Tackling Hidden Hunger in Rwanda

# Executive Summary

This brief presents a data-driven strategy to reduce childhood stunting in Rwanda. By analyzing national survey data with machine learning, it identifies hotspots and key drivers of malnutrition. The proposed interventions align with NST-1 and HSSP-IV strategies and are delivered via an interactive dashboard for decision-makers.

# Background & Challenge

Childhood malnutrition, particularly stunting (33% prevalence), remains a major health issue in Rwanda. Disparities exist across districts and social groups. This project uses data science to inform tailored interventions.

# Objectives

* • Generate district-level maps of malnutrition using CFSVA 2024
* • Build ML models (XGBoost, LightGBM, Logistic Regression)
* • Recommend data-driven, equity-focused policy interventions

# Key Findings

## Geographic Distribution

* Western and Northern districts (Nyabihu, Rubavu, Rutsiro, Burera, Gakenke) show high stunting
* Rural children are more affected than urban peers
* Wasting and underweight concentrated in fewer areas

## Top Predictors

* Nutrition: Poor dietary diversity, bad feeding practices
* Health: Limited antenatal care, maternal undernutrition
* WASH: Long water-fetching time, no sanitation
* Socioeconomic: Poverty, low maternal education

# Policy & Intervention Recommendations

## Short-Term Interventions (0–1 Year)

* Micronutrient supplementation via mobile clinics
* Scale up IYCF counseling using CHWs
* Distribute fortified foods
* Emergency WASH: Water trucking, handwashing kits

## Medium-Term Strategies (1–3 Years)

* Integrate nutrition into maternal health & ANC
* Promote kitchen gardens & biofortified crops
* Expand school-based feeding programs
* Improve district-level coordination

## Long-Term Vision (3–5+ Years)

* Institutionalize CHW monitoring in health system
* Scale Girinka + kitchen gardens
* Add nutrition to school curriculum
* Use machine learning for early warning
* Adopt equity-based budgeting

# Community Health Workers (CHWs)

CHWs are central to Rwanda’s success. Their work includes growth monitoring, supplement tracking, nutrition education, and early detection. Recommendation: Digitally empower CHWs and reward performance.

# Implementation Notes

* Customize interventions using dashboard data
* Engage local leaders and women’s groups
* Partner with NGOs and private sector

# Conclusion

By combining machine learning, national data, and policy alignment, this project helps Rwanda target stunting at the local level. With community-driven and multisectoral action, a healthier, equitable future is possible.

# References

1. [1] Government of Rwanda. (2017). National Strategy for Transformation (NST1) 2017–2024.
2. [2] National Institute of Statistics of Rwanda, Ministry of Health, and Rwanda Biomedical Center. (2021). Rwanda Demographic and Health Survey (RDHS) Key Findings.
3. [3] NISR. (2025). Comprehensive Food Security and Vulnerability Analysis (CFSVA) 2024. Retrieved from https://statistics.gov.rw/data-sources/surveys/CFSVA
4. [4] Uwera, L. (2025). Hidden Hunger Rwanda Dashboard. GitHub: https://github.com/uweraliliane