STRENGTHENING HEALTH SYSTEMS AND IMPROVING SERVICES IN TANZANIA USING DATA

Transforming IntraHealth International's Tabular Data into Visualizations

BACKGROUND

IntraHealth International is a global health organization involved in HIV prevention, family planning, and reproductive health services in Tanzania. IntraHealth leans on the use of technology and data for stronger decision-making and to help officials plan for, recruit, and deploy an effective health workforce.

Since 2011, IntraHealth has been working in five regions in Tanzania in sectors related to Gender Based Violence (GBV), HIV Testing and Counselling (HTC), and Voluntary Medical Male Circumcision (VMMC) programs. Effective planning for the implementation of these projects requires knowing both who the service recipients are and where they are located.

Photo Courtesy of IntraHealth

PROBLEM

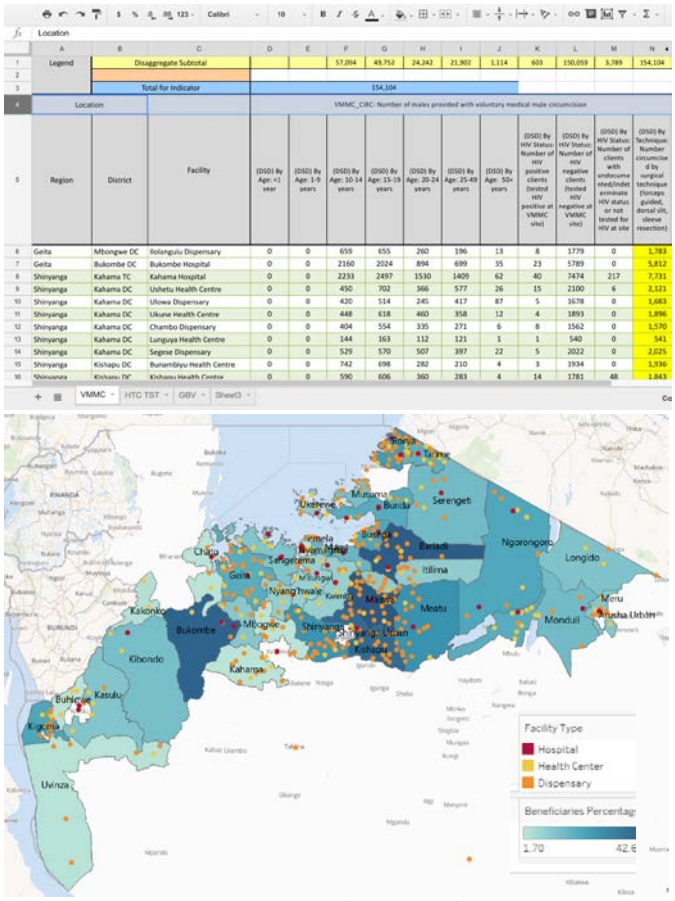
IntraHealth has been tracking their patient populations using tabular data, but this system provides only a limited perspective on patient services. Adding a geospatial component to the tabular data is necessary to understanding the distribution of patients in a region relative to the location of the nearest IntraHealth facility, finding the percentage of a local population that is being served by IntraHealth, and assessing where unserved or underserved populations are in need of additional health resources.

SOLUTION

Developing a clear and dynamic understanding of where IntraHealth's clinics are located relative to the population distribution will enable IntraHealth to identify who their existing facilities are serving and failing to serve. Paired with aggregated, district-level population data, IntraHealth will understand what fraction of the population the organization is serving in the districts where they operate. With assistance and training from dLab data scientists, IntraHealth will create geovisualizations that will enable them to identify opportunities for growth, select facilities best suited to providing additional services, and determine where to focus outreach and engagement activities such as conducting public (street) awareness campaigns.

PROCESS

One of the most powerful ways to add value to an existing data set is to integrate data from other sources. While IntraHealth's own data could tell them how their facilities are performing relative to each other, joining that data with population and geospatial data from the National Bureau of Statistics (NBS) and geotagged health facilities from the Health Facility Registry gives IntraHealth a much more complete picture.



While tabular data (top) is a powerful way of keeping track of patient information, it does little to illustrate the geographic distribution of patients and the health facilities that they visit. A map of IntraHealth's facilities (bottom) overlaid on a district-level map showing the fraction of the population served by IntraHealth can help IntraHealth identify possible areas for expansion.

For example, matching the health facilities to their geospatial coordinates clearly shows where IntraHealth facilities are clustered, and overlaying that information on a map that shows, at a district level, what percentage of the population is served by IntraHealth's facilities provides a much more nuanced view of the healthcare access that is being achieved than the tabular data that IntraHealth started with.

Joining data from disparate sources can be challenging. For example, discrepancies in naming systems between IntraHealth's records and the Health Facility Registry required manual matching of each facility to its geographic coordinates. The time-consuming process - impractical at larger scales - underscores the need for data compatibility across sectors and among different stakeholders through the use of standardized naming systems or alphanumeric codes.

No data use project would be complete without a critical analysis on how future data collection strategies could be tailored to create a more robust product in the next iteration. In this case, it was noted that IntraHealth collects age data on their patients in aggregated age bands, and the composition of those age bands has changed over time. This strategy precludes a direct comparison between services offered to certain population subsets from year to year. As a best practice going forward, dLab is proposing that IntraHealth keep the datasets in two presentation formats, one for donor reporting which will be produced based on donor specifications, including any age aggregation, and another, more disaggregated data set to be shared with other stakeholders and used internally.

OUTCOMES & IMPACTS

As a result of the data analysis and visualization undertaken in collaboration with the dLab, IntraHealth International will be in a position to

- Understand the number of beneficiaries of IntraHealth's services as compared to the total local population and to the target number of beneficiaries, thereby allowing IntraHealth to quantitatively assess the performance of each facility;
- Locate populations that are unserved or underserved by IntraHealth's facilities and allocate resources to making IntraHealth's services more available, e.g., through increased staffing, extended facility hours, or services at new locations;
- Plan for targeted outreach sensitization campaigns in areas where IntraHealth's services are reaching a relatively lower percentage of the population; and
- Identify the highest-performing facilities and use that identification as a starting point for improving services in lower-performing facilities.

The dLab Data Science team has additionally identified an area where an improved data collection strategy on the part of IntraHealth could lead to more informative analyses in future work.

KEY COLLABORATORS

IntraHealth International is a global health organization that works to improve the performance of health workers and strengthen the systems in which they work. It envisions a world where everyone, everywhere has the health care they need to thrive. Find them at www.intrahealth.org.

Tanzania Data Lab (dLab) is a national data hub that promotes data innovations, literacy, data use, and multi-stakeholder data collaborators. The dLab is working with IntraHealth to provide training and support to create data visualizations. http://www.dlab.or.tz