THE CASE FOR SOCIAL BROADBAND: ADDRESSING DIGITAL POVERTY

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Acknowledgements

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Executive Summary

This is the first of our reports that looks at the case for social broadband. In this report, we focus on digital poverty, how it is explained and how it is experienced in a low-income neighbourhood in the borough of Knowsley. We report on a survey undertaken in the town of Huyton in Knowsley, where face-to-face structured interviews took place with a sample of residents.

The main points from this report can be summarised as follows.

- Definitions of digital poverty are changing. Previously, digital exclusion was seen to be an outcome of an under developed skills base, a lack of access to technologies needed for connectivity and the costs associated with getting online. This has been the hypothesis that has underpinned common explanations of digital poverty.

- However, new research is redefining digital poverty to incorporate a wider set of variables. Work by organisations such as the British Academy and the Digital Poverty Alliance has expanded the definition to incorporate online safety, privacy, motivations and levels of support to connect.

- The work here is sympathetic to the redefining of digital poverty. Our concern with socio-economic context and the circumstances of households lead us to investigate access to technologies, ability to connect, ease of use and affordability.

- Our case borough Knowsley, situated in the wider Liverpool City Region, has a very specific socio-economic context. Knowsley is characterised by low-income communities located in the main urban settlements of Kirkby, Huyton, Prescot and Halewood.

- Knowsley has an economic activity rate comparable to the rest of Great Britain and better than the rest of the North West of England. However, in comparison to the rest of the country, the residents in the borough experience low employment income, low self-employment income and low pension income.

- The quality of employment accessed by residents is a problem. A difference of some £1,300 per annum is recorded between those who work in Knowsley and those working residents who live in Knowsley. People travel in to the borough to access the better paid jobs.

- Our survey area is focused on a neighbourhood in Huyton and has socio-economic characteristics that are comparable to those found in poorer neighbourhoods across Knowsley. In this neighbourhood there is slightly worse employment activity, slightly worse health indicators and stubborn child poverty.

- We randomly sampled 415 households. The survey response rate was 17%, in 52% of cases there was no answer and 31% refused to take part in the survey. The response rate jumps to 36% if the absentees are removed.

- The neighbourhood is a predominantly white working class, low-income community, with residents across the age range, 35% aged 25 to 40 years and 31% aged 41 to 65 years; it is a stable neighbourhood with 18 years the mean figure for living in the same home.

- We found that the residents in our survey area to be amongst the lowest deciles for household income. With the median UK household income in the region of £31,400 we find that only 6% of households from our survey reached or passed that figure.

- We found that eight out of ten households are connected to the internet. Their main mode of connection is the mobile phone with 95% of respondents using this medium. A smart TV (75%), a tablet (50%) and a games console (48%) were all used frequently to connect to the internet.

- Banking, general access to information and shopping were the online services used most by residents, at least on a weekly basis. Video and music streaming were often accessed daily, while public services such as those provided by the council, housing association or health service were used much less. Almost two-thirds of our respondents never accessed any online education.

- Generally, levels of digital access were not compromised by capability. Over half spend up to 21 hours a week online and residents reported their ability as very competent (34%) and competent (32%). Only 11% felt that they were still learning how to use the internet.

- Affordability remains an important factor for residents who want to be digitally connected. While 57% believed connection to be too expensive, around 70% of respondents were spending between £20-£80 per month on wi-fi connection.

- Almost a quarter were spending between £81-£120 per month and 7% spending over £121 per month for broadband connection. Around 94% were spending less than £80 per month on mobile connection.

- Our figures indicate that residents spend somewhere in the region of between 3% and 16% of their total household income on broadband and mobile connectivity. We estimate that almost half of residents spend about 8% of all income on connectivity and the rest fall between the 3% and 16% range.

- Only a small minority of households had heard of social tariffs. Where they were known, reliability and speed of connection were cited as reasons for not taking up the reduced tariff.

- Affordability remains critical for low income households to connect to the internet and choices about expenditure remain acute. The availability and limits of some technologies used for access may continue to limit types of use and user profile.

- Our results show people connect from home, mainly to access services provided by commercial companies and they find it easy to do so. The capabilities of residents are not in doubt, although whether a better quality of online experience, consumption and opportunity can be provided remains a point to be explored.

- The type of use we encountered is based on the consumption of private providers and mainly related to retail and entertainment. The results indicate a community able to connect competently to the internet for this purpose. In contrast, socio-economic indicators suggest a lack of formal digital literacy and qualifications.

- We suggest that any support provided should take account of socio-economic context and look to wider neighbourhood-based initiatives that bring community resilience and confidence and importantly overcome individualised isolation.

1. About this Report

This work was commissioned due to concerns that residents in Knowsley were at a disadvantage and were likely to suffer from digital exclusion and digital poverty. We have looked at this through a focus on a neighbourhood in Huyton over a twelve-month period. The purpose of the work was to consider ways to provide social broadband to households of this neighbourhood, many of whom were residents of the housing association, Livv Housing Group. Our focus has meant that we did not limit ourselves solely with matters of technology and produce ideas that would prompt a technical response. Rather, at the heart of concerns about digital poverty were the persistence of poor life chances related to wider matters of deprivation that affected residents.

In our original proposal, we were concerned about the following components of digital poverty and exclusion: skills, the supply and price of technology, educational attainment and employability, public services, governance and democracy. This was based on previous work and presented a hypothesis of digital poverty that is widely recognised based on three main contributory elements: having the appropriate digital skills, having access to an appropriate device and being able to afford the cost of digital connectivity. On this initial basis, the project team held a collective view that there was a compelling case to be made for providing free social broadband to those on low-income and Universal Credit.

Social broadband would help residents save money and in the longer term, would improve outcomes such as educational attainment for children, training for adults and thereby improve employment opportunities. In other words, residents would become better equipped with the digital skills that many employers increasingly expect. There are also real benefits for those providing public services. A better, connected client base is an essential enabler of digital service delivery for local authority and health services releasing the convenience and cost benefits that digital transformation can deliver.

In such a socio-economic context, the resulting hypothesis was that to account for these short and longer term benefits and that there was a strong rationale for providing free social broadband. Associated with this was the question of how those organisations that benefit from highly connected social broadband users would contribute to funding the underlying costs. For this, a model of providing social broadband would be required. However, as the results from the work began to challenge the original hypothesis, it became necessary to reconsider what problems social broadband could address.

Our work has coincided with a larger 2022 project led by the British Academy to consider the role government can play in supporting technology investment, broadband use and address matters of inequality. These reports have covered matters relating to digital exclusion and poverty and a number are cited in this report. Although the work of the British Academy has taken a different approach to our work in Knowsley, similar conclusions have been reached, suggesting new ideas are emerging about digital poverty, connection and internet use. At the same time, both the Good Things Foundation and the Digital Poverty Alliance have been making comparable points about how we understand digital poverty.

As the work of each of these organisations has been concurrent with ours, we have reviewed and considered their findings in detail. Thus, we are reporting on the work in two different reports. In this first report our focus is on digital poverty and is characterised by statistics that represent a low-income borough. We cover the results from our survey of residents in the Huyton neighbourhood and frame these against the backdrop of the emerging debate that is reviewing how we understand digital poverty. We show the importance of socio-economic context and provide a view of access to technology, what connection looks like and an indication of affordability for residents. We show why users connect and how capable they feel about digital connection.

The second report has a stronger focus on user type, people and communities and offers an action plan for stakeholder consideration. A third technical summary is provided online. In this, we show the methods deployed for the survey research and includes other results from the survey that we did not include in the two reports.

2. Explaining Digital Poverty

In this section, we revaluate what we mean by digital poverty and consider its causes. Where previously commentators spoke of digital exclusion, there is a focus now on digital poverty and how this prevents broader levels of digital engagement. We look initially at digital exclusion and then move towards a working definition of digital poverty.

2.1 Digital exclusion

Views on digital exclusion tend to be focused on whether individuals have the skills, access to a device that enables connectivity, and being able to afford to use the internet. Those who lack one or any combination of these attributes may be digitally excluded and are at risk of being left behind in an increasingly digital society.[1] This is related not just to those who make no use of, or who cannot access the internet at all, but also those who are only making limited use of the available technologies.

In their 2022 report Ofcom outlined three aspects of digital exclusion that UK adults experience. There are those who lack access to the internet from home or elsewhere; those who do not have the skills or confidence to be active online; and there are those who are excluded from online activity because they are unable to afford access.[2] The Ofcom report indicated around 6% of UK households had no access to the internet with older people, poorer people and vulnerable groups such as those with disabilities were disproportionately affected.

In some instances, the term digital 'inequality' is preferred. There is little difference in what is being referred to in such cases with the British Academy suggesting digital inequalities can be defined through 'three levels' of the digital divide.[3] The three categories, or divides, can be seen in inadequate access to the technologies required, then low levels of skills and digital literacy and finally, an inability to exploit "digital resources and transform it into tangible social benefits."[4] The latter appears to be more subjective than the first two levels.

An area that is obviously important is simply having the financial means to gain access to the internet. During the pandemic lockdown, lack of access to public wi-fi and internet connection would have affected those on low incomes disproportionately, particularly if we assume their previous purchases of equipment and connection was lower than for those on higher incomes. Another impact is the 'poverty premium' that indicates how those on lower incomes pay proportionally more for essential services and goods. This is an outcome of market structures, corporate practices and more recently, cuts in public services.[5] Recently, as households in the UK have had to face inflation at levels hitherto unseen for almost four decades, concerns over digital exclusion have increased.

Undoubtedly, those who are financially poor will have more chance of being digitally excluded. However, as our research shows, this is a much more complex association of access and income. Furthermore, digital exclusion can result in a range of variables interacting in different ways, whether this is centred on ethnicity, disability or income, or even individual capabilities and motivation. The conclusion arrived at by Ofcom was to address digital exclusion in three ways, by

> *"supporting those who want to get online; providing less confident users with essential digital skills; and ensuring that those who remain offline are not left behind."[6]*

Such a generalisation however, appears inadequate to overcome the context of low income and we could, for example, make the case that social broadband should be considered as a universal service to overcome digital exclusion.[7] The Ofcom view provides a point from which we can think about how to build resilience in communities and provide new opportunities for digital equality.

2.2 The definition of digital poverty

The definition of digital poverty provided by the Digital Poverty Alliance is equally wide ranging. They refer to

1   British Academy (2022), Understanding digital poverty and inequality in the UK, The British Academy: London.
2   Ofcom (2022) Digital exclusion A review of Ofcom's research on digital exclusion among adults in the UK, March. Available: www.ofcom.org.uk/__data/assets/pdf_file/0022/234364/digital-exclusion-review-2022.pdf
3   British Academy (2022), p.6.
4   Ibid.
5   Davies, S. and Finney, A. (2020) The poverty premium and debt, in Gardner, J., Gray, M. and Moser, K. (Eds) Debt and Austerity, Edward Elgar Publishing: Cheltenham.
6   Ofcom (2022) p.1.
7   See Moreno, J.M., Woodcraft, S., Islam, K. and Yasmin, S. (2021) Stories of Change from the Connected Communities Inclusive Broadband Project, Institute for Global Prosperity. Available: www.ucl.ac.uk/bartlett/igp/sites/bartlett_igp/files/new_cover_final_draft_ph_report.2020.01.22_2.pdf

digital poverty as an inability to interact online as the individual requires. While this is again general and all encompassing, their explanation is helpful by showing where aspects of digital poverty are likely to manifest. The five determinants of digital poverty are, according to the Digital Poverty Alliance, concerned with: (i) the technology, (ii) how connection can be secured, (iii) the capability to connect, (iv) the motivation to connect and (v) the levels of support to enable connection.[8] Importantly, socio-economic context and household circumstance is also deemed to be critical in determining connectivity.

Digital poverty becomes evident along a continuum of digital experience. It is not a case of a dichotomy of groups defined as digitally poor in contrast to those defined as digitally rich and is instead, based on how different degrees of digital poverty are grounded in the experiences and habits of users.[9] This means that ideas like the five determinants can be examined empirically and if we can measure them then we should be able to assess different degrees of digital poverty. Many studies have sought to do this although in so doing, they have often failed to see the significance of context and circumstance.[10]

A slightly more nuanced approach is provided in a report by Nesta, who in their work on data poverty refer to those unable to secure mobile or broadband data that would meet essential needs.[11] The authors of this work note that measurements of data poverty include connectivity infrastructure, speed, cost and use. They argue that while poor infrastructure impacts on relatively fewer people, there are specific rural problems as we know,[12] uneven access to mobile data has a disproportionate impact on those with lower incomes and that there is "a negative cycle of data costs; those with low digital literacy are less able to navigate the market and access the best rates."[13] Nevertheless, the terms data and digital appear to point in the same direction and are used interchangeably.

The pervasive character of all things digital add to the complexity of measuring digital poverty. All parts of society are dependent on connectivity, whether public, private or third sector. Nearly all types of business are reliant on some form of digital presence for example as part of their marketing, while all individuals create some type of digital footprint. The role of the latter as digital citizens is subject to decisions that are designed into digital systems, not least by means of what is known as algorithmic bias.[14] These points broaden the idea of what is digital poverty and although correct to be considered, they make the concept of digital poverty more difficult to comprehend.

Too narrow a definition of digital poverty would mean specific groups are targeted at the cost of others. The British Academy, who recently funded a wide research initiative into digital poverty in the UK, suggest that such an approach may miss the circumstances of those not experiencing digital poverty today, but who may be at risk, and may be subject to digital poverty in the future. They argue that we should understand digital poverty as a fluid condition into which an individual can move into or out of, throughout their life. Rather than policy initiatives reacting to a certain point in time, it is important to keep a watching eye on the mechanisms and support networks that can be used to prevent digital poverty.[15]

In fact, the recent experience of the COVID-19 pandemic and the subsequent lockdown and further impact on the lives of ordinary people has given a chance to learn more about digital poverty. We know that as many functions of society had to move online, one consequence was to exacerbate the distance to services provided to those who were at the time digitally excluded.[16] The reaction for example, from schools was to provide technology as a method to ensure students were able to continue their education. Other public service efforts were made to create a better online experience in an attempt to continue levels of service provision. Regardless of how well intentioned these were, such moves tended to reinforce socio-economic difficulties by aggravating digital inequalities.

Specific to those in social housing, household circumstances and socio-economic context are important to internet access. As we have made clear, affordability is one of the main criteria of this work and is a situation made worse by the 'cost of living' crisis. The focus on financial stress is still central to our understanding of digital poverty although for those in social housing other criteria are also of interest. Broadband infrastructure, space and privacy to connect, access to services - private and public - and cheaper supply of broadband through social tariffs are all factors that can limit digital poverty. It could well be that a focus on these would bring gains in efficiency

8   See the Digital Poverty Alliance website: digitalpovertyalliance.org/about-us/#determinants-rainbow
9   Ragnedda, M., Ruiu, M.L., Addeo, F., Ruiu, G., Pellegrino, D. and Posner, M. (2022) Living on the edge of digital poverty, The British Academy. Available: www.thebritishacademy.ac.uk/publications/living-on-the-edge-of-digital-poverty/
10   For example Alexiou, A. and Singleton, A. (2018) Indicators of Internet Use and Engagement, Consumer Data Research Centre (CDRC). Available: data.cdrc.ac.uk/system/files/iuc2018userguide.pdf; Himma, K., Bottis, M. (2014) The Digital Divide: Information Technologies and the Obligation to Alleviate Poverty in Sandler, R.L. (Eds) Ethics and Emerging Technologies, Palgrave Macmillan: London; Liptrott, M. (Ed) Tackling the Digital Divide: The Shift from Access to Capacity, IGI Global: Hershey, PA.
11   Lucas, P.J., Robinson, R. and Treacy, L. (2020) What is Data Poverty? Nesta: Edinburgh. Available: media.nesta.org.uk/documents/What_is_Data_Poverty.pdf
12   See for example Ge, B et al (2022) Digital Poverty Transformation: Accessing Digital Services in Rural Northwest Communities, On behalf of The British Academy, Lancaster University Management School.
13   Lucas et al (2020), p.13.
14   Allmann, K. (2022) UK Digital Poverty Evidence Review, The Digital Poverty Alliance. Available: digitalpovertyalliance.org/wp-content/uploads/2022/06/UK-Digital-Poverty-Evidence-Review-2022-v1.0-compressed.pdf; Yates et al (2021) Me and My Big Data Understanding Citizens Data Literacies, University of Liverpool. Available: www.liverpool.ac.uk/media/livacuk/humanitiesampsocialsciences/meandmybiddata/Understanding,Citizens,Data,Literacies,Research,,Report,Final.pdf
15   British Academy (2022), Understanding digital poverty and inequality in the UK, The British Academy: London.
16   Ragnedda et al (2022).

to the housing providers as well and is a reminder of why digital inclusion is regarded as essential by many housing associations.[17]

As the literature on digital poverty shows, this is a phenomenon with multi-faceted causes. We recognise that it is something that should be seen on a continuum where different degrees of digital poverty could be observed and could also change over time. The recent definition provided by the Digital Poverty Alliance is an informed starting point for understanding digital poverty. Their five determinants provide a framework for our investigation and while the well-recognised classification of digital poverty that we noted earlier remain important, the pervasive character of digitisation means digital poverty is a much more complex experience.[18] As we see in our survey, such complexity requires a clear context for study.

17   See Holmes, H., Karampour, K. and Burgess, G. (2022) Digital Poverty and Housing Inequality, Cambridge Centre for Housing & Planning Research: Cambridge, and
18   Ragnedda et al (2022).

3. The Borough of Knowsley

In this section, we look at the socio-economic environment of Knowsley. This, we believe, is an important contributory factor to the way broadband connection is used. As we see in Figure 1, Knowsley suffers from high levels of deprivation as defined by the government through their 2019 Indices of Deprivation. In this illustration, we highlight the Knowsley wards, but can see how poverty cuts right across the Liverpool City Region. The shade from Wallasey in the Wirral, goes across the north of Liverpool, cuts right through the Knowsley borough showing Kirkby, Huyton, Prescot and Halewood in particular, and across to the post-industrial area of St.Helens. Our survey area is a neighbourhood in Knowsley, one that has many common features of the borough. We see an indication of how many common features of deprivation are shared to the west and east of this neighbourhood and to the north in Kirkby, and Halewood in the south.

3.1 The Knowsley context

The Knowsley context and specifically the Huyton backdrop, cannot be understated in this study. Recent events have put Knowsley in the news for the wrong reasons[19] although have demonstrated yet again the pervasiveness and effect of low income in the borough. Figure 2 below shows the concentration of deprivation in Knowsley wards and highlights our survey area showing how many wards across Knowsley have comparable problems of poverty specifically in Kirkby, Stockbridge Village, Huyton, parts of Prescot and Halewood.

From the 2021 Census, we know that the population of Knowsley is 155,000, a 6% increase from 2011. Between census dates, Knowsley has recorded a 14% increase in people aged over 65, a 4% increase in those aged 16 to 64 years and a 7% increase in numbers of children. Knowsley has a slightly higher workforce available (those aged between 16 and 64 years) compared to the North West or the rest of Great Britain. In 2017 it was estimated that the breakdown in ethnicity of Knowsley residents was 97% white, compared to 85% white in the rest of England. Early indications from the 2021 Census suggest little change.[20]

One of the main problems for the borough in general is that the residents suffer from low levels of employment income (see Figure 3). Knowsley has historically suffered from higher rates of unemployment claimant and still experiences slightly more workless households than the rest of Great Britain, but slightly less than the North West. While unemployment obviously is a contributory factor to poor levels of household income, it is not the defining feature of Knowsley's low-income characteristics. We have in Knowsley, the largest industrial estate in the Liverpool City Region and elsewhere, major employers who operate in the pharmaceutical and the automotive sectors. These are firms that are located within or on the boundaries of the borough. This results in more medium and larger enterprises in the borough than elsewhere, although they do not necessarily translate into higher paid employment for Knowsley residents.

Figure 3 **Knowsley: comparative income and employment ranking**

	Decile	**Rank**
Total Income	2nd	65
Self-Employment Income	2nd	74
Employment Income	2nd	85
Pension Income	1st	23
Economic Activity Rate	6th	295

Note: comparison based on Parliamentary constituencies; lowest decile =1, highest = 10; rank is out of 533, with 533 an indicator the most economically affluent.

Even with higher than median economic activity rates, there is a £1,300 per annum difference in the average weekly pay for those who work in Knowsley compared to those who live in Knowsley and are employed. The residents of Knowsley suffer disproportionately from low levels of in-employment income, self-employed income and pension income. There are higher levels of chronic illness, dependency on free school meals and much lower levels of managerial or professional occupations, 32% in Knowsley compared to 52% in the rest of Great Britain. Knowsley has higher levels of unskilled jobs and a much higher rate of residents without any educational qualifications.[21] Finally, Knowsley has experienced a cut in council finances of 31% since 2010.[22]

Variables such as these can be overwhelming. Households live the experience of persistent poverty,

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19   'Charities call for Knowsley asylum violence condemnation' www.bbc.co.uk/news/uk-england-merseyside-64631509.
20   These initial figures are from the 2021 Census via the ONS, from Nomis and from Knowsley Borough Council.
21   Figures from Nomis: www.nomisweb.co.uk/reports/lmp/la/1946157103/report.aspx?town=Knowsley
22   'Poorest councils have seen 3 times the cuts as richest say SIGOMA' See: www.sigoma.gov.uk/news/2023/poorest-councils-have-seen-3-times-the-cuts-as-richest-say-sigoma

Figure 1 **Knowsley deprivation and poverty across the Liverpool City Region**
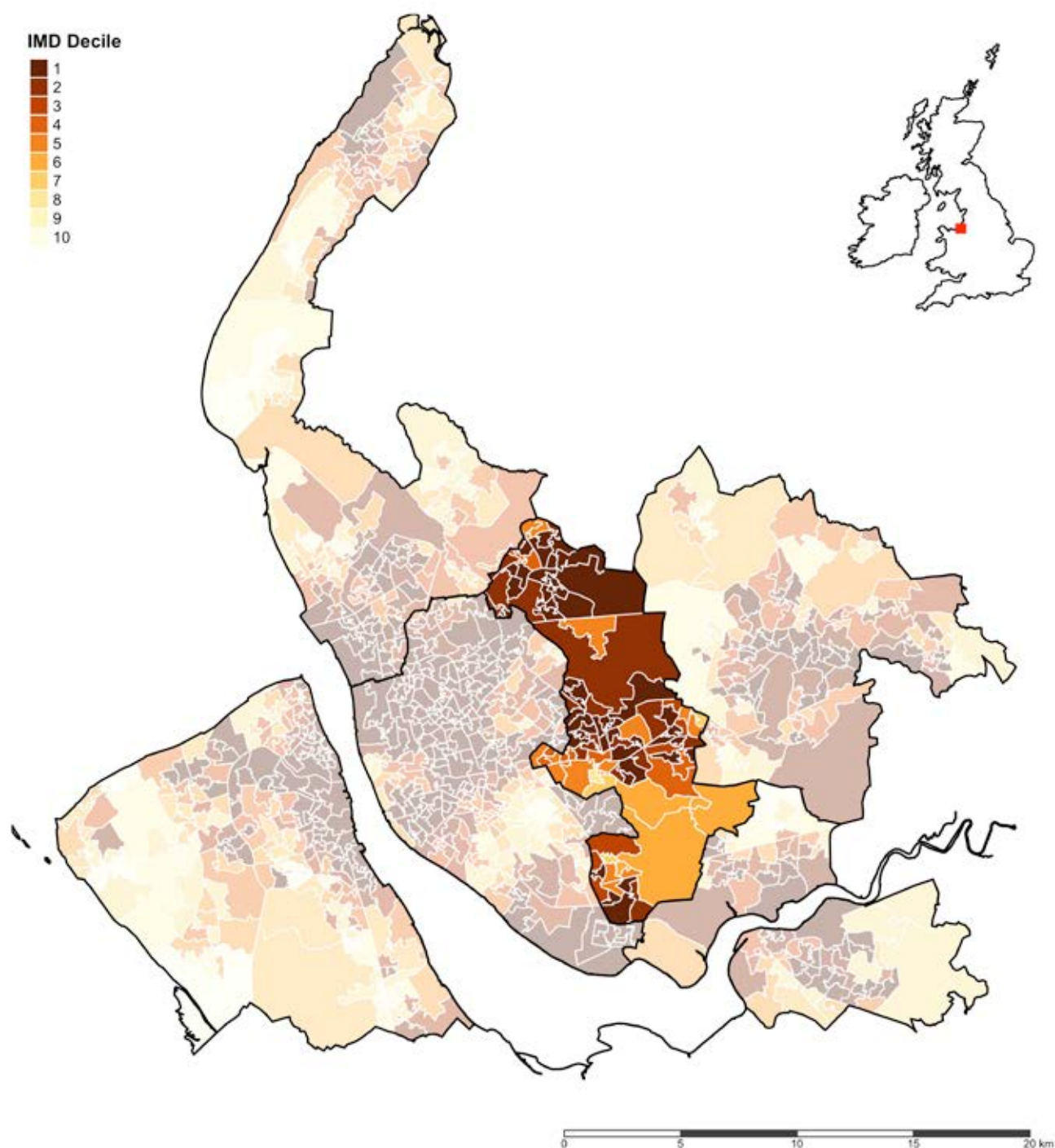
low income and what looks like poor employment opportunity. In turn, those organisations who provide basic services such as housing, health and education are required to manage the consequences of such socio-economic contexts. Knowsley residents experience more low-paid jobs, higher child poverty and older age poverty rates, poorer educational provision and lower attainment and poorer health. Such context undoubtedly shapes the way technologies such as broadband are used by residents.

Figure 2 **Knowsley 2019 Indices of Deprivation and the survey area**
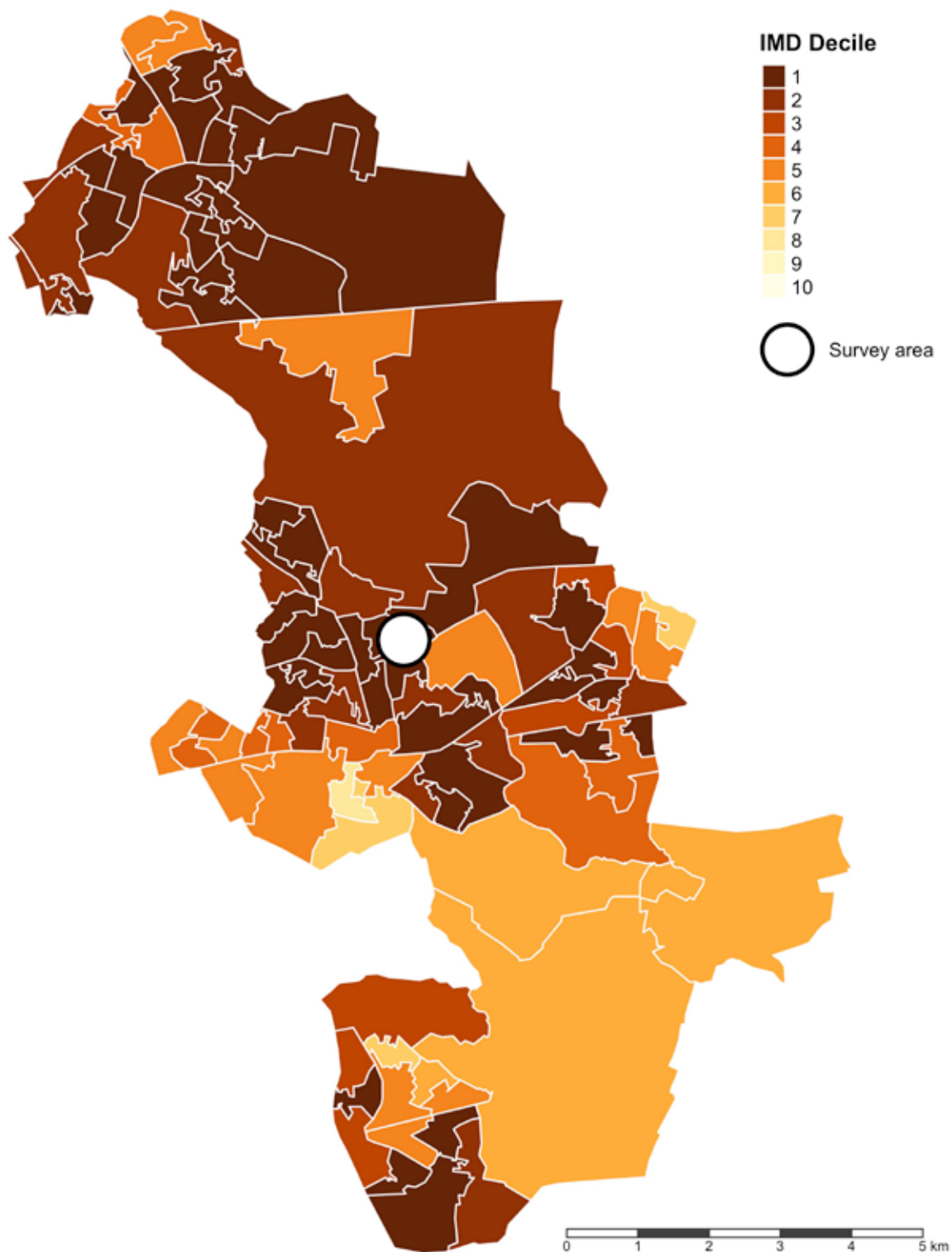
4. The Survey Area

Our investigation focused around the Knowsley Heights area in Huyton. In 2018, of the four main areas in the borough, Huyton was second only to Kirkby in terms of its deprivation according to Knowsley Borough Council. Lung illness such as COPD (chronic obstructive pulmonary disease), depression, obesity and hypertension, cancer and strokes are all highlighted by the council as illnesses with high prevalence.[23] Around 3% of Huyton's residents defined themselves as not 'White British' compared to an average in England of 20%. Over a third of housing was reported at the time as rented, with about 27% defined as social housing and a further 9% private rented. About 62% of housing was owned or mortgaged with the highest proportion in Roby, an area south of the survey area, were almost 90% of homes were owner occupied.

4.1 The neighbourhood

The survey area consisted of households that crossover onto the Longview, St Gabriels and St Michaels wards. According to 2018 estimates, these wards display similar characteristics to other poorer areas in the rest of the borough with perhaps Longview having slightly worse health and economic activity rates.[24] We estimate the survey area has a combined population of around 10,000, probably around 6% of the total borough population.

In the survey, 415 households were sampled and 17% responded. If we remove the 52% of households who were not in when we called initially and then when we called back, then it provides a response rate of some 36%. The neighbourhood is a predominantly white working class, low-income community, with residents from across the age range; 35% aged 25 to 40 years and 31% aged 41 to 65 years. In general, residents have spent a considerable time in the same housing, with

18 years being the mean figure of occupancy. One striking feature of the survey area is the level of child poverty.

Figure 4 is an illustration of the level of free school meals claimed by children in walking proximity to their school, in the survey area. We estimate 1,620 children in schools within a 15 minutes walking distance to the survey area and 53% of these students qualified for free school meals. The closest schools to the survey

Figure 4 **Child poverty: free school meals eligibility and survey area**
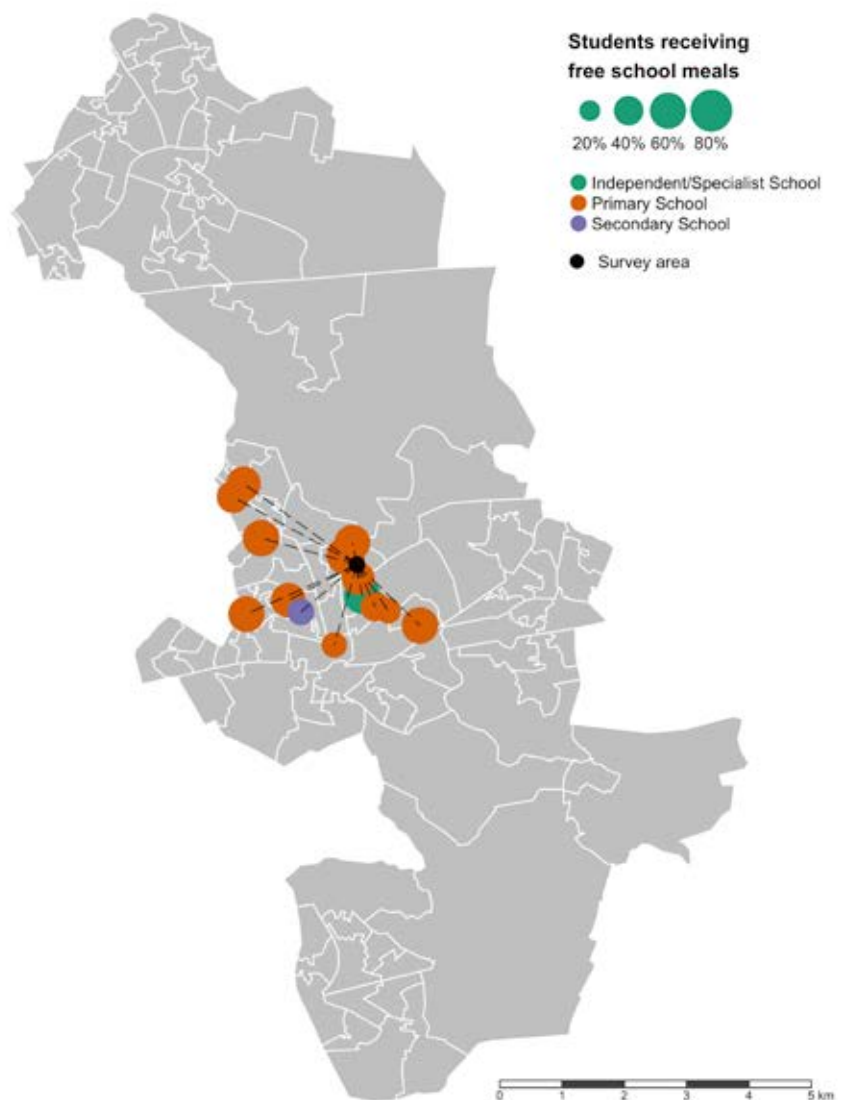
23 McGurgan L. and Grace, M. (2018) Huyton Profile 2018, Public Health Intelligence: KMBC.
24 2018 Ward Profiles, KMBC.

area recorded higher levels of free school meals eligibility at 66% and 58%, while as shown in the map, over a distance of just under 30 minutes, of the almost 4,000 students 52% were eligible for free school meals. During the pandemic closure ten schools of those highlighted in Figure 4 were provided with equipment to deliver and receive online lessons by Knowsley Metropolitan Borough Council, with 415 devices handed out. While 52% of children were defined as being in poverty, 11% of students were provided with ready to connect IT devices for the duration of lockdown.

4.2 Mapping connectivity

Previous work has indicated a low level of connection for this neighbourhood. We have mapped the results from a study of connection made in 2018 and we show this in Figure 5.[25] The authors of this work are concerned with indicators of engagement and develop a user classification guide for this purpose. They use retail data from the Consumer Data Research Centre that maps online purchasing behaviour, infrastructure data from Ofcom with population and Census data. This produces a rudimentary classification that provides ten user groups implying levels of user sophistication. The highest form is the e-Cultural Creator, while the lowest belongs to those who are 'e-Withdrawn'. The former has high levels of internet use in contrast to the latter who are "individuals who are the least engaged with the Internet... expressed by areas that are associated with those more deprived neighbourhoods of urban regions."[26]

This appears to offer a useful if simple way of understanding internet connection and use. Figure 5 shows the ten classifications and their application to wards in Knowsley and provides an interesting counterpart to Figure 2 above, that shows levels of poverty in Knowsley. Our survey area is firmly rooted in an e-Withdrawn location. One might believe from the two maps that digital poverty equates wholly with indices of deprivation.

Figure 5 **Types of connection and use in Knowsley**
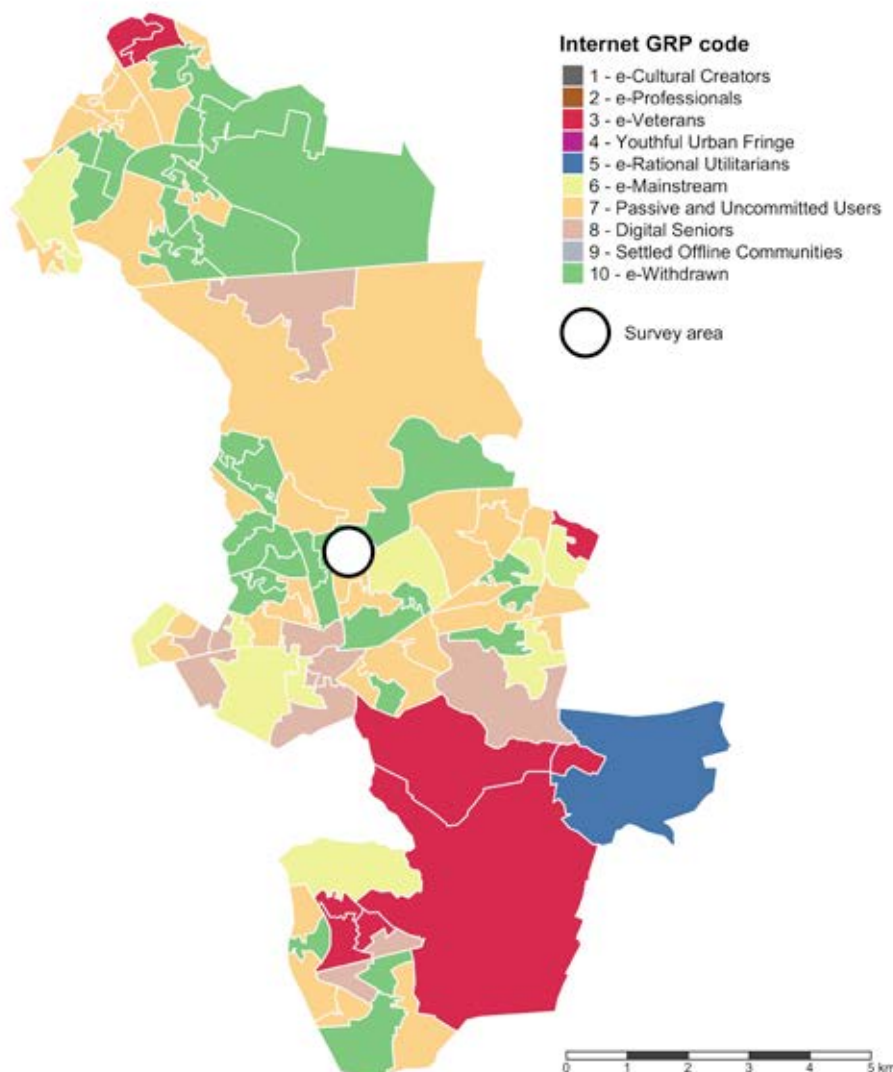
25 We have mapped the work of Alexiou and Singleton (2018) for this purpose.
26 Ibid. p.12.

5. Results from the Survey

Our survey of residents meant we visited 415 homes during the summer in 2022. We called on homes to conduct a face-to-face structured interview in the following streets in the survey area: the flats of Knowsley Heights and houses in Nyland Road, Parkbrook Road, Pennard Avenue, Butleigh Road, Woolfall Heath Avenue, Altmoor Road, Alt Bridge Road and Liverpool Road. One resident responded on behalf of the household. The 415 homes for the survey were taken from a larger dataset of 438 that consisted of 128 one-bedroom flats and 310 houses, of which about 40% were two-bedroom and the rest three bedrooms or above. As we have stated, our survey response rate was 17%, with a refusal rate of 31% and a no answer rate of 52%.

We structure the reporting of our results into three categories. The categories are taken from the five determinants set out above by the Digital Poverty Alliance. The first is a focus on the technology, then connectivity including how and capabilities and finally, we look at affordability.

5.1 The technology

We asked three specific questions that provide evidence about the technology. These questions were focused on if internet connection was used, how and where accessed. A resident from the household responded to the survey and were asked if they used the internet; 78% said yes, while 22% said no. While 17% of respondents were aged over 65 years, in this category only 7% used the internet, showing that age continues to feature in digital access. The household income of those who did not use the internet was almost all under £20,000 per annum and although not conclusive, cost and lack of benefit from connection were cited as reasons for no internet connection.

For those who did access the internet, we asked what technology they used for connection. Figure 6 shows the type of technologies used in the household, to connect to the internet. The main technology used for connectivity is through a mobile telephone with 95% stating this. The digital TV was another common route to connectivity with three quarters of all households using this medium, while other technology such as smart household devices (such as Alexa) featured much less (11%). While the games console and tablet featured equally as a medium for connection much less prevalent was the PC (18%), although a laptop was twice as likely to be used.

Figure 6 **The type of technology used to connect to the internet**
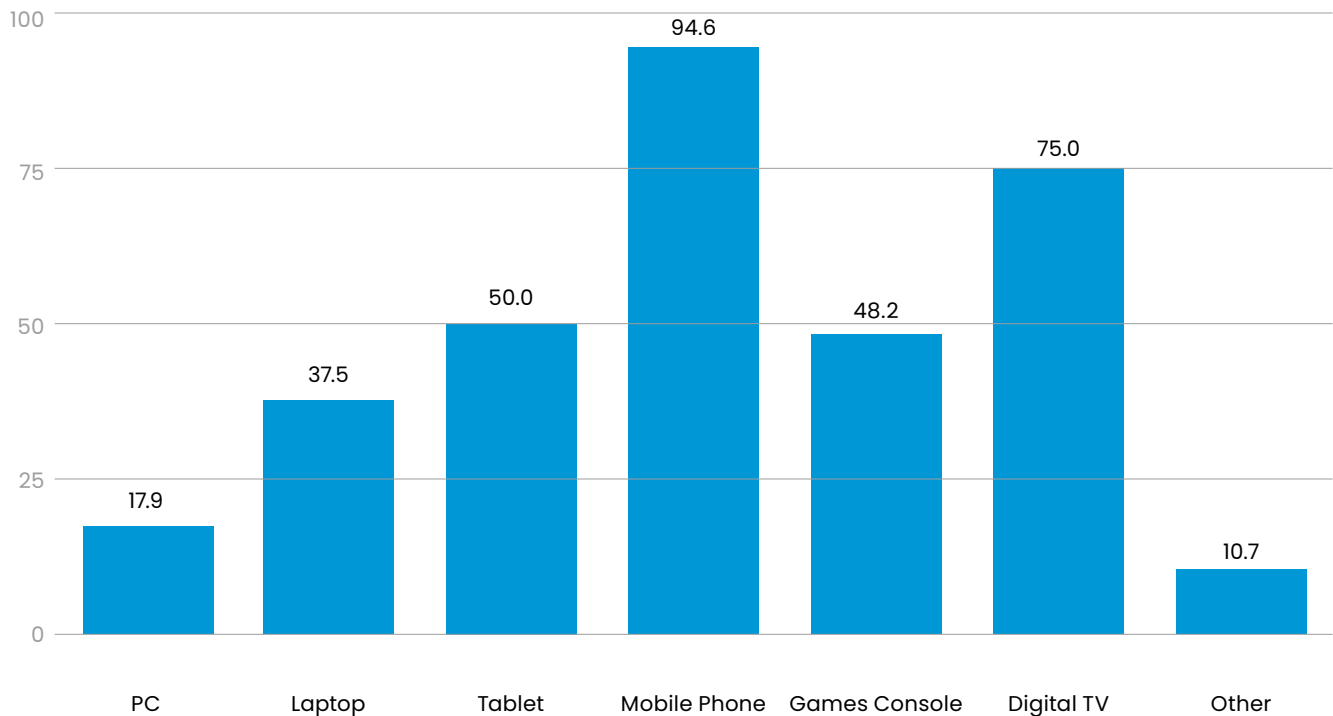
We then asked from where the Internet would generally be accessed, prompting a reply from the statement "I access the internet from…" At home, via a router was the main response with 93% using this means. Interestingly, the mobile phone was cited by 80% of respondents, demonstrating the strong presence of mobile phone ownership. Around a quarter of respondents said they accessed the internet regularly from work, one in five from the house of a friend or family, although only 10% said they accessed from a public space and only 5% from a connected community centre.

Accessing technology proved not to be a problem as eight out of ten households where able to attain some form of personal connection to the internet. However, if the type of access – and therefore use – is determined by the technology as some suggest, then mobile phone and smart TV access may indicate that a more nuanced understanding of digital poverty is required.[27] This form of access raises questions about the types of skills individuals have and the types of skills expected from employers, and the types of services public institutions offer online and what would motivate the resident to use the internet for this purpose.

5.2 Connectivity

The results from the survey suggested that the medium used to access the internet is a factor in determining the types of services that are to be accessed. Figure 7 shows the types of services residents in our survey access and how regularly they do so. Of the services listed, 56% are accessed either daily or weekly. Another third are accessed monthly. On the face of it, this does not seem to be a type or level of behaviour that exemplifies limited internet engagement and certainly challenges the idea that this is a community to be considered as e-Withdrawn. Instead, the evidence shows that in this community residents are regularly online.

Banking is the service most accessed. The most common services to be used after banking are shopping and general information. Almost a third of households (32%) engage with their bank online daily and over three-quarters (78%) regularly during the week. Over half of all households' access information services (such as online search engines for specific tasks like recipes or travel directions or information from YouTube) on a weekly basis while just under 40% shop weekly online. Streaming services, such as video (50%) and music (34%) are accessed mostly daily,

Figure 7 **Using connected services**
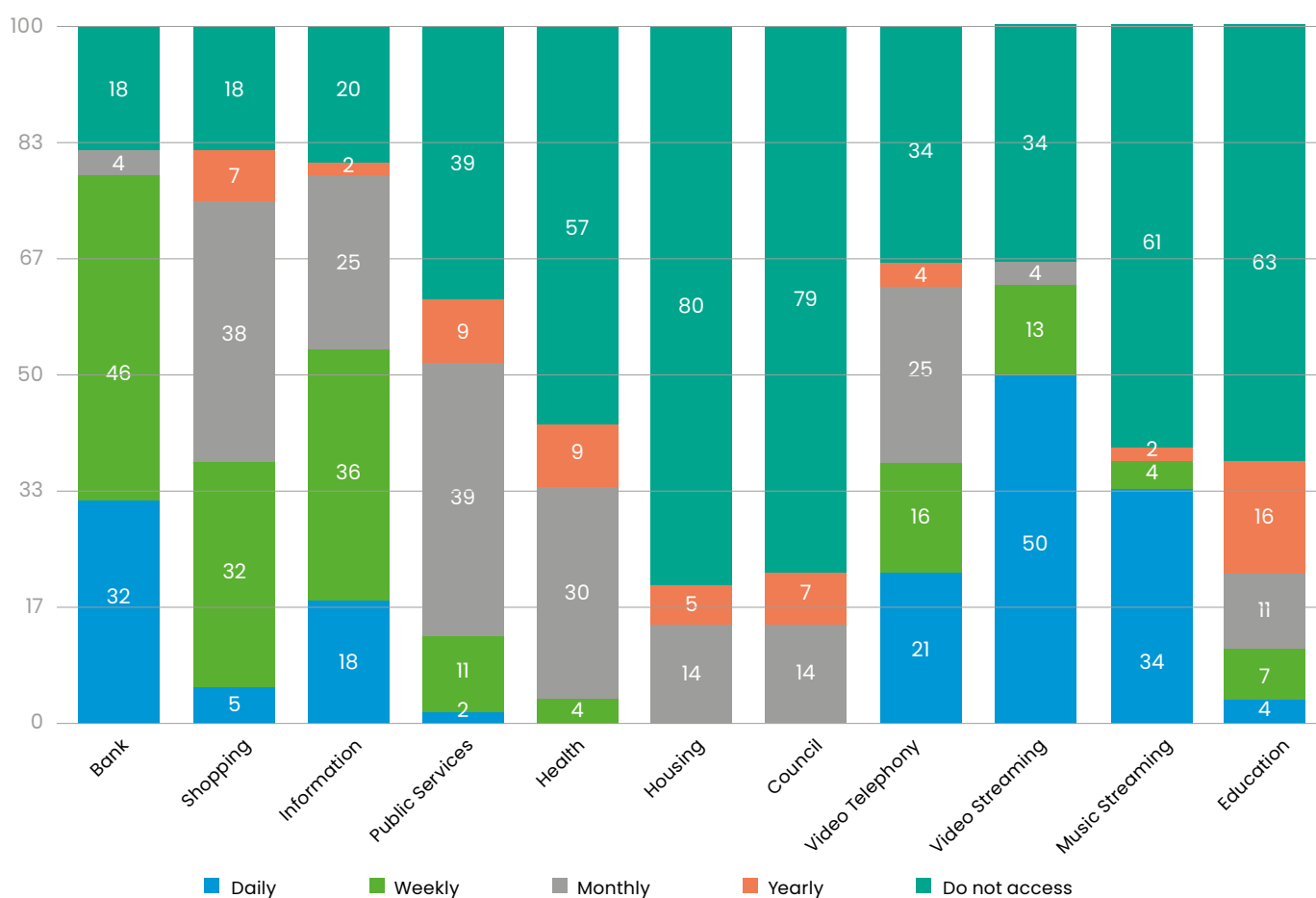
27   See Ragnedda et al (2022); also, Ofcom (2022) where it is stated "5% of households rely solely on mobile internet access to connect to the internet" (p.5); and Allman (2022) who argues that "poorer people rely on mobile phones for connectivity more than people in higher socio-economic grades" (p.40).

while one in five households will use video telephony such as FaceTime, every day.

The results show that services with a commercial aspect to them are accessed much more than general public services. Health, housing, council and education services are much less likely to be accessed by our survey residents. Monthly, 43% of residents will access online health services, 14% council services and 14% housing services. While one in ten access educational services – broadly defined – weekly, the figure jumps to one in five per month. However, almost two-thirds of our respondents never accessed any online education.

Ideas about a digital skills deficit amongst those on low incomes are challenged initially by our results. There is a seemingly ease of use prevalent with over a third of our survey users (34%) describing themselves as very competent users. Just under a third described themselves as competent (32%) while none saw themselves as just beginners. Only 11% regarded themselves as still learning. The confidence in accessing online services was very specific: 98% said that accessing online banking was easy; 100% said that accessing both video and music streaming was easy; while 89% said that online shopping was easy. The lowest ease of access rate was 87% who found accessing health services easy, although suggesting one in ten have difficulty accessing these online services.

The benefits from connectivity fall into three main categories: accessing services, including entertainment; keeping in touch with friends and for one's own wellbeing. In the first, access to banking, being able to work from home, doing the shopping online from home and watching streaming services such as Netflix were all seen as beneficial. Comments such as "it's a convenience when I need help, such as when I needed a blood test, I could book it online" were offered when questioned. Some responded by saying how useful connection was in keeping in touch with friends and family and this we believe, lay at the basis of those who clearly cited how staying in touch benefits their own mental wellbeing.

Comments about benefit for this in particular included: "I suffer from social anxiety so being online is important and it helps me" and "Yes, to talk to friends online. It helped during lockdown". One response was quite specific: "It has been good for my mental wellbeing". Other comments include: "I feel I have used the internet more but have mixed benefits depending on what it is", and that "face-to-face allows you to ask questions although some online is good enough" and "face-to-face is still valuable. Online helps me complete things in my own time." In general, when asked about benefits from being connected most who responded were positive and indicated how it was easier to access many services and often better than using the telephone.

These results suggest a wide range of motivations to be online. Certainly, the time spent online does not indicate a lack of motivation or any indication of obsessive levels of connectivity. More than half of survey respondents (54%) said they were online between 0-3 hours per day, while 18% said between 3-6 hours, with 20% recording 6-9 hours and 9% over nine hours per day spent online. Negatives about being online were indicated in comments about the unreliability of the service provider and the costs of connection.

We do not believe that the results from the survey implies a community that is under represented in general in terms of their access, ability or motivation to connect to the internet and to use the services available. They do raise further questions about types of use, notwithstanding that the idea of being e-Withdrawn seems not to be a wholly adequate description of this neighbourhood. Questions also remain about the quality of use and the quality of provision both in terms of infrastructure and service content. Finally, there may be questions about skills to access online services (to consume) as opposed to skills needed to access better quality employment (to produce).

5.3 Affordability

Our survey questions on cost had three component parts. First, whether a simple judgement on how expensive connection is could be garnered. Second, if an indicative cost per month could be given and finally, if residents had been prompted and used any social tariffs available. We felt that this would provide us with information on connection expenditure in the socio-economic context of the survey neighbourhood.[28] It would also provide data that could be used for comparison with other research.

Questioned before the rise in energy prices and while inflation was on an upward trend, none of our respondents felt that the cost of broadband or mobile connection was too cheap; 57% felt connection was too expensive while 43% felt the cost to be 'priced about right'. Around 70% of respondents reported expenditure on wi-fi connection of between £20-£80 per month; a further 23% spend between £81-£120 per month, with the rest (7%) spending over £121 per month.[29] In contrast, around 94% spend less than £80 per month on mobile connection, including 20% who spend less than £20 per month, perhaps illustrating the possible savings to be found for mobile tariffs.

The comparison website Uswitch suggests a combined internet and phone line combination would cost £28 per month as a standard package. Superfast fibre connection for the same combination would cost £40 per month and ultrafast connectivity at over 300

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28 Even in the short time since the survey the 'cost of living crisis' could have changed this, while our focus group work confirmed that connectivity is essential to access Universal Credit without penalty (see also Faith et al, 2022).

29 Although not formally asked, some respondents indicated that wi-fi costs reported would include TV subscription package. Our data does not however discern between wi-fi and TV services or subscription.

Mbps plus would cost £62 per month.[30] In contrast, for the cheapest plan that provides at least 5GB monthly high-speed data from the service provider with the largest market share in each economy (i.e. BT), it would cost £38 per month according to the global comparisons provided by the International Telecommunication Union.[31] The figures we suggest as costs for resident connection fall within the range indicated by these two organisations.

We know that the median UK household income at the end of 2021 was £31,400. Official figures from Nomis show the average weekly pay in Knowsley is £589, meaning an annual income of £30,600.[32] However, in stark contrast almost eight from ten of our households reported an annual household income of less than £20,000 per annum, with 62% indicating an income between £10,000 and £20,000. A further 16% reported their annual household income of between £20,000 and £30,000. Only 6% of survey households could report an annual income of over £30,000. Even if these figures were conservative or underestimated by respondents, it still indicates a level of low income in the neighbourhood that limits the purchasing capacity of individual households.

The proportion of households in our survey who experience acute low-income circumstances contrasts with other work that sought to estimate income and expenditure on connection. From the figures provided by the residents in our survey we can suggest around 70% were spending between £20 and £80 per month on broadband connection, while slightly more were spending a similar amount on mobile phone connection. In comparison, the survey by Ragnedda et al (2022) reported around 56% spending between £50

and £150 for all their digital connectivity, see Figure 8.

The figures on monthly broadband expenditure are important not least because Ofcom report, intuitively, that digital affordability is most likely to be of concern for those on lowest incomes.[33] Ofcom suggest that those on an annual income below £20,000 (their lowest decile used in their reports) spend around 3% of their disposable income on broadband connection; for those on an annual income below £26,000, the second and third lowest deciles, it is 3.1% and for those on an annual income below £30,500 (the fourth lowest decile, similar income to that for the whole borough and near to the UK median figure), they spend 1.2% of their disposable income on broadband connection. In contrast, for those households on Ofcom's estimated median figure of £38,300 per annum, 0.9% is spent on broadband connection.[34]

We can use these figures to begin to estimate the cost of connection as a proportion of total household income. From our survey, if we were to take a low point (33%), mid-point (50%) and high point (66%) on the £20-£80 per month (p.m) expenditure on broadband connection then we might assume £35 p.m low point, a £50 p.m mid-point and a £65 p.m high point as indicative costs. We could then apply this to mobile connection giving us a scale of £70, £100 and £130 p.m for both technologies. The results of our estimated proportion of annual income spent on connection is provided in Figure 9.

The figures suggest that the residents in our survey spend between 3.4% and 15.6% of their total household income on broadband and mobile connectivity. Those on the lowest income of £10,000 per annum and on the

Figure 8 **Comparing our survey - resident income and expenditure on connection**

	Our Survey (2022)	Ragnedda et al (2022)
Annual household income		
Under £10,000	16%	6%
£10,000 - £20,000	62%	
£11,000 - £25,000		25%
£20,000 - £30,000	16%	
£26,000 - £50,000		42%
Over £30,000	6%	
Over £50,000		27%
Spend per month on connection		
On broadband	70% pay £20 - £80	
On mobile phone	76% pay £20 - £80	
All digital technology		56% pay £50 - £150

30 Reported on February 1st 2023, see www.uswitch.com/broadband/broadband-statistics/
31 See the comparisons at the International Telecommunication Union website: www.itu.int/en/ITU-D/Statistics/Dashboards/Pages/IPB.aspx
32 Nomis, Op.Cit.
33 Ofcom (2021) Affordability of communications services, 22nd July. Available: www.ofcom.org.uk/__data/assets/pdf_file/0016/232522/Affordability-of-Communications-Services.pdf
34 Note: a median figure is problematic on a decile scale and Ofcom's figures do not equate with headline median household income provided by the ONS. Ofcom explain this in their 2021 report, op.cit.

Figure 9 **An estimate of broadband cost as a proportion of annual income**

Expenditure band	As % of £10,000 annual income	As % of £15,000 annual income	As % of £25,000 annual income
Survey low point at £70 p.m	8.4	5.6	3.4
Survey mid-point at £100 p.m	12.0	8.0	4.8
Survey high point at £130 p.m	15.6	10.4	6.2

highest point in the most common expenditure band would be paying around 16% of their total income on connection. Those households earning in the region of £25,000 per annum - still below the UK median - and on the lowest point in the most common expenditure band, would still be spending over 3% of their total income on broadband connection.

Ofcom suggest around 7.3% of household income spent on connectivity for those on an annual income lower than £30,500. Using our assumption that most of our survey households are in the £10,000 to £20,000 annual income range, we can estimate that almost half of residents spend about 8% of all income on connectivity and the rest fall between the 3% and 16% range of total income on connectivity spend.

Finally, we asked residents about using social tariffs to keep the costs down. Social tariffs provide a discounted broadband connection for those receiving Universal Credit. Ofcom report that only 55,000 from 4 million plus who are eligible have registered for the discounts and Ofcom have suggested that providers do little to advertise this form of discount.[35] This is borne out in our survey with most residents, 79%, reporting they had never heard of social tariffs. The main reason given by those who had heard of them (21%) for not using them are that the speed offered was too slow and unreliable, while some suggested that it was easier just to look for a whole commercial package that includes broadband, land line and TV services.

In areas that have a disproportionate number of low-income households, affordability remains a critical feature of use and should be factored into policies aimed at alleviating digital exclusion, such as social broadband. It is significant that in the United States, the *Affordable Connectivity Program*, a supply-side measure as part of the Inflation Reduction Act (2022) has been introduced. This reduces the cost of internet access by $30 per month for households and provides support for purchasing hardware for those on low income. In addition, the Biden-Harris Administration's *Internet for All* initiative is providing an estimated $65 billion to "provide affordable, reliable, high-speed internet for everyone in America."[36] Affordability remains a significant matter in attempts to address digital poverty and there are no similar

initiatives in the UK to such a scale.

Our data indicates that the residents we surveyed experience costs per month for connection comparable to those reported elsewhere. However, there is a significant impact on resident finances as connectivity accounts for a notable 3% of spending, although it could be as much as a staggering 16% of all total household expenditure. We are suggesting that around half of all residents pay a substantive 8% of their total annual income on connection, a figure consistent with that suggested by Ofcom in their work. We should note that these figures on affordability where collected prior to the winter of 2023 when energy prices and inflation began to affect households.

35 Fitzsimmons, J. (2022) Social broadband tariffs: millions could save on internet costs, Love Money. Available: www.lovemoney.com/news/130857/social-broadband-tariffs-millions-of-households-could-save-150-on-their-i

36 See the initial details at: www.whitehouse.gov/getinternet/

6. Conclusion: Reframing the Digital Poverty Hypothesis

When we began our research in 2022 a larger although more general set of studies were simultaneously underway. The research by the British Academy on digital poverty in the UK remains ongoing, covering digital poverty and including subjects as diverse as Artificial Intelligence and democracy.[37] Meanwhile, the work of the Digital Poverty Alliance allows them to campaign for the eradication of digital poverty[38] and the Good Things Foundation continue with their work on how the deployment of digital skills or lack of thereon, affect society.[39] Each of these is shifting the discussion on what digital poverty is and what it means.

The presentation of results from our survey of residents in a typical low-income Knowsley neighbourhood is consistent with the work of these organisations. The results of our work question earlier definitions of poverty in a very specific socio-economic context. It also helps us to reconsider what social broadband would look like, who would it be for and how could it be delivered. Beginning with the five determinants of digital poverty set out above, we can use this research to raise further questions that can help to reframe the assumptions associated with digital poverty.

The first question to pose is does the cost of providing the technology act as a barrier to digital inclusion? Ideas about a minimum digital living standard[40] while welcome, often fail the specificity of context. Our research indicated that technology as a problem of access has been overcome and in this sense, a minimum digital standard has been met. Residents suggested to us that they can communicate and engage with opportunities through the technology they own in their own home. The question now about affordability may well focus on (i) importantly, rising costs and difficult choices about expenditure and (ii), the limits of certain technologies, often determined by the content provided by private service providers. Can the mobile phone, smart TV and games console allow the same 'opportunity' as the laptop?

The second question concerns the notion of connection. This concerns the capabilities of users and in our case, the residents of a low-income neighbourhood. Ideas about a personal skills deficit have become a feature of explanations of poverty in general and are fiercely contested. A similar reasoning lies behind the digital skills deficit and can be answered when we look at how people connect, what for and how easy they find it. Our results show people connect from home, mainly accessing commercial services as part of a general consumption of retail and entertainment provision and find it easy to do so. We will look at more detail into the question of digital skills in the next report, however we can say that users are competent. Whether they need to be told what additional skills they require seems to be a further point for discussion.

This brings us on to the third point focused on motivation. Our results indicate that while two-thirds of residents see themselves as competent users, they do not appear to be obsessed with being online. Over half spend up to 21 hours a week online, with a further 18% up to 42 hours a week and 20% saying they spend up to 63 hours a week. Hours online and levels of competence appear to be well matched. The online experience from a low-income community is that connection is designed to attract them, to spend time consuming content and in this sense, they do not seem to be at a disadvantage. The question of what individuals do when they are online, what is deemed to be productive and unproductive, may therefore be worth considering.

Finally, on support to help individuals connect online and why people will move in and out of digital inclusion, our results do show that one in five residents have little or no interest in engaging with the digital world. Age is a factor here and child and older aged poverty, prevalent in Knowsley, remains a contributor to digital exclusion. We also recognise that in some cases online engagement is undoubtedly forced, such as when the benefit claimant has no other option than to be online to submit a claim. Support therefore, needs to be about more than simply getting people online and perhaps attention can turn towards wider neighbourhood-based initiatives that bring community resilience and build confidence as a starting point for building new ways of social broadband access. Social innovation in this field needs to be about more than connectivity and importantly, should be able to overcome individual isolation.

These points are the basis from which we seek to reframe the digital poverty debate. At this point we can leave behind the original hypothesis of digital exclusion centred on technology, skills and costs. These remain important but are too blunt to incorporate

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37 See British Academy Digital Society: www.thebritishacademy.ac.uk/programmes/digital-society/
38 See Digital Poverty Alliance: digitalpovertyalliance.org
39 See Good Things Foundation: www.goodthingsfoundation.org
40 See Good Things Foundation (2022) Developing a new benchmark: A minimum digital living standard, June. Available: www.goodthingsfoun-dation.org/insights/developing-a-new-benchmark-a-minimum-digital-living-standard/#:~:text=%27A%20minimum%20digital%20stand-ard%20of,opportunities%20safely%20and%20with%20confidence

the results we find from our work here. We take them as the starting point for our second report where we spend some time looking at people and communities with a specific focus on user type, digital skills, health and community capacity building. We demonstrate costs of upgrading digital skills, we take account of user type and provide an eighteen-point action plan that should help prompt further stakeholder debate.

About the Heseltine Institute for Public Policy, Practice and Place

The Heseltine Institute for Public Policy, Practice and Place is an interdisciplinary public policy research institute which brings together academic expertise from across the University of Liverpool with policy-makers and practitioners to support the development of sustainable and inclusive cities and city regions.

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