

Using CARI to Conduct Behavior Coding Analysis of Alternative Questionnaires

Joanne Pascale
US Census Bureau
Federal CASIC Workshop
March 27-29, 2012

Acknowledgements (Census)

- LaTerri Bynum
- Joanne Carruba
- Sue Casson
- John Chesnut
- Donna Daily
- Katie Drom
- Marissa Fond
- Rachel Freidus
- Patti Goerman
- Todd Hughes
- Jenny Leeman
- Bob McGrath
- Jennifer Tancreto
- Sherry Thorpe
- Rob Wallace

Acknowledgements (RTI)

- Brett Anderson
- Sandhya Bikmal
- Carl Fisher
- Neelima Kunta
- Emily McFarlane
- Mai Nguyen
- Hyunjoo Park
- Emilia Peytcheva
- Erica Saleska
- Chris Siege
- R. Suresh
- Rita Thissen

What is CARI

- Computer Audio Recorded Interviewing
- Creates digital recordings of both CATI and CAPI interviews
- Captures both interviewers' (INT) and respondents' (R) speech

What is Behavior Coding?

- Systematic method to describe & quantify INT-R interactions
- Each turn of speech (“utterance”) by INT or R is assigned standardized code(s)
- Open-text notes provide detail about the assigned code for that utterance

Anatomy of an Interview

“Utterance” = everything one person says before the other person says something

“Exchange” = pair of utterances (one INT’ s, one R’ s)

“1st level” exchange = first pair of utterances

“2nd level” exchange = second pair, etc.

Data match = correspondence between R’s answer on audio and INT’s data entry on screen shot

Typical Behaviors of Interest

- Interviewers
 - Asking questions as worded or changing wording
 - Verifying or skipping questions
 - Providing clarification
 - Probing for more detail
- Respondents
 - Providing answers that fit response categories
 - Providing indirect or qualified answers
 - Asking for clarification
 - Other response that does not answer question

Evaluating Questionnaires

- How often are Qs asked as worded?
- What wording changes are most common?
- How often do Rs give straight answers?
- How do these factors vary by:
 - Question
 - Interviewer
 - Treatment (test vs control)
 - Mode (CATI vs CAPI)
 - Language
 - Etc.

American Community Survey (ACS)

- Replaces Census “long form”
- Year-round data collection
- Annual data release
- Person-by-Person questions
- Multi-mode:
 - Mail out/mail back
 - CATI
 - CAPI

ACS 2010 Content Test

- Two main goals – to explore:
 - Changes to existing Qs
 - Alternative Qs for new content areas
- Data Collection:
 - August-September: mail out/mail back
 - October-November: CATI and CAPI interviews conducted and recorded

Coding Operation

- Total caseload = 1,427 households
 - CATI = 726; CAPI = 701
 - English = 1,092; Spanish = 335
- Code Frame Development
 - Listen to recordings; develop codes to capture most common and/or important behaviors
- Coders
 - 8 bilingual Tucson phone center interviewers
 - Behavior coder training: 3 days in early Dec
 - Coding operation: ~12 weeks (mid Dec – early March)

Interviewer 1st Level (Question-Asking) Codes

- Exact reading/slight change
- Major change
- Verification + (standard)
- Verification - (non-standard)
- Skipped question
- Other
- Inaudible

Respondent 1st Level Codes

- Codeable (answer fits a response category)
- Indirect answer
- Request for clarification
- Qualified or uncertain answer
- Uncodeable/other response
- Don't know/refused
- Inaudible

CARI Coder's Home Page

List of questions recorded

User: pasca001
Role: Research Manager
Component: Behavior Coding
Survey: ACS Cont

<< Previous Next >> Save Reset

Survey ID:	acp_ja10	Survey Name:	ACS Cont
Control Num:	20100904013910234195	Question:	ANCW(1)
Coding Status:	Completed	Date/Time Last Saved:	01/31/201
Assigned Coder ID:	stom0001	Assigned Coder Role:	Coder
Audio Link:		Audio Date/Time:	
Image Link:		Image Date/Time:	10/07/201

Data Collection Mode: 1

Resp Behavior:
Int 2nd Level:
Final Outcome:

Codes:

Notes:

Add Coding Entry Needs Secondary Review Needs Questionnaire

Category	1	2	3	4	5	6	7	8	9
Int 1st Level	ES	ENGI	VER+						

Audio link

Image link

Question/Answer Display

The screenshot shows a web browser window with the URL https://cari002prod.boc.ad.census.gov/CARIProd/CCC/CCC_DisplayImageFile.aspx?OBJACCESSID=hooc4o. The browser title is "American Community Survey - Content Test ver 9:62". The page has a menu bar with "Forms", "Answer", "Navigate", "Options", and "Help". Below the menu bar is a "Main Path" with links for "CARI Consent", "ADDR", "Respondent", "HHRos", "FAQ", "Census 2010 FAQs", and "Exit".

The main content area is a light yellow box containing the question: "Are you a citizen of the United States?". Below the question are two radio button options: "1. Yes" (selected) and "2. No".

Below the question/answer area is a section titled "Detailed Person" with the following fields:

State of Birth	<input type="text" value="NJ"/>	Year of naturalization	
Country of Birth	<input type="text" value="INDIA"/>	Entry Year	
Specify Country of Birth	<input type="text"/>		
Citizenship	<input type="text" value="A"/>		
Parent/Naturalized			
CIT for Unsure POB			

Interviewer 1st Level Code Screen

The screenshot shows the 'BCC Code Cases' web application in Internet Explorer. The browser address bar shows the URL: https://cari002prod.boc.ad.census.gov/CARIProd/BCC/BCC_Coding.aspx?SOURCE=CCWorkLoad&VIEW=STAFF. The application header identifies the user as 'pasca001' (Research Manager) and the survey as 'ACS Content Test 2010-CATI'. Navigation buttons include '<< Previous', 'Next >>', 'Save', 'Reset', and 'Mark Case Complete'. A metadata table displays details such as Survey ID (acp_ja10), Control Num (20100906037910108593), Coding Status (Assigned to Coder), Assigned Coder ID (pasca001), and Date/Time Last Saved (10/01/2010 03:47:09 PM). A 'Reason For Not Coding' dropdown is set to 'Int 1st Level'. The main coding area contains several sections: 'Categories' (with 'Int 1st Level' selected), '1. Int Q Asking (check one)' (with 'ES Exact/slight' selected), '1a.MC Detail (all that apply)' (with 'INTR Dr/chng intro*' selected), '1b.Ver Detail (check one)' (with 'VER+ Ver correctly*' selected), '2. Int Lang (check one)' (with 'ENGI English only' selected), '3. Int Interrupted (if app)' (with 'BRI Int gets interrupted*' selected), and '4. Int Lang Prob (if app)' (with 'PRNI Lang probs*' selected). A 'Codes' input field is at the bottom. The Windows taskbar at the bottom shows the Start button and several open applications, including 'Novell-deliv...', 'Joanne Pas...', 'Inbox (16)...', 'BCC Code...', '2 Window...', '2 Microsof...', 'WordPerfec...', and 'Microsoft P...'. The system clock shows 12:08 PM.

Survey ID:	acp_ja10	Survey Name:	ACS Content Test 2010-CATI
Control Num:	20100906037910108593	Question:	CARICON1
Coding Status:	Assigned to Coder	Date/Time Last Saved:	
Assigned Coder ID:	pasca001	Assigned Coder Role:	Coder
Audio Link:		Audio Date/Time:	10/01/2010 03:47:09 PM
Image Link:		Image Date/Time:	10/01/2010 03:47:15 PM
Data Collection Mode:	1		

Respondent 1st Level Code Screen

Categories	
Resp Behavior	▲
Int 2nd Level	▬
Final Outcome	▬
Sound File Problem	▼

1. Response (check one)		
CODR	Codeable answer	<input type="checkbox"/>
INDR	Uncodeable but R indirectly answers Q*	<input type="checkbox"/>
QUAL	Qual/uncertain answer*	<input type="checkbox"/>
UNCR	Uncodeable; R does not answer Q*	<input type="checkbox"/>
CLAR	Request for clarification	<input type="checkbox"/>
DKR	DK/uncertainty	<input type="checkbox"/>
REFR	Refused	<input type="checkbox"/>
OTHR	Other*	<input type="checkbox"/>
INAR	Inaudible/Incomplete Audio*	<input type="checkbox"/>

2. Resp Lang (check one)		
ENGR	English only	<input type="checkbox"/>
SPAR	Spanish only	<input type="checkbox"/>
MIXR	English/Spanish mix*	<input type="checkbox"/>

3. Resp Interrupted (if app)		
BRR	Resp gets interrupted	<input type="checkbox"/>

4. Resp Lang Prob (if app)		
PRNR	Lang probs*	<input type="checkbox"/>

5. Resp Misses Q (if app)		
MISR	R misses Q*	<input type="checkbox"/>

1st Level INT and R Frequencies

Interviewer 1 st Level							
	Exact	Verify +	MC	Verify -	Skip	Other	Inaud
CAPI	40%	1%	39%	5%	9%	0%	7%
CATI	47%	1%	38%	3%	3%	0%	8%
Total	44%	1%	38%	4%	6%	0%	7%

Respondent 1 st Level							
	Codeable	Indirect	Clarify	Qualified	Unicode	D/R	Inaud
CAPI	51%	7%	2%	1%	2%	1%	37%
CATI	75%	10%	3%	1%	2%	2%	7%
Total	65%	8%	2%	1%	2%	2%	20%

ACS Results: Selected Topics

A. Modified Wording

- Food Stamps
- Public Assistance

B. New Content; Alternative Placement

- Computers, Internet Access & Subscriptions
- Parental Place of Birth

C. CAPI vs CATI Inaudible Utterances

Food Stamps Questions

Control: IN THE PAST 12 MONTHS, did anyone in this household receive Food Stamps or a Food Stamp benefit card?

Test: IN THE PAST 12 MONTHS, did **you or** any member of this household receive benefits from the Food Stamp Program or **SNAP, the Supplemental Nutrition Assistance Program?** Do **NOT** include WIC, the School Lunch Program, or assistance from food banks.

Public Assistance Questions

Control: Did you receive any public assistance or public welfare payments from the state or local welfare office DURING THE PAST 12 MONTHS?

Test: Did you receive any welfare payments or **cash assistance** from the state or local welfare office **for yourself or any children in this household** DURING THE PAST 12 MONTHS, **even if for only one month? Do NOT include benefits from food, energy, or rental assistance programs.**

Food Stamps and Pub Assist

Food Stamps Interviewer 1st Level

	Exact	Verify +	MC	Verify -	Skip	Other	Inaud
Control	73%	0%	26%	0%	0%	0%	0%
Test	34%	0%	62%	1%	1%	0%	2%

Public Assistance Interviewer 1st Level

	Exact	Verify +	MC	Verify -	Skip	Other	Inaud
Control	44%	0%	40%	0%	2%	1%	13%
Test	22%	0%	65%	1%	2%	0%	9%

Changes to Control Question

IN THE PAST 12 MONTHS, did anyone in this household receive Food Stamps or a Food Stamp benefit card?

Change made to Control Question (categories are not mutually exclusive)	n	% of all changes (n=74)	% of all admins of Q (n=288)
Dropped "Food Stamp benefit card"	46	62%	16%
Dropped "In the past 12 months"	30	41%	10%
Dropped "Did anyone in this household"	24	32%	8%
Dropped "card" but read "Food Stamp benefits"	5	7%	2%
Dropped "Food Stamps"	3	4%	1%

Changes to Test Question

IN THE PAST 12 MONTHS, did you or any member of this household receive benefits from the Food Stamp Program or SNAP, the Supplemental Nutrition Assistance Program? Do NOT include WIC, the School Lunch Program, or assistance from food banks.

Change made to Test Question (categories are not mutually exclusive)	n	% of all changes (n=146)	% of all admins of Q (n=279)
Dropped the last sentence “Do not include WIC...”	144	99%	52%
Dropped “Supplemental Nutrition Assistance Program”	80	55%	29%
Dropped “SNAP”	52	36%	19%
Dropped “SNAP” & “Supplemental Nutrition Assistance Program”	48	33%	17%
Dropped “Did anyone in this household”*	29	20%	10%
Dropped “In the past 12 months”	19	13%	7%

Changes to Test Question

Change made to Question (categories ARE mutually exclusive)	n	% of all changes (n=146)	% of all admins of Q (n=279)
EXACT READING: In the past 12 months, did you or any member of this household receive benefits from the Food Stamp Program or SNAP, the Supplemental Nutrition Assistance Program? Do not include WIC, the School Lunch Program, or assistance from food banks.	95	N/A	34%
In the past 12 months, did you or any member of this household receive benefits from the Food Stamps Program or SNAP, the Supplemental Nutrition Assistance Program?	63	43%	23%
In the past 12 months, did you or any member of this household receive benefits from the Food Stamps program or SNAP?	23	16%	8%
In the past 12 months, did you or any member of this household receive benefits from the Food Stamps program?	22	15%	8%
Did you receive Food Stamps?	11	8%	4%

Internet Subscription Questions

Item: At this house, do you or any member of this household subscribe to the Internet using...?	Exact Readings		Diff (T-C)
	Control	Test	
Dial-up	68%	58%	- 10%
DSL	53%	55%	2%
Modem	52%	59%	7%
Fiber Optic	63%	66%	3%
Broadband	60%	65%	5%
Satellite	68%	73%	5%
Other service	58%	60%	2%

Computers and Internet

Control

A. Internet Access

At this house do you or any member of this household **subscribe** to the internet?

B. Subscription Types

At this house do you or any member of this household subscribe to the internet using...[dial-up; DSL; modem; etc.]

C. Computer Types

At this house do you or any member of this household own or use...[desktop, laptop; handheld computer; etc.]

Test

A. Computer Types

At this house do you or any member of this household own or use...[desktop, laptop; handheld computer; etc.]

B. Internet Access

At this house do you or any member of this household **access** the internet?

C. Subscription Types

At this house do you or any member of this household subscribe to the internet using...[dial-up; DSL; modem; etc.]

Parental Place of Birth

PATERNAL: In what country was your **FATHER** born? Tell me the name of the country, or Puerto Rico, Guam, etc.

MATERNAL: In what country was your **MOTHER** born? Tell me the name of the country, or Puerto Rico, Guam, etc.

By Person Number

P #	Paternal Control			Maternal Control			Paternal Test			Maternal Test		
	Exact	Ver -	Skip	Exact	Ver -	Skip	Exact	Ver -	Skip	Exact	Ver -	Skip
1	18	7	1	8	5	6	20	7	2	9	7	11
2	7	13	1	3	8	15	10	11	4	4	11	16
3	7	16	6	5	16	18	8	18	5	6	15	15
4	6	13	4	4	12	20	6	19	8	3	15	21
5	7	20	5	4	11	17	8	18	9	5	15	17

CAPI 1st Level R Inaudibles

Respondent 1 st Level							
	Codeable	Indirect	Clarify	Qualified	Uncode	D/R	Inaud
In-person (n=15,377)	57%	8%	2%	1%	2%	2%	29%
Phone (n=3,058)	21%	2%	1%	0%	1%	1%	74%
Unknown (n=57)	54%	9%	0%	0%	7%	4%	26%
Total (n=18,492)	51%	7%	2%	1%	2%	1%	37%

Data Match

(audio matches screen shot)

Data Match			
	Match	NonMatch	Other
CAPI	57%	1%	42%
CATI	87%	2%	11%
Total	73%	2%	25%

Summary

- CARI enhances conventional behavior coding analysis:
 - Increased precision; coder has screen shot of what was on INT's screen
 - Data match can be evaluated
 - Larger sample size (unobtrusive recording)
 - “Equalizes” CATI and CAPI evaluation
- Additional analysis:
 - Assess differences by mode and language
 - Match behavior coding to content test data
 - Examine sequencing effects