Are non-respondents ill?
The relationship between survey participation and health

Ineke Stoop

Why is non-response a problem?
According to the 1987 Dutch Amenities and Services Utilisation (AVO) survey, the physical condition of men aged 85 years and older was substantially better than that of men in a younger age bracket (80–84 years).1 This remarkable result can be put down to the design of the survey. As in most social surveys, the sample was drawn from the non-institutionalised population. Assuming that older men who suffer from physical disabilities are more likely to be living in residential care, the health of those remaining in the community will compare favourably with that of younger men who are more likely to be living alone; hence this counter-intuitive outcome.

The health of the community dwelling population can also have an impact on their survey participation. Target respondents who are in hospital or seriously ill cannot be contacted. Target respondents who suffer from physical disabilities or mental health problems will not always be able to cooperate in a general survey. For instance people with visual impairments cannot easily respond to written questionnaires, those with hearing difficulties may not be able to hear spoken questions, and people living with cognitive problems, such as dementia, may not understand questions.** Target respondents who have a bad cold or headache may not look forward to a lengthy interview and thus refuse to cooperate. Conversely, those who are feeling a little unwell may be more likely to be at home. They may welcome the distraction of an interview and jump at the chance to discuss at length their ailments and complaints with a sympathetic interviewer. In both cases non-response bias may occur, resulting in either too low or too high an estimate of health problems. Cohen and Duffy, for instance, found that the “prevalence of common sources of ill-health in the over 75s is likely to be underestimated, even by a carefully conducted health survey, but among the ‘young elderly’ such prevalence estimates are unlikely to be severely biased if a reasonably high response rate is achieved”.

Quality programme and non-response study
Response rates to the Dutch AVO survey fell from 60–70% in the 1980s to 43% in 1991, raising serious concerns about the quality of the data and the possible differences between respondents and non-respondents. An intensive data quality programme resulted in a substantial improvement in response rates (69% in 1995, and between 60% and 65% in 1999 and 2003), combined with a detailed record keeping of the response process. This monitoring, based on detailed records of the fieldwork, including information on the timing of household visits, outcomes of contacts and information on the interaction with householders, made it possible to evaluate the differences between ‘easy’ respondents (easy to contact and easy to persuade), those who were hard to contact, and those who were initially reluctant to cooperate but who subsequently participated (the converted refusals). In addition, in 2000 a follow-up survey was conducted among a sample of the most adamant refusers in the 1999 study. The persistent refusers who finally cooperated in the follow-up survey could be compared with the converted refusers in the regular study. Previous publications indicate how the results of this follow-up study make it possible to assess whether the enrolment of converting refusals helps to minimise non-response bias and to what extent non-response bias remains in a survey with reasonably high response rates.

Enhancing response rates
The target households in the AVO were sent an advance letter on behalf of the Social and Cultural Planning Office outlining the purpose and contents of the survey. They were approached in person by experienced interviewers trained in achieving high response rates. In the AVO, almost all target households were contacted. This high contact rate was obtained by making up to twelve visits to previously non-contacted households over a five-month fieldwork period, including evening and Saturday house calls and additional telephone calls to those not at home. This large number of contact attempts ensured that both those

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* The AVO is a face-to-face survey of a net sample of 6,000–6,500 households, commissioned by the Social and Cultural Planning Office (SCP) of the Netherlands, and conducted every four years. The survey comprises a household interview with a responsible adult and a drop-off self-completion questionnaire for every member of the household aged six years and older.

** Surveys can be adapted to include these groups, and special surveys can be conducted among people with learning and physical disabilities. In general social surveys, such as the AVO, these special measures are rarely taken. Most survey interviews in the Netherlands are only conducted in Dutch, so a very small minority of the population, such as recent migrants, may also not be able to participate.
individuals who were rarely at home and those who were away for long periods could be contacted. The percentage of target respondents who said they were not able to cooperate because they were ill was slightly higher during the day than during the evening. Rather than reflecting poor labour morale in the Netherlands, this is likely to reflect the presence of other, healthy household members during evening hours.

Table 1 reports the initial responses to first contact with interviewers as well as the final outcomes for each household. Initially, 35.5% refused to cooperate. More than two-thirds of those who initially refused to cooperate were re-approached. 37% of the initial refusers ultimately agreed to participate. This led to a substantial increase in the response rate. The number of those who initially refused who were re-approached, and of those who then decided to participate after all are remarkably high. Similar findings have been seen elsewhere, as in the European Social Survey. This shows that perseverance pays, and that respect for respondents can be combined with asking them to cooperate after a previous refusal.

At the first contact, 1.7% of those individuals who opened the door said that they were too ill to be interviewed. Half of these individuals ultimately did cooperate. The net effect of re-approaching those who were ill was therefore much smaller than that of converting refusals; although of course those who cannot participate because of illness are a specific group.

Final refusers
In a follow-up survey of a small sample of adamant refusers, a response rate of more than 70% was obtained. A comparison between respondents and non-respondents to this follow-up survey gave no reason to assume that these groups differed. The high level of response in the follow-up survey can be attributed to a number of factors:

- A less burdensome survey design: shorter questionnaire, one person only, multi-mode;
- Highly motivated, well-trained and well-paid interviewers;
- Good support for interviewers from fieldwork organisations (training, support desk and special newsletter);
- A wide range of incentives for respondents (monetary, the prestige of participating in a survey reported in a major national newspaper, direct involvement of a high calibre management survey organisation and sponsor).

These adamant refusers differed in a number of aspects from the participants in the regular survey. In the latter group, for instance, single men were under-represented; it was therefore to be expected that they would be over-represented among refusers. They included both more of the younger (16–34) and older (55 plus) age groups. They were also slightly less active on a wide range of issues, participation in sport, in religious activity or in computer ownership. Those individuals who refused to participate who did own a computer, however, used it more often to access the internet, as well as for chatting and playing games. Cultural participation also had a particular relationship with response behaviour. Those who were hard to contact participated in more cultural activities than those who were more often at home. Those who initially refused partook more in classical cultural activities (classical music concerts, opera, theatre) whereas the final refusers participated more in popular cultural events (cinema, pop music concerts, clubbing). These differences suggest that converted refusers are not necessarily the best proxy for final refusers.

**Health and response behaviour**

The outcomes of the survey presented in Figure 1 show that hard to contact respondents are generally healthier than the other response groups; this has also been reported by Lynn and Clarke. In their UK based study, respondents in hard-to-contact households were

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**Table 1: Initial response at first contact and final outcome for all contacted sample households (%)**

<table>
<thead>
<tr>
<th>Response at first contact</th>
<th>Final outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interview</td>
<td>37.0</td>
</tr>
<tr>
<td>Appointment</td>
<td>14.3</td>
</tr>
<tr>
<td>Broken off/incomplete</td>
<td>5.3</td>
</tr>
<tr>
<td>Not able, ill</td>
<td>1.7</td>
</tr>
<tr>
<td>Not able, busy</td>
<td>2.2</td>
</tr>
<tr>
<td>Not able, language problems</td>
<td>0.1</td>
</tr>
<tr>
<td>Not able, other reasons</td>
<td>3.8</td>
</tr>
<tr>
<td>Refusal</td>
<td>35.5</td>
</tr>
</tbody>
</table>

N (=100%) 9,261    9,261

**Figure 1: Health status by response group**
youngest, more likely to be employed, more often heavy smokers and drinkers, but still more healthy. This latter characteristic may be related to their age and employment status. The respondents in the Dutch survey who showed some initial reluctance (the converted refusals) did not differ from this pattern with respect to health. The final refusers who participated in the follow-up survey were, however, slightly less healthy than the respondents in the regular survey.

After correcting for socio-demographic characteristics, however, these health differences disappear, or show a less consistent pattern. Figure 2 shows that final refusers in the 16–34 and 55 plus age groups are less healthy than participants in the regular survey. Individuals in the 35–54 years age group were, however, at least as healthy as regular respondents. These differences are not significant.

Improving health surveys
What do these results teach us with respect to health surveys? First (and outside the scope of the non-response study presented above) they show that excluding people living in institutional care facilities from health surveys may give a biased view of the health of older people. Second, it appears that quite adequate response rates can be obtained by increasing the contact rate and persuading those who initially refuse to participate. This is important, because a high contact rate may improve the balance of the survey. More contact attempts will increase the probability of contacting healthy, employed, busy people. Allowing sufficient time for fieldwork will make it possible to get in touch with those individuals who are not at home for a long periods, for instance because they are in hospital. This will also make it possible to re-approach those who were temporarily not able to cooperate because of illness. The results here suggest that the majority of this group may be willing to participate at a later point in time.

These results do not indicate that initial refusers are more or less healthy than willing participants. The health status of final refusers differed, but these differences are partly due to differences in age and sex. What is clear, however, from this study is that non-contact and refusal may lead to different types of non-response bias: those who are hard to contact are likely to be more healthy than the easy to contact, whereas those who refuse may be more often older people who are less healthy than the participants. Only by closely monitoring the response process and by collecting supplementary information on final refusals can these factors be brought to light.

REFERENCES

This new book, edited by Magdalene Rosenmöller, Martin McKee and Rita Baeten, supported by the Sixth Framework Programme for Research, and published by the European Observatory on Health Systems and Policies, is an attempt to inform this debate. It seeks to understand how the opportunities offered by the EU, for instance on sharing capacity in border regions, or on ensuring access to specialist services, can be maximised.

A series of case studies illustrate different issues and how local health systems have responded. These include cross border care arrangements between Slovenia, Austria and Italy as well as between Estonia, Finland and Latvia. Arrangements on the island of Ireland are also discussed. Meeting the needs of new long term residents in Spain, tourists in the Veneto region of Italy and the development of contractual agreements and other forms of cooperation between several EU countries also feature.

Patient mobility in the European Union: Learning from experience

To what extent should patient mobility be of concern to European policy-makers?

The book is freely available on-line at www.euro.who.int/Document/E88697.pdf