4 Telecoms and networks

4.1 Recent developments in Scotland

The Scottish Government is leading the Digital Scotland Superfast Broadband Programme. Combined with existing commercial roll-out plans, the programme plans to deliver access to fibre broadband to around 85% of premises in 2015/16 and at least 95% of premises by the end of 2017.

The Digital Scotland Superfast Broadband programme passed 275,000 premises (around 40% of the total in Scotland) by April 2015. The programme also funded the laying of over 400km of sub-sea cabling to connect some islands and some of the most remote areas of Scotland.

The Scottish Futures Trust was appointed to help the Scottish Government deliver its 2020 vision. The work will include the scoping of digital infrastructure requirements and further projects under the Demonstrating Digital workstream, focusing on trialling innovative technological solutions.

Community Broadband Scotland (CBS)[36] continues to play a significant role in securing connectivity to the areas not covered by the Digital Scotland programme. CBS, as part of Highlands and Islands Enterprise, is actively working with 85 communities across Scotland to get access to faster broadband as part of the Scottish Government Digital Scotland project. These projects could potentially provide services to 16,000 premises. In total 45 projects have had approved grant funding for planning and development, and more than £500,000 has been awarded in capital funding for nine communities whose projects offer services to 1,456 premises and 2,920 beneficiaries.

Ofcom has published research on 3G and 4G network performance in Edinburgh. Average download speeds on both 3G and 4G networks were higher in Edinburgh than in London, and Edinburgh recorded the highest average 3G download speed of all the locations tested. The research also noted improvements in performance due to decreased latency and increases in upload speeds in Edinburgh.

The agreement between the UK Government and mobile network operators, to secure a £5bn investment in network infrastructure to bring 90% UK-wide geographic coverage, is anticipated to bring additional coverage to Scotland.

A pilot project went live in April which made 3G and 4G services available on the island of Coll for the first time. The concept behind this project is to test an alternative model, based around community ownership of the mobile mast. The community own the mast and are able to use it for their benefit while providing mobile coverage to the island.

Glasgow City Council has continued to work on its Digital Glasgow strategy, and following the launch of free city-wide WiFi access, 31 community centres and public halls operated by Glasgow Life have been connected. This will enable access and awareness raising, as well as the ability for users to develop their digital skills. Other outputs from the Digital Glasgow project have been the creation of a digital access map across the city, to identify learning opportunities and further work to identify the most digitally unconnected citizens and help them to get online.

[36] http://www.gov.scot/Topics/Economy/digital/action/WC2020/CBS

Wheatley Group has extended its pilot programme, trialling broadband facilities for GHA tenants living in a multi-storey block in Glasgow. The initial results were encouraging in terms of the number of tenants taking part in the study and increasing their breadth of use of different applications. One of the key areas being looked at is affordability for people on low and fixed incomes. One-third of the people taking part in the study expressed concern about affordability, with 55% of the tenants believing a figure of £5 per month would be manageable. The study will be extended until August 2016; the emphasis in the coming months will be on the use of digital housing and digital public sector services.

In 2015 the Scottish Government launched a new digital participation programme 'Let's Get On' aimed at supporting individuals and micro-businesses get online. It held 89 events across Scotland to highlight the benefits of broadband and to offer help with basic digital skills.

4.2 Availability of fixed broadband services

Almost all UK premises are able to receive basic broadband services

Three key technologies are used to provide fixed broadband services in the UK: exchange-based ADSL, cable (over a hybrid fibre-coaxial network) and fibre-to-the-cabinet (using VDSL in the street cabinet).[37] ADSL transmits data over the existing copper network, and is the cheapest of these technologies to deploy, as in most cases it does not require an upgrade to the existing telephone network other than new equipment in the local exchange (cable and fibre roll-out both involve the deployment of new infrastructure to connect local exchanges/nodes to the end user).

However, while ADSL technology has the benefit of being comparatively cheap to roll out, it is unable to provide the superfast speeds[38] that cable and fibre can, and some premises in ADSL-enabled areas may not be able to receive service, or may only be able to do so at very low speeds of as a result of the long length, or poor quality, of the telephone line from their premises to the local exchange.

By the end of 2014, almost all of BT's local exchanges (of which there are around 5,600 across the UK) had been upgraded to offer ADSL broadband services, and across the UK as a whole, the proportion of premises (i.e. homes and offices) connected to an ADSL-enabled exchange was over 99.9% (Figure 4.1). In Northern Ireland and Wales, all BT local exchanges have been upgraded to offer ADSL broadband services, while in England and Scotland there remain exchanges that are not ADSL-enabled, and the proportion of premises connected to ADSL-enabled exchanges is slightly lower.

Local-loop unbundling (LLU) enables an alternative provider to offer broadband services over the twisted copper pair from the local exchange to the end user's premises. To do this, the LLU provider has to site its own equipment in the incumbent's local exchange and connect it to its own backhaul network. The advantage of LLU to ISPs is that it allows them to benefit from the economies of scale that are not available when purchasing wholesale services from the incumbent on a per-connection basis, and it enables them to differentiate their retail products from those offered by their competitors. The deployment of LLU ADSL services in the UK has resulted in the availability of low-cost bundled broadband services to consumers living in unbundled exchange areas.

By the end of 2014, LLU availability in the UK was high, with 95% of premises being in areas served by unbundled local exchanges (an increase of just 0.2 percentage points compared

[37] A small proportion of premises is also served by fibre-to-the-premises (FTTP).
[38] i.e. actual speeds of 'up to' 30Mbit/s or higher

to the previous year). Roll-out of any fixed telecoms network tends, initially at least, to be concentrated in urban areas (where there are a larger number of premises to be served). This is reflected in fact that the proportion of premises in urban areas connected to an unbundled local exchange at the end of 2014 (over 99.9%) was higher than in rural areas (77%). Along with Northern Ireland, Scotland had the joint lowest proportion of premises that were connected to an unbundled local exchange at the end of 2014 (89%). England had the highest proportion at the end of the year, at 96%, while in Wales, the proportion was 93%.

Figure 4.1 Proportion of premises connected to ADSL-enabled and unbundled exchanges

Source: Ofcom / BT, December 2014 data

By May 2015, 36% of premises in Scotland could receive cable broadband services

Ofcom, as part of its work to monitor the UK's communications market infrastructure, collects data showing the number of UK premises that are able to receive cable and fibre broadband services. It is important to note that not all cable and fibre broadband connections are capable of providing superfast broadband services (i.e. those with an actual speed of 30Mbit/s or higher). For example, the speed achievable on a fibre-to-the-cabinet (FTTC) line will depend on the length and quality of the copper connection from the street cabinet to the user's premises, as is the case with ADSL (these limitations do not apply to cable and fibre-to-the-premises services). Ofcom's 2015 *Communications Infrastructure Report Update*[39] will provide more detailed analysis of the distribution of fixed broadband speeds.

Urban and rural classifications

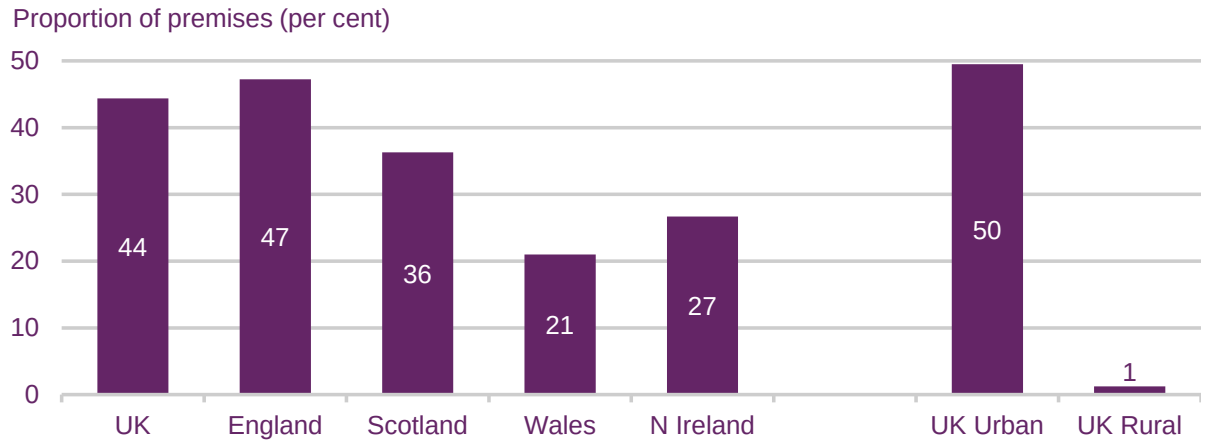
In previous *Communications Market Reports*, Ofcom has used a third-party data source (*Locale*) to classify postcodes as being urban or rural. This year, that data source was not available, so Ofcom has used the rural/urban classifications developed by DEFRA, NISRA and The Scottish Registry Office to produce urban/rural splits. Analysis shows that at an urban/rural split level, the two datasets correspond 95% of the time, where postcodes can be matched. However, each dataset cannot match 2.5% of all postcodes, and the unallocated postcodes differ between datasets. Therefore, the urban/rural classification of between 5% and 10% of postcodes varies between datasets, and the urban/rural figures in this report are not directly comparable to those in previous reports.

Data provided to Ofcom by Virgin Media shows that 44% of UK premises were able to receive cable broadband services over Virgin Media's network in May 2015, unchanged from

39 Due to be published in Q4 2015

June 2014 (Figure 4.2). Across the UK nations the proportion of premises able to receive Virgin Media cable broadband services (which offer advertised download speeds of 'up to' 50Mbit/s, 100Mbit/s and 152Mbit/s) ranged from 21% in Wales to 47% in England (in Scotland it was 36%, the second highest proportion across the nations). The proportion of premises able to receive Virgin Media cable broadband services was significantly higher in urban areas of the UK (50%) than in rural areas (1%).

Figure 4.2 Proportion of premises able to receive Virgin Media cable broadband services



Source: Ofcom / Virgin Media, May 2015 data

Three-quarters of premises in Scotland could receive fibre broadband services by May 2015

We have calculated the proportion of premises able to receive fibre broadband services using data provided by Openreach (a BT Group company) and Kcom (the incumbent provider in the Kingston-upon-Hull area).[40] As stated previously, it is important to note that not all fibre broadband connections will be able to achieve actual download speeds of 30Mbit/s.

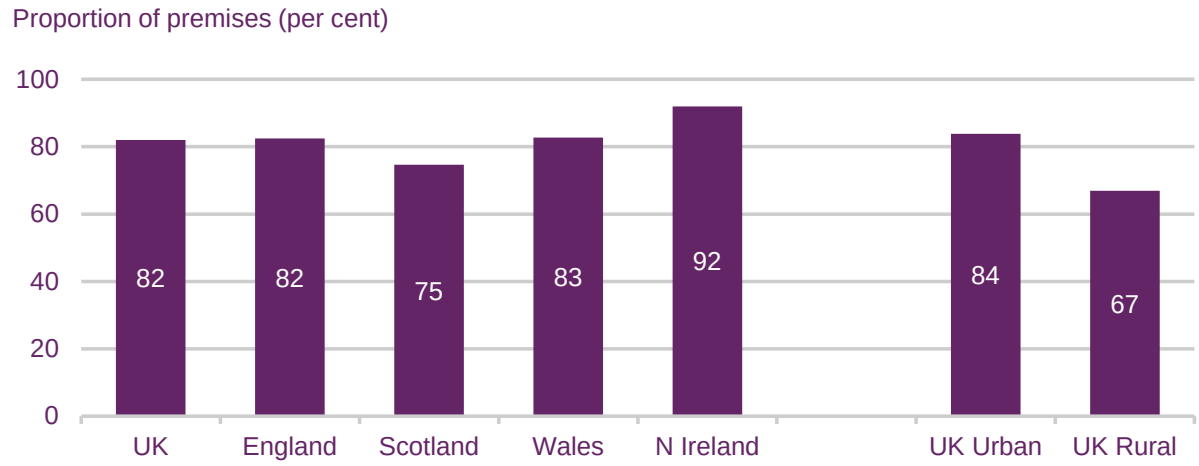
Our analysis shows that by May 2015 82%[41] of UK premises were able to receive fibre broadband services over Openreach or Kcom's fibre broadband networks, a 13 percentage point increase compared to June 2014 (Figure 4.3). Scotland had the lowest proportion of premises that could receive fibre broadband services among the nations in May 2015 (75%), however, this was a 26 percentage point increase compared to June 2014, the second highest increase among the nations after Wales.

Among the other nations, the proportion of premises that were served by Openreach or Kcom's fibre broadband networks ranged from 82% in England to 92% in Northern Ireland, which has benefited from a Department of Enterprise, Trade and Investment (DETI) initiative to increase the availability of superfast broadband services. As is the case with cable services, the availability of fibre broadband services is higher in urban areas of the UK than in rural areas, with 84% of premises in urban areas being able to receive Openreach or Kcom's fibre broadband services, compared to 67% in rural areas.

[40] Under regulatory rules other providers can provide retail fibre broadband services to consumers using these networks.
[41] It should be noted that this figure, and those given below, will understate actual fibre broadband availability as they exclude availability over networks other than Openreach and Kcom's.

Again, it is important to note than not all fibre broadband connections will be able to achieve actual downstream speeds of 30Mbit/s.

Figure 4.3 Proportion of premises able to receive Openreach / Kcom fibre broadband services



Source: Ofcom / Openreach / Kcom, May 2015 data

By May 2015, 85% of premises in Scotland could receive next generation access broadband services

We are able to estimate the proportion of premises that are served by next generation access (NGA) networks (which are used to deliver superfast broadband services) by combining the Virgin Media cable broadband availability data shown in Figure 4.2 with the Openreach/Kcom fibre broadband availability data shown in Figure 4.3.

Combining postcode-level availability data for cable and fibre services gives us a range of availability for NGA broadband services: for example, if cable broadband and fibre broadband services are both available to 50% of premises in a postcode, the availability of NGA services in that postcode will be somewhere between 50% of premises (where cable and fibre services are available to the same premises within the postcode area) to 100% of premises (where there is no overlap in the availability of cable and fibre services). In Figure 4.4 below, we show the mean of the possible range of availability of NGA services, which would be 75% in the example given above.

Our analysis indicates that 90% of UK premises were able to receive fixed broadband services over NGA networks by May 2015, a 12 percentage point increase compared to June 2014. Scotland had the lowest availability of NGA broadband networks in May 2015, with 85% of premises having access to these services, however, this was a 22 percentage point increase from June 2014 as a result of increasing fibre broadband availability. Across the other UK nations, the proportion of premises that could receive NGA broadband services ranged from 87% in Wales to 95% in Northern Ireland, with 90% of premises in England being within NGA network footprints. In urban areas of the UK, 92% of premises were able to receive NGA broadband services in May 2015, compared to 67% in rural areas.

Figure 4.4 Proportion of premises able to receive NGA broadband services

Source: Ofcom / Openreach / Virgin Media / Kcom, May 2015 data

Seventy-three per cent of premises in Scotland were able to receive superfast broadband services in May 2015

As mentioned previously, not all NGA broadband connections are capable of providing superfast broadband services (i.e. those with an actual speed of 30Mbit/s or higher) and in particular, the speed achievable over an FTTC connection will depend on the length and quality of the copper connection from the street cabinet to the user's premises. In collecting data to inform its work monitoring the UK's communications market infrastructure in 2015, Ofcom asked Virgin Media, Openreach and Kcom to provide postcode-level data regarding the proportion of premises that could receive superfast broadband services, i.e. a fixed broadband service with an actual speed of 30Mbit/s or higher.

As is shown in Figure 4.5 below, this data suggests that while 90% of UK premises were able to receive NGA broadband services in May 2015, the proportion that was able to receive superfast broadband services was seven percentage points lower, at 83%. As was the case with NGA broadband services, Scotland had the lowest proportion of premises that could receive superfast broadband services in May 2015 (73%), meaning that 12% of premises in Scotland were in areas where NGA broadband was available, but could not receive actual broadband speeds of 30Mbit/s, the second highest proportion across the UK nations after Northern Ireland (18%).

Among the other UK nations, the proportion of premises that could receive superfast broadband services ranged from 77% in Northern Ireland to 84% in England (in Wales it was 79%). The proportion of premises that could receive superfast broadband services in urban areas of the UK (88%) was significantly higher than in rural areas (37%). This indicates that while across the UK as a whole, 7% of premises in NGA areas could not receive an actual fixed broadband download speed of 30Mbit/s, this proportion was much higher in rural areas (45%) than in urban areas (4%).

Figure 4.5 Proportion of premises able to receive superfast broadband services

Source: Ofcom / Openreach / Virgin Media / Kcom, May 2015 data

4.3 Mobile network coverage

Overview

How we measure the availability of mobile telephony for this report

The coverage information presented in Ofcom's *Communications Market Reports* and *Infrastructure Report* is collected by Ofcom from the four UK mobile network operators (MNOs). Information on coverage is provided by each operator for each 100x100m pixel of landmass across the UK. This information is correlated with maps of premises to give the premises' coverage figures.

The availability figures quoted all refer to outdoor coverage. Coverage figures for indoor reception are likely to be lower because radio signals are attenuated as they pass through the fabric of buildings. Indoor reception is highly dependent on the building in which reception is desired, and where the user is located in the building, making it difficult to calculate accurate indoor coverage figures.

Figure 4.6, Figure 4.7 and Figure 4.8 show coverage levels for 2G, 3G and 4G mobile services respectively.[42] 2G is considered satisfactory for telephone calls and text messaging, while 3G is considered the minimum necessary to provide an acceptable experience of accessing mobile data services. 4G generally provides a better user experience than 3G when accessing mobile data services as a result of the faster data speeds that it offers.

There are still areas of the UK where a lack of mobile coverage means that it is not possible to make mobile voice calls, send text messages and/or access mobile data services. These areas are known as 'mobile not-spots' and are often characterised by low population density and/or hilly terrain which present physical and economic obstacles that deter mobile network operators (MNOs) from deploying mobile network infrastructure in these areas. In other areas (known as 'partial not-spots') some operators have mobile coverage whereas others do not.

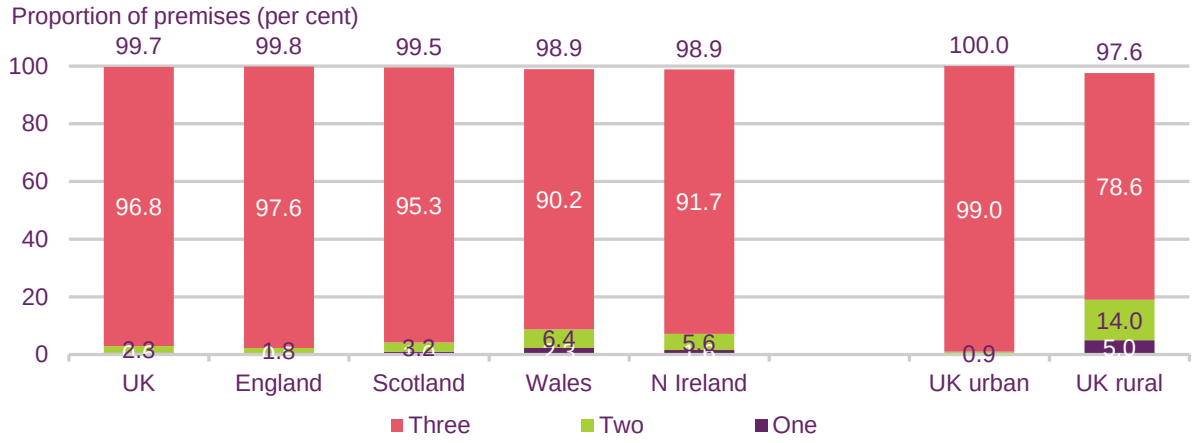
[42] The availability data provided by the MNOs are taken from network planning tools, which are subject to a margin of error, and local factors such as tall buildings or trees can affect signal strength.

99.5% of premises in Scotland were in areas with outdoor 2G coverage in May 2015

The coverage data provided to us by MNOs shows that 96.8% of UK premises had outdoor coverage from all three 2G network operators (EE, O2 and Vodafone) in May 2015 (Figure 4.6). Overall, 99.7% UK of premises were in areas where at least one mobile network provided outdoor 2G coverage, suggesting that 0.3% of UK premises (around 75,000 premises) were in areas without any 2G mobile coverage. The proportion of UK premises in areas with outdoor 2G mobile coverage was higher in urban locations (100.0%) than in rural ones (97.6%).

Scotland had the second highest proportion of premises with outdoor coverage from all three 2G networks among the UK nations in May 2015, at 95.3%, while 0.5% of premises in Scotland (around 14,000 premises) were in areas without 2G coverage. The lower-than-average network coverage in Scotland is a reflection of its lower population density (which means that providing mobile services in some areas is not commercially viable) and its hilly terrain, which restricts the propagation of mobile signals. England had the highest 2G coverage across the UK nations, with 97.6% of premises having outdoor coverage from all three 2G networks and 0.2% being in areas without any outdoor 2G coverage.

Figure 4.6 2G outdoor mobile coverage to premises, by number of operators



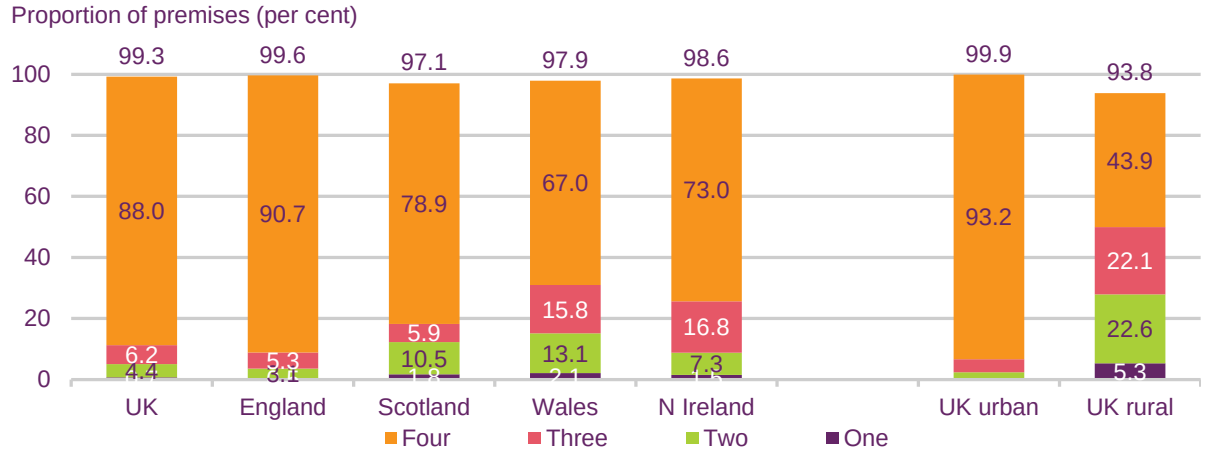
Source: Ofcom / operators, May 2015 data
Note: Coverage is based on 100m square pixels covering the UK

Scotland had the lowest proportion of premises with outdoor 3G coverage among the UK nations in May 2015

Our analysis suggests that 99.3% of UK premises were in areas where there was outdoor 3G mobile coverage in May 2015, while 88.0% were in areas where there was similar coverage from all four UK 3G networks (EE, O2, Vodafone and Three). Conversely, 0.7% of premises were in areas without any 3G mobile reception, equivalent to around 210,000 premises. The proportion of premises in areas with outdoor 3G coverage was higher in urban areas of the UK (99.9%) than in rural areas (93.8%).

As was the case with 2G services, the proportion of premises in areas with outdoor 3G mobile coverage was highest in England, where 99.6% of premises were in areas with coverage from at least one 3G network, and 90.7% had coverage from all four MNOs (Figure 4.7). Scotland had the lowest proportion of premises in areas with outdoor 3G coverage from at least one MNO, among the UK nations, in May 2015, at 97.1%; 2.2 percentage points below the UK average, although it had the second highest proportion of premises with similar coverage from all four 3G networks, at 78.9%.

Figure 4.7 3G outdoor mobile coverage to premises, by number of operators



Source: Ofcom / operators, May 2015 data
Note: Coverage is based on 100m² pixels covering the UK

Scotland had the largest increase in 4G availability among the UK nations between June 2014 and May 2015

The UK's four national MNOs are still in the process of deploying their 4G networks, and this is reflected by the fact that availability of 4G services in May 2015 was lower than that of 2G and 3G services (Figure 4.8).

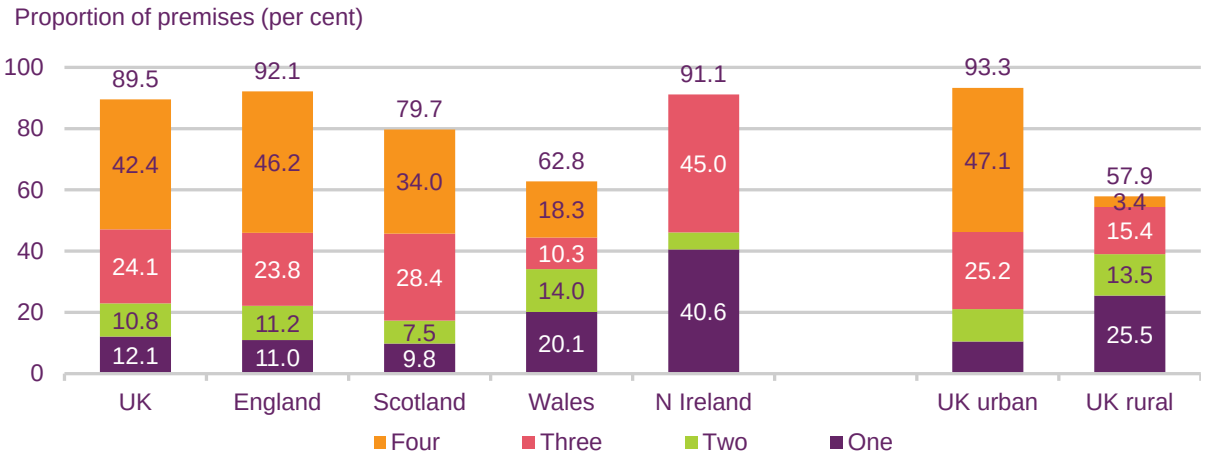
Data provided by the MNOs suggest that 89.5% of UK premises were in areas with outdoor mobile coverage from at least one 4G network in May 2015, a 17.7 percentage point increase compared to the 71.8% recorded in June 2014[43]. All four UK MNOs aim to have at least 98% 4G population coverage by the end of 2015, and the 4G spectrum licence acquired by O2 stipulates that it should provide indoor coverage to 98% of the UK population (and at least 95% of the population of each of the UK nations) by the end of 2017 at the latest.

Scotland had the second lowest proportion of premises in areas with outdoor 4G network coverage from at least one 4G network in May 2015 at 79.7%. This was a 23.3 percentage point increase compared to June 2014, the largest such increase among the UK nations over this period. Among the other UK nations, the proportion of premises with outdoor 4G coverage ranged from 62.8% in Wales to 92.1% in England (in Northern Ireland, where mobile provider Three did not offer 4G mobile services in May 2015, it was 91.1%).

The difference between urban and rural 4G coverage was much more marked for 4G services than for 2G and 3G in May 2015, with 93.3% of urban premises having outdoor 4G coverage, compared to 57.9% of those in rural areas.

[43] All 4G coverage comparisons between 2014 and 2015 are indicative only as coverage data for Three was not available in 2014, and 2014 figures are therefore based on three rather than four UK MNOs.

Figure 4.8 4G outdoor mobile coverage to premises, by number of operators



Source: Ofcom / operators, May 2015 data
Note: Coverage is based on 100m square pixels covering the UK

4.4 Service take-up

Household computer ownership is lower than average in Scotland

As shown in Figure 4.9, while take-up levels for landlines and mobile phones in Scotland in Q1 2015 were in line with the UK averages, internet take-up was lower than the average for the UK as a whole (78% vs. 85%).

This was largely because adults in Scotland are less likely to have fixed broadband at home compared to the UK average (71% vs. 78%), and this is likely to be related to the fact that fewer homes have any type of computer (75% vs. 83%). It was notable that there were no significant differences in levels of take-up of any of the services or devices shown below across urban or rural areas of Scotland in Q1 2015.

Figure 4.9 Take-up of communications services: 2015

		UK	Scotland	England	Wales	N Ireland	Scotland urban	Scotland rural
Individual								
Voice telephony	Fixed Line	**84%**	82%	85%	83%	84%	81%	86%
	Mobile phone	**93%**	91%	93%	90%	91%	90%	93%
	Smartphone	**66%**	63%	67%	63%	63%	64%	60%
Internet	Computer (any type)	**83%**	75%	84%	84%	77%	75%	75%
	Tablet computer	**54%**	52%	54%	60%	54%	53%	47%
	Total Internet[1]	**85%**	78%	86%	86%	79%	79%	77%
	Broadband (fixed & mobile)[2]	**80%**	73%	81%	78%	72%	73%	73%
	Fixed Broadband	**78%**	71%	79%	77%	69%	71%	72%
	Mobile internet[3]	**61%**	59%	62%	59%	60%	60%	54%

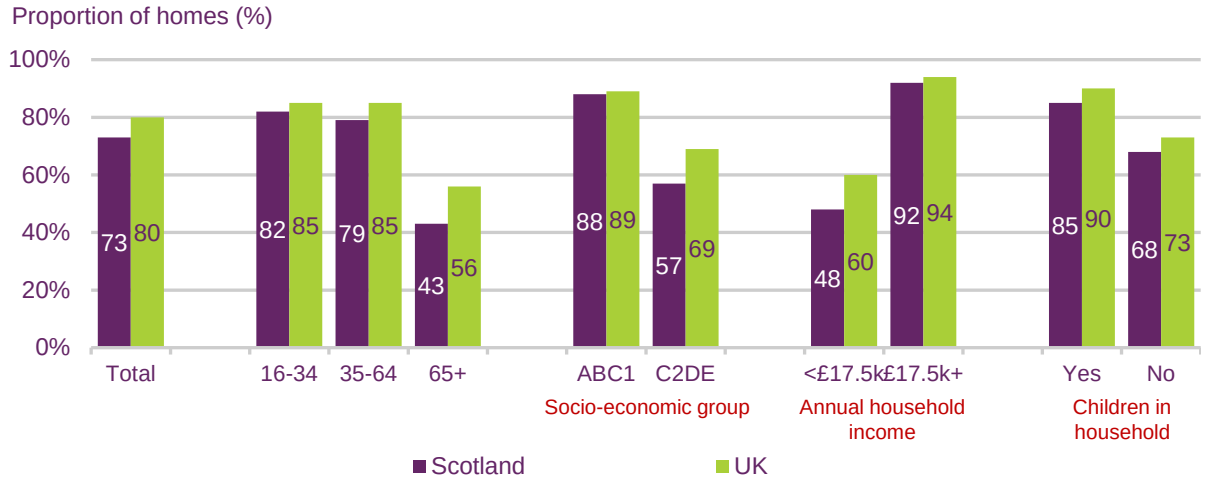
Source: Ofcom Technology Tracker, wave 1 2015
Base: All adults aged 16+ (n = 3756 UK, 492 Scotland, 2264 England, 496 Wales, 504 Northern Ireland, 246 Scotland urban, 246 Scotland rural)
Notes: [1]Households with an internet connection of any description; [2]Households with a fixed broadband and/or dedicated mobile broadband (dongle/SIM) data connection (excludes households that solely use a mobile handset/s to access the internet); [3]households that use a mobile handset/s to access the internet (may also have any other type of internet access).
QC1. Is there a landline phone in your home that can be used to make and receive calls?/ QD2. Do you personally use a mobile phone?/ QD24B. Do you personally use a smartphone?/ QE1. Does your household have a PC or laptop computer?/ QE2. Do you or does anyone in your household have access to the internet/ World Wide Web at home?/ QE9. Which of these methods does your household use to connect to the Internet at home?/ QD28A. Which if any, of the following activities, other than making and receiving voice calls, do you use your mobile for?

Take-up of broadband is lower in Scotland than for the UK as a whole

Household broadband take-up in Scotland (73%) was lower than the UK average (80%) in Q1 2015 (Figure 4.10). Households in Scotland in C2DE socio-economic groups were less likely to have broadband at home (57%) than the UK average for these households (69%), while take-up among ABC1 homes in Scotland (88%) was in line with the UK average.

As was the case across the UK overall, there were differences in broadband take-up in Scotland by age, socio-economic group and household income in Q1 2015. Adults aged 65 and over were less likely to have broadband (43%) compared to 16-34s (82%) and 35-64s (79%). Broadband take-up was 31 percentage points higher among adults in Scotland in the ABC1 socio-economic groups (88%) than among those in C2DE socio-economic groups (57%). There was close to a 50 percentage point difference between household broadband take-up by adults in Scotland with a household income below £17.5k (48%) and those with a household income above £17.5k (92%). As in the UK overall, households with children in Scotland were more likely to have broadband at home, compared to households without children (85% vs. 68%).

Figure 4.10 Consumer broadband take-up in Scotland, by demographic



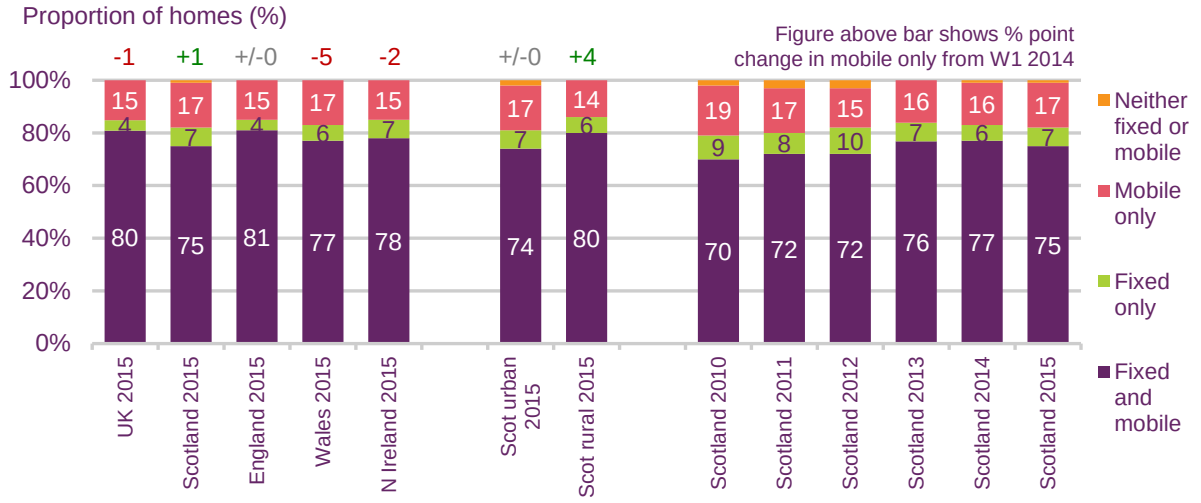
Source: Ofcom Technology Tracker, wave 1 2015
Base: All adults aged 16+ (n =492 Scotland, 158 16-34s, 231 35-64s, 103 65+, 249 ABC1, 243 C2DE, 157 <£17.5k income, 168 £17.5k+, 142 children in home, 350 no children in home)
QE9. Which of these methods does your household use to connect to the internet at home?

Just under one in five households in Scotland is mobile only

As is shown in Figure 4.11, in Q1 2015 just under one in five (17%) households in Scotland used mobile as their only form of telephony; this is similar to the level across the UK as a whole (15%) and to the level recorded in Q1 2014 (16%).

The level of mobile-only households varied significantly by demographic; those in the DE socio-economic group were more likely to live in a mobile-only household (32%) than those in the AB, C1 or C2 socio-economic groups (3%, 18% and 11% respectively). There are also significant differences between age and gender in the level of mobile-only penetration: those in the 16-34 age group are more likely than those in the 35-54 and 55+ age groups to live in a mobile-only household (31% vs. 14% and 8% respectively) and males in Scotland are more likely than females to live in a mobile-only household (22% vs. 12%).

Figure 4.11 Cross-ownership of household telephony services



Source: Ofcom Technology Tracker, wave 1 2015
Base: All adults aged 16+ (n = 3756 UK, 492 Scotland, 2264 England, 496 Wales, 504 Northern Ireland, 246 Scotland urban, 246 Scotland rural, 1468 Scotland 2010, 487 Scotland 2011, 500 Scotland 2012, 501 Scotland 2013, 501 Scotland 2014, 492 Scotland 2015)
QC1. Is there a landline phone in your home that can be used to make and receive calls?/ QD1. How many mobile phones in total do you and members of your household use?

A majority of adults in Scotland had been online using their mobile phone in the previous week

In Q1 2015, six in ten adults in Scotland (59%) said they had used their mobile phone to access the internet, with 92% of these saying they had done so in the previous week (Figure 4.12). These figures were in line with those for the UK as a whole. There was no change in levels of use of a mobile phone to access the internet in Scotland in the year to Q1 2015.

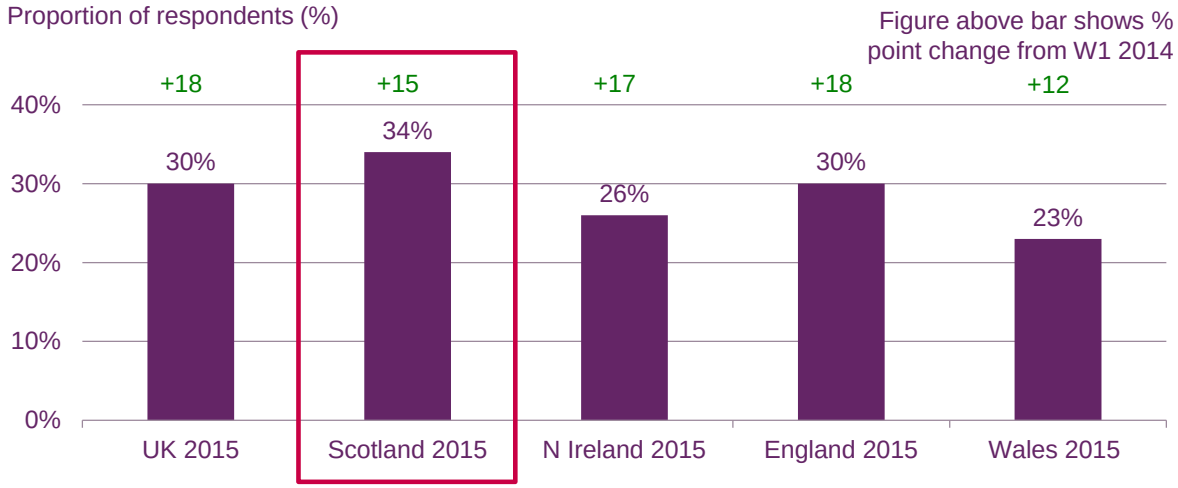
Figure 4.12 Proportion of adults who have used a mobile phone to access the internet

Source: Ofcom Technology Tracker, wave 1 2015
Base: All adults aged 16+ (n = 3756 UK, 492 Scotland, 2264 England, 496 Wales, 504 Northern Ireland, 246 Scotland urban, 246 Scotland rural, 1468 Scotland 2010, 487 Scotland 2011, 500 Scotland 2012, 501 Scotland 2013, 501 Scotland 2014, 492 Scotland 2015)
QD28A-B. Which, if any, of the following activities, other than making and receiving calls, do you use your mobile for?/ And, which of these activities have you used your mobile for in the last week?

A third of adults in Scotland had a 4G service in Q1 2015

In Scotland, a third (34%) of adults reported that they had a 4G mobile service in Q1 2015 (Figure 4.13). This was higher than the average across the UK as a whole (30%) and 11 percentage points higher than the proportion in Wales, where 4G take-up was lowest at 23% of adults. The proportion of adults with a 4G service in Scotland increased in the year to Q1 2015, up by 15pp.

Figure 4.13 4G take-up, by nation

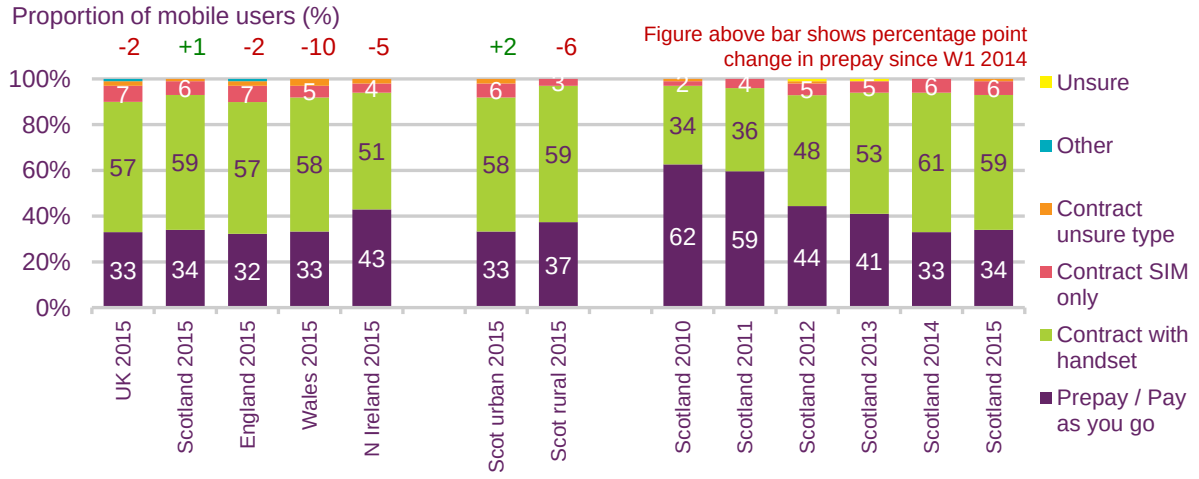


Source: Ofcom Technology Tracker, wave 1 2015
Base: All adults aged 16+ (n = 3756 UK, 438 Northern Ireland, 2264England, 492 Scotland, 496 Wales
QD6 (QD41). Do you have a 4G service? This is a relatively new service that enables faster mobile internet access

Take-up of pre-pay and pay-monthly mobile services in Scotland is in line with the UK average

In Q1 2015, one in three mobile phone users in Scotland (34%) had a pre-pay mobile phone service, unchanged since 2014 and in line with the UK average (Figure 4.14). Most mobile phone users in Scotland (66%) therefore continue to have a pay-monthly mobile phone contract, as is the case for the UK overall (67%). There was no statistically significant difference in the type of subscription held by mobile users in urban and rural areas of Scotland in Q1 2015, due to a six percentage point decline in the use of pre-pay among users in rural locations during the previous year.

Figure 4.14 Type of mobile subscription



Source: Ofcom Technology Tracker, wave 1 2015
Base: Adults aged 16+ who personally use a mobile phone (n = 3425 UK, 450 Scotland, 2080 England, 439 Wales, 456 Northern Ireland, 222 Scotland urban, 228 Scotland rural, 1237 Scotland 2010, 425 Scotland 2011, 430 Scotland 2012, 464 Scotland 2013, 447 Scotland 2014, 450 Scotland 2015)
QD11. Which of these best describes the mobile package you personally use most often?
Source: Ofcom Technology Tracker, wave 1 2015

4.5 Satisfaction with telecoms services

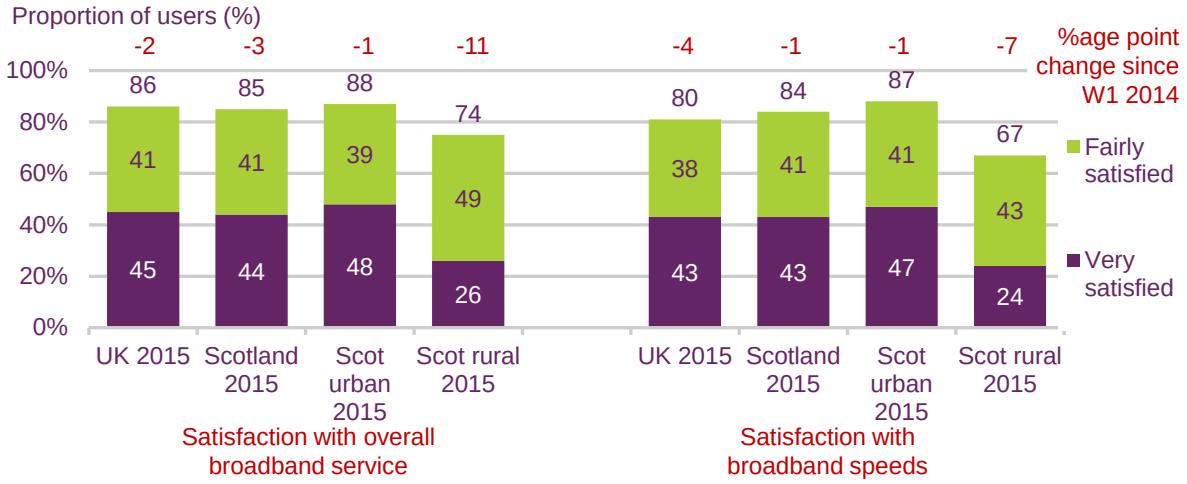
Rural broadband users in Scotland are less satisfied with their fixed broadband service

Overall, more than eight in ten broadband internet users (85%) in Scotland were either 'very' or 'fairly' satisfied with their fixed broadband service in Q1 2015, in line with the UK average (Figure 4.15). There was little change in overall levels of satisfaction with broadband services in Scotland, or across the UK as a whole, in the year to Q1 2015.

While on average, UK broadband users were less likely to be satisfied with their broadband speed (80%) than with their broadband service overall (86%) in Q1 2015, this was not the case among internet users in Scotland; they were equally satisfied with their broadband speeds (84%) and their service overall (85%). Levels of satisfaction with broadband speeds in Scotland were comparable to those for the UK as a whole in Q1 2015 (84% vs. 80%), and while satisfaction with broadband speeds fell among all UK internet users in the preceding year (down from 84% to 80%) there was no statistically significant change in Scotland over this period.

Urban broadband users in Scotland were more likely than rural users to say they were satisfied with their service overall (88% vs. 74%) and with the speed of their connection (87% vs. 67%). This was partly due to falling levels of satisfaction among rural broadband users in Scotland in the year to Q1 2015, with overall satisfaction falling by 11 percentage points to 74% in rural areas, and satisfaction with fixed broadband speeds falling by 7 percentage points to 67%.

Figure 4.15 Satisfaction with overall service and speed of fixed broadband connection

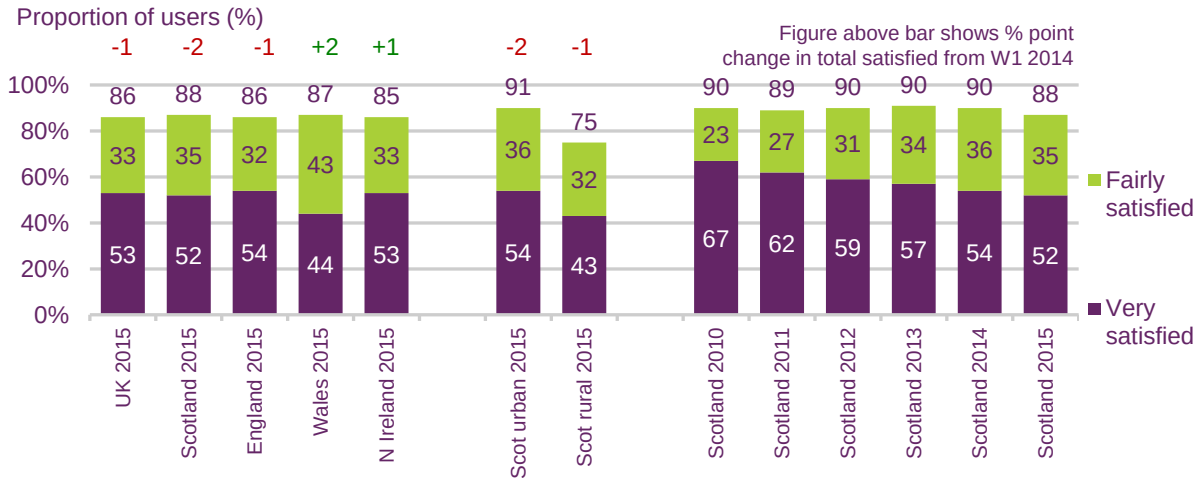


Source: Ofcom Technology Tracker, wave 1 2015
Base: Adults aged 16+ with broadband connection at home (n = 2781 UK, 345 Scotland, 171 Scotland urban, 174 Scotland rural)
Note: Figures above chart columns indicate the proportion of people who were 'very' or 'fairly' satisfied with their speed of service while online
QE8b. Thinking about your fixed broadband internet service, how satisfied are you with (main supplier) for the overall service/ for the speed of your service while online (not just the connection)?

Mobile users in Scotland are as likely as in the UK overall to say they are satisfied with their mobile phone reception

Around nine in ten mobile phone users in Scotland (88%) were 'very' or 'fairly' satisfied with their mobile reception in Q1 2015 (Figure 4.16). This was in line with the UK average, as were the proportions of mobile users in Scotland who were 'very' and 'fairly' satisfied with their mobile reception (52% and 35% respectively). There was no change in levels of satisfaction with mobile phone reception among users in Scotland in the year to Q1 2015, and mobile users in urban areas of Scotland are more likely than those in rural areas to say they are satisfied with reception (91% vs. 75%).

Figure 4.16 Satisfaction with reception of mobile service

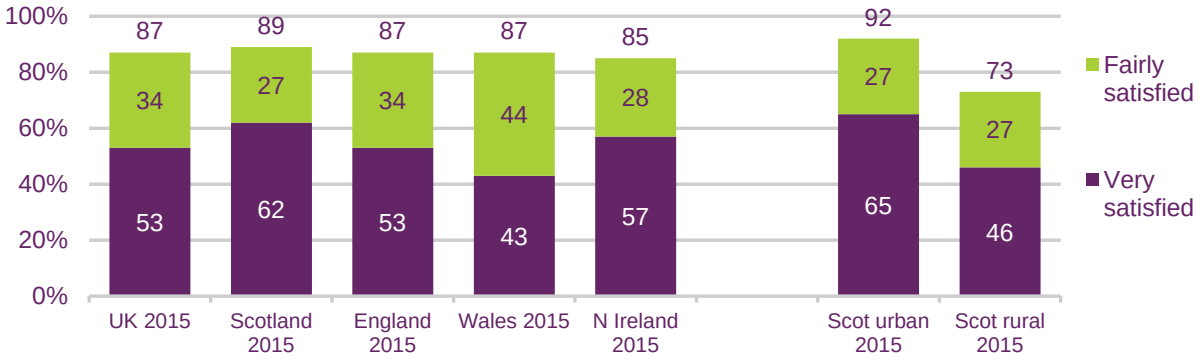


Source: Ofcom Technology Tracker, wave 1 2015
Base: Adults aged 16+ who personally use a mobile phone (n = 3425 UK, 450 Scotland, 2080 England, 439 Wales, 456 Northern Ireland, 222 Scotland urban, 228 Scotland rural, 1237 Scotland 2010, 425 Scotland 2011, 430 Scotland 2012, 464 Scotland 2013, 447 Scotland 2014, 450 Scotland 2015)
Note: Figures above chart columns indicate the proportion of people who were 'very' or 'fairly' satisfied with their mobile reception
QD21c. Thinking about your mobile phone service only, how satisfied are you with (main supplier) for reception/ accessing network?

Almost nine in ten smartphone users in Scotland are satisfied with the ability to connect to the internet via 3G or 4G

In Q1 2015 almost nine in ten (89%) smartphone users in Scotland were 'very' or 'fairly' satisfied with their mobile network service in terms of being able to connect to the internet via 3G or 4G; this was in line with other nations (Figure 4.17). Satisfaction with ability to connect to the internet via 3G or 4G is highest among smartphone users in urban Scotland (92%) compared to rural Scotland (73%).

Figure 4.17 Satisfaction with ability to connect to the internet via 3G or 4G



Source: Ofcom Technology Tracker, wave 1 2015
Base: Adults aged 16+ who personally use a smartphone (n = 2334 UK, 303 Scotland, 1437 England, 288 Wales, 306 Northern Ireland, 157 Scotland urban, 146 Scotland rural)
QD21k. Thinking about your mobile phone service only, how satisfied are you with (main supplier) for ability to connect to the internet using the mobile network (3G or 4G)?
Note: Figures above chart columns indicate the proportion of people who were 'very' or 'fairly' satisfied with the ability to connect to the internet using the mobile network