

Non-response problems at Statistics Sweden (SCB)

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1 Surveys conducted at the SCB - a synopsis

As laid down by the Government, the SCB is the central authority for the production of governmental statistics in Sweden.

Among other things the SCB has been commissioned to conduct - on behalf of central and local authorities - statistical surveys, to carry out automatic and manual data processing and to provide an advisory service on statistics. The SCB may also undertake commissions for private persons, corporations or organizations.

The actual statistical production is performed by three different departments; namely Area Statistics, Enterprise Statistics, and Statistics on Individuals.

Four functional departments, Planning and Coordination (including Statistical Methods), Central Administration, System and Information, and Operations serve the subject-matter departments in different ways.

For Area and Enterprise Statistics, most survey data are collected by a combination of mail and telephone. In surveys of individuals, the majority of the data is collected by the Interviewing Unit with about 350 interviewers. Many of these surveys are designed for face-to-face interviewing, but the telephone is used frequently both as a primary collection method and when face-to-face interviews are infeasible.

2 Growing concern

During the 70's the SCB has noted an increase in non-response rates but the problem seems to be restricted to surveys of individuals and households. It is a general fact that all subject-matter departments have been forced to resort to increased salesmanship to cope with the growing resistance among respondents, but in our surveys of individuals these efforts have not proved adequate. The table below presents the non-response rates for our continuous surveys of individuals and households.

Table Approximate non-response rates in continuous surveys of individuals and households (%)

- LFS = Labour Force Survey
- PPS = Party Preference Survey
- SCBE = Survey of Consumer Buying Expectations
- SLC = Survey of Living Conditions
- HIS = Household Income Survey
- SHEC = Survey of Household Energy Consumption
- TN = Total non-response
- RN = Refusal non-response

Survey Year	LFS		PPS		SCBE		SLC		HIS		SHEC	
	TN	RN	TN	RN	TN	RN	TN	RN	TN	RN	TN	RN
1970	1.7	1.2										
1971	3.0	2.3										
1972	3.4	2.7										
1973	3.6	2.6	11.7	6.6					10.9	8.9		
1974	4.2	2.7	14.5	7.5	17.6	9.9	17.6	16.5	11.8	9.4		
1975	7.1	3.8	14.7	7.9	15.3	10.8	19.1	18.0	12.8	8.2		
1976	7.4	4.1	14.8	8.9	16.1	10.8	21.3	19.5	12.9	9.1		
1977	7.0	3.9	12.9	7.1	15.4	10.3	20.0	18.2	11.9	7.9		
1978	6.5	3.6	12.4	6.6	14.4	9.8	15.2	13.9	12.3	8.1	17.7	12.0

The table reveals a high non-response level for these surveys. Generally speaking, we can note an increasing rate until 1976. This pattern is striking in the LFS and the rate for that survey is probably what distresses us most. Over the last two years the situation has stabilized and the rates are decreasing slightly for most surveys.

In the SLC and the HIS the non-response problem is mainly one of refusal. The time schedules for these surveys are such that almost all of the respondents could be traced, resulting in a low not-at-home rate. In the other surveys those not-at-home play a more important role.

The reasons for this irritating non-response situation are not quite clear. Prior to 1970 (when only the LFS existed among the surveys in the table) the SCB was, for most people, an unnoticed institution. In connection with the 1970 Census of Population the media took an interest in aims and methods of the census. This resulted in an enormous public debate on invasion of privacy. This debate, which would probably have come sooner or later anyway, eventually resulted in the Swedish Data Act. The Data Act imposes restrictions on the SCB activities with respect to, for instance, the content of advance letters. It must be explicitly stressed that respondent cooperation is entirely voluntary for a non-mandatory survey. Another example is that imputation on the individual level is no longer permitted. The use of proxy interviews has also been limited.

During 1970-76 the SCB has on occasions suffered from highly adverse publicity. Some leading newspapers have even propagated for stalling and noncooperation among potential respondents. However, with a few exceptions, such propaganda has ceased during the last couple of years. Another serious problem is that the number of unlisted telephones in urban areas is increasing on a huge scale, which makes the tracing of respondents tedious and sometimes impossible within the time limit available.

3 Different approaches to solving the problem

The situation around 1974-75 called for special action by the SCB. A project on non-response problems was started. A steering committee and three project groups were established for the conduct of the project. The general object was, firstly; to try to diminish the non-response rates in the surveys mentioned above, secondly; to try to neutralize the effects of non-response and, thirdly, to try to estimate the impact of non-response on survey results. The initial penetration and discussion of available methodological research and experiences within our agency clearly showed that the issue of non-response posed a complex and manifold problem. As a consequence, it was decided to work along the following lines.

- Respondents and the media should be better informed about survey aims and methods

- The data collection strategies should be revised with a view to reducing non-response rates
- Statistical methods aiming at a reduction and control of the effects of non-response should be reviewed and evaluated and - if possible and necessary - improved.

The project work is not yet finished, but some of the efforts are presented and discussed in subsequent sections of this paper.

4 Informing respondents and the media

4.1 A public relation manual

The public relations unit at the SCB has compiled a public relation manual covering various aspects of the relationship between survey designers and respondents. It is intended for use by the survey designers. The manual suggests that each survey should include a special information plan including pilot tests and evaluation of information material exposed to the respondents. Different types of advance letters and forms are described as well as methods for obtaining media cooperation.

4.2 Offering publications and file excerpts

A respondent can always obtain a summary of results from a specific survey on request. Furthermore, according to the Data Act each individual has the right to receive a print out from his own data file stored at the SCB. Many people avail themselves of this right.

An experiment was conducted in connection with a mail survey. The aim of the study was to find out what would happen to the non-response rate if the SCB made this offer direct to the respondents, together with a more informal type of information material. Thus, one half of the sample received the usual advance letter and nothing else and the other half got the more informal information material and the chance to request survey results and/or their own file excerpts.

The result of the experiment was that about every second person in the experimental group made the request. The non-response rate was lower in this group (20.5 %) compared with the control group (23.3 %). Since the difference is significant on the 5 % level one might conclude that this special effort had a positive effect on the non-response rate.

4.3 Alternative types of information material

Different types of more informal information material have been used over recent years. No special evaluation studies have been carried out but experience shows that it is easier to obtain respondent cooperation if the survey subject is interesting. We believe that more personal and less formal advance letters could increase this interest.

4.4 The results of a privacy and confidentiality survey

In 1976 the SCB conducted a survey with the purpose, among other things, of clarifying the public attitude towards the invasion of privacy, the Data Act, the pooling of data between authorities and institutions, and their relationship with the SCB. The sample size was about 1 300 individuals and the non-response rate was 22 % (!).

According to the respondents the protection of privacy is an important task for society. The respondents ranked the importance of this problem higher than problem areas such as "the care of elderly people" and "equal opportunities for men and women". Only the questions of rising prices and unemployment were ranked higher than privacy problems. Their knowledge of the Data Act was not very good. About half of the respondents knew that such legislation existed but only 20 % could actually describe its main features. Relatively few respondents (3 %) have experienced undue circulation of information about themselves between different authorities and institutions, but many more (23 %) were afraid that this could happen. 90 % of the respondents have heard of the SCB before they were contacted in this study. 60 % could give examples of SCB surveys.

5 Data collection strategies

5.1 Some experiments with mail surveys

Experiments with different call back procedures have been conducted in three mail surveys. The purpose was to investigate whether the response rate would change. The three experiments revealed similar results.

- It is possible to obtain a faster inflow of questionnaires by sending out a brief reminder a few days after the initial mailing.
- A conventional call back is relatively expensive since a new questionnaire and a new kind of advance letter is sent out. The brief reminder is a simple post-card which is sent to all respondents whether they have answered the initial questionnaire or not. Thus costs can be reduced.
- An intensive call back procedure does not have a negative effect on later follow up attempts.
- Unfortunately the brief reminder and various types of call backs have no effect on the final non-response rate.

5.2 Conducting refusal surveys

The SCB has conducted two small exploratory interview surveys of refusers in the SLC and the LFS. The interviews were unstructured, their primary aim being to throw some light on the reasons why the person had chosen not to participate. The interviews were conducted by two independent psychologists commissioned by the SCB. The non-response among the refusers was 17 % in the SLC study and 43 % in the LFS study. The

difference is explained by the fact that the refusers in the LFS constitute the real hard core.

There emerged a great number of reasons, often interacting ones, for a person's decision not to participate, and the refusers turned out to be a very heterogeneous group in respect of personality characteristics and living conditions. Many of the refusers showed a marked distrust of the confidentiality safeguards and many were concerned about being computer registered.

5.3 The interviewer organization

The SCB has a staff of 350 interviewers at its disposal. Ten years ago the number of interviewers was 570. As a result the amount of work per interviewer has almost doubled. During recent years the interviewers have formed a union and a new labour market legislation has come into effect. This development resulted in various consequences. Firstly, unsatisfactory interviewer performance is no longer a valid reason for dismissing an interviewer. Secondly, it is now up to the SCB to ensure that all its interviewers meet the specific quality and efficiency standards. Today, we have no formal system for controlling the interviewers, which is rather unusual by international standards. (The non-response rate is one possible component in such a system.) However, there are indications that a more formal control of the interviewers can be expected in the near future.

5.4 Individual non-response rates

One reason for the special interest in checking interviewer performance is the varying non-response rates between interviewers. Naturally these rates differ between urban and rural areas, but they also differ considerably within limited geographical areas. For instance, in the 1978 Family Expenditure Survey, the total non-response rate is about 30 %. However, the inter-quartile range between interviewers in a county could be substantial; i.e. the difference in average non-response rate between the "best" and the "worst" interviewer quartiles is sometimes 25-30 percentage points.

In the SLC a special study of interviewer non-response rates has been carried out. This shows that there are no differences in rates attributable to the interviewer's sex. With respect to age, the younger and the older interviewers have lower rates than those in between. Interviewer experience has some significance. The difference in non-response rates between those employed prior to 1965 and those employed after 1974 was 3.5 percentage points. It is interesting to note that interviewers with poorer educational backgrounds have lower non-response rates than their better educated colleagues.

5.5 Experiments with interviewing teams

Normally interviewers have no contact with their colleagues except for special meetings arranged by the central Interviewing Unit. Over recent years the idea of creating interviewer teams has been put forward and even tested, at least tentatively. There is some justification for the

conclusion that team work is more motivating and that the interviewers feel more at ease in such a role. Hence there are reasons for believing that team formation could have an impact on non-response rates. The interviewers can support and help each other with difficult cases.

For the moment more extensive experiments are under discussion including the concept of regional offices to take over tasks from the central Interviewing Unit.

6 Statistical methods

6.1 Negatively coordinated samples

There are grounds believing that respondent burden plays an important role as a causal factor for refusals. A recent experiment shows that the non-response rate among pupils who had already participated in an earlier SCB pupil survey was significantly higher than the rate obtained in a control sample of pupils who had not been selected for the earlier study. The difference was six percentage points.

Rough calculations point to the fact that about 15 000 persons might be selected for SCB surveys at least twice within a twelve month period. The estimated number of households where at least one member is selected at least twice during the same period is 38 000. As a consequence the SCB has started to develop the idea of negatively coordinated sampling. The aim is that no person should be included in a sample for an individual or household survey more than once during, say, a period of five years. The actual time is arbitrary, but should be based on the assumption that after such a period the respondent would not experience participation in an earlier survey as a burden.

A variety of technical approaches exist for effecting such coordination. For instance, the Register of the Total Population could be divided into subsets. (In Sweden we are in the fortunate situation of having access to such a register, which is almost complete. For instance, there is no need for area sampling.) Another option is to mark an individual or a household after selection for a survey and compile these units in a special register. For each new sample this register would be searched for overlapping units.

6.2 Reducing the effects of non-response

A common method of dealing with the non-response problem in our mail surveys has been to use the Hansen-Hurwitz double sampling procedure. Unfortunately, we have yet to succeed in obtaining complete or nearly complete cooperation when sampling the initial non-response stratum. In order to decrease the non-response bias the method of post-stratification has been used frequently. In our mail surveys of pupils we have used average marks as poststratification variables. Some analyses carried out within the SCB indicate that these measures are achieving more accurate results. However we

know very little about the effects in practice. There is certainly need for more empirical and simulation studies, and we are continuously working on these problems.

6.3 Imputation

The Swedish Data Act, in its present form, prevents the SCB and other statistical agencies from using non-response imputation techniques. The reason for this is that the Data Act requires that information about individuals in registers must be "accurate". "Inaccurate" information must be corrected or deleted from the register. According to the Data Inspection Board imputation for non-response also violates our in house principle that participation in our surveys should be voluntary. Thus, at least for the moment, we are trapped. The SCB has petitioned the Government without any success, and since 1975 we have not carried out any imputations for individual non-response. (The statutory provisions cited above do not prohibit "anonymous" imputation, mainly at tabulation level.) It is indeed frustrating to witness the rapid development in the field of imputation techniques illustrated by, for instance, last year's San Diego papers on the subject. However, certain facts indicate that existing Data Inspection Board directives are not immutable.

6.4 A computer program for the judgement of non-response error

The SCB has designed a computer program for synthetic calculation of the non-response error for estimation without correction for non-response. Starting with observed frequencies among respondents and the observed non-response rate for a specific variable under study, different assumptions are made about different non-response propensities for different variable values. The program calculates the frequencies for the variable given these assumptions and calculates the non-response error when estimating the variable mean. In the real life situation special measures, such as post-stratification, have often been taken in order to reduce the non-response error. In such situations the program gives information about the size of the non-response error if no such measures have been taken.

6.5 Describing non-response in publications

It is desirable to have a unified structure for reporting non-response in order to be able to discuss and compare the results from different surveys or to observe the trend for a specific continuous survey. The SCB has established special recommendations for this purpose. These recommendations are based on extensive studies of how these matters are handled in our various surveys. Thus, those responsible for the contents of our publications are urged to consider the following items when presenting information about non-response

- describe the data collection procedure and measures taken to minimize non-response

define the frame and its objects

describe undercoverage and overcoverage

give possible reasons for object non-response

estimate the non-response rate for the entire population and for important subgroups

describe measures taken to reduce the effects of non-response

distinguish between measurement error and item non-response

calculate item non-response for important variables

judge the impact of non-response

describe any methodological studies on non-response

7

Summary

The present paper describes a sample of measures taken to cope with non-response problems at the Statistics Sweden. The non-response rates for our continuous surveys of individuals and households have been judged far too high during the 70's, but since 1976 the situation has become less alarming. Efforts have been made in three different areas. These areas are information, data collection procedures and statistical methods. By the end of 1979, all our studies and experiments will be presented in a special report aimed at those responsible for survey planning at our agency. The purpose of this report is to produce a set of tools to cope with the issues of non-response in all its dimensions. Hopefully, it will also provide a base for future efforts in this field.