



NHS COVID-19 app: early adopter evaluation report

NHS Test and Trace programme

8 April 2021

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1. Executive summary

An NHS COVID-19 app has been developed in response to the COVID-19 pandemic. The NHS COVID-19 app uses Bluetooth contact-tracing technology to log nearby NHS COVID-19 app users and alert those who are likely to have been exposed to coronavirus. It also allows users to 'check in' to venues, record their symptoms and test results, and count down periods of self-isolation. The NHS COVID-19 app has been trialled in the London Borough of Newham, the Isle of Wight (IoW) and among NHS Volunteer Responders. This trial period is referred to as the early adopter phase.

The NHS COVID-19 app programme commissioned a formal evaluation to ascertain perceptions of the NHS COVID-19 app and (intended) usage of its features during the early adopter phase. Quantitative online survey work was carried out among IoW residents between 25 August and 5 September 2020 and among NHS Volunteers between 27 August and 19 September 2020 by a third party research agency, NatCen, who were commissioned by the NHS COVID-19 app programme. Telephone and online fieldwork was carried out between 12 and 27 September 2020 by another third party research agency, IFF, who were commissioned by the NHS COVID-19 app programme. This report also includes NHS COVID-19 app analytics and NHS COVID-19 app store data covering the period of the trial as well as findings from insight work that was conducted with Newham community groups between 2 and 12 September 2020. The main findings of the evaluation are summarised below.

NHS COVID-19 app downloads

Feedback obtained from users during the NHS COVID-19 app hypercare process was that users found the NHS COVID-19 app to be a useful tool to keep friends and family safe and to provide good local area information. Additionally, they agreed that the NHS COVID-19 app had a 'slick' interface and that it does not drain the battery. This was a positive contrast to feedback received on the previous version of the NHS COVID-19 app, which, it was reported to drain batteries quickly.

Among those who downloaded the NHS COVID-19 app, the most common reason for doing so in all surveys (IoW – 66%, NHSV – 47%, Newham – 35%) was to let them 'know when they had been at risk of coronavirus'.

Of those that said they did not download the NHS COVID-19 app, 44% of the IoW sample, and 48% of the NHSV sample, said that they had 'tried but had failed to do so', compared to only 10% of the Newham sample. Of those who did not try to do so, the most important reasons given by the IoW and NHS Volunteers were that they 'did not want to use it' (12% and 18% of non-triers respectively); that they 'did not think it would work' (11% and 6%) or that they 'were concerned about privacy' (8% and 15%). In Newham, the most commonly

cited reasons were 'not having got round to it' (29%), 'being concerned about privacy' (18%) and 'not wanting to use it' (11%).

The most common barrier to downloading the NHS COVID-19 app for those who tried but failed to do so was 'compatibility with smartphone'. No respondents aged 18 to 34 claimed to have tried to download the NHS COVID-19 app but had failed to do so.

Of the participants who downloaded the NHS COVID-19 app, 80% of IoW respondents and 81% of both NHS Volunteers and Newham respondents found the NHS COVID-19 app 'easy to download' with just 2% of respondents of both IoW and NHS Volunteers and 1% of Newham finding the NHS COVID-19 app 'not at all easy to download'. NHS Volunteers aged 30 to 54 experienced the most difficulties of any age group in comparison to the 70+ group in the IoW, and the 65+ group in Newham.

The majority of IoW and NHS Volunteer respondents were 'completely comfortable' sharing their data with the NHS COVID-19 app (58% – IoW; 57% – NHS Volunteers) with a further 17% and 21% respectively rating their comfort at 4 out of 5. This compares to Newham, where 27% were completely comfortable and a further 16% rated their comfort at 4 out of 5. Just 4% of NHS Volunteers and 5% of IoW respondents were 'not at all comfortable'. In Newham, 23% of respondents were 'not at all comfortable'.

37% of (IoW), 31% of (NHS Volunteers), 20% of (Newham) respondents claimed they were 'completely confident' that data shared with the NHS COvid-19 app will be handled securely, with a further 27% (IoW), 33% (NHSV) and 16% (Newham) rating their confidence at 4 out of 5. Only 7% of IoW respondents and 6% of NHS Volunteers and 23% of Newham respondents were 'not at all confident'. 16 to 24-year olds were significantly more likely than older age groups to be confident that their data would be handled securely.

QR code posters

In total, 3,059 QR code posters were generated over the trail period, representing 23.1% of IoW registered businesses and 11.9% of Newham businesses.

The hospitality and tourism sectors generated the largest volume of QR code posters.

39% of IoW respondents claimed the QR code feature made them feel 'more comfortable' visiting a pub, restaurant or venue, 3% claimed it made them feel 'less confident'. 26% of NHS Volunteer respondents claimed the QR code feature made them feel 'more comfortable' visiting a pub, restaurant or venue, 16% claimed it made them feel 'less confident'. 30% of Newham respondents claimed the QR code feature made them feel 'more comfortable' visiting a pub, restaurant or venue, 8% claimed it made them feel 'less confident' and 57% said it made no difference. BAME respondents were significantly more

[Insert title]

likely, at 36%, to say the QR code feature made them feel more confident than white respondents, at 24%.

QR code posters were used a total of 14,610 times by participants to check-into a venue over the trial period.

18% of IoW respondents had used the QR code feature, 67% had not and 15% were not aware of the QR code feature. 22% of NHS Volunteers had used the QR code feature, 71% had not and 7% were not aware of the QR code feature. 29% of Newham respondents had used the QR code feature, 62% had not and 9% were not aware of the QR code feature.

Businesses requested a 10-day lead time moving forward to print QR code posters.

QR code posters need to be printed in a visible size and placed in a clearly visible location that is accessible to wheelchair users as well.

Symptoms, testing and self- isolating

The total number of days spent isolating on any day over the trial period due to a trace alert was measured at 109 days. The majority (86) were from the NHS Volunteer group.

An average of 18 people were self-isolating at any time because they had received a trace alert.

Over the trial period, 148 participants booked and returned a test, of which the results were:

- 25 positive
- 132 negative
- 15 void

Contact tracing toggle

There is a lack of awareness of the contact tracing toggle and how to use it.

9% of Newham respondents used the contact tracing toggle feature to pause the NHS COVID-19 app. 58% said they were aware of the feature but have not used it. 33% were not aware of the feature.

4% of IoW respondents used the contact tracing toggle feature to pause the NHS COVID-19 app. 41% did not use the feature. 55% were not aware of the toggle feature.

9% of NHS Volunteers used the contact tracing toggle feature to pause the NHS COVID-19 app. 44% were aware of the feature but have not used it. 47% were not aware of the feature.

Of those using the toggle feature in Newham, the largest proportion, 61%, turned it off when they were at home; 27% when behind a Perspex screen; 24% did so when their phone was unattended, 29% when wearing clinical grade PPE in a clinical setting and 39% had turned it off in other circumstances.

Of those using the toggle feature in the IoW, 63% did so when their phone was unattended, 18% when wearing clinical grade PPE in a clinical setting and 7% when behind a Perspex screen. Of the 26% stating 'other', the most popular reason at 27% of those stating 'other', was that the participant was 'at home'.

Of those using the toggle feature from the NHS Volunteers, 32% did so when their phone was unattended, 4% when wearing clinical grade PPE in a clinical setting and 2% when behind a Perspex screen. Of the 71% stating 'other', 37% were pausing the NHS COVID-19 app 'at home'.

Among the Newham respondents who used the contact tracing toggle feature to pause the NHS COVID-19 app, 84% found it useful, 40% who had used the pause feature remembered to switch the NHS COVID-19 app back on after pausing it 'straight away' and 26% did so 'fairly quickly', 21% reported that 'it took a while', 10% 'did not remember to reactivate the app' and 4% said they did not know

Among the IoW Respondents who have used the contact tracing toggle feature to pause the NHS COVID-19 app, 88% found it useful, 53% who had used the pause feature remembered to switch the NHS COVID-19 app back on after pausing it 'straight away' and 35% did so 'fairly quickly', 9% reported that 'it took a while' and 2% 'did not remember to reactivate the app'.

Among the NHS Volunteers who have used the contact tracing toggle feature to pause the NHS COVID-19 app, 95% found it useful, 35% who had used the pause feature remembered to switch the NHS COVID 19 app back on after pausing it 'straight away' and 32% did so 'fairly quickly', 23% reported that 'it took a while' and 11% 'did not remember to reactivate the app'.

2. NHS Test and Trace

NHS Test and Trace ensures that anyone who develops symptoms of coronavirus (COVID-19) can be tested to find out if they have the virus and includes targeted testing of asymptomatic NHS and social care staff and care home residents.

The service helps to trace close recent contacts of anyone who tests positive for coronavirus and, if necessary, notifies them that they must self-isolate at home to help stop the spread of the virus.

NHS Test and Trace is central to the government's coronavirus recovery strategy. It will enable life to return to as close to normal as possible, for as many people as possible, in a way that is safe and protects our NHS and social care.

Objectives

The following 3 objectives were developed for the NHS COVID-19 NHS COVID-19 app but remain NHS COVID-19 applicable to the service.

1. Contribute to flattening the epidemic by reducing the average number of people that each new case of COVID-19 infects (R).
2. Help return people to their normal life more rapidly, thereby preserving the local economy.
3. Estimate and flow of patients who will require hospital treatment in the coming days.

3. Early adopter phase

Background

An NHS COVID-19 app has been developed in response to the COVID-19 pandemic. The NHS COVID-19 app uses Bluetooth contact-tracing technology to log nearby NHS COVID-19 app users and alert those who are likely to have been exposed to coronavirus. It also allows users to ‘check in’ to venues, record their symptoms, test results, and periods of self-isolation.

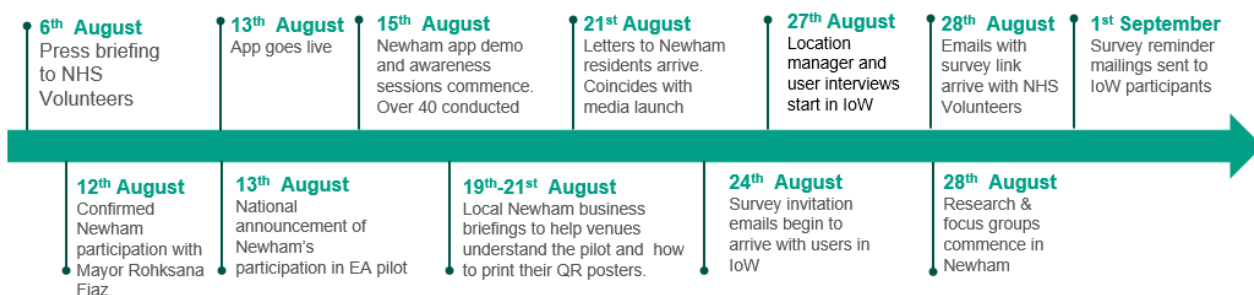
The NHS COVID-19 app has been trialled in the London Borough of Newham, the IoW and among NHS volunteer responders.

The London Borough of Newham was chosen in order to maximise learnings on barriers to adoption due to its broad diversity in terms of ethnicity, religion, language, levels of social deprivation and disability. Approximately 270,000 Newham residents aged 18+ were invited to pilot the NHS COVID-19 app from 20 August 2020 until national rollout of the NHS COVID-19 app on the 24 September 2020.

The (IoW) was chosen to trial the project because it has a single NHS Trust that covers all NHS services on the Island, and an integrated system of healthcare and local government. Its geography as an island with a sizeable population makes it an ideal place to introduce the NHS COVID-19 app. Approximately Up to 117,000 residents of the IoW residents aged 18+ were invited to pilot the NHS COVID-19 app from 13 August 2020 until national rollout of the NHS COVID-19 app on the 24 September 2020.

NHS Volunteers were chosen as a positively engaged network, who are easily contactable and geographically well- spread, adding additional scale to the trial. Approximately 90,000 volunteers were invited to pilot the NHS COVID-19 app from 13 August 2020 until national rollout of the NHS COVID-19 app on the 24 September 2020.

Timeline:



Research objectives

The early adopter evaluation team wish to ascertain the following in order to inform mass rollout for national launch:

Overall objectives

1. Test the core technology and end-to-end performance of the NHS COVID-19 app at scale
2. Provide behavioural insight into how users in different demographic groups engage with and respond to the NHS COVID-19 app and to QR code service provision
3. Ensure the NHS COVID-19 app is understood by, works for, and will be trusted by the diverse groups most at risk of COVID-19
4. Rebuild public confidence in the efficacy of an NHS COVID-19 app in the fight to limit transmission of COVID-19
5. Test how we visualise and share data when the NHS COVID-19 app is launched.

4. Key evaluation questions

The evaluation took place across the NHS COVID-19 app, testing and contact tracing and focussed on the following key learning objectives:

- to test the overall journey for the user from the NHS COVID-19 app, through testing, and on to public health contact tracing
- to improve interfacing between the pillars, processes, and monitoring

Due to the timeframe and pace of the evaluation, the small number of positive cases expected during the early adopter phase, and the focus on the acceptability and technical functioning of the NHS COVID-19 app, it was not possible to evaluate the wider impact of the service. Things that were not in scope for this evaluation include the epidemiological efficacy of the service and changes in attitude over time.

The key evaluation questions were:

1. What are the volumes and patterns of NHS COVID-19 app downloads?
2. Are each of the processes (QR code service, contact tracing toggle, symptoms questionnaire, logging test results) operating effectively?
3. What feedback has the NHS COVID-19 app received from users?
4. What are the key learnings we can take away for national rollout?

5. Data collection methodology

A multi-faceted evaluation approach was used encompassing both primary and secondary data collection methods to collect quantitative and qualitative data about users, their behaviour, and their interaction with the NHS COVID-19 app.

- Anonymous app usage information was collected, (that is, percentage of the population who downloaded the NHS COVID-19 app, number of QR codes downloaded, number of people reporting symptoms via the NHS COVID-19 app and so on).
- Insights were gathered through focus groups and user research.
- Data was collected through online surveys issued to all IoW residents and NHS Volunteers, and a mixed method of telephone and online surveys targeted at Newham residents.
- Surveys targeted both NHS COVID-19 app and non-NHS COVID-19 app users and focused on ascertaining experience of the NHS COVID-19 app as well as behaviours and attitudes towards the NHS COVID-19 app.
- In-depth qualitative interviews were conducted with NHS COVID-19 app users and applicable venue managers from all 3 early adopter pilot groups.

In addition to the data that was collected through primary sources, a bespoke evaluation was carried out.

Surveys took place among all early adopter pilot groups to gather feedback on participant's motivations and concerns regarding the NHS COVID-19 app, as well as about the QR Code Feature, Toggle Feature, and NHS COVID-19 app alerts and notifications.

Quantitative online survey work was carried out among IoW residents between 25 August and 5 September and NHS Volunteers between 27 August and 19 September and 12 and 27 September among Newham residents.

In total, 3,618 responses were received from IoW residents (40% response rate), 700 responses from NHS Volunteers (<1% response rate) and 6,331 responses were received from Newham, representing 41% of those spoken to by telephone (% of those called), and 2% of those who received an invitation letter.

Most respondents in the IoW and NHS Volunteers' (NHSV) surveys were aged over 55 (62%% NHSV and 73% IoW). Newham had a more representative age distribution with 43% of respondents between 16 and 34, 36% between 35 and 54, and 22 percent over 55.

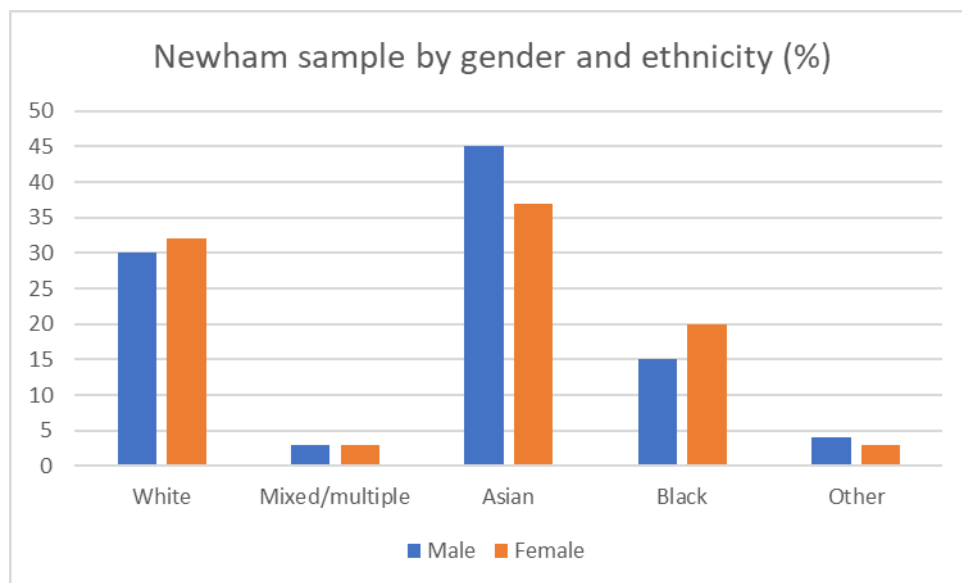
The gender split in all areas was relatively equal (NHSV – 53% female and 47% male; loW – 52% female and 48% male, Newham – 47% female, 53% male).

Under one per cent of respondents were from a minority ethnic group in loW in comparison to 5% of the NHS Volunteers' population. In Newham, by contrast, just 40% were white, 4% mixed/multiple ethnicity, 32% Asian, 16% Black and 3% other. (Results were weighted to be representative of the Newham population).

5% of NHS Volunteers respondents claimed to be disabled in comparison to 9% in Newham and 10% in the loW.

The responding sample is more educated than the average resident: 41% of loW respondents, 50% of Newham respondents and 66% of NHS Volunteers are educated to degree level (or equivalent) or above compared with 32% of the population.

13% of Newham respondents, 10% of loW respondents and 8% of NHS Volunteers think they have had COVID-19, with 74% of Newham respondents, 72% of loW and 70% of NHS Volunteers claiming they think they have not had it.



6. Evaluation results

The evaluation results are split into the research questions detailed earlier.

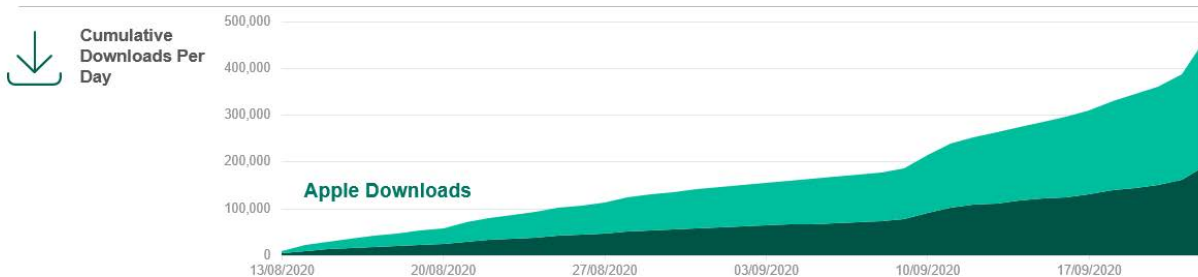
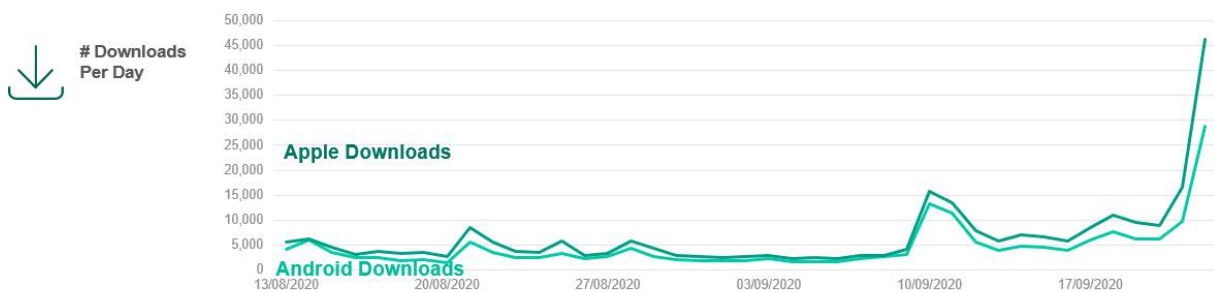
1. What are the volumes and patterns of NHS COVID-19 app downloads?
2. What feedback has the NHS COVID-19 app received from NHS COVID-19 app users?

Results are based on weighted data.

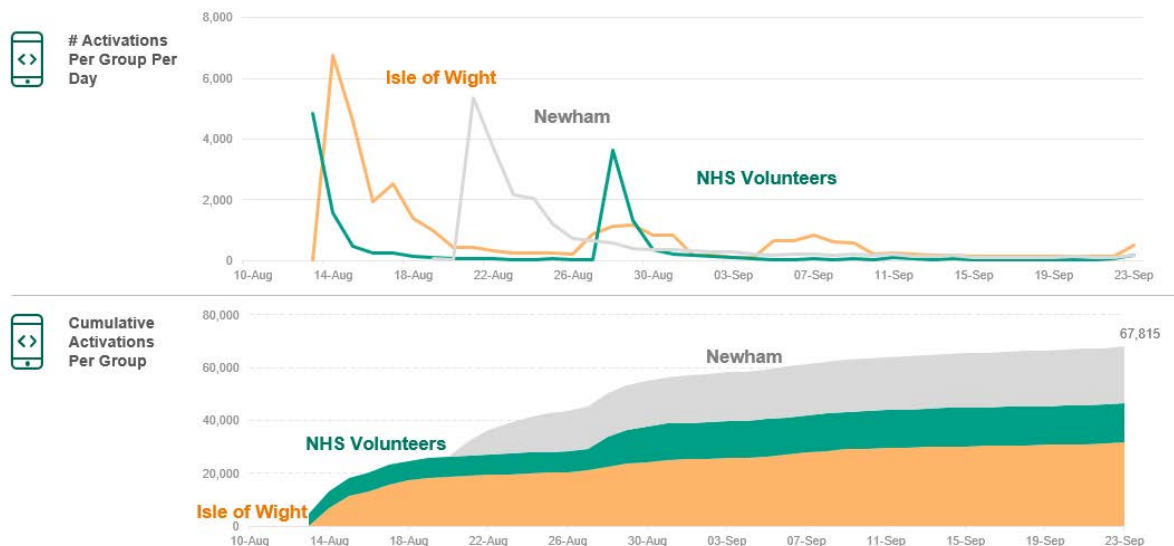
1. What are the volumes and patterns of NHS COVID-19 app downloads?

The early adopters phase set out to test operational feasibility of the NHS COVID-19 app, both in terms of its functionality and its reception.









These graphs illustrate the peaks following the launch of the NHS COVID-19 app in different trial areas. We can see that the largest uptake is within the first few days following launch.



These graphs illustrate activation of the NHS COVID-19 app across different trial groups, with large spikes seen 14 August in the loW, 22 August in Newham and 29 August among NHS Volunteers. The activation feature was trialled as part of this period but has not been taken forward as a feature in the version of the NHS COVID-19 app.

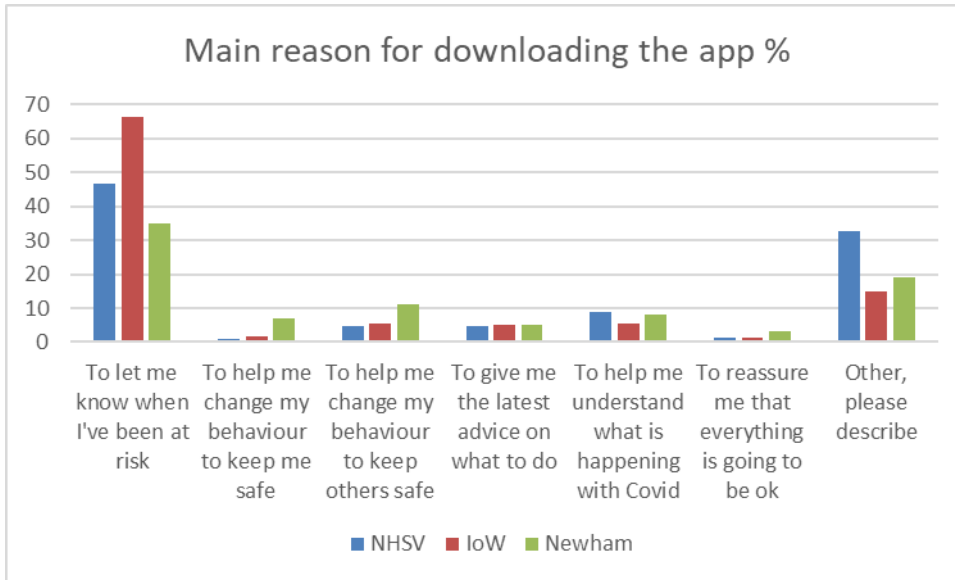


The below table outlines the statistics collected against the NHS COVID-19 app features within each trial population. 31% of the target population in the loW downloaded the app in comparison to 17% of NHS Volunteers and 9% of the target population in Newham. 23% of registered businesses in the loW generated QR posters (10,059 check ins) in comparison to 12% of businesses in Newham (18,173 check ins). NHS Volunteers completed 78 tests in comparison to 56 residents in the loW and 38 residents in Newham.

	 Isle of Wight	 NHS Volunteers	 Newham	Total
 # Downloads	329,171 App Downloads			
 # Activations	31,672	15,038	21,640	67,815
% of target adult audience	31.1%	16.7%	9.0%	15.7%
 # QR Posters Generated	1,249	n/a	1,810	3,059
% of Registered Businesses in Area	23.1%	n/a	11.9%	~14.8%
 # Check Ins	10,059	3,563	4,551	18,173
Symptoms – # Completed Questionnaires	329	544	446	1,319
Isolate – Average Users Isolating	37.86	57.24	48.76	143.86
Days Spent Isolating Due to Trace Alert	11	86	12	109
 All Tests Returned	56	78	38	172
Positive Tests Returned	0	18	7	25
Negative Tests Returned	55	50	27	132
Void Tests Returned	1	10	4	15

[Insert title]

The below graph outlines the main reasons NHS COVID-19 app users downloaded the NHS COVID-19 app. Of the 3,618 IoW survey responders, 72% had downloaded the NHS COVID-19 app. Of the 700 NHS volunteer survey responders, 90% had downloaded the NHS COVID-19 app. Of the 6,331 IFF survey responders, the download rate was 38%.



There was a significant difference between the rates of download of white (51%) and BAME (33%) respondents.

Among those who downloaded the NHS COVID-19 app, the most common reason for doing so in all surveys (IoW – 66%, NHSV – 47%, Newham – 35%) was to let them ‘know when they had been at risk of Coronavirus’.

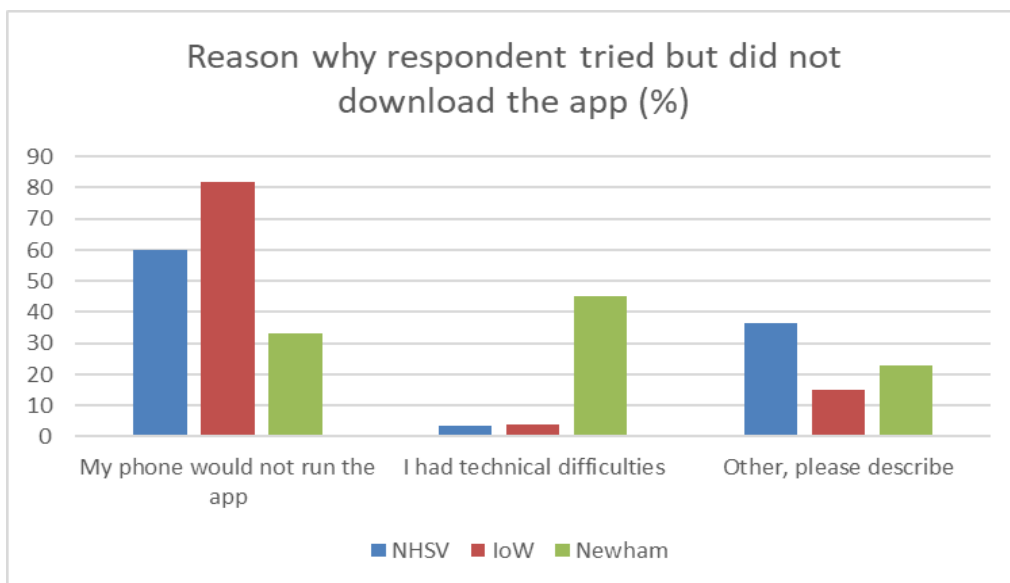
Qualitative research revealed additional user reasons that were identified for downloading the NHS COVID-19 app:

- Access to useful information (that is, local risk level) which some groups felt gave them an increased level of confidence and greater sense of safety
- Having the opportunity to identify as an ‘early-adopter’
- Supporting a return to ‘normal life’ by facilitating visiting venues and travelling on public transport
- A sense of civic, public or social responsibility or obligation to help society and protect loved ones

Additionally, qualitative research showed that:

- Downloading the NHS COVID-19 app was:
 - straightforward
 - familiar (in that participants were used to downloading similar apps)
 - and that the fact it was an NHS and government supported app gave certain data security safeguards
- the letter inviting participants to download the NHS COVID-19 app was 'easy to follow' and 'timely'

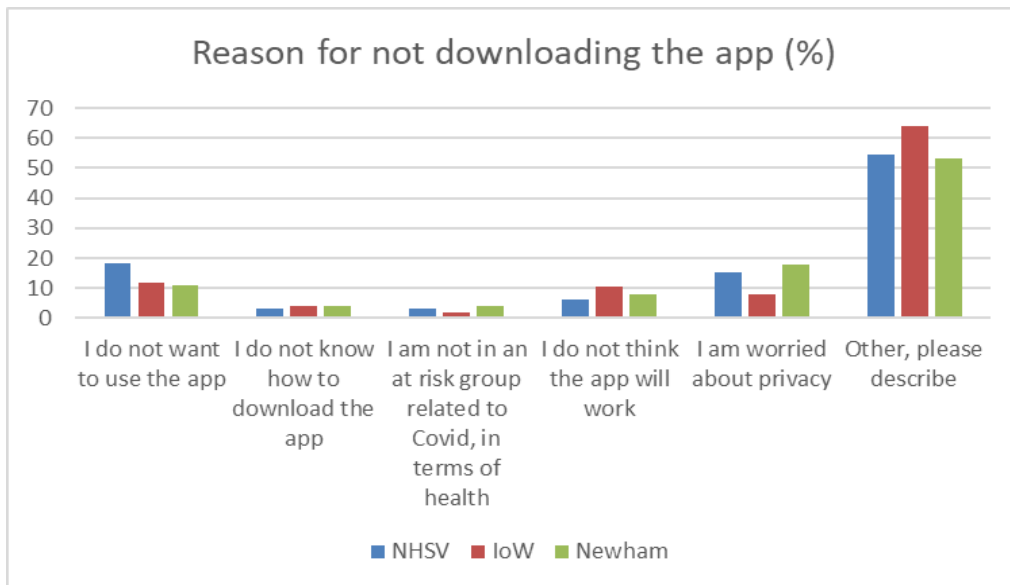
The below graph highlights the barriers to downloading the NHS COVID-19 app. A number had tried but failed to download the NHS COVID-19 app primarily due to phone compatibility or technical issues.



- Participants were aware of others who had been prevented from accessing the NHS COVID-19 app either due to device compatibility issues or to not having received an access code.
- Some participants were confused by the number of similar looking or similarly named apps in their app store.
- People who were viewed as less technologically 'savvy' were perceived by participants as likely to find downloading more challenging.

[Insert title]

- The primary reasons for not downloading the NHS COVID-19 app were concerns around privacy (as outlined in the graph below) and not wanting to use the app.



- Language barriers and lower levels of familiarity with the principles of test and trace were found to limit understanding of the purpose and value of the NHS COVID-19 app in Newham. This was the case even when information was provided in other languages. Terminology was found to be ‘unfamiliar’ and certain individuals required intensive support to access and familiarise themselves with the NHS COVID-19 app.
- Some participants felt there was ‘no point’ in downloading the NHS COVID-19 app unless it had been universally adopted.
- Some users had concerns regarding the interaction of their phone with the NHS COVID-19 app, fearing that:
 - it might reduce the phone's battery life
 - having Bluetooth on could leave their device vulnerable to being hacked
 - they would need to delete existing data to free up space to download the NHS COVID-19 app
- Some participants felt that implementation of the NHS COVID-19 app was not worthwhile unless people were supported to self-isolate, citing the practical implications of having to isolate (for individuals as well as employers).
- Some participants said self-isolation would be financially impossible for people who could not work from home, were on low incomes or in precarious employment.

- Some felt that BAME communities would be disproportionately affected as a higher proportion worked outside the home and those with precarious immigration status were similarly highlighted as a group unlikely to be able to afford to lose work.
- Some participants felt that the NHS COVID-19 app was not relevant to them as they had limited contact with others (that is, they were shielding).

2. What feedback has the NHS COVID-19 app received from NHS COVID-19 app users?

Feedback around trust and confidence in the NHS COVID-19 app

The majority of respondents supported the national rollout of the NHS COVID-19 app: 82% of NHS Volunteers were completely supportive of a national rollout, as were 81% of IoW respondents, compared to 47% of Newham respondents. The proportions rating their support at 4 out of 5 was 9% among NHS Volunteers, 7% in IoW and 17% in Newham. Just 2% of NHS Volunteers and IoW respondents were 'not at all supportive'; this rises to 7% in the Newham population.

The majority of IoW and NHS respondents were 'completely comfortable' sharing their data with the NHS COVID-19 app (58% – IoW; 57% – NHS Volunteers) with a further 17% and 21% respectively rating their comfort at 4 out of 5. In Newham, 27% were completely comfortable and a further 16% rated their comfort at 4 out of 5. Just 4% of NHS Volunteers and 5% of IoW respondents were 'not at all comfortable'. In Newham, 23% of respondents were 'not at all comfortable'.

A smaller proportion (37% – IoW, 31% – NHSV, 20%- Newham) of respondents claimed they were 'completely confident' that data shared with the NHS COVID-19 app will be handled securely, with a further 27% (IoW), 33% (NHSV) and 16% (Newham) rating their confidence at 4 out of 5. Only 7% of IoW respondents and 6% of NHS Volunteers were not at all confident. 23% of Newham respondents were not at all confident. 16 to 24-year-olds were significantly more likely than older age groups to be confident that their data would be handled securely.

Additionally, concerns around privacy and data protection were explored in more depth through qualitative research. Findings included:

- IoW research participants reported being concerned about privacy owing to their experience with the pilot of an earlier version of the NHS COVID-19 app in May. However, such concerns had largely allayed at the current NHS COVID-19 app's launch as part of the trial period.

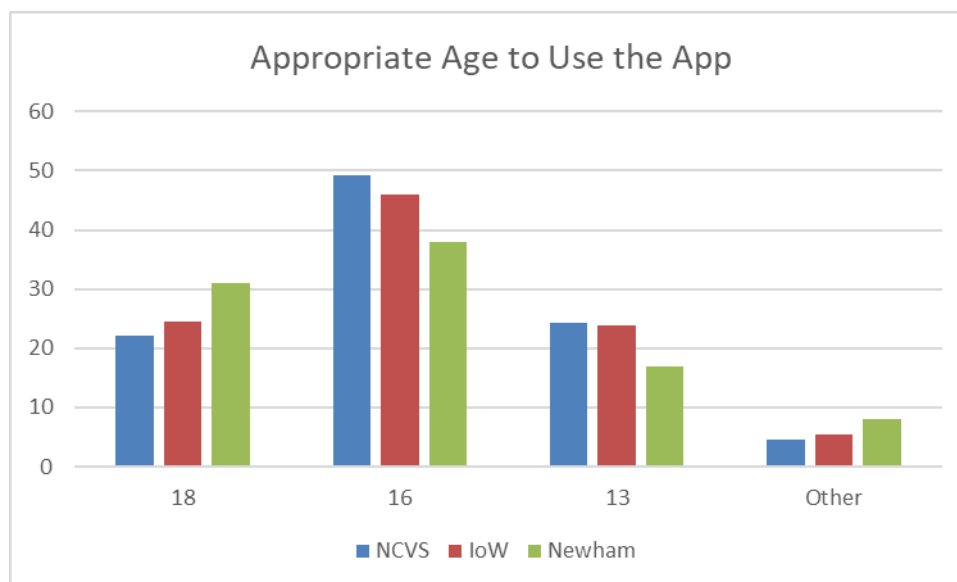
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- Some participants perceived that other apps, especially social media apps, were more invasive than the NHS COVID-19 app.
- Debates around privacy and data protection were not particularly concerning for the NHS Volunteers group, for business participants, and some Newham community members.
- However, among some Newham residents, privacy and data protection were a concern and a key reason why some chose to not use the NHS COVID-19 app. Reasons included:
 - the (false) perception that the NHS COVID-19 app was run by a distrusted private company (Serco) rather than by the NHS
 - lack of trust in government competence and public health response overall
 - concern about being monitored
 - phones' vulnerability to hacking could be increased when their Bluetooth was switched on

Feedback on the appropriate age to use the NHS COVID-19 app

In the early adopter pilot, the minimum age for downloading the NHS COVID-19 app was 18. Survey respondents were asked their opinion on permitting younger people to download the NHS COVID-19 app and offered the options of 13 and 16 as the minimum age to download.

In all cohorts 16 was the age supported by the largest proportion of respondents (NHSV – 49%, IoW – 46%, Newham – 38 %). 24% of NHSV and IoW respondents supported lowering it still further to 13, as did 17 % of Newham respondents. 22% of NHSV, 25% of IoW and 31% of Newham respondents favoured keeping the minimum age of 18. This is outlined in the graph below:



Feedback on the contact tracing toggle feature

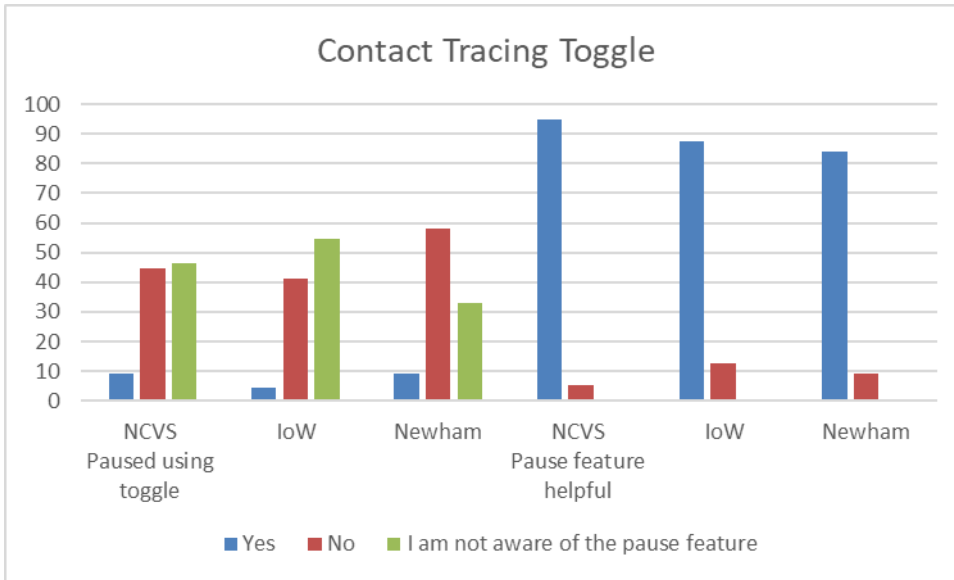
The contact tracing toggle feature of the NHS COVID-19 app allows users to pause contract tracing in the NHS COVID-19 app. Participants should pause contact tracing when:

- they are working behind a fixed Perspex (or equivalent) screen and are fully protected from other people
- they store their phone in a locker or communal area, for example while working or taking part in a leisure activity like swimming
- they are a worker in social care and are wearing medical grade PPE such as a surgical mask
- they are a healthcare worker working in a healthcare building such as a hospital or GP surgery

Among survey respondents there was a lack of awareness of the contact tracing toggle and how to use it. 9% of Newham respondents used the contact tracing toggle feature to pause the NHS COVID-19 app. 58% said they were aware of the feature but have not used it. 33% were not aware of the feature. 4% of IoW respondents used the contact tracing toggle feature to pause the NHS COVID-19 app. 41% did not use the feature. 55%

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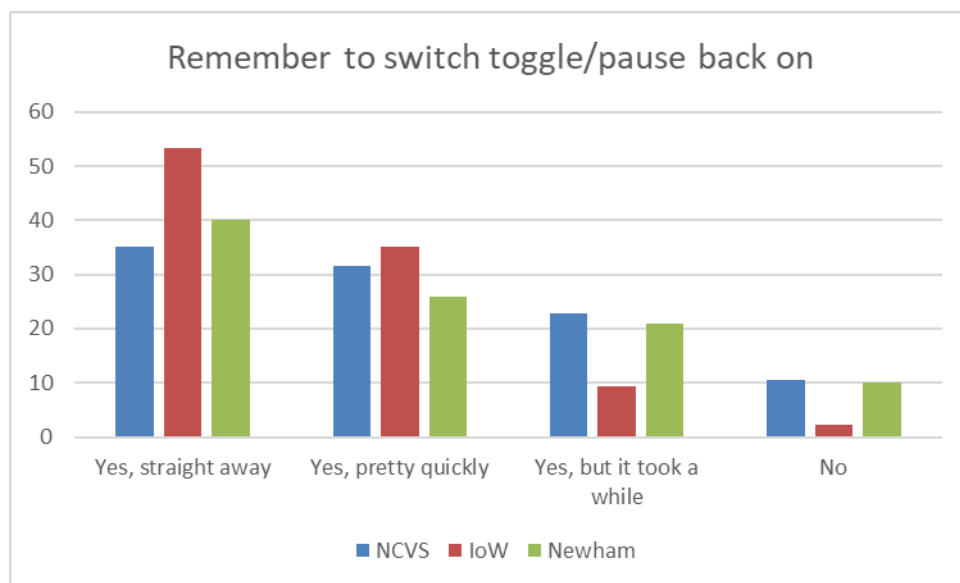
were not aware of the toggle feature. 9% of NHS Volunteers used the contact tracing toggle feature to pause the NHS COVID-19 app. 44% were aware of the feature but have not used it. 47% were not aware of the feature.



Of those using the toggle feature in Newham, the largest proportion, 61%, turned it off when they were at home; 27% when behind a Perspex screen; 24% did so when their phone was unattended, 29% when wearing clinical grade PPE in a clinical setting and 39% had turned it off in other circumstances. Of those using the toggle feature in the IoW, 63% did so when their phone was unattended, 18% when wearing clinical grade PPE in a clinical setting and 7% when behind a Perspex screen. Of the 26% stating 'other', the most popular reason (at 27% of those stating 'other') was that the participant was 'at home' (not a valid reason to pause). Of those using the toggle feature from the NHS Volunteers, 32% did so when their phone was unattended, 4% when wearing clinical grade PPE in a clinical setting and 2% when behind a Perspex screen. Of the 71% stating 'other', 37% were pausing the NHS COVID-19 app 'at home' (not a valid reason to pause).

The toggle was however generally felt to be useful. Among the NHSV who used the contact tracing toggle feature to pause the NHS COVID-19 app, 95% found it useful. The equivalent proportions for IoW and Newham were 88% and 84% respectively.

Most survey respondents who had used the pause feature remembered to switch the NHS COVID-19 app back on after pausing it ‘straight away’ (Newham – 40%, IoW – 53%, NHSV – 35%) or ‘fairly quickly’ (Newham – 26%, IoW – 35%, NHSV – 32%). A smaller number reported that ‘it took a while’ (Newham – 21%, IoW – 9%, NHSV – 23%). 2% of IoW respondents, 11% of NHSV and 10% of Newham respondents did not remember to reactivate the NHS COVID-19 app. This is outlined in the graph below:



Attitudes towards the toggle feature were also explored in through qualitative research. Findings included:

- Although no participants or venue managers in the IoW had reported that they had used the ‘toggle’ feature, some residents had noticed the feature on the NHS COVID-19 app, but were unsure about what it was or how to use it and were concerned that they would forget to switch it off or that others could misuse it. This was echoed by venue managers who claimed it was not clear to them if or how the ‘toggle’ feature should be implemented in their organisation.
- Participants in Newham stated that the toggle option was clear and provided a level of comfort and reassurance that the NHS COVID-19 app can be paused when required (e.g. when protected behind a Perspex screen).
- In Newham, those concerned about data privacy commented that they would use the toggle feature to pause the NHS COVID-19 app most of the time but would still download the NHS COVID-19 app to stay informed.
- Participants in Newham evaluation research had not used the toggle feature at the time of their interviews, and therefore, had mixed views on its utility:

[Insert title]

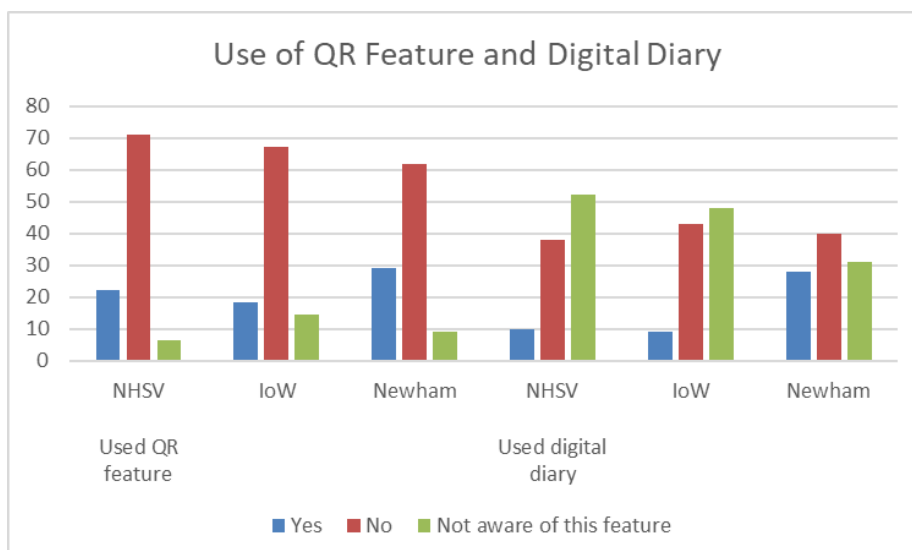
- some felt it was useful but were unsure they'd use it
- others felt it superfluous, as users could switch phones off if they did not want to be traced
- NHS Volunteers had mixed views on the usefulness of the toggle feature:
 - some felt it was useful but were unsure they'd use it
 - others felt it superfluous, as users could switch phones off if they did not want to be traced
 - others were concerned that inappropriate use of the toggle function may cause the loss of tracking info

Feedback on the QR code feature:

QR code posters were used a total of 18,173 times by participants to check-into a venue over the trial period.

18% of IoW respondents had used the QR code feature, 67% had not and 15% were not aware of the QR code feature. 22% of NHS Volunteers had used the QR code feature, 71% had not and 7% were not aware of the QR code feature. 29% of Newham respondents had used the QR code feature, 62% had not and 9% were not aware of the QR code feature.

The digital diary feature which helps users log all the places they have checked into with the NHS COVID-19 app, had been used by 28% of Newham respondents, 10% of NHS Volunteers and 9% of IoW respondents. 40% of Newham respondents, 43% of IoW respondents and 38% of NHS Volunteers had not. A sizeable proportion (52% – NHSV, 48% – IoW, 31% – Newham) had not heard of the function. This is detailed in the graph below:



26% of NHSV respondents, 39% of IoW respondents, 30% of Newham respondents claimed the QR feature made them feel 'more comfortable' visiting a pub, restaurant or venue. 16% of NHSV respondent, 3% of IoW respondents and 8% of Newham respondents claimed it made them feel 'less confident'. The majority however (NHSV – 57%, IoW – 58% and Newham – 58%) said it made no difference. In Newham, BAME respondents were significantly more likely, at 36%, than white respondents, at 24% to feel reassured.

Qualitative research findings included:

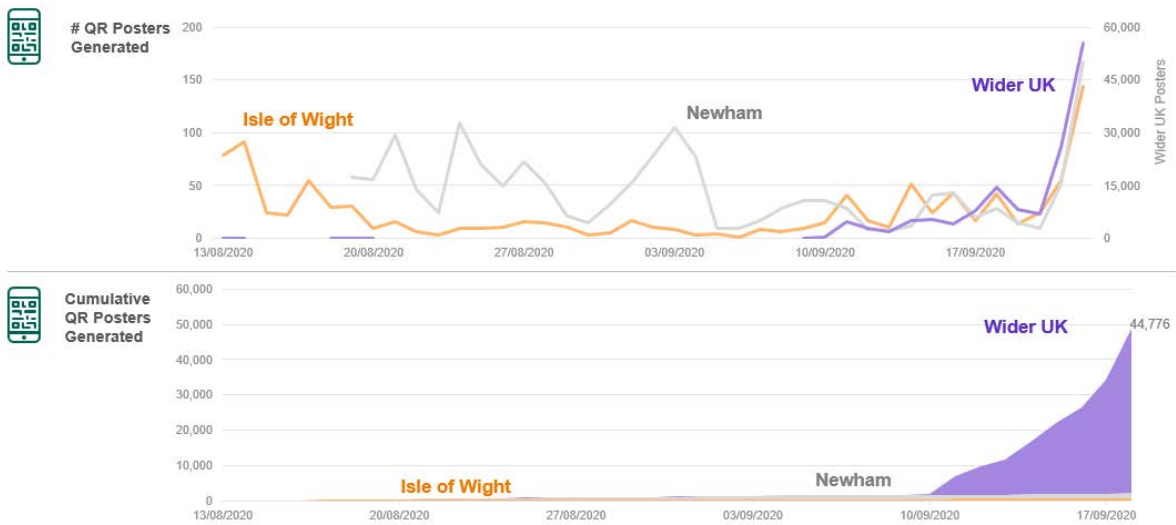
- IoW participants across all ages viewed the QR code feature as a useful, or potentially useful, feature in making them aware of their risk of exposure.
- They asserted the code was easy to understand and some reported that it was more private than the manual alternative. However, they felt that it was important to provide a manual log as well as the QR code service to accommodate those who did not have access to the NHS COVID-19 app or were unwilling to use it.
- Similar views were expressed in Newham with the QR code feature being seen as simple, easy to use and something that was familiar to people.
- Users also liked being asked to do something and felt like they were helping to play their part.
- Some users preferred to check in using the NHS COVID-19 app than venue-specific systems, perceiving it to be more trustworthy in terms of data security and anonymity.
- Despite NHS Volunteers not being able to use the QR check-in feature, they still felt it was a key feature.
- Many participants in the IoW had not seen a QR poster at any of the venues they attended, with those who had used the code reporting that the posters were sometimes difficult to find and it was not widely implemented.
- Users in Newham felt not enough venues in Newham had the QR codes. Frustration was felt from NHS COVID-19 app users that they couldn't check into local venues. Users wanted clarity about official NHS COVID-19 app QR codes and other QR codes.
- In terms of usage of the QR code function, some Newham participants checked in whenever they saw the code. Others made their decision based on a range of factors, including:
 - perceived risk: participants were more inclined to check in if they spent an extended period somewhere or felt the venue presented a higher risk (that is, of crowding)

[Insert title]

- receipt of alerts: some would choose not to scan into a larger setting because they anticipated that they might receive alerts despite physical distance from others
- prominence and prompting: some would only remember or bother to scan a QR code if nudged to do so
- negative peer pressure: some felt discouraged or reluctant to check in when they saw other visitors were not doing so, as they could not foresee how the system could be effective
- In Newham, some questioned why the QR check-in was needed if the NHS COVID-19 app was already tracking users via Bluetooth.
- Venue managers in IoW felt displaying the QR code poster was a way to reassure customers that they were taking the pandemic seriously and were doing what they could to make them safe.
- Some business leads felt that older people were less likely to be willing and able to use the NHS COVID-19 app.
- Newham businesses found the process of setting up the QR code to be simple, exceeding expectations for some who anticipated it would be a long process.
- Participants appreciated the option of printing the poster at a local library, supporting businesses that didn't have printers.
- Newham businesses did highlight some barriers to the widespread adoption of QR codes:
 - awareness of the QR code among other businesses was perceived to be low
 - the risk of confusion for public due to the availability of multiple systems, suggesting that some businesses might be unwilling to change to the new QR system when they had already set up their own QR system
- Location of posters is important: The poster in venues was not always obvious to locate. Most venue managers had chosen to display the QR poster at entrances and exits.
- Businesses suggested a lead-in time of 10 days from launch in order to print out QR Code posters.
- A disabled group fed back that it would be helpful to have a number to enter as well as the QR code to scan and that the codes need to be inside of buildings at an appropriate height to enable people in wheelchairs to see and scan.

- Some commented that it is not practical to scan such a large QR code as the person must stand quite far away from the poster with their phone extended, raising safety concerns.

These graphs illustrate the number of QR posters generated. In Newham, we see that posters generated peaks during the week, and drops during weekends and public holidays. There has been a consistent generation of QR posters over the trial period.



[Insert title]

The tables below illustrate the type of business generating QR code posters within the IoW and Newham. We observe retail to be the biggest sector generating QR posters. Over 85% of businesses are related to retail, children and education, eating and drinking, and civic and community.

IoW	
Unspecified	410
Restaurants, cafes, pubs and bars	143
Accommodation	134
Other	105
Personal care	73
Retail shops and branches	39
Sports and fitness facilities	38
Recreation and leisure	27
Non-residential institution	13
Place of worship	10
Residential care	8
Private event	8
TOTAL	1,013

Newham	
Unspecified	578
Other	234
Retail shops and branches	224
Restaurants, cafes, pubs and bars	207
Non-residential institution	62
Personal care	61
Recreation and leisure	56
Accommodation	43
Place of worship	43
Sports and fitness facilities	34
Medical Facility	20
Residential care	17
Total	1,584

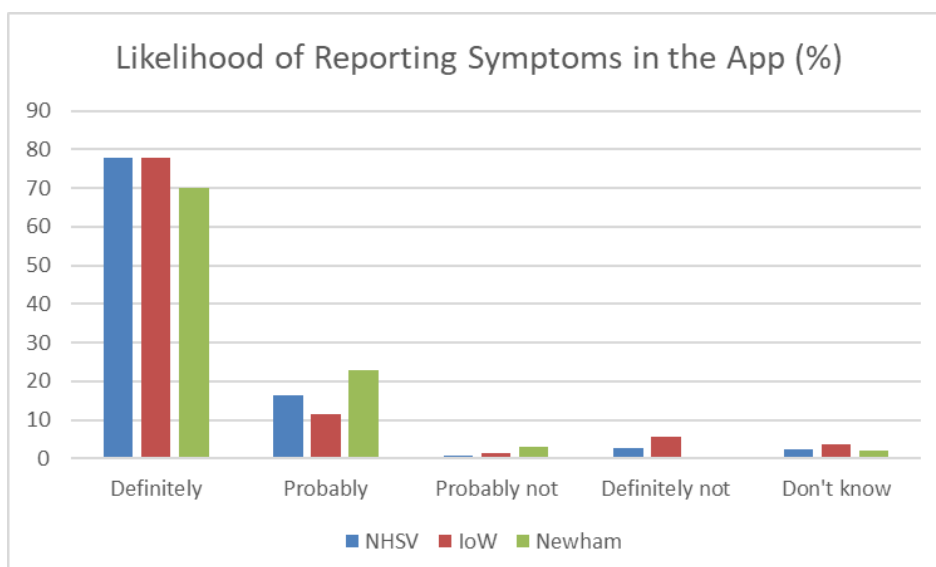
Feedback received on recording symptoms

The survey also looked to ascertain an understanding of the recording of symptoms in the NHS COVID-19 app.

Of the NHS Volunteers, just 1% developed symptoms. No symptoms were recorded in the NHS COVID-19 app.

No respondents to the IoW survey developed symptoms since downloading the NHS COVID-19 app. Despite this a small number (14) of respondents did record symptoms in the NHS COVID-19 app. Six recorded them (47%) in the NHS COVID-19 app and 8 (53%) did not. More males recorded symptoms in the NHS COVID-19 app than females. Of the 6 who did record their symptoms in the NHS COVID-19 app, 2 did so within 3 hours and another 2 did so within 24 hours. Two of the 6 said that the process was very easy and 4 said it was 'fairly easy'. Of the 6 who recorded their symptoms in the NHS COVID-19 app 3 ordered a COVID-19 test and one tried to but was unable to do so. Two did not attempt to order a test. Four of the 6 self-isolated, while 2 did not.

4% (n=33) of Newham respondents had developed symptoms since downloading the NHS COVID-19 app. Of these, half (n = 16, 48%) had entered symptoms and half had not, with all of those who did reporting that the process was 'very easy' (n = 13, 82%) or 'fairly easy' (n = 3, 18%). After they had entered their symptoms, 6 ordered a test through the NHS COVID-19 app, 5 did not, and 5 tried but were unable to complete the process. 12 of those who had reported their symptoms went on to self-isolate, while 4 did not.



NHS COVID-19 app store reviews

NHS COVID-19 app store reviews (2.29 for Android users and 3.5 for Apple users) fell below rating for comparable apps internationally (see graph below), with Germany

[Insert title]

(Android 3.3 , Apple 4.5), Switzerland (Android 3.8 , Apple 4.6) Republic of Ireland (Android 2.9, Apple 3.8) and Northern Ireland (Android 3.3 , Apple 3.8) all rating more favourably.



However, the majority of poor user sentiment in app store reviews has originated from users in non-trial groups (that is, outside of Newham, the IoW and the NHS Volunteers population). A high proportion of scores of 1 on the app store were associated with comments about being unable to activate as they did not have an activation code – which was because they lived outside the trial areas. Once these ‘1’ ratings are excluded ratings rise from 2.29 to 2.9 among Android users and from 3.3 to 3.5 among Apple users. In fact, the second most commonly given star rating was 5.

The next largest challenge to NHS COVID-19 app ratings appears to be around app compatibility with the users’ smartphone.

Feedback received on NHS COVID-19 app alerts and notifications

- NHS Volunteers had not received any alert messages and were not aware of what to do in case of alert message. Some anticipated that the NHS COVID-19 app would provide the necessary information.
- NHS Volunteers had mixed views on weekly notifications. Positively received by some as an indication that the NHS COVID-19 app was functioning and/or that they’d not come into contact with COVID. One view that greater frequency would be preferable. Others found them alarming, as they appear like an alert. One view was that they should not be sent at all – users only want to be alerted if they have come into contact.
- Several IoW residents claimed they were not aware of what they needed to do if they did receive an alert. While some thought that they would need to self-isolate, others thought they needed to be cautious and book a test. Despite confusion, participants were confident that they could find this information on the NHS COVID-19 app. Having felt alarmed by a message they received on the NHS COVID-19 app informing them how many times they had checked-in, one participant recommended that it should be clearer that this is an update and not an alert.

7. Recommendations and next steps

Lessons learnt

There are several lessons learnt from the early adopter phase that have been considered as part of the national launch.

Lesson learnt	How we responded in national launch
Starting the media campaign before access codes were available caused frustration among participants	The media campaign for national launch was timed with the release of the NHS COVID-19 app with emphasis on a 'Big Download Weekend'
Businesses, venues and locations who posted a QR code poster requested a 10-day lead time to ensure posters were up by the time the public have the NHS COVID-19 app and are looking to scan codes	Business, venues and locations were briefed and received the necessary material and guidance ten days prior to launch in order to ensure posters were up in time for the 'Big Download Weekend'
The importance of the location of the QR code poster was emphasised, particularly, for wheelchair users where accessibility is key	Guidance was issued to businesses, venues and locations providing details of how and where in locations posters should be positioned
Building trust in data privacy was the biggest hurdle in NHS COVID-19 app adoption	A public video was created as part of the media campaign for national launch that explained how data would be protected in order to increase public trust in data privacy in the NHS COVID-19 app. Local authority (LAs) were briefed on data privacy concerns in order to address local concerns
Active local authority support is essential to driving local adoption of the NHS COVID-19 app	A local authority (LA) playbook was developed to be shared across LAs in England and Wales. A series of LA engagement sessions were hosted prior to launch to ensure LAs were informed, engaged and to provide a space to address any key concerns or questions about the NHS COVID-19 app. Engagement sessions were held post-launch to provide additional support to LAs and continue to drive local engagement
GP involvement is very powerful in driving adoption of the NHS COVID-19 app	As part of the national launch campaign, text messages were issued from GP

	centres to patients encouraging the download of the NHS COVID-19 app
There was widespread support for lowering the age of use to 16	The app was made available to all those over the age of 16 in the national rollout
Some respondents were concerned, or actually forgot, about turning the contact tracing toggle back on after pausing it	The NHS COVID-19 app now has a timer function to reactivate contact tracing
Some users were unaware that non-NHS QR codes could not be scanned	The NHS COVID-19 app now alerts users when they try to scan a non-NHS code
Some participants were unable to download the NHS COVID-19 app due to smartphone compatibility	The Google and Apple technology that enables contact tracing to work on the NHS COVID-19 app does not comply with older versions of smartphones

Limitations

There were several limitations to the early adopter trail period.

- IoW and NHS Volunteers respondents were older than the UK population. These factors may skew survey results which cannot predict the behaviour of the UK population as a whole.
- The IoW has a homogeneous population with very little diversity and so does not reflect the populations of England and Wales as a whole.
- The short time period meant that we were unable to understand the long-term impact on behaviour of NHS COVID-19 app download and usage.
- Evaluation data is currently limited to administrative records, web data and stakeholder consultation and surveys. We cannot therefore use it to meet additional information needs such as:
 - the epidemiological impact of the Test and Trace programme
 - the evaluation of end-to-end processes, including future components of the programme such as providing certification to individuals of low risk of being infectious
 - the wider NHS and social care requirements for the NHS COVID-19 app

Next steps

Lessons learnt from the early adopter evaluation will be incorporated into the approach and evaluation for national launch.

National launch evaluation will look to ascertain:

- how well the NHS COVID-19 app project is working and what factors affect performance
- whether people display the behaviours needed for the NHS COVID-19 app to have its intended impact and what factors drive these behaviours
- the extent to which the NHS COVID-19 app is delivering its intended impact
- whether there are any unintended consequences of the implementation of the NHS COVID-19 app

To do so, it will explore the following research questions:

- What was the initial reaction to the national launch of the NHS COVID-19 app?
- To what extent do citizens understand, support, accept and show willingness to engage with the NHS COVID-19 app?
 - Does engagement change over time and, if so, what factors influence this?
 - Do additional features in the NHS COVID-19 app increase willingness to download it?
 - Do NHS COVID-19 app users differ in terms of infection rates and health behaviours to non-NHS COVID 19 app users?
- What factors influence people to report symptoms?
- How does receiving an alert impact upon users' health-related behaviours?
- How important is the NHS COVID-19 app as a catalyst for self-isolation?
- To what extent does the NHS COVID-19 app improve data provision for the purposes of managing public health?

Additionally, it will provide illustrative examples of how different stakeholder groups engage with the NHS COVID-19 app.

The data and insights collection approach for national launch evaluation will include:

- a tracker survey via a YouGov panel (n=2000) with an ethnic minority boost (n= 700), to explore how the NHS COVID-19 app supports operational use during the pandemic, how it influences health behaviours and whether use of the NHS COVID-19 app changes over the course of the pandemic

[Insert title]

- ongoing use of NHS COVID-19 app analytics to measure the extent to which users and location managers are engaging with the NHS COVID-19 app
- analysis of web analytics – natural language processing of NHS COVID-19 app store reviews
- case studies to provide illustrative examples of how different stakeholder groups engage with the NHS COVID-19 app
- methodology will be a mix of quantitative surveys and qualitative research

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