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ABSTRACT

Reviews of 227 comparative studies and 50 descriptive studies covering the time periods 1931-1999 and 1975-1999 respectively, revealed little change in response rates over time for postal mail surveys. Significant differences were found in comparative studies' response rates based on the academic area represented by the journal in which studies were published, with response rates higher for education and psychology journals than for business journals. Based on results of these reviews, as well as a review of textbook advice to researchers, it is recommended that the minimum standard for response rate vary by population accessed but be set at 50% for business surveys and 70% for surveys in education or psychology. (Contains 4 tables and 88 references.) (Author/SLD)

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TRENDS IN POSTAL MAIL SURVEY RESPONSE RATES THROUGH 1999

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Abstract

Reviews of 227 comparative studies and 50 descriptive studies covering the time periods 1931-1999 and 1975-1999, respectively, revealed little change in response rates over time for postal mail surveys. Significant differences were found in comparative studies' response rates based on the academic area represented by the journal in which studies were published, with response rates higher for education and psychology journals than for business journals. Based on results of these reviews as well as a review of textbook advice to researchers, it is recommended that the minimum standard for response rate vary by population accessed but be set at 50% for business surveys and 70% for surveys in education or psychology.

Reviews of research studies investigating postal mail survey response rates have usually focused on identifying the survey methods most likely to produce high response rates. In order to obtain a body of studies large enough in number to examine the effects of different potential response facilitators it has been necessary to utilize studies conducted over a period of years, typically several decades. While some textbook authors, journal editors, and doctoral committees indicate expectations of acceptable response rates, there has been minimal research to establish the response rates generally obtained in mail surveys and whether these response rates are reasonable in today's climate. For academic and professional credibility, norms are sometimes used to evaluate what is and is not acceptable (e.g. values of Cronbach's alpha above .5; Nunnally, 1978), but norms for response rates are unclear. The purpose of this review was, first, to examine trends in response rates to published reports of mail surveys over time and, second, propose a standard for an acceptable response rate.

Response rate to postal mail surveys has received extensive attention as failure to achieve an adequate response calls population parameter estimates into question. Potential demographic and interest differences between respondents and nonrespondents have lent impetus to response facilitation research. While we have continually advanced our knowledge of how to enhance response rates and have continually improved survey methodology, such advances may yield null results in light of reputed declines in participation in research in North America and Europe.

Contradictions exist among the results of studies of research participation rates, with suggestions of declines in responses to in-person and phone surveys but less evidence of declines in postal mail responses. Steeh (1981) found a decrease in interview participation rates over the period from 1952 to 1979. Goyder (1986) found response rates to in-person surveys to be dropping in the United States and Canada. Sugiyama (1992) reported a similar trend for the Japanese as did

Bethlehem and Kereten (1981) for the Dutch. Baim (1991) noted declines in response rates for the United Kingdom and France, with no declines for Switzerland and Germany. The reported decline was considered of sufficient importance to justify creation of an AAPOR task force in 1987 to research methods for reducing nonresponse. The Council for Marketing and Opinion Research (1998) suggested that "reversing or slowing the decline in respondent cooperation looms as one of the research industry's most urgent challenges" (p. 1).

Less empirical documentation of trends in response rates to mail surveys over time is available, despite calls for such information (Steeh, 1981). Baruch (1998) cited a decline in response rate to behavioral science surveys from 1975 to 1995. He reviewed data in five management journals. Hox and De Leeuw (1994) located 45 studies that contrasted in-person, telephone, and postal mail survey response rates. Twenty-six comparisons with postal mail were identified in their data, which spanned the period from 1947 to 1992. Results with respect to in-person and phone surveys suggested declining participation while response rates to postal mail surveys were stable. It should be noted that their database was comparative studies, with a small number of studies (2-4) representing each five-year time span. Studies were drawn from the North American and western European research literature. Support for a stable pattern of mail survey response for populations in the Netherlands (De Leeuw, 1992) and Sweden (Lyberg & Lyberg, 1990) were noted. Dillman and Carley-Baxter (2001) found no evidence of a decline in survey response rates from 1988 to 1999 in a yearly survey of visitors to United States national parks. In this study, however, surveys were delivered in-person and mailed back.

The primary purpose of this study was to assess trends in response rate to postal mail surveys conducted in the United State over time. Two sources of empirical data were used to address this purpose. The first source was a database of 227 published articles documenting the

effects of experiments with mail survey response rate. The publication dates of the studies began with 1931 and continued to 1999. The second data source was published articles detailing the use of mail surveys in descriptive studies from 1975 through 1999. A random sample of 10 studies was selected for each five-year period yielding a database of 50 studies reporting 58 response rates--some studies reported more than one response rate. Because of differences in the two datasets (comparative studies from 1931 to 1999 in the first, descriptive studies from 1975 to 1999 in the second), information from the datasets were analyzed and reported independently. Comparative studies may not represent survey use by the wider community, so the smaller second database of descriptive studies was compiled to be more representative of general survey use.

The secondary purpose of this study was to propose a general standard for response rate. A convenience sample of introductory research textbooks, survey research textbooks, and journal articles that stated recommendations for response rate were used to supplement the aggregate values from the two empirical databases. Differences in response rates by the academic area represented by journals were also assessed to determine if recommendations might differ by area of study.

Method

Comparative Studies. Studies were selected that met the following criteria: surveys were conducted via postal mail, the study reported results of a comparative or split-sample (experimental) approach, the survey was conducted in the United States and published in English, the response rate and sample size were reported, and the study report was available through published sources. Computer searches of four CD-ROM or on-line databases (ABI/Inform, PSYCHInfo, Sociofile, ERIC) were conducted using the search terms "mail survey" or "mail surveys" combined with "response rate" or "response rates." These sources were supplemented by

a review of reference lists in published studies and of current issues of journals that consistently publish survey research studies. The database was originally compiled in 1994 and updated to December 1999. (See Boser and Clark, 1996, for citations through 1994 and the reference list in this paper for citations from 1995 through 1999.) Information from a total of 227 articles was abstracted.

Information abstracted from each article included response rate, sample size, journal type, publication date, sampling technique, type of assignment to treatment, target population, whether follow-ups were used, and survey topic. Interrater agreement was assessed, disputes resolved, and re-assessed and deemed adequate. (See Green and Hutchinson, 1996, for a more complete description of the original database and method for assessing interrater agreement.)

Studies were grouped by 5-year intervals with the exception of studies published prior to 1949 where due to the small number of studies the interval was 1931-1949. Response rates were averaged across studies in each 5-year interval. Analysis of variance was used to determine if there were differences in mean response rates among the 5-year periods. The simple correlation of publication year with response rate was calculated. Then, standard multiple regression was used to predict response rate from abstracted variables and the significance of the coefficient for publication year examined. Differences in response rate by journal type (e.g., business, education) were also assessed, with the expectation that response rates would be significantly lower for business journals since business surveys tend to deal more with general populations than targeted professional groups.

Descriptive Studies. Comparative studies were excluded from consideration for this database. The four computer-searchable databases described above were searched and 10 published articles were randomly selected from each 5-year period beginning with 1975-1979, for a

total of 50 articles. The same information was abstracted from these articles as described above, and studies were again grouped in 5-year intervals for analysis. Analysis of variance was used to assess changes in response rate over time. Differences in response rate by journal type were also assessed.

Published Standards for Response Rate. A convenience sample of 14 social science, business, and survey research textbooks that contained response rate recommendations supplemented by journal articles and a dissertation was obtained and recommendations regarding response rate abstracted.

Results

Comparative Studies. Table 1 presents the average response rate by 5-year interval for comparative studies. No significant difference was found in response rate over time, $F(10,216) = 1.73$, $p = .08$. The simple correlation of response rate with publication year was nonsignificant, $r = -.04$, $p = .56$. When response rate was predicted from publication date, journal type (business versus other), sampling technique (random versus other), topic (targeted versus not), assignment to treatment (random versus not), sample size, followup (yes versus no), and population description (general versus other), the multiple R was $.35$, $p = .006$. The regression coefficient for publication year was not significant, $t = -.32$, $p = .75$. The only significant predictor was followup, $t = 1.99$, $p = .05$. (When regression analyses were run separately for studies with and without use of followup, the multiple R 's were, respectively, $R = .49$ and $R = .37$.) In neither analysis was publication date a significant predictor.

Table 2 displays response rate differentiated by journal type and in aggregate for comparative studies for 1995-1999. The assumption of homogeneity of variance was upheld, Levene's = 1.05 , $p = .37$. Differences were significant at $p < .01$ ($F_{3,221} = 5.83$) for the aggregate

data. Tukey's honestly significant difference test revealed significant pairwise differences between the mean response rate for education compared to business, and education compared to "other." It should be noted that there were only 7 studies abstracted between 1995 and 1999, with only one published in a non-business journal.

Table 1. Mean and Standard Deviation of Response Rate over Time for Comparative and Descriptive Studies

Time Period	Comparative Studies				Descriptive Studies			
	N	Mean	SD	Range	N	Mean	SD	Range
1931-1949	6	42.23	16.10	24.8-65.5				
1950-1954	6	34.57	15.90	19.5-61.1				
1955-1959	5	44.36	12.82	28.1-60.2				
1960-1964	8	44.28	19.62	21.0-82.8				
1965-1969	15	36.21	11.70	18.2-56.5				
1970-1974	29	48.56	18.47	17.5-80.5				
1975-1979	45	42.61	17.28	18.3-85.2	10	69.69	16.78	42.0-95.0
1980-1984	30	34.04	13.75	7.6-60.7	12	40.98	15.15	18.2-62.0
1985-1989	37	45.06	16.95	13.5-79.0	10	50.23	26.91	14.6-93.0
1990-1994	39	37.08	20.83	3.5-90.2	11	46.54	22.59	12.2-77.0
1995-1999	7	38.21	20.14	7.1-69.2	15	54.57	25.98	12.8-96.5
Total	227	41.00	17.66	3.5-90.2	58	52.09	23.39	12.2-96.5

Table 2. Mean, Standard Deviation, and Range of Response Rate by Journal Type for Comparative Studies.

Journal Type	Aggregate				1995-1999			
	N	Mean	SD	Range	N	Mean	SD	Range
Business	131	38.65	16.29	3.5-90.2	6	41.02	16.85	25.1-69.2
Education	37	49.39	16.61	16.5-85.2	1	55.30		
Psychology	33	46.74	18.93	7.6-80.5				
Other	24	36.01	17.53	13.5-76.0				

Descriptive Studies. A significant difference in response rate over time was found for descriptive studies, $F(4,53) = 2.56, p < .05$. The homogeneity of variance assumption was upheld, Levene's = 2.08, $p > .10$. Tukey's honestly significant difference test revealed the single significant pairwise difference to be between the highest response rate in 1975-1979 and the lowest in 1980-1984 (Table 1). Mean response rates for 1985-1999 differed by 4-8%.

Table 3 displays response rate differentiated by journal type and in aggregate for descriptive studies for 1995-1999. No differences significant at $p < .05$ by journal type were found for 1995-1999 or in aggregate.

Table 4 displays recommendations for adequate response rates made by textbooks and journal authors. The minimum response rate recommended by survey research textbook authors is about 50% while the minimum response rate proposed by educational research authors seems closer to 70%. In business, recommendations vary by population addressed.

Table 3. Mean, Standard Deviation, and Range of Response Rate by Journal Type for Descriptive Studies.

Journal Type	Aggregate				1995-1999			
	N	Mean	SD	Range	N	Mean	SD	Range
Business	17	44.65	24.31	12.8-89.9	4	33.15	22.16	12.8-64.5
Education	5	65.74	10.08	55.7-82.0	2	75.00	9.90	68.0-82.0
Psychology	16	56.34	22.87	21.5-96.5	4	70.53	28.23	42.5-96.5
Other	20	51.62	24.38	12.2-95.0	5	50.78	20.79	28.9-79.0

Table 4. Response Rate Recommendations in Textbooks and Journals

Textbooks			
Author	Book Type	Date	Recommendation
Aday	Survey	1996	60-70%
Babbie	Survey	1990	50%-adequate, 60%-good, 70% very good
Backstrom & Hursh-Cesar	Survey	1981	70% is extraordinary but depends on type of survey
Mangione	Survey	1995	<50% not acceptable, 50-60 barely acceptable, 60-70% acceptable, 70-85% very good, 85% excellent
Newman & McNeil	Survey	1998	80% minimum or assessment of nonrespondent characteristics
Rea & Parker	Survey	1997	59-60% satisfactory
Kervin	Business	1992	50% typical; 60-70% good
Pelosi, Sandifer, & Sekaran	Business	2001	30% acceptable
Gay	Education	1992	60% is unacceptably low
Johnson & Christensen	Education	2000	Over 70% acceptable
McMillan & Schumacher	Education	2001	≥70% are doing very well
Tuckman	Education	1999	75-90% minimum
Wiersma	Education	2000	70% minimum with professional population; lower with general public
Singleton, Straits & Straits	Social Science	1993	50% minimal; above 65% quite good
Journal Articles			
Anonymous	Business	1995	Minimum 60% suggested by Advertising Research Foundation
Baruch	Business	1999	36%±13% for business managers; 60%±20% other business populations
Henderson	Business	1990	20-30% for businesspersons

Discussion

Findings of no response rate differences in comparative research studies and a nonsignificant *increase* in response rate differences in the last decade in descriptive studies support Lox and DeLeeuw's (1994) conclusion that response rates to postal mail surveys have remained substantially stable over time. This stability in response rate seems accompanied by downward trends in telephone and in-person interview participation rates. Frankel and Frankel (1987) argued that the problem in interview participation rates was exacerbated by changing lifestyles and demographic shifts, citing increased demands on individuals' time as one factor. De Maio (1980) found the top two reasons cited for interview refusal were invasion of privacy and negative past experiences with surveys. Schleifer (1986) found a downward trend in those reporting their last interview as a "pleasant" experience. Improvements in mail survey methodology and the relative convenience of mail survey response may have combined to counter the downward trend and keep response rates stable for this method.

The low point in response rate in 1980-1984 could be due to publication of studies dealing with general populations, which tend to be placed in business journals. However, the proportion of the 22 studies from that time period that were published in business journals (17%) was lower than the proportion in 1975-1979 (30%).

Significant differences in response rates across type of journal were found for comparative studies. Differences for descriptive studies were not significant, though the pattern found was similar to that found with comparative studies. As expected, response rates for studies published in business journals were the lowest on average and were significantly lower than response rates found on average in studies published in education journals. This finding reinforces the need to

consider characteristics of the population and whether the survey is targeted to that population in *a priori* estimation of response rates.

It might be noted that response rates to comparative studies were lower in each time period than those of descriptive studies. In comparative studies, two conditions are of interest. One of those conditions is thought to be superior and to promote a higher response rate. The inclusion of one or more weaker conditions with lower response rates might tend to drag down the response rate means for those studies.

The secondary purpose of this study was to propose a minimum standard for mail survey response rate. Typical average response rates in business are about 50% with higher average rates in education and psychology (about 70%). These averages are in line with typical textbook suggestions thus it is suggested that standards for survey response, first, vary by population type and, second, be targeted at $50\% \pm 20\%$ for business and $70\% \pm 20\%$ for education and the social sciences. Thus the minimal standard would vary from 30% to 50% with ideal targets at 70% and 90%.

The results presented here are derived from a fairly lengthy history in postal mail survey research. The current trend, however, is toward use of web-based and e-mail surveys. If one considers web-based and e-mail surveys as more intrusive and less convenient for the respondent than postal surveys, it is likely that response rates to surveys in those modes may experience the same problems with participation that has been found with telephone surveys. A possible decline in responses to web- and e-mail surveys may be alleviated by improvements in convenience which are likely to accompany improvements in hardware and software. However, improved convenience might also be accompanied by an explosion in junk e-mail used for marketing that could alienate

respondents as it seems to have done with telephone surveys. The history of e-mail use is brief, and it is unlikely that response rates will stabilize in the next several years.

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