PUBLIC UNDERSTANDING AND PERCEPTIONS OF THE COVID-19 TEST-AND-TRACE SYSTEM

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ACKNOWLEDGEMENTS

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EXECUTIVE SUMMARY

Main findings

- A nationally representative sample of 1,000 people overwhelmingly agree that the Test-and-Trace system is extremely important for controlling the spread of COVID-19.

- Almost 90 per cent of people are aware they can arrange a test for COVID-19 by calling their own GP, but only 30 per cent know they can do so by calling any GP or an out-of-hours GP service.

- Wrongly perceived costs could deter engagement with the Test-and-Trace system. Almost 50 per cent of people erroneously think they could be charged for an over-the-phone consultation about COVID-19 symptoms and 36 per cent think they could be charged if they need a test.

- Over 70 per cent of people across all socio-demographic groups believe it is likely that someone who contracts COVID-19 has been careless or reckless in following public health. This could lead to a fear of stigmatisation which might prevent people from quickly arranging a test. Despite assured anonymity, almost two-thirds (63 per cent) believe their close contacts could identify them if they were to test positive.

- Over 85 per cent of people know they should self-isolate while awaiting test results.

- Knowledge of how contact tracers notify close contacts of confirmed cases is poor. Over 90 per cent of people are unaware that the call comes from a private number.

- Differences between socio-demographic subgroups highlight the need for targeted public health communications:

  o Men think GPs are less likely to recommend tests than women, even when experiencing the main symptoms of COVID-19, whereas more women than men think getting a test is costly.

  o Compared to Irish nationals, non-Irish members of the public think GPs will be less likely to recommend a test, that they need to pay for a test and that results will be less accurate.

  o Age differences are the most striking. Compared to older age groups, people aged under 40 are less likely to know the GP consultation is free, more likely to believe getting tested would be a hassle and uncomfortable, more pessimistic about result wait times, more

sceptical of the accuracy of results, more worried about being identified by their close contacts and less aware of how contact tracers notify them. Older age groups, however, are less likely to think a test would be recommended if they were to experience cold and flu symptoms and so may be less aware of the link between these symptoms and COVID-19.

CHAPTER 1

Introduction

1.1   INTRODUCTION

Maintaining control of the spread of COVID-19 requires quickly testing people suspected to be infected and tracing the contacts of those who test positive (European Centre for Disease Prevention and Control, 2020). Governments and public health officials are ultimately responsible for this 'Test-and-Trace' system, but its efficiency also depends on the public. People need to understand and be willing to engage with the system when necessary. The aim of this study was to measure understanding and perceptions of the COVID-19 Test-and-Trace system among a representative sample of adults in Ireland. We were interested in all stages of the process, from arranging a test to getting the results and notifying close contacts if necessary. The online study ran between July 3 and July 6, shortly after Ireland transitioned into Phase 3 of the Roadmap for Reopening Society and Business and before the COVID Tracker App was launched. Cases were low, on average under 20 per day, and over 460,000 tests had been run (Government of Ireland, 2020).

We had two specific aims. One was to assess comprehension of the system. For example, do people know how to arrange a test if they suspect they need one? Are they aware that both the GP consultation and the test are free? The second aim was to assess perceptions of the system, and in particular perceptions that might hinder engagement. For example, do people hold negative views of others who test positive for COVID-19? Gaining insight into how people in different socio-demographic subgroups respond to these types of questions can help to identify economic and social factors that could disincentivise individuals from engaging with the Test-and-Trace system. The survey is the first of its kind in Ireland.

CHAPTER 2

Method

2.1   PARTICIPANTS

One thousand participants were recruited from a large online panel held by a leading market research and polling company. Socio-demographic characteristics of the sample are summarised in the Appendix. They approximate latest CSO figures well, with slight over-representation among the over 60s. The survey took about six minutes and was administered at the end of a larger online study about symptoms of COVID-19. Other elements of the study will be reported separately. Participants were paid €6 for undertaking the full 20-minute study, which was programmed using Gorilla Experiment Builder (Anwyl-Irvine et al., 2020).

2.2   PARTICIPANT RECRUITMENT

Respondents who had signed up to the market research agency's online panel were issued an email invite to take part based on a socio-demographic quota. The invite link allowed one response per person.[1] There are pros and cons to collecting data using this method. On the downside, relative to traditional probability sampling the method introduces potential selection biases (Baker et al., 2010; Fan and Yan, 2010), although similar concerns about nonresponse bias are increasingly linked to probability sampling (Bethlehem, 2016), including in Ireland (Lunn, 2017). In the present case, the issue is that individuals who agree to be on such panels and to undertake the survey may not be representative of the population and could hold different views about COVID-19. We therefore checked not only the representativeness of the sample (outlined above), but also that responses to standardised questions collected in other parts of the study closely matched figures collected by contemporaneous surveys using nationally representative samples gathered through other means (Timmons et al., forthcoming).

On the upside, online panels provide quick results from large samples – important during a rapidly evolving pandemic (Geldsetzer, 2020). Increased internet usage and better online panel construction has improved the quality of data from online panels (since Baker et al., 2010). Recent studies indicate that they can give similar estimates to traditional national probability sampling and random digit dialling (Ansolabehere and Schaffer, 2014; Coppock and McClellen, 2019), with a meta-analysis of the psychometric properties of measures closely matching traditional approaches (Walter et al., 2019). In addition, for certain topics, responses collected online may be more honest than those collected through in-person contact (Chang

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[1]   For further details on quality control of the online panel we used, see https://redcresearch.ie/techniques/online-research.

and Krosnick, 2009), as the latter can strengthen social-desirability bias (Kreuter et al., 2008). Since our questions explored potentially sensitive issues to do with privacy and blame, online participation was probably beneficial. Overall, the quality of responses obtained recently from online panels 'does not seem to be worse than that from traditional methods and, in some cases, may be better' (American Association for Public Opinion Research, 2020, p.2).

Given the above, we conclude that the representativeness and accuracy of the present survey is likely to be at least as good as modern opinion polls, which employ similar methods, but perhaps to fall short of the levels associated with the larger CSO household surveys. The method is therefore appropriate, given the need to obtain rapid results for policy and the interest in the broad pattern of responses to novel questions rather than small percentage-point differences in routine measures.

2.3   MATERIALS AND DESIGN

The questions were organised into two sections that matched the twin aims of assessing comprehension and perceptions. First, participants were shown seven comprehension questions about the Test-and-Trace process. For the first question, participants had to select the correct ways to arrange a test from a range of options. The remaining six comprehension questions were multiple choice questions, which asked about the cost of a phone assessment by a GP, the cost of a test, when results should be expected, what people should do while waiting for results, how 'close contacts' are defined and how close contacts are notified. Questions were ordered as described here. Where knowledge from a previous question was required, participants were given the correct answer to that question (e.g. they were informed that the correct way to arrange a test is to phone a GP before being asked about the cost of the consultation).

The second section measured perceptions. There were 15 questions about six central topics: how important participants thought the system was; how likely they thought their GP would be to recommend a test for COVID-19 if they were experiencing different types of symptoms; how uncomfortable they thought the test would be; how accurate they thought the test would be; whether they were worried about close contacts identifying them personally; and their judgements of others who test positive for COVID-19. Responses to these questions were elicited on Likert scales (i.e. rating scales) numbered from 1 to 7. A full list of questions is available in the Appendix.

CHAPTER 3

Results

A large majority judged that the Test-and-Trace process was extremely important for containing the spread of the virus, with 76.8 per cent giving the maximum response and 94.7 per cent selecting a response above the midpoint on the scale (Figure 3.1a). Participants also reported that the system for arranging a test is easy to understand, with 68.6 per cent responding above the midpoint on the scale (Figure 3.1b).

FIGURE 3.1   RESPONSES TO LIKERT QUESTIONS ABOUT TEST-AND-TRACE IMPORTANCE AND EASE OF UNDERSTANDING SYSTEM FOR ARRANGING A TEST
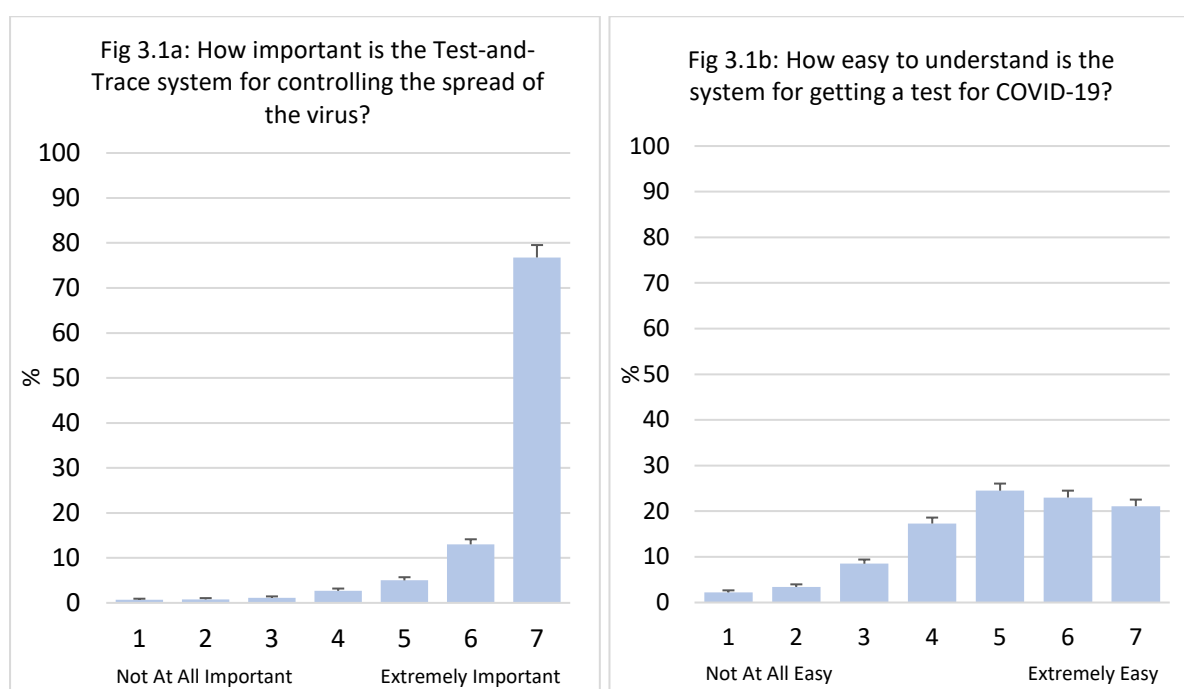
Source: Authors' analysis of ESRI survey July 2020.
Note: Error bars indicate the standard error of the proportion.

We report the remaining questions not in the order they were shown to participants but rather by how they relate to steps in the Test-and-Trace process, from arranging and getting a test, to getting the results and close contacts being notified. In addition to the headline figures, we examine whether responses differed by gender, age, education, living area (urban or rural) and nationality (Irish or non-Irish). We used binary logistic regression to test for socio-demographic differences in the likelihood of answering the comprehension questions correctly. We used ordinal logistic regression for all other types of questions. In place of full regression tables of each model, we report beta coefficients (ß), standard errors (*SE*) and p-values (*p*). Beta coefficients indicate the change in the outcome variable

if there is a change in the predictor and the relative effect size (i.e. the magnitude of different beta coefficients can be compared). Standard errors indicate how precisely estimated the beta coefficient is. P-values indicate the probability of observing an effect as large as the one reported if, in reality, there is no difference in the population. We use conventional cut-offs for interpreting 'statistical significance' of 10 per cent ($p < .10$), 5 per cent ($p < .05$) and 1 per cent ($p < .01$). We report only statistically significant effects; non-reported effects are not statistically significant.

3.1   ARRANGING A TEST

Figure 3.2a shows that 89.8 per cent of participants knew they could call their own GP if they thought they needed a test, but just 29.5 per cent and 31.5 per cent knew they could call any GP or an out-of-hours GP service, respectively. Less than one-in-five participants (17.7 per cent) correctly selected all three ways to arrange a test, although 94.2 per cent selected at least one of the three correct answers. Six per cent did not know how to arrange a test. Of those who answered incorrectly, most thought that they could call HSELive (50 per cent) or go to their GP in person (39.7 per cent). Non-Irish participants were less likely to select that they could contact their own GP (81.3 per cent vs. 91.0 per cent; ß = -0.85, SE = 0.26, $p < .001$) and more likely to believe that they could phone a community test centre (33.3 per cent vs. 25.8 per cent; ß = 0.37, SE = 0.21, $p = .075$). Men were less likely to select a correct answer than women (92.7 per cent vs. 95.7 per cent; ß = -0.57, SE = 0.29, $p = .046$) and degree holders were more likely to choose a correct response than those without degrees (95.9 per cent vs. 92.9 per cent; ß = 0.69, SE = 0.30, $p = .021$), although these differences are both small.

Fifty-six per cent answered correctly that the phone consultation with a GP (to discuss whether a test is required) is free, with 28.3 per cent indicating that they weren't sure of the cost and the remainder split between selecting half the cost of, and the same price as, a standard GP consultation (Figure 3.2b). Men were more likely to answer correctly than women (58.7 per cent vs. 52.4 per cent; ß = 0.23, SE = 0.13, $p = .082$) and participants aged over 60 than ones under 40 (60.9 per cent vs. 50.6 per cent; ß = 0.40, SE = 0.16, $p = .013$). The difference between age groups was large: half of those aged under 40 did not know that the consultation was free, while awareness was 20 per cent greater among those over 60 (an absolute difference of 10 percentage points).

Eighty per cent thought it would be 'extremely likely' that a GP would recommend a test if they were to call while experiencing one of the main COVID-19 symptoms (Figure 3.2c). Ninety-seven per cent gave a response at or above the midpoint of the scale, implying widespread recognition of these main symptoms. Women thought GPs would be more likely to recommend a test compared to men (M = 6.8

vs. 6.5; ß = 0.67, *SE* = 0.17, *p* < .001), as did over-60s compared to both under 40s (*M* = 6.8 vs. 6.6; ß = 0.51, *SE* = 0.22, *p* = .018), and those aged 40 to 60 years (*M* = 6.6; ß = 0.83, *SE* = 0.21, *p* < .001). Irish participants were also more likely to think a GP would recommend a test than non-Irish participants (*M* = 6.7 vs. 6.5; ß = 0.39, *SE* = 0.22, *p* = .079). Again, however, these socio-demographic differences were relatively small.

Participants were far less certain about the likelihood of being referred for a test if they rang their GP while experiencing other cold and flu symptoms (e.g. sore throat, headache). While more than half (55.1 per cent) gave a response above the midpoint of the scale, over a quarter (26.9 per cent) responded below the midpoint (Figure 3.2d). Again, women thought GPs would be more likely to recommend a test (*M* = 4.8 vs. 4.4; ß = 0.36, *SE* = 0.11, *p* = .002), but the pattern for age was reversed: over-60s thought a referral was *less* likely compared to those aged 40 to 60 (*M* = 4.2 vs. 4.7; ß = -0.42, *SE* = 0.14, *p* = .004), and under 40s (*M* = 4.9; ß = -0.69, *SE* = 0.14, *p* < .001). This reversal may indicate better awareness of the link between general cold and flu symptoms and COVID-19 among younger people. Again, Irish participants thought a GP would be more likely to recommend a test than non-Irish participants (*M* = 4.7 vs. 4.3; ß = 0.39, *SE* = 0.17, *p* = .021). These proportions and socio-demographic differences were similar to those observed in response to a question about the perceived likelihood of a referral if they were to call the GP with cold and flu symptoms when they had been limiting their contact with others by staying at home (Figure 3.2e).

FIGURE 3.2   QUESTIONS REGARDING ARRANGING A TEST

Figure 3.2a: How can you arrange a test for COVID-19, if you think you need one?
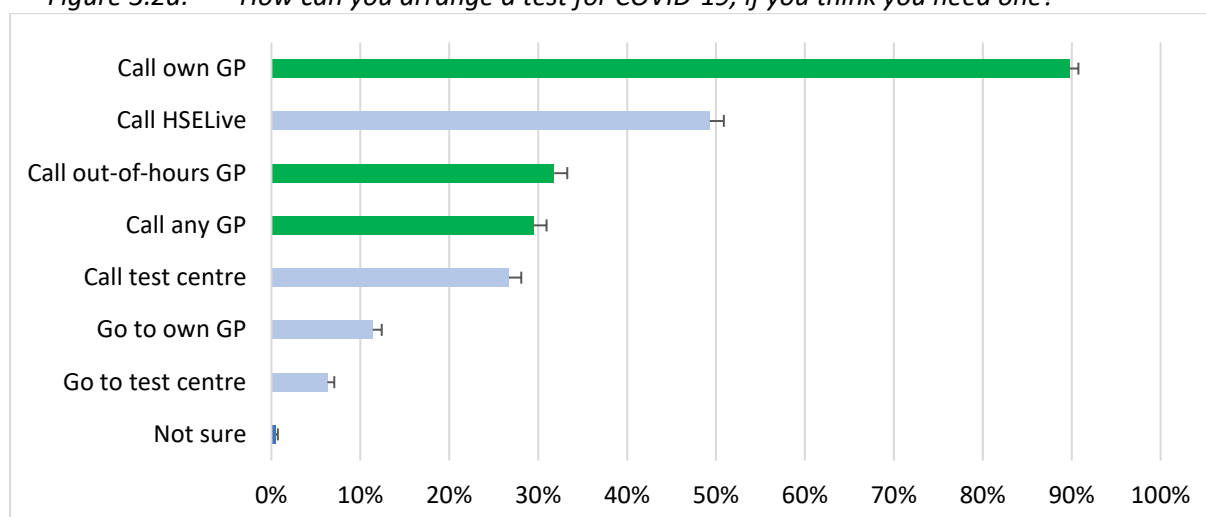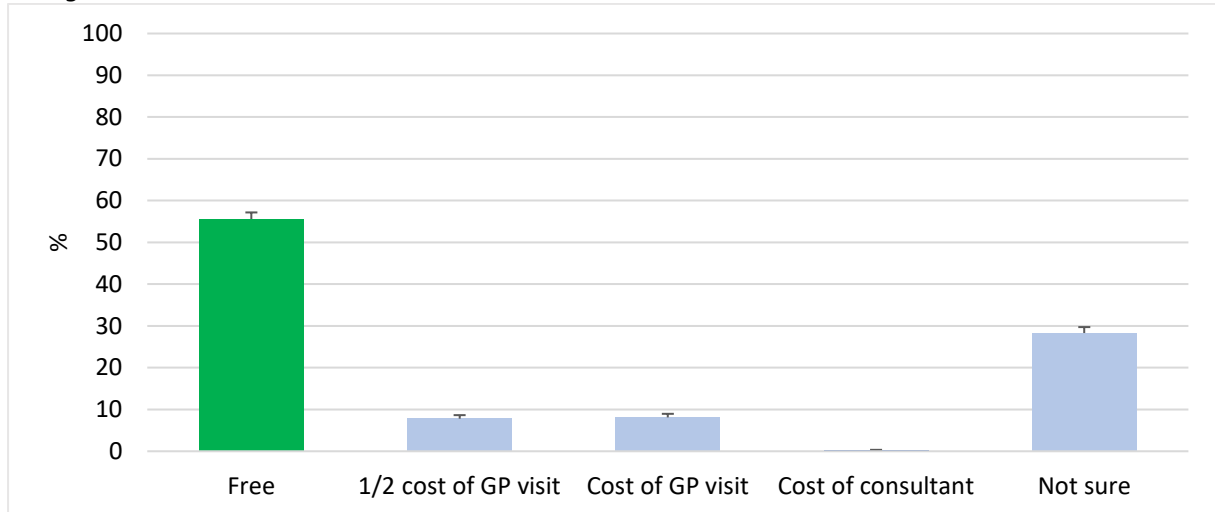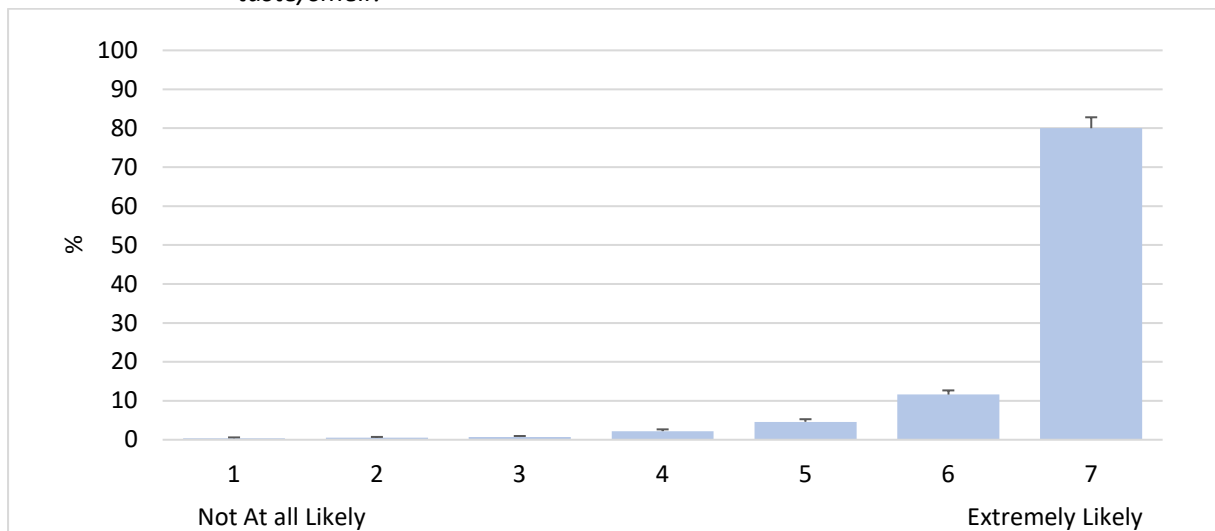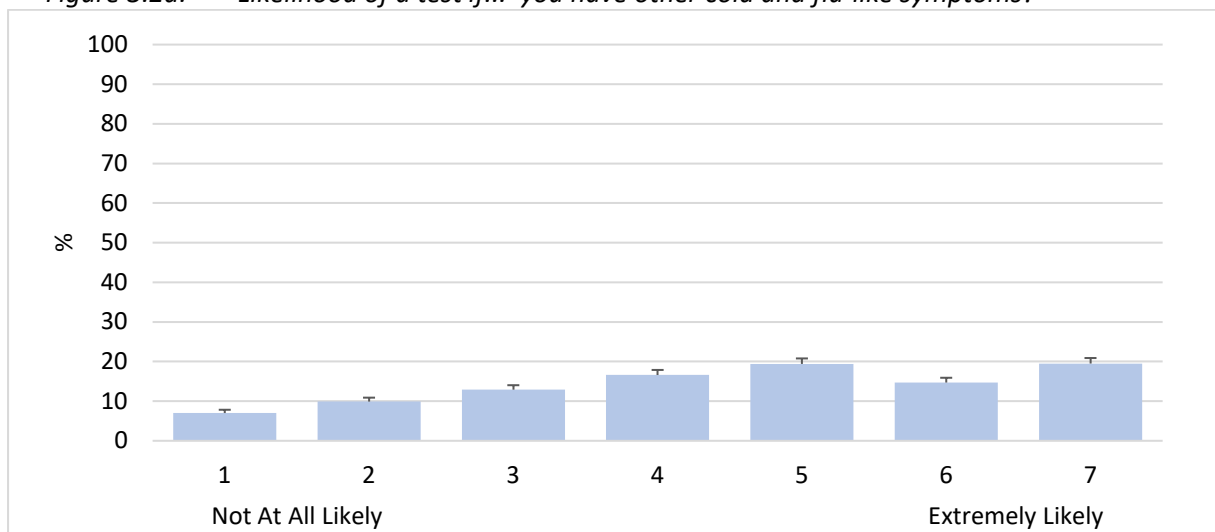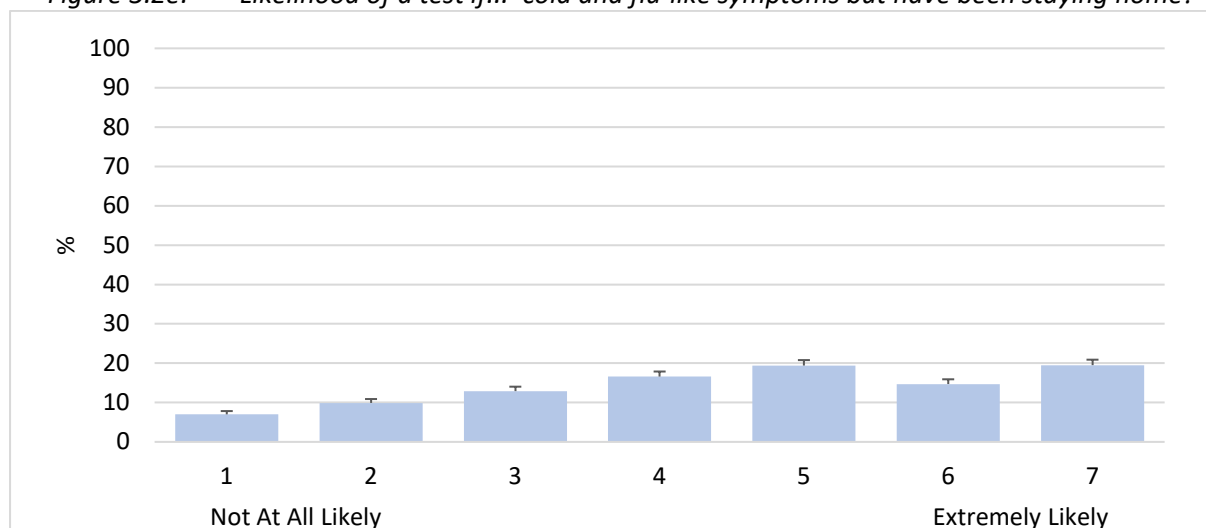
Figure 3.2b: *How much does the assessment cost?*

Figure 3.2c: *Likelihood of a test if... 'you have a cough, fever, shortness of breath or loss of taste/smell?'*

Figure 3.2d: *Likelihood of a test if... 'you have other cold and flu-like symptoms?'*

Figure 3.2e: *Likelihood of a test if... 'cold and flu-like symptoms but have been staying home?'*

3.2   GETTING A TEST

In addition to the potential cost of a GP consultation, we measured whether participants believed they would have to pay for a test should they need one. Less than two-thirds of participants (63.7 per cent) correctly answered that the test was free, with the majority of the remainder (a further 28.7 per cent) unsure (Figure 3.3a). Knowledge that a test was free was associated with responses on an earlier task: those who were certain that the test was free reported that they were more willing to call their GP if they were to experience symptoms of COVID-19. Men were more likely to know that the test was free than women (67.7 per cent vs. 59.6 per cent; $ß = 0.32$, $SE = 0.13$, $p = .019$), and Irish participants marginally more so than non-Irish ones (64.8 per cent vs. 56.1 per cent; $ß = 0.33$, $SE = 0.20$, $p = .093$).

Participants believed that getting tested might be somewhat uncomfortable but overall not much hassle (Figures 3.3b and 3.3c). Women thought the test would be more uncomfortable than men ($M = 4.4$ vs. 3.8; $ß = 0.57$, $SE = 0.11$, $p < .001$), as did participants aged under 40 compared to those aged 40 to 60 ($M = 4.4$ vs. 3.9; $ß = -0.36$, $SE = 0.14$, $p = .010$) and those over 60 ($M = 4.0$; $ß = -0.28$, $SE = 0.14$, $p = .045$). Some participants reported having been tested ($n = 92$) and they gave a higher rating for discomfort than those who had not been tested ($M = 4.7$ vs. 4.0; $ß = 0.49$, $SE = 0.19$, $p = .009$). Participants aged under 40 also perceived getting a test to be more hassle than those aged 40 to 60 ($M = 3.5$ vs. 2.9; $ß = -0.48$, $SE = 0.14$, $p < .001$) and those over 60 ($M = 2.7$; $ß = -0.74$, $SE = 0.14$, $p < .001$). Participants with degrees judged getting a test to be more hassle than those without degrees ($M = 3.2$ vs. 2.9; $ß = 0.27$, $SE = 0.12$, $p = .018$), as did Irish participants compared to non-Irish participants ($M = 3.5$ vs. 3.0; $ß = 0.47$, $SE = 0.17$, $p = .006$).

FIGURE 3.3   QUESTIONS REGARDING GETTING A TEST

Figure 3.3a: How much does the test for COVID-19 cost?

Figure 3.3b: How painful or uncomfortable do you think the test would be?

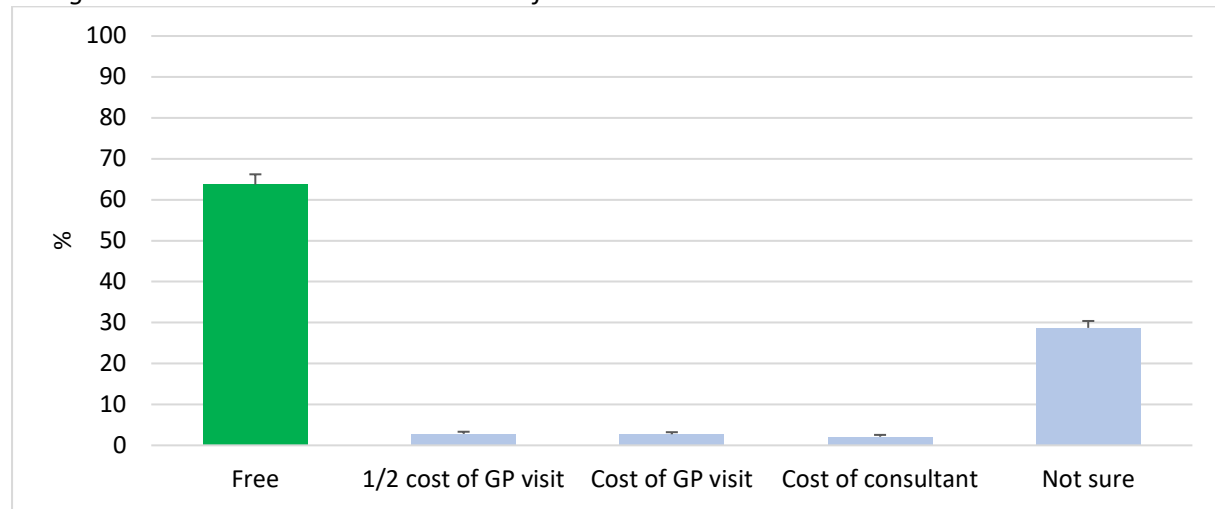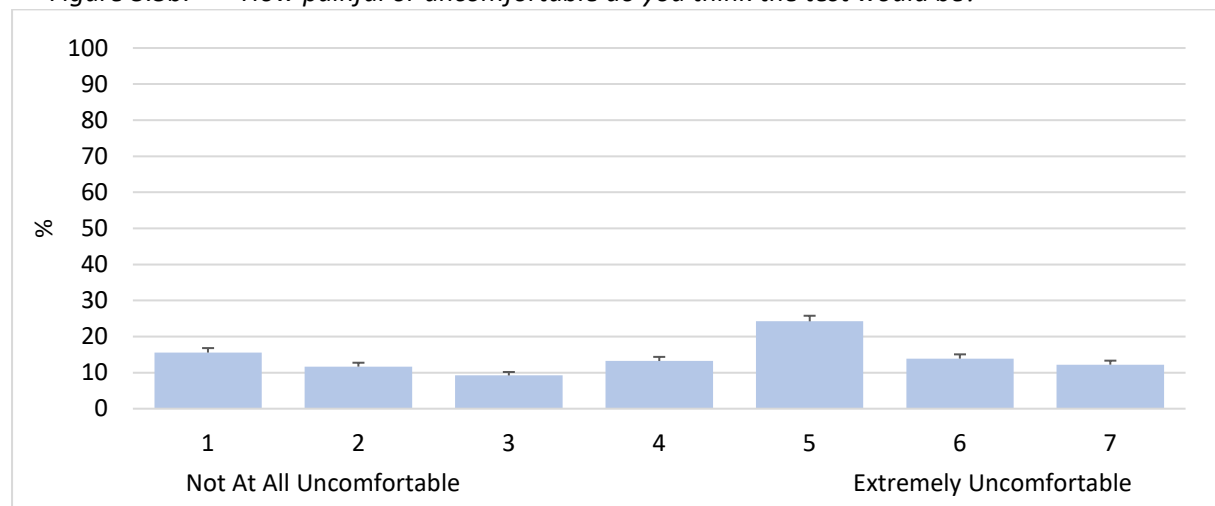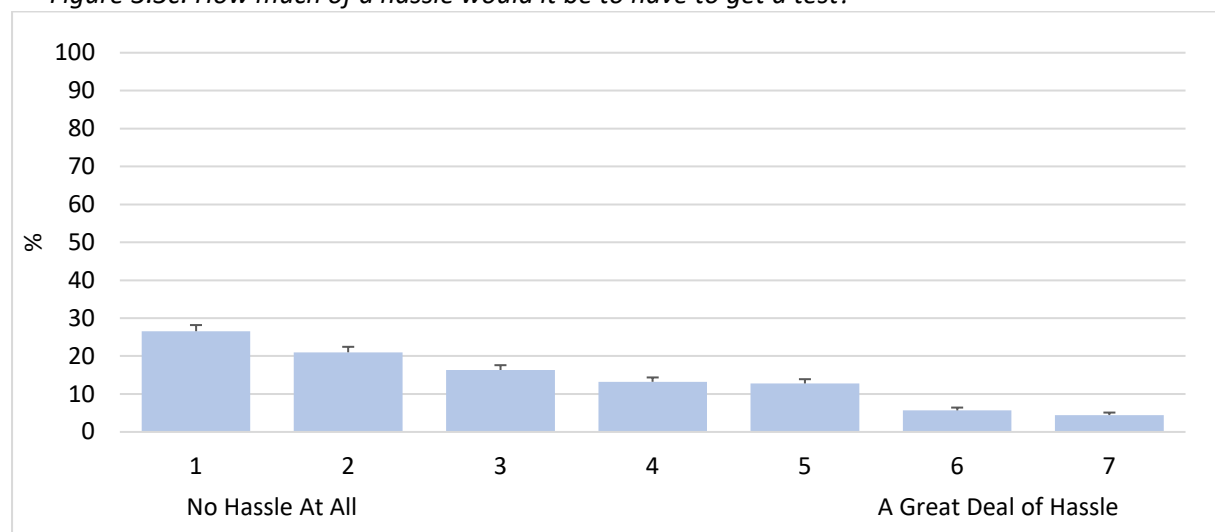*Figure 3.3c: How much of a hassle would it be to have to get a test?*

Source: Authors' analysis of ESRI survey July 2020.
Note: Green bars indicate correct responses on comprehension questions. Error bars indicate the standard error of the proportion.

3.3   TEST RESULTS

Participants were optimistic about the wait-time for results: just under half (47.3 per cent) thought it would be less than two days. In reality the advised wait-time in early July was within three to four days (selected by 23.8 per cent of participants; Figure 3.4a) – although many results at the time may have been returned to patients within two days. Men were more optimistic than women (ß = -0.30, *SE* = 0.12, *p* = .013) and over-60s more so than under-40s (ß = -0.71, *SE* = 0.15, *p* < .001). However, having a degree was the only socio-demographic factor that predicted responding correctly (27.5 per cent vs. 20.7 per cent; ß = 0.40, *SE* = 0.15, *p* = .008). While waiting for results, a majority (85.1 per cent) of participants knew that they should self-isolate and that others in their household should restrict their movements (Figure 3.4b). A further 8.8 per cent reported that they and their household should restrict their movements only. Women were more likely than men to know to self-isolate (88.8 per cent vs. 81.5 per cent; ß = 0.66, *SE* = 0.19, *p* < .001) and those with degrees were marginally more likely to know than those without (87.2 per cent vs. 83.5 per cent; ß = 0.34, *SE* = 0.19, *p* = .071).

Faith in the accuracy of test results was high. Ninety-four per cent of participants gave a response above the midpoint of the scale for the accuracy of a positive test result and 84 per cent did for a negative result (both are averaged in Figure 3.4c). Subgroup differences were small. Participants over 60 years old and those living in rural areas had more faith in the test than those under 40 (*M* = 6.1 vs. 5.8; ß = 0.36, *SE* = 0.14, *p* = .012) and those living in urban areas (*M* = 6.0 vs. 5.9; ß = -0.32, *SE* = 0.12, *p* = .008), respectively. Irish participants also believed test results would be more accurate than non-Irish participants (*M* = 5.9 vs. 5.7; ß = 0.35, *SE* = 0.17, *p* = .041).

Participants were unsure whether having had the virus conferred immunity. The modal response was the midpoint of the scale, 35.6 per cent gave a response below the midpoint and 30.6 per cent responded above it (Figure 3.4d). Men thought immunity was more likely than women (*M* = 3.9 vs. 3.6; ß = 0.37, *SE* = 0.12, *p* = .001), as did those under 40 compared to the other two age groups (*M* = 4.0 vs. 3.6 and 3.7; ß = 0.39, *SE* = 0.14, *p* = .006; ß = 0.37, *SE* = 0.14, *p* = .009 for 40 to 60 years and over 60, respectively). Degree holders judged immunity to be more likely than non-degree holders (*M* = 4.0 vs. 3.7; ß = 0.24, *SE* = 0.12, *p* = .038), as did non-Irish participants compared to Irish participants; *M* = 4.1 vs. 3.7; ß = 0.37, *SE* = 0.18, *p* = .032, respectively).

The responses described thus far largely concern the operation of the Test-and-Trace system and how an individual might interact with it. By contrast, two questions probed perceptions of others who test positive for COVID-19 at the moment (i.e. during early July). Participants were asked 'How likely is it that people

test positive for COVID-19 at the moment because they have been reckless or careless in following advice?' and 'If someone tests positive for COVID-19 at the moment, how much are they themselves to blame?' Most participants were of the opinion that where someone tested positive it was likely to be because they had been reckless (M = 5.2, with 70.6 per cent above the midpoint of the scale; Figure 3.4e). While fewer participants thought that people who tested positive had themselves to blame (M = 4.0), just 32.1 per cent responded below the midpoint of the scale: a majority believed that those who tested positive had, at least in part, themselves to blame (Figure 3.4f). Notably, there were no socio-demographic differences on these questions, implying broad agreement across society.

FIGURE 3.4   QUESTIONS REGARDING TEST RESULTS

Figure 3.4a: If you are tested for COVID-19, when should you expect the results?
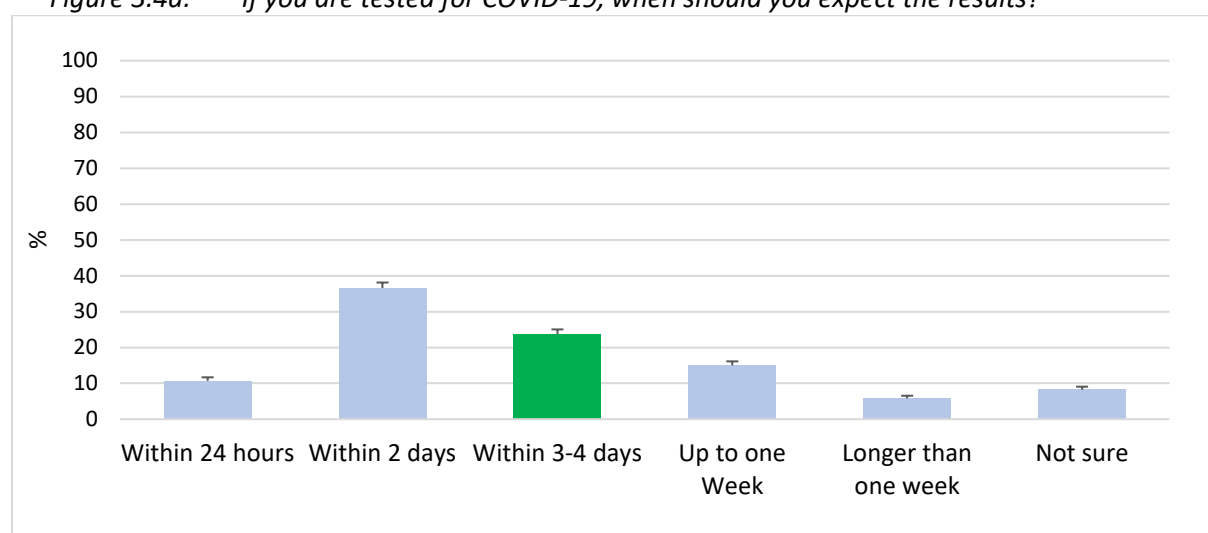

Figure 3.4b: What should you do while you wait for the results of a test?

Figure 3.4c: *How likely are test results to be accurate?*
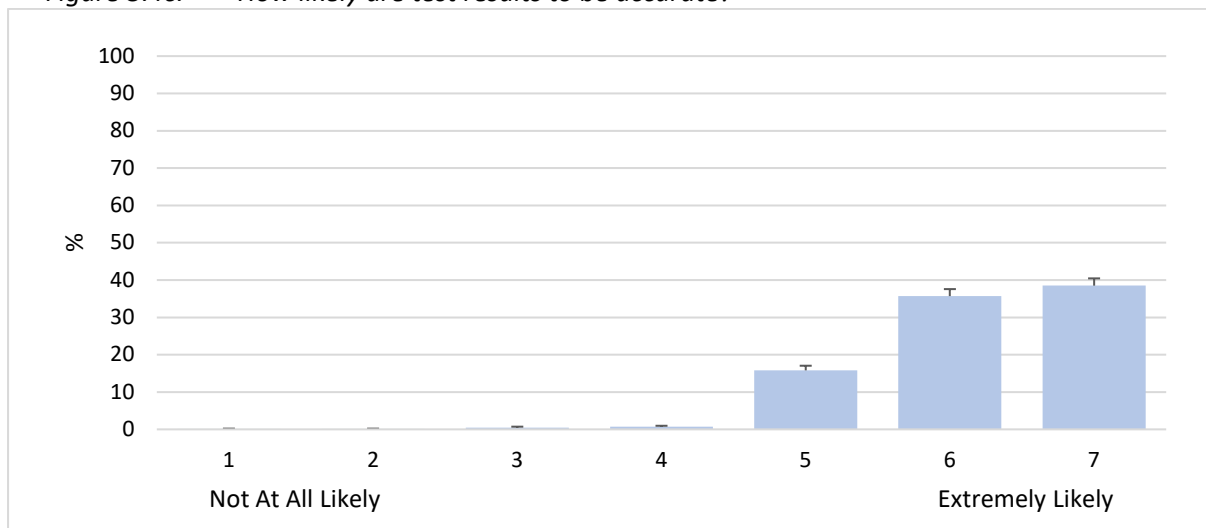

Figure 3.4d: *If you get COVID-19 once, how likely is it that you would develop immunity?*
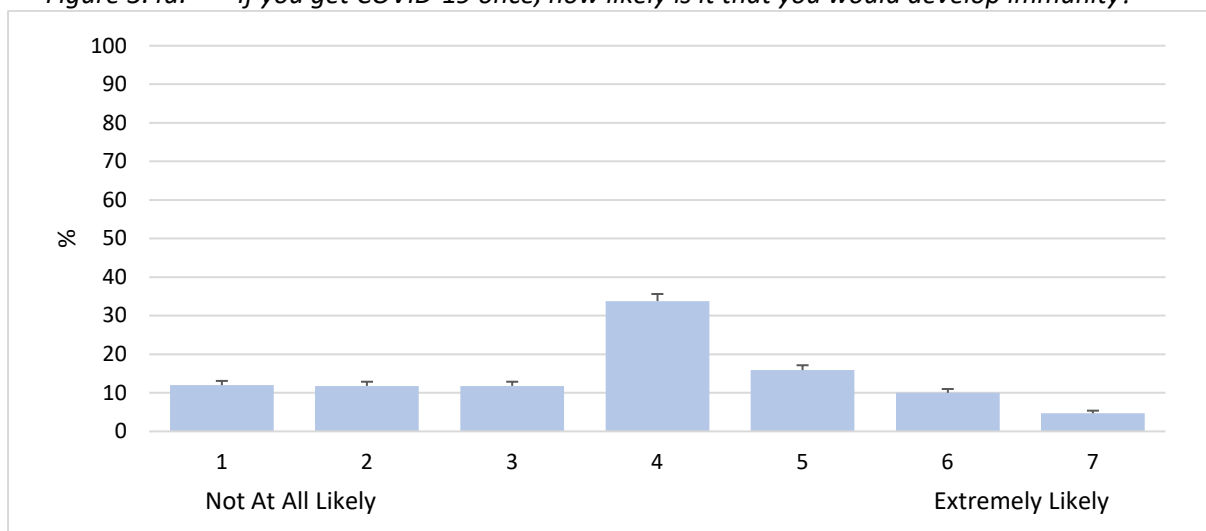

Figure 3.4e: *People test positive because they have been reckless or careless*
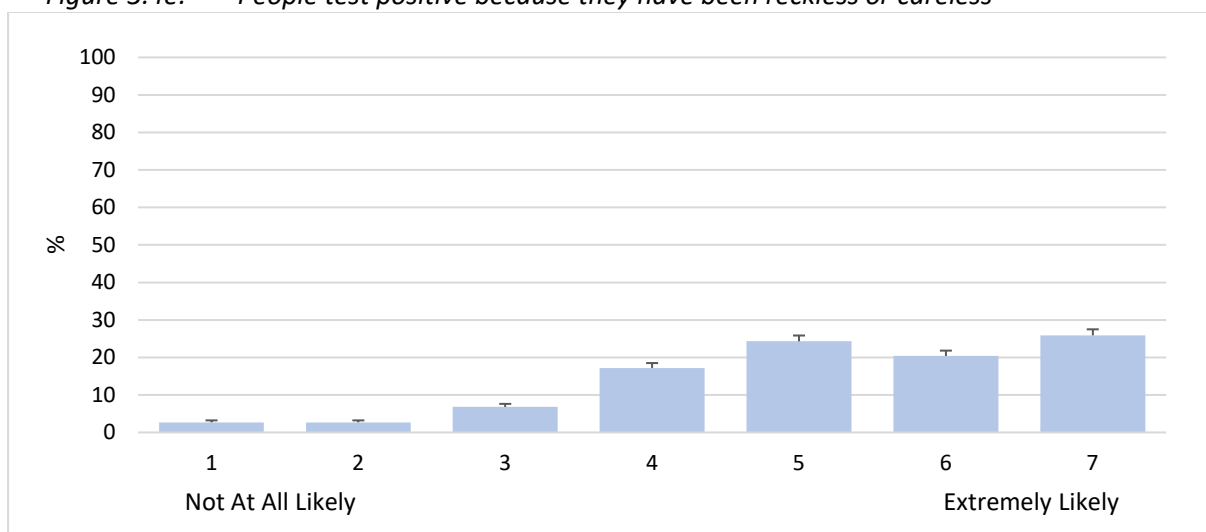
Figure 3.4f: How much are people themselves to blame for testing positive?

3.4   CLOSE CONTACTS

Two-thirds of participants (66 per cent) knew the definition of a close contact: someone they have spent more than 15 minutes with less than two metres apart (Figure 3.5a). Most who got this wrong (a further 20.8 per cent) thought it was anyone they spent time with indoors. Men were less likely than women to define close contacts correctly (63.4 per cent vs. 68.7 per cent; ß = -0.25, *SE* = 0.14, *p* = .063) as were non-Irish participants compared to Irish (56.1 per cent vs. 67.4 per cent; ß = 0.50, *SE* = 0.20, *p* = .011). Participants judged that recalling who their close contacts were would not be difficult (*M* = 2.76; Figure 3.5b), although men perceived greater difficulty than women (*M* = 3.1 vs. 2.5; ß = 0.73, *SE* = 0.12, *p* < .001).

Participants judged that, if their close contacts were traced, they would be likely to figure out that it was the participant who had tested positive (*M* = 5.0) (Figure 3.5c). Women thought this more so than men (*M* = 5.3 vs. 4.7; ß = -0.65, *SE* = 0.12, *p* < .001). Most were not worried about being identified by their close contacts, with 40.9 per cent selecting 'not at all' worried (Figure 3.5d), but younger participants were more concerned than those aged 40 to 60 (*M* = 3.1 vs. 2.7; ß = 0.48, *SE* = 0.14, *p* = .001) and those aged over 60 (*M* = 2.6; ß = 0.52, *SE* = 0.14, *p* < .001).

A large majority of participants were unaware of how contact tracers might get in contact with them. Just 7.2 per cent knew that contact tracers ring from a private phone number (Figure 3.5e). Most participants were split between thinking calls came from the HSELive number (31.9 per cent) or another HSE number (26.5 per

cent) and being unsure (29.5 per cent). Participants over 60 years old were marginally more likely to answer correctly than those under 40 (9.8 per cent vs. 6.1 per cent; ß = 0.52, *SE* = 0.30, *p* = .085), but broadly speaking this lack of awareness was universal.

FIGURE 3.5   QUESTIONS REGARDING CLOSE CONTACTS

Figure 3.5a: How are 'close contacts' defined?
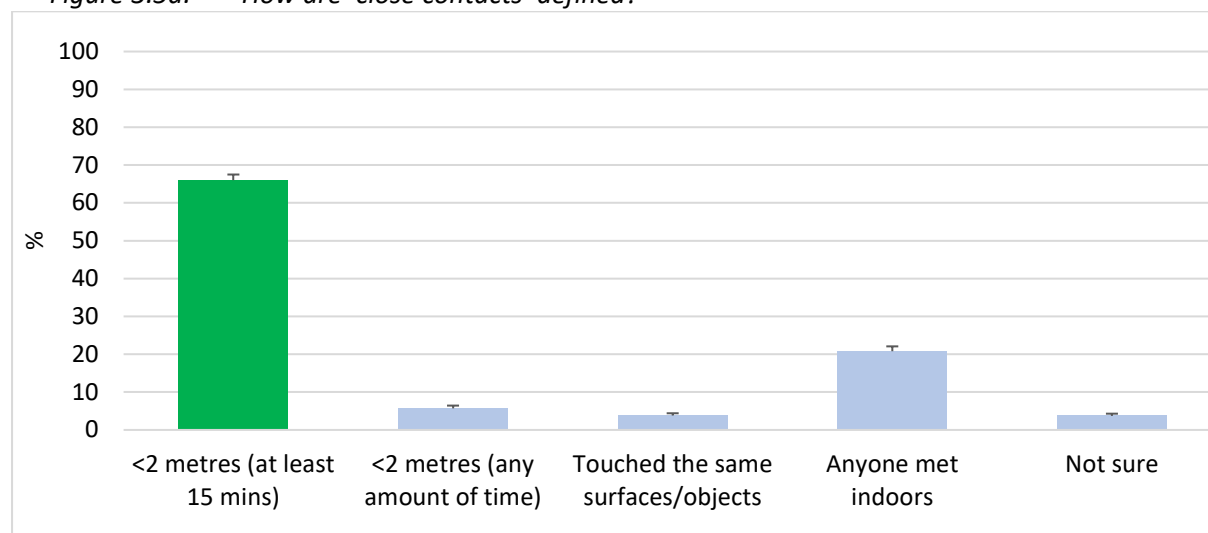
Figure 3.5b: How easy or difficult to recall your close contacts?
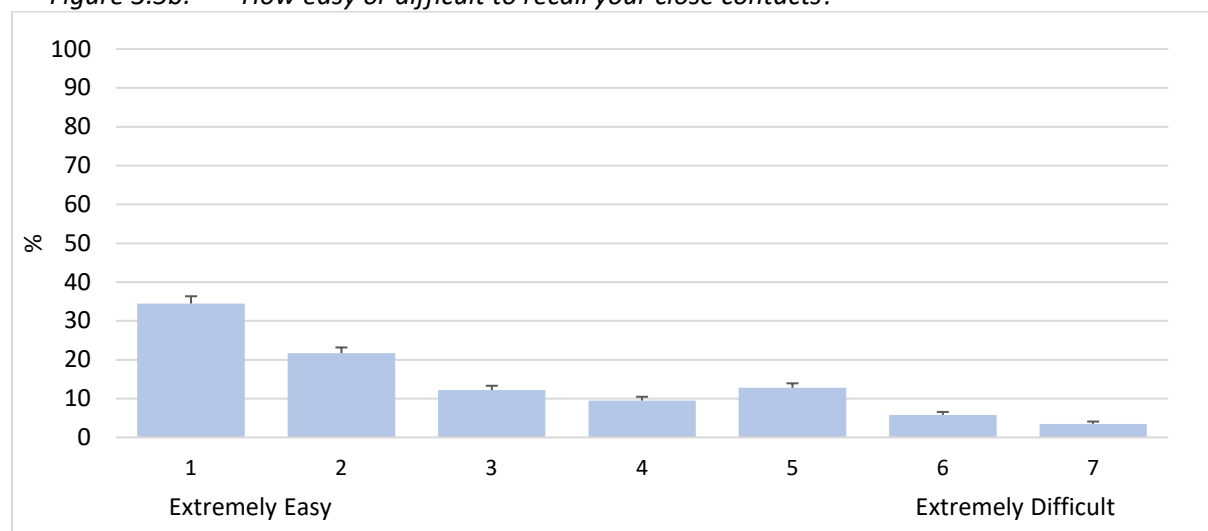
Figure 3.5c: **How likely would your close contacts be to identify you, if you tested positive?**
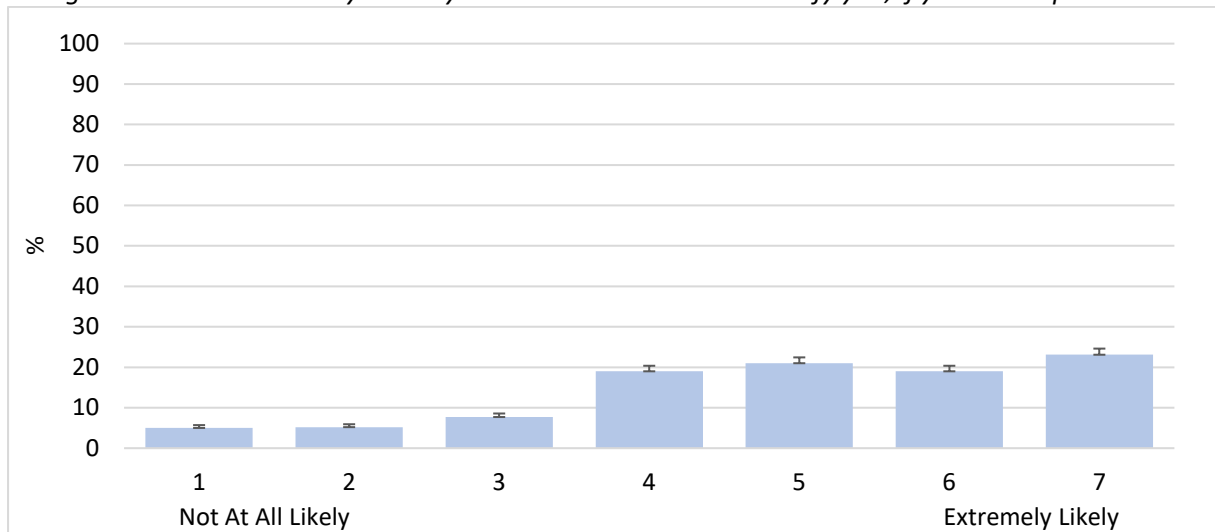
Figure 3.5d: **How worried would you be that your close contacts would identify you?**
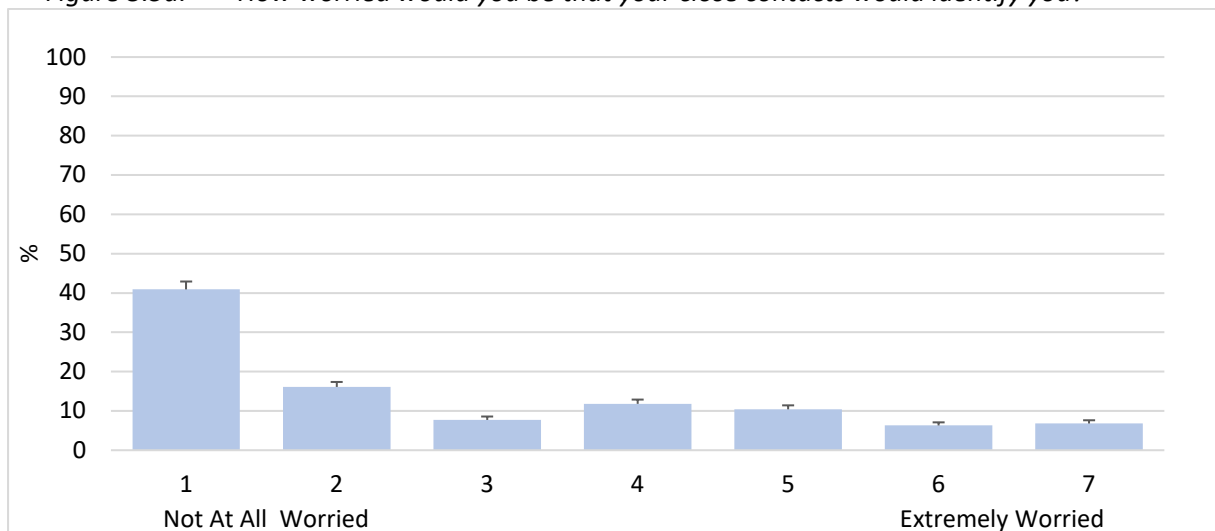
Figure 3.5e: **If you are a close contact, how are you notified?**
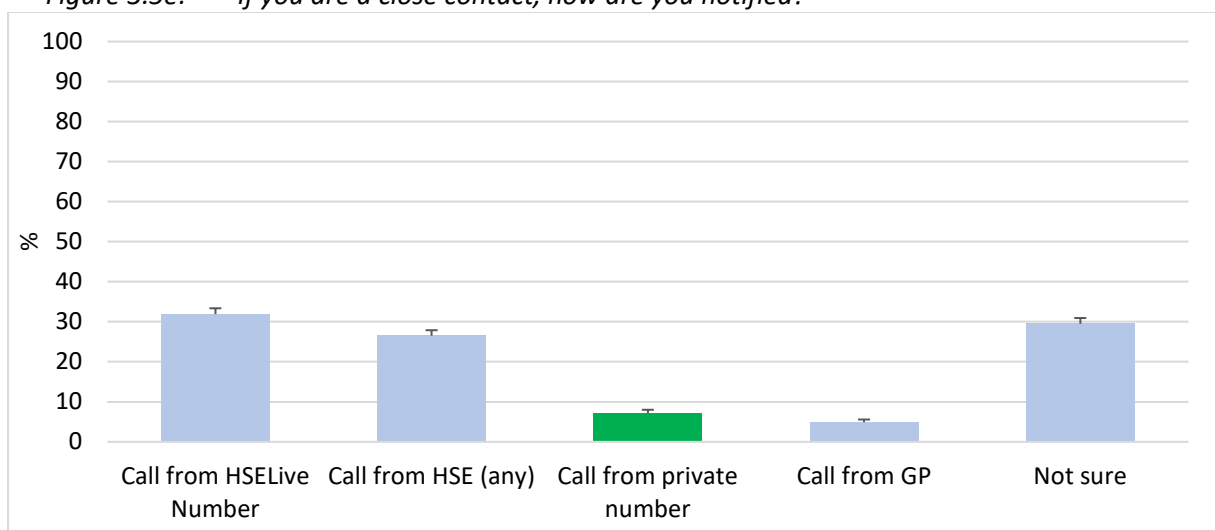
Source: Authors' analysis of ESRI survey July 2020.
Note: Green bars indicate correct responses on comprehension questions. Error bars indicate the standard error of the proportion.

3.5   OVERALL KNOWLEDGE

Considering all questions for which there were objectively correct answers, but excluding the question about result wait time, participants answered on average 3.7 (SD = 3.72) of the six questions correctly. The majority (81.8 per cent) answered between three and five questions correctly, however just 3.1 per cent correctly answered all six. We use linear regression to check for socio-demographic effects on the number of correctly answered questions. Participants aged under 40 answered fewer questions correctly than those aged 40 to 60 (M = 3.59, SD = 1.16 vs. M = 3.79, SD = 1.17; ß = 0.25, SE = 0.09, p = .006) and those over 60 (M = 3.79, SD = 1.16; ß = 0.23, SE = 0.09, p = .012). Participants with degrees answered more questions correctly than those without degrees (M = 3.81, SD = 1.14 vs. M = 3.65, SD = 1.18; ß = 0.22, SE = 0.08, p = .004), as did Irish participants compared to non-Irish participants (M = 3.76, SD = 1.14 vs. M = 3.45, SD = 1.30; ß = 0.29, SE = 0.11, p = .010).

CHAPTER 4

Discussion

There is overwhelming agreement among the public that the Test-and-Trace system is extremely important, but three key findings from our survey highlight issues that could plausibly inhibit their engagement with it.

The first issue relates to costs. While most people know they can arrange a test by calling their own GP, almost half of people erroneously think that they could be charged for this over-the-phone consultation. Over one-third think they could be subsequently charged if their GP judges that they need a test. This finding is particularly concerning, as evidence from another stage of the study showed that participants who were uncertain about the cost of a test were less willing to contact their GP, even if they were to experience some of the main symptoms of COVID-19. Thus, there may be some reluctance among those concerned about the cost of a test to contact their GP when they experience symptoms. Moreover, less than one-third of people know they can arrange a test by calling a GP other than their own or an out-of-hours GP service. These findings imply that those without a GP or those who experience symptoms over the weekend may find it difficult to arrange a test should they experience symptoms.

The second issue concerns the potential for stigma towards those who contract the virus. The perception that someone who tests positive is likely to have been careless or reckless in following advice is widespread, with no differences among socio-demographic subgroups. A majority also judge that those who contract the virus partly have themselves to blame. While it is important for people to follow public health guidance and limit risk where possible, there is no 'zero risk'. Infection can come from recklessness, but the contagiousness of COVID-19 means that infection while being careful is also possible; bad luck plays a large role. Hence this negative perception of those who contract COVID-19 at present may signal a lack of understanding of the transmissibility of the virus. While some degree of social disapproval of reckless behaviour may be important to promote compliance (Lunn et al., 2020a), negative perceptions of those who contract the virus may deter people who suspect they are infected from getting tested, regardless of the cause of infection. Moreover, many people believed at the time of the survey that their close contacts would be likely to identify them as having tested positive, despite the anonymity of the contact tracing system. There was some evidence that this potential for identification caused more worry among younger participants than older ones. This suggests that the potential for stigma could cause reluctance to engage with the Test-and-Trace system in all age groups, but particularly among the young.

The third finding relates to the contact tracing process. Few people are aware that, if they have been in contact with someone who later tests positive for the virus, contact tracers will notify them via a call from a private number. While not necessarily a barrier to engagement with the system, this could be problematic given that some individuals are reluctant to answer calls from private numbers and do not routinely use voicemail. Hence some people may be difficult to notify, meaning they may not self-isolate and arrange a test as quickly as necessary.

In addition to these three issues, we recorded specific socio-demographic differences in responses that are worth highlighting. Differences between men and women emerged in most analyses. Men were less aware of how to arrange a test but more aware that the consultation and test are free. Men also thought GPs would be less likely to recommend a test, even when experiencing common COVID-19 symptoms. They were less able to define what 'close contact' meant and less aware of the need to self-isolate while awaiting test results. Some of these differences may not affect ultimate engagement with the system – awareness of the need to self-isolate can be rectified by a GP when contacted. But if men are more likely to think that a GP will not recommend a test, they may be less likely to call when symptoms first begin or if symptoms are mild. Similarly, if more women think testing is costly they may be less likely to call. These respective gender differences may be useful for targeting public health media messages.

Participant nationality also mattered. Non-Irish participants were less likely to report they could call their GP to arrange a test, although they may be less likely to use GP services more generally (Barlow et al., forthcoming). More problematic is that they were more likely to erroneously think they could arrange a test by calling a community test centre. They also thought that, if they were to ring a GP to report experiencing some of the main symptoms of COVID-19, the GP would be less likely to recommend a test compared to Irish participants, perhaps implying poorer recognition of symptoms or less awareness of how testing criteria have changed. Moreover, non-Irish participants were more likely to think they would have to pay for a test should one be recommended and were less confident that the results would be accurate. These are all issues that could disincentivise non-Irish members of the public from engaging with the system, implying that they could also benefit from targeted public health messages.

Perhaps more concerning, however, are age differences. There were multiple differences in responses between younger and older adults, but considered together there is reason to believe that younger adults perceive stronger disincentives to engagement. Half of the participants under 40 thought that a telephone consultation with a GP would cost money. This age group was also more

likely than others to think that a test would be necessary, that it would be uncomfortable and a hassle, that it would take longer to get results and that the results would be less likely to be accurate. Members of this group were also worried about being identified by their close contacts and less aware of how contact tracers notify them. Not all of these views can be considered misperceptions – for example, the perceived hassle of getting a test may reflect real barriers that are more likely to exist for younger people, such as being less likely to own a car to drive to a test centre. However, the overall effect is likely to disincentivise people with early or mild symptoms to come forward. At the time of writing, younger people constitute the majority of recent cases. Communication campaigns that target those aged under 40 may be important to rectify this. For those in older age categories, respondents were less likely to think a GP would recommend a test if they were to experience cold and flu symptoms, perhaps implying poorer recognition of the link between these symptoms and COVID-19. Campaigns that highlight this association could be beneficial, especially given the importance for those experiencing mild symptoms to get tested quickly.

The importance of the Test-and-Trace system in maintaining control of the spread of COVID-19 has largely been absorbed by the public. While this widespread awareness is encouraging, some issues with understanding and perceptions of specific components identified here may be problematic. Perceiving costs where there are none could deter people from getting a test as quickly as they should. Fear of stigmatisation following a positive test result could present another barrier. Lack of awareness that a call from a private number could be a contact tracer might lead to calls going unanswered. Differences between socio-demographic subgroups are important for multiple aspects of the response to COVID-19 and we observed pronounced differences with respect to the Test-and-Trace process. Low comprehension or failure of engagement among some groups of society might make clusters more likely. Fear of stigmatisation may be greater among younger people, who hold more negative perceptions of multiple aspects of the system. In addition to broad-based campaigns to address misperceived costs and the potential for stigmatisation, public health messaging that targets the differences observed between men and women, Irish and non-Irish members of the public, and different age groups could be beneficial. Coping with the pandemic has required people to process multiple forms of information about a stressful concept. This information can change often and quickly, which might explain some of the gaps in comprehension identified here. The Irish public has shown high receptivity to public health communications about COVID-19, so it is likely these issues can be addressed. Informing communications using behavioural science and experimentally testing them is one way to help to make them more effective (e.g. Lunn et al., 2020b).

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APPENDIX

Table A.1 presents the sample characteristics, with the national breakdown according to 2016 Census data from the Central Statistics Office for comparison, except for Employment which is taken from Q1 2020 Labour Force Survey and July 2020s Monthly Unemployment Survey.

TABLE A.1   SAMPLE CHARACTERISTICS

		n	%	CSO %
Gender	Men	508	50.8	49.6
	Women	488	48.8	50.4
	Prefer Not To Say/Other	4	0.4	
Age	18 – 29 years	178	17.8	16.5
	30 – 39 years	182	18.2	21.8
	40 – 49 years	182	18.2	19.8
	50 – 59 years	151	15.1	16.5
	60 years +	307	30.7	25.4
Education	Degree or above	436	43.6	42
	Below degree	564	56.4	58
Employment	In Labour Force	638	63.8	62.3
	(of which, Employed)	(563)	(88.2)	(83.3)
	(of which, Unemployed)	(75)	(11.2)	(16.7)
	Not in Labour Force	362	36.2	37.7
Living Area	Urban	627	62.7	60.8
	Rural	373	37.3	39.1
Nationality	Irish	877	87.7	88.4
	Non-Irish	123	12.3	11.6

Source: Authors' analysis of ESRI survey July 2020.
Note: For responses to our measure of Living Area, participants self-reported whether they consider themselves to live in a rural or urban area, whereas the CSO figures are calculated based on Census data and definitions. Our estimate of unemployment (11.2 per cent) falls between the CSO's standard unemployment estimate (5.5 per cent) and COVID-adjusted estimate (16.7 per cent). This is possibly because our measurement of Employment is based on a self-report question and so some respondents may have been in receipt of the Pandemic Unemployment Payment or Temporary Wage Subsidy Scheme and selected unemployed, whereas others may have selected employed.

MATERIALS

In this next section, you will see some questions about the 'test-and-trace' system. The test-and-trace system involves:

(1)   testing to see if some people who might have COVID-19 actually have the virus
(2)   getting in contact with anyone they might have spread the virus to before they knew they were infected.

There are two sets of questions. In the first set, you might find some of the questions difficult, but please try to give them your best shot. In the second set, we are simply interested in your opinion, so there are no right or wrong answers.

Please answer honestly and don't use the internet or ask anyone else for the answers.

[next page]

Please try to choose the correct answer(s) on each of the following 7 questions.

[next page]

Understanding
[Always Q1]
How can you **arrange** a test for COVID-19 if you think you need one? **Select all that apply**.
-   Phone your own GP [correct]
-   Phone any GP [correct]
-   Phone an out-of-hours GP [correct]
-   Go to your own GP
-   Phone the HSELive helpline
-   Phone a community test centre
-   Go to a community test centre
-   I'm not sure
[random order options except last]
[varname: arrange]

[Always Q2]
To arrange a test for COVID-19, your GP (or any GP) will first assess your symptoms over the phone. How much does this **assessment** cost? [MCQ]
-   Free [correct]
-   Half the cost of a normal GP visit (e.g. around €25), unless you have a medical card
-   The same as a normal GP visit (e.g. around €50), unless you have a medical card
-   The same as a visit to a consultant (e.g. around €120), unless you have a medical card
-   I'm not sure
[options in this order]
[varname: assesscost]

[Always Q3]
How much does the **test** for COVID-19 cost? [MCQ]
- Free [correct]
- Half the cost of a normal GP visit (e.g. around €25), unless you have a medical card
- The same as a normal GP visit (e.g. around €50), unless you have a medical card
- The same as a visit to a consultant (e.g. around €120), unless you have a medical card
- I'm not sure

[options in this order]
[varname: testcost]

[Always Q4]
If you are tested for COVID-19, when should you expect the results? [MCQ]
- Within 24 hours
- Within 2 days
- Within 3-4 days [correct]
- Up to a week
- Longer than a week
- I'm not sure

[options in this order]
[varname: resulttime]

[Always Q5]
While you wait for the results of a test for COVID-19, what should you do? [MCQ]
- Continue as normal but make sure to follow current health advice (e.g. wear a mask when in public)
- Restrict your own movements (i.e. leave your home only for essentials) but anyone else in your household doesn't need to
- Restrict your own movements and everyone else in your household should do the same
- Self-isolate (i.e. do not leave your home unless it is an emergency) and everyone in your household should restrict their movements [correct]
- I'm not sure

[options in random order except last]
[varname: resultwait]

[Always Q6]
If you test positive for COVID-19, you are asked to provide details of your 'close contacts' from the past 48 hours. Which of the following best describes who your 'close contacts' would be? [MCQ]
- Anyone you spent more than 15 minutes with while less than 2 metres apart [correct]
- Anyone you met or passed by (e.g. in a shop) while less than 2 metres apart
- Anyone that might have touched the same surfaces or objects as you
- Anyone you met while indoors, regardless of whether you kept 2 metres apart
- I'm not sure

[options random order except last]
[varname: ccdef]

[Always Q7]
If you are a close contact of someone who tests positive for COVID-19, how will you find out? [MCQ]
- You will get a call from a contact tracer on the HSELive number
- You will get a call from a contact tracer on any HSE number
- You will get a call from a contact tracer on a private number [correct]
- You will get a call from your GP
- I'm not sure

[options random order except last]
[varname: tracecall]

[next page]

In this next set of questions, we're simply interested in your opinion. Please read the questions carefully and answer honestly.

[next page]

Perceptions
[PAGE1]
Please answer the below questions.

How **easy to understand** do you think the system for getting tested for COVID-19 is?
(1 Not at all easy to understand – 7 Extremely easy to understand)
[varname: ease]

How **important** do you think the test-and-trace system is for controlling the spread of the virus?
(1 Not at all important – 7 Extremely important)
[varname: import]

[PAGE2]
How likely is it that your GP would recommend you to get a test for COVID if you were to call them and…

… you have **a cough, fever, shortness of breath or loss of smell/taste**?
(1 Not at all likely – 7 Extremely likely)
[varname: likely_c]

… you have **any cold or flu-like symptoms other than a cough or fever** (e.g. headache, sore throat)?
(1 Not at all likely – 7 Extremely likely)
[varname: likely_lc]

… you have **any cold or flu-like symptoms but have been limiting how much you leave home**?
(1 Not at all likely – 7 Extremely likely)
[varname: likely_any]

[PAGE3]
Please answer the below questions.

How **painful** do you think the test for COVID-19 would be?
      (1 Not at all painful – 7 Extremely painful)
[varname: pain]

How much of a **hassle** do you think it would be to have to get a test for COVID-19?
      (1 No hassle at all – 7 A great deal of hassle)
[varname: hassle]

[PAGE4]
Please imagine you were tested for COVID-19 and answer the below questions.

If you test **positive** for COVID-19, how likely is it that the test is accurate?
      (1 Not at all likely – 7 Extremely likely)
[varname: postest]

If you test **negative** for COVID-19, how likely is it that the test is accurate?
      (1 Not at all likely – 7 Extremely likely)
[varname: negtest]

If you get COVID-19 once, how likely is it that you are immune to it? (i.e. that you **can't** get it again if you've had it)
      (1 Not at all likely – 7 Extremely likely)
[varname: immune]

[PAGE5]
If you test positive for COVID-19, you will be asked to give details about your 'close contacts' from the 48 hours before your test (i.e. anyone you have spent more than 15 minutes with less than 2 metres away from.)
Contact tracers then phone your close contacts, but they never give them your name.

How easy or difficult do you think it would be to remember all of your close contacts from the past 48 hours?
      (1 Extremely Easy – 7 Extremely Difficult)
[varname: ccease]

How likely do you think it is that your close contacts would figure out that you personally tested positive for the virus?
      (1 Not at all likely – 7 Extremely likely)
[varname: anon]

How worried would you be that your close contacts would figure out that you personally tested positive for the virus?
      (1 Not at all worried – 7 Extremely worried)
[varname: worry]

[PAGE6]
Please answer the below questions **about people in general who test positive for COVID-19 at the moment**.

How likely is it that people test positive for COVID-19 at the moment because they have been reckless or careless in following advice?
     (1 Not at all likely – 7 Extremely likely)
[varname: reckless]

If someone tests positive for COVID-19 at the moment, how much are they themselves to blame?
     (1 Not at all to blame – 7 Completely to blame)
[varname: blame]

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