CSPro: CAPI Census

Savy Surumpudi
International Programs Center
Population Division
U.S. Census Bureau

This presentation is intended to inform interested parties of ongoing work at the U.S. Census Bureau. Any views expressed on statistical, methodological, technical, or operational issues are those of the presenter and not necessarily those of the U.S. Census Bureau.

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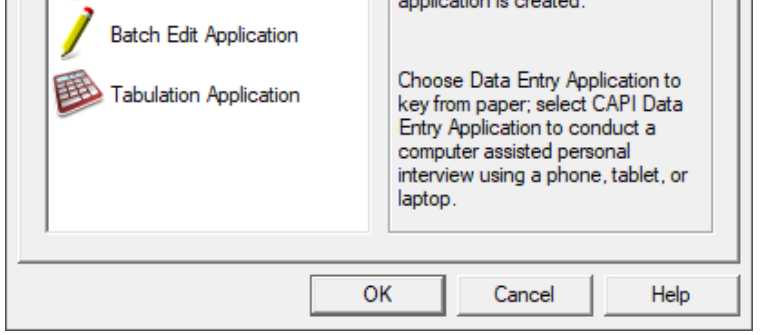
What is CSPro?

- Census and Survey Processing System
  - First release in 2000
  - Initially designed for key-from-paper
  - Public domain
- Product Suite
  - Data Entry
  - Batch Editing
  - Tabulation



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Product Suite

- Data Entry
  - Enter and verify data, with control over skips and consistency checks

- Batch Editing
  - Apply logic to edit data to ensure consistency

- Tabulation
  - Create cross-tabulations

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CSPro Applications

- Censuses (population and housing, agriculture, and economic)
- Demographic and labor force surveys
- Health and nutrition surveys
- Household income and expenditure surveys
- Major international projects:
  - Demographic and Health Survey (DHS), ICF International
  - Population-based HIV Impact Assessment (PHIA) survey, CDC, ICF International, Westat
  - Multiple Indicator Cluster Survey (MICS), UNICEF

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2020 Census Round

- CSPro Android
  - Namibia, Botswana, Cameroon, Côte d'Ivoire, Burkina Faso, Lesotho, Ethiopia, Ghana, Kenya, Malawi, Mali, Mauritius, Nigeria, Tanzania, Zambia, El Salvador
- Keying, Scanning, or Mixed Mode
  - Guatemala, Haiti, Madagascar, Mozambique, Uzbekistan, Bangladesh
- Over 620 million people will be counted using CSPro Android

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CAPI Census

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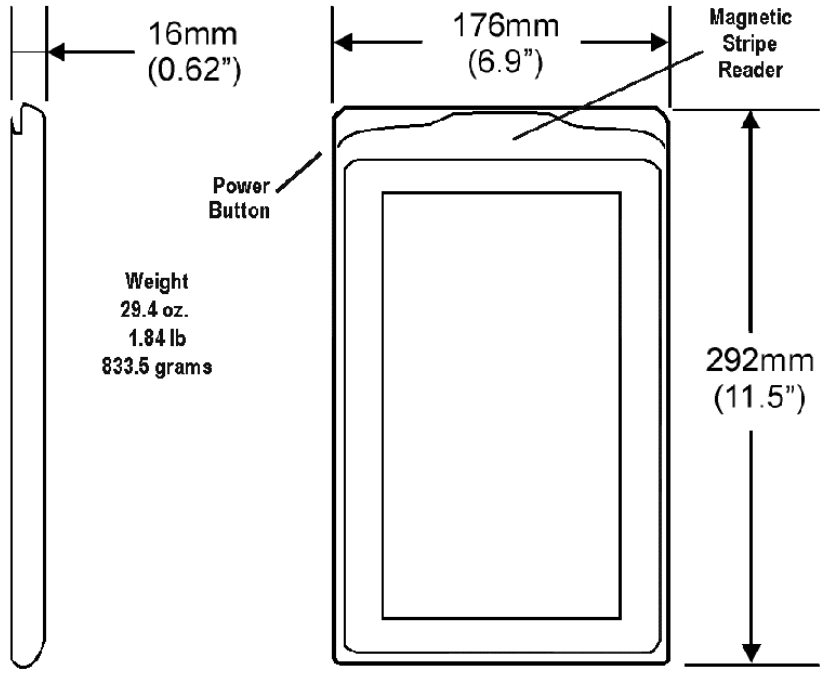
CAPI Considerations

- Procurement
- CAPI Instrument
- Data Security

Procurement

- Tablets
  - Specifications
    - Screen Size: 7” to 8” tablets
    - Battery Life: Backup / solar power supply
    - Connectivity: Not all tablets will need a sim card
  - Off the shelf vs custom
  - Avoid different manufacturers



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Procurement (cont.)

- Telecom
  - APN (Access Point Name)
- Servers
- Backup Power

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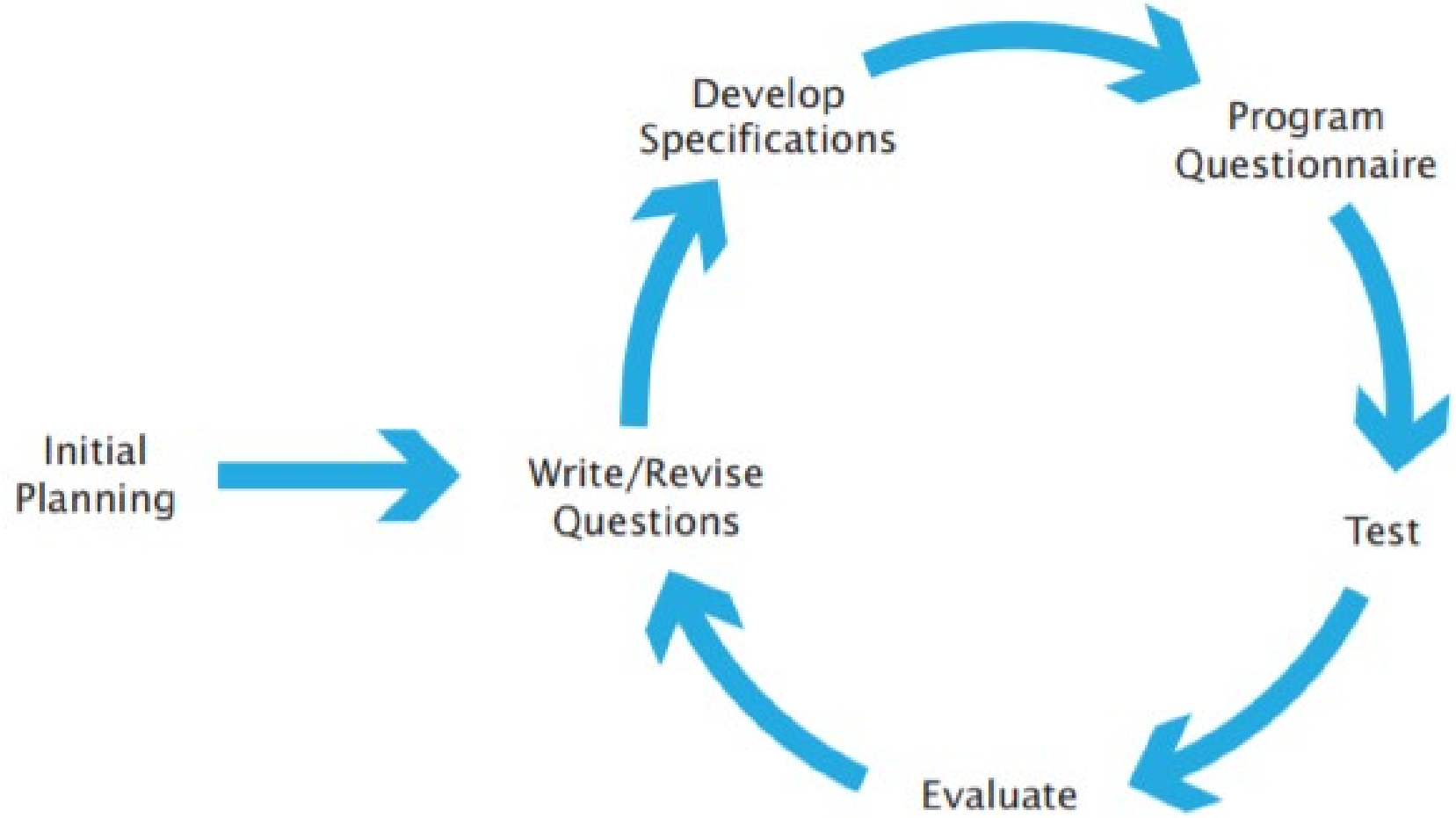
CAPI Instrument

- Software Development
- Ownership
  - SMEs and Data Processors
- Change Control
- Testing

Figure 1.

Steps in Electronic Questionnaire Development



Data Security

- Device Level Encryption
  - Enable passcode on tablet devices
- Mobile Device Management (MDM)
  - Manage, monitor, control mobile devices
- Data transfer over HTTPS
  - SSL certificate
- Virtual Private Network (VPN)
  - Telecom

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Questionnaire Development and Survey Implementation

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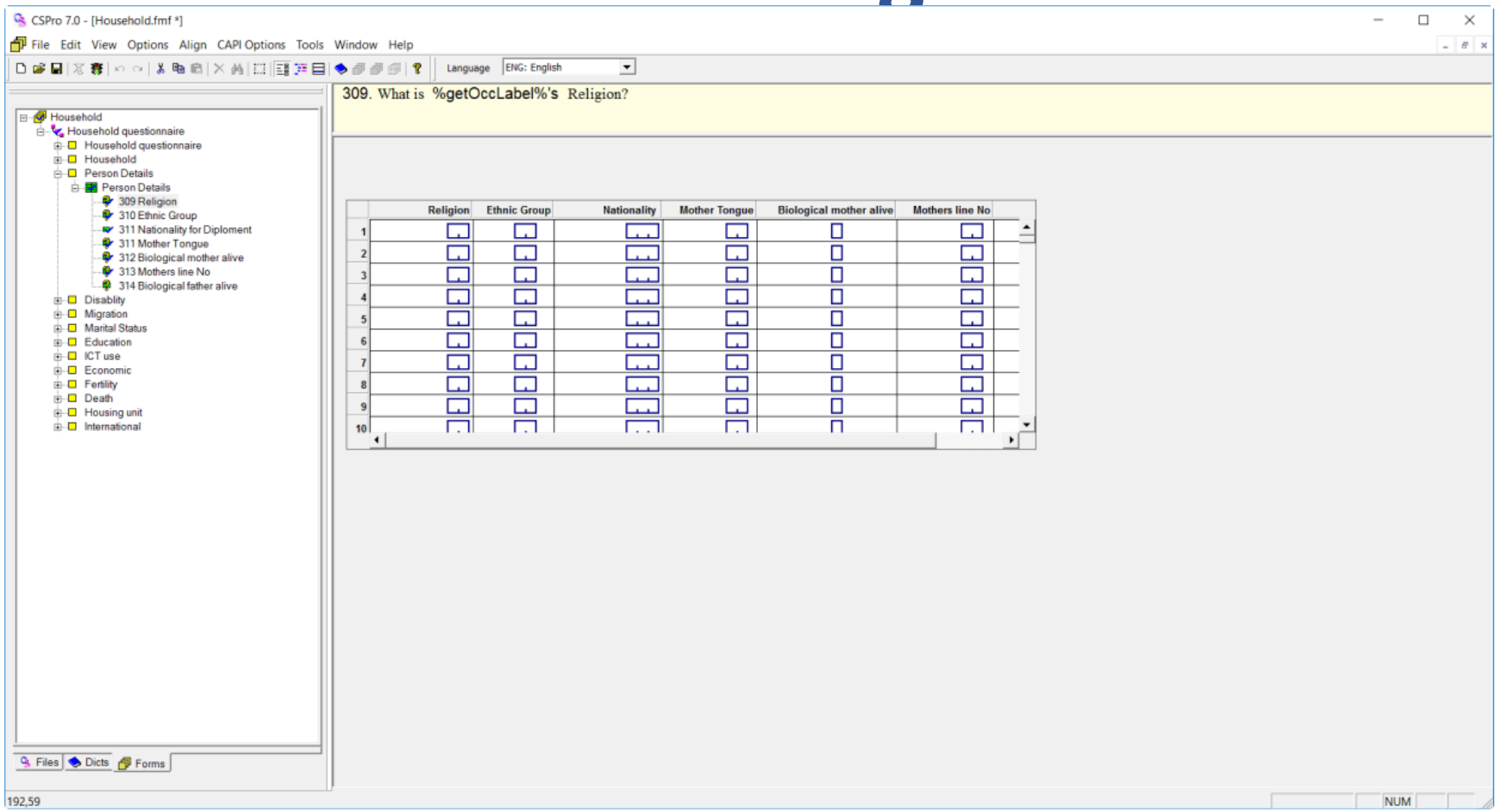
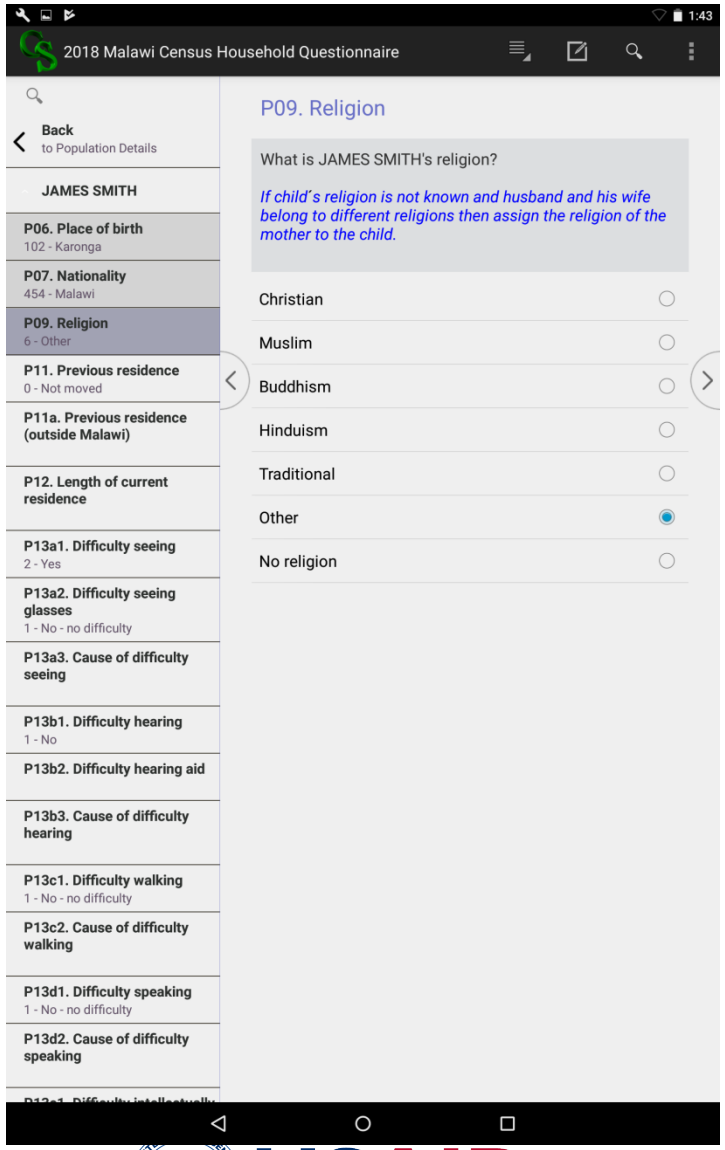
CSPro CAPI Features

- Dynamic question text and responses
- Response categories rendered as radio buttons, check boxes, date pickers, etc.
- Multiple language support
- GPS
- Multimedia
- HTML/JavaScript
- Paradata

CSPro Designer



Questionnaire



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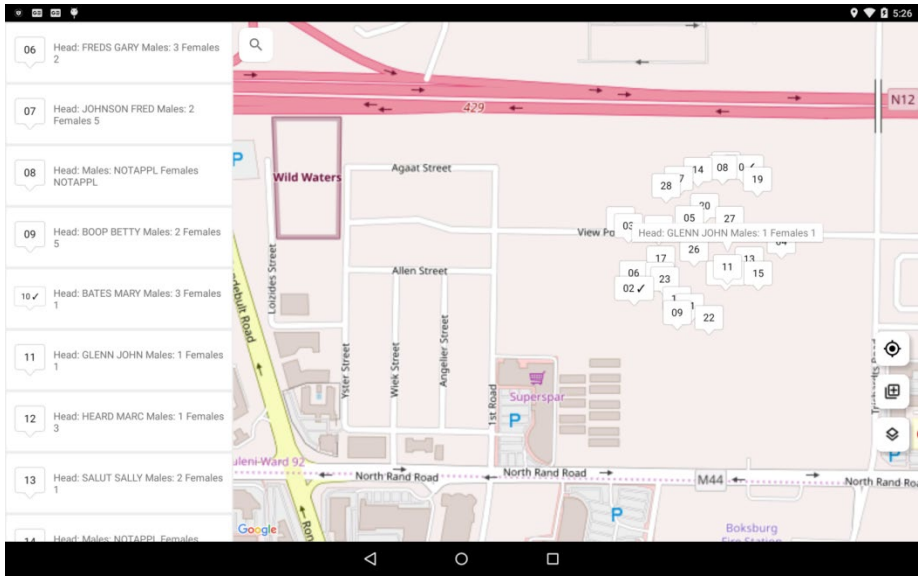
CSPro – Interactive Maps



Data Synchronization

- CSPro data can be transferred securely using:
  - Bluetooth
  - Dropbox
  - FTP server run by an organization
  - CSWeb - Web server run by an organization

Case Management

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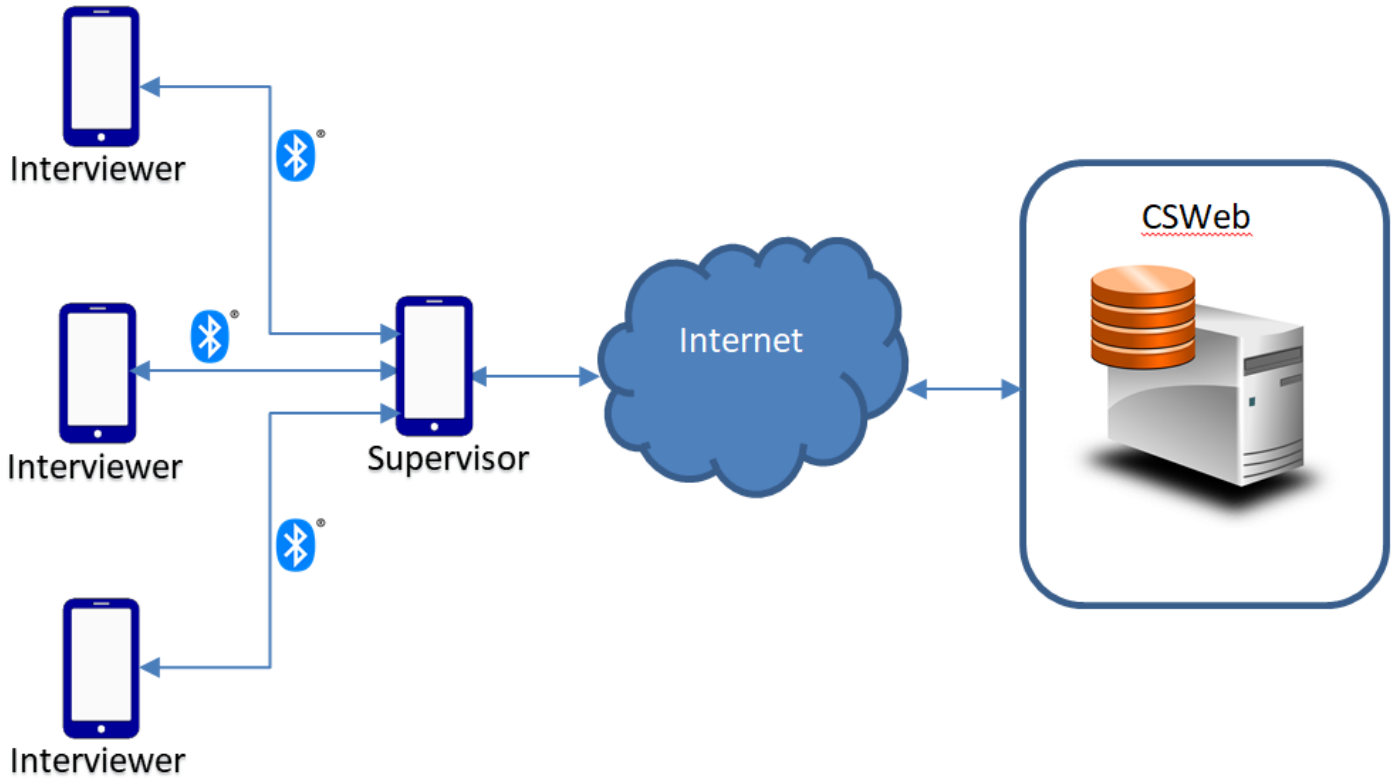
Workflow and Data Transfer



Synchronization between interviewers, supervisor and central server over the internet

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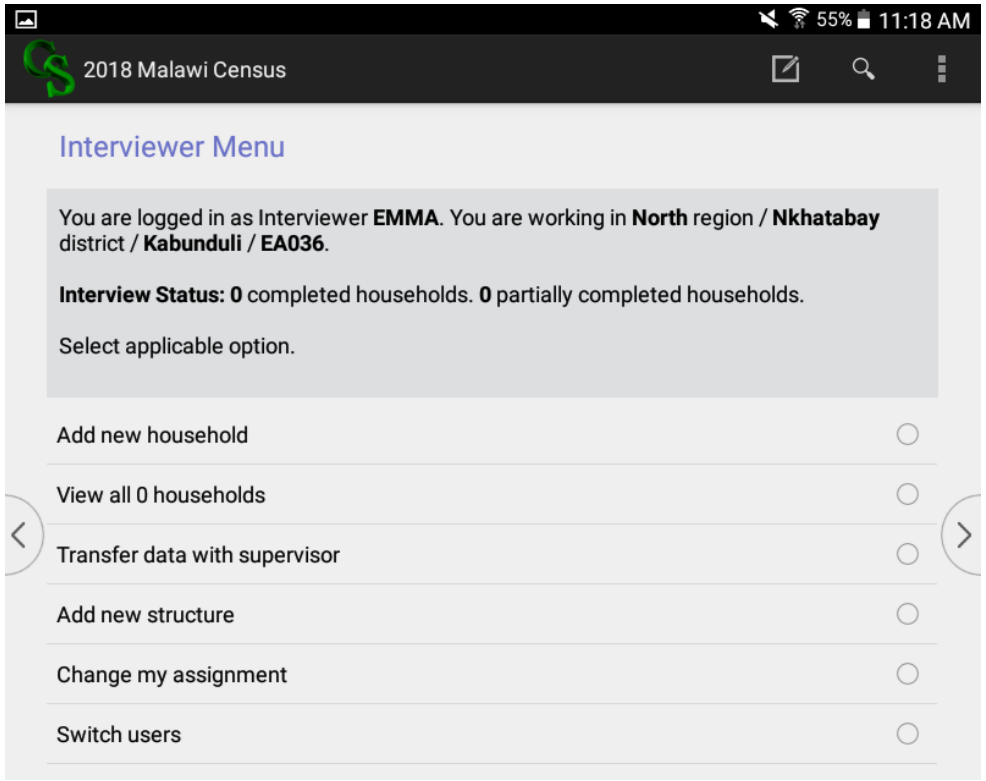
Enumerator



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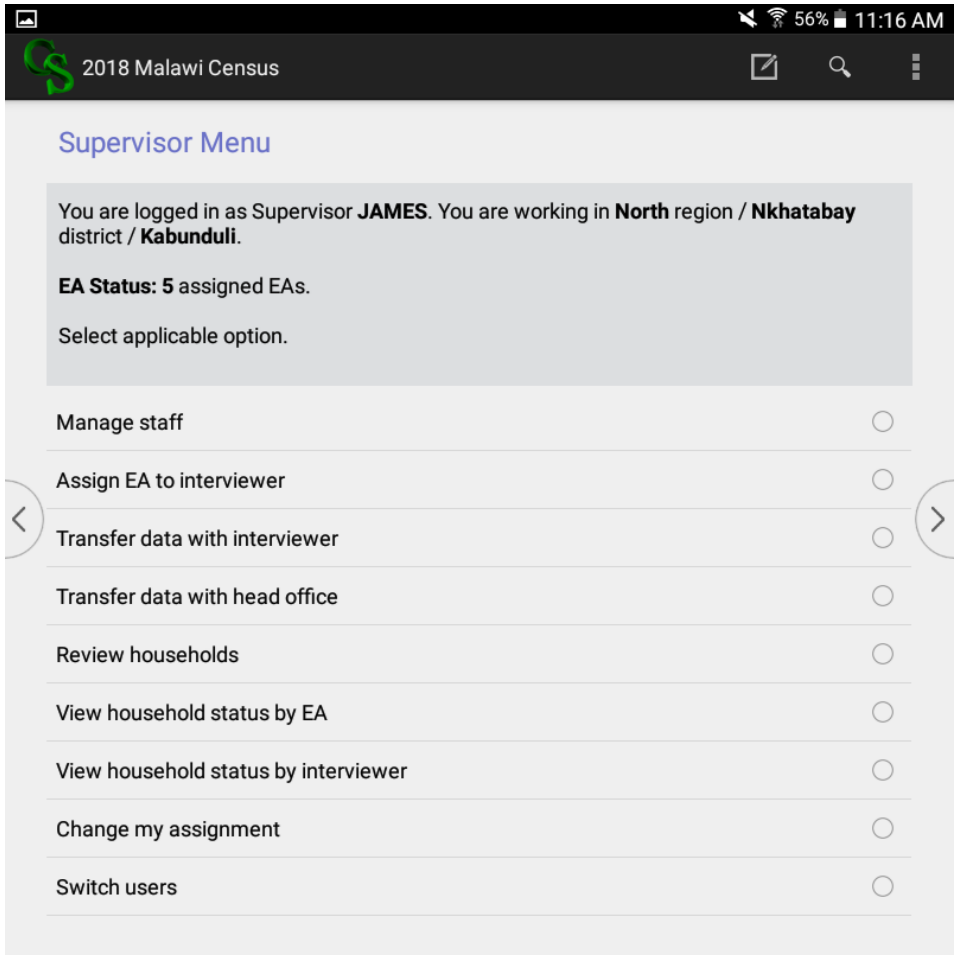
Supervisor



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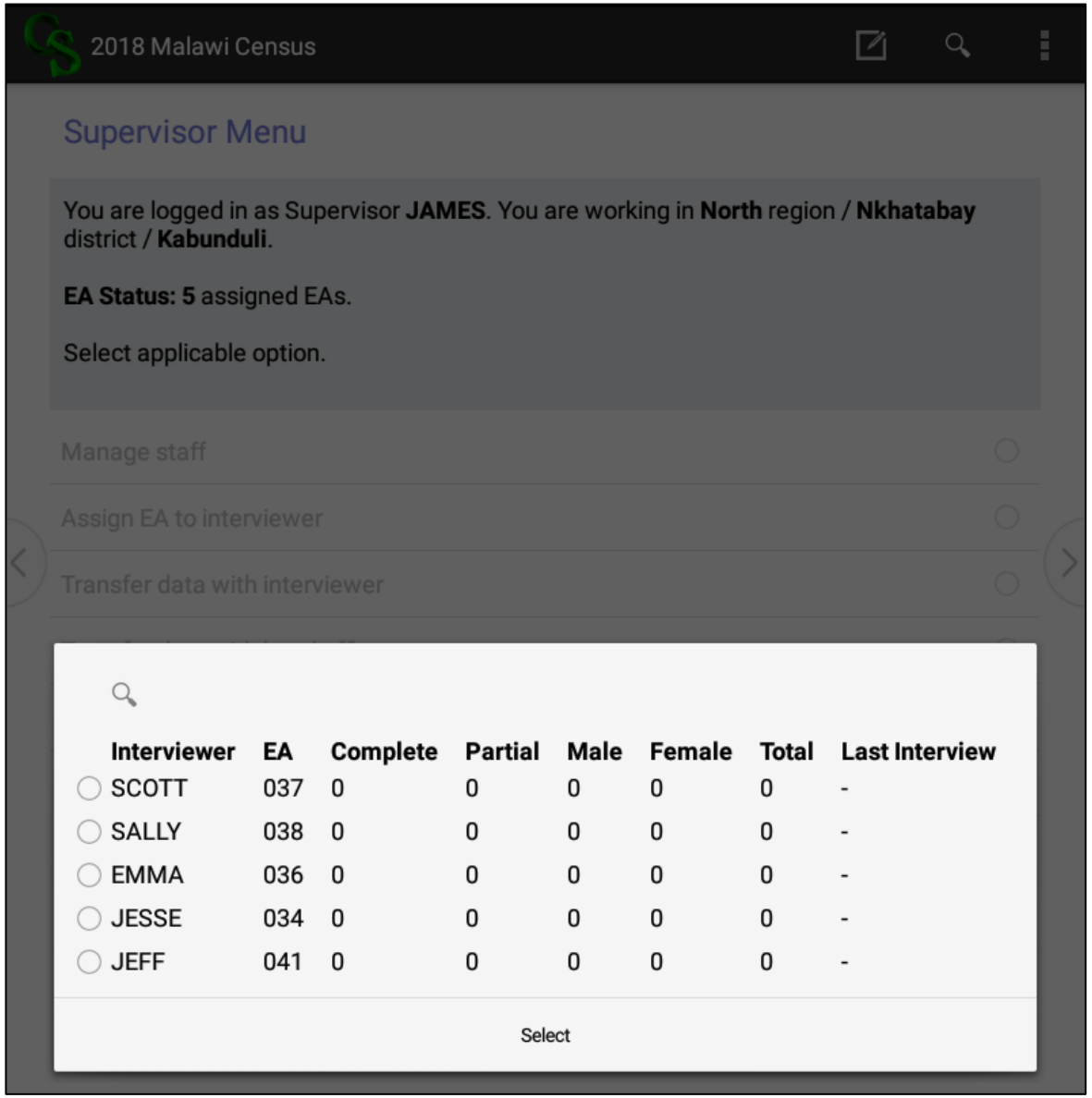
Monitoring Data Quality

- Soft checks
- Re-interview
- Reports



Data Synchronization

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CSPro Android – Census Implementations

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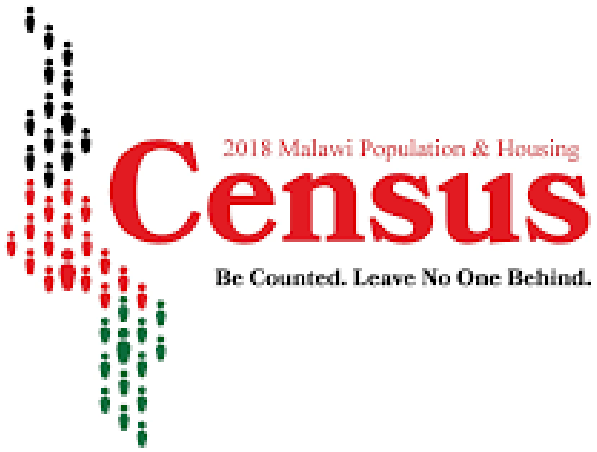
Malawi – Census 2018

- CSPro Android CAPI Solution
- Population around 17.3 million
- 20,000 Android Tablets
- Power bank with solar charger
- CSWeb Data Transmission
- CSPro Edits and Tabulations



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Malawi Census

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Tanzania Census 2022

- CSPro Android CAPI Solution
- Population around 60 million
- One week enumeration period
- Android Tablets – 200,000
  - Provisioning 15,000 tablets per day
- Supervisors – 20,000
- MBTile Maps
- CSWeb Data Transmission
  - 2.5 millions households per day

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Questions?

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