NEW TECHNOLOGY AND NONRESPONSE BIAS IN RDD SURVEYS

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The telephone answering machine and caller ID, while conferring a number of clear-cut benefits upon consumers, at the same time pose potential problems to telephone survey researchers. Both of these new technologies may make it more difficult for telephone surveyors to establish contact with potential respondents and thus imperil the representativeness of the samples selected for interviewing.

There now exists a growing body of literature delineating the characteristics of answering machine owners and the reasons for ownership (see Tuckel and O'Neill 1995; Tuckel and Feinberg 1991; Oldendick and Link 1994; Piazza 1993; Xu, Bates, and Schweitzer 1993). This literature is often couched within a definitional framework of "cocooners" versus "connectors" (Lavrakas 1993; Tuckel and Feinberg 1991). "Cocooners" are individuals who are seeking refuge from a stressful world by making their home environment as private as possible. They view the answering machine principally as a mechanism to screen unwanted calls. The "connectors," by contrast, are individuals for whom the wall between their public and private worlds is far more permeable. To them, the answering machine is basically a means by which to receive messages when they are away from the phone. Adopting this definitional framework, one might hypothesize that caller ID subscribers would be more akin to the "cocooners." By using caller ID, they can screen calls while, at the same time, dispense with the "burden" of having to receive messages on an answering machine. Thus, they can filter out unwanted calls and yet not be obligated to return calls to individuals who have left messages. Alternatively, the characterization of caller ID subscribers as "cocooners" may not be an appropriate one. Subscribers may simply be individuals who are concerned with identifying the numbers of annoying callers which is, of course, a different objective than screening unwanted calls.

To date, no research has been carried out on subscribers to the caller ID service. Yet, if subscribers act as "cocooners," this may pose a serious challenge to telephone survey researchers. The principal focus of the present study, therefore, is to identify the characteristics of caller ID subscribers and to learn about the patterns of usage of this technology. A second focus of this study is to build upon our knowledge of answering machine owners.

Method

The results of this study are based upon interviews carried out with a nationwide cross section of 1980 men and women 18 years of age and over. Respondents were interviewed face-to-face in their homes during the time period October 14-21, 1995.

The sampling methodology employed was a multistage, stratified probability sample of interviewing locations. One limitation of the methodology which should be mentioned is that quota sampling was employed at the final stage (block level) of the sample.

A Profile of Caller ID Subscribers and Answering Machine Owners

In 1992, the number of U.S. households with telephones that subscribed to caller ID was a scant 3 percent (Roper Organization 1992). Today this figure stands at 10 percent. Moreover, an additional 13 percent report they are either "almost certain," "very likely," or "somewhat likely" to obtain this service within the next year.

The profile of respondents who say they subscribe to this service is a distinctive one. Older respondents (those 65 and over) are greatly underrepresented among subscribers. Only 8.8 percent of subscribers fall into this age category versus 19.3 percent for the sample as a whole. Marital status is another key factor. A markedly higher proportion of caller ID subscribers are separated or divorced (18.2%) than for the rest of the sample (11.7%). There is also a greater incidence of families with larger numbers of children living at home among subscribers than non-subscribers.[1] For example, 31 percent of those with caller ID report having children living at home in at least two separate age categories compared to a corresponding figure of just 19 percent for the entire sample. Race, too, is a factor with a higher-than-average proportion of blacks found among the ranks of subscribers. There is little

discernible relationship, on the other hand, between level of education and ownership. However, respondents from more affluent households and (somewhat inconsistently) those in white- or blue-collar occupations are slightly overrepresented among subscribers. Full-time employees and those who are more actively involved in political and social activities are also disproportionately found among caller ID users.[2]

In addition to these individual or household attributes, external factors such as region and size of place of residence are associated with whether or not individuals have caller ID. A considerably higher-than-average proportion of subscribers reside in either the Midwest or the South census regions. In part, this geographic concentration is due more to the greater availability of caller ID service in certain areas of the country than to regional preferences.[3] Finally, it should be noted that there is a higher proportion of individuals residing in medium-size cities and their surrounding suburbs among subscribers than for the sample as a whole. Approximately one-third of subscribers live in these size locales versus about a quarter for the remainder of the sample.

To examine the independent effects of sociodemographic characteristics upon whether or not an individual subscribes to caller ID, we conducted a stepwise logistic regression analysis. The final model confirms the importance of marital status, presence of children living at home, work and occupational status combined, level of political/social activism, size of place of residence and region as determinants of whether or not individuals subscribe to caller ID service.

The portrait of caller ID users drawn above obscures some important points of differentiation between users who possess answering machines and those who do not. Overall, just 2.5 percent of the entire sample have just caller ID, while 8.1 percent have both caller ID and an answering machine. Thus, the bulk of subscribers (76.1%) are answering machine owners.

The most prominent difference between the two groups based on whether or not they own answering machines lies in their marital status. While separated and divorced individuals are overrepresented within the ranks of both groups, their presence is particularly noticeable among caller ID subscribers who do not own answering machines. A whopping one-third of those who possess just caller ID are either separated or divorced compared to a corresponding figure of 13.4 percent of those who own both telephone technologies. Another salient difference between these two groups concerns their socioeconomic status. Considerably higher proportions of subscribers without answering machines than those with machines have not graduated from high school and have household incomes below $15,000. Furthermore, there is a far greater preponderance of members of the former group who are politically/socially inactive than members of the latter group (64.4% vs. 45.1%).[4]

The data gathered for this study also allow us to compare the attributes of answering machine owners who are also caller ID subscribers versus answering machine owners who are not subscribers. One of the most critical distinctions between these two groups is the number of age categories of children. Among users of both technologies, the number of age categories of children living at home is proportionately greater than the number for just answering machine users.

Lastly, the data enable us to compare individuals who are neither caller ID subscribers nor answering machine owners with the rest of the sampled groups. These data dovetail closely with those from other studies describing the characteristics of nonowners of answering machines (see, in particular, Tuckel and O'Neill 1995; Oldendick and Link 1994). Compared to the sample as a whole, respondents who possess neither technology tend to be older (65 years of age and over), rank low in terms of socioeconomic status, be inhabitants of small towns and rural areas, and be less politically or socially participatory.

Why Do People Have Caller ID?

To find out why people subscribe to caller ID, both current and "likely" subscribers were presented with a list of three possible reasons and asked to rank the importance of each as a motivating factor.[5] The three reasons were: (1) to have a record or log of recent calls made to your home, (2) to identify the phone numbers of annoying callers, and (3) to screen calls when you are at home. The list of reasons was rotated sequentially to eliminate the bias which might intrude as a result of the order in which the reasons were presented to respondents.

The results show that the primary reason both current and likely subscribers obtain the service is to be able to identify the phone numbers of bothersome callers. This reason is cited as being "very important" by 65 percent of current subscribers and 76 percent of likely subscribers.

What is perhaps the most intriguing aspect of these data is that a sizable proportion of respondents say that the capacity to screen calls while at home is an important inducement for having caller ID. Forty-nine percent of current subscribers and fifty-seven percent of likely subscribers attach the label "very important" to this reason. Furthermore, even when the analysis is confined to those respondents who own answering machines, the same basic results persist. Thus, it seems safe to conclude that there are many individuals who possess answering machines who utilize caller ID for screening purposes. The next section is devoted to a fuller examination of this topic.

Call Screening

Several questions were inserted in the survey to learn about the screening behavior of caller ID subscribers. The first question, which was posed to all answering machine owners (including caller ID subscribers), was: "How often do you use your answering machine to screen calls when you are at home?" All told, 20.9 percent responded "always," 14.3 percent said "most of the time," 22.9 percent answered "some of the time," 16.8 percent replied "not very often," and the remainder (25.1%) replied "never." Interestingly, both current and likely caller ID subscribers screen calls via the answering machine with far greater frequency than their counterparts who either do not have caller ID nor are seriously contemplating subscribing to this service within the next year. The tendency to screen calls via the answering machine, moreover, is particularly pronounced among likely caller ID subscribers.

A second question, paralleling the one above, asked current caller ID subscribers the extent to which they screened calls using their caller ID when at home. What is noteworthy is that the overall incidence of screening with caller ID far exceeds the overall incidence of screening with the answering machine. For example, 55.5 percent of caller ID subscribers report utilizing their caller ID units to screen calls either "always" or "most of the time." The comparable figure for answering machine owners is considerably lower—35.2 percent. Another facet of the data which is worthy of mention is that there is no significant difference in the frequency of screening via caller ID among subscribers with and without answering machines. Thus, people with answering machines use their caller ID units to screen calls with the same frequency as caller ID subscribers who do not possess answering machines.

Screening Calls With Unrecognized Numbers

A critical concern of opinion and market researchers, of course, is not simply the degree of call screening but the types of calls which are screened by prospective respondents. It can be assumed that the phone numbers of most survey research organizations will not be recognized by prospective respondents when these numbers are displayed on their caller ID units. Therefore, it is important to gauge the willingness of caller ID subscribers to respond to calls which have unrecognized numbers. A third question in the survey concerned with screening behavior addresses this issue. Caller ID subscribers were asked: "If your caller ID shows a number that you do not recognize when you are at home, how likely are you to answer the phone?" The results indicate that about 56 percent are either "almost certain" or "very likely" to answer the phone under this circumstance. Thus, a majority say they would respond to a call when they do not know the identity of the caller. While this figure is encouraging, it is important to bear in mind also that a sizable contingent express some reservation about responding to a call with an unrecognized number. This reservation is more marked among current subscribers who do not own answering machines than those subscribers who do own machines.

Attitudes Towards Telephone Surveys

From the vantage point of telephone survey researchers, it is important to understand the attitudes towards telephone survey participation on the part of potential respondents who have caller ID. Clearly, their attitudes would be expected to influence their screening behavior upon being contacted by a survey researcher. To assess attitudes towards telephone survey participation, respondents were read a list of statements and asked which one best described how they felt when contacted to participate in a market or opinion research survey. The statements ran along a five-point continuum ranging from "I like to participate in telephone surveys because they give me the opportunity to offer my opinion" to "I really don't like telephone surveys, so I usually refuse to participate." For ease of presentation, we collapsed the response categories into just three values: (1) individuals who, in general, are positively disposed towards participation, (2) individuals who are either ambivalent or whose participation is contingent upon the subject matter of the survey, and (3) those who are generally hostile towards participation. We then cross-tabulated this attitudinal measure with a four-group typology of

respondents based upon caller ID and answering machine ownership status.[6] The four groups comprising this typology are: (1) caller ID subscribers who do not own answering machines, (2) caller ID subscribers who do own answering machines, (3) non-subscribers with answering machines, and (4) non-subscribers without answering machines.

Overall, only 8.6 percent of the individuals in this analysis report they generally like to participate in telephone surveys. The bulk (51.9%) say they are either neutral or that their participation depends upon the topic of the survey. The remainder (39.5%) affirm that they generally refuse participation. What is most striking, though, is the variation in attitudinal disposition towards survey participation on the part of the four groups in our typology. The group which is most favorably disposed is composed of caller ID subscribers who also own answering machines. Almost 14 percent of this group fall into the ranks of those who say they generally like to participate in telephone surveys. Non-subscribers who possess answering machines rank second place in terms of those who are favorably disposed towards participation. While caller ID subscribers without answering machines are not nearly as enthusiastic about survey participation as their counterparts with answering machines, nevertheless, they still report being more positive than individuals who have neither telephone technology.[7]

Not only are caller ID subscribers overall as amenable to survey participation as others in the study (and those with answering machines even more amenable), but there is also little correspondence between the incidence of screening among subscribers and their attitudes towards participation. If anything, those with a greater propensity for screening either via the answering machine or via caller ID harbor a more favorable orientation.

Lastly, there is a relationship in the anticipated direction between the willingness of subscribers to answer calls with unrecognized numbers on their caller ID units and their attitudes towards participation. A considerably higher proportion of respondents who say they are either "almost certain" or "very likely" to answer a call with an unrecognized number register more positive feelings towards survey participation than respondents who are less inclined to answer a call with an unrecognized number.

Discussion

In the preceding pages, we have uncovered a number of findings about the ownership and usage patterns of caller ID which have important implications for the conduct of telephone survey research. To begin with, we have observed that approximately 10 percent of respondents from households with telephones have caller ID. An additional 6 percent indicate they are either "very likely" or "almost certain" to obtain this service within the next year and 6 percent more say they are "somewhat likely" to become subscribers. Two developments, in particular, can be expected to substantially raise the incidence level of caller ID in the near future. First, a ruling by the Federal Communications Commission allowing long-distance caller ID service was implemented in December of 1995, shortly after the interviews for the present study were completed (Douglas 1995). Second, almost every region in the country will soon have caller ID service which will supply the name of the person or organization attached to the number of an incoming call. Both the expanded geographic coverage of caller ID and the capacity to identify the name of the party initiating the call are likely to be attractive features to consumers.

The findings in this study concerning usage patterns of caller ID, in the main, can be thought of as heartening to telephone surveyors concerned with the impact of this technology on gaining access to potential respondents. Several discrete findings serve as a basis for encouragement. First, we have noted that the most important reason which both current and likely subscribers give for obtaining caller ID is the ability to identify the numbers of annoying callers. This factor supersedes in importance the ability to screen calls when individuals are at home. Second, we have found that three-quarters of caller ID subscribers also own answering machines. Thus, telephone surveyors can at least establish "remote" voice contact with a substantial majority of subscribers by leaving a message on their machines.

The profile of subscribers also provides grounds for optimism. This profile suggests that subscribers are not any more averse to being contacted by telephone surveyors than non-subscribers. The data show, for example, that: (1) subscribers (particularly those who also own answering machines) display more favorable attitudes towards telephone survey participation than the sample as a whole; (2) the frequency with which subscribers screen their calls either via the answering machine or via caller ID is unrelated to their general

orientation towards telephone survey participation; and (3) a majority (56.3%) are either "very likely" or "almost certain" to answer the phone when their caller ID unit displays an unrecognized number. Furthermore, as we have discovered, two of the distinguishing characteristics of subscribers is that they tend to be involved in a number of political activities and that they have several children living at home. One may infer from this first characteristic that, overall, caller ID subscribers are not "social isolates" who want to remove themselves as much as possible from the surrounding society. To the contrary, they appear to be as engaged, if not more so, in the world around them than others. On the other hand, they may wish to protect their children from harassing calls or to lower the "noise content" associated with larger families or, more generally, to exert some degree of control over the intrusions of modern-day life into their households. While they may screen their calls frequently, their aim does not appear to totally immerse themselves in their private worlds but rather to selectively filter out calls based upon personal or family considerations. In this important regard, then, it does not appear that the term "coroners" provides an apt description of the majority of caller ID subscribers. Perhaps a more appropriate term would be "managers"—individuals who, because of the fast pace of modern-day society, including the ever-increasing flow of communications, seek to adopt more efficient means of organizing their daily lives. These are not individuals who wish to withdraw from the surrounding society but rather are those looking for ways to better cope with its pressures.

As encouraging as the above findings are, there are others in this study which are disconcerting in nature and which cannot be overlooked. Clearly, there is a subgroup of subscribers (principally those who do not own answering machines) who cleave more closely to what might be the stereotypic image of caller ID users—individuals who wish to insulate themselves more from the rest of the world (e.g., the "coroners"). Compared to subscribers who own answering machines, for example, subscribers who do not own machines are less politically and socially active, are more reluctant to respond to an incoming call with an unrecognized number, and are less positively disposed towards telephone survey participation.

A second finding which can be viewed as distressing is that while a majority of caller ID subscribers say they are either "very likely" or "almost certain" to answer the phone upon encountering an unrecognized number, a sizable bloc (approximately two-fifths of the total) express at least some reservation about doing so. Since the telephone numbers of most survey research organizations are likely to be unrecognized by subscribers, this hesitancy to answer the phone may restrict the accessibility of certain respondents.

Finally, we have reported that subscribers screen their calls with considerable frequency either via their caller ID units, their answering machines, or through both mechanisms. While the original impetus for screening may be primarily to filter out calls of a personal nature—such as those from annoying acquaintances—once individuals become habituated to the practice of call screening, they may demonstrate increasing selectivity in the type of calls to which they respond.

Within this same context, we have also observed that a large segment (roughly one-third) of non-caller ID subscribers who own answering machines report screening their calls on a frequent basis. It is not surprising, therefore, that the incidence of obtaining an answering machine response disposition across repeated call attempts in RDA household samples has increased over the past several years.

In sum, it appears that caller ID and the answering machine do not yet represent major obstacles for telephone survey researchers. Nevertheless, there are certain troubling signs which this research has uncovered. Opinion researchers need to closely monitor the usage patterns of these new technologies and to keep apprised of their effects on telephone surveys.

Footnotes

[1]The survey instrument did not include a question which asked respondents how many children in toto were living at home with them. Instead, respondents were queried as to whether they had any children living at home with them in each of four different age categories. A summated scale (ranging in value from 0 to 4) was then created based on responses to this set of age questions.

[2]To measure level of political/social activism, respondents were read a list of 12 activities (e.g., attended a political rally, wrote a letter to the paper, etc.) and asked which, if any, they had engaged in during the past year.

[3]One of the principal reasons why the incidence level of caller ID is low in the West is because California, the

most populous state in the nation, still does not have this service available to telephone customers.

[4] The authors are mindful of the relatively small number of caller ID subscribers who do not possess answering machines (n=45) and, therefore, of the need to exercise caution in drawing comparisons between these subscribers and those who do own machines.

[5]"Likely" subscribers are defined here and elsewhere in this study as those who say they are either "almost," "certain," or "very likely" to obtain caller ID service sometime within the next year. Together, these respondents comprise about 6 percent of the entire sample.

[6]Altogether, approximately 12 percent of those who were asked about their general orientation towards telephone survey participation volunteered that they had never been contacted to participate in such a survey. This group, along with a scattering of respondents who fell into the "don't know/no answer" category, were omitted from this analysis.

[7] The results presented here could be spuriously related to age since older respondents are disproportionately found among those who have neither an answering machine nor caller ID and are also more disinclined to participate in surveys. However, even if we eliminate respondents who are 65 years of age or older, the same basic pattern emerges as beforehand. Those who possess neither technology are still the most reluctant respondents.

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