It's About Time: Examining the Effect of Interviewer-Quoted Survey Completion Time Estimates on Nonresponse

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Introduction

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- Random-digit dial (RDD), computer-assisted telephone interviewing (CATI) surveys provide a relatively affordable means of conducting studies over large geographical regions.
- However, declining response rates and expanding cell phones use may increase costs and nonresponse bias.
- The challenge is to identify ways to increase response rates and manage costs while maintaining data quality.

Survey Completion Principles

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- Survey burden and interview completion are **inversely** related
  - Commitment-involvement (Albaum, Evangelista & Medina, 1998)
  - Leverage-salience (Groves, Singer, & Corning, 2000)
  - Social exchange theory (Emerson, 1976)
- Conventional wisdom: a shorter interview is better

Interviewer-Quoted Time Estimate as Indicator of Burden

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- Hypothesis:
  - Interviewer-quoted time estimates drive perceived burden of survey, affecting survey participation
- Evidence from multiple studies – both non-experimental and experimental
  - National Survey of Children with Special Health Care Needs (NS-CSHCN)
  - National Survey of Children's Health (NSCH)
  - National Immunization Survey (NIS)
  - NIS questionnaire redesign experiment

Survey Overview

- National Survey of Children with Special Health Care Needs (NS-CSHCN):
  - Provides estimates of the number and characteristics of children with special health care needs at the state and national level
  - Coordinated by NCHS
  - Funded by the Maternal and Child Health Bureau (MCHB)
- National Survey of Children's Health (NSCH):
  - Provides data on the physical and emotional health of children under 18 years
  - Coordinated by NCHS
  - Funded by the Maternal and Child Health Bureau (MCHB)

Survey Overview

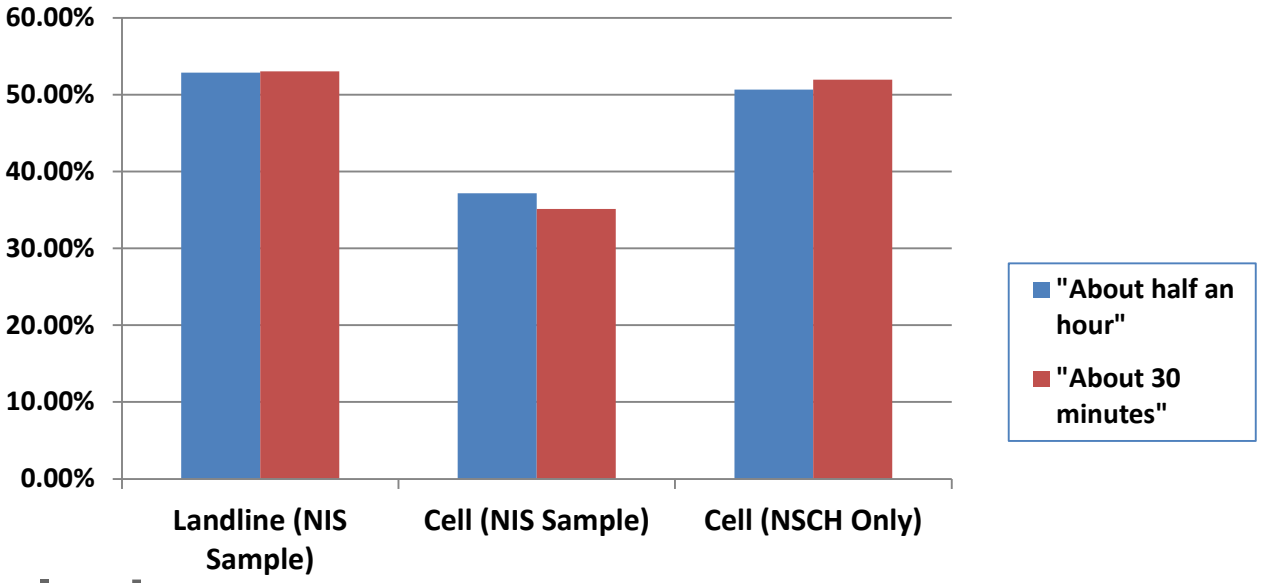
- National Immunization Survey (NIS)
  - Sponsored by Centers for Disease Control and Prevention
    - National Center for Immunization and Respiratory Diseases (NCIRD)
    - National Center for Health Statistics (NCHS)
  - RDD survey via CATI
  - Assesses vaccination coverage of U.S. children 19 – 35 months
  - CATI survey followed by provider record check (PRC)
  - Data are collected on a quarterly basis and used to produce estimates at the local, state, and national level

Non-Experimental Modification: 2006 NS-CSHCN

- Different time estimates given to respondents depending on eligibility for survey
- Modified location of the survey completion time estimate
  - Moved from informed consent to after the screener
  - Break offs during informed consent reduced from 21.4% to 15.2%
  - Screener completion rate increased from 72.7% to 78.0%
- **Conclusion**
  - Screener completion rates improved when the time estimate was moved to after a determination of eligibility.

Experiment: 2011 NSCH

- Randomized experiment
  - Respondents received time estimate of "*about half an hour*" or "*about 30 minutes*"
- No significant differences observed



- **Conclusion**
  - Interview completion rate was not affected by using different words to state the same amount of time.

Non-Experimental Modification: 2007 NIS

- Socio-Economic Status (SES) Module added at end of NIS interview in 2007
  - Sample that received the SES Module also received a longer time estimate - stated after screening
  - No impact on the screener completion rate
  - Interview completion rate ***decreased by 5 percentage points*** if a case received the increased time estimate
- **Conclusion**
  - Interview completion rate decreased with a longer time estimate.

Experiment: 2011 NIS Redesign Background

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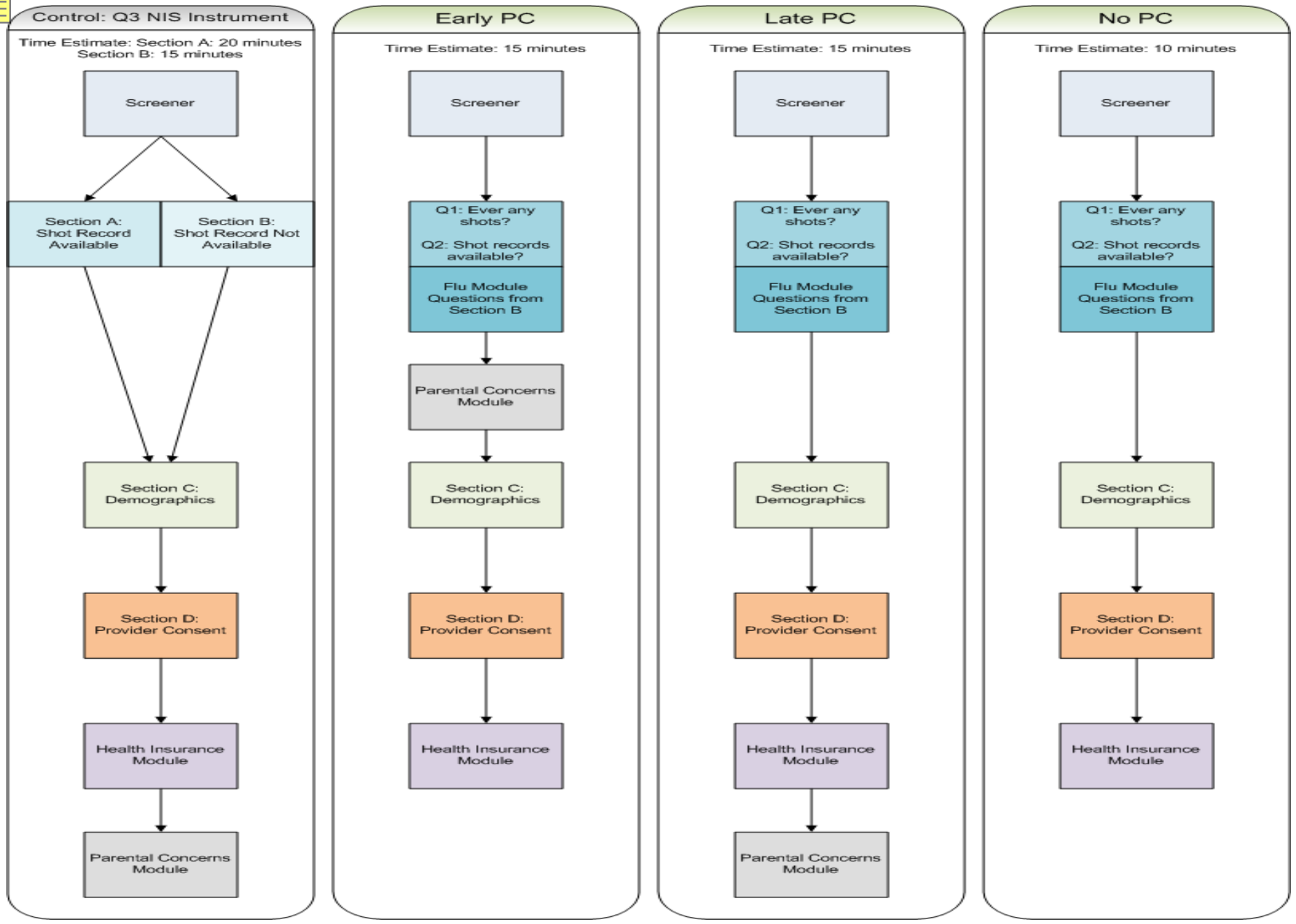
- Problem
  - Questionnaire additions over the years and few deletions increased survey length
- Hypothesis
  - A shorter interview and interviewer-quoted time estimate would improve interview completion rate
  - Placing an engaging topic earlier, e.g., the Parental Concerns (PC) module, would increase respondent interest, reducing breakoff, and improving interview completion
  - These changes would result in reduced costs and improved response rates
- Reasoning
  - Increasing response rates:
    - Reduces the number of sample lines necessary to achieve target number of completes
    - Reduces hours spent interviewing
    - Minimizes risk of survey errors (bias, variance)

Methodology

- Experiment conducted outside of regular NIS production
- An age-targeted list sample (children under 5 years) used to increase efficiency
- Target of 1,900 completes per condition
- Used only non-NIS experienced interviewers to minimize potential interviewer effects
- Conducted careful analysis of potential impact of removing questions on final vaccination estimates


Control: Q3 NIS Instrument
Time Estimate: Section A: 20 minutes
Section B: 15 minutes
Screener
Section A: Shot Record Available
Section B: Shot Record Not Available
Section C: Demographics
Section D: Provider Consent
Health Insurance Module
Parental Concerns Module
Early PC
Time Estimate: 15 minutes
Screener
Q1: Ever any shots?
Q2: Shot records available?
Flu Module Questions from Section B
Parental Concerns Module
Section C: Demographics
Section D: Provider Consent
Health Insurance Module
Late PC
Time Estimate: 15 minutes
Screener
Q1: Ever any shots?
Q2: Shot records available?
Flu Module Questions from Section B
Section C: Demographics
Section D: Provider Consent
Health Insurance Module
Parental Concerns Module
No PC
Time Estimate: 10 minutes
Screener
Q1: Ever any shots?
Q2: Shot records available?
Flu Module Questions from Section B
Section C: Demographics
Section D: Provider Consent
Health Insurance Module

Control Group – Q3/2011 Instrument

- After screening, respondents asked to report on child's vaccination history
  - Section A: with shot records
  - Section B: without shot records
- Followed by:
  - Section C: Demographics
  - Section D: Provider Consent
  - Section E: Health Insurance Module
  - PC module
- Time estimates:
  - Section A: 20 minutes Section B: 15 minutes

Early PC Group

- Removed Sections A & B
- After screening, asked:
  - Ever received shots?
  - Shot records available?
  - Influenza vaccination history
- Followed by:
  - **PC module**
  - Section C
  - Section D
  - Section E
- Time estimate: 15 minutes

Late PC Group

- Removed Sections A & B
- After screening, asked:
  - Ever received shots?
  - Shot records available?
  - Influenza vaccination history
- Followed by:
  - Section C
  - Section D
  - Section E
  - **PC module**
- Time estimate: 15 minutes

No PC Group

- Removed Sections A & B
- After screening, asked:
  - Ever received shots?
  - Shot records available?
  - Influenza vaccination history
- Followed by:
  - Section C
  - Section D
  - Section E
- Time estimate: 10 minutes

Results: Key Rates

Key Rates	Control	Early PC	Late PC	No PC
Screener Completion Rate	78.0%	77.8%	78.1%	77.8%
Interview Completion Rate	75.1%	80.2%	81.8%	86.4%
Provider Consent Rate	78.9%	78.4%	77.0%	75.4%

- No significant differences in screener completion or provider consent rates
- Interview completion rate for experimental groups all significantly higher than *Control* at the p<.01 level
  - *No PC* interview completion rate significantly higher than all other conditions at the p <.01 level

Summary of NIS Experiment Results

- Significantly higher interview completion rates for all three experimental conditions
- No significant differences in distribution of responses to most key questions (e.g., breastfeeding, flu vaccinations, mother's age)
- Implications for sample lines:

Projected Reduction in Sample Lines Needed	Control	Early PC	Late PC	No PC
% Reduction in Sample Lines	--	5.8%	6.7%	10.5%

Conclusions

- A shorter instrument and interview-quoted time improved interview completion rate.
  - Response rates were improved without sacrificing data quality.
- Placing an engaging topic earlier was not as critical as a shorter instrument.
- Costs were reduced with a shorter instrument.
  - Fewer interviewer hours and sample lines needed.
- Researchers conducting the survey must make judgments about what is critical to include in the survey to minimize respondent burden and increase response rates.

Next Steps: Shortened Questionnaire in Q1/2012

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- Data collection for 2012 NIS was changed.
  - Implemented the “no PC” version
  - Removed Sections A & B
    - After screening, asked:
      - **Ever received shots?**
      - **Shot records available?**
      - **Influenza vaccination history**
      - **Chicken pox disease history**
    - Followed by:
      - **Section C**
      - **Section D**
      - **Section E**
    - Time estimate: 10 minutes
- Fielded on a full dual-frame landline and cell sample
- Continue to assess whether results from NIS redesign experiment holds for the full NIS

2012 Results

- 2012 data compared to 2011 data

Change from 2011 to 2012	Percent Change
Interview Completion Rate – Landline	+2.9%
Interview Completion Rate – Cell	+5.6%

- **Conclusion:**
  - Shortening the questionnaire and providing respondents with a shorter time estimate improved interview completion rate for both landline and cell frames
    - May be more dramatic for cell phone frame

2013 Activity

- Currently planning similar experiment for NIS-Teen in latter half of 2013
  - **Control:** Current NIS-Teen questionnaire
  - **Short Version:** Removes Section A and shortens Section B by including only questions about vaccinations administered during teenage years
  - **Long Version-Order Reversed:** Removes Section A and reorders Section B so questions about vaccines given more recently are asked first, followed by those given at younger ages
  - **Medium Version-Order Reversed:** A combination of the other two conditions – Removes Section A, reduces the number of vaccinations asked ,and reorders Section B so questions about vaccines given more recently are asked first

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Thank you!

The findings and conclusions in this paper are those of the author(s) and do not necessarily represent the views of the Centers for Disease Control and Prevention.