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# Who's Calling? The Impact of Caller ID on Telephone Survey Response

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## Abstract

The Gallup Organization conducted a caller ID randomized study with a pre- and postexperimental design to test the impact of different caller ID displays (names) on the response, contact, and cooperation rates for telephone surveys. This research focuses on the impact of caller ID listing on the frequency of final dialing dispositions. The authors find initial evidence for the hypothesis that the caller ID transmission works as a sort of “condensed survey research organization business card” that can trigger brand awareness, thus legitimating the survey and diminishing suspicions of collector or telemarketing calls.

## Keywords

caller ID, unknown caller, RDD sample, list sample, response rates, advance notification

Caller ID technology can pose a threat to the telephone survey industry (Couper 2005; Battaglia et al. 2007). Lepkowski (1999), for example, views caller ID as a growing challenge to telephone survey organizations, Nathan (2001) believes it increases the likelihood of nonresponse, and Tourangeau

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(2004) views it as a barrier to contact. There is concern because caller ID is one of the technologies that enables households to shield themselves from unwanted calls (Brick et al. 2003), perhaps contributing to the overall decline in survey response rates.

Academic research indicates that the decline in response rates for telephone surveys is explained, at least in part, by changes in lifestyle, increases in telemarketing calls, and new telephone technologies (Frankel 2004). In addition, much of the decline in response rates can be attributed to an increasing rate of noncontacts for academic (Steeh et al. 2001; Curtin, Presser, and Singer 2005) and commercial sector surveys (Tortora 2004).

### *Caller ID Ownership*

Caller ID was established in 1987 (Mukherjee and Samarajiva 1996), and its use has become increasingly widespread over the past decade. Using face-to-face surveys in 1992, Tuckel estimated that the number of U.S. households with a subscription to caller ID was only 3%; in 1995, this figure stood at 10% (Tuckel 1996); and by 2000, 45% of U.S. households had caller ID (Tuckel 2001).

Using a telephone survey, the American Teleservices Association (ATA 2002) estimated a caller ID penetration rate of 39% in 2001 and of 41% in 2002. ATA also estimated that in 2002 caller ID subscription was higher in the South (50%) and had the highest growth in the Midwest (+9% in one year). Age appears to be a good indicator of caller ID subscription, as those in the youngest age groups are clearly more likely to subscribe; those in the older age groups are far less likely to subscribe than younger people. The study did not find support for the hypothesis that income is a good indicator for caller ID subscription.

The Pew Research Center (2004) estimated caller ID penetration at 52% in 2003 with a random-digit dialing (RDD) telephone survey. The study indicates that relatively more African Americans than whites (73% vs. 47%) have caller ID. The Pew study agrees with the ATA survey in reporting that household income is not a good predictor of caller ID ownership.

The last study we found measuring caller ID ownership is the Council of Market and Opinion Research (CMOR) Industry Image study (Glaser 2006) documenting caller ID ownership at 58% in 2006. The survey was conducted by telephone.

We need to be cautious in estimating caller ID penetration from telephone surveys because nonresponse bias can be correlated to caller ID ownership, but from the available studies it appears that caller ID is becoming a popular feature in the United States.

## Caller ID Usage

In a face-to-face survey, Tuckel and O'Neill (1996) compared caller ID and answering machine users to nonusers and reported that the former were more positively disposed toward telephone survey participation. In a second study, also conducted face to face, Tuckel (2001) reported finding that respondents' likelihood of answering an unrecognized call drops dramatically when they use caller ID. In their 1995 sample, 56% of caller ID subscribers indicated they were either "almost certain" or "very likely" to answer the phone under such circumstances; by their 2000 study, this percentage dropped 20 points. However, the very small difference between caller ID subscribers and non-caller ID subscribers on their attitude toward survey participation led Tuckel (2001:4) to state that there is "no inherent link" between orientation toward survey participation and screening behavior. Similar results were obtained in a study of South Carolina telephone subscribers (Link and Oldenick 1999), in which screening behavior did not appear to hinder survey research efforts significantly. Furthermore, the Pew Research Center (2004:10) study did not find evidence of the usage of call screening devices in itself "undermining the reliability of survey research." It did find, however, that more African Americans (34% vs. 24%) than whites always use caller ID devices for screening calls and that young people (18–29) are most likely to use it for screening calls (41% always screen calls) compared to 12% of those aged 65 and older. Using self-report data from the National Household Education Survey, which asked respondents about call-screening practices with caller ID and/or answering machines, Roth, Montaquila, and Brick (2002) found that the average number of call attempts for households that screen calls was 5.1, compared to 4.5 for households that do not screen calls. More recently Curtin, Presser, and Singer (2005) found no support for the hypothesis that respondents used caller ID to avoid callbacks. In fact, the trend of missed callback rates by year of the Survey of Consumer Attitudes did not show any systematic tendency.

One of the problematic aspects of all the studies reviewed is that caller ID is potentially misclassified with other screening devices. It is difficult, then, to estimate the "pure effect" of caller ID because many respondents use it in conjunction with answering machines, privacy managers, and similar devices and technologies.

## Caller ID Experiments

In the past few years, there have been numerous caller ID experiments. Before reviewing them, it is necessary to explain how caller ID works and what can

be manipulated. The transmission of caller ID information consists of two elements: a number and a text representing the name of the caller. Although it is theoretically possible to manipulate the text being sent, it is not easy to do so practically, and differences exist among telephone companies. To further complicate the picture, there is no guarantee that the information is completely forwarded from carrier to carrier, and geographic variations do exist (Okon, Moore, and Bates 2008). Finally, if a toll-free number is sent, the display is a variant "TOLL-FREE NUMBER," no matter what text the researcher wanted to send (Barron and Khare 2008). There is also a limit in the amount of text that can be displayed. Depending on the local telephone service, the length might be truncated to fifteen characters (Trussell and Lavrakas 2005).

In one of the first studies we were able to obtain, using a sample from McLennan County, Texas, Matos and Krey (2005) found that when using "BAYLOR UNIVERSITY" on the caller ID, respondents appeared to be more willing to answer the phone compared to the situation where no caller ID information was transmitted (43% vs. 23%).

The Nielsen Company conducted two experiments. In the first study done in 2004, Trussell and Lavrakas (2005) assigned a very large RDD sample either to a caller ID treatment ("NIELSEN RATINGS") together with a local Florida number or to the control group ("UNKNOWN" or "OUT OF AREA" shown on the caller ID). The study was part of the Nielsen TV ratings survey that recruits households to fill out a paper TV viewing diary. They found out that the American Association for Public Opinion Research (AAPOR 2008) Response Rate 1 (RR1) increased by 1.5 percentage points while the Refusal Rate 1 (REF1) decreased by 1.7 percentage points. In a parallel study conducted in the same period, there was an increase of 2.6 percentage points for the RR1, and the REF1 decreased by 2 percentage points. This increase in initial response rate, however, did not translate into an increase in the number of households mailing back the paper diary cooperation rates. Three years later, Nielsen conducted a similar study, and this time Nielsen found an overall increase of diary keeping cooperation rate by 0.9 percentage points for the caller ID condition (Brown et al. 2008). Based on this study, the company decided to systematically transmit "NIELSEN RATINGS" on its calls.

Macro International conducted two local experiments on the Behavioral Risk Factor Surveillance System (BRFSS) survey. In the first study, conducted in 2007, the sample for the Georgia BRFSS was split into two groups. In the experimental group, the display showed "GA PUBLIC HEALTH," along with a local telephone number. In the control group, no caller ID information was sent. Results did not show any statistically significant difference in response

rates between the two groups, although in the control group fewer attempts were required to resolve a case in general but more to finalize a refusal (Fernandez and Hannah 2007). In the second study, conducted with a more advanced dialer during early 2008 in the state of Ohio,<sup>1</sup> the BRFSS sample was divided into four groups: In the control group “UNKNOWN” was displayed, and in the experimental groups “OH HEALTH DEPT” was displayed. The manipulation allowed showing the caller ID information on all calls (group 2), only on the initial attempts (group 3), and only on later attempts (group 4). Although the authors did not detect any statistically significant difference in response rates among the conditions, for group 4 more call attempts were necessary to achieve a contact.

During the third quarter of 2006, Barron and Khare (2008) randomly assigned cases of the National Immunization Survey to three groups: In the control group, the caller ID was deactivated; in the first experimental group, the text “NORC U CHICAGO” was displayed; and in the second experimental group, “TOLL FREE” was displayed. The authors found a statistically significant increase in the Council of American Survey Research Organizations (CASRO) response rate of 3.1 percentage points when comparing the first experimental group to the control condition.<sup>2</sup> In the toll-free condition, the increase was positive (+1.1 percentage points) but not statistically significant. Another interesting difference was an increase of answering machine cases in the control condition in comparison to the experimental groups.

Last, mixed findings are reported by Okon, Moore, and Bates (2008) on a nonexperimental design involving two U.S. census surveys manipulating “CENSUS BUREAU” versus “UNKNOWN CALLER.” In the first study, using the Telephone Point of Purchase Survey, the CENSUS BUREAU condition elicited a small but significant reduction in the average number of call attempts prior to contacts and the average number of calls until the interview was completed. The response rate increased by 3.8 percentage points. In the second experiment, with the American Community Survey (ACS), the average number of call attempts prior to contacts in the CENSUS BUREAU caller ID made no difference, but the average number of calls until the interview was completed was slightly higher. The cooperation rate increased by 1.5 percentage points.

The few available caller ID studies begin to provide some evidence of a beneficial use of the feature, although many unknowns are still present. Technical reasons (how the information is transferred from carrier to carrier), differences in subscribership among the population, and the fact that there is no guarantee that a subscriber has the time or the means to read the caller ID information before answering the phone show how complex it is to do research in this area and to control for all possible confounding factors.

## Theoretical Approach and Hypotheses

We view the caller ID transmission as a “condensed survey research organization business card.” The general assumption is that the name of a well-known, legitimate organization triggers “brand awareness” (Tuckel 2001), thus legitimating the survey (Barron and Khare 2008). Because of the limitation of the technology, only a brief text can be shown (typically with a maximum of fifteen characters) along with the phone number. For this reason, the caller ID transmission might be equated to an advance letter to a limited extent. If the name of the survey research organization is recognized, the respondent can infer that it is not a sales call or a telemarketing call, thereby possibly increasing the respondent’s chances of picking up the phone. Thus, we reasoned that showing the Gallup name on the caller ID would have a beneficial impact on response, cooperation, and contact rates.

On the basis of these earlier findings, we tested this specific hypothesis: Using the survey research organization’s name is likely to increase the response rate of the survey if the company’s name is well known and positively viewed by the target population.

### *Study Design*

The Gallup Organization arranged a caller ID study in the spring of 2003 to test the hypothesis. Five call centers were involved in the data collection, and the results from five major tracking studies were compared. Four of the studies involved list sample customer satisfaction surveys. The first of these was an inpatient study, the second an outpatient study, the third a bank customer satisfaction study, and the fourth a discount store customer satisfaction study. The last survey was an RDD consumer preference survey, with selection of the final sample unit based on the Kish grid.

### *Sample Size*

The sample size is shown in Table 1.

### *Treatment Conditions and Calling Rules*

The interviewing team remained stable across the entire experiment fieldwork. The interviewers were aware of the experimental condition and instructed to answer possible questions regarding the caller ID message. Based on the ATA (2002) study, we estimated a 43% to 45% caller ID penetration rate during the study period.

**Table 1.** Quantity of Telephone Numbers That Were Dialed, Organized by Study and Treatment Condition

Study	Treatment Condition A		Treatment Condition B	
	Control—No Caller ID	Caller ID: “GALLUP”	Control—No Caller ID	Caller ID: “GALLUP POLL”
Inpatient	10,664	9,206	12,855	11,478
Outpatient	15,390	12,747	13,646	12,670
Bank customer satisfaction	63,158	32,967	51,933	19,280
Discount store customer satisfaction	85,873	80,635	60,416	45,904
RDD	13,859	10,221	27,099	16,410

Note: RDD = random-digit dialing.

We could not randomly assign cases to a caller ID condition or control condition at the same time because of purely technological limitations; the required call randomization could not be integrated into the switchboard software of the five call centers at the time the study was done. We discuss this possible study limitation in the conclusions.

The field period for the *control condition* (no caller ID information sent) was February 8 to March 7, and call centers 1 to 5 were used. The field period for the treatment conditions was March 8 to April 4. In *treatment condition A* with caller ID “GALLUP,” call centers 1, 2, and 3 were used. In *treatment condition B* with caller ID “GALLUP POLL,” call centers 4 and 5 were used. “GALLUP” and “GALLUP POLL” caller ID transmissions each required fewer than the typical minimum (fifteen characters), thus ensuring that each respondent with caller ID enabled could read the labels without truncation. The phone number sent together with the caller ID subscription was the local number of the call center.

## Results

The AAPOR standard definition and call outcomes formulas were used to tabulate the results (AAPOR 2008). For the computation of  $e$ , the estimated proportion of cases of unknown eligibility that are eligible, we used the proportional allocation, or CASRO, method (Frankel 1983).

The significance test between treatment and control group was done using the  $z$  test for comparing two population proportions. The comparison was done

**Table 2.** American Association for Public Opinion Research RR1 and RR3 by Study and Condition

	RR1				RR3			
	Treatment Condition A		Treatment Condition B		Treatment Condition A		Treatment Condition B	
	Control	Gallup	Control	Gallup Poll	Control	Gallup	Control	Gallup Poll
Inpatient	63.22	47.92**	61.78	51.13**	70.60	55.20**	69.03	58.77**
Outpatient	57.92	45.90**	55.56	43.37**	65.72	53.35**	62.32	50.13**
Bank customer satisfaction	28.49	31.51**	28.78	35.31**	42.05	43.54*	41.28	46.05**
Discount store customer satisfaction	43.10	40.65**	47.61	45.56**	51.31	48.13**	56.10	53.79**
RDD	15.79	16.26	16.75	19.03**	21.89	22.66	23.31	26.20*

Note: RR = response rate; RDD = random-digit dialing.

\* $p < .05$ . \*\* $p < .01$ .

pairwise: call center 1, 2, 3 (control) with call center 1, 2, 3 (“GALLUP”), and call center 4, 5 (control) with call center 4, 5 (“GALLUP POLL”).

## Response Rates

Table 2 reports the response rates for the five studies. In general, almost all of the comparisons are statistically significant. This means that using caller ID does appear to make a difference in response rates. We have mixed results, however. When looking at the inpatient and outpatient studies, the caller ID appears to hurt the response rate, by quite a lot. One plausible explanation is that hospital patients are less receptive to participating in surveys in general and to answering questions on potentially sensitive topics (e.g., one’s health, one’s recent or upcoming hospital visit) specifically. In this case, the caller ID warns individuals of a survey call and gives them a “shield to unwanted calls” (Brick et al. 2003). A similar difference appears for the discount store customer satisfaction studies. In contrast, caller ID was associated with a higher response rate in the bank customer satisfaction survey and in the RDD survey, where the transmission of “GALLUP POLL” increased the response rate by 2.9 percentage points (RR3).

**Table 3.** American Association for Public Opinion Research COOP1 by Study and Condition

	Treatment Condition A		Treatment Condition B	
	Control	Gallup	Control	Gallup Poll
Inpatient	91.15	91.29	91.37	91.81
Outpatient	91.10	91.88	89.71	90.78
Bank customer satisfaction	83.61	83.58	83.77	85.87
Discount store customer satisfaction	71.95	72.54	78.27	80.63**
RDD	24.37	25.39	25.28	28.28*

Note: COOP = cooperation rate; RDD = random-digit dialing.

\* $p < .05$ . \*\* $p < .01$ .

### Cooperation Rates

The cooperation rate is the proportion of all cases interviewed of all eligible units ever contacted. In the case of list samples, we noticed only a single statistically significant difference. An important reason for this is that, for list samples, we have a previously obtained list of final respondent names, so the interviewer already knows who to speak with. In other words, with list samples we have a list of eligible participants, so the computation of cooperation rates for a list sample is less informative. For RDD surveys, however, the cooperation rates—specifically household-level cooperation rates—is quite important. In our case, calling with “GALLUP POLL” on the caller ID increased the COOP1 (cooperation rate) by 3 percentage points. Table 3 reports the cooperation rate for the five studies.

### Refusal Rate

Table 4 reports the refusal rate for the five studies. The general trend is a decline of refusal rate for list sample surveys when the caller ID transmission is used. The decline is slightly more pronounced for “GALLUP POLL” than for “GALLUP.” The inpatient and outpatient surveys show a reduction of refusals as well as a reduction of response rate. That suggests that there was a self-selection mechanism before picking up the phone. Thus, if the phone call was answered, there was likely to be fewer refusals. For the RDD poll, we found no difference that reaches a statistically significant level.

**Table 4.** American Association for Public Opinion Research REF1 and REF2 by Study and Condition

	REF1				REF2			
	Treatment Condition A		Treatment Condition B		Treatment Condition A		Treatment Condition B	
	Control	Gallup	Control	Gallup Poll	Control	Gallup	Control	Gallup Poll
Inpatient	6.13	4.57**	5.83	4.56**	6.85	5.27**	6.52**	5.25
Outpatient	5.66	4.05**	6.37	4.41**	6.42	4.71**	7.15**	5.09
Bank customer satisfaction	5.58	6.19**	5.58	5.81	8.24	8.56	8.00	7.58
Discount store customer satisfaction	16.80	15.39**	13.22	10.94**	20.00	18.22**	15.58	12.92**
RDD	48.98	47.79	49.49	48.24	67.94	66.59	68.89	66.43

Note: REF = refusal rate; RDD = random-digit dialing.

\*\* $p < .01$ .

**Table 5.** American Association for Public Opinion Research CON1 and CON2 by Study and Condition

	CON1				CON2			
	Treatment Condition A		Treatment Condition B		Treatment Condition A		Treatment Condition B	
	Control	Gallup	Control	Gallup Poll	Control	Gallup	Control	Gallup Poll
Inpatient	69.35	52.49**	67.61	55.69**	77.46	60.47**	75.55	64.02**
Outpatient	63.58	49.96**	61.93	47.78**	72.14	58.07**	69.47	55.22**
Bank customer satisfaction	34.08	37.70**	34.36	41.12**	50.30	52.10**	49.28	53.63**
Discount store customer satisfaction	59.90	56.04**	60.83	56.50**	71.32	66.35**	71.68	66.71**
RDD	64.77	64.04	66.23	67.26	89.83	89.25	92.20	92.63

Note: CON = contact rate; RDD = random-digit dialing.

\*\* $p < .01$ .

### Contact Rate

The contact rate is the proportion of all cases in which some member of the household was actually reached by the interviewers, including the *refusal* households. Table 5 reports the contact rate for the five studies.

For the inpatient and outpatient surveys, the trend is similar to the response rates and shows a decline of contact rate with caller ID. This gives further evidence that, for these surveys, respondents may be screening the calls with caller ID and not answering the phone. We have mixed results for the two other customer satisfaction surveys. For the bank customer satisfaction survey, the contact rate increased with use of the Gallup name by an average of approximately 4 percentage points across conditions. For the discount store customer satisfaction study, however, the results were in the opposite direction. The contact rates for the RDD survey did not show any statistically significant differences.

Eligibility rate ( $e$ ) was used to compute the following AAPOR formulas: RR3, REF2, CON2 (contact rate). From these data, we notice an increase of  $e$  for the list sample cases. An increase of  $e$  means a reduction of RR3. Indeed, a 100% eligibility assumption produces the lowest response rate and a 0% assumption the highest (Lynn et al. 2002). For the four list sample surveys, the caller ID transmission increased the average  $e$  by about 5% for "GALLUP" and by approximately 4% for "GALLUP POLL."

### *Privacy Managers*

The problem with privacy managers is that if the caller ID is disabled, they require those calling to leave a name on an answering device or to enter a ten-digit phone number. Depending on the technology, the name is then forwarded to the household in an automated telephone call, giving residents a chance to accept or reject the incoming call.

Although we did not keep track of the number of privacy managers in the control or experimental conditions, discussion with Gallup interviewers confirmed the fact that they encountered much less call blocking and privacy manager problems when calling with caller ID transmission enabled. The earlier cited Pew Research Center (2004) study estimated call blocking or privacy managers ownership at 19% in 2003. Although this percentage seems high and might be the result of misunderstanding of the question by some respondents (S. Keeter, pers. comm.), the data give an idea of the widespread use of this technology. During the same period as our data collection, the CMOR study estimated call blocking ownership at 16% (Glaser 2006).

### *Answering Machine and Ring/No Answer Call Outcomes*

To further examine the hypothesis that respondents in the inpatient and outpatient surveys were purposely not picking up the phone, we analyzed the number of answering machine and ring/no answer final call outcomes. Table 6 presents the results of the analysis.

**Table 6.** Answering Machine and Ring/No Answer Final Call Outcomes, Percentage of Total Call Outcomes

	Treatment Condition A		Treatment Condition B	
	Control	Gallup	Control	G. Poll
Inpatient answering machine	9.46	16.38**	10.00	15.99**
Outpatient answering machine	13.40	21.30**	15.09	23.65**
Inpatient ring/no answer	5.45	9.19**	5.87	7.76
Outpatient ring/no answer	5.03	6.44	5.29	7.79*

\* $p < .05$ . \*\* $p < .01$ .

The increase in the number of answering machines' final dispositions codes indicates that respondents were letting the phone ring to screen the call. The increase in number of ring/no answer rates is weaker, but still in the predicted direction.

## Discussion and Conclusions

Caller ID appears to be a "branding" instrument that may, under some conditions (recognizable company or institution name, designation not considered as selling anything, and interaction with the survey topic) help the survey research process for well-known survey companies such as the Gallup Organization. "GALLUP POLL" seems to work better than "GALLUP" in most of the ratios we computed. We found major differences between caller ID salutations for list samples and for RDD samples in which a respondent has to be selected within the household. In the latter case, we found an improvement that reached statistical significance for response rates and cooperation rates. The closest comparison for this study is with another commercial survey organization such as Nielsen; our results appear to move in the same direction as those reported for the Nielsen caller ID studies (Trussell and Lavrakas 2005; Brown et al. 2008).

As is clear from our analysis, however, sometimes caller ID appears to hurt the response rate; this was the case for the inpatient and outpatient surveys. For this particular group of people, the survey alert may have given them a way out, resulting in a lower response rate for inpatients than for outpatients. In other words, the caller ID increases the number of implicit refusals (i.e., a higher number of answering machines and ring/no answer final call

outcomes). A similar pattern, though of a lower magnitude, was also found for the discount store customer satisfaction survey. Based on these results, researchers should consider the survey topic, as well as the target population, before using the caller ID transmission.

One limitation of our study is that, for technical reasons, the assignment of treatment and control conditions could not be done during the same time period; during the first field period the interviewers were calling with no caller ID transmission (control condition), and in the second period either "GALLUP" or "GALLUP POLL" was transmitted (treatment condition). The second limitation is that we did not ask respondents if they had a chance to look at their caller ID and what they actually were able to read.

Caller ID does appear to increase response rates and reduce refusal rates under certain circumstances. Caller ID also appears to help overcome privacy managers and other call blocking technologies. The generalizability of our results to other all organizations is less clear, however. We find support for the hypothesis that the caller ID transmission can be used to the advantage of survey organizations for RDD telephone surveys when the name of the survey organization is well known. The results for the list sample customer satisfaction surveys, on the other hand, are clearly mixed. The mechanism for the RDD telephone surveys may be similar, although to a much lesser extent, to that of advance letters, which explain the rate improvements as because of the principles of social exchange (Groves and Couper 1998), leverage-saliency theory (Groves, Singer, and Corning 2000), and rapport building (Dillman 1978). This is consistent with our case, as well as the case of the Nielsen study, which showed that half of the American population was aware of "Nielsen" in an aided recognition context and about one-fourth could name "Nielsen" in an unaided recall context (Melgar, Lavrakas, and Thompson 2004). It is possible that less well-known survey organizations might experience fewer benefits from caller ID transmission. Further research is clearly needed on caller ID transmissions; for example, it will be interesting to reverify in this new context the pioneering results on advance letters by Brunner and Carroll (1969) showing a different response rate based on the prestige of the survey organization (e.g., commercial vs. academic).

Caller ID ownership is on the rise among U.S. telephone subscribers (Glaser 2006). Moreover, increasing numbers of telephone service providers are offering caller ID packages at discounted rates, and virtually all Voice over IP companies include it as a free service. Consequently, we believe the impact of caller ID transmission will become stronger in the future and that this might help in increasing response rates for telephone surveys.

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## Notes

1. The new dialer was capable of automatically changing the caller ID outgoing message depending on the call.
2. The Council of American Survey Research Organizations response rate is equivalent to the American Association for Public Opinion Research Response Rate 3.

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