CHANGES IN TELEPHONE SURVEY NONRESPONSE OVER THE PAST QUARTER CENTURY

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Abstract   We correct, update, and elaborate Curtin, Presser, and Singer's (2000) report that the University of Michigan's Survey of Consumer Attitudes (SCA) experienced only a small response rate decline between 1979 and 1996, contrary to the widespread perception of plunging response rates. Our aims are to (1) correct errors in the SCA response rate data that affected Curtin, Presser, and Singer's (2000) result, (2) examine the trend in SCA response rates after 1996, when caller identification technology became widespread, and (3) describe the roles played by the various sources of SCA nonresponse over time. The results show that the response rate decline from 1979 to 1996 was larger than described by Curtin, Presser, and Singer (2000); the response rate drop was significantly steeper from 1996 to 2003 than from 1979 to 1996; and the 1979 to 2003 trends differed substantially for refusals and noncontacts.

The lengthy history and extended periods of relative design stability of the University of Michigan's Survey of Consumer Attitudes (SCA) make it an important resource for documenting response rate changes over the better part of survey research's history. In a widely cited analysis, Steeh (1981) described a major response rate decline from 1954 through 1976, when the SCA was conducted in person. Contrary to the perception that nonresponse continued to grow at a similar pace after that, Curtin, Presser, and Singer (2000) reported a relatively minor response rate drop from 1979 to 1996, when the SCA was

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conducted by telephone. Consistent with the perception of an increasingly difficult survey environment, however, Curtin, Presser, and Singer (2000) found that interviews became much harder to obtain over the course of the later period. The average number of calls to complete an interview, for instance, more than doubled from 3.9 in 1979 to 7.9 in 1996.

We undertook the present analysis in pursuit of three main objectives. First, we discovered that the SCA response rate data used in Curtin, Presser, and Singer (2000), as well as in other publications, contain errors. Thus, we correct the record and show that the response rate decline from 1979 to 1996 was larger than described in Curtin, Presser, and Singer (2000).

Second, a potentially key feature of the survey environment deteriorated markedly in the few years since 1996, the end point of Curtin, Presser, and Singer's (2000) analysis. Access to technology designed to screen unwanted calls skyrocketed. According to Tuckel and O'Neill (2001), the proportion of U.S. households that had caller identification (caller ID) grew nearly 500 percent in just five years, from barely 1 in 10 households in 1995 to almost half by 2000. Thus, we examine the trend in SCA response rates since 1996. As we will demonstrate, the deterioration in SCA response rates from 1997 to 2003 was significantly steeper than from 1979 to 1996.

Third, Curtin, Presser, and Singer (2000) examined response rates overall, providing no information about nonresponse components. As Groves and Couper (1998) argue, refusals, noncontacts, and incapacity to complete the interview are very different, and combining them may obscure important patterns. Thus, our final aim is to describe the roles played by the different nonresponse components in SCA response rates over time. As we will show, the SCA trends from 1979 to 2003 in refusals and noncontacts were markedly dissimilar. Steeh et al. (2001) reported a comparable analysis but reached different conclusions, partly because of the errors in the SCA data that we have now identified.

Methods

For the last quarter century, the SCA has been conducted monthly, using newly selected cases and recontacts from previous SCAs. We restrict our analysis to the new cases, as did Curtin, Presser, and Singer (2000). These are random digit dial (RDD) samples from the coterminous United States, drawn until 1993 using Mitofsky-Waksberg procedures and since then using list-assisted procedures. One respondent has always been randomly selected from among all household residents aged 18 or older. About 300 new interviews are now conducted each month, although the number was larger at the beginning of the period. No formal changes have ever been made to call scheduling (nor has an automatic call scheduler ever been used), and attempts have always been made to convert virtually all initial refusals. Although we later describe design features (for example, advance letters and monetary incentives) that

did change, we do not believe these changes can account for our main results, for reasons explained below.

The intention of the SCA has always been to place no limit on the number of calls, except for the constraint imposed by the month-long interviewing period. From 1979 to 1988, telephone numbers that were "ring–no answer" on each of the first 12 calls were temporarily removed to determine whether they were in service by contacting the appropriate telephone companies. If a number was reported as out of service, it was coded ineligible. If the phone company reported that a number was working (or no report was obtained), further calls were made to the number, which was treated as an eligible household. In 1988 the call limit to numbers that never yielded a contact was reduced from 12 to 6. The same year, as it became more difficult to obtain working-status information, inquiries to telephone companies ceased. Instead, noncontacts on the first 6 calls were removed from the active sample, assigned a final disposition code of ineligible, and excluded from the response rate denominators, but this change was not documented.[1] The automatic coding of these numbers as ineligible came to light in 2003, and since then, numbers have been called until the study's end, irrespective of how many times they produced no contact.

We have been able to correct the erroneous assignment of the noncontacts, and in our first set of analyses we treat all of them (irrespective of how many times there was no answer) as eligible households. In these analyses, the response rate denominators include every sampled phone number with the exception of those known to be ineligible (for example, businesses and numbers yielding a "nonworking" recording), and the numerators include the small number of partial interviews that reached all the questionnaire's key items (American Association for Public Opinion Research's [AAPOR] response rate 2). We then present analyses that treat a fraction of the noncontacts as ineligible (AAPOR's response rate 4). All our results are based on the nearly 300 monthly surveys conducted from January 1979 through December 2003, which interviewed about 100,000 respondents.

Nonrespondents are commonly divided into three groups: those never reached (noncontacts), those unwilling to cooperate (refusals), and all others, composed mainly of those for whom it would have been difficult or impossible to cooperate (for example, those with language or hearing barriers). Since 1984, the SCA has been administered in English and Spanish, so from that point on the language component of the third group consisted of people who spoke neither of those languages.

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1. As a result, the post-1987 response rates reported in figure 1 of Curtin, Presser, and Singer (2000), as in other publications using the SCA, are incorrect. No other results in Curtin, Presser, and Singer (2000) are affected, as the rest of that article is based only on completed interviews. The conclusions of experimental comparisons using the SCA (such as Singer, Van Hoewyk, and Maher 2000) are also unaffected, as response rates were computed in the same way for the different conditions.

The SCA distinguishes three main kinds of refusal: by the selected respondent, by some other adult in the household after the respondent had been selected, and by an informant before the respondent could be selected. Interviews that began and then broke off before all the survey's key items had been asked were also coded as refusals if the respondent did not indicate a willingness to complete the interview at a later time. (When willingness to complete the interview at another time was expressed, the case was recorded as a missed callback, if the later calls never reached the respondent.) We combine all four refusal types into a single category.

Our refusal category does not capture indirect refusals, of which the most likely form is telling the interviewer to call back another time and then avoiding further contact. Because it is not possible to distinguish those requests to call back another time that are refusals from those that are not, they were all coded as missed callbacks.[2] As we will see, whereas refusals are related to time, there is no trend over time for missed callbacks, which indicates the utility of keeping the categories separate.

Results

OVERALL RESPONSE RATE

Curtin, Presser, and Singer (2000) reported that the SCA response rate ranged from a high of 72 percent to a low of 67 percent between 1979 and 1996, showing a gradual decline of just one-fifth of a percentage point per year. The corrected data for those years reveal a much larger drop from about 72 percent to 60 percent, with an annual average decline of almost three-quarters of a percentage point (figure 1). Furthermore, the deterioration since 1996 has been twice as steep, averaging 1.5 percentage points a year. As a result, by 2003 the response rate was only 48 percent.

Figure 1 suggests that SCA response rates have been marked by three distinct periods: a gradual decline from 1979 to 1989, a plateau from 1989 to 1996 (when there was essentially no change), followed by an even sharper decline after 1996.[3] In the next sections we examine the relative roles

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2. Although Steeh et al. (2001) report that SCA procedures for classifying final refusals and noncontacts changed in 1998, this is incorrect. An undiscovered programming problem caused erroneous data to be delivered to those authors, and misinformation was then provided in explaining the errors.

3. Two changes occurred in 1997 that might have temporarily affected response rates. First, from January to May 1997, the survey administration gradually shifted from paper and pencil to computer. With the possible exception of a short-term start-up effect, there is no reason to expect any impact on response rates from this design change (see, for example, Groves and Mathiowetz 1984). Second, from August 1997 to June 1998, a small fraction of the sample was conducted on the phone by members of SRC's national interviewing staff from their homes. Again, although this could have affected response rates during that time, there is no reason to expect it to have had other than a temporary effect.
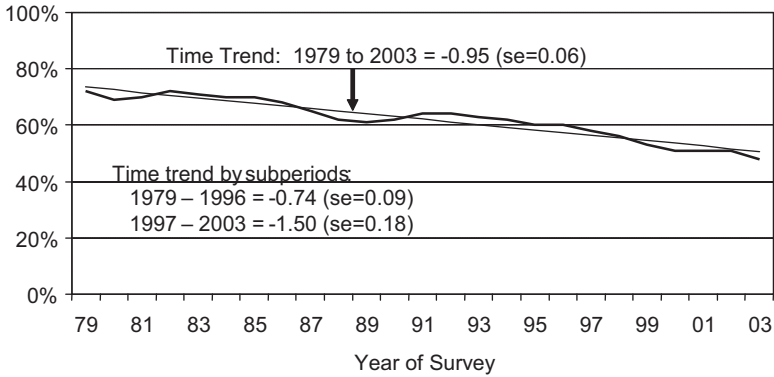
Figure 1. Response rates (RR 2) by year.

of respondent amenability, contactability, and incapacity in producing these results.

REFUSALS, MISSED CALLBACKS, AND REFUSAL CONVERSIONS

As shown in figure 2, final refusals to the SCA have increased over the past two-and-a-half decades: from 19 percent of the total sample in 1979 to 27 percent in 2003. On average, final refusals rose by one-fifth of a percentage point each year. Like the trend in overall response rates, the change has been sharper more recently.
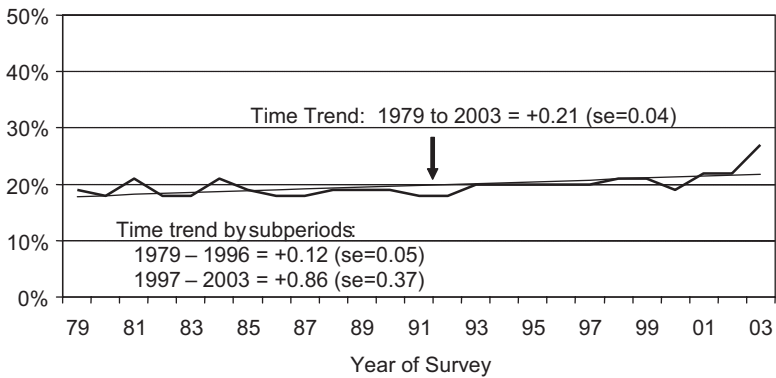

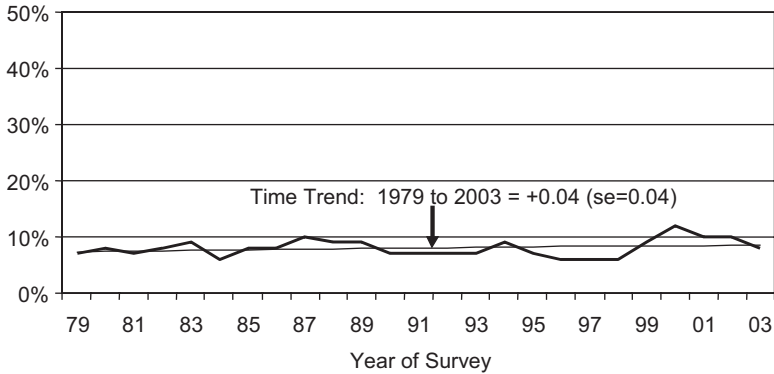**Figure 2.** Final refusal rates by year.

Figure 3. Missed callback rates by year.

By contrast, missed callbacks, some of which might represent a form of refusal, show no trend over time (figure 3). The proportion fluctuates between 6 and 10 percent in all but one year, with no systematic trend. This suggests, counter to our expectation, that respondents did not use the tool provided by the recent spread of caller ID as a way to avoid callbacks.

Curtin, Presser, and Singer (2000) reported that refusal conversions as a proportion of completed interviews rose markedly from 1979 to 1996. Of course, the rising proportion of refusal conversions does not mean interviewers have become better at converting refusals. In fact, when conversions are tallied as a percentage of all initial refusals, it appears interviewers have become slightly less successful over time (figure 4). Over the entire period,
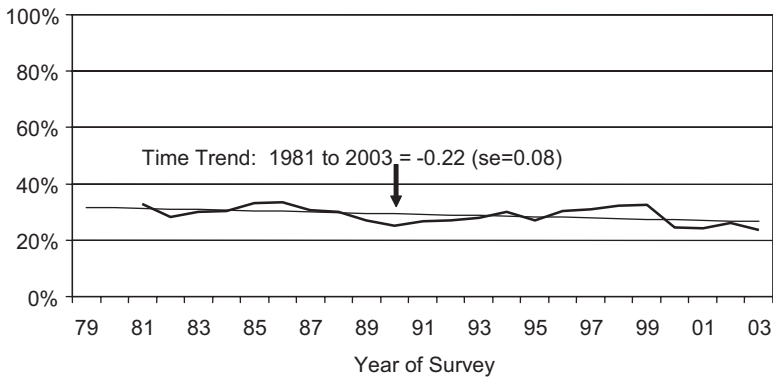

Figure 4. Percentage of initial refusals converted to interviews by year.

the proportion of refusals converted to interviews has declined by about 0.22 percentage points per year. Beginning in the early 1990s, interviewers were given the option to promise a monetary incentive to refusals, and that decade did see a small rise in conversions. However, by 2000, the decline resumed.

RESPONDENT INCAPACITY

Respondent incapacity (mainly language and hearing barriers) is a tiny source of SCA nonresponse, though it has grown over the last 25 years as the population has aged and as more people speak neither English nor Spanish. Less than 1 percent was coded in this category in 1979, compared to 2 percent in 2003.

NONCONTACTS

From 1979 to 1985, noncontacts were only a minor source of nonresponse and were dwarfed by refusals. Figure 5 shows that the noncontact rate grew dramatically after that, increasing an average of 0.63 percentage points annually over the entire period. As a result, since the later 1990s, noncontacts have accounted for almost as much nonresponse as refusals. While the rate of increase in noncontacts was smaller after 1996 than from 1979 to 1996, this difference is not statistically significant. Nonetheless, the slower growth in noncontacts after 1996, combined with the simultaneous increase in refusal growth, means that noncontacts have recently not contributed as much to the overall response rate decline as have refusals

The rise in noncontacts in the last ten years is consistent with the proliferation of caller ID. Yet the increase in noncontacts over the entire period might also be a consequence of the growing demand for telephone numbers, which
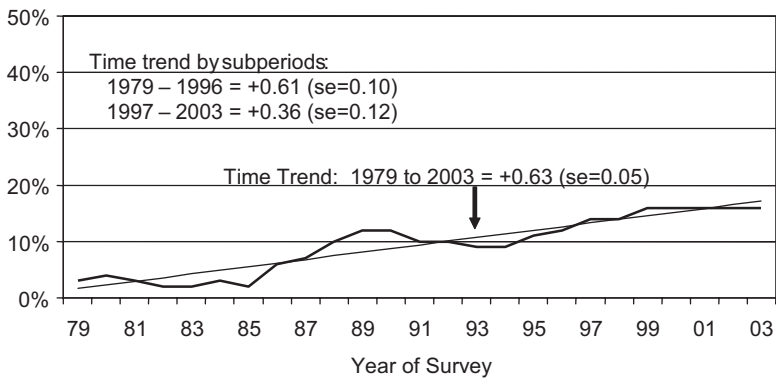

Figure 5. Noncontact rates by year.

(1) reflected the greater use of phones for nonvoice applications such as computers, and (2) led to the introduction of new area codes and thereby increased the fraction of unassigned (that is, nonworking) numbers (Piekarski, Kaplan, and Prestegaard 1999). To account for unanswered nonvoice lines and for nonworking numbers not connected to an out-of-service recording, researchers often exclude some noncontacts from the response rate denominator (AAPOR's response rate 4). Probably the most common approach (known as the CASRO rate) is to include in the denominator only the proportion of unknown eligibility cases equal to the eligibility rate ("e") among the remaining cases. Figure 6 shows that from 1979 to 2000, the SCA "e" computed in this way hovered around 60 percent. In other words, among numbers whose eligibility was established (all cases except noncontacts), about 6 in 10 were households. After 2000, there was an increase in this proportion, followed by a decline, both of which we are unable to explain.

We used these CASRO estimates of "e" in computing AAPOR's response rate 4. The drop in response rate 4 over the entire period is a little less steep than for response rate 2—an average annual decline of 0.86 percentage points (data not shown) compared to 0.95 in figure 1. But the marked increase over time in the proportion of noncontacts means that response rate 4 shows a somewhat steeper average annual decline after 1997 (1.9 percentage points; data not shown) than does response rate 2 (1.5 percentage points).

However, the assumption that the eligibility rate among noncontacts (dialed a minimum of six times) was the same as among answered numbers (many of which were dialed substantially fewer times) is probably not a good one. The assumption very likely leads to overestimating eligibility among the noncontacts and underestimating the response rate (Brick, Montaquila, and Scheuren 2002). Although there is no way to determine the exact extent to
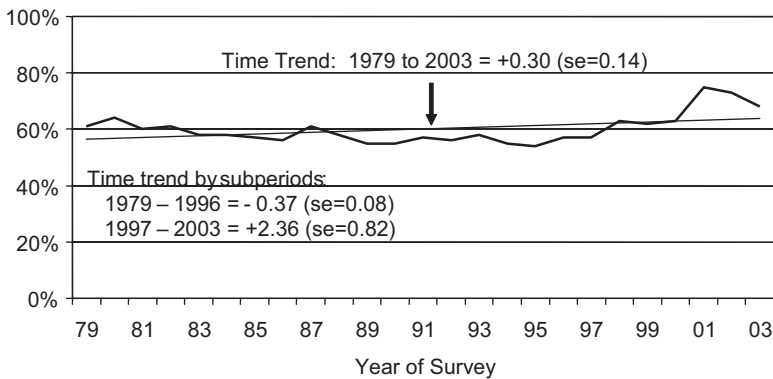

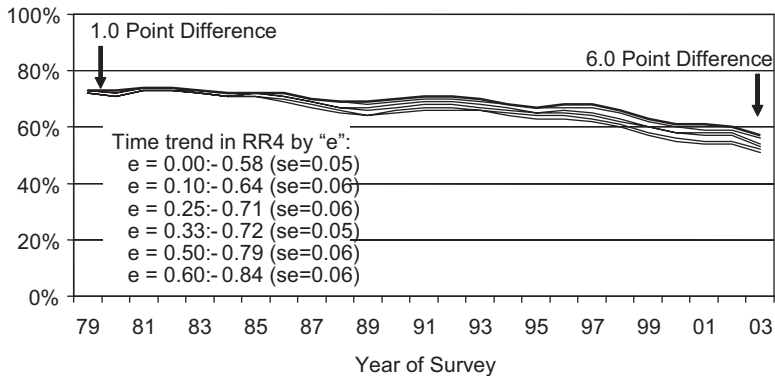**Figure 6.** CASRO "e" rates by year.

Figure 7. Response rates (RR 4) by year, using different estimates of "*e*."

which the CASRO approach overestimates "*e*," figure 7 shows the impact on response rate 4 when "*e*" varies between 0 and 0.6. To take the limiting case, if all the survey's noncontacts were ineligible (*e* = 0), the average annual response rate decline between 1979 and 2003 would be only 0.58 percentage points.

ADVANCE LETTERS AND PREPAID INCENTIVES

In January 1999, based on experiments that showed advance letters increased cooperation (Traugott, Groves, and Lepkowski 1987), the SCA began sending such letters to all potential respondents for whom a mailing address could be identified (about 44 percent of the sample). Then, in January 2000, $5 was added to the letter, as a result of experiments by Singer, Van Hoewyk, and Maher (2000) that found such an incentive increased SCA response rates by more than 10 percentage points among cases with a listed address. The experiments also showed a reduction both in number of calls to complete a case and in initial refusals.

As can be seen from figure 1, neither advance letters nor incentives raised overall response rates above prior levels, although they may have prevented further declines. Indeed, the response rate remained largely unchanged from 2000 to 2002. In the discussion section we will consider reasons that the letter and monetary incentive did not produce an improvement in response rate. Here, we note that the absence of such an effect means that the introduction of the letter and incentive, although changing the SCA survey design, cannot account for the recent accelerated declines in overall response rate and noncontacts (both of which began prior to the introduction of the letter and incentive, and are counter to the experimentally observed effect of these manipulations). Of

course, it is possible that without the letter and incentive the post-1999 decline in response rates would have been even steeper than it was.

Discussion

Response rate 2 on the Survey of Consumer Attitudes has declined dramatically over the past quarter century, averaging roughly one percentage point a year. Moreover, the decline has accelerated in the last few years. In contrast to an average annual decline in response rate 2 of 0.74 percentage points from 1979 to 1996, the yearly decline averaged 1.50 percentage points between 1997 and 2003.

How much of the decline is attributable to increasing numbers of refusals, and how much to the other major component of survey nonresponse, failure to contact the household? An exact answer to this question is not possible since the proportion of noncontacts that are eligible households is unknown. Based on response rate 2, refusals to the SCA increased an average of 0.21 percentage points per year between 1979 and 2003, whereas noncontacts increased by 0.63 points. Thus, the perception that it has become increasingly difficult to contact households by telephone, and that noncontacts have become a more substantial part of nonresponse, is borne out by these data. However, the relative role of noncontacts and refusals has recently reversed. Although the growth in nonresponse from 1979 to 1996 was driven mainly by rising noncontacts, the even steeper nonresponse rise after 1996 was due mainly to a rise in refusals.

What accounts for these patterns? Harris-Kojetin and Tucker (1999) found that increases in the Current Population Survey (CPS) refusal rate were associated with declines in the unemployment rate, but this does not appear to hold for the SCA. (The CPS is distinctive both in terms of its government sponsorship and its very high response rate.) Another major survey that has experienced a recent response rate shift is the General Social Survey (GSS). The GSS response rate varied between 73.5 percent and 82.4 percent in the 19 times it was conducted from 1975 to 1998, and it dipped below 75 percent just twice (1978 and 1990). By contrast, the GSS response rate in 2000 and 2002 fell to 70.0 percent and 70.1 percent. The post-1998 GSS change was due entirely to an increase in refusals; noncontacts were unaffected. But noncontacts are usually easier to minimize in personal visit surveys (like the GSS), where interviewers can observe information about the household and consult neighbors, than in telephone surveys. The SCA increase in noncontacts may be partly due to the dramatic increase in the use of call-screening devices in the late 1990s (Tuckel and O'Neill 2001).[4] However, the absence of a trend

4. In a telephone survey of South Carolina, Link and Oldendick (1999) found that 17.5 percent of the respondents with caller ID said that the technology made them more hesitant to answer the interviewer's call. Generalizing from this result is not straightforward, as the call was identified on many respondents' machines as University of South Carolina or South Carolina state government. The authors also note that caller ID effects may be quite different for nonrespondents than for respondents.

for missed callbacks, as well as a rival hypothesis for the noncontact increase (growth in nonvoice and unassigned numbers), cast some doubt on this. The most promising explanation to account for the SCA increase in both refusals and noncontacts over the past 25 years may be the rapid growth in sales and survey phone calls during the period, though further work is required to document this.

In an effort to stem the decline in response rates, the SCA in 2000 began to mail incentives to that portion of the sample (roughly half) for whom addresses could be obtained. The effect of this strategy was considerably less than that observed between experimental and control groups in the small-scale experiments carried out in 1998 (Singer, Van Hoewyk, and Maher 2000). We suspect there are several reasons for this. First, because incentives could be mailed to less than half the sample, the majority of potential respondents remained unaffected by them. Second, for those who received them, incentives may have increased cooperation above what it would otherwise have been, but because response rates were trending downward, the incentive did not succeed in increasing rates to pre-2000 levels. Third, incentives are probably less effective in facilitating contact with respondents than in overcoming reluctance to participate. Singer, Van Hoewyk, and Maher (2000), for example, found no effect of incentives on calls to first contact, although measures of cooperation, such as initial refusals, number of interviews completed on first contact, and number of appointments made on first call, did show such effects.

Concern about falling response rates is driven partly by fears about nonresponse bias. Although the common wisdom holds that decreases in response rates lead to increases in nonresponse bias, this has lately been challenged by results from the SCA (Curtin, Presser, and Singer 2000) and other surveys (Groves, Presser, and Dipko 2004; Keeter et al. 2000; Merkle and Edelman 2002). Hence, the recent deterioration in the survey environment may not have led to greater nonresponse bias in the statistics commonly estimated from surveys. Yet the rapid response rate decline has clearly increased survey costs. Moreover, as one of the reviewers of this article noted, although the long-term decline in response rates has sometimes been temporarily stemmed, response rates have rarely increased over time. Thus, without better approaches to both contacting respondents and persuading them to be interviewed, the long-term future of telephone survey research does not appear promising.

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