



Bridging data sets: a GIS response to the HIV/AIDS epidemic in Zambia

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**Humanitarian
Information
Unit**





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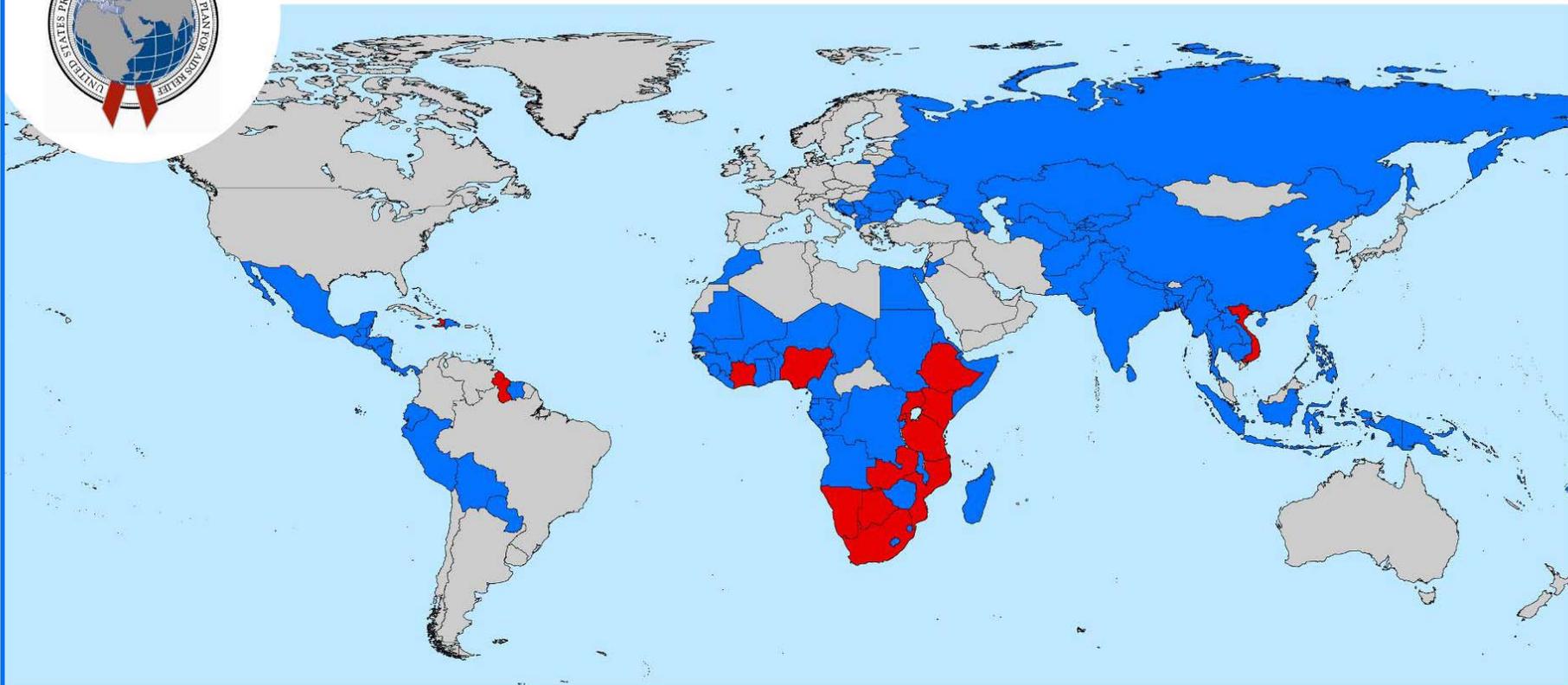
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U.S. President's Emergency Plan for AIDS Relief (PEPFAR) Worldwide Activities July 2006



U. S. Government International HIV/AIDS Activities

-  Focus Countries
-  Other U.S. Bilateral Efforts
-  No Activities Present

This map includes all HIV/AIDS activities funded through the following USG agencies: Department of State, U.S. Agency for International Development, Department of Defense, Department of Commerce, Department of Labor, Department of Health and Human Services, and Peace Corps. This does not include activities funded through the U.S. Department of Agriculture.



Zambia

Life expectancy at birth,
men and women, 40

Estimated population: 11,668, 000

Adults aged 15 to 49 HIV prevalence
rate: 17.0 [15.9 - 18.1]%

Sources: Zambia MODIS and UNAIDS

0 240 480 960 Kilometers





Population and facility-level data

- Population surveys
 - Mortality, morbidity, natality
 - Service utilization
 - Change over time
- Facility surveys
 - Capacity
 - Service throughput
 - Change over time



Large-scale health surveys in Zambia 2001-2006

Organization	Data	Timeframe	Scale	Sample
Japanese International Cooperation Agency	Health Facility Census	Ongoing	Health facility location	Full census with GPS
World Health Organization	Service Availability Map	2004	District	District with GPS ground-truthing
MEASURE/DHS	Service Provision Assessment	Ongoing	Province	Province with GPS ground-truthing
MEASURE/DHS	Demographic Health Survey	2001-2002	Household sample cluster	Nationally representative sample with GPS



Service Availability Mapping

- Purpose: Overview of what is available and where
- Scale: District, with sample of GPS point data
- Attributes:
 - Location of health service delivery points (public and private);
 - Availability and location of physical infrastructure;
 - Availability of health services (maternal and child health, HIV/AIDS, TB, malaria);
 - Availability of health workers.



Service Provision Assessment

- Purpose: Information on quality of health services
- Scale: Regional or national, with sample of GPS point data of government and non-government health facilities
- Attributes:
 - Availability of infrastructure;
 - Facility-level systems to support quality services and maintenance;
 - Staff qualifications, training, and supervision;
 - Adherence to standards in practice;



Health Facility Census

- Purpose: Comprehensive snapshot of physical infrastructure, services, and human resources
- Scale: GPS point data of public and semi-public health facilities
- Attributes:
 - Availability and condition of physical infrastructure;
 - Location of health service delivery points (health facilities and outreach points);
 - Availability and condition of equipment;
 - Availability of health services;
 - Headcounts of health workers.



Demographic and Health Survey

- Purpose: Large nationally representative population-based health survey
- Scale: Sample cluster GPS point data
- Attributes:
 - Population
 - Health
 - HIV
 - Nutrition



Barriers to data fusion

- **Level of representativeness**
- Text versus code
- Inconsistent indicators
- Irresolvable discrepancies
- Confidentiality



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Coding

Adobe Acrobat Standard - [HHS.pdf]

Table 3.1.3: Kapiri-Mposhi District

Facility Name	Type	Owner	Total	
			Beds	Cots
Kapiri-Mposhi	District Hospital	Government	40	20
Chankomo HC	RHC	Government	4	
Chibwe	RHC	Government	2	
Chilumba	RHC	Government	4	
Chilwa Island HC	RHC	Government	4	
Chipili	RHC	Government		
Chibefwe HAHC	UHC	Government		
Chipepo	RHC	Government	4	
Kakulu	RHC	Government	8	
Kawama HAHC	UHC	Government		
Luanshimba	RHC	Government	6	
Lunsemfwa Power Station	RHC	Private	5	
Mpunde	RHC	Mission	31	10
Mukonchi Hc	RHC	Government	20	
Mukubwe	RHC	Government	6	2
Mulungushi Power Station	RHC	Private	2	
NCMDS	RHC	Government	3	
Ngabwe	RHC	Government	4	





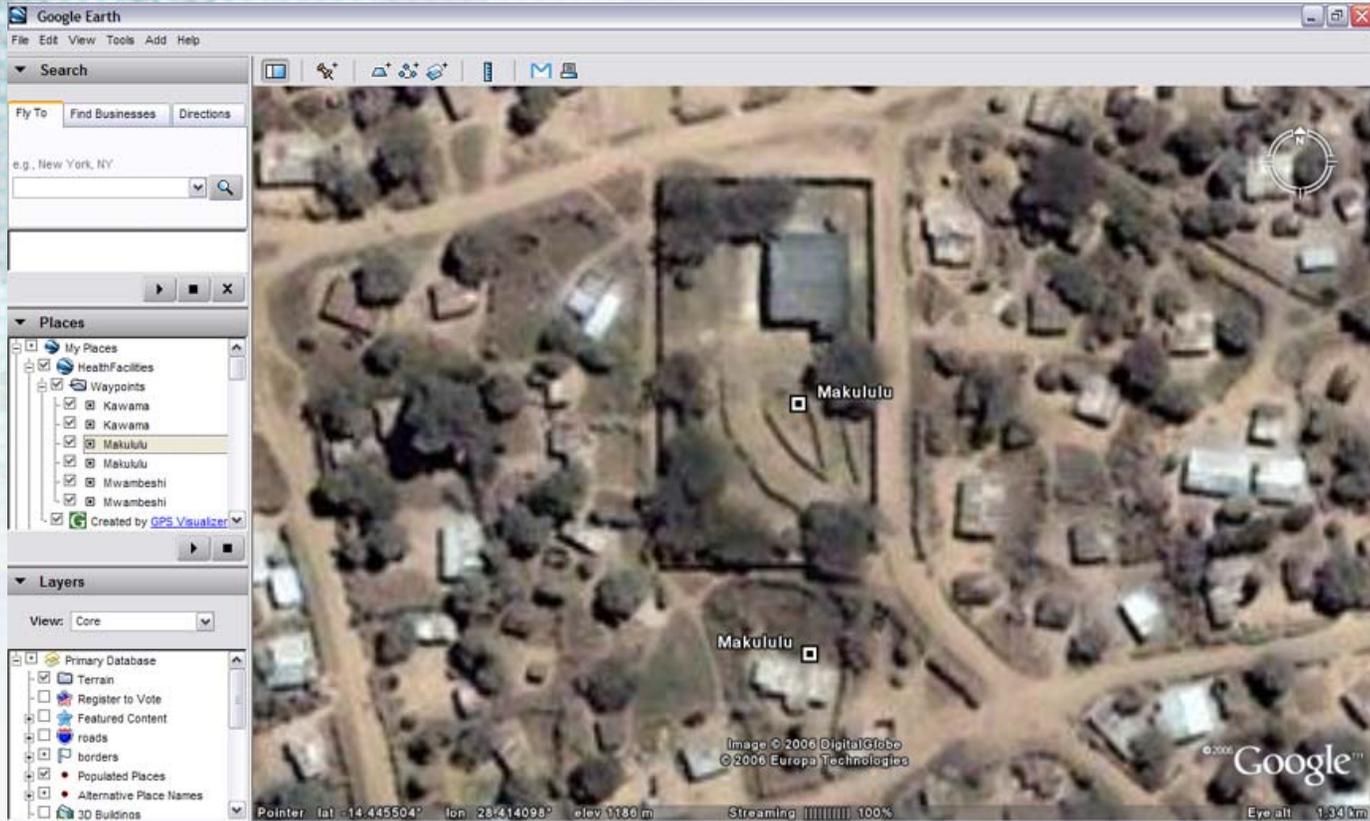
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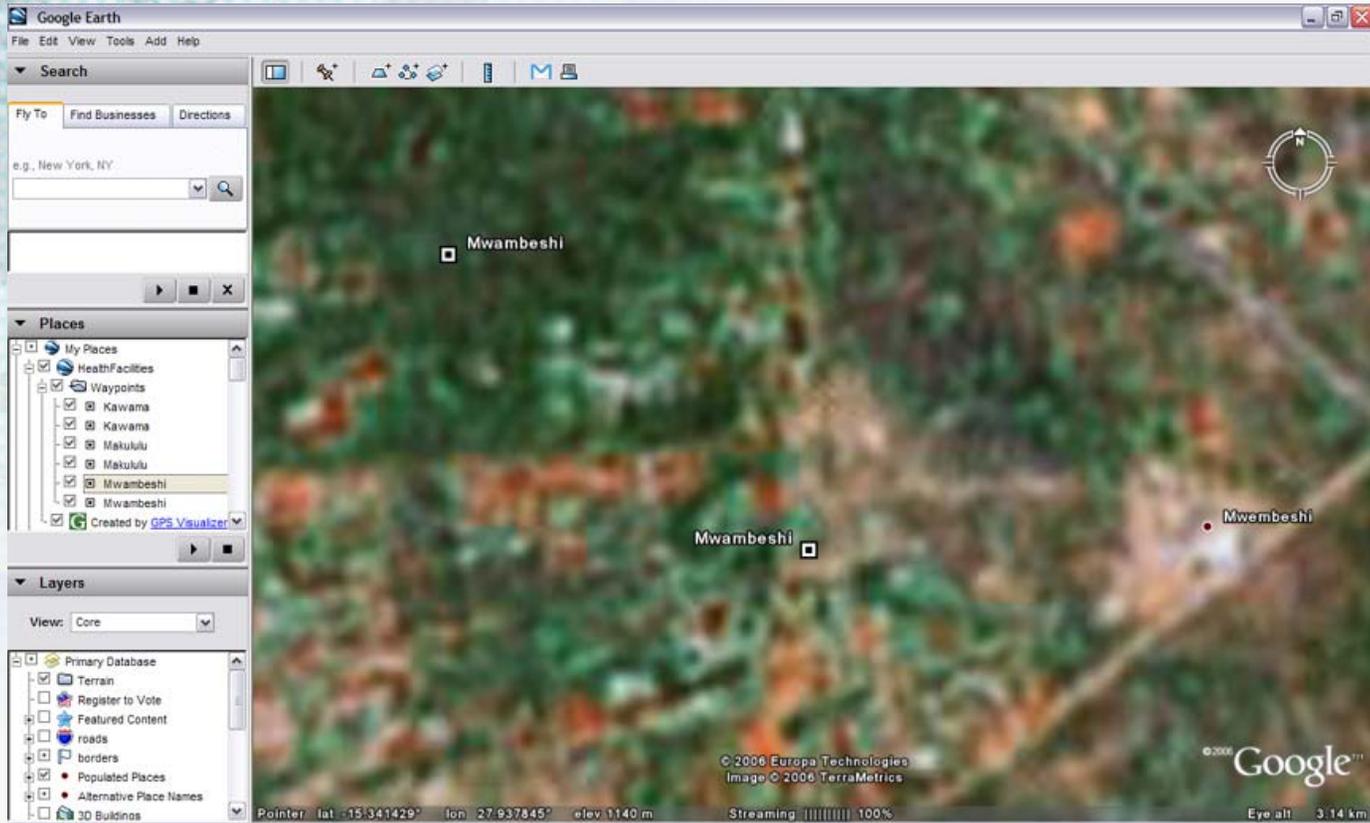


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Analyses

- Absolute number of people infected by district (DHS and Census)
- Correlation between access and outcomes (DHS and HFC)
- Correlation between quality and utilization (DHS and SAM or SPA)
- Identification of high prevalence areas with low service availability (DHS and SAM)
- Validation of GPS points (HFC, SAM, SPA)

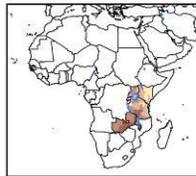


HIV Prevalence by Gender in Zambia, 2002

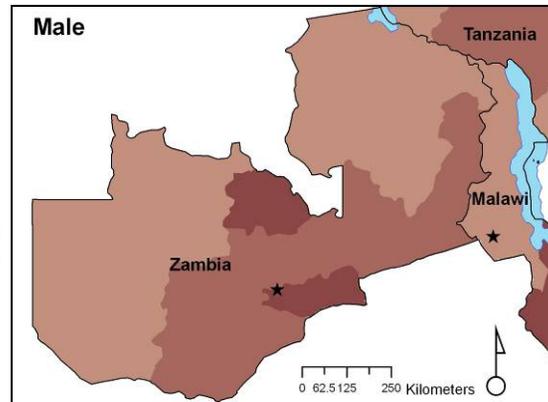
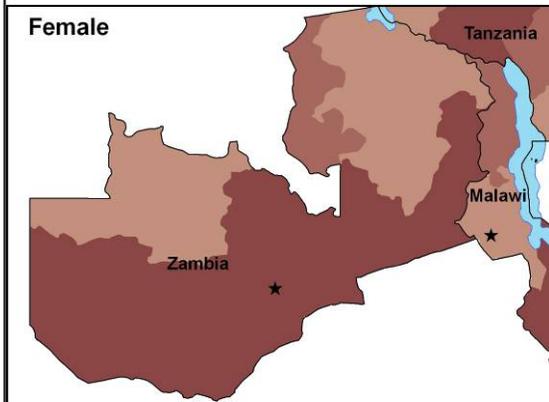
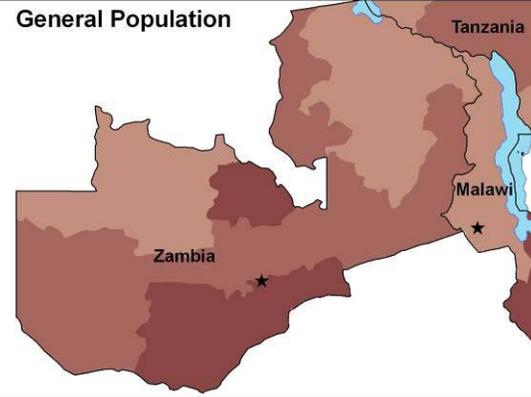
Data Aggregated to First Order Administrative Divisions

Percent HIV Positive

-  Less than 2%
 -  2-5%
 -  5-10%
 -  10-15%
 -  More than 15%
- ★ Capital

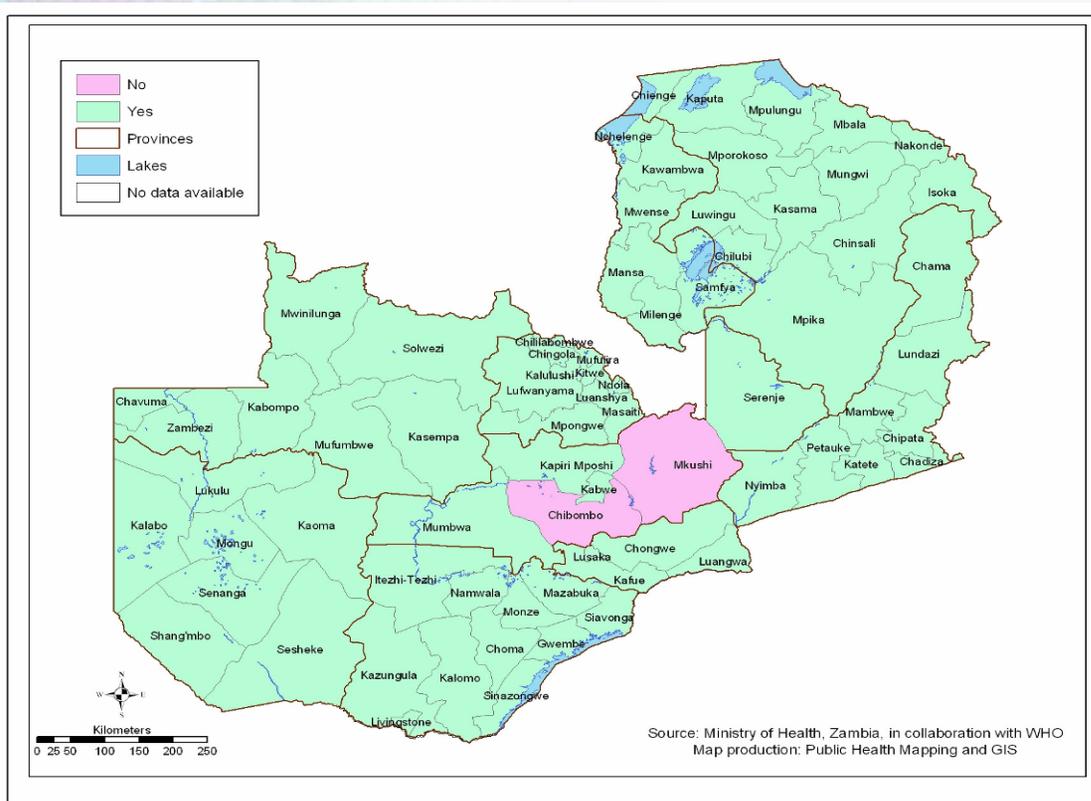


Note: Source years are not concurrent. Boundaries are not necessarily authoritative. Source: Zambia DHS 2002.





Presence of condom marketing programs, by district





Policy recommendations

- **Normative standards for geographic data collection**
- Metadata
- Coordination among partners



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