Sustainable Drug Seller Initiatives Partners

Role of GIS Mapping in Drug Shop Inspection Activities

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The Problem

- NDA has not yet built skills in geographic information systems (GIS) or acquired GIS software for the spatial location and distribution of ADS
- It can be challenging to locate Class C drug shops and ADS, especially in rural areas
- This makes regulatory monitoring and inspection of drug outlets difficult

Objectives

- Develop capacity of National Drug Authority to utilize geographic information systems (GIS) in mapping locations of ADS and other health facilities
- Specific objectives include
  - Developing skills of NDA inspectors in collecting GIS data
  - Generating maps showing location of drug outlets using Google Earth, which is an easy to use and low-cost software

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Process

- UBOS to train NDA official on GPS data collection.
- Conduct Field Data Collection using GPSMap 62s Device

Input Data Sources

- Development of Training Manual.
- Development of Summary Sheet (Inspectable areas)

- Conducting Data Entry by NDA Inspectors.

Geodatabase

- Development of the Geodatabase
- Updating as requires

- Data Processing using Garmin Base Camp by NDA Inspectors
- Data Visualization using Google Earth
- Spatial and distance alysis,

GIS processes/ Cartographic elements

- GIS Analysis and Statistical Computations
- Cartographic Editing and map production

- Final Maps produced by inspectors
- Tables Generated
- Files inform of GPX,CSV,KML for exchange to different users

Maps, figures ,Charts, graphs

- Printable format
- Web based format
- GIS Datasets

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Garmin GPS Device

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Inspection and GIS Mapping

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Inspection and GIS mapping

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Results

- Successfully trained all NDA Regional and selected District Drug Inspectors in Global Positioning System (GPS) including map generation of maps using Google Earth
- Generated maps showing locations of the different ADS in Mityana, Kibaale & Kyenjojo districts
- Developed a database of all the ADS locations and their inspected data, which can be queried in assessing ADS services and premise quality.

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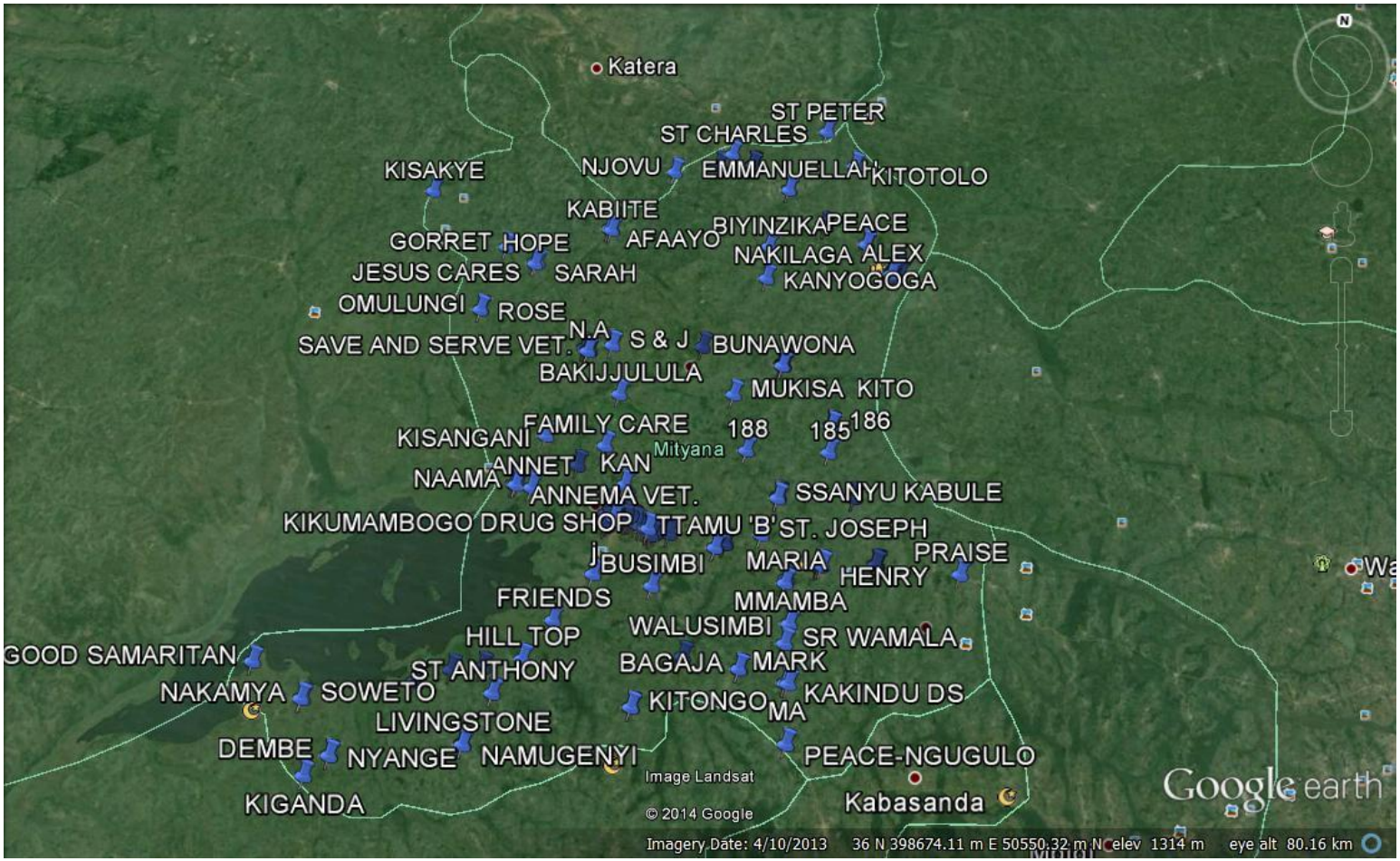
Mityana District Map

ADS and Class C Drug Shops



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Zone level map

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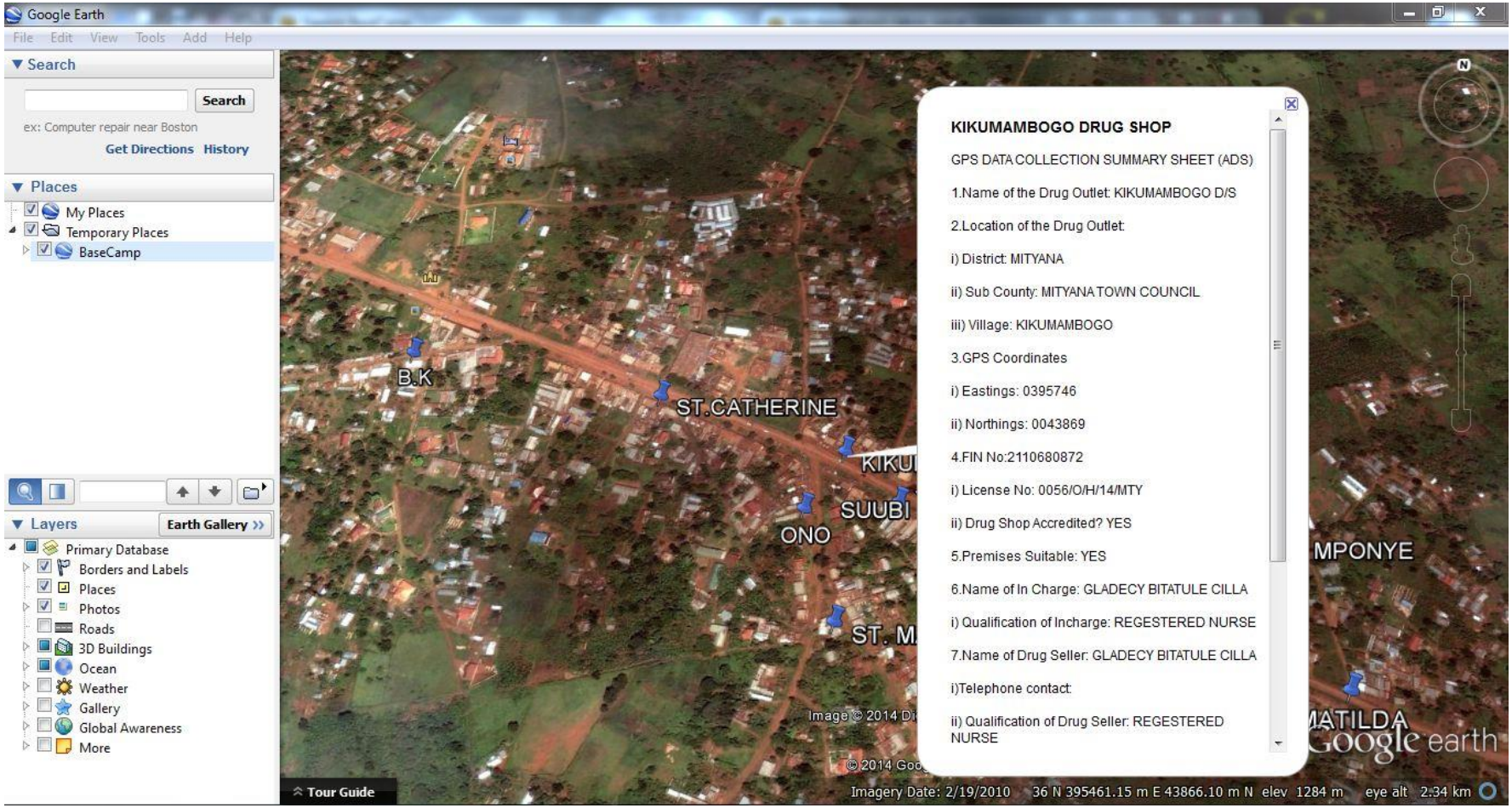
Google Earth View
Information available on each drug shop



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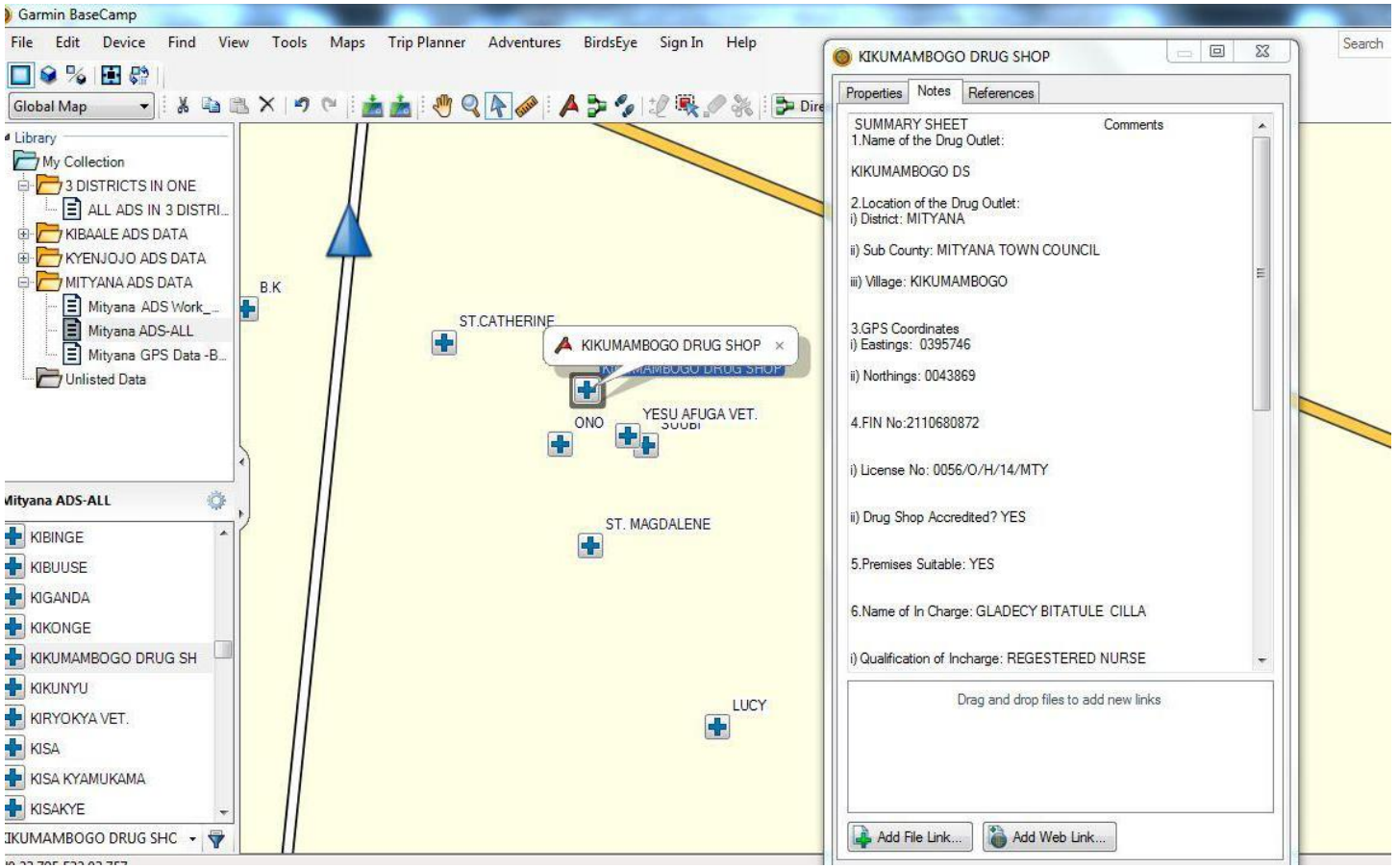
Garmin Base Camp View



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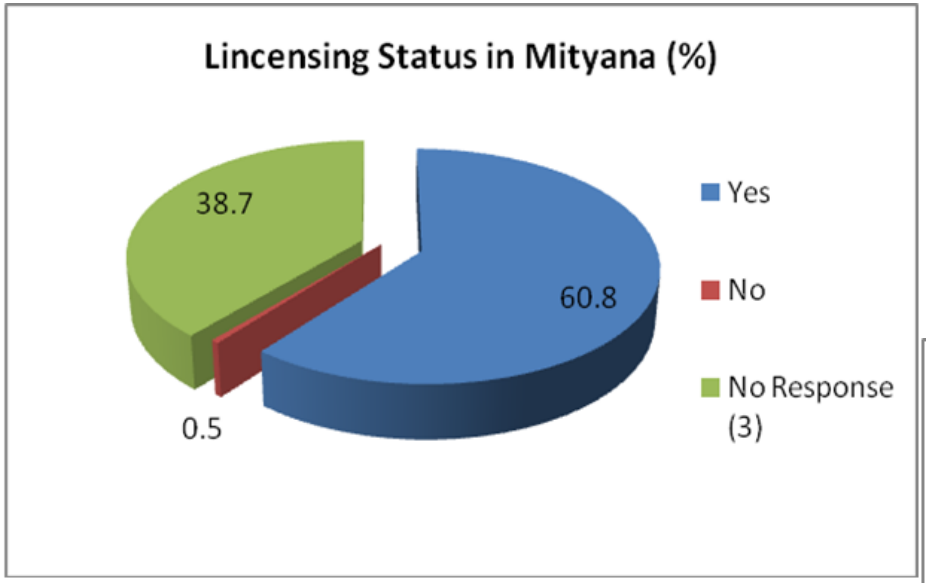
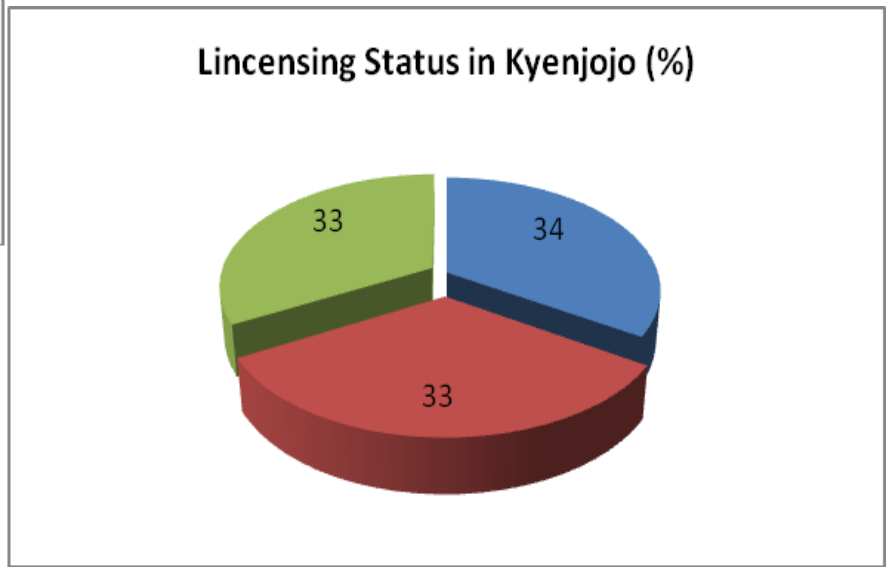
Example of Inspection Data Analyzed





Source: Data Collection and Supervision in Kyenjojo & Mityana, April 2014

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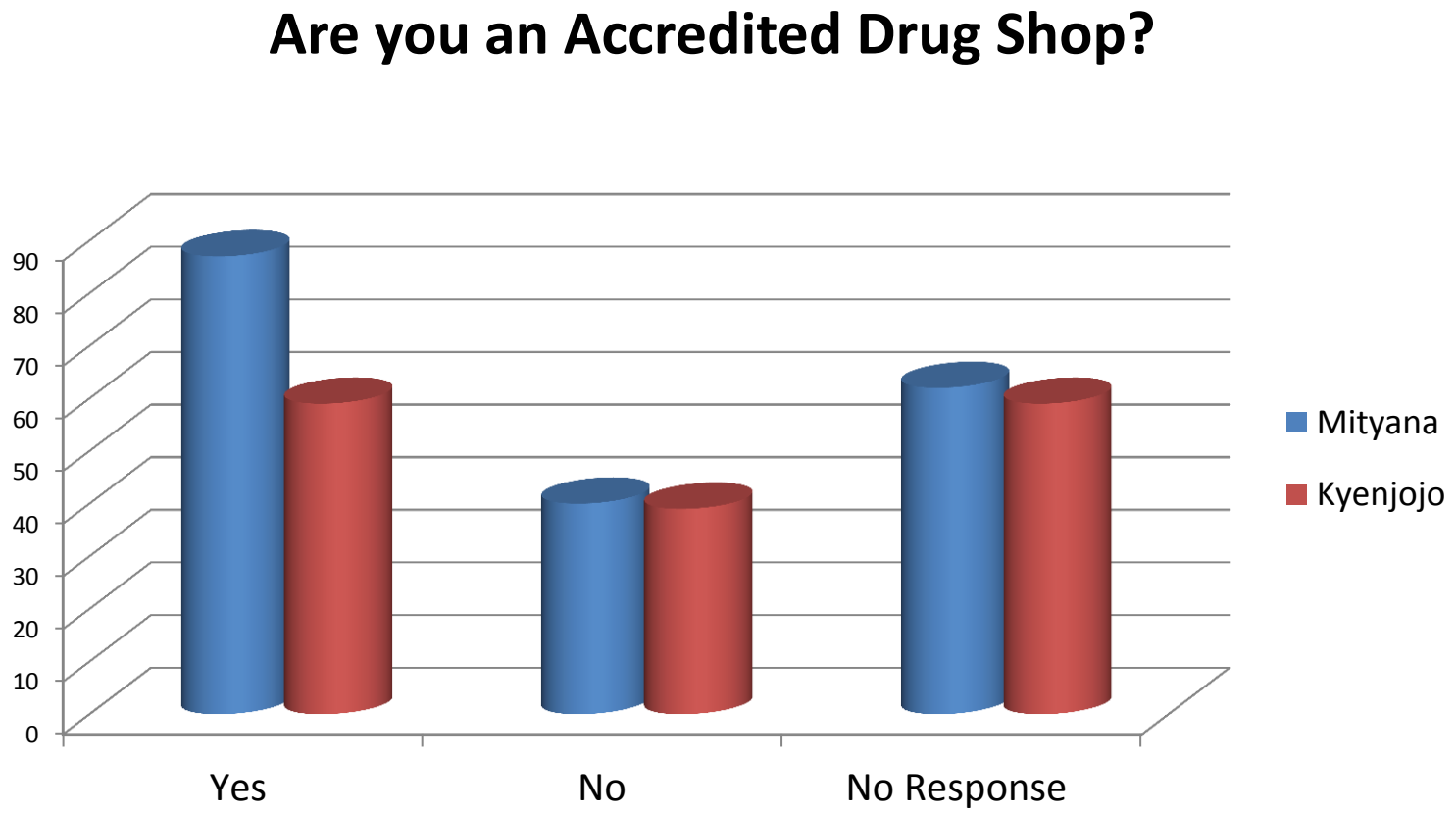
Example of Inspection Data Analyzed



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What does SDSI leave behind?

- Detailed GPS training manual for drug inspectors and data collection summary sheets
- Trained all regional NDA inspectors to collect GIS data and generate maps of drug shops
- Interactive Excel database enabling sharing of datasets (imported & exported files) generated from GIS Mapping.
- All ADS and Class C in Mityana, Kyenjojo, and Kibaale mapped for ease of inspection, monitoring, and evaluation
- Transferring ownership of GPS instruments to NDA

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Remaining Challenges

- GPS knowledge is hands on technology and a learn by doing instrument, hence learning varied depending on individual interest and level of proactiveness of the participants.
- The inspectors' electronic notebooks (laptops) cannot handle the 3D imagery.
- Inspection data is currently collected using paper forms; electronic data collection using GIS-enabled tablets would be more efficient and help ensure data accuracy.

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Lessons learned from implementation

- Inspectors are capable of capturing GPS location of shops and create maps.
- Generated ADS maps should be viewed on desktops or laptops in the NDA offices rather than on notebooks because desktops/laptops are more compatible with Garmin Base Camp & Google Earth software, which is required for inspectors to fully view maps
- More similar trainings and field exercises required for sustainability

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Take home messages

- The generated maps can improve the process of monitoring, supervision, and follow-ups by drug inspectors in ensuring comprehensive assessments.
- Such maps and electronic inspection data collection may help improve inspection efficiency and make the data more accessible for decision makers
- Developing maps in additional districts in Uganda and comparing with maps of population density will help reveal underserved areas that lack access to medicines
  - Can then target interventions in these areas

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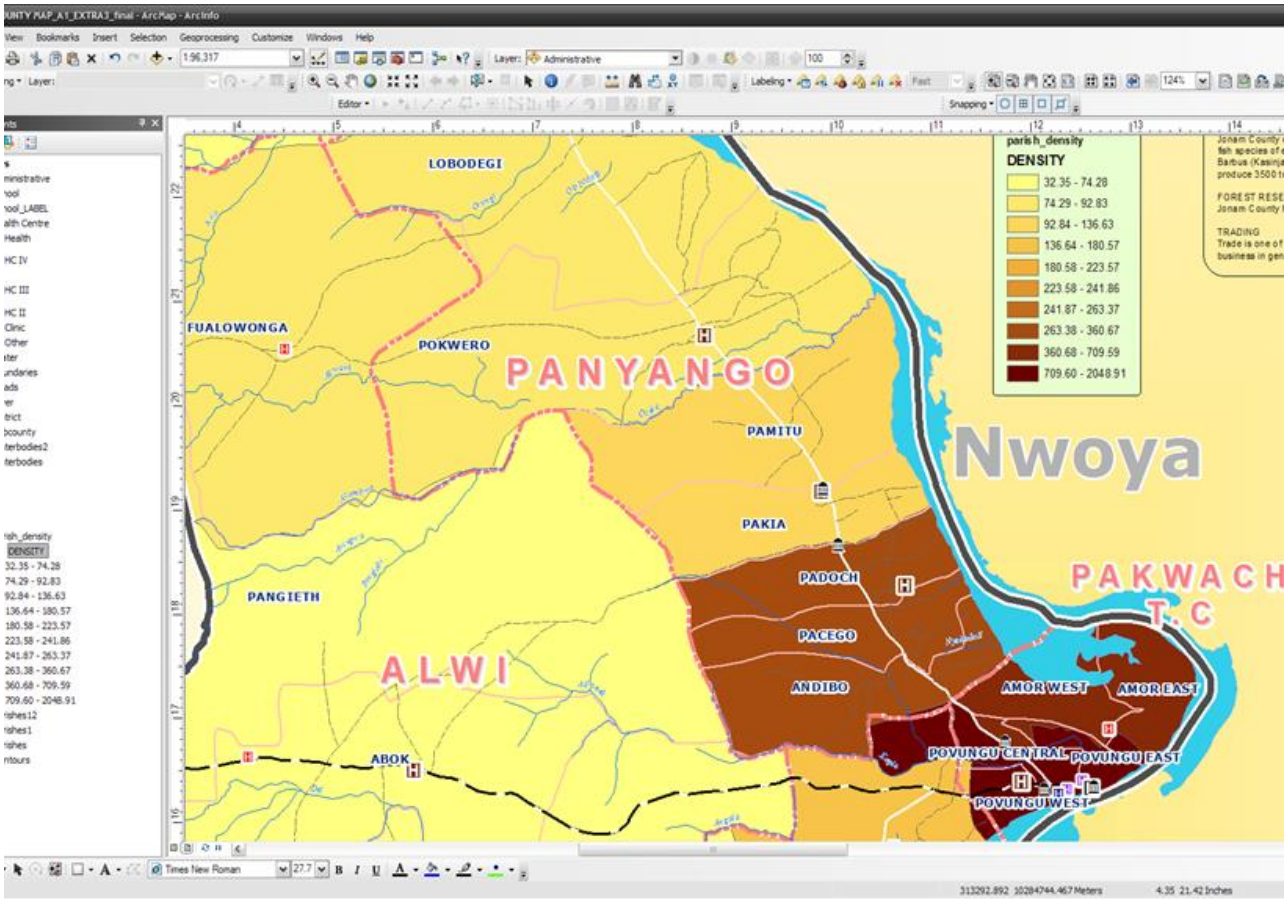
Population Density Map- Nebbi District



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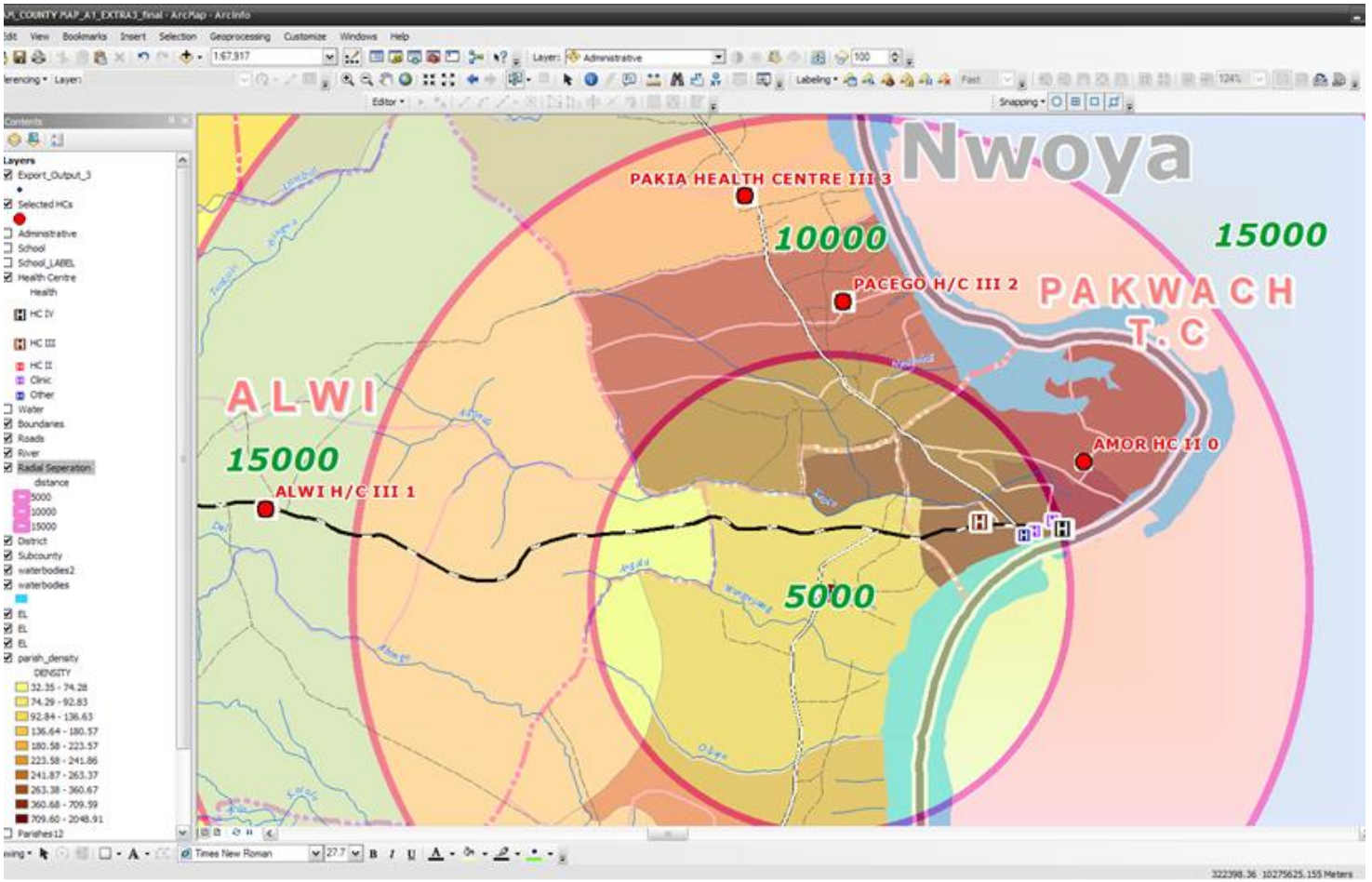
Population Density
Radial separation of 5, 10, and 15 km



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Thank You.

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