

Preface

In late 1979, the Board of Directors of the Council of American Survey Research Organizations (CASRO) became concerned with wording that existed in specifications contained in Requests for Proposals (RFPS) by the Federal Government for survey work based upon probability samples. Among the specifications, there is usually a statement specifying what minimum completion or response rate would be acceptable. Since there was no clear-cut definitions of these terms, they were used interchangeably and different interpretations existed. As a result, the competing company that adopted a loose interpretation was usually the low bidder. It was felt that such a system was not fair to either the bidders or the sponsoring federal government agency. This situation was not limited to the federal government but existed in proposals requested by other organizations.

CASRO recognized the need to establish a uniform definition and to develop a uniform formula for measuring response rates for survey research. The formula to be developed should be applicable to probability samples that made use of mail, telephone, personal interview or any combination of these methods. To achieve this aim, a Task Force was established.

At the beginning it became apparent that the findings of the Task Force would extend beyond the originally stated purpose. It also became apparent that in developing a uniform formula, a set of standards for specifying and reporting would have to be established that would be applicable and acceptable to survey statisticians who were involved with the problems of non-response. Hence, the Task Force that was established was not limited to CASRO members, but also included survey statisticians from government, from universities, from industry, and from research institutes. It included those who specify standards and those who use survey data, as well as those who produce data.

The members of the Task Force on Completion Rates have contributed a considerable amount of time and effort to this project since it was begun two years ago. Now that the Task Force's work has been completed, it is time to recognize those who worked on this project.

I should like to acknowledge the contributions of Anthony Asmann of National Analysts, Philadelphia; Barbara Bailar of the Bureau of the Census, Washington, D.C.; Martin Frankel of Baruch College, New York; Maria Gonzalez of the Office of Federal Statistical Policy and Standards, Washington, D.C.; Robert Groves of the Institute for Social Research, Ann Arbor, Michigan; Thomas B. Jabine of the Department of Energy, Washington, D.C.; J. Edward Jackson of Eastman-Kodak Company, Rochester, New York; William Kalsbeek of the Department of Biostatistics at the University of North Carolina, Chapel Hill; Ingrid Kildegaard of the Advertising Research Foundation, New York; William Madow of the National Research Council, Committee on National Statistics, Washington, D.C.; Monroe Serkin of the National Center for Health Statistics, Washington, D.C.; Alfred Vogel of Response Analysis Corporation, Princeton, New Jersey; Joseph Waksberg of Westat, Rockville, Maryland; and Frederick Wiseman of Northeastern University, Boston. The counsel and assistance of these individuals is deeply appreciated. I should also like to give special thanks to Edwin Goldfield of the Committee on National Statistics not only for making available a meeting room at the National Academy of Sciences, but also for his words of encouragement on the importance of our task at the initial meeting.

Lester R. Frankel, Chairman
CASRO Task Force on Completion Rates

CASRO[®]
170 North Country Road, Suite 4
Port Jefferson, New York 11777
(631) 928-6954 Fax: (631) 928-6041
www.casro.org • email: casro@casro.org

CASRO[®] On the Definition of Response Rates ©1982 CASRO. All Rights Reserved. This document is protected under the copyright laws of the United States and other countries and may not be reprinted or reproduced without permission from CASRO, provided that it may be referenced and quoted with attribution and credit given to CASRO.

Introduction

During the past few years there has been a great deal of discussion in survey research concerning the problem of non-response. While always a concern, there was a general feeling among practitioners as early as 1970 that non-response was becoming a growing problem. People were not cooperating in granting an interview. Interviewers would not go into certain areas. The population had become more mobile and people were not at their usual place of residence for extended periods. Also, because of the high participation of women in the labor force it had become difficult to find women respondents at home during daytime hours and also difficult to obtain good interviewers to carry out field work.

Because of the concern over the magnitude of the non-response group and its effect upon the validity of survey conclusions, the profession is reacting in at least three different ways. First, there is the reporting of non-response rates in the description of a survey report. It is expected that part of the technical appendix be devoted to a discussion of response rates. In their specifications to bidders for survey work, the Federal RFP's usually specify a minimum response rate. The Office of Federal Statistical Policy and Standards has alerted federal agencies sponsoring data collections that the quality of data obtained may not be sufficient if the response rate falls below 75 percent. In the private sector there are agencies concerned with the dissemination of survey research data that are syndicated and are used to make media purchasing decisions. These agencies, such as the Advertising Research Foundation and the Broadcast Rating Bureau, require the statistical reports that are issued to contain statements of the response rate and, in some cases, full disclosures of the procedures used to derive this rate. The activities of this first type are designed, in a sense, to protect the user of sample survey data and to provide measures to evaluate the interviewing performance.

A second set of activities in which statisticians are currently engaged are designed to cope with the existence of non-response. These activities involve the imputation of missing values in an attempt to correct for non-response and thus minimize its effect. The Committee on National Statistics of the National Research Council has established a Panel on Incomplete Data. This panel is examining current procedures, developing theoretical bases for amputations, and evaluating various practices.

A third type of activity is concerned with an investigation of the causes of non-response and the development of techniques to reduce its impact in sample surveys. The American Statistical Association (ASA), the Council of American Survey Research Organizations (CASRO), the Marketing Science Institute (MSI), the Research Triangle Institute (RTI), the Institute for Social Research (ISR), the Committee on National Statistics, National Research Council (CONSTAT), and others have been involved. In order to make progress, it is necessary to have full details of response rate calculations and to compare non-response rates under different conditions. For example, how do response rates today compare with response rates ten years ago? What effect does the mode of interviewing have upon non-response? Does the nature of the topic being investigated have any effect? Do government conducted surveys yield different response rates than those conducted by private industry? Are privacy and confidentiality factors that affect survey response rates?

CASRO®

170 North Country Road, Suite 4
Port Jefferson, New York 11777
(631) 928-6954 Fax: (631) 928-6041
www.casro.org • email: casro@casro.org

CASRO® On the Definition of Response Rates ©1982 CASRO. All Rights Reserved. This document is protected under the copyright laws of the United States and other countries and may not be reprinted or reproduced without permission from CASRO, provided that it may be referenced and quoted with attribution and credit given to CASRO.

Among theoretical statisticians and also among practical statisticians engaged in fields such as quality control, laboratory and medical experimentation, and agricultural field crop experiments, the concepts of "missing observation" and "incomplete data" have been of great use in handling inferences when not all of the individuals designated to be measured or observed yield the required information. In these applications each sampled unit is uniquely defined and the measurement process is usually straightforward.

In sample surveys that involve not only interviewing but also the sample selection process, the latter for the designation of the selected individual, there has been a tendency to adopt, blindly, the concepts used in the above areas and to use them whether or not they are applicable. Ambiguities of definition create problems that lead to confusion in communication. It is necessary, then, to set up procedures to define the response rate for surveys based upon probability sampling.

Many Terms - Many Meanings

Part of the difficulty in establishing a formula to determine response rates occurs because of looseness in the usage of many terms. The term "response rate" has a specific meaning to many authors and is generally accepted to designate the ratio of the number of completed interviews divided by the number of eligible units in the sample. While the determination of this ratio may be complicated, and will be discussed later, there is no question about its unique meaning.

On the other hand, the term "completion rate" can have and has been used with a multiplicity of meanings when applied to the sample survey process. The completion rate is the extent to which a task has been accomplished. Since in a sample survey there are many tasks to be undertaken and there are different criteria for accomplishment, the term completion rate has been used with the following meanings:

- 1) C. R. = Number of Completed Interviews/Number of Contacts
- 2) C. R. = Number of Respondents Who Answered All Questions/ Number of Respondents Who Started An Interview
- 3) C. R. = Number of Completed Interviews / Number of Eligible Units in Sample
- 4) C. R. = Number of Completed Interviews / Total Units in Sample (Eligible Plus Ineligible)
- 5) C. R. = Number of Completed Interviews Plus Ineligibles / Total Units in Sample (Eligible Plus Ineligible)
- 6) C. R. = Number of Households Who Completed a Census Form / Number of Households That Received a Census Form
- 7) C. R. = Number of Telephone Numbers That Have Been Established To Be Residential, Other Working or Non-Working / Number of Telephone Numbers Dialed
- 8) C.R. = Number of Units for Which Eligibility Status Has Been Determined / Number of Units in Sample

CASRO®

170 North Country Road, Suite 4
Port Jefferson, New York 11777
(631) 928-6954 Fax: (631) 928-6041
www.casro.org • email: casro@casro.org

CASRO® On the Definition of Response Rates ©1982 CASRO. All Rights Reserved. This document is protected under the copyright laws of the United States and other countries and may not be reprinted or reproduced without permission from CASRO, provided that it may be referenced and quoted with attribution and credit given to CASRO.

All of those have specific uses in planning studies. The first six, above, refer to the interviewing process, while the other two relate to tasks involved in the sampling operations. The third form is the same as the definition of the response rate.

The Task Force compiled a list of about a dozen terms that are in common usage. Some of these terms are more directed than the term "completion rate" such as, for example, "cooperation rate," "interview rate," "at-home rate," etc. Other terms were the obverse of those mentioned, such as "non-response rate," "refusal rate," "not-at-home rate," etc. All of these are useful for diagnostic purposes.

Because of the proliferation of these terms, there is a tendency to use more than one term to define the same concept and to find the same term used for different concepts. Even when different terms are used, the reader of a statistical survey may become, confused.

For example, in the fall of 1976, the Panel on Privacy and Confidentiality as Factors in Survey Response, Committee on National Statistics had two surveys conducted as part of its study. The first was an "Attitude Survey," nationwide in scope, in which a sample of 1,456 households was selected for a personal interview to obtain information on the expressions of individuals as respondents in surveys and their attitudes about surveys. In addition to this, an "Experimental Study" was conducted. A national sample of 2,440 households was selected. These were divided into five replicates where they differed from each other with respect to different promises of confidentiality. The questionnaire consisted of a census-type form and also was administered by personal interview. In the attitude study the "interview rate" was 81.5 percent and in the response behavior study the overall "completion rate" was 91.5 percent.

The principal reason for the difference was that different tasks were being evaluated. In the attitude study a pre-selected person 18 years of age or older in the sampled household had to be interviewed. In the behavior study, a measure was used to specify the extent to which a responsible household member would supply information so that a census-type form could be filled out.

In many marketing studies, through the use of the Politz-Simmons technique, the population sampled is defined as the population of persons at home when the interviewer calls, and those who were not at home when the interviewer originally called are not considered part of the non-response group.

Through the use of the coincidental method in determining in-home television viewing, a person who is not at home when the interviewer calls is a respondent whose value for watching television at home is zero. This is considered to be a completed interview.

In a particular study comparing random digit dialing (RDD) with personal interviews it was stated that, "Cooperation rates in the two survey methods were very close. The Census Bureau obtained interviews in 96 percent of the households contacted, while the RDD city-wide sample had a cooperation rate of 93

CASRO®

170 North Country Road, Suite 4
Port Jefferson, New York 11777
(631) 928-6954 Fax: (631) 928-6041
www.casro.org • email: casro@casro.org

CASRO® On the Definition of Response Rates ©1982 CASRO. All Rights Reserved. This document is protected under the copyright laws of the United States and other countries and may not be reprinted or reproduced without permission from CASRO, provided that it may be referenced and quoted with attribution and credit given to CASRO.

percent. . ." The cooperation rate for RDD was defined as interviews completed divided by households contacted and not by the number of eligible households that could have been in the sample had there been a concerted effort to contact them. From the substantive viewpoint, the comparison of the two cooperation rates is meaningless.

It is apparent that there exists a great deal of confusion because of the various meanings of different terms used. Nevertheless, it is possible to establish a pair of definitions that will clarify the situation. In discussions within the Task Force the following evolved:

Completion Rate is to be considered as a collective term that is used to designate how well a task has been accomplished. In general, completion rates are used to measure how well the various components involved in a sample survey are accomplished.

The term **Response Rate** is a summary measure and should be used to designate the ratio of the number of interviews to the number of eligible units in the sample. The response rate is a measure of the result of all efforts, properly carried out, to execute a study. In determining a response rate, completion rates are used to evaluate the component steps. These component steps are then combined to form the response rate.

Basic Definition

Response Rate = Number of Completed Interviews with Reporting Units/ Number of Eligible Reporting Units in Sample

The above formula, somewhat more specific, takes into account the various possibilities for executing a survey.

Computation of Response Rate

The implementation of the formula may be simple or complex depending upon the type of sampling survey that is employed. This is discussed in the sections that follow.

To illustrate how the formula is used, consider the following simple example: a single stage survey with individuals where no screening is involved.

Example

Universe = Charge Account Customers in a Metropolitan Department Store with Branches
Frame = List Arrayed by ZIP Codes Containing Name, Address and Telephone Number of Each Customer
Sample = Systematic Sample of 1,000 Names, Addresses and Telephone Numbers
Questionnaire: Single Question = Did You Visit Any of Our Stores On Labor Day?
Definition of Completed Interview = A Response To Above Question
Reporting Unit = Individual In Whose Name That Charge Account Is Listed

CASRO®

170 North Country Road, Suite 4
Port Jefferson, New York 11777
(631) 928-6954 Fax: (631) 928-6041
www.casro.org • email: casro@casro.org

CASRO® On the Definition of Response Rates ©1982 CASRO. All Rights Reserved. This document is protected under the copyright laws of the United States and other countries and may not be reprinted or reproduced without permission from CASRO, provided that it may be referenced and quoted with attribution and credit given to CASRO.

Results

Call #	Attempts	Number of Customers Interviewed	Cumulative	Response Rate
1	1000	600	600	60.0%
2	400	200	800	80.0%
3	200	50	850	85.0%

In this example, the number of eligible units is 1000, the customer is the reporting unit and there is no ambiguity as to the definitions of a completed interview. The response rate after 3 calls is 85.0%.

Treatment of Substitutions

It often happens that in order to fulfill the requirements of a survey design, a fixed number of interviews has to be obtained. Suppose, in the above survey, it is required to obtain 1000 interviews. Since the frame contains many more names than were originally selected, additional names are available for sampling.

There are a number of methods for achieving the pre-designated number of interviews. In practice the two common methods are:

- A. Select larger sample to start with.
- B. For each non-response, after n calls, select next name in file, make a single attempt, if not successful, take next one and continue until a completed interview is obtained.

In this example, method A would have selected 1000 divided by .85 to equal 1176 names and with 3 calls, 1000 completed interviews would be obtained.

$$\text{Response Rate} = 1000/1176 = 85.0\%$$

If method B were used, it is impossible to tell in advance how many names would be required. Assume that to obtain the additional 150 interviews to bring up the number of interviews to 1000, 300 names would be required.

$$\text{Response Rate is not } 1000/1300 = 76.9\%$$

but

$$\text{Response Rate is } 850/1000 = 85.0\%$$

CASRO®

170 North Country Road, Suite 4
Port Jefferson, New York 11777
(631) 928-6954 Fax: (631) 928-6041
www.casro.org • email: casro@casro.org

CASRO® On the Definition of Response Rates ©1982 CASRO. All Rights Reserved. This document is protected under the copyright laws of the United States and other countries and may not be reprinted or reproduced without permission from CASRO, provided that it may be referenced and quoted with attribution and credit given to CASRO.

The Panel on Privacy and Confidentiality as Factors in Survey Response of the Committee on National Statistics has called attention to an illegitimate method of computing response rate through the use of substitute cases. The citation is as follows:

"One controversial device is substitution. Substitution for initially designated units can be performed in a variety of ways, some quite sophisticated. One scheme, vigorously defended by some theoreticians, starts with a preferred final sample unit and, say, three 'alternates,' all drawn randomly. If the preferred unit cannot be secured, the first alternate is tried, then the second alternate, followed by the third. The case is called a non-response only if none of the four can be realized. For example, one major survey employing substitution methods had this experience (values are percents of designed sample):

Preferred unit responded 73.7
First alternate unit responded 8.1
Second alternate unit responded 2.9
Third alternate unit responded 1.2
No response for the area 14.1
TOTAL 100.0

The survey was reported to have an 86 percent completion rate."

The Panel on Incomplete Data of the same Committee on National Statistics recommends that interviews with substitutions for non-respondents should not be used in computing response rates.

Determination of the Elements in the Formula

It may appear that the terms of the formula are self evident. However, they have precise meanings depending upon the survey specifications, and for certain survey designs they cannot be obtained directly but have to be estimated.

Reporting Units

The term "reporting unit" has to be distinguished from the "sampling unit" and the "analytic unit." In some cases all these coincide, however, in most sample surveys, they are different. For example, in a nationwide survey the sampling unit may consist of a structure and the reporting units may be all of the households in the structure. Information is to be obtained from each household. The household is the reporting unit.

In an industrial survey a sample of companies is selected and all of the officers in the selected company are to be interviewed. The officers are the reporting unit and, while there are exceptions, the analytic unit is smaller than the reporting unit. Thus, in the Census CPS survey a sample of approximately 60,000 households is selected and current demographic data are obtained for about 100,000 persons 14 years of age and older living in these households. Most of the CPS reports deal with the characteristics of

CASRO®

170 North Country Road, Suite 4
Port Jefferson, New York 11777
(631) 928-6954 Fax: (631) 928-6041
www.casro.org • email: casro@casro.org

CASRO® On the Definition of Response Rates ©1982 CASRO. All Rights Reserved. This document is protected under the copyright laws of the United States and other countries and may not be reprinted or reproduced without permission from CASRO, provided that it may be referenced and quoted with attribution and credit given to CASRO.

these persons. The reporting unit is the household and response rates are computed on the basis of these households.

Completed Interview

A completed interview has to be specified in terms of the (1) amount of information supplied and (2) the sources of information that are acceptable.

The number of questions, the proportion of questions, and the satisfactory responses to particular questions are sometimes used as criteria to determine completeness.

In almost all market research studies and in all attitude studies it is required that the designated respondent be the only acceptable source. The designated respondent in a household is usually selected by a random process or may be defined in terms of function, e.g., "the principal shopper."

In many government surveys the acceptable respondent is sometimes defined as "any responsible household member" (CPS). In other studies, a surrogate living in the same household or a proxy respondent is acceptable.

Depending upon the nature of the study and the type of data required, a neighbor may supply the information. In other cases, information obtained from outside sources or records are acceptable.

Since there are a variety of possibilities available in defining a completed interview, it is necessary to specify in advance just what is meant by this term.

Number of Eligible Units in the Sample

The determination of the number of eligible units in the sample depends upon the method of sampling and the sampling frame that is used. In most cases, this number cannot be obtained directly and has to be estimated. The mathematical procedure of doing this is the same whether the interviewing is done in person, by telephone, by mail, or through a combination of these methods. However, the procedures for obtaining some of the values needed will vary.

Four types of sampling are considered. These are:

- Type I - Single Stage, No Screening
- Type II - Single Stage, Screening Required
- Type III - Multistage, No Screening
- Type IV - Multistage, Screening Required

In Type I there is a direct access to the selected sample, while in Types II, III and IV, interviewing or some other form of investigation is required before the eligible units can be identified. As a result, unless there is perfect execution for these processes, estimates of the number of eligible units have to be made. The general rule is the number of eligible reporting units equals the number that would have been obtained if there was perfect execution.

CASRO®

170 North Country Road, Suite 4
Port Jefferson, New York 11777
(631) 928-6954 Fax: (631) 928-6041
www.casro.org • email: casro@casro.org

CASRO® On the Definition of Response Rates ©1982 CASRO. All Rights Reserved. This document is protected under the copyright laws of the United States and other countries and may not be reprinted or reproduced without permission from CASRO, provided that it may be referenced and quoted with attribution and credit given to CASRO.

The following procedures should be used to determine the number of eligible sampling units for each of the four types of sample designs:

Sample Type I

- Single Stage - All units in frame eligible.
- Number of reporting units in sample directly available whether using personal interviews, telephone or mail.

Sample Type II

- Single Stage - Not all units in frame eligible – screening required.
- General Rule: Attempt to determine eligibility for each element in frame.
- Screening will yield (1) eligible, (2) non-eligible, (3) not ascertained.
- Distribute N.A.'s in the ratio of (1) to (2) to estimate the number of eligible units.
- The general rule applies to personal, mail or telephone studies. However, (1) method of determining eligibility may vary, (2) degree of eligibility will vary - depending upon the frame.

Sample Type III

Multistage - no screening

Type III (A): Sample of households, then sample of individuals within selected households.

Type III (A) 1: One person selected from each sampled household, total reporting units in sample equals number of households selected.

Type III (A) 2: Every Nth person selected within sample household; total reporting units equal $1/N$ of all persons in sample households. For a household where no contact is made or a refusal occurs, attempt to determine the size from other sources, such as neighbors; in absence of such information, assume average size of household of those missed equals average of those that were interviewed.

Type III (B): Sample of area segments, N households per segment, one individual per household - possibility of missing segments. Compilation of number of reporting units in sample computed as in Type III (A), but have to take into account the number of eligible units that would have existed in those segments that were missed.

CASRO®

170 North Country Road, Suite 4
Port Jefferson, New York 11777
(631) 928-6954 Fax: (631) 928-6041
www.casro.org • email: casro@casro.org

CASRO® On the Definition of Response Rates ©1982 CASRO. All Rights Reserved. This document is protected under the copyright laws of the United States and other countries and may not be reprinted or reproduced without permission from CASRO, provided that it may be referenced and quoted with attribution and credit given to CASRO.

Sample Type IV

Multistage – Screening

Use all the principles described for previous types in combination depending upon the specific design.

Determination of Response Rates from Completion Rates

Since the response rate is a summary measure while completion rates are measures of how well certain tasks have been accomplished, it is possible in a sample survey to obtain the response rate from the completion rates. For a Type I survey, i.e., single stage --- no screening, the completion rate is a measure of how well the interviewers have performed their tasks and the completion rate equals the response rate.

For Type II surveys involving single stage with screening, there are two tasks, the first being to screen the sample units to determine eligibility and the second being to interview the eligible respondents. In this case, the response rate is equal to the screening completion rate, i.e., the proportion of units where a decision has been reached as to whether or not a unit is eligible multiplied by the interview completion rate, that is, the proportion of screened eligible responses who completed an interview.

In Type III surveys, completion rates are obtained for each of the stages, these are multiplied together and, finally, this product is multiplied by the interview completion rate. For example, suppose the design was such that 100 sample segments are selected and within each segment 10 persons from 10 households are to be interviewed. Suppose 5 sample segments were not contacted and in the remaining 95 segments, 800 out of the 950 households supplied information listing the individuals in the households. Finally, of the 800 persons selected, 750 were reached and 680 granted an interview. In this example, the response rate is 68%, that is, 680 completed interviews with individuals of the 1000 respondents that would have been obtained if there were perfect executions. This same result could have been obtained by the following multiplication:

$$\begin{aligned} &(\text{segment contact rate}) \times (\text{household completion rate}) \times (\text{interview completion rate}) \\ &(95/100) \times (800/900) \times (680/800) = .68 \end{aligned}$$

Type IV surveys are similar to Type II except that a screening interview is involved to establish eligibility. Suppose, in the above survey, it was desired to sample persons with automobile driver permits. Two designs are possible. In the first design, the eligibility status is determined from the selected individual and, if that person is eligible, then an interview is attempted. In the second design, within each household, only eligible persons are listed and a selection is made among those eligible. The second design will yield a larger amount of interviews. However, assuming the same completion rates for each task, the estimated response rate will be the same.

CASRO®

170 North Country Road, Suite 4
Port Jefferson, New York 11777
(631) 928-6954 Fax: (631) 928-6041
www.casro.org • email: casro@casro.org

CASRO® On the Definition of Response Rates ©1982 CASRO. All Rights Reserved. This document is protected under the copyright laws of the United States and other countries and may not be reprinted or reproduced without permission from CASRO, provided that it may be referenced and quoted with attribution and credit given to CASRO.

Relationship Between the Frame and the Response Rate

In the previous examples illustrating the computation of the response rate, all but one involved area frames and required personal interviews. The computation of response rates is the same for mail and telephone interviewing. The main distinction in terms of sampling between these latter two types of interviewing and personal interviewing is that area frames are not used. For mail and telephone interviewing, the frames consist of listings. These lists may be obtained from a variety of sources such as subscribers, present customers, addresses from city directories, telephone directories, etc., as well as lists of the addresses and/or phone numbers of households that were previously interviewed and those that are not available for a personal interview. Not all frames are existent listings of sampling units; a frame may be generated by a rule.

Because of the use of unlisted numbers among telephone subscribers, frames for telephone sampling are not confined to listed numbers. The frame may consist of all ten thousand numbers within selected exchanges and the sample is obtained by selecting random numbers from among the ten thousand (random digit dialing). Usually, not all numbers are assigned and many of the existing numbers are for businesses and institutions. Residences account for a small proportion of the possible numbers. Many numbers dialed are not connected with a telephone instrument and are, thus, not eligible. Since telephone companies tend to assign numbers sequentially, it is possible in advance to eliminate banks of 1,000 numbers that are non-working.

Usually frames contain extraneous units and it is necessary to select those units that are eligible for the study. The higher the proportion of extraneous units, the more difficult and expensive it is to screen and select a sample of eligible units. The most extreme case is in using random digit dialing (RDD). The situation improves where the frame is defined in terms of working banks. On the other extreme, there are current mailing lists, but these contain non-eligible units.

The rules for computing response rates for random digit dialing sampling are essentially the same as for any other method of data collection. However, in the screening operation two processes are combined. The first is the elimination of those numbers that are not assigned or are not working numbers. The second is the determination of the eligibility status of the working numbers. Depending upon the survey, among the working numbers, some will be established as eligible and would include all of the working household numbers. Those established as ineligible would include numbers assigned to businesses, government agencies, institutions, etc., as well as those assigned to public place instruments. The ineligible would also include those households that fell into the sample, but are located outside the geographic unit sampled.

CASRO®

170 North Country Road, Suite 4
Port Jefferson, New York 11777
(631) 928-6954 Fax: (631) 928-6041
www.casro.org • email: casro@casro.org

CASRO® On the Definition of Response Rates ©1982 CASRO. All Rights Reserved. This document is protected under the copyright laws of the United States and other countries and may not be reprinted or reproduced without permission from CASRO, provided that it may be referenced and quoted with attribution and credit given to CASRO.

There would be another group of numbers where, in spite of many callbacks, eligibility status cannot be determined. Such cases could include, continuous ringing but no answer, a constant busy signal, or immediate disconnections. For purposes of estimating the number of eligible sampling units, this unknown remainder should be distributed between eligibles and ineligibles in the same proportions as exists among the working numbers.

In the determination of the number of eligible households, it is not necessary to depend upon such a ratio-estimating procedure. If there is reason to believe that such a procedure will tend to overestimate the number of eligible units among those not reached in the screening process, other sources of information may be used. For example, in using random digit dialing to obtain residential households, if a number has a busy signal for three attempted calls, then the telephone operator can be asked if the number is a working number.

For mail surveys, where the frame is not up to date, non-response may occur because the intended recipient of the questionnaire is no longer at the given address. These cannot be considered as noneligible cases unless definite proof is available through Post Office returns, through personal visits to the addresses, or through information from some other source.

Summary

This Task Force was established by CASRO for the purpose of developing a uniform formula for measuring "completion rates in survey research for all modes of data collection, that is mail, telephone and personal interview." It turns out that the term "completion rate" has a multitude of meanings and can be applied to specify the degree to which any one or more of the steps that are part of a sample survey has been successfully executed. After much discussion, the Task Force thought it would be more appropriate and in keeping with current usage to establish a formula to obtain the response rate.

A definite mathematical formula has been proposed to determine the response rate for a sample survey. While the formula itself is unambiguous, the terms used require definitions. These can usually be specified in advance. The measured value of other terms, in some cases, cannot be determined precisely and has to be estimated. This occurs when the frame for sampling contains units that are outside the scope of the survey. This is always true when sampling telephone households through the use of random digit dialing. Procedures for making estimates of eligible reporting units, which appear in the denominator of the formula, have been recommended. There are, of course, other procedures that are possible.

In this report, the Task Force limited its discussion to its original assignment to establish a formula. It was well aware that there are many aspects involved in the reporting and specification of response rates. Response rates for various segments of the sampled population in the form of an "Accounting Table" are suggested by the Panel on Incomplete Data.

Weighted response rates can be obtained by taking into account the importance of each reporting unit.

CASRO®

170 North Country Road, Suite 4
Port Jefferson, New York 11777
(631) 928-6954 Fax: (631) 928-6041
www.casro.org • email: casro@casro.org

CASRO® On the Definition of Response Rates ©1982 CASRO. All Rights Reserved. This document is protected under the copyright laws of the United States and other countries and may not be reprinted or reproduced without permission from CASRO, provided that it may be referenced and quoted with attribution and credit given to CASRO.

An estimate of the response rate for the population sampled can be derived. This procedure is used by the Advertising Research Foundation.

Since it was not the objective of the Task Force to determine the nature of the non-respondents in a sample survey, there is no discussion of the types or characteristics of non-respondents. However, in recommending a procedure for estimating the number of eligible units through the use of screening, it

was assumed that after all other methods were exhausted, non-respondents in the screening operation had the same eligibility characteristics as those who were successfully screened.

For questions regarding this or any other CASRO publication, please contact us.

CASRO

CASRO®

170 North Country Road, Suite 4
Port Jefferson, New York 11777
(631) 928-6954 Fax: (631) 928-6041
www.casro.org • email: casro@casro.org

CASRO® On the Definition of Response Rates ©1982 CASRO. All Rights Reserved. This document is protected under the copyright laws of the United States and other countries and may not be reprinted or reproduced without permission from CASRO, provided that it may be referenced and quoted with attribution and credit given to CASRO.