NatCen
Social Research that works for society

Adapting fieldwork during the COVID-19 outbreak

A methodological overview of the ELSA COVID-19 Substudy (wave 1)

Authors: Gianfranco Addario, Peter Dangerfield, David Hussey, Bruno Pacchiotti, Martin Wood
Date: 30/09/2020

At **NatCen Social Research** we believe that social research has the power to make life better. By really understanding the complexity of people's lives and what they think about the issues that affect them, we give the public a powerful and influential role in shaping decisions and services that can make a difference to everyone. And as an independent, not for profit organisation we're able to put all our time and energy into delivering social research that works for society.

Contents

Tables

Figures

Executive summary

Research objectives

- The first wave of the ELSA COVID-19 Substudy aimed to understand the **immediate impact of the COVID-19 outbreak** on health, access to health and social care, financial circumstances, mental wellbeing, and social activity in the older population in England.

- It sets a **baseline for a second wave** of the study later in 2020 which looks to assess what changes have taken place as the COVID-19 crisis evolves.

- ELSA's longitudinal design offers the possibility to link the data collected in the waves of the COVID-19 Substudy with previous and future standard waves of ELSA, enabling the **exploration of the outbreak effect on the 50+ population of England in future years** as the data collection progresses.

The sample

- The ELSA sample is selected to be representative of **people aged 50 and over**, living in private households **in England**.

- The study was issued to **9,392 ELSA members,** many of whom have been part of the study since it began in 2002.

Fieldwork

- The fieldwork used a **sequential Web-computer assisted telephone interview (CATI)** mixed-mode design. Study participants were firstly invited to take part in the study online and then, after a period of time, were contacted by an interviewer to complete the survey on the phone.

- The study fieldwork lasted **54 days** (7 weeks and 5 days), with the survey launching on the **3rd June 2020** and closing on the **26th July 2020**.

Response rate

- The ELSA COVID-19 Substudy achieved a **final response rate of 75%** (7,040 completed interviews).

- **83%** of the interviews were **completed online** and 17% on the phone.

Weight

- The ELSA COVID-19 Substudy weighting scheme offers both **cross-sectional and longitudinal weights**, using ELSA wave 9 as a baseline.

- For the first time in ELSA, a **cross-sectional weight** was produced that included both study core members and partners to maximise the sample size available for analysis.

1 Introduction

This report provides a methodological overview of the first wave of the English Longitudinal Study of Ageing (ELSA) COVID-19 Substudy. This introductory chapter provides an overview of the main ELSA study, how the COVID-19 Substudy is linked to it and its significance in the context of the COVID-19 outbreak.

The report continues in five chapters. Chapter 1 is focused on the development of the questionnaire, with specific attention on the mitigation of mode effects expected in a Web-CATI design. Chapter 2 is dedicated to the sampling strategy and to the presentation of the sample used. Chapter 3 looks at the fieldwork design and the operational and methodological solutions implemented in response for a mixed-mode approach (Web and CATI). Chapter 4 explores response patterns (response rates and interview modes), with a specific focus on the trends that emerged from the fieldwork design as well as key socio-demographic elements and participation to previous waves. The last chapter, Chapter 5, provides a general overview of the weighting approach focusing on new elements of the ELSA study, such as the decision to develop survey weights for all the study participants in each household.

1.1 An overview of the English Longitudinal Study of Ageing

ELSA launched in 2002 with the primary objective of exploring ageing in England through a longitudinal survey design, where repeated measures are taken over time from the same sample of study participants, composed of people aged 50 or above.

Such a design allows the observation of changes over time at an individual level for a number of outcomes of interest in the ELSA study, such as health dimensions (health trajectories, disability and healthy life expectancy, biological markers of disease, care needs, predictors of well-being), socio-economic measures (economic position, household and family structure, social networks, social support, digital inclusion) and financial resources (income, pensions, assets and level of expenditure in key areas).

To date, data has been collected every two years in a fieldwork design based on in-person interviews (CAPI), with trained nurses visiting every four years to carry out a number of physical function tests and collect samples for laboratory analysis (such as blood samples). A self-completion questionnaire is also handed out to the study participant either before or during the CAPI interview. There have been additional modules on different occasions, such as a life history assessment, a behavioural risk module, and an online nutrition assessment. There have been 9 waves in the study since wave 1 in 2002/3.

The sampling frame for ELSA is the annual Health Survey for England (HSE), with individuals selected in line with the ELSA age requirement (being 50 years old or above at the time of the first ELSA interview). Partners of core study members are also included in each wave of fieldwork, without age limitations (partners below the age of 50 are also interviewed in the study).

The first wave of ELSA in 2002 achieved 12,099 interviews – since then, the sample has been regularly refreshed with the addition of new participants at the lower age range to maintain the 50+ representation and to compensate for longitudinal study attrition. After the first wave, new cohorts joined the study during waves 3, 4, 6, 7 and 9.

The design and collection of data for the ELSA study has been developed through a collaboration between five institutions, which form the ELSA Research team:

- Department of Epidemiology and Public Health, University College London
- Institute for Fiscal Studies
- National Centre for Social Research (NatCen)
- School of Social Sciences, University of Manchester
- Norwich Medical School, University of East Anglia

More information about the fieldwork design of the ELSA study and the data collected during previous waves can be found in the technical reports and user guides published with the study datasets[1].

1.2 What is the ELSA COVID-19 Substudy?

The ELSA COVID-19 Substudy can be seen as a follow-up study based on the sample of the regular ELSA study. After the beginning of the Coronavirus Disease 2019 (COVID-19) outbreak at the end of 2019, its classification as global pandemic by the WHO in March 2020 and the gradual escalation of protective measures in the UK, culminating with the enforcement of a nation-wide lockdown in late March, the ELSA research team identified the need to carry out a new ad-hoc study that could measure the prevalence of COVID-19 symptoms, testing and hospitalisation as well as socio-economic effects/psychological impact of the lockdown on the 50+ population of England.

Indeed, since its early manifestations, the disease showed mortality rates increasing exponentially with age and being strongly associated with the prevalence of medical conditions particularly common in later life, such as diabetes (Public Health England, 2020). The importance of studying the 50+ population cascaded from this condition of vulnerability, considered likely to influence many traditional ELSA areas of interest, such as mental health, household dynamics or socio-economic outcomes.

ELSA's longitudinal design offers significant opportunities. In addition to enabling cross-sectional analysis focusing on the dynamics of the lockdown, it will also be possible to link the data collected in the ELSA COVID-19 Substudy with previous and, more importantly, future waves of ELSA. The study will enable exploration of the effect of the outbreak on the 50+ population of England in future years as the data collection of the ELSA study progresses.

The COVID-19 pandemic ruled out collecting data with CAPI assessments in participants' homes as usual. Most research during the pandemic has involved on-line assessments, but this is not possible for some older ELSA participants who are not able

---

[1] Technical reports, user guides and questionnaires of the ELSA study can be accessed from the ELSA project website (https://www.elsa-project.ac.uk/) and from the ELSA repository on the UK Data Service (https://www.ukdataservice.ac.uk/).

to use computers. We therefore designed an assessment protocol that could be completed on the Web by those who were able, and administered through CATI for the remainder of the study sample.

2 Questionnaire

This chapter focuses on the questionnaire and the methodology behind its design. After presenting the content, we discuss the strategies adopted for the mitigation of the measurement bias expected in the mixed-mode design (Web and CATI) due to using modes that varied in terms of visual and aural qualities and the presence of an interviewer. We conclude the chapter looking at the "mobile-first" approach and how this impacted the design of some questions (primarily, grid questions).

The analysis here builds on previous works carried out for the ESRC's 'UK Population Lab' programme (D'Ardenne et al., 2019), which provides a more comprehensive assessment of the expected measurement errors in ELSA.

2.1 Questionnaire content

The first wave of the ELSA COVID-19 Substudy questionnaire aimed to understand the immediate impact of the COVID-19 crisis on health, access to health and social care, financial circumstances, mental wellbeing, and social activity in the older population in England. It also aimed to set a baseline for a second wave of the study later in 2020 which looks to assess what changes have taken place in mental and physical health, finances, and social experience of the older population as the COVID-19 crisis evolves. The findings from the study can also be combined with current and future waves of ELSA to examine many of the immediate and long-term impacts of COVID-19.

The questionnaire covers the following topic areas[2]:

- Demographics
- Mental Health
- Financial security
- COVID-19-related health
- Employment and work
- Financial situation
- Volunteering and Care
- Physical Health and health behaviours
- Social connection isolation and technological inclusion
- Income, pensions and retirement

Previous main waves of data collection provide additional information for classification, in addition to baseline measures for analysis. The most recent wave, Wave 9, was conducted from June 2018 to July 2019.

---

[2] The full study questionnaire can be consulted on the ELSA project website (https://www.elsa-project.ac.uk/) and from the COVID-19 Substudy User Guide in the ELSA repository on the UK Data Service (https://www.ukdataservice.ac.uk/).

NatCen Social Research | Adapting fieldwork during the COVID-19 outbreak: a methodological overview of the ELSA COVID-19 Substudy (wave 1)

5

2.2 Assessing mode effects

Mode effects are part of the measurement bias in the context of the Total Survey Error framework (Biemer, 2010). More specifically, this bias arises when the interview mode influences the responses given by study participants. Mode effects are particularly important in the context of time-series and longitudinal designs as changes between survey waves or variations on an individual level might be partly caused by the interview mode and, ultimately, by how the question was asked and displayed.

Two types of mode effects were relevant here:

    A. Mode effects within the ELSA COVID-19 wave (Web versus CATI).

    B. Mode effects between waves (CAPI/PAPI of the regular ELSA study versus Web/CATI of the ELSA COVID-19 Substudy).

The primary focus was the mitigation of mode effects within the ELSA COVID-19 Substudy, which required consideration of two key differences between the Web and CATI mode: first, the contextual usage of a visual mode (Web) and an aural mode (CATI); second, the presence of an interviewer in the CATI mode (Web is a self-completion mode) [3].

2.3 Mitigation of mode effects: aural and visual modes

A common measurement bias is caused by how the questions and their answer options are presented. Participants completing the interview on CATI are generally considered more likely to choose their answers between the latest options read out to them by the interviewer (recency effect) while participants completing on Web tend to select their answers amongst the first few options presented in each question (primacy effect).

One solution is to randomise the order of the answer options when they are not ordered or to flip the scale when they are ordinal categories to balance responses across a sample. However, this means accepting the measurement error bias and trying to minimise it, instead of trying to avoid the error, and there are problems with comparing individuals' responses over time. The preferred approach in this study was to reduce the number of answer options in each question, making it easy for both CATI and Web respondents to give their best answer and minimising any recency/primacy effect. Some multicode questions were also presented in the form of a grid question with a binary yes-or-no answer option, forcing both Web and CATI respondents to offer an answer for each item of the multicode and avoiding any measurement bias caused by answering multicode questions with a large number of items [4].

Another common measurement bias is caused by capturing answers on a numeric scale, such as 11-point scales. Firstly, the display of the scales is particularly difficult on Web

---

[3] These two elements of measurement bias were identified in a 2015 working paper from ISER (Cernat et al., 2015) on the Health and Retirement Study data, which share the same sample design and research objectives of ELSA.

[4] Nicolaas et al. (2015) found that respondents take more time in answering "yes-or-no" format questions and endorse more items than in a "mark-all-that-apply" format.

survey, especially when completed on mobiles, as the device screen is particularly small, and the proximity of the answer options increases the risk that some study participants might select the wrong ones. Secondly, CATI respondents do not see the scale and provide an oral answer without being visually influenced by its presentation. The elimination of this measurement bias was achieved by replacing any scale capturing continuous data with a text box with a numeric validation, so that the experience for Web respondents was aligned to the experience of CATI participants: in both cases the study participants were required to either say or type their answers without having a scale in front of them that could influence their choice.

This strategy did not take advantage of optimal design solutions for Web survey developed for capturing continuous data and 11-point scales. However, in the trade-off between measurement bias and ease of completion on Web, it was preferred to prioritise the former rather than the latter.

2.4 Mitigation of mode effects: the presence of an interviewer

While Web interviews are self-completion, CATI interviews are conducted by an interviewer and this difference can represent a source of measurement error bias (interviewer effect).

The first form of bias relates to differences between interviewers in their approach, their way of presenting questions, recording answers and talking to participants. This is mitigated in CATI with a script that each interviewer is required to strictly follow. Each question was accompanied by instructions that ensured that each interviewer was reading or using prompts in a consistent way. The instructions were designed to offer to the CATI participants the same pieces of information that a study participant would access when completing online so that the Web and CATI experience could be aligned as much as possible. To further reduce between-interviewer differences, all interviewers went through a training process specific to this study. This had a theoretical part (presentation of the study, the survey content and the sample characteristics) and a practical part (discussion of the interviewer instructions, how to conduct the interview and live run-through of both the pre-survey script and the questionnaire) and included a focus on messaging to minimise unit non-response differences.

The other element of bias caused by the presence of an interviewer is social desirability; this is both the tendency to exhibit a socially acceptable behaviour in presence of an interviewer (such as less item nonresponse in presence of an interviewer; Burton and Jackle, 2019) and to provide socially acceptable answers (less socially acceptable opinions are more likely to be expressed in self-completion modes, such as Web).

Although it was not possible to effectively reduce the second form of social desirability, the option adopted to reduce the impact of the first form (item nonresponse) was to *not* present the nonresponse options (such as "Don't know" and "Refusal") initially (either in the list in the Web mode or read out by interviewers). Instead, these were only presented after the study participant has attempted to move on without selecting a valid answer option in Web, or offered spontaneously in CATI. This reduced the likelihood of item nonresponse in Web interviews by displaying nonresponse options only when

necessary. There were some instances where 'don't know' was a more likely response, in which case this was listed

2.5 Web measurement bias: a mobile-first design

Another potential source of measurement error bias relates to the device used to complete Web surveys. These differ in terms of both device category (commonly desktop, laptop, tablet and smartphone) and screen size (width and length). When designing the technical implementation of the questionnaire, the objective was to achieve a "mobile-first" design optimised for the worst-case scenario in terms of screen size: smartphones.

Figure 1 Examples of collapsible grids used in the mobile questionnaire design
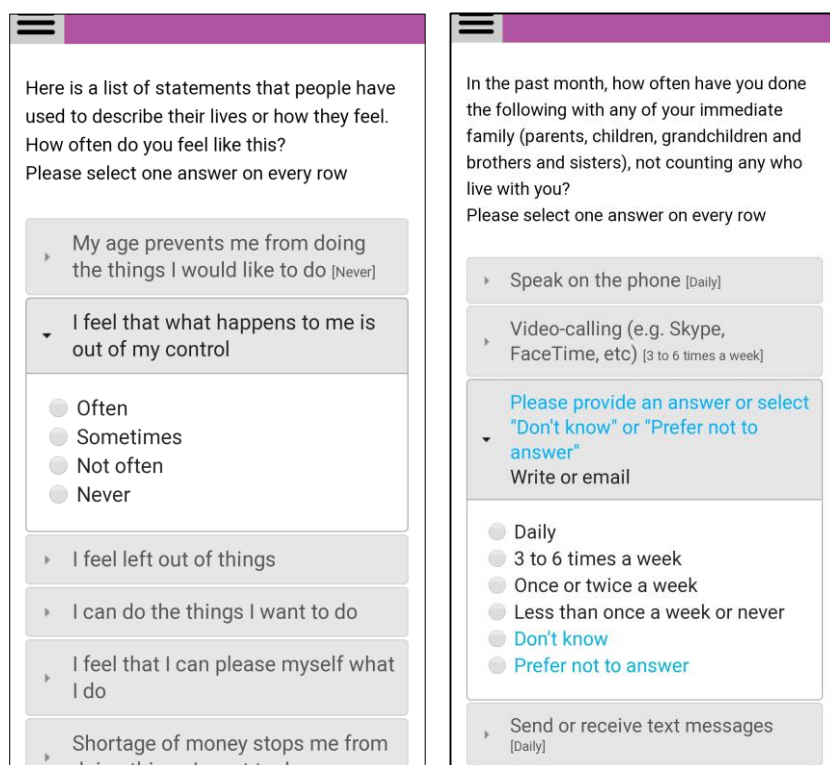
Although NatCen's web templates automatically detect screen size and render the display accordingly, the implementation of a smartphone-friendly questionnaire had two additional space-management requirements. Firstly, the answer options had to be distanced enough, so that the likelihood of clicking on the wrong answer when completing the survey from smaller screens was reduced. Secondly, all answer options had to be visible on the screen along with the relevant question and question stem when completing the interview on any device.

In practical terms, the biggest obstacle was represented by grid questions (where several questions or statements use the same response scale), which are traditionally complex to display on smaller screens, requiring scrolling to see the full set of answer options.

The approach adopted was to use "collapsible" grids[5], which display one question at a time from the same grid while retaining on the screen both the question stem and the answer options. These solutions were tested successfully on different screen sizes and different devices.

---

[5] "Collapsible" grids are also known as "Accordion" or "Item-by-item" grids.

3   Sampling

This chapter presents an overview of the ELSA sample and a summary of the criteria used to select the sample for the first wave of the ELSA COVID-19 Substudy.

3.1   The ELSA sample

The ELSA sample is selected to be representative of people aged 50 and over, living in private households in England. The study has been running since 2002, with the original sample drawn from households that had previously responded to the Health Survey for England (HSE) between 1998 and 2001. The same group of respondents have been interviewed face-to-face in two-yearly waves. In the course of the study, the sample has refreshed at the younger age range to maintain the 50+ design. The sample has been refreshed using HSE participants in waves 3, 4, 6, 7 and 9.

The ELSA sample consist of two main groups:

1. Core Members – these are the core target sample group for ELSA, sampled and weighted to be representative of the 50+ English population. ELSA core members have each met three criteria:

1. Fitted the age eligibility criteria of a given ELSA cohort
2. Participated in the sample-origin HSE survey[6]
3. Participated in the first wave of ELSA when invited to join the study

2. ELSA Partners – these are people who are in a cohabiting relationship with an ELSA Core Member but do not fill all the criteria to become a Core Member. Partners include people who were living in the household when the Core Member joined ELSA, or new partners joining the household at a later stage.

ELSA Partners are further classified into four different types (Core, Younger, Older or New Partner), to give an indication of the relative time of joining the household and their age in relation to the Core Member.

More information about the ELSA sample and a comprehensive overview of its design can be found on the technical reports for the ELSA waves[7].

3.1.1   Differences in sampling approach for the COVID-19 Substudy

All participants for the COVID-19 Substudy were selected from the existing ELSA sample. There were a number of key differences made the selection criteria for the study:

---

[6] There have been a small number of exceptions to this rule on early waves, with someone unproductive in HSE being classified as a Core Member.
[7] These can be accessed from the ELSA project website (https://www.elsa-project.ac.uk/) and from the ELSA repository on the UK Data Service (https://www.ukdataservice.ac.uk/).

3.1.2 Inclusion of partners

At a standard ELSA wave, ELSA partners are of interest for the study through their household connection to the Core Member. They are therefore temporary sample members, with eligibility dependent on their continuing co-residence with a Core Member. However, in the COVID-19 Substudy, partners were invited to participate in the study directly and were treated as a target group along with the core members in the weighting scheme to make them representative of the over 52[8] population (see chapter **5 Weight**). This has the benefit of providing the same contextual information about the core members that existed in the main study wave, but also of offering a greater statistical power for more detailed subgroup analyses.

Table 1 Core members and partners in the ELSA COVID-19 Substudy sample

Sample type	Issued cases (n)
Core member	7689
Partner	1701

3.1.3 Issuing earlier wave of data

The relatively low costs of the web and telephone fieldwork compared to standard face-to-face interviewing, and the opportunity to attempt interviews with new modes meant that the eligibility rules for this substudy could include a larger number of sample members, generally excluded from CAPI fieldwork.

The invitation to take part was extended to study participants who were not issued at wave 9, because they had refused face-to-face interviewing or could not be contacted for a number of ELSA waves, and new partners who were eligible for an interview in the forthcoming ELSA wave 10 but had not been interviewed before.

3.1.4 Mental incapacity

At a standard ELSA wave, interviews with a nominated proxy are permitted for those who do not have the mental capacity to participate in the study. It was not possible to enable this with the Web approach adopted at this wave and those known to have participated by proxy at the previous wave were excluded.

---

[8] The ELSA sample was last refreshed at wave 9 (2 years ago). It means that the youngest sample members were aged 50 2 years ago and were 52 years old during the first wave of the ELSA COVID-19 Substudy.

4 Fieldwork

The fieldwork structure adopted a sequential mixed-mode strategy, where study participants were firstly invited to take part to the study online and then, after a period of time and opportunities to complete online, contacted by an interviewer to complete the survey on the phone (CATI). The study fieldwork lasted 54 days (7 weeks and 5 days), with the survey launching on the 3rd June 2020 and closing on the 26th July 2020. The CATI fieldwork started on the 29th June and lasted for 4 weeks, with a smaller number of study participants being assigned to the telephone interviewers two weeks earlier than the others (see section **An Early CATI group** below).

Web and CATI are often paired in sequential mixed-mode studies because the strengths of each mode compensate the weaknesses of the other. Firstly, Web has a particularly low cost per interview compared to interviewer-led modes (although CATI is significantly cheaper than CAPI). Secondly, the proactive role of the telephone interviewer can encourage response among those who lack the motivation or ability to complete online (Calderwood et al., 2019). Lastly, unlike the Web approach, CATI can support the interview process of the offline population (people with no internet access).

While this is the first time that modes other than CAPI have been used with the ELSA sample[9], other studies with an aged 50+ sample have done so previously. Among the ELSA sister studies (ageing studies around the world, designed to be comparable and measuring similar outcomes on the same population of interest) this was a choice taken by both the Dutch team of SHARE (Survey of Health, Ageing and Retirement in Europe) and HRS in the US (Health and Retirement Study). SHARE opted for a mixed-mode Web-CATI fieldwork (Das, 2017), while HRS adopted a CAPI-CATI fieldwork with postal and online inter-wave studies (Guyer et al., 2017).

However, the aim of this study was not to move away from CAPI for the traditional ELSA interview, but to collect high-quality data during the COVID-19 outbreak, in a context that did not allow any data collection process with in-person interviewers. Within the UK, similar decisions were taken by the teams behind the largest longitudinal studies, such as ISER for Understanding Society (Burton et al., 2020) and CLS for the birth cohort studies (Brown et al., 2020). While ISER operationalised a sequential Web-CATI mixed mode design, CLS opted for a Web-only fieldwork.

This chapter aims to provide a description of this mixed-mode fieldwork strategy and the operational challenges presented by the context of the COVID-19 outbreak and consequent lockdown, by the demographic profile of the sample (50+) and by adopting and developing a new fieldwork system for an existing longitudinal sample.

---

[9] The ELSA study participants have been occasionally invited to complete surveys on different modes (such as the wave 9 nutrition questionnaire), but this was always within the context of a larger CAPI fieldwork.

4.1 Participant communications and the Web-first approach

The communication about the new ELSA COVID-19 survey was carried out across three different channels: mail, email and text messages. These were sent at different times during fieldwork but were more frequent towards the beginning; the aim was to pursue a push-to-web strategy and encourage web completion before the beginning of the (more expensive) CATI fieldwork.

Letters were sent to all sample members on the 5th June which included unique login information for the online survey. Invitation emails were sent at two different points in time, with a first batch of emails sent on the 3rd June and the second batch on the 6th June (the day when the invitation letters were expected to reach the study participants). The study participants were randomly allocated in the two different samples for the invitation emails[10]. There were two reasons for splitting the invitation email sample:

- The concurrent delivery of a large number of emails to the whole sample might have led to a large number of study participants attempting web completion in the same time window. Although a small risk, this could have led to some respondents being unable to access an overloaded server.
- The urgency to get into the field meant that the survey was carried out without piloting. The three days between the delivery of the first and second batch of emails could be used to review and test the data collection and fieldwork management systems in a live environment before the bulk of the sample could engage in web completion.

Each piece of communication presented a different focus and tried to leverage different subjective motivations to take part in the study:

Communication	Date[11]	Focus[12]
Invitation email (batch 1)	3 Jun	• Introduction of the study • Acknowledging and thanking for the ongoing commitment to the ELSA study
Invitation email (batch 2)	6 Jun	
Invitation letter	6 Jun	
Reminder text 1	10 Jun	NA
Reminder letter 1	20 Jun	• Importance of the study
Reminder email 1	23 Jun	
Reminder letter 2	4 Jul	• Ease of completing the survey online

---

[10] Almost all the study participants provided a valid residential address and were sent an invitation letter but only 59% provided an email address and were sent an invitation email. Each invitation email batch included just above 2,800 participants.

[11] The fieldwork started during the UK lockdown following the outbreak of COVID-19, so it was impossible to have certainty around the delivery day of the letters. The dates for the letters listed in this table are the expected delivery day. However, study participants might have received the letters up to 2 days before or after this date, depending on the level of disruptions experienced by the mail service in the local areas where the study participants lived at the time of the survey.

[12] All the communications also mentioned the incentive, the estimated duration of the survey, reference to the study funders, a description of the ELSA Research Team, information on how to access the web survey and presented a detailed FAQ section. Later communications also informed the study participants about the possibility of completing the survey on telephone.

Reminder email 2	7 Jul	
Reminder email 3	16 Jul	• Urgency of completing the study before fieldwork ends
Reminder text 2	21 Jul	• Reference to survey closing date

4.2 Telephone fieldwork in a sequential design

The CATI fieldwork had three methodological aims:

A. **Reaching the offline population |** Web surveys are often complemented with other modes to ensure that study participants without internet access can take part in the study. This includes interviewer-based modes (such as CATI or CAPI) or offline self-completion solutions (such as postal paper surveys).

B. **Web-first approach |** Mixed-mode studies face higher development costs than those with a single mode. They are most cost-effective as part of a sequential design that leads with the cheapest mode (Brown and Calderwood, 2019), in this case Web. To optimise the budget for the study, it was important to give sample members sufficient opportunity to complete online before CATI interviewers started to make contact (the Web option was held open throughout the fieldwork period).

C. **Compensate for web nonresponse |** Response rates to web surveys vary between key socio-demographic groups, with some groups being more likely to complete online than others. In addition to reaching the offline population, it was key to ensure that study participants who had internet access but were in socio-demographic groups underrepresented in the Web phase were prioritised in the CATI fieldwork.

Longitudinal studies are able to effectively implement mixed-mode designs due to rich data available on the study members which can support efficient fieldwork management (Brown and Calderwood, 2019). Although ELSA had not previously used Web-CATI fieldwork, it was possible to use survey data and behaviour collected in previous CAPI waves (with a focus on Wave 7, 8 and 9) to support the development of an efficient CATI approach that aimed to improve sample quality by giving more time and resource to cases less likely to complete online. This was achieved by dividing the CATI sample into five groups with decreasing prioritisation for CATI interviewers, based on the three underling concepts discussed above. These five groups (Early CATI, Batch 1, Batch 2, Batch 3 and Batch 4) are presented in the next few paragraphs.

4.3 An Early CATI group

The Early CATI group was composed of study participants considered to be the offline population in the sample. Those allocated to this group were identified before fieldwork using operational information from previous fieldworks (such as having declined an online nutrition questionnaire carried in Wave 9 because they were not comfortable doing this over the internet or due to a lack of internet access) and responses to the Wave 9 questionnaire (such as reporting that they never used the internet).

As the Early CATI study members were expected to have a low likelihood to take part online, it was beneficial to the overall length of fieldwork to bring forward the CATI fieldwork for this group, while still providing a window for online completion. Their CATI fieldwork was moved up by two weeks: the Early CATI group started on the 15th June (12 days after launching the Web fieldwork), while the CATI fieldwork for the rest of the sample started on the 29th June (26 days after launching the Web fieldwork).

The Early CATI group was informed about the telephone option from the first communication about the study (unlike the rest of the sample, who were informed of this just before CATI commenced). The aim was to avoid unnecessary distress in study participants by pushing them for online completion when they were not able to do so.

The Early CATI group was the only group where study participants were allocated on a household-level instead of on an individual-level. This meant that if at least one person in the household was identified as Early CATI, the entire household was allocated to the Early CATI group. The rationale for this decision followed two considerations; firstly, it was not possible to offer a telephone interview to one household member only while denying this option to other household members considered more likely to complete online; secondly, one of the elements for being in the Early CATI group was not to have internet access in the household, which is a situation that would affect all the residents in the household.

4.4   Prioritisation of subsequent CATI groups

In contrast to the Early CATI group, the subsequent four CATI groups (Batch 1 to Batch 4) were constructed after the beginning of fieldwork. Study members were allocated to these four groups based on their predicted likelihood to complete the web questionnaire. This was achieved by fitting a binary logistic model that used as the outcome variable having completed the survey during the CAWI-only fieldwork (the 12 days between the launch of the survey and the beginning of the Early CATI fieldwork, for a total of 4,345 web-completed interviews) and a range of variables as predictors, largely selected from previous survey data, but also drawing from sample elements and from the Web-CATI design[13].

4.4.1 Survey data for the modelling

Survey data was the largest source of predictors for the modelling exercise. The predictors were computed from waves 7, 8 and 9, using data from the latest wave with a valid answer. Therefore, waves where the study participant did not have a productive interview (unit nonresponse) or where the answer was missing (item nonresponse) were excluded. The survey variables used in the exercise were:

- Gender
- Age in years and age groups

---

[13] The reliability of the model was tested with a Hosmer and Lemeshow goodness-of-fit test, comparing the distribution of predicted cases and observed cases at different bands of predicted probability. The test returned insufficient evidence to reject the null hypothesis that the distribution of cases predicted by the model does not differ statistically from the distribution of cases observed in the data (p-value > 0.05).

- Frequency of internet use
- Number of internet-based activities
- Whether or not in paid employment
- NS-SEC
- Self-reported eyesight level
- Urban-rural index

While some of these variables were considered direct indicators of internet usage, such as frequency of internet use and number of internet-based activities, other variables were considered proxies for internet exposure, such as whether in paid employment (people in employment are more likely to regularly use the internet for work and have a higher level of IT literacy), NS-SEC (moving from the hypothesis that people with a higher socio-economic position are more likely to be internet users), sight difficulties (people with poor sight might be less able to use IT devices) and the urban/rural index (those living in rural areas might be more likely to have a poorer access to broadband compared to people living in cities).

4.4.2 Sample and response history data for the modelling

Some sample elements, such as the cohort of the study participants or productive outcomes in previous waves were also used in the model. For example, study participants from earlier cohorts were expected to be more engaged with the study and, therefore, more likely to react positively to the invitation to take part in a new Web-CATI study.

Other sample elements of interest were having had a productive interview in waves 7, 8 and 9 as this also indicated higher levels of engagement with the study.

4.4.3 Web-CATI design element for the modelling

A binary variable based on having been assigned to the Early CATI group was also added to the model. The rationale for including this variable was that those assigned to the Early CATI group were the only study participants to have been informed that they had the opportunity to complete on phone if they preferred this option. This aspect of the communication strategy was considered to influence their propensity of completing the survey online.

4.4.4 Operationalisation of the batches

Towards the end of the Early CATI fieldwork and upon beginning the main CATI fieldwork, those study participants who did not have any final outcome (either a productive – survey completed – or an unproductive outcome – such as refusals, unavailability or ineligibility) were divided into CATI "batches" in line with the groups described above. Each week, a new batch was released to NatCen's Telephone Unit with the first batch including study participants less likely to complete online and the last batch including those more likely to do so.

The number of cases included in each batch (**Table 2**) was based on a division in percentiles of the predicted probability of completing online and the batch size was kept

smaller for later batches for two reasons. Firstly, as fieldwork progressed and the number of released batches increased, telephone interviewers needed to spend relatively more time on calling cases from earlier batches: the operating ratio was that 50% of the calls were directed to the fresh sample (newly released batches that had not been called yet) and 50% of the calls were directed to the recall sample (study participants from previous batches who had already received at least one call). Secondly, telephone interviewers had less time to work through later batches, with the last batch scheduled for release in the last week of fieldwork.

Table 2 Summary of the groups for the main CATI fieldwork

CATI groups	Released date	Batch size		Probability of completing online[1]		
		n	%	Median	Min	Max
Batch 1	29-Jun-20	833	30	0.113	0.004	0.202
Batch 2	06-Jul-20	833	30	0.336	0.202	0.479
Batch 3	13-Jul-20	693	25	0.573	0.479	0.690
Batch 4	20-Jul-20	417	15	0.744	0.690	0.845

[1] Probability predicted by the statistical model.

As fieldwork progressed, the batch sizes were further reduced before they were released to telephone interviewers due to web completion or final unproductive outcomes such as refusals. The decrease of the batches over time was particularly noticeable in later batches where there were higher levels of web completion (as expected from the model prediction). Specifically, 90% of the cases in the first batch were eventually released to the telephone interviewers, against 76% of batch 2 cases, 65% of batch 3 cases and 50% of the cases in the batch 4.

4.5 Socio-demographic distribution of the Early CATI and later CATI groups

The strategy and the rationale for the organisation of the telephone interviews discussed in the previous few paragraphs can be better understood after observing the socio-demographic distribution of the study participants across the different telephone groups (**Table 3** and **Table 4**).

In line with the principles of a web-first approach and addressing Web nonresponse bias, the group that had the closest socio-demographic distribution to the online respondents was the one that was released to the telephone interviewers towards the end of fieldwork (Batch 4)[14]. Less time and interviewer resource was allocated to study participants allocated to Batch 4 given they were considered likely to respond positively to Web and

---

[14] Both Web fieldwork and Batch 4 groups were marked by the predominant presence of female study participants aged between 66 and 75, who had had productive interviews in the last three CAPI waves, a good, very good or excellent sight, regular internet users and, predominantly placed in the highest NS-SEC category. These were also the two groups with the relatively higher presence of study participants living in rural areas.

their socio-demographic profiles was already overrepresented by web respondents, but it remained important to ensure they were included in telephone fieldwork for at least two reasons:

- Although web respondents and the Batch 4 sample were similar on a specific set of socio-demographics variable, this similarity may not extend to non-observed characteristics.

- All Batch 4 participants had had productive interviews in Wave 9 of ELSA and 99% of them were also interviewed in Wave 8 and Wave 7. This makes them valuable for longitudinal analysis, given that this is the group of respondents that would have the lowest presence of item nonresponse where data from the ELSA COVID-19 Substudy was analysed with data from the previous CAPI waves.

There were clear differences between sample members in Early CATI and Batch 1 compared to web respondents. The Early CATI group was significantly older, with 17.6% of the study participants being above the age of 85 and 36.7% between 76 and 85, and by low levels of internet usage[15]. Batch 1 was the most peculiar group in terms of participation in previous waves. Indeed, it largely included study participants who had never been interviewed before or had unproductive outcomes in previous ELSA interviews. To a lesser extent, Batch 2 respondents also showed a relatively low level of participations in previous ELSA CAPI waves.

The response rates and efficacy of this fieldwork strategy is discussed in chapter **6 Response rates**.

---

[15] The prevalence in this group of study participants who do not use the internet and took part in the latest ELSA waves is a design element. Specifically, the allocation to the Early CATI group was based on wave 9 data which was available only if study participants had a productive interview during that wave, as discussed in section **An Early CATI group**.

Table 3 Socio-demographic distribution in the Early CATI and main CATI groups (part 1)

	Web fieldwork[1]	Early CATI	Main CATI fieldwork groups			
			Batch 1	Batch 2	Batch 3	Batch 4
Gender						
Male	44.7	40.5	51.4	48.4	47.0	39.8
Female	55.3	59.5	48.6	51.6	53.0	60.2
Age group						
Below 55	12.3	5.8	23.0	21.2	26.3	1.7
56-65	27.2	12.4	31.1	26.3	29.6	29.0
66-75	42.6	27.5	19.2	27.0	26.3	55.9
76-85	15.6	36.7	16.7	21.2	15.8	13.4
Above 85	2.4	17.6	10.0	4.3	2.0	0.0
Interview in previous waves						
Productive interview in W9	95.6	98.8	33.3	80.4	99.4	100.0
Productive interview in W8	83.6	88.1	38.5	67.4	67.2	99.0
Productive interview in W7	84.8	89.2	62.0	72.1	68.4	99.3
Never interviewed in ELSA	0.6	0.5	9.6	0.0	0.0	0.0
Sight level						
Excellent, very good or good	90.7	77.0	64.7	86.2	88.6	97.6
Fair, Poor or blind	8.6	22.5	20.1	13.7	11.4	2.4
Unknown	0.7	0.6	15.3	0.1	0.0	0.0

[1] Includes study participants who completed the web survey before the beginning of the main CATI fieldwork and were not part of the Early CATI group.

NatCen Social Research | Adapting fieldwork during the COVID-19 outbreak: a methodological overview of the ELSA COVID-19 Substudy (wave 1)

19

Table 4 Socio-demographic distribution in the Early CATI and main CATI groups (part 2)

	Web fieldwork[1]	Early CATI	Main CATI fieldwork groups			
			Batch 1	Batch 2	Batch 3	Batch 4
Frequency of internet use						
Every day	82.2	24.2	10.9	41.6	85.0	99.5
Weekly	7.2	10.3	5.0	15.3	13.2	0.5
Rarely or never	5.9	55.7	28.2	25.5	1.9	0.0
Unknown	4.7	9.8	55.8	17.7	0.0	0.0
Urban/Rural index						
Urban	68.8	76.5	80.2	74.3	75.6	62.6
Rural	31.2	23.5	19.8	25.7	24.4	37.4
Whether in paid employment						
In paid employment	36.8	15.7	40.6	43.4	54.0	29.7
Not in paid employment	62.5	83.7	44.0	56.5	46.0	70.3
Unknown	0.7	0.6	15.4	0.1	0.0	0.0
NS-SEC						
Higher managerial, admin. and prof.	36.5	16.8	7.8	16.8	22.7	51.3
Intermediate	12.3	10.4	4.1	9.6	9.5	12.7
Lower supervisory and technical	5.7	10.0	3.2	4.7	6.8	3.8
Semi-routine and routine	17.2	36.6	18.5	23.9	18.9	16.1
Small employers and own account workers	9.6	11.4	4.6	10.7	10.8	11.3
Unknown	18.6	14.9	61.8	34.3	31.2	4.8

[1] Includes study participants who completed the web survey before the beginning of the main CATI fieldwork and were not part of the Early CATI group.

NatCen Social Research | Adapting fieldwork during the COVID-19 outbreak: a methodological overview of the ELSA COVID-19 Substudy (wave 1)

4.6 Interview length

The median length of the ELSA COVID-19 Substudy interviews was 28 minutes, with the CATI interviews being considerably longer (median length 37 minutes) than the Web interviews (26 minutes). The median interview lengths were calculated from the beginning of the survey intro to the end of the survey close, so the differences between modes cannot be attributed to the additional steps in the CATI process (such as establishing contact with the study participants). The time difference in minutes was also trimmed at the 10th and 90th percentiles to account for system recording errors and extreme outliers.

Table 5 Interview length (overall and by interview mode)

	No. interviews	Interview length in minutes		
		Mean	Median	St. deviation
Overall	7028	31	28	13
Phone	1197	39	37	10
Web	5831	30	26	13

The difference between modes can be only partly explained by age (**Table 6)**. Indeed, while it is possible to see a strong linear association between age and interview length in study participants completing online, with the median interview length increasing from 22 minutes for respondents below the age of 56 to 36 minutes for respondents above the age of 85, the same trend cannot be seen in CATI interviews, where the median interview length fluctuated between 36 and 40 minutes across all the age groups.

These trends seem to suggest that the respondents' socio-demographic profiles might have a stronger influence on the interview length in self-completion modes than interview-based modes. Indeed, the substantial uniformity of the CATI interview length across the different age groups can be explained by the mitigation of interviewer effects implemented on CATI, discussed in chapter Error! Reference source not found. Error! Reference source not found..

Table 6 Interview length by interview mode and by age groups

	No. interviews	Interview length in minutes		
		Mean	Median	St. deviation
Phone				
Age below 56	68	39	37	10
Age 56-65	171	39	38	9
Age 66-75	367	38	36	9
Age 76-85	435	40	37	10
Age above 85	156	42	40	10
Web				
Age below 56	757	27	22	13
Age 56-65	1576	28	24	12
Age 66-75	2413	30	26	13
Age 76-85	929	34	30	13
Age above 85	149	38	36	14

4.7 Incentive strategy

The study used cash-like conditional incentives (Nicolaas et al., 2019); specifically, study participants were sent a £10 shopping voucher upon completing the survey and they were informed and reminded of the incentive in each communication they received. The decision to adopt conditional incentives reflected expectations about response rates and mirrored the strategy used in the ELSA study, where participants are offered a £20 voucher after undertaking the interview[16].

However, the design of the incentive system revealed some challenges. As the study was carried out during step two and three of the UK lockdown, the socio-economic context drove the formulation of an ad-hoc strategy for the dissemination of the incentives:

- Many of the shops in the UK were temporarily closed as part of the strategy to slow down the outbreak and, at the same time, online shopping was soaring. Postal vouchers that had to be physically used in shops could not be spent in the immediate future. On the other hand, digital vouchers for online shopping could not be used by study participants who did not have internet access, did not use the internet or had a low IT literacy.
- It was not uncommon for people living on their own/living apart from their families to move in with their relatives in other households during the lockdown. This meant that a physical voucher delivered to the permanent residential address would not be received quickly.

It was decided to set up a flexible incentive system that could accommodate the needs of the study participants and could cover any changes in the evolving lockdown regulations. Study participants were invited to decide, at the end of the questionnaire, whether they preferred a digital voucher, a postal voucher or no voucher at all. Those who opted for a postal voucher were also given the option to confirm the delivery address of the voucher, which did not necessarily need to be the same as their residential address.

Physical vouchers were preferred overall, but the preference was strongly associated with the mode of survey completion. Overall, 26.1% of the study participants who were interviewed online required a digital voucher, while it was requested by only 3.9% of those interviewed by phone. The opposite trend can be seen for postal voucher, which was the preferred option for 92.6% of those interviewed by the telephone unit and by 68.7% of those who completed on web.

The ease of the lockdown limitations during fieldwork did not seem to have altered the study participants preference over time. Although it was possible to hypothesise that at the beginning of fieldwork that digital vouchers were preferred over postal due to the

---

[16] More information about the ELSA incentive strategy can be found in the technical reports accessible from the ELSA project website (https://www.elsa-project.ac.uk/) and from the ELSA repository on the UK Data Service (https://www.ukdataservice.ac.uk/).

NatCen Social Research | Adapting fieldwork during the COVID-19 outbreak: a methodological overview of the ELSA COVID-19 Substudy (wave 1)

23

difficulty of spending a physical voucher in a shop, as fieldwork progressed there was no discernible trend towards a stronger preference for postal vouchers.

Table 7 Voucher requested and preferences by interview mode

Voucher requested	Overall (%)	Voucher requested by interview mode	
		Web (%)	CATI (%)
Digital Voucher	22.1	26.1	3.9
No voucher required	4.9	5.2	3.5
Postal voucher (home address)	72.5	68.2	92.4
Postal voucher (other address)	0.5	0.5	0.2

Alternative incentive strategies, such as offering the option of donating the voucher face value to a charitable organisation were also considered while developing the incentive system. However, as this was the first time that the ELSA sample was pushed towards a mixed-mode study without CAPI component, it was preferred to use an incentive system aligned to the standard ELSA study so that the response rate could be assessed without cofounding incentive effects.

5 Weighting

This chapter outlines the weighting approach used for the ELSA COVID-19 Substudy. The weighting scheme was developed to ensure the data could be analysed in conjunction with the most recent wave of ELSA (Wave 9). Furthermore, given the relatively high response rate from partners, an additional weight was created to allow partners aged 52+ to be included in weighted analysis. Use of this weight maximises the available sample size, thereby increasing the statistical power of the analysis (where required).

The following three weights were created:

- A longitudinal weight for analysis of individual-level changes amongst core members between ELSA Wave 9 (cross-sectional sample) and the COVID-19 Sub-study.
- A cross-sectional weight for core members aged 52+ living in England.
- A cross-sectional weight for core members *and their partners* aged 52+ living in England.

5.1 Differences to the face-to-face approach

This weighting approach used for this sub-study is a little different from the approach taken at a typical (main) wave of ELSA.

First, the longitudinal weight adjusts *only* for non-response between ELSA wave 9 and the COVID-19 Substudy. This contrasts to the "usual" longitudinal ELSA weights, one of which adjusts for non-response over the course of the whole study (i.e. since wave 1), whilst the other adjusts for non-response since wave 4. In each case the "base" for weighting is the (weighted) cross-sectional achieved sample of (either) wave 1 or wave 4; and the weight facilitates longitudinal analysis of individual-level change between the latest wave of ELSA and (either) wave 1 or wave 4. In this case i.e. for the COVID-19 Substudy, the longitudinal weight uses wave 9 as the "base" i.e. it facilitates analysis of changes since wave 9 (only). Wave 9 was chosen specifically for analysis focussing on changes in measurements taken in the immediate period before the COVID-19 epidemic (i.e. at wave 9) and measurements taken during the first few months of the epidemic.

Second, at a typical (main) wave of ELSA, cross-sectional weights are created only for core members, while partners are included in the released data as a source of contextual information. The COVID-19 Substudy offers a "standard" ELSA cross-sectional weight i.e. a weight for core members only, but in addition, a second cross-sectional weight - for both core members and partners - was created to provide increased sample sizes for subgroup analysis, and to supports analysis where both the core members and their partners are used as analytical units.

The technical process for developing these weights is outlined below.

5.2 Longitudinal weight (core members)

To facilitate longitudinal analysis of change between ELSA Wave 9 and the COVID-19 Substudy, response to the latter was modelled using logistic regression. The dependent variable in the model was a binary indicator for whether (or not) the interview was completed, relevant demographic and behavioural variables from Wave 9 were used as covariates to predict response to the COVID-19 Substudy survey and the model was weighted by the Wave 9 cross-sectional weight.

The following variables were found to be predictive of response: age group by sex, region, IMD quintile, tenure, education, NS-SEC category, number of household members, self-reported general health, financial unit type, employment status, frequency of vigorous/moderate/mild sports or activities, smoking and self-rated memory.

The inverse of the predicted probabilities from the model were used to create the non-response weights; these weights were trimmed at the upper 1% tail to remove extreme values. The longitudinal weight (N = 5,583) was a product of the trimmed non-response weight and the Wave 9 cross-sectional weight. As such, it adjusts the Wave 9 cross-sectional weight to account for differential non-response to the COVID-19 Substudy among Wave 9 (core member) respondents.

5.3 Cross-sectional weight (core members and partners)

Two cross-sectional weights were created: one for core members taking part in the COVID-19 survey (all of whom were 52+) and one for (the same) core members and their partners (here on referred to as the extended sample). Both weights were restricted to those living in England and aged 52+ at the time of the COVID-19 survey.

The first step was to calibrate the longitudinal weights (above) to the latest population estimates (from mid-2019) for age/sex and region for people living in England. These calibrated weights, when applied to the ELSA COVID-19 Substudy survey respondents (the subset who also took part in wave 9), provided us with an additional set of population estimates to use in creating the COVID-19 Substudy cross-sectional weights. The following COVID-19 survey variables were weighted by the calibrated longitudinal weight, thus providing the population estimates: IMD quintile, tenure, urban/rural classification, ethnicity, tenure, relationship status, long-term illness and private health insurance[17].

At the same time as the above calibration, the full sample core members responding to the ELSA COVID-19 Substudy sample and the extended sample (including partners) were calibrated to the same population estimates (from mid-2019) for age/sex and region for people living in England. The starting weights were:

---

[17] The ELSA COVID-19 Substudy longitudinal weights are based on the cross-sectional weights from wave 9; these were weighed to population estimates for 50+ in England in 2018. Therefore, as the longitudinal weights are adjusted to account for non-response to the ELSA COVID-19 Substudy survey, adjusting these weights to match the latest population estimates for age/sex and region in England provides us with up-to-date population estimates for those aged 52+ in England today.

- the longitudinal weight (for those taking part in Wave 9)
- the latest cross-sectional weight (for those who last took part in a previous wave, mostly Wave 8 but some from waves 6 and 7)
- the mean weight (effectively a weight of one) for partners.

The resulting weighted profiles were compared with the profile of the calibrated longitudinal sample, itself providing the benchmark i.e. the "best" population estimates available.

Following this calibration, the two cross-sectional samples (particularly the core member sample) matched the desired profile closely. However, weighted estimates for tenure and relationship status differed by up to 2.3 percentage points. Therefore, the two cross-sectional weights were re-estimated, this time including the "best" estimates for tenure and relationship status. This method produced the final cross-sectional weight for core members (N = 5,785).

A second cross-sectional weight for the extended sample (N = 6,845) was created, again using calibration, but this time starting with the following weights:

- the (final) ELSA COVID-19 cross-sectional weight (for core members)
- the mean weight (effectively a weight of one) for partners.

These were calibrated to the same set of population estimates (i.e. age/sex, region, tenure and relationship status) and compared with the other version of the cross-sectional weight for core members and partners.

The latter weight was chosen for two reasons:

1. It produced a profile for highest educational qualification (not included in the ELSA COVID-19 survey unlike the other key variables) which matched the Wave 9 cross-sectional estimates more closely;
2. Its variance was slightly lower.

Finally, the two weights were scaled to have a mean of one.

NatCen Social Research | Adapting fieldwork during the COVID-19 outbreak: a
methodological overview of the ELSA COVID-19 Substudy (wave 1)

27

6 Response rates

The ELSA COVID-19 Substudy closed on the 26th July 2020, achieving a final response rate of 75% (7,040 completed interviews from a sample of 9,392 study participants)[18], with 83% of the surveys completed online and 17% on the phone.

This chapter offers a review of the response rates in the first wave of the ELSA COVID-19 Substudy. The first section focuses on the response patterns by fieldwork phase and interview modes, while the second section discusses on how the response rate was affected by the study design, looking at the distribution of the responses overtime and the preferred interview modes across the different CATI groups.

The third section reviews the response rate across age groups and cohorts. These two groups cannot be easily disentangled and should be discussed jointly because older study participants have been part of ELSA for a longer period of time and have developed a higher level of engagement with the study.

The last two sections focus respectively on the household dynamics, looking at both survey completion and modes used by the study participants within each household, and on response rates for study participants who have not had productive interviews in the latest CAPI waves or who were never interviewed before and assesses whether offering alternative modes was effective in mitigating nonresponse.

6.1 Overall response by mode

The overall response rate of the first wave of this Substudy is substantially aligned to the results achieved by the National Child Development Study (NCDS), the first Longitudinal cohort study in England to carry out a sequential Web-CATI fieldwork with 50+ study participants[19] (TNS BMRB, 2014). However, the CATI completion rate was higher in NCDS compared to ELSA (respectively 35% and 17% of the achieved interview, with both studies having a similar interview length). Despite the particular demographic composition of its sample, the mode completion trends in ELSA are closer to the experience of a general-population longitudinal Web-CATI study such as the NatCen Opinion Panel, where CATI completion fluctuates between 13 and 22% (Jessop, 2018).

Interestingly, there was a higher prevalence of Web interviews over CATI even during the main CATI fieldwork of the ELSA COVID-19 Substudy. This trend might have been partly influenced by the large volume of unproductive interviews registered in the main CATI fieldwork phase (1,614 unproductive cases out of 2,732 cases released to the telephone interviewers). More than half of the unproductive cases in this group were caused by telephone interviewers not being able to establish contact with study participants; this is probably due to the fact that the ELSA COVID-19 Substudy sample included participants who had not been interviewed in the most recent waves (in some cases, for over 6 years) and their contact details were not up to date.

---

[18] The study was issued to 9,524 ELSA sample members but 132 were found ineligible. The large majority of sample members considered ineligible passed away before the beginning of fieldwork (128).
[19] The overall response rate was 78% at Age 55 Sweep.

The opposite trend, a higher prevalence of CATI interviews over Web, can be seen in the Early CATI group. Indeed, 728 of the 1,197 CATI interviews were carried out in this group, considered to be the group less likely to have access to the internet in the substudy sample.

Table 8 Full details of fieldwork and survey responses

	No. of sample members	% of eligible sample	% of productive interviews
Full fieldwork results			
Issued sample	9524		
Ineligible sample	132		
Eligible sample	9392		
Productive interviews	7040	75.0	
Web productive interviews	5843	62.2	83.0
CATI productive interviews	1197	12.7	17.0
Web fieldwork before main CATI[1]			
Eligible for Web fieldwork	7474	79.6	
Web productive interviews	4713	50.2	66.9
Unproductive cases	29	0.3	
Early CATI fieldwork			
Eligible for Early CATI fieldwork	1918	20.4	
Web productive interviews	481	5.1	6.8
CATI productive interviews	728	7.8	10.3
Unproductive cases	709	7.5	
Main CATI fieldwork			
Eligible for Main CATI fieldwork[2]	2732	29.1	
Web productive interviews	649	6.9	9.2
CATI productive interviews	469	5.0	6.7
Unproductive cases	1614	17.2	

[1] Web fieldwork figures exclude Early CATI. Although Early CATI participants were issued to web fieldwork with the rest of the sample, they are reported separately in this table to help the understanding of survey outcomes in this group.

[2] Includes study participants who were not part of the Early CATI group and did not complete or refuse the study during Web fieldwork.

Table 9 Details of unproductive cases by fieldwork stages

	No. of unproductive cases
Web fieldwork before main CATI	
Refusal before interview	23
Physically or mentally unable	6
Early CATI fieldwork	
No contact	233
Refusal before interview	259
Refusal by Proxy	45
Unavailable during fieldwork	42
Physically or mentally unable	104
Other reason for no interview	26
Main CATI fieldwork	
No contact	937
Refusal before interview	436
Refusal by Proxy	79
Unavailable during fieldwork	59
Physically or mentally unable	63
Other reason for no interview	40

'No contact' includes: no contact at numbers available, contact made but not with respondent, fax/modem/data line/pager, call-blocking, wrong number or other no contact.

NatCen Social Research | Adapting fieldwork during the COVID-19 outbreak: a methodological overview of the ELSA COVID-19 Substudy (wave 1)

31

6.2 Response patterns and study design

It was discussed in earlier chapters of this report that the fieldwork design was carefully tailored around three broad – and to a certain extent overlapping – strategies: push-to-web, CATI budget optimisation and covering the offline population. This section offers a review of the survey completion patterns across these different strategies.

6.2.1 Push-to-web

The fieldwork was designed to maximise web completion before the beginning of the main CATI fieldwork so that the higher development costs of the mixed-mode study could be balanced by having the majority of study participants completing via the most cost-effective mode (Web).

Figure 2 Responses over time by interview mode
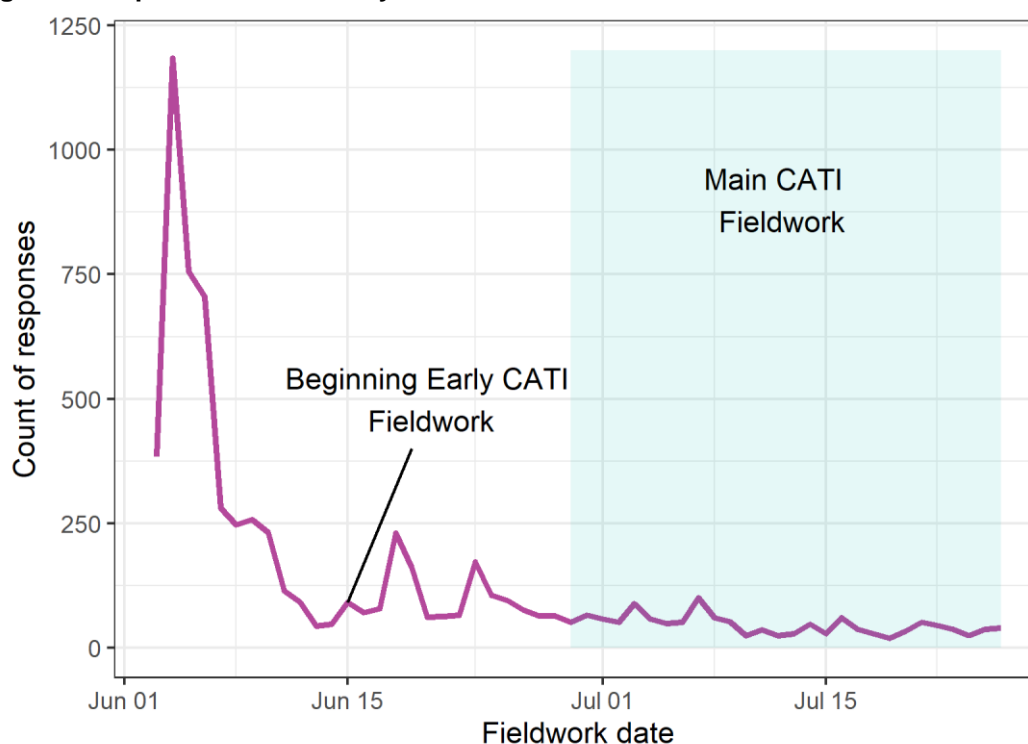
The effectiveness of the push-to-web fieldwork design can be assessed looking at the responses over time (**Figure 2**). Of all productive interviews, 43% were carried out online in the first four days of fieldwork[20] and 61.7% before the 15th June, when the Early CATI fieldwork started for the offline population. A total of 1,402 interviews were completed during the Early CATI fieldwork (in this period the Early CATI group was engaged by the telephone interviewers while the rest of the sample continued to be invited to complete online); the total interviews achieved at the at the end of the Early CATI fieldwork and before the beginning of the main CATI fieldwork was 81.6% of the total interviews. The

---

[20] The trend for the first four days of fieldwork shows the effect of dividing the invitation email sample in two batches, as illustrated in chapter **4 Fieldwork**. Nearly 2,000 interviews were completed in the first two days of fieldwork, allowing for a complete test of the fieldwork management systems.

remaining 18.4% of interviews (1,293 interviews) were completed during the four weeks of main CATI fieldwork.

6.2.2 CATI resource optimisation and offline population

It was an important aim within the sequential mode design to ensure that CATI resource was prioritised for those less likely to complete online. This was operationalised by allocating the unproductive web sample into CATI groups, as discussed in chapter **4 Fieldwork**.

The management of the CATI fieldwork and the optimisation of its budget can be assessed by looking at the response rates of the different groups during fieldwork and at the interview mode preferred by study participants in each group.

The Early CATI was the assumed offline population and, as expected, it is also the group showing the highest prevalence of CATI interviews (60.2% of the total productive interviews in this group). The other groups with a strong prevalence of CATI-completed surveys were Batch 1 and Batch 2: both included study participants that were predicted to be less likely to complete online. Batch 1 was also the group with the largest presence of final unproductive cases (82.2%) as it largely included study participants who had not taken part in any of the three previous CAPI waves of the ELSA study (Wave 7, 8 and 9) or who were never interviewed before and therefore had a low level of engagement with the study.

Table 10 Survey completion and interview modes by CATI fieldwork groups

	Survey completion			Completion by interview mode		
	Fieldwork group size	Completed interviews (%)	Unproductive cases (%)	Achieved interviews	Web interviews (%)	CATI interviews (%)
Early CATI	1918	63.0	37.0	1209	39.8	60.2
Batch 1	819	17.8	82.2	146	50.7	49.3
Batch 2	818	43.0	57.0	352	49.4	50.6
Batch 3	685	53.1	46.9	364	63.2	36.8
Batch 4	413	62.7	37.3	259	67.2	32.8

On the other hand, the latest batches (Batch 3 and 4) not only showed a higher prevalence of productive interviews (respectively 53.1% and 62.7% of the allocated sample) but they are also the CATI groups with the strongest incidence of web-completed surveys (63.2% and 67.2% of the total number of productive interviews). The reason for the former is that it mostly included study participants who had had productive interviews in all the recent ELSA CAPI waves while the reason for the latter is that these groups were populated with study participants predicted to be more likely to complete on web and, therefore, they were not engaged by telephone interviewers until they had enough time to complete online.

6.3   Response patterns and age

The highest response rate was achieved amongst study participants aged between 66 and 75 (83.4%), followed by the groups 56-65 and 76-85 (both with a response rate above 72%). As expected, the lowest response rate was amongst study participants aged 86 or above (55.4%): most of them also expressed directly or indirectly (proxy refusals) the decision to not participate due to poor physical or mental health. The response rate was particularly low for the youngest group of study participants (66.3% for those below the age of 56), who would usually be considered more likely to react positively to an online survey.

Table 11 Response rate by age

Age group	Issued sample	Completed interviews (%)	Unproductive cases (%)
Below 56	1251	66.3	33.7
56-65	2332	75.1	24.9
66-75	3338	83.4	16.6
76-85	1886	72.4	27.6
Above 85	554	55.4	44.6

However, this younger group is dominated by cohorts more recently brought into the ELSA study. In **Table 12**, the number of the cohort represents the wave of their first participation in ELSA. It is key to remember that in cohorts after the first cohort, study members were recruited when they were in their early 50s. Therefore, the response rate by cohorts is aligned to the responses seen by age groups.

Table 12 Response rate by cohorts

Cohort	Issued sample	Completed interviews (%)	Unproductive cases (%)
1	4106	76.2	23.8
3	1030	83.8	16.2
4	1614	77.2	22.8
6	880	76.2	23.8
7	393	65.9	34.1
9	1331	63.7	36.3

Study participants recruited in earlier cohorts were more likely to complete the survey in comparison with more recent cohorts. The only exception to the linear trend is represented by Cohort 1, which includes also the oldest study participants (those who were recruited when the survey was originally launched with the first wave of data collection). The reason for a higher response rate for earlier cohorts can be explained

with a higher degree of engagement with the study and attrition of those groups less likely to participate; indeed Cohort 9 respondents were only interviewed in a single CAPI wave before the launch of the ELSA COVID-19 Substudy.

While the response rates can be better explained looking at the ELSA cohorts, interview mode preference is strongly associated with age: web interviews are less prevalent for older study participants, who were more likely to respond via CATI interviews.

Table 13 Interview mode by age

Age group	Achieved interviews	Web interviews (%)	CATI interviews (%)
Below 56	829	91.8	8.2
56-65	1752	90.2	9.8
66-75	2785	86.8	13.2
76-85	1366	68.2	31.8
Above 86	307	49.2	50.8

It is particularly interesting to see that online completion significantly dropped for the age group 76-85 from 86.8% to 68.2%. A similar drop can be seen between age 76-85 and those above 85, with web productive falling to just 49.2%, making this the only group with a prevalence of productive CATI interviews (50.8%).

6.4   Response patterns and household dynamics

As discussed in the **chapter 3 Sampling**, ELSA is a household study, where interviews are attempted and carried out with more than one person in each household, and this design was reflected in the ELSA COVID-19 Substudy as well.

Table 14 Response rate by household type

	Households with one participant only	Households with two or more participants
Issued households	2957	3216
Fully productive households (%)	69.1	70.9
Partly productive households (%)		13.6
Unproductive households (%)	30.9	15.5

The study was issued to 9,392 eligible study members living in 6,173 households: 3,216 households with more than one study participant and 2,957 households with one study participant only. The number of fully productive households did not vary by number of respondents in the household – indeed c.70% of both households with one study

participants and households with two or more study participants were fully productive. However, the largest number of unproductive households (30.9%) were households with one study participant only, while in 13.6% of the households with two or more study participants at least one person took part in the study, bringing the number of unproductive households for this group to 15.5%.

One of the most interesting elements around completion patterns can be observed looking at the interview modes in fully productive households. Indeed, in households with two or more study participants 95.9% of the completed interviews were submitted on the same mode (88.4% Web, 7.5% CATI) and only 4.1% of the fully productive households had surveys completed using different modes. The trend differs for households where only one person was issued to the study: it can be observed a higher incidence of CATI-completed surveys (30.6%). Although number of CATI interviews are considerably lower than Web interviews (69.4%), the rate of telephone completion is still 4 times higher in household with one study participants over households with two or more study participants.

Table 15 Interview mode by household type

	Productive households with one participant only	Households with two or more participants	
		Fully productive	Partly productive
Number of households	2042	2280	437
Households with web interviews only (%)	69.4	88.4	68.6
Households with CATI interviews only (%)	30.6	7.5	31.4
Different interview modes in the household (%)		4.1	0

This difference might be explained by different socio-demographic elements between these two groups, such as age, gender and relationship status. However, the incidence of survey modes observed in household with one study participant only is comparable to the one registered in households with two or more study participants with a partially productive outcome (i.e. at least one, but not all, study participants completed the study). In this group 68.6% of the productive interviews were carried out on Web and 31.4% were carried out over the phone. This seems to indicate that there are other elements that should be explored to better understand the prevalence of CATI interview in some households over others.

6.5 Response patterns and participation in previous CAPI waves

Mixed mode studies are often considered effective at limiting nonresponse observed in surveys with just one of the modes, as they are able to offer study participants choice and can accommodate a larger range of needs (Burton and Jackle, 2019). The adoption

of a mixed-mode strategy was successful in achieving completed interviews in 40.5% of the study participants who last took part in Wave 8 of the regular ELSA study (so did not participate in the most recent wave), however its efficacy is less clear looking at response rates of study participants who haven't had a productive interview since wave 7 and before (**Table 16**). It is worth noting that the contact details of study participants who have not taken part in the study for more than two waves may have changed.

There is a stronger prevalence of web-productive interviews in those who had not been interviewed in ELSA recently. Although this may suggest that self-completion was more successful amongst study participants who had refused to or could not take part in the unimodal CAPI study, it is important to keep in mind the low sample size of some groups.

Table 16 Response rate and interview mode by participation in previous ELSA waves

Last ELSA interview	Survey completion			Completion by interview mode		
	Issued sample	Completed interviews (%)	Unproductive cases (%)	Achieved interviews	Web interviews (%)	CATI interviews (%)
Never Interviewed	116	31.9	68.1	37	94.6	5.4
Before wave 7	54	18.5	81.5	10	90.0	10.0
Wave 7	281	22.4	77.6	63	79.4	20.6
Wave 8	486	40.5	59.5	197	87.3	12.7
Wave 9	8455	79.6	20.4	6733	82.8	17.2

While the Web-CATI approach performed impressively for the ELSA COVID-19 Substudy, the response rate achieved with a CAPI-only approach at Wave 9 among the eligible sample for this wave was higher at 90% compared with 75%.

NatCen Social Research | Adapting fieldwork during the COVID-19 outbreak: a methodological overview of the ELSA COVID-19 Substudy (wave 1)

37

7 Conclusion

In this report we offered an overview of the methodology employed in the operationalisation of the first wave of the ELSA COVID-19 Substudy. Our experience confirms that longitudinal studies are well-placed to operationalise alternative fieldwork designs because of the presence of rich data collected in previous waves which can be used to facilitate fieldwork management and sample members with high level of engagement with the study. We have presented in the previous chapters several examples of other successful changes in interview modes in other longitudinal studies such as Understanding Society and NCDS in the UK or SHARE in the Netherlands: the experiences of these studies have both driven our approach and offered a benchmark for the evaluation of the ELSA fieldwork.

We consider the first wave of the ELSA COVID-19 Study a successful operation, with a final response rate that was higher than our initial expectations. The ELSA sample seems to have largely reacted positively to the change in mode; indeed, the response rate was particularly high across key demographic groups and substantially dropped only in the older sample (study participants above the age of 85). A similar, though milder, decrease in response rate amongst older study participants can be seen in the CAPI waves of the ELSA study as well.

Another successful aspect in the ELSA COVID-19 Substudy is the number of interviews completed online (83% of the achieved interviews). The prevalence of Web-completed surveys can be observed in all the fieldwork phases and amongst key demographic groups, with the exception of the older sample, where there is a nearly equal split between Web and CATI productive interviews.

Achieving a higher number of Web interviews was one of the objectives of the CATI fieldwork design, with the operationalisation of the Early CATI and main CATI groups. We presented in the previous few chapters the design of this system and the results achieved by splitting the sample in several batches with different priority levels.

NatCen's telephone interviewers targeted study participants who were unlikely to complete on Web first, ensuring that the study budget was not misplaced by calling those who were considered likely to complete online. The response rates and interview modes recorded amongst study participants in later CATI batches seem to suggest that the sample behaved as expected: those who were considered likely to complete on Web needed more time than others, but eventually largely engaged with online completion.

This allowed the telephone interviewers to focus their time on the offline population and groups unlikely to complete on Web, such as the older study participants and those who did not take part in the most recent CAPI waves. CATI interviewers were presented with a difficult sample and, despite a high level of unproductive final outcomes (mostly refusals in the Early CATI group and no contact during main CATI fieldwork), they achieved a tally of c.1,200 interviews from sample members that would have been excluded in online-only fieldwork.

8 Bibliography

Biemer, P. (2010), *Total Survey Error: Design, Implementation and Evaluation*, The Public Opinion Quarterly, Vol. 74, No. 5, Total Survey Error (2010), pp. 817-848.

Brown, M., Goodman, A., Peters, A., Ploubidis, G.B., Sanchez, A., Silverwood, R. and Smith, K. (2020), *COVID-19 Survey in Five National Longitudinal Studies: Wave 1 User Guide* (Version 1). London: UCL Centre for Longitudinal Studies and MRC Unit for Lifelong Health and Ageing.

Brown, M. and Calderwood, L. (2019), *Mixing modes in longitudinal surveys: an overview*, Centre for Longitudinal Studies, Economic and Social Research Council (available at: https://esrc.ukri.org/files/funding/funding-opportunities/matt-brown-and-lisa-calderwood-mixing-modes-in-longitudinal-surveys-an-overview/ - last accessed September 2020).

Burton, J., Lynn, P. and Benzeval, M. (2020), *How Understanding Society: The UK Household Longitudinal Study adapted to the COVID-19 pandemic*, Survey Research Methods (2020), Vol. 14, No. 2, pp. 235-239.

Burton, J. and Jackle, A. (2019), *Methodological Briefing: Mode effects*, Institute for Social and Economic Research, Economic and Social Research Council (available at: https://esrc.ukri.org/files/funding/funding-opportunities/jonathan-burton-and-annette-jackle-methodological-briefing-mode-effects/ - last accessed September 2020).

D'Ardenne, J., Wood, M. and Pacchiotti, B. (2019), *Considering alternative fieldwork designs for a biennial face-to-face longitudinal survey*, NatCen Social Research, Economic and Social Research Council (available at: https://esrc.ukri.org/files/funding/funding-opportunities/considering-alternative-fieldwork-designs-for-a-biennial-face-to-face-longitudinal-survey/ - last accessed September 2020).

Calderwood, L., Goodman, A., Ploubidis, G., Sakshaug, J. and Silverwood, R. (2019), An Investigation of Item Non-Response and Measurement Equivalence in a Mixed-Mode Cohort Study: Findings from the Next Steps Age 25 Sweep, Centre for Longitudinal Studies, Economic and Social Research Council (available at: https://esrc.ukri.org/files/funding/funding-opportunities/an-investigation-of-item-non-response-and-measurement-equivalence-in-a-mixed-mode-cohort-study-findings-from-the-next-steps-age-25-sweep/ - last accessed September 2020).

Cernat, A., Couper, M. and Ofstedal, M. (2015), *Estimation of Mode Effects in the Health and Retirement Study using Measurement Models*, Institute for Social and Economic Research, Working Paper Series, No. 2015-19, September 2015 (available at: https://www.iser.essex.ac.uk/research/publications/working-papers/iser/2015-19.pdf - last accessed September 2020).

Das, M., de Bruijne, M., Janssen, J., and Kalwij, A., *Experiment: Internet interviewing in the sixth wave of SHARE in the Netherlands*, in Malter, F. and A. Börsch-Supan (Eds.) (2017), "SHARE Wave 6: Panel innovations and collecting Dried Blood Spots", Munich: MEA, Max Planck Institute for Social Law and Social Policy (available at:

http://www.share-project.org/uploads/tx_sharepublications/201804_SHARE-WAVE-6_MFRB.pdf - last accessed September 2020).

Gyuer, H, Ofstedal, M., Lessof, C. and Cox, K. (2017), *The benefits and challenges of collecting physical measures and biomarkers in cross-national studies*, Health and Retirement Study (available at: https://hrs.isr.umich.edu/documentation/user-guides - last accessed September 2020).

Jessop, C. (2018), *The NatCen Panel: developing an open probability-based mixed-mode panel in Great Britain*, Social Research Practice, Issue 6, Summer 2018, pp. 2-14.

Nicolaas, G., Corteen, E., Davies, B. (2019)*, The use of incentives to recruit and retain hard-to-get populations in longitudinal studies*, NatCen Social Research, Economic and Social Research Council (available at: https://esrc.ukri.org/files/funding/funding-opportunities/the-use-of-incentives-to-recruit-and-retain-hard-to-get-populations-in-longitudinal-studies/ https://esrc.ukri.org/files/funding/funding-opportunities/considering-alternative-fieldwork-designs-for-a-biennial-face-to-face-longitudinal-survey/- last accessed September 2020).

Nicolaas, G., Campanelli, P., Hope, S., Jackle, A. and Lynn, P. (2015), *Revisiting "yes/no" versus "check all that apply": Results from a mixed modes experiment*, Survey Research Methods (2015) Vol. 9, No. 3, pp. 189-204.

Public Health England (2020), *Disparities in the risk and outcomes of COVID-19* (available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/908434/Disparities_in_the_risk_and_outcomes_of_COVID_August_2020_update.pdf - last accessed September 2020).

TNS BMRB (2014), Technical Report of the 1958 National Child Development Study: Age 55 survey (2013/2014) (available at: https://cls.ucl.ac.uk/wp-content/uploads/2017/07/NCDS-Age-55-Sweep-Technical-Report-FINAL.pdf - last accessed September 2020).