

HILDA Project Discussion Paper Series

Wave 20 data quality and the impact of questionnaire and fieldwork changes due to the COVID-19 pandemic

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Contents

Introduction	1
Changes to questionnaires	1
Showcards.....	1
Removal of cognitive ability tests	1
Addition of coronavirus module.....	2
Changes to fieldwork.....	2
Fieldwork period	2
Mode.....	3
Incentive structure	3
Interviewers	3
Impact on response rates	4
Individual interview.....	4
Self-Completion Questionnaire	5
Impact on mode	8
Use of mode.....	8
Use of showcards.....	9
Interview situation	10
Interview duration	11
Incentive type	12
Impact on response timing.....	13
Impact on item responses	16
Item non-response	17
Primacy versus recency in list-style questions	24
Straight lining	25
Rounding	25
Length of open-ended responses	26
Conclusions	27
References	28
Appendix	30

List of Tables

Table 1: Re-interview rates by region	4
Table 2: Number and percent of questionnaires by mode	8
Table 3: Percentage of respondents using showcards during their interview	10
Table 4: Interviewer report of respondent situation (%)	10
Table 5: Interviewer report of interview location (%).....	10
Table 6: Average duration of interviews	11
Table 7: Incentive type by wave.....	12
Table 8: Average item non-response (%) by section.....	18
Table 9: Percentage of item non-response for specific variables	22
Table 10: Number of options chosen at multi-item response questions	23
Table 11: Percentage of respondents selecting first option to list-style questions with four or more response options where showcards had been used in waves 18 and 19	24
Table 12: Percentage of respondents providing exactly the same response across all items in multi-item question (with four or more items)	25
Table 13: Percentage of respondents rounding amounts reported for current wages and salaries or Financial Year age pension	26
Table 14: Number of characters recorded in occupation and industry descriptions.....	26

List of Figures

Figure 1: Response rates for individuals associated with previous wave responding households	5
Figure 2: Response rate of PQ respondents to SCQ	6
Figure 3: Response rate of SCQ by time since PQ interview	7
Figure 4: Increase in response rate of SCQ by time since PQ interview, by PQ mode and wave.....	7
Figure 5: Frequency of SCQ mode by age group.....	9
Figure 6: CPQ interview duration by order of CPQ completion by interviewer.....	12
Figure 7: Number of PQ interviews completed by rolling week	13
Figure 8: Cumulative number of PQ interviews in Sydney and Melbourne	14
Figure 9: Cumulative number of PQ interviews in rural New South Wales and rural Victoria	14
Figure 10: Distribution of gap between completion of PQ and SCQ	15
Figure 11: Distribution of gap between completion of PQ and anniversary date of PQ in the last wave	16
Figure 12: Carousel question for A3 in the Self-Completion Questionnaire, after the first item had been answered.....	19
Figure 13: Accordion style question for A9 in the Self-Completion Questionnaire, after the first item had been answered	19
Figure 14: Item non-response rate (proportion) for the wave 20 SCQ, by mode	20
Figure 15: Cumulative percentage of breakoffs when completing the SCQ	21

Introduction

The COVID-19 pandemic and associated restrictions and social distancing requirements greatly impacted the fieldwork for wave 20 of the Household, Income and Labour Dynamics in Australia (HILDA) Survey. Face-to-face interviews were predominantly replaced by telephone interviews and face-to-face interviewer training was replaced by self-paced learning and live webinars.

The shift to telephone interviewing precipitated a range of other changes to the administration of wave 20:

- The cognitive ability tests (included every 4 years) which requires the face-to-face interview setting were dropped and a new coronavirus module was added.
- Showcards were mailed to all households and were also made available online. An alternative interview script was developed for the situations in which the respondent did not have access to the showcards.
- An online Self-Completion Questionnaire (SCQ) was developed in addition to the hardcopy form.
- The incentive structure was revised from \$40 per complete individual interview plus a \$40 household bonus if every eligible household member was interviewed to \$40 per completed individual interview and \$20 for returning the SCQ.

This paper describes the various changes made to the administration of wave 20 and then compares the quality of the data with the previous two waves. The aspects of data quality examined include response rates, response timing, missing data, use of multi-item response options, responses chosen for questions with long response lists, straight lining, rounding, and the length of responses provided at open-ended questions.

Changes to questionnaires

Showcards

With the switch to telephone interviews, the number of questions that relied on showcards was substantially reduced. Table A1 in the Appendix provides a list of the showcards that were removed and the subsequent change to each question. Six showcards were removed from the Household Questionnaire and 51 showcards were removed from the Person Questionnaires (Continuing and New). This left 44 showcards in total (2 for the Household Form, 11 for the Household Questionnaire, and 31 for the two Person Questionnaires).

A showcard booklet was mailed out to each household with the pre-approach material. If respondents did not have access to this physical booklet for their interview, they were instructed how to access the showcards online and, if that was not possible, the interview proceeded without the showcards. Alternative text was developed for the specific questions when interviews were completed without showcards.

The wave 20 questionnaires and showcards are available on the HILDA Survey website (<https://melbourneinstitute.unimelb.edu.au/hilda/for-data-users/questionnaires-and-fieldwork-materials>).

Note that the question text the interviewer reads out during the interview is in bold. Where the script is modified for the situation where there are no showcards, alternative text is provided in square brackets (for example, see question A17a).

Removal of cognitive ability tests

The 4-yearly rotating module included in wave 20 focuses on education, skills and abilities. This usually includes three tests of cognitive ability but, as these are designed to be administered face-to-face, they had to be dropped from wave 20.

Addition of coronavirus module

A new coronavirus module was developed in light of the COVID-19 pandemic to collect information on how the policy responses, designed to contain and suppress the virus, have affected the lives of people living in Australia. The topics covered include:

- COVID-19 infection;
- general impact;
- paid work;
- home life;
- social distancing;
- pro-social behaviour;
- health and medical care;
- finances;
- education;
- digital technology;
- income supplements;
- children's education;
- housing costs;
- resilience; and
- self-reliance.

The development of the coronavirus module is documented at length by Wooden (2020).

Changes to fieldwork

Fieldwork period

The fieldwork for wave 20 was conducted from 4 August 2020 to 7 February 2021. There was a one-week delay in starting fieldwork due to the extra preparations required. While an extended fieldwork (to March or later) was mooted during the planning phase (Wooden, 2020), this was ultimately not needed.

The environment within which the fieldwork was undertaken was extremely different from earlier waves.¹ The fieldwork period overlapped with a number of lockdowns. Extended lockdowns occurred in Melbourne between 2 August and 28 October and in rural Victoria between 2 August and 17 September. During these lockdowns people were only allowed to leave their homes for four reasons: shopping for food and other essentials, going to work, going to medical appointments, and to exercise. Also occurring during the fieldwork period was a three-week lockdown in the very localised area of Sydney's Northern Beaches (19 December to 9 January) and several short lockdowns in Adelaide (5-day lockdown in mid-November), Brisbane (3-day lockdown in early January), and Perth (5-day lockdown at end of January/early February). Even outside of lockdown periods, a number of restrictions were still in place, such as limits on the number of visitors to a household and wearing masks in certain situations. Governments encouraged working from home where possible. They also encouraged certain health behaviours, such as washing hands frequently, and ceasing greeting people with a handshake, hug or kiss, and maintaining a distance of 1.5 metres from others.

¹ Prior to the fieldwork, lockdowns were experienced in multiple locations around Australia from late-March to mid-May as the first wave of COVID-19 cases were identified and quarantined. Travel restrictions were also imposed in other areas.

Mode

All of the interviews completed in August through to mid-October (i.e., the first period of the fieldwork) were conducted exclusively by telephone. Between late-October and February, interviewers could undertake face-to-face interviews if the COVID-19 restrictions in the area permitted and both the interviewer and the respondent were comfortable with this arrangement. Even so, telephone interviews continued to be the predominate mode during this time. Overall in wave 20, 95.7% of the individual interviews were conducted by telephone. This compares to 9.4% and 9.6% of the interviews in waves 18 and 19 respectively being conducted by telephone. Telephone interviews in prior waves were used in the following situations: where the respondent lived outside the range of our interviewer network; where the respondent express a strong desire for a telephone interview; or as a method of last resort.

As for the Self-Completion Questionnaire (SCQ), a link to the online option was included in the primary approach letter sent to respondents two weeks before the interviewer attempted contact with the household. After contact was made with a household, the interviewer could discuss with the respondent how they would like to complete the SCQ (online or paper) if they had not already done so. Alternatively, the interviewer could have this discussion with the respondent at the end of their individual interview. If the respondent chose the online option, an email was sent to their email address and an SMS was sent to their mobile. If the respondent chose the paper option, the paper SCQ was mailed out from the office (if the interview was done by telephone) or handed to the respondent (if the interview was completed face-to-face). Overall, 82.0% of SCQ respondents completed the online version and 18.0% completed the paper version. We plan to continue using the online and paper versions of the SCQ in future waves.

Incentive structure

The participation incentive was restructured for wave 20 to include an SCQ-related component. Telephone interviews in prior waves had low SCQ response rates, in part because the interviewer was not available to pick it up from the respondent at the time of the interview, or when next at the address to interview others in the household or next in the area. Further, previous online tests of the SCQ had resulted in SCQ response rates between 7 and 9 percentage points lower than the portion of the sample only offered a hardcopy SCQ.² These online tests did not incentivise the return of the SCQ.

The incentive for wave 20 was revised from \$40 per completed interview plus a \$40 household bonus if all eligible household members responded to \$40 per completed interview plus \$20 per returned SCQ. We plan to maintain this incentive structure going forward.

Interviewers

Only experienced interviewers who had worked on wave 19 were used for the wave 20 fieldwork. This included 102 face-to-face interviewers who were trained to conduct telephone interviews and 21 interviewers with telephone interviewing experience.

Interviewers undertook a set of self-paced online training exercises and participated in live webinar training sessions. Detailed instructions were provided on conducting telephone interviews and building rapport over the telephone. Practice interviews were conducted and feedback was given.

² See Watson and Wooden (2015) for details of the online SCQ test undertaken in 2007. A subsequent test was undertaken in 2017. Note that these findings from the HILDA Survey are consistent with other experiments that found, in general, online surveys have lower response rates than mail survey (see Manfreda et al. (2008) for a meta analysis).

Impact on response rates

Individual interview

In changing a survey from face-to-face interviewing to telephone interviewing, we would normally expect a drop in response rates (Holbrook, Green and Krosnick, 2003). However, 2020 was far from a normal year. There is also an issue of non-coverage of segments of the population that do not have or have not provided a contact number which may lead to an under-representation of the most socially vulnerable segments of the population. In our case, our fieldwork company Roy Morgan had at least one phone number for 99.4% of the households issued to wave 20. The remaining portion of the sample could only be interviewed once face-to-face interviewing was reintroduced in late October 2020 to February 2021.

Fortunately, this change in interview mode did not greatly harm our primary response rates. In wave 20, the response rate for previous wave respondents was 95.6% in the main sample and 94.1% in the top-up sample.³ This is a decrease in the response rates achieved in wave 19 (of 1.3 and 2.1 percentage points respectively) but given the circumstances this is an excellent achievement.

Table 1 shows some differences in re-interview rates by region. The wave 20 response rates were close to those achieved in the previous two waves in Melbourne, rural Victoria and rural Queensland. The remaining rural areas were impacted the most with a drop of at least 2 percentage points in the re-interview rates. Many of these differences are eliminated once a range of respondent characteristics are controlled for (see Table A2 in the Appendix for details of the logistic regression model predicting re-interview). People less likely to be re-interviewed are those who are young or old, did not complete the SCQ last wave, have more adults in their household and, for waves 18 and 19, completed the previous wave interview by telephone.

Interestingly, in wave 20, those who completed the previous wave interview by telephone were actually more likely to be interviewed, perhaps because they were accustomed to this type of approach. Also, in wave 20 and in difference to earlier waves, people in defacto relationships and those with long-term health conditions were less likely to participate and people living in Perth were more likely to participate.

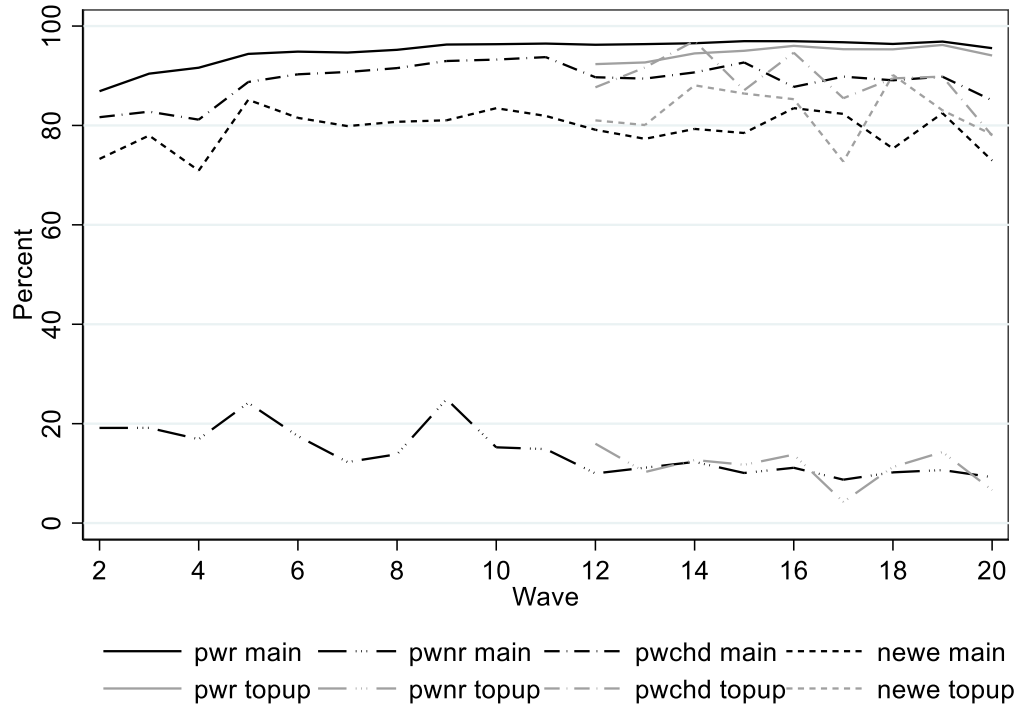
Table 1: Re-interview rates by region

	Wave 18	Wave 19	Wave 20	Wave 20 minus average w18&19
Sydney	95.5	96.4	94.6	-1.3
Melbourne	97.1	97.5	96.9	-0.3
Brisbane	95.9	97.0	95.3	-1.1
Other major capitals (Adelaide, Perth, Canberra)	96.7	96.0	95.4	-0.9
Rural NSW	96.2	98.1	94.8	-2.3
Rural Vic	96.0	94.9	95.1	-0.4
Rural Qld	95.1	96.1	95.4	-0.2
Other	96.5	97.5	92.9	-4.1

³ This is calculated as the percentage of respondents in wave 19 that were re-interviewed in wave 20, excluding those that have moved overseas or died.

Turning now to the response rates for all individuals associated with households responding in the previous wave which are given in Figure 1. We report these response rates rather than the response rates for the full sample as these are the most comparable over time. The response rates for each type of respondent were lower in wave 20 than in wave 19. In particular, new entrants to the household were harder to interview by telephone, with response rates 9.6 and 4.9 percentage points lower than in wave 19 in the main and top-up samples respectively. Also, the wave 20 response rate for children turning 15 in the main and top-up sample was lower than in wave 19 by 4.8 and 11.8 percentage points respectively.

Figure 1: Response rates for individuals associated with previous wave responding households



Note: pwr=previous wave respondent, pwnr=previous wave non-respondent, pwchd=previous wave child, neue=new entrant.

Self-Completion Questionnaire

Self-Completion Questionnaires were completed by 91.9% of the individuals interviewed in wave 20. This compares well to 92.1% in wave 19 and 91.1% in wave 18. Figure 2 shows the overall SCQ response rate, and the response rates by the mode of the individual interview. The addition of the SCQ incentive and the mix of respondents interviewed by telephone in wave 20 compared to wave 19 resulted in vastly better response rates for the telephone sample. Recall that face-to-face interviews were only possible in the last two periods of fieldwork in wave 20 (from late October 2020 to early February 2021), so it is pleasing to see the SCQ response rate for this groups is 84.7%.

For the most part, the characteristics associated with response to the SCQ in wave 20 were similar to those observed in waves 18 and 19 (coefficients for a logistic regression model predicting response to the SCQ for waves 18, 19 and 20 are provided in Table A3 in the Appendix). Non-respondents to the SCQ are more likely to be male, born overseas, not highly educated, employed full-time, or living with a long-term health condition. In terms of their household characteristics, SCQ non-respondents are more likely to be renting, living with children under 15, living in Sydney or Melbourne, without internet access at home, or part of a partially responding household. In wave 20, there was no response differential for the SCQ in terms of age, but in earlier waves the young were less likely to complete the SCQ. Also in difference to earlier waves, we find that in wave 20, those who were defacto, separated, divorced or widowed and the unemployed were less likely to complete the SCQ.

Figure 2: Response rate of PQ respondents to SCQ

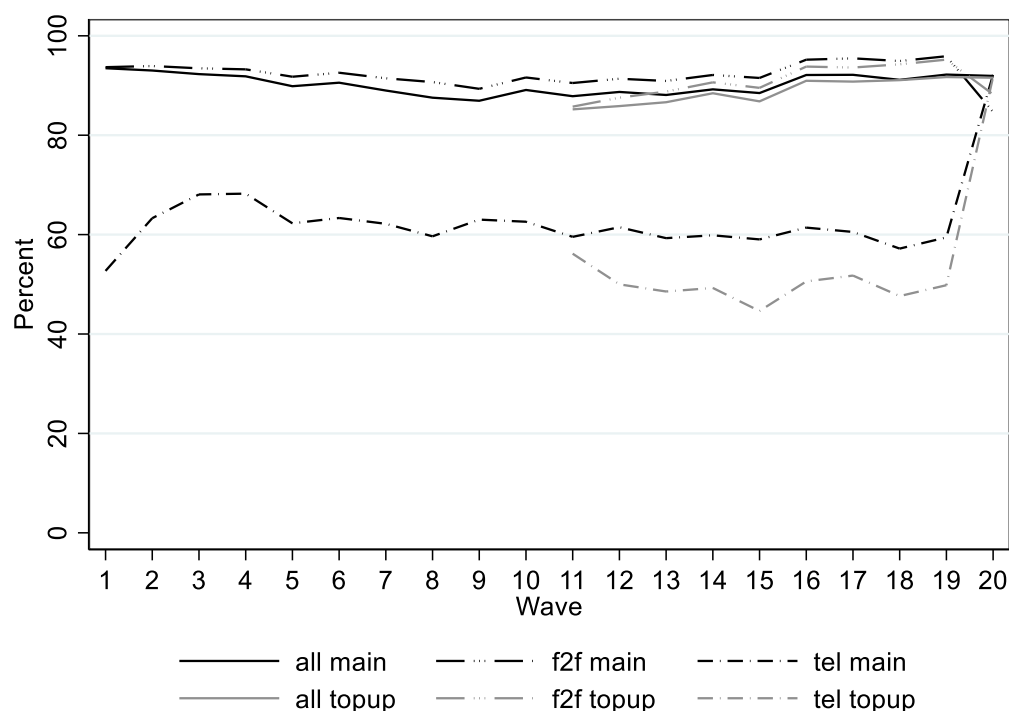


Figure 3 shows the percentage of SCQs completed by the number of days since the individual interview (i.e., the PQ) was completed. The percentage of PQ respondents who had completed their SCQ *before* the day of their PQ interview in wave 20 was similar to that in waves 18 and 19, but the percentage of respondents completing the SCQ *on* the day of their PQ interview in wave 20 was about half that in the earlier two waves (22.5% in wave 20 compared to 44.1% in wave 18 and 43.9% in wave 19).

The SCQ follow-up protocol was important in increasing the overall SCQ response rate. Figure 4 shows the daily increase in the SCQ response rate each day following the PQ interview by PQ mode and wave. The red (dark) vertical lines relate to the SCQ reminders sent by email and text message to the respondents to complete the online SCQ on days 3, 10 and 17. The light grey vertical lines relate to the reminder calls made for the hardcopy SCQ sent from the office on days 9 and 21.⁴ The day 9 call is primarily to see that the respondent had received the SCQ package in the mail and the day 21 call is to remind the respondent to return the SCQ by mail if they had not already done so. Interviewers who conducted face-to-face interviews would have sought to pick up the SCQ when they were in the area so there was no official reminder protocol in these circumstances other than reminders to the interviewer from the office at 21 days to return the SCQs to the office. As can be seen in Figure 4, there are clear increases in the SCQ response rates in wave 20 on the day of the reminder and a few days afterwards for those respondents who opted to complete the SCQ online. There is no apparent effect of the 9 and 21 day calls on the hardcopy SCQ response rate in any of the three waves.

⁴ Due to longer postal times to non-metropolitan regions and to Western Australia, the follow up calls to households in these areas are made on day 11 rather than day 9.

Figure 3: Response rate of SCQ by time since PQ interview

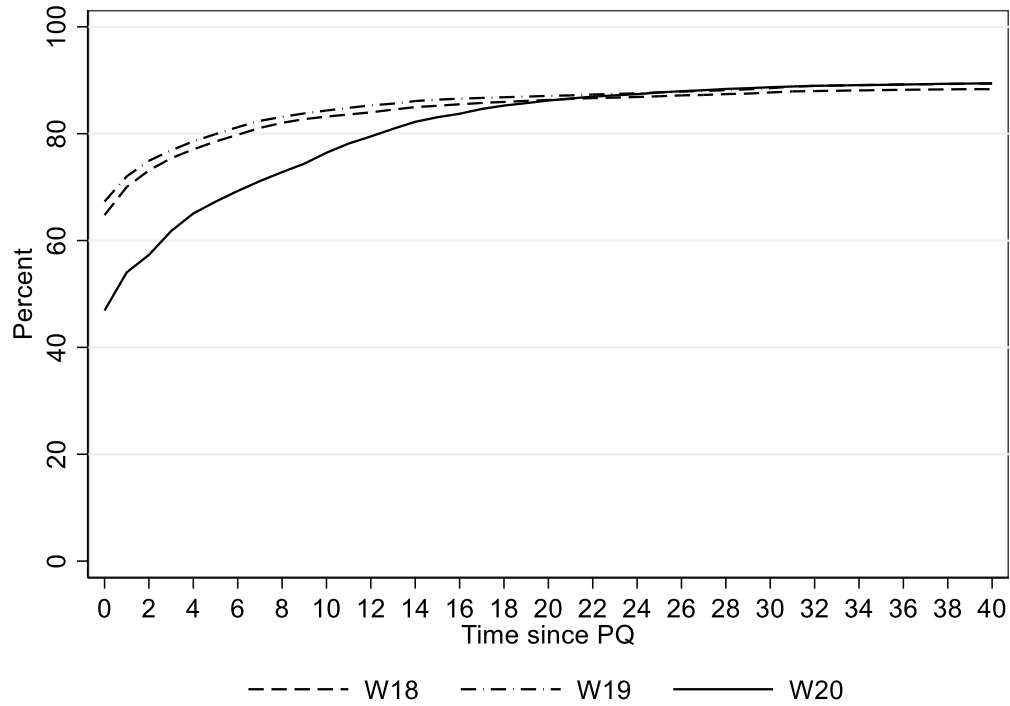
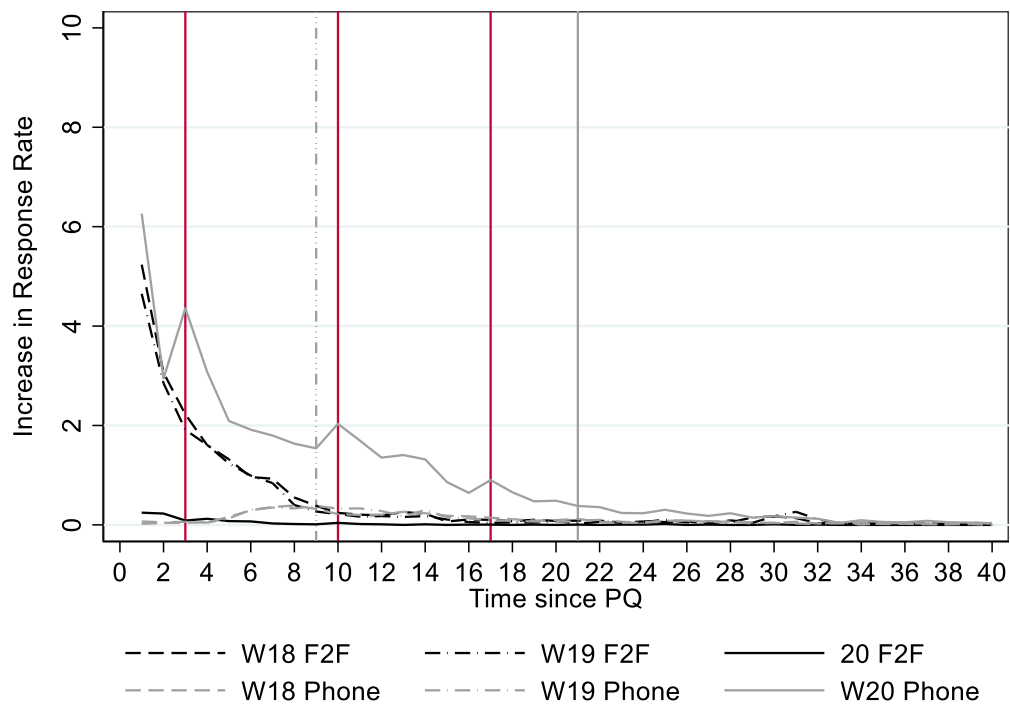


Figure 4: Increase in response rate of SCQ by time since PQ interview, by PQ mode and wave



Note: The red vertical lines represent the day 3, 10 and 17 reminders to those agreeing to complete the SCQ online. The dashed grey at day 9 indicates the reminder call made to the respondent to check they received the SCQ parcel in the post. The solid grey vertical line at day 21 is for when the respondent/interviewer is called and reminded to return the SCQ to the office.

Impact on mode

Use of mode

The number and percent of each survey instrument completed by different modes in waves 18 to 20 is given in Table 2. This shows the switch from predominantly face-to-face interviewing in waves 18 and 19 to predominantly telephone interviewing in wave 20 for the various interview components. It also shows the great uptake of the online SCQ when both hardcopy and online methods were offered to respondents in wave 20.

Table 2: Number and percent of questionnaires by mode

	Wave 18		Wave 19		Wave 20	
	N	%	N	%	N	%
Household Form						
Face-to-Face	8,575	89.0	8,584	88.8	542	5.7
Telephone	1,063	11.0	1,080	11.2	9,013	94.3
Household Questionnaire ¹						
Face-to-Face	8,621	89.5	8,622	89.2	567	5.9
Telephone	1,013	10.5	1,039	10.8	8,987	94.1
Person Questionnaire						
Face-to-Face	15,802	90.6	15,782	90.4	730	4.3
Telephone	1,632	9.4	1,680	9.6	16,340	95.7
Self-Completion Questionnaire						
Hardcopy	15,887	100.0	16,082	100.0	2,829	18.0
Online (Total)	-	-	-	-	12,848	82.0
By mobile ²	-	-	-	-	4,839	30.9
By PC (desktop/laptop) ²	-	-	-	-	8,009	51.1

Notes: 1. There are a small number of households each wave that completed a Household Form but did not complete the Household Questionnaire (4 in wave 18, 3 in wave 19 and 4 in wave 20).

2. The default classification of tablets places android tablets in the 'mobile' category and ipads in the 'PC' category.

To understand the characteristics of the respondents associated with completing the PQ by telephone (versus a face-to-face interview), a logistic regression model was fitted to the data for waves 18, 19 and 20. The coefficients for this model are provided in Table A4 in the Appendix.

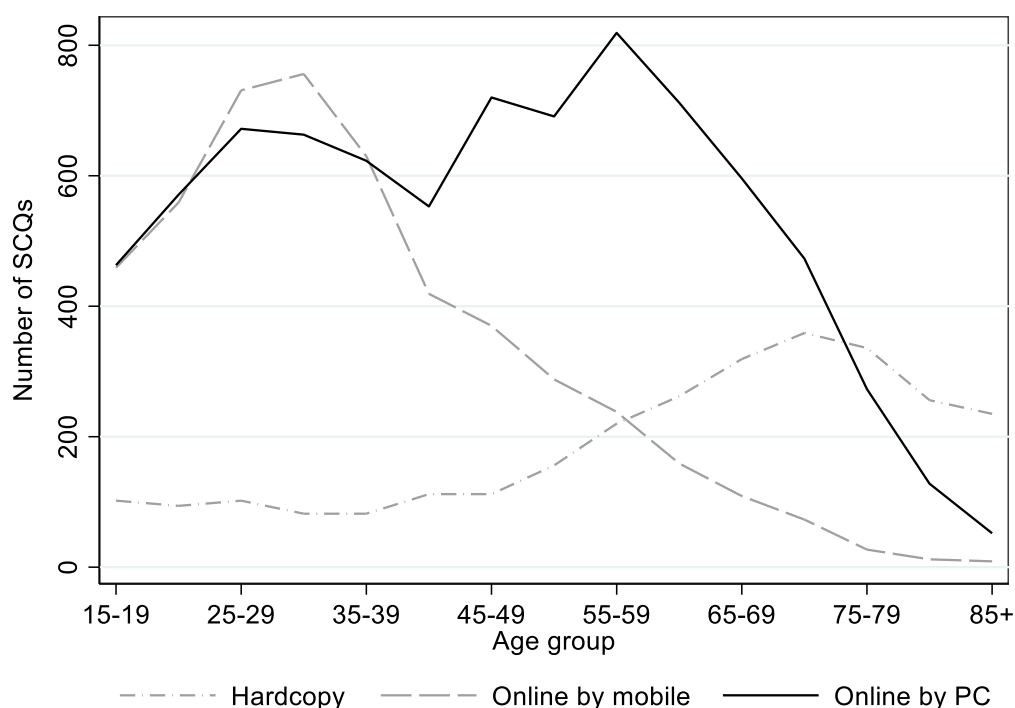
In waves 18 and 19, respondents were more likely to complete the interview by telephone if they were in their 20s and 30s, living in a flat, more highly educated, working long hours, living in regional or rural areas, living at a new address since the last wave, or a member of a partially responding household. They were less likely to complete the interview by telephone if they were born in a non-English speaking country, working part-time, or living in large households.

The majority of these factors continued to be associated with telephone interviews in wave 20 even though telephone became the primary mode of interview. There were some changes. Respondents were no more or less likely to be interviewed by telephone in wave 20 if they were living in a flat, working long hours or part-time hours, living in large households, living at a new address since the last wave, or a member of a partially responding household. Further, they were less likely to be interviewed by telephone if they rented, had a serious long-term health condition or lived in Perth but were more likely to be interviewed by telephone if they lived in Melbourne.

Turning now to the characteristics of people completing the SCQ online versus hardcopy, Figure 5 shows the number of SCQs completed via the different methods by 5-year age groups. Respondents completing the hardcopy SCQ were typically older, respondents completing the SCQs on their mobiles were typically younger (15-35 year olds) and respondents in their 40s, 50s or 60s were more likely to complete their SCQ on their PC (desktop, laptop or tablet).

To further understand the profile of SCQ respondents who completed their SCQ online rather than hardcopy, a logistic regression model was fitted to wave 20 data. The coefficients for this model are provided in Table A5 in the Appendix. Respondents more likely to complete the SCQ online were younger (as previously mentioned), married, highly educated, employed, or living at a new address since the last wave. They were less likely to be born in a non-English speaking country, living with a long-term health condition, or complete their interview face-to-face. In terms of their household characteristics, online SCQ respondents were more likely to be living in a flat, have access to the internet at home and rate their devices to access the internet as good or excellent, but they were less likely to be renting, or living in Melbourne or rural areas.

Figure 5: Frequency of SCQ mode by age group



Use of showcards

Most respondents (62%) used the showcard booklet sent to them by mail. Some (7%) used the online showcards and 30% of respondents did not use showcards. Table 3 shows the use of showcards for the Household Questionnaire and the Person Questionnaire. As different people can complete the HQ at different times depending on their knowledge of childcare (Section Q) and finances (Section R), there can be some small differences for who uses showcards between these sections.

To examine the respondent characteristics associated with using showcards, a logistic regression model was fitted to the PQ respondents (see Table A6 in the Appendix). Respondents not using showcards were more likely to be male, born in a non-English speaking country, not married, unemployed or working long hours, with lower education, or living at a new address since the last wave. In terms of their household characteristics, respondents not using showcards were more likely to be renting, living in larger households, living in Brisbane or rural/regional areas, or part of a partially responding household.

Table 3: Percentage of respondents using showcards during their interview

	Paper showcards	Online showcards	No showcards
Household Questionnaire			
Section Q	62.2	7.1	30.6
Section R	62.4	7.4	30.2
Person Questionnaire	62.6	7.2	30.2

Interview situation

After the individual interview, interviewers answer some questions about the interview situation (see Table 4). The first question asks if others were present during the interview. In wave 20, interviewers reported there was another person present during the interview for 22.1% of the interviews (this excludes 6.2% of cases where the interviewer reports they did not know). And given the high use of telephone interviews in wave 20, mostly these other people would have just heard the respondent's side of the conversation. In waves 18 and 19, other people were present during the interview a third of the time and given the high use of face-to-face interviewing they were typically hearing both sides of the conversation between the respondent and the interviewer. The rate of "don't know" responses to whether others were present during the interview in these earlier waves was very small (0.3%).

In terms of the other characteristics of the interview situation, the wave 20 situations were very similar to waves 18 and 19.

Table 4: Interviewer report of respondent situation (%)

	Wave 18	Wave 19	Wave 20
Others present during interview	35.1	32.8	22.1
Whether others influenced interview a fair amount or a great deal (where others were present during the interview)	4.0	3.7	4.5
Excellent or good understanding	95.7	96.4	95.8
Excellent or good cooperation	98.4	98.9	98.9
Not suspicious	98.5	99.0	98.5
Referred to documents	39.5	36.8	39.7

As for where the interview was conducted, interviewers reported that, as in earlier waves, the vast majority of interviews in wave 20 were conducted while the respondent was at home (see Table 5). There was only a very small increase in the percentage of interviews conducted while the respondent was at their workplace or elsewhere.

Table 5: Interviewer report of interview location (%)

	Wave 18	Wave 19	Wave 20
At the respondent's home	95.6	95.4	94.9
At the respondent's workplace	0.8	0.8	1.1
Elsewhere	3.5	3.8	4.0

Interview duration

The average interview lengths for each instrument (excluding the Household Form) for waves 18 to 20 are provided in Table 6. Note that in wave 18 when the wealth module was included, the extra duration for the HQ is compensated by a shorter PQ duration.

For the SCQs completed online, the duration of the instrument can be timed. However, it is somewhat problematic to know when breaks are taken and the questionnaire is resumed. Only section lengths are timed and SCQs are excluded from the average when any section length 60 minutes or longer or the overall SCQ duration is 90 minutes or longer. This is still likely to lead to an overstatement of the duration of the SCQ.

Table 6: Average duration of interviews

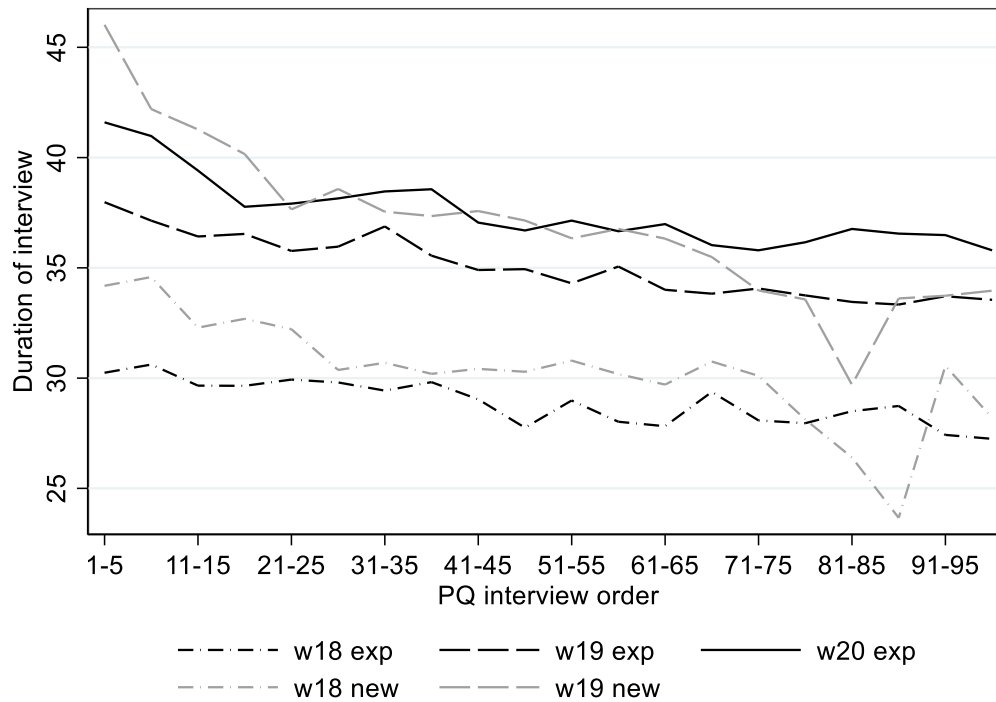
	Wave 18 (wealth)	Wave 19	Wave 20
Household Questionnaire (HQ)	16.9	6.3	6.9
Continuing Person Questionnaire (CPQ)	28.5	35.1	35.9
New Person Questionnaire (NPQ)	39.0	43.0	45.8
Self-Completion Questionnaire (SCQ) – Online	-	-	30.2

Note: Excludes HQs and PQs where any section duration is 60 minutes or more. Excludes SCQ durations of 90 minutes or more or where any section duration is 60 minutes or more.

Figure 6 shows the average duration of PQ interviews by the order the interviewers completed them for waves 18 to 20. This is separated by type of interviewer: new (have never worked on the HILDA Survey before) and experienced. No new interviewers were used in wave 20. A learning effect is evident for the wave 20 interviewers due to the shift from face-to-face interviewing to telephone interviewing. The average duration of the initial five interviews for each interviewer was 41.6 minutes and this dropped by almost 4 minutes after 20 interviews.⁵ It takes a further 80 interviews for the average interview length to drop another 2 minutes. In waves 18 and 19 the drop in interview duration after 20 interviews is 1 to 2 minutes per interview for experienced interviewers and the drop in interview duration after a further 80 interviews is around 2 minutes. New interviewers can take up to 30 interviews to settle into a rhythm and then can reduce the average interview duration by another 2 to 3 minutes during later interviews.

⁵ This drop is also apparent when restricting PQs to interviewers who undertake 100 interviews for the wave.

Figure 6: CPQ interview duration by order of CPQ completion by interviewer



Incentive type

The incentive offered to respondents in wave 20 not only changed structure (to remove the household bonus and add an individual SCQ incentive) but also change in the delivery method with most of the interviews being completed by telephone. Table 7 shows the type of incentive used in waves 18 to 20. Cash was the primary method used in waves 18 and 19. This changed to EFTPOS cards and E-gift cards in wave 20. Cash incentives were only possible in wave 20 when the interview was conducted face-to-face later in the fieldwork period. Note that the method chosen for the PQ was somewhat different from that chosen for the SCQ in wave 20, likely due to the ordering of the possible options (EFTPOS cards were listed first in the PQ and E-gift cards were listed first in the online SCQ).

Table 7: Incentive type by wave

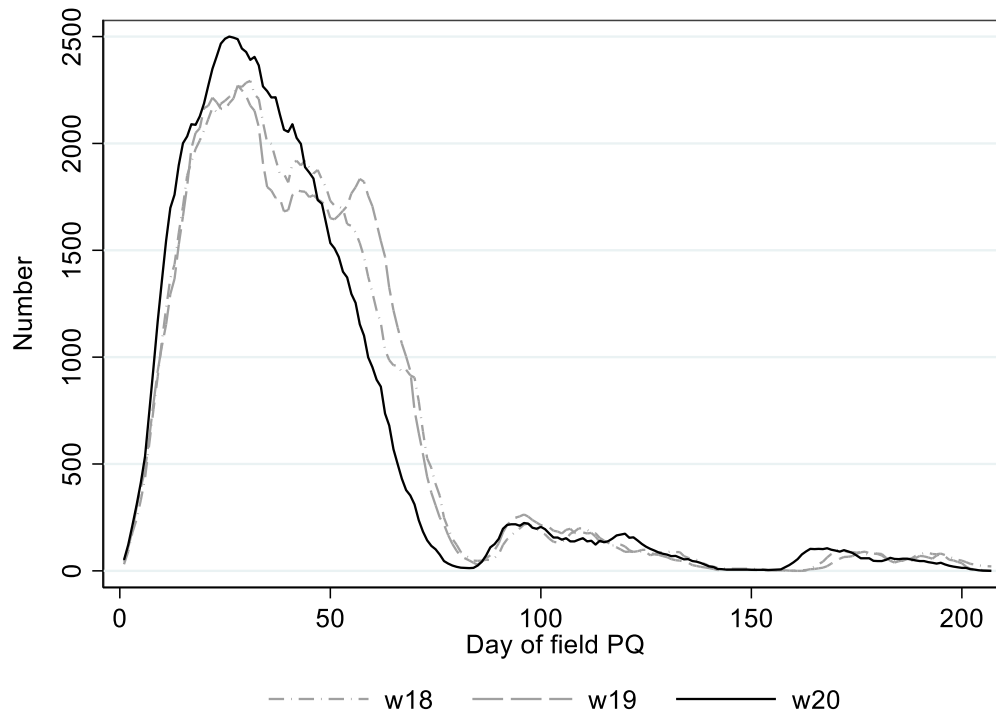
	Wave 18 PQ	Wave 19 PQ	Wave 20 PQ	Wave 20 SCQ
Cash	90.8	90.8	4.5	3.0
Cheque	7.9	6.3	1.1	0.4
EFTPOS card	-	-	52.6	45.3
Physical gift card	1.2	1.7	-	-
E-gift card	-	1.0	39.1	46.9
Charitable donation	0.1	0.1	2.7	4.1
Do not wish to receive gift	-	-	-	0.4

Note: Only the SCQ incentive question in wave 20 allowed for the option 'Do not wish to receive gift'. Where the respondent did not wish to receive the gift following the PQ in waves 18 to 20, they were encouraged to donate it to charity. Also, the wave 20 SCQ figures exclude 155 incomplete SCQs.

Impact on response timing

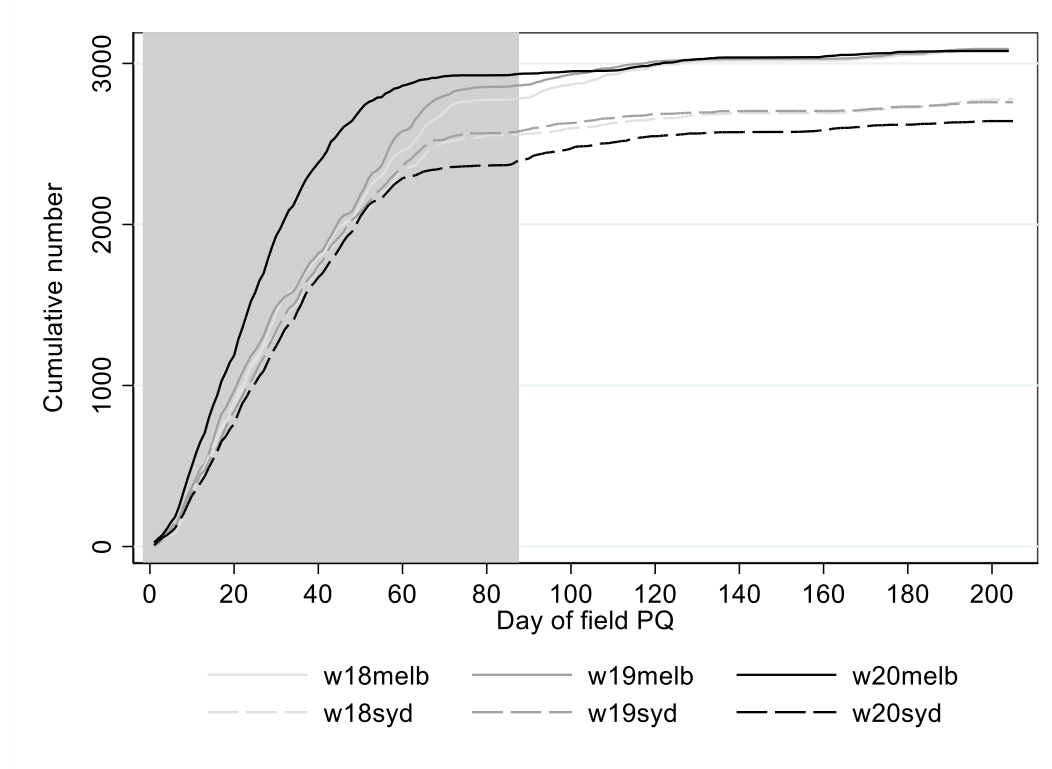
Compared to waves 18 and 19, the PQ interviews were completed slightly earlier in the fieldwork period in wave 20. This is because the interviewers were able to progress through their allocated sample quicker as they did not have to factor in travel time to get to their areas in person. Figure 7 shows the number of PQs completed in a rolling week throughout the fieldwork period. For example, the number of interviews completed in a rolling week on day 50 is the number of interviews completed on days 54 through to 50.

Figure 7: Number of PQ interviews completed by rolling week



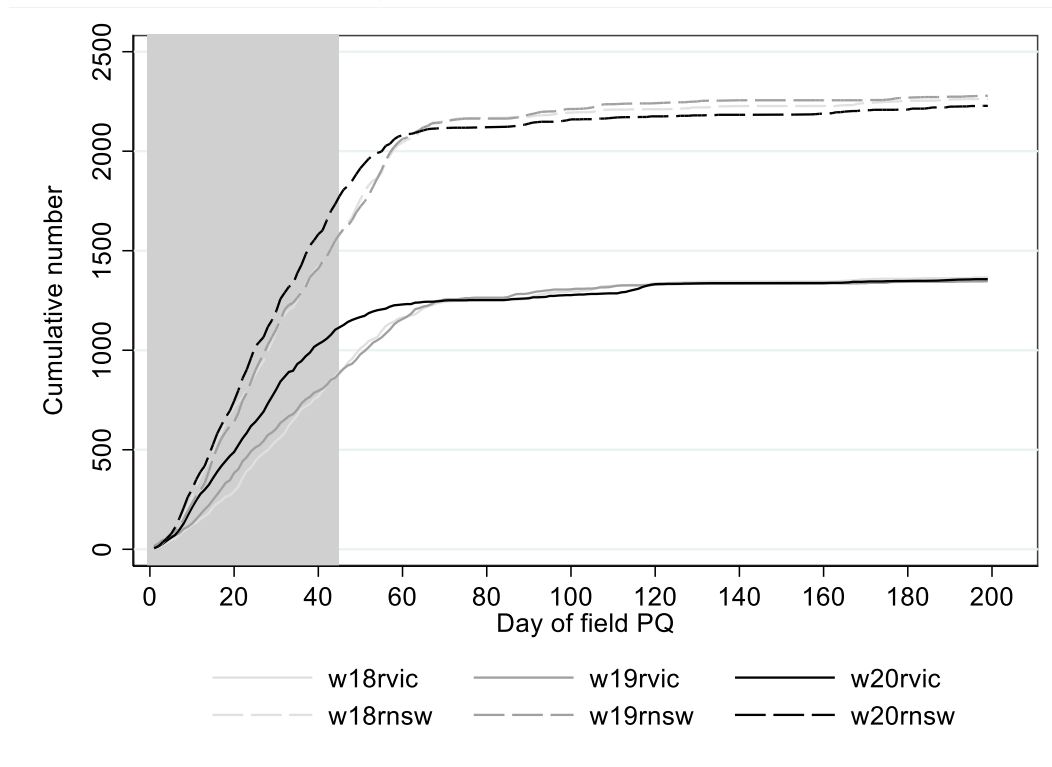
The next two graphs show differences in the completion of fieldwork by selected geographical areas. A different way of looking at the work interviewers complete is used here and it cumulates the number of interviews completed by each day of field. Figure 8 and Figure 9 also show the lockdown periods in Melbourne and rural Victoria respectively (shaded grey). In Melbourne, the interviewers progressed through the interviews in wave 20 much quicker than in waves 18 and 19, perhaps due to the greater availability of respondents during lockdown. This also occurred in rural Victoria during their lockdown period and, to a lesser extent, in rural NSW, suggesting the faster pace of accumulated interviews in rural Victoria was due to both people being at home more during lockdown and interviewers not having to space out interviews to allow for travel time. In contrast, the number of interviews completed in Sydney in wave 20 keep pace with the amount conducted in waves 18 and 19 until around day 60 (beginning of October) and then tapered off. This is in contrast to the previous two waves where the interviews continued to accumulate between day 60 and 85 (corresponding to the end of the first fieldwork period). This is due to an increase in refusals in the initial period in Sydney, more so than most other areas, in wave 20.

Figure 8: Cumulative number of PQ interviews in Sydney and Melbourne



Note: Lockdown in Melbourne from 2 August 2020 (fieldwork started 4 August) to 28 October 2020 (day 76 of fieldwork) shaded in grey.

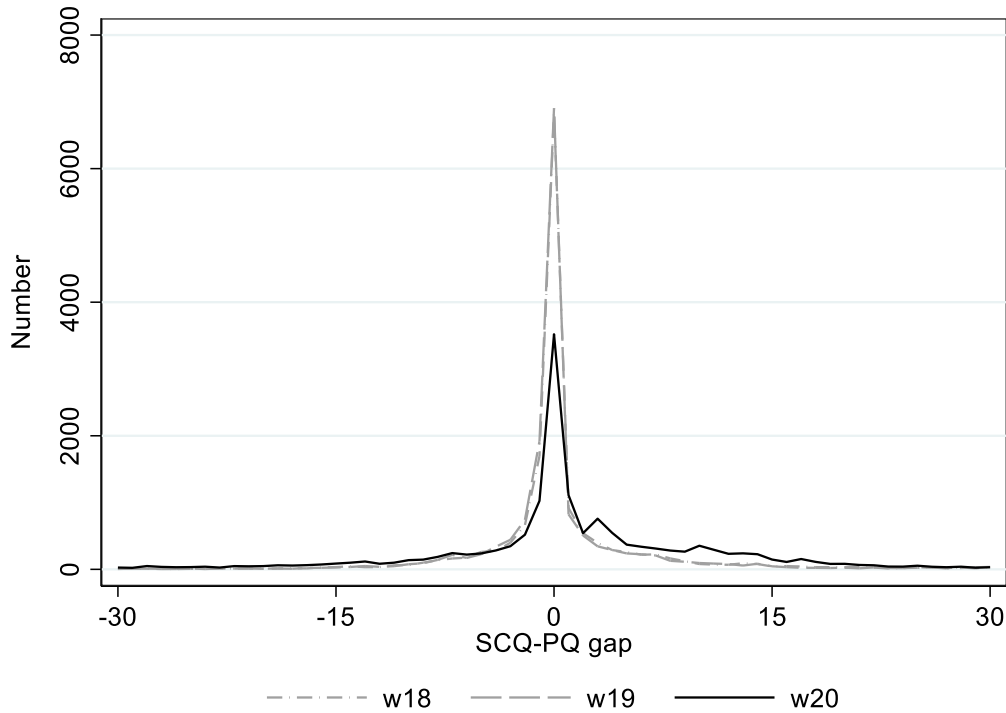
Figure 9: Cumulative number of PQ interviews in rural New South Wales and rural Victoria



Note: Lockdown in rural Victoria from 2 August 2020 (fieldwork started 4 August) to 17 September 2020 (day 45 of fieldwork) shaded in grey.

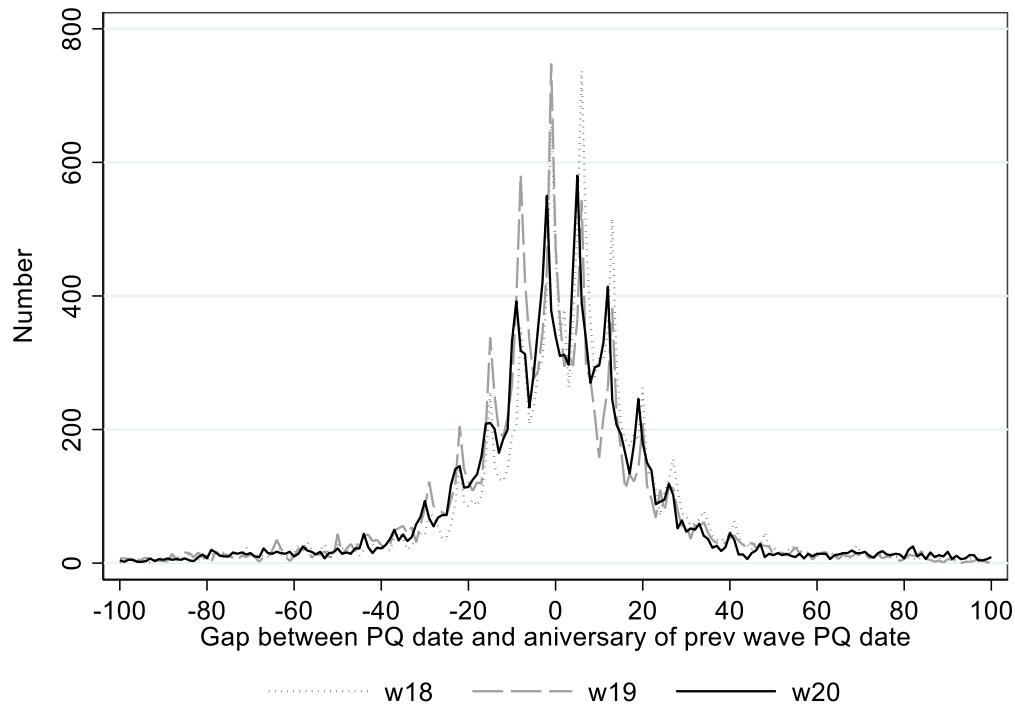
Changes in the PQ and SCQ mode of delivery in wave 20 has modified the distribution of the gap between the PQ and SCQ. As already mentioned in the earlier section on the SCQ response rate, a similar proportion of respondents completed the SCQ before their PQ interview but the proportion completing both on the same day reduced by half. Figure 10 shows the distribution of the gap between the PQ and SCQ within 30 days of the PQ. More SCQs were completed within two weeks after the PQ in wave 20 with peaks relating to the days the SCQ reminders were sent to the respondents by text message and email where they had indicated they would complete the SCQ online.

Figure 10: Distribution of gap between completion of PQ and SCQ



Another goal we aim to achieve is to interview as many respondents around the anniversary date of their previous wave interview. This is done by issuing workloads to interviewers at a similar time each year. Figure 11 shows the distribution of the difference between the PQ interview date and the one-year anniversary of their previous wave interview. Some differences occur simply because the interviewer training occurs a day or two later or earlier each year. This causes the spikes every seven days in all three waves. In wave 20, the interviewer training started a week later than usual due to the large number of changes made to the interview process for wave 20. Even so, when this is combined with the earlier completion of PQs in wave 20 as shown earlier in Figure 7, the proportion of interviews completed within 30 days of the anniversary of the previous waves interview was 82.4%, which compares well with 82.5% in wave 19 and 81.8% in wave 18.

Figure 11: Distribution of gap between completion of PQ and anniversary date of PQ in the last wave



Impact on item responses

The survey mode can result in differences in responses if it affects how the respondent arrives at an answer. The quality of the response is a result of how well the respondent understands the question, retrieves relevant information, integrates that information to form an overall judgement, and then formulates a response (Tourangeau, Rips, and Rasinski 2000, p.7). How well a respondent performs this task depends on their level of effort to obtain the relevant information and their willingness to disclose that information).

In a face-to-face interview, the interviewer can respond to both visual and aural cues from the respondent to allow more time for the respondent to formulate a response, to repeat the question or provide additional information or clarifying statements (as may be provided with optional question text). The interviewer can slow down or speed up the pace of the interview based on their perception of the respondent's level of comfort with the interview. The respondent is typically fully engaged in the face-to-face interview process as they are sitting down with the interviewer and are not engaged with other tasks at the same time. The interviewer can observe interruptions from others and react accordingly. Showcards can also be provided to the respondent to help them select an appropriate response for certain questions.

In a telephone interview, the interviewer can only respond to aural cues from the respondent and there may be a temptation for the interviewer or the respondent to fill in any awkward silences. It is harder for the interviewer to pace the interview exactly right for the respondent in a telephone interview compared to a face-to-face interview. This can result in shorter telephone interviews compared to equivalently scripted face-to-face interviews, as was found by Jäckle and colleagues (2006). Telephone respondents may also be multitasking during the interview or they may be in a public place which may affect their ability to concentrate on the interview or, in the latter case, their willingness to disclose answers. In our situation in wave 20, the vast majority of telephone interviews were conducted while the respondent was at home, as was the case for previous waves (refer to Table 5). We were also able to continue to use showcards in the telephone interviews in wave 20 for nearly 69% of the interviews.

Face-to-face surveys tend to have slightly less overall item non-response (de Leeuw 1992) and slightly longer responses to open ended questions than telephone surveys (de Leeuw 1992, Jäckle et al. 2006) but do

not tend to differ on socially desirable responses (de Leeuw 1992).⁶ Some studies have also found more straight lining (also known as non-differentiation) on battery questions in telephone surveys compared to face-to-face surveys where the same response option is chosen across multiple items in a question set (Green et al. 2001, Holbrook et al. 2003, Jäckle et al. 2006).

For forms that are self-administered, such as our Self-Completion Questionnaire, there may also be some differences by mode. The main differences are that an online questionnaire routes the respondent through the questionnaire, reducing skip errors, and avoids the need for the respondent to mail back (or have an interviewer pick up) a hardcopy questionnaire. In an online questionnaire, the questions are typically displayed one at a time whereas with a hardcopy questionnaire the respondent can see the overall size of the questionnaire and all questions on each two-page opening of the questionnaire booklet. Mode differences may also occur if the way the questionnaire is laid out on the screen is different to how it is displayed on the hardcopy questionnaire. For example, the hardcopy questionnaire displays a multi-item question in a matrix form (e.g. SCQ questions A3, A9) but the online version of the questionnaire may use a different style (such as an accordion style or carousel style as discussed in detail later).

Online (web) surveys typically have lower item non-response than surveys with hardcopy questionnaires (Kwak and Radler 2002; Shin et al. 2012). Open ended responses tend to be longer and there are fewer skip errors in web surveys compared to mail surveys (Fricker and Schonlau 2012). Straight lining behaviour has been found to be similar between online and mail surveys (Kim et al. 2019). In terms of whether the survey is completed on a mobile phone versus a PC, mobile phone respondents tend to have higher levels of item non-response (Keusch and Yan, 2016; Lugtig and Toepoel, 2015; Struminskaya et al., 2015), more straight lining responses patterns (Struminskaya et al., 2015), longer interview durations (Tourangeau et al. 2018, Mavletova 2013, Struminskaya et al., 2015), and are more likely to breakoff during the interview (Mavletova 2013). Respondents using a smaller mobile phone are also more likely to adopt straight lining behaviours and breakoff than those using a larger mobile phone or tablet (Wenz 2017).

In the following sections, various aspects of data quality are considered for waves 18 to 20. These are item non-response, number of items chosen at questions with multi-item responses, proportion of the first response option chosen at questions with a long list of responses, straight lining (choosing the same response option in multi-item questions), rounding, and the length of open-ended questions.

Item non-response

The average item non-response rate for each section of the survey instruments is provided in Table 8. It is calculated from the variables common to all three waves. The item non-response rate for wave 20 is very similar to waves 18 and 19 in the interview components (HF, HQ and PQ). In the SCQ, the item non-response rate in wave 20 is lower than that seen in waves 18 and 19 for most sections (Sections B, D and E).

When the SCQ is completed online (in wave 20), the respondent is moved to the next relevant question and appropriate skips are followed. It is still possible for the respondent to not answer a question, but a warning message is displayed on the screen to indicate a question has not been answered and asks the respondent to click on the forward button again if they meant to skip the question. In comparison, a respondent using the hardcopy SCQ can skip answering some questions, miss questions placed in the right-hand column on the page, or skip two entire pages of the SCQ if they turn over two pages rather than one. The respondent can also look ahead and see what is involved with a series of question and decide not to answer them.

⁶ While some studies have found some small differences in social desirable responses between modes, it has generally not been in the expected direction (Green et al. 2001, Holbrook et al. 2003, Jäckle et al. 2006). They have found that telephone respondents are slightly more likely to give socially desirable responses even though there is a greater social distance between the respondent and the interviewer than in face-to-face interviews. Nevertheless, the type of questions where an effect has been found would typically be placed in our self-completion questionnaire (such as attitudes, beliefs, risky behaviours, religion) or not asked (e.g., voting behaviour).

Table 8: Average item non-response (%) by section

	Wave 18	Wave 19	Wave 20
Household Form	0.18	0.18	0.18
Household Questionnaire			
Section Q: Childcare	0.22	0.24	0.23
Section R: Housing	1.04	0.98	1.01
Person Questionnaire			
Section AA: Country of birth, migration, language (NPQ only)	0.09	0.24	0.36
Section BB: Family background (NPQ only)	3.76	4.34	4.56
Section A: Education	0.05	0.06	0.05
Section B: Employment status	0.01	0.02	0.03
Section C: Employment	0.30	0.30	0.37
Section D: Not Employed	0.80	0.78	0.92
Section E: Calendar and job training	0.02	0.02	0.02
Section F: Income	0.91	0.94	1.16
Section G: Family formation	0.49	0.61	0.49
Section H: Relationships	0.29	0.33	0.22
Section K: Health, caring, mobility	0.14	0.15	0.14
Section T: Tracking	0.03	0.03	0.04
Self-Completion Questionnaire			
Section A: Health and wellbeing (SF36)	1.63	0.87	1.30
Section B: Lifestyle and living situation	0.92	0.89	0.75
Section C: Finances	3.43	1.92	2.14
Section D: Attitudes towards job	4.32	4.33	3.42
Section E: Attitudes towards parenting	2.20	2.26	1.91

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 18, 19, and 20. The item non-response rate is calculated from the General Release, with the exception of Section B where it is calculated from the Restricted Release. The average is calculated across the section rates of all individuals.

Graphs of the item non-response for the common questions in each section of the SCQ are provided in the Appendix (Figure A1 to Figure A5). Two questions styles are used for multi-item questions which have a common stem to introduce the topic, a common response scale, and a set of items that ask about different aspects (e.g., A3 asks how the respondent’s health limits their ability with certain). The first question style used is a carousel question (as shown in Figure 12) which requires the respondent to answer the first item in the question and click on the forward arrow in the blue circle on the right. Once this is done, the next item in the question scrolls in from the right and the first grey dot in the series of grey dots under the item turns blue to indicate the respondent has answered the first item. Figure 12 shows what the screen looks like at this point. If the respondent does not answer an item and simply clicks the forward arrow they do not receive a warning message that they have skipped the item other than the grey dot under the question remains grey. When the respondent gets to the last item in the multi-item question, a rectangular forward button appears underneath the question. If the respondent clicks on this rectangular forward button, they moved on to the next question and it is not possible to go back to the multi-item question. The second style of multi-item question asks the first item in the question and then rolls the response up to sit under the first item and asks

the next item of the question (see Figure 13 for what the screen looks like after the first item has been answered). The rectangular forward button is underneath the set of questions but is off screen. When the respondent clicks the forward button without answering one of the items, a warning message appears to indicate some items had not been answered and if this was intentional then they should click the forward button again.

In Section A of the SCQ, there is higher item non-response (3.8%) at the start of the first carousel question (A3) and this declines with each item to the second last item (1.0%) but then increases again for the last item (1.3%). It seems the respondent is getting used to this particular question style as the other questions using this style (A4, A5, C2 and D3) do not have this same item non-response profile but they do all have an increase in the item non-response for the last item. The accordion style questions have relatively stable item non-response for all items. For wave 21, the carousel styled questions will be changed to accordion style.

Figure 12: Carousel question for A3 in the Self-Completion Questionnaire, after the first item had been answered

A3. The following questions are about activities you might do during a typical day.

Does your health now limit you in these activities? If so, how much?

Select 'Yes, limited a lot', 'Yes, limited a little', or 'No, not limited at all' for each statement as it appears below.

⏪
Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling or playing golf
⏩

● ○ ● ● ● ● ● ● ●

Yes, limited a lot

Yes, limited a little

No, not limited at all

[SF-36 Standard English (Australia/New Zealand) Version 1.0.] Copyright © 1994 Medical Outcomes Trust.
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Figure 13: Accordion style question for A9 in the Self-Completion Questionnaire, after the first item had been answered

A9. These questions are about how you feel and how things have been with you during the past 4 weeks. For each question, please give the one answer that comes closest to the way you have been feeling.

How much of the time during the past 4 weeks:

Select **ONE** for **EACH** question

a. Did you feel full of life?

Most of the time

▼ b. Have you been a nervous person?

☐ All of the time

☐ Most of the time

☐ A good bit of the time

☐ Some of the time

☐ A little of the time

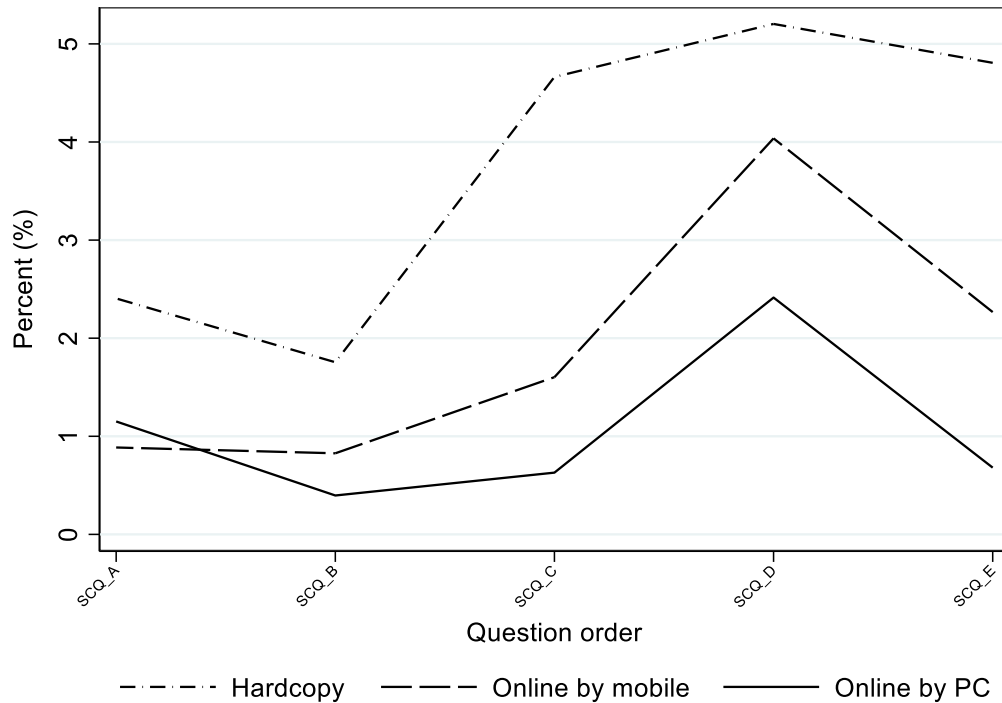
☐ None of the time

c. Have you felt so down in the dumps that nothing could cheer you up?

d. Have you felt calm and peaceful?

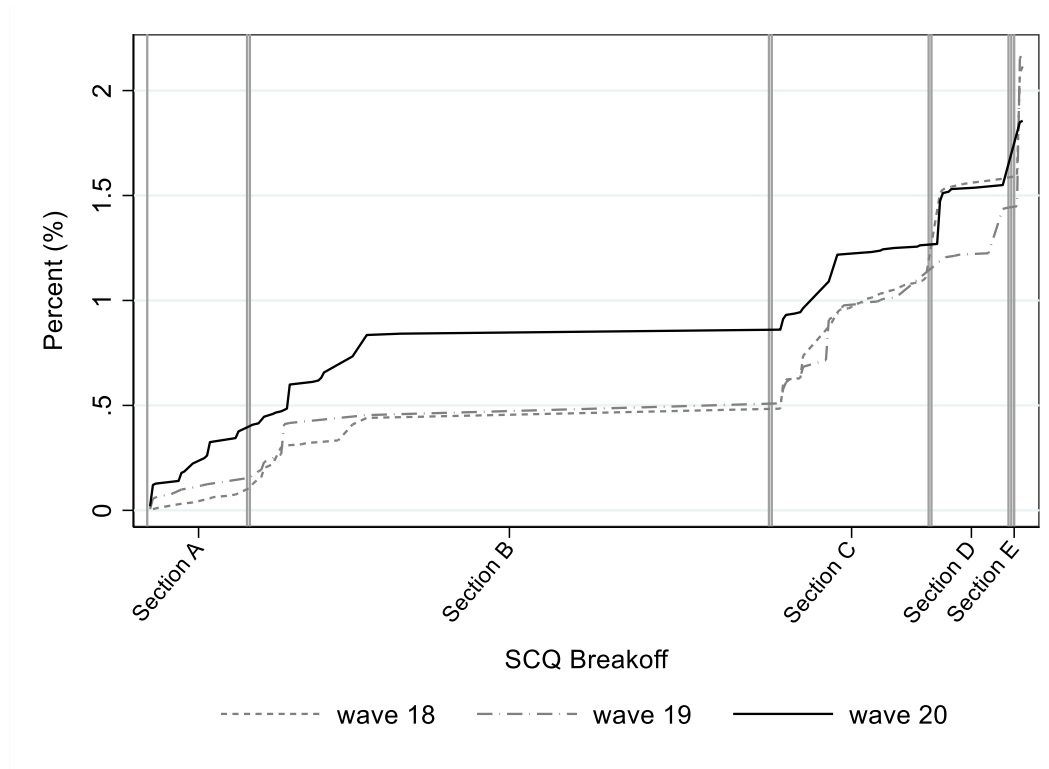
The item non-response rates in the SCQ in wave 20 also differ by mode. Figure 14 shows that the hardcopy SCQs have higher item non-response and that people completing the SCQ online using their PC had the lowest item non-response. Of course, some of these differences can be explained by the different age profiles of the respondents (see Figure 5).

Figure 14: Item non-response rate (proportion) for the wave 20 SCQ, by mode



We can also compare the amount of breakoffs that occur throughout the SCQ. A break-off occurs when the respondent stops responding to questions in the SCQ. We might expect this to occur more when using the online SCQ as respondents are called away from the online form to other things on their computer or in their home. People completing the paper version of the SCQ may be more likely to return to complete it at a later point in time. Figure 15 shows the percentage of breakoffs in the SCQ, after restricting the variables to those in common between the three waves. This confirms there is a higher break-off rate across the first three sections of the SCQ in wave 20 compared to earlier waves. In total, the proportion of breakoffs in the SCQ in wave 20 is 1.8% compared to 2.1% in wave 18 and 2.2% in wave 19.

Figure 15: Cumulative percentage of breakoffs when completing the SCQ



Turning now to particular variables of dollar value amounts that typically have higher item non-response, Table 9 shows the item non-response for a selected set of derived variables that are subsequently imputed in the HILDA Survey datasets. The item non-response rates are generally similar to previous waves, however government pensions, allowances, and parenting payments (at least for the last FY) having marginally higher rates of item non-response in wave 20. Item non-response for house value has declined in wave 20, likely due to homeowners reconsidering their housing needs during 2020.

Table 9: Percentage of item non-response for specific variables

Variable	Wave 18	Wave 19	Wave 20
Responding Persons¹			
Current Income			
Wages and salaries	3.1	2.7	3.3
Government pensions	4.0	4.0	5.1
Government allowances	5.8	5.9	5.0
Parenting payments	2.5	2.4	3.7
Financial Year Income			
Wages and salaries	4.2	4.7	5.0
Business income	12.4	13.6	12.9
Investment income	15.8	15.5	16.1
Private pension	4.9	5.4	3.9
Private transfer	6.8	8.5	9.2
Government pensions	3.1	3.0	3.7
Government allowances	3.3	3.7	6.1
Parenting payments	4.2	4.5	7.0
Total Financial Year income	10.6	10.9	11.2
Households²			
Total Financial Year income	22.9	22.9	24.8
House value	3.7	2.7	2.4
House debt	6.3	5.2	5.1
Mortgage repayments	2.4	2.3	2.4
Rent	1.4	1.6	1.6

Notes: 1. The percentage is calculated for non-zero cases for the income components and total income.

2. The percentage is calculated for non-zero cases for the housing variables and for zero and non-zero cases for household total income.

Completeness of multi-item responses

Another way the data quality of responses could change with the change in mode or after removing some showcards is that multi-item response questions could have a different number of items selected by the respondent. There could be less probing by the interviewer over the telephone or the respondent may not consider some options as valid without seeing a list of possibilities on a showcard. We would then expect to see a lower number of options selected at multi-item response questions in wave 20. What we see (in Table 10) is that the number of options selected at multi-item response questions in wave 20 is very similar to waves 18 and 19. There is one question, E26 on requirements from Centrelink or employment services, where the number of responses selected has dropped. However, this may be a real change in the COVID-19 environment of 2020.

Table 10: Number of options chosen at multi-item response questions

Question	Wave 18	Wave 19	Wave 20
Household Questionnaire			
Q18: Family Tax Benefit payments	1.01	1.02	1.03
Personal Questionnaire			
A17a: Qualifications studying for since last interview	1.06	1.05	1.05
A19: Qualifications completed since last interview	1.04	1.02	1.02
A14a: Qualifications ever completed (NPQ)	1.38	1.42	1.46
C9b: Days usually worked	4.14	4.17	4.19
D2: Activities to look for work	2.94	2.88	2.86
D6: Difficulties getting a job	2.46	2.58	2.39
D11: Reasons not looking for work	1.36	1.37	1.32
E12: Aims of work-related training	2.77	2.67	2.74
E26: Requirements from Centrelink or an employment services provider	1.38	1.37	1.19
F7: Salary sacrifice received – main job	1.21	1.22	1.20
F11: Non-cash benefits received – main job	1.57	1.58	1.58
F19: Salary sacrifice received – other jobs	1.07	1.20	1.29
F22b: Non-cash benefits received – other jobs	1.31	1.26	1.43
F28: Current pensions and allowances received	1.03	1.03	1.02
F30a: Other current pensions and allowances received	1.01	1.01	1.01
F36: Financial year salary sacrifice received	1.23	1.22	1.19
F40: Financial year non-cash benefits received	1.57	1.57	1.54
F46: Financial year salary sacrifice received with incorporated businesses	1.29	1.30	1.57
F50: Financial year non-cash benefits received with incorporated businesses	2.30	2.28	2.36
F61a: Financial year pensions and allowances received	1.14	1.14	1.22
F67: Use of lump sum payments	1.26	1.32	1.22
F69a: Other sources of income	1.05	1.05	1.05
H1a: Marital status changes since last interview	1.01	1.00	1.01
K1b: Long-term health condition	2.69	2.70	2.62
K8: Care for household member with long-term health condition	1.03	1.04	1.05
K11: Care for people living elsewhere	1.03	1.03	1.04
K20: Reasons for moving since last interview	1.27	1.30	1.21
Self-Completion Questionnaire			
C3b: Ways to get money for an emergency	1.73	1.72	1.67

Primacy versus recency in list-style questions

It has sometimes been found that responses to questions with a long list of response options can change when they are read (such as on a showcard or during an online questionnaire) compared to when they are heard (by being read out by an interviewer on the telephone). Respondents reading through a list may select an earlier option as the earlier options are processed more thoroughly whereas when the interviewer reads out the list the respondent may select an option from later in the list as they can be processed more thoroughly once the interviewer pauses after reading all the options (Krosnick and Alwin 1987). This is known as primacy versus recency.

Table 11 shows the proportion of respondents selecting the first option in list-style questions with four or more (substantive) response options. The mean responses are similar across the waves indicating that primacy versus recency is not an issue for these questions in wave 20.

Table 11: Percentage of respondents selecting first option to list-style questions with four or more response options where showcards had been used in waves 18 and 19

Question	Wave 18	Wave 19	Wave 20
Interviewer reads out list only when respondent does not have showcards in wave 20			
C10: Current work schedule (8 categories)	48.9	48.9	48.2
C24: Category of current pay (5 categories)	17.1	17.1	16.9
C31: Category of working place organisations (6 categories)	45.3	44.5	42.9
D9: Main activity since last worked or looked for work (8 categories)	18.5	18.6	19.4
G11b: Current employment status of the other parent whom the youngest children lives elsewhere with (8 categories)	1.0	1.0	1.0
G24: Current employment of the other parent (7 categories)	2.3	2.5	2.3
Interviewer reads out list in wave 20			
G9a: Frequency to see the youngest child living elsewhere (9 categories)	0.3	0.3	0.3
G10: Contact with the youngest child living elsewhere (5 categories)	1.5	1.4	1.3
G22a: Contact of the youngest child with the other parent who lives elsewhere (9 categories)	0.3	0.3	0.2
G23: Feeling about the amount of contact that youngest child has with the other parent (5 categories)	0.8	0.7	0.6
H4: Current marital status (6 categories)	46.1	45.7	45.4
H8: Likelihood of marrying current partner (5 categories)	6.6	6.5	7.3
H9: Likelihood of marrying in the future (CPQ) (5 categories)	0.1	0.1	0.0
H9: Likelihood of marrying in the future (NPQ) (5 categories)	5.3	5.0	5.2

Straight lining

Straight lining occurs when the respondent answers the same response category to all items in a multi-item question. For example, Q5 in the Household Questionnaire asks the respondent to rate on a scale between 0 and 10 how much difficulty they have had with certain aspects of childcare in the last 12 months. If the respondent reports the same number for all 12 items in the list this is considered an instance of straight lining. Table 12 shows the percentage of respondents providing the exact same response to all items in a multi-item question. Again, we are focusing just on those questions asked all three waves. There does not appear to be any changes in straight lining behaviour in the interview components in wave 20, though the instances of straight lining have decreased for some questions in the SCQ. These differences in the SCQ is due to the questionnaire style chosen in the online format for these questions which was either carousel or accordion (as discussed earlier with respect to item non-response). With these question styles, the answer for earlier items is hidden from view or folded up under the item text. A matrix style (as used in the hardcopy SCQ) could have been used for these online questions and were these chosen it is anticipated that we would not have seen any reduction in straight lining behaviour in the SCQ.

Table 12: Percentage of respondents providing exactly the same response across all items in multi-item question (with four or more items)

Question	Wave 18	Wave 19	Wave 20
Household Questionnaire			
Q5: Having difficulties with childcare in the last 12 months (12 items)	3.6	2.7	2.2
Personal Questionnaire			
C35: Job satisfaction (6 items)	4.8	4.7	4.7
K13: Life satisfaction (8 items)	0.8	0.8	0.8
Self-Completion Questionnaire			
A9: Feelings during the past 4 weeks (9 items)	0.9	1.0	0.7
A11: Feelings about own health condition (4 items)	2.7	2.9	2.8
B13: Satisfaction with family life (8 items)	0.4	0.5	0.4
B20: Support got from the others (10 items)	1.1	1.1	0.9
D2: Feelings about current (main) job (21 items)	1.0	1.1	0.8
E2: Feelings about raising children (4 items)	11.8	11.2	12.3

Rounding

Another aspect of data quality that can be affected by mode is the level of rounding the respondents may apply at dollar questions. Table 13 shows the level of rounding of responses to two particular dollar value questions in the individual interview, being current wages and salaries and financial year age pension. It shows the distribution of the values that end with zero, one, two, three or four zeros. The level of rounding in wave 20 appears similar to earlier waves.

Table 13: Percentage of respondents rounding amounts reported for current wages and salaries or Financial Year age pension

	Wave 18	Wave 19	Wave 20
Current Wages and Salaries			
Ones	26.3	29.0	27.0
Tens	18.7	17.7	18.2
Hundreds	36.0	34.2	37.6
Thousands	14.2	14.8	13.6
Ten thousands	4.7	4.3	3.7
Financial Year Age Pension			
Fortnight amount reported ¹			
Ones	33.6	32.1	35.6
Tens	36.9	38.2	43.3
Hundreds	29.5	29.8	21.2
Annual amount reported ²			
Ones	29.9	28.4	29.0
Tens	19.9	23.8	19.4
Hundreds	27.2	25.0	28.0
Thousands	20.9	20.5	21.2
Ten thousands	2.2	2.3	2.4

Notes: 1. The percentage is calculated for non-zero cases for the financial year age pensions reported as a fortnightly amount. Relatively few respondents reported a fortnightly amount: 148 in wave 18, 131 in wave 19, and 104 in wave 20.

2. The percentage is calculated for non-zero cases for the financial year age pensions reported as an annual amount.

Length of open-ended responses

When interviews are conducted on the telephone rather than face-to-face, it may affect the interviewer's level of probing for open ended questions such as occupation and industry. Table 14 shows the number of characters recorded at the two components of the occupation questions and at the industry questions. The number of characters recorded in wave 20 is consistent with waves 18 and 19.

Table 14: Number of characters recorded in occupation and industry descriptions

	Wave 18	Wave 19	Wave 20
Occupation			
Job title	25.5	27.1	25.0
Tasks and duties	43.1	46.7	44.8
Industry	30.0	32.4	31.1

Conclusions

This paper examined the quality of the wave 20 data in light of the numerous changes made to the administration of the survey due to the lockdowns and restrictions related to the COVID-19 pandemic. The key change was the shift from face-to-face interviewing to telephone interviewing. Indeed, this was the only mode of interview for the initial fieldwork period. Further, an online SCQ was introduced in addition to the paper SCQ and the incentive was revised to include an SCQ component.

We find a relatively small drop in response rates for those interviewed in the previous wave (95.6% in the main sample and 94.1% in the top-up sample wave 20 compared to 96.9% and 96.2% respectively in wave 19). This is an excellent outcome given the circumstances. The response rates for new entrants and children turning 15 were much more affected with a drop of between 5 to 12 percentage points. This is because it is harder to make contact and build rapport with these individuals over the telephone.

In total, 95.7% of the individual interviews were completed by telephone in wave 20 (compared to 9.6% in wave 19). In this telephone-centric environment, the shift to offering these PQ respondents the option of completing the SCQ online or via paper along with an SCQ specific incentive resulted in 91.9% of the SCQ being return, which is comparable to previous waves. Again, this is an excellent outcome. Use of the online SCQ did, however, alter the timing of the SCQ compared to the PQ somewhat: while there was a similar proportion of SCQs completed prior to the day of the PQ interview, fewer were completed on the same day (22% compared to 44%) and more done within a few weeks after.

We found similar rates of missingness in variables in the interview components in wave 20 compared to the previous two waves but lower rates of missingness in the SCQ. This is due to the online version of the SCQ routing respondents through the questionnaire as appropriate and prompting responses at most questions if the respondent skipped past a question.

We found no evidence of differences across the waves in the use of multi-item response options, the responses chosen for questions with long response lists, straight lining, rounding, or the length of responses provided at open-ended questions.

Overall, we conclude that the wave 20 data is of a similar quality to previous waves despite the fieldwork challenges faced during the COVID-19 pandemic. It will be important to engage with the new entrants and children turning 15 who did not respond in wave 20 in future waves of the study.

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Appendix

Table A1: Showcards removed and subsequent changes to the question

Question with showcard removed	Resulting change to question
Household Questionnaire	
Q5: Having difficulties finding childcare in the last 12 months	Question text change to mention labelled endpoints on scale (previously on Showcard)
Q22: Type of school child attended	Response categories added to question text
Q26: Satisfaction with quality of child's school education	No change (aside from removing showcard)
Q27: Child's achievement at school	Response categories added to question text
R13b: Type of home loan	Response categories added to question text
R20b: Type of second mortgage/home equity loan	Response categories added to question text
Person Questionnaire	
AA11: Migration category (NPQ)	Response categories added to question text
BB11a: Schooling father completed (NPQ)	Interviewer note added: probe
BB11b: Schooling mother completed (NPQ)	Interviewer note added: probe
BB13: Type of organisation father's highest level of qualification obtained from (NPQ)	Interviewer note added: probe
BB15: Type of organisation mother's highest level of qualification obtained from (NPQ)	Interviewer note added: probe
A2: Highest level of school completed (NPQ)	Interviewer note added: probe
A3: Type of school (NPQ)	
A6: Type of school attended in last year	Response categories added to question text
A10: Achievement at school	Response categories added to question text
B4: Business incorporated	Interviewer note added: read out definition if queried
C23: Contract of employment	Response categories added to question text
C28: Independent contractor or freelance worker	Interviewer note added: read out definition if queried
C32: Number of employees at the workplace	Interviewer note added: probe
C34: Number of employees throughout Australia	Interviewer note added: probe
C35: Job satisfaction	Question text change to mention labelled endpoints on scale (previously on showcard)
D29: Contract of employment of most recent job	Response categories added to question text
E11: Contribution to cost of training	Showcard list added to question text
E13b: Use of new skills gained from the training if got a new job	Response categories added to question text
F7: Salary sacrifice – main job	Interviewer note added: probe
F19: Salary sacrifice – other job	Interviewer note added: probe
F31: Wages and salaries in last financial year	No change (aside from removing showcard)
F36: Salary sacrifice – last financial year	No change (aside from removing showcard)

Question with showcard removed	Resulting change to question
F43: Incorporation of business	Interviewer note added: read out definition if queried
F46: Salary sacrifice – incorporated business	Interviewer note added: probe
F56a: Whether received interest in last financial year	Showcard list added to question text
F57c: Amount of royalties received	Interviewer note added: probe
F58a: Whether received dividends in last financial year	Showcard list added to question text
F58c: Amount of dividends received from investments	Interviewer note added: probe
F59f: Amount of rent received	Response categories added to question text
F72: Balance of credit cards paid off	Response categories added to question text
G2f: Where child lives	Response categories added to question text
G3d: Distance from where child lives	Interviewer note added: probe
G9a: Frequency of the contact with youngest child living elsewhere	Response categories read out
G10: Amount of the contact with youngest child living elsewhere	Response categories read out
G15e: Distance from where child's other parent lives	Interviewer note added: probe
G22a: Contact of the youngest child with the other parent	Response categories read out
G23: Feeling about the amount of contact the youngest child has with the other parent	Response categories read out
G29: Like to have more children in the future	Read out question text that defines scale (previously optional)
G30: Likely to have more children in the future	No change (aside from removing showcard and rearranging question text a little)
H1a: Marital status changed since last interview	Response categories read out
H4: Current marital status	Response categories read out
H5: Current living circumstances	Response categories read out
H8: Likely to marry current partner	Response categories added to question text
H9: Likely to marry / remarry in the future (if have current partner)	Response categories added to question text
H10: Likely to marry / remarry in the future (if do not have current partner)	Response categories added to question text
K4: How much long-term health condition limits the amount of work that can be done	No change (aside from removing showcard)
K7: Actively cares for household member due to long-term health condition, elderly or disability	Showcard list added to question text
K10: Actively cares for non-resident person due to long-term health condition, elderly or disability	Showcard list added to question text
K13: Life satisfaction	Question text change to mention labelled endpoints on scale (previously on Showcard)
N3: Reading skills	No change (aside from removing showcard)
N5: Mathematical skills	No change (aside from removing showcard)

Table A2: Logistic regression coefficients for model predicting response to individual interview (vs non-response) for previous wave respondents

Variable	Waves 18	Wave 19	Wave 20
Female	0.160	0.184	0.258
Age	0.091***	0.078**	0.133***
Age squared	-0.001***	-0.001**	-0.001***
Dwelling (base=separate house)			
Semi-detached	-0.697**	0.629	-0.331
Flat	-0.198	0.624	0.666*
Other private dwelling	0.000	0.000	-0.506
Non-private dwelling	-0.587	0.000	0.108
Renter	0.287	-0.229	-0.126
Country of birth (base=Australia)			
Main English-speaking country	-0.413	-0.530	0.210
Not main English-speaking country	0.139	-0.560*	-0.145
Part responding HH	-0.070	-0.347	0.136
No SCQ in previous wave	-1.098***	-1.372***	-1.386***
Telephone interview in previous wave	-0.838***	-0.584*	0.810**
Marital status (base=married)			
De-facto	-0.087	-0.038	-0.502**
Separated	0.156	-0.218	0.450
Divorced	0.484	-0.147	0.450
Widowed	1.290*	0.030	1.270**
Never married	-0.114	0.340	0.332
Number of children	-0.103	0.141	0.008
Number of adults	-0.440***	-0.399***	-0.299***
Education (base=Year 11 or below)			
Year 12	0.139	0.124	0.063
Certificate	-0.135	0.308	-0.285
Diploma	0.309	0.046	0.427
Graduate degree	0.405	0.154	0.628*
Post-graduate	0.432	0.884*	0.609
Employment and hours (base=not in labour force)			
Unemployed	-0.126	0.331	-0.446
Employed part time	-0.221	0.186	0.165
Employed full time (35-54 hours)	0.003	0.370	-0.450*
Employed full time (55 plus hours)	-0.606	-0.316	-0.700*
Serious long term health condition	-0.164	-0.396	-0.616**
Location (base=Sydney)			
Melbourne	0.333	0.049	0.047
Brisbane	0.634	0.181	0.308
Adelaide	-0.006	0.328	0.139
Perth	0.662	0.071	1.092**
Major city	0.290	0.627	0.438
Inner regional	0.269	0.706*	0.165
Outer regional	-0.066	0.433	-0.275
Remote	1.203	-0.072	-0.149

Variable	Waves 18	Wave 19	Wave 20
SEIFA quintile (base=quintile 1 (most disadvantaged))			
Quintile 2	0.316	-0.426	-0.379
Quintile 3	0.037	-0.092	0.033
Quintile 4	0.025	-0.164	-0.371
Quintile 5 (least disadvantaged)	-0.125	-0.347	-0.464
Moved	-0.086	0.358	0.467*
Constant	4.317***	4.133***	2.910***

Note: * $p \geq 0.05$ & $p < 0.1$, ** $p \geq 0.01$ & $p < 0.05$, *** $p < 0.01$.

Table A3: Logistic regression coefficients for model predicting completion of SCQ

Variable	Waves 18	Wave 19	Wave 20
Female	0.194***	0.263***	0.435***
Age	0.043***	0.036***	0.015
Age squared	-0.000***	-0.000*	0
Dwelling (base=separate house)			
Semi-detached	0.022	-0.067	0.166
Flat	-0.099	-0.048	0.213**
Other private dwelling	0.749*	0.144	-0.022
Non-private dwelling	-1.307***	-1.436***	-1.083***
Renter	-0.405***	-0.306***	-0.228***
Country of birth (base=Australia)			
Main English-speaking country	0.134	-0.065	-0.007
Not main English-speaking country	-0.920***	-0.718***	-0.433***
Part responding HH	-0.714***	-0.744***	-0.743***
Telephone interview	-2.768***	-2.926***	0.372***
Marital status (base=married)			
De-facto	-0.055	-0.137	-0.277***
Separated	0.073	-0.265	-0.489***
Divorced	-0.033	-0.181	-0.446***
Widowed	-0.746***	-1.021***	-0.902***
Never married	-0.283***	-0.213**	-0.572***
Number of children	-0.205***	-0.259***	-0.157***
Number of adults	0.090***	0.034	0.073**
Education (base=Year 11 or below)			
Year 12	0.441***	0.237**	0.222**
Certificate	0.198**	0.217**	0.186**
Diploma	0.431***	0.246*	0.538***
Graduate degree	0.643***	0.426***	0.489***
Post-graduate	0.737***	0.616***	0.567***
Employment and hours (base=not in labour force)			
Unemployed	0.029	-0.079	-0.290**
Employed part time	-0.066	-0.018	0.015
Employed full time (35-54 hours)	-0.250***	-0.238**	-0.286***
Employed full time (55 plus hours)	-0.686***	-0.483***	-0.681***
Serious long term health condition	-0.299***	-0.571***	-0.153*

Variable	Waves 18	Wave 19	Wave 20
Location (base=Sydney)			
Melbourne	0.122	0.152	0.207**
Brisbane	0.380***	0.406***	0.399***
Adelaide	0.682***	0.374**	0.303**
Perth	0.968***	0.746***	0.474***
Major city	0.794***	0.771***	0.255**
Inner regional	0.384***	0.539***	0.365***
Outer regional	0.299***	0.471***	0.02
Remote	0.476**	0.286	-0.069
SEIFA quintile (base=quintile 1 (most disadvantaged))			
Quintile 2	0.035	-0.155	0.01
Quintile 3	0.007	0.128	0.176*
Quintile 4	-0.038	0.041	0.075
Quintile 5 (least disadvantaged)	-0.043	-0.006	-0.018
Moved	-0.186**	0.05	-0.174**
Has internet	0.663***	0.653***	0.732***
High satisfaction with internet	-	-	0.146**
Rating of device to access internet (base=no device or fair/poor device)			
Excellent devices	-	-	0.259**
Good devices	-	-	0.147
Constant	1.088***	1.493***	0.424

Note: * $p \geq 0.05$ & $p < 0.1$, ** $p \geq 0.01$ & $p < 0.05$, *** $p < 0.01$.

Table A4: Logistic regression coefficients for model predicting completion of individual interview by telephone (vs face-to-face)

Variable	Waves 18	Wave 19	Wave 20
Female	-0.032	-0.071	-0.022
Age	0.034***	0.029***	0.075***
Age squared	-0.001***	-0.001***	-0.001***
Dwelling (base=separate house)			
Semi-detached	-0.133	-0.213*	-0.290**
Flat	0.259***	0.222**	0.215
Other private dwelling	1.112***	1.032***	-0.267
Non-private dwelling	-0.025	-1.059*	0.06
Renter	0.045	-0.017	-0.526***
Country of birth (base=Australia)			
Main English-speaking country	-0.179	0.247**	-0.219
Not main English-speaking country	-0.440***	-0.410***	-0.815***
Part responding HH	1.980***	2.049***	-0.153
Marital status (base=married)			
De-facto	-0.152*	-0.244***	-0.149
Separated	-0.026	-0.078	-0.221
Divorced	0.073	0.028	-0.107
Widowed	-0.084	-0.288	-0.23
Never married	0.026	-0.05	-0.042

Variable	Waves 18	Wave 19	Wave 20
Number of children	-0.093***	-0.137***	-0.192***
Number of adults	-0.262***	-0.359***	0.036
Education (base=Year 11 or below)			
Year 12	0.112	0.209**	0.526***
Certificate	0.067	0.109	0.024
Diploma	0.039	0.118	0.482***
Graduate degree	0.259***	0.340***	0.790***
Post-graduate	0.277**	0.256**	0.680***
Employment and hours (base=not in labour force)			
Unemployed	0.22	-0.06	-0.183
Employed part time	-0.200**	-0.236***	0.13
Employed full time (35-54 hours)	-0.023	-0.095	-0.071
Employed full time (55 plus hours)	0.401***	0.223*	-0.246
Serious long term health condition	0.119	-0.044	-0.374***
Location (base=Sydney)			
Melbourne	0.004	-0.004	0.638***
Brisbane	0.273**	0.089	0.291*
Adelaide	-0.251	-0.375**	0.359**
Perth	0.005	0.002	-0.555***
Major city	0.198	0.167	0.683***
Inner regional	0.439***	0.440***	0.612***
Outer regional	1.187***	1.249***	0.510***
Remote	2.466***	2.484***	0.953**
SEIFA quintile (base=quintile 1 (most disadvantaged))			
Quintile 2	-0.024	-0.063	0.254**
Quintile 3	0.143	0.089	0.203*
Quintile 4	0.274***	0.258***	0.390***
Quintile 5 (least disadvantaged)	0.133	0.220**	0.479***
Moved	0.390***	0.387***	-0.184*
Constant	-2.758***	-2.192***	1.325***

Note: * $p \geq 0.05$ & $p < 0.1$, ** $p \geq 0.01$ & $p < 0.05$, *** $p < 0.01$.

Table A5: Logistic regression coefficients for model predicting completion of SCQ online vs hardcopy

Variable	Wave 20	Variable	Wave 20
Female	0.047	Employment and hours (base=not in labour force)	
Age	-0.026***	Unemployed	-0.147
Age squared	-0.000***	Employed part time	0.440***
Dwelling (base=separate house)		Employed full time (35-54 hours)	0.422***
Semi-detached	0.165	Employed full time (55 plus hours)	0.339**
Flat	0.230**	Serious long term health condition	-0.304***
Other private dwelling	-0.14	Location (base=Sydney)	
Non-private dwelling	-0.246	Melbourne	-0.210**
Renter	-0.264***	Brisbane	0.024
Country of birth (base=Australia)		Adelaide	-0.011
Main English-speaking country	0.397***	Perth	0.213
Not main English-speaking country	-0.332***	Major city	-0.126
Part responding HH	-0.006	Inner regional	-0.128
Telephone interview	3.943***	Outer regional	-0.357***
Marital status (base=married)		Remote	-0.629***
De-facto	-0.158*	SEIFA quintile (base=quintile 1 (most disadvantaged))	
Separated	-0.495***	Quintile 2	0.222***
Divorced	-0.509***	Quintile 3	0.378***
Widowed	-0.407***	Quintile 4	0.488***
Never married	-0.859***	Quintile 5 (least disadvantaged)	0.681***
Number of children	0.065*	Moved	0.179**
Number of adults	-0.008	Has internet	1.354***
Education (base=Year 11 or below)		High satisfaction with internet	0.083
Year 12	0.366***	Rating of device to access internet (base=no device or fair/poor device)	
Certificate	0.313***	Excellent devices	0.778***
Diploma	0.777***	Good devices	0.552***
Graduate degree	0.983***	Constant	-2.235***
Post-graduate	1.026***		

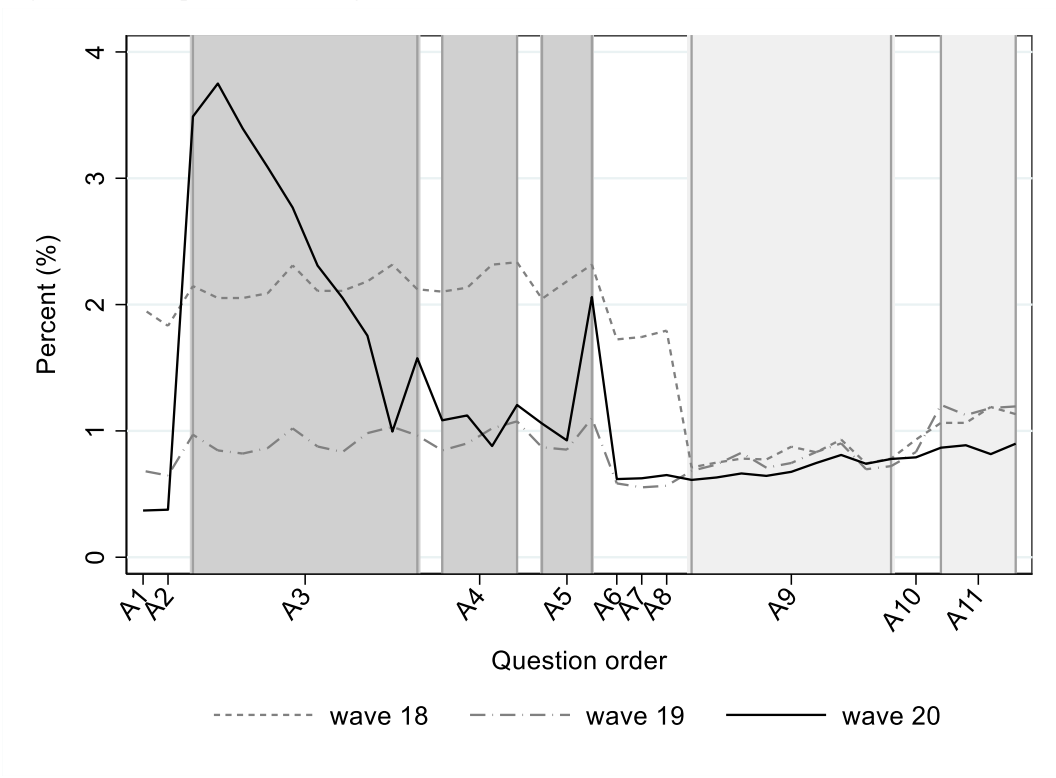
Note: * $p \geq 0.05$ & $p < 0.1$, ** $p \geq 0.01$ & $p < 0.05$, *** $p < 0.01$.

Table A6: Logistic regression coefficients for model predicting use of showcards in individual interview

Variable	Wave 20	Variable	Wave 20
Female	0.093**	Employment and hours (base=not in labour force)	
Age	0.005	Unemployed	-0.194**
Age squared	0.000	Employed part time	0.043
Dwelling (base=separate house)		Employed full time (35-54 hours)	-0.097*
Semi-detached	-0.025	Employed full time (55 plus hours)	-0.644***
Flat	0.042	Serious long term health condition	-0.052
Other private dwelling	-0.580***	Location (base=Sydney)	
Non-private dwelling	-1.061***	Melbourne	-0.024
Renter	-0.171***	Brisbane	-0.490***
Country of birth (base=Australia)		Adelaide	-0.138
Main English-speaking country	0.056	Perth	0.686***
Not main English-speaking country	-0.304***	Major city	-0.393***
Part responding HH	-0.670***	Inner regional	-0.327***
Marital status (base=married)		Outer regional	-0.484***
De-facto	-0.233***	Remote	-0.370**
Separated	-0.511***	SEIFA quintile (base=quintile 1 (most disadvantaged))	
Divorced	-0.477***	Quintile 2	0.129**
Widowed	-0.415***	Quintile 3	0.064
Never married	-0.348***	Quintile 4	0.046
Number of children	-0.098***	Quintile 5 (least disadvantaged)	0.162***
Number of adults	-0.061***	Moved	-0.657***
Education (base=Year 11 or below)		Has internet	0.306***
Year 12	-0.005	High satisfaction with internet	0.051
Certificate	0.065	Rating of device to access internet (base=no device or fair/poor device)	
Diploma	0.166**	Excellent devices	0.283***
Graduate degree	0.308***	Good devices	0.176***
Post-graduate	0.333***	Constant	0.730***

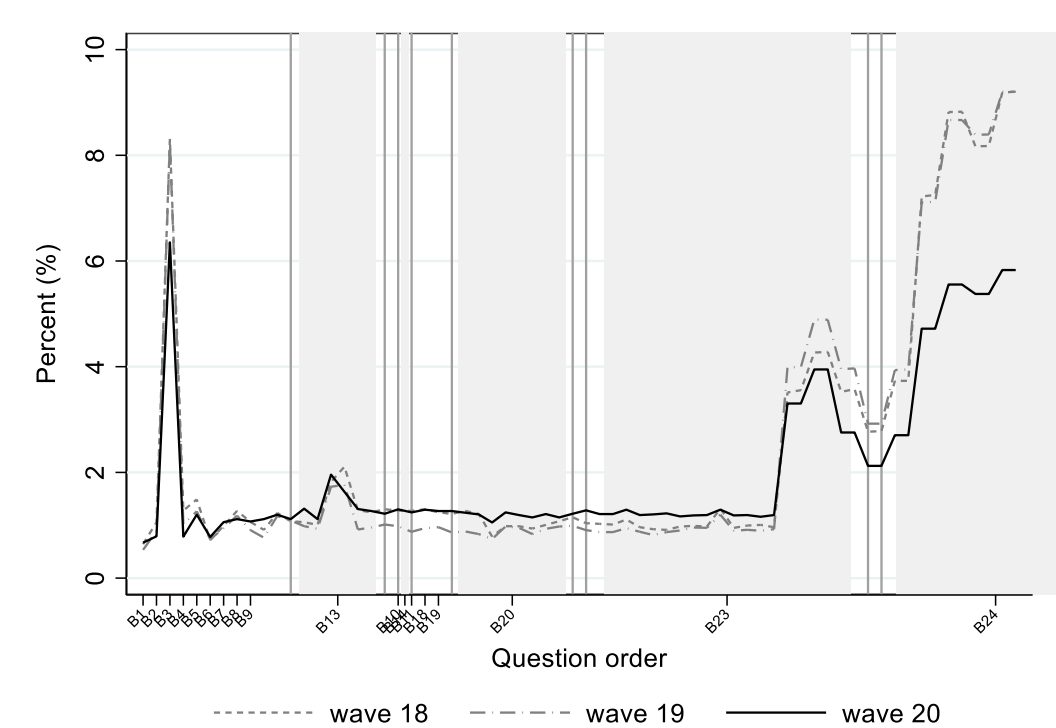
Note: * $p \geq 0.05$ & $p < 0.1$, ** $p \geq 0.01$ & $p < 0.05$, *** $p < 0.01$.

Figure A1: Proportion missing in SCQ Section A



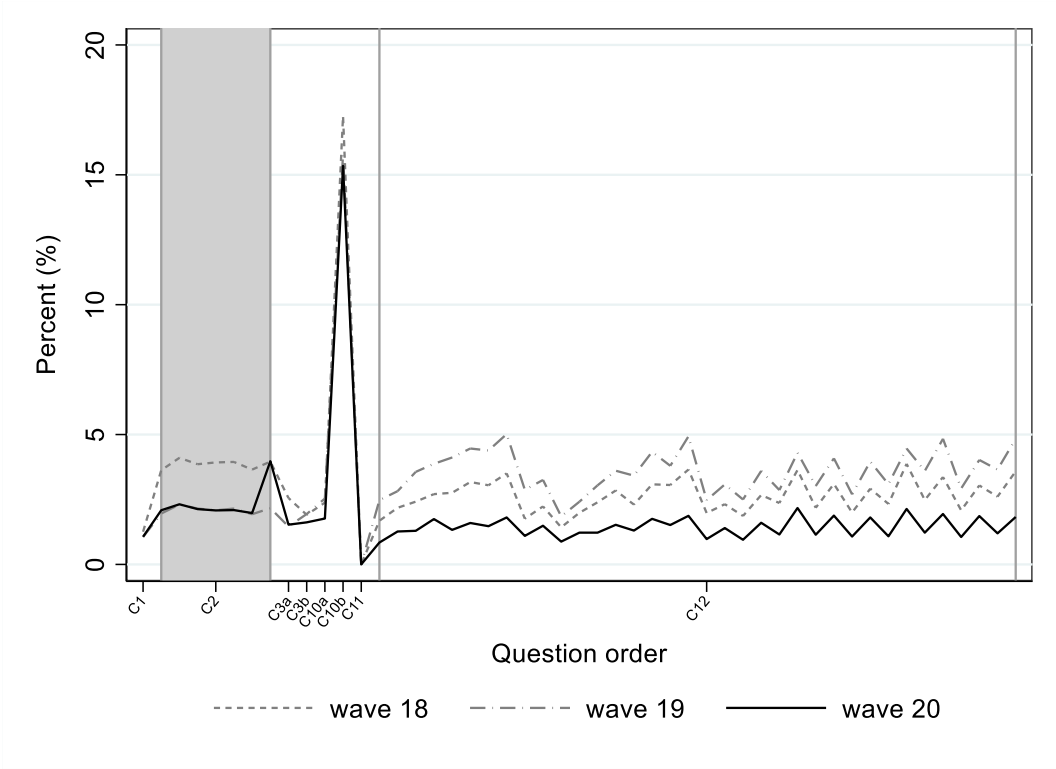
Note: Dark shading corresponds to multi-item questions using the carousel style questions and light shading corresponds to multi-item questions using the accordion style questions.

Figure A2: Proportion missing in SCQ Section B



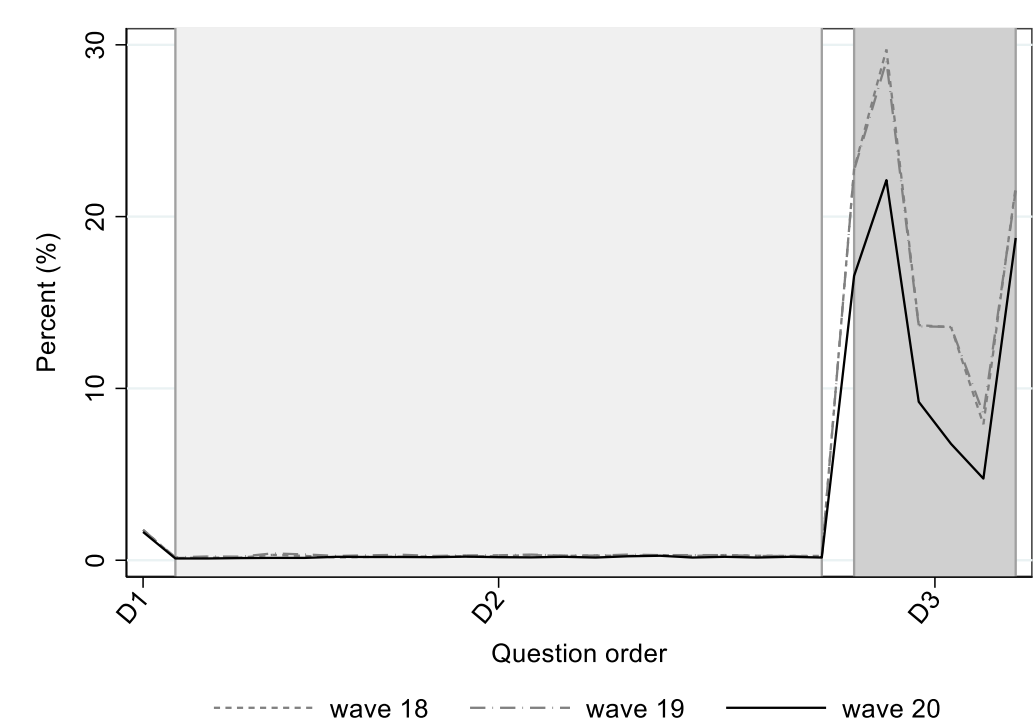
Note: Light shading corresponds to multi-item questions using the accordion style questions.

Figure A3: Proportion missing in SCQ Section C



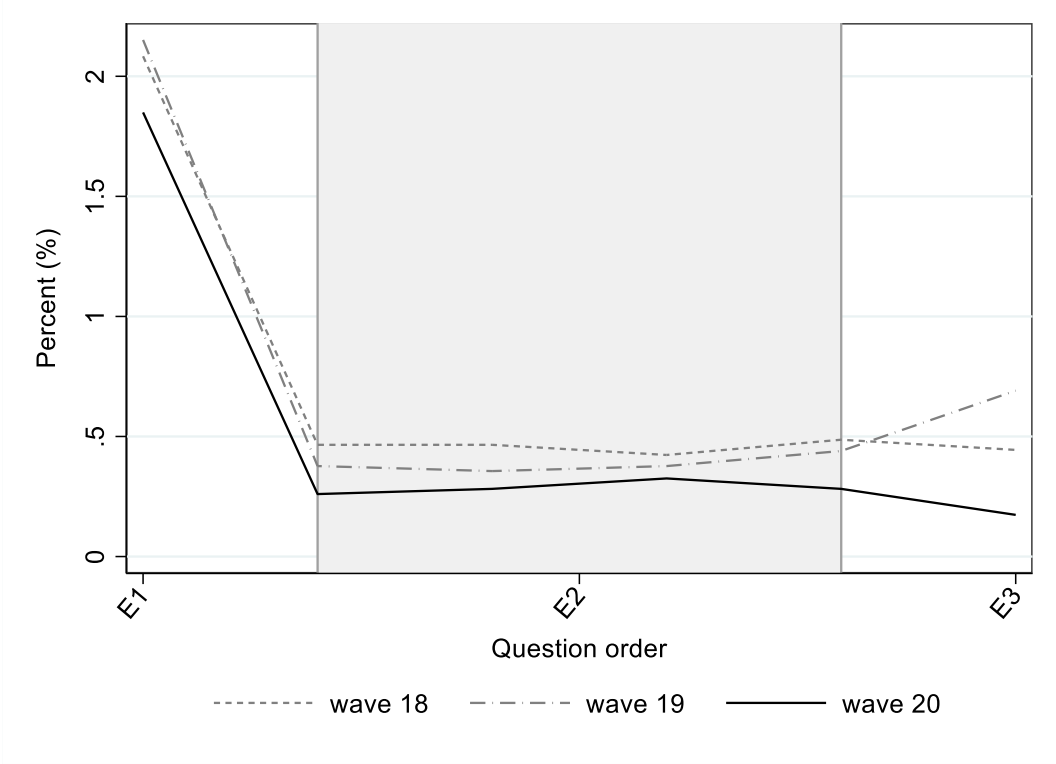
Note: Dark shading corresponds to multi-item questions using the carousel style questions.

Figure A4: Proportion missing in SCQ Section D



Note: Dark shading corresponds to multi-item questions using the carousel style questions and light shading corresponds to multi-item questions using the accordion style questions.

Figure A5: Proportion missing in SCQ Section E



Note: Light shading corresponds to multi-item questions using the accordion style questions.