

UK Time Use Surveys: A Review

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Abstract

In recent years, two time use surveys using online diary tools have been developed and used in the UK. These are: 'ELiDDI' developed by the Centre for Time Use Research (CTUR) based at University College London, and 'OTUS' developed by the Office for National Statistics (ONS). Both these tools provide a novel and representative perspective on society and economic activity in the UK in a manner that reduces the costs, data collection time and respondent burden relative to historical approaches.

The Economic Statistics Centre of Excellence (ESCoE) have brought together both the teams at CTUR and ONS – along with a diverse group of experts including survey providers and stakeholders – with the aim of establishing a unified and comprehensive data collection tool. This tool aims to gather high-quality, comparable data while prioritizing the following objectives:

- maintaining and improving the existing time series.
- ensuring representativeness.
- enhancing accessibility and promoting inclusivity.
- encompassing data needs for a broad audience of data users and researchers.

Between November 2023 and March 2024 various streams of work – including a review of the tools and the fieldwork design, stakeholders' workshop and time use data quality analysis – were undertaken to review the latest versions of the ELiDDI and OTUS tools to ensure that they are collecting the best possible quality data and meeting the range of economic measurement needs.

By presenting the findings of the review of the current tools and survey fieldwork design, this report aims at informing decision-making and guiding future developments in the field of time use surveys. However, to develop an optimal survey design that meets the needs of users and stakeholders while maximising the utility and reliability of the collected data, it is essential to consider these findings alongside the other streams of work.

Keywords: time use survey, online diary data collection, respondent burden, economic statistics, beyond GDP

JEL classification: C80, C81, C82, C83

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Executive summary

Context

In recent years, two time use surveys using online diary tools have been developed and used in the UK. These are: 'ELiDDI' developed by the Centre for Time Use Research (CTUR) based at University College London, and 'OTUS' developed by the Office for National Statistics (ONS). Both these tools collect data to provide a novel perspective on society and economic activity in the UK in a manner that reduces the costs, data collection time and respondent burden relative to historical approaches.

The Economic Statistics Centre of Excellence (ESCoE) have brought together both the teams at CTUR and ONS – along with a diverse group of experts including survey providers and stakeholders – with the aim of establishing a unified and comprehensive data collection tool. This tool aims to gather high-quality, comparable data while prioritizing the following objectives:

- maintaining and improving the existing time series.
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Between November 2023 and March 2024 various streams of work – including a review of the tools and the fieldwork design, stakeholders' workshop and time use data quality analysis – were undertaken to review the latest versions of the ELiDDI and OTUS tools to ensure that they are collecting the best possible quality data and meeting the range of economic measurement needs.

By presenting the findings of the review of the current tools and survey fieldwork design, this report aims to inform future decision-making and developments in the field of time use surveys. However, to develop an optimal survey design that meets the needs of users and stakeholders while maximising the utility and reliability of the collected data, it is essential to consider these findings alongside the other streams of work.

Review aims and methodology

The systematic review was set out to achieve two main aims:

1. assess the performance of the fieldwork design and identify ways to improve fieldwork efficiency; and

2. evaluate the various steps of the respondent's journey – from initial engagement to survey completion – to identify barriers and enablers to participation, as well as factors which may impact the data quality.

These overarching objectives were further refined into five research questions, which serve as the focal points of discussion in this report. To achieve the aims of the study and address the research questions, three main strands of work were carried out:

- A comprehensive **desk review** of all the steps of the respondent journey.
- **Data analysis** to uncover patterns, trends, and insights that could inform the evaluation of the fieldwork design and respondent journey.
- And, finally, **an exercise to collect data on the timings of completion** offered insights into response times, as well as potential bottlenecks or challenges encountered by respondents during the survey process.

Please note that the report makes reference to the three following distinct groups, as sources of evidence:

- **Respondents** – individuals who took part in either of the time use surveys.
- **Reviewers** – NatCen researchers from the NatCen Opinion Panel and Questionnaire Development & Testing team who conducted the desk review.
- **Testers** – NatCen staff members with varying levels of digital skills (including researchers, interviewers, and logistics staff) who participated in the timing measurement test.

Key findings

This section consolidates findings from the different strands of work and addresses the various research questions to present key recommendations for best practice.

What improvements can be made to the respondent's journey to encourage/enable participation and accurate data entry?

Answer categories (activity codes list)

During the desk review, reviewers found that some activity codes in both the OTUS and ELiDDI diaries overlapped (e.g. 'spending time with a friend' and 'socialising and having a conversation').. Whilst the choice of codes was found to be useful by testers within the timing exercise, reviewers felt there is a risk of this being selected as both a primary and secondary activity, effectively double-counting the activity, and increasing respondent burden.. To address this, we suggest activity codes should be kept as distinct as possible.. Where activities could plausibly fit into multiple categories, we suggest providing clear guidance on how to select a code, and minimizing the duplication of follow-up probes.. Researchers should also review the list for under-used activities and consider the impact of the order effect.

Cognitive processes

When creating a time use diary, consideration should be given to the cognitive processes respondents go through when thinking about their time and the corresponding burden placed

on them. Each of the time use diaries took a different approach to data entry, with the OTUS diary asking about the duration of activities and the ELiDDI asking about the start and finish times of activities. Reviewers felt that asking respondents to calculate an activity's duration would be more cognitively burdensome, with the start and finish time of an activity being more salient.

Reviewers noted that time use activities were thought of as separate from each other, in that main and background activities for the same time period were not related. Future research should consider how respondents think about how they spend their time and if this corresponds with how the time use diary is set up. The length of time slots should be also considered: the burden it places, the distinction between main and secondary activities (5-minute vs 10-minute intervals), the level of precision respondents are able to remember and record, and the heuristics people follow for remembering periods of time. Researchers may want to consider using cognitive interviews to gain insights into respondents' mental processes, when designing future time use tools.

Flexibility of the tool

Knowing how people spend their time, and how they feel about it, makes it possible for life to be improved in many ways. That could mean better services, better health initiatives or more action on loneliness or other issues of public concern. Taking part in a time use study is a great opportunity for people to show the reality of life and how that varies for different groups of people. To achieve this, a time use tool needs to be flexible to capture contextual changes in the wider social and political environment. It is therefore key that the data collection tool infrastructure, especially the feature used to manage the activities list, is setup so that it can be straightforwardly, cost-effectively, and speedily updated. A modular approach might also be considered where modules with a specific focus are added onto a core module which is kept consistent and subject to minimal, if any, changes. For example: an add-on module focusing on childcare responsibilities could be added for a data collection wave focusing on gender inequalities and should ideally be asked/shown only for those who say they are parents. Being able to program complex routing is also a key feature to allow for automated question flow, or the presentation of codes relevant to specific sub-groups of interest.

Online instructions

It often takes time for individuals to become acquainted with new online platforms, understand their functionality, and learn how to input the required information accurately. Investing in user-friendly interfaces which offer support when required in the form of pop-ups, video or text instructions that the participant can decide to use or dismiss can help mitigate these challenges and improve overall data quality. By leveraging visual and auditory elements, such as animations, graphics, and clear narration, a single instructional video, – or a series of short videos focusing on different elements– can effectively convey key instructions, survey objectives, and data entry procedures to participants. Such an approach will not only facilitate learning but also make the training process more engaging and accessible for participants, ultimately leading to improved data collection outcomes.

What improvements can be made to the online tools and supporting materials to improve usability, reduce the burden for respondents, and improve data quality/response rates?

Layout and visualisation

Online tools should be designed with a mobile first approach, in that what works on small screens should in theory work for larger screens. During the desk review, reviewers felt that on smaller screens, when completing the secondary/background activity sections, they could not see the primary activities. As such, this would require respondents to remember what activities they had entered as their primary activities. The layout of an online time use tool should allow respondents to easily view all information entered into their diary. During the timing review, testers indicated a preference for viewing all information on the one screen, as this allowed them to see their whole day and all elements at once.

Cohesion between the online tool and supporting materials

Paper support materials in the form of a paper diary booklet aid and activity list were present in both the OTUS and ELiDDI time use tools. If paper support materials are used, they should align with the online time use tool and should not increase respondent burden. Within the respondent communications, reviewers noted that respondents were encouraged to take notes, but the use of the paper diary was not explicitly mentioned as a method for taking notes. Reviewers felt that it was unclear to respondents that they should complete the paper diary to *aid* online diary completion, and as such there was a risk that respondents may complete the paper diary believing that this could be submitted as the entry. As such, respondents should be clearly informed across multiple documents that the paper diary is used only as an optional memory aid and that it is only information entered within the online tool which will count towards eligibility for incentives.

Experimental data showed that providing participants with paper support material (diary booklet) increases the likelihood of respondents taking notes and referring to them. There was mixed evidence on the impact on response rates. The trade-off between respondent burden and data quality should be assessed.

Data entry mechanism

When reviewers and testers completed both time use diaries, there was a preference for the visual nature of a timeline based tool, where respondents could see all aspects of their day on one screen. When entering activities into the diary, respondents at times expressed difficulty at having to find activities within long lists and felt that excessive scrolling through lists of activities was not productive. For testers, the drag and drop data entry method was perceived positively. Respondents felt the interactive element of dragging and dropping appeared fun and they enjoyed seeing their time use survey populate. Issues with drag and drop were present when using larger screen devices. When adding activities of smaller time periods, such as 10 and 20 minutes, respondents reported not being able to add or having difficulty in adding activities to the tool, with these activities not wanting to stick to the tool. Respondents completing on mobile devices did not report these issues, suggesting that drag and drop worked well on smaller screen devices. Future research should aim to optimise a data entry method which works for both smaller and larger screen devices and is user intuitive.

What accessibility issues and requirements should be considered when using the online tools and supporting materials? And how may these accessibility considerations impact respondent burden, data quality and response rates?

Dexterity impairments

For respondents who experience motor or dexterity impairments, time use tools should allow for both keyboard only entry and mouse only entry. Drop down lists should be optimised to reduce the amount of scrolling which is required from respondents. During the desk review, the drag and drop entry method was not suitable for some of the accessibility personas who experienced motor impairments. As such, when using these personas, reviewers were unable to enter time use data into the online diary.

Outside of using the accessibility personas, both reviewers and testers experienced issues with using the drag and drop entry method. Reviewers and testers reported difficulty with adding activities to the diary on larger screen devices (such as laptops), particularly when adding shorter activities which had a duration of 10 minutes. The latest Web Content Accessibility Guidelines (WCAG) recommend adding additional data entry techniques if drag and drop is used. As such, future design should consider, if drag and drop is used at all, whether it can be supplemented with another mechanism of data entry to make the tool accessible for respondents with dexterity limitations.

Visual impairments

Accessibility requirements should be considered in the design of online time use tools. Methods of data entry should be compliant with the latest WCAG. During the desk review, reviewers found that the ChromeVox screen reader extension (a commonly used Google add-on screen reader), did not pick up all text within the online tools. As such, respondents who rely on screen readers, may not be able to use the online tools. Future development work should ensure that all text within the time use tools are compatible with a range of different screen readers.

How do the two online tools and fieldwork design perform in terms of representativeness and fieldwork efficiency?

Firstly, in general on mode of completion, enabling respondents to switch between modes is desirable, but still impractical given budget and tight turnarounds for diary completion. This option could be given ahead of fieldwork in the pre-notification communications but would increase the complexity of sample management.

The use of telephone fieldwork has improved both response rates and sample profile. However, if telephone fieldwork is being considered as an alternative completion mode, it's crucial to carefully integrate the time use data collection tool with the telephone environment used for establishing contact, recording call outcomes, and scheduling follow-up appointments while accounting for mode-specific requirements such as on-screen instructions for interviewers. Should complete integration between the online time use tool and telephone systems not be feasible, it's imperative to develop fieldwork protocols aimed at minimising mode-bias. Additionally, providing specific training for interviewers is essential to ensure consistency, accuracy, and speed in data collection processes across different modes.

Offering higher incentives has been proven to be highly effective at increasing response rates. However, higher incentives offer diminishing returns.

While re-issue fieldwork periods can increase response rates, it adds complexity to analysis and delays delivery. It may not be the most cost-effective approach compared to investing in higher incentives or using telephone fieldwork.

Providing a longer completion window (72 vs 48 hours) and opening the diary at the start of the diary day itself seem to have a positive effect on response rates. Allowing respondents to enter data on their assigned day rather than only being able to enter data retrospectively once a day is closed may also improve data quality.

The communications management remains a resource-intensive task. Reviewing processes and systems to further reduce turnaround time and the resources needed, as well as automating the weekend's reminders will be key for future developments especially in the scenario of new data requirements such as sample across the whole year and/or collection of household-level information.

Finally, regarding the survey length we recommend the collection of accurate and reliable paradata, such as survey time-stamp data. This will enhance the accuracy of estimating survey length and provide insights into how this varies among different individuals.

Introduction

The Office for National Statistics (ONS) – as part of the research programme of the Economic Statistics Centre of Excellence (ESCoE) – commissioned the National Centre for Social Research (NatCen) to undertake a review of time use online data collection conducted in the UK from 2020 to 2023.

The cost-effective and timely collection of accurate time use data from a representative sample of the UK population are an important part of ESCoE's toolkit for measuring socio-economic change in the UK. This review, together with other strands of work commissioned, will help to ensure that the data collected are the highest quality possible given constraints, helping to improve the accuracy of analysis and the validity of conclusions and subsequent actions.

Background

Examining how people allocate their time provides a distinctive perspective on society, offering insights beyond traditional survey-based research or economic indicators like GDP. For instance, by capturing unpaid activities such as domestic childcare, time use surveys offer a nuanced understanding of productivity that complements GDP measurements. Moreover, by documenting various activities, these surveys shed light on how different tasks intersect and influence one another, such as the impact of holding a second job on childcare responsibilities.

While historically, high-quality time use data collection has been costly and time-intensive, recent developments such as the 'OTUS' (Online Time Use Survey) tool by the Office for National Statistics (ONS) and the 'ELiDDI' (Extended Light Digital Diary Instrument) tool by the Centre for Time Use Research (CTUR) have aimed to address these challenges. These online tools aim to provide a novel and representative view of society and economic activity in the UK while reducing costs, turnaround times, and respondent burden compared to traditional approaches.

However, the transition to online tools presents its own set of challenges. Some individuals may lack engagement or proficiency with online platforms, face barriers to access or accessibility issues, or find the task burdensome without the support of an interviewer. These factors may contribute to lower completion rates or reduced data quality as participants may be less inclined to invest effort or may struggle to participate without external prompts or assistance.

Addressing these challenges requires careful consideration of factors such as participant engagement, digital literacy, accessibility, and support mechanisms within the online survey environment. By incorporating strategies to enhance engagement, accessibility, and support, survey organisers can maximise the effectiveness and reliability of online time use data collection efforts while minimising potential barriers to participation and data quality issues.

To explore these issues, this study conducted a comprehensive review of the existing ELiDDI and OTUS tools, as well as the broader fieldwork design. The main aim was to identify features that contribute to the collection of high-quality data while simultaneously reducing respondent burden and ensuring accessibility.

Research questions

This report comprises three chapters. Each chapter is dedicated to one or more of the five overarching research questions this review aimed to explore:

RQ 1 *What improvements can be made to the **respondent's journey** to encourage/enable participation and accurate data entry?*

RQ 2 *What improvements can be made to the **online tools** to improve usability, reduce the burden for respondents, and improve data quality/response rates?*

RQ 3 *What improvements can be made to the **supporting materials** provided to respondents to reduce the burden for respondents, and improve data quality/response rates?*

RQ 4 *What **accessibility issues** and **requirements** should be considered when using the online tools and supporting materials? And how may these accessibility considerations impact respondent burden, data quality and response rates?*

RQ 5 *How do the two online tools and fieldwork design perform in terms of **representativeness** and **fieldwork efficiency**?*

To address these research questions, we conducted three main strands of work, although we note that these are inter-related and findings from each often informed one another:

- Strand 1 – Desk review
- Strand 2 – Data analysis
- Strand 3 – Timings exercise

See more about these three strands in the 'Methodology' section below.

Methodology

The research questions and work strands are inter-related. For example: how participants interact with the materials they are provided is related to how they interact with the diary tool and how they experience the study as a whole. The work strands are designed to examine different elements of the diary tool and fieldwork design from multiple angles to provide a holistic perspective on challenges and opportunities for the optimal running of the study in the future.

Desk review

To identify barriers and enablers to participation, and in addition factors which may impact data quality, a comprehensive desk review of the most recent version of the tools (namely, ELiDDI W1 and OTUS W6) was conducted. Across both tools the respondent communications including letters, emails and texts, paper supporting materials such as the paper diary booklet and activity list and the entire online tool including the background survey and diary days underwent review.

To ensure standardisation across reviewers, reviewers used a review matrix to assess each element of the diary tools. The review matrix used to assess both tools is presented and described in detail within Appendix A. Four areas were assessed in relation to each time use tool. To summarise, reviewers firstly assessed the tools in relation to the holistic respondent journey, which involved considering how respondents would progress through the tool. Secondly, reviewers assessed the language used within each of the tools using an adapted version of the questionnaire appraisal system-99 (QAS-99). Thirdly, reviewers considered the usability of each of the tools using an expanded version of Nielsen's 10 usability heuristics for User Interface Design. Lastly, reviewers assessed the accessibility of each of the online tools. To assess the accessibility reviewers took two approaches. Within the first approach, reviewers used the seven Personas Profiles created by the Accessibility Team at the Government Digital Service (GDS) to assess how the online tool appeared for respondents with a range of visual and dexterity impairments. Within the second approach, reviewers assessed the tool for general accessibility considerations, using general accessibility criteria developed based on the Web Content Accessibility Guidelines (known as WCAG-2).

To ensure a comprehensive review of the tool using the above framework matrix, reviewers followed review protocol. The review protocol, presented in Appendix B, consisted of nine different scenarios which provided reviewers different testing paths through each of the time use tools. On each path reviewers were asked to do different things within the diary, such as completing a full day of diary activities, completing a partial day of diary activities, and trying to enter activities in the future etc. Online tools were tested on a range of screen sizes (mobile and laptop), device types (iOS and Android) and browsers (e.g., Microsoft Edge and Google Chrome).

The desk review was conducted by three experienced reviewers who each attended a review briefing session prior to undertaking the review. Each scenario was tested by at least two independent reviewers. Following the review, reviewers met with two senior members of staff with methodological and time use diary expertise to discuss the findings of the review.

Data analysis

To identify ways to optimise fieldwork efficiency, both in terms of costs and data quality, we drew on the various data sources available from the data collections carried out between 2020 and 2023. Where possible, we focused on data and information from the parallel run (OTUS W6 and ELiDDI W1).

The data sources used were:

- Response rate data
- Sample profile data

- Experiment data
- Paradata
- Respondents' feedback (available for all waves)
- Interviewers' feedback (available only for multi-mode waves, namely: OTUS W1, W2, W3 and ELiDDI W1)

As of survey metrics, for the response rate we used the day-level response rate which is given by the number of days meeting the threshold for incentive eligibility divided by the total number of issued days. For info, on the threshold for incentive eligibility for the two studies see **Section 1.3**.

Figure 1 – Day-level response rate formula

$$\text{Day-level response rate} = \frac{\text{Number of diary days meeting the threshold for incentive eligibility}}{\text{Total number of issued diary days}}$$

The response rate analysis presented throughout the report are exclusively based on the NatCen Opinion Panel sample recruited via the British Social Attitudes survey (BSA). This sample consists of adults aged 18 and over living in Great Britain. This approach was chosen to enable more precise comparisons with older waves of OTUS, which were conducted when the NatCen Panel did not cover Northern Ireland. For the second survey metric, sample representativity, the following six measures were assessed: sex, age (18-24; 25-34; 35-44; 45-54; 55-64; 65+), region, education, ethnicity and household type.

On the data in general, it should be noted that the data presented in this report is mainly non-experimental, and when it is experimental, it is dated. Moreover, changes to the sample profile and sample management (e.g., inactive cases dropped; push-to-web recruitment instead of face-to-face; proportional sampling, etc.) mean that how older fieldwork experiments would interact with newer sampling approaches is unknown. Finally, given the main objective is to assess the scale of the impact rather than obtain extremely precise figures, due to time and budget constraints, simple data reduction techniques (such as averages for the evaluation of the sample profile) have been deemed appropriate.

Finally, a note on the respondent feedback data. This is mainly based on queries received by our Freephone team from respondents during the parallel run. All queries were reviewed and coded by theme. For more info on the analysis, see **Appendix C**.

Timings exercise

ONS has estimated that data collection with the OTUS tool should take around 25 minutes on average per diary day, while CTUR estimated that data collection with the ELiDDI tool should take around 20 minutes on average per diary day.

Due to accurate and comparable survey time-stamp data not being available for both tools, a testing exercise was conducted to evaluate on average how long each study's time diaries

take to complete. Fourteen participants¹ were purposively selected from NatCen staff to take part in the exercise – this included a mix of people below 40 years old or 40 and above, as well as with and without day-to-day experience of working on survey development and testing.

When looking at the data, two factors should be considered. Firstly, this testing exercise can only provide a rough indication of how long each diary tool takes to complete within testers, rather than offer precise estimates such as average or mode completion time across them. Secondly, although recruitment was conducted within NatCen staff who use laptop devices, various software packages and tools to track/schedule daily activities as part of their day-to-day work, we actively aimed to recruit testers with a range of digital skills. Even among this group of professional workers, a few testers found completing their diary days quite challenging and encountered difficulties at different stages. These issues resonated with those raised by NatCen Opinion Panel sample members during the parallel run or previous waves of OTUS, as well as with the findings of the desk review. Examples of encountered issues included: struggling to deal with gaps in their main activities timeline at the point of submitting their diary day for OTUS and having difficulties using the drag and drop function to enter activities for ELiDDI.

Exercise protocol

Each tester was instructed to complete two diary days using both tools, for a total of four testing days. To account for the fact that testers would become quicker over time as they gained familiarity with how the studies work, half of testers were asked to complete OTUS first, whilst the remaining half started with ELiDDI. Testers were also split by mode, with half completing all their tests by laptop (main screen only no external screen; and using Chrome browser) and the rest by mobile. All testers were asked to complete their time diaries on the day after their diary days (i.e. between 24 to 48 hours after their diary opened).

Testers were asked to complete their days from memory alone, with no diary booklets provided and an explicit instruction given to not keep notes. However, digital versions of the activities list leaflets for both studies were shared with testers – they were advised to read through them prior to testing and use it as they wish whilst completing their online diaries. Testers were asked to use a stopwatch to measure the exact time spent on completion (minutes and seconds). They were told to start timing from when they clicked on the button to enter a diary day (namely: the specific diary date on the calendar on the home-page for ELiDDI; the 'start' button next to the specific day on the home-page for OTUS) and to stop the timing as soon the day was submitted. Testers were advised to go through the tool's online instructions on their first testing days for each tool – but were told to skip these on their second diary day. Testers were told to not log into either tool prior to testing on their allocated days. They were also advised to focus on the task, without any distractions, and to complete their diaries in one go. Testers were asked to enter secondary activities on all their days. Testers were told to note down relevant details about each day of testing, including devices

¹ Originally the exercise involved selecting 12 testers. Each tester was instructed to complete two diary days using both tools, totaling four testing days consistently scheduled for all testers (29th January, 1st, 5th and 8th February 2024). Due to a mix of factors including delays in getting the test sample uploaded on the tool and unexpected circumstances leading to the dropout of some testers, combined with the time-sensitive nature of the tests as diary days are set to expire, it was impossible to fully adhere to the original protocol. Consequently, some testers have partial data. However, given our interest in variance within participants and the importance of capturing each tester's experience, even if a day was skipped, all available data was included in the report.

used, the rough level of activities entered, and any issues experienced that affected completion.

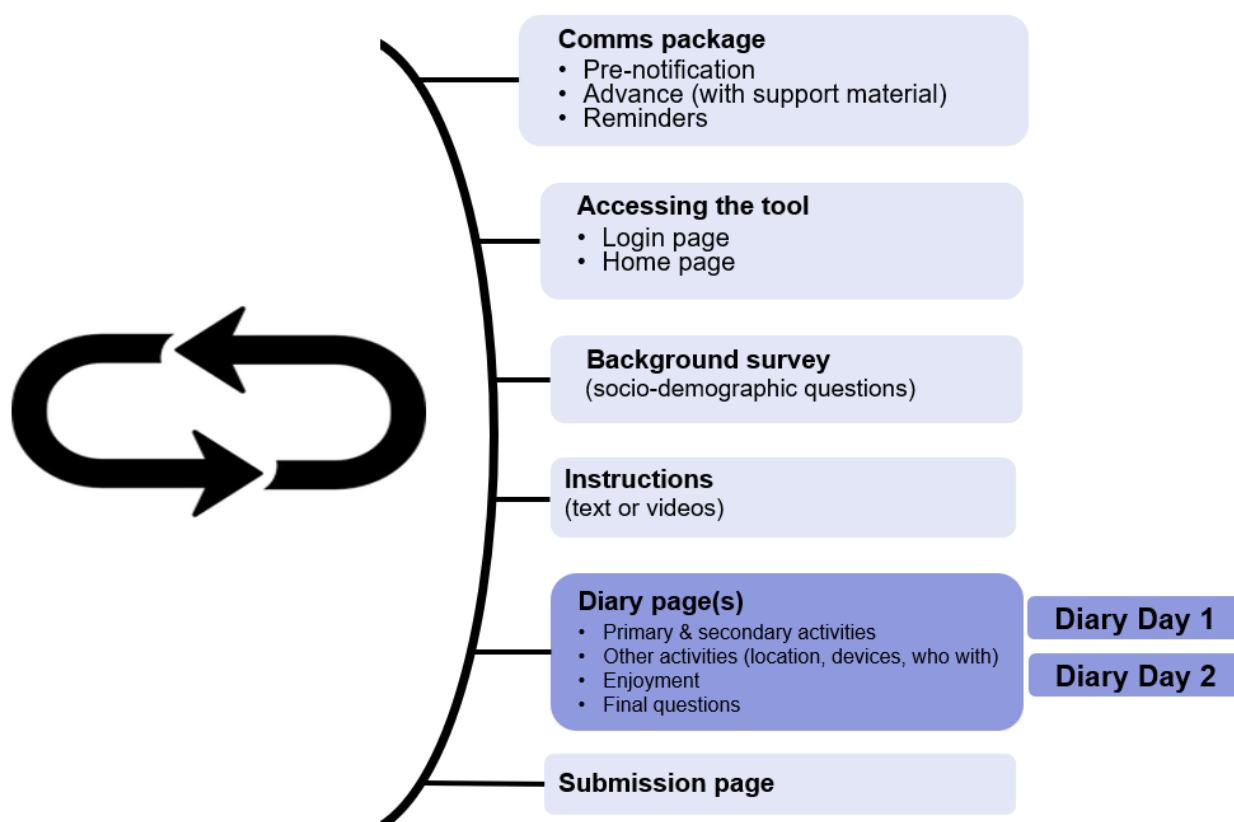
Testers were provided with login details as well as a clear set of instructions, based on the above protocols. The instructions included screenshots highlighting exactly where testers should stop and start their timing. After finishing their tests, testers took part in a 2-hour debrief session to discuss their experiences completing both studies or, if unavailable on the day of the debrief, were asked to submit written notes and answers to specific questions. The key points that emerged during the debrief are presented in **Sections 2.5.5** and **2.6.5**, while the timing data are discussed in **Section 1.5.3**.

Online tools overview – ELiDDI W1 and OTUS W6 key features

The online tools for both studies consist of a non-linear² survey made up of two elements – an online time diary and a demographic questionnaire. **Figure 2** provides a visual representation of the non-linear time use surveys. Respondents are asked to fill out a time diary for two randomly allocated days during the fieldwork period (one weekday and one weekend day) as well as a short background survey. The time diaries are used by participants to record the main and secondary activities done throughout their diary days, as well as other measurements such as their enjoyment, device usage, location, and other people they were with. The demographic questionnaire records data about the respondent including their sex, age, and ethnicity, as well as measures such as life satisfaction.

² A survey is defined as 'non-linear' when respondents can pick and choose which parts of the survey they wish to respond to, and in which order. The setup of a non-linear instrument might require that participants return to a main contents page after each page/section of the survey instrument is answered.

Figure 2 – Key components of the respondent journey for a non-linear time use survey



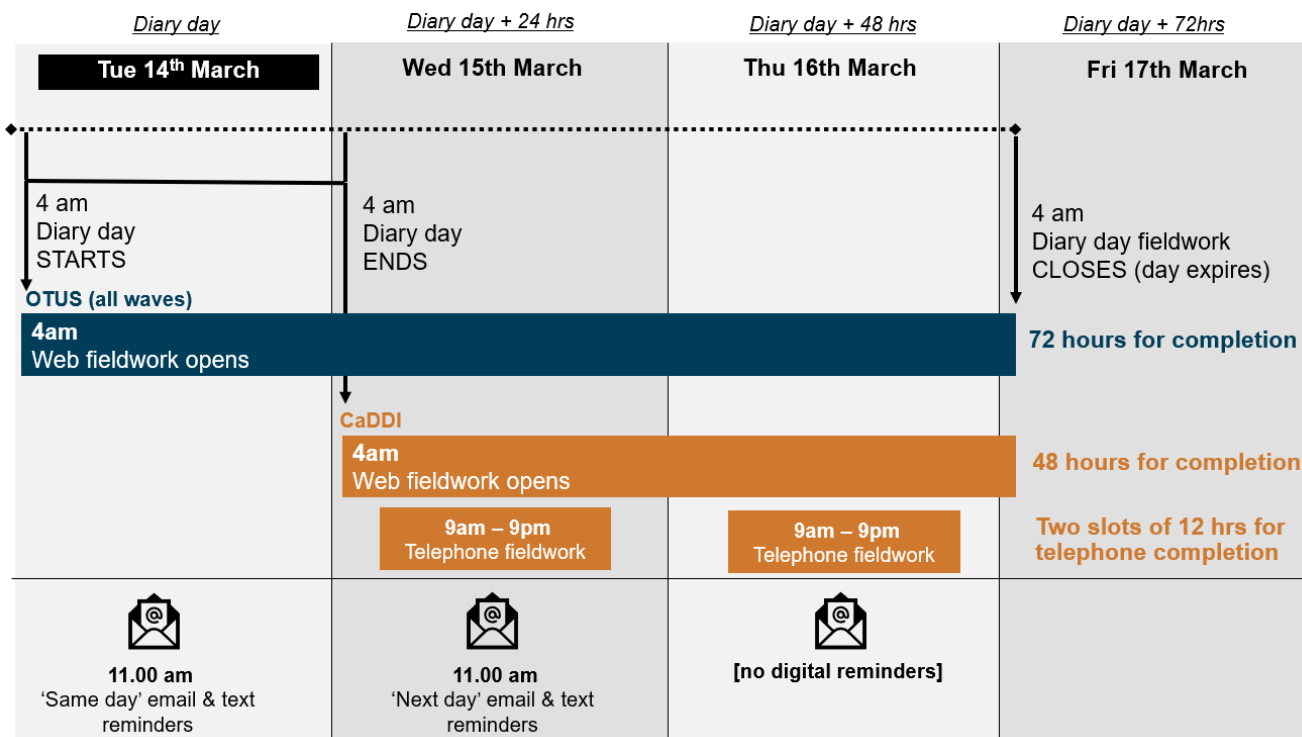
ELiDDI and OTUS – main differences

Some key differences between the two studies and their online tools are listed below. It is worth keeping these in mind when reading through the report.

Timeline for completion

For OTUS, online diaries are open for completion at the start of a respondent's diary day at 4am. It remains open for 72 hours (3 days) and closes at 4am two days after the diary day. This means that respondents can fill in their online diary as they go about their diary day, if they wish to do so. Meanwhile for ELiDDI, the online diary opens at the end of the respondent's diary day at 4am. It remains open for 48 hours (2 days) and closes at 4am two days after the diary day. It is worth noting that ELiDDI's telephone fieldwork took place across two 12-hour shifts (9am to 9pm) on the two days following a respondent's diary day – meaning participants had an effective 24-hour window to complete. **Figure 3** provides a visualisation of the timelines for completion for both studies, using an example diary day of Tuesday 14th March.

Figure 3 – Visualisation of OTUS and ELiDDI timelines for diary day completion



Entering diary data

For OTUS, diary data is entered across two separate pages – one page for primary activities and another for background activities. Data on these pages are entered using four drop-down menus. Respondents need to select an activity from a list of activities and then specify the activity's start time as well as the duration of time spent doing it (hours and/or minutes) and then click an 'add activity' button to enter it. It will then appear on a timeline on screen, from which they can be edited or deleted. Main and background activities work differently – see the table below for more details. Once a single main activity has been added, respondents are able to move onto secondary activities – they can switch between the two pages as required. For main activities, follow-up questions will appear once an activity has been added, for example, asking about the respondent's enjoyment of the activity and who they did it with – these questions are formatted like a conventional survey. Once a respondent finishes entering their secondary activities, they must then answer some final questions regarding their diary day before they can submit it. Once submitted, respondents can re-enter their diary day and make edits as needed up until the diary expires.

Meanwhile for ELiDDI, diary data is entered on a single page. Activities and other details are entered using a click and drag function onto a set of six timelines: main activities, secondary activities, location, who you were with, devices and enjoyment. Respondents need to select from a list of options at the bottom of the page and then click onto a 24-hour timeline and drag from the start time to the end time to add it. Activities that have been added onto a timeline can be edited or deleted. Each timeline can only be completed one at a time and follow different rules – for example, the primary activity row requires 23 hours and 20 minutes to be entered for participants to be able to move on. The next button will be greyed out until enough activities have been added. See **Table 1** for more details. Once a respondent finishes completing their enjoyment timeline, they must then answer some final questions regarding

their diary day before they can submit it. Once submitted, respondents are unable to re-enter the diary day to make edits.

Table 1 – Data entry rules for the various sections of the ELiDDI W1 and OTUS W6 online tools

Section	ELiDDI	OTUS
Main activity	- Cannot overlap - Maximum of 40 minutes of gaps allowed - Recorded in 10-minute intervals	- Cannot overlap - Maximum of 1 hour of gaps allowed - Recorded in 10-minute intervals
Secondary activity	- Cannot overlap - Time gaps allowed - Recorded in 10-minute intervals	- Can overlap (maximum of 5 activities within same time period) - Time gaps allowed - Recorded in 5-minute intervals
Location	- Cannot overlap - No time gaps allowed - Recorded in 10-minute intervals	(follow-up question; asked only for specific activities)
Who were you with?	- Can overlap - No time gaps allowed - Recorded in 10-minute intervals	(follow-up question; asked only for specific activities)
Devices	- Can overlap - Time gaps allowed - Recorded in 10-minute intervals	(follow-up question; asked only for specific activities)
Enjoyment	- Cannot overlap - No time gaps allowed - Recorded in 10-minute intervals	(follow-up question; asked only for specific activities)

Mode of completion offered

Respondents for the OTUS W6 study were only able to complete the survey online (CAWI). It is worth noting that telephone fieldwork was provided at some of the previous waves of the study run by NatCen. The ELiDDI study, meanwhile, had both online (CAWI) and telephone (CATI) participation. Due to the nature of the study, respondents were issued either to web or phone completion prior to the start of fieldwork, based on their characteristics and past survey participation – 10% of the sample were issued to complete by phone. Respondents were not able to switch from the mode they had been issued to. In terms of how telephone completion worked, respondents would receive a call on one of the two days following a diary day, with an interviewer logging into the tool and completing the online diary and background survey on their behalf.

Thresholds for diary day incentive eligibility

A certain threshold of hours of main activities had to be met for a respondent to complete and submit a diary day, and in turn be eligible to receive an incentive. For OTUS, this threshold was entering at least 23 hours of main activities, whilst for ELiDDI, it was at least 23 hours and 20 minutes of main activities.

Development status

The parallel run represented the sixth wave of the OTUS study run on the NatCen Opinion Panel, with a further wave run prior to the review. This includes three pilot waves, developing the transition from a paper diary and interviewer-led fieldwork to an online diary and web-first approach, and four subsequent regular waves. It is worth noting that over the course of these waves, in coordination with ONS and the diary tool provider, numerous changes and updates

have been made, resulting in fundamental issues and glitches within the tool and the fieldwork design being ironed out. In addition, a proportion of the sample who took part in OTUS W6 have participated in previous waves so will have had some familiarity with the study and tool.

Meanwhile, for ELiDDI, this was the first time the study had been run by NatCen. However, several waves of the study have been conducted between 2016 and 2021, using a market research survey provider and non-probability sample. During the parallel run, the ELiDDI online tool did not operate as intended with several glitches present that affected survey participation. For example, some respondents noted that diary days that should have been open for completion were showing as not yet available on their homepage. As a result, we believe it would be inappropriate to make a direct comparison between the two studies, without taking this caveat into account.

Paper support materials: activities list and diary booklet/memory aid

The OTUS study has a total of 72 activity codes, compared with 111 for ELiDDI. The main differences between the codes are that work and activities for pay are split across more options for OTUS, whilst travel and leisure activities are split across more options for ELiDDI. The OTUS activities list leaflet provides clarifications and examples for some activities, whilst the ELiDDI leaflet purely lists their activities. The OTUS diary booklet, compared with the memory aid for the ELiDDI study, provides more detailed guidance about the survey and more directly prompts respondents to take notes on their diary days – it includes an example notes page as well.

Note: the paper diary was different in terms of language used and level of information provided – and as such was presented differently to respondents (*‘diary booklet’* for OTUS vs. *‘memory aid’* for ELiDDI). However, for simplicity’s sake in this report the term ‘diary booklet’ is often used to refer to the paper diary support material of both studies.

UK online time use data collections overview

Table 2 summaries the key features of all the online-first time use studies conducted in the UK between March 2020 and March 2023 using the NatCen Opinion Panel probability-based sample³, eight waves in total: seven with the OTUS tool and one with the ELiDDI tool. The first wave using the ELiDDI tool was run in parallel with OTUS W6 in March 2023 with the aim of providing additional experimental or quasi-experimental data to be used for this review (see, for example, the experiment with the diary booklet support material and the evaluation of the impact of telephone fieldwork examined in later sections of this report).

The table also shows how some elements of the fieldwork design changed, as well as key contextual or fieldwork management aspects to consider (such as: the outbreak of the COVID-19 pandemic at OTUS W1 and the enforcement of new lockdown rules during OTUS

³ The NatCen Opinion Panel is the first probability-based research panel in the UK that is open to be used for data collection by the social research community. Launched in 2015, it covers adults (18+) in the UK. The NatCen Opinion Panel is recruited through studies such as the British Social Attitudes (BSA) survey for which participants are selected at random from the general population using the Postcode Address File (PAF) as a sample frame. At any given Panel fieldwork wave/study, all active panellists from the target population (or a random sub-sample) are invited to take part in the available survey (no quotas are used). This sustains the principle that the population has a known and non-zero chance of being selected and thus the random probability design.

W2; the change in the incentive strategy and dropping of inactive cases at W2; or the removal of the device section at W3; etc.).

Finally, the table presents the day-level response rate for each wave. The day-level response rates fluctuated across waves. Given the numerous changes made to the tools and fieldwork design features, along with changes in the study context, it is challenging to disentangle the various effects and draw definitive conclusions. Looking at the parallel run conducted in March 2023, and therefore keeping consistent the sample approach and the external context, the OTUS study achieved a 43% day-level response rate while the ELiDDI tool achieved a 35% response rate. To contextualise this 8 percentage point difference, four points should be noted. Firstly, as this was the sixth wave NatCen ran for OTUS in collaboration with the same diary provider over the past three years, fundamental issues and glitches with the tool and the fieldwork design had been ironed out; moreover, a proportion of the panel sample was already familiar with the study and the tool as they had completed previous waves. Secondly, the ELiDDI tool did not operate as intended due to some system bugs (e.g. diary days showing as unavailable when they should have been open for participants), therefore it would be unfair to make a direct comparison. A swift analysis of paradata provided by the ELiDDI diary provider indicated that among web participants who encountered no glitches, the day-level response rate stood at 89%. Paradata indicated that out of 4,725 participants issued to web fieldwork in ELiDDI, 3,832 did not experience any glitches and fully completed (i.e., submitted) a total of 3,398 diary days. However, these results should be treated particularly cautiously as paradata on glitches may not be entirely reliable, and data quality should also be assessed. Thirdly, the completion mode offered by the two studies differed: ELiDDI had a CATI component while OTUS was web only. And finally but not less important, as just discussed in the section preceding this one, the two tools use very different designs and data entry mechanisms.

While no direct comparison can be made between the ELiDDI and OTUS tools, and similarly, definitive comparisons between different waves of OTUS are a challenge to make, the results can help steer the decision-making process and support the identification of areas for future development.

Table 2 – UK online time use studies 2020-23: key features overview

	OTUS W1	OTUS W2	OTUS W3	OTUS W4	OTUS W5	PARALLEL RUN		
Day-level response rate	35%	46%	51%	43%	38%	43%	37%	35%
Fieldwork period	Mar-Apr 2020	Sep-Oct 2020	March 2021	March 2022	November 2022	March 2023	Sep-Oct 2023	March 2023
Mode	Web + Tel	Web + Tel	Web + Tel	Web	Web	Web	Web	Web + Tel
Re-issue	Yes	Yes	No	No	No	No	No	No
Incentive per day	£5 but only if <u>both days</u> completed	£5 or £10 (experiment)	£10 or £15 (experiment)	£10	£10	£10	£10	£10
Sample source	BSA F2F	BSA F2F	BSA F2F	BSA F2F + P2W	BSA F2F + P2W	BSA F2F + P2W	BSA F2F + P2W	BSA F2F + P2W
Other key notes	Pandemic outbreak Tool glitches	Inactive cases dropped (sample change) 1 day complete = 1 voucher COVID-19 lockdown measures	Device section removed		Comms error (Reminder emails not sent on some days)	Comms error (One reminder email not sent for one day)		Tools glitches

Report structure overview

The first chapter is dedicated to the evaluation of six features of the fieldwork design: mode, re-issue fieldwork period, threshold for voucher eligibility, incentive value, survey length and timeline for completion. The second chapter focuses on the review of six elements of the respondent's journey: the communication package, the process to access the tool (login and home page), the background survey collecting socio-demographic information, the online instructions provided to participants, the online diary page(s) including additional questions related to the diary days and, finally, the survey submission page. The third and concluding chapter presents the relative costs of different fieldwork design features.

1. Fieldwork design

RESEARCH QUESTIONS (RQ)

This chapter addresses:

- **RQ #5:** How do the two tools and fieldwork design perform in terms of representativeness and fieldwork efficiency?

In this chapter we present a review of six key fieldwork design elements:

- Mode of completion.
- Re-issue fieldwork period.
- Thresholds for diary day incentive eligibility.
- Incentive value.
- Survey length.
- Timeline for completion.

For each element, we make recommendations accounting for both the impact on sample representativeness and improvements to fieldwork efficiency.

Table 3 provides an overview of all the elements for the tools used at the parallel run (ELiDDI W1 and OTUS W6). For OTUS, the table also flags the fieldwork characteristics of the first three waves, to which we have referred to for some of the analysis.

Table 3 – Overview of the fieldwork design key elements reviewed

						
	Mode of completion	Re-issue fieldwork	Incentive eligibility threshold	Incentive value	Survey length*	Timeline for completion
ELiDDI W1 <i>(parallel run)</i>	Web & Telephone (respectively 90% vs. 10% of sample)	No	At least 23 hours 20 minutes of main activities	£10 for each valid diary day (£20 max)	Total: 45 minutes - For each day: 20 minutes - Background survey: 5 minutes	48 hours for web participants - Two slots of 12 hours for telephone participants
OTUS W6 <i>(parallel run)</i>	Web only	No	At least 23 hours of main activities	£10 for each valid diary day (£20 max)	Total: 60 minutes - For each day: 25* minutes - Background survey: 10 minutes (*30 minutes for W1...W5, for a total of 1 hour and 10 minutes)	72 hours
OTUS W1, W2, W3	Web & Telephone (respectively 85% vs. 15% of sample)	W1 & W2 only	[same as W6]	Experiments with max amount: - W2: £10 vs £20 - W3: £20 vs £30	[same as W6]	72 hours for web participants - Two slots of 12 hours for telephone participants

*Survey length: estimated by CTUR for ELiDDI and ONS for OTUS

1.1 Mode

The first three waves of OTUS (pilot waves) run between March 2020 and March 2021, as well as the ELiDDI wave run in 2023, were multi-mode waves. The sample of study participants was split into two groups: ‘web participants’ contacted and engaged with exclusively via post, text message and online communications and invited to take part in the study online on their own; and ‘telephone participants’ who were invited to take part by completing the survey over the phone with a trained interviewer.

For OTUS W1, W2 and W3, a total of 15% of cases unlikely to take part online, but likely to take part on the phone were issued to the telephone fieldwork; while 10% of cases were issued to telephone for ELiDDI W1 during the parallel run. A regression model based on the participants’ characteristics and their previous survey participation preferences was used to predict the likelihood of online or telephone completion, and thus the allocation to the mode group.

While the two groups were in field simultaneously, they were managed separately – given the tight window for completion of the diary days, mode-swapping was not allowed. The ‘telephone’ group was never invited to take part online and was not able to do so, even if, when contacted by an interviewer, they expressed the preference for online completion. Likewise, ‘web’ participants were not issued to the telephone fieldwork even if they expressed the need for support to be able to participate.

During the parallel run in 2023, OTUS W6 used a uni-modal approach with the entire sample invited to take part online. However, in anticipation of the systematic review presented in this report, during the sampling process equivalent cases to the ones issued to telephone for ELiDDI were identified for OTUS.

Communication differences for multi-mode approach (OTUS W1, W2, W3; ELiDDI W1)

Following a pre-notification communication (by email and/or letter) sent to all issued cases one week before the start of fieldwork to present the study and give sample members an opportunity to opt-out and a reminder letter with the support paper material enclosed, participants received different types of communication depending on whether they were issued to web or telephone fieldwork.

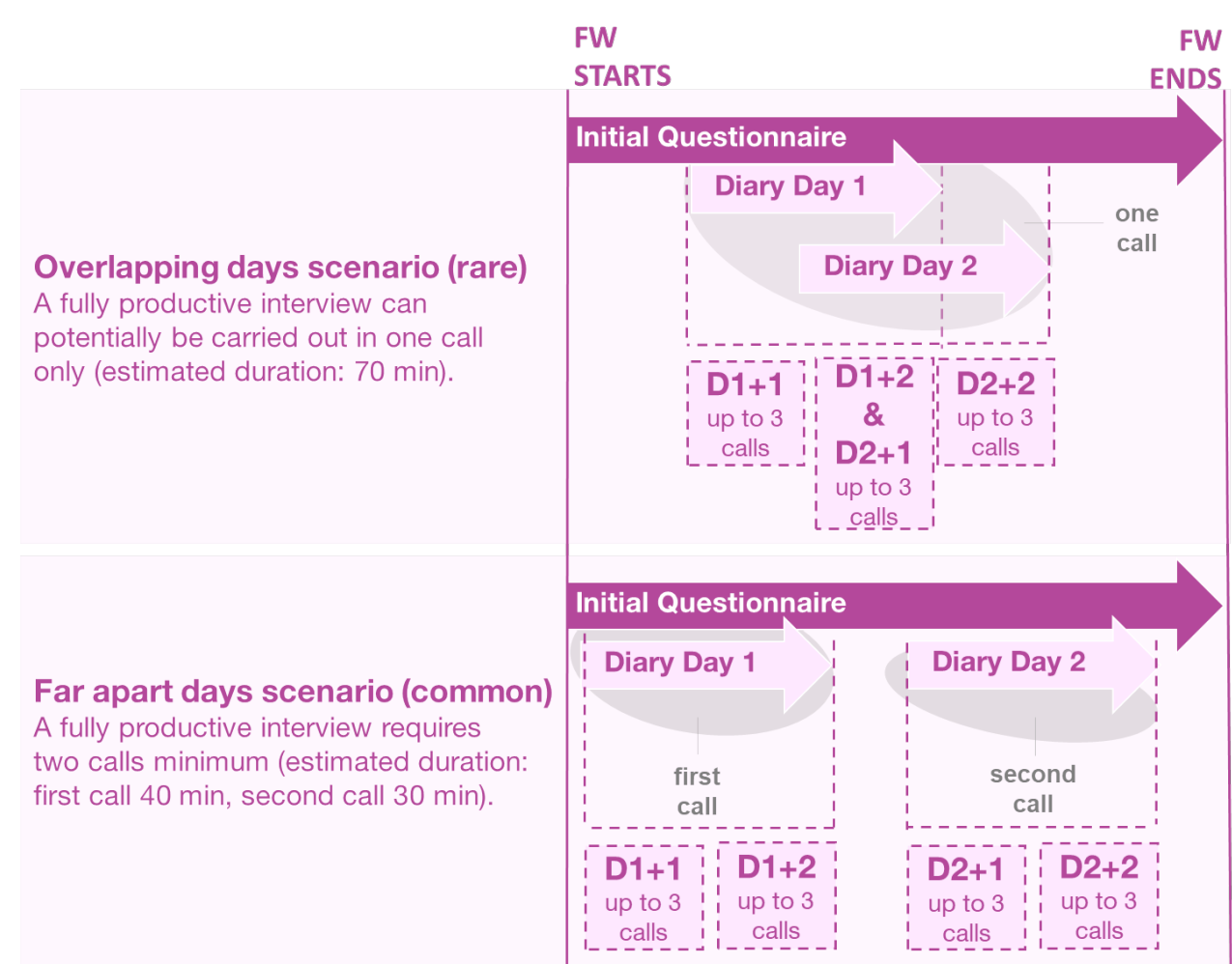
The web sample was sent digital communications (emails or texts) specifying the two assigned days for the study period, and containing a link to the diary tool, their username and password. The telephone sample was sent digital communications (emails or texts) specifying the two assigned days for the study period and reminding them to take notes about how they spent their diary day and to expect a call from a NatCen interviewer.

Telephone fieldwork call requirements (OTUS W1, W2, W3; ELiDDI W1)

Interviewers made multiple call attempts within the required period to maximise the chances of contact with participants. The CATI program managed the call patterns and prompted interviewers to set suitable appointments. The maximum number of calls per day, excluding appointments requested by the participant, was set to three: once in the morning, once in the afternoon and once in the evening. This 3-call per day pattern also applied if both diary days

were both available at the same time. **Figure 4** represents the call patterns for an ‘overlapping diary days’ scenario and a ‘far apart days’ scenario.

Figure 4 – Telephone fieldwork call pattern for two different scenarios: ‘overlapping days’ and ‘far apart days’

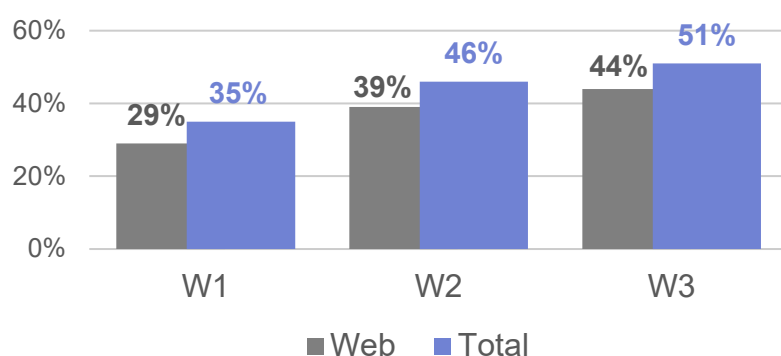


1.1.1. Response rate

OTUS W1, W2, W3

For the pilot waves of OTUS, 15% of cases unlikely to take part online, but likely to take part on the phone, were issued to CATI. This consistently improved the day level response rate by approximately 7pp.

Figure 5 – OTUS W1, W2, W3 day-level response rate by mode



Base: issued days

W1: Web (4,302); Total (5,060)

W2: Web (2,844); Total (3,338)

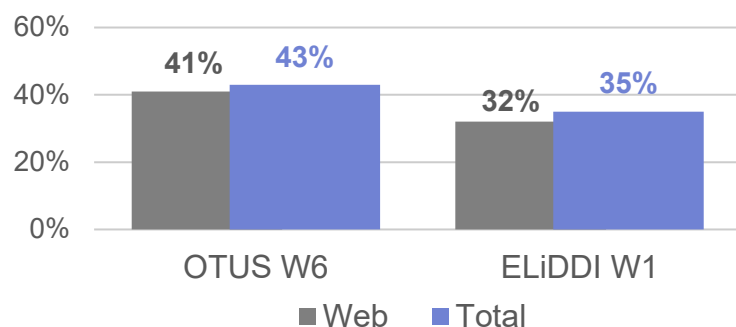
W3: Web (6,222); Total (7,380)

Parallel run (OTUS W6; ELiDDI W1)

During the parallel run, for ELiDDI 10% of cases were issued to telephone among those identified as less likely to take part online and more like to take part over the phone. Equivalent cases were identified for OTUS for the purpose of this analysis (but were invited to take part exclusively online). This group of participants is referred to as the ‘telephone sample’ in this section, irrespective of whether participants were actually issued to telephone fieldwork (ELiDDI) or simply identified as those who would have been issued to telephone if telephone fieldwork were an option (OTUS).

Firstly, we look at the projected overall day-level response rates if no telephone fieldwork was implemented, and all cases issued to telephone (or equivalent cases for OTUS) would have not taken part. That is why the bases in **Figure 6** for each diary tool are the same by fieldwork type (N=9,708 for OTUS and 10,478 for ELiDDI). For both OTUS and ELiDDI, including this specific ‘telephone sample’ the issued sample increased the day level response rate by around 3pp, suggesting the telephone fieldwork doesn’t make much difference (**Figure 6**).

Figure 6 – Parallel run day-level response rate by whether web-only or mixed-mode fieldwork implemented



Base issued days:

OTUS W6: Web (9,708); Total (9,708)

ELiDDI W1: Web cases (10,478); Total (10,478)

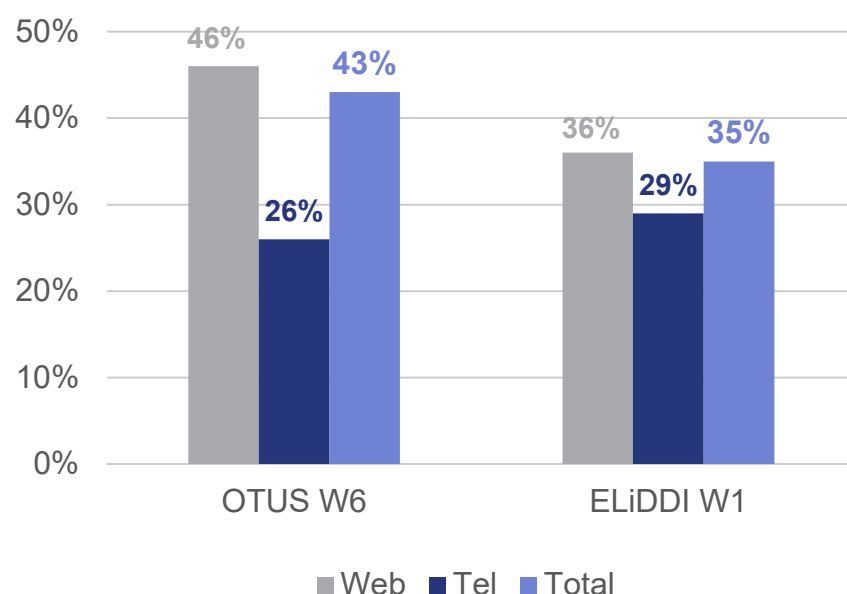
However, when looking at the relative mode response rate differences (telephone vs. web), the ELiDDI fieldwork design showed a smaller gap indicating that the offer of telephone mode plays a role in pushing up the response rate:

- for OTUS: 26% telephone predicted vs. 46% of 'web' sample (20 pp gap)
- for ELiDDI: 29% telephone issued vs. 36% of 'web' sample (7 pp gap)

In addition, it should be noted that despite a substantially lower web response rate, in absolute terms the ELiDDI telephone response rate was higher than the equivalent OTUS sample (26% vs. 29%).

Finally, looking at OTUS, it seems that roughly 1 in 4 participants (26%) identified by the model as potential telephone fieldwork participants were willing and could take part in web mode. The data quality of these diaries should be assessed though – those for whom telephone mode was the best fit found with the modelling exercise may not enter as good data when completing online.

Figure 7 – Parallel run day-level response rate by mode



Base issued days:

OTUS W6: Web cases (8,718); Tel (990); Total (9,708)*

ELiDDI W1: Web (9,450); Tel (1,028); Total (10,478)

() Cases identified for CATI fieldwork, but issued to web*

1.1.2. Sample representativity

OTUS W1, W2, W3

The sample profile was consistently improved by inclusion of telephone fieldwork – estimates on average 0.5pp closer to the population. The inclusion had more impact for some demographics (e.g., age – 3pp better for 65+) than others (e.g., ethnicity).

This is with only 15% of the sample issued to telephone. The fact that these improvements affect only a small part of the sample means its overall effect may be limited.

Parallel run (OTUS W6; ELiDDI W1)

The inclusion of the telephone sample made the profile on average 0.5pp better for OTUS W6. This is similar to what was found at older waves of OTUS (W1, W2, W3). One might therefore conclude that this small half percentage point improvement is driven by other factors than the use of telephone fieldwork (which wasn't actually used at W6); for example, it might be driven by changes to the sample design approach (e.g., dropping inactive cases; proportional sampling etc.).

Given the sample characteristics and sampling approach during the parallel run were the same, the ELiDDI data helps us try to disentangle the various factors. Including telephone fieldwork made the profile of ELiDDI respondents on average 1pp better (half percentage point higher than what was found for OTUS). We might therefore conclude that at least 0.5% of the total improvement is due to the offer of telephone fieldwork.

While it is very difficult to disentangle the various mechanisms at play here, it is also worth noting that despite a lower overall day level response rate (OTUS 46% vs. ELiDDI 35%) including telephone fieldwork made the sample marginally better. While higher response rates are generally good as they improve the effective sample size and address hidden bias, they might also reduce ‘variation’ by bringing in more of the same people in the final sample of respondents.

1.1.3. Respondent feedback

During the parallel run, 7% of respondent queries for OTUS and 3% for ELiDDI referenced the mode of completion. It is worth noting that all OTUS respondents participated by web while telephone completion was also available for a selection of ELiDDI respondents.

For both studies, a number of respondents who were issued to complete their survey online stated that they did not have internet access and thus were not able to take part. There were also some participants who noted having difficulties completing online due to possessing limited digital skills. Among both of these groups, respondents often noted that they would have preferred to complete by telephone - a few mentioned paper completion as an alternative.

For ELiDDI, where respondents were issued to a mode prior to the start of fieldwork based on their characteristics and past survey completion, some of those who were issued to take part by web stated they were unable to complete online and wanted to take part by telephone instead. For OTUS, a couple of respondents who had struggled to complete their survey online, requested to send in their filled paper diary booklet instead.

1.1.4. Considerations and recommendations

1. Incorporating telephone fieldwork enhances both response rates and sample profile. Yet, its impact at the population level remains relatively modest, as it only influences a small fraction of the total sample. This prompts the question: are these enhancements justified?

- To what extent are costs of using interviewers off-set by savings from higher response rates (issuing fewer cases)?
- What about the effective sample size?
- Are improvements in representativeness in groups of interest?
- Impact on hidden biases?
- Ethical/accessibility considerations of no offline option.

2. For standard NatCen Opinion Panel surveys, the proportion of respondents completing surveys via phone is steadily decreasing, currently standing at around 5-7%. While targeted approaches could potentially mitigate costs, it's important to consider...

- What proportion of CATI costs are from variable costs? Scaling back might not yield substantial savings.

1.2 Re-issue fieldwork period

In the first two waves of OTUS, respondents who did not complete or only partially completed one or both of their days were given another opportunity to take part. Depending on the status of the first tranche of fieldwork (referred to as ‘first issue fieldwork period’), respondents were reassigned either another set of days or a specific day. Given for a case to be considered a

complete both a weekday and a weekend day must be completed, the 'type' of day (i.e. weekday or weekend) that was missed was reassigned. Cases were not reissued only to complete the background socio-demographic questionnaire. Similar to first-issue collection, respondents were given advance notice of a few days.

This fieldwork design therefore encompassed three re-issue scenarios:

- **No re-issue** | If both diary days were completed during the first issue fieldwork phase, or the participant had adamantly refused to take part in the study, the case was not re-issued (irrespective of whether the background questionnaire was completed or not).
- **1-day reissue** | If during the first issue phase only one of the two diary days was completed and the participant was still eligible for the study a new day of the type of the one missed was made available for the re-issue phase.
- **2-day reissue** | If during the first issue phase neither of the two diary days were completed and the participant was still eligible for the study, two new days were made available for the re-issue phase.

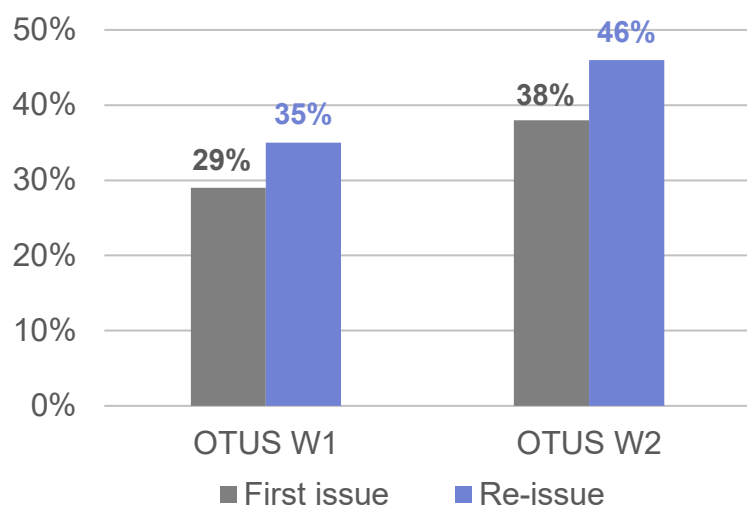
In this section we assess the impact of a re-issue fieldwork period approach on the response rate and the representativity of the sample, and we also review the feedback from both respondents and interviewers.

It's important to note that OTUS W1 and W2 were conducted during the initial phases of the COVID-19 pandemic. During this period, people's behaviors and attitudes towards survey response may have been influenced by various factors related to the pandemic, such as changes in daily routines, heightened concerns about health and safety, underscored importance of reliable and timely data, and disruptions to work and social activities.

1.2.1. Response rate

Looking at the response rate, survey metrics data tells us that a re-issue fieldwork period increased the day-level response rate by 6pp (from 29% to 35%) in OTUS W1 and by 8pp (from 38% to 46%) in OTUS W2.

Figure 8 – Day-level response rate by fieldwork period



Base issued days: OTUS W1 (5,060); OTUS W2 (3,338)

1.2.2. Sample profile

Looking at the sample profile, data showed the re-issue fieldwork period didn't affect the sample representativeness for the measures used in either OTUS W1 or W2. However, it may have had an impact on other characteristics that were not evaluated, but were associated with the outcomes of interest.

1.2.3. Respondent feedback

During the parallel run, 3% of respondent queries for OTUS and 1% for ELiDDI referenced the allocation of specific days.

Across both studies, a small number of respondents stated that their diary day was atypical, for example due to being sick or on holiday, and so wouldn't be participating as a result. Some of these asked if they were able to change one or both of their allocated days.

During the first waves of OTUS, a seemingly minor alteration to the layout of how the diary dates were presented likely helped reduce the number of queries about diary days allocation and potentially increased compliance with the rules, in turn positively impacting response rates. The change involved centring the diary dates on a new line on their own, as opposed to being in line with the main text of a sentence, as well as adding a reference to the expiry dates (approach then used for all waves of OTUS from W4, and for ELiDDI – see **Section 2.1**). However, it's important to note that no experimental data is available to confirm these impacts definitively.

1.2.4. Interviewer feedback

No feedback on this topic was received from interviewers working on the ELiDDI study.

Looking at feedback received at past OTUS waves, interviewers noted that some study respondents – including older people and those who were ill or disabled – felt that they weren't doing anything of interest or didn't have activity-filled days, so thought their data wouldn't be of use to the study. Interviewers also reported that re-issue respondents were more difficult to persuade to participate, particularly if they hadn't completed either diary day in the initial fieldwork period.

1.2.5. Considerations and recommendations

1. The communication around day allocation, expiry rules and the study's objectives are of paramount importance.

- Clear communication and visual aids are essential for facilitating participant understanding, minimising confusion, and promoting engagement and compliance. Layout variations, if not diagrams, to supplement written instructions and enhance participant comprehension are recommended. See also **Section 2.1.5**.

2. The use of re-issue fieldwork period is effective at increasing response rates. However, re-issuing cases introduces certain important challenges. The benefits of increased response rates probably don't outweigh the drawbacks.

- Adds complexity to analysis – re-issuing cases means that not everyone participates during the same week, which can add complexity to the analysis process. Comparing data from respondents who participated in different weeks may require additional adjustments and considerations to ensure valid comparisons.
- Delays data delivery – the additional time required for re-issuing and waiting for responses from previously non-responsive participants extends the overall data collection timeline, potentially impacting project deadlines and deliverables such as publication of bulletins and results.

3. The current evidence is somewhat out-of-date, as the sample and fieldwork design have undergone substantial changes such as P2W recruitment; weighted sampling and absence of telephone fieldwork. In light of these changes, it's important to re-evaluate the cost-effectiveness of different approaches (see **Chapter 3**).

- However, while the re-issue approach has shown some effectiveness in the past, it may not be worth prioritising compared to other strategies, such as increasing incentives or utilising telephone. Investing more in higher incentives can incentivise participation and improve response rates without the added complexity and delays associated with re-issuing cases. Additionally, leveraging telephone can enhance data quality and reduce the need for re-issuing by enabling real-time communication and assistance to older and/or less tech-savvy participants during the survey process.

1.3 Thresholds for diary day incentive eligibility

Establishing a diary day validity⁴ threshold for incentive eligibility is crucial for managing fieldwork operations effectively. In particular, the distinction between 'valid' (or 'complete') and

⁴ Validity is discussed here from a fieldwork management perspective rather than data quality. Validity threshold from a data quality perspective might consider other factors such as the total number of activities entered.

‘not valid’ (i.e. ‘partial’ or ‘not started’ or ‘expired’) diary days enables a tailored administration of reminders during fieldwork and the management of the incentives as token of appreciation for participation.

Once the threshold for incentive eligibility is established, the diary provider needs to configure the necessary variables to capture this information at the required granularity level. This entails setting up variables in a format that can be easily utilised as input for managing fieldwork operations. The variables should accurately indicate whether each diary day meets the validity threshold, enabling efficient tracking and management of participant progress throughout the survey period.

1.3.1. Response rate

To assess the impact of the validity threshold on the response rate, we looked at the data from the March 2023 parallel run (OTUS W6 vs. ELiDDI W1). However, differences in criteria for determining the voucher eligibility threshold between the two studies, as well as variations in data saving and storage procedures, pose challenges when comparing their impact on response rates.

Firstly, the two diary tools used slightly different criteria to determine the threshold for voucher eligibility. For OTUS a diary day was considered ‘valid/completed’ when the participant entered at least 23 hours of main activities. For ELiDDI participants were required to enter at least 23 hours and 20 minutes of main activities to unblock the other five levels of the survey and therefore be able to proceed to submission. This means that – looking exclusively at main activities – OTUS allowed a one-hour gap per diary day, while ELiDDI only a 40-minute gap.

Secondly, and more importantly, the saving and storage of the data on the number of hours entered for main activities is managed differently by the diary providers. In particular, the ELiDDI dataset lacked detailed hour-level information available in the OTUS dataset as it did not allow the transfer of information on the precise number of hours entered for under 23 hours. This means that the datasets used for this piece of analysis – i.e., the fieldwork reports produced by the diary providers – are not perfectly comparable: OTUS provided data at the hour-level (ranging from 0 to 24⁵), while ELiDDI only provided a binary variable flagging whether the hours entered were below or above 23 hours and 20 minutes.

Looking only at people issued to web during the parallel run, reflecting the lower overall response rate for ELiDDI, a higher percentage of OTUS W6 participants recorded 24 hours:

- Day 1 – OTUS 45% vs ELiDDI 28%
- Day 2 – OTUS 45% vs ELiDDI 31%

Of the productive cases, if we focus on those who entered 23 hours or more, for OTUS 99% completed 24 hours compared to 86% for ELiDDI.

⁵ Across all waves of OTUS, for a minority of cases (c. two or three per wave) the number of hours of main activity entered was greater than 24. The diary provider has not been able to pinpoint a cause for this yet.

This data suggests that people completing the OTUS diary leave less gaps than those people completing the ELiDDI diary, in terms of number of hours submitted. However, this does not speak to the quality of those hours.

1.3.2. Respondent feedback

During the parallel run, 15% of respondent queries for OTUS and 8% for ELiDDI referenced the diary day expiration – although some of these related to ‘completed’ diaries that were showing as expired.

For both surveys, some participants were unclear about diary expiration rules. This included being unaware that diary days would expire or thinking that they could complete both diary days together, once the second day had opened. Some respondents had missed their diary completion window due to personal circumstances. Participants whose diary day had expired without being started typically queried if the day could be reopened – they had often taken notes and therefore claimed that their data would be accurate. When informed that an expired day can’t be reopened and that they would only be eligible for half of the value of the full incentive, some pointed out that they felt it was unfair that the time dedicated to take notes and their commitment were not acknowledged⁶.

1.3.3. Interviewer feedback

Interviewers flagged that the 48-hour deadline for completion, once a diary day had ended, made it challenging to gain cooperation, especially when participants were keen to take part but working, busy (e.g. due to caring responsibilities) or unwell. It is worth noting that the 48-hour telephone deadline translates into a circa 24-hour completion window in telephone mode, given that interviewers make and take calls during a specific timeframe (usually 9am-9pm).

Missing the deadline for the first diary day can negatively affect overall participation. This is especially true for respondents who had taken the time to make notes to refer to during the interview. Within this engaged group of participants, many stated they didn’t want to complete their second day if they weren’t going to receive the full incentive amount.

A telephone deadline can be missed due to different factors – main ones to consider are: interviews taking longer than expected meaning that interviewers have less time to spend to fully work the sample according to the established call pattern (i.e. call each sample case at least three times per day at different times – see **Figure 4**); tool glitches slowing down if not preventing the survey completion; interviewers booking appointments outside the available completion window and therefore preventing the case to come up in the call scheduler system (i.e., human error).

1.3.4. Considerations and recommendations

1. Data saving and storage procedures impact the type of fieldwork performance analysis that can be conducted, as well as the information that can be fed through for the tailoring of reminders during fieldwork. The latter in turn can impact the response rate.

⁶ These types of complaints were evaluated on a case-by-case basis by the research team. To increase the overall study response rate, and to reduce the risk of sample attrition, a full amount voucher was often granted.

-
- By implementing a clear validity threshold and setting up the requisite variables, researchers and diary providers can streamline fieldwork operations, optimise participant engagement via personalised communications, and ensure the effective administration of incentives in survey research endeavors. A thorough assessment of the data type and granularity needed for fieldwork performance analysis and management is therefore highly recommended.

1.4 Incentive value

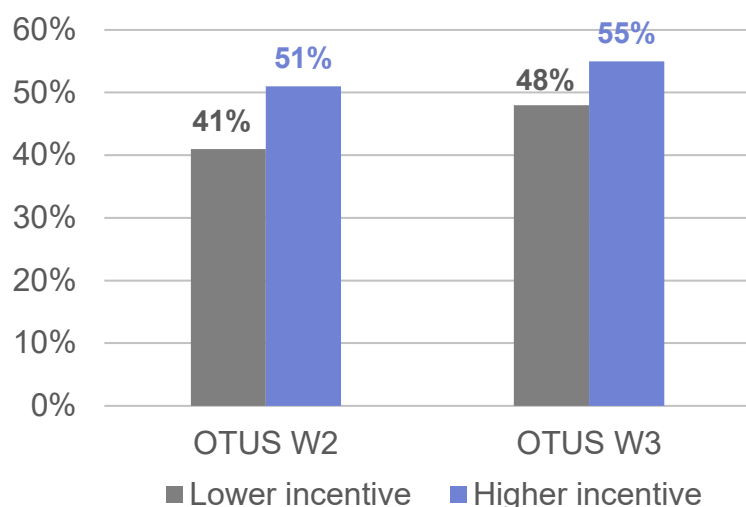
In the pilot phase of OTUS, two split-sample experiments were conducted to determine the optimal “data-value for money” by testing different voucher amounts. During W2, respondents were eligible for either £10 or £20 (£5 and £10 per diary day, respectively), while during W3 the values were slightly increased to £20 or £30 (£10 and £15 per diary day, respectively). In March 2023 during the parallel run, for both studies, participants were eligible for £10 for each diary day that met the respective threshold for voucher eligibility (see **Section 1.3**)

To evaluate the impact of these varying incentive values on key survey metrics, we analysed experimental data from earlier waves of OTUS. Additionally, we considered feedback from respondents and interviewers across different waves to gain insights into the effectiveness of the incentive structure. Finally, using OTUS W6 data, we compared the threshold for day validity for voucher eligibility versus day validity for data quality. That is we compared the number of people issued an incentive with the number of those included in the final list of ‘good diaries’ used by the ONS for weighting and analysis. This analysis helps assess whether the criteria for voucher eligibility broadly aligns with the standards for data quality. Identifying any discrepancies can inform adjustments to the incentive structure or data validation criteria within the online tool to better align with the overarching goals of the survey, such as maximising response rates while maintaining data integrity.

1.4.1. Response rate

The data from OTUS Wave 2 indicated that increasing the incentive from £10 to £20 resulted in a notable increase in the day-level response rate, rising by 10 percentage points from 41% to 51%. Similarly, in OTUS Wave 3, increasing the incentive from £20 to £30 led to a 7 percentage points increase in the day-level response rate, climbing from 48% to 55%.

Figure 9 – Day-level response rate by incentive value



Base issued days: W2 (5,060); W3 (3,338)

These findings suggest that higher incentives can indeed have a positive impact on response rates, as demonstrated by the significant increases observed in both waves. However, it's worth noting that the magnitude of the increase in response rates differed between the two waves, despite the similar incremental increases in incentive amounts. This indicates that the relationship between incentive value and response rates may not be linear and can be influenced by various factors such as survey context, participant demographics, and external influences. Overall, these results provide valuable insights into the effectiveness of incentive strategies in encouraging participant engagement and increasing response rates in survey research.

Finally, we also looked at the discrepancy between voucher eligibility and data validity. For OTUS W6 ONS identified 4,215 'good diary' days within BSA participants. Of these 'good diary' days, 4,171 had at least 23 hours recorded leaving 44 'good diary' days with less than 23 hours recorded. This compared to 4,222 complete days based on fieldwork progress data used as voucher eligibility criteria (i.e. number of days with 23 or more hours recorded). This means that, overall, during W6 there was an over-payment of £70 $[(4,222 - 4,215) \times £10]$. Moreover, this analysis showed that 44 days were used but not incentivised, and finally 51 days were not used but were incentivised.

1.4.2. Sample representativity

In OTUS Wave 2, the data indicated that the sample profile improved by approximately 1 percentage point on average for the measures evaluated. This improvement suggests that the increase in incentives led to better representation within the sample for the measures of interest. However, in OTUS Wave 3, despite the increase in incentives and subsequent higher response rates, there was no noticeable impact on the sample profile for the measures evaluated. This suggests that while increasing incentives may have attracted more respondents, it did not necessarily result in significant changes to the composition of the sample for the measures considered.

These findings indicate that the relationship between incentive amounts, response rates, and sample profile improvements is difficult to disentangle, highlighting the complexity of incentivising participants in survey research. Further exploration may be needed, and new experimental data should be collected, to understand the underlying factors influencing these outcomes.

1.4.3. Respondent feedback

No respondent feedback specifically mentioning the value of the survey incentives was received during the parallel run for either study. This outcome, rather than being an indication of the incentive value being considered appropriate across different individuals, is probably associated with specific factors for each of the tool. For OTUS: as the March 2023 wave was the sixth iteration of the study, some Panel members may have been familiar with what to expect, including how the tool works and the level of effort required, as they had participated in previous waves. This familiarity might have led some panel members to perceive the incentive as inadequate, potentially resulting in them not even considering participation and not reaching out to the Freephone team to express their disappointment (as they might have already done so in the past). For ELiDDI: while participants did not question the value of the incentive relative to the task, some of those who experienced glitches and decided to not complete the survey (even when the Freephone team explained the issue was resolved) still claimed they deserved the full amount for each diary day. They felt that their commitment and time should have been recognised regardless of whether their data had been captured or not.

During the earlier waves of OTUS, especially at W1 when the tool was still being optimised and the voucher amount was only £5 if both days were completed, some participants referred to the value of the voucher being inadequate given the complexity of the task and time required. This feedback was valuable for researchers to refine the incentive structure and its communication to improve transparency and the overall experience for participants.

1.4.4. Interviewer feedback

Interviewers for the ELiDDI study highlighted that respondents did not make any comments in relation to the study's incentives, including their value – partly a reflection that no experiments were conducted around the incentives.

Looking at feedback received at previous OTUS waves, interviewers noted a more positive response at wave 3, especially among younger people. They felt this was in part due to the higher incentive on offer – a £10 increase on the previous wave's amount. Interviewers also stated that being able to offer half of the value of the full incentive for completing one day was helpful when recruiting respondents who had missed their first diary day.

1.4.5. Considerations and recommendations

1. There is an underlying principle of offering an incentive proportionate to the scale of the task which revolves around the concept of fair compensation for participants' time, effort, and contribution to the survey or research endeavour. This principle acknowledges that larger or more complex tasks may require greater incentives to incentivise participation effectively and maintain engagement.
 - However, alongside this principle, there is also the important consideration of achieving value for (public) money and operating within the constraints of government funding. While incentives can

enhance response rates and data quality, it's essential to balance the desire to incentivise participation with fiscal responsibility and efficient resource allocation.

- Ultimately, the decision to offer incentives and the amount offered should be guided by a careful assessment of the task's scale, the desired level of participant engagement, budgetary constraints, and broader strategic objectives related to data collection and research outcomes.

2. In absolute terms, the use of higher incentives can be highly effective at increasing response rates. However, they offer diminishing returns.

- As the incentive amount increases, the incremental impact on response rates gradually decreases. There are several reasons for this such as:
 - *Saturation*: Over time, participants may become accustomed to receiving incentives, and the novelty or attractiveness of the incentive may wear off.
 - *Selective Participation*: Higher incentives may attract participants primarily motivated by the incentive itself rather than a genuine interest in the survey topic, potentially compromising data quality.
 - *Cost-Benefit Tradeoff*: At higher incentive levels, the cost of offering incentives may outweigh the benefits gained in terms of increased response rates.
- As saturation and selective participation depend on the sample of participants and the fieldwork design, further research might be needed to account for the characteristics of the new time use study that will be developed.

3. A larger increase in response rates, resulting from the implementation of higher incentives or other effective engagement strategies, can indeed lead to reduced print and post costs, as well as reduced administrative overhead costs, and be relatively cost-effective in the long run.

- This is in line with what was noted also in relation to the use of telephone fieldwork.

4. For OTUS the discrepancy between thresholds for voucher eligibility and data validity had a minimal impact on the budget, to the point it could even change direction.

- While there are instances of individuals not being paid who should have, and vice versa, these occurrences are infrequent. If terms for voucher eligibility were changed, these should be communicated clearly and concisely. The reference to 'at least 23 hours', which is not explicitly referenced in communications but is used by the Freephone team when managing voucher queries and expectations, is clear and reasonable.
- Researchers should maintain transparency and fairness in the voucher eligibility process while effectively managing budgetary considerations.

➤ *Note – this analysis and considerations on the discrepancies between thresholds apply to OTUS only. Different considerations may apply for tools where diary day information is captured in one unique page and/or the entry of data is simplified, offering participants a seamless experience.*

5. There was no clear evidence on impact on the sample representability. While incentives can indeed enhance response rates, their effectiveness in ensuring a representative sample may vary depending on various factors such as the incentive amount, survey design, target population, and demographic characteristics of participants.

- The use of targeted and tailored incentives for specific demographic subgroups could be evaluated to increase both the quality and number of diary days completed by subgroups of interest (e.g. students, caregivers).

6. Current experimental evidence is somewhat out-of-date. Given the changes in sample and fieldwork design (e.g. P2W recruitment; weighted sampling; no telephone, no re-issue), as

well as the impact of inflation on the value of incentives (what was £20 in 2021 is now £24), re-running an experiment to establish the effect of incentives in current circumstances could be highly beneficial.

- It is key that research findings remain relevant, reliable, and actionable in addressing contemporary challenges and opportunities in survey research and data collection efforts.

7. Telephone fieldwork implications: ensuring that voucher eligibility information aligns with diary statuses is crucial for maintaining consistency and transparency in telephone fieldwork.

- By evaluating how the online diary tool interacts with telephone data collection software and ensuring that voucher eligibility information aligns with diary statuses, survey organisers can enhance participant engagement, maintain data integrity, and streamline fieldwork operations in telephone surveys.

1.5 Survey length

For the March 2023 parallel run, the completion of all the survey components was expected to take 45 minutes for ELiDDI web participants (with each day taking 20 minutes; and the background survey taking 5 minutes), and 1 hour for OTUS (with each day taking 25 minutes; and the background survey taking 10 minutes). These completion times were estimated by CTUR for ELiDDI and ONS for OTUS.

Respondents were informed about the expected survey length in their communications with sentences like the one reported in the box below:

HOW SURVEY LENGTH IS COMMUNICATED TO PARTICIPANTS – EXAMPLE

We value your time

If you tell us about your activities for both days and complete the initial questionnaire, we will send you a **£20 shopping voucher** as a thank you for your time. It will only take around **25 minutes** to tell us about each day, and **10 minutes** to answer the questions about yourself.

1.5.1. Respondent feedback

During the parallel run, 3% of respondent queries for OTUS and 4% for ELiDDI referenced the length of diary completion.

Across both studies, some participants flagged that completion of their diaries took a lot longer than was suggested in the initial communications sent to them. OTUS respondents who noted that participation was time-consuming often commented about the complexity of the tool, whilst for ELiDDI respondents in the same position, this was usually linked to difficulties experienced adding activities within the diary as well as tool unresponsiveness and glitches.

1.5.2. Interviewer feedback

Among ELiDDI interviewers, it was noted that time taken to complete a diary day varied, depending on the respondent – some interviewers completed on average between 20-30 minutes, but others often took a lot longer, up to an hour, usually as a result of issues around entering activities. On the background survey, they stated that it generally took around 5-10

minutes, but it did take longer for some. They reported that respondents were usually very patient with them, however some were reluctant to book an interview for their second day as a result of how long their first online diary took to complete.

Looking at feedback from prior OTUS waves, interviewers noted that a diary day took around 30 minutes to complete, although it took up to an hour for some. They noted that the second diary day took less time to complete, as familiarity improved. Most stated that the initial questionnaire took around 10 minutes to complete. Some contributing factors to interviews taking longer than expected that are worth noting were having a different method of entering durations between the diary booklet and online diary (“from – to” vs. “start time & duration”) and the need for the interviewer to do mental arithmetic in base 60 on all or most activity entries.

1.5.3. Timing exercise data

The results of the timing exercise are presented in **Table 4**.

In the table, testers' ID numbers are marked with an asterisk (*) or a plus sign (+) to indicate that a note should be considered. Those marked with an asterisk noted experiencing difficulties whilst completing one or both of the time use studies. Those marked with a plus sign are respondents who deviated from the testing protocol as follows: tester 2 only completed OTUS day 1 and ELiDDI day 2 for health reasons; tester 6 and tester 14 completed their tests over two days rather four, with OTUS and ELiDDI day 1 completed on same day and OTUS and ELiDDI day 2 completed on same day (OTUS was completed before ELiDDI as per relative quota); tester 9 did not enter secondary activities for ELiDDI day 1, due to respondent error, but completed all other rows; tester 9 was discovered at the debrief to have had previous experience with ELiDDI as a telephone interviewer; tester 16 completed their tests over two days rather four (like tester 6 & 14) and also did not complete ELiDDI day 2 for health reasons.

Table 4 – Testing exercise: respondent information and diary completion times

ID	Survey first tested	Device	Survey tester	Age	Sex	OTUS Day 1	OTUS Day 2	ELiDDI Day 1	ELiDDI Day 2
4	ELiDDI	PC	Yes	Below 40	F	17m 29s	14m 4s	25m 24s	15m 32s
7	ELiDDI	PC	No	40 and above	F	36m	24m 30s	32m	42m
12+	ELiDDI	PC	No	40 and above	M	35m	40m	45m	40m
15	ELiDDI	PC	No	Below 40	M	17m 29s	13m 19s	35m 45s	10m 50s
5	ELiDDI	Mobile	No	Below 40	F	39m 2s	29m 49s	50m 49s	41m 46s
10	ELiDDI	Mobile	Yes	Below 40	F	15m 45s	17m 26s	17m 13s	16m 56s
9*+	OTUS	PC	No	40 and above	F	42m 15s	25m 25s	37m 3s	23m 26s
13*	OTUS	PC	No	Below 40	F	48m 14s	46m 24s	14m 20s	20m 14s
14+	OTUS	PC	Yes	Below 40	F	39m 41s	17m 28s	28m 17s	27m 54s
3	OTUS	Mobile	No	Below 40	M	21m 1s	17m 24s	15m 4s	17m 52s
6+	OTUS	Mobile	Yes	Below 40	F	21m 38s	11m 52s	20m 1s	22m 33s
11	OTUS	Mobile	No	40 and above	F	31m 17s	36m 1s	38m 10s	34m 8s
2+	OTUS	Mobile	Yes	Below 40	F	34m 27s	n/a	n/a	27m 23s
16*	OTUS	Mobile	No	40 and above	F	40m	45m	45m	n/a

Firstly, comparing completion times versus how long each diary is expected to take, a majority of testers took longer than 25 minutes to complete their first OTUS diary day. This was not the case for the second day, where there was a roughly even split in the number who took more than 25 minutes as well as less than the expected time to finish their online diary. For ELiDDI, like with OTUS, most testers took longer than the expected 20 minutes to complete their first day. However, in contrast to OTUS, this was also seen with the second diary day, with a majority of testers still taking longer than 20 minutes to finish. Across both studies, those who took longer than expected to complete tended to be older and without experience of survey testing in their day-to-day work. Most of these testers completed by PC, which is the device where the drag & drop functionality seemed to generate more data entry issues relative to mobile devices. These testers did not enter a significantly higher number of activities on their days compared to other testers.

Next, we checked the assumption that a second diary day will take less time to complete versus the first day as a result of respondents becoming familiar with how the studies and the tools work. For OTUS, the majority of testers took less time to complete their second day compared to their first one. A similar pattern was seen with ELiDDI, with most testers completing their second day quicker than their first one. Looking at OTUS testers who took longer on their second day versus their first one, all entered a higher number of activities on day two compared to day one. Meanwhile, this was not the case for ELiDDI testers who took longer completing their second day, with none entering a greater number of activities on day two.

Finally, comparing completion times between both studies within testers – for day one diaries, roughly half of testers took longer to complete OTUS versus ELiDDI, while the other half took more time to finish ELiDDI relative to OTUS. Among testers for whom OTUS took longer, most entered a higher number of activities compared to their ELiDDI day one diary, which may explain at least some of the difference. Most of these testers completed by PC and did not have experience of survey testing. Meanwhile looking at testers who took more time completing ELiDDI, most did not enter a higher number of activities relative to their OTUS day one diary. These testers tended to complete by mobile (device mode for which the drag & drop functionality works better compared to PC, but generally enabled a less speedy data entry process compared to PC) and also did not have survey testing experience. Those who took longer on either study were generally made up of those assigned to complete that study first, highlighting that a diary will generally take longer if it is the first time a participant is completing it, irrespective of the tool. With regards to day two diaries a similar picture was seen, with an even split between testers who took longer with OTUS and those who took more time with ELiDDI.

1.5.4. Considerations and recommendations

1. Respondents feedback showed that completion times vary based on factors such as familiarity with technology, reading speed, and comprehension level.
 - Adjustments when estimating the survey length, and related to this the incentive value and/or the mode of completion, may be needed to account for these differences.
2. The timing exercise, as well as the feedback received from interviewers and respondents, showed that the general population is accustomed to standard surveys but may be less familiar with time use data collection methods. It often takes time for individuals to become acquainted with online data collection tools, understand their functionality, and learn how to input their data accurately.

- Given the visual nature of the time use survey tools, we recommend that any future time use survey tools have an accompanying instructional video (see also **Section 2.4.5** on recommendations for online instructions). These videos can expedite users' comprehension of tool functionality and offer effective guidance on usage.

3. Collecting timing paradata is highly recommended to improve accuracy in estimating survey length and understand how this varies among different individuals.

- The type, quality and reliability of timing paradata collected, considering factors such as data completeness, accuracy, and consistency should be also evaluated.

4. For telephone mode: allowing interviewers to build confidence and familiarity with the tool features and types of activities to be recorded can help reduce the survey length and improve data accuracy.

- When evaluating whether to include telephone fieldwork, it's important to consider the necessity for tailored briefing, debriefing and training sessions, taking into account both cost implications and timetable constraints.

1.6 Timeline for completion

The tools used for the parallel run followed different opening and expiration rules, thus offering participants different timelines for completion. For OTUS, online diaries were open for completion at the start of a respondent's diary day at 4am and remained open for 72 hours (3 days) closing at 4am two days after the diary day. Meanwhile for ELiDDI, the online diary opened at the end of the respondent's diary day at 4am and remained open for 48 hours (2 days) closing at 4am two days after the diary day. Moreover, it is worth noting that ELiDDI's telephone fieldwork took place across two 12-hour shifts (9am to 9pm) on the two days following a respondent's diary day – meaning participants had an effective 24-hour window to complete. For a visual representation of these timelines see **Figure 3**.

By analysing completion rates by diary date, we ascertained the impact of allowing participants to fill in their online diary as they go about their diary day, if they wished to do so.

1.6.1. Response rate

Looking at OTUS W6 fieldwork reports from the diary provider – which are produced each day of fieldwork at 4.15am (that is after each diary day closes at 4.00am), of all people who started the diary for any given day, 36% started filling it in on the diary day itself (with 1%⁷ completed on the diary day itself).

1.6.2. Considerations and recommendations

1. Providing a longer window to respond (72 hours compared to 48 hours) and the option of real-time response rather than recall seems to have a positive impact on response rate.
 - While the impact of a different timeline was not assessed systematically via a random experiment, and the glitches of ELiDDI probably had a higher negative impact on response rate compared to a shorter timeline for completion, the option of real-time response can also improve data accuracy so it would be highly recommended.

⁷ The 1% can be explained by a few people submitting between 4.00 and 4.15am, or respondents being able to submit their time ahead of experiencing it, or paradata inaccuracy.

2. Respondent journey

RESEARCH QUESTIONS (RQ)

This chapter addresses:

- **RQ #1:** What improvements can be made to the respondent's experiences of the study to encourage/enable participation and accurate data entry?
- **RQ #2:** What improvements can be made to the online tools to improve usability, reduce the burden for respondents, and improve data quality/response rates?
- **RQ #3:** What improvements can be made to the supporting materials provided to respondents to reduce the burden for respondents, and improve data quality/response rates?
- **RQ #4:** What accessibility issues and requirements should be considered when using the online tools and supporting materials? And how may these accessibility considerations impact respondent burden, data quality and response rates?

In this chapter we discuss six elements of the respondent journey:

- The communication package.
- Accessing the tool (login and home page).
- The background survey.
- The online instructions.
- The online diary page(s), including additional questions related to the diary days.
- The submission page.

A desk review was carried out to identify barrier and enablers to participation, as well as factors which may impact data quality. This review solely drew on data from the parallel run carried out in March 2023 using the ELiDDI W1 and OTUS W6 tools. Alongside the desk review, available fieldwork performance data from the parallel run were analysed. Given the difference in the mode of completion offered during the parallel run (web only for OTUS W6; web and telephone for ELiDDI), OTUS interviewers feedback from older waves that relates specifically to the research questions have been also reviewed. For simplicity within this chapter, the tools utilised in the parallel run are referred to by their respective study names only, with no reference to the wave – 'ELiDDI' is used instead of 'ELiDDI W1'; and 'OTUS' instead of 'OTUS W6'. When data from previous waves of OTUS is incorporated, this is explicitly indicated.

For each element of the respondent journey, we make recommendations on how to reduce respondent burden and how to improve accessibility.

2.1 Comms package

2.1.1. Overview of key elements

The type of communication – letter, email, text – used varied according to the contact details available on record for participants, as well as the aim and urgency of the message.

Communications for both studies consisted of the following items:

- A pre-notification letter and/or email sent a week prior to the start of fieldwork. These briefly introduced the study, highlighted the respondent's two allocated diary days and provided an opportunity to opt out. The email was also used to inform participants on how to update their home address detail to be able to receive a study support material package comprising two items (namely: a paper booklet for taking notes and a leaflet) in the post.
- A reminder letter sent a few days before a participant's first diary day. It contained more detailed information about the study as well as their login details. A leaflet listing the respective study's activity codes was also enclosed. As part of a sample-split experiment, a random half of respondents alongside the leaflet were sent a diary booklet/ memory aid which provided some further context about the survey as well as space to take notes during each diary day.
- Reminder emails and/or texts sent on each diary day as well as the day after were used to remind respondents to take notes, if they wished to do so. They then prompted web respondents to login and complete their online diary; and reminded telephone respondents (ELiDDI only) to look out for a call from NatCen interviewers or get in contact to book an appointment at a time that suit their schedule best.

2.1.2. Results from desk review of OTUS

Holistic (Respondent Journey)

The OTUS pre-notification letter is presented in **Figure 10**. Reviewers noted clear instructions and allocation of days for participants but suggested improvements in information staging. The mention of note-taking with the paper diary booklet could encourage participants. Reviewers felt there was a need for more granularity in communicating the incentive strategy. Additionally, reviewers felt the diary description within the letters could have been more optimal, with the first letter only explicitly mentioning the diary exercise in the last sentence and the second letter opening with this information.

Language

The language explaining the benefits of participation used technical terms, such as "labour market policies", which may not resonate with participants. Additionally, the text length and density within the letter were identified as barriers to effectively conveying the main messages.

Accessibility

Instructions on seeking help and assistance were included in the communications, both in the text for letters and through email links. However, concerns were raised about displaying text and line spacing, which appear small and closely packed together.

Figure 10 – OTUS Advance letter



2.1.3. Results from desk review of ELiDDI

Holistic (Respondent Journey)

The ELiDDI pre-notification letter is presented in **Figure 11**. Reviewers acknowledged the clear delineation of days, comprehensive instructions on tool usage, and appropriate information staging in communications. These aspects effectively guide participants in their involvement. However, the diary description within the letters could have been more optimal. In the pre-notification letter, the paper diary was not mentioned until the final sentence, with the letter only referring to taking “notes” prior as a way to remembering diary day activities. Additionally, the saliency of completing the diary within the letter was reduced. Respondents were only reminded about the task of completing the diaries halfway down the page, and as such it was not the first thing respondents would read. Additionally, the letters lacked information about the consequences of partial completion for participants⁸. The absence of a reference to the diary booklet within the communications may leave participants uncertain about its purpose.

Language

Whilst a positive aspect was the use of a good practice highlighting the value of participation in the first paragraph, there was a tendency to employ complex language, such as 'Time use diary data,' which respondents may need help understanding. Reviewers felt the letter's excessive text length and density hindered the effective communication of critical messages.

Accessibility

Information on how to seek help and assistance was provided within the communications, both in the text for letters and through email links. However, concerns were raised about displaying text and line spacing, which appear small and closely packed together.

⁸ For ELiDDI the data on the status of the survey components was not captured at the granularity level needed for an accurate tailoring of messages.

Figure 11 – ELiDDI Advance letter



Your panel ID number:

Time Use Study – How do you spend your time?

An important study is starting soon

Dear

NatCen is working with the Centre for Time Use Research at UCL on a UK-wide study which aims to find out how people are spending their time, and how much they are enjoying their daily lives. This study is an opportunity to show what we really do all day and how our age, gender, family and work-life balance influence how we spend our time. Your answers will help to find out how things such as our health and well-being are affected.

By taking part you will make sure the experiences of people like you are represented. Your participation is important to us, and would be very much appreciated.

What will taking part involve?

To take part you will need to note down your activities in detail for just two specific days:

Sunday 12th March and Friday 17th March

We would like you to go online and answer a few questions about yourself and how you have spent your time.

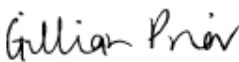
In the next days, we will send you a letter with more information on how and when to take part. This will also include a small paper memory aid to help you keep track of your activities during those days.

We value your time

If you tell us about your activities for **both days**, we will send you a **£20 shopping voucher** as a thank you for your time. It will only take around 20 minutes to tell us about each day, and 5 minutes to answer the questions about yourself.

We hope you will take part in this important research. Taking part is voluntary – if you would prefer to opt out please let us know. If you have any questions or would like advice on completing the diary – we are here to help.

Thank you for your support,



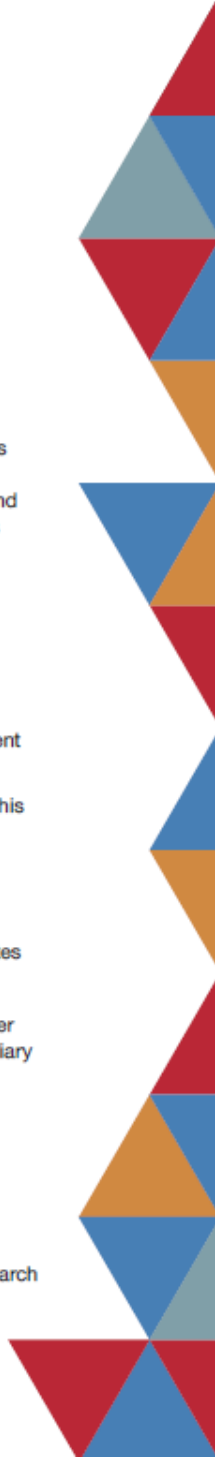
Gillian Prior
Director of Surveys, Data and Analysis
The National Centre for Social Research



Professor Oriel Sullivan
Co-Director, Centre for Time Use Research
University College London (UCL)

For more information see back of this letter or contact us

 panel@natcen.ac.uk  0800 652 0401  natcen.ac.uk/UKDailyLife



2.1.4. Results from data analysis

Respondent feedback

During the parallel run, 17% of respondent queries for OTUS and 11% for ELiDDI referenced the communication package. More specifically, 1% of queries received for OTUS and 2% for ELiDDI related to not receiving the diary booklet. The remaining queries were about the wider set of communications sent to respondents (letters, emails and texts).

For both studies, some participants got in contact to highlight that they hadn't received a letter containing their login details and relevant study materials in time for their first diary day, due to postal delays. This sometimes meant they were unclear on what they had to do or were unable to log into the online tool, with some missing their first diary day as a result. A small number of respondents flagged receiving a reminder email or text urging them to complete their diary day, despite having already completed. This was related to NatCen processes necessitating weekend reminders to be scheduled using sample files created before the end of the work week.

Interviewer feedback

Firstly, looking at feedback received for ELiDDI: some interviewers felt that the activities list could have been more detailed, as codes were often open to interpretation and so it wasn't immediately clear which activity to use. Some also thought the 'Other time use' activity option could have been made more prominent, as it was often under-used by respondents in their notes. Finally, some suggested that it would be helpful to have allocated a number to each activities for reference. On the diary booklet, ELiDDI interviewers noted that some respondents stated it was invaluable and they couldn't have completed their diary without it. Generally, interviewers felt that diary completion was easier, and more detail was provided, among respondents who had either used the booklet or taken notes. Although they caveated that completion and recall was broadly okay among participants who hadn't done so – reasons stated by participants for not using the booklet included: not receiving it in time, forgetting about it or feeling that they could remember their day without it. In terms of the booklet's content, interviewers noted that making it look more similar to the online tool would help to aid completion. On the layout of the notes pages, some stated it was unclear what the 'Other notes' section should cover and some felt it would be helpful to add 10-min segment lines.

Now looking at interviewer feedback from OTUS pilot waves: interviewers highlighted that some telephone participants hadn't read their letters (and materials) prior to their first day interview, as they had assumed no preparation was necessary as is the case for other surveys they complete as part of the NatCen Opinion Panel. On the activities list, OTUS interviewers felt that it was very helpful to have whilst completing online diaries, as it made it easier to choose the most appropriate activity code. They also noted that the numbering of activities was useful and found that interviews were more efficient when respondents had coded their activities using the list provided – although they noted that many respondents often didn't know about the list or use it. Finally, some stated that if they hadn't read it thoroughly before starting interviews alongside guidance provided by researchers on how to probe on potential overlapping categories, mis-categorisation of some activities would have been likely. With regards to the diary booklet, interviewers flagged that its usage varied among telephone respondents. Reasons stated by respondents for not using the paper diary included having forgot about it or not looked at it, a lack of interest, having not received it and

finally, feeling that they did not need to use it, as what they did was fresh in their memory. When the booklet was used, interviews were generally shorter, with more detail provided and less prompting required – although some interviewers felt that if a respondent hadn't used it did not have a major impact on completion. On the booklet's content, interviewers reported that having activity timings recorded in a different format versus the online diary tool caused difficulties for some respondents ('from-to' vs. 'from & duration'). On the layout of the notes pages, some felt an additional column where participants could record the duration of activities would be helpful, while some thought the enjoyment scale could be made clearer by labelling the extremes and by including the neutral option.

Paradata

In this section we analyse the paradata provided by the platform used by NatCen to manage digital communication. Paradata offers valuable insights into recipient engagement and campaign effectiveness, but they are subject to various factors that can impact its accuracy (e.g. image blocking, bounce rate variability, spam filtering etc). Given these inherent limitations, it's essential to interpret paradata cautiously.

The digital communication for the parallel run included a pre-notification email, as well as email and/or text reminders sent around 10.00 am on the diary day (named "same day" reminders) and around 10.00 am on the following day (names "next day" reminders).

Given the communication strategy, the total number of digital campaigns required were: 18 text campaigns and 18 email campaigns for OTUS; 18 text campaigns and 40 emails campaign for ELiDDI. The latter necessitated a higher number of email campaigns because to better tailor the communication depending on the mode of completion different email templates were used with web and telephone participants. As the platform used for the comms management does not allow duplicate contact information in a sample file, a separate campaign was sent whenever there were cases who shared an email address or phone number with another participant invited to the study. **Table 5** presents the number of campaigns processed by NatCen researchers and logistics team for each study by day of the week, accounting for the sample management restrictions.

Table 5 – Digital communications (emails and texts) managed during the parallel run carried out in March 2023

Date Day of the week	Pre-not	Reminders										
	3rd Fri	10th Fri	11th Sat	12th Sun	13th Mon	14th Tue	15th Wed	16th Thu	17th Fri	18th Sat	19th Sun	20th Mon
Tasks' intensity	LOW	MEDIUM	N/A		MEDIUM				HIGH	N/A		LOW
OTUS - emails	2	5	(weekend)		3	4	4	4	12*	(weekend)		2
OTUS - texts	n/a	6	(weekend)		4	4	4	4	11	(weekend)		1
ELiDDI - emails	2	9	(weekend)		5	5	5	5	18	(weekend)		2
ELiDDI - texts	n/a	3	(weekend)		3	3	3	4	7	(weekend)		2
Total campaigns			(weekend)							(weekend)		

*The 'same day' campaign for 17th March was not sent due to a technical glitch.

Across fieldwork a total of 36 email campaigns and 34 text campaigns were scheduled for OTUS, whilst for ELiDDI there were a total of 51 emails and 25 texts were scheduled. Due to a technical glitch, for OTUS the 'same day' email for those participants with '17/03' as diary day was not sent, affecting a total of 1,567 respondents⁹. This was the only digital communication that did not go out during the parallel run.

In terms of timings, the vast majority of comms went out in the morning or at the latest, the early afternoon. Due to unexpected issues experienced arranging the communications on the 13th of March, some reminder emails and texts went out later than expected for both studies – in particular, OTUS: next day email for '12/03' and same day email for '13/03' at 4.30pm, next day text for '12/03' and same day text for '13/03' at 8.00pm; ELiDDI: next day emails for '12/03' and same day emails for '13/03' at 7.30pm, next day text for '12/03' and same day text for '13/03' at 9.00pm.

Looking at the campaigns that were scheduled, over 99% of emails and between 85% to 99% of texts were delivered. OTUS emails had an open rate of 54 to 66%, whilst ELiDDI emails had an open rate of 47% to 73%. Finally, of those panel members with an email address who were originally invited to take part (i.e. were sent a pre-notification email): 2% for OTUS and 1% for ELiDDI requested to unsubscribe from the NatCen Opinion Panel email list during the study emails (in absolute numbers – for OTUS: 112 respondents out of 6,413; for ELiDDI 73 respondents out of 5,106).

Although considerably improved since the earlier waves of OTUS, the communication approach remains: resource-intensive – as it still requires a high number of sample files and templates to be managed meaning a high the risk of error; and sensitive to errors – due to the time-sensitivity of this project, a small delay (e.g. data from the diary providers needing fixing) can have a material impact on communications.

Experiment data: paper diary booklet

During the parallel run, a sample split-sample experiment relating to the paper diary booklet was run across both studies. A random half of participants for OTUS and ELiDDI received a paper diary booklet with their reminder letter which arrived around two days before their first allocated diary day. The other half of respondents were not sent one.

The experiment aimed to assess three factors: [i] the potential impact of the diary booklet on response rates, [ii] whether the respondent took notes during their diary day, and finally [iii] whether the participant referred to their notes whilst completing their online diary. Further below a section is dedicated to the analysis of each of these.

It was hypothesised that usage of the diary booklet – which contain more detailed information about the studies as well as space to take notes – would result in a greater number of respondents taking relevant notes about their activities and also in turn a higher number who used notes during their online diaries. On the other hand, it is worth noting that provision of a diary booklet may also increase respondent burden, due to the fact that participants will be

⁹ After investigation, it was established the campaign did not go out due to human error rather than a software glitch. A box that put a campaign on hold until a supervisor unblocks it was accidentally clicked. The overall impact on response rate was relative minor as it affected only those participants for whom NatCen only had an email address and no mobile number (N= 485 out of 1,567 who were eligible for the email). Within this group then, it probably affected more those who had Friday 17th March as first diary day (N=233) as they only received the "next day" email reminder on the 18th.

encouraged to take detailed notes about each diary day, which they will need to then enter online. Some may feel they are completing the study ‘twice’. By looking at response rates, we assessed whether there was any detrimental effect related to increased burden.

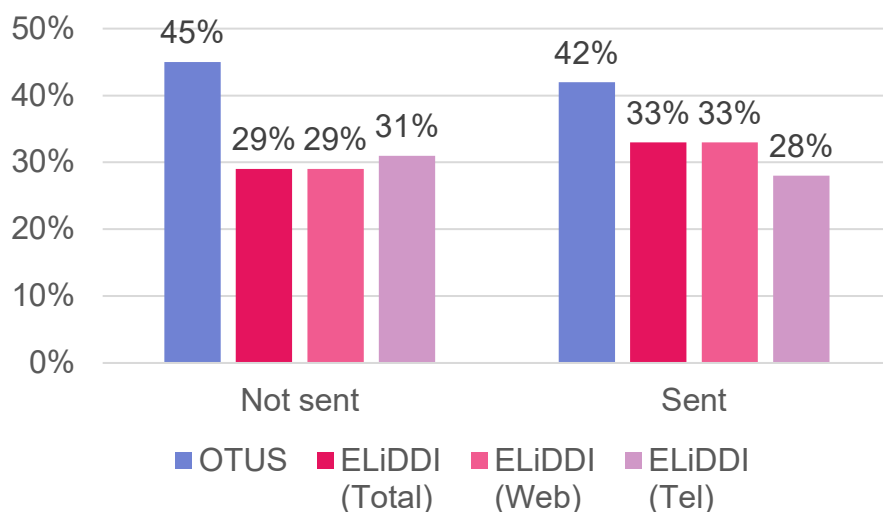
It could also be expected that usage of the booklet results in increased data quality (e.g. a higher number/type of activities entered), due to respondents more easily remembering information from up to two days before then, as well as a shorter completion time, as a result of respondents having the information they need to enter online already noted. However, neither of these two additional factors were examined, due to falling outside the scope of the review and data availability constraints.

In order to help evaluate the impact of the paper booklet, some questions were added to the online diaries including on whether participants had used the provided booklet, another memory aid of their choice or nothing at all; and whether they had notes to hand at the time of completing their online diary or not. It is worth noting some differences between the two studies in who the questions were asked to and when. For ELiDDI, the booklet usage questions were only asked to those sent the booklet, whilst they were asked for all participants on OTUS. Web participants on both studies were asked these questions just before diary day submission, within a section with some other general questions. Meanwhile, telephone participants on ELiDDI, were asked these prior to the start of their interviews.

Response rate

Firstly, looking at the impact on response rates, the inclusion of the paper diary booklet looks to have had mixed results. On OTUS, those sent a booklet had a 3pp lower day response rate compared to respondents not sent one (42% vs 45%). On the other hand, for ELiDDI, participants who received a booklet had a 4pp higher day response rate relative to those not sent one (29% vs 33%). It is worth noting that the ELiDDI diary booklet was more simple compared to the OTUS one, with less information included and weaker language around having to take detailed notes. It is possible that this may explain the divergent impact seen across the two surveys.

Figure 12 – Day-level response rate for OTUS and ELiDDI by whether sent the paper diary booklet or not



Respondents sent booklet:

- OTUS $n=1,084$
- ELiDDI $n=1,038$ (Web $n=926$; Tel $n=112$)

Respondents not sent booklet:

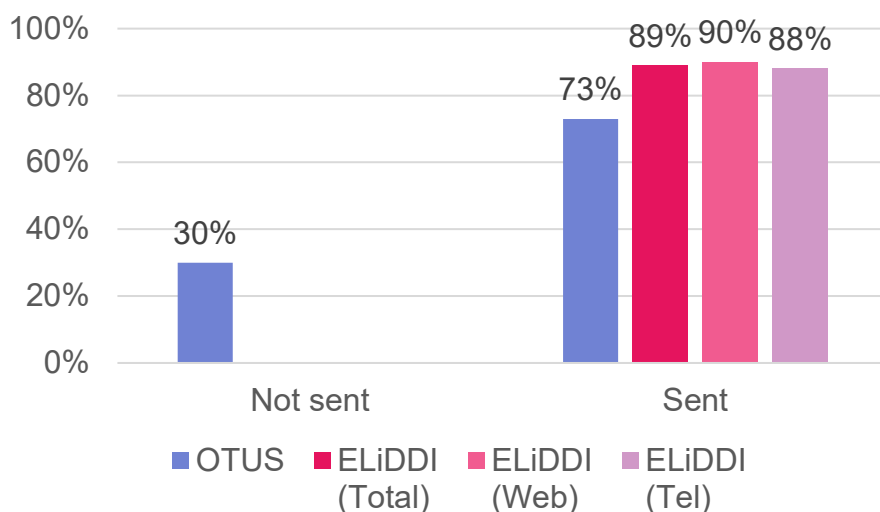
- OTUS $n=1,138$
- ELiDDI (n/a – questions not asked of those not sent booklet)

Whether received

Next, looking at whether those sent a diary booklet actually received it in time for when it was needed, 73% of OTUS and 89% of ELiDDI respondents sent a booklet reported having received it ahead of their first day. The variation between the studies is likely related to measurement differences, as both surveys followed the same protocol in terms of sending the booklets out to respondents. The fact that 30% of OTUS respondents who were not sent the booklet reported receiving one is also an indication of measurement error – it is likely they confused the booklet with other instructions they had been sent like the activities list leaflet.

While all letters are dispatched first class and are scheduled to arrive two days before the first diary day, postal delays meant that some respondents did not receive their materials in time.

Figure 13 – Respondents who reported receiving the paper diary booklet ahead of their first diary day



Respondents sent booklet

- OTUS *n*=1,084
- ELiDDI *n*=1,038 (Web *n*=926; Tel *n*=112)

Respondents not sent booklet

- OTUS *n*=1,138
- ELiDDI (*n/a* – questions not asked of those not sent booklet)

Usage

Finally, looking at the usage of the booklet: those sent a booklet were 4pp more likely to take notes and 5pp more likely to refer to the notes when completing their online diary, compared to those not sent one – based on OTUS data, which asked all respondents about note taking and usage. This supports the idea that the paper diary booklet helps to encourage note taking and usage of notes during online completion, which in turn should hopefully result in improved data quality and reduced respondent effort when filling in their online diaries. On note taking, those who received a booklet were 10pp more likely to make any notes for ELiDDI and 17pp more likely for OTUS, versus respondents who were sent a booklet but did not receive it. This difference likely reflects the more detailed booklet used for OTUS, which also had stronger language about taking notes and why that would be helpful. On referring to notes, those who made notes in their diary booklet were 4pp more likely to refer to their notes when completing online for ELiDDI and 3pp more likely for OTUS, compared to those who took notes elsewhere. This suggests that the booklet may be encouraging respondents to take more useful and relevant notes which are more worth referring to during online completion, as well as that it plays a role in explaining the potential benefit of taking notes and referring to them to participants.

2.1.5. Considerations and recommendations

The following gives recommendations specific to the findings of this review. Some of these recommendations can be addressed with further research aimed at identifying ways to encourage participation in a way which is salient to respondents. An overarching

recommendation is therefore to conduct further research to ensure a Respondent Centered Design approach is applied to the design of communications.

1. Streamlining communication

- Consider revising communication materials to reduce text length and density, allowing key messages to stand out and be easily comprehensible.

2. Improving communication on 'why' and 'how'

- Clearly outline the purpose and instructions of the study or task right from the beginning.
- Ensure that communication materials, such as letters and emails, effectively convey information without any ambiguity.

3. Simplifying language

- Simplify language to make it more accessible and understandable to all participants. We recommend that the reading level is between 80-10 Flesch reading score.
- Avoid using overly complex terms or technical jargon that may alienate or confuse respondents.

4. Enhancing accessibility

- Ensure that information on how to seek help and assistance is readily available and easy to understand.
- Address concerns regarding text display and line spacing to improve readability, especially for participants with visual impairments or reading difficulties.

5. Clarifying incentives

- Clearly communicate the incentive structure to participants, including details on incentives for partial completion if applicable.
- Provide granularity in conveying the incentive status to motivate participation effectively.

6. Review processes and systems for the management of communication (considering interaction between the diary tool provider and sample provider)

- Review processes and systems to further reduce turnaround time and the resources needed, as well as automate the weekend's reminders,

Good practice

When these communications are reviewed, you may also want to adopt other good practices of respondent communications. The section below synthesises good practice recommendations and what this looks like put practice on some other long standing UK surveys, many of these already exist in the current communication packages used by the two studies. It should however be noted that when designing respondent communications there is likely to be a trade-off between the practicalities of a project – such as the budget, printing approaches, sample management options, rapidity required – and applying good practice principles. For example, a greater use of visual elements like images, icons or tinted boxes might limit the use of mail merge fields thus increasing the number of different templates and sample files needed.

1. Apply theory-based messaging

- Embrace Social Exchange Theory to reduce social-psychological costs and highlight potential rewards for survey participation.
- Provide small rewards, personalise letters, emphasise social usefulness, express appreciation, and utilise graphic design in letters.

-
- Adopt behavioural insights by using “EAST” principles in the messaging: Easy, Attractive, Social and Timely.

2. Language

- Keep advance letters simple, brief, and engaging.
- Maintain a balance between personal and professional tones in the letters.
- Ensure that the content is in "Plain English" for maximum understanding.

3. Key content elements

- Clearly communicate the purpose and nature of the survey.
- Highlight what the respondent needs to do and the benefits of participation.
- Provide information about additional tasks or rewards associated with participation.

4. Confidentiality statements

- Instill confidence and trust by including clear and convincing statements about the confidentiality of participant data.
- Highlight any sponsorship from authoritative organisations to enhance legitimacy.

5. Signatures

- Ideally, sign letters using an actual signature, printed name, and job title to increase response rates.

6. Use of past results

- Consider including information about past survey results to generate interest and highlight the potential for surprising or impactful outcomes.
- Address potential dismissive attitudes towards survey results by emphasising the uniqueness of the current survey.

7. Respondent communications for online surveys

- Tailor advance letters for online surveys by considering the location of the survey URL.
- Use short URLs to make it easier for respondents to type them into a browser manually.
- Consider supplementing URLs with QR codes.
- Consider the cognitive burden of logging in and provide clear instructions for any IDs, usernames, or passwords in the letter.

Below are two exemplar letters that demonstrate various good practices. Letter 1 was developed by the Office for National Statistics, for the Labour Force Survey. This letter showcases brevity, good visual design, and accessibility considerations. Please note that this is a generic letter and does not feature the persuasive messaging you may expect in addressed based sample survey where messaging is critical. Letter 2, an example from the Health Survey for England which uses a named sample, showcases good practices in both messaging and design.

Letter 1: Office for National Statistics

Office for National Statistics

The Resident
<ADDRESS_LINE1>
<ADDRESS_LINE2>
<ADDRESS_LINE3>
<ADDRESS_LINE4>

If you need help or a large print or Braille letter, phone us free on 0800 085 7376 or email accessibility@ons.gov.uk

Date of Issue
Reference Number

Dear Resident

We recently wrote to inform you that the Office for National Statistics is running a UK-wide online study, and we would like you to be a part of it. The study covers a range of topics, including work, retirement, higher education, unemployment and looking after the family or home.

How to take part
Complete the steps below on your computer, tablet or smartphone

- 1 Go to www.ons.gov.uk/takepart on your smartphone, tablet or computer.
- 2 Select "Start Now" and enter your household access code in the boxes provided:
1234 5678 9101
- 3 Complete the study and submit when done.

The information you give us is protected by law and treated as confidential.

How long does it take? The study takes between 10 and 20 minutes to finish.

Who should take part? All adults in your household over the age of 16 should take part. Any related adult may respond on behalf of another household member. They will only be asked about facts, not opinions. It is important that everyone sees the letters and leaflets that we send you.

When should I complete it by? You have until <DATE> to take part online. If you do not take part online by then, one of our interviewers may call you. Most people we invite to our studies take part – this is your chance to be counted.

Thank you for your time. Yours faithfully
Iain Bell Iain Bell - Director General

www.ons.gov.uk/surveys Segensworth Road, Titchfield, Fareham, PO15 5RR

Callouts:

- Familiar and respected logo
- Sponsorship logo
- Brief messaging about why communication
- Prominent accessibility note
- Key staged numbered
- Demonstration of the next step should look
- Key instructions most visually prominent
- Limited bolding to give importance
- Short-to-the-point messaging
- Simplistic method and display of passcode

Letter 2: NHS Digital - Health Survey for England

Wider benefits of the study

Key messages highlighted through subheadings

Prominent incentive

Interviewer details, reassurance and setting expectations

Personalisation

Familiar and respected logo

Extra information as bulleted FAQs on reverse of letter

Jo Bloggs
123 Main Street
London
E20 8HP

NHS Digital

Your interviewer will be:
Emma Bowey
Ref: P1234/8888

Support our health services from 123 Main Street

Dear Sir or Madam,

Our health, and the health of our family and friends, is important to us all. We would like to invite your household to take part in a research interview for the Health Survey for England at a time convenient to you. By taking part you will help to provide vital information supporting the work of the NHS, and doctors and nurses across the country. We rely on the goodwill and voluntary co-operation of people like you to make the study a success.

What next?
An interviewer from the National Centre for Social Research will call at your address in the next week or so. They will explain more about the study and arrange a convenient time for you to take part. Your interviewer will show you a photo ID card, so you know who they are.

Complete confidentiality
Your answers are confidential and will not be shared with anyone. Last year nearly 10,000 people took part. Many found it an interesting and rewarding experience. We hope you will too.

Thank you
As a thank you for taking part, please find below a **£10 voucher** that can be exchanged for cash at any branch of the Post Office.

For more information, please visit www.natcen.ac.uk/taking-part/hse. If you would like to talk to someone about the study or don't want to take part, please call Freephone 0800 526 397.

A. Conolly
Anne Conolly,
Research Director, NatCen Social Research

J. Mindell
Dr Jennifer Mindell,
Health Survey Doctor, University College London

NatCen
Social Research that works for society

UCL

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Issue date: 04/06/2017
Expiry date: 04/12/2017

Frequently Asked Questions

How did you choose my address?
We chose your address at random from the Postcode Address File. This file is held by the Post Office and is available to the public.

What will happen to any information I give?
We will treat information you give in strict confidence under the Data Protection Act 1998. The results collected are used for statistical purposes only and will help inform the planning of future health services.

Who is carrying out the survey?
NHS Digital has asked NatCen Social Research and the Department of Epidemiology and Public Health at UCL to carry out the survey.

What is NHS Digital?
NHS Digital is an Executive Non-Departmental Public Body (ENDPB), sponsored by the Department of Health and is the national provider of information, data and IT systems for commissioners, analysts and clinicians in health and social care in England. It is responsible for collecting information about all aspects of health and health services and works in partnership with the NHS and other national organisations to help make decisions to improve people's care and well-being.

What is the interview about?
The interview covers a range of health topics including general health and lifestyles. The second part of the survey, if you agree, is a visit by a qualified nurse. You can agree to some parts of the interview (and the nurse visit) and not others, if you wish.

Where can I find out more?
See the enclosed leaflet or visit www.natcen.ac.uk/taking-part/hse or phone 0800 526 397.

NatCen Social Research, Kings House, 101-105 Kings Road, Limerbrook, Essex CM14 4LX. Tel: 0800 526 397. A Company Limited by Guarantee, Registered in England No. 4382418 Charity No. 1081768

17-025-AdvancedLetterHBM-010-FEDv1-May 2015

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Post Office Payout

2.2 Accessing the tool

2.2.1. Overview of key elements

For both studies, in order to access the online tool, respondents need to enter some details into a login page. Once logged in, participants are shown a homepage from which they can access their background survey and their two allocated diary days. They can also see the status of each of these elements.

OTUS

In order to login into the OTUS online diary, respondents need to enter a username and password – these details are not case-sensitive. Participants must accept cookies, via a pop-up, in order to log in.

The OTUS homepage is split into sections, with the initial questionnaire on the left and the two diary days on the right. A status is present next to each of these, highlighting the current availability or completion status – for example, a diary day can have a status of ‘pending’ if the day is not yet open, ‘not started yet’ if it is available to start, ‘completed’ if finished and submitted, and ‘expired’ if the day has closed and the diary wasn’t submitted before then. Next to the statuses are buttons which respondents can click to complete the relevant element – its wording will vary depending on the status. A screenshot of the homepage for a partially completed survey (day 1 completed; day 2 not yet available; background survey not yet started) is presented below in **Figure 14**.

Figure 14 – Screenshot of OTUS homepage (PC)

Your Questionnaires

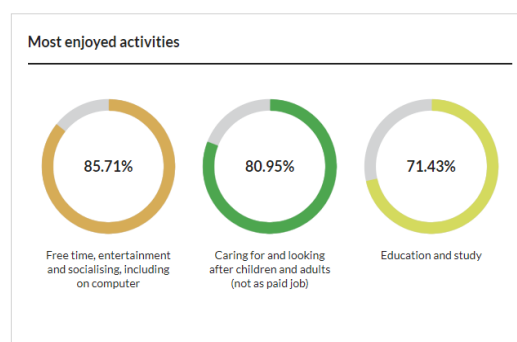
Name	Status
Initial questionnaire	Not started yet Start

Your diary entries

Date	Status
Sun 7 March 2021	Completed Review and edit
Wed 10 March 2021	Pending

Your time recorded so far

Time logged		
0	23	0
days	hours	minutes

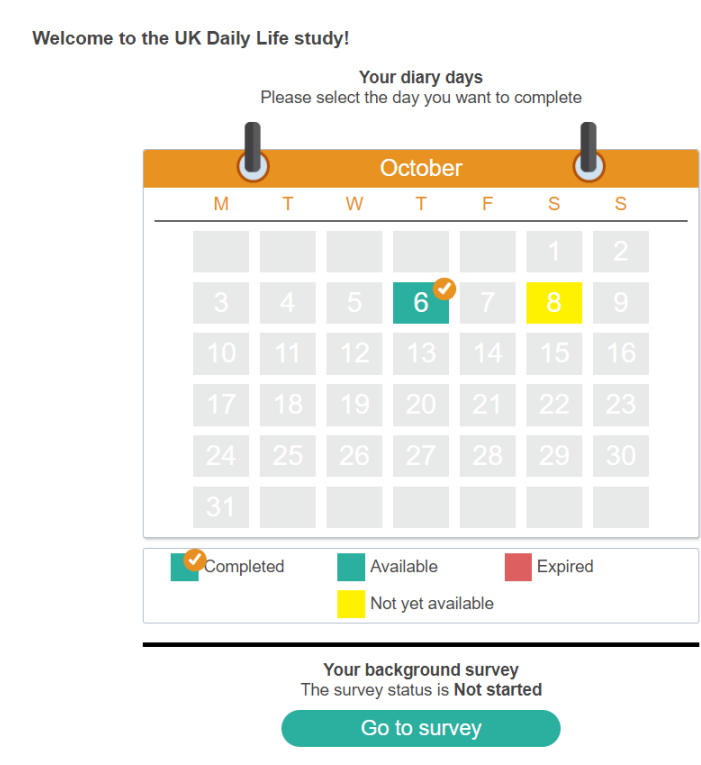


ELiDDI

In order to login into the ELiDDI online diary, respondents need to enter only a password, which is case-sensitive.

The ELiDDI homepage is presented as a calendar, with each diary day shown in a different colour according to its status. A diary day will show in yellow if it is not yet open, green if it is available to complete and red if the diary day has closed and it wasn't fully completed by then. Once a diary day has been completed, an orange tick will appear in the calendar. The background survey is located underneath the calendar – its status is highlighted next to a button which respondents can click to start completing it. A screenshot of the homepage for a partially completed survey (day 1 completed; day 2 not yet available; background survey not yet started) is present below in **Figure 15**.

Figure 15 – Screenshot of ELiDDI homepage (PC)



2.2.2.Results from desk review of OTUS

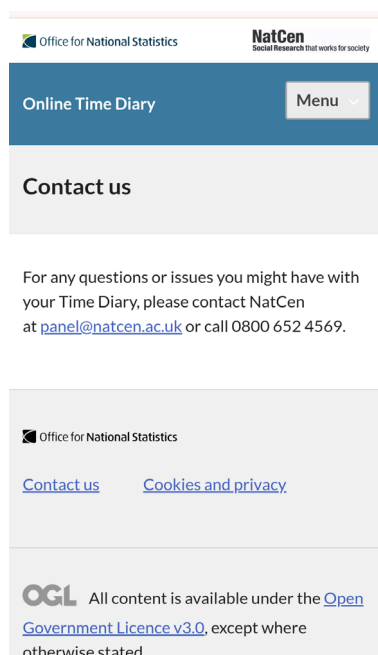
Holistic (Respondent Journey)

Upon accessing the login page, reviewers felt the branding for OTUS was clearly displayed both through the use of the ONS logo within the header of the page and the use of study colours which harmonised with the colours used within the respondent communications. Reviewers felt that there was clear signposting within the online OTUS tool, through a

noticeable 'contact us' hyperlink at the footer of every page (see **Figure 16**). When clicking on this hyperlink, reviewers were presented with contact details for the NatCen Opinion Panel.

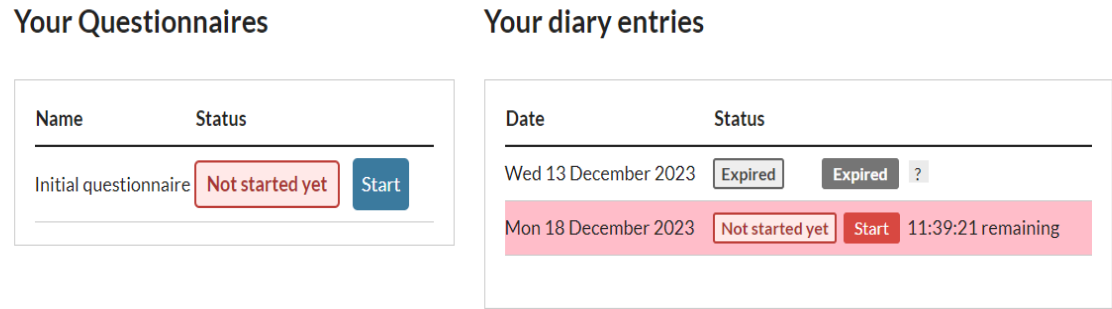
Reviewers found that the login details for OTUS could be saved within an online password manager, so that when respondents re-accessed the tool, details did not have to be re-entered. As such, closing and re-accessing the OTUS tool was found to be a simple process.

Figure 16 – Screenshot of OTUS contact us helplink (mobile)



On entering the homepage, reviewers noted the page appeared to rely on textual rather than visual information. The status of each aspect of the tool, such as the background survey and diary days, were clearly outlined with use of colour. For diary days in their last 12 hours, a countdown was also presented next to the diary day (see **Figure 16**). Within the first paragraph of the homepage, respondents are given a clear overview on what is required from the survey. Due to the amount of text present, on mobiles respondents would need to scroll down the page to see their allocated diary days.

Figure 17 – Screenshot of OTUS submission countdown (PC)



Language

Within the OTUS homepage, reviewers felt respondents were provided with a clear overview on what is required from them, and how they should proceed with completing the diary days.

At the login page, respondents are asked to enter their 'credentials'. The terminology of credentials may not be lay accessible, in that members of the general population may be unaware that this means they should enter their login in details. At the bottom of the introduction paragraph within the homepage, respondents are told that *"Saved data will be submitted and where possible used for analysis"*. Reviewers felt there was some ambiguity about what this would mean in practice for partial completions and incentives, as respondents may be unclear on what elements of their diary submission would be used within data analysis.

Usability

Upon accessing the OTUS homepage, reviewers felt the status of the initial questionnaire and two diary entries were clearly presented to the respondent with the use of colour coding, for example: expired entries are in grey, with not started entries in red. Entry buttons with the text 'start' are used for both the initial questionnaire and two diary entries. Reviewers felt that the status information and entry buttons to the diary days and initially questionnaire appeared similar, in that respondents may attempt to click on the status to enter the tool. To prevent any miscommunication, the entry button should be visually distinct from the status information. Additionally, whilst the selected diary days are clearly communicated to respondents, to aid memory and recall the use of visual features, such as a calendar may be useful.

At the bottom of the homepage, respondents are provided with visual feedback on their progress through the diary days under the section 'your time recorded so far'. Reviewers noted that when the diaries were populated, this section updated to summarise both the

number of hours entered into the diary, whilst also providing respondents with feedback on the activities they spent the most time doing. Reviewers felt this feature was useful in encouraging engagement with the tool, as the information provided to respondents on their daily activities may be seen as incentive to participation.

Accessibility

When logging into the OTUS tool, the password was not case sensitive. As such, there was more flexibility on how the password was entered particularly on mobiles, as respondents are not required to keep capitalising letters, which required less clicks. Depending on the web browser used, reviewers noted that respondents could save their usernames and password, which streamlines the re-entry process.

For respondents who may have visual impairments, the text was sufficiently large enough to read. The colors used were clear and distinct, with good contrast between text and background. Whilst the text size was sufficient, respondents were required to scroll down the page to see the diary days and initial questionnaire, as when first accessing the page they were presented with the introduction text.

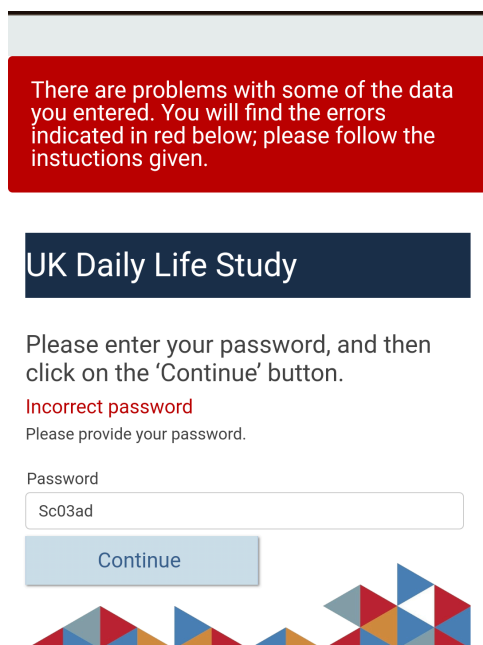
2.2.3. Results from desk review of ELiDDI

Holistic (Respondent Journey)

Upon accessing the login page the visual presentation of the page, in particular the ELiDDI colours of grey, yellow and blue, were recognisable and corresponded well to the branding used within the respondent communications.

When logging into the tool, the password was case sensitive, however reviewers felt this was not made evident to respondents. When a password was entered incorrectly, respondents were presented with an error message which communicated information had been entered incorrectly (See **Figure 18**). However, reviewers felt the error message did not provide explicit enough guidance on what the specific issue was, and how to rectify it (i.e. that the password was case sensitive).

Figure 18 – Screenshot of ELiDDI error message (Mobile)



Upon accessing the homepage, reviewers noted the visual presentation of the diary days in the form of a calendar. The diary days respondents had been allocated to complete were clearly identified, with the calendar days highlighted. A clear colour coded system is in place to communicate to respondents the status of each diary day, with expired days shaded in red, and available ones shaded in green.

While the respondent's communications for ELiDDI did communicate where help could be sought, no explicit signposting to online help was present.

Language

On the ELiDDI tool homepage, there was minimal written instruction provided to respondents. The main textual instruction present on the page was to "*please select the day you want to complete*". While additional textual instructions were sparse, for diary days which were available there was clear messaging for respondents for what respondents were expected to do to access the diary days.

For diary days which had expired there was less guidance. Within the ELiDDI homepage, there was limited information provided on what non-completion of diary days meant for respondents, both in terms of proceeding with data collection and the incentive available. Given that there was no explicit signposting to help within the online ELiDDI tool, this would require respondents to return to the respondent communications for help and guidance on how to proceed.

Usability

The calendar format of the homepage allowed for clear visual cues for the diary days, with the calendar format aiding recall. When accessing the homepage on devices with smaller screens, such as mobiles, respondents would be required to scroll down the page to view the background survey button.

Accessibility

Reviewers found the colours used to indicate diary status were distinctly different than those with visual impairments would be able to distinguish between them.

When reviewers were accessing the tool on mobile devices, the standard for a mobile keyboard is to present letters in lowercase. Given that passwords were case sensitive, to get the letters to appear in uppercase, respondents would have to manually change the case, which would require additional clicks. Reviewers felt that for respondents with dexterity and motor function impairments, the additional clicks needed would mean that these respondents had to exert additional effort to access the tool. Furthermore, when completing on mobile, reviewers identified that the pinch to Zoom features of the ELiDDI tool were not optimised for mobile, in that the text and page did not render optimally.

Reviewers also felt the ELiDDI tool homepage had a heavy reliance on touch screen, in that respondents had to select a diary day to continue. When using the accessibility personas who used keyboard only entry methods, the lack of a mouse pointer was found to add difficulty when entering the diary days. For respondents with dexterity consideration and for those who did not have touch screen mobiles (i.e. a keyboard entry only phones), reviewers felt that these respondents may struggle to select a diary day to complete. When completing on laptops using accessibility personas with dexterity impairments, reviewers found it slightly challenging to select diary days, especially in conditions where respondents may not be able to hold the mouse steady.

2.2.4. Results from data analysis

Respondent feedback

Looking at respondent feedback received during the parallel run, 8% of respondent queries for OTUS and 7% for ELiDDI mentioned issues related to accessing the tool. For both studies 6% of queries referred to either the diary website link not working, or issues related to the login details. The remaining queries related to cookie or browser related problems.

Across both studies, a minority of respondents reported having difficulties accessing the online tool. This included being unable to find the study webpage, not having their login details to hand (due to being misplaced or not having received them) and having problems with their username or password (details not working or being incorrectly entered).

For the ELiDDI study, some respondents flagged that they were unable to enter an open diary day via the homepage, due to it still showing in yellow and therefore 'not yet available'. A couple of respondents also noted seeing a message stating that a diary day was already in use, when clicked on for the first time.

For OTUS, a few participants highlighted having issues logging into the tool, in relation to cookies or the browser they were using.

2.2.5. Considerations and recommendations

1. Help and assistance should be provided to respondents at the point at which they need it:
 - Respondents should be more explicitly signposted to links for help and assistance within an online diary tool, including explicit sign-posting from login and home pages. They should not be expected to refer to another document for this information.
 - Freephone contact details should be provided on the login page for respondents who may have misplaced or not received their login details. Explicit instructions should be provided on who respondents should ring if their details are misplaced.
 - Passwords to enter time use tools should not be case sensitive. Researchers should consider the browsers for which their tools are optimised for and whether it would be suitable to provide respondents with a username and password which they could save to a password manager for easy re-entry into the diary.
2. The visual presentation of the diary should communicate actions to respondents:
 - Language and visuals used around login details should match what is provided in the respondent communications.
 - Within the tools homepage, clear communication to respondents through both colour and text should inform respondents which parts of the tools have been completed, and which parts are outstanding.
3. The use and presentation of error messages requires careful consideration:
 - When triggered, error messages should clearly identify what the issue is and how a respondent can rectify it.
 - If passwords are case sensitive, error messages should clearly communicate this information to respondents.
4. The size of an electronic device's screen can impact the presentation of the diary tool:
 - Given the prominence of survey and diary completion on smaller screens, such as mobiles, we recommend a mobile first approach in tool design, whereby the tool is initially designed for the smallest screen and then adapted for larger screens.
 - Navigation pages should be usable for people who use keyboard only data entry methods.

2.3 Background survey

2.3.1. Overview of key elements

Both studies have a short background survey that respondents need to complete, on top of their two diary days. This survey typically takes around 5-10 minutes to finish and consists of some demographic, economic and social questions – for example, asking about things like the respondent's age, household composition and level of education. Participants access this survey via a button on their homepage. They can partially complete the survey and re-access it at a later point. However, once it has been submitted respondents are not able to re-enter to edit their answers, although for OTUS they can view a list of the answers given. It is worth noting, for both OTUS and ELiDDI, that this survey is not compulsory for respondents to complete and does not affect their eligibility to receive an incentive.

2.3.2. Results from desk review of OTUS

Holistic (Respondent journey)

From the information provided within the OTUS homepage, reviewers felt it was clearly communicated to respondents that they needed to complete the initial questionnaire. Access to the questionnaire was signposted on the homepage through 'start' entry buttons. When completing the questionnaire, reviewers could easily move between the initial questionnaire, the homepage and the diary days through clicking on the navigation links within the tools page online header.

Aside from the instructional text "*please complete this study with information about you and your characteristics*" reviewers felt there were limited instructions provided at the start of the initial questionnaire on how respondents should complete. Once respondent have completed the initially, they are able to review their answers, however they are not able to amend them. To amend their answers, respondents are informed that they would need to contact the NatCen Opinion Panel.

Language

Reviewers felt the language used within the OTUS initial questionnaire was clear and easy to understand. For some questions, such as income, reviewers felt more clarification could be provided on how respondents should complete this question. For example, when asked about their income, should respondents be thinking about their household or personal income, or should they be thinking about their gross income (i.e. your income before tax or any other deductions) or net income (i.e. your income after tax and other deductions).

For some questions within the initial questionnaire, particularly those which asked about wellbeing and were therefore more sensitive, reviewers felt that "prefer not to say" or "don't know" response options could have been utilised more. An example of this type of question is displayed in **Figure 19** where prefer not to say and don't know response options were not present. To be useful, time use study data needs to collect detailed information on respondents. To avoid non-response of sensitive questions, prefer not to say and don't know response options could appear hidden, in that they are only displayed if respondents attempt to proceed to the next question without answering. Alternatively, where sensitive questions are asked, reviewers felt that reassurances could be provided to respondents in that the survey reiterates the purpose for collecting the data.

Figure 19 – Questions with no prefer not to say or don't know response options (PC)

Online Time Diary

[Home](#) [About this study](#) [Your Notepad](#) [Activities Guidelines](#)

Initial questionnaire

Please complete this study with information about you and your characteristics.

ONS would like to ask you four questions about your feelings on aspects of your life. There are no right or wrong answers.

For each of these questions ONS would like you to give an answer on a scale of 0 to 10, where 0 is "not at all" and 10 is "completely".

Overall, how satisfied are you with your life nowadays?

0

1

2

3

4

5

6

7

8

9

10

not at all

completely

Overall, to what extent do you feel that the things you do in your life are worthwhile?

0

1

2

3

4

5

6

7

8

9

10

not at all

completely

Usability

Reviewers reported being able to move between questionnaire pages easily. Reviewers found the time periods for completion to be flexible, as respondents could partially complete the questionnaire before returning to complete it at a later date. The initial questionnaire rendered well on both smaller and larger screens, with text clearly visible to reviewers. Reviewers felt that as multiple questions were often displayed on the one page, scrolling down the page was required to see and answer all questions.

Accessibility

For respondents who experience difficulties with dexterity and motor skills, using a keyboard is often preferable to a mouse which requires more precise movements. When using only a keyboard, reviewers were able to complete the initial questionnaire by using the tab button to move between questions. Whilst reviewers were able to complete questions using a keyboard only approach, reviewers felt using this approach to complete Likert scale questions was time consuming and involved pressing the tab button multiple times to move between response options. Reviewers felt when completing as personas who had dexterity difficulties, selecting some of the response options with a mouse was challenging, as the radio buttons were quite small.

Error messages did present if errors during entry were made. However, error messages appeared as a block of errors at the top of the relevant page, rather than directly next to the

question where the error was present. This required reviewers to scroll up and down the page to identify where the error had been made.

2.3.3. Results from desk review of ELiDDI

Holistic (Respondent journey)

Reviewers felt there was clear written communication both within the advance respondent communication letter and within the introduction to the background survey itself, on how long it should take respondents to complete the background survey. Reviewers were able to easily navigate between the background survey and the homepage by clicking on the “Go to home page” button.

Reviewers felt there was a lack of clarity in term of whether the background survey was compulsory for respondents to complete. From the ELiDDI tools homepage, reviewers felt it was not explicitly clear that the background survey should be completed due to the focus and framing on the homepage around the diary days. When referring back to the respondent communications, reviewers felt it was unclear whether the study incentive was dependent upon the completion of the background survey or not. Similarly, to concerns raised about the ELiDDI homepage, reviewers felt that if respondents were to experience issues in completing the background questionnaire, help was not explicitly signposted within the online tool. As such there would be reliance on the respondents referring back to the respondent communication letters to contact details for help.

Language

Whilst reviewers identified that most questions displayed “prefer not to say” response options, some questions which asked about sensitive topics did not have this response option. Some examples of these sensitive questions included asking respondents about their current happiness and whether they felt their life was worth living. For these questions, reviewers noted that respondents were asked to select a response options from 0-10 with prefer not to say not a visible option.

Reviewers felt across questions, some archaic terminology was present within the questions which respondents may not be familiar with, and as such may affect their understanding. Examples of this which reviewers highlighted included “fixed line telephone”.

Usability

Reviewers noted that respondents had to select a response option to every question to be able to proceed with the questionnaire, Reviewers felt this approach was beneficial as it prevents missing data from respondents which can affect data completeness, and thus data quality. However, reviewers felt that having to input an answer for every question was at times unnecessary, particularly as some of the questions which reviewers were shown did not apply to their personal situations. An example of this question is shown in **Figure 20**. The reviewer who was completing this question did not have children, and as such attempted to progress to the next question without entering any figures into the boxes. Reviewers felt it that if a respondent did not have children, it would be reasonable to assume that respondents would also not enter any information here. When attempting to progress to the next question, the reviewer was presented with the error message seen in **Figure 20**. It is only after seeing this error message that respondents must deduce that they need to enter ‘0’ into each box if they

have no children. Adding additional non-relevant information may contribute to respondent burden and cognitive fatigue.

Figure 20 – Example of ELiDDI question with required answers (PC)

There were problems with some of the data you entered in the survey. You will find the questions with errors below; please follow the instructions attached to each question.

[Go to home page](#)

How many children of the following ages live in your household?
Please specify a whole number.

Aged under 5	
Aged 5 to 11	
Aged 12 to 16	

Accessibility

When accessing general accessibility requirements, reviewers felt that error messages were clearly displayed to respondents and included guidance on how to rectify the issues.

For respondents who experience difficulties with dexterity and motor skills, using a keyboard is often preferable to a mouse which requires more precise movements. When using only a keyboard, reviewers were able to complete the initial questionnaire by using the tab button to move between questions. When completing questions with drop down lists (such as country of origin), reviewers noted that no typing shortcuts were enabled so that they could enter the first letter of a country and be directed to these. Instead, reviewers noted having to scroll down a long list of questions to find their answer. For respondents with dexterity requirements, increased scrolling using a mouse or fingers (on touchscreen devices) may increase respondent burden.

For respondents who experience visual impairments, reviewers used the ChromeVox screen reader to explore the accessibility of the ELiDDI tool. Whilst the screen reader was able to read aloud parts of the text, for some questions, particularly those with Likert response options the screen reader was not able to capture all written text.

2.3.4. Results from data analysis

Respondent feedback

A handful of respondent queries were received relating directly to the background survey for ELiDDI – none were received for OTUS. The ELiDDI queries were from respondents who reported getting stuck on a question where a number had to be entered (e.g. number of

children in household) and being unable to proceed – with an error message stating that the number they had entered wasn't a whole number.

Interviewer feedback

Looking at interviewer feedback for ELiDDI, some respondents found certain questions to be unclear or stated that there sometimes wasn't an appropriate answer option to select. Telephone participants also mentioned that some questions were irrelevant to them and shouldn't have come up based on their previous answers, for example after stating they were retired. Interviewers also flagged that respondents were often unhappy that some questions did not have a 'don't know', 'prefer not to answer' or 'not applicable' option, which meant they couldn't be skipped¹⁰. Finally, interviewers highlighted that some questions had lengthy answer options, making them difficult to complete over the phone as a result – with some respondents forgetting the question after all options had been read out.

The same types of feedback – i.e. possible improvements for the wording, answer options, and routing of some questions – was given by interviewers during the pilot waves of OTUS.

2.3.5. Considerations and recommendations

1. Clear communication is needed to emphasise the importance of completing the initial or background questionnaire:

- If completing the background questionnaire is imperative to data analysis, future time use tools should consider emphasising to respondents the importance of completing it both within the tool's homepage and within respondent communications.
- Researchers may want to consider altering the placement of the background survey within the tool. Having the background survey appear prior to the homepage, i.e. once respondents have entered their login details would increase response rates.

2. Respondents journey through questions should be carefully considered to reduce burden and fatigue:

- Routing and filter questions should be adopted within background questionnaires to ensure that only relevant questions are asked to respondents, therefore creating a more streamlined questionnaire.
- For questions which ask about personal and sensitive topics, such as wellbeing and health, the use of prefer not to say and don't know response options should be considered. Prefer not to say and don't know response options do not have to be presented overtly to respondents but could be hidden, in that if responses try to go to the next question without selecting a response option they are presented with these.
- Researchers could consider the use of signposting to help on sensitive questions or after the background survey. Examples of charities which may be suitable are Mind, a mental health charity.
- For questions which require data entry (e.g. number of children), respondents should be clearly told that they need to put a number in every entry box, even if that number is 0.

¹⁰ For scenarios where respondents did not know the answer or thought the question was not applicable to them, interviewers were briefed to ask respondents to give their best estimate or pick the option they felt most relevant. If respondents still couldn't or did not wish to choose, interviewers were asked to input or select the middle option.

3. The use of drop-down lists should be optimised to reduce scrolling:

- Keyboard accessibility for drop down lists could be optimised, so that as respondents begin to type their answer, there are presented with a shortlist of responses which match their typed entry.
- Researchers should consider the ordering of response options in relation to participant burden. For example, if data on the time use study is being collected U.K, questions about country of origin could be ordered non-alphabetically, so that the most likely answer (i.e. Great Britain) is the top option by default.

2.4 Online instructions

2.4.1. Overview of key elements

Both studies provide some instructions on how to complete the online diary. They are presented once a respondent enters into an open diary day. The format of these vary for each survey, with ELiDDI using videos and OTUS using written text to convey the information. For both studies participants are able to skip this instructional information as needed and go to the first page from which they can enter data about their diary day.

On the ELiDDI tool, a main instructional video provides a run-through of someone completing an example diary day, filling in all six rows on the diary page. There are also additional videos running through tasks such as deleting and editing activities or clearing a row. Once on their diary page, these videos are also available to watch by clicking a question mark button on the top right.

For OTUS, meanwhile, respondents are first shown some written instructions, explaining the task and providing some guidelines that need to be followed. On the next page, participants are shown a list of the study's activity codes. Once on their first diary page, respondents need to navigate back to these pages if they wish to refer to them again.

2.4.2. Results from desk review of OTUS

Holistic (Respondent journey)

Reviewers felt that the instructional text clearly informed respondents on how the diary should be completed. The rules of completing the diary were clearly communicated, with respondents informed that main activities could not overlap with each other, but that background activities could. Whilst the idea of main and background activities was introduced to respondents within the instructional pages, reviewers felt that more clarity could be given to respondents on how main and background activities would be entered into the diary, in that they are entered on separate pages. Without this clear distinction, reviewers were concerned that respondents may not realise they need to enter background activities after entering their main activities ones.

Language

Within the instructional text, reviewers felt that background activities were a well defined concept. Reviewers felt these were described to respondents as things which a could be done in the background alongside a main activity. Respondents were given examples of what background activities could include, such as having a drink or checking your phone whilst

watching TV. However, reviewers felt that main activities were not as well defined. Reviewers felt that the instructional text was written with the presumption that respondents would automatically know what a main activity was, as this term is not defined, with no examples given.

Reviewers noted that the terms secondary and background activities tended to be used interchangeably within the instructional text. To avoid any confusion amongst respondents, reviewers felt that one term should be selected and used consistently across all materials.

Usability

Reviewers were able to move between the two instructional pages and the OTUS diary days by using the numbers for pages (between 1 and 6) at the top and bottom of the diary page (see **Figure 21**). This function allows for the diary to perform as a non-linear tool. The use of numbers to show progress through the diary tool was perceived as useful as it would allow respondents to see their progress through the tool.

Figure 21 – Screenshot of OTUS diary instructional page (PC)



Instructions for your Diary Tool

Key guidelines:

- Main activities (in 10-minute segments) cannot overlap
- You must enter main activities for the entire day - even your sleep time should be recorded
- Background activities are allowed to overlap with each other

1. Begin by filling in all the main things you were doing throughout the day, for example, sleeping, working or eating meals.

Main activities need to be recorded in multiples of 10 minutes (10, 20, 30, 40, 50 or larger) without gaps. You may need to round up or down to the nearest 10 minutes.

2. Next, record anything else you were doing in the background.

These are things you were doing alongside your main activity. For example, while watching TV, you may have had a drink and checked your mobile phone. Only include secondary activities that took 5 minutes or longer.

Accessibility

When using the ChromeVox screen reader, reviewers noted that the screen reader was compatible with the instructional text. However, when using an alternative screen reader, called Read&Write for Education, reviewers found areas of the text were not compatible.

2.4.3. Results from desk review of ELiDDI

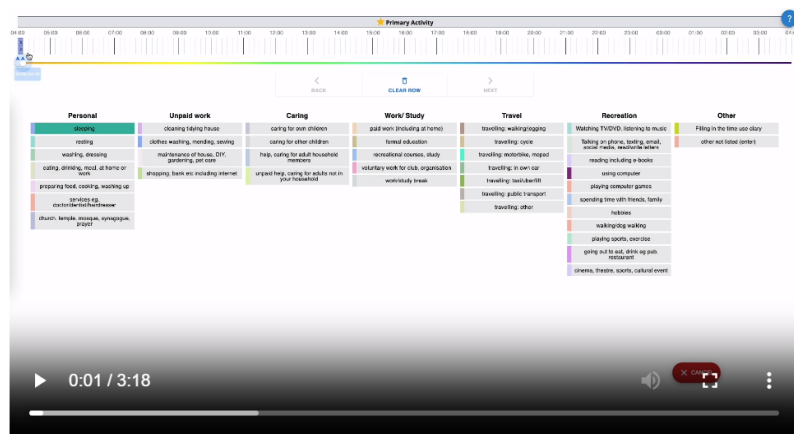
Holistic (Respondent journey)

When accessing the instructional video, reviewers noted that respondents are informed in writing that they can re-access the videos when completing the diary (See **Figure 22**). When listening to the videos, reviewers noted the lack of narration or sound accompanying the video. Reviewers felt that the lack of sound made viewing the videos slightly challenging and felt it would have benefitted from some narration to explain the actions which they were viewing in the videos.

Figure 22 – Screenshot of ELiDDI diary instructional video (PC)

These videos show you how to complete your diary using a simple 'click (or tap) and drag' feature, and give you some additional tips. We invite you to watch them before starting your diary. There is also an option to access the videos while you are filling in your diary – simply click on the blue button with a question mark on the top of the page.

How to fill in the diary



Other features

Write in activity Delete Clear all

Language

As the video did not have sound or narration accompanying it, no reviewer comments can be made about language.

Usability

Through the visual nature of the instructional video, reviewers felt the process of how information should be entered into the diary was displayed well. However, reviewers felt that the terms primary and secondary activities were not defined in the video. Reviewers felt respondents would be able to see that primary and secondary activities should be entered on two separate rows, but it was not explained during the instructional video what would count as a primary and secondary activity.

The video was found to be quite fast paced, with reviewers not able to find an option to decrease the speed of playback. When viewing the instructional page on mobile devices, reviewers felt the focus of the page was on the video, and the next button to allow progression to the diary page was not explicitly visible. As a result, reviewers felt respondents would have to actively scroll down and look for a next button to progress.

Accessibility

The video provides a visual demonstration of the drag and drop tool which reviewers found useful in informing respondents what would be required within the diary pages. Amongst the instructional videos available, reviewers noted that in addition to informing respondents how to enter information into the diary pages, there were also videos available for how to resolve conflict within the diary and how to delete activities added to the ELiDDI tool.

Reviewers had some concerns about how respondents with visual impairments could use this video. Given that no accompanying text or narration is present with the video, screen readers could not be used. As such, reviewers felt that respondents with visual impairments would not be able to clearly see the instructional videos and therefore would not understand the content within them.

2.4.4. Results from data analysis

Respondent feedback

Few respondent queries related directly to the online instructions. A small number of ELiDDI participants noted that the instruction videos did not have any sound or commentary and that they moved too quickly. Some also felt the videos did not provide enough information, with completion of the online diary still unclear after watching them.

Interviewer feedback

Both for ELiDDI and the pilot waves of OTUS, interviewers did not comment specifically on the online instructions as they did not use them with telephone participants. During a telephone interview a short definition of main and secondary activities was included in the CATI (Computer Assisted Telephone Interview) software used to make contact. This short text was used to refresh the participants' memory before the start of the interview.

Interviewers therefore provide feedback more broadly relating to how well respondents had understood the instructions contained in the communications and paper support materials. Telephone respondents on both surveys were sometimes still unclear about what a secondary activity was and required some examples to understand. Interviewers also noted that respondents often failed to note down their activities using the correct intervals – for example, noting main activities in 15-minute segments or having activities with very short durations that needed rounding up. On the OTUS pilot waves, interviewers mentioned that some respondents had recorded their main and secondary activities using the same 10-minute durations, despite not needing to do so as secondary activities could be recorded using 5-minute intervals; and that some were unaware that secondary activities could overlap.

2.4.5. Considerations and recommendations

1. Instructions on how to complete the diaries should be accessible to all respondents:

- Instructions should not rely solely on audio or visual demonstrations and should instead incorporate both elements.
- Given the visual nature of the time use survey tools, we recommend that any future time use survey tools have an accompanying instructional video. Any videos should have sound or text accompanying them, with any text used compatible with assistive technologies such as screen

readers. The videos should be fully tested with the end user to ensure that users are fit for purpose.

- Instead of having one long video which encompasses all instructional content, we recommend multiple shorter videos. Each video could provide respondents with information about specific actions which can be taken when entering data into the time use survey. Having multiple shorter videos serves two purposes. Firstly, respondents can have more control over which videos they choose to watch and are relevant to them. Additionally, having shorter ‘bitesize’ videos may also allow for them to be integrated within the diary page itself through the use of pop-up which can be accessed and dismissed by respondents as required.

2. Instructions should clearly outline what is expected from respondents when completing the diary days:

- Instructions should both explain what the task is and how the task should be completed.
- When creating instructions for how to use the diary tools, researchers should explain any key definitions used within the diary pages, provide examples for them where appropriate, and clearly explain any rules around diary completion.
- Help should also aim to address the most frequently asked questions that the freephone team and interviewers have received.
- Instructions are crucial in communicating the importance of the study to respondents and exactly how they should complete the time use tools. Some respondents may not have read the instructions within the respondent communications. Therefore any crucial information which would impact diary completion is best given at the time of diary completion.

3. Navigation buttons to allow progression to the diary days should be explicitly visible:

- Navigation buttons should be present both at the top and bottom of the screen to ensure respondents do not have to scroll to find the next buttons.
- Buttons should be large enough so that those with dexterity and motor impairments can easily select them.

2.5 Diary page(s)

2.5.1. Overview of key elements

Both studies have dedicated pages where respondents can enter details about activities done on their diary day.

OTUS

For the OTUS survey, there are two separate pages for respondents to enter data into – one for primary activities and a second for background activities. Respondents can enter data onto these pages from 4am on each diary day, with the day remaining open for entries for 72 hours. In terms of entering data, this is done using drop-down menus – respondents need to select from a list of activities and then specify the activity’s start time and also the duration of time spent doing it. Activities which are entered will then appear on a timeline, from which they can be edited or deleted. For main activities, once added, participants will usually get some additional questions to answer in a pop-up, for example, about who did they an activity with and how much they enjoyed it. A screenshot of a partially completed secondary activities page is shown in **Figure 23**. Once a respondent finishes entering their secondary activities with any associated follow-up questions, they must then answer some final questions regarding their diary day – including about whether they had cared for any children or adults.

Figure 23 – Example of partially completed OTUS diary day (PC)

1 — 2 — 3 — 4 — 5 — 6

Were you doing anything else?

- Record anything you did in the background alongside your main activities.
- Only include activities lasting 5 mins or longer.
- You can use the timeline at the top of the screen to help you recall what main activities you have entered.

Tip

Your main activities so far:

Activity type: Activity detail:

Eating, drinking, cooking	Snacking 4:00 - 5:00
Caring for and looking after children and adults (not as paid job)	Other childcare not elsewhere listed 12:35 - 14:35
Exercise, health and being active	Running or jogging 15:10 - 16:10

24 Banking...
11:30 - 14:30

22 Breeding...
14:30 - 15:50

24 Feeding...
15:50 - 18:00

Activity (Thursday 5 December 2019)

From

16:10

Duration (hours)

0

Duration (minutes)

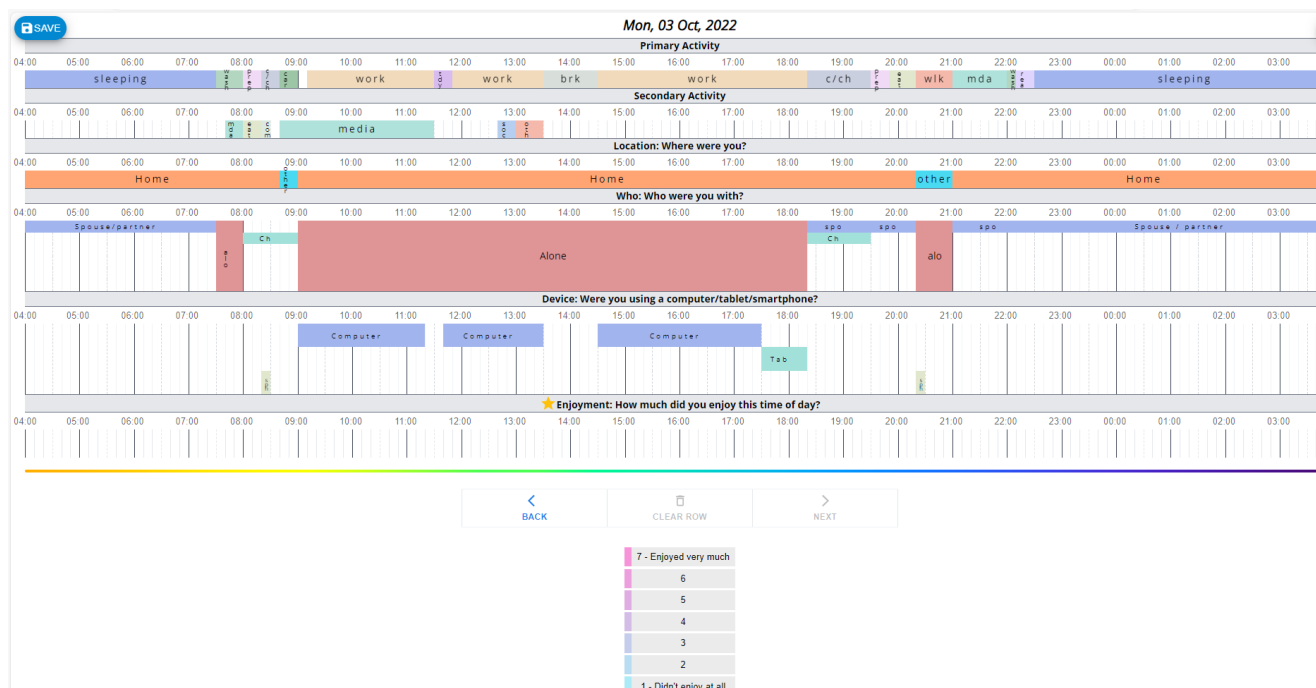
0

Add activity

ELiDDI

For the ELiDDI survey, activities and other additional details are all entered on a single page. Respondents are able to enter data onto this page from 4am of the day after each diary day, with the day remaining open for entries for 48 hours. Activities and other details are entered using a click and drag function onto a timeline – there are six of these that need filling out. Respondents need to select from a list of options at the bottom of the page and then click onto a timeline and drag from the start to end time in order to add it. Activities that have been added onto a timeline can be edited or deleted. Respondents are only allowed to complete one row at a time, with different data entry criteria applying to each row in terms of time gaps allowed and whether activities could overlap or not (for the complete list of criteria see **Table 1** at page 20). A screenshot of a partially completed diary page is shown in **Figure 24**. Once a respondent finishes completing their enjoyment timeline, they must then answer some final questions regarding their diary day – for example, whether they thought the day was a typical one and what they felt were the most and least enjoyable activities.

Figure 24 – Example of partially completed ELiDDI diary day (PC)



2.5.2. Results from desk review of OTUS

Holistic (Respondent journey)

When arriving at the OTUS diary page, reviewers were able to navigate easily between the diary pages, homepage and instructional text pages using the links on the header of the page. Like other pages within the online OTUS tool, reviewers felt help was adequately signposted in the footer of the page through the 'contact us' hyperlink. Reviewers felt respondents were given adequate reminders on the diary page about the rules of entering activities into the tool.

Within the OTUS online tool, reviewers noted that respondents could access an online notepad where they can make notes. The online notepad was not referred to in any of the respondent communications or within the homepage, and as such reviewers questioned its' purpose. Reviewers felt that in having an online notepad there was a risk that respondents may record information within this section, rather than within the diary day. As such, reviewers felt its' role within the tool should be reviewed.

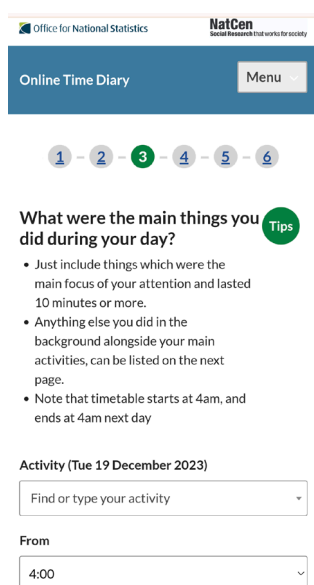
When completing the diary pages, reviewers were presented with some final questions about time use. These final questions asked about time spent caring for others. These two questions were not previously discussed at any point, and as such were unexpected. As such, reviewers felt there was a risk that if respondents do not clearly know how many questions are required of them, this may set false expectations. The final questions also ask about paper diary booklet usage with no further definition. As not all respondents may have received a paper diary due to either postal delays or fieldwork design, this lack of definition could be problematic, as respondents may interpret this as using the paper activities list and not the paper diary. The results of the paper diary booklet experiment for which half of the

sample was not sent the booklet suggested respondents were indeed confused as within this group 30% reported receiving it (see **Section 2.1.4**)

Language

When reviewing the online OTUS tool, reviewers felt the instructions at the top of the diary tool provided a useful recap of the previous instructional pages (see **Figure 25**). Across reviewers, there was some concern about the overlapping of response categories. For example, if a respondent was spending time with a friend to catch up, should they select 'socialising' or 'having a conversation'.

Figure 25 – Screenshot of OTUS diary page instruction recap (mobile)



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Online Time Diary Menu

1 - 2 - 3 - 4 - 5 - 6

What were the main things you did during your day? **Tips**

- Just include things which were the main focus of your attention and lasted 10 minutes or more.
- Anything else you did in the background alongside your main activities, can be listed on the next page.
- Note that timetable starts at 4am, and ends at 4am next day

Activity (Tue 19 December 2023)

Find or type your activity

From

4:00

Usability

When completing the OTUS tool on laptop devices, reviewers were able to use both the keyboard and mouse independently of each other to enter information into the online diary.

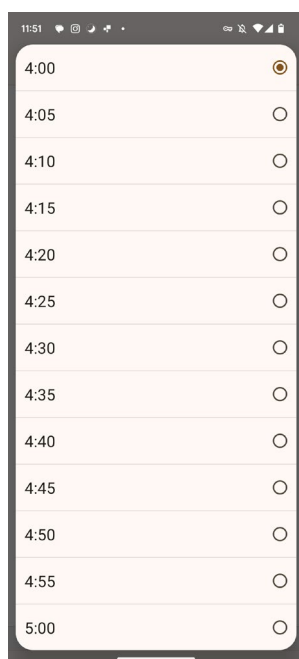
When entering activities into the online diary, reviewers noted that respondents had to enter the duration of their activity from a selected start time. For example, if inputting information about their journey to work, respondents would have to calculate how long they spent travelling in minutes and hours rather than entering the time they left and the time they arrived at work. Ask respondents to calculate the durations of their activities may enact a higher cognitive burden on respondents and as such contribute to respondent fatigue and attrition from the diary.

When attempting to enter main activities which overlapped, which would therefore violate the OTUS diary conditions, reviewers found that they were able to enter them within the diary. Reviewers noted that overlapping activities appeared as red text within the diary. Reviewers were able to progress through the diary with conflicting activities, however they could not submit the diary until the activities were rectified. Reviewers found that when error messages were triggered, they did not appear directly next to the error and instead appeared as a block at the top of the screen. Additionally, error messages did not always identify the exact issue

and did not provide guidance on how to resolve the error to allow respondents to proceed. Taken together, there is the risk that if errors are not adequately identified to allow resolution, respondents may not be able to progress and submit the diary, which would result in missing data.

When entering secondary information, reviewers struggled when completing on mobile, as due to the smaller screen size, they were no longer able to see the main activities they had entered previously. Additionally, when selecting the time at which the secondary activity started, the list of times which appeared on smaller screens, such as mobiles, meant that reviewers were not able to see any of the time use diary (see **Figure 26**).

Figure 26 – Screenshot of adding secondary activities in OTUS (mobile)



Accessibility

The primary accessibility concern identified with the OTUS online diary was in relation to increased scrolling needed to view the entire diary day. When using the OTUS online diary to view all information entered for one day, reviewers had to scroll up and down the page and were unable to view a whole diary day on one screen. Whilst zooming out did increase the amount of information which could be seen on a page, for respondents with visual impairments this would prevent how much of the information entered they could see and read.

When using the accessibility personas, reviewers were able to complete the OTUS diary using a keyboard only, which suggests that the tool is optimised for respondents who have dexterity and motor impairments. When using the ChromeVox screen reader extension, a Google Chrome screen reader which can be installed as a web add-in, the screen reader could be used to read most text within the OTUS tool. When using the screen reader, reviewers found it challenging to select activities to enter within the diary. The key difficulty faced was that the screen reader did not re-read out the select option, and when added to the tool, the screen reader was unable to read out the time which the activity had been entered into the diary for. As such there is the risk that for respondents with visual impairments who rely on screen readers to check their entry, may encounter problems with errors when using

the diary. In addition, one reviewer used the “Read&Write For Education” screen reader in addition to the ChromeVox tool. The “Read&Write For Education” screen reader was not able to read out portions of text within the OTUS tool. This screen reader is commonly used by respondents who have learning difficulties such as Dyslexia.

Use of paper materials in completing the online diary

Reviewers also assessed the role of the paper supporting materials in OTUS diary completion. OTUS paper materials consisted of a paper diary booklet and a paper activities list.

Whilst the paper diary is designed to be used as a memory aid to help online data collection, reviewers were concerned that respondents may think they can submit the paper diary in place of the online tool. On the first page of the OTUS diary, within the section ‘Why should I use this booklet’, respondents are told that they will be able to “*easily add this information into the online diary*”. Reviewers were unsure if this was a clear enough message to respondents that they could not use the paper diary alone as a way to submit information. Reviewers felt that it was only on the back page of the booklet that respondents were informed in small text that they cannot post this diary back, and that they can only use the information in the completed online diary. Having this information presented clearly on the front page of the diary would aid respondents in knowing the purpose of the booklet.

Reviewers felt that the main and background activities were well defined with useful examples provided to guide respondents in identifying what counted as a main and background activity.

When using the paper diary to aid online completion, reviewers noted that the paper diary did not neatly align with the OTUS online diary. Within the paper booklet, respondents were asked for the start and finish time of their activities. However, the online diary asked for the duration of activities. Given that the format of time is not asked for in a consistent way (i.e. start/finish vs duration), there is the concern that respondents who complete the paper diary may be exposed to additional cognitive burden, as in addition to their activity start and finish times, they are then asked for duration. Additionally, when completing the paper diary and noting their enjoyment, the scale presented to respondents is a Likert scale from 1-7, with no guidance on what the end points on the scale should be interpreted as. As such, there is a risk that across respondents, that the scale will not be interpreted in a standardised way.

Within the paper diary, respondents were provided with an example page of what the diary should look like online. This example page extended from the booklet so that when it was open, the diary was slightly larger than an A4 sheet of paper. Whilst reviewers found the example of the online diary useful, the placement of the example within the diary was questioned, as reviewers did not feel that respondents would need to refer back to this example to complete the paper diary. Additionally, reviewers found making notes when the extending was open to be challenging, as it required more physical space than an A4 piece of paper to use the booklet. As such, reviewers felt a more conventional booklet structure would allow respondents to flick between diary pages more easily and would take up less physical space in a respondent’s environment when opening the booklet to complete it. Reviewers found the numbered activities easy to search on the online tool, as they could enter the number which corresponded to the activity rather than scrolling or typing the activities name. If an extending page was to be used, reviewers felt that this page should include an overview of the activity codes which could be listed, as this would aid completion of the paper diary.

2.5.3. Results from desk review of ELiDDI

Holistic (Respondent journey)

Upon accessing the diary day page, reviewers noted that the day was presented on one single page, with new rows appearing for the different questions within the diary day such as secondary activities, locations and so on. Due to the visual timeline of the diary, respondents can see the full 24 hours which they need to provide activities for.

When respondents first access the page, it is not explicitly clear that they will need to report anything in addition to their primary activities. It is only when respondents enter 23 hours and 20 minutes of activities into the diary that they can access the section about secondary activities.

For primary activities, respondents can add activities to the nearest 10 minutes, and are given instructions on how to round. For secondary activities, the ELiDDI diary, respondents can only input one secondary activity. As such, there is the risk that some secondary activities which take less than 10 minutes may be lost or not recorded accurately, especially if there is not space within the diary to record this as a secondary activity.

In relation to navigation, whilst respondents can easily save their entry by clicking on the save button, there is no clear way that respondents can return to the homepage. During the desk review, for reviewers to return back to the homepage, they had to save their diary day, close the browser and then re-access the ELiDDI homepage via the login.

Language

When accessing the diary page, reviewers were presented with a pop-up which explained how to add activities into the diary. Reviewers felt that this instructional pop-up was clear and concise. Aside from this instructional pop-up, there were no further written instructions on the page. Reviewers felt that primary and secondary activities were not defined within the main diary page.

When completing the online diary, reviewers felt there was the potential for overlap between response options. For example, if someone was chatting with friends online whilst playing a game, reviewers were uncertain whether this individual should choose “Using the computer” or “Playing computer games” as their main activity, or if they should choose one as their main activity and the other as their secondary, and as such risk double counting.

There was further uncertainty amongst reviewers on where phone usage should be recorded. Within the diary, one section asked about device usage, however within main and secondary activities there was the option to enter device usage such as “using the computer”. Reviewers were then unsure if they should also record computer usage within the devices section, or if this would count as a duplication of responses.

Reviewers found asking about enjoyment for every activity to be slightly inappropriate. For example, if a respondent had a personal event which was negative, for example the death of a family member, asking about enjoyment would not be appropriate, and there did not appear to be an option to not enter enjoyment and proceed with the diary.

Usability

When using the ELiDDI tool, reviewers felt that respondents would receive a good level of visual feedback. The tool is very visual in nature and the reviewers liked that they could clearly see the activities which were being added to the diary without the need to scroll up or down the page. Reviewers found that they could easily edit the time of, and delete activities. Conflicting main activities are not allowed to be entered at all into the ELiDDI, when reviewers tried to enter a conflicting activity, the activity could not be added to the diary.

When completing on both mobile and laptop, respondents found the diary day rendered well, making it appropriate for both larger and smaller screen devices. When completing the diary on larger screens, reviewers struggled with adding activities to the diary using drag and drop. Reviewers particularly struggled adding activities which had smaller durations such as activities lasting 10 minutes. Reviewers felt they had to concentrate and focus their mouse to change the time to the correct one. Reviewers found that the drag and drop function was easier to use on mobile, and that they had more control on entry when using drag and drop in this mode.

Due to the design of the ELiDDI tool, respondents must complete at least 23 hours of main activities before you are allowed to enter your secondary activities. As such, reviewers felt respondents were forced to think about their day separately for each of the different areas of interest (e.g. device use, enjoyment). Reviewers felt that respondents are forced to enter their information sequentially into the diary, and do not have the flexibility to enter location first and then activities.

Accessibility

As all information entered into the ELiDDI online diary is displayed on the one page, reviewers felt this was an accessible format as respondents would not need to scroll up and down the page to view their whole day of activities. Reviewers could easily zoom in to read text.

When completing the diary using the accessibility personas, reviewers encountered some issues. Firstly, personas who had dexterity accessibility considerations, such as motor function impairments, struggled to use the drag and drop. Reviewers found that as the drag and drop required a high level of physical dexterity, using the mouse to place an activity onto the diary was challenging and often impossible. As such, for these personas this exercise was quite time consuming and required a high level of concentration. Reviewers discussed feeling frustrated when the drag and drop did not work and felt that for respondents with dexterity considerations, drag and drop would enact a high respondent burden.

Secondly, when assessing the ELiDDI diary tool for accessibility, reviewers found that the diary was unable to be completed solely using a keyboard. Reviewers could not enter any information into the diary tool as any data entry required a mouse for drag and drop. As such, respondents who are unable to use a mouse would not be able to take part online, and would have to rely on other modes of data collection such as computer assisted telephone interviews (CATI).

Use of paper materials in completing the online diary

Reviewers also assessed the role of the paper supporting materials in ELiDDI diary completion. ELiDDI paper materials consisted of a paper '*aide memoire*' (in other parts of this report referred to as 'diary booklet' for simplicity) and a paper activities list.

When reviewing the materials, reviewers felt that the terms primary and secondary activities were defined well. Within the instructions on the paper diary booklet, reviewers felt that the paper diary acted as a useful memory aid when completing the online tool. Within this diary there was a clear explanation of how they should enter the timings of their activities, and the colours and text size used within the paper diary was appropriate. Reviewers found the activity list useful to refer to and felt that the list was comprehensive.

Whilst the paper diary is designed to be used as a memory aid to help online data collection, reviewers did not think this was explicitly clear from the paper diary itself that it could not be submitted as a completed diary day. As such, reviewers were concerned that respondent could complete the paper diary thinking it could be submitted as an eligible diary day. It is only on the back page of the booklet that respondents are informed in small text that they cannot post this diary back, and that they can only use the information in the completed online diary. Having this information presented clearly on the front page of the diary would aid respondents in knowing the purpose of the booklet.

Reviewers did feel that some terminology could be used more consistently between the paper materials and the online tool. Within the paper diary, six 'elements' are referred to. The six elements appear to be in reference to the information respondents are asked about in relation to their time use (e.g. main activities, location of activities). The term 'elements' is not used in the online tool and as such could confuse respondents. When using the paper diary to aid online data entry, reviewers felt that for some of the 'elements' the response options online were categorical, for example locations and who respondents were with. However, the categorical response options were not clear on the paper diary, and as such there is the threat that respondents may go into too much detail on the paper diaries that they then cannot use on the online tool which may increase participant burden and fatigue.

2.5.4. Results from data analysis

Respondent feedback

During the parallel-run, 22% of respondent queries for OTUS and 34% for ELiDDI referenced the diary pages – the difference reflects the fact that ELiDDI participants experienced a series of glitches. More specifically: 11% of OTUS and 19% of ELiDDI queries mentioned finding the diary tool too complex to complete, giving up part-way or having issues with navigation. More specifically on the data entry process: 15% of queries for OTUS and 19% for ELiDDI mentioned data entry issues such as resolving gaps, not finding an appropriate activity code or being unsure which one to use. For ELiDDI then 9% of queries referred to difficulties with adding activities, for example, that they would disappear after being entered. For both studies 1% of queries referenced issues with the follow-on questions such as having difficulties understanding or answering them. Finally, 1% of queries received for the ELiDDI study mentioned being unsure if diary progress had been saved after breaking off part-way through.

Across both studies, several respondents found the online diaries too complex to use and not user-friendly - often giving up part-way through completion. These respondents tended to be those of an older age or those who were less tech-savvy, with some stating they did not have the necessary computer skills to participate online or overcome issues experienced. Some were frustrated by the fact they had spent time filling out their diary booklet or taking notes on their diary day but were unable to share their time use data due to difficulties completing online. Within OTUS respondents who had been invited to a previous wave, some stated they

wouldn't be participating in W6 based on their experiences at past waves. Finally, a number of participants also highlighted that completion was often difficult using a tablet like an iPad, and sometimes also with a mobile.

For ELiDDI, numerous participants reporting having issues adding activities onto their diary day timeline using the click and drag mechanism – activities would often disappear and need adding multiple times before they stuck. Respondents noted it was particularly difficult to add activities with a 10-minute duration. A partially sighted respondent noted the mechanism was hard to use, whilst a participant with a condition that made their hands shake stated that it was tricky to select a specific time period as it required fine control of the mouse. One respondent flagged that adding activities was so fiddly they were tempted to enter less detail. Beyond this, some participants also flagged that the diary pages would sometimes glitch or become unresponsive, which made completion more difficult. A few respondents reported getting stuck halfway through filling a line on their diary page and not being able to move forward or back. Finally, some noted seeing a blank page whilst in the tool, for example, once they clicked into a diary day or after they had submitted it.

For OTUS, respondents often had issues with resolving a gap in their timeline or determining where an error was when shown an error message, particularly when trying to proceed to the final questions or submit, for which a minimum of 23 hours of main activities had to be entered. A few respondents reported seeing an '*illegal choice made*' error message which caused confusion. Some participants had difficulties navigating between pages, for example progressing to the next step, or backtracking to amend something. Some also struggled with the process of adding activities. Finally, some respondents noted having difficulties entering activity timings, with the online tool requiring a duration to be specified rather than an end-time.

Interviewer feedback

Data entry

Looking at interviewer feedback, for ELiDDI, interviewers reported that they frequently had issues with adding activities on a respondents' diary page – as reported by online participants, entries needed adding several times. Issues with inputting data were apparently more common with secondary activities as well as near the end of each row. They noted that this generated frustration for both them and participants, and extended the length of interviews beyond what was initially expected. Issues with completion sometimes meant interviews had to be ended prematurely with a call back necessary to finish a diary day. However, it is worth noting that interviewers broadly found the tool okay to use and navigate, once they'd had some practice – but all agreed the functionality of the timelines could be improved so that it is easier to add activities. Interviewers highlighted that some respondents wanted to talk through their primary and secondary activities at the same time, however simultaneous completion of both sections wasn't possible. Lastly, some issues were experienced relating to the saving of data: partially completed diaries often had to be started from scratch when they were restarted with another interviewer using a different browser/device, as the diary wouldn't have any previously entered data within it.

For OTUS pilot waves, interviewers noted that the tool was quite complex to use initially, so practice was necessary before starting interviews. Some noted that having to scroll both vertically and horizontally to see relevant information on a diary page was time-consuming and sometimes frustrating. Interviewers also noted that any timing changes to an activity after

it had been added meant all follow-up questions had to be answered again. However, they did highlight that the timeline of activities present on the diary pages was helpful with triggering recall and identifying secondary activities as well. Interviewers reported sometimes experiencing glitches whilst using the tool (e.g. at W3 a glitch prevented the first activity entered from being saved the first time it was added so it had to be entered twice) or that the tool could be slow to respond, which sometimes delayed diary entry. Some interviewers had issues typing in a time in the minutes 'Duration' drop-down menu, so often had to scroll to select the correct minute. Finally, interviewers stated that it could sometimes be difficult to keep up with respondents given the nature of the online tool (speed of the tool, complexity and mental arithmetic required to calculate durations).

Activities

For the ELiDDI study, interviewers noted that prompting was particularly necessary for certain activities such as washing, dressing, having breakfast, watching TV or listening to the radio, using the bathroom, eating or drinking, shopping, travelling, preparing meals, using their phone or laptop, reading, walking and general chit-chat with household members. Activities that were highlighted as not being available but mentioned by respondents included: going to the hospital/doctors, taking medicine, smoking, sexual activity, chatting with someone who is neither a friend or relative (e.g. sociable conversation with a shop assistant or person waiting at bus stop), general chitchat with family/friends/colleagues (not social occasions), planning/preparation (i.e. time spent thinking about what they were going to do), waiting around, reading emails, waiting for a bus and 'pottering' about. Activities that were flagged as unclear included how to code phone or tablet use as respondents generally did lots of things at the same time e.g. social media, email, shopping; whether crosswords go into reading periodicals; how to code puzzles as can be done in print but also online; parlour games was hard to understand as an old-fashioned term; whether caring for children referred to those under 18 or any child of the respondent regardless of their age; computer and phone based activities could have had expanded descriptions.

During the pilot waves of OTUS, interviewers noted that prompting was particularly necessary for certain activities such as travelling (e.g. to the shops), being in bed but not asleep, doing things whilst in the car, having cups of tea/coffee, having the TV/radio on in the background, doing things whilst watching TV, checking their phone, listening to music, general chatting with household members, reading the papers, getting ready/dressed before going out, making food or drink before consuming it, and going to the toilet. Interviewers stated that probing often resulted in respondents providing significantly more secondary activities, particularly those that took less than 10 minutes. Codes that were noted as not being available to record but mentioned by respondents included: storing shopping, online shopping, getting ready to go out, searching for documents or sorting the post, having their OTUS interview for diary day 1, writing (with pen and paper) including taking notes in preparation for OTUS interview, taking deliveries of online shopping, dealing with a medical emergency, making music, booking a GP appointment and going to the park. Some of these codes were then added to the activities list for subsequent waves of the study. Codes that often needed clarification included: checking their phone (often was checking social media or email when probed), talking to someone whilst outside (unclear whether counts as socialising), working (confusion among some other choices available resulted in 'other' being used a lot) and walking (whether for exercise, travelling somewhere or leisure). Some older respondents noted feeling that the activity codes and diary booklet example did not apply to them, with too many references to online tasks. Interviewers found that some respondents tended to mention a code they saw first on the paper activities list sent in the post, with the interviewer having to probe on other

more relevant codes. Some felt there could have been more ‘other – please specify’ options within activity subcategories e.g. ‘Other type of sports’. Interviewers stated that respondents generally didn’t select supervision of child or adult code unless they were doing a specific task such as helping with homework or feeding them.

Other activities (location, who with, devices and enjoyment) – additional timeline rows for ELiDDI vs. follow-up questions for OTUS

For ELiDDI, interviewers reported that respondents sometimes found it difficult to determine whether they were indoors or outdoors whilst doing an activity, for example when shopping or travelling in a vehicle. Some participants had confusion with answering about who they were with during their diary day – for example, whether being with someone meant being in the same building, same room or doing the same activity; how to code caring for someone; and whether travelling by public transport or shopping counted as being alone or with people. Interviewers noted that respondents often didn’t mention device use until prompted and stated that it was difficult to accurately remember as they were often used unconsciously or here and there, as opposed to in clear blocks of time. On enjoyment, respondents sometimes wanted to sum up their whole day with a single score; stated that it didn’t apply to certain activities e.g. sleeping; or felt it was unclear what it applied to – primary activities or each 10-minute slot.

For OTUS pilot waves, interviewers noted that some participants were annoyed at being asked about their enjoyment of certain activities, including mundane tasks like taking a shower or going to the toilet, and compulsory tasks like taking medicine – although they stated that using the skip button was helpful in these cases. The enjoyment scale was sometimes not clearly understood, with interviewers needing to explain it, including the fact that respondents could state they didn’t enjoy an activity. Interviewers highlighted that respondents found some follow-up questions and their answer options unclear or irrelevant.

Final questions

For ELiDDI, interviewers stated that some respondents felt that none of their activities were stressful or unpleasant and noted that there wasn’t an option to state this. Others highlighted that if an activity was done multiple times during the day (e.g. driving in a car), it could be difficult to answer about how pleasant or stressful it was, given that it may have varied across the different times it was done. Some interviewers felt that the anxiety question could be confusing, with some thinking 10 on the scale was positive and also that the use of ‘pleasant’ could be amended to ‘enjoyable’.

For OTUS pilot waves, interviewers noted that some participants had difficulties answering about time spent caring for others during their diary day. Some were unsure whether this should include doing things like cooking a meal for older children (above 18) or adults in the household, who participants stated were able to look after themselves. Some were confused as to whether they should include activities that were already listed as a main or secondary activity. Lastly some with full-time caring responsibilities felt they were caring for someone all day, despite not actively helping them at all times.

2.5.5. Results from timing exercise

When reflecting on their experiences of completing both time use diaries, the majority of testers preferred thinking about their activities in terms of a start and stop time, rather than thinking about activities in terms of hour and minute durations. The majority of testers

generally felt that thinking about their activities in terms of a start and finish time was more in sync with how they view their time.

Additionally, across both the OTUS and ELiDDI diaries, testers felt it was sometimes inappropriate to ask about enjoyment and stress experienced for certain activities. Examples of these activities given were attending funerals and sleeping. Testers felt that for activities such as sleeping selecting an enjoyment level was a tricky concept, with respondents expressing that unless they had a terrible night sleep they would guess their enjoyment.

OTUS

Overall testers reported finding the OTUS tool easy to use, as the use of numbered activities made selecting them on the online tool an easier process. Testers who completed OTUS diary days on their mobile expressed finding the diary slightly challenging to complete. For these respondents due to the smaller screen size, they were unable to see their main activities when they were filling out their secondary activities. Testers completing on laptops and other larger screen devices (such as PCs) felt they could see the information adequately.

When asked about the understanding of the terms main and secondary activities, all testers felt that they understood what these terms meant and understood that main activities should be recorded in period of 10 minutes, with secondary activities recorded in 5 minute ones. When discussing the secondary activities which they had entered into the time use diaries, some testers felt it was difficult to know which secondary activities were worth including and which were not. For example, one tester said that throughout the day they fill up and drink from their water bottle, but they did not include this information as they did not think it was necessary.

When exploring how testers found entering their time use into the diaries, testers felt that some of the activity categories were a bit complicated, with one tester mentioning they found the voluntary work category hard to disentangle. Testers also felt that some activities were missing or were hard to categorise, examples provided by one tester included watching YouTube, with this individual uncertain as to whether this should be categorised under Watching TV or Social Media. In terms of how activities were grouped together, one tester felt that it was not appropriate to put drinking coffee and alcohol in the same category. Finally, testers expressed that determining the location of their activities was sometimes challenging, particularly for activities which occurred across both inside and outside locations.

ELiDDI

Testers found the layout and visual presentation of the ELiDDI tool to be appealing, with respondents liking that they could see all the information they had entered into the diary on the one screen. One tester expressed that they were more inclined to enter more activities into ELiDDI diary because they could see how the diary was coming together with every activity they entered.

Across testers, most experienced problems with the drag and drop tool, with testers expressing that using the drag and drop was challenging in adding activities at the right time into the diary. Due to the issues with using the drag and drop, when selecting activities testers often had to submit the wrong time (i.e. a slot longer than 10-minutes) and then adjust the bar accordingly, otherwise data entry wouldn't work. When asking about their experiences of using the ELiDDI tool, testers were positive about the visual aspects of the tool, and felt that if

the drag and drop features of the tool could be optimised, this would greatly benefit the tools usability.

When asked about the understanding of the terms main and background activities, all testers felt that they understood what these terms meant and understood they should have both been recorded in period of 10 minutes. Across testers, some expressed that it was difficult to know which secondary activities were worth including in the diary and which were not, for example should drinking water be included or not. In addition, some testers felt that activity categories were missing. An example given by testers was walking for recreational purposes, with testers feeling that there was not a response category they could select which would reflect this activity. Testers instead reported having to select “*walking the dog*”, which they felt was not reflective of their activity.

2.5.6. Considerations and recommendations

1. Time use diaries should consider the respondent burden and cognitive processes that respondents go through when thinking about their own time:

- Time use research tools should be designed with respondents in mind, and therefore the way data is collected from respondents should correspond with how they think about their time.
- Researchers should consider whether respondents think about their time. Further research should be undertaken to explore whether respondents think of their time as separate activities (e.g. main activities and background activities) or as part of distinct occasions (e.g. going to work).
- Future time use diaries should also consider how to collect information on the timing of activities, by considering how respondents think about the time structure of their activities, for example do respondents think of their activity as a duration or as a start and finish time.
- To gain further insight on this, we would recommend key questions about time use undergo cognitive testing to explore how respondents understand and answer questions.

2. If paper support materials are used, they should align with the online time use tool and should not increase respondent burden:

- Paper support materials should be embedded more explicitly within the research process. For example in the respondent communication letters, respondents could be introduced to the paper support materials as a method of taking notes and as a way for respondents to see all activity codes available to them when using the online diary.
- Respondents should be clearly informed across multiple documents that the paper diary is used only as a memory aid and that it is only information entered within the online tool which will count towards eligibility for incentives.
- Language and terminology of the paper materials needs to be consistent with that used in the online tool.

3. Activities within the activity list should be reviewed to ensure they are distinctly different, overlapping response categories should be addressed and guidance provided:

- Guidance should be provided to respondents on whether activity categories should be entered twice to capture both potential descriptions for an activity (i.e. once as main, and then as secondary), or just the once – e.g. ‘socialising’ and ‘having a conversation’.
- To avoid activities being over or underrepresented, it should be clearly communicated to respondents what types of activities should be included and not included in the diaries. This information could be communicated to respondents in online instructions immediately prior to entering the diary day. If this is not clearly communicated there is a risk that respondents may think habitual activities, such as drinking water should not be recorded.

-
4. When designing the online diary tool, researchers should consider taking a respondent centered design approach:
 - Mobile first design to optimise use on smaller screens.
 - Navigation buttons on how to proceed to the diary and how to return to the homepage should be clearly visible.
 - Drag and drop appears to be optimised for mobile but not for larger screens. As such, future time use tools should consider optimising on both screen types to make it easier for respondents to add activities with smaller time durations to the time use tool.
 - Error messages should be visible and appear next to the issue, with clear instruction on how to resolve them.
 - Respondents should be able to save data across devices to facilitate completion over multiple sessions.
 5. To ensure a range of respondents can complete the time use tool, accessibility requirements should be considered in the design of the tools:
 - Designers should be aware that some features such as drag and drop are less accessible for respondents with dexterity considerations.
 - Future design should consider, if drag and drop is used at all, whether it can be supplemented with another mechanism of data entry to make the tool accessible for respondents with dexterity limitations
 - Where text is used in diaries, it should be tested to ensure it is compatible with screen readers.

2.6 Submission process

2.6.1. Overview of key elements

On both studies, once they've finished entering details about their activities, participants are able to submit their diary days.

In the ELiDDI survey, after a respondent has finished entering their activities and other relevant information, they will then get asked a set of final questions relating to their diary day. Once the last of these questions is answered, the diary day is complete and will automatically get submitted – respondents will see a message stating 'You have now completed your diary day. Thank you!'. In addition, a tick will appear on the diary day in the calendar on the participant's homepage (see **Figure 27**).

Figure 27 – ELiDDI submission page (PC)

Welcome to the UK Daily Life study!

Your diary days
Please select the day you want to complete

October						
M	T	W	T	F	S	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

☒ Completed ☐ Available ☐ Expired
☐ Not yet available

Your background survey
The survey status is **Not started**

[Go to survey](#)

In a similar fashion, in the OTUS survey, once respondents have finished entering their primary and secondary activities, they will get asked some final questions, for example about whether they had cared for any children during their diary day. Upon answering the last of these questions, participants will be shown a submit button which they can click to submit their diary day. Alternatively, they can proceed onto a page where they can review their day's activities and make edits as necessary (see **Figure 28**). On the top and bottom of this page are further submit buttons, either of which need clicking in order to submit. Once clicked, respondents are shown the message 'Thank you for completing your day!' In addition, the diary day will show a green status of 'Completed' along with a 'Review and edit' button on the respondent's homepage. Participants can click this button to re-enter their submitted diary to make amendments if needed.

Figure 28 – OTUS submission page (PC)

Review and Submit

Your Review (Sat 20 January 2024)



- Review all the activities you have entered. Your secondary activities are highlighted in grey.
- Make sure you have entered **main activities** across the full 24 hour day.
- Once your review is complete submit your entry.

Morning Activities



Activity type:	Activity detail:	04	.30	05	.30	06	.30	07	.30	08	.30	09	.30	10
Sleeping, personal care and medication	Sleeping 4:00- 6:00													Edit » Delete »
Sleeping,	Washing, dressing, using the													Edit »

2.6.2.Results from desk review of OTUS

Holistic (Respondent journey)

In the last 12 hours of a diary day being open, respondents are presented with a countdown clock which updates every time the page is refreshed. Reviewers felt the countdown clock was a good cue to action and communicated the urgency to complete an open diary day.

Once respondents have submitted their diary day, the status on the OTUS homepage changes to complete, which is displayed in green text (see **Figure 29**). Respondents are able to edit their diary day by pressing the Review and edit button. During the desk review, reviewers found that they could edit the diary day up until 72 hours after the diary day had opened. After this time, the diary was closed and no further changes could be made. Whilst the option to make changes to the diary day was appreciated by reviewers, the process of making the changes could be further streamlined. When making changes to the diary day, reviewers found this time consuming, as it required them to go back through the entire day and then re-submit.

Figure 29 – OTUS confirmation of submission (PC)

Home About this study Your Notepad Activities Guidelines

✓ Thank you for completing your day!

Welcome to the Online Time Diary Tool

Thank you for taking part in the Online Time Use Study.

All the information you provide will be used for statistical purposes only. These questions are being asked on behalf of the Office for National Statistics and approved (government) organisations.

Here you can see the days you have been allocated to complete. You can also view and edit past entries.

Your responses will be saved each time you move to the next page. You can return to finish any time up to the deadline. If you are not able to return to complete the survey, the information you have taken the time to share with us is still useful. Saved data will be submitted and where possible will be used for analysis.

Your Questionnaires

Name	Status
Initial questionnaire	Not started yet Start

Your diary entries

Date	Status
Thu 18 January 2024	Completed Review and edit
Sat 20 January 2024	Completed Review and edit

Language

Reviewers identified no issues with the language used within the submission process.

Usability

After entering activities into an OTUS diary day, reviewers were presented with a review page prior to submission. The review page consisted of two interactive grids with one for morning activities and one for afternoon and evening activities. Within the grid, the timing of activities was presented horizontally, and the descriptions of activities presented vertically. This meant that to see all activities, reviewers had to scroll up and down the page. During this review process, reviewers could not identify a way to see all activities entered for a day on the one screen, which made checking entries challenging, particularly for those completing on mobile.

Accessibility

The green submit button is quite small, and as such respondents with visual accessibility needs may not be able to clearly see this button, especially given that it is placed at the top of the page.

2.6.3. Results from desk review of ELiDDI

Holistic (Respondent journey)

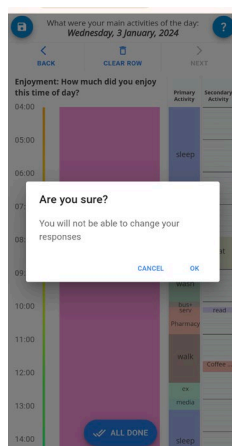
When completing the diary day, reviewers were able to close and re-access the day with no issues. When reviewers re-opened the diary day any previously information prior to closing the page had been saved.

After submitting the diary day, reviewers were not able to amend any of their responses, even if they were still within the available time window for completion. Reviewers noted that prior to submission, respondents were informed via a pop-up that once they had submitted their responses they would not be able to change. Reviewers noted that once respondents had submitted, they were directed to the ELiDDI homepage where they would be presented with visual confirmation of submission by a green diary day with a tick.

Language

Reviewers found the pop-up to confirm submission quite brief (See **Figure 30**). To reinforce to respondents that once 'OK' is selected there can be no changes, reviewers felt the pop-up could be expanded to make this message more explicit. An example of how this could be done in practice is: "Once you select 'OK' your diary day will be submitted. You will not be able to make any changes to this day".

Figure 30 – ELiDDI submission confirmation (Mobile)



Usability

When reviewing the submission process, reviewers felt that screen size impacted this process. Reviewers found it more challenging to review the full diary day on a smaller screen such as a mobile as it was harder to see the six different sections of the diary (e.g. location, activities) at once. Reviewers found it easier to review all this information on a larger screen, as they were able to view the one diary day on a single screen.

Accessibility

To submit the diary involves clicking on an 'OK' entry button. For respondents with dexterity considerations, submission requires the use of a mouse, with the 'OK' button not keyboard accessible.

2.6.4. Results from data analysis

Respondents feedback

During the parallel run, 13% of respondent queries for OTUS and 34% for ELiDDI referenced the submission process. More specifically, 13% of OTUS and 17% of ELiDDI queries mentioned difficulties with submitting their diary day, struggling to locate the 'submit' button or not being sure whether a day had been submitted. Meanwhile, reflecting the numerous glitches of the ELiDDI tool, 1% of queries for OTUS and 23% for ELiDDI mentioned data submission issues including red error messages appearing at the point of submission or the day status on the homepage not updating after a diary had been submitted.

Across both studies, numerous respondents struggled to submit their diary or found the process unclear – for example, not being able to locate a submit button or not realising they had to complete additional steps after they had entered their activities. Participants also often noted not seeing or receiving confirmation of their diary day being submitted, so were unsure if their data had been received and got in contact with NatCen Freephone team to check.

For ELiDDI, a significant number of participants experienced errors or glitches at the point of submitting their diary days. For some, the homepage did not update after a day had been submitted to show it had been completed. Others saw an error message stating their diary day had *already* been submitted. Many were concerned their data hadn't been received and that their efforts had gone to waste.

For OTUS, some participants who had partially completed a diary – but provided over 23 hours of main activities and therefore met the voucher eligibility criteria – were confused or annoyed by the fact it would show as 'expired' on the homepage once the day had closed. This was despite the diary day being 'complete' in their eyes and the fact they were eligible for an incentive. Some thought their efforts were in vain and they wouldn't be receiving a voucher.

Interviewers feedback

No feedback was received from interviewers that related directly to the submission process. Although some interviewers who worked on OTUS pilot waves noted that the 'review and edit' page was generally not used prior to submitting, given that probing was done during the interview and that respondents had been on the phone for a long time.

2.6.5. Results from timing exercise

OTUS

A few testers experienced issues in relation to submitting the OTUS diary because of gaps in the main activities data that they were unable to resolve. Moreover, one tester reported clicking the submit button three times before they were able to proceed to the next page.

ELiDDI

Across testers, no one reported experiencing any problems with submitting their diary days.

2.6.6. Considerations and recommendations

1. Respondents should be able to re-access, amend and edit the diary days for the full 'open' time window:

-
- Respondents should be given the opportunity to review their diary entry once they have submitted it.
 - There is the potential that after submitting their diary, but before the entry window closes, that a respondent may remember additional activities or information which they did not enter within their diary. If they cannot re-enter and edit their entry, this information will be lost and not recorded.

2. Confirmation of diary submission and respondent eligibility for an incentive should be made clearer within the online tool:

- Whilst respondents do receive a visual cue to submission, respondents' eligibility for an incentive could be re-confirmed either within the respondent's homepage, or alternative through a submission confirmation email sent to respondents.

3. If a respondent has partially completed a diary day before it expires, there should be clearer communication to the respondent on how this will affect their participation.

- If a respondent does not fully complete the first diary day, it should be communicated to them both via their homepage and through additional communications that they are still eligible for a further voucher if their second diary day is completed.

3. Relative costs of fieldwork design

RESEARCH QUESTIONS (RQ)

This chapter addresses:

- **RQ #5:** How do the two tools and fieldwork design perform in terms of representativeness and fieldwork efficiency?

In this chapter we present the relative costs of various fieldwork design options. Their potential advantages and disadvantages are discussed considering the findings of the desk review and data analysis workstream.

3.1 Cost Per Diary Day (CPDD)

To estimate the relative costs of various fieldwork design approaches, we started by defining a baseline cost for what is referred to as ‘core fieldwork design’.

The core fieldwork design assumes the following key elements:

- *Mode:* web only
- *Issued sample size:* 5,000 panel members
- *Day response rate:* 43%
- *Incentive value:* £10 incentive per diary day
- *Threshold for diary day incentive eligibility:* at least 23 hours of main activities logged
- *Background survey:* not compulsory (i.e. its completion does not affect incentive eligibility)
- *Timeline for completion:* 72 hours (for web completion)
- *Re-issue fieldwork period:* not utilised
- *Paper diary booklet:* utilised
- *Survey length:* 25 minutes per diary day, plus 10 minutes for the background survey

This is the fieldwork design adopted for OTUS from W4 to W7 following the performance and cost implications evaluation of the first three pilot waves¹¹. This design also mainly mirrors the one used for the first wave of ELiDDI during the parallel run, the only two differences are

¹¹ See paper published by the ONS titled ‘The ONS Online Time Use Survey: Creating a Feasible Platform for 21st Century Time Use Data Collection’. Available at: https://iariw.org/wp-content/uploads/2021/08/TheONSONlineTimeUseSurvey_paper.pdf

that ELiDDI included telephone fieldwork as alternative mode of completion and web participants only had 48 hours for completion rather than 72 hours.

We have estimated the costs of data collection following these assumptions based on estimates of the amount of staff time required and direct costs (e.g. the price of postage or number of incentives sent). For the purposes of this estimate we have also assumed that the study has an ongoing stable design, meaning that there are not substantial changes required between waves. This assumption primarily impacts the time needed to design the paper support materials for respondents, as well as the time needed to prepare briefing materials, homework exercises, and interview crib sheet and flow-chart materials to supplement the lack of on-screen instructions for interviewers.

Drawing on the evidence summarised in **Sections 1.1, 1.2 and 1.4**, we have then estimated the impact on costs and day response rates of implementing the alternative designs. Note that these are only estimates of the impacts – we do not have pure experimental evidence to draw on and compare like for like. For commercial reasons, all cost estimates have then been scaled such that the total ‘core’ costs equal £100,000, although this is indicative of the actual order of magnitude of these costs.

Finally, the costs are divided by the estimated number of completed diary days to produce the ‘Cost per Diary Day’ (CPDD), reflecting that the higher costs of some approaches (with a fixed issued sample size) may be off-set by a greater response rate.

The estimated scaled costs, assumed day response rates, and CPDDs for different fieldwork approaches are presented in **Table 6**. We have not tried to estimate how the different options might interact, as we do not believe we can do this accurately with the information available.

Table 6 – Relative costs of various fieldwork design options

Element	Estimated cost	Predicted day response-rate	Estimated CPDD
Core fieldwork design (<i>reference approach</i>)	£100,000	43%	£22.99
Drop paper diary booklet	£97,828	43%	£22.49
Add telephone fieldwork (assuming 10% of the total sample issued to telephone)	£134,604	45%	£30.17
Increase incentive to £15 per day	£130,061	50%	£25.76
Include re-issue fieldwork period	££132,335	49%	£26.74

3.1.1. Considerations and recommendations

1. The small savings from not providing participants with a diary booklet are probably not worth the (possible) loss on data quality.

2. If the analysis of data quality shows a positive impact reflecting higher levels of reported note taking discussed in **Section 2.1.4 (Experiment data: paper diary booklet)**, then we highly recommend retaining the diary booklet.

2. The use of telephone fieldwork, a higher incentive, and a re-issue period all add roughly the same cost, and none off-set this increase entirely through an increased response rates. However, gains in sample representativeness should also be considered.

- The use of telephone fieldwork resulted in the lowest increase in response rate, and therefore has the highest CPDD. However, the analysis in **Section 1.1.2** indicated that CATI fieldwork also resulted in the greatest gains in sample representativeness. Moreover, the evaluation of this option speaks to an 'accessibility'. Issuing a lower, more targeted, percentage of the sample to telephone mode would bring the price down, but may also reduce the impact on the sample profile.
- Analysis in **Section 1.2.2** indicates that the use of re-issue fieldwork did not improve sample representativeness. Given the additional impact of a slower delivery and the increased complexity for the analysis of having different participants participating in different weeks, this option is probably the one that offers the lowest value-for-money. Targeting a re-issue fieldwork period at those under-represented after the first-issue period could make it more effective in terms of sample quality, but would also make it more expensive in terms of CPDD.

Conclusion

The ELiDDI and OTUS time use surveys, developed respectively by CTUR and ONS in collaboration with two different diary providers, have been designed in response to decades of research and high-profile international reviews assessing the limitations of economic statistics in measuring a country's economic growth. Time use surveys (TUS) that reframe productivity away from traditional economic production values like the Gross Domestic Product (GDP), have the potential to measure a range of unpaid work and can capture how individuals split their time between leisure and non-leisure activities.

The review conducted by NatCen between November 2023 and February 2024 aimed to provide practical considerations and recommendations for the future design of a TUS survey, ensuring it meets the diverse needs of a nationally representative survey across various disciplines. This was done by drawing on the eight waves of time use studies conducted in the UK from 2020 to 2023 using sample from the NatCen probability based-panel. The approach taken for this review provides insight on how current approaches to time use research could be further optimised. As such, the review aimed to identify areas for future best practice using the OTUS and ELiDDI tools as case studies for analysis. The review did not attempt to compare the two time use surveys against each other.

By synthesising these findings with the results of other streams of work promoted by the ESCoE program such as time use data quality analysis and stakeholder panels, researchers can make informed decisions about potential enhancements or modifications to the survey fieldwork design and tool interface. As we move forward, it is imperative to remain agile in adopting innovative approaches that align with the changing landscape of technology, user preferences and unexpected societal changes such as the COVID-19 pandemic and the cost of living crisis. Ultimately, the goal is to optimise the survey design to meet the evolving demands, as well as enhance the quality, efficiency, and relevance of the collected data for economic measurement purposes.

Whilst this research has identified several practical considerations and recommendations in the development of a future time use study tool, there are some limitations to the review which should be considered.

Firstly, this report analyses data from previous TUS survey waves run using the probability-based NatCen Opinion Panel. As a result, the considerations and recommendations derived from this review may be influenced by the characteristics and behaviors of NatCen Opinion Panel members, which could differ from those of individuals in other types of panels or sample approaches such as quota samples or fresh cross-sectional samples. Therefore, when applying the findings and recommendations from this review to the development of future time use study tools, it's essential to consider the specific characteristics and dynamics

of the target population and sampling approach. This may involve conducting additional analyses or research to assess the relevance and applicability of the identified practical considerations within different sample contexts.

Secondly, the data used are mainly nonexperimental, and when experimental they are from some years ago. This limitation underscores the need for new experiments to be conducted, particularly to test various fieldwork design approaches.

Additionally, experimental approaches can be used to test the language of instructions, layout approaches and presentation of activities on participants' heuristic processes and cognitive fatigue. Such investigations can provide valuable insights into optimising the user experience and minimising respondent burden, ultimately enhancing data quality and survey outcomes.

Finally, the desk review of the time use diaries was conducted by NatCen researchers who were experienced in survey and diary methodologies. Whilst a timing exercise was conducted with other members of NatCen staff who were less familiar with surveys, the review process did not allow for the time use surveys to be tested with members of the general population. As such, there are still outstanding questions about how target respondents would understand, engage with and complete time use surveys. To better understand how individuals find completing a future time use study, we would recommend that the tool undergoes cogability testing. Cogability testing is a combination of cognitive and usability testing which would give researchers an insight into how the content of the TUS is understood and used prior to quantitative data collection. Cogability testing would allow researchers to explore assumptions about time use, including for example what individuals perceive as childcare, and how accurately the activity codes selected reflect individuals' activities.

Appendix A. Desk review framework matrix

Approach to using the review framework

To assess both the OTUS and ELiDDI online diary tools and paper supporting materials, this document outlines a review framework.

The review framework begins by outlining assessment criteria related to a respondent's journey in using the tools. Within this section of the framework, the process of logging into the online tool, progressing through, and submitting information within the online tool interface is explored.

In addition to exploring the respondent's journey in using both the OTUS and ELiDDI tools, the framework considers three elements on which to assess each individual tool component on:

- i. the **language** used in the online diary tools and paper supporting materials;
- ii. the **usability** of the online diary tools and paper supporting materials;
- iii. the **accessibility** of the online diary tools and paper supporting material.

Using the review framework outlined below, reviewers will consider how the **language, usability and accessibility** of the tool may influence methodological considerations such as the accessing and engaging with the tool.

Respondent Journey Framework

In taking a holistic approach to the respondent's journey through the tool, this part of the framework will consider the following components of the tools and assess how they may influence respondent's when accessing and engaging with the tools.

Criteria	Reviewer guidance – Please note if...	Issue description
1. Communication package		
Is there alignment between the communication package and the online tool?	- Does the online tool match/correspond with how it is described in written communications? - Does the communication package help respondents in accessing the online tool?	
Does the communication package clearly explain the study to respondents and outline expectations?	- If it is clearly explained to participants what the study involves (i.e. diary days) - If it is clearly explained to participants what they need to do next. - Is the incentive procedure clearly explained/ outlined?	
Reviewer comments on letters	- Is the language used accessible? - Using Flesh Kincaid is the language used appropriate for a 9 year old?	
2. Accessing the online tool (Login page)		
Is the login page clear to use?	Are participants able to easily login to the tool?	
Is help adequately signposted?	If respondents encounter any issues, is there help clearly signposted at this point in the tool?	
3. Accessing the online tool (Home page)		
When arriving on the home page, is it clear how respondents should proceed with the tool?	Is any information given to respondents on what they should complete? Is it clear what has been completed?	

Criteria	Reviewer guidance – Please note if...	Issue description
	Is it clear what has not been completed?	
Can respondents easily access the background survey?	Is it clear that respondents need to complete the background survey? Is it clear how respondents would access the background survey?	
Can respondents easily access the diary page/s?	Is it clear which diary days respondents need to complete? Is it clear how respondents would access the diary days?	
Is help adequately signposted?	If respondents encounter any issues, is there help clearly signposted at this point in the tool?	
4. Other pages within the online tool		
OTUS ONLY: Are the instruction pages informative and clear to understand?	Is the information provided clear and easy to understand? Does the information provided help respondents in completing the online tool?	
ELiDDI ONLY: Are the instructional video/s clear and easy to understand?	Is the information provided clear and easy to understand? Does the information provided help respondents in completing the online tool?	
Is help adequately signposted?	If respondents encounter any issues, is there help clearly signposted at this point in the tool?	

Criteria	Reviewer guidance – Please note if...	Issue description
5. Submission page		
Is it clear what is required from respondents to submit the diary?	Is it clear to respondents what they need to do to submit their entry? Is it clear how they should submit their entry?	
Is there communication or confirmation that the diary has been submitted?	Is it clear that participants have submitted their diary entry? Is it clear whether this entry has been submitted correctly or not? (e.g. valid) Is it clear whether the entry has been securely submitted? Is it clear whether that entry is eligible for an incentive?	
Is help adequately signposted?	If respondents encounter any issues, is there help clearly signposted at this point in the tool?	

Language Framework

To assess the language used in these components, six criteria are listed within the review framework. The criteria were adapted from the Questionnaire Appraisal System-99 (QAS-99; a desk review tool to assist in evaluating questionnaires) and expanded for use in assessing and evaluating diaries.

Criteria	Reviewer guidance – Please note...	Issue description
Instructions Are the introductions, instructions or explanations clear from the respondent's point of view?	If the instructions/ introductions/ explanations are not clear.	

Criteria	Reviewer guidance – Please note...	Issue description
Clarity Are there problems related to communicating intent or meaning to the respondent.	• If there are any technical terms which are undefined, unclear or complex. • Are primary and secondary/background activities clearly defined? • If there is any wording which could be interpreted in multiple ways which may affect what should be included or excluded in the diary.	
Assumptions Are there problems with any assumptions made about the respondent?	• If there are any inappropriate assumptions made about a respondent, such as their personal circumstances.	
Sensitivity/ Bias Are sensitive questions or topics asked about? (e.g. illegal behaviour)	• What types of sensitive topics are asked about and in what ways? • Is there any potential for bias in the way activities are listed? (i.e. are more sensitive items later on?).	
Recall Does the diary tool aid recall?	• Are there features built into the online tool which would prompt/ aid with recall? <i>If so, what are they?</i> • If there are features which prompt/ aid recall, where are these positioned within the diary?	
Response categories (where applicable) Are there an adequate range of response options to aid completion?	• If there are vague response categories/ activities which are subject to multiple interpretation. • If there are overlapping response categories – i.e. activities could be classified in two different ways.	
Other language issues	• If there are other issues with the wording which may impact engagement with and understanding of the task.	

Usability Framework

To assess usability, a total of 10 criteria are listed: 8 for the online diary pages and 2 for the paper supporting materials. The criteria were adapted from the Nielsen's 10 usability heuristics for User Interface Design (a set of general principles for interaction design) and were expanded for use in this review.

Online tools:

Criteria	Reviewer guidance – Please note...	Issue description
Visual feedback: Do users get enough visual feedback on their actions when completing the diary?	• Clarity on which tasks completed and which are still to be completed. • Boxes marked as checked when selected, visual cues when buttons pressed/ data entered etc • Is it clear what information should be entered and where (e.g. primary vs secondary activities). • Is it clearly communicated to respondents about the level of detail required when entering their diary days (e.g. to nearest 5-10 minutes, exact details on who they are with at each activity).	
Navigation: Are users able to easily go back and forward?	• Is it easy to move between pages? • Is it easy to enter information?	
General data entry: Can information be entered easily?	• Can a primary activity be easily entered? • Can a secondary activity be easily entered? • If a mistake is made, can this be easily rectified? • Can pop-ups or error messages be easily dismissed?	
Error prevention: Are formatting errors accommodated or prevented?	• Is respondents try to enter numbers as letters will the system let them, or will it flag as an error?	
Error correction: If errors are made, are the users identified of these?	• If an error is identified, is the necessary information provided to the respondent to fix problem? • How easy or difficult are error messages to interpret?	

Criteria	Reviewer guidance – Please note...	Issue description
Recall of information from earlier sections: Are respondents expected to remember key information from an earlier pages or supplementary documents?	- Are reminders given to help remember information? If yes, how are reminders given? - Are reminders easy to identify and dismiss (particularly if pop-up).	
Flexibility of use: Will the tool still work IF respondents don't use it in the optimal way?	- Are they able to pause and resume? - Are non-optimal behaviours accommodated by the system or blocked (e.g. if people try and enter all information retrospectively rather than fill in on the day specified)?	
Efficiency of use: How long does it take to input a standard set of tasks?	- How many clicks are required to complete set tasks? - Is it clear how granular the information needs to be? (e.g. to the nearest X minutes)? - Is inputting secondary tasks easy or difficult? - Is it possible to Autofill repeated information rather than provide it twice?	
Aesthetic and minimalist design: Is the design clean and uncluttered	- Can the tool be seen on and used on mobiles as well as larger screens? - Do error messages and inputting of information still work on both screen types and in different operating systems/ browsers? Does this hold for all pages/ question types?	
Is help available for people who want more assistance?	- What formats are the help available in? - Is there any training or demonstration available? If yes, can these be easily identified and accessed?	

Paper support materials:

Criteria	Reviewer guidance – Please note...	Issue description
Consistency: Is terminology and formatting consistently used?	• This could be internal consistency (e.g. within the diary software) or externally (between the software and the hard copy materials). • If there inconsistency between the supporting materials and the online tool? • Does the formatting break any familiar web conventions?	
Role of the paper diary: Is it clear that the paper diary is a support to the online tool?	• Is it clear how respondents should use the paper diary? • Is it clear that it is only the information on the online diary which is submitted?	

Accessibility Framework

To assess accessibility the review will take two approaches

Approach 1:

The first approach will use the seven the Personas Profiles created by the Accessibility Team at the Government Digital Service (GDS) to assess the following components of the tool:

- Online components:
 - ELiDDI diary page(s)
 - OTUS W7 diary page(s)
 - ELiDDI background survey
 - OTUS background survey

Within this approach, reviewers will enable the settings to replicate each persona on their chrome web browser and would complete sections of each time use survey using a pre-defined user protocol. When completing this exercise, reviewers will note the key difficulties they faced under each persona.

Approach 2:

The second approach will assess the following components of the tool for general accessibility:

- Communication package for both ELiDDI and OTUS W7
- Online components:
 - ELiDDI online tool (all components)
 - OTUS W7 online tool (all components)
- Paper supporting materials:
 - ELiDDI paper booklet
 - ELiDDI activity list
 - OTUS W7 paper booklet
 - OTUS W7 activity list

Within this approach, reviewers will assess the tool using general accessibility criteria developed based on the Web Content Accessibility Guidelines (known as WCAG-2).

Criteria	Reviewer guidance – Please note...	Issue description
Personas		
Findings from Persona 1: Claudia - Sight impaired	• After reading the respondent comms as [Persona] can you access the diary login page? • As [Persona] can you easily login to the diary tool? • As [Persona] is it clear where you would need to select to continue with the survey/ diary? • Can you easily access the background survey? • Can you easily access the diary day/s? • Other notes	
Findings from Persona 2: Ashleigh - Blind	• After reading the respondent comms as [Persona] can you access the diary login page? • As [Persona] can you easily login to the diary tool? • As [Persona] is it clear where you would need to select to continue with the survey/ diary? • Can you easily access the background survey? • Can you easily access the diary day/s? • Other notes	

Criteria	Reviewer guidance – Please note...	Issue description
Findings from Persona 3: Ron – Multiple Conditions	• After reading the respondent comms as [Persona] can you access the diary login page? • As [Persona] can you easily login to the diary tool? • As [Persona] is it clear where you would need to select to continue with the survey/ diary? • Can you easily access the background survey? • Can you easily access the diary day/s? • Other notes	
Findings from Persona 4: Chris - Arthritis	• After reading the respondent comms as [Persona] can you access the diary login page? • As [Persona] can you easily login to the diary tool? • As [Persona] is it clear where you would need to select to continue with the survey/ diary? • Can you easily access the background survey? • Can you easily access the diary day/s? • Other notes	
Findings from Persona 5: Pawel – Asperger's	• After reading the respondent comms as [Persona] can you access the diary login page? • As [Persona] can you easily login to the diary tool? • As [Persona] is it clear where you would need to select to continue with the survey/ diary? • Can you easily access the background survey? • Can you easily access the diary day/s? • Other notes	
Findings from Persona 6: Simone – Dyslexic	• After reading the respondent comms as [Persona] can you access the diary login page? • As [Persona] can you easily login to the diary tool? • As [Persona] is it clear where you would need to select to continue with the survey/ diary? • Can you easily access the background survey? • Can you easily access the diary day/s? • Other notes	
Findings from Persona 7: Saleem - Deaf	• After reading the respondent comms as [Persona] can you access the diary login page?	

Criteria	Reviewer guidance – Please note...	Issue description
	• As [Persona] can you easily login to the diary tool? • As [Persona] is it clear where you would need to select to continue with the survey/ diary? • Can you easily access the background survey? • Can you easily access the diary day/s? • Other notes	
General accessibility		
General visual accessibility considerations	• Can the text be seen on mobile screens? (i.e., Pinch to Zoom) • Do you need to change any visual aspect of the screen to read the information? • Is there sufficient contrast between background and text (including on paper and on screen)? • Is the text printed in size 12 minimum? • Can the respondent comms be printed or provided in different formats?	
General dexterity accessibility considerations	• If at any point something is selected or entered incorrectly can it be easily changed? • Are the clickable entry fields on a touch screen version large enough to enter information? • Do any fields rely on drag and drop in addition to touch screen? • Is it possible to complete the online tool using a keyboard only? • Can repeat information be auto filled or does it have to be provided more than once?	
Other accessibility issues noted	• Any other notes?	

Appendix B. Desk review scenarios

Scenario 1 – Respondent journey

Reviewer instructions:

- Imagine you have received a letter in the post/ an email inviting you to take part in the time use study.
- You should review the communication package (Pre-notification letter/email and advance letter and reminder emails/texts) and follow the instructions on how to access the online diary tool. You should also review the process of accessing the online tool including the login and home pages.
- When arriving at the home page, you should firstly complete the background survey.
- Once you have completed the background survey you should try and access the open diary day.
- When you are on the open diary day, you should try and access the instructional video (ELiDDI) or instructional pages (OTUS).
- Once you have looked at the instructional videos you should then leave the diary.

Scenario 2 – Naturalistic run through

Reviewer instructions:

- Using the access code provided, you should access the online diary tool and complete the background survey and 1 day of the online diary as if you were the participant.
- E.g. if the diary day is Friday 8th December, you should complete the diary based on what you did on the 8th December. Save it.

Framework used:

- 1.1 Respondent journey
- 1.2 Language of the background survey and online diary days
- 1.3 Usability
- 1.4 Accessibility – approach 2

Scenario 3a – Complete full diary day in one go (Large screen) NOT USING PAPER SUPPORT

Description of scenario (this is what should be entered in diary day 1):

- Imagine you slept until 7:17am in the morning, when you awoke you got straight up. From 7:17am – 7:45am you had a shower and got yourself and your child ready to leave the house whilst listening to the radio. From 7:45am – 7:50am you played with your child, and then spoke to your partner for 10 minutes about household bills (while your child was upstairs doing some homework).
- From 8am you left the house and got the train into work. You spoke to a friend over the phone from 8:15am – 8:30am. You arrived at work at 8:57am. When arriving at work you made yourself a coffee and spoke to some colleagues.
- You worked from 9:15 – 1pm and took a lunch break from 1pm-2pm where you went on a walk (not for exercise) and ate some lunch.
- At 2pm you started working again and listened to some music on your headphones (laptop). At 2:25pm you received a call on your laptop from your colleague about a project mistake. After the 20 minute call you scrolled on social media until 3pm whilst listening to music to relax.
- At 5pm left the office to go home while listening to a podcast on mobile, quickly stopped for grocery shopping (continuing to listen to podcast on mobile), arriving back home at 5:45pm (still listening to podcast, but as soon as entered home you switched to 'smart speaker' → see next bullet point).

Location:

- o Street/commuting back from work (10 min)
- o Supermarket (15 min)
- o Street/commuting back from work (20 min) – at 5.45pm you arrive home

Device used to listen to podcast:

- o Mobile phone (45 min)

Enjoyment: 5 for the entire time

- Between 5.45 and 6.00pm sorts out shopping while listening to the same podcast as before but now the device used is the smart speaker of the flat (no mobile anymore).

Location: home

Device used to listen to podcast: smart speaker

Enjoyment: 7

- From 6-7pm you went on a run whilst listening to music (phone).
- Between 8-9pm you cooked and ate dinner. Then you had a shower. Before going to bed at 10pm you watched TV whilst scrolling on your mobile phone.
- Leave 11pm-midnight blank on the diary.

Reviewer instructions:

- You should review the process of accessing, completing and submitting a diary day.
- You should review the language of the online diary tool.
- You should complete an 'open' diary day using the above description as your guide.
- You should attempt to enter an overlapping activity: overlap the time making coffee and speaking to colleagues.
- IF REVIEWER 1 (OTUS ONLY): Activities should be entered using the keyboard function only.
- IF REVIEWER 2: Activities should be entered using a mouse only.
- IF COMPLETING OTUS: Try to search for the activities using the drop down function.
- Ensure main activities have been added for entire diary day apart from between 11pm-midnight.
- IF COMPLETING ELIDDI: Enter additional activities/information as necessary to proceed through diary day sections.

At the point of submitting:

- You remember that you arrived home from work at 6pm, so your commute was longer than you originally entered. You should try and edit your entry.
- When reviewing your diary day, you realise that you entered cooking/eating dinner between 8-9pm when you actually did this between 7-8pm. You should delete the 8-9pm entry and enter a new activity between 7-8pm.
- IF COMPLETING OTUS: once you have entered one day of activities, you should use the review page and try and make changes to a completed diary day.
- Once you have made these changes/ saved and completed your diary day you should try to submit the diary day.
- You will be trying to submit the diary using 23 hours of main activities.
- Once you have submitted your diary day, you will try to re-enter the submitted diary and try to make a change.

Scenario 3b – Complete full diary day in one go (Small screen) – NOT USING PAPER MATERIALS

Description of scenario:

- Imagine you slept until 7am in the morning, when you awoke you watched television in bed whilst you drink a coffee you had made and ate some leftovers for breakfast. At 9am you got out of bed, had a shower and got ready to leave the house.
- From 10am you left the house and took a bus to your doctor's appointment. You waited in the waiting room from 10:07 – 10:21 and read a magazine before being seen by the doctor. At 10:30am you went to the pharmacist to pick up your medication.
- From 11-12:30pm you went on a walk round the park, stopping midway to get a coffee from a local café. You jogged back (exercise) from the park arriving home at 1pm. Whilst listening to the radio you fell asleep between 1:15pm and woke up at 3:20pm. From 3:30pm – 6pm you played games on your computer with friends online. At 5:45pm your partner arrived home from work.
- At 6:15pm you ordered a takeaway online and it arrived at 7pm. You ate food whilst watching television and scrolling on your phone. At 8pm you did the washing up and put some laundry on before returning back to watch the TV with your partner from 9-10:30pm – your partner left to go to sleep at 10pm. At 10:30pm you went to bed to read.
- Leave 11pm-midnight blank on the diary.

Reviewer instructions:

- You should review the process of accessing, completing and submitting a diary day.
- You should review the language of the online diary tool.
- You should complete an 'open' diary day using the above description as your guide.
- Ensure main activities have been added for entire diary day apart from between 11pm-midnight.
- IF COMPLETING ELIDDI: Enter additional activities/information as necessary to proceed through diary day sections.

At the point of submitting:

- You remember that you started playing on your computer at 3:45pm and that your friends did not join you online until 4pm. You should try and edit your entry.
- When reviewing your diary day, you realise that you entered ordering a takeaway at 6:15pm when you had actually ordered it at 6:30pm.
- IF COMPLETING OTUS: once you have entered one day of activities, you should use the review page and try and make changes to a completed diary day.
- Once you have made these changes/ saved and completed your diary day you should try to submit the updated diary day.
- You will be trying to submit the diary using 23 hours of main activities.
- Once you have submitted your diary day, you will try to re-enter the submitted diary and try to make a change/

Scenario 4 – Usability of paper supporting materials in completing the online diary day/s

Description of scenario:

- You slept until 6:30 in the morning. When you got up you got ready, had breakfast and went out on a walk from 7-7:30am.
- When you came back you got your children out of bed and got them changed and ready for school between 7:30-8am.
- At 8am you left the house and drove to drop your children off at school for 8:15am. Once you dropped your children at school you headed to the gym arriving at 8:27am.
- You did an exercise class from 8:35 – 9:30, before going for a coffee with friends at 9:45. You caught up with your friends over coffee until 11am before walking back to your car and driving home listening to the radio.
- You got back home at 12 noon and read a book until 12:30pm.
- From 12.30 to 1.30 (1hr) you played videogames with different people. Specifically:
 - o Alone for first 10 mins → enjoyment 5
 - o With nephew (a child) for 20 mins → enjoyment 7
 - o Alone again for 10 mins → enjoyment 4
 - o Partner for 20 mins → enjoyment 6
- At 1.30pm you had lunch with your partner for until 2pm.
- At 2:15 you hoovered your house before leaving to drive to school at 2:45. You parked your car and walked to pick your children up at school for 3:15pm. After this you went to the supermarket before returning home at 4pm.
- You watched TV from 4-5pm, with your partner joining at 4:30pm, before cooking dinner between 5-6pm. After 6pm you played a board game with your family, before starting the bedtime routine at 7pm. Once you put your children to bed at 9pm you read a book before going to sleep at 11pm.

Reviewer instructions:

- Imagine you have been sent a package in the post which contains the paper supporting materials: paper booklet and activity list.
- Using the information in this package, you should complete a day of the paper diary using the above information.
- Once you have completed a day of the paper diary, you should access the online diary and attempt to complete an online diary day using the information you have written in the paper diary.
- IF COMPLETING ELIDDI: Enter additional activities/information as necessary to proceed through diary day sections.

Scenario 5 – Accessibility scenarios – Approach 1

Description of scenario:

- Imagine you slept until 7:30am in the morning, when you awoke you got straight up. From 7:30 – 8am you had a shower, made and had breakfast and got ready for work whilst listening to the radio.
- From 8am you left the house and got the train into work. You arrived at work at 9am. When arriving at work you made yourself a coffee and spoke to some colleagues.
- You worked from 9:15 – 1pm and took a lunch break from 1pm-2pm where you went on a walk and ate some lunch. At 1pm you started working again and listened to some music on your headphones.
- At 5pm left the office to go home, arriving back at 6pm. From 6-7pm you went on a run whilst listening to music. Between 7-8pm you cooked dinner and then had a shower. Before going to bed at 10pm you watched TV whilst scrolling on your mobile phone.
- Leave 11pm-midnight blank on the diary.

Reviewer instructions:

- On each run through, reviewers should adopt 1 of the 7 personas profiles created by the Accessibility Team at the Government Digital Service (GDS).
- As each persona the review should try to access the diary login page and complete a diary day as this persona.
- IF COMPLETING ELIDDI: Enter additional activities/information as necessary to proceed through diary day sections. As each persona, you should also complete the background survey noting any accessibility considerations.
- Background survey needs to be included here.

Instructions for how to use the accessibility personas:

Link to the personas: <https://accessibility.blog.gov.uk/2019/02/11/using-persona-profiles-to-test-accessibility/>

Two ways which you can get the add-ons to your laptop:

Way 1: Think you need a chromebook – which I don't think we have, but in theory you would use the Instructions on GitHub for each persona, which can be found here:
<https://alphagov.github.io/accessibility-personas/setup/chromebook.html>

Way 2 (this is what I've used when playing around): Use the 7 profiles in Chrome:
<https://alphagov.github.io/accessibility-personas/setup/chrome.html>

Scenario 6 – Try to access a diary day 1 which is in the past and then complete diary day 2

Reviewer instructions:

- Imagine you are trying to enter diary day 1 which is a date in the past (outside of the completion window for each respective diary).
- After logging onto the diary home page, try to access diary day 1 with the aim of completing the diary date.
- You should then try to complete diary day 2 using a naturalistic run through.

Parts of the framework you will be using on this run through

- 1.1 Respondent journey
- 1.2 Language

Scenario 7 – Try to access a diary date in the future

Reviewer instructions:

- Imagine you are trying to enter a diary day for a date which is in the future (i.e. this diary date is not open yet).
- After logging onto the diary home page, try to access the diary date in the future with the aim of completing the diary date.

Scenario 8 – Complete a partial diary day, re-enter and finish within completion window

Description of scenario;

1st login:

- Imagine you slept in until 11am. When you wake up you scroll through your phone and look at the news and social media sites.
- Log out, try to save.

2nd login:

- You get out of bed at midday and cook yourself some food. From 1-8pm you watch television in your house alone before taking a shower at 9pm and going to bed at 10pm.
 - IF ELiDDI – Fill in the other compulsory fields as needed to get to the 'submission' step.

Reviewer instructions:

- Review the language of the online diary tool.

Usability:

- To test partial completion and then re-entry, complete the activities on the first bullet point, try saving and then click exit on the browser.

-
- Try to immediately re-open the diary page using the same browser and complete the remaining activities on the second bullet point.

Scenario 9 – Complete a partial diary day, re-enter and finish outside of completion window

Description of scenario:

- Imagine you slept in until 11am. When you wake up you scroll through your phone and look at the news and social media sites.
- You get out of bed at midday and cook yourself some food. From 1-8pm you watch television in your house alone before taking a shower at 9pm and going to bed at 10pm.

Language:

- Review the language of the online diary tool.

Usability:

- To test partial completion and then re-entry, complete the activities on the first bullet point, try saving and then click exit on the browser.
- Wait a day until the diary day has expired, then try and access the diary day using the same browser with the intention to complete the remaining activities on the second bullet point.

Appendix C. Respondent feedback

Respondent queries received by our Freephone team for both the OTUS and ELiDDI studies during the parallel run were collated in order to be analysed. All queries were then reviewed with duplicate queries dropped where all covered the subject matter. In addition, queries that did not directly relate to either study were removed, for example, contact detail updates, returned letters and queries about when vouchers for taking part would arrive. The queries were then coded by theme, as per the below code frame. Each query was assigned up to four codes. Once done, a second coder then reviewed every tenth query for both study as a quality check – some minor amends to codes were made as a result. It is worth noting that only a portion of respondents that experience an issue or have a query get in contact with our Freephone team. As such, the figures in the tables below may not be an accurate reflection of the total number of participants who had a problem or query for either study during the parallel run.

Table 7 presents the queries received by broader macro-areas, taking into account queries which have multiple codes within a theme. For example, 53% of respondent queries received for OTUS mentioned at least one of the codes within the 'diary tool' macro-area. Without accounting for multiple codes, certain macro-areas will seem to have made up a larger proportion of overall queries than they actually did.

Table 7 – Parallel run fieldwork macro-area freephone queries by diary tool

	OTUS N	OTUS %	ELiDDI N	ELiDDI %
Macro-areas				
Study relevance & queries about allocated days	9	3	5	1
Diary booklet	6	2	8	2
Diary tool	187	53	344	74
Initial questionnaire	0	0	3	1
Mode preference	26	7	14	3
Comms	57	16	44	9
Refusals	118	33	80	17
Vouchers	2	1	0	0
Others	2	1	16	3

While in **Table 8**, for each survey, are the number of queries received that mentioned each particular code, as well as the percentage those queries were of the total queries received.

Table 8 – Parallel run fieldwork micro-level freephone queries by diary tool

		OTUS N	OTUS %	ELiDDI N	ELiDDI %
QUERY CODES					
STUDY RELEVANCE & QUERIES ABOUT ALLOCATED DAYS					
12	Study Relevance - general critic to ONS/CTUR/ NatCen (money invested, etc.)	0	-	0	-
13	Study Relevance - allocated days are not 'typical' ones, respondent wants to change dates, etc.	9	3%	4	1%
19	Study Relevance – other	0	-	1	0%
ALL		9		5	
DIARY BOOKLET					
21	Diary Booklet – not received	5	1%	7	2%
22	Diary Booklet - does not reflect diary tool (or the other way around: diary tool not reflecting the booklet)	0	-	0	-
23	Diary Booklet - not expected to receive but would have preferred to use one	1	0%	0	-
29	Diary Booklet – other problems	0	-	1	0%
ALL		6		8	
DIARY TOOL					
31	Diary Tool – too complicated/ given up/ navigation problems	38	11%	88	19%
32	Diary Tool – login issues: link not working, login codes missed/not working	23	6%	30	6%
33	Diary Tool – login issues: cookies	4	1%	0	-
34.1	Diary Tool – browser issues in general (at login or during data entry, e.g. poor visualisation or unexpected error)	3	1%	6	1%
34.2	Diary Tool – browser issues: tool not optimised for Internet Explorer (respondent only has IE, can't/doesn't want to download other browsers)	1	0%	0	-
35.1	Diary Tool - data entry issues (gaps, not appropriate code or unsure of best code, illegal choice etc.)	55	15%	86	19%
35.2	Diary Tool – follow-on questions clarity or appropriateness: difficulty in understanding/answering them	2	1%	3	1%
35.3	Diary Tool - data entry issues: difficulty adding activities e.g. not sticking / disappearing	1	0%	44	9%
35.4	Diary Tool - data submission issue: day status not updating, red warning message	3	1%	109	23%
35.5	Diary Tool - not sure if diary progress has been saved, after breaking off part-way through	1	0%	4	1%
36	Diary Tool – difficulty submitting/locating the 'submit' button; not sure whether day was submitted	45	13%	78	17%
37	Diary Tool – diary day expiration query (incl. they 'completed' diary day but showing as expired)	53	15%	38	8%

		OTUS N	OTUS %	ELiDDI N	ELiDDI %
38	Diary Tool – took too long/longer than comms suggested	10	3%	19	4%
39	Diary Tool – other	3	1%	15	3%
ALL		242		520	
INITIAL QUESTIONNAIRE					
41	Initial Questionnaire – repetitive/ already answered such questions for Panel	0	-	0	-
42	Initial Questionnaire – not relevant questions/ impossible to skip questions	0	-	0	-
43	Initial Questionnaire – question clarity: difficulty in understanding/answering	0	-	3	1%
49	Initial Questionnaire – other	0	-	0	-
ALL		0	-	3	
MODE PREFERENCE					
51	Mode - would have preferred CATI (complete over the telephone with an interviewer)	25	7%	10	2%
52	Mode - would have preferred CAWI (complete online) [DOES NOT APPLY TO OTUS W6]	0	-	0	-
53	Mode – would have preferred PAPI (return paper booklet)	4	1%	6	1%
ALL		29		16	
61	Comms – does not want to receive SMS	0	-	1	
62	Comms – does not want to receive EMAIL	0	-	0	-
63	Comms – does not want to receive LETTERS	0	-	0	-
64	Comms – complained about frequency of messages	0	-	0	-
69	Comms – other	57	16%	43	9%
ALL		57		44	
REFUSALS					
71	Refusal – One day (e.g. participant warns us they won't be able to complete a specific diary day)	2	1%	6	1%
72	Refusal – Issue (e.g. participant warns us they won't be able to complete BOTH diary days)	79	22%	56	12%
73	Refusal – Future time use studies but happy to stay on the Panel	6	2%	3	1%
74	Withdrawn – Panel	32	9%	16	3%
ALL		119		81	
VOUCHER					
85	Voucher - complaint about value	0	-	0	-
89	Voucher – other (e.g. complaining because one day was completed)	2	1%	0	-
ALL		2		0	-
OTHER					
999	Others - not categorisable using any codes above	2	1%	16	3%
ALL		2		16	
Total queries received		355		464	
Total respondents who made a query		340		434	