

Strategies for Reducing Nonresponse in a Longitudinal Panel Survey

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This article provides an evaluation of some of the fieldwork procedures and survey systems used on the British Household Panel Study (BHPS). The BHPS procedures for dealing with nonresponse through panel maintenance systems, tracking procedures, and refusal conversion during fieldwork are described. The analysis uses data from the first four waves of BHPS from 1991 to 1994, to examine longitudinal patterns of response and reasons for refusal. The reasons for refusal or for becoming a non-contact over the life of the panel are discussed. The process of refusal conversion is described together with conversion outcomes. Finally the effect of interviewer continuity on maintaining the co-operation of sample members is examined. The article argues that in the context of a longitudinal panel survey, having a relatively complex set of procedures in place is critically important to minimise nonresponse and maintain high response rates over time.

Key words: Response rates; survey methodology; fieldwork procedures.

1. Introduction

Conducting a longitudinal panel survey presents a number of specific problems which have a direct bearing upon data quality. For longitudinal studies such as cohort or panel surveys, minimising nonresponse to counter the potentially damaging effects of attrition and to maintain a viable sample is essential (Kazprzyk, Duncan, Kalton, Singh 1989). Survey nonresponse has long been recognised as a complex and multi-faceted phenomenon (see for example Sudman and Bradburn 1977). While longitudinal panels share many of the difficulties faced by cross-sectional surveys in gaining a high response rate, the very nature of the panel design imposes additional complexities in terms of response rate requirements. Panels face two main problems specific to their design which can result in attrition over time. The first major source of loss from a panel survey is due to the geographical mobility of sample members. If respondents move and, despite all efforts, cannot be traced, they are effectively lost from the survey. Moreover, the respondents who are most likely to be geographically mobile tend to differ from those who maintain a stable home address. So the problem of differential attrition arises where a particular category of respondent can become under-represented within the sample. The second,

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and more extensive source of loss, is refusals, very often the result of what we call panel fatigue. At every interview point, respondents have the option of refusing to take part in the survey. After co-operating for what can be some years of a panel, respondents may become bored or uninterested in taking part any further or simply feel that they have “done enough.” While the majority of respondents become rather committed to taking part and actively enjoy the interview process, inevitably there are some respondents who decide they do not wish to carry on. As with the geographically mobile, those who refuse to be interviewed tend to have specific characteristics, potentially producing differential patterns of attrition and, at worst, bias within the data collected.² The aim of this article therefore is to assess the effectiveness of the fieldwork strategies and survey procedures used on the BHPS for minimising nonresponse over time.

2. The British Household Panel Study

The British Household Panel Study is a national household panel survey of over 10,000 individuals in some 5,500 households in Britain which is carried out by the Institute for Social and Economic Research based at the University of Essex. The sample covers non-institutional residences in England, Wales and Scotland. The BHPS began in September 1991 and returns to re-interview panel members on an annual basis. At Wave 1 of the survey 13,840 individuals, including children under 16 years of age, were enumerated in 5,511 households. Of these, 9,912 eligible adults, i.e., individuals aged 16 years or over were interviewed and 352 proxy interviews taken, giving an upper response rate (full interviews with at least one member of the household) of 74 per cent. The fieldwork for the sixth wave of the survey began in September 1996 and we will be returning to our respondents for the seventh time in September 1997. The BHPS collects information at both the household and individual level. At the household level the questionnaire covers household composition, housing tenure and costs, non-monetary poverty indicators, consumption items and household expenditure on fuel and food. The individual questionnaire collects a wide range of information on migration, health status and usage of health services, detailed employment and income information, values and opinions, and household organisation and the domestic division of labour. A self-completion questionnaire containing attitudinal items and some GHQ items is completed by all respondents doing a full individual interview (see Rose et al. 1991 for a full description of the content and design of the BHPS). The household interview takes around ten minutes to administer and each individual interview 40 minutes, on average, keeping the total interview package for any one person to no more than one hour maximum. In addition, since 1994, children between eleven and fifteen years of age living in our sample households have completed a short self-completion questionnaire (Scott et al., 1994). While the aim is to gain a full interview with every eligible adult, we also collect proxy information or conduct a short telephone interview as a means to gain basic information about as many sample members as possible. For the first five years of the BHPS, respondents completing a full interview have received a £5 gift voucher as a token of our thanks for taking part. Young people completing a youth

² The issue of differential attrition from the sample and the weighting techniques used by the BHPS to compensate for nonresponse bias are not directly addressed by this article. Please see Taylor (1993) for a description of respondent characteristics in relation to differential attrition and weighting procedures.

interview receive a £3 gift voucher. Both of these are mailed to the respondent with a thank-you letter and change of address card after the interview.³ In addition, we use small gifts given by the interviewer at the point of interview, such as a pen with the survey logo or a small diary. While there is some evidence that the incentive increases response at the margins, particularly for those on low incomes such as the single elderly, it is used primarily as a means to register our thanks for the respondent's co-operation rather than being a payment for his or her time.

All panel studies adopt following rules which designate which sample members are to be followed and under what circumstances they should or should not be followed (Burgess 1989; Kalton and Lepkowski 1985). Whatever following and eligibility rules are adopted in the overall survey design they impose certain constraints on how sample members are followed year on year, requiring a relatively sophisticated sample management system to be in place. In the case of the BHPS sample members are followed as they move out of a household, create a new household or rejoin a household of which they were a member at a previous wave. All members originally sampled at Wave 1 of the survey are designated as permanent sample members and are followed when they move, including children under the age of sixteen. As children reach the age of 16 they become eligible for interview. New household members are included in the sample and are eligible for interview as long as they continue to share a household with a permanent sample member. All children born to an original sample member are designated as permanent sample members, together with their natural parents. Despite being a household panel survey, the BHPS is effectively an individual level sample, as it is individuals who are followed as they move in and out of different household circumstances. As Duncan and Hill (1985) have argued, the concept of a longitudinal household is problematic, as longitudinal households do not exist but only longitudinal individuals. Households change in composition, new households are formed and households dissolve through the combined movements of individuals, making the individual the only sensible unit for tracing in a longitudinal context.

3. Longitudinal Response Rates

In a panel survey the issue of how to describe response rates longitudinally becomes somewhat problematic. For each cross-sectional wave of the survey we can calculate the household response rate for all issued households or for all contacted households if we include new households created during fieldwork. Similarly we can calculate the individual response rates for each cross-sectional wave. While cross-sectional response rates give some purchase on the success or otherwise of each fieldwork period, they tell us little about longitudinal patterns of response over all the years of the survey. Nor can we assess the effect of attrition from the survey over time. From a longitudinal perspective, therefore, we need to calculate the wave on wave response rates at the individual level. This is because we are dealing with a sample of individuals who move between households, making wave on wave household response rates problematic to derive. For carrying out

³ From Wave 6 of the survey, the voucher incentive is being mailed in advance of the interviewer calling to respondents who co-operated the previous year and to rising 16 year olds becoming eligible for interview at the current wave. Interviewers will have vouchers to hand directly to all other respondents at the point of interview. The value of the voucher has also been increased from £5 to £7 per individual interview and from £3 to £4 for a youth interview.

substantive panel analyses, it is those respondents with continuous interview records, that is respondents who have done a full interview at every wave of the survey, who provide the core longitudinal information. One means of assessing wave on wave response rates is to look at the wave on wave re-interview rate at the individual level (see Table 1). Of the 9,912 respondents who did a full interview at Wave 1 of the survey, 87.7 per cent of those still eligible for interview were re-interviewed at Wave 2. At Wave 3, 90.3 per cent of eligible Wave 1 respondents who were also interviewed at Wave 2, were re-interviewed. And at Wave 4, 94.9 per cent of these continuing Wave 1 respondents were re-interviewed. While these re-interview response rates may seem high in comparison with many cross-sectional response rates, it has been necessary to achieve these levels in order to maintain a viable longitudinal sample.

Of the total 9,912 respondents at the first wave of the survey, 7,131 have continuous interview records over the four year period. This means that, after excluding those who have become ineligible at any point, we have retained 74 per cent of our original interviewed sample with complete, continuous information for the first four years of the survey.

In addition to the core longitudinal sample, we have in many cases information for respondents who have been interviewed at one or more points in the survey but not at every wave, and therefore have discontinuous data. For example, there are 207 of our Wave 1 respondents who have completed a full interview at Waves 1, 2, and 4 but not at Wave 3. Similarly, there are 173 Wave 1 respondents who have a full interview for all waves except Wave 2. Depending on the analysis being carried out, these respondents clearly have longitudinal information which can be used. Some of the respondents with discontinuous information are members of originally sampled households at Wave 1 who were either not interviewed at Wave 1 or were under 16 years of age and have since become eligible for a full interview. At each wave of the survey approaching 200 youngsters turning 16 become eligible for a full interview, all of whom we attempt to interview. In the three years since Wave 2 of the survey, 432 of our younger original sample members have been interviewed. Others with discontinuous information are temporary sample members who have joined the survey since Wave 1 by virtue of living in the same household as an original sample member. Despite the fact that these respondents are not part of the original sample, many have been with the survey for two or three years, providing important contextual information for any longitudinal analyses, while also adding to the overall sample size for cross-sectional analysis. When we look at the original interviewed sample

Table 1. BHPS individual re-interview response rates, 1991–1994*

	1991	1992	1993	1994
Original Wave 1 respondents	9,912			
Continuing Wave 1 respondents		8,568 (87.7%)	7,622 (90.3%)	7,131 (94.9%)
All R's continuing from last wave		(na)	8,216 (90.2%)	8,278 (94.0%)
Total full interviews**		9,459	9,024	9,060

*Full individual interviews for eligible respondents at each wave.

**The total number of full interviews at each wave includes new entrants to the survey.

Table 2. Wave 1 respondents maintained in interviewed sample BHPS Waves 1 to 4 (eligible respondents at each wave)

Waves interviewed	Type of interview achieved	
	Full interview % N	Inc Proxy/phone % N
1, 2, 3 and 4	74 (7,131)	78 (7,643)
1, 2 and 3	79 (7,622)	83 (8,170)
1 and 2	88 (8,568)	89 (8,970)
1 and 3	81 (7,839)	85 (8,419)
1 and 4	80 (7,577)	82 (7,990)

according to the number of waves at which they have responded and the type of interview data collected, the percentage of sample members who have any form of longitudinal information over the four years of the survey is higher than when calculated on the basis of a full interview at all four waves (Table 2). Of the 9,391 originally interviewed sample who were eligible for interview at Wave 4, 80 per cent (7,577) were re-interviewed with a full interview at Wave 4. Of the 9,779 respondents who had completed either a full or proxy interview at Wave 1 and who were still eligible for interview at Wave 4, 82 per cent (7,990) were re-interviewed using either a full, proxy or telephone interview at Wave 4. While the proxy and telephone interview provide a more limited amount of information about the respondent, the policy of using a mix of data collection instruments has enabled the BHPS to keep a larger proportion of respondents within the longitudinal interviewed sample than would otherwise be the case. The BHPS experience confirms that of other household panel surveys, where the use of flexibly constructed data collection instruments and a mix of methods helps to maintain contact with sample members who might otherwise be lost altogether (Schupp and Wagner 1996).

4. Survey Procedures to Minimise Nonresponse

4.1. Fieldwork

A number of fieldwork procedures have been adopted on the BHPS to minimise non-response as far as possible. These procedures are built into the survey process as a whole with some, such as tracing respondents, being ongoing throughout the year between interview points. Running a panel requires the implementation of a range of quality control measures throughout fieldwork, all of which are aimed to maximise response and collect high-quality data. On the BHPS only experienced interviewers who have previously worked on random sample surveys are employed and, where possible, the same interviewer is assigned the same households at each wave of the survey. All interviewers new to the survey attend a two-day briefing prior to going into the field while those who have worked on the survey in previous waves attend a one-day briefing. Fieldwork is closely monitored throughout with a weekly progress chase of all interviewers to establish the current status of each household and each individual sample member. Interviewers are required to make a minimum of six calls on each address at different times of day before returning the household as a non-contact. In addition, where six or more calls were made at the previous wave, the call records are fed forward to interviewers. The content, design and length of

the questionnaire documents are also critical elements in gaining the continuing co-operation of sample members. However, beyond these elements which apply to any survey data collection operation, there are three areas in which a panel must commit additional resources. These are i) running a panel maintenance operation, ii) having tracking procedures in place for movers, and iii) implementing a refusal conversion programme.

4.2. *Panel maintenance*

An early decision taken after consultation with other panel surveys, was to develop a custom designed Panel Maintenance Database (PMDB) to keep track of panel members. The priority in an ongoing panel survey is to maintain up-to-date and accurate records of the whereabouts of each sample member. The PMDB is maintained as a database of names and addresses of sample members held separately from the survey database containing the interview data. This is for two main reasons. First, the issue of confidentiality has to be considered, not only to comply with the UK Data Protection Act but also to maintain our own ethical standards as researchers in protecting our respondents. Respondents in the BHPS are given a promise of confidentiality which guarantees that their names and addresses will never be linked to any of the information they provide. Holding names and addresses separately from the survey database ensures we maintain this promise as direct links between the two can only be made by a limited number of authorised staff. Secondly, we update the PMDB in the year between interview points, so need some facility to do this separately from the survey data collected at each wave.

In designing the panel maintenance procedures the main objective has been to keep contact with respondents through means other than the annual interview itself. The BHPS uses a variety of techniques to do so, including:

- providing a named contact person, freephone number and answerphone for respondents
- recording details of contacts with respondents between interview points
- passing any relevant information about respondents to the interviewer before each round of interviewing, e.g., news of a family bereavement/illness
- an annual pre-fieldwork mailing of a short Respondent Report of research findings and activities with a confirmation of address card for freepost return
- the inclusion of a change of address card with gift vouchers and thank-you letter post-interview
- sending a £5 gift voucher incentive to any person returning a change of address card between interview points
- updating address details between interview points
- maintenance of an historical record of all addresses ever occupied for each sample member
- ongoing tracing of respondents both during and between fieldwork periods.

The BHPS has taken the view that respondents make quite a commitment in agreeing to continue with the survey and deserve some feedback about how the data they provide are being used. Anecdotal information from respondents indicates that receiving feedback about the survey in the Respondent Report is much appreciated by them, makes them feel they are contributing to a worthwhile project and are considered to be individually

important to the survey as a whole. Indeed, we have many respondents who request more information than we provide in the Respondent Report, requests which are handled on an individual basis. Maintaining a rapport with respondents through mailings between waves encourages a feeling of belonging to the survey while providing us with an additional opportunity to update our address records. This means we cannot only update our addresses at the point of interview but also in the months between interviews, a process which feeds into the survey's tracking procedures. Respondents return approximately 500 change of address cards to us every year and the confirmation of address card is returned by around one third of respondents before the sample is issued into the field each year.

4.3. *Tracking*

Updating addresses in between interview points so that we issue as many households as possible to the most recent address is what Burgess (1989) calls a forward tracing method. Retrospective methods are used at the point of interview when the interviewer calls, discovers some have moved and tries to find a new address for them. Approximately 10 per cent of the BHPS sample (1,000 individuals) move in a given year. In up to one half of these cases we will have received some notification of the change of address through contacts between interview points via the change of address card, via the confirmation mailing or by telephone. For the remainder, the tracking process begins at the point when the interviewer makes his or her first call at the issued address, finds the respondent has moved and is unable to find a new address. One of the advantages of a panel survey is that the interviewer's local knowledge, tracking skills and knowledge of the respondent's circumstances, build up over the years of the survey, increasing the chances that the interviewer will be able to trace someone without needing any help from the office. However, it is inevitable that interviewers will not be able to find everyone who moves and they then complete a Movers Form with details of the respondent(s) they are unable to find. At each wave of the survey interviewers return between 200 and 250 tracking forms to the office for further tracking. One of the main means we use for tracking is contact names supplied by the respondent in previous years. In the UK there is no requirement by law for individuals to officially register their current address as in, for example, Germany. We are therefore more reliant on the goodwill of respondents to inform us when they move and to provide us with contact names. Every year all respondents are asked for details of a contact name, a person who would know where they were if they happened to move, and in our experience this is the most effective method of tracing movers, both in terms of cost and success rate. Willingness to give a contact name may also be an indicator of how co-operative the respondent is and whether they are prepared to commit themselves to future participation. And as the years go by we have in many cases accumulated several different contact names with regard to the same respondent, increasing the chances of successfully tracing movers in future waves.

The tracking process is time-consuming and requires a commitment of resources in terms of staff time. We estimate it costs around £10 per household in staff time and other resources such as telephone costs to carry out the tracing process. However, we successfully track 50 per cent of households for which interviewers can find no new address, which amounts to some 125 households per wave. In the context of a longitudinal

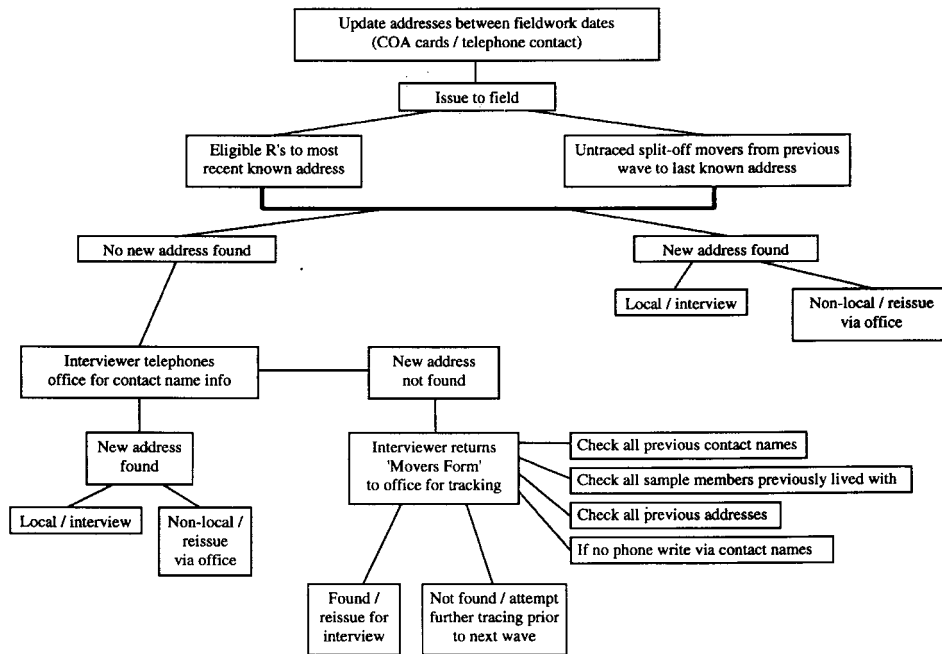


Fig. 1. BHPS tracking procedures

panel, this relatively small number of households represents approaching 2.5 per cent of our issued households, making a critical contribution to maintaining contact rates and minimising cumulative losses to the sample over time. When this cost is spread across the whole 5,500 households in the sample, the additional cost per household is less than 50 pence, an amount well worth spending in the context of what are relatively high survey costs overall.

4.4. Refusal conversion

Minimising the level of refusals is the second key area for maintaining high response rates. While interviewer training on how to approach the doorstep is the first and most important element in countering refusals, it is inevitable that some respondents will refuse to be interviewed. Implementing a refusal conversion programme is therefore an important element in reducing the potential losses from refusals. In the case of the BHPS, we have found that refusals tend to fall into two main types: refusals which are wave specific and those which are a definite withdrawal from the survey altogether. In the case of wave specific refusals, the respondent refuses to take part for one year because of immediate circumstances such as an illness or bereavement in the family, problems which the following year may have passed. The second type of refusals are less tractable, the most difficult question being how to assess the point at which a refusal becomes an adamant refusal to take part and when it would become unethical to attempt a conversion. In many cases where the interviewer has received a fairly firm refusal to take part, we have found that we can ease the interview situation or organisation to encourage the respondent to change his or her mind and take part. This may simply be through talking to the respondent and

explaining the purpose of the survey more fully, or by pointing out his or her importance as an individual and irreplaceable sample member. Alternatively, we try and accommodate the respondent's needs where we are able. For example, the respondent may request that the interviewer call on a particular day or time of day and, as far as possible, we attempt to meet these requests.

Since Wave 2 of the BHPS a refusal conversion programme has been in place as a standard part of our fieldwork procedures. On receiving a refusal coversheet from the field each case is assessed as follows:

- reasons for refusal assessed
- review any historical information/contacts with the respondent
- decision taken on whether a conversion should be attempted
- if conversion is attempted, experienced interviewer approaches by telephone
- if agreement to be interviewed is achieved, re-issue to field for interview
- reissue to a senior interviewer or area supervisor unless respondent requests particular interviewer
- interviewer to make the call-back within seven days of the conversion being re-issued
- interviewer bonus payment for all re-issued conversions where interview is achieved
- if telephone conversion attempt fails to gain agreement for the interviewer to return, a short telephone interview is collected
- if no conversion or telephone interview, re-assess before issuing at following wave

The telephone interview was introduced at Wave 3 as a mechanism to keep respondents who may otherwise be lost altogether in the interviewed sample. This approach has proved quite successful, with 50 per cent of the 252 respondents who completed a telephone interview at Wave 3 being converted back to a full individual interview at Wave 4. In the region of 300 households per wave go through refusal conversion. And in approaching 60 per cent of households where a refusal conversion is attempted, either a full interview or a telephone interview is achieved. As with the tracking procedures, this relatively small number of households converted represents between two and three per cent of households in the sample, a significant proportion in the context of longitudinal response rates.

In order to deal with refusals appropriately we have found it necessary to collect as much information about the reasons for refusal as possible and to maintain an ongoing history of contacts with respondents who may have been reluctant to take part or had some problem at an earlier wave of the survey. At all waves interviewers have been asked to record the reason given for refusal at the doorstep. From Wave 3 onwards these responses have been office coded. Table 3 sets out the reasons for refusal for Waves 3 and 4. At Wave 3 there were 385 households who refused to take part with the main reason for refusal being that they "Couldn't be bothered" (30%, $n = 114$). These responses relate to households where at least one interview has been achieved in the past and many of these respondents probably felt that "I've done my share" and so could not be bothered by the third wave. Other common reasons given were that the respondent was busy or rarely home (8%, $n = 30$) or that they were too ill or elderly (17%, $n = 67$). And in 23 per cent ($n = 89$) of the cases no reason for refusal was given. At Wave 4 the number of initial refusals fell by approaching one third compared with Wave 3, to a total of 288 households, a reduction which is partly due to the decisions made between waves about

Table 3. Household reasons for refusal in BHPS Waves 3 and 4

	Wave 3 %	Wave 4 %
Survey related reasons	40 (154)	51 (147)
Can't be bothered	30 (114)	46 (132)
Worried about confidentiality	4 (17)	2 (6)
Survey too long	2 (6)	1 (3)
Survey a waste of time/nothing changed	4 (17)	2 (6)
Respondent related reasons	37 (142)	41 (117)
Too busy/rarely home	8 (30)	13 (39)
Too ill/elderly/senile	17 (67)	15 (42)
Stressful family situation/caring	5 (18)	8 (23)
Other household member refuses	6 (23)	3 (9)
Speaks no English	1 (4)	1 (4)
Other/no reason given	23 (89)	8 (24)
Base $N = 100\%$	385	288

how to treat previous wave refusals. Where a respondent refuses adamantly to take part in the survey, he or she is withdrawn from the sample, which means that each year a proportion of resolute refusals are removed, tending to make the sample increasingly co-operative over time. At Wave 4 the proportion of those refusing because they "Couldn't be bothered" was 46 per cent ($n = 132$), an increase on Wave 3, although the absolute number of such refusals is only slightly higher at Wave 4 when compared with Wave 3.

By Wave 4 interviewers had become more successful at eliciting reasons for refusal from respondents and the number of "No reason given" cases was reduced by almost two thirds. The percentage of respondents who could not take part due to being elderly and in ill health is similar across both waves, which is not surprising given that there is no upper age limit for the BHPS sample. Similar proportions of personal or family reasons such as being too busy or rarely at home were found at both waves.

A further question to examine is whether some types of initial refusal reasons are easier to convert to interview than others. Table 4 gives the percentage of Wave 4 households who went through refusal conversion by their original reason for refusing and the final household outcome after the conversion attempt. At Wave 4 a total of 276 households went through refusal conversion. In 26 per cent of these households at least one full individual interview was achieved, in a further 31 per cent at least one telephone interview was achieved, while 43 per cent refused once again. A conversion to telephone interview is, overall, more likely than a conversion to a full interview. However, this does vary depending on the type of reason for refusal given by the respondent. A telephone interview was more likely to be achieved where the initial refusal reason was survey related rather than a personal or family reason. In 69 per cent of the cases where a telephone interview was gained, the respondent had objected to something about the survey process itself or said he or she could not be bothered anymore. In contrast, a conversion to a full interview rather than a telephone interview was more likely where the original reason for refusal was personal or family related. Of those who were converted to a full interview, 37 per cent had given a personal reason for refusing compared with 22 per cent of those who did a telephone

Table 4. Household reasons for refusal by conversion outcome: BHPS, Wave 4

Reason for 1st refusal	Conversion outcome		
	Full interview %	Tel interview %	2nd refusal %
Survey related reasons	43.7 (31)	69.4 (59)	51.7 (62)
Personal/family reasons	36.6 (26)	22.4 (19)	38.3 (46)
Other/no reason given	19.7 (14)	8.2 (7)	10.0 (12)
Total (row %)	25.7 (71)	30.8 (85)	43.5 (120)

sig < .01.

interview. A second, final refusal was more likely where the initial refusal reason was survey related rather than personal. To counter survey related reasons for refusal, the presentation of the survey to respondents is of prime importance so that they do not object to taking part on the grounds of length or confidentiality for example.

To help counter panel fatigue and becoming bored with the survey, respondents also need to feel that the survey is covering issues which are relevant and important in their own lives to maintain their commitment to taking part. In addition, considerable care in trying to respond to respondents' needs and circumstances when making contact should be taken so that sample members are not lost simply through a lack of flexibility in fieldwork procedures and arrangements.

5. Interviewer Continuity

Among the range of fieldwork procedures used on the BHPS, one of the principles adopted throughout the panel survey has been to use the same interviewers wherever possible. Anecdotal evidence suggests that having the same interviewer return every year is preferred by both respondents and interviewers, and this has also been the experience of other long-running household panels (Pannenberg and Rendtel, 1996). Respondents are able to build up a rapport with the interviewer, developing a relationship of trust between them. From the interviewer's perspective, they are able to maintain contact with people and families for whom they have a genuine concern. We can examine the interviewer continuity effect in relation to respondents' propensity to co-operate over the course of the panel. Since the BHPS began, 97 per cent of respondents have had the same interviewer for at least two of the first four waves. Of respondents who have been at the same address over the life of the panel, 46 per cent have had the same interviewer for all four waves and 18 per cent for three of the four waves. Table 5 gives the response rates for achieving a full individual interview at each wave for all Wave 1 respondents by whether they have had the same interviewer the previous year of the survey.

As can be seen, at both Waves 3 and 4 there is a statistically significant difference in the response outcomes depending on whether respondents have the same interviewer as at the previous wave.

Clearly, moving will in many cases mean that a different interviewer calls the following year, especially where the move is non-local, and we might expect that the change of interviewer could be a contributory factor in people refusing to take part. However, when we compare movers that we have been successful in tracing to a new address

Table 5. Percentage of Wave 1 respondents with a full individual interview at each wave by whether same interviewer as previous year – BHPS, Waves 1 to 4

		Whether same interviewer as previous year		
		Same %	Different %	All %
Wave 2	Full interview	89.3	88.2	88.9
	Not full int	10.7	11.8	11.1
Wave 3	Full interview*	86.1	83.3	85.3
	Not full int*	13.9	16.7	14.7
Wave 4	Full interview*	88.5	85.0	87.8
	Not full int*	11.5	15.0	12.2

*sig. < .01.

with the non-mover population, the strongest negative effect of a change of interviewer from one year to the next is within the *non-mover* population. The response rates for non-movers who have a change of interviewer wave on wave are without exception lower than where the same interviewer has returned. For those who have moved, having a different interviewer does not have this effect. It may be that the expectation of those who move is that their regular interviewer will not necessarily be able to make the call to interview them. In contrast, the non-mover population may have an expectation that, as they are in the same geographical location, the same interviewer will make the call the following year.

Apart from the wave on wave effect of interviewer continuity, we can also predict the odds of a Wave 1 respondent being in a nonresponse household at Wave 4 by a number of key variables, including interviewer continuity over the life of the panel. In the model described in Table 6 we are concerned to assess the effect of interviewer continuity over the first four years of the survey while controlling for a range of demographic and other respondent characteristics. The model uses demographic and socio-economic characteristics of respondents at Wave 1 as well as information reported by the interviewer about respondent behaviour during the Wave 1 interview as predictors of being in a non-response household at Wave 4. Interviewers are required to complete a series of interviewer observations after each individual interview describing whether or not the respondent was co-operative, whether they had any health or language problems which affected the interview and whether or not the respondent was willing to provide a contact name for tracking purposes in case they moved between waves.

In terms of this model we can see that demographic characteristics such as having lower levels of qualifications, living in rented accommodation, and having no dependent children increase the likelihood of being in a nonresponse household by Wave 4 of the survey. Having more than one interviewer over the four years of the survey is a significant predictor of being in a nonresponse household at Wave 4. Respondents with different interviewers over the life of the panel were more than 20 per cent more likely than those with the same interviewer to be in a nonresponding household at Wave 4, supporting the contention that keeping the same interviewer is a positive strategy for maintaining longitudinal response rates. The interviewer observations from Wave 1 also provide statistically significant predictors of nonresponse at Wave 4. Those coded as being

Table 6. Logistic regression predicting odds of Wave 1 respondent being in Wave 4 nonresponse household (category in brackets is the reference category)

	<i>B</i>	Sig	Odds in nonresponse household at W4
Response variables			
Partially co-operating hhold @ W1 (Complete co-op @ W1)	.3537	.0000**	1.4243
One plus interviewers (Same interviewer all waves)	.2125	.0001**	1.2368
Imputed non-labour income @ W1 (Not imputed @ W1)	.1869	.0060**	1.2055
Interviewer observations			
Fair to poor respondent @ W1 (Good to very good R W1)	.1947	.0313*	1.2149
No contact name given @ W1 (Contact name @ W1)	.1529	.0422*	1.1652
Health/language problems @ W1 (No problems @ W1)	.2181	.0136*	1.2441
Socio-Demographic/economic			
Qualifications below A level (A level and above)	.2268	.0035**	1.2546
Accommodation rented (Owner occupier)	.1785	.0024*	1.1954
No dependent children (Has dependent children)	.1930	.0012**	1.2129
Monthly hhold income	-.0002	.0011**	.9998

*sig. < .05.

**sig < .01.

N = 6,690 W1 respondents eligible at all waves with no missing information/non-mover population only.

Nonsignificant variables entered in the model: age; sex; marital status; employment status @ Wave 1; imputed labour income @ Wave 1.

“fair to poor” respondents at Wave 1, those who did not give a contact name for tracking purposes, and those with health or other problems affecting the interview, were all more likely to be in a nonresponse household at Wave 4. This suggests that the policy of feeding information about respondents forward to interviewers at the next fieldwork period is important so that they can tailor their approach to the household and increase the chances of maintaining contact. It also suggests that for a new panel survey, the interviewer comments from the first wave of the survey could be used to target likely nonresponders with specific contact strategies at the second wave of the survey to good effect. And finally, the propensity of a respondent to co-operate is clearly affected by the attitude of other household members to the survey and by the culture within the household regarding whether it is worthwhile to take part in the survey. Where the household had a within household refusal or non-contact at Wave 1, respondents had a much greater likelihood of being in a non-response household at Wave 4 than respondents who were in a fully co-operating household at Wave 1. In terms of interviewer training, the importance of attempting to gain the co-operation of all household members, including refusal conversion procedures, must be stressed.

6. Conclusion

Maintaining high response rates in the context of a longitudinal panel survey requires a fairly complex mix of procedures and survey systems, only some of which have been discussed here. Some of these procedures are fieldwork related and implemented directly by interviewers, while others are office based activities such as the panel maintenance, tracking and refusal conversion procedures used on the BHPS. What is clear from the BHPS experience to date is that the combined strategy of expending considerable effort on keeping track of panel members, on the refusal conversion process and on implementing fieldwork procedures geared specifically to the needs of the panel sample is justified. These procedures together have a significant overall impact on minimising attrition and maintaining response rates at a level which ensures the continuing viability of the sample and the collection of high-quality data for substantive analysis.

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