

Digital Poverty Transformation:
Accessing Digital Services in Rural Northwest Communities

by

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Executive Summary

This Digital Poverty Transformation in Northwest England report, set out the purpose of our project, presents a state-of-the-art literature review on digital poverty, and the findings of a telephone survey, in-depth interviews and a policy workshop.

The literature review is based on search terms strongly associated with digital poverty in a particular place, including *digital divide*, *digital inclusion*, *digital exclusion* and *hollowing out*. The literature review concludes by presenting a practice-based framework that we use to further explore how five key factors work to shape peoples' everyday practices – *digital infrastructure*, *sociodemographic*, *skills*, *place* and *purpose* - and uses this to identify where, within those everyday practices, interventions are likely to impact digital poverty transformations. The digital practice-based framework focuses our data collection efforts on understanding the meaning, materials, competences and resources (or lack thereof) that perform digital poverty in everyday rural life in the Northwest of England.

We used insights from the state-of-the-art literature review to inform the development of a regional digital survey tool (Appendix 2). Our key findings include:

- **Fixed broadband is broadly affordable, with 74% of respondents agreeing that it is**
 - When asked if it is too expensive to use the internet, a larger proportion of older respondents agree, 18% of those 65+ compared to 9% overall
- **People unable to use the internet at home can also struggle to find access within their communities.** Of the respondents who do not have fixed home internet connection or have not used the internet in the last three months, 16% agree that there is nowhere they can easily get to use the internet
- **Digital poverty is limiting routes to communication for residents in rural areas.** At a time when video calling has become normalised in healthcare settings, and has offered a vital route for maintaining contact with friends and relatives,
 - 23% of rural NW residents report not feeling confident holding video calls, rising to 40% of respondents aged over 65 and 51% among long term sick/disabled or carer respondents (though this last finding is indicative due to a relatively low sample size).
- **Digital poverty is preventing individuals from looking for jobs.** 26% of respondents did not feel confident searching or applying for jobs online. In particular, this affected:
 - 52% among respondents who are long-term sick/disabled or a carer;
 - 42% among respondents with a household income of less than 20K.
- **Digital poverty risks putting some respondents off from using digital services.**
 - Of the 16% of respondents who have trouble using the internet, 41% do not agree that using the internet provides everyday advantages.
- **Older people rely more on friends and family for help with the internet**
 - While 22% of respondents agree that they rely on friends and family for help with the internet, this rises to 43% among respondents 65+; 45% for unemployed respondents; 40% for those who are long-term disabled or a carer.
- **Using the internet gives people advantages in every-day life**
 - 87% agree; this drops to 77% among those 65+; 55% among respondents without a formal education and 71% among respondents lacking basic digital skills.

We developed an in-depth qualitative data collection tool (Appendix 3), designed to drill down into the everyday digital poverty experiences of those identified by the survey. Our key findings reveal that:

- **Rural settings can configure digital poverty:** a desire to keep up with friends, family and work colleagues through the use of digital technologies is denied by poor digital connectivity and unequal distribution of reliable digital infrastructure.
- **Digital poverty is amplified by the lack of local resources and infrastructure to hand:** poor public transport, shops and local amenities make access to digital services even more important.
- **Limited competence and low consumer confidence restricts people's ability to evaluate the 'best digital deal'** when buying digital devices and contract bundles for home broadband and mobile phone products.
- **Digital poverty pushes people into other forms of poverty:** such as food/energy poverty
- **Those in digital poverty feel unsupported by service providers when attempting to resolve connectivity issues,** contributing to 'technostress' as individuals attempt to navigate online and telephone help.
- **Affordability concerns constrain people's ability to participate in and realise the benefits of the digital world.**
- **Resilience and people's ability to have a 'Plan B' is hindered by the combined lack of local digital and physical infrastructure.**
- **Resilience for those in digital poverty is built by support from nearby family and friends**
- **Resilience is broken when digital connectivity fails,** making people feel helpless and isolated
- **Those in digital poverty adopt remedial practices to compensate for poor quality broadband** by relying on mobile phone data, or moving to different locations to get a mobile phone signal
- **Distrust of digital services is prevalent for those in digital poverty:** in connectivity service providers, access support services, digital service providers, and online security.
- **Distrust comes from a lack of service providers/mobile network operators (MNOs) transparency and support:** resulting in those in digital poverty adopting disabling practices, excluding themselves from digital worlds.
- **Distrust in digital connectivity reliability hampers confidence in online job hunting and working from home.**

We presented our quantitative and qualitative findings at a policy-oriented workshop. The discussion revealed distinct opportunities for policy intervention for the transformation of digital poverty at a national (Appendix 6) and regional (Appendix 7) scale.

Our regional policy recommendations for digital poverty transformation in Northwest England include:

- Harnessing social value investment from commissioned large-scale connectivity partnerships, to target educational outreach to the rural residents at the greatest risk of digital poverty;
- Incentivising job platforms and recruiters to conduct outreach to assist rural residents with online job searches and applications;
- Undertaking peer-to-peer outreach to boost confidence in accessing digital services.

Our national policy recommendations for digital poverty transformation in Northwest England include:

- Raising the awareness of social tariffs as available to Universal Credit claimants, with plans for a joint campaign to be set out in the forthcoming Digital Strategy 2022;

- Ofcom should require providers fully disclose the full range of charges included within mobile or broadband package with these new regulations to be drawn up in consultation with bodies such as Citizens Advice and other advisory groups.

1.0 Introduction

This project set out to uncover the drivers of digital poverty in Northwest Rural England and capture good practices where inclusion has been achieved via adaptive practices in the time of COVID. Whilst we know that digital poverty is caused by poor infrastructure and limited use of digital technologies, we know much less about the conditions that configure digital poverty and disengagement or exclusion from the world of digital services, so often a part of everyday life (Philip et al., 2017; Roberts et al., 2017). Rural communities face particular challenges in relation to digital poverty as they struggle with unreliable internet connectivity, reduced local resources and additional costs, often referred to as ‘the rural premium’ (Mason and Wagg, 2021). But there is a significant limitation to extant understandings of the conditions and practices of access that configure digital poverty. A more nuanced understanding of rural communities and the challenges that individuals face when caught in the ‘digital poverty trap’ that excludes and marginalizes them by denying them access to digital technologies and online systems.

Progressive digital policy agendas such as Digital-by-Default (i.e., replacement of government and social support services delivered through in-person, telephone and paper-based interactions with online services) are exacerbating existing inequality of access to digital services as everyday socio-economic life increasingly moves online (Marien and Prodnik, 2014; Williams et al., 2016; Wagg and Simeonova, 2021). The Covid-19 pandemic has exposed and accentuated digital inequalities, accelerating the movement to remote working and service delivery and making digital inclusivity even more of a pressing problem. A condition for digital access is digital skills. While the number of people in the UK lacking digital access is declining, it is still significant. In 2018, 8% of people in the UK (4.3 million people) were estimated to have zero basic digital skills. A further 12% (6.4 million adults) were estimated to only have limited abilities online. By 2025 it is estimated that 7.9 million people will still lack digital skills ([Centre for Economics and Business Research](#) (CEBR, 2015)). This matters because digital skills have been shown to lead to an increase in earnings of between 3% and 10%, 13% savings through online shopping and a 14% increase in family contact (CEBR, 2015). A second important condition of access is digital infrastructure. Access to broadband services in remote rural areas is still patchy, with 9% of rural communities lacking 4G access; 6000 ‘forgotten’ rural homes have no connectivity (Guardian, 18.09.2019). Yet despite evidence that some people seriously struggle to access and adapt to using digital technologies (Hayes et al., 2020; Hayes et al, 2021), we have little understanding of why this is the case, or the type of policy interventions required to achieve digital inclusion. By systematically identifying the conditions and practices of access, and the corresponding interventions that will include those currently on the margins of digital life, this report sets out to uncover the drivers of digital poverty in Northwest Rural England and capture good practice where inclusion has been achieved via adaptive practices in the time of COVID.

We define “digital poverty” as “the inability to interact with the online world fully, when, where and how an individual needs to” ([Digital Poverty Alliance](#)). Poverty is a complex term, and, in this context, it can be used to describe both those who do not have access to digital services (but are not otherwise impoverished), and those who are impoverished whose access to digital services are directly impacted by their socio-economic conditions (Barrantes, 2010). We know little of the extent of these digital poverties in the Northwest region; such insight would determine the need for infrastructure, and support services for digital skills development. Our starting point is that “poverty” and “need” are closely related concepts. When individuals are presented with a “Hobson’s choice” to either “get online” or “miss out”, they can easily spiral into digital poverty,

excluding them from tasks such as booking a virtual GP appointment, accessing online learning, managing online banking, remote working, and other online systems. Digital poverty excludes people from meaningfully participating in the digital world. The usability of online services, particularly in relation to welfare and benefit services (Universal Credit), is increasingly evidenced as a barrier to digital inclusion (Yates et al., 2015), as are issues with literacy, technology skills and in some cases the socioemotional condition of individuals who have complex information needs (Diaz Andrade and Techatassanasoontorn, 2021). Yet the situated nature and the particularities of these conditions and practices of digital poverty must be identified in a particular place before interventions can be developed for that place and that community.

This project addresses the significant limitations of extant understandings about the conditions and practices of access that configure digital poverty, disengagement, or exclusion from the digital world of services in rural areas. In so doing it generates valuable insight into appropriate interventions that will include those currently on the margins of digital life.

In Section 2, we present a state-of-the-art literature review that identifies the conditions of digital poverty and digital access exclusion in Northwest Rural England. We identify six key conditions that collectively characterize and specify conditions of digital poverty: infrastructure, social demographics, skills and support, place, purpose and everyday practice. Section 3 presents our findings from i) a regional survey of 501 participants in the rural Northwest of England, ii) 15 telephone interviews with participants identified as experiencing digital poverty, including four personas, using stylised facts to characterize those living in digital poverty, and iii) roundtable event with policy stakeholders. Section 4 provides the projects conclusions which are also captured and represented in Policy Briefing documents that are included Appendix 6 and 7.

2.0 Work Package One: A State-of-the-Art Literature Review

2.1 Introduction to Literature Review

This section reviews the academic literature and debates surrounding digital poverty in rural areas. We define 'digital poverty' as *"the inability to interact with the online world fully, when, where and how an individual needs to"* (Digital Poverty Alliance). While 'digital poverty' is less mentioned in the academic literature, synonymous terms like digital inclusion, digital exclusion and the digital divide are frequently used to refer to this phenomenon. We use 'poverty' as it is a complex term, which can be used to describe both those who do not have access to digital services (but are not otherwise impoverished), and those who are impoverished whose access to digital services are directly impacted by their socio-economic conditions (Barrantes, 2010). Digital poverty excludes people from meaningfully participating in the digital world. The usability of online services, particularly in relation to welfare and benefit services (Universal Credit), is increasingly evidenced as a barrier to digital inclusion (Yates et al., 2015), as are issues with literacy, technology skills, and in some cases the socioemotional condition of individuals who have complex information needs (Diaz Andrade and Techatassanasoontorn, 2021).

In this literature review, we focus on the challenges pertaining to access and use of internet-based devices such as laptops, personal computers, tablets, and mobile phones by rural citizens for the purposes of social connectedness, access to services (e.g., education, health) and economic reasons. Thus, this review focuses on the question of **access** to digital services and content and leads us to consider three questions: *access to what, for whom, and for what purpose?* (Clement and Shade, 1998).

In particular, we outline the five key themes, subthemes, and indicative authors that form our review (Table 1). We start with academic literature that has considered the specificities of **infrastructure internet access** in rural settings. Here we will examine the issues with fixed-line broadband and mobile-based internet connectivity, and the use of different devices. While much of the literature has focussed on such connectivity challenges, as Table 1 highlights, others have argued that we need to attend to the specificities of **socio-demographic** dimensions of rural settings. These accounts seek to provide explanations for why when, how and by whom digital services are accessed in rural locations. Namely, we will explore socio-demographic issues such as education, employment, age, and income. Then we will consider **skills and support** such as access to support, training as well as the prior use of technology. We look at **Place** referring to the specific geographic and community dimensions such as community facilities/spaces and public transport. Finally, we evaluate the **purpose** relating to the motivation for rural users to seek to access technology and what they might use it for.

While few studies have considered all the elements listed with specific reference to rural settings, we approach this literature review with an open-search strategy, namely, we search the literature broadly to look for insights on these topics. For example, while there is much literature on age and technology access, and while we know that rural populations are older than urban, many of the studies to date often do not differentiate by location. Thus, a degree of inference is necessary.

Table (1) Five elements influencing access and use of technology in rural areas.

	Theme Name	Key subthemes	Indicative reference
1.	Digital Infrastructure (e.g., broadband, devices)	Digital markets Evolving concepts of digital divide Rural/urban Availability/quality/speed of connection Cost/affordability Reliability Accessibility/usability Type of devices	Salemink et al., 2017 Mubarak et al., 2020 McGillivray et al., 2017 Philip and Williams, 2019 Cowie et al., 2020 Philip et al., 2017 Ashmore et al., 2015 Roberts et al., 2017 Williams et al., 2016 Gerli et al., 2020 Blank et al., 2018 Pearce and Rice, 2013
2.	Social demographics (e.g., users, skill gaps)	Socio-economic Education & employment Age – older adults Social resources Rural populations	Townsend et al., 2013 Correa and Pavez, 2016 Rasi and Kilpeläinen, 2015 Helsper, 2008 Olsson and Viscovi, 2016
3.	Skills and intermediary support	Digital training/initiatives Role of family & friends Social support by intermediary organisations Digital skills/access frameworks	Wagg and Simeonova, 2021 van Deursen and van Dijk, 2010 Gerli et al., 2018 Asmar et al., 2020
4.	Place (e.g., organizational, library, community assets)	Availability of public wifi Libraries/community hubs	Ragnedda, 2018 Robinson et al., 2020 Reisdorf and Rhinesmith, 2018
5.	Purpose (meaning and motivation)	Effective/meaningful use Usefulness/relevance Trust Anxiety/fear Personal Values	Gurstein, 2003; 2012 Hosman and Comisso, 2020 (El-Haddadeh et al., 2019 Yates et al., 2020 Helsper 2009

In the final section of this literature review, we will examine the limited literature that has suggested that we need to understand digital poverty, and access to meaningful services, as an assemblage of situated practices. This literature is concerned with understanding how ICTs are embedded into existing routines and practices of rural users.

Inspired by the synthesizing of literature, we propose a practice-based perspective that is particularly suitable for investigating digital poverty in rural areas. This perspective allows us to switch our attention to the everyday doing of digital, which we termed as 'digital practice'. To enable better dissemination of our findings, we illustrate the practice-based perspective of 'digital practice' in a framework (Figure 3) and explain how it can help to enhance our understanding of dealing with digital poverty in rural areas.

2.2 Digital Infrastructure and the Digital Divide

2.2.1 Infrastructuring Digital Markets for Access

In the UK, there has been clear recognition of the need to put in place an inclusive digital infrastructure, and for the most part this has been approached through a combination of state and market action. This has been necessary to ensure that internet access is available at affordable prices, in settings where the commercial case for the provision of such services is either not clear cut, or is clear cut in a negative direction, i.e., too costly to provide (Roberts et al., 2017a). Thus, a key challenge for those working to enable digital access and to overcome digital poverty has been the structure of the connectivity market in the UK. While digital connectivity infrastructures have been installed at speed in urban areas, historically, rural areas have had to wait, and very rural areas often remain unconnected. Phillips et al. (2017: 287) describe the territorial effects of absent digital infrastructures, producing variations in the availability and quality of telecommunications at different spatial scales,

“An urban-rural digital divide across many countries in the Global North has been acknowledged for some time in academic and policy circles. In 2001 the OECD identified, at the international level, an urban-rural digital divide that was framed by cost and quality of access and related network costs and infrastructure capabilities.”

This observation remains pertinent, as MNOs continue to show little interest in investing in sparsely populated and highly distributed very rural locations such as those typically found in the northwest of England (see Figure 1).

Figure 1. An Example of Rural areas in the northwest of England: Downham, Lancashire, population 214.



The absence of rural digital infrastructure has been highlighted as a serious potential threat to rural communities, threatening the hollowing out of communities as young people leave for jobs in the city and for the appeal of an urban life that is so inextricably entangled with the world of digital (Correa and Pavez, 2016). Several authors have reported attempts to improve digital infrastructures in remote rural communities, emphasising the “stubborn” (Philip et al. 2017: 287) nature of rural digital exclusion (Gerli et al., 2020). A common finding is that even when digital infrastructures are in place, rural digital infrastructure often offers inferior and unreliable or variable quality compared with those serving urban areas (Philip et al., 2017; Cowie et al., 2020). This has resulted in significant numbers of people being unable to take advantage of digital connectivity potentialities because of where they live and work. Yet, as Philip et al. (2017) point out, there remains a paucity of academic literature about the specific spatial nature of rural digital exclusion and the ramifications of this.

In 2018 the Government identified the digital divide as a critical national priority: *“We have put in place legislation to create a new Universal Service Obligation giving every household and business the right to request a broadband connection of at least 10 Mbps, to ensure no-one is left behind”* (Jeremy Wright, “Future Telecoms Infrastructure Review”, 2018). To fast-track digital infrastructure development the Government launched a £1bn *“nationally coordinated [research and innovation] programme of 5G testbed facilities and trials”*. The Minister of State for Digital and the Creative Industries explained,

“The ground-breaking projects announced today will help to unlock 5G and ensure the benefits of this new technology are felt across the economy and wider society”.

These investments have taken a particular form: as projectized market experiments, often led by SMEs in collaboration with NGOs, local authorities and academics, working in specific geographic areas (North Yorkshire, Dorset, and the Midlands to put innovative digital infrastructures in place, and to ‘test’ those digital infrastructures by mobilising and collecting data that demonstrates additional digitally enhanced health services, tourism, transport infrastructure and critical response services, for example. These investments, amongst others, are having a significant impact on the development of digital infrastructure across the UK.

In 2021, Ofcom, the UK telecommunications regulator, published its Connected Nations 2021 report claiming significant improvements in digital infrastructures:

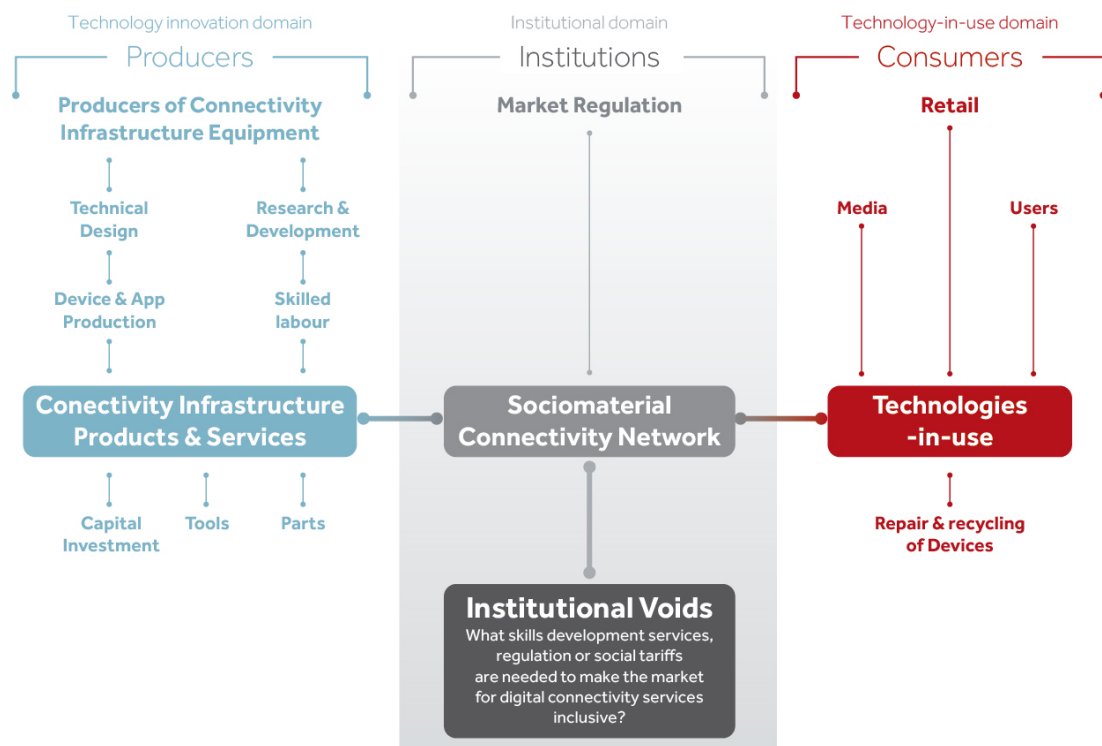
- **Full-fibre broadband is available to 8.2 million homes (28%).** This is 3 million more premises (10 percentage points) than a year ago and represents the highest year-on-year increase since full fibre started being rolled out in the UK.
- **Gigabit-capable broadband is available to 13.7 million homes (47%).** This includes full-fibre and upgraded cable networks that “are capable of delivering” download speeds of 1 Gbit/s or higher.
- **Around 123,000 homes and businesses (0.4%) are still without access to a decent broadband connection.** This figure factors in coverage from both fixed and fixed-wireless networks. The universal broadband service is helping some people in areas where decent broadband is not available. These properties may be eligible for a connection under the universal service.
- **5G rollout** has continued at pace, with the number of mobile base stations providing 5G services more than doubling over the last year, to **over 6,500 sites across the UK. 87% of these are in England**, 8% in Scotland, 3% in Wales and 2% in Northern Ireland. We estimate that 5G is available from at least one mobile network operator (MNO) outside 42-57% of premises.
- **Mobile connectivity covers around 79% of UK landmass** and is not growing. The four Mobile Network Operators (MNOs) – EE, O2, Three and Vodafone – each estimate they provide 4G outdoor coverage to c.99% of premises. There has been some incremental progress in increasing coverage across each of the UK Nations by the MNOs, including 46 fresh deployments towards their Shared Rural Network commitments.
- **Average monthly data usage on fixed networks has increased to 453GB from 429GB last year, and from 315GB in 2019.** Whilst peak usage remains in the evening, networks continued to see high demand during the day due to continued working from home. Networks have continued to perform well despite significant demands as people and businesses relied on their phone and broadband connections during further periods of lockdowns due to the Covid-19 pandemic.

As noted by Morris et al. (2022), despite these significant improvements, evidence suggests that the digital divide sustains, with rural SMEs significantly affected, constraining socio-economic flourishing in very rural places. Using a survey of 110 businesses in Wales, Morris et al. (2022) identify the barriers and opportunities associated with the accessibility of high-speed broadband services and their impact on business decisions. Their findings show that small businesses are more dependent on reliable digital connectivity to support their basic business activities than their urban equivalents and that the Coronavirus global pandemic has, not surprisingly, further driven businesses’ dependence on reliable digital connectivity.

Even before reaching this point, putting and holding in place economically viable digital connectivity infrastructures and services demands the development of complex systems of innovation that move beyond the traditional provisions of the large MNOs in the UK (for example, EE, Vodafone and O2). It also requires making markets for such services in these new and hard-to-reach places, with communities that do not have and sometimes find it difficult to imagine digital access as part of their everyday lives. To address this issue, we draw on the market-making literature to sensitise us to the market-making issues that enable us to understand i) market infrastructures that are currently being imagined and put in place (Mason, Friesl and Ford 2017); ii) the systems of innovation (Geels 2004) that need to be created to enable new markets to operate in areas of digital poverty; and iii) the market-making work that needs to be done to make connectivity innovations accessible and valuable within this emerging socio-material eco-system of action (cf. Fernandes, Mason and Chakrabarti 2019; Mason, Friesl and Ford 2019; Palo, Mason and Roscoe 2019). Our reading of the literature, together with our experience of researching the role of digital infrastructures in opening-up access to multiple markets and service provision, extends Geels (2004) ‘systems of innovation’ framework. Geels (2004)

framework recognises two core domains of action: the *domain of production* (focusing attention on the production system for new 5G technologies, and the challenges such emergent systems face) and the *domain of technology-use* (focusing attention on the practical application, use and consumption of such innovative product-service bundles that are put to work in the real world to make the lives of potential consumers 'better' in some discernible and valuable way). Geels (2004) also discusses the role of the state and regulators in connecting these domains to make them work as one interconnected system. We further develop this view. We additionally, consider the *institutional domain* and the work that needs to be done to create a robust and institutionalised system of production *and* consumption for emergent 5G technologies and the product-service bundles that rely and capitalise on such infrastructures. Data security and secure systems are becoming an increasingly important theme in this domain (see Figure 2).

Figure 2: An Analytical Framework for the Identification of Institutional Voids Across Three Rural connectivity Domains.



We argue that if key elements of the emerging socio-technical eco-system are not present at key points of technological innovation, the market system will fail, and the market will not be opened-up to those currently in digital poverty.

The infrastructure view presented here suggests that digital poverty is based on the presence or absence of the digital infrastructure itself. We explore this conceptualisation before expanding it to consider the entanglement of digital infrastructures and technologies with our everyday social lives.

2.2.2 Digital Connectivity and Devices: from Digital Divides to Digital Poverty

Digital poverty has its origins in discussions relating to the digital divide (Gerli and Whalley, 2021) digital inclusion (e.g. Wagg and Simeonova, 2021), with definitions and debates about access to digital connectivity (also widely referred to as Information Communications Technology (ICT)) and the internet. Precisely because early research in the UK in particular (see, for example, Norris, 2001), but elsewhere too (see Van Dijk, 2005) focused on a lack of digital infrastructure in key places, the digital devices used to access the heavy-duty infrastructure of fibre-optic cables, 3G, 4G and now 5G masts, transmitters and connectors, the digital divide was initially framed in terms of missing technological infrastructures (Brunori, 2022)). Correa and Pavez (2016) found that despite not being able to get good mobile service, many people from the Chilean rural communities purchased mobile phones to use when they travelled outside their village. Haenssger (2018) states that mobile technology has become so pervasive in some domains of Western life that it is simply expected of everyone to use it so as not to inconvenience others.

Devices – the smartphones, laptops and tablets - sometimes referred to as ‘first order’ infrastructure elements, act as the key interfacing devices with the internet. Ownership, and none-ownership of these devices, their cost and their frequency of use have been of primary concern in these studies (Friemel, 2016). Some researchers have even conceptualised a ‘device divide’, which looks at the differential use based on the number of devices someone has access to. For example, some people may use their smartphone as ‘a primary internet access point,’ while other people supplement their use with other devices such as PCs or laptops (Pearce and Rice 2013). Tsai et al. (2015) understand accessibility in terms of ‘ease of use’: especially for older people using digital tablets. Mobile devices are making the internet much more accessible for these citizens.

What is clear, is that new configurations of internet access are emerging, changing at pace in relation to new forms of digital mobility. These changes represent key opportunities for inclusion and are engendering transformations in existing practices, as well as creating new ones. Mobile devices potentially broaden who is able to access the internet. Those without access may not have a PC, may have access to the internet via a smartphone or other mobile device, potentially helping to overcome ‘many of the infrastructural differences between urban and rural, and developed and less-developed regions, as wireless connectivity requires far less heavy-duty infrastructure’ (Pearce and Rice, 2013, p.724). Mobile devices may also be a more affordable option for those unable to afford broadband or a phone line at home. Mascheroni and Olafsson (2016:1658) write that smartphones with data plans offer the promise of *‘a cheaper and more accessible route to the Internet’, especially for ‘less advantaged social groups’,* observing that *‘different devices do not lead to the same Internet experience’* and *‘while mobile-based internet use reduces the access divide, it may produce new inequalities in terms of usage patterns and skills.’*

A key feature of both the academic literature and of policymakers seeking to overcome the divide between the ‘haves’ and the ‘have nots’ has been improving access to infrastructure and technology, whether in terms of digital devices, bandwidth, phone line, broadband access or amount of kbits per actor. The concept of the digital divide has expanded as new technologies have been introduced (Gao et al., 2015).

Historically the literature has described a lack of access to heavy-duty digital infrastructure and its associated devices in terms such as the ‘digital divide’ and ‘digital inequalities’ (Van Dijk, 2005; Helsper, 2017). But in recent times, efforts have been made to foreground more positive, people-centred approaches to the absence of material digital infrastructures, resulting in the introduction of the term ‘digital inclusion’. Digital Inclusion is often used interchangeably with ‘digital divide’ and not only recognises the high degree of correlation between digital inequalities and social exclusion (Mervyn et al., 2014; Helsper, 2008), or the strong links between socioeconomic exclusion and digital exclusion (Clayton and MacDonald, 2013; Buchanan et al., 2018), but importantly it is increasingly identified with a need for a more nuanced understanding of digital exclusion (Zheng and Walsham, 2008; Marien and Prodnik, 2014; Helsper and Reisdorf, 2017; Wagg and Simeonova, 2021).

As more nuanced understandings of digital inclusion have developed, reference has increasingly been made to the activities necessary to ensure that all individuals and communities, including the most disadvantaged, have the right access, motivation, skills and trust to navigate confidently the internet and its plethora of online worlds (Government Digital Service, 2014). Indeed, considerable effort has been invested in identifying digital inclusion activities, including creating access to: (1) affordable, and good quality broadband and mobile access, (2) Internet-enabled devices, (3) quality technical support, (4) accessible applications and online content designed to enable and encourage self-sufficiency, participation and collaboration, and (5) digital skills training and support (Park et al., 2019; Al-Muwil

et al., 2019; Fang et al., 2019). Such digital inclusion activities are delivered through the provision of initiatives by a variety of organisations (public, private and third sector), to tackle digital inequalities, the implementation of policy-level rural digital inclusion, Digital-by-Default and improve social inclusion (Marien and Van Audenhove, 2012; Yates et al., 2015; Al-Muwil et al., 2019; Wagg and Simeonova, 2021). It is to this broader conceptualisation that we now turn as we move from a digital divide between the urban and the rural, the ‘haves’ and the ‘have nots’, to focus on the socio-demographic aspects of digital poverty.

2.3 Social Demographics and Digital Poverty

In response to calls for more sophisticated and nuanced understandings of the digital divide, researchers have begun to focus on social demographics, studying the ways environmental, economic, political, and cultural factors influence, and are influenced by, for example, migration (from urban to rural settings), fertility (births), aging, mortality (deaths), and morbidity (disease). That is to say, the use of smartphones and mobile applications has been additionally explained by socio-demographic dimensions such as age, income, educational background, or region (Gao et al., 2015). These demographics are reflected in the OECD’s definition of the digital divide:

“the gap between individuals, households, businesses and geographic areas at different socio-economic levels with regard both to their opportunities to access information and communication technologies (ICTs) and to their use of the internet for a wide variety of activities’ (OECD, 2001)

Another commonly cited definition for the digital divide is *“the differential access to and use of the Internet according to gender, income, race and location”* (Rice 2002 in Couldry, 2003, p. 89). These definitions point to more than the absence of technological infrastructures. Rather they explicitly associate the missing technology with people and places foregrounding the importance of the socio-demographics of internet users. The claim then, is that socio-technical and socio-economic differences are tied-up with the notion of place and the geo-spatial demography of exclusion.

Studies show that some demographic groups are unlikely to use the Internet or use it only in specific and limited ways. For example, non-users are typically older, less educated, more likely to be unemployed and on a low income, disabled, refugees and socially isolated (Helsper and Reisdorf, 2016; Borg et al., 2018; Alam and Imran, 2015). Martínez-Cantos, (2017) and Arroyo, (2020), found that many women in developing countries have an inability to access, operate, and use digital tools and technologies in a meaningful way (also see Rebollo and Vico, 2014; Rashid, 2016). While Townsend et al., (2013) found that those living in rural or remote communities often lack digital access and local infrastructure, and experience poor-quality internet speeds and mobile reception (also, see Farringdon, 2015; Correa and Pavez, 2016).

All these studies connect social demographic factors to geo-spatial places which are quite often described as ‘rural’. We will explore the issue of place in more detail below. The point we make here is that many of the socio-demographic factors that hold digital poverty in place in rural settings, also explain digital poverty in urban areas (cf. Barrantes, 2010). It is, therefore, problematic to assume that being geographically rural or remote constitutes being at greater risk of digital exclusion than in urban areas. The picture is far less binary and more complex than that. An analysis of urban digital exclusion using socio demographics make this clear, revealing variations in internet use are not only the result of available digital infrastructure; they are also influenced by demographic factors such as age,

education and occupation (Blank et al., 2020). Digital exclusion and digital poverty are, therefore, a problem for both rural and urban populations, particularly for those residing in places at increased risk of multiple deprivation (Wagg, 2021).

2.3.1 Social Inclusion and Digital Connectivity

Digital inclusion has a strong social aspect and is generally associated with broader aspects of social inclusion. Thus, digital inclusion is important for social inclusion and equality, to ensure equal access to the benefits offered by digital technology and the Internet (Mervyn et al., 2014; Williams, 2016; Díaz Andrade and Doolin, 2016). Similarly, digital poverty appears to be grounded more generally, though not exclusively, in broader definitions of poverty, deprivation and exclusion, and can therefore form part of a self-fulfilling prophecy. For Guerrieri et al. (2010), levels of economic development and social inequality are the main determinants of digital inclusion or 'e-inclusion' and thus any digital inclusion policy must aim to develop *"a social system that promotes the economic development and social welfare of its citizens by reducing inequality in all its various aspects"* (p. 139). Policies that support social inclusion are also seen as making a difference to engagement with technology (Helsper 2008). However, it is not only digital exclusion that causes social inequalities. Inequalities in access and use can reproduce the same inequalities (Sparks 2013) and exacerbate existing sources of inequality and social exclusion (Hardill and Olphert, 2012). For van Deursen and van Dijk (2010), the difference in levels of internet skills leads to differences in usage for news, information and personal development that once again map 'on to familiar social indicators' (Sparks, 2013). While Helsper (2008: 12) found that social isolation and economic disadvantage *"tend to be associated with a lack of basic/practical use of the internet"* and that *"those who suffer specific social disadvantages are least likely to benefit from the very applications of technology that could help them tackle their disadvantage"*. For example, being elderly (and more likely to be isolated, with constrained social networks) was found to reduce the likelihood of benefiting from social applications of the Internet.

The notion of digital inclusion is not without its critiques. The literature is replete with calls for older citizens, for example, to be *"reskilled and educated"* (see section 4 below), and that *"rather than trying to change older citizens"*, digital technologies could be reshaped to *"fit better with the lives of older citizens"*. Further, older citizens should be involved in shaping digital devices and worlds to generate *"situated and distributed literacy"* which understands the contexts and situations in which people act (Selwyn et al., 2003: 578). Seeing digital competence as an individual characteristic provides a limited view of digital inclusion. From this purview, digital design should always and necessarily be a co-design process where, in Selwyn's (Selwyn et al., 2003: 578) words, *"distributed competences of elderly dyads [couples living together], families with three generations and informal networks of villagers"* can work together to shape technologies and processes that support access to them and their use, so that they work for all. Thus, digital inclusion needs to be imbued with notions of agency *"[that] can be seen in the way in which individuals know from whom to ask for help and how to do so if and when needed"* (Rasi and Kilpeläinen 2015: 156).

A second critique of the digital inclusion concept has been that the European social policy emphasis on the need to remedy social exclusion through digital inclusion, puts the responsibility on the very individuals and communities that lack skills to act. There is little evidence of efforts to transform the structural and societal problems that perform moments of exclusion and privilege on an ongoing basis (cf. Taylor and Packham, 2016). This is particularly pertinent to those concerned with digital poverty transformation because such moments *"remove both responsibility and accountability from the state to the individual when something goes wrong"* (Roberts et al., 2017b: 380). The question is rarely asked but perhaps people should be allowed to make an informed choice concerning joining or

declining to join the digital society (cf. Klecun, 2008), though the reality of this is becoming increasingly questionable.

In sum, digital inclusion policies continue to struggle to address significant inequality issues, bringing into question the concept itself. This, it is claimed, may be due to the narrowly conceived, short-term, technology-centric solutions that are generally applied (Mariën and Prodnik, 2014; Díaz Andrade and Techatassanasoontorn, 2021). This insight has important implications for how we think about digital poverty – not just as a technical deprivation but as part of a broader, complex socio-demographic practices. In other words, it's more than the technologies we have access to. It's also how we are able to integrate those digital technologies into our everyday socio-economic lives.

2.3.2 Economic Resources and Digital Poverty

Economic resources are a key element of the socio-demographic characteristics that are repeatedly shown to impact digital poverty. A number of studies have highlighted that the ownership of devices and connectivity to the internet vary depending on educational attainment, work role and income (Tirado-Morueta et al., 2016). For example, Olsson and Viscovi (2016) found that while 12% of the low-income group lacked ICT and internet access, it was only 4% for the middle-income group. All of the high-income groups had one device or more. Family financial support was attributed to the affordability of smartphones (Ma et al., 2016).

Directly related to this is the financial outlay and costs of devices or internet connection. Recent statistics indicate that during the pandemic as many as one million households in the UK struggled with broadband bills (Ofcom, 2022), raising concerns about the increase in “*data poverty*” in terms of the affordability of “*sufficient, private and secure mobile or broadband data to meet everyday needs*” (Nesta, 2020: 5).

Financial outlay and cost are frequently cited in the academic literature, as a significant factor in inhibiting older citizens from using technology (Lam and Lee, 2006; Neves et al., 2012; Richardson et al., 2005; White and Weatherall, 2000). This has included the cost of tablets (Tsai et al., 2015), computer equipment (Lee et al., 2011), internet subscription (Lee et al., 2015; Stoica, 2015) and assistive devices and training for people who have a vision impairment (Okonji et al., 2015), for example. Mobile devices and the services can be “prohibitively expensive for most pensioners” and do not often provide a “good deal” for pensioners (Kurniawan, 2008: 891). Similarly, Wagg (2021) identifies the cost of purchasing and subscribing to digital devices and paying for online services such as broadband and mobile phone subscriptions and mobile data as key barriers to digital inclusion. Hardill and Olphert (2012) found that the cost of having both a mobile phone and landline was an issue for households on fixed incomes. Cost was also a significant factor affecting the acceptance of smartphone technology by older citizens in China (Ma et al., 2016). In contrast, Gao et al.’s (2015) study of older people in China found that price did not make a significant impact on the purchase of smartphones.

While cost can be a major factor impacting digital poverty, there are other reasons. Hardill and Olphert (2012) found that aging and its consequences had their own impacts on digital poverty. Only a minority of elderly people in their study gave up their phones because of cost, and socio-economic reasons. For most, it was problems in remembering how to use the phone, linked in part to the infrequency of use. These issues are sometimes coupled with a reducing need for mobile technologies, as their own

mobilities reduce (Nguyen et al., 2015). The lack of perceived benefit of using digital technologies can be a bigger issue than cost (Melenhorst et al., 2006). This raises important issues of perceived need in relation to digital poverty, with some people opting out, not for socio-economic reasons, but for perceived value reasons, which may not necessarily hold.

2.3.3 Social Resources and Digital Poverty

In addition to economic resources, research suggests that social resources and what is often referred to as 'social support' can also have a significant impact on how people engage with and access digital worlds. For example, an older person's personal and social networks can play a significant role in determining their use of and learning about new technologies (Rasi and Kilpeläinen, 2016). As one of Livingstone et al.'s, (2005: 56) respondents explained:

"The more people one knows who use, say, email, the more incentive one has to use it oneself; the more one's community is "wired", the greater the benefits of participating online."

Rasi and Kilpeläinen, (2016) argue that it is important to recognize that certain demographics – and specifically older people who lack social networks - are most of vulnerable in terms of being excluded from the digital society. Nasi et al. (2011), for example, in their analysis of survey data of older people in Finland found that 'seniors who have a variety of different leisure activities are by far more likely to be active users of the Internet than those less active during their day.' More broadly, and beyond the elderly as a social group, personal networks have been found to have consequences for internet use, particularly in rural areas (Boase, 2010).

Personal networks are an important demographic characteristic of digital poverty and are often influenced by the structures and cultures of an individual's and a community's setting. Rasi and Kilpeläinen (2016) argue the traditional structures of local culture and local history of the village played an important role in everyday lives and explain low use and non-use by social, cultural, and local factors. Similarly, Hakkarainen (2012: 240) concluded that *"some older people's distinct identities, interests, history, and culture might shape their motivation and capacity to welcome and use computers"*, though Rasi and Kilpeläinen (2015: 157) also found the example of participants that refused to comply with *"the social pressures to use the Internet"*, thereby showing *"media agency that entails resisting and deviating from customary ways of thinking and acting"*, (also see Lipponen, 2007).

Family and friends are an important social resource, and their absence has been associated with digital poverty. This particular form of social network features strongly in the research on older citizens and digital technology. Friemel, (2016) found that family members can play a key role in providing support and initiating access to a range of devices. In contrast, the absence of relatives or social support at home has been cited as one of the key factors affecting levels of access (Richardson et al., 2005):

"Opportunities afforded by the Internet technologies developed through their interactions with their children and grandchildren", (Rasi and Kilpeläinen, 2015: 156)

In sum, family members can play a key role in older people acquiring devices, either through pass-me-downs from children or through encouragement to buy and use (Selwyn, 2004, Saunders, 2004).

Zhou et al. (2014) found that older citizens usually obtained their first mobile phone as a gift. Sometimes this gift was an old phone when a family member has finished with it or replaced it. In other settings, respondents reported, *“seeing others use tablets, getting recommendations from family members, or having tablets given to them”* (Tsai et al. 2015, 695); reporting this as the primary reasons for engaging with digital worlds. The opinion of family members and family are often taken into account by users, particularly older users engaging with smartphones (Gao et al., 2015). Family conversations and family device use often generate interest and a desire to learn how to access and use digital devices (Sourbati, 2009, Friemel, 2016, Gatto and Tak, 2008). And in some studies, younger people were found to social pressure to get older people to buy and use mobile phones (Conci et al. 2009), with family members often invoking safety concerns as a means to urge their seniors to use them (Renaud and Biljon, 2010). Multiple studies report participants recognising pressure from family members to become digital, and this was often received positively: *“many participants felt that it had motivated them to adopt new practices”*, (Quan-Haase et al., 2016: 701).

Ongoing digital learning is strongly associated with strong social resources and networks. Family members, including grandchildren and adult children, can play an important role in teaching and helping older people to access and use digital services. This includes making use of mobile devices and the internet (Weaver et al., 2009, Sayago and Blat, 2011, Neves and Amaro, 2012, Nguyen et al., 2015). Younger people were often found to help their seniors with mobile phone operations such as topping up credit or filling in the address book (Kurniawan, 2008). Avilés (2016) and colleagues found that family members play a vital ‘infomediary’ role that boosts the needs and confidence of the subjects’ learning of ICT – suggesting that family networks and the need to communicate can become a motivation for the learning of digital skills.

Finally, family members were cited as a reason why older people did not need or want to access digital worlds: there was someone else who could do that for them. This is what Selwyn et al. (2003) refer to as ‘access by association’, for example, a friend’s or relatives’ uses their device to access digital information or services to support the senior citizen.

Formal support networks also act as a critical form of social resource in supporting digital access and inclusion. These often take the form of intermediary organisations such as the Good Things Foundation, Age UK and public libraries. The literature places significant emphasis on digital skill improvement (see section 4 below). While clearly a determining factor of digital poverty, it can eclipse or obscure the importance of ‘social support’ which is a critical part of the learning and digital skills development process (Asmar et al., 2020; van Deursen et al., 2014). Asmar et al. (2020) define the digital inclusion concept of ‘social support’ as the emotional, instrumental, and informational support individuals receive when being helped to use digital technologies. Support is emotional because, when it works well, support is given through appraisal and social companionship, often during a time of heightened distress caused, for instance, by an individual’s fear of technology. Support is instrumental when it is task-oriented, and informational when it takes the form of guidance and advice during a learning process.

These different and varied means of support have become increasingly important as society has changed, configuring its subjects to be digital humans. In their study of caring institutions, Sweeney and Rhinesmith (2017: 1491) see care as an essential infomediary role that should be embedded “as an ongoing and participatory process, prioritizing people and community relationships over deliverables”. In other words, care as social support, in its digital and other socio-material forms, is a central part of the everyday, and of a good quality life.

2.3.4 Education, Employment, Age and Ethnicity

Related to but distinct from socio-economic demographics, studies have shown that education, employment, age, and ethnicity can have a significant impact on digital poverty. These four socio-economic subthemes affect an individual's standing in society and because of this how they have access to the skills and devices they need to be part of the digital world.

The impact of education and employment on digital poverty is often researched together. Education has a significant impact on *"the propensity to have digital technologies and the number of devices"* (Olsson and Viscovi, 2016: 281), while those employed in business, the public and private sectors have much higher digital activity than those who were unemployed, retired or housewives. As Tirado-Morueta et al. (2016: 1437), explains, *"a [digital] divide between elderly people according to the work they do"*. Similarly, previous work experience and whether someone used a computer regularly before retirement also made a difference. However, studies in this area have shown some contradictions. For example, Selwyn (2004) found that while many people often learn about, and had to use, computers in the workplace this didn't necessarily translate into later use in older age and there were other influences *"causing older citizens to make less use of ICT despite their prior skills and experience of computers"* (Selwyn, 2004: 381). Barnard et al. (2013) found that people who had used a computer at work continued using them after retirement, however, if new technologies differed too much from what they had previously used they often felt left behind. Not all experiences of accessing digital services through employment were good: *"many interviewees had learned to use a computer during their late working years, and had experienced it as extremely difficult and frustrating, which affected their current perceptions on digitalization"* (Suopajarv, 2015: 120).

Employment can be impacted by the rural location. For example, Pearce and Rice's (2013) study of rural areas in Armenia, found that people working in agriculture had less exposure to technology at work than people working in offices in urban areas. Similarly, there can be migration to rural areas after retirement. In rural Australia, Warburton et al. (2014) examined improved access to ICTs as a way of increasing social inclusion among rural older people. It is found that farmers account for only 0.4% of the total Chinese online population (CNNIC, 2007). Age seems to be a particularly important socio-demographic characteristic of digital poverty in rural areas. Warburton et al. (2014) identified major barriers to digital poverty transformation due to poor digital usage by many rural agencies, and poor digital usage among rural older people, driven by a lack of skills as well as lack of access and resources. While the Warburton study highlights barriers to digital inclusion within a rural context, it also provides an example of the growing phenomenon in developed countries of aging rural populations. This socio-demographic are typically less engaged with digital technology than the rest of the population (Hill et al., 2008; Damodaran and Sandhu, 2016; Hodge et al., 2017).

Finally, ethnicity, in some settings, seems to be a significant factor in shaping digital poverty. For example, Rennie et al. (2013) focus on remote Aboriginal indigenous communities in Australia and the challenges they face accessing digital technology. While McMahon (2020) discusses two examples of digital inclusion initiatives co-developed with First Nation, Inuit and Métis indigenous populations in Canada. Their study details a supply-side intervention focused on digital access policy, and a demand-side intervention focused on digital adoption. A key insight here is that more emphasis can be usefully placed on co-development initiatives that address the specific needs and situated practices of particular user groups. The local ownership and control of digital inclusion initiatives are important to communities and reflect the specific characteristics of user communities.

2.4 Digital Skills and Intermediary Support

2.4.1 Literacies

As referred to earlier, the literature places significant emphasis on digital skills improvement to ensure participation in the digital economy. Digital literacy and skills have been a key focus of the “*second order*” digital divide literature and are the focus of many empirical studies on digital technologies and society (Hargittai, 2002; DiMaggio et al., 2004; van Deursen and van Dijk, 2010) that places emphasis less on the physical access and more about the range of skills and resources available to individuals (Guerruero et al., 2010: 115 in Sparks 2013). However, what actual digital skills are required to be digitally included remains inconclusive as a plethora of terminology such as digital literacy, digital competence, ICT skills, and information literacy, is used interchangeably in the literature. Martinez-Cantos (2017) suggests “*digital literacy and associated competencies play a key role in the development of the Information Society, and a priority in initiatives for social inclusion and human capital*” (p.420). In comparison, Yu et al. (2017) state how information literacy is an important literacy for ICT adoption and increased use of digital devices, without which “*the benefits of digital participation will be significantly diminished*” (Anderson and Johnston, 2016: 8). This notion of being able to participate or not in society feeds into the debate on information poverty and the “*information rich*” and “*information poor*” (Chatman, 1996, Haider and Bawden, 2007).

Some scholars argue technology and the digital agenda has the potential to exacerbate information poverty and exclude individuals who cannot access information online or interpret the information available, thus restricting their ability to seek information and make informed decisions based on that information (Marcella and Chowdhury, 2020). However what exact skills and abilities people need to be digitally included differ quite radically from person to person (Carmi et al., 2020) and are often determined by peoples’ information-seeking behaviours and motivation (Jaeger et al., 2014), but importantly what they seek to do using digital. The literature highlights how scholars and policymakers increasingly want to understand and measure the level of individuals’ digital literacy or digital competence, particularly when evaluating the outcomes of digital inclusion training and initiatives. For example, Helsper (2008: 43) identifies 11 different types of engagement with the internet including “*information, learning, gaming, leisure, communication, individual networking, social networking, shopping, finances, eGovernment, and civic participation*”. She found that as the number of activities a person does increases, the likelihood of them doing more intermediate and advanced activities also increases. Table 2 provides some examples of digital skills frameworks used to measure the digital skills of individuals.

Table 2. Digital Skills Frameworks

Essential Digital Skills Framework	Framework designed to support providers, organisations and employers across the UK who offer digital skills training for life and work across five categories Communicating; Handling information and content; Transacting; Problem-solving; Being safe and legal online.	Department of Education, (2018)
European Digital Competence Framework for citizens (DigiComp)	European framework that aims to build ‘digitally-competent citizens,’ describes information literacy, communication, content creations, safety and problem solving as key requirements	Carretero, et al., (2017)
Digital literacy index	Internationally accepted digital literacy index which offers policy makers a means to monitor the diffusion of digital skills.	Chetty et al., (2018)

Scholars (Mariën and Van Audenhove, 2012; Gann, 2019; Wagg and Simeonova, 2021) identify how digital inclusion initiatives play a key role in encouraging digital participation through the provision of digital skills training and support as outlined below.

2.4.2 Digital inclusion initiatives & training

In recognition of the need for individuals to be able to access and use digital technologies to participate fully in society, governments, technology providers and civil society organisations around the world have sought to develop and implement digital inclusion solutions and initiatives, to assist access to opportunities of using digital technology and the Internet and provide funding, training and support to help individuals overcome digital exclusion and marginalisation (Ragnedda, 2018; Hosman and Comisso, 2020). These initiatives involve the provision of digital skills training and support, delivered by a plethora of organisations (public, private, charities and social enterprises), such as public libraries, local government, advice centres, service providers, adult education organisations, housing associations and learning centres, as well as banks and telecommunication corporations (Mariën and Van Audenhove, 2012; Al-Muwil et al., 2019; Yates et al., 2015a; Hodge et al., 2017; Reisdorf and Rhinesmith, 2020). While national government and corporate organizations may participate in or fund community-based projects, many of these initiatives are in the public sector with heavy involvement from grassroots and non-profit institutions like libraries and community centres (Sweeney and Rhinesmith, 2017), highlighting efforts in multi-agency, cross-sector working, and inter-organisational processes (Szeles, 2018; Wagg, 2021).

The literature also provides examples of specific digital skills training that encourages and enables individuals to use the Internet and digital technology. Generically such examples include group sessions tailored towards a specific audience such as ‘broadband for seniors’ and ‘digital support for job seekers’, to more informal drop-in one-to-one sessions, such as in a public library, where individuals can seek support and guidance from a librarian to access government services or health information (Strover, et al., 2020; Gann, 2019). Other examples are linked to local and national initiatives such as NHS Widening Digital Participation, Digital Heroes initiative in Wales (Gann, 2019) and Future Digital Inclusion programme (Richardson, 2018). A significant number of initiatives were launched during the Covid-19 pandemic by third sector organisations and mobile phone/broadband providers. Huggins and Izushi (2002) review of digital inclusion initiatives in rural counties across the UK identifies criteria for digital inclusion good practice. These include use of community resource centres; targeting of personal and cultural activities that fit into the community; support for self-managed learning; mobile provision of training programmes (training beyond fixed locations to support the “transport-poor”); demonstrations of the benefits of digital through the use of in general services; and financial support due to the additional costs incurred through delivering training in rural locations, often referred to as the “rural premium.” However as identified by scholars, not all these initiatives have proven successful at tackling digital exclusion, raising questions about how digital skills training is provided and delivered (Helsper and van Deusen, 2017; Reisdorf and Rhinesmith, 2020; Wagg and Simeonova, 2021).

2.4.3 Formal Intermediation

As Governments increasingly set digital-by-default agendas, moving many public services online, the literature also provides examples of how some individuals, particularly those on the margins of society, rely increasingly on the support provided through formal intermediation; in public libraries and community anchor institutions (Jaeger et al., 2014; Real et al., 2014). These intermediaries are particularly important for supporting individuals with lower levels of digital skills (McGillivray et al., 2017; Manlove and Whitacre, 2019; McMahon, 2020). Examples of intermediaries in the literature include trainers, tutors, and frontline staff within a variety of settings, and in some instances are referred to as “*digital champions*” (Casselden and Dawson, 2019; Whitworth et al., 2012) “*information intermediaries*” (Mervyn et al., 2017; Buchanan et al., 2018), and “*infomediaries*” (Gomez et al., 2012; Ramírez et al., 2013; Sweeney and Rhinesmith, 2017).

Support provided by these intermediaries includes helping individuals navigate online systems, such as for government services and claiming welfare benefits, accessing online health services and job seeking services, setting up an email or use of social media (Wagg and Simeonova, 2021). Support is offered often in the format of a drop-in session or over a period of weeks either face-to-face in-person or online. A study by Gonzalez et al. (2015) found that even short training can have a positive impact and that negative attitudes can be positively affected by basic training lasting 20 hours.

However, the reliance on such intermediaries is brought into question as technology and devices evolve. The literature identifies concerns with the level and quality of digital skills owned by intermediaries themselves which can obstruct them providing the necessary digital inclusion support (Helsper and van Deursen, 2017; Buchanan et al., 2018). Scholars report that the quality of support individuals receive is variable, unequally distributed and replicates existing inequalities in society (van Deursen et al., 2014; Helsper and van Deursen, 2017; Asmar et al., 2020). For example, a lack of support and training programs are often cited as a barrier or obstacle to older citizens using ICTs (Lee et al., 2011). This supports findings by Wagg and Simeonova (2021) which identified the provision of digital inclusion initiatives in rural areas is hampered by the lack of local resources and poor-quality connectivity.

2.5 Place

We use place to mean a specific geographic location. Three characteristics of digital poverty have become associated with place: 1) rural and very rural areas; 2) the geographies of digital infrastructure – where the optic fibres, masts and receivers are positioned in or absent from the landscape, and 3) geographic areas particularly identified with poor socioeconomic status (including poor employment levels, low skilled work and ill health amongst the working population). We pick up these themes below to draw out their interdependencies and their implications for digital poverty.

2.5.1 Rural and Very Rural Places

The National Geographic Society defines a rural area as an “open swath of land that has few homes or other buildings, and not very many people,” Rural places, also frequently referred to as *rural* and *very rural areas*, are characterised by very low population density, where there are fewer people, and their homes and businesses are located far away from one another. In these places, agriculture is often the primary industry, with tourism coming a close second. Most people live or work on farms. Hamlets, villages, towns, and other small settlements are typically found in rural areas.

Figure 3. the National Geographic Society’s image of a very rural place

Source: <https://www.nationalgeographic.org/encyclopedia/rural-area/>



Rural places play an important part in digital exclusion. As Salemink et al. (2017: 361) point out, “rural areas are increasingly found on the wrong end of the digital divide”, in both developing and developed countries (also see Mubarak et al., 2020). This is due to the variability in access to and distribution of technological infrastructure, and to the number of inter-related barriers to digital inclusion that have become tied up with the physical landscape (McGillivray et al., 2017; Philip and Williams, 2019). Such places have often been deemed less fit or desirable as sites for urbanisation because of their geographic distance from other urban settings, their geology, making building of infrastructure challenging. It can be difficult and expensive to install optical fibre, poor weather conditions hilly terrain can impact radio transmissions of signals on masts and between rural homes and businesses. All this limits digital participation and access to online services (Salemink et al., 2017; Townsend et al., 2013; Farrington, 2015), which in turn threatens the social and economic health of rural areas (Philip, et al., 2017; Cowie et al., 2020).

2.5.2 Geographies of Digital Infrastructure

Research on the rural digital divide and rural broadband within the UK context, uncovers the contrasting material digital infrastructures put in place in urban places, compared with rural places (Ashmore et al., 2015; Philip et al., 2017; Roberts et al., 2017a, b; Salemink et al., 2017; Williams et al., 2016; Gerli et al., 2020). Extant studies conclude that the rural digital divide persists, despite significant efforts and investments to narrow the provision gap (Philip et al., 2017; Salemink et al., 2017). Despite a growing number of government-sponsored broadband initiatives, such as the [Broadband Delivery UK](#), by the end of 2021 around 123,000 rural homes and businesses are still without access to a decent broadband connection and 4G mobile networks (Ofcom 2021; but also see, Ashmore et al., 2015; Philip et al., 2017; Gerli et al., 2018; Ofcom 2021; Philip and Williams, 2019b). This is an improvement in 2018, when 12% of rural premises struggled to access a decent broadband service, compared to only one per cent of urban premises (Ofcom, 2018). This disparity is often attributed to the fact that it is “economically unattractive to the private companies that characterise today’s telecommunications industry” (Gerli et al., 2020, p. 540), though some scholars attribute this to the poor quality or intermittent connectivity provided in rural communities as the result of inferior digital infrastructure and the environmental challenges presented to them (Williams et al., 2016; Gann, 2019). In other words, the geophysical characteristics of rural places represent a wicked problem for extant digital infrastructure technologies. In other words, the UK’s internet infrastructure and use are stratified geographically. It is worth noting that these differences exist regionally as well as across the well-documented urban–rural divide (Blank et al., 2018). For example, according to the Lloyds Bank UK Consumer Digital Index 2020, London and the South-East have the highest percentage of digital engagement of all the UK regions at 86%, whereas Wales, Scotland and the North-East of England have the lowest. Furthermore, the 2019 Oxford Internet Survey (OxIS) found that people living in cities are more likely to be ‘next-generation users’ - using multiple devices including tablets, laptops and smartphones - compared to those living in rural households (Blank et al., 2020).

Because of the significant challenges that rural geographies and geologies present, the problem of digital exclusion has not been resolved. Yet the pace of change emerging from many urban areas is relentless and stands to further exclude rural citizens as many organisations and public services become *Digital-by-Default* (Hepburn, 2018). Organisations *Digital-by-Default* strategies often emerge from efforts to improve services and drive efficiencies, but they also (wrongly) assume access to connectivity services. This has raised significant concerns from some commentators, who worry that organisations pushing ambitious digital policy agendas, replacing sometimes critical public services that have traditionally delivered through in-person engagement, telephone and paper-based interactions, with online services. Digital-by-Default strategies, by default, exacerbate existing inequality of access to digital services. As Wagg (2021) points out, the UK’s House of Common’s (2019) report “An Update on Rural Connectivity” supports Hepburn’s concern claiming that delivering a Digital-by-Default strategy for public services, before solving the issue of poor connectivity in rural areas, has worsened the impact of the digital divide, stating that 40% of UK rural areas have poor Internet connectivity. Hepburn (2018) argues that this failure to tackle digital exclusion appears symptomatic of both central and local governments’ inability to efficiently implement the digital policy agenda.

2.5.3 Rural Places with Poor Socio-economic Status

Rural places are geographic areas that are often (but not always) characterised by poor socioeconomic status, including poor employment levels, low skilled work and ill health amongst the working population (Philip et al., 2017). This is often attributed to the ‘hollowing’ out of rural communities as local socio-economic activity is insufficient to support the young and upwardly mobile in their ambitions and desired lifestyle (Morris et al., 2022). The lack of digital connectivity is often blamed, at least in part, for this phenomenon (Casado-Muñoz et al., 2015; Hakkarainen, 2012; Rasi and Kilpeläinen, 2015; Saunders, 2004). This means that rural places are often left with significantly larger proportions of older people in their populations (Kurniawan, 2008). Yet only a limited number of studies look at issues of digital access in the context of older citizens living in rural areas. Kurniawan (2008: 891) in his study of older people and mobile phones states that *“until recently the coverage of some services was poor in smaller towns and rural areas, which disadvantage older persons who retire in those places”*. Rasi and Kilpeläinen (2016) in their study of a remote rural village in Finnish Lapland, attribute lower usage of internet by rural dwellers to their older age, lower education level and lower occupational status as well as social, cultural and local factors. These studies begin to show the interdependences between the characteristics of the physical geography and socio-economic status of a place.

Relatedly, studies also show that the provision of digital inclusion initiatives in rural areas is hampered by the lack of local resources, community assets, reduced or poor-quality connectivity and lack of funding. This is perhaps not surprising given that the process of applying for funding to support digital connectivity initiatives is often complicated and requires significant skills and expertise (Marien and Prodnik, 2014). Similarly, many businesses in rural areas are microbusiness, with limited capacity and resources, making it particularly difficult for these organisations (Real et al., 2014). This suggests that rural communities might be better supported through tailored approaches to digital inclusion, such as asset-based community development approaches (Reisdorf and Rhinesmith, 2018) which should aim to consider the specific context of the rural communities and their needs.

An example of a tailored approach is *where* face-to-face digital skills training and support takes place. Notable venues or places frequently referred to in the literature include community centres, education centres, telecentres, cybercafes, technology hubs and schools (Gomez and Gould, 2010; Garrido et al., 2012; Davies et al., 2017; Price et al., 2018; Robinson et al., 2020a). Other venues include care homes, housing associations and refuge centres (Mervyn et al., 2014; Richardson, 2018; Ragnedda, 2018; Olphert and Damodaran, 2013) and people’s homes (Hill et al., 2008; Mervyn and Allen, 2012). Public libraries have also acted as important, central places for providers of free broadband Internet service and WiFi when home connectivity is not technically or economically possible (Real et al., 2014; Jaeger et al., 2014). Public libraries also act as important places for access to devices for their communities, often providing desktops and a place to work (Gann, 2019; Strover et al., 2020). Interestingly, libraries are not always static buildings in rural towns. Sometimes public libraries are mobile libraries providing connectivity access in the form of a digital media bus (Ahmed, 2019; Wihlborg and Engstrom, 2017). Digital skills training and support are also provided through networks of organisations such as the Online Centres, public libraries, advice centres but also through informal social networks such as friends, family, peers, and work colleagues (Philip and Williams, 2019).

A common factor in all these studies that look at the places and spaces where digital access is supported, either through infrastructure or skills support, is the trusted nature of these institutions, and the safe learning environment they generate (Mervyn and Allen, 2012). A key characteristic of

these trusted places and spaces is the use of skilled, human intermediation (Asmar et al. 2020; Damodaran et al., 2015), resources and information, disseminated in person-centred ways, with care and empathy, that is relevant to their everyday life (Sweeney and Rhinesmith, 2017). This might be one-to-one or in a group setting, but in both cases, the nature of access creates an environment conducive to learning and for receiving support (Wagg, 2021).

Places of trust and trustworthiness are just as important as the digital point of access, as well as the material place of access: some participants reported a lack of trust in websites as a reason for exclusion and non-use. For example, a lack of trust has been found to affect older adults' willingness to use digital technologies, including concerns about the trustworthiness of websites (Lee et al., 2011). One study found that some participants didn't "*access Internet sites or chat rooms because they did not trust the sites and did not want to take the time to develop that trust*" (Clark, 2002 in Gatto and Tak, 2008, p.803). The trustworthiness of information has also been identified as a concern for some older citizens. In Gatto and Tak's (2008: 808) study reported a respondent's question about digital information: "*Can you trust it?*" Quan-Haase et al.'s (2016) research participants preferred to find information in printed format because they did not trust online sources. While Vroman et al., (2015: 157) found trust to be a dynamic process:

"[as] older citizens successfully use online social networking, studies show that concerns diminish and connectedness with others becomes a frequently cited benefit".

These observations suggest that there are ongoing challenges in relation to people's trust with websites, the Internet and digital technologies (Dutton and Shepherd, 2006). Importantly this extends to public services, including government online services (Al-Muwil et al, 2019); government initiatives (Tapia and Ortiz, 2010; Smith, 2011); and public venues (Gomez and Gould, 2010). In sum, places of trust seem of central concern to those choosing to engage with or exclude themselves from digital worlds and should be a founding principle of digital access initiatives.

2.6 Purpose

Our reading of the literature suggests that the meaning and motivation that actors attribute to their engagement with digital connectivity really matters. That is, actors seek out internet access with purpose. We take the term purpose to be the reason for which something is done; a digital world activity and engagement set-up as an object or end to be attained. Tsatsou, (2011) claims that how digital technologies are used in practice really matters. He suggests that actors require "quality of access". Similarly, Gurstein (2003) argues for "effective access" that fulfils the needs or goals of individuals and communities. Yet, as highlighted in the discussion about places of access above (section 5), what is judged as effective access is inevitably context-specific: what works in one context might not necessarily work in another. Further, access need not be limited to "consuming" or "accessing information". Rather it can additionally include broader levels of use and creation, including participation in the design and appropriation of the technology itself (Gurstein, 2003). This suggests that the form that access and inclusion take, must be dependent on the purpose of engagement, and that this will vary depending on which of the entire range of support is being explored:

"Access to ICT for the promotion of social inclusion cannot rest on providing devices or conduits alone. Rather it must engage a range of resources, all developed with an eye toward enhancing the social, economic, and political power of the targeted clients and communities" (Warschauer, 2003: 47).

Warschauers (2003) points out that the purpose of digital access interventions takes must be connected to the purpose and meaning that individuals and communities attribute to the value in the use of such technologies. That is, how these technologies make their lives better in some discernible way.

Providing access to digital technologies and connectivity is a necessary but not sufficient requirement for rural communities. Digital inclusion policy and initiatives must engage and reflect social purpose and practices if they are to drive “effective use” in a variety of community settings (Gurstein, 2012). This highlights the need to go beyond the rhetoric of “access-only” programmes that historically dominated digital inclusion policy. To tackle the digital divide in a way that is meaningful to individuals and communities living in rural places and spaces, policymakers and community support organisations must design initiatives that are fit for purpose of those, situated communities (Hosman and Comisso, 2020; Yates et al., 2020). Policymakers need to invest in gaining a better understanding of the implementation of digital inclusion initiatives (Madon et al., 2009; Ragnedda, 2018; Robinson et al., 2020a) to reach “non-users” and “limited-users” traditionally targeted by government and charitable organisations, (Díaz Andrade and Techatassanasoontorn, 2021; Yates et al., 2020). Yates et al. (2020: 36) also recommend policymakers consider the local and personal social contexts of citizens when designing interventions, *“to help understand people’s communities and how to tailor intervention strategies in a way that is meaningful to them and their everyday lives”*.

2.6.1 Usefulness of Digital Technologies

There are a variety of motivations and meanings associated with digital technologies and their use or non-use. Selwyn et al., (2003), point out that non-users are not a homogenous group of disempowered, under-resourced and under skilled individuals. Helsper (2009: 1) uses the term “digital choice” to refer to those who make a voluntary decision to disengage from digital technologies and worlds. Large-scale surveys have typically shown that a “lack of interest” (Office for National Statistics, 2016) or “access not needed/not useful” (Eurostat, 2016g) are among the most common reasons for not having internet access.

Selwyn’s (2004: 381) study traces the origins of the digital divide in the centre–left social inclusion policy agenda of the 1980s and 1990s to its current status of political ‘hot topic’, found that a key reason for older non-use to disengage was *“the inability to fit computers usefully into their lives”*. The perceived irrelevance of digital technologies and the internet to older citizens has been identified as a key factor influencing use (Hakkarainen, 2012; Selwyn, 2004; Sourbati, 2009). For example, Selwyn et al. (2003: 577) found that for some older citizens, *“dealing with everyday problems does not involve the personal use of ICT [Information Communication Technologies]”*. While Hakkarainen, (2012: 1206) found that while respondents saw the computer as being a useful tool for others and potentially for some tasks for themselves, they didn’t want to use a computer themselves. As one respondent put it: *“it’s not much use when it comes to shovelling snow and it’s just in the way when carrying firewood”*. In contrast, Hill et al.’s (2015) research participants reported that one of the strengths of digital technologies was the facilitation of everyday tasks that enabled them to overcome issues such as distance, time limitations and personal mobility.

Hayes et al.’s (2019) and Knowles et al.’s (2019) studies of digital inclusion projects in the South Lakeland, a rural district of Cumbria in Northwest England, showed that the co-creation aspect of the project aimed at producing a mobile app to help older adults’ living in rural areas access public services

and events in order, promoted independent living and address loneliness and social isolation. Working with participants from rural communities, they identified technological interventions (the development of a mobile app) to address loneliness and social isolation. Their observations revealed that such digital products needed to consider the situated practices in order that the use of digital technologies “remain situated in the daily lives of older adults for it to be meaningful and relevant” (Knowles et al. 2019: 4288). Whilst this is just as relevant in urban areas as in 59 rural areas, Hayes et al. (2019) reveal the complex nature of the purpose and meaning of digital access and use revealing how limited public transport availability in rural areas stood to situate the new app as irrelevant if older adults did not have their own transport. This place-based characteristic needs to be considered when developing the app and promoting events through it.

2.6.2 Fear of Digital Technologies

A fear of using or engaging with digital technologies can prevent those not used to them, from engaging with them, even if such technologies might be fit for the purposes of citizens wishing to access, for example, banking services, health services and other public services. Fear of digital technologies is more prevalent in older citizens. Saunders, (2004) and Steelman et al. (2016) show that a common concern amongst research participants is that they might accidentally break or harm expensive equipment which might have economic consequences. Yet once these initial fears of breaking equipment had been overcome, older citizens often developed new fears associated with the security and vulnerability of both the technology and themselves. Older citizens had often heard stories of fraud and identity theft in the media, have little understanding of threats or how to minimize them (Steelman et al., 2016). Many UK consumers and news programmes report and warn against the dangers of online fraud and scams. These reports are grounded in law enforcement and NGO agencies' efforts to drive awareness, and to inform citizens about what to look out for and how to protect themselves (Age UK; Hill et al., 2015). Hill et al. (2015) additionally identify the technical fears of older citizens, including picking-up technology viruses on their devices (also see, Richardson et al., 2005, Hakkarainen, 2012), technical problems that means they have broken digital devices (Hakkarainen, 2012), the capture and manipulation of their personal data and details by unscrupulous online actors (Pangrazio and Selwyn, 2019), and disinformation, misinformation and malinformation on the Internet (Carmi et al., 2020). Steelman et al. (2016) found that those participants often encountered narratives of ‘danger’ including the dangers of the internet (Steelman et al., 2016, Conci et al., 2009, Gatto and Tak 2008). Hakkarainen’s (2012) respondents thought of computers as dangerous and a threat to many things. Citizens’ fear and lack of trust in technology and the Internet is linked by scholars to cybersecurity.

2.6.3 Personal values

Studies have found that when actors seek out digital connectivity with purpose, this purpose is shaped by their personal values. Digital technologies connect with personal values in different ways. For example, the value of thriftiness and frugality can drive some users to search for the best value online (Weaver et al., 2010). In their study of older people living in a village in Finland, Rasi and Kilpeläinen (2015: 158) found that respondents did not always ascribe to different purposes and meaning of engagement – with a variety of understandings of digital competence driving engagement or exclusion:

“the meanings assigned to Internet use and digital competences were often subordinate to other, more meaningful previous, present or future activities and competences”.

The stories of rural citizens sometimes imply that competencies other than digital competence were more significant and personally meaningful in older citizens' lives (Rasi and Kilpeläinen, 2015). Rasi and Kilpeläinen's (2016) participants viewed the computer and the Internet as useless and risky, threatening their freedom, nature-oriented lifestyle, health, and security, and creating differences between users and non-users (Rasi and Kilpeläinen 2016). In sum, individuals will only participate in digital worlds if they see its merits or relevance (Gerli et al., 2020; Helsper, 2017) or if they have perceived value (El-Haddadeh et al., 2019). Individuals' personal values can have a significant impact on this and devoting time to building trust helps maintain learners' perceived value of digital and increases self-efficacy (Damodaran and Sandhu 2016; Richardson, 2018).

2.7 A Practice Perspective on Digital Poverty

Concluding from the aforementioned literature, we find that there is a strong emphasis on technology, skills and social demographics and their impact on internet connectivity in rural settings. Such techno-centred accounts have dominated much of the digital inclusion literature for decades. Literature on skills has pointed to the importance of skills development training. While social demographics have pointed to regional and socio-economic inequalities and the importance of financial support to make devices and internet connectivity affordable, what is missing from much of the literature on digital poverty is an explicit focus on how rural citizens go about their everyday lives and the ways in which this might inform our understandings of the possibilities for addressing digital poverty. Borg et al. (2018: 1) claim that *“digital exclusion does not necessarily come from physical access to ICTs, but rather from what people are able to do and what they want to do with these technologies”*. We draw on practice theory to take Borg et al.'s (2018) point seriously.

Along with Halford and Savage (2010), we argue that practice theory allows us to move beyond a deficit approach. A practice-based approach to digital poverty provides a new opportunity to think about and *“get inside the complex and evolving nature of digital social inequalities”* (Halford & Savage, 2010: 952) by focusing attention on the everyday situated practices that rural citizens perform (cf. Shove 2003). This understanding of digital poverty takes us away from focussing on digital and an individual's deficit, and instead focuses our attention on the co-constitutive role of the material and social worlds in the performance of moments of digital poverty (cf. Schatzki, 2009; Mason et al. 2019).

Accessing digital services in rural settings, from a practice-based perspective, can be studied by focusing attention on the *set of entangled practices that have evolved and continue to evolve over time*. This leads us to question the everyday lives of rural citizens, what they value and how they go about doing what they value. Rather than simply asking them about which technology they use or don't use, whether they have a good broadband or mobile access, we focus on understanding their situated practices such as their modes of communication with friends and family, which services, why those services and how they access services, etc. Through the identification of their particular ensemble of practices, the strategies they adopt, the materials they use, and their connections to other institutionalised practices and societal norms, we are able to reveal those aspects of their everyday lives that are considered to be especially meaningful and potentially exclusitary from digital worlds and life online. Such an approach will generate valuable insights for digital poverty

interventions, potentially foregrounding the reasons why digital interventions such as broadband do not make sense to certain rural social groups, e.g., to older adults and manual workers as it does not come up as a meaningful practice for them (Hayes, et al, 2019). Inspired by this perspective, we are well positioned to start considering what service might be meaningful to different rural social groups, how we might help them conceive of these new services, how it might align with or require changes to, their existing ensemble of practices (MobileAge, 2018). A practice approach to understanding and addressing rural poverty will thus start by understanding the situated practices of rural social groups in specific contexts and as a precursor to eventually putting in place meaningful solutions to address digital poverty.

Figure 4. Situated Digital Practices Framework



The collectiveness and aggregated nature of practice theory allows us to consider different themes in literature and consolidate the findings into practices that prevent digital access. Shove (2012: 24) identifies three elements of practices – material “*objects, infrastructures, tools, hardware and the body itself*”, competence “*understanding and practical knowledgeability*”, and meaning “*the social and symbolic significance of participation at any one moment*”. To this we add resources – *the specific socio-materialities to hand that are picked up and used to enable inclusion in digital life by foregrounding the importance of digital poverty attending to financial, demographic and location specific dimensions of practice*. By relating these elements to each of the five elements of digital poverty identified in the literature review - *digital infrastructure, social demographics, skills and intermediary support, place, and purpose* (Table 1) - and our previous related research ([MobileAge](#); [SGRIT](#) and [MANY](#)), we present a situated digital practice framework (Figure 4). We use this framework to understand the co-constructive nature of the digital poverty elements in the performance of key moments of exclusion (Giddens, 1984).

In sum, we argue for a move away from technological and individualised focussed understandings of digital poverty. Technological solution will only be meaningful for the rural population if they can be integrated into their everyday practices. This means exploring digital poverty as more than a skills, economic or infrastructure deficit. Rather, a situated practice approach provides the opportunity for in-depth insights into the everyday practices of rural citizens as they access meaningful digital services (or not) and the role of *digital infrastructure, social demographics, skills and intermediary support, place, and purpose* in enabling/disabling them to do so. Rural citizens have well-established strategies

for doing things they see as meaningful. By looking at how doing this we can gain an in-depth understanding of the ensemble of situated practices and how to introduce new practices that will make sense to the different social groups. We would thus suggest that digital poverty, from a practice perspective, needs to attend to the following three questions:

1. What do rural citizens do and seek to do that is meaningful to them (at least partially) through digital means?
2. How might new digital possibilities become meaningful to different rural social groups?
3. How might digital interventions support rural citizens in making new digital possibilities meaningful and valuable to them?

2.8 Literature Review Concluding Remarks

This literature review has explored five key aspects of digital poverty: *digital infrastructure, social demographics, skills and intermediary support, place, and purpose*. There is ample evidence that all these factors affect digital poverty and that they are interdependent in how they act on such. Our key insight is that much of the extant research reports on what people say, and not necessarily what they do or how they do things. To address this limitation, we adopt a practice-based approach to our inquiry so that we can open-up and make transparent opportunities to intervene in everyday practice in order to transform digital poverty. We propose a digital practice framework (Figure 4) as an exploratory device and use this to inform our online survey and our qualitative interviews.

3.0 Work Package Two: Regional Survey Findings – ‘the Northwest’

3.1 Regional Survey of Northwest England

We developed a regional telephone survey tool to engage 501 residents in Northwest England. Appendix one presents our sampling frame for the telephone survey and appendix two presents the quantitative telephone survey tool that will be used. Blue Marble collected the data for us.

We define Northwest England as comprising the counties of Cheshire, Cumbria and Lancashire, as well as the metropolitan conurbations of Greater Manchester and Merseyside. Across these areas, there are 39 district / unitary authorities and the Lake District National Park authority (Figure 5). Our study focused on the rural Northwest, where digital poverty is thought to be more extreme.

Figure 5. The 39 Districts/Unitary Authorities and the Lake District National Park Authority that comprise Northwest England



*ONS (2011) Labour Market Profile – Northwest (population indicators are estimated using Census 2011 data and employment indicators through the Annual Population Survey).

The population of the Northwest is 7,367,500. The two industries that enjoy the largest share of the region’s workforce are wholesale and retail trade; repair of technology and human health and social work activities, at 15% and 14% respectively. 77% of the region’s population are economically active, compared to an average of 79% for the UK overall (ONS Labour Market Profile – Northwest*).

3.1.1 Who we surveyed

Our survey comprised 48% Male participants, 51% Female and 1% who self-identified as 'other'. 31% of Male participants were between the ages of 18-44, 40% were between the age of 45-64 and 28% were 65 years or over. 32% of Female participants were between the ages of 18-44, 47% were between the age of 45-64 and 28% were 65 years or over. 79% of Male participants were white, 2% described themselves as mixed race and 10% described themselves as ethnic minorities. 92% of Females were white, 2% were mixed race and 3% of Females described themselves as ethnic minority. 59% of Male participants were employed or self-employed while only 2% were unemployed, 2% in education and 2% retired. A similar pattern was seen amongst Female participants, with 56% employed, 2% unemployed, 6% in education and 9% retired (see Tables 3).

Note, in Table 3. we look at the ethnicity and working status breakdown by gender. Our n=500 for this analysis while our n for the entire study was 501. One participant identified as neither Male or Female, so their data does not appear in this table.

Table 3: Socio-demographic breakdown of male/female participants by age, ethnicity and work status

Gender		Age			Ethnicity			Working Status			
		18-44	45-64	65+	White	Mixed	Minority	Employed	Unemployed	Education	Retired
Male	243	77	97	69	193	5	24	144	5	5	4
	48%	31%	40%	28%	79%	2%	10%	59%	2%	2%	2%
Female	257	82	122	54	236	5	8	143	5	15	22
	51%	32%	47%	21%	92%	2%	3%	56%	2%	6%	9%
Total	500	159	219	123	429	10	32	287	10	20	26
	99%	31%	44%	25%	86%	2%	6%	57%	2%	4%	5%

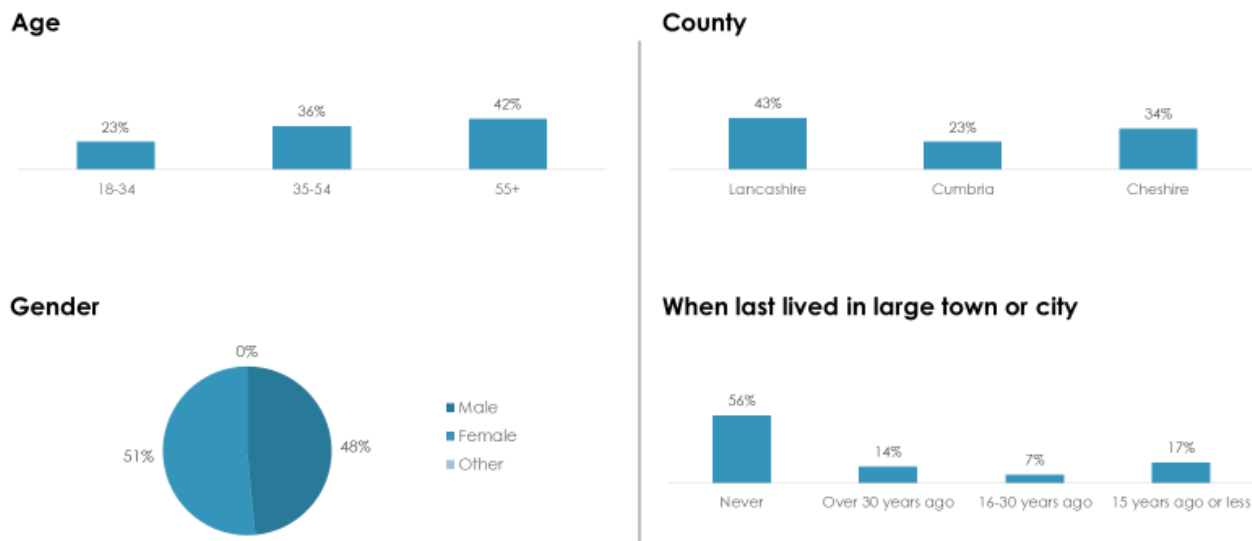
The socio-economic situation of our participants was broadly similar across Male and Female participants with 21% of all participants having a household income less than £20k, 21% between £20-£40k, and 28% with more than £40k per annum as a household income. 88% of our participants were educated to and FE or HE level. 43% of our participants were from Lancashire, while 23% were from Cumbria and 34% from Cheshire (Table 4).

Table 4: Socio-demographic breakdown of male/female participants by age, ethnicity and work status

Gender		Household Income			Education			Place: County		
		Less than £20k	£20-40k	£40k+	No	Further	Higher	Lancashire	Cumbira	Cheshire
Male	243	51	52	76	5	122	105	105	46	92
	48%	21%	21%	31%	2%	50%	43%	43%	19%	38%
Female	257	52	52	66	4	112	133	111	69	77
	51%	20%	20%	26%	2%	44%	52%	42%	29%	30%
Total	500	103	104	142	9	232	208	216	115	169
	99%	21%	21%	28.4%	2%	46%	42%	43%	23%	34%

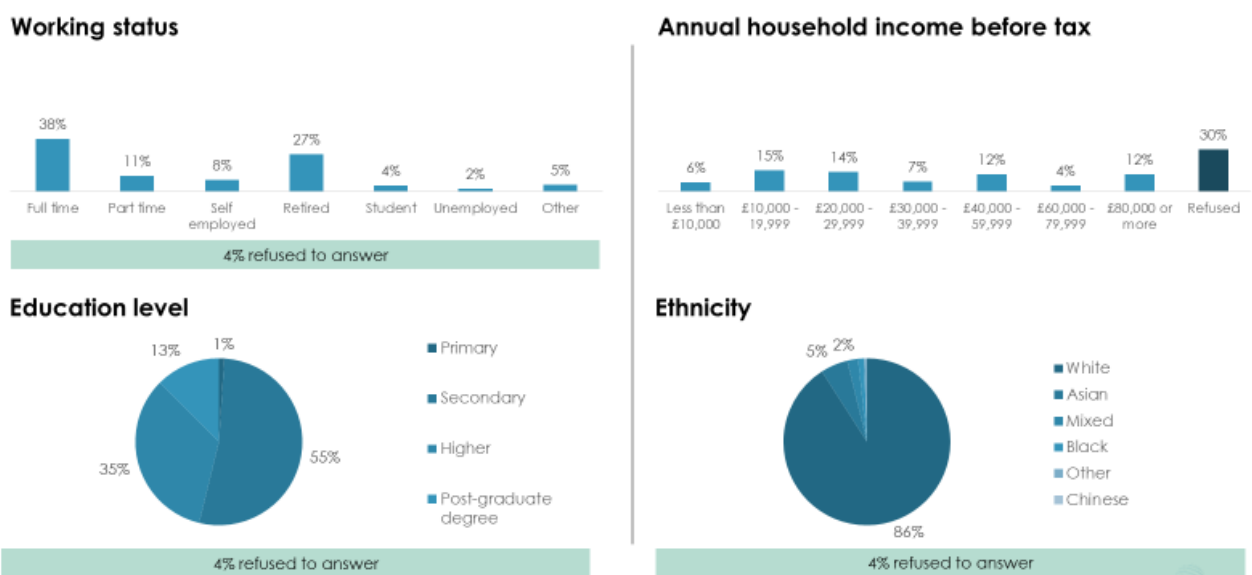
Another view on our sample profile show that our sample is evenly divided across our sociodemographic data, though 70% of our sample have never lived in a large town or city. The age, gender and county data were weighted to the 2011 Census data for the are sampled (Figure 6).

Figure 6. 2011 Census weighted sample profile



57% of respondents are employees or self-employed, with just over one quarter of participants being retired. There is a wide distribution of household income – just over 1 in 5 earn under £20,000 per year (Figure 7).

Figure 7: Sample profile on Working Status, Education, Income, Ethnicity



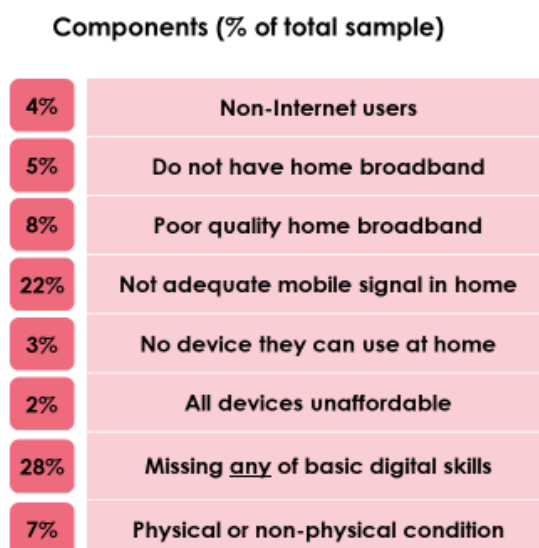
Our starting point was to assume a working definition of digital poverty, so that if someone met any of the individual conditions, of digital poverty, they were understood to have exhibited an indicator of digital exclusion (see Table 5). We developed this definition through our understanding of both the qualitative and quantitative data.

Table 5: Indicators of Digital Poverty

ACCESS & INFRASTRUCTURE BARRIERS	<p>ANY of the following apply</p> <ul style="list-style-type: none"> Do not have home broadband (Q5) Home broadband connection quality rated as poor (Q6) Do not have adequate mobile signal to use mobile broadband in the home (Q8a) <p>Do not have PC, smartphone or tablet that they can use at home (Q11)</p>
SOCIODEMOGRAPHIC BARRIER	PC, broadband, smartphone and mobile contract are all unaffordable (Q12)
DIGITAL SKILLS BARRIERS	<p>NOT confident about ANY of (Q16)</p> <ul style="list-style-type: none"> downloading or saving photos they find online AND using search engines like Google (MANAGING INFO) in emailing or other online messaging (COMMUNICATION) buying products / service online AND installing apps (TRANSACTIONING) can use online help if they have a problem online (PROBLEM SOLVING) can fill out online application or registration forms (CREATING)
CONDITION BARRIERS (Place and Purpose)	<p>They have a physical or non-physical condition that makes using the Internet difficult (Q19)</p> <p>They have not used the internet in the last 3 months (Q13)</p> <p>Postcode</p>

Based on our working definition, our survey showed that Digital Poverty is a significant issue across the Northwest of England and poses specific challenges for individuals living in rural areas. Half (50%) of all respondents in our survey were shown to be experiencing digital exclusion/poverty (Figure 8). The most widespread indicators are inadequate mobile signal to be able to use mobile internet in the home and missing any of the basic digital skills. Poor quality home broadband is also a significant barrier (Figure 8).

Figure 8. Elements of Digital Poverty Experienced by Participants



While 95% have access to the internet, a quarter aren't able to make the most of that, with 14% saying they would like to use more online services and 16% reporting they have trouble doing things that they want to do online.

3.1.2 Access to Digital Infrastructure

In total, 13% of those we spoke to either had no home broadband or poor-quality home broadband. A considerable proportion - 1 in 5 - did not have adequate mobile signal to use mobile internet inside their home, with the picture improving slightly if outdoors near their home. Of the 25 respondents who do not have home broadband, most (18) say there are home broadband services available where they live. A lack of any fixed line infrastructure is an issue for fewer than 1% of the total sample (Figure 9).

Figure 9: Mobile and Broadband Home Access and Quality

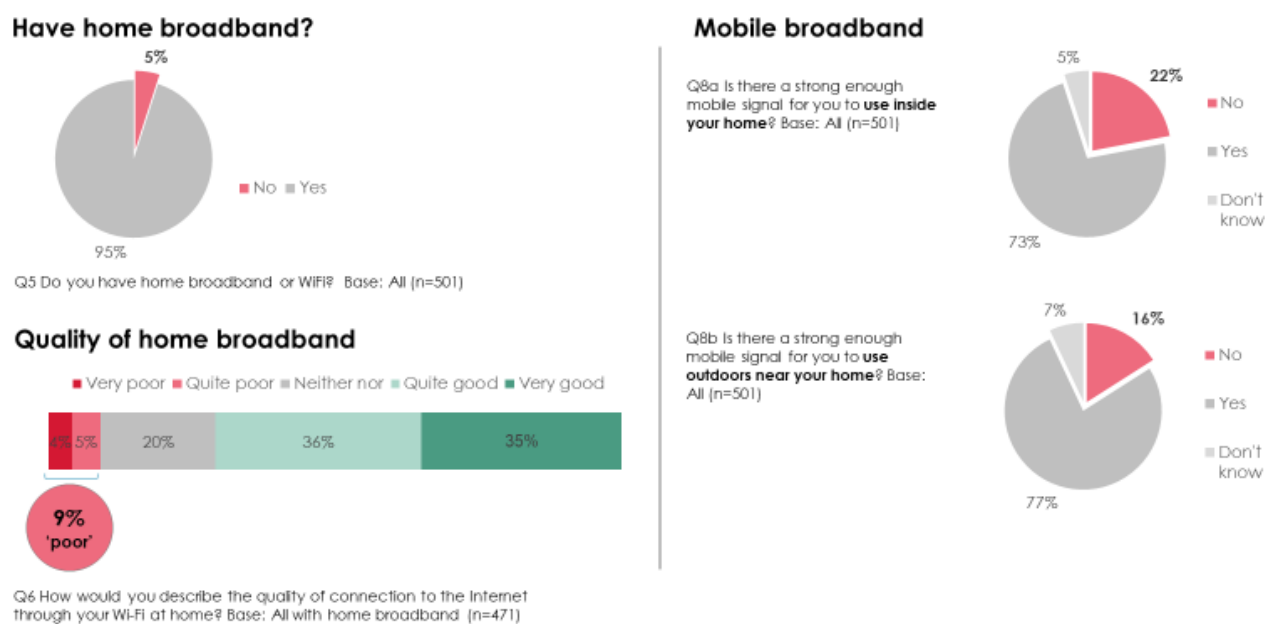


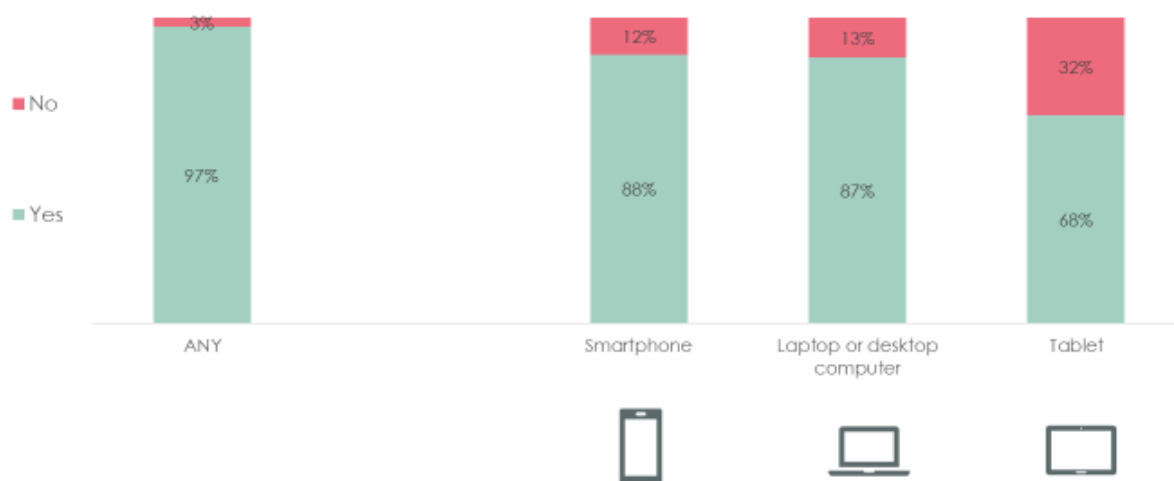
Table 6: Infrastructure available to participants

Home Broadband		Local Area Broadband		Quality of Fixed Broadband		
Yes	No	Yes	No	Poor	OK	Good
	51 21%	52 21%	5 2%	105 43%	46 19%	92 38%
	52 20%	52 20%	4 2%	111 42%	69 29%	77 30%
	103 21%	104 21%	9 2%	216 43%	115 23%	169 34%

The quality of connection to the internet through home WiFi varies with 29% of participants reporting poor or neutral, 71% Good quality connectivity. There is an interesting intersection with household income as this drops to 63% among respondents with a household income of less than £20K.

We also asked participants about the devices they used at home to access the internet. While only 3% don't have access to **any device** at home, it is notable that 13% do not have access to a PC, which may constrain what can (easily) be done online (Figure 10).

Figure 10: Devices available at home



Q11 Which, if any, of the following devices are available for you to use when you're at home? Please include any provided by your work
 Base: All (n=501)

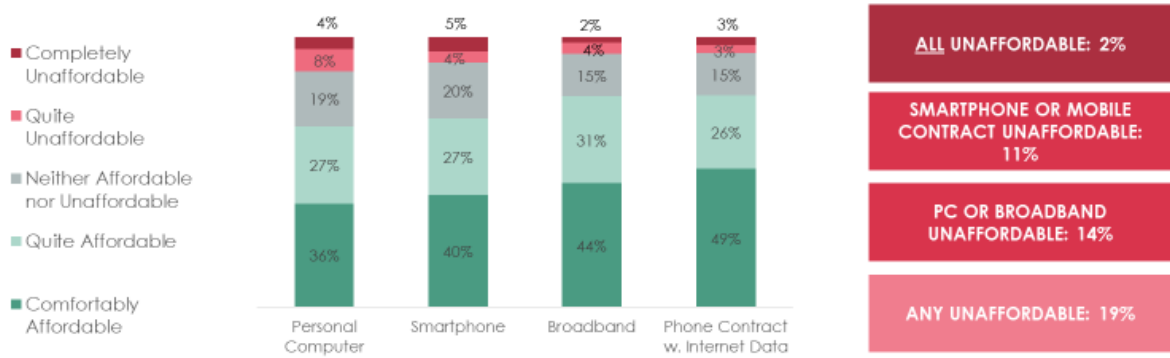
In sum:

- **Fixed broadband is broadly affordable, with 74% of respondents agreeing that it is**
 - However, when asked if is too expensive to use the internet, a larger proportion of older respondents agree, 18% of those 65+ compared to 9% overall
- **People unable to use the internet at home can also struggle to find access within their communities.** Of the respondents who do not have fixed home internet connection or have not used the internet in the last three months, 16% agree that there is nowhere they can easily get to use the internet

3.1.3 Sociodemographic Factors that Affect Access: Who is affected?

We reported a number of sociodemographic markers in Section 3.1.1 above, including household income. We noted that 21% of all participants had a household having an income less than £20k, 21% between £20-£40k, and 28% with more that £40k per annum as a household income. 88% of our participants were educated to and FE or HE level. Household income and education affect the affordability of devices that enable participants to connect to digital worlds. For 1 in 5 people, at least one of the following devices or means of connection - broadband, PC, smartphone/with data - is unaffordable. Personal computers are most unaffordable, followed by smartphones, broadband, and phone contract with internet data (Figure 10). 14% of our respondents said that a PC or broadband were unaffordable, while 2% said all forms of connectivity were unaffordable.

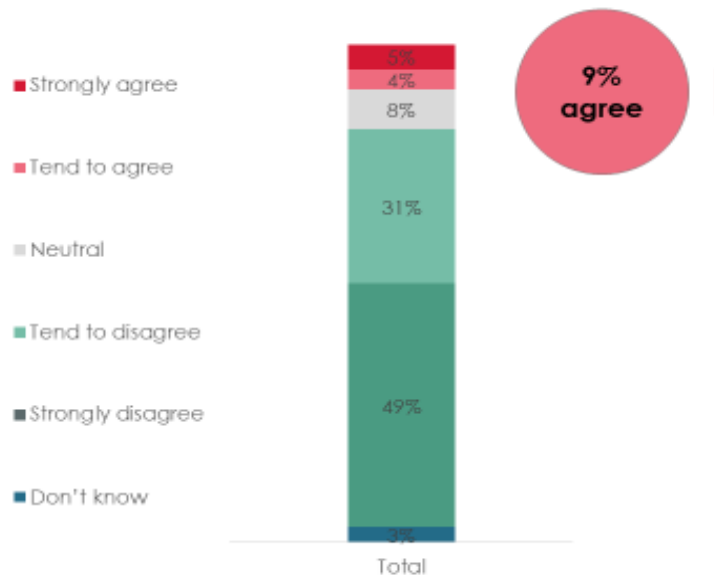
Figure 11. Affordability of digital devices



Q11 How affordable are each of the following for you? Tell me on a scale of 1 to 5 where 1 is completely unaffordable and 5 is comfortably affordable
 Base: All (n=501)

While we saw nearly 2 participants in 10 claiming that any of the listed digital connectivity products and services which enable Internet access were unaffordable, this only translates to just under 1 in 10 telling us they think the Internet is too expensive for what they need it for (Figure 12). The over-represented demographic in this subgroup included: those aged 65+/retired (18%); those whose incomes are less than £20,000 p.a. (15% compared to 7% of those on £20-40,000 and 5% of those on £40,000 or more); those who stated that they have trouble doing things they want to do on the internet (24%); those who stated that they rely on family and friends to help them to use the Internet (20%).

Figure 12. The Internet is too Expensive for what I need it for



Q11 How much do you agree or disagree with each of the following statements?
 Base: All (n=501)

Among those who have trouble doing things they want to online, older people (28%), and those on low incomes (32%) are over-represented. We had 55% of participants at the intersection of these factors (those who were older, on low income and unemployed (though only 10 of our participants were unemployed)). These intersections generate complex forms of digital poverty that are more difficult but perhaps more pertinent to address.

It is worth noting here that the sample size discussed above is quite small, including only 81 participants out of 501 included in this group: including 34 older people; 34 low incomes; 10 unemployed.

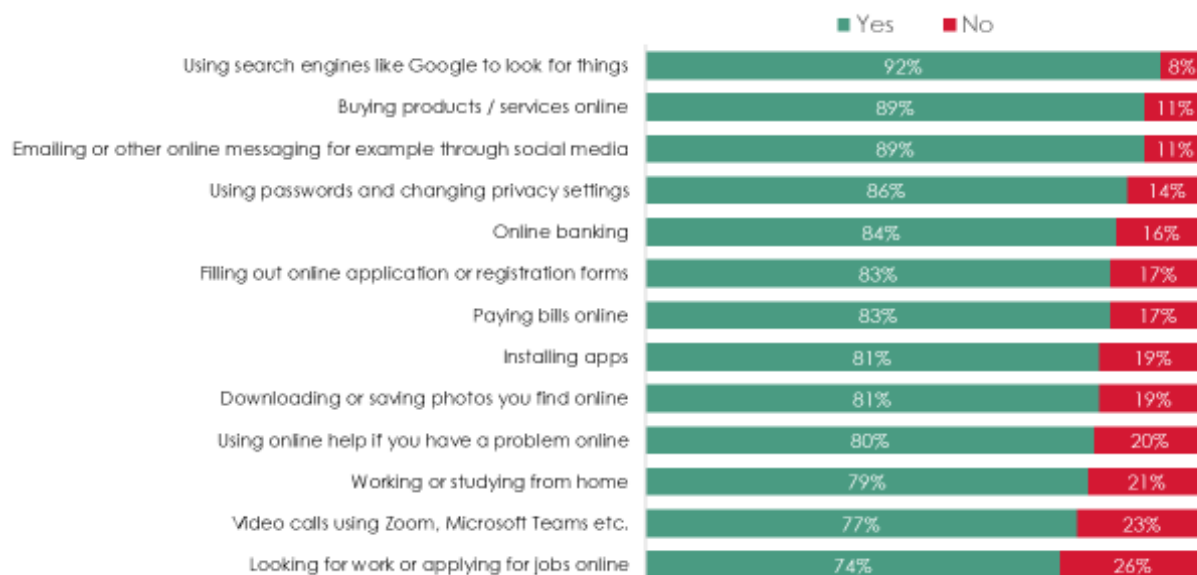
3.1.4. Skills and Intermediary Support

What became clear from our socio-demographic analysis was that lifestage (age), access to devices and affordability are all related to a lack of digital skills. While connectivity was a problem for some respondents, the most common signifier of digital poverty was low confidence in using core digital skills, experienced by 28% of the survey sample. Significantly higher amongst this group were those: with no laptop / desktop at home (58%); aged 65+ (51%) vs. 15% of those aged 18-44; with a Household income less than £20k (46%); Retired (42%); who say any devices / connectivity are unaffordable (40%).

Indicative of this 'no basic skills group' were those: who don't have home broadband (69%); with poor quality home broadband (55%); who don't have any devices at home (84%); and with disability or condition making Internet access difficult (57%). Again, a note of caution here is the low sample sizes (141 participants in this group).

We found that just over 1 in 4 people are not in one or more of the basic digital skills required to provide users with digital access. 1 in 25 are not confident in any of the basic digital skills and, importantly for rural communities, 26% of those surveyed said that they were not confident in their ability to look for work or apply for work online (Figure 13). Only 4% of participants were found to lack all digital skills, while 28% were found to lack at least one of the listed basic digital skills.

Figure 13: Confidence with Digital Skills



When participants were asked if they were confident they had the necessary skills and ability to do using the Internet, we found that a significantly higher number of the people who lacked the basic skills to access these services and make use of key functions were those with no laptop / desktop at home (58%), those with a household income less than £20k (46%), those who say any devices / connectivity are unaffordable (40%) and, those who are retired (42%) and aged 65+ (51%). Compare

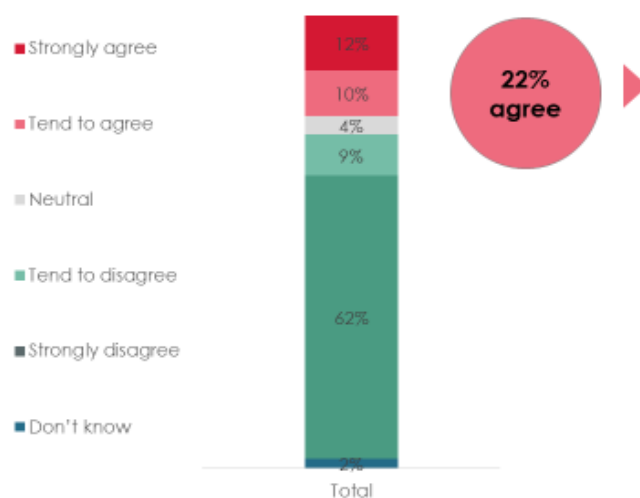
this last observation with the percentage of 18–44-year-olds that consider they don't have the necessary basic skills to access digital worlds –at 15%.

We also found that basic skills (n=141; 28%) were lacking where participants did not have (17; 68%) or had poor quality (23; 55%) home broadband, or those that did not have access to digital devices at home (12; 84%), with disability and condition making Internet access difficult (21; 57%).

A note of caution: because the number (n) of respondents lacking basic skills is low (141 participants), some of these percentages look at first sight to be high but represent quite small numbers of participants – this is typical of sparsely populated rural and very rural areas. However, the point remains an important. There are key intersections that mean those excluded from one thing, (education, higher income, access to digital devices or infrastructure), are much more likely to be excluded from another.

To get help, those who are not confident with their digital access skills often rely on friends and family to help. Over 1 in 5 of our participants told us that they rely on other people to help them use the Internet – indicating they are not confident in their digital skills (Figure 14). This group is heavily skewed to older age groups with 45% of participants in this group being over 65 years of age. Similarly, 34% of participants in this group have a household income of less than £20k p.a. compared to 19% of those on £20k–£40k and 12% of those on £40k+ pa. Interestingly, 24% of this group have never lived in an urban area and so may well never have been exposed to settings where there is good and reliable connectivity. Not surprisingly, 57% of this group say they have trouble doing things they wanted to do on the internet.

Figure 14: 22% of Participants told us that they rely on family and friend to help them use the Internet

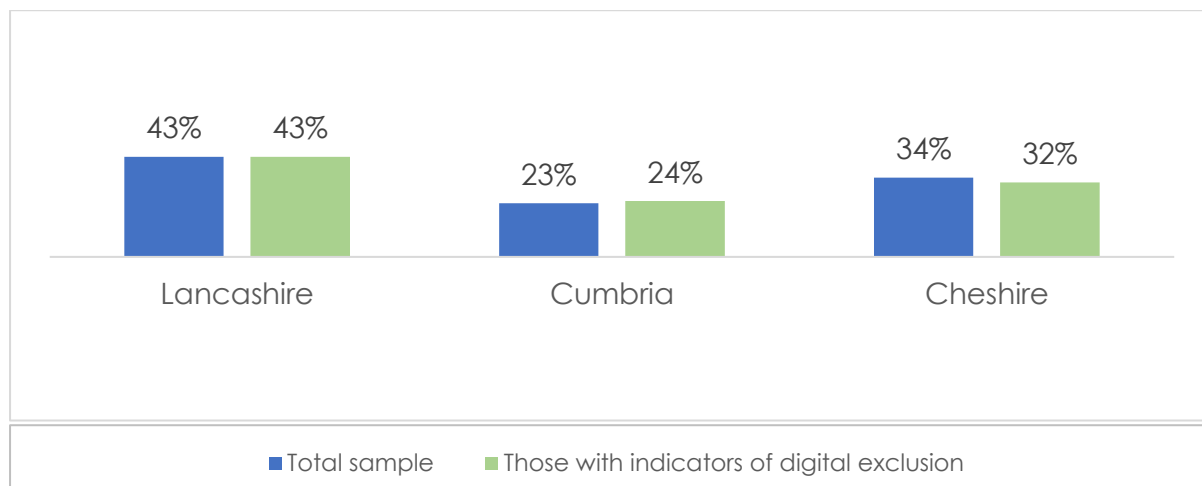


An important insight from this data is that many older people seek to access services, knowledge and the functionality of digital worlds and service indirectly – through their friends and family. This is an important dimension of digital poverty that is neither reported nor well understood. We marked this observation as an important observation to further explore in our qualitative study.

3.1.5 Place

43% of our participants came from Lancashire, while 23% were from Cumbria and 34% from Cheshire. We only collected postcode identifiers to the first three digits for each participant, but as near as we can tell, some of our participants were from villages or rural towns (27%) while 4% were lived in more isolated spots. Further, 22% of participants had lived in an urban area in the last 20 years.

Figure 15: Those with Digital Poverty Indicators in Place



Anecdotal evidence suggests that the connectivity quality and download speeds reported by Ofcom, do not match the lived experience of people living in those areas. We did not have the resource to match Ofcom data with participants lived experience data, but we recommend this as a study that needs doing in the future. Our concern is that self-reported data by the connectivity service providers may not be giving an accurate picture of connectivity and associated digital poverty.

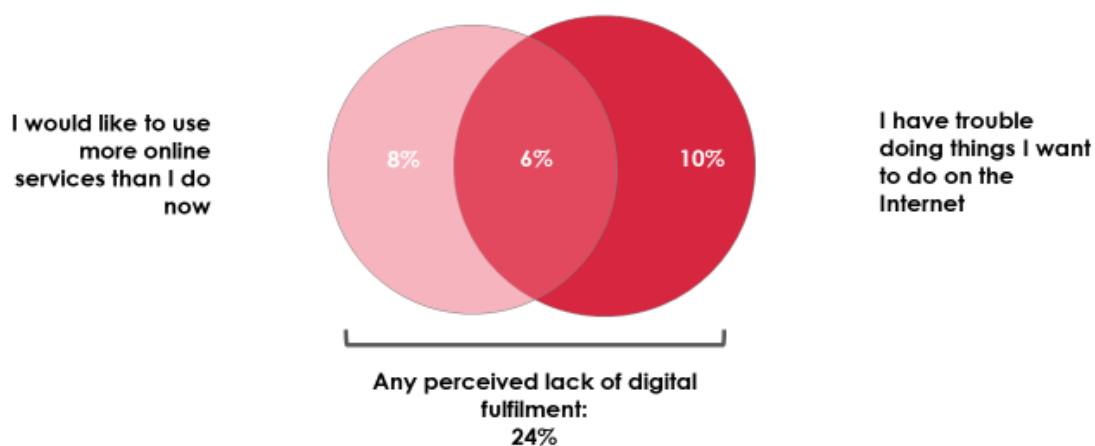
3.1.6 Purpose and Meaning of Access

Using the internet gives people advantages in every-day life. 87% agree; this drops to 77% among those 65+; 55% among respondents without a formal education and 71% among respondents lacking basic digital skills. The reason or purpose that people access digital services was not as detailed or clear as would have been able to develop through a longer survey. This issue was much more clearly illustrated in our telephone interviews in the second phase of our study. However, what was clear was that 1 in 4 people feel that they have a lack of digital fulfilment and want to do more and have more access to internet services and digital worlds (Figure 16).

Figure 16: Overall, 1:4 feel they have a lack of digital fulfilment

Overall, nearly 1 in 4 feel that they have a lack of digital fulfilment

Agreement with either of these statements amounts to 24% of our sample – notably the two attitudes often do not overlap.



Q17 How much do you agree or disagree with each of the following statements? % OF TOTAL AGREEING WITH EACH / BOTH STATEMENTS
Base: All (n=501)

The key insights from the telephone survey show the intersectionality of multiple factors recognised in the extant literature. It is clear that those that are denied access to digital worlds, do associate core meanings to online life and engagement. Primarily our analysis shows:

- **Digital poverty is limiting routes to communication for residents in rural areas.** At a time when video calling has become normalised in healthcare settings, and has offered a vital route for maintaining contact with friends and relatives,
 - 23% of rural NW residents report not feeling confident holding video calls. Concerningly, this rises to 40% of respondents aged over 65 and 51% among long term sick/disabled or carer respondents (though this last finding is indicative due to a relatively low sample size).
- **Digital poverty is preventing individuals from looking for jobs.** 26% of respondents did not feel confident searching or applying for jobs online. In particular, this affected:
 - 52% among respondents who are long-term sick/disabled or a carer;
 - 42% among respondents with a household income of less than 20K.
- **Digital poverty risks putting some respondents off from using digital services.**
 - Of the 16% of respondents who have trouble using the internet, 41% do not agree that using the internet provides everyday advantages.
- **Older people rely more on friends and family for help with the internet**
 - While 22% of respondents agree that they rely on friends and family for help with the internet, this rises to 43% among respondents 65+; 45% for unemployed respondents; 40% for those who are long-term disabled or a carer.
- **Using the internet gives people advantages in every-day life**
 - 87% agree; this drops to 77% among those 65+; 55% among respondents without a formal education and 71% among respondents lacking basic digital skills.

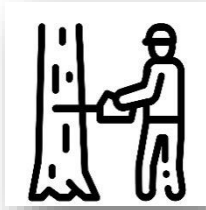
3.2 Work Package Three: In-Depth Research Interviews: digital personas and the lived experience of digital poverty

We have used insights from the state-of-the-art literature review and the practice approach framework (Figure 4) to inform the development of an in-depth qualitative data collection tool, to enable us to drill down into the everyday experiences of those living in digital poverty, as identified by the survey. Qualitative data collection involved in-depth interviews with sixteen (16) people who took part in the telephone survey and expressed an interest in engaging further in the in-depth interview phase of this study. Appendix one presents our sampling framework for the interviews and appendix three presents the interview schedule used by members of the team at Lancaster University Management School.

Drawing on a practice perspective we focussed on understanding the assemblage of situated and entangled sociomaterial practices (the interactions between the human and the technological) that come into play in people's everyday lives in a rural setting. Using this diverse group, we developed digital poverty personas, that allowed us to present stylised facts as findings, that represent a typical person and type of experience without revealing personal details of any one individual. The following section presents four situated personas, relating to specific individuals and their lived experience of digital poverty in a rural place, while protecting the anonymity of the individual, as promised through our ethics process.

3.2.1 Situated Personas

Personas are archetypical users whose goals and characteristics represent the needs of a larger group of users (Schmidt and Tawfik, 2022). Usually, a persona is presented in a one-page document or less. Such descriptions include practice patterns, goals, skills, attitudes, and background information, as well as the environment in which a persona operates. We make use of persona templates, which include a few fictional personal details to make the persona a realistic character while incorporating quotes and characteristics of real people that we spoke to in our qualitative research phase. We have taken care to include context-specific details for example, the particularities of the rural setting within which participants are typically situated, for example, in an outlying farm with no accessible bus routes, a mobile library that visits monthly, a participant's financial position and other details that affect their everyday way of life. We emphasise the situated nature of our personas by naming them 'situated personas'. This decision reflects an observation made in the quantitative, qualitative and policy stakeholder data – that there is something particular about the rural setting that amplifies digital poverty, its complexities and its potential solutions. We return to this point in the conclusion of this report.



Persona 1: Ted
Forester

Background information

Ted, 62, lives with his wife in an isolated village in rural Cumbria. He works fulltime as a forester and has lived in the area for many years.

Environment

Ted's village has a pub, a café and very little public transport. The bus runs twice a day, and the nearest train station is 4 miles away. The village shop closed six months ago and there is no public broadband in the vicinity. He is reliant on poor broadband and mobile phone coverage. *"[Broadband] is not good. It's very slow.....Mobile is bad as well - it comes and go. Messages don't always get through or come through late."*

Ted's work as a forester takes him to remote rural forested locations, often working alone with limited or no digital connectivity

Skills

- Forestry, physical work
- Gets support from partner and daughter with digital skills
- Doesn't do online banking

Attitudes

- Relevance of digital – conflicted - *"I'm not really that bothered [with digital]"* yet sees his mobile as essential due to the dangers associated with his work
- Worries about digital - Concerned with cyber bullying and online fraud
- Cost – Nonchalant - *"I don't even know how much it costs me... it costs what it costs because we need it."*

Goals

- Ted wants to cut his working hours and improve his physical health *"I'm getting too old for the job. It's a very physical job. I've done it all my life, so I'm just about worn out."*

Practice patterns

- Works outside most of the time.
- Takes mobile phone on forestry jobs for safety reasons *"if I have an accident or something and it's close by and I can get hold of it and call somebody."*
- Uses remedial practices to compensate for lack of mobile signal in the forests by communicating directly with landowner, park ranger or game keeper so they know he is on site check on him in case there is an accident.
- Disabling evaluative practices results in Ted not doing online banking and uses local post office instead as nearest bank is 10 miles away.



Persona 2: Jake
Rural job seeker

Background

Jake 26, lives with his parents and is currently unemployed. He lives in a semi-rural location and does not drive. Broadband connectivity is good in the area, but mobile reception is unreliable.

Environment

Jake's town has few employment opportunities. *"There is no incentive to do business here. Nobody even tries to open anything here. There's no jobs."*

Skills

- Struggles applying for jobs through online recruitment platforms and worries about working from home, *"I'm not confident that I would be able to work a job where I would have to use the phone, because it would just be so unreliable."*
- Can't drive and waiting list for driving lessons is long.

Attitudes

- Frustration with mobile connectivity - *"I had a job interview and the call kept dropping out."*
- Low self-esteem - *"there isn't really an opportunity for me to have a high paying job."*
- Money worries – *"The internet connection is good if you can afford it, which most people can't. I'm living at home so I can."* Jake's parents pay for broadband and his phone contract.

Goals

- To find a job that he can travel to easily and reliable mobile phone connectivity. *"It would definitely make a difference. It would mean I could do telemarketing from home. It would mean I could have longer phone calls with people."*

Practice patterns

- Uses remedial practices to compensate for poor mobile signal by moving around the house in the attempt to gain a better signal.
- Uses remedial practices when job seeking by avoiding jobs that involve working from home as feels unable to rely on the mobile phone connectivity.
- Displays signs of evaluative practices by choosing to live with parents due to lack of income and opportunities for work in the area.



Persona 3: Rosa

The Single Mum with preschool children

Background

Rosa, 32, is a part-time student and a single parent, and lives alone in a large village in a rural setting.

Environment

Rosa's village has a number of shops and good transport infrastructure that provides services for communities in surrounding smaller villages. She lives on a modern housing estate with poor broadband infrastructure. *"you'd think with new builds they'd have better things like internet connection."* Due to the rural location Rosa is unable to use food delivery and taxi apps, *"there's no... we don't do... there's no Uber here. There's no Uber. There's no Deliveroo. There's no Just-Eat."*

Skills

- Evaluating how to compensate for poor digital connectivity *"My phone sometimes doesn't even connect to my own home Wi-Fi, so I use my mobile data."*
- Negotiating with service providers to fix poor connectivity
- Doesn't drive

Attitude

- Security - Mobile connectivity is important to her as she wants the security of knowing she could make a call if needs be.
- Prioritises costs of using mobile phone over cost of TV
- Doesn't want to use social media
- Lack of trust in service providers and tech companies

Goals

- To be a teacher
- To have reliable free broadband provided through social housing *"we could have a community where, the council pays for everyone to have Wi-Fi."*

Practice patterns

- Uses remedial practices to compensate for poor quality broadband by relying on mobile phone data. However, this resulted in her paying for two mobile phone contracts due to the lack of mobile phone coverage with her initial service provider, pushing her into financial poverty. *"I was in a contract with one company which I didn't get any signal for. So, I phoned them and said, "I don't get any signal here, you know, in my own home and I'm a new mum, a single parent, do you think I could maybe cancel this contract?" and they replied "not really, no."*
- Rosa's personal circumstances influenced the how she undertook evaluative practices to decide to what extent she can afford to make use of digital technologies.



Persona 4: Josie
Office worker

Background

Josie, 58, works fulltime for a local authority and lives in a rural area very close to a major urban town with good transport links, local amenities and shops. She resides in an outlying farm and struggles with very poor digital connectivity and landline.

Environment

Poor digital connectivity has resulted in Josie being unable to work from home. This created added risk during the Covid pandemic where she had to work in the office. *“I had to go into the office during lockdown because working from home was not an option for me, which was very frustrating because we have vulnerable people in the house so it’s not without consequences.”* Poor connectivity also impacts the farm business as they are unable to do online payments and forms.

Skills

- Professional office worker
- Digitally skilled
- Regularly contacts service providers regarding poor connectivity

Attitude

- Believes everyone should have good quality digital connectivity. *“it’s a utility.”*
- Frustrated with monopoly and bureaucracy of telecom service providers

Goals

- Josie wants reliable good quality digital connectivity to enable her to work from home and undertake farm business online and digital payments *“I would like gigabit technology in my life like everyone else.”*

Practice patterns

- Drives to train station and then takes two trains to get to work
- Regularly uses remedial practices to compensate for poor quality broadband at home by working in the office, moving to different parts of the house to get any mobile signal, and relying on mobile data rather than WiFi.

3.2.2 Themes from Qualitative Research

Adopting a practice approach to our inquiry enabled us to drill down into the everyday practices of rural citizens living in digital poverty and reveal in-depth insights to inform our understandings of possible interventions. Semi-structured interviews sought to answer the following questions:

- What do rural citizens do and seek to do that is meaningful to them (at least partially) through digital means?
- How might new digital possibilities become meaningful to different rural social groups?
- How might digital interventions support rural citizens in making new digital possibilities meaningful and valuable to them?

Organising the interviews in this way allowed for a discussion of the assemblage of situated and entangled sociomaterial practices rural citizens undertake through a digital means in relation to the strategies they adopt, and the aspects of their everyday lives considered to be especially meaningful. From the analysis of our qualitative interviews, the following factors emerged: physical social connectedness, poverty awareness, intermediaries, resilience/plan B, trust and security. Each factor is discussed and illustrated with quotes in the next section.

3.2.2.1 Physical social connectedness

We selected all our participants on the basis that they had at least one or more indicators of digital poverty. Sometimes we experienced this first hand in our in-depth telephone interviews, with transcripts often including sections such as this:

“hello, hello,.... Can you hear me..... hold on, I’m trying to fix this... I’m not really sure why.... I’ve moved to a different part of the house... is that better?” (0001)

Poor connectivity disrupted the interview occurred on landlines, the Internet and mobile calls. We often had to call participants back, making poor connectivity a lived experience for the researchers as well as the participants.

Participants spent time describing their home and rural setting. Some lived in rural towns, others lived in very rural villages or outlying houses. For example, one participant explained,

“We are in a very rural location, very close to a major urban town. So, Frodsham is classified as a key service centre in the Northeast of Cheshire West and Chester as a municipal borough. It is deemed to be one of the best-connected communities in the Northwest. I live three miles from the M56 motorway, two miles from the centre of Frodsham, the A56 is the main arterial road linking Greater Manchester, Liverpool and North Wales areas. The emergency escape route for the M56 which is one of the busiest motorways in the country. In the centre of town we have reasonable bus service along the A56. We also have a train station that connects hourly and half-hourly to Greater Manchester and to, now, directly right into the centre of Liverpool. So, from a connectivity point of view, we are really connected. We’ve got lots of shops. We’ve got lots of good transport links. We are 30 minutes from Liverpool Airport, probably 40 minutes from Manchester Airport. We are in a very, very attractive location. And I live on a 1–3-megabit broadband service, on the odd days that it’s working.” (1125)

Not everyone had services on their doorstep. Participants said that their town or village often had small supermarkets or stores with limited supplies, bus services that ran between 10am–6pm with reduced services at the weekends and in holidays.

"I actually live in the Eden Valley. So, the village probably has about, ... 250 houses. There's essentially one main road going through it. Two small B-roads that come off that and that's basically what's in the village. It has one shop which is a bakery/café, it has one pub, and the post office shop actually closed about six months ago. So, basically, that's all that's in the village now, the pub and a café. ...there's one bus a day, a little service for the older people to get to Penrith. I'm not sure now how many times it runs. It's probably twice a day to get there and back. That's about it. The nearest station is in the next village at Langwathby, which is about four miles away. There is actually a station there that can take you north towards Carlisle and Scotland or south down towards Manchester and that way." (1159)

More than half of our survey respondents had a 25-minute car journey to reach a railway station. What was interesting was the expectation, and to a degree an acceptance of poor connectivity, in these isolated settings.

"It's okay and it's not fast or super-fast or anything, like. Usually, it's okay for what I want. I mean, it does dip from time to time. I find the broadband probably better than the phone signal, actually, the mobile." (1630)

However, some participants did highlight the unfairness of the distribution of reliable digital infrastructure and the need for change.

"We are not a rural hidden away sort of town. But what does characterise us is for over 10 years we've been lobbying for high-speed broadband connectivity as a community. We've got, overall now, very good communications because, finally, Open Reach did arrive in town and, over the last 12 months have been providing fibre to the premises for 75% of the properties in the exchange area. But the flip side of that is that there is a significant part of a community that has woeful connectivity, with absolutely no hope of it coming our way in the very near future, at all." (1125)

"I suppose it's [connectivity] okay compared to what some people that live in the valleys that have no signal at all. Obviously, it's nowhere near as good as the towns and the cities." (1630)

One participant that was living in a new housing association property in a rural village explained that broadband was not 'part of the deal',

"They [the houses] have satellite dishes. ... So, if, for example, you wanted Sky, I know Sky's a bit different, Sky has the TV box thing now, but it's all through the internet... [but] Fibre broadband wasn't available in my area... It's... "Would you like to sign up to this package?" It's like, "yes, yes, sure", "what's your address?" Get through everything, "oh, not available in your area". (1003)

Most participants had some form of connectivity available to them, even where connectivity in their own home was poor, they could visit nearby establishments to access connectivity, though not one single participant told us that they regularly did this.

"There're a few pubs around in the next village and stuff that you can use their Wi-Fi just, that's really standard now, isn't it" but "there are lots of places that are cash-only as well." (1003)

One participant emphasised the importance of meeting up with friends at the local pub and how the pandemic prevented that from happening, relying on telephone calls instead to stay in touch.

"The virus really was an upheaval in my life, yes, it stopped me doing that [going to the pub]. Didn't stop me working, I did carry on working but I really isolated myself.....I used the telephone instead." (1001)

We found the connection between the digital and the real world, could both reassure and raise concerns. One participant gave an example of how a video health consultation has offered him significant reassurance:

"...I got shingles two years ago. I spoke to Dr Gracie, and she said, 'I'll do a video call with you, but I think I know what's wrong, but I just want to have a look at this scab that was coming up'. So, she just did a video call, my wife held the camera where the big scab was. She said, 'you've got shingles'. I thought thanks a lot." (1130)

But for all participants, digital connectivity represented a really important means of keeping in touch with friends and family,

"...my son plays Nintendo Switch and he hooks online and plays with his friends" (1003)

"My brother lives quite some distance away so it would be easier to contact him on video call..." (1427)

Despite these clear advantages and a desire to be connected, some participants raised concerns that digital connections may come to replace physical, social interactions,

"We run a Christmas business, so one of the things that would be great would be able to do online selling from our farm. We literally at Christmas are running a trusted Christmas business so you would come, for example, pick up your Christmas tree, take it away because who comes with cash for anything? ... we were literally sending people away with a Christmas tree trusting that they would pay us when they got home!" (1125)

"Being a shopkeeper, I much prefer to buy locally and if the facility is there for buying locally, I buy locally. If they say, 'well, I can get it for you; it will be a couple of days' I will also buy locally. So, it's things I cannot get locally that I use that [the internet] for. That's probably once or twice a month.....I don't like the Big Brother concept very much because they kill off a lot of businesses that have been giving a good service for a long time and they kill them off because, basically, they're very efficient and not any more efficient than a local business but efficient and cheaper, usually. But it means sooner or later we'll end up with no shop centres." (1720)

What was common in all our interviews, was the emphasis on using the digital to enable and support digital interaction, and not to replace it. This often-affected participants relationships with their devices.

"I'm not very European in the way that I eat out a lot, so when I do go out, it's usually a treat and with people I probably... to meet up with them that I haven't seen for a while or whatever. So, I won't be on my phone. So, it's actually not the appropriate place to be on my phone. There's no need for me to check my emails in that small amount of time that I'm eating and enjoying time with a friend." (1003)

"[I] just literally send an email now and again, or a phone call. Friends, most of them are around, again it would be a meetup in the park or a walk... Physical contact rather than through devices. I would rather meet somebody in person than talk to the on the video call." (1427)

We also spoke with one participant that had moved from a well-connected home to a very poor one. They had moved one mile up the road, leaving an area with 57 MB delivery, to an area which offered “typically between 1-3 MB per second service”. This family that included young adults, all of whom were used to working online, and enjoyed gaming. They described feeling bereft of digital access, especially after becoming so utterly reliant on online access during the pandemic:

“We are quite sophisticated users. We have two youngish adults living in the house who would dearly like to game. We do a lot of everything for us is online or it was online. Now, it’s a struggle. I need access to things like Teams because I am the local elected councillor as well so the last two years, I’ve been doing pretty much everything online. Teams is very intolerant to low latency on the broadband service. So, if I can get in at all, which is a bit hit and miss because I never know whether it’s going to work or not, I can’t do it over my broadband. I have to do it over a SIM in my laptop. The SIM, because that’s accessing the cellular network, is equally not very good. So, we’ve got 3G is all right; 4G is fine outside, according to which side of the house you actually stand on.... If I’m on a Teams ... I can very rarely do video and audio at the same time.” (1125)

Life without reliable connectivity has become a struggle. This raises another important point, that is, where connectivity is poor, people could be denied services and care that others might be offered or have open to them. One participant provided an excellent example of this in relation to the anticipated changes in social care:

“... we’ve got a crisis in social care in this country and digitally-enabled care and medicine is going to be a massive part of the way forward. And, unfortunately, the digital infrastructure has to be better than it is for everybody, not just for people that... you can’t just be old or ill or disabled, or learning disabled, and live in a town; because not everybody does. So, there literally is a digital postcode lottery in this country.” (1125)

“Unfortunately, the public sector is being pretty crap at making sure that the infrastructure is rolled out, is going to blindly wake up to the fact that one of the reasons we can’t discharge old Mrs Riley from hospital is that Mrs Riley doesn’t have any digital infrastructure for us to be able to keep her safe at home.” (1125)

“As farmers, obviously the future is very much a drive of all sorts of things, a lot of the systems that we have very exacting things to spray to for environmental considerations and a lot of these online calculators, in terms of how you programme your tractor and everything else, it’s all online now.... we need to know, for example, what the weather forecast is, what the humidity All our energy provision is online. Interestingly, this morning I just literally scraped in my RHI application.” (1125)

“We’re trying to go as green as we can but a lot of the smart metering, what’s the point of having a smart meter when nobody can get to it?” (1125)

We found, that for the most part, people did want digital connectivity so that they had options of being included and did want to be able to keep up with the socio-technical world as it transformed.

“I would like access to what everybody else has. I would like gigabit technology in my life. I’d like it today because I can’t live my life in the future without it. Very soon, I know BT have reared back on it only this week, but we can’t turn off everything analogue because one of the strange things is when I’m trying to get a Wi-Fi signal in my house, the strongest Wi-Fi pickup I get is to my bloody washing machine! You know, you can’t now buy a washing machine that’s not Wi-Fi and digitally enabled. So, the next time I need a fridge or a cooker, or anything, the future is the Internet of Things. I have no internet.” (1125)

“Reliability, security and keeping abreast of times with the product ranges, I think are the important things about the digital age for me.” (1720)

“Wearable tech and sort of internal medicine, so you don’t have to build big infrastructure because smart drugs, we’re going to take endoscopy pills and it’s going to photograph us from the inside rather than having a camera shoved up your” (1125)

Some participants also mentioned the importance of social interaction through digital skills training sessions. One participant described their experience of completing the European Computer Driving Licence qualification some years back,

“It was really good, and I enjoyed doing it. As I say, it got you into the community and meeting other people. It got me out of the house when the kids were younger. I enjoyed it. I thought it was a good idea. It also helped me get the job I’ve got because I had that qualification.” (1630)

In summary key insights captured under the theme ‘social physical connectedness’ show:

- **Rural settings can configure digital poverty:** a desire to keep up with friends, family and work colleagues through the use of digital technologies is denied by poor digital connectivity and unequal distribution of reliable digital infrastructure.
- **Digital poverty is amplified by a lack of local resources and infrastructure to hand:** poor public transport, shops and local amenities make access to digital services even more important.

3.2.2.2 Poverty Awareness

One participant put the lived experience of digital poverty into sharp relief, illustrating how poor unreliable infrastructure in rural place, demanded additional expenditure as participants tried to ensure connectivity.

“My internet was terrible... loads of people didn’t [have reliable connectivity] but the best one [connectivity] was if you went up to the third floor... you could kind of get signal there, or you could go outside and get signal. But that was about it. So, I changed my mobile phone connection, because I was in a contract with one company which I didn’t get any signal for. So, I phoned them and said, “I don’t get any signal here, you know, in my own home and I’m a new mum, a single parent, do you think I could maybe cancel this contract?”, “not really, no”. So, I finished... I just ended up paying out that whilst opening up another and at the time, ... I was really... yes, really skint.... (_1003)

What is apparent is that such expenditure leaks out, creating poverty in other domains:

“I felt really stuck where I was. The boiler kept breaking. The internet was definitely always going off; and for a while, I was so skint, ... because I was paying two mobile phone contracts. ...I was paying off the old contract with the phone...” and “...because of the mobile phone thing, I made sure that I paid for a landline...because I was on my own with a child..., I don’t drive... I feel like I need to be in contact with people, just in case.” (1003)

Phone contracts, the nature of MNO coverage and the product-service contract bundles they sell, a lack of technical understanding of participants/customers (and often in our experience) sales assistants’ knowledge of connectivity, specifically the difference between fixed and mobile broadband and how they connected (or not) to form a seamless (un)reliable service, means that customers cannot buy well, often committing themselves to “useless” contracts that they are then tied into. To sell such product-services packages well would require MNOs to check coverage in rural areas before sale, and even this is problematic. We found Ofcom published data of expected digital delivery speeds and

coverage to be inconsistent with what was being delivered in relation to the lived experience of our participants.

Participants reported poor weather impacted connectivity services and having repeated visits from “BT” to try and solve home broadband quality issues. But this again has knock-on effects for those living in what we call digital poverty+ settings. That is, where digital poverty is not the only form of poverty in play and were addressing or prioritising digital poverty pushes people into other forms of poverty (e.g., heating or eating poverty). As one participant illustrated,

“...they (BT) have this standard phrase, “if we send an engineer and it’s your fault, you’ll have to pay our fee, but if we find a problem and it’s our end, we will fix it” and they’ve been out a few times, but they say, “your broadband is slow, you’re doing nothing wrong, but we can’t find a problem” (1125)

While it's cheaper for participants, “now that texts are not 50p a time”, many participants end-up relying on “...mobile data rather than my home broadband” (1003), which again adds an extra layer of expenditure, and drives up the cost of digital access.

This laying of one cost over another as each service proves unreliable, has important multiplying effects for those in digital poverty+ settings as expressed by one participant:

“and there are a few places, little shops, where they say “oh, you need to spend £10” [to use digital money]” (1003)

The situated nature of this type of digital poverty, is emphasised by the local expectations and situation. Participant 1003 for example, told us that rural towns “having shops and a library and stuff” are often surrounded by rural residential areas that “aren’t really villages” because their Post Office “and smaller businesses have gone now”, “it’s all residential... with a primary school and a church”. (1003) and that poor quality, unreliable and inaccessible digital connectivity “is quite normal up there.” (1003). Some participants reported regular disruptions with other utility services, such as regular power cuts.

Personal situations had an important impact on digital poverty awareness. One participant explained, “maybe if I didn’t have a child, it wouldn’t have bothered me so much” (1003), while another pointed out, “I look after my wife, I’m her carer, she’s disabled.... I’m [online] every day near enough”. (1130)

Digital poverty awareness is highlighted by the ubiquity of digital in everyday life. One participant told us that her smartphone was “a minicomputer” in her pocket, used for “shopping, ordering things online... entering gas and electric... water meter readings... banking... through the apps on my phone... there are apps for everything, it is really handy...”. (1003)

And the lack of availability of access to online services inevitably put these issues into sharp relief with participants telling us:

“... a few things that I can’t access because “it’s not available in my region”... my PGCE is Distant Learning” so everything should be accessed online, ... but when I first signed up to the course to do this verification thing where you get the app on your phone ... it’s not available for me that app, so I have to receive a text message or a phone call with a code, verification code, and type it in [and I can’t]...it’s the same with car insurance... Uber...Deliveroo, Just-Eat... You see the adverts but it’s not applicable for us” (1003)

“I would probably get a more modern phone [a smartphone] if it was more affordable But I have a limited income at the moment, so I have to watch what I’m spending... I can’t just go out and spend a few hundred pounds on a phone, I would maybe like to...” (1427)

"I couldn't update my meter readings from here. The latency of when you're trying to log on to somebody's system to do your online shopping, you've not got all day to pick your carrots or to upload your credit card information and pay for it. So, a lot of those options occasionally work but I tend not to use them because, more often than not, you get halfway through something and then it drops out and you start again. It's just harsh."

Some respondents felt that the place they lived in was directly connected to digital poverty and poverty more broadly.

"Winsford, it's quite big, there's quite a lot of people living there, but the thing is there isn't really any opportunity." (0001)

Participants also emphasised how rurality and the cost of public transport can contribute to poverty.

"I find it [the train] super-expensive; if there's two of you it's cheaper to take the car." (1207)

Awareness of digital poverty was recognised by those who were not necessarily experiencing it for themselves in a digital poverty+ context. For example, participants told us,

"...we're very fortunate because we can afford all these deals, and all these gadgets it's very expensive and yet it's becoming like electricity, and water and whatever, an essential part of being a member of society, is access to it.... There's no jobs ...businesses close..." (1213)

"...my husband wants the sports... so, it's an awful lot of money; ... we're fortunate, the position that we're in, but for other people... but it's no longer a luxury.... having good broadband is no longer a luxury, it's what you have to have. It's a function, isn't it, applying for benefits is all online." (1213)

Participants also drew attention to what we can define as the notion of 'double bind' which emphasises how those with the means to access and afford digital devices gain even greater benefits due to the cost saving opportunities available online when purchasing goods and services, for example through short-term online offers and buying second-hand through websites such as eBay. An excellent example of this is how one participant rather than buying a brand-new mobile phone bought a refurbished phone through the online store Music Magpie and made significant cost savings on the contract:

"I bought my phone, iPhone, it's an Apple, it's an iPhone 7, I think, and I bought it from Music Magpie and they're very, very large national firm and it's remanufactured, rejigged, whatever they call it, but it looks brand spanking new, and it's got a 12-month warranty on it and it's brilliant. And I paid 100 quid for it, and I've got everything I want, all the phone messages, data, I think I've got 32GB on it or something like that. and that costs me £8 a month..... So, if you can look around and shop around, you'll find somewhere where you can get these phones that are not as expensive, and you just get a contract on them and the contract's cheap..... they're all online and they don't have a phone number. When you go on you get a website, you pick it out and you take it 'that's the one I'll have; that one; that pretty one that's got a blue cover on it and it's got 36 gigabytes, so and so, unlimited texts and whatever, eight quid, I'll have that phone.' You buy it and they send the sim card, you put it in and off you go." (1720)

While this participant alluded to the fact that he is not that engaged with digital *"I'm not tech savvy, me. I'm an abacus man"*, he clearly had the know-how to to save money through buying

second-hand – a strategy that perhaps could be advocated more fully through policy and regulators.

In summary key insights gathered under theme ‘poverty awareness’ show:

- **Limited competence and low consumer confidence restricts people's ability to evaluate the 'best digital deal'** when buying digital devices and contract bundles for home broadband and mobile phone products
- **Digital poverty pushes people into other forms of poverty such as food/energy poverty**
- **Those in digital poverty feel unsupported by service providers when attempting to resolve connectivity issues**, contributing to 'technostress' as individuals attempt to navigate online and telephone help
- **Affordability concerns constrain people's ability to participate in and realise the benefits of the digital world**

3.2.2.3 Intermediaries

Our qualitative data revealed many instances of those living in the rural Northwest as accessing digital services via intermediaries. By intermediaries, we mean person who acts as a link between those living and working in the rural Northwest and the digital world they want to access. We found numerous instances of families and friends working to bring services, information and connections to those who would otherwise be excluded from them. When people “*get stuck*” (1213), they often reach out to family or friends and neighbours for help:

“it's been helpful that I can call up my neighbour and get support” (1213)

“It's on Facebook... It's called the Bromley Cross noticeboard....She (my daughter) tells me where it is, what is going on...” (1130)

“Family or friends help. I've got neighbours that are pretty good upstairs... and a friend just round the corner sorted something out on my phone for me.” (1427)

One participant gave a great example of how his family provide support:

“You just get all your grandchildren, or your children and they come in and fix this or fix something else. My Alexa's not working today. What's happened, we had a power cut and something's gone wrong. 'I know what that is, granddad,' bang, bang, bang, wallop, wallop, wallop, fixed. I wouldn't have a clue.” (1720)

Sometimes the help required is general, but quite often it's for trouble shooting:

“I normally do [online work] myself. If I do get stuck, I can always ask the eldest daughter because her job involves lots of online business....” (1130)

“I went round to my neighbour's... to submit my assignment for uni... I just couldn't work it out. ... I didn't know if it [the problem] was internet-based, because sometimes my laptop was finicky, I don't know what the word is, you know, I'd have to restart it so it would go on the internet and hook up.” (1003)

“My friend, she got this fancy printer, and it won't connect to her... she can't make head nor tail of it. I do her printing..... I don't mind at all, you know, and I said, “just send it to me”. ... That's the community spirit.” (1003)

Our qualitative data also revealed the importance of community and community spirit in how people accessed digital services through intermediaries.

“I’ve got a man down the road who’s expert on it. He’s got his own little business and he comes along and cleans my computer down every year and anything I’ve got wrong or struggling with, or if I’ve done something wrong, I’m worried about somebody stealing my information, he will come along and sort it all out and he installs all my gizmos like security things.” (1720)

Another participant, talked about the notion of ‘rural reciprocity’ as explained:

“I’ll either look after their dog, do their ironing, I know it’s very sexist, sort the house out, but it got me free computer classes once, for my son, so I’m very much barter-inclined.” (1207)

However, some people found it difficult to ask for help as explained by one participant who lived on her own.

“You don’t always want to have to ask somebody, if you feel that what you’re doing is right. I mean using the bank and all the rest of it, that’s fine, because the process is very straightforward, really. They guide you through it.” (1502)

This participant went on to explain how she gained support through work and family.

“I thought probably I ought to be getting some more training. I never actually did any computer work at school, because it just wasn’t... it hadn’t come in. Since then, I’ve worked as a teaching assistant, and I’ve learnt more from the children than I’ve learned from anything else. From my own children as well, because they just seem to take to it so easily, don’t they?” (1502)

Drawing on her previous experience of struggling with digital skills, this participant went one step further by discussing how she was keen to use the Womens Institute (WI) as a digital skills intermediary, which highlights how a national organisation with hyper-local intermediaries can support communities.

“The secretary and I are looking into that [digital skills training], to see if we could do something. We have an office nearby and they do things there, put classes and things on sometimes. I am looking into doing something about that.” (1502)

In summary key insights gathered under theme ‘intermediaries’ show:

- Intermediaries in the form of family, friends and neighbours play a key role in providing trusted peer-to-peer support with using digital
- Community spirit and the notion of ‘rural reciprocity’ help rural citizens overcome the limiting factors created through digital poverty
- Hyper-local intermediary organisations have an important role to play in digital interventions and engaging with rural communities

3.2.2.4 Resilience/Plan B

Many participants told us that they had unreliable broadband and mobile signals and most had difficulty with mobile signals in their home. Participants also told us about the lack of community assets and local infrastructure such as shops and public transport. Such a lack of infrastructure hinders resilience and people’s ability to have a ‘Plan B’.

Talking about their poor connectivity one participant told us,

"I have to have the hub [router] in a certain place [in my house] otherwise it's very difficult for me to pick up a signal. I tend to work in the kitchen where I've got a good surface to work on, but I have to go where the walls aren't too thick to make a call." (1427)

"I have to be careful where I am if I answer my [mobile] phone especially in the property because I've got, I live in a flat with thick stone walls so if you're in the middle of the building you don't get a good signal."

Another participant told us how they rely on mobile signal at home due to the unreliable broadband which resulted in them having to adapt their practices of communication as explained,

"I tend to use my mobile data more than my Wi-Fi, if that makes sense. I run out of data with what's going on in the house. It's a nuisance. To try and combat that I've turned my mobile data off so I don't get emails or WhatsApps when I'm out but if I might just surf the net, I still have it and I've not used it all at home. I just have to reconnect it." (1207)

In contrast we found that most of our participants expressed concerns that they did not know what to do if equipment failed. One participant demonstrates how it was down to their family effectively arguing with them before they would resort to getting support as explained:

"...this is my daughter, she was always, always on my case when it [internet] kept dropping out 'do something about it will you?' So, she got on my nerves in the end, and I thought, 'right, I'm going to do something'. So, I asked Virgin and they went 'oh, Mr Crompton, you've been a customer so long...' they did nothing. I said, 'right, well I'm going to look elsewhere' and then they virtually wanted to bend over backwards, Virgin Media and shift me modem from where it was to a better place; they were going to cut this off the bill... I thought, 'why didn't you do that in the first place?' until I said I'm going to leave. I thought, no, I'll just stick with BT then. And I just went, and they've been all right. Plus, their bill is all in one, that's my mobile, everything. Virgin had it split up. All the bills were separate, and they went out at different times of the month." (1130)

Indeed, family support can play an important role in resilience. One participant, an adult living with his parents, provided a good illustration of this,

"If I had neither, if I lived on my own and I had to pay for my own phone calls... I probably wouldn't even buy a phone contract, to be honest with you. The only... everything that I have is connected to the internet. If I was just like not able to use the internet when I was walking around, that would be fine. Wi-Fi I would rely on, so I would have to pay for that. Again, probably with how much I'd earn at a job I could actually get, probably not going to be able to afford it." (0001)

One participant expressed his concern that the access to digital services could lead to cutbacks in other areas, particularly in replacing real-world public services.

"Cutbacks where they [service providers] do away with the train services and bus services... We didn't used to have a bus service on a Sunday and then they stopped the services last year, it was after six o'clock, Monday to Saturday. So, in theory, unless you could drive after six o'clock, you couldn't get out unless you were prepared to walk... It was government money or council money or a mixture, I don't know." (1130)

Interestingly, the bus service was restored after a local digital Facebook campaign.

Some participants had concerns about digital inclusion because of the pace of change with technologies.

"...my computer is definitely [old], ... I replaced it after the 2015 flood so it's going to be seven years old now. So, most of my devices are getting a bit older" (1427)

"I just lack the knowledge, really. I was at school when computers weren't portable. They were great big things in rooms and so I didn't really learn anything from them... [or] in work, ... I probably should do a course of some description, but I never get round to it." (1427)

"They [digital technologies] are quite relevant but I don't know if I will ever get updated enough to use them to the full extent" (1427)

Indeed, a lack of confidence using digital was displayed by many of the participants at the beginning of the interview process, as they struggled with the idea of physically signing the interview consent form that had been sent by email.

In summary key insights captured under theme 'resilience/Plan B show:

- **Resilience and people's ability to have a 'Plan B' is hindered by a lack of local infrastructure.**
- **Resilience for those in digital poverty is built by support from nearby family and friends**
- **Resilience is broken when digital connectivity fails**, making people feel helpless and isolated
- **Those in digital poverty adopt remedial practices to compensate for poor quality broadband** by relying on mobile phone data, or moving to different locations to get a mobile phone signal

3.2.2.5 Trust and Security

A lack of trust in the institutions and service providers involved in the digital realm was a significant factor for participants and was often entangled with worries about security as summarised by this participant:

"You always are a bit worried when you have all these digital things like laptops and computers and phones and whatever, Alexas, whatever. I'm always concerned about the security of it. And the security of my information about me, my bank accounts and my bank number, etc. I think that the security is the only worry I have." (1720)

Participants repeatedly questioned online banking.

"I didn't know to trust it and mobile banking, but now all the banks have shut in my area, you have to travel quite some distance to even go to your bank. So, it was like, "here's the new thing, online; it must be safe enough now," you know, because there was a lot of fraud and stuff but, you know, then I sort of thought, "well, it must be safe and it's paperless, I can just ask my gas and electric people not to send me any letters, that saves post and paper, I can just upload it on my phone, it's easy," and I think, because they'd ironed out all the sort of... I'm always afraid of newness, you know, "hmm," so I was like, "well, I'll just see if that works," you know, "and then I'll jump on board". I'm a bit sceptical with new things." (1003)

"I use online banking, mostly because my local branch is in the next town. I picked my bank based on the fact it had... I think that delay's coming in again a bit. I picked my bank based on the fact that I went to university and there was a branch there. Online banking is all I use these days. I never even get paper statements anymore." (0001)

"To be honest, there is a lot of things about digital which I... yeah, I mean, you hear all these stories don't you about people being bullied on phones and stuff, you know, and then also on Facebook. I just think it's a very easy access for people who want to hurt other people or even try to commit fraud and try to get money out of people. That is one thing I really don't like

about it..... get so many phone calls and things from people and messages on emails. You just have to be so careful now because quite a lot of them are actually people trying to get money out of you, legally. I've found that really disturbing, actually; 30 years ago, that just didn't happen." (1529)

Digital online banking is becoming almost a requirement rather than a choice. As one participant put it:

"Literally, in my very connected town where when I first lived here, we had every major bank on the high street, they all had a nice big office with people in there to take your money. Our last one is closing so we now had no bank. So, for everybody who says I don't do digital, well, I'm afraid you do!" (1125)

The routinised nature of practices meant that it was difficult for some people to adopt new practices such as online banking, even when their nearest bank was more than 10 miles away.

"I should do [online banking] because it saves you money in the end just getting information is so much easier but I'm just old-fashioned, I just hold back over time. But I know at some stage I will have to because I suspect that even cheques will get faded out soon." (1529)

"I changed bank because they closed my branch in my village. I don't want to be doing it online." (1427)

Participants also talked about trusting child safe spaces online:

"...he's [eight-year-old son] playing online, everything goes through the parent app thing, which I have on my phone, and I give permission to. Yes, and that's all through the internet as well, isn't it, online? I feel safe with that." (1003)

Trust in the technical reliability has affected people's confidence to look for work, to work from home and to use online services. One participant told us,

"I probably wouldn't be able to hold down a job that relied on the internet... I am not confident in working from home... because I wouldn't... especially if it was... the internet is fine, most of the time. It's the phones, the phones are bad. I'm not confident that I would be able to work a job where I would have to use the phone, because it would just be so unreliable. I'm worried about the phone signal constantly dropping.... And everything has moved to house-based things, I wouldn't be able to do it." (0001)

"...I literally have to go into an office, during lockdowns principally because working from home was not an option for me. Which was very frustrating because we do have clinical vulnerability in the house. So, it's not without consequence.... It's two trains... more than one hour away" (1125)

Bundled up with this participant's observation is a lack of skills in accessing valuable, reliable technical support, a lack of transparency with what goes wrong and where, so no empowerment or a means of how to fix it.

Participants, time and again, illustrated the lack of transparency and public understanding about what might work, and what solutions might be. This led to a lack of trust in service providers.

"We have a very, very, very, crackly landline for voice coms. We have... according to who you're speaking to at BT it's just about 10 megs for the purposes of not actually giving us access to any of the grants that are available. But we get 1-3 meg service from any of the major providers. So, our broadband is woeful. If it's windy we have no broadband. If it's very

rainy we don't have broadband. It drops out on a very regular basis. We have no connectivity for at least a week because there was yet another fault. So, we largely pay for a service that, (1) is crap on a good day; and (2) is actually probably unavailable for 25% of the time in any shape or form." (1125)

Generally, service providers were unhelpful or obstructive when approached for help. Participants told us,

"BT have very nearly collapsed my mental health because, as a large organisation, with Open Reach within its corporate domain, they are atrocious, very uncooperative, very couldn't give a monkey's, will not allow us in any shape or form to access the USO funding that's available out there because they are so adamant that they can provide us with the 4G service." (1125)

"I asked Virgin and they went 'oh, Mr [X], you've been a customer so long...' they did nothing! I said, 'right, well I'm going to look elsewhere'." (1130)

"Because we live on a farm so we have looked into we could dig a big trench and lay a fibre optic cable across our fields and down. but they want something ridiculous like about five grand to splice it into somewhere, if we could even get it across the road. So, there is absolutely no cooperation, no willingness. They very much want to treat everybody as individual because they put so many barriers in the way to any sort of collective engagement that neighbours might have to want to get together and use the... Even if they could access it." (1125)

There is no unified approach to connectivity either. One participant explained,

"I have literally tried every technology option available. We've currently got a satellite dish connected to the roof which sadly hasn't really delivered. We've tried full 4G as an option. But whilst we might be able to get a dribble of the service to the exterior of the property, what you can't get is a 4G service with a guaranteed availability in different rooms of the house. They only guarantee it to the outside of the property which is not much good because I'm not standing outside in the rain with my laptop trying to connect to a Teams talk." (1125)

Similarly, government investments to get rural areas connected, have been very fragmented, and again lack transparency and logic for the public, making it difficult for them to understand what is going on, what they might realistically expect and what might be judged fair or reasonable in terms of connectivity expectations. One participant explained,

"... initiative in Cheshire, called Connecting Cheshire which is the government vehicle so over the last 10 years we've had, tens of millions of pounds of government money to bring on to the Eurozone specification, properties that are deemed hard to reach. Sadly, those initiatives have never really been very joined up that said, 'if Open Reach are in the area deploying 75% of properties are going to have fibre to the property connection, why don't we just use some of that money to do the rest of them while there's mobilisation in the area.' But that's all too difficult." (1125)

This type of frustration was typical. This lack of trust in both the reliability of the service, and in the service providers and their ability or willingness to solve problems affects people's relationship with connectivity. One participant was actively excluding himself from key jobs because of a lack of trust in connectivity, while another revealed his confusion about the possibility of connectivity problems being solved.

"..they've built houses everywhere.There isn't anywhere in town to build a mast anymore. There used to be, but they've been building houses that nobody can afford.That's sort of what this town has become. There's nothing in it, people just live here because they... people who can afford it live here because they have a nice house and then they go to work in Manchester, or they go to work in Crewe or somewhere like that." (0001)

"If I lived on my own, I would struggle with it, because I wouldn't probably... there wouldn't really be an opportunity for me to have a particularly high paying job. If I lived on my own, I would probably struggle to pay for broadband and other such things. I'm privileged in the fact that I don't... my dad pays for my phone contract. He gets it as my birthday present every year, just his way of back-paying child support, I suppose." (0001)

A lack of institutional trust in MNOs and broadband providers was very apparent among participants particularly in the way contracts and packages were sold to consumers. One participant described how he observed people being effectively mis-sold brand new mobile phones when there is an option to buy second-hand, cheaper phones.

"When I was sat in this shop waiting to be served....., there were two pairs of people in there and they sat there for hours talking to the bloke about buying a phone I'm thinking, 'what are you doing?' And then of course I then thought 'this is not for me; I'm not going to waste my time sat here; he's going to sell me the most expensive phone because that's the only one he's got in the shop, and he wants to sell me a contract.' Whereas I'm on the contract for phone and the sim and I'm stitched up for ever and ever. So, the only thing I can do is he'll ring me up one day and say, 'your phone's a bit old now, Mr Jones, we'll let you have a new one and your new contract will be so and so'. It's like PPI or whatever they call it, on cars, that's how cars are sold now." (1720)

There seems to be an expectation that people living in rural communities will have to create their own fixes. But this seems undoable, as participants lack the knowledge, technical skills and expertise to do so whilst frustrated with the lack of support by service providers:

"It's all very, very, very, inadequate, unacceptable, there is no help, there is no support out there from anybody to do anything to compel Open Reach, and I'll put this on the record, who are the worst organisation in the universe, matched only by BT." (1125)

The attitude that those living in poor connectivity areas seems to be mixed – it starts with residents being told that they will get connectivity services soon, and ends with the MNOs changing their minds.

"...we knew the coms weren't going to be great [when we moved here]. However, we didn't realise they were going to be this bad and we'd been given categorical assurances by the planners at Open Reach that fibre was being rolled out everywhere in the Frodsham area. Then, of course, they've had a change of heart and 'ever so sorry; there's nothing we can do' and all that sort of stuff. And there's 750 properties on the grey list for this postcode." (1125)

Mobile phones, and the mobile phone coverage was important for our participants. They were often very aware of 'not spots' in their area, where they could not receive signal, and were also aware of how poor weather, particularly wind and rain, affected signal quality. Many people in rural areas have outdoor jobs, in farming and forestry for example, and carry their phones for security purposes. As one participant explained,

"...if I've been out, I've my mobile phone with me, it really is just there for safety reasons. So, if I have an accident or something and it's close by and I can get hold of it and call somebody." (1529)

Mobile coverage and reliability affect the everyday practices of work, with practices being altered to take account of not spots:

“If I’m working on a private estate or something, what we usually do if there’s a problem with the phones, somebody like the gamekeeper or somebody will just pop over every sort of probably mid-morning sometime after lunch and then I’ve got to let him know that I’ve left the site, so he knows that I’m all right.” (1529)

“You really have to go to the top of the drive if you want to use that [mobile signal]. It dramatically improves at the top of the drive..... I think people are used to it. People who know us are used to it and they probably email us before they’d text us.” (1001)

Participants also referred to their lack of confidence or inability to use digital technologies for activities in their everyday lives, how they struggle and how that made them feel.

“I wouldn’t want it [digital] to take over but I would like to be more fluent with it.” (1001)

“Sometimes feel you’re really in the dark. You sort of feel that I’m not... you’re not an expert at this, and yet you’re having to do something that experts do, that people who are really proficient with computers, know what they’re doing. For them, it’s not a great issue, but when you’re just an amateur like me, muddling along, it’s not easy sometimes.” (1502)

While lockdown in some instances encouraged people to use digital technologies so they could continue their hobbies in an online format, as one participant explains, her lack of digital skills prevented her from participating in an online choir during lockdown, something which she was quite passionate about.

“During lockdown I joined the isolation choir, but I didn’t feel I could go ahead with it, because I didn’t feel I could do the... where you have to send in what you’re singing, record yourself singing and send it in. I couldn’t go the full way with that, which I was a bit sorry about really..... I just hadn’t got anybody to ask about it, so I didn’t continue with that. Never mind, I enjoyed the rehearsals anyway.” (1502)

In summary key insights captured under theme ‘trust and security’ show:

- **Distrust of digital services is prevalent for those in digital poverty:** in connectivity service providers, access support services, digital service providers, and online security.
- **Distrust comes from a lack of service providers/MNO transparency and support:** resulting in those in digital poverty adopting disabling practices, excluding themselves from digital worlds.
- **Distrust digital connectivity reliability hampers confidence in job hunting and working from home**

3.2.3 Concluding Remarks on the Qualitative Interviews

Our analysis of the qualitative data revealed that the specificities of a person’s socio-material-economic-political setting have the potential to configure them as excluded from normalized digital practices in their everyday lives. While the traditional ‘digital divide’, ‘digital inclusion/exclusion’ literature revealed a number of key factors affecting digital poverty in practice – *Digital Infrastructure, Social Demographics, Digital Skills, Place, and Purpose* (see Table 1), the quantitative study revealed the extent to which these factors were at play. Importantly, our qualitative study shows *how* these distinct factors came together to perform moments of exclusion and inclusion from digital worlds. They each play a critical role in how our respondents go about their everyday lives and so can act as

resources, barriers, or enablers and disablers at particular moments, and through particular places and spaces as they go about their working and private lives.

Table 7 provides illustrative examples of the way in which people calculate and bricolage their activities, drawing on or failing to access different resources at hand, to perform moments of digital inclusion and exclusion. We name these practices as *enabling* and *disabling* practices dependent on the digital connectivity outcome. Two broad categories of these practices are what we have labelled *calculative practices* – where people are working out how to engage with digital worlds, and *remedial practices* – where people are seeking to take corrective action when something has disrupted digital connectivity. We found both calculative and remedial practices as acting to enable and disable digital inclusion. Calculative practices were enabling when individuals calculated that engaging with the digital world brings benefits (e.g., getting support from family/friends to help with video calls during lockdown). Calculative practices were disabling when individuals calculate that engaging with the digital world is too risky (e.g., deciding not to do online banking due to worries of online fraud/security). Remedial practices were enabling when when individuals calculate trade-offs and take remedial action (plan B) to compensate for unreliable/unaffordable digital connectivity (e.g., shopping around mobile phone/ broadband providers that offer cheaper products, &/or more reliable connectivity). Remedial practices were disabling when individuals take no remedial action to compensate for poor digital access (e.g., carrying out everyday activities living with limited digital skills, unreliable digital connectivity, &/or unaffordable mobile phone/ broadband products) (see Table 7).

Table 7. Enabling and Disabling Digital Connectivity Practices

	Enabling practices	Disabling practices
Evaluative practices	when individuals calculate that engaging with the digital world brings benefits (e.g., getting support from family/friends to help with video calls during lockdown)	when individuals calculate that engaging with the digital world is too risky (e.g., deciding not to do online banking due to worries of online fraud/security)
Remedial practices	when individuals calculate trade-offs and take remedial action (plan B) to compensate for unreliable/unaffordable digital connectivity (e.g., shopping around mobile phone/ broadband providers that offer cheaper products, &/or more reliable connectivity)	when individuals take no remedial action to compensate for poor digital access (e.g., carrying out everyday activities living with limited digital skills, unreliable digital connectivity, &/or unaffordable mobile phone/ broadband products)

We argue that our findings suggest the need to rethink conceptualizations of the digital divide as dichotomous and binary. Rather, our data suggests that digital poverty is a far more complex phenomenon, with the confluence of practices from different spheres of social and digital life, coming together in critical situated moments to exclude or include those who do not have all the resources necessary for full inclusion, all the time, at their fingertips. We were intrigued by the ingenuity that some participants showed by working with friends and family, seeking out social tariffs and secondhand devices, or being mobile to situate themselves out of not-spots. We also noted that those at particular disadvantage suffered from intersectionality's that made moving themselves out of digital exclusion extremely difficult, for example someone with a learning difficulty, out of work, living in a 'not-spot' (with no connectivity infrastructure).

3.3 Work package Four: Qualitative Study of Policy Stakeholders

On Wednesday 16th March 2022, the Work Foundation and LUMS academics co-delivered a workshop with policy stakeholders to explore, inform and support the development of policy recommendations based on our data analysis, providing an opportunity to:

- share and explore early findings from the survey and interviews
- identify policy priorities to enable digital poverty transformation
- scope out infrastructure gaps and potential policy interventions to tackle digital poverty

Attendees included representatives from the Department for Culture, Media and Sport, Good Things Foundation, the RSA and Lancashire Local Enterprise Partnership (see Table 8 below). The methodology of the workshop and presentation slides is presented in Appendix 5.

Table 8: Organisations represented at workshop

Organisations represented
Citizens Online
Ofcom
Cumbria LEP
Age UK Lancashire
Digital Poverty Alliance
Rural Services Network
Digital Unite
Good Things Foundation
The RSA
CPRE Lancashire
Capgemini
DCMS College of experts
DCMS
Dept of Education

The workshop discussion identified digital service interventions as pathways to digital access. The notion of *pathways to digital access* became of primary importance to the discussion with participants centring on interventions that are most likely to transform practices *in situ* as always and necessarily hyper-context specific, dynamics, responsive, recursive and take their participants are likely to be on an expansive learning journey (cf. Engestrom, 2001). This transformative learning journey needs to be supported at every life-stage (cf. Dewan et al. 2005) and at multiple levels, specifically at the individual, community, organisational, and systemic level (cf. Wagg and Simeonova, 2021) if engaged, digital practices are to become a part of everyday life.

Our findings fall into three broad categories of interest for policymakers: *Situated Nature of Practice and its Implication for Developing Pathways to Digital Access*; *Lack of Joined-up Thinking (in interventions design)* and *call for Mapping exercise*; and *Valuing the Unique: Hyperlocal vs. Regional/National Evaluations of Intervention*.

3.3.1 Situated Nature of Practice and its Implication for Developing Pathways to Digital Access

Our literature review revealed the lack of attention in extant studies on the situated nature of practice. We have argued, through our analysis of the qualitative data, that the specificities of a person's socio-material-economic-political setting has the potential to configure them as excluded from normalized digital practices in their everyday lives.

We found policymakers and third sector policy-implementation organizations raising similar concerns. Our policy workshop participants recounted their own experiences of settings that configure exclusion from digital worlds, in terms of “hyper localities”: the setting specific factors that constitute exclusion of particular people in a particular context. For example, our ‘forester’ who could not access digital or physical banking services near his home, because of his physical location. Policymakers and implementers used the term “hyper localities” to describe the detailed particularities of people’s lives in very rural areas as being “significantly important” and “critical” to the successful design and delivery of impactful pathways to digital access.

We used situated personas, invoking interesting observations from our workshop participants. One workshop participant explained,

“... your first three personas [1] ‘retired’, 2) ‘young-people job seeking’, 3) ‘young families/single mum’], almost exactly match the three target groups we chose for our intervention in urban Sheffield.... we’d identified them from the data that social housing providers had about who was not engaging with digital and who was not whatever and what their issues were.”

Participants were critical of the use of personas in the workshop. They were concerned that such a method does not necessarily capture every scenario. However, it was acknowledged that personas are a useful tool to prompt and focus discussion. For example, there was much discussion on life stages of individuals and how the aging process combined with technology developments and out-of-date skills can result in people ‘drifting away’ from technology, becoming ‘digitally’ disconnected. As one participant explained, *“needs change over time as do levels of motivation, skills, awareness and availability of resources.”*

Participants also acknowledged the rural context of our project and how the potential different needs associated in this context should be acknowledged in the personas and future interventions:

“Families, the age of the children in families and how their needs, depending on the age of the children, would be very different in rural areas and the demands. So, being able to identify what those key events were that might trigger somebody to have a greater or lesser need, maybe crisis points.”

Reflecting on the methodology of the workshop, the personas were a useful tool for invoking discussion and generating ideas to embed in policy outputs. The discussion helped our project better understand the use of personas. We further developed the situated personas we present in section 3.2.1 as a result of this discussion. We wanted to use personas to bring the survey data to life, and to help policy makers pay attention to the hyper-localities that would require certain types of policy intervention. Much of the discussion focused on creating pathways to impactful interventions by making use of existing community expertise, peer learning, community networks and existing community mechanisms of support. Capitalising on extant community relations, needs, meaning and purpose of digital connectivity was seen as central.

3.3.2 Lack of Joined-up Thinking and call for Mapping exercise

Our literature reviewed revealed the extent of the digital interventions and initiatives happening across the UK, and an apparent lack of joined-up thinking across these initiatives (cf. Wagg and Simeonova, 2021). Our policy workshop participants raised similar concerns, recounting their own experiences of operating across lots of interventions, while navigating the notion of “reinventing the wheel” for each intervention. One participant explained:

“There’s a lot of interventions and support going on but even those groups themselves don’t know about the other group that’s two roads round the corner. Because one’s an art centre doing art support and intervention and has a digital skills programme in there because they got some funding for it. And the other one’s a job search support kind of activity.”

Crucially, participants pointed out the lack of visibility of digital inclusion work that was happening locally, regionally and nationally. The extent and nature of digital interventions and available support for those in digital poverty was not made visible to communities or those organizing interventions in different agencies. While participants praised much of the intervention work happening in the digital inclusion realm, they were frustrated with how this essential work is seemingly happening behind the scenes with little recognition and joined-up thinking across initiatives, policy makers and stakeholders. For example, questions were raised as to the accuracy of the Ofcom data, the actual lived experience of digitally connected and partially connected households, and how this should be mapped against telecom data, and against intervention efforts to support those in digital poverty.

“Is there a question of matching the Ofcom/Open Reach measures with lived experience. In US for example connectivity speed by “post code” is determined by best connection in the “post code” area. So ironically one house with broadband or good speed, is logged as the whole area being well connected. How is the 98% [of connected households in UK] measured?”

This discussion led participants to discuss the idea of a mapping exercise that shows not only where the digital infrastructure is in place and the level of connectivity, but also the social infrastructure: community assets such as libraries, village halls with WiFi, places and spaces and organisations where people can go to get digital inclusion training and support. So, mapping a ‘socio-technical’ mapping exercise that brings together the technical with the social and illustrates how the two interact. This raised the idea for a call for investment to do such a mapping exercise with a methodology that enables the mapping to be accessible and visible, thus providing a platform for knowledge sharing and joined-up thinking across the digital inclusion realm. Suggesting mapping methodology one participant suggested:

“Overlaying the resources and delivery available in that community, town, or village against the level of the problem. It doesn’t solve everything, but it might help you make resourcing decisions about the type of intervention you can support.”

Social activity/support mapping expands the idea of not only mapping community’s physical assets, by adding a social dimension and focusing on what is being delivered via those assets. A mapping exercise would help illustrate the lived experience of people’s everyday life, living and working in a rural locality and the potential barriers to embedding and accessing digital poverty support. One participant explained:

“Thinking about the sustainability or the efficiency of being able to deliver [digital inclusion] to rural communities; so, often it may be more expensive, so for organisations that are commercial organisations or are running on very tight budgets such as third sector organisations then the costs are prohibitive in terms of helping people in rural areas.”

There was recognition of the need to incorporate systems mapping. Specifically, the context of where people go for support, so that the everyday practices people undertake to access support (perhaps not related to digital support), and the services they brush-up against to access that support. Participants identify the need to understand whether or not support is actually available and/or embedded in particular communities. As explained by one participant:

“No-one goes, or very few people go “I have this particular digital skills gap” but they have a challenge or a problem or something they want to explore, so how do we understand that in terms of the contextual way in which people access local services is just really critical. I think it also would make very strong recommendations where there are clear gaps that aren’t actually meeting people’s needs and so where you do focus resources there are these areas of unmet needs where, actually, they’re pushing people further into crisis situations and so that is where funding and resourcing really needs to be focused.”

The key insight from participants was that both the process of mapping and the maps themselves would enable agencies and local support providers to engage in different conversations and generate new pathways to access, perhaps a little extra cost, and with increased effectiveness because it made use of extant community relations.

3.3.3 Valuing the Unique: Hyperlocal vs. Regional/National Evaluations of Intervention

Workshop dialogue led to participants discussing the effectiveness of current digital interventions, the need to evaluate interventions and the need to change them when they weren’t working: being able to adapt interventions in situ was thought to be central to their success. Again, more contextual information was thought valuable, with participants eager to put the lived experiences of those in digital poverty, and understandings of the choices and evaluate practices they engaged in to work out how to access specific services and interventions, as central to their likely success. Policymakers felt strongly that more information was needed about the support that those in digital poverty received (or didn’t receive) within these broader bundles of service. These observations brought the discussion back to the specificities and peculiarities of the rural context, the effect of unreliable poor digital connectivity and the sparsity of local resources. As such there was a recognition for local, and specifically “hyper-local”, as well as regional and national interventions.

Key recommendations from the policy workshop related to three core areas: education and coordinated action, access and confidence, and affordability and consumer choice.

Education and coordinated action

- Provide relevant, timely and actionable information and practical support to enable access to reliable connectivity services *in situ*: when connectivity is absent, breaks down; rendered unaffordable
- Need coordinated interventions at a national, regional and (hyper)local scale

Access/confidence

- Support and education is needed to extend connectivity and opportunity:
 - Educational provision should be baked-in to large Government connectivity initiatives, as part of the social value component
 - This provision should be run in partnership with local bodies, including the third sector, who can initiate peer-to-peer interventions
 - Engage at a hyper local level, taking training to where people are based

Affordability and consumer choice

- Accessing digital services is closely related to both low confidence and financial pressures
 - Advice services and job centres should have a role in highlighting social tariffs (discounted digital service packages) available to people on UC and other benefits
 - Recruiters and job search platforms should conduct outreach with rural residents with low confidence in looking for jobs online to improve accessibility and user experience
 - Ofcom should set out information standards on pricing information for customer information, particularly on price

4.0 Conclusion

The state-of-the-art literature review presented revealed a number of resources - *digital infrastructure, sociodemographic, skills, place and purpose* - that were often lacking in peoples' everyday lives, and which were likely to configure people as living in digital poverty. This project developed a digital practices model to explore how those resources were or were not used in practice, the intersections of their absence that constructed moments of digital poverty and the calculative and remedial practices that participants engaged in to access, at least partially or temporarily digital services.

Our quantitative and qualitative data, reveal both the extent, form and temporal-spatial nature of digital poverty, foregrounding that people can move in and out of digital poverty in a day – as they walk around their home, visit a city or access their library – or for specific periods of their life cycle, as a new homeowner on a low income, as a retiree and such like. This dynamic nature of digital poverty suggests a very different understanding of the types of interventions needed in an increasingly 'digital by default' world. One thing was clear: digital access is now essential for all, if we are to have an inclusive and fair society. Our data showed how digital poverty could drive other forms of poverty and exclusion and for this reason, we argue that intervention is essential.

Working with policymakers, we make policy intervention recommendations at a regional and national level, but the richness of the data here is likely to be useful to policymakers at a hyper-local level in Northwest England also. Our final call is for those in isolation, in very rural areas, living in the very expensive to connect 'last mile' not to be forgotten. Our data show that these people are still members of our society, often acting as guardians of our countryside, of our biodiversity and of culturally rich ways of life that need to be nurtured and protected. They should not be the forgotten.

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*Not in literature review

Appendix One: Sampling Framework

Telephone Survey Sample Framework

All adults 18+ in Northwest England who do not live in major metropolitan areas or larger cities and towns.

- As a pragmatic sample definition, eligible respondents will be all adults 18+ in Northwest England **excluding**:
 - Those who live in Merseyside and Greater Manchester
 - Those who live in the largest cities/towns in Lancashire, Cheshire and Cumbria (e.g. Preston, Blackburn, Chester and Carlisle)
- The sample is as representative as possible of all adults in this geographic area, rather than only targeting those who are more likely to be in some form of digital poverty. This widely representative sample definition will enable us to report the overall extent of digital poverty, and the incidence of barriers to digital inclusion.

We have set broad quota targets on County, Gender and Age to ensure wide representation

- While we will endeavour to represent younger people (18-34s) as strongly as possible, low response to telephone surveys amongst this group increasingly poses a challenge. Weighting will be applied at the analysis stage to ensure the proportion of different demographic groups in the final data matches the actual population

The 5-minute survey provides scope for basic profiling and identifying overarching digital use, plus the presence of any key barriers. The sample size of 500 of those living in the Northwest of England (see section 3.1 of this report) and is robust overall and will enable us to analyse those with any indicator of digital poverty as a separate sub-sample.

Qualitative Study Sample Framework

The survey enabled us to identify fifteen (15) people who are characterised as living in digital poverty and who expressed an interest in taking part in the next phase of this study (the in-depth interview phase). People were selected from across the range of sociodemographic factors used in the survey, living in different areas across the Northwest.

Our aim is to use this diverse group to develop digital poverty personas, allowing us to present stylised facts as findings, that represent a typical person and type of experience without revealing personal details of any one individual.

Appendix Two: Telephone Survey



Digital Poverty in Rural Northwest England

To be conducted among a representative sample of 500 residents of Northwest England who do not live in metropolitan areas or larger towns or cities.

Good morning / afternoon / evening. My name is (INTERVIEWER NAME) from Blue Marble, a market research company, calling on behalf of Lancaster University. We're conducting a survey about Internet access in the Northwest. Would you like to take part, it will only take 5 minutes?

We follow the Market Research Society Code of Conduct so any information you share is in confidence and used for research purposes only. The call may be monitored for quality control. If you would like contact details I can give you those now?

INTERVIEWER TO READ OUT CONTACT DETAILS IF REQUESTED

QCONSENT Are you happy to continue?

1. Yes – CONTINUE
2. No – THANK AND CLOSE

ASK ALL

Q1a. Firstly, may I ask your age? ENTER AGE

ASK ALL WHO ARE UNDER 18 AT Q1a

Q1b. Is it possible to speak to someone aged 18 or over please?

1. Yes – TAKE REFERRAL
2. No – THANK AND CLOSE

ASK ALL

Q2. Could you tell me the first part of your postcode, so we can check you live in the area we are interested in? WRITE IN – CHECK IT IS ENTERED IN POSTCODE FORMAT

IF POSTCODE DISTRICT IS NOT IN ELIGIBLE LIST, THANK AND CLOSE

ASK ALL

Q3a. Before moving to your current community, have you ever lived in a large town or city? PROMPT ONLY IF NECESSARY. SINGLE CODE

1. Yes
2. No
3. Don't know

ASK IF CODE 1AT Q3b (Have previously lived in a large town or city)

Q3b. About how long ago did you last live in a large town or city? PROMPT ONLY IF NECESSARY. SINGLE CODE

1. Up to 5 years ago
2. 6-10 years ago
3. 11-15 years ago
4. 16-20 years ago
5. 21-30 years ago

6. Over 30 years
7. Don't know

ASK ALL

Q4. Would you describe yourself as male or female, or do you identify in another way? SINGLE CODE

1. Male
2. Female
3. Other
4. Prefer not to say

ASK ALL

Q5. Do you have home broadband or WiFi? SINGLE CODE.

1. Yes
2. No
3. Don't know

ASK IF CODE 1 AT Q5 (Have fixed Broadband at home)

Q6. How would you describe the quality of connection to the Internet through your Wi-Fi at home? Tell me on a scale of 1 to 5 where 1 is very poor so you often can't do what you need to, and 5 is very good. SINGLE CODE

1. Very poor – often can't do what you need to
2. Quite poor
3. Neither good nor poor
4. Quite good
5. Very good
6. Don't know

ASK IF CODE 2 OR 3 AT Q5 (Do not have fixed home broadband / don't know)

Q7. Are there any home broadband services available in your area that your household could connect to? SINGLE CODE

1. Yes
2. No
3. Don't know

ASK ALL

Q8. Is there a strong enough mobile signal for you to use mobile Internet (3G, 4G or 5G) ...SINGLE CODE

	Yes	No	Don't know
a) ...inside your home?	1	2	3
b) ...outdoors nearby your home?	1	2	3

Q9 AND Q10 REMOVED

ASK ALL

Q11 Which, if any, of the following devices are available for you to use when you're at home? Please include any provided by your work. READ OUT. FIXED ORDER. MULTI CODE POSSIBLE

1. A laptop or desktop computer
2. A smartphone
3. A tablet
4. None of these (DO NOT READ OUT. EXCLUSIVE)
5. Don't know (DO NOT READ OUT. EXCLUSIVE)

ASK ALL

Q12 How affordable are each of the following for you? Tell me on a scale of 1 to 5 where 1 is completely unaffordable and 5 is comfortably affordable. RANDOMISE ORDER. SINGLE CODE FOR EACH

- a. A personal computer
- b. A smartphone handset
- c. Fixed home Broadband
- d. A mobile phone contract including internet data

ANSWER CODES

1. Completely unaffordable
2. Quite unaffordable
3. Neither affordable not unaffordable
4. Quite affordable
5. Comfortably affordable
6. Don't know

ASK ALL

Q13. When did you last use the Internet for any reason, including sending or receiving emails, and using social media? *This could be anywhere, not just at home.* SINGLE CODE. PROMPT AS NEEDED

1. Today
2. 1-2 days ago
3. 3-6 days ago
4. A week ago
5. 2- 3 weeks ago
6. A month ago
7. 2 months ago
8. 3 months ago
9. More than 3 months ago
10. Never used
11. Don't know

Q14 AND Q15 REMOVED

ASK ALL

Q16. Please tell me which, if any, of the following things you are confident you have the necessary skills and ability to do using the Internet? RANDOMISE. MULTI CODE ALL THAT APPLY

	RANDOMISE ORDER	CATEGORY (DO NOT READ)
1	Working or studying from home	
2	Using passwords and changing privacy settings	Being safe and legal
3	Downloading or saving photos you find online	Managing Info
4	Using search engines like Google to look for things	Managing Info
5	Emailing or other online messaging for example through social media	Communication
6	Video calls using Zoom, Microsoft Teams etc	Communication
7	Buying products / services online	Transacting
8	Installing apps	Transacting
9	Paying bills online	Transacting
10	Online banking	Transacting
11	Using online help if you have a problem online	Problem Solving
12	Filling out online application or registration forms	Creating

13	Looking for work or applying for jobs online	Creating
14	None of these (DO NOT READ. FIXED. EXCLUSIVE)	

ASK ALL

Q17. How much do you agree or disagree with each of the following statements? Tell me on a scale of 1 to 5 where 1 is strongly disagree and 5 is strongly agree. (SINGLE CODE FOR EACH)

RANDOMISE ORDER OF STATEMENTS

- a. Using the Internet gives people advantages in everyday life
- b. I have trouble doing things that I want to do on the Internet
- c. I rely on family and friends to help me use the Internet
- d. I would like to use more online services than I do now
- e. It's too expensive for me to use the Internet for what I need it for
- f. There is nowhere I can easily get to in order to use the Internet (ONLY DISPLAY IF DO NOT CODE 1 AT Q5 - Do not have fixed home Internet connection OR CODE 9 OR 10 AT Q13 – Have not used Internet in last 3 months)
- g. I never really think about needing to use the Internet (ONLY DISPLAY IF DO NOT CODE 1 AT Q5 - Do not have fixed home Internet connection OR CODE 9 OR 10 AT Q13 – Have not used Internet in last 3 months)

ANSWER CODES

1. Strongly disagree
2. Tend to disagree
3. Neither agree nor disagree
4. Tend to agree
5. Strongly agree
6. Don't know (DO NOT READ OUT. FIXED)

ASK ALL WHO CODE 4 OR 5 AT Q17b (Have trouble doing things they want to do)

Q18. You said that you have trouble doing things that you want to do on the Internet. Please could you describe to me what you'd like to do that you have trouble doing? (OPEN QUESTION. WRITE IN)

99. Don't know

Now a few final questions about you to help ensure we have a broad range of people taking part. The next two questions relate to sensitive personal information, so if you'd prefer not to answer, just let me know.

ASK ALL

Q19. Do you have a physical or non-physical condition or disability that makes accessing and/or using the Internet difficult? For example, affecting your vision, hearing, thinking, remembering or learning.

SINGLE CODE

1. Yes
2. No
3. Don't know
4. Prefer not to answer

ASK ALL

Q20. To which of the following ethnic groups do you consider you belong? (RANDOMISE. READ OUT. SINGLE CODE)

3. White
4. Mixed
5. Asian

6. Black
7. Chinese
8. Other ethnic group (FIXED)
9. Prefer not to answer (FIXED)

ASK ALL

Q21. How would you describe your working status? PROMPT ONLY IF NECESSARY. SINGLE CODE

1. Employee in full-time job (30+ hrs/wk)
2. Employee in part-time job (less than 30 hrs/wk)
3. Self-employed
4. Government supported training
5. Unemployed and available for work
6. Retired
7. Full-time education at college or University
8. Looking after home/ family
9. Long-term sick/disabled
10. Doing something else
11. Prefer not to say

ASK ALL

Q22. May I ask, which of the following describes your total household income per year, before tax?
(READ OUT BANDS. SINGLE CODE)

1. Less than £10,000
10. £10,000- £14,999
11. £15,000 - £19,999
12. £20,000 – £29,999
13. £30,000 –£39,999
14. £40,000 – £59,999
15. £60,000 –£79,999
16. £80,000 or more
17. Prefer not to answer

ASK ALL

Q23. What is the highest level of education you have completed? (PROMPT ONLY IF NECESSARY.
SINGLE CODE)

18. No formal education
19. Primary
20. Secondary school, high school, 6th form college, GCSEs, O Levels, CSEs, A levels, BTEC, NVQ levels 1 to 3 etc
21. University degree or equivalent professional qualification, NVQ level 4 etc
22. Higher university degree, doctorate, MBA, NVQ level 5 etc
23. Still in full time education
24. Don't know
25. Prefer not to answer

ASK IF RECORD ANY INDICATOR OF DIGITAL EXCLUSION* (SEE DEFINITION BELOW)

Q24a. Thank you for taking part in this study. Our client Lancaster University would like to contact you again to discuss your views and experiences of the Internet in more detail. Would you be willing for us to pass on your contact details to Lancaster University so they can get in touch with you directly?

Yes

No – THANK AND CLOSE

Q5 CODE 2 OR 3 (Do not have or do not know if they have home broadband)

OR

Q6 CODE 1 OR 2 (Home broadband connection quality is rated as poor)

OR

Q8a CODE 2 (There is not adequate mobile signal to use mobile broadband in the home)

OR

Q11 DO NOT CODE 1 OR 2 OR 3 (There is not a PC or smartphone or tablet they can use at home)

OR

Q12 CODE 1 OR 2 FOR ALL OF a) to d) (PC, Broadband, smartphone and mobile contract are ALL unaffordable)

OR

Q13 CODE 9 OR 10 (Not used Internet in last 3 months)

OR

Q16 (DO NOT CODE 3 AND 4) OR (DO NOT CODE 5) OR (DO NOT CODE 7 AND 8) OR (DO NOT CODE 11) OR (DO NOT CODE 12) (Missing any one of the essential digital skills)

OR

Q19 CODE 1 (Physical or non-physical condition that makes using the Internet difficult)

IF CODE Yes at Q24a

Q24b. Thank you. Lancaster University would also like to see your answers from today's survey before they get in touch with you. They would not share this information with anyone else. Would you be willing for us to also pass on your answers, or would you prefer we only give them your contact details?

Yes – pass on answers

No – do not pass on answers

IF CODE Yes at Q24a

Q25. Thank you. We will pass on the relevant details to Dr Sharon Wagg from Lancaster University. You can contact her for any further information at s.wagg1@lancaster.ac.uk or call 01524 510832.

Capture contact name and telephone number

THANK AND CLOSE

Appendix Three: In-depth Qualitative Questions



Digital Poverty Transformation:

Accessing Digital Services in Rural Northwest Communities

Work Package 3 (WP3): Qualitative Research - The Situated Practices of those Living in Digital Poverty

This work package is designed to reveal the situated practices of those living in digital poverty in Northwest rural England. We will do the interviews in the **first week of March 2022**. We will carry out **15 in-depth semi-structured interviews**, identifying participants that represent key findings emerging from the Regional Survey (based on digital poverty, skills, work/life and demographic characteristics). The meaningful use of technology emerges in and through situated and entangled practices in the flow of everyday life (Hayes et al, 2021). Rather than focusing on the individual or on the technology separately, we will focus on the assemblage of situated and entangled sociomaterial practices (involving the interactions between the human and the technological) that come into play in people's everyday lives.

Interview Preparation

Before interview

Review interviewees' responses to the survey. Use this to inform sampling frame, identifying people that:

- a) Demonstrate some form of digital poverty
- b) Have agreed to have their name put forward for in-depth semi-structures interviews
- c) Represent a geographic spread across the northwest

Setting up interview with participant

- Organise time of interview
- Confirm interview will take approximately 1 hour by phone
- Confirm interview will be by telephone or video call (depending on what is favourable for participant)
- Confirm interview will be recorded and stored on secure LU server password protected
- Email participant information sheet and consent form to interviewee prior to interview and secure oral agreement at start of interview and return of signed consent form

Interview Protocol

Introduction to interview

- Explain the purpose of the interview (see below)
- Define any key terms and answer any questions in relation to the participant information sheet and consent form (already sent to the participant)

Obtain informed consent

Go through the participant information sheet and consent form with the participant. Ask the interviewee to read the participant information sheet and if they are happy to proceed to sign the consent form and give verbal consent on the recording.

Recording

Confirm the participant is happy to be recorded. Turn on recording device and reconfirm that the participant has received and understood the Information Sheet, gives consent, and agrees to sign and return the consent form.

Purpose of the Interview and Research Questions

The purpose of the interview is to reveal insights into three key research questions:

1. What do rural citizens do and seek to do that is meaningful to them (at least partially) through digital means?
2. How might new digital possibilities become meaningful to different rural social groups?
3. How might digital interventions support rural citizens in making new digital possibilities meaningful and valuable to them?

We will ask questions that generate insights into these questions, facilitating a discussion about the ensemble of practices that they are currently undertaking, the strategies they adopt, and reveals those aspects of their everyday lives that are considered to be especially meaningful and possibly frustrated by digital poverty.

Interview questions

Begin by thanking interviewee for taking part and commence interview questions

Research Question 1: What do rural citizens do and seek to do that is meaningful to them (at least partially) through digital means?

To answer this question, ask the following questions:

1. Can you tell a little bit about your local community and what it's like to live where you live? [to gain a sense of place]
2. What activities do you do or seek to do through digital access? [examples might include Facebook, email, work, online banking and such like; Prompts may be broad e.g. activities for work, leisure, education, health, everyday life]
3. Could you tell me a bit more about how you access these digital services and what constraints or enables your use of them? [to reveal socioeconomic standing of participant]
4. Do you access specific digital services on a regular basis? If so which ones? [Prompt – online shopping, online banking, social media etc.]
5. Why do you do these activities through a digital means?
6. How do you access these digital services? [Prompt: mobile connectivity, broadband, mobile phone, PC, tablet etc.]
7. Do you find using digital services useful/helpful/relevant in your day-to-day activities? [Prompt – communicating with family & friends, for work, leisure, education, health, everyday life etc.]
8. Could you tell me a bit more about that? [to reveal digital skills/ability/confidence/attitudes to digital, level of use]
9. What devices do you use to access digital services? [Prompt: for example, your smartphone, laptop or tablet]
10. Could you tell me a bit more about how you use these devices? [to reveal ownership/use of different devices]
11. Do you have any challenges with accessing or using digital devices?
12. Could you tell me a bit more about this? Prompt – are there any specific activities that are challenging?
13. Does anyone in your household or local social circle have challenges using digital devices?
14. Do you have any challenges accessing digital services in or outside of your home? Could you tell me a bit more about this? [Prompt: does anyone in your household or local social circle have challenges accessing digital services in or outside of your home?]
15. Do you have any support using digital devices and digital services? [Prompt – family, friends, library etc [to establish social support available]

Research Question 2: How might new digital possibilities become meaningful to different rural social groups?

To answer this question, ask the following questions:

1. What would you *do differently* in your everyday life if you had better access to digital services? [access to infrastructure/devices]

2. Could you tell me a bit more about this?
3. What would you *do differently* in your everyday life if you had better local support to access to digital services? [access to infrastructure/devices]
4. Where do you see the relevance of digital in your everyday life activities now and in the future?
5. Could you tell me a bit more about this?
6. What would be your key aspirations and/or concerns about your community having better access to digital services?
7. Could you tell me a bit more about this? Prompt: online GP consultations, thus lessening reliance on transport/public transport; connecting with family and friends, thus reducing loneliness; online learning etc; improved reduction of crime through home security cameras; online security; or working from home, involvement in community groups, smart meters (monitoring energy usage); running a business etc.]

Research Question 3: How might digital interventions support rural citizens in making new digital possibilities meaningful and valuable to them?

To answer this question, ask the following questions:

1. What changes (if any) would you like to see in your locality/community in relation to accessing digital services? [Prompt – improved broadband speed, better quality mobile phone connectivity etc.]
2. What local support (if any) would you like to have in your local area to improve your access and use of digital devices and digital services?
3. Is there anything else you would like to add?

Wrap-up

Is there anything else you'd like to say or ask me before we finish?

Thank you for your time.

END

Researching Digital Poverty Transformation in the Northwest

A Research Project being carried out by Lancaster University in conjunction with the Partners: Work Foundation, Blue Marble

Participant Information Sheet

We are working with a team of partners and with academics from Lancaster University to understand the issue of digital poverty in the Northwest of UK. Our role in this project is address the significant limitations of extant understandings about the conditions and practices of access that configure digital poverty, disengagement or exclusion from the digital world of services in rural areas of Northwest UK. We are academics at Lancaster University Management School. We specialise in understanding how to improve the everyday lives of people in rural communities especially in terms of digital connectivity. We are keen to talk with you to understand how you see the digital connections in your home and community. Please take time to read the following information carefully before you decide whether or not you wish to take part.

What is the study about? This study aims to help us understand the drivers of digital poverty in northwest rural England. We want to capture good practice where digital inclusion has been achieved, particularly via adaptive practices in the time of COVID. We want to understand the practices that come into play in people's everyday lives; specifically, their interactions with digital technologies and the different online worlds these give them access to, for example, online healthcare, banking, shopping, work, or chat with friends.

We want to understand how your everyday activities generate different forms of value for you and perhaps even for your community, or if there are barriers that prevent you getting access to online services. We want to know if improved connectivity might be able to make your life better in some way.

Through this project, in addition to talking with people who are using or want to use digital connectivity in their everyday lives, we will also be working with digital service providers, policymakers and businesses to understand what is needed to put reliable, high quality digital connectivity in place in your home and community, and to ensure that you have the skills and means to make it valuable to you in your everyday life.

Why have I been invited? We have approached you because you represent live in an area that is known to be experiencing digital poverty (poor quality, unreliable or unaffordable digital connectivity) and we think you may have an interesting point of view and experiences that we might learn from. We would be grateful if you would agree to take part in this study.

What will I be asked to do if I take part? We want to talk to you about your everyday life and/or the work you do in an interview. Our interview with you will follow a loose structure, but really, we want to understand your everyday life, your ideas, experiences, frustrations and opinions about digital connectivity. There are no right or wrong answers and we will not be making any kind of value judgements about what you say.

What are the possible benefits from taking part? Usually participants benefit in at least two ways from our research: Firstly, talking through some their experiences with someone, who might ask quite different questions and encourage you to think in different ways, can be interesting in itself; Secondly, our goal is to generate research outcomes that are genuinely useful to you, your community, and to others doing work to promote connectivity in rural communities.

Do I have to take part? No. It's completely up to you to decide whether or not you take part. Your participation is voluntary.

What if I change my mind? If you change your mind, you are free to withdraw at any time during your participation in this study. If you want to withdraw, please let us know, and we will extract any ideas or information you contributed to the study and destroy them. However, it is difficult and often impossible to take out data from one specific participant when this has already been anonymised or pooled together with other people's data. Therefore, you can withdraw up to 2 weeks after taking part in the study.

What are the possible disadvantages and risks of taking part? There should be no disadvantages, other than you sparing us some of your time for this discussion and, possibly, follow up conversations if you have time for those, to clarify points that you raise.

Will my data be identifiable? After any interview or online workshop attendance, only the researchers conducting this study will have access to the ideas you share with us. The only other person who will have access to what you contributed is a professional transcriber who will listen to the recordings and produce a written record of what you have said. The transcriber will sign a confidentiality agreement and your name will be changed on the transcript to anonymise it.

We will keep all personal information about you (e.g. your name and other information about you that can identify you) confidential. I will not share it with others. I will remove any personal information from the written record of your contribution. For further information about how Lancaster University processes personal data for research purposes and your data rights please visit our webpage: www.lancaster.ac.uk/research/data-protection

How will we use the information you have shared with us and what will happen to the results of the research? We will use the information you have shared with us for of academic research that generates: 1) management toolkits, models or frameworks to help organisations and policy-makers understand the scale and impact of digital poverty in the northwest, 2) articles for academic journals, and 3) slide decks or more practitioner-oriented books, reports or articles in order to share the insights that we have gained from this work.

When writing up the findings from this study, we would like to reproduce some of the views and ideas you shared with us. We will only use anonymised quotes (e.g. from our interview with you), so that although we will use your exact words, you cannot be identified in publications. If we wish to attribute any specific comments to any individual, we would always ask for their permission in advance, and will not proceed until this was received.

How my data will be stored? Your data will be stored in encrypted files (no-one other than us, the researchers will be able to access them) and on password-protected computers. We will store hard copies of any data securely in locked cabinets in our office. We will keep data that can identify you separately from non-personal information (e.g. your views on a specific topic). In accordance with University guidelines, we will keep the data securely for a minimum of ten years.

Who has reviewed the project? Lancaster University FASS LUMS Research Ethics Committee

What if I have a question or concern? If you have any queries or if you are unhappy with anything that happens concerning your participation in the study, please contact either of us: Katy Mason, Researcher (k.j.mason@lancaster.ac.uk); Sharon Wagg, (s.wagg1@lancaster.ac.uk)

If you have any concerns or complaints that you wish to discuss with a person who is not directly involved in the research, you can also contact: Professor Magnus George, Lancaster University Management School, m.george@lancaster.ac.uk. For further information about how Lancaster University processes personal data for research purposes and your data rights please visit our webpage: www.lancaster.ac.uk/research/data-protection.

Thank you for considering your participation in this project.

This research project on Digital Poverty Transformation in Northwest Rural England is managed by Katy Mason (k.j.mason@lancaster.ac.uk) of Lancaster University.

Consent Form:

Please tick each box

1. I confirm that I have read & understand the information sheet for the above study. I have had the opportunity to consider the information, ask questions & had these answered satisfactorily.	
2. I understand that my participation is voluntary and that I am free to withdraw at any time during my participation in this study and within <u>2 weeks</u> after taking part in the study, without giving any reason. If I withdraw within 2 weeks of taking part in the study my data will be removed. If I am involved in interviews or meetings and then withdraw, my data will remain part of the study.	
3. I understand that any information given by me may be used in future reports, academic articles, publications or presentations by the researcher/s, but my personal information will not be included, and I will not be identifiable.	
4. I understand that my name will not appear in any reports, articles or presentation without my consent.	
5. I understand that any interviews or meetings will be recorded and transcribed and that data will be protected on encrypted devices and kept secure. All internal project documentation is similarly saved securely. For further information about how Lancaster University processes personal data for research purposes and your data rights, visit our webpage: www.lancaster.ac.uk/research/data-protection	
6. I understand that written transcripts will be kept according to University guidelines for a minimum of 10 years after the end of the study.	
7. I understand any photos taken of me may be used for data analysis & included in future reports, academic articles, publications or presentations by the researcher/s where faces will be pixelated or blurred.	
8. I understand that I have the right to refuse permission to take or use photos of me.	
9. After participating in the study, I would like to be contacted about the possibility of taking part in a media interview, to highlight my experiences in digital poverty transformation in Northwest rural England, and I recognise that I may be identifiable in any media coverage. Email address: _____ Phone number: _____	Yes No
10. I would like to receive communications from the Work Foundation about relevant future opportunities to take part in further research. Email address: _____ Phone number: _____	Yes No

Name of Participant

Date

Signature

To be completed by the researcher: I confirm that the participant was given an opportunity to ask questions about the study, and all the questions asked by the participant have been answered correctly and to the best of my ability. I confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily.

Signature of Researcher _____

Date _____

One copy of this form is for the participant, the original kept securely in the researchers' files.

This consent form is designed in accordance with the Lancaster University Research Ethics Guidelines and has been approved by the Faculty of Arts and Social Science and Lancaster University Management School (FASS-LUMS) Research Ethics Committee.

Appendix Five: Digital poverty workshop with expert stakeholders

Workshop Methodology

We created a of local, regional and national policymakers and agencies. We compiled a list of key stakeholders and invited them to an online workshop. We presented the purpose of the project and our preliminary findings from our survey and in-depth interviews. We used personas to provoke conversations about opportunities for particular types of interventions working in two groups. Each group fed back to the plenary session at the end of the workshop highlighting what worked in their experience, where the current gaps were for policy intervention at local, regional and national scales, and the challenges of challenging resources in ways that are likely to transform digital poverty in the North West. The workshop lasted for two hours and was recorded and transcribed. The data fed into the policy recommendation in the regional and national policy documents (Appendices 6 and 7).

Workshop presentation slides

WORK FOUNDATION wf

Digital Poverty in the North West of England: Identifying digital service interventions as pathways to access

16th March 2022

Lancaster University

theworkfoundation.com

WORK FOUNDATION wf

Welcome

- This research is funded by the British Academy as one of a series of projects exploring digital poverty
- The methodology comprises a literature review, a survey, qualitative interviews and this workshop.
- The project is being jointly conducted by the Work Foundation and academic colleagues at Lancaster University's Management School

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Project overview and objectives

- Establish the drivers of digital poverty in Northwest Rural England
- Derive practical policy interventions to increase digital inclusion

While the evidence on the causes of digital poverty is well established, less is known about the practices that underpin it and result in exclusion from online services - a focus of this research

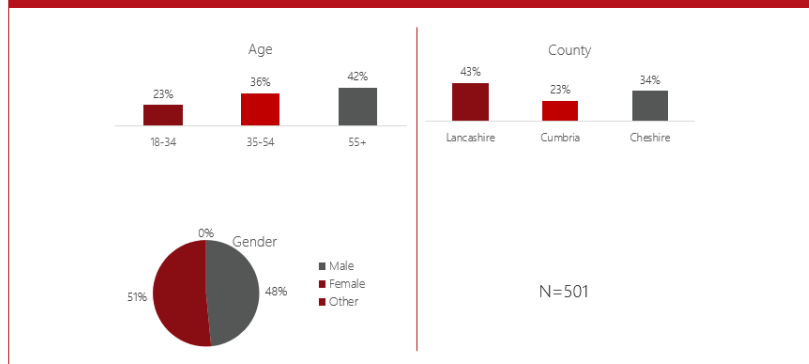
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Literature review

State of the art literature review	Key themes
<ul style="list-style-type: none"> ▪ <i>"the inability to interact with the online world, when where and how an individual needs to"</i> Digital Poverty Alliance ▪ Three key questions framed the review: <ul style="list-style-type: none"> ▪ who has access to what? ▪ how? ▪ for what purpose? 	<ul style="list-style-type: none"> ▪ Social demographics (e.g., age/gender/income/education of users) ▪ Digital Infrastructure (e.g., broadband, devices) ▪ Place (e.g., rural, organisational, library, community assets) ▪ Skills and intermediary support ▪ Purpose (meaning and motivation)

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Telephone survey sample



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Half of individuals surveyed experience digital exclusion

- 4% of the sample were non-users.
- 50% exhibit at least one indicator of digital poverty, across:

Barrier	Indicators
Access & infrastructure	No or limited access to home broadband or devices, No or low quality connectivity at home.
Affordability	Mobile contract, home broadband or devices too expensive.
Basic digital skills	Using online services to resolve problems, emailing, buying products, etc.
Disability or condition	A condition which makes using the internet difficult

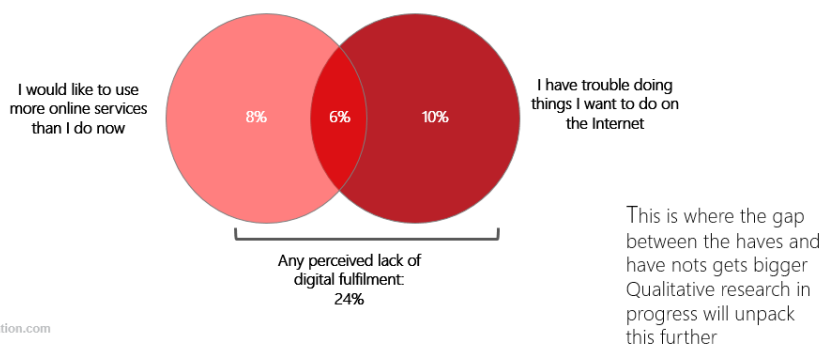
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Drivers of digital exclusion

- Lacking at least one basic digital skill (28%)
- Inadequate signal to use mobile internet at home (22%)
- Poor quality home broadband connection (8%)
- Those who have a condition or disability make up 14% of those who exhibit at least one indicator of digital poverty despite only making up 7% of the total sample

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1 in 4 experience a lack of digital fulfilment



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Age, income and education are strongly related to digital poverty

- Of the 1 in 8 who have difficulty completing what they want on the internet, there is higher agreement among respondents within households with an income of less than £20k (32%)
- And 21% for those who haven't attended Higher Education
- Of the 28% of respondents lacking any basic digital skills, 51% are aged 65+ compared with 15% of those aged 18-44

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Persona Activity

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Persona 1



Digital exclusion indicators:
age, infrastructure, skills

- Retiree

Jan, 78, has lived in the countryside all her life. She is not confident accessing digital services and has poor broadband connectivity which hampers her attempts to use the internet. She does not see the relevance of digital in her life.

I don't do online banking for security reasons and it frightens me a little

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Persona 2



Digital exclusion indicators: skills, income, access, education

▪ Job Seeker

Ian, 38, lives with his parents due to the lack of job opportunities in the local area. He has not attended university and struggles using the internet when searching for jobs. He feels he can't work from home due to the poor mobile phone signal but appears to have adequate broadband.

Applying for jobs as the websites are sometimes badly designed and the links are sometimes broken

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Persona 3



Digital exclusion indicators: access, income, skills

▪ Parent on low income

Angie, 26, moved to the countryside to raise a family. She was hoping to find part-time employment in the local area, but found there were few opportunities. She is now claiming welfare benefits but struggles with the online systems due to the poor rural digital connectivity.

Our broadband is so dreadful, I can't do what I need to because the internet service is so bad

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Persona 4



Digital exclusion indicators: infrastructure, skills, place

▪ Remote worker

Claire, 50, works remotely due to her organisation shifting to hybrid working. She has found this change difficult at times due to her unreliable rural digital connectivity when doing video calls and feeling under pressure to do more work activities digitally. Luckily, she has family nearby for support.

Sometimes I can't do things I need to do for work purposes and need to ask for help from family

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Persona 5



Digital exclusion indicators:
Disability, skills, place

- Individual with sight impairment

Janet, 55, has an underlying health condition that affects her sight and mobility. She wants to be able to do more online but struggles due to her condition and lack of available support in the area with her digital skills. She felt increasingly isolated during the Covid-19 pandemic as friends and family were unable to visit.

I have problems with my sight, it would be nice if I had something I could click on rather than putting in a password with codes and numbers when I can't see.

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Group Discussion

- How do these findings match with what your knowledge about the key drivers of digital poverty?
- How can policy interventions aimed at addressing digital poverty deal with its multifaceted nature?

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Next Steps.....

- WF will be developing policy insight document by end of April
 - We will draw on this groups insights to generate those documents
 - You will be listed as contributor in recognition
 - let us know if you rather not be named
 - We would like to share this document with you to get your '*fast feedback*'
- WF would like to publish the final policy insights document in early May 2022

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