

the Survey Statistician

The Newsletter of the International Association of Survey Statisticians

No. 68

July 2013



INTERNATIONAL ASSOCIATION
OF SURVEY STATISTICIANS



International Statistical Institute

INTERNATIONALE
ASSOCIATION
DES STATISTIENS
D'ENQUETES



Institut International de Statistique

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New and Emerging Methods

Non-respondent surveys: pertinence and feasibility

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Abstract

Among the techniques to address the problem of unit-nonresponse in surveys, short follow-up surveys for nonrespondents have not (yet) been a strong tradition. They are however promising ways to document and possibly correct for non-response bias, so that it should be of interest to put aside a small part of the overall budget to implement them.

This contribution relates to a longer series of experiences from non-respondent surveys as follow-ups of long face-to-face general social surveys in Switzerland. It shows the great opportunities offered, but also the challenges that have to be faced when opting for this approach.

Introduction

All surveys are facing at least four sources of error: sampling, coverage, measurement, and non-response errors (Dillman, 2000). The latter deals with the fact that not all sampled people finally participate in the survey, raising the question of representativity of the collected data.

Non-response error has always been a major concern, which has been mainly addressed by trying to get high response rates. This concern is getting even more relevant when response rates are low or dropping, as it is currently observed in several countries. However, response rates alone are not sufficient to inform about possible non-response biases, since it has been shown that non-response biases are not always directly related to the extent of non-response (Peytcheva and Groves, 2008). In order to ensure data quality, it is therefore central to have at least some information about the non-respondents.

We first briefly present the different approaches used to get information about non-respondents and their application to elucidate the specific advantages of non-respondent surveys. We then present this approach in general and specifically as used in the last several years in Switzerland in the fieldwork setting of international surveys. We finally summarize the opportunities and challenges raised by this approach.

What can be done about unit non-response?

1. A very widely used technique, especially in marketing and opinion surveys but not only, is to compare the respondents to the population, using for example census data as a reference. This leads to the so called post-stratification weighting. The advantage is that these population data are easily accessible and quite reliable in most countries. The serious drawback is that population data

don't inform directly about non-respondents and such weighting gives the illusion of representativeness, but in many cases does not correct for relevant non-response biases (for the case of foreigners, see for example Lipps et al, 2013).

2. In some cases, respondents can be compared to non-respondents on the basis of sample frame data. The clear advantage is that each information contained in the frame is available for every sample unit, respondents and non-respondents altogether, allowing for precise determination of non-response bias. The problem is that informative sample frames are only available in few countries, and if so, mostly contain only very basic socio-demographic information. Finally, there is a similar limitation as for the previous technique: biases on relevant survey outcomes cannot always be detected and corrected using the frame information. In other words, such a correction will function only if there is a clear relation between the variables available in the frame and the variables of interest in the survey.
3. Another widely used technique is to compare early to late respondents, using for example days to respond as a regression variable, or the level of effort (Biemer et al. 2013). Advantage: contact paradata can be produced by every survey as a collateral product with minimal effort, and mostly are recorded anyway for fieldwork monitoring purposes. Problem: This approach assumes that there is some linear function of response propensities linking cooperative respondents to non-respondents, and that late respondents, and respondents needing higher levels of efforts to be reached and motivated to participate, are situated in between. However, as there are different types of non-respondents (Brennan and Hoek, 1992), this is not necessarily the case.
4. Respondents can also be compared to non-respondents on the basis of information collected at every sample unit's address, such as geographical or GIS-related data, and observational data (Smith 2011). These data however don't always relate to the non-respondents but mainly their environment and imply that a common dimension, such as lifestyle, links the choice of a residential environment and the propensity to participate to a survey. Moreover, the particular case of observational data implies a clear protocol in order to be coded reliably.
5. Information about non-respondents can also be collected at the doorstep. Doorstep questionnaires have shown to be effective in some cases (e.g. Lynn, 2003), even if based on the judgement of the interviewer (for example by evaluating the current sexual activity in the NSFG, see West, 2011). The problem is that they can be collected only for refusals, not for non-contacts, and only in face-to-face surveys.
6. Finally, it is possible to invite all non-respondents to answer a very short questionnaire, repeating some central survey questions, suspected to be particularly sensitive to non-response bias. The advantage of this technique is to deliver not only socio-demographic information about non-respondents, but also attitudinal ones, and to be feasible for all kind of surveys at reasonable costs. The drawback is of course that not all the survey non-respondents will answer such a follow-up.

The idea to follow up non-respondents with a specific survey is not completely new. Non-respondents were specially targeted already by Hansen and Hurwitz (1946), who proposed to subsample the nonrespondents. But they assumed that there was a fundamental difference between the very easy respondents and the others since they defined the non-respondents as all those who did not answer at the first attempt. The idea of reapproaching nonrespondents by another protocol in order to reach different profiles has also emerged (e.g. Hochstim and Athanasopoulos, 1970). However, there is not a vast literature about short surveys focusing on all non-respondents of a longer survey.

Method

The non-respondent surveys presented in this paper were all conducted for international general social surveys based on random samples and realized face-to-face interviews following the same strict fieldwork protocols, ensuring the international comparability. They were also carried out by the same survey organization. The surveys differed mainly in timing (season of start and length of fieldwork) and central topic. Long face-to-face interviews (of about 1 hour) don't achieve high response rates in Switzerland (around 50%). This inevitably raises the concern about non-response bias. The comparisons with population data did not bring to light significant differences between respondents and non-respondents, except for nationality, non-nationals being underrepresented as in most surveys (Laganà et al, 2013). The authors were convinced, supported by literature (Stoop et al. 2010), that these comparisons do not detect most of the survey relevant differences between respondents and non-respondents. Such differences were supposed to lie more on the attitudinal level than on socio-demographics. This is why, since 2006, the non-respondents of 6 long CAPI surveys¹ (several rounds of the European Social Surveys, European Values Study, MOSAiCH conveying the ISSP) have been followed up by a short paper questionnaire, including socio-demographic, behavioural and attitudinal questions.

These non-respondent surveys (NRS) were all conducted after completion of the main survey, by addressing a single page two sided paper questionnaire with about 15 questions to all non-respondents (except the hard refusals, having contacted us directly and asked not to be bothered anymore). Refusals and non-contacts were addressed by specific letters, taking into account their status, and they were all given an unconditional incentive (from a pen to 10 CHF cash (around 10 USD), depending on the incentive given at the main survey). The contact procedure included at least one reminder (by mail or telephone, depending on the survey). In parallel, 20% of the respondents to the main survey received the same questionnaire, in order to check for stability of the answers over time and mode.

The Response Rates

The response rates to the NRS we experienced in Switzerland are very encouraging: through this technique we can collect information concerning about half of all non-respondents, achieving an overall response rate of about 70-75%.

¹ The most recent NRS survey follows the ESS 2012 and is still in field, results are not yet available.

Figure 1. Response rates to the main surveys, non-respondent surveys and cumulated

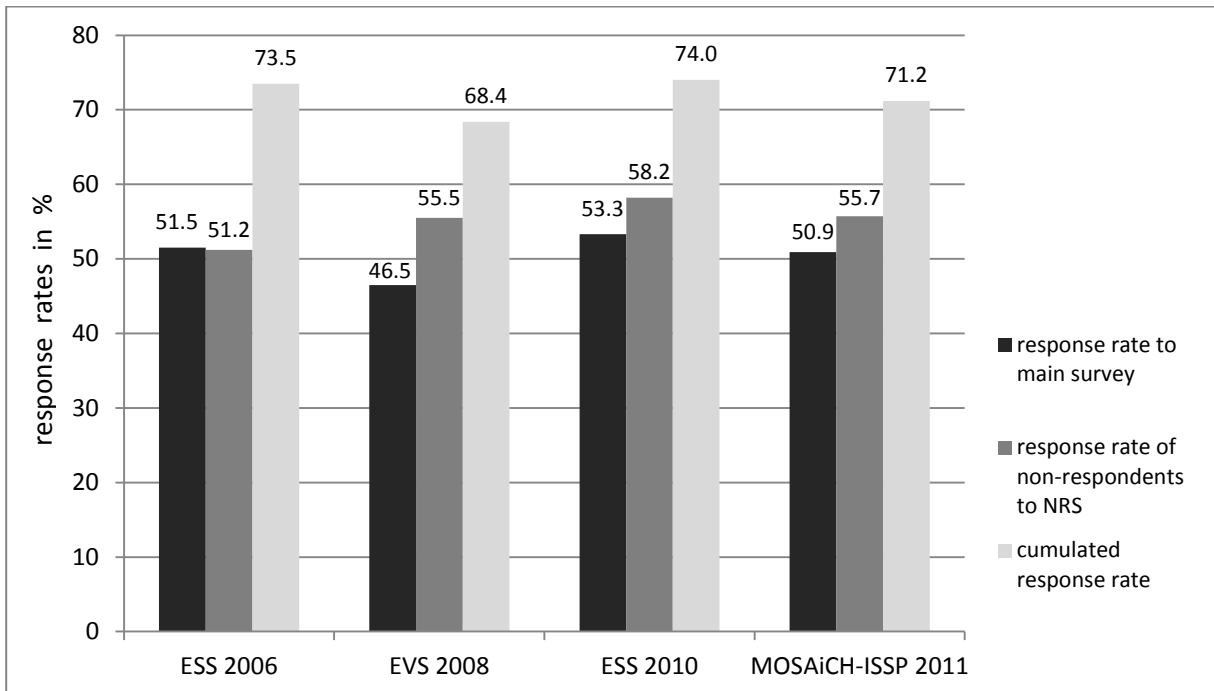


Figure 1 shows that the NRS can significantly improve the information about the sample. But there seems to be an upper limit.²

There clearly is a significant minority (around a fifth) of the population who can be designated as hard-core non-participants because they can neither be reached nor persuaded to participate. In our case the share of non-contacts and the share of refusals are approximately of the same size. And a small part of the population does not participate for non-systematic reasons, even if followed up.

The response rate for the control group (people having participated to the main survey) varies between 80% and 90%. The response rate for the subgroup of refusals and non-contacts varies roughly between 40% and 60%, depending on the survey and subgroup. There is no clear pattern, sometimes refusals responding better, sometimes the inverse. The reason for these irregular differences lies in the specific contact and conversion efforts of each main survey and the procedure applied to the NRS.

Choosing the right questions

The first NRS was developed for the European Social Survey Round 3, together with the ESS core scientific team. It has been carried out in 4 countries (Switzerland, Belgium, Norway and Poland, see Stoop et al, 2010). Questions that were expected to be sensitive to non-response bias were selected from the main survey. Previous analyses on NR-bias, based on comparisons between cooperative and reluctant respondents and variance inflation induced by post-stratification, guided the choice of the questions. In this first version of our NRS, the following questions have been retained: gender, birth year, household size, education, work status, hours watching TV,

² Even in a very recent mixed-mode experiment, where we could achieve high response rates with a shorter questionnaire and several sequential mixed mode designs (up to 70%), the overall response rate including a NRS did not significantly go beyond what we could achieve in the longer face-to-face surveys (max. 76%). Similar figures were achieved by other countries participating in the ESS-R3 NRS (Stoop et al., 2010, pp.252-278). In fact, when response rates to the main survey are higher, the response rate to the NRS is lower.

participation in social activities, involvement in charity organizations, interpersonal trust, trust in politicians, political interest, perception of neighborhood security, satisfaction with democracy in country, attitudes towards immigrants and attitudes towards surveys. Compared to the respondents, the non-respondents (answering the NRS) were more likely to live alone, to disagree that surveys have a value for society, to be less interested in politics, to participate less in social activities, to be less employed and to feel safe rather than very safe in their neighborhood after dark. Through propensity scores weighting, these biases could be reduced (Matsuo et al. 2009).

The content of the NRS questionnaires for the following surveys was quite similar, with a mix of demographic variables and opinions known to be linked to non-response: social isolation and participation and attitude to foreigners notably. However they have been adapted each time in response to the results of the previous NRS and to the actual main survey concerning the interest in the central topic as well as the final choice, the wording and the format of the questions. The subsequent NRS included alternately also questions about centrality of different life domains, membership of associations, propensity to vote, perceived people's fairness, trust in justice, trust in science, happiness, life satisfaction, health, depression, work-life balance, social support and locus of control. Some other characteristics, potentially linked to the possibility to contact the respondents, such as having a fixed telephone line and the telephone number listed in the directory, were included as well as the household composition.

Comparative analyses of the first three NRS showed that the following variables are quite stable predictors of survey participation and should therefore be included in each NRS: interest in politics, attitude towards immigrants and attitude towards surveys. Registration in telephone directories is also a powerful predictor, however partly linked to the survey process itself. Even if telephone contacts are not used, this predictor remains significant: if registration of one's phone number is a voluntary act, it is a good proxy of openness to the public sphere. These results strengthen the idea that participation is mainly related to life styles and relation to the society.

The Challenges

There are however some serious challenges to face. The questions in the main and the non-response survey have to be as comparable as possible, even if NRSs are rarely carried out in the same mode as the main survey. When designing the NRS, careful attention has to be paid to the 'mode translation'. In our case, when we check the distribution differences and the correlation between the answers to the main survey and the NRS in the control group, we have found some significant shifts in the response patterns, meaning that the comparability of the main and NRS surveys can suffer from time/context or mode effects. In a few cases, we can correct for them, in particular if we have a measurement model. In order to improve the stability of the information, in the last NRS still in field, we introduced 3-item-batteries per concept whenever possible in order to construct latent variables. Further research is also needed to assess which differences are mode related, and could therefore be corrected by redesigning the questions also in the main survey, or by developing a specific battery of questions to be used for the NRS and introduced in the main survey. This last option would also allow for not having to repeat a NRS for every survey, if the set of questions proves to be stable predictors of participation over time and over the surveys.³

As mentioned earlier, the NRS can not only be used in order to identify possible biases but also for correcting biases through a weighting procedure. More research is needed to investigate the most appropriate way of performing the propensity score weighting (Matsuo et al, 2010; Alanya and Wolf, 2012) in particular taking into account that not all

³ To disentangle mode from time effect, an idea could be to have an additional control group of respondents answering the NRS shortly after the main survey.

the non-respondents have given information. Inflation in the variance term is also a worry to consider when using such weighting schemes. More generally, we still don't know how the last part of the non-respondents differs and we have no information how far, or on which values, they are different from respondents.

Cost should not be the main concern, as such non-respondent surveys represent a small share of the overall budget, compared to their potential contribution to the overall quality of the survey. In Switzerland, an NRS as described above, addressed to all possible non-respondents and including a significant unconditional incentive, represents about 5-7% of the whole field budget. If the non-respondent sample is very large, a random subsample of non-respondents can be drawn.

Conclusion

Non-respondent surveys are a powerful tool to assess and to correct for non-response bias, as they can inform about a high proportion of all types of non-respondents on participation and survey relevant dimensions. The central challenges lie in the choice of the questions and their design. What we currently suggest is to include questions measuring social integration and participation, or, more generally the relation of a respondent to the others in the society. This could include dimensions about lifestyles but also opinion about, for example, immigrants or attitude towards surveys. Whenever possible, we have to use short batteries and include – if not available through the sample frame – age, sex and household composition. Particular attention has to be paid to avoid at least mode effects when designing the questions. Geographical information, such as urbanization and residential environment or even data linked to the address, should also be considered, for instance through the paradata or metadata, sample frame or any other source that can be legally used. And the integration of information coming from non-respondent surveys and other data about non-respondents should be further investigated.

References

- Alanya, A., & Wolf, C. (2012). Evaluation of Multiple Imputation as an Alternative to Propensity Score Weighting in Detecting Unit Nonresponse Bias. Presented at the *RC33 8th International Conference on Social Science Methodology*, Sydney, Australia.
- Biemer, P. P., Chen, P., & Wang, K. (2013). Using level-of-effort paradata in non-response adjustments with application to field surveys. *Journal of the Royal Statistical Society: Series A (Statistics in Society)*, 176(1), 147–168.
- Brennan, M., & Hoek, J. (1992). The Behavior of Respondents, Nonrespondents, and Refusers Across Mail Surveys. *The Public Opinion Quarterly*, 56(4), 530-535.
- Dillman, D. A. (2000). *Mail and Internet surveys: the tailored design method*. J. Wiley.
- Groves, R. M. (2006). Nonresponse Rates and Nonresponse Bias in Household Surveys. *Public Opinion Quarterly*, 70(5), 646-675.
- Hansen, M.H. and Hurwitz, W.N. (1946): The problem of non-response in sample surveys, "Journal of American Statistical Association", 41, pp. 517-529.
- Hochstim, J. R., & Athanasopoulos, D. A. (1970). Personal Follow-Up in a Mail Survey: Its Contribution and Its Cost. *Public Opinion Quarterly*, 34(1), 69.
- Kessler, R.C., Little, R.J.A., Groves, R.M. (1995). Advances in strategies for minimizing and adjusting for survey non-response. *Epidemiological Reviews*, 17:192-204.
- Laganà, F., Elcherth, G., Penic, S., Kleiner, B., & Fasel, N. (2013). National minorities and their representation in social surveys: which practices make a difference? *Quality & Quantity*, 47(3), 1287-1314.
- Lipps O., Laganà F., Pollien A., Gianettoni L. (2013) Under-representation of foreign minorities in cross-sectional and longitudinal surveys in Switzerland. In: Font J., Méndez

- M. (eds.) *Surveying Ethnic Minorities and Immigrant Populations: Methodological Challenges and Research Strategies*. Amsterdam University Press, pp. 241-267.
- Lynn, P. (2003). PEDAKSI: Methodology for Collecting Data about Survey Non-Respondents. *Quality & Quantity: International Journal of Methodology*, 37(3), 239-261.
- Matsuo, H., Billiet, J., & Loosveldt, G. (2009). *Measurement and correction of non-response bias based on non-response surveys in Belgium, Norway, Poland and Switzerland. European Social Survey – Round 3 (2006-2007)* (Working Paper, CeSO/SM/2009–17, Deliverable Nr. 13) (45 pp.). Leuven: Centrum voor Sociologisch Onderzoek (CeSO).
- Matsuo, H., Billiet, J., Loosveldt, G., Berglund, F., & Kleven, Ø. (2010). Measurement and adjustment of non-response bias based on non-response surveys: the case of Belgium and Norway in the European Social Survey Round 3. *Survey Research Methods*, 4(3), 165-178.
- Peytcheva, Emilia, and Robert M. Groves. (2009). Using Variation in Response Rates of Demographic Subgroups as Evidence of Nonresponse Bias in Survey Estimates. *Journal of Official Statistics* 25(2):193–201.
- Peytchev, A., Baxter, R. K., & Carley-Baxter, L. R. (2009). Not All Survey Effort is Equal Reduction of Nonresponse Bias and Nonresponse Error. *Public Opinion Quarterly*, 73(4), 785-806.
- Smith T. W. (2011) The Report of the International Workshop on Using Multi-level Data from Sample Frames, Auxiliary Databases, Paradata and Related Sources to Detect and Adjust for Nonresponse Bias in Surveys, *Journal of Public Opinion Research*, Volume 23, Issue 3, pp. 389-402
- Stoop, I., Billiet, J., Koch, A., & Fitzgerald, R. (2010). *Improving Survey Response: Lessons Learned from the European Social Survey*. John Wiley & Sons.
- West, Brady Thomas. (2011). *The Error Properties of Interviewer Observations and their Implications for Nonresponse Adjustment of Survey Estimates*. PhD Thesis (Survey Methodology), University of Michigan

New and Emerging Methods – Call for Volunteers

If you're interested in contributing an article to the "New and Emerging Methods" section of a future edition of *The Survey Statistician*, please contact Mick Couper at mcouper@isr.umich.edu.
