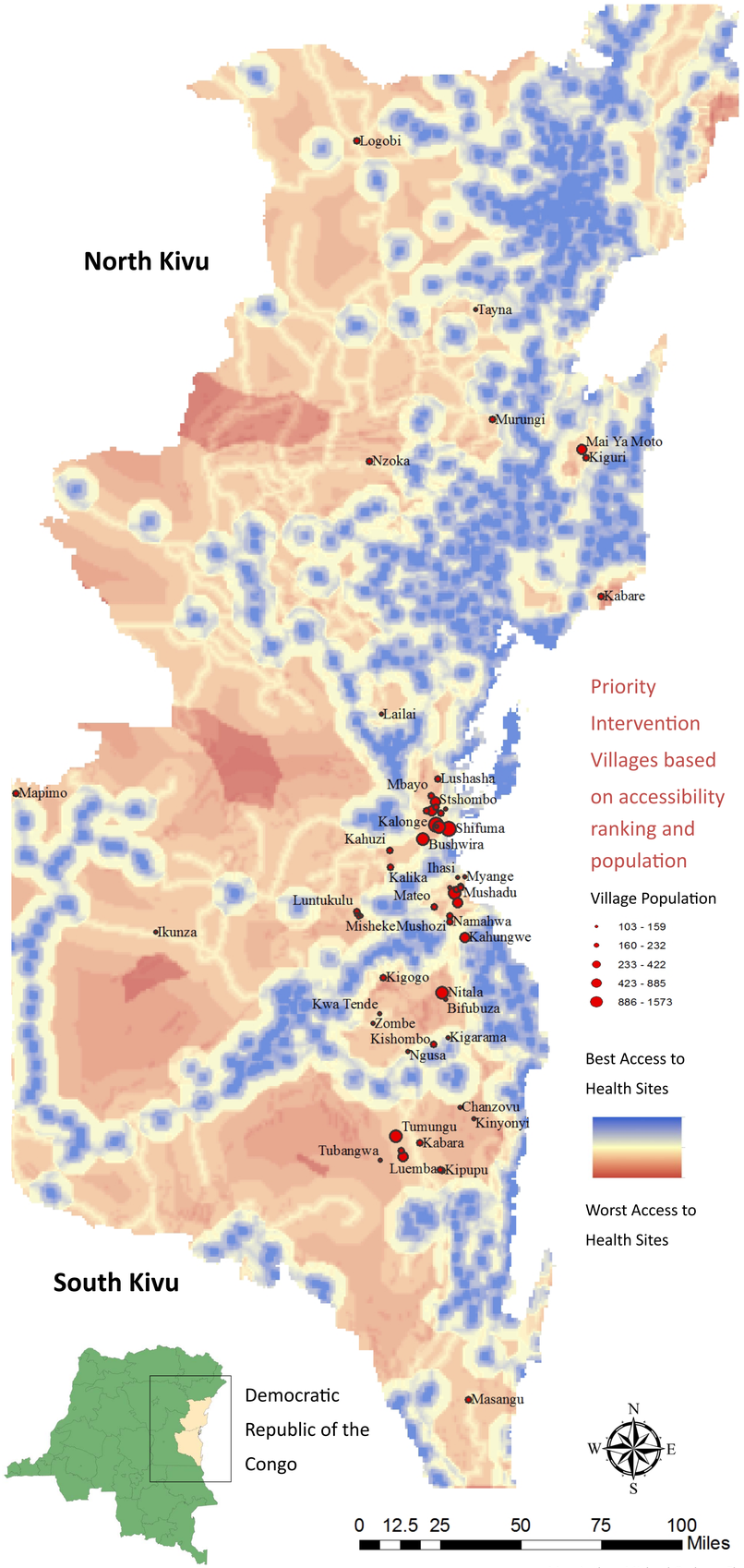
Geographic Access to Health Facilities in North and South Kivu, Democratic Republic of the Congo



INTRODUCTION

The Democratic Republic of the Congo has experienced a decade of conflict that has decimated health infrastructure. In much of the country, access to health sites requires a 1-2 day walk without roads. In the Kivus, at the epicenter of the humanitarian crisis and funding, and with the largest population outside of Kinshasa, access is better but still severely lacking. While lack of data prevents us from knowing the type or quality of care provided at each site, with GIS we can analyze the physical accessibility of villages to health structures in North and South Kivu provinces.

METHOD

I gathered all available data from the Congolese Ministry of Health and online sources to create distance rasters for the locations of health structures, towns, roads, SRTM-derived slope and population density, and built a single weighted raster that assigns pixels values based on combined rank of accessibility blockage factors- primarily distance and high slope.

By transferring these rankings to the towns attribute layer, I sorted towns visually by level of access. Finally, by adding raster population data to town points, I identified towns with both highest population and least access to care.

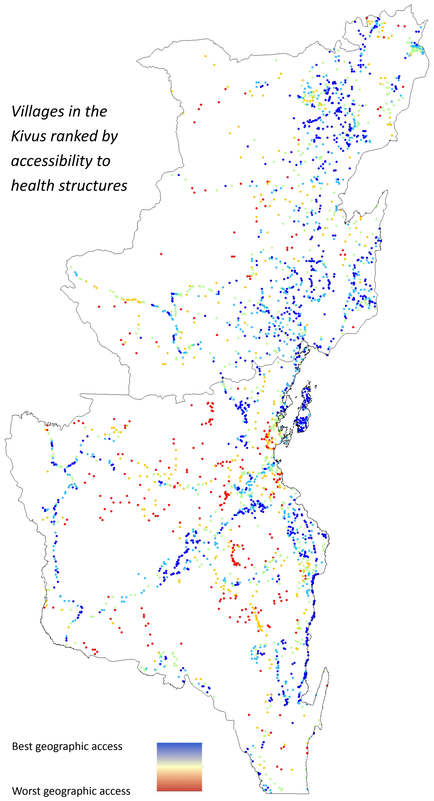
FINDINGS AND LIMITATIONS

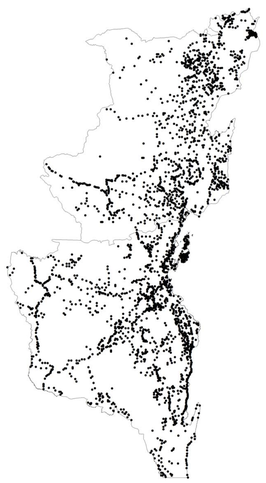
The analysis of the raster and town rankings found two things: first, it identified specific physical areas (shown in shades of red and blue on left map) that are either accessible or inaccessible to health facilities, given lack of roads, high slope of terrain and physical distance from health structures. The same is visualized in more detail for specific towns on the map on right. The two together provide a good guide to which villages and regions in the Kivus are least accessible to existing health structures.

There was a strong correlation between existing towns, road networks and health structures, but a few areas (southeast area of South Kivu) did not correlate, suggesting either incomplete health site data or lack of access. If we had greater confidence in the data we could assert that these villages do not have adequate access to health facilities.

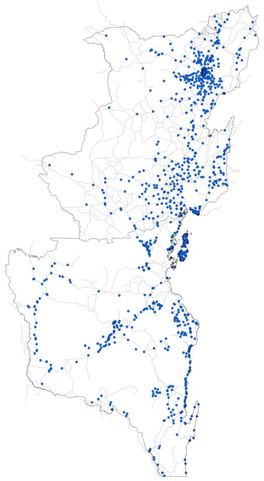
Without knowing how many people live in these least accessible villages or regions, this does little to identify gaps in access for Congolese. By selecting the most vulnerable towns ((20% of total) and then only those with populations greater than 100, we were able to identify 60 towns (2% of total) that should be prioritized for health structure access intervention.

Quality of available health facility data makes confidence in this analysis low. More complete health infrastructure data for the DRC on a national level would allow for far more useful understanding of gaps in accessibility to health not only in the Kivus, but more remote and less populated regions of Congo.

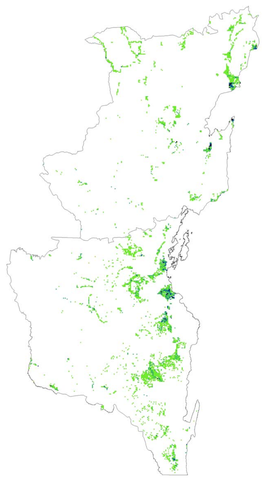




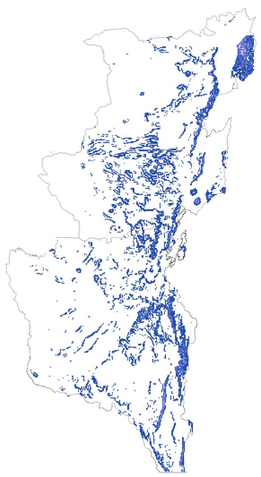
Towns



Health Structures and Roads



Population density



High Slope Areas

Map Author: Michael Graham, Fletcher School of Law and Diplomacy. Projection: Transverse Mercator, coordinate system: WGS 1984, UTM ZONE 34S Data provided by Congo National Health Ministry and UNDP in April, 2012. All photos taken by author.

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