

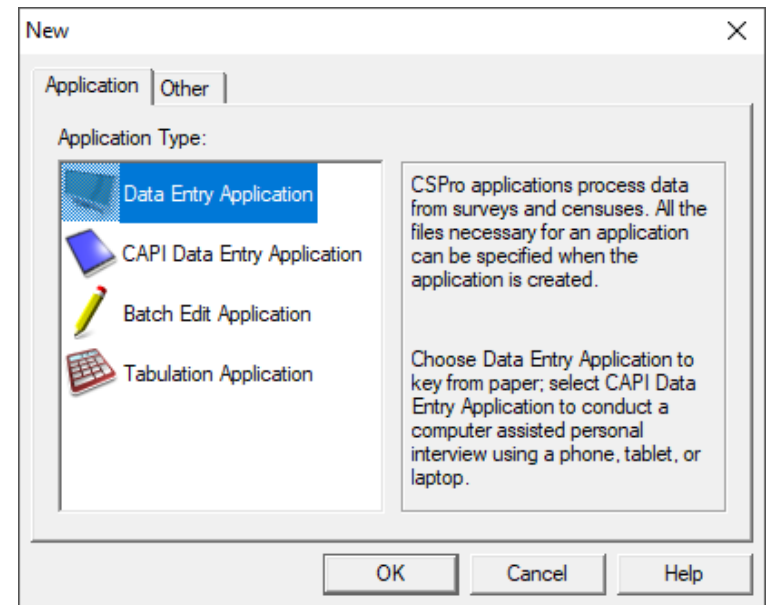
CSPPro: CAPI Census

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.

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



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

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

2020 Census Round

- CPro 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 CPro Android

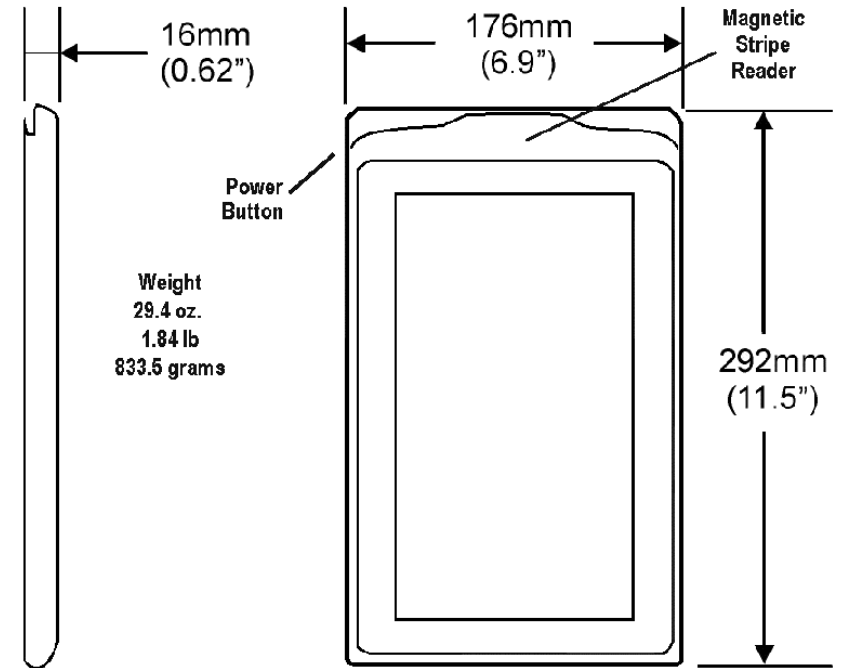
CAPI Census

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



Procurement (cont.)

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



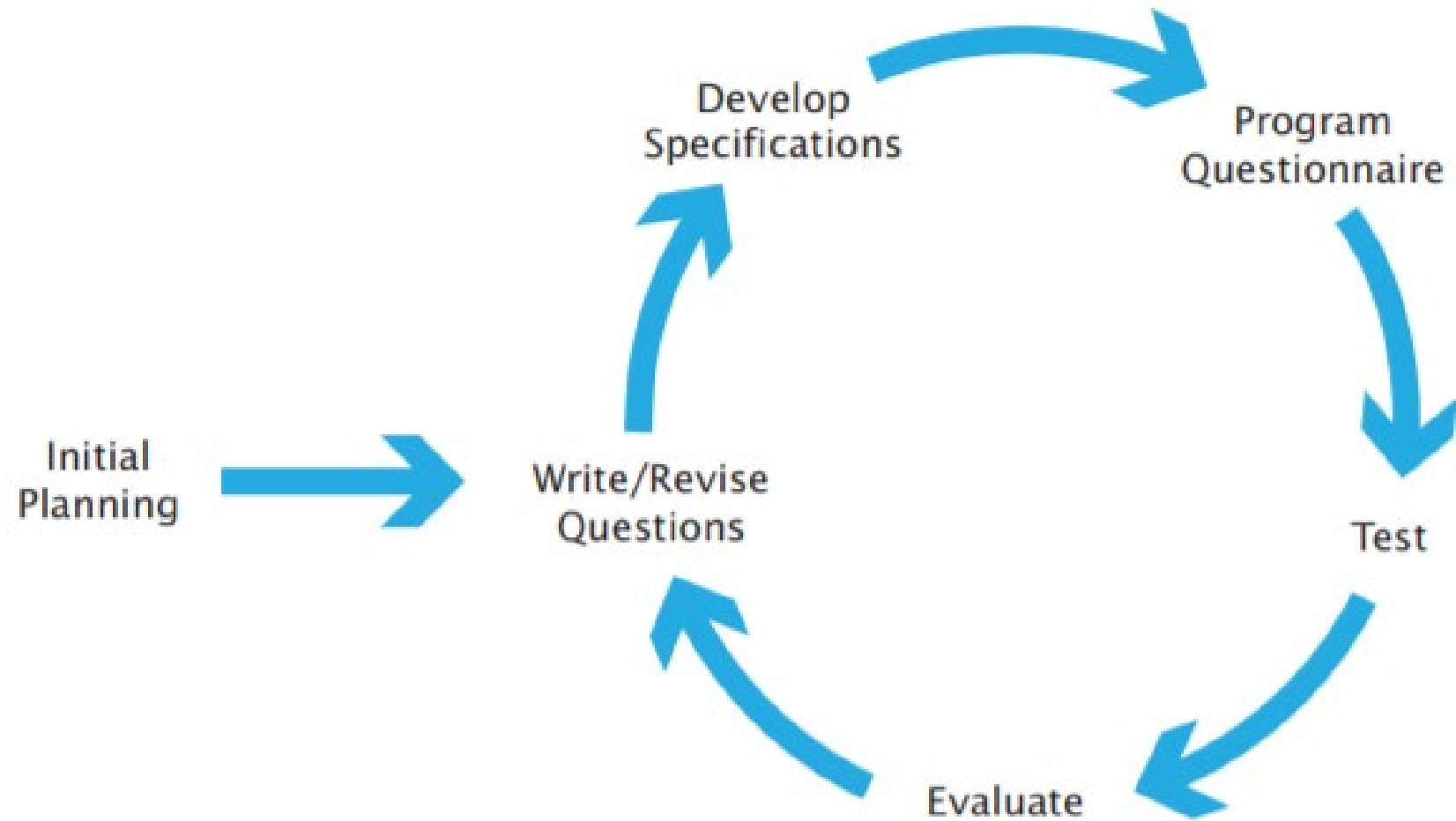
CAPI Instrument

- 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

Questionnaire Development and Survey Implementation

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

CSPro 7.0 - [Household.fmf *]

File Edit View Options Align CAPI Options Tools Window Help

Language ENG: English

Household
Household questionnaire
Household questionnaire
Household
Person Details
Person Details
309 Religion
310 Ethnic Group
311 Nationality for Diploment
311 Mother Tongue
312 Biological mother alive
313 Mothers line No
314 Biological father alive
Disability
Migration
Marital Status
Education
ICT use
Economic
Fertility
Death
Housing unit
International

309. What is %getOccLabel%'s Religion?

	Religion	Ethnic Group	Nationality	Mother Tongue	Biological mother alive	Mothers line No	
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Files Dicts Forms

192.59

NUM

Questionnaire

2018 Malawi Census Household Questionnaire

Back to Population Details

JAMES SMITH

P06. Place of birth
102 - Karonga

P07. Nationality
454 - Malawi

P09. Religion
6 - Other

P11. Previous residence
0 - Not moved

P11a. Previous residence (outside Malawi)

P12. Length of current residence

P13a1. Difficulty seeing
2 - Yes

P13a2. Difficulty seeing glasses
1 - No - no difficulty

P13a3. Cause of difficulty seeing

P13b1. Difficulty hearing
1 - No

P13b2. Difficulty hearing aid

P13b3. Cause of difficulty hearing

P13c1. Difficulty walking
1 - No - no difficulty

P13c2. Cause of difficulty walking

P13d1. Difficulty speaking
1 - No - no difficulty

P13d2. Cause of difficulty speaking

P09. Religion

What is JAMES SMITH's religion?

If child's religion is not known and husband and his wife belong to different religions then assign the religion of the mother to the child.

Christian

Muslim

Buddhism

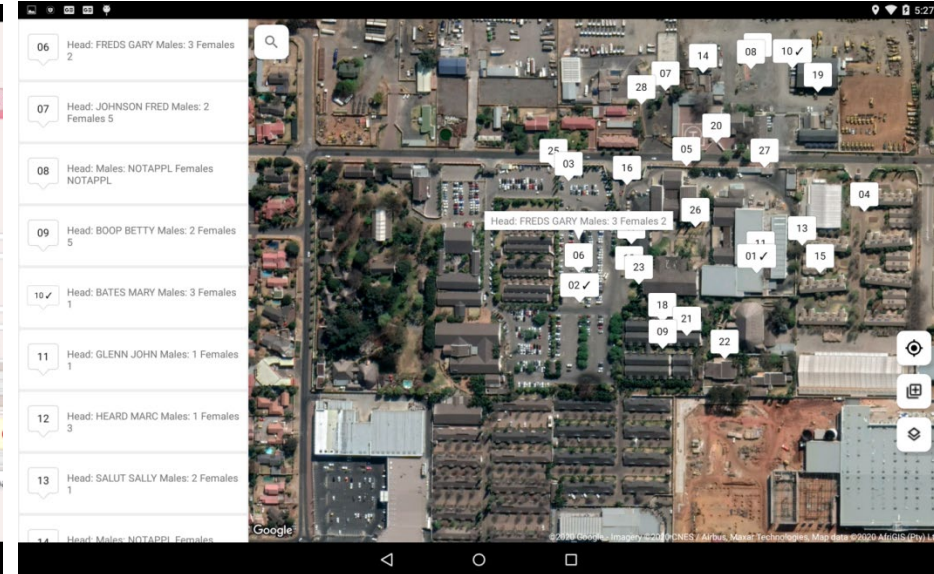
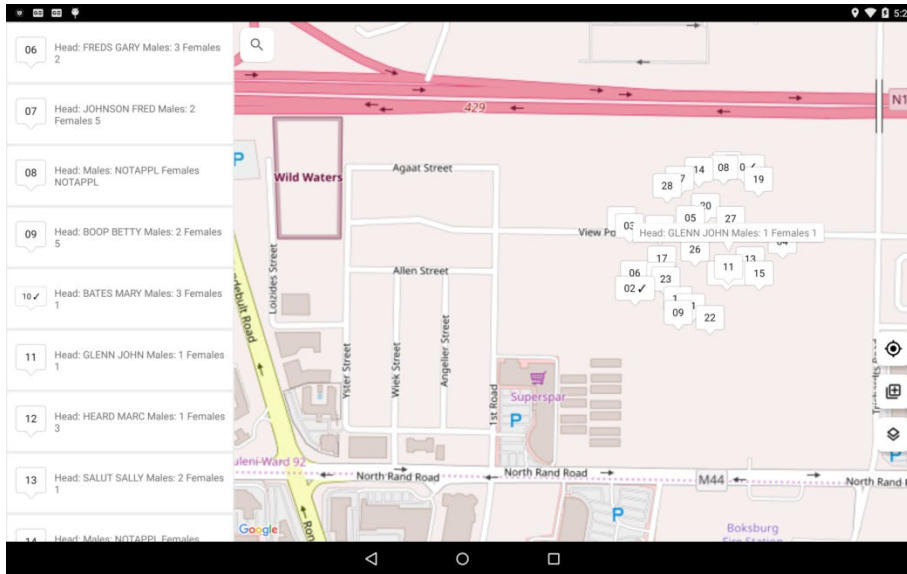
Hinduism

Traditional

Other

No religion

CSPro – Interactive Maps

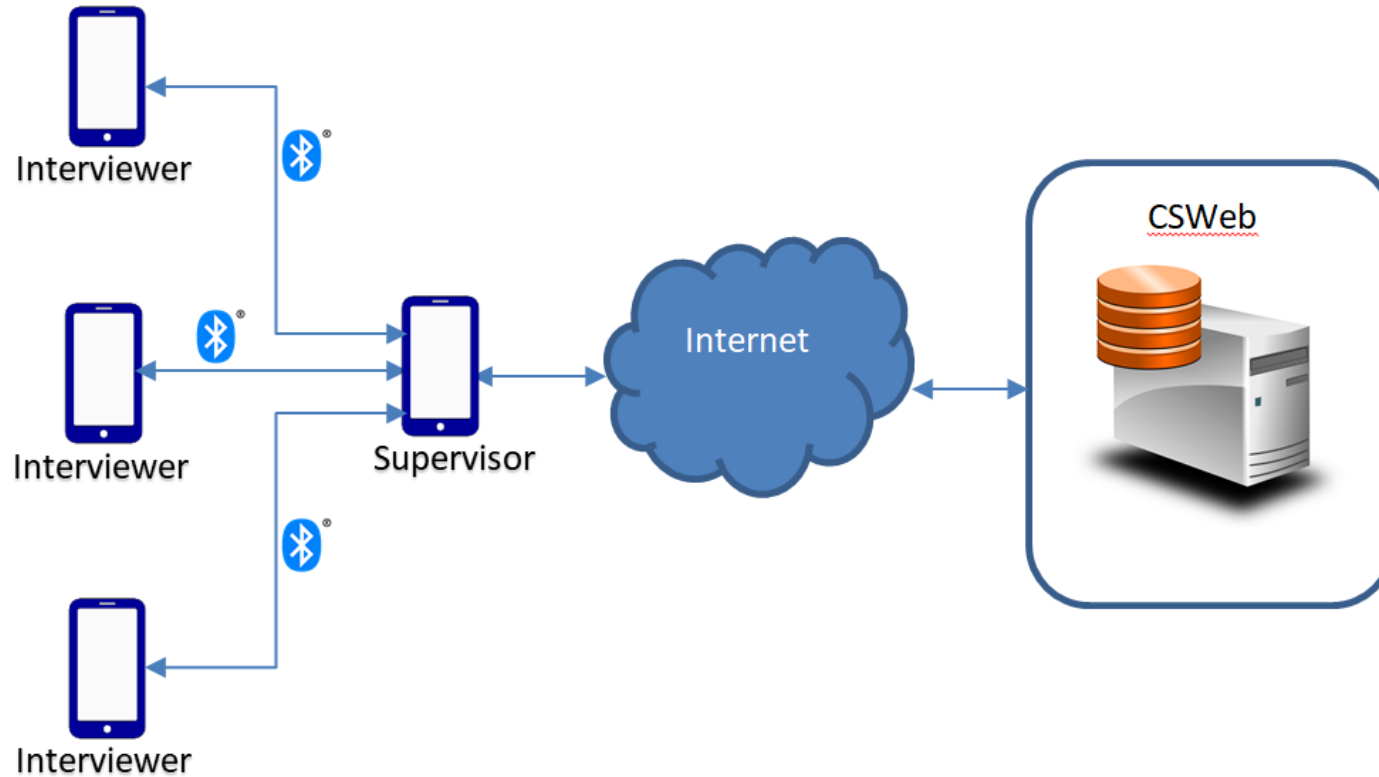


Data Synchronization

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

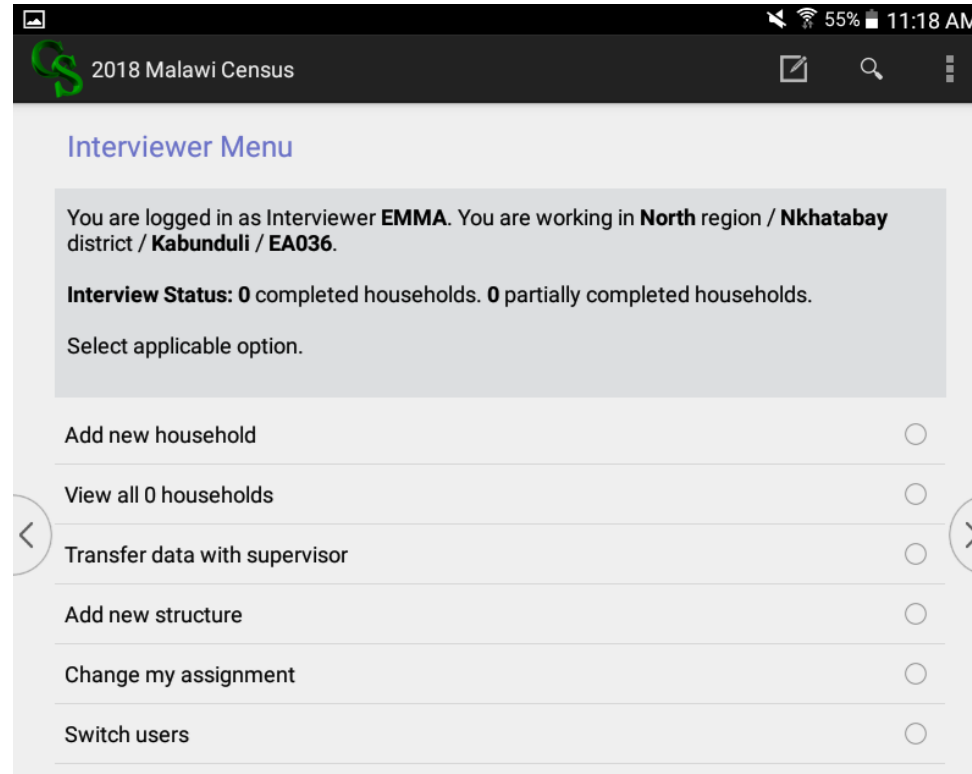
Case Management

Workflow and Data Transfer

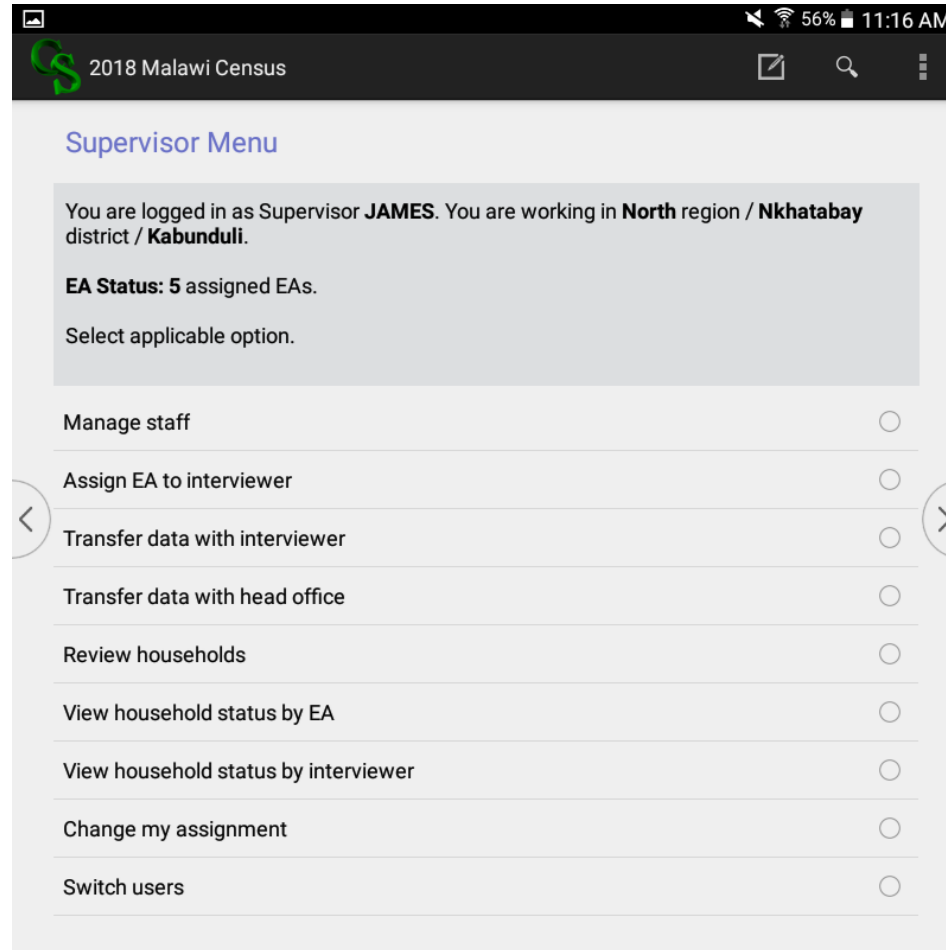


Synchronization between interviewers, supervisor and central server over the internet

Enumerator

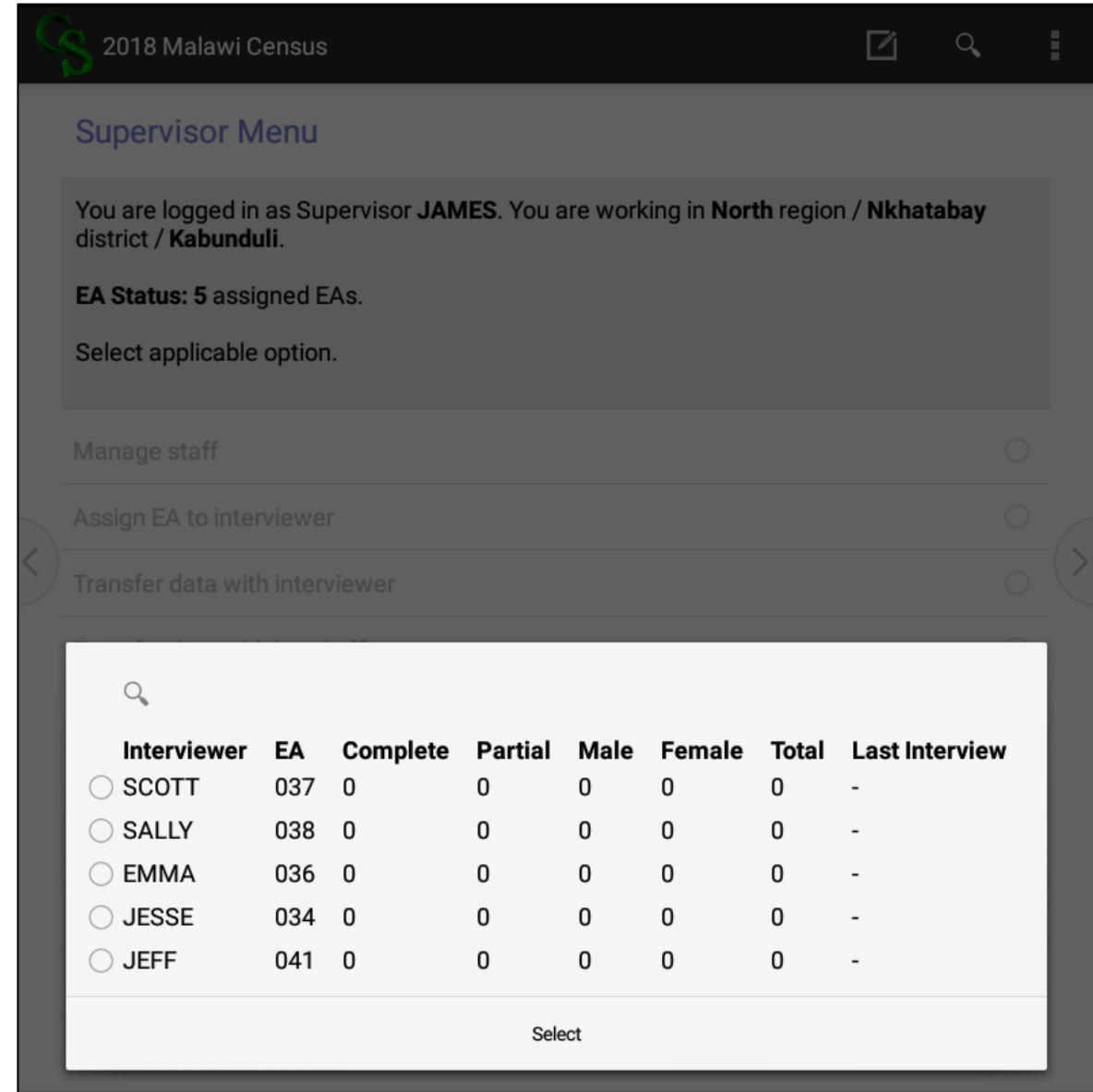


Supervisor



Monitoring Data Quality

- Soft checks
- Re-interview
- Reports



2018 Malawi Census

Supervisor Menu

You are logged in as Supervisor **JAMES**. You are working in **North** region / **Nkhatabay** district / **Kabunduli**.

EA Status: 5 assigned EAs.

Select applicable option.

Manage staff

Assign EA to interviewer

Transfer data with interviewer

Interviewer	EA	Complete	Partial	Male	Female	Total	Last Interview
<input type="radio"/> SCOTT	037	0	0	0	0	0	-
<input type="radio"/> SALLY	038	0	0	0	0	0	-
<input type="radio"/> EMMA	036	0	0	0	0	0	-
<input type="radio"/> JESSE	034	0	0	0	0	0	-
<input type="radio"/> JEFF	041	0	0	0	0	0	-

Select

Data Synchronization



CSPro Android – Census Implementations

Malawi – Census 2018

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



Malawi Census



Tanzania Census 2022

- CPro 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





Questions?