

The Role of the Response Rates in Assessing Survey Quality

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Probability Sampling

- The “Battle” to convince social researchers (and government statistical agencies) to use probability samples rather than “quota” samples was fought in the 1940’s and 1950’s.
- By the 1960’s Probability Sampling was generally recognized as the “gold standard” and by the 1970’s the Response Rate was used as the primary measure of “quality”

Response Rate

- In a Probability Sample, the Response Rate is a measure of the percent of the “selected probability sample” that provides “responses” to the survey.
- Thus, if the sampling frame covers the population, the Response Rate measures the proportion of the “Population” that is properly represented or covered by the sample.

Response Rate

Response Rate (Simplified) =

$$\frac{\text{\# of Responders to Selected Sample}}{\text{\# of Potential Responders}} \times 100\%$$

Response Rate

- In the 1970's and 1980's high quality probability samples generally required a response rate of 75% or more; preferably above 80%.
- OMB and other US government standards required at least a 75% or 80% response rate.
- However, researchers noticed a increase in the effort (\$ and Time) required to maintain these 70-80% levels

Response Rate

- In the 1990's and 2000's response rates (even for "highest quality" surveys showed substantial declines.
- This has produced the need for a somewhat more realistic and sophisticated look at the implications of lower response rates.
- The response rate is only one of the two components of Nonresponse Bias

Nonresponse Bias

- Nonresponse Bias = The difference between the sample results and the full population results due to survey nonresponse
- Depends upon
 - The Nonresponse Rate
 - The Difference between Responders and Nonresponders

Nonresponse Bias

- **Nonresponse Bias =**

Nonresponse Rate x

Difference (Responders – Nonresponders)

Nonresponse Bias

- Average Hours Per Week of Media Brand “A” consumption:
 - Population Value = 5 hour
 - Difference (Responders – Nonreponders) = 1 hour
 - If Response Rate = 75%, Nonresponse Rate 25%
 - Nonresponse Bias (25% x 1hour) = 0.25 hour
 - Relative Nonresponse Bias = $(0.25/5.0) = 5\%$

Nonresponse Bias

- Average Hours Per Week of Media Brand “A” consumption:
 - Population Value = 5 hour
 - Difference (Responders – Nonreponders) = 1 hour
 - If Response Rate = 25%, Nonresponse Rate 75%
 - Nonresponse Bias (75% x 1hour) = 0.75 hour
 - Relative Nonresponse Bias = $(0.75/5.0) = 15\%$

Nonresponse Bias

- If the difference between Responders and Nonresponders is relatively small, a larger Nonresponse Rate will not have large impact on the Nonresponse Bias.
- So both the Response Rate (100%- Nonresponse Rate) AND the difference between Responders and Nonresponders are both IMPORTANT

Relation of Nonresponse to Bias

THE IMPACT OF NONRESPONSE RATES ON NONRESPONSE BIAS: A META-ANALYSIS

ROBERT M. GROVES and EMILIA PEYTCHEVA

*Public Opinion Quarterly, Vol. 72, No. 2, Summer
2008, pp. 167–189*

Groves and Peytcheva

Groves and Peytcheva studied 59 Surveys which included an “nonresponse analysis” component.

“To be eligible, the research needed to have produced estimates of nonresponse bias for a set of estimated population means or percentages.”

Eligible Studies (n=59)

1. sample frame data (i.e., where records were available both on respondents and nonrespondents), and means on the record variables were estimated;
2. supplemental data, for both respondents and nonrespondents, linked to the sample person's data;
3. screener interview data, used to compare respondents and nonrespondents to a later larger interview;
4. followup studies of sample persons who were nonrespondents to a survey, comparing the earlier respondent group to those former nonrespondents measured in the followup; and
5. reports of intentions to respond to a later survey, comparing those who report agreeing to respond with those who decline to respond.

Absolute Value of Nonresponse Bias

$$\left| \frac{100^* (\bar{y}_r - \bar{y}_n)}{\bar{y}_n} \right|$$

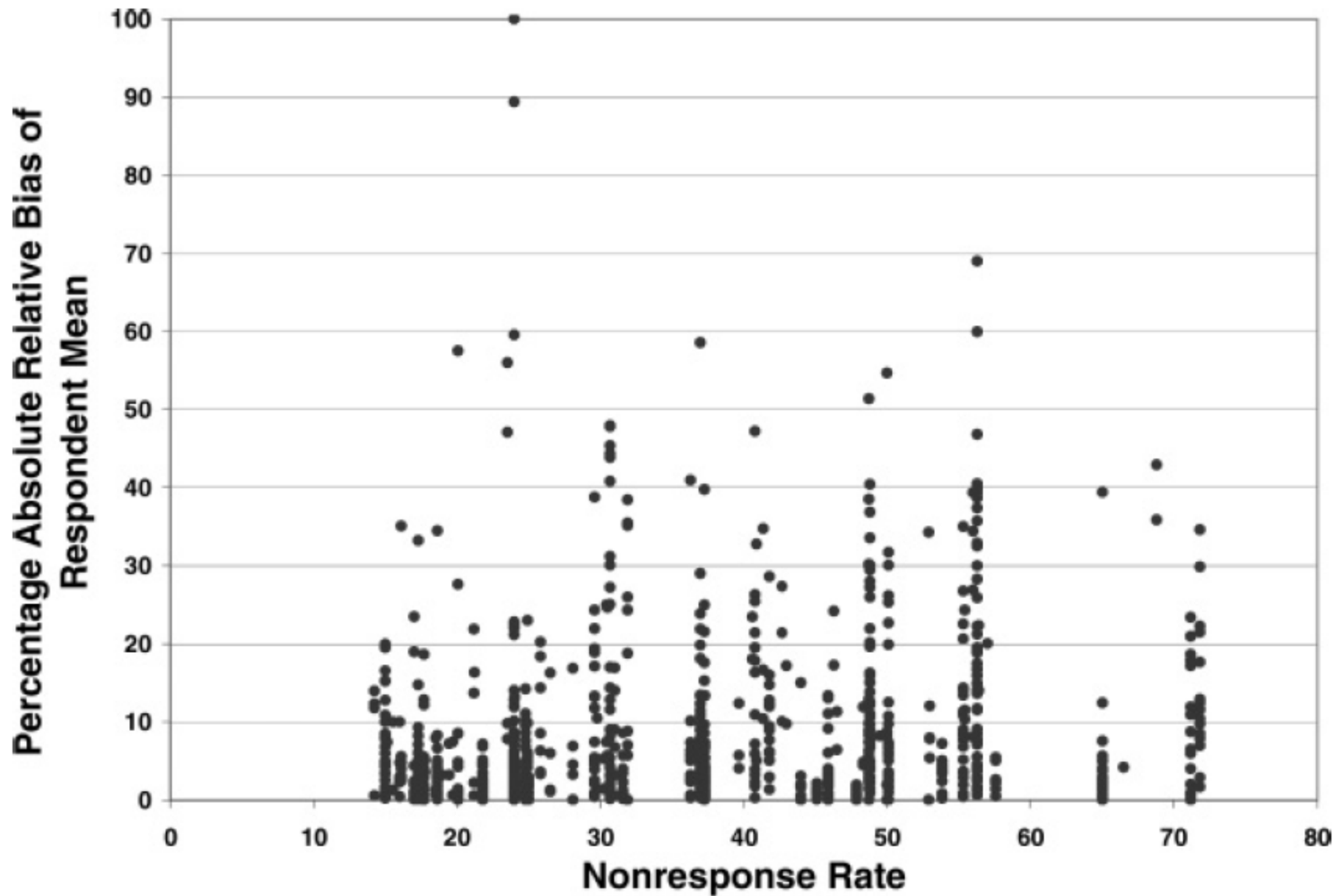


Figure 2. Percentage Absolute Relative Nonresponse Bias of 959 Respondent Means by Nonresponse Rate of the 59 Surveys in Which They Were Estimated.

OMB Standards For Statistical Surveys

- **“Standard 1.3 Survey Response Rates**

Agencies must design the survey to achieve the highest practical rates of response, commensurate with the importance of survey uses, respondent burden, and data collection costs, to ensure that survey results are representative of the target population so that they can be used with confidence to inform decisions.

Nonresponse bias analyses must be conducted when unit or item response rates suggest the potential for bias to occur”.

PRACTICAL TOOLS FOR NONRESPONSE BIAS STUDIES

JOINT PROGRAM IN SURVEY METHODOLOGY

- This course is designed to help in addressing the OMB guidelines for conducting nonresponse bias studies when response rates in surveys are less than 80 percent or there is reason to suspect that estimates are biased from nonresponse.

Conclusion

The Response Rate is an Important Measure of Survey Quality!

But, the SIZE of the Difference between Responders and Nonresponders Should Not Be Ignored!

Conclusion

- When response rates are low, users should request Nonresponse Evaluation (Bias) Studies
- It should be remembered that the framework to carry out a “projectable” Nonresponse Bias Study still requires the framework of a probability sample.

Thank You!