

Are Lower Response Rates Hazardous to Your Health Survey?

Introduction

Surveys are widely used in public health for surveillance, evaluation and monitoring of important public health policy issues. The most widely used measure of the quality of such surveys is response rate.¹ A working assumption has been that for a survey to be construed as "very good," it must attain a high response rate, and response rates are often reported to summarize the "quality" of the data set. The high response rate was seen as a proxy for the amount of potential bias due to the non-respondents being different than the respondents. Recent research, however, has shown that response rates are only weakly associated with response bias,² and public opinion surveys with much lower response rates can yield similar estimates to those with higher response rates.³

A Look at Response Rates

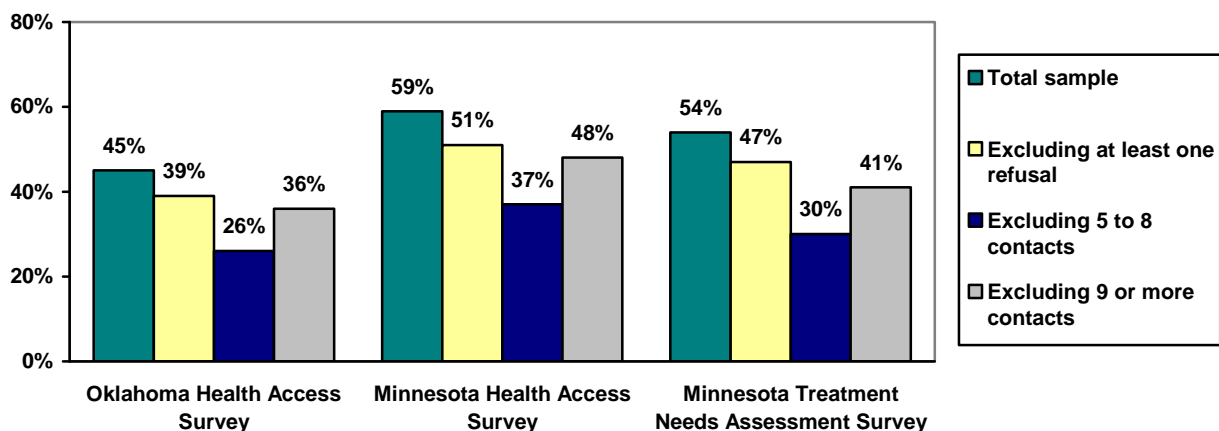
Response rates to most telephone surveys are rarely higher than 60 percent⁴ and have been decreasing over the course of the past several years. For example, recent response rates for the Behavior Risk Factor Surveillance System (BRFSS) survey, a telephone survey conducted by

states, hover around the 50 percent range. Rates for general population telephone surveys in the late 1980s were typically in the vicinity of 70 percent.⁵

In order to secure the highest possible response rates, the standard procedure in many telephone surveys is to make multiple call attempts (e.g., up to 50 calls) and to convert people who initially refuse to eventually participate in the survey.⁶ Recent work by SHADAC examined whether refusal conversion and making many calls to the same number alter health survey estimates. We used data from three large general population telephone surveys of residents of Minnesota and Oklahoma from 2003-2005 conducted by the University of Minnesota's School of Public Health.

Figure 1 shows the response rates for the total sample compared to the rate had initial refusals been excluded and the rate for those requiring five to eight and nine or more contacts to complete the survey. Results show that extra contact effort clearly leads to a higher response rate. The question, however, is to what extent the effort taken to achieve these responses improves data quality.

Figure 1: Response rates for three surveys, total sample versus the rate had refusals been excluded, the rate for completes requiring 5 to 8 contacts, and the rate for completes requiring 9 or more contacts



Source: 2004 Minnesota Health Access Survey, 2004 Oklahoma Health Care Insurance and Access Survey, 2004/2005 Minnesota Treatment Needs Assessment Survey; Note: All responses are not weighted: n= 13,802 (MN Health Access), 5,847 (OK Health Insurance), 16,891 (MN Treatment Needs Assessment). Response rates are AAPOR RR4.

Differences Types of Responders

Davern and colleagues examined differences in demographics and health measures by whether a respondent took five or more days to complete the survey (a typical field period for a public opinion poll) or the household initially refused to participate.⁷

The analysis, shown in Table 1, revealed some differences between early and reluctant survey responders by demographic characteristics (e.g., people over 65 tend to be early respondents and also tend to be initial refusers). However, there were not differences with respect to health characteristics such as reported health insurance coverage, access to health care, and general health status after controlling for demographic characteristics commonly used to make weighting adjustments to survey data (age, sex, geography, race and ethnicity). These findings are similar to the findings from public opinion surveys.⁸

In one of the three surveys a significant difference was found in the type of reported health insurance coverage and self-reported drug use after introducing control variables that are commonly used to make weighting adjustments. This survey's methods differed in important ways from those of the other two surveys examined. Most notably, proxy responses were not allowed and the survey dealt with sensitive mental health and drug abuse issues. Initial refusers were more likely to be current smokers and to have never used illicit drugs or abused prescription drugs. Those who took five to eight days to become a respondent were more likely to have private insurance coverage, binge drink within the past year, and have an alcohol disorder.

Table 1: Health insurance status and outcomes of interest of respondents with an initial refusal, and by number of call attempts

	Oklahoma Access Survey			Minnesota Access Survey			Minnesota Treatment Needs Survey		
	At least one refusal	5-8 Attempts	9 or More Attempts	At least one refusal	5-8 Attempts	9 or More Attempts	At least one refusal	5-8 Attempts	9 or More Attempts
Insurance – any public	45.1%	31.1%	** 27.7%	37.3%	27.9%	** 23.5%	38.0%	23.9%	** 23.0%
Insurance – any private	68.8%	66.4%	67.4%	76.5%	76.1%	74.7%	76.7%	78.2%	77.7%
Uninsured	13.1%	17.7%	16.8%	8.0%	7.5%	9.1%	7.0%	8.0%	* 8.6%
Health Status (excellent, very good, good)	79.4%	82.8%	86.8%	85.7%	88.9%	** 87.9%	79.1%	83.2%	** 84.0%
Has a usual source of care	86.6%	85.4%	83.4%	90.8%	87.7%	** 86.3%	n/a	n/a	n/a

Source: 2004 Minnesota Health Access Survey, 2004 Oklahoma Health Care Insurance and Access Survey, 2004/2005 Minnesota Treatment Needs Assessment Survey
 * p<0.01, ** p<0.001 indicates a significant difference between "at least one refusal" and "no refusal", a significant difference between "1-4" attempts and "5-8 attempts", or between "1-4" attempts and "9 or more attempts." Note: All responses are not weighted: n= 13,802 (MN Health Access), 5,847 (OK Health Insurance), 16,891 (MN Treatment Needs Assessment).

The Value of Increased Response Rate

The results suggest that researchers should carefully examine under what circumstances additional survey resources should be expended towards achieving higher response rates. Making many calls to one number and attempting refusal conversion increases the cost of fielding surveys and also causes more respondent (or nonrespondent) burden. These increased costs reduce the total number of completed surveys one could obtain within a given survey budget.⁹ As a result, a survey's statistical power will be lower. That is, the effort invested in making many more additional attempts to reach a number could have been put towards reaching a new number that has a higher probability of response on

the next attempt than one that has been called many times already.¹⁰

Efforts to increase response rates can also create more respondent burden. It is plausible that repeated call attempts create a situation in which people have to refuse twice. Excessive calls to a household that screens telephone calls may also create a fair amount of respondent annoyance and burden (even for those who may never answer the phone). In the long term, this burden may heighten the downward trend of response rates that these efforts were designed to forestall or eliminate altogether.

Conclusions

Several recent studies suggest that the respondents we work hardest to obtain responses from may be somewhat different sociodemographically, but quite similar in their substantive responses, to their more accessible and receptive counterparts.¹¹ A survey with a 90% response rate can have the same amount of overall response bias as one with a 30% response rate.

The extent of bias rests on the differences between the responding sample and the balance of the frame. The field needs to move away from an over-reliance on response rates as indicators of response quality. Health care researchers relying on telephone survey methods in their investigations should undertake more nonresponse bias analyses as a matter of course, instead of simply relying on the response rate as a quality measure.

Notes

- ¹ Atrostic, B. K., Bates, N., Burt, G., & Silberstein, A. (2001). Nonresponse in U.S. government household surveys: Consistent measures, recent trends, and new insights. *Journal of Official Statistics*, 117, 209-226; Biemer, P., & Lyberg, L. (2003). *Introduction to Survey Quality*. New York: Wiley.
- ² Blumberg, S., Davis, K., Khare, M., & Martinez, M. (2005). The effect of survey follow-up on nonresponse bias: Joint Canada/United States survey of health, 2002-03. *Paper Presented at the Annual Meeting of the American Association for Public Opinion Research*, Miami FL; Groves, R. M. (2006). Nonresponse rates and nonresponse bias in household surveys. *Public Opinion Quarterly*, 70(4), 646-675.
- ³ Keeter, S., Kennedy, C., Dimock, M., Best, J., & Craighill, P. (2006). Gauging the impact of growing nonresponse on estimates from a national RDD telephone survey. *Public Opinion Quarterly*, 70(4), 125-148; Keeter, S., Kohut, A., Miller, A., Groves, R., & Presser, S. (2000). Consequences of reducing non-response in a large national telephone survey. *Public Opinion Quarterly*, 64(2), 125-48.
- ⁴ Brehm, J. (1993). *The Phantom Respondents: Opinion Surveys and Political Representation*. Ann Arbor, MI: University of Michigan Press; Centers for Disease Control and Prevention. (2006). *2005 Behavioral Risk Factor Surveillance System Data Quality Report Handbook*. Atlanta GA: Centers for Disease Control and Prevention.
- ⁵ Groves, R. M., Fowler, F. J., Couper, M. P., Lepkowski, J. M., Singer, E., & Tourangeau, R. (2004). *Survey methodology*. New York: Wiley; Lavrakas, P. J. (1993). *Telephone Survey Methods: Sampling, Selection, and Supervision*. Thousand Oaks, CA: Sage Publications.
- ⁶ Frey, J. H. (1983). *Survey Research by Telephone*. Beverly Hills, CA: Sage Publications; Groves, R. M., & Lyberg, L. E. (2001). An overview of nonresponse issues in telephone surveys. In R. M. Groves, P. P. Biemer, L. E. Lyberg, J. T. Massey, W. L. Nicholls & J. Waksberg (Eds.), *Telephone survey methodology* (pp. 191-212). New York: Wiley.
- ⁷ Davern, M., Call, K. T., Ziegenfuss, J., McAlpine, D., & Beebe, T. J. (2007). "Are low response rates hazardous to your health?" Paper presented at the annual meeting of the American Association of Public Opinion Research. May 21, 2006 Montreal Canada. (This paper is also currently under review at a peer reviewed journal).
- ⁸ Keeter et al. (2006); Keeter et al. (2000).
- ⁹ Allison, K. R., & Yoshida, K. K. (1989). Increasing response rates in community health surveys administered by telephone. *Canadian Journal of Public Health*, 80, 67-70; Groves, R. M. (Ed.). (1989). *Survey Errors and Survey Costs*. New York: Wiley.
- ¹⁰ Groves (1989); Triplett, T. (2002). What is gained from additional call attempts and refusal conversion and what are the cost implications? Report. Washington DC: Urban Institute.
- ¹¹ Holle, R., Hochadel, M., Reitmeir, P., Meisinger, C., & Wichman, H. E. (2006). Prolonged recruitment efforts in health surveys. *Epidemiology*, 17(6), 639-643; Keeter et al. (2006); Keeter et al. (2000).