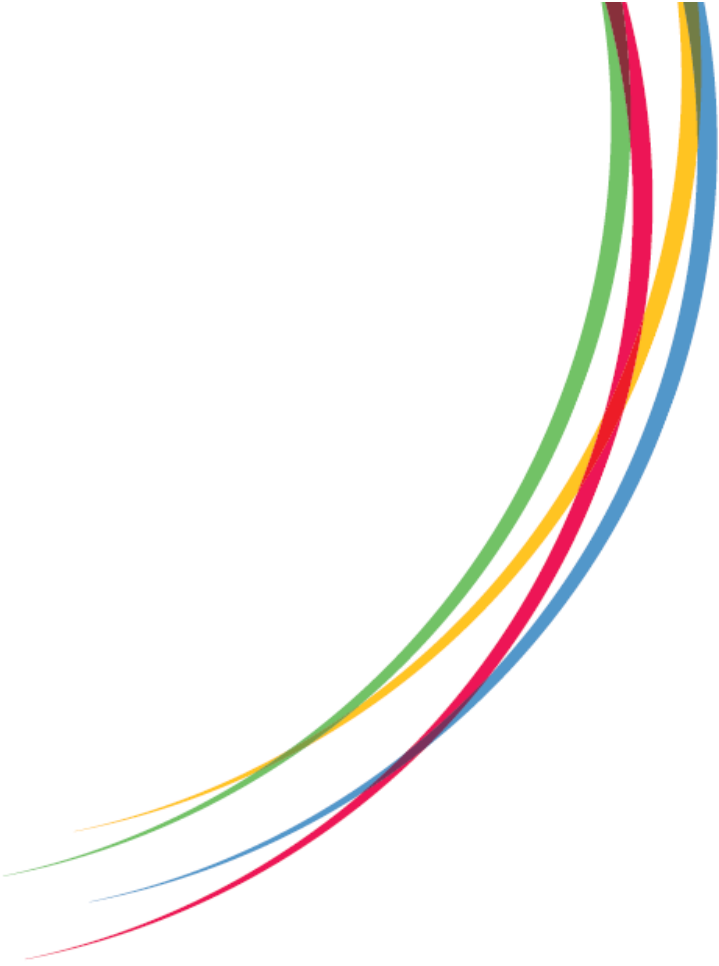




**Understanding Society
Working Paper Series
No. 2010 – 02**

July 2010

**Continuity and Innovation in the Design of
Understanding Society: the UK Household Longitudinal Study**

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Non-technical summary

One of the problems for those designing longitudinal surveys which run over many years is balancing the requirement to maintain longitudinal consistency in the questions and measures used against the need to meet new and emerging research agendas. Long running panels tend on the whole to be conservative in terms of introducing changes in content in order to preserve longitudinal comparability in the questions and measures collected. This paper discusses the particular case of the transition for the British Household Panel Survey (BHPS) sample into the new *Understanding Society* household panel. The BHPS has been run for eighteen years with annual data on over 10,000 households and has a large and loyal user base who wished to see continuity in the content and design being carried forward into the new study. On the other hand, the new *Understanding Society* panel aims to cover new and innovative areas which were not part of the BHPS design. There are no right or wrong answers to how the competing demands of continuity versus innovation are met as decisions are based on an informed assessment of the available alternatives. This paper describes the rationales for the decisions made in this case.

Continuity and Innovation in the Design of *Understanding Society*: the UK Household Longitudinal Study

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Abstract

This paper discusses the design decisions made in the incorporation of the British Household Panel Survey (BHPS), a long-running household panel survey in the UK, into a new and larger study, *Understanding Society*: the UK Household Longitudinal Study. The paper sets out the background to the new study, the key features of the new study and its potential for analysis, the survey design of *Understanding Society* and the decisions made in incorporating the BHPS sample into the new design, and the decisions around continuity and innovation in the content of the questionnaires.

Key words: household panel, longitudinal comparability, survey design, questionnaire design, BHPS, *Understanding Society*

JEL classifications: C80, C81, C83

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Acknowledgements: To the *Understanding Society* research team based at ISER, all of whom have contributed to the discussion in this paper through their work.

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1. Introduction

For survey designers longitudinal studies present specific problems in adapting to change, especially when the design has been more or less constant over the life of a long-running study. This paper discusses such a situation where The British Household Panel Study (BHPS) faced a transition to a new and larger study, *Understanding Society* the UK Household Longitudinal Study. The BHPS is a household panel survey of around 8,000 households in the UK which has completed 18 annual waves of data collection. The BHPS has been the major source of household panel data for the UK since 1991 and is widely used by academic and policy researchers. Following extensive consultation with the user community, a contract to establish a new and larger household panel of 40,000 households, called *Understanding Society*: the UK Household Longitudinal Study, was awarded to the research team responsible for the BHPS who are based at the Institute for Social and Economic Research (ISER), University of Essex. Wave 1 of *Understanding Society* began in January 2009 with wave 2 commencing in January 2010. The design of *Understanding Society* includes the incorporation of existing BHPS sample members from wave 2 of the new study. This paper outlines the design of *Understanding Society* and how experience from the BHPS informed design and implementation decisions in setting up the new study. The rationales for decisions made in incorporating the BHPS into the new study are considered. These include reconciling the competing demands for continuity and innovation, decisions on the timing of interviews throughout the year, questionnaire content, and maintaining panel loyalty while making the transition to a different fieldwork organisation.

1.1 Background to *Understanding Society*

Understanding Society is a new household panel survey funded by the UK Economic and Social Research Council with co-funding from UK government departments and motivated by the success of longitudinal studies in the UK. The UK has a diverse and rich portfolio of longitudinal studies including not only the BHPS but the British Birth Cohort studies (National Child Development Survey, British Cohort Study 1970, Millennium Cohort Study), studies of ageing such as the English Longitudinal Study of Ageing (ELSA), youth cohort studies such as the Longitudinal Study of Young People in England (LSYPE), and Census longitudinal studies. The BHPS is a widely used dataset in the UK but it was recognised that as a mature panel, there was a need to look to the future of longitudinal data resources for the coming decades in the UK. In taking the BHPS forward into a new era, continuity with the existing design and data was important. But it was also clear that there were new demands which would inevitably lead to changes to the BHPS model and which needed careful consideration. One of the key elements for the new study was sample size as it was recognised that a larger sample size than was available on the BHPS would enable a broader range of analysis and finer grained analysis of sub-groups within the population. The total achieved sample for *Understanding Society* was set at 40,000 households including the existing sample of BHPS households.

1.2 Key features and analysis potential

There are eight key features of the design of *Understanding Society* that reflect its scientific rationale and can be exploited to generate major innovations in scientific research. These offer significant analysis potential beyond those available within the BHPS and include the following.

(i) The **large sample size** of 40,000 households provides an opportunity to explore issues where other longitudinal surveys are too small. Analyses of small subgroups, such as teenage parents, disabled people, or the young unemployed, which are of key policy concern but which, when sub-groups are disaggregated by other characteristics may become too small for robust analysis. Analysis at regional and sub-regional levels, allowing examination of the effects of geographical variation in policy, also becomes possible. And the large sample size allows high-

resolution analysis of events in time, for example focussing on single-year age cohorts. Events which are relatively rare in the population, such as divorce for example, will occur in greater numbers at any given wave, something which enables robust analysis without having to wait for a number of waves to build up sufficient numbers of events for analysis.

(ii) The **household focus of the design** means data are collected on all members of sampled households and their interactions within the household. This has major advantages for important research areas such as consumption and income, where within-household sharing of resources is important, or demographic change, where the household itself is often the object of study. Compared to individual-based birth cohorts, it gives better and more continuous information on the family and household environment within which early development takes place. The ability to observe multiple generations and all siblings also allows examination of long-term transmission processes and isolate the effects of commonly shared family background characteristics. Compared with existing studies, *Understanding Society* will provide much greater opportunities to explore linkages outside the household.

(iii) A **full age range sample** complements age-focused cohort studies in the UK such as those sampling elderly people or young people and provides a unique look at behaviours and transitions in mid-life. For example, even for issues of pensions and long-term care, usually associated with old age, the policy setting is heavily influenced by behaviour occurring earlier in people's lives when decisions about savings, pensions and investments are taken. Moreover the large sample size means that all cohorts can be analysed at a common point in time.

(iv) The inclusion of an **Innovation Panel for methodological research and testing** provides a vehicle for a range of methodological work to inform not only the survey development but to contribute to survey methodological developments in general.

(v) The **multi-topic design** aims to meet a wide range of disciplinary and inter-disciplinary research needs. *Understanding Society* is a multi-topic survey for the study of a range of life course domains. While meeting the needs of 'traditional' quantitative social science disciplines such as economics, sociology and social policy, it also serves other disciplines (e.g.

the biomedical sciences) and makes possible a wider set of methodological approaches. It aims to facilitate genuine interdisciplinary research: within the social sciences (e.g. geography and economics); within the biomedical sciences (e.g. psychology and genetics); and between the two.

(vi) The incorporation of an **ethnicity research** agenda within *Understanding Society* recognises the increasing prominence of research into ethnic difference for our understanding of the make-up of British society and issues of diversity and commonality. It also emphasises the potential of such research to transform our understanding of individual and social processes. Through its coverage of large numbers of minority group members over time and of ethnicity-relevant research domains, the ethnicity strand will enable critical advances in knowledge of these topics and the processes involved.

(vii) *Understanding Society* is supporting collection of a wide range of **biomarkers and health indicators**. This opens up exciting prospects for advances at the interface between social science and biomedical research. It will provide the opportunity to assess exposure and antecedent factors of health status, understanding disease mechanisms (e.g. gene-environment interaction, gene-to-function links), household and socioeconomic effects and analysis of outcomes using direct assessments or data linkage.

(viii) Extensive **data linkage to administrative records** and geo-coded data is planned with permissions to link to health, education, pension and state benefit records being requested of survey participants. These data will provide significant new areas for analysis where the rich, contextual social survey data can be used in combination with administrative data.

2. Survey design

2.1 Household panel design

The design of *Understanding Society* follows that of the BHPS and other national household panels. The study design is a longitudinal sample of individuals representing the whole UK population, and interviewed within a household context. The sample consists of private residential addresses drawn from the UK Postcode Address File (PAF) and all members of private households found at those addresses at wave 1 are designated as original sample members. The sample is an equal probability sample with a total of 2640 Primary Sampling Units (PSU is a postcode sector in the UK) containing 18 issued addresses per PSU. In Northern Ireland the sample is a simple random sample. Each monthly sample consists of 110 PSUs with each month providing representative data for the UK with a key aim of the design being to enable analysts to produce quarterly estimates for the UK. The issued sample size assumes a minimum household response rate of 60% after the exclusion of ineligible addresses identified during fieldwork. At each wave all sample members aged 10 and over are eligible for interview and individuals are followed as they move and form new households. Other individuals who form households with sample members after wave 1 become eligible for interview as long as they are resident with an original sample member. As with the BHPS, the following rules mean that the sample will remain representative of the UK 2009 population as it changes, subject to weighting and except for new immigrants to the UK. The inclusion of a new immigrant sample is planned for the future. (see <http://www.iser.essex.ac.uk/survey/bhps> for details of the BHPS design and content and <http://www.understandingsociety.org.uk> for further details of *Understanding Society*).

Beyond the basic specification of the household panel design, there are some key differences between the *Understanding Society* and BHPS designs. The first of these is the inclusion of an Innovation Panel, a longitudinal sample of 1500 households which goes into the field a year in advance of the main sample and is used for methodological testing and experimentation. As with the main sample, this is an equal probability sample of Great Britain (in this case south of the Caledonian Canal) and excluding Northern Ireland with 120 PSUs and 23 issued addresses per

PSU. The Innovation Panel is used for randomised experiments in fieldwork procedures such as incentives and materials provided to respondents, split ballot experiments on the use of showcards, alternative question wording, the use of dependent interviewing in measures of change, as well as for sensitivity testing of certain items (see Laurie, H., Burton, J and Uhrig, S.C. Noah (eds) (2008) for preliminary results from wave 1 of the Innovation Panel).

Secondly, the design includes an ethnic minority oversample in medium to high density areas of ethnic minorities which, from 2001 UK Census data, are estimated to cover 80 – 90% of the ethnic minority populations of interest in the UK. The oversample is designed to achieve an additional 1,000 interviews in each of five key groups: Indian, Pakistani, Bangladeshi, Caribbean and Black African with eligible households identified through a screening survey. In addition all mixed background respondents identified in the screening interview including Chinese, other Asian and Middle Eastern respondents are eligible for inclusion. The boost design also incorporates a comparison sample from the general population sample of some 500 households. The estimated sample sizes for the various components of *Understanding Society* are set out in Table 1 below.

Table 1
Estimated Achieved Sample Sizes (Households) waves 1 and 2

	New sample *	BHPS Sample**	EM Boost	Total
Wave 1	29,850	8,100	4,220	42,170
Wave 2	25,370	6,900	3,590	35,860

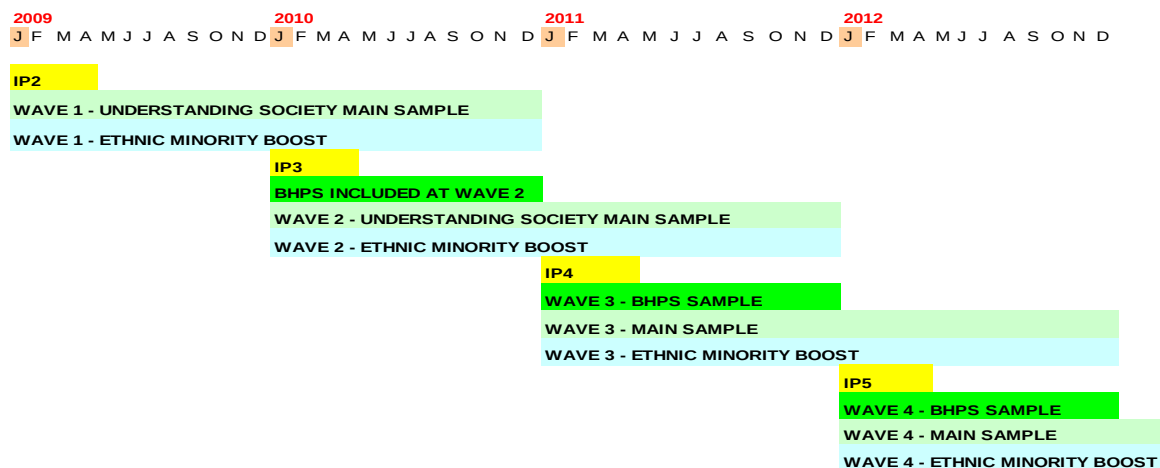
* Includes the Innovation Panel of 1500 households and the 500 household comparison sample for the boost.

** Note that BHPS Wave 18 is considered here as part of *Understanding Society* Wave 1

2.2 Timing of data collection

The BHPS is an annual interview and for 18 years, fieldwork has started on September 1st with the main fieldwork period running until December of the same calendar year. This has been followed by a relatively long tail of a further three months to deal with cases which were difficult to contact or away during the fieldwork period, tracing movers and refusal conversion. The design of *Understanding Society* also has an annual interview at 12 month intervals but given the large sample size and fieldwork capacity for getting the interviews completed, it has continuous fieldwork over a 24 month period for each wave. Respondents will maintain their wave 1 sample month throughout the life of the study even if they move address between waves. The implication of this design is that there are overlapping waves where year 2 of wave 1 overlaps with year 1 of wave 2. Monthly samples for *Understanding Society* began in January 2009 and the BHPS sample is being incorporated from wave 2 of the study in 2010. Table 2 sets out the data collection timetable for each wave.

Table 2
Data collection Timetable for *Understanding Society*



One difficult decision with respect to the BHPS sample was whether to maintain the wave 1 to wave 18 data collection timetable or alternatively, to integrate the BHPS sample fully into the *Understanding Society* fieldwork timetable by assigning it to monthly samples. There were arguments for and against keeping the BHPS data collection in the same fieldwork period as in

previous waves. Respondents expected to be interviewed between September and December each year and were generally ready for an interviewer to call on them at that time of year. For analysts, keeping the same data collection period would ensure consistency in terms of any seasonal effects and provide continuity for analyses which were built up over a number of waves of data. The arguments for incorporating the BHPS sample into the *Understanding Society* collection timetable were primarily to do with a desire to fully integrate the BHPS into the new study for the future. In addition, keeping the BHPS sample data collection in the same period as at previous waves would produce a lumpy and difficult to manage distribution for fieldwork.

On balance, the view taken was that incorporating the BHPS into the monthly sample design would enhance the possibilities of using the BHPS in conjunction with the new sample rather than being seen as something of a separate sub-study within *Understanding Society*. In terms of the longer term strategy for the study as a whole integrating the BHPS into the monthly sample design seemed the most coherent approach. Despite this decision, there were concerns about the longer than normal gap between interviews for the BHPS sample. The wave 18 interviews took place in late 2008 and into early 2009, so the BHPS sample could not be incorporated into wave 1 of the new study starting in January 2009. Wave 2 of *Understanding Society* started in January 2010 and if the BHPS sample were evenly spread across the two calendar year period for wave 2, the gap between interviews could be as great as 36 - 38 months. This was seen as unacceptable so the decision was taken to randomly allocate the BHPS sample across the first twelve months of the wave 2 fieldwork period giving a maximum gap between interviews of two years with 50% of the sample being interviewed within around 18 – 20 months of their previous wave 18 interview. This means that the BHPS sample are being included in the first year of data collection at each wave in the future.

2.3 Data collection mode

The BHPS has always been conducted with face to face interviews in respondent's homes, which since 1999 have been Computer Assisted Personal Interviews (CAPI). The intention on *Understanding Society* is to move to mixed modes of data collection at some waves, partly due to fieldwork costs but also to provide respondents with a greater choice of mode by which to

answer. Waves 1 to 3 of *Understanding Society* are being conducted face to face using CAPI as establishing the panel in the early waves through maximising response rates and minimising attrition at those waves is recognised to be critical for the long-term quality and health of the study. It is likely that either wave 4 or wave 5 of the study will use a mixed mode data collection strategy and the Innovation Panel (IP) is being used to test different sequential mode strategies in order to determine which is most effective in terms of overall response rates and fieldwork efficiency. Wave 2 of the Innovation Panel (conducted April – June 2009) experimentally tested sequential mixed modes using telephone and face to face interviews and we anticipate including web interviews at a later phase of the development work. Analysis of these data, including extensive para-data on calling patterns, is currently underway. The Innovation Panel is therefore a resource not only for informing the development of the main study but also for conducting innovative methodological research of wider interest to survey practitioners and methodologists.

2.4 Changing fieldwork organisations

For the BHPS sample, their first contact with *Understanding Society* is a face to face interview at wave 2 (2010). For eighteen years, the BHPS has been conducted by GfKNOP, a London based survey organisation sub-contracted by the survey team at ISER to carry out the interviews and deliver the data. However, the process of commissioning the new study resulted in a different fieldwork provider, the National Centre for Social Research (NatCen), being awarded the data collection contract for waves 1 and 2 of the study. This change presented certain integration issues for the BHPS sample, many of whom had been interviewed by the same interviewer for all or many waves of the BHPS. Our concern was that this change in fieldwork provider might impact negatively on response amongst the BHPS sample. No matter how loyal they may have been to the BHPS over the years, it could be expected that this change might lead some respondents to decide to withdraw from the study, something we clearly wished to avoid as far as possible. In addition to the change of interviewers and fieldwork organisation, BHPS respondents needed to have a new name and associated new logo and ‘look’ introduced to them.

Special procedures to introduce BHPS respondents to the new survey and to interviewers new to them were developed. These included a series of mailings between the wave 18 BHPS interview

and the first contact at wave 2, informing respondents about the changes to the study and encouraging them to see these in a positive light. Their importance as founder members of the study was stressed, the new name, design of logos and materials introduced to them, additional promotional material was sent to them, details about NatCen were provided and they were informed of their new month of interview. Prior to the interviewer calling at the address, an advance letter tailored for the BHPS sample is being sent which interviewers personalise with their name and telephone number details. As is standard practice on the BHPS, there is a dedicated phone-line, email address and participant website so that respondents can contact the survey team directly if they have any concerns. As wave 2 has just begun, we have no evidence to date of how the transition to the new study is progressing for the BHPS sample but are monitoring progress closely and making any interventions needed during fieldwork.

3. Questionnaire design and content

3.1 Continuity and innovation in content

The questionnaire structure for *Understanding Society* has a similar format as BHPS and consists of:

- Household questionnaire (including household membership roster) of 15 minutes
- Individual interview for all adults aged 16 and over (32 minutes)
- Self-completion questionnaire for all interviewed adults (7 minutes)
- Proxy interview for adults aged 16 and over who are unable to be interviewed (10 minutes)
- Self-completion Youth questionnaire for children aged 10 – 15 (on the BHPS the Youth questionnaire is from age 11 – 15).

All questionnaires within the CAPI script and associated fieldwork materials for respondents are translated into nine languages including Welsh, and bi-lingual interviewers or translators provided where necessary.

While the structure of the interviews uses the same instruments as BHPS questionnaire, there is significant demand from the user community for new or extended content relative to the BHPS to be included on *Understanding Society*. The BHPS sample receives the new questionnaire from wave 2 and it has been important to maintain some comparability with BHPS in order to minimise disruption to long-running time series on key measures. As a result, there is significant use of BHPS questions in *Understanding Society*. A guiding principle in making decisions about any specific question was that where an existing BHPS question had no better replacement that would clearly produce better quality data, it would be carried forward without changes. However, where there was a clear rationale in terms of improved data quality for changing or improving a BHPS question we included new, revised or replacement questions.

Substantive areas where either new content relative to the BHPS or extended content has been required include:

- Family and social networks outside the household
- Attitudes and behaviours related to environmental issues
- More on illicit and risky behaviour especially for young people
- More on neighbourhood attachment and social engagement
- Cultural activities and use of leisure time
- More on parenting attitudes, behaviour and parenting styles
- Psychological attributes
- Cognitive ability/functioning measures
- More on health outcomes and health related behaviour
- Quality of sleep
- Well-being
- Quality of marital relationships
- Risk and trust
- Collection of data about younger children < 10 from parent
- More data on transition into young adulthood
- Discrimination and harassment
- Ethnic and national identity

While these new areas of coverage were seen as centrally important, the survey also needs to collect the key social, economic and employment data which form the backbone of the longitudinal content. One of the major problems faced was the reduced individual interview length on *Understanding Society* which is significantly shorter than has been the case on the BHPS (32.5 minutes vs. 40 minutes respectively). This length constraint has meant that a fairly high proportion of BHPS questions are either not being included at all, or more usually being asked less frequently than annually on *Understanding Society*.

3.2 Annual and rotating modular design

The solution to the length constraints was to move away from the BHPS model where around 80% of the questionnaire was annual repeated measures and 20% rotating thematic content and with most people being eligible to be asked all questions. *Understanding Society* has adopted a model where there is more use of (i) questions asked regularly, but not every wave; (ii) triggered questions asked only after key events such as the birth of a child or moving house; (iii) questions asked only at particular ages; and (iv) sub-samples based on demographic characteristics. In contrast to BHPS, around 50% of the individual questionnaire is devoted to annual repeated measures and the remainder to rotating thematic modules carried either every two or three years depending on the subject matter and expected rates of change. The annual repeating measures are largely BHPS questions carried forward which will allow longer time series analysis to continue for that portion of the sample as well as providing continuity with the new *Understanding Society* sample as the longitudinal data come on stream over the next few waves.

A key design task in the initial stages was to agree which measures were critical for the annual panel design and which questions should be carried annually. The annual repeated measures include:

- household composition;
- demographic characteristics;
- changes between waves in employment, education, training, fertility, partnering, geographic mobility, health conditions;
- health status (e.g. SF12), disability;

- labour market activity and employment status, job search; current job characteristics, basic employment conditions, hours of paid work, second jobs;
- childcare, other caring within and outside household;
- child development at key ages;
- income and earnings;
- life satisfaction;
- political affiliation;
- transport and communication access; education;
- retirement planning/expectations at key ages;
- consumption expenditure; housing characteristics;
- housing expenditure; household facilities, car ownership.

In addition, the wave 1 questionnaire included factual background measures such as place of birth, educational qualifications, and details of parental background along with some life history information including cohabitation, marriage and fertility history and a migration history for the ethnic minority boost.

3.3 Bio-measure collection

The collection of direct physical measures and samples is scheduled to begin during wave 2 of *Understanding Society* and to continue through wave 3. While the available funding does not allow collection from all sample members we estimate that between 25,000 and 30,000 individual cases will have these measures, providing a significant proportion of the total sample. The aim is to collect these measures from all BHPS sample measures so that the longitudinal survey data can be used in conjunction with the bio-measure data and provide early longitudinal results.

There are two types of bio-measures being collected. The first are direct anthropometric measures and the second are samples to be stored for use in later analysis. Health researchers are increasingly incorporating summary measures derived from these biomarkers in the analysis of pathways to disease and in the exploration of the emergence of health disparities (for example

Chandola, Brunner and Marmot 2006; Seeman et al 2004; Sabbah et al 2008). The data collection for this element of the study will be done either by nurse interviewers or by trained survey interviewers. The measures to be taken are:

- Whole blood (nurse only)
- Lung function (spirometry) (nurse only)
- Blood pressure and pulse rate
- Height and Weight
- Waist circumference
- Bio-electrical impedance
- Grip strength
- Saliva (interviewer only)
- Dried blood spots (interviewer only)

In the UK, there are well-developed protocols and standards for collecting physical measures using nurse interviewers and this is done on several large scale studies. The collection of some of the proposed measures by trained interviewers, in particular taking blood pressure and pulse rate, saliva, and dried blood spots has never been done on large scale surveys in the UK. The protocols and interviewer training for this element are innovative for the UK. There is substantial experience in major US population surveys of successful use of these ‘minimally invasive’ approaches being carried out by well-trained survey interviewers (McDade et al 2007, Lindau and McDade 2008; Weinstein et al 2008) and we are drawing on this experience in developing our procedures.

In addition to the physical measures, wave 3 will collect cognitive ability/functioning measures for the whole sample. Overall, these data should provide an opportunity to assess exposure to and antecedent factors of people’s current health status; a better understanding of disease mechanisms such as gene-environment interactions; household and socioeconomic effects on health and an analysis of outcomes using direct assessments and data linkage.

4. Conclusion

Understanding Society is a highly ambitious study in both scope and coverage and is designed to keep the UK at the leading edge of social science research. A major feature is the intention to be a bio-social survey providing new opportunities for inter-disciplinary research across the medical and social sciences. As a data resource, *Understanding Society* therefore offers data of multiple types from multiple sources for a longitudinal sample of households and individuals over time.

The BHPS has been a huge success over the past eighteen years and is highly valued as a longitudinal data resource for the UK. The data are widely used by academic researchers within the UK and across the world and it is regularly used by government departments and policy makers as a source of high quality, authoritative longitudinal data for the UK. The BHPS has been designed to the highest academic standards and has constantly evolved throughout its life, with the transition to *Understanding Society* being the most recent development to ensure a bright future for the continuation of the BHPS in the coming years. *Understanding Society* is an ambitious study with a wider scope than the BHPS in terms of design, content and potential analysis uses. Getting it right is therefore of critical importance, with a successful transition into the new study for the BHPS sample being an important marker of the success of the study. The design decisions facing the survey team at ISER have not been easy and in many cases we will not know how successful we have been until analyses using the BHPS sample in conjunction with the new *Understanding Society* sample begin to appear. Judgements have had to be made based on the available evidence, advice from the user community, meeting the longitudinal analysis needs and aims of the study, and our experience of designing and managing longitudinal surveys. We hope we have found the right balance between continuity and innovation demanded by *Understanding Society* while remaining true to the principles of providing high quality longitudinal data always followed on the BHPS.

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For further information see:

<http://www.understandingsociety.org.uk>

<http://www.iser.essex.ac.uk>