2010 ESRI Health GIS Conference

NIMR

Health Workers Retention: Spatial Analysis of Basic Services Using GIS

Benjamin K. Mayala

October 19, 2010

NATIONAL INSTITUTE FOR MEDICAL RESEARCH, TANZANIA

Introduction

NIMR

- Lack of basic services in some areas is one of the reasons for a health worker to migrate to a areas with better services
- Understanding the spatial distribution of basic services in a community is important
- Data on the existence of basic services in not well known

NIMR

Water problem

NIMR

Market

NIMR

Health Facility buildings- Dispensary

Working Environment…… is it Good?

Can a MD work here?

Water problem at Health Facility

NIMR

Infrastructure

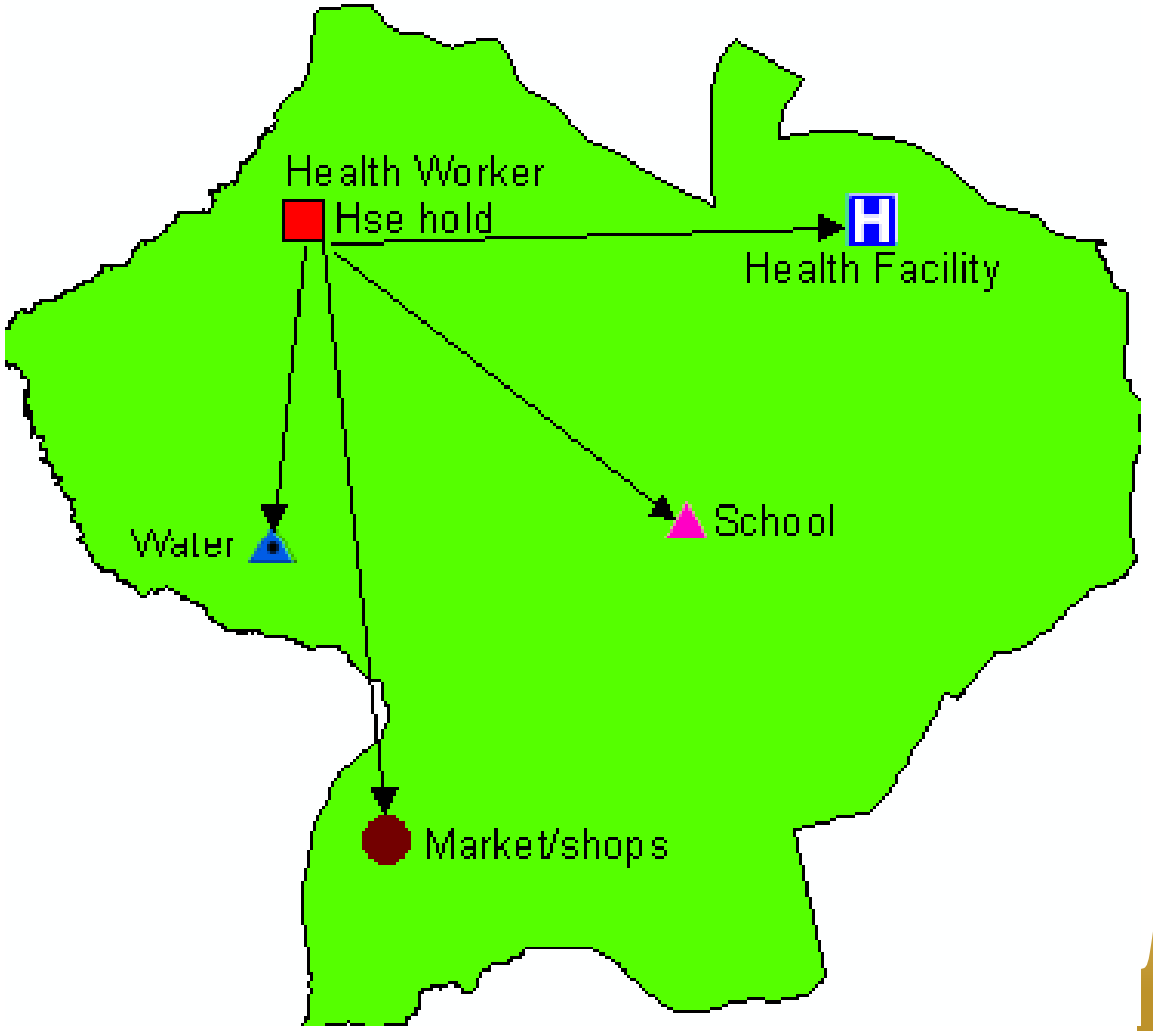
Objective

Determine the availability of basic key services that are important for health workers

- Focus - how health Workers can access services in terms of travel distance using GIS techniques

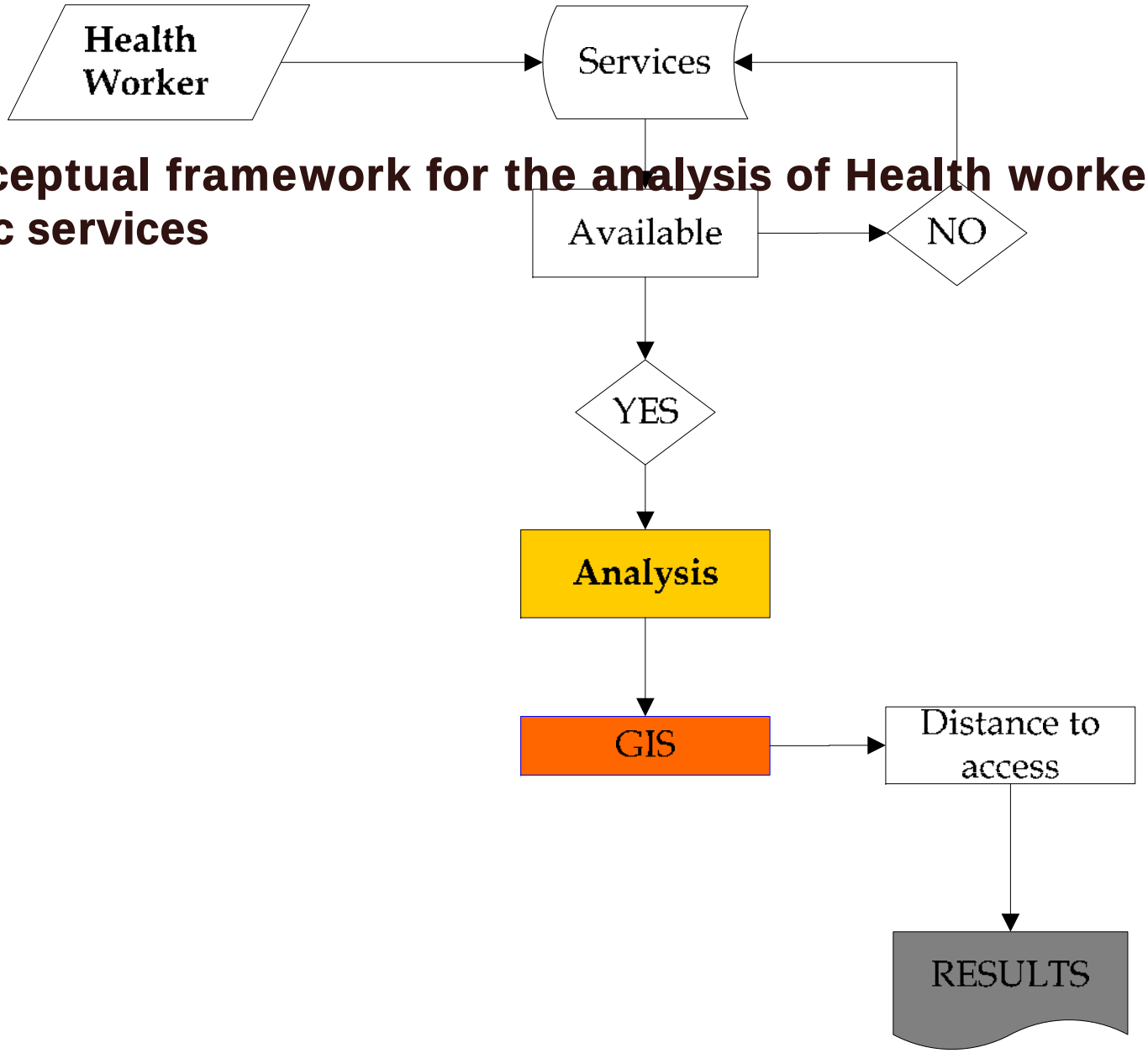
Specifically

GIS was used to establish a network that will consider *geographic position* **and existence of key services that could influence retention of health workers (e.g.** *bank, police post, markets, schools, post office, and water sources*



NIMR

Conceptual framework for the analysis of Health worker access to basic services



Methods

- 16 districts were selected
  - Urban and Rural
- All health care facilities (Hospital, Health Centre and dispensary)
- Interview health workers
- GPS locations of basic services
  - Health Facilities, Health workers HH, Water sources, Banks, Post office, Police post, Referral hospital, Shops/markets, schools
- Buffer and Point distance analysis

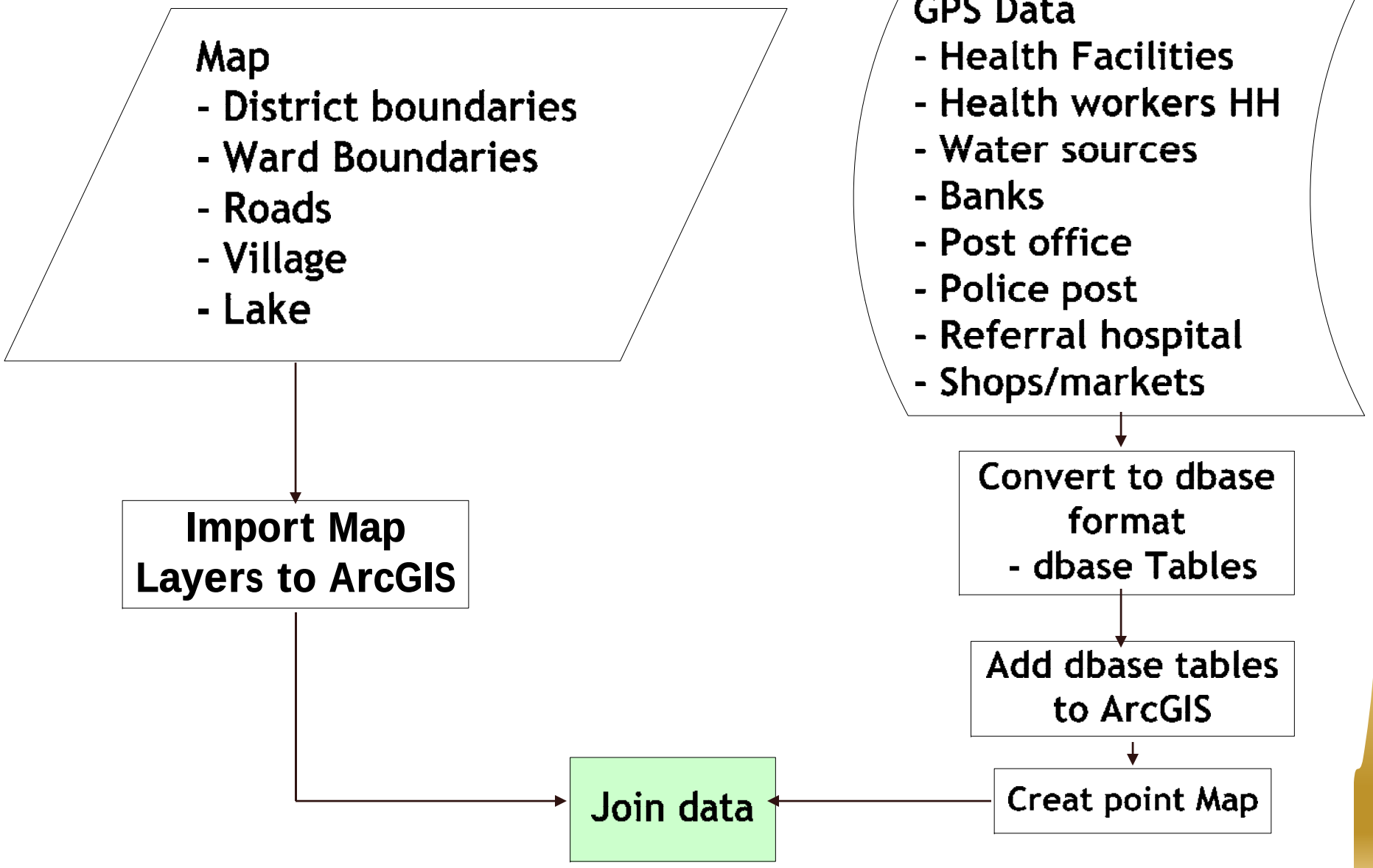
Methods Cont...

Health Facility

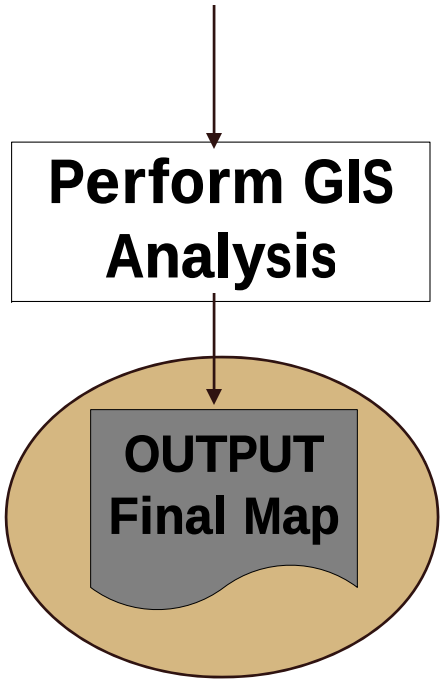
Water source

NIMR

Methodological Flow



NIMR



Results

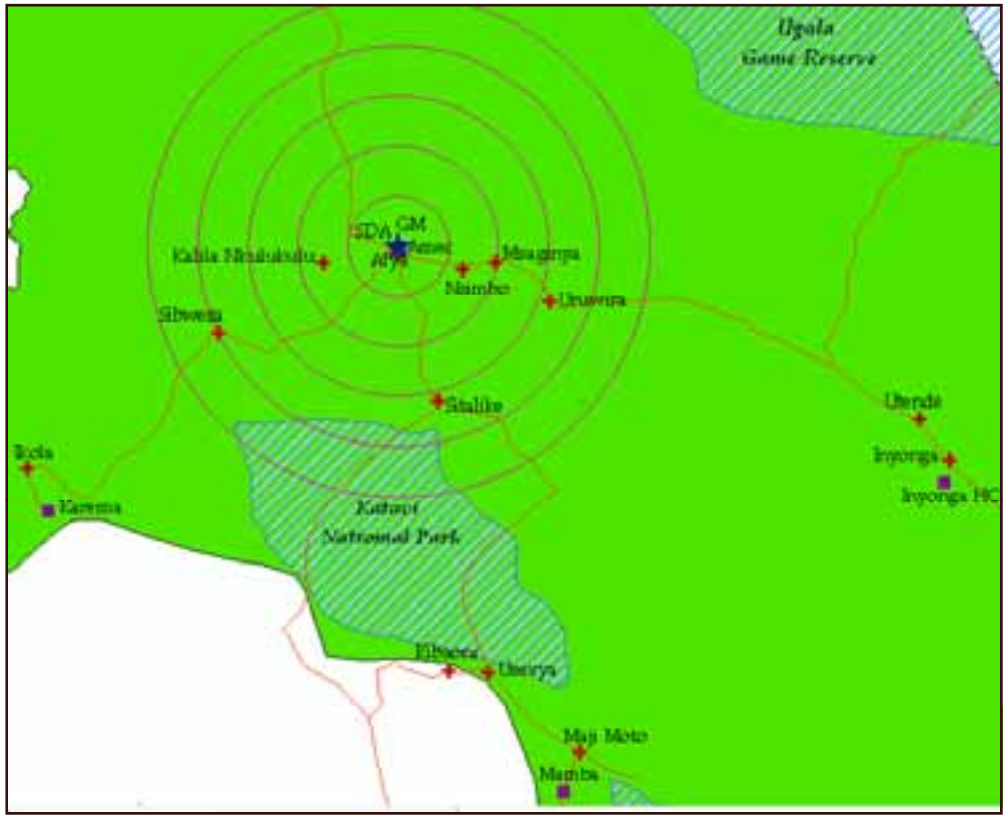
NIMR

Location of Services

NIMR

- Analysis revealed areas that were significantly accessible and/or underserved
- Results from GIS point analysis show that HW might travel a distance up to 200km to seek for services (bank), with an estimated travel time of 4 to 6 hours or more

NIMR



Road

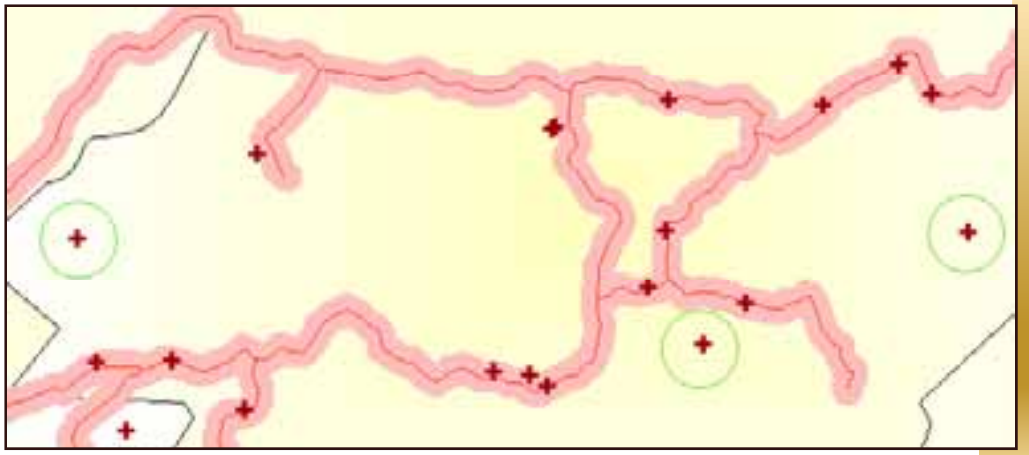
Bank

G Dispensary

" Health Centre

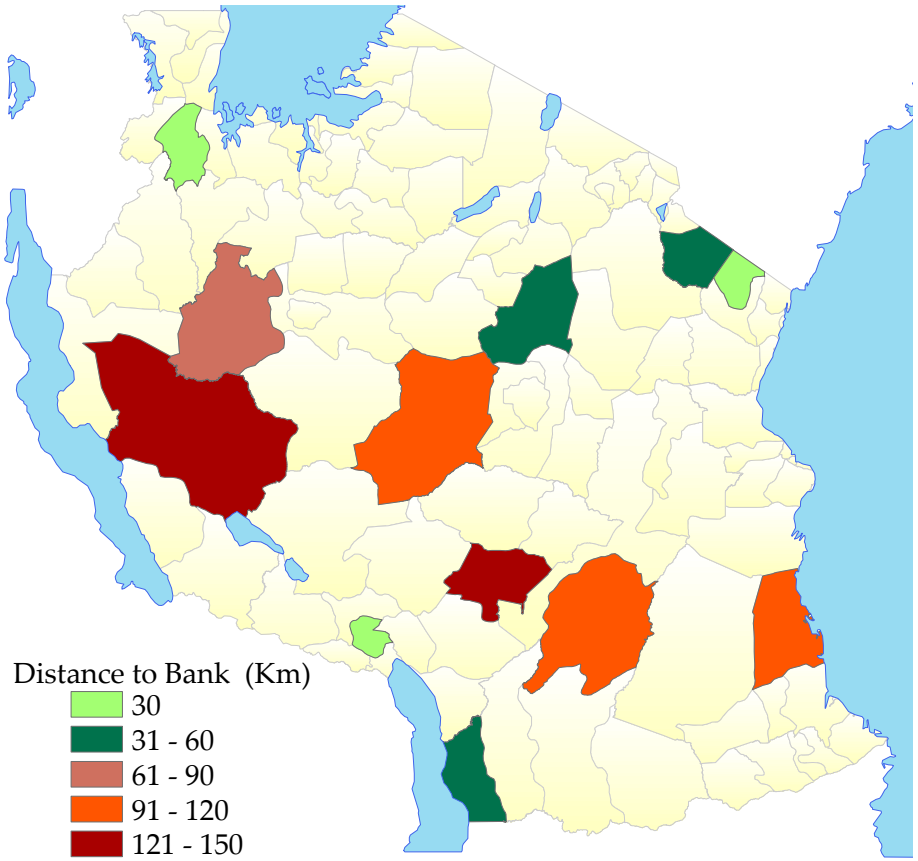
q Hospital

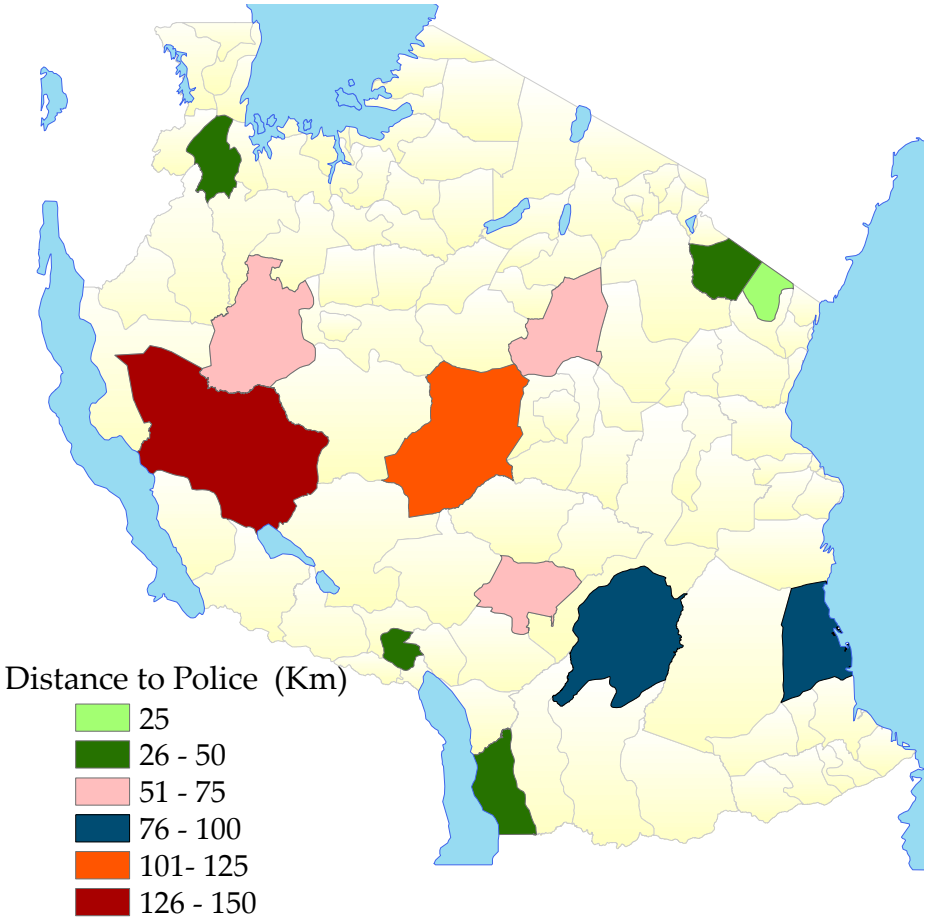
Distance 10-50 km



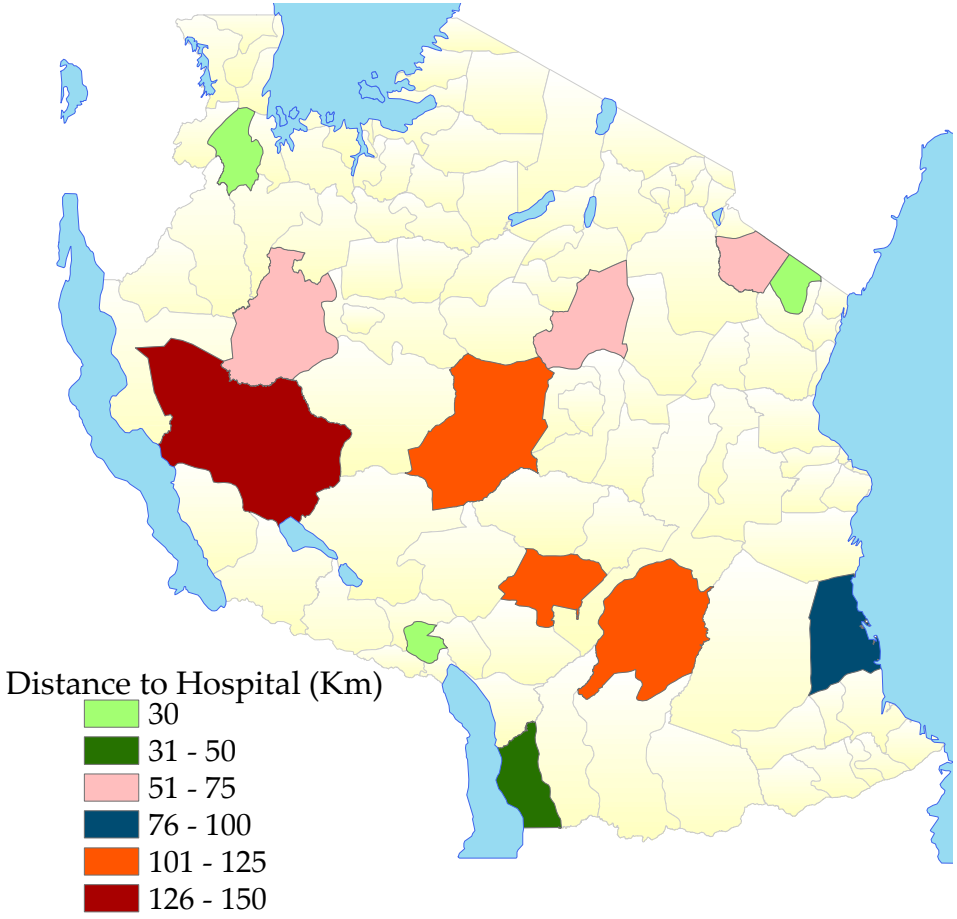
3km buffer
from a road

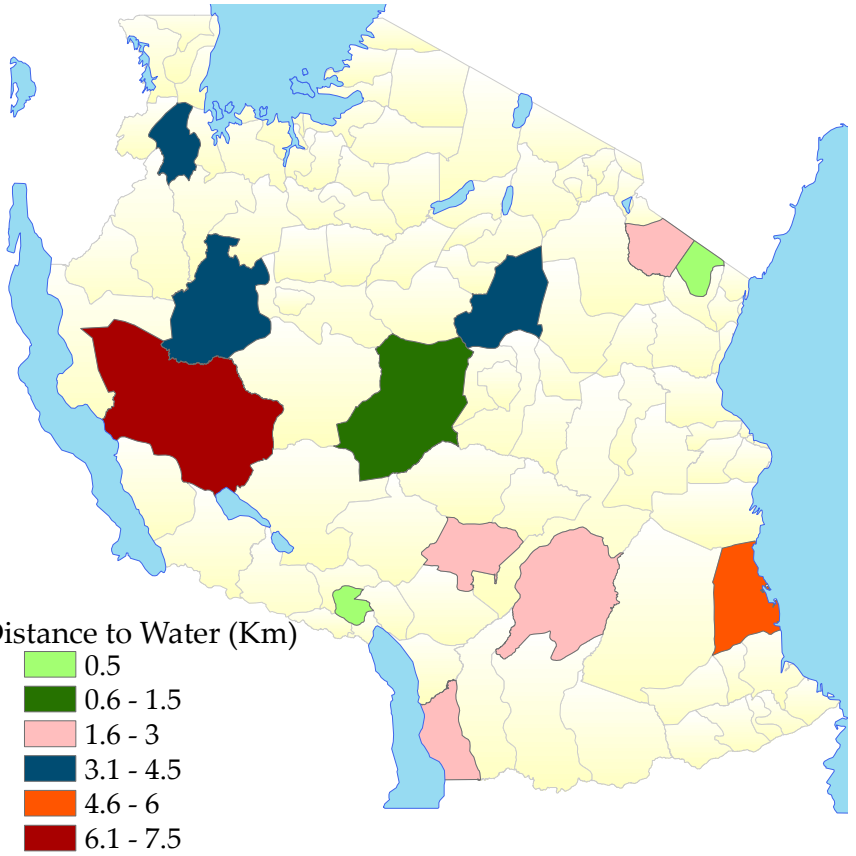
NIMR


Distance to Bank (Km)
30
31 - 60
61 - 90
91 - 120
121 - 150

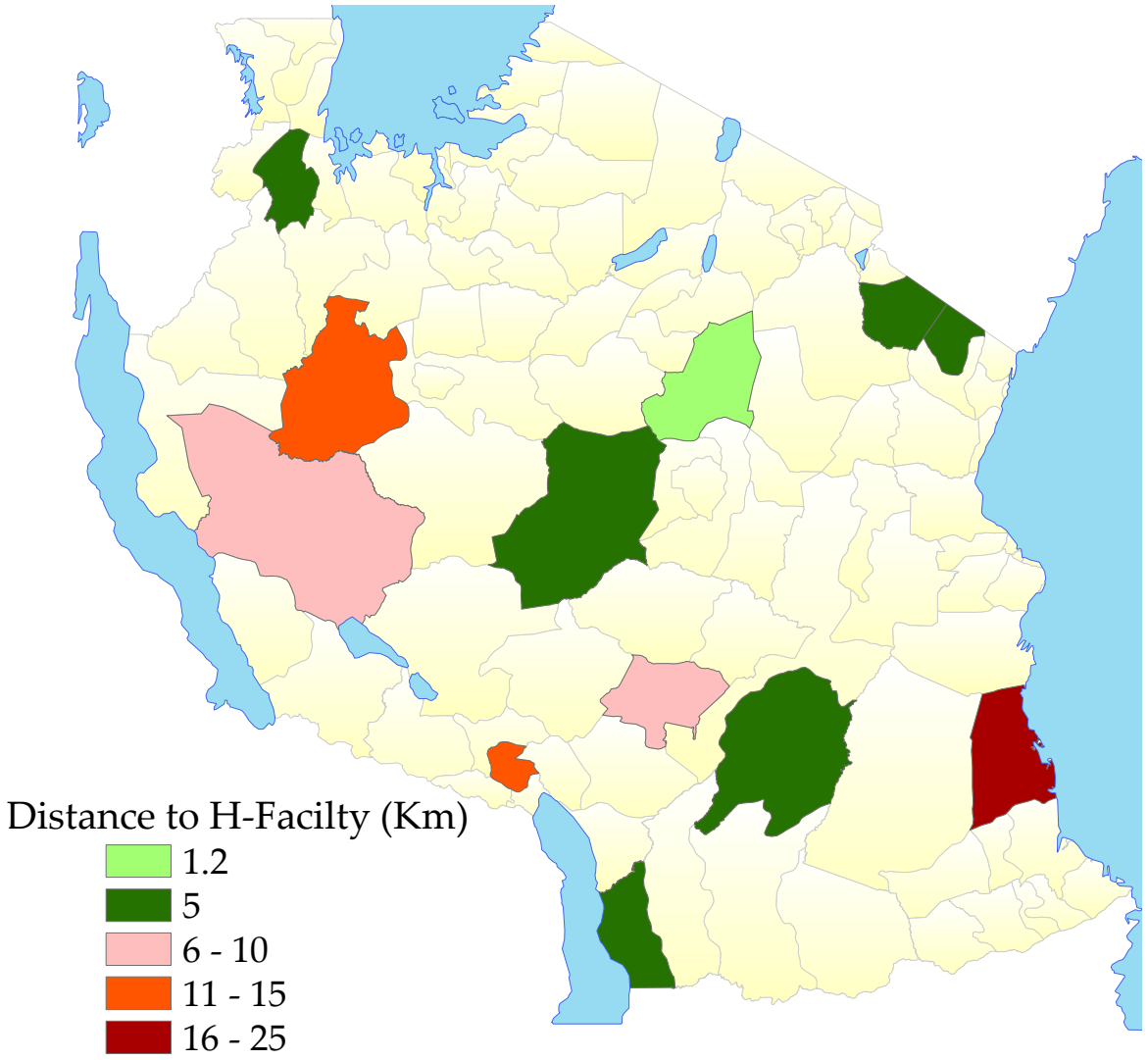

Distance to Police (Km)
25
26 - 50
51 - 75
76 - 100
101- 125
126 - 150

NIMR

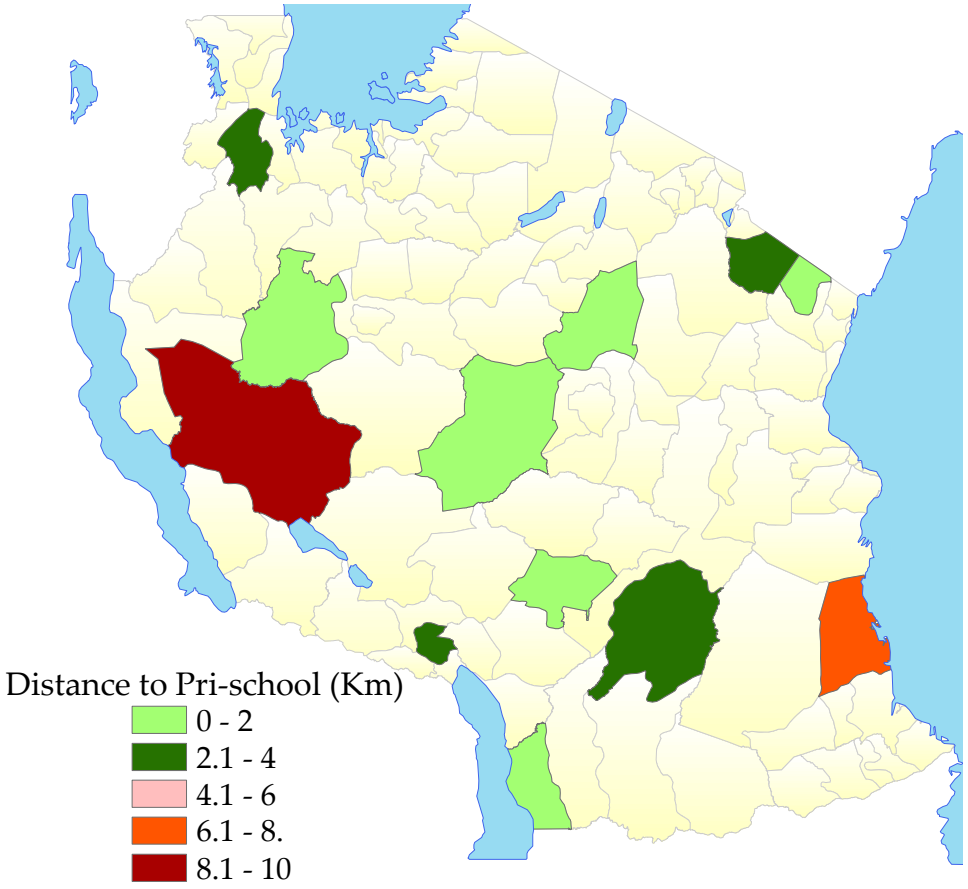

Distance to Hospital (Km)
30
31 - 50
51 - 75
76 - 100
101 - 125
126 - 150

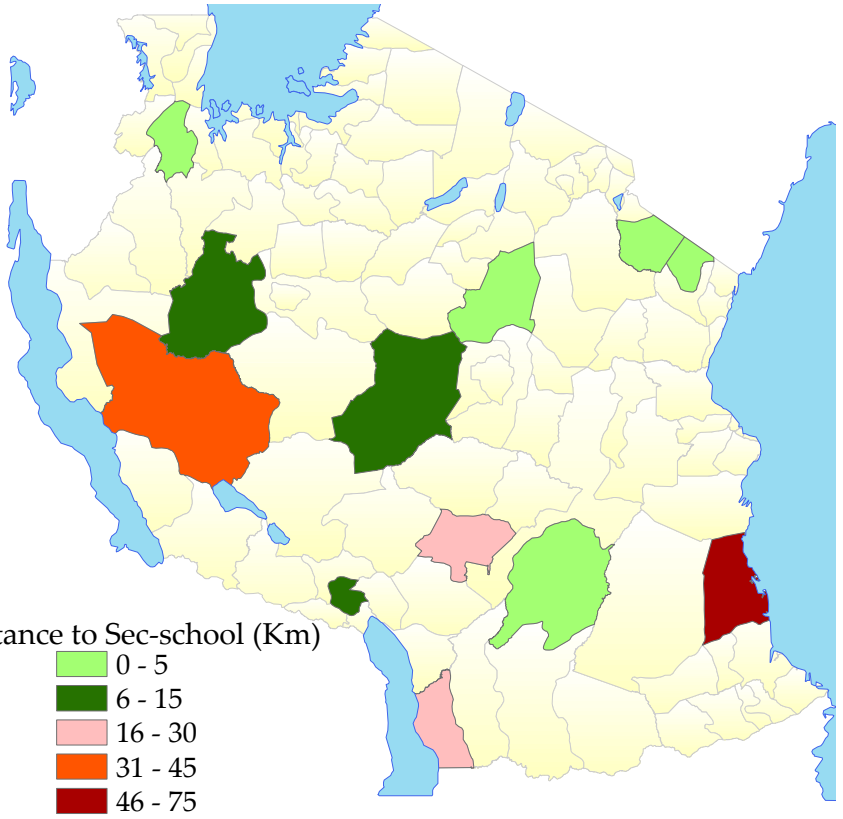

Distance to Water (Km)
0.5
0.6 - 1.5
1.6 - 3
3.1 - 4.5
4.6 - 6
6.1 - 7.5

NIMR



NIMR


Distance to Pri-school (Km)
0 - 2
2.1 - 4
4.1 - 6
6.1 - 8.
8.1 - 10


Distance to Sec-school (Km)
0 - 5
6 - 15
16 - 30
31 - 45
46 - 75

Conclusion

- GIS - an approach to determine spatial distribution of existing basic services
- GIS - demonstrates how health worker can access services
  - Overlay different maps
    - More weight (i.e. planning) can be given into those areas which lack services

NIMR

NIMR