The Differential Effect of a Mobile-Friendly Instrument on Data Quality

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Disclaimer: Any views expressed are those of the author and not necessarily those of the U.S. Census Bureau.

Background

- The rise in smartphone ownership and use in surveys is well documented (Pew Research Center; Horwitz, 2015; Baker-Prewitt, 2013)
- As are problems associated with their use in surveys (Baker-Prewitt, 2013; Mavletova, 2013; de Bruijne and Wijnant, 2013)
  - Long completion times (Mavletova, 2013; de Bruijne and Wijnant, 2014; McClain et al, 2012; Peterson, 2012)
  - Higher breakoffs (Baker-Prewitt, 2013; Callegaro, 2013; Mavletova, 2013, Wells et al., 2013)

Background

- Optimization helps but does not eliminate longer response times and higher breakoffs (Couper et al., 2015)
- Meta-analysis includes surveys from different populations, of different lengths, and different types of "optimization"
- Can we identify differential effects in the benefits of optimization by survey length?

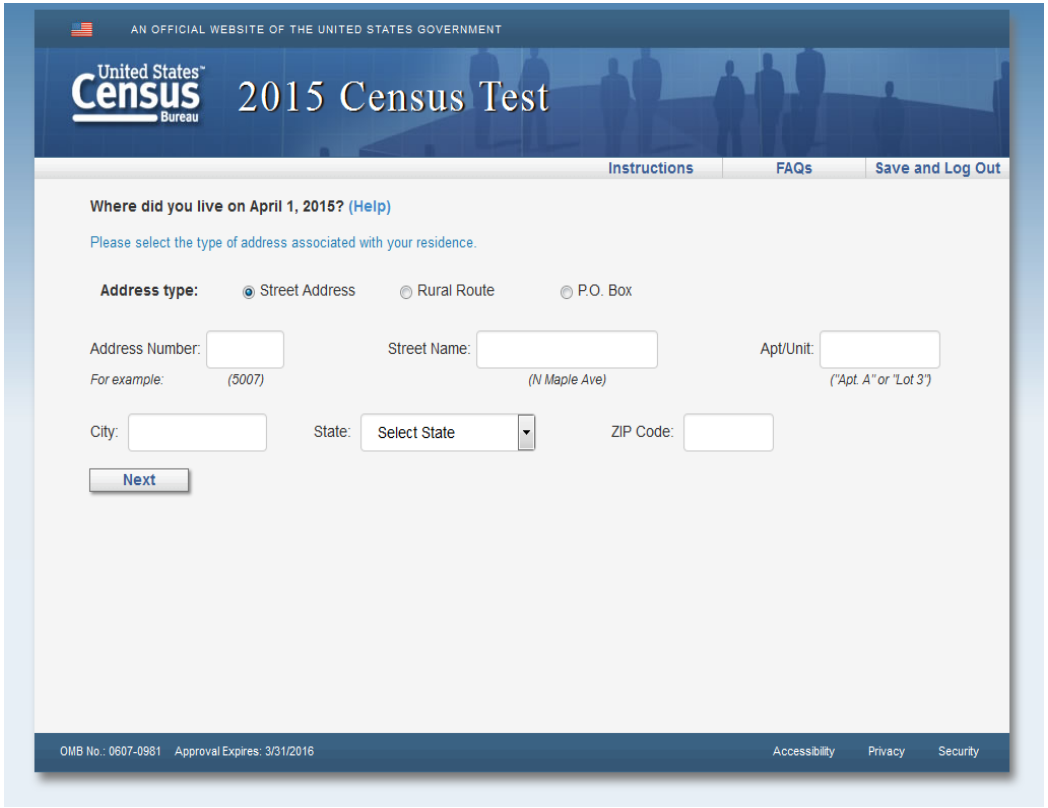
Mobile-Friendly Census Surveys

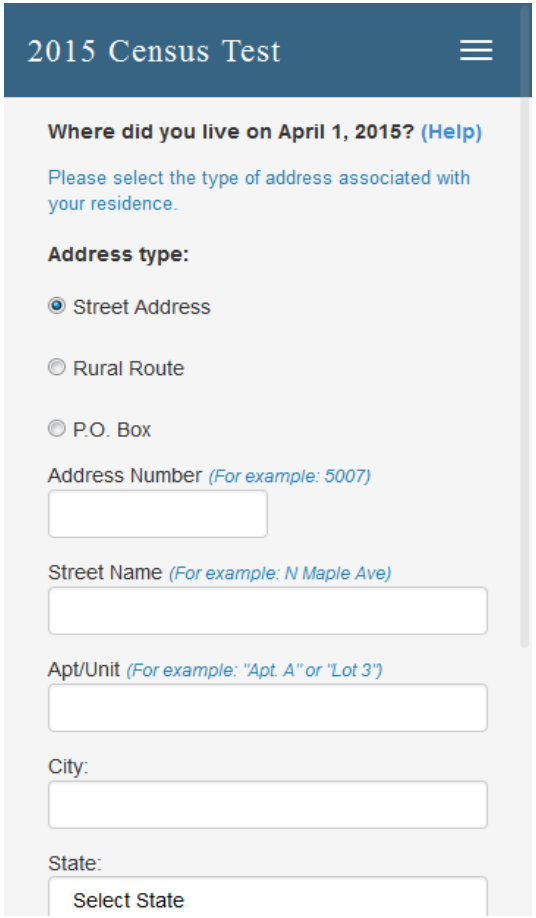
2015 National Content Test (NCT)

2016 American Community Survey (ACS)

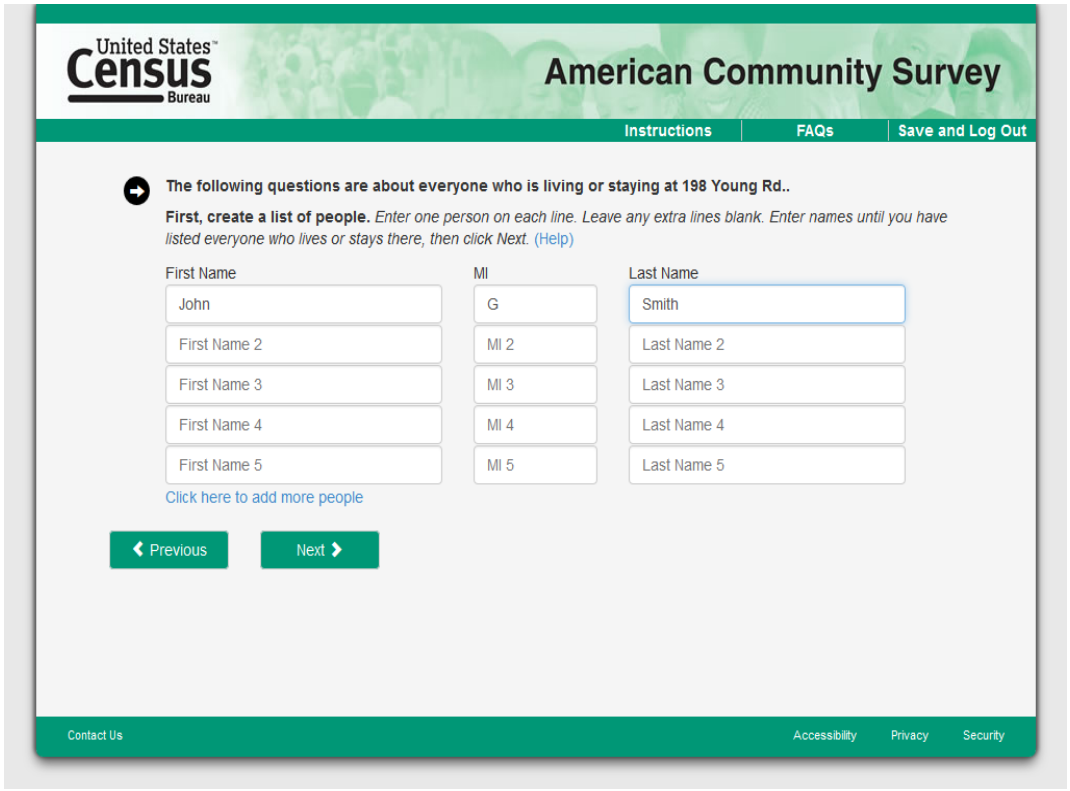
- First Census Bureau surveys using a mobile-friendly design
  - Use a responsive web design vs. mobile-first
  - Layout of information on the screen may change

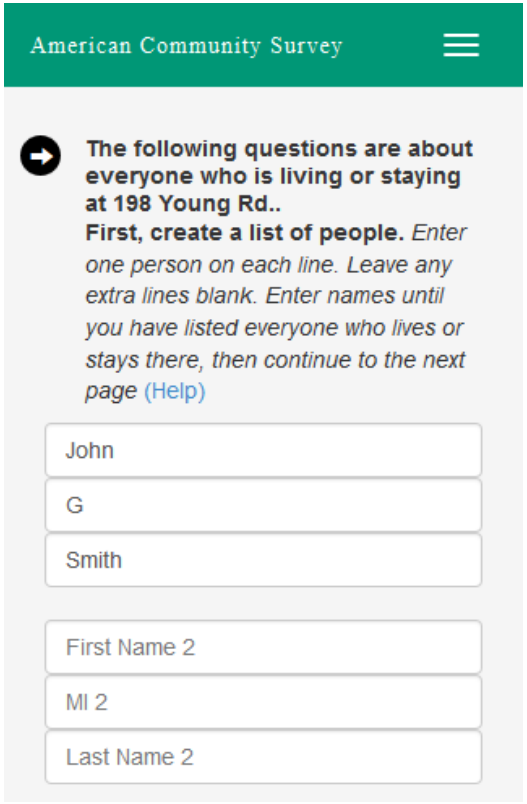
Examples


AN OFFICIAL WEBSITE OF THE UNITED STATES GOVERNMENT
United States Census Bureau
2015 Census Test
Instructions
FAQs
Save and Log Out
Where did you live on April 1, 2015? (Help)
Please select the type of address associated with your residence.
Address type:
Street Address
Rural Route
P.O. Box
Address Number:
For example: (5007)
Street Name:
(N Maple Ave)
Apt/Unit:
("Apt. A" or "Lot 3")
City:
State:
Select State
ZIP Code:
Next
OMB No.: 0607-0981 Approval Expires: 3/31/2016
Accessibility
Privacy
Security


2015 Census Test
Where did you live on April 1, 2015? (Help)
Please select the type of address associated with your residence.
Address type:
Street Address
Rural Route
P.O. Box
Address Number (For example: 5007)
Street Name (For example: N Maple Ave)
Apt/Unit (For example: "Apt. A" or "Lot 3")
City:
State:
Select State

Examples


United States Census Bureau
American Community Survey
Instructions
FAQs
Save and Log Out
The following questions are about everyone who is living or staying at 198 Young Rd..
First, create a list of people. Enter one person on each line. Leave any extra lines blank. Enter names until you have listed everyone who lives or stays there, then click Next. (Help)
First Name
MI
Last Name
John
G
Smith
First Name 2
MI 2
Last Name 2
First Name 3
MI 3
Last Name 3
First Name 4
MI 4
Last Name 4
First Name 5
MI 5
Last Name 5
Click here to add more people
Previous
Next
Contact Us
Accessibility
Privacy
Security


American Community Survey
The following questions are about everyone who is living or staying at 198 Young Rd..
First, create a list of people. Enter one person on each line. Leave any extra lines blank. Enter names until you have listed everyone who lives or stays there, then continue to the next page (Help)
John
G
Smith
First Name 2
MI 2
Last Name 2

Data

- Surveys
  - National Census/Content Test (NCT)
    - 2012 – Not optimized (25,103 respondents)
    - 2015 – Optimized (435,951 respondents)
  - American Community Survey
    - January 2015 – Not optimized (65,846 respondents)
    - January 2016 – Optimized (69,190 respondents)
- Analysis
  - Limited to computer and phone respondents (smartphone and feature phone)

About the NCT and ACS

- Similarities
  - National sample
  - Mandatory
  - 3-month data collection period
  - Framework used to develop web survey
- Differences
  - Survey length
    - NCT ~ 10 minutes
    - ACS ~ 40 minutes
  - Survey content
    - NCT – demographic and household information
    - ACS – demographic, housing, social, and economic characteristics

Analysis

ANALYSIS MEASURES (BY DEVICE)	
Logins	% people who successfully logged into survey
Breakoff Rate	% people who logged in but did not submit the survey
Time To Complete	difference between survey submit time & login time
Answer Changes	average # of times a respondent changed an answer
Device Switching	% respondents that started on a phone then switched to a computer

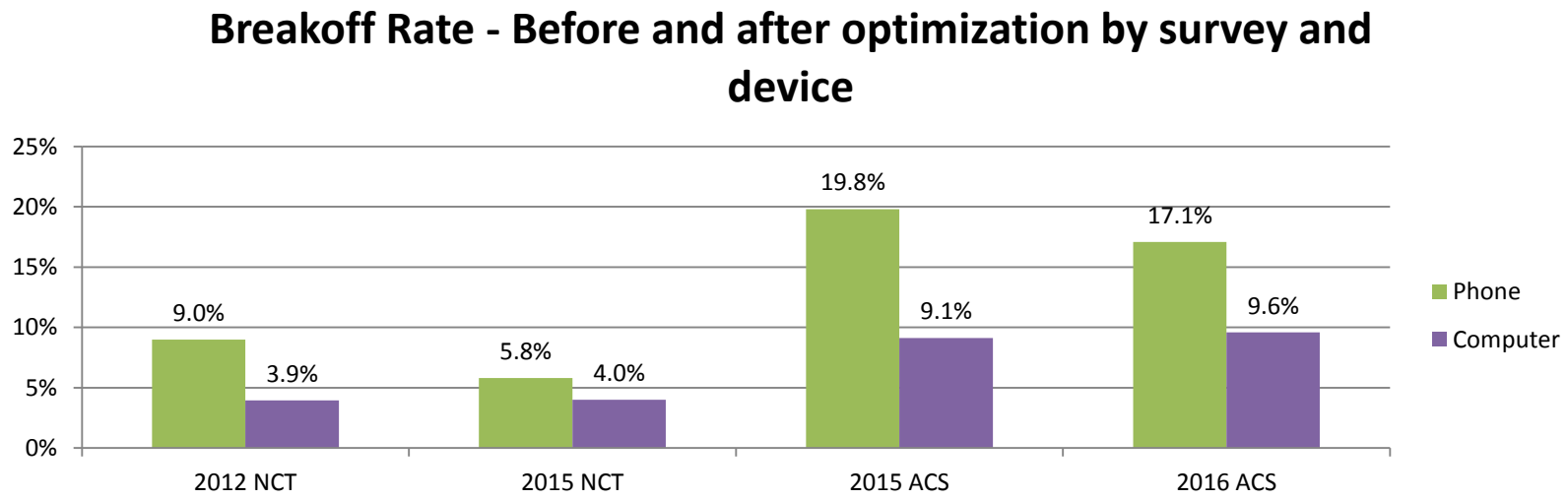
Logins by Device

How have logins by device changed?

	NCT		ACS	
	2012	*2015*	*2015*	*2016*
Phone	2.6%	7.7%	4.6%	7.6%
Computer	91.2%	83.0%	80.3%	82.2%
Tablet	6.3%	9.3%	15.1%	10.2%

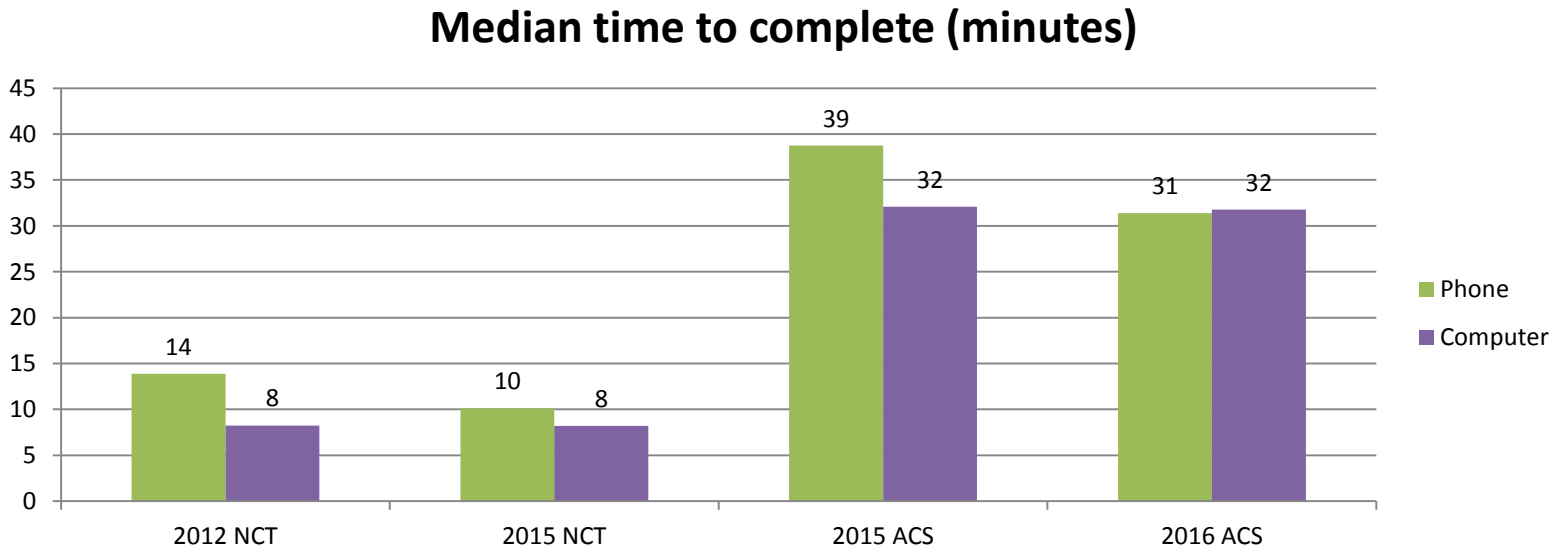
Results – Breakoff Rate

- NCT: 2.3 times higher before optimization, 1.4 times after → differential of 0.9
- ACS: 2.2 times higher before, 1.8 times after → differential of 0.4



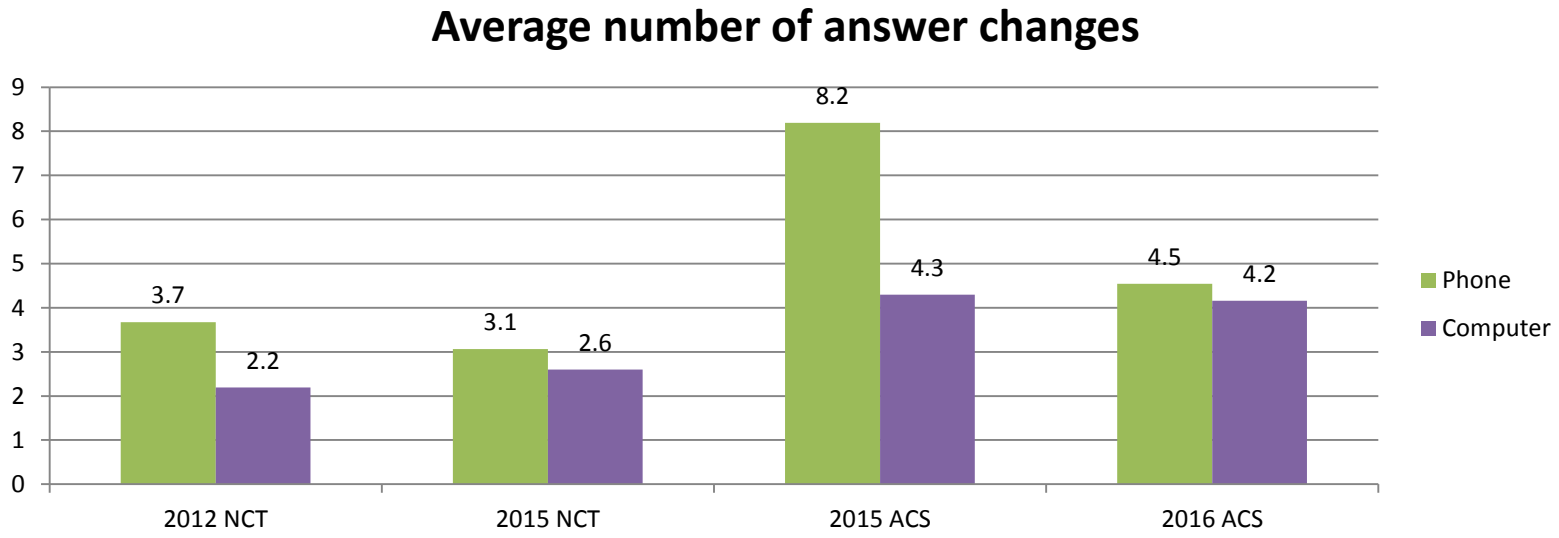
Results – Completion Time

- NCT: 1.8 times longer before, 1.3 times longer after → differential of 0.5
- ACS: 1.2 times longer before, 1.0 times after → differential of 0.2



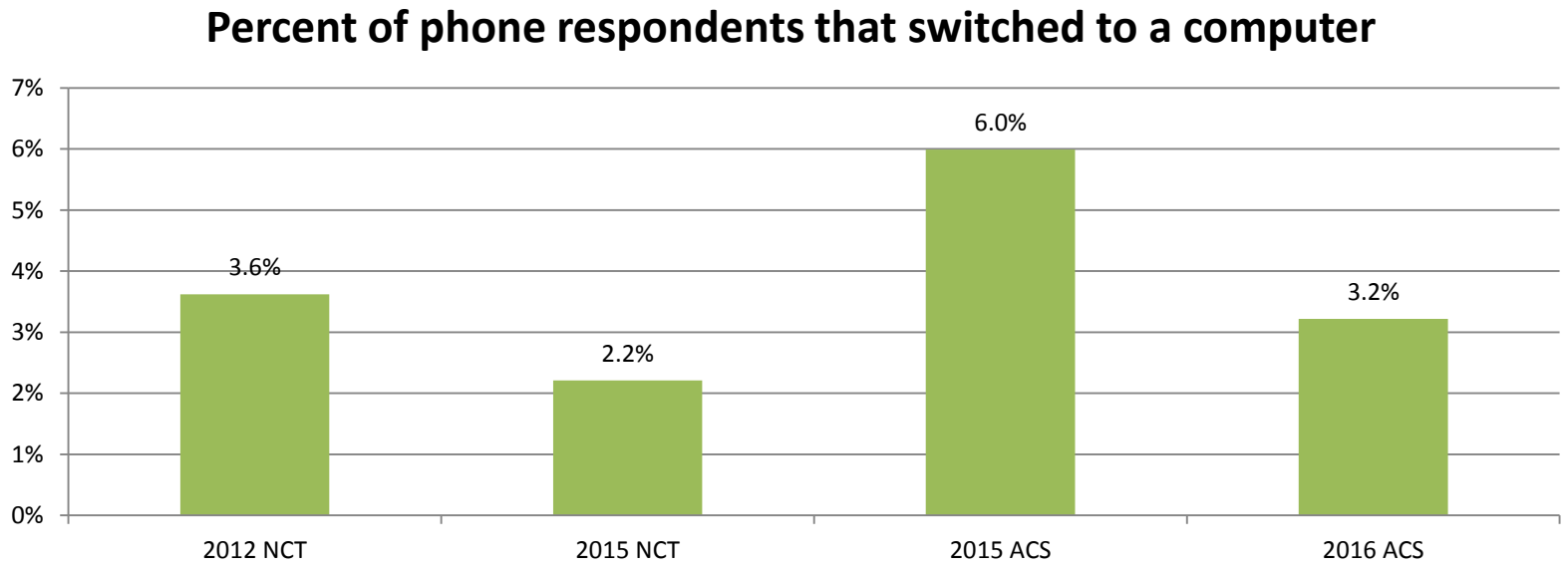
Results – Answer Changes

- NCT: 1.7 times more changes before, 1.2 times more changes after → differential of 0.5
- ACS: 1.9 times more changes before, 1.1 times more changes after → differential of 0.8

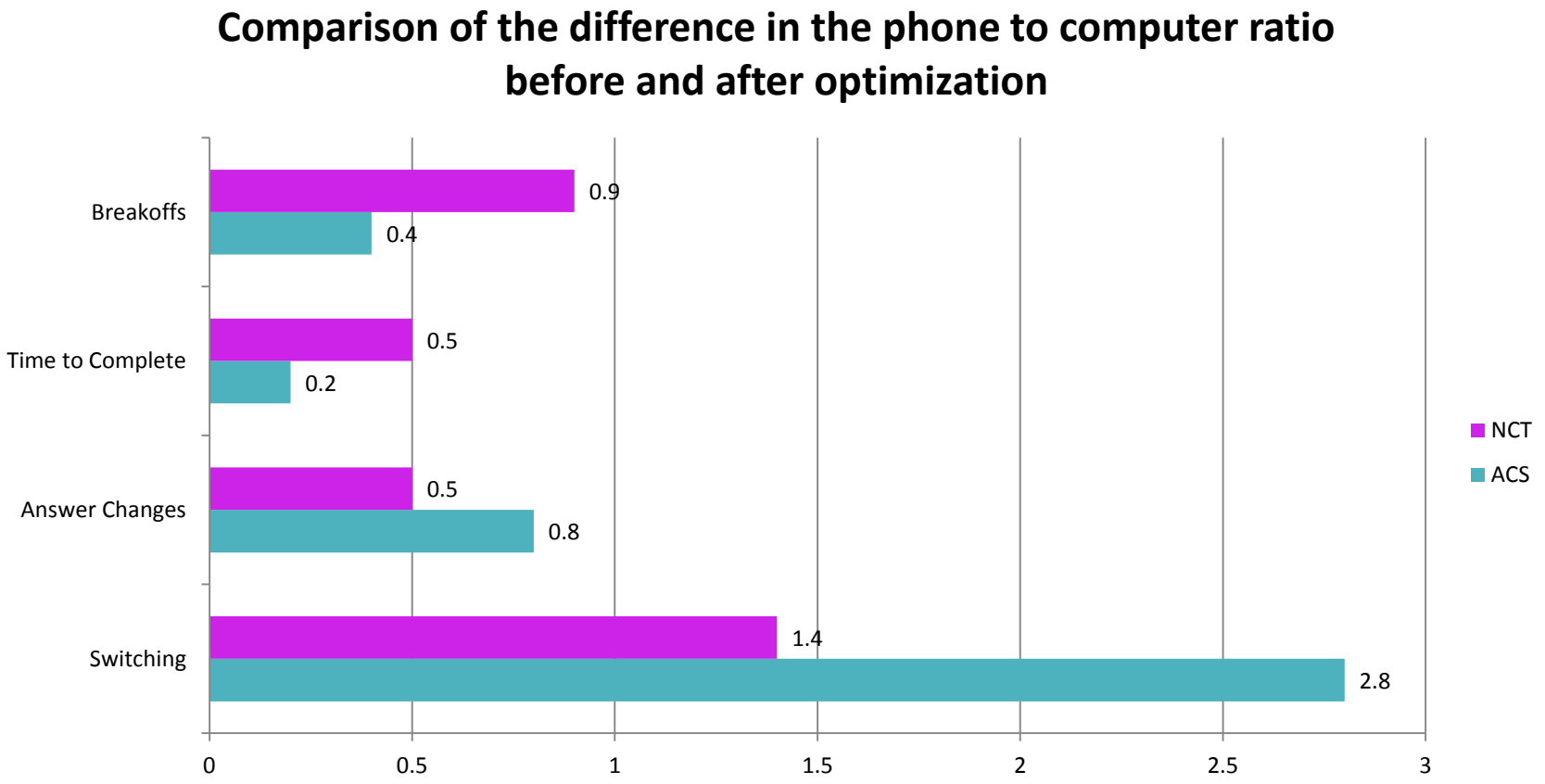


Results – Switching to Computer

- NCT: 1.4 percent decrease after optimization
- ACS: 2.8 percent decrease after optimization



Results – Are there differential gains by survey length?



What does all this mean?

- Optimization yields an improvement across all measures for both surveys
- There is a difference in the effect of optimization between long and short surveys, but the direction depends on the measure
- Length is likely only one factor, future research…
  - Question Type
  - Phone Quality
  - Connection Speed
  - Population
- Still see gains, even for short surveys

Thank you!

Contact:

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