



Digital exclusion: Internet access and affordability

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Abstract

This briefing explores digital exclusion and the barriers for a lack of internet access in the home. People Know How are currently supporting people suffering from digital exclusion through their Computer Delivery and Learn Digital projects as well as providing support through the Connecting Scotland national helpline. As such, this briefing is useful to further develop these projects and People Know How's overall online support amongst digitally excluded groups. UK and Scottish Government initiatives and legislation are examined, as is the legislation designed to make the internet accessible to more of the population. It is found that a lack of internet access most likely has a detrimental effect on our human rights. Furthermore, the briefing provides details of a UK-wide case study that indicates that there could be different perceptions in Scotland concerning the affordability and benefits of internet services compared to other UK nations. This finding highlights a need for further study, to identify how and why these differences exist. Some alternative technical solutions from academic research are provided. In summary, it is found that digital exclusion is a complex issue, bound up with government initiatives, education, technology, poverty, culture, and more.

Keywords

Internet, OFCOM, digital exclusion, R100, Computer Delivery, Reconnect

Key points

- There is no human right to access the internet, but digital exclusion may be detrimental to an individual's human rights.
- The G8 group recognises that access to the internet is facilitated by government action and national policies. Legislation laid out by the Scottish government, regarding internet access, may be confounded by EU and UK-wide legislation and governance.
- People in Scotland may be up to 4 times more likely to cancel their internet subscription than people in other UK nations.
- People on certain benefits may be able to obtain a basic internet service for a minimal fee. However, there are likely to be many others who cannot afford it.
- Alternative technical solutions have been proposed in research literature, but none seem to have progressed beyond research projects.

Introduction

People Know How's Reconnect service provides support for people who wish to improve their health, wellbeing and digital knowledge. In combination with their Computer Delivery project, they are able to provide computer equipment and technology support to those who wish to access online resources (People Know How 2020). Around 15% of the 180 people who were offered a computer through the Computer Delivery project returned or declined it, stating that they had no internet access at home. To help them this percentage stay connected and overcome this obstacle, Connecting Scotland, whose national helpline we operate, enables us to help these people with a device and connectivity. Furthermore, there are news reports of the difficulties that children are encountering as they try to study at home during the COVID-19 crisis that these projects also aim to address (see e.g. BBC News 2020a). In our digitally connected world, those without internet access can be at a severe disadvantage. 'Digital exclusion' refers to the kind of social exclusion suffered because of lack of access to these digital services. The digital services focused on in this briefing are the hard-wired and mobile broadband services that allow access to the internet and world wide web. This research briefing is intended to provide People Know How with further insights about digital exclusion in Scotland and the factors that contribute to it. The briefing starts with an overview of digital exclusion and continues with a discussion about the availability of internet services. To understand what has been done to make the internet more accessible across Scotland, UK and Scottish Government legislation will be examined. Following

this, OFCOM data will be reviewed to obtain a more in-depth understanding of the affordability of internet services. Here, a distinct difference in the data which may indicate a difference in digital exclusion, is noted; an area warranting further investigation. The briefing ends by considering alternative technical solutions and concludes with a summary.

Digital exclusion

Digital exclusion refers to a kind of social exclusion caused by a lack of access to digital services. As some key services are most easily accessed through the internet, digital exclusion is a key area of concern – particularly in the current climate, where many face-to-face services have been moved online as a result of the COVID-19 pandemic. Several causes of exclusion are identified by Al-Muwil et al. (2019) including: difficulty accessing services due to network availability, the high cost of equipment and internet services, and the lack of information technology (IT) skills and knowledge in the population. Furthermore, Liddall (2020) presents an overview of digital in a previous People Know How research briefing. The author discusses the 'big picture' issues and some potential solutions, including Scottish Government and UK Government schemes, an introduction to technology for children in schools, price capping through legislation, a coordinated third sector response and the development of smart cities. This research briefing extends the exploration of some of these ideas.

The importance of reducing digital exclusion grows as our society becomes more dependent on digital technology. This is highlighted by initiatives such

as the UK Government's 'Digital by Default' project (Al-Muwil et al. 2019; UK Government 2020). The project ran from 2010 to 2015, with the aim of making all government services available online. The intention was to make the internet the default 'choice' for interfacing with government services for majority of its service users. This emphasis on provision of services for the majority is good for the majority, but it does not tend to benefit the minority – those suffering from digital exclusion. Al-Muwil et al. (2019) conclude that security concerns, lack of skills, cost, and access provide the greatest barriers to participation. In our 'connected' world, there are no human rights to internet access itself (Tully 2014). However, several human rights could be considered to be affected by digital exclusion, such as freedom of expression and social exclusion. Referring to the Deauville G8 Declaration (European Commission 2011), Tully argues that restricting Internet access could be considered inconsistent with international law (Tully 2014). The European Commission (2011) also highlights the importance of government assistance in the form of national policies with regards to ensuring a transparent and stable internet environment. The important role of governance will be further examined in the section on the UK Government Help and Legislation, which also includes Scotland's national policy.

Internet availability

In the home, the internet is usually accessed using wireless broadband (Wi-Fi) or an Ethernet cable attached to a modem-router. The modem-router is usually connected to an Internet Service Provider (ISP) using a telephone line or fibre-optic cable, it may also involve

a satellite link. In some cases, Wi-Fi is available to a community through a local network where the Wi-Fi signal is broadcast from a local hub. So-called "mobile" internet services, available through the cell-phone network, can be accessed from smartphones and other equipment attached to a special receiver. In addition, many public spaces such as cafes, libraries and shops have internet access through Wi-Fi.

In some ways, the internet seems to be pervasive in our society, yet there are sections of society without internet access. One reason for the lack of access is the cost and effort of connecting isolated communities (Schofield 2018). A solution for this group will require new government initiatives, new technologies or new ways of using existing technologies. Another group that does not have access are those who cannot afford the cost of equipment and services (ISPReview 2019a). Although basic broadband package options with a low-cost tariff do exist for people receiving certain benefits, many people will not qualify for this low tariff. Thereby, they may be excluded if they are on low incomes. We see from People Know How's Computer Delivery experience that, even when people are given equipment, they cannot gain access to the services. There is clearly a digital divide in the community. At the time of writing it has not been determined whether this was due to service availability or cost. However, to shed light on the wider issue we can refer to the results of an OFCOM (2018) survey on the affordability of services. In OFCOM's 2019 statement, the stated aim is for people "across the whole of the UK to be able to access better broadband and mobile services, so everyone can benefit from

the services they deliver” (p. 2). Below, it is investigated what this means in practice.

UK Government help and legislation

In March 2018, the UK government introduced legislation for a broadband Universal Service Obligation (USO), to give homes and businesses the right to request a decent and affordable broadband connection. Those charged with providing the services are the Universal Service Providers (USPs). These are currently BT and KCOM. The actual commitments derived from the USO are as follows: USPs will have 30 days to check and confirm whether someone is eligible. To do this (apart from KCOM in Hull) they will check that the consumer’s location is a home or business, that it has no access to existing decent, affordable broadband, it will not be covered by a public scheme in the next 12 months, and it will not cost more than £3,400 to connect (as set in the legislation). Where the cost is more than £3,400, people will have the choice to pay the excess costs of installing a USO connection or use an alternative technology (such as via a satellite) outside the USO scheme. People who only have access to a service priced over £45 per month will also have the right to request a USO connection.

Furthermore, OFCOM’s (2019) view of an affordable broadband service, is one that is priced at the upper end of the prices paid by UK households. Their research found that few households face problems affording broadband. They claim that a cost of £45 per month (including any up-front fees spread across the life of the contract and expressed in November 2018 prices) is a reasonable level. As

discussed in the section on OFCOM Statistic, a significant number of people in the UK do have difficulty paying for services. Therefore, there may be grounds to doubt OFCOM’s affordability assumptions.

Building Digital UK

Building Digital UK (BDUK) is a government initiative that has been running since 2013 (BDUK 2013). It aims to extend broadband to harder to reach areas and hopes to deliver community hubs from which networks may be extended by the communities themselves. They state that “the scheme is applicable if you are a resident, then you could have access to a Superfast scheme in your area”. However, it is not really clear what that means. They further state that “you may also be eligible for a voucher to support the cost of gigabit-capable broadband as part of a group scheme”. Thus, if you are a community, you may be able to improve your broadband connectivity by creating group schemes with broadband suppliers and using vouchers to support the cost of installation. However, recent news reports are suggesting that there is low take-up of the scheme (BBC News 2020b).

Digital Scotland Superfast Broadband

In Scotland, the Scottish Government (2017) introduced a separate programme – Digital Scotland Superfast Broadband (DSSB) – as part of their digital strategy in 2017. However, the target for making sure that every premises in Scotland is able to access broadband speeds of at least 30 Megabits per second by 2021 will be missed. Sutherland (2017)

highlights the difficulties of providing a national broadband strategy in Scotland. The author concludes that the Scottish Government has been restricted by the multiple layers of governance from Brussels and London, and the removal from regional government subsidies to the national BDUK scheme, which means Scotland no longer controls its regional spend as it is covered in the UK scheme. Scotland, however, has revised its national strategy to roll out broadband across the whole country; it is now called the R100 project. Its vision is to provide broadband access to the whole country, but it will take at least until 2023.

Commentary on help and legislation

The OFCOM statement highlights that everyone has the right to request a decent broadband service, but there is no actual right to a service and no actual requirement for the USP to provide a service beyond the stated cost limitations. For those without an existing service, if the cost of connection is more than £3400, you have no right to a service. There are some alternatives, but most of them, such as satellite broadband are likely to be more expensive, so are a barrier to the least well-off in society. Schemes, such as BDUK, suggest community initiatives as a solution. Indeed, when looking at their guide (Department for Digital, Culture, Media and Sport [DCMS] 2019) the scheme seems to require a well-organised, well-motivated community, working together to bring a project to a successful conclusion. There have been some successful projects, but no data relating to BDUK community schemes running specifically in deprived areas

have been found (ISPreview 2019b). Furthermore, Sutherland's (2017) report highlights the difficulties of providing a national broadband strategy in Scotland. In addition, Scotland's strategy still appears to be linked to the UK-wide USO which imposes a £3400 limit on cost (DSSB no date; OFCOM 2020). However, if the R100 project truly reaches 100% of the population, that would be good news on the infrastructure front. Perhaps in the future, in Scotland, we need only focus on the affordability of services. Whether or not affordability estimates similar to OFCOM are to be used in costing may determine uptake of services in the most deprived areas.

OFCEM statistics

A 2018 OFCEM survey presents details of the proportion of customers in each UK country that had difficulty paying for at least one communications service (where that person is responsible for the service). Across Scotland, England, Wales and Northern Ireland, the proportions appear to be of the same order of magnitude, i.e. between 9 and 12%. However, the proportion of people cutting back on internet access is significantly higher in Scotland (13%), due to its cost, than people living in England (3%) and Wales (3%). There is no data for Northern Ireland. If it really is the case that the proportion of people having difficulties paying is similar to other nations, then it is necessary to consider what makes people living in Scotland more likely to disconnect. This difference may be due to differing levels of deprivation in each nation. It may be that more people are in low paid employment in Scotland, rather than in receipt of the benefits that would enable them to receive a low-cost

tariff service. Alternatively, it could be that people's spending priorities differ, or there is a greater lack of confidence in the benefits of the service. It may even be that rural broadband/mobile data performance is poor and not perceived as good value for money. Therefore, for People Know How to deliver its online services to the most deprived people, it is important to understand why people are disconnecting. In time, R100 should solve the infrastructure problem. However, the problem of whether a service is actually affordable for the least well off, and whether the benefits of the financial outlay are considered to be great enough, may be more difficult to address. If a cost of £45 per month for broadband is considered affordable for most (OFCOM 2019), and that many would be willing to pay more, then regulators have not considered what to do about the least well-off in the community, for whom even £45 per month would be unaffordable.

Alternative technical solutions

It may be appropriate to consider if there are any technical solutions that may be useful for rural communities, particularly if they could be implemented quickly. Several proposals are available however, there is no indication of the speed at which they might be implemented. Therefore, it may be quicker to wait for R100 to be completed, but further investigation is required. Kassem et al.'s (2018) case study demonstrates how a decent internet service can be provided to a rural community of 200 people (in Balquhiddy, Scotland) who had been receiving poor internet service. They found that, although the setup cost is related to geographical location

and terrain, the typical initial capital expenditure can be as low as US\$1000 and running costs as low as US\$1 per month (Kassem et al. 2018). Furthermore, Townsend et al. (2014) advocate a wireless solution to this same problem, targeting Scotland specifically. It seems that the knowledge transfer into a practical solution has not progressed much in the intervening period.

Moreover, Mohideen et al. (2018) propose a technological solution that would provide free basic internet for accessing government services, called Rural Public Access Wi-Fi Services (Rural-PAWS). They define a prototype model for Lower Effort (LE) services that could be adopted by commercial satellite companies. A pilot study in 8 locations showed that a satellite network-based LE service is feasible and that the performance of the system was acceptable. The idea of using satellite systems for internet services is not new and, despite previous low uptake of the technology, seems to continue to attract investment. One system that many people may have heard of is the Starlink system. However, this project is currently limiting its scope to USA and Canada. A similar system covering Europe is the OneWeb project, but unfortunately, this project has recently run into financial difficulties.

Another option is that of community sharing of spare network capacity. This is proposed by Dimogerontakis et al. (2017), who describe a technical solution that divides a community broadband network into two parts. One partition is defined as being spare and may be used by an alternative group of users – such as disadvantaged users. Deigerontakis et al. (2017) state that: “We define spare Internet capacity as the network traffic that can be transferred to and

from the Internet by secondary users (using Internet connectivity provided by others) with no significant performance degradation or cost penalty for primary users (sharing their Internet connectivity)” (p. 1). This work is not widely cited and does not seem to have been followed up. However, it may provide a solution for providing a basic service for users that would otherwise be excluded from a scheme such as smart cities. In general, there seems to be very little progress in finding alternative solutions for deprived areas in the UK, and Scotland specifically. Quaglione et al. (2020) note that achieving the correct mix of fixed and mobile broadband services in an area is complex and requires careful planning. This is something that People Know How may be interested in pursuing at government level on behalf of digitally deprived people in across Edinburgh and East Lothian.

Conclusion

This research briefing has focused on the issues of access to digital services and its affordability. To some extent, these are linked, since in geographically isolated regions the cost of connection is higher. In areas that are not geographically isolated, affordability is likely to be an issue. There is a basic broadband offering for people receiving certain benefits. However, where OFCOM (2019) data indicates that £45 per month is considered to be a reasonable price to pay, and an assertion that many would be willing to pay more, many people on low-income will find this unaffordable. There is surprising data that indicates that people living in Scotland are more likely to discontinue their digital service than others in the UK. This warrants

further investigation, in order to validate its statistical significance and discover the reasons for this apparent difference. In the interim period, before R100 is completed, an alternative technical solution may be used to solve the problem associated with reaching isolated communities (Dimogerontakis et al. 2017).

When considering the idea of providing decent digital services to all citizens, it is apparent that much of the technological landscape and difficulties with providing the appropriate infrastructure are bound up with the complexity of the technology, geography, cost and its UK-wide governance. Scotland’s R100 plan to provide digital infrastructure to 100% of Scotland is a promising commitment, although its initial deadline has already been missed, and a new one set for 2023. In addition, this plan also seems to be linked to the UK-wide schemes which are restrictive in practice. At present, it is far from clear how the different schemes will be applied since there seems to be some overlap. Indeed, in trying to draw some conclusions we are faced with a multitude of difficulties. This research briefing has reviewed various sources of information such as government literature, academic research and the world-wide-web. Thereby, this review is an attempt to provide background knowledge for People Know How, to assist in their efforts to obtain digital services for a small excluded, but important, group.

- Al-Muwil, Ahlam, et al., 2019. 'Balancing Digital-By-Default with Inclusion: A Study of the Factors Influencing E-Inclusion in the UK'. *Information Systems Frontiers*, vol. 21, no. 3, June 2019, pp. 635–59. Springer Link, doi:10.1007/s10796-019-09914-0.
- BBC News, 2020a. 'Our Six Children Shared One Phone for Homework'. BBC News, 8 July 2020. www.bbc.co.uk, <https://www.bbc.com/news/uk-england-53323405>.
- BBC News, 2020b. 'Rural Broadband Upgrade Cash "There for the Taking"'. BBC News, 8 Aug. 2020. www.bbc.co.uk, <https://www.bbc.com/news/technology-53693585>.
- Building Digital UK 2013. GOV.UK. www.gov.uk, <https://www.gov.uk/guidance/building-digital-uk>. Accessed 30 June 2020.
- Department for Digital, Culture, Media and Sport, 2019. 'Guidance'. GOV.UK, <https://www.gov.uk/government/publications/community-led-broadband-schemes/guidance>. Accessed 12 Aug. 2020.
- Digital Scotland Superfast Broadband, no date. *Digital Scotland Superfast Broadband*, <https://www.scotlandsuperfast.com/how-can-i-get-it/alternative-solutions>. Accessed 12 Aug. 2020.
- Dimogerontakis, Emmanouil, et al., 2017. 'Community Sharing of Spare Network Capacity'. *2017 IEEE 14th International Conference on Networking, Sensing and Control (ICNSC)*, 2017, pp. 299–304. IEEE Xplore, doi:10.1109/ICNSC.2017.8000108.
- European Commission, 2011. Deauville G8 Declaration. p. 25, https://ec.europa.eu/archives/commission_2010-2014/president/news/speeches-statements/pdf/deauville-g8-declaration_en.pdf.
- ISPreview, 2019a. 'Lords Report Propose Fixes for Poor UK Rural Broadband and Mobile'. *ISPreview UK*, 27 Apr. 2019, <https://www.ispreview.co.uk/index.php/2019/04/lords-report-propose-fixes-for-poor-uk-rural-broadband-and-mobile.html>.
- ISPreview, 2019b. 'Guidance'. GOV.UK, <https://www.gov.uk/government/publications/community-led-broadband-schemes/guidance#before-you-start-forming-a-community-group-and-deciding-on-the-best-solution>. Accessed 12 Aug. 2020.
- Kassem, Mohamed, et al., 2018. 'DIY Model for Mobile Network Deployment: A Step Towards 5G for All'. *Proceedings of the 1st ACM SIGCAS Conference on Computing and Sustainable Societies*, Association for Computing Machinery, 2018, pp. 1–5. ACM Digital Library, doi:10.1145/3209811.3212703.
- Liddall, J., 2020. 'Combating Digital Exclusion'. *People Know How*, 13 May 2020. peopleknowhow.org, <https://peopleknowhow.org/combating-digital-exclusion>.
- Mohideen, A. I. C., et al. "Free" Public Access to Internet Services via Satellite for Rural UK'. *International Journal on Advances in ICT for Emerging Regions (ICTer)*, vol. 11, no. 2, 2, University of Colombo School of Computing, Nov. 2018, pp. 1–8. icter.sjoi.info, doi:10.4038/icter.v11i2.7196.
- OFCOM, 2020. 'Your Right to Request a Decent Broadband Service: What You Need to Know'. *Ofcom*, 20 July 2020, <https://www.ofcom.org.uk/phones-telecoms-and-internet/advice-for-consumers/broadband-uso-need-to-know>.
- OFCOM, 2019. 'Statement: Delivering the Broadband Universal Service'. *Ofcom*, 6 June 2019. www.ofcom.org.uk, <https://www.ofcom.org.uk/consultations-and-statements/category-1/delivering-broadband-universal-service>.
- OFCOM, 2018. https://www.ofcom.org.uk/data/assets/pdf_file/0027/121977/affordability-tracker-2018-data-tables.pdf. Accessed 12 Aug. 2020.
- People Know How, 2020. Computer Delivery. <https://peopleknowhow.org/computer-delivery>. Accessed 12 Aug. 2020.
- Quaglione, Davide, et al., 2020. 'Are Mobile and Fixed Broadband Substitutes or Complements? New Empirical Evidence from Italy and Implications for the Digital Divide Policies'. *Socio-Economic Planning Sciences*, vol. 71, Sept. 2020, p. 100823. ScienceDirect, doi:10.1016/j.seps.2020.100823.
- Schofield, Jack., 2018. 'How Can I Get Faster Broadband in a Rural Area?' *The Guardian*, 31 May 2018. www.theguardian.com, <https://www.theguardian.com/technology/askjack/2018/may/31/how-can-i-get-faster-broadband-in-a-rural-area-bt>.
- Scottish Government, 2017. *Realising Scotland's Full Potential in a Digital World: A Digital Strategy for Scotland - Gov.Scot*. <https://www.gov.scot/publications/realising-scotlands-full-potential-digital-world-digital-strategy-scotland>. Accessed 12 Aug. 2020.
- Sutherland, Ewan, 2017. 'Broadband in Scotland : Broader, Faster, Poorer, Remoter'. *Fraser of Allander Economic Commentary*, edited by Graeme Roy, vol. 41, no. 1, 1, Mar. 2017, pp. 93–119.
- Townsend, Leanne, et al., 2013. 'Enhanced Broadband Access as a Solution to the Social and Economic Problems of the Rural Digital Divide'. *Local Economy*, vol. 28, no. 6, SAGE Publications

Ltd, Sept. 2013, pp. 580–95. SAGE Journals, doi:10.1177/0269094213496974.

Tully, Stephen., 2014. 'A Human Right to Access the Internet? Problems and Prospects'. *Human Rights Law Review*, vol. 14, no. 2, Oxford Academic, June 2014, pp. 175–95. academic.oup.com, doi:10.1093/hrlr/ngu011.

UK Government, 2020. 'Making Public Service Delivery Digital by Default'. GOV.UK, 25 June 2020. www.gov.uk, <https://www.gov.uk/government/news/launch-of-gov-uk-a-key-milestone-in-making-public-service-delivery-digital-by-default>.

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