# Planning for the Future: Usability Testing for the 2020 Census

## 2014 FedCASIC Workshop

**Emily Geisen**

**Murrey Olmsted**

RTI International

**Patti Goerman**

**Sabin Lakhe**

U.S. Census Bureau

*The findings and conclusions in this presentation are those of the authors and do not necessarily represent the views of the U.S. Census Bureau or RTI International.*

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# 2020 Census Coverage Study Overview

- The Census Bureau is exploring the use of mobile and web-based modes to improve coverage and reduce costs

- This study evaluated test versions of mobile applications for the 2020 census instruments

- Survey apps were developed by the Census Bureau

- RTI International contracted to conduct pretesting of the new census forms

- Study used an iterative approach to cognitive and usability testing

# Study Methodology

- Tested multiple census questionnaires: Household, Nonresponse follow-up, Be Counted, and Group Quarters

- Included both interviewer-administered and self-administered surveys

- Three rounds of testing with instruments revised between rounds

- 50-67 participants in each round

- Interviews conducted with Census-provided smartphones and tablets (android platform)

# Overview of Usability Testing Topics

1. Multiple Questions per Screen

2. Use of Visual Cues

3. Gate Questions vs Looping

4. Pick Lists to Reduce Burden

5. General Usability Considerations

# 1. Multiple Questions per Screen

# 1a. Introductions were often ignored

### Round 1:

BeCounted, CSM, US Census Bureau

*I'm here to complete a Census questionnaire for this address. It should take about 10 minutes. We need to count everyone where they were living or staying on Census Day, which was January 15, 2012.*

**Question 1**

Were you already counted in the 2012 Census?

◯ Yes

◯ No

◯ Don't know

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### Round 3:

BeCounted, CSM, US Census Bureau

The Census Bureau needs to count everyone where they were living or staying on Census Day, which was June 1, 2013. It should take about 10 minutes to complete this survey.

June 2013 — Census Day

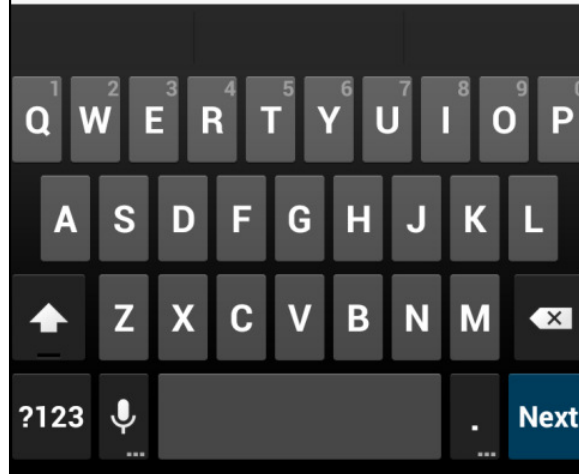| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|--------|--------|---------|-----------|----------|--------|----------|
| 30 |  |  |  |  |  | 1 |
| 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| 16 | 17 | 18 | 19 | 20 | 21 | 22 |
| 23 | 24 | 25 | 26 | 27 | 28 | 29 |

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- Intros before questions were often ignored
- When moved to a separate screen, they were read more often

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# 1b. Keyboard blocked screen

**Question 2**

Let's start with you. What is your name?

Firstname Middlename Lastnan

Was there anyone else living or staying at this address on January 15, 2012? What is his/her name?

Anyone else ?

○ Yes

○ No

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**Question 2**

Let's start with you. What is your name?

Firstname Middlename Lastnan

Was there anyone else living or staying at this address on January 15, 2012? What is his/her name?

[keyboard: Q W E R T Y U I O P / A S D F G H J K L / Z X C V B N M / ?123 . Next]

- Multiple question format was difficult for questions with text entry

- The keyboard (smartphones only) would block lower questions so they were not visible

- This could affect perceived context of the survey questions

# 1c. Questions accidentally skipped



**Group Quarter, CSM, US Census Bureau**

**Question 1**
What is your full name?

First:    Middle:    Last:

Were you already counted in the 2013 Census?

○ Yes

● No

Please enter your first and last name!

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- When multiple questions appeared on the same screen, users would accidentally skip questions, receive error messages

- Ideally, would like to prevent users from making errors in the first place

# 1d. Multiple questions were distracting

- Asking for too much info on one screen was distracting

- Important information was skipped or ignored

  - Splitting into multiple screens worked well and did not appear to be more burdensome

# 2. Use of Visual Cues

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# 2a. Visual cues for name prompts (round 1)

**Question 2**

Let's start with you. What is your name?

Firstname Mname Lastname

Please list all the (other) people who live or stay at this address.

Anyone else ?

○ Yes

○ No

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Round 1 Format:
- One-box format chosen to support multicultural names (e.g., two last names, no middle name)
- Prompt included in text box to save space

Round 1 Results:
- Users started typing and the prompt would disappear
- Few provided a middle name (even if they had a middle name)
- Some just listed first name

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# 2b. Visual cues for name prompts (round 2)

**Question 2**

What is your full name?

[First Middle Last]

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**Question 2**

What is your full name?

[First]    [Middle]  [Last]

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Round 2 Format changes:
*   Moved prompt outside of text box
*   Tested 1-box and 3-box format
*   Asked for "full" name

Round 2 Results:
*   Improved name format in both versions
*   3-box format worked best for our users
*   Limited number of unconventional names

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# 2c. Visual cues for name prompts (round 3)



**Question 2**

What is your full name?

First:          Middle:          Last:

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**Question 3a**

What are the full names of the other people who were living or staying at 123 Main St on June 1, 2013?

First:          Middle:          Last:

Round 3 Format:
- Moved prompts above text boxes (below in Round 2)

Round 3 Results:
- Prompt still visible when keyboard is used

# 3. Gate Questions vs Looping

# 3a. Gate Questions vs Looping (Round 1)

- Census surveys ask questions about each household resident

- For each resident, we asked questions on possible alternate locations each resident stays
  – Vacation home (seasonal or second residence)
  – Place closer to work
  – With a parent, grandparent, etc. (e.g., child custody)

- Addresses were collected for each person and place

- In Round 1, there was satisficing (answering no to avoid providing address)

- In Round 2 compared use of gate questions vs looping

# 3b. Gate Questions (Round 2)

## Gate Questions

**Question 10**

Do you or any of these people sometimes live or stay somewhere else with a parent, grandparent, friend or other person?

○ Yes

○ No

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**Question 10a**

Do you or any of these people sometimes live or stay at another home, like a seasonal or second residence?

○ Yes

○ No

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**Question 10b**

Do you or any of these people sometimes live or stay at another address for college, for the military, or for a job?

○ Yes

○ No

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## Follow-up Questions

**Question 10F**

You reported that before Person 2 stayed someplace else with a parent, grandparent, friend or other person. What is the address of the other place Person 2 stayed?

Address (Number and street name)

Apt #

City

State

Zip Code

# 3c. Looping (Round 2)

**Question 10**

Do you sometimes live or stay somewhere else with a parent, grandparent, friend, or other person?

○ Yes

○ No

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**Question 10F**

What is the full address of the other place you stayed?

Address (Number and street name)

⎸                                    Apt #

City

State

Zip Code

If there is no street this is a facility, ple description in the

**Question 10**

How about Person 2? Does Person 2 sometimes live or stay somewhere else with a parent, grandparent, friend, or other person?

○ Yes

○ No

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**Question 10**

How about Person 3? Does Person 3 sometimes live or stay somewhere else with a parent, grandparent, friend, or other person?

○ Yes

○ No

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**Question 10F**

What is the full address of the other place Person 3 stayed?

☐ 123 Main St

☐ Enter a new address

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# 3d. Round 2 Results

- Gate Questions had more Yes responses than Looping, but fewer unique addresses

**Question 10**

Do you or any of these people sometimes live or stay somewhere else with a parent, grandparent, friend or other person?

- ○ Yes
- ○ No

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**Does anyone…**
**Who…**
**Does anyone…**
**Who…**
**Address…**

**Question 10**

Do you sometimes live or stay somewhere else with a parent, grandparent, friend, or other person?

- ○ Yes
- ○ No

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**Does Person 1…**
**Address…**
**Does Person 2…**
**Address…**

**Gate Questions**

- Confusing because follow up questions too long after gate question

**Looping**

- Participants found this to be less confusing, but long and repetitive

# 3e. Looping and Grouping (Round 3)

**Question 13a**

Besides ADDRESS, do <u>you</u> sometimes live or stay at another address:

For college, the military, or a job?

  ⭘ Yes  ⭘ No

At anoth... or secon...

With a p... or other ...

Next Pag...

Looped by household member

**Question 13a**

Besides ADDRESS, does <u>NAME</u> sometimes live or stay at another address:

For college, the military, or a job?

  ⭘ Yes  ⭘ No

At another home, like a seasonal or second residence?

  ⭘ Yes  ⭘ No

With a parent, grandparent, friend, or other person?

  ⭘ Yes  ⭘ No

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Grouped by location

## Results

- Focuses on each person, improved reporting

- Grouping location reduced length and burden on participants

# 4. Pick lists to reduce burden

# 4a. Problem: burdensome address requests

**Question 10F**

Please provide the full address of the other place Person A stayed.

Address (Number and street name)

City

State

Zip Code

If there is no street address or if this is a facility, please type a description in the box below.

- Census instruments need to collect multiple addresses for household members
- Many household members often stayed at the same location as a group (e.g., vacation home or shared custody situation)
- Entering the address multiple times was tedious – could lead to underreporting of addresses

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# 4b. Solution: pick-lists



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**Question 13b**

What is the address where you stayed at another home, like a seasonal or second home? Please provide as much information as you know.

☐ 3040 E. Cornwallis Rd

☐ 2 Massachusetts Ave, NW

☐ Enter a new address

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- Address selections were saved
- Participants could click the box for existing address or enter new address (or both)
- Only slight evidence that participants selected an address incorrectly

# 5. General Usability Concerns

# 5a. Unfamiliar Devices

- Usability tests were conducted on Census-owned rather than participant-owned devices

- Overall, participants had very little difficulty answering the survey on the unfamiliar devices

- When difficulty was experienced, it was primarily due to:
  - "Virtual" Keyboard (difficulty toggling between keyboard and no keyboard, typing with accuracy, using numbers or upper case)
  - Touch screen (tapping too hard/light, fingernails)
  - Size of buttons/space between selections (difficulty selecting with accuracy)

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# 5b. Tablets vs Smartphones

**Tablet**

**Smartphone**



Wide textbox fields

Text cut off

Radio buttons could be spaced out more, adjusted in Round 3
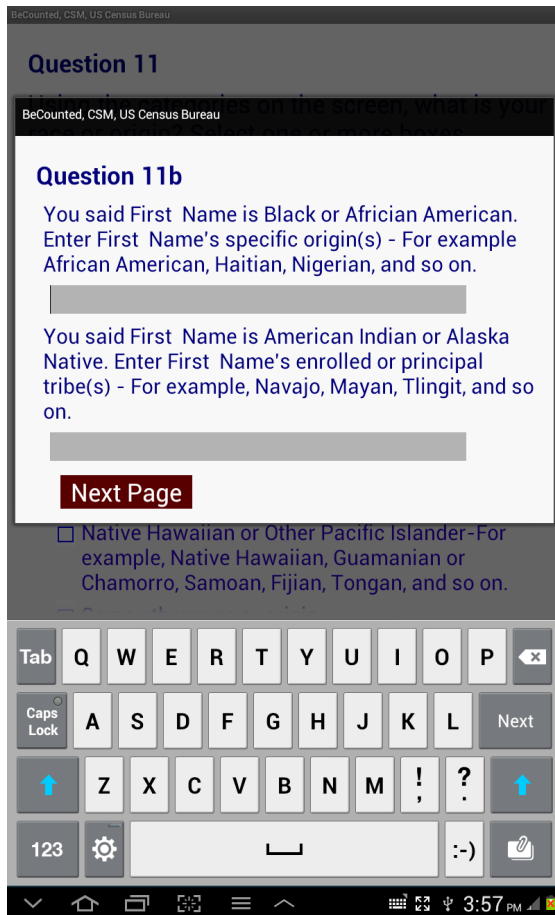
Keyboard blocks less of screen on tablet
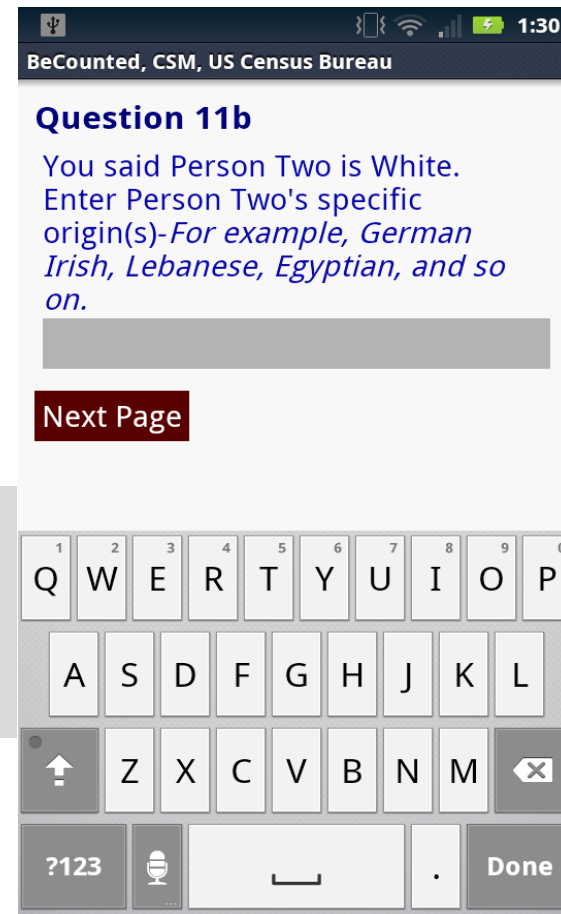
# 5b. Tablets vs Smartphones (continued)

## Tablet

## Smartphone



On tablet follow up questions are displayed on popup screen.

On smartphone follow up questions are displayed on a full screen

# Summary

- One question per screen worked better (even when all questions fit without scrolling)

- Implementing visual cues aided in responding

- Focusing on residents individually (instead of as a group) appeared to improve reporting

- Efforts to reduce amount of typing needed (pick lists) reduced burden to respondents

- Very few general usability issues even with Census-provided devices

- Participants preferred tablets and there were fewer usability issues with tablets