

# RESPONSE RATES AND RESPONSE CONTENT IN MAIL VS. FACE-TO-FACE SURVEYS<sup>1</sup>

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Administering questionnaires by mail is the most common form of survey research, due in good part to the fact that mail surveys are typically easier to carry out and less expensive than either telephone or face-to-face interviewing (Dillman, 1991). Historically, mail surveys have been criticized for inadequate response rates, which are usually lower than both telephone and face-to-face modes. Considerable research has been devoted to developing techniques to improve mail survey response rates and these efforts have paid off. There is evidence that in some cases one can achieve response rates in mail surveys that are nearly as high as those obtained with face-to-face interviews.

Although increasing response rates of mail surveys has been a priority of survey methodologists, the related issue of coverage has received little attention (Dillman, 1991). In particular, mail surveys often draw their samples from sources such as telephone directories, organization membership lists, and customer lists. The limitations of this for the generalizability of results is well-established and consequently mail surveys are sometimes regarded as inappropriate for gathering information from the general public. What has not been established is whether mail surveys can successfully use area probability sampling to obtain information from the general population.

## Coverage and Response Rates.

There are two reasons to believe that mail surveys based on area probability samples might obtain lower response rates than face-to-face surveys. First, reports of mail response rates comparable to those obtained in face-to-face interviews may be the result of differences in the types of people who compose the different samples, rather than reflecting

equal success in obtaining all kinds of respondents. Second, in an area probability sample we do not have the names of the respondents, and thus we cannot personalize the mailings -- something that mail survey methodologists recommend highly for improving cooperation.

## Response Effects.

We are also interested in whether people who do respond will answer questions differently depending on the mode of data collection. There are several reasons this might happen: first, the presence of an interviewer in a face-to-face study may lessen the sense of confidentiality and anonymity and thus result in less candid, more socially desirable responses than are given in a mail survey.

Second, the two modes of administration have different cognitive demands (including memory requirements, context, interviewer control, and verbal versus written presentation of the questions and possible answers) which may create mode differences. For example, it has been argued that the order in which response options are listed may affect responses differently for different modes. Primacy effects -- the tendency to choose the response option listed first -- are more likely to occur in written presentations, while recency effects -- the tendency to choose the response option listed last -- are more likely to occur in oral presentations (Krosnick and Alwin, 1987). More generally, however, researchers have begun to recognize that mode differences in response content cannot be attributed to any single cause (Dillman and Tarnai, 1991). It is likely that differences are due to a combination of factors, depending in part on the nature of the question being asked.

We draw on results from the Tri-County study, a mail survey conducted in conjunction with the 1992 face-to-face Detroit Area Study, in order to explore the two main issues outlined above. First, we test the extent to which a mail survey can successfully use an area probability sample -- the method typically employed in face-to-face surveys -- to gather information from the general population. Second, we investigate whether mode of administration affects responses to controversial racial attitude questions. Because the mail and face-to-face surveys were conducted at the same time -- spring and summer of 1992 -- by the same sponsoring institution and used the same basic sampling frame, this study contributes

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to an existing literature on mode effects that has often relied on special samples or on data collected at different times and with different sponsoring institutions.

## RESEARCH DESIGN

### Face-to-Face Procedure.

Each year, the Detroit Area Study (DAS) develops an area probability sample for its face-to-face surveys. In 1992, the DAS sampling procedure classified sample segments into two strata in order to oversample African American respondents. Therefore, our results are presented separately for the two strata, defined as: a predominantly black stratum said to be 70 percent or more black, and a predominantly white stratum said to be less than 70 percent black. In fact, the actual separation was much sharper: according to the 1990 Census figures, the predominantly black stratum was 93 percent black, and the predominantly white stratum was 7 percent black. The final face-to-face sample sizes for the two strata were 776 in the predominantly white stratum and 511 in the predominantly black stratum.<sup>2</sup>

An hour-long interview was conducted with an individual randomly chosen by the interviewer within the selected household. Attempts were made to match the race of respondent and race of interviewer: this was achieved for 93 percent of the white respondents and 90 percent of the black respondents. A gift-boxed University of Michigan pen (cost per unit of \$3.75) was sent ahead of time to each respondent as an incentive.

### The Mail Procedure.

The mail survey used the same sampling frame developed for the face-to-face survey, drawing unused addresses from the same segments. The ratio of the face-to-face to mail respondents was approximately constant across all segments. Although the face-to-face study oversampled from the predominantly black stratum, because of additional research goals for the mail survey we did not oversample from this stratum. Completed surveys

<sup>2</sup> In the predominantly black stratum, the mail survey sample was drawn not from all segments, but from a random subset of the total pool of segments. For comparison purposes, our analysis of the predominantly black stratum will be restricted to only those segments included in both the mail and the face-to-face comparison samples. This reduces our face-to-face comparison sample from 767 to 511 for the predominantly black stratum.

were returned from 351 of the 487 households in the predominantly white stratum and from 39 of the 88 households in the predominantly black stratum.

Our mail questionnaire, consisting of 45 items, was produced in the form of an attractive eight page booklet. We requested that the individual in the household who had the most recent birthday complete the questionnaire. The extent to which households followed this procedure is unknown, although analyses presented later in this paper suggest that it was in general done.

We followed closely Dillman's (1978) strategies for maximizing response rates, except that we were unable to personalize our mailings -- all correspondence was addressed to "Michigan Neighbor" -- and we included a \$1.00 incentive on the basis of considerable evidence of its effectiveness in boosting response rates (James & Bolstein, 1992). Five sequential mailings were employed.

Although the mail and face-to-face questionnaire contained an overlap of several questions, they did differ from one another in two respects. First, the face-to-face interview required a greater time commitment from its participants: an average of one hour; the mail questionnaire could be completed in five to ten minutes. Thus, the mail survey response rate we obtain is likely to overestimate the rate we would find for a questionnaire approximating the length of the face-to-face survey instrument. Second, even though the overlapping questions were identical in wording, the order and context of the questions differed somewhat for the two modes. We cannot completely rule out effects due to question order, though our focus is on questions where other interpretations of differences would appear to be more likely.

## RESULTS

### Response Rate Differences.

The final response rates for the two surveys, separated by the predominant racial composition of the stratum, are shown in Table 1.

In the predominantly white stratum, the face-to-face survey achieved a four percent higher response rate than the mail survey -- a difference that reaches borderline significance. In striking contrast, in the predominantly black stratum, the face-to-face survey yielded a considerably higher response rate than the mail mode -- a 39 percent difference. Thus, the face-to-face survey was clearly much more successful in

obtaining a satisfactory response rate in the predominantly black stratum than the mail method.<sup>3</sup>

The explanation for the failure of the mail survey to obtain an acceptable response rate in the predominantly black stratum is not entirely clear, although similar findings of a large gap in response rates between predominantly white and predominantly minority populations are reported by Dillman and others (in press) in a series of mail survey experiments sponsored by the U.S. Census Bureau. Using 1990 Census data from our sample segments to compare the black and white strata, it is evident that in addition to racial composition, the two strata differ along several other characteristics. The tracts in the predominantly black stratum had, on the average, lower incomes, lower housing values and lower education levels and were located almost exclusively within the city of Detroit.

Because the mail sample for the predominantly black stratum was small, it is not possible to analyze the data from that stratum further to determine whether the low response rate was due mainly to race or to correlates of race, such as income, education, and geographic location. Also because of the small sample size, further analysis of mode differences will be restricted to the predominantly white strata.

#### Differences in Respondent Characteristics

Although there was not a large difference in response rates by mode for the predominantly white stratum, it is important to consider whether the type of people who respond to mail surveys are different than those who respond to face-to-face surveys. Direct questionnaire and Census data indicate that within the predominantly white stratum there are no mode differences along a number of traits, such as gender, race, age, years living in the Tri-County area, education and economic status.

Thus, there is no evidence that certain groups are underrepresented in mail surveys within the predominantly white stratum. However, it is

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<sup>3</sup> Our design involved both cluster effects and a control for such effects by drawing our mail and face-to-face samples in fixed expected proportions from each segment. Therefore, we also ran the Cochran-Mantel-Haenszel test in SAS for both the "a" and the "b" comparisons in Table 1. The outcome was essentially the same as in the case of the overall chi-square results:  $p = .10$  within the predominantly white stratum and  $p < .001$  within the predominantly black stratum.

important to keep in mind that this stratum is much better off, has more formal education, and is less racially and geographically diverse than the Tri-County area as a whole. Consequently, although the predominantly white stratum shows no demographic differences between mail and face-to-face survey respondents, it is clear from the large response rate differences in the predominantly black stratum that mail surveys of this type do seriously underrepresent parts of the total population.

#### Response Content Differences

The mail and face-to-face surveys had ten attitude questions in common. In this paper we focus on just six of them. The results presented in Table 2 show a number of differences in answers to the mail and face-to-face surveys in the predominantly white stratum.<sup>4</sup>

Because we found no differences in the background characteristics of the two samples, it is likely that the observed differences are due to mode of data collection rather than to differences in the type of respondents. However, the interpretation of observed mode differences need not be the same for each of the questions.

Our original concern in this study was with possible differences in candor on responses to questions about sensitive racial issues. We hypothesized that respondents would be more likely to express more conservative racial attitudes when they filled out a mail questionnaire than when they were asked similar questions by an interviewer in a face-to-face study. The results for the three racial attitude questions provide support for this hypothesis. Mail survey respondents were more likely to oppose affirmative action programs for blacks, more likely to report that reverse discrimination against whites was likely to happen, and more likely to oppose open housing laws than respondents in the face-to-face interview.

A set of questions about neighborhood satisfaction provide more puzzling findings. Our hypothesis about the role of social desirability did not lead us to expect these neighborhood questions to differ between the two modes. However, there were clear-cut mode differences: respondents in the mail survey were more likely to report having problems in their neighborhood than respondents to the face-to-face study. The relatively neutral topic of these questions, in contrast to the more controversial racial

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<sup>4</sup> None of the dichotomous questions was skewed, and so mean responses and F-Ratios are used for ease of presentation and comparison across all the items.

questions, does not make the argument of increased candor seem plausible in these cases.

Although not explicitly predicted, in hindsight our methods and results seem to fit most closely with a primacy/recency interpretation. In our study, the neighborhood satisfaction questions were the only items in which respondents to the face-to-face survey were not provided with a visual presentation of response options. Thus, the face-to-face and mail modes differed in whether the presentation of response options was oral or verbal, raising the possibility of recency effects in the face-to-face mode and primacy effects in the mail mode.

Inspection of the distribution of responses (not shown) provides some support for this interpretation. Respondents to the face-to-face survey, who heard but did not read the response options, were more likely than the mail survey respondents to give the most recent response option ("not a problem"). Mail survey respondents, in turn, showed some evidence of a primacy effect -- they were about twice as likely as face-to-face respondents to say "always a problem" for two of the three neighborhood items.

Other researchers have also found mode effects on a similar set of questions. However, while we interpret our findings as a recency/primacy effect, these results seem to run counter to this interpretation. Dillman and Mason (1984) found that respondents were more likely to report "no problem" in the face-to-face and telephone mode than the mail mode. However, the order of the response options for their study was the reverse of ours -- the option of "no problem" offered first, rather than last. Furthermore, while our results also indicate a primacy effect (the mail survey respondents were more likely to choose the first response option than face-to-face respondents) there is no evidence for this in Dillman and Mason's results. We are unable to account for the discrepancy between these results and those of our study.

## CONCLUSIONS

Our results about response rates are both encouraging and discouraging. First, we are encouraged by the finding that among respondents residing in the predominantly white stratum we obtain response rates nearly comparable to a face-to-face survey of the same population, despite, among other things, the inability to personalize mailings to potential respondents. Furthermore, there are no differences in demographic characteristics between the respondents to the two types of surveys.

The discouraging news, however, is that in the predominantly black stratum -- characterized by

lower levels of education, income, and housing values, and higher levels of city (as opposed to suburban) residence -- mail surveys do quite poorly. Whether this low response rate is a function of education, income, geography, or race is an unanswered question. A further possibility is that the acknowledged sponsor of the survey, a University remote from the city of Detroit, contributed to the reduced response rate. Further research is needed to answer this question (e.g., experimental variation of sponsorship), and to develop strategies to overcome the problem so that mail surveys can become a useful tool for gathering information from the total population. In addition, even for the predominantly white stratum, we must keep in mind that the questionnaire was much briefer in the mail survey than in the face-to-face interview.

Focusing on the predominantly white stratum, we find that mail and face-to-face surveys obtain nearly comparable response rates, but show considerable response content differences. There is compelling evidence of a mode effect for questions about sensitive or controversial racial attitudes. Respondents to the face-to-face interview give more socially desirable answers than mail survey respondents. There is also evidence that other forces are operating: seemingly non-sensitive questions about neighborhood satisfaction also show reliable mode differences, perhaps due to recency effects in the face-to-face survey.

Closer inspection of these mode differences indicates that they vary depending on level of education.<sup>5</sup> If there appears to be a fairly clear socially desirable response, the mode of administration appears to have a stronger affect on those with more formal education. For the questions that seem to have a more cognitively based interpretation, there is the opposite effect: it is considerably stronger among those with less than a high school education.

Our conclusions about the relative merits of mail and face-to-face surveys of the general public are mixed. A brief mail survey of a predominantly white metropolitan population can evidently obtain a response rate that nearly matches that of a much more expensive face-to-face survey. Moreover, differences in answers between the two modes can plausibly be interpreted as indicating that the self-administered mail

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<sup>5</sup> Due to length limitations, the results of the analysis of the relationship between mode effects and education are not presented in this version of the paper. A paper that includes a more complete discussion of this and other more detailed analyses is available from the authors.

survey is less subject to both social desirability and response-order effects. Of course, these virtues are quite likely purchased at the cost of restricting the mail survey instrument to a limited set of questions that can be answered in just a few minutes and with some uncertainty as to exactly who filled out the questionnaire. And for a survey of the total population, including in our case the predominantly black areas of the metropolitan region, a mail survey yields a substantially lower response rate than the face-to-face mode, which points to the need for the latter approach if sampling bias is to be minimized. Finally, these conclusions are based on a single experiment and one where questionnaire length and some other relevant variables could not be controlled: replications with additional variations are clearly called for.

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#### QUESTION WORDING

##### AFF ACTION - BLACK

Some people feel that because of past disadvantages there are some groups in society that should receive special job training and educational assistance. Others say that it is unfair to give these groups special training and assistance. Do you strongly favor, favor, neither favor nor oppose, oppose, or strongly oppose special job training and educational assistance for blacks? (1=Strongly Favor, 5= Strongly Oppose)

##### OPEN HOUSING

Suppose there is a community-wide vote on the general housing issue. There are two possible laws to vote on. One law says that homeowners can decide for themselves who to sell their house to, even if they prefer not to sell to blacks. The second law says that a homeowner cannot refuse to sell to someone because of their race or color. Which law would you vote for? (1=Homeowner can decide, 2=Owner cannot discriminate)

##### REVERSE DISCRIMINATION

What do you think the chances are these days that a white person won't get a job or promotion while an equally or less qualified black person gets one instead? Is this very likely to happen, somewhat likely, somewhat unlikely, very unlikely, or can't you say one way or the other? (1=Very likely, 5=Very unlikely)

##### NEIGHBORHOOD QUESTIONS

Thinking about your own neighborhood, please indicate whether the following are always a problem, often a problem, sometimes a problem or never a problem in your neighborhood (1=Always a Problem, 4=Never a Problem)

##### CITY SERVICES

...City services such as street cleaning or garbage collection.

##### PROPERTY NOT KEPT UP

... Housing and property not being kept up.

##### CRIME

.... Crime or vandalism.

Table 1

Response Rates by Mode of Administration and Racial Composition of the Strata.

<u>Predominantly White Stratum</u>		<u>Predominantly Black Stratum</u>	
(a)	(b)	(c)	(d)
<u>Mail</u>	<u>Face-to-Face</u>	<u>Mail</u>	<u>Face-to-Face</u>
72.1 % (487)	76.2 % (1021)	44.3 % (88)	83.0 % (511)
	<u>X<sup>2</sup> (df)</u>	<u>p-value</u>	
a vs. b	2.98 (1)	.08	
c vs. d	63.9 (1)	< .001	
a vs. c	26.3 (1)	< .001	
b vs. d	9.2 (1)	.002	

Table 2

Mean Responses to Attitude Questions on Mail versus Face-to-Face Surveys (Respondents in Predominantly White Stratum)

Question	Mean Response	Sign. of F-Test	Eta-Squared (in %)
<b><u>Racial Attitudes</u></b>			
<b>AFF ACTION -- BLACKS</b>			
Mail	2.74	.000	2.26 %
Face-to-Face	2.38		
<b>OPEN HOUSING</b>			
Mail	1.48	.000	2.25 %
Face-to-Face	1.64		
<b>REVERSE DISCRIMINATION</b>			
Mail	2.43	.032	0.40 %
Face-to-Face	2.60		
<b><u>Neighborhood Satisfaction</u></b>			
<b>CITY SERVICES</b>			
Mail	3.58	.003	0.8 %
Face-to-Face	3.70		
<b>PROPERTY NOT KEPT UP</b>			
Mail	3.31	.000	2.0 %
Face-to-Face	3.53		
<b>CRIME</b>			
Mail	3.11	.000	2.6 %
Face-to-Face	3.35		