



Analysing geographic coverage of ART clinics using GIS: example of collaboration between several institutions in Malawi

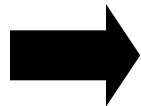
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Pre-CODIST workshop
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Co-authors

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Cross-sectoral collaborative effort



Current HIV/AIDS situation in Malawi

Selected indicators (Estimate, [low estimate – high estimate])

• Estimated number of Adults and children living with HIV (2007) ¹ :	930,000 [860 000 - 1 000 000]
• Adult (15–49) prevalence percent (2007) ¹ :	11.9 [11.0 - 12.9]
• Deaths in adults and children (2007) ¹ :	68,000 [59 000 - 77 000]
• Orphans (0–17) currently living (2007) ¹ :	550,000 [470 000 - 640 000]
• Number of ART sites (end 2008) ² :	221 (170 Pub., 51 Private)
• Number of patients ever registered for ART (end 2008) ² :	196, 368 (39% M , 61 % F)
• Number of patients alive on ART at the end 2008 ² :	147,479
• Number of patients who started ART in 2008 ² :	76,581

¹ 2008 Report on the global AIDS epidemic, UNAIDS/WHO, July 2008.

² Q4 report ART treatment



Importance of geography when fighting against HIV/AIDS

Making sure that peoples in needs of HIV/AIDS care are having access to it in an equitable way requires to know about:



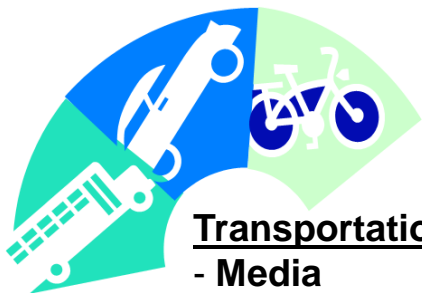
Prevalence population

- Number
- Distribution



Condition

- Travel time
- Type of care



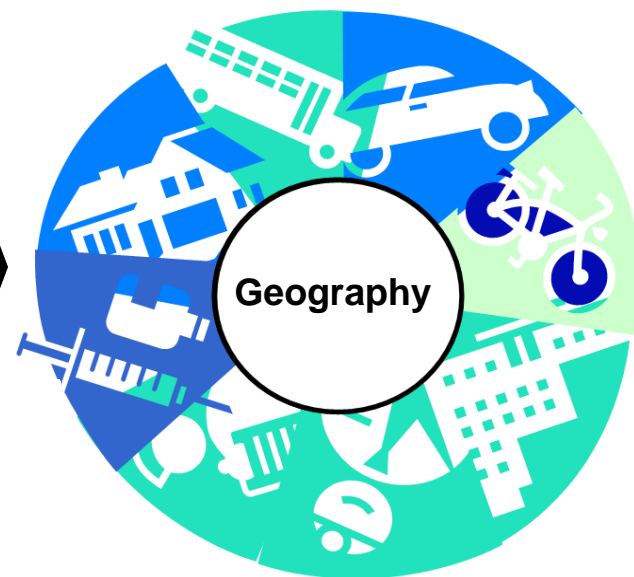
Transportation

- Media
- Network
- Environment

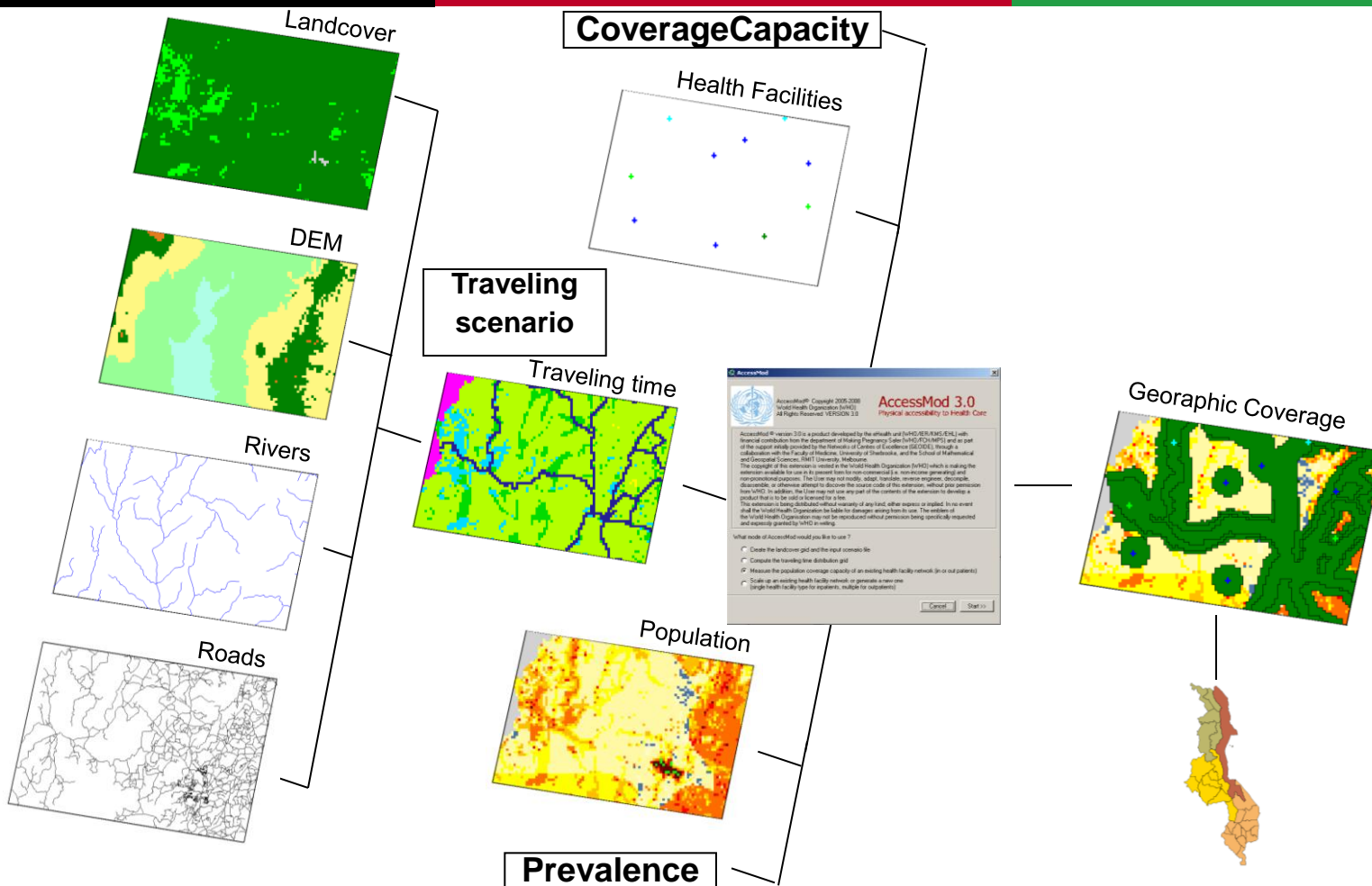


HIV/AIDS care centres

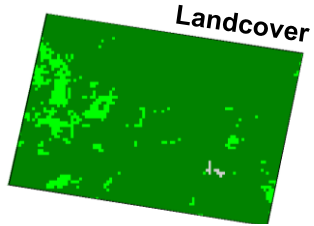
- Location
- Resources (staff, drugs, equipment)



Importance of geography when fighting against HIV/AIDS



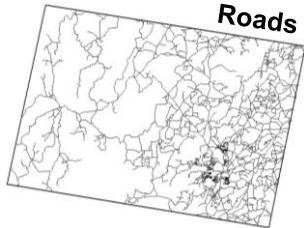
Challenges (2006)



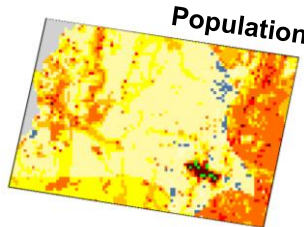
Survey Department
Forestry Department



Survey Department

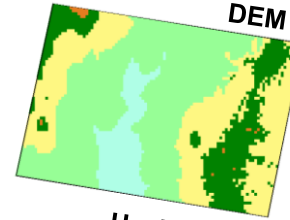


Survey Department
National Road Authority

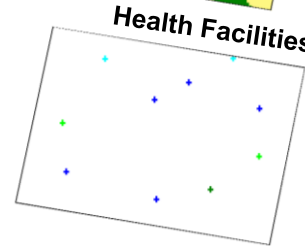


National Statistical Office

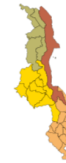
GIS capacity and
technical expertise



Survey Department



Ministry of Health
National AIDS Council
Local Government
National Statistical Office
CDC



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Survey Department

Prevalence

Ministry of Health
NAC
CDC
UNAIDS

Coverage Capacity

...

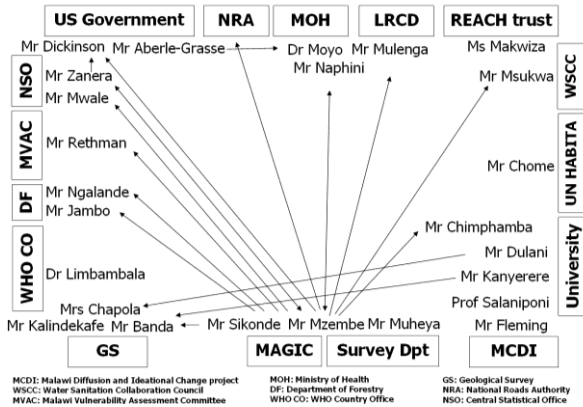


All



Challenges (2006)

Who works with whom ?

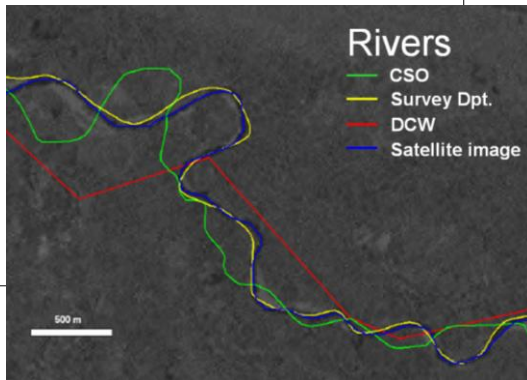


- Mandates and capacities dispersed among several stakeholders
- limited or even a lack of communication and/or working relations between institutions producing health data and/or geographic information of interest in public health (MOH, NAC, NGOs, Survey Department, National Statistical Office (NSO),...),
- Several stakeholders not participating in the development of the National Spatial Data Infrastructure (NSDI) like for example the MOH
- lack of agreed upon data collection standards and protocols
 - existence of many different coding schemes that are not linked together,
 - very limited integration of the time dimension
- lack of awareness of the data, resources and GIS skills available in the country (e.g. from the academic sector),
- important competition for funding.



Challenges (2006)

NSO
Dedza district
hospital



➔ Duplication of efforts for the creation of datasets that are of questionable quality

➔ Important number of lost opportunities at that time:

- NSO collected the location of the health facilities and schools in the context of the 2008 population census without collaborating with the Ministry of Health nor the Ministry of education
- Existence of a course on medical geography at the University of Malawi unknown from the Ministry of Health

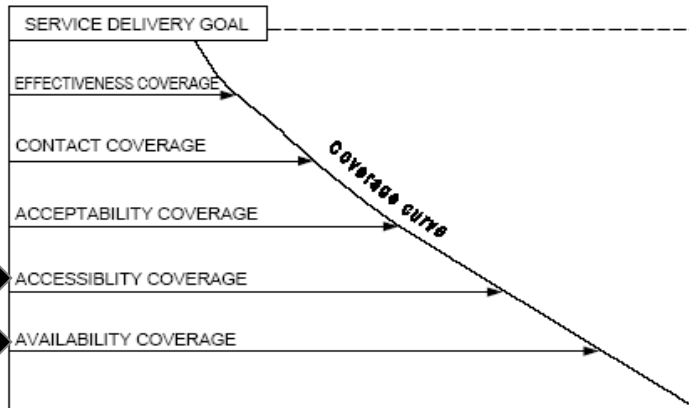
➔ Large park of specific hardware (e.g. large size printer, GPS devices) which is not frequently used

➔ Leveraging the existing capacity and data as well as improving the working connection between the stakeholders would benefit all and improve decision making



The Equity project

"Promoting equity and a health systems approach towards treatment access and responses to HIV and AIDS in Southern Africa: a joint project for World Health Organization (WHO), REACH Trust Malawi / Southern African network on Equity in Health (EQUINET)"



Source: Tanahashi, T, 1978

MEASURING AVAILABILITY AND ACCESSIBILITY COVERAGE. RESULT OF THE GIS CAPACITY AND DATA AVAILABILITY ANALYSIS: ZAMBIA

PROMOTING EQUITY AND A HEALTH SYSTEMS APPROACH TOWARDS TREATMENT ACCESS AND RESPONSES TO HIV AND AIDS IN SOUTHERN AFRICA: A JOINT PROJECT FOR WORLD HEALTH ORGANIZATION (WHO), REACH TRUST MALAWI / SOUTHERN AFRICAN NETWORK ON EQUITY IN HEALTH (EQUINET)

08 SEPTEMBER 2006

Introduction and Objectives

As part of the equity project there is a need to measure the availability and access coverage offered by the ART (antiretroviral therapy) delivery system in the country. The consultant processes and data that needs to be integrated in order to measure accessibility coverage highlights the potentiality to use the capacities of a Geographic Information System to measure accessibility coverage in Zambia.

Willing to take advantage of the GIS capacity and data set available in the country a preliminary analysis has been performed in Zambia at the beginning of July 2006.

The objective of this report is to present the results of this analysis before proposing recommendations aiming at:

- Establishing consciousness between the main institutions using GIS which perform the technical work;
- Improving the quality and level of completeness of the already existing GIS data;
- Possibility establish a link between this work and the GIS component of the e-Health Management Information System (HMIS).

Process followed for the analysis

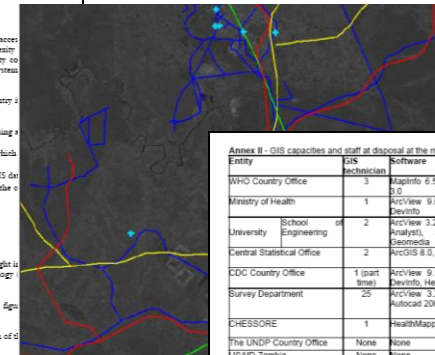
Two type of information are generally used in order to measure availability:

- the size of the population;
- the quantity of resources available for delivering an intervention. This might be number of health facilities, number of personnel, availability of technology equipment, etc).

This information might be either presented under the form of national figures disaggregated according to the administrative structure of the country.

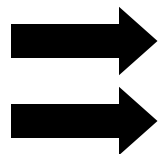
In order to measure accessibility coverage we in fact need the geographic location of information used for measuring availability coverage as well as:

GIS capacity and data availability assessment



Annex II - GIS capacities and staff at disposal at the moment of the interview

Entity	GIS technician	Software	Special Hardware	Nbr of GPS
WHO Country Office	3	Maginfo 6.5, Healthmapper 4.3, Epiinfo/none	None	None
Ministry of Health	1	ArcView 9.0, ArcGIS 9.0, ArcInfo 9.0, A1 plotter	72 (one for each district)	72 (one for each district)
University	2	School of Engineering ArcView 3.2a (+ Spatial, 3D and Image) AD1 plotters, 1 AGI Analyst, Spring 4.2, ILWIS 2.2, digitizing table, A4 scanner	1 AGI Analyst, 1 AGI Analyst	1 AGI Analyst
Central Statistical Office	2	ArcGIS 8.0, ArcInfo 7.0, DevInfo	A1 plotter, A0 digitizing table	0 (Magellan)
CDC Country Office	1 (part time)	ArcView 9.1, ArcGIS 9.1, ArcInfo 9.1	None	None (to be purchased)
Survey Department	25	ArcView 3.2, ArcGIS 8.3, ArcInfo 8.3, A0 plotter, Autocad 2004	ACI digitizing table, ACI tables, 6 (local)	6 (local)
CHESSORE	1	HealthMapper, EpiInfo	None	None
The UNDP Country Office	None	None	None	None
USAID Zambia	None	None	None	None
Ministry of Works and Supply Road department	2	ArcView 9, ArcGIS Desktop	None	0 (to arrive)
Total	37	72 different software	0 large size plotter, 107 large size digitizing tables, 1 small size scanner	6



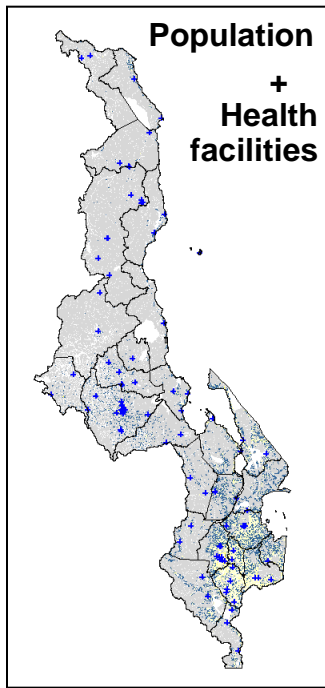
Opportunity to go beyond the needs of the Equity project

Propose a different collaborative approach

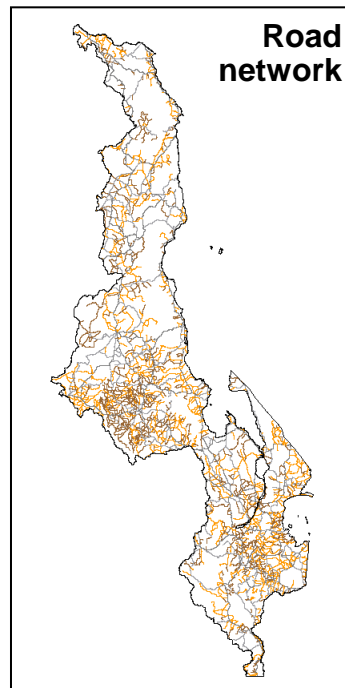


Collaborative work

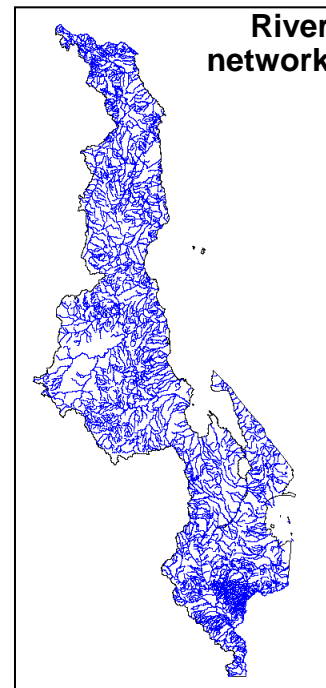
Collaborative efforts concentrated on 4 layers



*NSO, MOH, NAC
CDC, U.
Pennsylvania*



*Road Authority
Survey Department*



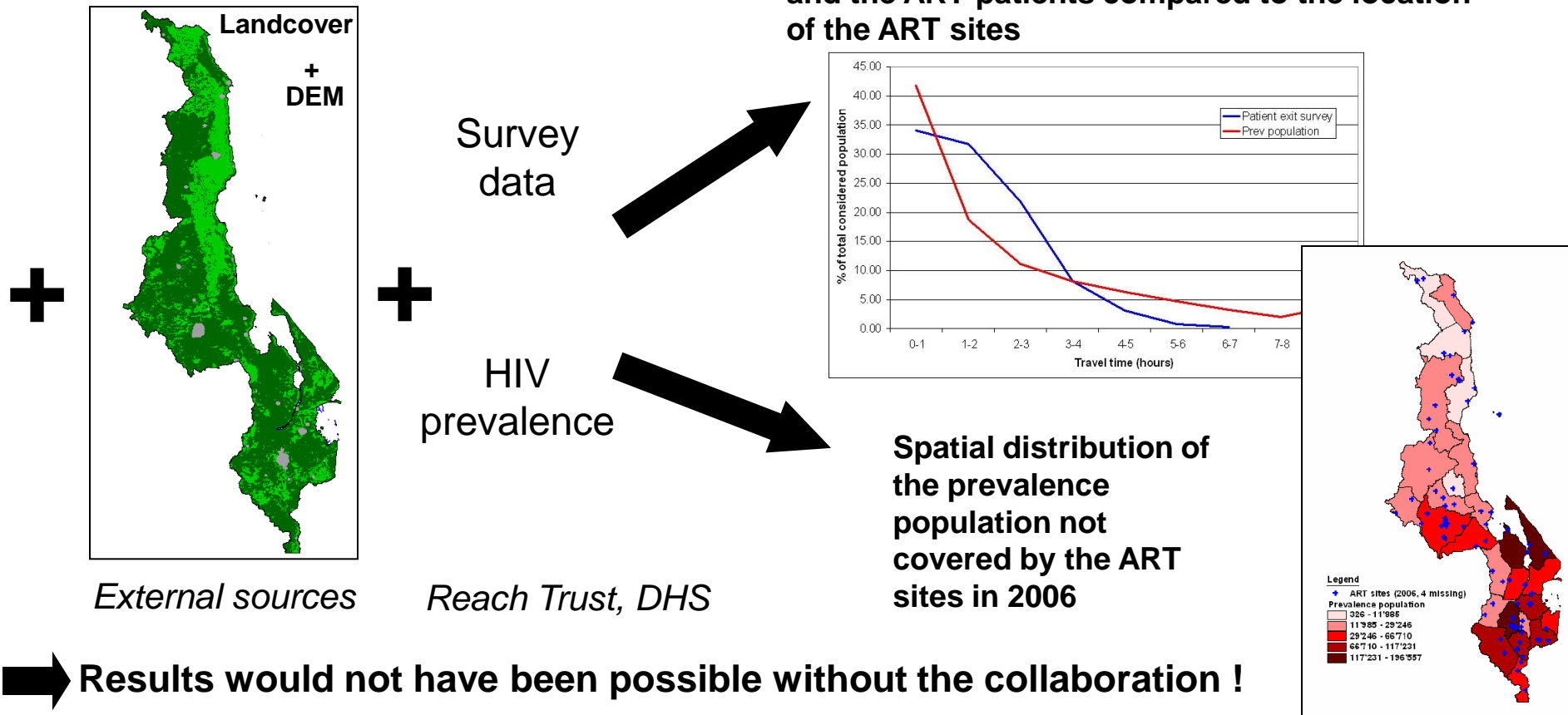
Survey Department

With WHO's support:

- ➔ compilation, cleaning, homogenization using satellite images
- ➔ resulted in an improved dataset



Results of the Equity project



Other benefits of the collaboration

- NSO used the layers to delimitate the Enumeration Areas for the 2008 population and housing census
- Better awareness of both tabular and spatial data existing in the country and provision of external data that could not be downloaded from the internet
- Better understanding of the needs for data of good quality to achieve data compatibility
- Better connection between the different institutions part of the exercise and among sectors (government, NGO, academic sector)
- Improved link with the international community
 - contribution to the development of the Malawi Spatial Data Standards document
 - connection between the group and external institutions doing work in Malawi
- Better awareness and involvement of the health sector in the development of the National Spatial Data Infrastructure (NSDI)
- Saved money !



What should/could be next ?

- organizing regular meetings of the group and include other institutions in the discussions
 - ➡ Find a local champion
 - ➡ Include donors for a more coordinated approach towards funding
 - ➡ Institutional arrangements and awareness raising at policy level
- receiving more advanced training in the management of spatial data, as well as analysis with spatial data (transfer of the methods)
- Making the data more accessible to reduce duplication of work
 - ➡ Importance of metadata
 - ➡ Establishment of a one stop information center
- establishing mechanisms ensuring a regular update these layers (still don't have the location for all the ART sites)
- improving the sharing of existing equipment (i.e. GPS devices)
- applying the approach to other services in and beyond health



Conclusion

NSDIs should actually been build to solve real problems (e.g access to HIV/AIDS care) and not necessarily technical problems:

- ➡ Facilitate the involvement of the policy level and donors**
- ➡ Health can be the context which support the development of an NSDI**
- ➡ The exercise presented here illustrates the benefits that might result from a collaborative efforts driven by health**
 - ➡ still at its early stage**
 - ➡ facilitated by external partners**
 - ➡ need to learn from other experiences and find resources to move forward**
- ➡ Should nevertheless already encourage other countries to look at the same type of synergies**

http://www.who.int/whosis/database/gis/salb/countries/MWI/GIS_HIV_AIDS_MWI.htm

