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National Survey for Wales, 2012-13
Digital inclusion

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Views expressed in this report are those of the researcher and not necessarily those of the Welsh Government

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Glossary of acronyms

3G	3rd generation mobile telecommunications technology
4G	4th generation mobile telecommunications technology
GCSE	General Certificate of Secondary Education
ICT	Information and Communication Technology

Executive Summary

1. The aim of this report is to identify the 'who', 'what', 'where', 'why' and 'how' of digital inclusion and exclusion across Wales today. In doing so, the intention of the report is to support the Welsh Government to better understand the reasons for digital exclusion and to more effectively design, tailor and target policy interventions to boost digital engagement further towards complete digital inclusion.

Household internet access across Wales

2. 73% of Welsh households have access to the internet, up from 70% in 2012.

3. The over 65s are markedly less well digitally connected than the under 65s: overall around 46% of Welsh over 65s live in households with access to the internet, though this falls to just 21% for the 13% of over 65s who live in social rented housing. In contrast, over 85% of adults in all younger age groups have household access to the internet.

4. Area deprivation is not a key driver of internet access: there is a gradual increase in household internet access as area deprivation decreases but these differences are relatively small.

5. The differences in rates of household internet access across Welsh local authorities are relatively small and largely down to the make-up of the population within those local authorities. The potential for future policies to be targeted at certain local authorities seems limited therefore.

Internet usage amongst Welsh adults: who and why?

6. 77% of Welsh adults (aged 16 and over) use the internet at home, work or elsewhere. Of the 23% of Welsh adults who do not currently use the internet, the vast majority (85%) have never used the internet – just under 20% of adults in Wales or around 550,000 adults. This group might be considered to be the 'core digitally disengaged'.

7. Markedly lower levels of digital engagement are seen across some social groups: the over 65s and retired; those with no qualifications; social renters; and those without dependent children in the household. Key drivers of digital exclusion are older age and having lower qualifications and it will be necessary for policy interventions to reach these groups in order to boost overall digital inclusion rates.

Internet usage amongst Welsh adults: how and where?

8. In 2012-13 laptops are the most common device used by digitally engaged Welsh adults to access the internet, with 76% using this device. Tablets are the least widely used device – just 17% of digitally engaged Welsh adults access the internet in this way.

9. In general the usage of alternative devices (i.e. laptops, desktops, tablets, smartphones) declines gradually as one moves up through the age categories. Desktops are a notable exception where usage generally increases amongst older adults.

10. Usage of smartphones shows a particularly pronounced difference between older and younger cohorts, with older age groups having markedly lower levels of smartphone internet usage. This is important both because the over 65s are a key target group and because smartphones offer a potentially attractive device through which to focus policy responses due to their multi-purpose use, affordability and increasing prevalence.

Understanding the digitally disengaged: who and why?

11. The digitally disengaged are comprised mainly of those who are over 65, relatively comfortable financially, disproportionately likely to have a limiting illness and no qualifications, and to be working in (or, for the retired, have worked in) manual jobs.

12. Of the roughly 20% of adults in Wales who are long-term digitally disengaged, for two-thirds this is due to personal choice ('digitally isolated') whilst for one-third it is due to some constraint ('digitally excluded').

13. A clearer understanding of why people are choosing not to engage with the internet (awareness? desire? peer disengagement?) is key to designing tailored policies. At present however such details are not available within the National Survey for Wales.

14. Lack of skills is by far the most common barrier to digital engagement for the involuntary digitally excluded: 75% of the barriers to digital engagement cited relate to lack of skills. Adults with no qualifications make up 56% of this group – over 100,000 adults. Other far less common constraints are cost and health issues. Alongside any ICT specific literacy and training, building general basic skills, literacy, and confidence in those skills is therefore key to boosting overall digital engagement levels.

15. Although many factors are relevant to explaining the patterns of digital disengagement seen in Wales, it is older age – in particular being over 65 – and weak qualifications and skills that emerge as the two dominant drivers of digital disengagement. It is this two-way matrix – choice and constraint, age and skills – that the Welsh Government will need to better understand and target interventions around if it wishes to make substantial inroads into reducing current levels of digital disengagement across Welsh adults.

16. Two groups emerge as potential proactive targets for policy in the short-term:

    a. Group 1: the over 65s, particularly those living in social rented housing. For those over 65s who are voluntarily digitally isolated out of personal choice the priority is to better understand the reasons why this is in order to assess the viability of effective policy interventions as well as the appropriate design of any such interventions. For those over 65s who are involuntarily digitally excluded the need is for ICT skills training, with a suggestion from the analyses that group learning and usage environments are beneficial;

    b. Group 2: those who are unemployed or with a limiting illness. Many of this group will have weak qualifications and will be in regular contact with Jobcentre Plus or Work Programme providers due to their receipt of out-of-work benefits. These organisations offer potential contact points through which both broader literacy skills and digital-specific literacy skills interventions might be delivered and any such interventions would support dual agendas around both employability and digital engagement.

Introduction

Through its Digital Wales and Digital Inclusion initiatives the Welsh Government is seeking to make Wales a country well equipped both in its infrastructure and in its people to take advantages of digital opportunities. Its aim in doing so is to support the Welsh people to engage with, and indeed be at the forefront of, an increasingly digital world and to maximize their potential benefits from the growing range of economic, purchasing and leisure opportunities that are available online. From the perspective of central and local government, the delivery of policy access, services and information is increasingly moving online due both to public demand and cost considerations.

One of the strands of the National Survey for Wales and its predecessor surveys has been to understand the population of Wales' access to, and usage of, the internet. Both the Welsh Government and the Westminster Government have policy strategies that highlight the importance of digital inclusion and that set out policy measures to achieve their digital objectives.

Ongoing technological development and increasing technological familiarity will naturally act to gradually enhance levels of digital inclusion over time. Ofcom's 2013 review of the communications market in Wales for example found that already 10% of consumers accessed the internet via mobile phone exclusively (Ofcom, 2013a). At the same time however, and certainly in the short run, complementary targeted interventions may well be required to support those adults who – whether for reasons of choice or constraint – are at risk of missing out on this trend towards digital inclusion.

Building on previous work by the Welsh Government (Welsh Government, 2011a), the findings presented below provide further analyses of the internet related questions of the National Survey for Wales 2012-13 in order to identify the who, what, where, why and how of digital inclusion/exclusion across Wales today. In doing so, the intention of the report is to support the Welsh Government to better understand the reasons for digital exclusion and to more effectively design, tailor and target policy interventions to boost digital inclusion and to meet their digital ambitions for the country.

Digital engagement: what we know already

Information and communication technology (ICT) is becoming ever more important to employment, purchasing, leisure and communication. Those who do not have access to the digital world, for whatever reason, are at risk of missing out on valuable social and economic opportunities to enhance their quality of life and reduce their cost of living (Ofcom, 2013b).

In an increasingly online world digital disengagement risks separating individuals from the wide range of opportunities and benefits that digital connectivity can bring. In policy terms specifically the delivery of many services is moving online with it being anticipated that many government services (for example, Universal Credit) will in the near future only be available online. To be offline therefore poses basic problems of policy access for precisely those vulnerable groups most likely to need to interact with those policies – the elderly, the unemployed, those with disabilities and those with literacy or ICT skills issues for example (Welsh Government, 2010a: 1).

From the consumer perspective digital retail offers opportunities for greater choice and lower prices than traditional retail. Many organizations – banks, energy companies, mobile phone operators – are increasingly moving to paperless billing as the default option, with paper bills often available only at request and for a fee. In terms both of children's and adult's learning, access to the internet is increasingly vital for those seeking knowledge and skills. And in terms of employment, digital engagement and digital literacy are paramount: not only do an increasing share of (especially higher paid) jobs require good digital literacy (Welsh Government, 2010a: 5) but for the unemployed many job vacancies are only advertised online and many job applications are only accepted online. Indeed, new systems for unemployment benefits introduced by the UK Government Department for Work and Pensions – not the Welsh Government it should be noted – are built around the online Universal Jobmatch system.

There are a number of possible reasons for digital disengagement. An initial barrier is the availability of connectivity and the reality that digital inclusion cannot be divorced from digital infrastructure. While fixed landline telephony is subject to a universal service obligation and hence ubiquitous, broadband and mobile coverage have no such obligation. Coverage is much more varied, with sparsely populated rural areas most vulnerable to access gaps (Ofcom, 2013b: 8). Currently most fixed broadband is delivered over the existing fixed telephony network (Ofcom, 2013b: 46). Ofcom (2013b) estimates that over 104,000 Welsh homes (around 8% of Wales' 1.3 million households) cannot receive standard broadband, 775,000 cannot receive superfast broadband (60% of households), and nearly 31,000 (2% of households) cannot receive 3G mobile. Indeed, 5,600 households in Wales (0.4% of

households) are able to receive neither standard broadband nor 3G mobile services and all of these are in rural areas (Ofcom, 2013b: Annex 1).

Such initial access barriers present clear problems to affected populations but are gradually, and relatively rapidly, being overcome. The UK Government has committed itself to provide superfast broadband to at least 90% of premises in the UK and to ensure universal access to standard broadband with a speed of at least 2 Mbit/s (Ofcom, 2013b: 3). The Welsh Government has set itself the goal of ensuring that everybody has access to next-generation broadband by 2020 (Welsh Government, 2011b: 4) and is additionally working to improve mobile and wireless coverage (Welsh Government, 2010b: 28). Thus, significant progress has been made in recent years in terms of broadband access and broadband speeds and the initial need for an available, adequate internet connection is increasingly being met.

Why then do a significant minority of the Welsh population – just under a quarter of Welsh adults according to the analyses presented below – remain digitally disconnected? This group of digitally disengaged adults can be divided into those who do not use the internet because of some constraint (skills, health, cost, security concerns, etc.) and, alternatively, those who do not use the internet out of choice. Of all those Welsh adults who are not using the internet at present the analyses below show that two-thirds do so out of choice whilst for one-third their exclusion is due to some constraint. It seems helpful in policy terms to follow the literature on social exclusion (Barry, 2002) in being clear in this separation between those who are involuntarily ‘digitally excluded’ as a result of one or more constraints and, in contrast, those might more precisely be termed ‘digitally isolated’ through their own personal choice. Although both are digitally disengaged the drivers underpinning their disengagement are very different, as are the policy interventions that are likely to be required in response.

Figure 1 shows the Welsh Government's distinction of disengagement through choice and through exclusion and sets out some of the previously identified factors behind each. In recent research the Welsh Government have found that digital disengagement across Wales is associated with a range of demographic and socio-economic factors, primarily where individuals were: older; on lower incomes; unemployed; of lower socio-economic status; disabled; and living in socially rented housing (Welsh Government, 2010a: 9). Although influential separately, these factors were often multi-dimensional and experienced simultaneously, with cumulative and interacting impacts on risks of digital disengagement.

Figure 1: Types and drivers of digital disengagement in Wales

'Digital Isolation' Disengagement through choice	'Digital Exclusion' Disengagement due to constraint(s)
Structured by cultural and social characteristics, in particular:	Enforced by social, economic and physical health constraints:
Age ► use of the internet is lower among older people	Low income / socio-economic status ► socio-economic exclusion
Life stage ► students and the employed are far more likely to use the internet than the retired or unemployed	Low level of educational attainment ► education and skills exclusion
	Disability or health issues ► health exclusion

(Welsh Government, 2011a: 15)

For those with low income or reliant on benefits, cost and financial constraints can be an important barrier to digital inclusion. Despite considerable progress in terms of financial inclusion in recent years, it is estimated that around 7% of low income households in Wales have no bank account, building society account or Post Office Card Account. These individuals are therefore excluded from mainstream financial activities, very likely to be financially vulnerable and without a direct debit facility (The Poverty Site, 2013). Without access to a financial account and to a direct debit facility it is both more difficult and, where it is possible, more expensive to obtain a broadband connection. Smartphones connected to 3G or 4G networks can be used to access the internet but require either a substantial up-front cost and/or monthly contract costs and may currently be out of reach of some low-income households. Cheaper phones and monthly tariffs are increasingly available and may be an important element in future to widening access to internet access to those with low-incomes given that this requires no additional hardware costs aside from the mobile phone itself.

Free wireless internet access in particular locations is helpful to those who have the hardware to take advantage of it but is concentrated in urban locations. Free public provision such as in libraries is one way forward for increasing digital inclusion but local authority budget pressures are leading some authorities to consider closing or restricting library facilities. Even here, however, free library provision faces several drawbacks including limited opening hours and transport barriers for those in rural communities or those with health barriers to travel. Libraries often also face limited computer availability and hence operate time limits on library computer usage. They also frequently prevent access to certain commonly demanded sites such as Facebook or webmail (Bevan Foundation, 2011).

Lack of skills is a commonly cited reason for digital exclusion. A lack of skills encompasses those with poor general literacy skills, those with a lack of ICT skills specifically, and those who lack the confidence in their skills to try to engage with digital technologies. Indeed, according to the analyses presented below skills seem to be *the* overwhelming causal factor behind involuntary digital exclusion in Wales today. In this sense ICT skills are fast becoming the 'fourth r' in the suite of key basic skills needed for successful economic and social adult life. The Welsh Government's Digital Inclusion Delivery Plan sets specific targets and dates for reducing digital exclusion and developing ICT skills (Welsh Government, 2011c).

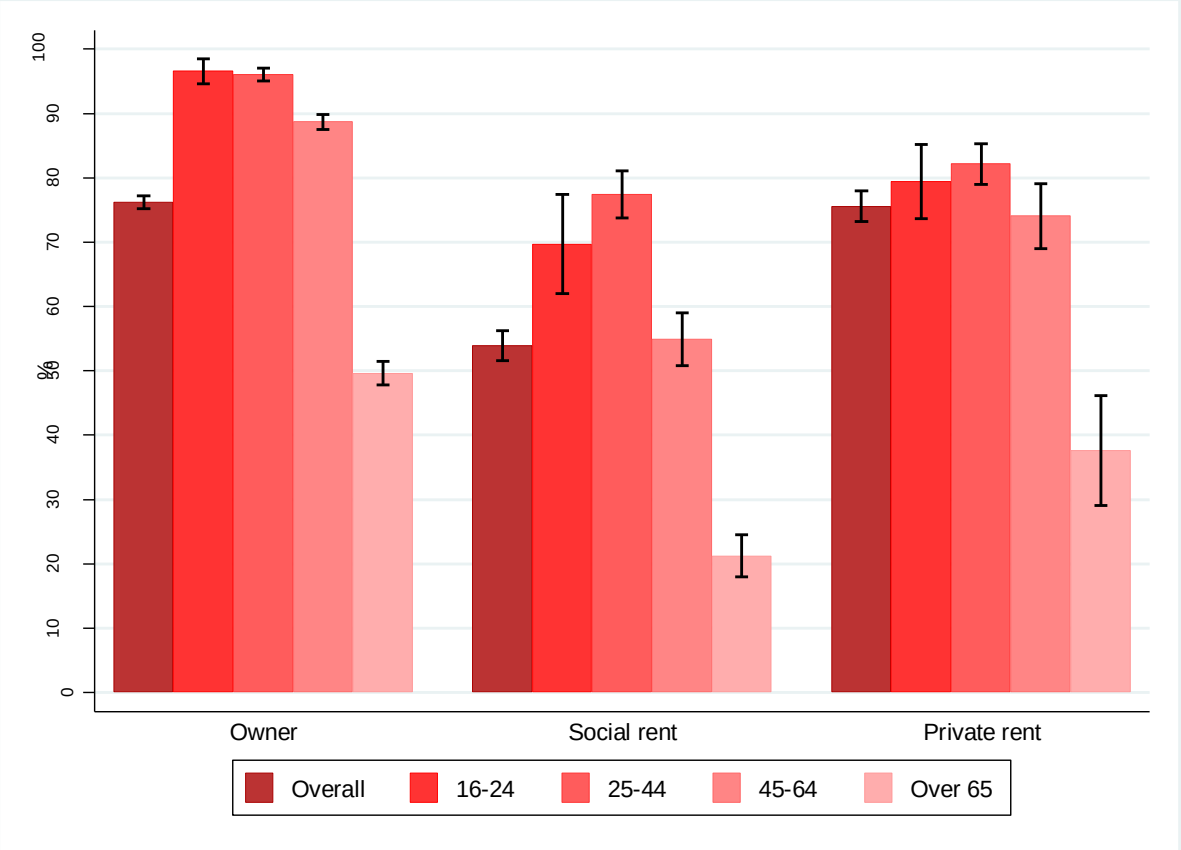
Additionally, whilst most people can see considerable opportunities and benefits in digital engagement it remains the case that a significant minority continue to choose to remain digitally disconnected. Indeed, the analyses presented below highlight that the majority of digitally disengaged adults in Wales today do so out of choice rather than due to some barrier to their inclusion. This may be because individuals understand what internet access could offer them and do not wish to have access to those online activities and services. Alternatively, it may be that individuals are simply unaware of what they could do online and that they would wish to be connected if they were clearer on its possibilities. Voluntary digital disengagement – digital isolation as we term it – is heavily dependent upon skills and age. Trends, however, are gradually changing, with 35% of over 65s having broadband access according to a recent Ofcom review of the Welsh market (Ofcom, 2013b). Whilst digital engagement will gradually tend to filter through the Welsh population in time, it may be that in the short to medium term some of today's older adults will require proactive interventions around information, demonstrations specific skills training in order to support them to embrace and navigate the digital world.

Understanding the precise nature of digital engagement across Wales today, and drawing out implications and recommendations for policy as a result of this enhanced understanding, is the focus of the remainder of this report. Section 2 describes the extent and distribution of household internet access across Wales. Section 3 drills down to the individual level and analyses the levels of digital engagement amongst Welsh adults, the devices and locations used to access the internet, and the effect of key socio-demographic, economic and geographical factors on the patterns seen. Section 4 focuses on the roughly 20% of Welsh adults who are long-term digitally disengaged and examines the reasons for their digital disengagement. Section 5 draws together the main findings and highlights the main recommendations for policy.

Household internet access in Wales

Across households in Wales digital inclusion has increased slightly since 2012, with 73%[1] of households having internet access in 2013 compared to 70% in 2012. Figure 2 below shows the headline results from the National Survey for Wales 2012-13 for household digital engagement across key tenure types. As one might expect, levels of digital engagement are highest amongst owner occupiers (76%), closely followed by private renters (75%) and with social renters some way behind with the lowest levels (54%). Within each tenure type older people show consistently lower levels of digital engagement: 50% of over 65s in owner occupied households have access to the internet but this falls to 38% in private rented households and only 21% in socially rented households. Whilst levels of digital engagement are noticeably lower for social renters, steeper differences between the age groups for this tenure type are also noticeable compared to the other tenure types.

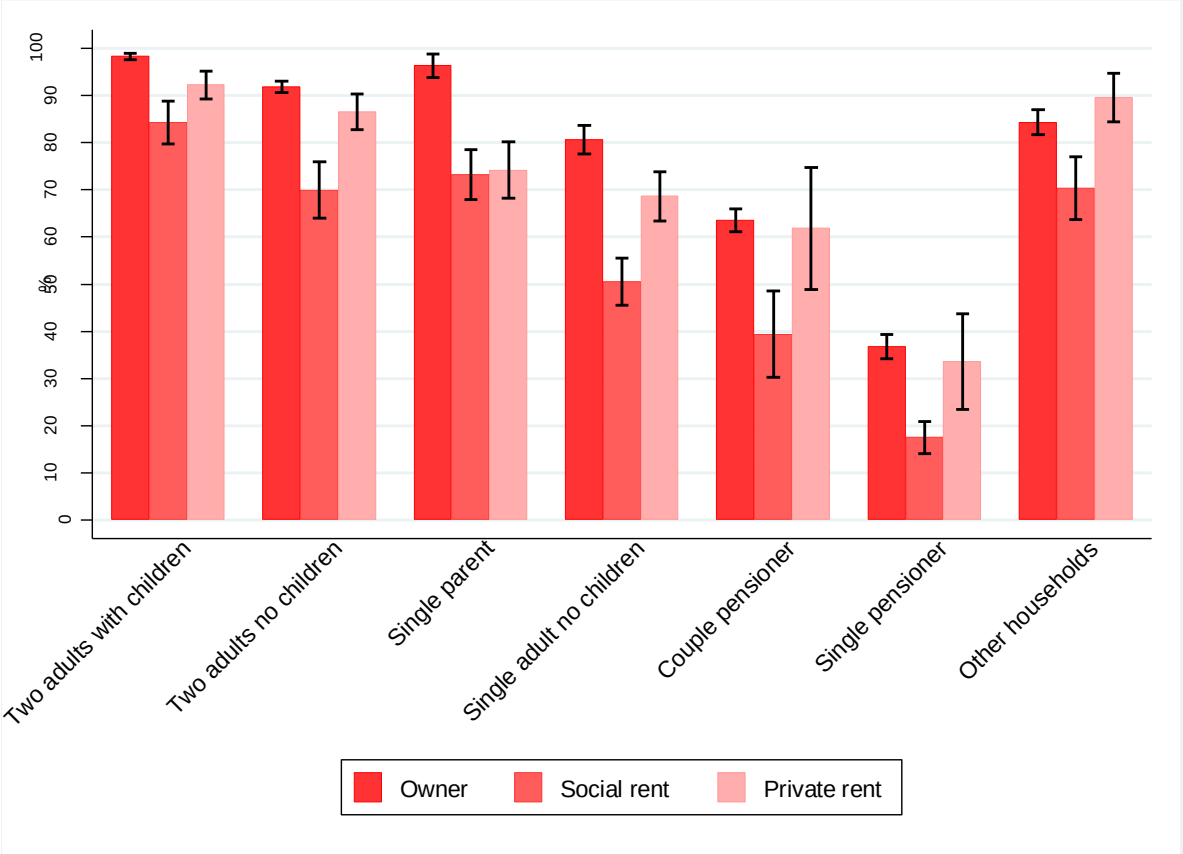
Figure 2: Household internet access by age and tenure



[1] All results in Figure 2 to Figure 6 are survey weighted findings produced using the National Survey for Wales household weights. All confidence intervals around survey estimates relate to the 95% significance level.

Figure 3 shows household access to the internet by household composition. Again there is a general trend of owner occupied households having the highest levels of internet access, closely followed by private rented households and with social rented households lagging some way behind. Within these tenure types, however, pensioner households show the lowest levels of digital engagement. Amongst the pensioner groups, however, it is striking to see the notably lower levels of digital engagement amongst single pensioners compared with couple pensioners. Amongst single pensioner households around one-third of those living in owner occupied households (37%) and privately rented households (34%) have access to the internet, compared with just 17% for single pensioners in socially rented housing. Focusing on this most disengaged group of single pensioners living in socially rented housing, it is worth noting that a gender equality issue also seems to emerge in that almost twice as many females than males estimated to be digitally disengaged single pensioners living in socially rented housing. The confidence intervals around these male and female estimates are admittedly relatively wide due to the small sample size in these two groups, but they are not overlapping. The presence of children in a household seems to have a positive effect on digital engagement, both for single adults and couples.

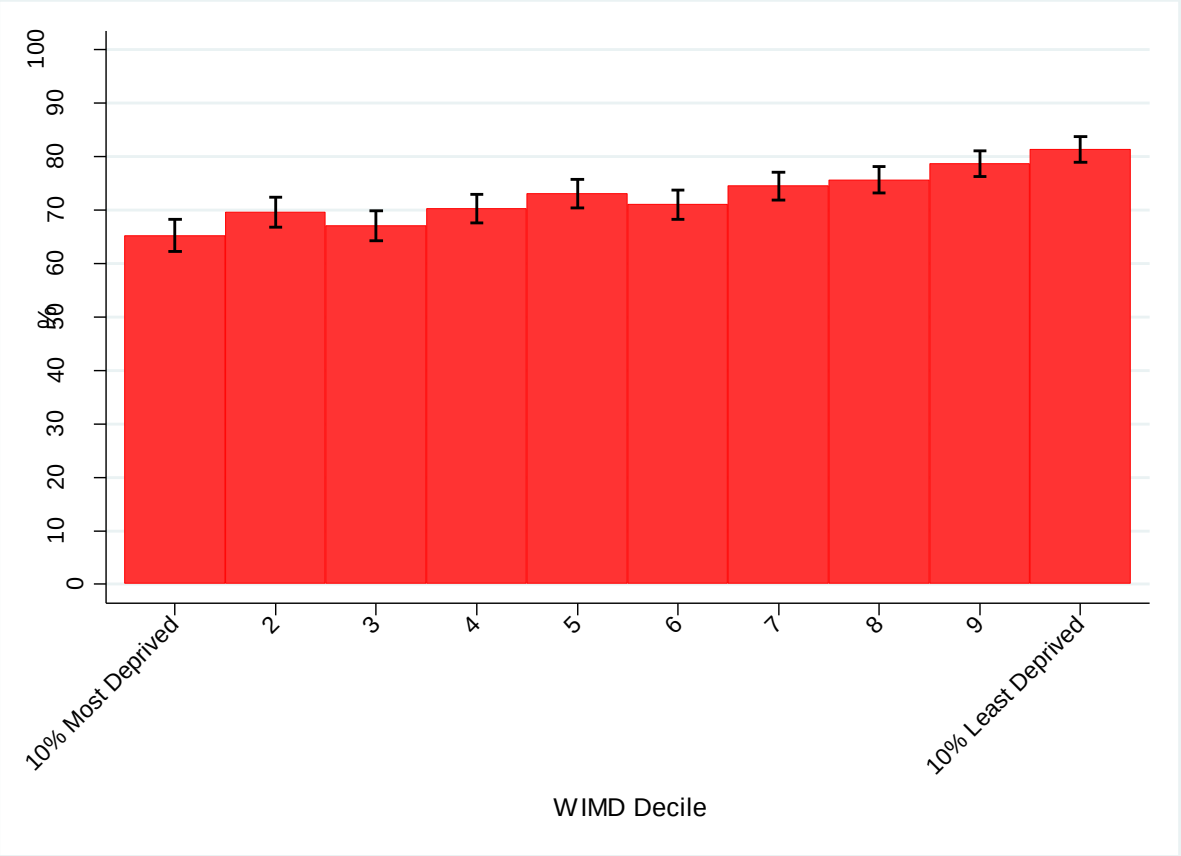
Figure 3: Household internet access by household composition



In Figure 4 below levels of household internet access across Welsh Index of Multiple Deprivation (WIMD) deciles are shown. These WIMD deciles place Welsh small areas[2] into ten equally sized groups from the 10% least deprived small areas in the country at the far right of the chart through to the 10% most deprived small areas at the far left of the chart. As might be expected, there is a gradual increase in rates of household internet access as area deprivation decreases. The differences, however, are relatively small and suggest that seeking to drive up *area* affluence *for the purposes of increased levels of household internet access* may not be the most cost efficient or effective policy approach, desirable as it may be in a range of other ways. The analyses presented below in this report also highlight the greater importance of various other factors besides area deprivation in shaping patterns of digital engagement.

[2] Lower Layer Super Output Areas (LSOAs)

Figure 4: Household internet access by Welsh Index of Multiple Deprivation (WIMD) deciles



Looking geographically, Figure 5 shows that household internet access across Welsh local authorities ranges from a low of 64% of households in Blaenau Gwent up to a high of 81% in Cardiff. Given that these data come from survey analyses, Figure 5 also shows 95% confidence intervals around these estimates and these denote the range within which we can be 95% confident that the 'true' underlying local authority value falls (i.e. if we had measured this using a comprehensive census). Looking across these local authorities, most sets of confidence intervals overlap and this suggests that we cannot be statistically confident that most of Wales' local authorities have different levels of internet usage, even if the mean survey estimates suggest that this is the case.

In terms of policy implications, Figure 5 suggests that there is some variation between local authorities but that this is relatively small and we cannot be statistically confident around much of it. Most of the variation in internet access appears to be *within* local authorities rather than *between* local authorities such that, in general, potential future policy interventions targeted geographically via local authorities do not seem a sensible approach.

Figure 5: Household internet access across Welsh local authorities

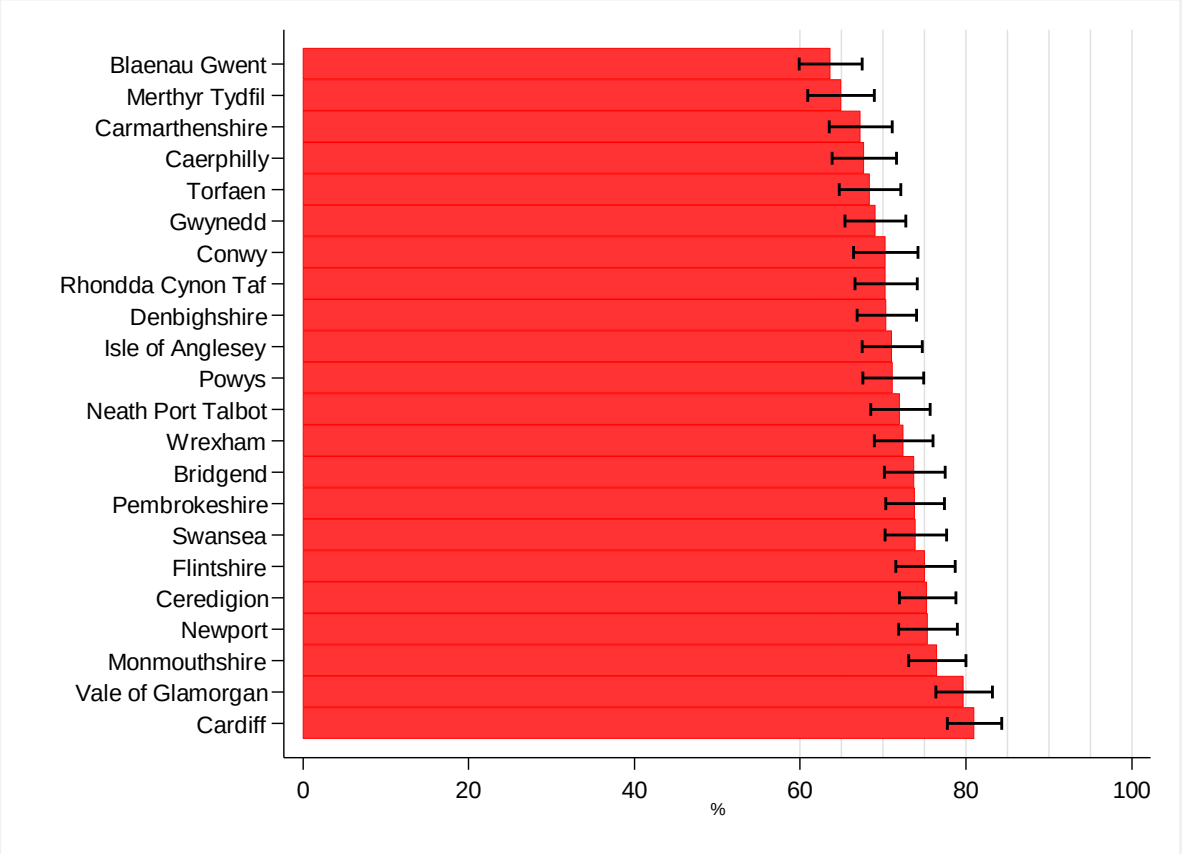


Figure 6 below visualizes the mean estimates above on a pair of maps: the left hand map is the familiar geographical map of Welsh local authorities and the right hand map is a population cartogram in which local authorities are resized according to their relative share of the Welsh population in the Census 2011. On the cartogram small physical areas with large populations are increased in size (e.g. Cardiff) whilst physically large but sparsely populated rural areas are reduced in size (e.g. Powys). In doing so the cartogram helps to identify both the size of the problem (in the sizing of its redrawn boundaries) as well as the depth of the problem (in its shading of the rates). In this case the cartogram highlights that in terms of the population coverage of internet access, local authorities such as Cardiff and the Vale of Glamorgan have high levels of digital inclusion and larger population shares than a standard physical map would imply. In contrast, the authorities of Caerphilly, Torfaen, Blaenau Gwent and Merthyr Tydfil show amongst the lowest rates of household digital engagement but also relatively large population shares.

Figure 6: Household internet access across Welsh local authorities on standard map (left) and population cartogram (right)

Internet usage amongst Welsh adults: who and why?

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Having set out the Welsh context in terms of household internet access, the focus in this section shifts to analyse the extent to which, and the ways in which, Welsh adults currently use the internet.

Figure 7 presents a breakdown of the headline results in terms of digital engagement across Welsh adults in the form of an internet usage tree diagram. Whilst the household level analyses in the previous section used the survey's household weights, all analyses in the remainder of the report are survey weighted using the individual weights in the National Survey for Wales. All results that follow therefore relate to survey estimates for all Welsh adults. Figure 7 also shows raw (i.e. unweighted) survey sample sizes for interested readers.

Overall, 77% of Welsh adults use the internet at home, work or elsewhere, leaving 23% of adults digitally disengaged at present across Wales. Of this 23% the vast majority (85%) have never used the internet in the past – what one might term the 'core digitally disengaged'. For two-thirds of this core digitally disengaged group their long-term digital disengagement is down to personal choice – the 'digitally isolated' – whilst for one-third it is due to some barrier – the 'digitally excluded'. Looking at the constraints preventing the digitally excluded from getting online[3] it is lack of skills and, to a far lesser extent, cost and health issues which emerge as key issues driving digital exclusion.

[3] Constraints sum to greater than 100% because respondents could give multiple responses in the survey.

Figure 7: Tree diagram of digital engagement headline patterns amongst Welsh adults

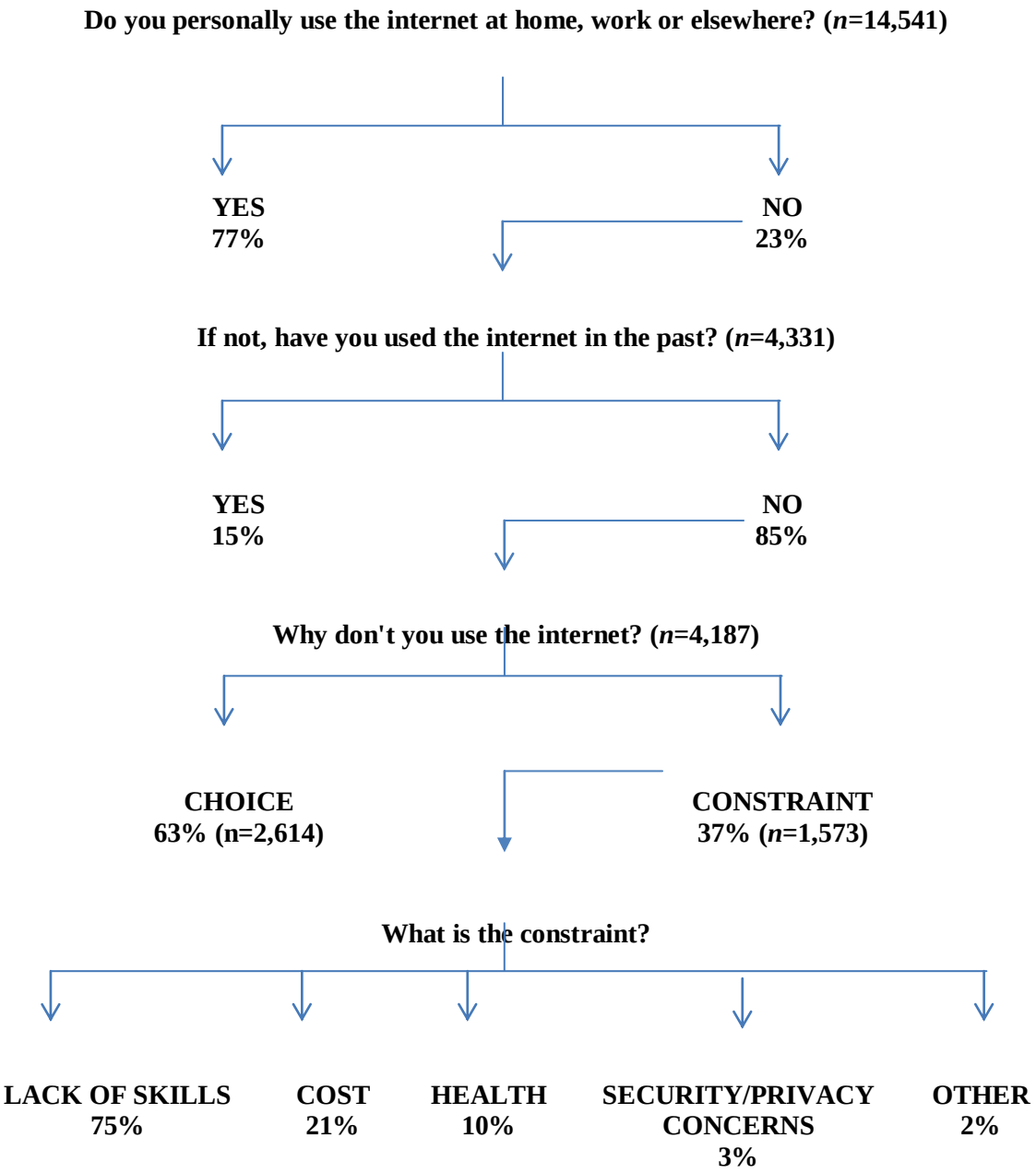


Figure 8 shows the percentages of people using the internet across a range of socio-economic, demographic and geographic characteristics, with all estimates presented alongside 95% confidence intervals.

Looking across Figure 8, younger people are more likely to use the internet and there is a steep decline in internet usage at pensionable age in particular. Internet usage rates of the employed and unemployed are both close to or above 90% but

the economically inactive and, in particular, retired individuals are some way behind this level.

In terms of education, over 90% of individuals whose highest qualification is either a university degree or A-levels are digitally engaged whilst those with only GCSE qualifications (or equivalent) show lower levels of engagement by around ten percentage points. It is those with no qualifications who lag far behind, however, with under 40% of this group currently using the internet. As discussed further in Section 4, this group of digitally disengaged adults with no qualifications is also large in size, comprising around 284,000 individuals and therefore making up 52% of all Welsh adults facing digital disengagement.

When looking at individuals rather than households, private renters show the highest digital engagement rates at 87%, nine percentage points ahead of individuals living in owner occupied housing with 78% digitally engaged, and social renters again some way behind with just over 60% using the internet.

Rates of digital engagement can be seen to gradually increase as area deprivation decreases across WIMD quintiles[4]. The differences, however, are not particularly large: there is only a ten percentage point difference in average digital engagement rates between the poorest (72%) and richest (82%) quintiles and confidence intervals frequently overlap.

In contrast, having children under the age of 16 in the household relates to a dramatic 24 percentage point difference in digital engagement rates – 94% internet access for adults with children in their household compared to 70% for adults without children in their household. Pensioners account for some, but not all, of this difference as even amongst working age adults this child effect is evident: working age adults with dependent children show an average of 94% digital engagement compared with 85% for working age adults without dependent children. Perhaps surprisingly, there is only a negligible difference in levels of digital engagement between rural and urban locations (both around 77%).

[4] Quintiles break the data (in this case the Welsh LSOAs) into five equally sized groups with each group containing 20% of the data.

Figure 8: Levels of digital engagement across key characteristics

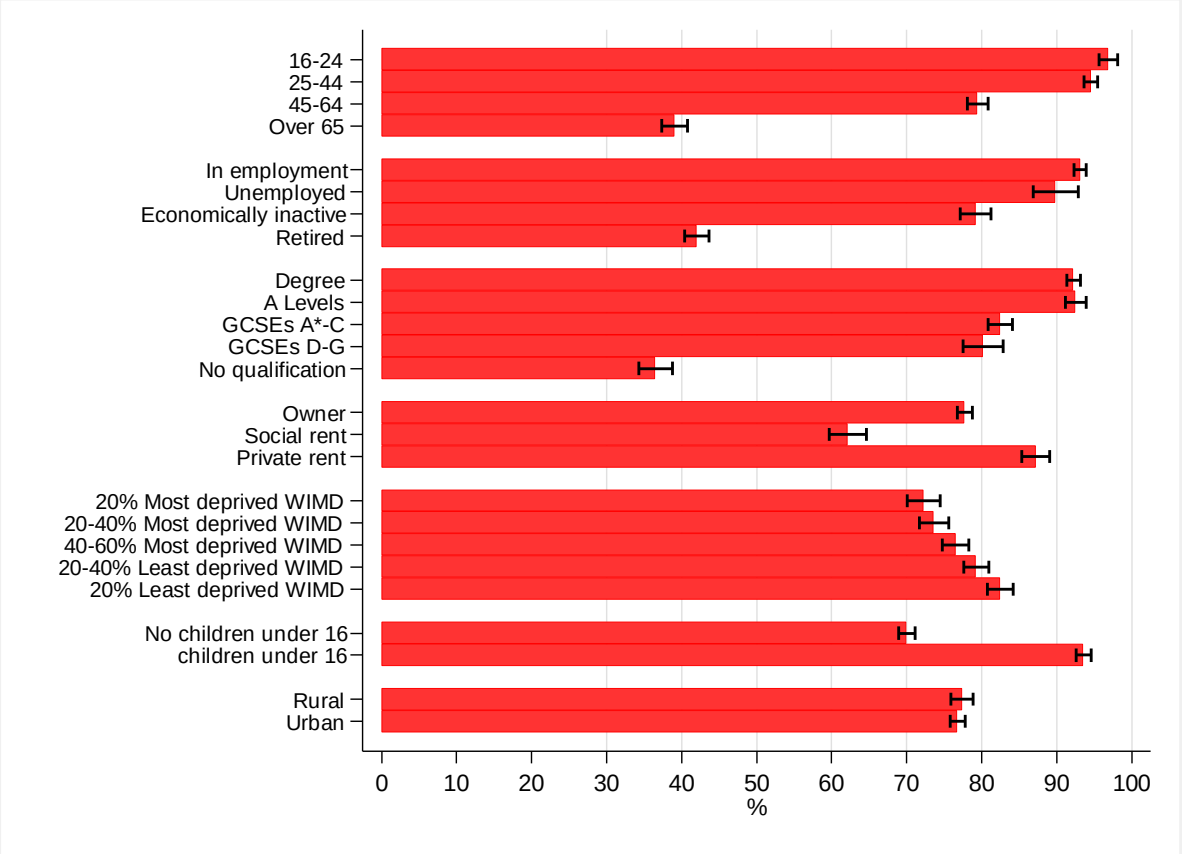
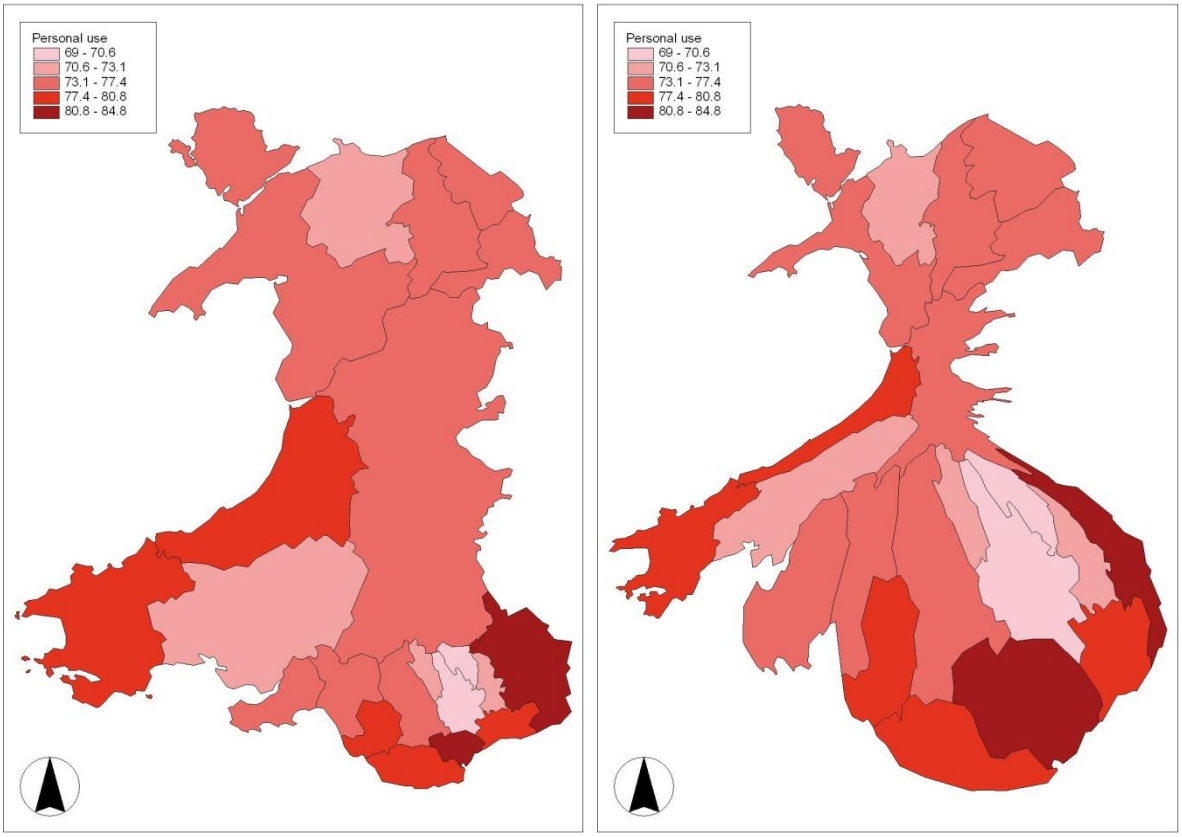


Figure 9 below maps the local authority mean estimates of individual internet usage across Welsh local authorities using a standard map and population cartogram as above. Cardiff and Monmouthshire have the highest individual internet usage rates at just over 80% with Caerphilly and Blaenau Gwent having the lowest rates at around 70%.

Figure 9: Adult internet access across Welsh local authorities on standard map (left) and population cartogram (right)



Although helpful in describing levels of digital engagement across key characteristics the analyses above do not analyse these variables simultaneously and, as a consequence, cannot truly separate out their relative effects on digital engagement. It may be, for example, that the lower levels of internet usage amongst those living in social housing is not truly to do with the type of housing at all but is, rather, a result of the fact that pensioners, those without children, or those with no qualifications live in social housing.

To isolate the individual effects of these various factors, Figure 10 presents the results of a regression model predicting an individual's likelihood of being digitally engaged. Findings are presented as risk ratios: a risk ratio of 1 is an important centre-point and means that there is no difference in the likelihood of using the internet between two groups after having controlled for other factors. For each variable the risk ratios shown are compared against a reference category. All reference categories throughout this report are chosen because they show the lowest risk of all groups in that variable and each reference category is clearly labelled and given a risk ratio equal to one. For all other bars on Figure 10, therefore, the risk ratios show how many more times as likely each group is compared to its reference category to be digitally engaged, controlling for other factors. Statistically

significant[5] results are shown on Figure 10 as solid red bars and statistically insignificant results[6] are shown as hollow white bars. In addition to the factors presented on Figure 10 this model also includes controls for local authority and these results are shown separately in Figure 11.

Controlling for other factors, age and educational qualifications emerge as powerful factors for digital engagement whilst gender, urban/rural location, financial struggles and area deprivation have little or no independent effect. Focusing on the largest effects, individuals over 65 are by far the least likely age group to be digitally engaged. After controlling for other factors, 16-24 year olds are over 1.75 times as likely as the over 65s to be digitally engaged and 25-44 year olds are over 1.5 times as likely as the over 65s to be digitally engaged. Indeed, even 45-64 year olds are on average almost 1.5 times as likely as the over 65s to be digitally engaged. Amongst the over 65s the household composition variable highlights that it is single pensioners – the reference category for this variable – that are least likely to be digitally engaged.

Large effects are also seen in relation to educational qualifications. Controlling for other factors, all other educational groups are over 1.5 times as likely as those with no educational qualifications to be digitally engaged. This is true even for those with GCSEs graded D-G and suggests that it is having no qualifications, rather than simply having low qualifications, that brings disproportionately negative impacts on digital engagement.

[5] Meaning that we can be statistically confident that this result is different to that of the reference category (i.e. different to one).
[6] Meaning that we cannot be statistically confident that this result is different to that of the reference category (i.e. different to one).

Figure 10: Factors affecting individual's likelihood of digital engagement

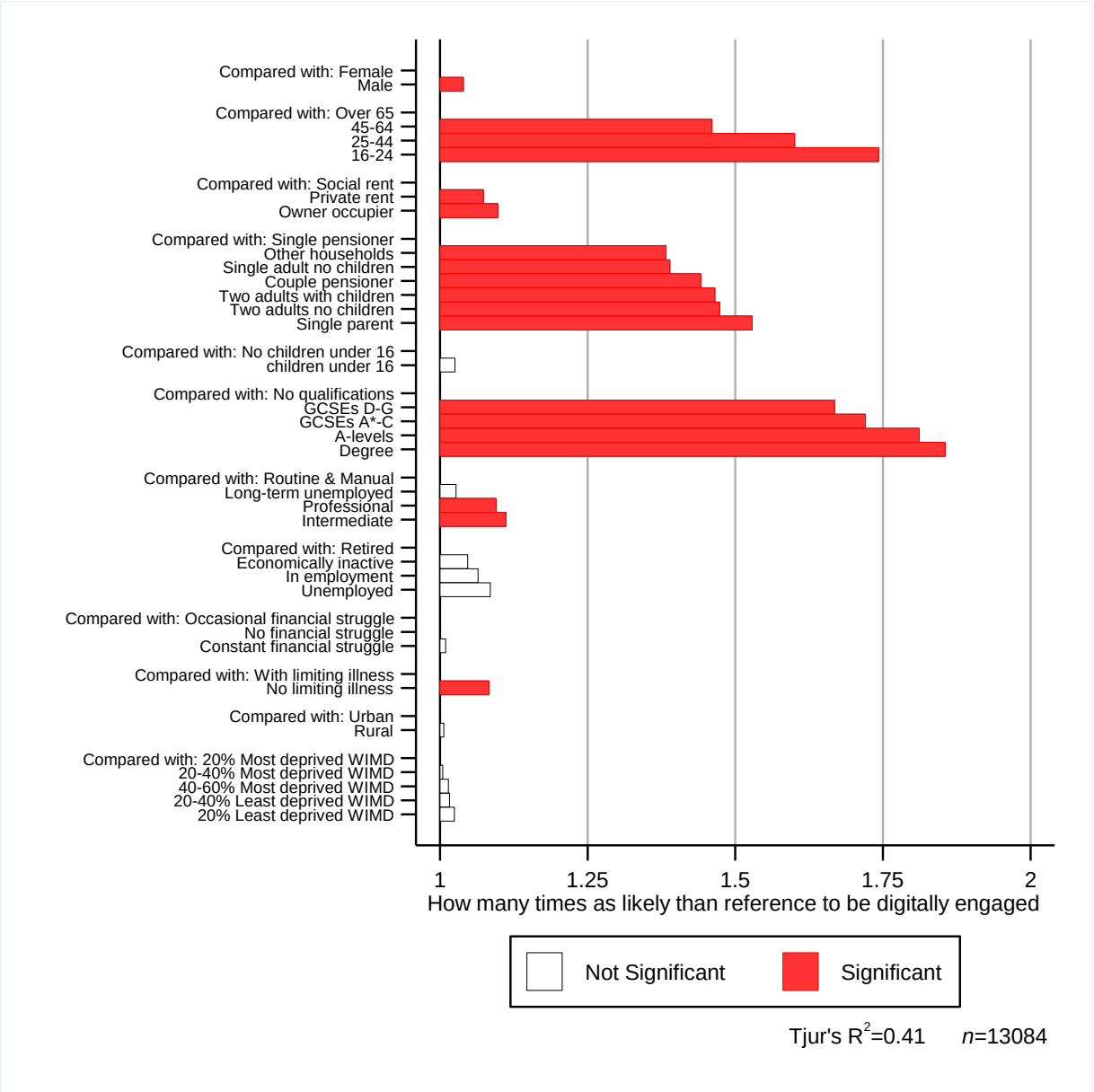


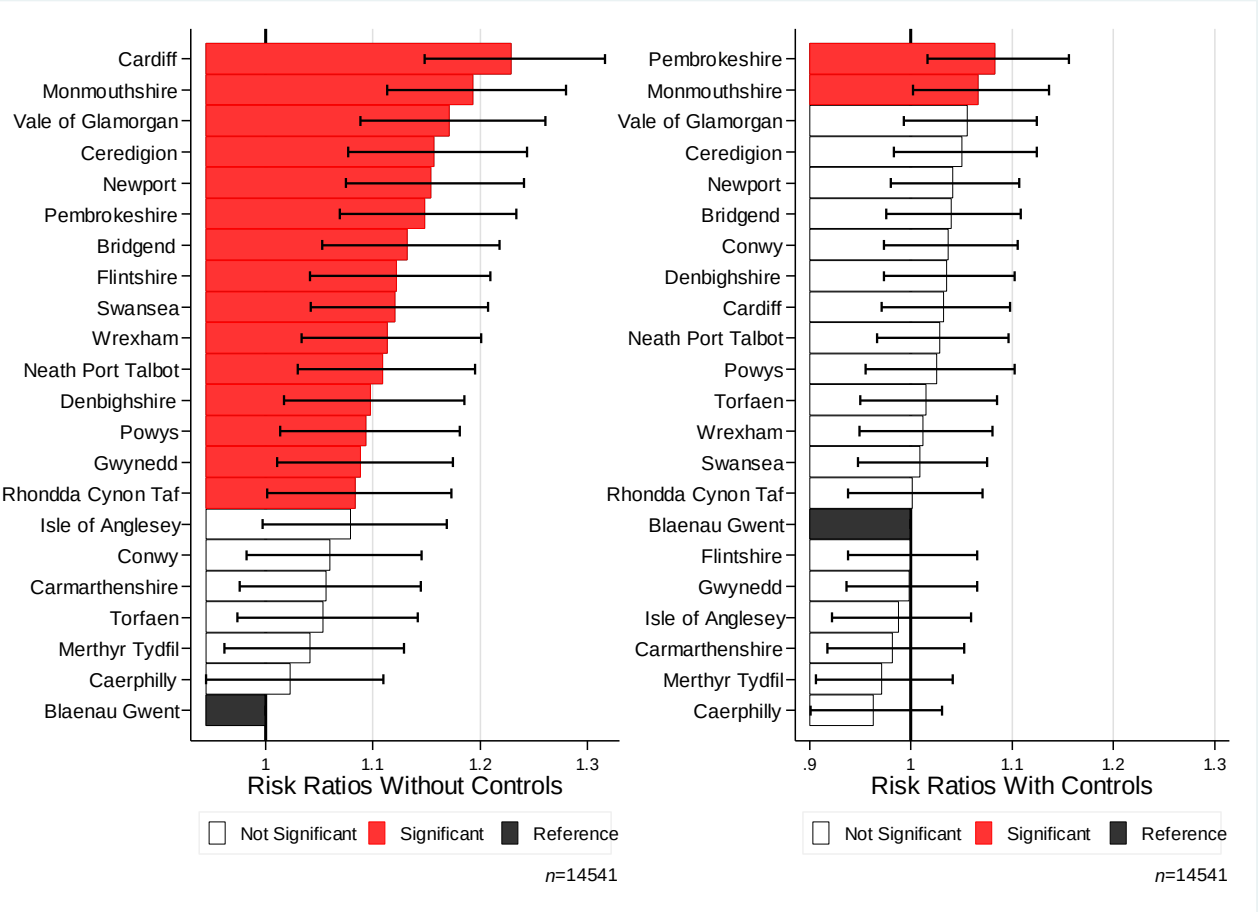
Figure 11 focusses next on the local authority results. The left pane of Figure 11 shows local authority differences in a model with no other control variables; the right pane, in contrast, shows the remaining local authority effects after having taken account of the full set of controls shown in Figure 10 above. Residents of Blaenau Gwent are least likely to be digitally engaged when no controls are considered and hence Blaenau Gwent is taken as the reference category in the left pane with a black bar and a risk ratio set equal to one.

Focusing firstly on the left hand chart, without any other control variables there is clear variation in the average risk of digital disengagement across local authorities, though it should be noted that the confidence intervals are relatively wide and often overlapping so that results for many local authorities cannot be separated with statistical confidence. Looking at the mean estimates, however, the suggestion is

that residents in authorities such as Monmouthshire and Cardiff are around 1.2 times as likely as residents in Blaenau Gwent to be digitally engaged. Turning to the right hand pane, however, most of this variation between local authorities is explained away once the control variables shown in Figure 10 are taken into account: all risk ratios are fairly close to one and virtually none of those remaining smaller differences between local authorities are statistically significant.

The contrast between these two panes, and the relatively minor local authority variation that remains in the right hand pane once controls are accounted for, suggests that it is compositional differences in the types of people that live in local authorities – and not the local authorities themselves – that accounts for the bulk of any differences in digital engagement rates between local authorities. People and not places (certainly not at the local authority scale) are at the heart of digital engagement and disengagement in Wales.

Figure 11: Effect of local authority on individual's likelihood of digital engagement without (left) and with (right) other control variables



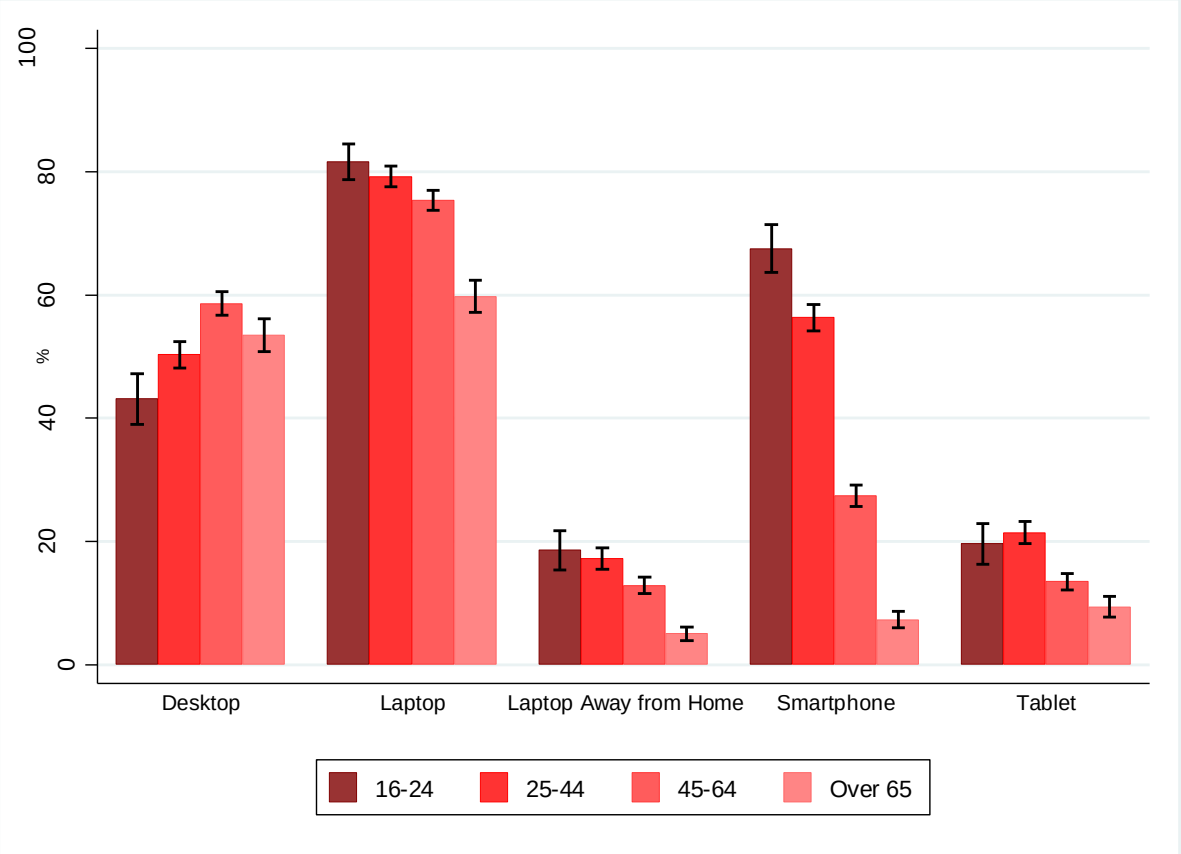
Internet usage amongst Welsh adults: how and where?

As Figure 7 above shows, two-thirds of Welsh adults are digitally engaged. Patterns of how different people access the internet vary, however, and are changing rapidly as technological advances continue to emerge and to reshape digital possibilities and practices. This section focuses only on those Welsh adults who are using the internet and examines how and where they are doing so.

Figure 12 shows the devices that in 2012-13 digitally engaged adults of different ages across Wales were using to access the internet, with respondents able to report multiple devices being used where appropriate. Overall, laptops are the most commonly used with 76% of digitally engaged Welsh adults reporting using laptops to access the internet at home. Overall 52% of digitally engaged Welsh adults are using desktops, 42% are using smartphones and 17% are using tablets to access the internet.

The rapid rise of the smartphone is testament to the impact of technological change on digital practices and it is smartphones which, understandably, show the sharpest variation in usage between the different age groups. In general this same pattern of declining usage with age is seen across all device types, with minor exceptions. For smartphones, however, the differences between the age groups is particularly clear, with younger cohorts showing markedly higher take-up of these devices than older individuals: 68% of 16-24s are accessing the internet using smartphones compared with 56% for 25-44 year olds, 27% of 45-64s and just 7% of over 65s. It will be interesting to see how the levels, distributions and age take-up rates of these devices change in the years to come as smartphones in particular become increasingly widespread and more affordable.

Figure 12: Devices used by adults to access the internet across Wales



Looking again only at the digitally engaged, Figures 13 to 16 show risk ratios for the effect of each factor on the likelihood of using different devices to access the internet. Statistically significant results are again shown with solid red bars and statistically insignificant results by hollow white bars. As with all models, local authority controls are included alongside the factors shown in these four figures but are not presented here.

Focusing firstly on the more traditional devices of desktop and laptop, it is interesting to see opposing patterns of usage across the different age groups. Controlling for other factors, the risk ratios in Figure 13 show that desktop usage gradually increases with age whilst, in contrast, Figure 14 shows that the likelihood of laptop usage gradually decreases with age. Stronger educational qualifications come through in both models as associated with an increased likelihood of using these devices, other things equal. Economic activity, occupational status and household composition do not have a clear effect on whether individuals use a desktop or laptop once other factors are accounted for. Of the remaining factors most have either relatively minor effect sizes or else are statistically insignificant.

Figure 13: Factors affecting individual's likelihood of using desktop to access the internet

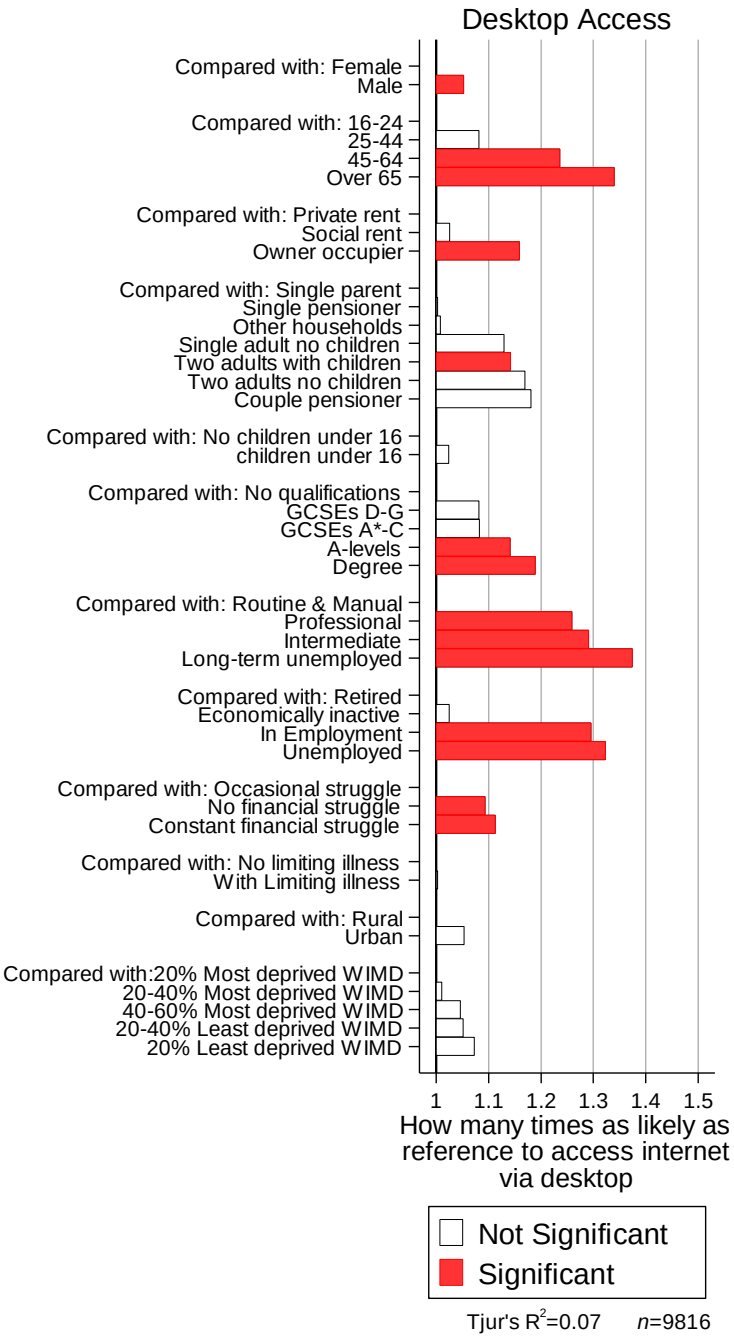


Figure 14: Factors affecting individual's likelihood of using laptop to access the internet

Figures 15 and 16 present risk ratios of the likelihood of accessing the internet via two more 'modern' devices – tablets and smartphones. Note the different scales for these risk ratios due to their larger effects sizes. Again the notable factor is age which shows clear and steep variation in usage of these devices: other things equal, digitally engaged 16-24 year olds are over four times as likely to access the internet

via a smartphone, and twice as likely to access the internet via a tablet, compared to digitally engaged over 65s. Educational qualifications again have a noticeable impact. Controlling for other factors, individuals with A-levels or degree level qualifications are over 1.75 times as likely to use a tablet or a mobile to access the internet compared with those with no qualifications.

Noteworthy also is that financial struggle seems to have a negative impact only in relation to tablet usage and even here the effect is relatively modest. For smartphones, the extent of financial struggle appears to have no impact on the likelihood of using a mobile to access the internet. This is interesting in that it suggests that smartphones may perhaps be thought of as indispensable commodities to individuals whose usage as a result is relatively immune to income pressures. Smartphones may therefore potentially be an attractive device to focus digital inclusion strategies around given their retention by low income individuals and their growing and increasingly affordable availability. In relation to the key target group of the over 65s in particular, mobile phone familiarity and usage for call and text purposes is at present far more widespread than smartphone internet access. However, the familiarity of the over 65s with mobile devices offers a potential platform through which to boost their digital engagement as smartphones continue to gradually dominate the mobile market and, as a result, to become increasingly prevalent over time amongst the over 65s.

Figure 15: Factors affecting individual's likelihood of using mobile phone to access the internet

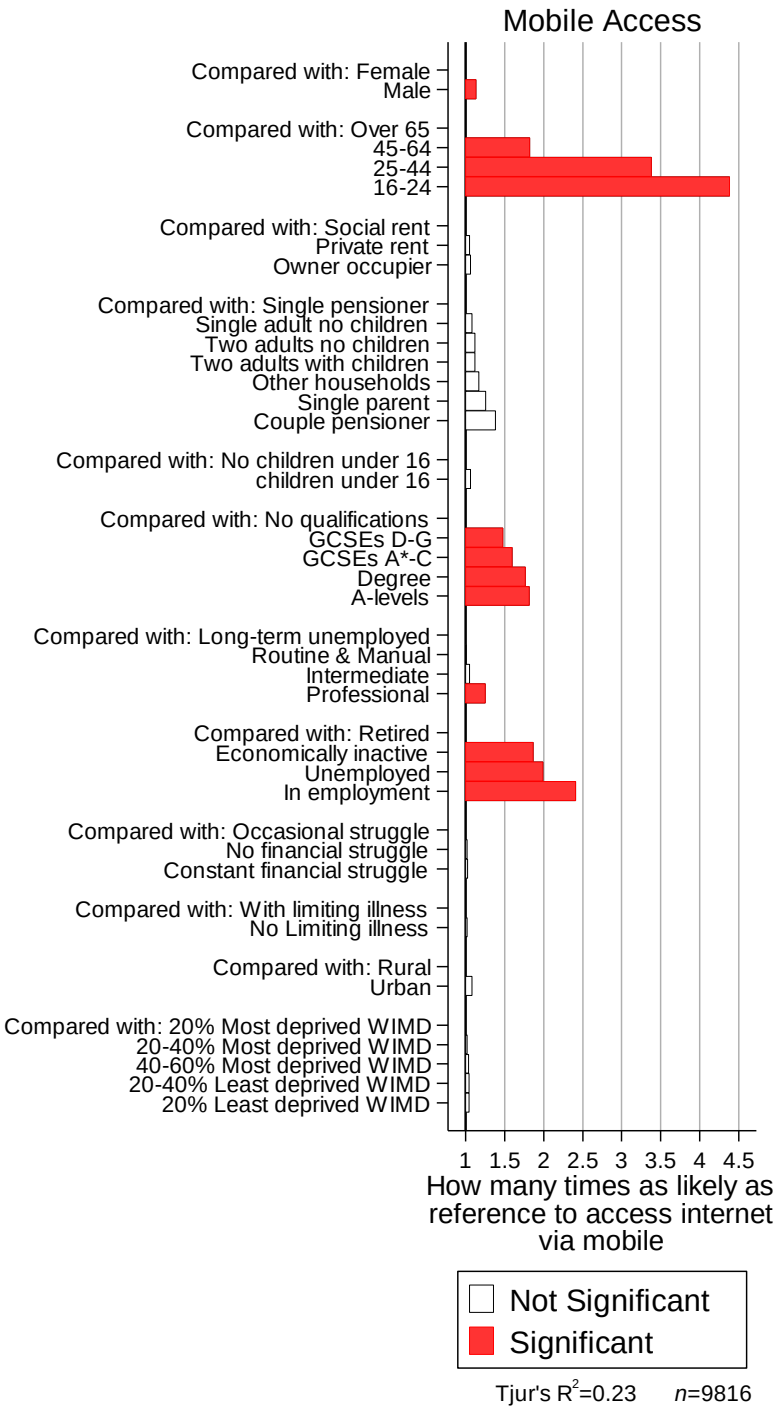
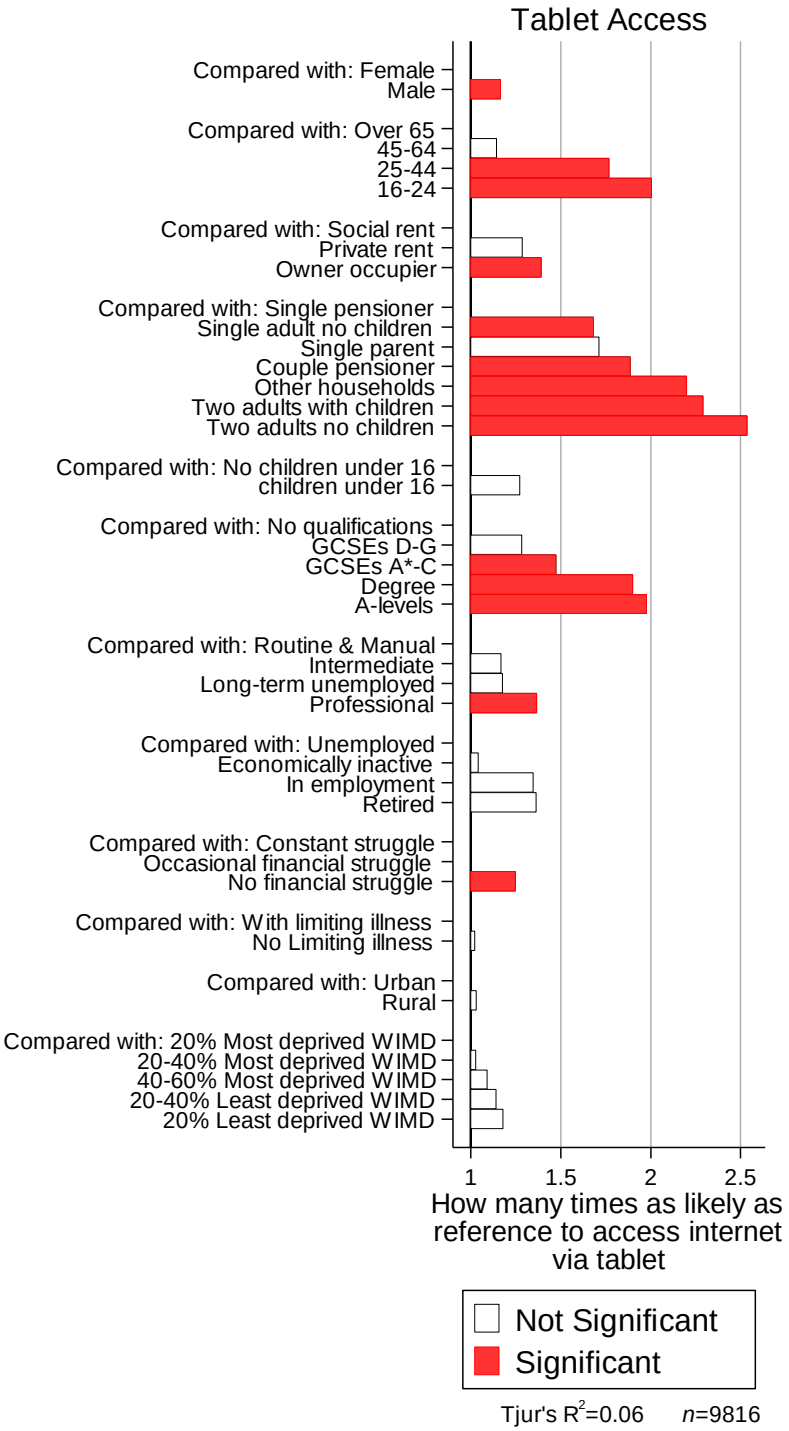


Figure 16: Factors affecting individual's likelihood of using tablet to access the internet

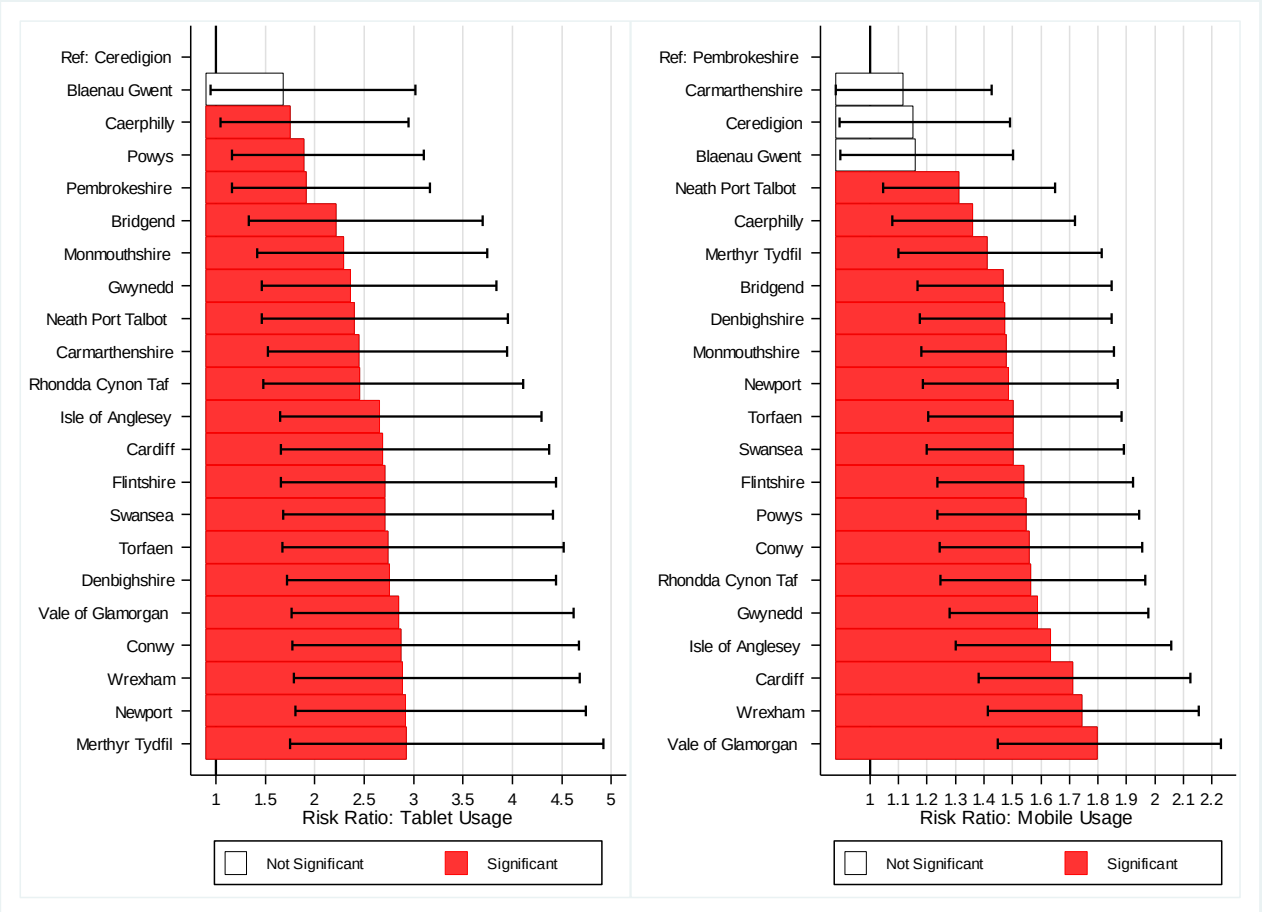


As noted above, local authority controls were included in the models presented above and in Figure 17 below the focus shifts to these local authority results. The focus in Figure 17 is restricted to tablet and smartphones given that this is where the strongest results emerge. The differing scales on the two charts shown in Figure 17

should be noted. Equivalent local authority results for desktop and laptop use are shown in Figure 27 in Appendix A.

Controlling for the range of factors shown in Figures 15 and 16, the left pane of Figure 17 shows that residents of Ceredigion show a notably lower likelihood of accessing the internet via a tablet compared to most other local authorities. Residents in local authorities towards the bottom of the left pane of Figure 17 (e.g. Merthyr Tydfil, Newport) are around three times as likely as residents of Ceredigion to access the internet using a tablet, other things equal. The right hand pane of Figure 17 focuses on mobile internet access and residents of Pembrokeshire are found to be least likely to access the internet in this way, controlling for the set of factors shown above in Figure 15. Towards the bottom of this pane, residents of the Vale of Glamorgan and Wrexham are estimated to be around 1.75 times as likely to access the internet using a mobile phone compared to residents of Pembrokeshire, other things equal. Despite the range of control variables used it may be that these local authority results are capturing imperfectly controlled for (probably financial) effects. It may also be, however, that local authority-specific factors or policy strategies might account for these differences.

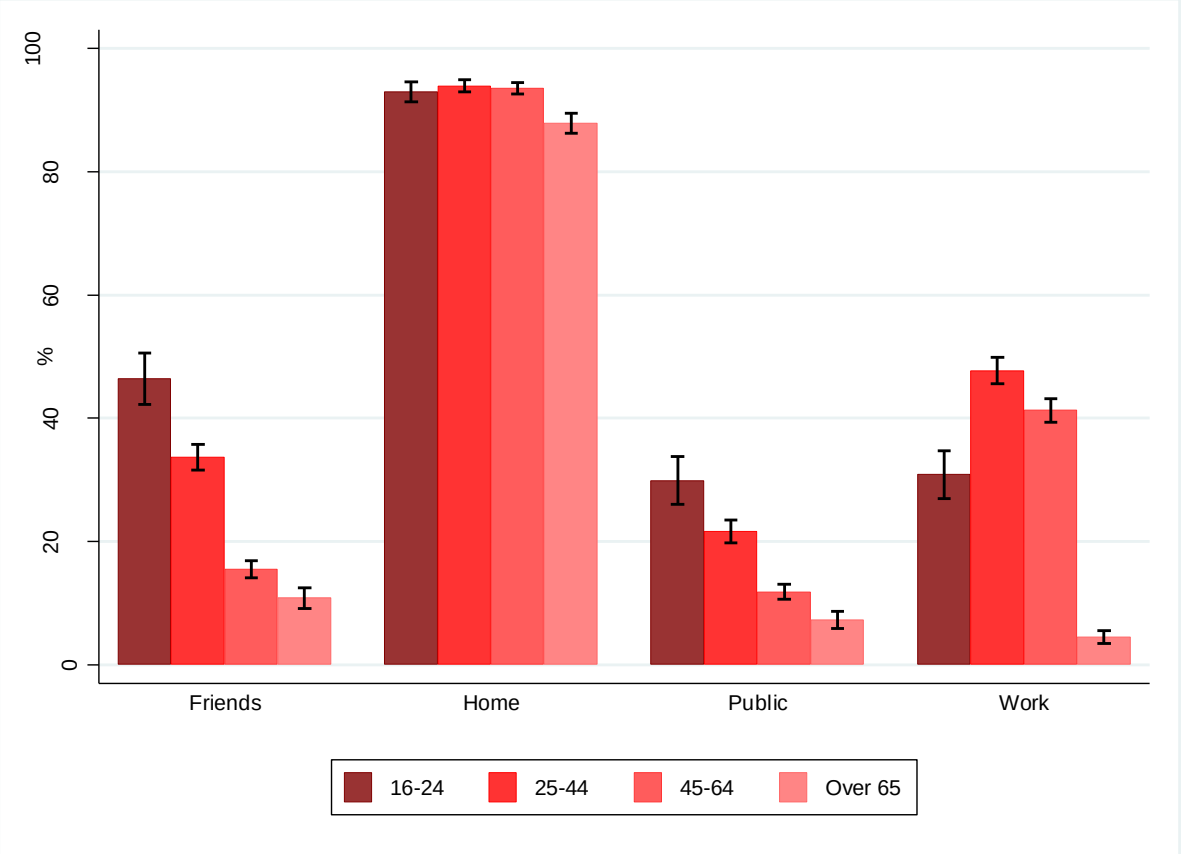
Figure 17: Effect of local authority on individual's likelihood of using tablet (left) and mobile (right) to access the internet



Turning next to where the digitally engaged access the internet, and noting that people can give multiple responses, Figure 18 shows that virtually all Welsh internet users access the internet from home. The over 65s differ to other age groups, however, in that they have low rates of internet access in any location other than their home. In contrast, a significant minority of working age respondents are also accessing the internet at a friend's house, in public, and at work. Even across these working age respondents, however, differences can be seen, with older working age adults more likely than younger adults to access the internet at work and less likely to be accessing the internet at friends or in public.

The growth – and expected continued growth – in the tablet and smartphone market has broadened the understanding of 'public' internet access to necessitate inclusion of Wi-Fi hotspots and mobile network coverage alongside a more traditional focus on libraries or internet cafes. Sadly it is not possible in the National Survey for Wales to separate out potentially different types of 'public' internet access but the expectation is that this relates predominantly to public access on personally owned private devices such as smartphones rather than through 'public' buildings such as libraries or internet cafes. However, this change in the meaning of 'public' in terms of digital engagement highlights the need for good telecommunication connectivity across Wales alongside strategies to enhance high speed residential and business internet access. Hence, whilst policy interventions such as the Super Connected Cities strategy are well advised to drive digital engagement via high quality broadband such policy strategies need also to be mindful of the parallel need to ensure a geographically comprehensive high quality mobile internet network in order to enable smartphone internet connectivity.

Figure 18: Location of internet access by age group



Including all control variables, Figures 19 and 20 below presents risk ratios for the likelihood of the digitally engaged accessing the internet at home and in a public place. Equivalent risk ratios relating to accessing the internet at a friend's house or at work broadly follow the pattern shown in the model relating to public access and are reported in Figures 28 and 29 in Appendix A.

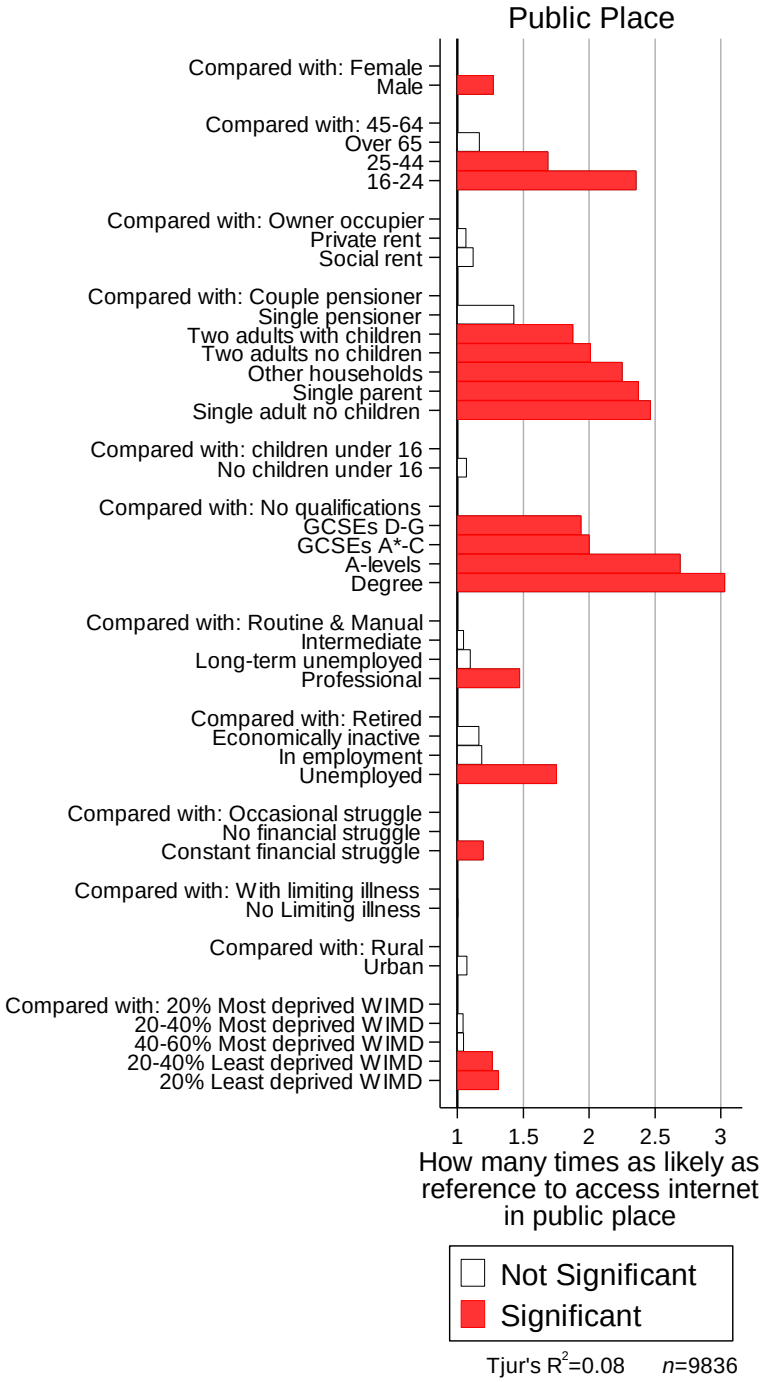
Looking firstly at the factors affecting the likelihood of accessing the internet at home, it is striking how little variation in effects is seen in Figure 19 across the range of factors controlled for. Whilst there are some statistically significant results the risk ratios are always extremely small and always close to one. This is unlike any other set of findings so far. The overriding, and perhaps surprising message, is that all social groups are relatively equally likely to be accessing the internet from home: even the over 65s are just as likely as the 16-24 year olds to be accessing the internet from home, other things equal.

Figure 19: Factors affecting individual's likelihood of accessing the internet at home

The differences between the groups come however in the other ways that different social groups also engage digitally. The focus in Figure 20 is on those accessing the internet in a public place but similar broad trends are also seen in terms of access at a friend's house and at work as reported in Figures 28 and 29 in Appendix A. One possible hypothesis is that internet access in a public place or at a friend's house reflect ways that the otherwise digitally excluded might access the internet. However,

these findings tend to suggest instead that it is younger, more professional, better educated and/or wealthier citizens who are more likely to access the internet from these locations. In doing so these groups can perhaps be said to represent something akin to 'digital omnivores' – markedly more likely to be digitally engaged from almost all locations and almost all devices, even if differences are not apparent when focusing only on the most 'traditional' internet access of connectivity at home.

Figure 20: Factors affecting individual's likelihood of accessing the internet in a public place

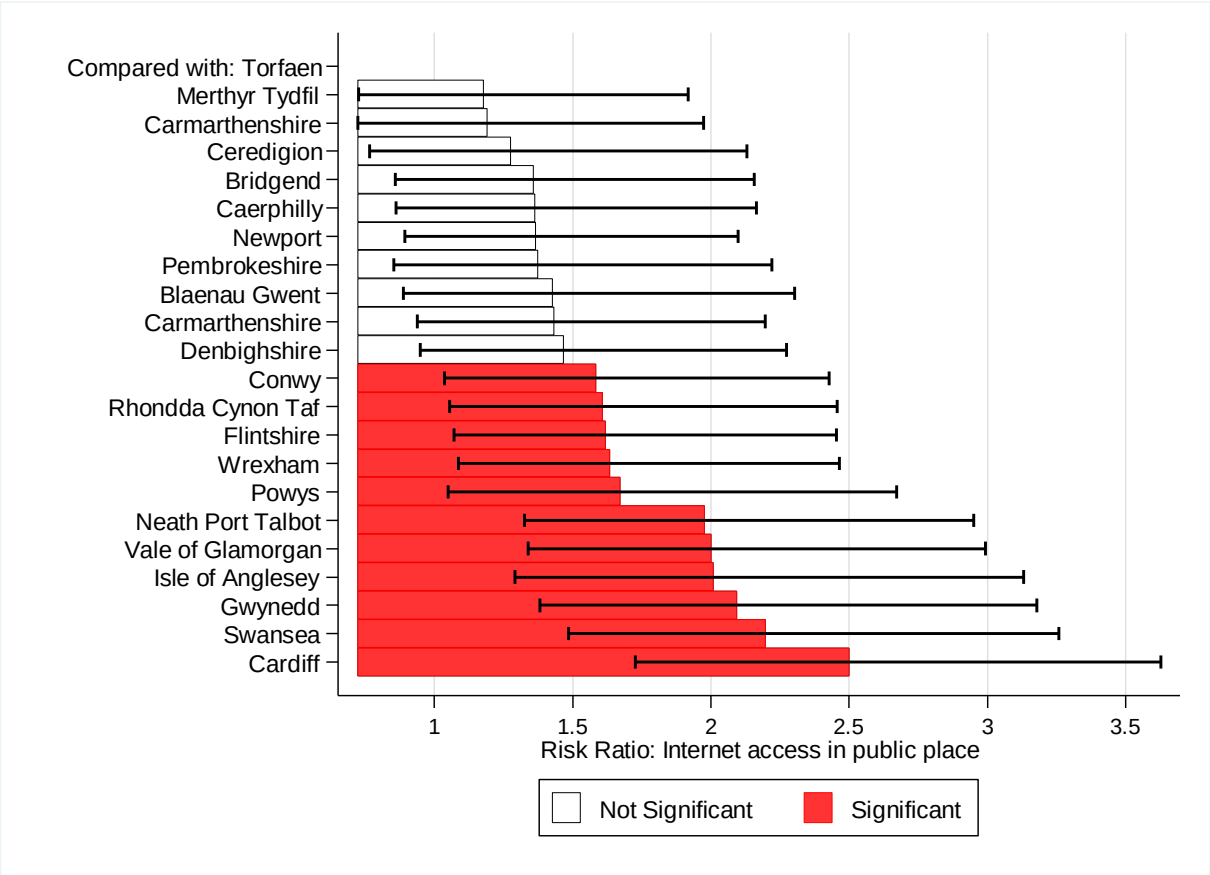


Of particular interest in relation to older populations specifically are the divergent effects for pensioner household types in relation to accessing the internet at a friend's house (seen on Figure 28 in Appendix A) contrasted with accessing the internet in a public place (Figure 20). Whilst noting these effects are not always statistically significant, the comparatively higher likelihood of pensioner's internet usage at a friend's house compared with in a public place suggests that collective digital engagement is a helpful enabler to older people's internet access. This collective internet usage may be preferred perhaps due to reassurance from group learning (whether in terms of hard skills or softer impacts on confidence) or due to the greater sociability and enjoyment from collective digital engagement. Given that the over 65s represent a key target group in terms of boosting overall digital engagement levels, greater awareness of the apparent appeal of collective learning and usage to this group may help to support the design of policies with enhanced attractiveness and effectiveness for the over 65s.

The models discussed above again contain controls relating to local authorities, though these are not shown on these charts. Turning now to these local authority results, the model relating to accessing the internet in a public place is the focus in Figure 21 below given that this location shows considerable variation in local authority results after having controlled for the range of factors shown in Figure 20.

Controlling for other factors, and noting the width of the confidence intervals, residents of several local authorities towards the bottom of Figure 21 are over twice as likely as residents of Torfaen to access the internet in a public place, with Swansea and Cardiff residents showing the highest risk ratios: other things equal, residents of Swansea and Cardiff are over twice as likely as residents of Torfaen to access the internet in a public place. These large urban cities, and in particular Cardiff, are different in many ways to much of Wales' other local authorities. Although many factors have been taken into account in the analysis it is possible that remaining factors specific to these cities have not been controlled for.

Figure 21: Effect of local authority on individual's likelihood of accessing the internet in a public place

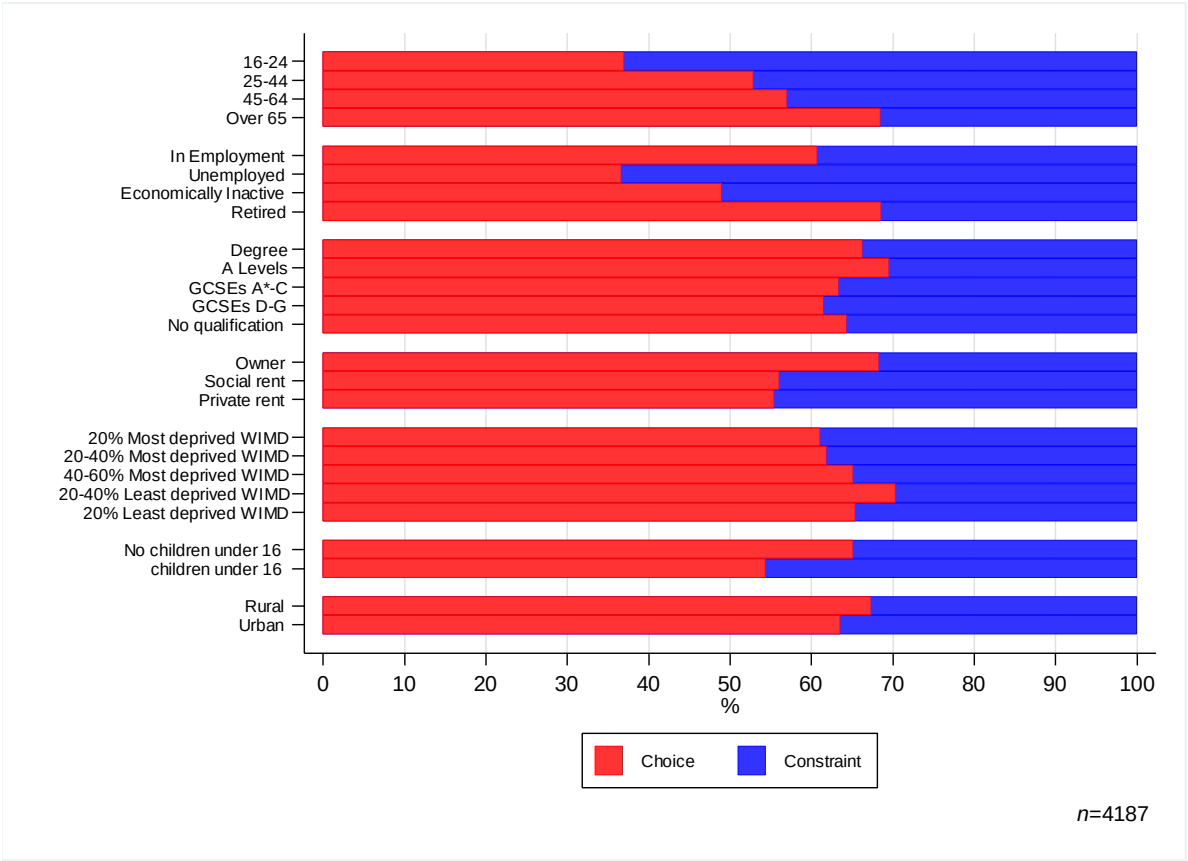


Understanding the digitally disengaged in Wales: who and why?

The digital engagement tree diagram shown above in Figure 7 highlights that 23% of adults across Wales are estimated to be digitally disengaged at present. Of this group of currently digitally disengaged adults, 85% of these adults have never used the internet – the core digitally disengaged who therefore represent just under 20% of all adults in Wales. Of this 20% of core digitally disengaged Welsh adults, two-thirds state that their digital disengagement was due to personal choice whilst one-third want to access the internet but feel constrained from doing so in some way.

Figure 22 focuses on this 20% of Welsh adults who are the core digitally disengaged and across a range of key characteristics identifies whether their lack of internet connectivity is due to choice or to constraint. Notable differences occur as a result of both age and affluence. The prevalence of constrained digital disengagement increases by age: over 60% of non-engaged 16-24 year olds for example feel digitally excluded due to some constraint(s) whilst almost 70% of non-engaged over 65s state their digital isolation is a voluntary decision of personal choice. Financially driven constrained digital exclusion is evident across several factors – employment status, tenure, WIMD, and having dependent children. Indeed, some of the age variation may itself be due to financial pressures felt by the young rather than age per se; the analyses below explore this issue.

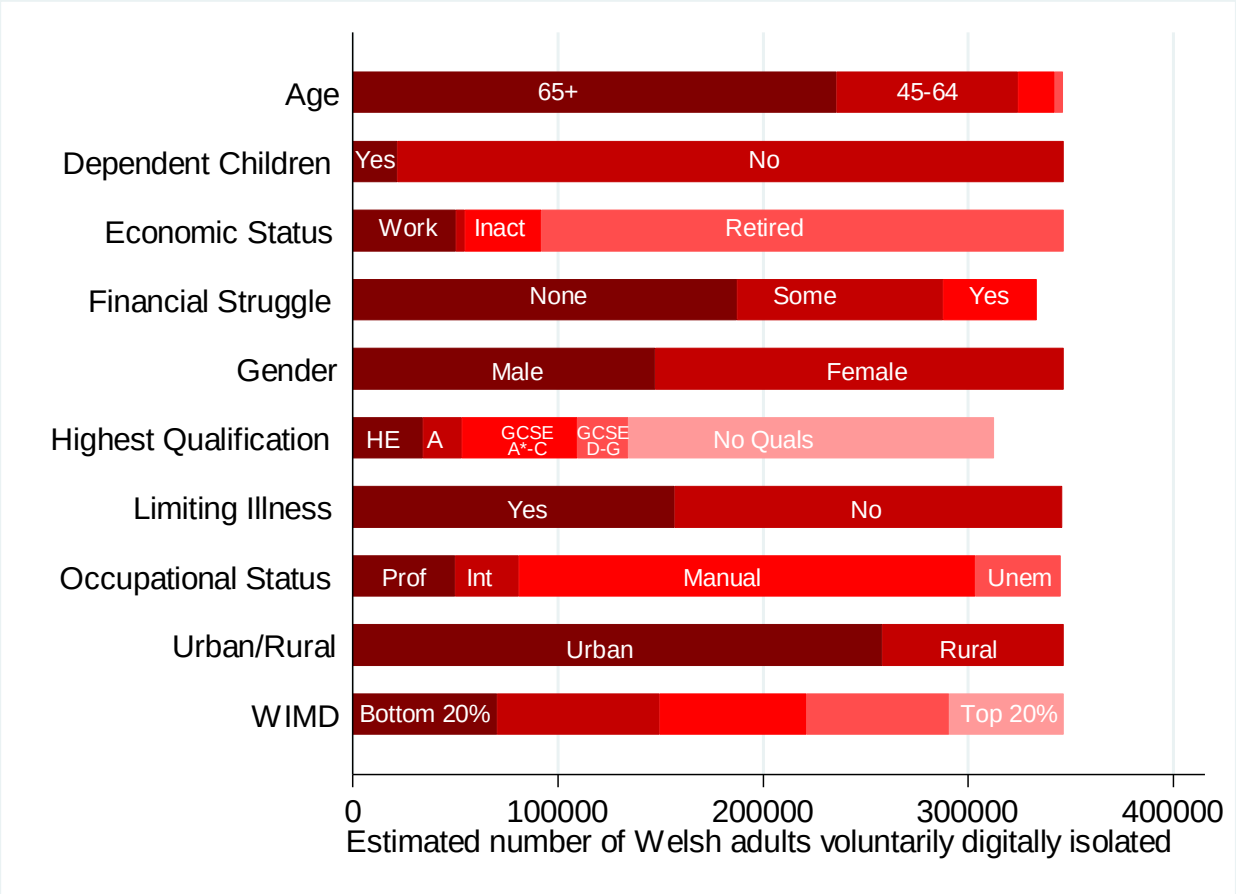
Figure 22: Digitally disengaged by constraint or by choice



Of those choosing not to access the internet it is unfortunately not possible from the National Survey for Wales to know anything further about their motivations for this view. It may be, for example, that some individuals who are unfamiliar with digital technologies and the internet may be unaware of what they might use the internet for. If they had this knowledge and guidance then they may well wish to get online. Alternatively, it may be that these individuals are aware of what the internet can offer but do not desire those digital opportunities. If awareness and motivation are part of the issue for some people in this group then information, demonstrations and guidance about possible uses and benefits of internet access for them will need to precede the provision of any digital skills training. The extent to which this group of the voluntarily digitally isolated might be supported, enabled and persuaded to engage with digital technologies is an important issue but is unfortunately not something that the National Survey for Wales as it currently stands can shed further light on.

It is however possible to estimate who, and how many, Welsh adults make up this voluntarily digitally isolated group across the country, remembering that this group comprise two-thirds of all core digitally disengaged adults in Wales. Better understanding the size and nature of this group is a necessary first step to informing the design and targeting of any potential policy interventions. These data are presented in Figure 23 below. Focusing in Figure 23 on the mean survey estimates, and hence ignoring the confidence intervals around those estimates, approximately 350,000 adults are estimated to be voluntarily without internet access Wales. Figure 23 highlights that voluntary digital isolation is dominated by older cohorts (particularly the over 65s), those who are retired, those without dependent children, those who work (or, for those who are retired, worked) mainly in manual occupations and those with no educational qualifications. Interestingly, the level of deprivation in which individuals live seems to make little difference with roughly equal numbers of individuals from each deprivation quintile part of this voluntarily digitally isolated group.

Figure 22: Estimated number of Welsh adults in key social groups who are digitally isolated out of choice



Having discussed the characteristics of those voluntary disengaged from the internet, the focus shifts next to exploring the characteristics of those Welsh adults who state that they would like to be digitally engaged but who feel involuntarily digitally excluded because of some barrier. This group, it will be remembered, make up around one-third of the 20% of Welsh adults who are core digitally disengaged.

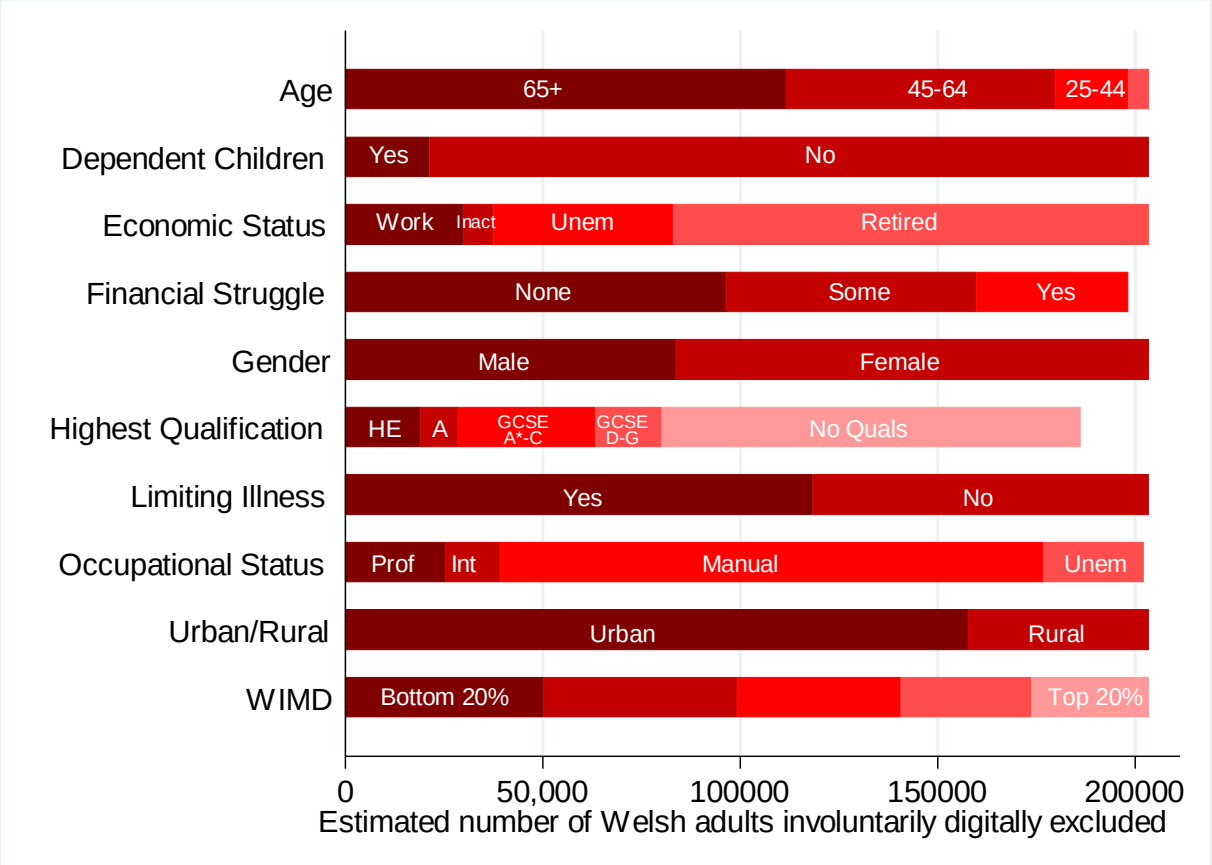
A lack of skills emerges in Figure 7 as by far the largest barrier to digital inclusion: individuals could report multiple barriers where appropriate (e.g. lack of skills and cost constraints) and three quarters of all constraints reported relate to a feeling of a lack of skills. A lack of skills can relate not only to a lack of ICT skills but also to a lack of literacy more broadly. According to NIACE Dysgu Cymru, 25% of adults in Wales lack basic literacy (NIACE Dysgu Cymru, 2014) and broader literacy barriers may be the skills constraint for some. Indeed, a lack of skills may also link to softer needs such as a lack of confidence in approaching what might to the unfamiliar seem a daunting digital landscape. The National Survey for Wales unfortunately does not allow us to disaggregate this skills issue in greater depth.

Whilst a lack of skills dominates Welsh adults' reasons for involuntary digital exclusion, 20% of the barriers reported relate to financial and cost constraints whilst

10% relate to health reasons (whether mental or physical). Concerns over IT security and privacy are only a very minor issue. For some adults there may be multiple reinforcing barriers to digital engagement. This does not seem to be widespread however: 89% of those who are involuntarily constrained from digital engagement report only one barrier preventing them from going online whilst a further 10% state two barriers. This leaves only 1% of Welsh adults citing three or more barriers to their digital inclusion.

In order to better understand the size and composition of this involuntarily digitally excluded group of Welsh adults, Figure 24 again describes their key characteristics. As in Figure 23, the focus in Figure 24 is again on the mean survey estimates, ignoring the confidence intervals around these estimates for the purposes of this chart. Across Wales as a whole it is estimated that around 200,000 adults are involuntarily digitally excluded due to some barrier. This group is again dominated by older cohorts, the retired, those without dependent children and with income-related factors (unemployment, financial struggle, WIMD area deprivation) understandably showing a role.

Figure 23: Estimated number of Welsh adults in key social groups who are digitally excluded by some constraint



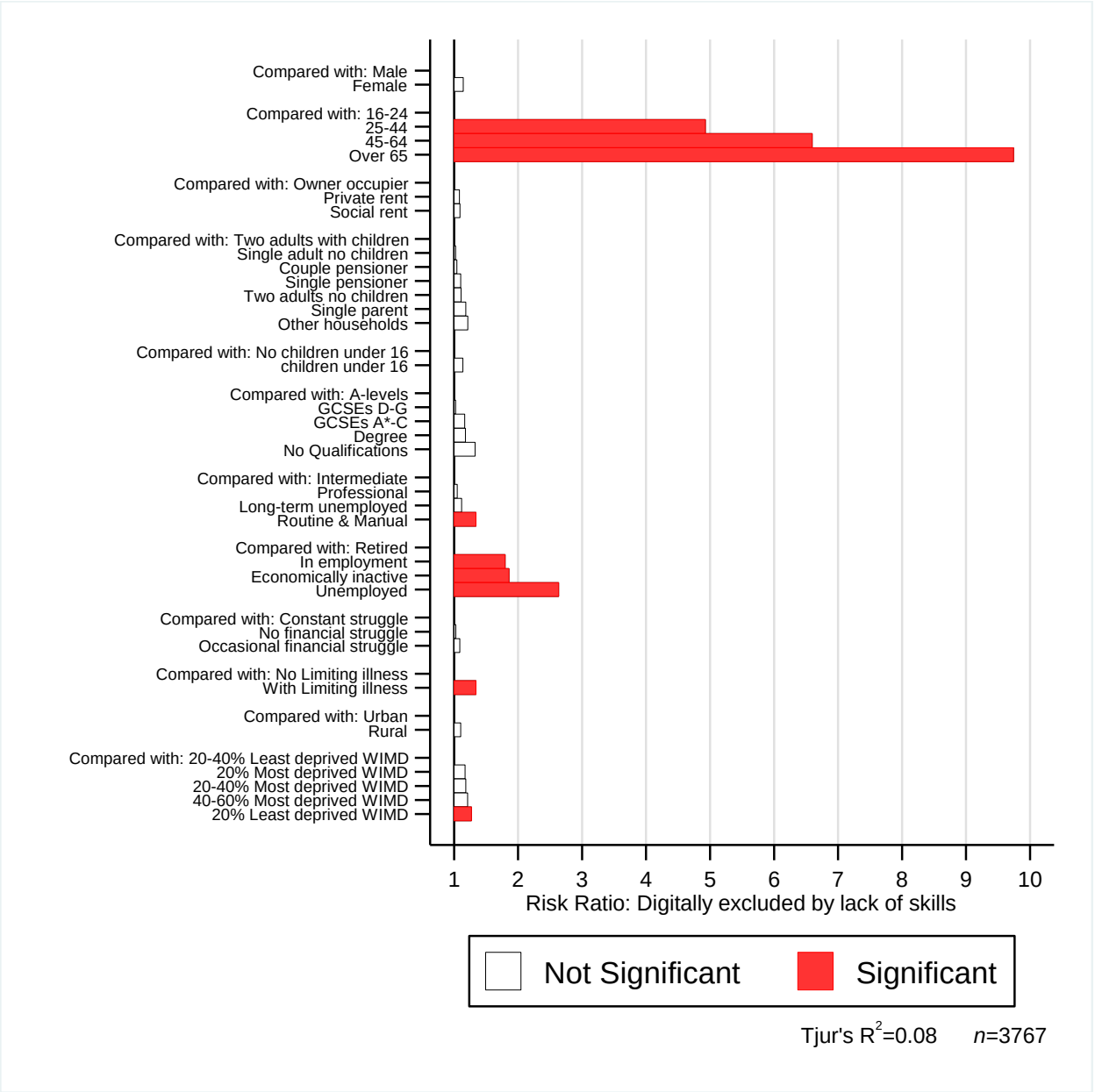
Given the importance of skills as a driver of digital exclusion, Figure 25 below takes only those adults who are involuntarily digitally excluded and considers the effects of

the full range of factors together in terms of their effects on an individual's risk of being digitally excluded due to a lack of skills specifically. As in previous charts, local authority controls are included but are not shown on Figure 25.

Controlling for other factors, the influence of age, health issues and employment status emerge as the main drivers of skills constrained involuntary digital exclusion. The most dramatic effects are seen across the age groups and the differences are stark. Other things equal, all other age groups are dramatically more likely than those aged 16-24 to be digitally excluded due to a lack of skills: those aged 25-44 are around five times as likely as those aged 16-24 to be digitally excluded due to a lack of skills whilst those aged 45-64 are around 6.5 times as likely as those aged 16-24 to be excluded due to a lack of skills, other things equal. The largest differences are seen for the over 65s, however, who are almost ten times as likely as those aged 16-24 to be digitally excluded due to a lack of skills, controlling for other factors.

Although dwarfed by the size of these risk ratios seen across the age groups, other notable effects can also be seen in Figure 25. A second group in terms of possible policy focus seems to contain those who are unemployed and/or who have a limiting long-term condition. In terms of health issues, those who are involuntarily digitally excluded and with a limiting long-term illness are on average around 1.25 times as likely as those without such a health condition to feel constrained due to a lack of skills, other things equal. Similarly, the digitally excluded unemployed are, other things equal, over 2.5 times as likely on average to be excluded due to a lack of skills compared to the retired. The unemployed are also around 1.5 times as likely to be digitally excluded due to a lack of skills compared to those in employment, a large effect size even if the difference between these two groups is not statistically significant.

Figure 24: For the involuntarily digitally excluded only, factors affecting likelihood that lack of skills is barrier to their digital engagement



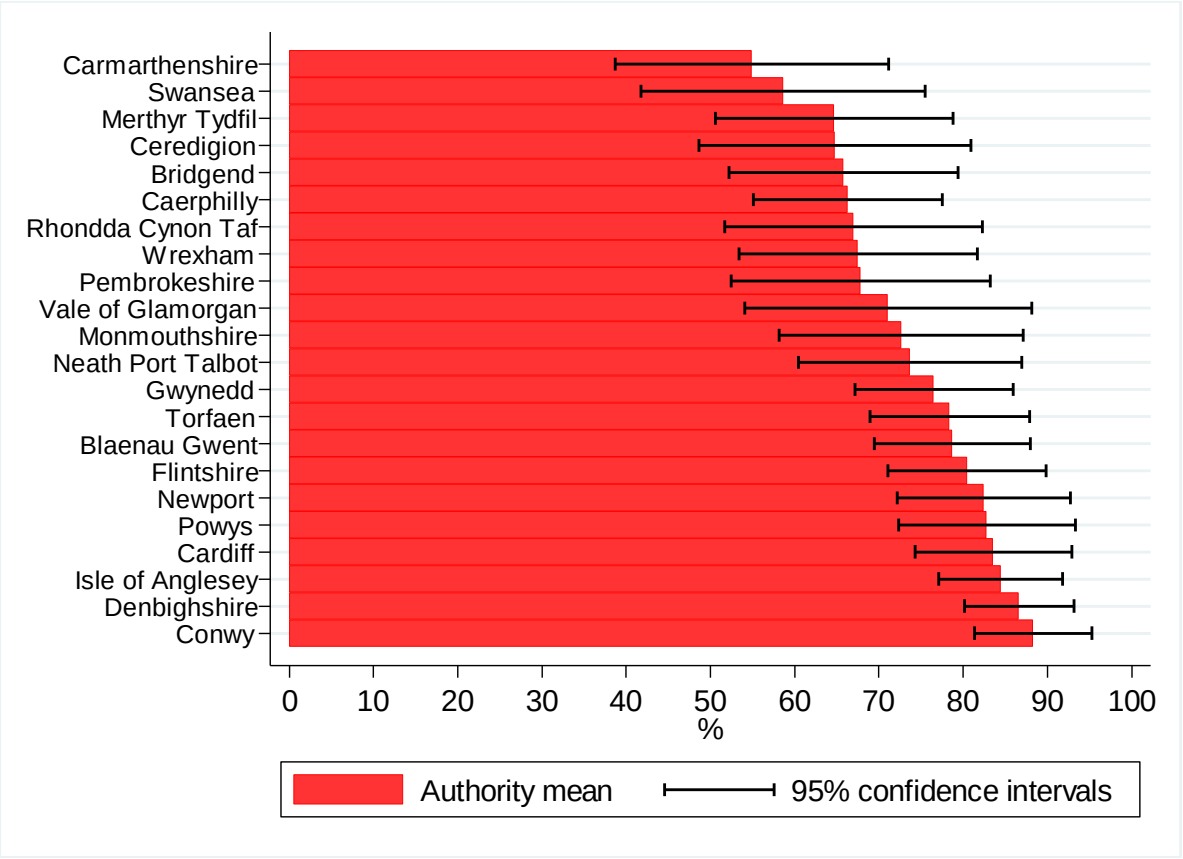
In terms of potential policy levers, whilst not all of those with long-term illness will be of working age one would expect that most working age individuals in these groups would be claiming state benefits either in the form of Jobseeker's Allowance or Employment Support Allowance (or, in time, Universal Credit). Many would undoubtedly be in contact with Jobcentre Plus or Work Programme providers and these offer possible contact points through which training to develop skills and confidence around ICT and broader literacy could be delivered in order to support both digital inclusion and employability strategies simultaneously.

Equivalent risk ratios in relation to cost as a barrier to digital engagement for those involuntarily excluded from internet access are provided in Figure 30 in Appendix A.

Figure 30 confirms the importance of age to exclusion on costs grounds also: digitally excluded 16-24 year olds are on average over four times as likely as digitally excluded over 65s to be excluded on cost grounds, other things equal. Unsurprisingly, income-related variables such as employment status and financial struggle also emerge as drivers of digital exclusion on cost grounds.

Turning finally to the geographical variation in the prevalence of skills as a barrier to the involuntarily digitally excluded, Figure 26 shows the percentage of the involuntarily digitally excluded in each local authority who state that they would like to get online but feel that they lack the skills to do so. Despite small sample sizes, and hence wide and often overlapping confidence intervals, there remain marked differences in these percentages between local authorities. Ideally one might wish to collect further data with the expectation that this would act to shrink the confidence intervals and hence offer greater statistical robustness to these results. As they stand, however, these findings are indicative of a pattern, even if the confidence intervals are wider than might be desired ideally. Nevertheless, the suggestion from Figure 26 is that the importance of a skills-led policy strategy to tackle digital exclusion may well vary across different local authorities, with skills being the near universal cause of involuntary digital exclusion in some authorities towards the bottom of Figure 26. Whilst local authority targeting of digital exclusion may not make sense in general terms, therefore, Figure 26 suggests in contrast that local authorities might well expect different profiles of digitally excluded individuals and may help them to tailor their policy responses more effectively. Further research might wish to repeat this analysis with larger sample sizes to seek additional precision to these estimates and one cost effective way to do so may be to simply pool consecutive years of the National Survey for Wales.

Figure 25: Percentage of involuntary digital exclusion that is due to a lack of skills across local authorities



Conclusions

Digital engagement is already a vital tool to enhance economic, purchasing, social and leisure opportunities as well as to reduce the cost of living. Its importance will only continue in the years to come. The Welsh Government have set ambitious targets around digital engagement and have policy strategies and interventions in place to seek to realize its digital objectives.

This report seeks to support the Welsh Government to realize its digital inclusion ambitions by examining the nature of digital engagement and digital disengagement across Wales today. It has been shown that 73% of households and 77% of adults use the internet currently. Hence, 23% of Welsh adults are not currently digitally engaged and the vast majority of these adults have never used the internet in the past. As a result, 20% of Welsh adults might be described as the core digitally disengaged. Of this group, two-thirds of these adults voluntarily choose not to go online but little is known within the National Survey for Wales about their motivations or potential receptiveness to informational or skills interventions to encourage or support them to become connected. The remaining one-third of the core digitally disengaged do want to get online but state that they face some constraint that is preventing them from doing so. For the vast majority of people this constraint is a perceived lack of skills. The over 65s, the unemployed and those with a limiting long-term illness are identified as key target groups in relation to possible skills interventions. It is suggested that the latter two groups may be reachable to policy makers via Jobcentre Plus and Work Programme providers and that interventions around skills may helpfully act to support both employability and digital inclusion agendas.

Whilst internet familiarity and usage will gradually tend to increase over time, for those adults who are digitally disengaged at present there is a need for proactive, targeted and tailored policy interventions to support all those who wish to be digitally included to become connected. Although many factors are relevant to explaining the patterns of digital disengagement seen in Wales, across both the voluntarily digitally isolated and the involuntarily digitally excluded it is older age – in particular being over 65 – and weak qualifications and skills that emerge as the two dominant drivers of digital disengagement. It is this two-way matrix – choice and constraint, age and skills – that the Welsh Government will need to better understand and target interventions around if it wishes to make substantial inroads into reducing current levels of digital disengagement across Welsh adults.

Gaps in understanding remain and refinements to some of the data collected in the National Survey for Wales might help to illuminate these issues more clearly. Amongst those who choose not to go online a better understanding is needed of their reasoning, their motivation and their potential receptiveness to alternative types of policy interventions. It may be, for example, that with a better understanding of what the internet might be used for, how it could help them, or that those around

them also use it, that individuals themselves might decide that they do actually now wish to get connected. For those citing a lack of skills as a barrier to digital engagement, this may be due to broader literacy issues, to specific ICT skills, or more to a lack of confidence in those skills rather than to significant weaknesses in the skills themselves. Better understanding of these differences may help to better tailor effective and targeted policy responses.

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Appendix A

Figure 26: Effect of local authority on individual's likelihood of using laptop (left) and desktop (right) to access the internet

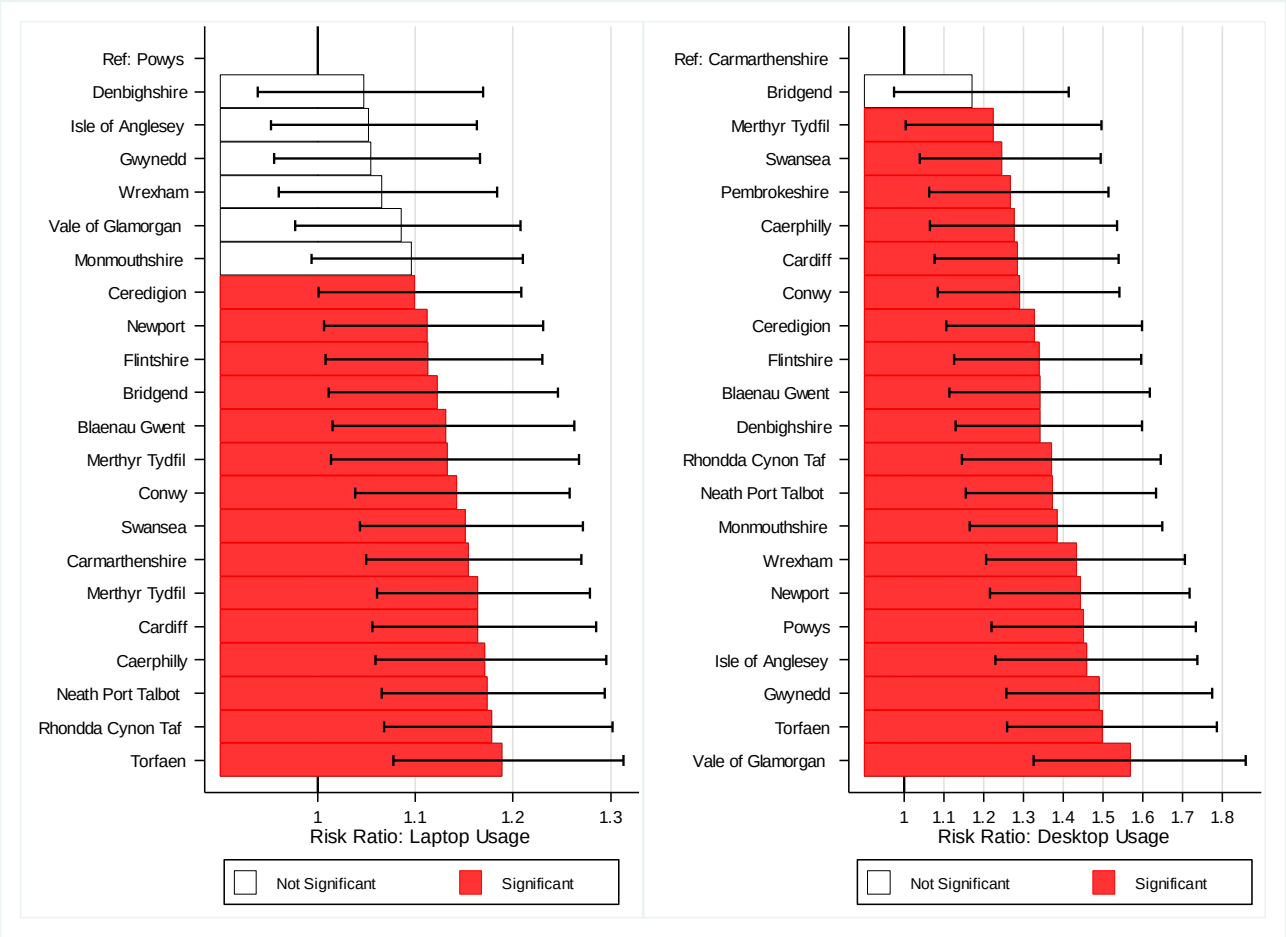

Figure 27: Factors affecting individual's likelihood of accessing the internet at a friend's house

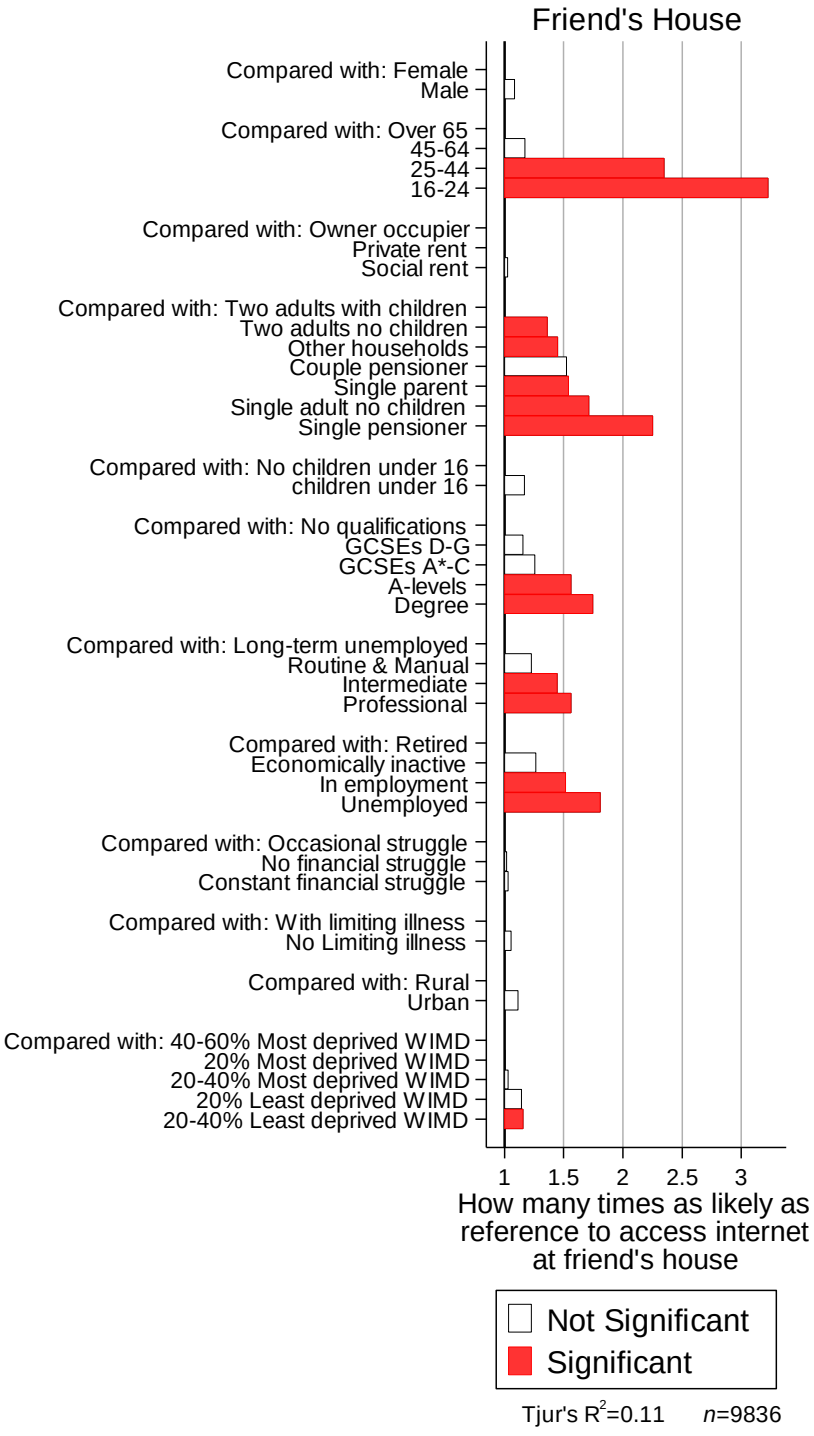

Figure 28: Factors affecting individual's likelihood of accessing the internet at work

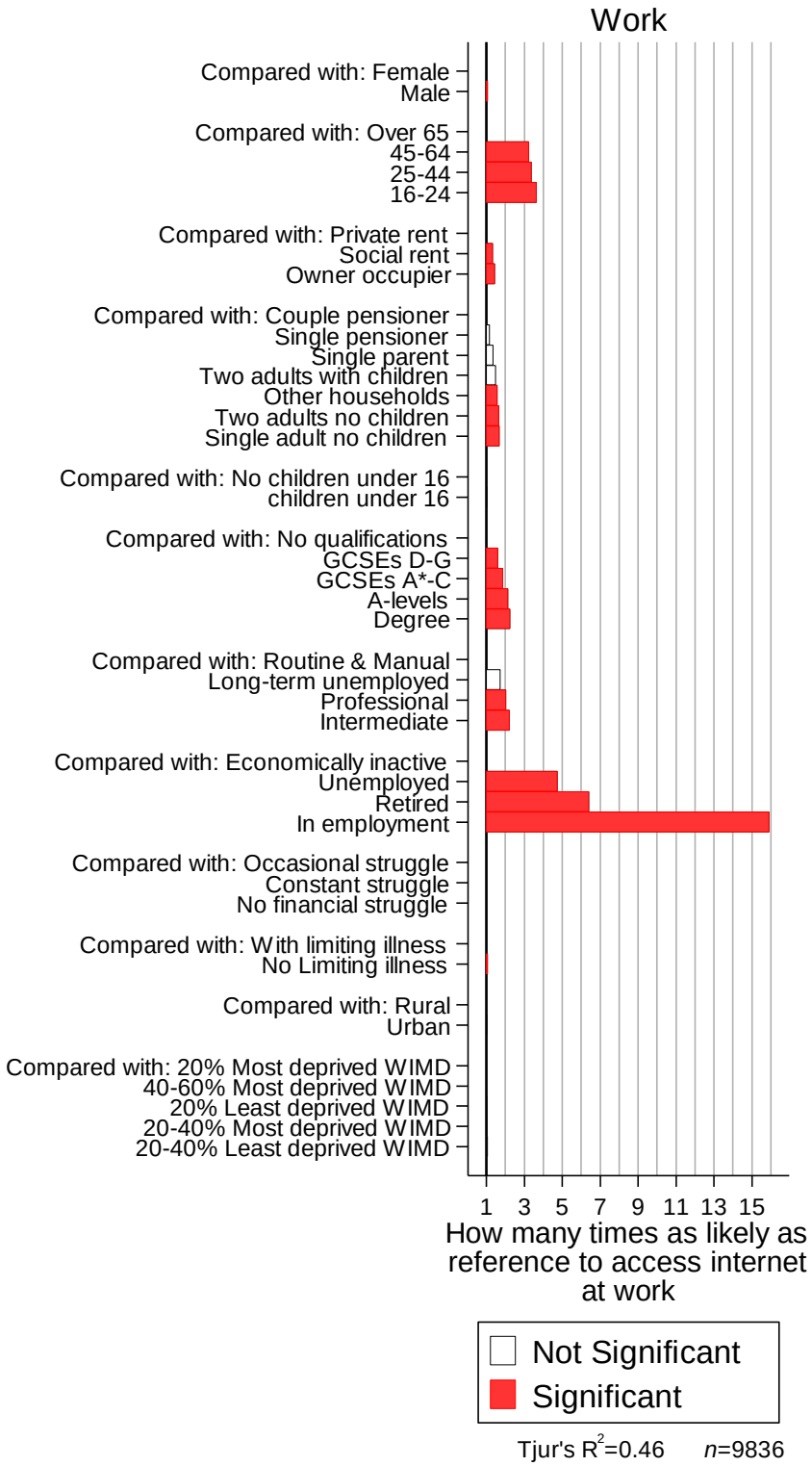

Figure 29: For the involuntarily digitally excluded only, factors affecting likelihood that cost is barrier to their digital engagement