Designing and Implementing Gridded Population Surveys

Gridded Population Sampling

Dana R Thomson & Dale Rhoda
www.gridpopsurvey.com
Overview

What is gridded population sampling?
Who uses it? For what?
When is gridded population sampling (not) appropriate? Why?
What tools can I use?
State of the field?
Example

Typical household survey in LMIC

1. Stratify by subnational region
2. In each stratum, list EAs
3. Sample EAs (now PSUs)
4. Oversample urban domain (optional)
5. Enumerate buildings in PSUs
6. Segment PSUs (if needed)
7. List households in segmented PSUs
8. Sample households (now SSUs)

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What is gridded population sampling?

Any survey in which the sample frame is derived from modelled gridded population estimates.
Gridded population survey in LMIC (Draw PSUs)

(Optional) Stratify by subnational region ➔ Create and list single-cell, multi-cell, or polygon units from gridded population data ➔ Sample from unit listing (PSUs) ➔ (Optional) oversample urban/rural

Output:
Gridded PSU boundaries with specified population and maximum area
Gridded population survey in LMIC (Draw SSUs)

Output:
Geographically accurate digital map of each PSU, and a digital listing of households
Available gridded population datasets

- Plain language descriptions of model methods
- Pros/cons for gridded population surveys

Check out the manual
Who uses gridded population sampling? For what?

Number of gridded pop. surveys in LMICs is likely 2X or 3X greater today

When is gridded population sampling NOT appropriate?

- Recent widely-trusted census
- Very small coverage area (e.g., neighborhood)
- Survey planning team does not have:
  - Internet
  - Knowledge of basic mapping tools (e.g., Google Earth, Google Maps)
When is gridded population sampling appropriate?

- Census is grossly outdated or inaccurate
- Dangerous area
- Highly dynamic and complex
- Stratify by geographic characteristics
- Distribution of gridded populations are often more accurate than underlying outdated/inaccurate census
- Small grid cells enable area-microcensus designs with 1 field visit
- Unlike listers, interviewers can build rapport & identify “hidden” HHs
- Gridded population sample frames are explicitly spatial
Area-microcensus design example

- Robust
  - One-stage or two-stage, area-microcensus
  - Two-stage, full-listing

- Sample weights
  - Two-stage, random-walk

- Approx.
  - Visits to the field
  - Approx.
Sample frame tools

Non-GIS users
- Basic
- Intermediate
- Advanced

GridSample, R

GridEZ
RUPHIA
Uganda 2022

GIS users
- Intermediate
- Advanced

QGIS

PreEA
Census preparation
Burkina Faso 2019
State of the field

Tools for designing and implementing gridded population surveys are piecemeal

Gridded population datasets are evolving (and improving) rapidly

Area-microcensus designs are promising, but need study (e.g. design effects)

Build better integrated tools

Use of field data to evaluate accuracy

Develop an evidence base
Filter relevant tutorials
Download & modify in Word
Assemble your custom manual!
Thank you

www.gridpopsurvey.com

By skill level:
✓ Decision-trees
✓ Step-by-step tutorials

For each design:
✓ Real-world survey profile
✓ Sample weights calculations

Dana R. Thomson
dana.r.thomson@gmail.com
 @GridPopSurvey