



FEDCASIC Computer Audio Recorded
Interviewing (CARI) Technology
Presentation:
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Bringing CARI to Actuality

Overview

CARI - Computer Audio Recorded Interviewing:

Application developed by Research Triangle Institute (RTI) in 1999

- Purpose: used to improve performance of enumerators and identifies challenges with interviewing behaviors
- Technology:
 - Laptop with microphone, compression, transmission
 - Central control system for tracking, monitoring*, and reports
 - Compatibility with CAPI* (windows or DOS-based system)

****CAPI: Computer-Assisted Personal Interviewing***

****monitor: Listen to and rate recordings***

Overview (cont'd)

- Functionality:
 - Captures audio and survey response data during CAPI interview without interruption
 - portions of selected interviews recorded and later monitored* by centralized staff
 - immediate playback feature of recorded interviews
- Value:
 - improve quality assurance
 - for questionnaire design or question evaluation
 - for measuring response error
 - ☞ closed questions
 - ☞ open-ended questions

Feasibility Studies

- CARI processes feasible for production surveys
- Adequate audio quality from recordings
- Interviewers display neutral or positive reactions to CARI
- 30 second recordings confirm interview validity
- CARI monitoring can reduce field reinterview costs
- CARI files compatible with Census Entrust encryption system
- Compatibility with Blaise
- Feasible file compression used for transmission
- CARI recordings identify interviewer falsification

2004 Census Lab Test 1 Goals

Census HQs staff: interviewers, respondents, and monitors

The entire interview was recorded. Goals of lab test 1:

- Gain knowledge of the CARI system used in a CAPI Blaise instrument:
 - incorporation of CARI code into instrument
 - impact of CARI on hardware performance
 - interviewer's ability to detect recording
- Compare interview duration of CARI vs. non-CARI
- Rate sound quality of recordings
- Determine which questions will be recorded in Lab Test 2
- Evaluate compression software

2004 Census Lab Test 1 Evaluation

There were a total of 48 interviews: 24 CARI and 24 non-CARI

- Successful incorporation of CARI code
- Interviewers unable to detect recorder turning on and off
- No difference in the length of CARI and Non-CARI interviews
- Recordings sound quality: 60% excellent, 28% good
- 20% of telephone recordings had poor sound quality due to suction cup recording device
- A question took an average of 10 seconds to complete.
- 1 minute recording=1 MB, compresses to 100KB (90%)
- Compression did not decrease the quality of the recording

2004 Census Lab Test 2 Goals

Census HQs staff: interviewers, respondents, and monitors.
Portions of each interview were recorded. Goals of lab test 2:

- Gain knowledge on CARI functions within CAPI Blaise instrument:
 - impact on performance
 - ability to detect recording
 - capability for interviewer to turn recorder on and off
- Compare interview duration of CARI vs. non-CARI
- Record question based and time based recordings
- Rate sound quality of recordings
- Evaluate the compression and encryption software
 - effect on sound quality of recordings
 - effect on file size

2004 Census Lab Test 2 Evaluation

There were a total of 24 interviews: 16 CARI and 8 non-CARI.

- Interviewers unable to detect recorder turning on and off
- Interviewers able to change recording permission
- No difference in length of CARI vs. non-CARI interviews
- Both question based and time based recordings confirmed interview validity
- Successful programming of CARI code
- Rating of recordings' sound quality
 - consent question recordings: 64% excellent, 5% good
 - multiple question recordings: 89% excellent, 10% good
- Compressed file had same sound quality as uncompressed file
- Compression reduced file size by over 90%....

CARI Research 2005 (RTI and BOC)

Mock instruments created using two Blaise programming techniques:

- Alien Procedure
 - On-path logic to start or stop CARI for selected items
 - Requires skilled Blaise programming
 - CARI activation time: < 50 msec
 - Must modify instrument to change the CARI items
- Alien Router
 - Selection of CARI items from a list in the Router logic
 - Requires skilled Visual Basic or Delphi programming, but allows easier Blaise programming
 - CARI activation time: < 2 sec (needs additional tests)
 - Potential to change CARI items by changing an external file

Field Experience at RTI: Prior Years

National Survey of Child and Adolescent Well-Being* 1999-2004

- CASES software
- Over 56,000 completed interviews on sensitive subject
- 83% acceptance by respondents (17% refusal)
- 260,000 sound files of varying lengths (850 lost)
- Wave files: 1 MB/minute of speech
- No file compression
- Transmission by shipping zip disks
- Used to verify authenticity and provide feedback
- Few hardware issues: 1 failed microphone in 200 laptops
- Few field staff issues: sound settings modified and zip disk shipments lost

* *DHHS, Administration for Children and Families*

Problems Detected Through CARI: Monitoring Results*

Problems found after review of 5592 cases

<u>Count</u>	<u>Percent</u>	
13	0.2	Authenticity Questionable
217	3.9	Reading - Minor Deviation
72	1.3	Reading - Major Deviation
73	1.3	Recording Errors
44	0.8	Unprofessional Behavior
86	1.5	Inappropriate Probing
79	1.4	Feedback not Neutral
1	0.01	Incorrect Incentive Provided

**National Survey of Child and Adolescent Well-Being*

Field Experience at RTI: 2005

Early Childhood Longitudinal Study – Birth Cohort:
Preschool Round*

Preliminary Findings from the Field Test

Field test of new instrument, October 2004 to February 2005

- Blaise “alien procedure” call
- 250 interviews completed
- 93% CARI acceptance rate (7% CARI refusal)
- 1 minute timed recordings, up to 3 per case
- Post-recording compression to mp3: 115KB/min
- Encryption before transmission: 118KB
- Transmission over dial-up: avg. 50.3 sec on 598 transfers
- Few hardware issues: 1 laptop out of 45 failed to record
- Field staff issues: 1 laptop where interviewer changed sound settings

**National Center for Education Statistics*

Problems Detected Through CARI: Preliminary Monitoring Results*

Problems found after review of 232 cases

<u>Count</u>	<u>Percent</u>	
0	0.0	Authenticity Questionable
4	1.7	Inappropriate Probing
8	3.4	Reading - Major Deviation
58	25.0	Reading - Minor Deviation

At least one wording change is planned, based on CARI results.

** Early Childhood Longitudinal Study – Birth Cohort: Preschool
(Field Test)*

Operational Concerns

- Instrumentation
 - Controlling when CARI starts and stops can be tricky in Blaise (How to handle flow control, backing up, etc.)
 - Start and stop recording by item, section or time?
 - File transfer limits: how much recording? (Too much can overwhelm transmission)
- Sound quality
 - Laptop settings are critical but must be set individually on each machine
 - Some laptops are better than others
- Central monitoring or by region?
 - Field managers want information, but it's more economical to centralize

Future Plans and Opportunities

Planned Activities

- Census: Field Tests 1 and 2
- Census: Additional steps toward production use
- Census and RTI: Continued research
- RTI: CARI on additional CAPI studies
- RTI: Enhancements to software and systems
- RTI: CARI on distributed web-based CATI (in progress)

Wish List

- External file which controls items for CARI
- CARI recording on handheld computers
- CARI monitoring through a web interface
- Broadband transmission

Credits

Census Bureau

- *Computer Assisted Survey Research Office, Former*
- *Demographic Statistical Methods Division*
- *Demographic Surveys Division*
- *Field Division*
- *Technologies Management Office*

RTI International

- *Research Computing Division*
- *Survey Research Division*

Department of Health and Human Services

- *Administration for Children and Families*

National Center for Education Statistics

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