Exploring public attitudes towards the use of digital health technologies and data

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The Health Foundation

Contents

Key points

- The NHS is looking to advances in digital health technologies and data to help tackle current pressures and meet rising demand. But ensuring new uses of technology and data have the backing of the public is critical if they are to become business as usual.

- In March 2023, we commissioned a survey of 7,100 nationally representative members of the public (aged 16 years and older) to investigate their attitudes to uses of health technologies and data, and the key factors affecting their views. Our earlier publication based on this survey reported on attitudes specifically towards virtual wards.

- Overall, the public thinks technology improves the quality of health care and is supportive of its many possible uses. But not all technologies are equally liked: those that empower people to manage their health and better connect them with the NHS seem to be more popular, while those that could be seen to 'come between' the clinician and patient – like chatbots or care robots – are least popular.

- Women and those most likely to be on low or no income were significantly less positive about the use of health care technology than men or those more likely to be on higher incomes, respectively – highlighting the need to engage with a wide and representative range of the public when considering how technology could be used in health care.

- The public is, on balance, happy with a range of ways its data could be used outside direct care, such as for research or to develop new medicines. But with around 1 in 5 people resistant to their data being used in these ways, it is clear that policymakers, health care organisations, researchers and industry must work to grow trust in the use of health data.

- The public trusts NHS organisations more with their health data than government or commercial organisations, though younger people are less likely than older people to trust the NHS with their data. As policymakers and health care organisations plan public engagement exercises on the use of health data, it will be particularly important to ensure young people are effectively represented.

1. Introduction

The health service is facing workforce shortages and growing backlogs of care, as well as future increases in demand. In response, policymakers and providers are looking to advances in health technologies and data to improve quality and efficiency and reshape services to better meet future needs – most recently with the announcement of £100m to advance the use of artificial intelligence in health care.

Ensuring new uses of health technologies or data have the backing of the public is critical if these are to become business as usual. As seen with the care.data scheme and the General Practice Data for Planning and Research programme, lack of public support can significantly constrain innovation and service transformation.

So how does the UK public feel about the use of health technologies and health data? To explore this further, in March 2023 we commissioned a nationally representative public survey to investigate attitudes towards health technology and data uses and the key factors affecting these views.

Box 1: Methodology

Through Censuswide, we commissioned an online survey of 7,100 members of the UK public aged 16 years and older that ran from the 1 to 23 March 2023. Our sample included a booster of 100 UK adults at risk of digital exclusion using computer-assisted telephone interviewing. Those in our booster sample met a minimum of two of the following criteria: aged 65 years and older; household income under £25,000 per year; or no post-18 qualifications. Our total sample was representative by age, gender, ethnicity, region and socioeconomic group as per 2011 UK census data.

2.   The public is, on balance, positive about health technologies

We asked respondents whether they felt the use of technology makes the quality of health care better, worse or no different. On balance, as shown in Figure 1, the public feels technology has a positive impact on health care quality, with 56% saying it makes the quality of care better, and only 8% feeling it makes the quality of care worse.

Figure 1

On the whole, the public thinks technologies improve the quality of health care

On balance, which of these statements would you say best describes how you feel about the NHS using technologies?
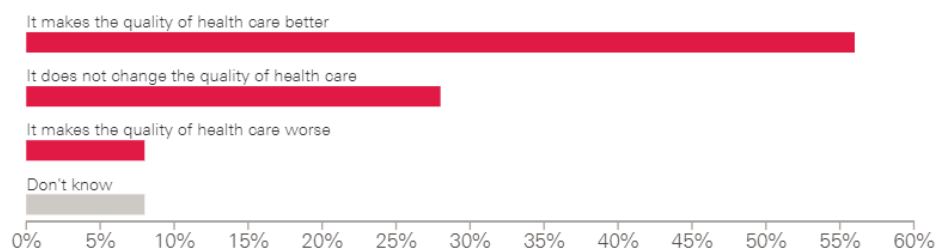
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Source: UK public survey fieldwork carried out online and by phone by Censuswide, 1–23 March 2023; total sample size 7,100 adults (85% from England, 8% Scotland, 5% Wales and 3% Northern Ireland); figures have been weighted and are representative of all UK adults (aged 16 years and older).

To understand whether the public may feel more or less positive about particular technologies, we presented a list of 10 health technologies and asked whether the NHS should be using more, less or the same amount of them. The list was chosen to represent the spread of digital and data-driven technologies currently being used throughout the health service.
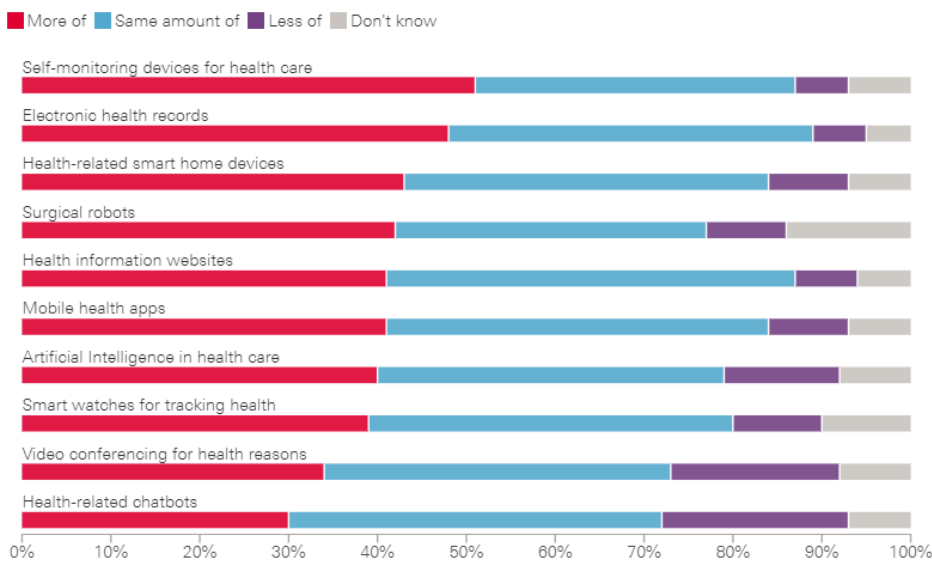
As shown in Figure 2, there is broad public support for a wide range of health technologies. Over half of the public (51%) thinks the NHS should make more use of self-monitoring devices, such as blood pressure or heart rate monitors – consistent with our findings elsewhere on remote monitoring and virtual wards – and nearly half (48%) said the NHS should be making more use of electronic health records. The public is, however, less supportive of the use of health-related chatbots to check symptoms or get health advice and video conferencing to speak to a health professional, with only 30% and 34%, respectively, saying the NHS should be making greater use of these (and 21% and 19%, respectively, saying the NHS should be using less of them).

Further research is needed to understand in more depth the motivations behind these answers. However, there appears to be a notable difference in sentiment towards technologies aimed at supporting the public to look after their health and increase their connection with the health service – such as self-monitoring devices and care records – and those that might be perceived to 'come between' the clinician and patient, such as chatbots and video conferencing. These results are consistent with our previous research on the need to protect the human dimension of care.

Figure 2

The public would like to see greater use of self-monitoring devices, but is less supportive of video conferencing and chatbots
Do you think the NHS should be using more of, less of, or the same amount of the following technologies?

Legend: ■ More of ■ Same amount of ■ Less of ■ Don't know

Self-monitoring devices for health care

Electronic health records

Health-related smart home devices

Surgical robots

Health information websites

Mobile health apps

Artificial Intelligence in health care

Smart watches for tracking health

Video conferencing for health reasons

Health-related chatbots

0%   10%   20%   30%   40%   50%   60%   70%   80%   90%   100%

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Source: UK public survey fieldwork carried out online and by phone by Censuswide, 1–23 March 2023; total sample size 7,100 adults (85% from England, 8% Scotland, 5% Wales and 3% Northern Ireland); figures have been weighted and are representative of all UK adults (aged 16 years and older).

To explore how the public feels about specific applications of health technology, we presented respondents with six scenarios and asked them whether they 'would' or 'would not' be personally happy with that scenario for their own care. The scenarios were chosen to illustrate a range of existing or potential uses of technology that raise questions about the interaction between humans and machines.
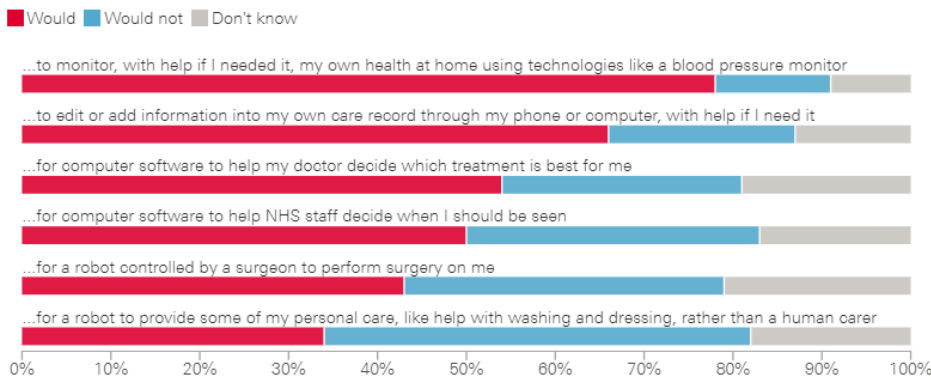
As shown in Figure 3, support varied significantly across the different scenarios presented. While more than three quarters of the public (78%) are happy to use technology to monitor their health at home instead of in hospital – and only 13% are unhappy – only 34% would be happy with a robot providing some of their personal care, like help with washing and dressing, with 48% unhappy. (This lack of support for robotic care assistants is consistent with a previous Health Foundation survey, where 47% of people felt that having a robotic rather than human carer 'risks undermining a person's dignity' and would be 'impersonal and dehumanising'.)

Notably, those who said they know more about how the NHS is using technology were more likely to say they would be happy with each of the uses of technology listed in Figure 2. This shows that while it is important to take account of current attitudes, raising awareness and understanding of different technologies – and engaging meaningfully with the public to build their familiarity with and confidence in them – could be one way to drive support.

Figure 3

On balance, the public would be happy to use technology to monitor its health from home, but would not like robots to provide personal care
I would/would not be happy...

■ Would ■ Would not ■ Don't know

...to monitor, with help if I needed it, my own health at home using technologies like a blood pressure monitor

...to edit or add information into my own care record through my phone or computer, with help if I need it

...for computer software to help my doctor decide which treatment is best for me

...for computer software to help NHS staff decide when I should be seen

...for a robot controlled by a surgeon to perform surgery on me

...for a robot to provide some of my personal care, like help with washing and dressing, rather than a human carer

0%   10%   20%   30%   40%   50%   60%   70%   80%   90%   100%

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3. Awareness about health data is low, but trust in the NHS is high

Our survey also investigated how the public feels about the ways their health data might be used. We first asked respondents how much they know about how the NHS is using health care data. As shown in Figure 4, nearly two-thirds of the public (61%) know 'very little' or 'nothing at all' about how the NHS is using the health care data it collects.

We then asked which organisations people trust with their health data. As shown in Figure 5, around two-thirds said they trust GP practices, local NHS hospitals and clinics and national NHS organisations with their health data 'a lot' or 'moderately'. By comparison, national and local government organisations and health technology companies are less trusted. These results speak to the need to grow trust in organisations with currently low trust levels. They could also guide policymakers and health care providers on the organisations best placed to engage with the public about their health data at the present time.
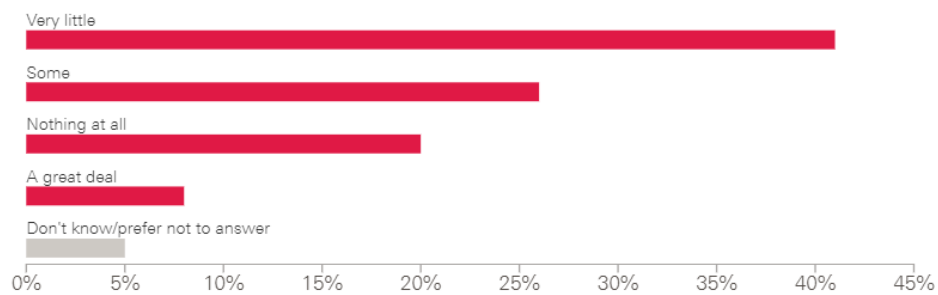

Box 2: Describing how health data is used

We wanted to understand how the public feels about how their health data might be used. To support survey respondents in thinking about this, we described how the NHS collects, stores and uses data as follows:

'Whenever people use the NHS, data are collected about them and their health. These "health data" are often recorded and stored in electronic health records and used to help health care staff to make decisions about your care. These data can also be used to plan how the NHS provides care, understands and improves how the service is running and does research. In this section, we would like to know how you feel about how these data are collected, stored and used.'

Figure 4

Nearly two-thirds of the public know very little or nothing at all about how the NHS is using the health data it collects

How much, if anything, would you say you know about how the NHS is using the health data it collects?

Very little	
Some	
Nothing at all	
A great deal	
Don't know/prefer not to answer	

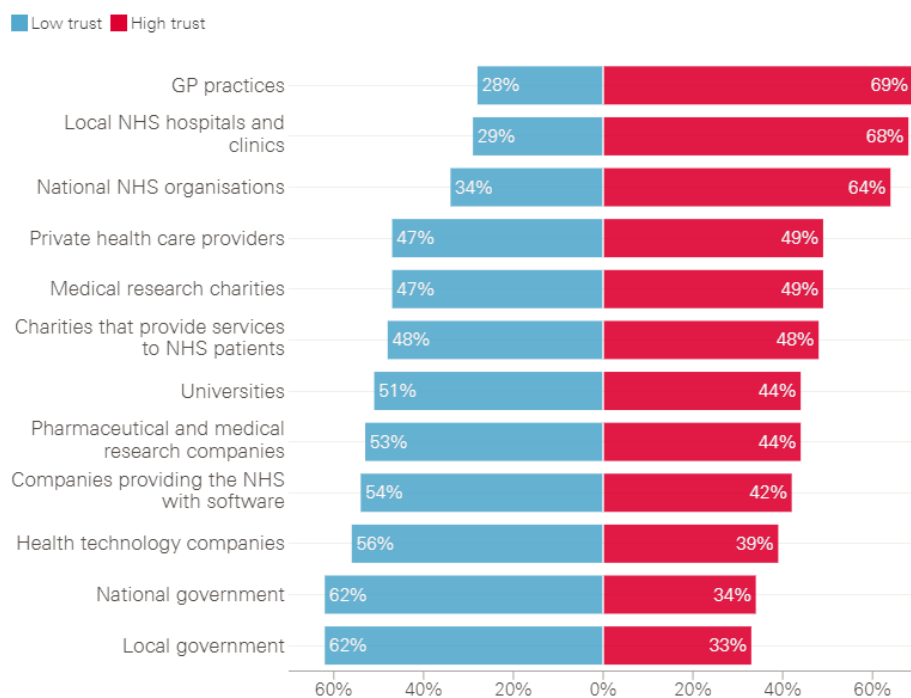0%   5%   10%   15%   20%   25%   30%   35%   40%   45%

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Source: UK public survey fieldwork carried out online and by phone by Censuswide, 1–23 March 2023; total sample size 7,100 adults (85% from England, 8% Scotland, 5% Wales and 3% Northern Ireland); figures have been weighted and are representative of all UK adults (aged 16 years and older).

Figure 5

The public trusts NHS organisations the most with its health data

How much, if at all, do you trust the following organisations with your health data?

■ Low trust ■ High trust

	Low trust	High trust
GP practices	28%	69%
Local NHS hospitals and clinics	29%	68%
National NHS organisations	34%	64%
Private health care providers	47%	49%
Medical research charities	47%	49%
Charities that provide services to NHS patients	48%	48%
Universities	51%	44%
Pharmaceutical and medical research companies	53%	44%
Companies providing the NHS with software	54%	42%
Health technology companies	56%	39%
National government	62%	34%
Local government	62%	33%

We also asked respondents how they felt about uses of their health data outside the direct provision of health care services. Specifically, we asked whether they would be happy for their data to be used:

- by the NHS to plan and improve local services
- by the NHS to understand the risk of people getting a disease so they can be offered services
- by health technology companies to develop health care products
- by pharmaceutical companies to develop medicines
- by universities to research health and illness.To investigate the effect of data anonymisation on people's views, half of the survey sample was asked whether they would be happy with their 'anonymised' health data being used in these ways, while the other half was asked whether they

would be happy with their 'identifiable' health data being used in these ways. Box 3 explains these terms further.

> ## Box 3: Anonymised versus identifiable information
>
> We described the terms 'anonymised' and 'identifiable' in our survey as follows:
>
> **'Anonymised health data'** means that health data could not be linked to you. It would not have any of your personal information in it, like your name, date of birth or address, and could not be traced back to you. It would still have information about your health like your medicines or health conditions.
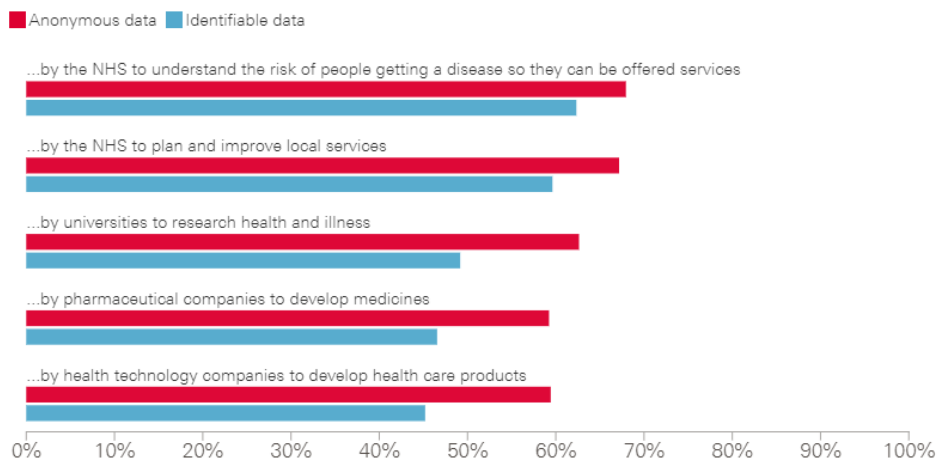>
> **'Identifiable health data'** means information about your health that could be linked to you. It might include your name, date of birth or address as well as information about your health like your medicines and health conditions. There are rules on how this data should be stored and used and that make sure only the exact data needed is shared.

Importantly, the public is, on balance, happy with all five data-use scenarios for both anonymised and identifiable health data. As shown in Figure 6, around two-thirds of the public said they would be happy with each scenario for anonymised data, with slightly higher support for NHS data usage than other types of organisation. Notably, though, for every scenario, around 1 in 5 members of the public (21% on average) said they would not be happy with the proposed use of data, indicating that there is a significant part of the population that is resistant to their data being used for purposes outside the direct provision of health care services. If this proportion of the population were to opt-out of their health data being used for planning and research, it could have significant implications for the quality and representativeness of NHS data sets.

When looking at those asked about their 'identifiable' health data, we see a fall in support for each scenario of around 11 percentage points on average, indicating that the nature of the data significantly affects public support for its usage. But this decline in support was not uniform across all types of organisation. For NHS data-use scenarios, the drop in those saying they would be happy with each scenario was 7 percentage points on average, but for those scenarios led by businesses and universities, the drop was 14 percentage points on average. This reflects our finding that the public trusts NHS organisations with their data more than other types of organisation. While the public is generally supportive of all the proposed data uses, these nuanced results highlight the need to ensure trust in both the data controller (the person or organisation responsible for deciding how, when and why data are used) and the data processor (the person or organisation then using those data for research or planning).

Figure 6

The public is generally happy for its data to be used for secondary purposes, with the greatest support for NHS data use
I would be happy for my anonymous/identifiable health data to be used...

■ Anonymous data ■ Identifiable data

...by the NHS to understand the risk of people getting a disease so they can be offered services

...by the NHS to plan and improve local services

...by universities to research health and illness

...by pharmaceutical companies to develop medicines

...by health technology companies to develop health care products

0%   10%   20%   30%   40%   50%   60%   70%   80%   90%   100%

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Source: UK public survey fieldwork carried out online and by phone by Censuswide, 1–23 March
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4.   Attitudes vary by demographics

Overall, the survey results indicate there is broad public support for health technologies and data usage. However, when we look more closely, it is clear that this support is not uniform across all groups. In this section, we explore three key demographic groups where support varies significantly from the population at large.

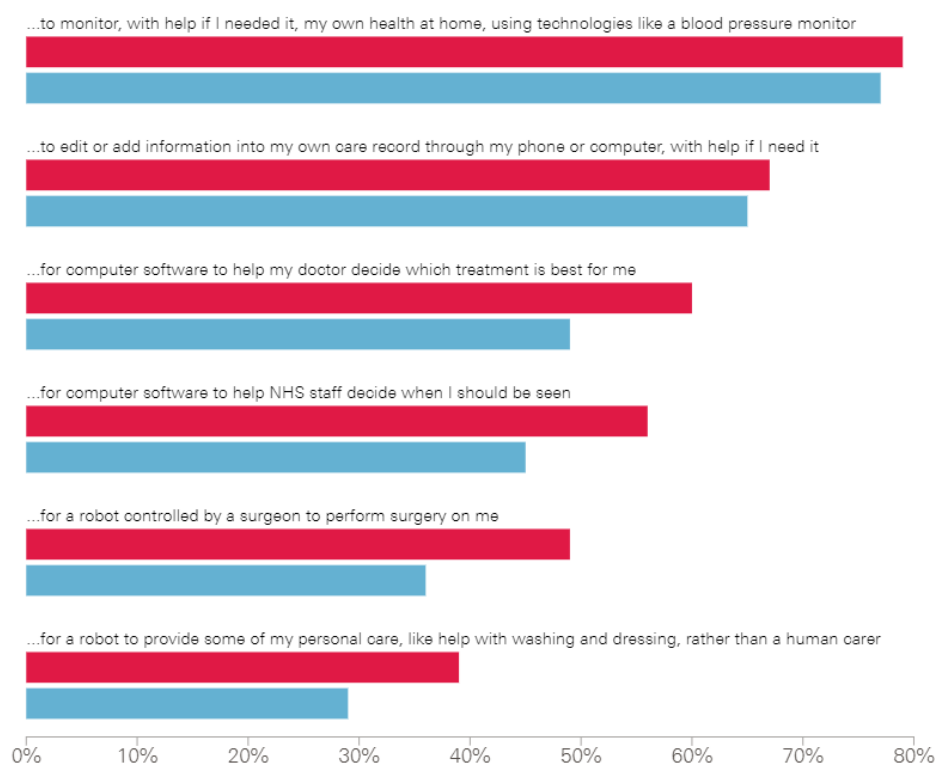## Men feel more positive about health technologies than women

Men are consistently more positive about the use of health technologies than women. For example, when exploring attitudes towards different technology-use scenarios (as shown in Figure 3), a higher percentage of men would be happy with each scenario compared with women, as shown in Figure 7. In particular, women feel significantly less positive about the use of robots for surgery and personal care, with the latter supported by only 29% of women (compared with 39% of men).

Figure 7

Men are consistently more supportive of health care technologies being used for their personal care

I would be happy...

■ Men ■ Women

...to monitor, with help if I needed it, my own health at home, using technologies like a blood pressure monitor

...to edit or add information into my own care record through my phone or computer, with help if I need it

...for computer software to help my doctor decide which treatment is best for me

...for computer software to help NHS staff decide when I should be seen

...for a robot controlled by a surgeon to perform surgery on me

...for a robot to provide some of my personal care, like help with washing and dressing, rather than a human carer

0%   10%   20%   30%   40%   50%   60%   70%   80%

Men are also significantly more likely to say that technology improves health care quality when compared with women (61% compared with 52%), suggesting that men are currently not only more open to different uses of technology in health care but also more positive about their potential impact.

## Young people are less likely to trust the NHS with their data

Although over half (57%) of people aged 16–24 years trust NHS organisations with their data, this proportion is significantly smaller than that for older people (where it rises to 79%), as shown in Figure 8. There is also a much smaller difference between young people's trust in NHS organisations versus their trust in commercial organisations, such as health technology companies and private health care providers, which are generally trusted with data more by this age group than other age groups.

As we move through the age groups to those aged 65 years and older, we can see that trust in NHS organisations related to data use grows significantly, whereas trust in commercial organisations falls. For young people, there is a 17-percentage point difference between the most and least trusted organisations (GP practices and health technology companies, respectively), as shown in Figure 8. For those aged 65 years and older, this grows to a difference of 49-percentage points. This strongly indicates that the type of organisation, or the 'data controller', plays a substantial role in trust for older people, but much less so for younger people (who are generally less trusting of data use overall).

Figure 8

Younger people are significantly less likely to trust NHS organisations with their data than older people, but more likely to trust private companies and providers

How much, if at all, do you trust the following organisations with your health data?
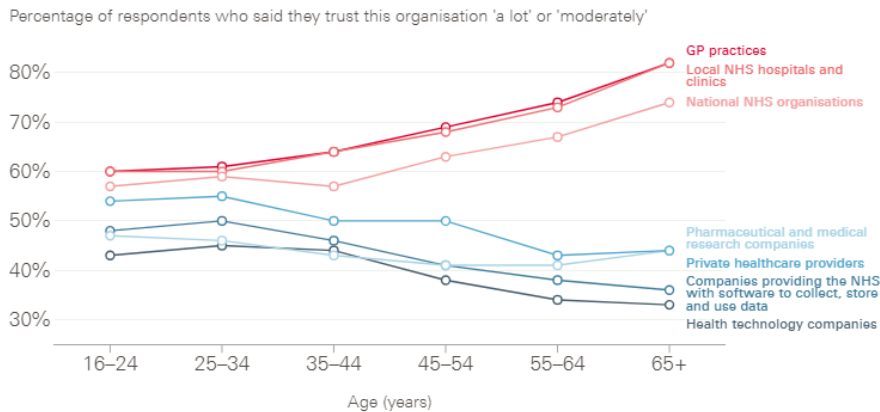
Percentage of respondents who said they trust this organisation 'a lot' or 'moderately'

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Source: UK public survey fieldwork carried out online and by phone by Censuswide, 1–23 March 2023; total sample size 7,100 adults (85% from England, 8% Scotland, 5% Wales and 3% Northern Ireland); figures have been weighted and are representative of all UK adults (aged 16 years and older).

Young people's lower level of trust regarding data use by NHS organisations is despite them being the age group most likely to say they know 'a great deal' or 'some' about how the NHS is using data. As shown in Figure 9, it is also despite half of young people (50%) feeling they have 'a great deal' of or 'some' control

over how their data is used by the NHS. In contrast, people aged 65 years and older are more likely to trust the NHS with their data despite nearly three-quarters (71%) believing they have 'very little' or 'no' control over how it is used. This indicates that giving people a sense of control over their health data alone may not be sufficient to grow trust in how it is used.

Figure 9

Younger people are more likely to feel in control of their health data, with over two-thirds of those aged 65 years and older feeling they have little to no control

How much control, if any, do you think you have over how data about your health are being used by the NHS?
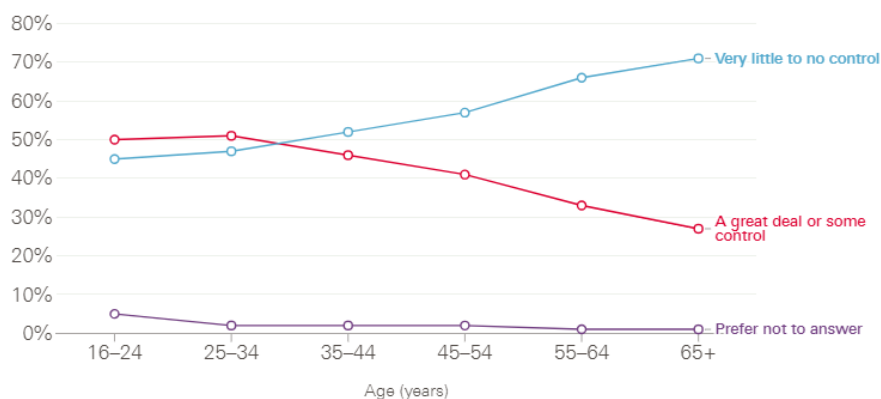
Support is not consistent across all socioeconomic groups

In addition to the differences by gender and age, there are also significant differences in support for particular uses of technology by socioeconomic group (see Box 4 for definitions of these groups). As shown in Figure 10, there is a fall in support of around 18 percentage points on average for each technology-use scenario between group A (higher managerial, administrative or professional) and group E (casual or lowest-grade workers and others 'who depend on the welfare state for their income').

For the technology-use scenario 'I (would/would not) be happy for computer software to help my doctor decide which treatment is best for me', the difference between groups A and E is 21 percentage points. These findings show how public support for the use of health care technology can be significantly lower among those more likely to face health inequalities or barriers to accessing health care. When designing and deploying new uses of technology, it will be critical to make sure they do not exacerbate existing inequalities or create new ones.

Box 4: Understanding socioeconomic groupings

We wanted to understand how attitudes towards health care technologies might vary by socioeconomic group. We used an occupation-based classification system to help understand a household's 'labour market situation', by which we mean their primary source of income, economic security and prospect of economic advancement.

Our survey used six categories, determined by the occupation of the chief income earner:

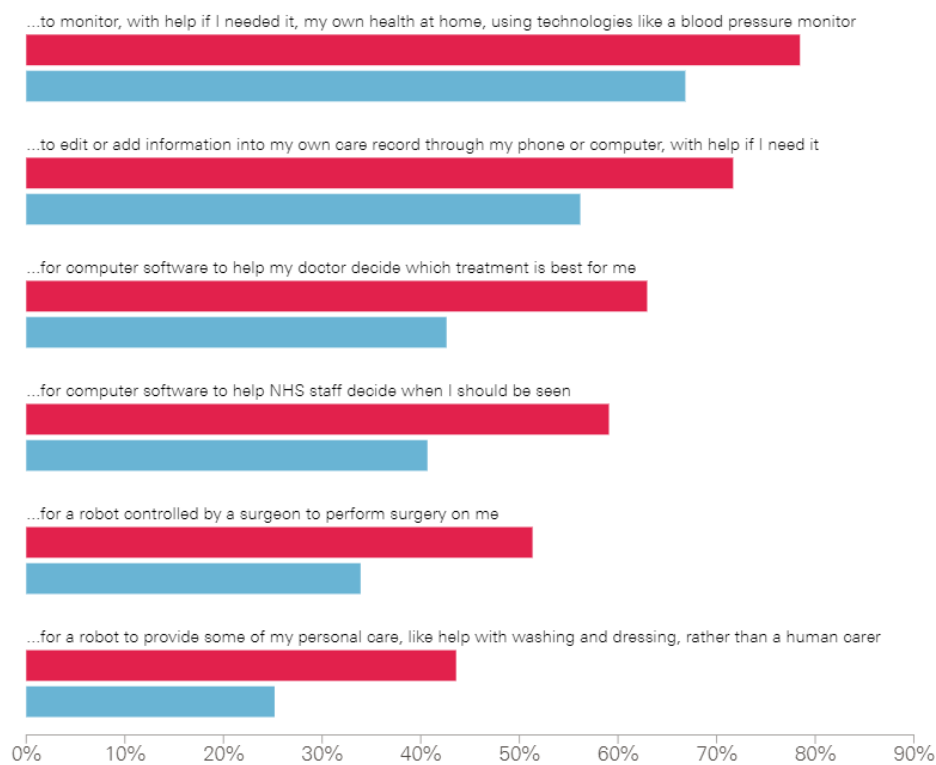|	
A	Higher managerial, administrative or professional
B	Intermediate managerial, administrative or professional
C1	Supervisory or clerical, junior managerial, administrative or professional
C2	Skilled manual workers
D	Semi-skilled and unskilled manual workers
E	Casual or lowest-grade workers and others 'who depend on the welfare state for their income'

While employment is not the only determinant of a person's welfare or life chances, this measure can be useful for thinking about how people can experience situations differently. In particular, it highlights the risks of negative impacts on those who might already be vulnerable.

Figure 10

People in socioeconomic group E are significantly less supportive of all technologies than those in socioeconomic group A

I would be happy...

■ Socioeconomic group A ■ Socioeconomic group E

...to monitor, with help if I needed it, my own health at home, using technologies like a blood pressure monitor

...to edit or add information into my own care record through my phone or computer, with help if I need it

...for computer software to help my doctor decide which treatment is best for me

...for computer software to help NHS staff decide when I should be seen

...for a robot controlled by a surgeon to perform surgery on me

...for a robot to provide some of my personal care, like help with washing and dressing, rather than a human carer

0%   10%   20%   30%   40%   50%   60%   70%   80%   90%

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5.   Implications for policymakers and practitioners

Effective uses of health technologies and data hold great potential for improving health care quality and efficiency. The public is broadly supportive of some of the most prominent current and potential uses of technology in healthcare – and, in many cases, would like to see them used more.

But this support varies depending on the technology itself, how it is applied and the characteristics of its user. For example, our findings suggest that women and those most likely to be on low or no income are significantly less supportive of many uses of technology in health care. These findings speak to the need to engage with a wide and representative range of the public when considering how technology could be used. Without this, the rollout of technologies may lead to uneven uptake among different social groups, with knock-on impacts on access and outcomes.

Over the coming years, policymakers and NHS leaders will need to prioritise meaningful public engagement on the future of technology in health care, both to understand and address concerns as well as raise awareness about and build confidence in new technology-enabled approaches. Again, it is important that this public engagement is inclusive, seeking out the voices of those who can often be excluded in public consultations.

Overall, there is public support for the use of data for purposes outside the delivery of care like service planning and research (also known as secondary uses), even where the data is identifiable and being used by commercial organisations. But this support is nuanced, with young people in particular appearing least likely to trust organisations with their health data for secondary uses. Moreover, the fact that many secondary uses of data are not supported by 1 in 5 people, even with anonymisation, could have significant implications for the quality and representativeness of data sets if these people were to opt out of their data being used in this way.

There is still work to do to grow trust in the use of health data. As we enter a period of what is likely to be intense public scrutiny following the award of the £330m contract to deliver NHS England's Federated Data Platform, it will be critical to ensure that the collection, storage and use of data is trustworthy, and done in ways the public are supportive of, with any necessary risks properly controlled.

In recent years, national and local governments and public sector organisations across the UK have stepped up their public engagement on the use of health data in recognition of this challenge. For example, NHS England is planning large-scale engagement events in 2024 and 2025 as part of the Data Saves Lives Strategy – a welcome development. Given the differences in attitudes among age groups identified by our survey, it will be particularly important to ensure young people are effectively engaged so their perspectives can be heard and help influence future policy.

> **Commented [A1]:** local governments?
>
> **Commented [A2R1]:** No - national governments
>
> **Commented [A3]:** Note this addition - is it OK? Just realised that technically NHSE is not the government
>
> **Commented [A4R3]:** But not essential if you've already updated it

6. Supporting information

About the authors

- Nell Thornton (@NellThornton_) is an Improvement Fellow at the Health Foundation
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