

**MSDA 3060 -Data Visualization and Storytelling**  
**Spring 2024 – Course Project**  
**Phase IV-Recommendations & Story Presentation**

**Project Title:** Global Health Statistics for women and children

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**Executive Summary**

This report presents a comprehensive analysis of global health trends, focusing on anemia prevalence among women and children, as well as broader indicators such as child mortality, immunization rates, fertility rates, and healthcare expenditure. The findings reveal alarming rates of anaemia, particularly in several African nations where over 80% of children aged 6-59 months suffer from this condition. Additionally, a strong positive correlation exists between anaemia prevalence in women and children, highlighting the need for integrated interventions targeting both populations.

Furthermore, the analysis highlights significant disparities in health outcomes across different regions and countries. While some nations have made notable progress in reducing child mortality and improving immunization coverage, others continue to grapple with high fertility rates, limited access to healthcare, and inadequate health spending.

**Dataset resourced:** <https://databank.worldbank.org/source/world-development-indicators>

**Intended Audience**

The intended audience for this comprehensive report on global health trends encompasses a wide range of stakeholders committed to improving health outcomes worldwide. The primary audience includes:

**Global health organizations:** International bodies such as the World Health Organization (WHO), UNICEF, and other UN agencies working to address global health challenges and promote equitable access to healthcare services.

**National and regional policymakers:** Government agencies, ministries of health, and policymakers responsible for developing and implementing public health strategies, allocating resources, and setting priorities in their respective countries or regions.

**Non-governmental organizations (NGOs):** Non-profit organizations and civil society groups actively involved in maternal and child health initiatives, as well as broader global health programs, advocacy efforts, and community outreach.

**Healthcare professionals:** Physicians, nurses, midwives, community health workers, and other healthcare practitioners who play a crucial role in delivering healthcare services, particularly in resource-limited settings, and can provide valuable insights from the frontlines.

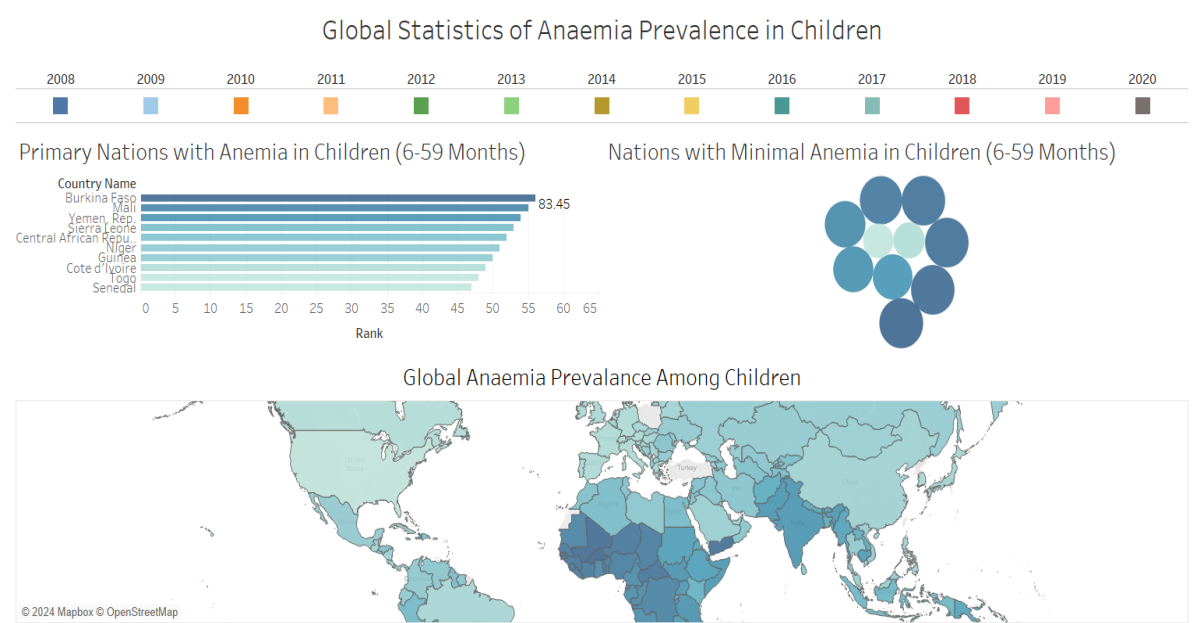
**Academic and research institutions:** Universities, research centers, and think tanks engaged in global health research, data analysis, and evidence-based policymaking to inform effective interventions and strategies.

Donors and funding agencies: Public and private organizations, foundations, and international donors that provide financial support for global health programs and initiatives, ensuring the sustainability and scalability of successful interventions.

Findings

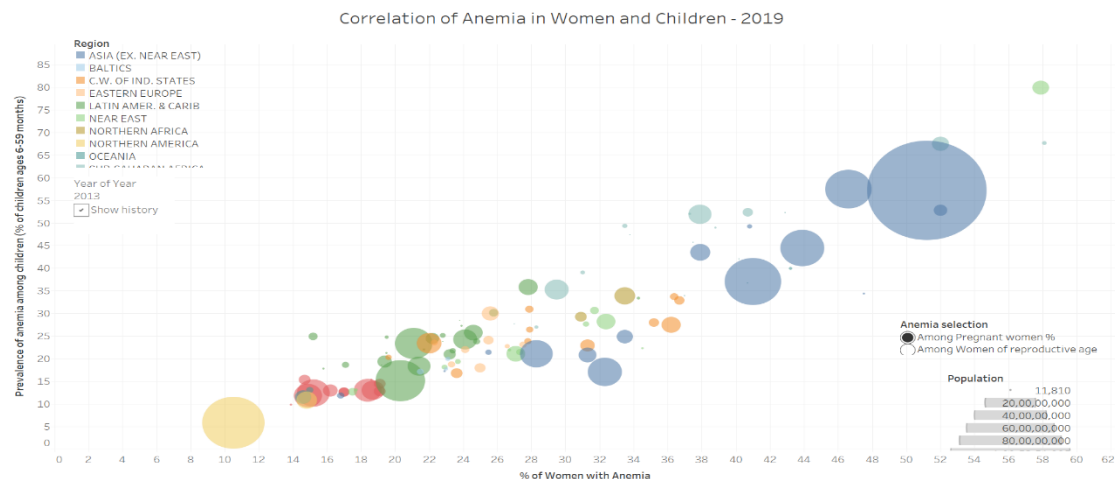
Global Anaemia Prevalence in Children

The data reveals a persistent and significant burden of anemia among children aged 6-59 months globally. While the overall trend has remained relatively stable from 2008 to 2020, certain regions and countries experience alarmingly high rates. The map visualization highlights the substantial geographic disparities, with darker shades indicating higher prevalence rates, particularly in parts of Africa and South Asia.



Several nations stand out as primary hotspots for childhood anemia, with Burkina Faso (83.45%), Mali (83.2%), Yemen (79.7%), Central African Republic (64.7%), Niger (72.1%), and Guinea (76.1%) having the highest prevalence rates among children aged 6-59 months. Conversely, a cluster of nations, primarily in Europe and North America, exhibit minimal anaemia prevalence in this age group.

## Correlation between Anaemia in Women and Children



The scatter plot demonstrates a strong positive correlation between anaemia prevalence among pregnant women and women of reproductive age, and anaemia prevalence in children. Countries with higher rates of anaemia in women tend to have correspondingly higher rates in children, suggesting the intergenerational cycle of anaemia and the need for integrated interventions targeting both populations.

This correlation holds true across various regions, as indicated by the clustering of data points by geographic regions. Sub-Saharan African nations, represented by larger blue dots, exhibit some of the highest rates of anaemia among both women and children.

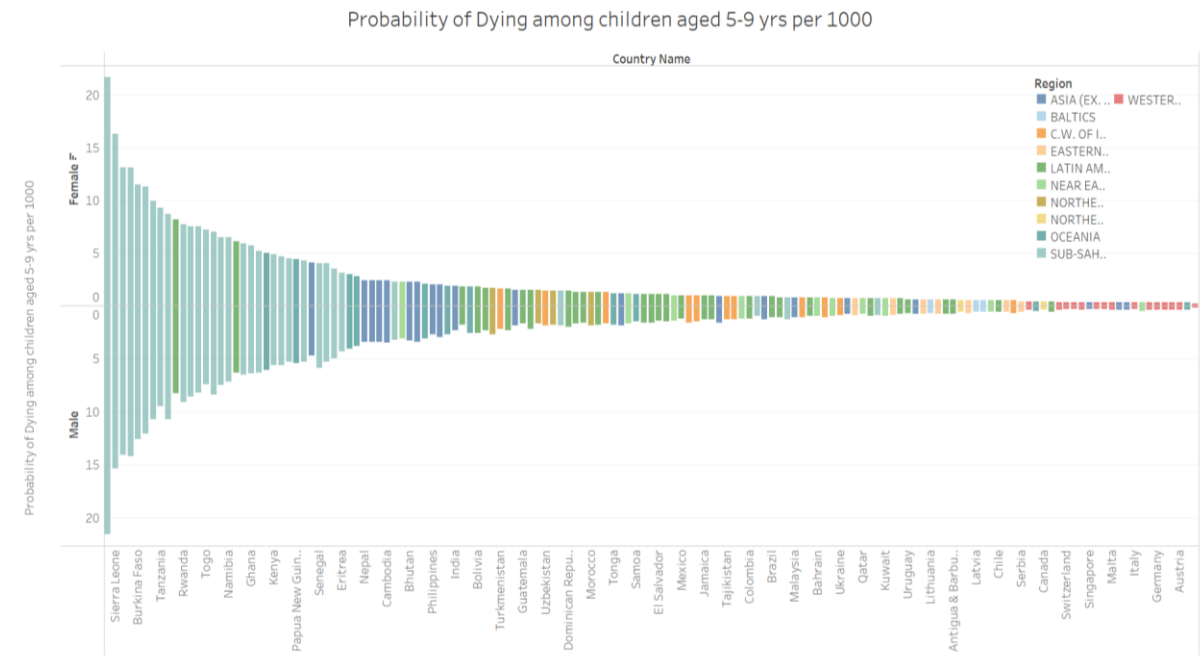
### External Context and Implications

Anaemia, a condition characterized by insufficient healthy red blood cells or haemoglobin, can have severe consequences for women and children. During pregnancy, anaemia increases the risk of maternal mortality, premature delivery, and low birth weight (WHO, 2022). In children, anaemia can impair cognitive development, growth, and immune function, contributing to increased morbidity and mortality.

The primary causes of anaemia include nutritional deficiencies (iron, folate, vitamin B12), infectious diseases (malaria, HIV/AIDS), and inherited blood disorders (sickle cell disease, thalassemia) (WHO, 2022). Poverty, poor dietary diversity, and limited access to healthcare further exacerbate the burden of anaemia in resource-limited settings.

### Child Mortality:

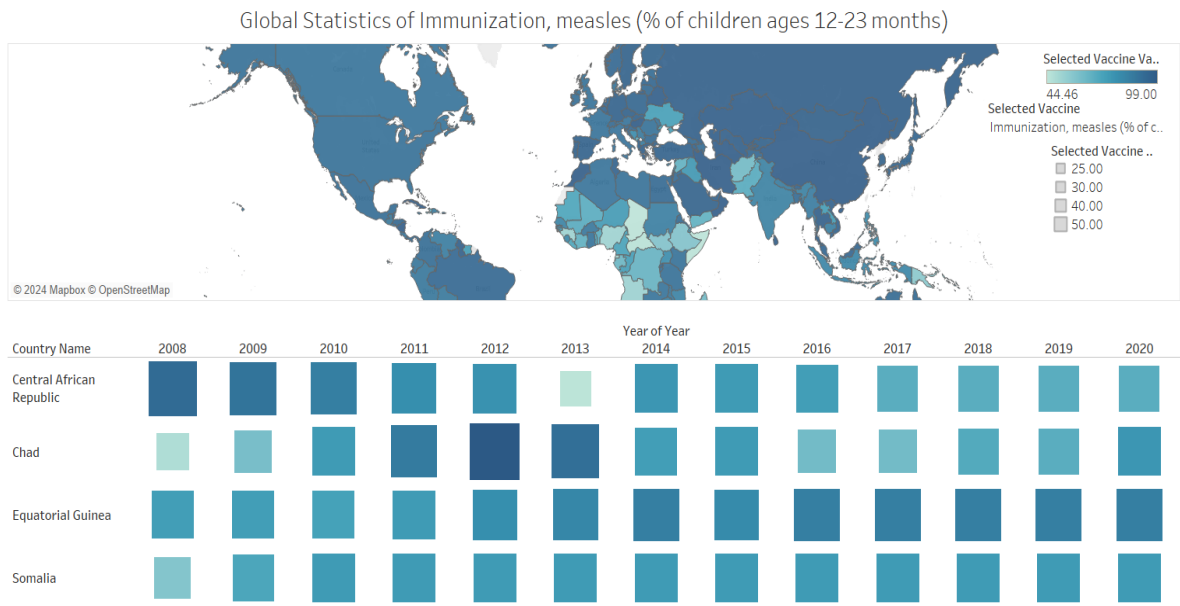
The data indicates significant disparities in child mortality rates across regions. Sub-Saharan Africa has the highest probability of dying among children aged 5-9 years, with several countries exceeding 15 deaths per 1,000 children. In contrast, developed regions like Western Europe and Northern America have remarkably low child mortality rates.



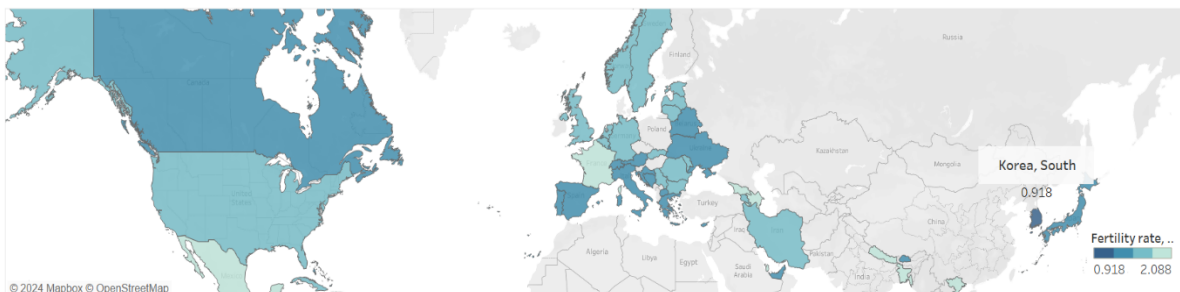
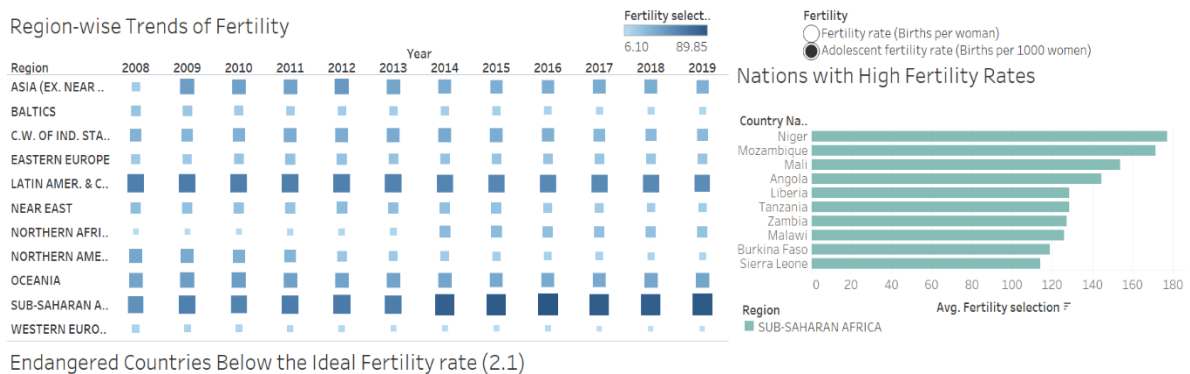
**Immunization Rates:** The following findings can be made regarding the global statistics of measles immunization for children aged 12-23 months:

1. The map displays varying levels of measles immunization coverage across different countries and regions of the world.
2. Many countries in Africa, particularly in Central and Western Africa, have lower immunization rates, as indicated by the lighter shades of blue on the map.
3. Countries like the Central African Republic, Chad, Equatorial Guinea, and Somalia have immunization rates consistently below 50% throughout the years shown in the data table.
4. In contrast, several countries in Europe, North America, and parts of Asia appear to have higher immunization rates, represented by darker shades of blue on the map.
5. The data table allows for tracking the immunization rates year by year for the four countries listed (Central African Republic, Chad, Equatorial Guinea, and Somalia) from 2008 to 2020.
6. While there are some fluctuations, the immunization rates for these countries generally remain below 50% throughout the period covered by the data.

Overall, the image highlights the disparities in measles immunization coverage globally, with lower rates observed in certain regions, particularly in parts of Africa, emphasizing the need for improved access and promotion of immunization programs.



**Fertility Rates:** Sub-Saharan Africa stands out with the highest fertility rates globally, with some countries like Niger, Mozambique, and Mali exceeding 6 births per woman. Conversely, several European and Asian countries, including South Korea, have fertility rates below the replacement level of 2.1, indicating population decline.



**Healthcare Expenditure:** There is a strong correlation between healthcare expenditure (as a percentage of GDP) and better health outcomes, such as lower child mortality and higher immunization rates. Countries like the United States, Switzerland, and Germany allocate a significant portion of their GDP towards healthcare, while many developing nations lag behind.

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## 1 Implement

1. Implement targeted nutrition and supplementation programs in high-burden countries:
  - Promote dietary diversity and iron-rich food consumption through community-based education and behavior change interventions.
  - Provide iron and folic acid supplementation to pregnant women and young children, as recommended by the World Health Organization (WHO).
  - Fortify staple foods with iron and other essential micronutrients in regions with high anemia prevalence.
  - Integrate deworming campaigns to reduce intestinal parasitic infections, a contributing factor to anemia.
2. Strengthen antenatal care services and maternal education:
  - Expand the coverage and quality of antenatal care visits, ensuring early detection and management of anemia during pregnancy.
  - Provide comprehensive counseling and education to pregnant women on the importance of a balanced diet, iron and folic acid supplementation, and adherence to recommended antenatal care practices.
  - Engage community health workers and traditional birth attendants in promoting anemia prevention and early care-seeking behaviors.
  - Address socioeconomic and cultural barriers that hinder access to antenatal care services, particularly in remote and underserved areas.
3. Increase investment in healthcare infrastructure, including hospitals, clinics, and training of healthcare professionals, to improve access to quality healthcare services.

4. Strengthen immunization programs through community outreach, education campaigns, and addressing logistical challenges in vaccine distribution and administration.
5. Address socioeconomic determinants of health, such as poverty, education, and access to clean water and sanitation, through a multisectoral approach involving collaborations between healthcare, education, and social services.
6. Promote family planning initiatives and invest in women's education and empowerment to address high fertility rates and improve maternal and child health.
7. Foster international collaboration and knowledge sharing, with developed nations providing technical and financial assistance to developing countries, and learning from successful health interventions implemented in resource-constrained settings.
8. Conduct regular monitoring and evaluation of health programs and policies, involving high-quality data collection and data-driven decision-making processes, to identify areas of improvement and ensure effective resource allocation.

By implementing these recommendations through collaborative efforts from global health organizations, policymakers, and local stakeholders, significant progress can be made in reducing the burden of anaemia and improving the health and well-being of women and children worldwide.

## **Conclusion**

The findings presented in this report underscore the urgent need to address the persistently high prevalence of anaemia among women and children globally. The data reveals staggering rates of anaemia, particularly in certain regions like Sub-Saharan Africa, where a multitude of factors, including malnutrition, poverty, lack of access to healthcare, and socioeconomic inequalities, contribute to this critical public health issue.

The strong positive correlation between anaemia in women and children highlights the intergenerational and cyclical nature of this condition. Anaemic mothers are more likely to give birth to anaemic infants, perpetuating a vicious cycle that can have far-reaching consequences on the health, development, and overall well-being of both populations.

Anaemia during pregnancy not only poses risks to the mother but also increases the likelihood of adverse outcomes such as premature delivery, low birth weight, and neonatal mortality. In children, anaemia can impair cognitive development, stunt growth, and weaken the immune system, making them more susceptible to infectious diseases.

Addressing anaemia is not only a matter of public health urgency but also a moral imperative. It is inextricably linked to the achievement of global development goals, including reducing maternal and child mortality, promoting sustainable population growth, and ensuring access to essential health services for all, regardless of socioeconomic status or geographic location.

The recommendations outlined in this report offer a comprehensive approach to combating anaemia, encompassing targeted nutrition and supplementation programs, strengthening antenatal care services, and enhancing maternal education. However, their successful implementation requires a multifaceted and collaborative effort involving various

stakeholders, including governments, international organizations, healthcare providers, and local communities.

Governments, particularly in developing nations, must prioritize investments in healthcare infrastructure, ensuring access to quality antenatal care, and addressing the underlying socioeconomic determinants of health. International collaborations and knowledge sharing are crucial for leveraging resources, expertise, and best practices from regions that have successfully implemented effective interventions.

Furthermore, community engagement and education are paramount in fostering behavior change and addressing cultural beliefs and practices that may hinder the adoption of recommended interventions. Involving community health workers, traditional birth attendants, and other local stakeholders can enhance the cultural relevance and acceptability of programs, ultimately increasing their impact.

Continuous monitoring and evaluation, underpinned by robust data collection and analysis, are essential for tracking progress, identifying areas for improvement, and ensuring the efficient allocation of resources. Regular assessments and adjustments to strategies will be necessary to adapt to evolving needs and challenges.