Global Malnutrition Trends: A Power BI Analysis (1983-2019)

Team ID : LTVIP2025TMID19951

Team Size : 4

Team Leader : Vadlamudi Gayathri Chowdary

Team member : Jai Srinivas Vadapalli

Team member : Tammana Pranayeni

Team member : Modugumudi Sai Seetha Ram

Abstract:

Malnutrition remains a critical global health issue, affecting millions of children and adults worldwide. This project analyzes malnutrition trends from 1983 to 2019 using Power BI, providing insights into factors such as underweight, stunting, wasting, and overweight across different countries and income classifications. By leveraging interactive dashboards, this study highlights disparities among income groups and regions, offering a comprehensive visual representation of the malnutrition crisis.

Introduction:

Malnutrition, encompassing both undernutrition and overnutrition, continues to pose significant challenges to global health and development. This project aims to analyze and visualize malnutrition trends using Power BI, utilizing a dataset that includes various attributes such as:

- Country and ISO Code
- Income Classification
- Survey Year & Sample Size
- Severe Wasting, Wasting, Overweight, Stunting, Underweight
- U5 Population (‘000s)

The primary objective of this project is to provide data-driven insights that can help policymakers and organizations address malnutrition effectively.

Data Sources:

The dataset is divided into two subfolders:

1. Country-wise Average: Includes country-level malnutrition statistics classified by income.

2. Malnutrition Estimates: Contains detailed survey-based estimates on various malnutrition indicators over the years.

Data Analysis & Visualization:

Using Power BI, the data was analyzed through interactive dashboards, highlighting the key trends and patterns in global malnutrition. The following visualizations were created:

1. Key Metrics Overview:

- Total Underweight Cases: 14.29K
- Total Survey Samples: 343 Million
- U5 Population Count: 924 Million

2. Underweight Trends by Country:

- A line chart displaying countries with the highest number of underweight children.
- Bangladesh, Vietnam, Nigeria, and India show the highest underweight cases.

3. Income Classification and Malnutrition:

- A bar chart indicating that low-income countries (Classification 0) suffer from the highest stunting and underweight rates.
- High-income countries (Classification 3) show lower malnutrition rates.

4. Overweight and Underweight Comparison:

- A stacked area chart illustrating the double burden of malnutrition, where certain regions struggle with both underweight and overweight issues.
- Countries like Kuwait exhibit a rising trend in overweight cases, exceeding 120 cases.

Findings & Insights:

- Economic Factors Play a Major Role: Countries with lower income classifications exhibit higher rates of undernutrition.
- Regional Disparities: Certain regions face a double burden, struggling with both obesity and undernutrition.
- Need for Policy Interventions: Governments and health organizations must prioritize interventions in regions with high malnutrition rates.

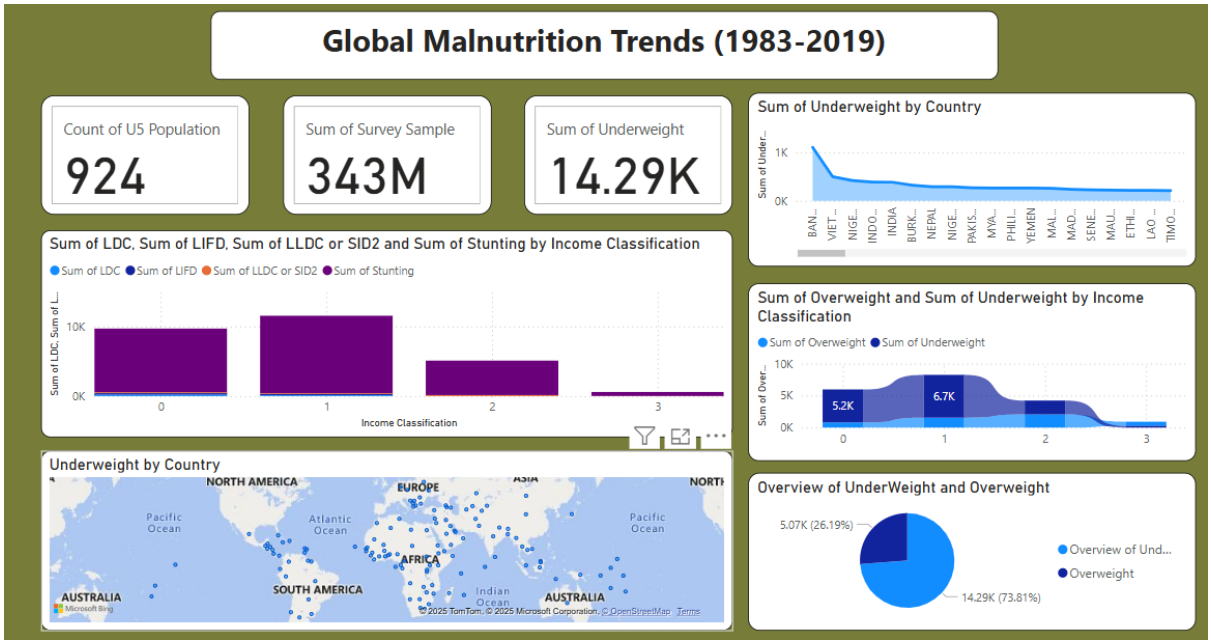
Conclusion:

This Power BI analysis provides data-driven insights into global malnutrition trends, highlighting the disparities among different income groups and regions. The interactive dashboards enable better decision-making for policymakers, helping to design targeted nutrition programs that address malnutrition effectively.

Dashboard Screenshots

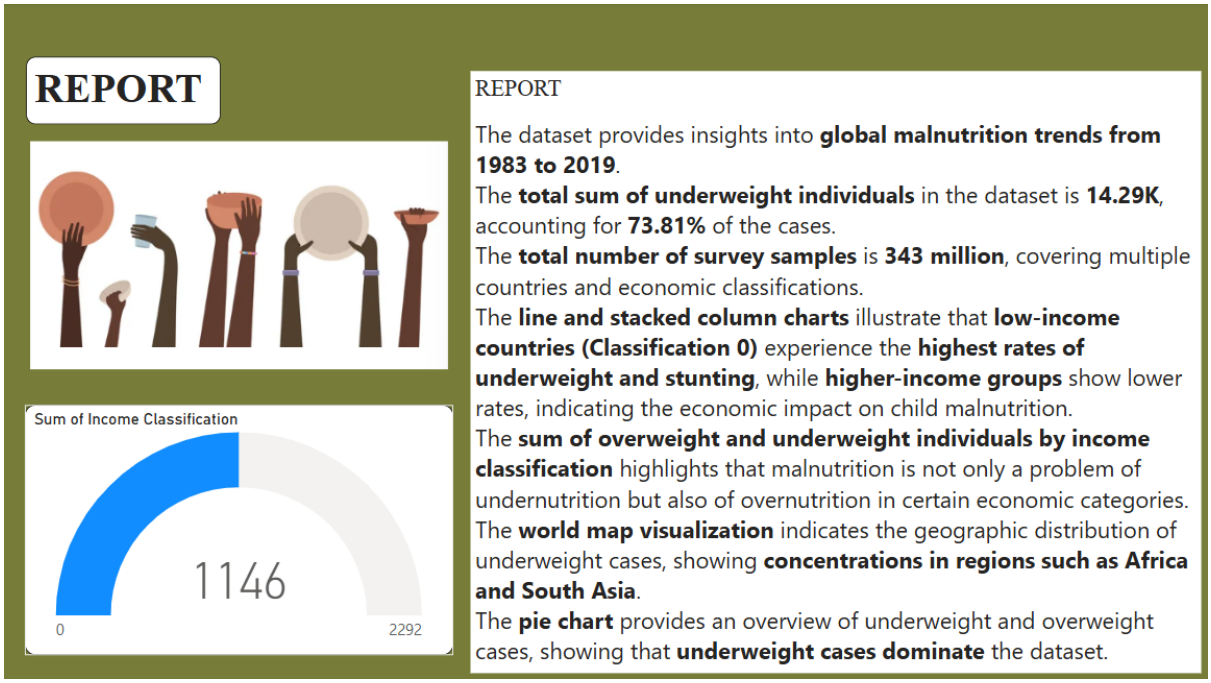
1. Global Malnutrition Trends Dashboard

[Global Malnutrition Trends Dashboard]



2. Report Summary Dashboard

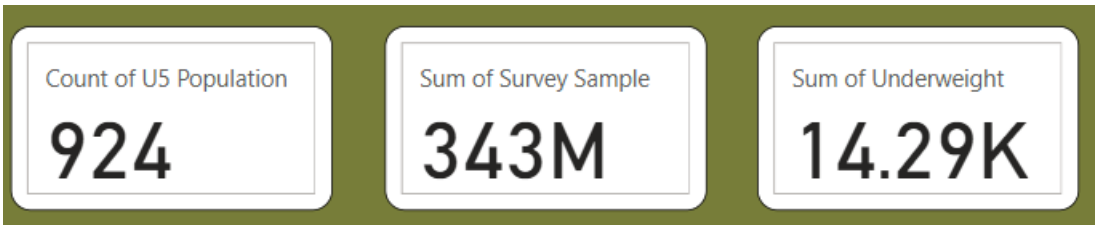
[Report Summary Dashboard]



Here is a detailed breakdown of each graph in your Global Malnutrition Trends (1983-2019) Power BI Dashboard:

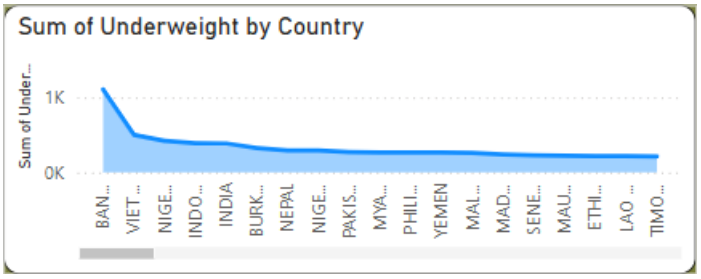
1. Key Metrics Overview (Cards)

- Count of U5 Population: Displays the total number of children under five years of age included in the dataset (924).
- Sum of Survey Sample: Represents the total number of survey samples collected (343M), providing insights into data coverage.
- Sum of Underweight: Indicates the total count of underweight individuals (14.29K), helping identify the burden of undernutrition.



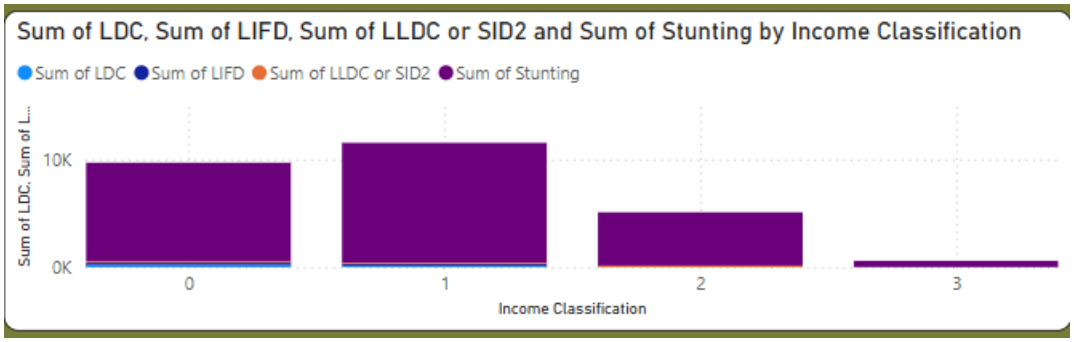
2. Sum of Underweight by Country (Bar Chart)

- Displays the top countries with the highest number of underweight individuals.
- Countries like Vietnam, Nigeria, India, Nepal, and Yemen exhibit high underweight cases.
- Helps identify regions requiring urgent intervention for child nutrition programs.



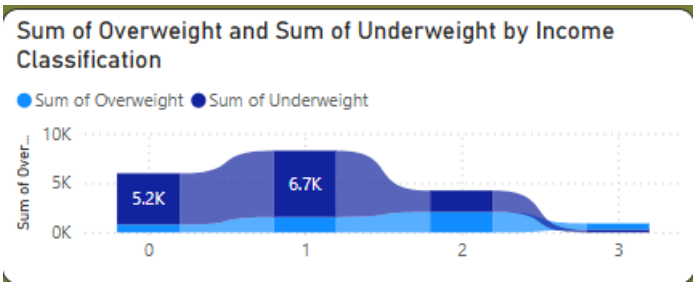
3. Sum of LDC, LIFD, LLDC, SID2, and Stunting by Income Classification (Stacked Column Chart)

- **LDC (Least Developed Countries), LIFD (Low-Income Food-Deficit Countries), LLDC (Landlocked Developing Countries), and SID2 (Small Island Developing States)** are plotted against **income classification**.
- **Low-income countries (Classification 0)** have the highest stunting and underweight rates.
- **High-income countries (Classification 3)** show **lower malnutrition rates**, reinforcing the correlation between economic status and nutrition.



4. Sum of Overweight and Sum of Underweight by Income Classification (Stacked Area Chart)

- **Compares undernutrition and overnutrition trends** across income levels.
- **Low-income groups** suffer from high undernutrition, while **higher-income groups** have rising overweight cases.
- Countries like **Kuwait** show a **significant overweight trend**, exceeding **120 cases**.



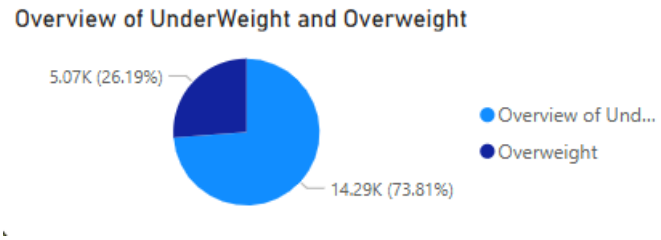
5. Underweight by Country (Geographical Map)

- **A world map plotting underweight cases** based on country-specific survey data.
- Densely populated undernutrition regions, like **Africa, South Asia, and parts of South America**, appear prominently.
- Useful for **geospatial analysis and policymaking**.

6. Overview of Underweight & Overweight (Pie Chart)

- **Breaks down the proportion of underweight vs. overweight cases**.
- **14.29K (73.81%)** of the cases belong to underweight individuals, while **5.07K (26.19%)** represent overweight individuals.

- **Highlights the "double burden" of malnutrition**, where undernutrition and overnutrition coexist in some regions.



Key Insights from the Dashboard:

1. **Underweight Trends Are More Severe in Low-Income Countries**:
    - High stunting, wasting, and underweight rates.
    - Economic disparities significantly impact child nutrition.
2. **Overweight Cases Are Rising in Higher-Income Nations**:
    - Kuwait and other **wealthier nations show higher obesity rates**.
    - Indicates the **shift in dietary habits and lifestyle changes**.
3. **Geospatial Mapping Highlights Regions for Intervention**:
    - Africa and South Asia have **high undernutrition rates**.
    - South America and the Middle East **show growing overweight cases**.

Future Scope:

Enhanced Predictive Analysis: Using AI/ML models to forecast malnutrition trends.

Integration with Other Health Indicators: Studying correlations with diseases like anemia, vitamin deficiencies, and obesity.

Geospatial Mapping: Adding heatmaps for a more detailed regional analysis.

References

Data Source: Global Malnutrition Dataset (1983-2019)

Power BI Dashboard Design: Self-created using Power BI tools