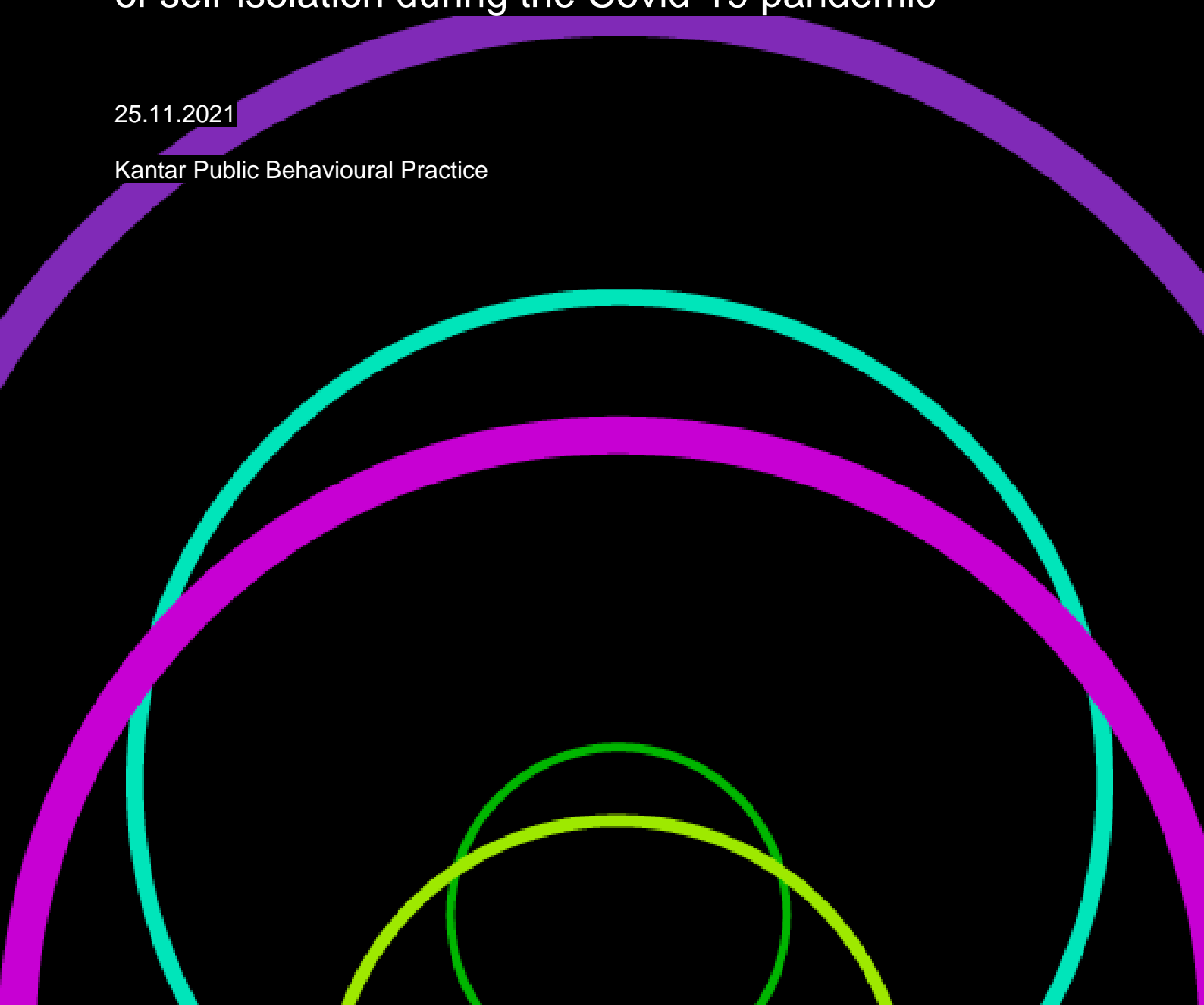**KANTAR** PUBLIC

Department
for Transport

Full Report: Covid-19 Behavioural Studies for the Department for Transport

A behavioural approach to supporting public confidence, wearing of face coverings and completion of self-isolation during the Covid-19 pandemic

25.11.2021

Kantar Public Behavioural Practice

Contents

1.1 General Introduction

In March 2020, the UK was hit by a global pandemic. HM Government instituted a national lockdown in England[1] which restricted the freedom of citizens to leave their homes, gather in groups and travel beyond their local area (Kirk-Wade, 2021). At the time, the world was still learning about the SARS-CoV-2 virus and its impact, increasing the uncertainty that citizens may have felt about whether and how to travel.

By April 2020 air passenger arrivals into the UK had fallen by 98% (Roberts, 2021), domestic rail travel had fallen by 95% (Department for Transport, 2020b) and domestic bus travel had fallen by 89% (Department for Transport, 2020b). As the pandemic continued, official guidance on how to behave evolved through several waves of infections. Given this evolving policy context, DfT officials sought a better understanding of how citizens travelling on public transport were adapting and how to best support them. There was a particular need to study the impact of novel policy interventions such as wearing face coverings whilst travelling and self-isolating after international travel.

DfT commissioned Kantar Public UK's Behavioural Practice to conduct three projects combining quantitative and qualitative research with insights from academic literature and experts from across government. Each project produced and tested options for policy interventions that DfT could consider or recommend to its partners. All projects provided rigorous evidence for the impact of interventions on behaviour using online randomised controlled trials (RCTs). The RCTs were delivered using Kantar Public's Behaviour Change Lab (BCL), a device-agnostic online experimentation platform. As such, the experiments could be completed on a desktop or laptop computer, tablet or smartphone, as participants preferred.

This report details all three projects, focusing on the RCTs conducted in the BCL:

1. Helping the public feel more **confident to resume travelling by public transport** (Autumn 2020).

2. Understanding how to support the **wearing of face coverings** on public transport (Spring 2021).

3. Understanding how to increase **adherence to mandatory self-isolation** after international travel (Summer 2021).

A shorter summary report covering all the studies is published separately. The reports are not designed to provide policy recommendations; the aim is to show how applying social

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[1] Health is a devolved matter, with England, Scotland, Wales and Northern Ireland making separate decisions.

and behavioural science to novel problems and testing the interventions that emerge in online experiments is rigorous, swift and deliverable. These reports are intended to share what was learnt and to stimulate thought about how such approaches can be developed to deliver impact across any policy area.

For further information on the methods and approaches taken in the projects reported here and in the summary report, please contact behaviouralpracticeenquiries@kantar.com.

1.1.1   Limitations

Online experimentation was the only option available for research at a time when in-person fieldwork was curtailed due to the Covid-19 pandemic. Online experiments have many virtues, but the teams involved in this work are clear eyed about their limitations as well. However immersive or cleverly designed the experiments are, the decisions participants take are hypothetical. At base, the method relies on assumptions that people know how they would behave in reality, and that they have no particular reason to hide or alter their preferences in the experiment (Kahneman & Tversky, 1979, p. 265).

The challenge is to provide an experimental environment that is familiar enough for participants to recognise what is being shown or described (for example the journey on public transport simulated in the face coverings experiment), and to take a decision based on their recognition of that environment. This challenge is easier to address where the environment is simpler, and/or where a single decision is required, as in the experiment focused on journey planning decisions using a recognisable Google Maps interface. By contrast, the final experiment on self-isolation, which involved the simulation of an experience that was less familiar and required multiple decisions over a substantial period of time, was necessarily more complex. However, despite the challenges, all three experiments produced results that strongly indicated they had succeeded in stimulating participants to respond as they would have done in the actual environment of interest, as we will explain in more detail in the sections below.

In addition, some practical challenges relating to the design and implementation of the experiments should be noted, particularly by those looking to mirror the approaches used. First, the work was conducted in a dynamic, shifting context. Circumstances that pertained during the design phase of an experiment might change during the fieldwork phase. In some instances this happened gradually, as Covid-19 case numbers increased or decreased. In others it happened more quickly, for example when a new virus variant was discovered, or when policies were introduced, changed, or repealed. For example, a policy change to exempt double-vaccinated adults from the requirement to self-isolate was announced during fieldwork for the third experiment (on self-isolation), prompting the termination of fieldwork earlier than expected.

Second, real-world experiences of the scenarios that the experiments sought to simulate vary greatly by social, demographic, geographical and other factors. Attitudes and behaviours regarding self-isolation, for example, are inevitably affected by the amount of indoor and outdoor space available, demands on time from constant childcare requirements to loneliness and isolation, and many other factors. Every care was taken to present experimental scenarios that were as widely applicable as possible, but the team recognises that there is a risk that they may not have felt familiar to at least some participants.

Kantar Public's Behavioural Practice and DfT officials welcome discussion on the research approaches taken and offer this report in the hope of supporting the delivery of rigorous online experimentation across government.

1.2 Public confidence in public transport

1.2.1 Context and aims

This research was commissioned by DfT in October 2020, after the first wave of the Covid-19 pandemic in the UK. Officials wished to understand how best to increase passengers' confidence in travelling on public transport when they had the need to do so. There was specific interest in how to support confidence amongst people with a BAME background, as they are more reliant on public transport (Mott MacDonald, 2020, p. 44).

DfT produced four prototype messages, and commissioned Kantar Public's Behavioural Practice to develop these and test them in an online experiment. The objectives of this project were threefold:

1. **Objective 1**: to provide evidence on which of the interventions most effectively increased the proportion of participants who chose public transport as their travel option.

2. **Objective 2**: to test whether the interventions improved the confidence of participants in the public transport system, measured using a range of survey questions.

3. **Objective 3**: to examine any differences in behaviour between priority groups, particularly people with a BAME background who are more likely to rely on public transport.

1.2.2 Method

Participants

The experiment involved 2,905 participants, drawn from Kantar's LifePoints panel. Participants were 16+ years old and representative of the English population (by gender, age, SEG, ethnicity and region of residence). A screener question was used to exclude those who almost never used public transport, both at the time of completing the experiment and before March 2020. Subgroups were identified for exploratory analysis wherever possible. Fieldwork was conducted between 13th and 23rd November 2020.

Participants were distributed as follows:

1. Location:
   a. North: 30%
   b. Midlands and East: 28%
   c. South: 42%

2. Ethnicity:
   a. White: 90%
   b. BAME: 10%

3. Age:
   a. 16-59: 72%
   b. 60+: 28%

4. Socio-economic grade:
   a. ABC1: 65%
   b. C2DE: 35%

Experiment design

Figure 1 illustrates the experiment design. Upon qualifying for the experiment, all participants were shown the same set of instructions and vignette. They were also prompted to engage with a training screen displaying the same interface as in the actual task, to help familiarise themselves with the experiment.

Participants were then randomly allocated to one of five arms, and exposed to one of the interventions twice: the first exposure was time-bound (participants saw it for 7 seconds before being moved on automatically), whilst the second exposure was not timed. This dual-exposure mechanism is common in experimental economics, psychology and medicine; the approach used in the BCL has also been informed by dual-processing theory which proposes that intuitive reactions to stimuli are confirmed or adjusted by more considered responses (Evans & Stanovich, 2013). The method mimics dual processing, and reflects the fact that communications are likely to be seen more than once and reactions or behaviour may be different each time. It therefore allows for an exploration of the potential for learning or 'wear out' effects over repeated viewings.

Figure 1. Experiment flow.
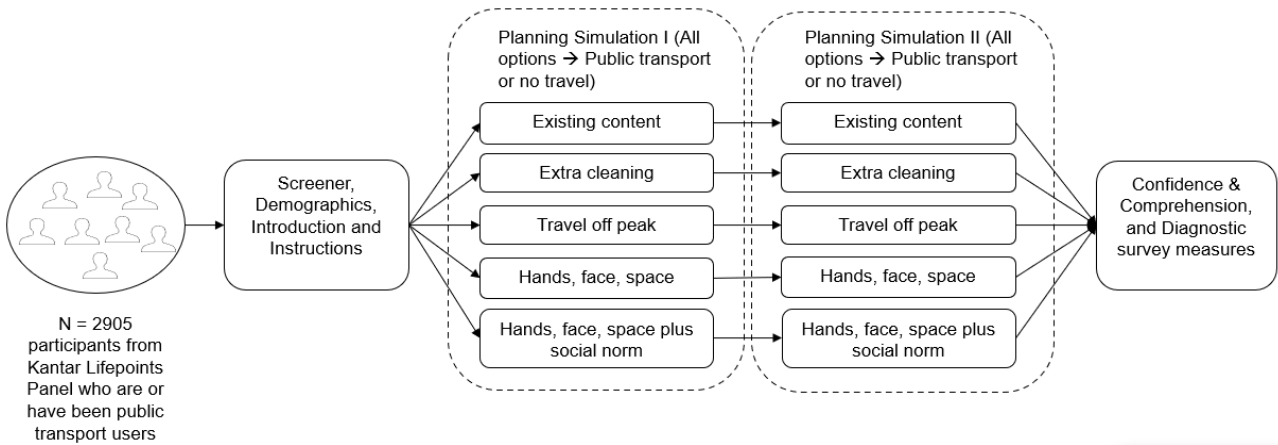
Each participant made two decisions after each exposure, using a journey-planner interface based on that found in Google Maps to make this process as familiar and intuitive as possible. For the first decision, all the buttons were active (Figure 2); for the second, only the public transport and 'no travel' options were active (Figure 3). The aim of this repeated measure was to force consideration of the key outcome of interest – the decision whether to use public transport or not to travel. Finally, all participants completed the same set of survey-based confidence, comprehension and attitudinal questions.

Figure 2. Journey planning interface (all options available).
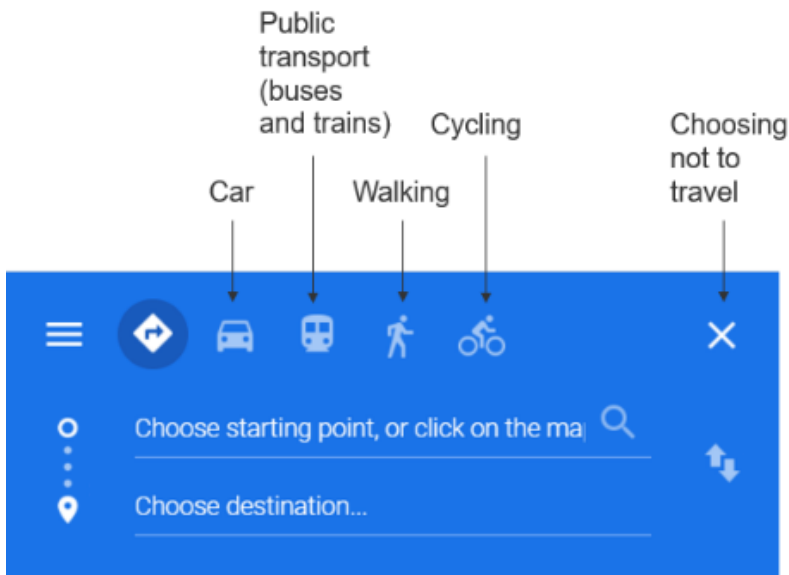
Figure 3. Journey planning interface (only two options available).
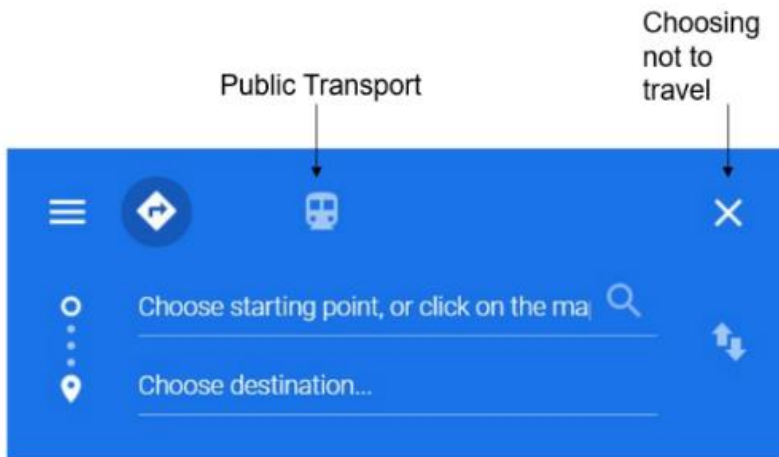
Interventions

Four new interventions were tested against an existing communication encouraging people to plan ahead and choose a direct route, which acted as a control. DfT officials had already developed a set of initial messages based on existing research; rather than simply testing these, the Behavioural Practice team worked with DfT officials to develop four messages into the posters shown below.

Public transport environments can be busy and cluttered, so the posters needed to stand out. In order to maximise the chances that the interventions being testing would capture people's attention, simple and relevant icons were added to the messages on each poster. Recognising that there will be variation in the way they are implemented, the posters used a simple visual style that transport operators could adapt to their own needs.

The control and four final interventions are shown in Figure 4 to Figure 8 below. Interventions three and four use the same imagery, but with different messages.

Figure 4. Plan ahead (control).

Figure 5. Extra cleaning (intervention 1).

Figure 6. Travel off peak (intervention 2).

Figure 7. Hands, face, space (intervention 3).

Figure 8. Hands, face, space, plus social norms (intervention 4).

Outcome measures

The choices participants made in the journey-planner interface were the primary outcome measure used to assess the performance of the interventions. Specifically, this measure was the proportion of participants choosing public transport (versus another transport mode or deciding not to travel) in any of the decisions.

The secondary outcome measures were drawn from the final survey measures, which explored comprehension of travel guidance and confidence in public transport.

Analyses performed

A two-sided z-test with a Bonferroni correction was conducted to assess the impact of the interventions on the primary outcome. A series of binary logistic regression models were then created to assess the impact of each intervention upon the primary and secondary outcomes controlling for various demographic and attitudinal sub-groups such as people with a BAME background.

Descriptive statistics were produced to understand who the participants were, their attitudes, and their comprehension of guidelines about travel and use of public transport during Covid-19. Descriptive statistics also helped determine what subgroups were sizeable enough to allow for further analysis. The answers to the open-ended questions were collated into word clouds, adding a text analysis dimension to the project that can help to understand why certain decisions were taken by participants.

A final analysis consisted of the creation of a Bayesian Belief Network, about which more information in Supplementary Information section 1.6.1 "Bayesian Belief Network explanation", to examine the relationship between the different factors that were driving the choice to travel by public transport (or not).

The subgroups that were of a sufficient size for further analysis were ethnicity, age and perceived vulnerability to catching Covid-19 as derived from the attitudinal survey questions.

1.2.3   Results of the experiment

Participants in the experiment had substantially reduced their use of public transport during the Covid-19 pandemic. Six in 10 (60%) said they (almost) never used public transport when the research was conducted, whereas only 1% said they were (almost) never using public transport before the pandemic. Two-thirds (64%) said that they were worried about catching Covid-19. Perceived vulnerability to catching Covid-19 appears to be a key factor in both the substantial decrease in use of public transport, and the findings laid out below.

Primary outcome measure

On the first, timed exposure, there was no significant difference in use of public transport between the control arm (the existing content) and any of the four intervention arms. This was the case when participants were confronted with all transport options, and when the decision was restricted to travelling via public transport or not travelling at all.

On the second, untimed exposure however, the 'Extra cleaning' intervention (highlighting the thorough cleaning carried out in travelling environments to kill the virus) significantly increased the choice of public transport when all options were available (p<.01). See Figure 9.

Modelling showed that the 'Extra cleaning' intervention was most effective regardless of SEG, age, ethnicity, or region.

Figure 9. The percentage of participants deciding to travel by public transport.

*** = p < .001; ** = p < .01; * = p < .05*
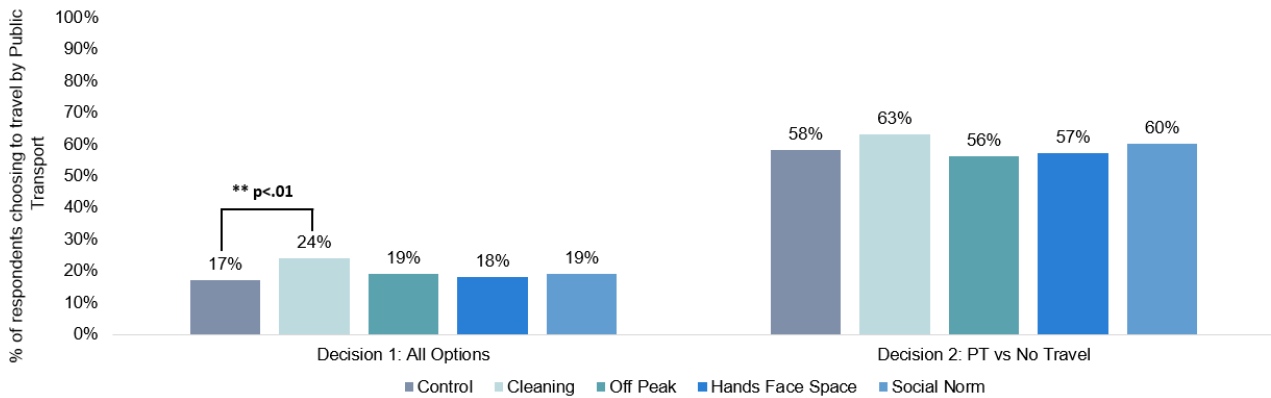
Base: Control [n=583] Cleaning [n=574] Off Peak [n=586] Hands Face Space [n=578] Social Norm [n=584].

Analysis of subgroups

The subgroups of a size suitable for use in the regression model were ethnicity, age, and perceived vulnerability about catching Covid-19 as derived from the attitudinal statements.

People with a black and minority ethnic (BAME) background responded differently from white participants. On the second, untimed exposure they were significantly more likely to choose to travel by public transport in response to *all* the interventions as compared with the control (not just the 'Extra cleaning' intervention), albeit this result was seen in the 'PT vs No Travel' decision rather than the 'All Options' decision as outlined above.

Two further points of interest regarding subgroups emerged from this analysis:

- Participants over 60 years of age were significantly less likely to travel, regardless of intervention.

- Those who self-reported as worried about Covid-19 were more responsive to the 'Extra cleaning' intervention.

Secondary outcome measures

No intervention had a statistically significant impact on how confident participants felt about taking public transport, which was Objective 2. When asked how confident (on a slider scale from 1 to 100) they would be using public transport for their next journey, only around a quarter of participants answered > 75. Unsurprisingly, those worried about catching Covid-19 were less likely to be confident about taking public transport, regardless of intervention or reason for travel.

When tested on their comprehension of the Covid-19 rules about travel, around eight in 10 people selected the correct options in a list of existing and made-up rules.[2] However, comprehension level did not have any significant effect on the primary or secondary outcome measures.

## Results from the Bayesian Belief Network

The aim of a Bayesian Belief Network (BBN) is to provide an indication of the potential causal relationship between the beliefs of participants, as derived from their answers to seven attitudinal statements, and the main outcome. In the network for this experiment, selection of public transport, regardless of intervention, was driven by expectations around communal compliance with Covid-19 guidance on public transport, which in turn was driven by perceptions of the feasibility of social distancing and trip planning.

Figure 10 illustrates the results of the BBN analysis. The direction of the arrow indicates the likely direction of the relationship: arrow from A to B means that A is likely to be influencing B, and vice versa. Black dots denote attitudes, and the two blue dots indicate outcomes – comprehension of guidelines and decisions whether to travel by public transport. Highlighted dots are the important drivers. For the complete technical details please see Supplementary Information section 1.6.1.

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[2] 87% correctly identified 'You should work from home if you can', 83% correctly identified 'You should follow transport guidelines during your journey, for example social distancing and wearing a face covering (unless exempt)', and 76% correctly identified 'You should plan ahead for your journey and travel off peak if possible'.

Figure 10. Results from the Bayesian Belief Network.
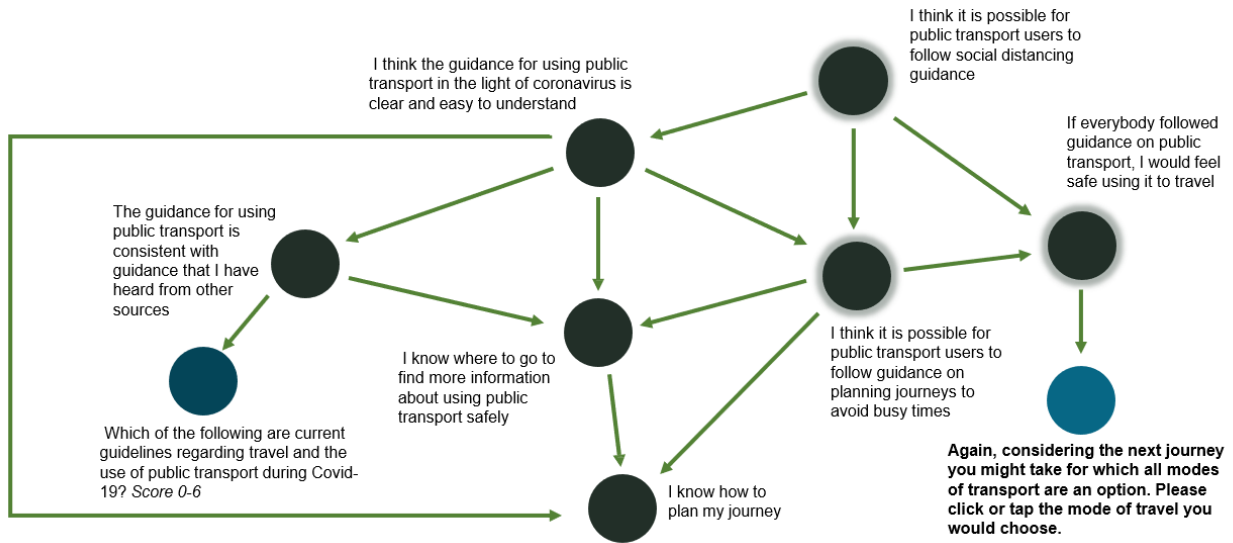
Text analysis of the 'why' behind choices

Participants were asked to write down in an open-ended question why they chose a specific mode of transport (public transport, car, walking or cycling), or not to travel at all.

Those who chose to travel by public transport often mentioned convenience ('time', 'bus pass') but also need ('work'). Participants who chose to travel by foot or to cycle very often mentioned the health benefits ('fresh air', 'healthier', 'exercise') but also safety ('safer walking', 'safest options'). Travelling by car was chosen mostly for convenience ('convenience', 'ease of use') and safety ('safer', 'safety'). Many of those who chose not to travel at all did so because of the pandemic ('Covid-19', 'lockdown', 'moment', 'current climate').

Overall, safety, convenience and reduced need due to the pandemic were commonly mentioned factors across all three means of transportation.

1.2.4 Conclusions

Three key conclusions can be drawn from this experiment.

1. The 'Extra cleaning' intervention could be recommended as a strong candidate for DfT officials to take forward. This intervention significantly increased the proportion of participants choosing to travel by public transport on the second exposure, even when all other options were available (travelling by car, walking, cycling, or not travelling at all). This in itself demonstrates the dual-processing effect, whereby responses change on repeated exposure to stimuli; and it reflects reality in that travellers will see these posters many times on their journeys.

2. An intervention influenced behaviour whilst leaving the main measure of confidence unchanged. This is an indication of the 'intention behaviour' gap, whereby changes in attitude or belief are not necessarily closely linked to changes in behaviour. The result validates the use of an objective measure of behaviour as the primary outcome rather than a subjective attitudinal measure.

3. Bayesian Belief Network analysis confirmed the expectations of DfT officials that confidence in the ability of fellow passengers to socially distance and follow public health guidance was associated with decisions to travel by public transport.

The experiment provided a clear result and permitted strong recommendations where an approach reliant on attitudinal measures may have proved inconclusive. This demonstrates the value of creating an intuitive behavioural outcome measure that allows participants to respond to interventions without rationalising their decisions, alongside more sophisticated analysis of the attitudinal factors underlying these responses.

1.

1.3 Wearing face coverings whilst travelling on public transport

1.3.1 Context and aims

From 15 June 2020, passengers (aged 11 and above) travelling on public transport in England were required to wear a face covering, unless exempt for reasons including a physical or mental illness, impairment or disability (Department for Transport, 2020a). In the months following the introduction of this measure, the number of people wearing face coverings on public transport was monitored through multiple sources (e.g. ONS research, DfT social research, British Transport Police and transport operator reporting). The evidence showed a complex picture of behaviours, ranging from not wearing face coverings at all, to not wearing them correctly, to not wearing them throughout the entire journey or wrongly using exemptions. Nevertheless, ONS data suggested that around nine in 10 passengers were wearing face coverings correctly (Office for National Statistics, 2020a).

DfT officials presented the Behavioural Practice with the challenge of understanding how communications in the transport operating environment could be used to maintain existing high levels of face covering usage, and to increase compliance among those who were not doing so correctly.

A key sub-objective for the project was to explore the impact that interventions might have on 'peer-policing' incidents, in which people not wearing face coverings are challenged by other members of the public, even if they have a legitimate exemption. These incidents could be highly unpleasant for the circa 4% of the travelling public (Office for National Statistics, 2020a) who were exempt for a variety of reasons, but many of these people nevertheless relied on public transport.

The objectives of this project were threefold:

1. **Objective 1**: to provide evidence on which of five interventions most effectively encouraged people to wear a face covering on public transport.

2. **Objective 2**: to identify which factors (e.g., belonging to a certain demographic) influenced the decision to wear a face covering on public transport.

3. **Objective 3**: to identify interventions that might increase the proportion of travellers wearing face coverings without negatively affecting the confidence of people who were exempt.

1.3.2 Method

Initial scoping and design

The project began by convening teams from across DfT to complete a logic model reporting expectations about relationships between the resources available, activities that are possible, expected outputs and desired outcomes. The model helped to foster a shared understanding across DfT teams of the behaviours and attitudes of interest, and therefore what could be measured in the online experiment. It was agreed that the experiment would need to capture both putting a face covering on, and wearing it throughout a journey on public transport. Confidence that others would wear face coverings was also identified as a key attitude that would need to be measured alongside the behavioural outcomes.

Qualitative research

The first stage of primary research comprised four online focus groups with a total of 15 public transport users, conducted between 24 and 28 September 2020. Each group had up to four participants stratified according to self-reported usage of face coverings on public transport, from wearing them almost all the time to almost never wearing them.

The discussion explored the drivers and barriers relating to wearing face coverings, to build hypotheses that would be useful in developing and testing interventions to increase their usage. Qualitative work that is behavioural needs to focus on specific environments, so discussion was structured around four stages of a journey on public transport: entering a station, on the platform, on the train and exiting the station.

Intervention development

Following the qualitative work, five prototype posters were developed for testing alongside a control. The interventions were developed through discussion between teams across DfT and the Behavioural Practice, and utilised insights from the qualitative research and existing academic literature.

User Testing

A second stage of primary research comprised user testing of the interventions between 7th and 11th December 2020. This involved 45-minute interviews with 12 participants, four of whom had a disability and were exempt from wearing a face covering, four who did not have a disability but were exempt, and four who had a disability but were still able to wear a face covering on public transport. All had previously travelled using public transport prior to the pandemic; use of public transport use during the pandemic was mixed, including some who rarely or never travelled during this time period. The interviews explored their

reactions to the interventions alongside their general experiences of and attitudes towards using public transport during the pandemic.

Experiment

Participants

The experiment involved a sample of 2,984 English public transport users aged 16+, recruited from Kantar's LifePoints Panel. A total of 279 of these participants self-declared themselves as exempt from wearing face coverings (around 9%, higher than the 4% figure drawn from (Office for National Statistics, 2020a)). Fieldwork was conducted between 23 and 28 December 2020.

Participants were distributed as follows:

1. Location:
    a. North: 27%
    b. Midlands and East: 29%
    c. South: 45%

2. Ethnicity:
    a. White: 86%
    b. BAME: 14%

3. Age:
    a. 16-34: 26%
    b. 35-59: 37%
    c. 60+: 37%

4. Gender:
    a. Males: 43%
    b. Females: 57%

5. Socio-economic grade:
   a. ABC1: 65%
    b. C2DE: 35%

Experiment design

Figure 11 illustrates the experiment design. Following initial instructions, participants were randomly allocated to one of six arms, then entered a simulated journey on public transport involving nine stages from getting on a bus to leaving a train station, namely:

1. Waiting at the local bus stop

2. Getting on the bus

3. Exiting the bus at the train station

4. Entering the train station

5. Using the ticket to pass through the ticket gates

6. Once on the train

7. Leaving the train station

8. Entering the stairwell to leave the station

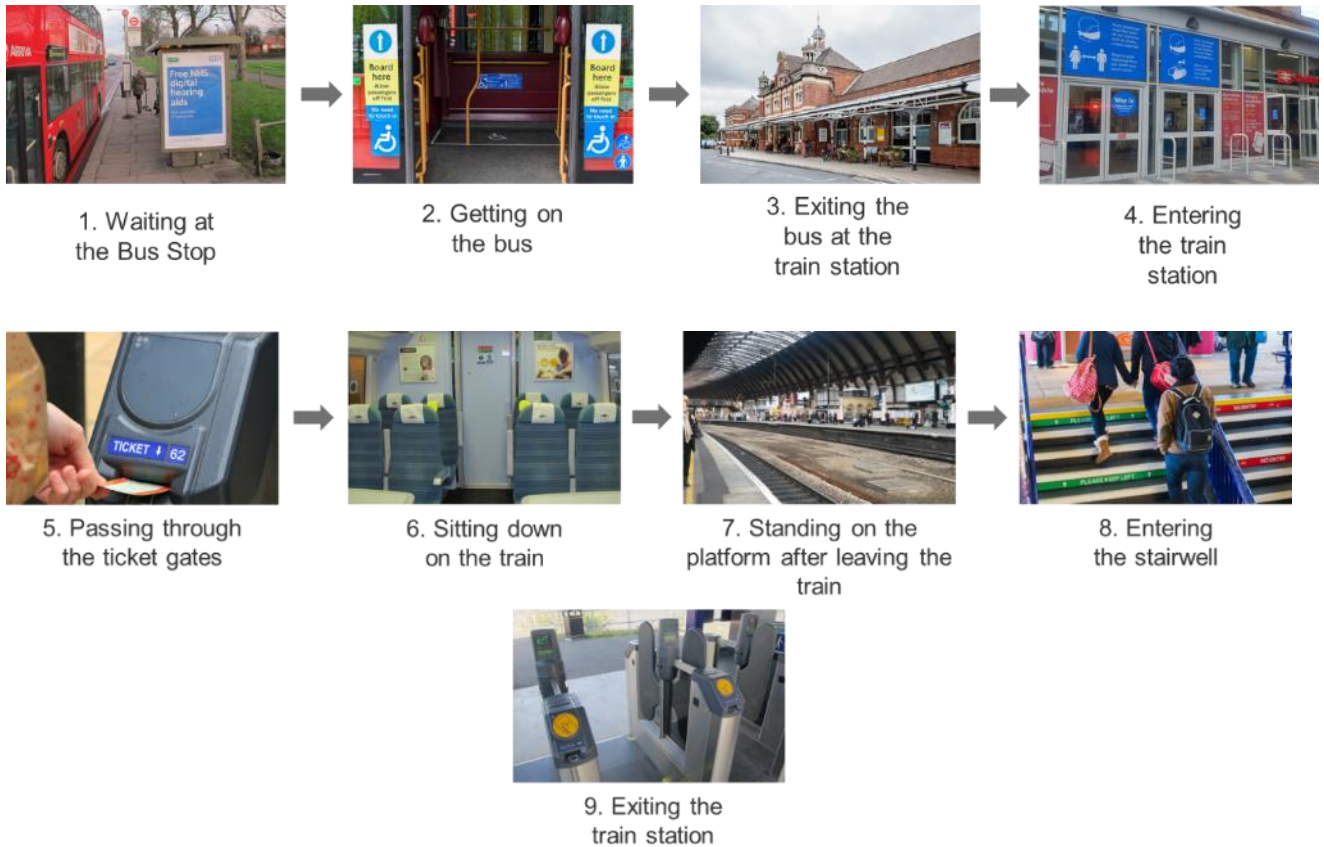9. Exiting the train station towards the street.

Finally, participants completed a series of survey questions to measure attitudes and demographics, to aid analysis.

Figure 11. Experiment flow.
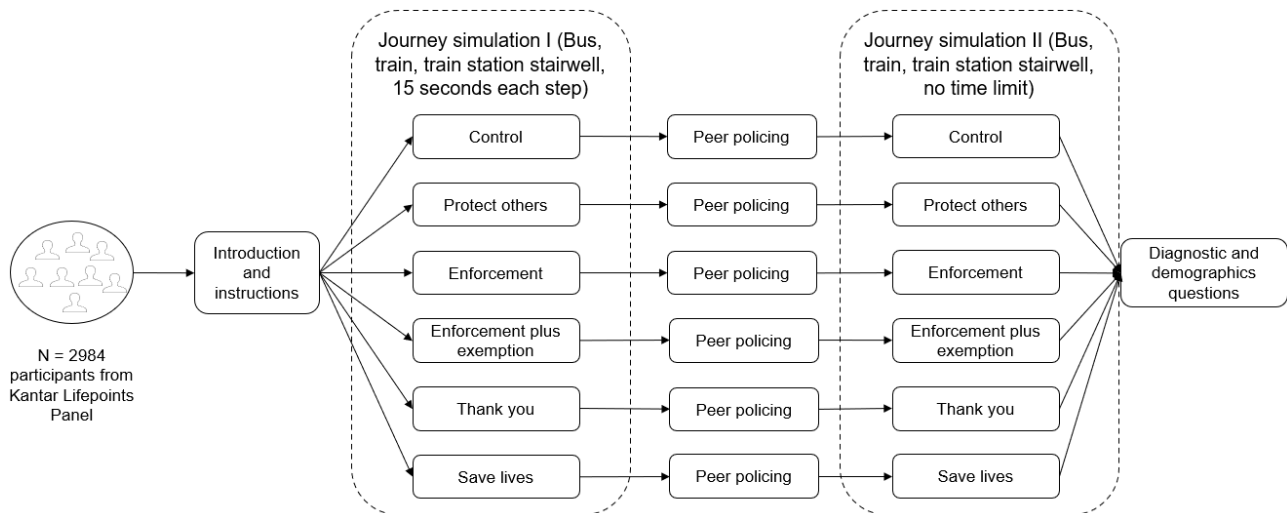
The stages of the journey were simulated using photographs of the relevant environments. Some of these photographs incorporated positions where posters would normally be located – for example, on the bus doors. The intervention posters were inserted into these positions so they were visible at points within the simulated journey. Participants were also provided with a description of each journey stage, next to the photograph. See Figure 12.
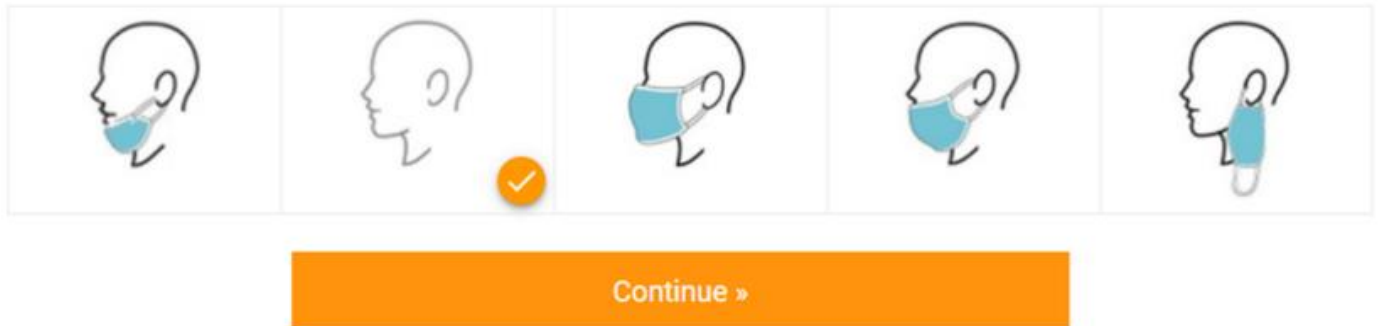
Figure 12. The simulated journey.

1. Waiting at the Bus Stop
2. Getting on the bus
3. Exiting the bus at the train station
4. Entering the train station
5. Passing through the ticket gates
6. Sitting down on the train
7. Standing on the platform after leaving the train
8. Entering the stairwell
9. Exiting the train station

At each stage in the journey, participants were able to make a choice about whether or how to wear a face covering, using the interface shown in Figure 13. The choice they had made in the previous journey step was pulled through to the current screen to simulate the fact that if you put your face covering on when you got on the bus, and did nothing when stepping off the bus, you would still be wearing your face covering. This was important as it introduced a natural default effect that can be a powerful driver of behaviour (Johnson & Goldstein, 2003).

Figure 13. Face covering interface.

"Let us know if you want to do anything by tapping or clicking the image below"

As Figure 11 shows, participants were exposed to the simulated journey twice. The generalised rationale for this approach is described in section 1.2.2. For this particular experiment, since many people regularly travel on the same route, it sought to capture how behaviour evolves over repeated journeys. The design aimed to increase the validity of the experiment, since in practice the travelling public would see and engage with the communications repeatedly (for instance, every time they are on the train platform).

In the first journey, participants were allowed 15 seconds for each step before being automatically moved on to the next. In the second journey, participants could take as long as they wanted and would be prompted to decide before moving on to the next journey step, but their previous decision still pulled through to the decision interface for each stage of the journey.

Interventions

Following the qualitative work, five prototype communications were developed for testing alongside a control based on existing content (Figures from 14 to 19). As with the interventions tested in the Public Confidence experiment, the interventions developed for this project were visually similar to those that would be used on buses and trains, and in stations. Public transport environments can be busy and cluttered, so interventions need to stand out (in the experiment as much as in the real world). In order to maximise the chances that the interventions being testing would capture people's attention, a simple and relevant icon was added to the messages on each poster. Recognising that there will be variation in the way they are implemented, the posters used a simple visual style that transport operators could adapt to their own needs.

Qualitative work particularly influenced interventions 1 and 5 that focus on morality, and intervention 4 that utilised a social norm message. Finally, the objective of reassuring

those who were exempt is present in intervention 3, which explicitly mentions exemption in the main message.

Figure 14. Existing content.

Figure 15. Protect others (intervention 1).

Figure 16. Enforcement (intervention 2).

Figure 17. Enforcement plus exemption (intervention 3).

Figure 18. Thank you (intervention 4).

Figure 19. Save lives (intervention 5).

Outcome measures

The primary outcome measure was the proportion of participants who chose to put on their face covering on entering the bus at the start of the experiment.

Survey-based questions were used to assess the impact of the interventions on how confident participants felt that others would wear their face coverings correctly, and on self-reported likelihood to peer police.

Analyses performed

A two-sided z-test with a Bonferroni correction was conducted to assess the overall impact of the interventions on the primary outcome. A series of binary logistic regression models were then used to assess the impact of each intervention on the primary outcome, controlling for various demographic and attitudinal sub-groups such as age (which qualitative research suggested was a key factor in whether to wear a face covering).

Descriptive statistics were produced to assess the impact of the interventions throughout the simulated journey and understand who the participants were, and their attitudes. Descriptive statistics also helped determine what subgroups were sizeable enough to allow for further analysis. The answers to open-ended questions were collated into word clouds, adding a text analysis dimension to the project that can help to understand why certain decisions were taken by participants.

A final analysis consisted of the creation of a Bayesian Belief Network, about which more information in Supplementary Information section 1.6.1, to examine the relationship between the different factors that were driving a choice to wear a face covering (or not).

The subgroups that were of a sufficient size for further analysis were ethnicity, age, and reason for travel.

1.3.3   Results from the initial qualitative research

The general insights from the qualitative research were reported in a framework of potential barriers and drivers of behaviour. The aim was to facilitate the design of communications, and provide ideas beyond communications that could be implemented outside the scope of this project.

Context / Setting

There was a widespread view that it was acceptable to remove one's face covering if there were few people around. Given the priority for users to keep face coverings on for the duration of their journey, emptier locations were considered a potential environment for targeted timely interventions.

Many participants who self-identified as not wearing their face coverings all the time mentioned the quality of ventilation on train carriages. Lower temperatures and enhanced

air circulation were therefore immediately recommended as interventions that may make wearing face coverings more comfortable and removing face coverings less tempting.

> **"If I'm on the platform and there's no one around**
> **I won't wear it, but any opportunity to not wear it,**
> **I'll take it off"**

Heuristics

Some participants referred to mental shortcuts they have developed as a rationale for not wearing a face covering or for removing their face covering during their journey.

Emphasising why it is important to keep face coverings on throughout your entire journey on public transport, and how this might differ to other contexts like restaurants or pubs. Constructing a separate heuristic for transport environments may be challenging, but also have a high impact.

> **"There's so much inconsistency about where we have to wear them and where we don't have to wear them. That has meant that the public does not understand, if there's a value to this, why aren't we having to do it everywhere. The fundamental confusion about where we can and can't...If it's important, you'd have to do it everywhere."**

Habit

Whether or not participants had established a habit of bringing a face covering with them had an impact on usage of face coverings. Those who said that they 'always' wear a face covering were typically more diligent about making sure they had a face covering with them. Those who said they 'sometimes' wear a face covering admitted that on some occasions they would forget to bring a face covering with them; and rather than turn back to retrieve a face covering, or go out and buy one, they would typically travel anyway but try to keep their distance from others. Some also said they would genuinely forget and found that the occasional reminder by staff to put on a face covering was helpful where they had one but had forgotten to put it on.

Both non-compliant groups suggested that providing free face coverings would encourage people to wear them. For those who forget but do want to comply with any requirement, explore the possibility of making face coverings easily available at stations (e.g., vending machines). The creation of feedback loops may encourage new habit creation.

Morality

Many participants, particularly those who said they 'always' wore a face covering, felt strongly that wearing one was the right thing to do to protect themselves and others. This was especially true for those who had known someone who had fallen sick or died of COVID-19. In non-compliant groups, however, there was an opposing appeal to personal liberty and a perception that it was not the place of government (perhaps particularly in the UK cultural context) to mandate the wearing of face coverings.

Messages that make a moral argument for wearing a face covering (e.g., that it's the 'right' thing to do and that it protects others) may help to influence some.

Norms

Though there were some instances of non-compliance described, wearing of face coverings on public transport was a well-established social norm. Participants reported feeling 'mask guilt' when they weren't wearing a face covering. As well as the presence of others, fear of judgement from others and wanting to avoid a confrontation was a strong motivator for wearing a face covering. Compliant participants referenced feeling self-conscious or embarrassed if they were not wearing a face covering.

Wearing a face covering is a (newly) established social norm, and violating this norm was seen to have consequences (e.g., being confronted) that even non-compliant participants were keen to avoid. Interventions and messaging could reinforce or strengthen this social norm.

Cost and benefits

Across the groups, there was a perception that the requirement to wear a face covering was not being enforced by either police or train staff. The penalties were seen as an empty threat because no one knew of anyone being fined for not wearing a face covering. There was also no cost associated with not wearing a face covering: for example those who had forgotten to take a face covering were still able to continue on their journey as planned.

Increasing the presence of staff at key locations in stations and increasing enforcement action could increase the numbers of people wearing face coverings due to the high perceived salience of staff and their actions. Where enforcement action is not feasible, communications could be used to make the costs of not wearing a face covering more apparent, for example by increasing visibility of fines issued or number of travellers asked to leave a service.

Efficacy

Amongst the non-compliant groups there was a request for information on how face coverings work. There was some confusion about whether they protected the individual, or others, and by how much. The non-compliant groups expressed a distrust of official statistics on COVID-19 and the effectiveness of face coverings, particularly amongst the older (30+) non-compliant. The younger (<30) non-compliant participants were less likely to see COVID-19 as dangerous or a threat and therefore were not as concerned or diligent about wearing a face covering – but also less likely to offer self-justificatory narratives. The compliant groups, in contrast, believed in the efficacy of face coverings and felt very strongly that you should wear a face covering to protect yourself and others.

Communications materials could help citizens who were confused to understand the rationale for wearing face coverings. Messages about protecting others may increase the wearing of face coverings among younger non-compliant groups who did not appear to appreciate that they could spread COVID-19 to others by not wearing one. Where trust is an issue for the older non-compliant, the source of guidance could be influential. for example, the NHS could be better placed to deliver messages about efficacy of face coverings than central departments or government ministers.

> **"A lot of people don't understand that you're protecting other people from you, not yourself. Understanding if you wear this mask, it is 50% more effective. If people understood the impact in a more simple way."**

Legitimacy

The exemption scheme was not seen as legitimate by the compliant groups, who suspected many were wrongly using exemptions to avoid having to wear a face covering. The lack of legitimacy is perhaps exacerbated by widespread perception in the groups of a

lack of enforcement of wearing a face covering and issuing of fines. Examples were also given amongst people who did not wear face coverings of their using fake exemption certification to avoid censure.

Help to ensure the exemption scheme is only used by those who have a legitimate reason for not wearing a face covering could address these findings.

> **"And the thing with that card is that anyone can get it, it's not like you have to go through your doctors to get the exemption thing. I mean I got it on my phone just cause I was able to get it really easily."**

Responses from qualitative user testing amongst those with a disability and/or exemption

Most of the people who were exempt expressed full support for the interventions, and asked for improved certification of their exempt status rather than a change to the prototype interventions. They suggested that interventions such lanyards, cards or passes that could prove exempt status might reduce anxiety about being challenged by staff or fellow passengers.

Participants acknowledged that there was a difficult balance between encouraging decisions to wear face coverings if able, which they felt was important, and not making those who were exempt feel anxious or alienated. Some felt those messages making a moral argument excluded them and could even imply that they were not playing their part or putting others at risk. However, several welcomed the positive messaging in the 'Thank you' intervention, as it focussed on the many who were wearing face coverings (social norm) rather than directing attention to those who were not. Participants who were exempt said that the 'Thank you' intervention avoided some of the pitfalls of the more authoritative messaging and did not alienate exempt passengers.

All exempt participants in the qualitative work appreciated the subheading "Some passengers are exempt. Please be considerate". They thought it was important to include this sort of message and felt this wording could discourage peer policing.

However, the inclusion of this wording in the main message of the 'Enforcement plus exemption' intervention was thought potentially unhelpful by many. Some felt that it may encourage fraudulent claims to be exempt; others that it reduced the power of the main enforcement message.

1.3.4   Results from the experiment

Primary outcome

The first objective was to provide evidence on which of the five interventions was most effective in encouraging people to wear a face covering when they entered public transport.

Nine in 10 participants (90%) in the control group chose to wear a face covering at the second point of the journey (getting on the bus), in both the simulations. This was in line with baselines obtained from counts of CCTV pictures. Compared to the control, passengers who saw the 'Enforcement plus exemption' intervention were significantly less likely to wear a face covering on the first journey, as Figure 20 shows. No interventions drove any significant increases in the wearing of face coverings compared to the control.

Figure 20. Percentage of passengers deciding to wear a face covering when first entering public transport. Title: 90% of participants wore a face covering on entering public transport. Those who saw the 'Enforcement plus exemption' intervention were significantly less likely to wear a face covering (vs the control).

*** = p < .001; ** = p < .01; * = p < .05
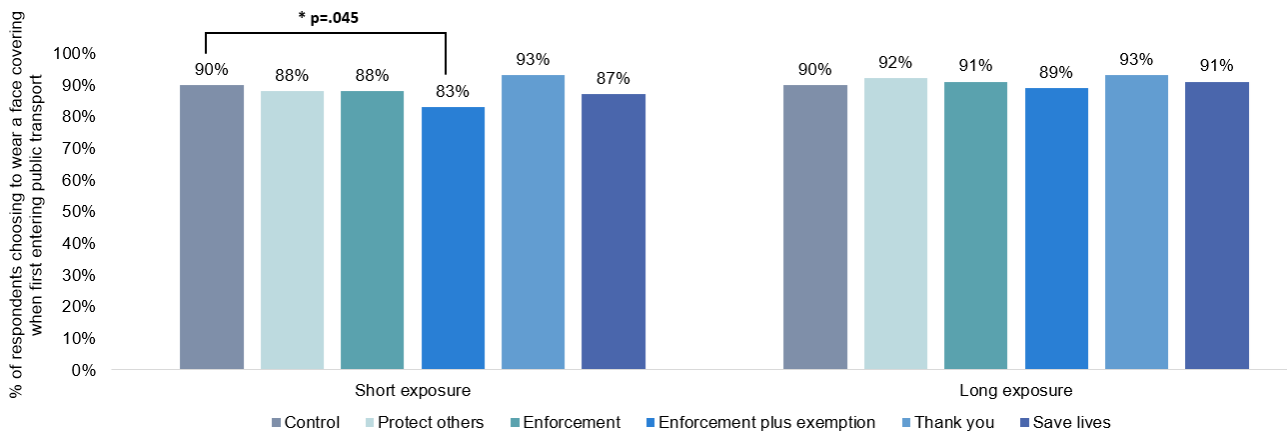
Base (total that do not consider themselves exempt from wearing a face covering): Control n=452 / Protect others n=442 / Enforcement n=445 / Enforcement plus exemption n=450 / Thank you n=455 / Save lives n=461.

The convergence in behaviour observed seems to support some of the exploratory qualitative work where participants suggested that reminders when entering public transport environments would be helpful to those who intended to wear their face coverings but might forget.

Secondary outcomes

The secondary outcomes focused on the wearing of face coverings across the journey, and participants' confidence in other travellers wearing face coverings correctly. The latter outcomes were measured with survey questions after the experiment.

Most passengers wore their face coverings correctly throughout the full journey (Figure 21). A substantial proportion of participants in both exposures and across all arms took off their face coverings when they exited the bus, stood on the train platform, and exited the station. This demonstrates the external validity of these findings, as these are the stages of the journey where people were outside and felt they could take off their face coverings.

Figure 21. Percentage of passengers deciding to wear a face covering at each point of the journey (two exposures). Title: Most passengers wore their face coverings correctly throughout the full journey across both exposures. The train platform is a moment of concern for lower numbers wearing face coverings.
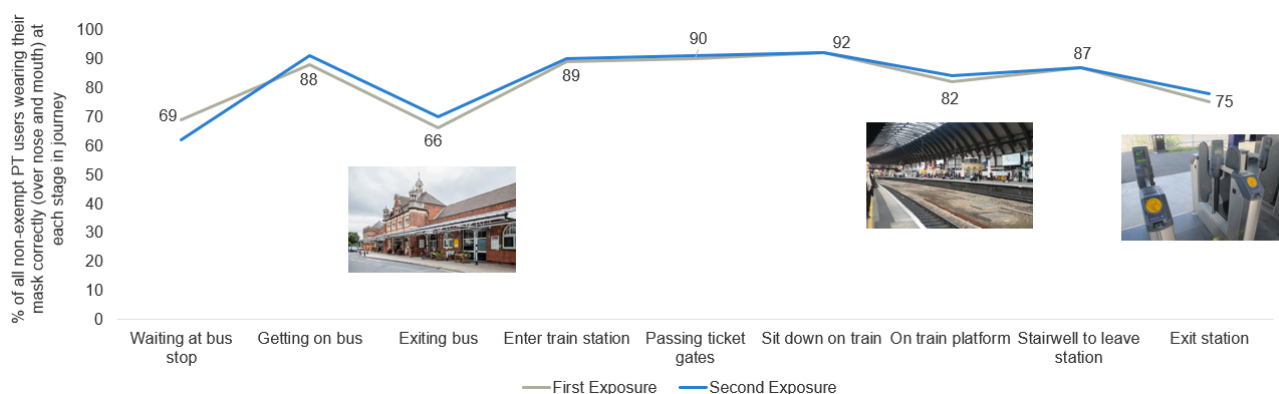
No significant differences were observed in confidence that other travellers would wear face coverings. However, the social norm based 'Thank You' intervention performed consistently (albeit not significantly) better across both behavioural and attitudinal outcomes. These outcomes included the wearing of face coverings at each journey stage in the first simulation, measures of confidence in other passengers wearing face coverings, and that following guidance would keep travellers safe.

Demographic factors

The second objective was to identify which factors, if any, influenced the decision to wear a face covering on public transport.

Modelling of the primary outcome controlled for age, ethnicity and reason for travel found that, on the first journey, older people (60+) and people with a BAME background were significantly less compliant, whilst younger people (16-34) were more compliant overall. However, the inclusion of these factors in the model specification did not alter the estimated effects of the interventions, with the 'Enforcement plus exemption' intervention still performing significantly worse.

Among those who did not wear face coverings when required, there being no other people near them was the most commonly reason given (42%), followed by finding face coverings uncomfortable or making it hard to breathe (32%). This finding was corroborated by open text question responses suggesting that many passengers will not wear a face covering if they feel there is sufficient circulation of fresh air, and few people are close by.

Results from the Bayesian Belief Network

The aim of a Bayesian Belief Network (BBN) is to provide an indication of the potential causal relationship between the beliefs of participants and the outcome, as derived from their answers to six attitudinal statements. Attitudes that face coverings should be mandatory drove decisions to wear face coverings, but also likelihood of peer policing. Peer policing was also driven by perceived vulnerability to catching Covid-19.

Figure 22 illustrates the results of the BBN analysis. The direction of the arrow indicates the likely direction of the relationship: arrow from A to B means that A is likely to be influencing B, and vice versa. Blue dots denote attitudes, and the two red dots indicate outcomes – wearing a face covering, and likelihood to peer police. The highlighted dot is the most important driver. For the complete technical details please see Supplementary Information section 1.6.1.

Figure 22. Results from the Bayesian Belief Network. Title: Decisions to wear face coverings, and the likelihood to peer police, are driven by the view that face coverings should be mandatory without exception. Views on how face coverings protect and perceived vulnerability about catching Covid-19 are also important.
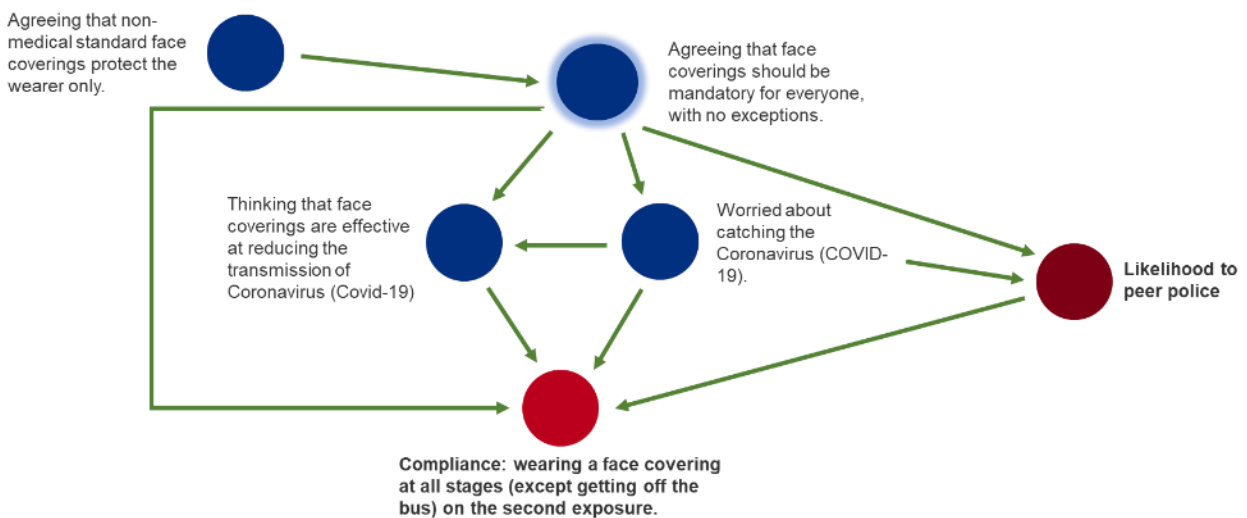
Further charts of these results are available at Supplementary Information section 1.6.2.

Exempt users

The final objective was to provide insight as to what messaging has the greatest effect on overall decisions to wear face coverings without increasing the anxiety among, or peer policing of, public transport users who were exempt from wearing a face covering. In the experiment participants who self-identified as exempt were younger and of lower socio-economic grades than other participants. Even though they self-identified as exempt, two thirds (67%) did in fact choose to put on a face covering when first getting on public

transport in the simulated journey. This result was in line with the qualitative work where many people who were exempt said they nonetheless chose to wear face coverings.

Likelihood to peer police was measured with a question between the two journeys on public transport. Participants were asked how likely they would be to challenge someone not wearing a face covering. No intervention had an impact on the likelihood of peer policing on public transport. Around a third of participants across all experimental arms (31% on average) said they were likely to challenge others, with males more likely than females to do so.

1.3.5 Conclusions

Three key conclusions can be drawn from this project.

1. The 'Enforcement plus exemption' intervention performed significantly worse on the primary outcome than the control intervention that simply stated 'Face coverings must be worn on public transport'.

2. Confidence in others wearing face coverings correctly, and all other measured attitudes including self-reported likelihood to peer police, did not change significantly in response to any intervention.

3. The social norm based 'Thank You' intervention performed consistently (albeit non-significantly) better across all the secondary outcomes including the wearing of face coverings at each journey stage on the first exposure and survey questions measuring confidence in other passengers wearing face coverings and that following guidance would keep them safe.

The experiment recorded similar levels of wearing of face coverings as observed in the field and in other research, as well as stimulating a behaviour which was described in the exploratory qualitative work (taking one's face covering off as soon as there is sufficient fresh air to do so). This demonstrated the validity of the online experiment, and shows how combining qualitative research and an immersive simulation can provide a rigorous and multi-faceted method for testing communications when field research is not feasible.
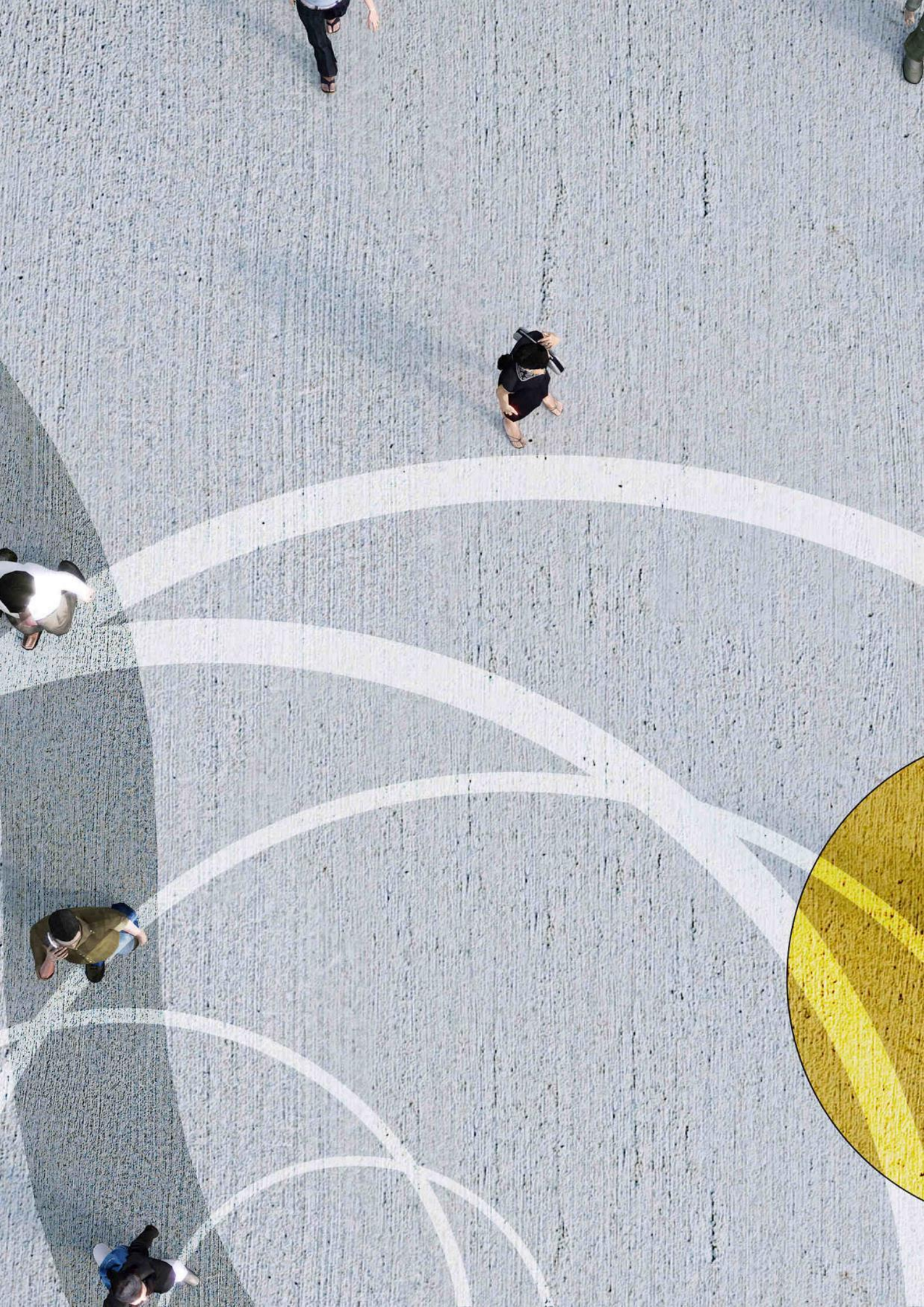
1.4 Self-isolation after international travel

1.4.1 Context and aims

Self-isolation (or quarantine) helps to prevent the spread of infectious disease to other people (NHS, n.d.), and has been a key part of England's response to the Covid-19 pandemic. In addition to self-isolation due to symptoms or contact with those confirmed to have the virus, since June 2020 most people returning to England have been required to self-isolate after travelling internationally. Initially 14 days of self-isolation were stipulated, but on 14 December 2020 the period was reduced to 10 days alongside the introduction of a day 8 post-arrival PCR test (Department of Health and Social Care, 2020).

HM Government introduced a traffic light system for international travel to England on 7 May 2021, categorising countries or territories as red (high risk), amber (moderate risk) and green (low risk), and updating this every three weeks (Department for Transport & The Rt Hon Grant Shapps MP, 2021). At the time of conducting the experiment, passengers returning from countries on the green list were not required to quarantine on arrival in England, but were still required to fill in the passenger locator form, provide a valid notification of a negative test result prior to travel into England and take a sequencing test on day 2 after arrival.

International travellers arriving in England from countries on the amber list were required to fill in the passenger locator form, provide a valid notification of a negative test result prior to travel to England, quarantine at home for 10 days, and take a PCR test on day 2 and day 8 after arrival.

Wider evidence showed that not all were adhering to the rules relating to self-isolation. In one study, just one in three (34%) people with symptoms of Covid-19 in England reported that they were self-isolating, of which two in three (61%) nonetheless reported having gone out in the previous 24 hours (Smith et al., 2020).

However, evidence of how people were responding to self-isolation rules on return from travel abroad was lacking, so DfT wanted to understand how it could best support this using communications channels and processes over which it had control. There was also interest in creating a baseline for levels of adherence to self-isolation in this context which could be compared with other sources to increase understanding of overall levels of self-isolation.

The main opportunity for intervention was sending text messages to people who were self-isolating. Kantar Public's Behavioural Practice was therefore commissioned to work with

DfT officials to develop and test a range of text message interventions intended to help people complete their self-isolation period after international travel from amber-listed countries.

The objectives of the project were:

1. **Objective 1**: to set a baseline for the proportion of people adhering to self-isolation given the difficulty of observing this in the field.

2. **Objective 2**: to provide evidence on which text-message intervention most effectively increased the proportion of participants who choose not to go out during the full 10 days of self-isolation.

3. **Objective 3**: to provide evidence of effectiveness on other measures:
   a. Increasing participants' confidence in the compliance of their peers.
   b. Increasing participants' support for self-isolation as a necessary measure to contain the pandemic.

1.4.2 Method

Initial scoping and design

The project began by convening teams from across DfT to complete a logic model reporting expectations about relationships between the resources available, activities that are possible, expected outputs and desired outcomes. The logic model helped to surface hypotheses about what influences the likelihood of someone fully self-isolating after international travel, and how the range of policy and process interventions already in place or planned were seeking to support this.

DfT officials wanted those self-isolating after international travel to an amber list country to:

- Not only know that they must self-isolate but also be aware of *why* it is important to complete the full 10 days.

- Have confidence in the government's commitment to and enforcement of rules.

- Reduce impulsive trips out of the house to a minimum.

Qualitative research

In order to understand the specific barriers to self-isolating after travel, so that interventions could be designed and targeted effectively, the Behavioural Practice team conducted qualitative research with 27 people who had experienced self-isolation. This included seven depth interviews and three focus groups with people who had had to self-isolate after international travel, and five depth interviews with people who had had to self-isolate for other reasons.

Literature review

A rapid literature review of 10 papers accompanied the qualitative research, using Google Scholar to select papers on the basis of relevance and availability. The review targeted literature that was produced during the period of the pandemic and discussed how interventions informed by the behavioural science literature could help with adherence to self-isolation. Research conducted in the UK, US or Europe was prioritised to minimise any cultural gap that may have made findings less applicable to the English context.

Ideation and intervention development

Insights and learnings from the qualitative research and the literature review were presented to representatives from central government departments and arm's length bodies during an ideation workshop. The Behavioural Practice team used its Moments of Change ideation game to facilitate collaborative and creative discussion that combined the results of the exploratory work with operational and behavioural science expertise.

Attendees created a longlist of 43 potential interventions, which can be found in Supplementary Information section 1.6.3, each linked to one or more behavioural science principles from the Moments of Change game. Each idea was developed from short notes on the workshop discussion to a full proposal including specific references from the literature and a link to the exploratory findings. The project teams then voted on these ideas to decide which to take into the online experiment.

Experiment

Participants

The experiment involved 2,860 participants, drawn from Kantar's LifePoints panel. Participants were 16+ years old and representative of the English population (by gender, age, SEG, ethnicity and region of residence).

All participants had travelled internationally between January 2018 and February 2020. This specific time window was chosen (instead of the last two years, for instance) to make sure that participants had travelled relatively recently, but to avoid disparities between those who travelled abroad *after* February 2020 (therefore likely self-isolated) and those who travelled abroad *before* February 2020 (and therefore had not needed to self-isolate). Fieldwork was conducted between 24 June and 7 July 2021.

Participants were distributed as follows:

1. Location:
   a. North: 29%
   b. Midlands and East: 30%
   c. South: 41%

2. Ethnicity:
   a. White: 86%
   b. BAME: 14%

3. Age:
   a. 16-34: 31%
   b. 35-59: 42%
   c. 60+: 27%

4. Gender:
   a. Males: 47%
   b. Females: 53%
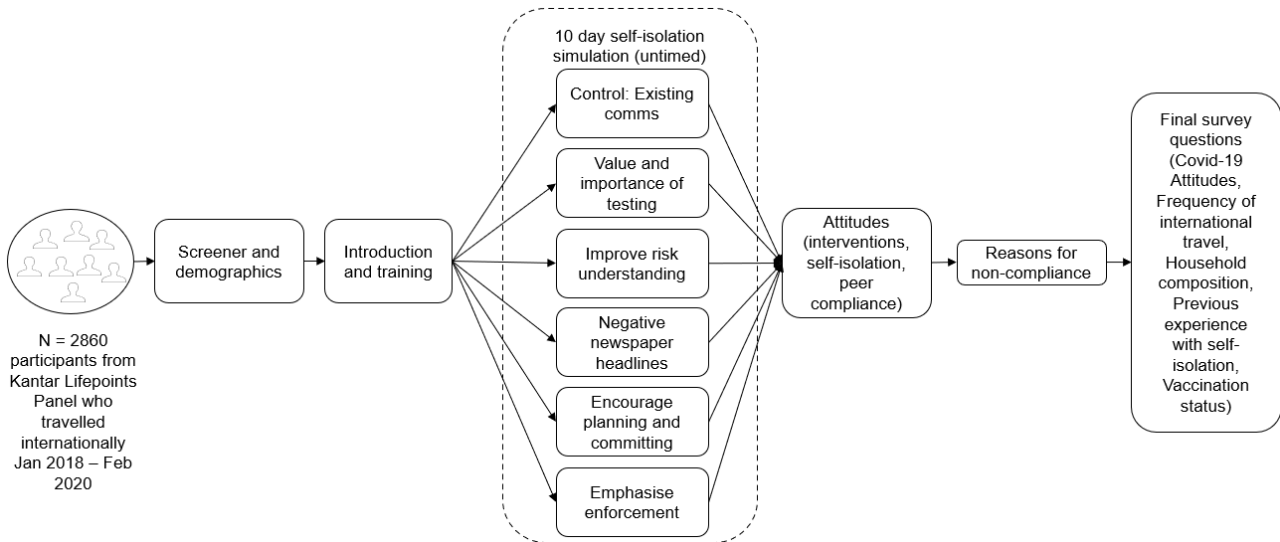
5. Socio-economic grade:
   a. ABC1: 58%
   b. C2DE: 42%

Experiment design

Figure 23 illustrates the experiment design. Following an initial training and familiarisation module, participants were randomly allocated to one of six arms, and entered a simulation of the 10-day self-isolation period. For each day within this simulation, participants encountered between two and four screens, with the aim of immersing them in an experience that felt lengthy. The days comprised the following elements:

1. Eight out of the 10 days began with participants receiving a text message (content depending on which arm of the experiment they were in). On days 5 and 10 all participants were sent a text with a negative Covid-19 PCR test result.

2. Each day had a scenario, accompanied by a relevant picture and a GIF of the sun going up and down, to help create a sense of time passing (Figure 24). Each scenario described different activities and weather for the day. Scenarios were built to be as balanced, believable, and relatable as possible.

3. On days three, five, seven and 10, all participants were asked how they were finding things (Figure 25). This question provided insight into the experience of self-isolation, aiming to identify how participants felt about the experience (regardless of choosing to stay in). References to self-isolation were purposefully omitted, to avoid self-isolation becoming salient.

4. Finally, participants were asked to choose to stay in or go out (Figure 26).

Figure 23. Experiment flow diagram for self-isolation simulation.

Figure 24. Example of a scenario, including the GIF of the sun going up and down.

TUESDAY

It is now three days since you got home. It's even sunnier than yesterday, and a gentle breeze is blowing. You hear on the news that the heatwave will last for another couple of days.

You carry out your daily activities with the windows open.

You look outside: it's a beautiful sunset and the streets look empty.

CONTINUE
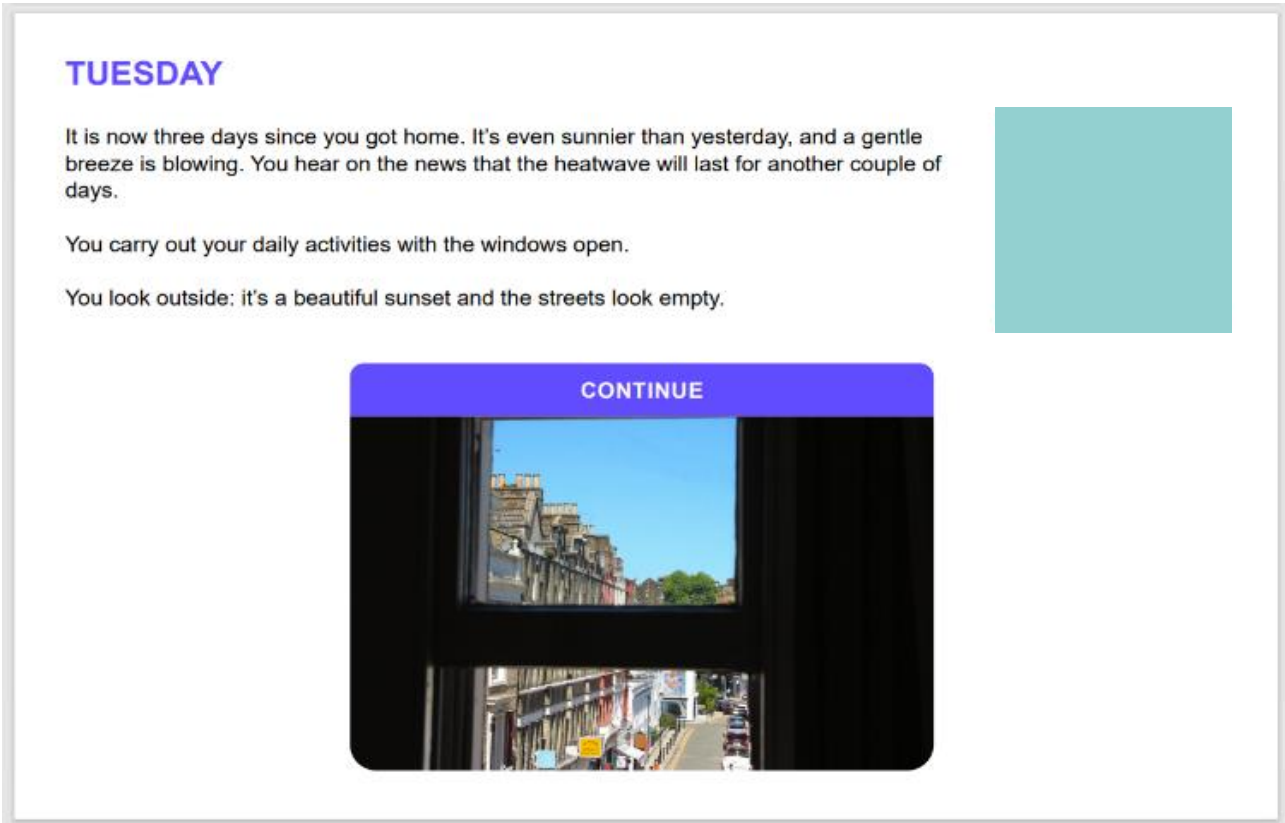
Figure 25. Secondary outcome measure: "How are you finding things?" question screen.

Tell us how you feel. Then click 'continue' when you are ready to move on.

How are you finding things after three days?

Very easy   Very difficult

CONTINUE
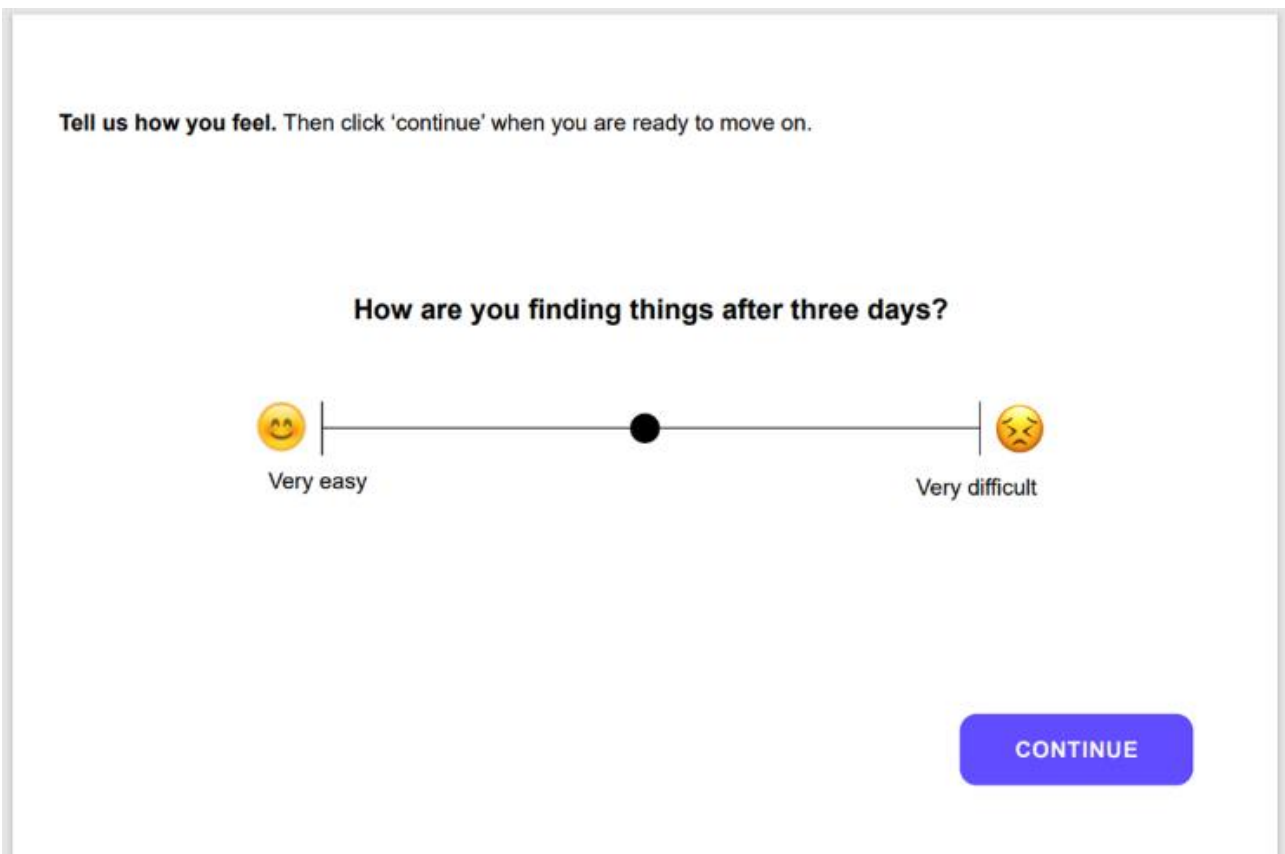
Figure 26. "What do you do?" question screen.

What do you do? Make your choice to proceed.

I CHOOSE TO GO OUT   I CHOOSE TO STAY IN

Interventions

The interventions tested were developed from the longlist of 43 ideas. Many of the ideas on the longlist were highly attractive when considering the results of the qualitative research, and the existing behavioural science literature, but impractical to test in an online experiment and/or unfeasible to deliver via text messages. For example, the provision of a helpful 'self-isolation kit' modelled on the Finnish baby box (Gardner, 2016) was highly rated as an idea to help people avoid impulsive trips to the shop for snacks or provide exercise gear or entertainment. Another interesting idea was to increase the salience of enforcement of rules at the border, as the qualitative research reveals a lack of awareness and subsequent view that there would be no serious consequences to breaking self-isolation.

Each intervention comprised a series of text messages with a consistent theme, as described below:

- **Intervention One: 'Value and importance of testing'.** A series of text messages explaining in more detail why testing for Covid-19 during self-isolation is important, and the value this brings to the effort to protect the UK against new variants. 'Value and importance of testing' aimed to address optimism bias (Sharot, 2011): in this context,

the overconfident belief that you are not likely to catch Covid-19, and so don't need to test or self-isolate. Additionally, this intervention aimed to address conspiracy theories or rumours arising from a lack of perceived control (Whitson & Galinsky, 2008) and information asymmetry about what testing is actually for.

- **Intervention Two: 'Improve risk understanding'.** A series of text messages emphasising how risky certain behaviours like passing others indoors are in terms of spreading the virus. 'Improve risk understanding' aimed to address overconfidence (Kahneman & Tversky, 1977) about the riskiness of leaving the house or meeting others by explaining more about the risks involved.

- **Intervention Three: 'Negative newspaper headlines'.** A series of newspaper stories presented as they would be on a smartphone screen summary. Each story suggested that people in the UK were not adhering with Covid-19 restrictions, such as wearing a face covering or self-isolating when showing symptoms. This was not an intervention aimed at improving adherence to self-isolation, but a means of investigating the impact of negative social norms (Goldberg et al., 2020) on adherence to the rules.

- **Intervention Four: 'Encourage planning and committing'.** An intervention inspired by implementation intentions (Gollwitzer, 1999) that prompted participants to plan three activities they could do if tempted to break self-isolation. Participants were also asked to sign their list and nominate a referee, who was asked to check on their progress leveraging social pressure to increase adherence. Following completion of the list, participants received reminders of their plan by text at several points throughout the simulation of self-isolation.

- **Intervention Five 'Emphasise enforcement'.** A series of text messages emphasising the financial and legal consequences of breaking self-isolation. 'Emphasise enforcement' exploits the availability heuristic (Tversky & Kahneman, 1973) by making enforcement more salient, and loss aversion (Kahneman & Tversky, 1979) by highlighting heavy fines.

These interventions were tested against a control which consisted of the standard series of existing text messages sent by government to people self-isolating. 'Negative newspaper headlines', and 'Encourage planning and committing' had additional elements: real newspaper stories presented on a phone accompanied by a relevant picture; and a web interface where participants listed activities to do during self-isolation. All other interventions comprised text messages - see Supplementary Information section 1.6.3.

Outcome measures

The primary outcome measure was 'survival' over the length of the experiment, representing the proportion of participants who choose not to go out during the 10 days of self-isolation.

The secondary outcome measures were survey-based questions designed to assess:

1. How participants were feeling at days three, five, seven and 10.

2. The confidence of participants in the compliance of their peers

3. The support of participants for self-isolation as a necessary measure to contain the pandemic.

Analyses performed

A form of survival analysis called a proportional hazards model was used to determine the effects of the interventions on decisions to go outside. This model identifies differences in survival curves – time until first breach – across treatment groups, relative to the control group. As the survival analysis related to the percentage of people who chose to stay at home during the simulation of self-isolation, the ONS estimate of 67% adhering to self-isolation overall was applied as a benchmark (Office for National Statistics, 2020b).

Differences in the secondary outcomes were analysed to look for statistical significance using z-tests for proportions (two-tailed, $\alpha = 0.05$), using a post-hoc Bonferroni correction to control the family-wise error rate (this means a cautious approach to labelling results statistically significant was taken).

Exploratory descriptive statistics were also produced to analyse responses to the additional survey questions.

1.4.3 Results from the qualitative research

Comprehension of requirements

Comprehension of rules was not mentioned as a barrier to completing self-isolation in the qualitative research. Most participants felt that information was freely available and were content that they understood the requirements. The main sources used included government websites, the news and social networks. Most participants found it useful to be reminded of the rules via phone calls, SMS and forms such as the Passenger Locator Form at the UK border.

Many participants had investigated why someone might be exempt from self-isolating, and had used these arguments where they felt applicable. Examples of appropriate use were shared: for example, one participant who lived alone understood that he could go shopping because he had no one to go for him and could not shop online.

Some said they felt there were inconsistencies in how the Government was dealing with people returning from international travel. These included the absence of temperature

checks at UK airports; being able to travel home from the airport via public transport, but then needing to self-isolate once at home; and differences between UK approaches and those elsewhere, or between the rules for adults and those for children.

Typical days and journey through self-isolation

Most people who had self-isolated after travel had made practical plans and were able to cope (e.g. getting food delivered, asking others to walk the dog, or even finding another place to self-isolate). As a result, their anxiety about the prospect of self-isolating had been low. By contrast, those who had self-isolated due to close contact had been less able to prepare, and had been much more concerned about it.

Whilst the first few days were relatively easy for most, the second week of self-isolation was more challenging. Most of those who broke self-isolation rules said that this took place around days six to nine. It is also important to note that self-isolation rules were not generally breached for necessities, but rather for what one participant described as "impulsive" reasons, such as going to the shop to grab a snack and walking the dog.

> **"I didn't miss things in my first week, but I really started to in my second" (Compliant, Focus Group)**

Capabilities and opportunities

Many participants described having an outdoor space (or choosing to self-isolate with family to have access to more space) and several were enthusiastic about its use. Participants without outside space cited this lack more than once as a reason for breaking self-isolation – for example to go for a run and get away from the same four walls.

> **"Make your own home an Oasis, be surrounded by lovely objects, be happy in your surroundings" (Partially compliant, Focus Group)**

Participants who had needed to self-isolate after close contact said that they had high levels of anxiety about their possible health status in the first few days, or before a negative Covid-19 test came back, which meant they were less likely to be tempted to exercise outside.

Motivations

Those who self-isolated after travel generally believed that this was the responsible and right thing to do. Many participants cited their own experience of Covid-19, or stories about its impact, even though many of them had also broken self-isolation later in the period. In general, perceived vulnerability to Covid-19 was low amongst the qualitative sample: instead, self-isolation was about protecting and looking after others.

There were widespread reports of fear of getting caught, albeit in the absence of any evidence of enforcement. A couple of participants reported receiving 'government' phone calls - this was a highly salient event.

Having self-isolated before and knowing what to expect helped participants to cope. One participant whose whole family had had Covid-19 before reported feeling 'trained' for a later period of post travel self-isolation.

> **"Self-isolation benefits everyone, it is better for society as a whole" (Compliant, Focus Group)**

Barriers

The perceived absence of enforcement (e.g.at UK borders) or contact from officials during self-isolation confused some and, despite some reports of guilt and fear, may have contributed to willingness to break self-isolation rules. Many participants complained about the lack of checks or incorrect information at airports.

It was clear from the qualitative work that there was a group of people who did not believe that enforcement was credible, and who were not planning to comply with the self-isolation rules. Although an intervention focused on enforcement was developed, this and the other interventions tested in the experiment are unlikely to be highly effective with a group that feels that there would be no personal consequences to them if they do not comply.

Some participants would have liked the authorities to show more interest in them self-isolating, and were disappointed that nobody reached out to confirm or acknowledge that they were complying with the rules. Feeling that "nobody cares" was especially hard when participants knew that others were breaking the rules.

Lacking a good supply of food, entertainment, and structure were key pain points. As fieldwork was conducted near the peak of the second wave of the pandemic (February/March 2021), participants mentioned booking food delivery slots as a main frustration. Many tried and failed, and this was used to explain some breaches of self-isolation.

Contextual details such as the weather and wider lockdown status also made a difference to the experience of self-isolation. Bad weather and high case numbers (e.g. in December) greatly decreased the urge to go outside.

A lack of symptoms and negative test results could also discourage adherence to self-isolation. Some participants reported reading about the likelihood that if you had Covid-19 you would have developed symptoms by day 10 or 11, and that this was a key reason they gave themselves permission to break self-isolation if it was still continuing at this point. Additionally, negative Covid-19 tests (before travelling or during self-isolation) seemed to sap participants' motivation and were interpreted by some as licence to breach self-isolation rules.

"The house felt smaller - getting on top of each other!" (Compliant, Interview)

1.4.4   Results from the literature review

Key findings from the literature review included:

- Helping people plan for self-isolation or maintain 'healthier' lifestyles whilst self-isolating could minimise 'impulsive' moments and drive adherence to self-isolation (Chtourou et al., 2020; Razai et al., 2020). This correlated with reports from the qualitative research: being unprepared (e.g. failing to organise a food delivery) could result in people making impulsive decisions to go out. Likewise, lack of structure (not knowing how to spend time or how to be entertained, especially in the absence of an outdoor space) could heighten feelings of boredom and frustration, causing people to break self-isolation just to get a breath of fresh air or to buy some comfort food.

- Increasing people's perception that the government is actively engaged and effectively managing the pandemic could help minimise the breaking of rules (Wright, Steptoe, & Fancourt, 2021). Lack of visible enforcement was also mentioned by participants in the qualitative research who broke self-isolation as a reason why they felt it was fine to go out. These participants variously showed disappointment and scepticism about the government's commitment when they reported not seeing enforcement at, for instance, the UK borders.

- Finding ways to socially engage people, making their behaviour salient and making it publicly visible could all be powerful tools to drive adherence to self-isolation (Kuiper et al., 2020; Lunn et al., 2020). As described above, contextualising experience of self-isolation within a social network was an important motivation for people – non-compliant qualitative participants said they felt others were not complying and this sapped their motivation or legitimised their own breaches of self-isolation. Lack of

interest from authorities made participants feel like "nobody cared", discouraging them from following the rules.

1.4.5 Results from the experiment

The first objective was to set a baseline for the proportion of people adhering to self-isolation given the difficulty of observing this in the field.

Four in 10 (39%) participants broke self-isolation at least once. In line with the results from the qualitative research most participants began to break self-isolation only after the first few days. It follows that six in 10 (61%) of participants did not break self-isolation, slightly below the indicative baseline for compliance of 67% (Office for National Statistics, 2020b). Empirically establishing a percentage close to the indicative baseline demonstrated the validity of the experiment and allowed DfT officials to have more confidence in their baseline estimate of how many people break self-isolation.

Primary outcome measure

The second objective was to increase the proportion of participants who choose to never go out during the full 10 days of self-isolation. None of the interventions performed significantly better than the Control in decreasing breaches in self-isolation across the full 10 days. See Figure 27.Figure 27. Survival analysis of the 10 days of self-isolation.
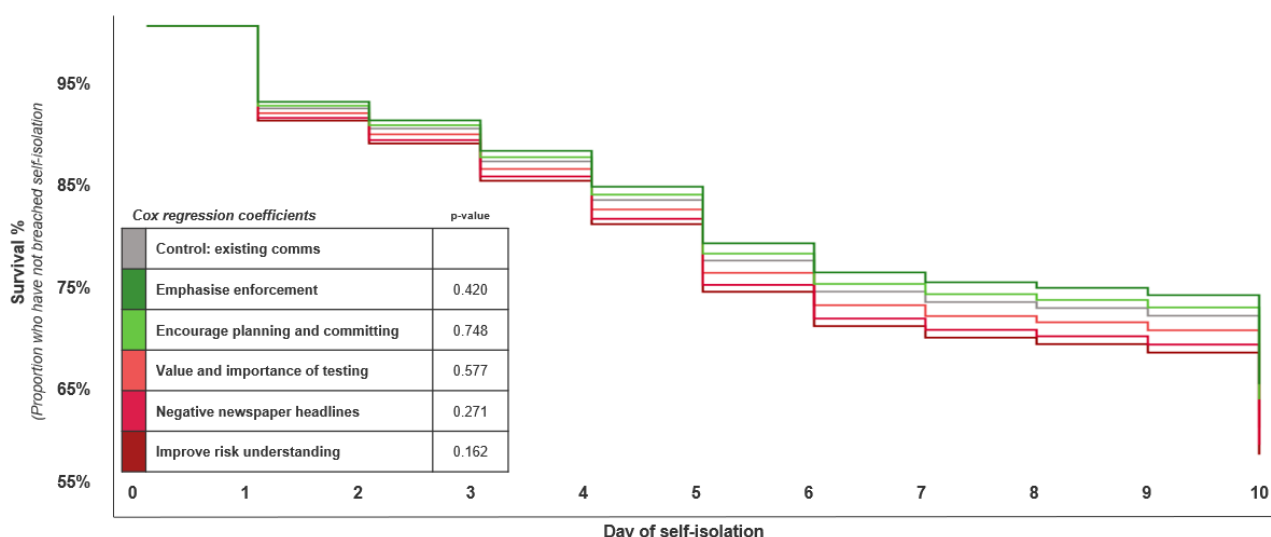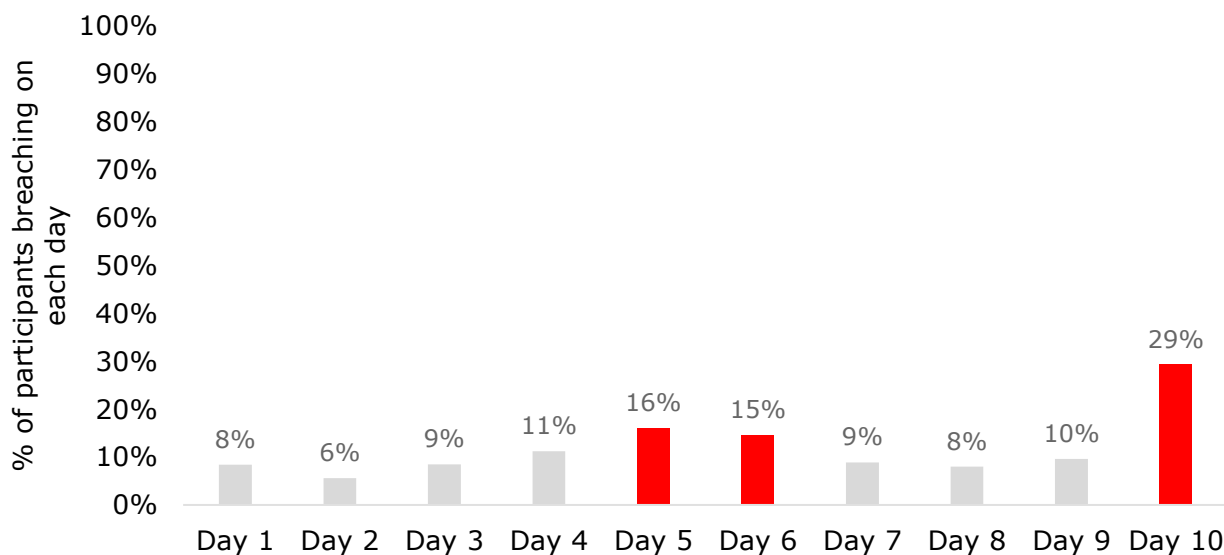

Base: Total, n=2.860 (Control, n=477; Value and importance of testing, n=476; Improve risk understanding, n=476; Negative newspaper headlines, n=477; Encourage planning and committing, n=477; Emphasise enforcement, n=477).

The experiment did show that Days 5, 6 and 10 were the main points for breaches, with open-ended questions suggesting that negative test results were highly salient for participants. See section "Feelings around the interventions" below for further details.

As Days 5, 6 and 10 showed spikes in breaches, additional exploratory analysis was conducted to understand these points in more detail. Participants who breached on Day 6, for example, were more likely to be male, 16-34, from Greater London and un-vaccinated. This demographic analysis also lent confidence in the external validity of the experiment, as younger unvaccinated people were expected to pay less attention to the rules.

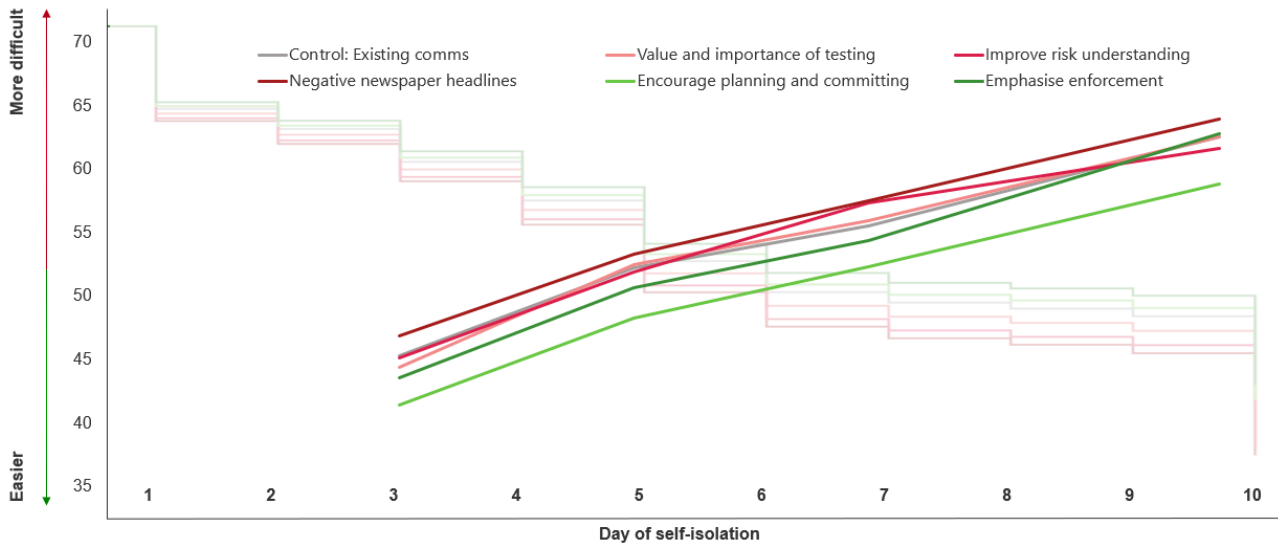*Figure 28. The percentage of participants breaching on each day of self-isolation.*

Base: Total, n=2.860 (Control, n=477; Value and importance of testing, n=476; Improve risk understanding, n=476; Negative newspaper headlines, n=477; Encourage planning and committing, n=477; Emphasise enforcement, n=477).

Secondary outcome measures

Participants' feelings about the experience of self-isolating were captured by asking them *"How are you findings things after x days?"* on Days 3, 5, 7, and 10. As with the primary outcome measure, no significant differences were observed in terms of the mean response over the full 10 days. See Figure 29.

Figure 29. Trended mood of participants during self-isolation.

Base: Total, n=2.860 (Control, n=477; Value and importance of testing, n=476; Improve risk understanding, n=476; Negative newspaper headlines, n=477; Encourage planning and committing, n=477; Emphasise enforcement, n=477).

The third objective was to examine the impact of the interventions on a number of other measures identified as potentially relevant to the overall objective of completing self-isolation. None of the interventions had a significant effect on the confidence of participants in the compliance of peers or the support of participants for self-isolation.

The most important demographic factors

The demographic profile of participants who breached self-isolation strongly differed from that of those who did not, especially in terms of age. Of those who decided to breach self-isolation in the experiment, more than four in 10 (43%) were aged under 35 and fewer than two in 10 (17%) were aged above 60. Conversely among those who successfully completed self-isolation, a quarter (24%) were under 35 and a third (33%) were above 60.

Feelings around the interventions

Participants were asked questions after the experiment about how the interventions made them feel. They could select any that applied among the following options (those numbered 1-8 were randomised for each participant):

1) Reassured.

2) Worried.

3) Optimistic.

4) Annoyed.

5) Relaxed.

6) Pessimistic.

7) Relieved.

8) Confused.

9) None of these.

Differences in self-reported emotions depending on which intervention participants experienced were clear. The most common negative emotion is annoyance, with on average one in five (22.5%) respondents feeling annoyed after seeing an intervention. Differences in responses to this question were analysed to look for statistical significance using z-tests for proportions (two-tailed, α = 0.05), using a post-hoc Bonferroni correction. All results reported below were significant at $p < .05$.

Compared to the control:

- 'Negative newspaper headlines' led to a significantly lower proportion of participants reporting all of the positive emotions ('reassured', 'optimistic', 'relaxed' and 'relieved). This intervention also led to a significantly higher proportion of participants reporting all of the negative emotions ('worried', 'annoyed', 'pessimistic' and 'confused').

- 'Emphasise enforcement' led to a significantly higher proportion of participants reporting the negative emotions 'worried' and 'annoyed', and a significantly lower proportion of participants reporting the positive emotion 'optimistic'.

- 'Encourage planning and committing' led to a significantly higher proportion of participants reporting the positive emotions 'optimistic'. and 'relaxed', and a significantly lower proportion of participants reporting the positive emotion 'reassured'.

- 'Improve risk understanding led to a significantly lower proportion of participants reporting the positive emotion 'relieved' and a significantly higher proportion of participants reporting the negative emotion 'pessimistic'.

It is notable that despite these self-reported differences in emotion or perception, behaviour did not change significantly for any of the interventions.

Further analyses on the full sample

Further exploratory analyses were conducted to understand the sample composition and get a glimpse of current attitudes and habits.

Travelling habits

Three quarters (75%) of respondents claimed to have travelled internationally at least once in 2019, with 14% travelling abroad at least three times. Expectations were lower for the

next 12 months however: half (50%) of respondents said they didn't expect to travel abroad at all, and the frequent traveller group halved from 14% to 7%.

Demographics played a large role. In 2019 more frequent travellers were male, from higher socio-economic grades, and from the south of England. These groups also had stronger travel intentions for the next 12 months, as did those under 35.

Vaccination status

Large differences in vaccination status by age group were observed. Overall, two-thirds (65%) had been fully vaccinated at the time fieldwork took place. Vaccination refusal was very low (2%) among those aged 60+, more common (7%) among those aged 35-59 and fairly common (18%) amongst people under 35.

Previous experience with self-isolation

Around four in 10 (37%) of respondents said they had had to self-isolate between March 2020 and the time they took part in the experiment. Experience with self-isolation (like vaccination status) was linked to age. Half (50%) of those under 35 had had to self-isolate, whilst fewer than three in 10 (28%) of those over 60 had had to do the same.

Perceived vulnerability to Covid-19

Across the sample as a whole, a slight majority was worried about Covid-19 (both catching the virus and the subsequent health effects). However, this differed by age. Those over 60 were a lot more worried about the effects on their health (65%) than 16-34-year-olds and 35-59-year-olds (51% and 53%, respectively).

People with a BAME background were much more worried (seven in 10 or 65%) about catching Covid-19 than those of white ethnicities (six in 10 or 55%). This is particularly worth noting as people with a BAME background in the sample tended to be younger. Given the result that younger people tended to worry less about Covid in the overall sample this suggests that people with a BAME background in our sample were particularly worried about Covid relative to the rest of the sample.

Text analysis of why participants had chosen to breach self-isolation

Participants who chose to break self-isolation were asked why they did so in an open-ended question. If someone broke self-isolation multiple times, they were asked to refer to the first time they did so. Answers helped to reveal the key motivations behind their decision. In particular:

- Participants felt that testing negative multiple times excused them from completing self-isolation. In line with what participants had said during the qualitative research, testing

negative and/or not showing Covid-19 symptoms after some time of self-isolation could legitimise breaching behaviours, as people felt they were very unlikely to have Covid-19.

- Participants often mentioned they decided to go out just to get a breath of fresh air, rather than for necessities. Similarly to the qualitative findings, breaching self-isolation was often an 'impulsive' moment motivated by trivialities, such as wanting to buy some comfort food or take a walk in the sun, rather than a careful decision for necessities.

- Overall, in their answers, participants said that going out felt 'safe' to them, indicating a low-risk perception. For many participants in the qualitative work, breaching self-isolation wasn't perceived as an antisocial act, but rather something justifiable if the right precautions were taken (such as wearing a mask and social distancing whilst out of the house).

1.4.6 Conclusions

Three key conclusions can be drawn from this project.

1. None of the interventions performed significantly better (or worse) than the control in decreasing breaches across the full 10 days of self-isolation (the primary outcome measure).

2. In line with the results from the qualitative research, most participants began to break self-isolation only after the first few days. The results showed spikes in breaches on Days 5, 6 and 10. Those on Days 5 and 6 appeared to be linked to receipt of negative test result, suggesting that a perception of lower risk of infecting others could be a key driver in breaches of self-isolation. Further analysis of the Day 6 results showed that participants choosing to breach self-isolation were more likely to be male, 16-34 years old and unvaccinated.

3. Four in 10 (39%) participants broke self-isolation at least once, meaning that three in five (61%) did not break self-isolation, slightly below an indicative baseline of 67% (Office for National Statistics, 2020b).

Having a qualitative dimension produced a wide range of hypotheses for what affects likelihood to complete self-isolation, which were built into the interventions and used to interpret the results of the experiment. The experiment was powered to detect any meaningful change in breaching behaviour that emerged. Therefore, although the experiment produced a null effect (no intervention significantly affected levels of breaches of self-isolation across the full 10 days), the results can give confidence that a worthwhile effect was not missed, and that therefore modifying the text messages sent to people whilst they are self-isolating is not going to be a cost-effective way to increase adherence to self-isolation.

The experiment also showed that negative newspaper headlines did not significantly increase the numbers of people breaching self-isolation, indicating that this need not be a cause for concern. However, receipt of negative test results did appear to drive an increase in breaches, suggesting that a perception of lower risk of infecting others could be a key driver in breaches of self-isolation.

Methodologically, this project grew from the success of the first two experiments, and as such was substantially more ambitious. The key technical question was whether the experience of self-isolation could be simulated in an online experiment. Six in 10 (61%) of participants did not break self-isolation, slightly below the ONS's indicative baseline of 67%. The similarity in findings on overall compliance between this experiment and the ONS research, as well as the spikes in breaches in response to negative test results, lent confidence to the results overall. Likewise, lower levels of adherence amongst males, younger and un-vaccinated groups are also behaviours that were expected based on qualitative work and the existing literature (Moran et al., 2021). This experiment therefore demonstrates that it is possible to observe meaningful decisions being made within an online environment that simulates the passage of time.

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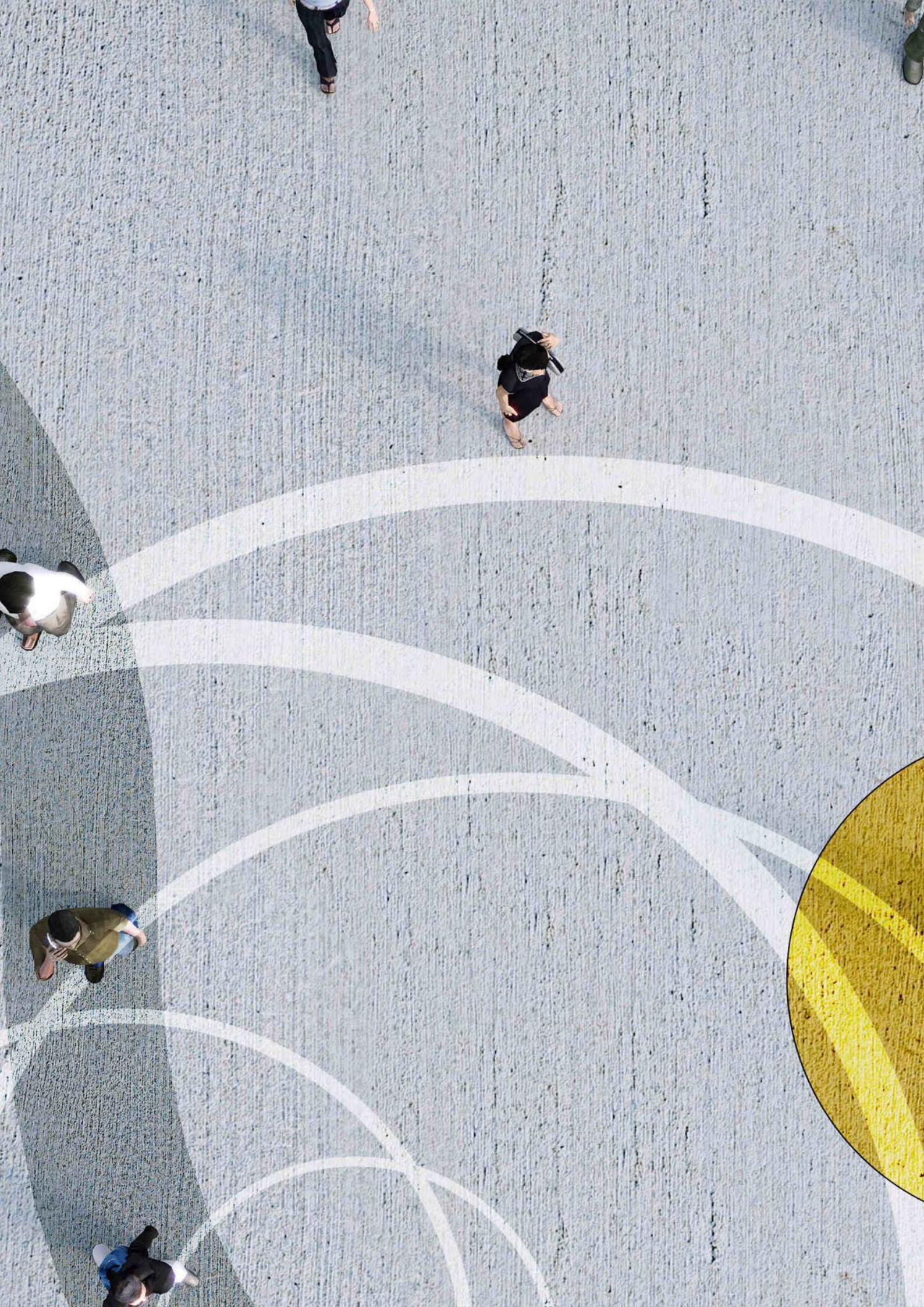
1.6 Supplementary Information

1.6.1 Public Confidence

Bayesian Belief Network explanation

There are four key stages to generating the map, namely:

1. **Determination of relationships between map variables**: connections between variables are determined based on tests of independence.

2. **Determination of directionality of relationships**: indicative direction of causal flow is determined by the pattern of conditional dependence and independence between variables, starting with arcs that are part of a v-structure. An example of this can be seen in Figure 30.

Figure 30. Determination of directionality of relationships in the Bayesian Belief Network.
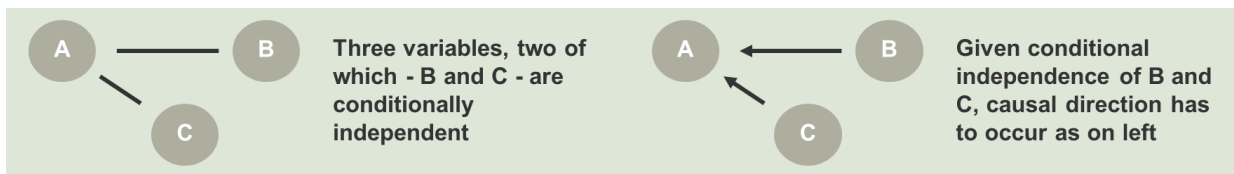
3. **Running tests across the dataset**: multiple tests of independence between all independent/dependent variables are conducted.

4. **Determining the most stable solution**: steps 1-3 are run for 200 bootstrap samples. The average of these maps is presented as the final map, resulting in a robust and stable model.

Bayesian Belief Networks illustrate the indicative influence of a collection of driver variables upon an outcome variable, as well as each other. When reading Kantar's Bayesian Belief Networks' maps, there are three key characteristics to look out for:

Figure 31. Determination of what different types of arrows mean within a Bayesian Belief Network.
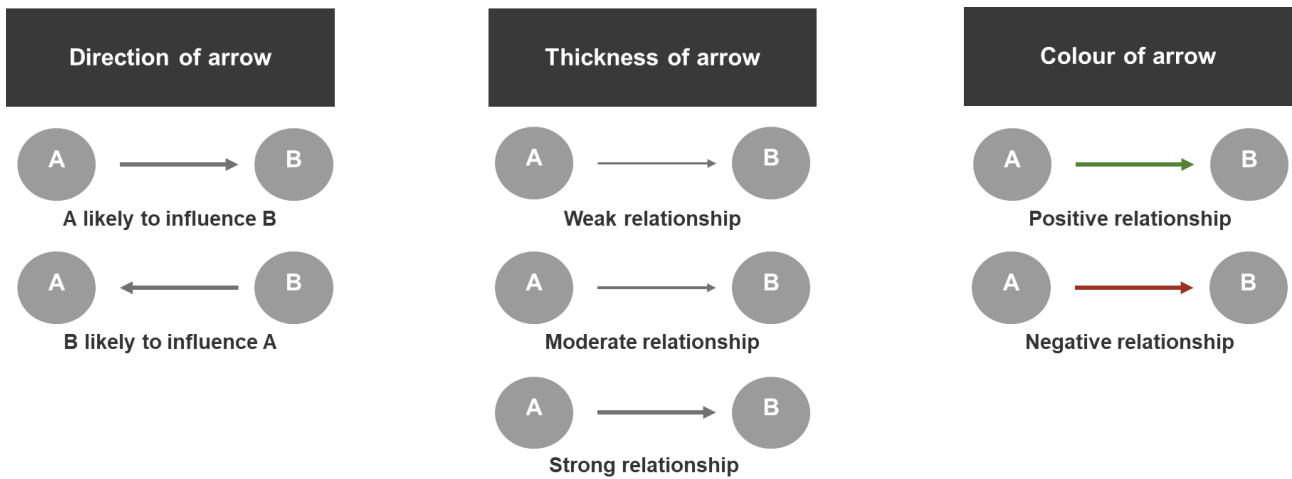
'BAME' participants' response to the interventions

Figure 32. The 'BAME' group were similar to other participants in their response to the cleaning intervention but were significantly more responsive to all the other interventions particularly when faced with the decision to take public transport or not travel.
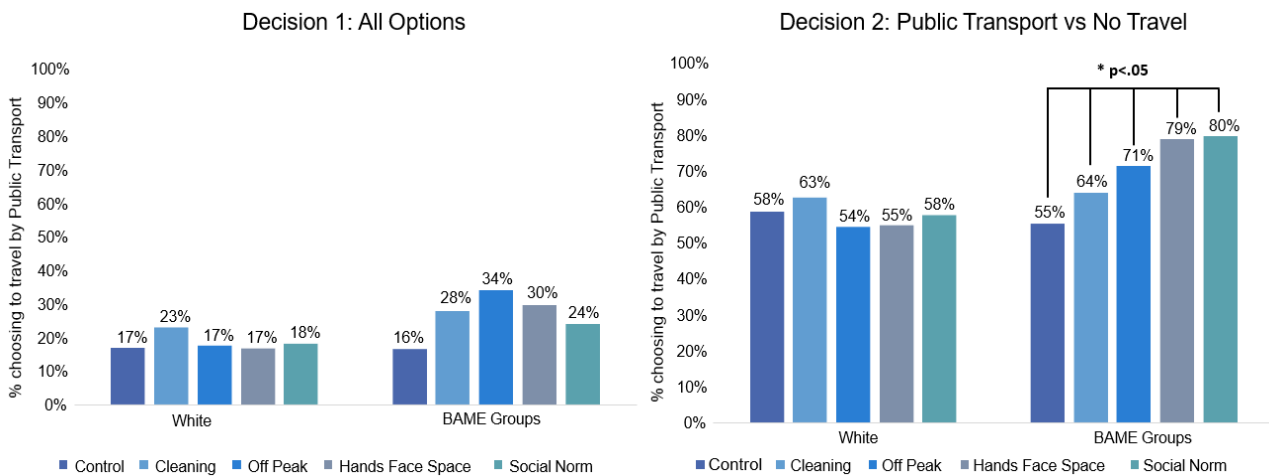

Base: White [n=2602] BAME [n=284].

1.6.2 Wearing of face coverings whilst travelling on public transport

First section of the journey

Figure 33. Percentage of passengers wearing their face covering correctly at each stage in the first part of the first exposure. The 'Enforcement plus exemption' intervention consistently elicited lower levels of mask wearing across the journey. The 'Thank you' intervention trends consistently higher.
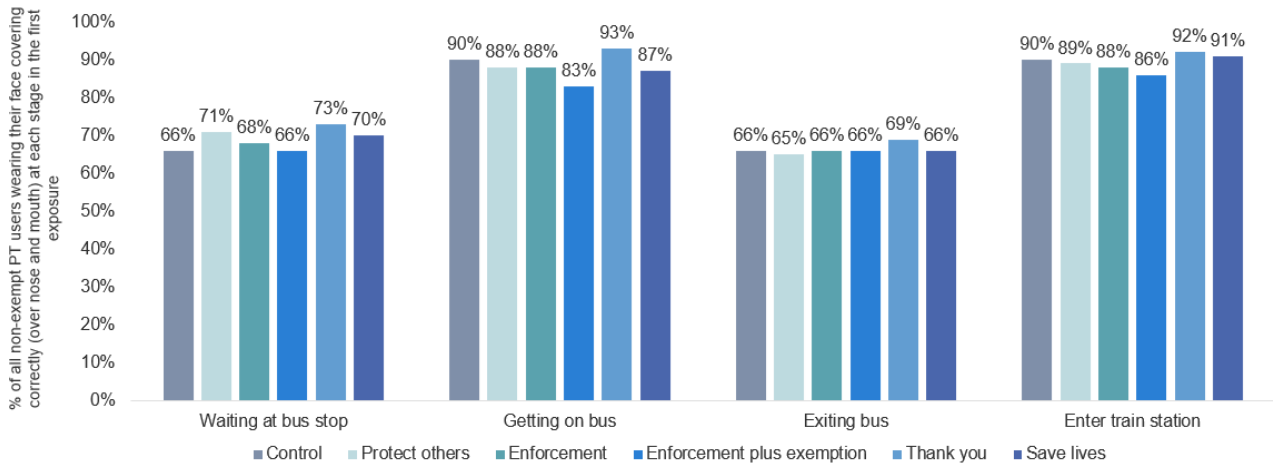
Base (total that do not consider themselves exempt from wearing a face covering): Control n=452 / Protect others n=442 / Enforcement n=445 / Enforcement plus exemption n=450 / Thank you n=455 / Save lives n=461.

Second section of the journey

Figure 34. Percentage of passengers wearing their face covering correctly at each stage in the second part of the first exposure. Train platform sees a drop in mask wearing. Amongst those who take off their face covering at this point there was no significant difference between interventions.
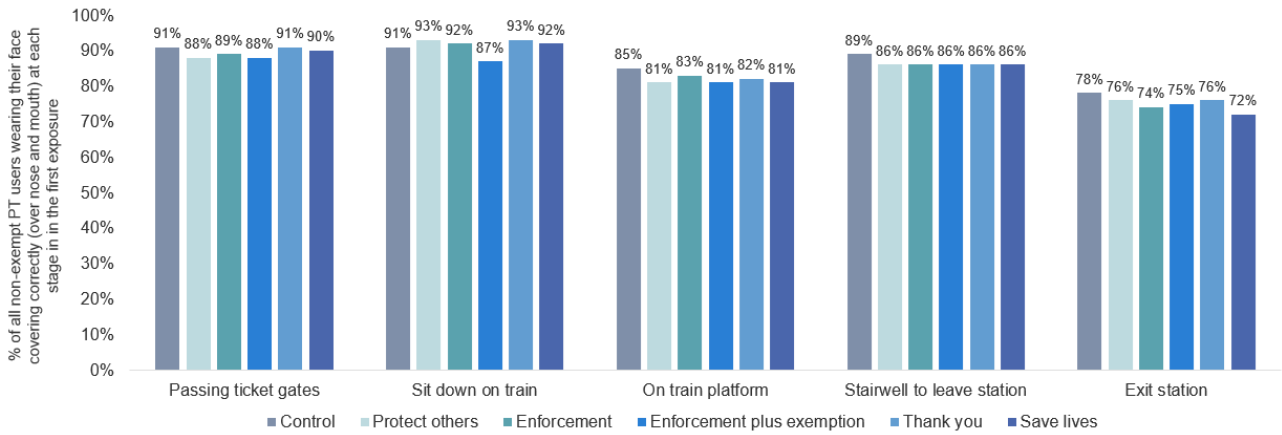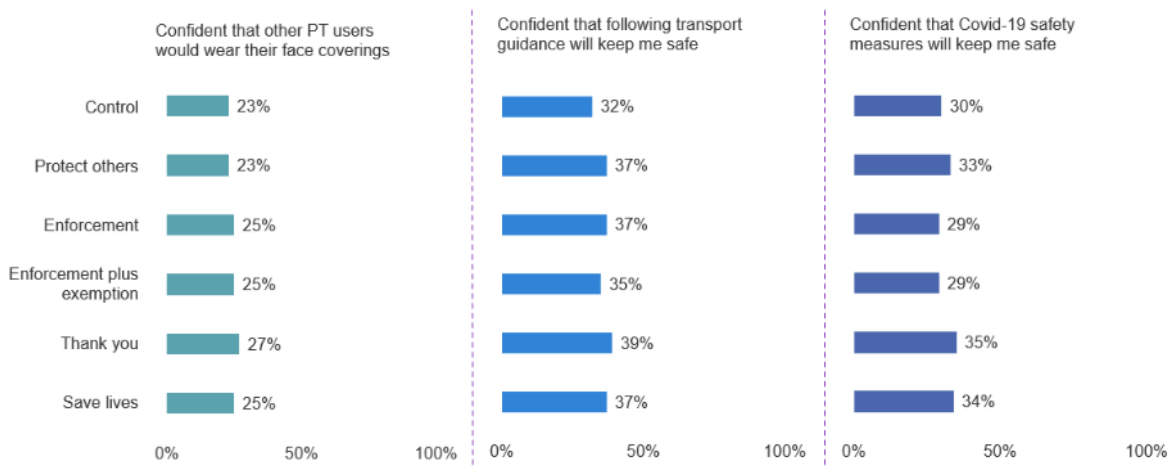

Base (total that do not consider themselves exempt from wearing a face covering): Control n=452 / Protect others n=442 / Enforcement n=445 / Enforcement plus exemption n=450 / Thank you n=455 / Save lives n=461.

Confidence measures

Figure 35. Confidence measures.

On the journey you just completed, how confident are you that other users of public transport would wear their face coverings correctly (over both their nose and mouth) on this journey? Please rate how confident you feel on the following statements: 'I am confident that following transport guidance will keep me safe'; 'I am confident that the coronavirus safety measures in place will keep me safe whilst using public transport'. Scale 1 – 100. Confident defined as 75+ %.

Base (total that do not consider themselves exempt from wearing a face covering): Control n=452 / Protect others n=442 / Enforcement n=445 / Enforcement plus exemption n=450 / Thank you n=455 / Save lives n=461.

1.6.3 Self-isolation after international travel

Long list of 43 interventions

1. Idea Name: I wish I'd known…

Idea Description: Provide honest information about what other people who have been successful wish they had known going into self-isolation.

Behavioural Tool: Anchoring/adjustment (fuel).

Intervention Point/Channel: Unclear - possibly when completing Passenger Locator Form or tracing team text messages/calls or email contact.

2. Idea Name: Right first time.

Idea Description: Highlight the importance of getting it right from the start

Behavioural Tool: Commitment effect (fuel).

Intervention Point/Channel: Passenger Locator Form.

3. Idea Name: Commitment plus tips.

Idea Description: Ask people to make a commitment to self-isolating when they complete the Passenger Locator Form (PLF) and provide a list of helpful tips.

Behavioural Tool: Descriptive social norm (fuel).

Intervention Point/Channel: Unclear.

4. Idea Name: Success stories and tips.

Idea Description: Success stories and/or tips from those who've done it successfully (take the experience out of private space) with honest information about challenges and how to mitigate.

Behavioural Tool: Commitment effect (fuel).

Intervention Point/Channel: Stand at arrivals (airport)

5. Idea Name: I'm self-isolating, look at me!

Idea Description: Put a stand at the arrival section where returning passengers can take a picture of themselves next to a commitment about self-isolating.

Behavioural Tool: Halo effect (fuel).

Intervention Point/Channel: Unclear.

6. Idea Name: I'm a celebrity and I did it!

Idea Description: People of influence (sports, media celebrities, politicians, royals, etc) share their experiences of self-isolation and their successes and challenges.

Behavioural Tool: Reciprocity (fuel).

Intervention Point/Channel: Unclear - possibly tracing team text messages/calls.

7. Idea Name: You'd stay home to keep me safe, so I'll do it for you.

Idea Description: Provide information about the risk to others in the household and add a reciprocity message (they would stay home to keep you safe).

Behavioural Tool: Salience/positive feedback (fuel).

Intervention Point/Channel: Unclear - possibly tracing team text messages/calls.

8. Idea Name: You've saved XX people.

Idea Description: Positive feedback - you've already kept X people safe by staying indoors for X days.

Behavioural Tool: Salience/positive feedback plus Halo effect (fuel).

Intervention Point/Channel: Unclear.

9. Idea Name: You've saved XX people (authority/celebrity variation).

Brief Description: Variation of positive feedback sent from an authority figure or someone with influence.

Behavioural Tool: Social norm (fuel).

Intervention Point/Channel: Unclear.

10. Idea Name: It's the same rules for everyone.

Idea Description: Using authority figure to show it's the same rules for everyone (e.g., celebrities, politicians, royals), perhaps details about their experiences and lessons learnt.

Behavioural Tool: Authority (fuel).

Intervention Point/Channel: Unclear - possibly tracing team text messages/calls or email contact.

11. Idea Name: It's day 2. Why don't you try...

Idea Description: Text people with activities/routine idea - acts as a reminder that 'government' is aware you're still supposed to be self-isolating as well as prompt re how to best succeed.

Behavioural Tool: Injunctive social norm (fuel).

Intervention Point/Channel: Could be posted or digital newsletter - could be from a partner rather than government (e.g., airline).

12. Idea Name: Self-isolation newsletter.

Idea Description: Self-isolation newsletters including news stories/exercise videos/ideas for what to do. Update as required related to journey (e.g., It's Day 1 - what to do; it's Day 7 - hang in there, we know it's getting tough).

Behavioural Tool: Availability bias (fuel) plus social norm (fuel).

Intervention Point/Channel: Unclear - possibly tracing team text messages/calls or email contact.

13. Idea Name: You're not alone.

Idea Description: Use salient memories from their arrival to remind people of the other people who arrived with them (their cohort) and that the other people also started their self-isolation journey at the same time.

Behavioural Tool: Social norm (fuel).

Intervention Point/Channel: Social media (unclear how would be implemented though).

14. Idea Name: You're not alone (variation with contact).

Idea Description: Variation of above whereby use social media to connect cohorts on arrival so people can contact others who are self-isolating at the same time.

Behavioural Tool: Default (fuel) & Descriptive social norm (fuel).

Intervention Point/Channel: Unclear - possibly tracing team text messages/calls or email contact.

15. Idea Name: Help future people like you.

Idea Description: Towards the end of the period, ask people if they want to opt in to provide accounts of their experiences to help others (get genuine quotes to feed into other comms and also remind people that they are part of a wider effort and that there is some visibility to their role).

Behavioural Tool: Descriptive social norm (fuel).

Intervention Point/Channel: Unclear - possibly tracing team text messages/calls.

16. Idea Name: You're one of the lucky ones.

Idea Description: Prompt around day 8 that it's great if they haven't shown symptoms and that this means that if they had Covid-19 (and there's still a chance you did) then they're one of the lucky ones (yay!). Plus a reminder that they could still be contagious even if they aren't symptomatic.

Behavioural Tool: Salience/positive feedback plus social norm effect (fuel).

Intervention Point/Channel: Unclear - possibly tracing team text messages/calls.

17. Idea Name: Pat on the back.

Idea Description: On day 8, "Thank you, you've done so well and you're nearly there!" Remind them of the impact they've had (e.g. you've potentially saved XXX lives) and remind them who's in there with them (e.g. number of others also self-isolating at this time).

Behavioural Tool: Optimism bias (friction).

Intervention Point/Channel: Unclear - possibly tracing team text messages/calls.

18. Idea Name: How much bread?!

Idea Description: Message re practical details (that could be fun) - how much it cost to feed a person/family for X days? How long does a loaf of bread last (and that you can freeze it). Tips that change depending on the day/stage - overcome optimism bias that may mislead their expectations.

Behavioural Tool: Goal gradient (fuel).

Intervention Point/Channel: Unclear - possibly tracing team text messages/calls.

19. Idea Name: You're nearly there!

Idea Description: Show progress towards the self-isolation goal on smart watch rings / phone home page widget.

Behavioural Tool: Goal gradient (fuel).

Intervention Point/Channel: iOS and Android app stores.

20. Idea Name: Self-isolate! You need to do xyz.

Idea Description: Authority - clearer and more authoritative message around testing and self-isolation.

Behavioural Tool: Authority (fuel).

Intervention Point/Channel: Unclear - perhaps comms campaign from the government or from the operator you've travelled with; for people who have lower trust in official authorities, have the message delivered by community leaders/religious leaders/celebrities.

21. Idea Name: Don't self-isolate alone/self-isolation buddies.

Brief Description: Boost motivation by linking up people self-isolating: perhaps people who travelled together, who need to self-isolate for the same amount of time? Make the behaviour visible and give acknowledgment.

Behavioural Tool: Injunctive social norms (fuel).

Intervention Point/Channel: Unclear - some form of social media? Travel operators linking up passengers?

22. Idea Name: They got fined - make sure you don't.

Idea Description: Make enforcement more salient/bring it to people's mind - make it look like there's more enforcement than there actually is - make sure one specific enforcement action gets picked up widely by (social) media.

Behavioural Tool: Availability heuristic (fuel).

Intervention Point/Channel: Mainstream media (BBC, Guardian…) but also more informal communication channels e.g. social media (FB groups)/community centres, especially for foreign nationals (e.g. highly publicised checks on passengers of one specific flight of expats from a specific destination).

23. Idea Name: Everything ready for when you get back?

Brief Description: Encourage people to have more supplies/make sure they have food deliveries booked etc before they get home - invoke scarcity feeling.

Behavioural Tool: Scarcity effect (friction).

Intervention Point/Channel: Unclear - communicated when the flight is booked?

24. Idea Name: Self-isolate & save.

Brief Description: Give a reward (£ or another incentive) - e.g. airline loyalty points i.e. you report every day you have self-isolated with BA who was the carrier and they give you 50 frequent flyer points - so 500 points if you go a full 10 days. Or: you don't get any points unless you've self-isolated for 10 days (could be too many people).

Behavioural Tool: Goal gradient (fuel).

Intervention Point/Channel: Unclear - communicated when the flight is booked?

25. Idea Name: I'm self-isolating, look at me!

Brief Description: Let people know you are self-isolating, make a pledge/commitment. Combine with narrative of 'protecting your neighbourhood'.

Behavioural Tool: Commitment effect (fuel).

Intervention Point/Channel: Stickers on doors "I am self-isolating", or through Nextdoor app.

26. Idea Name: Help me do my part.

Brief Description: Indicating you are self-isolating and need groceries or something else - your neighbours can help you. Encourage a sense of community like during the first lockdown, get people to check in on each other.

Behavioural Tool: Reciprocity (fuel).

Intervention Point/Channel: Stickers with writable section to put on your front door or window "I am self-isolating - could you help me out? I need xyz", or through the Nextdoor app (not necessarily comms).

27. Idea Name: You're nearly there, don't blow it now.

Brief Description: Comms opportunity around day 8: reinforcing that you should continue to self-isolate but also that you'll receive your freedom soon.

Behavioural Tool: Peak-end effect (friction).

Intervention Point/Channel: Text message/phone call: "you're nearly there, don't blow it now - the end is in sight! The weather forecast for the day you can end self-isolation is…"

28. Idea Name: How can you be sure that you don't have COVID?

Brief Description: People are taking trips because they believe they are low-risk; from a comms angle: reiterating how risky these trips actually are - help squash over-confidence.

Behavioural Tool: Overconfidence.

Intervention Point/Channel: Unclear - some sort of communication?

29. Idea Name: It will be easier if you start well.

Brief Description: Use authority figures (not necessarily central gov) to encourage people to follow the rules in the early days of self-isolation - setting a positive premise could help carry out the full self-isolation.

Behavioural Tool: Authority (fuel).

Intervention Point/Channel: Unclear.

30. Idea Name: Testing negative doesn't excuse you.

Brief Description: With a negative pre-departure test, rules become less available - need to make them more available by making enforcement more visible.

Behavioural Tool: Availability (fuel).

Intervention Point/Channel: Making enforcement visible - have someone outside restaurants/supermarkets at the airport to check who is coming in.

31. Idea Name: Tests don't only tell you whether you have COVID.

Brief Description: At the end of the self-isolation period - if there are no symptoms, a negative test feels like a confirmation that you are no threat to public health - must highlight that test don't only tell you whether you have COVID, but also whether you have a variant and other useful information.

Behavioural Tool: Confirmation bias (friction).

Intervention Point/Channel: Unclear.

32. Idea name: Target the moment.

Brief Description: What is the initial piece of information which people use to inform their decisions? How can the government capture this first moment? Target ads at people searching for information on self-isolation, and make sure you provide information on the high proportion of people who are trying to self - isolate.

Behavioural Tool: Anchoring/adjustment (fuel).

Intervention Point/Channel: Google ad words / FB / Insta / Twitter etc.

33. Idea name: I tested negative - now what?

Brief Description: Clarify what to do when you get a negative test, and why. 'If I get a negative test, then I will continue to isolate' The reason you need to do this is…

Behavioural Tool: Implementations Intentions (friction).

Intervention Point/Channel: Unclear.

34. Idea name: Be ready!

Brief Description: Help people set more realistic expectations of how difficult it will be - make people more well calibrated (I think it will be easy because I've been on holiday, but I start to struggle days five to seven).

Behavioural Tool: Overconfidence (fuel).

Intervention Point/Channel: Planning app/interactive part of website - could base on quotation flow from a price comparison website?

35. Idea name: Do I really need to travel?

Brief Description: Help people make more realistic forecasts of financial and psychological costs vs benefits.

Behavioural Tool: Planning Fallacy (friction).

Intervention Point/Channel: Planning app/interactive part of website - could base on quotation flow from a price comparison website?

36. Idea name: Stay in, set the example.

Brief Description: Make it socially unacceptable (attach a negative injunctive norm) to break self-isolation for other members of the household, especially non-complying authority figures by making all members of a household liable for a fine if one breaks self-isolation.

Behavioural Tool: Injunctive social norms (friction).

Intervention Point/Channel: Unclear.

37. Idea name: We're nearly there, let's not blow it now.

Brief Description: We are becoming less compliant now - i.e. the tail period - because of the long tail of the pandemic. Increase perceived threat by providing up to date and relevant information about covid deaths and patients now to increase perceived intensity now.

Behavioural Tool: Peak-end effect (friction).

Intervention Point/Channel: Unclear.

38. Idea name: Make self-isolation visible.

Brief Description: As you see others not self-isolating (e.g., people at the airport getting some food shopping on the way home), it's more acceptable for you not to self-isolate as well. Reduce or remove opportunities to break self-isolation at airports by closing shops and other areas where people could interact, provide dedicated 'self-isolation' carriages on the Piccadilly line.

Behavioural Tool: Descriptive social norm (fuel).

Intervention Point/Channel: Process with airports and travel providers.

39. Idea name: Provide disinformation.

Brief Description: Test whether the exposure of negative messages has an effect - provide the much-reported stat about low levels of self-isolation from the SAGE minutes.

Behavioural Tool: Social norm (fuel but for encouraging people to breach!).

Intervention Point/Channel: Only in experiment.

40. Idea name: Sandbox payments.

Brief Description: Include an arm with a 'wishful thinking' policy intervention that we could use to benchmark the impact of other 'nudge'-style interventions e.g., paying people for self-isolating.

Behavioural Tool: Incentives (friction).

Intervention Point/Channel: Only in experiment.

41. Idea name: Make Covid deaths real.

Brief Description: Make the threat (of COVID) salient with highly impactful real content of people dying. (Challenge: do we want to exploit fear?).

Behavioural Tool: Availability (friction).

Intervention Point/Channel: Only in experiment.

42. Idea name: Self-Isolation National Project.

Brief Description: Get businesses to create self-isolation-friendly products that contribute to a national purpose - e.g., you can volunteer to help administer vaccine rollout (like WWII pots and pans for spitfires!) or something you can nurture e.g. M&S selling a self-isolation plant / British bulb by the UK gov! Reach out to the wider business community to raise awareness/build a sense of community.

Behavioural Tool: Availability (fuel).

Intervention Point/Channel: Multiple.

43. Idea name: Goals or steps?

Brief Description: Test variation between messages focused on the outcome (i.e., impact) and messages focused on the process. Would be interesting to know which is most effective.

Behavioural Tool: Planning Fallacy (friction).

Intervention Point/Channel: Combine with a comms intervention.

One example message for each intervention

Value and Importance of testing (Day 1 example)

When you travel to the UK you must quarantine and take 2 further coronavirus tests once you get home.

Your next test helps determine if you contracted coronavirus during your journey, and detects people who may not have symptoms but still be infectious.

Day 2 testing also undergoes special genomic analysis, which serves to identify and contain the spread of new and dangerous variants.

Visit https://www.gov.uk/guidance/how-to-quarantine-when-you-arrive-in-england

Text messages explaining why it is important to test for Covid during self-isolation

Improve risk understanding (Day 1 example)

When you travel to the UK you must quarantine and take 2 further coronavirus tests.

New variants may be more transmissible and also infect people who have been vaccinated.

The first test must be taken on or before day 2 after your arrival. As you are coming from abroad, this helps reduce the risk that you spread a new coronavirus variant in the UK.

Visit https://www.gov.uk/guidance/how-to-quarantine-when-you-arrive-in-england

Text messages emphasising the risks of spreading Covid variants in England

Negative newspaper headlines (Day 1 example)

News articles suggesting that many in England are not adhering to self-isolation

Encourage planning and committing (Day 2 example)

Just a reminder of your plan. You said:

If I am tempted to leave my home during self isolation then I will:

1) *Play the guitar*
2) *Exercise at home*
3) *Watch Kill Bill*

Signature: LF

Your referee JK will receive a notification today, asking them to check in on your progress!

An implementation intentions-inspired platform encouraging participants to plan activities to do if tempted to go out

Emphasise enforcement (Day 1 example)

When you travel to the UK you must quarantine and take 2 further coronavirus tests. You may be fined up to £10,000 if you fail to do so.

The first test must be taken on or before day 2 after your arrival.

Visit https://www.gov.uk/guidance/how-to-quarantine-when-you-arrive-in-england

Text messages emphasising the financial and legal consequences of breaking self-isolation