

Computer-Assisted Personal Interviewing in African Censuses: Observed Opportunities and Challenges

Oliver P. Fischer
International Programs Center
U.S. Census Bureau

November 29, 2022

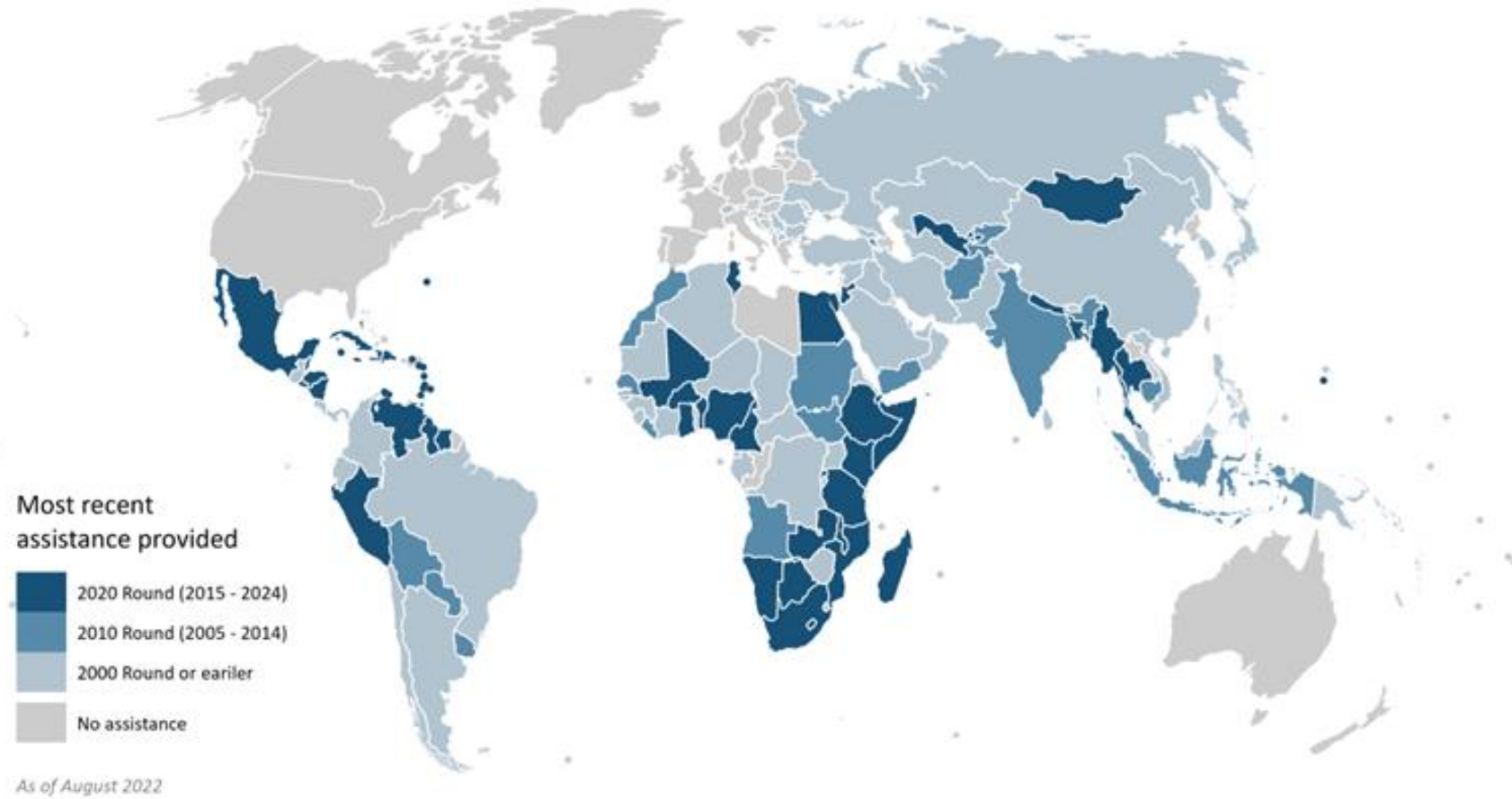
Presentation Overview

- U.S. Census Bureau's International Programs Center
- PAPI vs CAPI
- Challenges to implementing successful CAPI censuses and potential solutions
 - Shifting timelines
 - Cost of mobile devices
 - National infrastructure
 - NSO infrastructure
 - Technical skills and capacity building

U.S. Census Bureau's International Programs Center

- Promotes international development and capacity strengthening through:
 - **Training and technical assistance** to National Statistical Offices in all aspects of census and survey taking
 - **Demographic, geographic, and economic research** to encourage informed decision making
 - **Software and methodological tools development** to facilitate the census and survey-taking process for counterpart agencies and the global statistical community

Where We Have Worked



Census and Survey Processing System



What does CSPro do?

- Data entry, including CAPI (Android and Windows)
- Data editing and imputation
- Data tabulation
- Data dissemination
- Data manipulation utilities

CSPro Experience

- Censuses
 - Over 40 countries committed to using CSPro Android for 2020 round
 - Over 620M million people will be counted for 2020 round
- Surveys
 - Demographic, labor force, income and expenditure surveys
 - Solution of choice for DHS and MICS

PAPI vs CAPI

Paper-and-Pencil Personal Interviewing (PAPI)

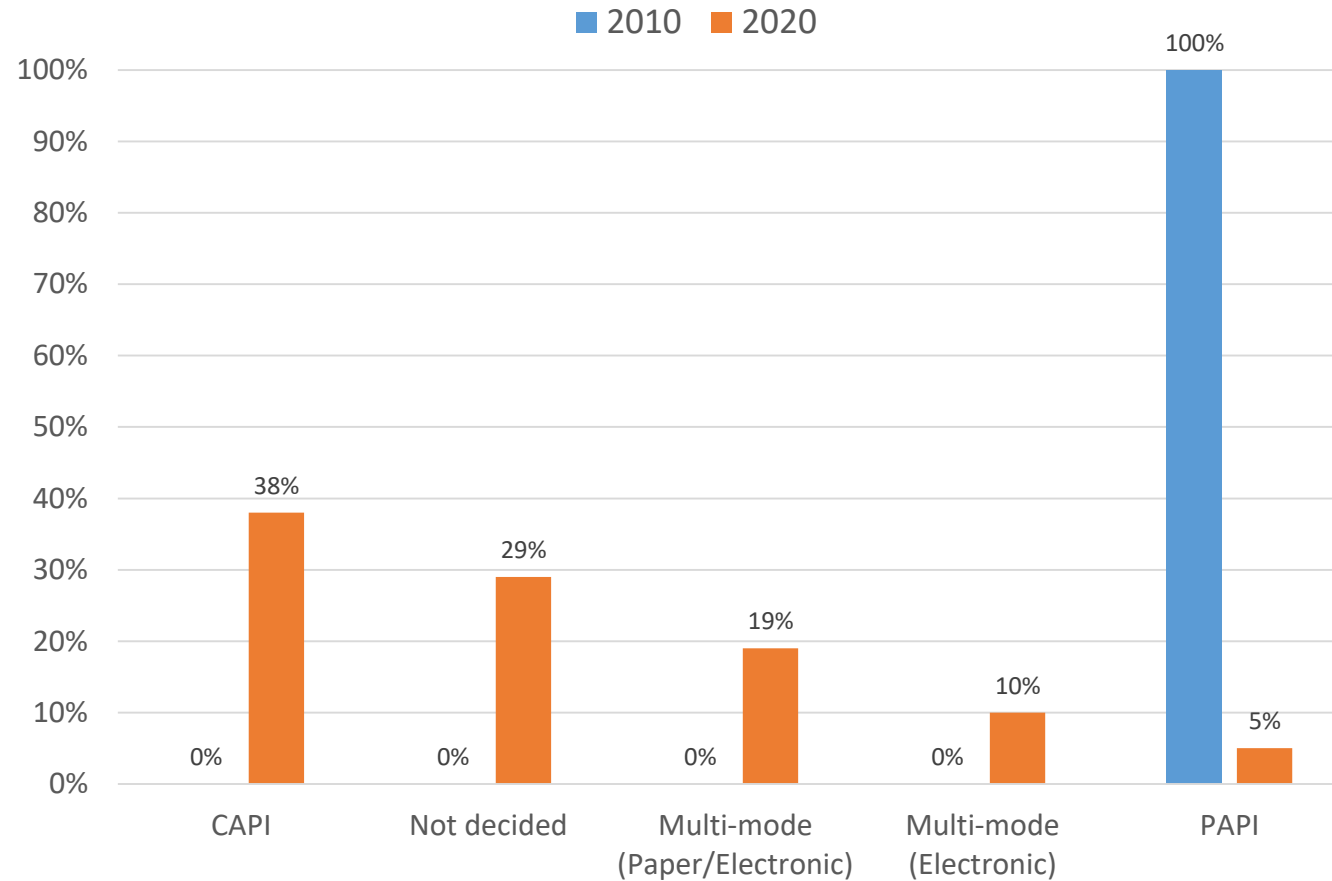
- Interviewer-administered paper questionnaire
- Following the enumeration period, paper questionnaires are sent to a data processing facility where coding and capture operations occur
- Following data capture, data cleaning operations are performed

Computer-Assisted Personal Interviewing (CAPI)

- Interviewer-administered questionnaire loaded onto a handheld device (tablet, smartphone, laptop)
- Coding and the majority of cleaning operations implemented as part of data capture application prior to enumeration
- Data collection and capture are simultaneous
- Following the interview, the data are sent to a central computing network electronically via the internet for other means

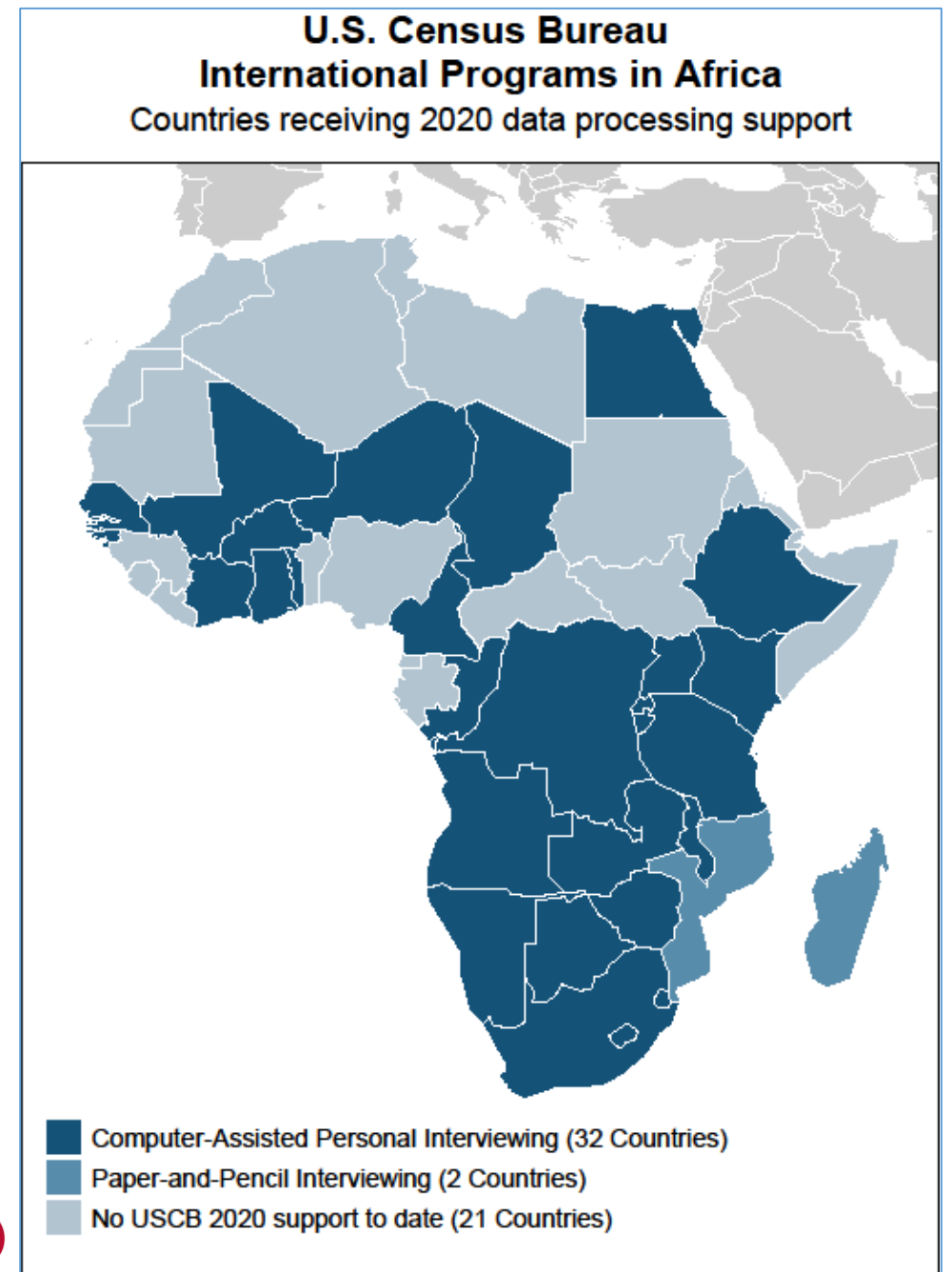
Trend towards CAPI use in Africa for 2020

Use of technology for data collection, by census round



2020 Census Data Collection Technology in Africa

- Of the 34 African NSOs we have provided technical support to, 32 are committed to implementing CAPI censuses
- The majority of these countries will implement a mixed-mode approach, with CAPI as the primary data collection method and PAPI as a back-up method
- The adoption of CAPI as a data processing solution for the 2020 census in Africa is being implemented faster than anticipated



Observed Challenges and Potential Solutions to Implement Successful CAPI Censuses

Challenge 1: Shifting Timelines

Challenge

CAPI adoption shifts a large share of the workload earlier in the census life cycle

Potential Solutions

- Avoid having CAPI census be the first CAPI experience
- Make decision to adopt CAPI early in the planning phase
- Involve IT and data processing staff early in the planning phase
- Take the pilot census seriously

Challenge 2: Cost of Mobile Devices

Challenge

A census employs a large number of field staff and purchasing a mobile device for each is costly

Potential Solutions

- Tablet sharing between regional NSOs
- Partnering with other Government Ministries
- Tablet buy-back option for census field staff
- Purchase smartphones instead of tablets
- Rent devices in place of purchasing
- Bring your own device (BYOD)

Challenge 3: National Infrastructure



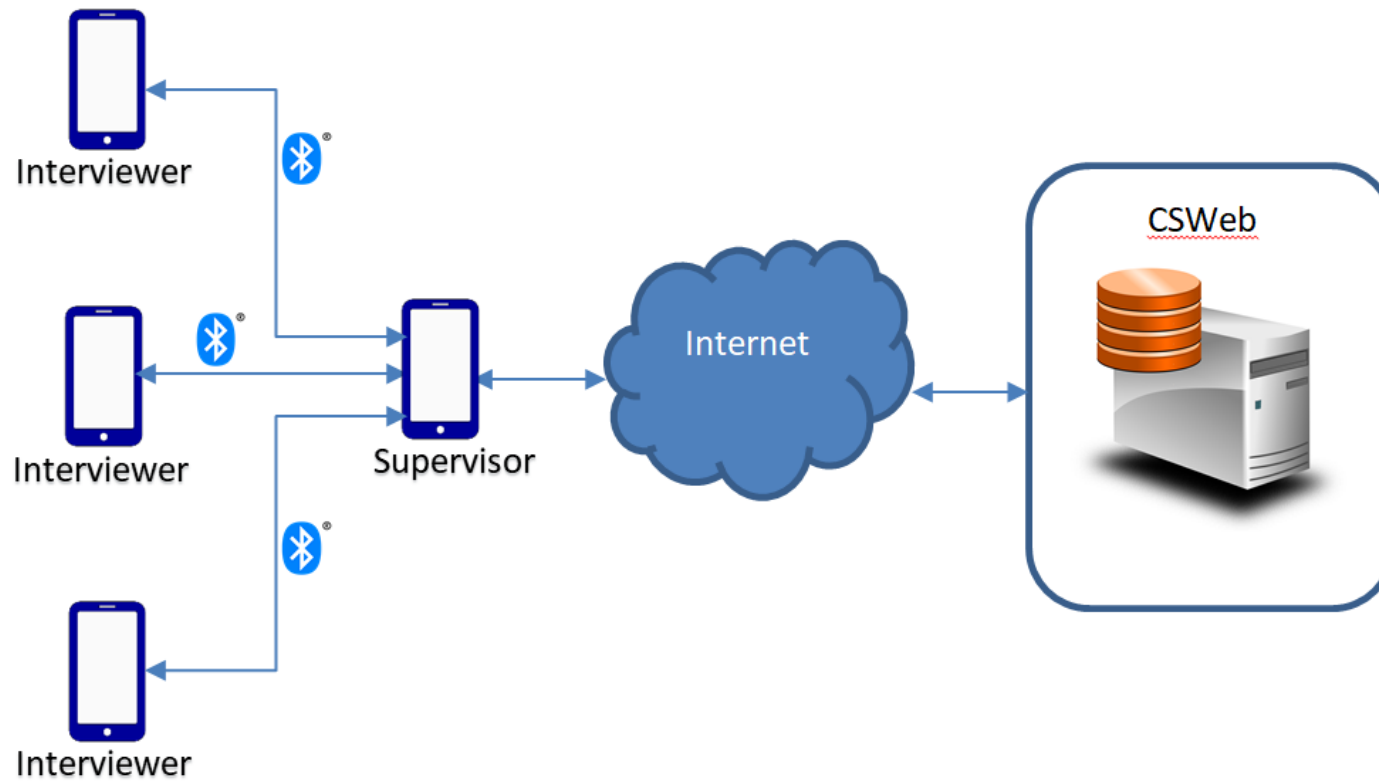
Challenge

Infrastructure issues such as availability of electricity and Internet can affect the success of a CAPI census

Potential Solutions

- Coordinate with power company providers to estimate coverage and assess the need for alternative solutions
- Collaborate with telecommunications companies to estimate cellular network coverage

Challenge 3: National Infrastructure (cont)



Synchronization between interviewers, supervisor and central server over the internet

Challenge 4: NSO Infrastructure

Challenge

Many African NSOs are unable to conduct CAPI censuses with existing infrastructure

Potential Solutions

- Study tour to neighboring NSOs who have completed a CAPI census to identify infrastructure needs and solutions
- Outfitting dedicated NSO space to house server
- Rent server space from outside organization

Challenge 5: Technical Skills and Capacity Development

Challenge

The technical skills necessary for implementing a CAPI census are significantly different from those needed for PAPI censuses

Potential Solutions

- Avoid having CAPI census be the first CAPI experience
- Secure capacity strengthening oriented training from organizations experienced with CAPI censuses

Conclusion

- CAPI has become the preferred data processing solution in the 2020 round of African censuses. Lessons from these implementations hold insights for countries considering transitioning from PAPI to CAPI.
- The technology holds great potential for providing high-quality data to decision makers in a fraction of time experienced just a decade ago
- However, there are a number of challenges associated with the adoption of this new technology that NSOs new to CAPI may not have experience with
- Study visits to neighboring NSOs that have recently conducted successful CAPI censuses is recommended to learn about context specific challenges and innovative solutions to overcome them

Thank You

Oliver.p.fischer@census.gov