Final Project Report Template

1. Introduction

1.1 Project Overview

Malnutrition among children under five remains a significant global health challenge. This project analyzes global malnutrition trends, focusing on stunting, wasting, underweight, and overweight indicators. Using Power BI, we visualized data from multiple countries and income groups, enabling policymakers to identify priority countries and target interventions effectively.

1.2 Objectives

- Identify countries with the highest malnutrition burden.
- Compare malnutrition trends across income groups and regions.
- Provide actionable insights for policymakers and NGOs.
- Develop an interactive Power BI dashboard for visual analysis.

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2. Project Initialization and Planning Phase

2.1 Define Problem Statement

Malnutrition affects millions of children under five globally, leading to long-term health and developmental issues. The project aims to analyze global trends and identify priority countries where interventions are most needed.

2.2 Project Proposal (Proposed Solution)

- **Solution:** Build a Power BI dashboard that visualizes malnutrition indicators and trends across countries and income groups.
- **Expected Outcomes:**
    - Prioritized list of countries based on malnutrition burden.
    - Insights into trends and regional disparities.
    - Interactive dashboard for policy-level decision-making.

2.3 Initial Project Planning

Task	Timeline	Responsibility	Status
Data Collection	1 October 2025	Self	Completed
Data Cleaning & Preprocessing	1 October 2025	Self	Completed
Dashboard Design & Visualization	2 October 2025	Self	Completed

Task	Timeline	Responsibility	Status
Report Writing	2 October 2025	Self	Completed

Note: Entire project was completed in **2 days (1–2 October 2025)**.

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3. Data Collection and Preprocessing Phase

3.1 Data Collection Plan and Raw Data Sources

- **Datasets Used:**
  1. `country-wise averages.csv` – Country-level malnutrition metrics.
  2. `malnutrition-estimates.csv` – Detailed data on stunting, wasting, underweight, overweight for U5 children.
- **Source:** WHO Global Malnutrition Database.

3.2 Data Quality Report

- Checked for missing or inconsistent values.
- Corrected country names for proper mapping.
- Cleaned columns: `Stunting_%`, `Wasting_%`, `Underweight_%`, `Overweight_%`, `Income_Group`.
- Added calculated column **Burden** = `U5 Population × Stunting_% / 100` for country-level impact.

3.3 Data Exploration and Preprocessing

- Computed averages for global and income group comparisons.
- Verified outliers and ensured consistent formatting for visualizations.
- Preprocessed data is **Power BI ready** for dashboards and analysis.

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4. Data Visualization

4.1 Framing Business Questions

- Which countries have the highest malnutrition burden?
- How do malnutrition indicators vary across income groups?
- What trends are observed globally for stunting, wasting, and underweight?
- Which countries require immediate interventions?

4.2 Developing Visualizations

- **Global Overview:**
  - KPI cards for Stunting, Wasting, Underweight, Overweight.
  - World map highlighting countries by stunting % or burden.
  - Comparison chart of malnutrition across income groups.
  - Trend line chart for global stunting rates over time.
- **Country Analysis:**
  - Drilldown KPIs for individual countries.
  - Line charts showing trends vs. global averages.
  - Burden share analysis using bar and scatter plots.
- **Priority Countries:**
  - Top 10 countries for stunting/wasting highlighted.
  - Treemap for malnutrition burden.
  - Scatter plot for stunting vs. underweight prevalence.
- **Insights & Recommendations Page:**
  - Narrative visuals summarizing key insights for policymakers.

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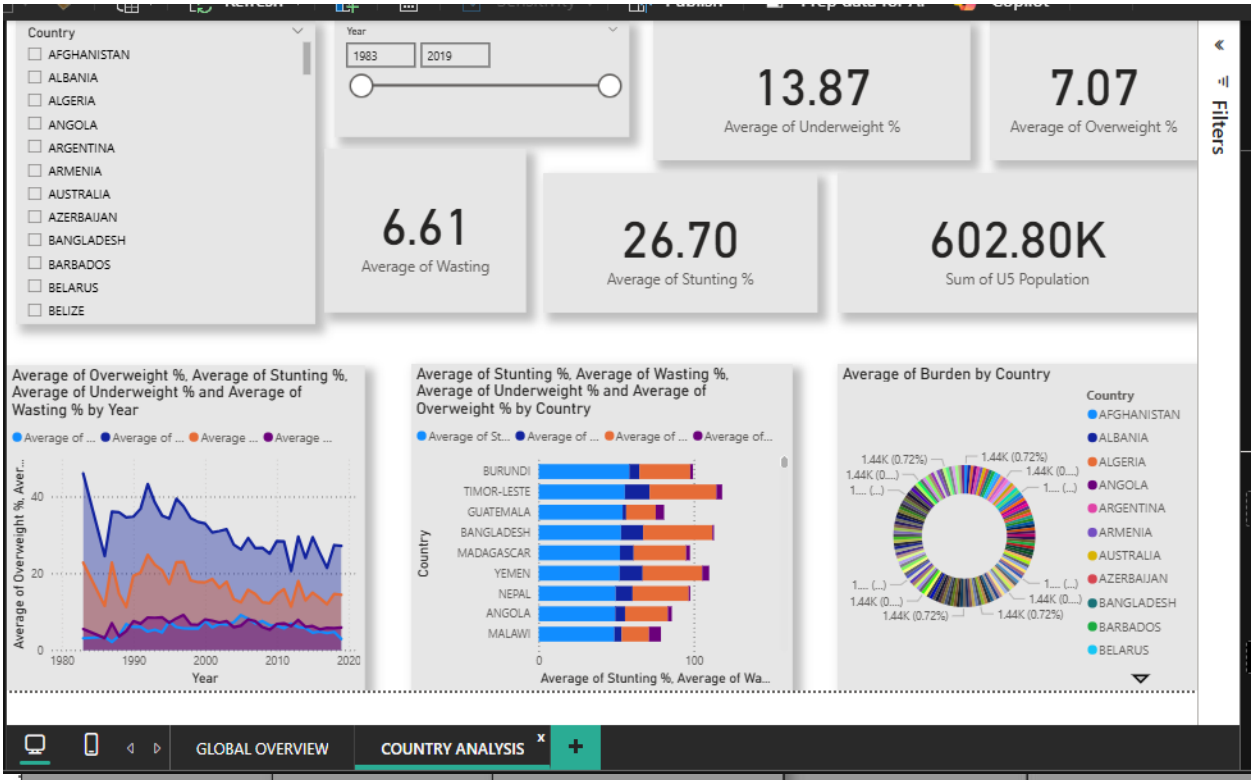
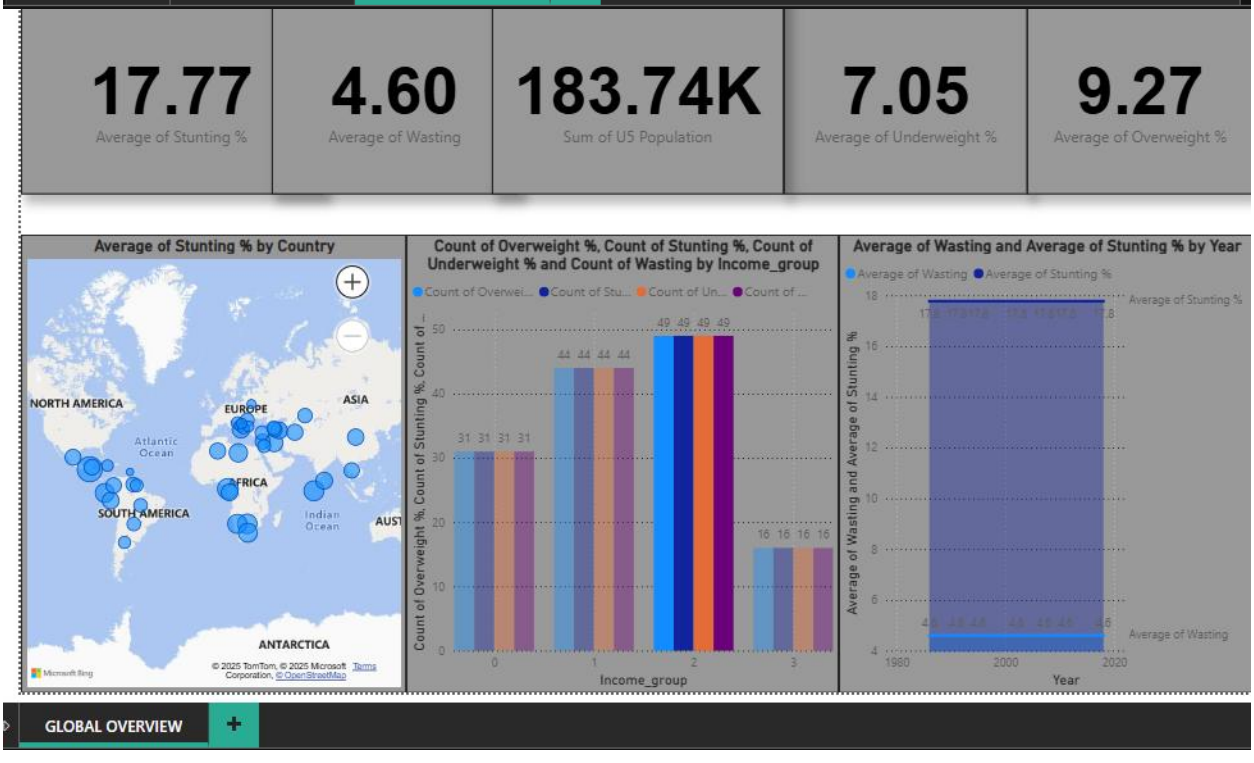
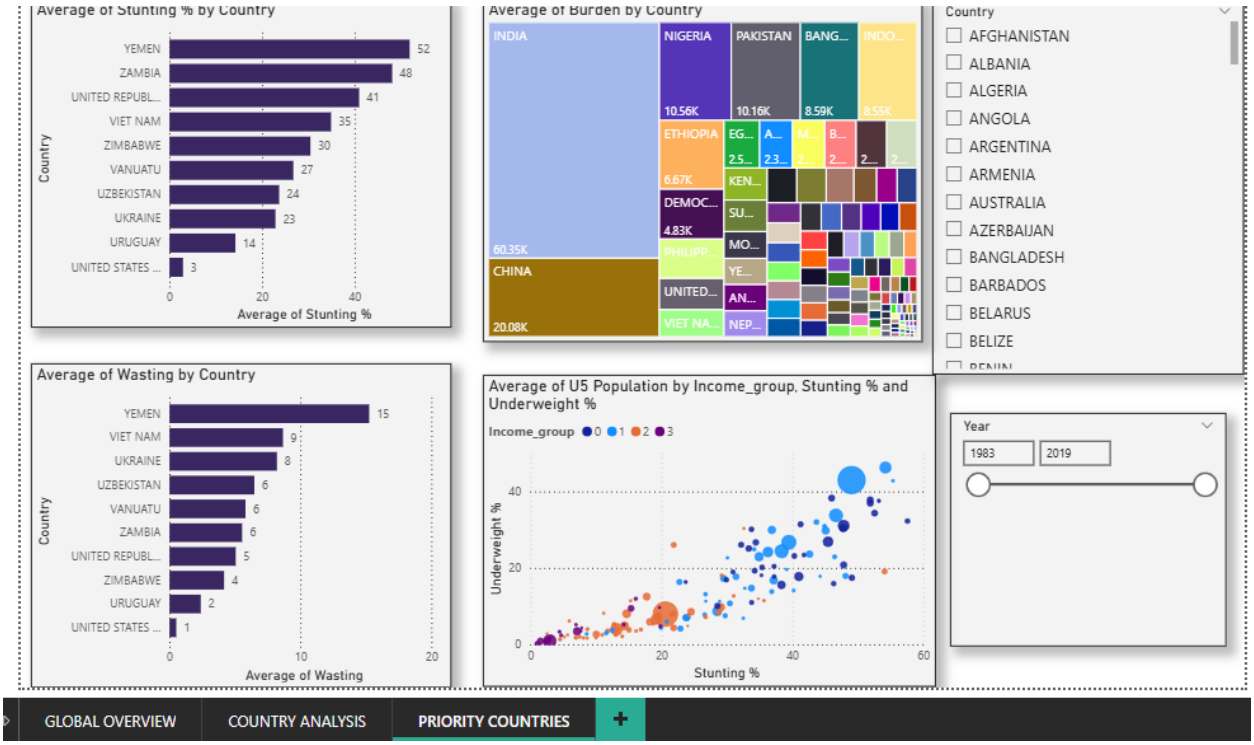
5. Dashboard

5.1 Dashboard Design File

- Interactive Power BI dashboard with 4 pages:
  1. Global Overview
  2. Country Analysis
  3. Priority Countries
  4. Insights & Recommendations
- Features:
  - Filters: Country, Year, Income Group
  - Drill-through options for country-level analysis
  - Interactive slicers and tooltips for enhanced user experience


Country
AFGHANISTAN
ALBANIA
ALGERIA
ANGOLA
ARGENTINA
ARMENIA
AUSTRALIA
AZERBAIJAN
BANGLADESH
BARBADOS
BELARUS
BELIZE
Year
1983
2019
13.87
Average of Underweight %
7.07
Average of Overweight %
6.61
Average of Wasting
26.70
Average of Stunting %
602.80K
Sum of U5 Population
Filters
Average of Overweight %, Average of Stunting %, Average of Underweight % and Average of Wasting % by Year
Average of Overweight %, Aver...
Year
Average of Stunting %, Average of Wasting %, Average of Underweight % and Average of Overweight % by Country
Country
BURUNDI
TIMOR-LESTE
GUATEMALA
BANGLADESH
MADAGASCAR
YEMEN
NEPAL
ANGOLA
MALAWI
Average of Stunting %, Average of Wa...
Average of Burden by Country
Country
AFGHANISTAN
ALBANIA
ALGERIA
ANGOLA
ARGENTINA
ARMENIA
AUSTRALIA
AZERBAIJAN
BANGLADESH
BARBADOS
BELARUS
GLOBAL OVERVIEW
COUNTRY ANALYSIS


17.77
Average of Stunting %
4.60
Average of Wasting
183.74K
Sum of U5 Population
7.05
Average of Underweight %
9.27
Average of Overweight %
Average of Stunting % by Country
NORTH AMERICA
EUROPE
ASIA
AFRICA
SOUTH AMERICA
ANTARCTICA
Atlantic Ocean
Indian Ocean
Count of Overweight %, Count of Stunting %, Count of Underweight % and Count of Wasting by Income_group
Count of Overwei...
Count of Stu...
Count of Un...
Count of ...
Count of Overweight %, Count of Stunting %, Count of ...
Income_group
Average of Wasting and Average of Stunting % by Year
Average of Wasting
Average of Stunting %
Average of Wasting and Average of Stunting %
Year
GLOBAL OVERVIEW



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6. Report

6.1 Story Design File

- Each page designed for storytelling with:
  - Key insights with captions
  - Top priority countries highlighted
  - Global trend comparisons
  - KPI cards summarizing metrics

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7. Performance Testing

7.1 Utilization of Data Filters

- Applied filters for dynamic selection: Country, Year, Income Group

7.2 Number of Visualizations

- 12 major visuals: World map, Line charts, Treemaps, KPI cards, Scatter plots

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8. Conclusion / Observations

- Stunting and underweight prevalence remain high in low-income countries.
- India, Nigeria, and Pakistan contribute most to global stunting burden.
- Malnutrition is inversely related to income levels.
- Policy interventions needed for Sub-Saharan Africa and South Asia.
- Overweight prevalence rising in upper-middle-income countries, indicating double-burden malnutrition.

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9. Future Scope

- Add datasets: maternal nutrition, vaccination coverage, and micronutrient deficiency.
- Predictive modeling to forecast malnutrition trends.
- Mobile-friendly interactive dashboards.
- Integration with broader global health indicators.

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10. Appendix

10.1 GitHub & Project Demo Link

- GitHub: https://github.com/navyamudgal20/Malnutrition-Analysis-and-Forecasting-using-Power-BI
- Project Demo (Power BI file): https://drive.google.com/file/d/14_ZHJFllJgvRg5wDR4SY9pJs_fetCHn-/view?usp=sharing