Analysis of the Joint Child Malnutrition Estimation Dataset Worldwide.

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Objective: The JME includes estimates of prevalence and numbers affected for stunting, overweight, wasting and severe wasting among children under five years of age at country, regional and global levels. Global, regional and country annual trends from 2000-2022 are available for stunting and overweight. The objective is to build an interactive dashboard that will visually showcase well-curated results of an advanced exploratory analysis conducted in Python to measure nutritional imbalance such as undernutrition (assessed from stunting, wasting and underweight) or overweight.

Scope: SDG target by 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under five years of age.

Why the analysis :

Every child has the right to good nutrition. Well-nourished children grow and develop to their full potential. They are better equipped to lead healthy lives, to be free from poverty, to learn and participate, and to continue thriving across the life course, with benefits that continue over generations. The past decade has seen essential gains in improving maternal and child nutrition, including a one-third decline in the proportion of children suffering from stunting. Yet the triple burden of malnutrition – stunting, wasting and overweight – continues to jeopardize children's ability to survive and thrive.

All forms of malnutrition are preventable. To stop malnutrition before it starts, children and their families need access to nutritious diets, essential services and positive practices to set them on the path to survival and thrive. But today, these vital pathways to good nutrition are under growing threat as many countries plunge deep into a global food and nutrition crisis fuelled by poverty, conflict, climate change and the enduring secondary effects of the COVID-19 pandemic. As the world responds to the crisis, urgent action is critical to protect maternal and child nutrition – especially in the most affected regions – and secure a future where the right to nutrition is a reality for every child.

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Key Questions:

· Which countries are affected most by child nutrition?

· Identify the number of deaths and affected due to mall nutrition.

· Does progress in reducing stunting equal across regions and sub-regions?

· Find the trend in the country's income and malnutrition growth.

· SDG target by 2030, including achieving 2025 the internationally agreed target to end all forms of malnutrition, stunting and wasting in children under five years of age. Will this target be achievable by the trends in the dataset?

Data Source

· The *UNICEF, WHO, and the World Bank inter-agency* team update the Joint Child Malnutrition Estimates (JME) every other year.

· The JME includes estimates of prevalence and numbers affected for stunting, overweight, wasting and severe wasting among children under five years of age at country, regional and global levels. Global, regional and country annual trends.

· Data Source: United Nations Children's Fund (UNICEF), World Health Organization (WHO), World Bank (WB)

· Data Collection: Data is collected from various national organisation's health survey departments. The list of organisations are DHS, DHS-style or MICS-style survey, LSMS, MICS, NNS, SMART

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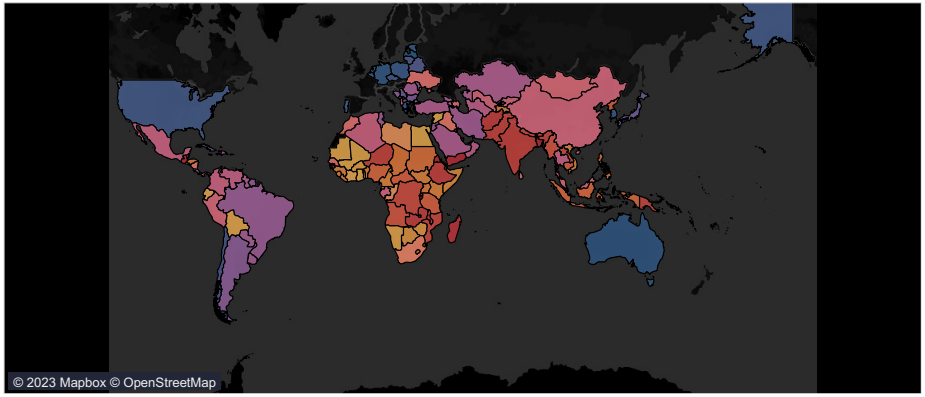
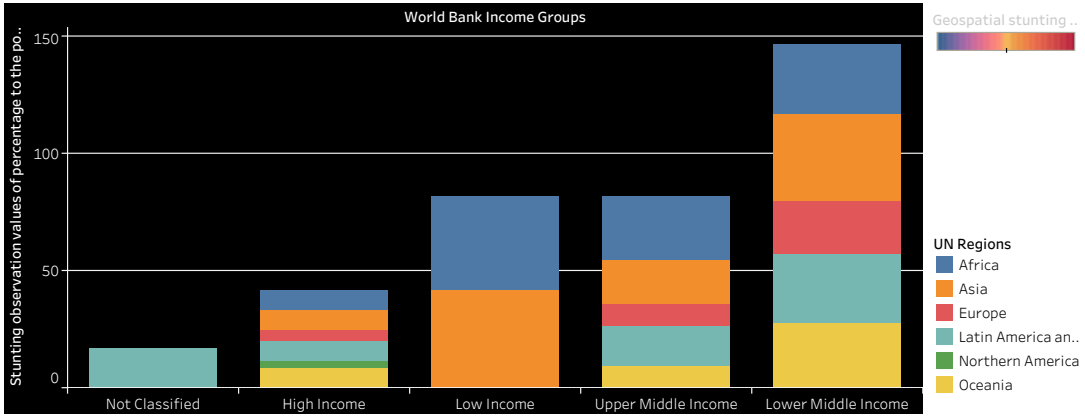
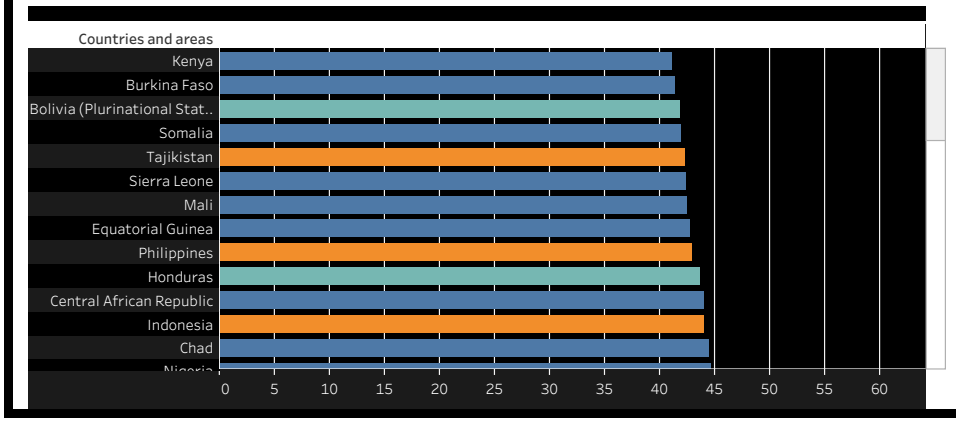
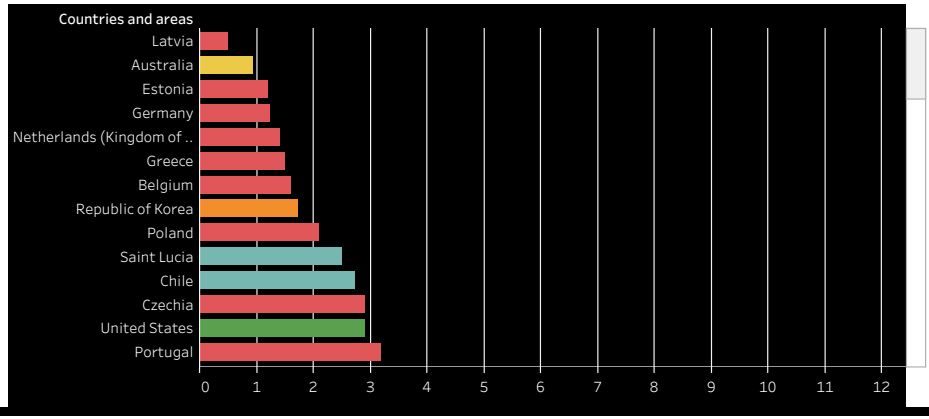
From top left to bottom right: Choropleth Map describing the stunting percentage in each country, national income vs stunting percentage in the UN region, highly and least affected nations by **stunting** under the age of 5.









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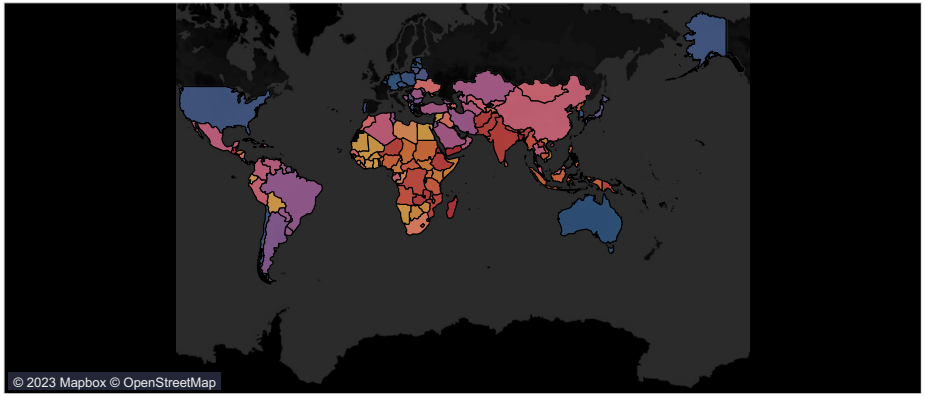

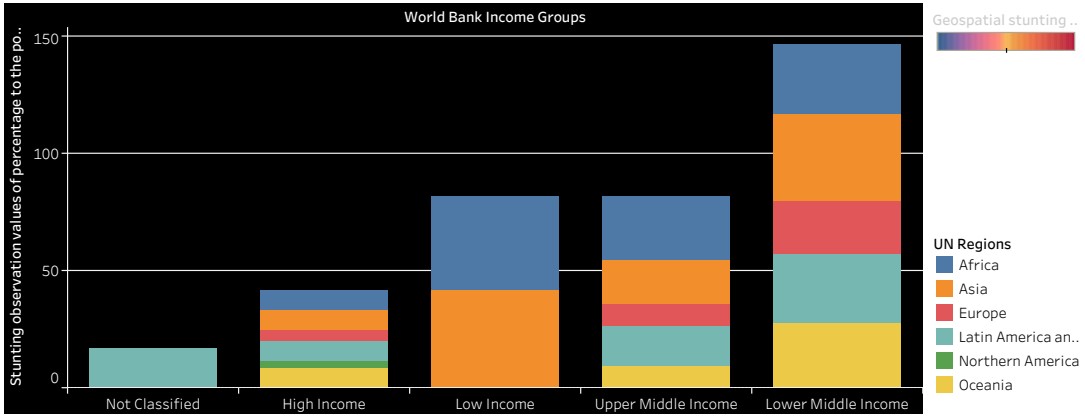

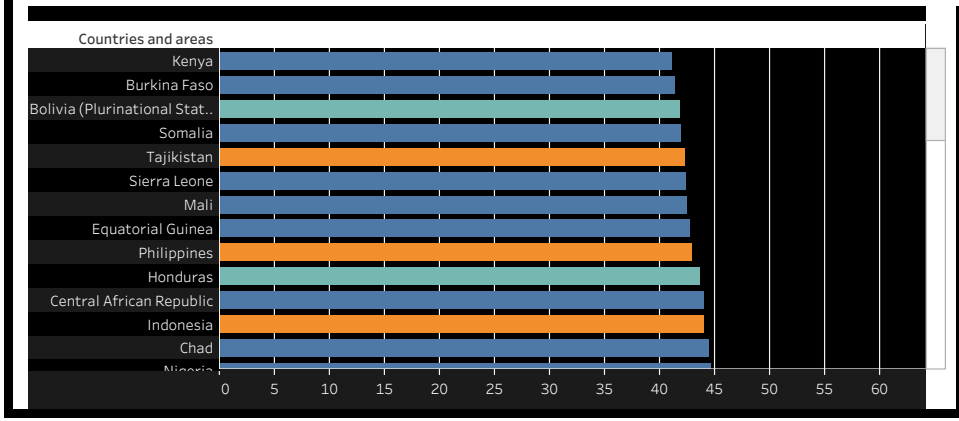

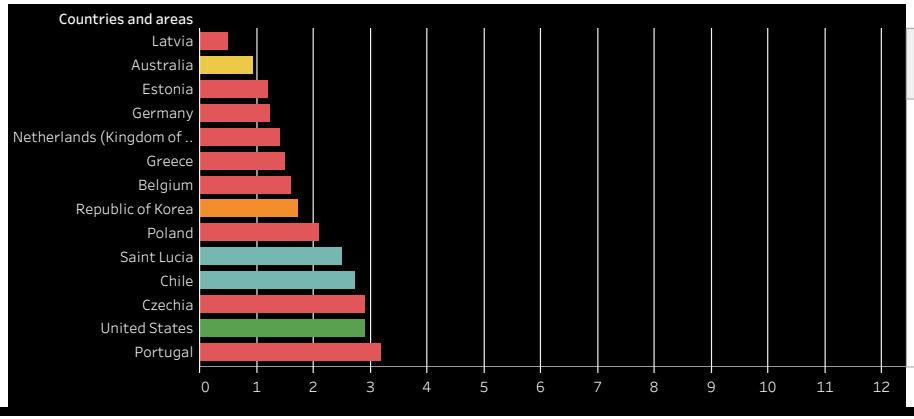

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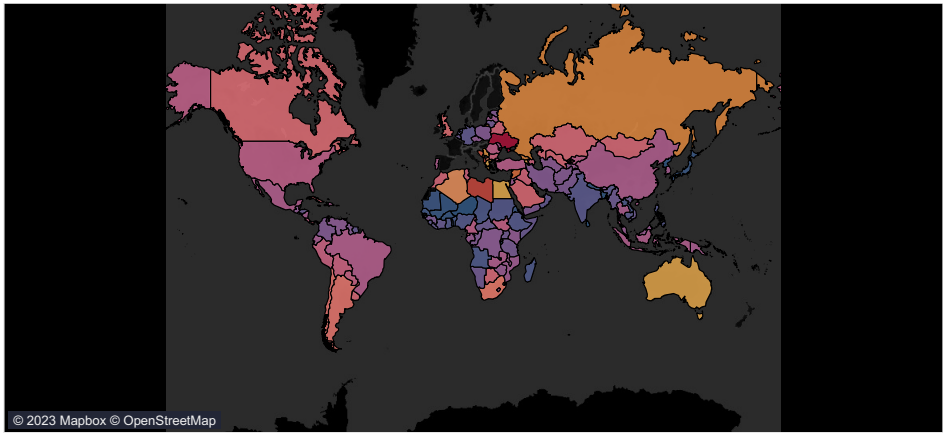
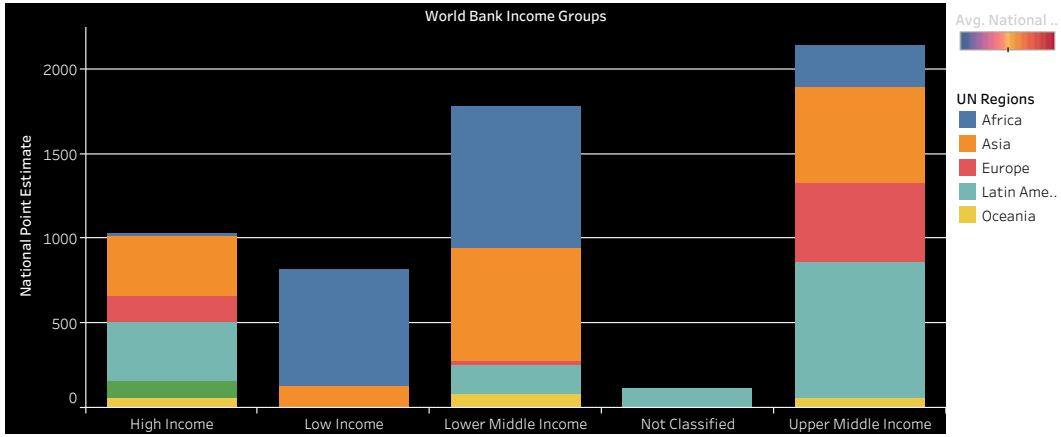
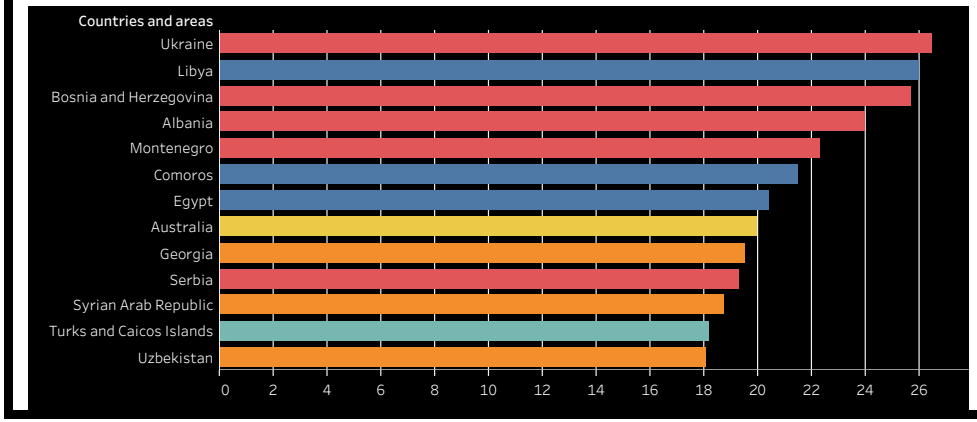
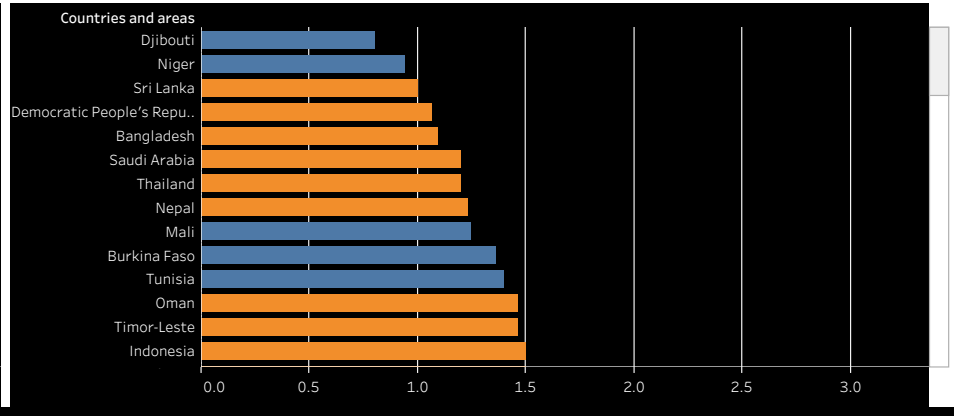
From top left to bottom right: Choropleth Map describing the overweight percentage in each country, national income vs wasting percentage in the UN region, highly and least affected nations by **overweight** under the age of 5.









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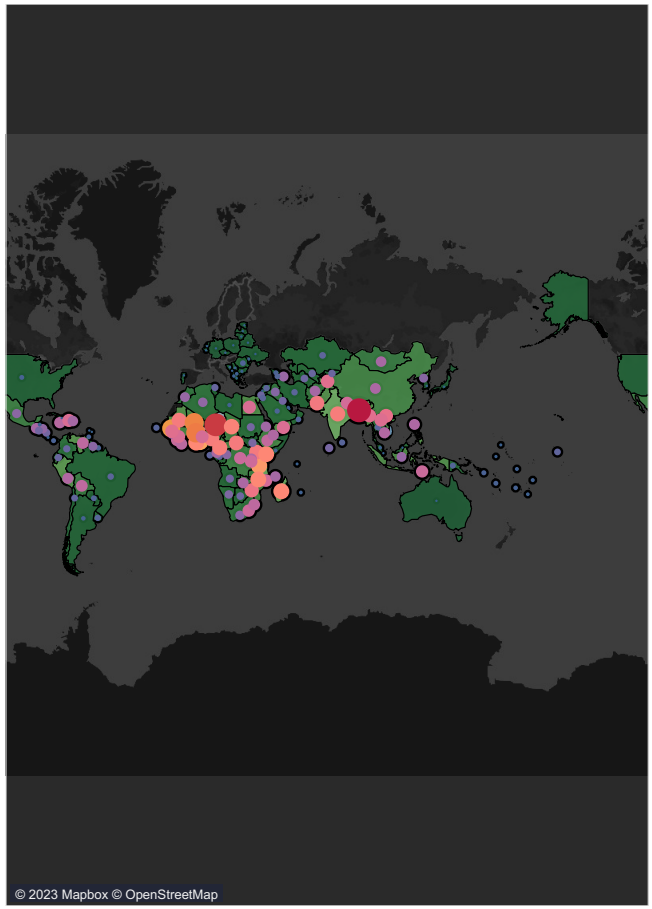
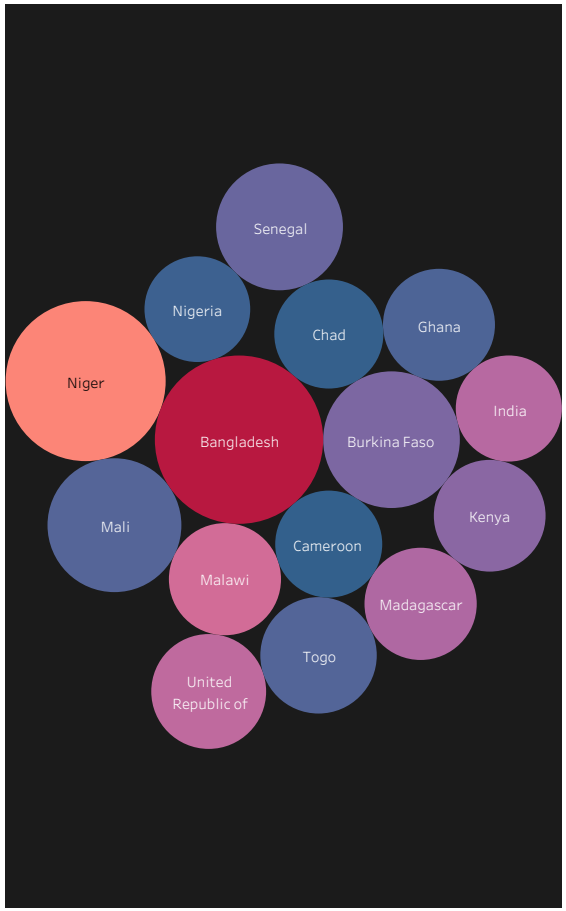
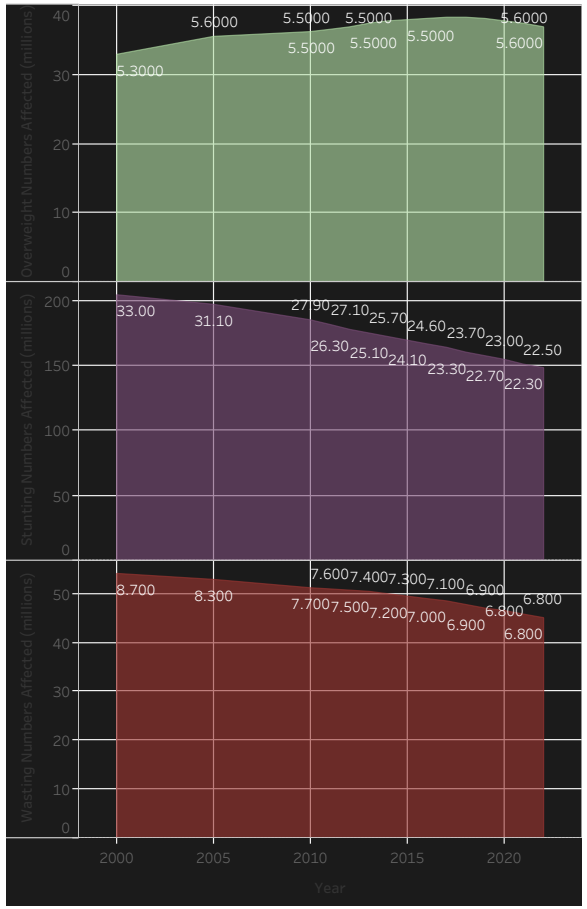
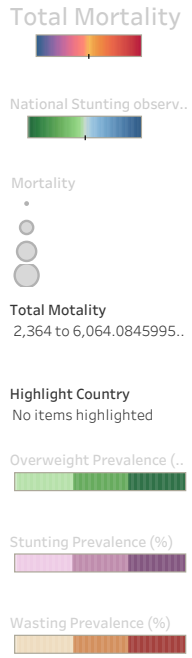
Choropleth Map, Bubble chart & Line chart depicting national stunting observation values vs mortality among kids under age five.









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Stunting: the data suggests that stunting, wasting, and the prevalence of low birth weight among newborns are positively correlated, even to varying degrees. Higher stunting rates are associated with higher rates of low birth weight, wasting, and severe wasting. Similarly, areas with a higher prevalence of low birth weight among newborns are more likely to have higher rates of wasting and severe wasting. Additionally, wasting and severe wasting are strongly correlated, indicating that they occur together.

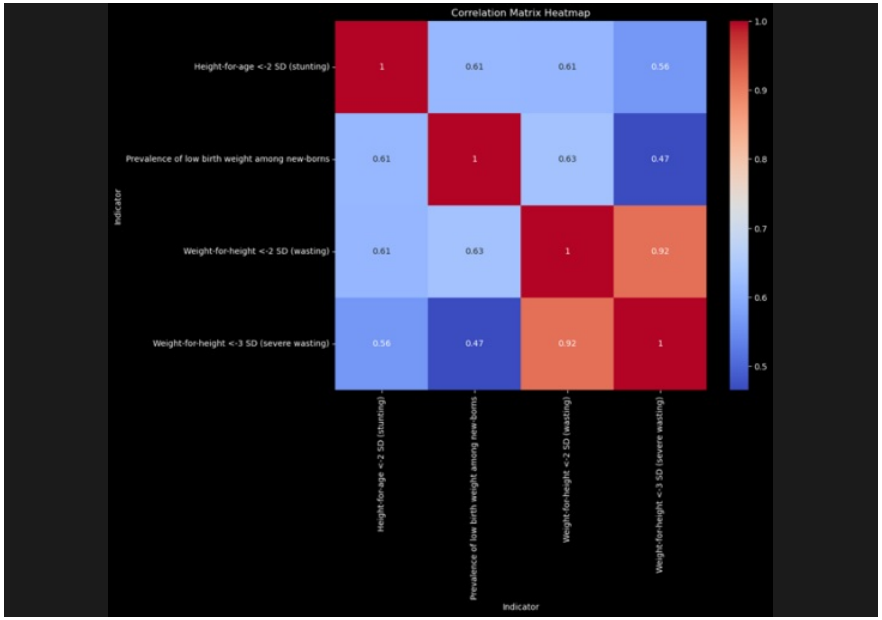
The most affected countries are Kenya., Bolivia, Somalia, Tajikistan and Mali. Some country's negligible stunting observations among those are Lativia, Australia, Germany, Netherlands. Stunting estimation values aren't the same across the globe.

Wasting: South Sudan, Papua, India, Cambodia, and Maldives recorded the highest observation values. Australia, Belgium, Estonia, Latvia, and Germany have very negligible cases of wasting. Wasting estimation values aren't the same across the globe.

Overweight: Ukraine, Libya, and Bosnia have the maximum records for the highest overweight. Observation values Srilanka, Bangladesh, Niger, and Saudi Arabia have the least number of overweight observation values. Overweight estimation values aren't the same across the globe.

Correlation: From the initial analysis of the UNICEF dataset observed malnutrition(Stunting, Wasting) among children under the age of 5 are directly influenced by the income of the countries.

Also, global death among children less than age 5 years is positively correlated with the country's malnutrition values. Higher the malnutrition observation value higher the mortality rate among children.



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Limitations:

1. Unicef dataset is recorded randomly from the different data source agencies, so consistency is missing.

2. All countries have different periods of observation or measuring of the samples. Some countries have a yearly collection of samples, and some have five or ten years once. The record is inconsistent, making finding the trend or pattern complex.

3. Also, there could be possibilities of data bias. Countries hide the actual sample estimation to protect country reputations.

4, Missing records: Most of the country won't segregate the malnutrition(stunting, wasting & overweight) observations based on age, gender, income and other factors.

Thank you

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