Oliver Lipps

Predictability of reasons for refusal in telephone surveys

Lausanne, April 2011

FORS Working Papers 2011-1

FORS Working Paper series

The FORS Working Paper series presents findings related to survey research, focusing on methodological aspects of survey research or substantive research. Manuscripts submitted are papers that represent work-in-progress. This series is intended to provide an early and relatively fast means of publication prior to further development of the work. A revised version might be requested from the author directly.

Further information on the FORS Working Paper Series can be found on www.fors.unil.ch.

How to cite this document:
Lipps, O. (2011). Predictability of reasons for refusal in telephone surveys. *FORS Working Paper Series,* paper 2011-1. Lausanne: FORS.

Summary

Refusals are one of the key problems in surveys. Data from panel surveys can help to predict reasons for refusal, as information on respondents is available from previous waves. If specific reasons can be anticipated measures can be taken to cope with them such as interviewer tailoring for those participants with a higher likelihood to use these reasons. This strategy implies that the reason which specific respondents are likely to use can be predicted.

We study effects on the refusal reason that was given by the respondents for the first time in the Swiss Household Panel from different domains, including socio-demographic features, social inclusion aspects, answer quality, and interviewer assessment of respondent behavior, question understanding, and future participation. We find that 'No interest' is uttered more frequently by young respondents with lower education and little interest in politics, and by those exhibiting a high variation of answers on subjective questions and those rated particularly difficult by interviewers. 'No time' reasons are more likely mentioned by the employed; 'Age' or 'health reasons' more often by older people, and generally by people with bad health. 'Not willing to fix a date and time for an appointment' is preferred by young foreigners not speaking one of the national languages as a mother tongue, the socially inactive, and especially those who tend to satisfice. 'Other reasons' apply to those with a smaller likelihood to continue to participate. 'Family reasons' are more difficult to assess; also family reasons are the only ones which are not mentioned during an early wave.

Keywords: reason for refusal, refusal prevention, refusal prediction, panel, no interest, no time

Predictability of reasons for refusal in telephone surveys

Oliver Lipps[1]

1.   Introduction

Refusing to complete a survey is the most important reason for nonresponse, both in cross-sectional (for the European Social Survey see e.g., Lipps and Pollien 2011) and especially in panel surveys (for the German Socio Economic Panel Survey and the Swiss Household Panel see e.g., Lipps 2009a). Once successfully contacted by an interviewer, most people actually give a reason why they are not willing to complete a survey. To be able to predict reasons for refusal therefore seems a promising way to anticipate them and treat the sample member accordingly. Good experiences with the strategy of tailoring (Groves and Couper 1998), i.e., adapting the treatment of sample members according to their attitudes towards surveys and previous survey experiences and behavior, further motivates attempts to predict reasons for refusal.

The present article is organized as follows: first, we examine if previous studies found a relationship of reasons for refusal stated and the assumed true reasons. That the reason stated has something to do with the true reason seems to be a precondition to be able to predict the reason. Next, we review panel studies that find respondent's correlates with later panel refusal. In the absence of studies that distinguish *specific* reasons for refusal we use these correlates as covariates to explain specific reasons relative to cooperation. We use covariates from the domains of socio-demography, social inclusion, survey question quality, and interviewer assessments of interview atmosphere and respondent difficulty. After introducing the data and the modeling approach, we discuss the model results and conclude by giving directions to use the results to prevent refusals in panel surveys.

[1] FORS, c/o University of Lausanne, Bâtiment Vidy, 1015 Lausanne
oliver.lipps@fors.unil.ch

2.   Truthfulness of reasons for refusal

To be able to predict reasons for refusal they must not be mentioned at random but should be associated with the true reason. In this section we briefly review if reasons are related to characteristics of the respondents in the literature. For example in face-to-face surveys, reasons (like too old) related to visible characteristics (like age) should correlate with these characteristics (Bates et al. 2006). Lipps and Kissau (forthcoming) show that this seems to be the case in telephone surveys as well: in a telephone survey, frame information like age or nationality are positively correlated with related reasons like health or language problems. This is not so clear for reasons like no time or no interest. In the literature even in face-to-face surveys there is discordance about whether survey refusers state the true reasons. Olson and Klein (1980), for example, do not find socio-demographic differences for refusal reasons. According to Brehm (1993), skepticism about refusers' accounts of their reasons seems justified. Refusers may just name the first reason they can think of but this reason will not necessarily be true. They may also name a reason which they think will be convincing for the interviewer but, finally, they might have no full awareness of why they are refusing. For example, with respect to one of the most often stated reason for refusal, no time, Stoop (2005) finds to the contrary of the expectation that people who have less time are generally more likely to participate in surveys. Also Abraham et al. (2006) report little evidence to confirm the hypothesis that busy people participate in surveys less often. Sztabinski et al. (2008), conducting in-depth interviews with refusers from the third round of the European Social Survey, report that people refuse "flatly, without stating any reasons" (p. 66). Such findings support doubts as to the truthfulness of reasons for refusal given, if any. Refusers even "openly admitted that the reasons they mentioned to interviewers had little to do with actual reasons" (p. 67). This is supported by Smith (1984) and Rogelberg et al. (2003). Refusers may therefore just look for an easy way to get rid of the interviewer as soon as possible. In the qualitative study from Sztabinski et al. (2008), even refusers who generally demonstrate acceptance for surveys could not identify rational arguments that led to a refusal.

3.   Reasons for refusal and causes of panel non-cooperation

We distinguish the following reasons for non-cooperation, always assuming that contact has been established with the household (Voorpostel and Lipps, forthcoming):

- either was a time to be interviewed fixed by the contact person or the target person, or it was agreed to call at a later time, without a fixed time. The interview was however never conducted ('broken appointment'; BA)[2]

---

[2] Throughout the paper we assume that BA reasons do not result from leaving the home during the fieldwork period, but deliberately not answering the phone or – more importantly – not fixing a date for an interview.

- the respondent has **n**o **i**nterest; NI
- the respondent has **n**o **t**ime; NT
- the respondent has **f**amily related **r**easons; FR
- the respondent has **a**ge or **h**ealth related reasons; AH
- the respondent has '**o**ther **r**easons'; OR. Although this reason is not specified it is an important "rest" category (Dutwin and Herrmann 2005).

Privacy concerns (DeMajo 1980) do probably not play a major role in a panel survey where the sample members already responded. In this section, we identify characteristics of respondents who tend to refuse more often from the literature and try to link these characteristics with the underlying reason for refusal by formulating hypotheses. Note that all studies cited use face-to-face interviews; reasons might therefore not generalize to studies that use other survey modes.

3.1 Demography

Nicoletti and Buck (2004) report lower cooperation rates among people under the age of 35. Groves and Couper (1998) and Groves et al. (2000) argue that while older people are more likely to behave according to norms of civic duty and cooperate to a higher degree, younger sample members are less likely to cooperate because norms of social obligation might be less strongly felt. However, Uhrig (2008) finds that refusals are more likely among the oldest age group. It might be that reasons used to refuse are different according to age such as *weak norms of civic duty (broken appointments) by younger people and age related reasons by the elderly. The young may also not be very interested as few survey topics are especially designed for the youth.*

Regarding education, Groves and Couper (1998) report that the higher educated are more likely to see the utility of survey participation and the links between participation and the greater good. For this reason, one should find *fewer no interest reasons amongst those with higher levels of education.*

Voorpostel and Lipps (forthcoming) and Groves and Couper (1998) find that the presence of children in the household is associated with continuous participation. Also Uhrig (2008) report that children reduce the likelihood of refusal with the younger the child the less likely is a refusal. As we expected a positive correlation between family reasons and the presence of children in the household, these findings may indicate that this is not necessarily the case. At the same time Uhrig (2008) reports that health problems seem to inhibit survey refusal rather than promote it. As we are skeptical about this finding we nevertheless *hypothesize an overall positive correlation between health problems and age or health related reasons for refusal.*

Uhrig (2008) does not find different refusal rates between men and women such that we do not hypothesize different reasons for refusal use by gender. However he finds that the employed are more likely to refuse the survey request than other people. Also Nicoletti and Buck (2004) find that professional activity is indicative of less cooperation. We therefore expect that *employed people use no time reasons more frequently.*

Haunberger (2010) report higher cooperation rates for native citizens and respondents without language problems. We expect the *willingness of foreigners to*

commit to an interview is less pronounced, especially by those who might have language problems.

3.2 Social inclusion factors

Stoop (2005) and Groves and Couper (1998) find social inclusion factors to causally determine survey cooperation. Attrition analyses in the SHP confirm this: Voorpostel and Lipps (forthcoming) find that foreigners (also Uhrig 2008) and those not living together with a partner (but see Nicoletti and Buck (2004)), people who are not active in clubs or groups and who are not interested in politics tend to not cooperate to a higher degree. Loosveldt and Carton (2002) identify "a high degree of utilitarian individualism" (p. 436) as a determinant to decline further participation. Also ownership of the house one lives increases the likelihood to participate (Voorpostel and Lipps, forthcoming). However, Haunberger (2010) reports that people of a higher socio-economic status cooperate to a smaller extent. Uhrig (2008) finds both social involvement and organizational activities to increase the likelihood of cooperation. We expect social inclusion factors like *social activity and interest in politics to be negatively associated with no interest or broken appointment* reasons.

3.3 Motivation and survey answer quality

Pickery et al. (2001) and Groves et al. (2004) find that topic interest plays an important role for motivation. Loosveldt et al. (2002) and De Keulenaer (2005) report that item nonresponse in a previous wave often precedes attrition in a following wave of a panel survey. Item nonresponse may stem from a lack of motivation and signals satisficing (Krosnick 1991) that is followed by a drop-out. Similar to above, we expect *bad answering quality and satisficing behavior to be associated with no interest or broken appointment reasons*.

3.4 Previous experiences and interviewer assessment

As for continued participation in panel surveys, experiences in a previous wave appear to be an important issue (Loosveldt et al. 2002). Respondents who were difficult to interview in terms of motivation, question understanding, ability to respond are more likely to refuse a second interview (Hill and Willis 2001). Loosveldt and Carton (1997) conclude that "the interview should … be a pleasant experience for the respondent." (p. 1022). Campanelli and O'Muircheartaigh (2002) find that the interviewer's assessment of the respondent's future cooperation is a good predictor for nonresponse in a future wave. Uhrig (2008) and Spiess and Kroh (2008) report that interviewer assessed poorer cooperation during the interview is related to higher chances of a subsequent refusal. We therefore expect *respondent's good understanding of the questions, a good interview atmosphere, and an interviewer's higher assessed likelihood of the respondent to cooperate in the future to be negatively associated with no interest or broken appointment reasons*.

4.   Data

To test these expectations, we use data from the Swiss Household Panel (SHP). The SHP is designed to observe social change, in particular the dynamics of changing living conditions in Switzerland. Questions are about household composition and socio-demographics, health, well being and attitudes, politics, social networks, and economics. The SHP is a nationwide, yearly conducted centralized CATI panel survey that started in 1999 with a random sample of 5,074 households. The refreshment sample, first observed in 2004, consists of about 2,538 randomly selected households. The SHP is representative of the Swiss residential population. Each year, the household reference person is asked to first complete the household roster using the grid questionnaire. We relate grid refusal to the household reference person. Conditional of the listing of all individuals in the household via the grid questionnaire, all household members from the age of 14 on have to complete their individual questionnaires. We use SHP data from 2004 to 2009 with the respectively related dependent variable (reasons for refusal, or cooperation as reference category) measured one wave after, i.e., from 2005 to 2010. The distribution of the reasons for refusal is given in Table 1. The total sample size amounts to some 9,425 individuals each surveyed 3.8 times on average, including cooperation and first reason for refusal if any. Individuals are thus only included until their first refusal at the maximum.

	Frequency (Occurrence)	Percent (Occurrence)
Broken Appointment (BA)	400	20.3
No Interest (NI)	737	37.4
No Time (NT)	251	12.7
Family Reasons (FR)	46	2.3
Age or Health (AH)	78	4.0
Other Reasons (OR)	460	23.3
Total	1,972	100.0

Table 1: First reasons for refusal. Data: SHP 2005-2010.

5.   Modeling approach and independent variables

In the models, we separately compare each of the refusal reasons with cooperation. We use multilevel 2-level random intercept logistic regression models with the respondent as one level and time points within respondents as the other. To check if multilevel modeling is necessary, we start with variance components models ("null model") which include only the intercept with both fixed and random effects. These models result in significant (around 1%) random effects with the exception of FR. To model FR, a one-level logistic model is used. We use the following independent

variables, classified as control variables if we do not expect the variable to determine the refusal reason (see section 2):

1. previous wave survey specific and socio-demographic control variables ("c" in Table 2 in the appendix):
- whether the respondent is a household reference person
- survey wave [1..10]
- sample [original=1999 vs. refreshment=2004 (=reference)]
- respondent male
- whether the respondent owns the house/apartment s/he is living in
- whether the respondent has a partner present in the household
- whether the respondent has a foreign nationality from one of the neighboring countries

2. previous wave socio-demography ("d" in Table 2 in the appendix)
- whether the respondent has higher education [median cut]
- whether the respondent has a foreign nationality from a country other than one of the neighboring countries
- respondent age-group [14-25 years, 26-34 years, 35-64 years (=reference), 65+ years]
- presence of children under the age of 7 years in the household
- self-rated physical health [0=very bad .. 4=very good]
- whether the respondent is full time employed

3. previous wave social inclusion ("s" in Table 2 in the appendix)
- whether the respondent is active in voluntary work in a club or group
- political interest [0=absolutely not .. 10=completely]

4. previous wave answer quality ("q" in Table 2 in the appendix)
- proportion of midscale answers on subjective 11 categories questions
- variance of answers on subjective 11 categories questions
- proportion of item-nonresponse on subjective 11 categories questions

5. previous wave interviewer assessment ("a" in Table 2 in the appendix).
- whether the respondent is friendly and cooperative [0=no .. 3= absolutely]
- whether the respondent is difficult to be convinced to participate [0=no .. 3= absolutely]
- whether the respondent understands questions well [0=no .. 3=absolutely]
- whether the respondent will repeat in next wave [0=no .. 3=absolutely]

6.   Results

The results of the final models are depicted in Table 2 in the appendix. First, we find substantial between-individual specific portions of the total variance ("Rho") in the variance components models, which decrease to almost zero in the BA, AH, and OR models after inclusion of the independent variables. In the NT model, Rho becomes insignificant; in the NI model, though becoming smaller, Rho remains significant. This means that the independent variables are able to explain the between-individual, time invariant random part of the total variance in the BA, AH, OR, NI, and NT models to a good extent. With respect to the significant effects of the regression coefficients in Table 2 other than control variables, we characterize refusing people prevalent in the different independent variable domain groups.

Demography

As it turns out, people with a higher education use 'no interest' reasons to a smaller degree. However, foreigners from a country other than one of the Swiss neighbors and especially younger people break or never fix an appointment more frequently. Older respondents – other than full time employed people - use 'no time' reasons less often. Though older people use age or health related reasons more often as well as those with health problems. Our hypotheses are mostly met.

Social inclusion factors

Respondents who are socially active are less likely to break or never fix an appointment. Also, people interested in politics state 'no interest' reasons less often. Our expectations are met.

Motivation and survey answer quality

People with not very pronounced attitudes and satisfaction scores (high proportion of midscale answers) are those who tend to break or never fix an appointment, as well as those with a high proportion of item non-responses on these questions (satisficers). Similarly people with a very high variance of attitudes and satisfaction answers rather tend to use a 'no interest' reason. Also here, our hypotheses are met.

Previous experiences and interviewer assessment

We find those who are difficult to convince and with a smaller likelihood to repeat to use 'no interest' reasons more often. Also 'other reasons' are mentioned more frequently by the latter group. Also here, our expectations are met.

7.   Summary and conclusion

In this article, we analyze if reasons given for noncooperation in a telephone panel survey can be predicted from prior respondent information. The reasons include broken appointment (or appointments where a time was never fixed but a 'call later' was agreed), no interest, no time, family related reasons, age or health related reasons, and other reasons. We first review the literature for correlates with non-cooperation and try to associate these correlates with our specific reasons that might have been the cause.

Correlates stem from the wave preceding the refusal (if this occurs at all) and cover respondent's socio-demography, social inclusion, motivation and response quality, and interviewer assessment of the interviewer atmosphere and future cooperation. Next we model the reasons given using data from the 2004-2009 waves of the centralized CATI Swiss Household Panel (SHP) against cooperation. We use two-level (respondent/wave) random effects models that take into account variance of both within and between individuals.

First, the high proportion of within-individual variance in the variance components models shows that using 2-level (respondent-wave) models improves the regression models considerably. Second, the strong reduction of the between-respondent variance ("Rho") vis-à-vis the random coefficient ("null"-)model shows that the covariates used are well able to explain interpersonal time invariant differences between cooperation on one hand and mentioning a specific reason for refusal on the other. Third, the effects of the covariates on different reasons for refusal are very close to what we expected. For example, the busier people tend use 'no time' reasons more often, the younger, lower educated and uninterested prefer 'no interest' reasons, and young foreigners with a foreign mother tongue who are socially inactive and exhibit satisficing behavior tend to never fix or break an appointment more frequently. Not all reasons for refusal can be equally predicted: While broken or never fixed appointments, no interest, no time, and age or health related reasons are in accordance with our expectations and are easier to predict, family reasons are comparatively harder to predict. This is in parts because no covariate is significant.

To summarize, other than most of the literature cited about the truthfulness of reasons for refusal, we find expected correlations for most reasons for refusal. This shows that it is possible to predict reasons from previous respondent behavior to a certain degree and to make use of this knowledge. The next steps could consist in defining likelihoods for each respondent to use a certain reason for refusal, especially for the easier to predict broken appointment, no interest, no time, and age or health related reasons. A specially tailored design (Dillman 2000) can be used to treat respondents with high likelihoods before the fieldwork for the next wave starts. Next, interviewers need to be trained to forestall special reasons or to adequately address them in the sense of Groves' and Couper's strategy of tailoring (1998). Although interviewers use lists with arguments even today, it might be easier if reasons from certain candidates are anticipated in advance and interviewers can be better prepared. In addition, interviewers can be specialized to address special reasons. For example during the first contact with household reference persons, which is the contact with the highest interviewer effects (Lipps 2009b), interviewers who prove most successful to address a 'no interest' reason, can work first contacts with people of the highest likelihood to state such reasons. Another example concerns "broken appointments". Often these are hidden refusals, i.e., the respondent does not want to fix an appointment and at the same time does not refuse explicitly ("call later"). In these cases interviewer could propose a deadline to conduct the interview. If this is not accepted, the respondent will be shifted to the refusal conversion phase, where specialized interviewers try to obtain cooperation.

Limitations of this study are first that the way we associated *specific* reason with the correlates for non-cooperation are somewhat subjective. More work needs to be done

to distinguish causes for *specific* reasons and to ground them on a more thorough theory. Secondly the empirical part is based on only one survey which seems problematic for generalization. In particular it is questionable whether the findings hold for surveys that do not use the telephone survey mode but for instance the face-to-face mode. Third, what is of course still lacking is a test if appropriately tailored pre-fieldwork communication with respondents or the use of well-trained or specialized interviewers is actually able to address anticipated specific reasons in advance such that the respondent cooperates.

8. Literature

Bates N., J. Dahlhamer & E. Singer (2006). *Privacy concerns, too busy or just not interested: using doorstep concerns to predict survey nonresponse*. Paper presented at the 17th International Workshop on Household Survey Nonresponse, Omaha (Nebraska), August 28-30 2006.

Brehm, J. (1993). The Phantom Respondents. Opinion Surveys and political Representation Ann Arbor, University of Michigan Press

Campanelli, P. & C. O'Muircheartaigh (2002). The Importance of Experimental Control in Testing the Impact of Interviewer Continuity on Panel Survey Nonresponse. *Quality & Quantity* **36**: 129-144

De Keulenaer, F. (2005). Using Process Data to Predict Attrition from a Panel Survey: a Case Study. *Proceedings of the Survey Research Methods Section,* American Statistical Association,

DeMajo, T. (1980). Refusals: Who, Where and Why. *Public Opinion Quarterly* **44** (2): 223-33

Dillman, D. (2000). *Mail and telephone survey: The tailored design method*. New York: Wiley

Dutwin, D. & M. Herrmann (2005). Finding Converts: Who Becomes a Refusal Conversion? International Communications Research (ICR): Media

Fielding, A. & H. Goldstein (2006). Cross-classified and Multiple Membership Structures in Multilevel Models: An Introduction and Review. *Research Report* **RR791**, department for education and skills, University of Birmingham

Groves, R., Singer, E. & A. Corning, A. (2000). Leverage-Saliency Theory of Survey Participation, *Public Opinion Quarterly*, **64**: 299-308

Groves, R. & M. Couper (1998). *Nonresponse in Household Interview Surveys.* New York: Wiley

Groves, R., S. Presser & S. Dipko (2004). The Role of Topic Interest in Survey Participation Decisions. *Public Opinion Quarterly* **68** (1): 2-31

Haunberger, S. (2010). The effects of interviewer, respondent and area characteristics on cooperation in panel surveys: a multilevel approach. *Quality and Quantity* **44**: 957-69

Hill, D. and Willis, R. (2001). Reducing Panel Attrition. A Search for effective Policy Instruments. *Journal of Human Resources*, 36, 416-438.

Krosnick, J. (1991). Response Strategies for Coping with the Cognitive Demands of Attitude Measures in Surveys. *Applied Cognitive Psychology* **5**: 213-236

Lipps, O. (2007). Attrition in the Swiss Household Panel. *methoden – daten – analysen* **1**: 45-68

Lipps, O. (2009a). Attrition of Households and Individuals in Panel Surveys. *SOEPpapers* **164**

Lipps, O. (2009b). Cooperation in centralised CATI Household Panel Surveys - A Contact-based Multilevel Analysis to Examine Interviewer, Respondent, and Fieldwork Process Effects. *Journal of Official Statistics* **25** (3): 323-338

Lipps, O. & K. Kissau (forthcoming). Nonresponse in an Individual Register Sample Telephone Survey in Lucerne/Switzerland. "Telephone Surveys in Europe: Research and Practice (Editors: Michael Häder, Sabine Häder, Mike Kühne), Springer

Lipps, O. & Pollien, A. (2011). Effects of Interviewer Experience on Components of Nonresponse in the European Social Survey. *Field Methods* **23** (2): 156-172

Loosveldt, G., J. Pickery & J. Billiet (2002). Item Nonresponse as a Predictor of Unit Nonresponse in a Panel Survey. *Journal of Official Statistics* **18** (4): 545-557

Loosveldt, G. & A. Carton (1997). Evaluation of Nonresponse in the Belgian Election Panel Study '91-'95. *Proceedings of the Survey Research Methods Section, American Statistical Association*.

Loosveldt, G. & A. Carton (2002). Utilitarian Individualism and Panel Nonresponse. *International Journal for Public Opinion Research* **14** (4): 428-438.

Nicoletti, C. and N. Buck (2004). Explaining Interviewee Contact and Co-Operation in the British and German Household Panels. *ISER Working Paper* **6**/2004. Colchester: University of Essex

Olson, J. & R. Klein (1980). Interviewers' perceptions of reasons for participation refusal in a national longitudinal survey, 1979-1980. *Proceedings of the Section on Survey Research Methods*: 552-7 Washington, DC: American Statistical Association.

Pickery, J., G. Loosveldt & A. Carton (2001). The Effects of Interviewer and Respondent Characteristics on Response Behaviour in Panel Surveys. *Sociological Methods & Research* **29**(4): 509-523

Spiess, M. and M. Kroh (2008). Documentation of Sample Sizes and Panel Attrition in the German Socio Economic Panel (SOEP) (1984 until 2006). *Data Documentation* **27**, DIW Berlin

Snijders, T. & R. Bosker (1999). *Multilevel analysis*. Newbury Park, California: Sage

Stoop, I. (2005). The Hunt for the last Respondent: nonresponse in Sample Surveys. PhD Thesis, Utrecht University

Sztabinski, P., A. Dyjas-Pokorska & T. Zmijewska-Jedrejczyk (2008). Understanding Refusals. Polish Academy of Sciences, Institute of Philosophy and Sociology, Warsaw

Uhrig, N. (2008). The Nature and Causes of Attrition in the British Household Panel Survey. *ISER Working Paper* **5**/2008. Colchester: University of Essex

Voorpostel, M. (2010). Attrition patterns in the Swiss Household Panel by demographic characteristics and social involvement. In Lipps, O., R. Tillmann, U. Kuhn & D. Lillard (eds.): Longitudinal Analysis in Switzerland. Special Issue of the *Swiss Journal of Sociology* **2/**2010

Voorpostel, M. & O. Lipps (forthcoming in *Journal of Official Statistics*). Attrition in the Swiss Household Panel: Is change associated with later drop-out?

Table 2: Coefficients of logistic models reasons for refusal vs. 'cooperation': BA=Broken Appointment, NI=No Interest, NT=No Time. FR=Family Reasons, AH=Age or Health related, OR=Other Reasons.
* = 1% significance level of effect (Coefficients printed in bold).
 # not calculated, instead, a single level model with robust standard errors is used.
omitted, dummies predict failure perfectly. Data SHP 2004-2009.

	Specific Reason given vs. Cooperation					AH	
	cooperation	BA	NI	NT	FR		OR
c	Person is Household Reference Person	**-.48***	**-.87***	**-.87***	-.31	**-1.07***	**-.78***
c	Wave	**-.09***	**-.32***	**-.30***	.07	.09	**-.16***
c	Original Sample (refreshment sample=0)	.14	**1.04***	**.87***	-.02	-.92	.39
c	Respondent male	**.31***	.22	.08	.11	.54	.01
c	Respondent is owner of house	-.03	**.32***	-.02	-.09	-.10	**.42***
c	Respondent has partner living in the same Household	-.12	**.61***	-.03	.74	-.16	.13
c	Nationality: foreigner from neighbor country	.17	-.09	.00	-.02	**1.07***	.29
d	Child under 7 years in household	-.29	-.09	.20	.53	-.90	-.43
d	Respondent has higher education	.07	**-.33***	.06	.36	-.63	-.10
d	Nationality: foreigner from other than a neighbor country	**.61***	-.05	.38	-.16	.48	.17
d	Respondent Age 14-25	**1.15***	**1.08***	.60	.61	-.81	.26
d	Respondent Age 26-34	**.55***	.05	.06	-.06	-.10	-.14
d	Respondent Age 65+	-.54	.-38	**-1.88***	-.56	**1.95***	-.22
d	Respondent self-rated Health (0=very bad..4=very good]	-.02	-.00	.13	-.11	**-.58***	-.03
d	Respondent Full Time employed	.28	.21	**.49***	-.66	-.32	.21
s	Respondent Active in a Club or Group	**-.41***	-.21	-.24	-.63	-.47	-.17
s	Respondent is interested in politics	-.03	**-.07***	-.02	-.15	-.01	-.04
q	Proportion of midscale answers on subjective questions	**1.41***	.94	1.71	1.91	1.67	1.32
q	Variance of subjective Questions (11 pt. Scale)	-.09	**.26***	.18	-.13	-.35	.10
q	Proportion of item-nonresponse on subjective Questions	**4.59***	.67	2.93	-7.72	3.06	.51
a	Respondent is friendly [0..3]	.04	-.05	-.34	##	.63	-.18
a	Respondent understands Questions [0..2]	-.03	.12	.20	.70	-.23	.42
a	It was difficult to convince respondent to participate [1..3]	.55	**.69***	.60	.31	.05	.37
a	Respondent will repeat in next wave [0..3]	.12	**-.27***	-.22	.01	-.46	**-.45***
	N (Observations)	35,122	35.461	34,959	34,750	34,784	35,187
	N (Individuals)	9,265	9,487	9,245	9,143	9,164	9,312
	Rho	.00	.44*	.31	#	.05	.00
	Rho Variance Components Model (Nullmodel)	.37	.68*	.79*	.00	.14	.66*