

The History of the Contact Procedure and Survey Cooperation -Applying Demographic Methods to European Social Survey Contact Forms Round 2 in Belgium

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Abstract

High non-response rates constitute a major threat to survey quality, since non-response bias is likely to be high. One of the possible ways to cope with this situation is to pay more attention to the organization and implementation of the fieldwork. This paper tried to study the role of fieldwork efforts in relation to survey participation. It focused in particular on the history of the contact procedure and the role played by the number of contact attempts on the one hand and the number of effective contacts on the other hand. Use was made of Belgian data from the European Social Survey (ESS) Round 2, a Europe-wide, longitudinal type of survey implemented in 2004-2005. Standardized contact forms used in the fieldwork implementation period are rich in data and contain detailed information on the contact process between the interviewer and sampled unit. Complementary use was made of the life table method, Cox regression model, and pathway analysis to analyze these forms. The research results obtained in this paper confirmed the importance of field work strategies as a determinant of survey cooperation. Its contribution was situated in the fact that it pointed to the importance of taking account of the full history of the contact procedure. It would seem to argue in favor of making a clear distinction in field work guidelines and in the analysis of contact forms later on between contactability and effective contacts (face-to face) and increasing the number of each category. Finally, based on our analysis some recommendations are made with regard to the fieldwork guidelines.

1 Introduction

High non-response rates constitute a threat to survey quality as they are likely to be associated with non-response bias (see discussion, Stoop, 2005). It becomes more likely that survey respondents are not representative of the target population (e.g. lower survey participation among lower educated group). Small sub-groups with unique characteristics that may become important later on can be seriously under-represented.

Non-response rates are high and increasing. Wehner (2002) recorded non-response rates in post-war Germany of 33 percent for academic surveys and refusal rates of 50 percent for commercial surveys. Groves and Couper (1998) noted that "*cooperation with surveys is declining in the United States, or at least it is becoming harder to maintain the same levels of cooperation*" (p. 166). This trend is also being observed in country like Norway where negative trend in the development of response rates are found in 1967-2004 for most household surveys (Thomsen et al., 2006).

The literature quotes many possible reasons for high and increasing non-response rates, including changes in the population's demographic profile (e.g. increasing diversification into sub-groups), increasing levels of urbanization, decreasing levels of trust, weakening norms of civic duty, increasing concerns about privacy, and the increasing number of surveys itself (Groves and Couper, 1998, p. 168-171). Differences in survey climate between countries participating in a survey and in at home patterns of sample units due to their work and lifestyle also matter (Billiet et al., forthcoming).

The determinants of survey cooperation have been discussed in the literature into two separate conceptual frameworks, one on the determinants of contactability, and one on the determinants of survey cooperation once contact has been established (Groves and Couper, 1998). There are 6 factors that are considered to be the determinants of likelihood of contact: 1. social environmental attributes; 2. physical impediments; 3. socio-demographic attributes; 4. accessible at-home patterns; 5. number and timing of calls; and 6. interviewer attributes (ibid., p.27, Figure 2.2.). As far as the factors on survey cooperation are concerned, these are: 1. social environmental control; 2. survey design, 3. household/er; 4. interviewer; 5. household-interviewer interaction (ibid., p.120, Figure 5.1.). What is clear from the description of these two models is the importance of field work strategies (role of interviewer and contact procedure) to obtain survey cooperation.

The purpose of this paper is to add to the literature on the determinants of survey cooperation by analyzing the contact procedure from a historical perspective. Our focus is on the contact process, in particular, the *timing* aspect. We analyze in this paper the complete history of the contact process between the interviewer and the sample unit, which consists of successive contact attempts (contactability, no contact included) on the one hand, and of successive effective contacts (obtained contact by face to face) on the other hand. In other words, we look into all contacts (contact attempt and face to face) with the sample unit until the final status of the unit is obtained. The aforementioned model of contactability already accounts for the number of contact attempts as a

determinant of establishing contact. But neither of the two aforementioned models is able to accommodate the role of successive effective contacts, for instance in obtaining refusal conversion.

Research Questions and Hypotheses

The focus of this paper is on the complete history of the contact procedure, consisting of the total number of successive contact attempts and effective contacts taking into account the *timing*. Within this context, we made a distinction between successive contact attempts (contactability) on the one hand, and successive effective contacts (face-to face) on the other hand, and asked whether either one of them mattered for obtaining survey cooperation. We hypothesized that both did. In other words, we hypothesized that the persistence of the interviewer in increasing contactability and obtaining face-to-face contacts enhances survey cooperation. This, of course, means that it lowers the total refusal rate as well.

At the same time we planned to control to the maximum extent possible for other, both socio-demographic and field work strategy related variables. The former included gender, age and region. The latter is on the characteristics of the last contact attempt or contact (mode, day, time, time between the two last ones) and of the interviewer (load, change).

Description of contact forms

To study the impact of the number and the timing of contact attempts (including non-contacts), and of the number of effective contacts (face to face contacts), detailed data are needed on the history of the contacting process at the level of the individual sample unit. Such data are usually recorded in contact forms recording the occurrence, timing and outcome of successive contact attempts, as well as the socio-economic characteristics of the sample unit. Since information is available on timing, it is possible to fully reconstruct the history of the contacting process.

The use of detailed contact forms is a key feature of the European Social Survey (ESS). ESS is a Europe-wide survey and now in its third round. Its objective is not just to monitor changes over time in public attitudes but also to consolidate methods in the area of cross-national quantitative measurement. ESS is unique in that from the first round since the Central Coordinating Team (CCT) set clear targets of a maximum 3 percent non-contact rate and a minimum 70 percent response rate thus pursuing one of the strategies described by Lynn (2003) in relation to the enforcement of cross-national

quality standards.¹ Substantial efforts were made in the first two rounds to achieve high response rates. The length of the field work period was specified. Careful attention was paid to the selection and training of interviewers, to the size of their assignments and their overall workloads, and to monitoring their performance. Advance letters were sent out, the number and mode of contact calls were specified, and efforts were made to convert refusers into respondents.² In Round 2, for instance, the CCT specified that the field work period should last no less than 30 days within a four-month period between 1 September and the end of December 2004. With regard to the contact procedure, it specified that at least four personal visits had to be made by the interviewer to each sampling unit, including at least one visit in the evening and at least one in the weekend and this spread over a two week period (*ibid.*, p.6). The preferred mode of contact was face-to-face, also for non-contacts and refusals. In order to minimize refusal rates, gender and age were matched between interviewers and sample units, and in case of refusal a change in interviewer was proposed. To enable close monitoring of the fieldwork on a real time basis and analysis after each contact outcome,³ contact forms were filled out in Rounds 1 and 2 for each sample unit. These forms record for each visit: (1) visit record (date, time, mode of visit, result of each visit); (2) outcome contact when no interview (specification of type of non-response). Some additional information was also recorded: (1) refusers' record (timing, reason, assessment of possibility of future cooperation, age category, gender); (2) ineligibles' record; and (3) neighborhood characteristics for all sample units.

Belgium as a case study

Among the countries that participated in ESS Rounds 1 and 2, Belgium constitutes an interesting case-study. First, its response rates were average (Round 1 - 59.3 percent, Round 2 - 61.2 percent). In ESS Round 2, only six out of 22 participating countries met the target for non-contact, and only four the target for response. Response rates ranged from lows of 48.6 percent in Switzerland and 50.1 percent in Luxembourg to highs of 78.8 percent in Greece and 79.1 percent in Estonia. In Belgium, the response rate was 61.18 percent (European Social Survey, Central Co-ordinating Team). Second, it was possible to complete the Belgian dataset with, for instance, demographic information taken from the national register.

¹ These are: the maximum quality approach; the consistent quality approach; the constrained maximum quality approach; the target quality approach and the constrained quality approach.

² See Field Procedures in the European Social Survey: Enhancing Response Rates, version 26/07/04.

³ This is more specifically proposed in ESS Round 3.

ESS previous analysis

Previous research on the basis of ESS contact forms already identified a number of fieldwork strategies that could further improve the survey outcome. Billiet and others (forthcoming 2) concluded on the basis of an analysis of Round 1 contact forms that both the number and the timing of contacts matter. They found that to reduce non-contact rates a minimum of 4 contacts was required, and that *weekday evening and weekend calls were more productive than weekday morning and afternoon contacts*. Another study, also based on an analysis of ESS Round 1 contact forms, focused on refusal conversion (Loosveldt et al., 2003), and pointed to the importance of cool-down periods (spreading contacts in between), identifying soft-refusers at the initial contact, and upgrading interviewer's skills. Another analysis was carried out of the characteristics of cooperative and reluctant respondents (Voogt, 2004, identified by Billiet et al., forthcoming). They concluded that the characteristics of reluctant respondents resembled those of non-respondents.

In the remainder of this paper, sections 2 and 3 discuss the data and methods used. The main results are presented in section 4, and a discussion and some conclusions are offered in section 5.

2 Data

We made use of the contact forms from ESS Round 2 implemented in Belgium in 2004-2005. The sample consisted of 3042 in which 24 units had invalid addresses that resulted into 3018 units. At the end of the fieldwork period, 1778 units (58.9 percent) had participated, 768 units had refused (25.5 percent), 62 units were ineligible (2.05 percent), 101 units did not get contacted (3.35 percent), 85 units (2.82 percent) had moved out from the contacted address, and the remaining 224 units (7.42 percent) were not able to participate. The 3018 sample units were initially contacted by 116 interviewers, and 286 units were re-contacted once more via 35 experienced interviewers as part of the refusal conversion process. Based on the ineligible sample (N=2906) this resulted into 61.18 percent response rate.

The fieldwork period ran from 1 September 2004 to 14 February 2005. A maximum of 10 contacts were recorded in the contact forms. In the data set, background information of non-respondents was limitedly recorded⁴. Some information (e.g. age, gender, and region) could be added from the national register. That was not the case for contact form variables such as housing and neighborhood characteristics (type of housing, level of vandalism and level of litter). The latter (housing and neighborhood variables) were therefore excluded from further analysis.

⁴ We have found that among non-respondents, 41% (270/656) for age variables, 18% (124/656) for gender variables and 10.2% (67/656) of household types are missing.

Table 1 summarizes the socio-demographic and fieldwork characteristics of the 3018 sampled units. Most of the sampled units were between 20 and 59 years old, a smaller share 60 and above, and the smallest share below 20. Slightly more women were sampled than men. Proportion to the entire sample, most units was sampled in Flanders, followed by Wallonia and Brussels. After four contacts, approximately, 83.7 percent of the sampled units achieved final contact outcome. Contact final outcome was achieved mostly after two contacts (31.1 percent). When more than one contact was needed to achieve final contact, re-contacting took place within seven days in nearly half of the cases, while in approximately one third of the cases it took place after more than a week. The last contact was mainly made in the morning or afternoon, and through personal visit. Refusal conversion was attempted for some units who expressed refusal (N=348) but then, mostly through the use of a second interviewer.

The data were prepared in view of the planned use of survival analysis and the Cox model. The information on the timing of events, for instance, was converted in the century month code format (Blossfeld and Rohwer, 1995). The observation period ran from 1 September 2004 (CMC 38231) to 14 February 2005 (CMC 38399). First contacts (initial contact made by the interviewer to the respondent) were made between 1 September 2004 and 12 February 2005 (CMC 38397-38397). Last contacts (last contact made by the interviewer to respondent) were made between 9 September 2004 and 14 February 2005 (CMC 38239-38399). The time between the first and the last contact ranged from 0 to 116 days. Ten cases had negative values for duration due to recording errors, which was exempted from further analysis. For more than half of all sample units, the final contact outcome was achieved within 7 days (N=1598), and for 20.5 percent (N=619) of all sample units it was achieved after one contact.

In the survival analysis, use was made of a cohort approach to study the duration to the event of survey cooperation. In this approach, we selected 30 October 2004 (CMC 38320) as a cut-off point to distinguish between an early and a later cohort in terms of the initial contact date. This date constituted approximately the middle point of the fieldwork period. Our analysis shows that 82.2 percent of initial contacts had already been initiated by 30 October and that already 56.4% of sample units obtained final contact outcome.

In this analysis, we have treated drop-outs (attritions) as censored cases. Blossfeld et al. (1995) pointed out that "*such dropouts or missing data are normally not random, and the characteristics of the lost individuals are very often related to the process under study. Such selectivity bias creates problems and cannot easily be corrected in an event history analysis*" (p. 36). However, Fitzgerald and Zuo argued that selection bias *can* be ignored if the probability of attrition does not vary according to the current situation of the person (unmeasured covariate) (See more Hill 1994 and Hoem 1985). In this paper, we assume that those conditions are met.

3 Method

In this paper, we have (1) made use of the life table method/survival analysis, (2) applied the Cox model, and (3) carried out pathway analysis to study the effect of field work strategies on survey cooperation.

Through the use of the life table method/survival analysis we aimed to *map* the cumulative distribution of total contact procedure (pathway) duration in terms of number of days for different cohorts. By applying the Cox model, we tried to obtain a better insight into the *drivers* of this duration. Both methods were used to estimate the expected duration to the event of survey cooperation that is expressed in days, based on all units at risk (exposure rate). Their use was justified because they allow for modeling time-to-event in the *presence of censored cases*. It was assumed that events and censorings occur at the *middle* of the discrete time interval (Namboodiri and Suchindran, 1987).

The life table method shows the trend of the proportion participating in the survey over the field work period distinguished by cohort. In order to illustrate the *time* dimension of the contact procedure, a survival function and the mean duration to response are shown. It should be noted that the mean duration here is calculated based on the life table which is equivalent to the life expectancy (e in life table, last column, formula omitted here) assuming normal distribution per time unit.

The application of the Cox model is particularly relevant because of high attrition rates and because of a high number of censored cases, which can distort the relationship between the socio-demographic and fieldwork variables (independent variables) and the different profiles of the sub-groups. Use of Cox model can best accommodate contact variables pertaining to timing. The model uses the hazard function (rate) to estimate the relative risk of failure. Given that the case survives until that instant, this hazard rate is an estimate of the potential for event per unit time. After pre-testing the model, the use of Cox regression with covariates in this analysis is based on proportional hazards assumption assuming constant hazard ratio across time (time-constant covariates).

Pathway analysis is used to retrospectively reconstruct the contact status of each sample units. The perspective here is cohort as we wish to capture the cumulative pattern of contact procedure at the sample unit level that is consistent with our theoretical construct. Pathway analysis does not only identify the type and number of response including the sub-type of non-response but also the order of these contacts. Here, last contact outcome is taken as the final contact outcome to distinguish different contact pathways among the sample units.⁵

⁵ In the final non-response disposition code, 2 methods are considered: (1) the outcome of the last contact as the final non response code; and (2) priority system of visit outcome to select the outcome with the highest priority. AAPON This contact final outcomes differ from what is being documented by previous study (Billiet, et al., forthcoming 1 and Lynn et al., 2003) as here we do not take the *contact process* but only the *last contact* with the sample unit as the final contact outcome.

4 Results

4.1 Survival Analysis

Cohort Approach (Before 30 October and after)

Focusing on the socio-demographic profiles of sample, our analysis shows that survey cooperation was obtained somewhat more quickly in cohort 1 (before 30 October) than in cohort 2 (after 1 December). While the median duration to survey cooperation was 11.6 days in cohort 1 and 14.3 days in cohort 2, the mean duration to survey cooperation was 32.8 days in cohort 1 as opposed to 31.4 days in cohort 2. The proportion cooperating with the survey within 20 days was 60.1 percent in cohort 1 as opposed to 56.8 percent (Table 1).

While in cohort 1, the survival curves differ little by gender (slightly higher proportion of males cooperating), three rather different age curves emerge (Figure 2). A slowly accumulating and eventually low degree of cooperation for the oldest age group (60 plus), a rapidly accumulating and eventually high degree of cooperation for the youngest age group (below 20), and a middle position both in terms of accumulation speed and eventual degree of cooperation for the 20-39 and 40-59 age groups. The mean duration to survey cooperation is 21.2 days for the youngest age group vs. 40.6 days for the oldest age group (Table 2). Three distinctive regional curves emerge as well, with Flanders as the forerunner followed by Wallonia and Brussels, though towards the end of the observation period convergence takes place (Figure 3). All of the aforementioned observations apply to cohort 2 as well, except for the fact that only two age curves appear positioning the youngest age group vs all the other age groups.

4.2 Cox Model

We present the analysis which compared respondents with non-respondents in the broad sense (refusal, non-contact, ineligible, not able). We checked for the role of the number of contact attempts, and of the number of effective contacts, while controlling for socio-demographic and field work strategy related variables, in line with our research question. The former included age, gender and region. The latter included the duration of contact⁶ (number of days between first contact attempt with the unit until the final contact outcome is being achieved), last contact day, last contact time, last contact mode, interview load and change of interviewer. Also, it should be noted that two specifications were made: one in which the total number of contact attempts and/or effective contacts,

⁶ This means the number of days between the first contact (attempt) and the last contact with the unit when final contact outcome is achieved.

the number of contact attempts, and the number of effective contacts were treated as *categorical* (model 1), and another one in which they were treated as *continuous* (model 2).

Respondents vs Non-Respondents

Descriptive statistics showed that, in comparison with non-respondents, respondents were younger, more often male, and more often from Flanders and Wallonia (and less often from Brussels). They also had shorter interaction period lengths, and the last contact took place more often on a weekday, in the morning or afternoon, and through a personal visit. Usually there was no change in interviewer. While the number of contact attempts appeared to be smaller, that of effective contacts appeared to be higher. (Table 3)

The Cox Model showed significance for the socio-demographic variable age as such (not for the separate age categories). Significance was also found for the regional variable. A negative effect was found for Wallonia and Brussels compared to Flanders, but only significant for Walloon. As for fieldwork variables, significant was the mode of the last contact, the duration between the two last contacts or contact attempts, as well as a change in interviewer. A negative impact was found for not working through face-to-face contact, for leaving too much time between the two last contacts or contact attempts, and for changing the interviewer.

As far as our research question is concerned, whether treating the three contact variables as categorical or as continuous variables, we found *significance for the total number of contact attempts and effective contacts* [$\exp(B)=0.58$; $p<0.01$], and for the number of effective contacts [$\exp(B)=1.59$; $p<0.01$], as well as a large effect for the latter, in accordance with our hypothesis. (Table 4) This means, when looking at the number of effective contacts as a continuous variable, it was found that one extra effective contact increased the likelihood of survey cooperation by 59 percent.

4.3 Pathway Analysis

A cohort approach was taken so as to be able to observe contact procedure patterns in a longitudinal way. Recall that cohort 1 included those cases where the first contact took place before 30 October 2004 and cohort 2 those where the first contact took place after 30 October 2004. Out of 3018 cases, cohort 1 captured 82.2 percent (N=2482), while cohort 2 captured 17.8 percent (N=536). In total, we identified 403 different pathways overall: 382 different ones for cohort 1 and 101 different ones for cohort 2.

Table 5 shows only the main pathways capturing nearly 60 percent of each cohort sample. The most popular pathway was pathway 4-1 (not able – interview), followed by pathway 1 (direct interview) in both cohorts. Most pathways were short, consisting of one or two stages, at the most four. With regard to the length/duration in terms of days of pathways, two observations could be made. The overall mean length/duration was 17.8 days in cohort 1 and 12.0 days in cohort 2 because of the presence of more complicated pathways

consisting of more stages at each cohort level. The mean duration of the most popular pathway 4-1 (not able – interview) was 5.2 days in cohort 1 and 4.8 days in cohort 2, indicating the short duration to obtain final outcome status.

Table 6 shows the main pathways that included *refusal* at any point in time (capturing 52.2 percent of cohort 1 and 56.6 percent of cohort 2). The total number of pathways including refusal at any point in time amounted to 199 in cohort 1 and to 44 in cohort 2. Most pathways including refusal at any point in time *end in refusal* indicating limited success of refusal conversion activities. In fact, one time refusal (3) is the most popular pathway in cohort 1 capturing 20.6 percent. Pathways involving two contacts, a combination of 4-3 (not able – refusal), 2-3 (non contact – refusal) and 3-3 (refusal – refusal) were also not negligible. Next, the duration of these pathways was somewhat longer. The most notable pattern was 3-3 with a length of 42.4 days (both cohorts) (sv 17.9). It is not clear whether this was part of a field work strategy of working with a substantial cooling-off period.

5 Conclusion and Discussion

High non-response rates constitute a threat to survey quality and efforts have to be made to reduce them. An important determinant of survey cooperation is the field work strategy. The focus of this paper was on an analysis of the contact procedure (both contactability and effective contact) focusing on the *timing* from a *historical perspective*. We made a distinction between the number of successive contact attempts and the number of successive effective contacts (face-to-face), asked whether either one of them played a role in obtaining survey cooperation and hypothesized that both did.

The analysis of ESS Round 2 data for Belgium consisted of three parts. We first mapped the cumulative distribution of total contact procedure lengths in terms of number of days for different cohorts and found important differences between those cohorts, and between different age categories and regions within those cohorts. Next we tried to obtain a better insight into the drivers of total contact procedure length in terms of number of days. On the basis of Cox model, we carried out analysis comparing respondents with non-respondents and specifying a model in which we controlled for a number of socio-demographic variables (age, gender, and region) and for a number of field work strategy variables. The last centered on the characteristics of the last contact attempt or contact (mode, day, time, time between the two last ones), the interviewer (load, change), and the total number of contact attempts and contacts (number of contact attempts, number of effective contacts). We obtained significant results and important effects for the number of contact attempts and/or the number of effective contacts. In a third stage, we reconstructed contact procedure pathways and determined that while many different pathways existed, only a few and small number of contact stages were very popular.

The methods employed in this paper (survival analysis, Cox model, pathway analysis) were complementary to each other and allowed for better understanding of the field work

carried out in Belgium within the framework of ESS Round 2. The research results obtained in this paper confirm the importance of field work strategies, in particular the contact procedure, as a determinant of survey cooperation. Its contribution lies in the fact that it points to the importance of taking account of the full history of the contact procedure. It would therefore seem to argue in favor of making a clear distinction in field work guidelines (and in the analysis of contact forms later on) between contact attempts and effective contacts and increasing the number of each category.

As a concluding remark, we list some recommendations for ESS fieldwork guidelines:

- High number of contact attempts (contactability) and effective contacts (face to face) is crucial in concluding the contact status of the sample unit.
- Every effort should be made to establish face-to-face contact with the sample unit. Interacting with the sample unit face-to-face is crucial and obtaining a final status of 'refuser' without having had face-to-face contact should be avoided.
- The number of effective contacts should be increased to the maximum extent possible as one extra effective contact can increase the likelihood of survey cooperation by 59 percent.

6 References

- Billiet, J., M. Philippens, R. Fitzgerald and I. Stoop (forthcoming 1) "Estimation of Response Bias in the European Social Survey: Using Information from Reluctant Respondents in Round One". *Journal of Official Statistics*.
- Billiet, J., A. Koch and M. Philippens (forthcoming 2) "Understanding and improving response rates". In: R. Jowell, C. Roberts, R. Fitzgerald, G. Eva eds, *Measuring attitude cross-nationally: lessons from the European Social Survey*. Sage, London, 107-29.
- Blossfeld, H.P. and G. Rohwer (1995) *Techniques of Event History Modeling*. Lawrence Erlbaum Associate, Publishers. Mahwah, New Jersey.
- European Social Survey. Field Procedures in the European Social Survey: Enhancing Response Rates (version 26/07/04). Accessed at 8/1/2007 (<http://www.europeansocialsurvey.org/questionnaire>).
- European Social Survey Data archive accessed at 8/8/2006 (<http://ess.nsd.uib.no/webview/index.jsp>).
- European Social Survey, Central Co-ordinating Team, *ESS Round 2 Fieldwork Figures and Projections for Round 3*. Accessed at 8/1/2007 (<http://www.europeansocialsurvey.org/questionnaire>).
- Fitzgerald, J. and X. Zuo (year unknown) *Alternative samples for welfare duration in SIPP: Does attrition matter*. U.S. Department of Commerce Bureau of the Census, No. 145. Survey of Income and Programme Participation. Accessed at 1/8/2006 (<http://www.sipp.census.gov/sipp/workpapr/workpapr.html>).
- Groves, R. M. and M. P. Couper (1998) *Nonresponse in household interview surveys*. A Wiley-Interscience Publication.
- Hill, D.H. (1994) *Adjusting for attrition in Event History Analysis*. Working paper in 204. Survey of Income and Programme Participation Accessed at 1/8/2006 (<http://www.sipp.census.gov/sipp/workpapr/workpapr.html>).
- Hoem, J.M. (1985) "Weighting misclassification and other issues in the analysis of survey samples of life histories". In: *Longitudinal analysis of labor market data*. ed., J. Heckman and B. Singer, New York, Cambridge University Press, 249-93.
- Lynn, P. (2003) Developing quality standards for cross-national survey research: five approaches. In: *International Journal of Social Research Methodology*, 6, 4, 323-36.
- Loosveldt, G., M. Philippens, I. Stoop and J. Billiet (2003) *Refusal conversion procedures in the European Social Survey*. Paper presented at the International Workshop on household non-response, 22-24 September, Leuven, Belgium.

Namboordiri, K. and C.M. Suchindran (1987) *Life table techniques and their applications*. Academic Press, Orlando.

Stoop, I.A.L. (2005) *The Hunt for the Last Respondent. Nonresponse in sample surveys*. SCP Publications. Den Haag.

Thomsen, I., Ø. Kleven, J. H. Wang and L. C. Zhang (2006) *Coping with decreasing response rates in Statistics Norway*. Statistisk sentralbyrå, Oslo.

Voogt, R. (2004) *"I'm not interested": Nonresponse bias, response bias and stimulus effects in election research*. PhD dissertation. Amsterdam.

Wehner, S. (2002) *Exploring trends and patterns of nonresponse: evidence from the Germany Life History Study*. Berlin. Max Planck Institute for Berlin.

7 Appendix

Figure 1: Likelihood of proportion survey cooperation: Before and after 30 October (N=2482/536) (X=days/Y=%)

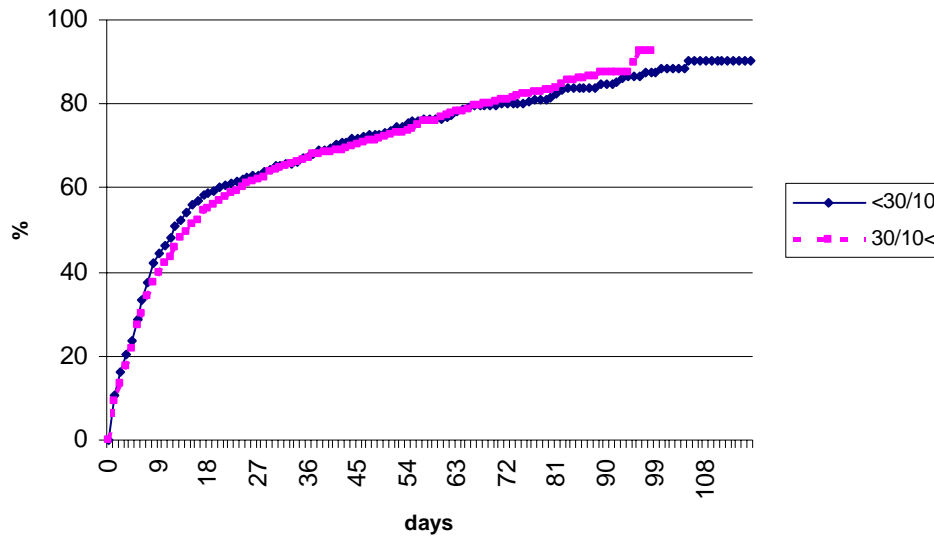


Figure 2: Proportion participating in survey by age in cohort 1 (N=2482) (X=days/Y=%)

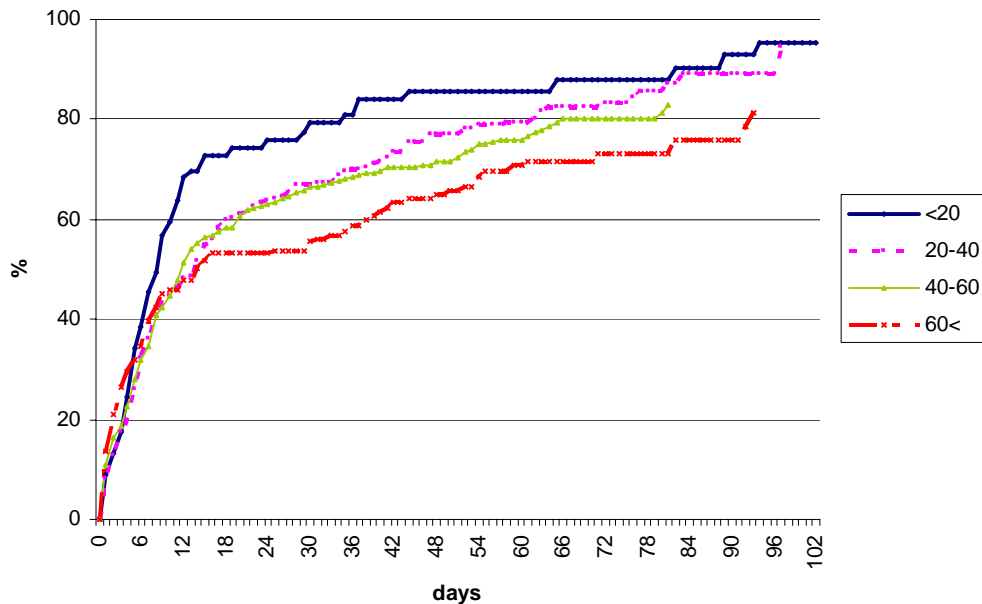


Figure 3: Proportion participating in survey by region in cohort 1 (N=2482)
(X=days/Y=%)

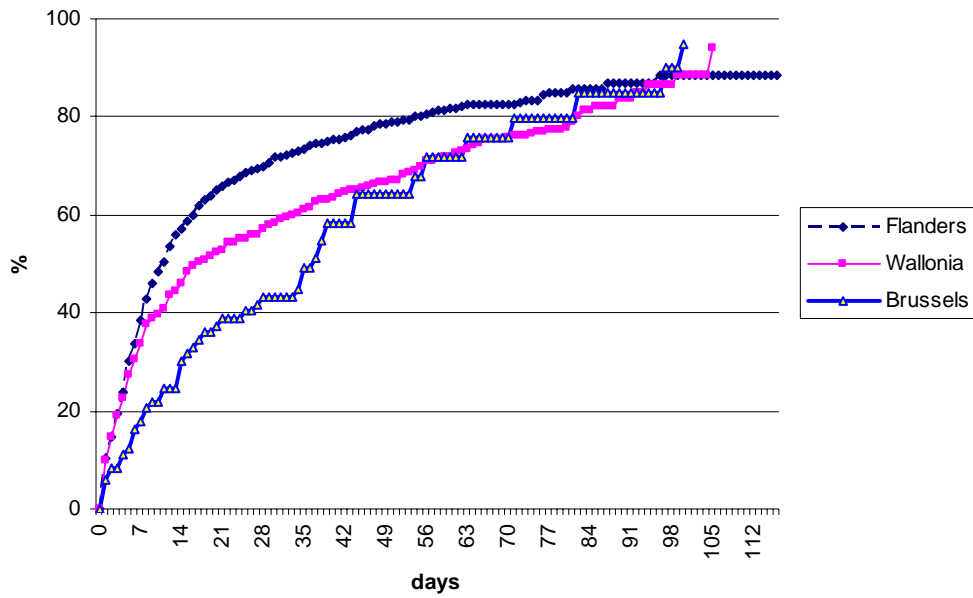


Table 1: Descriptive statistics: total and cohort observations

Socio-economic	Total		Cohort			
	All		<30 Oct..		30 Oct.<	
(Age)	N=3018	%	N=2482		N=536	
<20	195	6,5	166	6,7	29	5,4
20-39	960	32,1	791	31,9	169	31,5
40-59	1005	33,6	827	33,3	178	33,2
60 plus	831	27,8	698	28,1	133	24,8
Do not know			0	6,7	27	5,0
Missing (9)	27					
(Gender)						
Male	1444	47,8	1,182	47,6	262	48,9
Female	1547	51,3	1,300	52,4	247	46,1
Do not know					27	5,0
Missing (9)	27	0,9				
(Region)						
Flanders	1781	59,0	1.419	57,2	362	67,5
Walloon	935	31,0	821	33,1	114	21,3
Brussels	257	8,5	224	9,0	33	6,2
Do not know		0,0				
Missing (9)	45	1,5	18	0,7	27	5,0
Cont. strategies						
(Duration of contact)						
0 day	693	23,0	627	25,4	169	31,8
1<3 days	286	9,5	522	21,2	113	21,3
3<8 days	619	20,5	738	29,9	141	26,6
8+days	1420	47,1	579	23,5	108	20,3
(Last contact day)						
Weekdays	2187	78,5	1.788	78,3	399	79,3
Weekends	599	21,5	495	21,7	104	20,7
Missing						
(Last contact time)						
Morning/afternoon	2561	86,0	2.109	86,1	452	85,6
Evenings	417	14,0	341	13,9	76	14,4
Missing						
(Last cont. mode)						
Personal visit	2623	86,9	2.161	87,1	462	86,2
Others (tel., intercom, etc)	395	13,1	321	12,9	74	13,8
(# assignments per interviewer)						
<30	2358	78,1	1.979	79,7	379	70,7
30<	660	21,9	503	20,3	157	29,3
(Change of interviewer)						
No	2732	90,5	2.251	90,7	481	89,7
Yes	286	9,5	231	9,3	55	10,3
(# contacts)						
1	619	20,5	487	19,6	132	24,6
2	938	31,1	779	31,4	159	29,7
3	594	19,7	474	19,1	120	22,4
4	374	12,4	312	12,6	62	11,6
5	216	7,2	176	7,1	40	7,5
6	111	3,7	101	4,1	10	1,9
7	71	2,4	68	2,7	3	0,6
8	37	1,2	30	1,2	7	1,3
9	27	0,9	26	1,0	1	0,2
10	31	1,0	29	1,2	2	0,4
(# rejects)						
0	1997	66,2	1.619	65,2	378	70,5
1	731	24,2	603	24,3	128	23,9
2	228	7,6	202	8,1	26	4,9
3	54	1,8	51	2,1	3	0,6
4	7	0,2	6	0,2	1	0,2
5	1	0,0	1			

Table 2: Proportion response after 20 days and mean/median duration before and after 30 October

	<i>Proportion after 20 days</i>		<i>Mean/median duration</i>	
	Cohort 1 (N=2482)	Cohort2 (N=536)	Cohort 1 (N=2482)	Cohort2 (N=536)
General	60.1%	56.8%	32.8/11.6	31.4/14.3
(Age)				
<20	74.4%	67.8%	21.2/8.1	16.4/8.8
20-40	60.9%	54.1%	28.8/13.4	34.2/16.3
40-60	60.5%	55.4%	33.5/11.6	31.9/15.4
60<	53.2%	58.2%	40.6/14.0	29.0/12.0
(Gender)				
Male	61.7%	56.6%	29.9/11.3	31.3/13.9
Female	58.6%	56.5%	34.8/12.0	31.7/15.2
(Region)				
Flanders	65.0%	62.3%	29.3/10.9	23.6/11.2
Walloon	52.2%	48.5%	36.4/16.5	29.5/22.6
Brussels	37.5%	41.2%	41.5/36.4	30.7/31.9

Table 3: Descriptive statistics: non-respondent vs. respondent

	<i>Non-respondent</i>		<i>Respondent</i>	
	N1543	%	N1778	%
(Age)				
<20	66	4.3	147	8.3
20-39	497	32.2	590	33.2
40-59	489	31.7	606	34.1
60 plus	477	30.9	422	23.7
DOK			13	
Missing	14	0.9	147	0.7
(Gender)				
Male	714	46.3	868	48.8
Female	815	52.8	897	50.4
Do not know				
Missing	14	0.9	13	0.7
(Region)				
Flanders	766	49.6	1.043	58.7
Walloon	365	23.7	580	32.6
Brussels	392	25.4	130	7.3
DOK				
Missing	20	1.3	25	1.4
(Dur. contact)				
Immediate contact	476	38.7	320	18.1
1<3 days	172	14.0	463	26.2
3<8 days	212	17.2	667	37.7
8+days	370	30.1	317	17.9
(Lst cont. day)				
Weekdays	879	77.7	1.308	79.1
Weekends	253	22.3	346	20.9
(Lst cont time)				
Morning/afternoon	1.043	85.8	1.518	86.2
Evenings	173	14.2	244	13.8
(Lst cont mode)				
Personal visit	863	69.6	1.760	99.0
Others (telephone, intercom, etc)	377	30.4	18	1.0
(# units per interviewer)				
<30	1.313	85.1	1.348	75.8
30<	230	14.9	430	24.2
(Change of interviewer)				

	No	1,039	83.8	1,693	95.2
	Yes	201	16.2	85	4.8
<hr/>					
(# total contacts)					
	1	385	31.0	234	13.2
	2	270	21.8	668	37.6
	3	181	14.6	413	23.2
	4	147	11.9	227	12.8
	5	106	8.5	110	6.2
	6	49	4.0	62	3.5
	7	39	3.1	32	1.8
	8	22	1.8	15	0.8
	9	18	1.5	9	0.5
	10	23	1.9	8	0.4
<hr/>					
(# contact attempts)					
	1	245	37.0	387	46.8
	2	130	19.6	176	22.7
	3	106	16.0	63	12.5
	4	67	10.1	34	7.5
	5	44	6.6	14	4.3
	6	31	4.7	6	2.7
	7	21	3.2	5	1.9
	8	8	1.2	2	0.7
	9	9	1.4	0	0.7
	10	2	0.3	0	0.2
<hr/>					
(# effective contacts)					
	0	101	8.2	0	0.
	1	648	52.3	358	20.1
	2	308	24.8	921	51.8
	3	116	9.4	348	19.6
	4	49	4.0	103	5.8
	5	10	0.8	31	1.7
	6	4	0.3	11	0.6
	7	3	0.2	4	0.2
	9	1	0.1	2	0.1
<hr/>					
(# rejects)					
	0	465	37.5	1,532	86.2
	1	518	41.8	213	12.0
	2	205	16.5	23	1.3
	3	47	3.8	7	0.4
	4				
	5	47	3.8	7	0.4

- DOK="do not know"

Table 4: Cox model: predicting survey cooperation (respondent) as opposed to non-respondent

	<i>Model 1</i>		<i>Model 2</i>	
	<i>Exp (B)</i>	<i>p-value</i>	<i>Exp (B)</i>	<i>p-value</i>
(Age)				
RC: <20	1.00		1.00	
20-39	0.76	0.10	0.78	0.12
40-59	0.87	0.42	0.95	0.77
60 plus	0.86	0.40	0.93	0.68
(Gender)				
RC: male	1.00		1.00	
Female	0.93	0.38	0.98	0.82
(Region)				
RC: Flanders	1.00		1.00	
Wallonia	0.70	0.00	0.72	0.00
Brussels	0.83	0.20	0.87	0.31
# Refuser				
RC: 0	1.00		0.36	0.00
#1	0.34	0.00		
#2	0.06	0.00		
#3	0.11	0.00		
#4	0.21	0.00		
(# units per interviewer)				
RC: <30	1.00		1.00	
30<	1.13	0.26	1.05	0.63
(Change of interviewer)				
RC: No	1.00		1.00	
Yes	0.30	0.00	0.31	0.00
(Last contact mode)				
RC: personal visit	1.00		1.00	
Non-personal visit	0.09	0.00	0.08	0.00
(Last contact day)				
RC: weekdays	1.00		1.00	
weekends	1.19	0.10	1.09	0.38
(Last contact hour)				
RC: morning/after-noon	1.00		1.00	
evenings	1.07	0.58	1.18	0.17
(Duration between last 2 contacts)				
RC: immediate	1.00		1.00	
1<3 days	1.07	0.74	0.98	0.90
3<8 days	0.86	0.44	0.81	0.26
8 plus	0.31	0.00	0.31	0.00

(# total contacts)			
RC: #1	1.00		0.58
#2	6.22	0.92	
#3	2.29	0.96	
#4	1.33	0.99	
#5	1.25	0.99	
#6	0.97	1.00	
#7	0.89	1.00	
#8	1.79	0.98	
#9	3.05	0.95	
#10	4.22	0.94	
(# effective contacts)			
RC: #1	1.00		1.59
#2	12.58	0.01	
#3	26.42	0.01	
#4	20.81	0.07	
#5	30.79	0.11	
#6	15.02	0.31	
#7	43.14	0.24	
#8	45.51	0.31	
#9	2.28	0.86	
(# contact attempts)			
RC: #1	1.00		
#2	0.95	0.92	
#3	0.54	0.57	
#4	0.52	0.68	
#5	0.28	0.56	
#6	0.13	0.46	
#7	0.08	0.43	
#8	0.07	0.48	
#9	0.02	0.40	

Note: RC: Reference category

Table 5: Pathways to final contact outcome: before and after 30 October

Pathway patterns	<i>1-September - 30 October</i>		<i>1 November - 14 February</i>	
	%/N=2482	Mean/median duration of contact days	%/N=536	Mean/median duration of contact days
4-1	21.83%/486	5.2/4.0	15.86%/85	4.8/4.0
1	8.45%/188	N.A.	8.58%/46	N.A.
4-4-1	6.51%/145	12.0/8.0	4.66%/25	12.1/7.0
3	6.29%/140	N.A.	5.97%/32	N.A.
2-4-1	6.24%/139	10.9/8.0	6.34%/34	11.0/7.0
4	4.13%/92	N.A.	5.04%/27	N.A.
2-2-4-1	3.10%/69	17.3/13.0	1.3%/7	13.6/13.0
5	2.79%/62	N.A.	3.73%/20	N.A.
2-1	2.65%/59	10.0/5	3.36%/18	4.7/3.0
4-3	2.43%/54	11.1/5.5	.93%/9	4.5/3.0
Sub-total	57.8%/1434	5.7/3.0	56.5%/303	4.2/1.0
Total	82.2%/2482	17.8/7.0	536/17.8%	12.1/5.0

1=interview; 2=non-contact; 3=refusal; 4=not able; 5=ineligible

Table 6: Pathways at least one refusal before and after 30 October

Pathway patterns	<i>1 September – 30 October</i>		<i>1 November – 14 February</i>	
	%/N=2482	Mean/median duration of contact days	%/N=536	Mean duration of contact days
3	20.6%/140	N.A.	23.5%/32	N.A.
4-3	7.9%/54	11.1/5.5	6.6%/9	4.6/3.0
2-3	6.8%/46	7.8/5.0	13.2%/18	5.7/3.0
3-3	6.3%/43	42.1/47.0	1.5%/2	50.5/50.5
2-2-3	3.4%/23	17.2/10.0	5.9%/8	14.9/14.0
2-2-2-3	2.1%/14	24.1/19.5	2.2%/3	41.7/46.0
3-4-1	1.9%/13	22.3/7.0	2.2%/3	52.3/59.0
3-1	1.9%/13	60.1/57.0	1.5%/2	47.5/47.5
2-3-3	1.5%/10	21.0/17.0	-	-
Sub-total	52.3%/356/681	13.5/2.0	56.6%/77/136	9.6/1.0