

Reported Response Rates to Mailed Physician Questionnaires

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Objective. To examine response rate information from mailed physician questionnaires reported in published articles.

Data Sources/Study Setting. Citations for articles published between 1985 and 1995 were obtained using a key word search of the Medline, PsychLit, and Sociofile databases.

Study Design. A 5 percent random sample of relevant citations was selected from each year.

Data Collection/Extraction Methods. Citations found to be other than physician surveys were discarded and replaced with the next randomly assigned article. Selected articles were abstracted using a standardized variable list.

Principal Findings. The average response rate for mailed physician questionnaires was 61 percent. The average response rate for large sample surveys (> 1,000 observations) was 52 percent. In addition, only 44 percent of the abstracted articles reported a discussion of response bias, and only 54 percent reported any type of follow-up.

Conclusions. (1) Response rates have remained somewhat constant over time, and (2) researchers need to document the efforts used to increase response rates to mailed physician questionnaires.

Key Words. Response rates, physician surveys

The mailed questionnaire is probably the most frequently used method for surveying physicians in the field of health services research. Mailed surveys are less costly than other alternatives, such as telephone surveys and face-to-face interviews (Hurd, Nnadi Okolo, Hartzema, et al. 1990; Maheux, Legault, and Lambert 1989; Shosteck and Fairweather 1979; Kanuk and Berenson 1975; Linsky 1975; Warwick and Lininger 1975); however, they tend to result in lower response rates (Hurd, Nnadi Okolo, Hartzema, et al. 1990; Shosteck and Fairweather 1979; Dillman 1978; Kanuk and Berenson 1975; Linsky 1975; Warwick and Lininger 1975) and thus are more likely to obtain results that are biased in favor of the sample population most interested in the survey topic (Donald 1960; Fowler 1988; Stinchcombe, Jones, and Sheatsley 1981).

BACKGROUND AND AIMS

Anecdotal evidence suggests that response rates to mailed physician questionnaires have been declining over time (CASRO 1982; Cartwright 1978). However, no gold standard for an acceptable response rate exists. Warwick and Lininger (1975) and Grady and Wallston (1988) suggest that response rates of 50 percent are very good for mailed questionnaires. Isaac and Michael (1971) disagree, indicating that a response rate of at least 80 percent is necessary to obtain good estimates. Gehlbach (1993) reports that although response rates of at least 80 percent are very good, rates below 80 percent (and above 40 percent) are not necessarily unacceptable. DeMaio (1980) and Fowler (1988), however, report that even response rates of 80 percent may be unsatisfactory if nonresponse bias is present.

Nonresponse bias is, in fact, the most important factor in assessing the effect of a response rate on the validity of a study (Fowler 1988; Grady and Wallston 1988). If nonresponders are similar to responders in every way, the response rate will not affect generalizability to the surveyed population (Fowler 1988; Grady and Wallston 1988). Thus, even questionnaires with relatively low response rates and for which no systematic differences between responders and nonresponders exist could be considered valid. Unfortunately, similarities between nonresponders and responders are often difficult to assess (Fowler 1988; Grady and Wallston 1988). Many researchers attempt to address this problem by increasing the amount of follow-up as a means of increasing the response rate, thereby decreasing the nonresponse rate. However, two studies of physicians have concluded that late responders do not differ significantly from earlier responders, suggesting that nonresponse bias is not necessarily reduced by an increased response rate (Sobal and Ferentz 1989; Berk 1985). Any type of systematic bias in response has the potential to result in biased conclusions—even when response rates are

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high (DeMaio 1980; Guadagnoli and Cunningham 1989; Gilbert, Longmate, and Branch 1992). Reporting whether there is any systematic bias between responders and nonresponders, therefore, is essential to determining the validity of published research (Fowler 1988; Grady and Wallston 1988; Gehlbach 1993).

The present study seeks to determine the following:

1. What are the average response rates to mailed physician questionnaires, and have these response rates been declining over time?
2. How well does the literature report on potential biases and variables affecting response rates when results from mailed physician questionnaires are published?

METHOD

In order to establish an approximation of the universe of published reports that use data from mailed physician questionnaires, three databases, Medline, PsychLit, and Sociofile were searched using "physicians," "questionnaire," "questionnaires," "survey," and "surveys" as key words. The citations recovered from the databases were downloaded electronically by year (1986–1995) and saved in EndNote®, a bibliographic database software program. A 5 percent random sample of articles reporting data from mailed questionnaires (approximately 27 articles) was selected for analysis from each of the ten years. Citations of articles based on surveys other than mailed physician questionnaires (such as patient surveys and telephone interviews) were discarded and replaced with the next randomly assigned article. Data were abstracted for the following variables:

- the response rate and its components;
- length of the questionnaire;
- amount of follow-up;
- extent of nonresponse bias;
- whether the study was anonymous;
- whether a return envelope was included;
- whether the validity of the survey instrument was discussed;
- whether a pilot study had been conducted;
- year of publication;
- name of journal;

- author(s);
- survey objectives; and
- the population being sampled.

These items were included for each article in a comparative matrix to the extent that they were reported.

RESULTS

Response Rates

Average, median, minimum, and maximum response rates for the full sample of mailed physician questionnaires and for the subsample of questionnaires used in large studies (>1,000 observations) are summarized in Table 1 and Table 2, respectively. The overall average response rate to a mailed physician questionnaire was 61 percent, while the overall average response rate for large studies was 52 percent.

These findings are comparable to those of Cartwright (1978), who found an overall average response rate of 71 percent to mailed physician questionnaires published between 1961 and 1977, and to those of Asch, Jedrzejewski, and Christakis (1997), who reported an overall average response rate of 54 percent to mailed physician questionnaires published in 1991.

Analysis of abstracted response rate data indicates that response rates to mailed physician questionnaires have not been declining over time.

Table 1: Average Response Rates Between 1986 and 1995

<i>Year</i>	<i>Number in Sample (N)</i>	<i>Average Response Rate (%)</i>	<i>Median Response Rate (%)</i>	<i>Minimum Response Rate (%)</i>	<i>Maximum Response Rate (%)</i>
1995	27	63	62	19	91
1994	25	60	61	17	87
1993	25	64	65	15	100
1992	25	65	64	39	91
1991	27	57	57	12	90
1990	26	63	67	19	93
1989	25	60	62	21	92
1988	26	63	62	24	96
1987	26	59	62	11	86
1986	25	58	62	14	91
Average:		61.20	62.40		

Table 2: Average Response Rates for Studies with Sample Size Greater than 1,000, 1986–1995

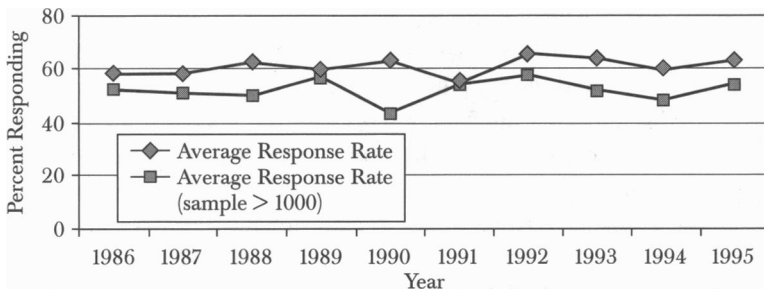
Year	Number in Sample (N)	Average Response Rate (%)	Median Response Rate (%)	Minimum Response Rate (%)	Maximum Response Rate (%)
1995	8	54	60	19	84
1994	11	49	58	17	76
1993	7	52	60	15	65
1992	9	57	54	39	82
1991	10	54	57	12	90
1990	6	43	43	19	68
1989	8	58	58	21	86
1988	8	50	43	25	82
1987	6	51	59	11	66
1986	11	53	54	20	81
Average:		52.10	54.60		

Figure 1 clearly indicates that response rates to mailed physician questionnaires did not decline between 1986 and 1995 and, in fact, suggests that response rates have remained somewhat constant over this ten-year period.

Assessment of Validity

Ninety-five percent of the studies sampled reported a response rate. Three percent of those, however, did not include the number of individuals in the sample or the number of individuals responding. In addition, although the average response rate was fairly low, only 44 percent of the articles discussed

Figure 1: Response Rates to Mailed Physician Questionnaires



any type of response bias, and only 18 percent of the articles performed any type of comparison between responders and nonresponders.

Reporting of Influential Variables

The reporting of variables that affect a study's response rate (and nonresponse rate) was very sketchy at best. A little over half (54 percent) of the articles mentioned whether any type of follow-up had been conducted. Only about one-fifth of the articles mentioned whether a return envelope was included (21 percent) or whether a pilot study was conducted (20 percent). Slightly fewer articles (17 percent) mentioned whether the study was anonymous. Even more discouraging, only 8 percent of the articles discussed the validity of the survey instrument.

DISCUSSION AND CONCLUSION

Reported response rates are often used by researchers as a quick proxy for survey quality because documenting every variable that affects the validity of a survey's results is impractical. Factors such as the length of the questionnaire, wording of survey questions, the inclusion of leading questions, and the ordering of survey questions, for example, are often not acknowledged or recognized by researchers even though they have the potential to seriously affect the validity of a survey's results. Instead, researchers report the response rate under the sometimes questionable assumption that the most appropriate methods to ensure the validity of a survey's results have been taken.

This study found an overall average response rate of 61 percent to mailed physician questionnaires and a 52 percent response rate for large sample mailed physician questionnaires, both of which are well below the 80 percent rate that most researchers suggest as being adequate. However, few conclusions as to the validity of the results obtained from these questionnaires can be made due to the paucity of information included within the published reports, particularly with respect to the presence of nonresponse bias. Less than one-fifth of the articles discussed the existence of any type of differences between nonresponders and responders to the study questionnaires. We acknowledge that this information is often difficult to obtain; however, two methods can be used to facilitate an analysis of differences between responders and nonresponders. First, care can be taken when developing the sampling frame to ensure that certain relevant variables with respect to the population being surveyed are noted so that comparisons between responders and nonresponders may later be made. Second, researchers can attempt to interview the group of nonresponders (or a random sample of

nonresponders) by phone or in person to determine how they differ from responders on select descriptive items. The use of both of these techniques will better enable researchers to assess the extent of nonresponse bias present in research that utilizes mailed physician questionnaires.

When an analysis of differences between nonresponders and responders is conducted that indicates few differences on relevant characteristics between the two groups, one can feel more confident about accepting the results of studies with low response rates. Without this enhanced information, readers are left at a disadvantage and should interpret the literature with caution. Readers should be aware of the implications and potential limitations of study results not clearly portrayed as we have discussed. Unless otherwise substantiated, reported findings should be viewed as potentially biased and thus may provide skewed results, inconsistent results, or both.

In examining trends in reported response rates, we found that physician response rates have not been declining over time and, in fact, have remained somewhat constant. This finding suggests that researchers should not accept very low response rates from mailed physician questionnaires under the misconception that physician response rates to mailed physician questionnaires are consistently low. As noted by Berry and Kanouse (1987), exclusively focusing extended efforts to increase the response rate may, in fact, introduce other forms of bias since varying follow-up approaches may differentially appeal to respondents. Rather, researchers need to focus on all of the elements that make a data collection effort reliable and valid.

The overall objective of any researcher should be to publish reports that contain sufficient information so that a reader is able to make a decision from the published report regarding the internal and external validity of the study's results. To this end, we suggest the following variables, at a minimum, be included in published reports based on mailed questionnaires:

1. specification of the sampling frame;
2. length and focus of the questionnaire;
3. number of questionnaires mailed;
4. number of questionnaires returned;
5. number of returned questionnaires discarded and reasons for doing so;
6. differences between nonresponders and responders; and
7. number and method of follow-up.

The availability of these variables will enable researchers to make sound judgments regarding a study's validity and will also facilitate the replication of a study's results.

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