

EFFECTS OF BENEFITS APPEALS, MANDATORY APPEALS AND
VARIATIONS IN STATEMENTS OF CONFIDENTIALITY ON
COMPLETION RATES FOR CENSUS QUESTIONNAIRES

Don A. Dillman, Eleanor Singer, Jon R. Clark, and James B. Treat, Bureau of the Census
Don A. Dillman, Bureau of the Census, Room 3067, Bldg. 3, Washington, DC 20233

Key Words: Mail Survey, Completion Rates, Confidentiality, Appeals

Although it has been argued that emphasizing the benefits of a survey to respondents and/or groups with which they identify is important to improving survey response (Houston and Nevin, 1977; Dillman, 1978), this proposition remains relatively untested. In this paper we report the impact of a benefits appeal on completion rates for census mailback questionnaires and compare it with the influence of a mandatory appeal.

Similarly, it has been reasoned that confidentiality assurances are more effective in stimulating response when gauged to the sensitivity of the questions asked (Singer, Hippler, and Schwarz, 1992; Singer, Von Thurn, and Miller, 1993). A second purpose of this paper is to compare the influence of a "strong" vs. a "standard" assurance of confidentiality on mailback response to the same questionnaires. Motivating these experiments was the fact that the mailback response rate to the 1990 Decennial Census was 10 percentage points lower than that achieved in 1980 (65% vs. 75%). The additional cost of enumerating these households in person is currently estimated at more than \$170 million.

Three previous experiments had shown that response to census questionnaires could be increased significantly by the use of respondent-friendly questionnaire construction, prenotice letters, reminder postcards and replacement questionnaires (Dillman, Sinclair, and Clark, 1993; Clark, Dillman, and Sinclair, 1993; Clark, West, and Dillman, 1994). The combined use of these factors, when tested in a noncensus year, produced completion rates of approximately 68 percent. This level of response represents an improvement of 26 percentage points over the estimated response of 42 percent achieved by simply sending a FOSDIC-style short-form questionnaire like that used in the 1990 Census, without prenotices, reminders, or a replacement questionnaire. The potential impact of the benefits, mandatory, and confidentiality appeals tested here is measured in the presence of these response-inducing factors.

PREVIOUS RESEARCH

Dillman (1978) has argued on theoretical grounds that in order to improve response to mail surveys it is important to emphasize the benefits of responding. Utilizing a social exchange approach, he argued that the respondent is more likely to respond if she or he believes that in the long run the anticipated benefits of responding outweigh the anticipated costs. The expected benefits need not be for the respondent *per se* but can be for groups with which the respondent identifies positively.

Houston and Nevin (1977) identified three distinct types of appeals for testing: social utility, i.e., helping the population of which the respondent is a member; helping the sponsor; and egoistic appeal, i.e., emphasizing benefits to the recipient of the questionnaire. Linsky (1975), in a review of research appeals, found only one study that tested experimentally a social utility argument, and three that tested other appeals for help. He concluded that neither the appeals for help nor social utility arguments improved response. Childers, Pride, and Ferrell (1980) compared egoistic, help-the-sponsor, and social utility appeals in separate surveys of academics and businesses. In neither case did any of the appeals improve response rates. However, this study, as well as those reported by Linsky, is limited in the influences that can be drawn from them by low response rates (ranging from 28-39%), and other design limitations, for example, specialized populations.

The influence of emphasizing to questionnaire recipients that their response is mandatory has not, to our knowledge, been tested before on general population surveys, probably because response to most surveys is voluntary. The U.S. Census may be the only survey to which the general public is required by law to respond. However, tests of this concept have been made in several Census Bureau surveys of businesses in which response is mandatory. These business survey tests utilized a message, "Your Response Is Required by Law", placed in a box on the envelope with the words "U.S. Census Form Enclosed" in smaller type. This message has been found to improve response rates by 20 percentage points or

more, even when multiple contacts are made (Tulp, Hoy, Kusch, and Cole, 1991). Some of these tests were made using bulk rate mail, and placement on the envelope may have served the purpose of keeping what might otherwise appear to be "junk mail" from being thrown away. It is unknown whether individuals, for whom the threats of not responding (fines and legal fees) may seem more remote than to a business, will respond similarly.

Evidence exists that a stronger assurance of confidentiality is counterproductive with nonsensitive data (Singer, Hippler, and Schwarz, 1992), but produces better responses when the data are sensitive (Singer, Von Thurn, and Miller, 1993). We hypothesized that emphasizing the mandatory nature of response would increase the sensitivity of the otherwise rather nonintrusive (for most people) information requested on the census short form (i.e., name, gender, date of birth, relationship to person in whose name residence is owned or rented, Hispanic ethnicity, race, and a few questions about the residence), and that therefore a "stronger" assurance of confidentiality should increase response.

EXPERIMENTAL DESIGN

The experimental design involved two independent variables, appeals (benefits vs. mandatory) and confidentiality (standard vs. strong). They were combined in a 2 x 2 factorial design with two additional panels: a control panel which carried no appeals message at all; and a panel in which the mandatory message appeared on the envelope only.

To achieve maximum impact, the experimental panels put the mandatory and the benefits messages in two places--the outside of the envelope and the front cover of a motivational insert. Messages on the outside of the envelope were "Your Response Is Required by Law," and "It Pays to Be Counted in the U.S. Census." On the flap of the motivational insert the benefits message had a heading, "Why It Pays to Be Counted in the Census," with four bulleted reasons listed below. The flap with the mandatory message stated, "A United States Law Requires that This Census Form Be Answered," followed by an explanation of why. In effect, the flap messages expanded upon the short statements on the outside of the envelopes.

Both confidentiality messages were placed on the lower fourth of the inside of the motivational insert, itself a folded sheet of 8-1/2" x 11" paper. The remaining part of the page was utilized for a common message under the headings of "Being Counted Helps Your Community," "It Helps Assure Fair Representation in Government," "It Saves Tax Dollars," and the

"Law Requires It." The standard confidentiality message was displayed in the same manner as the other four messages on this page under the heading "Your Answers Are Confidential." The strong confidentiality message was titled, "A Personal Message from the Director About Confidentiality." The wording was the same as the standard version except for the addition of the sentence, "All employees, including myself, must sign an oath not to reveal, now or in the future, any person's individual answers to the census," and the name and signature of the Acting Director of the Census Bureau. Also, this message was printed against a lightly colored blue background in order to emphasize it. The graphic design of the motivational insert utilized variations in only one color of ink (blue) for all printing, with the color being chosen to match that used for the questionnaire.

All treatment groups received a prenotice letter, a respondent-friendly eight-page booklet questionnaire containing all of the questions asked in the 1990 Census short form folded and mailed in a 9-1/2" x 6" envelope with a business reply envelope, a reminder postcard, and a replacement questionnaire (nonrespondents only). All pieces of mail were addressed to "residents" at the household address (names of occupants are not available for use in census mailings) and sent with first class postage. Prenotice letters were mailed July 9, 1993, the questionnaire on July 12, the reminder card on July 15, and the replacement questionnaire on August 5.

The front of the questionnaire used in all treatments contained a heading (in bold type), "The 1993 National Census Test," and a cover letter "To members of the households selected for participation in the 1993 National Census Test." The fourth paragraph of this letter contained the statements, "A Federal law requires that all Census Bureau workers and I keep your replies to this survey confidential. The law (Title 13, United States Code) that protects your information also requires that you answer this survey...." Thus, all treatments contained information on confidentiality and the mandatory nature of the return. However, playing down the mandatory nature of response by placing that information in the dependent clause of a sentence, and inconspicuous placement on the page, made these messages likely to have little or no impact on respondents, and were part of the justification for this experiment.

SAMPLE DESIGN

A national sample comparable to those used in the three previous experiments was utilized for this study, details of which are described by Treat (1993). The universe consisted of all housing units in the

questionnaire mailback areas as identified by the Census Bureau's 1990 Census Address Control File. Housing units included in previous Census Bureau studies were excluded from this universe.

Two strata were defined for this test. One was defined as Low Response Areas (LRA) and the other as High Response Areas (HRA) in the 1990 Census. The 449 district office areas for the 1990 Census were selected as the geographic units for defining the strata. Because of a high correlation between the minority rate (minority was defined as including all black and Hispanic classifications) and the 1990 Census mail response rate, the stratification objectives were met by ranking the district offices by their percent minority.

The first stratum consisted of 67 district offices with a high minority population. The 67 district offices had a combined minority population (Black and/or Hispanic origin) of about 64 percent and encompassed about 11 percent of all housing units in the census mailback areas. The second stratum consisted of 382 district offices with a combined minority population of about 15 percent. In the 1990 Census the district offices in the HRA stratum had a cumulative mail response rate approximately 10 percentage points higher than the district offices in the LRA stratum.

A sample of 30,000 housing units was selected, with 15,000 units in each stratum. Each stratum, in turn, was divided into six equally sized panels in order to test the six different short-form treatments. The sample was clustered in order to reduce the sampling variance in the treatment-to-treatment comparison. A systematic sample of 2,500 housing units was selected for each treatment within each stratum. For each housing unit selected, five subsequent units also were selected. The resulting housing units in each cluster were randomly allocated to each treatment. Specifically, the sample size selected (30,000 units, 15,000 per stratum) was deemed sufficient for detecting a minimum of a 3.0 percent difference between treatments at the national level at the 0.10 level of significance. The national completion rate estimates for a given treatment as presented in this paper are computed by dividing the weighted total of the number of questionnaires returned by the weighted total number of forms mailed out less Postmaster Returns. For the stratum level, the estimates are obtained without the weights.

Postmaster returns were deleted for purposes of calculating completion rates. A case was considered a postmaster return if both the initial and the replacement questionnaires were returned by the United States Postal Service (USPS) as undeliverable.

STATISTICAL INFERENCE

Completion rates were calculated for each of the treatments within stratum and at the national level (strata 1 and 2 combined). Standard errors for the national estimates are computed using the Stratified Jackknife variance procedures (Wolter, 1985). The estimates were produced by the VPLX statistical software procedure. Standard errors for the within-stratum estimates were computed using the formula for the simple random sampling jackknife variance procedures.

Because of the various hypotheses being tested, all possible pairwise comparisons between the six treatments (15 total) can be analyzed in the experiment. The more comparisons made, the greater the potential that some of them will be declared significant when they are not. To prevent this, additional statistical measures are employed to control the overall error of the decision process.

The analysis has been carried out so that statements about the entire "family" of 15 pairwise comparisons by stratum and at the national level are made while maintaining the 90 percent confidence level simultaneously for all comparisons. All 90 percent confidence intervals were adjusted using the procedure in Hochberg and Tamhane (1987) for comparing pairwise contrasts of the test treatment estimates for a balanced equicorrelated design. Woltman (1993) discusses the use of the procedure in the response rate experiment program. With six test treatments, a multiplier of 2.59 was applied when calculating the confidence intervals.

FINDINGS

COMPLETION RATES

The overall completion rates and standard errors for each of the treatments at the national and stratum levels are presented in Table 1. For the treatments with the mandatory motivational message (4, 5, and 6), the completion rates at the national level were between 76.4 percent and 78.1 percent. At the HRA level, treatment 5 had a completion rate of 80.5 percent, and treatments 4 and 6 had completion rates of 79.3 percent and 78.5 percent, respectively.

THE EFFECT OF THE APPEAL STRATEGIES

1. The Confidentiality Statement

Table 2 shows the effect of the confidentiality statement on completion rates. Two comparisons are shown. The first comparison is between treatment 3 (standard) and treatment 2 (strong). Both treatments received the full benefits motivational message. The second comparison is between treatment 5 (standard)

and treatment 4 (strong). Both treatments received the full mandatory motivational message. Neither difference is statistically significant at the national, the HRA, or the LRA levels. Therefore, there is no evidence that a strong confidentiality assurance increases the likelihood of response in this survey.

2. The Full Benefits Motivational Message

Also in Table 2, the comparisons indicate the effect of the full benefits motivational message with the standard or strong confidentiality statement on the insert. The first comparison (2 - 1) evaluates the effect on the completion rate of the full benefits appeal with the strong confidentiality statement. The second comparison (3 - 1) evaluates the effect on the completion rate of the full benefits appeal with the standard confidentiality statement. None of the comparisons at the national, the HRA, or the LRA levels are statistically significant. Since there is no difference between the standard confidentiality statement and the strong confidentiality statement, we combined the two treatments (2 and 3). Therefore, the last comparison [(2&3) - 1] evaluates the effect on the completion rate of the full benefits appeal with either the standard or the strong confidentiality statement. Like the two previous comparisons, none of the differences at the national, the HRA, or the LRA levels are statistically significant.

3. The Full Mandatory Motivational Message

The comparisons in the third level of Table 2 indicate the effect of the full mandatory motivational message with the standard or strong confidentiality statement on the insert. The first comparison (4 - 1) evaluates the effect on the completion rate of the full mandatory appeal with the strong confidentiality statement. The second comparison (5 - 1) evaluates the effect on the completion rate of the full mandatory appeal with the standard confidentiality statement. The third comparison is the combination of treatments 4 and 5 with treatment 1 [(4&5) - 1]. Treatments 4 and 5 have been combined since there is no difference between the standard and the strong confidentiality statements. For all three comparisons at the national, the HRA, and the LRA levels the full mandatory appeal produces a statistically significant higher completion rate. At the national level the estimated difference was 10.3 percent (4&5 - 1).

4. The Mandatory Insert

The fourth level of Table 2 contains the comparisons which indicate the effect of the mandatory motivational message without the insert. The first comparison (6 - 4) is between the mandatory appeal without the insert and the full mandatory appeal with the strong confidentiality statement. The second comparison (6 - 5) is between the mandatory appeal

without the insert and the full mandatory appeal with the standard confidentiality statement. The third comparison is the combination of treatments 4 and 5 with treatment 6 [6 - (4&5)]. Treatments 4 and 5 are combined since there is no difference between the standard confidentiality statement and the strong confidentiality statement. For the three comparisons, the difference is not statistically significant at the national, the HRA, or the LRA levels.

The last comparison (6 - 1) indicates the effect of the mandatory motivational message without the insert in relation to the control group. At the national, the HRA, and the LRA levels the mandatory appeal without the insert produces statistically significant higher completion rates. The estimated differences are 9.1 percent, 9.2 percent, and 8.4 percent at the national, the HRA, and the LRA levels, respectively.

DISCUSSION AND CONCLUSIONS

The main finding of this study is that use of a mandatory appeal can dramatically improve completion rates for census questionnaires in noncensus years. Further, most of that increase can be achieved by simply printing the message, "Your Response is Required by Law" on the outside of the envelope. The increase of 9.3 percentage points observed here comes on top of a 67.2 percent completion rate achieved by the use of factors tested in previous experiments.

Neither this experiment, nor the previous ones, can tell us what influence these factors would have on completion rates obtained during a census year. Past Census Bureau research has shown that completion rates obtained during noncensus years are 20 percentage points or more lower than those achieved during the census, with the usual explanation being the presence (in census years) of a supportive "census climate" of interest and visibility. Nonetheless, we would find it surprising if use of these factors did not result in some improvement in completion rates during a normal census.

Potential use of a mandatory notice in a census raises the question of whether people may react negatively to it in ways other than observed through completion rate comparisons. Debriefing interviews with individuals who returned the questionnaires revealed that more than 90 percent of those interviewed remembered seeing the "mandatory" message compared to only 66.7 and 81 percent who remembered seeing the "benefits" message (Singer, 1994). However, when asked about their reaction to the message on the envelope using a 1-10 scale, there were no significant differences between those who received the benefits treatments and those who received the mandatory treatments. We speculate that

the envelope message may be viewed as "appropriate disclosure" by most respondents, perhaps keeping them from discarding as unimportant the resident-address envelope and questionnaire.

Our finding that a benefits message does not improve completion rates is consistent with previous research. At the same time, conveying to respondents the benefits of responding, which is often justified as simply good public relations, does not decrease completion rates.

Variations in the assurance of confidentiality had no effect on completion rates. This may mean that emphasizing the mandatory nature of response did not increase the sensitivity of the data, or it may mean that respondents did not perceive differences in the assurance of confidentiality. The procedures used to operationalize concepts for this test resulted in the confidentiality message being subordinated to the mandatory and benefits messages (in the sense of easy visibility to the respondent), and therefore may not have been a very strong test of our hypothesis. A stronger test might be achieved by utilizing a more prominent message in conjunction with the use of census long-form questionnaires, which contain items of information that are more likely to be viewed by respondents as private and confidential, e.g., income and sources of income.

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Table 1. Appeals and Long-Form Experiment Final Completion Rates at the National & Stratum Level

Treatment	Completion Rate (%) Estimates and Standard Errors (%)					
	National		1990 High Response Areas		1990 Low Response Areas	
	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error
1. Control	67.2	0.9	69.2	1.0	52.3	1.0
2. Full Benefits/Strong	69.1	0.8	71.5	0.9	50.5	1.0
3. Full Benefits/Standard	68.4	0.8	70.7	0.9	51.5	1.0
4. Full Mandatory/Strong	77.0	0.7	79.3	0.8	59.7	1.0
5. Full Mandatory/Standard	78.1	0.7	80.5	0.8	59.7	1.0
6. Mandatory, No Insert	76.4	0.8	78.5	0.9	60.7	1.0

Table 2. Comparison Between the Standard and the Strong Confidentiality Statement, and . . .

Experimental Comparisons	Completion Rate Differences (%) and 90% Confidence Intervals (C.I.)					
	National		1990 High Response Areas		1990 Low Response Areas	
	Difference	90% C.I.	Difference	90% C.I.	Difference	90% C.I.
3 - 2	-0.6	-3.5 to 2.2	-0.9	-4.0 to 2.3	0.9	-2.5 to 4.3
5 - 4	1.1	-1.5 to 3.6	1.2	-1.6 to 4.1	-0.0	-3.5 to 3.4

The Effects of the Full Benefits Motivational Appeals

2 - 1	1.8	-1.1 to 4.8	2.3	-1.0 to 5.6	-1.7	-5.2 to 1.8
3 - 1	1.2	-1.7 to 4.1	1.4	-1.8 to 4.7	-0.8	-4.3 to 2.7
(2&3) - 1	1.5	-1.0 to 4.1	1.8	-1.0 to 4.7	-1.3	-4.3 to 1.8

The Effects of the Full Mandatory Motivational Appeals

4 - 1	9.8 *	7.0 to 12.6	10.1 *	7.0 to 13.2	7.4 *	3.9 to 11.0
5 - 1	10.9 *	8.1 to 13.7	11.3 *	8.2 to 14.4	7.4 *	3.9 to 11.0
(4&5) - 1	10.3 *	7.9 to 12.8	10.7 *	7.9 to 13.5	7.4 *	4.3 to 10.5

The Effect of the Insert

6 - 4	-0.7	-3.3 to 1.9	-0.9	-3.8 to 2.1	0.9	-2.5 to 4.4
6 - 5	-1.7	-4.3 to 0.8	-2.1	-4.9 to 0.8	1.0	-2.4 to 4.3
6 - (4+5)	-1.2	-3.4 to 1.0	-1.5	-4.0 to 1.1	1.0	-2.0 to 3.9
6 - 1	9.1 *	6.3 to 12.0	9.2 *	6.1 to 12.4	8.4 *	4.8 to 12.0

*indicates that the difference is statistically significant at five $\alpha = 0.1$