

CAPI Questionnaire Design

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Population and Housing Census

- A population census is the complete process of collecting, compiling, evaluating, analyzing, and disseminating demographic, economic, and social data belonging, at a specific time, to all people in a country or in a well-defined part of a country.
- It is among the most complex and massive exercises a nation undertakes.

U.N. Principles and Recommendations for Population and Housing Censuses

Census Benefits

Contemporary censuses at least answer three important questions:

- How many are we?
- Where do we live?
- Who are we?

Census Benefits

- Public administration
 - National statistical system
 - Business Planning
 - Research and analysis
 - International development
- National statistical system
 - Sample frame
 - The development of population estimates (denominators) used to calculate vital statistics
 - Production of other statistical indicators
 - Preparation of population projections

Challenges and Risks: Census Data Quality and Quantity

- In many countries, the census is the only time when sufficient resources are available to collect data.
- There are also data needs for development at low levels of geography that can only be collected through a census.
- However, there is always a risk that when many questions are asked, it increases the burden on the respondent that can result in incorrect data.

Quantity of Data

Advantages

- Ability to collect data on the universe of a range of variables, especially rare cases such as maternal mortality or disability.
- Ability to collect information on the development of small areas or agricultural needs.
- Ability to do research analyses that have no sampling biases.

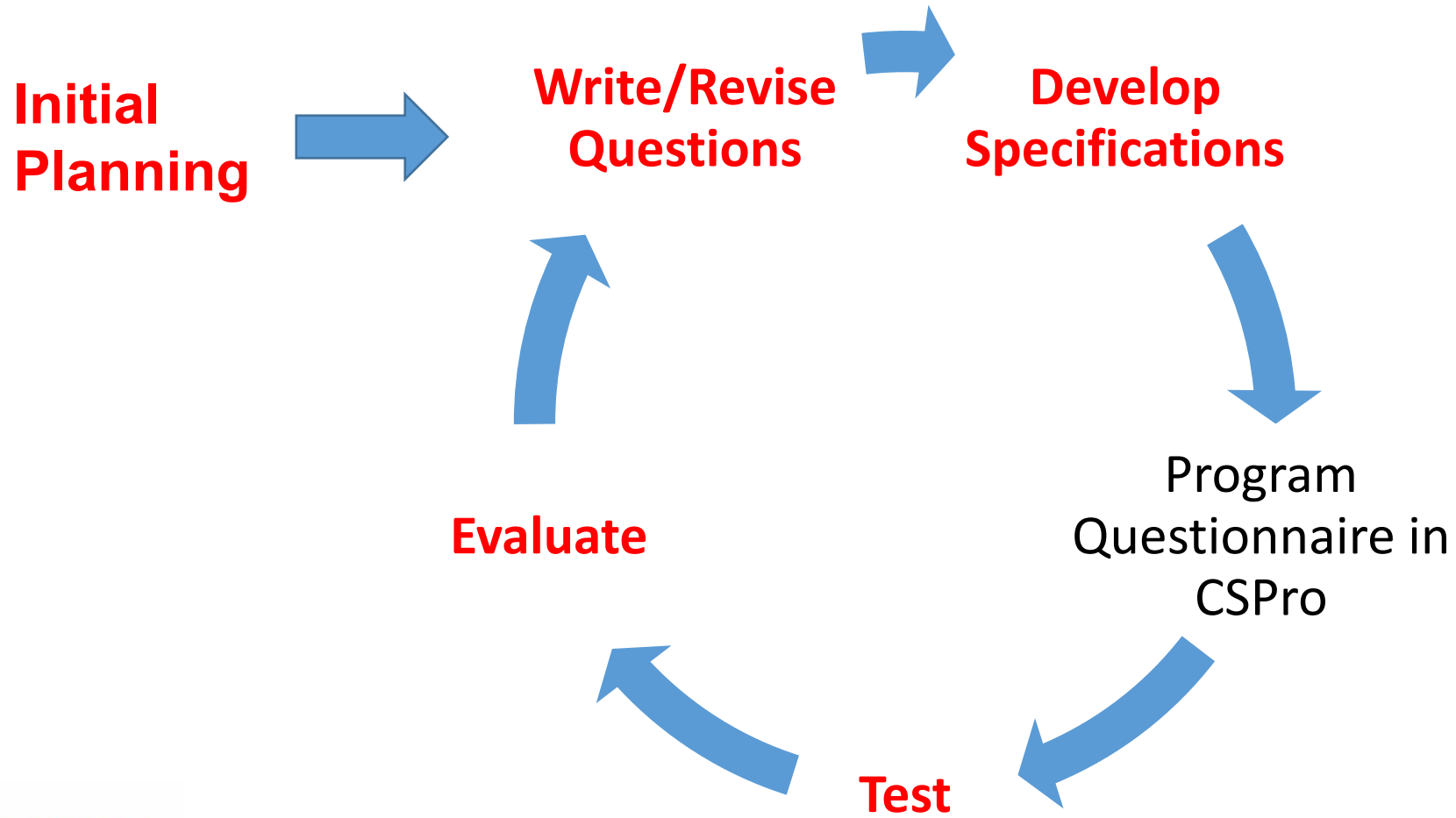
Disadvantages

- Burden on respondent can lead to inaccurate answers.
- Burden on respondent may result in more interview rejections.
- The content of the questionnaire may include sensitive questions that discourage answers.
- Enumerator loading can lead to rushed data collection, resulting in multiple errors.

Census Benefits

- The generation of **relevant, accurate and timely** statistics of detailed statistics for **small areas and small population groups**.
- *U.N. Principles and Recommendations for Population and Housing Censuses*

Steps in Electronic Questionnaire Development Involvement of Subject Matter Specialists



Write/revise questionnaire

Why can't we just give the paper questionnaire to the programmers?

REPUBLIC OF MALAWI NATIONAL STATISTICAL OFFICE 2008 Population and Housing Census Questionnaire		SECTION L - LOCALIZATION AND IDENTIFICATION OF THE HOUSEHOLD					
CONFIDENTIAL: The Census is being conducted under the 1967 Statistics Act. The information will be strictly confidential and used for statistical purposes only.		Region	TA, STA or Town	Urban or Rural	Type of Household		
Questionnaire: _____ of _____		District	Control Centre No.	Household Number	Regular Hospital/Hotel/Lodge Other Collective Homeless		
MARK HERE IF MORE THAN ONE QUESTIONNAIRE <input type="checkbox"/>		Village or Place	Enumeration Area	Number of dwelling units to household			
SECTION P - QUESTIONS ON POPULATION FOR ALL MEMBERS OF THE HOUSEHOLD							
P1. Number of the person and NAME	P2. What is (NAME)'S relationship with the head of household?	P3. Is (NAME) male or female?	P4. In what month and year was (NAME) born?	P5. How old was (NAME) at his/her last birthday?	P6. Where was (NAME) born?	P7. What is (NAME)'S nationality?	
	Head of Household Wife/Husband Son/Daughter Other relative Non relative	Male Female	EXAMPLE: NAME was born in May 1969 0 5 6 9	Enter age in completed years ("00" for children less than one year) EXAMPLE: NAME is 37 3 7	Code region and district OR code the foreign country code	Malawian: Record "000" Foreigner: Record the country code	

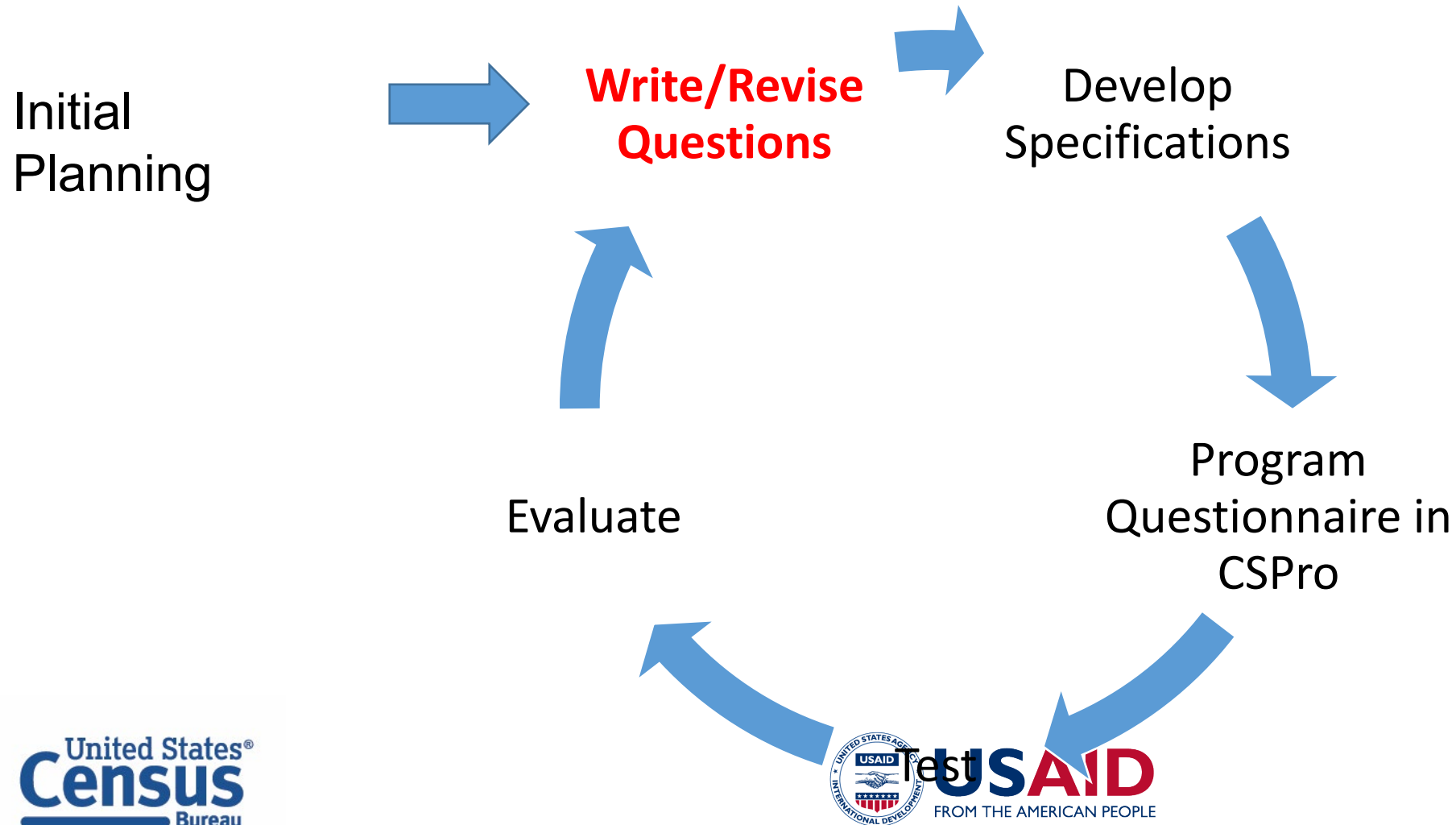
TOTAL ENUMERATED	
MALE	
FEMALE	
TOTAL	

Why can't we just give the paper questionnaire to the programmers?



- Enumerators interact differently with a mobile device
- Some questions may need to be adjusted for the electronic format
 - Screen size
 - Take advantage of the added features of an electronic questionnaire (e.g. prefilling existing data, consistency and range checks, etc.)

Steps in Electronic Questionnaire Development Involvement of Subject Matter Specialists



Adapting a Paper Questionnaire to CAPI Format

- Questions to modify/add to work better on mobile devices
 - Roster (Grid/Matrix) vs. Verbatim Questions
 - Open-ended vs. Closed-ended questions
 - Office post-coding vs. field coding
 - Response format options in an electronic questionnaire
 - Screening questions and skip patterns
 - Adding “helper” questions
- Additional features that take advantage of CAPI
 - Preloading the questionnaire
 - On-screen help
- Change log

Roster (Grid/Matrix) vs. Verbatim Questions

- Roster

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0-0	0-0 0-0 0-0 0-0 0-0	0-0 0-0	Month Year Month Year Month Year Month Year Month Year	0-0 0-0 0-0 0-0 0-0	0-0 0-0 0-0 0-0 0-0	0-0 0-0 0-0 0-0 0-0
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Roster (Grid/Matrix) vs. Verbatim Questions

Roster

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001	Head of Household	Male	05	37		
002	Wife/partner	Female				
003	Spouse's partner					
004	Other relative					
005	Non relative					

Verbatim

- Please list the names of all persons who slept in this household on census night, starting with the head of household.
 - 1. *Jane Doe*
- What is [*Jane Doe's*] relationship with the head of household?

Open-ended vs. Closed-ended questions

Open-ended

What was [NAME's] main occupation during the last 7 days or the last time he/she worked?

Write main occupation

Closed-ended

- Do/Does [NAME's] work as?
 - Employee
 - Paid apprentice or intern
 - Employer (with hired employees)
 - Own-account worker (without hired employees)
 - Helper (without pay) in a family business

Office Post-Coding vs. Field Coding

Post-Coding

- Coding of open-ended responses after the interview has completed
- Produces consistent results when done by a small number of specially trained staff
- Can be time consuming and costly

Field Coding

- Coding of open-ended responses at the time of the interview
- Faster
- Can be facilitated by table look-ups or radio buttons in an electronic questionnaire to improve consistency

Response Format Options in an Electronic Questionnaire

Radio buttons (select only one)

Sex

Sara: What is your sex?

Male

Female

Check boxes (select all that apply)

Simple CAPI (Sample Questionnaire)

Back to Roster Form

Person Record(1)

Name Sara

Sex 2 - Female

Age 14

Relationship 3 - Son

Literate 1 - Yes

Languages Spoken

Languages Spoken (Other)

Main Language

Languages Spoken

Sara: What languages do you speak?

If Sara lists only one language, probe and ask if Sara speaks more than one language.

Arabic (العربية)

Bengali (বাংলা)

Cantonese (粵語)

English

French (Français)

German (Deutsch)

Gujarati ()

Hindi (हिन्दी)

Italian (Italiano)

Japanese (日本語)

Javanese ()

Korean (한국어)

Malay (Bahasa Melayu)

Mandarin (官話)

Marathi (मराठी)

11:23 PM

Response Format Options in an Electronic Questionnaire

- Text

- Specify to accept numbers or letters or both
- Specify the range of numbers to accept (e.g. between 0 and 120)
- Specify the format (e.g. for phone numbers or postal codes)

Screening Questions and Skip Patterns

- Automatically display only the relevant questions
- Improves accuracy and reduces enumerator burden
- Once programmed, the skip patterns are less obvious
- Must be clearly specified and tested
- If skip patterns were programmed incorrectly, it can affect the entire dataset

Adding “Helper” Questions

- CAPI applications may need additional questions to set up or end response entry
 - Example: After entering responses about each person on a roster, a question may need to be added that asks “Is there anyone else in this household?”

Pre-filling the Questionnaire

- Pre-fill geocodes, identifiers for households, etc.
 - Must specify which variables will be prefilled, where the data will come from or how they will be generated
- Automatic calculations
 - Sum totals
 - Produce summary statistics

Ability to generate consistency rules and apply them in the field

- Generally, inconsistencies in the data are captured in the processes of editing and validation of the data after fieldwork.
- The CAPI methodology opens the possibility of integrating consistency rules into the application that allow the identification of possible errors and alert the interviewer to review, re-ask the question or make pertinent modifications while in the field.

On Screen Help

- Can provide on-screen help for enumerators
- Enumerators do not have to carry a manual
- Easily access definitions or other items needing clarification during the interview
- Can be linked to each question
- Must be included in the specifications

Change Log

- Change logs are important because changes made to an electronic questionnaire may not be immediately visible
- Especially important if there are multiple people working on the questionnaire
- Consider keeping a change log for any changes to the questionnaire

Typical functions in CSPro applications

Features in the CSPro application menu typically include:

1. Login key
2. Selecting the assigned task
3. Start interview from a map or text
4. Field Reports
5. Synchronization

Field Reports in CSPro

Enumerators

- It is recommended that reports are simple and actionable.
- Reflect progress for each type of questionnaire
- Each progress report may include:
 - Not started
 - Partially complete
 - Complete
 - Last interview (day and time)

Supervisor: You can also include an assignment to review a portion of a household's questionnaire.

Multiple questionnaires

- Usually, people are observed in the places where they usually sleep:
 - Households
 - Group quarters
 - Hospitals
 - Nursing homes
 - Shelters
 - Prisons (administrative records)**

In these cases, you have the household questionnaire and the questionnaire for group quarters.

Handling multiple questionnaires in CSPro

In the case of a questionnaire for group quarters, there are different forms of programming:

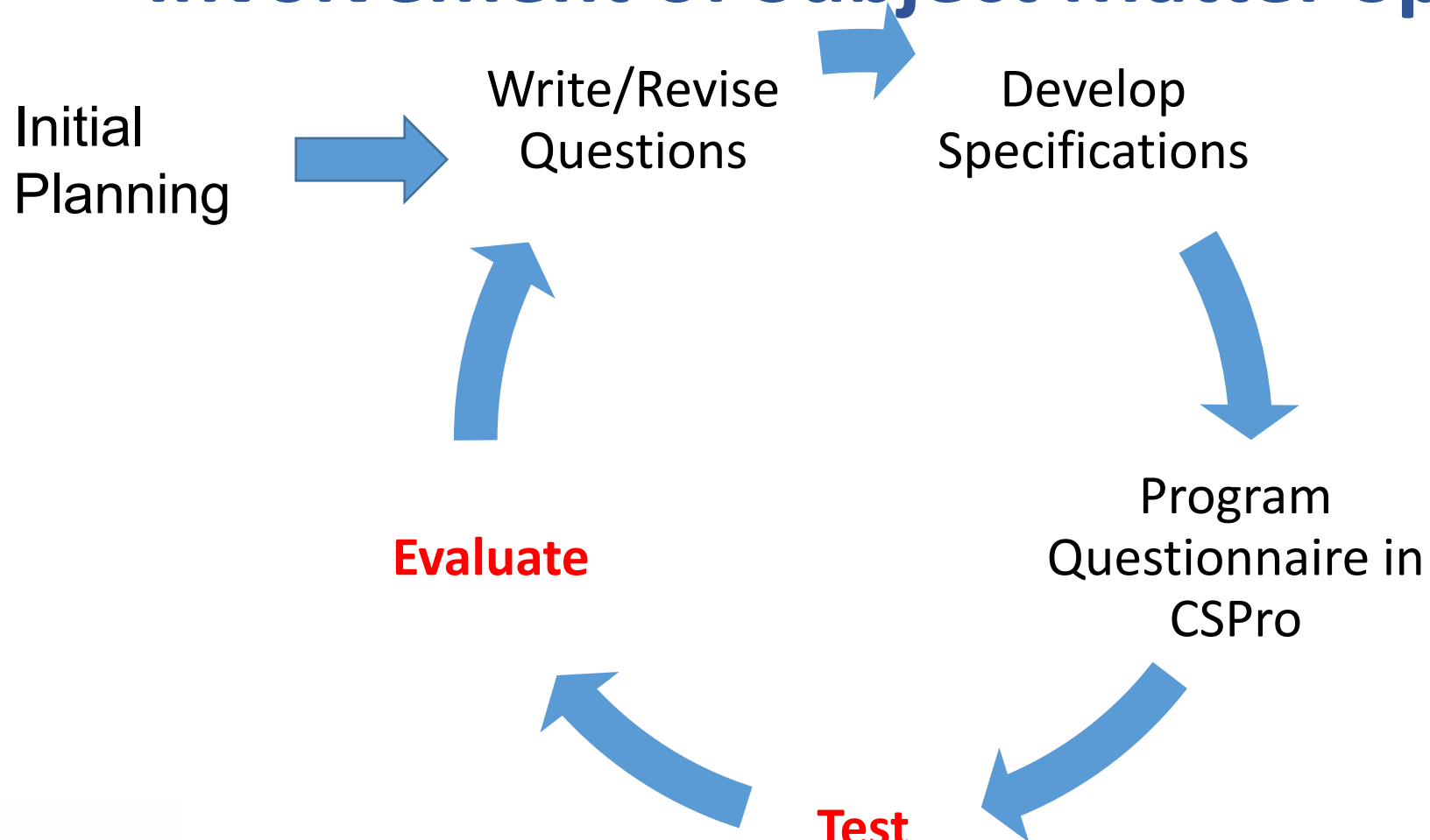
1. Share the dictionary and application with options to open the group quarter questionnaire
2. Share the dictionary with separate application for the group quarter questionnaire
3. Separate dictionary and separate application for the group quarters questionnaire

Handling multiple questionnaires in CSPro

- Option 2 separates the logic of the household and group quarter questionnaires. It is more explicit and facilitates the maintenance of the application.
- Option 3 is the most robust. In this way each interviewee is a case, instead of a line in the list of collective accommodation (roster). This format is more agile since a large list (e.g. 10,000 people) can slow down processing.

Test and evaluate

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Test, Test, and Test Again!

- Purpose:
 - Functional
 - Make sure all aspects of the questionnaire (including the questions texts, response options, error messages, etc.) work as intended under all possible situations
 - Usable
 - The enumerators can effectively and efficiently make use of the questionnaire to collect necessary data

Main Testing Approaches

- Question-by-question testing
 - Go through each question thoroughly, check for question wording, response options, missing values, fills, appearance, consistency checks, error messages, etc.
- Testing by task
 - Divide up different testing tasks among testers (e.g. one checks for skip patterns, another checks for wording)
- Scenario testing
 - Construct various scenarios of responses and enter them in the questionnaire application.
- Data testing
 - Examine the preliminary data output from the application

Main Testing Approaches

- Pretesting with survey respondents
 - Select respondents and pretest with them
- Simulating survey data
 - Produce random responses with questionnaire application, then examine the results for skip patterns and other types of logical errors.

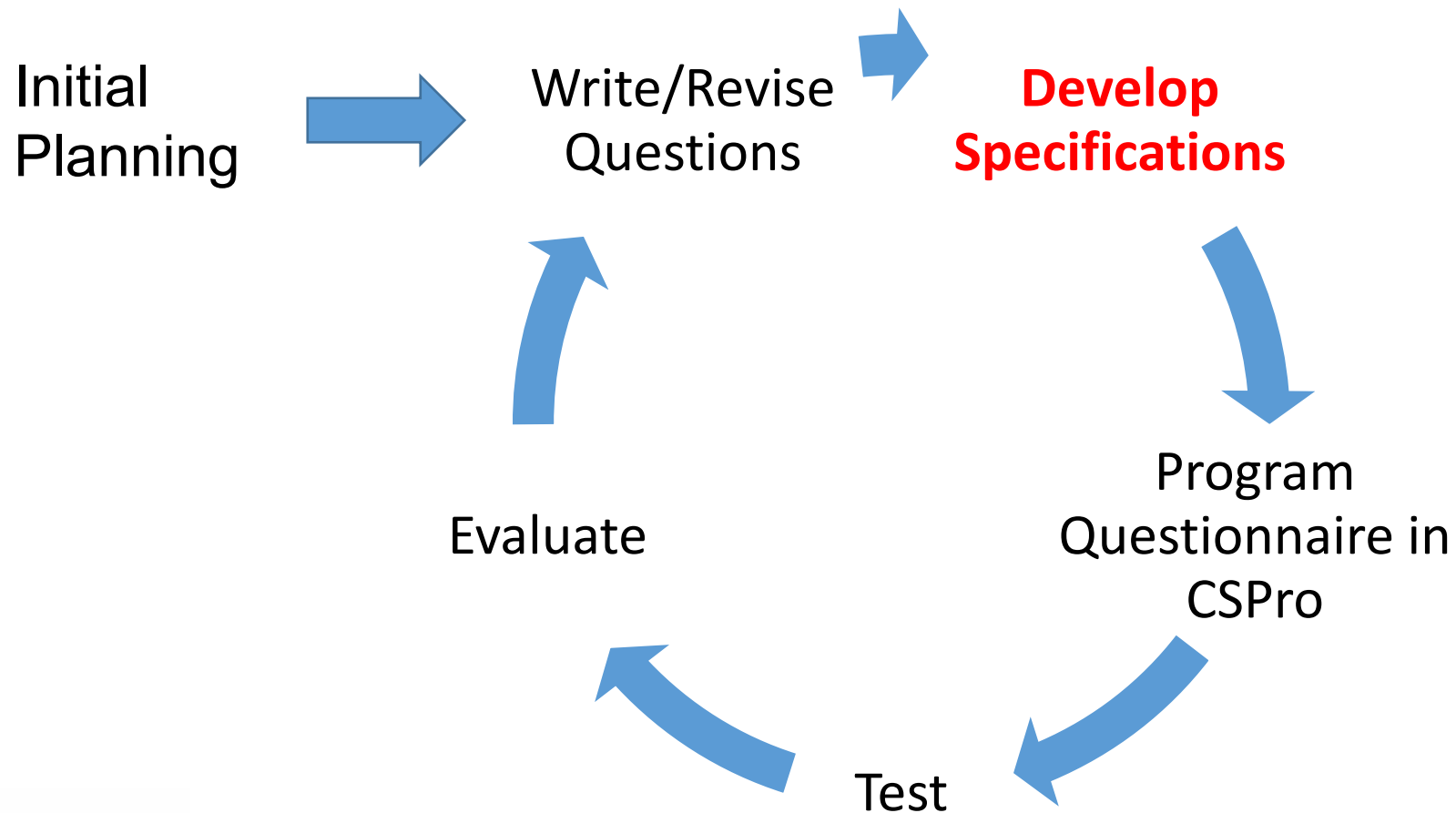
More Rigorous Testing Methods

- Cognitive interviewing
 - Focuses on particular questions and understanding the cognitive processes involved in answering them through “think alouds” and probing
- Behavior coding
 - Interviewers are monitored
 - Interviewer and respondent behavior are coded
- Experiments
 - Test whether revisions are improvements by comparing original and revised questions
- Statistical methods
 - Applying statistical methods for questionnaire evaluation (including modeling measurement error and item response patterns, predicting reliability and validity)

Summary Developing an Electronic Questionnaire

- Questions to modify/add to work better on mobile devices
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- Additional features that take advantage of the CAPI
 - Preloading the questionnaire
 - On-screen help
- Change log
- Test and evaluate
- Test again

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Questions?

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