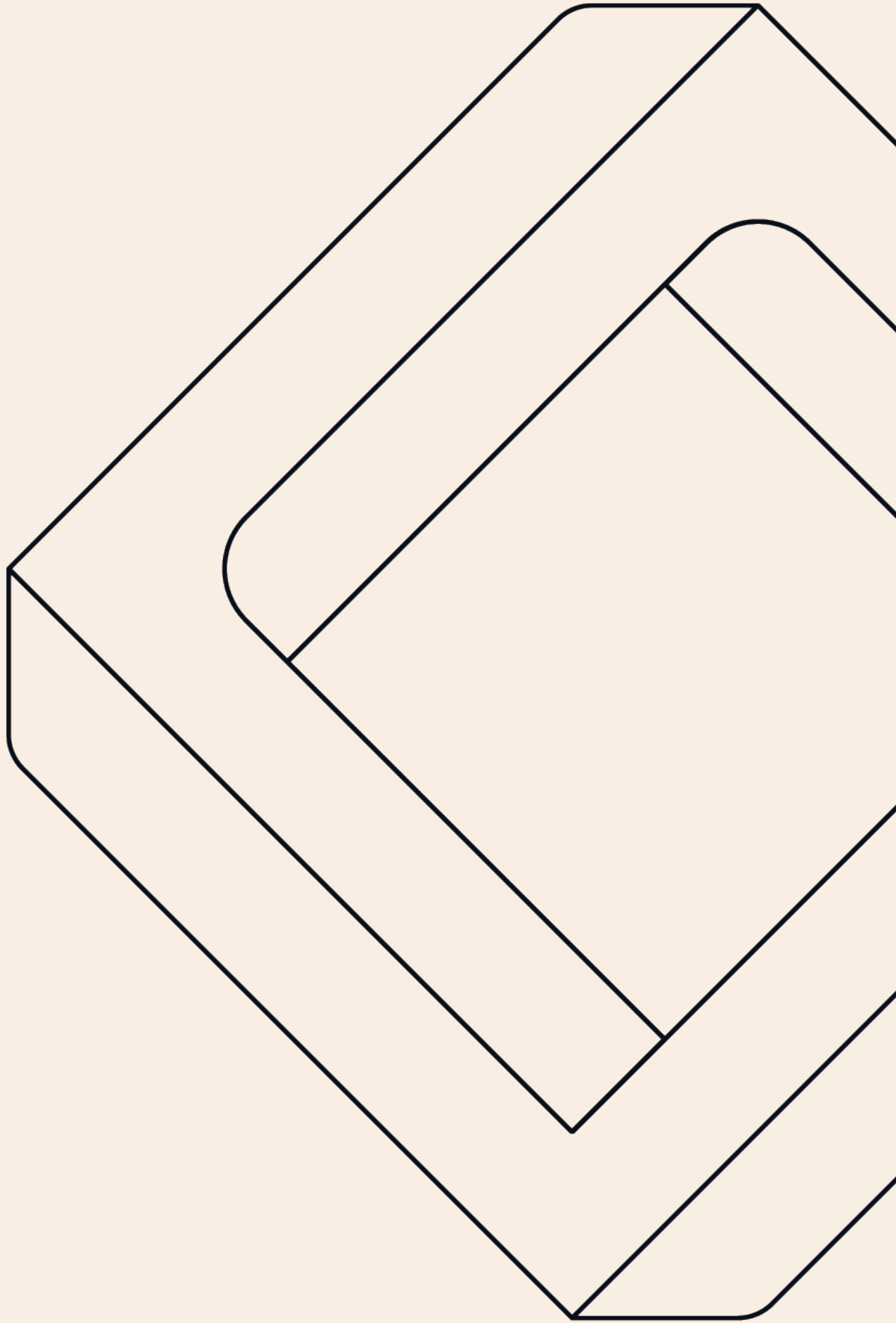


Communicating during travel disruption



July 2024

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Executive summary

Background and research objectives

This research project was commissioned by the Department for Transport's Behavioural Science and Strategic Communications teams to produce guidance for international travel operators and stakeholders on how to communicate effectively with travellers during international travel disruption. The research was structured around four objectives:

1. Understand travellers' decision-making in response to travel disruption
2. Explore what, how and when existing communications are accessed by travellers
3. Consider how communications can be optimised across travel and disruption contexts
4. Develop a toolkit to support travel stakeholders to communicate with travellers during travel disruption

Research methods

The research was conducted across two stages.

In Stage 1 we conducted a scoping review, interviews with stakeholders, and interviews and focus groups with travellers to understand the needs and decisions of travellers in response to travel disruption, and to explore current and best practice for traveller communication. Based on the insights from this first stage of research, an initial toolkit for designing and enhancing operator-traveller communication to mitigate the impact of disruption was developed.

In Stage 2 we tested the communication toolkit using stakeholder interviews and focus groups and an online experiment. Based on quantitative and qualitative findings from this stage, we revised the toolkit and provided directions for future research.

Findings from Stage 1

The **scoping review** identified useful communication frameworks including the Krebs method which outlines principles about what and how to communicate, and the needs analysis *framework* which can be adapted to transport and used by operators to map out travellers' needs, pre-empt travellers' behaviours, plan how to mitigate any negative consequences and adjust communication approaches to support travellers' decision-making.

Stakeholders highlighted that several factors impacted how and what could be communicated with travellers about disruption, including the level of prior warning they had, the severity and scale of impact, and availability of information about disruption.

Findings from the traveller interviews and focus groups supported the development of a typical international traveller journey across two phases (pre-travel and during-travel). At each stage, travellers make different types of decisions and have different information needs. Pre-travel, travellers tend to search for information more actively; when travelling to the hub, travellers tend to be more passive and expect their operator and/or travel company to notify them if there are changes to their journey.

Travellers reported making specific decisions to avoid experiencing travel disruption, from planning extra time to take actions that enabled them to exert more control over their journey (e.g., choosing a car or taxi over public transport) or give over responsibility to others (e.g. using travel agents and package holidays).

Travellers who reported high anxiety about the potential for travel disruption and being negatively impacted by disruption included: less experienced travellers, travellers with existing health conditions, and those travelling with young children and/or pets. Travellers were generally less tolerant of disruption perceived as preventable, reoccurring and/or man-made (e.g., peak travel disruption).

Findings from Stage 2

Online experiment: A 4-arm between-subjects design (2 Control / Intervention x 2 Plane / Ferry) was conducted to test the impact of communications that had been enhanced using key insights from the toolkit. These included highlighting the ease of following operator instructions (self-efficacy), the potential benefits of adhering with operator instructions, and the potential negative consequences associated with non-adherence. We investigated their effect on adherence with operator instructions and on the perceived acceptability of disruption. In the experiment, participants completed either a Ferry or a Plane version of a nine-stage simulated traveller journey from booking to departure. At each stage, participants were shown a picture and description which explained what was happening at that specific stage of the journey. Participants also saw a phone screen where communications from the operator were displayed. At each stage participants were asked a question; in 4 of the stages the question posed to participants was a key outcome measure in our experiment. The Ferry and Plane journeys were identical in terms of the stages shown to participants and the outcomes recorded, however contextual information specific to a journey to an airport/or port (such as the desired arrival time for departure) differed across experimental conditions.

Participants who were shown the toolkit-informed intervention messages were more likely to follow operator advice to avoid shortcuts (Ferry) and arrive at the specified time (Plane) relative to the control conditions. Most participants reported that they would apply for 'Travel Authorisation' on time, with no difference between intervention/control conditions. The intervention did not affect perception of acceptability of delays. Crucially, we found no evidence of a backfire effect of including text highlighting the benefits/consequences to travellers and others of following/not following operator advice. Overall, our findings suggest that including toolkit-informed principles in operator-traveller communications can increase adherence to operators' instructions in specific contexts.

Stakeholder engagement: Alongside the experiment, we conducted interviews and focus groups with stakeholders on the toolkit, to understand how it could be used in practice, and refined to increase its value and usability. The traveller journey and Krebs method were highlighted as helpful frameworks, consistent with operators' current understanding and approach to communications.

Based on stakeholder feedback that the toolkit should focus on a specific travel disruption scenario to increase its actionability, we updated the toolkit to focus on supporting strategic planning around planned changes, such as the introduction of the Exit and Entry System (EES) and European Travel Information and Authorisation System (ETIAS). We also added a short checklist to help guide communications when the toolkit would need to be referenced quickly.

Communication toolkit

The toolkit (see Technical Appendix A, or the supporting PowerPoint published alongside this report) includes:

1. An outline of the contents and purpose of the toolkit
2. The traveller journey developed through the qualitative research with travellers that highlighted different decisions points and potential issues
3. A needs framework analysis to encourage operators to map out how needs vary across the traveller journey and across different traveller types
4. The Krebs method applied to travel disruption to show how and what to communicate to improve messaging
5. A one-page checklist of key considerations for communications during travel disruption.

Introduction

Travel disruption is an issue for all international travel operators, stakeholders, and travellers. In 2022, international travellers faced considerable disruption at UK's ports and airports, with ferries, flights, and trains cancelled or delayed at short notice. This resulted in long queues on Kent's road network and at airport departures, and consequent frustration, confusion, distress and anger for travellers. As a result, there is a need for the Government to work closely with industry to address and increase resilience against systemic causes of disruption.

The Department for Transport's (DfT) Behavioural Science and Strategic Communications teams commissioned this project to produce guidance for transport operators and other stakeholders on how to communicate most effectively with travellers so that they respond to information in ways that minimise the impacts on them and others.

The research explores communication challenges during travel disruption resulting from a range of causes, such as staff shortages and extreme weather events, and across international travel modes: air, ferry, and rail. There was also a particular interest in how communications could mitigate potential impacts that may arise from the introduction of the European Entry and Exit System (EES), which will require UK nationals and residents to provide extra information when entering the EU visa area.

The research was designed to:

1. Understand travellers' decision-making in response to travel disruption
2. Explore what, how and when existing communications are accessed by travellers
3. Consider how communications can be optimised across travel and disruption contexts
4. Develop a toolkit to support international travel stakeholders to communicate with travellers during travel disruption

The research was conducted in two stages to inform the development of a travel disruption communications toolkit for operators communicating with travellers travelling internationally by plane, ferry, and rail. In both stages of the research, operator and traveller perspectives were explored.

The research was conducted in line with the Government Social Research guidance on ethical assurance for social and behavioural research and principles of GDPR <https://www.gov.uk/government/publications/ethical-assurance-guidance-for-social-research-in-government/>.

The report is structured as follows.

Section 3 outlines the research methods in Stage 1 which included a scoping review, interviews with stakeholders, and interviews and focus groups with travellers. In Section 4, we report the findings from Stage 1. Section 5 then summarises the development of the initial toolkit based on these findings.

Section 6 outlines the research methods for Stage 2 which included an online experiment and interviews and focus groups with stakeholders. In Section 7, we report the findings from Stage 2. Following this, Section 8 outlines refinements to the toolkit based on Stage 2 findings. Finally, questions for future research are discussed in Section 9.

Stage 1 – Methods

A workshop with policy experts from the Department for Transport was used to define and clarify the scope of the project and develop a basis for exploratory primary qualitative research. To understand travellers' decision-making in response to travel disruption and explore what, how and when existing communications are accessed by travellers we first conducted:

- A scoping review and five in-depth interviews with representatives from UK international travel operators and hubs to identify existing communication principles and effective communication campaigns/strategies

The results of the scoping review and stakeholder engagement informed the exploratory qualitative research with travellers, to provide support for and identify principles of effective communication and build a traveller journey in the context of international travel by plane, ferry, and rail. This consisted of:

- 20 x 1-hour in-depth interviews and six focus groups with international UK travellers to understand traveller decision-making, behaviour, and information needs during international travel disruption

Stakeholder interviews

Five online in-depth semi-structured interviews lasting 60 minutes were run with representatives from international rail, ferry, plane operators and hubs. Stakeholders tended to be in senior roles within their organisations with responsibility for overseeing policy, communications, and/or corporate or public affairs. We drew on DfT's network of contacts to identify appropriate stakeholders for the interviews conducted between 18th July and 21st July 2023. The discussion guide focused on understanding stakeholder current approaches to traveller disruption communication, the challenges faced by different operators, and what could help to overcome these.

Scoping review

Alongside the stakeholder interviews, a scoping review was conducted that included 15 pieces of evidence.

To identify the most relevant evidence, including academic papers, existing communication guidance/toolkits, and grey literature, we drew on recommendations from DfT and the results of a Google and Google scholar search. We used these initial searches between the 25th and 31st May 2023 to compile a long list of evidence and then selected the most relevant 15 using a set of inclusion criteria agreed with DfT (see Appendix B for a full list of the 15 included papers). We focused the search on evidence published from 2008 onwards and prioritised evidence from the UK and evidence that focused on international travel disruption.

The scoping review search was not systematic, and so there may have been relevant evidence available at the time of searching that was not found. Also, we found limited evidence focused specifically on traveller decision making during international travel disruption (4 pieces of evidence), and on how operators can best communicate with travellers during international travel disruption. Therefore, evidence was included in the review that focused on domestic travel disruption and on non-UK travellers.

Traveller interviews & focus groups

Exploratory research with travellers was conducted at this stage to understand traveller decision-making, how and what information is currently accessed, and what information travellers want to know and when across different travel disruption contexts.

Twenty x 60-minute online in-depth interviews were conducted in June 2023 with travellers who were either planning to go on an international trip within the next three months or had returned from an international trip within the last three months. We also included quotas for health condition and travelling with children. The recruited sample represented a mix of genders, socioeconomic status, ages, and regions of the UK. They also varied in their destinations, the purpose of their trip, international modes (car/plane/ferry/train/bus or coach), and whether they were regular versus less frequent travellers. Full details of the recruited sample can be found in Appendix C.

Participants were given a task to complete and bring to the interview. This involved summarising the status of their travel plans, outlining their journey, and identifying any sources of information they used or were planning to use. The pre-task was used to get participants thinking about the travel journey, the decisions they make at each stage, and what type of information they seek out or receive. The discussion guide covered their background, international travel experience, key decisions in their journey, any previous experiences of travel disruption and communication they received, and explored their specific information needs across hypothetical travel disruption scenarios (including border regulation changes, peak season disruption, and heatwaves).

Six 90-minute online focus groups with 5 or 6 participants each were conducted in July 2023 with travellers who had been on an international trip within the last 3 years. These groups aimed to support the findings from the in-depth interviews and scoping review, to help develop the communications concepts for testing and inform the final toolkit. Groups were stratified based on the mode of international travel as well as the mode of travel used to get to the hub, which resulted in the following:

Group no.	International travel mode
1	Air – drive to airport
2	Air – use public transport to get to airport
3	Ferry from Dover
4	Ferry from UK port other than Dover
5	Eurostar
6	Eurotunnel Le Shuttle

In addition to this, the recruited sample included representation of individuals with physical impairments or other health conditions requiring adjustments for travelling and those with children between 0 – 10 and 11-16. Please see Appendix C for full details of the recruited sample.

Each focus group primarily focused on one hypothetical travel disruption scenario drawn from border regulation changes, peak season disruption, and heatwaves. The discussion guide aimed to explore participants' information needs and information-seeking behaviour at each stage of the traveller journey, how travel disruption impacted these information needs, and their responses to hypothetical communications. Please see Appendix D for copies of the discussion guides used in the traveller focus groups and traveller depth interviews.

Qualitative Analysis

A qualitative approach was used to gather insight on stakeholder and traveller perspectives to ensure an in-depth understanding of the international travel context that stakeholders and travellers were operating within.

Depth interviews for both stakeholders and travellers, and traveller focus groups, were audio-recorded and transcribed to aid analysis. Data was analysed using framework and thematic analysis to draw out insights. This involved transcribing the content of each interview or focus group into an Excel chart structured according to the research objectives to enable sorting of the data. This could be done across different participant types (e.g. different international modes, individuals with children) to



highlight any patterns within and between groups. Using this chart enabled researchers to search for themes within the framework to tackle each research question systematically.

Stage 1 – Results

The first stage of the research focused on understanding traveller decision making in response to travel disruption and what, how, and when existing communications are accessed by travellers to build a user journey. We also used a scoping review and in-depth interviews with stakeholders to understand communicating during travel disruption from the operator perspective.

The findings of the stakeholder interviews, scoping review, and qualitative research with travellers are discussed below.

Stakeholder interviews

We spoke with representatives from international rail, ferry, plane operators and travel hubs to understand current approaches to disruption mitigation and challenges of communicating with international travellers.

Stakeholders highlighted the range of travel disruption factors that can impact on how and what can be communicated to travellers. These included, the level of prior warning, severity and scale of impact (i.e., in some cases only a small number of passengers are affected, or disruption may be confined to one part of a hub or route), and available information on the cause of disruption which can change over time.

One of the key challenges for all international travel operators during disruption is managing the experience of passengers, but different challenges emerged across travel modes and hub locations:

- Airports often involved many sub-contractors and organisations which made harmonised and quick communication of disruption more difficult
- Ports serving the English Channel must manage high volumes of traffic due to the high throughput and passengers do not want to be waiting more than 30 mins
- Eurotunnel is generally less affected by disruption from external sources but is affected by traffic around Dover/Folkestone
- Ports serving the Irish Sea may be much more heavily affected by storms/sea conditions and may have less infrastructure to help deal with disruption when it happens

When to communicate with travellers can be complicated for stakeholders. Some disruption communication strategies are based on a time-based trigger (i.e., sending communications once delays have reached one hour), others may be triggered by specific decision makers (e.g. port masters/captains/operational teams etc). Airline stakeholders discussed not wanting to communicate with travellers until the actual impact of delays are known or in case a quick resolution can be found.

Stakeholders had many strategies for managing traveller experiences that went beyond communications. For instance, helping travellers to make alternative arrangements, encouraging feedback, providing welfare options (food, drink, toilets), and making efforts to improve waiting areas. For example, one flight operator referenced their development of a self-service portal for disruption enabling travellers to make their own informed decisions.

Scoping review

The scoping review was designed to identify existing evidence and best practice for operator communication with travellers to prevent or mitigate the impacts of travel disruption. A range of document types were included, including peer-reviewed articles, reports, government toolkits, and online articles. The 15 papers also covered a range of contexts, 4 were focused on international travel

disruption in aviation while the rest focused on domestic travel disruption on public transport or roads. See Appendix B: for more detail on the papers in the scoping review.

The evidence reviewed highlighted the importance of considering both the context of the travel disruption and the individual traveller when designing a disruption mitigation communication strategy. For example, two papers found traveller tolerance for travel disruption depended on the cause of disruption: travellers were more tolerant for disruptions that are 'out of operator control', such as severe weather events, relative to 'operator caused' disruptions such as strikes or operational issues as these were considered avoidable (Department for Transport, 2021; Papangelis et al., 2016).

Additionally, Clegg et al. (2018) found rail passengers were willing to tolerate delay to some extent before normal service resumes (a one to two hour "pacification window" within which "minor" incidents can be rectified). Papangelis et al., 2016 suggested that traveller characteristics and experience can also determine vulnerability to travel disruption. They found rural travellers were more likely to be prepared (e.g. have food/fuel/water) to tackle travel disruption because they were more likely to experience it (e.g. disruption from weather events) relative to travellers located in urban areas.

The scoping review highlighted existing frameworks to inform the development of communications with travellers within the context of their environment. For example:

- The Krebs method: a simple framework that can help structure communications effectively around two pillars "How to communicate" and "What to communicate". The Krebs method has been used to inform approaches to effectively communicate in other UK government published toolkits (Government Communication Service, 2022). This was taken forward into the development of the toolkit so is discussed in more detail later in this section.
- The IN CASE framework: a framework to help policymakers and communicators anticipate potential unintended behavioural consequences of a campaign or intervention (Government Communication Service, 2021)
- Problem Location Action (PLA) method (Robinson et al., 2018): a framework to structure basic dynamic message sign content on motorways
- User journey frameworks to map out passenger recovery phases to disruption from the traveller perspective during transit (Papangelis et al., 2016)

The scoping review highlighted other potential principles of effective operator-traveller communication during disruption:

- Information flow to travellers should be consistent and regular (Department for Transport, 2022; Heathrow Express, 2021; Jones & Woolley, 2019; Vancouver Airport Authority, 2023).
- Information should be delivered by trusted sources and messengers (Department for Transport, 2021, 2022)
- Information about disruption should be communicated to travellers quickly (Clegg et al., 2018; Department for Transport, 2021; Heathrow Express, 2021)
- It is important that travellers receive accurate and current information. One solution would be to add timestamps to messages (Robinson et al., 2018)
- Any information/communication is better than none (Department for Transport, 2021, 2022; Ghee, 2013)

- Less emphasis should be placed on pushing out large volumes of generic information, and greater emphasis on narrow-casting/customising messages based on passenger preferences and locations (Clegg et al., 2018). Stakeholders echoed the sentiment that passengers are not interested in information if there is no delay to them, and do not want to know too much detail about the reasons for the issues
- Multiple channels should be used to communicate with passengers (Civil Aviation Authority, 2011; Clegg et al., 2018; Department for Transport, 2021; Marsden et al., 2016; Robinson et al., 2018; Vancouver Airport Authority, 2023)
- Travellers should receive a consistent message (Department for Transport, 2021; Ghee, 2013; Heathrow Express, 2021; Vancouver Airport Authority, 2023)

The review also highlighted some case studies of successful and unsuccessful travel disruption communication; we give details of two below. Case study 1 demonstrates a case where communicating with travellers successfully mitigated anticipated travel disruption on the public transport system.

Communication strategy case study 1: Jones & Woolley (2019)

"The big scare" was a strategy employed during the London 2012 Olympic games to encourage travellers to make travel adaptations to mitigate disruption. The strategy involved highlighting the possible impacts on important elements of travel choice decisions (travel; time, comfort, and convenience) with a "hard-edge" narrative (i.e., the stick not the carrot). The negative tone of messages was a powerful psychological tool, effective in gaining attention and encouraging action. However, most people interviewed after the games felt the messaging about the negative consequences of not participating in travel behaviour change was exaggerated - but agreed the messaging was justified - but this could be as the event (the Olympics) has such prestige and was considered a one-off).

Communication strategy case study 2: Civil Aviation Authority (2011)

The Civil Aviation Authority reviewed aviation's response to a major unanticipated disruption event due to bad weather and found passenger decisions can be adversely affected by a lack of consistent, timely and accurate information on the operational status of flights. First, faced with an absence of clear information, some passengers chose to travel to disrupted airports, either because they believed that they would be able to get better information at the airport itself or because the information they had access to was inaccurate (e.g. their flight was shown as operating when in fact it was cancelled). Second, once at the airport, many passengers were reluctant to leave for the same reasons.

Case study 2 gives an example where failure to communicate effectively with travellers during a period of unanticipated disruption led to poor outcomes for both plane travellers and operators.

Scoping review frameworks included in the toolkit

The Krebs method was highlighted in the scoping review as an effective approach to crisis or disruption communication. The framework sets out how organisations in general should communicate with the public to reassure, inform and promote desired behaviours.

The Krebs method outlines principles for how to communicate:

- Communicate consistently and frequently
- Use trusted sources and messengers
- Set expectations that information may change quickly as more is known

And what to communicate:

- Tell the public what is known
- Tell the public what is not known, emphasising the uncertainty
- Tell the public what actions are being taken, and why (this may include actions to mitigate the crisis, and actions to reduce uncertainty)
- Tell the public what they should do, and why
- Tell the public when to expect more information

The needs analysis framework also emerged from the scoping review as a useful tool for inclusion in the toolkit for operators to help support desired traveller behaviours. It was developed in the crisis communication behavioural toolkit created by the Government Communication Service and involves the following 4 stages:

1. Identify the public's essential needs
2. Identify the barriers to meeting those needs
3. Identify the behaviours the public might engage in to meet those needs
4. Identify potential consequences of these behaviours, and plan how to mitigate negative consequences

The needs analysis goes much broader than communication needs alone and can be used in tandem with the six-stage traveller journey developed from the qualitative research. Combining these in the toolkit, by conducting a needs analysis at each stage of the traveller journey, could potentially help operators think more broadly and systematically about traveller decision making. This could help pre-empt traveller behaviour and enable operators to prepare a plan to mitigate any negative consequences. In particular, this process may aid operators in understanding why travellers engage in undesirable behaviour and what the role of communications could be to address traveller needs.

Qualitative research with travellers

In the next stage of the project, exploratory qualitative research with international travellers was conducted to support findings from the scoping review and explore traveller behaviour and communication needs during an international travel disruption context.

Stages of the traveller journey

The qualitative research with travellers identified six typical stages of international travel when making a return trip, these are outlined below with the key decisions to be made at each stage:

1. **Booking or deciding to travel** – deciding whether and when to travel, whether to book independently or with a travel agent, which mode of international travel to use, which hub to use, and how far ahead to plan
2. **Pre-travel preparation** – deciding to check travel rules, documentation or travellers rights
3. **Travel to hub preparation** – planning the journey to the hub in terms of mode, timing, and route

4. **Travelling to the hub** – deciding whether to check the journey before leaving, how to respond to any travel disruption on the way to the hub
5. **Departure from the hub** – deciding how to respond to any travel disruption at the hub
6. **Returning from abroad** – deciding whether to check for UK travel disruption when abroad

The first 3 Stages can be categorised as 'pre-travel', while Stage 4 and 5 can be categorised as 'during travel'. Stage 6, returning from abroad, was not the focus of this research project, although travellers in focus groups suggested that they did tend to prepare for their return journeys.

Decision-making in response to travel disruption

Potential or actual travel disruption could impact decision-making at each stage of the traveller journey.

Pre-travel (Stages 1 to 3): Responses to potential travel disruption

Prior to travelling (in Stages 1, 2, and 3 of the traveller journey), many travellers in the focus group reported making specific decisions to avoid potential travel disruption or mitigate negative outcomes caused by potential travel disruption.

Many travellers tended to spontaneously assume that they would need to plan in extra time for travelling on the road or public transport network to avoid traffic or service disruptions. This was sometimes accompanied by cynicism about the resilience of the national UK travel network.

Some also reported specifically choosing strategies that would allow them to either exert more control over their journey themselves (e.g., choosing a car or taxi over public transport), or hand over control and responsibility to others (e.g. using travel agents and package holidays).

"For me it's all about control. I plan every minute of my holidays. So I take the car because I'm in control of my car getting there. I get there 2 or 3 hours early, once I'm through security I can relax." focus group, plane user

Several participants also cited choosing international rail or ferries over flights in part to reduce the likelihood of travel disruption. Those who did choose to travel by air tended to plan in additional time at the hub prior to their flight to account for any disruption, which ranged from planning to arrive between 2 to 4 hours in advance.

"You know where you stand a lot more with the ferries, if anything they tend to leave earlier rather than late. It's a smooth process because as soon as you get there its well sign-posted with humans telling you where to go which is a big benefit." – focus group, ferry user

For some it also affected their choice of hub, as they reported they might choose different airports or ports depending on their pre-existing knowledge of the hub. Others also reported buying travel insurance or flexible tickets to reduce any potential associated costs of travel disruption (such as having to buy a new ticket if they missed their original journey).

"I went from [specific airport], and did everything I could to make it as unstressful as possible: dropped off luggage the night before, bought fast track tickets for security, arrived 4 hours early. I had seen on social media the delays and it was chaos from the photos I saw." focus group, plane user

It also appeared that travellers with certain characteristics were less comfortable with the potential of travel disruption than others. This included individuals with physical or mental health conditions, and

those travelling with dependents. In particular, they reported being uncomfortable with the uncertainty created by travel disruption as they felt they could not fully control and prepare for it, and also did not know how the disruption would interact with their additional requirements (e.g. children needing entertainment, facilities, food/drinks or themselves having additional needs due to their condition).

During travel (Stages 4 and 5): Responses to travel disruption

Overall, travellers in the qualitative research tended to see travel disruption as a relatively common occurrence that they were willing to tolerate up to a certain degree. All participants had experienced multiple incidents of travel disruption and generally reported that a disruption of up to two hours was broadly acceptable.

“It’s understandable because things happen, a delay of an hour is okay. It depends on the client service, do they listen to their customers, what is the attitude of staff members, do they take ownership for the disruption, things like that.” depth interview, frequent plane traveller

During travel to the hub or at the hub (Stages 4 and 5 of the traveller journey), travellers reported that travel disruption such as queues, cancellations, or delays created uncertainty which could cause discomfort and stress. Their stress was heightened when travellers had bookings dependent on this journey such as onward services, connections, or accommodation. Discomfort and stress were also heightened for some travellers who needed extra support in travel disruption situations such as help getting to the gate, for example those with disabilities, travellers with children or animals, and vulnerable people.

Most travellers reported that airports in particular increased their anxiety and they had the most negative perceptions of how disruptions were communicated and handled at airports in comparison to other international hubs. Common reasons for these negative experiences included a shared environment where travellers lacked personal space, a perception that staff were unavailable, and facilities being closed (e.g. shops, restaurants, toilets). When at ferry ports, they reported an increased focus on facilities and shelter from the elements due to their open-air nature.

In terms of their response to disruption, some travellers reported that if they were stuck in traffic queues and risked missing their departure, they would consider using residential roads (re-routing via back streets) to try and get to the hub in time for their departure. Some reported that once at the hub, they would also try and find a staff member to speak to face-to-face to get the most updated information.

Responses to travel disruption during travel also varied depending on the extent to which disruption had been anticipated, the reasons for the disruption, and if the impact of the disruption was known. Travellers reported that they tended to be less concerned when they had been pre-warned about travel disruption and had been given the chance to prepare for disruption or make alternative arrangements. They were also less concerned when the impact of the disruption was known, for example the exact duration of a delay, as this meant they had a clear idea of the effect on their journey. Several travellers reported that disruption was less tolerable to them when they felt that operators or infrastructure owners had some control over the situation but had not taken action to address the cause of disruption, such as disruption caused by the peak travel season.

“There is an element of disbelief that they can’t have prepared for it [peak season] – it happens every year. If money is involved all of a sudden everything gets sorted, although that might be cynical of me.” focus group, ferry user

This finding is consistent with evidence identified in the scoping review (Department for Transport, 2021a; Papangelis et al., 2016).

Accessing existing communications

The stage of travel also determined what communications were sought or accessed by travellers. It was apparent from the qualitative research that travellers were more active information seekers pre-travel (Stages 1-3) than during travel (Stages 4-5).

Prior to travel, when planning their journey travellers tended to seek out information and felt personally responsible for ensuring they mitigated any potential travel disruption to the extent that they were able. Although, more experienced travellers reported not planning as far in advance compared to less experienced travellers. More experienced travellers also searched for less information and instead relied on assumptions or experiences from their previous similar journeys. In Stage 1 travellers tended to focus on searching for international operator booking information to book their journey. In this stage, travel disruption information was not a priority and tended to have low salience. Any information about travel disruption was typically reaching the traveller through the media. In the next stage, travellers typically reported searching for information via online searches and gov.uk about travel documents and requirements to ensure they met/had these. In Stage 3, when preparing to travel to the hub, they tended to search for information using journey planning apps. Potentially, there is an opportunity to introduce communications to help travellers prepare for travel disruption scenarios during this pre-travel stage where they actively seek out information.

During travel, travellers instead tended to rely on receiving information from the operator or at the hub regarding any travel disruption. They felt the operators or hubs were responsible for delivering these messages directly rather than travellers having to seek out information themselves. Reported sources of information included operator apps, live flight boards, announcements and signage at hubs, and hub/operator staff. Here, the operator with whom travellers had booked their travel with was perceived as a key trusted messenger in the context of travel disruption, as travellers knew that they had specific information about the journey (such as time of departure, destination, and their contact details).

"I feel like it's the operator's responsibility because we are travelling with them and have paid them. They have our information and should communicate with us." depth interview, frequent ferry traveller

Many travellers in the qualitative research tended to criticise current communications around travel disruption, especially regarding transparency of information. They also raised other issues with current communications including inconsistency of information (such as from an individual operator, across operators and across partners within hubs), timeliness of information, a lack of joined up information across the live transport network and a lack of personalisation of information. They also reported that they were not confident about their rights regarding international travel and they sometimes felt operators were not fully transparent to avoid compensating passengers.

Some travellers also raised that they had specific needs for certain communication channels. Non-digital channels were emphasised for those who were digitally excluded or enroute without access to a data network or their phone. Travellers with hearing or visual impairments highlighted that they needed to be able to access written or visual communication online, as they could not depend on being able to hear or see announcements at the hub. All travellers felt that ideally communication regarding travel disruption should include a range of different channels to increase the likelihood of it being received and read, although they emphasised again the importance of this information being consistent across channels.

"I have a visual impairment, so I need assistance from airport staff to get through security. I can't see any signs and with crowds I might not hear announcements over the intercom. I regularly check information on the airport website so keeping it updated is really important." focus group, plane user

Optimising communications

When asked specifically about messages relating to travel disruption, travellers in the qualitative research generally reported that they were only interested in receiving messages when there was a known impact on their specific journey. In terms of content, they preferred messages that outlined how disruption affected their booked journey specifically, gave details of what the operator was doing to address the issue, and offered suggestions for what travellers could do to control their own situation and make 'good' choices. In terms of tone, they generally expressed a preference for a reassuring and understanding tone that acknowledged any mistakes on the part of the communicating party. In terms of timing, they wanted regular updates when there was clarity about a situation or a change, so that they would be able to make informed decisions in response. In contrast, travellers tended to reject more generic messages, especially when they perceived these as not making clear what the impact on them was, or being a statement of a general anticipated issue that is commonly experienced (e.g., peak travel disruption due to a lack of resilience in the transport network).

"I want information about the problem and the steps being taken. Its worse if there is no communication even if the problem isn't solved yet. The tone should be empathetic and confident, a real human would be even better." depth interview, business plane traveller

One key issue that emerged was that early communication of possible disruption could backfire. Some travellers in the qualitative research suggested that if they were given advice on how to prepare for queuing it would prompt them to add in significantly more extra journey time than suggested to ensure they made their departure, which could then worsen the travel disruption situation. Possible strategies for avoiding this could include communicating a specific arrival window and the negative consequences of arriving early, and allowing travellers to access live queuing times (via signage at the hub or online before getting to the hub). Instead, in the pre-travel stages communications can aim to educate travellers more broadly about what they can be doing to plan ahead for their journey, including links to any relevant external sources. Travellers reported trusting the government as a source for delivering general information regarding travel disruption, such as best practice for preparing for travel, information about travellers' rights, and information about travel documents.

"They're not going to stop the ferry just for me, so I wouldn't listen to messages telling me to come later, honestly it might make me come even earlier. I can't see how logistically if there are long queues I could still get through, so I would want to be there early." focus group, ferry user

During travel, communications should be scheduled on the day before and day of travel to communicate any known or potential disruption so that travellers are informed and, importantly, have time to take action. Once at the hub, to ensure the message is seen by all travellers, communication should occur via signage, announcements, and digitally. As delays become more severe, it may be necessary to enable ground staff to interact with travellers directly.

The qualitative research also suggested that some variations to communication may be required depending on the travel disruption scenario. Each qualitative focus group focused on exploring responses to one of the following travel disruption scenarios: border control changes, peak travel disruption, or heatwaves. For border control changes, travellers reported wanting information about precise changes to processes as far in advance as possible. They also wanted to be informed of any implications for timings of their journey and how impacts might vary by citizen type. They felt this type of information would ideally be communicated by operators but also reiterated by the government and hubs. For peak travel disruption, travellers were cynical about the causes of this disruption (feeling it was due to a general lack of investment in infrastructure) and felt that as a recurring issue it should have been addressed. As a result, they were not sympathetic to messages informing them about the reasons for the disruption. Instead, they were interested in knowing the precise impact on their journey prior to leaving and concrete specifics of what had been done to respond to the issue. For heatwaves,

travellers only wanted to be told about this in the context of a clear impact on their booked journey, but some felt it would be useful in general to be given information about health impacts and how to mitigate the impact of hot weather. There were some conflicting views expressed regarding the extent to which individuals should be responsible for protecting themselves versus the hub or operator taking responsibility for this.

“It feels like it puts the responsibility for planning for the heatwave on the traveller rather than the operator helping. They should provide water and tell us our options.” focus group, international rail

The Krebs method was also shown to travellers in the qualitative research, who felt it addressed many of the key issues with communication around travel disruption they had previously experienced. For the purposes of the toolkit, the principles could be tailored specifically into guidance for operators to inform travellers about travel disruption.

Based on reported preferences from travellers in the qualitative research, this could include:

- Communicating as soon as possible once disruption has been identified:
 - For planned changes specifically, developing messaging and updating when the situation changes
 - For immediate unplanned disruption, setting expectations in communications that information may change quickly as more is known and updating travellers every 30 minutes to an hour
- Tailoring messages to individual journeys as far as possible
- Having people delivering messaging at hubs as the impact of disruption becomes more severe
- Having a factual, professional and helpful tone, becoming more sympathetic and apologetic when impacts are more severe

Summary of Stage 1

The first stage of the research suggested that:

- There are often contextual and material factors that impact when and what can be communicated with travellers – travel disruption covers a wide range of scenarios each with their own challenges for operators
- From the traveller perspective, the cause of disruption can matter too, travellers have a more negative view and a lower tolerance towards disruption that is perceived as within the operators control or caused by human error
- Each operator also faces different challenges, depending on the location of the hub, and the mode of transport, however, the principles of good communication are relatively consistent for all operators

Therefore, a communications toolkit needs to be broad enough to apply across modes of transport and forms of disruption. The traveller journey, Krebs method, and needs framework from the scoping review and qualitative interviews with travellers were used to develop an initial toolkit to support operators to refine/update their communications with travellers by taking a traveller-centric approach.



The intended purpose was to enable operators to fully map out the context around travel disruption and understand their audience in a systematic way.

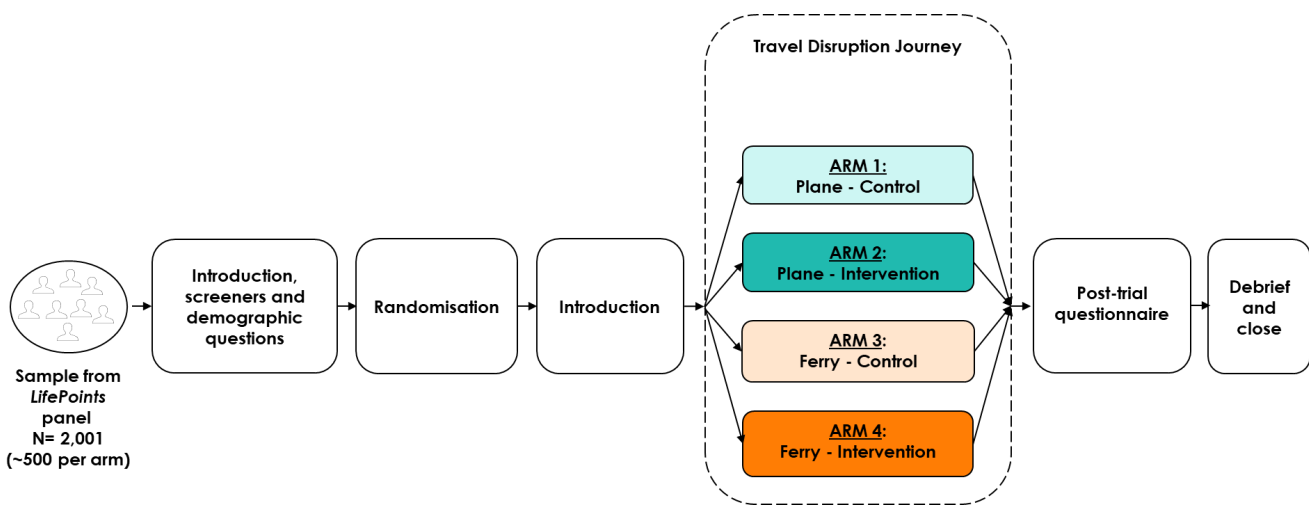
Stage 2 – Methods

The aim of **Stage 2** was to refine and support the insights from the first stage and consider how communications and the toolkit can be optimised. To do so, we conducted two online randomised controlled trials with a combined total of 2,000 respondents, to test the effectiveness of specific communications assets within a simulated travel journey.

Online experiment

To explore whether toolkit-based operator communications would improve travellers' adherence to operator instructions during an imaginary journey to a travel hub, we conducted an online experiment with a 4-armed (2 control / Intervention x 2 Plane / Ferry) between-subjects design (see Figure 1 for an overview of the structure of the experiment).

Figure 1: Trial flow



To conduct this experiment, we recruited a sample of (N = 2,001) UK adults who had travelled abroad by the mode simulated in the experiment (plane or ferry) in the last 10 years or would consider doing so. Participants were recruited via Kantar's *LifePoints* panel and paid approximately £4¹ for completing the experiment and post-trial questionnaire (Median completion time: 8:15). Fieldwork was conducted between 19 January and 7 February 2024. The survey environment was developed using Forsta Surveys.

To ensure participants met the criteria for inclusion in our experiment, we included screener questions that asked if participants had travelled by either plane or ferry in the last 10 years, or if they would consider doing so in the future, to determine their eligibility for each arm. If participants indicated they had not travelled by a given mode in the last 10 years and would not consider doing so in the future, they were considered ineligible for that version of the experiment. If participants were deemed ineligible for both versions of the experiment, they were excluded. In addition to this, to ensure that this sample was demographically representative of the population of UK residents, we applied quotas on age groups within gender, ethnicity, and region of residence. See Appendix E for an overview of the demographic breakdown of the sample.

After screening, participants were randomly assigned to either the control or intervention group within the mode condition(s) they were eligible to complete. Both scenarios included the same number and type of stages, but images, text, and information provided by operators were tailored to the travel

¹ Participants were compensated with LifePoints, a platform specific currency which is exchangeable for real currency.

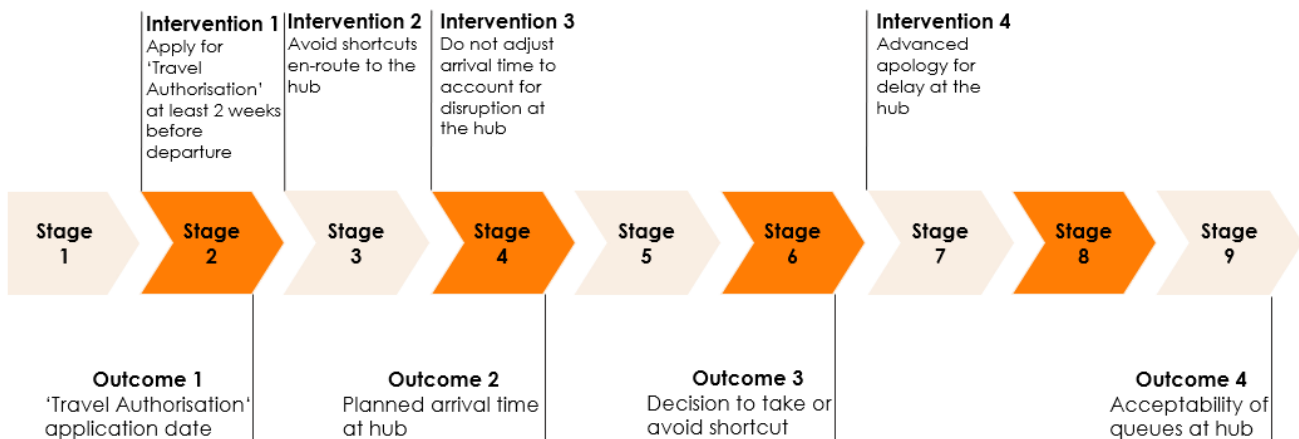
mode. We did not test for differences in participant responses across scenarios, only between the control and intervention conditions within each scenario (see Appendix F: Statistical methods and analysis for details).

Traveller journey and embedded outcome measures

Participants completed a simulated nine-stage journey, from booking their travel to departure. At each stage of the simulated journey, participants saw an image, a text description of what was happening at the stage, and a phone screen which showed messages sent by operators during the journey which contained instructions to take during the journey. Participants were asked questions at each stage of the travel journey; these questions included our four primary outcome measures (see Appendix G: Outcomes for details) which were designed to assess adherence with operator instructions. Please see Appendix H: Procedure for additional details about the experiment.

Our key outcomes were included in this experiment as they were either highlighted as key areas of interest for future policy (Outcome 1), instances of traveller behaviour which was particularly problematic (Outcome 2 and Outcome 3), or identified as a promising opportunity for communications during the qualitative phase of research (Outcome 4).

Figure 2: Overview of traveller journey



As highlighted in Figure 2, participants in the intervention conditions were shown four intervention messages each designed to promote or discourage a target behaviour (Outcomes 1 to 3) or perception (Outcome 4) relative to participants in the control condition.

In Stage 2, which took place 6 weeks prior to 'departure', all participants were informed they were required to complete a 'Travel Authorisation' form at least two weeks prior to departure (intervention 1). After receiving this information via operator communications, participants were asked when they intended to complete the 'Travel Authorisation' form (Outcome 1). We hypothesised that receiving the intervention communications at this stage would increase the likelihood of participants adhering to operator recommendations by applying for the 'Travel Authorisation' at least 2 weeks prior to departure relative to participants in the control condition.

In Stage 3, which took place one week prior to departure, participants in the intervention conditions were informed that they should avoid taking shortcuts through residential roads whilst enroute to the travel hub (Intervention 2). In Stage 6, which took place whilst the participant was driving towards the hub, participants were offered the option to take or avoid the shortcut (Outcome 3). We hypothesised that receiving the intervention communications at this stage would increase the likelihood of

participants adhering to operator recommendations to stay on the main road rather than taking a shortcut relative to participants in the control condition.

In Stage 4, which took place the day before departure, participants were informed that there were possible delays at the hub due to industrial action, but were advised by operators to arrive when bag drop (Plane) or check in (Ferry) opened, rather than before (Intervention 3). After receiving this information via operator communications, participants were asked to enter a planned arrival time at the hub (Outcome 2). We hypothesised that receiving the intervention communications at this stage would increase the likelihood of participants adhering to arrival time recommendations from operators relative to participants in the control condition.

In Stage 7, which took place as participants arrived at the hub, participants in the intervention conditions received a message regarding the potential for delays at the hub due to queues (Intervention 4). In Stage 9, which took place whilst participants were in a long security queue shortly before their departure time, participants were asked to report how acceptable the queue length was (1 ('Totally Unacceptable') to 7 ('Totally Acceptable')) (Outcome 4). We hypothesised that receiving the intervention communications at this stage would increase the reported acceptability of delays due to queues at the hub relative to participants in the control condition.

Outcomes 1 to 3 were be coded as binary: either compliant or not. Outcome 4 was measured via a 7-point Likert scale (1 Totally unacceptable to 7 Totally acceptable). (see Appendix H – Outcomes: for the exact wording of all four questions used to measure key outcomes).

Intervention messages

The intervention messages shown in this experiment were based on the mechanisms of effective communication identified in the earlier stages of the research. Intervention messages 1-3 were designed to leverage at least one of three key principles in order to increase adherence with operator instructions:

1. Increase participants' self-efficacy in order to increase confidence in one's ability to complete desired actions
2. Highlight the potential personal benefits associated with adhering to operator advice
3. Highlight the potential consequences (either personal and/or social) associated with not adhering to operator advice

Intervention message 1 drew on all three of these principles from the communications toolkit. Participants in the intervention conditions were told how and where to apply for the 'Travel Authorisation' and reassured that the process was "quick and easy" (Self-efficacy), advised to apply early to ensure the 'Travel Authorisation' was approved early (Benefit of adherence) and warned that not completing the form in sufficient time may mean they were unable to travel (Consequence of non-adherence).

Intervention message 2 highlighted the potential consequences of non-adherence with operator instructions regarding avoiding shortcuts en route to the hub. Participants in the Plane – Intervention condition were told that using shortcuts would cause "additional delays if traffic measures were in place", and participants in the Ferry – Intervention condition were told that they may be "unable to rejoin the main road" after taking a shortcut through residential roads.

Similarly, Intervention message 3 highlighted the potential consequences of non-adherence with operator instructions regarding participants' planned arrival time at the hub after learning about disruption. Participants in the Plane – Intervention condition were told that early arrival "may add to

[your] waiting time and cause delays for other passengers". Participants in the Ferry – intervention condition were told that early arrival “may mean a longer wait”, and/or they “may be turned away and asked to return later”.

Intervention message 4 did not explicitly reference the principles developed in the communication toolkit. Instead, it was informed by findings from Phase 1 where participants reported that pro-active updates from operators regarding delays at the hub were desirable.

The messages were developed in collaboration with policy experts at the Department for Transport and were based on real communications sent by ferry and plane operators. Please see Appendix I for an overview of the outcome-relevant messages shared with participants in the control and intervention conditions. Differences between the control and intervention messages, which were informed by the toolkit, are highlighted in bold.

Secondary outcomes

We also collected additional secondary behavioural outcomes during the traveller journey, and a range of comprehension-based and demographic questions in the post-trial questionnaire (See Appendix J – Questionnaire for an overview of the questions asked to participants, see Appendix K for a summary of responses not included in the main report). Specifically, we asked participants in the intervention conditions who did not adhere to operator advice in outcomes 1 to 3 the reason for their non-adherence. Additionally, we measured participants perceived self-efficacy relating to operator instructions, and their expected personal and social benefit associated with performing those actions.

Limitations

The experiment has two potential limitations. Firstly, the participants in this study were sampled from a non-probability online-access panel. Therefore, the results should not be considered robust population estimates. We did apply proportionate quotas and screening questions to ensure the sample profile matched the study population of interest (UK residents who had travelled abroad via Plane or Ferry in the last 10 years, or would consider doing so in the future), which will account for some sources of potential bias. Additionally, random allocation to trial arms means that any fixed recruitment biases would apply equally across those arms. In other words, fixed recruitment biases should not have confounded our findings. This is an inherent weakness in the sampling design of any study which does not randomly sample participants directly from the population of interest.

Secondly, participants completed a hypothetical journey and were not subject to any of the real-world stress associated with a journey to a travel hub prior to an international trip, nor the frustration and potential financial impact of travel disruption. It is therefore plausible that participants' responses in this research may not be a valid indicator of real-world behaviour and the effects reported may not generalise beyond this research. To maximise the external validity of our experiment we used real-world examples of operator-traveller communications to inform control messages shared with participants. Additionally, we created an interactive user journey with stylised communications in the form of emails and text messages to engage participants. Moreover, whilst the hypothetical nature of this experiment limits the generalisability of our findings, this approach allowed us to control potential noise in the experimental design, meaning we can draw strong causal inferences about the effectiveness of our toolkit-informed communications.

Stage 2 – Results

In Stage 2 of the research, we conducted an online experiment designed to explore whether toolkit-based operator communications could increase adherence with operator instructions to mitigate the impacts of travel disruption. Specifically, we tested whether our intervention text would:

1. Increase the likelihood of participants completing a 'Travel Authorisation' application at least 2 weeks prior to departure.
2. Decrease the likelihood of participants arriving earlier than specified by the travel operator.
3. Decrease the likelihood of participants taking a shortcut via residential roads en-route to the hub.
4. increase the likelihood of participants reporting that delays at the travel hub due to queues were acceptable.

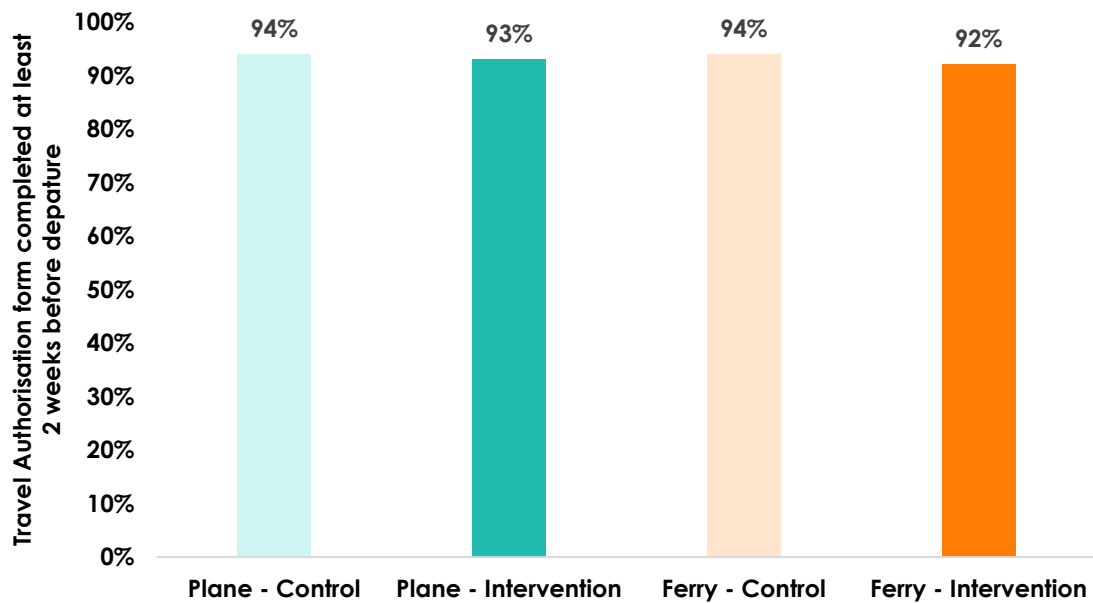
Online experiment findings

Primary outcomes – Adherence with operator instructions

'Travel Authorisation' application

Most participants reported that they would apply for the 'Travel Authorisation' at least 2 weeks before the departure date (see Figure 3). We found no evidence that the intervention text shown to participants in the Plane or Ferry versions of the journey significantly changed the likelihood of applying for the 'Travel Authorisation' at least 2 weeks before the departure date (Plane – Control: 94%, Plane – Intervention: 93%, Ferry – Control: 94%, Ferry – Intervention: 92%)

Figure 3: Percentage of participants who applied for the ‘Travel Authorisation’ at least 2 weeks (or earlier) before their trip²³



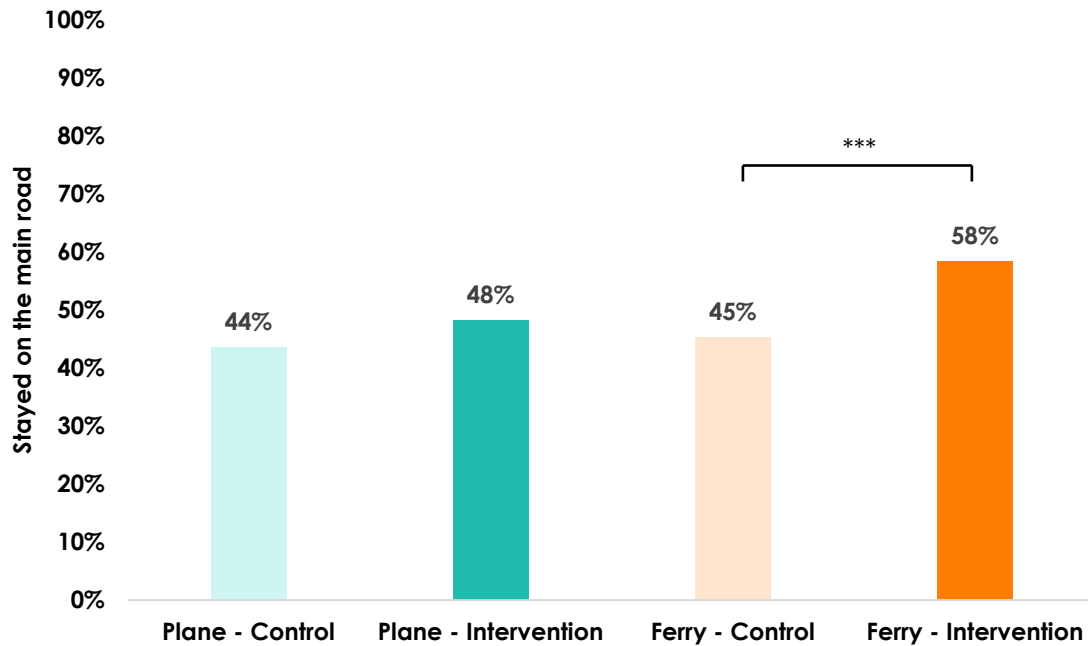
Avoiding residential roads

Participants who saw the intervention text in the Ferry condition were more likely to follow the operator's advice to stay on the main road relative to participants in the control arm, who saw no such advice (see Figure 4), indicating the intervention communications worked as hypothesised in the Ferry condition (Ferry – Control: 45% compared to Ferry – Intervention: 58%). This difference was robust to adjusting for multiple comparisons. In contrast there was no statistically significant difference in responses between participants in the Plane condition who saw the intervention text and the control (Plane – Control: 44% compared to Plane – Intervention – 48%).

² Seven participants (Plane – Intervention: 3, Ferry – Intervention: 4) were excluded from analysis because they indicated they did not need to apply for a Travel Authorisation because they were an EU citizen in the post-trial questionnaire.

³ The base size for this question was: Plane – Control: 500, Plane – Intervention: 497, Ferry – Control: 500, Ferry Intervention: 497 (accounting for exclusion of participants who indicated that they did not need to apply for a Travel Authorisation because they were an EU citizen). To conduct this analysis, we constructed a generalised linear model (GLM) with a logit-link function (equivalent to a logistic regression model) which predicted whether participants applied at least 2 weeks prior to departure (binary outcome) by intervention arm. Plane and Ferry conditions were analysed separately. We adjusted p values to account for 4 comparisons. For more details, please refer to Appendix L – Model Tables.

Figure 4: Percentage of participants who chose to stay on the main road rather than taking the shortcut⁴



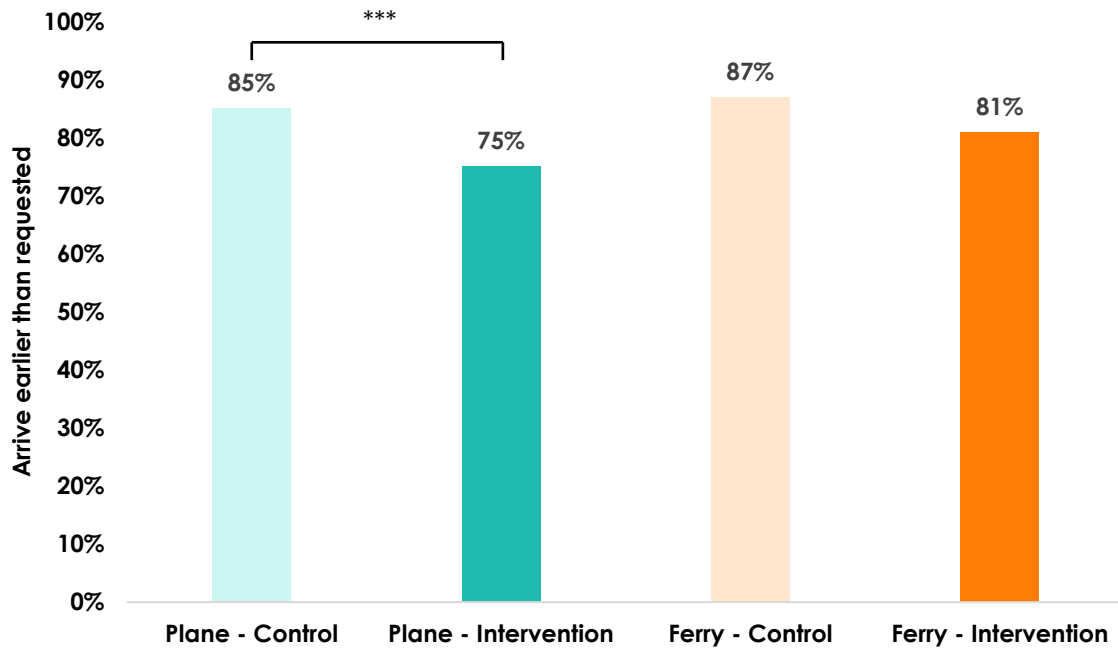
Arrival time

Participants in the Plane condition who saw the intervention text were less likely to arrive earlier than specified by the operator advice ('11:30am') after learning about disruption at the airport than participants in the control condition (see Figure 5), indicating the intervention communications worked as hypothesised in the Plane condition (Plane – Control: 85% compared to Plane – Intervention: 75%). This difference was robust to adjusting for multiple comparisons. Participants in the Ferry condition who saw the intervention text were marginally less likely to arrive earlier than specified by the operator advice ('12:30pm') after learning about disruption at the port relative to participants in the control condition (Ferry – Control: 87% compared to Ferry – Intervention: 81%); however, this difference was not significant after adjusting for multiple comparisons.⁵

⁴ The base sizes for this question were: Plane – Control: 500, Plane – Intervention: 500, Ferry – Control: 500, Ferry Intervention: 501. *** indicates $p < 0.001$. To conduct this analysis, we constructed a generalised linear model (GLM) with a logit-link function (equivalent to a logistic regression model) which predicted whether participants opted to take the shortcut (binary outcome) by intervention arm. Plane and Ferry conditions were analysed separately. We adjusted p values to account for 4 comparisons. For more details, please refer to Appendix L – Model Tables.

⁵ Note: This analysis was conducted using a threshold time of 11:30am in the Plane condition and 12:30 in the Ferry condition. We also performed analysis which assessed the likelihood of participants arriving within 30 minutes of the specified arrival time ('11:30am – 12:00pm' in the Plane condition, '12:30pm – 13:00pm' in the Ferry condition). The pattern of results was consistent in both cases; the intervention significantly increased the likelihood of participants in the Plane condition arriving between 11:30-12:00 relative to the control condition, even after adjusting for multiple comparisons. There was no significant effect of the intervention text in the Ferry condition after adjusting for multiple comparisons. see Table 2 for details on the breakdown of participant arrival times.

Figure 5: Percentage of participants who arrived earlier than specified by the operator⁶

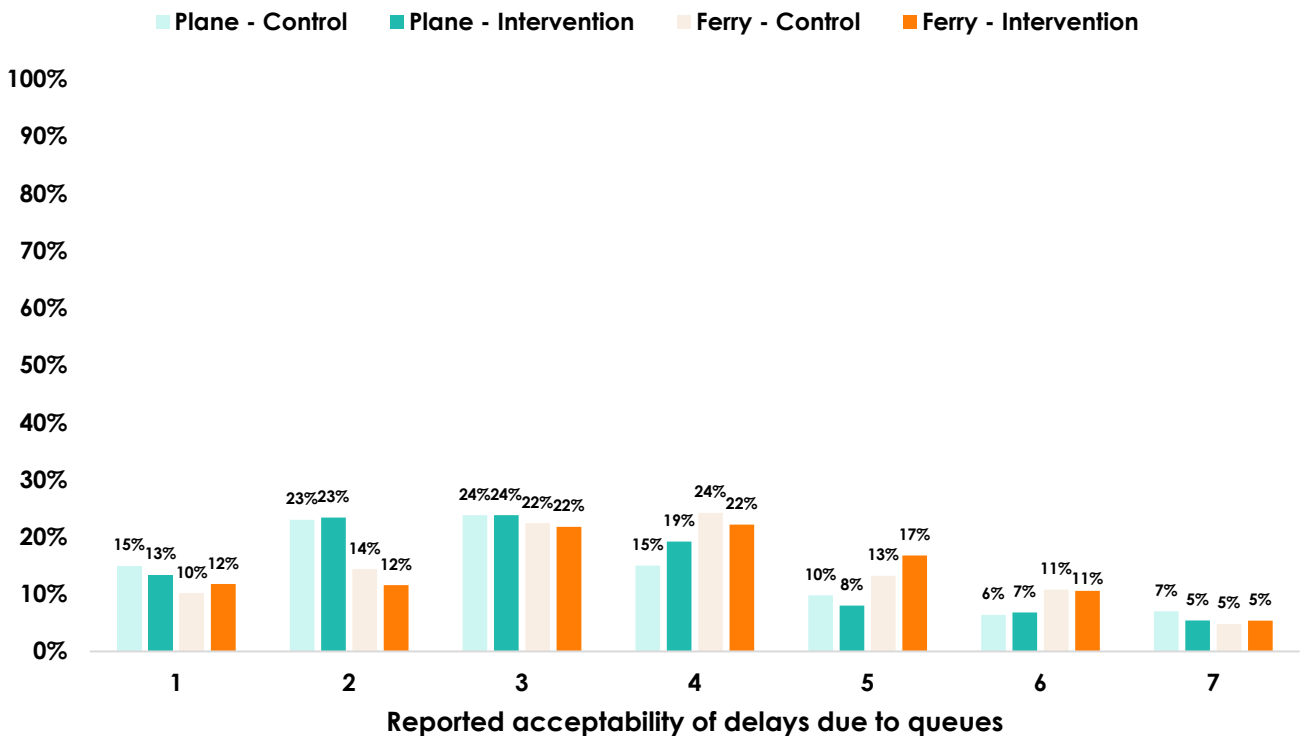


Acceptability of delays due to queues

Participants who saw the intervention messages did not report a significantly higher level of acceptability of delays due to queues in either the Plane or Ferry condition (see Figure 6 for the average reported acceptability per arm). The modal response for participants in the Plane condition was 3 ('Slightly unacceptable'), irrespective of whether they saw the intervention text which included an advanced warning of the delays and an apology. The modal response for participants in both versions of the Ferry condition was 4 ('Neutral').

⁶ The base sizes for this question were: Plane – Control: 500, Plane – Intervention: 500, Ferry – Control: 500, Ferry Intervention: 501. *** indicates $p < 0.001$. To conduct this analysis, we constructed a generalised linear model (GLM) with a logit-link function (equivalent to a logistic regression model) which predicted whether participants planned to arrive earlier than recommended by the operator (binary outcome) by intervention arm. Plane and Ferry conditions were analysed separately. We adjusted p values to account for 4 comparisons. For more details, please refer to Appendix L – Model Tables.

Figure 6: Reported acceptability of delays due to queuing⁷



Secondary outcomes – Responses to post-trial questionnaire

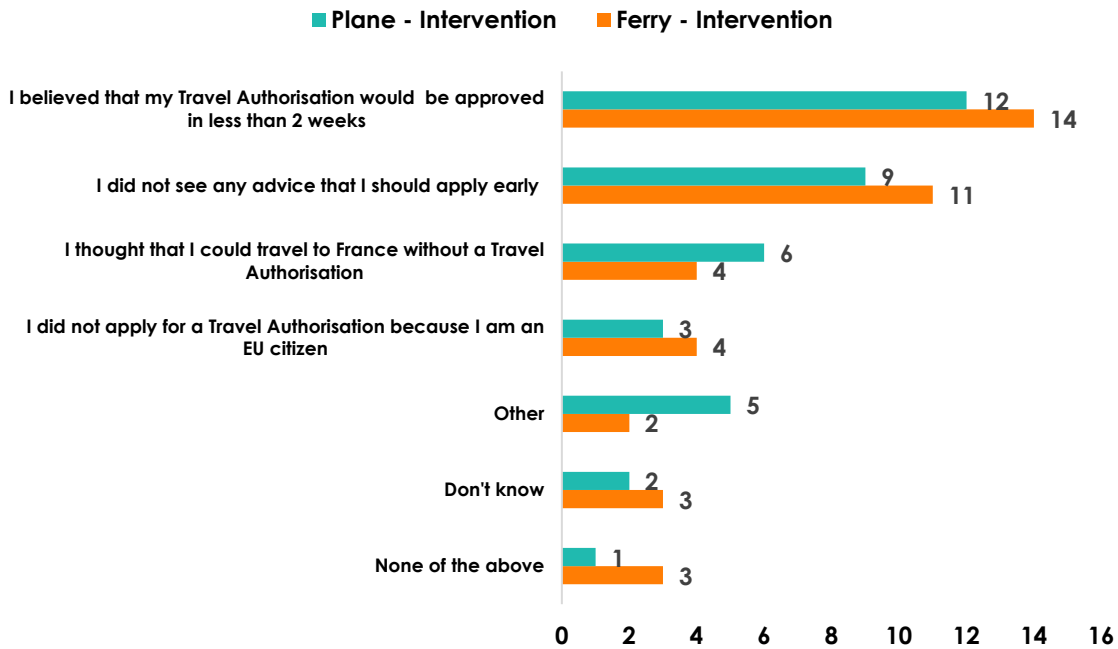
‘Travel Authorisation’ application

Few participants chose not to complete the ‘Travel Authorisation’ form at least 2 weeks before departure (Plane – Control: 31, Plane – Intervention: 37, Ferry – Control: 32, Plane – Intervention: 40). Amongst participants who applied less than 2 weeks before departure (Plane – Intervention: 25, Ferry – Intervention: 24), the majority indicated they did so because they believed the ‘Travel Authorisation’ would be approved in less than 2 weeks” (Plane – Intervention: 12, Ferry – Intervention: 14), or that they did not see advice indicating they should apply early (Plane – Intervention: 9, Ferry – Intervention: 11).

Several participants also indicated that they would not apply for a ‘Travel Authorisation’ (Plane – Intervention: 12, Ferry – Intervention: 16). Amongst those participants, some indicated that they did so because they were EU citizens (Plane – Intervention: 3, Ferry – Intervention: 4), however some participants also indicated, presumably incorrectly, that they “could travel to France without a Travel Authorisation”.

⁷ Participants used a 7-point Likert scale (1 = “Totally unacceptable”, 7 = “Totally acceptable”) to respond. The standard deviation of responses to this question across arms was (Plane - Control: 1.73, Plane – Intervention: 1.64, Ferry – Control: 1.62, Ferry - Intervention: 1.66). The base sizes for this question were: Plane – Control: 500, Plane – Intervention: 500, Ferry – Control: 500, Ferry Intervention: 501. To conduct this analysis, we constructed an ordinal logit model which predicted participants reported acceptability of delays due to queues by intervention arm. Plane and Ferry conditions were analysed separately. We adjusted p values to account for 4 comparisons. For more details, please refer to Appendix L – Model Tables.

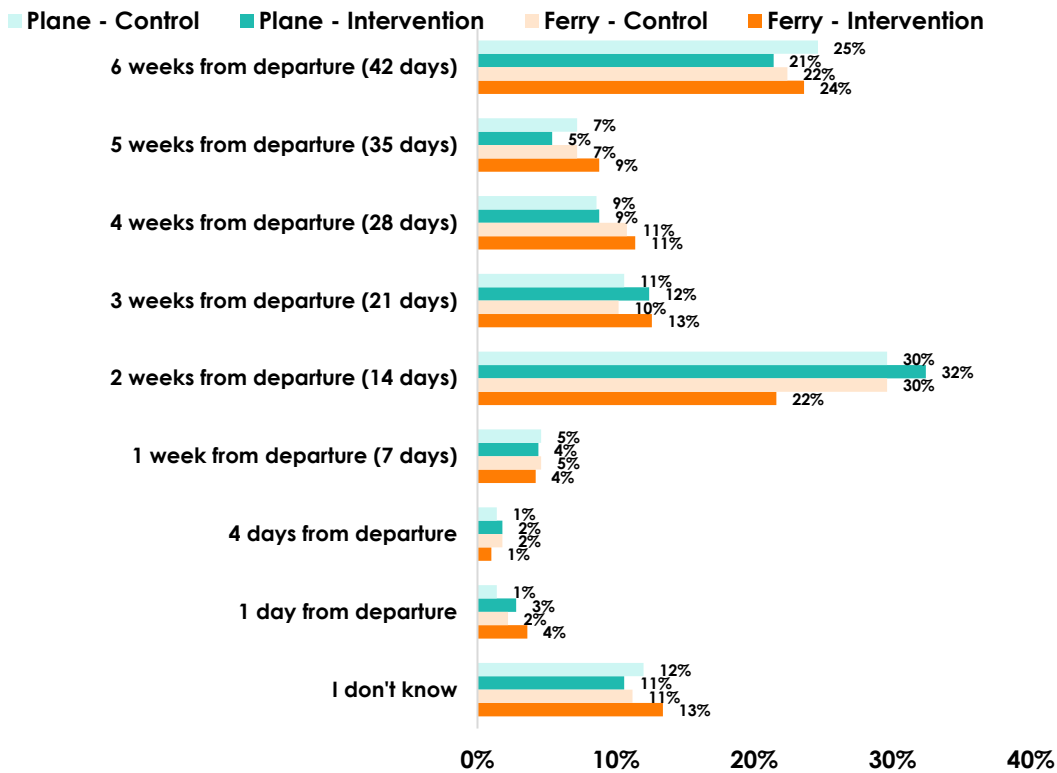
Figure 7: Reasons provided for not applying for the 'Travel Authorisation' form at least 2 weeks before departure ⁸



Participants were also asked when the latest they should apply for the 'Travel Authorisation' form was to test their understanding of operator advice. The majority of participants indicated that the latest they should apply was at least 2 weeks before departure or earlier (Figure 8).

⁸ The base sizes for this question were: Plane – Intervention: 37, Ferry Intervention: 40.

Figure 8: Latest application for the Travel Authorisation⁹



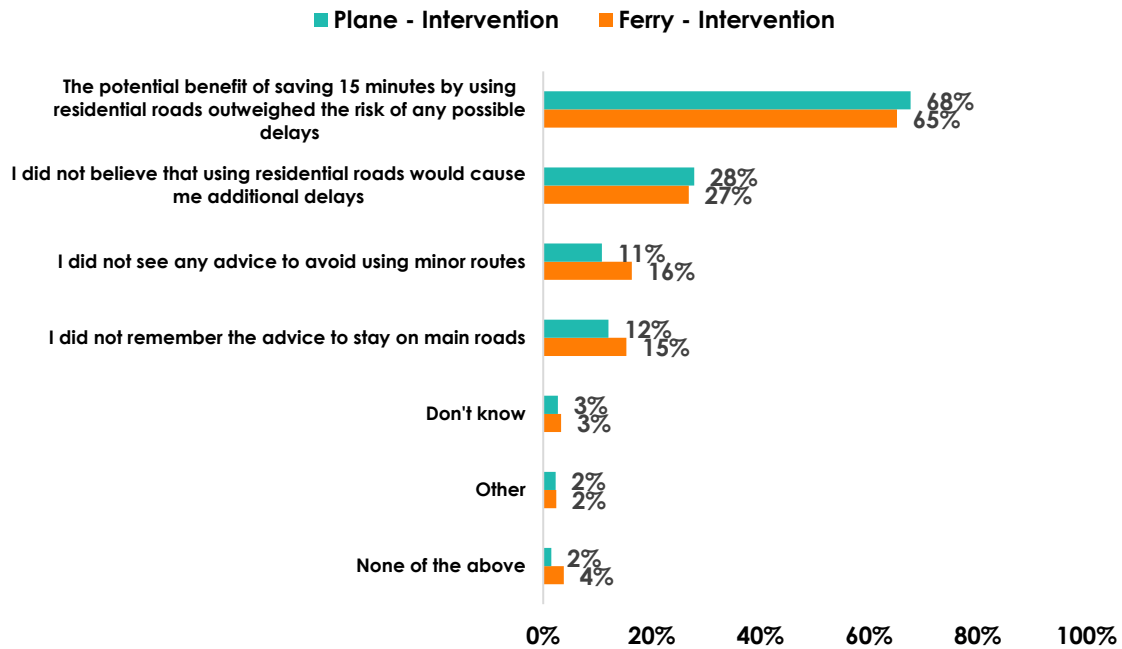
Avoiding residential roads

Participants who did not follow operator advice regarding staying on main roads most often reported doing so because they thought that the potential benefit of saving 15 minutes by using residential roads outweighed the risk of any possible delays (Plane – Intervention: 68%, Ferry – Intervention 65%) (see Figure 9). Many participants also indicated that they did not believe using residential roads would cause additional delays (Plane – Intervention: 28%, Ferry – Intervention 27%).

Relatively few participants indicated that they did not see (Plane – Intervention: 11%, Ferry – Intervention 16%), or did not remember (Plane – Intervention: 12%, Ferry – Intervention 15%), operator advice to avoid residential roads. This suggests that many participants actively chose to disregard operator advice regarding avoiding residential roads, rather than forgetting or not seeing the advice.

⁹ The base sizes for this question were: Plane – Control: 500, Plane – Intervention: 500, Ferry – Control: 500, Ferry Intervention: 501.

Figure 9: Reasons provided for not following operator advice regarding staying on main roads¹⁰



Arrival time

Participants in the Ferry and Plane conditions who arrived earlier than specified by the operator most often indicated that they did so because they usually aim to arrive earlier than the operator advises (Plane – Intervention: 40%, Ferry – Intervention 41%) and that they wanted to “arrive before bag drop opened to leave plenty of time before their flight” (Plane – Intervention: 40%) or to board the ferry (Ferry – Intervention: 38%).

The intervention texts stated some negative consequences of arriving early; some participants indicated that they did not believe that their arriving early would cause delays for other passengers (Plane – Intervention: 12%), add to their own waiting time (Plane – Intervention: 13%), or cause them to be turned away (Ferry – Intervention: 16%).

Some participants in both conditions also indicated that they had not seen the warning text in the operator communications which advised them not to arrive early (Plane – Intervention: 12%, Ferry – Intervention 17%), or had accidentally chosen a planned arrival time they thought was within the range specified by the operator (Plane – Intervention: 12%, Ferry – Intervention: 21%).

For a complete breakdown of responses to these questions, please see Figure 10 (Plane – Intervention) and Figure 11 (Ferry – Intervention).

¹⁰ The base size of responses for this question was Plane - Intervention: 259, Ferry - Intervention: 209.

Figure 10: Reasons provided for arriving early at the airport¹¹

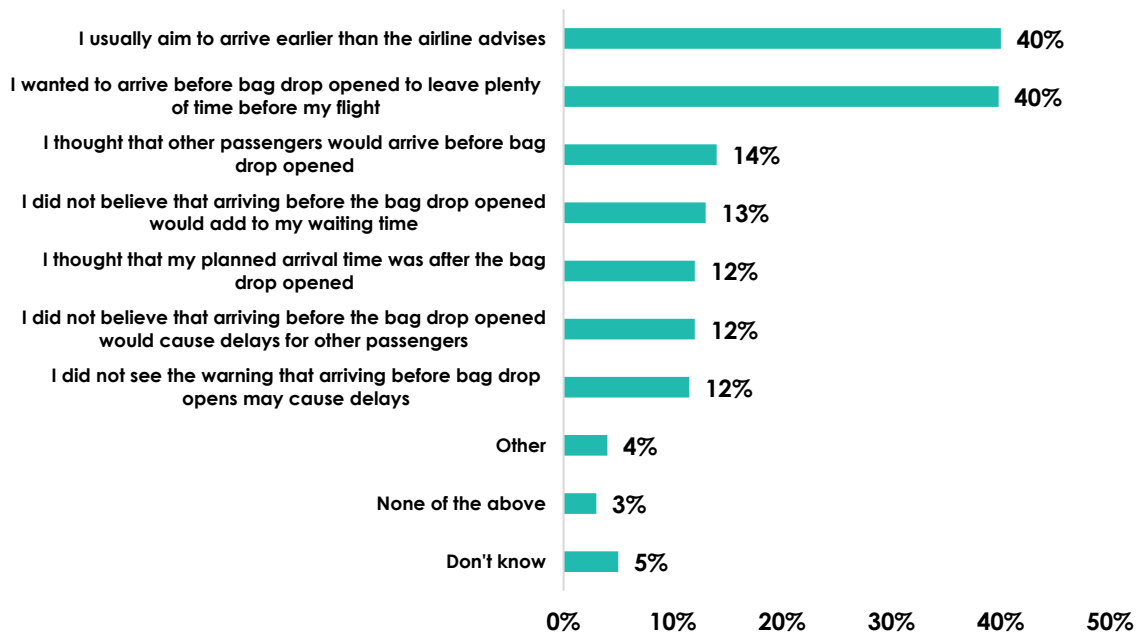


Figure 11: Reasons provided for arriving early at the ferry port¹²

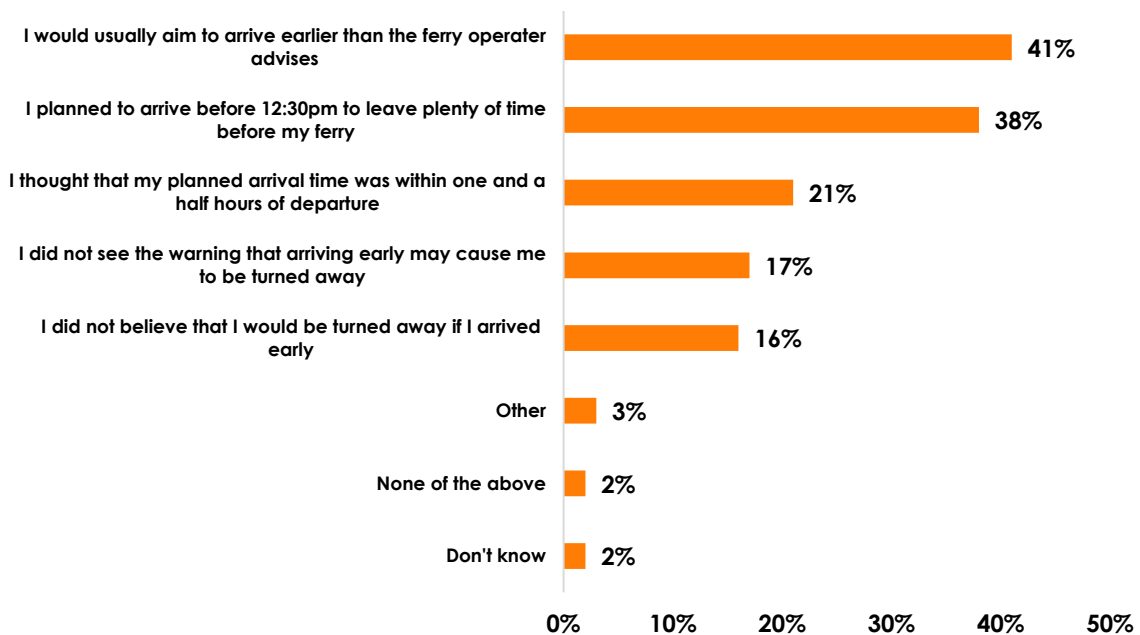


Table 1 and 2 show the breakdown of the proportion of participants who (a) planned to arrive before '11:30am' (Plane) and '12:00pm' (Ferry), (b) within 30 minutes of the specified arrival time ('11:30am – 12:00pm' (Plane), '12:00pm – 12:30pm' (Ferry)), or (c) later than the specified arrival time, before and after learning about disruption. These results suggest that a large proportion of participants shifted their planned arrival time forward (i.e., earlier in the day) after learning about disruption at the hub.

¹¹ The base size for this question was n = 374

¹² The base size for this question was n = 407

Table 1: Breakdown of arrival times prior to learning about disruption at the hub

	Early arrival	Arrival within 30 minutes of specified time	Arrival after 30 minute window
Plane – Control	60%	35%	5%
Plane – Intervention	60%	36%	4%
Ferry – Control	67%	31%	2%
Ferry – Intervention	77%	21%	2%

Table 2: Breakdown of revised arrival times after learning about disruption at the hub

	Early arrival	Arrival within 30 minutes of specified time	Arrival after 30 minute window
Plane – Control	85%	12%	3%
Plane – Intervention	75%	23%	2%
Ferry – Control	87%	12%	1%
Ferry – Intervention	81%	17%	2%

Perception of communications

Participants across each condition generally indicated that they felt that they could follow the advice provided by the operator ('self-efficacy') (see Table 3). There was no clear difference in reported expected self-efficacy between participants in the control and intervention arms in either condition.

Similarly, the majority of participants in all conditions reported that following operator advice would provide benefits to themselves ('personal benefit') and other passengers ('social benefit') to them on their journey (see Table 3). There were no clear differences in the reported personal or social benefit between participants in the control and intervention arms in either condition.

Table 3: Reported expected self-efficacy, social and personal benefit associated with adhering to instructions issued by the operator¹³

	Self-efficacy		Personal benefit		Social benefit	
	Modal response	Mean response	Modal response	Mean response	Modal response	Mean response
Plane – Control	6 ('Agree')	5.99	6 ('Agree')	5.74	6 ('Agree')	5.84
Plane – Intervention	6 ('Agree')	5.78	6 ('Agree')	5.64	6 ('Agree')	5.70
Ferry – Control	7	5.94	6 ('Agree')	5.76	6 ('Agree')	5.87

¹³ Participants used a 7-point Likert scale (1 = "Strongly agree", 7 = "Strongly disagree") to respond. For easier interpretation, scores have been inverted in Table 4. The standard deviation of responses to these questions were: SELFEFFICACY (Plane - Control: 1.11, Plane – Intervention: 1.16, Ferry – Control : 1.19, Ferry - Intervention: 1.21), BENEFIT (Plane - Control: 1.13, Plane – Intervention: 1.25, Ferry – Control : 1.17, Ferry - Intervention: 1.25), SOCIALBENEFIT (Plane - Control: 1.15, Plane – Intervention: 1.21, Ferry – Control : 1.23, Ferry - Intervention: 1.23). The base size for responses to these questions were: Plane – Control: 500, Plane – Intervention: 500, Ferry – Control: 500, Ferry Intervention: 501.

	('Strongly Agree')					
Ferry – Intervention	6 ('Agree')	5.85	6 ('Agree')	5.74	6 ('Agree')	5.76

Discussion of findings

The results of our experiment indicate that intervention communications which were designed to improve participants' self-efficacy and increase the saliency of the potential benefits (personal) of adherence to operator instructions, or potential negative consequences (social and personal) of non-adherence to operator instructions, have the potential to improve adherence with said instructions in specific contexts. We found that participants who saw the intervention text which specifically emphasised the negative consequences of non-adherence with operator advice were more likely to stick to main roads (Ferry scenario) and arrive at the transport hub at the time specified by the operator (Plane scenario). However, the intervention text had no effect on the likelihood that participants applied for the 'Travel Authorisation' at least 2 weeks prior to departure, nor on their perception of delays due to queues at the hub as acceptable.

This pattern of results suggests that participants across all arms were invested in successfully making their flight or ferry, and they took actions which they felt maximised their chance of doing so. Indeed, in the control arms, participants in both the Ferry and Plane conditions were likely to take a short-cut en-route to the travel hub, and plan to arrive earlier than specified by the operator.

Conversely, in the intervention conditions, we found that participants were more likely to avoid shortcuts (Ferry) and arrive at the specified time (Plane) relative to the control conditions. This pattern of results may be attributable to the specific content of the intervention messages shown to participants. In our experiment, participants in the Plane condition were told that there may be additional delays due to taking the shortcut. Participants in the Ferry condition were also told that there may be additional delays, and received an additional warning which stated they may be unable to "rejoin the main road" if they took the shortcut. It is therefore plausible that participants in the Ferry condition were more responsive to advice asking them to avoid residential roads given that the consequences of non-adherence could be interpreted as more serious), and more likely to result in missing the departure entirely.

Participants in the plane version of the experiment were more likely to follow operator advice and not arrive too early in the intervention condition, but there was no effect of the intervention message of adherence in the Ferry version. One possible explanation for this inconsistent finding is that participants in the Plane – Intervention arm were shown a comparatively stronger warning message, which highlighted the potential for their actions to "cause delays" if they arrived too early. In contrast, participants in the Ferry – intervention arm were only told they "may be turned away and asked to return later". Additionally, participants may have stronger prior beliefs about the potential consequences of delays at airports, which may mean they were more responsive to the intervention text which highlighted the potential for their actions to cause disruption.

Despite significantly reducing the percentage of participants who arrived earlier than specified (Plane) relative to the control condition, most still opted to arrive earlier than requested by the operator (in all conditions). Those participants often did so because they usually aim to arrive earlier than the operator advises. Similarly, participants in the intervention conditions who did not follow operator advice regarding avoiding the shortcut appeared to do so because they felt taking a shortcut or arriving early would maximise their chances of successfully departing. These findings may point to the role of habit and prior experience in travel behaviour; people may be less attentive and/or receptive to communication advice for frequently-travelled or familiar journeys. This suggests that when there is a conflict between traveller's expectations regarding optimal behaviour and operator instructions,

communication principles alone may not be enough to encourage participants to follow advice against their interests. Related to this point, our qualitative research revealed that experienced travellers tended to search for less information prior to their journey, instead relying on previous experiences of similar journeys, meaning experienced travellers may be less likely to adhere to operator advice which contradicts their prior experiences expectations.

Participants across all arms were equally likely to report that they felt “neutral” about the delays they experienced at the transport hub. This indicates the additional text message shared with participants in the intervention conditions—which included an apology and an indication of when to expect future updates—did not affect the acceptability of delays. It is also worth noting responses to this question reflect attitudes towards a simulated experience, rather than an actual disruption. As a result, participants did not experience the ‘real’ impact of disruption, and so this measure may not accurately reflect participants’ real-world perspectives on the acceptability of disruption. Indeed, this finding differs from the perspectives offered by participants in the qualitative phase of this research, which suggested that travellers wanted clear updates on travel disruption which include both an apology and advice regarding next steps.

Reassuringly, there was no evidence of a ‘backfire’ effect of adding additional intervention text to communications shared with participants; participants who received intervention communications relating to our primary outcomes were no less likely to adhere to operator advice during the travel journey. Furthermore, participants who saw the intervention text in both scenarios reported high expected social and personal benefit from following operator advice. Similarly, participants in all conditions were equally likely to report that they were confident they would be able to follow operator advice, indicating that the additional information provided in the intervention condition did not reduce participants’ understanding of the instructions they were issued by the operator. Collectively, these findings suggest that whilst the effectiveness of the intervention text may be limited to certain contexts, there appears to be no detrimental effect of including intervention text which is designed to improve self-efficacy and the perceived benefit (social and personal) of operator instructions or negative consequences of non-adherence.

Toolkit revisions

After developing the toolkit designed to support the design of communications during travel disruption in Phase 1, we re-engaged with stakeholders to assess the efficacy of our toolkit and further refine it.

Stakeholder re-engagement

Stakeholder focus groups and interviews

We drew on DfT's network of contacts to invite a different set of stakeholders to give feedback on the toolkit. We ran two 90-minute online groups, with stakeholders from the aviation sector (operators, airports) and the maritime sector (operators, ports, local council), and two 60-minute in-depth interviews with an accessibility stakeholder and a travel package operator. All sessions were conducted between 25th September and 28th September 2023.

We used the approach taken in Stage 1 to analysis the qualitative data (see Section 4.1 for more details).

Stakeholder response to the toolkit

In general, stakeholders felt they already understood how to communicate with travellers during travel disruption. They were primarily invested in travellers having a good experience enough to rebook with them and ensuring they got through to their departures. As a result, many have already conducted work trying to understand the needs and behaviour of their customer base and to mitigate disruption. Therefore, stakeholders felt that the toolkit should be versatile enough to refine existing and inform new communication approaches. It was essential to set out the purpose and use case for each tool included in the final toolkit.

Stakeholders reacted positively to the traveller journey and Krebs method and highlighted that these frameworks were consistent with their current understanding and approaches to communications. Stakeholders felt that there was value to the toolkit as a sense-check for their current approach to communications and a reference document setting out best practice. Some also felt that less established operators and hubs who had done less thinking in this area would benefit from the toolkit as a training tool.

Stakeholders also felt that some of the recommendations were in theory best practice (such as communicating every 30 to 60 minutes and giving the exact length of a delay) but not always actionable due to the complexities and time pressures of travel disruption situations.

The accessibility stakeholder specifically suggested that to properly consider accessibility – and how this might affect traveller needs and communications – we might need additional research and a separate toolkit that focused on this topic, and highlighted where travellers were similar and where needs might differ. They felt this complex area required more detail than could be incorporated within the existing toolkit for this project.

Based on feedback from stakeholders that a specific focus would make the toolkit more actionable, the toolkit mainly focused on supporting strategic planning around planned changes, such as the introduction of the Exit and Entry System (EES) and European Travel Information and Authorisation System (ETIAS).

Additionally, in response to stakeholder feedback the toolkit was reframed as a “best practice training guide” setting out principles of communication to be used for long term planning.

A one-page checklist was added that focused on communications during travel disruption itself. Stakeholders suggested that a short, useable checklist could be a helpful tool to guide

communications, as during travel disruption there is limited capacity and situations can change quickly requiring immediate response.

Summary of the final toolkit structure

The final toolkit included the following content:

1. An introduction page outlining the contents and purpose of the toolkit
2. The traveller journey developed through the qualitative research with travellers that highlighted different decisions points and potential issues.
3. A needs framework analysis to encourage operators to map out how needs vary across the traveller journey and across different traveller types.
4. The Krebs method applied to travel disruption communications to show how to communicate and what to communicate to improve messaging
5. A one-page checklist of key considerations for communications during travel disruption.

The full 10-page toolkit can be found in Appendix A.

Questions for future research

Future potential qualitative research

One area that international travel stakeholders were keen to understand better was how to best communicate with travellers with accessibility requirements or who need accommodations for travelling, such as those with disabilities or dependents. While the toolkit sets out a general approach, more qualitative research could be conducted with these traveller groups directly to understand how communications could be tailored to ensure that negative outcomes for both the travellers and stakeholders are avoided. This could include the development of a separate toolkit that creates a guide to communicating with all travellers that highlights the stages and aspects where travellers are similar and the ones where needs may differ and how.

Stakeholders also suggested that more research could be done to understand how to best encourage travellers to travel responsibly, which includes encouraging them to prepare for travel disruption (e.g. having a form of payment on their person, bringing essential medication, providing contact details). They suggested that some travellers also had a general lack of awareness or knowledge in this area and felt that the government would be best placed to communicate these best principles for travelling responsibly. Future research could explore travellers' awareness and knowledge of actions they can take when faced with travel disruption in a variety of contexts.

Future potential quantitative research

Responses to some questions in the online experiment suggest that some participants discounted operator advice in certain circumstances. For example, despite significantly reducing the percentage of participants who arrived earlier than specified (Plane) relative to the control condition, most participants still opted to arrive earlier than requested by the operator (Plane and Ferry intervention conditions). Those participants often did so because they usually aim to arrive earlier than the operator advises.

Similarly, many participants opted to take the shortcut despite operator advice because they felt the benefit of the shortcut outweighed the risk signalled by the operator. This suggests that travellers may be willing to disregard operator advice in circumstances in which they feel operator advice contradicts their expectations of how to behave optimally. Future research could explore the effectiveness of intervention communications on different types of target behaviour. For example, comparing the effects on more familiar target behaviours (e.g. adhering to luggage requirements) with more novel behaviours (e.g. registering for biometric checks) to determine whether prior experience impacts travellers' receptiveness to operator instructions. In the current experiment, participants' prior experience may have contributed to their decision to disregard operator advice, thus, we may expect intervention communications which target 'novel' behaviours to have a greater impact on adherence compared to more familiar behaviours.

Additionally, future research could explore the effect of applying toolkit-based communication principles to other instances of travel disruption which may take place during traveller journeys. For example, future research could vary alternative contextual factors such as the cause of disruption (such as staff shortages, extreme weather or mechanical failure), what stage of the traveller journey travellers experience disruption (such as receiving news of disruption several weeks in advance, en-route to the hub, or whilst at the hub) or the context of their trip (for example, domestic travel, international travel with a layover).

As previously highlighted, we found that messages which specifically highlight the potential for negative consequences associated with non-adherence to operator instructions were effective in increasing participants likelihood of following said instructions. Future research could also explore



whether messages which highlight the negative consequences of non-adherence with operator instructions are more effective than messages which highlight the potential benefits of adherence.

References

- Civil Aviation Authority. (2011). *Aviation's response to major disruption*.
- Clegg, B., Orme, R., Owen, C., & Albores, P. (2018). Analysis of a train-operating company's customer service system during disruptions: Conceptual requirements for gamifying frontline staff development. *Journal of Rail Transport Planning & Management*, 8(1), 56–77.
<https://doi.org/10.1016/j.jrtpm.2017.12.002>
- Cottrill, C., Gault, P., Yeboah, G., Nelson, J. D., Anable, J., & Budd, T. (2017). Tweeting Transit: An examination of social media strategies for transport information management during a large event. *Transportation Research Part C: Emerging Technologies*, 77, 421–432.
<https://doi.org/10.1016/j.trc.2017.02.008>
- Department for Transport. (2021). *Rail passenger experience of disruption handling*.
- Department for Transport. (2022). *Travel disruption—Communications Advice: A Behavioural Approach*.
- Douglas, B. D., & Brauer, M. (2021). Gamification to prevent climate change: A review of games and apps for sustainability. *Current Opinion in Psychology*, 42, 89–94.
<https://doi.org/10.1016/j.copsy.2021.04.008>
- Ghee, R. (2013, November 7). *How can airlines and airports improve customer service during disruption?* Future Travel Experience. <https://www.futuretravelexperience.com/2013/11/how-can-airlines-airports-improve-customer-service-disruption/>
- Government Communication Service. (2021). *IN CASE: A behavioural approach to anticipating unintended consequences*. GCS. <https://gcs.civilservice.gov.uk/publications/in-case-a-behavioural-approach-to-anticipating-unintended-consequences/>
- Government Communication Service. (2022). *Crisis Communication: A behavioural approach*. https://gcs.civilservice.gov.uk/wp-content/uploads/2022/08/Behavioural_science_guide_to_Crisis_Communications_PDF_Official.pdf
- Heathrow Express. (2021). *Passenger Information During Disruption*.
https://ctphexcmsprod.blob.core.windows.net/cms/docs/default-source/policies/hex-pidd-november-2021.pdf?sfvrsn=cde31e18_0

- Jones, A., & Woolley, J. (2019). The role of businesses in facilitating voluntary travel behaviour change—Insights from the London 2012 Olympic Games. *Transportation Research Interdisciplinary Perspectives*, 2, 100040. <https://doi.org/10.1016/j.trip.2019.100040>
- Marsden, G., Anable, J., Shires, J., & Docherty, I. (2016). *Travel Behaviour Response to Major Transport System Disruptions: Implications for Smarter Resilience Planning*. OECD. <https://doi.org/10.1787/153e234a-en>
- Neill, C. (2022). *South Western Railway Passenger Information*. <https://lbfoster.eu/perch/resources/case-studies/lbfoster-tew-eng-swr-inform-191022-1.pdf>
- Office of Rail Regulation. (2015). *Office of Rail Regulation investigation report: Disruption caused by engineering overruns on 27 and 28 December 2014 at King's Cross and Paddington stations*. <https://www.orr.gov.uk/sites/default/files/om/investigation-report-2015-02-12.pdf>
- Papangelis, K., Velaga, N. R., Ashmore, F., Sripada, S., Nelson, J. D., & Beecroft, M. (2016). Exploring the rural passenger experience, information needs and decision making during public transport disruption. *Research in Transportation Business & Management*, 18, 57–69. <https://doi.org/10.1016/j.rtbm.2016.01.002>
- Robinson, E., Lubar, E., Singer, J., Kellman, D., Katz, B., & Kuznicki, S. (2018). *State of the Practice for Traveler Information During Nonrecurring Events (FHWA-HRT-17-014)*. Federal Highway Administration. <https://www.fhwa.dot.gov/publications/research/safety/17014/17014.pdf>
- Vancouver Airport Authority. (2023). *YVR Report & Action Plan: December 2022 Travel Disruption*. YVR. <http://www.yvr.ca/en/about-yvr/leadership-and-accountability/action-plan>

