

Research

**GIS APPLICATION FOR HEALTH FACILITIES
LOCATION IN EMBAKSI DIVISION)**

By:

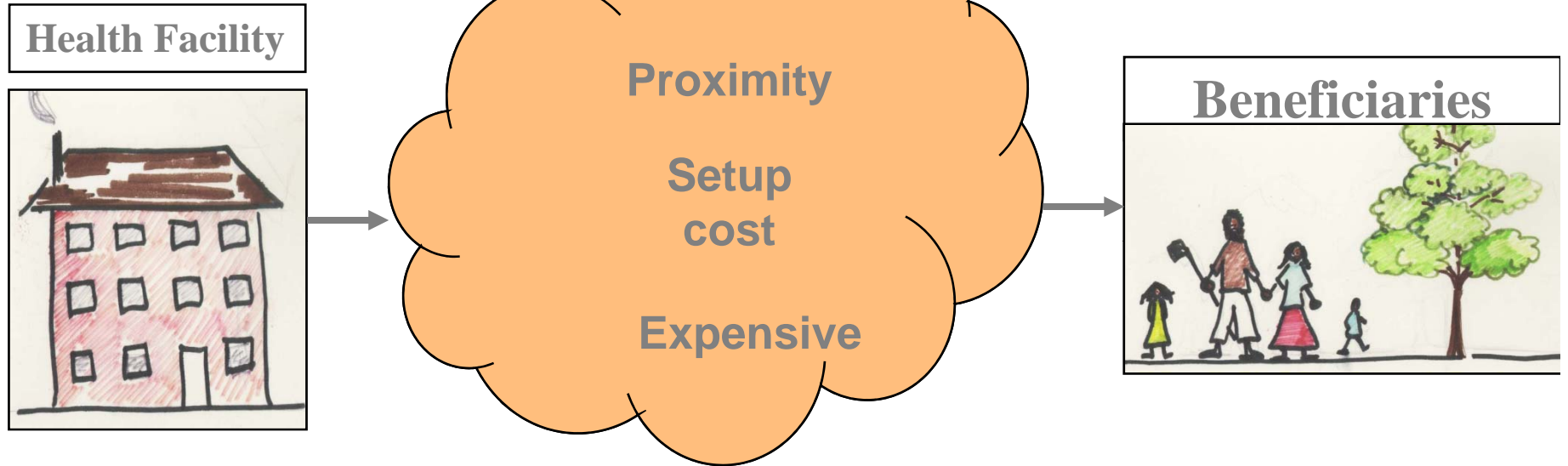
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01 June 2009

**Masters Degree in
Information Technology**

Supervisor: Dr. I. L. Ateya

Introduction



WHY GEOGRAPHICAL INFORMATION SYSTEM (GIS)?

↓
Analyzing of
patial data

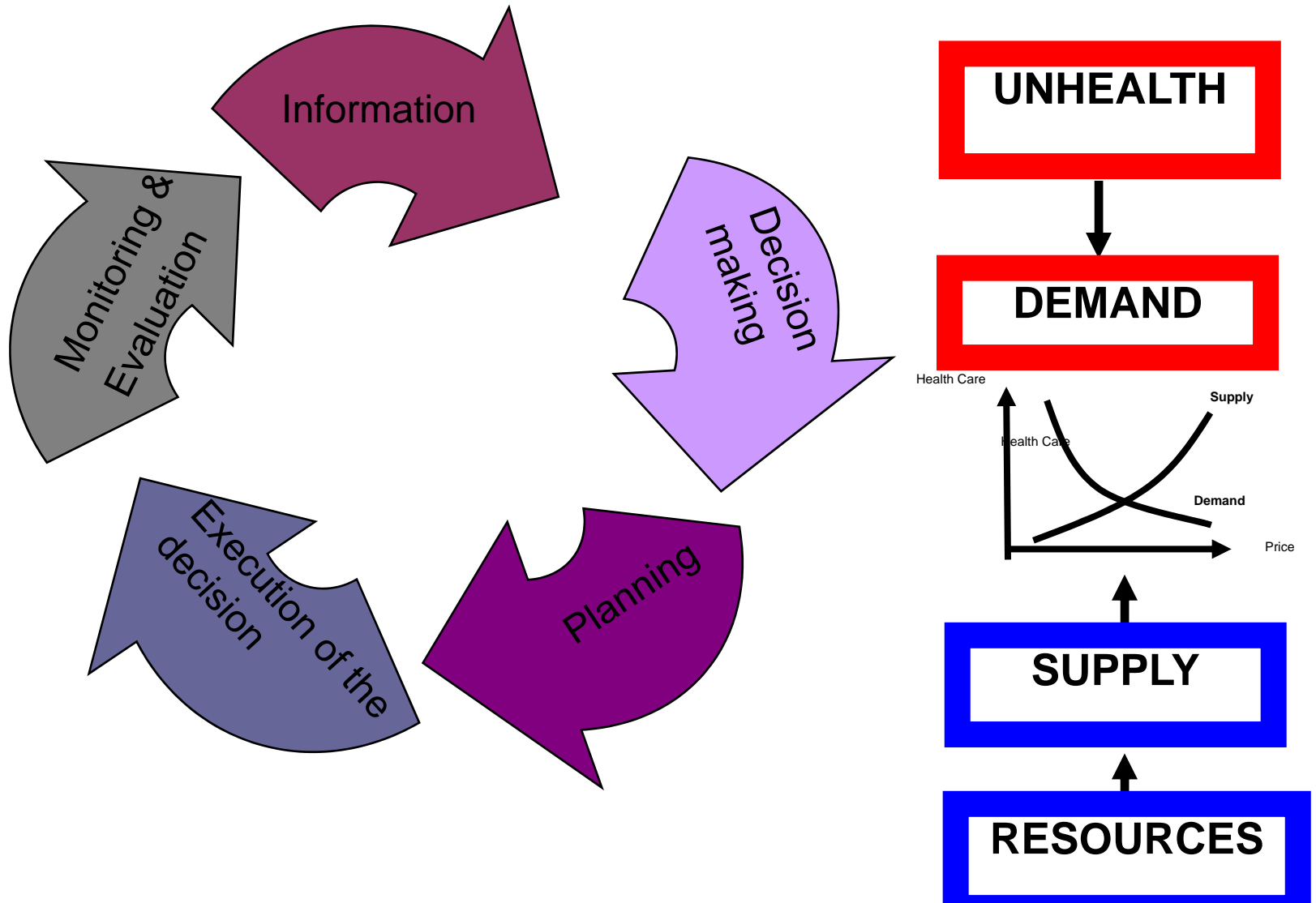
↓
Visual
thinking

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visual
communicat

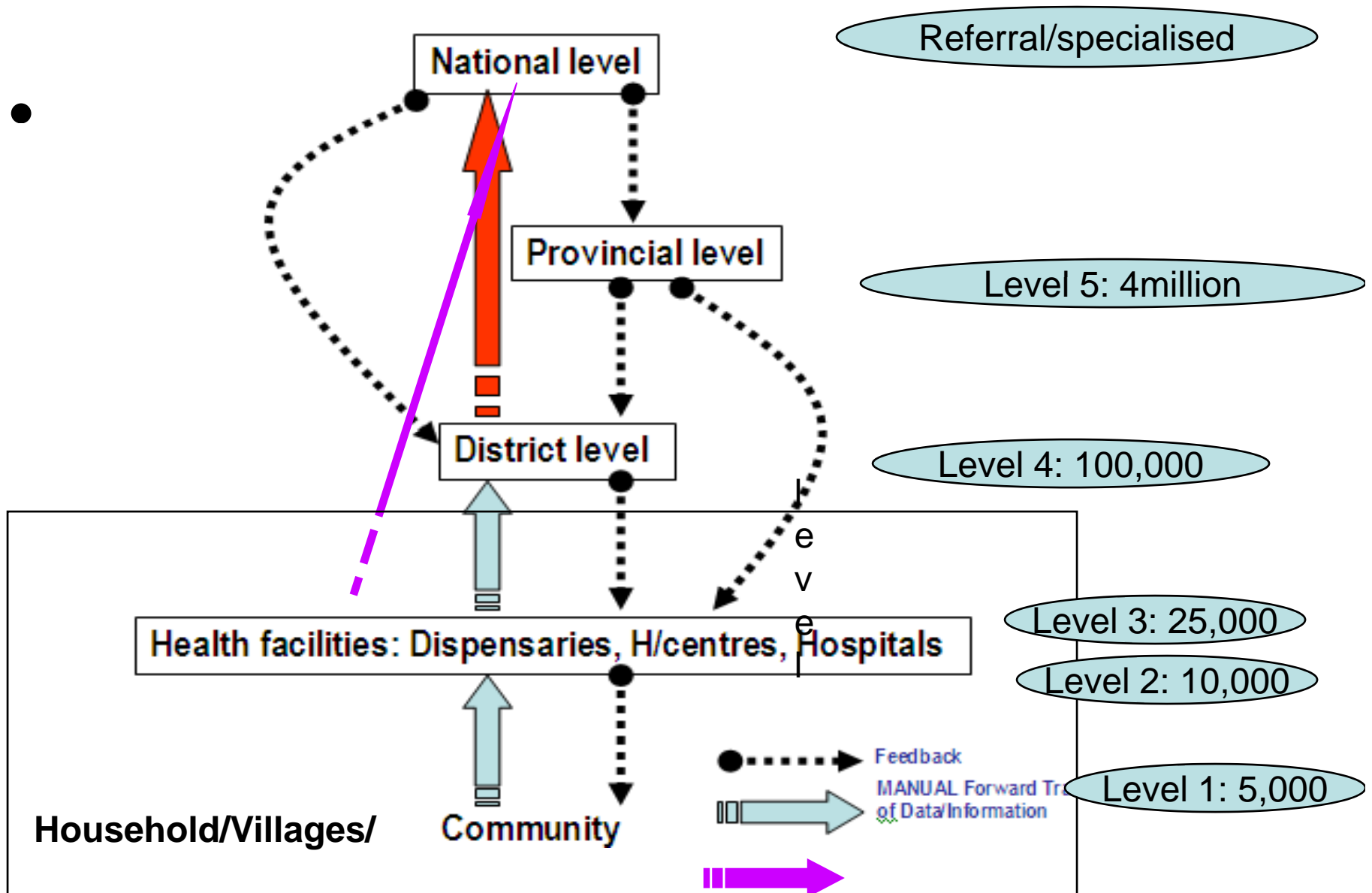
↓
Manipulates
map data

↓
Establishes linkages

HMIS is critical and integral component in the health sector



Health Facilities linkages



Literature Review



Mapping of health facilities in rural

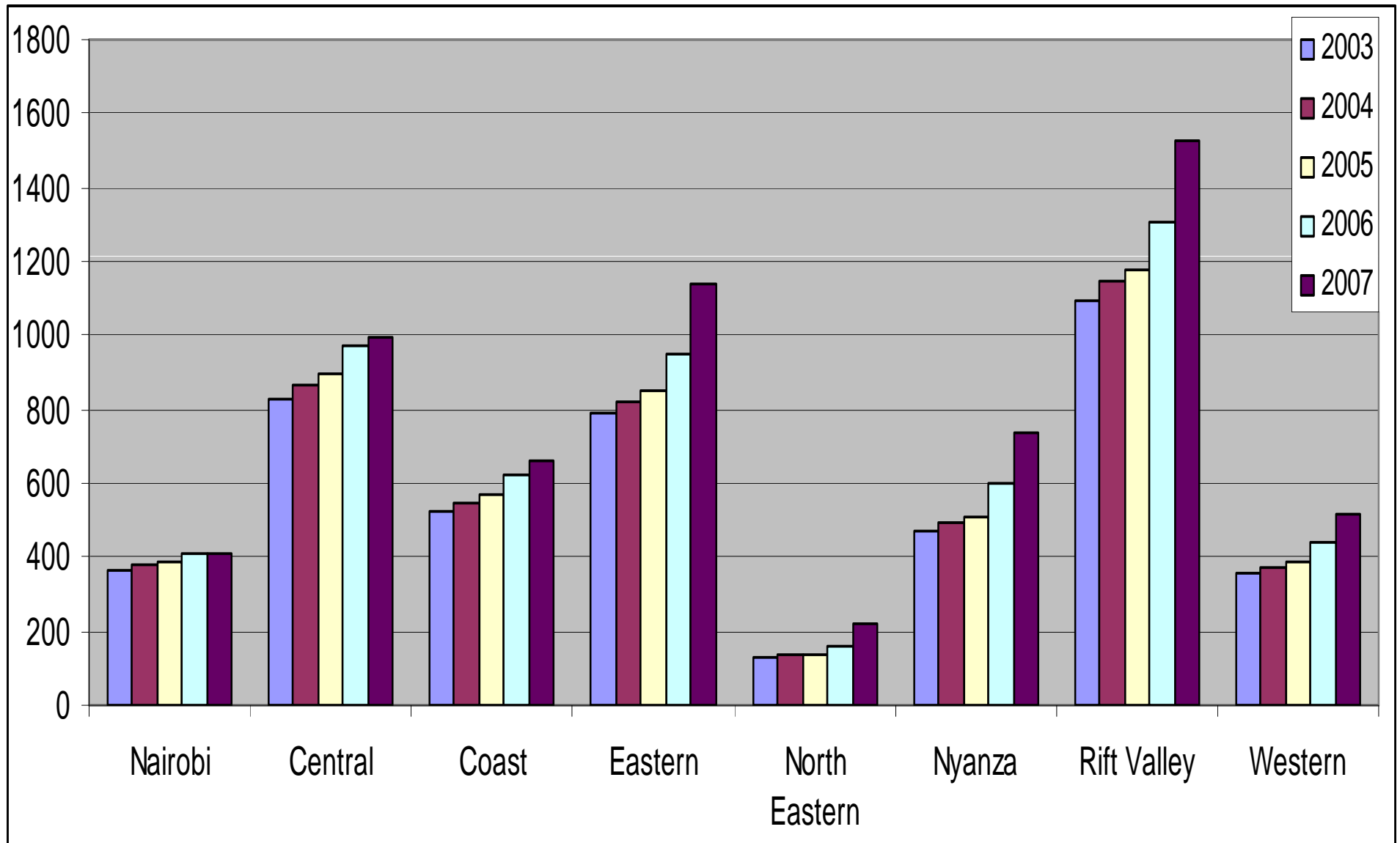
“Not done”

Focus on health facilities location has not been

To-date

Literature review

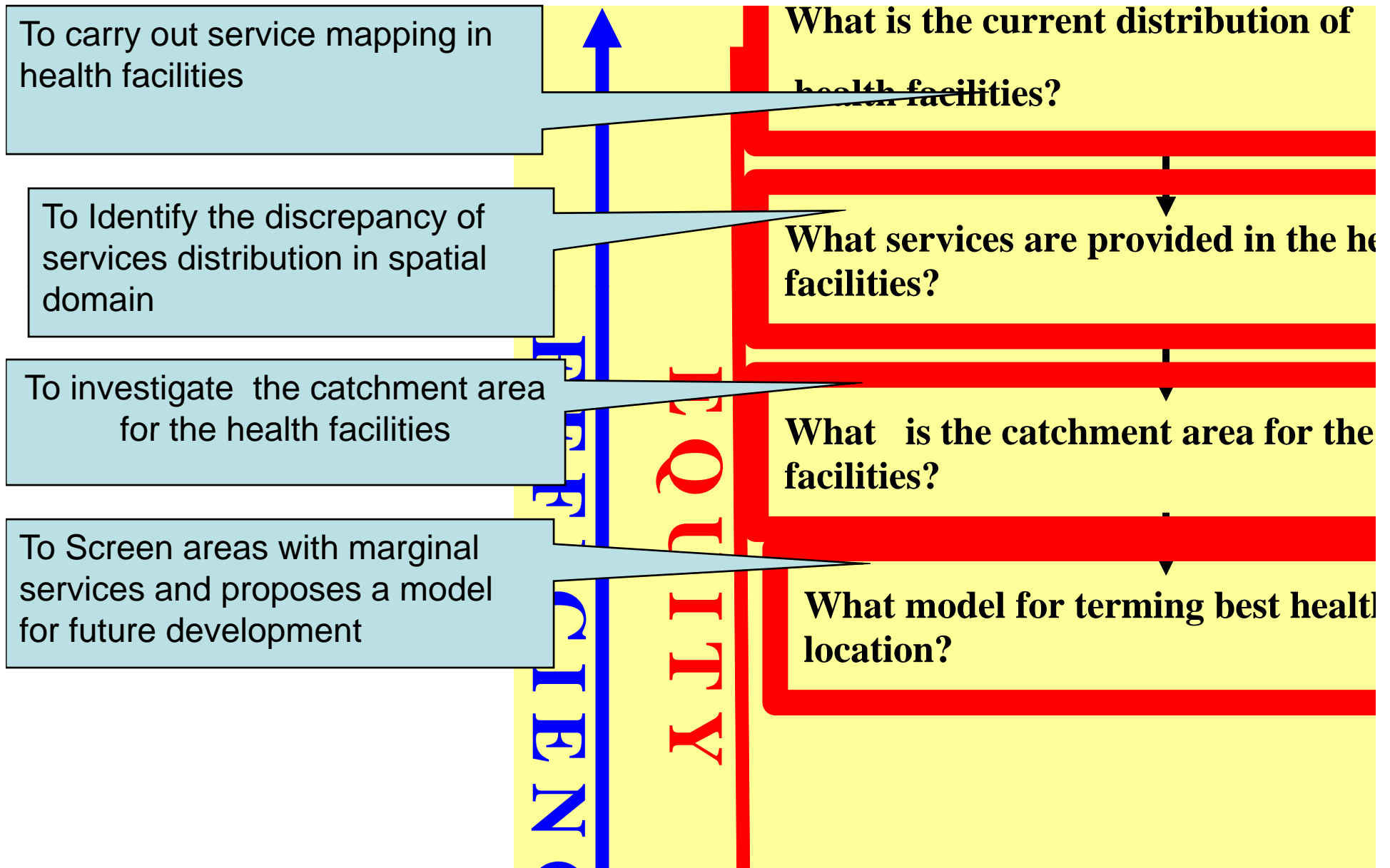
Health facilities growth in Kenya



Research Problem?

- There is haphazard setup of health facilities without tangible and reliable planning information.
 - Resources- 3m's
 - Training
 - Procurement of equipments
 - Procurement of medicines
 - Construction of health facilities

Objectives & Questions



Research Design

1. Questionnaire programmed on Palm

SERVICE AVAILABILITY MAPPING (SAM) FOR DISTRICTS:
Part I. Listing of facilities providing selected services
To be filled in by the District Health Officer (DHO)

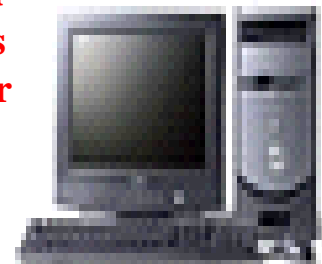
| DISTRICT | Facility name |
|-------------------|---------------|
| 1. Health Centre | |
| 2. Health Centre | |
| 3. Health Centre | |
| 4. Health Centre | |
| 5. Health Centre | |
| 6. Health Centre | |
| 7. Health Centre | |
| 8. Health Centre | |
| 9. Health Centre | |
| 10. Health Centre | |



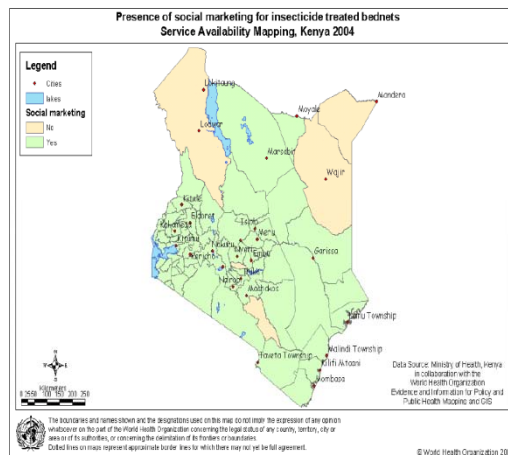
2. Data collection with handheld unit



3. Palm synchronized with PC for data transfer

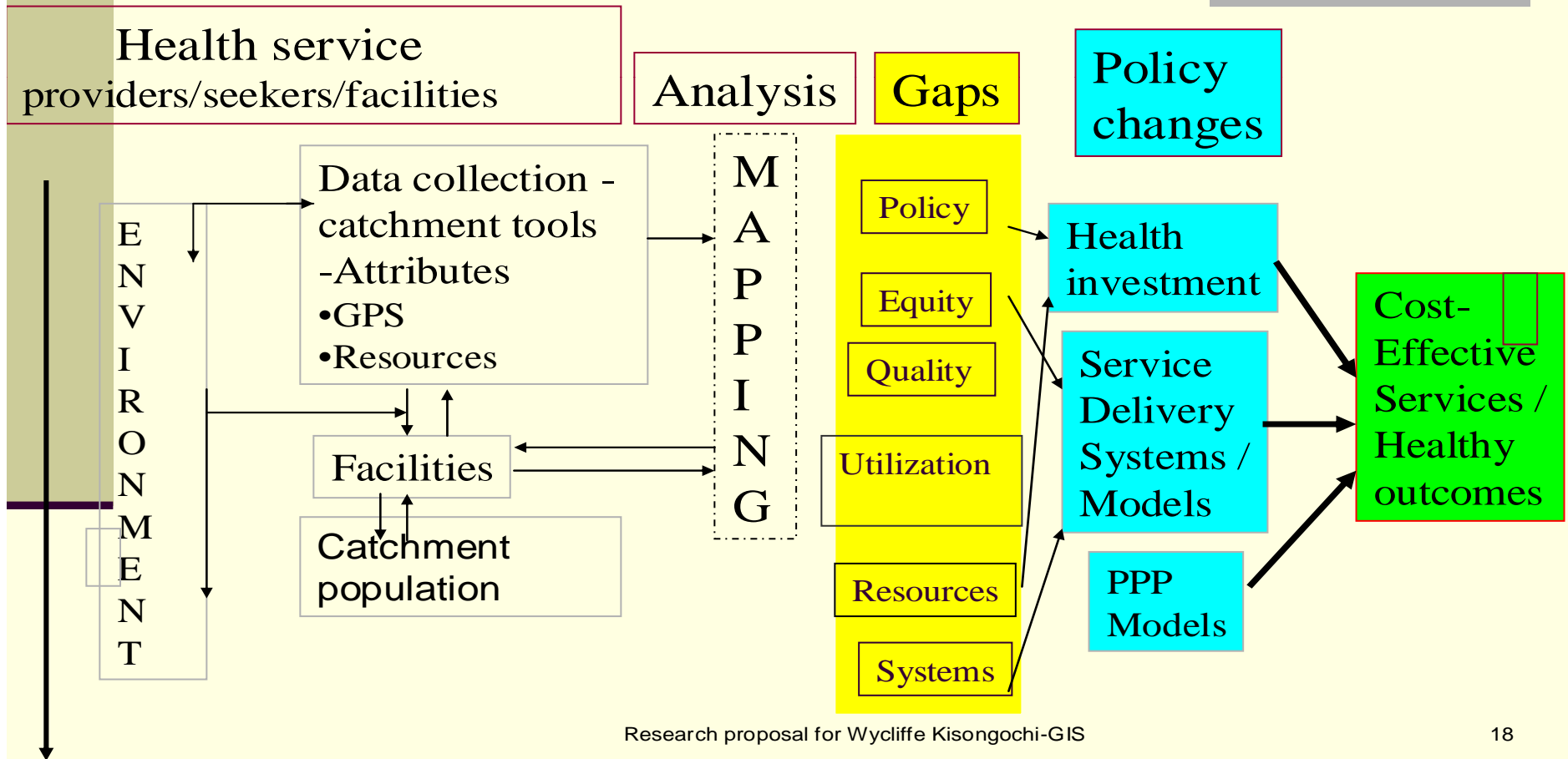


4. Data analysis and production of maps with HealthMapper

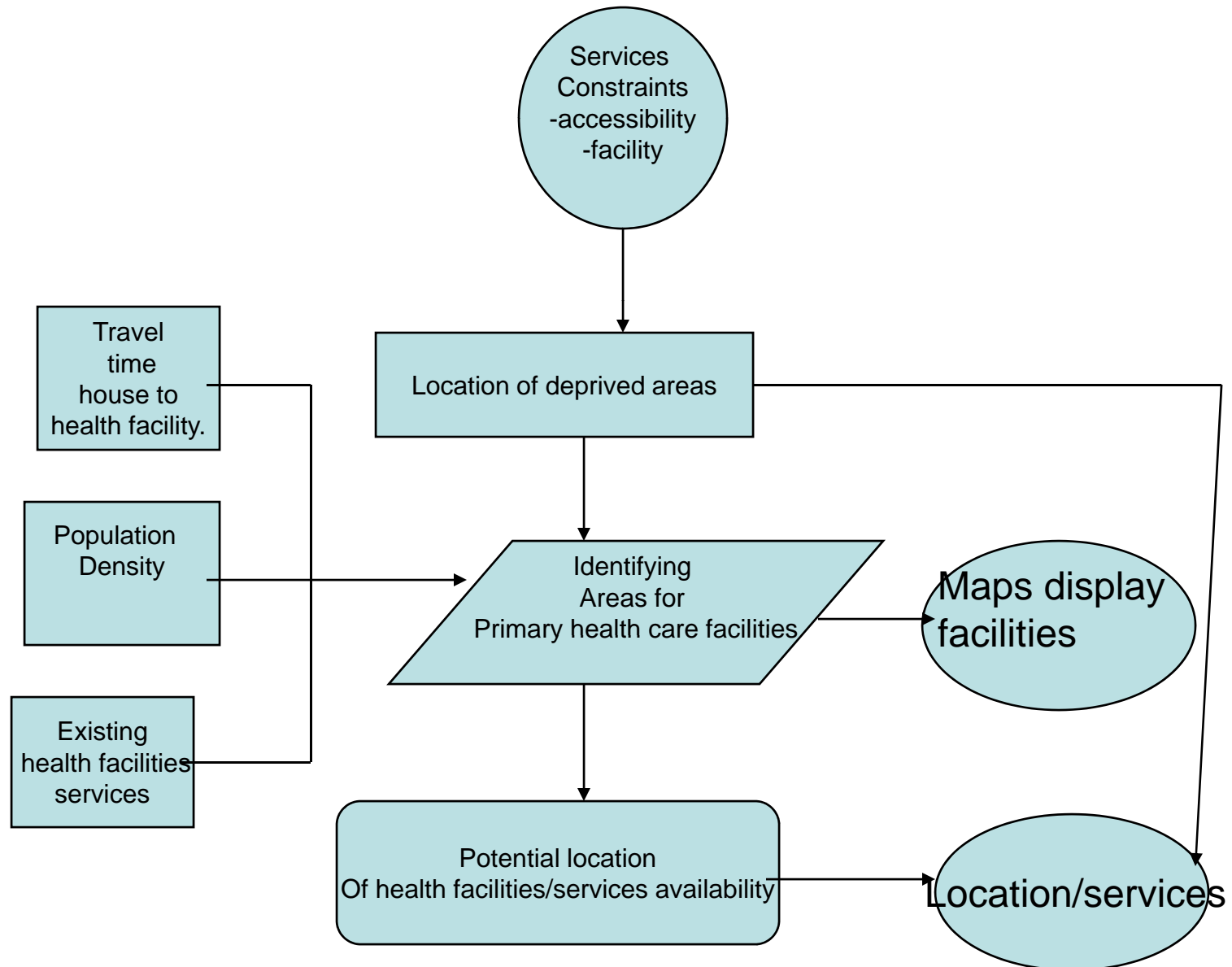


Design/Methodology

Dynamic GIS for Strategic Planning

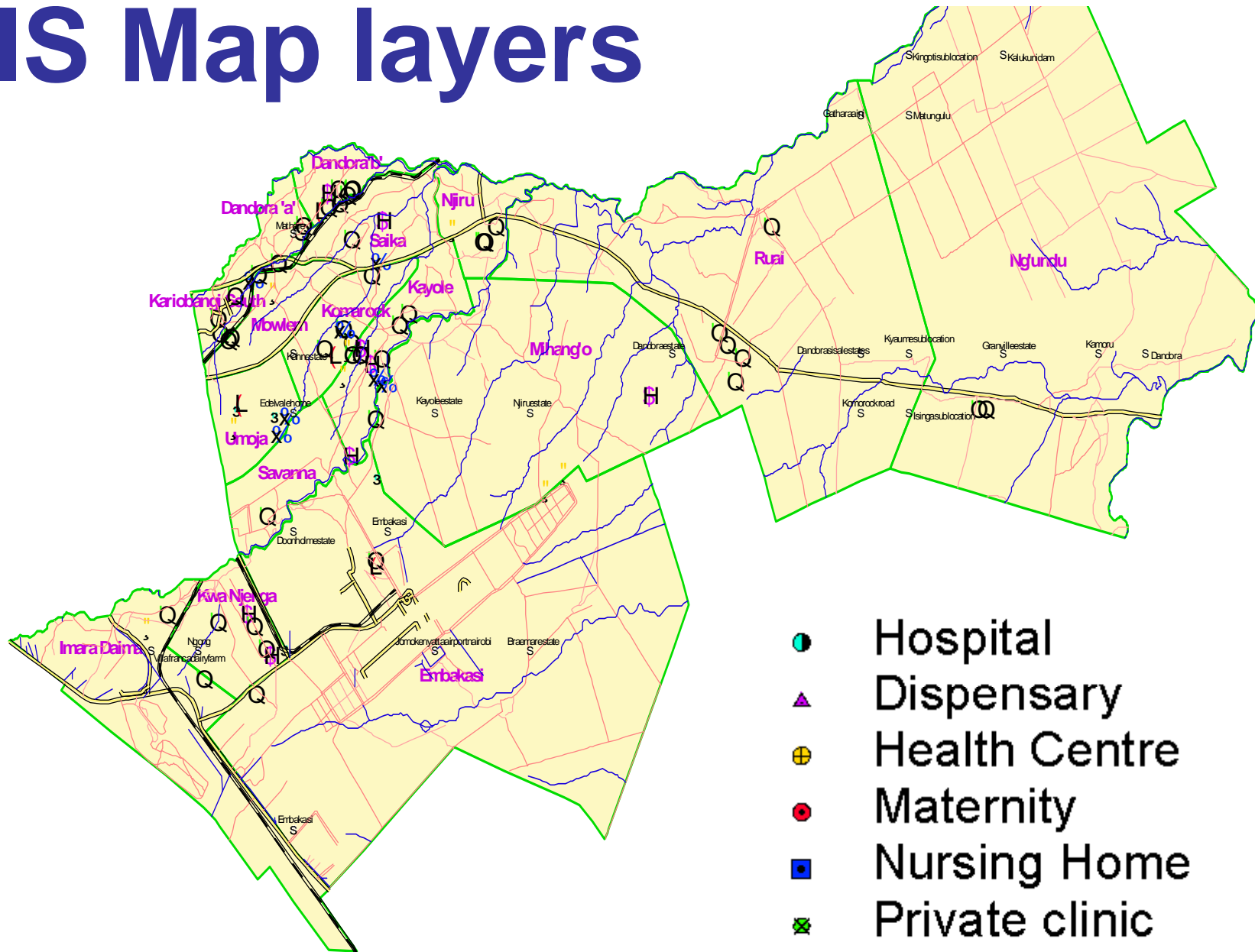


Proposed framework



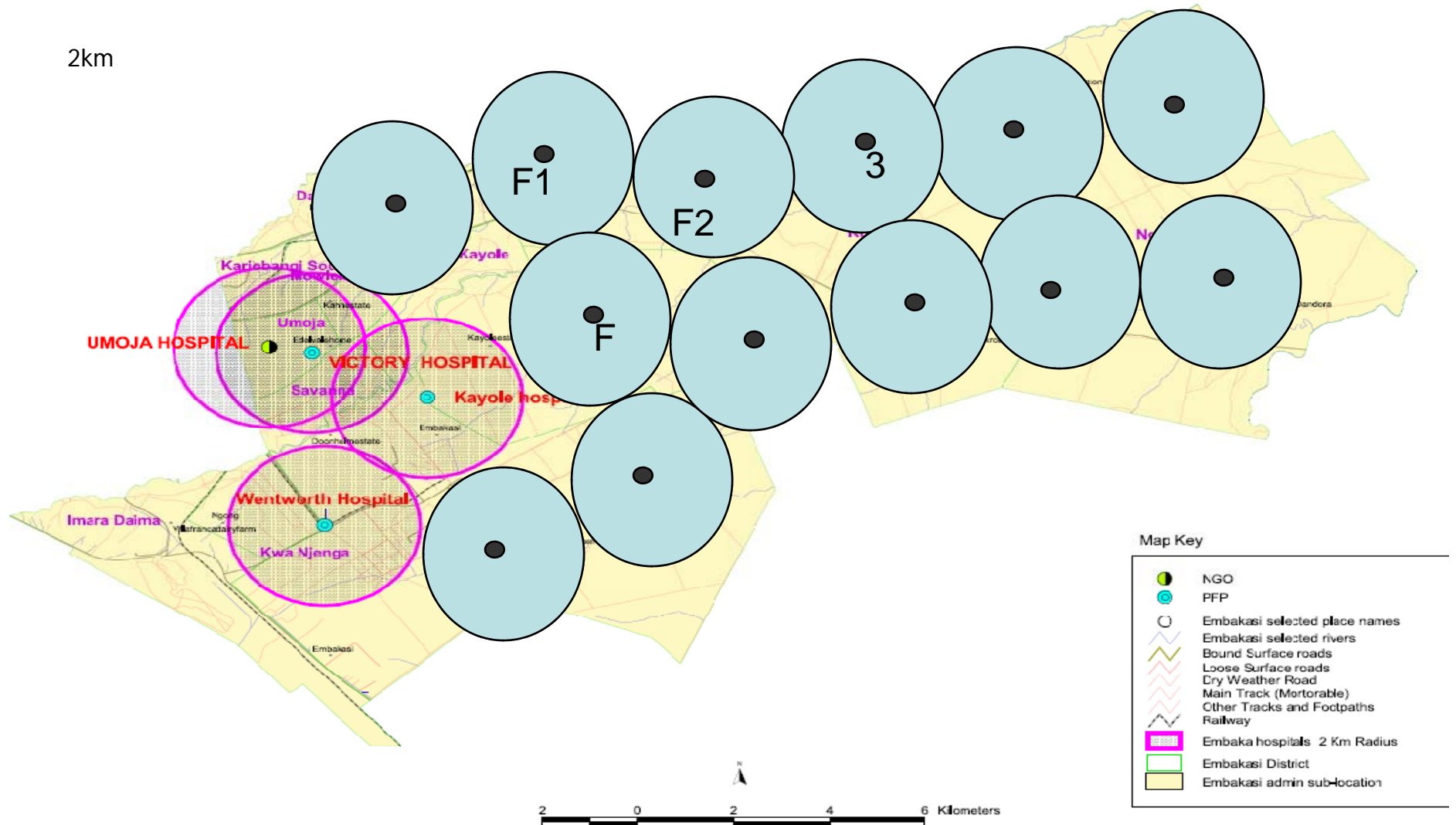
Embakasi HF by Type -Hospitals, health centres, nursing homes, maternity Dispensaries and Private clinics

GIS Map layers

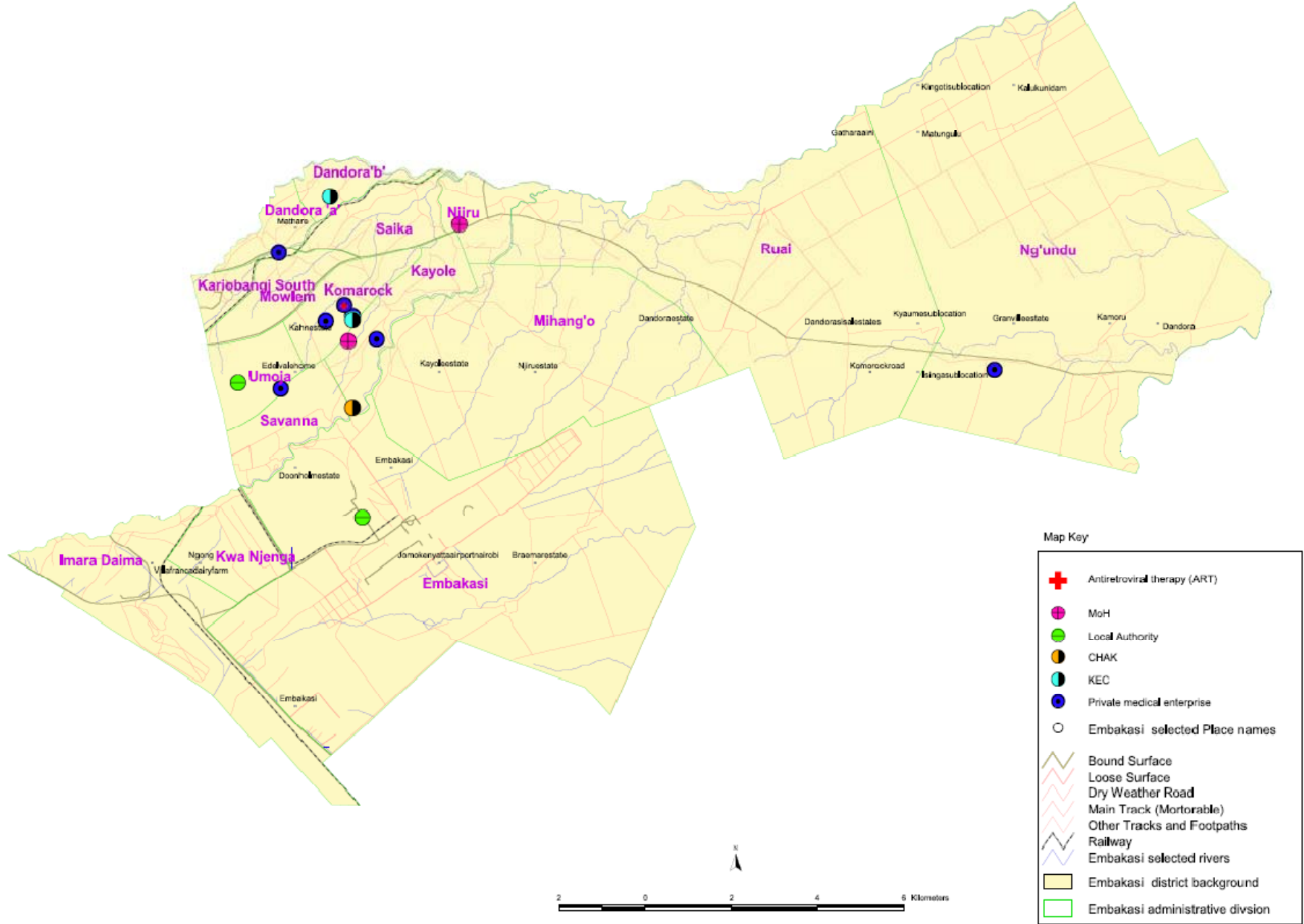


Results and Findings

Embakasi hospitals by ownership and its 2 Km radius



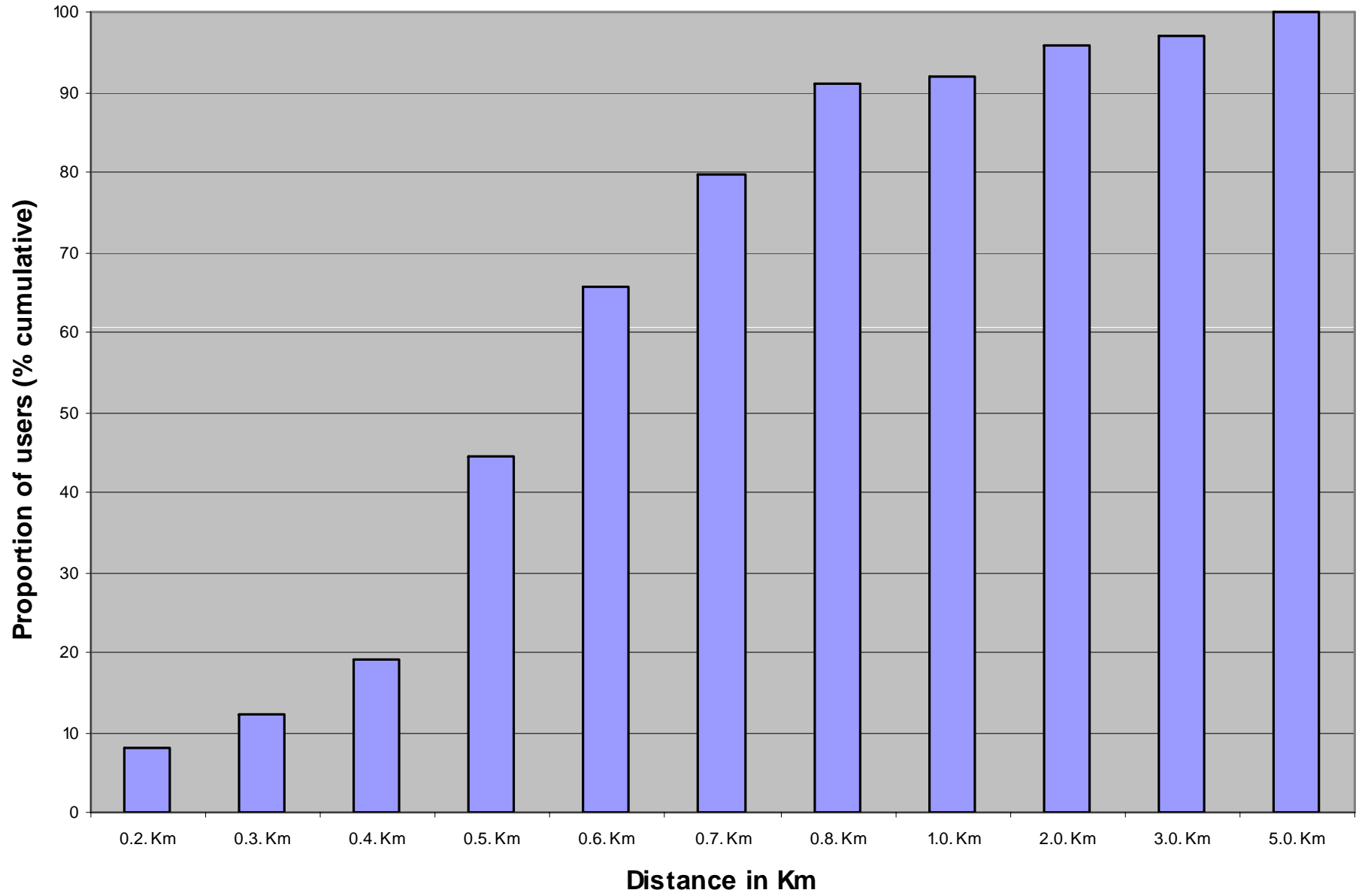
Embakasi district HF by ownership offering ART



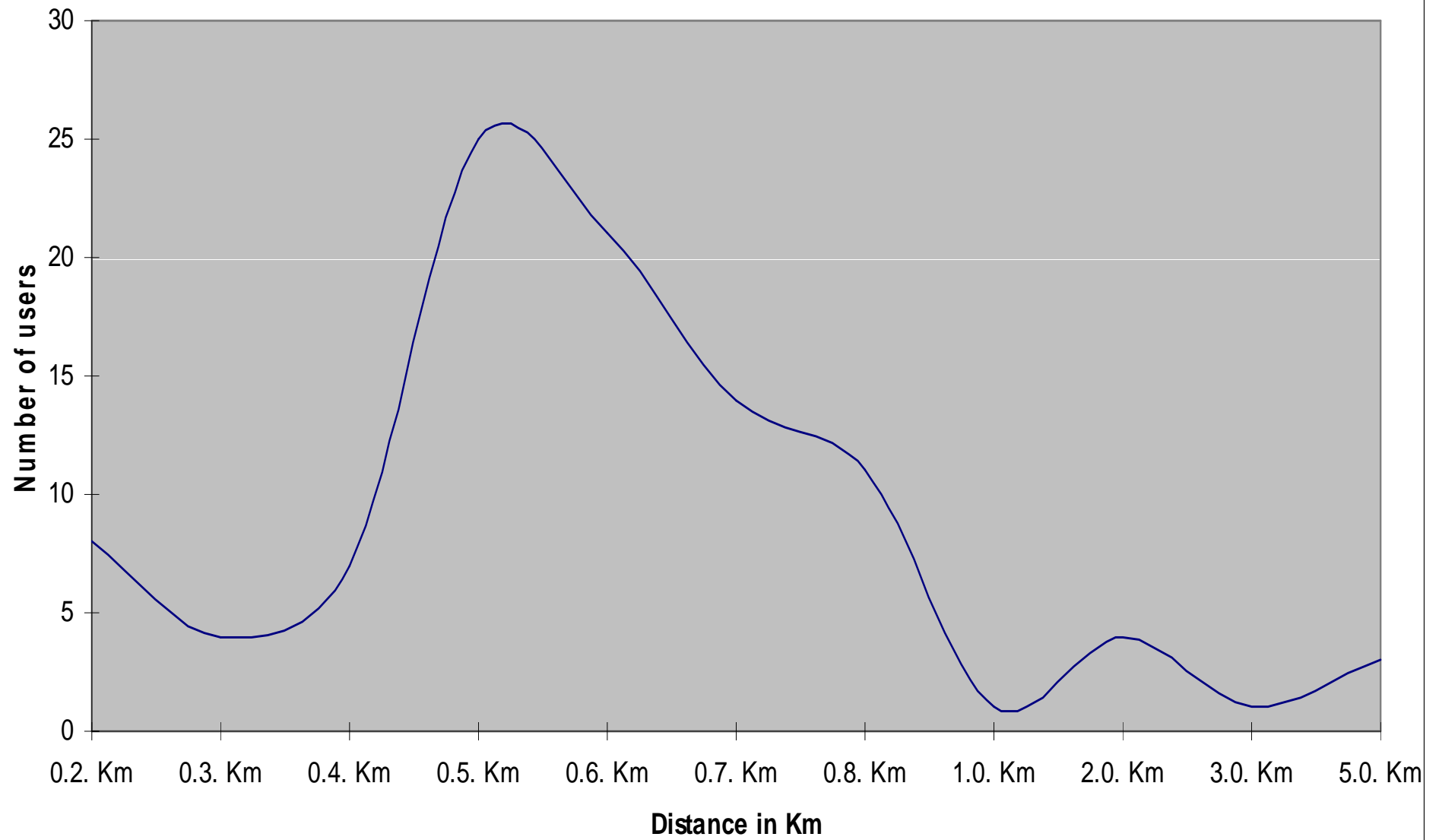
Map Key

- + Antiretroviral therapy (ART)
- MoH
- Local Authority
- CHAK
- KEC
- Private medical enterprise
- Embakasi selected Place names
- Bound Surface
- Loose Surface
- Dry Weather Road
- Main Track (Mortorable)
- Other Tracks and Footpaths
- Railway
- Embakasi selected rivers
- Embakasi district background
- Embakasi administrative division

Viictory Hospital Catchment

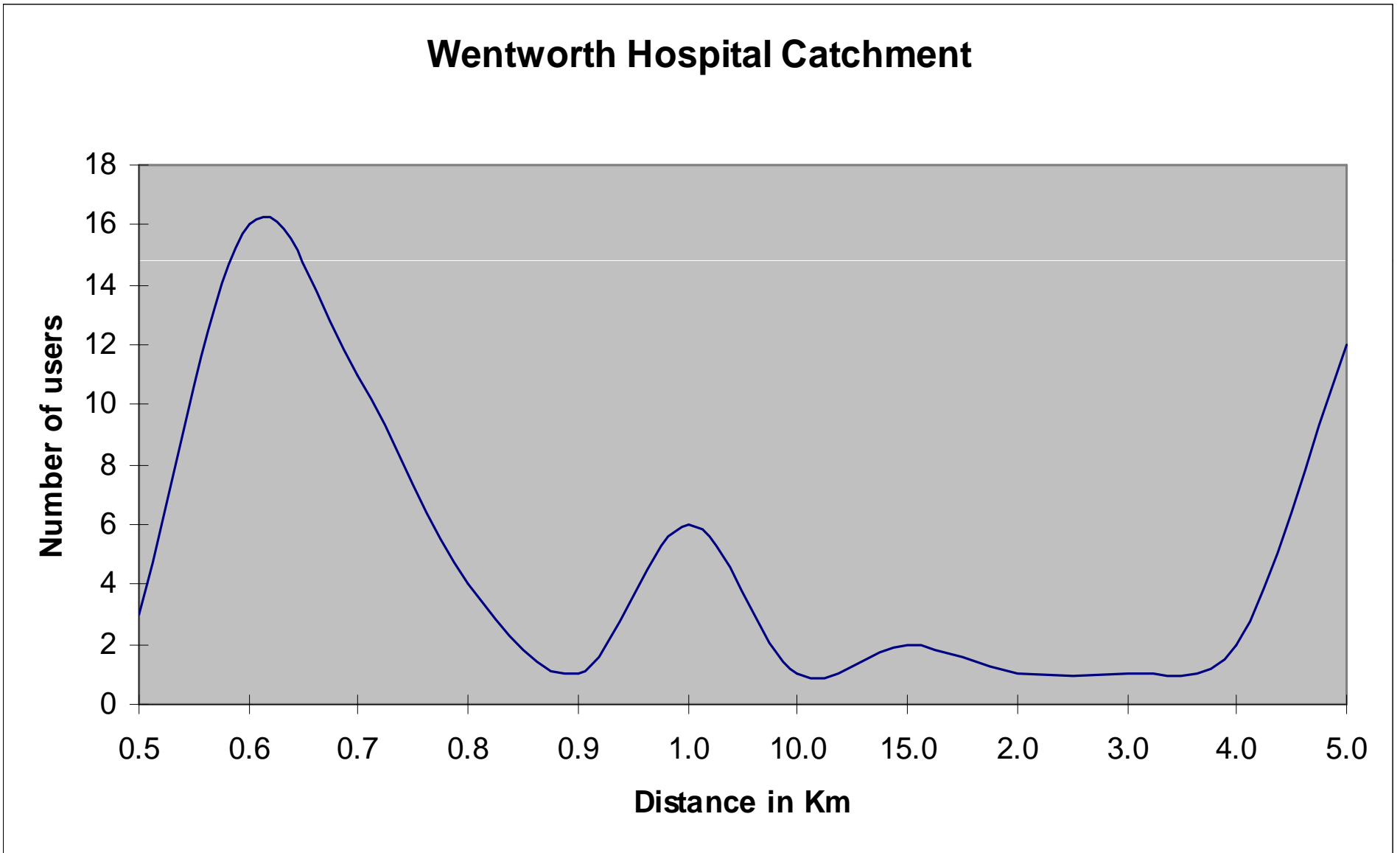


Victory Hospital Catchment

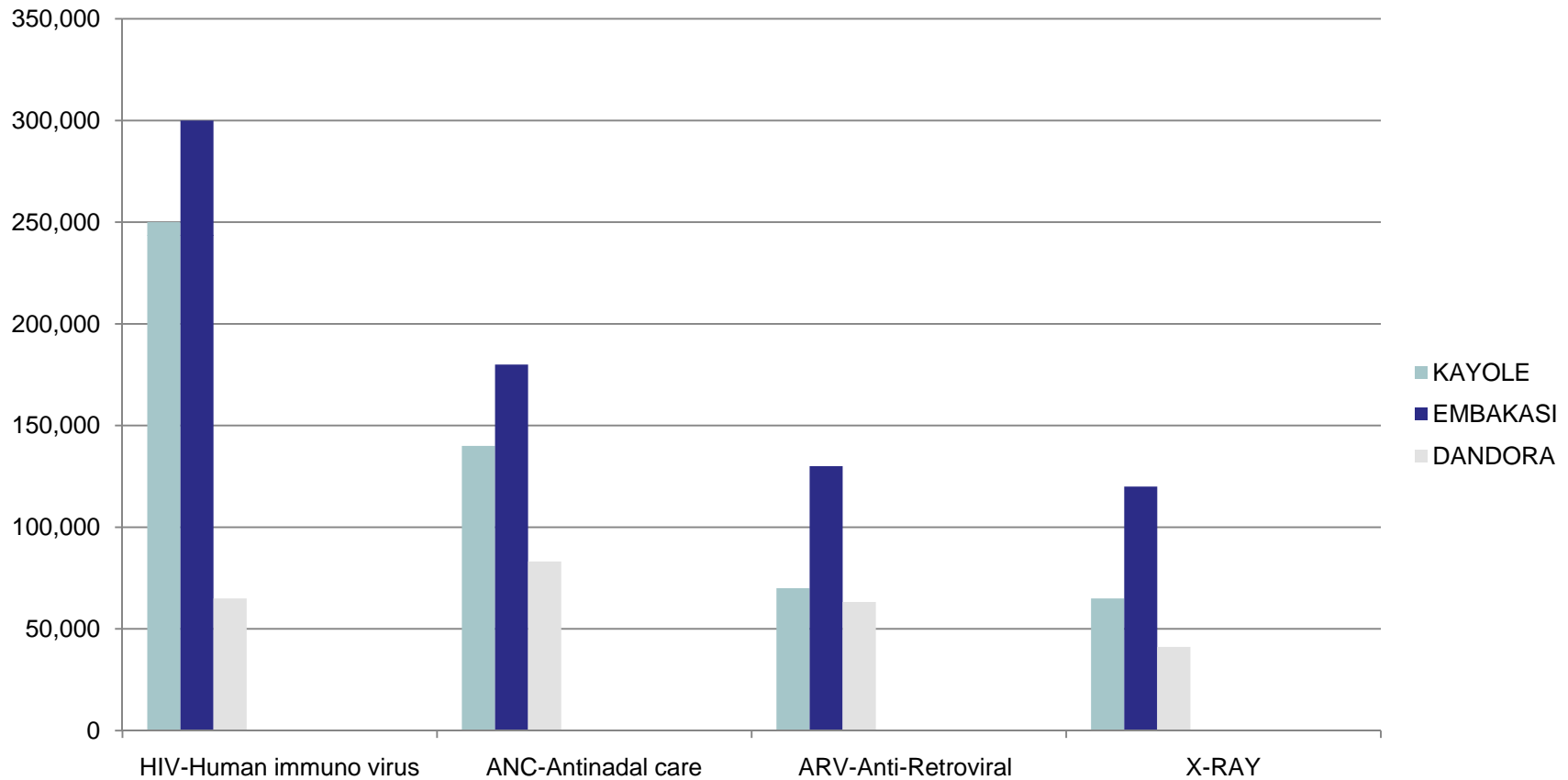


Analysis/results

Wentworth Hospital Catchment



SERVICES AVAILABILITY



Percentage distribution to nearest health facility

Hospital

| Location | <5km | >5km |
|----------|------|------|
| Embakasi | 56 | 44 |
| Kayole | 88 | 12 |
| Dandora | 90 | 10 |
| Mukuru | 67 | 33 |
| kenya | 52.3 | 47.7 |

Analysis/discussion

- Facilities distribution
 - Some facilities were to be closed and others upgraded
 - Its not possible to tie health seekers to a facility
 - Most health care seekers are constrained in accessing the available facility
 - Facilities distribution provides an opportunity for investment in line with services offered
- Service mapping
 - HIV-testing facilities and ARV treatment in different facilities
 - Services targets employed and their immediate families.
 - Services appear coincidental with the population
 - Most population lives within 5 km of the health facilities but exist inter and intra divisional disparities.
 - 1: 23,000 for ARV
 - 1: 71,650 FOR x-ray services

Recommendation

- GIS is a better tool for handling spatial and descriptive data.
 - GPS coordinates for positioning health care services and facilities
 - This study can be furthered into web-based
 - Can be extended to e-service through a mobile provide
 - This will provide basis for health facility audit and creation of master facilities in the country.
 - This Mapping can provide basis for referral system within a locality.

