



USAID Boresha Afya

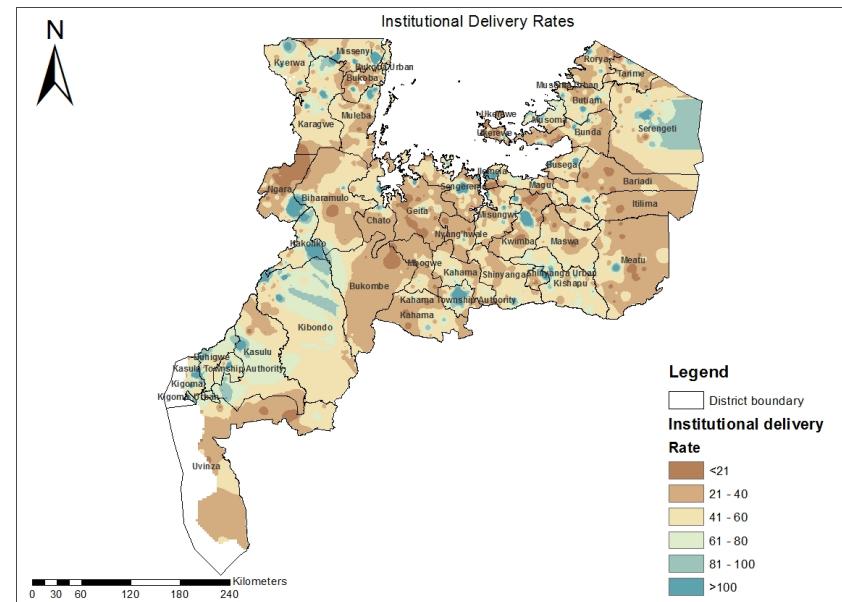
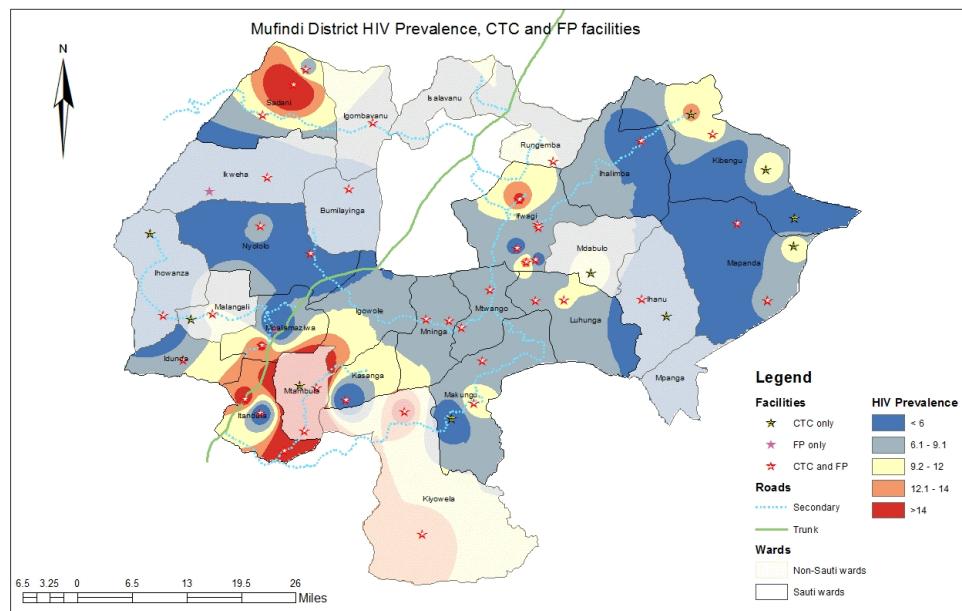


President's Malaria Initiative



Using GIS and Spatial Analysis to Determine Health Service Delivery Gaps:

Case of Population Density vs. Availability of Services



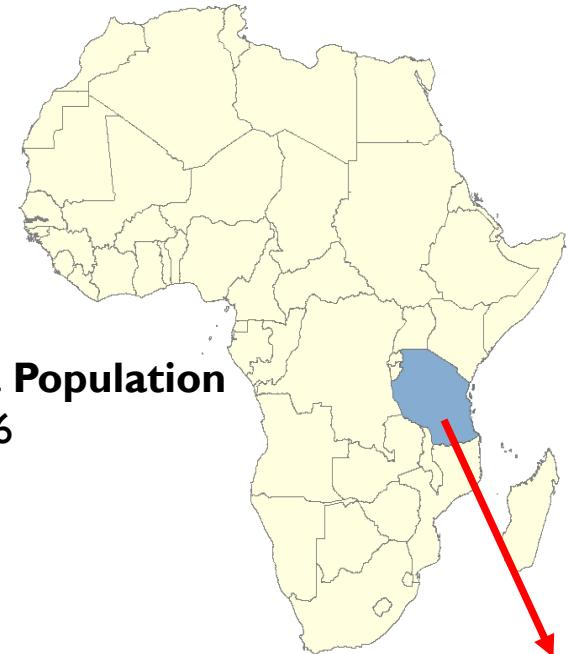
Scholastica Bahemana
Spatial Analyst-Health Informatics Officer

5th December 2017

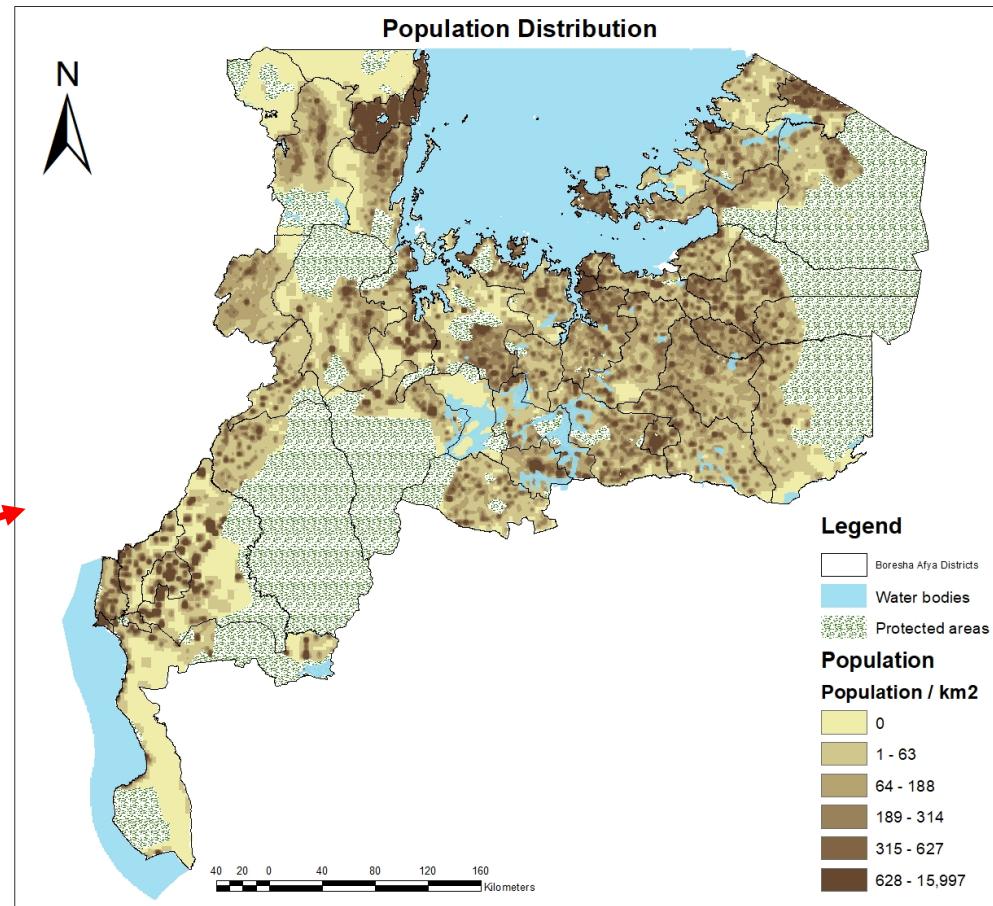
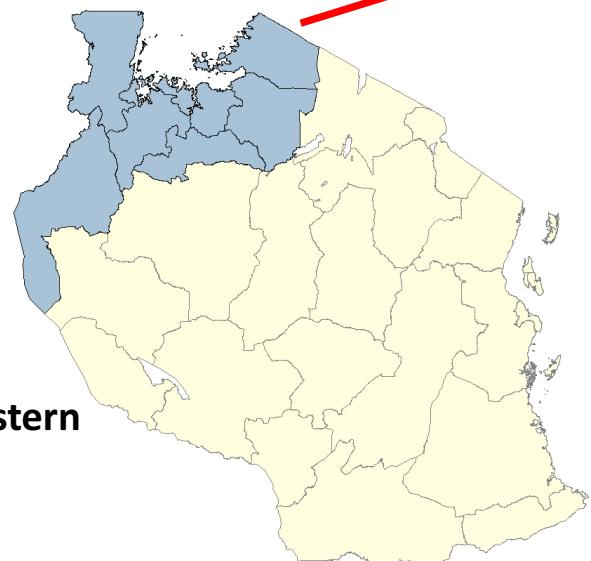
USAID Boresha Afya Tanzania

October 2016 – September 2021

Tanzania Population
52,482,726



Zones: Lake and Western
Regions: 7 regions



Lake and Western Regions Population: 16,034,715

Women Reproductive Age: 3,612,245
Infants: 603,078
Under 5: 3,010,270

Source: DHIS2 (2017)

Source: TDP 2016

GOAL: To improve the health status of all Tanzanians—with an emphasis on women and children in targeted regions



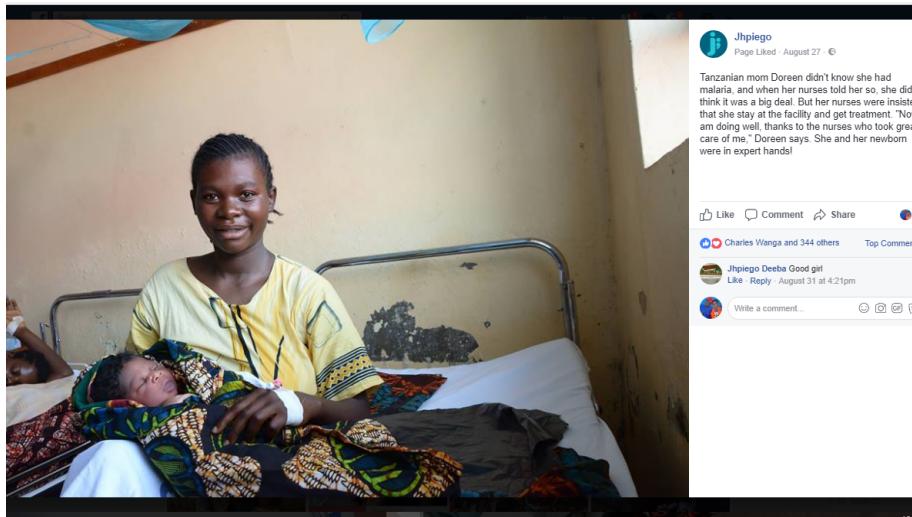
Child Health



Maternal and Newborn Health
(ANC, EmONC, PNC)



Family Planning (including
PPFP)

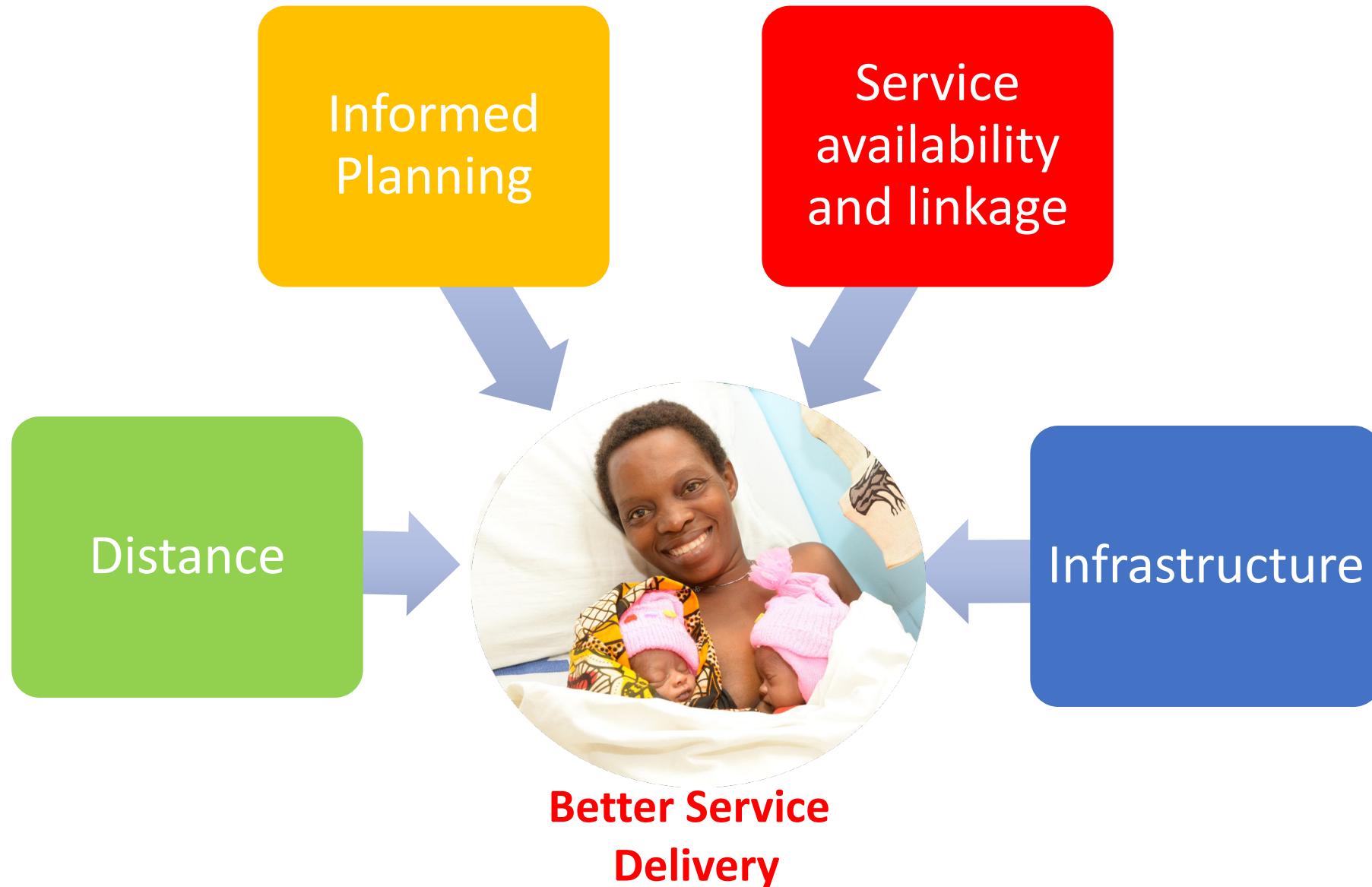


Malaria (MiP and case management)



Cross cutting: Gender, Respectful Care,
Integration, Nutrition and Community
engagement and SBCC

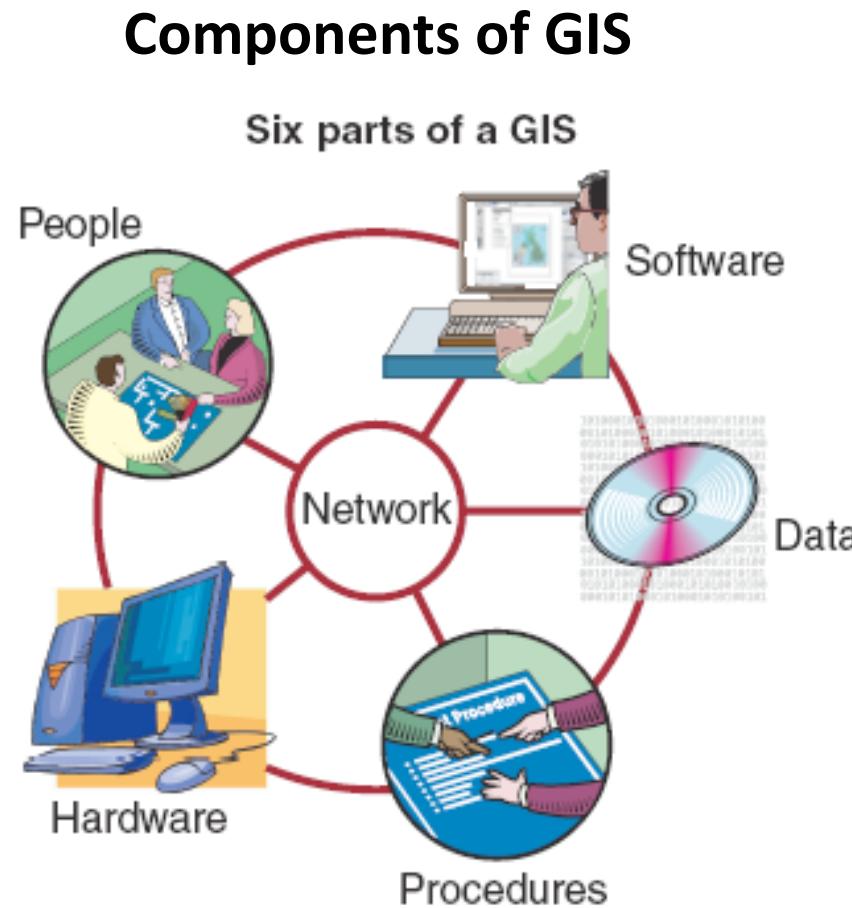
Using GIS to improve services delivery



Where was GIS first used EVER?



Cholera outbreak in 1854
Broad Street Region, London



John Snow

Why GIS in USAID Boresha Afya project?



Gaps

- Unavailable maps (burden, population, etc)
- Some facilities were missing and some wrongly located
- Services provision at facilities
- Proximity of facilities for referral



- Visualize routine and spatial data for decision-making for project and government
- Track progress by looking at pattern change in geography
- Support network of care by identifying service and distance

Implementation



Tools

- GPS
- ArcGIS software
- QGIS software
- Computers
- Internet access
- People



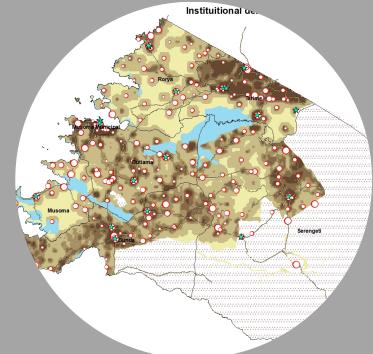
Process

- Household digitization
- Population density calculations
- Review HFR documents
- Interview on facility services
- Identify the current wards
- Mapping of facilities coordinates



Geospatial Analysis

- Update the shapefiles
- Analyzing geospatial data
- Interpolation
- Overlaying the layers
- Depict the proximity



Information Use

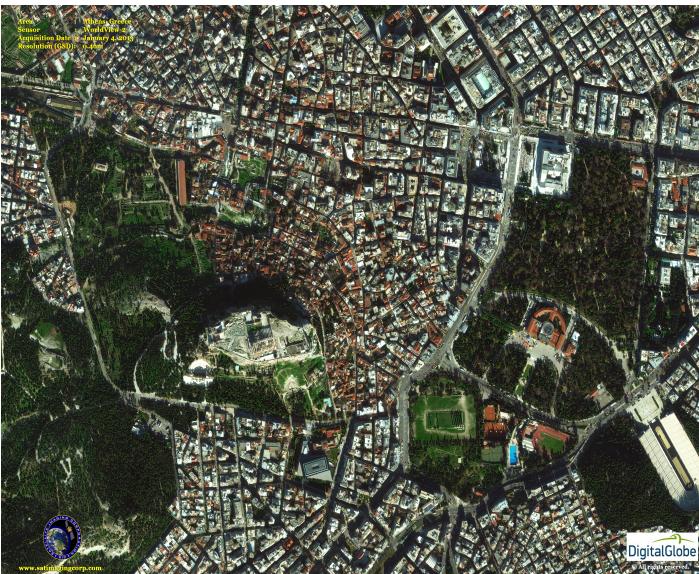
- Planning intervention
- Track indicators
- Track progress of the program
- Client referrals



Process: Household Digitization



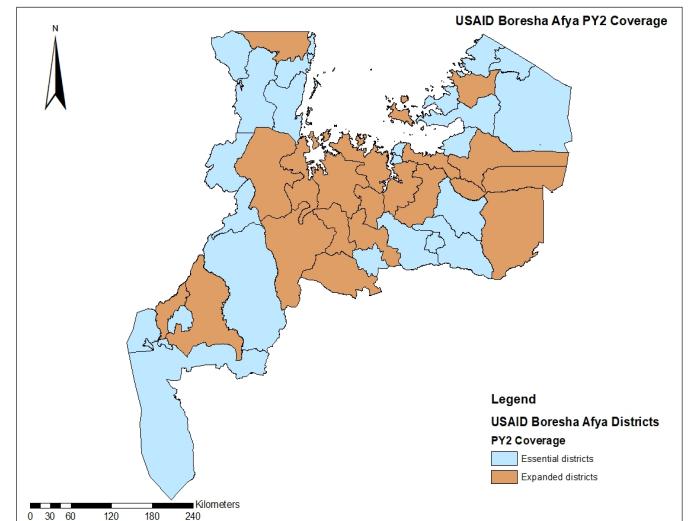
A temporary team of 30 people used QGIS software



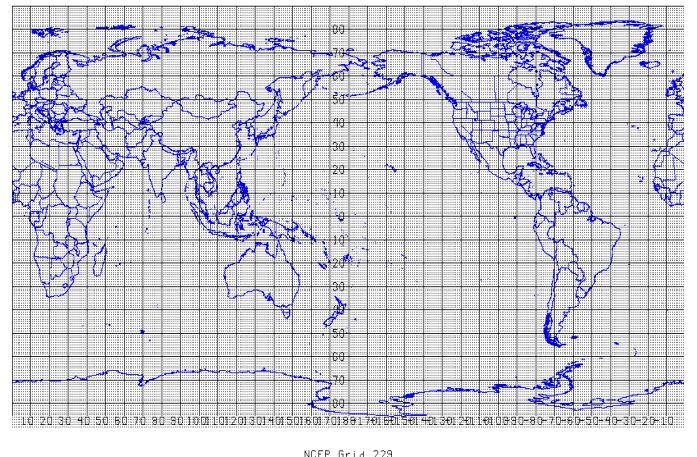
Overlaid a satellite picture



Mapped houses



51 districts were divided among participants

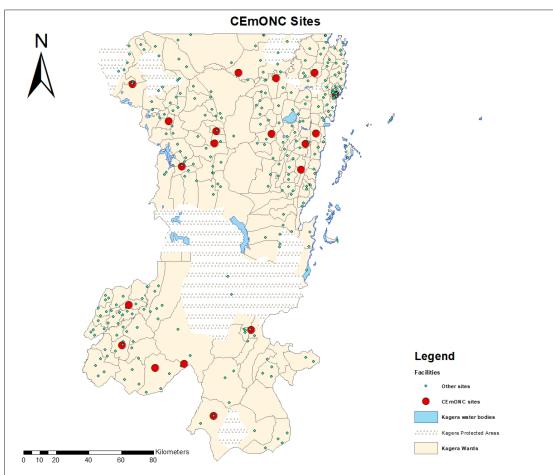


Grids of 1km² with number of houses were created

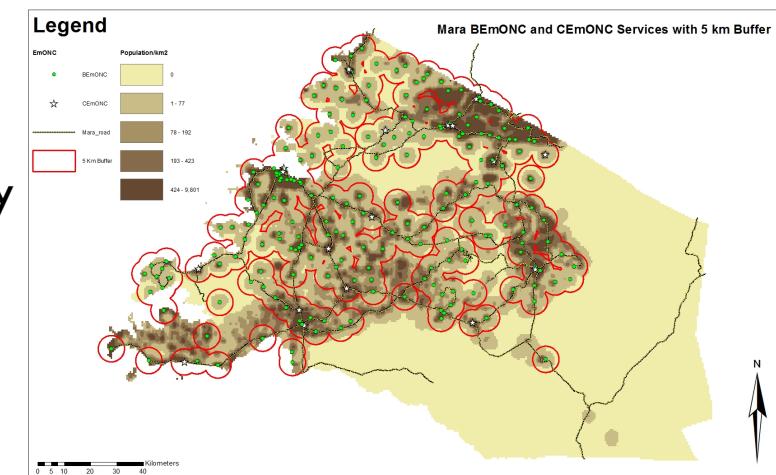
Process: Site Verification



- Reviewed facility document
- Interviewed HMIS focal person to get each facility service information
- Remapped the wrongly located facilities



- Created the facilities map
- Identified current existing wards
- Overlaid the population density and 5 km buffer from facility



Geospatial Analysis

Sample mapping results
in Geita

Total number of HF: 159

HF remapped: 29

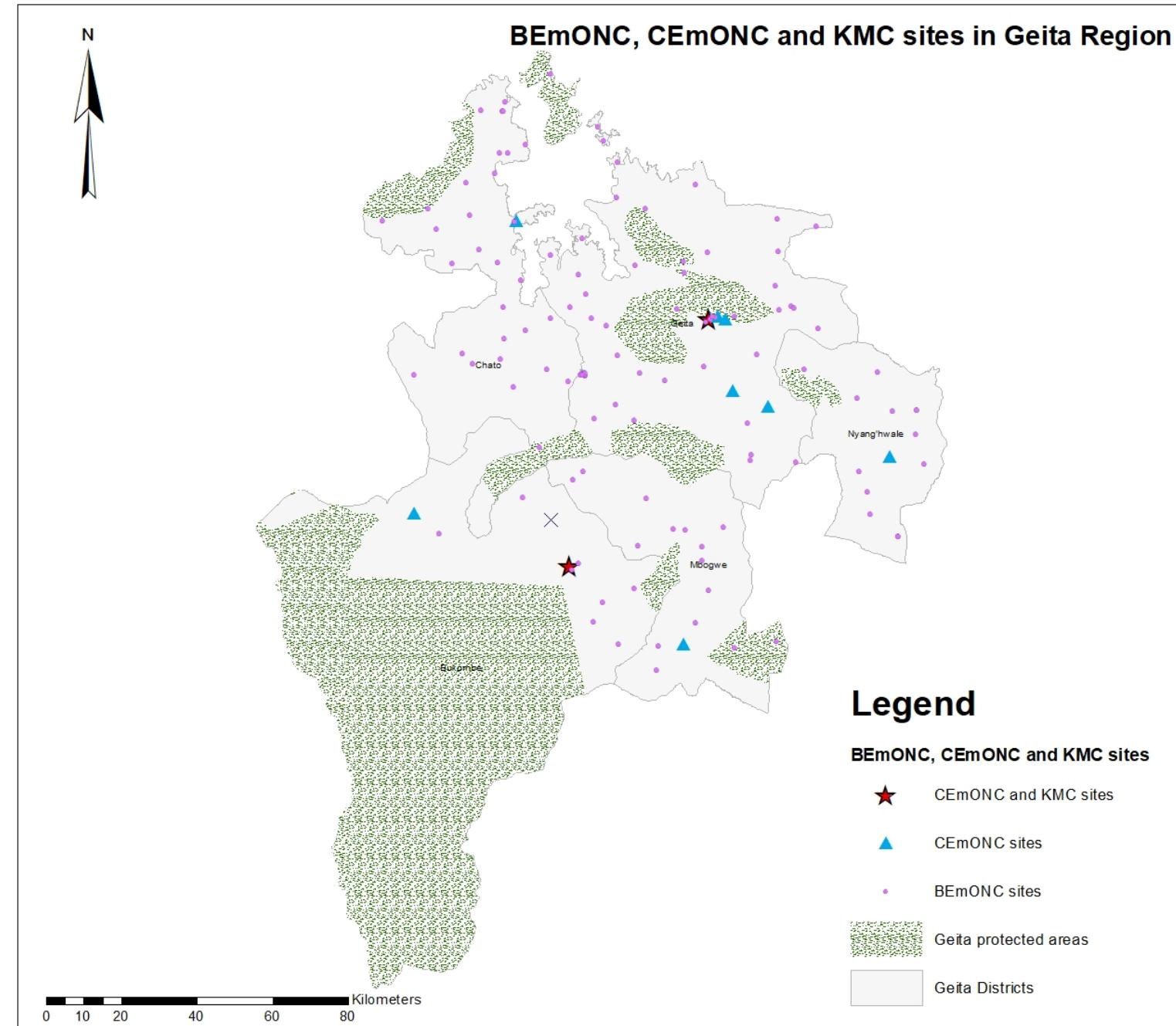
BEmONC sites: 129

CEmONC sites: 10

PPFP sites: 7

KMC: 2

The map here shows how the health facilities with provided services are located in Geita region



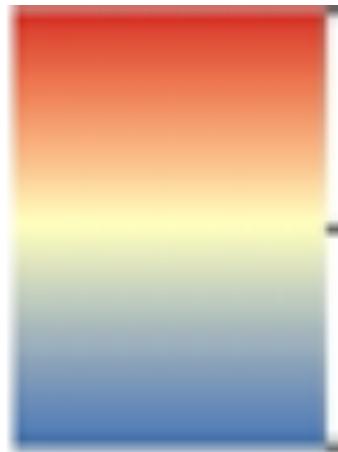


Information use: Malaria Burden Kagera Region

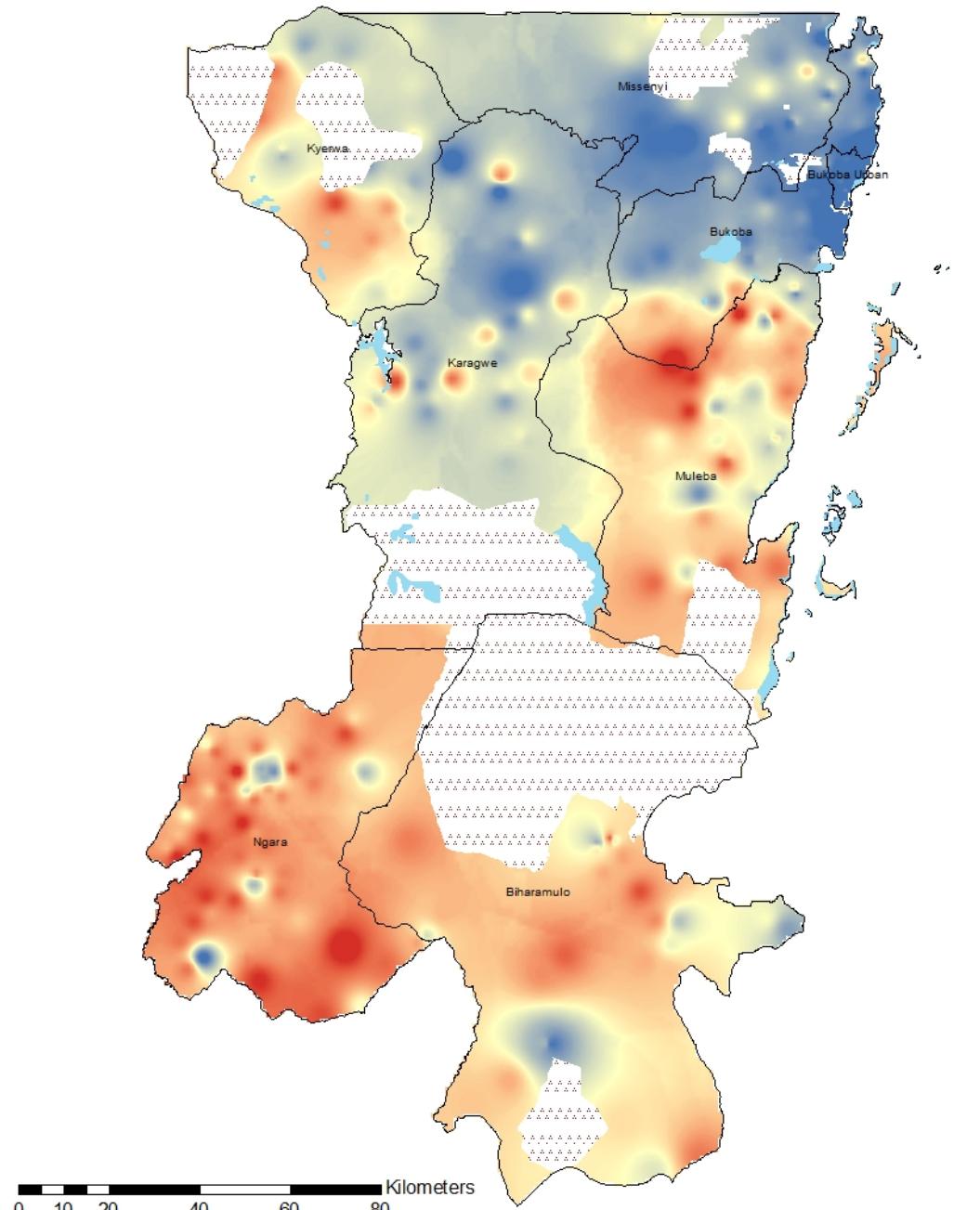
Result:
Positivity Rate

Blueish to reddish:
increasing malaria
positivity rates

Yellow: cutoff
point for program
intervention.



Kagera Region Malaria Positivity Rate : Period of (Oct 2016-June 2017)





Information Use: FP Uptake Mwanza region

Result:
Where there is
availability of PPFP sites,
FP uptake is also high.

Family Planning Uptake (Oct 16 - Sept 17) in Mwanza Region



Legend

Sites



PPFP sites



FP sites

FP Uptake in ward level



0 - 265



266 - 605



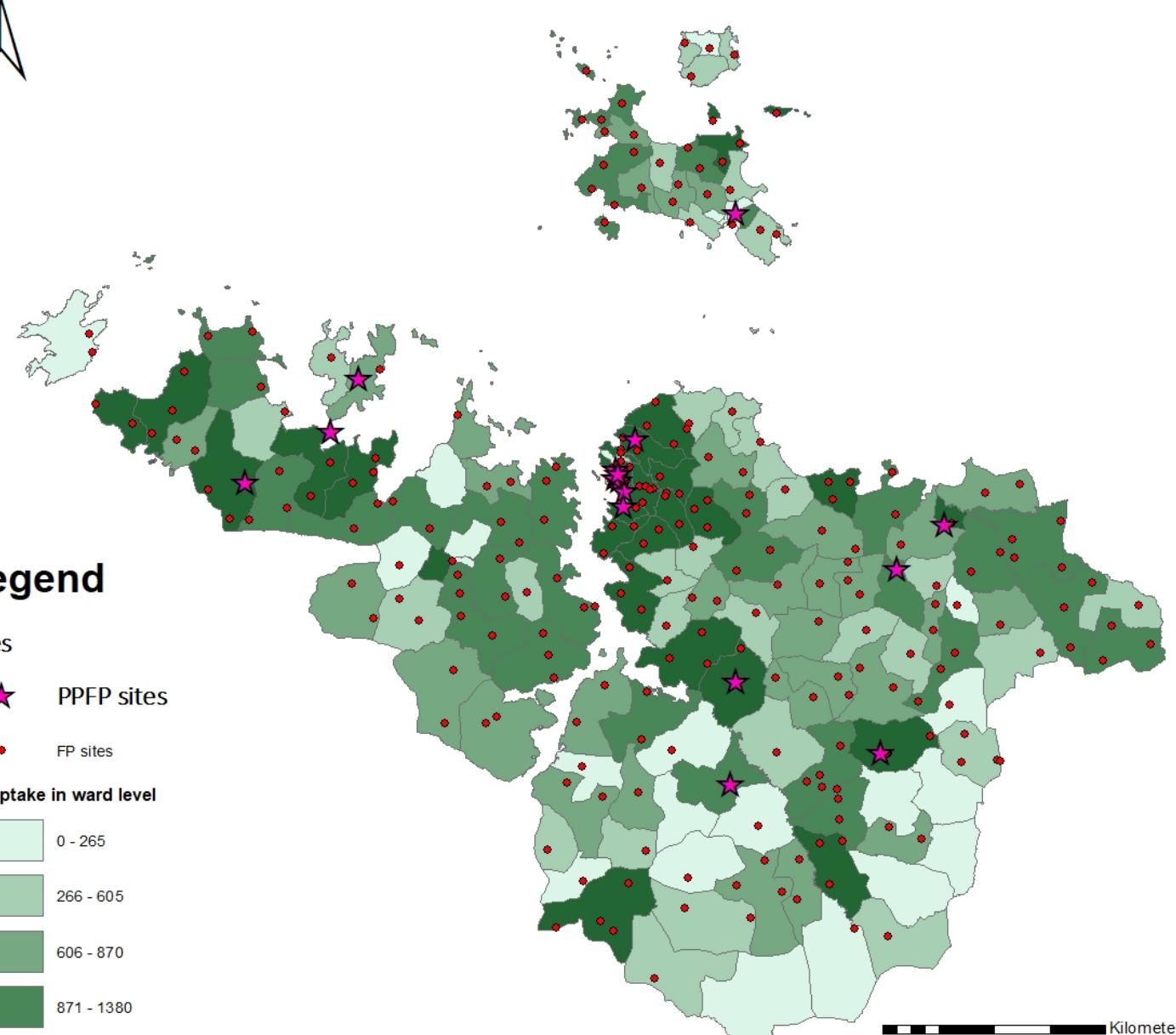
606 - 870



871 - 1380



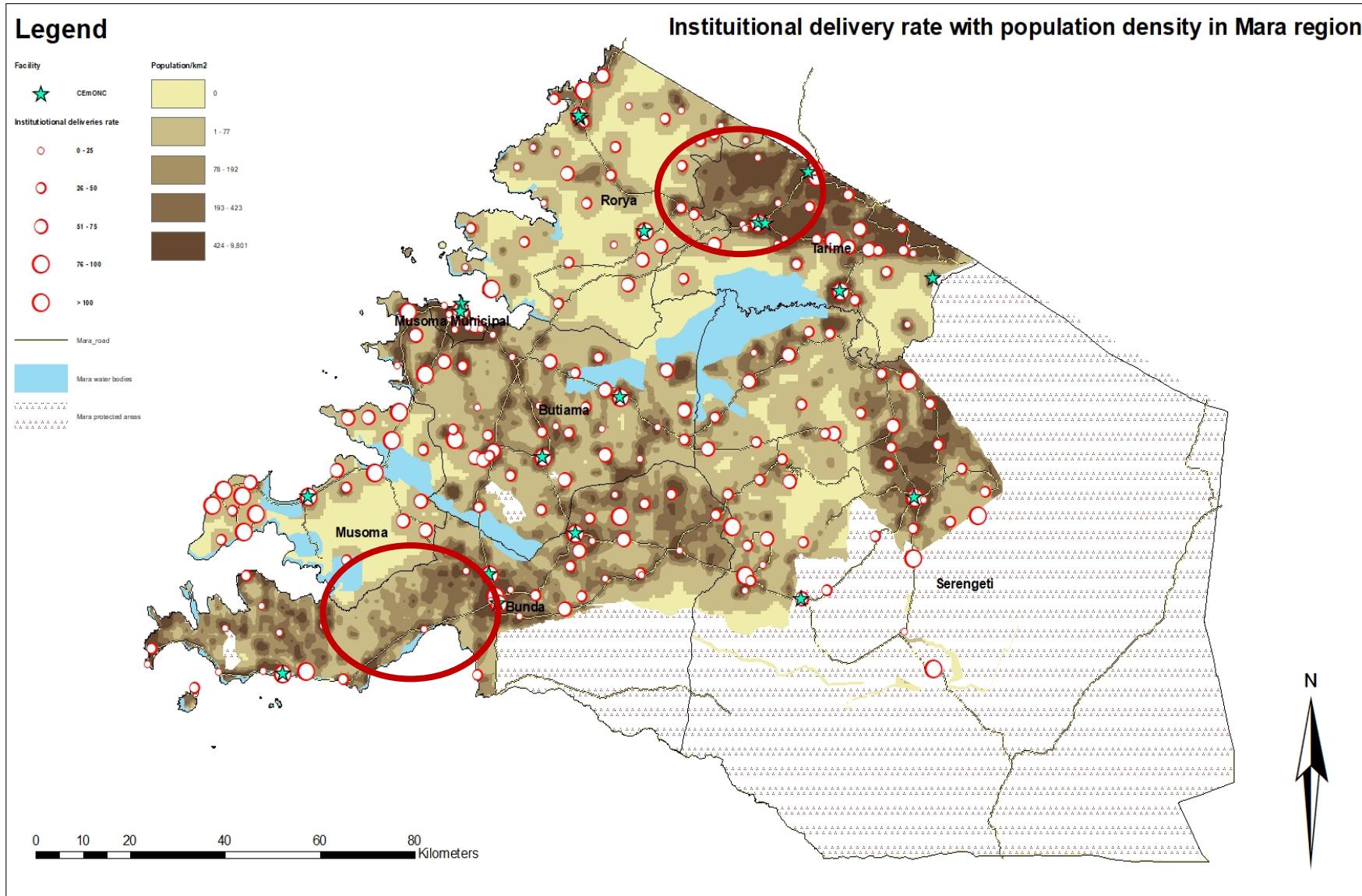
1381 - 6901





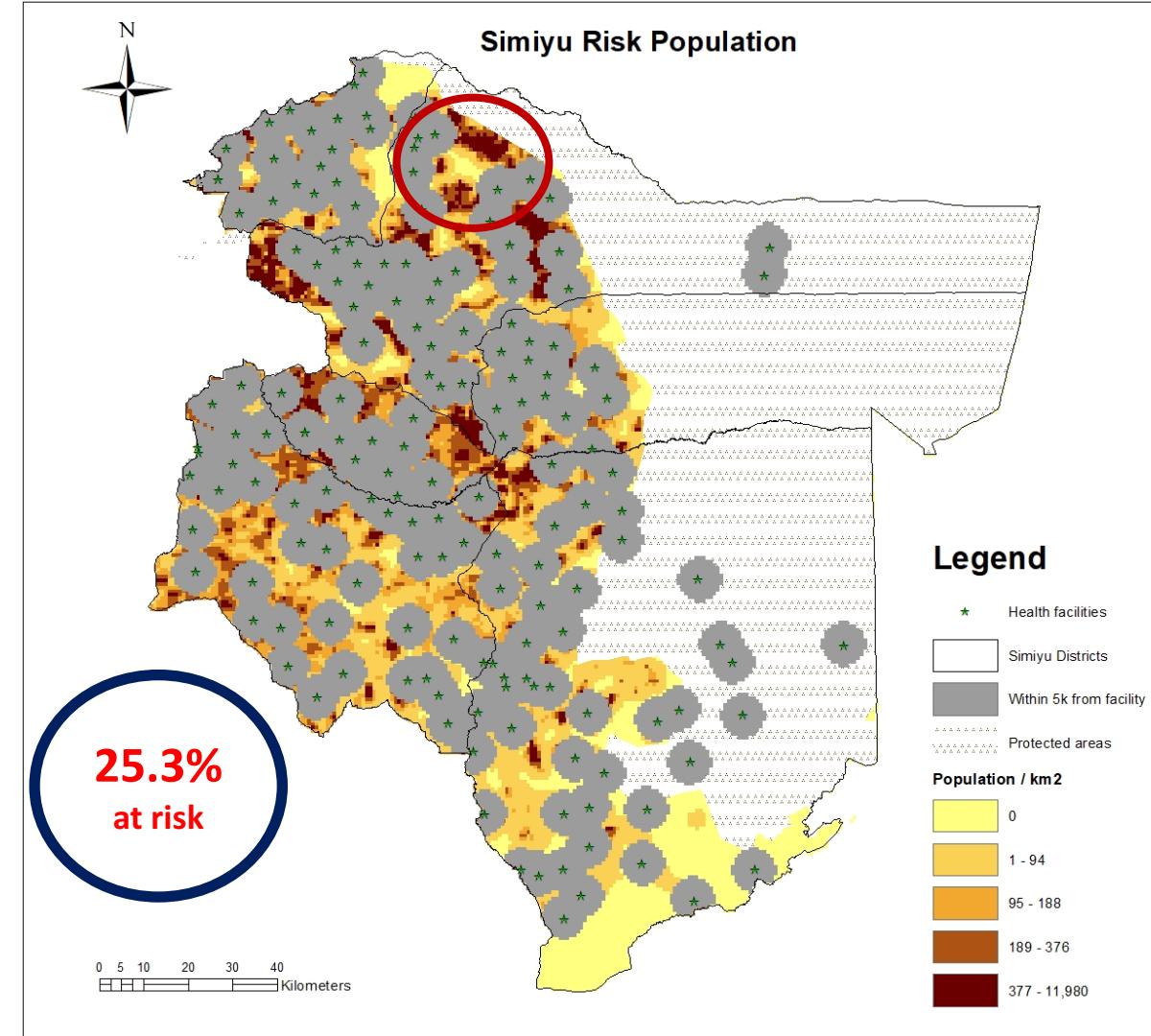
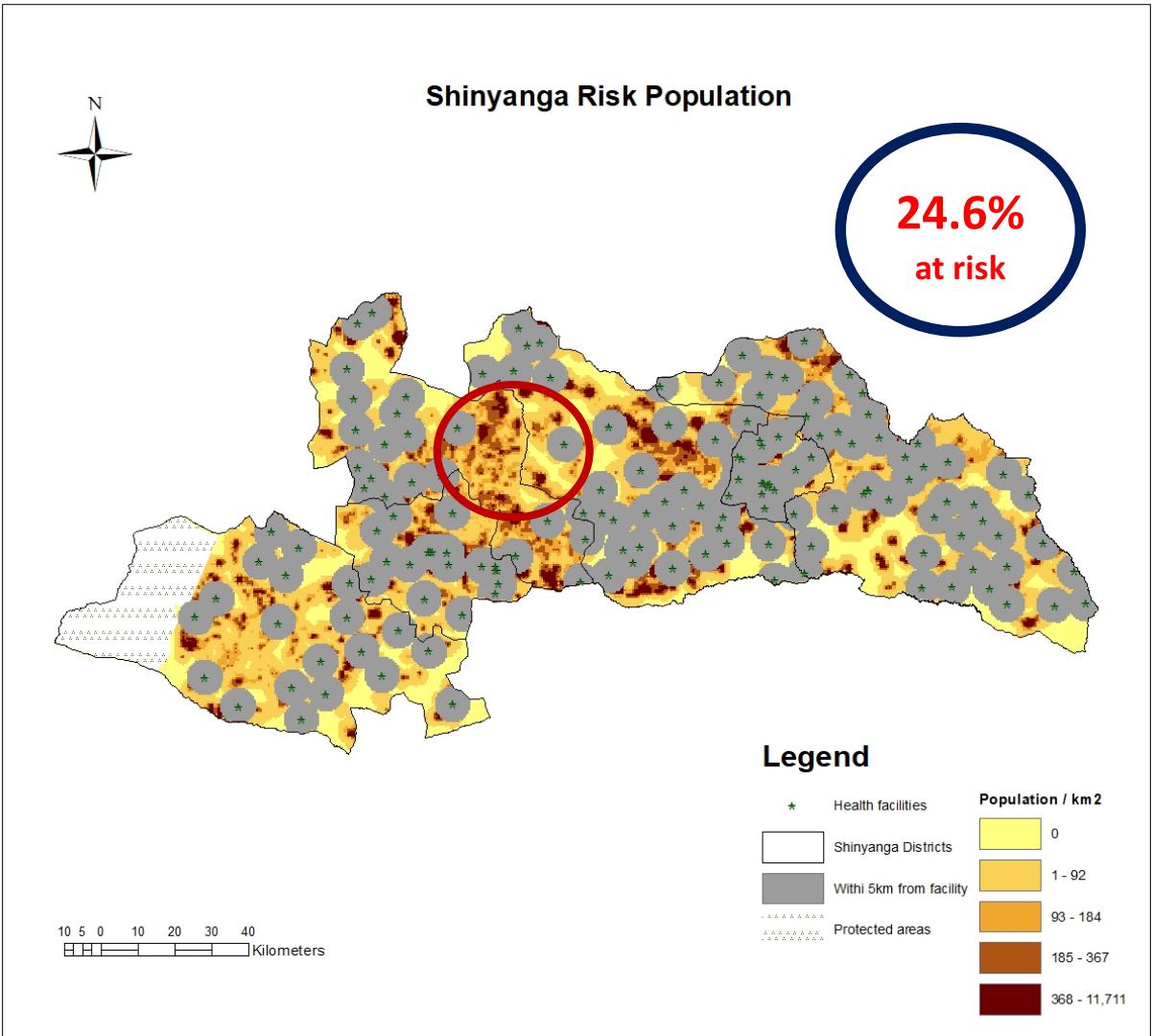
Information Use: Populated areas with low facility delivery rate, Mara Region

Result:
Highly Populated Places have
low facility delivery rates.





Information Use: Risk population



The areas outside the circles are risk populated areas as there is no HF within 5km distance

Challenges

- Internet access during digitization process
- Slow uptake of use of GIS by technical team
- Limited time to digitize all the districts
- Unreached facilities due to geographical challenges



Opportunities

- OpenSRP application tool roll out
- Tablets and smart phone use by CHWs and providers
- Technical areas to use maps during implementations
- Government interest

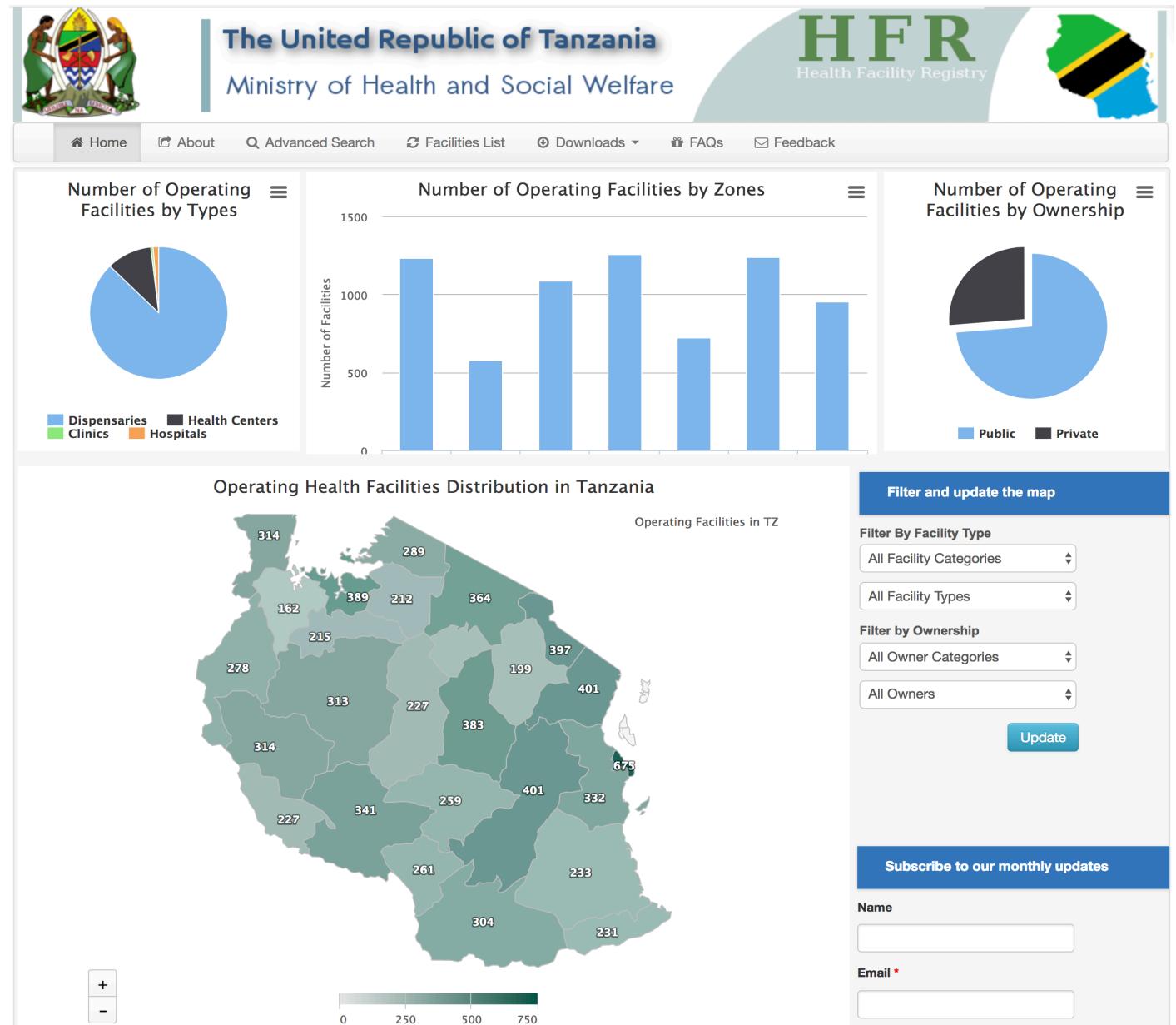




Photo by Frank Kimaro/Jhpiego

Thank You

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