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## Key Words: Response Rate, Establishment Surveys, Mail Surveys, Telephone Surveys, Mixed-Mode

It is generally accepted that achieving high response rates to surveys of businesses requires the use of more than one survey mode. Generally, mail surveys have been sent first and, when businesses failed to respond, telephone follow-ups were made either to obtain data in that way or to encourage response to the original mail survey. Relatively little research has been done on the advantages and disadvantages of reversing the order and preceding the use of the mail questionnaire with an attempt to collect the required data by telephone.

In this paper, we report an effort by the authors to obtain data by mail, followed by telephone efforts to interview managers or owners of a national sample of predominately rural (non-metro) manufacturers. These data were collected in a pilot study prior to implementation of a large-scale study in which data were to be obtained from approximately 3,600 firms. A second pilot study reversed the procedure, seeking to complete a telephone interview with a small sample and using the mail questionnaire as a followup for interviews that could not be obtained by telephone. The large-scale study then utilized one of the methods for conduct of the national study. Procedures and response rates for all three surveys are analyzed here in an attempt to evaluate the advantages and disadvantages of each procedure, with emphasis on response rate.

#### **Previous Research:**

Certain ways in which surveying businesses differs from surveying individuals is summarized by Paxson et al. (1995):

• *Businesses are often hard to define.* Sending a questionnaire to a named business does not mean it reaches the appropriate respondent.

• Addresses can be problematic. It is often unclear who should respond to the survey, and therefore to whom to address correspondence.

• *Businesses often have gatekeepers* who decide whether or not survey requests should be given to the appropriate person for response.

• Some businesses have policies about responding to surveys. There may be a policy against responding to any survey, or there may be a process for deciding which surveys should receive a response.

• The questions asked in business surveys are often difficult to answer, requiring record checks or even compiling information.

These features would seem to make it difficult to obtain high response rates to business surveys, especially when conducted by mail, when one is unable to "talk" through who should be contacted and use that feedback to target the survey request. Consequently, it is increasingly common for survey researchers who wish to collect data by mail to follow-up with telephone contacts.

Christianson and Tortora (1995) in a survey of 21 statistical agencies in 16 countries obtained methodological information on 104 surveys. Fifty of the 104 surveys used multiple modes of data The most common multi-mode collection. combination was mail followed by telephone, with a median of 90% of the data being collected by mail and 10% by telephone. Next most common was mail, followed by telephone and finally face-to-face interviews. The median proportion of information collected by each of these modes was 60%, 30%, and 18%, respectively. Thus, not only is mail relied upon frequently for the conduct of mixed mode surveys, but also most of the information is collected by the mail mode, with the more expensive methods being used for follow-up.

A review of 183 mail surveys of businesses conducted by Paxson (1992) found that an overall response rate of 21 % was obtained. This review was based upon a search of academic and trade journals published since 1990. She also noted that nearly all of these studies did not use any follow-up procedures. A related analysis of 26 surveys which were conducted between 1989 and 1992 by the Social & Economic Sciences Research Center at Washington State University revealed than an average response rate of 61 % had been obtained, with a range of 28-95% (Paxson, Dillman, and Tarnai, 1995). It was noted that the response rate for surveys addressed to the "owner/manager" of an organization obtained an average response rate of 40%, compared to 72% for those addressed to an individual. All of the surveys that obtained a response rate of 73% or higher were not only sent to an individual within an organization, but also used a minimum of three contacts; the two highest response rates (90 and 95%) were obtained in surveys which made final contacts by telephone. of these were Although none surveys of manufacturers. and most were done within Washington State, it was reasoned that the following up of a mail survey with telephone could produce high response rates.

An analysis of 20 national business surveys conducted by the Census Bureau since 1987. in which mail questionnaires are sent to businesses, revealed consistently high response rates, ranging from 57 to 96% and averaging 79%. (Paxson et al., 1995) Two factors appear to be responsible for these high response rates. First, all but one of these surveys used telephone contacts to collect data after one or more contacts were made. The second factor was the use of a mandatory disclosure statement prominently stamped onto the outside of the mailing envelopes: "U.S. Census Form Enclosed. YOUR RESPONSE IS REOUIRED BY LAW." Experimental evidence revealed that response rates could be increased by as much as 20% by the use of this technique. However, it must be noted that this option is not available to most researchers.

It's apparent from these studies that a mail questionnaire followed by telephone follow-up has been used successfully to achieve satisfactory response rates in many business surveys. For this reason, we attempted to design a survey of national manufacturers using a similar model. For reasons described below, we later reversed the procedure.

#### The Study:

The study was a large nation-wide survey of manufacturing businesses sponsored by the USDA Economic Research Service. The purpose of the study was to gather information to help assess the labor skills, financial resources, technology, and other needs manufacturing firms require to be competitive. A total of 3,600 interviews were to be collected from manufacturers over a four-month period. The sample of businesses was obtained from Survey Sampling. Inc. from business listings having a Standard Industrial Classification (SIC) code Division D (Manufacturing) of the SIC Division Structure. This included all businesses with SIC major group classification from 20 to 39.<sup>1</sup> The sample was stratified by size, metro and non-metro classification, and region. The target response rate for the study was 65 percent.<sup>2</sup>

The project design called for the development of procedures for collecting the data, a pilot study to test the proposed procedures, and implementation of the full study. There were a number of factors that suggested that careful consideration must be given when developing the implementation procedures. First, the sample information did not include the name of the target respondent. Second, the questionnaire instrument was extremely complex. Data for some of the questions would not be readily available and therefore require the respondent consult business records. In general, it was expected that the desired respondent would be a high level company executive who was very knowledgeable about the overall operations of the company, such as the CEO or operations manager. This led to the third issue: getting past the gatekeeper and gaining access to the respondent. Finally, the length of the questionnaire was anticipated to be an issue. The mail questionnaire was a 20-page booklet containing over 370 variables. The telephone version of the questionnaire averaged 38 minutes in length.

## **Pilot Study I:**

After careful consideration of these issues and the existing research on establishment surveys, a set of procedures was developed that was expected to produce a high response rate and high data quality. The implementation strategy consisted of an initial telephone contact with businesses to confirm the existence of the business and to identify a person to whom a mail questionnaire could be sent. This was followed by a prenotice mailing, personalized questionnaire and cover letter mailing, and reminder letter mailing. Finally, respondents received a follow-up by telephone to obtain data or prompt response by mail. Thus, a total of five contacts were attempted with each business.

The pilot study sample was a random selection of 500 manufacturing businesses from across the United States.

Validation Interview: A separated contact was used to screen businesses for eligibility based on current manufacturing status. Once the target respondent was identified, the correct mailing address for that person was also confirmed. An advantage of a separate contact was that it could be completed with a secretary or other individual who answered the phone for the business; thus, it did not increase the response burden for the respondent. Additionally, the validation interview was very brief, consisting of only 20 questions (variables) and lasting less than five minutes.

Attempts were made to contact all 500 businesses in the pilot sample. The results of the validation step were very encouraging. Interviews were completed with a total of 408 businesses, resulting in a response rate of 89.0%. From the 408 completed interviews, a sub-set of 300 businesses were randomly selected for use in subsequent phases

<sup>&</sup>lt;sup>1</sup> Businesses with the four-digit SIC code 2711

<sup>(</sup>Newspapers: Publishing and Printing) were

excluded from the population prior to sampling. <sup>2</sup> Response rate statistics for this paper are calculated using CASRO's generally accepted rules for reporting response rate statistics, 1982.

of the first pilot study. The 89 businesses identified as ineligible, unable to reach, wrong number, or language barrier were added to this sub-set. These cases were included to allow verification of their ineligible status, or to determine whether the wrong number and language cases would be returned. Thus, 389 cases continued on to subsequent phases of the first pilot study. The remaining 108 completed cases were set aside and <u>did not</u> receive any further contact in Pilot I.

*Mailings:* The mailing sequence for the Pilot I survey effort started in mid-November, 1995. All 389 businesses were sent a prenotice letter, printed on official USDA letterhead and bearing the signature of the Under Secretary of Research, Education, and Economics at the USDA. One week later, a 20-page questionnaire booklet and cover letter was mailed. Two weeks after the prenotice mailing went out, a reminder letter was mailed. Both of these mailings were sent out on SESRC letterhead. All three mailings were personalized: sent to the name and job title of the target respondent identified in the validation interview.

Telephone Follow-up: Approximately three weeks after the questionnaire mailing, telephone follow-up contacts began. At the time the contacts began, only 38 completed questionnaires had been received. Such a low initial response rate portended the likelihood that the first pilot study was destined for a low overall response rate (Heberlein & Baumgartner, 1978). Two additional questionnaires had been returned refusing to participate and 19 questionnaires were returned indicating the business was ineligible. The remaining 330 businesses were included in the telephone follow-up.

The interviewer's first goal during the telephone follow-up was to obtain data by telephone; if this failed, she attempted to prompt response by mail.

*Priority Mailing:* Although the strategy for Pilot I did not call for a sixth contact, a priority mailing was added to the pilot as a last effort to improve response rate. It contained a cover letter and replacement mail questionnaire. This mailing went out two months after the initial prenotice mailing was sent. It is difficult to determine the effect of the priority mailing because its returns overlapped with the returns from the telephone follow-up. A total of 22 questionnaires were received between the date the priority mailing was sent and the cutoff date for returns.

*Results:* The contact sequence used for the first pilot study resulted in a low response rate of 44.7%. A total of 126 interviews were completed: 94 by mail and 32 by telephone.

In general, we found respondents preferred responding by mail rather than telephone. While only 32 respondents completed a telephone interview, 64 respondents promised to return the questionnaire by mail. Of these 64 cases, only 34 returned a completed questionnaire. Due to the nature of mail surveys, it is difficult to determine which of the completed questionnaires received after the telephone follow-up are attributable to mail or telephone contacts. At minimum, we know that 66 completed cases (32 completes by telephone and 34 respondents who promised to mail it when contacted for the follow-up and from whom questionnaires were subsequently received) can be attributed to the telephone follow-up contact. In total, only 126 businesses completed the survey for Pilot I. Thus, 52.4% of the total completes may not have occurred without the presence of the telephone follow-up.

The results of the first pilot study indicated the mixed mode approach would not produce the target response rate. However, before making recommendations for a change in the data collection strategy, the pilot study was evaluated in terms of what worked well and what did not.

First, it was felt that the validation interview appeared to be an effective method for determining the eligibility of the business. Overall, it is believed the information gained in this phase contributed to increased response rates in subsequent phases.

Second, the prenotice letter was deemed as an important component of the data collection strategy. It was believed this contact was more likely to get past gatekeepers, because it was personalized, mailed on official government stationary, and signed by the Under Secretary of the USDA.

It was difficult to ascertain what factor or combination of factors caused the low overall response rate for Pilot I. A number of possibilities existed:

• *Timing.* Data collection occurred during two major holiday seasons (Thanksgiving and Christmas) and at year-end – a busy time for many businesses.

• *Questionnaire Length.* The length of the questionnaire may have been a detriment to the study, especially considering the timing issue, above.

• *Complexity.* In addition to being lengthy, the questionnaire was also quite complex. It required knowledge of a wide number of issues. This may have created too much of a burden on the respondent who received the mail questionnaire.

• Getting Past the Gatekeeper. During the validation interview, the interviewer asked for the name of the "owner, manager, or person most knowledgeable about operations." Since we were trying to reach a high level executive, it was even more difficult to gain access to this person.

• *Respondent Selection.* Given the complexity of the questionnaire, had we *selected* the right respondent? Even if the survey made it past the gatekeeper, did the respondent feel qualified to answer?

• Company Policy. During the telephone followup, a number of respondents indicated that doing surveys was simply "against company policy." Using mail as the primary mode did not provide a means for addressing this policy or concern.

The results of the pilot study suggested that the implementation strategy would need radical rethinking if there was to be hope of reaching the target response rate of 65%. Because the changes would be drastic, a second pilot study was recommended.

# **Pilot Study II:**

The primary focus in developing the new strategy for Pilot II was to incorporate what worked well from the first pilot and avoid what did not.

The sample for Pilot II was comprised of the 108 eligible businesses that completed the validation interview in Pilot I who were not contacted in subsequent phases of that pilot.

*Prenotice Mailing:* Each business was mailed a prenotice letter. As in the first pilot, the letter was personalized, mailed on official USDA letterhead, and signed by the Under Secretary of the USDA.

*Telephone Interview:* Approximately one week after the prenotice mailing, efforts were made to contact each business by telephone. Respondents were asked to participate in a 30-minute interview. Up to 20 contact attempts were made.

Additionally, individual case assignment was used during the telephone data collection effort and substantial efforts were made to develop effective refusal prevention statements to help interviewers convince hesitant respondents to participate.

Of course, the most notable change in Pilot II was the switch from mail to telephone as the primary mode of data collection. There are several reasons for this change in strategy. One was the length of the questionnaire. It was believed that the telephone contact offered the valuable opportunity to persuade the respondent to participate, whereas the mail questionnaire did not. It was also felt the telephone would offer more opportunities to get past the gatekeeper. Once past, the interviewer could address concerns regarding the complexity of the questionnaire, or, assist in identifying a more appropriate respondent if the targeted respondent did not feel qualified to answer. Finally, if the respondent or gatekeeper indicated that participation in the survey was "against company policy," the interviewer could offer to send a mail questionnaire instead of collecting data by telephone.

Individual Case Assignment: In order to prepare interviewers to effectively deal with the various issues or concerns that a respondent might raise, individual case assignment was used for the telephone phase of this pilot. It consisted of assigning an interviewer her own set of cases for which she would be responsible for making all contacts. This procedure offered a number of benefits. First, having one representative make all contacts with a particular business would convey a more professional image. This was considered critical to convincing gatekeepers and executives the study was important and worthwhile. Second. a single interviewer was more capable of getting to know the business and establishing rapport with the gatekeeper (or respondent). Finally, when dealing with difficult businesses, the interviewer was able to suggest possible strategies based on her extensive knowledge of what had or had not worked with the business in the past.

*Priority Mailing:* Eventually, non-respondents and businesses that had refused to participate by telephone were sent a priority mailing. This contact consisted of a cover letter and a mail questionnaire booklet. Two letters were used for the priority mailing; one targeted to non-respondents and the other to respondents who had refused to participate.

*Final Reminder:* Approximately one week after the priority mailing, a final letter was mailed to respondents. The purpose of the letter was to thank the respondent for their participation and remind him of the final deadline for returning a completed questionnaire.

*Results:* The results of the second pilot study were quite encouraging. Of the 108 businesses in the sample, 70 completed the survey (68 by telephone, 2 by mail). Ten businesses were further screened out of the sample as ineligible, 2 had non-working numbers and/or were returned to sender, 23 refused, and 3 were unreachable. This resulted in an overall response rate of 71.4%.

As with the first pilot, we evaluated what aspects of the study design for the second pilot worked well and what did not. First, the change of primary mode of data collection from mail to telephone was clearly quite successful. Although other factors such as time of the year may have contributed somewhat to the overall increase in response rate, it was felt that the switch in mode had the most dramatic impact. Additionally, it was felt that the use of individual case assignment and the increase in the number of attempts from eight to twenty played important roles in the increased response.

Second, the priority mail follow-up showed potential for helping to improve response rate and

reaching groups of respondents who could not be contacted by telephone (i.e., wrong number cases).

Finally, the separate validation contact and the prenotice letter were still considered to be effective components of the overall strategy.

As a result of the high response rate obtained in the second pilot study, it was decided that these procedures would become the foundation of the data collection strategy for the full study.

### **Full Study:**

In the final study, attempts were made to contact a total of 8,800 business establishments. As in the pilots, the sample was drawn from the listing of all businesses in the United States with a Standard Industrial Classification (SIC) code representing Division D (Manufacturing) of the SIC Division Structure.

A summary of the data collection strategies used in Pilots I and II and a presentation of the strategy used for the full study is outlined in Table 1. This table helps to show the progression and changes in the data collection strategy over time.

In the final study, the validation interview began in April 1996. Approximately one week after the prenotice letter mailing, cases were released into the field for telephone contact attempts. Due to the size of the final study, all mailings and releases for calling occurred in a batch process so as to minimize the time between each contact. A minor modification was made to the telephone procedures used in Pilot II. "Individual case assignment." Was modified to "team case assignment." The main change in procedure was that two- or three-person teams (rather than individuals) were used for case assignments. The reasons for this were twofold. First, a number of new interviewers had been hired and trained for the final study; we wanted to avoid any bias introduced from the use of seasoned versus novice interviewers. Second, we wanted to allow the maximum flexibility in accommodating respondent requests for call back appointments. As with the second pilot study, up to 20 attempts were made fore each business.

The fourth contact was a priority mailing. The mailing was sent to all respondents who refused to participate by telephone, respondents who requested a mail questionnaire, non-respondents, and businesses with disconnected telephone numbers. Approximately one week after the priority mailing was sent, a reminder letter was mailed to each business.

A final telephone follow-up was conducted with non-respondents to the priority mailing. Telephone follow-ups were conducted with a total of 1,315 businesses. The purpose was to collect data by telephone or prompt response by mail.

*Results:* Response rate statistics for the final study are presented in Table 2. Attempts were made to contact a total of 8,800 businesses. A single-stage

Contact	Pilot I	Pilot II	Final Study
1	Telephone Verification	Telephone Verification	Telephone Verification
	Interview	Interview	Interview
	<ul> <li>Determine Eligibility</li> </ul>	<ul> <li>(Used Remaining Sample)</li> </ul>	<ul> <li>Determine Eligibility</li> </ul>
	<ul> <li>Respondent Identification</li> </ul>	from Pilot I)	<ul> <li>Respondent Identification</li> </ul>
2	Prenotice Letter Mailing	Prenotice Letter Mailing	Prenotice Letter Mailing
	<ul> <li>USDA Letterhead</li> </ul>	<ul> <li>USDA Letterhead</li> </ul>	USDA Letterhead
	<ul> <li>Personalized</li> </ul>	Personalized	• Personalized
	<ul> <li>Study Introduction</li> </ul>	Study Introduction	Study Introduction
3	Questionnaire Mailing	Telephone Contact	Telephone Contact
	<ul> <li>SESRC Letterhead</li> </ul>	<ul> <li>Indiv. Case Assignment</li> </ul>	Team Case Assignment
	<ul> <li>Personalized</li> </ul>	• 20 Contact Attempts	• 20 Contact Attempts
4	Reminder Letter Mailing	Priority Mailing	Priority Mailing
	<ul> <li>Thank you</li> </ul>	<ul> <li>Non-Respondents</li> </ul>	<ul> <li>Non-Respondents/Refusals</li> </ul>
		<ul> <li>Refusal Conversions</li> </ul>	Requested Mail Quest.
			Wrong Number
5	Telephone Follow-up	Final Reminder	Reminder Letter Mailing
	• Collect Data/Prompt by Mail	Thank you/Deadline	• Thank you
6			Final Telephone Follow-up
			• Collect Data/Prompt by Mail
			Confirm Refusal

Table 1: Comparison of Data Collection Strategies for Survey of U.S. Manufacturers

sample design with screening was required. A business was screened out of the sample for the following reasons: 1) it was <u>not</u> involved in manufacturing production, or 2) it employed fewer than ten people. Establishments that were no longer in business were also coded ineligible.

As mentioned above, a separate validation attempt was made to determine eligibility. The results of this call are presented in column two of Table 2. The majority of ineligible businesses (84 percent) were identified during this contact, although a small number of cases were found to be ineligible in subsequent phases of the project. Results of the validation contact are only shown for cases that reached their final termination during this phase. If a case was attempted in subsequent phases of the project (telephone interview or mail survey) it is not shown in column two.

A total of 3,843 completions were collected for the study (3,352 by telephone, 491 by mail). This resulted in an overall response rate of 67.9%. The response rate calculations are also given in Table 2.

### **Conclusions:**

Obtaining high response rates to surveys of businesses is known to be difficult, especially when high level employees such as managers or owners are being asked to respond. Low response rates are often reported for such surveys. The U.S. Census Bureau is able to use the authority of government in order to obtain high response rates. Based on previous experience of the U.S. Census Bureau and those of the SESRC for in-state surveys, a mail strategy followed by attempts to obtain telephone interviews with non-respondents was developed for a national survey of predominately rural businesses. The goal was to achieve a response rate of 65%, which seemed reasonable based on previous experiences.

We conclude that for business surveys outside of government that a mixed-mode strategy is desirable. Further that it is likely to be more effective if attempts to contact respondents for telephone interviews precede attempts to obtain data by mail. Thus, this is a reversal of the procedure typically used in business surveys conducted by the US Bureau of the Census, and previously used for numerous instate surveys by the Social and Economic Sciences Research Center.

Results of the second pilot and main study also make it clear that high response rates to business surveys are feasible, and that the low response rates often reported in the literature need not be accepted as the best that organizations outside of government can do in conducting such surveys.

Although we found the results of these tests convincing, we recognize that strictly experimental tests were not made. However, the size of the study and the experience of evaluating and redesigning the strategy suggest that a mixed-mode approach with telephone as the primary mode was effective, given the nature of this study and the population surveyed. Thus, despite dramatic improvements demonstrated by the reversal, it is important that the procedures tested here be tested in strictly experimental studies.

		Validation	Telephone	Mail	Combined
Eli	gible Population				
Α	Completed Interview		3352	491	3843
В	Partially Completed Interview		66	0	66
С	Refusal to Participate, Eligibility Determined	72	43	0	115
D	Sub-total	72	3461	491	4024
Eli	gibility Not Determined				
E	Refusal, Eligibility Not Determined	425	1137	17	1579
F	Language Barrier	7	3	0	10
G	Unable to Reach / Qr not returned		5	611	616
Н	Not Attempted*		83	19	102
I	Non-Working Number / Returned to Sender		26	210	236
J	Sub-total	432	1254	857	2543
Ine	ligible Population				
K	Ineligible	1873	287	73	2233
L	Sub-total	1873	287	73	2233
	Grand Total	2377	5002	1421	8800
Μ	Eligibility Factor [D/(D+L)]				64.3%
Ν	Estimated Eligible Sample Units [D+(J*M)]				5660
0	Response Rate [A/N]				67.9%

Table 4. Distribution of An Sample Cases and Response Rate Statistics for Survey of U.S. Manufacture	Table 2:	Distribution of All Sam	le Cases and Rest	oonse Rate Statistics fo	r Survev of U.S. Manufacture
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