

**Designing
and Implementing
Gridded Population
Surveys**



**THE INTERSECRETARIAT
WORKING GROUP ON
HOUSEHOLD SURVEYS**

Designing and Implementing Gridded Population Surveys

AN OVERVIEW OF AVAILABLE
METHODS, TOOLS, AND DATA

Dana R Thomson, MSc, PhD

10 October 2023

www.danathomson.com | www.gridpopsurvey.com



1

Overview

2

3

What is gridded population sampling?

4

Who uses it? For what?

5

When is gridded population sampling (not) appropriate? Why?

6

What tools can I use?

7

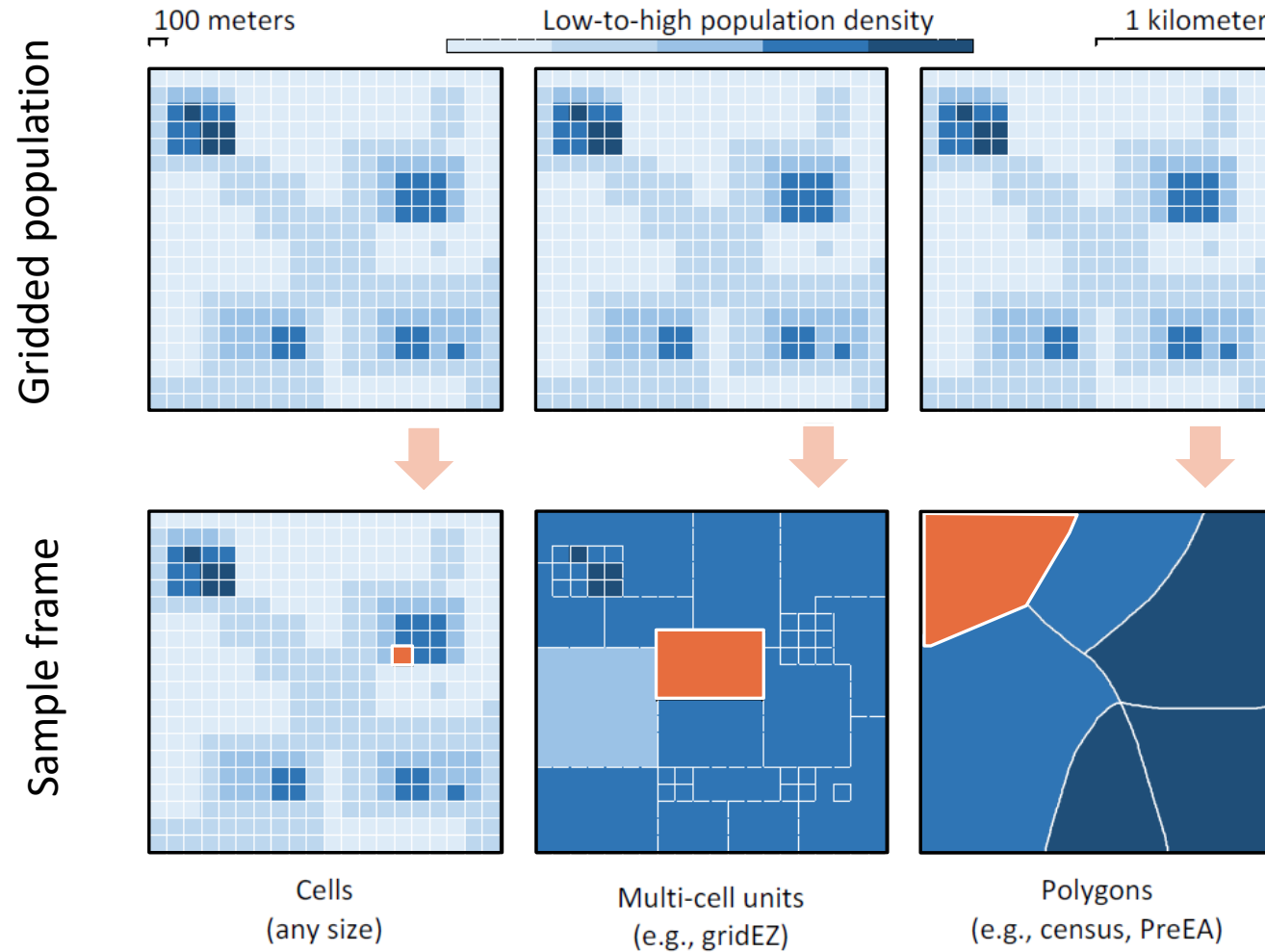
State of the field?

8

9



What is gridded population sampling?



Any survey in which the sample frame is derived from modelled gridded population estimates

1

2

3

4

5

6

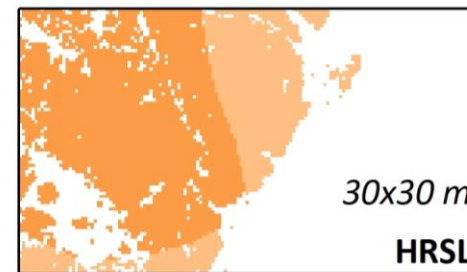
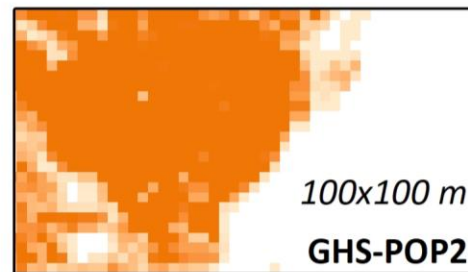
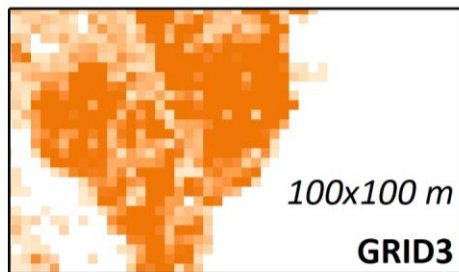
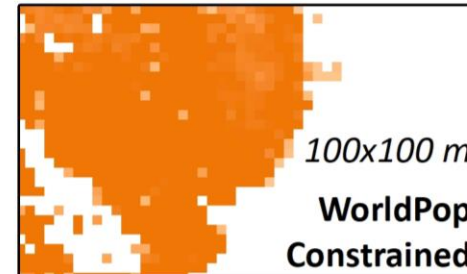
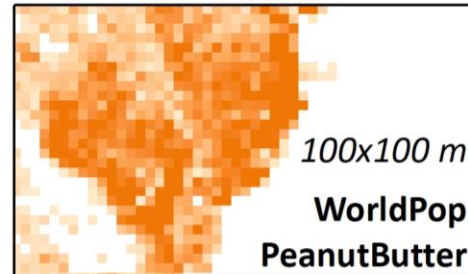
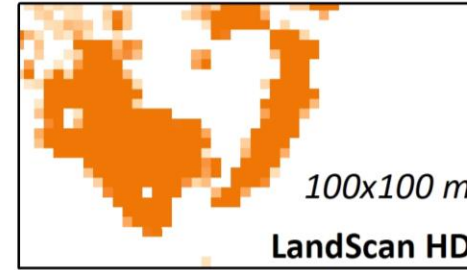
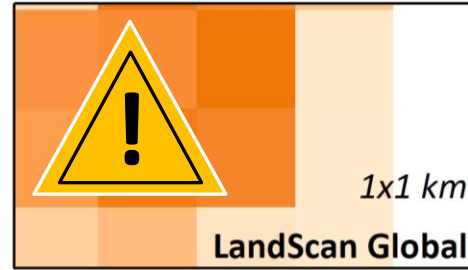
7

8

9



Available gridded population datasets

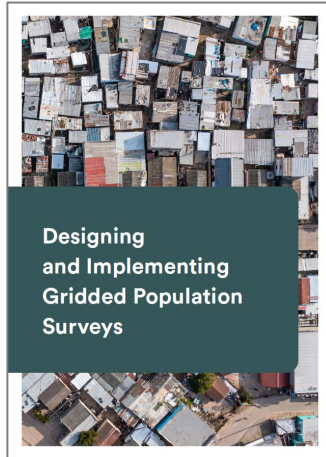


0 0.5 1 Km

0 0.5 1 Km

0 0.5 1 Km

Check out the manual



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

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9



Who uses gridded population sampling? For what?



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

Thomson, Rhoda, et al. (2020) **Gridded population survey sampling: A systematic scoping review of the field and strategic research agenda**. Int J Health Geogr. <https://doi.org/10.1186/s12942-020-00230-4>

1

2

3

4

5

6

7

8

9



1

2

3

4

5

6

7

8

9

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)

HERD
International
Kathmandu
2017





1

2

3

4

5

6

7

8

9

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

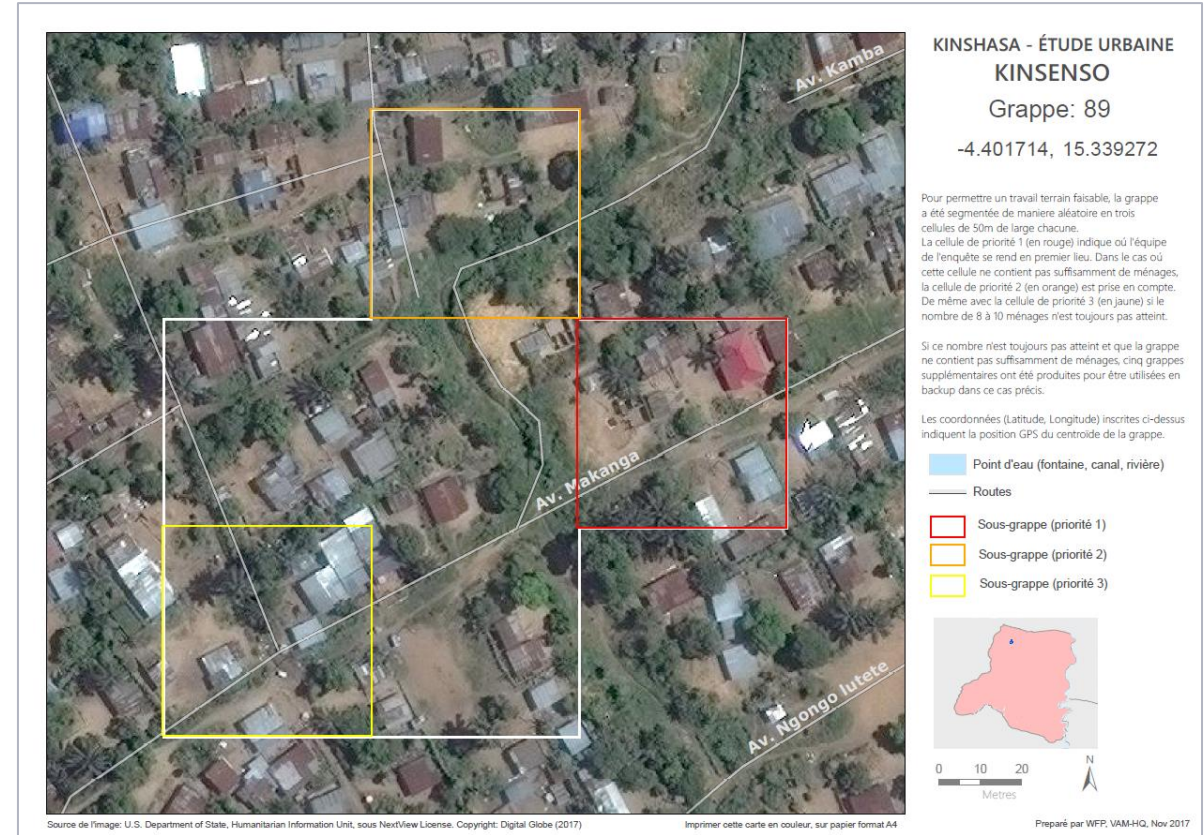
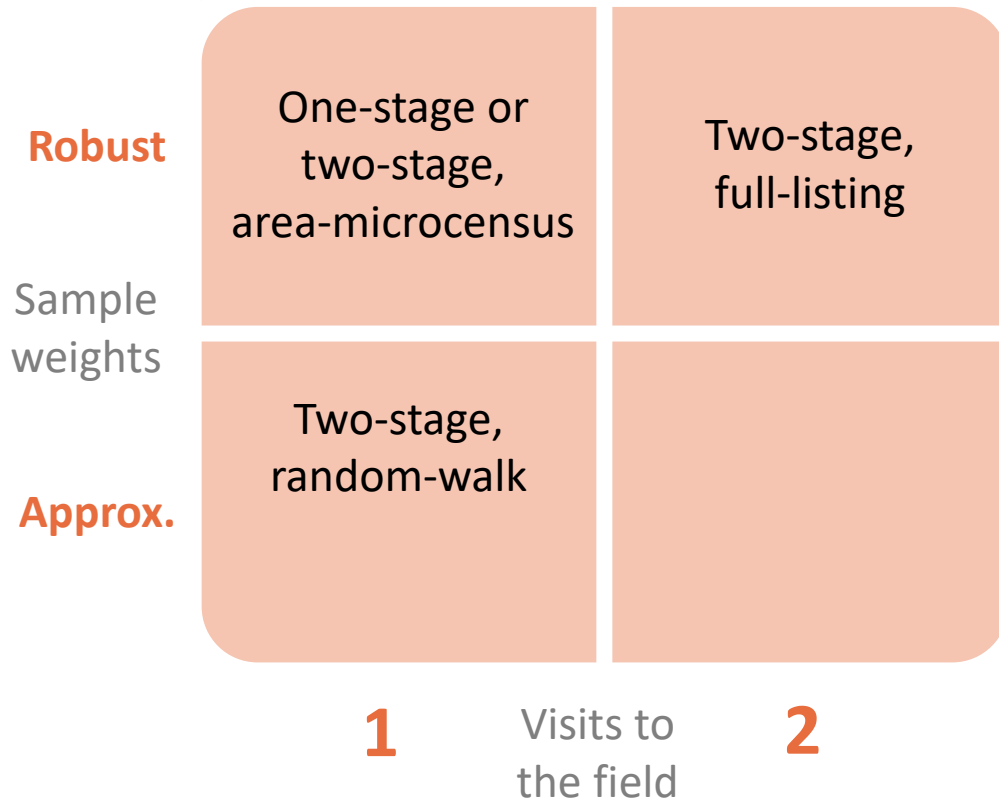


JEI / SDI
Lagos 2020



Area-microcensus design example

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9



World Food Programme
Kinshasa 2017



1

2

3

4

5

6

7

8

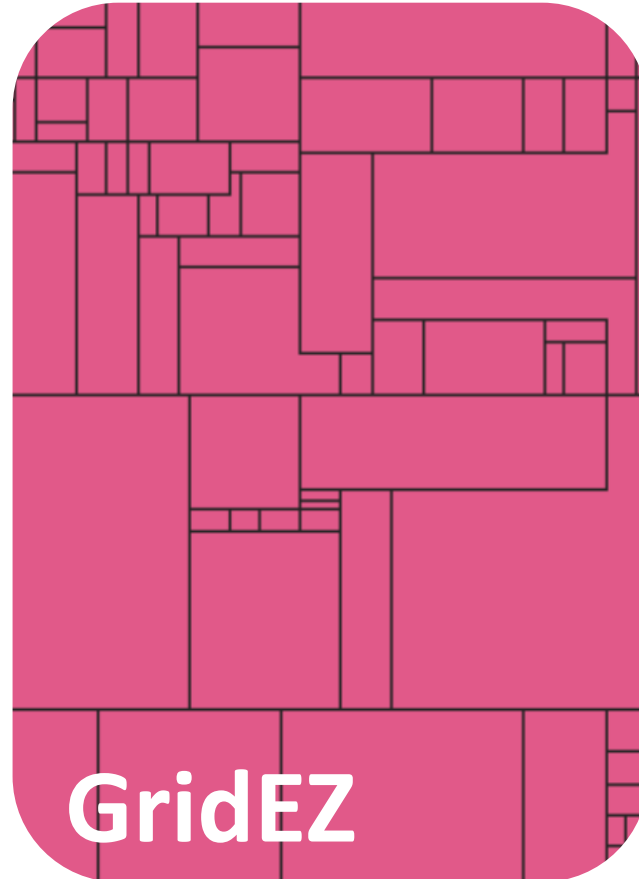
9

Sample frame tools

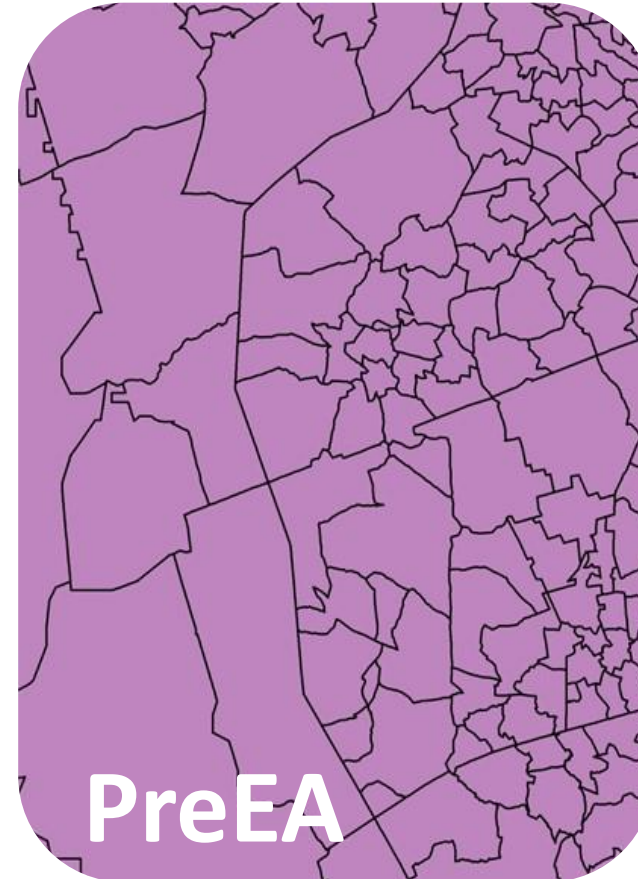
Non-GIS users

- Basic
- Intermediate
- Advanced

GridSample, R



RUPHIA
Uganda 2022



Census preparation
Burkina Faso 2019

GIS users

- Intermediate
- Advanced

QGIS



1

State of the field

2

3

Tools for designing and implementing gridded population surveys are piecemeal

Build better integrated tools

4

5

Gridded population datasets are evolving (and improving) rapidly

Use of field data to evaluate accuracy

6

7

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

Develop an evidence base

8

9



Designing
and Implementing
Gridded Population
Surveys

Check out the
website & manual

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
🐦 @dana_r_thomson 🐦

