



THE LONG-TERM EFFECTIVENESS OF REFUSAL CONVERSION PROCEDURES ON LONGITUDINAL SURVEYS

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The British Household Panel Survey is one of the main instruments for measuring social change in Britain. The BHPS comprises a nationally representative sample of around 5,500 households and over 10,000 individuals who are reinterviewed each year. The questionnaire includes a constant core of items accompanied by a variable component in order to provide for the collection of initial conditions data and to allow for the subsequent inclusion of emerging research and policy concerns.

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BHPS data provide the academic community, policymakers and private sector with a unique national resource and allow for comparative research with similar studies in Europe, the United States and Canada.

BHPS data are available from the Data Archive at the University of Essex
<http://www.data-archive.ac.uk>

Further information about the BHPS and other longitudinal surveys can be obtained by telephoning +44 (0) 1206 873543.

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ABSTRACT

Survey organisations often attempt to “convert” sample members who refuse to take part in a survey. Persuasive techniques are used in an effort to get the refusers to change their mind and agree to an interview. This is done in order to improve response rate and, possibly, to reduce non-response bias. However, refusal conversion attempts are expensive and must be justified. Previous studies of the effects of refusal conversion attempts are few and have been restricted to cross-sectional surveys. The criteria for “success” of a refusal conversion attempt are different in the case of a longitudinal survey, where for many purposes the researcher requires complete data over multiple waves. This paper uses data from the British Household Panel Survey (BHPS) from 1994 to 2002 to assess the long term effectiveness of refusal conversion procedures in terms of sample sizes, sample composition and data quality.

Key words: Data collection, data quality, refusal conversion, survey nonresponse

1. Introduction

The maintenance of high response rates is an important objective for most surveys. Increasingly, survey organisations are having to make greater efforts in order to achieve respectable response rates. Relatively expensive response-maximisation techniques that were once used only in adversity or on particularly burdensome surveys are now used routinely. These include the use of respondent incentives (Singer, 2002; Singer *et al.*, 1999), extended interviewer efforts to make contact (Campanelli *et al.*, 1997; Lynn *et al.*, 2002; Lynn and Clarke, 2002; Swires-Hennessy and Drake, 1992; Weeks *et al.*, 1980; Weeks *et al.*, 1987) and attempts to convert refusers (Curtin *et al.*, 2000; Lynn *et al.*, 2002; Lynn and Clarke, 2002; Stoop, 2004; Phillipens and Stoop, 2004). The focus of this paper is on attempts to convert refusers.

Previous research has assessed the impact of refusal conversion attempts on nonresponse bias, typically by comparing survey estimates with and without the converted refusers. This has been done for telephone surveys (Curtin *et al.*, 2000) and for face-to-face interview surveys (Lynn *et al.*, 2002; Lynn and Clarke, 2002; Stoop, 2004; Phillipens and Stoop, 2004), but all these studies were based upon cross-sectional surveys. With a cross-sectional survey, a successful refusal conversion typically implies that all, or most, of the required survey data are available for the converted respondent. However, recent years have seen an increased recognition of the analytical advantages of longitudinal or panel surveys and a consequent increase in the number of major surveys that are longitudinal in nature, in the sense that attempts are made to collect data from each sample member at several points in time (Gershuny,

2002; Tourangeau, 2003). In the case of longitudinal surveys, the definition of a “successful” refusal conversion is less clear cut. Longitudinal analysis requires data from each of a number of waves and the presence of data from the wave at which a respondent was converted does not necessarily imply the presence of data from subsequent waves. This paper therefore examines the extent to which sample members successfully converted at a particular wave of a longitudinal survey continue to respond at subsequent waves, and the impact that this has on sample composition and survey estimates.

As important context, we summarise what is known about the effects of refusal conversion attempts on cross-sectional surveys (section 2) and about the nature of sample attrition due to non-response on longitudinal surveys (section 3). We then introduce relevant aspects of the British Household Panel Survey (BHPS) (section 4). Our findings are organised into three sections, relating to outcome rates (section 5), longevity of successful outcomes (section 6) and the effects on sample composition (section 7). Section 8 concludes.

2. Refusal Conversion

When a selected sample member refuses to take part in a survey interview, the survey organisation may choose not to accept the refusal as a final outcome, but rather to make further attempts to “convert” the refusal into an interview. Such further attempts may result in contact either with the same person who refused the first time or with another household member. In the former situation, refusal conversion will consist of

attempting to persuade the person who refused to change their mind; in the latter situation, it is possible that the newly-contacted person will be more co-operative than the person who originally refused. In the case of samples of named individuals, the former situation will be more prevalent amongst refusal conversion attempts (though there will also be cases of the latter situation, viz. a proxy refusal by another household member), while the converse is true in the case of samples of addresses or households where a random selection of a person to interview needs to be made subsequent to contact with the household.

The extent to which surveys rely on refusal conversions to maintain response rates can be considerable. Lynn *et al.* (2002) show that converted refusers constituted between 1.2% and 8.0% of completed interviews across six UK face-to-face surveys carried out between 1995 and 1998. On a Wisconsin telephone survey reported by Lin and Schaeffer (1995), converted refusers constituted 7.5% of completed interviews. Juster and Suzman (1995) report that 4.2% of respondents at wave 1 of the (US) Health and Retirement Study were converted refusers. Furthermore, it is widely believed that the extent of refusal conversion has been increasing over time. Curtin *et al.* (2000) provide evidence of this in the case of the (US) Survey of Consumer Attitudes: they show the proportion of interviews requiring refusal conversion to have roughly doubled between 1979 and 1996, from around 7% to around 14%.

The effect on survey estimates of the considerable effort that is made to convert refusals is less clear. Lynn and Clarke (2002) found a significant difference between converted refusers and other respondents for only two out of twenty-five estimates

investigated. These estimates spanned a range of topics and surveys, consisting of five key health indicators for each of two years of the Health Survey for England, six financial status estimates from the 1997-98 Family Resources Survey (FRS) and three attitude indicators from each of three years of the British Social Attitudes (BSA) Survey. The only two respects in which converted refusers differed were that they had lower mean housing costs (FRS) and were more welfarist in one of the three BSA surveys. The same study found no consistent differences between converted refusers and other respondents in terms of demographic variables. Curtin *et al.* (2000) found that converted refusers had a lower Index of Consumer Sentiment than other respondents (this indicates that they were less optimistic about the US economy) – but that this difference disappeared after controlling for demographics. The main demographic differences between the two groups were that converted refusers had less schooling, were older and were more likely to be female than other respondents. Stoop (2004), analysing a face-to-face survey in the Netherlands, found that converted refusers were more likely than other respondents to be female, non-single, low income and resident in a large city. However, Stoop concludes that differences between converted refusals and other respondents do not necessarily imply bias reduction. She found that initial response rate was higher amongst women than men, so a higher conversion rate amongst women simply exaggerated the bias. The possibility that refusal conversion might not necessarily reduce non-response bias is also suggested by Groves and Couper (1998), Guadagnoli and Cunningham (1989) and Lin and Schaeffer (1995).

3. Attrition in Longitudinal Surveys

For any longitudinal survey design where the aim is to re-interview the same sample members over a number of years, attrition is one of the major concerns. Even the most well designed and implemented surveys can expect to lose considerable proportions of the sample to attrition if data is collected over long periods and many waves. For example, on the Panel Study of Income Dynamics (PSID) which began in 1968, half the sample were lost to attrition over the twenty year period to 1989 (Fitzgerald *et al.*, 1998). To minimise attrition, longitudinal surveys typically implement several procedures, which may be adapted to suit the particular survey design and requirements, and which tend to be relatively resource-intensive (e.g. Laurie *et al.*, 1999). In common with cross-sectional surveys, longitudinal surveys suffer from non-response due to refusals and due to non-contacts at each wave. However, the causes and correlates of these types of non-response may be rather different in the case of longitudinal surveys. In particular, refusals are often related to the specific experience of taking part in the survey and non-contacts are most likely to be related to geographical mobility rather than the pattern of time spent at home (in the terminology of Lepkowski and Couper (2002), failure to locate, rather than failure to make contact conditional upon location).

There is a suggestion that refusals on a longitudinal survey, particularly at wave 2, are likely to be particularly associated with a lack of interest in, or knowledge of, the topic of the survey. There is support for this in the findings of Taylor *et al.* (1996), who showed that propensity to refuse at wave 2 of the British Election Panel Survey (BEPS) is positively associated with a reported (at wave 1) lack of interest in politics and low

scores on a political knowledge scale. Similarly, Lepkowski and Couper (2002) found that lack of co-operation at wave 2 of the (US) National Election Study (NES) is associated with a lack of knowledge of political figures and with a lack of interest in public affairs, though only marginally with a lack of interest in politics. Lepkowski and Couper also found that co-operation at wave 2 of the Americans' Changing Lives Survey (ACL) – a survey with a considerable focus on community involvement and social integration – is associated with involvement in voluntary activity and attendance at community meetings.

Propensity to successfully locate a sample member at successive waves of a longitudinal survey, on the other hand, is only likely to be associated with survey measures when these happen to be correlated with characteristics associated with ease of location. On all three of the surveys mentioned in the previous paragraph, these were found to include age, with younger adults being the most difficult to locate. On both ACL and BEPS, employment status and region were both found to be associated with a failure to locate. Additionally on ACL, African Americans and those who rented their home were more likely not to be successfully located. On both NES and BEPS, those who had moved home in a given period prior to wave 1 were more likely not to be located at wave 2. In the UK, around 10 per cent of the population changes address within a one year period.

4. The British Household Panel Survey

4.1 Survey design

The British Household Panel Survey has been running since 1991 and involves annual face-to-face in-home interviews with a national sample of adults aged 16 and over living at residential addresses. The BHPS is conducted by the UK Longitudinal Studies Centre (ULSC) at the University of Essex and is funded by the UK Economic and Social Research Council. Field work is carried out by NOP Social and Political under contract to ULSC.

At wave 1 of the survey (1991) a total of 9,912 individuals were interviewed in 5,511 households with a response rate of 74 per cent. The interview lasts an average of 45 minutes per respondent and covers a broad range of topics including housing, education, employment, health, income and people's attitudes and values. All individuals living in sample households at wave 1 were designated as original sample members (OSMs), including children who become eligible for interview when they reach the age of sixteen. As sample members move they are followed to their new address and new members of their household become eligible for interview as long as they are living with an OSM. If a new sample member has a child with an OSM, they become a permanent sample member (PSM) to be followed regardless of whether they continue to live with an OSM. Other new members of the households of OSMs are designated temporary sample members (TSMs), that is they are only eligible for interview as long as they continue to live in the same household as an OSM or PSM (see

www.iser.essex.ac.uk/bhps for a full description of the design of the BHPS and the data collected).

The sample was a stratified clustered sample of addresses drawn from the Postcode Address File, representative of the residential population of Great Britain (excluding Northern Ireland). Since its inception, four additional samples have been added to the original BHPS sample. In 1997, a sub-set of one thousand households from the UK component of the European Community Household Panel Survey was added to the BHPS sample. In 1999, two new samples of 1,500 households for each of Scotland and Wales were included to allow independent analysis of these countries. And in 2000 a sample of 2,000 households for Northern Ireland was also added. The analysis which follows is restricted to the original BHPS OSMs and their associated TSMs and PSMs, as the four additional samples are likely to have different non-response characteristics as they have been in the survey for a shorter period. Separate research will investigate those samples.

The BHPS employs a range of response-maximisation techniques, including advance letters and between-wave mailings, refusal-avoidance training for interviewers, multiple call-backs, and incentives in the form of a gift voucher presented as a “thank you” for doing the interview. From waves 1 to 5 this was a five pound gift voucher and since wave 6 respondents have received a seven pound gift voucher (per person, not per household). These techniques are described more fully in Laurie *et al* (1999).

Of the 9,912 respondents who did a full interview at wave 1 of the survey, 87.7 per cent (8568) of those still eligible for interview were re-interviewed at wave 2. At wave 3, 90.3

per cent (7622) of eligible wave 1 respondents who were also interviewed at wave 2, were re-interviewed. And at wave 4, 94.9 per cent (7131) of these continuing wave 1 respondents were re-interviewed. Since wave 5 the annual re-interview rates for individuals interviewed the previous year have been consistently over 95 per cent (Lynn, 2002). This pattern of higher attrition in the early years of the survey which flattens out quite quickly by around year three or four is typical of many longitudinal surveys. By wave 4, 75.0 per cent of wave 1 respondents (excluding the deceased and those who had moved out of the UK) had been interviewed at every wave. And of all wave 1 respondents, 79.9 per cent were interviewed at wave 4. By wave 7, 68.6 per cent of wave 1 respondents still eligible had complete interview records with 76.2 per cent of all wave 1 respondents being interviewed at wave 7. By wave 12 of the survey, 55.0 per cent of wave 1 respondents still eligible had complete interview records for all waves with 64.2 per cent of all wave 1 respondents still eligible being interviewed at wave 12.

Before each fieldwork period, all refusals from the previous wave are assessed and those considered to be firm refusals are withdrawn from the issued sample. Those considered to be worth a further attempt are issued to field. Many refusals are situational, that is there is a particular event or stressful situation which leads to a refusal at one year of the survey but is essentially temporary. At the following year when circumstances have moved on, many respondents are again happy to take part.

The BHPS policy has been to avoid withdrawing refusals judged to be of this situational type before having a further attempt. This process is subjective and there has never

been a policy of automatically withdrawing cases from the sample following two consecutive refusals for example, even though in practice this is often what happens.

4.2 Refusal conversion on the BHPS

The BHPS refusal conversion procedures developed incrementally over the first three years of the survey. At waves 1 and 2 the fieldwork agency, NOP Social and Political, carried out conversion attempts in the field. Usually this involved sending a senior interviewer back to refusal households to attempt the conversion on the doorstep. NOP field staff made the decision about when to attempt a conversion. At wave 3 a new set of procedures was introduced with the refusal conversion programme being managed directly by staff at the ULSC. On receiving a refusal from field, a decision is made as to whether a conversion should be attempted. In almost all cases where the refusal is the first over the life of the survey, a conversion attempt will be made. Where respondents have a history of refusing at one or more waves, the decisions can be more difficult. The decision to attempt a conversion is largely subjective and depends on a number of factors including the reasons given for the refusal, the respondent's previous response history, interviewer comments and comments that may have been received directly from the respondent. The BHPS fieldwork has a long tail of up to three months after the initial three month fieldwork period. Some refusals due to temporary circumstances such as ill health or being too busy due to starting a new job at the beginning of the fieldwork period can be successfully converted by the end of the fieldwork period. These types of cases are put to one side for later attempts during the current wave.

Once the decision to attempt a conversion has been taken, the respondent is contacted by telephone. Any problems that led to the refusal are identified and concerns addressed if possible. If the respondent agrees to be interviewed, the interviewer is notified and they call at the household to carry out the interview (in most such cases, an interview is then completed, but it is sometimes only possible to carry out a proxy interview with another household member, or no contact may be made). If the respondent refuses to have the interviewer call they are asked if they will complete a short telephone interview as an alternative and if they agree this is normally carried out immediately at that point. (Both telephone and proxy interviews collect just a limited subset of the full interview data and are therefore less useful for many analysis purposes.) Thus, there are several possible outcomes from a conversion attempt. A full or proxy interview may be conducted in the respondent's home, a respondent converted on the telephone may refuse or be a non-contact when the interviewer calls at the address, a short telephone interview may be carried out, or the respondent may refuse on the telephone to any type of interview. No additional monetary incentives are offered during refusal conversion attempts (though if a respondent reports not having received the £7 voucher, they may be sent another one).

From wave 4 of the survey, information on the process of refusal conversion has been recorded on the survey data. Initial interview outcomes are recorded together with information on whether a conversion attempt took place and final outcome of the conversion attempt. Unfortunately, these data were not recorded for waves 2 and 3 of the survey.

Table 1 shows the proportion of refusals who are put through the conversion procedure. Generally fewer than half of those who refuse go through the conversion process, though there is some variation across waves, the highest proportions being in the years in which the greatest numbers refused. It should also be noted that over waves there have been changes in the office personnel making the decisions to attempt conversions and, giving the subjectivity of the decision-making, this may have affected the proportions for which conversions are attempted. The proportion varies over sample subgroups (Table 2, 3rd column). A woman who refuses is more likely to be put forward for conversion than a man (41.1% compared to 30.4%). Those respondents who had done a telephone interview (69.4%) or a full interview (61.2%) at the previous wave were the most likely to go through the conversion process and those who had refused the interview at the previous wave were the least likely (18.9%). Refusers aged 65 or over, retired, single elderly, living as a couple (but not married) or with no qualifications seem less likely than others to receive a conversion attempt. As context, the second column of Table 2 shows the proportion of eligible sample members who initially refuse. It can be seen that in some respects, subgroups with a higher refusal rate are less likely to enter the refusal conversion process (e.g. men, people who refused at the previous wave, those with no or low qualifications) while in other respects there does not appear to be such a relationship (region, employment status, household type, marital status). (The last two columns of Table 2 will be discussed later in section 5).

Table 1. Number and proportion of conversion attempts

| | All initial refusals | | | |
|----------------|-----------------------------|----------|---------------------------------|----------|
| | Conversion attempted | | Conversion not attempted | |
| | Number | % | Number | % |
| Wave 4 (1994) | 610 | 41.2 | 869 | 58.8 |
| Wave 5 (1995) | 577 | 41.9 | 799 | 58.1 |
| Wave 6 (1996) | 245 | 23.6 | 795 | 76.4 |
| Wave 7 (1997) | 188 | 22.5 | 648 | 77.5 |
| Wave 8 (1998) | 267 | 29.4 | 641 | 70.6 |
| Wave 9 (1999) | 288 | 28.0 | 740 | 72.0 |
| Wave 10 (2000) | 311 | 29.6 | 741 | 70.4 |
| Wave 11 (2001) | 428 | 33.0 | 869 | 67.0 |
| Wave 12 (2002) | 717 | 51.6 | 672 | 48.4 |

Table 2. Refusal rate, conversion attempt rate and conversion rate, by subgroups

| Value at t-1 | <i>Number of refusers</i> | Refusal rate ¹ | Conversion attempt rate ² | Conditional conversion rate ³ | Unconditional conversion rate ⁴ |
|--|---------------------------|---------------------------|--------------------------------------|--|--|
| 1. Sex | | | | | |
| Men | 5989 | 12.7 | 30.4 | 7.9 | 2.4 |
| Women | 4370 | 8.7 | 41.1 | 10.2 | 4.2 |
| 2. Age | | | | | |
| 16-24 | 1462 | 10.0 | 39.1 | 9.4 | 3.7 |
| 25-34 | 1367 | 7.9 | 40.0 | 8.8 | 3.5 |
| 35-44 | 1424 | 8.7 | 37.2 | 9.6 | 3.6 |
| 45-54 | 1542 | 10.4 | 36.5 | 9.8 | 3.6 |
| 55-64 | 937 | 9.4 | 35.8 | 11.0 | 3.9 |
| 65+ | 993 | 6.8 | 30.5 | 12.2 | 3.7 |
| 3. Previous wave outcome | | | | | |
| Full interview | 2878 | 3.6 | 61.2 | 13.6 | 8.3 |
| Proxy interview | 375 | 17.8 | 33.1 | 6.5 | 2.1 |
| Telephone interview | 431 | 49.2 | 69.4 | 3.3 | 2.3 |
| Refused (in partially-cooperating household) | 4217 | 76.0 | 18.9 | 4.0 | 0.8 |
| Other non-interview | 221 | 38.6 | 40.7 | 3.3 | 1.4 |
| Whole household refusal | 246 | 29.2 | 53.7 | 1.5 | 0.8 |
| 4. Paid employment at t-1 | | | | | |
| In paid employment at previous wave | 4945 | 9.3 | 37.3 | 9.2 | 3.4 |
| Not in paid employment at previous wave | 2397 | 7.4 | 36.8 | 11.7 | 4.3 |
| 5. Marital status at t-1 | | | | | |
| Married | 4056 | 8.5 | 37.5 | 9.3 | 3.5 |
| Living as a couple | 803 | 8.7 | 32.0 | 9.3 | 3.0 |
| Widowed | 352 | 5.7 | 35.8 | 15.9 | 5.7 |
| Divorced | 226 | 5.6 | 48.7 | 13.6 | 6.6 |
| Separated | 105 | 8.3 | 42.9 | 6.7 | 2.9 |
| Never married | 1986 | 11.1 | 36.1 | 9.8 | 3.5 |

Table 2 continued

| | | | | | |
|--|------|-----|------|------|------|
| 6. Region at t-1 | | | | | |
| London | 485 | 6.2 | 59.8 | 17.2 | 10.3 |
| South East | 639 | 4.1 | 55.1 | 9.1 | 5.0 |
| North | 893 | 4.2 | 61.5 | 8.0 | 4.9 |
| Midlands | 669 | 4.8 | 64.6 | 14.8 | 9.6 |
| Other England | 475 | 4.3 | 57.7 | 15.3 | 8.8 |
| Wales | 224 | 5.2 | 58.9 | 6.8 | 4.0 |
| Scotland | 405 | 5.7 | 56.8 | 10.4 | 5.9 |
| 7. Employment status at t-1 | | | | | |
| Employee | 1909 | 4.5 | 63.1 | 10.0 | 6.3 |
| Self-employed | 388 | 6.5 | 64.9 | 16.3 | 10.6 |
| Unemployed | 207 | 6.7 | 57.5 | 10.9 | 6.3 |
| Retired | 581 | 3.9 | 49.9 | 12.1 | 6.0 |
| Family care | 318 | 4.7 | 60.7 | 17.1 | 10.4 |
| Student | 234 | 5.0 | 53.0 | 10.5 | 5.6 |
| Long-term sick/disabled | 131 | 4.4 | 51.9 | 11.8 | 6.1 |
| 8. Household type at t-1 | | | | | |
| Single, non-elderly | 321 | 6.0 | 65.1 | 11.0 | 7.2 |
| Single, elderly | 247 | 4.2 | 38.9 | 14.6 | 5.7 |
| Couple, no children | 999 | 4.1 | 62.2 | 10.1 | 6.3 |
| Couple, dependent children | 1055 | 4.2 | 61.8 | 10.3 | 6.4 |
| Couple, non-dependent children | 642 | 5.8 | 61.5 | 13.2 | 8.1 |
| Lone parent, dep't children | 214 | 6.3 | 62.1 | 15.8 | 9.8 |
| Lone parent, non-dep't children | 135 | 4.4 | 48.9 | 10.6 | 5.2 |
| 2+ unrelated adults | 96 | 5.7 | 45.8 | 29.5 | 13.5 |
| Other households | 93 | 6.8 | 57.0 | 9.4 | 5.4 |
| 9. Highest qualification at t-1 | | | | | |
| Degree | 282 | 3.4 | 65.6 | 15.7 | 10.3 |
| Other higher qualification | 570 | 3.2 | 65.1 | 7.0 | 4.6 |
| A Level | 319 | 3.5 | 57.7 | 11.4 | 6.6 |
| O Level or equivalent | 579 | 3.7 | 61.7 | 14.6 | 9.0 |
| CSE | 138 | 4.5 | 58.0 | 12.5 | 7.2 |
| Other qualification | 137 | 3.1 | 65.0 | 14.6 | 9.5 |
| No qualification | 811 | 4.2 | 57.8 | 18.3 | 10.6 |

¹Refusal rate is the number who initially refuse divided by the number eligible for interview; ²Conversion attempt rate is the number entered into the conversion process divided by the number who initially refuse; ³Conditional conversion rate is the number successfully conversion divided by the number entered into the conversion process; ⁴Unconditional conversion rate is the number successfully conversion divided by number who initially refuse, i.e. the product of the conversion attempt rate and the conditional conversion rate. For all rates, the numerators and denominators are both aggregated over waves 4 to 12, the descriptive variables therefore relating to waves 3 to 11. Number of refusers (column 1) therefore constitutes the numerator of the refusal rate and the denominator for both the conversion attempt rate and the unconditional conversion rate. Variables 2, 4 and 5 are taken from the household enumeration grid that is part of the cover sheet and are therefore available for all sample members in households that were enumerated at t-1. These constitute around 75% of all refusers. Variables 6-9 are taken from the individual interview and are therefore only available for those who completed an interview at t-1: around 37% of all refusers.

5. Outcome of Conversion Attempts

Possible outcomes of a conversion attempt are a full interview, a telephone interview, a proxy interview or a non-response (refusal or non-contact). Table 3 presents the distribution of outcomes at each wave for individuals for whom a refusal conversion attempt was made at that wave. Overall the conversion rates are fairly stable with around 30 to 40 per cent of conversion attempts resulting in an interview of some kind each year. However, in later waves it appears that telephone interviews have become a relatively more likely outcome, compared to full face-to-face interviews.

The number of interviews does not necessarily reflect the number of individuals who are converted, since an individual may require converting at more than one wave. Table 4 shows the number of individuals who are converted for the first time at each wave (excluding any conversions at waves 2 and 3 which, as previously explained, are not recorded on the data). It can be seen that the proportion of conversions who are first-time conversions falls over time (waves), with around one-third of successful conversions at later waves (waves 10 – 12) consisting of sample members who had previously been converted at least once.

Table 3. Outcome of conversion attempts, by wave

| | Number of adults | | | | |
|---------|------------------|-----------------------------|------------------------------|----------------------------------|---------------------------|
| | Attempted | Converted to full interview | Converted to proxy interview | Converted to telephone interview | Conversion attempt failed |
| Wave 4 | 610 | 99 | 14 | 112 | 385 |
| % | 100 | 16.2 | 2.3 | 18.4 | 63.1 |
| Wave 5 | 577 | 55 | 2 | 136 | 384 |
| % | 100 | 9.5 | 0.3 | 23.6 | 66.6 |
| Wave 6 | 245 | 22 | 1 | 52 | 170 |
| % | 100 | 9.0 | 0.4 | 21.2 | 69.4 |
| Wave 7 | 188 | 44 | 5 | 32 | 107 |
| % | 100 | 23.4 | 2.7 | 17.0 | 56.9 |
| Wave 8 | 267 | 19 | 3 | 59 | 186 |
| % | 100 | 7.1 | 1.1 | 22.1 | 69.7 |
| Wave 9 | 288 | 29 | 1 | 73 | 185 |
| % | 100 | 10.1 | 0.3 | 25.3 | 64.2 |
| Wave 10 | 311 | 16 | 1 | 103 | 191 |
| % | 100 | 5.1 | 0.3 | 33.1 | 61.4 |
| Wave 11 | 428 | 24 | 0 | 164 | 240 |
| % | 100 | 5.6 | 0 | 38.3 | 56.1 |
| Wave 12 | 717 | 19 | 0 | 240 | 458 |
| % | 100 | 2.6 | 0 | 33.5 | 63.9 |

Table 4. Number of individuals converted for the first time, by wave

| Wave | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|----------------------------------|-------|------|------|------|------|------|------|------|------|
| Number of first-time conversions | 225 | 158 | 59 | 70 | 61 | 85 | 75 | 123 | 175 |
| % of all conversions at wave | 100.0 | 81.9 | 79.7 | 86.4 | 75.3 | 82.5 | 62.5 | 65.4 | 67.6 |

Note: A first-time conversion is defined as the first time since wave 4 that the sample member has been converted. Data on conversions at waves 2 and 3 are not available.

It is of interest to know whether the conversion rate depends upon the reason for the initial refusal. If it does, then reason for refusal could be used in targeting conversion

attempts and in explaining variation in outcomes (e.g. as control factors when calculating interviewer-specific success rates as performance indicators). In particular, as noted earlier, many of the reasons for refusal are situational and a further attempt at a later date might be expected to be relatively more successful in such cases. As context, we first examine the relationship between reason for refusal and outcome at the subsequent wave (Table 5). This analysis uses nine years of pooled data, from wave 4 to wave 12. Of the almost 9,000 instances of an initial refusal, in 13.7% of these cases a full interview was achieved at the following wave. The most common reason given for refusal is that the respondent does not want to bother (22% of all refusals): 11.7% of those who say this give a full interview in the following year. The second most common reason is that the interviewer judges that further persuasion might risk the cooperation of other household members. This may relate to refusals where the interviewer would have tried again were it not a survey where interviews are required with all household members. In only 2.5% of these instances is a full interview achieved at the following wave. Of those who said they were too busy, a fifth gave a full interview the next year. The highest proportion of people returning to the survey were those where no household member was contacted (32.5% responded at the following wave), who were temporarily absent (31.7%) were almost never home (28.5%), were in a stressful family situation (27.5%) or were looking after ill or elderly person(s) (26.9%). These findings suggest that refusals are indeed more likely to be temporary if the reason for refusal is situational or due to a short-term circumstance.

Table 6 looks at the reasons given for refusal amongst cases where refusal conversion was attempted. This analysis uses pooled data from nine waves (waves 4 to 12). The

columns show the result of refusal conversion for each reason for refusal. Where the refusal was because the respondent was almost never home, over one in ten (10.5%) gave a full interview after going through refusal conversion whilst 12.7 per cent of those where no household member was contacted were found and gave a full interview. These reasons for refusal or non-response reflect the need for more attempts before an interview can be achieved, rather than having to convert a face-to-face refusal.

The most common reasons for refusal were that the respondent couldn't be bothered or they were too busy. In these cases the proportion converted to a full interview was lower than the examples where extra contact attempts were needed (at 10.7% and 7.6% respectively). Those respondents who said they were too busy were more likely to take part in the shorter telephone interview (35.8%) than those who couldn't be bothered (25.3%) suggesting that it may be the inconvenience of having to make an appointment and have the interviewer call at their house that is discouraging those who say they are too busy. Those who are least likely to be converted are those respondents who say that they refused because the survey is too long, because the questions are too personal, or because someone else has persuaded them to refuse.

Table 5. Propensity to respond, by reason for refusal at previous wave

| Reason for refusal at wave t | % Full interview at wave t+1 | <i>N</i> |
|---|---------------------------------|----------|
| Too ill | 18.4 | 430 |
| Too elderly | 6.9 | 72 |
| Respondent is senile or incompetent | 1.7 | 59 |
| Respondent does not speak English | 21.1 | 57 |
| Stressful family situation | 27.5 | 414 |
| Looking after ill/elderly | 26.9 | 26 |
| Looking after children | 30.0 | 40 |
| Respondent almost never home | 28.5 | 123 |
| Respondent is temporarily absent | 31.7 | 63 |
| Too busy | 20.2 | 848 |
| Unhappy about confidentiality | 14.8 | 27 |
| Questions too personal | 10.6 | 160 |
| Respondent does not want to bother | 11.7 | 1999 |
| Nothing has changed in last year | 15.7 | 51 |
| Survey too long | 17.2 | 64 |
| Survey is a waste of time | 4.7 | 256 |
| Other family member opposes participation | 21.4 | 84 |
| Someone outside household convince respondent to refuse | 9.5 | 200 |
| Family members refuses on behalf of respondent | 3.7 | 54 |
| Risks other response in household | 2.5 | 930 |
| No household member contacted | 32.5 | 610 |
| Respondent institutionalised | 5.6 | 90 |
| Other | 20.8 | 144 |
| No reason given | 8.7 | 2181 |

Base is all initial refusals (final refusals plus those subsequently converted), pooled over waves 4 to 11; outcomes therefore relate to waves 5 to 12. Reasons with fewer than 20 cases have been omitted. These were: previous bad experience with surveys; problems with voucher.

Table 6. Outcome of conversion attempt by reason for refusal

| Reason for refusal | Full interview | Proxy/phone interview | Failed attempt | <i>N</i> |
|--|----------------|-----------------------|----------------|----------|
| Too ill | 8.0 | 25.8 | 66.3 | 163 |
| Too elderly | -- | 24.2 | 75.8 | 33 |
| Stressful family situation | 11.1 | 30.8 | 58.1 | 234 |
| Looking after ill/elderly | 5.0 | 45.0 | 50.0 | 20 |
| Looked after child(ren) | 8.3 | 45.8 | 45.8 | 24 |
| Respondent rarely home | 10.5 | 21.1 | 68.4 | 57 |
| Respondent is temporarily absent | 4.5 | 27.3 | 68.2 | 22 |
| Too busy | 7.6 | 35.8 | 56.6 | 567 |
| Unhappy about confidentiality | -- | 14.3 | 85.7 | 21 |
| Questions too personal | 3.0 | 24.2 | 72.7 | 66 |
| Respondent won't bother | 10.7 | 25.3 | 64.1 | 807 |
| Nothing has changed in last year | 13.3 | 13.3 | 73.3 | 30 |
| Survey is too long | 5.6 | 37.0 | 57.4 | 54 |
| Survey is a waste of time | 12.2 | 22.4 | 65.3 | 49 |
| Other family member opposes participation | 9.6 | 26.9 | 63.5 | 52 |
| Someone has convinced respondent to refuse | 3.6 | 23.9 | 72.5 | 138 |
| No household member contacted | 12.7 | 19.1 | 68.2 | 377 |
| Other | 7.6 | 32.9 | 59.5 | 158 |
| No reason given | 8.2 | 27.6 | 64.2 | 729 |

Note: base is all refusals where reason was stated and conversion was attempted, pooled over waves 4 to 12. "--" indicates a count of zero. Reasons with fewer than 20 cases have been omitted. These were: previous bad experience with surveys; problems with voucher; Respondent senile or incompetent (0 cases); respondent does not speak English; respondent institutionalised.

In terms of socio-demographic characteristics, it is noticeable that a successful refusal conversion to a full interview is more likely (last two columns of Table 2) amongst women, persons aged 55 or over, those who were widowed or divorced, those living in the London region, and those in households consisting of two or more unrelated adults. Also, the conversion rate was higher amongst those who had completed a full interview at the previous wave than amongst others.

6. Longevity of Response Amongst Converted Refusals

The results of section 5 are encouraging as it appears that sizeable proportions of refusals are successfully converted, especially when the reason for refusal would have suggested that a conversion attempt at a later date should be profitable. However, our main concern here is whether that initial success translates into sustained response over subsequent waves. If it does not, and the renewed cooperation of these converted refusers is short-lived, then refusal conversion attempts can not help to reduce non-response bias in (most) longitudinal analysis. Table 7 looks at the outcome in subsequent waves of those who are converted. The table shows the numbers converted at wave t (to a full, proxy or telephone interview) and the numbers of those who completed a full interview at wave $t+1$ and subsequent waves. For example, 610 adults went through the conversion process at wave 4 and data was successfully collected on 225 of these (36.9%). Out of those 225, 128 were interviewed again at $t+1$ (56.9%). Of all those converted at wave 4, 44.9 per cent gave a full interview eight years later.

The first striking feature of the table is that sizeable proportions of converted refusers continue to co-operate fully. For example, between one third and one half of persons who had been converted at waves 4 to 10 responded fully at wave 12. Over one half of those converted at waves 4 or 5 were still cooperating four years later. This suggests that it is possible to sustain cooperation following a refusal conversion in significant numbers of cases.

In general, once converted, the percentage who continue to respond at any given subsequent wave has declined over time. This can be seen in a pattern of declining percentages from left to right in each row of Table 7. For example, looking at the outcome one year (wave) after an initial successful conversion, between one half and two thirds of those initially converted in waves 4 to 7 completed a full interview. For those converted at waves 8 or 9, this proportion fell to under a half and for those converted at waves 10 or 11, less than one third were interviewed again at the following wave. Similar patterns are observed for longer intervals since the initial conversion. This may suggest that the longer a person remains a responding member of the panel before requiring a refusal conversion, the less likely they are subsequently to remain a responding panel member. Perhaps they are converted with more reluctance than someone converted earlier in the life of the panel. But it may also be related to the type of interview achieved during conversion.

Amongst those converted to a full interview, 82% gave a full interview again a year later, whereas of those converted to a telephone or proxy interview (the majority of which were telephone interviews – see Table 3), only 35% gave a full interview a year later (Table 8). Though the proportion of full conversions who continue to give a full interview declines over subsequent waves, to 66% five years later, it still exceeds the equivalent proportion amongst telephone conversions (37%). The increasing prevalence of telephone interviews as an outcome of the conversion process (Table 3) may therefore be related to the apparent decline seen in Table 7 in the extent to which conversion is sustained. It may be the case that maintaining face-to-face contact with the interviewer

is important element in fostering loyalty to the panel, whereas the telephone is relatively impersonal and allows the respondent to refuse more easily without causing offence.

Table 7. Outcome at subsequent waves for successful conversions

| t: | Wave | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Conversion attempts at t | 610 | 577 | 245 | 188 | 267 | 288 | 311 | 428 | 717 |
| Interview at t | 225 | 193 | 75 | 81 | 81 | 103 | 120 | 188 | 259 |
| % interview at t | 36.9 | 33.4 | 30.6 | 43.1 | 30.3 | 35.8 | 38.6 | 43.9 | 36.1 |
| % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Full interview at t+1 | 128 | 119 | 48 | 46 | 36 | 48 | 36 | 57 | |
| % | 56.9 | 61.7 | 64.0 | 56.8 | 44.4 | 46.6 | 30.0 | 30.3 | |
| Full interview at t+2 | 138 | 116 | 38 | 40 | 42 | 44 | 44 | | |
| % | 61.3 | 60.1 | 50.7 | 49.4 | 51.9 | 42.7 | 36.7 | | |
| Full interview at t+3 | 130 | 109 | 36 | 32 | 39 | 38 | | | |
| % | 57.8 | 56.5 | 48.0 | 39.5 | 48.2 | 36.9 | | | |
| Full interview at t+4 | 122 | 99 | 32 | 33 | 39 | | | | |
| % | 54.2 | 51.3 | 42.7 | 40.7 | 48.2 | | | | |
| Full interview at t+5 | 116 | 86 | 33 | 41 | | | | | |
| % | 51.6 | 44.6 | 44.0 | 50.6 | | | | | |
| Full interview at t+6 | 107 | 81 | 31 | | | | | | |
| % | 47.6 | 42.0 | 41.3 | | | | | | |
| Full interview at t+7 | 104 | 76 | | | | | | | |
| % | 46.2 | 39.4 | | | | | | | |
| Full interview at t+8 | 101 | | | | | | | | |
| % | 44.9 | | | | | | | | |

Table 8. Outcome at subsequent waves for successful conversions, by conversion outcome

| <u>Wave</u> | <u>Outcome</u> | Outcome of conversion attempt at wave t | |
|-----------------|----------------|---|----------------|
| | | Full response | Other response |
| | | % | % |
| t+1 | Full response | 81.8 | 35.1 |
| t+1 | Other response | 5.2 | 25.6 |
| t+2 | Full response | 73.9 | 42.4 |
| t+2 | Other response | 4.2 | 14.1 |
| t+3 | Full response | 69.4 | 40.4 |
| t+3 | Other response | 3.0 | 10.2 |
| t+4 | Full response | 66.5 | 39.9 |
| t+4 | Other response | 5.9 | 7.7 |
| t+5 | Full response | 65.5 | 37.3 |
| t+5 | Other response | 2.3 | 8.8 |
| <i>Base t+1</i> | | <i>308</i> | <i>758</i> |
| <i>Base t+2</i> | | <i>284</i> | <i>594</i> |
| <i>Base t+3</i> | | <i>268</i> | <i>490</i> |
| <i>Base t+4</i> | | <i>239</i> | <i>416</i> |
| <i>Base t+5</i> | | <i>220</i> | <i>354</i> |

Note: Base t+1 consists of all sample members successfully converted at waves 4-11, the outcome therefore relating to waves 5-12. Base t+2 consists of those successfully converted at waves 4-10, the outcome relating to waves 6-12, and so on.

From Table 7, the number of individuals who remain in the longitudinal sample (interviewed at every wave) subsequent to a refusal conversion cannot be inferred, as response at each wave is not conditional upon response at every previous wave. Table 9 presents the numbers and percentages of convertees who give a full interview at *all* subsequent waves. For example, from Table 7, 101 of the sample members converted at wave 4 (45%) gave a full interview eight years later at wave 12. Table 9 shows that three-quarters of these (75, 33% of the wave 4 conversions) had in fact given full interviews at every wave from wave 5 to wave 12. For individuals converted between wave 4 and wave 8, around one-third continued to give full interviews at every wave up

to wave 12. Again, it appears to have become more difficult to retain converted respondents in the full interview sample at subsequent waves at later waves of the panel.

Table 9. Percentage of individuals converted who gave a full interview at all subsequent waves

| | Wave of conversion | | | | | | | | <i>Total</i> |
|--|--------------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|--------------|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | |
| Full interview at all subsequent waves | 75 33.3% | 70 36.3% | 24 32.0% | 22 27.2% | 26 32.1% | 18 17.5% | 24 20.0% | 130 69.1% | 612 33.2% |

Using information on previous response history and demographic characteristics we have modelled propensity to respond at later waves following a conversion (Table 10). We first look only at the effect of the type of conversion i.e. to a full interview, proxy or telephone interview, on whether or not a full interview was obtained at the following wave of the survey (model 1). In this model, the dependent variable was a dummy variable, coded '1' if the respondent gave a full interview in the year following conversion, '0' otherwise. Variables denoting the type of initial conversion were entered as independent variables. The modal category of the dependent variables was to have no full interview at the subsequent wave – this accounted for 50.2 per cent of the outcomes.

This basic model suggests that those converted to a full interview are the most likely to give a full interview at a subsequent wave. Those converted to a proxy interview are also more likely (at $p < .001$) to give a full interview subsequently compared to those who

are converted to a telephone interview. Compared to a model with no information about past behaviour, information on the form of conversion increases the prediction power from 50.2 to 63.3 per cent. The face-to-face contact with the interviewer again seems an important factor with the more impersonal telephone contact making it more difficult to convert respondents back to a full interview. It is also likely that those who do a telephone interview during conversion are already less co-operative than those who agree to have the interviewer call again so will already be less likely to respond the following year.

When we include in the model information on the wave in which the initial conversion took place and the time since the conversion (model 2), we find that those whose initial conversions were in later waves (wave 7 onwards) are less likely to give a full interview, compared to those converted at wave 4. The longer the time gap between the initial conversion and the subsequent interview request, the less likely the request would result in a full interview. This confirms the patterns previously observed in Table 7. This model increases the prediction accuracy just slightly to 63.4 per cent.

Adding demographic information (model 3) suggests that sex is not significantly associated with propensity to give a full interview for those converted previously. Compared to individuals living in London, those in the north, the midlands, the south west, East Anglia and Scotland were more likely to give a full interview. Persons co-habiting, separated or divorced are more likely than those who are married to take part again following a conversion. Individuals living in a couple (with or without children) and lone parents with dependent children are less likely to give a full interview than those in

single non-elderly households. Being retired or looking after the family are associated with an increased propensity to give a full interview following conversion relative to persons in employment. The opposite is true of self-employed persons. TSMs are less likely to participate following a conversion than OSMs or PSMs. The more full interviews the individual has completed before they require conversion, the more likely they are to participate again subsequently, but only up to a point. There is no evidence that those who have done eight or more previous interviews are any more likely to respond following a conversion than those who have done no previous interviews. Model 3 predicts 65.1 per cent of cases correctly.

Table 10. Propensity to achieve a full interview at waves subsequent to a conversion

| | Model 1 | | Model 2 | | Model 3 | |
|--|---------|------|----------|------|---------|------|
| | B | S.E. | B | S.E. | B | S.E. |
| Converted to Full interview | 1.234** | .063 | -1.253** | .066 | 1.279** | .074 |
| Converted to Proxy interview (Converted to Telephone int) | .463** | .156 | -.784** | .163 | .893** | .173 |
| Wave 5 | | | .089 | .079 | .010 | .085 |
| Wave 6 | | | -.124 | .114 | -.297* | .122 |
| Wave 7 | | | -.537** | .120 | -.622** | .127 |
| Wave 8 | | | -.210 | .131 | -.360* | .138 |
| Wave 9 | | | -.557** | .137 | -.534** | .160 |
| Wave 10 | | | -.835** | .159 | -.921** | .193 |
| Wave 11 (Wave 4) | | | -.976** | .186 | -.982** | .219 |
| 2 years since conversion | | | .010 | .101 | .011 | .104 |
| 3 years since conversion | | | -.193* | .106 | -.206* | .110 |
| 4 years since conversion | | | -.323* | .112 | -.343* | .115 |
| 5 years since conversion | | | -.446** | .117 | -.475** | .121 |
| 6 years since conversion | | | -.683** | .124 | -.731** | .128 |
| 7 years since conversion | | | -.760** | .131 | -.816** | .136 |
| 8 years since conversion (1 year since conversion) | | | -.710** | .166 | -.761** | .172 |
| Male | | | | | -.050 | .068 |
| Age | | | | | .030* | .013 |
| Age Squared | | | | | .000* | .000 |
| North | | | | | .669** | .092 |
| Midlands | | | | | .233* | .095 |
| South West & East Anglia | | | | | .703** | .105 |
| Wales | | | | | .024 | .131 |
| Scotland (London & south east) | | | | | .263* | .109 |
| Co-habiting | | | | | .532** | .125 |
| Separated/divorced | | | | | .374* | .158 |
| Widowed | | | | | -.250 | .206 |
| Never married (Married) | | | | | .099 | .131 |
| single, elderly hhold | | | | | -.363 | .245 |
| Couples | | | | | -.517** | .142 |
| Lone parent, dep. children | | | | | -.741** | .169 |
| Lone parent, non-dep. children | | | | | .336 | .220 |
| Other households (single, non-elderly) | | | | | -.347* | .176 |
| Self-employed | | | | | -.444** | .100 |
| Unemployed | | | | | .082 | .149 |
| Retired | | | | | .604** | .150 |
| Family care/maternity leave | | | | | .315* | .114 |
| Other (Employed) | | | | | .293* | .134 |
| TSM sample status (PSM/OSM) | | | | | -.551** | .161 |
| 1-2 previous interviews | | | | | .109 | .167 |
| 3-7 previous interviews | | | | | .725* | .167 |
| 8-10 previous interviews (0 previous interviews) | | | | | .356 | .241 |
| Constant | -.440 | .037 | 1.239 | .099 | -1.045 | .398 |

Reference categories in *(italics)*; ** P < .001 * P < .01; The observations are wave-sample member combinations (i.e. "response attempts") for each respondent previously successfully converted. For example, a sample member converted at wave 7 will contribute 5 observations to the analysis, consisting of the survey outcomes at waves 8 through 12. Independent variables are observed at the wave of conversion.

The conversion process since wave 4 had a significant effect on overall respondent sample numbers over the course of the survey (Table 11). Amongst the whole sample, including new members who joined the sample after wave 1, by wave 12 there were an additional 626 cases remaining in the interviewed sample who would otherwise have been lost. Conversion provided an additional 3,525 interviews across the whole period.

Amongst the wave 12 longitudinal interviewed sample – i.e. persons interviewed at all twelve waves - there are an additional 503 cases present at wave 12 who would not have been present in the absence of refusal conversion. This has provided an additional 2,964 interviews within the longitudinal data.

The conversion strategy is clearly important for maintaining sample sizes and increasing the number of interviews available for analysis across the whole period of the panel survey.

Table 11. Effect of refusal conversion on sample sizes

| t | All interviewed at wave t (= sample available for wave t cross-sectional analysis) | | All interviewed at waves 1, 2, ... , t (= sample available for full wave 1 to t longitudinal analysis) | |
|----|--|-------------------------------|--|-------------------------------|
| | Whole sample | Sample without conversions | Whole sample | Sample without conversions |
| 4 | 9481 | 9264 | 8537 | 8351 |
| 5 | 9249 | 8934 | 8164 | 7886 |
| 6 | 9438 | 9125 | 8046 | 7750 |
| 7 | 9373 | 9030 | 7874 | 7555 |
| 8 | 9215 | 8841 | 7673 | 7335 |
| 9 | 9100 | 8705 | 7475 | 7145 |
| 10 | 9006 | 8576 | 7259 | 6922 |
| 11 | 8936 | 8424 | 7014 | 6637 |
| 12 | 8818 | 8192 | 6735 | 6232 |

7. Effects on Sample Composition

It is of concern not only to see that refusal conversion increases the size of the sample available for analysis, but also to know whether, and how, it affects the composition of the sample over time. One of the rationales for carrying out a refusal conversion programme is that it may be a means of reducing differential attrition and therefore bias in the sample. However, the literature does not appear to offer any evidence on this point other than that summarised above in section 2. It has been argued by some that increasing a response rate does not necessarily reduce bias (Curtin *et al.*, 2000; Groves and Couper, 1998; Stoop, 2004). If the additional interviews are with respondents who are similar to those who co-operate, bias may not be reduced. Whether or not reduction of attrition bias is achieved depends on two main factors. First, the extent to which those who refuse to take part differ from those in the co-operating sample and second, whether those refusals who are successfully converted are similar to those who refuse and are not converted. In other words, are those we successfully convert more like the co-operating sample or more like the unconverted refusals?

The figures presented in the final two columns of Table 2 can begin to address this question. The evidence here is mixed. In terms of sex, marital status and paid employment, refusal conversion does not seem to reduce refusal bias. For example, women are less likely than men to refuse and would consequently be over-represented in the interviewed sample, other things being equal. However, female refusers are also more likely than male refusers to be successfully converted, thus exacerbating the bias

in terms of sex. The same pattern is apparent for people who were not in paid employment at the previous wave and for people who were divorced or separated. On the other hand, refusal conversion does seem to be successful in reducing the bias in terms of regional distribution, employment status (amongst those in paid employment) and qualifications. Sample members in London, those who are self-employed and those with no qualifications all have relatively high initial refusal rates but also relatively high conversion rates. In each of these three groups, the proportion of initial refusers who eventually complete a full face-to-face interview is over 10%, compared to only 3.2% overall.

Table 12 takes this analysis a step further by considering outcome variables and considering the effect on the longitudinal sample (those persons interviewed at all waves). The longitudinal sample at waves 4 and 12 is compared with the sample without those who have been converted and with the convertees. Comparisons are in terms of distributions of survey items collected at waves 4 and 12 respectively. At wave 4, the convertees are therefore individuals who were converted at that wave. At wave 12, they are all those converted at any time from wave 4 onwards and who remain respondents at each wave.

At wave 4 there is little difference between the full sample and the sample excluding converted refusals. This is not surprising given the small number of converted refusals. However, it might be expected that as convertees accrue over years of the survey, the wave 12 sample might look somewhat different in the absence of convertees. In practice, differences are small though there is a suggestion that without convertees the

sample would (further) under-represent individuals who are employed, have never been married, have a degree, and are in privately rented accommodation. Again, the converted cases account for only a small proportion (7.5%) of the total wave 12 longitudinal sample, so the scope for impact on the sample composition is limited. In the case of the wave 12 longitudinal sample, it can be seen that converted individuals are significantly different from respondents who did not require conversion, in several respects. They are more likely to be in employment, separated or never married, a single-person (non-elderly) household or a lone parent with children, living in privately rented accommodation, or to have a degree-level qualification. That convertees appear to have a lower median household income but higher personal income may be related to a tendency to be in households with a smaller number of earners.

Table 12. The Effect of Refusal Conversion on Sample Composition

| Variable | <i>Wave 4 longitudinal sample (interviewed at waves 1-4)</i> | | | <i>Wave 12 longitudinal sample (interviewed at waves 1-12)</i> | | |
|---|--|------------------------------------|---------------------------------|--|---------------------------------------|----------------------------------|
| | All | Without convertees at Wave 4 | Only convertees at Wave 4 | All | Without convertees Waves 4 - 12 | Only convertees Waves 4-12 |
| 1. median gross monthly pay (most recent) | 900.69 | 900.69 | 642.48** | 1300.00 | 1300.00 | 1298.24 |
| 2. median usual gross monthly pay | 887.54 | 888.33 | 656.39** | 1280.99 | 1283.67** | 1244.83** |
| 3. median monthly household income | 1523.75 | 1524.84 | 1490.12** | 2183.41 | 2209.79** | 1781.29** |
| 4. median annual personal income | 6749.16 | 6742.95** | 7076.63** | 10658.70 | 10605.71** | 11552.47** |
| 5. age at 1 December of survey year | 46.91 | 46.93 | 45.92** | 48.54 | 48.74** | 46.01** |
| 6. household size | 2.78 | 2.78 | 2.96* | 2.69 | 2.71 | 2.56** |
| 7. subjective wellbeing | 11.16 | 11.15 | 11.87** | 11.15 | 11.12 | 11.70** |
| 8. % male | 46.8 | 46.9 | 45.1 | 45.9 | 46.2 | 41.5† |
| 9. % self-employed | 7.3 | 7.2 | 12.4** | 7.1 | 7.1 | 7.2 |
| 10. % employed | 45.7 | 45.6 | 50.4 | 49.4 | 48.9 | 54.8** |
| 11. % unemployed | 4.8 | 4.8 | 5.0 | 2.5 | 2.6 | 1.5 |
| 12. % retired | 22.4 | 22.5 | 14.3** | 25.3 | 25.7 | 21.1* |
| 13. % family care | 10.1 | 10.0 | 13.2 | 6.0 | 6.0 | 6.0 |
| 14. % FT student | 5.2 | 5.3 | 1.9* | 4.5 | 4.5 | 5.1 |
| 15. % married | 56.7 | 56.7 | 58.4 | 53.1 | 53.6 | 46.8** |
| 16. % separated | 1.8 | 1.8 | 2.8 | 1.8 | 1.6 | 4.6** |
| 17. % divorced | 6.6 | 6.5 | 9.3 | 8.4 | 8.2 | 9.9 |
| 18. % widowed | 10.4 | 10.5 | 9.6 | 9.4 | 9.6 | 6.9† |
| 19. % never married | 24.4 | 24.5 | 19.8 | 27.4 | 27.0 | 31.8* |
| 20. % health excellent/good | 69.6 | 69.6 | 70.7 | 67.5 | 67.6 | 66.9 |
| 21. % financially living comfortably | 26.7 | 26.8 | 21.7 | 32.2 | 32.4 | 28.2† |
| 22. % financially finding it very difficult | 3.5 | 3.5 | 5.3 | 1.6 | 1.5 | 4.2** |
| 23. % single non-elderly | 6.5 | 6.4 | 8.4 | 8.3 | 7.8 | 14.3** |
| 24. % single elderly | 10.3 | 10.4 | 6.6† | 9.9 | 10.1 | 6.3** |
| 25. % couple no children | 29.1 | 29.3 | 20.8** | 31.4 | 31.3 | 33.2 |
| 26. % couple dep. children | 29.4 | 29.4 | 26.9 | 26.0 | 26.2 | 23.0 |
| 27. % couple non-dep. children | 12.8 | 12.6 | 23.5** | 13.0 | 13.1 | 11.5 |
| 28. % lone parent dep. children | 4.3 | 4.2 | 5.9 | 4.5 | 4.3 | 6.9** |
| 29. % lone parent non-dep. Children | 4.2 | 4.3 | 2.5 | 3.8 | 3.9 | 2.5 |
| 30. % 2+ unrelated adults | 1.7 | 1.6 | 2.5 | 1.3 | 1.3 | 1.1 |
| 31. % other households | 1.8 | 1.7 | 3.0 | 1.8 | 1.8 | 1.2 |
| 32. % own outright | 24.5 | 24.6 | 16.1** | 30.5 | 30.7 | 25.9* |
| 33. % own with mortgage | 46.4 | 46.4 | 44.3 | 45.8 | 45.6 | 47.9 |
| 34. % local authority rented | 17.3 | 17.2 | 21.8 | 11.1 | 11.1 | 10.4 |
| 35. % other rented | 11.9 | 11.7 | 17.9** | 12.8 | 12.5 | 15.7† |
| 36. % degree | 8.5 | 8.5 | 5.8 | 13.4 | 13.1 | 18.5** |
| 37. % none of these qualifications | 41.4 | 41.0 | 47.9† | 31.2 | 31.2 | 32.3 |
| <i>Base items 1 – 2</i> | <i>3966</i> | <i>3930</i> | <i>36</i> | <i>3334</i> | <i>3163</i> | <i>171</i> |
| <i>Base items 3 - 37</i> | <i>8537</i> | <i>8351</i> | <i>186</i> | <i>6735</i> | <i>6232</i> | <i>503</i> |

The data are reported weighted; Measures of significance compare the "without" and "only" columns with the full sample ("All"). **=p<.001 *=p<.05 †=p<.1; The base for items 1 – 2 consists of all respondents currently in paid employment; the base for items 3 – 37 consists of all respondents. Bases vary slightly between items due to item non-response, but are either equal to or slightly less than those presented, which are the maxima that apply in the case of no item non-response.

8 Conclusion

The refusal conversion procedures used on the BHPS appear to be effective in minimising attrition from the sample over the longer term. Converting an initial refusal at a particular wave does not, in a large proportion of cases, merely postpone the loss of the sample member to the panel for a wave or two. Rather, many converted refusers go on to remain fully co-operating respondents for several waves. In terms of increasing the cumulative number of interviews available for longitudinal analysis, the procedures seem to have been successful.

Converted refusals have been shown to have characteristics that are, in some respects, distinct from those of other respondents. There is a suggestion that this is partly because sample members chosen for refusal conversion attempts are different from other refusers. It could also be the case that refusers overall differ from respondents who do not refuse in terms of these characteristics. Or, indeed, that successfully converted refusers differ from those for whom an unsuccessful conversion attempt was made.

However, despite these differences between converted refusers and other respondents, conversions have only limited effects on overall sample distributions. Survey researchers may find this reassuring, though it could also be suggestive of possible improvement in the refusal conversion process. We would point nevertheless to the distinctness of the converted refusers and suggest that excluding them could make an important difference to the sample composition as non-response cumulates over more waves, or if response rates were to fall. Also, within this article we have not been able to examine the effect these cases may have on estimates

from longitudinal analyses such as employment duration modelling or event history analyses. That is an important issue for future research.

References

- Campanelli, P., Sturgis, P. and Purdon, S. (1997) *Can You Hear Me Knocking: An investigation into the impact of interviewers on survey response rates*. London: National Centre for Social Research.
- Curtin, R., Presser, S. and Singer, E. (2000) The effects of response rate changes on the Index of Consumer Sentiment. *Publ. Opin. Q.* **64**, 413-428.
- Dillman, D.A., Eltinge, J.L., Groves, R.M. and Little, R.J.A. (2002) Survey Nonresponse in Design, Data Collection, and Analysis. In *Survey Nonresponse* (eds R.M. Groves, D.A. Dillman, J.L. Eltinge and R.J.A. Little), pp. 3-26. Chichester: Wiley.
- Fitzgerald, J., Gottschalk, P. and Moffitt, R. (1998). The Impact of Attrition in the Panel Study of Income Dynamics on Intergenerational Analysis. *J. Human Resources*, **33**, 300-344.
- Gershuny, J. (2002) Co-ordinating longitudinal survey data in the UK: towards a national strategy. *J. R. Statist. Soc. A*, **165**, 3-7.
- Groves, R. M. and Couper, M. P. (1998) *Nonresponse in Household Interview Surveys*. New York: Wiley.
- Guadagnoli, E. and Cunningham, S. (1989). The effects of nonresponse and late response on a survey of physician attitudes. *Evaluation & the Health Professions*, **12**, 318-328.
- Juster, F.T. and Suzman, R. (1995) An overview of the Health and Retirement Study. *J. Human Resources*, **30**, S7-S56.
- Laurie, H., Smith, R. and Scott, L. (1999) Strategies for reducing nonresponse in a longitudinal panel survey. *J. Off. Statist.*, **15**, 269-282.
- Lepowski, J. M. and Couper, M. P. (2002) Nonresponse in the second wave of longitudinal household surveys. In *Survey Nonresponse* (eds R.M. Groves, D.A. Dillman, J.L. Eltinge and R.J.A. Little), pp. 259-272. Chichester: Wiley.
- Lin, I.-F. and Schaeffer, N. C. (1995). Using survey participants to estimate the impact of nonparticipation. *Publ. Opin. Q.* **59**, 236-258.
- Lynn, P. (ed) (2002). *Quality Profile: British Household Panel Survey Waves 1 – 10 (1991-2000)*. Colchester: Institute for Social and Economic Research, University of Essex. Available from <http://natstrat.essex.ac.uk/quality>.
- Lynn, P and Clarke, P. (2002). Separating refusal bias and non-contact bias: evidence from UK national surveys. *J. R. Statist. Soc. D*, **51**, 319-333.

- Lynn, P., Purdon, S., Hedges, B. & McAleese, I. (1994) The Youth Cohort Study: An assessment of alternative weighting strategies and their effects. *Employment Department Research series YCS Report no.30*.
- Lynn P, Clarke P, Martin J and Sturgis P (2002) The effects of extended interviewer efforts on nonresponse bias. In *Survey Nonresponse* (eds R.M. Groves, D.A. Dillman, J.L. Eltinge and R.J.A. Little), pp. 135-147. Chichester: Wiley.
- Philippens, M. and Stoop, I. (2004) The effects of selective refusal conversion strategies on the reduction of nonresponse bias. Submitted for publication.
- Singer, E. (2002) The use of incentives to reduce nonresponse in household surveys. In *Survey Nonresponse* (eds R.M. Groves, D.A. Dillman, J.L. Eltinge and R.J.A. Little), pp. 163-177. Chichester: Wiley.
- Singer, E., Van Hoewyk, J. and Gebler, N. (1999) The effects of incentives on response rates in interviewer-mediated surveys. *J. Off. Statist.*, **15**, 217-230.
- Stoop, I. (2004) Surveying nonrespondents. *Field Methods* **16**, 23-54.
- Swires-Hennessy, E. and Drake, M. (1992) The optimum time at which to conduct interviews, *J. Market Research Society* **34**, 61-72.
- Taylor, B., Heath, A. and Lynn, P. (1996). The British Election Panel Study 1992-95: response characteristics and attrition, *Centre for Research into Elections and Social Trends Working Paper no.40*. Glasgow: University of Strathclyde.
- Tourangeau, R. (2003) *Recurring Surveys: Issues and Opportunities: A report to the National Science Foundation based on a workshop held on March 28-29 2003*. Arlington VA: National Science Foundation.
- Weeks, M., Jones, B.L., Folsom, R.E. and Benrud, C.H. (1980) Optimal times to contact sample households. *Publ. Opin. Q.* **44**, 101-114.
- Weeks, M.F., Kulka, R.A. and Pierson, S.A. (1987) Optimal call scheduling for a telephone survey. *Publ. Opin. Q.* **51**, 540-549.