

Safety Screening in the NIS RDD Cell-Phone Sample

Becky Reimer¹, Benjamin Skalland¹, Jacquelyn George¹,
Qiao Ma¹, James A. Singleton²

¹NORC at the University of Chicago, 55 East Monroe Street, Suite 3000, Chicago, IL
60603

²Centers for Disease Control and Prevention, National Center for Immunization and
Respiratory Diseases/Immunization Services Division/Assessment Branch, 1600 Clifton
Road, MS E-62, Atlanta, GA USA 30333

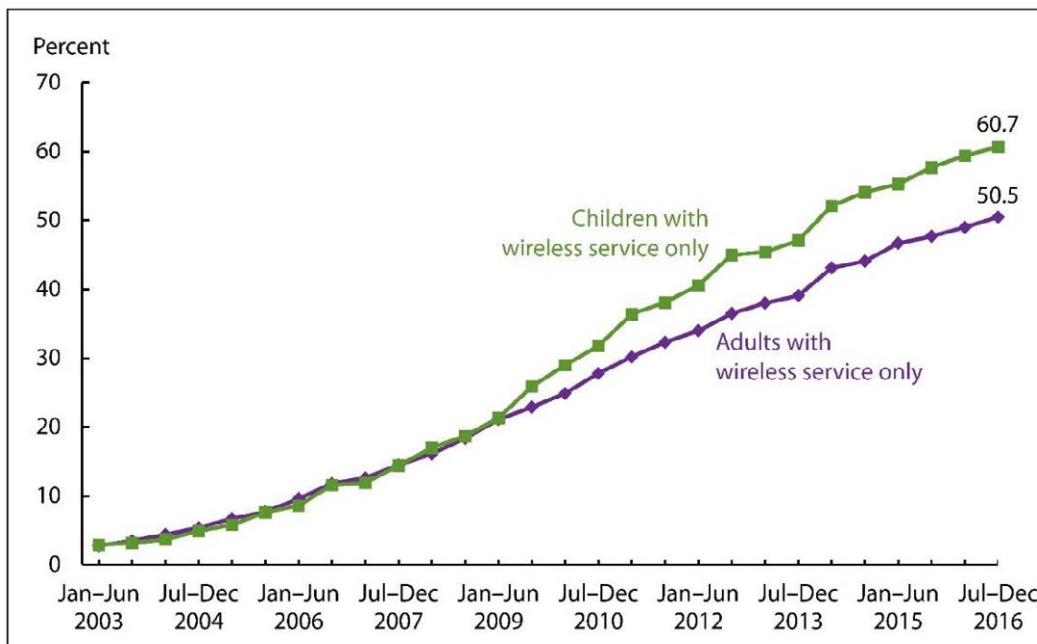
Abstract

When dialing cell phones for telephone surveys, respondent safety is an important ethical consideration for survey researchers. Since the National Immunization Surveys (NIS) started dialing cell phones in 2010, the cell-phone safety screening item used on every cell-phone dial has been "If you are currently driving a car or doing anything that requires your full attention I need to call you back at a later time." Following guidelines published by the AAPOR Cell Phone Task Force in 2010, NORC's Institutional Review Board (IRB) suggested that the cell-phone safety screening item be modified to avoid referring to specific activities such as driving and instead refer more generally to respondent safety. In addition, in 2015, the CDC's National Center for Health Statistics (NCHS) Ethics Review Board (ERB) requested that the safety screening item be phrased as a question, requiring explicit agreement from the respondent rather than reading a statement and continuing as the default behavior. Because the screener is administered at the beginning of the survey, any change to the item wording could result in a change in respondent behavior, with subsequent impacts on response rates and costs. Therefore, before implementation of a new version, a large-scale evaluation was conducted to test the original version of the cell-phone safety screening item against two alternate versions that incorporated the IRB and ERB feedback. We describe the design and results of the evaluation, including the impact on survey response rates and how this work may apply to other telephone surveys that dial random digit dial (RDD) cell-phone samples. As the cell-phone population continues to evolve, adaptations to cell-phone methodology are increasingly important.

Key Words: National Immunization Surveys, Cell Phones, RDD, Safety Screening, Ethics, Institutional Review Board

1. Introduction

Cell-phone dialing has become an essential component of random digit dial (RDD) studies. The number of cell-phone-only households in the United States continues to grow (Figure 1) (Blumberg and Luke, 2017). An even higher proportion of U.S. households are "cell-mainly," meaning they have a landline, but can mainly be reached by cell phone.



NOTE: Adults are aged 18 and over; children are under age 18.
 DATA SOURCE: NCHS, National Health Interview Survey.

Figure 1: Proportion of U.S. adults and children whose households have wireless service only (and no landline telephone), from 2003 through 2016.

Cell-phone dialing involves ethical considerations beyond those that apply to landline dialing. As is noted in the AAPOR cell-phone task force recommendations (Lavrakas, Blumberg and Battaglia, 2010), researchers who conduct surveys via cell phone have an ethical obligation to confirm that respondents are safely able to talk to interviewers:

“...it is suggested that researchers leave the responsibility for determining safety to the respondents themselves and encourage respondents to consider their own safety by asking about it directly (e.g., “Are you in a place where you can safely talk on the phone and answer my questions?”)”

For this confirmation about safety to be done in good faith, it must occur as early in the survey as possible. This paper investigates how the wording of this safety screening item impacts survey participation.

1.1 Data Source: National Immunization Surveys (NIS)

The data source for this paper is the National Immunization Surveys (NIS), which are a family of large dual-frame RDD telephone surveillance surveys sponsored by the Centers for Disease Control and Prevention (CDC). They assess vaccination coverage of U.S. children 19-35 months of age, adolescents 13-17 years of age, and influenza vaccinations for children 6 months-17 years of age. Data were collected on a quarterly basis and used to produce estimates at the local, state, and national level.¹ Research protocols for the study were reviewed by the CDC’s National Center for Health Statistics (NCHS) Research Ethics Review Board (ERB) and by NORC’s Institutional Review Board (IRB).

¹ More information about the NIS is available at <https://www.cdc.gov/vaccines/imz-managers/nis/>.

1.2 Motivation for Evaluation

The NIS has included a safety screening item for cell-phone respondents since cell-phone sampling was introduced in 2010. This item was administered directly after the study introduction, and before any screening questions. From 2010 through 2015, this item read as follows:

“If you are currently driving a car or doing anything that requires your full attention, I need to call you back at a later time.”

While this item was a statement rather than a question, it included response options that interviewers were able to silently code, as they would for question items. These options included: 1) the respondent was able to continue the interview, 2) the respondent indicated that he or she was not in a safe situation, or 3) the respondent indicated that he or she wanted to discontinue the interview, but did not cite safety concerns. Screening questions followed this item, and assessed whether the respondent was an adult, and whether any children between one and four years of age lived in the household.

In 2015, CDC’s NCHS ERB requested that the safety screening item be changed from a confirmatory statement to a question and that the respondent be required to provide a direct answer to that question before proceeding with the survey. Rather than make a wholesale change to this item without testing, an evaluation was conducted to compare performance of the existing item against new question wording to assess how this change might impact respondent behavior, survey response rates, and costs. Around the same time, the IRB at NORC recommended removal of the phrase “driving a car” from the existing item to allow respondents to make their own determinations about safety. The ERB approved an evaluation to compare the existing wording against treatment question wording for the third quarter of 2015 (Q3 2015).

While the Q3 2015 evaluation was underway, the decision was made to conduct a second evaluation to test a second version of safety screening item wording in Quarter 4 of 2015 (Q4 2015). More details about the development of these items and the rationale for conducting a second evaluation are included below in the Methods section.

1.3 Evaluation Questions

The questions that the NIS sought to address with these evaluations included:

1. How would changing the wording of the safety screening item affect survey participation, including breakoff rates and completion of the screener questions?
2. Relative to the safety screening item wording that has been used in the NIS in the past, would the question wording used in the Q4 2015 evaluation perform better than the question wording used in the Q3 2015 evaluation?

2. Methods

2.1 Evaluation Design

For each evaluation, the NIS cell-phone sample was randomly divided into two conditions. Half of the sample was randomly assigned to the control condition where respondents would receive the existing safety screening item on each call. The other half was assigned

to the treatment condition where respondents would receive an alternate version in the form of a question.

The safety screening item wording that was selected for the Q3 2015 evaluation was “Is this a safe time to talk with you?” A number of options for wording were considered, and the process was informed by a review of safety screening items used for other projects both at NORC and elsewhere. NORC discussed options with CDC, and in the end, the decision was made to use this safety screening item wording, which was already in use on another large survey conducted on behalf of the CDC -- the Behavioral Risk Factor Surveillance System (BRFSS). Preference was given to this option partially because it was short and direct, potentially minimizing disruptions to the flow of the study introduction and screening questions.

While the Q3 2015 evaluation was underway, screening and interview completion rates were monitored and revealed that the selected wording was leading to increased breakoff rates compared to the control wording. Anecdotal feedback from interviewing staff also suggested that some respondents were confused by the selected wording, and that it might be beneficial to provide additional context. The decision was made to conduct a second evaluation to test a second version of safety screening item wording in Quarter 4 of 2015 (Q4 2015) to see if different wording might still meet the IRB and ERB suggestions while addressing these concerns. The wording used for both evaluations is shown in Table 1.

Table 1: Safety Screening Item Wording for Evaluations Conducted in the National Immunization Surveys (NIS), United States, Q3 2015 and Q4 2015

	<i>Control Wording</i>	<i>Treatment Wording</i>
<i>Q3 2015 (Evaluation 1)</i>	“If you are currently driving a car or doing anything that requires your full attention, I need to call you back at a later time.”	“Is this a safe time to talk with you?”
<i>Q4 2015 (Evaluation 2)</i>	“If you are currently driving a car or doing anything that requires your full attention, I need to call you back at a later time.”	“Since I’m calling your cell phone, I need to ask: Are you currently doing anything that would make it unsafe for you to talk?”

Regardless of condition, it was part of the NIS protocol to confirm respondents’ safety on each contact, so it was possible for respondents to reach the safety screening item on multiple call attempts.

2.2 Calculation of Key Metric: Screener Completion Rate

The screener completion rate was selected as the key outcome measure when assessing the impact of changes to the wording of the safety screening item on survey participation for this pair of evaluations. This rate is computed as, among contacted respondents who reached the safety screening item, the proportion who completed the screening questions, either by indicating that they had children between the ages of one and four years and providing eligible dates of birth for those children, or by indicating that they did not have children in this age range. Respondents who discontinued the interview during the screening questions and did not complete the screener questions on a later call were considered incomplete for screening. Respondents who discontinued the screener on a particular call, either because they indicated that they were not able to safely talk on their cell phones at the time or due to other reasons, could have progressed further on later calls. The screener completion rate was calculated using the furthest progress that respondents made on the screening questions across all call attempts.

To make the most direct comparison between the treatment groups as possible, this calculation was limited to those respondents who were exposed to either the control condition or the treatment condition wording. That is, it excluded respondents who broke off very early in the interview and never reached the cell-phone safety screening item. Calculations were performed in SAS version 9.2. Figure 2 displays the paths through the questionnaire leading to a complete versus incomplete screener.

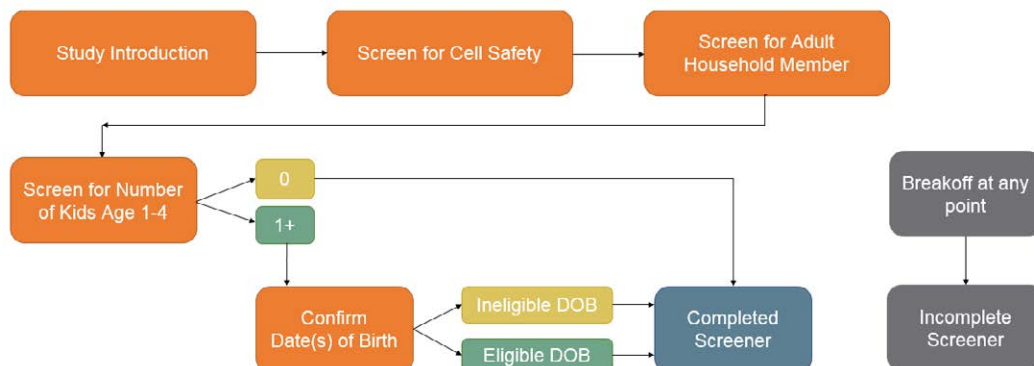


Figure 2: Paths through the National Immunization Surveys (NIS) questionnaire leading to a complete or incomplete screener, United States, Q3 2015 and Q4 2015.

3. Results

3.1 Evaluation 1 (Q3 2015)

At the conclusion of Evaluation 1, a total of 218,769 cell-phone sample lines within the control condition had been dialed and reached the cell-phone safety screening item on at least one call, and 218,310 in the treatment condition had done the same. The results of Evaluation 1 show that the treatment wording of the safety screening item (“Is this a safe time to talk with you?”) was associated with a lower final screener completion rate than the control wording. As shown in Table 2, the size of this difference was 3.0 percentage points (44.6 percent vs. 47.6 percent).

Table 2: Screener Completion Rate Comparison for Evaluation 1, National Immunization Surveys (NIS), United States, Q3 2015

	<i>Q3 2015 Control Wording</i>	<i>Q3 2015 Treatment Wording</i>
Dialed cases that reached cell-phone safety screening item	218,769	218,310
Screener completion rate among those who reached cell-phone safety screening item	47.6%	44.6%*

*Significantly lower than control wording, $p < 0.001$.

In addition to this overall difference, there were differences in the ways respondents progressed through the questionnaire following the cell-phone safety screening item, depending on the wording used. Figure 3 shows the proportions of respondents who took each path after reaching the safety screening item, and the proportions along each path who eventually completed the entire set of screening questions. If respondents reached the safety screening item on multiple call attempts, their paths reflect the first instance of reaching that item. This means that some of those who initially broke off or said they were not in a safe situation eventually completed the screener on another call. As shown in Figure 3, the majority of respondents in the control condition (62.2 percent) continued on at the safety screening item, while only half as many (31.4 percent) of those in the treatment condition did so. Respondents in the treatment group, who received the safety screening item as a short question, were more likely to break off the interview at that point (45.2 percent vs. 32.9 percent) or to indicate that they were not in a safe situation (23.3 percent vs. 4.9 percent) than those in the control group. While a lower proportion of treatment group respondents continued with the survey at the safety screening item than control group respondents, those who did continue were more likely to eventually complete the screener than those in the control condition (82.9 percent vs. 58.5 percent). All of these differences were found to be statistically significant using t-tests.

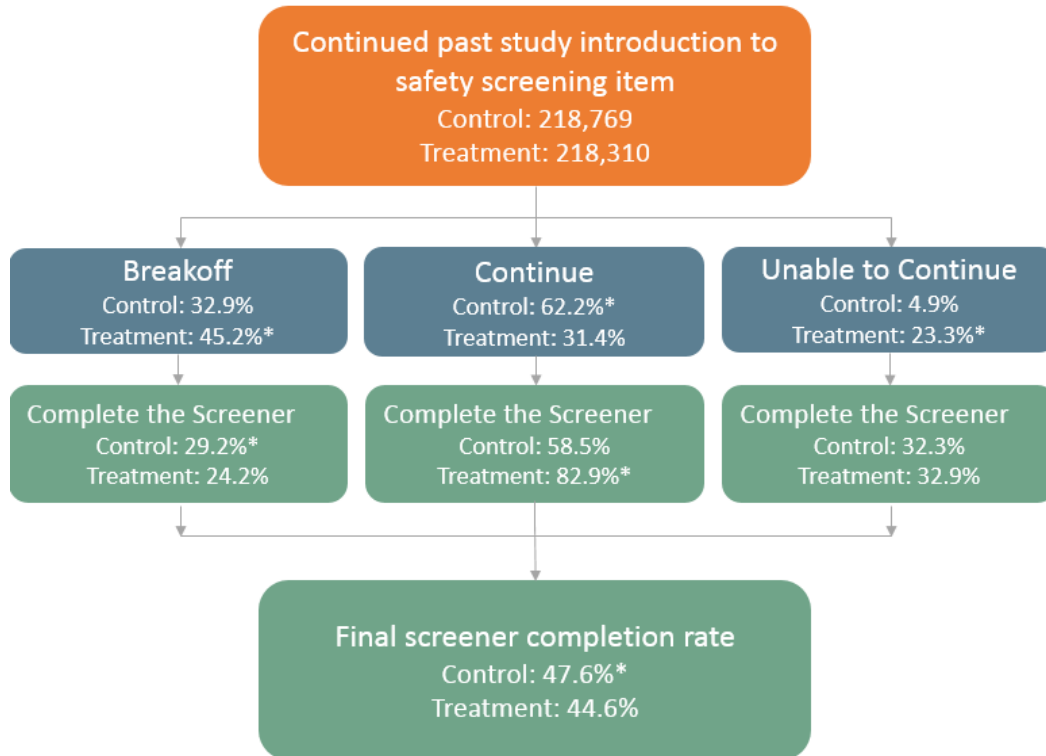


Figure 3: Differential Progress Through the National Immunization Surveys (NIS) Questionnaire Based on Treatment Condition in Evaluation 1, United States, Q3 2015.
* Significantly higher than the comparison condition, $p < 0.001$.

3.2 Evaluation 2 (Q4 2015)

A total of 162,289 cell-phone sample lines within the control condition and 163,329 cell-phone sample lines in the treatment condition were dialed and reached the cell-phone safety screening item on at least one call, had done the same. In Evaluation 2, the treatment wording was again associated with a lower final screener completion rate than the control wording (43.2 percent vs. 44.1 percent), as shown in Table 3. The magnitude of the difference was smaller for Evaluation 2 than it was in Evaluation 1 (0.9 percentage point decrease vs. 3.0 percentage point decrease).

Table 3: Screener Completion Rate Comparison for Evaluation 2 (Q4 2015)

	<i>Q4 2015 Control Wording</i>	<i>Q4 2015 Treatment Wording</i>
Dialed cases that reached cell-phone safety screening item	162,289	163,329
Screener completion rate among those who reached cell-phone safety screening item	44.1%	43.2%*

*Significantly lower than control wording, $p < 0.001$.

Again, there were differences in the paths taken through the questionnaire following the cell-phone safety screening item based on the wording used. As shown in Figure 4,

respondents in the control condition were more likely to continue on in the survey at the cell-phone safety screening item than those in the treatment condition (54.7 percent vs. 37.7 percent), but those in the treatment condition who did continue at this point were more likely to complete the screener (76.1 percent vs. 58.7 percent).

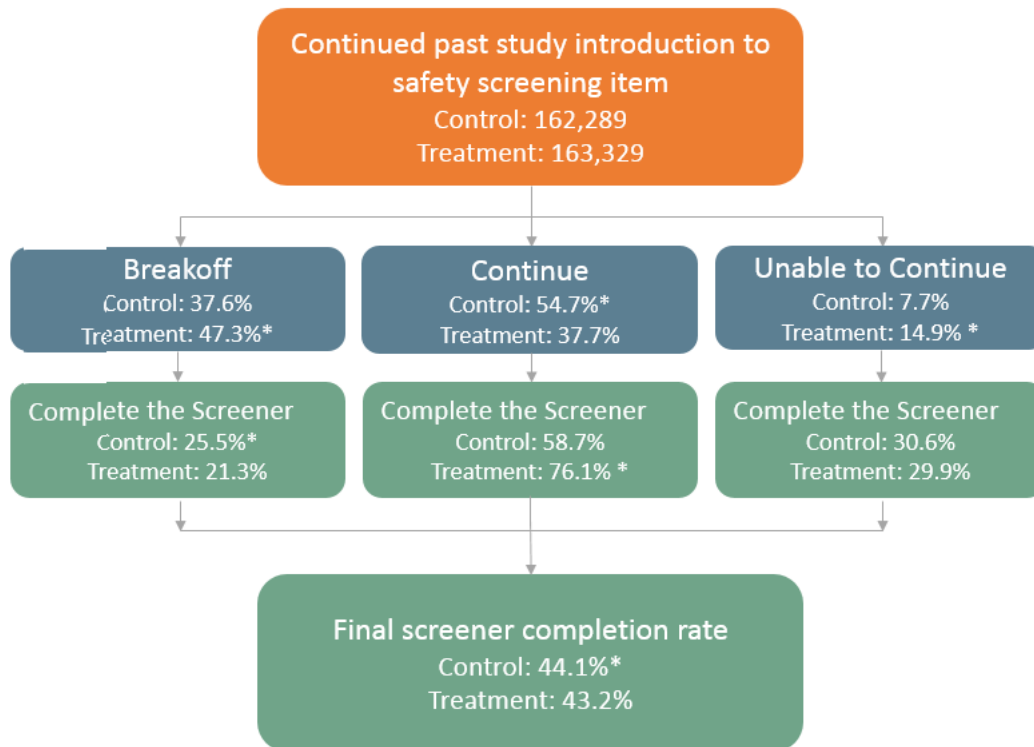


Figure 4: Differential Progress Through the National Immunization Surveys (NIS) Questionnaire Based on Treatment Condition in Evaluation 2, United States, Q4 2015.
* Significantly higher than the comparison condition, $p < 0.001$.

4. Conclusions

The results of these two evaluations show that changes to the wording of the cell-phone safety screening item did have an impact on survey participation, with both treatment question wording options leading to a lower screener completion rate than the original cell-phone safety screening item. However, the size of the difference was relatively small with the version tested in Evaluation 2, which read: “Since I’m calling your cell phone, I need to ask: Are you currently doing anything that would make it unsafe for you to talk?”

Following these evaluations and starting in the first quarter of 2016, the NIS implemented this wording of the cell-phone safety screening item for all cell-phone sample respondents to meet the ERB request to change this item to a question. After this change had been implemented, the ERB engaged in continuing review in May of 2016 and communicated that, while they had originally approved the recommendation of the IRB to remove the safety screening item’s reference to driving, they continued to have concerns about allowing respondents to complete surveys while driving, even if those respondents believed it was safe to do so. The ERB communicated that placing the decision about safety in the

hands of respondents overlooks the safety of others in the vehicle or on the road in such situations.

As a result, NIS staff made a modification in the third quarter of 2016 to address this new ERB requirement, changing the wording to: “Since I’m calling your cell phone, I need to ask: Are you currently doing anything such as driving that would make it unsafe for you to talk?”. This wording continues to be used on the NIS. The addition of the reference to driving may prevent some respondents who believe they are safely able to complete a survey while driving from doing so, but it seems unlikely that this change would have a dramatic impact on the screener completion rate. The majority of these cooperative respondents are likely to be reached on a callback attempt. The cell-phone landscape continues to evolve, but for now, other telephone survey researchers may benefit from the considerations weighed in this work.

Disclaimer

The findings and conclusions of this paper are those of the authors and do not necessarily represent the views of the National Center for Health Statistics, Centers for Disease Control and Prevention, or NORC at the University of Chicago.

References

- Blumberg, S.J., and Luke, J.V. (2017). Wireless Substitution: Early Release of Estimates from the National Health Interview Survey, July-December 2016. Hyattsville, MD: National Center for Health Statistics. Retrieved May 4, 2017 from <https://www.cdc.gov/nchs/data/nhis/earlyrelease/wireless201705.pdf>.
- Lavrakas, P. J., S. Blumberg, and M. Battaglia. (2010). "New considerations for survey researchers when planning and conducting RDD telephone surveys in the US with respondents reached via cell phone numbers." Deerfield, IL: American Association for Public Opinion Research.