

Using Technologies and Multiple Data Sources in Population and Housing Censuses in the Arab Region

Ismail Lubbad

Lead and Regional Adviser on Demographic and Social Statistics | ESCWA

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1. Introduction

- **Population and housing censuses** remain a core pillar of national statistical systems.
- **Census-taking** is increasingly supported by digital technologies and multiple data sources.
- **Administrative records, geospatial data and other complementary sources** can improve coverage, quality and timeliness.
- **Arab countries** are adopting different approaches according to national capacities, data availability and country circumstances.
- **Census modernization** also requires attention to methodology, data quality, confidentiality and institutional coordination.

2. Census modernization in the Arab region

Progress

- 16 Arab countries conducted a census in the 2020 round
- Electronic mapping and GPS expanded
- Online and GIS-based dissemination increased

Challenges

- Introducing new technologies and methodologies
- Coverage and data quality
- Financing and public trust

2030 round

- Countries are considering full field,
- combined and register-based approaches
- Starting points and capacities vary considerably

There is no single census model for all Arab countries.

2. Arab region: progress, but different starting points

2020 round

16 Arab countries conducted a census

Electronic maps and GPS expanded

Online and GIS-based dissemination increased

Main challenges

New technologies and methodologies

Coverage and data quality

Financing and public trust

2030 pathways

Full field enumeration

Combined / mixed census

Register-based census

Key message: modernization is a pathway — not one prescribed methodology.

3. Technologies and multiple data sources

Enumeration

CAPI / field
CAWI / self-enumeration
Telephone

Administrative

CRVS
Population / ID registers
Sectoral records

Population & Housing Census

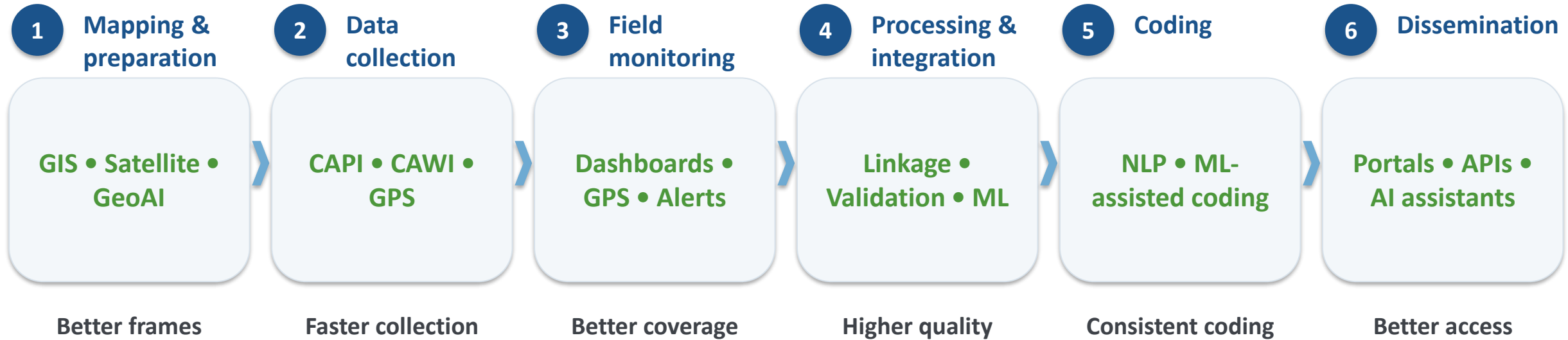
Geospatial

GIS & addresses
Satellite imagery
Building footprints

Complementary

Household surveys
Mobility data
Other relevant sources

3.1 Technology and AI/ML across the census cycle



Technology supports every stage — from preparation to data use.

AI/ML supports — not replaces — census methodology, quality assurance and human oversight.

4. Moving towards a combined census

A combined census uses administrative sources together with direct collection to complete and validate census information.

Administrative data

- Provide available census variables
- Support frames, pre-filling and validation

Targeted collection

- Collect variables not available or reliable in registers
- Reach unmatched or non-responding households

Integration & quality

- Link and reconcile sources
- Assess coverage, consistency and completeness

The objective is not to eliminate fieldwork immediately, but to use it more selectively as administrative systems improve.

4.1 Steps towards adopting a combined census

1

Assess readiness

Administrative sources, legal access, coverage and quality

2

Strengthen infrastructure

Registers, addresses, identifiers and geocoding

3

Design the source strategy

Define which variables and populations come from each source

4

Link and integrate

Match records, remove duplication and identify gaps

5

Collect the gaps

Use web, telephone or field enumeration where needed

6

Test and validate

Pilot linkage, coverage, quality and contingency arrangements

7

Implement and improve

Evaluate and progressively increase administrative-data use

5. Flexible census pathways and Arab experiences

Mature registers	Register-based	Bahrain- Oman- Kuwait / GCC experience
Partial registers + connectivity	Combined / mixed	KSA. Qatar, Jordan: self-enumeration + field follow-up
Limited registers + field access	Technology-enabled field census	Digital enumeration and geospatial tools
Severe access / crisis constraints	Interim complementary approaches	Syria: listing, mixed modes and rapid approaches

Methodology should be adapted to national circumstances while preserving census principles and quality.

6. Conclusions and recommendations

1. Strengthen the foundations

CRVS, registers, addresses and geospatial infrastructure.

2. Integrate progressively

Move towards combined approaches where source quality and coverage permit.

3. Use technology strategically

Apply digital tools and AI/ML where they solve clear census needs.

4. Protect quality and trust

Coverage, validation, confidentiality, cybersecurity and transparency.

5. Invest in capacity and cooperation

Skills, institutional coordination and regional exchange of experience.

One region — different pathways — common principles of coverage, quality and trust.



ازدهار البلدان كرامة الإنسان



شكراً جزيلاً

lubbad@un.org

Thank you
Merci