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**The impact of the transition to CAPI and a new
fieldwork provider on the HILDA Survey**

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Introduction

The HILDA Survey underwent two major changes in wave 9. The first was the change to a new fieldwork provider and the second was a change of mode from pen and paper interviewing (PAPI) to computer-assisted personal interviewing (CAPI). While the change of mode was largely inevitable over the course of the project, the change of fieldwork provider provided the impetus for the change of mode at the same time.

This paper describes the key differences in operations and provides an assessment of the impact on the data quality.

Change of fieldwork provider

In 2008, our fieldwork provider for waves 1 to 8 – The Nielsen Company – made a business decision to move away from face-to-face interviewing work to concentrate on other types of survey work. Following a competitive tender process, Roy Morgan Research (RMR) was selected to undertake the fieldwork for waves 9 to 12.

A smooth transition between Nielsen and RMR was essential to the continued success of the HILDA Project. A transition strategy was developed by the Melbourne Institute with significant input from both Nielsen and RMR. This strategy incorporated four aspects: i) knowledge transfer of the survey operations; ii) systems development at RMR; iii) interviewer continuity; and iv) communication of the change of fieldwork provider to the respondents.

The HILDA team at RMR undertook an intensive study of the HILDA Survey operations at Nielsen by meeting on multiple occasions with Nielsen staff, attending the wave 8 interviewer training, and reviewing the procedural documentation. In addition, there were a small number of Nielsen office staff who sought employment with RMR to continue to work on the project and this contributed to the knowledge transfer between the companies. With the move to CAPI occurring at the same time, many of the operations at RMR would, by necessity, be different to those used in the paper-based environment for waves 1 to 8.

The two main systems developed for wave 9 were the respondent management system and the CAPI system. Particular attention was paid to how these systems would interface with each other and how they would provide fieldwork monitoring capability.

One area where we hoped for little change was in interviewer continuity. As Nielsen were moving away from face-to-face work, the interviewers were encouraged to continue to work on the HILDA Project in wave 9. This was facilitated by RMR staff attending the interviewer training where the interviewers could meet the new team and ask about future plans for the Project. The continuity of interviewers with sample members is one of the factors associated with higher response rates (see Watson and Wooden, 2009), so it was important to maximize this where possible.

Respondents were informed of the transition from Nielsen to RMR by a letter that the wave 8 interviewers handed over at the end of their interview to explain the change.¹ For the respondent, it was anticipated that very little would change and many would see the same interviewer return in wave 9. A similar letter was mailed to non-respondents at the end of wave 8. The vast majority of the respondents were not concerned with this change, however

¹ See <http://www.melbourneinstitute.com/hilda/respondent-info/ri-wave8.html> for a copy of the letter.

one respondent refused to have their contact details passed on and a small number of respondents indicated they would very likely refuse in wave 9.

The collaboration of the HILDA teams in each organisation and their commitment to the Project were apparent throughout the transition period from July 2008 to July 2009.

Transition to Computer-Assisted Personal Interviewing

The move to CAPI in wave 9 offered cost savings to the Project compared to continuing with pen and paper interviewing. In anticipation for such a change, we trialled this methodology in a split sample test in the wave 7 Dress Rehearsal (see Watson and Wilkins, forthcoming), which for the most part provided positive support for the move. For this test, both the Household Questionnaire and the Person Questionnaire (PQ) were completed in CAPI, but the Household Form (HF) was still completed on paper. Fortunately both RMR and Nielsen use the same CAPI software – Confirmit – so the early work from wave 7 formed the basis of the CAPI script for wave 9.

Development of CAPI scripts

The major development work for wave 9 centred on the HF to provide a more integrated CAPI solution to the interviewers. The HF is more complex than the other questionnaires as it helps the interviewer manage their work in relation to the household – such as recording calls, appointments, household and individual status codes, tracking notes and interviewer comments – in addition to a short interview with a household member to set the structure of the household.

With CAPI, the data entry occurs at the time of the interview. Therefore, the logic and consistency checks that were previously undertaken post-field at the data entry stage were programmed into the CAPI script. Any issues were raised with the respondent for clarification at the time of the interview.

The questionnaire development and testing phase are now more complicated in the CAPI environment compared to the paper questionnaires used in waves 1 to 8. The testing of the CAPI script is very time consuming and it is impossible to test the multitude of scenarios that exist. We have identified three problems in the wave 9 script which impact on the data quality and these are reported in the section on the *Impact on item responses*.

CAPI Tablet

Face-to-face interviewers use a tablet computer and stylus whilst interviewing. As tablets are not in wide use in Australia, it helped generate interest with both respondents and interviewers. The interviewers also did not need to have good keyboard or mouse skills to operate the computer (a factor which we believe drove the wave 7 Dress Rehearsal interview times higher than anticipated).

Telephone interviewers access the same CAPI script from a desktop computer.

Use of dependent data

The wave 9 interviews made limited use of dependent data. As in previous waves, the HF was populated with the names of the sample members from the previous wave, their dates of birth, last interview date, last wave outcome and a list of sample members who had previously lived with them (should they return this wave). Prior to wave 9, this information was pre-printed on the HF. In CAPI, this information was pre-loaded onto the HF in appropriate places.

There were three new data components brought forward from the previous interview, being

- i) whether the respondent was employed or not,
- ii) if they were employed whether they had one or more jobs, and
- iii) the respondent's contact details.

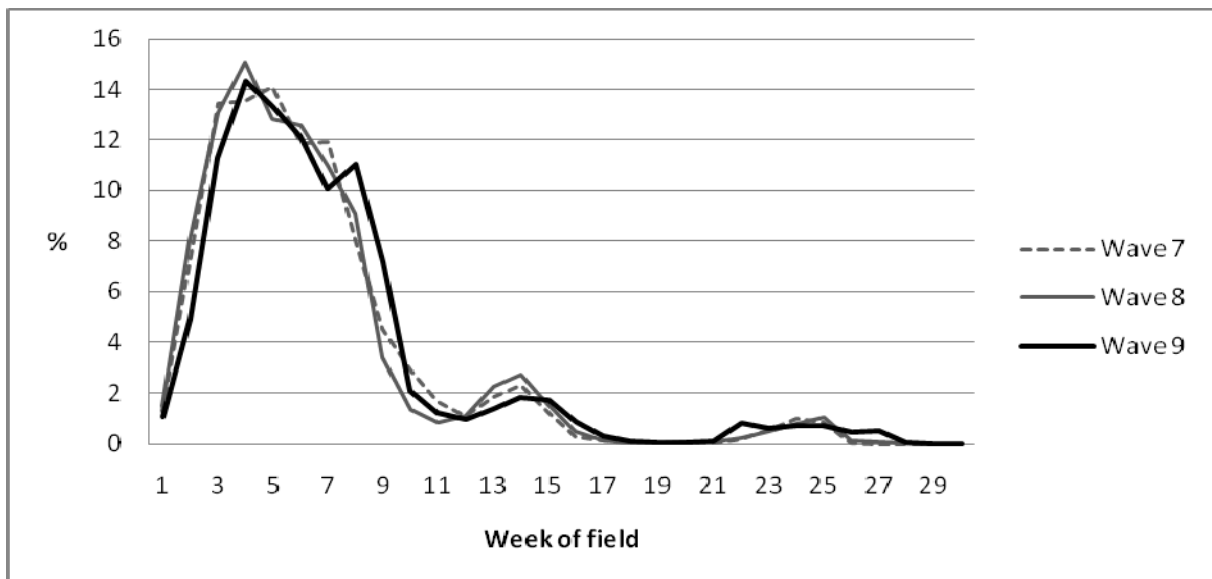
The first two pieces of information were used in the Person Questionnaire in sections C (for those currently employed) and D (for those not currently employed) just before the questions about the job they had at their previous interview. This information was presented to the respondents as *proactive dependent data* which means they were reminded of what they had said at their last interview prior to being asked the series of questions. For these two data items, the respondents were given the opportunity to correct the information presented to them if they disagreed with it.

The last component of dependent data was used in the Tracking section (section T) in the Person Questionnaire. The respondent's mobile number, work number, email address, and the contact details of up to two other people who might know where they are if they move were all prefilled. The interviewer confirmed these details and updated them as necessary.

Interviewer training

All of the interviewers attended a 3-day training session covering both CAPI and HILDA specific issues. None of the interviewers had worked with CAPI before (aside from those who worked on the HILDA Dress Rehearsal sample earlier in 2009 or 2007). By the third day of the training, the interviewers were reasonably comfortable with the new technology. Nevertheless there was a slower start to field than in earlier waves, as shown in Figure 1. The three main peaks of work relate to the three fieldwork periods we have – August to October, October to December, January to March.

Figure 1: Percentage of Person Questionnaires completed each week of field, waves 7 to 9 compared



Fieldwork monitoring

As interviewers typically synchronise their work back to the office at the end of each work day, the progress and outcomes of the fieldwork can be more closely monitored. This permits more targeted follow up with the interviewers throughout the course of the fieldwork.

Data structure

A major data mapping exercise was undertaken by the Data Manager at the Melbourne Institute to harmonise the data captured by the CAPI system with the post-field data entry system from earlier waves. For the most part, we have continued to use the structure adopted in earlier waves as this is what many users are familiar with. Some changes have been made to earlier waves where it was sensible to do so (all changes are documented in the 'Readme 90.pdf' file on the DVD for Release 9).

Other procedural differences introduced in wave 9

In addition to the two major changes previously discussed, there were a number of more modest changes introduced in wave 9 to improve the response rates, coverage of the sample, coding quality and provide additional meta data. These are described below.

Increased respondent incentives

Two significant changes were made to the cash incentive for wave 9. First, it was provided in cash to the respondents (in a thank-you envelope) immediately after the face-to-face interview. Second, the amount was raised from \$25 to \$30. Feedback from the interviewers was that this was received enthusiastically by the sample members and contributed to high response rates.

For Period 3 (January to March), the cheques for the sample members allocated to phone interviewers were pre-printed and were sent out to the respondent immediately after their interview was completed. This reportedly helped convince some sample members to participate.

Revised respondent communication

The respondent communication was updated for wave 9 to a fresher design. The key changes were:

- to incorporate 'HILDA' more strongly in the text and include it in the study's logo to help respondents identify their contribution when HILDA is mentioned in the media;
- to offer the latest Statistical Report to sample members; and
- to include an endorsement of a well known figure – for wave 9 a quote from Glenn Stevens, Governor of the Reserve Bank of Australia, was used.

Notably, the demand for the Statistical Report was far greater than we anticipated, with approximately 960 copies being distributed to sample households.

Inclusion of recent arrivals in the following rules

As an interim measure prior to the top-up sample planned for 2011, all immigrants who arrived in Australia after 2001 and joined the households of our sample members were converted to continuing sample members. If a recent immigrant subsequently leaves the household, they will be followed and interviewed. This is in accordance with the recommendation made by Watson (2006) in a review of the sampling options for the top-up

sample. It is expected that this modification to the following rules will reduce the under-coverage of recent immigrants in the HILDA sample by 35 per cent. A total of 74 recent immigrants were converted to continuing sample members at the beginning of wave 9 and a further 40 were converted after wave 9.

Revised process for occupation and industry coding

A particular focus was placed on the coding procedures for occupation and industry in wave 9 following a review of the coding undertaken in earlier waves (see Watson and Summerfield, 2009). The introduction of CAPI permitted more timely coding of occupation and industry as the data entry of the text responses was done at the time of the interview and returned to the office usually that night. Feedback on the quality of the descriptions an interviewer provided was given promptly so that they could improve their probing skills for later interviews.

As was done for waves 1 to 8, a ten per cent verification was undertaken in wave 9. This verification process has taken different forms across the waves:

- For waves 1 to 7, a senior coder verified the code written on the paper questionnaires and modified the code as they thought appropriate.
- In wave 8, a senior coder undertook a blind recode of the verbatim text (that is they could not see the original code). If the code they assigned was different to the original code, they decided the final code to be used.
- In wave 9, a second coder undertook a blind recode of the verbatim text. An experienced coder adjudicated between the cases that had been coded differently between the original coder and the verifier.

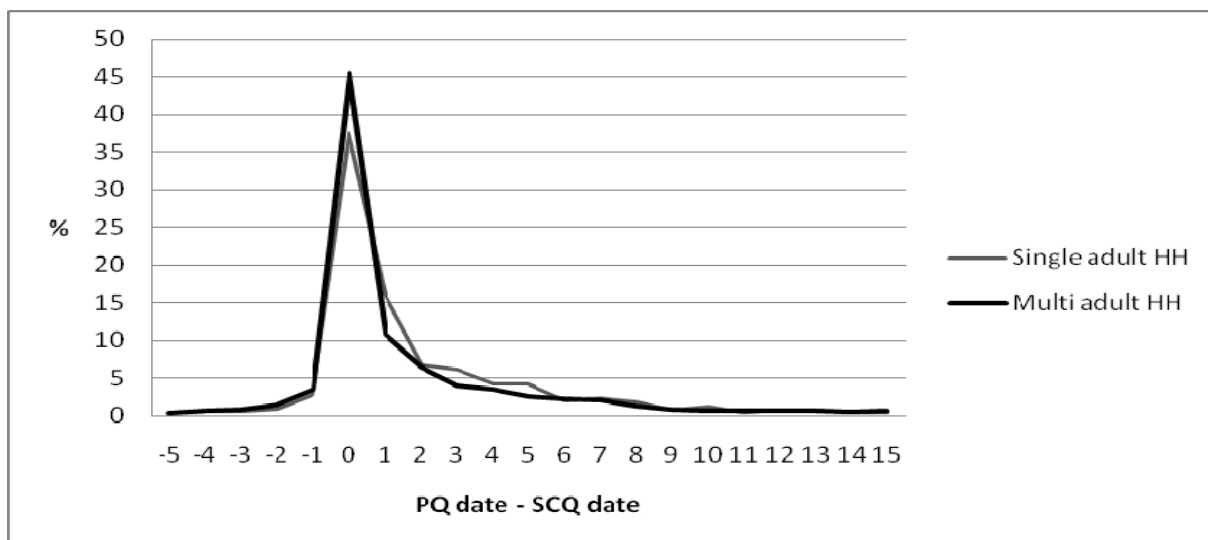
In all three verification processes, any discrepancies were discussed with the coders to improve the quality of their coding. The wave 9 coding procedure is closer to the method adopted by the Australian Bureau of Statistics. The quality of the coding was regularly monitored throughout the wave and some batches of coding were redone if they fell below a certain standard.

Collection of completion date for the Self-Completion Questionnaire

For the first time in wave 9, we collected the date the respondent completed the Self-Completion Questionnaire (SCQ). Of the respondents who returned an SCQ, 97.8 per cent provided a valid date for its completion.

In Figure 2, we have compared the date the SCQ was completed to when their Person Questionnaire (PQ) was completed, a negative difference means the SCQ was completed prior to the day of the PQ and a positive difference means it was completed after the day of the PQ. There are extremely long tails in both directions and this figure has been restricted to -5 days to +15 days. The comparison has been undertaken for two groups: i) single adult households, and ii) multi-adult households. Nearly 38 per cent of single adults complete the SCQ on the same day as the PQ, whereas this rate is 45 per cent in households where there are multiple adults.

Figure 2: Completion date of SCQ compared to PQ



Impact on response rates

Response rates achieved

The collective changes to the HILDA Survey for wave 9 have had a positive impact on the response rates. The re-interview rate for previous wave respondents is 96.3 per cent, resulting in a wave-on-wave attrition rate of 3.7 per cent in wave 9.² This is an improvement of 1.1 percentage points on the attrition rate achieved in wave 8 (see Table 1).

The response rate for previous wave non-respondent was particularly good in wave 9, which we suspect was due in large part to the altered incentive (increased from \$25 to \$30 and paid in cash at time of interview). For some of these previous wave non-respondents, the change of fieldwork provider may also have been a factor in them agreeing to participate this wave.

Of those providing an individual interview, 86.9 per cent returned the Self-Completion Questionnaire (see Table 2). This is 0.7 percentage points below the rate achieved in wave 8. Of particular concern is that the SCQ response rates for face-to-face interviewees continue to fall over time. We expect the length and repetitive nature of the SCQ are factors in these declining response rates. A number of strategies have been put in place for wave 10 to help curb this decline.

² The re-interview rate for wave 9 is calculated as the proportion of wave 8 respondents in-scope for wave 9 that provided an interview in wave 9. The wave-on-wave attrition rate is the proportion of wave 8 respondents in-scope for wave 9 that *did not* provide an interview in wave 9.

Table 1: Response rates for the HILDA Survey, waves 2 to 9 compared

	W2	W3	W4	W5	W6	W7	W8	W9
All people								
Previous wave respondent	86.8	90.4	91.6	94.4	94.9	94.7	95.2	96.3
Previous wave non-respondent	19.7	17.6	12.7	14.7	8.4	5.6	5.7	8.5
Previous wave child	80.4	71.3	70.7	74.6	75.4	70.8	73.7	73.4
New entrant this wave	73.3	76.1	70.4	81.7	81.1	79.7	79.5	81.4
People attached to responding household in previous wave								
Previous wave respondent	86.8	90.4	91.6	94.4	94.9	94.7	95.2	96.3
Previous wave non-respondent	19.7	19.8	18.1	25.3	18.3	13.2	15.0	25.9
Previous wave child	80.4	81.8	81.2	87.3	89.5	90.5	90.9	93.0
New entrant this wave	73.3	78.5	71.8	85.4	81.0	80.2	81.2	81.4

Table 2: Self-Completion Questionnaire response rates by wave

	W1	W2	W3	W4	W5	W6	W7	W8	W9
Face-to-face interviews	93.7	93.9	93.5	93.3	91.8	92.7	91.5	90.7	89.3
Phone interviews	52.7	63.3	68.1	68.2	62.3	64.1	62.2	59.7	63.0
Overall	93.5	93.0	92.3	91.9	89.9	90.8	89.0	87.6	86.9
Percentage of phone interviews	0.5	3.0	4.6	5.6	6.5	6.9	8.4	10.1	9.1

Comparison with other panel studies

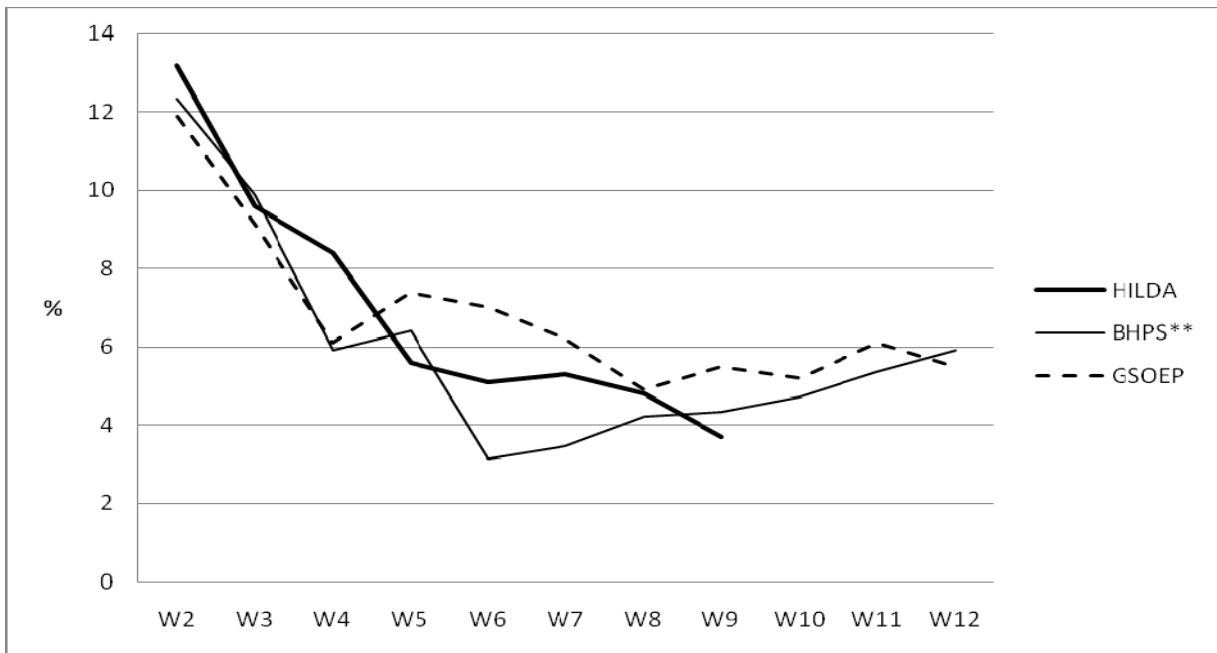
Figure 3 shows how the HILDA attrition experience compares with that of the British Household Panel Study (BHPS) (thin line) and the German Socio-Economic Panel (GSOEP) (dashed line).

After initially experiencing rates of attrition that were somewhat higher than both the GSOEP and the BHPS, the HILDA Survey is now reporting rates below that reported at the equivalent time in both the GSOEP and the BHPS. Indeed, wave 9 is only the second year in which the HILDA Survey has reported attrition rates lower than the comparable rates reported by both the GSOEP and the BHPS (the other year was wave 5).

Both the BHPS and GSOEP experienced a general increase in attrition during waves 10 to 12 and our challenge is to avoid this pattern and maintain the good attrition rate experienced in wave 9 through this period.

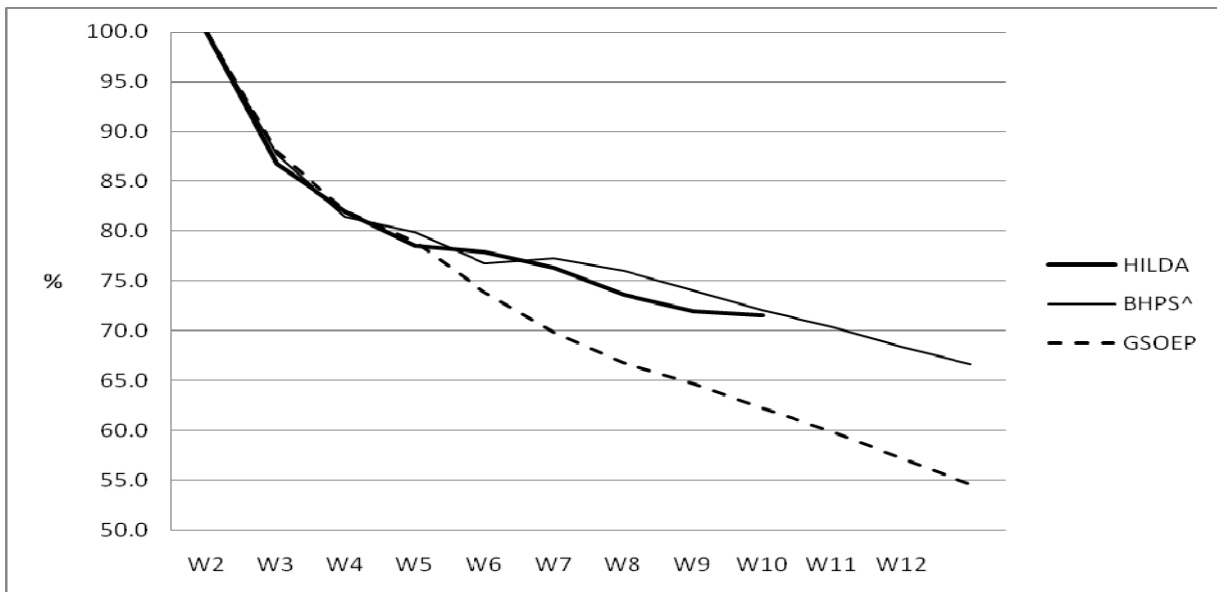
In Figure 4, the proportion of in-scope wave 1 respondents that are re-interviewed each wave is presented. Our rate closely follows the BHPS rate for the first five waves, and it is pleasing to see that the two percentage point gap that opened up in wave 6 has been greatly reduced. The reason for the sizeable difference between the GSOEP, on the one hand, and the BHPS and HILDA, on the other, since wave 5 are being investigated.

Figure 3: Wave-on-wave attrition rates, HILDA, BHPS and GSOEP compared



Note: ** Excludes proxies and short telephone interviews.

Figure 4: Proportion of wave 1 respondents re-interviewed, HILDA, BHPS and GSOEP compared



Note: ^ Includes proxies and short telephone interviews

Impact on operational outcomes

Interviewer continuity

While 92 per cent of wave 8 face-to-face interviewers stated they were interested in continuing to work on the project, 89 of the 123 interviewers (72 per cent) actually worked on wave 9. The common reasons given by interviewers who decided to discontinue working on the project include:

- The move to CAPI was considered too challenging, especially for some interviewers close to retirement age;
- Some interviewers opted to take ongoing employment elsewhere (rather than casual interviewing work) due to concerns about the economic downturn in the first half of 2009; and
- A small number of interviewers continued to work for Nielsen on some remaining face-to-face fieldwork projects and they could not commit to the HILDA work due to conflicts in workloads.

RMR also chose to increase the face-to-face fieldwork team by 13 interviewers to help reduce the very high workloads of some interviewers. This was especially important given the introduction of CAPI in wave 9 to ensure interviewers did not carry high workloads whilst learning the new technology.

A total of 135 face-to-face interviewers and 24 telephone interviewers worked on wave 9, including 46 new face-to-face interviewers and 23 new telephone interviewers. The new interviewers brought onto the project were, for the most part, very experienced interviewers who have worked for RMR for considerable time. The rate of interviewer continuity in wave 9 was nevertheless much lower than in recent years, but similar to levels experienced in wave 2 (as shown in Table 3).

Table 3: Number of interviewers and percentage of new interviewers each wave

	<i>Face-to-face interviewers</i>		<i>Telephone interviewers</i>		<i>All interviewers¹</i>	
	<i>N</i>	<i>% new²</i>	<i>N</i>	<i>% new</i>	<i>N</i>	<i>% new</i>
Wave 1	133	100.0	0	-	133	100.0
Wave 2	133	33.8	9	100.0	142	38.0
Wave 3	118	18.6	10	60.0	128	21.9
Wave 4	117	12.8	9	44.4	126	15.1
Wave 5	122	14.8	10	80.0	132	19.7
Wave 6	127	28.4	13	53.8	140	30.7
Wave 7	126	20.6	15	53.3	141	24.1
Wave 8	123	11.4	15	46.7	138	15.2
Wave 9	135	34.1	24 ³	95.8	159	43.4

1. To be classified as an interviewer for a particular wave, the interviewer needed to complete at least one household or person interview.

2. A 'new' interviewer is one who has not worked as a HILDA interviewer in any previous wave.

3. All of the Team1800 staff were trained and can conduct telephone interviews. Most of the telephone interviews were undertaken by 12 interviews and others in the team conducted the interviews as necessary.

Interview length

The average time taken to complete the questionnaires and the number completed are provided in Table 4. Questionnaires completed on hardcopy and later entered are excluded from the interview lengths as the timestamps relate to data entry rather than interview times.

In general the use of CAPI appears to facilitate the collection of more data within the agreed (and budgeted) time limits. There is mixed evidence from the literature about how CAPI affects interview lengths but the studies which note an increase in length suggest that one cause is the speed of typing versus writing (see for example, Martin et al., 1993, and Fuchs et al., 2000). As we have used a tablet and stylus, typing speed is not relevant in our situation (at least for our face-to-face interviewers).

Table 4: Average time taken to complete wave 9 questionnaires and number completed

<i>Questionnaire</i>	<i>Time taken to complete</i>	<i>Number completed</i>
Household Form	Approx 6 minutes for responding households (not timed)	7,234 (responding) 8,136 (all)
Household Questionnaire	6.0 minutes	7,234
Continuing Person Questionnaire	34.7 minutes	12,445
New Person Questionnaire	43.6 minutes	856
Self-Completion Questionnaire	Not timed	11,561

The duration of the interviews tended to reduce over the course of the fieldwork as the interviewers became more familiar with the instruments. This effect in wave 9 with CAPI was similar to those in other waves (as shown in Figure 5). A notable difference in wave 9 was that the interview durations for the new interviewers were much closer to those of the experienced interviewers. Two possible explanations for this are that the new interviewers in wave 9 had substantially more interviewing experience on other projects than new interviewers in other waves, or alternatively CAPI eliminates time spent working out the skip instructions (which new interviewers are likely to be slower at than the experienced interviewers).

Use of paper backups

Pen-and-paper questionnaires were not abandoned entirely, with backup hardcopy questionnaires provided to all interviewers in the event of unresolvable problems with the CAPI Tablet or Conformat program. As shown in Table 5, these were used rarely. The situations when they were needed include: the household was established incorrectly, the last interview date for rejoiners was not correct, and where ghosts of ghosts were not listed (resulting in a New Person Questionnaire being displayed for the sample member when a Continuing Person Questionnaire should have been).³

³ A ghost is a person who previously lived in the household. They may rejoin the household and a list are provided to the interviewers in the CAPI script. For wave 10, ghosts of ghosts will be included in this list.

Figure 5: Average interview length by order of interview and experience of interviewer, waves 7 to 9 compared



Notes: Only individuals interviewed in a prior wave (who are given a Continuing Person Questionnaire) have been included here. Individuals who have not been interviewed before receive a New Person Questionnaire which tends to be longer as it asks additional history questions.

Table 5: Number of questionnaires completed on hardcopy (partially or fully)

	<i>N hardcopy</i>	<i>N CAPI</i>	<i>Total</i>	<i>% hardcopy</i>
Household Form	26	8,100	8,136	0.3
Household Questionnaire	32	7,202	7,234	0.4
Continuing Person Questionnaire	77	12,368	12,445	0.6
New Person Questionnaire	20	836	856	2.3

Recording calls and outcomes

The count of the number of calls made to a household may be slightly inflated in wave 9. This is because access to the household record was only possible through the call record and some interviewers logged a ‘call’ when they were going into the record to select the final outcome at the end of the period even though a call to the household was not made. For wave 10, the functionality of the call record was extended to include an ‘admin only’ button to ensure a more accurate record could be obtained.

Also a lot of work was required in wave 9 to unravel the individual and household outcomes at each stage of fieldwork and recover the appropriate interviewer numbers for the interviewer responsible for the household at each stage. The process for capturing this meta-data has also been improved for wave 10.

Interview situation

The introduction of CAPI appears to have had little or no impact on the interview situation. At the end of each interview, interviewers record a number of observations about the interview situation, and almost all of these indicators are consistent with prior waves. There was a rise in the proportion of respondents with ‘excellent’ cooperation, but also a small drop in the proportion with ‘excellent’ or ‘good’ understanding of the questions. It is unclear how the new module on health may have impacted on these ratings and therefore it may be more instructive to reconsider these interviewer observations in wave 10 where there is a repeat of the wealth module that was undertaken in waves 2 and 6.

Table 6: Interviewer observations about the interview situation (%)

	W1	W2	W3	W4	W5	W6	W7	W8	W9
Others present during interview	39.7	38.1	37.2	38.6	34.7	37.7	36.6	35.4	35.7
Whether others influenced interview	3.1	3.9	3.5	2.1	2.5	4.1	3.6	3.5	3.8
Excellent or good understanding	94.5	95.0	94.8	96.3	95.9	96.3	96.1	96.5	95.4
Excellent cooperation	79.3	79.4	82.2	82.8	80.1	81.9	84.5	83.6	87.2
Not suspicious	95.1	96.5	97.5	98.3	98.2	98.0	98.8	98.3	98.8

Improved data delivery timing

The delivery timeframe of Release 9 was brought forward by two months. This was made possible in part because the improved timeliness with which data could be delivered from the CAPI system and also because of a restructure of the HILDA team at the Melbourne Institute.

Impact on item responses

Item non-response

As the CAPI script takes care of the skips through the questionnaire, interviewer error from following incorrect skips is removed.⁴ Unfortunately it is much harder to flick back to an earlier question to fill in a missing response if it is later provided, which may have occurred when the respondent’s memory was prompted by a later question or they subsequently asked their partner about some details (which may occur for some income questions). In the CAPI script, each question now offers explicit ‘don’t know’ and ‘refused’ options to permit the interviewer to move through the questionnaire to the correct questions if the respondent cannot or does not wish to provide a response.

The combined effect of these two factors was that the overall rate of missing items in wave 9 was about the same as earlier waves. There has been a reduction in interviewer error, but also a compensating increase in the proportion of ‘don’t know’ and ‘refused’ responses provided. See Table 7 for the average item non-response rate for the Household Form and each section

⁴ Though there is still the possibility that the interviewer selects the incorrect response at a question and as a result skips questions that should be asked.

in the Household Questionnaire and Person Questionnaire. This has a noticeable effect on the proportion of missing values at questions requiring a dollar value (as shown in Table 8), which is consistent with both the BHPS (Laurie, 2003) and GSOEP (Schräpler et al., 2006) for monetary questions.⁵

The new technology has also led to some partial interviews. There were five respondents who completed only part of the Person Questionnaire and a further six households for which the Household Questionnaire was not completed. In the paper-based system, it was easier to notice part interviews and missing questionnaires. An alert system in wave 10 has been set up to flag partial interviews so that these can be followed up quickly with the interviewer.

Table 7: Average item non-response (%) by section, waves 7 to 9 compared

Variable	Wave 7	Wave 8	Wave 9
Household Form	0.44	0.45	0.31
Household Questionnaire	0.69	0.78	0.91
Section Q: Childcare	0.35	0.53	0.35
Section R: Housing	0.82	0.92	1.08
Person Questionnaire	0.20	0.25	0.26
Section AA & BB: Background for new persons	3.19	3.13	4.81
Section A: Education	0.02	0.04	0.03
Section B: Employment status	0.01	0.03	0.01
Section C: Employed persons	0.13	0.15	0.30
Section D: Not employed persons	3.69	0.31	0.28
Section E: Employment activity calendar	0.02	0.03	0.02
Section F: Income	0.57	0.65	0.70
Section G: Children	0.18	0.50	0.27
Section H: Marriage and relationships	0.12	0.14	0.20
Section K: Health and satisfaction	0.04	0.10	0.20
Section T: Tracking information	2.68	3.41	2.11
Section Z: Interviewer observations	0.03	0.10	0.09

Note: The item non-response rate for a section is the number of questions with a 'don't know' or 'refused' response divided by the number of questions asked, restricted to questions common to waves 7, 8 and 9. The average is calculated across the section rates of all individuals.

⁵ This finding holds even when we restrict the analysis to previous wave respondents.

Table 8: Item non-response for selected variables, waves 7 to 9 compared

Variable	Wave 7	Wave 8	Wave 9
Responding persons¹			
Age pension	1.2	1.5	3.6
Newstart allowance	0.6	0.9	3.0
Disability support pension	1.2	1.6	2.7
Youth allowance	0.8	1.2	1.8
Parenting payment	1.2	2.1	5.8
Wages and salaries	5.1	4.6	5.9
Business income	19.8	18.7	20.3
Total Financial Year income	9.9	10.1	11.6
Households²			
Total Financial Year income	22.1	22.5	24.0
Home value	2.6	2.9	3.5
Home mortgage	1.2	1.4	1.7
Rent	0.5	0.5	0.6

Notes: 1. The percentage is calculated for non-zero cases for the income components, but for all cases for total income.
2. The percentage is calculated for non-zero cases for the housing variables, but for all cases for total income.

Use of multi-item responses

The capturing of multiple responses at certain questions throughout the questionnaire is unaffected by the use of CAPI. Table 9 shows the average number of responses recorded at each of these questions in the Person Questionnaire in waves 7 to 9.

Table 9: Average number of multiple responses, waves 7 to 9 compared

Question	Wave 7	Wave 8	Wave 9
A9a: Qualifications studying for since last interview	1.07	1.07	1.07
A11: Qualifications completed since last interview	1.07	1.06	1.07
A7a: Qualifications ever completed (new person interview)	1.44	1.41	1.43
C8: Days usually worked	4.33	4.28	4.20
D2: Activities to look for work	2.76	2.52	3.03
D7: Difficulties getting a job	1.99	1.89	2.09
D12: Reasons not looking for work	1.34	1.33	1.43
E7: Aims of work-related training	2.67	2.62	2.78
E17: Mutual obligation activities	1.14	1.08	1.07
F14 & 16: Current pensions and allowances	2.03	2.03	2.03
F32a: Financial year pensions and allowances	1.15	1.14	1.15
F33: Other sources of income	1.01	1.01	1.01
H1a: Marital status changes since last interview	1.00	1.00	1.00
K66: Reasons for moving since last interview	1.33	1.28	1.24

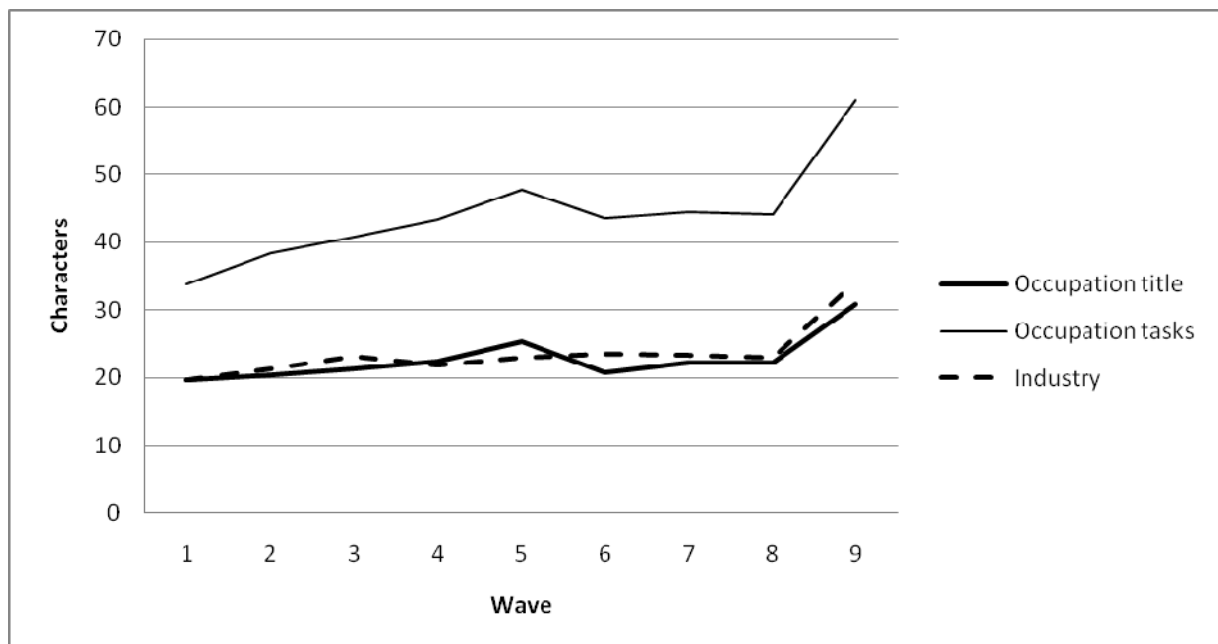
Length of open-ended responses

There has been a marked increase in the number of characters recorded for the industry and occupation descriptions (see Figure 6). This is in contrast to the small number of other studies that have considered the impact of CAPI on the length of the text entered at open-ended questions – Laurie (2003) using the BHPS found a reduction in the text recorded and de Leeuw *et al.* (1995) found no effect in their study.

This increase in text length in the HILDA Survey is most likely due to the increase in the size of the box displayed on the CAPI console compared to what was provided in the paper questionnaires. From a study of different questionnaire designs in a self-administered questionnaire, Christian and Dillman (2004) found that the size of the box for open ended responses was significantly related to the amount of text recorded. It is expected that this would also be true with interviewers completing a questionnaire on the respondent's behalf.

Another possibility is that the interviewer training may have had an effect on how extensively they probed the respondent about their industry and occupation. Over the waves, this training has increasingly emphasized the importance of collecting detailed descriptions and appropriate probing for particular problematic responses. This is reflected in the general increase in the amount of text recorded at these questions across the waves.⁶ The wave 9 training continued to do this but this is not likely to be the cause of such a large increase in the amount of text recorded.

Figure 6: Number of characters recorded for occupation and industry by wave



⁶ We are not aware of any change in practice in wave 6 that would have led to a reduction in the length of text recorded.

Dependent data

The incorporation of dependent data on whether the respondent was employed at the last interview and the number of jobs they had has greatly improved the consistency of the reports. In wave 8, for example, 2.1 per cent of the respondents who had been interviewed previously did not recall being employed at their last interview when they had previously said they were and a further 2.7 per cent incorrectly reported being employed. When the wave 9 respondents were reminded of their employment status at their last interview, few disagreed with this information. As a result, the wave 9 data shows that 0.3 per cent of respondents incorrectly reported being not employed and 0.5 per cent incorrectly reported being employed.

Table 10: Measurement error in employment status and number of jobs at last interview

	W2	W3	W4	W5	W6	W7	W8	W9
Re-interviewed respondents								
Employed last interview...								
and recalled correctly	58.4	60.1	60.5	60.9	62.6	62.1	63.1	65.4
but recalled incorrectly	2.8	2.3	2.4	2.3	2.3	2.6	2.1	0.3
Not employed last interview...								
and recalled correctly	36.1	34.9	34.3	33.5	32.4	32.6	32.0	33.8
but recalled incorrectly	2.6	2.7	2.8	3.3	2.7	2.7	2.7	0.5
Re-interviewed respondents who correctly recalled being employed last interview								
Had 1 job...								
and recalled correctly	87.6	87.3	87.8	87.8	88.0	88.6	88.9	91.1
but recalled incorrectly	3.1	3.1	2.9	2.8	2.5	2.6	2.6	0.5
Had 2 or more jobs...								
and recalled correctly	5.9	6.0	6.2	6.1	5.6	5.0	5.0	8.0
but recalled incorrectly	3.5	3.6	3.1	3.3	3.9	3.8	3.4	0.3

Errors in the dependent data

The use of dependent data is not without danger. The data fed forward from the previous interview could be incorrectly constructed, become corrupted, or used incorrectly in the CAPI script.

In wave 9, we had 19 cases where the day and month of last interview were accidentally swapped. For 10 of these cases, this resulted in an invalid month and the interview had to be completed on paper (using the correct date) and later entered once the date was corrected. For the remaining 9 cases, the interviews proceeded in CAPI with the interviewer referring to a valid (though incorrect) date. The dates were incorrect by between 29 and 293 days and all related to respondents who were last interviewed between 2003 and 2006.

This highlights the importance of thoroughly testing the dependent data that is used and being cautious in how much dependent data we employ in future waves.

Errors in the CAPI script

Another type of CAPI-related problem is skip errors. As mentioned previously, the CAPI program is very complex and it is impossible to check every possible scenario. Unfortunately three skip errors occurred in wave 9. None of these errors were identified until after all of the interviews had been completed and we were preparing the data for release.

The most serious of these occurred in the Household Questionnaire, resulting in 51 households missing the non-employment related childcare questions and 83 households (including the previous 51) missing the child health questions.⁷ The filters programmed into the CAPI script were overly complex and did not capture all possible scenarios.

Two other minor skip problems have also been identified – one involves seven cases (at K66 in the New Person Questionnaire) and the other three (at A11 in the Continuing Person Questionnaire).⁸

While we will continue to test the CAPI script as much as possible before going into field in future waves, the ability to work through the skip problems in the Dress Rehearsal data will be important in detecting these sorts of errors. This will be more productive now that the CAPI data has been fully integrated into the production system for wave 9.

Changes in types of errors identified

The type and scope of the edits required for the wave 9 data were largely consistent with previous waves. The only area showing a suggestive difference was in the number of edits applied to home value as a result of the interviewer including too many or too few zeros. In wave 8, the number of such edits was 17, whereas in wave 9 this rose to 44.

Changes in reporting behaviour

With the introduction of a new questionnaire layout suited to the tablet screen comes the potential for changes in the respondent reporting behavior. One such dramatic change occurred in how respondents reported their financial year benefit income. The question (F32 in wave 9) asked which pension the respondent received, how many weeks it was for and then asked for either an annual amount or a fortnightly amount. Prior to wave 9, the respondents typically reported a fortnightly amount, with the proportion providing an annual amount varying between 10 and 25 per cent depending on the particular payment type. In wave 9, between 80 and 90 per cent of the respondents provided an annual amount, as shown in Table 11.

This change in behavior was driven by how this question was displayed on the screen. Interviewers recorded the number of weeks received and the annual amount. Only if this annual amount is unknown or refused, a fortnightly amount was asked for on the next screen. It is highly likely that interviewers worked out an annual amount with the respondent and put

⁷ The households that incorrectly skipped these questions include 50 households who reported that the only childcare they used during school holidays was ‘me or my partner’, one household who refused to state whether their child was of school age or not, and 32 households who did not use any non-work related childcare but did use work-related childcare. The first two groups form the 51 households that missed the non-employment related childcare questions and all three groups missed the child health questions.

⁸ While the Continuing Person Questionnaire and the New Person Questionnaire are integrated in the CAPI script to a single ‘Person Questionnaire’, they remain separate instruments on paper. We have continued to reference the question numbers based on the paper questionnaires.

that in the box for the annual amount rather than recording it on the next screen. On the paper questionnaire, the annual and fortnightly columns were next to each other so interviewers could readily choose which column to put the information into depending on what the respondent provided.

It is difficult to determine if this change in the reporting behavior has resulted in a loss of information. In Table 12 we look more closely at the most frequently occurring pension – the age pension – to identify how much rounding has occurred on the fortnightly or annual amounts. Of course, we cannot distinguish actual amounts that are divisible by 10 from those that have been rounded to the nearest 10, so we have counted all amounts that are divisible by 10 as rounded. Fewer respondents are providing an exact figure for either fortnightly or annual amounts in wave 9 (35.8 per cent compared to 48.0 per cent in wave 8). Nevertheless, if we agree that an annual amount that is rounded to the nearest 10 is better than a fortnightly amount rounded to the nearest 10, then the proportion of respondents with either an exact amount or a financial year amount rounded to the nearest 10 is 53.2 per cent in wave 9 compared to 50.2 per cent in wave 8.

Table 11: Percentage of respondents reporting annual benefit amounts for the Financial Year

	W1	W2	W3	W4	W5	W6	W7	W8	W9
Age pension	22.9	20.4	18.0	17.1	13.2	18.4	17.4	21.1	90.0
Newstart allowance	28.1	23.4	26.5	25.4	19.6	18.8	20.5	20.5	85.3
Disability support pension	16.6	14.7	14.5	11.4	9.8	12.6	13.2	11.4	81.7
Youth allowance	29.0	23.4	25.5	20.5	15.3	18.5	15.4	16.3	86.9
Parenting payment	23.7	19.9	20.6	22.3	17.5	20.7	20.9	22.9	80.9

Table 12: Percentage of respondents rounding the age pension amount

	W1	W2	W3	W4	W5	W6	W7	W8	W9
Fortnight amount reported									
Ones	62.5	62.6	43.7	34.8	46.6	39.4	45.2	47.2	40.6
Tens	27.6	31.3	51.2	59.2	36.3	46.8	46.5	44.6	47.4
Hundreds	9.9	6.1	5.2	6.1	17.1	13.8	8.3	8.2	12.0
Annual amount reported									
Ones	49.7	38.8	58.0	51.9	59.3	47.9	50.8	51.0	35.2
Tens	12.1	19.4	17.3	17.5	13.2	15.1	15.1	10.5	19.3
Hundreds	18.1	25.6	14.5	15.7	16.9	18.1	18.3	20.7	22.8
Thousands	14.8	12.1	8.2	11.9	8.5	16.2	13.5	15.5	19.9
Ten thousands	5.4	4.2	2.0	3.0	2.1	2.6	2.4	2.3	2.8
All amounts reported									
One	59.6	57.7	46.3	37.7	48.3	41.0	46.2	48.0	35.8
Ten (annual only)	2.8	4.0	3.1	3.0	1.7	2.8	2.6	2.2	17.4
Other	37.7	38.3	50.6	59.3	50.0	56.2	51.2	49.8	46.8

We plan to revise the way this question is displayed on the screen for wave 11 (the design for wave 10 is the same as wave 9). This will avoid the interviewers or respondents having to undertake any calculations to provide an appropriate figure.

Quality of occupation and industry coding

The quality of the coding was closely monitored and feedback was provided to both interviewers and coders. Following concerns over the quality of the initial coding for occupation, several batches were recoded early in 2010. Figure 7 shows the disagreement rate between the coders (initial coder and blind verifier) and the error rate of the initial coder (after adjudication between the initial coder and verifier by the coding manager). Both the disagreement rate and the error rate fell as a result of the recoding work undertaken.

The final disagreement rates were:

- 8.0 per cent for 4-digit occupation;
- 3.6 per cent for 1-digit occupation;
- 8.5 per cent for 4-digit industry; and
- 3.5 per cent for division-level industry.

The final error rates in the coding were:

- 2.9 per cent for 4-digit occupation;
- 1.2 per cent for 1-digit occupation;
- 3.6 per cent for 4-digit industry; and
- 1.5 per cent for division-level industry.

These error rates are quite low, but unfortunately we cannot compare them to earlier waves as this information was not recorded.

Another aspect of coding quality considered here is the level to which the industry and occupation responses were coded. Table 13 shows the lowest level to which the responses to main job occupation and industry were coded and it reveals that there was a greater tendency to code to a higher level in wave 9 than in earlier waves. A review of these cases indicates that the higher level codes are generally appropriate in wave 9 given the description provided. There is also some suggestion from our earlier review of the coding for waves 1 to 7 that more detailed codes were used on occasion than supported by the description provided by the respondent.⁹

In light of this information about the quality of the coding, a particular focus was placed on the descriptions captured for industry in the interviewer training for wave 10. It is hoped that this will reduce the number of cases coded to the higher level in future waves.

⁹ A review of wave 6 cases recoded for Table 4 of Watson and Summerfield (2009), shows that potentially 3.3 per cent of the occupation codes may be coded to a lower level than the description suggests.

Figure 7: Disagreement and error rates in occupation coding (at 4-digit), wave 9

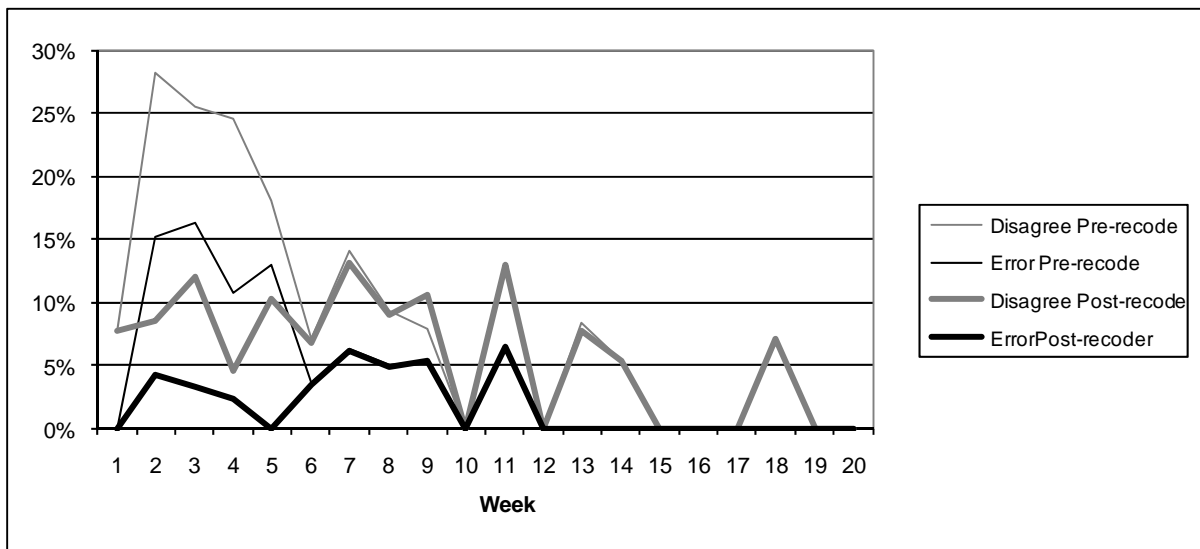


Table 13: Level of coding for main job occupation and industry (%)

	W1	W2	W3	W4	W5	W6	W7	W8	W9
Occupation									
Uncodeable	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1 digit	0.1	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.5
2 digit	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.4
3 digit	0.5	0.3	0.2	0.1	0.2	0.3	0.0	0.5	0.6
4 digit	99.3	99.7	99.7	99.7	99.6	99.6	100.0	99.3	98.5
Industry									
Uncodeable	0.4	0.0	0.0	0.0	0.6	1.0	0.2	0.2	1.6
Division	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3
2 digit	0.3	0.2	0.5	0.2	0.7	0.3	0.2	1.8	4.0
3 digit	0.4	0.3	0.4	0.5	0.6	0.3	0.2	1.1	3.3
4 digit	98.9	99.5	99.1	99.3	98.1	98.4	99.5	96.9	88.8

Comparison of reported values

The change of mode does not appear to have had an impact on the values reported by the respondent. Of course, we cannot distinguish real changes in the population (such as those caused by the Global Financial Crisis) from those that may have been caused by a change of mode as we do not have a split sample test of CAPI. The cross-sectional (unweighted) estimates for various key variables are provided in Table 14 and all seem to show sensible movements between wave 8 and 9. Further, the relationships between various key variables have also been maintained (as shown in the unweighted correlations provided in Table 15).

One aspect that is worth exploring a little further is where the respondent said they did not have a change in their main job since the last interview, but the industry and occupation code has changed. Figure 8 shows the level of consistency in the 2-digit codes for these

respondents. We see a loss of consistency in the codes between waves 6 and 7 by 3.2 per cent for occupation and 5.8 per cent for industry, whereas in the other waves the rate of consistent coding was either the same or slightly improving. This fall coincides with a change of coding procedure in that the text responses recorded by the interviewer were data entered and then coded in a database (rather than being coded on the paper questionnaire prior to data entry), thus removing access to other parts of the questionnaire that may have assisted the coder in assigning a code.

Table 14: Means for selected variables (responding persons)

	W1	W2	W3	W4	W5	W6	W7	W8	W9
Life satisfaction (0 to 10 scale)	7.96	7.89	7.97	7.94	7.90	7.89	7.89	7.89	7.89
Has long-term health condition	23.6%	22.1%	27.9%	26.3%	28.2%	26.7%	27.1%	25.9%	28.7%
Employed	61.0%	62.0%	62.8%	63.0%	64.6%	64.8%	65.2%	65.5%	64.5%
Unemployed	4.4%	4.0%	3.6%	3.3%	3.1%	3.3%	3.1%	3.1%	3.8%
Had job in last financial year	66.7%	67.4%	68.1%	68.4%	69.8%	69.8%	69.7%	70.7%	70.4%
Number of jobs in last financial year	1.25	1.29	1.30	1.30	1.31	1.29	1.29	1.30	1.26
Wages and salaries (imputed)	20,776	21,437	22,348	23,355	24,846	26,671	28,611	30,284	31,456
Married	53.9%	52.5%	51.2%	50.2%	49.3%	48.7%	48.0%	48.0%	46.9%
Defacto	9.7%	10.2%	11.0%	11.5%	12.0%	12.7%	13.8%	13.4%	14.1%
Household moved		18.0%	19.6%	18.3%	18.2%	17.9%	18.5%	16.8%	17.3%
No job change, same 2-digit occupation code assigned		67.8%	68.8%	69.2%	70.2%	71.7%	68.5%	68.5%	70.7%
No job change, same 2-digit industry code assigned		71.2%	74.7%	74.2%	73.9%	76.9%	71.1%	70.4%	71.5%

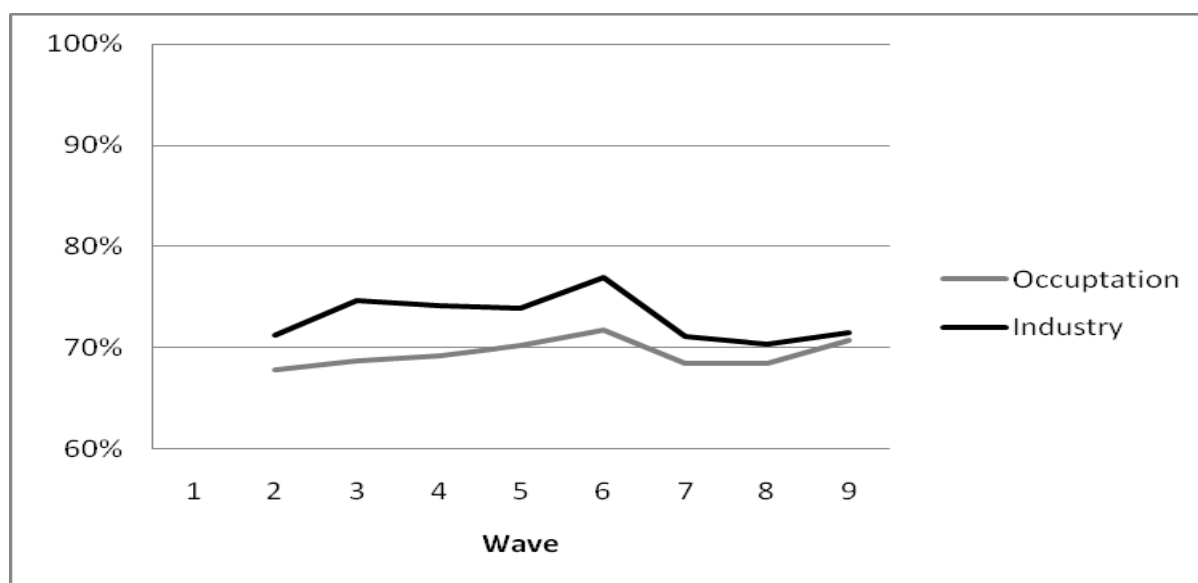
Table 15: Correlations between selected variables (responding persons)

	W1	W2	W3	W4	W5	W6	W7	W8	W9
Education and wages & salaries (employed persons) ¹	0.273	0.303	0.305	0.311	0.314	0.324	0.269	0.342	0.340
Life satisfaction and job satisfaction (employed persons)	0.393	0.418	0.414	0.425	0.432	0.416	0.411	0.428	0.406
Life satisfaction and general health	0.291	0.314	0.314	0.330	0.330	0.338	0.337	0.340	0.369
General health and mental health	0.471	0.486	0.491	0.501	0.503	0.509	0.514	0.503	0.507
Household disposable income and household expenditure ²	-	-	-	-	-	0.390	0.356	0.375	0.408

Notes: 1. Education was classified into ten levels with 10 being the highest (i.e., the reverse of *_edhigh*). Wages and salaries have been imputed where they were missing.

2. One person per household included, to provide a household level comparison. Expenditure relates to non-durable items that have been collected from wave 6.

Figure 8: Percentage of respondents with the same job that have the same 2-digit code assigned



In Table 16, the changes between successive waves has been considered for several key variables. Once again, these are typically in the direction we would expect with the Global Financial Crisis – fewer people moved from part time to full time work, or from unemployed to employed, there was a drop in wages and salaries, but an increase in overall person-level income (which might reflect, at least in part, the impact of the stimulus payments). There were no apparent shifts in how relationships were recorded between wave 8 and 9. Obviously this is a fairly high-level investigation and other researchers will delve into these issues in much more detail in the coming months and years. The evidence built in this paper suggests that these changes are much more likely to be real changes rather than those introduced by the switch of mode to CAPI and the change to a new fieldwork provider.

Table 16: Mean change in selected variables (responding persons) ¹

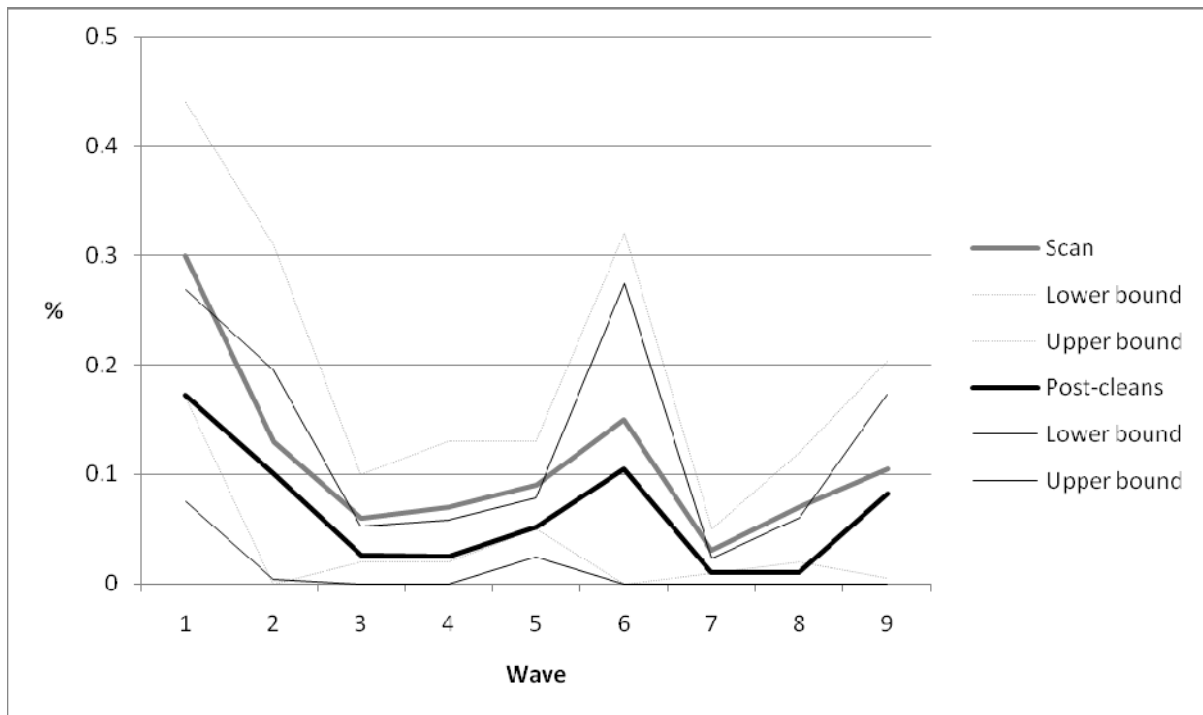
	W1 to W2	W2 to W3	W3 to W4	W4 to W5	W5 to W6	W6 to W7	W7 to W8	W8 to W9
From part time to full time work	16.7%	17.6%	16.8%	18.1%	17.9%	19.3%	19.7%	16.9%
From full-time to part-time work	6.7%	6.8%	6.3%	5.9%	6.4%	7.0%	6.9%	7.5%
From unemployed to employed	44.3%	49.0%	49.7%	54.1%	56.0%	56.7%	49.9%	41.8%
From not in labour force to employed	11.2%	10.5%	11.5%	13.1%	10.9%	11.8%	11.2%	10.1%
From defacto to married	10.8%	9.4%	11.4%	13.0%	10.8%	10.1%	12.2%	11.0%
From never married (and not defacto) to married or defacto	8.7%	6.8%	6.2%	7.1%	8.3%	8.4%	6.7%	7.8%
Increase in wages and salaries	973	905	1,367	1,788	2,230	2,355	2,127	1,536
Increase in total gross income	1,912	1,284	1,973	2,728	3,391	2,728	2,597	3,458

Notes: For the transitions between stats, the denominator is the number of people in the initial state.

Quality of the scanning of the Self-Completion Questionnaire

Every wave, we randomly select 100 Self-Completion Questionnaires for which the scanned images are checked against the data to determine an overall error rate for this questionnaire. This essentially compares the scanning process (with verified numerical fields) to a very careful data entry process. The wave 9 error rate was similar to previous waves at 0.1 per cent per item (see the grey line in Figure 9). Following the usual series of image-to-data comparisons undertaken by the Melbourne Institute, the estimated error rate fell to 0.08 per cent (black line in Figure 9).

Figure 9: Item-level scanning error rate in the Self-Completion Questionnaire



Conclusion

This paper has documented the changes in fieldwork procedures introduced in wave 9 and has considered the implications for the quality of the data. We have had a smooth transition in fieldwork providers and the introduction of CAPI has gone reasonably well. Of particular note, the response rate in wave 9 for previous wave respondents was 96.3 per cent, the highest achieved to date. The increased incentive, continuity of the interviewers, the introduction of CAPI, and the dedication of the new HILDA team at RMR, we believe, have all contributed to this high response rate.

Nevertheless, CAPI provides some challenges for the HILDA Survey. We have noticed an increase in the amount of missing data at monetary question, even though the overall rate of item missingness has remained fairly steady through a counterbalancing reduction in interviewer error. The CAPI script is also much more complex to check than paper questionnaires and the most serious error involved 83 households not being asked some questions that they should have been. There has also been a change in the reporting behaviour at one particular question due to how the CAPI question has been laid out. Where possible, we have put strategies in place to minimise the risk of these problems in future waves.

It should be borne in mind that the analysis presented in this paper is subject to the caveat that we cannot separate real world changes from those associated with the survey specific changes as we did not have a split-sample test. Despite this, we have found little to cause concern in the wave 9 data following the change in mode and fieldwork provider.

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