Targeting the Poor
Towards evidence-based implementation

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Outline

- Integrating Data Sources - GIS
- What is GIS?
- Potential Uses of Integrated GIS Data Bases
- Targeting Examples in Education
- Targeting who?
- The big picture – are public expenditures targeted to the poor?
- How to build Integrated GIS Data Bases
What is GIS?

- Geographic Information System
- A computer software program that contains geo-referenced data layers
- Data layers are referenced by points, lines, areas (polygons), or images (satellite info)
- Information at any scale: facilities to localities to districts to Kenya as a whole
- Powerful tool to **analyze** and **integrate** complex data sets from different sources
- Integrate spatial aspects of problems into **planning** and solutions
- Spatial representation of data is useful in both analysis and **dissemination** phases

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Students and Households
Schools
Infrastructure & Environment
Community
Census Data
School
Catchment Area

All on a Common Coordinate Basemap
Potential uses of Integrated GIS databases

Database and tool for:
- Policy planning and evidence-based targeting of resources
- Monitoring and Process Evaluation
- Impact Evaluation
- Dissemination and communication
- Towards harmonization among donors, bilaterals, NGOs and other development partners

Some resource targeting examples for education
- Targeting of infrastructure
  - New & upgrading classrooms (quality & crowding issue)
  - New schools (quantity & access issue)
- Targeting OVC’s
- Targeting of School Bursaries
Targeting Example: Where to build new classrooms?

- School census data (2003) integrated with maps:
  - Example for 3 districts
- Geographic Targeting Rule
- Based on simple outcome indicator:
  - Ratio of number of enrolled pupils per classroom (quality adjusted) per school
  - Compute geographic averages of the indicator

2 Simulations:
- Target at District Level
- Target at Location level
Targeting Example: Where to build new classrooms? (cont.)

- Imagine only funds to target 1 Districts and only 3 Districts in Kenya...

- District-Level Simulation:
  - Butere-Mumias has highest crowding indicator (relative to Busia and Teso)
  - Uniformly allocate funds to all schools in Butere-Mumias

- Rationale for Targeting at the Location-Level
  - “Leakage”: not all schools in Butere-Mumias are overcrowded
  - “Coverage”: some schools in Busia and Teso have over-crowding indicator that are worse than the average school in Butere-Mumias
Location-Level Means: 73.7

District-Level Means: 59.5
Targeting Example: Where to build new classrooms? (cont.)

- Targeting at finer levels of geographic detail can minimize leakage and maximize coverage

- Caveats:
  - Targeting at school level
  - Do different but close correlated targeting indicators yield similar results?
    - Sensitivity analysis…
  - Are the data precise and accurate?
    - Verification and feedback process coordinated with, for instance, District Education Boards, Inspectors…
  - Implementation costs and effectiveness
    - How low can we go? risk and cost-benefit analysis…
    - Program design crucial
Targeting Example: Where to build new schools?

Access issue – in which areas are gross enrollment rates low?

School catchment area computation

- School locations known
- Population numbers and composition known at sub-location, village and EA levels (from population census database) – link population census into database
- Compute school catchment areas:
  - km radius (or time) in walking distance, or if applicable, other transport means
- Compute covered and non-covered target population (e.g., primary school aged children)
- Integrate additional information to determine catchment area or explain non-coverage/non-attendance (e.g., road network, cultural issues).
Targeting Example:
Where to build new schools? (cont.)

School catchment area computation

- Integrate additional information to determine catchment area (e.g., road network) and areas lacking coverage,
- and explain non-attendance (cultural issues, poverty levels) – supply versus demand
Targeting Who and How: Approaches

- **Means & Proxy-Means tests**  Individuals
- **Community based targeting**  Groups
- **Demographic targeting**  Groups
- **Geographic targeting**  Groups
The Big Picture – Are Public Expenditures Targeted to the Poor?

- Size of the budget about $US 2.2bn (2000-01)
- Recurrent, Developmental and “Core Poverty” Expenditures
- Treasury accounting breaks down the budget: Votes (Ministry), Headings, Sub-Headings (District) and Items.
- Only 5.5% of the overall Government budget is tracked to the District level in Treasury (Paymaster General) database
The Big Picture – Are Public Expenditures Targeted to the Poor?

Total Expenditures for selected Ministries (2000-01)
The Big Picture – Are Public Expenditures Targeted to the Poor?

Key Data Sources:

- Treasury - Paymaster General: printed and actual and detail by sub-Heading (Districts)

- Auditor General: detail on divergence between printed and actual; no sub-Heading info

- Individual ministries – need to make an assessment of routinely collected data available

Currently no central system in place to track public expenditures by Ministries to Districts !!!
Towards Building Integrated GIS Databases

❖ Step 1: Building up the Database

- Geo-reference service delivery locations (point coordinates) and build the base facility-level layer
- MoEST school mapping project, Health facilities and dispensaries…
- Data verification and validation
- Collaboration among actors !!!
Towards Building Integrated GIS Databases

**Step 2: Integrate Data Layers - examples**

- **School Census Data (2003)**
  - At the facility level
  - Link MoEST school code to GIS location
  - Integrate all the info collected from the school census
  - EMIS data can be used for annual updating of database

- **National Exam Registration and Results (annual)**
  - At the facility level
  - Link MoEST to KNEC school code
  - KCPE and KCSE data from KNEC

- **MoEST and TSC staffing and expenditure data (annual)**
  - At the facility & administrative levels
  - Link MoEST to TSC codes and MoEST budget lines
Building an Integrated MoEST GIS Database (cont.)

✦ Step 2: Integrate Data Layers (cont.)
  ■ Population Census Data (1999)
    ♦ Population (by age and sex) per sub-location
    ♦ Orphans (by sex and type) per sub-location
    ♦ Additional population characteristics…
    ♦ Update every 10 years and annually with demographic estimates (from CBS – MPND)
  ■ Health facilities and dispensaries
  ■ Physical Infrastructure and Community Information (various years and sources)
    ♦ Road network
    ♦ Electricity
    ♦ Water
    ♦ Topographic (1:50000) maps
Challenges for Completing an Integrated GIS Database

- Collaboration is critical: fortunately the incentives are present – positive network externalities

- Technical:
  - Verification, cleaning and facility layer compilation
  - Data integration: Coding Correspondence Critical
  - e.g., MoEST, KNEC, TSC
  - e.g., clusters from different surveys

- GIS Data Management System – Sustainability!

- Investments Needed
  - Physical (computers, software, etc)
  - Human (training, etc)