

# PROJECT DOCUMENTATION

## GLOBAL MALNUTRITION ANALYSIS (1983 – 2018)

### 1. Introduction

#### a. Project overviews

This project analyzes global malnutrition data in children under five years using two datasets: a time-series dataset (1983–2018) and a country-wise average summary. The objective is to extract actionable insights into malnutrition indicators, highlight trends over the years and across income classification, and provide a basis for data-driven policies.

#### b. Objectives

- To analyze malnutrition indicators (Stunting, Wasting, Underweight, Overweight) globally.
- To identify trends across income classifications and years.
- To create an interactive Power BI dashboard for comparative analysis.

### 2. Project Initialization and Planning Phase

#### 2.1. Define Problem Statement

Malnutrition continues to be a major global challenge affecting millions of children, especially in low- and middle-income countries. The goal is to analyze and compare child malnutrition trends globally using historical (multi-year) data. The aim is to understand how factors like income classification relate to malnutrition indicators (e.g. underweight, stunting, wasting, etc), and to highlight at-risk populations, and guide data-driven interventions.

#### 2.2. Project Proposal (Proposed Solution)

Building an interactive Power BI dashboard that visualizes global malnutrition trends, segmented by income classification, country and time, enabling stakeholders to make informed decisions.

#### 2.3. Initial Project Planning

- Data Source: secondary datasets from Kaggle

<https://www.kaggle.com/datasets/ruchi798/malnutrition-across-the-globe?select=malnutrition-estimates.csv>

- Tools: Power BI (for pre-processing and visualization)
- Timeline: 10 days (Data Collection: 2 days, Data Preparation: 2 Days, Data Visualization: 3 Days, Report Design & Testing: 2 Days, Testing and Reporting: 2 Days, Project documentation & Demonstration:1 day).

### **3. Data Collection and Pre-processing Phase**

#### 3.1. Data Collection Plan and Raw Data Sources Identified

- Dataset 1: malnutrition-estimates.csv (year-wise data)
- Dataset 2: country-wise-average.csv (summary stats)

#### 3.2. Data Quality Report

- Missing values in some columns (handled via cleaning).
- Income classification labels were mapped to readable names (as Income Category)
- Transforming the numerical datasets for consistency.

#### 3.3. Data Exploration and Pre-processing

- Removed irrelevant columns (e.g., Notes, Unnamed indices).
- Renamed a Column to “ID”
- Added 'Income Category' derived from the classification labels.
- Converted the columns to their appropriate data type
- Reduced the number of decimal points to 2 for easy understanding and consistency across the dataset.

### **4. Data Visualization**

#### 4.1. Framing Business Questions

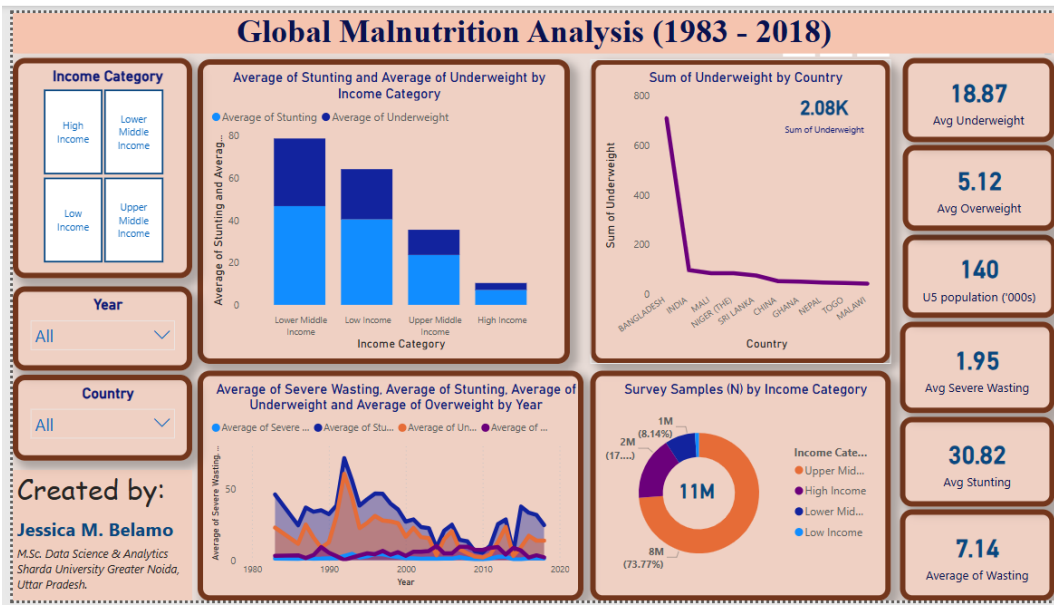
- Which countries have the highest malnutrition rates?
- How does malnutrition differ across income groups?
- Are there visible trends over time in malnutrition indicators?

#### 4.2. Developing Visualizations

- Line charts for year-wise trends.
- Bar charts for top/bottom countries in key metrics.
- Stacked charts for income group and year wise comparisons.

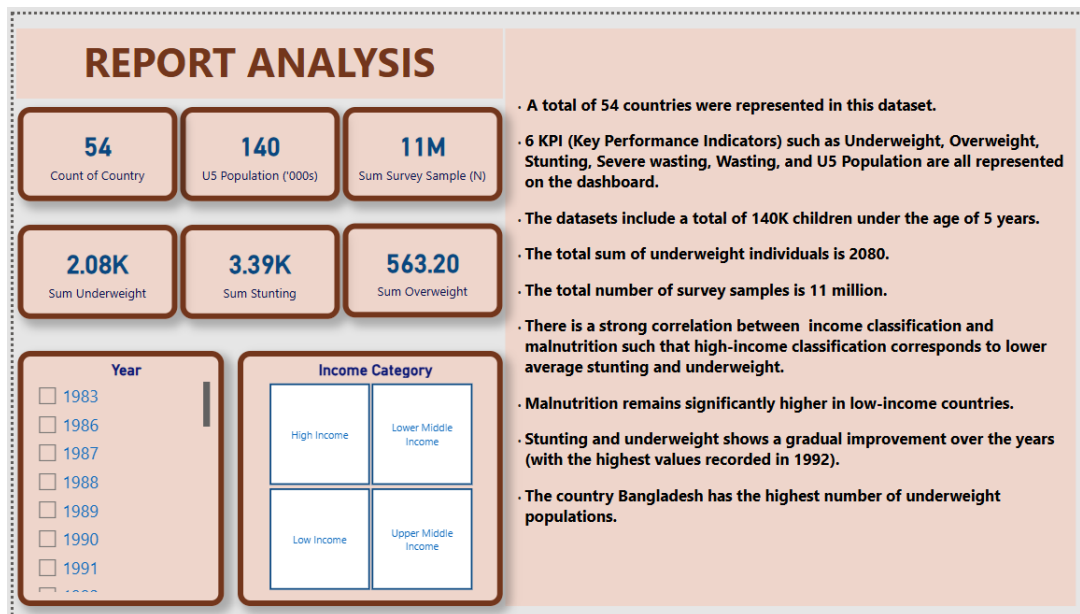
### **5. Dashboard**

#### 5.1. Dashboard Design File



## 6. Report

### 6.1. Story Design File



## 7. Performance Testing

### 7.1 Utilization of Data filters

- Filters by Year, Country, Income Category.

## 7.2 No of Calculation Field

- 6 calculated measures: Global Averages for each malnutrition indicator; Underweight, Overweight, Stunting, Severe wasting, Wasting, and U5 Populations.

## 7.3 No of Visualization

- Total: 13 (Cards: 6, Stacked column Charts: 1, Area Charts: 1, Line Charts: 1, Doughnut Chart: 1, Slicers: 3)

## 8. Conclusion/Observation

- Malnutrition remains significantly higher in low-income countries.
- Bangladesh, India, Mali, Niger, Sri Lanka are the top 5 countries with the highest underweight population.
- The year 1992 recorded the highest average values for stunting and underweight.
- Stunting and underweight trends show gradual improvement over the years.
- Data-driven dashboards are effective tools in identifying at risk areas.

## 9. Future Scope

- Segment analysis by gender, urban/rural regions.
- Implement predictive models for malnutrition trend forecasting.
- Integrate real-time WHO/UNICEF datastreamsfor updates.