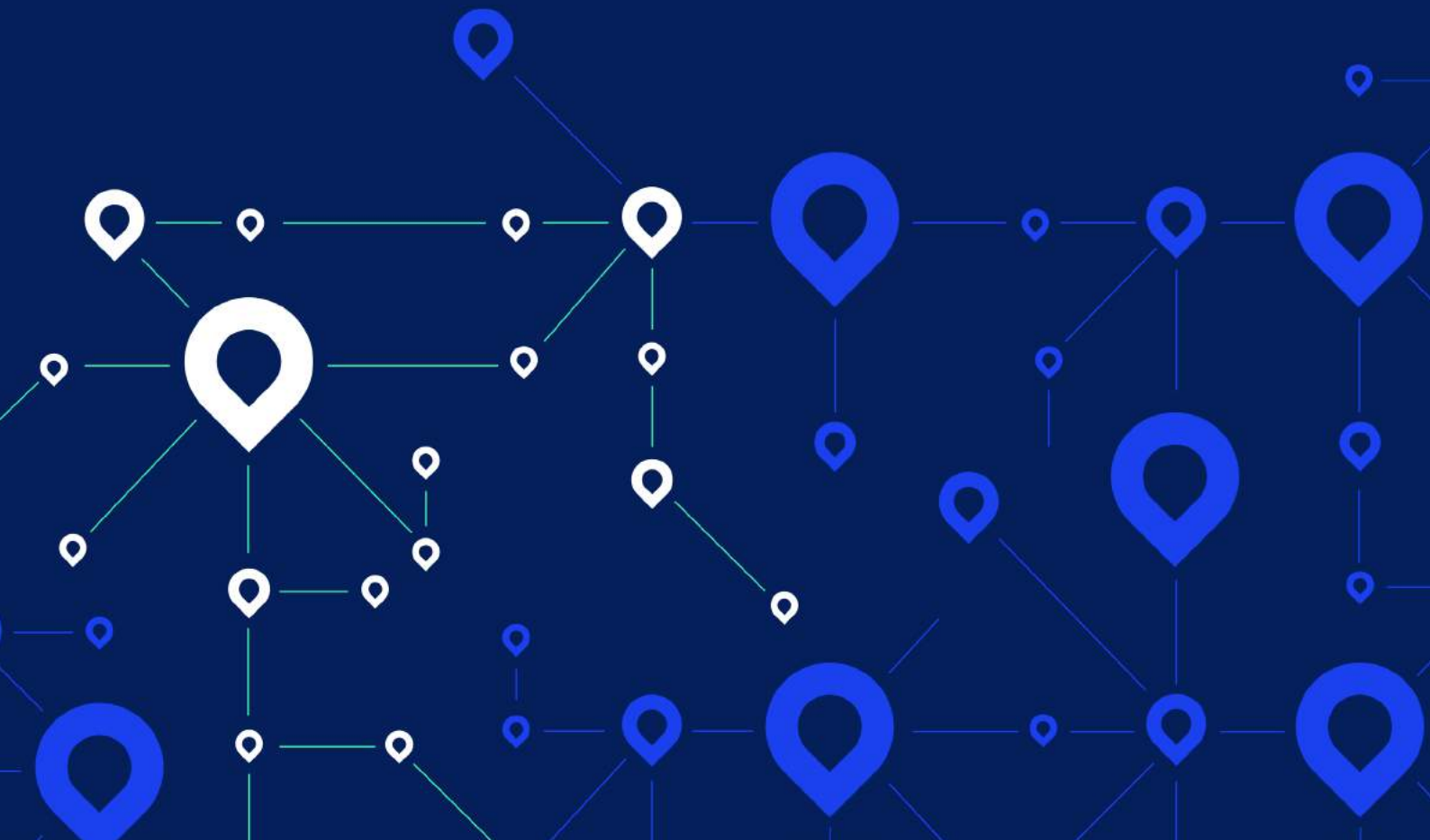# digital poverty alliance

UK Digital Poverty Evidence Review 2022

Dr Kira Allmann
for the Digital Poverty Alliance Community

"Digital poverty simply should not still be an issue in today's connected world. As everyone and everything we do becomes more digitally dependent, it threatens to exclude those disconnected. At Currys, we pride ourselves on helping everyone enjoy amazing technology, through our competitive pricing, access to online and physical stores, and affordable and responsible credit offering. But that's not all: because our social purpose is at the heart of what we do, we also support causes that help those who might otherwise be excluded. That's why we stepped up to be one of three founders of the Digital Poverty Alliance in the UK.

Through our work with them during the pandemic, and their Tech for Teachers initiative, we helped get critical tech infrastructure to schools who without it, would have struggled to teach pupils remotely. And we aren't stopping there. In the UK, 32% of young people are at risk of becoming increasingly disconnected because they're unable to get access to a device when they need it. Through our work with the new Tech4Families campaign, we'll raise vital funds to provide a mix of new and refurbished laptops and connectivity to families who would otherwise be unable to get online.

We're proud to be working with the Digital Poverty Alliance to eradicate digital poverty by 2030."

Paula Coughlan, Chief People, Communications and Sustainability Officer, Currys plc

"This evidence review is the beginning of a long journey for the Digital Poverty Alliance (DPA) on the road to ending digital poverty once and for all. Collating the crucial evidence gained over the last 5-10 years will provide the DPA with the evidence-based insights of complicated issues connected around digital divide today and will support the DPA in establishing its digital poverty action plan for the next phase of this important journey."

David Lakin, IET Head of Education, Safeguarding & Education Policy

"When the Learning Foundation, Currys and the IET came together in 2021 we had one clear goal – to end digital poverty once and for all. To do that we first need to know what the state of play is. This report gives us a detailed and evidence-based understanding of digital poverty in the UK today. Importantly, it will allow us to develop achievable plans for how, working together, we best tackle it."

Niel McLean, Chair, Learning Foundation

The Digital Poverty Alliance

The DPA was established in 2021 by the Learning Foundation, Currys plc and the Institute of Engineering and Technology.

We pull together existing activity, avoiding duplication and work across industry, government and the third sector to align approaches to tackling digital poverty based on the five determinants of it.

Our vision.

To live in a world which enables everyone to access the life changing benefits that digital brings.

Our mission.

To end digital poverty once and for all by 2030.

What we do...

Our main focus is policy and advocacy, gaining the evidence that we need, and bringing the community together to create the social change needed to end digital poverty by 2030.

Our aim is to convene, compel and inspire collaboration for the UK community to lead sustainable action against digital poverty. We will do this through four key pillars of work:

- **Unifying** the community of organisations working in this space to build solutions

- Being **evidence-based** and using behavioural science and research to create impact

- **Advocating** for action to tackle digital poverty at all levels – government to public

- Running **proof of concept projects** to innovate where there are gaps

currys

techUK

#joining
the dots
#digitalinclusion

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Citizens Online

BRC

AbilityNet

Good Things
Foundation

Teach
First

MOVEMENT
TO WORK

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Contents

Acknowledgments

Executive Summary

What is digital poverty

Digital poverty is the inability to interact with the online world fully, when, where, and how an individual needs to.

Why it matters

More than ever, not having access to the digital world means not having access to fundamentals of life. As a result, digital exclusion can exacerbate existing inequalities in society or introduce new inequalities. While the pandemic made us all more aware of the digital divide, it's clear that more progress needs to be made to address digital poverty and its underlying causes.

What needs to be done

Five intertwined "determinants" of digital poverty must be addressed simultaneously to end digital poverty.

Devices and Connectivity

Around 1.7 million households are offline and one in five children who had been home schooling in 2021 did not have access to an appropriate device.[1]

As the gap between people who live in digital comfort and those who face digital disadvantage widens, we need to identify a minimum digital living standard that can adapt as our needs and the digital world change.

Access

In 2020, roughly 96% of households in Britain had internet access.[2] While internet access is important, simply getting everyone online is not enough.

Providing real access includes the accessibility of digital services, platforms, and technologies; online safety, creating technologies and spaces that are inclusive and welcoming for all; and the privacy of digital services and the spaces in which people can use them.

Capability

Around 11 million people in the UK lack the digital skills needed for everyday life, and 36% of the workforce lack Essential Digital Skills for Work. Moreover, only 74% of those who earn up to £13,500 per year have Essential Digital Skills for Life, compared to 95% of those who earn over £75,000.[3]

Closing the skills gap alone will not solve digital poverty. Having a supportive environment at home or at work, which involves positive role models and meets people where they are, is crucial. Developing data literacy will also be important for keeping people safe online and building trust in the digital world.

Motivation

Sixty-nine percent of those without home internet access said that nothing would make them go online in the next year, and 47% reported the reason was that they were not interested or felt no need to use the internet.[4]

Tackling barriers like access and devices can help with this, alongside taking an inclusive design approach built around the experiences of disadvantaged and disinterested groups. There is a need to address the context in which people are encountering the digital world. Are they being forced into using digital? Do they understand and experience the benefits? And do they receive support?

Support and Participation

According to the Lloyds Bank Consumer Digital Index 2021, almost a fifth of those who reported they had not gone online in the last three months said "I want to but I don't know where to get help",[5] and 49% of those who did not use the internet at home could be classed as "proxy users", which means that they had asked someone else to do something for them online in the past year.[6]

Many people do not know about the support available, or the existing models of support do not suit their lifestyle or needs. Both formal and informal approaches to digital literacy are clearly needed. People also fall in and out of inclusion based on life circumstances and will need different kinds of support at different life stages as a result. It is essential to support the supporters that people rely on.

Principles for ending digital poverty

Based on the evidence, the Digital Poverty Alliance has developed five key principles for ending digital poverty once and for all. These will guide the creation of a National Delivery Plan, with specific recommendations for government, public, private and third sectors.

1 Digital is a basic right. Digital is now an essential utility – and access to it should be treated as such.

2 Accessing key public services online, like social security and healthcare, must be simple, safe, and meet all people's needs.

3 Digital should fit into people's lives, not be an additional burden — particularly for the most disadvantaged.

4 Digital skills should be fundamental to education and training throughout life. Support must be provided to trusted intermediaries who have a key role in providing access to digital.

5 There must be cross-sector efforts to provide free and open evidence on digital exclusion.
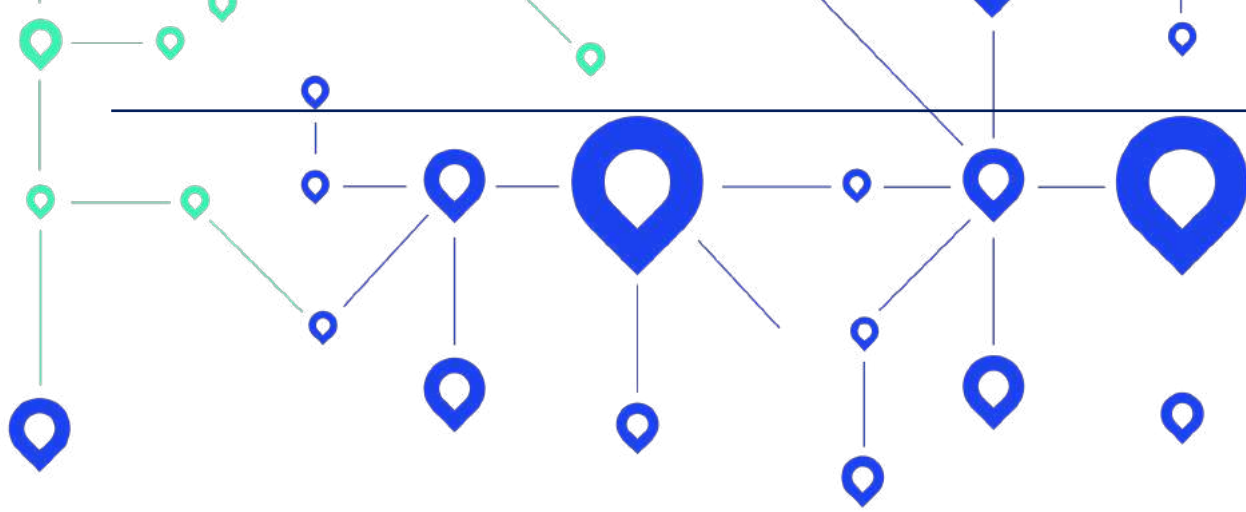
Introduction: Myths and Shifts

In roughly the last three decades, the Internet became widely available to the public through connected devices in schools, workplaces, and the personal computing revolution, and it has transformed our societies, our economies, and our day-to-day lives as a result. It has also *been transformed* through public use. Moreover, the digital world, which was once conceived as a world apart — a place we *visited* — is now the world in which we *live* every day.

In short, today the digital world is ubiquitous, and it is essential. As this report will highlight, it is also unavoidable, even for those without the resources and skills to benefit from it.

Although the concept of a digital divide has existed for a long time, it has also had to change as digital technologies and our relationship to them have evolved. Once conceived as the gap between digital "haves" and "have-nots",[7] years of academic research have revealed the digital divide to be a constellation of diverse and intersecting divides, with salient gaps not just in access to connections and devices but also in skills,[8] literacies,[9] and meaningful outcomes.[10] Digital exclusion in any of these dimensions also *exacerbates* and *is exacerbated* by other socio-economic, educational, racial, linguistic, and gender inequalities.[11]

Policy developments have not only responded to this evolving understanding of digital exclusion, but they have also – sometimes inadvertently – contributed to the conditions of digital exclusion. For example, the widespread transformation of government services to digital-by-default[12] has intensified the social and economic exclusion of certain groups, who have been further marginalised by the need to get online to access basic services.[13] In recognition of the need to address digital inclusion in a pervasively digitising society, the Department of Education published the Essential Digital Skills Framework in 2018[14], and has funded initiatives to help people acquire these skills, such as the Digital Skills Partnerships.[15]

The disadvantages of digital inequality have compounded for decades, but the COVID-19 pandemic irrevocably thrust digital poverty and its damaging effects into the national spotlight. Public spaces closed in order to mitigate the spread of the coronavirus, and everyday life was suddenly confined to the private sphere, online and in the home. Digital connectivity and literacy helped overcome social isolation as many professional jobs transitioned to remote working, schools began offering remote learning, and people engaged with essential services like banking online. People who lacked sufficient connectivity, devices, or skills, however, were at a severe disadvantage. Children without access fell even further behind in education. Adults who could not transition to online work faced more exposure to the virus. Vulnerable and older adults without digital skills were cut off from social support networks and unable to access important health information.[16]

It is impossible to anticipate what the "new normal" will look like, as we learn to live with COVID-19 and aspire toward a post-pandemic equilibrium, facilitated by vaccinations and greater scientific knowledge. One thing is certain: many of the crisis-driven digital transformations accelerated by the pandemic – toward hybrid working, digital health, online learning, and the rapid digitisation of many face-to-face services — will endure. On top of all this, a burgeoning cost of living crisis has now followed closely on the heels of the pandemic, putting mounting pressure on people already living on the brink of poverty and digital exclusion.[17]

In light of the startling social,[18] health,[19] and likely economic impacts[20] of digital exclusion during the pandemic and beyond, there has never been a more important historical moment to reflect on and recalibrate our approach to digital poverty.

Defining digital poverty

The Digital Poverty Alliance defines digital poverty as **the inability to interact with the online world fully, when, where and how an individual needs to.**[21] It is related to concepts such as the digital divide, digital inclusion and exclusion, and data poverty, but it is also distinct. Economist Roxana Barrantes has defined digital poverty as "the lack of goods and services based on ICT", but outlines a taxonomy of digital poverty that accounts for the relationship between social factors and technological access – the digitally poor might be fully offline, lacking devices and connectivity, but they may also be online but unable to realise the benefits due to lack of education or other resources.[22] More recently, Nesta has defined "data poverty" as "individuals, households or communities who cannot afford sufficient, private and secure mobile or broadband data to meet their essential needs."[23]

The Digital Poverty Alliance definition encompasses these definitions and goes beyond, placing the emphasis on individual need. It is consciously imprecise in order to be responsive to a changing digital landscape, raising the benchmark with new technological developments and the increasing digitisation of services. As a term, digital poverty can begin to blur the lines between poverty and exclusion. When does someone go from digitally excluded to living in digital poverty? Is digital poverty a product of or contributor to socio-economic poverty?

The answer, perhaps unsatisfyingly for the reader of this report, is that the line is indeed blurry between digital exclusion and digital poverty. Digital poverty is both – the result of *and* a cause of financial hardship. A person might not need to live in financial poverty to experience digital poverty. Social problems are wicked ones, and the evidence in this report overwhelmingly shows that digital exclusion is much more than simply technological; it is also social – a product and producer of everyday inequalities in society.

Still, digital poverty is a helpful term because it draws attention to this relationship between the technological and the social – it connects the issue of digital exclusion to the well-documented and well-established problem of poverty. This report will be useful to readers interested in digital exclusion or digital poverty, or both. It summarises the evidence linking digital marginalisation to social precarity, though more research needs to be done to define when precarity becomes poverty and whether defining that threshold can help improve people's lives.

This evidence review is organised around the [five "determinants" of digital poverty](#) articulated by the Digital Poverty Alliance: devices and connectivity, access, capability, motivation, and support and participation. The determinant framework draws on the rainbow model of health inequality[24] and recognises that digital poverty is the result of multiple, compounding, and intersectional forms of inequality. It provides a framework within which to explore the complexities of today's digitised service landscape.

One of the key findings in this evidence review has been the fact that the familiar categories of digital exclusion (access and connectivity, for instance) now encompass a more complex range of factors as a result of the digitisation of all spheres of life. The most innovative and effective approaches to eradicating digital poverty depend on moving the starting line to avoid several persistent fallacies, or myths, that have plagued progress on digital inclusion for years, and to account for several significant shifts in the digital landscape that now impact or exacerbate digital inequality. The Digital Poverty Alliance National Delivery Plan should be positioned at this starting line.

Introducing the evidence

The most-cited statistics in the UK pertaining to digital poverty and exclusion originate from two sources: the Ofcom Adults' Media Use and Attitudes report, and the Lloyds Bank Consumer Digital Index and Essential Digital Skills reports. The Office for National Statistics (ONS) also publishes statistics on internet access and use, based on the Labour Force Survey and the Opinions and Lifestyle Survey (OPN). There are notable differences among these frequently cited sources. Both Ofcom and ONS publish this data publicly; it is free and available for analysis by other researchers. These are also large, nationally representative samples. The Lloyds Bank Digital Consumer Index sample is drawn from the 30 million customers across Lloyds Bank, Halifax and Bank of Scotland, from which 2,700 are telephoned for survey interviews. For the Essential Digital Skills Report, Ipsos Mori interviews around 4,000 participants and the responses are weighted to be nationally representative. Lloyds Bank does not make the data publicly available. New surveys and focus groups, such as the Nominet Digital Youth Index, commissioned from Opinium, are capturing additional insights on young people and their parents – but the data from this index is also not publicly available.

Despite the valuable contributions of these data sources to understanding digital poverty, data on digital exclusion and poverty is still fairly limited; national samples are often not granular enough to provide detail on the nuances of people's real lives, and small, context-specific samples cannot be interpreted as representative of broad trends. Many different stakeholders across the public and private sectors produce reports on digital exclusion based on their own surveys, case studies, interviews, and statistics. These vary widely in terms of sampling technique, sample size, research aims, and audiences. The result is a cornucopia of evidence on digital exclusion and digital poverty that paints a picture of genuine need, but it is also a body of evidence that is often fragmented, sporadic, specialised, or not comparable.

> We cannot make sense of any single determinant of digital poverty in isolation.

The determinants form a rainbow of digital exclusion in which various social and technological factors interact with each other in different ways for different users. Ofcom reports[25] that around 6% of households in the UK do not have internet access, which amounts to around 1.7 million households. More and more people are accessing the internet through a smartphone only (21%), particularly those in lower socio-economic grades. Beyond the dichotomy between users and non-users, Ofcom's 2021 report[26] identified a borderline category of "narrow users" – those who have only ever engaged in between one and ten (out of 20) types of online activity, ranging from e-mail to using social media sites to online shopping. As this report will discuss, the absolute distinction between online and offline, users and non-users, is no longer the defining feature of digital exclusion or digital poverty in the UK. This report takes a deeper dive into the evidence and introduces a broader range of literature on digital disadvantage in order to understand this spectrum better.

Statistics Snapshot: The Digital Divide

Office for National Statistics (2020)

- 6.3% of adults in the UK had never used the internet

- 99% of adults age 16 - 44 were recent internet users, compared with 54% of adults aged 75 years and over

- 81% of disabled adults were recent internet users

- 71% of retired adults had used the internet in the last 3 months, compared to 99% of employed adults

Ofcom Adults' Media Use and Attitudes (2022)

- 99% of 16-24 year olds use the internet at home, compared to 73% of those 65 and older

- Those most likely not to have internet access at home are those aged 75+ (26%), those in DE households (14%) and the most financially vulnerable (10%)

- 29% of internet users could be considered "narrow users"

Ofcom Connected Nations (2021)

- 96% of UK premises have access to superfast broadband (speeds of at least 30Mbit/s)

- Around 123,000 premises cannot get a decent broadband service of at least 10Mbit/s download speed and 1Mbit/s upload speed

Oxford Internet Survey (2019)

- 60% of those earning under £12,000/year are internet users

- 36% of those with no formal educational qualifications use the internet, compared to 95% of those with higher education qualifications

Nominet Digital Youth Index (2021)

- 30% (2.1 million) of young people aged 8-25 are at risk of becoming "digital castaways"

- 42% of young people (6 million) do not have either home broadband or a laptop/desktop computer

Lloyds Bank Essential Digital Skills (2021)

- 21% of the population (11 million people) lack Essential Digital Skills for Life, with 10 million of this group lacking even the Foundation Level of skills

- 36% (11.8 million) of the workforce lack Essential Digital Skills for Work

- There are differences among the nations in skills: 81% of people in Scotland have the Foundation Level, 79% in Northern Ireland, 81% in England, 73% in Wales

Lloyds Bank Consumer Digital Index (2021)

- 2.6 million people are still offline

- 14.9 million people have "very low" digital engagement and 5.7 million people have "low" digital engagement

- 55% of those offline earn less than £20,000 per year

- 44% of people with "very low" digital engagement earn less than £20,000 per year (compared with just 17% of those with "very high" engagement)

- 34% of benefits claimants have "very low" digital engagement (5 points higher than the national average)

- 10% of those offline are under the age of 50

Big picture myths and shifts

"Another challenge is to recognise that the 'digital divide' is really a spectrum, and also that the spectrum isn't a static one. What we need and what we want to understand about where the population is on this spectrum will shift, and should shift, over time."

Emma Stone, Good Things Foundation

Several themes cut across all of the evidence on digital poverty. They are the **big picture myths** and **game-changing shifts** that reflect some of the major developments that have occurred in the technological landscape in the last several years as well as our greater understanding of the landscape.

There is a need to move beyond the taken-for-granted assumptions about how digital exclusion manifests and who is most affected by it – these are the big picture myths. At the same time, we know more now than we ever have about the ways in which the digital world can be imbalanced, unfair, and unsafe. These inequalities affect how people fall into digital poverty and how they experience digital poverty, and they have been exacerbated by the rapid, widespread digitisation of everyday life – they are the big picture shifts. In order to tackle digital poverty, the myths must be put to rest and the shifts must be accounted for.

Big picture myths

- **The kids are alright**

There are important demographic divides between those who are online with high levels of skills, and those who are offline with low levels of skills. On the whole, people over the age of 65 are more likely to be offline.[27] This rather coarse statistic has given rise to the myth that young people are naturally "digital natives": having grown up with technology, they will acquire the necessary digital capabilities simply through high exposure. The evidence increasingly refutes this assumption,[28] with factors such as employment status, education, disability, income, and self-confidence cutting across age and impacting people's level of exclusion. Often, unequal access to technology is a feature of schooling, with a growing inequity between affluent schools with more access to and choice about technology, and less well-resourced schools with more limited access and choices. As a result, technology provision in education is deepening existing differences in life chances.

- **Access is access**

In the early days of digital divide research and policy, digital inequality was mainly thought of as the gap between those who have internet access and those who do not. This was called the "first-level digital divide," and it has been thoroughly challenged by decades of further evidence showing that there are second- and third-level divides in skills, usage, and outcomes.[29] Still today, digital inclusion is often treated like a switch that can be flipped on once and stays on for life. However, evidence shows that digital inclusion is a process rather than an event.[30] Differences in quality, reliability, location, and experiences of access all influence whether an individual will be able to make the most of the digital world.

- **Digital exclusion will diminish or disappear over time without intervention**

There is a common misconception that time will solve three of the biggest factors in digital exclusion in the UK – exposure, motivation, and confidence. The logic goes that the more people have to do online, the more people will spend time online, and the better acquainted with the digital world they will become. However, the digital divide has remained a problem for digitising societies since the beginning of the digital revolution – lower prices for hardware, more devices, and widespread connectivity have not *solved* digital exclusion. This is because digital inclusion is relative, the benchmarks are always changing as technology changes, and the solutions depend on social, political *and* technical responses to inequality. Ultimately, only concerted top-down *and* bottom-up efforts to address deep-rooted societal inequalities will help make progress on digital poverty. This dynamic approach demands thinking big and small at the same time, and putting the needs of people first.

Game-changing shifts

• **Digital is not a separate domain, sector, or agenda**

In our increasingly digitised world, the division between online and offline has become completely blurred. One of the tensions in dealing with digital poverty is keeping the spotlight on digital and its contribution to disadvantage, while also stressing that digital is pervasive and cannot be treated as a separate issue or programme. A focus on digital poverty, like the one taken in this report, could be misconstrued to suggest that "digital" constitutes its own domain, separate or on top of other domains of social life, such as education or work. The reality is that digital is embedded in *all* domains. In the words of Ofcom Chief Executive Dame Melanie Dawes, digital is not a separate sector.[31]

• **The digitally excluded are still digital citizens**

Everyone is part of a digital society — whether they are online or not. "Datafication" is the process by which information about people is turned into data that can be processed by computers,[32] and this occurs behind the scenes, whether the datafied person is digitally literate or not. It is important to recognise how the digital world affects everyone – even people who are not actively online or have long periods of digital absence[33] – especially as more of our everyday lives are digitised through the Internet of Things and Smart Cities, for example.

• **The digital world can be unfair by design**

A growing body of literature has emerged on the issue of algorithmic bias[34] and automated discrimination.[35] Tackling the determinants of digital poverty will entail an awareness of the assumptions that go into the design and deployment of technology and how these can replicate and deepen certain inequalities and exclusions. Digital poverty is not just about access to connection and devices; it is also about ensuring the digitised, algorithmic systems do not perpetuate, deepen, or create new disadvantages for people.[36] The automation of many processes and services and the invisibility of algorithmic "decisions" can create a false impression that these decisions are objective and neutral. When frontline staff in essential services rely on these outputs, it can deepen inequalities faced by already disadvantaged groups. In addition, the design of platforms and technologies can actively exclude, mislead, or disadvantage certain users. For example, websites that have not been designed to Web Content Accessibility Guidelines (WCAG) exclude assistive technology users and other disabled users.

"When we started to do this research in 2015, no one really recognised the scale of the problem. Even more so today, digital is the golden thread throughout everything and a key enabler for society."

Joanna Boosey, Lloyds Banking Group

Because of these game-changing shifts, digital inclusion can be a double-edged sword: being included in the digital world is necessary to live a fulfilling life today, but participation in the digital world as we know it also exposes people – particularly people with low literacy and skills – to new disadvantages and even harms. This report strives to spotlight this tension, rather than treating digital poverty as a problem that can be solved by simply getting more individuals online and skilled up.
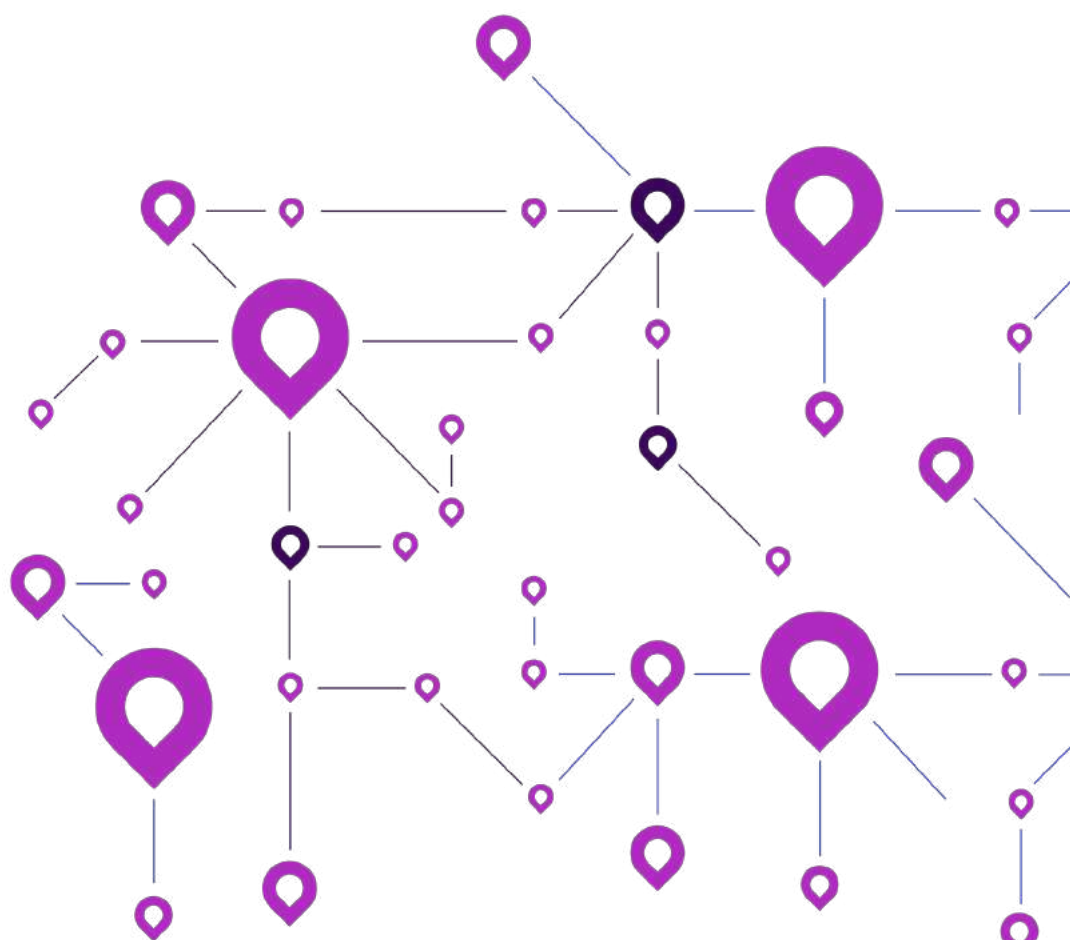
Aims of this report

This evidence review synthesises evidence-based insights that have emerged in roughly the last decade around digital exclusion and digital poverty. Based on a review of academic and grey literature, the report highlights key themes, organised into the five determinants of digital poverty as outlined by the Digital Poverty Alliance. It also surfaces several key recommendations for addressing the complexities of digital poverty today. The review and related recommendations will inform the Digital Poverty Alliance's forthcoming National Delivery Plan.

Rather than focus on what have become familiar headline statistics about the digital divide, each chapter introduces the determinant broadly and then takes a "deeper dive" into the relative disparities and contextual social factors in digital life that might push people into digital poverty in the UK today. The deeper dive adds some nuance and complexity to the definition of each determinant. By training a spotlight on these complexities, the report aspires toward nuanced, critical, and connected thinking about how to make our digitally connected future more equitable, just, and fair for the most marginalised people.

Although the evidence is diverse, it collectively points to a clear awareness of the challenge and an urgent call to action: **digital poverty is a persistent problem that is both the product of and a contributor to societal inequality, and it will not go away on its own. Tackling digital poverty will require connected policies, interventions, and research agendas across the public and private sectors and at national and local scales that put digital equity at the heart of the UK's societal future.**

How to use this report

The evidence consulted for this report articulates the scale and persistence of digital poverty: today millions of people in the UK do not benefit from the digital world as we know it.[37]

The following chapters aim to surface evidence that can help us understand the complexity of digital poverty. They offer a deeper-dive reading of existing qualitative and quantitative research that reveals how social and technical factors interact to sustain digital poverty. Top-level statistics bring the wow factor – they identify broad trends and point to the need for urgent action. But to address digital poverty as an endemic problem, rather than a crisis, we need to spend more time digging beneath those numbers to identify the *how* factor – where to target interventions at the intersection of technology and lived experience.

The chapters can each be read on their own, but the determinants of digital poverty overlap and intersect in real life, so readers should approach this report with the understanding that no determinant (or chapter) exists in isolation.

Review Recommendations

Six key recommendations emerged from the evidence consulted for this report. These recommendations are not sector-specific because the evidence clearly points to the need to share responsibility for ending digital poverty. Some solutions will best be implemented by Government, some by industry, some by the charitable sector, or local authorities and communities.

Digital poverty does not respect sector siloes, and neither should the recommendations for tackling it. These recommendations have implications for all sectors – Government, local authorities, industry, the private sector, the third sector, and academia or the research sector. They have also gone on to inform five specific Policy Principles, developed in consultation with the Digital Poverty Alliance community to take the agenda forward. These recommendations and principles will contribute to the Digital Poverty Alliance's forthcoming National Delivery Plan.

Evidence Review Recommendations

- **Affordable and sustainable inclusion:** Digital inclusion must be made more affordable and sustainable through both stop-gap digital inclusion initiatives, such as device distribution, and long-term community investment that recognises digital inclusion as dependent on broader (non-digital) community resilience and resources.

- **Inclusive and accessible design:** Technologies, platforms, and digital services must be designed to be safe, inclusive, accessible and privacy-protecting from the outset, through participatory design – involving affected communities in the design of technologies that affect their lives – and through effective and enforceable regulation.

- **People-centred and community-embedded interventions:** Digital inclusion policy, interventions, and research need to meet people where they already are by fostering and utilising existing community-based, formal, and informal spaces for inclusion, and focusing on helping people meet their own goals and objectives.

- **Skills to engage and empower:** The skills needed to tackle today's pervasive and complex digital world are more than technical competencies, like typing and internet searching. Digital literacy must treat digital as part of civic life, encompassing critical thinking and awareness of data rights, privacy, and consent.

- **Support for the whole journey:** Digital inclusion needs to accommodate a shifting and increasingly complex digital landscape by supporting people throughout their entire lives and meeting them where they are in that journey – in school, on the job, through the health and care system, and more. Life circumstances and social context are important contributors to digital poverty, so this requires a focus on the offline, social dynamics of disadvantage.

- **Building the evidence base:** Although a lot of research on digital exclusion and poverty exists, there are some significant gaps. Research needs to consider digital poverty in relation to social, economic, political, and health inequality, and vice versa – these issues cannot remain siloed. Data on digital poverty needs to be both quantitative (statistical) and qualitative (interview, observation, and lived experience-based), and it needs to be representative, comparable, longitudinal, and freely available to the public and research community.

The Digital Poverty Alliance Policy Principles

Based on the evidence, the Digital Poverty Alliance has developed five key principles for ending digital poverty once and for all. These will guide the creation of a National Delivery Plan, with specific recommendations for government, public, private and third sectors.

Policy Principle 1

Digital is a basic right. Digital is now an essential utility – and access to it should be treated as such.

Initial recommendations

• Sustainable social tariffs on all broadband providers for people on low incomes should be introduced and meaningfully promoted by services who come into contact with people who are eligible. National and local governments must also introduce inclusion funds to allow key community resources and groups to help get everyone online.

• A legal right to internet access and digital infrastructure should be introduced. This should be more adequate than the Universal Service Obligation and properly regulated and enforced in a way that gives individuals a right to redress.

Policy Principle 2

Accessing key public services online, like social security and healthcare, must be simple, safe, and meet everyone's needs.

Initial recommendations

As we move to an increasingly digital world where fundamentals of daily life are online, platforms, tools and hardware have to be accessible, usable and safe for everyone. Accessibility must be fundamental to all digitisation approaches by government, ensuring digital is not an additional barrier to accessing a service.

• Basic, inclusive design requirements must be enforced for all essential services that ensure people can access them no matter their skill level, differing ability or needs. Dedicated resources within regulators should be provided for this.

• There must be a mandate for all major cross-sector digital services to provide sustainable "assisted digital support" where people's needs are triaged at point of need. This means offering solutions as part of the customer journey, to where they have a gap in provision, e.g., skills, access to connectivity, or offered free or low cost devices.

Policy Principle 3

Digital should fit into people's lives, not be an additional burden — particularly the most disadvantaged.

Initial recommendations

Many of the people who are most digitally excluded don't have the time or motivation to seek out support. Particularly if someone is living on a low income, meeting more immediate needs like feeding a family or affording transport to work will always be top of mind.

• Digital inclusion interventions, from public, third and private sector, need to support already trusted intermediaries to provide the access, skills and support needed. The Assisted Digital Standards should be updated to build sustainable access and skills, not merely assist with a single, one-off interaction.

• Government should ensure that people can afford a basic standard of living that includes digital, as measured by the Joseph Rowntree Foundation's Minimum Income Standards.

Policy Principle 4

Digital skills should be fundamental to education and training throughout life. Support must be provided to trusted intermediaries who have a key role in providing access to digital.

Initial recommendations

Whether in school, on the job, through the health and care system, and more – people will all face different challenges based on their changing circumstances. Everyone will continue to need digital training, whether formal or informal, throughout life.

• Comprehensive digital literacy training in schools and throughout life, including data literacy.

• Training for appropriate frontline staff in healthcare, education, social care, and service industry to identify likely digital exclusion and signpost to support and other resources.

Policy Principle 5

There must be cross-sector efforts to provide free and open evidence on digital exclusion.

Initial recommendations

In order to understand digital poverty, its impacts, how to solve it and how we're doing, we fundamentally need to build a solid evidence base.

• Accepted definitions of digital poverty and a minimum digital living standard.

• Research that shows the real, lived experience of living in digital poverty – its causes and consequences. Real gaps exist on ethnicity and digital poverty – this needs to change.

Methods and Evidence

This evidence review summarises recent evidence about digital poverty across a range of sources, including peer-reviewed academic literature, grey literature, statistical bulletins, news, press releases, and blogs in order to (1) surface more nuanced insights about the different determinants of digital poverty, and (2) pinpoint outstanding research gaps and suggest policy recommendations. This section of the report gives an overview of the evidence that has been consulted for this review, the kinds of evidence that exist around digital inclusion in general, and how and why different sorts of evidence are generated and used by different sectors.

Evidence in the report

This report is a landscape review of the qualitative and quantitative evidence around digital poverty, digital inequality, and digital exclusion/inclusion that has emerged in roughly the last decade. A variety of sources were consulted for this review. Literature was compiled through search engine queries of key terms and searches of scholarly databases, including Google Scholar, Jstor, and the University of Oxford's SOLO tool. In addition, a call went out to members of the Digital Poverty Alliance Community and the broader public to contribute articles and reports for this review, through social media posts and the publication of an Interim Evidence Review in November 2021.[38] The Digital Poverty Alliance also supported a convening of five roundtables in the form of the Digital Poverty and Inequalities Summit, co-hosted by the All Party Parliamentary Groups for Digital Skills, Data Poverty and the Parliamentary, Internet, Communications and Technology Forum (PICTFOR). These discussions also contributed to the framing for this review, and summaries of the roundtables are available on the Digital Poverty Alliance website.[39]

This process generated hundreds of resources on digital poverty. It is not possible to reference or include all of the evidence gathered in the review process in this report, which is a curated collection of insights across this vast array of source material. The report encompasses a wide range of evidence because digital exclusion is an issue that many sectors have grappled with in different ways. It is also impossible to ignore the impact of COVID-19 on the issue of digital poverty. This report includes sources and data collected before and during the COVID-19 pandemic in an effort to track overarching trends in the determinants of digital poverty but also to spotlight some of the important lessons we have learned as a result of the pandemic. The Digital Poverty Alliance Research and Insights database is a useful companion resource for this report, containing a more extensive range of sources on digital inclusion than could be references in this document alone.

It will likely be some time before we know the full scope and scale of the impact of COVID-19 on digital disadvantage, including on how we study it. The important thing is not to lose focus on digital poverty as the shock of the pandemic fades. The crisis has revealed the scale and

significance of digital exclusion, and it is an opportunity to prepare for future crises, too. The task of this evidence review, therefore, is not only to assess what we know but also to identify what we wish we knew in order to make better policy decisions and to design more effective interventions.

The report aims to surface important but often-overlooked aspects of digital poverty. To help understand these issues, the author also interviewed and consulted with experts who lead research on digital poverty in the public sector, private sector, and third sector about how we collect evidence on digital deprivation, why we collect the evidence we do, and what we should be studying to better tackle the challenges. Some quotes from these conversations are included in the report with permission. In addition, the review draws heavily on the author's own knowledge of digital inequalities research and is informed by her experience conducting research and volunteering in the digital inclusion field over many years.

Many reports on the digital divide spotlight statistics from national data, and this report will do that, too. But the deeper dive sections in each chapter are intended to situate these oft-cited statistics in a broader, and increasingly complex, context in which solutions to closing the numerical gaps really lie between the data and the realities of day-to-day life.

To put the different sources of evidence cited in this review in context, the next sections discuss the contributions of quantitative and qualitative research to our understanding of digital poverty – these different data sources are often presented together (as they are in this report), but they have different strengths and weaknesses and have contributed different kinds of insights over time to our knowledge about digital exclusion. Identifying the gaps in the evidence starts with taking stock of the evidence we do have.
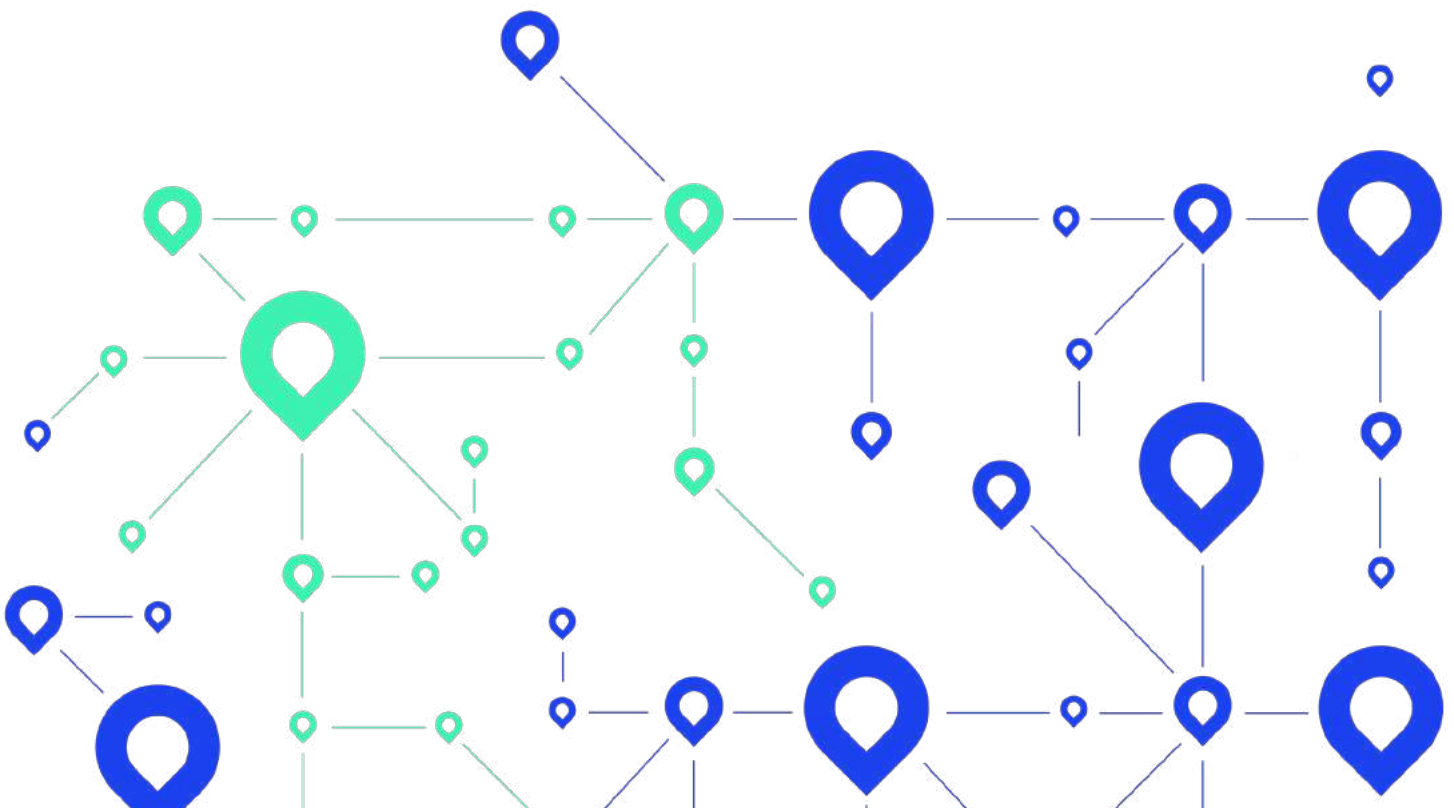
Quantitative Studies

There are several large surveys that measure digital access, use, and participation which are widely cited in the UK in studies on digital exclusion. These include the Ofcom Media Literacy Tracker,[40] ONS Labour Force Survey[41] and Opinions and Lifestyle Survey,[42] which contribute to the ONS statistical bulletins on internet users in the UK, the Lloyds Bank Consumer Digital Index and Essential Digital Skills Reports,[43] and the Oxford Internet Survey.[44] These surveys have large sample sizes and strive to be nationally representative in order to identify trends and give a big picture reading on issues like access to connections, device usage, and motivations for getting online or using technology. In recent years, attitudes to technology have also become important, as people have more choices about how to engage in the digital world, and issues of trust and motivation have been shown to affect people's digital behaviours. Examples of public attitudes surveys about technology have included the People Power Technology surveys from DotEveryone,[45] and the Centre for Data Ethics and Innovation (CDEI)'s Trust in Technology surveys about COVID-19 technologies,[46] although these are no longer running. CDEI also runs a tracker survey on public attitudes to data and AI,[47] which is ongoing.

Surveys are also a common measurement tool for collecting evidence in smaller samples, such as to get a picture of digital inclusion in a sector, project, or a funded programme. They are sometimes accompanied by qualitative interviews or case studies to give a more in-depth picture of the data, and this combination of surveys with focus groups or case studies is a common research practice in the third sector. The Charity Digital Skills Report,[48] the Digital Lifeline Evaluation report[49] or the DevicesDotNow reports from the Good Things Foundation,[50] or the COVID-19 and Digital Inclusion report from the Centre for Ageing Better,[51] are examples of reports that utilise surveys as part of the effort by third sector organisations to take the pulse of their projects and synthesise learnings from frontline service providers or their participants in digital inclusion initiatives.

"Researchers are doing the best they can with the data that are available. [...] But improvements are needed, and it will be key to work together to achieve this. Improving the data is one of the main priorities for ONS's Centre for Equalities and Inclusion as well as for the National Statistician's Inclusive Data Taskforce. It's all about having those conversations and bringing people together, to work on this together – because everyone understands the limitations of their own data. And we make people aware of these as much as possible."

Paola Serafino, Centre for Equalities and Inclusion (Office for National Statistics)

Although surveys aim to be representative and therefore capture important trends across a population or sector, they can often miss important insights because the people who participate have self-selected to complete the survey and respondents have been asked to self-report responses to questions about their behaviours and attitudes. Not all survey data about digital access, use, and participation are publicly available. When survey data is not free to other researchers to analyse, it is also impossible to audit or scrutinise, or to gain insights beyond summary reports. For example, many surveys categorise users based on their responses in the questionnaire, but these categories are composite measures that involve making decisions about what responses to include and how to weight them. Digital exclusion is complex, so those choices influence what the data ultimately say about "non-users," "limited users," or "proxy users." And without making those decisions and the underlying data public, these categories cannot be compared across studies, or recalculated by other researchers in light of new insights. Academic work using national data sets therefore usually relies on Ofcom data, which is freely available for this kind of analysis.

Qualitative Studies

Qualitative studies of digital exclusion aim to provide depth of understanding on the determinants of digital poverty from small samples of participants based on case studies, workshops, focus groups, semi-structured interviews, and ethnographic or participant observation. They yield more descriptive insights on people's specific needs, expectations, and lived experiences, and therefore help to drill down into the data to understand how trends seen on a regional or national scale affect people in their everyday lives. They can also humanise the problem of digital poverty by telling personal stories.

Examples of qualitative research on digital exclusion include the Ofcom Adults' and Childrens' Media Lives studies,[52] a longitudinal ethnographic study; the Me and My Big Data project,[53] which used focus groups along with surveys to study adults' media literacy; and research conducted by third sector organisations in their communities, such as the Centre for Ageing Better and Good Things Foundation's "I am connected" report[54] on supporting digital inclusion in later life. This is not an exhaustive list; some academic research uses in-depth qualitative methods, such as a two-year study on a digital inclusion programme for schools by Huw Davies, Rebecca Eynon and Sarah Wilkin,[55] or the author's own work with Grant Blank and Annique Wong on public libraries.[56] And many third sector reports in particular draw on qualitative interviews for case studies and quotes in their reports.

But with descriptive depth comes a loss of generalisability. At this more intimate, micro scale, there are likely to be more differences between findings across different studies. Still, qualitative research can shed light on people's lived reality, which is important because digital poverty, as it is experienced by technology users, is not the result of any single determinant — it is complicated, messy, and what researchers call "intersectional," meaning that it is the product of combined social, political, economic, and personal dynamics that make up an individual's identity.[57] For this reason, some of the most important evidence gaps across all five determinants of digital poverty are qualitative – understanding the specific characteristics, identities, and contexts of people that influence their inclusion or exclusion.

Determinant 1: Devices and Connectivity

The Government's digital transformation agenda ushered in a channel shift to digital starting around 2010, and has led to the rapid digitisation of many essential public services, alongside a parallel transition to digital-first or digital-only services in the private sector. This step change in the way that people access services has effectively made internet connectivity and device access necessities. Without these basic resources, people cannot access the digital world, and they cannot acquire the confidence and literacy needed to benefit from it. Today, millions of households remain offline and face digital poverty, but internet access and devices are widespread. This determinant of digital poverty is about overcoming the basic barriers of connectivity and access, while also recognising that the bar for accessing these resources is a moving target. In a pervasively digitised country like the UK, *relative* digital deprivation in terms of devices and connectivity is making the gap between the digitally affluent and the digitally poor ever greater.

Deeper Dive

Absolute measures of being "on-" or "offline" are increasingly less salient than relative differences in quality and affordability of connections, number and type of devices, and the experiences and outcomes people gain from the digital world. This recognition has strong parallels in research on socio-economic deprivation and poverty, where the concept of relative poverty has helped to tackle inequality within developed and developing economies.[58] In highly digitised societies like the UK, differential or relative access – such as differences in speed, reliability, and hardware   have a significant impact on an individual's degree of digital inclusion or exclusion. Beyond simple access alone, digital poverty is also determined by a constantly shifting digital landscape, characterised by planned obsolescence of hardware and software. This rapid, constant change in terms of what is required to participate fully in the digital world leaves people behind if they have out-of-date technologies and skills.

Even though the absolute divide between those with internet connections and those without has dramatically narrowed in the UK (in 2011, 20.3% of the UK population were non-users of the internet, compared to around 8% in 2020),[59] the uneven availability and speed of connections for people in different social, economic, and geographic circumstances remains a significant determinant of digital exclusion and poverty.

The COVID-19 pandemic starkly exposed this persistent divide. Although national statistics suggest that around 98% of the UK should be able to access a decent internet connection, 1.5 million adults were offline when the pandemic hit, and between 1.2 and 1.7 million children had no home access to a laptop, desktop or tablet.[60] The Government supported a device distribution scheme that gave out over 200,000 devices and over 50,000 routers,[61] but as the Children's Commissioner pointed out, this only accounted for 37% of disadvantaged children in need of connectivity or a device.[62] Device donation schemes sprang up across the country to meet local needs, training the spotlight on inadequate connectivity and access as a key factor in digital exclusion.

But evidence shows that the bar for meeting crisis needs may be too low for meeting the digital demands of everyday life. To ensure that people have adequate connectivity and appropriate devices to overcome digital poverty, policy must address relative differences in connectivity and device access and use. Sufficient device access and literacy go hand-in-hand, and more equitable device access and connectivity will need to be more environmentally sustainable device access and connectivity as well. This chapter therefore examines three factors that are having an impact on devices and connectivity as a determinant of digital poverty: relative differences in connection speed, cost, and geography; the lack of multiple device access and device-limited literacy; and the issue of environmentally and socially sustainable devices and connectivity.

Relative differences in devices and connectivity

Today's bar for access to connectivity and devices is higher than ever before because the digital world is more pervasive and demanding than ever before. A 10 Mbps connection speed is sufficient for doing e-mails and loading most static websites, but to livestream a Zoom call, connections need to be much faster; to conduct several Zoom calls simultaneously in the same household requires a connection that is faster still. This level of connection is not a luxury. It is increasingly required to access online learning, interview for jobs, and more.

This is just one example, but it illustrates a new reality: that the minimum standard for living a comfortable digital life in the UK is higher than simply having a device and connectivity available.[63] Poverty, device access, and cost, coverged in many damaging ways during the pandemic that had been less visible in non-crisis times. For example, according to a report by the Sutton Trust,[64] just 10% of teachers said their students had adequate access to a device for remote learning in the first week of lockdown, and a survey by TeachFirst reported that 84% of schools with the poorest students did not have enough devices and internet access to ensure they could keep learning.[65] As the pandemic has made apparent, the cost of connectivity is often closely linked to the devices or hardware that people use to access the internet. Inadequate connectivity, in terms of availability and speed, is often exacerbated by inadequate devices for doing everyday tasks.

The Alliance for Affordable Internet has outlined a more robust "meaningful connectivity" standard, which involves everyday access to an appropriate device, enough data, and a fast enough connection.[66] Good Things Foundation's Data Poverty Lab has proposed five standards for digital poverty solutions: they should be cheap, handy, enough, safe, and suitable.[67] UNICEF has also called for safety as a basic requirement for internet access, especially for children.[68] What these proposals share is a recognition of the fact that adequate or basic digital provision depends on several interrelated factors, including speed and cost, as well as individual needs in a constantly shifting digital landscape.

Speed

In the UK, Ofcom data indicate that 96% of premises can access superfast internet (30 Mbps). Around 2% of properties cannot access the decent broadband standard of 10 Mbps from a fixed line connection, of which more than half are rural properties.[69] Even within urban areas, where only 1% of properties cannot receive a decent fixed line connection, the distribution of that 1% is highly uneven, with pockets of disconnection that these seemingly small percentages obscure.[70]

The National Audit Office reports that almost 1.6 million properties do not have access to a 30 Mbps connection (considered the speed required for streaming video), and around 600,000 lack even a 10 Mbps connection.[71]

To tackle this disparity, in 2020 the Government introduced the Universal Service Obligation (USO) for broadband, which recognises a basic standard of a 10 Mbps download/1 Mbps upload speed and gives people the right to request a better connection if their connectivity does not meet this threshold.[72] On the face of it, the USO confers a degree of enforceability to increasing calls, including from the House of Lords, to treat broadband as an essential utility.[73] However, the USO guarantees UK households baseline speeds that are arguably insufficient for everyday use, particularly in a pandemic context in which several people might be working and learning from home in the same household. Activities like streaming video or live calls require faster connections than e-mail or web browsing, and the pandemic rendered these speed-demanding activities more common and more essential. In addition, the cost cap on services of £45 per month is too expensive for many UK consumers,[74] the most excluded and remote properties incur huge build and installation costs for getting connections from USO providers BT and KCOM,[75] and USO requests can take years to fulfil at a time when the need to get online is urgent.

Statistics Snapshot

Ofcom Connected Nations (2021)

- Of the roughly 2% of properties in England unable to get even 10 Mbit/s connections, over 50% are rural

- 9% of rural properties cannot receive decent broadband from a fixed line, compared to 1% of urban properties, and 2% in the UK overall

- In the UK overall, 96% of premises can access superfast internet (30 Mbit/s), but only 83% of rural premises can

Lloyds Bank Consumer Digital Index (2021)

- 27% of people offline say that they would be encouraged to get online if they had better WiFi or broadband coverage in their area

- Among people who have not used the internet in the last 3 months, 17% say it is due to poor connectivity or slow speeds; 14% say they don't have access to broadband in their area

But the offline population is much larger than just those without decent broadband coverage – nearly 1.7 million households by Ofcom's estimate.[76] And even among people who occasionally or frequently get online, research increasingly shows that many people – and even up to 50% of people – have no or limited digital skills.[77] This evidence points to the fact that having an available connection is not the same as being able to use it – or to afford it. Therefore, it is important to distinguish between available broadband coverage and affordable broadband coverage.

Cost

Relative cost of connectivity is yet another dividing line contributing to this determinant of digital poverty. Many non-users say that a cheaper cost for broadband or devices would encourage them to get online, and families squeezed by the pandemic have reported needing to choose between paying for WiFi or buying essential goods.[78] The pandemic has further strained household broadband budgets, as broadband has both become more essential and people have experienced more income and employment precarity. According to Citizen's Advice, 2.5 million people are behind on their broadband bills. Younger people (18-34 years old) are three times more likely to be behind, and households on Universal Credit are nine times more likely to be behind.[79] The cost of living crisis is putting an additional burden on families, and along with the price of essentials like heating and food, broadband costs are also rising. Twenty-five percent of respondents in a survey commissioned by the price comparison site, Choose, said that they would find it financially difficult if their broadband bills go up by the predicted 10%.[80]

In addition, different kinds of connections incur different costs. National surveys show that poorer people rely on mobile phones for connectivity more than people in higher socio-economic grades. Ofcom reports that 31% of those in socio-economic grade DE are smartphone-only internet users.[81] Mobile data prices are consistently higher than fixed line prices in the UK,[82] meaning that the poorest users are often paying for the most expensive connections for a more limited service, as many common tasks are more difficult to complete on smartphones. Ofcom reports that 35% of smartphone-only users try to complete online tasks as quickly as possible to avoid using too much data, and 55% say completing online forms or working on documents is harder than on a desktop or laptop (27% said they didn't know).[83]

Statistics Snapshot

Lloyds Bank Consumer Digital Index (2021)

- 28% of people say that cheaper cost of devices would encourage them to use the internet; 31% say cheaper cost of data would help; and 33% say cheaper cost of the Internet would help

- Among people who have not used the internet in the last 3 months, 47% say they would rather spend money on other things, and 26% say it is too expensive

Ofcom Adults' Media Use and Attitudes (2022)

- 82% of those in social grade DE use the internet at home compared to 97% in grade AB

Ofcom Affordability of Communications Services (2022)

- 5% of households struggle to afford their fixed broadband service, similar for their mobile smartphone services

- For broadband households on means-tested benefits, around 10% are experiencing issues with affordability of fixed broadband service

Centre for Ageing Better and Citizens Online (2021)

- Although the majority of 50-70 year olds are internet users, 27% of 50-70 year olds with an annual household incomes under £25,000 were offline before the pandemic and the majority of those aged 50-70 who are offline are those living on household incomes under £25,000 (around 994,000 people)

Oxford Internet Survey (2019)

- 14% of those earning under £12,500/year are mobile-only users, and a fifth of those earning between £12,500 and £30,000 are mobile-only users

- 42% of those earning under £12,500 have both a mobile device and a computer to access the internet, compared to 81% of those earning over £50,000/year

The cost of data has given rise to the concept of "data poverty," meaning the inability to afford sufficient, private, and secure mobile or broadband data.[84] Good Things Foundation has established a Data Poverty Lab, working directly with people with lived experience of data poverty to understand which solutions work best for them,[85] and in 2021, an All-Party Parliamentary Group on Data Poverty was established to tackle the issue.[86] Social tariffs for broadband have provided some relief for households and individuals struggling with data poverty, but research by Ofcom has found that despite being available to more than 4 million households receiving Universal Credit, only 1.2% of those eligible had taken advantage at the beginning of this year.[87] This points to a need for more robust and effective messaging, signposting, and support so that people can actually access the opportunities to tackle this determinant themselves.

Regional and Geographic Differences

Perhaps the greatest absolute difference in terms of availability of decent broadband is between urban and rural communities in the UK. In 2020, of the roughly 2% of properties unable to get even 10 Mbps speeds in the UK, over 50% were rural.[88] The rural/urban digital divide intersects with other forms of disadvantage faced by rural communities, such as lower economic productivity, lower levels of education, and fewer employment opportunities,[89] all of which contribute to digital exclusion. In turn, digital exclusion further entrenches to these forms of disadvantage.[90]

Statistics Snapshot

Lloyds Bank Consumer Digital Index (2021)

- 95% of people in England are online, as are 96% of people in Scotland, compared to only 88% of people in Wales

Ofcom Connected Nations (2021)

- 83% of rural properties in the UK can access superfast broadband, but this drops to 80% in Wales, 73% in Scotland, and 70% of rural premises in Northern Ireland

The Office for National Statistics Exploring the UK's Digital Divide (2019)

- London has the lowest proportion of internet non-users (7.0%) while Northern Ireland continues to have the highest proportion (14.2%), followed by the North East of England (12.1%)

And national statistics might mask some of the profound regional and community level differences in quality of connections. A 2020 survey by the National Farmer's Union, for instance, reported that 32% of their respondents had less than a 2 Mbps connection at home.[91] Coverage statistics, whether reported through national surveys or geographic data provided by the telecom industry, can give the impression that certain communities are adequately connected, when lived experience would suggest otherwise.[92]

"Although some data is collected around ethnicity, a much bigger sample is needed to understand properly how ethnicity (for example) intersects with digital inequalities. And there can be a disconnect between what the data tells us and what we know from the experience of people in communities and community organizations, where you just see those issues about poverty and housing and ethnicity and digital exclusion and English language barriers all coming together. The lack of sufficient data has knock-on effects in other areas - such as planning and allocating resources in different sectors."

Emma Stone, Good Things Foundation

Closing the gap between rural and urban communities could provide a significant boost to the economy, with additional social inclusion benefits for rural residents. In urban areas where there is coverage, the cost of broadband often keeps people from subscribing – a factor contributing to digital poverty that links cost and geography.

Number of devices

In the same way that having a *faster* internet connection now influences how a person can engage with the digital world, the *number and type* of devices that people use to access the internet also impacts their ability to participate and benefit from internet connectivity. Growing evidence indicates that having and using more devices (mobile phones, tablets, laptops, and desktop PCs) correlates with higher socio-economic status and greater digital literacy.[93]

As with connectivity, however, it is also important to keep both absolute and relative differences in mind simultaneously. Having just a single device to get online can make a huge difference to a person's confidence, ability, and outcomes — as a great deal of qualitative evidence, especially from the charitable sector, illustrates.[94] This is, to borrow an expression from a librarian interviewed in the Oxfordshire Digital Inclusion Project, about getting onto the "first rung of the ladder."[95] And it is better than nothing.

But while a proliferation of different types (and prices) of devices has arguably enabled more people to get connected, it has also led to a wide range of *different experiences* of being online, which results in advantages for some and disadvantages for others. Some studies show the emergence of a "narrow user"[96] who only uses the internet in limited ways, often due to access to fewer devices. And research increasingly shows that people find it hard to do everyday tasks on certain devices, such as completing job applications on a mobile phone, or attending online classes and writing essays on a tablet.[97] Narrow users also face other disadvantages, such as greater risk of online harms.[98]

Having multiple devices is expensive, and many services not only assume users have multiple devices, but that those devices are new models with the latest software and operating systems. Recycling and reusing devices has helped people during the pandemic, but it could also be a more long-term, sustainable solution to many access needs. Digital technologies are not often designed with longevity in mind, but a shift toward more sustainable design could help address not only environmental issues, but digital exclusion as well.
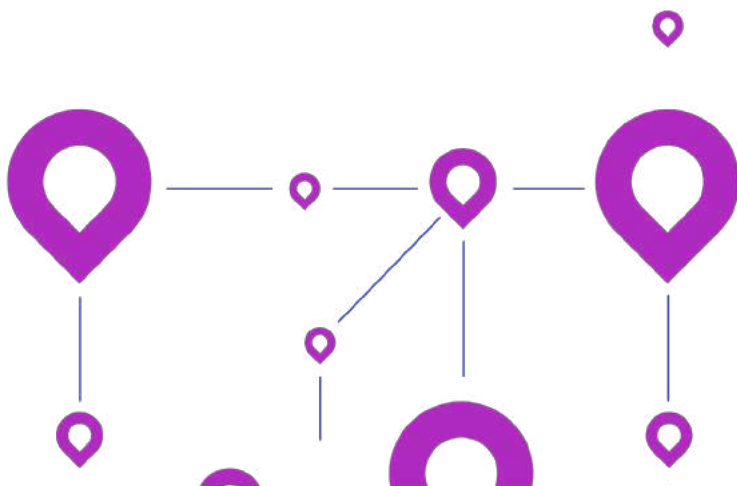
Statistics Snapshot

Ofcom Adults' Media Use and Attitudes (2022)

- 21% of internet users only used a smartphone to go online

- People aged 25-34 are more likely to be smartphone-only users, as are those in the C2 or DE socio-economic groups

- 24% of 16-24 year-olds, 32% of 25-34 year olds, and 23% of 35-44 year olds use only a smartphone to get online

- Those over the age of 65 are most likely to use a computer to go online

Oxford Internet Survey (2019)

- 15% of internet users are mobile-only users

- 63% of internet users have a computer and a smartphone to get online

Nominet Digital Youth Index (2021)

- 15% of young people have a smartphone but no access to a laptop or desktop computer

- 32% of young people do not have access to home broadband; almost half of over-18s reported not having access to internet at home

- 30% of those living in households with a combined income below £20,000 do not have access to a laptop or computer, 10 points higher than the average

Socially and environmentally sustainable access

Future-proof solutions to digital poverty will require anticipating the long-term digital needs of people and fostering a digital ecosystem that promotes digital equity. System-level policy and technology design decisions have a downstream impact on device and connectivity-related exclusion. For example, the Public Switched Telephone Network (PSTN), the analogue infrastructural basis for a lot of the UK's telecom technology for over a century, is due to be switched off in 2025 and replaced with digital-only telephone services (VoIP).[99] Although a digital transition has been underway for years, and more and more telephony services are provided over internet protocol (IP), this transition risks suddenly leaving many people without a telephone connection.

Up to 3% of households have only a PSTN landline and no broadband connection, and there are many other services, like certain emergency alarm systems, telehealth and telecare systems, CCTV, business telephone networks, and even parts of the broadband infrastructure system that also rely on the PSTN network.[100] As a result, the impending switch-off could exacerbate digital exclusion, leaving people – including people with care and support needs – without internet connections or skills even more isolated, as their analogue communications technologies are made obsolete. This could be especially pronounced for people for whom their only device or connection is dependent on the PSTN network.

All of the proposed updated standards for adequate connectivity and device access acknowledge the importance of the long-term reliability of access. Long-term reliability is directly linked to the availability of connections through robust infrastructure and the provision of connectivity at an affordable price. But it is also linked to two further issues: the planned obsolescence of devices and software and the environmental impact of digital infrastructure and data consumption.[101]

"We do not have just complexity. We have Dynamic Complexity. A large part of the problem that we have is caused by change."

Maurice Perks, IBM Fellow (Retired)

In order to tackle the climate crisis, there is increasing evidence that digital infrastructure and data usage must be underpinned by green energy and future-focused strategies for sustainability.[102] Energy consumption (of networks, including data transfer and processing) and e-waste (including the long-term production of non-recyclable garbage, such as "space junk") needs to be considered in the deployment of connectivity solutions to close the digital divide. There is also growing evidence that incorporating local knowledge of natural landscapes, customs, and traditions into the building of digital infrastructure, like fibre-optic networks and Wireless Internet Service Providers, can help mitigate environmental impacts.[103] Thinking about climate impacts *now* can mitigate disruptions to connectivity later on, when networks will inevitably need to be upgraded to greener technologies and processes.

> "I think the technology companies with their planned obsolescence, the incompatible nature of some software, it must be a very disorientating world out there. Well, it is, for all of us. And it's deliberately so. [...] Whereas we're trying to do the opposite and demystify and help and keep things consistent, have the right software that's compatible for people, provide things for free [...] So it's almost like we're the counter-narrative to the commercial drive of digital, which is why I'm always in this ambivalent relationship with the digital – because a lot of it is driven by, you know, the consumerist world we're in. So we [at the library] are having to offer the level playing field, I think."
>
> Librarian, Oxfordshire County Library (personal interview, 2020)[104]

And finally, "planned obsolescence" — when the eventual un-usability of a device or software is built into the design from the start — means that many devices cannot be easily recycled or repurposed. Enabling people to fix their own devices indefinitely would keep the costs of device ownership down in the long run and also create a more robust, lower price market for pre-owned devices.[105] Today, owning an older device automatically disadvantages users, as new operating systems become incompatible with old hardware, and new services and interfaces designed to be digital-first are often designed for the newest hardware. A more sustainable, repair-rather-than-replace business model for technology could therefore not only benefit marginalised users but also reduce e-waste – a socially and environmentally sustainable way of tackling digital inequality.
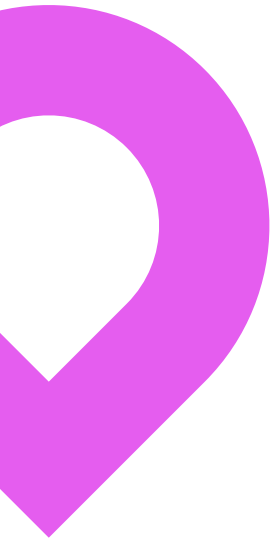
Determinant 2: Access

Access is usually the main focus of digital inclusion agendas, and it remains central to policy narratives around closing the digital divide.[106] As discussed in the introduction, digital poverty is poverty. It is difficult to make progress on a digital poverty agenda in no small part because poverty is a causal factor in digital exclusion, and digital inclusion is posited as a mechanism of poverty eradication. However, digital poverty is more complicated than a question of socio-economic deprivation, and overcoming it will not solve the problem of poverty in general. Instead, access needs to be treated as a social as much as a technological issue, and this chapter focuses on several barriers to access that are the product of social and technical inequalities combined.

Deeper Dive

Access is not solely about the availability of connections and devices. It also involves recognising that people's experiences of using digital technology can be empowering or disempowering, even once they have overcome the absolute exclusion of being offline. Addressing the problem of access solely by striving to *get everyone online* will not mitigate the underlying causes of digital inequality, exclusion, and poverty. Scholar Daniel Greene calls this panacea approach to access the "access doctrine" – the idea that new technologies and technical skills can solve the problem of poverty by giving those left out of the digital world the chance to "catch up and compete." It is politically useful, he writes, but not effective or practical.[107]

In reality, the social world needs to become more equitable and inclusive to truly level the digital playing field, not the other way around. Digital inclusion scholar Ellen Helsper similarly refers to the "socio-digital" dimensions of digital inequality – social *and* digital.[108] For the purposes of this chapter, these insights point to a need to consider how society and digital technologies interact to exclude people – how the digital world often replicates and exacerbates detrimental social and economic patterns because those patterns are built into the technologies and technological systems themselves.

> The interaction of both social and technical factors perpetuate poverty and digital exclusion in a vicious cycle.

Getting and keeping people online therefore depends on designing and building a digital world for *everyone*, taking into account: accessibility, safety, privacy, and space. Ensuring people can access the digital world requires consulting and involving users with different, diverse needs in the design of digital technologies and systems. The following sections explore how accessibility, safety, privacy, and space are each implicated in providing adequate access and eradicating digital poverty.

Accessibility

Digital technologies have the potential to radically improve the lives of people with physical or cognitive impairments and differences. For example, voice-activated technologies, like smart speakers, can help partially sighted or blind people do more tasks independently.[111] Remote video GP appointments can help elderly people with limited mobility access medical care.[112] But the reality is that despite the successes of many assistive technologies, the evidence shows that the digital world remains particularly inaccessible to disabled people. According to national statistics, disabled adults make up disproportionately large proportion of adult internet non-users. Disabled people are more likely to be offline or to be lapsed users of the internet, and they are more likely to report lower levels of confidence and skills. There are many factors that contribute to this persistent exclusion, but two important factors stand out: digital design and cost.

"More than ever, the Digital Divide is impacting on the lives of the most disadvantaged in our communities. It is important that a sustainable approach is taken to address this. Providing devices and data for individuals without identifying what will motivate them to take their first steps or providing the right kind of support and guidance to build digital skills could be a missed opportunity to provide positive impacts and improvements to their lives. For disabled users this is even more important. Barriers exist in the digital world as well as in the physical world. Providing timely advice on assistive technologies, operating system adjustments, hardware and apps that can help is crucial in building the confidence of users and demonstrating that independent use of digital is possible for everyone."

Amy Low, AbilityNet

In 2018, the Government issued accessibility regulations for public sector websites, but today, most websites still do not meet basic accessibility standards, and the regulation does not apply to private industry.[109] Accessibility standards include visual displays that accommodate colour-blindness and text and menus that can be read by screen readers. Digital platforms – from websites to apps – are often text-heavy, which can be challenging for people with dyslexia or speakers of British Sign Language, which has different grammar and syntax to English. A report by Socitm looking at UK council websites found that 74% of the sites tested lacked text with adequate contrast or navigation menus formatted for screen readers, and more than 87% of websites tested had at least one instance in which a form field was incorrectly labelled, which inhibits "autocomplete" – a useful feature for disabled users.[110]

Statistics Snapshot

The Office for National Statistics Exploring the UK's Digital Divide (2019)

- Disabled adults make up a large proportion of adult internet non-users; in 2017, 56% of adult internet non-users were disabled, much higher than the proportion of disabled adults in the UK population (around 22% in 2016/17)

- For internet non-users aged between 16 and 24 years, 60% were disabled in 2017, a proportion that is the same as for those aged 75 years and older

Lloyds Bank Consumer Digital Index (2021)

- People living with impairments are 9 percentage points more likely to be non-users of the internet (87% versus 96% of those living without impairments)

- People living with impairments are under-represented among those newly working from home (only 24% compared to 41% of those without impairments), as well as those using COVID-19 related services (35% compared to 42%)

- Assistive technologies (including voice assistants and screen readers) are more likely to be used by people with High or Very High digital engagement, which suggests that they are not easily accessible for those with impairments who are less digitally active

- People living with an impairment are 10 percentage points less likely to say that technology makes their lives easier than those living without an impairment

Lloyds Bank Essential Digital Skills Report (2021)

- 68% of those living with an impairment have the Foundation Level of skills (versus 87% living without an impairment)

- 52% of people lacking Essential Digital Skills for Life are living with an impairment

In order to ensure the digital world works for everyone, digital platforms and technologies need to be built by and with people with disabilities, centring on the disabled rights principle of "nothing about us without us."[113] Digital design often stops short of incorporating the social model of disability, which explains how people are *dis*-abled by barriers (physical and social) in society, not by their differences.[114] Crucially, this model points to the responsibility of society as a whole to build digital technologies and spaces that are inclusive from the outset.

Where digital design fails, it is often in ignoring the underlying ableist assumptions that have been built into seemingly innocuous features, such as reCAPTCHA, the verification test that purports to distinguish humans from bots and protect websites from spam. ReCAPTCHA presents challenges for people with certain impairments, as the text is intentionally difficult to read, and the prompt often times-out after a while, meaning that people who struggle to enter responses quickly face challenges using it. Rather than distinguishing between humans and bots, this feature inadvertently excludes humans with certain impairments. As academic Karen Nakamura puts it, this simple design feature deprives disabled people of their humanity.[115]

Assistive technologies can help people access the digital world, but they can also be too expensive for some people, making cost a barrier to accessibility, a key factor in access.[116] Taken together, these insights point to a need to tackle the underlying causes of digital poverty for disabled people who are consistently among the most digitally disadvantaged in the UK, starting with digital design and assistive technology cost.

Safety

The evidence also points to the importance of safety as an aspect of access that increasingly determines the quality of people's experiences online and their willingness to participate online. When people have negative experiences or fear negative experiences online, they are less likely to use digital technologies or develop digital skills. Therefore, issues of safety and privacy are integral to access and other determinants of digital poverty, such as motivation. Online bullying, scams, misinformation, identity theft and data breaches are among the common concerns people face in their digital interactions,[117] but they tend to be disproportionately experienced by already marginalised groups, like those living in poverty or those living with a disability.[118] Getting and keeping people online so that they can access essential services and benefit from the digital world is therefore contingent on mitigating the harms that people experience through digital platforms and technologies.

Statistics Snapshot

Lloyds Bank Consumer Digital Index (2021)

- Among the 14.9 million people with low digital engagement, 74% are concerned about using sites/tools to enter personal details; among the 9.8 million people with very high digital engagement, 58% are concerned about using sites/tools to enter personal details

- 51% of those offline say they are worried about privacy and security and having their identity taken; 44% say they are worried about how organisations use their data (up by more than 10 points since 2020)

- 36% of those offline say that more transparency about the data organisations have on them and how they are using it would encourage them to get online

- 44% of those offline say that the ability to easily stop organisations from using their data would encourage them to get online

Ofcom/ICO Survey on Online Harms (2020)

- 62% of adults and 81% of 12-15 year-old internet users have had at least one potentially harmful experience online in the past 12 months, with adults most likely to have experienced spam emails (32%), scams/fraud (22%) and fake news (16%) and 12-15 year olds most likely to have experienced offensive language (39%), spam (31%) and unwelcome friend requests (29%). A quarter have experienced bullying (26%) or trolling (24%)

Ofcom Adults' Media Use and Attitudes (2022)

- 65% of people who use the internet say people need to be protected from harmful content; and this view is more commonly held by women than men

- 83% of internet users say they are confident in their abilities, but that drops to 61% who feel confident in knowing how to manage their personal data online

Oxford Internet Survey (2019)

- 70% of respondents said they are not comfortable with companies tracking them online

- Non-users are 20 percentage points more likely to be concerned about privacy threats online (72% versus 52% among users)

- Only 29% of non-users think that technology is making things better

Nominet Digital Youth Index (2021)

- A third of 17–19-year-olds (32%) say the internet has a negative impact on their mental health and nearly half of young people (44%) say they feel isolated

- Nearly 3 in 5 (58%) young people in the LGBTQ+ community have experienced hate speech online

- 43% of Black, Asian, or other ethnic minority young people have experienced hate speech online compared to 34% of White young people

- 83% of young people aged 11 or above have experienced something that they found upsetting, including fake news, hate speech, sexual content and contact with strangers

Evidence is beginning to show that both real-life experiences and news coverage of harms are increasingly damaging public trust in the veracity of online information, the privacy of their content and data, and the social benefits of digital communication.[119] On the one hand, this evidence could be interpreted as public resignation to the status quo: this is just how it is, and after all, digital participation has still grown overall year-on-year. But on the other hand, it could also be read as a concerning shift in sentiment, from technological optimism toward greater technological pessimism – even if people continue to engage online out of necessity.

Online harms also have offline consequences, which can contribute to the reinforcing feedback loop of online and offline marginalisation (digital poverty perpetuating or exacerbating other disadvantages). Scholars have long argued that the emotional, economic, social, and cultural impact of digital interactions both shape and are shaped by the societies we live in. We are social and socialised online and offline, and the more pervasively digital our societies become, the more obvious the impacts are: online financial scams can lead to or exacerbate economic hardship, online bullying can lead to mental health challenges, and online misinformation can contribute to public health crises.

The UK's Online Safety Bill aims to mitigate some of these harms by holding internet platform companies to account,[120] but the scope and scale of this issue will undoubtedly exceed the bounds of the legislation. Online safety is a complex issue of social change, design decisions, and online data privacy norms. It presents a strong case for understanding digital policy as a cross-sector, social, and technical challenge. As this evidence suggests, it is also integral to digital inclusion and eradicating digital poverty.

Privacy and space

One of the emergent themes of this evidence review has been the importance of relative differences and divides in terms of the determinants of digital poverty. When it comes to access, there is growing inequality between people who have access to private, secure, safe, at-home connections and devices, and those who rely on public access and devices. And the difference between private and public access has implications not only for connectivity but also for skills.

Statistics Snapshot

Oxford Internet Survey (2019)

- 19% of people who use the internet report using it in a library; 60% at school or work; 68% use free WiFi; 72% on mobile devices; and 99% at home

Nominet Digital Youth Index (2021)

- Nearly half of all young people (45%) rely on other ways to connect to the internet instead of through home broadband

The COVID-19 pandemic spotlighted these differences. When public spaces closed to limit socialising and transmission of the virus, people who relied on public libraries or cafés with free WiFi went from precariously included to excluded.[121] This sudden restriction of public spaces also illustrated how life circumstances can affect digital inclusion. People do not just progress from excluded to included in a linear direction of travel toward greater digital skills and better outcomes. Instead, people might be more or less included at various points in their lifetimes. And as the pandemic revealed, people can fall out of inclusion due to circumstances associated with their *relative* digital deprivation. Compared to families with access to multiple devices and a high-speed, at-home internet connection, families who relied on libraries for instance, were at a severe disadvantage.

In research the author conducted with colleagues in Oxfordshire public libraries, 28% of library computer users did not have the internet at home. And 31% said they use library computers because they feel safe in the library.[122] People relying on public WiFi, also tend to be socially and economically marginalised in other ways. For example, lack of public WiFi may have dispropor-tionately disadvantaged older people,[123] and low-income families during the pandemic.[124] In addition, relying on public access means people have less time and fewer opportunities to use digital technologies or participate in the digital world (library computer time is often restricted to a couple of hours), and they therefore have less opportunity to develop digital skills.[125]

"We know, for instance, that there's a lot of this kind of messaging throughout government and public services at the moment of focussing on 'the most vulnerable' or words to that effect. And I think that creates lots of problems because the processes for identifying those people aren't perfect, eligibility criteria can involve arbitrary cut-offs or difficult to meet demands for evidence, and people move in and out of categories, and so on. And it can just reduce the level of provision generally, which of course, impacts on those people who are most vulnerable. If a library in an area where there are more affluent people is closed, it still reduces available provision for more 'vulnerable' people, some of whom will live in the vicinity, and others for whom that library might have been on a bus route, or, on their way to work or whatever, and actually, it was the more suitable location for them than the one that's nearest their home? It's more complicated than 'vulnerability' or risk of exclusion being hyper-localised."

James Beecher, Citizens Online

The spaces in which people access digital technologies and the internet matter in other ways, too. When children have to share confined home spaces with siblings, parents, carers, or other relatives, it can create distractions that make online learning more difficult than it would be for a child with a private room and a desk on which to work. As more and more essential services move online – such as court tribunals[126], GP appointments[127], and online mental health support – having appropriate and adequate *private* space in which to be online is increasingly important and fundamental to personal dignity and privacy.[128]

Using public WiFi is often also less secure than school, work, or home internet connections. When people need to conduct online banking, immigration applications, job applications, or other sensitive processes involving personal information, the fact that they are using less secure connections exposes them to further risks. The availability of public WiFi is a lifeline for many people, but it needs to be made safer and better fit for purpose in a digital world that requires more personal exposure than ever before. In summary, issues of privacy and space are important considerations when it comes to equity of access – and overcoming this determinant of digital poverty will require levelling the playing field between at-home and public access, which currently offer qualitatively different experiences of the digital world.

Determinant 3: Capability

Along with devices, connectivity, and access, people need digital skills to be able to make the most of the digital world. Capability therefore entails the ability to *do* things and accomplish one's goals with digital technologies on the internet. A lack of digital skills is keeping millions in the UK from engaging fully with digital services, and in recent years, digital skills have been front-and-centre in the digital divide agenda, with the Government publishing an Essential Digital Skills framework in 2018 and launching eight local Digital Skills Partnerships in the same year to help build local digital skills capacity across sectors. Since then, Lloyds Bank has reported on the prevalence of Essential Digital Skills in the UK population in an annual report. All of this attention on people's capability to do things with digital devices and access recognises that technologies do not exist in a vacuum – and people need to be supported with skills in order to benefit from digitisation. However, evidence points to the fact that digital skills frameworks and curricula need an upgrade to take account of the scale and complexity of digitisation today.

Deeper Dive

In academic research on the digital divide, digital skills or capabilities have been identified as the second-level divide after access to connectivity and devices.[129] A third-level divide in outcomes is contingent on both access and skills. Skills remain a key determinant of digital exclusion and digital poverty, with estimates of between 20%[130] and 50%[131] of the population lacking basic digital skills needed for life in today's digital world.

More than ever before, everyday life requires digital skills for work, school, and entertainment. At least 82% of online-advertised openings across the UK require digital skills and pay roughly 29% more than those that do not.[132] A report by techUK estimates that the digital skills gap, where prospective employees lack skills needed by UK employers, could be costing the economy billions.[133] Moreover, people with stronger digital skills reap financial rewards. Lloyds Bank reports that manual workers with high or very high digital engagement earn £421 more per month than less digitally engaged peers in the same roles.[134] And some evidence shows that people with more digital skills also save money on utility bills; those with very high digital engagement pay less on their utility bills (£211 on average per month compared to £230 for those with very low engagement).[135] This skills-based disparity contributes to what Fair By Design calls the "poverty premium," the extra costs people on low incomes pay for essential products and services.[136]

As the digital world evolves, the digital skills required for it change, too. The baseline for digital skills is higher than ever before. Completing many simple forms and applications online immediately demands far more than foundational digital skills.[137] And higher wage professional jobs increasingly require advanced technical skills, such as graphic design and coding.[138]

Despite recognising that differences in skills are a salient aspect of digital exclusion and poverty, in general research and policy on capabilities have not adequately accounted for the ways that other inequalities – such as race, language, gender, disability, life stage, socio-economic status, etc. – intersect with digital ability, opportunity, and outcomes. Although skills frameworks offer helpful benchmarks to ensure people can perform certain tasks, the strong focus on individuals' skills runs the risk of ignoring systemic inequalities, which can impact people's lives so that they cannot acquire or do not see the value of digital skills; or, cannot translate digital skills into meaningful outcomes in their lives. For example, while people *might* be able to save money on essential goods and services when they have more digital skills, automated systems might discriminate against them in determining the price of goods and services. Citizens Advice found recently that algorithmic decisions used in the UK insurance market consistently discriminate against people of colour.[139] This is an example of where technological inequalities and social inequalities meet, and possibly prevent people from realising the positive outcomes of their digital capabilities due to endemic societal inequalities that manifest in other digitised processes.

People's attitudes to learning can be also be affected by a broader context of inequality. A report by Good Things Foundation about the Future Digital Inclusion programme found that only 22% of those with no formal qualifications express an interest in qualification at the point of engagement in a community digital inclusion hub.[140] Evidence also shows that there is a connection between a lack of general literacy and digital skills and literacies. In other words, educational inequality contributes to digital inequality.

In order to tackle both the basic skills gaps *and* pernicious social inequalities, the evidence points to a need to conceptualise digital skills as skills for life, not just for digital work or the digital economy. Digital skills are relationship skills and civic skills as well as vocational skills. Therefore, this chapter focuses on three deeper dive themes that emerged from the literature: people's digital capabilities are influenced by their broader social context; the emergence of narrow and device-limited users presents new challenges for acquiring broad, essential skills; and digital skills for today's digital world must include the ability to make choices about how personal data is collected and used.

Digital skills in context

Evidence shows that even when people acquire digital skills, from foundational to advanced, they may not be able to translate those skills into positive or tangible outcomes due to contextual and systemic factors. In their in-depth qualitative and quantitative study on parenting in the digital age, Sonia Livingstone and Alicia Blum-Ross observed that "although both better-off and poorer parents try to use technologies to confer advantage, they are very differently positioned to do so."[141] Many reports on remote learning during the pandemic highlight the importance of the skills of caregivers and parents in supporting children to acquire digital capabilities.[142] As a former Secretary of Education said at a 2021 roundtable on education hosted as part of the Digital Poverty and Inequalities Summit,[143] one of the biggest mistakes they made in early digital policy was not focussing enough on training parents. A repeated theme in this discussion was the limits of formal educational settings to compensate for wider social inequality.

Statistics Snapshot

Lloyds Bank Essential Digital Skills (2021)

• 75% of those earning under £13,499 have Foundation Level digital skills compared to 96% of those earning over £75,000

• 93% of office workers are confident Internet users compared with 85% of manual workers

• Office workers are 11 percentage points more likely (73%) than manual workers (62%) to use the Internet to develop professionally and improve future work prospects

• Over half (57%) of respondents said the easiest way to receive digital skills training would be through their employer

• 77% would improve their digital skills if they thought it would directly help them with a day-to-day task or piece of work

Nominet Digital Youth Index (2021)

• Technology-related jobs are more appealing to younger children, young men, and those with higher income levels

• Almost half of young people (48%) are teaching themselves digital skills, often with little input from parents or teachers

• Young people who are not in any form of education, employment or training are far more likely to be teaching themselves (73%) as are those in the C2 or DE social grade (52%)

• 12% of school-aged respondents do not think their school provides good training and almost a quarter of those who have left school (23%) do not think their school provided good training in the use of technology; A quarter of those in work (23%) do not think their employer provides good training to use technology

There are also social and cultural expectations around technology rooted in biased or discriminatory assumptions about particular people or groups that have been shown to influence people's interest in, acquisition of, and application of digital skills. More affluent children often find themselves in family and educational settings that offer ample access to digital resources and that encourage them to be digital innovators, while lower-income children are not encouraged – and sometimes actively discouraged – toward digital engagement.[144] The recent Nominet Digital Youth Index reported that young people experiencing the most digital disadvantage are also least likely to think that tech careers are for people like them.[145] This evidence points to the fact that digital skills frameworks cannot exist in isolation from an understanding of the role of education more broadly in social inclusion and mobility. Initiatives like code clubs and courses in computer science aimed at disadvantaged communities and students are not enough to bridge this gap. Alongside greater availability of digital skills training, bigger cultural shifts are needed in expectations around capabilities and achievements of different groups of people as well as greater diversity and inclusivity in the tech sector itself.

The Essential Digital Skills framework and learning platforms, like Learn My Way, have been influential in rightly putting skills at the centre of digital inclusion strategies. During the pandemic, several digital skills training platforms emerged or gained popularity, including Google Garage and iDEA. But with more services converting to digital-first, accelerated by the pandemic, limited and non-users can increasingly be described as *goal-oriented users*, meaning they seek access and skills to complete a specific task, which happens to include digital steps.[146] This is a challenge and an opportunity. The design of services should avoid further coercing people into digital participation through requirements to be online or transact digitally. It should be possible to access all services, even if someone has made the conscious choice to be offline. But when people have a *reason* to engage with the digital world, it can be a chance to signpost to further opportunities, build confidence, and seed motivation.

Device-limited literacy

As internet access becomes more widespread, through a range of different devices and platforms, new categories of users have emerged. The simple distinction between non-users and users is no longer sufficient for explaining the dynamics of the digital divide. As the chapter on Access discussed, even among regular users of the internet, there are important differences in *quality* of access that create new inequalities.

Scholar Simeon Yates and colleagues have offered new categories for understanding both limited and extensive users, drawing distinctions between limited users who use social media and limited users who do not, for instance, and extensive political users versus extensive non-political users.[147] These distinctions point to the fact that the way people engage with the internet might affect their levels of literacy. Ofcom defines a category of "narrow users" of the internet as those who undertake between just one and 10 of the various activities the survey asks

about, but also points out that smartphone-only users are more likely to fall into this category.[148] Smartphone-only users are also a growing category of users, who both struggle to do certain fundamental tasks online but also prefer to use a phone rather than a laptop, desktop, or tablet to access the internet.[149]

These findings suggest that there are new divides forming based on device-limited literacy[150] — meaning proficiency in one device but not others, with implications for digital literacy overall. This narrow literacy applies particularly to young people, who are often wrongly assumed to be "digital natives."[151] During the pandemic, some teachers and students depended solely on smartphones for remote learning,[152] and in research in public libraries, library staff said students often could not use a mouse or keyboard.[153] These findings point to an emerging skills gap among young people; while they may spend a great deal of time online, their range of knowledge of different hardware, software, and services may in fact be fairly limited, depending on their access to and use of different devices, operating systems and platforms.

Statistics Snapshot

Ofcom Adults' Media Use and Attitudes (2022)

- 21% of internet users only used a smartphone to go online

Ofcom Adults' Media Use and Attitudes (2020/2021)

- Narrow internet users were less likely than average to say they were confident as an internet user (66% vs. 83%), confident in managing their personal data online (54% vs. 61%) or confident recognising advertising online (67% vs. 84%)

Me & My Big Data (2020)

- General (74%) and limited users (71%) are the most uncomfortable with 3rd party sharing of personal data

Schools with more resources have been shown to provide students with more opportunities to get online through multiple devices and software (operating systems and platforms), while under-resourced schools increasingly depend on more limited device provision and a single proprietary provider of software in what is an ever-growing EdTech sector.[154] These different experiences of technology in the classroom entrench well-worn pathways to dependency (on certain technology providers/companies and certain devices) and disadvantage (children having more limited digital literacy due to more limited digital resources).

Narrow use and device-limited literacy present a challenge for identifying a minimum digital living standard in the UK today. Smartphone proficiency helps overcome digital exclusion, but it limits the breadth of people's digital skills. Service design will increasingly need to accommodate these inequalities of skills and familiarity with multiple tasks and devices.

Critical thinking and data literacy

Evidence from academic literature strongly points to the need for several interrelated competencies that rarely appear in digital skills surveys or frameworks, but they are fundamental to the digital world as we know it today: abstract thinking, critical thinking, and data literacy. These capabilities go beyond the ability to complete concrete tasks associated with digital technologies, like use a search engine, send an e-mail, or do online banking. They have to do with the way the digital world works and equipping people to navigate it with agency and understanding.

Statistics Snapshot

Ofcom Adults' Media Use and Attitudes (2022)

- 6% of internet users believed that all information they find online is truthful, 30% don't know, or don't think about it

- 85% of internet users were confident that they could recognise advertising online, but only 63% of search engine users identified paid-for listings in search results and understood that this was the only reason those results appeared at the top of the list

- Among 16-24 year-olds, only 16% were aware of the four ways companies collect personal data asked about in the survey, and just 33% were confident and could identify paid advertising

- Younger people have less search engine literacy than other age groups, with 34% believing that if a source appears in search results it will be accurate and unbiased

Centre for Data Ethics and Innovation Public Attitudes to Data and AI Tracker Survey (2022)

- 52% of respondents reported that they know only a little or nothing about how data about them is used and collected in their day-to-day lives

Lloyds Bank Essential Digital Skills (2021)

- Education is the most important factor in whether people have Essential Digital Skills for Work, not age (only 25% of those with no formal qualifications have EDS for Work)

Capability

One of the major evidence gaps identified in the Oxfordshire Digital Inclusion project was around lived experience studies capturing how novice, lapsed, or limited users encounter the contemporary digital world. By spending time with library computer users and digital inclusion volunteers, that research found that people need to be able to assemble a set of abstract steps in their minds to reach digital goals.[155] A task such as "apply for a job online" involves everything from turning on a device to setting up an email account, typing a word document, saving it, uploading it, and so forth. In this example, the steps required for a single task cut across all levels of the Essential Digital Skills framework.

The implication of this finding is that people need to be able to do the abstract thinking needed to assemble these digital steps, follow them, and even retrace them later on. Many digital inclusion interventions, like digital champions or buddies, address this complexity of digital tasks through bespoke, one-to-one assistance that meets users where they are and helps them take the steps they need and want. More inclusive technology and platform design can help mitigate this complexity for users by reducing the steps required for basic digital tasks. And more emphasis on abstract thinking as a defined skill can help people develop stronger and more adaptable or transferable digital skills. It is worth noting that existing Web Content Accessibility Guidelines focus on access for people with disabilities and not on reducing complexity of the user experience in general. But this evidence suggests that accessibility (a key component of Access) would actually benefit all users by reducing the abstract nature of many digital platforms and tasks.

"People go online with a specific outcome in mind, rather than to 'improve their digital skills'. It could be paying a bill, or using internet banking; it's more of a transactional relationship with the internet. And once they do that one think and that goes well, they build up their confidence and continue. For people who are struggling with the Foundations though, are in a potentially slightly more vulnerable state with their confidence and their mindset. So if they fall at the first hurdle, they might not be likely to try again."

— Joanna Boosey, Lloyds Banking Group

This points to a need for a more nuanced understanding of digital literacy – less as the ability to use hardware and software to complete certain tasks and more about the ability to understand, make choices about, and therefore make the most of the digital world. These are abstract and critical thinking skills. Because the digital world is increasingly data-driven, meaning that

information is collected about individuals, stored by different public and private entities, and analysed to provide services, including advertising, evidence also shows that this understanding must include data literacy.[156]

Data literacy and agency

A significant divide is growing in terms of people's understanding of how the digital world works, and it tracks many of the other inequalities contributing to digital poverty. Digital literacy increasingly encompasses this issue of *understanding*. The Ofcom Adults' Media Use and Attitudes report now includes measures of people's awareness of advertising and misinformation. In the Me and My Big Data Project,[157] scholars Simeon Yates, Elinor Carmi, and colleagues found that most people do not feel they have any choice about how their data is used, and they do not understand how to take more control over their privacy. Unsurprisingly, extensive users and those with high levels of education scored highest on data literacy measures, and limited users scored lowest.

These emerging trends suggest that gaps in data literacy might further entrench data-driven disadvantages scholars have already begun to identify: greater surveillance and data extraction of marginalised groups leading to cycles of stigmatisation and deprivation and more data-driven targeting of marginalised groups by advertising and scams, for example.[158] The long-term effect of consistent disempowerment in relation to data practices could be a reduction in motivation among the most marginalised people to acquire digital skills and participate fully in the digital world.

Apart from users' digital and data skills and literacies, tackling the digital divide also requires addressing the technical and social literacies of technology designers and developers. Research shows that computer science training inadequately prepares students to consider how social inequalities might be replicated in or exacerbated by technology design, data collection, and data analysis, such as algorithmic processes and Artificial Intelligence.[159] Unconscious biases, which often treat the experiences of affluent, White male technologists as a neutral norm, wind up literally hard-wired into the technologies that everyone needs to use.[160] Alongside greater data literacy for digital users, digital skills of the future must also encompass this social awareness for technologists.

In summary, both the highest and lowest ends of the capabilities spectrum are coming up against the contextual realities of today's digital world – in which even the simplest digital tasks require abstract thinking, people need an understanding of data and its uses in order to avoid being further disadvantaged by technological advances in algorithmic processing, and technology and digital service designers need social knowledge and awareness to design for diverse users.

Determinant 4: Motivation

As the absolute divide narrows between people online and those offline, motivation has emerged as a major determinant of digital exclusion. Motivation broadly refers to people's level of interest in and commitment to getting online and improving their skills and outcomes as a result. It is also among the most difficult determinants to understand empirically and tackle in terms of policy because it is rooted in personal opinions, lived experience, and social context (including community norms, public messaging, education, and so on). This chapter dives deeper into motivation as a determinant of digital poverty to spotlight what the evidence says about lowering barriers and considering inclusion at the level of design.

Deeper Dive

A lack of motivation to get online, acquire digital skills, and participate in the digital world is often underpinned by important push and pull factors linked to other forms of disadvantage. Evidence is beginning to demonstrate that it is also intertwined with many of the other determinants of digital poverty, such as cost, perceptions of privacy and safety, and lifestage.[161] Despite the rapid and ever-expanding digitisation of many everyday life realms, many people still express a lack of interest in the digital world and a feeling that it is "not for me."[162] Necessity does not automatically translate into motivation.

So, what does this tell us about motivation as a determinant of digital poverty? For this determinant, there is a clear need for research to explore and policy to address the underlying reasons *why* people feel uninterested in the digital world or why the internet is not for them. Due to the difficult-to-measure and hard-to-articulate nature of motivational barriers to digital inclusion, the issue of motivation is strongly connected to other determinants of poverty. Therefore, this chapter focuses on inclusive design and lowering barriers that cut across all the determinants of poverty. But while it is important to enable people who want to get online to do so, if people have made an informed decision not to use the internet, it is also important to have alternative options in place for essential services they have a right to access.

Statistics Snapshot

Lloyds Bank Consumer Digital Index (2021)

- 26% of people still don't understand the benefits of being online and what they stand to gain

- 32% of those offline say "nothing" could encourage them to use the internet

- When asked what would encourage you to improve your digital skills, 8% said "nothing, I avoid adopting technology where I can"

Good Things Foundation & Simeon Yates (2019)

- Almost 4 million non-users say that the internet "is not for them" (3 in 5 non-users)

Office for National Statistics Exploring the UK's Digital Divide (2019)

- 38% of disabled people who are not using the internet reported that the internet does not interest them

Oxford Internet Survey (2019)

- 69% of non-users say they are "just not interested" in using digital technologies

Inclusive design

According to the Design Council, inclusive design is about "remov[ing] the barriers that create undue effort and separation. It enables everyone to participate equally, confidently and independently in everyday activities."[163] The core principles of inclusive design apply to the digital world as much as they do to the physical world: it is design of platforms and technologies that are people-centred and allow choice when a one-size-fits-all approach would not work. These principles aim to empower people in their virtual and physical environments, and a sense of empowerment can be important for feeling comfortable in a space – whether that space is a Town Hall or an app to access a GP surgery.

Statistics Snapshot

Nominet Digital Youth Index (2021)

- "Tech jobs are least appealing to those most impacted by inadequate tech," with men and those on higher incomes more likely to consider tech a viable career

The digital world often does not enable meaningful choices by users, beginning with the choice about whether to use technology at all or not. Scholar Veronica Barassi calls this "the coercion of digital participation," or coercive consent.[164] And this extends to a lack of choice about what data people give up or how data is used – what scholars Nora Draper and Joseph Turow call "digital resignation."[165] The digitisation of essential services makes digital participation a requirement, not a choice. If a GP surgery only communicates (or only communicates *efficiently*) through an app, do people really have a choice about whether or not to download the app? This could also be called "compulsory computing," where people *have* to go online to complete even the most basic tasks.[166] Scholar Elinor Carmi has provided further examples, critiquing the underlying model of digital consent in which people are asked to agree to terms and conditions as a tick-box exercise in which people lack real choices and instead are asked to validate their own exploitation by companies that trade in user data.[167]

> "The providers of digital services designed for personal devices have a responsibility to deliver affordable experiences that are easy to use by anyone, including people with physical disabilities, in a trustworthy manner, with users needing only basic reading and writing skills."
>
> Chris Winter, IBM Fellow (Retired)

Some evidence shows that people experience these commonplace practices in the digital world as disempowering.[168] They feel like they are given no choice except to participate, and this lack of agency is frustrating. Research shows that platforms and services often employ "dark patterns" – technical nudges that trick users to take actions that might harm them, such as paying for overpriced services or consenting to share more data than they realise. But these are design *choices* that can be made differently in order to create a safer and more inclusive digital world.[169] More research is needed about how people feel about these different pressures and the impact it may have on motivation, but findings on public trust in data-driven systems, data practices, and digital platforms, are beginning to show that it could have a chilling effect.[170]

By contrast, building more inclusive platforms, by consulting and co-producing technologies with users, can potentially increase feelings of agency, ownership or buy-in. For example, Social Finance in conjunction with Leeds City Council, Southampton City Council, and the London Borough of Havering worked to co-produce an app for young care leavers for managing their transition out of social care. The app gives care leavers more agency over their pathway than the traditional (non-app-based) system, with the goal of enabling young people to "own" their plan to independence, with frequent targeted help.[171] Findings about the uptake and impact of this app have not yet been published at the writing of this report, but these interventions should be thoroughly evaluated to determine whether and how more inclusive design can both improve motivation among users, and lead to better social outcomes.

Lowering fundamental barriers

All of the determinants of digital poverty implicate fundamental barriers that keep people from engaging with the digital world in the ways they may want or need to. Lowering those barriers might have an effect on motivation or willingness to get online. A major barrier is cost (see Devices & Connectivity), with one in seven non-users of the internet saying that the internet is too expensive. People also need community-embedded, often long-term support to use digital technologies (see Support & Participation), and education and skills training must recognise that the skills needed for digital participation are often non-digital. People who are not confident in their overall literacy are 2.4 times more likely to think the internet is "not for them." Findings like this reinforce the importance of inclusive design: the text-based nature of many websites and apps can be challenging for people with low levels of literacy and education, for instance.

Statistics Snapshot

Ofcom Adults' Media Use and Attitudes (2022)

- Among the reasons that non-users give for not using the internet, 46% said it is too complicated; 42% said it is "not for people like me"; 37% said they did not have the right equipment; 36% said it is too expensive

Good Things Foundation & Simeon Yates (2019)

- 1 in 7 non-users say the internet is too expensive

- 1 in 5 non-users say the internet is too complicated

- 25% of non-users say they don't have the right support

- Those who left education before the age of 16 are 2.8 times more likely to say the internet is "not for them"

- People who are not confident in their overall literacy are 2.4 times more likely to say the internet is "not for them"

- People in social grades D and E are 3.2 times more likely to say the internet is "not for them"

Oxford Internet Survey (2019)

- 18% of non-users say they do not know how to use the internet

- 10% of non-users say they are worried about privacy

As research by Simeon Yates and Good Things Foundation demonstrates,[172] there is a need to dive even deeper into the reasons behind responses like "I'm not interested" to get to the nuances – the *relative* differences – that have become increasingly salient in determining the contours of the digital divide. For example, when someone says connectivity is too expensive, they might mean that no cost would be a suitable cost (they are unemployed and on too low an income) or that costs should be lower for lower speed packages (they were previously employed and think broadband costs too much for slow speeds).[173] When someone says "it's too complicated", they might mean that they have never tried to use technology or that they have tried and failed once or twice before, which damaged their confidence. They might speak English as a second language, or have caring responsibilities and little time.[174] The on-the-ground reality beneath the top-level statistics points to the need for more flexible and adaptable services, localised interventions, and personal and personalised solutions.

> "The thing about digital inclusion is what people are facing is always changing. It often seems to be the same people being affected. However, what they're encountering in terms of what they're being expected to do, or what they're seeing other people doing that they feel they ought to be able to do, does change. So, I think there's a lot of value to get from people with lived experience, and it's important to be constantly updating that insight. It's often neglected in research."
>
> James Beecher, Citizens Online

However, it is also important to recognise that some non-users have made an informed decision not to use digital technologies or engage with the digital world. Research by Good Things Foundation and the Centre for Ageing Better has found that the healthier and more socially resourced older people are, the less they need technology to meet their basic needs — further evidence of the link between social and digital determinants of outcomes. As the report states, "policymakers and practitioners need to recognise the difference between this unproblematic non-use of the internet and true digital exclusion: non-use which accompanies and exacerbates other forms of social exclusion and disadvantage."[175]

Determinant 5: Support and Participation

Digital inclusion is dependent on a person's context, and people may be more or less included at various stages in their life. As a result, support getting online and acquiring digital skills is always a factor in overcoming digital exclusion and digital poverty. Evidence shows that many people would get online if they knew where to get help and support. And many people are already receiving informal help to do essential tasks. These "proxy users" ask someone else to do something for them online when they need to. In addition, more and more people are reporting being supporters themselves, helping others with digital access and skills. A large and vibrant digital inclusion sector of charities, along with additional initiative from Government, local councils, and industry, provides digital access and skills training through online centres and digital champions. Even so, many people do not know that these opportunities are available, or the existing models do not suit their lifestyle or needs. Research shows that many people would be motivated to get online or improve skills if they had the right support or knew where to get it, so support and participation are an important determinant of digital exclusion – and a crucial bridge out of digital poverty.

"One of the things that has become a sort of aphorism in digital inclusion land is that people prefer to get support or are best reached through trusted networks that they're already a part of."

James Beecher, Citizens Online

This chapter takes a deeper dive into support and participation to spotlight what the evidence says about what works. This determinant centres on people's social context and social interactions in overcoming digital poverty. The evidence available points to the importance of informal networks and learning in supporting people's digital access and skills, as well as the need to support people's entire life journeys to mitigate the risk of people falling into digital poverty when their life circumstances change.

Deeper Dive

Most interventions around digital poverty involve intensive one-to-one, in-person support. In recognition of this interpersonal dimension of digital inclusion, a "digital champion" model has been adopted across many sectors, largely led by charities and industry, with Government support. Digital champions are designated individuals who are recruited and trained to help with digital inclusion in their organisation or community. Many reports produced in the charitable sector during the pandemic have illustrated the centrality of personal support to digital inclusion quite clearly; not only were people on the brink of digital exclusion suddenly cut off without digital connectivity or skills, but helping them get online was an even greater challenge in the absence of face-to-face contact.

While digitisation is a pathway to greater efficiency and cost savings for Government, public services, and business, tackling digital exclusion in this personalised way is conversely time-, energy-, and often cost-intensive. This makes the support needed for digital inclusion difficult to scale. Moreover, although there is a wide range of resources, services, and initiatives available, these efforts remain piecemeal, under-funded (or unfunded), and largely crisis-driven. In addition, some evidence points to the fact that many people are unaware of the support that is available, which means that crucial information that could bridge the digital divide is out of reach.

Over the last decade or so, a dedicated digital inclusion sector has evolved to address digital poverty, which is led by charities and social enterprises, and bolstered by unpaid volunteers, with a patchwork of funding from trusts, foundations, corporations, local authorities, and Government. These include Good Things Foundation, which supports a national network of over 2,000 Online Centres (varying from libraries to community centres, local training providers to refugee and migrant support groups) and has developed basic digital skills learning resources for adults, such as Learn My Way. Citizens Online conducts research on digital exclusion and helps to train digital champions and organisations in promoting digital inclusion. Digital Unite also assists organisations in building their digital inclusion capacity. And AbilityNet offers specialist one-to-one support for disabled people getting online and supports local organisations with accessibility and assistive technology.

There are also a handful of impactful council- and locality-led digital inclusion initiatives, such as 100% Digital Leeds and the Greater Manchester Digital Inclusion Taskforce. Businesses have also stepped in to help clients and communities overcome digital exclusion, particularly through skills training. Lloyds Banking Group and Bank of Scotland Academies and Barclays Digital Eagles are examples. Most of these initiatives share a focus on digital skills and cultivate a peer-training model in which the learners become the teachers and the teachers go on to train more learners. These efforts collectively constitute a civil society movement for digital inclusion that recognises the importance of support that meets people where they are – whether in a local library or at the bank.

In considering how to tackle the heterogeneous needs of people while also joining up the efforts to provide necessary support throughout life, evidence shows that tackling digital exclusion requires interventions that are as much social as technical, recognising and fostering the informal learning that many people already engage in, and treating inclusion as a journey rather than a singular event.

Digital is social

Evidence shows that people prefer to receive support from trusted individuals and organisations that *they already know*. When people feel secure and confident in the way that they are learning, they feel more secure and confident in their digital participation. A thriving civil society sector helps communities thrive and creates more opportunities for people to get to know each other, which helps in identifying and reaching digitally excluded members of the community. More than ever, the path to digital inclusion is through people's social lives and context.

> This is not just about making technologies and platforms more usable; it is about making life more liveable for people – which sometimes has little to do with technology at all.

Among people who ask for help accessing the digital world, most people turn to friends, family, or work colleagues. By contrast, a lack of support stands in the way for some non-users: around 67% of people would improve their digital skills if they knew support was available.[176] Still others, who access the internet and use devices occasionally do so through a "proxy user"[177] or "digital carer",[178] a trusted individual who performs digital tasks for them. And people who live alone are more likely to be digitally excluded than people who live with at least one other person. One of the most reliable indicators of whether someone is a non-user of the internet is whether or not there are children in the household.[179] The chapter on Capabilities also explored the influence of parents, carers, and teachers in cultivating digital skills among young people. It is clear from the evidence that social context plays a determining role in whether or not a person will be digitally included – and whether or not they will be able to benefit from their inclusion.

Statistics Snapshot

Ofcom Adults' Media Use and Attitudes (2022)

- 49% of non-users reported asking someone else to do something for them online

Lloyds Bank Essential Digital Skills Report (2021)

- When learning new digital skills, 65% of people said they would prefer face-to-face learning when it is available again; 66% said they would prefer to learn from friends, family, or colleagues; 93% said they need to learn by having a go themselves

- 64% of those who live alone have Foundation Level digital skills, compared to 87% of those in a household of two or more; families with children are also more likely to have Foundation skills; this effect holds true even for those under 65 years of age

Lloyds Bank Consumer Digital Index (2021)

- Among people with very low digital engagement, 61% are quite/very confident using the internet but still prefer face-to-face relationships for their banking

Nominet Digital Youth Index (2021)

- Nearly half of young people (44%) feel isolated and a third of 17–19 year-olds (32%) say the internet has a negative impact on their mental health

Perhaps the most important insights on digitisation that have emerged over the past several years are about how digital technologies are embedded in social circumstances that influence and shape them. These insights collectively point to the importance of investing in *people* in order to invest in ending digital poverty. The solutions to digital poverty are not exclusively technical because the benefits of the digital world are more than technical – opportunities to communicate, play games, get a job, get medical advice, do banking. So, digital poverty can lead to social isolation, and conversely, the more lonely, isolated, or disconnected people are from their communities, the less likely the digital world will appeal to them *and* the less likely they are to know about the benefits.[180] Only a whole-of-society approach to ending digital poverty will ultimately meet everyone who needs support *where they are* in terms of comfort, confidence, environment, and life stage.

Informal networks and learning

Statistics Snapshot

Lloyds Bank Essential Digital Skills Report (2021)

- 40% of those offline say they would be encouraged to engage digitally if they had support from friends and family (compared to 26% who would be encouraged by formal training or courses)

- 69% of people aged 60-69 say they prefer to learn new skills from family

Good Things Foundation & Simeon Yates (2019)

- Each child in a household makes a person 1.7 times less likely to think the internet is "not for them" (i.e. the more children you have in your household the higher the likelihood that you will be interested in using the internet)

Office for National Statistics Exploring the UK's Digital Divide (2019)

- 9% of households with a single adult aged between 16 and 64 years did not have an internet connection, compared with only 1% of households with two adults aged between 16 and 64 years

- 41% of households with a single adult aged 65 years and over had no household internet connection compared with 13% of households with two adults, at least one of whom was 65 years or older

When it comes to individualised support, evidence increasingly demonstrates that support comes in many shapes and sizes, including informally through friends and family, and through proxy users – more experienced digital users who help limited and non-users do basic digital tasks.[181] While formal pathways to skills development, such as online courses, may work for some people, evidence suggests that there is a clear need to understand and leverage informal pathways to learning.

For example, some evidence shows that simply living in a household *with other people* increases the likelihood that someone will have an internet connection, have foundational digital skills, and be interested in using the internet. People learn from those around them, and they turn to those closest to them for help, too. Survey research by the Centre for Ageing Better and Citizens Online exploring the experiences of 50 to 70 year olds online found that an overwhelming majority of respondents did not know of an organisation where they could get help to use digital technology (87%). Among those on lower incomes who sought help during the pandemic, the majority (63%) got support from a friend, family member or neighbour.[182]

"One of the things we did when we set up the Lloyds Bank Academy was hold focus groups as well as conducting research into understanding what good support looked like. Basically, the majority of the feedback indicated that informal was preferred. They didn't want to go through a long, formal qualification process, because they had not always had the best experiences in that space. One of the key determining factors for that lower capability group is that qualification level, we must recognise the formal education route isn't for everyone and there is a need for more informal support."

Faye Van Flute, Lloyds Banking Group

Other findings also demonstrate the importance of friends, family, and colleagues in cultivating digital skills. Lloyds Bank found that 66% of respondents said they would prefer to learn digital skills from friends, family, or colleagues, and older people in particular are most likely to say it would be easiest to learn new digital skills from family.[183] In a roundtable discussion on education and digital poverty, held during the Digital Poverty and Inequalities Summit in November 2021, several participants raised the importance of parents and carers in motivating young people and teaching digital skills. Digital inclusion does not stop at the school gate[184] – tackling the digital divide means supporting the supporters, the whole social network to which people belong.

Evidence also shows that many people living in digital poverty or at risk of digital poverty also have low levels of formal education and possibly negative experiences of formal learning environments. Among participants in the Future Digital Inclusion programme, delivered by Good Things Foundation, 62% of people with no qualifications reported having no positive learning experiences since leaving school, and 48% did not enjoy learning at school.[185] A lack of formal educational qualifications is also correlated with a lack of interest and motivation. Those who left education before the age of 16 are 2.8 times more likely to say the internet is "not for them".[186] In this context, familiar faces and informal spaces are especially important in bridging the general learning and literacy divides that stand in the way of people pursuing helpful learning opportunities.

Beyond role modelling and teaching, friends, family, and colleagues might also serve as "proxy users" – performing certain digital tasks for people with limited access or skills. In 2021, 60% of people "who did not use the internet at home had asked someone else to do something for them online in the past year."[187] Some academic research has also identified the rise of proxy internet use as an important aspect of our pervasively digitising world,[188] but more research is needed to understand the scale and effect of proxy use on digital inclusion.

Finally, peer-to-peer learning has proven integral to successful bottom-up digital inclusion initiatives.[189] Ofcom reports this year that 86% of internet users aged 16-24 had offered assistance to someone else, and almost half of them did this on a weekly basis.[190] When people learn from others like them, it can boost confidence and increase motivation. The digital champion model, discussed at the start of the chapter, is based on this logic – alongside dedicated Online Centres and digital skills bootcamps, every home, school, or office is a potential bridge across the digital divide, as long as there are people with digital skills there, willing to help.

As regional differences in access, skills, and motivations persist or deepen, it is all the more important to meet people where they are in order to level the playing field and level up. Successful interventions are to be found in the places and people that already make up the fabric of local day-to-day life, from community groups to churches to libraries, supermarkets, or GP surgeries. Evidence shows that people already seek out informal routes to digital participation, suggesting that these social dynamics are key to preventing digital poverty.

Inclusion as a journey

Statistics Snapshot

Office for National Statistics Exploring the UK's Digital Divide (2019)

- Adults over the age of 65 have consistently made up the largest proportion of adult internet non-users, and in 2018 more than half of non-users were over 75

Age is often cited as the most important factor in whether people are online or not, and digitally skilled or not. And it is true that older people consistently make up the majority of the offline population, particularly as internet access becomes more widespread. However, a focus on age as the single most significant fault line in the digital divide can be misleading when it comes to understanding the underlying determinants of digital poverty and tackling the enduring problem of digital inequality. First of all, there are important differences among even older age groups; 50- to 70-year-olds are more digitally engaged, for instance, than over-70s. In some cases, older people demonstrate more awareness of things like online advertising and biased information than younger people, and they may have more access to multiple devices.[191] And other factors, such as education level, employment status, and income consistently surface as determinants of digital poverty.

"Our research shows that digital capability is not a fixed state. Once you get online, it's not a game that you can complete and then rest on your laurels. Digital skills require practice and are always evolving, and if not careful, people can be left behind."

Joanna Boosey, Lloyds Banking Group

This is perhaps best illustrated by the "digital native" fallacy, which assumes that young people in general do not face digital exclusion. In fact, the Nominet Digital Youth Index reports that 30% of young people aged 8-25 are at risk of becoming "digital castaways", and 42% of young people do not have either home broadband or a laptop/desktop computer.[192] Academic research shows that children's ability to benefit from digital access and skills are influenced by their social circumstances, such as where they live and their parents' education.[193]

The first thing this tells us is that digital exclusion and poverty are not solely the product of a generational divide between the young and the old, a divide that can be overcome with time, as younger people progress through their own life journeys. Instead, digital poverty is the product of intersecting factors associated with life circumstances, opportunities, and life-stage, which combine to result in certain exclusions from access, skills, and motivation. In other words, people can fall in and out of being digitally included due to changes in their life context, such as unemployment, sickness, childcare responsibilities, or financial hardship.

Many national narratives and strategies for overcoming digital poverty still mostly treat inclusion as a ladder that people can progressively climb, rather than a bumpy road with diversions, on which people can travel, stumble, and veer off course. Evidence shows that the determinants of digital poverty are factors that affect all of us at different points in our lives, so support will continue to be needed in schools, workplaces, healthcare, community spaces, the home, and beyond to ensure that people do not fall through the gap when their access, capabilities, and motivation change.
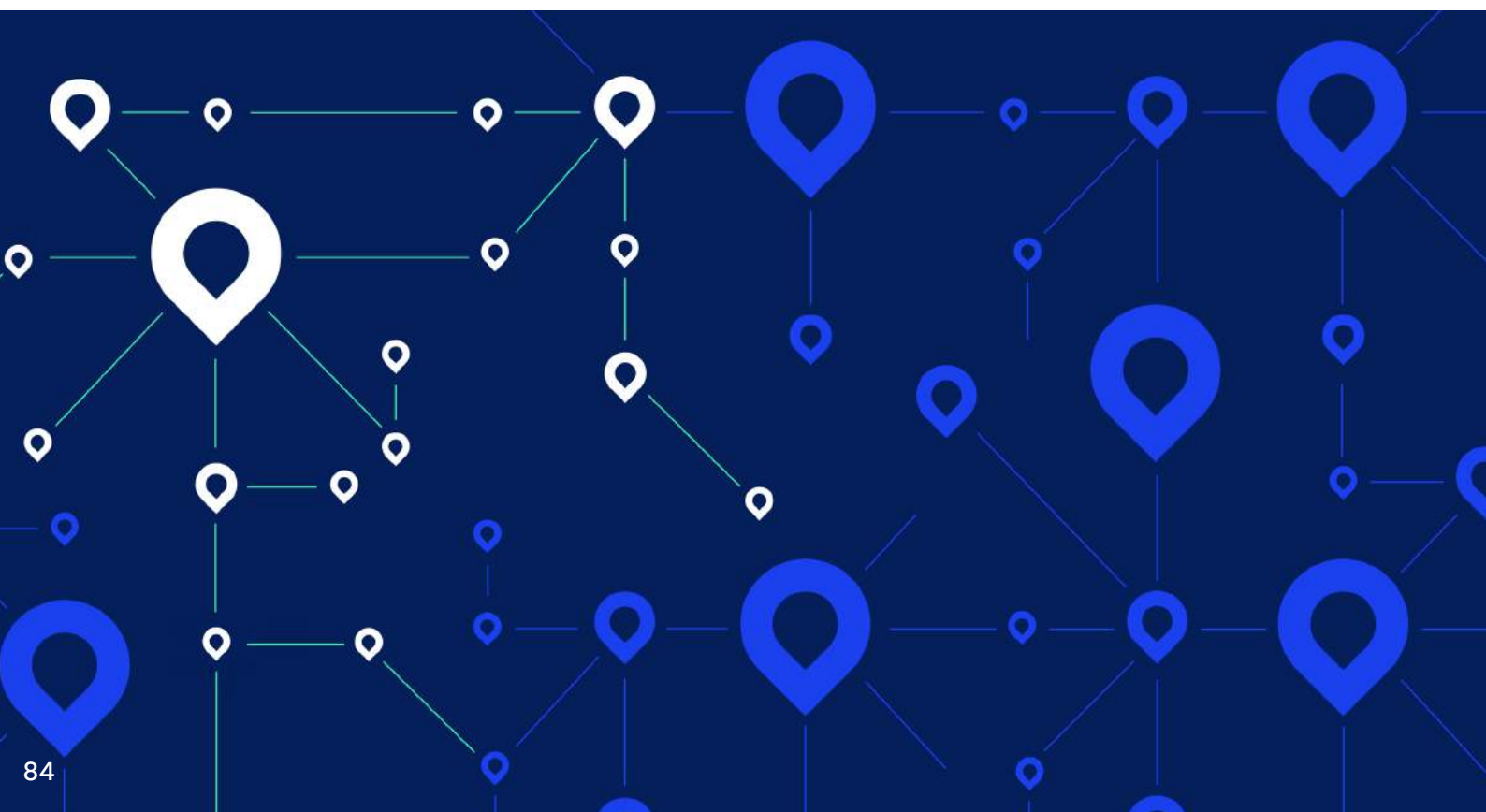
Conclusion: Reading between the Datasets

The aim of this evidence review is to dive deeper than the headline statistics on digital exclusion to spotlight a more nuanced understanding of the determinants of digital poverty. Over the past several years, the UK has undergone rapid and transformational digitisation of public and private sectors, which has rendered digital access and skills necessary for everyday life. During this time, a digital divide has deepened; although more people in the UK are users of digital technologies and the internet than ever before, the negative impact on the digitally excluded has become more extreme. And it reflects and exacerbates existing social and economic divides in society more broadly.

Conclusion: Reading between the Datasets

The COVID-19 pandemic dramatically exposed digital inequalities and has raised digital inclusion to new levels of national concern. The nature of the health crisis meant that many people were forced to isolate to protect themselves and their families, and even more jobs, services, and communication channels transitioned to online-first or online-only. Those who were digitally excluded were suddenly cut off. Moreover, the closure of offline spaces like libraries and cafes, schools and workplaces, exposed how precarious digital inclusion can be for many people. Changes in life circumstances have caused people to shift from digitally included to excluded, pointing to the nonlinear nature of inclusion. This evidence review also responds to these pandemic-driven insights: there are *degrees of inclusion and exclusion*, contingent on intersectional factors like age, income, language, gender, and ethnicity and that *people may be more or less included* at different times in their lives based on the context in which they find themselves. But it also points to the fact that this is not a pandemic problem alone; digital poverty existed before the pandemic, and it will persist long after – unless steps are taken to tackle the determinants of digital poverty.

To eradicate digital poverty by 2030, we need to confront the subtleties and complexities of each determinant, drawing on the evidence that already exists and making a concerted national effort to fill evidence gaps. Policy must also respond to the multiplicity of issues that contribute to and result from digital poverty.

This starts by moving past some of the lasting myths around digital exclusion, and recognising the important shifts in the digital landscape that have occurred as a result of widespread digitisation of all realms of life.

Three myths have been busted by the evidence: the kids are alright, access is access, and digital exclusion will gradually diminish or disappear over time. This review has spotlighted evidence that while generational divides are still salient, there are other cross-cutting digital divides that affect people of all ages and are the product of people's life circumstances. The absolute dividing line between those "offline" and those "online" is no longer the only determinant of digital poverty – if it ever was. Instead, relative differences in devices, connectivity, and experiences of access all affect who can participate in the digital world and benefit from the outcomes. And digital poverty persists, despite the pervasive digitisation of everyday life and the greater exposure of all people to digital technologies, because it is fundamentally rooted in social inequalities. To tackle digital exclusion and poverty, technology and digital platforms have to change, and society has to change too.

The evidence has also surfaced three important shifts in the digital ecosystem in recent years that affect how and why digital poverty remains a pernicious problem. Firstly, digital is not a separate domain, sector, or agenda – it deserves special attention because of its significance in people's lives, but it also needs to be understood as fundamental to almost all aspects of everyday life. Rather than being taken for granted, the *digital* dimensions of people's lives need to be accounted for in relation to inequality more broadly. Secondly, the digitally excluded

are still digital citizens, meaning that digitisation affects everyone, whether they are online or not. Digital access and skills are often assumed in the design of public-facing services, and datafication means that information about people is collected and processed by digital services, with downstream impacts on their opportunities, experiences, and outcomes. And thirdly, the digital world can be unfair by design, when technologies and systems have not taken into account the social contexts that affect people's lives – their access, capabilities, and motivations, for instance. Design choices are often invisible, built into the very architecture of digital technologies and platforms and based on assumptions about the end user that are not transparent. On the lesser end, these dark patterns can nudge people to make choices they do not want to make, and on the more extreme end, they can create exclusionary environments that keep people from accessing and benefiting from the digital world.

> "There's a need for greater political and public will to say, you know, this is really important. If we don't make it possible and easy for people to get the access, skills and confidence they need, then people will be left further behind. [...] The facts are that we're still waiting for a digital strategy; that we cannot say for sure how big a part in that [strategy] there will be for real citizen digital inclusion (as opposed to high end digital skills) or that there will be investment in the soft infrastructure of community support which is necessary for digital inclusion. So it still feels to me that we're at a quite fragile stage in building the political and public will to act."
>
> Emma Stone, Good Things Foundation

While there is a lot that evidence can tell us about these myths and shifts and how they manifest in relation to each determinant of digital poverty, there remain several significant evidence gaps. Closing these gaps would help answer questions about how social and technical factors interact to create the conditions of digital poverty, and they would therefore help pinpoint more targeted policy solutions.

Cross-cutting Evidence Gaps

Across all of the determinants of digital poverty, it is clear that there are some significant gaps in the evidence about digital poverty that would help to inform evidence-based decision making. There are specific gaps relating to each determinant, but there are also three overarching gaps.

1. A lack of comparable and comparative data

There are very few long-running (longitudinal) studies collecting data on digital poverty. Of the evidence reviewed for this report, only a handful have been carried out using the same, or very similar, methodology for more than two years. Most evidence on digital exclusion is gathered for a one-off study or report. This makes it harder to track trends over time. It is important not only to ask the same questions over time but also to track the same people — something that the Ofcom Media Lives study has done intensively since 2005,[194] and which Citizens Online undertook for the Get IT Together study published in 2014.[195] Evidence shows that people's relationship with technology changes over the course of their lives, and more studies that track the same individuals for longer periods of time will help to identify the push and pull factors that affect digital inclusion.

In addition, there are few comparative studies - which could provide evidence of the difference that certain interventions, circumstances, or conditions make to certain outcomes. Many reports take account of how many courses were delivered or devices distributed but do not track the long-term impact of those interventions. In addition, little evidence compares the circumstances and interventions in one locality with another.

2. A lack of local-level data

A great deal of the evidence on digital poverty focuses either on the national/system level or the individual level, but the community or local level – the crucial middle that links the two – is missing.[196] This is the vital close-to-home space in which people form attitudes, learn new skills, norms, and behaviours, and engage with the digital world in terms of needs and outcomes. Some social science research has explored, for instance, the link between improved local infrastructure and investment in civil society and lower levels of violence and crime.[197] Similar studies that apply a wider lens to the determinants of digital poverty would be valuable.

Third sector organisations do report on digital inclusion initiatives and conditions of digital

exclusion in their communities, and while they importantly document locally successful digital initiatives that currently contribute to "digital inclusion" in a piecemeal way, they also often tend towards the anecdotal. Granular, quantitative and qualitative local-level data is needed from councils, school catchment areas, and local authorities on the determinants of digital poverty in order to target digital inclusion initiatives where they are needed most — work that localities like Greater Manchester[198] and Brighton and Hove[199] have begun to undertake.

There are challenges related to the interoperability of different datasets (i.e., ensuring different datasets can be combined and therefore comparably analysed in an efficient manner) in terms of identifying and then intervening where digital need is greatest, an issue that requires national investment – to collect more data on digital exclusion in particular across more national surveys – and more sharing of best practice at the regional and national level by local authorities.

3.   A lack of qualitative, lived experience, and co-produced research

Third sector, front line providers of digital assistance work very hard to consult, collaborate and co-create interventions with their communities in order to deliver services. They have insights into the lived experience of digital exclusion, which get conveyed in reports through illustrative case studies and pull quotes. But comparatively little academic evidence on the digital divide comes from qualitative studies, lived experience, or co-produced research with people who experience digital poverty in the UK.

There are some notable exceptions, such as the APLE Collective report on "Socially Distanced Activism"[200] and Sonia Livingston and Alicia Blum-Ross's book, *Parenting for a Digital Future*. But this remains a major gap in evidence, policy, and practice because qualitative research is most likely to reveal the intersectional realities of digital exclusion. There is unquestionably a need for more public participation — consultation of the public and insights gathered from lived experience — in both evidence gathering and policy formulation around digital poverty.

Many digital inclusion initiatives provide stop-gap assistance to people when they need digital access the most; and today, most of the research on digital exclusion still comes from front line service providers and charities, themselves. A more diverse range of research insights on digital exclusion is needed in order to take the long view on digital poverty: What are the trends over time? What are the deep, underlying social and economic issues that contribute to digital exclusion? These insights will complicate the picture of digital exclusion, but they will also reveal the more-than-digital mechanisms that cause it to persist.

Diverse Experiences, Diverse Solutions

When considering the evidence we have and the evidence we still need, it is important to remember that greater specificity on the determinants of digital poverty both complicates the problem and helps us tackle it better. One of the key themes of recent digital inclusion research is that there are infinitely diverse reasons that people experience digital poverty. That is because digital poverty is not solely a technological problem; it is also a social problem. It can therefore feel overwhelming at times to know where to begin. But the important thing is to make a start – to recognise the intersectional nature of digital poverty and to take steps to tackle its complexity at both a technical and societal level.

Knowing more about the diversity of experiences people have with digital technologies, data-driven systems, and the digital world is not an impediment to change; it helps identify the changes that need to take place for more people to benefit from the digital world. This evidence review is intended to contribute to the dialogue on digital exclusion and poverty, by spotlighting important contributions from the last few years, moving the conversation forward toward more nuanced, more ambitious thinking that treats digital issues not as separate from wider social and economic goals, but as central to a more equitable society.

Digitisation holds the potential to make many aspects of service provision and everyday life more efficient and cost-effective. What the issue of digital poverty reveals is the need to recognise that digitisation occurs in a diverse society in which these technological transformations will encounter all the complexities of human life. For the digital world to work for everyone, there are some *inefficiencies* we need to tolerate as a society because they are fundamental to preserving human dignity and rights. The role of interpersonal support networks and digital inclusion champions demonstrates this clearly: people need people, even in the digital world.
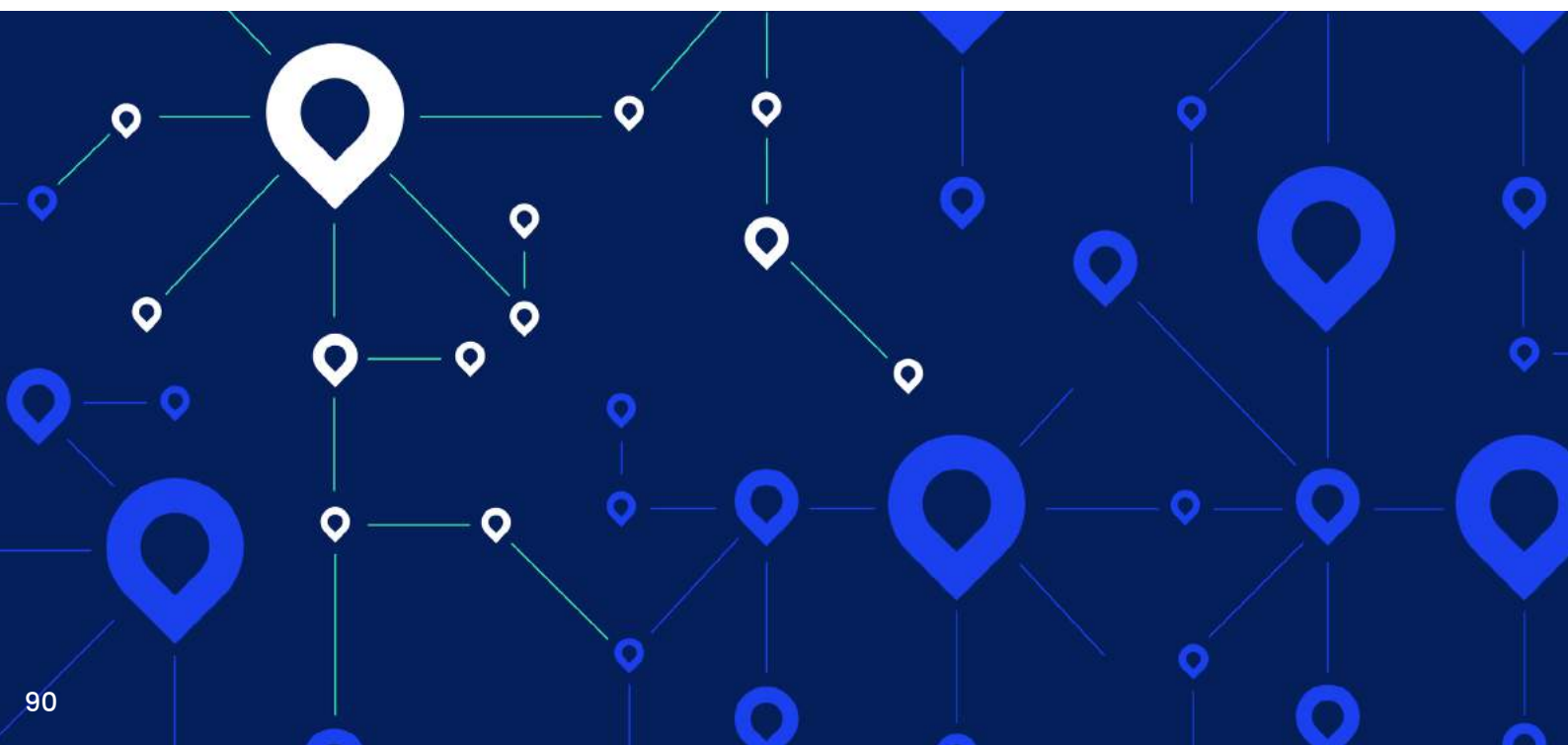
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