Global Comparison of Malaria and Diarrhoeal Deaths in Children Aged 1-59 months: Analysis of 2020 Gapminder data

Simon Boakye

25 January 2026

Table of Content

1.0 Overview

This report analyzes malaria and diarrhoeal deaths among children aged 1–59 months across countries using Gapminder data. The analysis focuses on 2020 and uses world maps and scatterplots to examine geographic patterns and the relationship between the two causes of mortality. Sixty-three out of one-hundred and ninety-two countries had data for both indicators in 2020.

2.0 Data and methods

Two datasets were used: malaria deaths and diarrhoeal deaths in children aged 1–59 months, covering 192 countries from 2000–2021. Analysis was restricted to 2020. Values were log-transformed where appropriate to address skewness. Julius AI was used as a support tool for the analysis.

3.0 Results: Word Maps

Both maps use log scales due to wide variation in values. Grey areas indicate missing data and/or no deaths.

3.1 Malaria deaths in children Aged 1-59 months

Malaria deaths are concentrated in sub-Saharan Africa (SSA), with most of countries carrying most of the burden. The top-five countries with high malaria-burden are Nigeria, DR Congo, Niger, Mozambique and Burkina Faso (Figure 1).

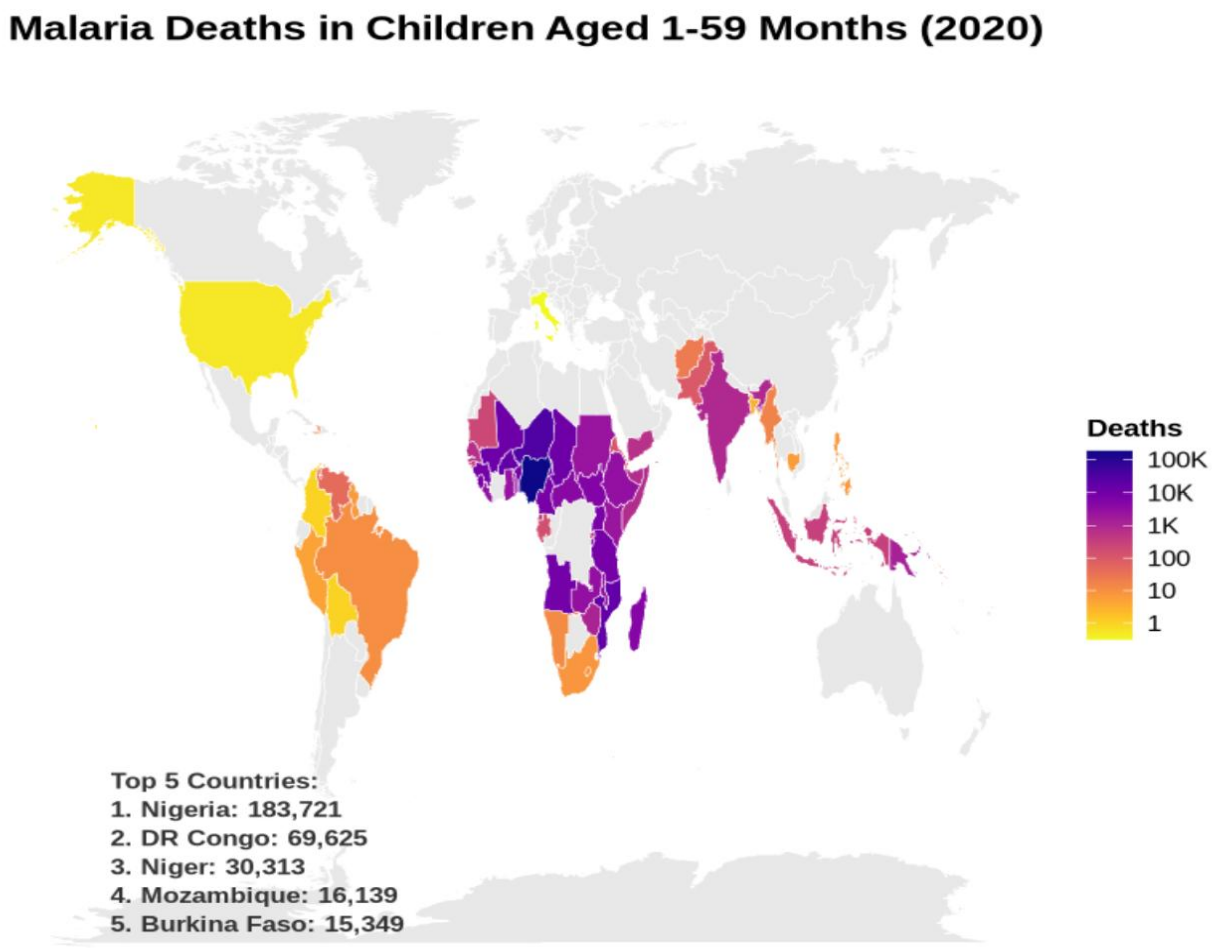

Figure 1: Malaria deaths in children aged 1-59 months across countries globally

3.2 Diarrhoeal deaths in children Aged 1-59 months

As shown in figure 2, Diarrhoeal deaths also appear high in parts of sub-Saharan Africa but include very large absolute burdens in South Asia. The top 5 countries with diarrhoeal-burden are Nigeria, India, DR Congo, Pakistan and Niger.

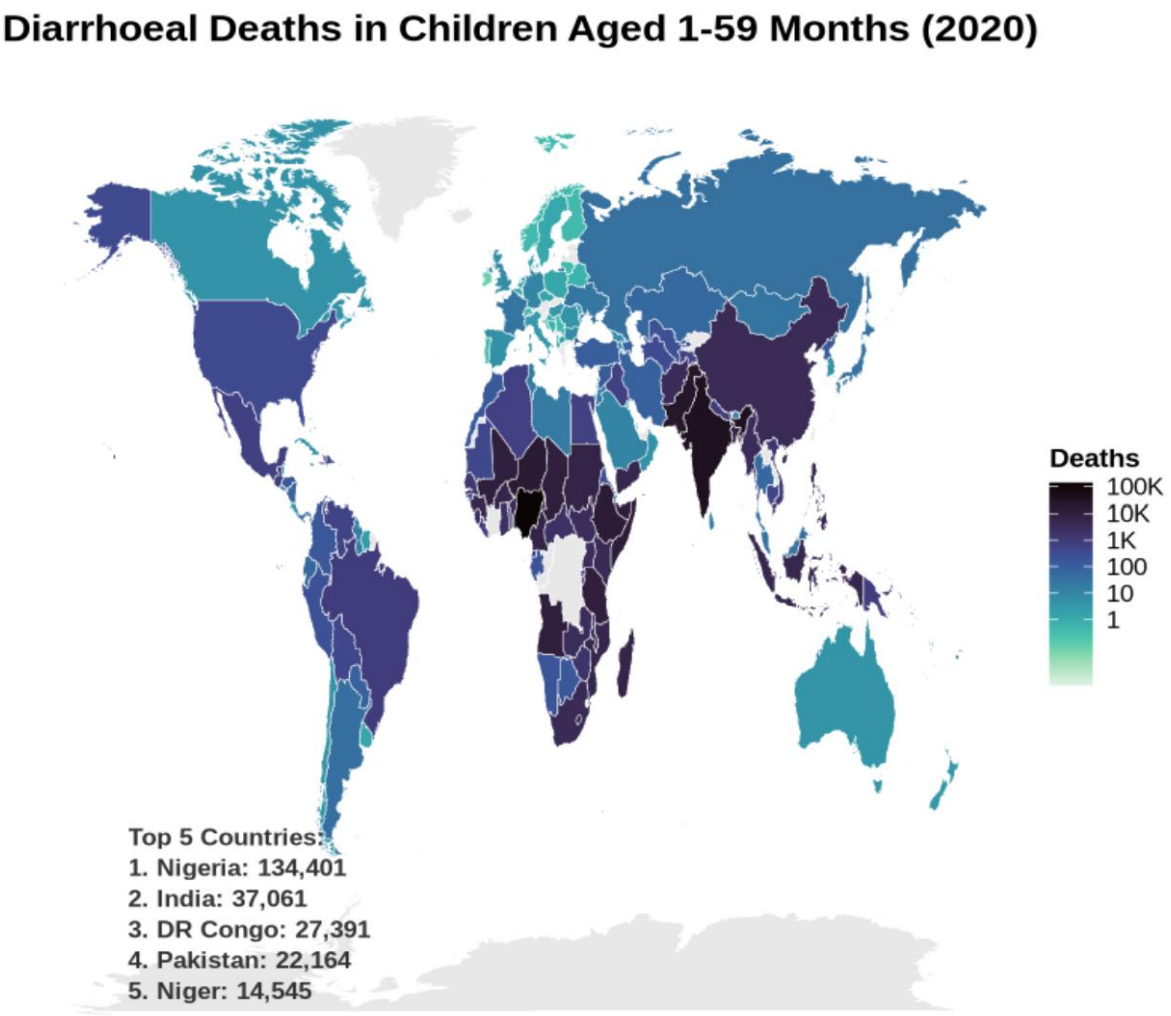

Figure 2: Diarrhoeal deaths in children aged 1-59 months across countries globally

4.0 Relationship between the two indicators (Malaria deaths and Diarrhoeal deaths) in scatter plot

The analysis reveals a moderate to strong positive relationship between malaria and diarrhoeal deaths in children aged 1-59 months (Pearson correlation: r= 0.66).

Countries with higher malaria deaths tend to also have higher diarrhoeal deaths.

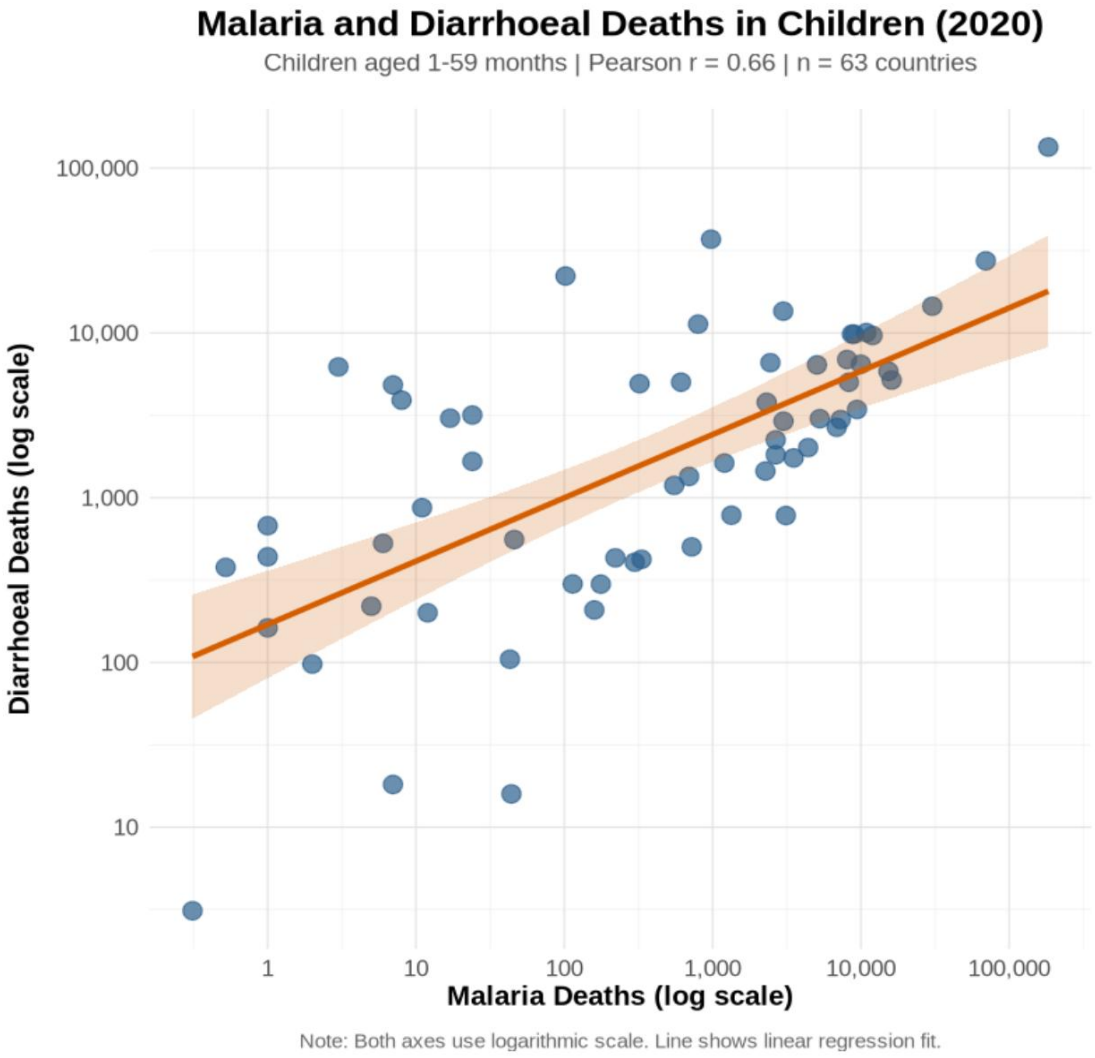

Figure 3: Relationship between the two indicators (Malaria deaths and Diarrhoeal deaths)

5.0 Conclusion and recommendation

Malaria and diarrhoeal deaths frequently co-occur, particularly in sub-Saharan Africa. This suggests a common risk factors such as poverty, weak health systems, and poor sanitation and limited access to clean water. The maps reveal highest burden in countries like Nigeria, Democratic Republic of Congo, and Angola although other countries show a clear dominance of malaria or diarrhoeal disease. Interventions should prioritize high-burden hotspots (Nigeria, DR Congo, Niger, Mozambique, Burkina Faso, India, Pakistan) because they drive much of the absolute global burden. Also, Integrated child health and primary care is important to reduce child mortality from these two leading causes.

6.0 Reflection on Using of Julius

Using Julius for the data analysis felt a mix of uncertainty since it was my first time using it. initially I struggled with the interface especially locating R and reading the outputs. But the guidance such as suggestions prompts by the tool helped me decide which analytical steps to take next, which reduced the initial uncertainty.

My most challenge was knowing how to ask the right questions of the data after the first prompt. While Julius could perform the analysis efficiently, I still needed to think critically about what I wanted to investigate. This made me came to realization that the tool does not replace understanding; it supports it.

One thing that surprised me was how quickly Julius could reveal patterns that might have taken much longer to identify manually. It was also surprising to see how small changes in the way I framed a question could lead to very different insights. This highlighted how important precision and clarity are in data analysis. Overall, I learned that data analysis is not just about using software to produce results, but about critical thinking and decision-making throughout the process.