Sampling for Conflict Areas

Stephanie Eckman
Kristen Himelein, Johannes Bauer, Siobhan Murray
Background

- Standard approach:
  - stratified cluster survey to select EAs
  - household listing operation

- Special case of Mogadishu
  - EA maps and estimated population counts available
  - but listing was prohibitively dangerous

- Requirement for a new design:
  - limited time in the field
  - representative
Sampling Options

- 5 options compared
  - Satellite Mapping
  - Segmentation
  - Grid / Geosampling
  - Qibla method
  - Random Walk
Satellite Mapping

- **How it works:**
  - Identify each structure in image
  - Select simple random sampling
  - Get coordinates of selected units

- **Pros:**
  - Good coverage, if image up-to-date
  - Weights straightforward

- **Cons:**
  - Multi-unit buildings
  - Uninhabited buildings, commercial buildings
Segmentation

- **How it works:**
  - Divide PSUs into given size chunks
  - Select segments SRS
  - List segments and interview

- **Pros:**
  - Weights straightforward

- **Cons:**
  - Manual work
  - Interviewers must identify boundaries in the field
Grid / Geosampling

- **How it works:**
  - Overlay grid
  - Select squares (SRS, PPS)
  - List segments and interview

- **Pros:**
  - Weights straightforward
  - Easier to find in field

- **Cons:**
  - Buildings that cross squares?
Qibla Method

- How it works:
  - Select random points
  - Walk from point to structure
  - Qibla is direction for prayer

- Pros:
  - Easy to implement

- Cons:
  - Some points lead out of PSU
  - Weights complex
Pros:
- Easy to implement (?)

Cons:
- No probabilities of selection
- Interviewer discretion
How We Tested Methods

- 3 PSUs in Mogadishu

- Assigned consumption values to HHs
  - At random
  - Somewhat clustered
  - Very clustered

- Conducted as part of the Mogadishu High Frequency Survey, a face-to-face household survey conducted from October to December 2014 in Mogadishu, Somalia, by the World Bank Group and Altai Consulting.
Results

Estimate of Consumption

Satellite Mapping  Qibla method  Segmentation  Grid  Random walk
Results

- Satellite Mapping
- Qibla (full weights)
- Qibla (simple distance)
- Grid
- Random Walk
- Segmentation

Graph shows relationship between bias (as a percentage of mean) and coefficient of variation.
Results – Bias & Precision

- Satellite mapping unbiased, smallest coefficient of variation
  - If map is good

- Segmentation unbiased bias
  - additional level of selection decreased the precision

- Grid theoretically unbiased
  - did not perform as well in simulations because of small n

- Random walk very biased

- Qibla may be inexpensive alternative
Results – Clustering in Y

- If Y randomly assigned – all methods work well

- Clustering in Y reduces precision
  - Segmenting, gridding

- Random walk showed did not show a steady relationship between clustering and precision
Papers:


“New Ideas in Sampling for Surveys in the Developing World” Advances in Comparative Survey Methods: Multicultural, Multinational and Multiregional Context