

DISCUSSION

D. G. Horvitz, Research Triangle Institute

I am particularly grateful to the organizer of this session and to the speakers for introducing us to a relatively new and interesting approach to data collection in telephone surveys. There is little doubt in my mind that computer-assisted telephone interviews (CATI) can provide data of higher quality than is ordinarily achievable with non-computer-assisted telephone interviews or with face-to-face personal interviews. I refer here exclusively to the interview process itself as the source of improved quality. The opportunity for an increase in survey data quality through better survey instruments and interview processes appears to be somewhat greater (and in some situations unique) for computer-assisted telephone interviews than for non-computer-assisted interviews. The computer provides the instrument designer a flexibility, not readily available otherwise, (i) in the order in which the questions are asked, (ii) in choice and number of probes and (iii) in the use of feedback to the respondents. The CATI mode should also contribute to higher quality data by achieving greater performance consistency across interviewers through improvements in instrument design and in the interview process.

The papers overlap to a considerable extent both dealing with various CATI features, its advantages, disadvantages and expectations. I have little quarrel with most of the discussion which was quite useful for the most part. Both papers point out the possibility of improvements in survey management with CATI. I think it is important to recognize that the use of computers for frame storage and retrieval, sample selection, control of field assignments and operations, field status reports, field cost control and other survey management functions is not unique to CATI or telephone surveys. What is unique is the considerable potential of CATI to improve the interview process and to reduce the usual data processing time by combining interviewing and data entry.

Reference is made to on-line coding as a feature, but again this is not unique to CATI. Data entry from hard copy with a set of on-line terminals separate from the interviewing process also offers the opportunity for on-line coding of open-ended questions.

The impression given from the Rustemeyer *et al.* paper is that the basic software essential for processing the data for input directly into standard tabulation and analysis packages such as SPSS is now a part of the UCLA-CATI System. But the Nicholls paper states that the present UCLA-CATI system does not have the "ability to provide tabulations of survey results within a day or two of field work completion." Some clarification is needed on this aspect.

The major difficulty I have with both papers is that little attention is given to the problem of measuring the actual improvement in data accuracy of CATI over non-CATI or of CATI over face-to-face interviews. The mere fact that quality will be greater with computer-

assisted interviews, which I am willing to concede, is not sufficient basis for choosing CATI over alternative data collection modes. Attention must be given to the actual reduction achieved by CATI in the error of estimate for statistics of interest and to the cost of achieving that reduction versus the reduction achieved for the same investment with the other data collection methods available. That is, we must know the trade-offs if we are to do a better job of survey design.

The use of CATI promises to reduce the total mean square error for a particular survey estimate through a reduction in the interviewer variance and possibly other non-sampling error components. If the reduction in the interviewer variance using CATI results in only a relatively small reduction in the total mean square error, CATI may not be a cost effective technique after all.

I urge the authors and other CATI enthusiasts to use survey designs which permit estimation, at the minimum, of the interviewer variance contribution to the total variance. This can be accomplished through appropriate randomization of interviewer assignments, which can be done much more readily with CATI than with face-to-face interview surveys. A number of interviewer variance studies have been carried out with face-to-face interviews. It would be useful to compare measures of interviewer variance using CATI with those generated in previous studies for similar characteristics and variables.

Nicholls has done a fine job of reporting the range of experience with CATI in the California Disability Survey. I do not wish to detract from his paper, but there are some items which I feel should have been given attention, including:

1. The paper could have reported factual data on field operations and experience, but did not.
2. The paper did not report any cost data.
3. The paper did not consider methodology appropriate to evaluating gains in data accuracy with CATI, nor were there any hard facts concerning expected gains such as reduction in the mean square error of estimates. An excellent opportunity to randomize interviewer assignments was lost.

Some additional specific points to be made are:

1. The sample is confined to working-age adults in California telephone households. Apparently no effort was made to collect disability data from non-telephone households, yet the likelihood is that a higher proportion of disabled persons would be found in non-telephone households than in telephone households. The size of the non-telephone population is not mentioned in the paper.
2. The reported response rate of 86 percent does not account for the three percent

of working residential telephone numbers not reached. I would prefer the response rate to have been reported as 83 percent of all working residential telephone numbers. There is a further reduction in coverage of the population of inference--that is, all working-age adults in California households--due to failure to survey the non-telephone households. Coverage is only approximately 77 percent since about 8 percent of the California households do not have telephones.

3. As indicated above, it would have been most helpful to report to this audience details of the sampling experience such as the replicate size; the number of banks of 100 numbers sampled in each replicate; the number of banks not used because of non-working or non-residential primaries; the number of telephone numbers required to be sampled in each working bank to reach six residential numbers; the number of

unlisted numbers in each bank that refused to be interviewed; and the means and variances of these data items by bank and replicate.

4. A tabulation of the final disposition coding would also have been meaningful to this audience.

5. The responses to questionnaire item A shown in Table 2 do not add-up in the "like most" category. The experienced interviewers add-up to $64 + 8 + 48 = 120$ percent checking the "like most" category while only $59 + 22 = 91$ percent of the interviewers without previous experience chose one of the three techniques as "like most." It appears to me that the interviewers would have had to choose one and only one of the three types of surveys listed as "like most." Perhaps a CATI of the interviewers would have produced a set of interviews without these inconsistencies in the data.