

NTS digital diary

Findings and recommendations from the first round of user-testing

Authors: Ruxandra Comanaru, Katriina Lapanjuuri and Sophie Pilley

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1 Introduction

1.1 What was tested

We tested the first prototype online travel diary which had been developed to capture journey information for the National Travel Survey (NTS). Some respondents were asked to complete the diary using a desktop computer with an eye tracker attached, others were asked to complete the diary on their mobile devices whilst the process of completion was filmed. Findings on each page of the diary tested are included within this report.

1.2 How the testing was undertaken

User testing protocols were developed in consultation with the Department for Transport (DfT). These protocols incorporated think aloud, observation and probing techniques. All respondents were asked to record the travel they had undertaken the day before the testing (or alternatively the day before that in case they had not travelled anywhere). Some respondents to whom the recording turned out more challenging or time-consuming were only asked to record one journey (both the outward journey and return including all stages of their journey). The testing explored:

- Overall layout of the diary;
- Ease of registering and logging in to use the diary;
- Whether each section of the diary was understood and completed easily;
- Appropriateness of information given.

The testing managed to cover a wide range of different types of journeys using a variety of methods of transport, but not all the possible options.

NatCen researchers who have extensive experience carrying out user-testing and cognitive interviewing conducted the interviews. Respondents were interviewed at City University Interaction Lab and interviews were recorded with their consent. Half of the interviews included an eye-tracking element and the other half involved respondents being video-recorded completing the diary on their mobile devices. Respondents were given a £30 cash incentive as a thank you for their time and help.

1.3 Recruitment of test subjects

Respondents were recruited via a recruitment agency and interviews were carried out at City University Interaction Lab. Eight interviews were conducted in total.

Table 1.4 below shows the composition of the user testing sample that used the desktop with eye tracker method.

Table 1.4 Characteristics of the desktop user eye-tracking sample

Desktop with eye-tracker – Round 1 of testing		No. with characteristic
Gender	Male	2
	Female	2
Age	18-29	1
	30-49	1
	50-64	1
	65+	1
Confidence accessing the internet via a desktop	Very confident	2
	Not very confident	2

Table 1.5 below shows the composition of the user testing sample that completed the website using their mobile devices.

Table 1.5 Characteristics of the mobile device sample

Mobile device – Round 1 of testing		No. with characteristic
Gender	Male	2
	Female	2
Age	18-29	1
	30-49	1
	50-64	1
	65+	1
Confidence accessing the internet via a mobile device	Very confident	2
	Not very confident	2

As part of the recruitment screening participants were also asked whether they would use a desktop or laptop, smartphone or a tablet to keep an online diary of their travel.

1.4 Analysis

Interviews were summarised and charted by researchers who reviewed the audio and video recordings of each interview. Responses to each probe were recorded, along with observations made by interviewers and any think aloud notes. Recommendations in this report are based on the debriefing discussion which took place between the researchers, DfT representative and a web developer, as well as a full analysis of the data.

2 Findings and recommendations

2.1 Navigation

The following section explores how respondents found moving from page to page within the diary.

2.1.1 Key findings

- Most respondents found the navigation between the pages quite straightforward.
- None of the respondents used the arrow-shaped 'back' button embedded in the pages. Instead they all used the browser back tab.
- Some respondents found it difficult to know what to do once they had entered the information for a stage or journey. In one instance the interviewer had to step in and press the back button so it moved to a different page (RC13); another respondent did not know how to navigate to a place where they could edit the information they had entered and wanted to go back repeatedly to do so (RC01).
- All respondents encountered some difficulties understanding the journey and stage concepts; those who had the difference explained in more detail subsequently found it easier to navigate the website and record their journeys.
- Some respondents were unclear about how to add a stage (KL04 considered walking to the station and taking the train as one stage).

2.1.2 Recommendations and suggestions

- Respondents recommended various ways the navigation between pages could be made easier: some suggested that having a practice day page would be beneficial; others suggested adding in more instructions on the different pages.
- There are various ways the navigation could be simplified for respondents:
 - Inclusion of a practice day is highly recommended, enabling respondents to practice recording their trips in a similar way that is currently being done with the paper version of the diary.
 - Another option could be the inclusion of an example day in the diary introduction. This could consist of a short vignette detailing the journey and stages, followed by screenshots, animation or a video of showing how to enter the information.
 - Lastly, a simple graph showing the relation between the journeys and stages could be added on the page which introduces the diary. This information could be repeated in further instructions which would appear as the respondents are filling out the diary.

2.2 Overall look and feel

This section explored what participants thought of the overall look of the diary such as the layout, colour scheme and font size. They were probed to talk about the overall feel both right after completing the digital diary and at the end of the interview, after the various sections of the diary had been discussed.

2.2.1 Key findings

- Overall, the respondents found the diary simple and clean.
 - For some this was a **positive** thing: user-friendly, possibly easier to fill out than a paper diary, clear and simple, the colour scheme was appealing, good font size, was *'fine, easy to use in terms of the buttons and dropdowns'* (KL12), *'better to be easy to use, than fancy'* (RC14);
 - Others had some **negative** comments about the visual aspects of the diary. It was said to look *'very bland'* (RC03), *'work in progress'* (KL02) and reminded of an Excel sheet (KL04). It was mentioned by a couple of respondents that the colours were not striking enough, some thought that younger people would find it boring as it had no flashy colours or design (KL04), quite boring (RC03).
- Some respondents suggested adding more colour and pictures to the diary to make it more visually pleasing.
- One participant pointed out that there is no option for amending the account details.
 - Others suggested that some of the locations could be entered here, such as home, work and other frequent locations, so that they would not have to enter these details every day.
 - Another respondent said that if the diary is not easy and quick to fill out, participants will not record all the information, or would *"probably shorten their journeys and stages to avoid filling out lots of information"* (RC14).
- One respondent also said that it would be good to have some sort of instructions throughout, along the lines of 'Hello, this is your travel diary' with some instructions or examples that really catch the eye.

2.2.2 Recommendations and suggestions

- The next round of testing includes a quota for tablets in addition to smartphones.
- Quotas for confidence are slightly altered – respondents who were not very confident would be unlikely to complete the diary in a digital format in real life setting. Whilst their contributions were valuable, we feel that testing it with respondents who are more attuned to the digital world might offer more relevant feedback at this stage.
- Getting design advice from an expert, to ensure the diary is visually pleasing.

2.3 Registration screen

This section of the interview explored how respondents found registering and logging into the diary.

National Travel Survey Login Register About

Registration

Create a travel diary account by filling in the details below.

Online ID:

Name:

Email:

Postcode:

Password:

Password confirmation:

[Create my account](#)

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2.3.1 Key findings

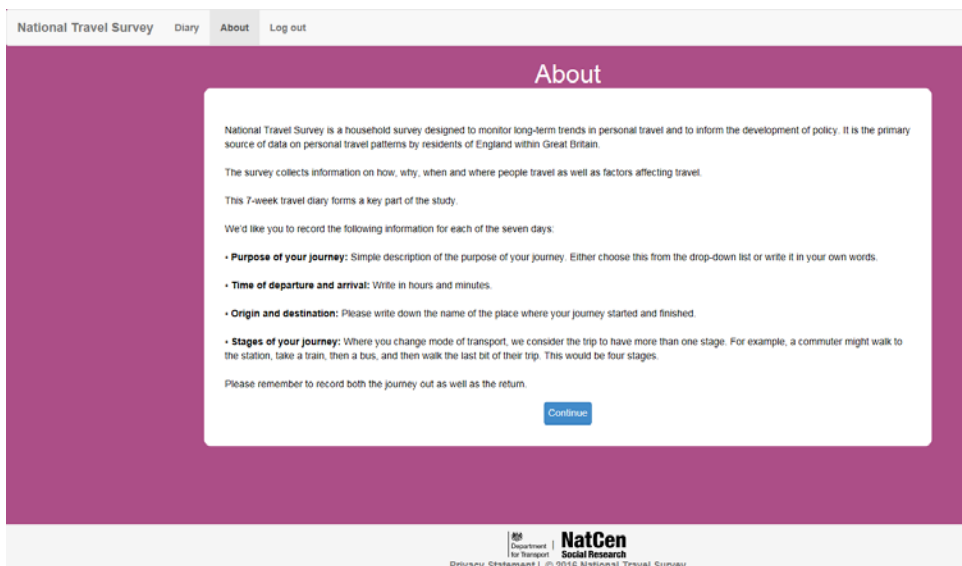
- Generally, there were no significant problems with this page, apart from slight issues with the error messages. These came about as a result of some typos entered during registration:
 - One respondent entered an incorrect email address (without @ symbol); another one entered incorrect postcode (without space between the first and latter part of the code); and one re-entered their password differently in the password confirmation field.

2.3.2 Recommendations and suggestions

- The error and warning messages on this page should be checked to ensure consistency and ease of use.

2.4 'About' page

The aim of this page is to provide some basic information about the diary. It is set to appear after the registration page, encouraging the respondent to read through it before they start recording their travel. After the registration, this page would not pop up anymore but is still available to be read in the navigation menu. The primary interest for the interviews was to explore whether the respondents read and understood the information on this page.



2.4.1 Key findings

- Two different approaches were tested with respondents in the testing situation; in some cases the interviewers did not intervene at all and allowed the respondents to read the page and proceed to filling out the diary, while with other respondents, the interviewers explained in more detail the relation between journeys and stages, and how these should be recorded at a later stage.
 - Providing more verbal information led the participants to comprehend the messages on the page better and to be more confident when filling out the following pages, however this information needed to be reiterated several times.
 - The respondents who were not given any verbal instructions other than to read the page, if that is what they would do so in real-life setting, had significantly more issues.
- Eye-tracking gaze plots show that most respondents started to read the 'About' page, but skimmed through the second part of it.
- Respondents who filled out the diary on a mobile device fed back that the page was too long, and required scrolling several times.
- Some respondents used thinking aloud techniques while reading through the 'About' page which indicated some confusion over the information on the page:
 - One respondent said that when he read about the departure and arrival times, he thought of trains departures and arrivals (RC03).

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- Another respondent said that they didn't think the information asked them to include their walk to the bus or train station, suggesting they did not fully take in the last part of the information (KL04).
 - One respondent who also skimmed through most of the page said: “*So I'm happy with this information – I'm going to click continue*” and when probed later said that the page looked like a prototype (KL12).
 - Overall, even the respondents who said that they have read the page had a hard time internalising the information and understanding how it related to further points in the survey.

2.4.2 Recommendations and suggestions

- Re-design the page so that it is more appealing for respondents to read (black text on white background was thought to look too simple and like a prototype, which led them not to read it carefully).
- Given the fact that the information appeared too long for most respondents, we suggest various options for ensuring they read and understand it:
 - The information could be condensed drastically and the bullet points removed from this page. The small information question marks and information button should be introduced to respondents at this stage to create awareness of them.
 - The information could be shown using graphics – a diagram of what information the diary will ask them to record. This should include an explanation that a journey might consist of several stages and that walking is also a stage of the journey. This diagram could provide a helpful overview of the whole diary which might be easier to take in than paragraphs of text.
 - The information could be spread out on two pages, however this might run the risk that respondents would not read both pages.
 - We could consider inclusion of a short video which would show that respondents how to fill out the diary and what information will be required of them.

2.5 Travel week navigation menu

This section asked respondents if they understood that they had to select a date to start completing their journeys.

National Travel Survey | Diary | About | Log out

Travel Diary

Please record your travel details on the seven consecutive days shown below.

Your specific dates below are predetermined and cannot be changed.

- Wed, 7 September
- Thu, 8 September
- Fri, 9 September
- Sat, 10 September
- Sun, 11 September
- Mon, 12 September
- Tue, 13 September

2.5.1 Key findings

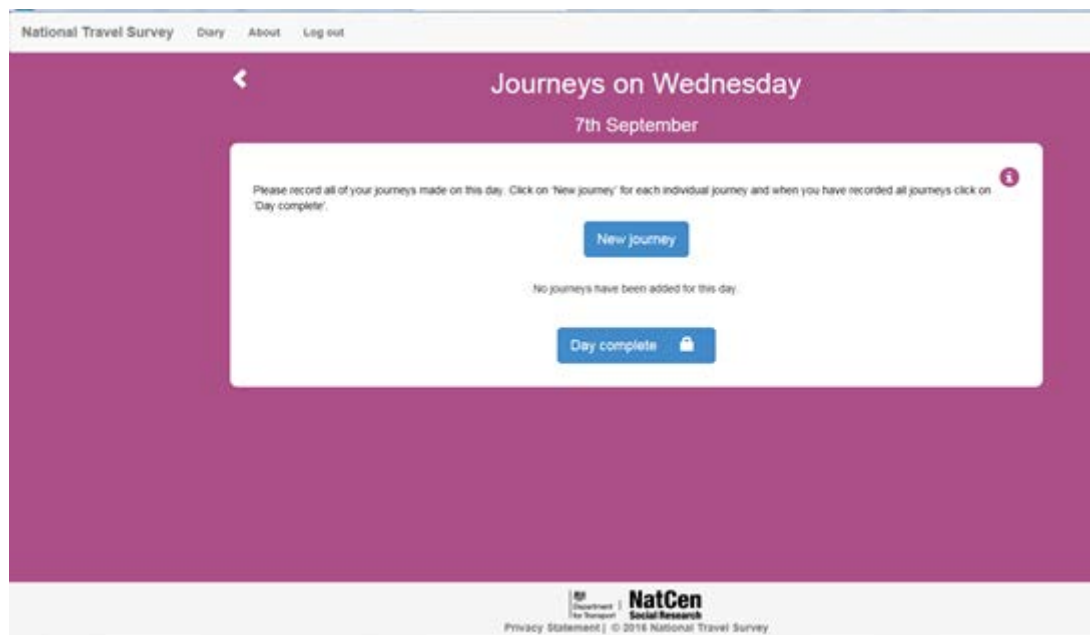
- The instructions at the top of the page were easy to comprehend.
- All respondents said that the page was clear and that they knew what needed to be done next.

2.5.2 Recommendations and suggestions

- On this page, but also on the following ones, it would be useful to ensure that the instructions are more visible – the font and colour could be changed.
- Consider moving the sentence ‘Your dates are predetermined and cannot be changed’ elsewhere on the website and replacing with practical instructions that focuses on diary completion.

2.6 Journey summary page

The testing explored whether respondents understood the instructions for adding a new journey.



2.6.1 Key findings

- There were no major issues with this page.
- One respondent pointed out that the 'Day complete' button should only appear once some journeys have already been entered.
- Some respondents wished they could see the full summary of their stages and journeys here without having to go one step deeper into the website.
- Some respondents also mentioned that it was very clear that they needed to click on 'New journey' to start filling out the diary.
- Most respondents mentioned during probing that this is the point when the journey and stages concepts should be explained (rather than on the 'About' page).
 - Some said that they would not think to include the return journey as a different journey.
 - Some mentioned that it was not clear that the walks should be included both in the journey and the stages (one respondent said that when he thinks 'I'm taking the bus to go shopping' he would not think of including the walk to the bus station as a stage of the journey).
- As with other pages, some respondents felt that the existing instructions should stand out more.
- Eye-tracking showed that this information was not read carefully by most respondents.

2.6.2 Recommendations and suggestions

- Include further instructions here to explain the concept of journey and stage.
- Include further instructions to record walks to the bus, train or tube station.

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- Add a button for 'No journeys on this day'.
 - The instructions could be more visible by changing the font or colour.
 - The 'Day complete' button could appear only after the first journey was entered.

2.7 Journey page

The following section explored the ease of adding a new journey to the diary and whether respondents understood how stages of the journey should be recorded.

The screenshot shows a web form titled "New journey for Sunday" for the date "9th October". The form is set against a purple background. At the top left, there are navigation links: "National Travel Survey", "Diary", "About", and "Log out". The form fields include:

- Journey purpose:** A dropdown menu.
- Journey departure time:** Two dropdown menus for time and minutes, currently set to "12 AM" and "0".
- Journey arrival time:** Two dropdown menus for time and minutes, currently set to "12 AM" and "0".
- Journey start location:** A text input field.
- Journey end location:** A text input field.

At the bottom of the form is a blue button labeled "Add journey". The footer of the page contains the NatCen Social Research logo and text: "Department for Transport | NatCen Social Research | Privacy Statement | © 2016 National Travel Survey".

2.7.1 Key findings

Journey purpose

- Purpose of the journey was found easily from the drop-down menu.
- Most respondents prefer to have the dropdown menu instead of an open text field.
- All respondents said that having an 'Other' category was reassuring given the variety of purposes respondents could have for their journeys.
 - One mobile respondent did not see this category as on her mobile (Nokia 1570) they would have had to scroll to find it – they were not a very confident user of mobiles and said that in real life they would have preferred to fill this out on a desktop or laptop.
- Several respondents would have wanted to enter more than one purpose of the journey – for example, one respondent went out by car to get coffee with a friend, to drop off some old metal and to exchange money – they chose 'Other' and typed in 'Shopping and out for coffee'.
 - For the next journey, the respondent also wanted to enter an 'Other' option and was surprised when they clicked it and found that their previous answer was already there (as a pre-filled text) – they thought this was confusing, but managed to enter their new journey – 'Social activity playing bridge'.
 - Another respondent said they would have liked to have an option in the dropdown menu for 'Socialising' or 'Social activity' and another one suggested 'Running errands' to be added.

Journey departure and arrival times:

- One participant entered 'AM' on the arrival time instead of 'PM' which they were meant to put in. The error was noted on the next page. Pressing 'cancel' at this point deleted all the previously entered information and the participant had to fill in all the details again. The participant recommended having a two column scrolling field here where you can choose the times straight away without having to go to each one. They also recommended having the time displayed on 24-hour clock.
- Most desktop participants found recording the times somewhat confusing because of the wide drop down menus – some clicked several times on the hour one, before realising that the minutes were on the right hand side tab.
 - Those testing the website on their mobile device, found that it was not always intuitive that the tab for minutes was under the hours tab. Several respondents found this to be placed in an odd position.
 - Some respondents also suggested that the AM/PM indication should be after the minutes rather than as part of the dropdown for hours.
 - Others would have preferred to have the 24-hour clock option for recording the hour – this would also lead to less errors in recording AM and PM (several respondents made this error and only realised later on the 'Add stage' page when they received an error message – at that point they had to go back and edit the Journey information which was somewhat difficult and unintuitive).
 - One respondent suggested having 00 instead of 0 for the minutes.
 - It was suggested that having two wheels to record the time (on mobiles) and a dropdown menu (on desktops) would be beneficial.

Journey start and end location:

- There was slight hesitation over what level of detail would need to be provided for the journey start and end locations and respondents offered various levels of detail here:
 - Some respondents entered the area where they live instead of simply writing 'Home' whilst others entered the name of the nearest tube station. Few respondents entered 'Home' and 'Work' without mentioning the specific area or postcode.
 - Some respondents queried whether they should enter the exact name of the station, address or area. Most of them said that it would have been demanding to know the addresses or postcodes for more unfamiliar or less frequently visited destinations.
- The respondents that were told that they needed to record the journey from the moment they left the house until they reached their destination, including walks, had an easier time recording the journey start and end locations.
- One respondent suggested that the data entry fields should be called 'Journey origin' and 'End, ultimate or final destination' to help clarify the confusion over journeys and stages.
- One respondent also talked about their need for privacy and said that they would never enter very detailed information about their start and end locations for fear of giving out too much information.
- During probing, we found that only very few of the respondents had seen the small question marks on this page (which could have provided more information about the level of details sought, for example) – even those respondents who noticed them said they did not consider clicking on them.

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- One respondent said they were afraid it might take them to a page where they wouldn't know how to return.
 - One respondent suggested that at this stage there should be a question asking respondents how many stages the journey was formed of, as that would have been useful for the next page.

2.7.2 Recommendations and suggestions

Journey purpose:

- Consider adding more categories, such as 'Social activities'. However, it is important to ensure the menu is short enough to be displayed in full on a mobile screen without having to scroll to find the 'Other' category (this will need to be tested on a variety of devices).
- The concept of main journey purpose (usually explained by the NTS interviewers as part of the introduction to the paper diary) should be explained here (Main journey purpose should be the purpose without which the journey would not have happened).

Journey departure and arrival time:

- These should be changed into 24-hour format to avoid data entry errors. AM and PM could be removed (or could appear automatically after the minutes, depending on the time chosen).
 - The hour and minutes should be placed next to each other on mobiles if possible, and the tabs should be shorter for desktops.
 - Using wheels for mobiles would be optimal, as respondents are used to them from using the alarm clock on the mobile; these would also reduce the length of a 24-hour drop down menu.
 - The first option for minutes should be 00.

Journey start and end location:


- Consider altering the data entry field labels. 'Journey origin' and 'Final/Ultimate/End destination' were suggested as alternatives.
 - The question mark or information button should specify more clearly what level of detail the respondents should include here.


2.8 Journey stage page


The following section explored whether respondents found the page easy to use and whether they understood the difference between a journey and stage of a journey.

National Travel Survey | Diary | About | Log out

Add Stage


Method of transport 

Distance travelled  Miles

Duration (hours and minutes) 

11 : 0

Delete stage Cancel Save stage

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2.8.1 Key findings

Overall

- Majority of respondents experienced confusion around the stages of the journey. At the point the respondents landed on this page they were not aware that they should start recording the first stage of their journey.
- Another common confusion was to do with respondents not immediately understanding that they would need to record each stage of their journey separately, despite the fact that this was explained to them in the introduction and in writing on the 'About' page.

One of the confident mobile users described the problems as follows:

"It was confusing at the beginning, the different stages of the journey and also quite long-winded particularly for me as I did quite a few things prior getting to the station. So it was quite confusing at the start to know the different stages."

"Maybe [it would've helped] to explain that at the beginning, maybe it did do it but I didn't read it properly... but to be honest I probably wouldn't read it properly anyway. When you see that stuff at the beginning I do just skip over that so I probably wouldn't have noticed it." (KL12)

Once this concept was explained to them, the majority of respondents were able to record their journeys and the stages without major issues. However, there were few who still struggled to understand where different elements of their journey were meant to be recorded.

- Respondents were also probed for their understanding of the word 'stage' and whether there would be another, clearer way of expressing this. Most respondents understood what was meant by this, and struggled to come up with another word that would express this better. A respondent mentioned that instead of using the word 'stage' it could be helpful if there was an instruction which would say 'Now tell us how you made this journey' (RC11).

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- One respondent recommended having a filter question on the previous page asking how many stages there were to the journey before proceeding onto this page to establish the concept of stages in peoples' minds (RC14).
 - To address this issue, another respondent recommended having a short note of this at the beginning and then re-iterating this on the relevant page where the stage recording starts (KL12). It was also suggested that a sentence saying 'If you are unsure of what is meant by journey then please refer back to the 'About' page' could be added throughout to clarify the confusion over what is meant by journey and the different stages of it (RC03).
 - A couple of respondents said that putting in the start and end location of each stage of the journey might help them keep track of what should be included and what has already been recorded (KL04, RC14).

Method of transport

- Overall, respondents found this field easy to fill in. The categories in the dropdown covered the types of methods of transport the respondents had used.
- One respondent queried if they should select multiple modes of transport or the main one (they did not understand he could add another stage to cover the next part of the journey). The interviewer had to explain that another stage can be added later on (RC03).
- A couple of participants showed slight signs of hesitation when looking for 'Underground' from the dropdown menu. One of the respondents said they were expecting to find the word 'Tube' appearing there (KL12).
- One respondent wanted to add both methods of journey (car and bus) from the start pointing to the fact he did not understand the stage concept – probing confirmed that (KL02).

Distance travelled

- Overall, respondents struggled to know the distance they travelled, particularly in relation to the more unusual journeys they had done. All respondents were very aware of the fact that they would often base the details on this field on an estimate which might not be completely accurate.
- One of the areas of particular interest in relation to this field was whether respondents are happy recording the distance travelled in miles and yards. The feedback based on this round of testing suggests that people are familiar with miles and are happy to record the distances in miles even when it comes to distances that are shorter than a mile. Older respondents seemed more familiar with yards than younger ones (KL04, KL02, RC03). Kilometres and metres were unfamiliar units for a couple of respondents (KL12, KL04) but overall miles seemed the most natural reference to distance. Many respondents put the distances down as '0.5 miles' or '0.2 miles' for example (KL12). However, there was slight hesitation over whether this was appropriate format for recording the distance (RC13).
- Two respondents tried writing in 'miles' in the data entry box clearly not noticing the dropdown for miles and yards (KL02, RC01). However, most respondents did notice the dropdown and checked the content. None of the respondents pointed out the inconsistency in the use of the measurement units (miles and yards).
- Another respondent suggested during probing that it would helpful to have a map on the website where they could select where they had been and where they was going and it would calculate how far the journey was. Guessing how many miles during a seven-day diary would stress out the respondent and they are likely to get fed up with doing that for seven days (RC04).

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- It was fed back that some sort of example could be useful here particularly for walking distances. This could consist of a sentence saying 'It takes about 15 minutes for an average person to walk half a mile' (KL12, RC01).
 - One of the confident mobile users checked the distance on Google maps (KL12) and another said they would be likely to do it too in real-life situation (RC01). Another respondent said they could get the accurate estimate by doing that but in practice would be unlikely to resort to online maps (RC14).

Duration (hours and minutes)

- A number of respondents experienced problems with the duration field. Whilst knowing how long their journey took was perceived easy, the problems were mostly to do with the data entry fields where it was not always clear where the hours and minutes should go.
 - A number of respondents tried recording the minutes the stage of the journey took in the field for hours (KL04, RC03, KL02, RC14). Some had to click the fields several times to ensure they were recording what they had intended. When asked about this in the interview it was fed back that on the desktop version the dropdown fields were long and more prominent.
 - It was also fed back that it was slightly frustrating having to open two different text fields for entering these details. A respondent recommended having a scroll up/down field where hours and minutes in 24-hour format would be shown at once which would make entering this information easier (KL12).
 - Another suggestion was to have the word 'hour(s)' appearing after the field where hours had to be recorded and 'minute(s)' were minutes were needed (KL04).
 - A couple of respondents showed signs of frustration over the 5-minute intervals in the minutes field (KL04, KL12). They would have preferred to record the exact time.

Number of people you travelled with (including yourself)

- Overall, this field was unproblematic for respondents in terms of comprehension as well as the data entry functionalities. All respondents recorded the number of people they travelled with as expected.

Ticket type

- In a couple of cases there was slight hesitation around which ticket type to choose for an underground journey. After scrolling up and down the list, one respondent picked 'Pre-paid Oyster card' but pointed out that the field for 'contactless' was missing from the list of options (KL12, RC02).
- It was also noted that 'Pay as you go Oyster' was not included in the list.

Ticket cost

- There was slight uncertainty and hesitation around the ticket cost, but this was mostly to do with the respondents not knowing the exact sum or being unsure about the off-peak and peak prices.
- One participant did not know the ticket cost from the top of their mind so opened up their Citymapper and checked there (KL04).

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- In one instance a respondent wanted to record the price of the ticket for his companion and did not understand that they only had to record the details of their own journey stage without including those who accompanied them (KL02).

Number of boardings

- There was some slight confusion over what was meant by the number of boardings.
- In particular, a couple of respondents struggled to count changes using the same method of transport as two boardings (KL04, RC13).
- One respondent opened the question mark to check if their understanding of what the field meant was correct (KL12).

Vehicle used

- There was some confusion around what should be entered onto this field.
- Some respondents showed signs of irritation as they thought the field was asking them to fill in the same information twice on the same page *'I've already put car, should I put in make of car. I'll just put 'car' again.'* (RC11, RC14, KL02).
- Another, more confident, respondent was able to understand what was needed and wrote in the make and model of their car. However, the respondent felt it burdensome having to enter the car details few times for all their stages and wished that the fields would automatically fill in. In rarer instances where a different vehicle was used, the field could be emptied.

Were you the driver or passenger?

- None of the respondents who recorded car stages in their journeys had problems with comprehending what was meant to be filled into this field or with the data entry field itself.

Parking cost (if applicable)

- No problems were identified in relation to this field. Those to whose journeys this did not apply to wrote either 'Nil' or 'N/A' on this field (RC13, KL12).

2.8.2 Recommendations and suggestions

Overall

- Add further instructions/clarification on top of the page. This could consist of something along the lines of:
 - 'Now please tell us how you made this journey. Please record below the details of the first stage of it below.'
- The question mark icons are too close to the field label. At least one space should be added between the label and the question mark icon.

Duration

- We recommend writing 'Hours' and 'Minutes' after the relevant drop-down menus to make it clear where each need to be recorded.

Method of transport

- Consider changing 'Underground' to 'Tube / Underground'.

Distance travelled

- To alleviate the respondents' anxiety over not knowing the distances, we suggested adding a note on the page saying 'Please give us your best estimate'.
- Miles seem to be a familiar measurement unit to use on this field, although we recommend exploring this further on the second round of testing.
- When walking stages are added, display a note about the average walking times to help respondents to estimate the distances.

Duration (hours and minutes)

- It has been discussed previously that having a clock which displays both hours and minutes at once (please see below an example) is difficult to implement in both mobile and desktop versions. If this is still not possible, we recommend:
 - Shortening the two fields in the desktop version.
 - Adding 'hours' and 'minutes' straight after the data entry fields to avoid confusion.

Figure 2.8.2. Example of two-wheel clock



Ticket type

- Add 'Contactless', 'Apple Pay' and 'Pay as you go Oyster' in the dropdown list – or add 'Other (Please specify)'.

Vehicle used

- There is clearly some confusion around what needs to be recorded on this field. Instead of having this as an open text field, this could be a drop-down menu with the options 'Our own vehicle' / 'Someone else's vehicle). If respondent chooses 'Our own vehicle' and open text field would appear where they can record the details of their car.
- It would be ideal if this field could be subsequently pre-filled with those details to avoid respondent having to enter this information multiple times.

2.9 Journey and stage summary page

This section established whether respondents are clear how they add another journey stage and what to do if they have completed the details for that journey.

The screenshot displays a form for entering journey details. The top section contains fields for 'Journey purpose' (Going to school/college), 'Departure time' (11:00 PM), 'Arrival time' (10:00 AM), 'Start location' (Guildford), and 'End location' (Manchester). Below this is a section titled 'Stages of your journey' with a sub-header: 'Some trips involve using more than one mode of transport. Where you change mode, we consider your trip to have more than one stage.' This section includes a table with the following data:

Method of transport	Bus
Distance travelled	20.0 Miles
Duration	1 hours and 0 minutes
Number of travellers	1
Ticket type	Season Ticket
Ticket cost	£200.00
Number of boardings	1

At the bottom of the form, there are two buttons: 'Add a stage to the journey' and 'Save'.

2.9.1 Key findings

- This page was generally well understood by the respondents.
 - One respondent said that if they were taking part in the study, they would probably save all of this information and go back to look at it at a later date, as it is a nice summary of their days' travels.
 - Several respondents did not think that they would need to fill out another journey detailing their return.
 - Others suggested that the 'Add a stage to this journey' button should be at the top of the page – particularly, those who did not think to scroll down without being probed to do so.
- The description about the journey stages was noted and read by many respondents at this point.
- The stages appeared to be ordered by the method of transport used and not in chronological order (i.e., the order that they were entered in) which was very confusing for some respondents who would have liked to have a summary of their journey in the order that it happened.
- Even some of the more confident respondents were somewhat unsure about how to enter another journey from this page, and that led them to add another stage.
- It was suggested that instead of 'Save' (or in addition to it) there could be a button to say 'Save and add another journey'.
- The functions of 'Edit' and 'Delete' buttons were understood by most respondents, but some suggested they should be further apart, as especially on the mobile there was a danger of

pressing 'Delete' instead of 'Edit'. One respondent deleted two of their journey stages without realising because he did not receive a warning or error message.

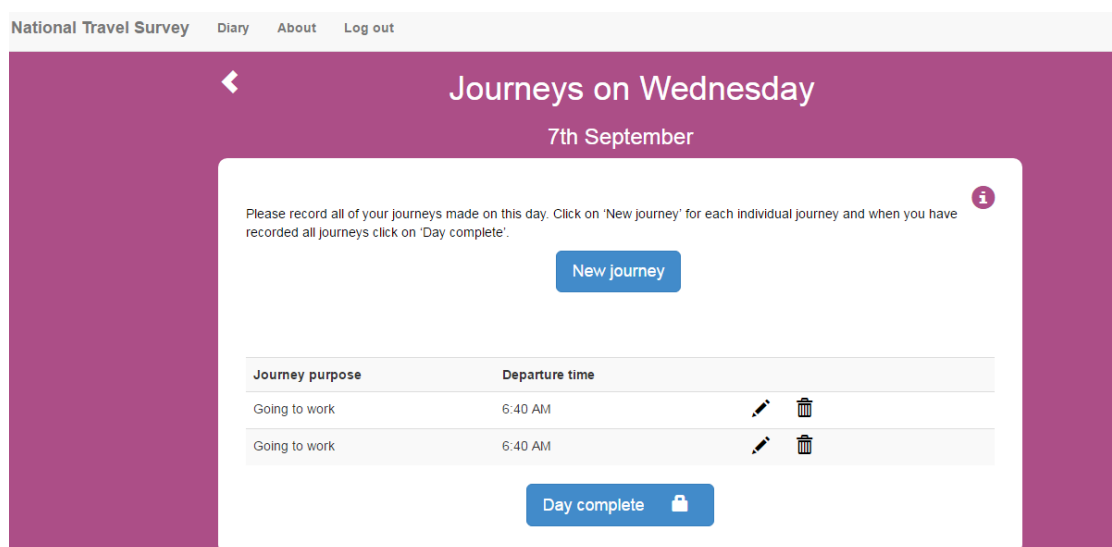
- Another respondent was scared to click the 'Edit' button because the 'Delete' was so close and they did not want to risk deleting anything. They suggested the buttons should be bigger.
- A respondent that had various stages to their journey (incorrectly entered as stages rather than journeys) thought that the page was overwhelming and that there was too much information and too much to scrolling through to get to the buttons for saving and adding stages.

2.9.2 Recommendations and suggestions

- The 'Delete' and 'Edit' buttons should be further apart.
- Warning should be added: "Are you sure you want to delete this stage?"
- The design should be condensed such that the respondents do not need to scroll down too far down to find the next thing they need to do. Making the margins narrower could help with this.
- The 'Add a stage to this journey' button could potentially be moved higher up, although this will not be necessary if the information is condensed.
- Please see 2.10.2 'Recommendations and suggestions' – if something like that is implemented, this page could be removed completely, and respondents could edit their stages from the stage summary page.

2.10 Day summary page

This section asks respondents about their understanding of completion of stages and journeys for one day.



2.10.1 Key findings

- Some respondents said during probing that either instructions or a check could be added here to ask respondents whether they had recorded their return journey as that was not intuitive to them.
- Some respondents mentioned that this page could provide more of the information that they have added previously at the stages page.
 - One respondent said they would have liked to see what happened in between the journeys (by adding the stages).
 - One respondent queried why the page was only displaying the departure time, and not the arrival time as well.
 - One respondent was accidentally taken to this page when he clicked 'Save' instead of 'Add stage of journey' – they queried why there was no back arrow to get back. They then clicked back on the browser, but this action took him to the page listing journey dates. He did not notice the 'Edit' icon.
- Several respondents attempted to click on the text (particularly the 'Departure time') to edit them – some realised this was not possible and looked for alternatives; one respondent hovered over the 'Edit' and 'Delete' icons and having the text displayed knew what he needed to click in order to edit his journey.
- It was also found confusing that the journeys were not displayed in a chronological order.

2.10.2 Recommendations and suggestions

- The journeys should be displayed chronologically.
- Restructuring this page so that respondents can see summary information for each journey. The main journeys would be displayed as below and on the side of each journey there could be

a + sign which when clicked would drop down a menu showing the stages of the journey displaying relevant details of them.

- If this solution was to be implemented, there would be no need for the journey and stage summary page – edit and delete icons could be added here as well.
 - The page could then include more information which appears to be important to some respondents, such that they can review an entire day’s journeys and stages of each journey at once.
 - If this change is implemented, the labels could be dropped to save space on the screen and use headings at the top of the page.

Figure 2.10.1: Potential redesign of the summary page - condensed

Journey purpose	Journey departure / arrival time	Start location	End location
Going to work	8:15 – 9:20	Home	Work

+

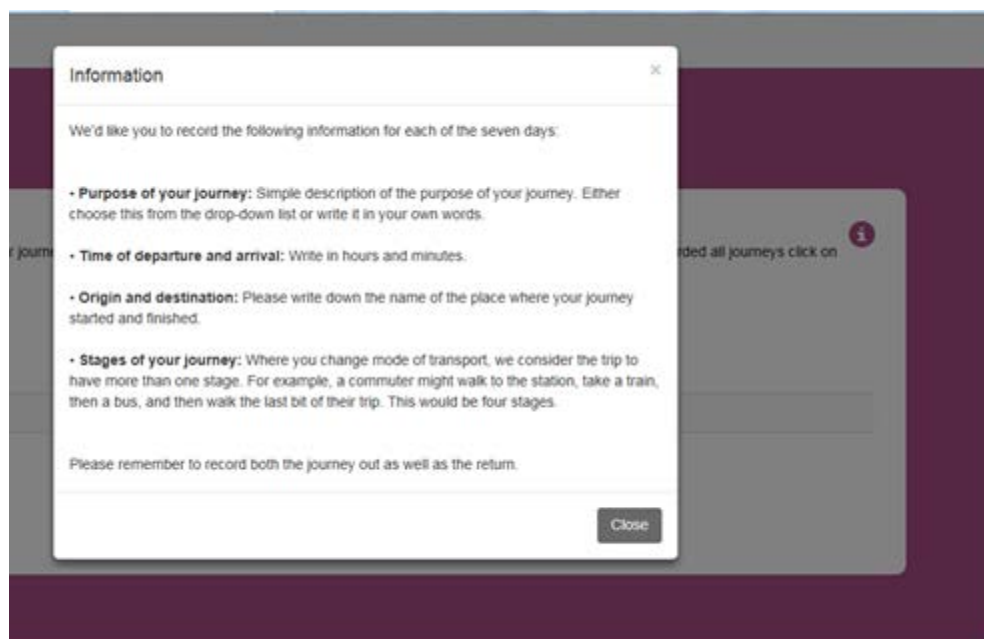
Figure 2.10.2: Potential redesign of the summary page - expanded

Journey purpose	Journey departure / arrival time	Start location	End location
Going to work	8:15 – 9:20	Home	Work
Walk	10 min	0.7 mi	--
Tube	35 min	5 mi	£2.90
Walk	12 min	0.9 mi	—

-

2.11 Help screens and error screens

The following section explored whether respondents used the help screens or encountered any error messages when completing the diary and what they thought of the content of the messages.



2.11.1 Key findings

Question mark help screens

- The feedback was mixed in relation to the question mark help buttons. Many respondents did not notice the small question mark buttons which gave respondents information on the relevant field.
 - One respondent, a less confident laptop user, thought that these were part of the text and did not realise there was a functionality to them. However, they fed back that this is likely to be clear to the younger generations who are more accustomed to online conventions. Having understood what the functionality was, they saw them as useful, but felt that they need to be explained.
 - Another respondent who had not noticed the buttons suggested having one larger question mark rather than several small ones. It was also mentioned that these should be made to stand out more.
 - A confident mobile user referred to one of these buttons to find out what the 'number of boardings' field was for whilst completing the diary. It was immediately clear to them what the icon stood for.
 - One respondent said that probably they would have clicked the question marks if they were alone filling in the diary and got stuck.
- Overall, respondents liked the idea of having these buttons on the screen but it was recommended that this functionality should be explained to the respondent as part of the introduction to the diary.

Information button on the right hand corner

- None of the respondents clicked on the information button though some respondents said they had noticed it on the screen and knew what the function is likely to be.
- A couple of respondents noticed the information buttons but felt unsure of what would happen if they clicked on it in case it takes them out of the page they were at. It was suggested that more of the key information should be displayed on the page itself.

Error messages

- A couple of respondents encountered error messages due to the journey times having been entered incorrectly or because of confusion over stages and journeys.
- There was some confusion over how to resolve the errors that were caused by the stage journey time exceeding the total travel time. One respondent struggled to understand what had caused the error and was unable to fix it without additional instructions.
- One of the respondents filled her journey time in as 13 hours instead of 13 minutes triggering an error message. They were unsure what the problem was until it was explained to them what had caused the error.

2.11.2 Recommendations and suggestions

Question mark help screens

- This icon and its functionality should be introduced explained to the respondent on the 'About' page to ensure respondents are familiar with them and notice them when they fill out the diary.
- The icon should be more obvious, potentially in a different colour as well.
- There should be a space between the icon and the data entry field label. Currently these are not displayed consistently across the stage pages.

Information button on the right hand corner

- This button should be explained to the respondent on the 'About' page to allow respondents to familiarise themselves with its purpose and functionality.

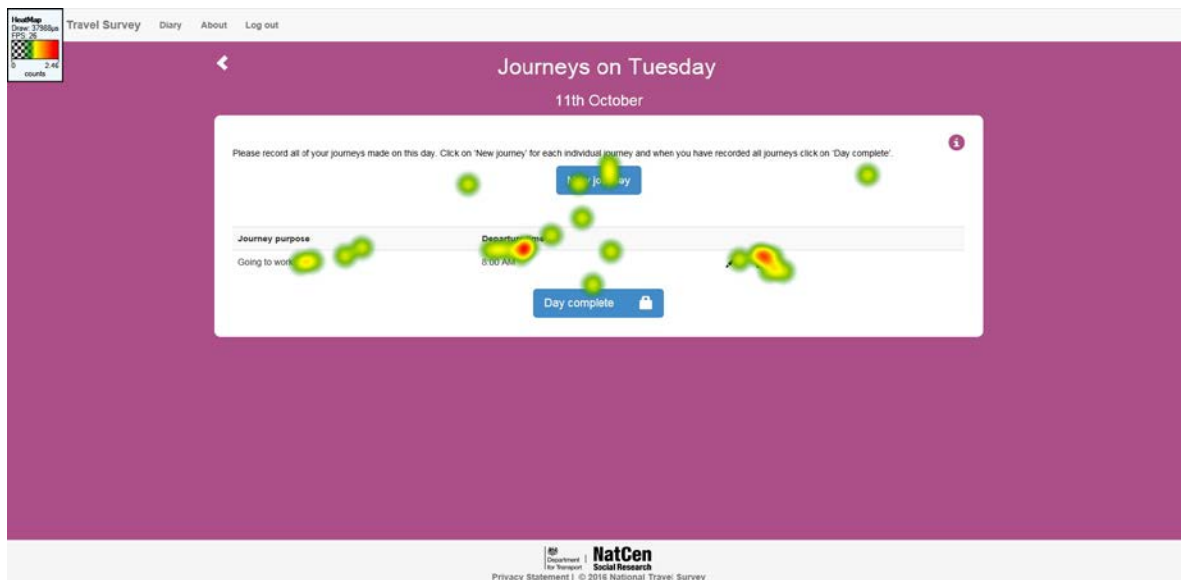
Error messages

- Where the error message does not appear on the page where the error itself was made, it is important to ensure that the message contains clear and actionable instructions on how to resolve the error.
 - For example, where it currently says 'The duration cannot exceed the difference between the departure and arrival time' a better way of phrasing this could be 'Please check the journey start and arrival times on the previous screen.'
- The error message should flag up the field that needs addressing on the same page the respondent is completing.
- The entire website should be tested thoroughly to ensure that the error messages appear where they should, and that the message and the action that needs to be taken are clear.

Appendices – Heat maps and gaze plots

Please see below some examples of gaze plots and heat maps from the eye-tracking experiment. Apart from these images, we also have videos from both the mobile and desktop testing, which aided writing this report.

Image 1. Instructions on the Journey Summary Page



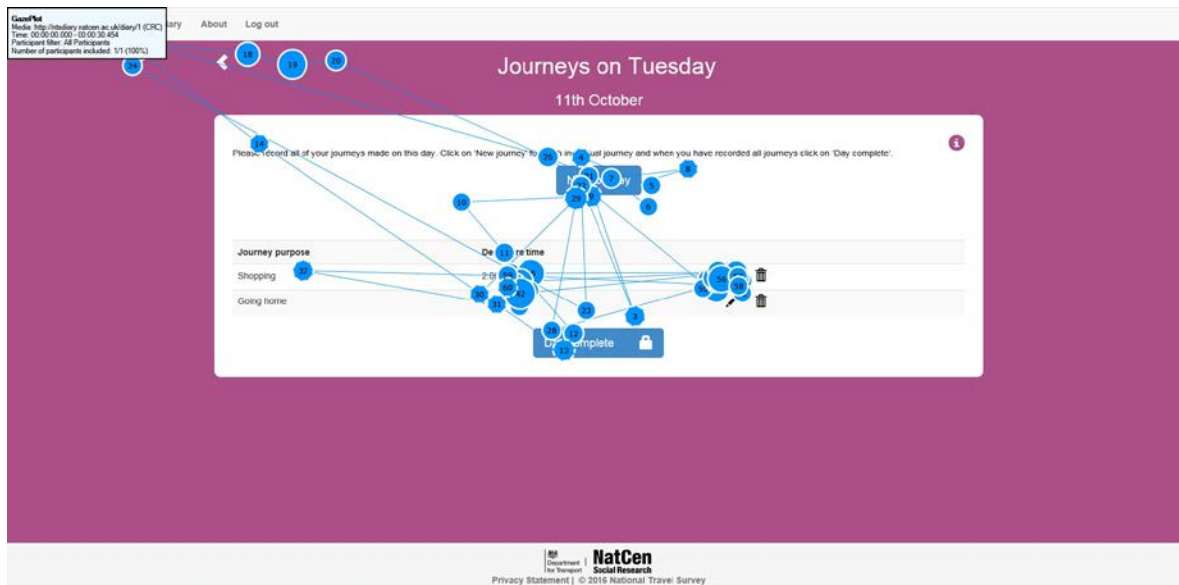
Interpretation: the heat map shows where the participant's gaze stayed longer – this image shows that this participant did not read the instructions, but rather focused on the Departure time and the Edit and Delete buttons

Image 2. Instructions on the journey summary page



Interpretation: This gaze plot shows that the participant did read the instructions carefully for this page, and spent time deciding which button s/he needed to press next. However, this plot also shows that the participant did not look at the Information button at all

Image 3. Instructions on the journey summary page



Interpretation: Once a few journeys have been added, the participant did not look at the instructions again, rather, they focused on whether they needed to add a new journey, edit or delete the ones entered, or mark the day complete. Again, they did not look at the Information button for clarification of what should be done next.

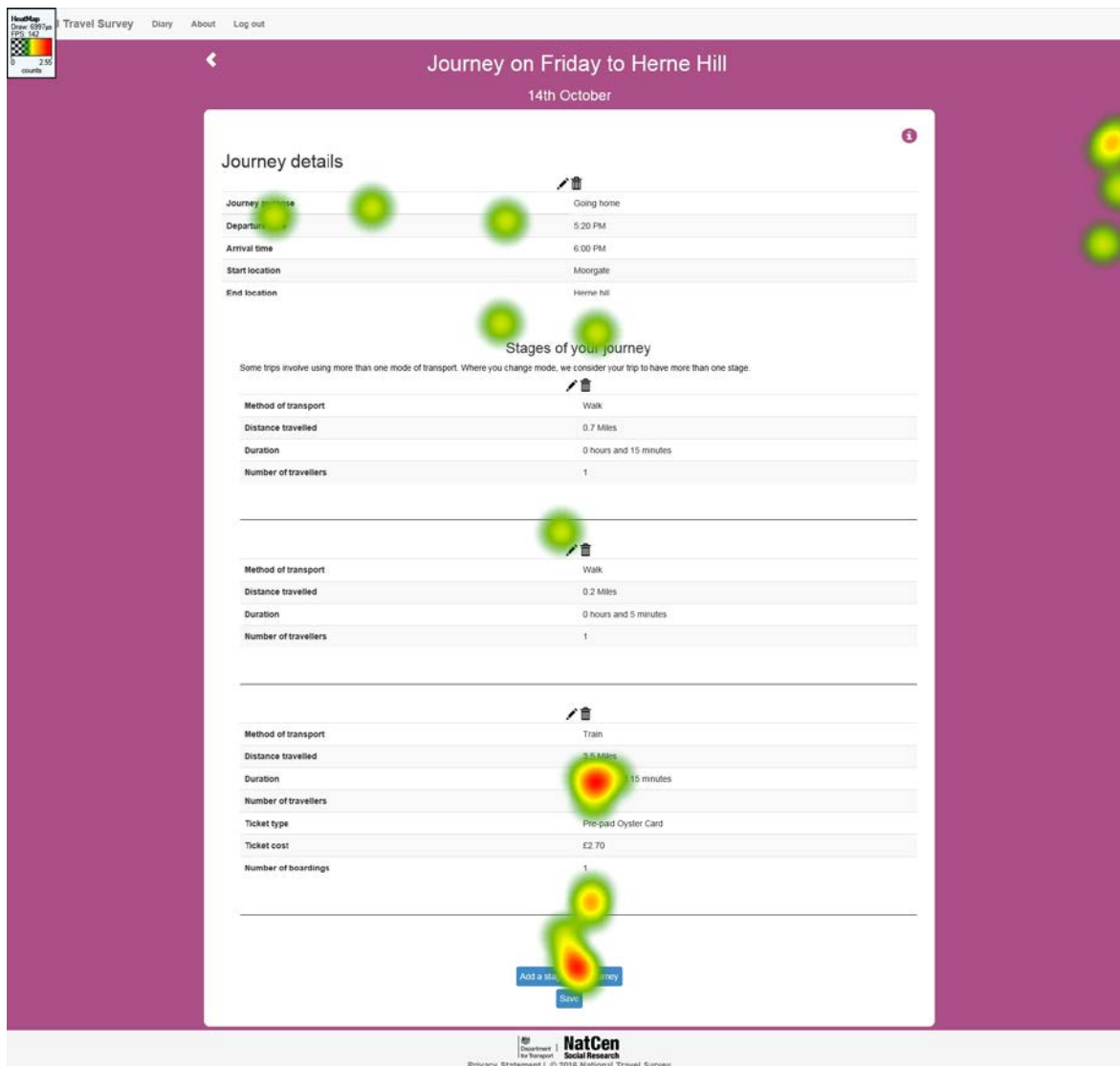
Image 4. Error message on the add stage page



Interpretation: the participant in this case had added the journey arrival and departure time incorrectly, but only received an error message on this page. The error message is not very visible, the content is unclear as it only states that 1 issues had been identified, and thus the participant is

struggling to see where the issue could be; the green marks on the top left corner indicate that the participant was looking for the back arrow which could not be found on this page.

Image 5. Stage summary page



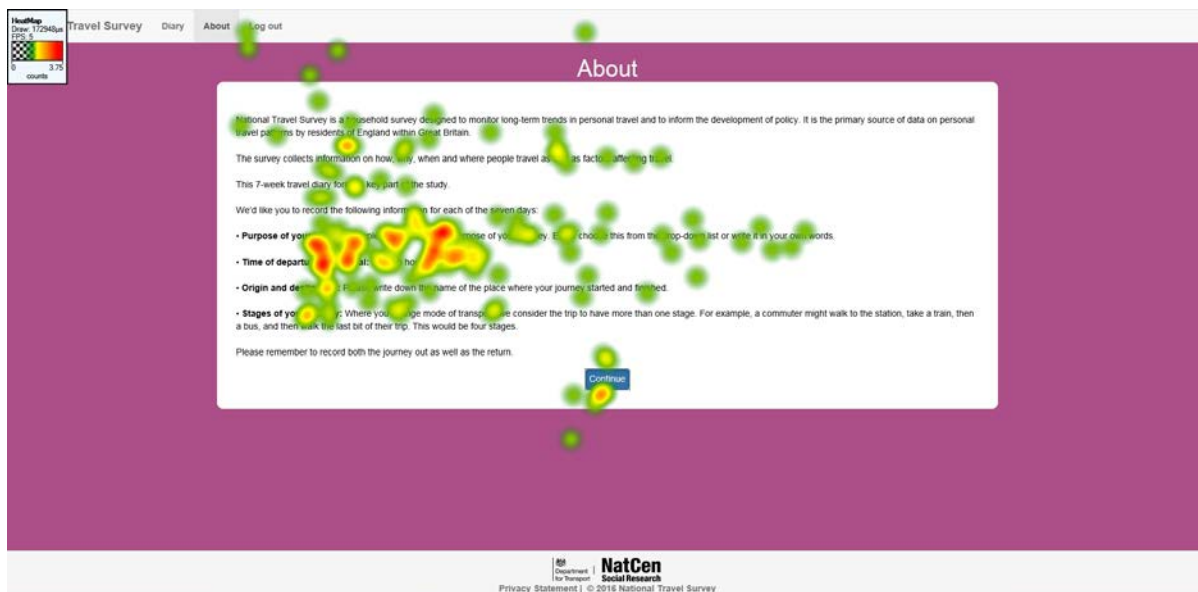
Interpretation: this heat map shows the moment when the participant complained about his stages not being arranged in chronological order. The participant did not look at the labels for the fields entered for each stage; rather, he tried to understand from this page why his second walk was displayed as a second rather than third stage. Similar results were obtained from other participants – the heat maps indicate that once they had entered the information and when they were reviewing it, they would focus on the actual details of the stages, rather than the labels.

Image 6. Reading the 'About' page carefully



Interpretation: This participant read the 'About' page thoroughly. They said they would do so if he was alone at home filling out the diary. The respondent thought there was too much information, but still read it carefully. Even so, they still had issues with the stages of the journey.

Image 7. Skimming the 'About' page



Interpretation: Compared to the previous heat map (Image 6), this one shows that this respondent did not read the first part of the page, and focused mostly on the bullet points. However, the last one, stages of the journey, was not read in full, which led the respondent to struggle with the concept later in the diary.