Will They Answer the Phone If They Know It's Us? Using Caller ID to Improve Response Rates

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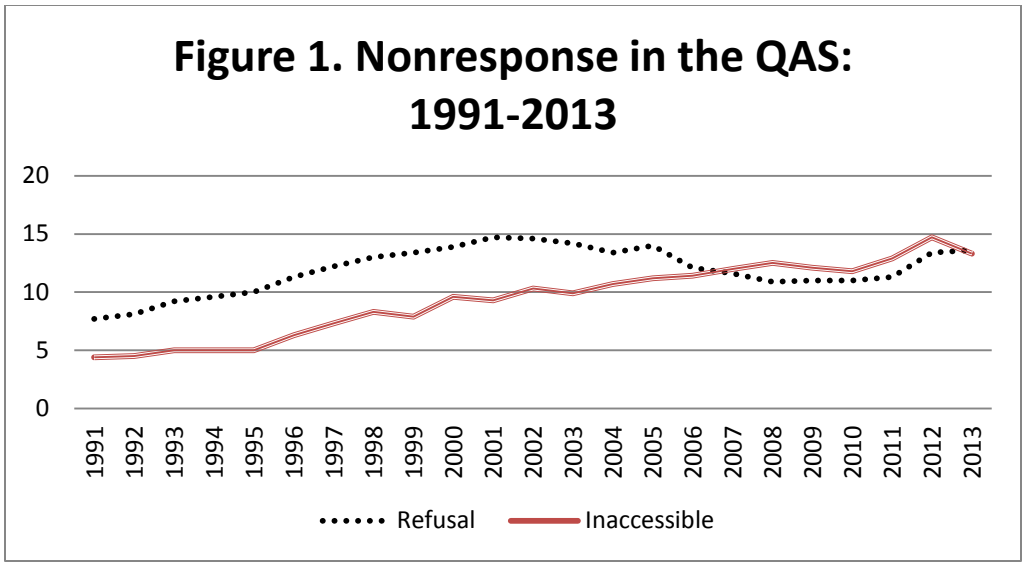
Abstract

Response rates have declined over the last several decades. In terms of telephone surveys, this decline is often attributed to the wide availability of call screening technologies and respondents' reluctance to answer calls from unknown numbers. Calling respondents from local area codes (or familiar area codes) and using identifiers that are both recognizable and trustworthy may improve survey response rates. In fact, anecdotal evidence within our own agency has suggested that this may be the case; however, research outside of our agency has produced mixed findings in regards to these claims. At the National Agricultural Statistics Service, we conducted a series of experiments to determine if the information presented on caller ID would influence response rates. Specifically, we examined whether calling respondents using in-state area codes rather than out-of-state area codes and different identifiers (i.e., USDA versus Ag Counts) improved response rates. In addition, we surveyed respondents regarding their use of caller ID and its influence on their decision to answer our call. In this paper, we will discuss the findings from this study and their implications.

1. INTRODUCTION

Survey response rates for telephone surveys have declined over the last couple of decades (Tourangeau 2004; Curtain, Presser and Singer 2005; Brick and Williams 2013). While declines in response rates may not always impact response bias, it can increase the cost of survey production due to additional calls that must be placed until a response is attained (Tourangeau 2004; Curtain, Presser and Singer 2005; Callegaro, McCutcheon, and Ludwig 2006) and therefore is worthy of examining. The two leading sources of nonresponse are refusals to participate in surveys and noncontacts (or inaccessibles) (Groves and Couper 1998). The amount of nonresponse attributable to these two factors varies across surveys. For example, Curtain and colleagues (2005) found refusals and inaccessibles accounted for almost equal amounts of nonresponse to the Survey of Consumer Attitudes for the years 1996-2004; however, inaccessible rates increased at a slower rate in comparison to refusals over this time period. Conversely, in their examination of the National Health Interview Survey and the National Household Education Survey during a similar time period (1996-2007), Brick and Williams (2013) found refusals accounted for a much larger percentage of nonresponse than inaccessibles. At the National Agricultural Statistics Service (NASS), refusal and inaccessible rates for our surveys have steadily increased over time, although refusal rates tend to be higher than inaccessible rates. However, an interesting trend in nonresponse to the Quarterly Agriculture Survey (QAS) has emerged in recent years. Refusal rates for this survey increased steadily from 1991-2001, after which they began to decline. During this same time period, inaccessible rates increased as well and continued rising. In 2007 the two converged, and in the following years, inaccessible rates were slightly higher than refusals (See Figure 1).



Declining response rates may be attributed to a number of factors such as, greater demand for respondents due to increased telemarketing calls and survey research, the rise of technologies that can be used to screen out unwanted calls (i.e., answering machines and caller identification (ID)) (Tuckel & O'Neill 2001; Tourangeau 2004), and the decline in the number of landline telephones (Blumberg and Luke 2012) coupled with cell phone respondents' reluctance to incur the cost of the call (Kempf and Remington 2007). Changes in the social climate over time, which may impact trust in government and other survey organizations, may also contribute to the decline in response rates. Brick and Williams (2013) examined the changes in the social climate that could lead to lower community cohesiveness and its effect on survey response. They found survey nonresponse rates to be negatively correlated with living in communities that had greater concentrations of families with young children, and positively correlated with living in communities that had more single person households and longer average commute times. However, they also found nonresponse to be negatively correlated with living in communities with higher violent crime rates, which does not provide support for this argument. Furthermore, experimental research has found minimal support for the relationship between changing attitudes toward privacy and confidentiality within the general population and survey response rates (Singer and Presser 2008). Furthermore, as Brick and Williams (2013) point out, even if changes in social climate was a plausible explanation for increases in nonresponse, it still would not explain differences in nonresponse rates for face-to-face and telephone surveys. It's plausible that a number of the factors cited above are contributing to the decline in response rates. In this study, we focus on the relationship between call screening and response rates.

As discussed above, a number of surveys witnessed a notable decline in response rates from the mid-1990s to the present. During this same time period, there was a rapid increase in the use of call screening technologies in households (Tuckel & O'Neill 2001). If respondents are screening calls, it may be beneficial to contact them using phone numbers and identifiers that are both recognizable and trustworthy. Within NASS, anecdotal evidence suggests that this strategy may be effective in increasing the number of contacts and response rates. For example, the Montana data collection center (DCC) implemented the use of cell phones with Montana area codes to conduct surveys in the various states they were assigned. This office was able to obtain additional responses on these telephones which they attributed to the telephone number displaying on respondents' caller ID rather than the identifier which typically displayed on caller ID for calls placed from their call center (i.e., "GSA"). The Wyoming DCC also implemented the use of cell phones programmed with in-state area codes for the states they were assigned to call, and perceived this to be an effective strategy in improving their response rates. However,

these DCCs did not empirically test the use of in-state area codes and only a limited number of studies have been done outside of our agency to empirically test this relationship.

The small number of studies that have examined the relationship between caller ID and response rates has not provided conclusive evidence. Some studies that examined the overall effect of caller ID on response rates did not find strong support for this relationship (Link and Oldendick 1999; Baron and Khare 2007). Link and & Oldendick (1999) surveyed respondents on whether or not the information displayed on their caller ID influenced their decision to answer the call and found that for the majority of respondents, the information displayed had no effect. However, when it did matter, respondents indicated that they were more hesitant to answer the phone when the number displayed was an out of area number or the listing was unknown. Some survey methodologists have posited that the identifier associated with the phone number that appears on caller ID should affect response rates, rather than the phone number itself. To test this, Baron and Khare (2007) conducted an experiment on the National Immunization Survey to see if identifying the call as originating from "NORC U CHICAGO" versus a general identifier (i.e., Toll free number) had an effect on response rates. No difference in response rates was found for these two identifiers. However, other studies found using trustworthy identifiers for outgoing calls increased response rates (Callegaro, McCutcheon, and Ludwig 2006; Okon, Moore, and Bates 2008). Okon, Moore, and Bates (2008) found programming calls placed from the Census Bureau call center to be identified as "Census Bureau" rather than "unknown caller" somewhat improved efficiency (number calls made) and response rates for their surveys. Gallup also experimented with its outgoing identifier but found its effect on response rates to be mixed. For an inpatient/outpatient study using "Gallup" and "Gallup Poll" to identify their organization on caller ID had a negative effect on response rates, but for bank and discount store customer satisfaction surveys it helped increase response rates (Callegaro, McCutcheon, and Ludwig 2006).

Inconsistencies in the effect of caller ID on response rates across these studies may be attributable to the survey organization and the type of respondents involved in these studies, as well as the particular identifier used. For example, respondents familiarity with and trust in the survey organization may influence whether or not they ultimately decide to answer a call (Callegaro, McCutcheon, and Ludwig 2006). Not surprisingly, a study conducted at NASS found respondents who hold negative views of our organization are less likely to respond to our surveys (McCarthy, Johnson, and Ott 1999). In these cases, providing a recognizable identifier when conducting telephone surveys may not improve response rates. The effect of caller ID on response rates may also be influenced by characteristics of the respondents themselves. For example, Tuckel and O'Neill (2001) found young adults, racial minorities, homemakers, those who have never married, households with children and those living in more urban areas are more likely to use call screening methods than other groups of respondents. Similarly, Link and Oldendick (1999) found young respondents, African American respondents, and households with young children and households with three or more adults are more likely to screen incoming calls. Undercoverage of and lower response rates for farms operated by African Americans, American Indians, and women have been found for NASS surveys and the census (The Council on Food, Agricultural and Resource Economics (C-FARE) 2007; National Research Council 2008). In part, difficulty identifying these farms and persuading them to participate in our surveys may be due to past events that led to distrust in our organization among these demographic groups. As mentioned above, using recognizable identifiers alone may not improve the accessibility and response rates for these groups of respondents.

In this report we focus on addressing the recent increase in inaccessible rates for the QAS. It is plausible that increased respondent burden (due to our own surveys and outside survey organization/telemarketing), recent organizational shifts within NASS[1], and the rise in technologies to screen unwanted calls are

[1]Due to a recent organizational shift at NASS, farmers and ranchers will increasingly be contacted by out-of-state enumerators.

attributing to the rise in inaccessible rates for this survey. We focus on one element that may reduce inaccessible rates: call screening via caller ID. More specifically we seek to answer two research questions: Are respondents more likely to answer the phone if they are contacted using an in-state telephone number? Are respondents more likely to participate in a survey if they are contacted using an in-state telephone number?

2. EXPERIMENT 1

2.1 Method

In September 2012, we conducted a preliminary experiment, which examined the effect of caller ID on response outcomes and completion rates. In total, 1,452 Nebraska (NE) records were assigned to the National Operations Center (NOC) for the September QAS. This experiment consisted of a simple between subjects design in which half of the Nebraska sample for the September QAS assigned to the NOC was called using landline telephones that were programmed to display a Missouri (MO) area code on caller ID and the other half of the sample was called using cell phones that were programmed to display a NE area code. There are currently three area codes in the state of NE. The area code 402, which covers the largest portion of the sample and should be familiar to most residents of the state, was chosen for this experiment. For both area code groups, the statement "Ag Counts" was also programmed to display with the phone number. Twelve enumerators were randomly selected to call the NE records. These enumerators were provided a landline telephone programmed with a MO area code and a cell phone programmed with the NE 402 area code. Prior to calling respondents, the enumerators checked the Blaise instrument to see which phone to use to call respondents. Respondents who were called using cell phones were read a disclosure statement prior to data collection, which indicated the security risks associated with collecting data via a cell phone and were asked for their permission to be interviewed over the cell phone: *"I am calling you on a cell phone which may be less secure than a land line. Are you comfortable providing your data?*" If respondents refused to be interviewed over a cell phone, attempts were made to contact them again using a landline telephone. After data collection, enumerators were surveyed regarding their experiences and opinions regarding the use of cell phones and in-state area codes for this survey. Calling for the experiment took place between August 30, 2012 and September 12, 2012.

2.2 Results

The NOC made a total of 2,884 attempts to reach 1,452 NE records. There was no difference in the number of attempts (i.e. call attempts leading to busy signals, no answers, contacts with person or answering machine) made for the two calling groups. On average, the NOC attempted to contact respondents using a MO area code 3.24 times, and using a NE area code 3.27 times.

Table 1 presents the dial menu outcomes by area code. No significant difference was found between the two area code calling groups (X^2 =5.001, df=5, p=.416).

Table 1. Dial Menu Outcomes by Area Code for NE September QAS (N=2,884)

	Area Code			
	Out-of-State (MO)		In-State (NE)	
	Count	Percent	Count	Percent
Started Interview[1]	442	32.57	465	30.45
No Answer	211	15.55	225	14.73
Busy	30	2.21	45	2.95
Answering Machine	485	35.74	581	38.05
Disconnected	1	0.07	0	0.00
Scheduled Appointment[2]	188	13.85	211	13.82
Total	1357	100	1527	100

[1]Started Interview = partial and complete interviews, refusals, and appointments made after interviewer started the interview
[2]Scheduled Appointment = appointments scheduled prior to starting the interview

No significant difference was found between the two area code groups in terms of attempts that led to an answered call (X^2=1.441, df=1, p=.230). Out of the 1,357 attempts made to contact respondents using a MO area code, 46.50% were answered. Of the 1,527 attempts made to contact respondents using a NE area code 44.27% were answered (see Table 2).

Table 2. Attempts Leading to an Answer by Area Code For NE September QAS (N=2,884)[1]

	Area Code			
	Out-of-State (MO)		In-State (NE)	
	Count	Percent	Count	Percent
Answer[2]	631	46.50	676	44.27
No Answer[3]	726	53.50	851	55.73
Total	1357	100	1527	100

[1]Table information derived from the dial menu information
[2]Answer = a call that yields an interview (partial or complete), a disconnect, or an appointment
[3]No Answer = a call that yields a no answer, busy signal, or answering machine

In total, 810 records were completed (i.e., yielded a completed interview, refusal or deemed inaccessible) at the NOC during the experiment calling period. No significant differences were found between groups in terms of interviews, refusals, and inaccessibles (X^2=.384, df=2, p=.825). Approximately 71% of the records called using a MO area code were interviewed, 28% ended in refusals, and 2% were inaccessible. Similarly, approximately 69% of the records called using a NE area code were interviewed, 29% ended in refusals, and 2% were inaccessible.

The distribution of interviews and refusals over the experiment calling period was very similar for both area code groups. Although we had hoped to see a steeper rise in response early in the data collection period for those called using an in-state area code (NE), this was not the case. No difference was found in the cumulative response rates for calls made using a MO area code versus a NE area code over the calling period.

There were 387 additional records (not reported above) that were attempted at least once at the NOC but completed in the NE FO due to callouts. Of these, 65 were completed using a mail questionnaire, 1 was completed using an in-person interview, 308 were completed by telephone, and 13 were completed using an "other" method. Seventy-seven percent of the calls placed from the NE FO led to an interview.

We were interested in whether there was an improvement in response rates for records that were initially called from the NOC (using an out-of-state area code) when called from the NE FO using an in-state area code. No significant difference was found in response outcome for the two initial calling modes (i.e., MO area code vs. NE area code) (X^2=2.617, df=2, p=.270).

Enumerator Debriefing

For the most part enumerators had no difficulty using cell phones to carry out this experiment. Enumerators reported having no difficulty dialing on the cell phones, and most enumerators reported that respondents had no difficulty hearing them on the cell phones. When asked to rate their overall experience with the cell phones on a scale from 1-5 (1=very poor, 5= excellent), enumerators rated their experience as good on average (M=4.14). When asked how they thought the cell phones affected response rates for this survey, 40 percent of enumerators believed the cell phones increased the response rate and 60 percent believed the cell phones had no effect on response rates.

3. EXPERIMENT 2

3.1 Method

A second experiment was conducted in December 2012. This experiment was conducted on the December QAS using the Minnesota (MN) (N=2,878) and Ohio (OH) (N=1,717) samples assigned to the NOC. In both states, half of the records were called using landline telephones that were programmed to display a MO area code and the identifier "Ag Counts" on caller ID. The other half of the MN and OH samples were called using cell phones that were programmed to display an in-state area code. There are currently seven area codes for the state of MN and nine area codes for the state of OH. We selected area codes in which the largest proportion of the sample resides (MN=507, OH=419). In addition to the area code manipulation, we also randomly assigned respondents in the MN and OH area code groups one of two different identifiers: Ag Counts and USDA. In the end there were three different conditions respondents could be assigned to:

Control: MO area code & "Ag Counts"
Condition 1: MN(507)/OH(419) area code & "Ag Counts"
Condition 2: MN(507)/OH(419) area code & "USDA"

Due to procedural delays in programming the cell phones we were not able to effectively carry out the second manipulation of this experiment (i.e., Ag Counts vs. USDA). Some cell phones were still being programmed on the first day of data collection. As a result, caller ID directories did not have sufficient time to update and the identifiers (i.e., Ag Counts, USDA) assigned to certain telephone numbers did not display on respondents' caller ID. Furthermore, because of these delays we could not route records assigned to conditions 1 and 2 to specific enumerators. Consequently, a respondent may have been assigned to condition 1 prior to data collection, but called under condition 2 during data collection (or vice versa).

Fifty-two enumerators were randomly selected to call MN and OH. These enumerators were provided a landline telephone programmed with a MO area code and a cell phone programmed with either the MN or OH area code.[2] Prior to calling respondents, the enumerators checked the Blaise instrument to see which

[2] Some records from MN and OH were routed to enumerators outside of the enumerator group selected for the experiment. This occurred for a variety of reasons; however it typically occurred when appointments were scheduled

phone to use when calling respondents. As in the first experiment, respondents who were called using cell phones were read a disclosure statement prior to data collection, which indicated the security risks associated with collecting data via a cell phone and were asked for their permission to be interviewed over the cell phone: *"I am calling you on a cell phone which may be less secure than a land line. Are you comfortable providing your data?*" If respondents refused to be interviewed over a cell phone, attempts were made to contact them again using a landline telephone. Enumerators were asked to indicate on the Blaise instrument which telephone they were using to call respondents at each dial attempt. Data was later outputted on the phone used to call respondents on the first and last call attempt. This allowed us to track whether respondents were called under the assigned conditions (i.e., control vs. condition 1 or 2) and adjust our analyses accordingly.

At the end of the December QAS we asked respondents from MN and OH about their use of caller ID. As in the preliminary experiment, enumerators were surveyed regarding their experiences and opinions regarding the use of cell phones and in-state area codes. Calling for this experiment took place between November 29, 2012 and December 7, 2012. Callouts began on December 12, 2012. Respondents included in the callouts are not included in the experiment analyses. Data for MN and OH are combined in the analyses.

3.2 Results

The NOC made a total of 5,805 attempts to reach 3,148 respondents in MN and OH. There was no difference in the number of attempts (i.e. call attempts leading to busy signals, no answers, contacts with person or answering machine) made for the two calling groups. On average, the NOC attempted to contact respondents in these states using a MO area code 1.78 times, and an in-state area code 1.74 times.

The dial menu outcomes are presented in Table 3. A significant difference was found between the two calling groups ($X^2 = 47.58$, df=5, $p<.001$). Twenty-six percent of calls placed using an in-state area code led to a started interview, whereas 20 percent of calls placed using a MO area code les to a started interview. Conversely, more calls placed using a MO area code were unanswered or picked up by answering machines than calls placed using an in-state area code.

Table 3. Dial Menu Outcomes by Area Code for MN and OH December QAS (N=5,805)

	Area Code			
	Out-of-State (MO)		In-State (MN/OH)	
	Count	Percent	Count	Percent
Started Interview[1]	732	20.04	560	26.02
No Answer	570	15.60	315	14.64
Busy	95	2.60	89	4.14
Answering Machine	1814	49.66	921	42.80
Disconnect	87	2.38	62	2.88
Scheduled Appointment[2]	355	9.72	205	9.53
Total	3653	100	2152	100

[1]Started Interview = partial and complete interviews, refusals, and appointments made after the interviewer started the interview
[2]Scheduled Appointment = appointments scheduled prior to starting the interview

for particular records. In these cases the enumerators called respondents using landline telephones regardless of the condition they were assigned. This was tracked in the Blaise instrument and accounted for in the analyses.

Respondents who were called using an in-state telephone number were significantly more likely to answer the phone (X^2=23.73, df=1, p<.001). Out of the 3653 attempts made to contact respondents using a MO area code, 32.14% were answered. Of the 2152 attempts made to contact respondents using MN and OH area codes 38.43% were answered (see Table 4).

Table 4. Attempts Leading to an Answer by Area Code for MN and OH December QAS (N=5,805)[1]

	Area Code			
	Out-of-State (MO)		In-State (MN/OH)	
	Count	Percent	Count	Percent
Answer[2]	1174	32.14	827	38.43
No Answer[3]	2479	67.86	1325	61.57
Total	3653	100	2152	100

[1]Table information derived from the dial menu information
[2]Answer = a call that yields an interview (partial or complete), a disconnect, or an appointment
[3]No Answer = a call that yields a no answer, busy signal, or answering machine

Although respondents were more likely to answer the phone when called using an in-state telephone number, they were less likely to participate in the survey when called using an in-state telephone number (X^2=18.95, df=1, p<.001). Approximately 67% of the records called using a Missouri area code were interviewed and 33% ended in refusals. Approximately 56% of the records called using MN and OH area codes were interviewed and 44% ended in refusals.

The distribution of interviews and refusals over the experiment calling period was similar for both area code groups. As in the first experiment, the cumulative response rates for the two area code groups were similar across the data collection period.

There were 849 additional records (not reported above) that were attempted at least once at the NOC but completed in the MN and OH FOs due to callouts. Of these, 409 were completed using a mail questionnaire, 2 were completed using an in-person interview, 38 were completed by web, and 400 were completed by telephone. Six percent of records contacted from the MN and OH FOs were interviewed.

Once again, we were interested in seeing if response rates improved for records originally contacted at the NOC using an out-of-state area code when called in the FOs using in-state area coded. No significant difference was found in response outcome for the two initial calling modes (i.e., MO area code vs. MN/OH area code) (X^2=5.11, df=2, p=.08).

3.3 Caller ID Questions

Of the 1,225 respondents interviewed at the NOC, 1,005 were administered a series of questions on their use of caller ID following the survey and of these 55 percent reported having caller ID. Fifty-seven percent of the respondents who had caller ID reported looking at it before answering the call and 75 percent of these respondents could recall what was displayed. As shown in Table 5, there was quite a bit of variation in what respondents reported seeing on their caller ID. Furthermore, there were a number of respondents who reported seeing information on their caller ID that was inconsistent with the telephone the enumerators indicated they called them on (see bolded numbers).

Table 5. Distribution of Information Reported on Respondents' Caller ID (N=226)

	Area Code	
	Out-of-State (MO)	In-State (MN/OH)
MO number	44	**8**
MN/OH number	**14**	45
"Ag Counts"	22	0
"USDA"	**2**	3
"Ag Counts" and MO number	16	**2**
"Ag Counts" and MN/OH number	**9**	2
"USDA" and MO number	**2**	**1**
Unavailable number	7	0
Unknown cell phone caller	**10**	4
Out of area number	10	0
Other	12	10
Refused/Don't know	2	1
Total	150	76

Note: No respondents reported seeing USDA and MN/OH number on caller ID.

Next we examined whether the information displayed on respondents' caller ID affected their perceived willingness to answer the telephone call. Nearly 51% of respondents indicated that the information displayed on their caller ID had no influence on their decision to answer the call, whereas 20% indicated the information displayed made them more hesitant to answer the phone and approximately 29% indicated that the information displayed made them more willing to answer the call (Table 6). Respondents, who indicated that the information displayed on caller ID influenced their decision to answer the call, were more willing to answer when the call was identified as coming from an in-state number, Ag Counts, or USDA, and less willing to answer the call when the call was identified as an unknown listing or other.[3]

[3] Information displayed on caller ID was coded as "other" in cases where respondents reported seeing phone numbers from area codes not included in the experiment (i.e., 509 (Washington), 517 (Michigan), 269 (Michigan)), cases where respondents could recall seeing a number only but could not recall the number itself, or cases where enumerators selected the other category but did not elaborate on what the respondents reported seeing on caller ID.

Table 6. Information Displayed on Caller ID and Willingness to Answer

	More Hesitant	More Willing	No Influence	Number
Overall	44	62	109	215
	20.37%	28.70%	50.93%	
Specific Display				
MO Number	7	7	35	49
	14.29%	14.29%	71.43%	
MN/OH Number	6	19	33	58
	10.34%	32.76%	56.90%	
Ag Counts	9	22	16	47
	19.15%	46.81%	34.04%	
USDA	0	6	3	9
	0.00%	66.67%	33.33%	
Listing Unknown	13	6	12	31
	41.94%	19.35%	38.71%	
Other	9	2	10	21
	42.86%	9.52%	47.62%	

Respondents were also asked to report how they would prefer we identified ourselves on their caller ID when contacting them in the future. The vast majority of respondents would prefer it if we identified ourselves as USDA on their caller ID (data not shown).

Enumerator Debriefing

As in the first experiment, most enumerators had no difficulty using the cell phones to place calls (i.e., reading the keypad and dialing); however, 34 percent of enumerators reported that they had difficulty hearing the respondents when using the hands-free headsets and 31 percent reported the respondents had difficulty hearing them. Enumerators did not rate their overall experience with the cell phones as highly in this experiment. On a scale from 1-5 (1=very poor, 5= excellent), enumerators rated their experience as good on average (M=3.46). When asked how they thought the cell phones affected response rates for this survey, 22 percent of enumerators believed the cell phones increased the response rate, 3 percent believed the cell phones decreased the response rate and 76 percent believed the cell phones had no effect on response rates.[4]

Many enumerators felt the use of cell phones was disruptive to the data collection process for the December QAS. Several enumerators indicated that they had difficulty hearing the respondents (both when using the hands-free headset and when using the phone only). Some enumerators opted not to use the hands-free headsets due to discomfort, difficulty getting the ear buds to stay in their ears, sanitary concerns, and difficulty hearing. In these cases, it was very difficult for these enumerators to hold the cell phone and key in responses. Enumerators also reported having difficulty switching back and forth between the landline telephone and the cell phone in this experiment. A couple of enumerators also mentioned that they felt the use of cell phones programmed with in-state area codes was deceptive and they were not comfortable with this manipulation. Finally, several enumerators indicated that the placement of the survey questions on respondents' use of caller ID was awkward. Enumerators were instructed to administer these questions after thanking respondents for their participation in the survey and

[4] Percents do not sum to 100 percent due to rounding.

offering them a copy of the results. This was done to reduce the impact of these questions on the data collection for the QAS. However, enumerators felt this was a very awkward transition and indicated that it would have been easier for them to administer these questions prior to thanking respondents for their participation.

4. DISCUSSION

The purpose of this research was to examine whether calling respondents using an in-state area code and a recognizable identifier would increase the number of answered calls and the response rate for the QAS. Using an in-state area code led to a small improvement in answered calls; however it had no effect on response rates. By using in-state telephone numbers we may have persuaded respondents who would have otherwise ignored our calls to answer the phone but we could not persuade them to participate in our survey. It was also hypothesized that using an in-state number would reduce the number of calls that were needed to be placed before a respondent was contacted. However, no differences in the number of calls placed were found between those respondents who were contacted using in-state telephone numbers and those who were contacted using out-of-state telephone numbers. Respondents were also surveyed on their use of caller ID. Based on data from this survey, we learned that very few of our respondents had caller ID and used it to screen calls. While we were not able to effectively test whether using recognizable identifiers increased the number of answered calls and the response rate, we did learn from this survey that respondents feel more inclined to answer the phone when called from an in-state telephone number, or a recognizable identifier such as Ag Counts or USDA, and overall they would prefer that we identify ourselves as USDA when contacting them in the future.

4.1 Limitations

There were several limitations to this research. First, all of the states we called in these experiments had multiple area codes in use. While we attempted to select an area code that covered the largest portion of the state where the famers/ranchers, who were surveyed, reside, it's possible that the area codes we selected were not familiar or local to some respondents. Furthermore, it's not uncommon for an operator to reside in a different state from where the farm operations are located. In these cases, manipulating the area code used may not have made a difference in persuading these respondents to answer the phone. Any attempt to use local area codes would also have to consider how to determine what "local" would mean in practice.

Cell phones were used instead of our Voice over Internet Protocol (VOIP) system due to the time and monetary costs associated with changing the VOIP system for these experiments. Although cell phones were a cost-saving alternative to changing the VOIP, they presented their own logistical challenges. First, we had to rely on the cell phone provider to assign area codes and identifiers to the phones. A number of the cell phones were programmed incorrectly, and as a result some phones were still being programmed to display the appropriate area codes and identifiers on the first day of data collection. This delay did not allow sufficient time for telephone carriers to update their databases which send information to respondents' caller ID. Subsequently the identifiers (AG counts and USDA) we assigned to the two cell phone groups in the second experiment did not display on most respondents' caller ID. When the cell phones were programmed well in advance of the calling period, we still had little control over the information displayed on respondents' caller ID. In order to display identifiers on caller ID, third party databases, which can charge fees, need to be accessed. Some telephone carriers do not access these databases, particularly when calls originate from cell phones (Wikipedia, 2013). Instead carriers will display the phone number along with the identifier "unavailable" or the city and/or state in which the phone number is based.

Using cell phones also made it very difficult to track the mode of calling (i.e., whether respondents were called using in-state vs. out-of-state area code) during the experiments. The late programming of the cell phones also made it difficult for our call center to assign cases to enumerators for the three different conditions in the 2nd experiment, which then limited our ability to control and track the execution of the experimental design. Had we used our VOIP system to carry out this experiment, we may have had more control over programming the phones (i.e., how and when they were programmed) and tracking the calls made.

Another limitation of using cell phones to carry out these experiments was that enumerators were required to read a discloser statement to respondents before beginning the survey, which disclosed any potential risks of sharing information over a cellular network. This disclosure statement may have led some respondents to refuse to participate in the survey due to privacy concerns. Conducting this type of experiment using a landline telephone would eliminate the need for this disclosure statement and more closely match typical CATI operations.

Finally, only respondents who answered the phone and participated in the QAS were administered the additional survey questions on caller ID use. As a result, we don't know if those who did not answer the phone or refused to participate in the QAS used caller ID to screen our calls.

4.2 Implications

Despite these limitations, there is enough evidence from this research to conclude that changing the area code (and possibly the identifier) we use when calling respondents does not appear to be a cost-effective way to improve the number of answered calls and the response rates for our surveys. In order to implement such a change in our call centers, a number of steps would need to be taken, many of which are resource intensive. First, a procedure would need to be put in place for selecting area codes to use for each survey. This would involve analyzing the survey samples to determine which area code(s) would be local or familiar to the majority of respondents in the survey. However, as mentioned above, even if this step was taken, it does not guarantee that the area code(s) selected is local or familiar to the respondents. In addition to selecting an area code, significant resources would need to be invested to change the VOIP system, as this system would need to be updated for every survey conducted out of our call centers. Finally, these changes would potentially impact only a small percentage of our samples since many respondents do not have caller ID, and many of those who do, do not use it to screen calls. Therefore, given the small improvement in answered calls, the lack of improvement in response rates, and the amount of logistical challenges to implementing such a change, this does not appear to be a cost-effective way to improve the number of answered calls and response rates. Instead our efforts would be better spent exploring alternative ways to improve response rates to our surveys.

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