policy

GeoHealth Mapping

Improving the HIV Response at Local Levels

Photo by Andrea Vazzano

Monitoring and Managing the HIV Epidemic

Routinely collected data can help...

- Monitor trends in HIV testing at PMTCT and antenatal clinics over time
- Estimate HIV prevalence and create a heat map to visualize HIV hotspots
- Compare estimated HIV prevalence with locations of health facilities
- Compare numbers of patients on ART with estimated numbers of PLHIV needing treatment

Geo-coded data sources include...

- National registries of health facilities
- Facility-level PMTCT, HIV counseling and testing, or ART data
- District Health Information System (DHIS) 2.0
- Administrative data such as city boundaries, roadways, and waterways
- Subnational shapefiles[1]

Examining HIV variation at subnational levels and identifying hotspots, or areas where HIV prevalence is greatest, is a crucial part of HIV prevention, control, and programming.

Understanding geographic variation at the most granular level can help to inform a more strategic, cost-efficient allocation of resources. Data collected as part of routine clinical care—such as HIV testing performed at prevention of mother-to-child transmission (PMTCT) programs, reports of patient volume at HIV clinics, or numbers of patients on antiretroviral treatment (ART)—are low-cost, timely, and readily available, offering an efficient means of monitoring and managing progress toward the achievement of global and country-specific goals. By mapping these existing data, decisionmakers at national and local levels can better explore the potential drivers of disease transmission, understand why some facilities experience a higher volume of HIV-positive patients than others, identify which sites are on track to meet targets, and determine where additional resources might be needed.

The USAID- and PEPFAR-funded Health Policy Project (HPP) has used the GeoHealth approach to assist selected high-impact Global Fund countries with analyzing and mapping available data to promote an efficient, effective, and localized response to the HIV epidemic.

How Does It Work?

Although population-based surveys are considered the gold-standard in estimating HIV prevalence, data collection on this large scale is both costly and infrequent. Instead, countries can use data already collected by health facilities to estimate important HIV-related indicators. For example, regularly reported HIV testing data from PMTCT clinics can be used to determine what is known as HIV positivity—a useful proxy for HIV prevalence—by dividing the total number of patients testing positive for HIV by the total number tested. When multiplied by population estimates, HIV positivity can provide a quick, timely estimate of HIV prevalence in a clinic area.

HPP's Approach

Adapting a methodology originally developed by Dr. Frank Tanser, of the University of KwaZulu-Natal, HPP worked with in-country stakeholders to examine HIV variation using routinely collected data. In particular, the team used HIV testing data from PMTCT clinics to (1) calculate HIV positivity; (2) estimate the number of people living with HIV (PLHIV); (3) estimate facility-level HIV prevalence (i.e., where patients access HIV care, support, and treatment); and (4) estimate ART coverage gaps.

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What Can It Do?

Using facility-level data for surveillance, countries can monitor progress toward national and global HIV reduction goals. For example, examination of the existing, low-cost data outlined above may help countries achieve the first two 90s of the UNAIDS 90-90-90 framework: For 90 percent of all people living with HIV to know their HIV status by 2020 and 90 percent of all people with diagnosed HIV infection to receive sustained ART.

Mapping these key indicators can also help decisionmakers identify where the HIV disease burden is greatest and target the allocation of available resources. HPP worked with the South African National AIDS Council to do just this in Eastern Cape (see below).

Using the data they already have, countries can significantly strengthen routine surveillance systems, improve data quality, and foster a data-use culture that promotes evidence-based decision making.

For more information on HPP's work in GeoHealth Mapping, please visit our website at www.healthpolicyproject.com.

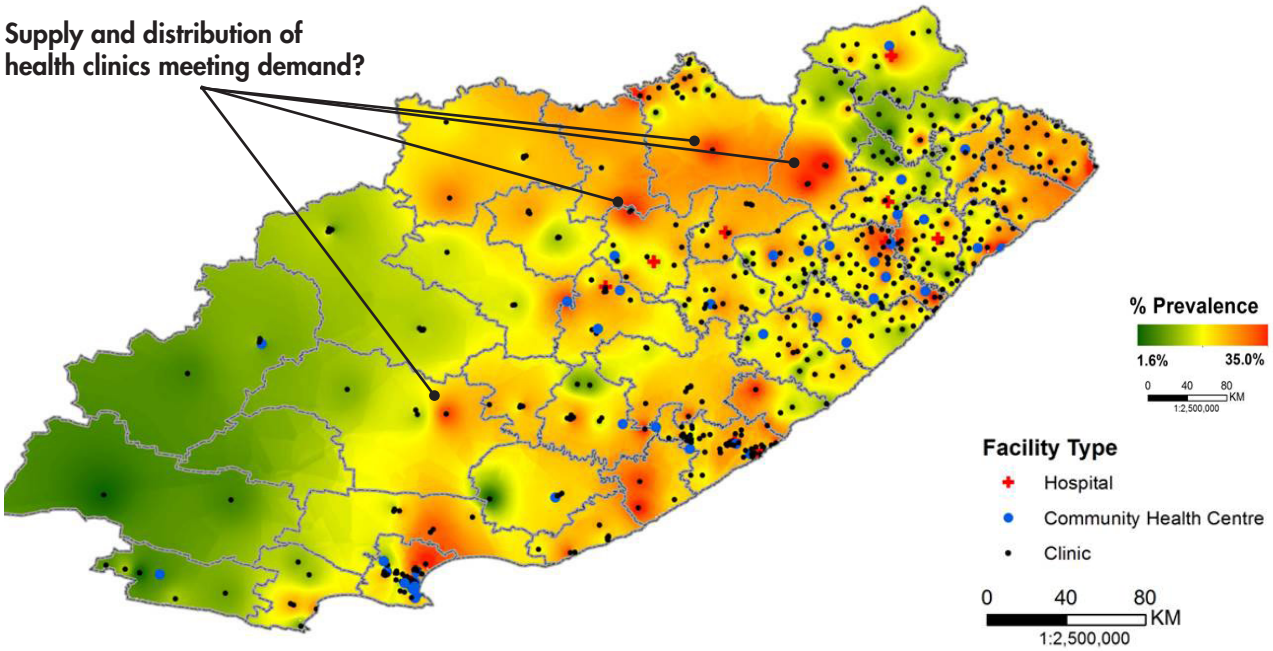
Note

[1] A shapefile stores nontopological geometry and attribute information for the spatial features in a data set. The geometry for a feature is stored as a shape comprising a set of vector coordinates representing points, lines, or polygons. An ESRI shapefile consists of a main file, an index file, and a dBASE table. See www.esri.com/library/whitepapers/pdfs/shapefile.pdf for more information.

GeoHealth Mapping for Strategic Resource Allocation in South Africa

When the distribution of health facilities is overlaid on an interpolated smoothed surface of estimated HIV prevalence between facilities, we can see that by and large, health facilities are distributed where estimated prevalence is highest. Still, the arrows point to potential hot spot areas with few facilities, suggesting that some areas may be underserved. Decisionmakers would want to explore these areas further when thinking about the prioritization and distribution of resources.

Estimated HIV Prevalence in Eastern Cape, South Africa, 2014



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