DataVerse Africa

CHILD MALNUTRITION RISK AND DETERMINANTS

Internship Presentation

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Problem Statement

- Malnutrition continues to be a major public health challenge in Africa.
- This occurs in regions affected by food insecurity, poverty, and limited access to healthcare.
- However, current early-detection systems remain insufficient.
- This project seeks to address these gaps by leveraging community-level data to identify vulnerable children early and enable timely, targeted interventions.

Project Objectives

- Identify key socioeconomic, dietary, and environmental factors contributing to malnutrition risk.
- To evaluate the patterns of malnutrition in the study area
- Empower healthcare workers with interpretable, data-backed insights for early identification and intervention.
- To recommend target intervention based on analytical findings.

Methodology

Data Cleaning

Original dataset structure

- 235957 rows and 21 columns
- 42 duplicates rows (Deleted)
- Missing values (frequency of Meals column)
- Spelling inconsistencies (corrected)
- Columns with high range of numerical values were grouped.

Tools used

- Excel
- Power BI.

Background

Three key anthropometric indicators are used to assess the nutritional status of children under five.

Measurement	What it Detects	Type of Malnutrition
Weight-for-Age	Light for age	Underweight (general malnutrition)
Height-for-Age	Short for age	Stunting (long-term malnutrition)
Weight-for-Height	Too thin for height	Wasting (short-term malnutrition)

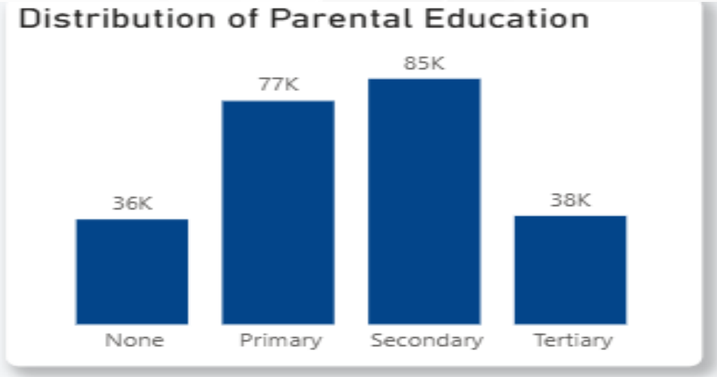
WHO Z-Score Classification

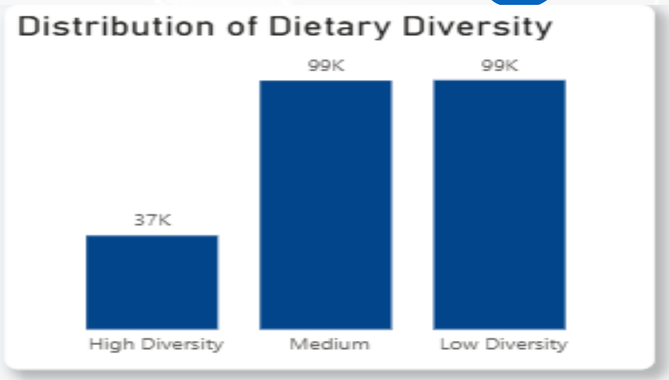
Z-score value	Category	Meaning
Z >2	**Overweight**	Child is above expected growth
2≤ Z ≥ –2	**Normal**	Child is within healthy growth range
–3 ≤ Z < –2	**Moderately malnourished**	Child is below expected growth
Z < –3	**Severely malnourished**	Child is far below healthy range; high risk

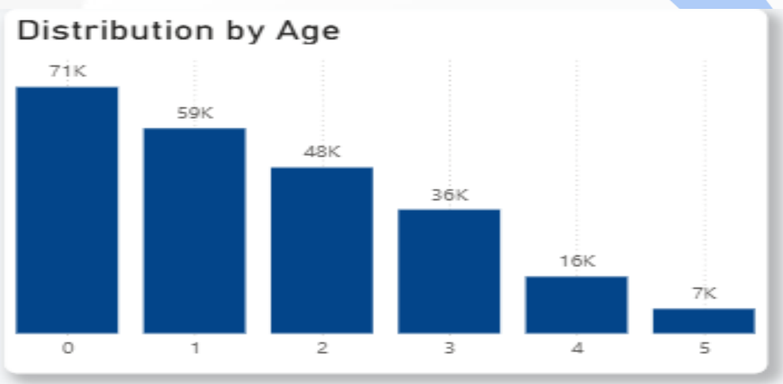
Data Insights

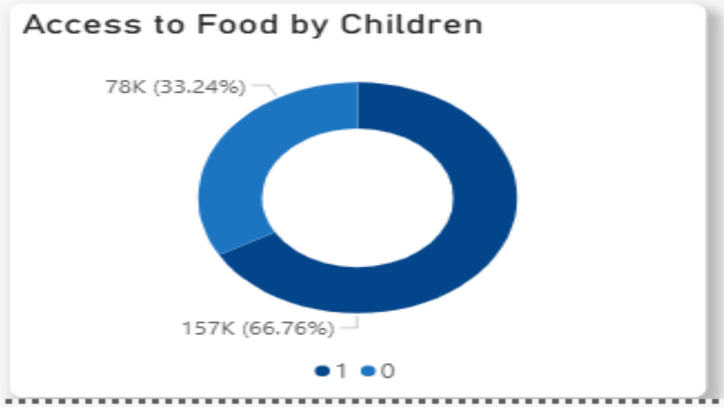
- Total children: 235915
- Average Weight-for-Age: -1.30
- Average Height-for-Age: -1.30
- Average Weight-for-Height: -0.87
- High malnutrition risk %: 26.7%
- Moderate malnutrition risk %: 33.3%
- Low malnutrition risk %: 40.0%

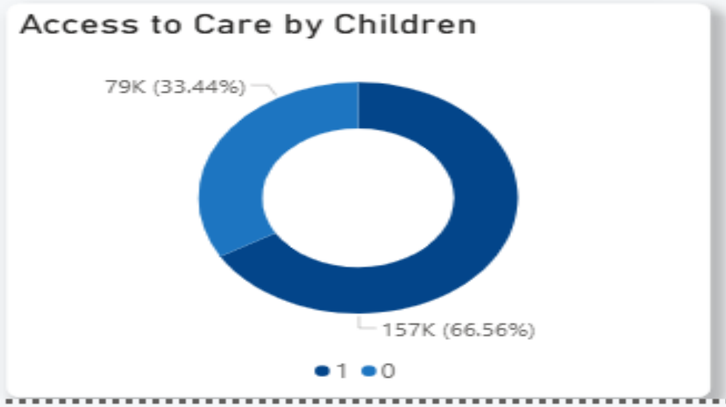
Data Insight

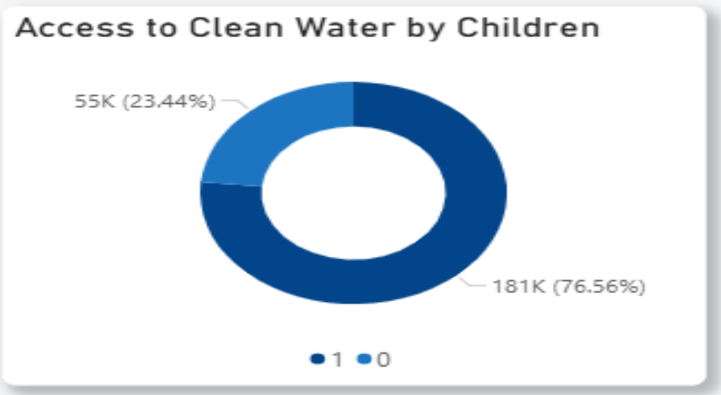






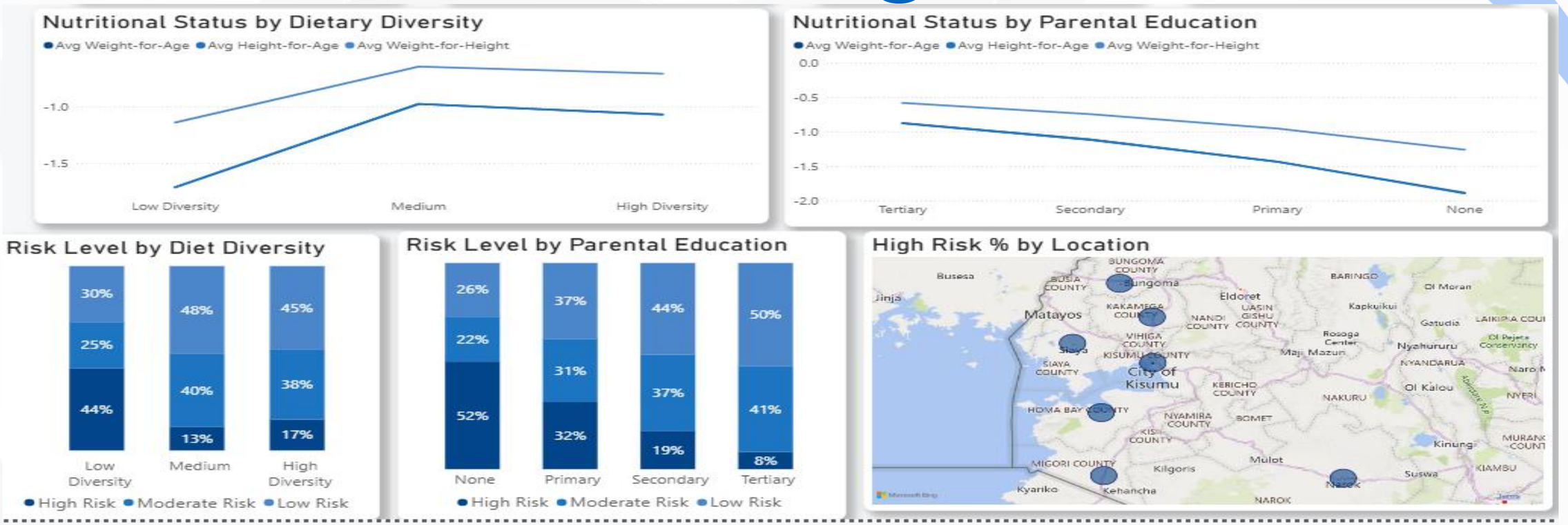






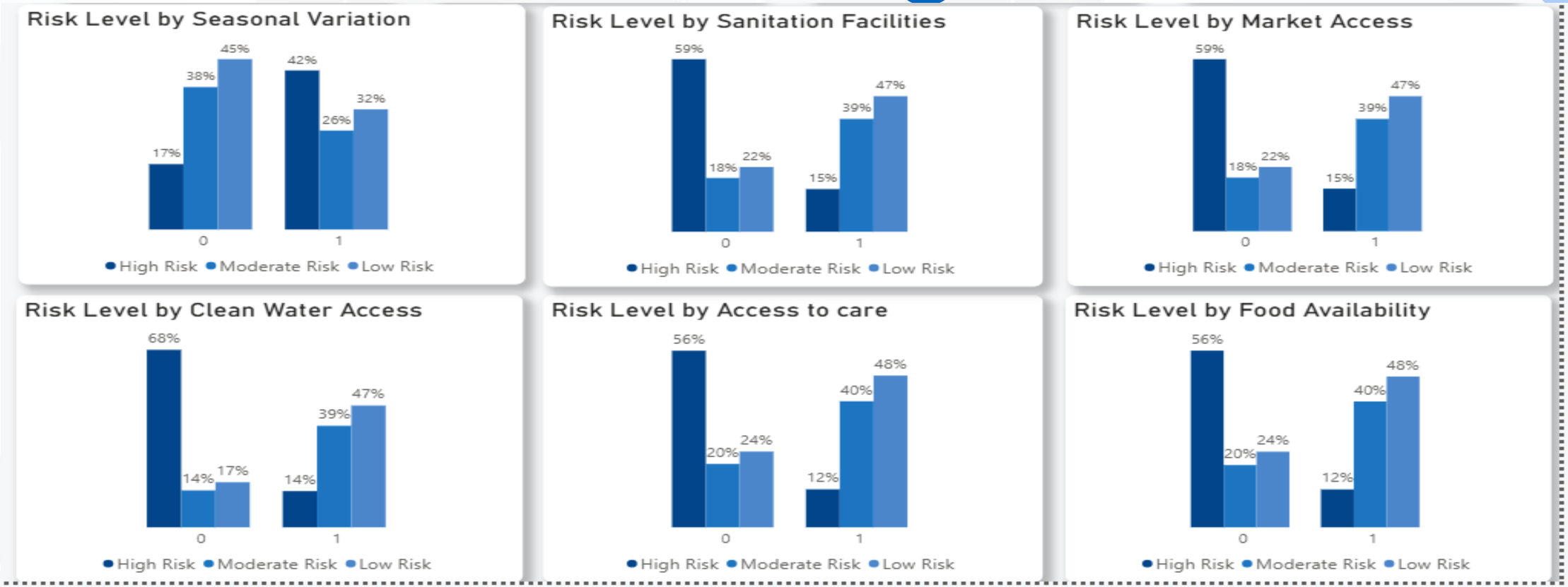
- Majority of children have parents with primary and secondary education, only a few have tertiary education (about 16%).
- Just a few (approx. 16%) have high dietary diversity (eat more than 6 types of meals).
- Most of the children (around 71K) are under 1 year.
- More than 30% of children have no access to food and healthcare.

Data Insight



- Children with low diversity have low z-scores of -1.7 for WFA and HFA. This is close to underweight and stunting.
- As parent education decreases, malnutrition worsens.
- Poor parental education and dietary diversity correlate with high malnutrition risk.
- The even bubble size in the map shows that the proportion of children with high-risk malnutrition in all location are similar (about 26%).

Data Insight



- Poor sanitation, poor market access, lack of clean water, lack of access to care and poor food availability shows high percentage of high-risk children
- However, high-risk increases when there is seasonal variations, as this can affect food availability and disease patterns.

Recommendation

- Improve dietary diversity through nutrition programs.
- Educate parents on healthy nutrition.
- Enhance food availability and market access.
- Improve Water, Sanitation and Hygiene (WASH) infrastructure.
- Strengthen access to healthcare services.
- Implement seasonal preparedness strategies.

Implementation Plan

Action	Timeline	Resources Required	Key Stakeholders
Launch community nutrition education campaigns. Integrate nutrition education into antenatal and postnatal clinics.	1-3 months	Training materials, community health educators.	NGOs, community health workers, Ministry of Health, hospitals, PHCs, midwives
Enhance food availability and market access. Support local farmers.	6-12 months	Seed, fertilizers	Governments, farmers
Improve Water, Sanitation and Hygiene (WASH) infrastructure. Build and upgraded water and sanitation facilities.	6-18 months	Construction materials, engineers	Governments
Strengthen access to healthcare services. Expand growth monitoring services.	1-6 months	CHWs, Nurses, equipment (scales)	Governments, hospital, health workers, UNICEF
Implement seasonal preparedness strategies. Identify high-risk seasons and provide food and support.	Annually	Food, cash	NGOs, Government

Conclusion

- Malnutrition remains a critical public health challenge, particularly among children under five in low-resource settings.
- The analysis shows that malnutrition risk is influenced by poor education, poor dietary diversity, and limited access to healthcare, clean water, and sanitation facilities.
- Z-score indicators consistently show poorer outcomes among children from households with constrained resources and reduced food availability.
- To address these gaps, strengthening community-based nutrition education help caregivers make informed decisions.
- Improving access to clean water, sanitation facilities, and primary healthcare services is essential to reducing disease burden and supporting growth.
- Finally, interventions should account for seasonal food shortages by implementing year-round food support systems, improved market access, and nutrition-sensitive agricultural programs.

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Thank You

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