KARAMOJA FOOD SECURITY— 2017 SEASON CROP PRODUCTION & YIELD ANALYSIS

DVF-PT06 MORINGA SCHOOL PROJECT 2

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THE PROBLEM

KARAMOJA IS A DISTINCT GEOGRAPHIC AND CULTURAL REGION IN NORTHEASTERN UGANDA, OFTEN DESCRIBED AS A "REGION WITHIN A REGION" DUE TO ITS UNIQUE ARID LANDSCAPE AND THE TRADITIONAL PASTORALIST LIFESTYLE OF ITS PEOPLE . ADMINISTRATIVELY KNOWN AS THE KARAMOJA SUB-REGION, IT IS MADE UP OF NINE DISTRICTS AND IS HOME TO A POPULATION PROJECTED TO BE 1.4 MILLION

KARAMOJA IS A SEMI-ARID REGION OF VAST, THORN-SCRUB PLAINS PUNCTUATED BY DRAMATIC VOLCANIC MOUNTAINS LIKE MOUNT MOROTO AND MOUNT NAPAK . THIS HARSH ENVIRONMENT HAS SHAPED THE CULTURE OF ITS PEOPLE, WHO ARE PREDOMINANTLY **AGRO-PASTORALISTS**, MEANING THEIR LIVES REVOLVE AROUND BOTH SUBSISTENCE FARMING AND THE HERDING OF CATTLE, GOATS, AND SHEEP . CATTLE, IN PARTICULAR, ARE NOT JUST A SOURCE OF FOOD BUT THE VERY FOUNDATION OF THEIR SOCIETY, CULTURE, AND ECONOMY.

CHALLENGES AND TRANSFORMATION

FOR DECADES, KARAMOJA HAS FACED SIGNIFICANT CHALLENGES, INCLUDING:

- **ENVIRONMENTAL STRESS**: THE REGION IS HIGHLY VULNERABLE TO CLIMATE CHANGE, WITH CYCLES OF DROUGHT BECOMING MORE FREQUENT AND SEVERE, LEADING TO FOOD AND WATER SHORTAGES .
- **HISTORICAL CONFLICT**: CATTLE RUSTLING AND ARMED CONFLICT, SOMETIMES INVOLVING GOVERNMENT FORCES DURING DISARMAMENT PROGRAMS, HAVE BEEN A PERSISTENT SOURCE OF INSECURITY .
- **HUMAN DEVELOPMENT**: THE REGION HAS HISTORICALLY HAD THE LOWEST HUMAN DEVELOPMENT INDICATORS IN UGANDA, FACING ISSUES LIKE POVERTY, MARGINALIZATION, AND POOR INFRASTRUCTURE .

HOWEVER, KARAMOJA IS ALSO A REGION IN TRANSITION. SIGNIFICANT EFFORTS ARE UNDERWAY TO PROMOTE PEACE AND SUSTAINABLE DEVELOPMENT. PROGRAMS LIKE THE **KARAMOJA INTEGRATED DISARMAMENT AND DEVELOPMENT PROGRAMME (KIDDP)** AND CROSS-BORDER INITIATIVES SUPPORTED BY THE UNDP AIM TO DIVERSIFY LIVELIHOODS, IMPROVE ACCESS TO SOCIAL SERVICES, AND BUILD RESILIENCE AGAINST NATURAL SHOCKS

HOWEVER SINCE WE ARE FOCUSING ON CROP PRODUCTION (MAIZE AND SORGHUM), THERE ARE SOME CHALLENGES THAT WIDELY AFFECT THE CROP PRODUCTION OF BOTH

THEY INCLUDE:

- **UNRELIABLE RAINFALL AND CLIMATE SHOCKS**: THE REGION'S AGRICULTURE IS HIGHLY VULNERABLE TO CLIMATE VARIABILITY. THE RAINY SEASON HAS BECOME INCREASINGLY UNPREDICTABLE, WITH FREQUENT LATE ONSETS, DRY SPELLS, AND ERRATIC DISTRIBUTION . THIS LEADS TO PLANTING DELAYS, POOR GERMINATION, AND CROP WILTING DURING CRITICAL GROWTH STAGES, RESULTING IN CONSECUTIVE POOR HARVESTS . PARADOXICALLY, WHEN HEAVY RAINS DO COME, THEY CAN CAUSE FLOODING THAT DAMAGES CROPS AND GARDENS .
- **POOR SOIL QUALITY AND LACK OF RESOURCES**: EVEN IN YEARS WITH NORMAL RAINFALL, CROP YIELDS TEND TO BE LOW. THE SOIL QUALITY IS NATURALLY POOR, AND THERE IS A WIDESPREAD LACK OF IRRIGATION SYSTEMS AND FERTILIZERS TO IMPROVE PRODUCTIVITY . THIS MAKES IT DIFFICULT FOR FARMERS TO ACHIEVE A SURPLUS.
- **INADEQUATE ACCESS TO QUALITY SEEDS**: FARMERS FREQUENTLY FACE A SHORTAGE OF SEEDS AT THE START OF THE PLANTING SEASON . MANY ARE FORCED TO RELY ON SAVED GRAIN FROM PREVIOUS HARVESTS, WHICH OFTEN HAS POOR GERMINATION RATES DUE TO INADEQUATE STORAGE. OTHERS WHO RECEIVE CASH SUPPORT MAY SPEND IT ON NON-AGRICULTURAL ITEMS, LEAVING THEM WITHOUT FUNDS FOR SEEDS . THE SEEDS AVAILABLE ARE OFTEN PRODUCED IN OTHER REGIONS AND ARE NOT ALWAYS WELL-SUITED TO KARAMOJA'S SPECIFIC SOIL AND CLIMATE .
- **PEST INFESTATIONS**: WHEN CROPS DO REACH MATURITY, THEY ARE THREATENED BY PESTS. FOR INSTANCE, THE MIGRATORY QUELEA QUELEA BIRDS HAVE BEEN REPORTED TO CAUSE SIGNIFICANT DAMAGE TO SORGHUM FIELDS, REQUIRING INTENSIVE EFFORTS TO SCARE THEM AWAY .

METHODS USED FOR THE PROJECT

- Python – Python was used to ensure the dataset was cleaned and to merge the datasets (Spatial Joining)
- Exploratory analysis
- Visualization in Tableau

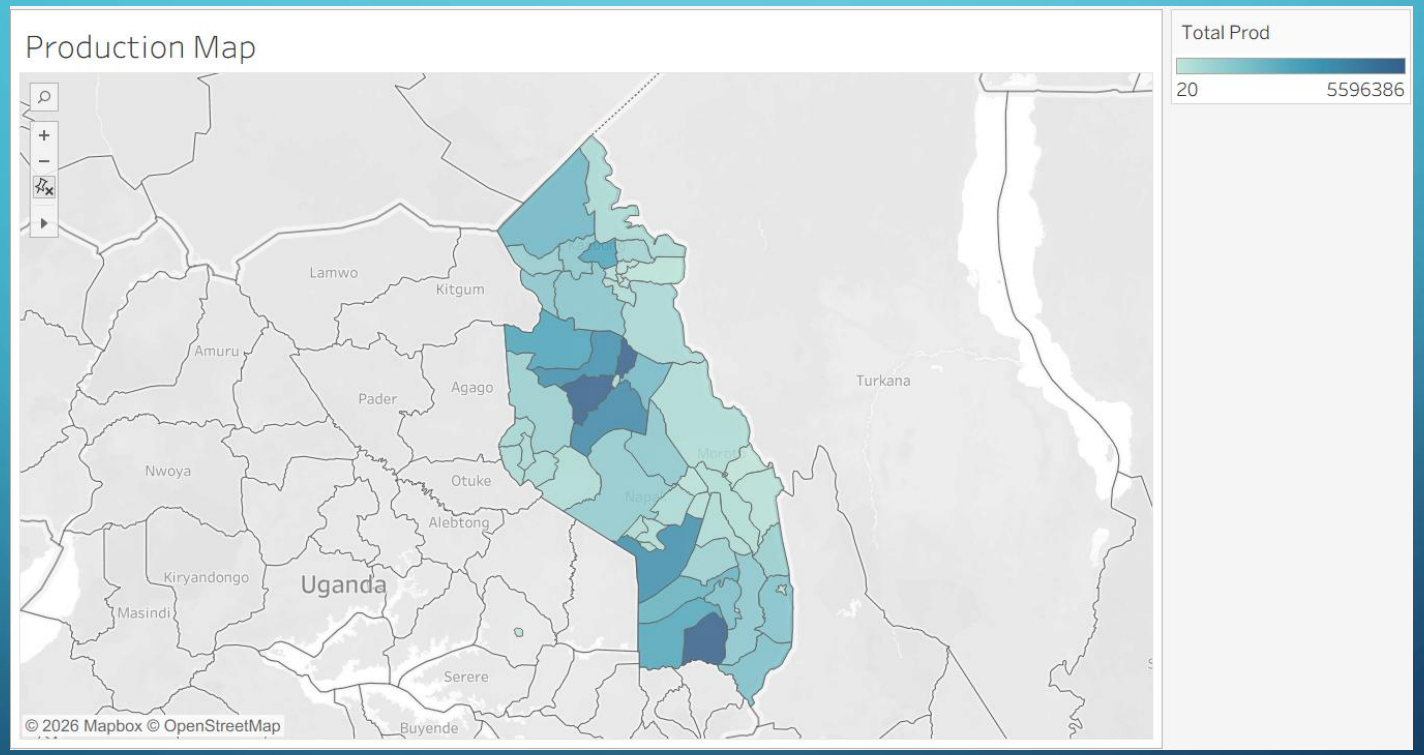
Objectives Of The Project

- Assess crop production patterns
- Compare districts and sub-counties
- Identify food insecurity hotspots
- Support targeted interventions

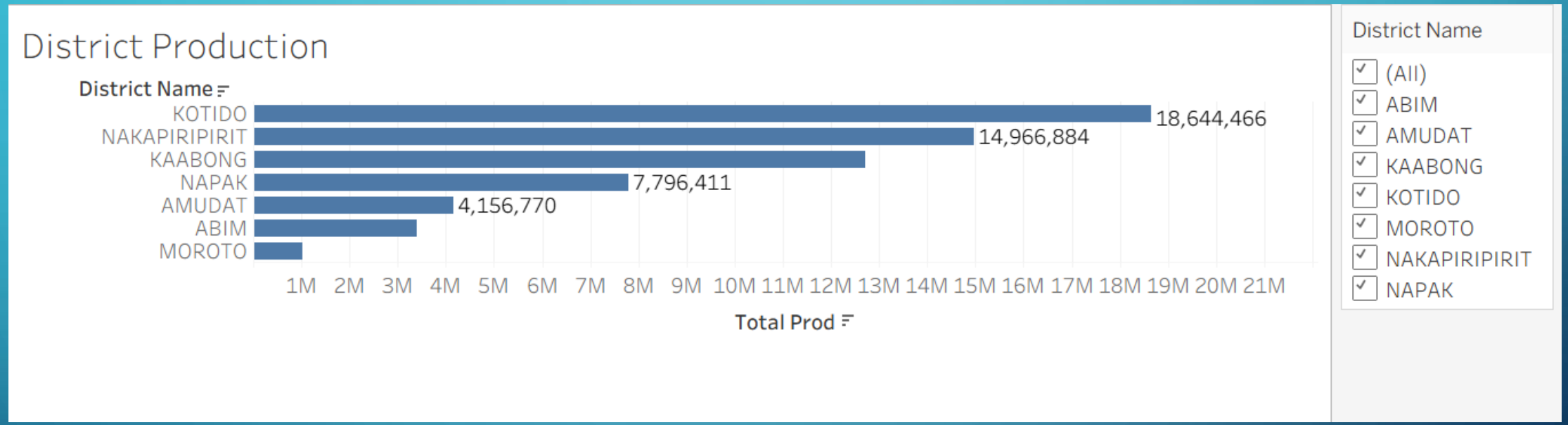
Data Sources Used

- Agricultural production dataset
- Population data
- Spatial boundary shapefiles
- 2017 growing season

REGIONAL OVERVIEW

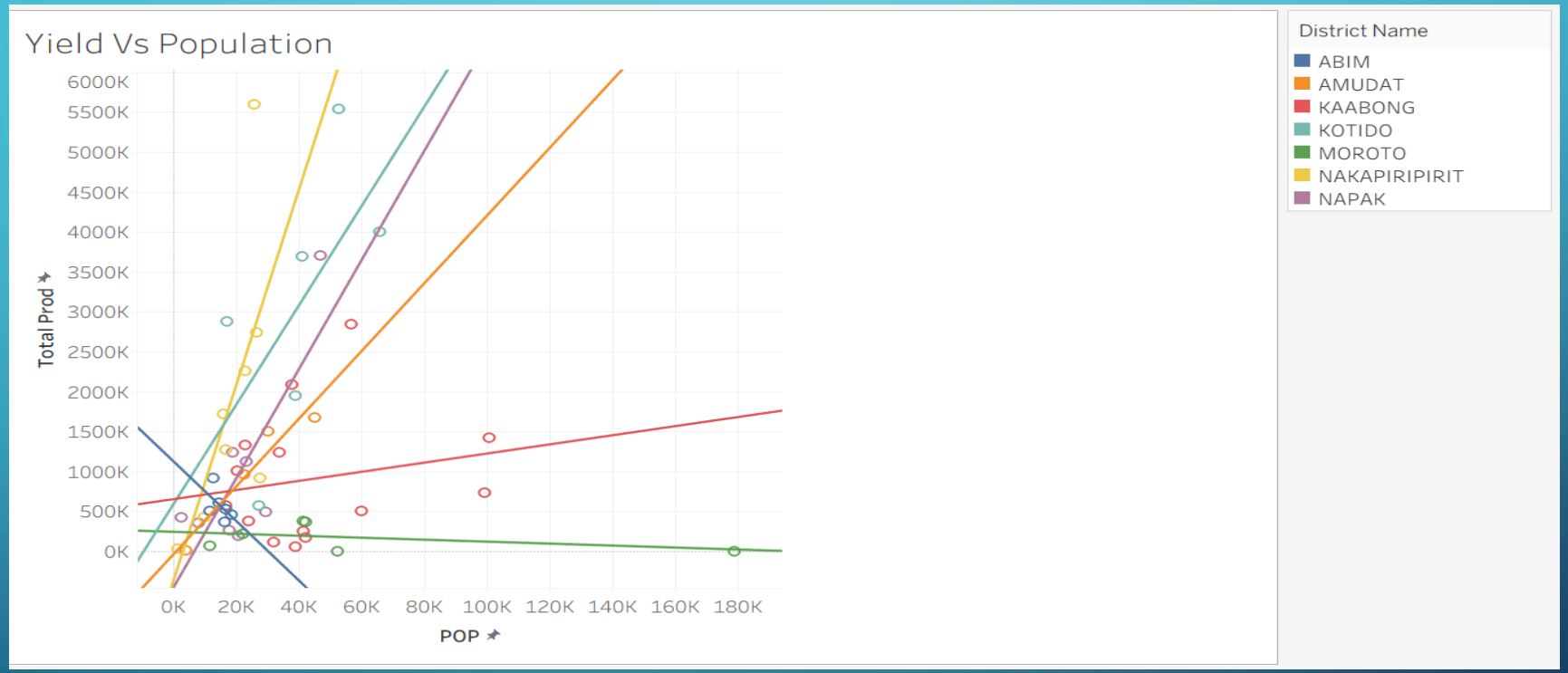


DISTRICT PRODUCTION COMPARISON



Key Insight: This is a **time-series dataset** tracking production over time.

YIELD VS POPULATION



KEY FINDINGS

- Agricultural production in Karamoja is highly uneven across districts.
- Kotido and Nakapiripirit are major production centers.
- Moroto shows consistently low output and may face food insecurity risk.
- Production does not align with population distribution.
- Significant variability exists at the subcounty level.
- Spatial patterns suggest environmental and resource disparities.
- Some areas likely experience insufficient food availability per capita.

Implications

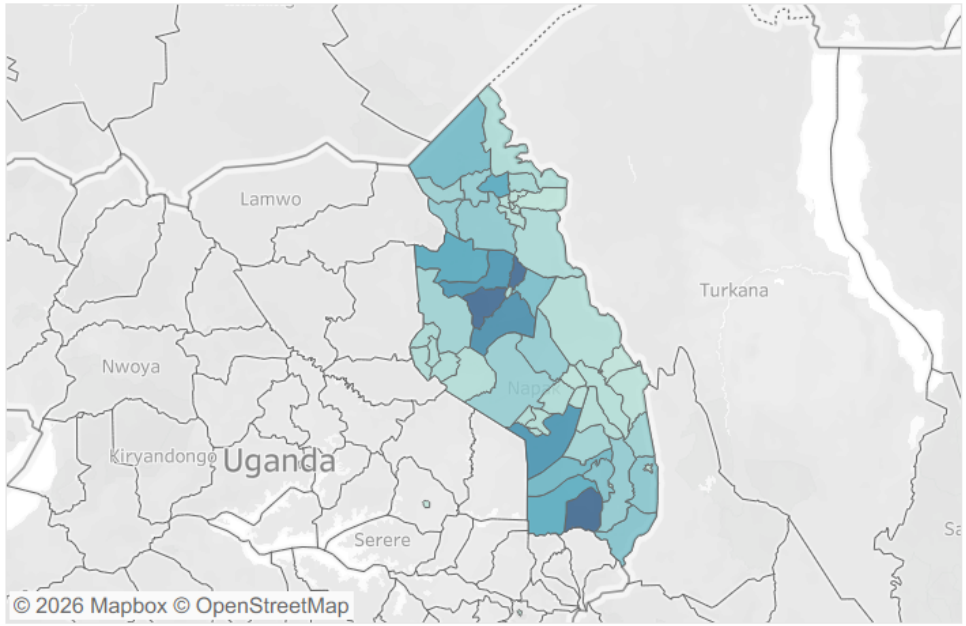
The mismatch between production capacity and population distribution indicates that food insecurity in Karamoja is not solely a production problem but also a resource allocation challenge.

TABLEAU DASHBOARD

Karamoja Food Security Monitoring Dashboard — 2017 Season Crop Production & Yield Analysis

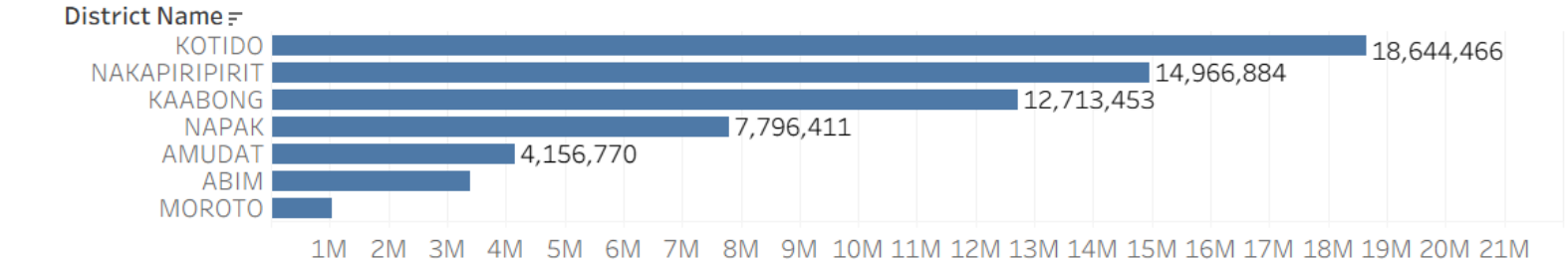
Interactive visualization of crop production, yield, population, and food availability across Karamoja. Designed to help NGOs identify high-risk areas and prioritize agricultural interventions. The dashboard is interactive therfore you can select regions on the map or use filters to explore patterns at district and subcounty levels.

Production Map

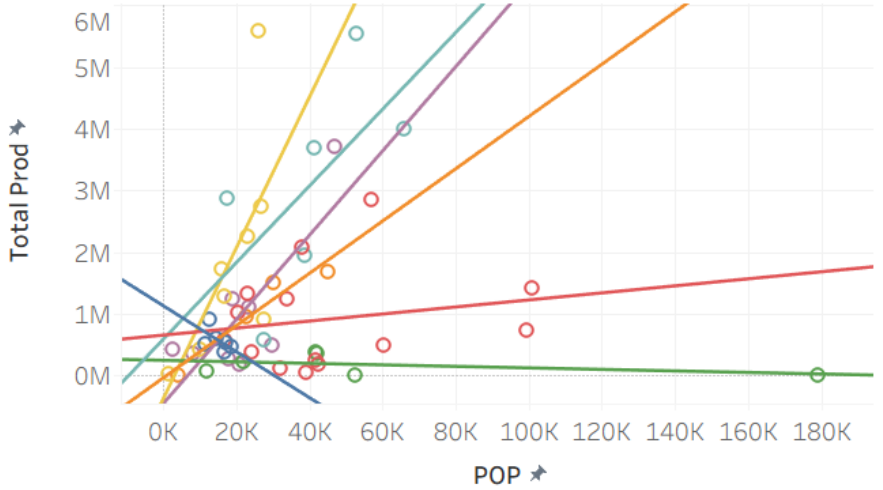


Total Prod
20 5596386

District Production



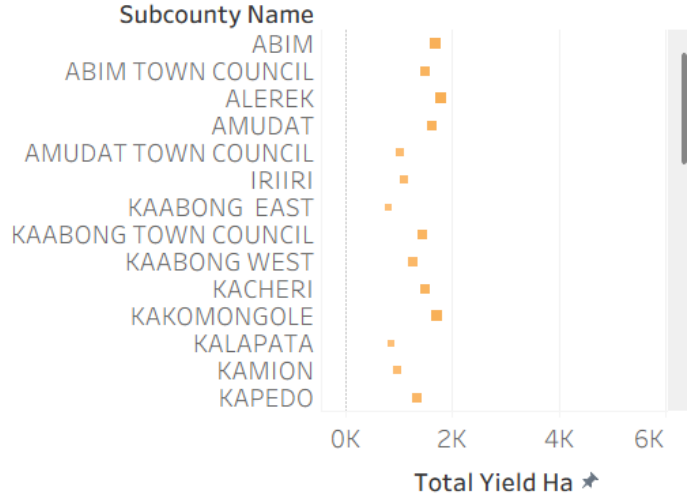
Yield Vs Population



District Name
ABIM KAABONG MOROTO NAPAK
AMUDAT KOTIDO NAKAPIR..

Yield Heatmap

Total Prod



Total Yield Ha
368 9,338

This interactive dashboard allows decision-makers to explore patterns dynamically.

RECOMMENDATIONS

- Prioritize agricultural investment in low-production districts such as Moroto.
- Improve farming efficiency in high-population areas.
- Support irrigation and climate-resilient crops.
- Focus food aid programs on identified high-risk sub-counties.
- Enhance data monitoring for future planning.

Conclusion

The analysis reveals substantial inequalities in agricultural productivity across Karamoja. Data-driven interventions focusing on low-performing regions could significantly improve regional food security outcomes.

THANK YOU