



Tackling Child and Infant Mortality in Africa

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Problem Statement	<p>Child and infant mortality remain critical challenges in Africa. International organizations like WHO and UNICEF have made progress, but many African countries still fall short of global targets, such as Sustainable Development Goals (SDG) 3: Good Health and Well-being.</p> <p>Urgent, coordinated efforts are needed to improve maternal health, healthcare access, and overall healthcare infrastructure to address these high mortality rates.</p>
Objective	<p>To analyze the current state of child and infant mortality in Africa, identify the major contributing factors, and propose data-driven solutions data-driven strategies and interventions that policymakers, healthcare providers, and organizations can adopt to improve health outcomes for children.</p>
The Dataset	<p><i>Health Protection Coverage</i> - Percentage of populations covered by health insurance.</p> <p><i>Global Vaccination Coverage</i> - Vaccination rates for various diseases among children.</p> <p><i>Births Attended by Skilled Health Staff</i> - The percentage of births assisted by skilled healthcare providers.</p> <p><i>Maternal Deaths by Region</i> - Estimated maternal deaths by region and year.</p> <p><i>Child Mortality by Income Level</i> - Under-five mortality rates across different income-level countries.</p> <p><i>Infant Deaths</i> - Annual number of infant deaths by country.</p> <p><i>Youth Mortality Rates</i> - Mortality rates for individuals under 15.</p> <p><i>Causes of Death in Children Under Five</i> - Breakdown of major causes of death among young children.</p>
Span	<p>Ranges with global policy periods (e.g., MDG era, SDG era) were selected:</p> <p>1991–2000: MDG planning phase; increased focus on reducing child mortality.</p> <p>2001–2015: Millennium Development Goals (MDGs) implementation period.</p> <p>2016–2023: Sustainable Development Goals (SDGs) implementation.</p>

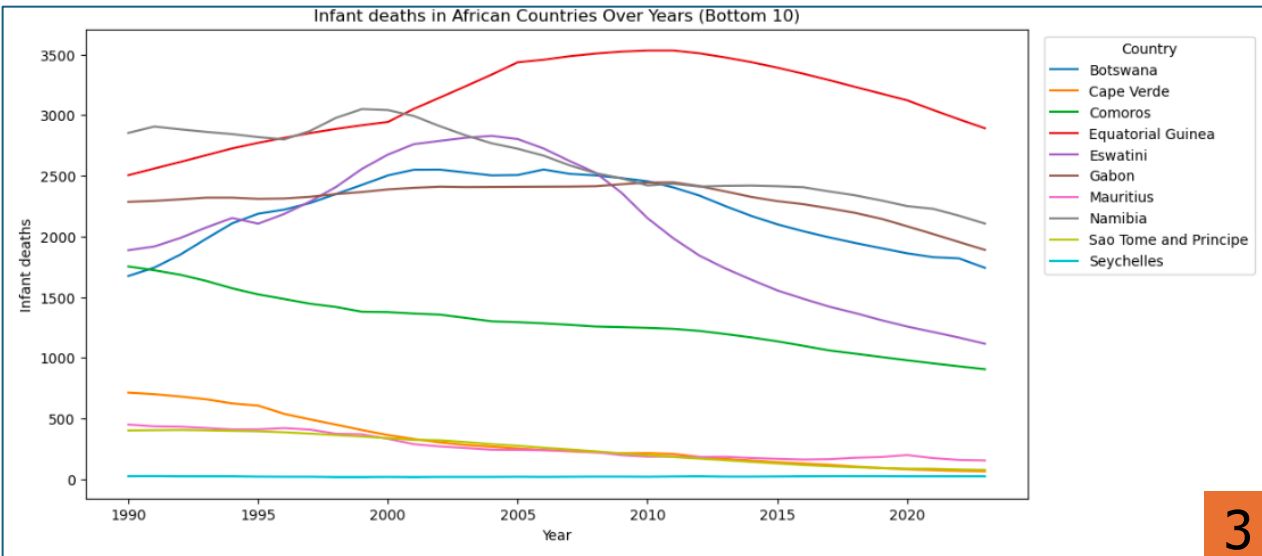
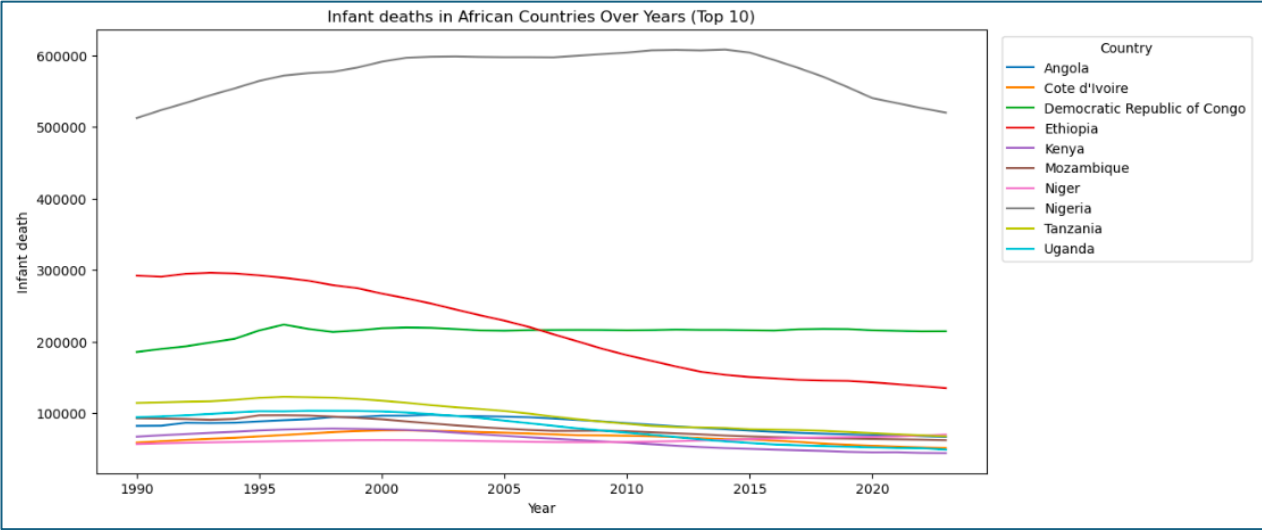
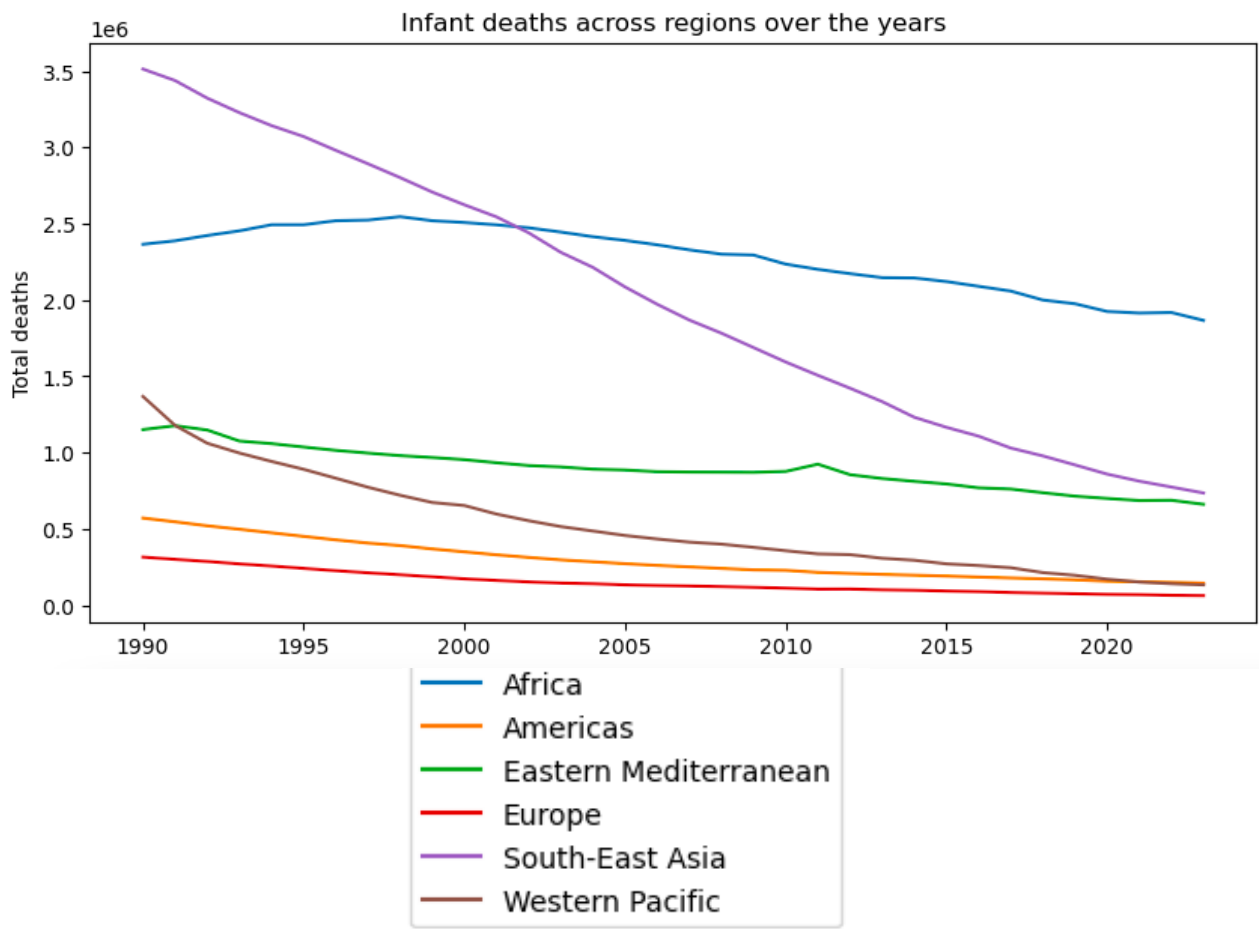
Outline

- ➡ Assess the mortality rates of infants and children (under five years) across various regions, including countries in Africa.
- ➡ Factors influencing mortality rates in these regions and countries
- ➡ Identify main causes of infant and child mortality
- ➡ Summary
- ➡ Recommendations
- ➡ Limitations (if any)

Among all regions, Africa recorded the highest infant mortality. In 2022, infant mortality in Africa was ca. 40% of global infant deaths.

Angola, Nigeria, Niger, Ethiopia and DRC - highest infant mortality in Africa.

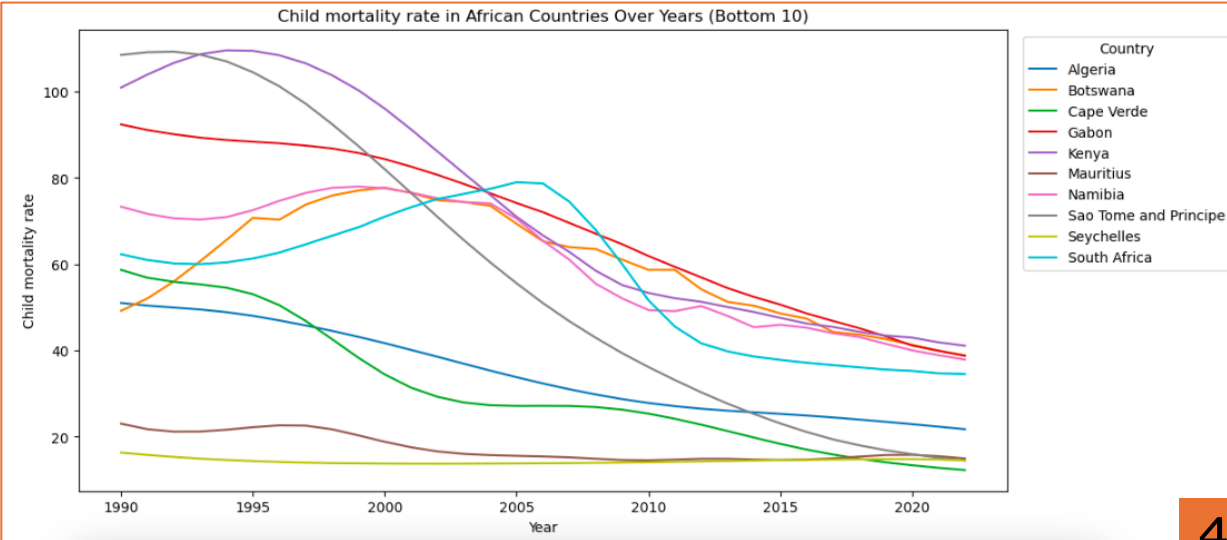
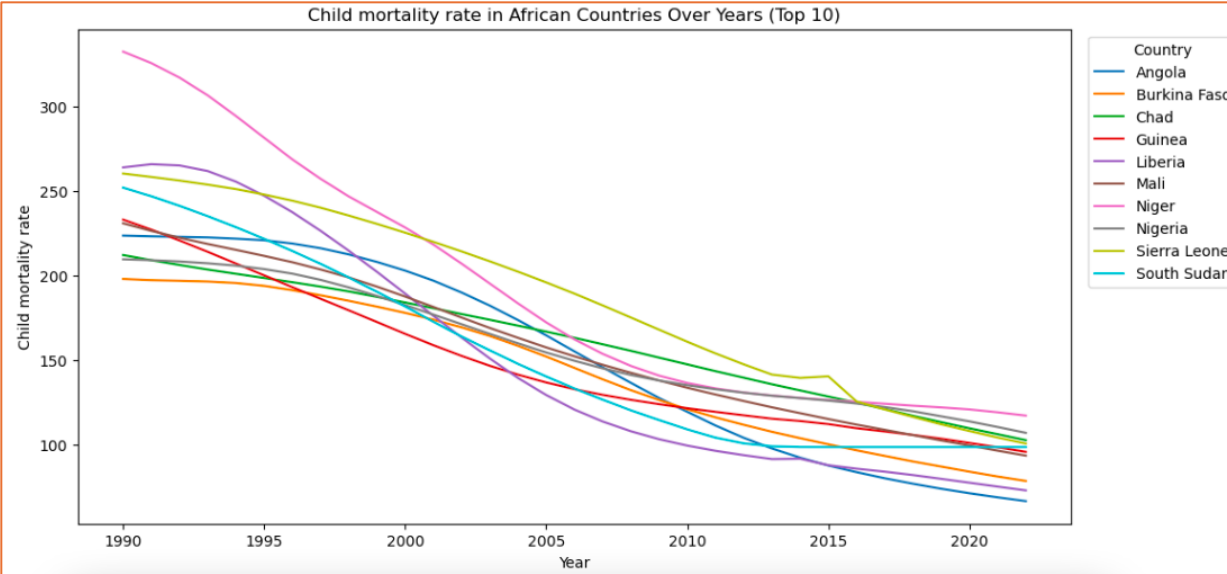
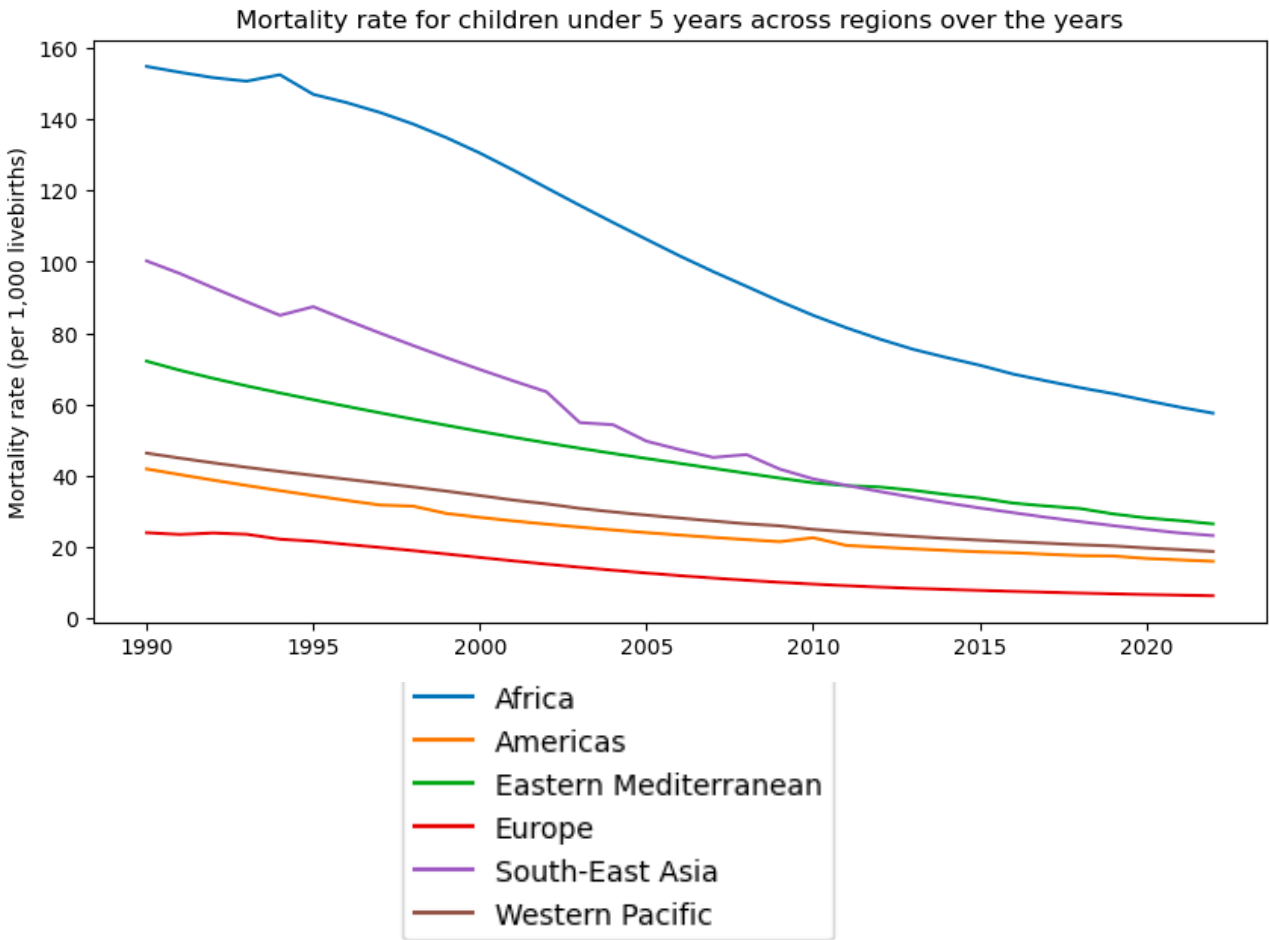
Cape Verde, Seychelles, Botswana, Mauritius – low infant mortality

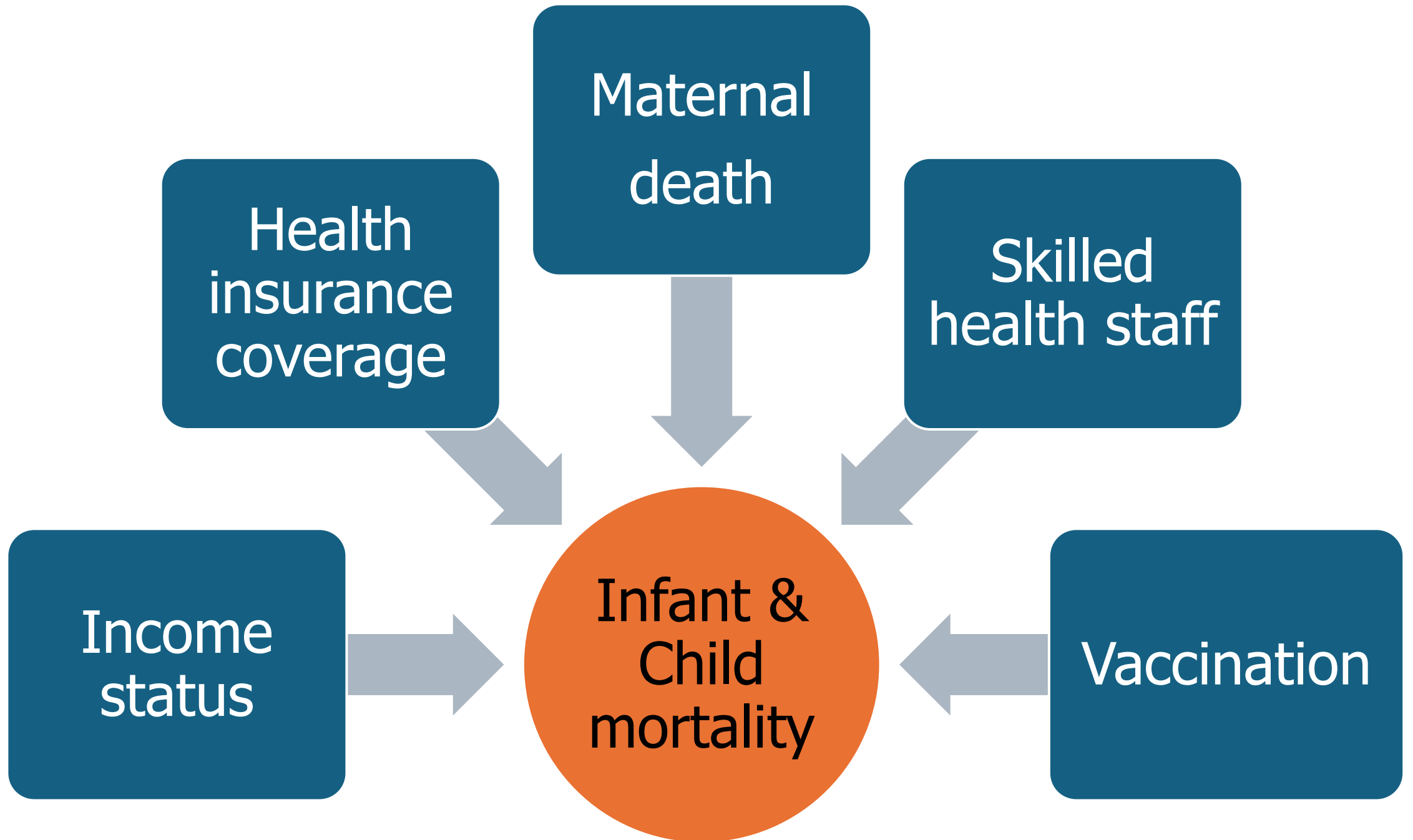


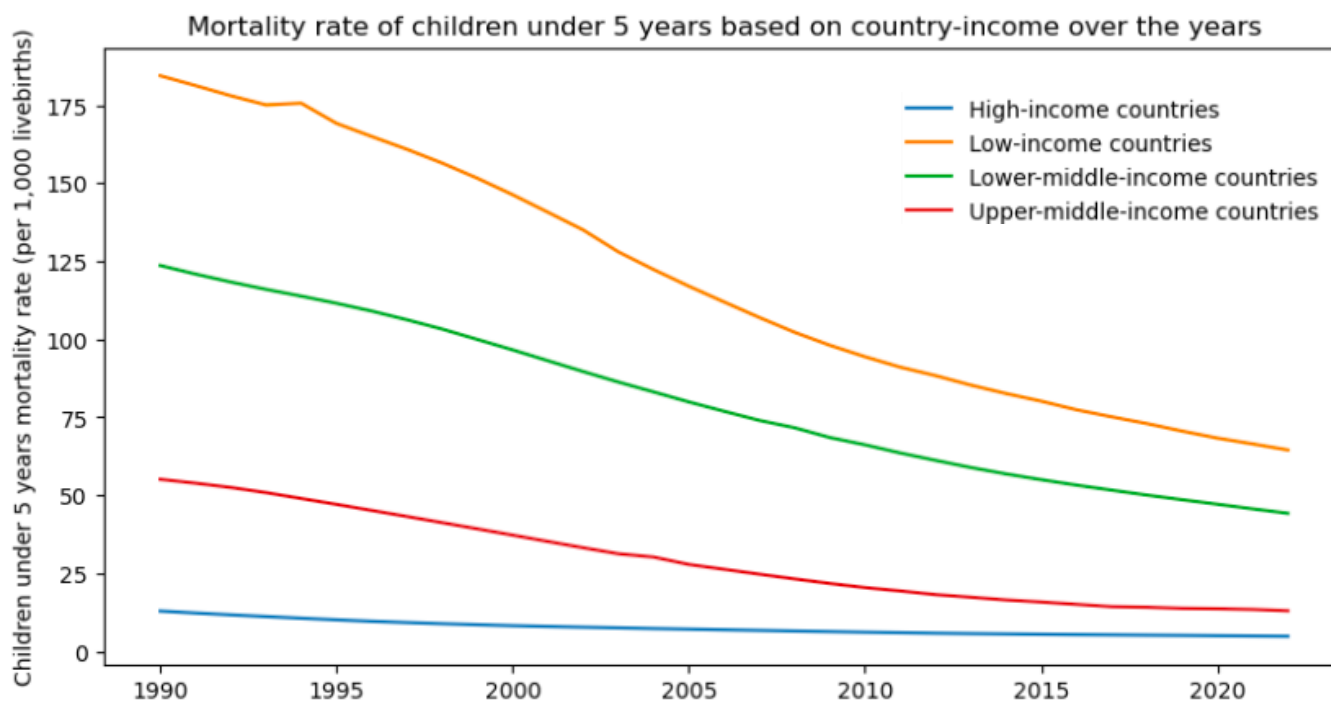
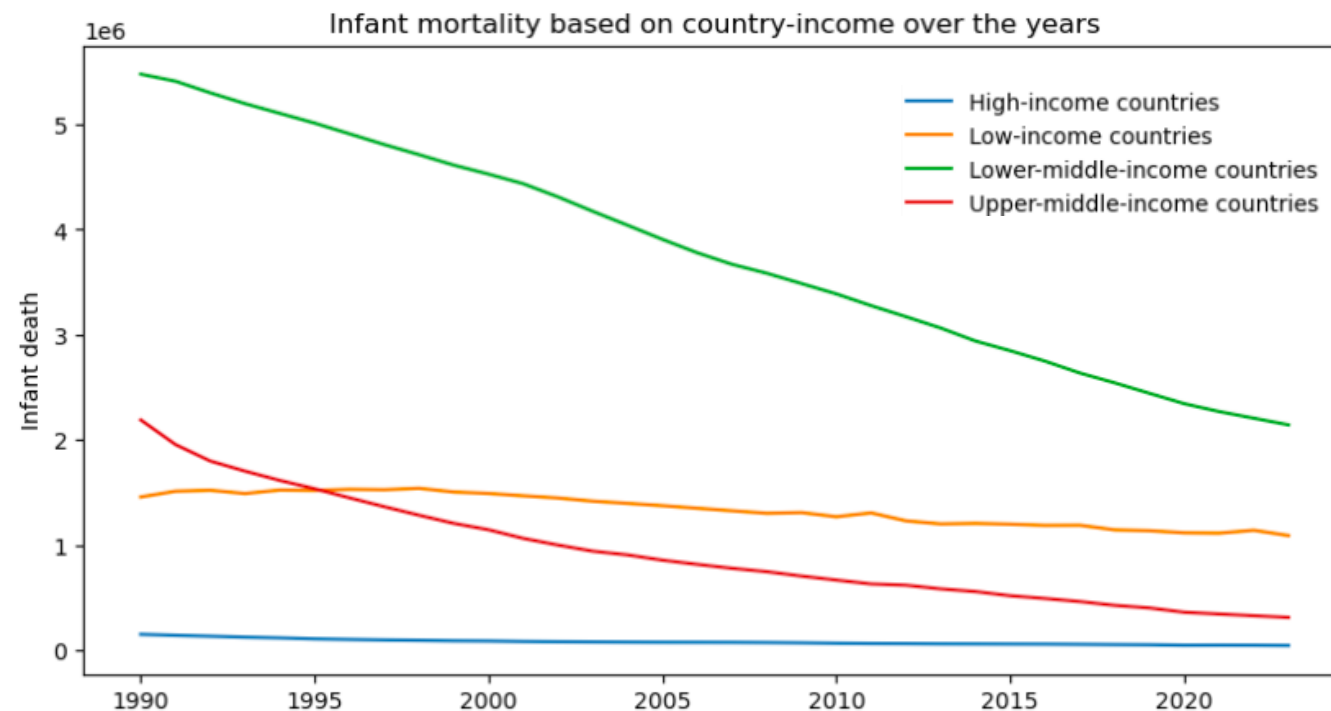
Africa also recorded the highest child mortality rate yearly. Child mortality rate in Africa was 51.4% of global recorded values.

Angola, Nigeria, Niger, Ethiopia and DRC - highest child mortality rate in Africa.

Cape Verde, Seychelles, Botswana, Mauritius – low child mortality rate







Relationship between **income levels** and **infant/child mortality rates** is a critical area of analysis

Low-income and lower-middle-income countries had the highest infant and child mortality.

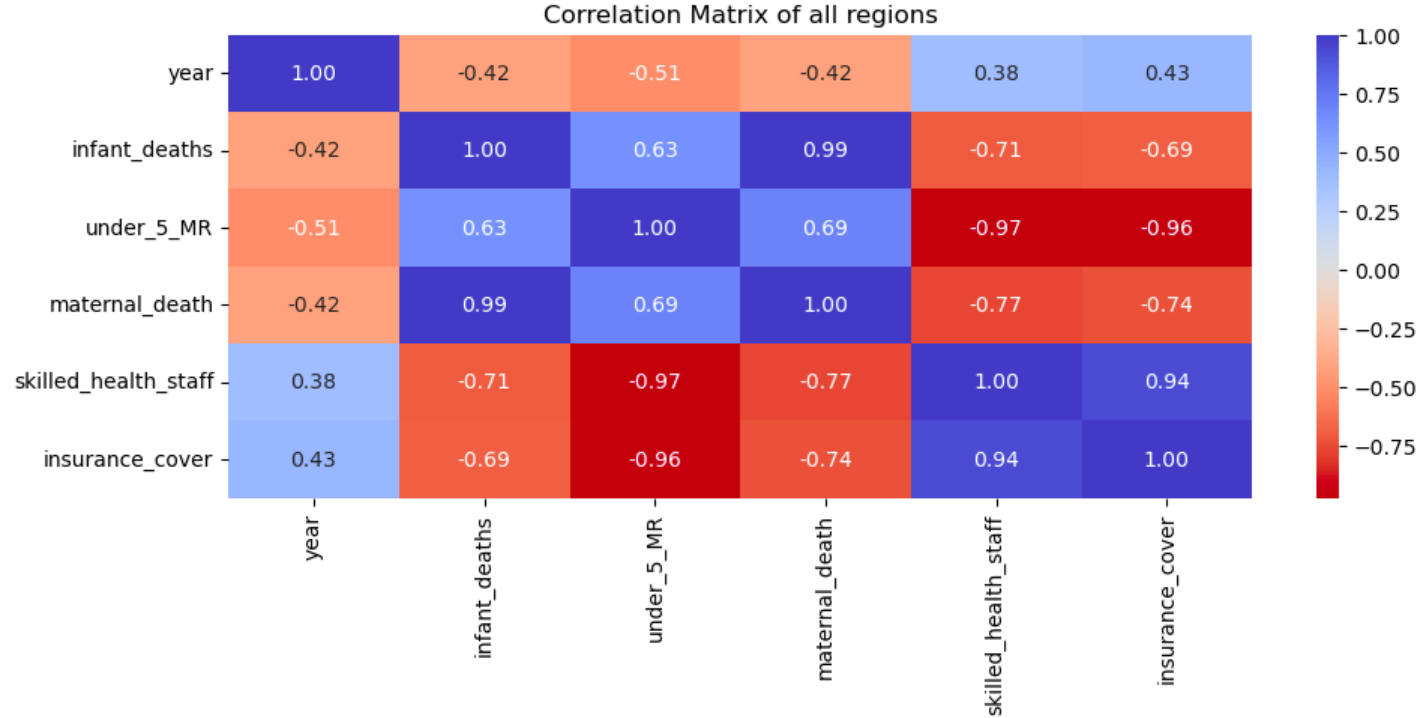
According to 2023 World Bank's income classification system (based on Gross National Income) per capita:

Low-income countries – Niger

Lower-middle-income countries – Nigeria

Upper-middle-income countries – Botswana

High-income countries – Seychelles, Mauritius

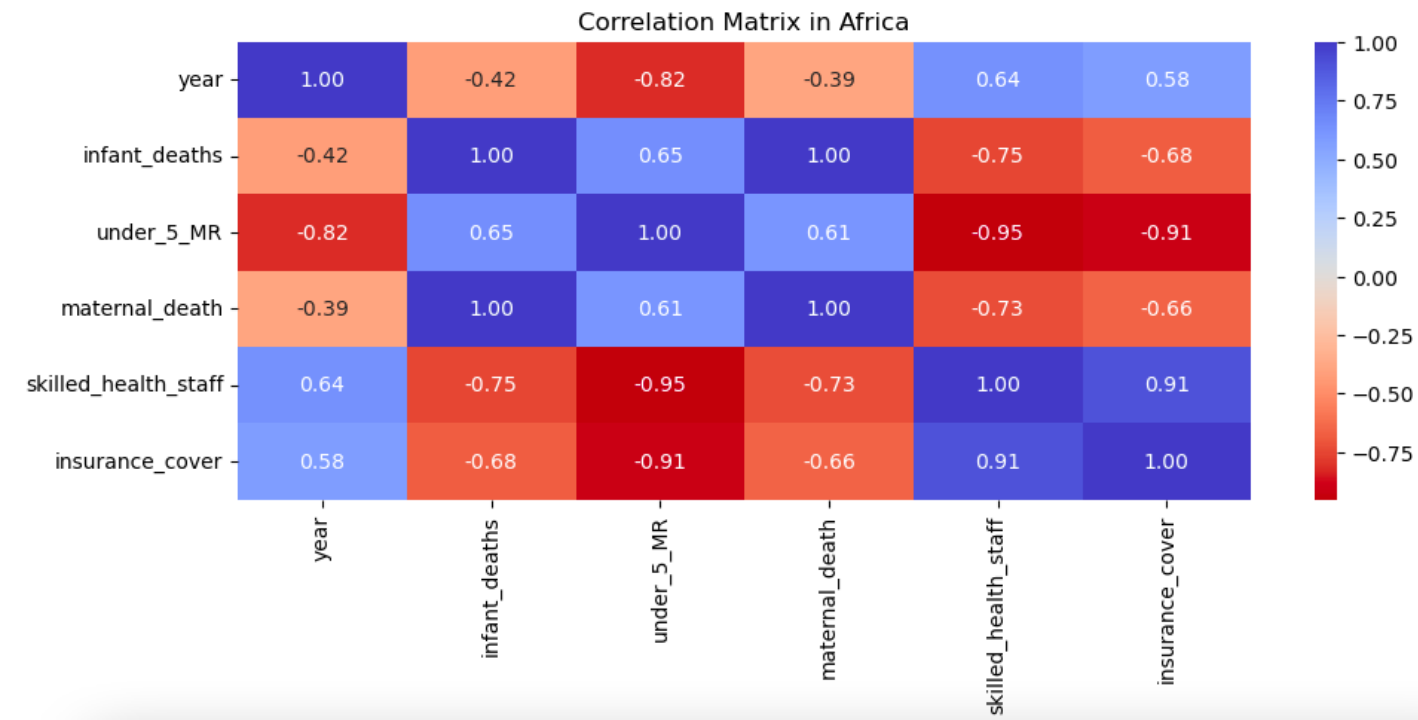


Strong positive correlation between maternal death and infant death (1.00) – death of mother leads to death of infant.

Maternal mortality also results in death of a child (1 – 59 months) – ca. 0.61

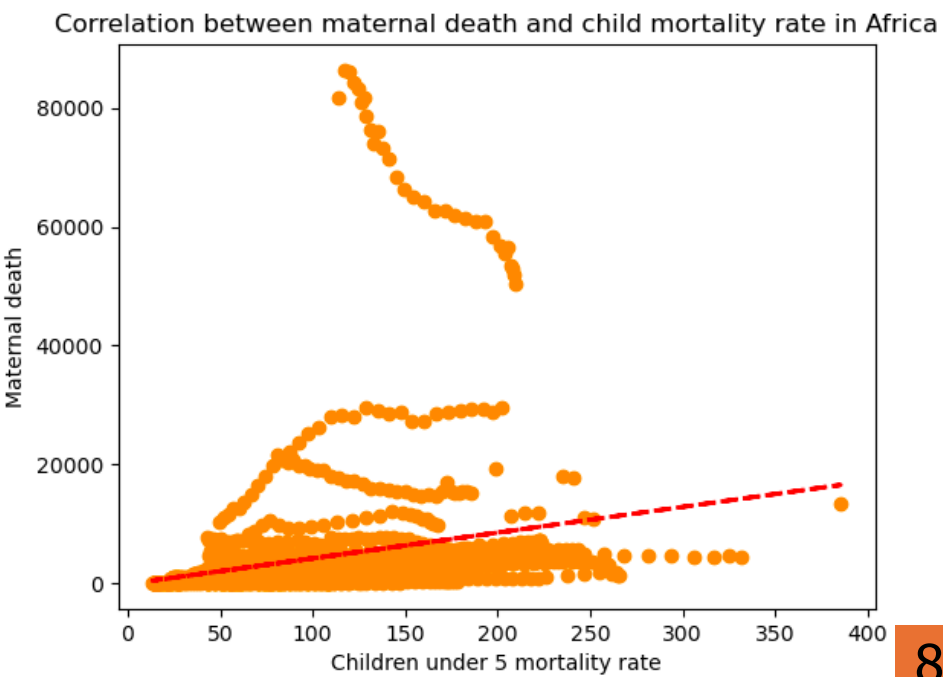
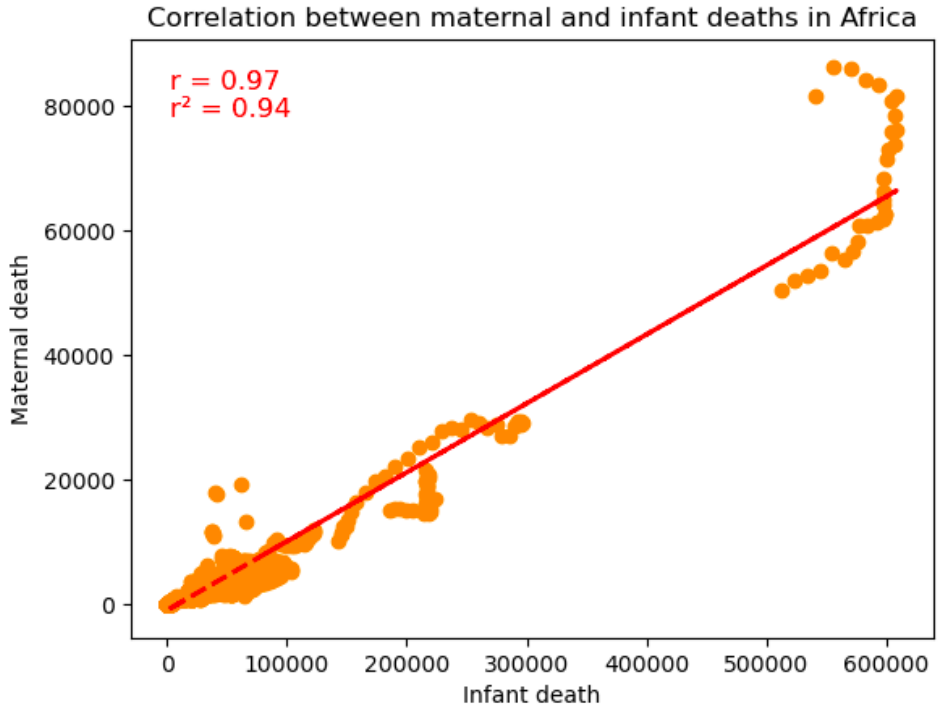
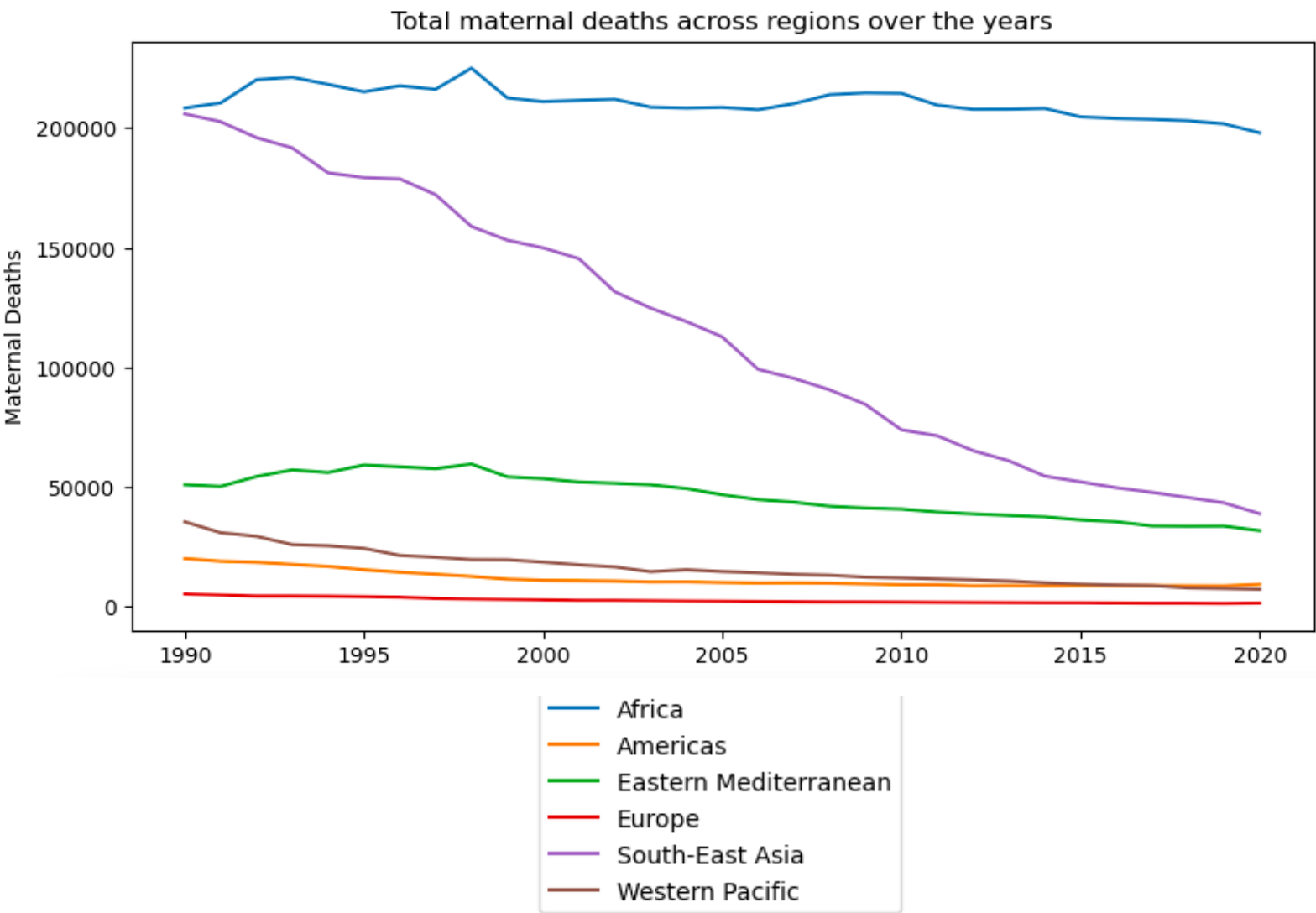
The absence of a skilled health staff and low health insurance coverage have negative correlation with infant and child mortality, and maternal mortality. Skilled health workers help reduce these mortalities

Similar correlation between maternal death, attendance of skilled health staff, % of health insurance coverage and infant and child mortality rates was observed in Africa.

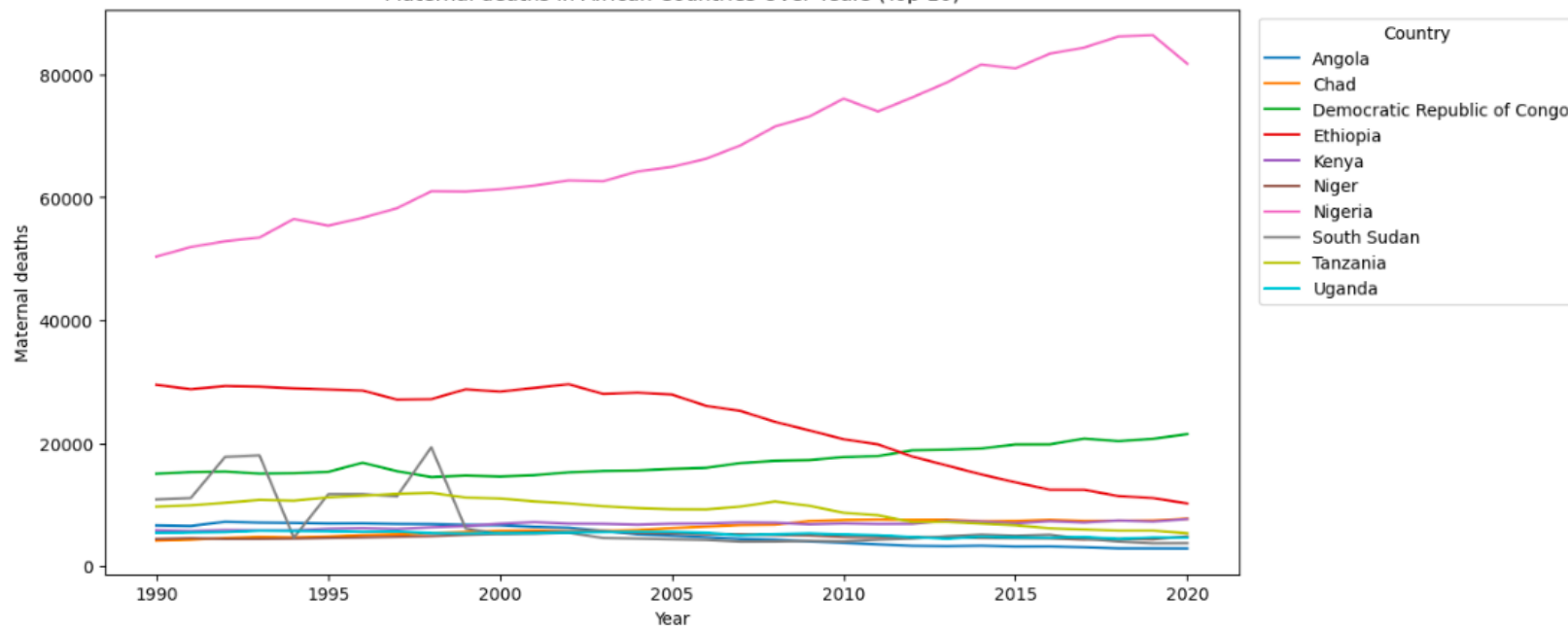


Worrying case of maternal deaths in African countries.

Increase in maternal deaths leads to higher rates of mortality in infants and children.

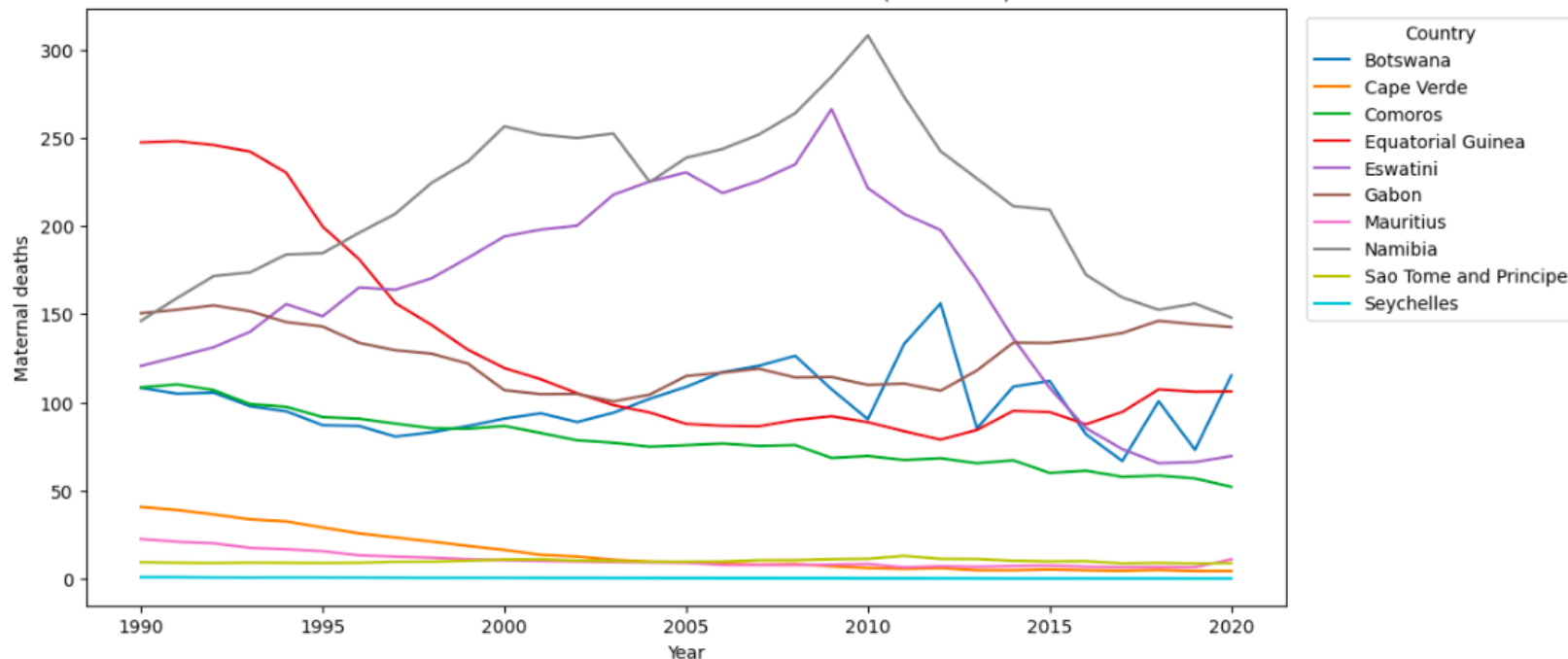


Maternal deaths in African Countries Over Years (Top 10)



Expectedly, African countries like as Nigeria, Niger, Angola, DRC, Ethiopia, previously identified to have high infant and child mortality also recorded high maternal death

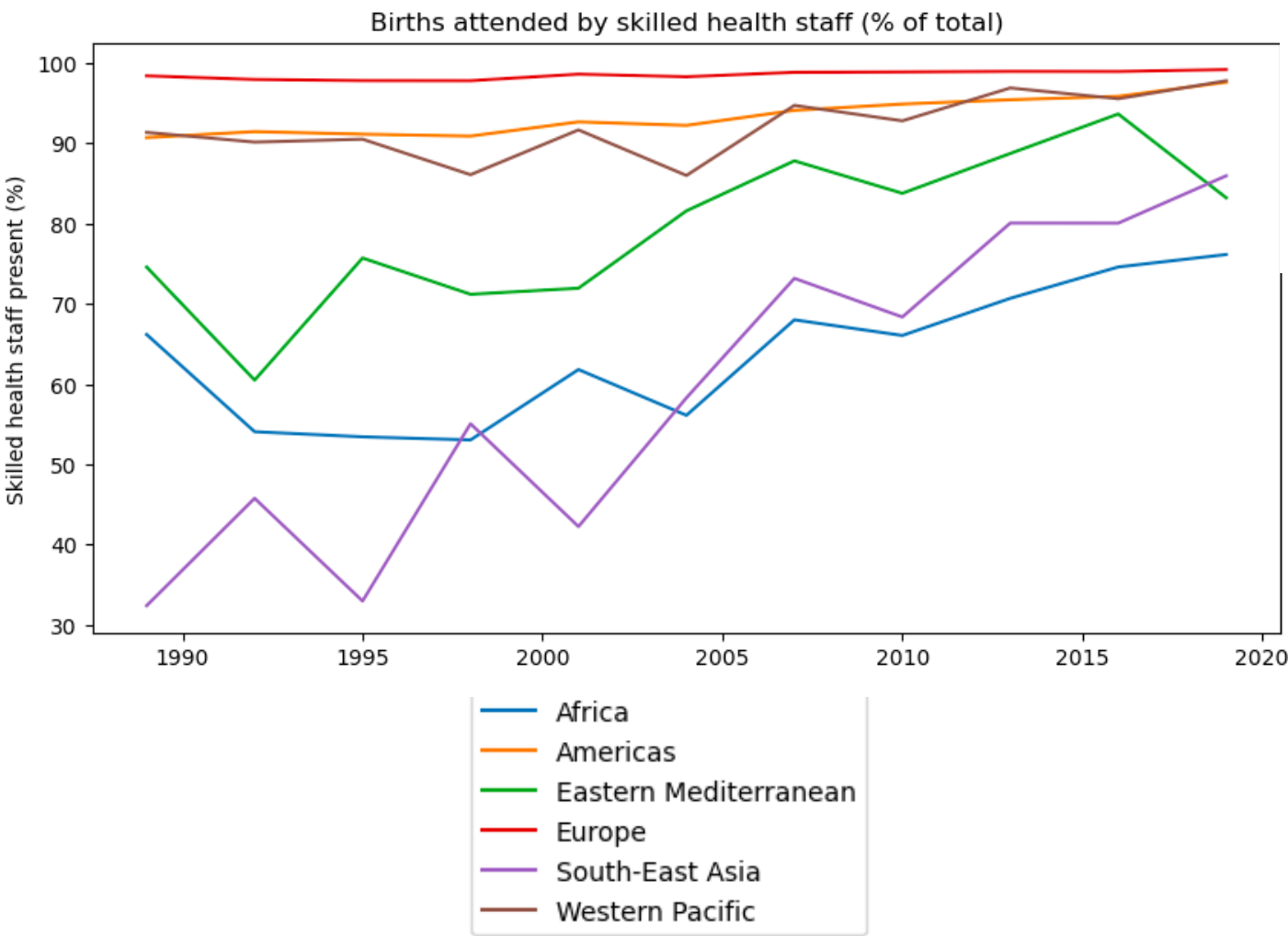
Maternal deaths in African Countries Over Years (Bottom 10)



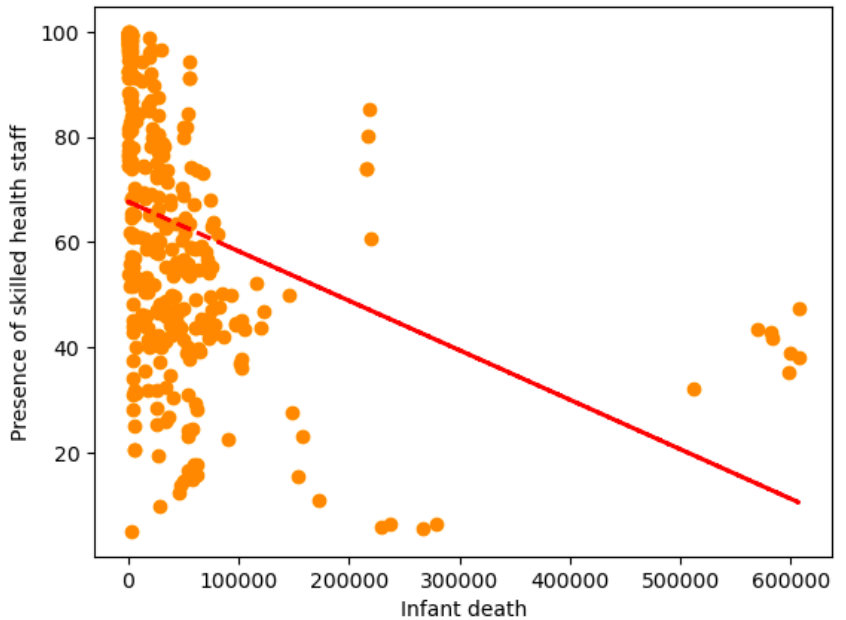
Seychelles, Cape Verde, Mauritius, etc., had low maternal deaths

Africa had the lowest % of skilled health workers present during birth of an infant, a factor that ensured it had highest infant and child mortality rates amongst all regions.

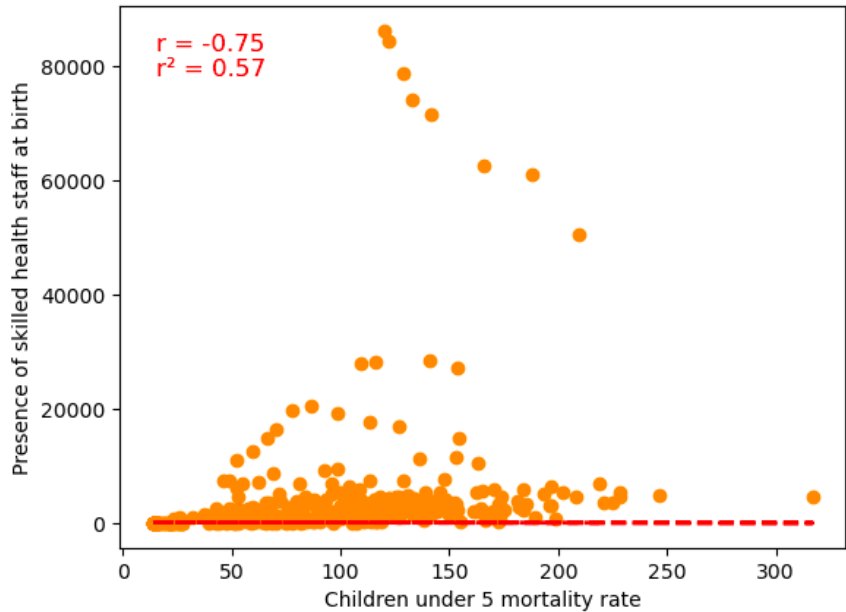
South-East Asia, dramatically improved this factor over the years



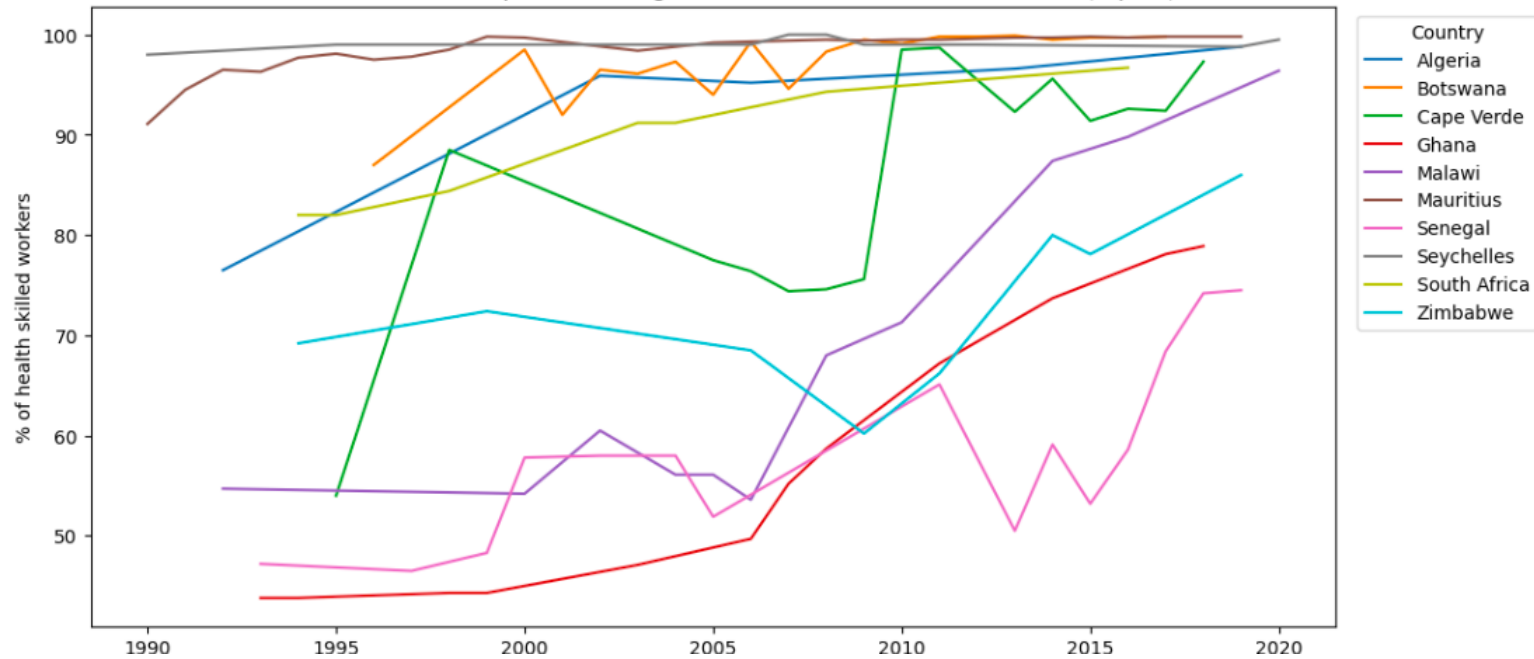
Correlation between infant death and attendance of skilled health staff during birth in Africa



Correlation between the attendance of skilled staff during birth and child mortality rate



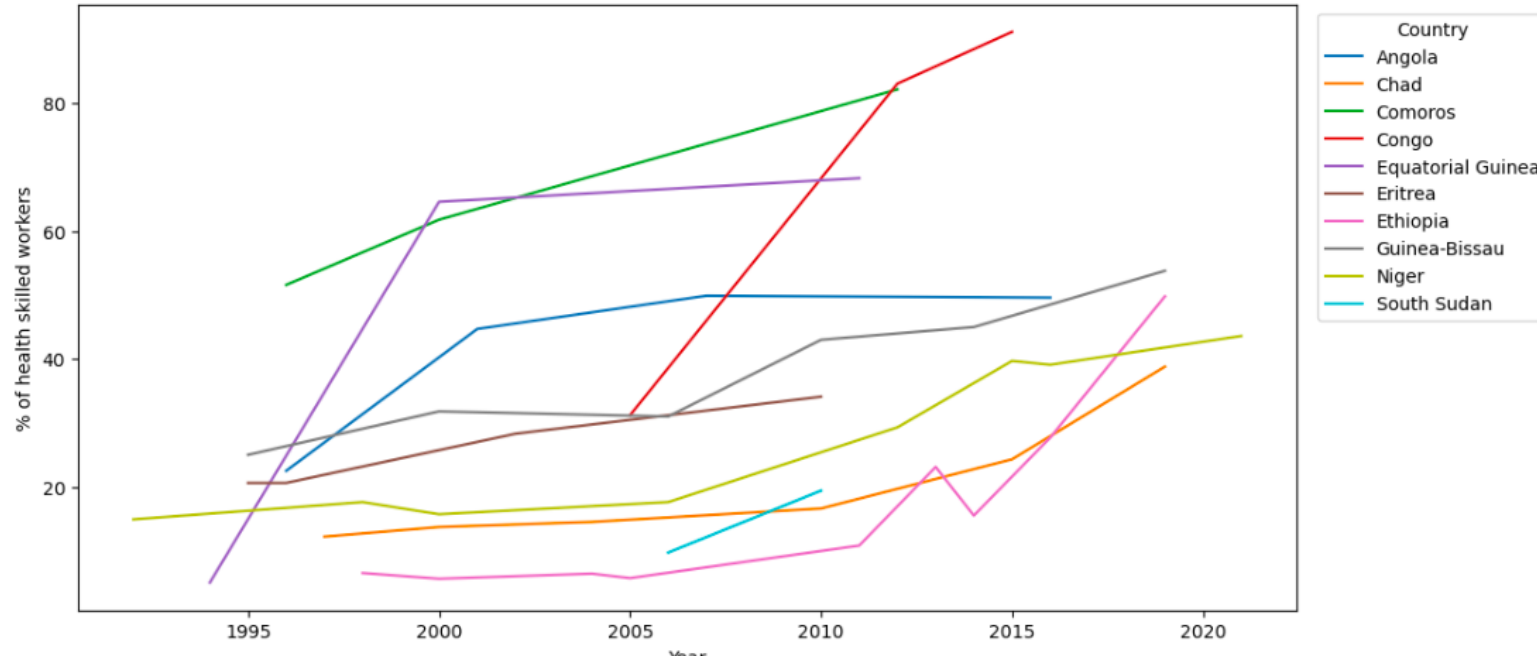
Skilled health workers present during birth in African Countries Over Years (Top 10)



The relationship between the attendance of skilled health staff during birth and mortality rate has been already deduced.

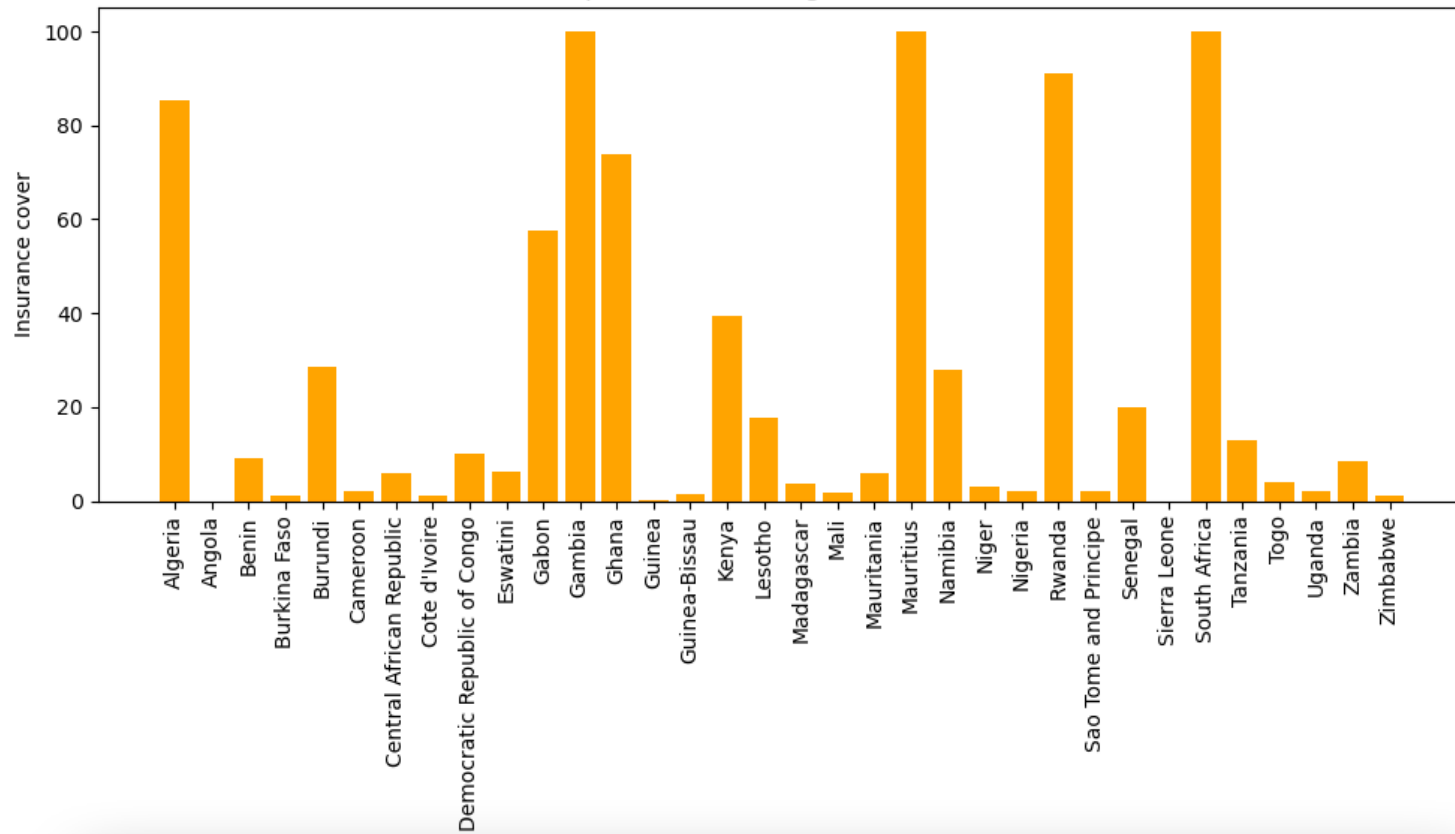
Thus, Niger, Angola, DRC, Ethiopia, expected were African countries with the lowest % of skilled health workers present during the birth of a child, resulting in associated high mortality rates

Skilled health workers present during birth in African Countries Over Years (Bottom 10)

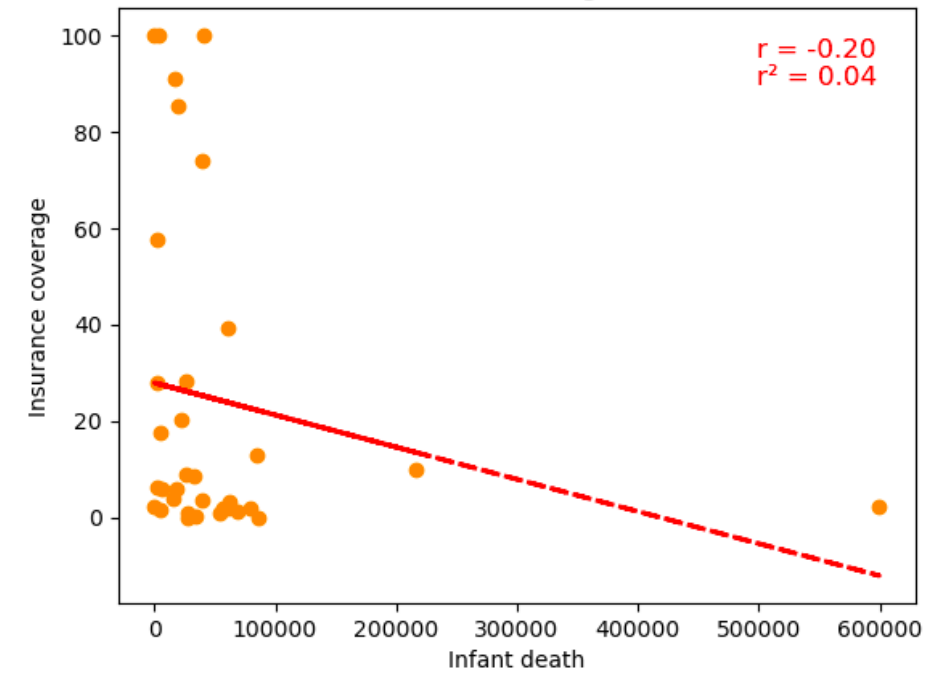


Seychelles, Cape Verde and Mauritius had ca. 100% of the health staff during births as skilled and experts, and thus had low infant and child mortality.

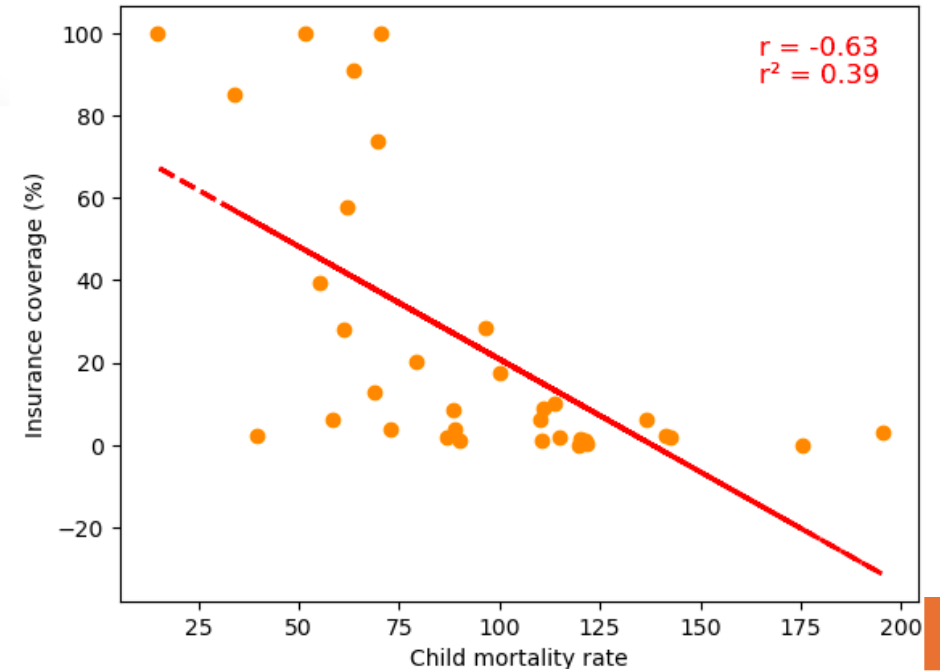
Health protection coverage in Africa countries



Correlation between insurance coverage and infant death in Africa



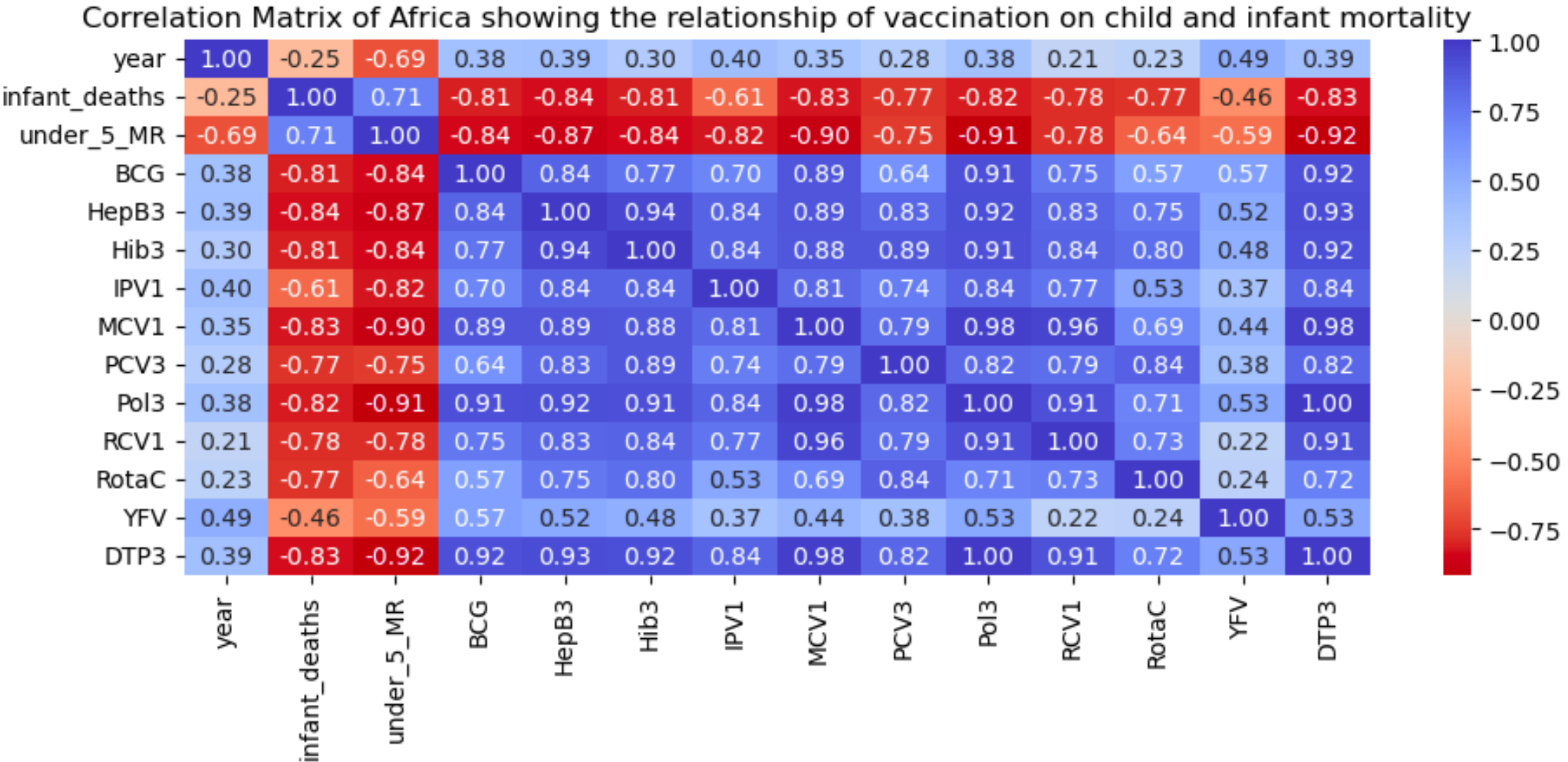
Correlation between insurance coverage and child mortality rate in Africa

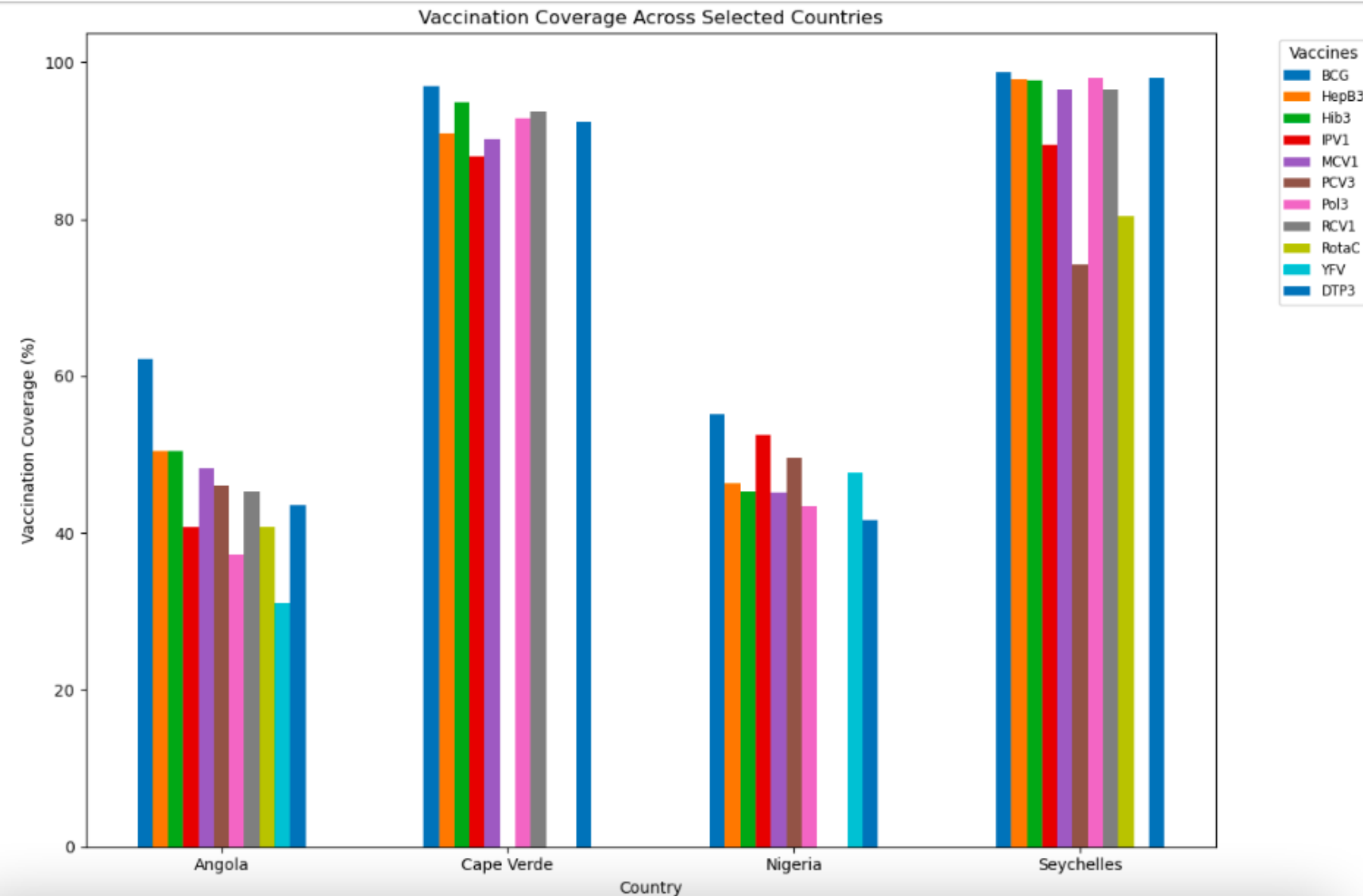


Similar correlation patterns observed between health insurance coverage with infant & child mortality, as in attendance of skilled health staff.

Angola (0%), Niger (3.1%), Mauritius (100%) supports this relationship.

Vaccination is crucial in reducing infant and child mortality by protecting against preventable diseases. A negative correlation was observed between vaccines with infant and child mortality, highlighting its significance in reducing mortality rates

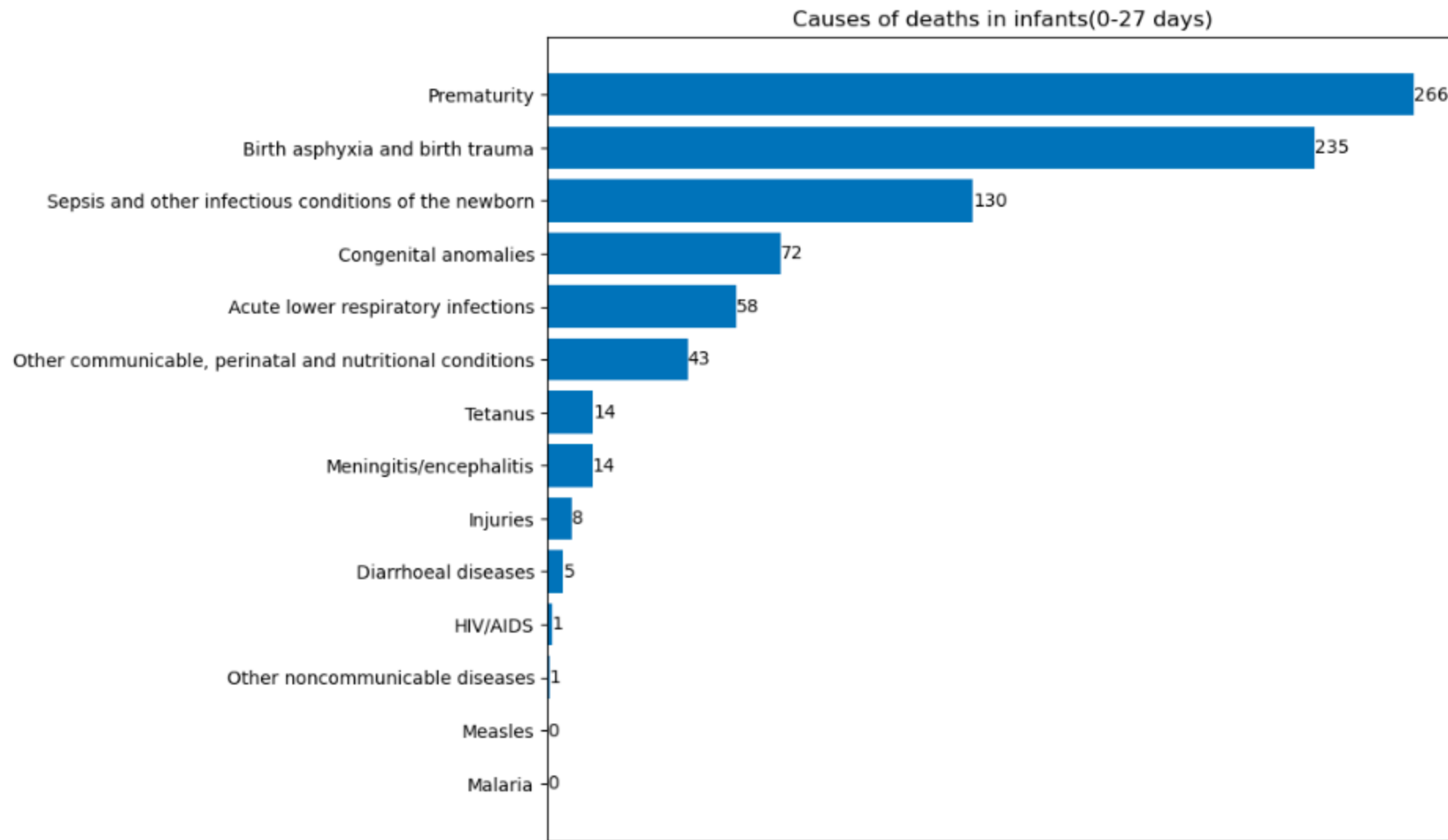




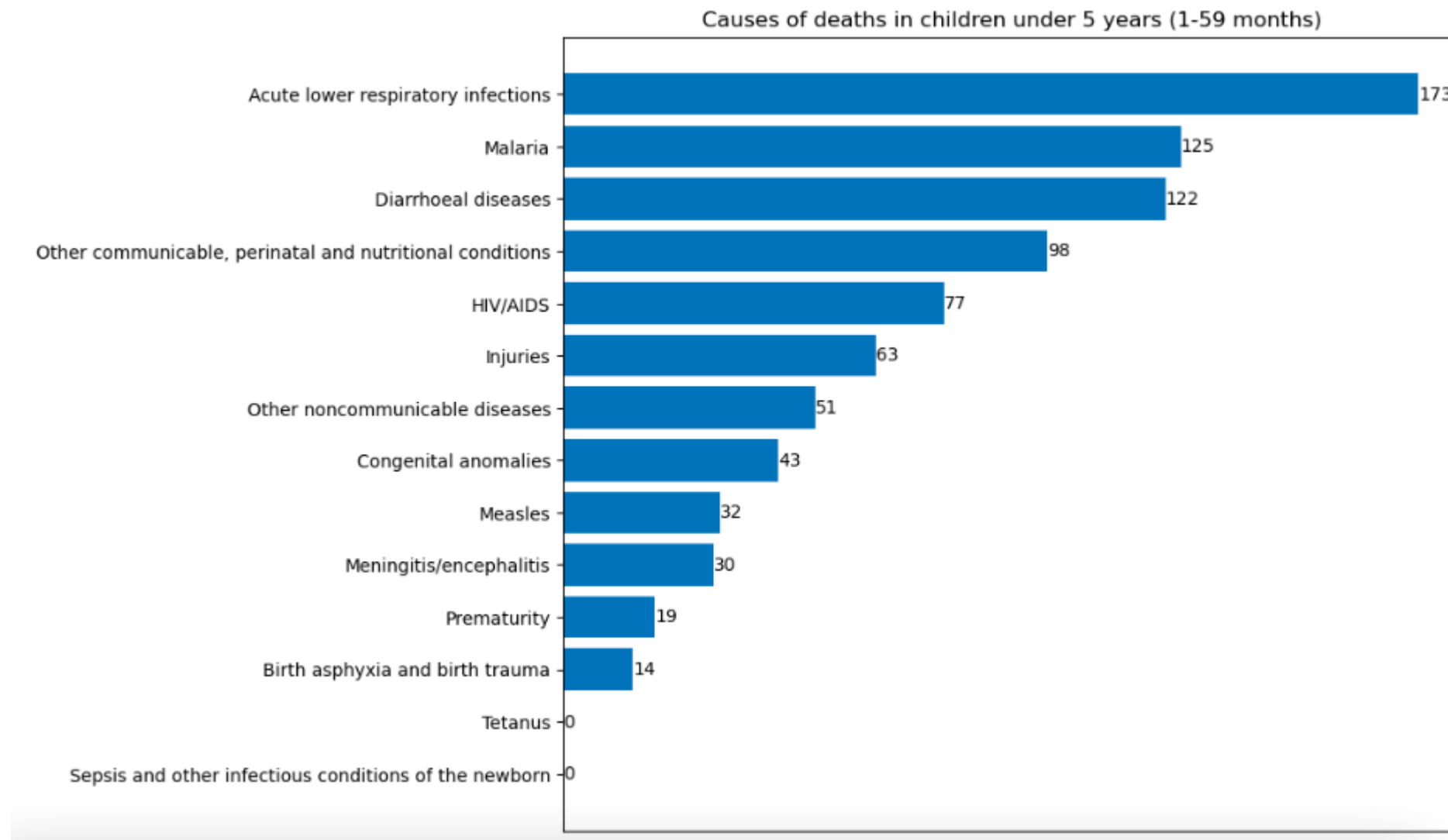
High child/infant mortality rates
(Nigeria and Angola)

Low child/infant mortality rates
(Cape Verde and Seychelles).

As clearly observed, Cape Verde
and Seychelles had higher
vaccination rates compared to
Angola and Nigeria, further
demonstrating the influence.



The main causes of death in infants were prematurity, birth asphyxia and trauma, and sepsis and other infectious conditions of the newborn.



The main causes of death in children (1 – 59 months) were acute lower respiratory infections, malaria and diarrhoeal diseases.

Summary

South-East Asia showing dramatic reduction in infant and child mortality over the years, an important regional case-study. African countries like Seychelles, Mauritius and Cape Verde, with low mortality rates should also serve as a benchmark.

Low maternal mortality rates and presence of skilled health staff during birth are important factors that reduced child and infant mortality rates. Provision of health insurance and adequate vaccination will also reduce these mortality rates. Lastly, country-income status influences infant & child mortality.

The leading causes of mortality in infants and children under five years are premature birth, birth trauma and asphyxia, acute lower respiratory infections and malaria.

Recommendation

Nations should strive to improve the attendance of skilled health care staff during childbirth, as this will also lead to a decline in maternal mortality. Neonatal and post-natal guidance is also essential. Health care worker trainings should also be implemented to improve the number of skilled staff.

High vaccination coverage is important in reducing child mortality rates, especially acute lower respiratory infections.

Subsidized insecticide-treated bed nets should be provided for malaria control, the second leading cause of child mortality.

Improving the income status of the country, which will correspond with the availability of better health infrastructure cannot be over-emphasized.

Limitation

Not enough data provided on the access to health insurance coverage for the countries across different years.

Using rates instead of total number of deaths for infants and mothers will provide better indices of measurement, but this was not possible due to the absence of data on livebirths and total population, respectively.

No information on nutrition, which will play a role on the child health, especially in the 1-59 months age group.

Thank you