

# Frontiers: Survey Selection



Sunflower crop, by Dan Sullivan

**Background:** In summer 2010, a multidisciplinary team of seven Harvard graduate students performed a comprehensive health needs assessment of Idjwi Island, D.R. Congo at the invitation of one of the island's two kings (*mwamis*). We were joined by a US-based doctor who grew up on the island.

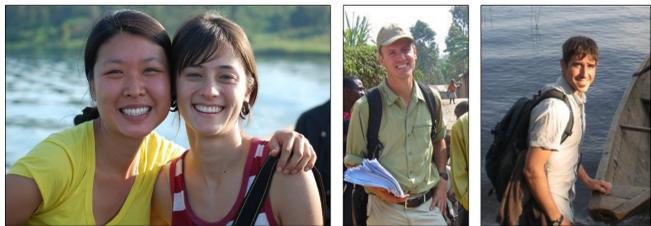
Located in Lake Kivu between D.R. Congo and Rwanda, Idjwi is the 2nd largest inland island in Africa (275 sq km). Although a part of D. R. Congo's South Kivu province, Idjwi functions semi-autonomously. Volcanic nutrient-rich soils make for productive farming, though with a population of 220,000 and less than 1/10th of a sq km of land per person, land is intensively cultivated and a quarter of households have chronic food insecurity.

Little is known about the health of Idjwi other than it has rapid population growth which was fueled by refugee during the 1994 Rwandan Genocide. Across the lake in eastern D.R. Congo amidst simmering conflict, non-governmental and humanitarian aid organizations have assumed conditions on the island were not as dire as the mainland. This survey found otherwise. Our data and maps are now being used by local leaders and agencies in mainland D.R. Congo to expand programs that address gender-based violence and basic health on Idjwi Island.

**Aims:** (1) Characterize the health status of the population and provided evidence for health program decisions through a representative household survey. (2) Give context to women's health attitudes and behaviors, particularly as they relate to gender-based violence, via ethnographic interviews. (3) Understand the health system, its strengths and gaps, through meetings with political leaders and health care providers.

**Principle Survey Findings:** Idjwi's high fertility (6.1 children/woman) is fueled by gender-based violence and lack of contraceptive availability. The health system is funded by the Catholic Church that does not make contraception widely available and thus only 6.5% of women have ever used modern contraception. 40% of women said it was "common" or "very common" for a woman to be forced to have sex by her husband or someone else. Infant and child mortality are very high (35 and 56 deaths/1000 live births, respectively), though child deaths were underreported due to strong social stigmas. Malaria, respiratory illnesses, and diarrhea are primary killers of children. 83% of people live on < US\$1 PPP/day and thus families struggle to afford food, health care, and education.

## Meet the Team:



From top left: Sunkyo Im (HKS '11), Marika Shioiri-Clark (HGSD '11), Michael Hadley (HSPH '11), Daniel Sullivan (HGSD '11), Jacques Sebisaho, Dana Thomson (HSPH '11), Shu-Chuan Tseng (HSPH '10), Thomas McHale (HSPH '11)



# Survey Selection

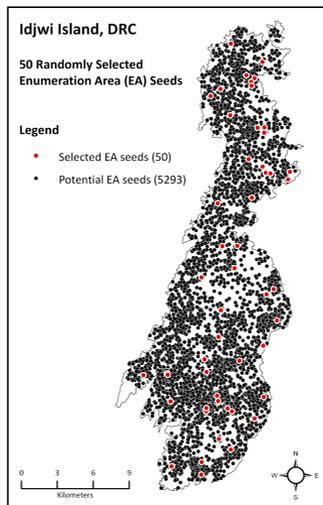
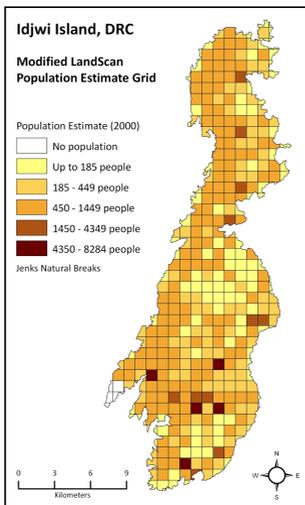


Resilient women, by Michael Hadley

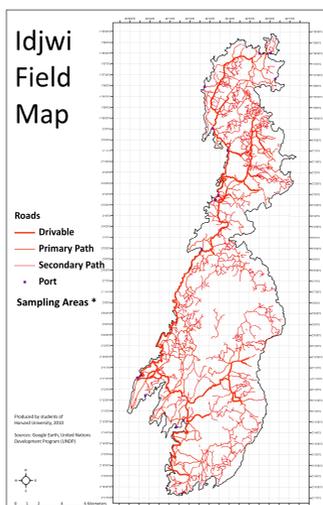
**Challenge:** Without recent census data, we needed a new method to select a representative sample of households.

**Method:** Because Idjwi's population is relatively homogeneous (96% Havu ethnicity) and dispersed across the landscape, we were able to use the 2001 LandScan population estimation grid and satellite imagery to select a representative sample of households. LandScan estimates of approximately 1 sq km grid cells are based on land characteristics detected via satellite (e.g. vegetation and roof materials), actual census figures, and regional adjustments. To ensure all people on the island had an equal chance of being in the sample, we adding population estimates to coastal grid cells that did not have data. In ArcGIS 9.3, we generated geographic coordinate in proportion to the population density of each grid cell, and randomly selected 50 coordinates with replacement. Using Google Earth, we delineated sampling areas around the approximately 45 closest dwellings to each of the selected coordinates. In Google Earth, we also digitized a road/path network for navigation.

**Outcome:** Local female surveyors interviewed a representative sample of 2100 households in 50 sampling units across Idjwi. They successfully navigated to sampling areas using GPS units and field maps, and identified all eligible households in each sampling unit from print-outs of Google Earth imagery.



Training survey team leaders to use GPS units and field maps to navigate



\* Sampling areas are not shown to protect the confidentiality of respondents

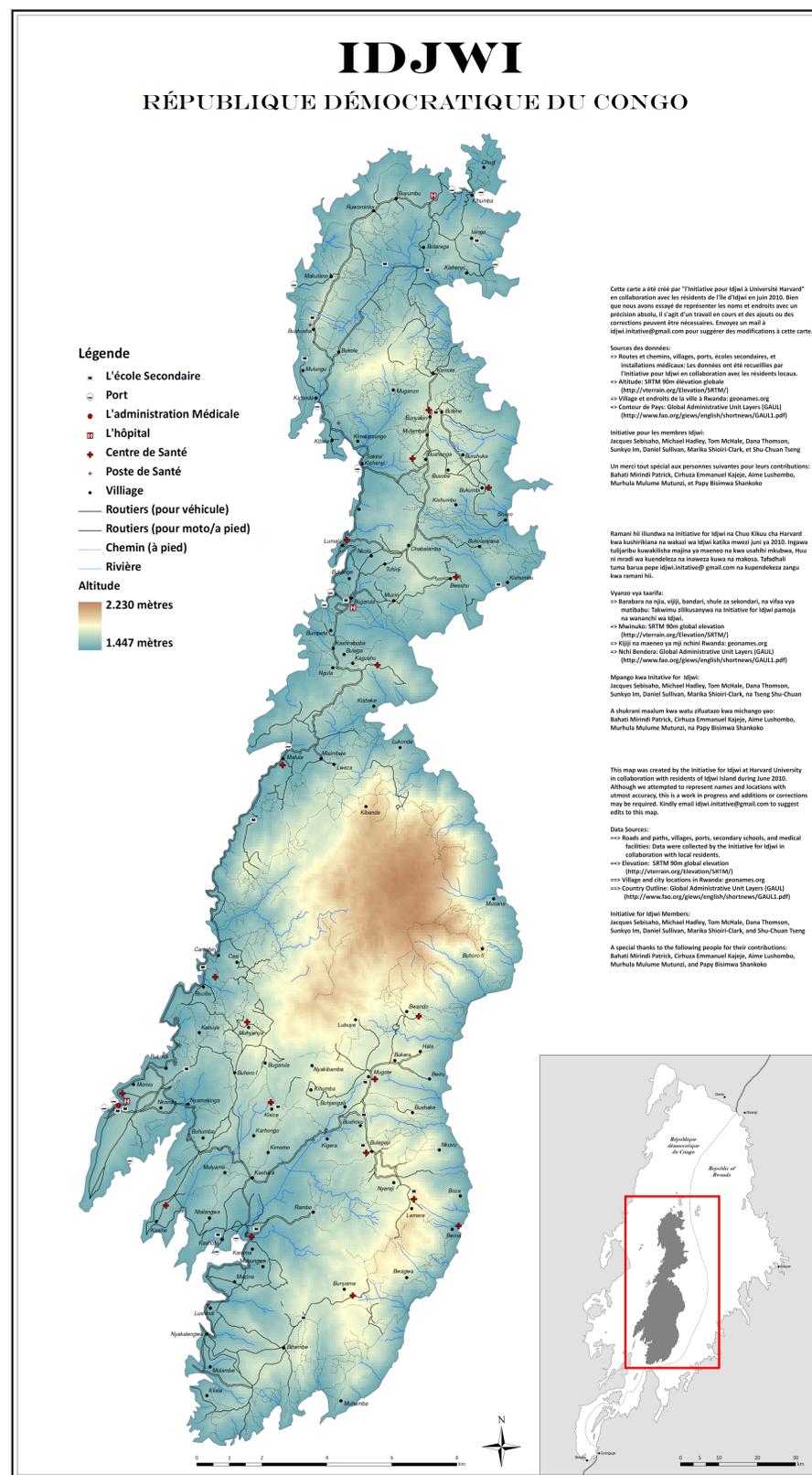
# Mapping Idjwi Island



Fishing boats, by Dan Sullivan

**Challenge:** We were asked by Idjwi's education, health, and political leaders to create a base map of Idjwi Island to be used for education, planning, and coordination.

**Method:** Working closely with motorcycle taxi drivers and field health workers, we used GPS units and satellite imagery to map 105 miles of rivers, 480 miles of roads and paths, 100 villages, 3 hospitals, 19 health centers, 3 health posts, 22 secondary schools, 14 ports, and dozens of other features on Idjwi (some features, such as Pygmy camps, were not included on the final map for political and safety concerns).



**Outcome:** The above wall map (full size 2 ft X 4 ft) is being distributed to Idjwi's health centers, schools, and *mwami* offices. The map has already been instrumental in discussions about how to boost services to medically underserved areas. It is also available online and is being used by non-governmental organizations in mainland D.R. Congo to expand services to Idjwi. As far as we know, this is the first digital base map of Idjwi.

<http://idjwi.wordpress.com>