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## Conference Paper Public internet access in areas of deprivation: The case of Glasgow

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## Public Internet access in areas of Deprivation: The case of Glasgow

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### Abstract

The Internet plays an increasingly central role in the lives of individuals. Through the Internet, individuals can engage in a wide array of activities such as shopping, participating in social networking activities, obtaining information and so forth. Given the extent to which the Internet is now used, those without access are placed at a disadvantage. They will miss out on the savings that occur when you shop online, lose contact with friends and family by not engaging in social networking and lack information on which to make decisions.

This paper explores the role that libraries may play in providing Internet access. This is examined within the context of Glasgow, a large post-industrial city where Internet adoption is lower than in comparable cities and which has a large proportion of its population facing a range of socio-economic hardships. Primary data was collected, from library staff across the city and users in three areas of deprivation.

The analysis demonstrates the role played by libraries as the provider of public Internet access. It also shows that this role is not without its difficulties – inadequate levels of resources have been provided to fulfil the multiple roles played by libraries in these communities. The data highlights the wide range of activities that users undertake online. In addition, the analysis shows how government policies shape the scope and quality of the infrastructure that is available while encouraging further use of the Internet in libraries.

Keywords: Glasgow, libraries, Internet access

## **1. Introduction**

The Internet is increasingly playing a central socio-economic role. Large parts of the economy rely on the Internet to sell and distribute their goods and services, while social activities are often underpinned by some form of online activity. This is demonstrated by the rise of large online retailers like Amazon and the widespread use of social networks, online content etc. across society. Given how important the Internet has become, those without access to it are clearly disadvantaged. While broadband adoption has steadily increased across the UK, there are large differences across the country in terms of the urban-rural split on the one hand and between different cities on the other. Although broadband adoption has steadily increased in Scotland, within Glasgow, the country's largest city, adoption has stagnated.

The reason for this stagnation is unclear. There are many socio-economic problems associated with Glasgow, though cities with comparable levels of populations and similar socio-economic characteristics all appear to have achieved higher levels of broadband adoption. Many parts of the city can be described as impoverished, with limited numbers of people working and low life expectancy. While this partly explains the low level of broadband adoption within Glasgow, it raises another issue that is the focus of this paper, namely, are individuals living in these areas obtaining access to the Internet through others means? Some Glaswegians may have access through a dongle, while others could use a smartphone. A third alternative, public provision, is the focus of this paper. Glasgow has an extensive network of public libraries across the city that offer the opportunity for free Internet access to library members. If these libraries are being used to access the Internet, what motivates the users and what activities are they undertaking online? This paper, through the analysis of primary data, seeks to address these questions.

With this in mind, the remainder of the paper is divided into six main sections. In Section 2, the digital divide that exists within Scotland and Glasgow is described. This is followed in Section 3 by a discussion of public Internet access. The methodology adopted in the paper is outlined in Section 4, with Section 5 presenting the results of the analysis. These results are drawn together in Section 6, with the interaction between them presented in a series of causal maps. Conclusions are drawn in the final section of the paper.

### 2. The digital divide in Scotland and Glasgow

In its simplest form the digital divide (hereafter DD) represents a gap in access to and use of digital or electronic information between different sectors of society and first arose around the end of the 1990's (Van Dijk, 2005). It has been argued that it is just another facet of social exclusion (Rafferty and Steyaert, 2007) and 'diminishes the chances of participation in all relevant fields of society' (VanDijk, 2005, p177). Epstein, Nisbet & Gillespie (2011) go further, splitting DD into access to technology and capacity to use technology. Access to digital information is for some an entitlement similar to that of other household utilities (Westminster e-forum, 2012; European Commission, 2009). Others make a stronger case stating 'Access to information and ICT services needs to be considered as a human right' (ITU, 2012, p82). However, from an ethical standpoint they also state that there needs to be further discussion on the right not to be connected and the consequences that arise (*ibid*,

p103). Mayer (2008) argues that as broadband (BB) is distributed and has different speed characteristics which affect its usefulness for certain applications, it cannot be labelled a utility.

Recognition of the importance of access to broadband services was part of the UK Government's universal service commitment, where they stated 'delivery of 2Mbps to virtually every household by 2012' (BIS, 2010). Even though BB is available in 99.87% of households (Ofcom 2012, p8), in Scotland uptake is only 70% (Ofcom 2013b, p8). Thus, around 700,000 households in Scotland lack Internet access (Scottish Government, 2012a). This has numerous implications for individuals and government. The implications for government relate to two specific policies. Firstly, the roll out of 'Digital by Default' for online public services (Cabinet Office, 2012), and secondly changes to the welfare system. The government will push public service access online as a way of achieving savings of £1.2 billion by 2015. More pressing are proposed changes to the welfare system, with the introduction of universal credit for the unemployed requiring Internet access to update and make online claims through the Department for Work and Pensions website (Alexander, 2012). In addition, Glasgow City Council (GCC) recognises the low levels of BB uptake in the city when it stated that the Glasgow Advice and Information Network (GAIN) service cannot rely on electronic means for contacting people and printed and pictorial matter must be provided in multiple locations (GCC, 2011, p35). This is, of course, a clear contradiction of the 'digital by default' strategy. In order to fulfil its aims GoOnUK<sup>1</sup> emphasises the need to encourage easy access, awareness of the benefits of being online and the development of basic skills to maximise the potential offered by digital technologies (Koss et.al, 2012). Individuals need frequent, convenient and flexible use of digital technology and access to information to enable them to be part of the digital revolution and an equal member of society. Although access to online information is an important issue in several areas, such as education and socialisation, an inevitable question to ask is what about those who are unable to participate due to a lack of broadband connection? The following sub-section identifies some of the drivers and barriers to Internet adoption, and is followed in Section 2.2 by an overview of some of the initiatives that have been undertaken to encourage adoption.

## 2.1 The drivers and barriers for Internet access

There is an extensive literature on the barriers to and drivers of household Internet access. Part of this literature is summarised in Table 1 and is divided into various factors (demographics, education etc.).

#### [Insert Table 1 about here]

Based on demographics factors, users are less likely to use the Internet if they are older, from an ethnic minority, female, have no children or are from a deprived area (Scottish Government, 2012; Ofcom, 2013b; Larose et al, 2012; Prieger & Hu, 2008; Dutton & Helsper, 2009; Selwyn, 2004). Enyon (2009 p281) specifically investigated the DD in terms of education and learning, finding that "use of the Internet is shaped by socio-economic,

<sup>&</sup>lt;sup>1</sup> GoOn U.K. began in 2009 with government appointment of a 'champion for digital inclusion'. It now runs as a charitable organisation with the aim of 'making the U.K the most digitally skilled nation'.

demographic and attitudinal factors". Those educational and skill related factors that influence the likelihood of using the Internet are, not at work, low technology and equipment skills, basic education level, low Internet skills and technology confidence and low levels of Internet experience (Selwyn, 2004; Scottish Government, 2012, Dutton & Helsper, 2007; CCP, 2012: Helsper, 2008; Hatgittai & Hinnant, 2008; Eynon, 2009).

Economics also influence use of the Internet. The Scottish Household Survey reports that in Scotland only 50% of those earning less than £15,000 per year use the Internet, with this figure rising to 98% for those whose yearly incomes are above £40,000 (Scottish Government, 2012). Ofcom reports this for Glasgow, showing similar trends - only 38% of households in lower socio-economic groups have a fixed broadband connection. This figure, however, rises to 87% for more affluent groups (Ofcom, 2013b). More people in Scotland than England said cost was a factor.

The social aspects of adopting something new are fundamental to driving adoption (Rogers, 2003), with the social experience of learning important for older people (Radcliff & Winkler, 2011). The structure of social networks, as well as direct social influence and neighbourhood relations, mediate ICT and Internet use (Dwivedi & Williams, 2009; Crang, et al, 2006; CCP, 2012). A Communications Consumer Panel study interviewed 48 Internet users with low levels of digital engagement and 44 stakeholders (CCP, 2012), finding that a 'lack of interest,' 'fear of technology' and failure to prioritise use, due to being unable to perceive benefits, were factors likely to prevent adoption. They also found that a 'fear of being excluded' could be a driver for some. If non-users are able to use the Internet by proxy – that is, someone else is able to go online for them - then they are less likely to use the Internet themselves (White, 2013; Ofcom, 2012a). A negative attitude to technology is also a barrier to being online (Eynon, 2009; Verdegem & Verhoest, 2007; DiMaggio et al, 2001). Eynon (2009) found that 91% of those with a 'positive attitude' (2007, n=2350) were current Internet users. Peer pressure and the household context may also act as a barrier to going online (Agarwal, Animesh & Prasad, 2009; Selwyn, 2004).

From the above, it is clear that a multitude of factors effect the decision to obtain Internet access at home. Some are particularly applicable to households, while others are wider in their application. Collectively, however, they suggest areas that policy initiatives could be undertaken in to encourage Internet adoption. These initiatives are discussed in the following sub-section.

#### 2.2 Policy initiatives

The regulation of telecommunications in the UK consists of a "complex and interlocking regulatory, self-regulatory, judicial and appellate bodies, interacting with parliamentary systems" (Sutherland, 2011, p1). This extends to complexities in policy derived from the division of tasks and responsibilities between different layers of government and a sequence of organisational changes that have occurred (*ibid*, p3). One key component of this is the devolution of power to the Scottish Government that has control over some aspects of telecommunications policy. In addition, complexity arises from cities competing against one another to attract investment and raise their profile (PWC, 2005, p1).

The UK Digital Strategy had a number of actions none of which were measurable or specific (Sutherland, 2011, p8), leading to lack of accountability and uncertainty regarding performance measurement. Responsibility for digital strategy in both Scotland<sup>2</sup> and Glasgow<sup>3</sup> is currently being developed, and it is hoped that this will include key measures of performance and linked objectives. Those policy initiatives that have been developed are discussed in the remainder of this sub-section.

## Infrastructure and speed

Broadband infrastructure was a significant problem in rural Scotland due to geography and economies of scale. In 2010 Ofcom began reporting on urban and rural telecoms across the UK. (Ofcom, 2010). As early as 2009 there appeared to be problems with local loop unbundling (LLU), which was lowest in Scotland (70%) and highest in England (87%). Those in urban areas of the UK were twice as likely as those in rural areas to be able to get LLU services (Ofcom, 2010, p110). As a consequence of the attention directed towards rural infrastructure provision, rural household broadband uptake increased to 73% in 2013 (Ofcom, 2013b). However, the story in Scotland's urban areas is different with uptake reaching just 69% by 2013 (Ofcom, 2013b). It would appear that the implicit assumption that urban uptake would increase once the infrastructure was made available has not materialised.

## Household adoption

The development of policies to encourage household adoption reflects the complex policy making framework noted above. Some of the initiatives emanate from the Scottish Government, while others originate in London. As a result, tensions emerge in terms of the funding that is provided and how the policy is implemented. As yet more policies are generated by NGO's, charities and local authorities what emerges are an incoherent policy direction and a lack of coordination. For example, some UK initiatives do not reach the nations and have an uneven impact across the country. Libraries across England were encouraged to work with UKOnline<sup>4</sup> (DCMS, 2010, p10), with libraries stated as being 'a vital component in guaranteeing universal access' (*ibid*, p39). However, Scotland has not followed this as library management is devolved and the responsibility of individual local authorities (Scottish Government, 2011).

## Broadband uptake in Glasgow

On several occasions Ofcom has drawn attention to the level of broadband uptake in UK cities. Broadband adoption in Glasgow remains low, at just 50% (Ofcom, 2013b, p30), though as Table 2 shows this has fluctuated by year and study. Interestingly, the 'adoption gap' that occurs between Glasgow and the other UK cities included in the Ofcom studies exists across all social groups and ages (Ofcom, 2012, p16).

## [Insert Table 2 about here]

Glasgow is Scotland's largest city. Cities play a key role in social and economic activity (Mossberger et al, 2013, p5), with their increases in productivity outpacing their growth in

<sup>&</sup>lt;sup>2</sup> <u>http://www.scotland.gov.uk/Topics/Economy/digital</u> accessed 28th August 2013

<sup>&</sup>lt;sup>3</sup> http://www.glasgow.gov.uk/index.aspx?articleid=9758

<sup>&</sup>lt;sup>4</sup> UK Online was re-branded and organised and is now called GoOnUK.

population (Bettencourt & West, 2011). They are, in other words, key drivers of economic growth. Unsurprisingly, Scotland's cities are viewed as being vital to its international competitiveness (Scottish Government, 2011a). Cities are, however, complex and spatially akin to jigsaws with the consequence that there is a need to understand how neighbourhoods within them change over time (Power & Haughton, 2007).

Given the role that broadband can play, both economically and socially, within cities, its adoption has been examined in numerous locations (Mossberger et al, 2013). Not all of these studies are relevant for us. More useful are those studies that highlight public access initiatives through libraries and other mechanisms. In Philadelphia a range of organisations – community groups, not-for-profits, universities, city officials – collaborated to provide access to computers while training them in their use (technicallyphilly, 2013). They provided access and training at multiple points across the city, providing access where broadband uptake was at its lowest – 813 workstations and WiFi access points have been provided in areas of economic deprivation to encourage public use.

WiFi access has been provided in Austin, Texas. The initial success of public WiFi in the city was underpinned by volunteers and by virtue of being free (Straubhaar et al, 2012). Interestingly, those initiatives that were locally generated appeared to survive funding cuts (*ibid*, p157). In Chicago, a large and diverse city, affordability was found to be a specific issue in poorer neighbourhoods (Mossberger et al, 2013). In 2009 Chicago received funding to integrate technology into neighbourhoods as they were being regenerated and to upgrade 150 public access facilities across the city. The five neighbourhoods that received the support each developed their own outreach and training strategies.

Together these three examples of US cities illustrate public provision of Internet access in deprived areas and the need for active community participation to sustain the initiatives. This does not, of course, guarantee success. Local libraries play a pivotal role in providing Internet access, especially in poorer communities (Mossberger et al, 2013, p6). The Internal Revenue service in the USA announced that they would not issue tax forms and directed people to use libraries to go online if they did not have household access (American Library Association, 2011). This demonstrates the US government's move online and thus the necessity of public access to be available. In England the importance of libraries is recognised as vital to guaranteeing universal access, specifically for e-government services (DCMS, 2010, p39). However, the first step in achieving universal access, which is discussed in the next section.

#### **3. Public Internet access**

In the UK libraries have provided public provision of Internet access since 2002. Lottery funding totalling  $\pm 120m$  was provided to libraries across the UK to develop and install computer and Internet access (Big Lottery Fund Research, 2004). Parts of the funds were to train library staff. Although now a core library service, Internet access is just one of several services that they provide with the consequence that tensions may arise.

In Scotland, libraries are the responsibility of the Scottish Government, with Local Authorities in turn responsible for ensuring adequate provision (Scottish Government, 2011).

The Scottish Library and Information Council (SLIC) is an independent advisory body responsible for public library standards. In their strategic plan they state that "Libraries are welcoming, free, safe and politically neutral public spaces", providing free books, information and learning (SLIC, 2011). They also state that libraries provide support for "skills, employability and research", for both "individuals and families". There is also mention of "public access computers offering access and support to use local and national government online services". However, no mention is made of the role libraries play in the leisure and social activities of library users.

Glasgow libraries are the largest public network of libraries in Scotland. The 33 libraries across the city are operated by Glasgow Life, a brand of Culture and Sport Glasgow (CSG), on behalf of Glasgow City Council. This 'arm's length external organisation' (ALEO), was created in 2007 and runs over 140 venues, including libraries, across the city and had a turnover of £117.2m in 2011/12, £ 78.1m of which comes from GCC, (Glasgow Life, 2011/2012, p41). The driving force behind the creation of the CSG ALEO was cost savings, with these reaching more than £35 million by 2012 (Culture and Sport Glasgow, 2012).

GCC has a number of ALEOs, one of which is 'Access', which is run by Serco<sup>5</sup> and responsible for managing a number of GCC services. This includes ICT across GCC, incorporating both library computers and the council's broadband network. The Limited Liability Partnership runs for 10years until 2018, with the contract worth £265 million in total. It has a target to save £50m over that period (Sotiropoulos & Duckworth, 2011). They also state that the £5m network and telecoms contract was re-negotiated to save £1m. While cost savings are a key priority of GCC, the use of partnerships is not without its problems. The technology is frozen and cannot be changed unless the contract is re-negotiated. In 10 years, desktops, laptops and even tablets may be hardware of the past (Davis, 2012). This could result in libraries having outdated technology, both in terms of computer access and the network capacity limiting the online experience.

#### **3.1 Public Internet, the users**

A survey of 38 'Citizens advice bureaux'<sup>6</sup> across Scotland showed that 45% of their clients who used a computer outside their home, did so at a public library (Beattie Smith, 2013). Another 38% used a computer at a friend or family's house. Although the role of the library as a place to access the Internet is well established only 4% of Scots with home access use the library for Internet access (Ofcom, 2012a, p9).

There are many challenges ahead for libraries and, according to Gomez (2012, p66), users desire multiple things from their library – information, entertainment and socialisation. These needs can be satisfied by the Internet but libraries need to be 'relevant and cool places to go' (p72) if they are to service the diverse needs of the population. However, in order to deliver such services it is necessary to understand who actually uses libraries for Internet access. Thus:

<sup>&</sup>lt;sup>5</sup> Serco is the partner organisation to Glasgow City Council, chosen via a competition between IBM, BT, Capita and Serco in 2007/8.

 $<sup>^{6}</sup>$  CAB is Scotland's largest independent public advice network with 250 service points across Scotland. 38 bureaux took part in the survey (individual respondents =1181) over a one week period.

#### RQ1 Who uses the public Internet in libraries?

Those using the Internet in libraries may also use it elsewhere. Viseu, Clement & Aspinall (2006) find that "public and private access modes intertwine with each other in a variety of ways, the combination offering significant additional value for many users". This makes it important to determine what other Internet access library users have, and the reasons why they use the library.

WiFi is another way of providing public access to the Internet and some US cities have attempted to address digital exclusion by investing in city wide WiFi. Tapia et al (2011) analysed three cities (Philadelphia, San Francisco and Chicago), finding that all failed to deliver a useful service to underserved communities. Free WiFi is used most by those already accessing the Internet in other places. Some Glasgow libraries provide WiFi and it is also widely available across the city in 350 'hotspots' (Yardley, et al, 2013, p69). In Glasgow the location of hotspots does not reflect the population distribution and it is not freely available (Yardley, et al, 2013, p7). Cost and perhaps skills will ensure that WiFi is not available to some. Given the competing ways to access the Internet, a second question that can be asked is:

#### RQ2 Do library Internet users have access to the Internet elsewhere?

Public Internet access should be available for all. However, those on lower incomes or from low socio-economic groups may be the most likely users. Some of these may be new or novice users. Determining the skill levels of users enables judgements to be made regarding whether they are making the most of free public Internet access. Thus:

RQ3 What is Internet skill level of library users?

## 3.2 Barriers and drivers for Internet use

Gomez (2012) identifies a number of barriers to public Internet access. Barriers include inconvenient operating hours and locations (Gomez, 2012, p5) and not being seen as a 'popular destination' with people choosing other places within the community to access the Internet, especially if the other venues had well trained staff able to offer relevant assistance. Gomez (2012) reports that libraries suffer from an image problem – they serve students and are viewed as being 'out dated' though necessary. Gomez (2012) also found that the most successful public access venues had two important features: 'strong infomediaries<sup>7</sup>, and/or strong community engagement. Consequently, training staff and building their digital capacity are important. Involvement of the local community and being able to serve their needs may mean, as Gomez (2012) suggests, that the technology is less important than the perception that the space belongs to the community and is seen as a gathering place.

The limited number of computers and restricted opening hours may act as a barrier to use (Bertot et al, 2008; DeMaagd et al, 2013; Jaeger et al, 2006; Rhinesmith, 2012). In the United States, libraries report that they are unable to meet demand resulting in long waiting times

<sup>&</sup>lt;sup>7</sup> infomediaries are 'laison or broker between an individual or group of persons and another group' (Gomez, 2012, p24).

and restricted access to computers (Becker et al, 2010, p17). This may be distressful, especially for those seeking employment.

How many computers are available in Glasgow's libraries? In 2010 Philadelphia received Federal funds to build a network of 77 public computer centres that were located in areas with the least access to the Internet. These centres collectively provided 829 workstations across the city for public access, a rate of 55 computers per 100,000 people. The Chartered Institute of Public Finance Accounts examined public Internet access in 16 local authorities and found that Manchester, a comparable city to Glasgow, had 120 computers per 100,000 people (CIPFA, 2012). WiFi was available in 30% of its libraries. In contrast, Sheffield had 50 computers per 100,000 people and no available WiFi. On average, England has 70 computers per 100,000 people.

In Glasgow libraries have 633 computers for public Internet access (Glasgow Life, 2013a). This equates to a rate of 107 computers per 100,000 people, with 18% of city libraries with WiFi. Different public access rates are shown in Table 3. Glasgow has the most static libraries for the population of the city - 5.6 per 100,000 versus 3.6 for Philadelphia. Manchester, in contrast, has more computers but these are concentrated in fewer venues.

#### [Insert Table 3 about here]

In Glasgow's libraries public Internet access is limited to a maximum of 1 or 2hrs per day. This is substantially less than the self-reported use of 17 hours per week in 2012 (Ofcom, 2013c, p4). Moreover, the opening hours of libraries also place restrictions on users – Bertot et al (2008) found that libraries in the United States were open, on average, 54.2 hours per week, while libraries in Glasgow are open for 49.8 hours. Manchester, which is comparable in size to Glasgow, has just 23 libraries with only a third of them open more than 45 hours a week (CIPFA, 2012). In contrast, all but one of Glasgow's libraries is open more than 45 hours a week. Although the opening hours of libraries in Glasgow would appear to be generous, they may not be convenient. Thus:

#### RQ4 Are Glasgow libraries convenient for users providing suitable access to the Internet?

Restrictions on access, privacy and filtering are related to the definition of a library. Is a library for education and information access, or is it also for leisure, socialisation and entertainment. Internet filtering is a clumsy method of restricting access to information (McMenemy, 2008), but is perhaps a necessity on public access systems. DeMaagd (2013) suggests that filtering should be addressed on a case-by-case basis, though some users could be deterred from asking for websites to be released.

The quality of access defined in terms of speed, privacy and security could cause users to become disillusioned with Internet access. CILIP (2005) states that legal content should be freely available. Brown (2013) questioned all 31 Scottish local authorities about content filtering in libraries, finding that 24 cited 'preventing access to illegal and/or inappropriate content' as a motive for filtering. In Austin (Texas) public libraries Internet access is filtered but there is also a provision of one or two computers that are physically screened for adult use (Straubhaar et.al., 2012, p172). Thus:

RQ5 Is privacy, safety, security and filtering a problem for library Internet users?

Support is required to encourage public Internet access use. This assistance comes in two forms, basic training to get online and on-going support for new users. Libraries provide such support in Glasgow. CCP (2012) found that structured courses, taster sessions and well-trained dedicated staff are vital if libraries are to provide support to users. Staffs also need to be trained so that they are able to overcome the low self-confidence and unfamiliarity with ICT of some would-be users that Gomez (2012) identifies.

Support for the inexperienced user could come from their social network or through using public Internet access. This assistance may take the form of helping users complete online forms. Two-thirds of those surveyed by Beattie-Smith (2013) stated that they would need assistance to make and complete an online application form. Applying for jobs online also required support. Training and support needs to be community based and targeted to the needs of specific groups perhaps even individuals (Radcliffe & Winkler, 2011: White, 2013). While training can help users get onto the bottom rung of the 'opportunities ladder' (Livingstone et al, 2012), they could fall off it later on if subsequent support is lacking, infrequent or inappropriate. Hence:

## RQ6 Are library Internet users getting the support they need from library staff?

In addition to the barriers to public Internet use there are also a series of drivers that can encourage the move online of individuals. Jayakar & Park (2011) argue that use can be encouraged by awareness raising campaigns, while Larose et al (2012) suggest that social factors are important. Friends and family may encourage the use of the Internet, as could use of the library for other services only to discover that Internet access was also available. White (2013) interviewed 200 people from deprived parts of Glasgow and found that 136 had never used the Internet before, and argues that the individual's attitude towards technology is a key factor in determining whether they will go online. In contrast, the 'digital by default' strategy of the UK government is pushing individuals online. As motives to going online differ, the following question is necessary:

#### *RQ7* What were the important factors in the decision to go online?

What activities do library Internet users undertake? Gomez (2012) suggests that users require information, socialisation and entertainment. The first of these equates to the traditional role of libraries. In the United States 40% of library computer users use the service for career and employment activities, with 42% using it for education and training (Becker, 2010), with those below the poverty line depending on its resources the most. Dailey et.al (2010) found that introducing new users to the Internet using low-pressure activities such as social networking, gaming or shopping empowered users. Online social networking was important to those using public Internet centres within low-income communities (Schejter & Martin, 2012). On the other hand DeMaagd (2013) found those who relied solely on libraries as their as their primary source of Internet access were more likely to be those using it for job searches, news, entertainment, social networking and e-mail. We adopt Gomez's categorisation and add an additional category of economic activities (including job search).

It is not just user activities that are important determinant of the type of user but also how long they spend online. Ofcom (2013c) found that more recent adopters claimed to spend less

time online. There were also considerable differences between demographic groups; for example, those in lower socio-economic groups have lower overall volume of use than others do. Men are also higher volume users than women. Thus:

## RQ8 What activities are users of public Internet in Glasgow engaged in and for how long?

Users who have more locations from where they can access the Internet, tend to engage in activities from which they could benefit (Hassani, 2006). Hargittai & Hinnant (2008), looked at the activities of 18-26 year olds to determine if Internet behaviour can have an effect on social mobility or benefit these users. They found that the skills reported by users were an important predictor of whether they used the Internet for 'enhancing activities' (*ibid*, p618). This highlights that self-confidence and knowledge are important factors to some segments of the population in terms of going online.

In summary: large cities such as Glasgow have areas of uneven uptake of household broadband and use of information technology. Determining why this is so would enable appropriate strategies to be designed and the various ambitions of Glasgow, not least of which is to be the UK's first digital city (Geere, 2013), to be fulfilled.

## 4. Methodology

This section is divided into two. In the first sub-section an overview of Glasgow is provided, in terms of its demographic as well as economic characteristics. This is then followed by a discussion of the methodology adopted in the paper.

## 4.1 Glasgow

Glasgow City Council (GCC) is the largest local authority in Scotland, with an annual budget of £2bn and a workforce of 40,000 (Serco Institute, 2011). Glasgow is a post-industrial city and is recognised as an area with high levels of deprivation. Bazalgette et al. (2012), in their large-scale analysis of Scottish families using Scottish Household Survey data from 2009/2010, found Glasgow 'had the highest proportion of households with four or more disadvantages' (p13) – 11% of families in Glasgow fall into this category. They developed a list of seven indicators of disadvantage similar to those of the Scottish Index of Multiple Deprivation (SIMD). These indicators are used to show that of all the local authorities in Scotland, Glasgow has the highest level of those claiming workless benefits. This is confirmed by ONS (2013), which states that in 2011 28.7% of households in Glasgow were workless, the highest in Scotland.

## Demographic characteristics

Glasgow has a population of 593,000 (Scotland's Census, 2011), 11.2% of Scotland's population. The city is split into north and south by the River Clyde, with around two thirds of the population living north of the river. A map of the city is provided in Figure 1.

## [Insert Figure 1 about here]

The city has a large student population amounting to 11% of the city's population. Only 19% of students who study in Glasgow come from the city. Glasgow graduates tend to remain in the city, with a reported 42% staying after their studies (Herald Scotland, 2012).

There is the possibility that this large student population has some effect on the broadband uptake figures.

In terms of age, deprived areas, which are defined as the worst 15% of data zones in the SIMD, in 2010 had higher levels of people under 15 years and over 65 years compared to the rest of the city (Freekie, 2012). The city also had 12.8% black minority ethnic (BME) population, the largest group being Pakistani 3.5% (p8). This population is less likely to live in a deprived area, apart from those of African descent who are almost twice as likely to live in a deprived area. Housing differs from the rest of Scotland. In 2012 only 48% of Glaswegians owned their own home, whereas across Scotland the figure is 60% (GCC, 2011, p16). There are more single parent households in the most deprived areas of Glasgow compared to the rest of the city (Freekie, 2012, p12). There are also higher levels of residents without qualifications, compared to both Scotland and the UK (Nomis, 2012).

## Economics and deprivation

Glasgow has a lower percentage of economically active residents (70.8%) than both Scotland (77%) and the rest of the UK (76.7%) (Nomis, 2012). Some of this economic inactivity is due to the large student population, however, a third is due to the long-term sickness (Nomis, 2012). Glasgow also has a greater proportion of residents in elementary occupations<sup>8</sup> compared to Scotland or the UK (Nomis, 2012). Glasgow employees also earn less per week – weekly wages are £474.90 in Glasgow, £498.30 in Scotland and £508 in the UK (Nomis, 2012). It is, therefore, no surprise that just over a fifth of Glaswegians were income deprived (SIMD, 2012, p3).

Glasgow also suffers from issues surrounding access to credit. At least 4,000 and perhaps as many as 6,000 households, do not have access to a bank account (Alexander, 2012, p14). This absence of a bank account can have an impact in multiple areas of someone's life due to the norms and systems within society today. For example, without a bank account you are unable to demonstrate your credit history, making it almost impossible to obtain a fixed line broadband or a mobile phone contract.

## 4.2 Methodology

Geographic mapping provides a visual picture of the city as seen from different viewpoints. Gonzales (cited in Straubhaar) stresses the value of resource and population mapping for seeing how resources are distributed, especially in different communities (Straubhaar et. al. 2012, p10). Grubesic (2006) uses spatial autocorrelation to map broadband in the United States, finding that islands of inequity exist in established urban areas that have high populations of impoverished minorities that are not attractive to providers. Milne, (2006) discussed universal service as having three components of availability (geographically), accessibility (ability) and affordability, again highlighting the importance of the geographic component in relation to broadband. Thus, mapping city demographics and economics

<sup>&</sup>lt;sup>8</sup> Elementary occupations are classified using the Standard Occupation Classification (SOC). These occupations are defined as those that 'require knowledge and experience to perform mostly routine task', using simple hand tools and requiring some physical effort. Requiring no formal qualifications. <u>http://www.ons.gov.uk/ons/guide-method/classifications/archived-standard-classifications/standard-occupational-classification-2000/dissemination-media-and-availability/soc2000-volume-1.pdf</u>

together with broadband information should provide a clear indication of areas where there are specific issues.

Demographic factors across Scotland are already mapped using census data and split into datazones with populations between 500 and 1000 household residents. The datazones were created to standardise data releases and allow multiple sources to use a common geography (White, 2011). There are 6505 datazones across the whole of Scotland, with 694 of them in Glasgow. Each SIMD datazone is associated with a number of postcodes (SIMD, 2011). The latest available SIMD data was released on December 2012. The index combines 38 indicators across seven domains (income, employment, health, education, skills and training, housing, geographic access and crime). The overall index is a weighted sum of the seven domain scores.<sup>9</sup> Glasgow has 30% of the most deprived datazones in Scotland (Scottish Government, 2013).

## Mapping deprivation in Glasgow

Figure 2 shows the overall deprivation ranking using the SIMD. Lighter areas are more deprived than darker areas, highlighting in the process specific areas of the city as being particularly deprived and thus worthy of investigation. Public Internet access points in libraries in the north and east of the city are also highlighted. These areas of deprivation are also those areas most likely to have lower broadband uptake levels.

## [Insert Figure 2 about here]

## Mapping broadband

As the Scottish Household Survey asks whether respondents use the Internet (Hope, 2010), it is possible to use this data in conjunction with SIMD datazones to map differing levels of broadband adoption across Glasgow. There are 694 datazones with between 12 and 1 householders surveyed. These were grouped over the survey period (2009/2010) and the media value for each datazone calculated. The results in Figure 3 show areas of the city where households are less likely to have the Internet at home, once more highlighting areas to the north and east of the city.

## [Insert Figure 3 about here]

## Identifying areas for investigation

In order to identify areas for investigation SIMD was mapped highlighting areas that were particularly deprived and had datazones with a rank less than 30. The map is shown in Figure 4.

## [Insert Figure 4 about here]

Figure 4 highlights areas of specific interest. Individual datazones do not have a verbal description and the nearest intermediate datazone descriptor has been used to identify the areas for further investigation. All three areas have two or more datazones below a rank of 30

<sup>&</sup>lt;sup>9</sup> The domains are weighted and expressed as a percentage of the overall weight, income (28%), employment (28%), health (14%), education (14%), geographic access (9%), crime (5%) and housing (2%). Full technical details on the methodology and construction of each indicator in the SIMD 2012 are available in the Technical Notes published online http://simd.scotland.gov.uk/publication-2012/

for overall SIMD deprivation rank. In practice this means that each of the three identified areas for the study has more than one datazone that is in the bottom 0.5% of all datazones across Scotland. The areas are:

- 1. Possil/Milton
- 2. Cranhill / Easterhouse
- 3. Parkhead / Barrowfield

Although cities have resources to address public access and training, they have limited influence over the cost of household broadband provision that is set by individual providers. Not only would any attempt to subsidise provision be costly, it would require political support as well.

## Target libraries

There are eight libraries in the target areas with public access to the Internet, with some offering free WiFi as well. Primary research was undertaken involving the collection and analysis of quantitative and qualitative data from a number of sources.

Firstly, interviews with library management and a web based of survey of staff at Glasgow libraries were conducted to provide a view of the service from the provider's viewpoint. Secondly, this was then followed by a survey of users at the eight target libraries. May (2008) suggests that surveys are useful in that they inexpensively and quickly provide data. The survey provides data for statistical analysis and insight into participant beliefs through the use of open questions. The survey was undertaken in June and July 2013, with only those library users who had used the public Internet computers being asked to participate. Thirdly, participant observation was conducted in each of the libraries. This allowed information provided by participants to be triangulated with other sources.

## [Insert Table 4 about here]

This resulted in 18 library staff responding to the online survey (69%<sup>10</sup> response rate) and 130 users surveyed across the eight target libraries.

## 5. Analysis

In this section, the data is analysed. However, before this occurs we begin by presenting a map of Glasgow that highlights the location of the libraries and the overall SIMD datazone ranking across the city. This map, Figure 5, clearly shows that libraries are not positioned in areas of deprivation but spread across the city. It also becomes clear that some areas with high levels of deprivation (lighter in colour) have the least numbers of computers for public Internet access.

## [Insert Figure 5 about here]

## 5.1 Staff survey

The electronic survey was sent to 26 members of staff at Glasgow libraries, with 18 responding. Staff were asked questions relating to Internet access at libraries as well as general information about the services provided by their library. When asked 'what a library

<sup>&</sup>lt;sup>10</sup> The survey was sent to 26members of Library staff

is for' they overwhelmingly responded that it is a place of learning and recreation which should be at the heart of a community. Over two thirds of survey respondents did not know if there was any other place in the community where there was free access to the Internet. This is disappointing given that libraries are viewed as community information resources.

### Library attendance

Many now make virtual visits rather than in person,<sup>11</sup> with 134,000 active members of Glasgow libraries. This analysis looks only at visits in person, which is measured using 'electronic people counters' built into security gates or entrances. According to the data supplied, between 2001/2 and 20012/13 library attendance has fallen in over three quarters of Glasgow's libraries. This is shown in Figure 6.

### [Insert Figure 6 about here]

After the computers were installed there was in general an increase in visitor numbers to Glasgow libraries. However, this has not continued and in person attendance has declined. There are five libraries where attendance appears to have had not only the biggest influence on overall attendance but whose figures have increased dramatically between these time periods. These five libraries are The Bridge, Pollok, Hillhead, The Mitchell and GOMA. There are a number of factors that could explain these dramatic increases. Several libraries have been refurbished, with facilities combined into a 'single cultural destination' that includes libraries, cafés, sports facilities, theatres and, at The Bridge, a joint venture with John Wheatley College. These refurbished libraries could have increased attendance due the 'people counters' including people attending other facilities in the same venue. For example, The Bridge<sup>12</sup> is a venue containing a library, college, gym, café and theatre where users of all of these facilities can use the library entrance. Pollok library is also refurbished and situated adjacent to a huge out of town shopping centre. Hillhead is in a particularly affluent, densely populated area of the city with a high resident student population. The Mitchell is the city's flagship library and the largest in its portfolio, with GOMA the city centre library which issues visitor passes for computer and Internet use to tourists and visitors not members of the library. Thus, visitor figures may not represent the underlying use of libraries.

## Obtaining access to the Internet at Glasgow libraries

In order to be able to use a computer at a Glasgow library users generally need to register and become a library card holder. To do this, users must show some form of identification and proof of address. This is not the case in city centre libraries where visitors can get a code to use the computers or WiFi. In some libraries users just arrived and went directly onto free computers while in other libraries, especially the older smaller ones, users needed to 'check in' with staff to be told what computers were available and for how long. This is due to the booking system in operation, where computers could be booked in advance. In some cases users pre-book a specific computer, for more privacy.

There is a different system to be able to use WiFi at libraries, where an additional code needs to be obtained, separate from the library card system. The system at the Bridge is

<sup>&</sup>lt;sup>11</sup> 600,000 virtual visits in 2012/13 at Glasgow libraries.

<sup>&</sup>lt;sup>12</sup> Since 2006, arts, learning and leisure integrated in a single location.

different again as the computer and Internet service is managed by John Wheatley College. This complexity could be confusing for users, and maintaining the different log systems a particular drain on staff resources. This is discussed more extensively in the following section.

#### Management of computers and Internet access

Various aspects of the management of computers and Internet access were identified. These will be addressed in turn, with the first one being the booking system. The computer booking is managed by netloan<sup>13</sup> and controlled locally by each library. Users can telephone a library and book a time slot ahead or just turn up and arrange one with staff. If the computers are not busy users may receive additional time. This means users at some libraries could be restricted to 30 minutes a day, whereas those at other libraries could receive more than the maximum 2 hours if it is quiet. Demand is particularly high in city centre libraries, where 30 minute slots have been adopted.

The flexibility of the booking system is confirmed by the staff survey. However, all libraries in the survey said people were sometimes waiting to use the computers, with four librarians stating that they always had people waiting. This means that library location and the popularity of public Internet use there is a factor in how long you are allowed access onto a computer.

This issue with greater demand is corroborated when librarians were asked whether they agree that the library has too few computers to meet demand, 56% agreed that this was the case. Those who did not agree (27%) were the newer refurbished libraries or those in more affluent areas of the city. Staff thought that users generally had enough time online, with only 6% indicating there was not enough time. Having said this, there was disagreement about whether there was enough time for users to complete job applications or job searches effectively.

The broadband speed in libraries is particularly slow with over three quarters (77%) of library staff agreeing that there were issues with connection speeds. In the last year, the average broadband speed has decreased or stayed the same in two thirds of the libraries surveyed. Two staff commented that they (connections) 'desperately need an updated broadband' and 'broadband speed is a major concern and causes problems on a regular basis'.

Bandwidth is shared between staff, library information systems and public computers in libraries. In total, there are around 3500 computers using the limited bandwidth that is available. Higher speeds could be achieved if libraries were connected to JANET; this was recommended to local authorities in England (DCMS, 2010, p10). That libraries in Glasgow are not connected partly reflects how the Scottish Libraries and Information Council manage its network. Funding is divided among local authorities rather than having a strategic plan to develop the library networks as a whole.

The Mitchell, GoMA and Hillhead have had WiFi since 2005, Partick since 2007 and Cardonald and Bridgeton since 2012. There were plans to upgrade WiFi in association with

<sup>&</sup>lt;sup>13</sup> This is a customisable PC booking service provided by http://www.lorensbergs.co.uk/ to public authorities and the education sector.

other Glasgow ALEO's as part of the 'Digital Glasgow' strategy currently being formulated. However, a recent report highlights the desire to aggressively manage costs at GL. WiFi was removed from Pollok library and moved to Cardonald as, according to Watson (2013), "Glasgow Life said it was too expensive to provide the people of Pollok with free WiFi". Due to low demand it was costing 20 times more per session than it did Hillhead library. This should not be interpreted as suggesting there is no demand for WiFi – 65% of survey respondents said that they had been asked about WiFi availability by users at some point during the last year. It is worth noting that the WiFi network in libraries is not run by Access but contracted out by GL to regenerateIT at a cost of £2000 per year per library. The users of the WiFi service use a different login with filtering and restrictions that are different from the wired service.

28% of respondents stated that some computers at their library were more than 6 years old. In addition, three librarians reported that it took longer than a week to get damaged computers back into service. This appears to contradict the stated policy that there is a 3 year refresh program for computers. This could mean that users at some libraries are experiencing difficulties with unresponsive equipment and not receiving the same levels of service.

## Training

Although the librarians role has changed 95% of staff reported being comfortable with the management and use of computers. Some reported being 'perfectly comfortable' and saw it in their role as a professional to 'keep up with changes'. Others, although comfortable, thought that 'current staff training is totally inadequate for all grades'. Almost three quarters of staff (72%) who responded to the survey indicated that they do not have enough training to help individual users with specific applications. For example, one said that 'more is being expected of them from the public and some have no knowledge of social networking sites or music downloading'. Most reported that there is no on-going or new staff training to allow them to be able to assist users on the computers and Internet.

There are two main levels of training for the public available at libraries. The first is free 'getting started classes' that are available in all libraries but demand led. These classes are delivered by any available member of library staff. More advanced  $\text{ECDL}^{14}$  classes are run at the Mitchell and Pollock libraries.<sup>15</sup> ECDL is not free, with classes costing between £165 and £200 per course (Glasgow Life 2012/2013). Some libraries such as Shettleston, Bridgeton and The Bridge have a dedicated training area separate from public computers. However, in some other libraries training is run in on the computers located in public areas.

In the first quarter of 2013 the seven<sup>16</sup> libraries in this study ran a total of 99 core classes with 466 learners. Interestingly only two out of these seven libraries have dedicated training

<sup>&</sup>lt;sup>14</sup> European Computer Driving License from the British Computer Society who state on their website that ECDL is 'the benchmark for digital literacy in educational systems around the globe'. http://www.bcs.org/category/14424

<sup>&</sup>lt;sup>15</sup> There is 14 full time staff able to deliver this training.

<sup>&</sup>lt;sup>16</sup> GL do not run any computer training classes at The Bridge. The Bridge has a different business model with a service level agreement in place to mediate delivery and development of services at the 'Cultural Campus'. Library services are bought by the College from GL. The College supplies IT services for students, staff and

facilities in a separate room. All of the others<sup>17</sup> used the public Internet computers for training with Springburn training more people (126) than Bridgeton (109) even through it does not have a dedicated training area. Staff in the survey reported that just over one third of libraries offered 'core' getting started classes, perhaps due to the lack of available computers, or maybe even a lack of demand. The number of computer classes available in the last 12 months at Glasgow libraries has stayed the same in 41% of libraries and decreased in 18%, which highlights that overall demand has not changed.

This formal training at some libraries is important, so too is any informal help offered to users, especially to novice users. When asked if there was any informal point of use assistance only 39% of staff confirmed that this was offered to users at their library. Although when asked about access to job resources, helping users to complete online application forms and collaborating with other agencies, over three quarters of staff said this was offered at their branch. This again highlights the inconsistencies in help and assistance offered to Internet users at Glasgow's public libraries.

### Filtering and privacy

As mentioned earlier, ICT is contracted out by GL to ACCESS who also control the filtering software. There are different 'builds' for Internet access depending on the job specification within GL. There is a separate build covering the public access computers. Some Scottish local authorities restrict access depending on age<sup>18</sup> but this does not happen in Glasgow. However, the restrictions that are applied to public Internet access are not universally understood. In the survey half of staff either did not know or thought that children and youth computers were restricted in terms of access to online materials. This contradicts the view of management. This could mean that the filtering is more restrictive because there is an assumption that a child can access any public computer.

Websites sites can be released on a 1 by 1 basis, using an override code, by some staff at libraries. They can then request for specific sites to be allowed on a permanent basis. Half of staff surveyed agreed that firewalls prevented access to some job sites. However, the scale of the problem could be hidden by users failing to report they have been denied access.

Management are aware of the privacy issue and commented that there are some computers that offer slightly more privacy than others. In the 13 years the Internet had been available at public libraries only once were computers removed by the police as part of an investigation.

It is clear that staff monitor user behaviour online in a number of ways, for example, by spot checks. Although the browser cache is cleared when the user logs off, their browsing history is stored and can be checked by senior staff if an issue is suspected. This indicates the 'lack of privacy' as a deliberate attempt to prevent crime and discourage certain behaviour. Moreover the survey highlights that there was disagreement between librarians about the importance of privacy for users.

library users as well as fulfilling any training requirements. Indeed to be able to use the Internet at the Bridge users need to register with the College.

<sup>&</sup>lt;sup>17</sup> Springburn, Parkhead, Riddrie, Milton, Possilpark

<sup>&</sup>lt;sup>18</sup> For example at Ayrshire libraries where there is additional filtering for computers used by children.

#### Activities

It might be expected that all of those who came in to use a library computer were going online to use the Internet. However, when librarians were asked if users access the Internet during each session, 28% of staff thought that users did not. This highlights that computers could be used for offline activities. It is, therefore, necessary to understand user activities.

There was almost universal agreement that libraries are welcoming community spaces where there is free access to the Internet. There was also recognition that services for 'job seekers' were important. However, one third of librarians said the provision of services for ethnic minorities and help using e-gov web sites and services, were less important than some of the other services provided.

The librarians were asked to state the library's greatest achievement with respect to maintaining or providing access to the Internet. One third made mention of library training with another 20% saying that free Internet access was the greatest achievement. Some even relayed stories of how training and free Internet access had changed the lives of some community members. Free Internet access also allows users from culturally diverse populations to stay in touch with friends and family overseas.

Overall library staff and management recognise the benefits of public Internet access, even though they are concerned about access speeds and lack of staff training. There is also some recognition that there needs to be a more pro-active approach to attracting people online, which could be done by libraries. There is also recognition of the impact access to the Internet can have on the lives of people.

## 5.2 User survey

The analysis in this section is based on the survey conducted at eight libraries. Each library was visited at least twice at different times of the day, resulting in 130 people completing the survey. Sampling was based on approaching those leaving a computer terminal and asking for their participation. Even though each library was only visited 2 or 3 times the researcher had already spoken to some computer users on a previous occasion. This highlights that the pool of Internet users at libraries is not large. It also highlights that the sample is representative of those using public computers.

The discussion is structured to reflect the questions identified in Section 3. Thus, the first question to be answered is 'who uses the public Internet in libraries'? More males (69%) than females (31%) use the Internet at Glasgow libraries. This confirms the finding of Becker et al (2010, p32). Respondents ranged in age from 16 to over 65 years of age. Only 6% of the sample was over 65, with the majority being in the age range 45 to 54 years old (25%). People using the Internet at libraries tended not to have children at home (84%). This is not surprising since it is known that those with children are more likely to have home Internet access (Dutton & Helsper, 2009; Selwyn, 2004).

Based on the postcode of each of the survey respondents, the overall SIMD rank and the percentage of income deprived for each datazone/postcode can be calculated. This is shown in Figure 7. On average, between 25% and 45% of respondents are income deprived and all are in the lower ranks for overall SIMD. The respondents are likely to be income deprived

and live in areas of recognised (overall) deprivation, where broadband uptake is also lowest. This means that the libraries targeted do appear to serve their local community and this work provides a picture of public Internet use in areas of poverty and deprivation.

#### [Insert Figure 7 about here]

Also 18% (n=130) of users had clear affordability problems in relation to Internet access. Some became lapsed users because it 'it was too expensive at home', while others use a 'pay as you go' dongle at home if they have money to top up while yet more have intermittent access on their mobile but this depends on 'if I have credit' or 'if I top up my phone'.

For 28% of Internet users the library is their only means of access. Those with other access have it only in only one other place 48% (n=93) while 19% have access in 3 or 4 other places<sup>19</sup>. The most common place for other access is a mobile phone with 81% saying they had Internet access in this way. There are also a surprising number of users who have access at home 56% (n=94). Those who have access at home are also likely to have mobile access. People also use the Internet at college, university or at a friend or family member's house. In other words, there is ample evidence to suggest that the answer to the second question is that a majority of users have access to the Internet elsewhere in addition to the library.

One possible explanation for the prevalence of multiple access channels is that it reflects the capabilities of the mechanism – as one interviewee stated, I can use my phone for the Internet but it is not good enough for some things'. Finances also play a role, with respondents switching between channels depending on their finances. The reasons people use the library rather than other places varies. Sometimes it is as simple as 'just don't have a printer at home' or 'needed to print boarding passes'. For others affordability of either the broadband connection or topping up their mobile phone is too great and they use the library as a backup. Some even stated they 'used to have a computer at home but it's not working'. Some liked coming to the library for Internet access as 'wanted to get out of the house' or 'for peace and quiet...focus to get things done'.

54% of library users had used WiFi before, mainly on a mobile phone (72%) (n=68), although a few indicated having used a laptop or tablet. Only 14 of these users mentioned the free WiFi at the library, preferring to mention public transport, fast food and bars or restaurants. Bridgeton is the only library in this study of 8 libraries offering free WiFi access to library users. Many users were not aware that some libraries provided free WiFi access as they only visited their local library that did not have it. Users were asked if they would like public WiFi at their local library and 38% (n=130) replied that they would like it.

The third question identified in Section 3 related to the skill level of library Internet users. Users were asked to rate their level of experience. They were also asked to indicate how long they had been able to use the computers and the Internet. Those who graded themselves as very experienced had been using the Internet for more than 10 years. Interestingly the largest category using library Internet services were the experienced 53% (n=129). Only 14% (n=129) classified themselves as novice users with the final third being intermediate level users. There was little difference between libraries with all categories of users in each library.

<sup>&</sup>lt;sup>19</sup> Home, work, mobile, cafe

In terms of gender there was little difference between the sexes except in the novice category. Only 10% of females were novices and 16% of men.

Intermediate and very experienced users are more likely to have Internet access elsewhere, with very experienced users the most likely to have the Internet at work. Only half of these users have access at home. Novice users are unlikely to have home access with only 4 from 13 novice users having this. All of the four are over 45 years. Two novice users come from more affluent areas.<sup>20</sup>

The fourth question related to the convenience of libraries for users. 78% of users were using the library closest to their home. Others reasons for using 'this library' rather than the one closest to home varied. Some mentioned that their local library had 'too few computers' or 'was too busy' and 'you automatically get 2 hours here' in reference to the Internet time slots. Others used 'this library' as it was convenient for work, family or close to the job centre.

On the GL website it states that 'Library members enjoy free access to the Internet and office applications at all of our community libraries' (Glasgow Life, 2013), highlighting that the access is free but not making it clear that registration is required for access. This means users need to be able to supply an address or some form of ID to become a library member, allowing them access to the Internet. Users were asked whether they had ever been unable for whatever reason to get onto a computer. Over half of library users (55%) report being unable to access a computer. This was mainly due to the library computers being 'too busy'. The worst library was Springburn where 77% of users experienced a problem, followed by Shettlestone (70%). Only the Bridge and Riddrie had less than 50% of users with waiting problems apart from Milton where there was never a problem getting access to a computer. Users at Springburn specifically said 'training groups mean I couldn't get on' or 'many times I have been unable to get on, it's very frustrating'.

How often users visit the library is a factor. Almost half of users visit the library between 1 and 3 times a week (43%), with the majority of the others visiting 4 to 7 times a week (34%). Those visiting 1 to 3 times a week are likely to have shorter sessions of up to 1 hour, whereas those visiting more frequently use the maximum 2 hours available. There is even a small minority of 8 people who visit libraries more than once a day and who use the computers and Internet, if possible, for 2 hours or more. Those using it the least frequently, once a month or rarely, use it for up to 30 minutes.

Users were also asked whether privacy, safety, security or filtering were a problem for them. When users were asked about their attitude towards computers and the Internet, all saw them as useful tools with two thirds (60%) trusting technology. As might be expected the more experienced you are, the less scary you find computers and the Internet. Many users commented that the Internet was scary at first and 'you can get lost with all the jargon' or 'if you don't know what you are doing' or 'scary in terms of security'. Others did not worry because they were careful regarding the information they share and what they did online in the library.

<sup>&</sup>lt;sup>20</sup> Based on SIMD overall datazone rank >2000. Others are 544 and 77.

Users were also asked if they worried about the safety, security and privacy of their information when using the Internet at the library and asked to rate their concerns on a scale of 1 to 10. The majority of users had no concerns about privacy 65% with the most frequent response being 10 (43%) meaning that two thirds of users have no concerns about their safety security and privacy online in the library. Some concerns were expressed by other users – for example, 'the seats are too close together, no screeens, so no privacy'. Some users book a specific computer allowing them some privacy to pay bills or use online banking, although these were the minority. Those who had no concerns commented 'I'm careful' 'cause I know what I am doing' or 'don't use for anything personal'. One issue is those waiting to get on who sometimes peer over shoulders to see how long is left on a session<sup>21</sup>. Those who showed concern commented that they were, 'extremely worried about people watchers', 'you don't have much privacy' and 'wouldn't pay bills or anything'

Just under half of users reported problems with blocked content, though just a third reported problems to staff. This is a hidden problem since 65% (n=51) of those who reported filtering problems kept it to themselves. Some commented that they 'didn't realise you could ask for a site to be released' or more worryingly 'would rather not annoy staff'. Parkhead library is where users appear least likely to ask for help and Riddrie most likely.

Most concerning is that some job websites were blocked with several users stating that jobs in bookmakers, bars or some recruitment agency websites are blocked. Often applications need to be completed through company websites, though some were blocked. Some common sites that users reported as being blocked were: Facebook, Polish version of Facebook, You Tube, tumbler pictures, Fanfiction, learning zone, Marie Curie, community addiction safety, Sound Cloud, political party websites (the Labour party), webmail (Hotmail), Stumbleupon, men's health websites, National Lottery website, academic study website, Gumtree, free rugby website.

It appears that some of these problems may come from bandwidth issues rather than blocking due to robust filtering. One user in particular knew that the filtering did not stop everything. He did a search and the advertising columns at the edge of the screen displayed images of sex. He was embarrassed and put his hands over the screen, as there were children in the library. This user was interested in gaming and gambling in the library so perhaps this was partly the reason why inappropriate material showed up.

The level of Internet filtering at The Bridge is different from other libraries as the Internet service there is run by John Wheatley College, not GL. This means users may receive a different experience and a different acceptable use policy (AUP).<sup>22</sup> The AUP<sup>23</sup> at most Glasgow libraries is a single page, however, the one for The Bridge is several pages in length.<sup>24</sup> Only two users mentioned the AUP, although several made comments like 'do not

<sup>&</sup>lt;sup>21</sup> Session times are displayed on the screen during use making the user aware how long they have left before reboot occurs.

 $<sup>^{22}</sup>$  AUP is commonly used to show the rules applied when using a network, computer system or website, often as part of a legal statement.

<sup>&</sup>lt;sup>23</sup> http://www.glasgowlife.org.uk /libraries/computers-

learning/Documents/AUP%20and%20Code%20of%20Conduct.pdf

<sup>&</sup>lt;sup>24</sup> http://www.jwheatley.ac.uk/documents/policies/AcceptableICTUsePolicy.pdf

go onto certain websites' or 'it gives a warning if you try and get onto something.' Hence, some users are aware of the policy even if they do not know its name.

Section 3 also identified the issue of whether users are receiving appropriate support from library staff. The survey found that the more experienced an Internet user you are, the less likely you need help with the computer - 71% (n=68) never asked for help. Those asking for help most often ask staff (90%), with the others asking a friend. The majority of people only need help in one or two areas. Less experienced novice users are more likely to need help with software than any other type of user. Figure 8 details the help required by users at the library.

#### [Insert Figure 8 about here]

Although some users experience problems, they have opted to go online. This raises the question as to why this is the case? Table 5 details where library users first used the Internet and what made them do so. Either school or homes are the most common first use locations. In terms of age, those whose first Internet use was at school, tended to be those under 45 years, and were least likely to be novices. Those who used the Internet first at a library or library training tended to be older with no one under 45 years having attended library training. This highlights that the younger generation are exposed to computers and the Internet at school. Those who first used it at work are more likely to be very experienced users and over 35 years of age. For the older generation who did not learn about the Internet at school or use it at work, the drivers to go online come from elsewhere.

When asked if there was something in particular that made them go online, 32% of respondents said information and learning, followed by economic factors (24%) including activities related to job searching. At the moment it seems that some are being forced online through necessity, that is, those who stated economic factors were what made them interested in going online. However, with comments such as "not really interested but in this day and age you have to" or 'felt like I had to, job centre gave me the push but I didn't want to do it" or 'its mandatory to job hunt online,' highlight that going online is viewed as a necessity rather than as a choice. Although it is not clear whether these users will remain Internet users in future, their move online does enable the government to save money through its 'digital by default' strategy.

#### [Insert Table 5 about here]

In terms of what or who made users aware of the Internet, users were asked to rate the importance of a number of factors. Work and government/job centre are important in getting online for all age groups except, understandably, those over 65 years. Friends are a more important influence the younger you are, with 58% of 16 to 24 year olds saying they were extremely or very important. For those over 55 years of age, more than three quarters said friends were not important in making them aware of the Internet. Also the older you are, the more important children become in making you aware of the Internet. Television and advertising are of least importance in making people aware of the Internet, although younger people were more likely to find this an important factor. 37% of 16 to 24 year olds indicated that TV is not important but this rises to 80% of those aged 55 to 64 years. Those under 34

years state that the family is important (54% for 16 to 24 year olds, 64% for those aged 25 to 34), falling to around a third for older age groups.

Respondents were also asked how important the use of libraries was to them and how they found the Internet there are discussed. More users thought the library was important to them and their family for computers and the Internet (80%) than it was for books (70%). This is not surprising since only those using computers were targeted for the survey. However, it does indicate that those using the Internet are not using the library for other services. Novice Internet users were also the most likely to consider access to books important to them compared to intermediate and very experienced users. Only 44% (n=129) of users saw the library as an important gathering place. One user in particular commented that the library is 'not promoted enough as a gathering place'. Those in the 45 to 54 age group saw the library as important for Internet training 59% (n=32), with those aged 25 to 34 (n=24) saw it as least important. For some, libraries are very important to them: views such as 'the library has become like a family for us' and 'don't want it shut down' were expressed.

Most people reported finding out about Internet access because they were at the library borrowing books 38% (n=127) or through friends and family (28%). Probably due to recent welfare changes 8% found the Internet at the library from the job centre or benefit office. Given that at the time of the survey some of the proposed benefit changes had not come into effect, this figure is likely to rise significantly in future.

Finally, users were asked about the activities they conducted online so that the eight research question identified in Section 3 could be investigated. Users were asked to choose, from a list of 24, which activities that they used the library Internet for. Figure 9 shows the popularity of various activities indicated by users. Search is the most popular, followed by e-mail and job hunting. This highlights the importance of library Internet access for those job hunting, CV writing and undertaking training courses, with 73% of people saying they do this type of activity at the library. Indeed 45% (n=94) of library users say this is the most important of all their activities at the library.

#### [Insert Figure 9 about here]

Using Gomez's (2012) categorisation of activities, complemented by economic activities, we see that job searching is a significant online activity within libraries. In contrast, online banking and shopping is not. This is shown in Figure 10. It is also worth noting that email and social networking websites are popular forms of online socialisation activity.

#### [Insert Figure 10 about here]

The length of time people spend online and the number of activities they do should be related (Ofcom, 2013c, p6). This relationship is shown in Figure 11. Those who use public Internet access once a month or rarely are online less than 1 hour and perform on average fewer activities (5). These occasional users also tend to have the Internet at home. The most important activities for occasional library users are printing and job hunting. Those using the Internet 1 to 3 times a week perform an average of 7 activities, have different levels of experience and use the Internet for longer. Those using it most frequently perform an average of 8 activities and are more likely not to have home Internet access.

## [Insert Figure 11 about here]

## 6. Discussion

Through analysing the data collected, the previous section has identified a series of issues that influence public Internet library access and use. As these issues interact with one another, the role of some factors may be hard to discern. With this in mind, this section presents and then discussed causal maps of the factors affecting the management and users of the public Internet in deprived areas of Glasgow.

## 6.1 The management of the public Internet

GCC operate many of their services through limited liability partnerships called ALEOs. How these affect the management of the public library Internet services is shown in Figure 12. GL ALEO manages culture and sport venues across the city including libraries, while ACCESS who, amongst other things, supply the broadband network to GCC and GL. However, the public Internet and network at the Bridge is supplied by John Wheatley College. The ACCESS broadband network is under constant pressure as it is used not only for the 543<sup>25</sup> public access computers but also to support 2800 staff computers and library information systems. 77% of library staff felt that the speed of the service was slow, and had observed no improvement over the course of the last year. Adding new computers to the network will simply worsen the service already being provided. The contract for the broadband network runs for 10 years until 2018 and, in essence, locks the council into this provider. In effect, this limits expansion of the network or any major changes to improve the service – to do so would require the contract to be re-negotiated.

## [Insert Figure 12 about here]

The negative effect on speed has, in turn, an effect on the attractiveness of the service for public Internet users. The growth of interactive Internet and web 2.0 services "require a range of high end hardware, software and telecommunications infrastructure to function properly" (Bertot et.al, 2008, p180). Failure to make improvements to the service then impacts on its attractiveness to users. The age of the computers also impacts on the Internet service, although there appeared to be a contradiction between staff perceptions of the maintenance and age of computers and management views that equipment was up to date.

There is demand for WiFi in libraries. Perhaps due to ACCESS contract limitations, WiFi provision in libraries was sourced elsewhere. This had a positive effect on the Internet at libraries by providing alternative connections for users with their own equipment. However, in the eight deprived areas surveyed only half of users had used WiFi before and only 38% said they would like it at the library. This highlights a divide not just in Internet use but also in the use of WiFi at different locations.

The partnerships necessitate reporting to GCC using statutory performance indicators (SPI). GL report a number of figures for libraries, including visitor numbers, number of times terminals are used, number of active members and financial figures. Visitor numbers are based on electronic people counters and in 20011/12 included virtual (online) visits.

<sup>&</sup>lt;sup>25</sup> 633 in total minus 90 computers at John Wheatley on a different network

Increasing visitor numbers provides positive feedback to GCC and the addition of virtual visits make it appear like the visitor numbers had increased overall. The combined facilities at some libraries mean the people counters often do not provide accurate figures for those visiting only libraries in person. Only those visiting the library in person can use the public Internet. Even based on the people counters, three quarters of Glasgow libraries have falling attendance. The number of active members is also reported providing indications of library use, however not all library members use the Internet. Another SPI reports the number of times terminals are used but takes no account of the different type of users, such as those who visit for 30 minutes versus those who stay on as long as possible. It also gives no indication of the unique number of users or new user figures. Cost reductions or optimisations also have a positive effect on the SPI reported. Although any staff reductions in libraries could negatively impact on services.

The number of computers available and the management of the Internet booking system also affect the quality and attractiveness of the Internet service at each library. The number of computers in public libraries increased 33% between the start of the ACCESS contract in 2008 and today, adding to pressure on the network. In terms of the distribution of these computers, it was initially based on socially excluded areas of the city. In 2000/2011, 402 computers were installed. In 2008 this increased to 475 and now stands at 633 computers. However, six libraries, mainly in deprived areas,<sup>26</sup> had some computers removed and redistributed, due to low demand. This resulted in reduction of Internet access in the areas where there was likely to be most need, if not demand. This demand issue also occurred with WiFi, which at around £2000 per library so has to prove cost effective at each location. Again due to low demand and cost pressures it was redistributed rather than focusing on increasing demand. The headline figure of 633 computers is deceiving as some of these are kept separate for training purposes and thus are not generally available for public use. Yet more computers are set aside for use by children after school hours and during holidays. This results in lower availability for adult public use than is reported. Indeed all library staff who replied to the survey reported they have people waiting for Internet access some of the time and over half reported that there were too few computers. This agrees somewhat with users where 77% of users at Springburn, and 55% on average, who report being unable to get online at some time.

Increased demand due to lack of available computers has a negative effect on the time restrictions placed on users. These time restrictions vary based on library location, staff inclination to be flexible and the Netloan booking system. This results in different service levels dependent on location. However, it seems short sighted to be moving computers away from areas with the lowest household uptake and the greatest need for public access. There should be greater focus on building demand for the service that requires investment that at the moment seems to be lacking.

Finally in terms of the management of the service, the causal map shows the stakeholders involved in managing Scottish libraries and the influence they have on GCC. Scotland's libraries are controlled and managed by individual local authorities with a guiding influence from the Scottish government and SLIC. However, there are also links to UK libraries via the

<sup>&</sup>lt;sup>26</sup> Anniesland, Castlemilk, Drumchapel, Gorbals, Ibrox, Springburn

professional institution for librarians, CILIP. Some local authorities are connected to the JANET broadband network as recommended by the UK government, something which Glasgow is unable to do to, at least until the ACCESS contract runs out in 2018.

Management of the Internet at public libraries also involves legal issues in terms of AUP and includes filtering and privacy issues for users. A causal map of these factors is shown in Figure 13. Filtering can mean job websites are blocked, which, if reported, can be released by staff. There are at least two AUP documents and three different types of filtering across the eight libraries in the study. This highlights the difficulty in managing public Internet access and the need to inform users. The different filtering across libraries again differentiates the service based on location and network provider. Half of staff did not understand filtering and made the assumption that the computers for children had different restrictions. However, this was not the case.

#### [Insert Figure 13 about here]

While the literature and data collection identified privacy as an issue, it does not appear to be a concern for around two-thirds of library users. This was because they restricted their online activities – only 16% (n=129) felt safe using a bank or credit card in the library. The privacy issue, although not a problem at the moment due to the types of activities carried out, could become one in the future as government services move increasingly online.

## 6.2 Users and the Internet

Demographics cannot provide all of the answers to policymakers as it is the underlying processes that are most important (Larose et al, 2012). In other words socio-economic characteristics are important in understanding Internet use. In this sample, from deprived, areas males were most likely to use public Internet (69%). Library Internet users in this sample range in age from 16 to 65 years old. It appears that older Internet users are still not going online. Public library Internet use is most popular among the 45 to 54 age range. Figure 14 presents a causal map for library Internet use that goes beyond demographics, providing an overview of some of the drivers and barriers to Internet use in deprived areas of Glasgow.

#### [Insert Figure 14 about here]

Firstly, the barriers for household broadband uptake could be considered as drivers for using public access, especially for those with a positive attitude who are predisposed to go online. These are older people, least likely to have children at home, from an ethnic minority who are poor and out of work. Specific areas of the city have already been labelled as being areas of deprivation where residents of these areas suffer from multiple disadvantages. Living in an area of deprivation means you are less likely to become an Internet user. Specific barriers to household Internet uptake in these deprived areas are a lack of credit history or access to a bank account.

Being from an area of deprivation makes it more likely that affordability is an issue. Affordability has a positive effect on the use of public Internet. Although 28% of users only had Internet access at the library, with the rest having supplemental access either at home or somewhere else. Affordability also means that in these deprived areas intermittent access to the Internet, either at home or on a mobile, drove people to use public Internet access. This

intermittent access may be due to hardware problems, a lack of money, a temporary loss of connection or not having a printer. Those without a printer, who are using library Internet as a mechanism for printing, tend to be those using for the shortest time and are the most experienced.

The map shows that there is a positive effect on Internet use of the library being close to home or in a convenient location. In deprived areas of Glasgow libraries are clearly serving the local community. This highlights the importance of geography and of having Internet access where it is needed most, that is, in deprived communities. Library staff were unaware of other sources of Internet access in the local communities that they serve. Another barrier to using public Internet is the requirement for prospective Internet users to have proof of address to obtain a library card. Access to WiFi requires additional registration and at the Bridge users need to register with the College in order to obtain library Internet access.

Another driver in getting Internet users online is the availability of training. Both formal and informal training are available at libraries. Informal help depends on library branch staff having the necessary skills and time available to help. Although 95% of staff reported that they felt comfortable in the management of computers, the speed of technology developments is an issue. Evidence of this is surfacing already – three quarters of staff said they did not have enough training to help individual users with specific applications and there is no training for new staff on Internet access.

While basic formal training is free, ECDL classes cost up to £200 for each module. Since ECDL classes incur a cost these are least likely to be attractive to those from deprived areas, who then rely on waiting for free basic training or going online anyway hoping for ad hoc help from staff. Another factor affecting training is class location. Some libraries run basic classes on the public computers, while others have a separate training room with dedicated computers. From the seven<sup>27</sup> libraries in the study only two (Bridgeton and Shettlestone) had dedicated training areas. However, in the first three months of 2013 more classes were run at Springburn library in the public areas. This caused tension between training requirements and increasing demand for public Internet access.

It could be considered that there are two ways of becoming an Internet user - push and pull. The push is currently focused on three main factors: 'digital by default', universal credit applications and evidence of job searching. Often it is the government or job centre that has made public Internet users aware of the service. This push is increasing demand for public Internet services without providing additional funding or support.

Figure 14 shows the pull factors that have more a positive effect on longer term Internet use. Some of the pull factors relate to how users were made aware of the public Internet, through, for example, family or friends. Training could also play a role. No one under 45 years of age in the sample had attended a training session. Basic Internet training is provided by library branch staff. The pull to increase the number of Internet users has until now been a passive approach where libraries respond to Internet demand. This passive approach is perhaps part of the reason why Glasgow has been left behind in terms of broadband uptake.

<sup>&</sup>lt;sup>27</sup> The Bridge training is delivered by the College, not library staff as part of the partnership agreement.

They are developing a strategy to try and address this. A reactive strategy based on the current situation highlights a lack of foresight, perhaps due to funding limitations and problems co-ordinating with other providers (for example, Race online and GoOn UK) in the U.K who have been successful pulling people online.

Some suggest that the market will attract users online. This is, however, unlikely to work in deprived areas due to the large numbers of barriers preventing market forces from working. Training content and a more proactive approach to attracting people online needs to be focused on community needs and involvement, actively creating opportunities for people to get engaged online. This is perhaps the softer side of engagement where users are encouraged online, by engaging them in activities likely to be of interest to them. According to Helen Milner<sup>28</sup> this requires investment in participation. It means developing different methods of engaging users, by varying training approaches. It also means understanding the mechanisms for adoption, as this is more likely to sustain engagement online.

### 7. Conclusions

This paper has explored public Internet access in three deprived areas of Glasgow. The paper began by summarising relevant literature and the experience of cities elsewhere. The resulting research questions were investigated through primary data collection. From the analysis it is possible to draw a series of conclusions regarding the role of libraries as places providing public Internet access.

The first conclusion that can be drawn is that libraries are constrained by limited resources, in terms of both staff and money. Although libraries are often the only place where residents of deprived areas can access the Internet without financial cost, they have not received the necessary investment for them to ensure that users can initially access the Internet and then be provided with the necessary support. One constraint relates to the organisational structure adopted by Glasgow City Council, while another is the more general budgetary constraint being faced throughout the public sector. These constraints limit service provision and prevent much needed Internet demand building activities. There is a catch 22 situation where it is recognised that more people need to get online but a lack of support for libraries to address this.

These constraints give rise to a second conclusion, namely, that those who use the libraries to access the Internet are arguably disadvantaged compared to those who access through other means. Without the requisite levels of support, from library staff as well as friends and family, they will not be able to maximise the benefits that accrue from online activities. Given that those within the sample live within deprived areas of the city, this lack of support would appear to perpetuate their disadvantaged position in society. This has clear implications for social cohesion on the one hand, and social mobility on the other.

Related to this point is a third conclusion, that the role of libraries is changing – once libraries were solely associated with books, but now they provide multiple services. While this maintains the position of libraries in their communities, it exacerbates the resource challenges faced by libraries and elevates the need to ensure that staff are appropriately

<sup>&</sup>lt;sup>28</sup> Helen Milner chief executive of the Online centre foundation talking at Digital Scotland 2013

trained. It also raises the issue of how to ensure that one community of users is not privileged over others.

Taken together these conclusions suggest that further research is needed to understand the role of libraries in their communities. While this goes further than solely examining Internet public access through libraries, it encompasses the need to understand the implications of the rise of online activities for libraries and their users. This paper focused on three deprived areas, with the consequence that libraries and users in more affluent parts of the city were not included. Research could examine the role of libraries and public Internet access in these areas.

A second area of further research is more strategic in character, and relates to the role of libraries – quite simply, how can libraries accommodate their increasingly diverse roles when their budgets and technology are constrained? Another strategic area is how can the substantial proportion of Glasgow that is not online be encouraged to move online? UK-wide schemes such as GoOn UK do not appear to be active in Scotland, but at the same time neither do Scottish initiatives. What has happened in Scotland is that numerous small scale or localised initiatives have been undertaken. Further research could examine the extent to which these have been successful, have learnt from one another or have shaped the political debate.

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## References

Alexander, N., 2012, The Unbanked in Glasgow and the impact of the Universal Credit: A report for Glasgow Housing Association.

American Library Association, 2011, Public Library Funding and Technology Access Study 2010-2011. Executive summary, online, <u>http://www.ala.org/research/plftas/2010\_2011</u>

Agarwal, R., A. Animesh, Prasad, K., 2009, Social Interactions and the "Digital Divide": Explaining Variations in Internet Use. Information Systems Research, 20(2): 277-294

Bazalgette, L., Barnes, M., Lord, C., 2012, Tackling severe family disadvantage in Scotland means looking at more than just poverty. A wider Lens, DEMOS, London

Becker, S., Crandall, M.D., Fisher, K.E., Kinney, B., Landry, C., Rocha, A., 2010, *Opportunity for All: How the American Public Benefits from Internet Access at U.S. Libraries*. (IMLS-2010-RES-01), Institute of Museum and Library Services, Washington, D.C.

Bertot, J. B., McClure, C. R., Jaeger, P. T., 2008, Public libraries and the Internet 2007: Issues, implications, and expectations. Library and Information Science Research, 30:175-184

Bettencourt, L.M.A., West, G.B., 2011, Bigger Cities do more with less: New science reveals why cities become more productive and efficient as they grow. Scientific American, Sept, 52-53

Beattie-Smith, S., 2013, Offline and Left Behind: Digital Exclusion amongst Scotland's CAB clients. Citizens Advice Scotland

Big Lottery Fund Research, 2004, Issue 7: The People's Network, evaluation summary.

Brown, T.G., McMenemy, D., 2013, The implementation of Internet filtering in Scottish public libraries. *Aslib Proceedings* 65 (1)

Business Innovation and Skills (BIS), 2010 Universal Service Commitment. Available at: <a href="http://www.publications.parliament.uk/pa/cm200910/cmselect/cmbis/72/7206.htm">http://www.publications.parliament.uk/pa/cm200910/cmselect/cmbis/72/7206.htm</a>

Cabinet Office, 2012, Government Digital Strategy moves Whitehall closer to being 'Digital by Default'. Available at: <u>http://www.cabinetoffice.gov.uk/news/government-digital-strategy-moves-whitehall-closer-being-digital-default</u>, (Accessed 14 Dec 2012)

Chartered Institute of Public Finance and Accounts, 2012, Manchester City Council: CIPFAstats Comparative Profile / Public Libraries.

Chartered Institute of Library and Information Professionals, 2005, *CILIP Statement on Intellectual Freedom, Access to Information and Censorship*, London: CILIP.

Cheong, P.H., 2008, The young and the techless? Investigating internet use and problemsolving behaviours of young adults in Singapore, New Media and Society. 10(5): 771-791

Crang, M., T. Crosbie, T., Graham, S., 2006, Variable Geometries of Connection: Urban Digital Divides and the Uses of Information. Urban Studies 43(13): 2551-2570.

Communications Consumer Panel (CCP), 2012, Bridging the Gap: Sustaining online engagement. Futuresight,

Culture and Sport Glasgow, 2012, Report and Group Financial Statements year ended March. 2012. companies house

Dailey, D., Byrne, A., Powell, A., Karaganis, J., Chung, J, 2010, Broadband adoption in low income communities. Social Science Research Council

Davis, 2012, Internet Evolution: The Internet in 10years. Available at: <u>http://www.Internetevolution.com/document.asp?doc\_id=243596</u> (Accessed 29<sup>th</sup> August 2013)

Department for Culture Media and Sport (DCMS), 2010, The modernisation review of public libraries: A policy statement. The Stationary office, ISBN: 9780101782128

DeMaagd, K., Chew, H. E., Huang, G., Khan, M.L., Sreenivasan, A., LaRoux, R., The use of public computing facilities by library patrons: Demographics, motivations, and barriers. 2013, Government Information Quarterly, 30: 110-118

Dimaggio, P., E. Hargittai, et al. (2001). "Social Implications of the Internet." <u>Annual Review</u> of Sociology 27: 307-336.

Dutton, W. H., Helsper, E.J., Gerber, M.M., 2007, The Internet in Britain. Oxford, Oxford Internet Institute, University of Oxford

Dutton, W. H., Helsper, E.J., Gerber, M.M., 2009, The Internet in Britain. Oxford, Oxford Internet Institute, University of Oxford

Dwivedi, Y. K., Lal, B., Williams, M.D., 2009, Managing consumer adoption of broadband: examining drivers and barriers. Industrial Management & Data Systems 109(3): 357-369.

Epstein D., Nisbet, E.C., Gillespie, T., 2011, Who's responsible for the digital divide? Public perceptions and policy implications. Information Society 27(2): 92-104

Eynon, R., 2009, Mapping the digital divide in Britain: implications for learning and education. Learning, Media and Technology 34(4): 277 - 290.

European Commission 2009, Available at: <a href="http://ec.europa.eu/information\_society/newsroom/cf/itemdetail.cfm?item\_id=4838">http://ec.europa.eu/information\_society/newsroom/cf/itemdetail.cfm?item\_id=4838</a>

Freekie, J., 2012, People and households in Glasgow: A comparison of demographic change in Glasgow's deprived areas and the rest of the city in 2001-2010. Glasgow City Council briefing paper

Glasgow Life, 2011/12, Get the most out of Glasgowlife: Annual Review. Glasgow Life, Glasgow

Glasgow Life 2012/2013, Community Facilities and Libraries: Price List. Available at: http://www.glasgowlife.org.uk/policy-research/price-list-2012-

<u>13/Documents/COMMUNITY%20FACILITIES%20AND%20LIBRARIES%20CHARGES</u> %20%202012%20-%2013.pdf Glasgow Life, 2013, Glasgow Libraries: Computers and learning. Available at: <u>http://www.glasgowlife.org.uk/libraries/computers-learning/Pages/home.aspx</u> (Accessed 4th August, 2013)

Glasgow Life, 2013a, e-mail communication- request for information.

GCC, 2011, Glasgow Housing Strategy. Available at: http://www.glasgow.gov.uk/index.aspx?articleid=4029

Geere, D. 2013, Glasgow will be UK's first smart city. Wired online, Available at: <a href="http://www.wired.co.uk/news/archive/2013-01/27/glasgow-smart-city">http://www.wired.co.uk/news/archive/2013-01/27/glasgow-smart-city</a> (Accessed 12th Apr 2013)

Gomez, R. (Ed.), 2012, Libraries, Telecentres, Cybercafés and Public access to ICT: International comparisons. Information Science Reference, Pennsylvania

Government, 2013, Policies: Giving more power back to cities through City Deals. Available at: <u>https://www.gov.uk/government/policies/giving-more-power-back-to-cities-through-city-deals</u>

Grubesic, T.H., 2006, A spatial taxonomy of broadband regions in the United States. Information Economics and Policy, 18: 423-448

Hargittai, E., Hinnant, A., 2008, Digital Inequality: Differences in young adults' use of the Internet. Communication Research, 35(5): p602-621

Hassani, S.N., 2006, Locating digital divides at home, work, and everywhere else. Poetics, 34: p250-272

Helsper, E. (2008). Digital inclusion: an analysis of social disadvantage and the information society. C. a. L. Government. London, UK, Queen's Printer and Controller of Her Majesty's Stationery Office

Herald Scotland, 2012, Students boost Glasgow's economy by £500m a year. Available at: <u>http://www.heraldscotland.com/mobile/news/education/students-boost-glasgows-economy-by-500m-a-year.17973730</u> (Accessed 1st Feb 2012)

Hope, S. (2010), Scottish Household Survey: Questionnaire January 2006 to December 2010. National Statistics, the Scottish Government.

International Telecommunication Union (ITU), WSIS Forum 2012 outcome document. Available at: <u>http://groups.itu.int/wsis-</u> <u>forum2012/Highlights/OutcomeDocument.aspx#booklet</u>

Jaeger, P.T., Bertot, J.C., McClure, C.R., Langa, L.A., 2006, The Policy Implications of Internet Connectivity in Public Libraries. Government Information Quarterly, 23: 123-141

Jayakar, K., Park, E., 2011, Funding public computing centers: Balancing broadband availability and expected demand. Government Information Quarterly, 29: 50-59

Koss, V., Azad, S. Gurm, A. Rosenthal, E., 2012, This is for Everyone: The case for Universal Digitisation. Booz&co

Larose, R., DeMaagd, K., Chew, H.E., Tsai, H.S., Steinfield, C., Wildman, S.S., Bauer, J.M., 2012, Measuring Sustainable Broadband Adoption: An innovative approach to understanding broadband adoption and use. International Journal of Communication, 6: 2576-2600

Lee, L., 2008, The Impact of Young People's Internet Use on Class Boundaries and Life Trajectories. Sociology 42(1): 137-153.

Livingstone, S., Haddon, L., Gorzig, A., 2012, Children, risk and safety on the Internet: Research and Policy Challenges in Comparative Perspective. The Policy Press, Bristol

May, T. 2008, Social Research: Issues, methods and process. Maidenhead, Open University Press

McMenemy, D., 2008, Internet access in UK public libraries: notes and queries from a small scale study. Library Review, 57(7): 485-489

Meyer, D., 2008, Is broadband a utility? ZDNet, available at: <u>http://www.zdnet.com/is-broadband-a-utility-4010009696/</u>

Milne, C., 2006, Improving affordability of Telecommunications: Cross-Fertilisation between the developed and the Developing world. August, Telecommunications Policy Research Conference, Virginia

Mossberger, K., Tolbert, C.J., Franko, W.M., Digital Cities. 2013, Oxford University Press

Nomis, 2012, Official labour Market Statistics. Available at: <u>https://www.nomisweb.co.uk/reports/lmp/la/2038432136/report.aspx</u> (Accessed January, 2012)

ONS, 2013, Regions with highest percentage of workless households. Available at: http://www.ons.gov.uk/ons/rel/lmac/workless-households-for-regions-across-theuk/2011/sty-liverpool-has-highest---of-workless-households-in-2011.html (Accessed 5th May 2013)

Ofcom, 2009, Communications Market Report, Ofcom: London

Ofcom, 2010, Communication Market Report: Scotland, Ofcom: London

Ofcom 2011, Communications Market Report: Scotland, Ofcom: London

Ofcom, 2011a, Measuring mobile broadband in the UK: performance delivered to PC's via dongles and datacards, Ofcom: London

Ofcom, 2012, Communication Market Report: Scotland, Ofcom: London

Ofcom, 2012a, Internet use and attitudes: Metrics bulletin, Ofcom: London

Ofcom, 2013a, Communications market report, Ofcom: London

Ofcom, 2013b, Communications Market Report: Scotland, Ofcom: London

Ofcom, 2013c, Adults' media use and attitudes report. Available at: <u>http://stakeholders.ofcom.org.uk/binaries/research/media-literacy/adult-media-lit-13/2013\_Adult\_ML\_Tracker.pdf</u>

Power, A. Haughton, J., 2007, Jigsaw Cities: Big Places, Small Spaces. Policy Press, Bristol

Prieger, J.E., Hu, W.M., 2008, The broadband digital divide and the nexus of race, competition and quality. Information Economics and Policy 20:150-167

Price Waterhouse Coopers, 2005, Cities of the Future: global competition, local leadership, connected thinking. Available at: <u>http://www.pwc.com/gx/en/government-public-services/issues-trends/index.jhtml</u> (Accessed 30th August 2013)

Radcliff, J., Winckler, V., 2011, Digital by Default: Online public services and digital inclusion in Wales. Bevan Foundation, Available at: <u>http://www.bevanfoundation.org/publications/</u>

Rafferty, J., Steyaert, J., 2007, Social work in a digital society, In Lymbery, M. & Postle, K. (Eds.), Social work: a companion to learning, pp. 165-175

Rhinesmith, C., 2012 Free Library Hot Spots: Supporting Broadband Adoption in Philadelphia's Low-Income Communities. International Journal of Communication, 6: 2529-2554

Rogers, E. M., 2003, Diffusion of innovations. New York, N.Y., Simon & Schuster

Schejter, A.M. and Martin, B.L., 2012, If you build it they will come? Understanding the Information Needs of Users of BTOP Funded Broadband Internet Public Computer Centers, March, TRPC Available at: <u>http://dx.doi.org/10.2139/ssrn.2032181</u>

Scotland's Census, 2011, Data Visualisations. Available at: http://www.scotlandscensus.gov.uk/en/censusresults/visualisations.html

Scottish Government, 2011, Culture – Public Libraries: High level summary statistics. Available at: <u>http://www.scotland.gov.uk/Topics/Statistics/Browse/Tourism-Culture-Sports/TrendPublicLibraries</u> (Accessed 7th August 2013)

Scottish Government, 2011a, Scotland's Cities:Delivering for Scotland. Available at: www.scotland.gov.uk.

Scottish Government, 2012, Scotland's People Annual Report: Results from 2011 Scottish Household Survey. Available at: <u>http://www.scotland.gov.uk/Publications/2012/08/5277</u>

Scottish Government, 2012a, Estimates of Households and Dwellings in Scotland. Available at: <u>http://www.scotland.gov.uk/News/Releases/2013/06/stats-households270713</u>

Scottish Government, 2013, Deprivation: Scottish Index of Multiple deprivation. Available at: <u>http://www.scotland.gov.uk/Topics/Statistics/Browse/Social-Welfare/TrendSIMD</u>

Scottish Libraries and Information Council, 2011, SLIC strategic plan2011\_2014. Available at: http://www.scottishlibraries.org/publications/

Selwyn, N., 2004, Exploring the role of children in adults' adoption and use of computers. Information Technology & People, 17(1): 53-70

SIMD, 2011, SIMD: Consultation. Available at: www.scotland.gov.uk/Resource/Doc/933/0120089.doc

SIMD, 2012, Local Authority Summary: Glasgow City. Available at: <a href="http://www.scotland.gov.uk/Resource/0041/00410731.pdf">http://www.scotland.gov.uk/Resource/0041/00410731.pdf</a>

Sotiropoulos, A., Duckworth, S., 2011, Glasgow Access LLP: Case Study, Serco Institute

Straubhaar, J., Spence, J., Tufekci, Z., Lentz, R.G., 2012, Inequity in the Technopolis: Race, Gender and the Digital Divide in Austin. University of Texas press, Austin

Sutherland, E., 2011, The regulation of telecommunications in the United Kingdom of Great Britain and Northern Ireland. International Telecommunications Society, Budapest, September

Tapia, A.H., Kvasny, L., Angel Ortiz, J., 2011, A Critical Discourse Analysis of three US municipal wireless network initiatives for enhancing social inclusion. Telematics and Informatics, 28: 215–226

Technical.ly Philly, 2013, Available at: <u>http://technicallyphilly.com/2011/10/11/freedom-rings-partnership-what-it-is-and-how-public-private-partnerships-fuel-its-success-video</u> (Accessed 24/01/13)

Van Dijk, J. A. G. M., 2005, The deepening divide : inequality in the information society. Thousand Oaks, Calif. ; London, Sage Pub.

Verdegem, P. and P. Verhoest, 2009, Profiling the non-user: Rethinking policy initiatives stimulating ICT acceptance. Telecommunications Policy 33: 642-652.

Viseu, A., Clement, A., Aspinall, J.& Kennedy, T.M., 2006, The interplay of public and private spaces in Internet access. Information, Communication & Society, 9(5), 633–656

Watson, L., 2013, Library Users' anger as WiFi is removed. Evening Times, Available at: <u>http://www.eveningtimes.co.uk/news/library-users-anger-as-wi-fi-is-removed-132336n.21772466</u>

Westminster e-forum, 2012, Broadband Britain - funding, 'killer apps' and digital engagement. Available at:

http://www.westminsterforumprojects.co.uk/forums/showpublications.php?pid=464

White, D., 2013, Across the Divide: Tackling Digital Exclusion in Glasgow. The Carnegie Trust

White, A., 2011, Scottish Index of Multiple Deprivation: Consultation. Available at: www.scotland.gov.uk/Resource/Doc/933/0120089.doc

Yardley, M., Adkins, I., Linton, R., 2013, Cities Project: Final report for Ofcom. Analysis Mason, July

		Likelyhood to use		hood to use		
Barriers	Туре		the In	ternet	Details	Evidence / Reference
Demographic	Age	older				SHS, 2012, p79: Ofcom, 2013b
					African Americans less likley to have BB: Blacks and hispanics	Larose et.al, 2012: Prieger
	Ethnicity	minority			less likley to be online in USA	and Hu, 2008
					SHS report no gender difference, p83: 'men use the internet	SHS 2012: Dutton and
	Gender	female			more than women, especially for entertainment'	Helsper, 2007
						Dutton and Helsper, 2009:
	children in house	no			presence of children increses contact with ICT	Selwyn, 2004
	SIMD	lower			15% most deprived, 37% no Internet	SHS, 2012, p81
Education and						
Skills	Use at work	no			Not used at work means less likely to have Internet at home	Selwyn, 2004
					non users more likley to point to lack of skill' : men and students	
					more capable of figuring things out for themselves and are more	
					confident in their Internet skills: Lack of confidence and ongoing	SHS, 2012, p88: Dutton and
	technology and equipment skills	low			support can cause users to lapse	Helsper, 2007 : CCP, 2012
					poor education barrier to accessing learning resources online'	
	Education	basic			Enyon classified into basic (55%), further, higher (90%)	Helsper, 2008: Eynon, 2009
	user percieved Internet skills /					Cheong, 2008: Hatgittai
	technology confidence	low			More skilled do more online activities	and Hinnant, 2008
	Internet experience	shorter			longer use increases likelyhood to use Internet for e-learning.	Eynon, 2009
Economic	Employed	no				Helsper, 2008
	Income	lower			< £15,000p.a. 50% to 98% >£40,000	SHS, 2012, p79
	socio-economic status	low			AB groups87% DE groups 38% in Glasgow city fixed BB uptake:	Ofcom, 2013b: Helsper, 2008: Lee. 2008
		-	1		potential users, friends and family went online for them: 23% of	,
Social	proxy use	ves			non users use by proxy.	White, 2012: Ofcom, 2012a
	percieved advantages / priority	low			low priority due to failure to percieve benefits of being online	CCP. 2012
		-			Diffusion of innovations: social influences from family and	Rogers, 2003: Dwivedi and
	structure of social networks /				friends to subscribe: social isolation: 'ICT use is strongly	Williams, 2009: CCP, 2012:
	social influence	low			mediated by neighbourhood social relations'	Crang, 2006
	interest in technology /	-			tenacity and determination including recognition of multiple	
	motivation	low			benefits, increases likelyhood to use	CCP, 2012
	fear of technology	high			is a barrier for those less digitally engaged	CCP, 2012
		Ŭ			3 , 30	Eynon, 2009: Verdegem
					UK longitudinal study, 91% with positive attitude were current	and Verhoest, 2007:
	attitude	negative			Internet users (2007, n=2350)	DiMaggio et.al, 2001
					poor family dynamics can lower confidence: peer effect are	
					present, including pressure to conform and cost of a decision to	CCP,2012 : Agarwal,
	peer effects	low			connect which is not just financial.	Animesh and Prasad, 2009
	family conflict / others in					,
	household use	high			childrens use of computers can displace adults use	Selwyn, 2004
	pressure to conform	low	Ì		the fear of being excluded can increase likelyhood	CCP,2012:

## Table 1: Barriers and drivers to household Internet use

Year	Sample	Area	BB	Type of	Comments	Reference
	size		uptake	connection		
2009	-	Greater Glasgow	39%	Fixed and	No details of sample size in	2009, p58
				mobile	CMR Scotland report	_
2010	357	Glasgow, Clyde and	45%	Fixed only	Individual	2010, p117
		Lanarkshire (GCL) <sup>1</sup>				_
2011	120	GCL	50%	Fixed and		2011 p29
				mobile		_
2011	594	Not clear if this is just	50%	Fixed only	Confirms results from 2011	British
		Glasgow Local			CMR	population
		Authority or GCL or				survey.
		other				CMR 2012
						p15
2012	120	GCL	60%	Fixed and	Data from Ofcom technology	CMR 2012
				mobile	tracker	p40
2013	594	Glasgow	50%	Fixed only	Fixed BB uptake stagnating	British
						population
						survey.
						CMR 2013
						p32

Table 2: Ofcom 'Communication Market' report figures for Greater Glasgow broadband adoption

Note 1 – Glasgow, Clyde and Lanarkshire is a NHS health board region and covers eight local authority areas on both sides of the River Clyde, including North and South Lanarksjre and Inverclyde.

Source: Ofcom, CMR Scotland reports, 2009,2010,2011,2012, 2013

## Table 3: Number of computers per 100,000 population

	Glasgow	Manchester	Manchester's nearest 16 neighbours average	Philadelphia
Population	590,000	502,900	394,950	1,500,000
Number of static libraries	33	22	22	55
Number of static libraries per 100,000 population	5.6	4.4	5.3	3.6
Library computers per 100,000 population	107	120	69.8	55 (includes multiple public access centres)
% of WiFi at public libraries	18%	30%	18%	No data
Computing costs p.a. per 100,000 population	No data	£1,628	£450	No data

Sources: compiled by the authors from a variety of online sources, library reports



Figure 1: Glasgow city and the local authority boundary





Figure 2: SIMD overall deprivation for Glasgow city, with library locations marked

Figure 3: Broadband uptake in Glasgow 2009/2010 with some public Internet access points



Source: based on SHS data from 2009/2010. Never used the Internet or only at work versus personal and work (median for each datazone)

## Figure 4: Overall SIMD rank less than 30, with areas for investigation highlighted



## Table 4: Area and library information

Area	Library Name	Postcode	SIMD 2012 rank	WiFi (Y/N)
Possil / Milton Milton		G22 7QR	50	Ν
	Possilpark	G22 5JJ	3	Ν
	Springburn	G21 1JY	167	Ν
Cranhill / Easterhouse	Riddrie	G33 2QF	645	Ν
	The Bridge	G34 9JW	739	Y
Parkhead / Barrowfield	Bridgeton	G40 2QH	77	Y
	Parkhead	G31 4XA	34	Ν
	Shettlestone	G32 7AX	449	Ν



Figure 5: Glasgow libraries with 2012 overall SIMD datazones



Figure 6: Visitors at Glasgow libraries 2001/2001, 2001/2002 and 2012/20013



Figure 7: Overall SIMD and percentage income deprived values for library sample



Figure 8: Type of help required by users at the library

First used Internet	Percentage
school/college	29
home	26
library or library training	20
work or job training	14
friends house	8
other	3

Particular Interest	Percentage		
information and learning	32		
economic	27		
socialisation	22		
entertainment	14		
economic and Info and learning	3		
multiple reasons	3		

	Age						
	Row %	16-24	25-34	35-44	45-54	55-64	>65
	home	20.59	26.47	11.76	23.53	11.76	5.88
	friends house	0.00	20.00	30.00	30.00	20.00	0.00
First used	job training	0.00	0.00	66.67	33.33	0.00	0.00
	work	0.00	0.00	20.00	53.33	20.00	6.67
	school/college	40.54	29.73	16.22	5.41	2.70	5.41
	library training	0.00	0.00	0.00	62.50	12.50	25.00
	library	5.56	11.11	22.22	33.33	22.22	5.56
	other	25.00	25.00	50.00	0.00	0.00	0.00

Table 5: Where the Internet was first used (n=129), by age and interest (n=116)



Figure 9: Activities of Internet users at eight of Glasgow's libraries



Figure 10: Type of activities

Activity

Figure 11: Number of Internet activities based on how often visited library and Internet experience





Figure 12: Causal map of Glasgow library management of library Internet access

Figure 13: Glasgow public library Internet privacy and filtering





Figure 14: Causal map of library users of public Internet access in areas of deprivation