Understanding Society
Working Paper Series
No. 2010 – 03
September, 2010

Lessons from a Randomised Experiment with Mixed-Mode Designs for a Household Panel Survey

Peter Lynn, S C Noah Uhrig, Jonathan Burton

Institute for Social and Economic Research, University of Essex

Understanding Society
THE UK HOUSEHOLD LONGITUDINAL STUDY

E·S·R·C ECONOMIC & SOCIAL RESEARCH COUNCIL

Lessons from a Randomised Experiment with Mixed-Mode Designs for a Household Panel Survey

Peter Lynn, S C Noah Uhrig, Jon Burton

Non-Technical Summary

This paper summarises the lessons learnt from a randomised experiment carried out on wave 2 of the Understanding Society Innovation panel. The experiment compared traditional face-to-face interviewing with two alternative "mixed-mode" designs where face-to-face interviewing was combined with telephone interviewing. A primary objective was to see whether either of the mixed mode designs could deliver a comparable response rate to the face-to-face design at a lower cost, or possibly even a higher response rate at no greater cost. A secondary objective was to assess the feasibility of implementing the mixed-mode designs.

A particular feature of the experiment is that it was carried out in the context of a household panel survey. This is important as in such surveys the objective is to interview all persons (aged 16 or over) in each household. Consequently, multiple contacts with a household are often necessary in order to complete all interviews. The two alternative mixed mode designs differed in the way that they dealt with the need to interview all persons in each household. In one design, attempts were made to interview as many household members as possible by telephone before resorting to a personal visit. In the other design, a personal visit was scheduled as soon as it became obvious that at least one household member would not be successfully interviewed by telephone.

The main finding was that neither mixed mode design was able to match the response rate achieved by the face-to-face unimode design. There was no evidence that response rates differed between the two mixed mode designs, though survey data collection costs may have been slightly lower with the design in which attempts were made to interview as many household members as possible by telephone before resorting to a personal visit.

Lessons from a Randomised Experiment with Mixed-Mode Designs for a Household Panel Survey

Peter Lynn, S C Noah Uhrig, Jon Burton

Abstract

This article describes a randomised experiment with mixed-mode survey designs in the context of a household panel survey. The experiment was designed to allow comparisons between two alternative mixed-mode designs (telephone interviewing plus face-to-face interviewing) and a unimode design (face-to-face interviewing only) in terms of response rates, sample composition, costs and other key outcomes, as well as to permit assessment of the feasibility of implementing the mixed-mode designs.

Key words: CAPI, CATI, household panel, mixed modes, non-response, survey design, survey modes, Understanding Society

JEL classifications: C81, C83

Contact: plynn@essex.ac.uk

Acknowledgements: This study forms part of the methodological research programme of the UK Longitudinal Studies Centre at ISER, funded as an ESRC Resource Centre. The authors are grateful to numerous colleagues at ISER and at NatCen for assisting with the successful implementation of this experiment, and to the Innovation Panel sample members for giving generously their time.

Lessons from a Randomised Experiment with Mixed-Mode Designs for a Household Panel Survey

Peter Lynn, S C Noah Uhrig, Jon Burton

Introduction

In this article we describe a randomised experiment with mixed-mode survey designs in the context of a household panel survey. The experiment was designed to allow comparisons between alternative mixed-mode designs and a unimode design in terms of response rates, sample composition, costs and other key outcomes, as well as to permit assessment of the feasibility of implementing the mixed-mode designs. An important aspect of the context (household panel survey) is the need to interview all persons (aged 16 or over) in each household.

To achieve an appropriate balance between response rates and costs, sequential mixed mode designs are often suggested. With such designs a cheaper (lower response rate) mode is administered first and then non-respondents are followed-up in a more expensive mode. But for a survey aiming to interview all adults in the household it can happen that some, but not all, household members respond in the first mode. Thus, a protocol is required to determine when and how to proceed to the next mode in the sequence. Our experiment compared two alternative such protocols.

UKHLS and the Innovation Panel

Understanding Society: *The UK Household Longitudinal Study* (UKHLS) is a major new household panel survey (www.understandingsociety.org.uk). The sample is of individuals, but all members of the current household of sample individuals are interviewed at each wave. Wave 1 went into the field in January 2009 and will continue through to December 2010. Wave 2 went into the field in January 2010. Whilst each wave of data collection is spread over two years (comprising 24 monthly samples), each individual is interviewed annually. The initial sample covers the full age range from birth. Subsequent new births to female sample

members themselves become sample members. Thus, the sample is dynamic and continues to represent the UK population, apart from post-wave 1 immigrants.

A key feature of UKHLS is the Innovation Panel. This is used to test both question design and survey procedures and is an opportunity for experimentation that would not be feasible on the main sample. This sample was first interviewed (wave 1) in January-April 2008, with all interviews carried out by CAPI. At wave 1, 1489 households were successfully interviewed, within which nearly 2400 individuals gave full interviews. Details of the first wave of the Innovation Panel, with descriptions of the experiments and preliminary findings, are in *Understanding Society* Working Paper 2008-03[1]. The experiment reported here took place at wave 2, carried out in April-June 2009. At wave 1, all respondents were asked to provide both household and personal (usually mobile) phone numbers, to enable a telephone approach at wave 2.

All field work reported in this article was conducted by the National Centre for Social Research (NatCen), under contract to the University of Essex.

Experimental Design

At wave 2 of the Innovation Panel, one-third of eligible households were randomly allocated to each of three treatments. The first treatment involved single-mode CAPI fieldwork. The second and third treatments consisted of sequential mixed mode CATI and CAPI fieldwork, differing only in the protocol determining the point at which a household is passed from CATI to CAPI.

In the second group ("early transfer"), all remaining non-respondents in a household were transferred to CAPI as soon as it became apparent that at least one household member would require a personal visit (e.g. because they refused the CATI, or were too ill or otherwise unable to talk on the phone). In the third group ("late transfer"), a household was transferred to CAPI only when all reasonable attempts had been made to complete a CATI interview with every household member[2]. It was expected that the "late transfer" treatment might

[1] http://research.understandingsociety.org.uk/publications/working-paper/2008-03

[2] A small number of households for which no telephone number was available were issued directly to CAPI (3.1% of the "early transfer" group and 2.9% of the "late transfer" group). A further small proportion were transferred to CAPI as soon as it was

result in a larger proportion of CATI interviews (which are less costly than CAPI interviews), while the "early transfer" treatment might result in a higher overall response rate (as more respondents were being approached face-to-face). The cost differences between the treatments were unclear, given that a large part of the marginal cost of face-to-face interviewing is incurred simply by having to visit a sample household, regardless of how many people in the household need to be interviewed. In other words, the savings from the "late transfer" treatment might not be as great as one might think by simply considering the number of individuals interviewed in each mode.

Implementation

Implementing the experiment highlighted two sets of issues. The first concerned the conversion of face-to-face instruments to ones suitable for CATI use. The second concerned the need to integrate disparate field work management procedures for face-to-face and telephone interviewing.

Translating a face-to-face interview protocol for telephone use triggers measurement issues (de Leeuw, 2005; Schwarz et al, 1991). UKHLS extensively uses show cards for multi-code and choice questions. Multi-codes were translated into a series of forced-choice items, even though measurement differences between the two forms are well documented (Smyth et al, 2006; Thomas & Klein, 2006). Response options were read out to respondents for other choice questions. Response options were not changed in other ways, but question stems and wording required some alteration. Preliminary analysis suggests no effect of mode on questions not involving cards (Jäckle, 2009); analysis of questions involving visuals is yet to be conducted.

CAPI and CATI operations used different organisational systems. CAPI staff operated a "craft" model where staff were issued households which they managed, interviewing all household members themselves. CATI work, which was centralised, was conducted in shifts where interviewers worked from a pool of available cases. In our experiment, households could have multiple phone numbers and cases would

established that the provided number was out of service or disconnected (2.5% of the "early transfer" group and 1.3% of the "late transfer" group).

remain in the pool until all eligible individuals had been worked. Both features represented differences from other studies carried out by the NatCen telephone unit, so it was necessary to redesign the telephone work allocation system to accommodate the household design.

Household and individual outcome codes were used to identify cases for transfer from CATI to CAPI staff. Cases were issued to field with a record of previous contact made by the telephone unit along with the reason for the transfer. Cases were transferred as and when they were available for transfer, which meant that face-to-face work was issued piecemeal. Many cases were transferred late in the fieldwork process, so advance mailings would have occurred several weeks before CAPI interviewers called at households. The piecemeal transfer of cases could have de-motivated field staff so transferring all cases within a PSU at once may have been more efficient. Also, mailing a second advance letter to transferred cases before the field interviewer's call would have been helpful. Additionally, it was necessary to extend the field work period for the two mixed-mode groups in order to fully work cases transferred to CAPI following delays in the transfer.

Outcomes

Overall household response rate (at least one adult gave a full interview) was 72.7 percent. However, this single measure hides a significant difference between sample members approached in person compared to those approached by telephone. For the CAPI sample, response rate was 76.9 percent. There was no difference in response between the other two treatments: 69.8 percent (early transfer) and 71.5 percent (late transfer). Both mixed mode treatments resulted in slightly higher refusal rates than the CAPI treatment, as well as more "other non-response" (Table 1).

Table 1. Household response

	CAPI %	Mixed mode (early transfer) %	Mixed mode (late transfer) %	Total %
Complete household	61.4	49.8	53.5	54.9
Partial household	15.5	20.0	18.0	17.8
Productive household	76.9	69.8	71.5	72.7
Non-contact	5.9	6.5	4.1	5.4
Refusal	15.5	18.5	16.9	16.9
Other non-response	1.8	5.4	7.6	5.1
n	*513*	*519*	*521*	*1561*

Of individuals in responding households, 84.2 percent gave a full interview (Table 2). This proportion was higher with CAPI (86.3 percent) than with either mixed-mode treatment (82.6 percent for early transfer, $p<0.05$ and 83.6 percent for late transfer, $p<0.1$). Of all completed individual interviews, 78.3 percent were completed by phone in the early transfer group and 79.8 percent in the late transfer group.

Table 2. Individual response

	Face-to-face %	CATI % (early transfer)	CATI % (late transfer)	Total %
Complete individual	86.3	82.6	83.6	84.2
Partial individual	0.5	1.7	0.7	1.0
Proxy	5.5	3.9	2.3	3.9
No contact	1.0	1.2	4.0	2.0
Refusal	5.4	6.4	6.7	6.1
Other non-productive	1.3	4.5	2.6	2.7
n	*735*	*665*	*700*	*2100*

Summary and Conclusions

The CAPI unimode design obtained a higher response rate than either of the mixed-mode designs. The advantages of CAPI were both in achieving a higher proportion of household interviews and in achieving interviews with a higher proportion of the individuals within those households.

The two mixed-mode designs performed similarly to each other in terms of response rates. We cannot conclude that either mixed mode design is preferable to the other or that either is capable of equalling the response rates achieved by CAPI alone.

Mixed-mode designs are still under consideration for future waves of UKHLS and further experimentation may take place, including with web survey methods.

References

Jäckle, A. (2009) Moving from CAPI to sequential CATI-CAPI data collection in a household panel survey: experiences from the UKHLS Innovation Panel. Presented at *SHARE-PREP Survey Methods Workshop,* Mannheim, Germany, 7 July 2009.

de Leeuw, E. (2005) To mix or not to mix: data collection modes in surveys. *Journal of Official Statistics* 21: 233-255.

Schwarz, N., Strack, F., Hippler, H. & Bishop, G. (1991) The impact of administration mode on response effects in survey measurement. *Applied Cognitive Psychology* 5: 193-212

Smyth, J., Dillman, D., Christian, L. & Stern, M. (2006) Comparing check-all and forced-choice question formats in web surveys. *Public Opinion Quarterly* 70: 66-77.

Thomas, R. & Klein, J. (2006) Merely incidental?: Effects of response format on self-reported behavior. *Journal of Official Statistics* 22: 221-244.