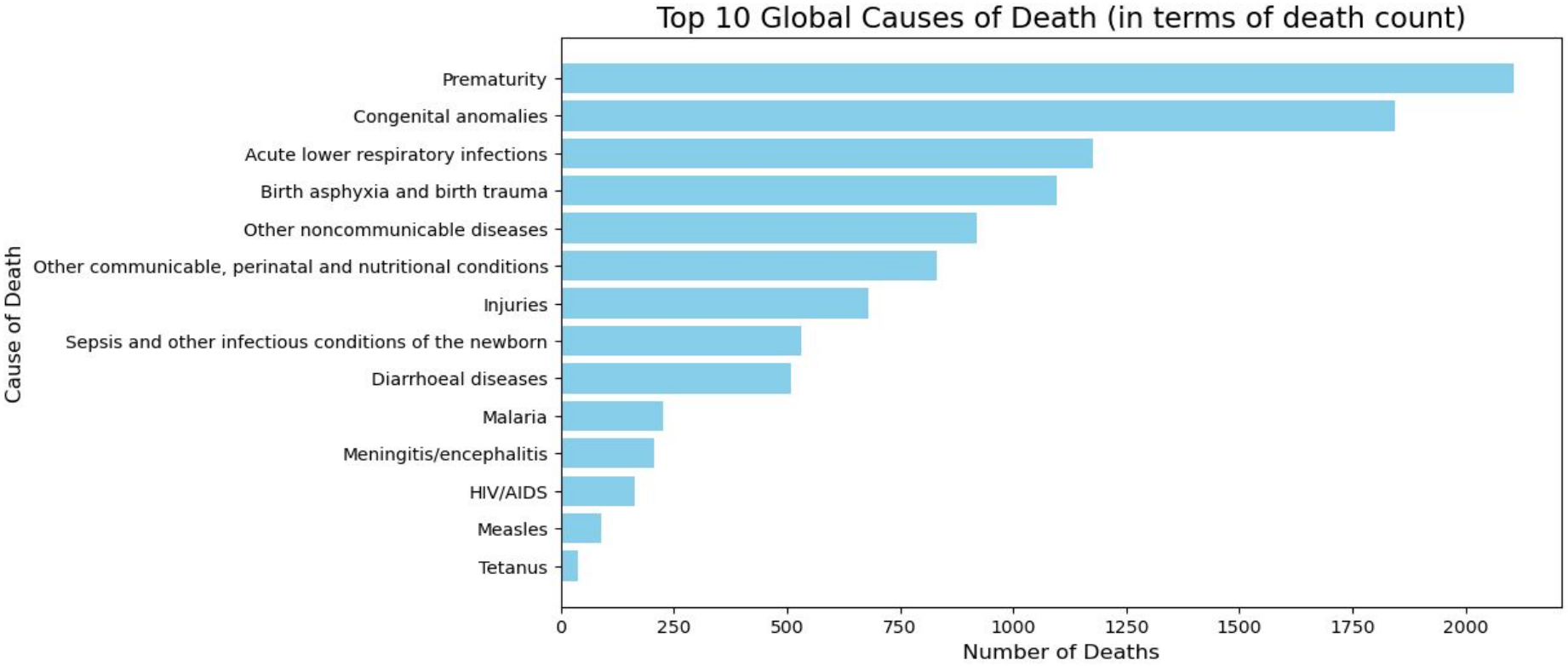
Maternal Mortality in Africa

Over 2,000 maternal deaths in 2020.
Shift from high volatility (1985–2005) to declining rates (2005–2020), indicating improved healthcare.

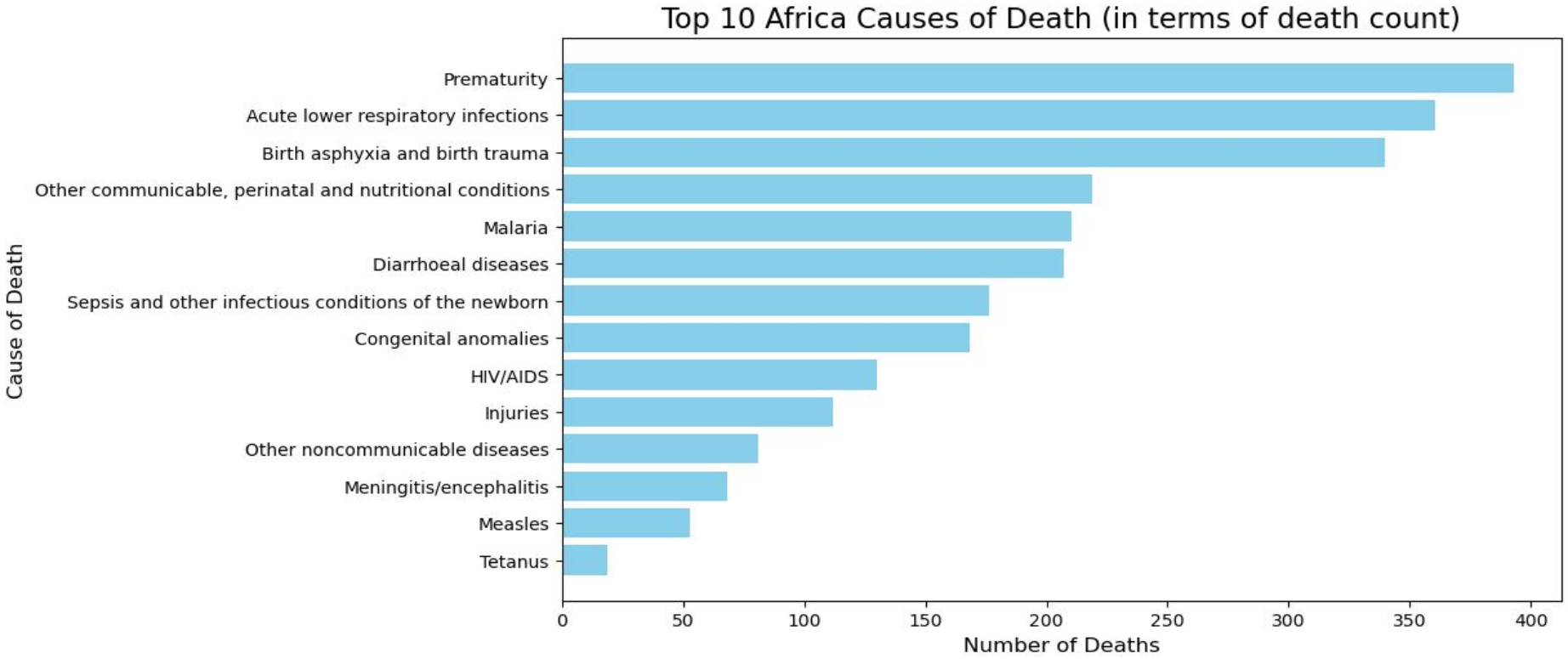


These countries are the most affected by infant mortality. Their governments need to take significant action to address this issue.

But What are the Causes ?

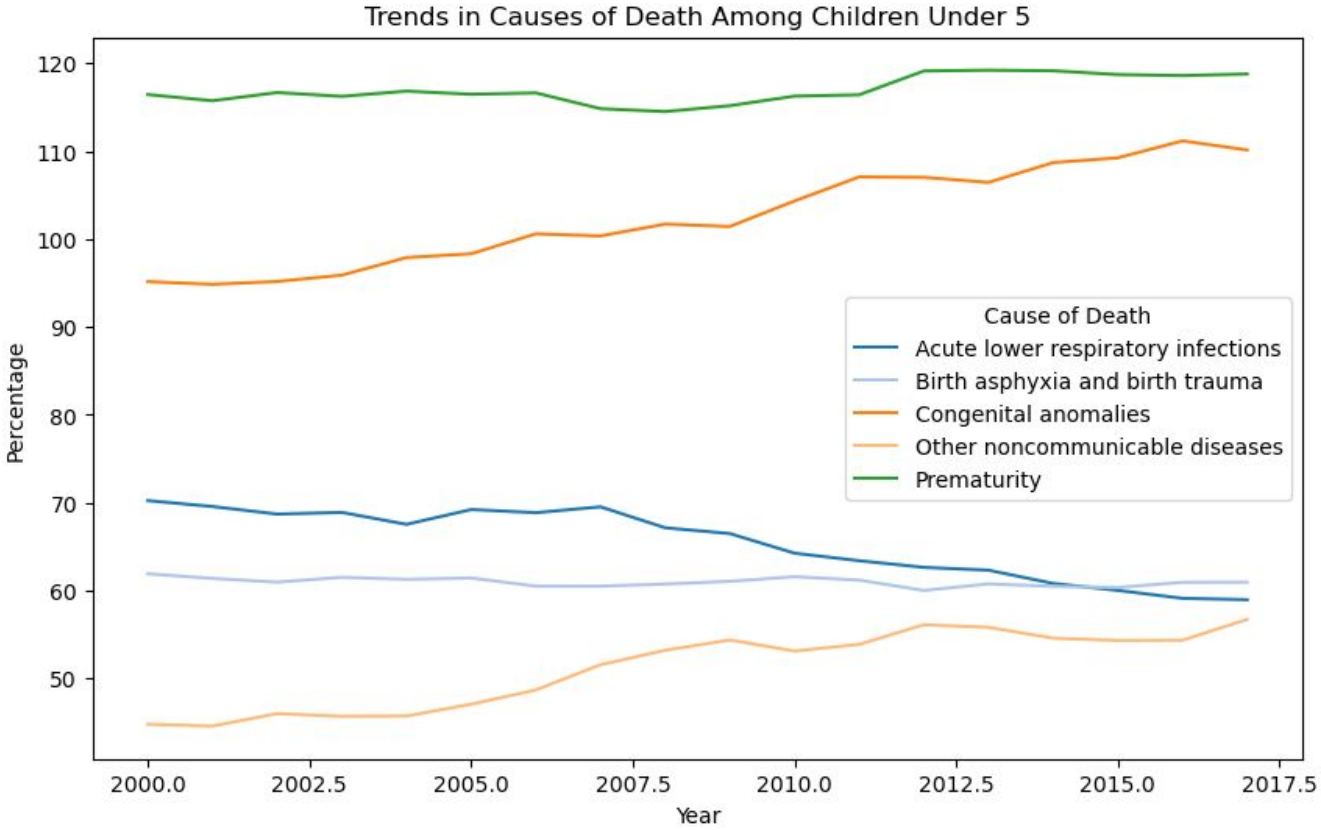


Top 10 of the Global causes

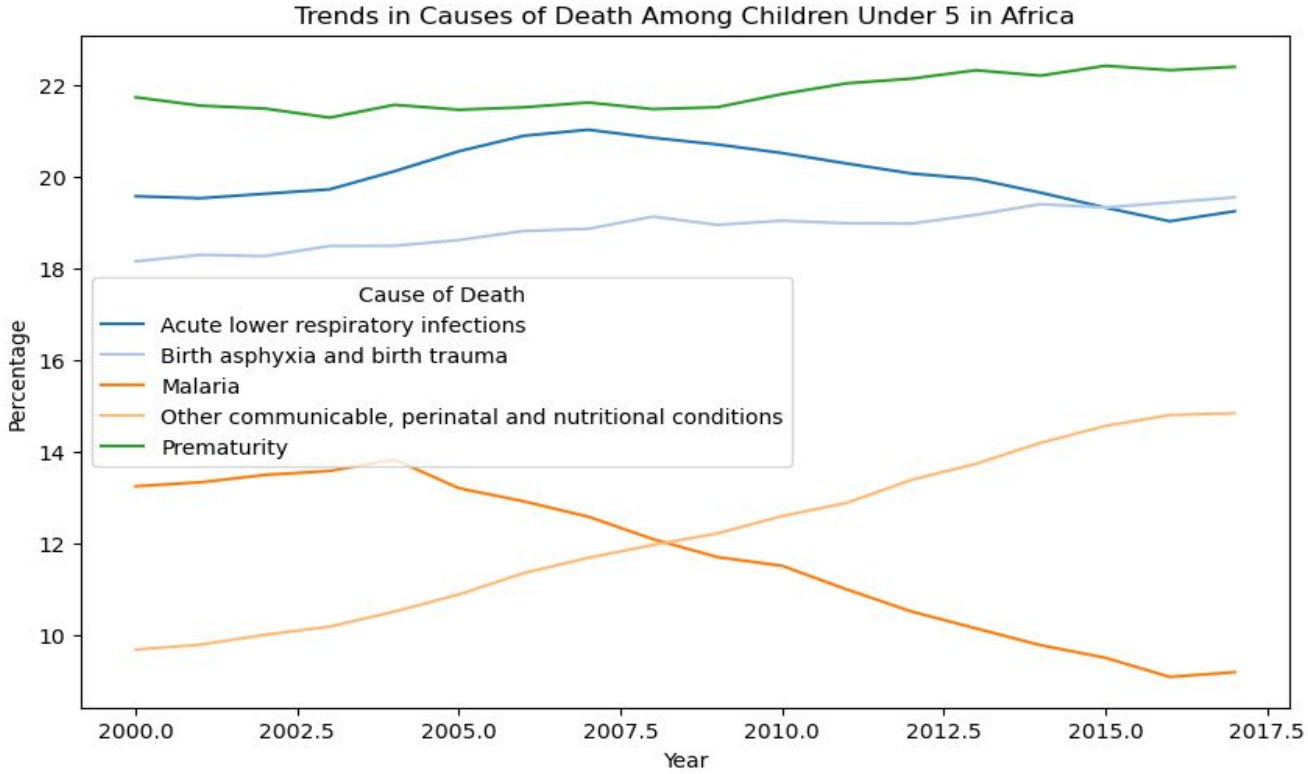


Top 10 Causes in Africa

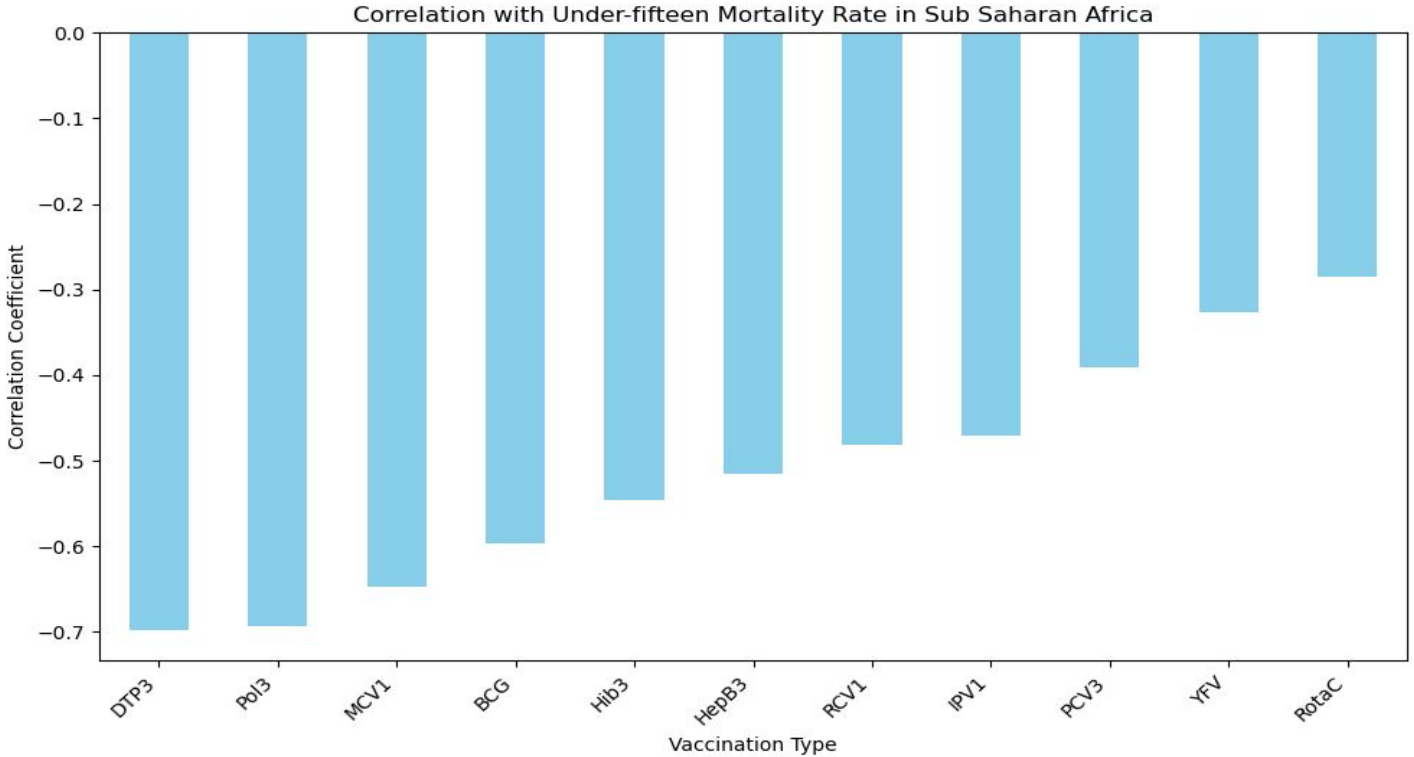
- Unique to Africa: Malaria, respiratory problems, diarrheal diseases, and HIV.
- Global Concern: Prematurity remains a leading cause worldwide, requiring collective global action.



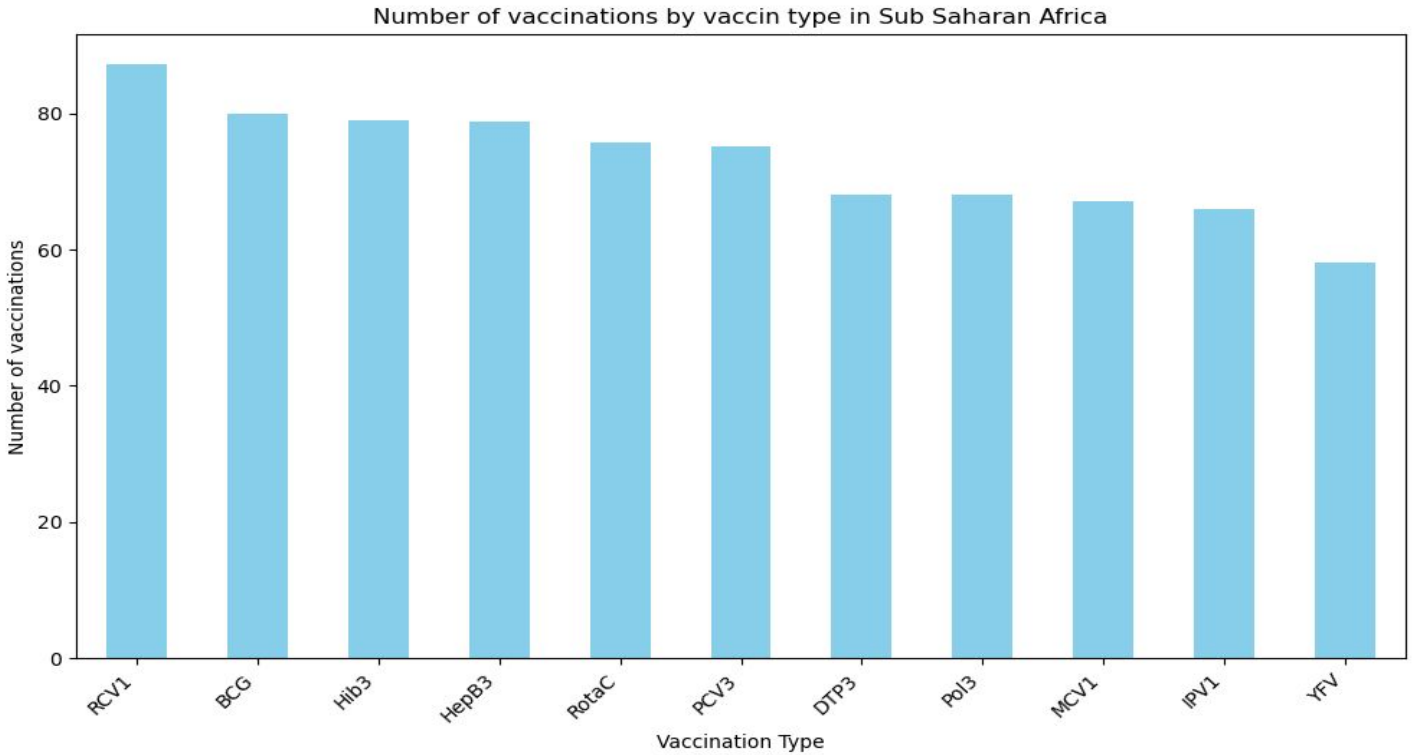
Prematurity remains consistently at the top, and governments need to address it. However, congenital anomalies are growing dangerously. Other causes, such as acute lower respiratory infections, birth asphyxia and trauma, and noncommunicable diseases, are less significant but still present.



The trend in Africa is different: prematurity remains at the top, followed by acute lower respiratory infections, then birth asphyxia and other causes. Notably, birth asphyxia is increasing, even with the ongoing issue of prematurity.



From this graph, we can see that some vaccinations are more strongly correlated with under-fifteen mortality than others. The most correlated ones, with over 50% correlation, include DTP3, Pol3, MCV1, BCG, Hib3, HepB3, RCV1, and IPV1. Governments should focus more on these vaccinations to improve outcomes.



From this graph, we can see that in Sub-Saharan Africa, there is more focus on vaccines that are not highly correlated with under-fifteen mortality, rather than the most important ones. More effort should be directed toward the vaccines highlighted in the previous slide.

Key points

Vaccination Focus in SSA

Vaccines with higher correlation to under-fifteen mortality (e.g., DTP3, Pol3, MCV1, BCG) are currently underprioritized.

Prematurity and Birth Asphyxia

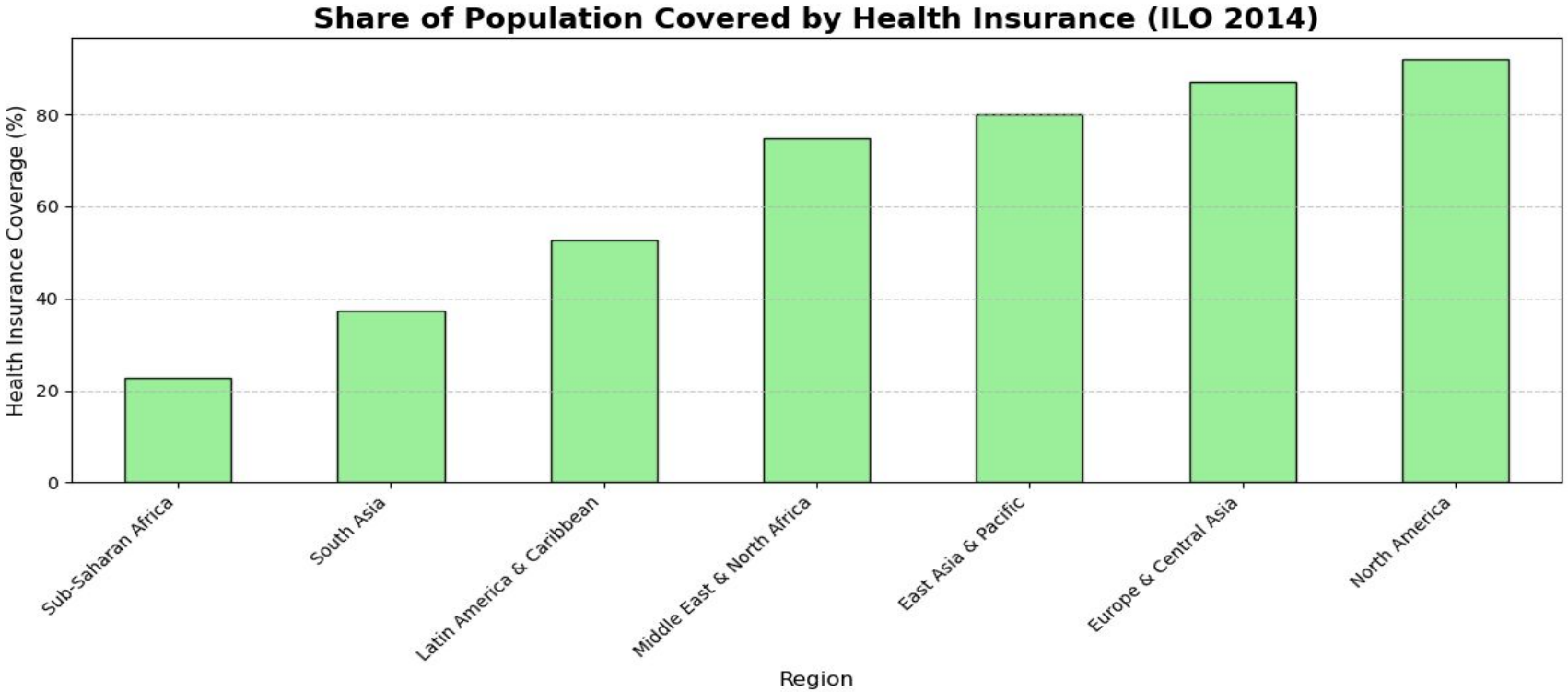
Prematurity remains the top cause of infant mortality, but birth asphyxia is increasing, even with prematurity.

Maternal and Child Health Trends

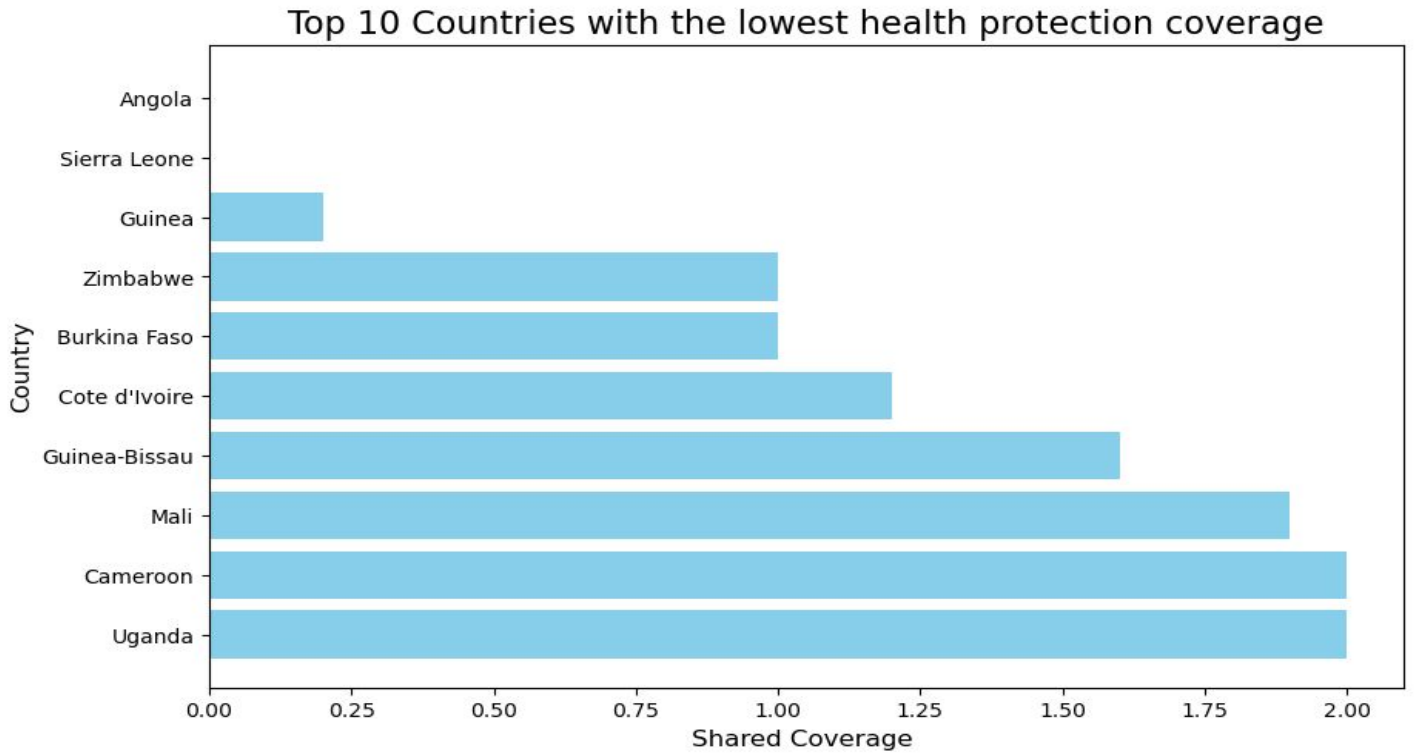
Maternal healthcare has improved, but gaps remain, particularly in low-income regions.

Recommendations

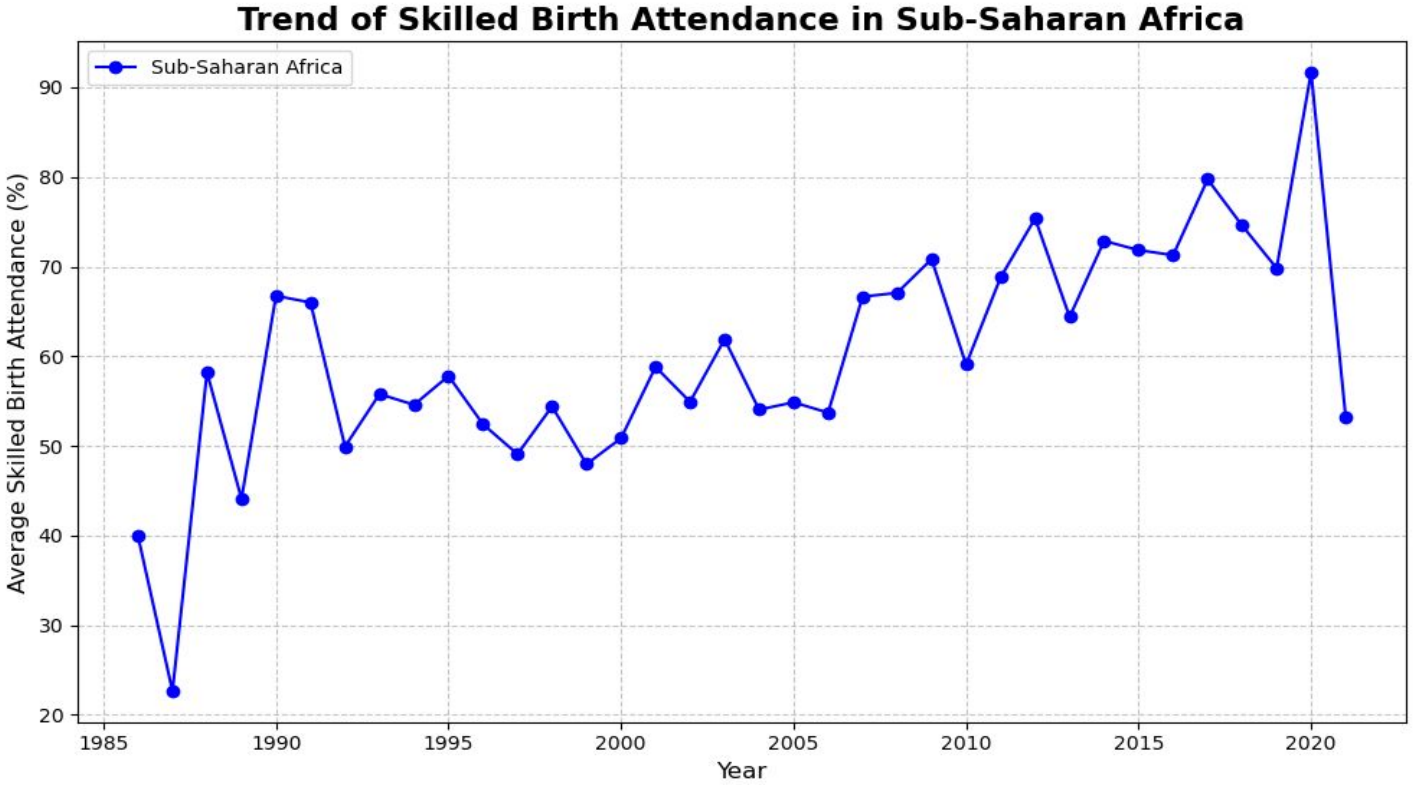
- Focus on high-impact vaccines (DTP3, Pol3, MCV1, BCG, Hib3, HepB3, RCV1, IPV1).
- Strengthen neonatal care and reduce birth asphyxia.
- Invest more in maternal healthcare to reduce maternal mortality.
- Address regional health disparities for more equitable access to healthcare.



SSA has the lowest healthcare coverage. Policies need to be implemented, as the correlation between healthcare coverage and the infant mortality rate is 0.334345.



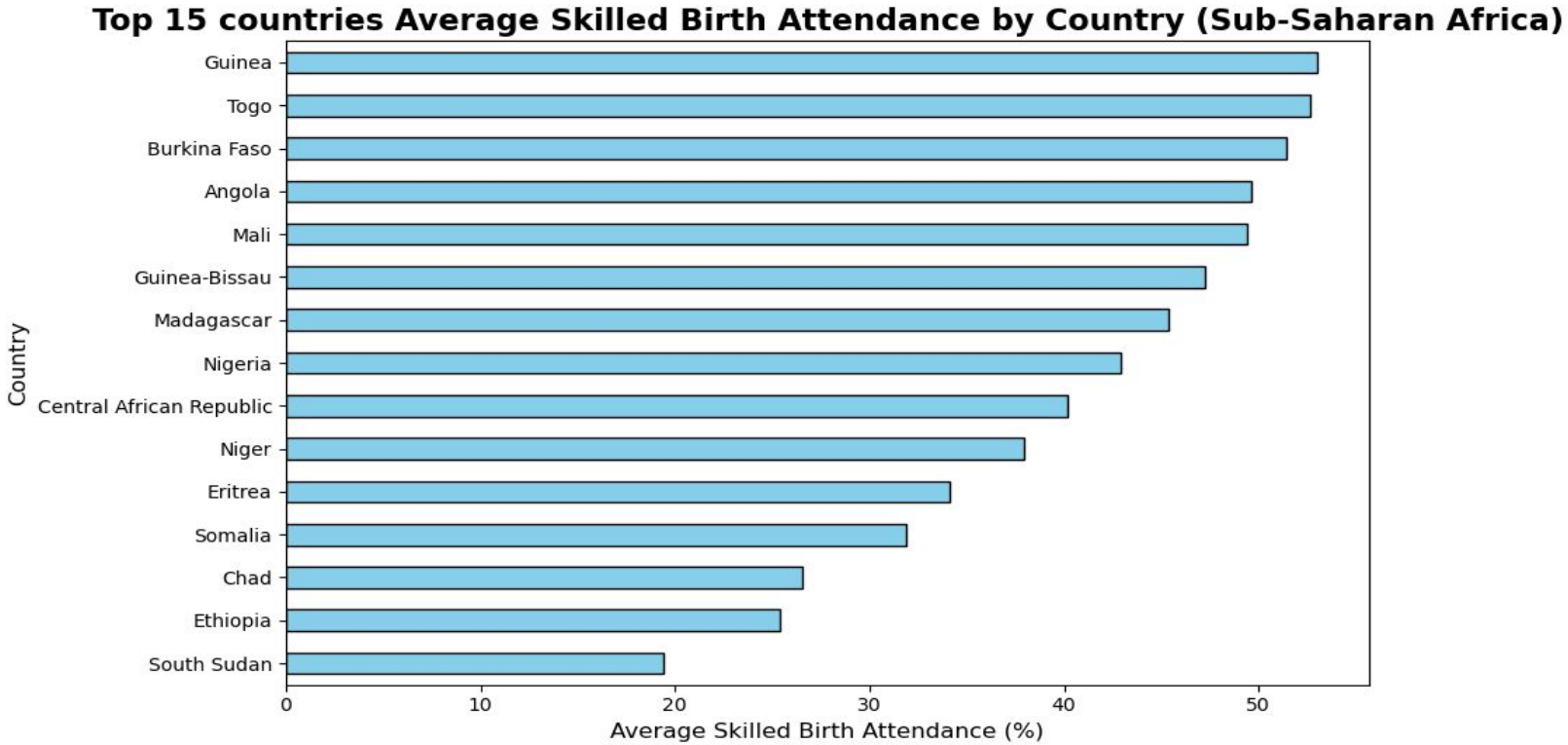
Here are the 10 countries that need to improve their healthcare coverage immediately.



Until 2019-2020, the number of skilled births was increasing, but in 2020, a decrease was observed.

But is it important ?

The correlation between skilled staff assistance and infant mortality is 0.536168, indicating its importance.

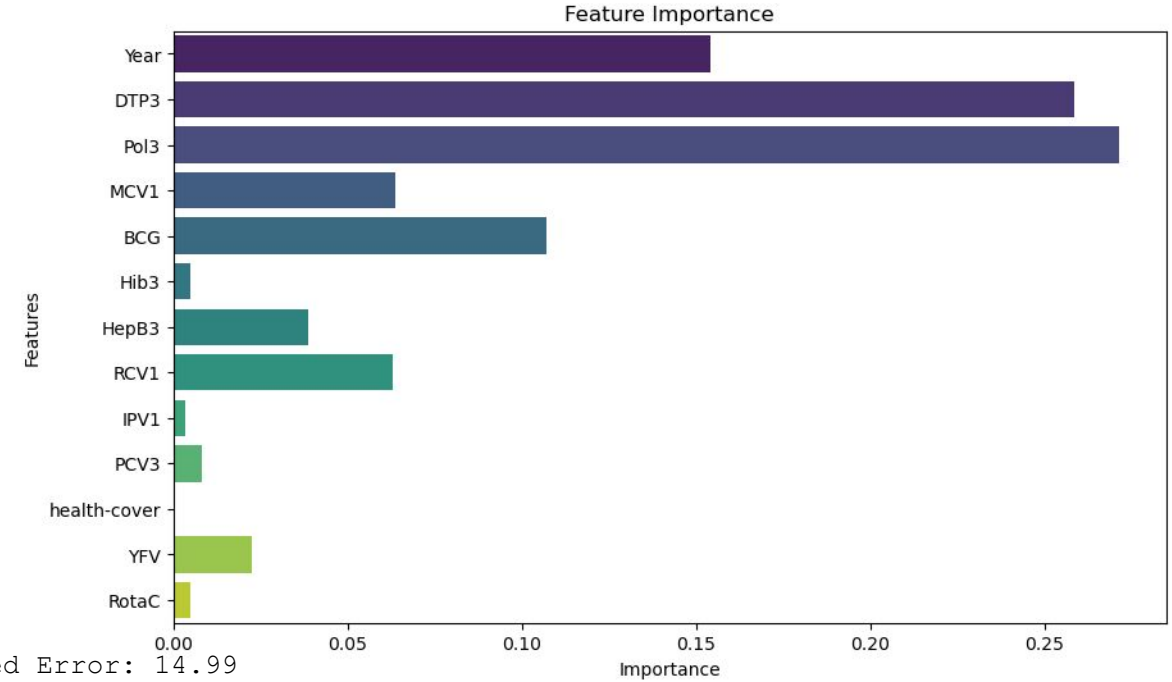


From the graph, it's evident that countries like South Sudan have significantly lower average skilled birth attendance, indicating a need to improve access to healthcare services. Efforts should focus on increasing skilled birth attendance in these countries to reduce maternal and infant mortality rates.

Recommendations

- Focus on high-impact vaccines such as DTP3, Pol3, MCV1, BCG, Hib3, HepB3, RCV1, and IPV1.
- Improve skilled birth attendance, especially in countries with low rates like South Sudan.
- Address prematurity and birth asphyxia by improving neonatal care and maternal health programs.
- Implement a data-driven model to predict infant mortality and guide decision-making.
- Continue strengthening maternal healthcare and ensure equitable access, especially for rural and vulnerable populations.

Finally, we propose a model that will assist Sub-Saharan African local governments in predicting the infant mortality rate. By inputting metrics such as vaccination rates and healthcare coverage, the model will predict the infant mortality rate for a given year, based on the actions they plan to implement. This tool will provide valuable insights to help governments make informed decisions and assess the effectiveness of their policies.



Mean Squared Error: 14.99

R^2 Score: 0.69