

## 4 Telecoms and networks

### 4.1 Recent developments in Northern Ireland

#### **Broadband speeds increase**

The Department for the Economy (DfE), the Department of Culture, Media & Sport (DCMS) and BT are investing around £17m to raise fixed broadband speeds for up to 39,000 premises across Northern Ireland. The Superfast Broadband Roll-out Programme aims to lift broadband speeds in these premises to 24Mbit/s or higher.

The main elements of the scheme include: some re-engineering of BT's network; additional fibred cabinets; and new fibre-to-the-premises nodes. The roll-out is due to be completed by December 2017 and will expand Northern Ireland's fibre footprint.

This programme builds on the £23.7m NI Broadband Improvement Project, completed in Q1 2016, which was aimed mainly at improving speeds for around 45,000 premises that were previously only able to achieve download speeds of less than 2Mbit/s.

#### **Subsidised satellite services for rural areas launched**

A subsidised satellite broadband scheme has been launched in Northern Ireland, aimed at homes and businesses that are still unable to get a broadband service of at least 2Mbit/s.

The UK-wide scheme, administered by DfE in Northern Ireland, provides a code to eligible homes and businesses. The code can be used with a selected number of providers to obtain a subsidised satellite broadband service including, in most cases, a free satellite dish and installation worth up to £350. The scheme is due to run until the end of 2017.

#### **New Executive aims to further improve internet connectivity**

"Improving internet connectivity so that more people have access to download speeds of 30Mbit/s and above" is one of the 42 performance indicators in the new Stormont Executive's *Draft Programme for Government Framework 2016-2021*, published in late May. The document, a plan of priorities and actions for the new Executive, is now out for public consultation. It will be brought before the Northern Ireland Assembly when it is finalised later in 2016.

#### **Three trials new mobile broadband service**

Mobile operator Three has chosen Northern Ireland as the site of a pilot for a new service, which will provide a mobile broadband alternative to fixed-line broadband for residential and small business customers.

The new home Wi-Fi service is targeted at renters, students and people who have 'little need' for a landline telephone service. The 'plug and play' router connects to Three's 3G and 4G networks, with customers able to choose from data packages of either 20GB or 40GB.

## 4.2 Availability of fixed broadband services

### Basic broadband services are available to almost all premises in Northern Ireland

Three main 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 from the street cabinet).<sup>8</sup> Of these three technologies, ADSL is the most widely available, partly because it is the cheapest to deploy as it uses the existing copper telephony network to transmit data to the end-user. In most cases it does not require an upgrade to the existing copper access network, and the only costs are associated with the installation of the new equipment in the local exchange and the end-user's premises. By comparison, cable and fibre roll-out both involve the deployment of new infrastructure to connect local exchanges/nodes to the end-user.

BT has around 5,600 local exchanges across the UK, and almost all of these have been upgraded to offer ADSL broadband services. Across the UK as a whole, 99.98% of premises (i.e. homes and offices) were connected to an ADSL-enabled exchange by the end of 2015 (Figure 4.1). In Northern Ireland and Wales, all the BT local exchanges had been upgraded to offer ADSL broadband services, while in England and Scotland there remain a small number of exchanges that are not ADSL-enabled.

It is important to note that some premises in ADSL-enabled areas may not be able to receive broadband services, or may only be able to access very low speeds. Potential reasons for this include the long length, or poor quality, of the copper telephone line from the premises to the local exchange.

#### What is local loop unbundling (LLU)?

Local loop unbundling (LLU) operators are able to offer fixed broadband services by placing their own equipment in the incumbent provider's local exchange. This equipment is then connected to the LLU provider's backhaul network and ADSL broadband services are provided over the copper lines from the exchange to the end user; these lines are leased from the incumbent provider. LLU operators are able to benefit from economies of scale that are not available when purchasing wholesale services on a per-unit basis, and are better able to differentiate their services from those offered by their competitors. Similarly, consumers living in LLU-enabled exchange areas have a greater choice of ADSL broadband services and, typically, access to lower-cost (particularly bundled) broadband services.

By the end of 2015, 95% of UK premises were served by unbundled local exchanges (a small increase compared to the previous year). As there are a larger number of premises to be served in urban areas, roll-out of any fixed telecoms network tends to be concentrated there, at least initially. This is reflected in the fact that almost all premises in urban areas (over 99%) were connected to an unbundled local exchange at the end of 2015. In rural areas, 77% of premises were connected to an unbundled local exchange by the end of 2015. England had the highest proportion of premises connected to an unbundled local exchange at the end of 2015, at 96%, followed by Wales with 93% availability and then Northern Ireland and Scotland (both 90%).

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<sup>8</sup> A small proportion of premises are also served by fibre to the premises (FTTP).

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



Source: Ofcom / BT, December 2015 data

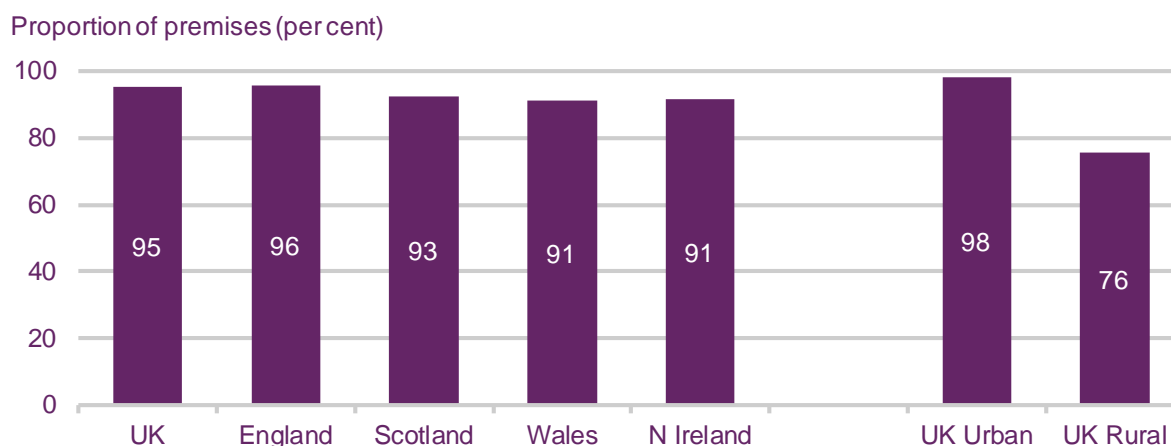
**Ninety-one per cent of premises in Northern Ireland were able to receive broadband services with speeds of 10Mbit/s or higher in June 2016**

In 2015, the UK Government announced its intention to establish a 10Mbit/s universal service obligation (USO) for fixed broadband services. Data provided to Ofcom by fixed broadband providers<sup>9</sup> shows that by June 2016, 95% of UK premises were able to receive actual broadband speeds of 10Mbit/s or higher, up from 92% a year previously. As with basic broadband services, availability was higher in urban areas, with 98% of urban premises able to receive speeds of 10Mbit/s and above, compared to 76% in rural areas.

By June 2016, Northern Ireland and Wales had the joint lowest proportion of premises that were able to receive broadband speeds of 10Mbit/s or higher among the UK nations, at 91%. Availability in Northern Ireland had increased by five percentage points compared to a year previously.

<sup>9</sup> This analysis is a preliminary assessment of coverage and is based on data from a limited number of national and larger regional providers. We are continuing to analyse the data we have received, including integrating data from additional, smaller providers, and our final assessment of coverage will be published in the *Connected Nations Report* later this year.

**Figure 4.2 Proportion of premises able to receive broadband services at 10Mbit/s speeds and above**



Source: Ofcom / operators, June 2016 data

Note: UK urban and rural figures are not comparable to those published in the 2015 report due to a change in the urban/rural classifications.

**Eighty-three per cent of premises in Northern Ireland were able to receive superfast, or higher, broadband speeds in June 2016**

When collecting data to inform its work in monitoring the UK’s communications market infrastructure in 2016, Ofcom asked operators to provide data regarding the proportion of premises that could receive superfast, or higher, fixed broadband speeds,<sup>10</sup> i.e. a fixed broadband service with an actual speed of 30Mbit/s or higher.

It is important to note that not all cable and fibre broadband connections are capable of providing superfast broadband services. 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).

As shown in Figure 4.3 below, the proportion of premises that were able to receive superfast or higher broadband services in the UK was 88% in June 2016. This represented an increase of five percentage points compared to a year previously. Availability was much higher in urban areas, with 93% of urban premises able to receive superfast or higher broadband, compared to 58% in rural areas. Northern Ireland, together with Scotland, had the joint lowest proportion of premises able to receive superfast or higher broadband, at 83%; availability in Northern Ireland had increased from 77% since June 2015.

The UK Government defines superfast broadband as having download speeds of 24Mbit/s or higher. We would expect the coverage of services at these speeds to be higher than the 88% of UK premises that are able to receive speeds of 30Mbit/s or more.

<sup>10</sup> This analysis is a preliminary assessment of coverage and is based on data from a limited number of national and larger regional providers. We are continuing to analyse the data we have received, including integrating data from additional, smaller providers, and our final assessment of coverage will be published in the *Connected Nations Report* later this year.

**Figure 4.3 Proportion of premises able to receive superfast or higher broadband services**



Source: Ofcom / operators, June 2016 data

Note: UK urban and rural figures are not comparable to those published in the 2015 report due to a change in the urban/rural classifications.

## 4.3 Mobile network coverage

### Overview

Mobile network availability varies across the UK, with some areas (known as ‘mobile not-spots’) having no mobile coverage from any of the providers. These areas are often characterised by low population density and/or hilly terrain, which present physical and economic obstacles, and deter mobile network operators (MNOs) from deploying mobile network infrastructure. Other areas (known as ‘partial not-spots’) have mobile coverage but only from some of the UK’s four operators.

#### How we measure the availability of mobile telephony for this report

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

The signal strength thresholds used by Ofcom to determine where 2G, 3G and 4G mobile services are available differ from those used in last year’s reports. As such, the mobile coverage data in this report are not comparable to those published last year. These thresholds may also differ from those used by MNOs in their reporting. UK urban and rural figures are also not comparable to those published in the 2015 report, due to a change in the urban/ rural classifications.

The availability figures in this report all refer to outdoor coverage. Coverage figures for indoor reception are likely to be lower because radio signals are weakened as they pass through the fabric of buildings. Indoor reception is highly dependent on the building, as well as the user’s location in the building, making it difficult to calculate accurate indoor coverage figures.

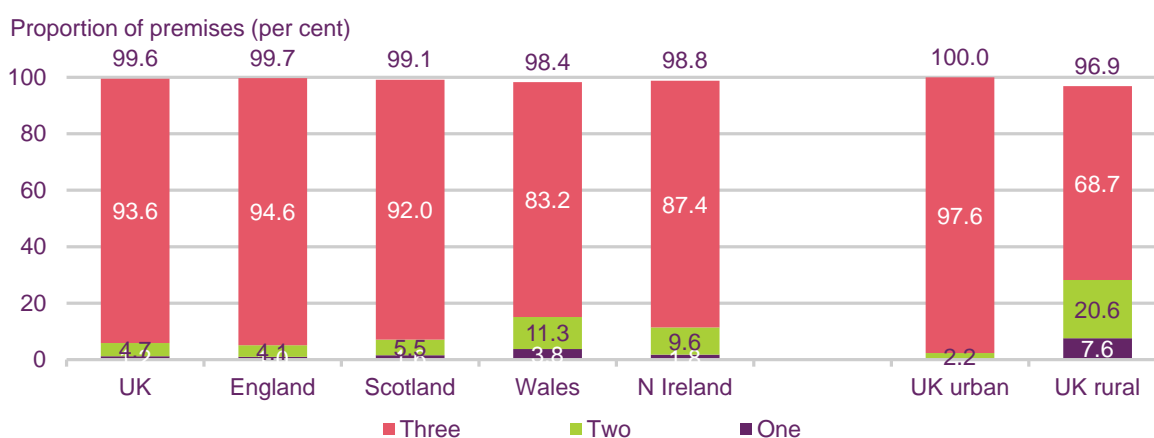
Figure 4.4, Figure 4.5 and Figure 4.6 show coverage levels for 2G, 3G and 4G mobile services respectively.<sup>11</sup> 2G is considered satisfactory for telephone calls and text messaging, while 3G is considered the minimum required to access mobile data services. 4G generally provides a better user experience when accessing mobile data services compared to 3G, as it offers faster download and upload speeds.

### 98.8% of premises in Northern Ireland were in areas with outdoor 2G coverage in May 2016

Data provided to Ofcom by the UK's three national 2G mobile network operators (Vodafone, O2 and EE) show that by May 2016, 99.6% of UK premises were in areas with 2G coverage from at least one network, and around 0.4% of UK premises were in areas without any 2G coverage at all. The data show that most UK premises (93.6% of the total) were in areas with outdoor 2G coverage from all three providers. The proportion of UK premises in areas with outdoor 2G mobile coverage in May 2016 was higher in urban locations (100.0%) than in rural ones (96.9%).

In Northern Ireland, 98.8% of premises were in areas with outdoor 2G coverage from at least one network in May 2016, the second lowest proportion across the UK nations, after Wales. Northern Ireland also had the second lowest proportion of premises with outdoor coverage from all three 2G networks, at 87.4%. One of the likely reasons for the lower-than-average 2G coverage in Northern Ireland is that a relatively large proportion of its population is evenly spread across the rural areas, where providing mobile services may not be commercially viable.

**Figure 4.4 Outdoor 2G premises mobile coverage, by number of operators**



Source: Ofcom / operators, May 2016 data

Note: Coverage is based on 100m<sup>2</sup> pixels covering the UK; UK urban and UK rural figures are not comparable to those published in the 2015 report due to a change in the urban/rural classifications used to calculate them.

### Northern Ireland had the second highest proportion of premises with outdoor 3G coverage in 2016

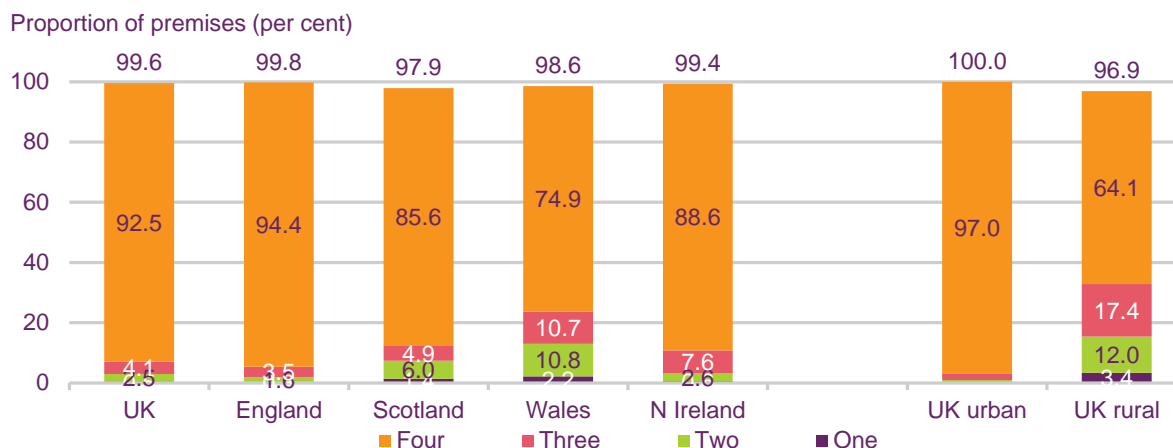
Data provided to Ofcom by the UK's four national 3G mobile network operators (the three national 2G providers plus Three) show that 99.6% of UK premises had outdoor coverage from at least one 3G network in May 2016, while 92.5% had outdoor coverage from all four

<sup>11</sup> The availability data provided by the MNOs is taken from network planning tools, which are subject to a margin of error. Local factors such as tall buildings or trees can also affect signal strength.

3G providers. The proportion of premises in areas with outdoor 3G coverage was higher in urban areas of the UK (100%) than in rural areas (96.9%).

In Northern Ireland, 99.4% of households had 3G coverage from at least one provider in May 2016, the second highest among the UK nations, after England. Similarly, 88.6% of premises in Northern Ireland were in areas with 3G coverage from all four 3G networks.

**Figure 4.5 Outdoor 3G premises mobile coverage, by number of operators**



Source: Ofcom / operators, May 2016 data

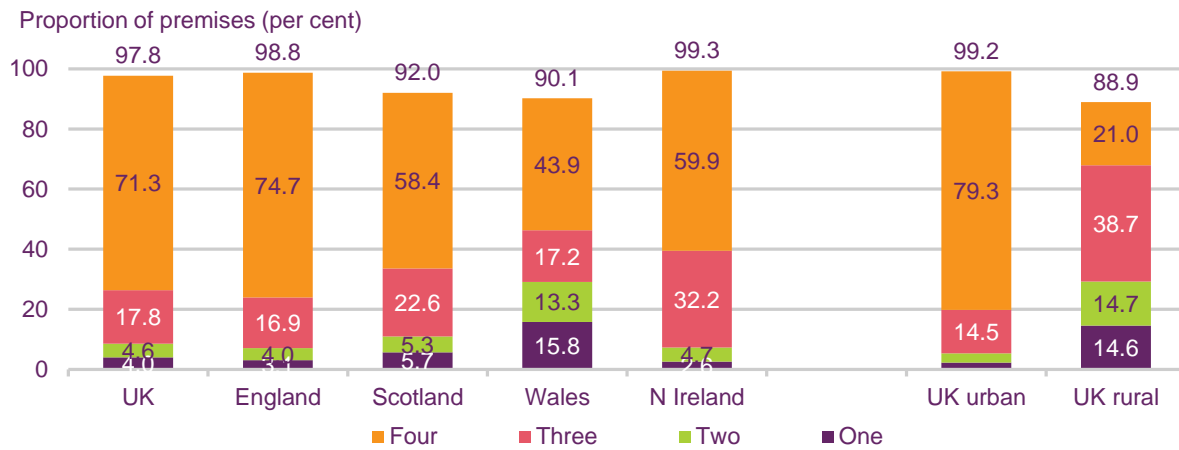
Note: Coverage is based on 100m<sup>2</sup> pixels covering the UK; UK urban and UK rural figures are not comparable to those published in the 2015 report due to a change in the urban/rural classifications used to calculate them.

### Northern Ireland had the highest proportion of premises with outdoor 4G coverage in May 2016

The deployment of 4G mobile services has progressed rapidly in recent years, and 97.8% of UK premises were in areas with outdoor 4G mobile coverage from at least one national mobile network operator in May 2016. Similarly, the proportion of UK premises able to receive outdoor coverage from all four national MNOs was 71.3%. The difference between urban and rural 4G coverage was much more marked for 4G services than for 2G and 3G, with 99.2% of urban premises having outdoor 4G coverage, compared to 88.9% of those in rural areas.

Northern Ireland had the highest proportion of premises with outdoor 4G coverage from one or more mobile networks in May 2016, at 99.3%. With Three launching its 4G service in Northern Ireland in summer 2015, 4G coverage increased rapidly, and by May 2016, 59.9% of premises had outdoor coverage from all four 4G networks, the second highest proportion among the UK nations.

**Figure 4.6 Outdoor 4G premises mobile coverage, by number of operators**



Source: Ofcom / operators, May 2016 data

Note: Coverage is based on 100m<sup>2</sup> pixels covering the UK; UK urban and UK rural figures are not comparable to those published in the 2015 report due to a change in the urban/rural classifications used to calculate them.

## 4.4 Service take-up

### Take-up of 4G mobile services is higher in Northern Ireland compared to the UK as a whole

While take-up of landline services, mobile phones, smartphones, tablets and all types of broadband in Northern Ireland in 2016 were all in line with the average for the UK as a whole, take-up of 4G mobile services was higher (54% vs. 48%).

Adults in rural areas of Northern Ireland were more likely than those in urban areas to have a tablet computer in the household (67% vs. 55%), to have any type of computer (86% vs. 77%) and to have fixed or mobile broadband (via dongle/SIM) access in the home (84% vs. 75%).



**Figure 4.7 Take-up of communications services: 2016**

		UK	N Ireland	England	Scotland	Wales	NI urban	NI rural
<b>Individual</b>								
<b>Voice telephony</b>	Fixed Line	<b>86%</b>	86%	86%	86%	85%	85%	89%
	Mobile phone	<b>93%</b>	92%	94%	91%	91%	90%	94%
	Smartphone	<b>71%</b>	72%	71%	70%	65%	70%	73%
<b>Internet</b>	Computer (any type)	<b>84%</b>	80%	85%	79%	85%	77%	86% ↑
	Tablet computer	<b>59%</b>	60%	59%	56%	67%	55%	67% ↑
	Total Internet <sup>1</sup>	<b>86%</b>	83%	87%	84%	84%	80%	87%
	Broadband (fixed and mobile) <sup>2</sup>	<b>81%</b>	78%	81%	79%	79%	75%	84% ↑
	Fixed Broadband	<b>79%</b>	77%	79%	78%	77%	74%	82%
	Mobile Broadband (via dongle/SIM) <sup>3</sup>	<b>4%</b>	3%	5%	3%	4%	3%	3%
	Web access on mobile phone <sup>4</sup>	<b>66%</b>	69%	66%	63%	61%	68%	70%
4G service	<b>48%</b>	54% ↑	48%	40%	44%	57%	52%	

Source: Ofcom Technology Tracker, H1 2016

Notes: <sup>1</sup>Households with an internet connection of any description; <sup>2</sup>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); <sup>3</sup>Households that use a dedicated mobile broadband (dongle/SIM) data connection to access the internet (excludes households that solely use a mobile handset/s to access the internet); <sup>4</sup>Households that use a use a mobile handset/s to access the internet (may also have any other type of internet access).

Base: All adults aged 16+ (n = 3737 UK, 507 Northern Ireland, 2239 England, 502 Scotland, 489 Wales, 262 Northern Ireland urban, 245 Northern Ireland rural)

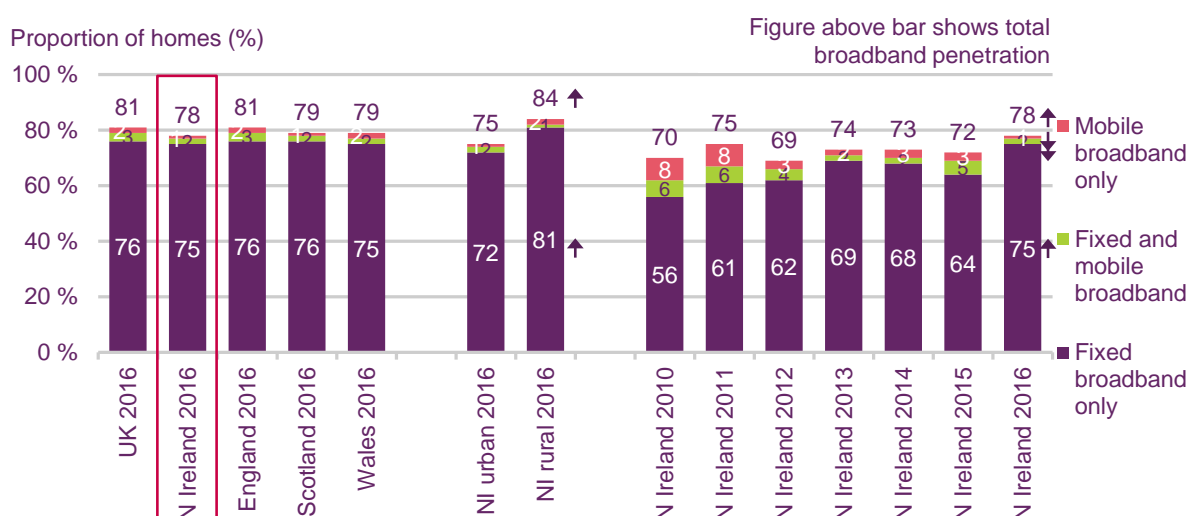
Significance testing: Arrows indicate any significant differences at the 95% confidence level between Northern Ireland and UK in 2016 and between Northern Ireland urban and rural in 2016.

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?/ QD4: Do you personally use a smartphone?/ QD6: Do you have a 4G service?/ QE1: Does your household have a PC or laptop computer?/ QE2: Do you or does anyone in your household have access to the internet 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?

### **Total household broadband penetration in Northern Ireland is higher than in 2015**

Total broadband penetration (both fixed and mobile) for households in Northern Ireland was up since 2015 (from 72% to 78%) and was in line with the UK average (81%). The proportion of households using solely fixed broadband services also increased, from 64% in 2015 to 75% in 2016 (in line with the rest of the UK, at 76%). In 2016, rural households in Northern Ireland were more likely than urban households to have any type of broadband.

**Figure 4.8 Overall household broadband take-up, by connection type**



Source: Ofcom Technology Tracker, H1 2016

Base: All adults aged 16+ (n = 3737 UK, 507 Northern Ireland, 2239 England, 502 Scotland, 489 Wales, 262 Northern Ireland urban, 245 Northern Ireland rural, 761 Northern Ireland 2010, 511 Northern Ireland 2011, 508 Northern Ireland 2012, 507 Northern Ireland 2013, 499 Northern Ireland 2014, 504 Northern Ireland 2015, 507 Northern Ireland 2016)

Significance testing: Arrows indicate any significant differences at the 95% confidence level between Northern Ireland and UK in 2016, between Northern Ireland urban and rural in 2016 and between Northern Ireland 2015 and 2016.

QE9: Which of these methods does your household use to connect to the internet at home?

### Overall household broadband take-up in Northern Ireland is lower than the UK average among over-65s and those without children in the home

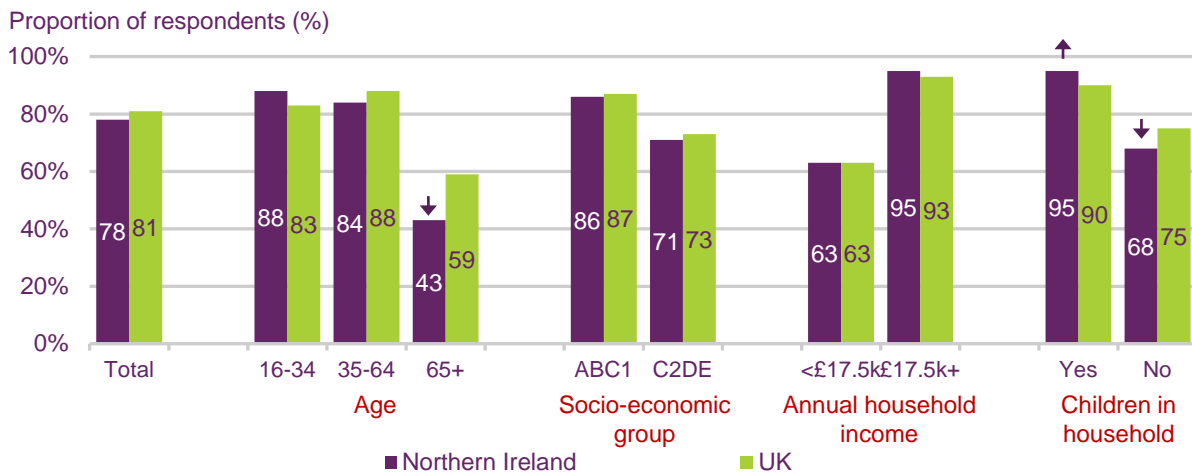
As shown in Figure 4.9, overall household broadband take-up<sup>12</sup> in Northern Ireland (78%) was consistent with the UK as a whole (81%) in 2016. Two demographic groups had lower broadband take-up in Northern Ireland compared to the UK: adults aged 65 and over (43% vs. 59%), and those without children in the household (68% vs. 75%).

As with the UK as a whole, there were differences in Northern Ireland in broadband take-up by age, socio-economic group, household income and the presence of children. Adults aged 65 and over were less likely than younger age groups to have broadband.

Broadband take-up was higher among ABC1 than C2DE households in Northern Ireland (86% vs. 71%). Similarly, there was a 32 percentage point difference in broadband take-up between households with an income below £17.5k (63%) and those with a household income above £17.5k (95%). Households with children in Northern Ireland were also more likely than those without children to have broadband.

<sup>12</sup> This figure includes fixed and dedicated mobile broadband (via dongle/SIM) access but excludes access on mobile handsets.

**Figure 4.9 Overall household broadband take-up in Northern Ireland, by demographic**



Source: Ofcom Technology Tracker, H1 2016

Base: All adults aged 16+ (n =507 Northern Ireland, 168 16-34s, 241 35-64s, 98\* 65+, 226 ABC1, 279 C2DE, 114 <£17.5k income, 90\* £17.5k+, 187 children in home, 320 no children in home) \*Caution: low base

Significance testing: Arrows indicate any significant differences at the 95% confidence level between Northern Ireland and UK in 2016 for each measure.

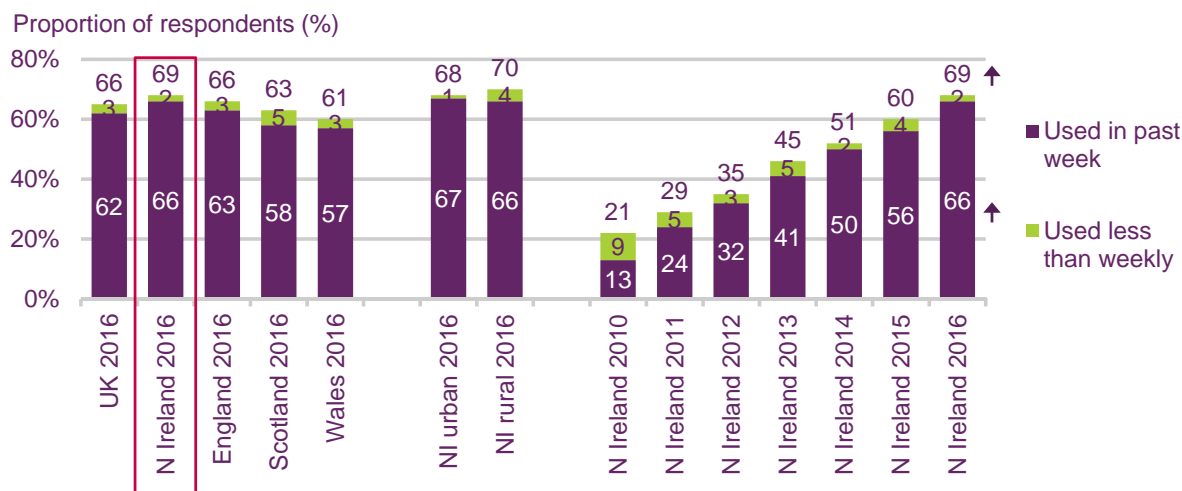
QE9: Which of these methods does your household use to connect to the internet at home?

**Between 2015 and 2016 there was a nine percentage point increase in the proportion of adults in Northern Ireland accessing the internet on their mobile phone**

In 2016, seven in ten adults in Northern Ireland said that they used their mobile phone to access the internet, with almost all these respondents saying they had done so in the previous week. These measures were in line with the UK average.

Between 2015 and 2016, use of mobile phones to access the internet rose from 60% to 69%.

**Figure 4.10 Proportion of adults who have used a mobile phone to access the internet**



Source: Ofcom Technology Tracker, H1 2016

Base: All adults aged 16+ (n = 3737 UK, 507 Northern Ireland, 2239 England, 502 Scotland, 489 Wales, 262 Northern Ireland urban, 245 Northern Ireland rural, 761 Northern Ireland 2010, 511 Northern Ireland 2011, 508 Northern Ireland 2012, 507 Northern Ireland 2013, 499 Northern Ireland 2014, 504 Northern Ireland 2015, 507 Northern Ireland 2016)

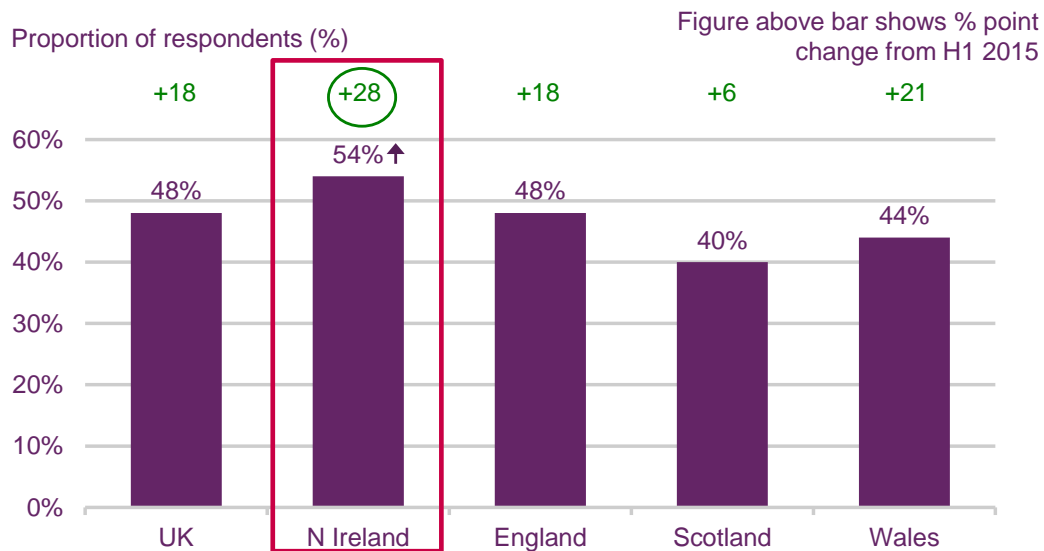
Significance testing: Arrows indicate any significant differences at the 95% confidence level between Northern Ireland and UK in 2016, between Northern Ireland urban and rural in 2016 and between Northern Ireland 2015 and 2016.

QD28A: Which, if any, of the following activities, other than making and receiving calls, do you use your mobile for? / QD28B: And, which of these activities have you used your mobile for in the last week?

**The proportion of 4G users in Northern Ireland has increased by 28 percentage points since 2015**

Figure 4.11 shows that in 2016 more than half (54%) of all adults in Northern Ireland had a 4G mobile service, higher than the UK average of 48%. This is likely to be related to the higher 4G availability in Northern Ireland compared to the UK overall (see Figure 4.6). The proportion of adults in Northern Ireland who used 4G mobile services increased by 28 percentage points in the year to 2016 (from 26% in 2015), likely because Three launched 4G services in Northern Ireland in summer 2015, and due to continuing roll-out by other networks.

**Figure 4.11 4G take-up, by nation**



Source: Ofcom Technology Tracker, H1 2016

Base: All adults aged 16+ (n = 3737 UK, 507 Northern Ireland, 2239 England, 502 Scotland, 489 Wales)

Significance testing: Arrows indicate any significant differences at the 95% confidence level between Northern Ireland and UK in 2016. A circle around the +/- figure above the chart indicates any significant difference between 2015 and 2016 for Northern Ireland.

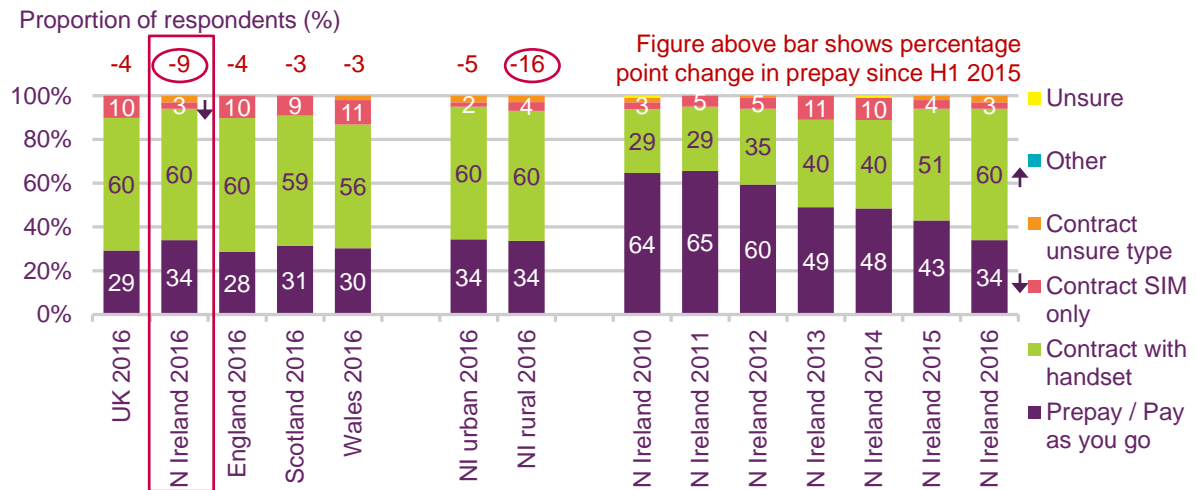
QD41. Do you have a 4G service? This is a service that enables faster mobile internet access

### Take-up of pre-pay mobile services in Northern Ireland has decreased since 2015

Since 2015, there has been an increase in use of pay-monthly contract mobile phone services including a handset, from 51% to 60%, with a corresponding decrease in use of pre-pay services (from 43% to 34%). Three per cent of mobile phone users in Northern Ireland have a SIM-only contract.

Overall use of mobile services did not differ by urban or rural location in Northern Ireland in 2016. However, the proportion of rural households using pre-pay services fell between 2015 and 2016 (from 50% to 34%).

**Figure 4.12 Type of mobile subscription**



Source: Ofcom Technology Tracker, H1 2016

Base: Adults aged 16+ who personally use a mobile phone (n = 3425 UK, 446 Northern Ireland, 2083 England, 451 Scotland, 445 Wales, 226 Northern Ireland urban, 220 Northern Ireland rural, 658 Northern Ireland 2010, 425 Northern Ireland 2011, 463 Northern Ireland 2012, 463 Northern Ireland 2013, 465 Northern Ireland 2014, 456 Northern Ireland 2015, 446 Northern Ireland 2016)

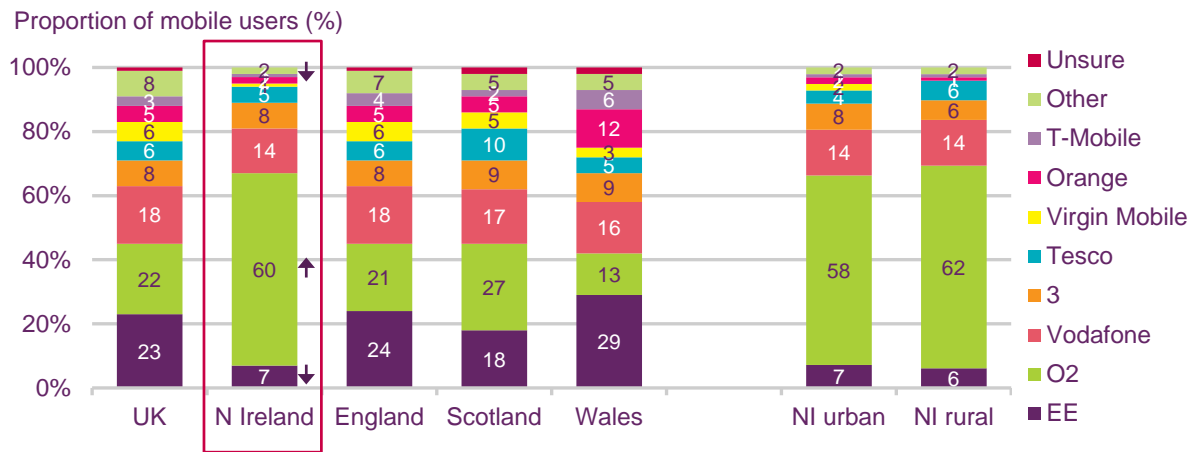
Significance testing: Arrows indicate any significant differences at the 95% confidence level between Northern Ireland and UK in 2016, between Northern Ireland urban and rural in 2016 and between Northern Ireland 2015 and 2016. Circles around the +/- figures above the chart indicate any significant difference between 2015 and 2016 for Northern Ireland, urban and rural.

QD11: Which of these best describes the mobile package you personally use most often?

### Respondents in Northern Ireland say that O2 is the mobile network provider they use most often

In 2016, 60% of mobile users in Northern Ireland said that O2 was the network they used most often, compared to just under a quarter (22%) of all UK mobile users, in line with previous years. Vodafone was the second most frequently used mobile network provider in Northern Ireland (14%). Mobile users in Northern Ireland were less likely than all UK mobile users to use EE (7% vs. 23%).

**Figure 4.13 Mobile network provider used most often**



Source: Ofcom Technology Tracker, H1 2016

Base: Adults aged 16+ who personally use a mobile phone (n = 3425 UK, 446 Northern Ireland, 2083 England, 451 Scotland, 445 Wales, 226 Northern Ireland urban, 220 Northern Ireland rural)

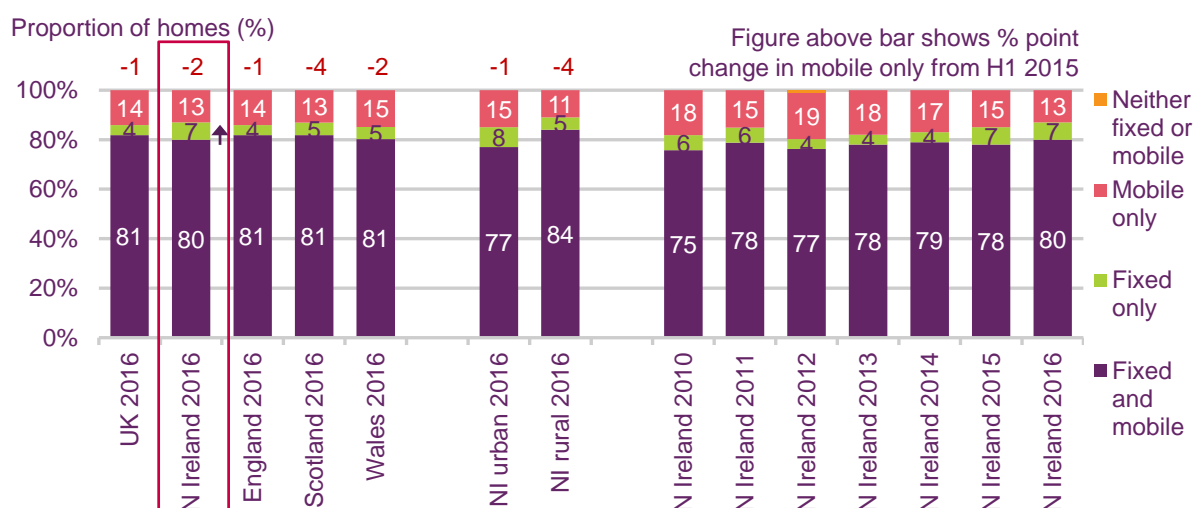
Significance testing: Arrows indicate any significant differences at the 95% confidence level between Northern Ireland and UK in 2016 and between Northern Ireland urban and rural in 2016.

QD10: Which mobile network do you use most often?

**The proportion of mobile-only households in Northern Ireland has remained broadly unchanged since 2015**

Four in five households in Northern Ireland had both fixed and mobile telephony services in 2016. Seven per cent of households only had access to fixed line telephone services (higher than the UK overall, at 4%) and 13% had access to a mobile phone only. There has been no change since 2015 in any of these measures, and there are no variances in ownership of household telephony services by urban or rural location.

**Figure 4.14 Cross-ownership of household telephony services**



Source: Ofcom Technology Tracker, H1 2016

Base: All adults aged 16+ (n = 3737 UK, 507 Northern Ireland, 2239 England, 502 Scotland, 489 Wales, 262 Northern Ireland urban, 245 Northern Ireland rural, 761 Northern Ireland 2010, 511 Northern Ireland 2011, 508 Northern Ireland 2012, 507 Northern Ireland 2013, 499 Northern Ireland 2014, 504 Northern Ireland 2015, 507 Northern Ireland 2016)

Significance testing: Arrows indicate any significant differences at the 95% confidence level between Northern Ireland and UK in 2016, between Northern Ireland urban and rural in 2016 and between Northern Ireland 2015 and 2016. Circles around the +/- figures above the chart indicate any significant difference between 2015 and 2016 for Northern Ireland, urban and rural.

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?

## 4.5 Satisfaction with telecoms services

### Fixed broadband users in Northern Ireland are more likely than all UK users to be very satisfied with their fixed broadband speeds

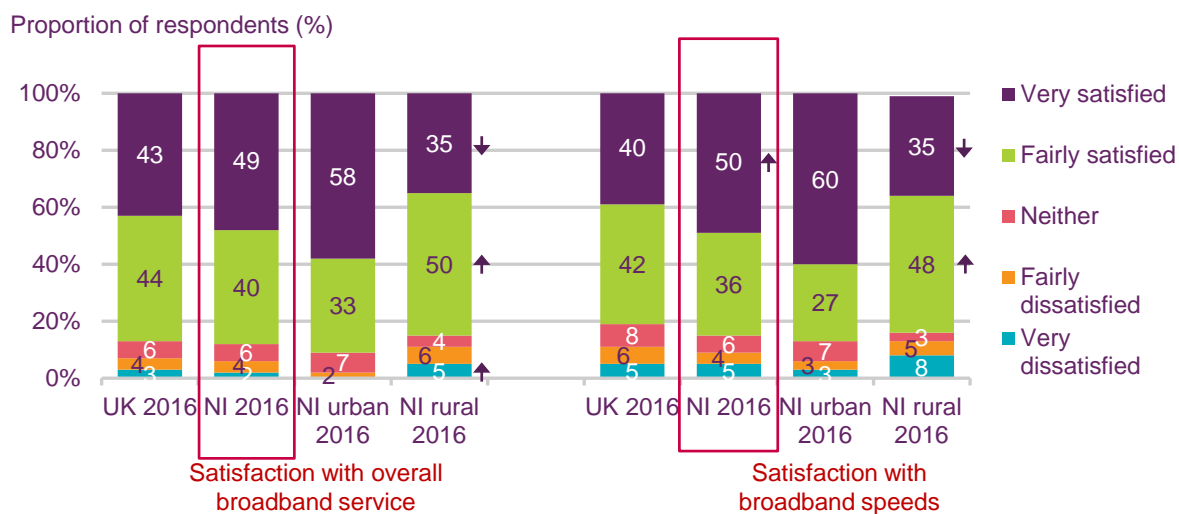
Almost nine in ten (88%) fixed broadband users in Northern Ireland were 'very' or 'fairly' satisfied with their overall fixed broadband service in 2016, while only 6% said they were 'very' or 'fairly' dissatisfied. This was comparable to the UK averages of 87% and 7% respectively. Compared to 2015, there has been no change in satisfaction with overall broadband services in Northern Ireland, or in the UK as a whole.

Users in Northern Ireland were more likely than users across the UK to say they were 'very' satisfied with their fixed broadband speeds (50% vs. 40%). A much lower proportion (9%) reported being either 'very' or 'fairly' dissatisfied, in line with the UK average (11%). There has been no change in satisfaction with broadband speeds in Northern Ireland since 2015.

Users in rural areas of Northern Ireland were more likely than those in urban areas to be dissatisfied both with their overall broadband service (11% vs. 3%) and with broadband speeds (13% vs. 6%). Similarly, for both measures, users in urban areas were more likely to say they were 'very' satisfied, while those in rural areas were more likely to say they were 'fairly' satisfied.



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



Source: Ofcom Technology Tracker, H1 2016

Base: Adults aged 16+ with a fixed broadband connection at home (n = 2774 UK, 353 Northern Ireland, 173 Northern Ireland urban, 180 Northern Ireland rural)

Significance testing: Arrows indicate any significant differences at the 95% confidence level between Northern Ireland and UK in 2016 and between Northern Ireland urban and rural in 2016.

QE8A/B: 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)?

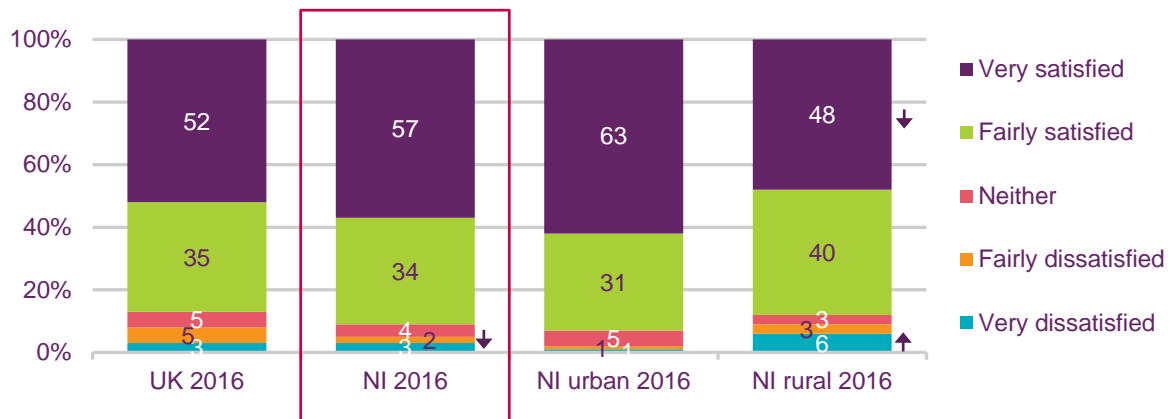
### Satisfaction with mobile reception has increased among mobile phone users in Northern Ireland, and is higher than in the UK overall

Nine in ten (91%) mobile phone users in Northern Ireland were ‘very’ or ‘fairly’ satisfied with their mobile phone reception in 2016 – higher than the UK average (87%), and an increase of six percentage points since 2015. A significantly lower proportion (5%) of mobile phone users in Northern Ireland said they were ‘very’ or ‘fairly’ dissatisfied with their mobile phone reception - in line with the UK average.

While mobile phone users in urban areas of Northern Ireland were more likely to say they were ‘very’ satisfied, compared to those in rural areas (63% vs. 48%), rural users were more likely to be ‘very’ dissatisfied (6% vs. 1% in urban areas). Overall, mobile users in rural areas were more likely those in urban areas to be dissatisfied with their mobile reception (9% vs. 2%).

**Figure 4.16 Satisfaction with reception of mobile service**

Proportion of respondents (%)



Source: Ofcom Technology Tracker, H1 2016

Base: Adults aged 16+ who personally use a mobile phone (n = 3425 UK, 446 Northern Ireland, 226 Northern Ireland urban, 220 Northern Ireland rural).

Significance testing: Arrows indicate any significant differences at the 95% confidence level between Northern Ireland and UK in 2016, between Northern Ireland urban and rural in 2016.

QD21J: Thinking about your mobile phone service only, how satisfied are you with (main supplier) for reception/ accessing network?