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Ellen J. Helsper and Bianca C. Reisdorf

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The emergence of a 'digital underclass' in Great Britain and Sweden: Changing reasons for digital exclusion

Lead author: Dr Ellen J. Helsper, Media and Communications Department, London School of Economics and Political Science, Houghton Street, London WC2A 2AE, UK, e.j.helsper@lse.ac.uk, +44 (0)20 7955 6420

Dr Bianca C. Reisdorf (Co-author), Quello Center, Department of Media and Information, Michigan State University, USA, reisdo10@msu.edu

Dr Ellen Helsper is Director of Graduate Studies and Associate Professor in the Media and Communications Department at the London School of Economics and Political Science. Her research interests include the links between social and digital inequalities, mediated interpersonal communication, new media audiences, and quantitative and qualitative methodological developments in media research. She consults widely for government, third sector and commercial organizations and is involved in a number of large cross-national research projects related to internet use by adults and children.

Dr Bianca C. Reisdorf is a Quello Postdoctoral Fellow in Media and Information Policy in the Department of Media & Information at Michigan State University. Her research interests include digital inequalities and policies, Internet use among vulnerable groups, and

cross-national comparative studies that apply both qualitative and quantitative methods. She was Lecturer and Director of Distance Learning in the Department of Media and Communication at the University of Leicester in the UK before her position at Michigan State University.

Abstract

Research into reasons for internet non-use has been mostly based on one-off cohort studies and focused on single-country contexts. This paper shows that motivations for being offline changed between 2005 and 2013 amongst non-and ex-users in two high diffusion European countries. Analyses of Swedish and British data demonstrate that non-user populations have become more concentrated in vulnerable groups. While traditional digital divide reasons related to a lack of access and skills remain important, motivational reasons increased in importance over time. The ways in which these reasons gain importance for non- and ex-user groups vary, as do explanations for digital exclusion in the different countries. Effective interventions aimed at tackling digital exclusion need to take into consideration national contexts, changing non-user characteristics, and individual experience with the internet. What worked a decade ago in a particular country might not work currently in a different or even the same country.

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1. Introduction

Early on, digital divide research mostly looked at how socio-economic factors, such as income, education, age, gender, and employment (Helsper, 2012; Norris, 2001; Vicente and Lopez, 2011), were related to internet non-use. Following the development of the debate in the field and to reflect the multi-faceted nature of explanations of non-use, this paper uses the term digital exclusion instead of digital divide to describe the range of external and internal factors that explain why people disengage from the internet and how this changed over time. This paper focuses on two sets of explanatory factors (socio-economic background and self-reported reasons) for internet non-use.

Most digital exclusion research uses snapshot data, examining how social and digital exclusion are related to each other at a certain point in time. There is also qualitative, ethnographic research (Bakardjeva, 2005; Haddon, 2000; Katz, 2010; Madianou and Miller, 2012), which spans longer periods of time. When trying to predict who will be digitally excluded in the future and why, a case study approach might be problematic because findings cannot be generalized and population changes in reasons for disengagement cannot be predicted. This paper uses a quantitative, longitudinal approach to look at how self-reported reasons for Internet non-use changed and how the predictors of these reasons fluctuate in high diffusion countries.

Britain and Sweden were chosen for comparison based on their characteristics and availability of comparable data. In both societies technologies are ubiquitous and embedded into everyday life. Digital infrastructure and broadband connections are widespread in Sweden and Britain, which means that basic access is no longer a major hurdle to digital inclusion. Nevertheless, levels of internet use have diverged between 2003 and 2013. While both countries started out with 60 percent of users in 2003, Great Britain had 78 percent users in 2013 (Dutton and Blank, 2013) and Sweden 86 percent (Findahl, 2013). One of the aims of this paper is to understand whether the smaller Swedish group of non-users shows different characteristics and reasons for non-use than the British group and whether differences and similarities between these countries have changed over time. While both are Northern European countries, Sweden is more technology-oriented (Frykman and Löfgren, 1985) and represents a more equal society than Great Britain (United Nations Development Programme, 2008). They also differ in policies regarding the internet and other information and communication technologies (ICTs); Sweden started pushing for broadband earlier and provided tax refunds for computer hardware in the mid-2000s.

2. Background and Research Questions

There has been considerable research into digital exclusion and reasons for internet non-use. Strong links have been found between traditional social exclusion and digital exclusion (Helsper, 2012; McCreadie and Rice, 1999; Norris, 2001; Van Dijk, 2005; Witte and Mannon, 2010). People who are disadvantaged in areas of economic, social, and personal wellbeing also tend to be the ones least likely to engage with ICTs. This has caused concern among policymakers (European Commission, 2010), since the socio-economically disadvantaged could benefit most from services offered online and are the heaviest users of services offline.

Patterns of exclusion persist even when access is almost universal and many services are only available online. Thus, it is important to understand why people choose not to take advantage of the opportunities that ICTs offer. Researchers disagree about the extent to which these 'choices' are truly free or forced by socio-economic circumstances and cultural practices (Eynon and Helsper, 2011; Selwyn 2006).

Recent research, using more complex analyses of quantitative and qualitative data, shows that there is rarely a straightforward relationship where one indicator trumps all others as an explanation of digital exclusion (Helsper, 2011; Helsper and Eynon, 2013; Selwyn, 2004; Zillien and Hargittai, 2009). There is concern that those who continue to be offline will be more difficult to reach because they suffer compound disadvantage,

suggesting digital inclusion is becoming entrenched amongst the most vulnerable in society (Helsper, 2014). However, most studies neither contextualize this more nuanced understanding within social and economic changes nor take into consideration the changing composition of groups that are excluded from using ICTs.

We test assumptions of changes over time by hypothesizing that:

H1a: In both Sweden and Britain the population of non-users has decreased in size but has become more concentrated in vulnerable groups.

Even less common is a cross-national comparison, which highlights the importance of national policy as well as socio-economic and socio-cultural landscapes. Research on digital divides suggests that digital exclusion might be explained by national-level infrastructure, regulation, and socio-economic inequalities (Helsper, 2012; Fuchs, 2009; James, 2008; Ono and Zavodny, 2007). A review of studies in the field brought up no cross-national research comparing changes in patterns and reasons for exclusion over time. Based on the different digital and policy histories of Sweden and Britain, we hypothesize:

H1b: The Swedish non-user population will be smaller and become more concentrated in vulnerable groups than in Britain.

In both countries, access to the internet is now widespread and access divides between socio-demographic groups are less problematic, but usage and skills patterns

remain unequally distributed (Dutton and Blank, 2013; Findahl, 2013), which links to debates about second-level digital divides (Hargittai, 2002). In addition, the internet has moved to incorporate a wider variety of activities of increasing complexity, making full engagement a matter of a wide range of skills (Helsper and Eynon, 2013; Van Deursen and Van Dijk, 2014).

Three indicators consistently show up as strong predictors of internet access and use : age, education and disability. The elderly are less likely to have learned computer and internet skills in institutional settings, such as school and work place, and motor, technical, and cognitive skills are often a problem (Kantner and Rosenbaum, 2003; Milligan and Passey, 2011). Similar problems with formal skills acquisition are found for the lower educated and for motor and cognitive skills for disabled people (Vicente and Lopez, 2011). We hypothesize:

H2a: Over time, as the non-user population becomes more concentrated in vulnerable groups and the internet diffuses widely and diversifies, access and costs will become less important as reasons for non-use in comparison to lack of skills.

And because in Sweden infrastructure and access are more widely diffused than in Britain, we hypothesize:

H2b: In Sweden access and costs will be comparatively less important over time than in Britain.

Reisdorf et al.'s (2012) qualitative study showed that non-users perceived a general social desirability of internet usage. This makes more likely that they indicate a lack of interest as a reason, since that is the more socially desirable response if being online is the norm for everyone else. This should be especially the case for the young since their peers are very likely to be online. The situation is different for those whose peers are less likely to use the internet frequently, i.e. the unemployed, the elderly, the retired, and the socially isolated. They might be just as likely to indicate that they are not interested as they are to indicate that they do not have the necessary skills. Research on the availability of proxy users confirms the importance of a close social circle at home and at work to motivate engagement with the internet (Bakardjeva, 2005; Helsper, 2011). We hypothesize:

H3a: Over time, as the non-user population becomes more concentrated in vulnerable groups, lack of interest as a self-reported reason will increase in importance in comparison to other reasons.

We assume that, because Sweden has a smaller non-user population, it is more likely in Sweden that non-users' peer groups are using the internet and that this increases the social desirability of being online. We hypothesize:

H3b: In Sweden, lack of interest will become relatively more important over time than in Britain.

To test the hypotheses above this paper will examine whether explanations for disengagement from the internet change over time. We examine socio-economic factors related to internet non-use and the reasons given by ex-users (who used the internet before) and non-users (who never used the internet) for disengagement from the internet, and we expect stronger entrenchment of digital exclusion in Sweden than in Britain. We analyzed several waves of the Oxford Internet Surveys (OxIS) and the World Internet Project (WIP) Sweden. Both are representative population surveys, which have had at least five waves of data collection.[1] Data on changing reasons for non-use over time and the predictors of these reasons permit us to ask whether there is a 'one size fits all' years and countries approach to tackling digital exclusion or whether this is a field that shifts so rapidly that understanding digital disengagement is highly dependent on national context and time. The underlying practical question is whether or not policies or interventions that would have worked to counteract digital disengagement half a decade ago would still be valid today, and whether Sweden and Britain could use similar approaches, or whether policies and interventions might have to differ.

3. Methodology

3.1 Sampling

We are using datasets from the OxIS and the WIP-Sweden, which are part of the World Internet Project. These datasets were designed to be comparable, collecting representative samples of the respective populations and using the same set of questions.

The OxIS is a biennial survey that uses a nationally representative sample of Britons aged 14 and older (England, Scotland, and Wales). Interviews were conducted face-to-face in people's homes. A two-stage random sampling design was used. The data were weighted according to the UK Census based on gender, age, socio-economic grade, and region (Dutton and Blank, 2013); each wave of data has over 2,000 respondents.

The WIP-Sweden is a yearly survey that uses a nationally representative sample of Swedish people aged 16 and older. The data are panel data; 104 of the original 2,078 participants in 2000, the first year of the survey, also completed the survey in 2013. Since the British data were not panel data, no longitudinal time series analyses could be conducted. Instead, we used cohort-based analyses and compare these over time. Since panel attrition was high, interdependence of year-to-year data was no issue for the Swedish dataset. For the purposes of this paper, only the years for which British data were available were used, thus making a comparison possible between 2005, 2007, 2009, 2011, and 2013.

3.2 Measures

3.2.1 Composition of non- and ex-user populations

To analyze the composition and to account for changes of non- and ex-user populations, we performed logistic regressions across the OxIS and the WIP-Sweden. Through logistic regressions we tested the influence of different socio-economic factors on the likelihood of being an internet non- or ex-user versus being an internet user while controlling for other factors, including social isolation with questions about whether other adults and children were in the household.

Although we cannot compare if changes between the waves are significant with this type of analysis, we can describe whether the influence of different factors has increased, decreased, or remained stable over these 8 years. For the ex-user analyses bootstrap regressions were performed since the number of ex-users was very small in both countries.

3.2.2 Reasons for disengagement

Both the OxIS and the WIP-Sweden were designed to explore general involvement with and ideas about the internet. Since the first survey in 2003, OxIS has asked non- and ex-users what their reasons were for disengagement. Over the years the set of questions has

expanded but the survey continuously measured four key categories of reasons: access, skills, interest, and costs.[2]

Dichotomous variables were created from these items; if the person marked at least one of the reasons within a class as a reason for why they did not use the internet (non-users) or stopped using the internet (ex-users) a score of '1' was assigned; if none of the reasons within a class were indicated as a reason, they received a score of '0' for that class. For Britain, two different types of questions measured reasons for non-use: the most important reason (one answer can be selected) and all relevant reasons mentioned (multiple reasons can be selected). The Swedish survey only asked for the most important reason. The benefits and disadvantages of asking these questions in different ways are discussed elsewhere (Helsper and Reisdorf, 2013).

3.2.3 Challenges

Comparing the British and Swedish datasets provided some challenges regarding the wording of questions and values ascribed to answers due to cultural differences. We found differences in wording for the measurement of disabilities and the definition of children. In both countries, the question wording changed over the years. The analyses were also restricted by the types of indicators that were asked consistently in both countries,

therefore, measures based on personal characteristics (such as personality and attitudes) could not be included.

Differences in the educational systems in Britain and Sweden led to different measurement of educational qualifications. While until recently it was possible for Britons to leave school without any qualifications, this was not the case in Sweden. The value 'no qualifications' was thus not part of the response options in the Swedish questionnaire.

These differences in definitions and measurement were considered when comparing the findings regarding socio-economic backgrounds of British and Swedish internet ex- and non-users.

4. Results

4.1 Explaining digital exclusion (non- and ex-use)

The regression analysis shows that the predictive strength of factors related to internet non-use and ex-use varies across the waves. Below we first discuss explanations of non-use and then ex-use.

4.1.1. Non-use in Britain and Sweden

Table 1 shows that age, education, disability, social isolation, and unemployment were strongly related to non-use across all waves in Britain. The strength of the relationship between age and non-use increased between 2005 and 2013 with a slight dip between 2007 and 2009. Younger age groups were significantly less likely to be offline in comparison to those over 65.

Educational qualifications are an important factor related to non-use, increasing in strength over the years; those without educational qualifications were 17 times more likely to be non-users in 2013 than someone with higher education. Britons with basic or secondary qualifications were 4 times (basic) and 3 times (secondary) more likely to be offline than Britons with higher education in 2013.

Those who reported a disability were more likely to be offline than those who did not report health problems in 2007, 2011, and 2013. Living in a household without children was significantly related to being offline only in earlier OxIS waves but not in recent years. Gender was significantly related to non-use in 2005 and 2013 only; women were slightly more likely to be offline than men.

Living without other adults was consistently related to non-use; those living alone were more likely to be offline than those living with an adult. Being retired or unemployed (versus employed) played a stable and significant role in the likelihood of being a non-user

across all waves, except for 2011. The goodness of fit and the correctly predicted

percentage in the model increased over the years.

The picture looks slightly different for Swedish non-users, although age, education,

disability, social isolation, and unemployment were also strongly related to non-use in most

waves. Unfortunately, the Swedish datasets only started to distinguish ex-and non-users in

2009; hence the 2005 and 2007 results need to be treated with caution.

Table 2 suggests that age relates to non-use even more strongly in Sweden than in

Britain. With a shrinking non-user population in Sweden, age is one of the factors most

strongly related to being offline.

Educational qualifications became increasingly important between 2005 and 2013

with those who had basic qualifications more than 10 times more likely to be non-users

than those with higher educational qualifications in 2013. This trend persisted over the last

8 years and can also be observed for secondary (3 times more likely) and further (3 times

more likely) educational qualifications.

Disability (measured in 2007, 2011, and 2013) was not significantly related to non-

use in 2007, but in 2011 those who reported a disability were more than 3 times more likely

to be non-users, and 2.5 times more likely to be offline in 2013. Gender did not have a

significant effect between 2007 and 2011. However, in the latest data, women were significantly more likely to be offline than men.

Living alone had a strong and stable influence on the likelihood of being offline since 2007; in 2013, those living alone were more than twice as likely to be non-users as those who lived with someone.

Between 2005 and 2013 occupational status significantly impacted the likelihood of being offline. Being retired strongly increased the likelihood of being a non-user across all waves. In 2013, retired Swedes were 5.6 times more likely to be offline than those who were employed, the strongest impact retirement had in any of the datasets, despite controlling for age. Being unemployed had an impact in 2007, 2009, and 2013, with a 3.2 times higher likelihood of being offline in 2013, the strongest impact unemployment had in any of the Swedish waves. Due to an extremely large number of missing cases for having children in the Swedish datasets, we were unable to include this variable in the analysis.

4.1.2. Ex-use in Britain and Sweden

Table 3 shows similar trends for ex-users to those found for non-users in Britain, but different factors play a role: education, social isolation, and unemployment were

significant across all waves. In contrast to non-use, age was not a significant factor for ex-use.

Similar to non-use, education was strongly related to ex-use with those who had no educational qualifications significantly more likely (5.7 times in 2013) to be ex-users across all waves than those with higher education. Other educational qualifications were only related to ex-use in 2009.

While disability was not previously a significant factor for ex-use, in 2013, those who reported a disability were twice as likely to be ex-users. Living without children in the household was only a significant factor in 2011. Gender was not related to the likelihood of being an ex-user.

Living alone, and occupational status were strongly and significantly related to ex-use from 2005 (living alone) and 2007 (occupational status). Those living alone and those who were unemployed or retired were significantly more likely to be ex-users than those living with another adult and those in employment.

Table 4 shows that Swedish ex- and non-users differed in their characteristics: education and social isolation were significant across all waves. While age was related to being an ex-user in 2009 and 2011, in 2013 it ceased to be significantly related to ex-use while it remained significant for non-use. Those who did not have higher education were

more likely to be ex-users. Disabilities were strongly related to ex-use only in 2011 but not

in 2013, in contrast to non-use, where disability remained significant. Those living alone

were consistently more likely to be ex-users. Being unemployed was significantly related to

ex-use only in 2009. In 2013, being retired was significantly related to ex-use and non-use

in Sweden.

These analyses show that the populations of ex- and non-users changed

considerably over time in both Britain and Sweden, especially in age, education, health, and

household composition. Sweden and Britain show differences in terms of the strength of

these relationships but are similar regarding the most important factors related to non- and

ex-use. Non-users in both countries are increasingly made up of the more vulnerable (i.e.

elderly, lower educated, worse health, more isolated). For ex-users, age does not make a

significant difference, but household composition and lower educational qualifications

impact the likelihood of being an ex-user.

4.2 Reasons

What follows is a descriptive examination of how self-reported reasons for non-use

have changed in Britain and Sweden (most important reason only) and how the range of

reasons changed for non-users in Britain (all mentioned reasons). As the Swedish dataset

did not differentiate ex- and non-use until 2009, we were only able to analyze data from 2009, 2011, and 2013.

4.2.1 Most important reasons for non-use over time in Britain and Sweden

In Britain, a significantly smaller proportion of non-users mentioned lack of access (Δ2009-2013 Z= 2.83, p<.001) and skills (Δ2009-2013 Z= 2.15, p<.05) as the most important reason for disengagement in 2013 than in 2009 (Table 5), while lack of interest increased in importance (Δ2009-2013 Z= -2.93, p<.001). Among Swedish non-users, lack of interest was the only significant change in the most important reason for disengagement (Δ2009-2013 Z=3.2, p<.001).

4.2.2 Most important reasons for ex-use over time in Britain and Sweden

Trends were different among ex-users; British ex-users mentioned access less often (Z= 3.20, p<.001), and neither lack of skills (Δ2009-2013 Z= -1.34, p=.18) nor lack of interest (Z=-1.85, p=.06) were mentioned significantly more often in 2013 than in 2009. An equal proportion of people mentioned costs in 2013 as in 2009 among both non- and ex-users. For Swedish ex-users the only significant change was found for costs (Δ2009-2013 Z=2.6, p<.001), which was less important in 2013.

4.2.3 Ranking most important reasons for non-use in Britain and Sweden

For both British and Swedish non-users, lack of interest was the most important reason for being offline in 2013: two thirds of the Swedish non-users named this as their most important reason, compared to 71 percent of British non-users (2013 Z=2.9, p<.001). Lack of skills was the second most important reason for non-users in both countries, but Swedish non-users attached more importance to this (2013 Z=3.6, p<.001). While access was as important for Swedish non-users, it was the least mentioned among British non-users (2013 Z=6.1, p<.001). Cost became the third most important reason in 2013 in Britain but was the least important in Sweden across all years (2013 Z=2.9, p<.001).

4.2.4 Ranking most important reasons for ex-use in Britain and Sweden

In 2013, the same proportion of ex-users in both countries mentioned lack of access and they did not differ significantly in how often they mentioned lack of interest as the most important reason (2013 Z=0.7, p=.46). Cost was the second most important reason in Britain and the least important reason in Sweden in 2013 (2013 Z=3.8, p<.001).

4.2.5 Range of reasons for non-use over time in Britain

The following findings are based on the questions that asked for a range of reasons for not using the internet instead of only the most important reason in Britain.[3]

Figure 1 shows that while lack of interest was the least mentioned reason for non-use in 2005, it became the most mentioned reason in 2011 (86 percent; Z=14.96, p<.001), and there was another significant increase in 2013 (94 percent; Δ2011-2013 Z= -4.09, p<.001).

From 2005 to 2007, the percentage of non-users who indicated a lack of skills as a reason for non-use went up to around 90 percent (Δ2005-2007 Z=7.29, p<.001), but it decreased to 71 percent in 2011 (Δ2007-2011 Z= 7.39, p<.001) and remained stable in 2013 (76 percent; Δ2011-2013 Z=, 1.75 p=.08). Between 2005 and 2013, there was no significant change in lack of skills as a reason for non-use (Z= 0.78, p=.44). There was no change over time in the percentage of non-users who mentioned high costs as a reason for non-use. The percentage of non-users who indicated a lack of access as a reason for non-use fluctuated around 70 percent with no significant change between 2005 and 2013.

4.2.5 Range of reasons for ex-use over time in Britain

Figure 2 shows that until 2011, ex-users were consistently most likely to mention lack of access as a reason for being offline. However, over time, costs were mentioned more frequently by ex-users (Δ2005-2013 Z= -2.97, p<.001), approaching similar levels to the mention of lack of access (around 50 percent) in 2013. After remaining relatively stable since 2005, there was an increase in the percentage of ex-users who mentioned a lack of interest between 2011 and 2013. Since 2005, there was a significant change in the importance of this reason for the first time in 2013 (Δ2005-2013 Z=-2.20, p<.05). Over time, there was a significant 24 percentage points increase in mentioning lack of skills as a reason for being an ex-user (Δ2005-2013 Z=-4.05, p<.001).

5. Discussion

This paper aims to shed light on several aspects of internet non-use over time in Britain and Sweden. The first hypothesis predicted that non-user populations would become more concentrated in vulnerable groups, as the proportion of those who were offline got smaller (H1a). The results mostly support this hypothesis as the non-user population shrunk in both countries and belonging to a vulnerable group became a stronger predictor of being offline, evidenced by an increase in the predictive power of the models for non- and ex-use over time.

In both Sweden and Britain, aspects traditionally associated with social exclusion were more strongly related to the probability of being a non-user in 2013 than in 2005. Especially those with lower levels of education seem more and more at risk of digital exclusion. The pattern among ex-users is different in that the range of predictors is narrower. However, in a more general sense, digital exclusion has entrenched itself among the most vulnerable (i.e. lower educated, retired, and socially isolated).

Thus overall, we cannot reject hypothesis H1a; in both countries the non-user populations have become more concentrated in terms of vulnerability. Worryingly, social exclusion and economic disadvantage have become stronger determinants of digital disengagement than they were when research into digital divides started, indicating the emergence of a digital underclass (Helsper, 2012, 2014). While this can be said for both countries, the non-user population in Sweden was considerably smaller and more concentrated among those with lower education, the unemployed, and the socially isolated. Within the next few generations, Sweden will probably have a very small, but potentially severely excluded group of non-users. In Britain, the non-user population is likely to remain larger but entrenched in a wider range of types of socio-economic disadvantages. These findings show that we cannot reject H1b either; the digitally excluded in Sweden are

more marginalized (i.e. there are fewer people like them) and have become concentrated among the severely socio-economically and socially vulnerable.

The findings show that those who have had some first-hand exposure to the internet (ex-users) differ from those who have had none. Ex-use is related to a narrower range of predictors than non-use, which means that, in a socio-economic sense, there are more barriers to overcome for non-users than for ex-users, and non-users are more likely to suffer compound disadvantage.

Our second set of hypotheses assumed a decreasing importance of access and cost as reasons for non-use and an increased importance of lack of skills. The descriptive analysis found support for hypothesis H2a only for British ex-users. For British non-users, skills actually decreased as *the* most important factor. Swedish ex- and non-users mentioned skills as often in 2013 as in earlier waves of the survey. To a certain extent, we have to reject the part of the hypothesis that stated that costs and access have become less important in determining non-use—for non-users they remained of similar relevance, especially when (British) non-users were asked to mention all reasons that contributed to being offline. Among ex-users a similar pattern occurred in Sweden; there was no significant change in the most important reasons. For British ex-users, costs and access increased as reasons for being disconnected until the last wave of the survey, when they

dropped significantly but were still mentioned more often than in 2005. Thus, H2a needs to be adjusted and qualified depending on the type of non-user and the country and on how the question is asked (Helsper and Reisdorf, 2013). We did not find support for H2b, since in Sweden reasons for non-use remained stable over time while in Britain they changed; the hypothesis predicted the opposite.

The third set of hypotheses stated that lack of interest as a reason for non-use would go up in importance compared to other reasons, especially relative to lack of skills. The results suggest a significant increase of lack of interest as a reason among non-users, although there was no significant change in Sweden or Britain between 2009 and 2011. It is interesting that in the period that lack of interest went up as a reason for non-use, lack of skills became less prominent, equaling levels of earlier waves. This was also the period in which an increase in social isolation was noted in the population of non-users. Age followed an opposite pattern up until 2013 when it increased in significance alongside a significant increase in lack of interest as a reason. This suggests that it is not so much age on its own that is an important factor but that life stage and social connections also need to be taken into consideration (Helsper, 2010) and that this is even more relevant now than when digital exclusion research started. That the importance of retirement dropped and the predictive value of education and social isolation increased in that same period shows that it

is not so much occupation but social and cultural aspects of age that might determine reasons for ex-use.

Therefore, we cannot reject hypothesis H3a; for a non-user population that consists of more individuals who are socially isolated, elderly, and have lower educational qualifications, it is more common to indicate lack of interest than lack of skills as a reason for being offline. Nevertheless, we did not expect lack of interest to increase so much more than skills. Since the mention of skill as a reason did not decrease significantly over time, it is unlikely that the increased mention of lack of interest is a social desirability effect. In addition, we did not find support for H3b. While interest became more important as a reason in Sweden, it increased relatively more in importance in Britain. Future research should disentangle the effects of age, social isolation, and education to understand which of these effects is related to social desirability and which to a genuine lack of interest (Helsper and Reisdorf, 2013). It should also look at how people determine whether ICTs are useful, who they compare themselves with, and what they use as referents in relation to access, skills, and interests and how this might differ between countries.

6. Conclusions

This study showed that overall non-users in Sweden and Britain are increasingly older, less educated, more likely to be unemployed, disabled, and socially isolated. This is accompanied by increases in lack of interest in the internet as a reason for non-use and stability of costs and access as reasons with less trends for the impact of a perceived lack of skills. These results partly contradict other research that indicates that second-level digital divides (interest and skills) will replace primary digital divides (costs and access) (Hargittai, 2002). While second-level digital divides increased in importance over the years, primary digital divides have not lost significance. Due to compound levels of disadvantage, those who are offline become entrenched in their exclusion and add more rather than replace one reason or barrier with another. Therefore, in both Sweden and Britain we see the emergence of a 'digital underclass' (Helsper, 2014). Entrenchment of digital exclusion among the most vulnerable was stronger in Sweden, where the non-user population was decidedly smaller than in Britain. This reflects earlier research indicating that national characteristics influence how digital divides play out at a micro-level (Fuchs, 2009; Helsper, 2012; James, 2008; Ono and Zavodny, 2007). It also suggests that different policies are needed to reach those who are disengaged. In Sweden, non-users are more likely to be confronted with others who are like them in some way but are engaging with

ICTs. We know very little about how comparisons are made that determine people's motivations for going online.

Conclusions about the nature of digital exclusions and their origin need to be contextualized. The type of exclusion depends on the type of non-user and on the country context. This is likely to be based in the slightly different characteristics of those who have and have not had some exposure to the technology (Van Dijk, 2005; Witte and Mannon, 2010). This can in turn be linked to the different levels of support and socialization that these groups have in relation to technology (Helsper, 2010; Selwyn, 2006). In addition, the differences between Sweden and Britain in terms of what different non-users indicated to be the reasons for their disengagement emphasize the importance of national contexts and differences that might be related to general population characteristics and national policies (Brandtzaeg et al., 2011; Helsper, 2012; Norris, 2001). Future research should include more countries and have an a-priori theory, with testable hypotheses, about which national factors explain internet use.

This study had some limitations, one of which was that the reasons for disengagement are self-reported and are therefore subject to social desirability bias (Reisdorf et al., 2012). Some of this was explored by comparing lack of interest to lack of skills as reasons for non-use. However, we do not know whether these biases differ

between different groups of people; qualitative research should explore this further. The design of survey measures that come closer to measuring actual skill instead of self-reported skill, which are tested against observations of use in everyday practice, would also be an important development in this regard (Van Deursen et al., 2015). While this study was unique in its use of data collected over time, the data were still cohort based. There is a need for panel data, which would enable proper time series analyses to check for the effects of life events, instead of the more descriptive approach taken here. A further limitation of the study was that while the data were cross-nationally comparable, there were issues with some variables being rephrased and asked differently in Britain and Sweden across the time series. This complicated the analysis and it is vital that cross-national datasets on internet use are even more rigorously designed to make them truly comparable.

Notwithstanding these limitations, the conclusion based on the analyses presented in this paper suggests that digital exclusion policies cannot rely on data that do not take into account changing trends over time. Further contextualization needs to take place in terms of time and country context. Non-users of the past are different from current non-users regarding their socio-demographic make-up and regarding the reasons they give for their digital disengagement. Therefore, those trying to tackle digital exclusion need to continuously adapt their strategies based on the current composition and socio-economic

and cultural contexts of non-users. Nevertheless, it does not seem a far stretch to argue that

a lack of interest will be central in addition to more traditional barriers to engagement in the

future and that the digitally excluded will be increasingly made up of those who are more

isolated and disadvantaged in society in general. Thus, interventions need to tackle digital

exclusion in increasingly hard-to-reach groups through multiple strategies, taking into

account skills, awareness, experience, and motivational issues that stop people from

becoming digitally engaged citizens. Non-users have changed in their composition and the

issues that are relevant in countering digital disengagement have changed with them. In

countries like Sweden that have increasingly small and, therefore, more vulnerable and

excluded non-user populations with multiple reasons for disengagement, policies and

interventions have to focus on the hardest-to-reach groups, employing a wider range of

interventions addressing multiple reasons for disengagement. In contrast, countries like

Britain with similarly high ICT infrastructure but more diverse and larger digitally excluded

populations can use more specific interventions related to fewer reasons for disengagement

but employing these across a wider range of social contexts. However, over time this is

likely to change as the non-user population becomes smaller and interventions will

probably take on a similar nature to those in Sweden. This shows the importance of

building on previous work that looks at national-level factors as explanations for digital

exclusion (Helsper, 2012; Fuchs, 2009; Ono and Zavodny, 2007) and work that looks at changes over time for different segments of the population.

7. Endnotes

[1] These datasets have detailed questions on socio-demographics and ask about reasons for non-use; other longitudinal research, such as the Eurostat datasets, does not include this type of information and was therefore not suitable for our analysis.

[2] The British and Swedish questionnaires, including a full description of the questions asked about age, gender, disability, and education, can be accessed at http://oxis.oii.ox.ac.uk/research/methodology and http://www.wii.se/.

[3] Question not asked in Sweden.

8. References

Bakardjeva M (2005) *Internet society: The internet in everyday life.* London: Sage.

Brandtzaeg PB, Heim J and Karahasanovic A (2011) Understanding the new digital divide - A typology of Internet users in Europe. *International Journal of Human-Computer Studies* 69(3): 123–138.

Dutton WH and Blank G with Groselj D (2013) *Cultures of the Internet: The Internet in Britain. Oxford Internet Survey 2013.* Oxford: Oxford Internet Institute, University of Oxford.

European Commission (2010) *Digital Agenda for Europe*. Brussels (BE).

Eynon R and Helsper EJ (2011) Adults learning online: Digital choice and/or digital exclusion? *New Media and Society* 13(4): 534-551.

Findahl O (2013) *Swedes and the Internet 2013.* Stockholm: .SE.

Frykman J and Löfgren O (1985) *Modärna Tider.* Lund: Liber.

Fuchs C (2009) The role of income inequality in a multivariate Cross-National analysis of the digital divide. *Social Science Computer Review* 27(1): 41-58.

Haddon L (2000) Social exclusion and information and communication technologies. *New Media & Society* 2(4): 387-406.

Hargittai E (2002) Second-Level Digital Divide: Differences in People's Online Skills. *First Monday* 7(4) http://firstmonday.org/article/view/942/864

Helsper EJ (2010) Gendered internet use across generations and life stages. *Communication Research* 37(3): 352-374.

Helsper EJ (2012) A corresponding fields model of digital inclusion. *Communication Theory* 22(4): 403-426.

Helsper EJ (2014) Synthesis Report: Harnessing ICT for Social Action. *Peer Review in Social Protection and Social Inclusion.* EU Commission, DG Employment report. Available at: http://ec.europa.eu/social/BlobServlet?docId=12437&langId=en

Helsper EJ and Eynon R (2013) Pathways to digital literacy and engagement. *European Journal of Communication* 28(6): 696-713.

Helsper EJ and Reisdorf BC (2013) A quantitative examination of explanations for reasons for internet nonuse. *Cyberpsychology, Behavior, and Social Networking* 16(2): 94–99.

James J (2008) Digital divide complacency: Misconceptions and dangers. *The Information Society: An International Journal* 24(1): 54-61.

Kantner L and Rosenbaum S (2003) Usable Computers for the Elderly: Applying Coaching Experiences. In: *Professional Communication Conference. IPCC 2003. Proceedings. IEEE International*, 21-24 Sept. 2003.

Katz VS (2010) How children of immigrants use media to connect their families to the community. *Journal of Children and Media* 4(3): 298-315.

McCreadie M and Rice RE (1999) Trends in analyzing access to information. Part I: cross-disciplinary conceptualizations of access. *Information Processing & Management* 35(1): 45-76.

Madianou M and Miller D (2012) *Migration and New Media*. New York, NY: Routledge.

Milligan C and Passey D (2011) *Ageing and the use of the Internet: Current Engagement and Future Needs. A State of the Art Review*. Oxford: Nominet Trust.

Norris P (2001) *Digital Divide: Civic Engagement, Information Poverty, and the Internet Worldwide.* Cambridge: Cambridge University Press.

Ono H and Zavodny M (2007) Digital inequality: A five country comparison using micro-data. *Social Science Research* 36(3): 1135–1155.

Reisdorf BC, Axelsson AS and Maurin H (2012) *Living Offline-A Qualitative Study of Internet Non-Use in Great Britain and Sweden* (Selected Papers of Internet Research, 2). Available at: http://spir.aoir.org/index.php/spir/article/view/10

Selwyn N (2004) Reconsidering political and popular understandings of the digital divide. *New Media & Society* 6(3): 341-362.

Selwyn N (2006) Digital division or digital decision? A study of non-users and low-users of computers. *Poetics* 34(4-5): 273–292.

United Nations Development Programme (2008) *2007/2008 Human development report.* Available at:

http://hdr.undp.org/sites/default/files/reports/268/hdr_20072008_en_complete.pdf

Van Deursen AJAM and Van Dijk JAGM (2014) *Digital Skills: Key for the Information Society.* Palgrave: London.

Van Deursen AJ, Helsper EJ, and Eynon R (2015) Development and validation of the Internet Skills Scale (ISS). *Information, Communication & Society*, 1-20.

Van Dijk JAGM (2005) *The Deepening Divide: Inequality in the Information Society.* London: Sage.

Vicente MR and Lopez AJ (2011) Assessing the regional digital divide across the European Union-27. *Telecommunications Policy* 35(3): 220-237.

Witte JC and Mannon SE (2010) *The Internet and Social Inequalities.* New York, NY: Routledge.

Zillien U and Hargittai E (2009) Digital distinction: Status-specific types of Internet usage. *Social Science Quarterly* 90(2): 274-291.

Table 1 Logistic Regressions Predicting the Likelihood of Being a Non-User, Britain, 2005-2013 (Odds Ratios)

	2005		2007		2009		2011		2013	
	B	Exp(B)	B	Exp(B)	B	Exp(B)	B	Exp(B)	B	Exp(B)
Age 14-24	-2.22**	0.11	-2.20**	0.11	-1.88**	0.15	-1.71**	0.18	-2.16**	0.11
Age 25-44	-1.32**	0.27	-1.17**	0.31	-1.62**	0.20	-1.09**	0.34	-2.28**	0.10
Age 45-64	-1.03**	0.36	-0.79**	0.45	-0.48*	0.62	-0.73**	0.48	-1.31**	0.27
No qualifications	2.77**	15.99	n/a	n/a	2.41**	11.10	2.71**	15.10	2.85**	17.24
Basic	1.56**	4.75	1.68**	5.38	1.35**	3.85	.83**	2.28	1.47**	4.36
Secondary	1.24**	3.45	2.22**	9.21	1.02**	2.78	.99**	2.68	1.16**	3.19
Further	0.58*	1.79	1.71**	5.53	.99**	2.70	.59	1.80	0.31	1.37
Disability	n/a	n/a	.42*	1.52	.27	1.31	.93**	2.53	.41*	1.50
No children	.43*	1.54	.44**	1.55	.38	1.46	.40	1.50	.40	1.49
Women	.44**	1.55	.12	1.13	.21	1.23	.03	1.03	.33*	1.39
Living Alone	.51**	1.67	.39**	1.48	.96**	2.61	1.09**	2.99	.82**	2.26
Not Working	.75**	2.13	.82**	2.28	.87**	2.39	.23	1.26	1.01**	2.75

Retired	.65**	1.92	1.25**	3.51	1.31**	3.70	1.14**	3.14	.75*	2.13
Constant	-2.01**	0.13	-2.75**	0.06	-2.95**	0.05	-3.16**	0.04	-3.31**	0.04

R2	.37	.37	.53	.59	.55
% correct	77%	79%	83%	85%	88%
Non-users	32%	28%	23%	23%	18%

[a] Base: GB population: 2005 N=2,021; 2007 N=2,145; 2009 N=1,886; 2011 N=1,932; 2013 N=2,415.
[b] Analysis does not include respondents still in education of any sort; student effects are filtered out.
[c] Reference categories for age, education, and occupational status: 65+ years; higher education; employed (full or part time).
[d] *significant at p< .05 level   **significant at p< .01 level

Table 2 Logistic Regressions Predicting the Likelihood of Being a Non-User, Sweden, 2005-2013 (Odds Ratios)

	2005		2007		2009		2011		2013	
	B	Exp(B)	B	Exp(B)	B	Exp(B)	B	Exp(B)	B	Exp(B)
Age 14-24	-1.87*	.15	-1.61**	.20	-2.15*	.12	-19.67	.00	-2.99*	.05
Age 25-44	-1.39**	.25	-.74*	.48	-2.98**	.05	-3.02**	.05	18.62	.00
Age 45-64	-.98*	.38	-.394	.67	-1.44**	.24	-1.34**	.26	-1.51**	.22
Basic			1.61**	5.01	2.11**	8.27	2.04**	7.66	2.35**	10.52
Secondary			.84**	2.33	1.16**	3.18	.62*	1.85	1.11**	3.03
Further			.50*	1.65	1.01**	2.75	.97**	2.63	1.16**	3.18
Disability			.15	1.16			1.15**	3.14	.95*	2.58
Women	.41*	1.51	.14	1.15	.28	1.32	.31	1.37	.55**	1.74
Living Alone	-.24	.79	.37*	1.45	.94**	2.56	.97**	2.63	.98**	2.65
Not Working	.40	1.49	.43*	1.54	.99**	2.70	-.423	.66	1.17**	3.22
Retired	1.08*	2.94	1.51**	4.54	1.38**	3.96	1.00*	2.72	1.73**	5.61
Constant	-.674	.51	-1.93	.15	-2.91	.06	-3.00	.05	-4.15	.16

R2	.24	.37	.55	.49	.56
% correct	79%	81%	89%	90%	92%
Non-Users	23%	26%	14%	11%	

[a] Base: SE population: 2005 N=896; 2007 N=1,775; 2009 N=1,688; 2011 N=2,199; 2013 N=3,030.
[b] WIP-Sweden did not distinguish between non- and ex-users before 2009.
[c] Reference categories for age, education, and occupational status: 65+ years; higher education; employed (full or part time).
[d] *significant at p< .05 level   **significant at p< .01 level

Table 3 Bootstrapped Logistic Regressions Predicting the Likelihood of Being an Ex-User, Britain, 2005-2013

(Odds Ratios)

	2005		2007		2009		2011		2013	
	B	Exp(B)	B	Exp(B)	B	Exp(B)	B	Exp(B)	B	Exp(B)
Age 14-24	-.29	.75	1.01	2.76	.78	2.19	-.90	.41	-.90	.41
Age 25-44	-.25	.78	0.60	1.83	.25	1.29	-.48	.62	-.66	.52
Age 45-64	-.82	.44	0.05	1.05	.54	1.72	-.31	.73	-.32	.73
No qualifications	1.19**	3.29			1.64**	5.16	1.22**	3.38	1.75**	5.73
Basic	.68*	1.98	0.17	1.19	1.87**	6.46	.65	1.91	.77	2.16
Secondary	.37	1.45	0.14	1.15	1.40**	4.06	.72	2.05	.54	1.72
Further	.47	1.60	0.29	1.34	1.00*	2.73	.67	1.95	.45	1.57
Disability			-0.12	0.89	.09	1.09	-.04	.96	.67**	1.96
No children	-.05	.95	-.02	.98	.06	1.06	.97**	2.64	-.39	.67
Women	-.03	.97	.01	1.01	-.15	0.86	.03	1.03	-.31	.73
Living Alone	.77**	2.17	.66**	1.94	.98**	2.67	.99**	2.68	.91**	2.48

Not Working	.43	1.54	1.47**	4.36	1.02**	2.77	1.63**	5.12	1.04**	2.82
Retired	-.10	.90	1.63**	5.09	1.56**	4.78	.86*	2.37	.88*	2.41
Constant	-2.43	.09	-3.98	0.02	-4.78	.01	-4.70	.01	-3.93	.02

R2 (Nagelkerke)	.07	.12	.20	.19	.21
% correct	87%	92%	90%	93%	94%
Ex-Users	8%	5%	7%	5%	3%

[a] Base: GB population: 2005 N=2,021; 2007 N=2,145; 2009 N=1,886; 2011 N=1,932; 2013 N=2,415.
[b] Analysis does not include respondents still in education of any sort; student effects are filtered out.
[c] Reference categories for age, education, and occupational status: 65+ years; higher education; employed (full or part time).
[d] Significance for bootstrapped model.
[e] *significant at $p < .05$ level   **significant at $p < .01$ level

Table 4 Bootstrapped Logistic Regressions Predicting the Likelihood of Being an Ex-User, Sweden, 2005-2011

(Odds Ratios)

	2009		2011		2013	
	B	Exp(B)	B	Exp(B)	B	Exp(B)
Age 14-24	-2.01*	.13	-1.10	.33	-.58	.56
Age 25-44	-2.32**	.10	-2.10*	.12	-.74	.48
Age 45-64	-1.36*	.26	-.92	.40	-.51	.60
Basic	.99*	2.69	.79*	2.21	.82*	2.27
Secondary	-.28	.76	-.35	.71	.86*	2.37
Further	.47	1.60	.46	1.58	.24	1.27
Disability			1.19**	3.28	.61	1.84
Women	.52	1.69	.12	1.13	.15	1.16
Living Alone	.74*	2.10	.89**	2.44	.66**	1.94
Not Working	.90*	2.46	-.02	.98	.51	1.66
Retired	.83	2.28	.53	1.70	1.26**	3.52

Constant	-3.37**	.03	-3.63**	.03	-4.30	.01
R2 (Nagelkerke)	.24		.16		.14	
% correct	96%		97%		97%	
Ex-Users	3%		2%			

[a] Base: SE population: 2009 N=1,688; 2011 N=2,199; 2013 N=3,030.
[b] WIP-Sweden did not distinguish between non- and ex-users before 2009.
[c] Reference categories for age, education, and occupational status: 65+ years; higher education; employed (full or part time).
[d] Significance for bootstrapped model.
[e] *significant at $p < .05$ level   **significant at $p < .01$ level

*Table 5 Most important reasons for non- and ex-use in 2009, 2011, and 2013 in Great Britain and Sweden*

		High Costs			No Access			No Skills			No Interest		
		2009	2011	2013	2009	2011	2013	2009	2011	2013	2009	2011	2013
Non-users	GB	7%	7%	5%	7%[a]	6%[b]	3%[a,b]	11%[a]	8%	7%[a]	62%[a]	63%[b]	71%[a,b]
	SE	3%	3%	1%	15%	14%	15%	18%	16%	15%	48%[a]	53%	61%[a]
Ex-users	GB	27%	39%[b]	24%[b]	33%[a]	28%[b]	14%[a,b]	6%	2%[b]	11%[b]	29%	25%[a]	41%[a]
	SE	15%[a,b]	3%[a]	2%[b]	17%	24%	14%	13%	11%	11%	39%	42%	47%

[a] Base: GB non-users (weighted): 2009 N=471, 2011 N= 466, 2013 N=483; SE: 2009 N=301; 2011 N=297, 2013 N=288.
[b] GB ex-users (weighted): 2009 N=141, 2011 N=93, 2013 N=91; SE: 2009 N=64, 2011 N=64, 2013 N=64.
[c] [a/b] Difference in proportion between years with same superscript significant at p<.05 for a particular reason.

Figure 1 Reasons mentioned for non-use between 2005 and 2013 in Great Britain
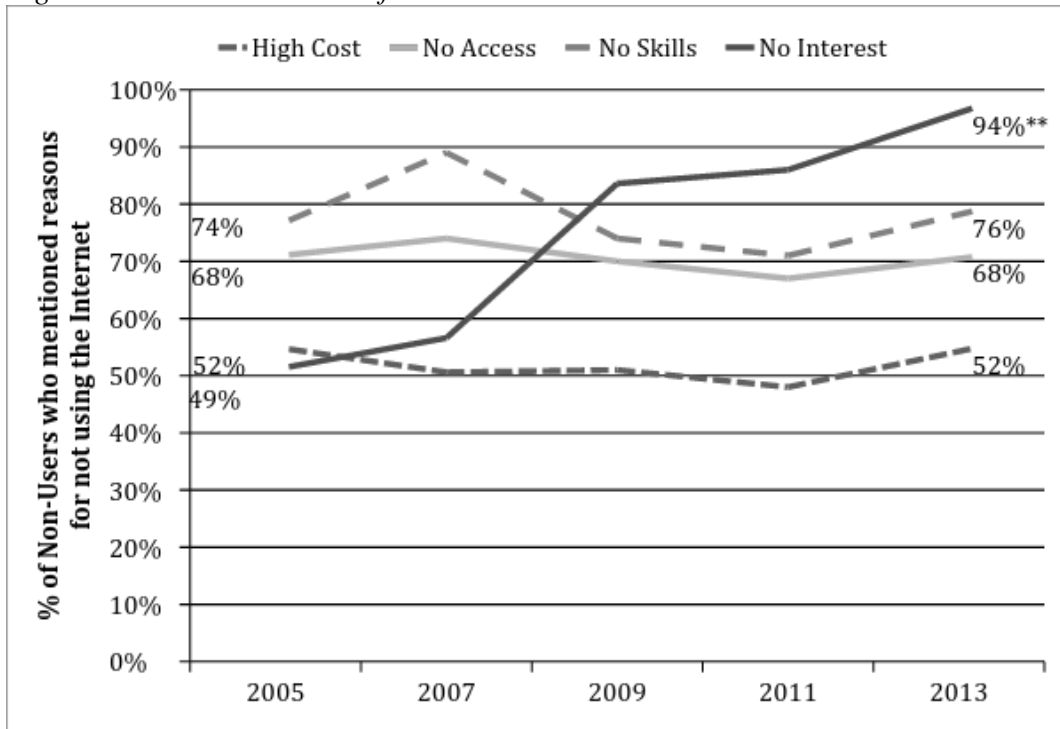
^a Base: GB non-users (weighted): 2005 N=709, 2007 N=649, 2009 N=471, 2011 N= 466, 2013 N=483.

^b **Difference between 2013 and 2005 significant at p<.01

Figure 1 Reasons mentioned for non-use between 2005 and 2013 in Great Britain

[a] Base: GB non-users (weighted): 2005 N=709, 2007 N=649, 2009 N=471, 2011 N= 466, 2013 N=483.

[b] **Difference between 2013 and 2005 significant at p<.01

Figure 2 Reasons mentioned for ex-use between 2005 and 2013 in Great Britain
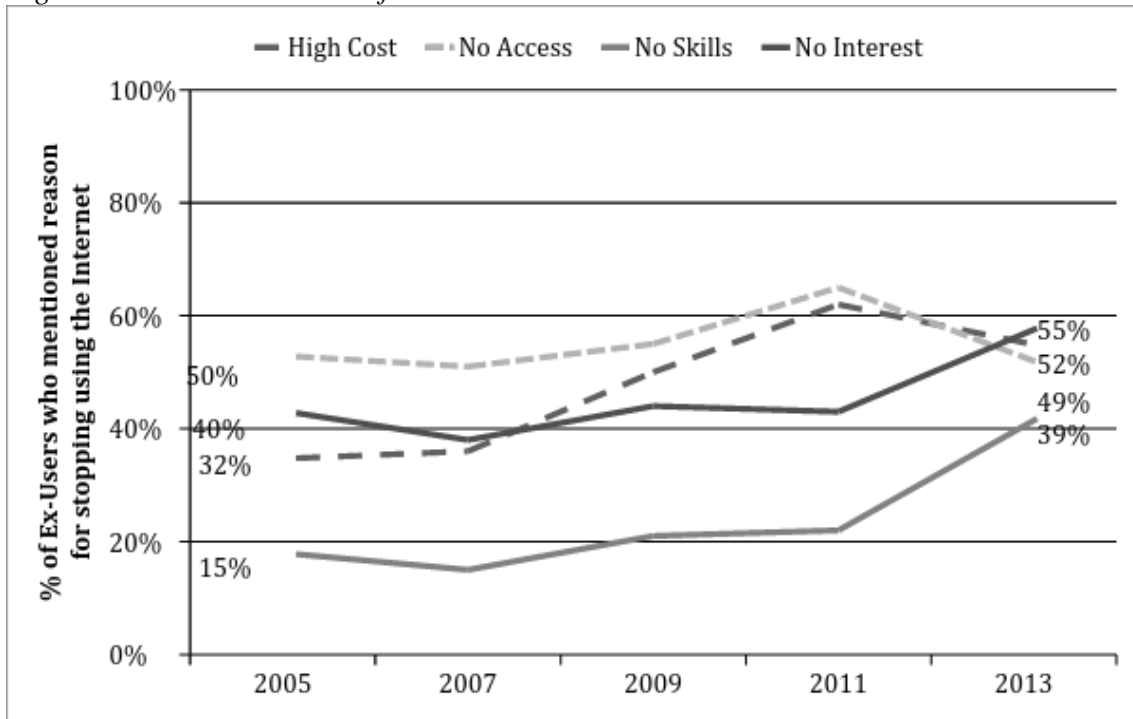
[a] Base: GB ex-users (weighted): 2005 N=167, 2007 N=124, 2009 N=141, 2011 N=93, 2013 N=91.