



## Development of a Geographic Information System for HIV Research in Lilongwe

### What is a GIS?

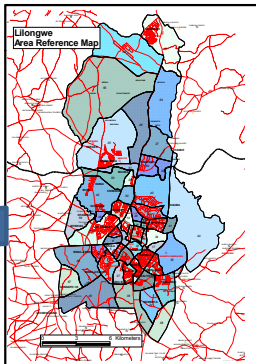
A system for the collection, storage, integration, analysis and display of spatially-referenced data

### What can GIS do for the UNC-Lilongwe Project?

1. Study participant location & retention
2. Project planning/id target populations
3. Spatial analysis research

### Why is "space" important for HIV research?

- Well-documented geographic variation in HIV
- May illuminate areas for intervention
  - High transmission areas (truck routes, bars)
  - High risk populations
  - Acute infections



### Requirements for Development of a GIS

#### Digital maps and data

- Malawi's National Statistics Office preparing updated boundary files for 2008 census
- Data layers from decennial census, NGOs
  - roads, healthcare facilities, sociodemographics
- UNC Project to begin ongoing collection of HIV data
  - prevalent/incident HIV, acute infections, resistance, morbidity, mortality

#### GIS Software

- ArcGIS installed on project computers in Lilongwe and accessed through UNC license

#### Global Positioning System (GPS) Technology

- Space based, 3-dimensional measurement & positioning system using radio signals from satellites
- GPS handheld devices used to collect geographic coordinates of the locations of interest
  - houses, clinics, high transmission areas)
- Fast, inexpensive (\$125/unit), accurate, easy-to-use

#### Staff Training

- 30+ staff trained to use GPS units
- Statisticians trained to download data

#### Ongoing Activities

- Incorporate data collection into research protocols
- Develop data management protocol
- ArcGIS training for data managers, researchers
- Update IRB and consent forms to allow for collection and use of these data



National Statistics Office in Zomba

Proposal writing course at Malawi College of Medicine in Blantyre



Field worker GPS training in Lilongwe