Results from studies that compare different methods of data collection may be confounded in many instances because of differences in response rates or sampling frames. Two alternatives to in-person interviewing were designed to overcome these confounding factors. One strategy utilized the telephone with in-person interviewing as a back-up when phone numbers were not available. The other strategy was a drop-off/pick-up, self-administered strategy. The telephone/field strategy was shown to be a viable alternative to in-person interviewing. The drop-off/pick-up strategy did not fare as well in comparison. Although response rates and costs were equivalent to in-person interviewing, the process was less enjoyable for respondents, and produced significantly different distributions on several sensitive measures.

Collecting Sensitive Data

A Comparison of Three Survey Strategies

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This study compares in-person interviewing with two alternatives.

A drop-off/pick-up, self-administered questionnaire. An interviewer delivers and picks up the questionnaire, explains the study and general instructions, motivates the respondent to participate, and sets a date for picking up the questionnaire. Interviewers assisted respondents who were unable to fill out the

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questionnaire by themselves. The drop-off/pick-up strategy does not have cost savings normally associated with self-administered methods, but this strategy had the potential of producing higher quality information at costs comparable to in-person interviewing.

Telephone with in-person follow-up. The sample was selected in the same way as it was for the in-person interviewing method. If telephone numbers did not exist or could not be found, interviews were conducted in person. This combined effort enabled contact with a sample equivalent to the in-person sample. This strategy, while more expensive than a pure telephone approach, can result in substantial savings over in-person interviewing if the majority of interviews are conducted on the phone.

METHODS

SAMPLE

An area probability sample of the Boston SMSA (Standard Metropolitan Statistical Area) was selected in the fall of 1977. To provide a sample that was geographically comparable for each data collection strategy, addresses of selected households were clustered in groups of 3. One address from each cluster was then randomly assigned to each of the 3 data collection strategies. The initial sample size consisted of 897 housing units, or 299 units for each of the methods. Assuming a 5% vacancy rate and a 75% response rate, we anticipated these samples would yield approximately 200 interviews/questionnaires for each strategy.

During the enumeration process, listers also tried to obtain the names of households, and all selected households were sent a letter describing the purposes of the study and asking for cooperation. For those households that fell into the telephone/field strategy, phone numbers were found by looking in telephone

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directories or city directories (when names were not available) or by calling the operator for information.

Assignments were given to sixteen professional interviewers with an equal number of addresses in each of the three data collection strategies. Half of the interviewers were instructed to begin work first on those households in the telephone/field strategy whose phone numbers were available; the other half of the interviewers began working first on their in-person and drop-off/pick-up households, plus households in the telephone/field strategy whose phone numbers were unavailable. After 60-75% of the initial assignment was completed, the interviewers would get permission from the office to begin work on the other part of their assignment.

Once the interviewer made contact with each household, a listing of all adults 18 years old or older was obtained and one respondent was randomly selected. In order to compensate for the unequal probabilities of selection due to differences in the number of adults per household, the analyses presented below are weighted. Weights were the reciprocal of the probability of being selected within the household (the number of adults in the household). These procedures produced a sample representative of the adult population in the Boston SMSA.

The interviews were designed to take about one-half hour to administer. Respondents were questioned about the following areas.

DEMOGRAPHICS

Questions were asked about age, sex, work status, education, religious preference, ethnic or racial background, marital status, household size, household composition, and family income.

LIFE SITUATION

Questions were asked about fifteen life events over the previous three-month period. Of the fifteen events, five were clearly negative (e.g., death in the family). Counts were made across all life events and across the negative events. Measures of life

happiness and satisfaction as well as Bradburn and Caplowitz's nine-item scale were asked. Their scale was divided into positive feelings and negative feelings.

DRINKING BEHAVIORS

The major focus of our study was drinking behavior. Respondents were asked their usual frequency of drinking, usual volume consumed on days person drinks, frequency of consuming five or more drinks at a time, whether person ever drank, volume consumed during each period that alcohol was consumed on the most recent day, how often they had difficulty stopping after starting to drink, how often they wanted to cut down on their drinking, whether or not they ever felt they had a drinking problem, and whether or not they currently felt they had a drinking problem. The first two measures (usual frequency and usual volume) were combined to yield a scale of average daily volume consumed.

Since problem drinking is viewed as socially undesirable, survey respondents may be tempted to underreport various drinking behaviors and problems. For example, comparisons of responses to Harris' national interview survey on drinking and national figures on alcoholic beverages sales suggested that the mean ethanol consumption rates in survey data reflect only about one-half the mean per capita consumption (Harris and Associates, 1973, 1974; Efron et al., 1972). At least a part of this discrepancy is probably due to underreporting (Armour et al., 1976).

When comparing the three survey strategies in this study, we focused on which strategy produced reports of higher levels of drinking and problems with drinking. Given the evidence of underreporting, the strategy that produced reports of more drinking or problems was considered to have produced more accurate data. In addition, data on other sensitive questions and on nonsensitive topics were compared. In these cases, we could only note differences in response distributions without a criterion to judge validity.

RESULTS

RESPONSE RATES

Response rates in the SMSA were: 71% for the in-person strategy, 73% for the drop-off/pick-up strategy and 76% for the telephone/field strategy. Although the response rates were 2-9% lower within the city of Boston, the same relative pattern of response rates for each strategy was found within the city of Boston and within the suburban areas.

In the in-person strategy, 3% of the interviews were conducted over the phone or were self-administered at the respondent's insistence. In the drop-off/pick-up strategy, 11% were conducted by interviewers in cases of reading difficulties, eyesight problems, or respondent insistence. Also, 6% were filled out while the interviewer waited. In the telephone/field strategy, 72% were completed on the telephone and 28% were conducted in-person. Of those done in-person, 83% were done so because a phone number for the household was not available; the remaining 17% were done in-person as a conversion of an initial refusal over the phone.

There were no differences on the twelve demographic characteristics measured between the two alternative strategies and the in-person method, with one exception. The telephone/field strategy found fewer people than the in-person method who described themselves as "working full-time" (38% versus 49%). In part, this may be due to the slightly better response rate in the telephone/field strategy, which may have been more successful in obtaining interviews from respondents who typically are hard to find or hard to interview (students, elderly, unemployed). There were no differences among the three strategies in reported family income, the demographic variable commonly considered most sensitive.

LIFE EVENTS AND HAPPINESS MEASURES

There was no significant difference in the overall number of life events or number of negative events mentioned across

TABLE 1

A Comparison of Response Distributions for Socially Undesirable and Socially Desirable Feelings on the In-Person and Drop-Off/Pick-Up Strategies

Items	Strategy	Response				Significance of Chi-Square Test
		Often	Sometimes	Seldom	Never	
Socially Undesireable						
Vaguely uneasy about something without knowing why	In-person	11%	28%	45%	16%	n.s.($p < .08$)
	Drop-off/ Pick-up	8	40	39	13	
Very lonely or isolated from other people	In-person	10	18	39	41	n.s.
	Drop-off/ Pick-up	8	24	32	36	
Bored	In-person	15	20	36	29	$p < .01$
	Drop-off/ Pick-up	13	33	35	19	
Depressed or very Unhappy	In-person	10	16	50	24	$p < .01$
	Drop-off/ Pick-up	6	29	42	33	
So restless you couldn't sit very long in a chair	In-person	18	21	31	30	n.s.($p < .09$)
	Drop-off/ Pick-up	20	29	31	20	
Socially Desireable						
Particularly excited or interested in something	In-person	38	39	22	1	$p. < .001$
	Drop-off/ Pick-up	30	54	12	4	
Pleased about having accomplished something	In-person	52	35	9	4	$p. < .01$
	Drop-off/ Pick-up	41	51	6	2	
Proud because someone complimented you on something you had done	In-person	32	48	19	1	$p. < .01$
	Drop-off/ Pick-up	41	51	14	1	
On top of the world	In-person	17	43	30	10	$p. < .03$
	Drop-off/ Pick-up	14	56	24	6	

strategies. The telephone/field strategy elicited fewer reports of a change in income, compared to the in-person strategy (16% versus 27%), but this was the only significant difference in reported individual life events. There were no significant differences between the alternative strategies on items that asked for overall happiness or life problem ratings.

Among the four socially desirable Bradburn and Caplowitz items, there were no significant differences in responses between the telephone/field strategy and the in-person strategy, but all of these items had significant differences when the in-person strategy was compared to the drop-off/pick-up strategy. The distributions reported in Table 1 indicate that the in-person

strategy gave higher proportions to *both* ends of the distributions; the drop-off/pick-up strategy had a greater proportion of persons responding in the "middle" category ("sometimes").

Significant differences between the in-person strategy and the telephone/field strategy showed in three of the five socially undesirable states. For one of these items (uneasy), there was no pattern to that effect; for the other two items (bored, depressed) the telephone/field stategy showed a greater proportion reporting "sometimes" (35% versus 20% and 31% versus 16%, respectively) and the in-person strategy showed more extreme responses.

On four of the socially undesirable items differences between the in-person and the drop-off/pick-up strategy approached or attained significance. For each, the drop-off/pick-up srategy produced more response in the middle of the scale—the "sometimes" response (see Table 1).

DRINKING

The in-person strategy produced a greater proportion of respondents who reported an average daily consumption (a combination of reported usual frequency and usual volume of alcohol consumed) of one drink or more than the drop-off/pick-up strategy (33% versus 23%). Also, the in-person strategy gave a higher proportion of respondents who reported drinking on "five or more days last week" (21% versus 13%).

The comparisons of the in-person strategy with the telephone/field strategy found one significant difference: The in-person strategy elicited more reports of "ever having had a drinking problem" (22% versus 12%). No significant differences in reported levels of drinking were observed on the rest of the fourteen drinking measures when the in-person strategy was compared to the two alternative strategies (see Table 2).

MISSING DATA AND RESPONDENT SATISFACTION

The proportion of "missing" responses for any one respondent was never more than 3% in any of the strategies, but the proportion of respondents who provided complete data was sig-

TABLE 2
Summary of Significance of Chi-Square Tests on Comparisons Between In-Person Interviewing and Two Alternative Strategies on Reported Drinking Behaviors

Item	In-Person versus Telephone/Field	In-Person versus Drop-off/Pick up
Usual Frequency of Drinking	n.s.	n.s. ($p < .10$)
Usual Volume Consumed	n.s.	n.s.
Average Daily Volume	n.s.	$p < .01$
Frequency of Heavy Drinking	n.s.	n.s.
Ever Drank Steadily	n.s.	n.s.
# Days Drank Last Week	n.s.	n.s.
Drank During Lunch	n.s.	$p < .02$
Drank During Afternoon	n.s.	n.s.
Drank During Dinner	n.s.	n.s.
Drank After Dinner	n.s.	n.s.
Difficulty in Stopping	n.s.	n.s.
Desire to Cut Down	n.s.	n.s.
Ever Had a Drinking Problem	$p < .01$	n.s. ($p < .10$)
Currently Have a Drinking Problem	n.s.	n.s. ($p < .10$)

nificantly less for the drop-off/pick-up strategy. On the drinking items, 82% of the drop-off/pick-up respondents answered all questions compared to 93% of the in-person strategy respondents and the telephone/field strategy respondents. On the larger block of nondrinking items, 47% answered all of the questions in the drop-off/pick-up strategy compared to 71% of those interviewed by the in-person strategy and 72% in the telephone/field strategy.

When asked at the end of the interview/questionnaire how they liked it, 17% of the respondents in the drop-off/pick-up strategy said they disliked it "somewhat" or "very much" compared to 6% in the in-person strategy or in the telephone/field strategy.

Because the telephone/field strategy found a different proportion of "full-time employed" persons, there was some concern

that differences between this strategy and the in-person method were obscured. Therefore, all comparisons were made again, but limited to "full-time workers." The results were very similar to the comparisons made for all respondents.

TELEPHONE VERSUS FIELD

Use of a combined telephone/field strategy was based on the assumption that the data obtained from part of the sample using one method would be similar to data obtained from the other part of the sample using the other method. This assumption was tested directly by splitting the telephone/field strategy interviews into two groups: those interviewed by telephone, and those interviewed in person.

The pattern of results was similar to the cross-strategy comparisons. The proportions who reported "ever having a drinking problem" and "a change in income" were higher in person than over the telephone. In addition, the proportions were higher in person than on the telephone for those who reported "making a new friend" (70% versus 48%) and "having more disappointments than others" (26% versus 9%). On the other hand, those differences on the socially undesirable Bradburn and Caplowitz items found in the cross-strategy comparison were not found when comparing within the telephone/field strategy.

DISCUSSION AND CONCLUSIONS

This study has demonstrated that a combined telephone/field strategy can be a viable alternative to in-person interviewing. This alternative is less costly, can provide a higher response rate, is equally enjoyed by respondents, and, save for one extremely sensitive item, (Have you ever had a drinking problem?). The results here were equivalent. This strategy may be particularly appropriate when random digit dialing is not suitable because of a lack of phone ownership among important population subgroups, or when focusing on geographic units that do not correspond well to phone exchange boundaries.

This study also has demonstrated that substantially improved data do *not* result from a drop-off/pick-up, self-administered questionnaire. This strategy overcame response rate problems, but was as expensive as the in-person interviewing, was less enjoyable for respondents, and produced less complete data than the in-person method. The self-administered strategy produced more responses in the middle categories on Bradburn and Caplowitz items. It is not known whether this constitutes more, or less, valid data.

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