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

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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

- 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
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-C SHCN)
- 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

• 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 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

<table>
<thead>
<tr>
<th>Key Rates</th>
<th>Control</th>
<th>Early PC</th>
<th>Late PC</th>
<th>No PC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screener Completion Rate</td>
<td>78.0%</td>
<td>77.8%</td>
<td>78.1%</td>
<td>77.8%</td>
</tr>
<tr>
<td>Interview Completion Rate</td>
<td>75.1%</td>
<td>80.2%</td>
<td>81.8%</td>
<td>86.4%</td>
</tr>
<tr>
<td>Provider Consent Rate</td>
<td>78.9%</td>
<td>78.4%</td>
<td>77.0%</td>
<td>75.4%</td>
</tr>
</tbody>
</table>

- 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:

<table>
<thead>
<tr>
<th>Projected Reduction in Sample Lines Needed</th>
<th>Control</th>
<th>Early PC</th>
<th>Late PC</th>
<th>No PC</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Reduction in Sample Lines</td>
<td>--</td>
<td>5.8%</td>
<td>6.7%</td>
<td>10.5%</td>
</tr>
</tbody>
</table>
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

- 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

<table>
<thead>
<tr>
<th>Change from 2011 to 2012</th>
<th>Percent Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interview Completion Rate – Landline</td>
<td>+2.9%</td>
</tr>
<tr>
<td>Interview Completion Rate – Cell</td>
<td>+5.6%</td>
</tr>
</tbody>
</table>

• 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
• 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
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.