

THE EFFECT OF CONSENT STATEMENTS AND FOLLOWUP TREATMENT METHODS
ON RESPONSE RATES IN NATALITY AND FETAL MORTALITY SURVEYS

Kenneth G. Keppel, National Center for Health Statistics

BACKGROUND

Vital record followback surveys are periodic data collections based on samples of registered births and deaths which occurred during a given time period. They are referred to as "followback" surveys because they involve contacting sources of information identified on vital records. These surveys extend the range of items available for analysis in connection with vital events. The 1980 National Natality Survey (NNS) and 1980 National Fetal Mortality Survey (NFMS) are currently in the field. These surveys are being conducted by the National Center for Health Statistics (NCHS) with support from six other Public Health Service agencies.¹

THE PRETEST

In preparation for the 1980 NNS/NFMS an extensive pretest based on vital records for 1978 was conducted. A convenience sample of 472 live births from the District of Columbia, Michigan and Montana, and 220 fetal deaths of 28 weeks or more gestation from the District of Columbia, Montana and New York State was utilized. Women who delivered, physicians who attended the deliveries, hospitals where the deliveries took place, and additional sources of medical care identified by responding women were surveyed. The survey was conducted by mailing questionnaires to 1563 potential respondents during the period from June to October of 1979.² The mailing and receipt of questionnaires was handled by the Survey Records and Collection Branch in NCHS's Division of Operations.

The pretest provided for an evaluation of survey instruments and a dress rehearsal of survey procedures. In addition, a number of issues concerning response rates were examined to determine the most productive way of conducting research of this kind given increasing concerns about privacy and confidentiality. Various followup treatment methods (TM's) were employed for nonrespondents. An experiment was also conducted to determine the effect of consent statements (CS's) on response rates. Response rates were calculated according to whether the delivery resulted in a live birth or a fetal death. Response rates were also calculated according to whether the delivery occurred in wedlock or out of wedlock. The pretest was therefore designed to provide information concerning the effectiveness of various followup treatment methods, the importance of consent statements, and the feasibility of surveying respondents associated with fetal deaths and out-of-wedlock deliveries.

Treatment Methods (TM's)

Nonrespondents were successively assigned to one of three followup TM's. Some nonrespondents were sent two mailings, some were sent two mailings with an attempted phone followup, and some were sent three mailings. Similar procedures were followed for women, hospitals, physicians, and additional medical sources. Potential respondents were initially sent questionnaires. Four weeks after the initial mailing all nonrespondents were sent a second questionnaire. Several weeks after the second mailing, a new list of nonrespondents was produced. A group of nonrespondents was chosen from the list for attempted phone reminders. Several weeks later, another list of nonrespondents (excluding those who received phone reminders) was produced. From this list of nonrespondents, a group of potential respondents was chosen to be sent third questionnaires. The remaining nonrespondents were never sent more than two mailings. Response rates for the two mailing TM were compared with response rates for the more intensive followup TM's.

Consent Statements (CS's)

Half of the women in the survey were sent questionnaires that requested them to sign a CS giving permission to NCHS to obtain supplementary medical information from health records maintained by medical sources. The remaining women were sent questionnaires that did not include CS's. Response rates were calculated separately for these two groups to determine the effect of requesting women to sign CS's. More importantly, the effect of including signed CS's with questionnaires sent to medical sources was examined. For the group of women who were requested to return CS's, questionnaires were only sent to medical sources when there was a signed CS available. Therefore, not all of the medical sources for these women received questionnaires. For the group of women who were not requested to return CS's, questionnaires were automatically sent to all medical sources.³

Delivery Outcome

Previously it was thought that a survey based on fetal deaths was not practical due to issues of sensitivity. This pretest was designed to determine whether or not it was feasible to survey sources associated with fetal deaths. Response rates were calculated separately for respondents associated with live births and fetal deaths to determine whether delivery outcome made any difference in response rates.

Marital Status

Earlier natality followback surveys focused exclusively on in-wedlock births, again due to issues of sensitivity. Deliveries which occurred out of wedlock were included in the pretest, however. In two areas women who had out-of-wedlock deliveries were included in the survey and medical sources associated with out-of-wedlock deliveries were included in the survey in all four areas. Response rates were calculated separately for sources associated with in-wedlock deliveries and for sources associated with out-of-wedlock deliveries. Response rates were therefore compared according to the marital status of women at the time of their deliveries.

RESPONSE RATES

Response rates for survey data are generally calculated by dividing the actual number of respondents by the potential number of respondents. For the purposes of this survey, it was necessary to compute response rates separately for women, hospitals, physicians, and additional medical sources by category of delivery. Categories were based on the marital status of the woman at the time of delivery, whether or not the woman was sent a CS, and whether the delivery resulted in a live birth or a fetal death. Within categories of respondents, however, response rates were calculated for the different followup TM's.

Four weeks after the original mailing, nonrespondents were sent a second questionnaire. Nonrespondents were again identified several weeks after the second mailing, and initial response rates were calculated. One group of nonrespondents was then chosen to receive phone reminders. Several weeks later, from the remaining nonrespondents another group was chosen to be sent a third mailing. Response rates were calculated for cases in each of these TM's. Responses continued to be received from potential respondents who were sent only two mailings. Subsequent response rates for these groups were therefore calculated for the period between the phone reminder and the third mailing and for the period between the third mailing and the conclusion of the survey. The response rates associated with each TM were applied to the number of nonrespondents noted after the second mailing. In this way response rates for each TM were obtained as if it had been the only treatment employed. The assumption was therefore made that the response rates for the treatment groups represent rates that could have been obtained for all potential respondents. The effectiveness of the more intensive followups was compared to the effectiveness of two mailings in terms of these estimated rates. In some comparisons the response rates for the more intensive followups are lower than those for two mailings due to the methods of calculation employed. Differences in response rates by category of delivery were

also examined in terms of these rates. Statistical criteria were not employed in the comparison of rates because each rate represents a combination of rates based on varying numbers of cases.

The following formulae were employed in the computation of response rates for the pretest survey. The sequential nature of calculations was necessitated by the successive assignment of cases to TM's. This approach takes into consideration responses associated with the TM's and responses due to the passage of time. The examples below are based on the computation of response rates for women. Rates were computed according to marital status, CS/non-CS, and delivery outcome. Response rates for medical sources were similarly calculated.

A. Attempted phone reminders three weeks after the second mailing:

$$(1) \frac{n_0 + (n_1 \times r_{mmp})}{N} = \text{the response rate assuming that attempts had been made to call all nonrespondent three weeks after the second mailing.}$$

B. Third mailings six weeks after the second mailing:

$$(1) n_1 - (n_1 \times r_{t1}) = n_3$$

$$(2) n_0 + (n_1 \times r_{t1}) = n_2$$

$$(3) \frac{n_2 + (n_3 \times r_{mmm})}{N} = \text{the response rate assuming that third mailings had been sent to all nonrespondents six weeks after the second mailing.}$$

C. Two mailings only:

(1) and (2) as in B above

$$(3) \frac{n_2 + (n_3 \times r_{t2})}{N} = \text{the response rate assuming that all nonrespondents had been sent only two mailings.}$$

Notation:

- N = total number of potential respondents (women/physicians/ hospitals) for a given category of delivery (in wedlock/ out of wedlock, CS/non-CS, live birth/ fetal death)
- n_0 = number of respondents prior to the attempted phone reminders
- n_1 = number of nonrespondents prior to the attempted phone reminders
- n_2 = number of respondents prior to the third mailings
- n_3 = number of nonrespondents prior to the third mailings
- r_{mmp} = response rate for the two mail-phone-reminder TM
- r_{t1} = response rate for the period between the phone reminders and third mailings
- r_{mmm} = response rate for the three mailings TM

r_{t2} = response rate for the period between the third mailings and the conclusion of the survey.

FINDINGS

Response rates are presented for women, physicians, hospitals and additional medical sources in Tables 1, 2, 3, and 4 respectively. These rates are presented according to the marital status of women at the time of delivery, whether or not the women were routinely sent CS's and whether the deliveries were live births or fetal deaths. The rates represent response rates that could have been obtained if two mailings had been sent, if phone reminders had been attempted, or if third mailings had been sent.

Women

The response rates for women by category of delivery are presented in Table 1. Nearly 47 percent of the women who had in-wedlock deliveries had responded three weeks after the second mailing. Responses were subsequently received from women who had only been sent the second mailing. Based on these returns, a final response rate of 53.3 percent could have been obtained if all nonrespondents had only been sent the second mailing.

Three weeks after the second mailing, telephone reminders were attempted for 29 women who had not responded. Phone contacts were made with 14 of these women. Seven of these 14 women eventually responded and two of the other 15 women returned questionnaires. Useable responses were therefore obtained from 9 of the 29 women in this group (31.0 percent). Based on these findings, a final response rate of 62.6 percent could have been obtained if phone reminders had been attempted for nonrespondents three weeks after the second mailing.

About six weeks after the second mailing, third mailings were sent to another group of 38 nonrespondents. Only 3 of these women eventually returned questionnaires (7.9 percent). Based on responses received prior to the third mailing and responses for this TM group, a response rate of 55.5 percent could have been obtained with three mailings. This represents very little gain over the response rate associated with two mailings.

The effectiveness of the TM's may also be compared for the CS/non-CS groups among women who had in-wedlock deliveries. There is little difference in the response rates for the three TM's among women who were not sent CS's. Response rates were higher for women who had live births, however. The response rates associated with the 2 mailing and 3 mailing TM's were slightly lower for women sent CS's than for women not sent CS's. The response rates for phone reminders were higher, however. Among women sent CS's, those who had fetal deaths had higher response rates for two of the three TM's. The use of CS's was not detrimental for the phone reminder group and

their use generally contributed to response rates among women who had fetal deaths.

The response rates for women who had out-of-wedlock deliveries were substantially lower than those for women who delivered in wedlock. The more intensive followup TM's produced higher response rates. These women were difficult to reach by phone. Third mailings were therefore most productive. Small numbers of cases jeopardize comparisons by CS/non-CS and delivery outcome.

Physicians

The response rates for physicians by category of delivery are presented in Table 2. Forty-eight percent of the physicians associated with in-wedlock deliveries had responded two weeks after the second mailing. Responses were subsequently received from some physicians who had only been sent the second mailing. Based on these responses, a final response rate of 61.3 percent could have been obtained with two mailings.

Two weeks after the second mailing, telephone reminders were attempted for 37 deliveries involving physicians who had not responded. Phone contacts were made with 31 of these physicians or with someone in their offices. Fifteen of the 37 physicians responded (40.5 percent). Based on these responses a final response rate of 67.5 percent could be expected if phone reminders had been attempted for all nonrespondents. Third mailings were not sent to medical sources that were routinely sent CS's.

The response rates for physicians sent 2 mailings with CS's were slightly lower than those for 2 mailings without CS's. The response rates associated with phone reminders were higher for the CS group, however (73.4 percent versus 64.0 percent). The response rate for physicians sent third mailings without CS's was 71.1 percent. For the CS group, physicians associated with live births had slightly higher response rates. For the non-CS group, physicians associated with fetal deaths had higher response rates.

The response rates for physicians associated with out-of-wedlock deliveries were based on small numbers of cases. The differences in rates by marital status for physicians are not as great as those for women, however.

Hospitals

The response rates for hospitals by category of delivery are presented in Table 3. Two weeks after the second mailing 49.0 percent of the hospitals associated with in-wedlock deliveries had responded. Responses were subsequently received from hospitals that had not been sent more than 2 mailings for a particular delivery. Based on these responses, a final response rate of 67.6 percent could have been obtained with two mailings.

Telephone reminders were attempted for 37 deliveries involving hospitals that had not

responded. Phone contact was achieved for 36 of these cases. Twenty-two responses were eventually received (59.5 percent). Based on these results, a final response rate of 73.8 percent could have been obtained if phone reminders had been attempted for all nonresponding hospitals.

The response rates for hospitals sent CS's were substantially higher than rates for hospitals not sent CS's. Phone reminders for hospitals sent CS's could produce response rates as high as 83.3 percent. Response rates were higher for live births in one treatment group and for fetal deaths in the other treatment group.

The response rates for hospitals associated with out-of-wedlock deliveries were lower than those for hospitals associated with in-wedlock deliveries; this was also evident for physicians. The use of CS's apparently contributed to response rates for hospitals associated with out-of-wedlock deliveries.

Additional Medical Sources (Table not shown)

Women respondents also identified physicians and x-ray sources that provided them with medical care prior to delivery. Questionnaires were also sent to these additional medical sources. Only a second mailing was employed for nonresponding physicians. The response rate for these physicians was 28.1 percent.

The response rate for x-ray sources sent questionnaires was 76.8 percent. Response rates for sources sent CS's were higher than those for sources not sent CS's. Telephone reminders generally produced higher response rates.

DISCUSSION

This pretest consisted of a survey of women, physicians, hospitals, and additional medical sources associated with 692 deliveries of live births or fetal deaths during 1978. Response rates were calculated by marital status of the women at the time of delivery and by delivery outcome. Response rates were calculated for different followup TM's and according to whether or not CS's were employed. These findings indicate that there is considerable difference in response rates for women by marital status. Response rates for women who had out-of-wedlock deliveries were substantially lower than those for women who had in-wedlock deliveries. The differences in response rates for medical sources associated with out-of-wedlock and in-wedlock deliveries were not as great.

Nonrespondents were sent at least two mailings. Response rates for the more intensive followup TM's were therefore compared with response rates for two mailings. The findings indicate that additional followup efforts could be expected to produce higher response rates. The phone reminders generally resulted in the highest response rates. While it was possible to contact about half of the women in the phone followup TM, about 84 percent of the physicians and 97 percent of the hospitals were contacted.

The use of CS's could produce higher response rates in the phone reminder TM groups for all types of respondents associated with in-wedlock deliveries. The response rate for women was 64.8 percent. The response rates for physicians and hospitals were 73.4 percent and 83.3 percent respectively. The use of CS's contributed substantially to the response rates for medical sources. It must be remembered that medical sources in the CS group were only sent questionnaires after a CS was supplied by the woman. These response rates for medical sources are based only on cases for women who had already responded. There is reason to believe that the pattern of nonresponse among women would influence the potential for response on the part of their medical sources.⁴ The medical sources for responding women might be more likely to respond.

Response rates were also compared by delivery outcome. While there is some variation by CS and TM groups, the response rates for sources associated with fetal deaths were surprisingly similar to those for live births. Many women who had fetal deaths expressed their willingness to contribute to research that could help others.

CONCLUSIONS

The 1980 NNS/NFMS will study 12 calendar months of births and fetal deaths occurring from January through December of 1980. Approximately 10,900 births and 8,000 fetal deaths will be studied. The surveys will be in the field from May of 1980 through May of 1981. These surveys are being carried out in light of the findings from the pretest. The pretest indicated that a survey of sources associated with fetal deaths was feasible. The NFMS based on fetal deaths of 28 weeks or more gestation is therefore being carried out. This survey utilizes the same questionnaires and survey procedures as those employed in the NNS.

Due to the low response rates for women who had deliveries out of wedlock, no effort is being made to contact these women in the 1980 surveys. Given the higher response rates for medical sources associated with out-of-wedlock deliveries, and the concern for the health status of these women and their babies, medical sources for out-of-wedlock deliveries are being contacted even though CS's will not be available.

Women whose deliveries occurred in wedlock are routinely being requested to sign and return CS's as a part of their questionnaires. Such requests had little effect on women's response rates. The inclusion of CS's contributed substantially to response rates for medical sources, however. In the main surveys, questionnaires will be sent to medical sources without CS's only after every effort has been made to obtain a CS from the woman.

Nonrespondents are being sent at least two mailings. After the second mailing, attempts are being made to contact all nonrespondents by phone. For women, abbreviated interviews are being attempted over the phone. Third mailings are being sent to women who cannot be contacted

by phone. Phone contacts with medical sources serve as reminders, and third mailings are sent only upon request.

The pretest provided valuable information which was utilized in planning the 1980 NNS/NFMS. Beside the results of the pretest discussed here, other changes in questionnaire composition and survey procedures have been implemented which should increase response rates. These include, shortening of questionnaires, inclusion of a more sympathetic cover letter for women who had fetal deaths, provision of additional information concerning the surveys, addition of a question for medical sources concerning the availability of patient records, and reduction of the time between date of delivery and date of mailing. Preliminary response rates for the 1980 NNS/NFMS indicate that these changes have had the desired effect.⁵

FOOTNOTES

1. Other sponsoring agencies include: the Bureau of Radiological Health (Food and Drug Administration), the National Institute for Occupational Safety and Health (Center for Disease Control), the National Institute of Child Health and Human Development (National Institutes of Health), the National Institute on Drug Abuse (Alcohol, Drug Abuse, and Mental Health Administration), the National Institute on Alcohol Abuse and Alcoholism (Alcohol, Drug Abuse, and Mental Health Administration), and the Bureau of Community Health Services (Health Services Administration).

2. Not all sources of information became potential respondents. New York State and Montana prohibited NCHS from mailing to women who had deliveries out of wedlock. For deliveries where the attendant had the same address as the hospital, only the hospitals were considered as potential respondents. In the consent statement experiment, medical sources for women who did not return consent statements were also not considered as potential respondents. Sources for which questionnaires were returned by the Post Office and for which new addresses were unavailable, were eliminated from the analysis.
3. When these medical sources requested a consent statement, NCHS attempted to obtain one on an as-needed basis.
4. "Nonresponse Bias in a National Health Survey", by Paul Placek and Peter Cattani. Presentation at American Statistical Association Session: Design and Collection Issues in Sample Health Surveys: The NCHS Perspective. Washington DC August 13-16, 1979. Forthcoming in 1979 ASA Proceedings.
5. Early Progress Report: 1980 National Natality Survey and 1980 National Fetal Mortality Survey, Paul J. Placek, Ph.D., Division of Vital Statistics, NCHS.

Table 1. Response Rates for Women After Various Followup Treatments: 1978 NNS/NFMS Pretest

Women by Category of Delivery	Number in Category	Percent of Women Responding		
		after 2 mailings	after 2 mailings and attempted phone reminder three weeks after second mailing	after 3 mailings
In wedlock-----	503	53.3	62.6	55.5
Sent consent statements-----	267	48.3	64.8	50.2
Live births-----	172	48.3	43.6*	54.1*
Fetal deaths-----	95	49.5	70.5	46.3
Not sent consent statements-----	236	59.3	61.4	61.4
Live births-----	158	64.6	64.6*	62.0*
Fetal deaths-----	78	46.2*	53.8*	55.1
Out of wedlock ¹ -----	102	26.5	33.3	43.1
Sent consent statements-----	53	30.2	26.4*	54.7*
Not sent consent statements-----	49	22.4	38.8*	32.7*
Live births-----	94	26.6	35.1	42.6
Fetal deaths-----	8	25.0*	25.0*	-

¹ Not broken down further due to small numbers of cases.

* Response rates based on denominators of 10 or less.

Table 2. Response Rates for Physicians After Various Followup Treatments: 1978 NNS/NFMS Pretest

Physicians by Category of Delivery	Number in Category	Percent of Physicians Responding		
		after 2 mailings	after 2 mailings and attempted phone reminder two weeks after second mailing	after 3 mailings
In wedlock-----	351	61.3	67.5	1
Sent consent statements-----	109	58.7	73.4	1
Live births-----	73	60.3	75.3*	1
Fetal deaths-----	36	58.3*	72.2	1
Not sent consent statements ³ -----	242	60.7	64.0	71.1
Live births-----	161	57.8	49.1*	67.7*
Fetal deaths-----	81	66.7	77.8*	77.8*
Out of wedlock ² -----	39	64.1*	48.7*	1
Sent consent statements, live births-----	8	50.0*	50.0*	1
Not sent consent statements, live births ³ -----	31	74.2*	48.4*	61.3*

¹ There were no third mailings to physicians routinely sent consent Statements.

² There were no physicians associated with out-of-wedlock fetal deaths in the sample; only the hospital questionnaire was mailed for these deliveries.

³ If a physician refused to furnish the woman's medical information until a consent statement was provided, and NCHS could not obtain it, the physician was coded as a nonresponse. If NCHS obtained a consent statement and mailed it to the physician, and the physician responded, these returns were included in response rates.

* Response rates based on denominators of 10 or less.

Table 3. Response Rates for Hospitals After Various Followup Treatments: 1978 NNS/NFMS Pretest

Hospitals by Category of Delivery	Number in Category	Percent of Hospitals Responding		
		after 2 mailings	after 2 mailings and attempted phone reminder two weeks after second mailing	after 3 mailings
In wedlock-----	408	67.6	73.8	1
Sent consent statements-----	120	75.0	83.3	1
Live births-----	76	71.1	82.9*	1
Fetal deaths-----	44	86.4	81.8	1
Not sent consent statements ³ -----	288	64.2	68.8	64.2
Live births-----	184	58.7	76.6*	70.1*
Fetal deaths-----	104	81.7	66.3	64.4
Out of wedlock ² -----	72	65.3	51.4	1
Sent consent statements-----	15	86.7*	60.0*	1
Not sent consent statements ³ -----	57	57.9*	49.1*	35.1*
Live births-----	66	65.2	48.5*	30.8*
Fetal deaths-----	6	83.3*	83.3*	-

¹ There were no third mailings to hospitals routinely sent consent statements.

² Not broken down further due to small numbers of cases.

³ If a hospital refused to furnish the woman's medical information until a consent statement was provided, and NCHS could not obtain it, the hospital was coded as a nonresponse. If NCHS obtained a consent statement and mailed it to the hospital, and the hospital responded, these returns were included in response rates.

* Response rates based on denominators of 10 or less.