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Trialling Event-Triggered Data Collection in the Understanding Society Innovation Panel: Response and Measurement Quality

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Understanding Society

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Non-technical summary

This report is a summary of findings from an experimental test of monthly data collection, implemented to enhance data about life events in a household panel with annual interviews.

Throughout 2020 we tested a monthly Life Events survey on the *Understanding Society* Innovation Panel: respondents in households with internet access were invited to a monthly web survey by email and SMS. Each month, sample members were asked a single Yes/No question about whether they had experienced any of a list of life events in the last calendar month. If 'Yes', they were asked which events they had experienced and then routed into modules of follow-up questions for each reported event. If 'No', this was the end of the Life Events survey for that month.

The Life Events study included experiments with the timings of reminders to complete the survey, the monetary incentives offered to respondents, and a control group that was not invited to the monthly survey.

The key results from the Innovation Panel testing are very positive. (1) Inviting sample members to the Life Events survey had no impact on attrition in the annual interviews at IP13 or IP14 and no effect on the rates of reporting events in the annual IP13 interview. That is, there is no evidence that respondents under-reported events they had already reported in the monthly Life Events survey. (2) Response rates for the Life Events survey were stable across the 12 months: monthly response rates were between 52% and 56% of invited sample members, with a small increase across months. This is unusual for a panel study; response rates usually drop from wave to wave due to attrition. (3) 59% of respondents completed all 12 months, a further 21% provided data that are relatively complete across the 12 months (either missing just one month, with gaps of maximum one month length, or joining the survey late but then completing every month). However, 21% of respondents provided data that were relatively incomplete, dropping out after a few months, completing only one to three months, or with long gaps between completed months. (4) The experiments with the incentive value and the interval between reminders had no significant effects on response rates. (5) The item non-response rate in the follow-up questions about events was low (around 1%). Across months the rate of partial responses (i.e. respondents who broke off the survey before finishing it) decreased. (6) The debrief questions suggested that respondents liked the monthly Life Events survey and the way it was implemented, with invitations sent by email or to their phones by SMS and the links in those invitations leading directly to their personal survey, without having to enter login details. (7) The analysis of reasons for non-participation in the monthly Life Events survey has provided the basis for further experimental testing of protocols in the next phase of testing.

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Abstract: This report is a summary of findings from an experimental test of monthly data collection, implemented to enhance data about life events in a household panel with annual interviews. Each month, sample members were asked a single Yes/No question about whether they had experienced any of a list of life events in the last calendar month. If 'Yes', they were asked which events they had experienced and then routed into modules of follow-up questions for each reported event. This report documents results on participation in the monthly data collection, quality of the data collected, effects of the monthly data collection on the annual interview, and related experiments in the annual interview to improve the collection of contact details.

Keywords: non-response, measurement error, experiment, web survey

JEL classification: C81, C83

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Contents

1 Introduction

This report is a summary of findings from an experimental test of monthly data collection, implemented to enhance data about life events in a household panel with annual interviews. The test was carried out on the Innovation Panel, to inform future data collection on the main *Understanding Society*: The UK Household Longitudinal Study sample.

The bulk of data collected by *Understanding Society* are about the respondent's situation at the time of interview. For some life domains (labour market activity, education, residential moves, diagnosis of health conditions, partnership formation and dissolution, fertility) we in addition collect information about events since the previous interview. The scope of what we can collect retrospectively is, however, limited, both in terms of the nature of questions that respondents can answer reliably and the quantity of information that can be collected.

The goal of event-triggered data collection is to improve the quality and scope of *Understanding Society* data about life events (such as onset of health conditions, pregnancy, partnership change, residential moves, or labour market transitions), by asking questions close in time to when the respondent experiences an event. This would enable us to collect information that is challenging to collect retrospectively in the annual interview, such as subjective assessments (e.g. attitudes, expectations, or wellbeing, where a recalled report would be influenced by experiences and adaptation since the event) and time-sensitive factual information (e.g. about the impact of events on the respondent's financial situation or information relating to different stages of a pregnancy).

The key challenge is to develop survey protocols that allow us to touch base with our sample members frequently between annual interviews and collect data about any events they have experienced – in a way that respondents find acceptable and are willing to comply with.

Throughout 2020 we tested a monthly Life Events survey on the *Understanding Society* Innovation Panel: respondents in households with internet access were invited to a monthly web survey by email and SMS text message. Each month, sample members were asked a single Yes/No question about whether they had experienced any of a list of life events in the last calendar month. If 'Yes', they were asked which events they had experienced and then routed into modules of follow-up questions for each reported event. If 'No', this was the end of the Life Events survey for that month.

The Life Events study included experiments with the timings of reminders to complete the survey, the monetary incentives offered to respondents, and a control group that was not invited to the monthly survey.

This report documents results on participation in the monthly data collection, quality of the data collected, effects of the monthly data collection on the annual interview, and related experiments in the annual interview to improve the collection of contact details. The data section in this report is largely taken from the User Guide for the Life Events data written by the same authors (Institute for Social and Economic Research 2022).

2 Data

The data collected in the Innovation Panel Life Events Study are available from the UK Data Service (University of Essex, Institute for Social and Economic Research 2022). The Life Events data can be linked to data on the same individuals from the annual Innovation Panel interviews, which are also available from the UK Data Service (University of Essex, Institute for Social and Economic Research 2023).

2.1 Fieldwork protocols

The design of the Life Events study was based on qualitative research with Innovation Panel sample members that explored whether respondents would be willing to complete additional surveys about life events between the annual interviews and on what conditions (Horsley et al 2019), and on previous experimental tests of different ways of asking the initial life events question and different methods of inviting sample members to the life events survey (Jäckle et al 2019).

The Life Events study was implemented as a monthly web survey. Invitations to the survey were sent out by email and SMS text messaging. Fieldwork ran from the 1st of the month for 7 days, starting in February 2020 and ending in January 2021. The recall period for each survey was the previous calendar month, that is, we collected data about January to December 2020.

All sample members who were invited to Life Events study were sent a prenotification letter by post on 28 January 2020. The letter explained the purpose of the Life Events study, what we were asking respondents to do, and the reward we were offering them in return. The letter also said that invitations to the monthly web surveys would be sent out by email and text message, depending on what contact information we had for them. If the sample member's email address and/or mobile phone were known to us, the letter included partially redacted versions, where all but the last few characters of the phone number and all but the first few characters of the email address were replaced by #. The letter said that this was the information we had and asked them to update their contact details on the participant website if the details were incorrect.

For each monthly survey, two reminders were sent out to sample members who had not yet completed it. The timing of reminders was randomly allocated: one group received reminders daily, the other group in two-day intervals.

All respondents were offered £1 for every monthly survey they completed. A random half of sample members were in addition promised £2 if they reported any life events, as the questionnaire would be considerably longer for them.

The text of the prenotification letter varied according to which incentive treatment group the sample member was assigned to, and whether we had an email address and/or mobile

number. Table 1 documents the frequencies of the different letter versions that were sent out.

Table 1: Prenotification letter versions

Version	Freq.	Percent
1: £1 incentive, email only known	124	6.8
2: £1 incentive, mobile only known	72	3.9
3: £1 incentive, email and mobile known	536	29.3
4: £1 incentive, no email or mobile known	158	8.6
5: £1+£2 incentive, email only known	127	6.9
6: £1+£2 incentive, mobile only known	69	3.8
7: £1+£2 incentive, email and mobile known	568	31.1
8: £1+£2 incentive, no email or mobile known	175	9.6
Total	1,829	100.0

2.2 Questionnaire content

The Life Events study used the same questionnaire in each of the 12 months, except for the addition of debrief questions in waves 2 and 8. The questionnaire is available with the data documentation for the Life Events study at https://beta.ukdataservice.ac.uk/datacatalogue/studies/study?id=8990.

Each month respondents were first asked a single Yes/No filter question, about whether they had experienced any of a list of events in the previous calendar month (Box 1). For respondents who answered 'No', this was the end of the Life Events survey for that month (except for waves 2 and 8 where they were asked some debrief questions).

Respondents who answered 'Yes', were asked a follow-up question to ascertain which event or events they had experienced (Box 2). They were then asked their date of birth, as an identity check to verify that the correct person was completing the questionnaire. Depending on which event types respondents had reported, they were then routed into follow-up modules of questions about the events reported.

There were some modules that were asked of all respondents who had reported events. These included questions about life satisfaction, mental health, finances, and support networks.

The debrief question in wave 2 was a single open-ended question. This was asked of all respondents, regardless of whether or not they had reported any events: ***"****We would appreciate your feedback, to help us improve how we collect data for Understanding Society. Do you have any comments on your experience of taking part in the monthly surveys about life events?"*

Wave 8 contained a longer module of debrief questions including questions about any difficulties with accessing the monthly surveys or answering the questions, about the

contents of the questionnaire and the events respondents did or did not report, whether they would participate in such a study again, whether the level of incentives was appropriate, and if they had not completed all waves so far, why they had missed some.

Box 1: Life Event filter question

Etevttrig *Life event trigger question*

SCRIPTING NOTE: Randomise the order of events 1-5. Exclude 'Don't know' and 'Prefer not to say' answer options.

Did you experience **any** of the following during {last calendar month} {year of last calendar month}?

Please only report events experienced during {last calendar month}. {IF {last calendar month} {year of last calendar month} not December 2020: We will be asking you about any events since then in the next survey.}

- Diagnosed with a new health condition or entered hospital/clinic as an in- or outpatient
- Had a pregnancy confirmed / partner had a pregnancy confirmed
- Changed jobs, started or stopped working
- Moved home
- Stopped or started living with a partner

1. Yes
2. No

UNIVERSE: All sample members eligible for the Life Events study

Box 2: Life Event type follow-up question

Etevents *Which life events question*

SCRIPTING NOTE: Randomise order of response options in blocks (as shown below). The order within a block should remain constant, but the order of the blocks should be randomised to match the randomisation for **Etevttrig.** Exclude 'Don't know' and 'Prefer not to say' answer options.

Which of the following did you experience during {last calendar month} {year of last calendar month}?

Please select all of the answers that apply to you.

Block 1	1. Diagnosed with a new health condition 2. Entered a hospital/clinic as an inpatient 3. Entered a hospital/clinic as an outpatient
Block 2	4. Had a pregnancy confirmed 5. Partner had a pregnancy confirmed
Block 3	6. Changed jobs 7. Started working 8. Stopped working
Block 4	9. Moved home
Block 5	10. Stopped living with a partner 11. Started living with a partner

UNIVERSE: If Etevttrig = 1 // Respondent has experienced an event

2.3 Sample and randomised allocations to experimental treatments

The eligible sample for the Life Events study included all active Innovation Panel sample members who were eligible for the next annual interview. The Innovation Panel is a clustered and stratified probability sample of postal addresses in Great Britain. For more details on the sample design see the Innovation Panel User Guide at https://www.understandingsociety.ac.uk/documentation/innovation-panel/user-guide.

Figure 1 documents the sample selection. In January 2020 all active sample members were extracted from the Innovation Panel sample file. Sample members in households where no-one had participated in the wave 11 annual interview were considered 'inactive' sample members and excluded.

All active sample members were randomly allocated to experimental treatments for the Life Events study:

1. Allocation to the Life Events study: 70% of the sample were allocated to the Life Events study, 30% were treated as a control group and not invited.
2. Respondent incentives: all respondents were offered £1 for every monthly survey they completed. A random half of sample members were in addition promised £2 if they reported any life events, as the questionnaire would be considerably longer for them.
3. Timing of reminders: for each monthly survey, two reminders were sent out to sample members who had not yet completed it. The timing of reminders was randomly allocated: one half received reminders daily, the other half in two-day intervals.

The randomisations were done at the household level, so that all individuals within a household would receive the same treatment. The randomisations were stratified by household internet use, wave 11 household survey response, wave 11 household cross-sectional survey weight, survey mode allocation and sample origin (original or one of the refreshment samples). The second randomisation was in addition stratified by the first randomisation, the third was in addition stratified by both preceding randomisations. In other words, the latter two randomisations (incentives and reminders) were fully crossed.

Once fieldwork for wave 12 of the annual Innovation Panel survey had closed, a number of sample members were returned as 'adamant refusers' and removed from the active sample.

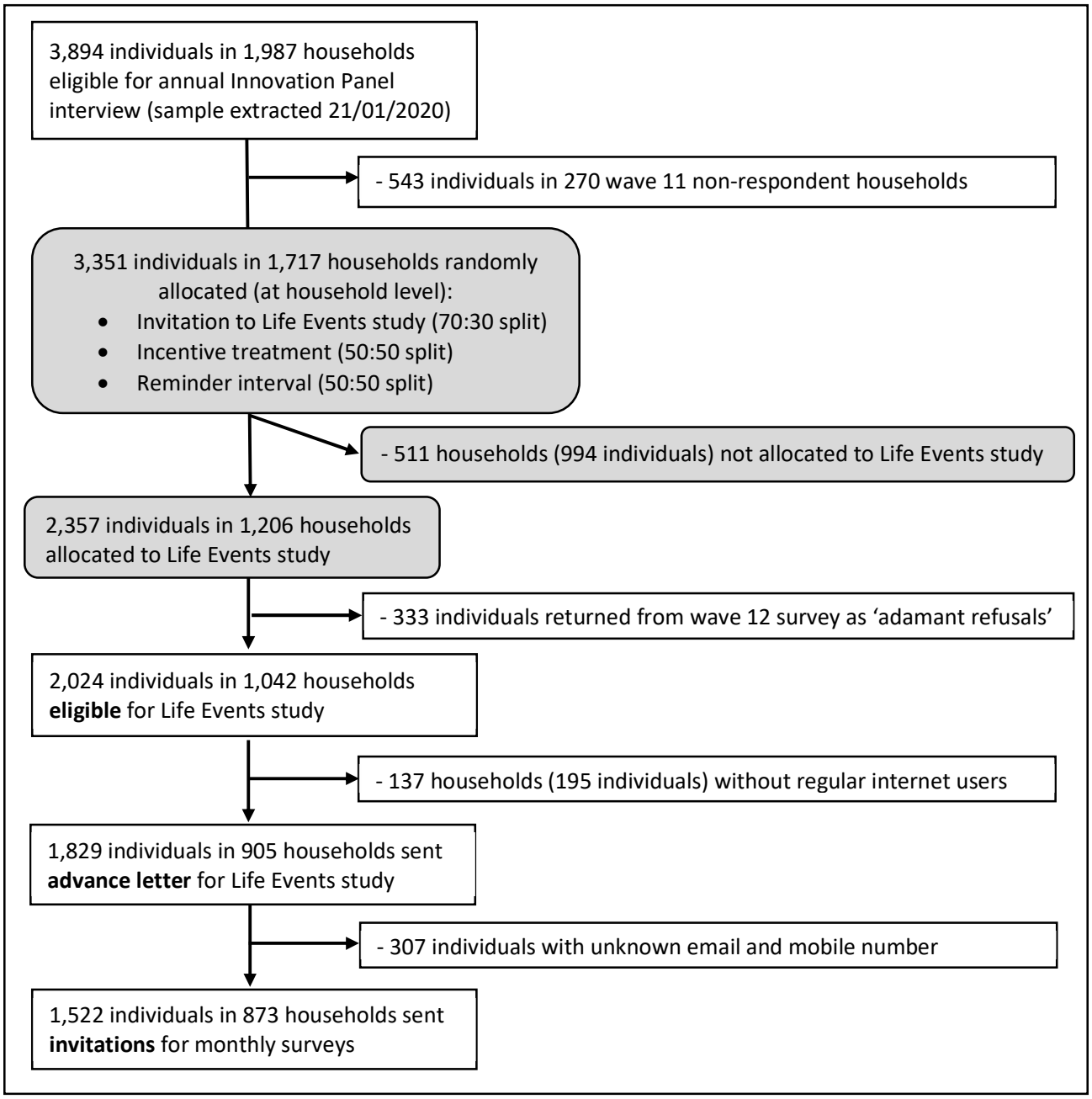
This left 2,024 individuals in 1,042 households who were active sample members and had been allocated to the Life Events study (i.e. eligible sample members).

As the Life Events study was implemented as a web survey, sample members in households where no-one regularly used the internet (according to responses in earlier waves of the annual Innovation Panel survey) were excluded from the study. This left 1,829 individuals in 905 households who were sent advance letters for the Life Events study.

However, for some sample members we did not have a valid email address or mobile number. Theses sample members therefore did not receive the invitations to the monthly survey that were sent out by email and SMS.

This left 1,522 individuals in 873 households who were sent an invitation to at least one of the monthly Life Events surveys (Figure 1).

Figure 1: Innovation Panel Life Events study sample selection



3 Life Event survey outcomes

In this first section we examine participation in the 12 monthly Life Events surveys. Whether sample members remain willing to complete the monthly survey over time is a key concern: for event-triggered data collection to be successful, the response rates would have to be relatively stable over time, otherwise the sample size will soon become unviable. We also examine the reasons for not participating in the survey and whether the experimental treatments varying the respondent incentives and the intervals between interviews affected response. We examine the following research questions:

- What were the survey outcomes and how did they vary between age groups?
- How did response rates evolve across the 12 monthly surveys?
- Did respondent incentive or reminder interval treatments affect response rates?
- How many of the 12 surveys did respondents complete?

3.1 What were the survey outcomes and how did they vary between sub-groups?

Table 2 documents the fieldwork outcomes, aggregated across the 12 monthly surveys, for the sample eligible for the Life Events study. Of the 2,024 eligible sample members, 195 (9.6%) were in households where no-one was a regular internet user and so were not sent the advance letter. This sub-sample is therefore lost due lack of internet coverage.

A further 307 (15.2%) were sent the advance letter, but as we had neither an email address nor a mobile number, they were never sent an invitation to the monthly surveys. That is, this sub-sample is lost due to non-contact.

The remaining cases include those who were invited but never completed any of the 12 surveys (n=502, 24.8%). This sub-sample is lost due to persistent non-response.

Table 2: Survey outcome aggregated over the 12 waves (sample eligible for the Life Events study)

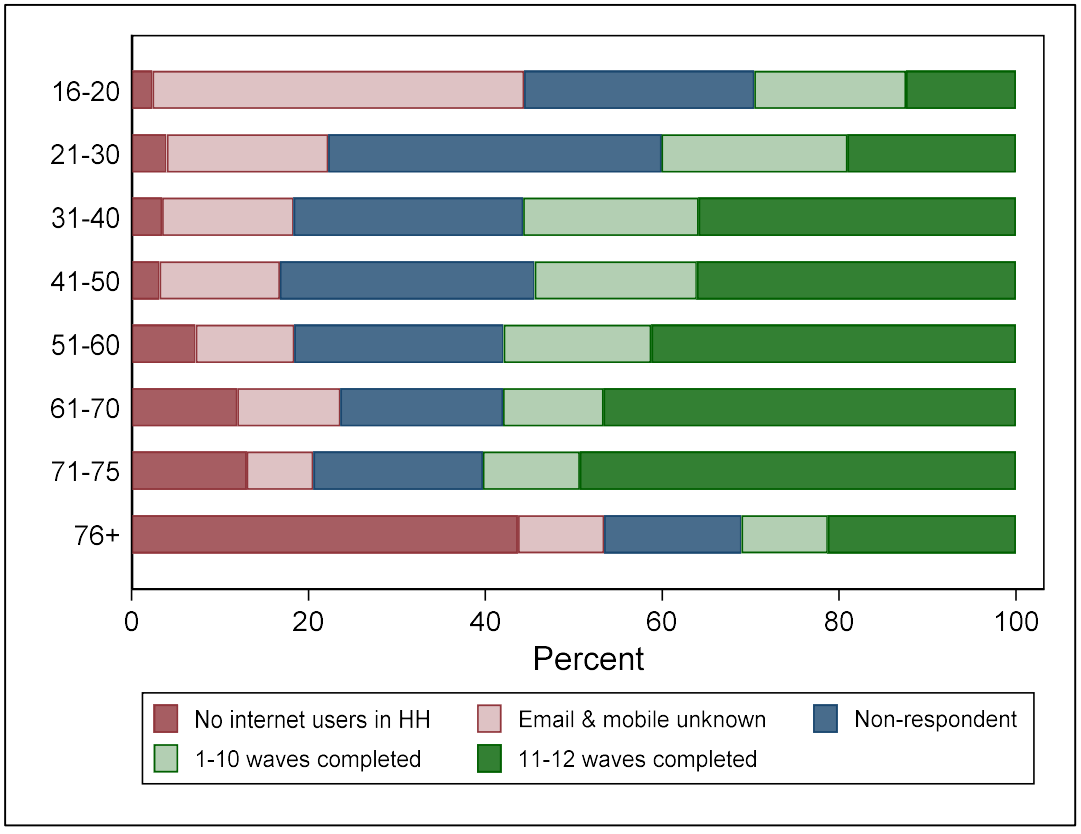
Survey outcome	Frequency	Percent	Cumulative Percent
No internet users in household	195	9.6	9.6
Email and mobile number unknown	307	15.2	24.8
Non-respondent in all waves	502	24.8	49.6
Completed 1-10 waves	324	16.0	65.6
Completed 11-12 waves	696	34.4	100.0
Total	2,024	100.0	

Notes: The base is active sample members who were randomly allocated to the Life Events study.

Among the respondents there are subsets who completed between 1 and 10 waves (n=324, 16.0%) and those who completed 11 or all 12 waves (n=696, 34.4%). Those who did not complete all waves include respondents who attritted permanently from the Life Events study and those with intermittent wave non-response.

Figure 2 shows that the survey outcomes vary considerable between age groups. Internet coverage is close to universal until age 60 and starts dropping for the older age groups: 12.0% of respondents aged 61-70 and 13.0% of respondents aged 71-75 are in households without any regular internet users, rising to 43.7% of respondents aged 76 and older. In contrast, the rates of missing contact details are highest among the youngest age group (16-20 year olds) at 42.0%, compared to rates of between 8% and 18% for all other age groups. The younger age groups are also more likely to be non-respondents in all waves, while the older age groups are the most compliant with 49.3% of 71-75 year olds completing all 12 waves of the survey, followed by 46.7% of 61-70 year olds and 41.2% of 51-60 year olds.

Figure 2: Survey outcome across the 12 waves, by age group (sample eligible for the Life Events study)



Notes: See Appendix Table 1 for the numbers underlying this graph.

Figure 3 illustrates the biases introduced at the different stages of selection into the Life Events study: the sub-set of sample members with internet users in the household, the sub-set with internet users and a valid email address or mobile number, and the sub-set of respondents who completed at least one monthly survey. We use sample member characteristics available from the wave 11 household enumeration grid, as these variables have valid observations for everyone in wave 11 respondent households. The drawback is that the list of variables that are relevant to the Life Events study is limited: age, gender, whether in paid work, whether living with a partner, and whether own children living in the household. The data from the individual interviews would provide more detailed information (such as health status) but would be missing for all non-respondents and are therefore not suitable for this analysis.

The full analyses are documented in Appendix Table 2. Following the approach by Couper et al. (2018), the first column shows the composition of the full sample eligible for the Life Events study. The bias columns show the difference in an estimate *y* between the selected sub-sample (s) and the full sample (f):

$$bias(y) = y_s - y_f$$

We calculate the standard error of the estimated bias following Lee (2006) as:

$$se(y_s - y_f) = \frac{n_f - n_s}{n_f}\sqrt{var(y_s) + var(y_{ns})}$$

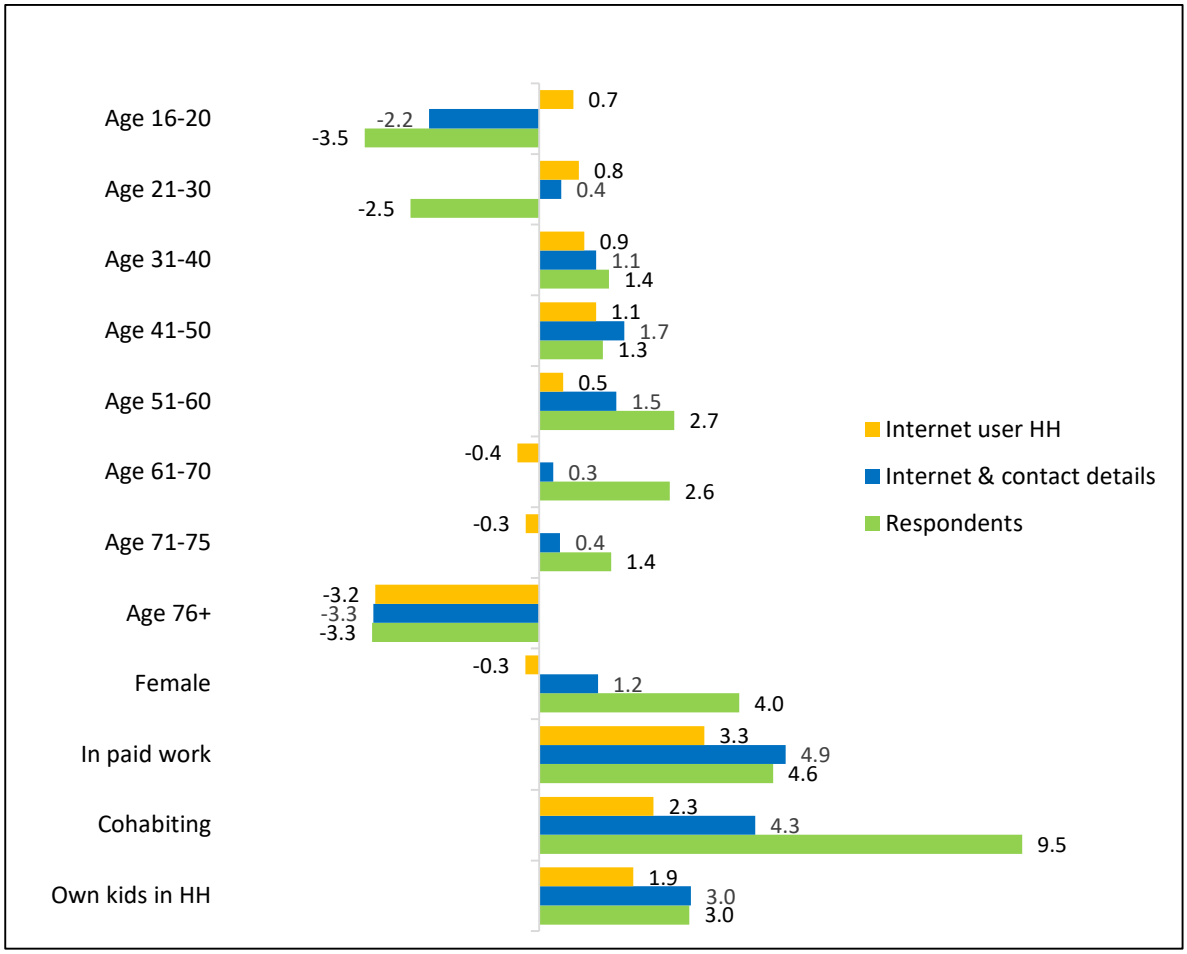
Where y_{ns} is the estimate for the sub-sample that is not selected. We then test the significance of the bias estimates using large sample z-tests, dividing each estimated bias by its standard error.

As an example, 8.6% of the full sample are in the 76+ age group. Among the sub-sample with at least one household member who uses the internet 5.4% are in this age group, resulting in a bias of -3.2 percentage points. For variables with two categories the bias estimates are symmetrical. For example, in the sub-sample of respondents, women are over-represented by 4.0 percentage points and men under-represented by the same amount. We therefore only include one of the two categories in the table. For variables with more than two categories all categories are included.

Figure 3 summarizes the bias estimates. The youngest age group (age 16-20) are over-represented among internet users (+0.7 percentage points) but under-represented among those in internet user households with known contact details (-2.2 percentage points) and under-represented among respondents (-3.5 percentage points). Those in the 21-30 age group are similarly under-represented among respondents by 2.5 percentage points. Those in the age group 76+ are also under-represented among respondents (-3.3 percentage points) and this is

mostly because they are under-represented among internet user households (-3.2 percentage points).

Figure 3: Selection bias of sample members in internet user households, sample members in internet user household with valid email or mobile number, and survey respondents (eligible sample)



Notes: See Appendix Table 2 for numbers underlying this graph, including significance tests.

Women are represented proportionately among internet user households, but over-represented among those with known contact details (+1.2 percentage points) and among respondents (+4.0 percentage points). Those in paid work are over-represented among internet households (+3.3 percentage points) and to a similar extent among those with valid contact details (+4.9) and among respondents (+4.6). Those living with children of their own are over-represented among internet users by 1.9 percentage points and by 3.0 percentage points among those with known contact details and among respondents. Finally, those living with a partner are over-represented by 2.3 percentage points among internet users, by 4.3 percentage

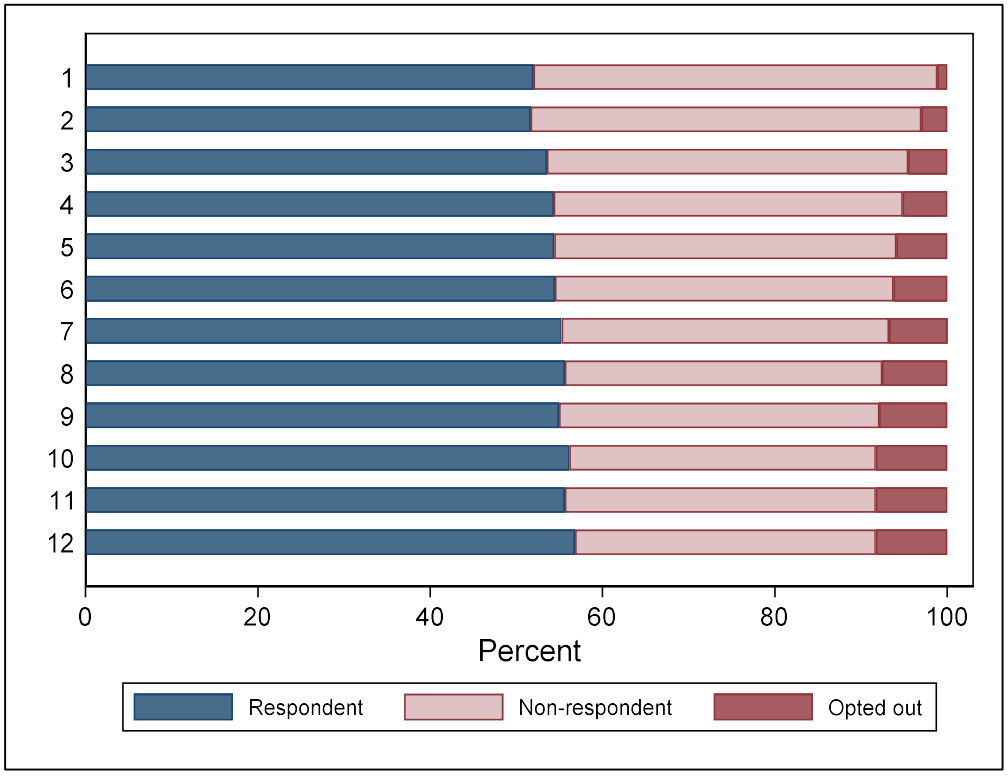
points among those with known contact details, and by 9.5 percentage points among respondents.

In sum, the under- or over-representation of some groups is mainly due to under- or over-representation among internet users (e.g. age 76+). For other groups the bias is mainly due to differential non-response (e.g. age 21-30, female, cohabiting).

3.2 How did response rates evolve across the 12 monthly surveys?

Figure 4 documents the monthly response rates, based on sample members for whom we had an email address or mobile number, that is, those cases whom we could send an invitation to the monthly survey. The number of cases varies slightly between waves, as some respondents updated their contact details during the year. Across the months, the response rate ranged from 52.0% in month 1 to 56.8% in month 12. Some sample members contacted the fieldwork agency or the *Understanding Society* participant liaison team and asked to be removed from the study. The rate of sample members who opted out increased from 1.1% who opted out immediately after the advance letter, to 8.3% in wave 12.

Figure 4: Life Event survey response by month (invited sample)



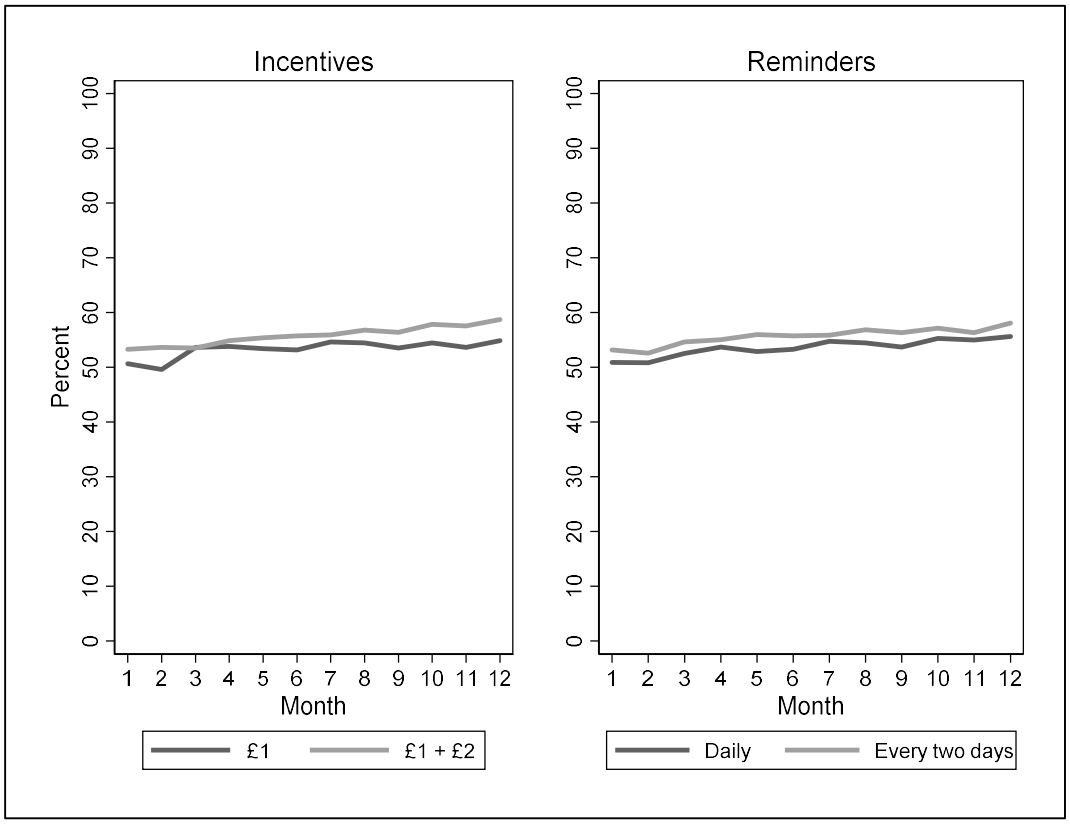
Notes: see Appendix Table 3 for the numbers underlying this graph.

To test whether the positive trend in response rates across the 12 months is significant, we estimate a random effects probit model of the probability that the respondent completed the monthly survey, with waves nested within respondents. The survey wave is included as a continuous variable and is the only covariate in the model. The positive time trend in response is significant (β=.041, SE=.006, p<0.001), suggesting that although there are sample members who attrit from the study, there are others who become increasingly likely to participate over time.

3.3 Did respondent incentive or reminder interval treatments affect response rates?

Figure 5 shows that response rates were slightly higher when respondents were offered £1 for completing each survey plus £2 if they reported events, than if they were offered only the £1. The average difference in response rates across the 12 waves is 2.5 percentage points. To test for significance, we estimate a random effects probit model of the probability that the respondent completed the monthly survey, with waves nested in respondents and the treatment indicator as the only covariate. The estimated coefficient for the treatment indicator suggests that this is a significant effect (β=0.202, S.E.=0.077, p=0.008).

Figure 5: Response rates by survey month and experimental treatments (invited sample)



Notes: See Appendix Table 4 for the numbers underlying these graphs.

Similarly, Figure 5 suggests that response rates were on average 2.1 percentage points higher when reminders were sent every two days than when they were sent every day. This treatment effect is marginally significant (β=0.148, S.E.=0.077, p=0.053).

3.4 How many of the 12 surveys did respondents complete?

Table 3 documents the pattern of missingness across the 12 months of the Life Events survey. Among respondents who completed at least one of the surveys, 58.9% completed all 12 and a further 9.3% completed all but one. A further 6.4% had multiple gaps, but they missed only one wave at a time, and 4.9% did not initially complete the survey, but once they did start they completed all waves. These groups of respondents provided complete or relatively complete data, and altogether represent 79.5% of respondents. The remaining 20.5% of respondents provided less-complete data: they had gaps of two or more waves at a time, they completed at most three waves, or they stopped responding to the last waves.

Table 3: Pattern of missingness across the 12 months of the Life Events survey (respondent sample)

	N	%	Cum. %	Example
All waves completed	601	58.9	58.9	11111111111
1 wave missing	95	9.3	68.2	1111.111111
Multiple gaps, max 1 wave each	65	6.4	74.6	1.1111.1111
Late starter: 4+ waves completed	50	4.9	79.5	111111
2 or more waves missing at a time	65	6.4	85.9	.1....11111
Only 1-3 waves completed	29	2.8	88.7	...1.1.....
Monotonic attrition: <10 waves completed	115	11.3	100.0	11111.....
Total	1,020	100.0		

Notes: '1's in the Example column denote months that respondents completed, '.'s denote months they did not complete. The base includes all respondents who completed at least one month of the survey.

3.5 What feedback did respondents give in the debrief questions?

All respondents who completed the month 8 survey were asked a series of debrief questions at the end of the Life Events survey (n=840). Respondents who did not complete any of the monthly surveys, or who completed some but not the month 8 one, were not debriefed. The following analysis is a complete case analysis, based on respondents who answered the debrief questions.

The debrief module used two feed-forward variables that were based on the respondents' response behaviour for the Life Event study. The first was an indicator of whether they had completed each of the month 1-7 surveys (72.3% yes, 27.7% no). The second was an indicator

of whether they had reported any events in the month 1-7 surveys (22.7% yes, 77.3% no). These feed-forward variables were used for routing in the debrief questions.

The following tables document the responses to the debrief questions.

In response to the question *"What difficulties, if any, have you had accessing the monthly surveys?"*, some respondents said they did not receive an invitation each month (6.6%) or that the links did not work (3.4%, Table 4). This finding has prompted us to think about how we can ask respondents how they would like to receive the invitations to the following surveys (by email or SMS text message) and ensure that we have the corresponding contact details.

Table 4: Difficulties accessing the monthly surveys

	N	% of responses	% of cases
Did not receive an invitation each month	55	6.6	6.7
Links to the survey didn't work	28	3.4	3.4
Could not access the survey on my device	24	2.9	2.9
Other difficulties accessing Life Events survey	35	4.2	4.2
No difficulties accessing the monthly surveys	694	83.0	84.0
Total	836	100.0	101.2

Valid cases: 826. Missing: 21. Select all that apply question therefore the sum of answers adds up to more than 100%.

The majority (92.8%) of respondents reported no problems in response to the question *"What difficulties, if any, have you had answering the questions in the monthly surveys?"* (Table 5). Only a few respondents said they were unsure what to report and what not to report (2.1%).

Table 5: Difficulties answering the questions in the monthly survey

	N	% of cases
I wasn't sure to report and what not	17	2.1
I couldn't understand some of the questions	2	0.2
The instructions were unclear	2	0.2
Other difficulties	38	4.6
No difficulties	763	92.8
Total	822	100.0

Valid cases: 822. Missing: 18. Select all that apply question, however no respondent selected more than one response option.

In response to the question *"Are there specific events that you would rather <u>not</u> tell us about?"*, the most frequent mention was 'being diagnosed with a new health condition' (1.3%, Table 6). For all other types of events the percentage of respondents who said they would rather not

report it was below 1%; 97.7% of respondents said they were comfortable telling us about all these types of events.

Table 6: Events respondents would rather not tell us about

	N	% of responses	% of cases
Being diagnosed with a new health condition	11	1.3	1.4
Entering a hospital/clinic as an inpatient	7	0.8	0.9
Entering a hospital/clinic as an outpatient	7	0.8	0.9
Having a pregnancy confirmed	4	0.5	0.5
Partner having a pregnancy confirmed	2	0.2	0.3
Changing jobs	0	0.0	0.0
Starting working	0	0.0	0.0
Stopping working	1	0.1	0.1
Moving home	0	0.0	0.0
Stopping living with a partner	5	0.6	0.6
Starting living with a partner	1	0.1	0.1
None - I am comfortable telling you about all of these events	796	95.4	97.7
Total	834	100.0	102.3

Valid cases: 815. Missing: 32. Select all that apply question therefore the sum of answers adds up to more than 100%.

When asked *"Imagine you were being asked to complete the monthly surveys for the first time. Based on your experience, how likely would you be to participate?",* 95.7% said they would be very or somewhat likely to participate again, and only 4.4% said they would be somewhat or very unlikely to (Table 7).

Table 7: Whether respondent would participate in a similar study again

Likelihood of participation	N	%
Very likely	616	74.8
Somewhat likely	172	20.9
Somewhat unlikely	19	2.3
Very unlikely	17	2.1
Total	824	100.0

When asked *"Do you feel that the amount you have received so far in your reward account for participating in the monthly surveys is too low, about right, or too high?"*, 85.9% of respondents said it was about right while 12.5% said it was too low. There was no difference in these answers between the incentive treatment groups (Table 8).

Table 8: Whether the amount of incentive offered was appropriate

Incentive treatment	Too low (%)	About right (%)	Too high (%)
£1	11.2	87.0	1.8
£1+£2	13.7	84.9	1.4
Total	12.5	85.9	1.6

Differences between treatment groups n.s.

When asked *"Since the start of the Life Events survey in February this year, were there any months where you had experienced events but did not get around to completing the survey? (Not to worry, we will not ask you about those events now.)"*, 5.4% said yes there were, 81.5% said no, and 13.1% said they did not know (Table 9).

Table 9: Whether respondent had any months where they did not complete the survey although they had experienced events

Did not complete survey in months when experienced events	N	%
Yes	44	5.4
No	670	81.5
Don't know	108	13.1
Total	822	100.0

Similarly, when asked *"Where there any months where you completed the survey but chose not to tell us about (some) events? If so, what were the main reasons?"*, 93.1% of respondents said they had reported all events. There were however small proportions of around 1% who said they could not bear thinking about the event, did not want to share the information, or some other reason (Table 10).

Table 10: Whether there were events the respondent chose not to report

	N	% of responses	% of cases
Couldn't bear thinking about the event	10	1.2	1.2
Didn't want to share information	10	1.2	1.2
Reward was too low	8	1.0	1.0
Asked too many questions about events	2	0.2	0.2
Questions about events were difficult to answer	0	0.0	0.0
Questions about events were boring	1	0.1	0.1
Other reason	27	3.3	3.3
None of the above - I reported all events	763	92.9	93.1
Total	821	100.0	100.1

Valid cases: 820. Missing: 27. Select all that apply question therefore the sum of answers adds up to more than 100%.

Respondents who had reported at least one event in the previous survey months were asked "*What are your views on the number of questions that were asked, about events you had reported?"*. Most respondents said they though the number of questions was about right, however 7.0% thought there were too many questions (Table 11).

Table 11: Whether too many follow-up questions asked about reported events

	N	Percent
Too many questions	13	7.0
Too few questions	8	4.3
About right number of questions	165	88.7
Total	186	100.0

Base: respondents who reported at least one event in the preceding survey months.

However in response to the question *"How comfortable are you answering the questions about events?"*, all respondents said they were either very comfortable (75.3%) or somewhat comfortable (24.7%, Table 12).

Table 12: Whether respondents were comfortable answering the follow-up questions about reported events

	N	Percent
Very comfortable	140	75.3
Somewhat comfortable	46	24.7
Not at all comfortable	0	0.0
Total	186	100.0

When we asked respondents who had reported events *"Are there things you wanted to tell us about events you had experienced, that we did not ask about?"*, 10.8% of respondents said yes there were.

However, when we then asked an open text question "*Can you tell us what you would have wanted to tell us about events you had experienced, so we can possibly ask in future surveys?"*, respondents seemed to have different types of events in mind, rather than different information about the events we had asked about. The types of events respondents said they would have liked to report included their wife's new health condition, the birth of a child or grandchild, the death of a family member or friend, marriage, and mental health problems.

Finally, when we asked the open text question *"Is there anything we could do to make it easier for you to continue to participate? Do you have any other comments about participating in our monthly surveys about life events?"*, most respondents said no or said they liked the survey as it was. Some examples of the feedback are:

- "I am [age] years old, living with my husband for 62 years, so some of the questions are not relevant to me but I do not mind reading them in the survey."

- “I don't always spot the emails I'm not sure that they are always sent, the texts i see more reliably”
- “No its been far easier this way than when asked about downloading an app”
- “We have not used most of the money cards you have sent to us. A recent electronic card payment, if it was sent to us by you has not been successfully opened and downloaded so is no incentive at all. There are some things that we do not do electronically. We prefer paper vouchers, cash or electronic prepaid cards.”

4 Measurement quality in the Life Events survey

4.1 Are the rates of reporting events similar in the annual IP13 interview and the monthly Life Events study?

Since respondents in the Life Events study were also invited to complete their annual Innovation Panel interviews, we can compare the reporting of events in the two data sources in order to assess the reliability of reporting.

Some of the questions asked during the Life Events surveys are directly matched by questions in the annual IP surveys; for other questions, the subject is covered by both the Life Events surveys and the annual IP surveys, but with somewhat different questions.

Methods

We calculated the incidence of respondents reporting at least one event of a given type during the 12 months of the Life Events study. We calculated comparator values for IP13 from the variables detailed in Table 13. Where relevant, the table also details which of the categorical options in the IP13 variables were counted as constituting an event to be counted.

For the diagnosis of new health conditions, the same list of conditions was provided to respondents in the Life Events survey and IP13. However, the definition of the “other” category differed between the two surveys: in the Life Events survey it was just “Other condition” whereas in IP13 it was “Other long standing/chronic condition; please specify”. Consequently, when comparing the incidence of respondents reporting each event type as a whole, we omit (from both Life Events and IP13 data) those cases where respondents reported having been diagnosed with a new health condition but only reporting a condition of type “other”. (Where a respondent reported both being diagnosed with a new health condition of type “other” and at least one named condition, they were included in the incidence count.)

Table 13: Correspondence of variables in the Life Events and IP13 data

Life Events variable	Life Events label	IP13 variable	IP13 label	IP13 values included
Etevents01*	New diagnosis of any health condition	m_hcondnew*	New diagnosis of any health condition	
Etevents02	Entered a hospital/clinic as an inpatient	m_hosp	Hosp or clinic in-patient last 12 months	
Etevents03	Entered a hospital/clinic as an outpatient	m_hl2hop	Hosp or clinic out-patient last 12 months	
Etevents04	Had a pregnancy confirmed	m_preg	Has had a pregnancy	
Etevents05	Partner had a pregnancy confirmed	m_father	Fathered children since last interview	Yes; Awaiting birth of child
Etevents06	Changed jobs			
Etevents07	Started working			
Etevents08	Stopped working			
Etevents09	Moved home	m_adcts	Lived continuously at this address since last interview	No
Etevents10	Stopped living with a partner			
Etevents11	Started living with a partner	m_lmcby41	cohab no. 1: Year began cohabitation spell	2019; 2020

* For the health condition diagnosis variables in both surveys, respondents only reporting a diagnosis of type “Other” were excluded from the analysis.

For each event type, we present the total count and number of respondents who reported the event at least once. We also calculate and present weighted values. These account for the fact that the reporting period for the Life Events survey and IP13 are not necessarily the same. In the Life Events survey respondents were asked to report on events in the prior calendar month for a period of 12 months. Respondents who completed fewer than the 12 surveys therefore reported on a shorter period. In IP13 respondents were asked to report on events since their last annual interview. If they had not completed IP12, they would report on events since IP11, say. In addition, the IP13 reporting period varies in length between respondents depending on the dates of their IP12 and IP13 interviews.

For the Life Events data we scale reports by the number of months that the respondent completed, multiplying by $(12/n_{waves\ completed})$; for a respondent completing all 12 waves, this

weighting will equal 1; for a respondent completing, say, 6 waves, this weighting will equal 2, doubling the impact of any events that they reported during those waves when they did complete the survey. For IP13 we calculated the length of time between their last annual IP survey completion and the date on which they completed IP13 and scaled their value to equal one year; for those respondents who had completed their previous annual IP survey less than a year earlier (e.g. completing IP12 relatively late in the fieldwork period and IP13 relatively early) this would result in scaling up any events they reported; for those respondents who were reporting on a period of more than a year, this would result in any event reports being scaled down to a fractional count. Each respondent's time since the previous IP annual survey completed was derived from the date on which they completed IP13 and the date on which they completed their most recent previous interview.

In a final step we restrict the analysis to the subset of respondents who completed all 12 waves of the Life Events survey and who completed IP12 and IP13.

Results

Tables 14 to 16 indicate that there are some differences in the rates of reporting events between the monthly Life Events survey and the annual IP interviews, even when we weight the reported events to account for differences in reporting periods between the two surveys (Table 14) and when we restrict the analyses to respondents who completed both the annual and the monthly surveys (Table 15).

Regarding the reporting of health conditions the wording was maybe not sufficiently similar in the two studies (Table 16). The wording seems to matter in relation to which "other conditions" respondents feel they should report. Across most categories, reporting of new diagnoses of health conditions was lower for the Life Events study than the annual IP13. However for "other" it was substantially higher. We assume that this was due to the IP13 version of this question specifying that other conditions have to be "long standing / chronic" whilst the Life Events version did not include that constraint.

Table 14: Weighted and unweighted incidence of reporting events in the Life Events study and IP13 interview

		Life Events study				IP13 annual interview			
Life Events label	IP13 label	N	%	Weighted n	Weighted %	N	%	Weighted n	Weighted %
New diagnosis of any health condition except other	New diagnosis of any health condition except other	57	5.6	95.3	4	292	13	261.9	13
Entered a hospital/clinic as an inpatient	Hosp or clinic in-patient last 12 months	51	5	75.7	3.2	148	6.6	133	6.6
Entered a hospital/clinic as an outpatient	Hosp or clinic out-patient last 12 months	209	20.5	283.1	12	859	38.3	771.1	38.5
Had a pregnancy confirmed	Has had a pregnancy	12	1.2	16.2	0.7	23	1	16.8	0.8
Partner had a pregnancy confirmed	Fathered children since last interview	3	0.3	3.6	0.2	16	0.7	12.1	0.6
Changed jobs		81	7.9	112.8	4.8				
Started working		66	6.5	102.9	4.3				
Stopped working		124	12.2	167.5	7.1				
Moved home	Lived continuously at this address since last interview	58	5.7	110.1	4.7	51	2.3	32.7	1.6
Stopped living with a partner		12	1.2	13.1	0.6				
Started living with a partner	cohab no. 1: Year began cohabitation spell	20	2	44.3	1.9	28	1.2	20.4	1

Notes: The effective Ns used to calculate the percentages for the weighted counts are the sum of all of the respective weights. For the whole samples these are 2365 for the Life Events study and 2009 for the IP. For individual variables they can be smaller due to inapplicable cases that are excluded from the denominators.

Table 15: Incidences of reporting each event type at least once, constrained to cases that are complete in both datasets (N = 575)

Life Events label	Life Events N	Life Events %	IP13 label	IP13 count	IP13 %
New diagnosis of any health condition except other	32	5.6	New diagnosis of any health condition except other	67	11.7
Entered a hospital/clinic as an inpatient (binary)	35	6.1	Hosp or clinic in-patient last 12 months	36	6.3
Entered a hospital/clinic as an outpatient (binary)	133	23.1	Hosp or clinic out-patient last 12 months	230	40
Had a pregnancy confirmed (binary)	5	0.9	Has had a pregnancy	7	1.2
Partner had a pregnancy confirmed (binary)	1	0.2	Fathered children since last interview	0	0
Changed jobs (binary)	53	9.2			
Started working (binary)	46	8			
Stopped working (binary)	83	14.4			
Moved home (binary)	29	5	Lived continuously at this address since last interview	11	1.9
Stopped living with a partner (binary)	6	1			
Started living with a partner (binary)	12	2.1	cohab no. 1: Year began cohabitation spell	5	0.9

Table 16: Incidences of respondents reporting each health condition at least once

Label	Life Events N	Life Events %	IP13 N	IP13 %
Asthma	3	0.3	53	2.4
Arthritis	12	1.2	71	3.2
Congestive heart failure	1	0.1	4	0.2
Coronary heart disease	4	0.4	12	0.5
Angina	2	0.2	11	0.5
Heart attack or myocardial infarction	0	0.0	12	0.5
Stroke	0	0.0	5	0.2
Emphysema	0	0.0	4	0.2
Chronic bronchitis	0	0.0	3	0.1
COPD (Chronic Obstructive Pulmonary Disease)	2	0.2	15	0.7
Hypothyroidism or an under-active thyroid	2	0.2	20	0.9
Any kind of liver condition	5	0.5	7	0.3
Cancer or malignancy	18	1.8	21	0.9
Diabetes	5	0.5	43	1.9
Epilepsy	0	0.0	3	0.1
High blood pressure/hypertension	8	0.8	89	4.0
An emotional; nervous or psychiatric problem	8	0.8	44	2.0
Multiple Sclerosis	0	0.0	2	0.1
H.I.V.	1	0.1	2	0.1
Life Events: Other condition **IP13:** Other long standing/chronic condition; please specify	124	12.2	71	3.2

4.2 How frequently did respondents report duplicate events? Did the extent of duplicate reporting vary between event types?

When asking respondents to report on events that happened during a specified recall period, there is always a risk of telescoping (Neter and Waksberg 1964): respondents might misremember the timing of events and place them earlier or later in time than when they actually occurred. In repeated panel interviews this can lead to respondents erroneously reporting the same event in more than one interview. For example, respondents might accurately report events that occurred towards the end of the previous calendar month, but erroneously also report them in the following interview, if they 'forward telescope' and think the event occurred more recently than it actually did.

In the monthly Life Events data we see that some respondents reported the same event type in multiple months. In this section we therefore examine whether these reports are duplicate reports of the same event or correctly reported sequences of events. We examine the following research questions:

- How frequently did respondents report possible duplicate events?
- Did the extent of duplicate reporting vary between event types?

We focus on assessing instances where the same event type was reported in adjacent calendar months.

Methods

We manually inspected each pair of adjacent events of the same type. To assess whether the adjacent reports are likely to be duplicate reports of the same event, we examine the answers to the follow-up questions about the event. If a respondent reported the same event type in three or more consecutive months (e.g. March, April and May), we assessed each month-pair in turn (e.g. March-April and April-May).

One member of the study team coded each adjacent event pair to create an indicator of the probability that they are duplicate reports of the same event. Table 17 documents the coding frame that was applied. Each adjacent pair of events was coded, based on the subjective assessment of how likely it is that the pair represented the same event. Event pairs were coded as "different events" if the subjective probability was less than 5%, as "probably different events" if the probability was between 5 and 30%, etc. For some of the analyses below, we collapse the categories, for example, into "different or probably different events", "possibly different or possibly duplicate events", and "duplicate or probably duplicate events".

Table 17: Coding frame for probability that an adjacent pair of events is a duplicate

Description	Assessed approx. probability range of being duplicate
Different events	<5%
Probably different events	5-30%
Possibly different events	30-50%
Possibly duplicate events	50-70%
Probably duplicate events	70-95%
Duplicate events	>95%

For a proportion of observations, there was insufficient information in the responses to be able to make any assessment. This included a small number of cases where the respondent had indicated an event type in the event filter questions, but then not answered the follow-up questions about the event, for example not providing a date when the event had occurred.

In coding the event pairs, the coder sought to make a subjective assessment of whether each was likely or not to represent a duplicate, considering the general impression created by the data including factors such as:

- Whether the events were of the same category within the overall event type. For example, for health condition diagnoses, if the follow-up questions indicated that these were diagnoses of different conditions, the events were coded as likely to be different events.
- The dates of the reported events. Events further in time from the point of reporting are more likely to be affected by memory decay and it seems more likely that recall of an event's date might slip by a few days rather than by several weeks. Therefore, an event reported late in one month and then early in the next month would be more likely to be a duplicate.
- For respondents who had longer sequences of events (e.g. reporting the same event type in June, July and August), we took the data from other months into account, to consider whether these were events that might truly have occurred periodically, such as regular outpatient appointments for an ongoing health condition.
- Any free text data that provided information that might distinguish between different events.

Where the event type was "diagnosis of a new health condition", this event type could represent more than one event: respondents could report multiple conditions in the follow-up questions. In these cases, the events were assessed separately: if someone reported in month 5 that they had received an arthritis diagnosis and in month 6 that they had received an arthritis diagnosis and a diagnosis of an 'other' health condition, we would assess the arthritis diagnosis from month 5 against the arthritis diagnosis from month 6, and separately the arthritis diagnosis from month 5 against the 'other condition' diagnosis from month 6. For health conditions, the number of event pairs examined is therefore based on the conditions reported in the follow-up questions about health conditions. That is, for a given pair of calendar months, a respondent can have more than one adjacent pair of health condition events. For the other event types (job starts, residential moves, etc.), there is only one event per month, based on the response to the initial event filter questions.

How frequently did respondents report duplicate events?

Table 18 documents how often respondents reported the same type of event in two adjacent months, and how often these were likely to be duplicate reports of the same event. Of the 1,020 respondents who completed at least one of the monthly Life Event surveys, most never reported the same type of event in adjacent months (89.1%), while 10.9% reported the same type of event in one or more pairs of adjacent months. However, only 4.4% of respondents reported one or more events that were coded as having a probability of 50% or more of being a duplicate (definitely, probably, or possibly duplicates), and 2.5% reported one or more events that were coded as having a probability of 70% or more of being a duplicate (definitely or probably duplicates). The results therefore suggest that respondents only rarely make the error of reporting duplicate events.

Table 18: Frequency of respondents reporting adjacent pairs of events and duplicate events

	Adjacent pairs of same event type		(Probably) duplicate events		(Probably, possibly) duplicate events	
N events	N	%	N	%	N	%
0	909	89.1	994	97.5	975	95.6
1	67	6.6	23	2.3	39	3.8
2	21	2.1	2	0.2	4	0.4
3	9	0.9	1	0.1	1	0.1
4	8	0.8	-	-	1	0.1
5	3	0.3	-	-	-	-
6	1	0.1	-	-	-	-
7	2	0.2	-	-	-	-
Total	1,020	100.0	1,020	100.0	1,020	100.0

Did the extent of duplicate reporting vary between event types?

Table 19 examines whether duplicate reporting is more likely for some types of events than others. This event-level analysis is based on the total number of events of each type, reported by all respondents across the 12 months of the Life Events survey. The counts in column 1 are based on the types of events reported in the second event filter question (Etevents), which asked respondents who said 'Yes' they had experienced one of the events in the last month, which type of event they had experienced. However, for the diagnosis of new health conditions, the count is based on the number of conditions reported. That is, a respondent who reported a diagnosis of new health conditions in the event filter questions, and in the follow-up questions reported two different conditions, contributes a count of two to the first column.

There are three types of events for which there are no adjacent reports of the same type of event: had a pregnancy confirmed, partner had a pregnancy confirmed, and stopping living with a partner.

Column 2 of Table 19 documents the number of adjacent event pairs. For example, of the 70 inpatient hospital/clinic visits reported, there were 11 adjacent pairs of this event type. That is, 15.7% of all reported inpatient visits are followed by another reported inpatient visit the following month. The results show some differences between event types: adjacent reporting of events is least likely for residential moves (4.4%) and job starts (8.2%), and most likely for new health conditions (19.4%) and outpatient hospital/clinic visits (24.1%). This pattern plausibly reflects true events, since health conditions and hospital visits are more likely to be associated with chronic conditions (repeat visits, follow-up treatments, etc.), whereas moves and job changes tend to be discrete events, unless both are temporary in nature.

However, columns 4 and 5 show that less than 1% of the inpatient and outpatient event reports are coded as duplicates or probable duplicates. In most cases the date of event and the open-ended question about the reason for the inpatient or outpatient appointment clearly indicated that these were different events. The highest rate of duplicate or probable duplicate reporting is for respondents saying that they have started living with a new partner (11.1%). There were only 3 reported adjacent events of this type, and all were coded as duplicates. Respondents were only asked about the date when they first moved in together and the date when they first knew this was going to happen. Collecting additional information about new partners, such as their names, could allow better identification of duplicates. For all other types of events, only between 2 and 4% of events are classified as duplicates or probable duplicates.

Based on a manual inspection and assessment of answers to the follow up questions about events, the results suggest that respondents only rarely reported events they had already reported in the previous calendar month. That is, erroneous duplicate reporting of events is rare.

There is, however, some variation between event types in the extent of duplicate reporting. Having a pregnancy confirmed, partner having a pregnancy confirmed, and stopping living with a partner were never reported twice in adjacent months. In contrast, starting to live with a new partner was most likely to be reported twice erroneously, although the number of times this occurred is very small and therefore to be interpreted with caution. For this type of event, it could be helpful to use dependent interviewing to reduce reporting errors: the questionnaire script can include an edit check question, asking respondents who report living with a new partner in two consecutive months, whether this is the same partner or a different new partner.

Table 19: Duplicate reporting by event type

	Events	Adjacent pairs		(Probably) duplicate		Possibly either		(Probably) Different	
Event type	N	N	%	N	%	N	%	N	%
Health condition	252	49	19.4	11	4.4	1	0.4	18	7.1
Inpatient	70	11	15.7	0	0.0	2	2.9	9	12.9
Outpatient	390	94	24.1	1	0.3	16	4.1	74	19.0
Pregnancy confirmed	12	0	0.0	.	.	.	.	.	.
Partner's pregnancy	3	0	0.0	.	.	.	.	.	.
Changed jobs	102	13	12.7	4	3.9	5	4.9	4	3.9
Started working	85	7	8.2	2	2.4	4	4.7	0	0.0
Stopped working	166	23	13.9	7	4.2	8	4.8	5	3.0
Moved home	68	3	4.4	2	2.9	0	0.0	1	1.5
Stopped living with partner	14	0	0.0	.	.	.	.	.	.
Started living with partner	27	3	11.1	3	11.1	0	0.0	0	0.0

4.3 What is the incidence of inconsistent reporting between household members on own/partner pregnancy and residential moves?

The Life Events survey mainly asked about events experienced by the respondent themselves. There were however two types of events that could be reported by multiple household members as applying to them. The question about pregnancy asked whether the respondent or their partner had had pregnancy confirmed in the last month. The question about residential moves would apply to all household members who moved at the same time, whether to the same new location or different locations. To examine the reliability of reports within households we examine the following research question:

- What is the incidence of reporting pregnancies that seems inconsistent between members of the same household?
- What is the incidence of reporting residential moves that seems inconsistent?

It should be noted that an apparent inconsistency between the reports of different members of a household will not normally conclusively demonstrate that there is an error in the reporting for that specific case. It is entirely possible for one member of a household to move out and for others to remain within the household, for example. However, a general impression of the degree of consistency between reports by members of the same household is a datapoint in understanding the reliability of Life Event reporting.

Methods

To assess the reported pregnancy events, we used data from IP13 to identify respondents' partners. For each respondent in the Life Event survey who reported a confirmed pregnancy or confirmed partner pregnancy, we used the variable in IP13 that contained the cross-wave person identifier of their partner (m_ppid), and then identified whether that partner was a respondent in the Life Event survey.

To assess house moves, we used data from IP13 to identify respondents' households. For each respondent in the Life Event study who reported moving home, we used the variable in IP13 that contained their household identifier (m_hidp), and then identified whether there were any other members of that household who were respondents in the Life Event survey.

In order to declare that all respondents in a household (i.e. sharing the same m_hidp) agreed on reports of house moves, we only required that they reported house moves in the same waves. That is, we did not require them to specify the same reason for the move or the same date.

Results

Overall, only 12 respondents reported an own pregnancy. For nine of these cases the partner's identification number was either missing or the partner was not a respondent in

the Life Event survey, leaving only three respondents who could be matched to data from their partners. Only three respondents reported a confirmed pregnancy of their partner, of whom only two could be matched to data on their partners (Table 20).

Table 20: Respondents reporting own or partner pregnancy and whether they could be matched to their partner's data

IP13 cross-wave person identifier of partner (m_ppid)	IP13 partner identifier (m_ppid) matches ETDC respondent	Number for respondents reporting pregnancies	Number for respondents reporting partner pregnancies
Inapplicable	N/A	3	0
Missing	N/A	3	1
Present	No	3	0
	Yes	3	2

Table 21 documents the Life Event survey data of the partners who could be matched. That is, we observe that for two cases, both the person reporting the pregnancy and their partner responded in all or nearly-all waves, and both of them reported the pregnancy in the same wave, while for the remaining case the partner only responded in one wave and that was several months away from the month when the respondent reported a pregnancy.

Table 21: Life Event survey data of respondents and matched partners

Respondent		Partner	
Life Event waves completed	Live Event wave reporting pregnancy	Life Event waves completed	Life Event wave reporting partner pregnancy
1 2 3 4 5 6 7 8 9 10 11 12	12	1 2 3 4 5 6 7 8 9 10 11 12	12
1 2 3 4 5 6 7 8 9 10 11 12	7	3	—
1 2 3 4 5 6 7 8 9 10 11 12	3	2 3 4 5 6 7 8 9 10 11 12	3

Table 22: Respondents reporting residential moves and whether matched to Life Event data from other household members

	Number of households	Number of respondents
Respondent reported house move; no IP13 household identifier	—	5
Respondent reported house move; no other household members were Life Event respondents	20	20
More than one Life Event respondent in a household; all respondents from the household reported the same number of house moves and reported them in the same month	8	16
More than one Life Event respondent in a household where at least one respondent reported at least one move; one respondent reported move, other respondent(s) did not; but other respondents did not respond in the wave in which the move was reports	2	4
More than one Life Event respondent in a household where at least one respondent reported at least one move; respondents' reports of house moves contained at least some differences; but all differences featured moves for reason "education"	8	22
More than one Life Event respondent in a household where at least one respondent reported at least one move; respondents' reports of house moves contained at least some differences in waves that multiple respondents completed (including some of the respondents in the household not reporting a move); where move reasons are not "education"	4	10

NB: The sum of the respondents in this table is larger than the 58 respondents who reported a move because respondents can be included if they were in a household where another respondent reported a move, even if they did not report a move themselves.

The table shows that in all-bar-four households, any inconsistencies were explained either by the respondent who did not report the move not responding in that wave (2 households) or by there being moves for education (8 households). In the remaining four households with inconsistencies over moves:

- In one household with three respondents, two reported no moves and one reported moving for reason "employment".

- In one household with two respondents, both reported a move in one month on the same date for reason “family” and one also reported a second move approximately 6 weeks later, also for reason “family”.
- In one household with two respondents, both reported a move for reason “family”, with one reporting a move in wave 11, dated towards the end of the month and the other reporting a move in wave 12, dated towards the beginning of the month. The respondent who reported the move in wave 12 did not respond at wave 11.
- In one household with three respondents, two reported no moves and one reported moving in wave 1, with no further information provided about the move. Of the respondents who reported no moves, one completed most waves, including wave 1 while the other only completed from wave 8 onwards. The respondent who reported a move did not respond again after wave 1.

All in all, the data collected in the Life Events study are too sparse to fully examine the consistency of reporting between household members.

4.4 What were the item non-response rates in the follow-up questions about reported events? Were they affected by the respondent incentive treatment? Did they vary across survey waves?

To examine the quality of reporting in the follow-up questions about life events, we examine the completeness of these data. We focus on the item non-response rate, which is the proportion of questions that a respondent did not provide a valid answer for. This could be either because they answered “Don’t know”, because they refused (“Prefer not to say”), or because they had dropped out of the survey, in which case the answer is coded as “Missing”.

The Life Events survey included an incentive experiment, whereby half the sample were offered £1 for each monthly survey they completed; the other half were also offered £1 per survey, plus an additional £2 if they reported any life events (see Section 2.3). A possible concern is that respondents in the £1+£2 treatment group might falsely report events, to earn the additional incentive. If this is the case, we might see poorer data quality in the group with the additional incentive, manifesting in higher item non-response rates.

Over time it is possible that respondents might tire of completing the monthly survey. If this is the case, we might see diminishing data quality, manifesting in item non-response rates that increase across waves.

In this section we therefore examine the following research questions:

- What were the overall item non-response rates in the follow-up questions about life events?
- Did the respondent incentive affect item non-response rates?
- Did the item non-response rate vary across survey waves?

Methods

The analysis of the quality of data from follow-up questions focuses on survey months in which respondents reported at least one life event, since there were no follow-up questions if they reported no events. We use the Life Events dataset in a 'long' format: each observation (case) contains the answers of a respondent from one survey month and the data set includes up to 12 observations per respondent. We drop all cases (n = 8,851) where the respondent answered 'No' to the opening question about whether they had experienced any events in the last month (Etevttrig == 2). We also drop all cases (n = 4) where the answer to the multicode question about which event types were experienced is set to 'Missing' (-9). The analysis sample therefore consists of the cases (n = 1,020) where the respondent completed a given wave of the Life Events survey, reported at least one life event, and answered the question about which event types they had experienced.

The follow-up modules include some multicode questions, where respondents are asked to select all response options that apply to them. For a given multicode question, the data include one binary indicator for each response option that indicates whether or not the respondent selected this option. If respondents answered don't know or refused in response to a multicode question, then each of the indicator variables is set to the same missing code. To avoid duplicate counting, we include only the first indicator variable for each multicode question.

The follow-up modules also include some questions about the dates of events. In the data these are provided as three separate variables — a day variable, a month variable and a year variable. If the respondent did not answer the date question, the three variables are set to the same missing code. To avoid duplicate counting, we therefore drop the day and month variables for each date question and retain only the year variable.

For each case (corresponding to a person-wave), we calculate the item non-response rate in the follow-up questions in the following way. First, we calculate the number of ***non-response items***: items for which the answer is missing, refusal or don't know (-9, -2, -1). Second, we calculate the number of ***response items***: items for which the answer is a completed value, which we define as any of the values coded as 0 to 99.

Variables that are coded as Inapplicable (-8) are not included in either count. These variables correspond to questions that the respondent was not asked, due to the routing in the questionnaire. For example, only respondents who reported moving home were asked about the reasons for the move; only respondents who reported moving for family related reasons were asked for which family related reason they moved. That is, the number of questions respondents were asked varied between respondents, depending on how they were routed through the questionnaire. To take this into account, in the third step, we calculate the ***total number of questions*** a respondent was asked, as the sum of the counts of response items and non-response items.

Fourth, we calculate the ***item non-response rate*** for each case: we divide the count of non-response items (missing, refused, don't know) by the total count of questions the respondent was asked and multiply this ratio by 100. The item-non-response rate is used as the outcome in the following analyses.

What were the overall item non-response rates in the follow-up questions about life events?

Across the 1,020 person-month cases included in this analysis, the mean item non-response rate is low, at 2.9% (95% C.I.: 2.0, 3.7). There is variation between observations, with 83.1% of cases having zero missing items, and at the other extreme, 2.2% of cases missing half or more of the questions they were asked. The majority of respondents who had any missing data had an item non-response rate of below 10% (14.2% of cases, see Table 23).

Table 23: Distribution of item non-response rate in the event follow-up questions (monthly surveys in which events were reported)

Item non-response rate (%)	N	%	Cumulative %
0	848	83.1	83.1
> 0 to < 10	145	14.2	97.4
10 to < 20	2	0.2	97.6
20 to < 30	1	0.1	97.7
30 to < 40	0	0.0	97.7
40 to < 50	1	0.1	97.8
50 to < 60	0	0.0	97.8
60 to < 70	0	0.0	97.8
70 to < 80	0	0.0	97.8
80 to < 90	3	0.3	98.0
90 to < 100	10	1.0	99.0
100	10	1.0	100.0
Total	1,020	100.0	

Did the respondent incentive affect item non-response rates?

The item non-response rate is not significantly different in the two incentive treatment groups: 3.3% in the £1 group and 2.6% in the £1+£2 group. To test for significance of the treatment effect, we estimate a regression with the item non-response rate as the dependent variable and the incentive treatment group as the independent variable, with observations clustered in respondents. The estimates for the treatment indicator indicate that the effect is not significant (β=-0.72, S.E.=0.98, p=0.47).

Did the item non-response rate vary across survey waves?

The item non-response rates vary somewhat between waves with a tendency to decrease over time (Table 24). To test whether the change over time is significant, we estimate a regression with the item non-response rate as the dependent variable and the wave as the independent variable, with observations clustered in respondents. The estimate for the wave indicator suggests that the time effect is marginally significant with the item non-response falling by -0.2 percentage points on average per wave (S.E.=0.11, p=0.07).

Table 24: Item non-response by survey wave (monthly surveys in which events were reported)

Wave	N cases	Item non-response rate (%)
1	108	4.0
2	104	3.5
3	115	1.3
4	69	5.2
5	53	5.7
6	73	4.4
7	69	1.7
8	80	4.6
9	90	1.3
10	79	0.9
11	87	2.9
12	93	0.7

In sum, across the cases where respondents reported having experienced an event in the month and told us which event type it was, respondents' item non-response rates on follow-up questions were on average 2.9%. This incidence of item non-response was almost entirely driven by a small number of cases where respondents failed to respond to all or nearly all of their follow-up questions; a large majority of cases had no or nearly no item non-response.

The incentive experiment had no effect on item non-response rates. Over time the item non-response rate fell slightly, by on average 0.2 percentage points per wave.

5 Effects of the monthly Life Events survey on the annual interviews

5.1 Did being invited to the monthly Life Event surveys affect attrition in the annual interviews?

The event-triggered data collection is intended as an addition to the main annual surveys. A key concern is therefore whether invitation to participate in an additional monthly survey

has any effect on attrition in the annual interviews. The monthly surveys could decrease willingness to complete the annual interview, if sample members experience them as a burdensome or undue request. The monthly surveys could, however, also increase willingness to complete the annual interview, if they keep sample members feeling more engaged with the study.

The 12 waves of the Life Events study were conducted between February 2020 and January 2021. The annual interviews for IP13 were conducted between July and November 2020, the interviews for IP14 between May and September 2021. That is, IP13 was fielded part-way through the monthly surveys while IP14 was fielded after the monthly surveys had ended. In this section we therefore examine the following research question:

- Did being invited to the monthly Life Events surveys affect attrition in the IP13 or IP14 annual interviews?

Methods

The Life Events survey included an experiment designed to test its effect on attrition in the annual interviews: a random 70% of the sample were allocated to the Life Events study, with 30% allocated to the control group and not invited.

The analysis sample for IP13 is created as follows. Of the 5,329 entries for panel members in the IP13 sample file, we drop the duplicate observations on people who have moved household. We keep only their observation for the household in which they were located and enumerated (n=118).

We also drop the cases (n=2,181) where the respondent was not eligible to be included in the event-triggered data collection experiment, comprising cases where the eligibility variable is 'Not eligible' (n=753) and where it is 'Inapplicable' (n=1428). These are households without any regular internet users and households that were non-respondents in IP11.

We drop the cases (n=76) where the respondent was not eligible for the adult interview. This comprises those who were out-of-scope, temporary sample members who were no longer living with an original sample member, those who were adamant refusers from a previous wave, those withdrawn before the field, and deceased panel members.

We create a binary outcome variable indicating whether each panel member completed the annual survey; this is 'true' both for the cases where the sample file indicates that they completed a full adult interview (n=1,908) and those cases where the interview outcome variable is listed as 'Lost CAPI interview' (n=1); it is 'false' for all other cases, such as non-responses, proxy interviews, and those who are coded as having completed partial interviews.

We test whether the proportion of panel members for whom this outcome variable is 'true' varies between the experimental trial arms for those who were allocated to be invited to

participate in the event-triggered data collection and those who were not.

The analysis sample for IP14 is created in a similar way. Of the 6,893 entries for panel members in the IP14 sample file, we drop the cases (n=1,841) where the respondent is a new entrant. These are mostly cases from the IP14 refreshment sample.

We drop the cases (n=1,083) where the respondent was not eligible for the adult interview. This comprises youth and child members of the panel, those who were deceased, and those who were ineligible as either in temporary sample member-only households or as individuals in households not issued to interview.

We merge the data from the IP13 sample file, which contains information on the experimental eligibility and treatment allocation for each panel member.

We also drop the cases (n=1,049) where the respondent was not eligible to be included in the event-triggered data collection experiment, comprising both the cases where the eligibility variable is 'Not eligible' (n=635) and where it is 'inapplicable' (n=414).

We create a binary outcome variable indicating whether each panel member completed the annual survey.

We test whether the proportion of panel members for whom this outcome variable is 'true' varies between the experimental trial arms for those who were allocated to be invited to participate in the event-triggered data collection and those who were not.

Results

Table 25 shows that the response rates in IP13 were comparable between the group allocated to the monthly Life Event surveys (64.3%) and the control group who were not allocated (65.3%). The 95% confidence interval for the difference in proportions of responses between the groups is (-4.7 percentage points, +2.8 percentage points); as this spans the null, we do not find evidence of an effect of allocation on response rates at IP13.

Table 25: IP3 annual interview outcome by Life Event study allocation

Outcome	Allocated to Life Events	Not allocated	Total
Non-responses, proxy interviews, partial interviews, etc.	736 (35.7%)	309 (34.7%)	1,045 (35.4%)
Full adult interview	1,327 (64.3%)	582 (65.3%)	1,909 (64.6%)
Total	2,063 (100.0%)	891 (100.0%)	2,954 (100.0%)

In IP14 the response rates are also similar between the two groups, at 62.8% for those allocated and 62.1% for the control group not allocated to the monthly Life Events surveys (Table 26). The 95% confidence interval for the proportion of responses between the groups

is (-3.2 percentage points, +4.7 percentage points); as this spans the null, we do not find evidence of an effect of allocation on response rates at IP14.

Table 26: IP4 annual interview outcome by Life Event study allocation

Outcome	Allocated to Life Events	Not allocated	Total
Non-responses, proxy interviews, partial interviews, etc.	709 (37.2%)	317 (37.9%)	1,026 (37.4%)
Full adult interview	1,198 (62.8%)	519 (62.1%)	1,717 (62.6%)
Total	1,907 (100.0%)	836 (100.0%)	2,743 (100.0%)

These results are reassuring in that they suggest that the additional monthly survey had no strong effects on the annual interviews. There are some caveats in that the year of the Life Events study (2020) was unusual due to the pandemic and associated lockdowns. Sample members might possibly react differently in other years. In addition, the experiment was limited to 12 monthly surveys. If it was continued over a longer period of time, it is possible that respondents would start to tire with adverse effects on the annual interviews.

6 Related experiments implemented in the annual interviews

6.1 Can we improve the questions in the contact details module so that more respondents report their mobile phone number?

With the fieldwork protocols we have tested so far, we sent sample members their personalized links to the online survey by SMS and email. In the prenotification letter for the Life Event study, sample members were reminded of the email and/or mobile number we hold for them and asked to provide updates via the online participant portal if necessary if they were out of date or missing (see Section 2.1). Even after this request, however, we did not have a valid email address or mobile phone number for 15.2% of eligible sample members (see Section 3.1). We have therefore been investigating how to improve the reporting of contact details in the annual interviews.

In waves 12 and 15 of the Innovation Panel, we implemented experiments to investigate the effects of prioritising the reporting of mobile phone numbers. We investigate the following research questions:

- Does adjusting the questions used to solicit respondents' contact details increase the proportion of respondents who provide their mobile phone number?
- Do these adjustments alter the proportions of respondents who provide other contact details?

Method

In IP12 all panel members were assigned to one of two experimental arms in the mobile phone contact details experiment. Two variants of the questions asking people to check or provide contact details were used. These questions were asked in the contact module, near the end of the survey.

The control arm used the existing versions of the questions, which starts with a grid of all 4 contact details (mobile, home landline, work number, email). Respondents indicate whether any of the contact details we hold for them are incorrect and then they can provide corrected contact details. They are then asked individually for any contact details that we do not hold for them[1].

In the intervention arm (new version of the questions), respondents were first asked about their mobile number separately and then had a version of the grid approach for the other 3 contact details.

In IP15 we used the version that prioritized mobile phone numbers (the IP12 intervention treatment) and contrasted that with a new intervention that reminded respondents that they had reported having a mobile phone earlier in the interview (if that was the case), before asking them to check and if necessary update their mobile number.

For the full question wordings see the Contact Details modules in the IP12 and IP15 questionnaires available at https://www.understandingsociety.ac.uk/documentation/innovation-panel/questionnaires.

In both experiments the outcomes are whether respondents are coded as reporting the relevant contact details. These outcomes are coded **positive** for both:

- people for whom we did not have the contact detail before and provided one afresh, and
- people for whom we did have one but they said they wanted to change it.

The outcome is coded **negative** for:

- people who left in place an existing contact detail we already held (confirming that it was still OK), and
- people for whom we did not hold a contact details before who still declined to provide one.

Consequently, the numbers of respondents represented here as providing each contact detail do not include the majority of respondents for whom we held that detail at the end of the survey: most respondents left their existing mobile numbers in place, which is counted here as **not** providing a mobile number for the purposes of this experiment.

[1] One practical exception to this is that the question asking respondents for a work phone number if we do not hold one is routed based on their employment status, so is not asked of people who are not in work.

The IP12 and IP15 analysis samples consist of those sample members who gave a full interview in the corresponding wave.

In the IP12 data, 1,116 respondents were allocated to the control treatment and 1,046 to the intervention that prioritized mobile phone numbers. In the IP15 data, 1,006 respondents were allocated to the treatment that prioritized mobile phone numbers and 994 to the treatment that reminded respondents that they had reported having a mobile phone.

We calculate the prevalence of providing a new contact detail in each arm of the experiment. From these, we calculate the prevalence difference — the difference in the proportions of respondents who provide a new contact detail between the intervention arm (new questions) and the control arm (existing questions) — and associated 95% confidence intervals. These are calculated for each of the outcomes (i.e. each of the contact details being provided that we are assessing).

Results

In IP12, asking respondents to update or provide their mobile phone number before checking their other contact details increased the reporting of mobile numbers by 4.7 percentage points (Table 27). It also increased the reporting of email addresses by 3.2 percentage points. The intervention did not have a significant effect on the reporting of landline or work telephone numbers.

Table 27: Results of IP12 experiment to improve reporting of mobile phone numbers

Outcome: provided…	Prioritize mobile (%)	Existing (control) questions (%)	Difference	95% C.I. of difference
Mobile phone number	14.2%	9.5%	4.7%	2 to 7.5%
Home landline number	5.6%	7.3%	-1.7%	-3.8 to 0.4%
Work phone number	1.7%	3.3%	-1.6%	-2.9 to -0.3%
Email address	15.5%	12.3%	3.2%	0.3 to 6.1%
N	1,046	1,116		

The IP15 experiment was not effective. Reminding respondents that they had told us earlier in the survey that they use a mobile phone, before asking them to update their mobile number, did not have a significant effect on reporting.

In sum, we find that the new IP12 questions, which were designed with the intention of increasing the proportion of respondents providing mobile phone numbers, did indeed result in more respondents providing a mobile phone number.

Our secondary analysis indicates that the new questions also resulted in more respondents providing an email address. The impact of the new questions on the proportion of respondents providing home landline numbers and work phone numbers was inconclusive.

One limitation of this analysis is that it only assesses whether the respondent provided a given contact detail. We do not verify whether the contact details provided are accurate (though there are some checks conducted by the surveying software to assess whether some contact details are in a valid format).

6.2 How best to collect consents to send survey questions by SMS?

Since most people in the UK now own a mobile phone, although not necessarily a smartphone, we have considered sending the initial question about whether the respondent experienced any of the list of life events in the past calendar month as a text message; the respondent would send their answer back by text message. That would increase coverage somewhat, allowing respondents who have a mobile but no internet to participate.

As discussed in Section 6.1, *Understanding Society* routinely collects mobile phone numbers from respondents. These are however collected for the purpose of contacting the sample member. We need additional consent from respondents to use their mobile numbers for a different purpose, in this case, to send them survey questions by text message.

We therefore asked respondents for consent to send them occasional survey questions by text message in IP13. This included an experiment that varied where in the questionnaire we asked for consent. In IP15 respondents who had not given consent in IP13 were asked again and those who did not consent were asked about the reasons why they did not consent. In this section we therefore examine the following research questions:

- Did the position of the consent request in the questionnaire affect propensities to consent to being sent survey questions by SMS text message?
- Is it worth asking non-consenters for consent again in a later interview?
- What are the reasons why respondents did not consent?

Methods

In IP13, the question requesting panel members' consent to send occasional survey questions via SMS text message was asked of all respondents who said they use a mobile phone. Panel members were randomly allocated at the household level for the question to be asked either early in the survey (in the Demographics module after the questions about mobile phone ownership and use) or at the end of the survey (in the Contact Details module).

The analysis of this experiment uses the data from the IP13 individual interview file. Of the 2,267 respondents in the IP13 respondent file, we drop the cases that were conducted by proxy interview (n=15); the cases where the response to the question seeking consent is

recorded as inapplicable, as is the case for respondents who were not mobile phone users (n=85); and the cases where the response to the consent question is missing (n=5).

For the purposes of this analysis, we code 'refusal' and 'don't know' responses as equivalent to ‘no’, since they all represent respondents who did not provide consent.

In IP15 the consent question was repeated for all respondents who had not consented in IP13. This included respondents from a refreshment sample added in IP14, as well as IP13 non-consenters. The consent question was not asked experimentally; all respondents were asked for consent in the contact details module.

Did the position of the consent request in the questionnaire affect propensities to consent to being sent survey questions by SMS text message?

In IP13, respondents who were asked for consent at the end of the survey in the contact details module were more likely to consent (70.6%) than respondents who were asked in the earlier demographics module (68.2%). The difference is however not significant.

Is it worth asking non-consenters for consent again in a later interview?

Of IP13 consent refusers (i.e. explicitly answered no), 52.7% (n=119) of early consent respondents consented in IP15, compared to 53.5% (n=107) of late consent respondents. That is, more than half of the non-consenters did consent when asked again. We have found similar results when asking for consent to data linkage (Jäckle et al. 2021). This suggests that there are considerable gains in asking non-consenters again at a later stage.

What are the reasons why respondents did not consent?

Overall, the leading reason provided for consent refusal reflected respondent burden, followed by non-relevance of contact mode (i.e. infrequent use of SMS). Table 28 documents the reasons respondents gave for not consenting. The main reason was not wanting to answer additional questions (38.4% of respondents), however, 32.8% said they did not use text messaging (much).

Table 28: Reasons respondents gave for not consenting to survey questions by SMS text message

Responses	% of responses	% of cases	N
I don't want to answer additional questions	34.2	38.4	173
I don't use text messaging (much)	29.2	32.8	148
Other reason	15.6	17.5	79
Unclear what the purpose of this is	13.2	14.9	67
I don't understand what this would involve	4.2	4.7	21
I would have to pay to answer the text message	3.6	4.0	18
Total	100.0	112.2	596

7 Conclusion and outlook

This working paper reports findings from an experimental monthly study, testing fieldwork protocols to collect data on life events close in time to when they occur. The study was a supplement to the annual *Understanding Society* Innovation Panel survey and implemented for 12 months throughout 2020. The results are positive, in terms of participation and measurement, and have encouraged us to pursue the next stage of development and testing to further refine the data collection protocols, so that the survey is as easy as possible for respondents to access and complete.

Most important is the result that the invitation to the monthly surveys did not affect attrition in the annual interviews in the same or the following year. The positive reactions of sample members to the monthly surveys, the fact that response rates were stable, even increasing slightly across the 12 months, and the fact that item non-response rates were low, were equally important.

The findings documented here have informed decisions for the next phase of testing. In particular, the results on different reasons why sample members did not participate in the monthly survey have informed our thinking about what we can do to reduce barriers to participation.

Sample members in households where no-one was a frequent internet user were not invited to the monthly Life Events study (this represented 10% of the sample). In the more recent data from the main *Understanding Society* survey (wave 11), 93% of sample members would be eligible according to this criterion. We are considering changing the definition to include all households where someone uses the internet at least occasionally. This would cover 95% of sample members.

Missing email addresses and mobile phone numbers for sample members prohibited sending out the monthly invitations: in the Life Events survey we lost 15% of the sample because of missing contact details. Currently in the mainstage sample we have 24% missing mobile number, 19% missing email, 13% missing both. In the *Understanding Society* COVID-19 study, which was implemented using the fieldwork protocols developed for the Life Event study, we sent invitations by post to these cases, but this was not cost efficient, response rates were in the single digits for this group. The changes to the contact details module tested in wave 12 of the Innovation Panel to prioritise the reporting of mobile phone numbers was successful, increasing the reporting of mobile numbers by 5 percentage points. We will suggest incorporating the new version in the questionnaire for the main survey.

Although there was no drop in response rates across the 12 months, not all respondents completed all monthly surveys. In the September 2020 debrief questions, 20% of those who had not completed all months said they thought they had, 15% said they had overlooked invitations, 6% said they could not log in, two cases did not know what the invitations were

for. Some respondents also indicated that they would prefer to receive the invitations by email rather than SMS. We are therefore considering not using SMS as the only mode for invitations/reminders: If sample members did not read and remember the pre-notification letter, they would not have known what the SMS invitations/reminders were for. We will trial asking respondents in the survey how they want to receive the next invitations, and to update their contact details accordingly.

Sample members who refused or were not interested represented 31% of eligible sample members: they were sent the monthly invitations but did not complete any of the Life Events surveys. We included a debrief question for Life Events non-respondents in the IP13 questionnaire, but this unfortunately failed due to error in the IP13 feed forward data. We will debrief non-participants in the next round of testing.

Web use is nearly universal among the 16-60 year olds, but starts to drop from age 70. Among respondents in the IP13 annual interview, the 16-30 year olds are under-represented due to low response rates, the 51-75 year olds are over-represented due to high response rates, the 76+ year olds under-represented due to lack of internet access. We will therefore run some further experiments with fieldwork protocols (including with incentives, information sent in the advance letter, and sending the initial question embedded in the email or SMS text) to increase response among the younger age groups. We are also exploring the cost-effectiveness of using CATI as a follow-up for non-respondents and an alternative for those who cannot complete the survey online.

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Appendix

Appendix Table 1: Survey outcome by age group (eligible sample, corresponds to Figure 2)

Age	No internet users in HH	Email & mobile number unknown	Non-respondent in all waves	Completed 1-10 waves	Completed 11-12 waves	N
16-20	2.4	42.0	26.0	17.2	12.4	169
21-30	4.0	18.3	37.7	21.0	19.1	252
31-40	3.4	14.9	26.0	19.9	35.9	262
41-50	3.2	13.6	28.8	18.4	36.1	316
51-60	7.2	11.1	23.7	16.7	41.2	359
61-70	12.0	11.7	18.4	11.4	46.7	343
71-75	13.0	7.5	19.2	11.0	49.3	146
76+	43.7	9.8	15.5	9.8	21.3	174
Total	9.7	15.2	24.8	16.0	34.3	2,021

Appendix Table 2: Biases at different stages of selection into participation in the Life Events study (eligible sample, corresponds to Figure 3)

	Full sample		Internet user household			Internet use and contact details			Respondent		
	N	%	Bias	Bias SE	P-value	Bias	Bias SE	P-value	Bias	Bias SE	P-value
Age 16-20	169	8.4	0.7	0.029	<0.001	-2.2	0.758	0.004	-3.5	0.863	<0.001
Age 21-30	252	12.5	0.8	0.070	<0.001	0.4	0.366	0.236	-2.5	0.879	0.004
Age 31-40	262	13.0	0.9	0.059	<0.001	1.1	0.291	<0.001	1.4	0.661	0.037
Age 41-50	316	15.6	1.1	0.057	<0.001	1.7	0.282	<0.001	1.3	0.736	0.087
Age 51-60	359	17.8	0.5	0.188	0.012	1.5	0.334	<0.001	2.7	0.713	<0.001
Age 61-70	343	17.0	-0.4	0.364	0.234	0.3	0.450	0.539	2.6	0.699	<0.001
Age 71-75	146	7.2	-0.3	0.287	0.349	0.4	0.259	0.111	1.4	0.456	0.002
Age 76+	174	8.6	-3.2	1.543	0.036	-3.3	0.977	0.001	-3.3	0.857	<0.001
Female	1,059	52.3	-0.3	0.379	0.473	1.2	0.595	0.051	4.0	1.014	<0.001
In paid work	1,120	55.6	3.3	0.145	<0.001	4.9	0.461	<0.001	4.6	1.000	<0.001
Cohabiting	1,190	59.0	2.3	0.227	<0.001	4.3	0.495	<0.001	9.5	0.892	<0.001
Own kids in household	446	22.0	1.9	0.036	<0.001	3.0	0.272	<0.001	3.0	0.786	<0.001

Appendix Table 3: Response rates by Life Events survey wave (sample with known contact details, corresponds to Figure 4)

Wave	Respondents (%)	Non-respondents (%)	Not invited – opted out (%)	N
1	52.0	46.9	1.1	1,512
2	51.7	45.4	3.0	1,506
3	53.6	42.0	4.5	1,509
4	54.3	40.5	5.2	1,509
5	54.4	39.7	5.9	1,509
6	54.5	39.3	6.2	1,509
7	55.3	38.0	6.8	1,509
8	55.6	36.8	7.6	1,510
9	55.0	37.2	7.9	1,510
10	56.2	35.6	8.3	1,510
11	55.6	36.1	8.3	1,510
12	56.8	34.9	8.3	1,510
Total	54.6	39.4	6.1	18,113

Notes: The base for each wave are sample members for whom an email address and/or mobile number were known.

Appendix Table 4: Response rates by survey month and experimental treatments (sample with known contact details, corresponds to Figure 5)

	Incentive treatment		Reminder treatment	
Wave	£1	£1+£2	Daily	Every 2 days
1	50.6	53.3	50.8	53.2
2	49.6	53.6	50.8	52.6
3	53.6	53.5	52.5	54.6
4	53.8	54.8	53.7	55.0
5	53.4	55.4	52.9	56.0
6	53.1	55.7	53.3	55.7
7	54.6	55.9	54.7	55.8
8	54.4	56.8	54.5	56.8
9	53.5	56.4	53.7	56.3
10	54.4	57.8	55.2	57.1
11	53.6	57.5	55.0	56.3
12	54.8	58.7	55.6	58.0