

Telephone versus In-Person Surveys of Community Health Status

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Abstract: Reports of physical morbidity are compared among a community sample of Los Angeles County adults (N = 546) randomly assigned to either in-person or telephone interviews. No statistically significant differences were found between the two interview methods for overall assessment of health status, illnesses reported for the previous four months,

or reports of hospitalization. A significantly greater proportion of in-person respondents, however, reported the presence of restricted-activity days during the previous two weeks. This difference could not be directly attributed to sociodemographic characteristics or reported physical health status of the two samples. (*Am J Public Health* 1982; 72:1017-1021.)

Introduction

Community surveys are often the only available means of estimating the general health status of local populations, and surveys conducted by telephone have become an increasingly acceptable alternative to in-person interviews. The development of modified random-digit dialing and computer-programmed interview schedules, the centralized location of interviewers, and the ease of administration, particularly in geographically dispersed areas, have combined to facilitate the use of telephone interviews.¹ One major obstacle—the omission of households without telephones—has receded in importance as the number of such households has decreased.² The major impetus behind the growing use of telephone interviews, however, has been their relatively low cost.

Of three studies which document the considerable cost advantage of telephone interviews, two conclude that the quality of health-related data obtained in telephone and personal interviews is comparable.^{3,4} The third found significantly greater accuracy in reports of health care utilization and expenditures for in-person than telephone re-interviews in an urban sample but no difference in accuracy in a rural sample.⁵ The urban interview differences were ascribed to the opportunity for the in-person interviewer to review written documents and to solicit information from additional household members; accuracy was relatively high for both methods in the rural area. Other comparisons of the quality of data obtained in telephone and in-person interviews have generally reported little or no difference between the two methods,⁶⁻¹⁰ although some studies have reported that response bias may present more of a problem in telephone interviews.^{1,11,12}

The experimental field study presented here compares in-person and telephone responses to a variety of health indicators among a community sample of Los Angeles County (California) adults, and addresses some of the limitations of previous health-related comparisons. Comparisons are made for respondents drawn from the same sampling frame and randomly assigned to an interview method, thus controlling potential effects related to different sampling methods. Second, comparisons are made for initial interviews, eliminating effects directly due to re-interview or repeated measurements. Third, both sets of interviews were conducted by the same professional interviewers, thereby controlling for effects directly due to differences in the characteristics of the interviewers.

Methods

The Los Angeles Metropolitan Area Sample (LAMAS) was used to select subjects for this study.¹³ This three-stage cluster sample with probabilities proportional to size can be considered representative of the adult population aged 18 years and older residing in Los Angeles County. During an initial contact at the subject's home, a household roster was completed and one resident adult was selected as respondent using the Kish method,¹⁴ and simultaneously randomly assigned to either the telephone or in-person interview method.

Of the 296 respondents assigned to the in-person interview, 238 (80.4 per cent) were interviewed. Of the 377 respondents assigned to the telephone interview, 308 (81.7 per cent) were interviewed. The rate of nonresponse in the two modes after assignment did not differ significantly, with similar proportions refusing and being inaccessible. A detailed description of the procedures and the sociodemographic characteristics of the samples are reported elsewhere.¹⁰ Overall, except for a slight racial-ethnic group difference, the two samples appear to be comparable in terms of their sociodemographic characteristics.

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The field work was conducted by 31 professional interviewers with prior experience in both interview methods, from the UCLA Institute for Social Science Research, Survey Research Center. The same interviewers conducted both the in-person and telephone interviews, with the exception of four interviewers who conducted a total of 10 interviews by telephone at the termination of the study. In addition to prior training at the Survey Research Center, all interviewers participated in an intensive study briefing regarding objectives, the content of the questionnaire including relevant definitions, circumstances necessitating the use of standard probes, appropriate responses to specific interviewee questions, and so forth.

While the telephone interview was considerably shorter than the in-person interview, the physical health questions were asked near the beginning of both interviews, thereby controlling for item placement. In both methods, the appropriate reference date was inserted into questions that referred to a specific time period, such as the past two weeks, but this recall period was also delineated on a calendar for the in-person respondents. Interviews were conducted in English and in Spanish.

Results

As shown in Table 1, responses to health-related questions are generally comparable in the two interview methods. No statistically significant differences are found for overall assessment of health status, reports of illnesses or injuries during the past four months, or reports of recent hospitalizations.

The only parameters on which there are statistically significant differences between the two interview methods are the per cent reporting *any* bed-disability days (Table 1, item 2) and *any* restricted-activity days (Table 1, item 4), other than bed days, during the past two weeks. In both instances, respondents to the in-person interview are more likely to report disability days than respondents to the telephone interview.

These two disability questions were combined into a summated measure of total restricted-activity days during the past two weeks. The proportion reporting any restricted-activity days (either bed-disability or other restricted-activity) was significantly higher in the in-person method than in the telephone method (23.5 per cent vs 13.3 per cent; $\chi^2 = 9.59$; $df = 1$; $p < .002$). As shown in Figure 1, this difference is consistent across age groups, although it is somewhat smaller in the younger age group. The higher in-person rate was also found separately for men (19.4 per cent vs 9.6 per cent) and women (26.7 per cent vs 16.3 per cent). The same age pattern is observed in Figure 1 for the more severe bed-disability days.

Before concluding that these differences in rates of reported restricted-activity days derive directly from the interview method itself, two alternative explanations must be considered. First, the difference may be a chance phenomenon observed because of the multiple significance tests. This explanation was evaluated using a Bonferroni-

type procedure to correct for the multiple tests.¹⁵ The differences on the two specific survey items do not exceed the corrected critical chi-squared value, but the difference between the two survey estimates for the *summated* total restricted-activity days remains statistically significant. In the following comparisons, we therefore limit our attention to the total restricted-activity days measure.

Second, the difference in total restricted-activity days may be attributable to differences in the actual health status of the two samples during the specific two-week period referenced by these items. To assess this possibility, the two samples were compared on all mentions of illnesses or injuries (Table 1, items 6–8), which were classified into one of the following time categories: began within the past two weeks, continued into the past two weeks, and other. For each illness mention, respondents were asked if it had limited or restricted their normal activities for three or more days, hereafter referred to as disabling illnesses. Considering all illnesses and only disabling illness, no statistically significant differences were found between the two samples for mentions that began within or continued into the two-week period preceding the interview—the time frame of the restricted-activity days questions. Finally, to determine if sociodemographic characteristics typically related to health status could account for the difference, a logistic regression was performed with presence or absence of restricted-activity days as the dependent variable and age, sex, education, employment status, race, and interview method as the independent variables. When all sociodemographic characteristics were simultaneously considered, the effect of interview method on total restricted-activity days remained statistically significant ($p < .01$).

In hypothesizing an interview method effect to account for differences in reports of restricted-activity days, we implicitly assume that the samples are comparable in their health status and that the observed rates represent a distortion—either overreporting by in-person or underreporting by telephone respondents. There is some tentative evidence to suggest both possibilities. First, a comparison of those reporting a disabling illness that began within the past two weeks suggests telephone underreporting since only six of 12 telephone respondents, as compared to all 10 in-person respondents, also reported at least one restricted-activity day for that period on the prior questions. On the other hand, more in-person than telephone respondents report 14 disability days for the past two weeks (7.1 per cent vs 2.6 per cent), suggesting possible overreporting by in-person respondents through the inclusion of inappropriate days that resulted from continuing disability rather than an illness limiting normal activities.

Discussion

Measures of bed-disability and restricted-activity days are among the most commonly used health indicators in household surveys. As telephone interviews become increasingly frequent, therefore, the issue of interview method effects on responses to these questions increases in impor-

TABLE 1—Responses to Health Status Questions by Interview Method

Health Status Question	Interview Method			
	In-Person		Telephone	
	N	%	N	%
1. Overall health rating*				
Excellent	97	40.8	116	37.7
Good	83	34.9	130	42.2
Fair	39	16.4	51	16.6
Poor	18	7.6	11	3.6
2. Any bed-disability days in past 2 weeks?				
No	211	88.7	291	94.5†
Yes	27	11.3	17	5.5
3. Number of bed-disability days‡				
1	8	3.4	6	1.9
2	5	2.1	4	1.3
3+	14	5.9	7	2.3
4. Any other restricted-activity days in past 2 weeks?§				
No	195	81.9	273	88.6†
Yes	43	18.1	35	11.4
5. Number of other restricted-activity days‡				
1	7	2.9	6	1.9
2	12	5.0	9	2.9
3+	24	10.1	20	6.5
6. Any illness or injury in past 4 months?				
No	143	60.1	184	59.7
Yes	95	39.9	124	40.3
7. More than one illness or injury?				
No	66	27.7	84	27.3
Yes	29	12.2	40	13.0
8. Number of illnesses or injuries over one				
2	21	8.8	28	9.1
3	8	3.4	12	3.9
9. Any hospitalizations in past 4 months?				
No	225	94.5	296	96.1
Yes	13	5.5	12	3.9

*Missing data on one in-person respondent.

†Significant interview method effect, $p < .05$ (χ^2 test with 1 degree of freedom).

‡Three or more days collapsed into one category for this analysis.

§Restricted-activity days other than bed days.

tance. In this experimental study, we found a significantly greater proportion of in-person than telephone respondents reporting restricted-activity days during the two weeks prior to the interview. To what extent is this difference attributable to the interview method per se?

This difference would not represent an interview method effect if the two samples actually differed in their health status. In the absence of an independent assessment of health status, we have relied on other survey indicators of morbidity to compare the health status of the two samples. On the basis of these comparisons, it does not appear that differences in the health status of the two groups explain the lower rate of restricted-activity days reported in the tele-

phone sample. Furthermore, the difference does not appear to be attributable to the sociodemographic characteristics of the two samples.

Any cogent interpretation of this apparent interview method effect must take into account that this difference appears only for the disability days measures and not for the other measures of physical morbidity. This deflects attention from general explanations associated with the method itself and directs it instead towards specific dimensions of these particular measures. For example, dimensions such as interviewer motivation and training or interviewee commitment^{1,16} would be unlikely to affect responses to only one item and not to other items as well. Instead, these item-

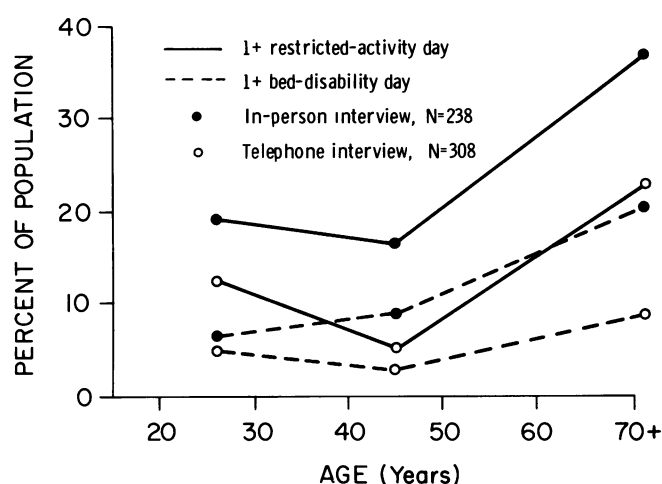


FIGURE 1—Occurrence of Any Restricted-Activity Days and Any Bed-Disability Days by Age and Interview Method, Los Angeles, 1980

specific differences are more likely to be related to characteristics of the items.

The restricted-activity days items differed from the other items in three major elements: they referred to a shorter two-week period, they were prefaced by a short lead-in, and they were among the first questions asked in the interview schedule. While the recall period was defined—in both methods—by specifying the date 14 days prior to the interview, in-person respondents were also shown a calendar on which this period was marked, and they may have been more precise about the period in question. Some telephone respondents may have used a recall period of less than 14 days, possibly referring instead to the last two calendar weeks. For those items referring to the past four months, the general effects of memory decay may tend to obscure any method differences in the precise delineation of the recall period. The early placement and short lead-in to the restricted-activity questions are essentially presenting a “cold” respondent with a “cold” stimulus. In contrast, for the illness episode questions, respondents have had the opportunity to become accustomed to the interview situation and can review the past four months while listening to the description of relevant illnesses and injuries. These two dimensions may have had a greater impact in the telephone than the in-person interview. For example, it may take longer to adjust to the interview situation on the telephone, or respondents may tend to respond more quickly, thus forgetting some relevant illness events, when the lead-in does not allow them adequate time to review the past.

Alternatively, these dimensions may elicit an indirect interviewer effect. For example, during the first few minutes, interviewers as a group may tend to interact differently in person than on the telephone. On the other hand, the same interviewer behavior may elicit a different type of response in the two mediums which dissipates with time as the interactional dyad adjusts to the situation.

To adequately assess effects related to these dimensions, further studies are needed in which dimensions such

as item placement are experimentally manipulated within each type of interview situation. The results of our study, however, suggest the need for care in defining relevant disability days and the precise recall period in both types of interview. An extended delineation of “restricted-activity” and precision in defining the two-week period could precede the actual questions and might lead to more comparable responses in the two interview methods.

While this study has concentrated on the one difference found between the two interview methods, it should be emphasized that overall the telephone interview results were comparable to those of the in-person interview. The two samples did not differ in their reports of the number of illnesses occurring in the four months prior to the interview, when those illnesses occurred, or whether they resulted in restricted activity. The samples were also similar in their perceptions of health status and in their reports of hospitalizations. Additionally, in an earlier report on this study, we found no differences in mental health reports as assessed by the Center for Epidemiologic Studies-Depression (CES-D) scale.¹⁰ Considering this general comparability of results, telephone interviews appear to be an acceptable, low-cost alternative to in-person interviews for community health surveys.

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The University of Minnesota announces 1982-83 dates for its graduate program for Working Long-Term Care Administrators. This unique national program combines residential study (September 20-24, 1982, January 17-21, 1983, and May 16-19, 1983), independent study, and organizationally applied written assignments. Administrators have an opportunity to develop their own organizations while they are enrolled in a program specifically designed to upgrade their professional skills in this increasingly complex area of health care.

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Health Careers Booklet Updated

The National Health Council recently announced the publication of an updated edition of its popular health careers booklet entitled, "200 Ways to Put Your Talents to Work in the Health Field."

The 1981 edition, printed in a handy 4" x 9" pocket size format, provides answers to many of the questions most frequently asked by persons interested in pursuing a variety of health careers: What kind of jobs are available? What about salaries? How should I select a school for training?

With the health field now ranked as the second largest industry in the country, employing more than 4.4 million workers, the ability to help others by working in a wide variety of stimulating health careers has never been more appealing. The booklet lists specific career opportunities and provides a brief description of the work involved and the educational and training requirements for entry into the field. The final section of the booklet lists 113 national organizations which can be contacted for more specific information—with annotations provided for those groups which can supply a list of training facilities as well as information about financial assistance programs.

The "200 Ways" booklet is designed to provide information to students who may be interested in a career in the health field, to persons already in the field who may wish to change careers or advance in their chosen field, and to guidance and career counselors, parents, teachers, and others who may be interested personally or on behalf of another.

First issued as part of a national television and print campaign in 1974, over 2 million copies of "200 Ways" have been distributed to date. The 1981 edition has been made possible through the support of the Blue Cross and Blue Shield Association of Greater New York as part of its efforts to upgrade and improve the quality of health care.

Single, free copies of the booklet are available by writing: National Health Council, Dept. 200, 70 West 40th Street, New York, NY 10018.

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