



Using Geographic Information Systems to support HIV Care in Rwanda

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Picture1. CHW collecting GPS waypoint

INTRODUCTION

Geographic Information System (GIS) is a useful tool for improving quality of care for HIV, and improving program monitoring and evaluation. Partners in Health (PIH) supports the Rwanda MoH in providing comprehensive patient care in three districts (Kayonza, Kirehe and Burera), and has introduced GIS technology to map service delivery in the supported catchments.



Picture2. CHW collecting GPS waypoint

METHODOLOGY

The first activity of the GIS Program was collecting geographic coordinates of imidugudu (villages) in the Districts with Community Health Workers using Global Positioning System (GPS) devices. Health centers providing HIV services in the three districts are supported with the OpenMRS Electronic Medical Record (EMR) system, so patient data, including structured addresses was available electronically. EMR data for currently enrolled HIV patients - address, Body Mass Index (BMI), date of last CD4, and missed visit status - was cleaned and exported, and combined with the geographic database in ArcGIS for map analysis.

The GIS program examined the distribution of villages in Southern Kayonza and Kirehe districts (Figure 1) with respect to distance from public Health Centers. Villages are indicated by blue circles and are sized proportional to population size. Of particular interest was to visualize the proportion of villages within five kilometers (Euclidean distance) to the nearest health facility. Maps were produced and feedback meetings were held with stakeholders.

RESULTS

The GIS team used HIV patient vital data from the EMR to calculate BMI (Figure 2). The proportion of active patients whose BMI is less than 18.5 (considered underweight) was mapped at the sector level. In May 2011, there were 6,064 active patients (over aged 15 years) in Southern Kayonza and Kirehe districts. 4,881 of those patients (80.5%) had both confirmed addresses at the sector level and a weight and height recorded.

Mapping shows variation in proportion of underweight patients by sector, with highest rates in Ruramira and Ndego sectors in Southern Kayonza and Mushikiri sector in Kirehe. Providing feedback of this information assists programs in making decisions regarding CHW outreach and targeting nutritional or agricultural programs. Maps are provided to the Medical Director, clinicians, administrators and Community Health teams.

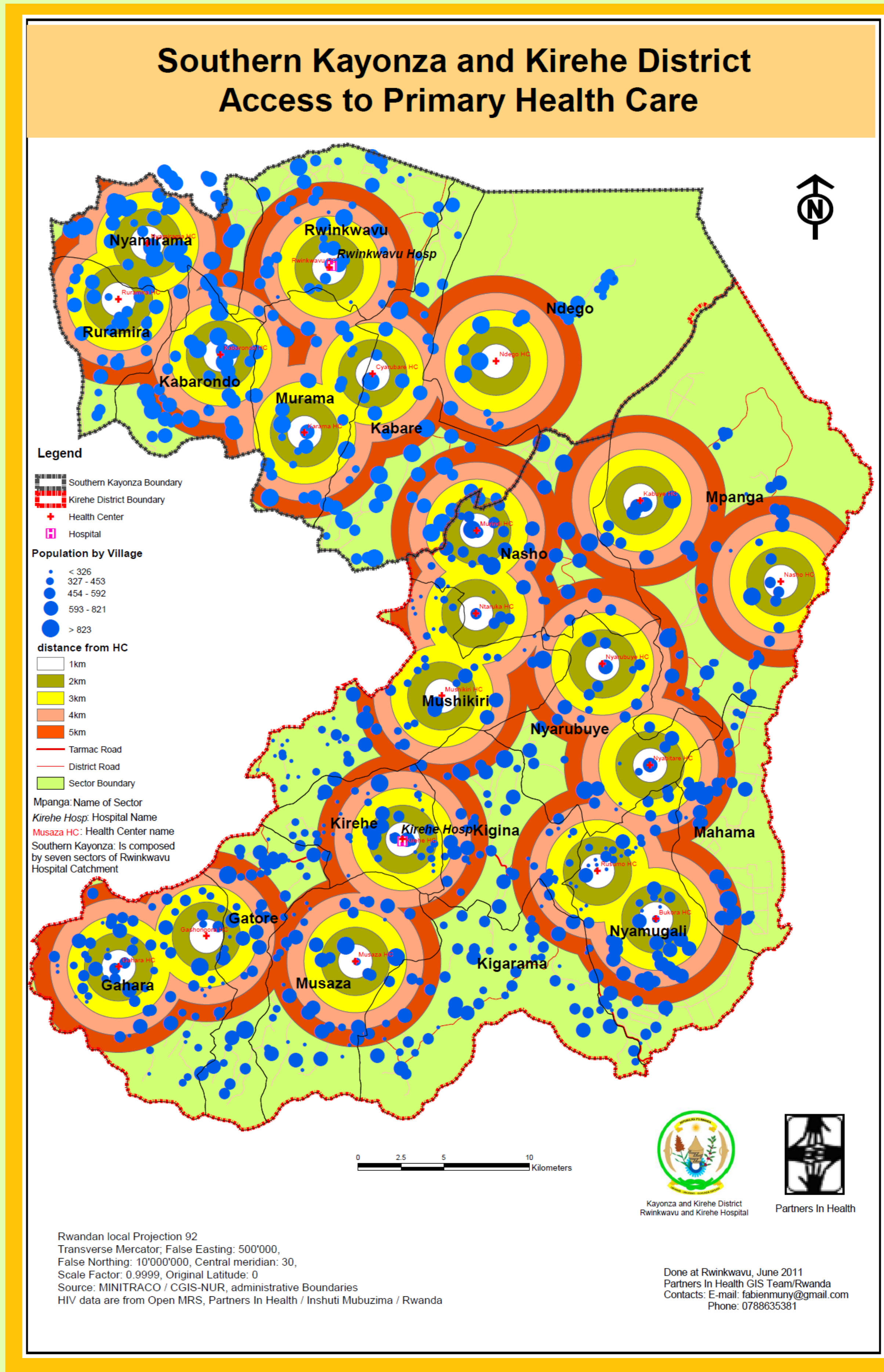


Figure 1 – Population access to primary health care

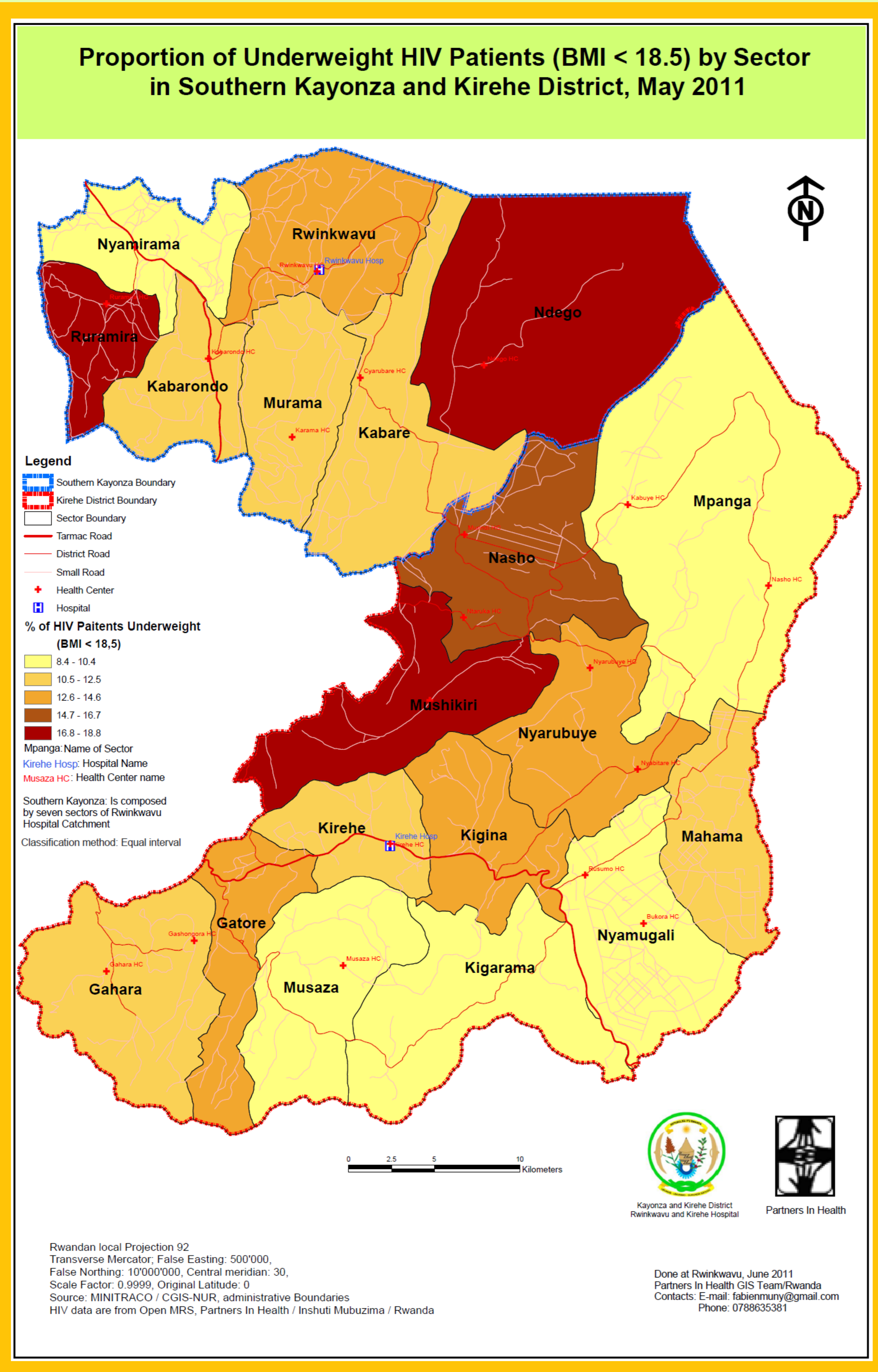


Figure 2 – Proportion HIV patients underweight by sector

CONCLUSION

Health maps can effectively be shared with clinical, administrative and community-based partners for decision-making, and are useful in supporting programs in planning services; for example the provision of nutritional supplements or education campaigns. Analysis is aided by the presence of EMR data, which can easily be analyzed without additional data entry. Map analysis can support planning targeted interventions to address gaps for ensuring equitable geographic access to care.

