Connected Nations 2019

Northern Ireland report

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Overview

This annual report[1] measures progress in broadband and mobile services in the UK and highlights the work Ofcom is doing, alongside UK and devolved governments and communications companies, to improve the availability of these services. Ofcom wants people in the UK to be able to easily access good broadband and mobile connections wherever they live, work and travel.

Alongside this Northern Ireland report, we publish a UK report, as well as reports for Scotland, Wales and England. We also provide an interactive dashboard, allowing people to see data for different areas, services and coverage levels. We are also making it easier for people to access our data, so they can create their own interactive services. We have two application programming interfaces (APIs), which allow others to use our data creatively to develop services, such as apps and widgets to benefit consumers and businesses.[2]

Ofcom is also releasing the International Broadband Scorecard 2019. This compares the UK's recent position on broadband availability with a number of other European nations.

Over the last few years, the availability and take-up of superfast and ultrafast broadband, and the coverage and take-up of 4G mobile services have dramatically increased. As the Scorecard shows, the UK leads other large European countries for the highest availability of superfast services. The UK also holds a leading position on current 4G mobile network coverage. This demonstrates that policy and regulatory decisions made in the past few years have supported investment in new networks and technology and delivered a good outcome for consumers. Emphasis must now turn to the initiatives needed to ensure that the next wave of network deployment aimed at meeting future needs, proceeds as quickly as possible, such as full-fibre and 5G mobile networks.

[1] Data included in Connected Nations is from September 2019
[2] More than 50 organisations are now looking to exploit this capability

Key findings from the Northern Ireland report:

Broadband

- Two hundred and thirty-two thousand homes (31%) in Northern Ireland now have access to full fibre broadband connections; over 160,000 more than last year. These connections can deliver much higher download speeds, of up to 1 Gbit/s and are also more reliable than older, copper-based broadband. Among the four UK nations, Northern Ireland (31%) has the highest availability of full fibre services, compared to England (10%), Scotland (8%) and Wales (12%).
- Superfast broadband (at least 30 Mbit/s), is available to 89% of premises in Northern Ireland, the same as last year.
- The average download speed delivered to premises in Northern Ireland is 55 Mbit/s. This has increased from 43 Mbit/s in 2018 and reflects increasing availability of faster broadband services.
- Average monthly broadband data use in Northern Ireland has gone up from 240 GB per connection in 2018, to 322 GB in 2019 – the equivalent of watching up to four hours of HD video content a day.
- The deployment of wireless home broadband from BT/EE on its mobile network has further reduced the number of premises that cannot get a decent broadband service. We now estimate that as few as 20,000 homes and businesses in Northern Ireland should be unable to access a decent fixed broadband service, subject to confirmation of individual premises coverage. From March 2020, those homes unable to get a decent connection will be able to request one from BT through the Broadband Universal Service Obligation (USO).

Mobile

- Good 4G services from all four operators are available (outdoor) across 75% of the Northern Ireland landmass while voice services from all four operators are available (outdoor) to 86% of the Northern Ireland landmass.
- 61% of premises and 52% of major roads in Northern Ireland have good indoor / in-vehicle 4G coverage from all four operators.
- Voice services (indoor) from all four operators are available in 80% of premises in Northern Ireland and 72% of major roads (in-vehicle).

Work continues to improve service availability

Ofcom supports investment in full fibre networks to make sure the needs of consumers and businesses continue to be met both now and in the future. We support this through measures designed to encourage investment from Openreach and make it cheaper and easier for other providers to build their own networks.

This has helped to support faster growth in full fibre over the past year. We will publish proposals on this in early 2020 as part of our forthcoming consultation on the Telecoms Access Review, which will also include a number of other regulatory measures to encourage new network investments.

We have also worked to encourage early investment in 5G mobile networks and this is already bearing fruit.

Working with the UK and devolved Governments

Alongside the work we do as a regulator, there will continue to be a role for government to help improve access to mobile and broadband, including by investing public money in networks in areas which are unlikely to be covered commercially. We will work closely with the new UK Government as it develops plans to invest £5bn in full fibre and gigabit capable broadband and as it works towards an agreement with the mobile operators on a Shared Rural Network (SRN). We will also continue to work closely with the devolved governments and relevant government departments as the implementation date for the Broadband Universal Service Obligation approaches.

Fixed broadband services

In this report, we focus on the availability of services for decent (10 Mbit/s and above), superfast (30 Mbit/s and above), ultrafast (300 Mbit/s and above) and full fibre broadband, which can offer speeds of 1 Gbit/s.[3] Our report shows that coverage of faster broadband networks, particularly full fibre networks, is increasing, and consumers are increasingly taking up the faster broadband services.

Decent broadband coverage is improving but more remains to be done

In March 2018, the UK Government introduced legislation for a Broadband Universal Service Obligation (USO), which will give eligible homes and businesses the right to request a broadband connection that delivers a decent broadband service of at least 10 Mbit/s download speed and 1 Mbit/s upload speed. Ofcom is implementing this and it will come into force during 2020.

Fixed-line broadband availability

There has been considerable investment in Northern Ireland's broadband infrastructure over the last year with more than 160,000 more premises now having access to full fibre services.

[3] In this report and the associated data and interactive charts, we are improving the way we identify, include and categorise properties in our analysis. This is explained in more detail in our methodology annex to the main UK report.

Much of this has been commercially-led and focussed in urban areas, where 39% of homes have access to such services, compared to just 11% in rural areas. However, Northern Ireland does lead the UK in full fibre availability and this investment is ongoing.

There are still considerable numbers of residential and business premises, some 50,000, or 6% of the total, that do not have access to decent broadband. The vast majority of these, some 44,000, are in rural areas.

The availability of faster services, not just in Northern Ireland but right across the UK, is lower in rural areas.

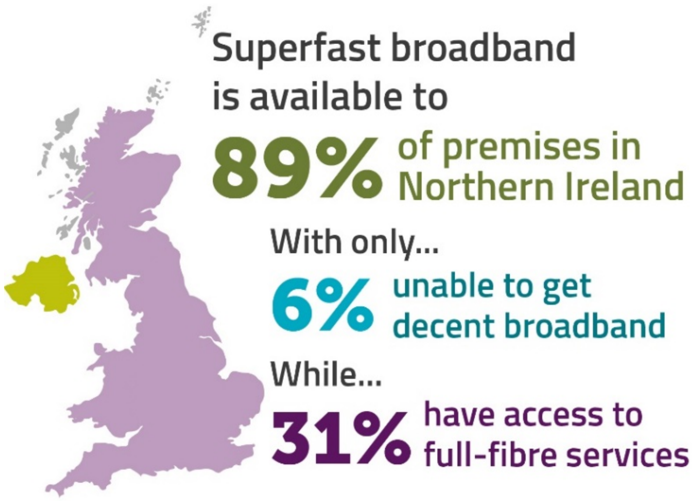
This is because of the increased costs of deploying communications infrastructure to serve areas where there are fewer customers or where the costs of building infrastructure are higher.

Presently, there are a number of publicly funded initiatives being rolled out in different parts of the UK, including Northern Ireland, aimed at improving broadband services in these predominantly rural areas.

In Northern Ireland, work on improving speeds in these rural areas will start with the commencement of ***Project Stratum*** in 2020.

This project will target those premises currently unable to access a broadband service of at least 30 Mbit/s.

At the same time, commercial investment in other areas continues apace. Through its ongoing ***Project Lightning*** programme, Virgin Media has significantly expanded its ultrafast broadband network in Northern Ireland, with further expansion planned.



It has invested close to £100 million in Northern Ireland and now offers ultrafast broadband services to more than 330,000 homes and businesses.

In 2019, premises in Carrickfergus, Craigavon, New Buildings, Templepatrick, Magheramason, Lurgan and Sion Mills have been connected to Virgin Media's network for the first time.

Openreach has now extended its full fibre broadband network to some 30 locations in Northern Ireland, including most recently: Newcastle, Portrush and Portstewart. Openreach now has more than 205,000 full fibre enabled premises in Northern Ireland, an increase of 156,000 in the last year, and Openreach has said it will have 50% of premises fully fibre-enabled by the end of March 2021.

In addition, Fibrus, a new full fibre internet service provider, is planning to invest more than £80 million over the next five years building a 1 Gbit/s full fibre broadband network across Northern Ireland.

Mobile services

Mobile coverage across the UK is gradually improving but too many parts of the country still struggle to get a good mobile connection. Good reception is easier to achieve outdoors than inside because mobile signals are weakened by obstacles such as walls and the glass used in cars and trains. Because of this, we report separately on outdoor and indoor coverage.

Mobile coverage

Good 4G services from all four operators are available (outdoor) across 75% of the Northern Ireland landmass with voice services. Voice coverage is more extensive, covering 86% of the nation.

Sixty-one per cent of premises in Northern Ireland have good indoor 4G coverage from all four operators while voice services (indoor) from all four operators are available in 80% of premises in Northern Ireland.

The broadband USO, which we are implementing, and the proposed SRN for improved mobile coverage should reduce the number of premises that are unable to receive either a decent fixed or good mobile service. However, there might be some premises that will require an alternative technology solution.

The Shared Rural Network proposal, which is subject to final agreement by the mobile operators and the UK Government, is set to improve coverage in rural areas especially. More information is provided in the Mobile section of this report.

Coverage can vary a lot between operators. Ofcom's online coverage checker and app enables people to identify which operators predict a good connection in the locations that matter most to them. People can then choose the operator that best meets their needs.

5G

As of October 2019 EE, O2, Three and Vodafone were offering mobile and/or fixed 5G services. They have launched 5G in more than 40 cities and towns in the UK. Initial offerings are focused on densely populated areas.

As well as providing improved broadband services for consumers via public networks, future 5G networks could provide specialist services to organisations and businesses. We expect our new spectrum sharing framework announced in July to provide support for organisations and businesses to deploy such private wireless networks.

Contents

Fixed broadband services in Northern Ireland

Fixed broadband scorecard - 2018

	Northern Ireland	UK
Coverage of broadband (% of residential premises):		
Superfast broadband (>=30 Mbit/s)	89%	95%
Urban	98%	97%
Rural	66%	79%
Ultrafast broadband (>=300 Mbit/s)	49%	53%
Urban	65%	59%
Rural	11%	15%
Full fibre	31%	10%
Urban	39%	10%
Rural	11%	12%
Percentage of residential and business premises unable to get 10 Mbit/s download & 1 Mbit/s upload speed	6%	2%
Urban	1%	1%
Rural	19%	10%
Average download speed	55Mbit/s	60Mbit/s
Urban	62Mbit/s	64Mbit/s
Rural	35Mbit/s	43Mbit/s
Average monthly data usage (per residential connection)	322GB	315GB

Source: Ofcom analysis of operator data. Direct comparison with previous years' figures is not possible given the changes in address matching

Introduction

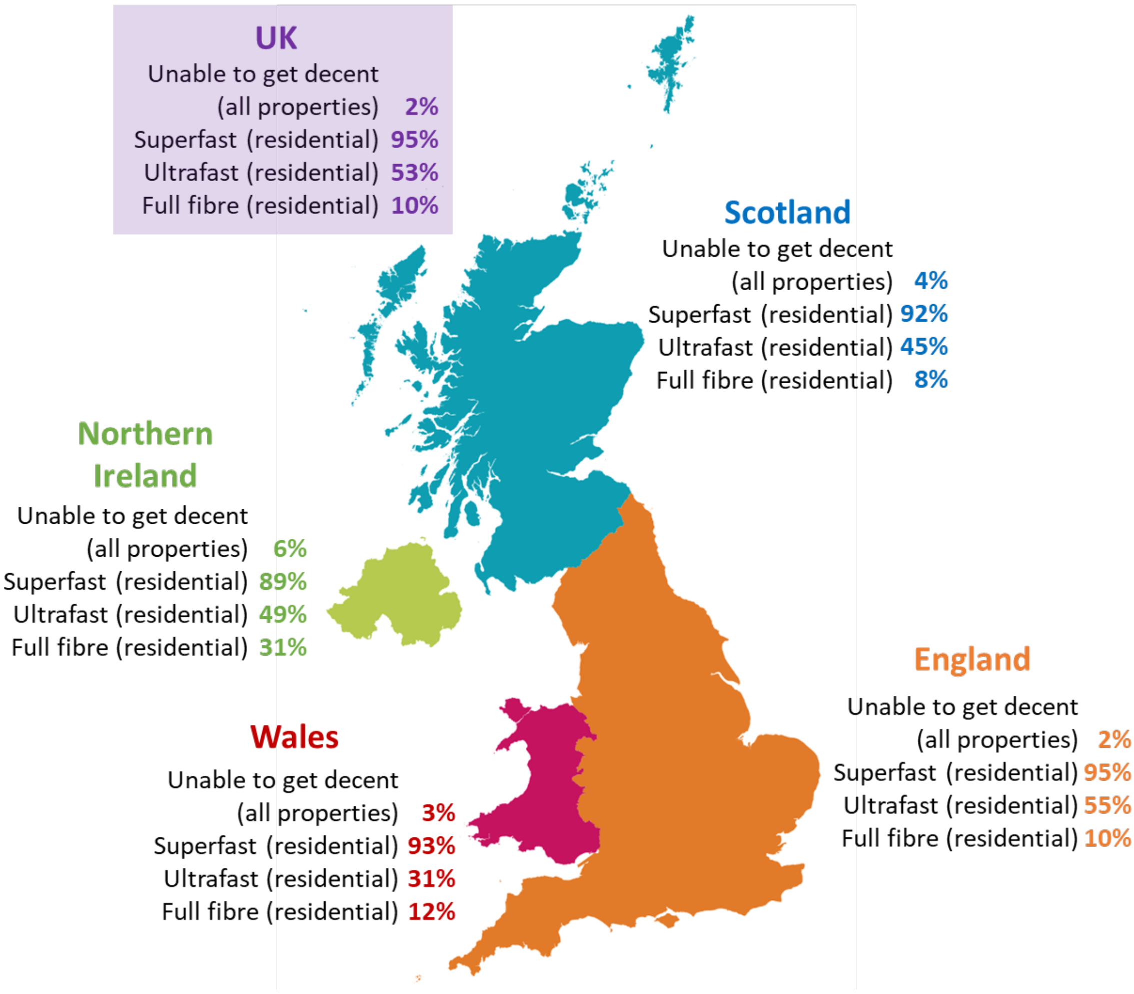
A key priority for Ofcom is to encourage investment in full fibre, which provides greater speed and reliability than copper-based telecoms networks. The UK and devolved governments are also supporting the move to improved connectivity.

The quality and reach of fixed broadband infrastructure in Northern Ireland is improving. Planned and ongoing investment by industry and government will ensure this continues.

Key highlights:

- Full fibre broadband services are now available to 31% of residential premises in Northern Ireland.
- Ultrafast broadband (>=300 Mbit/s) is available to 49% of premises.
- Superfast broadband (>=30 Mbit/s) is available to 89% of premises in Northern Ireland.
- Availability of superfast broadband, at 66%, is lower in rural areas.
- Average broadband download speeds in Northern Ireland have increased by nearly 30% to 55 Mbit/s, up from 43 Mbit/s in 2018. Average download speeds are lower in rural areas but have increased to 35 Mbit/s in 2019, compared to 29 Mbit/s in 2018.
- Average monthly data use (upload and download) per broadband line in Northern Ireland is up 34% to 322 GB.
- Around 50,000 residential and business premises (6% of all premises) in Northern Ireland cannot get decent broadband from a fixed line connection. This is a service with at least 10 Mbit/s download and 1 Mbit/s upload speeds.

Summary of fixed line broadband coverage across the UK and Nations



We expect superfast broadband coverage to continue to increase as a number of UK-wide and Northern Ireland specific public sector interventions are currently underway or about to commence:

- In Northern Ireland, the Department for the Economy has identified 97,000 premises that will be eligible for a broadband boost under ***Project Stratum***. The Department published its response to a public consultation in December 2019 on the proposed intervention area for the £165m project, which seeks to improve connectivity for those unable to access broadband services of 30 Mbit/s or greater. A postcode checker is available on NI Direct at: www.nidirect.gov.uk/services/check-if-your-address-might-get-faster-broadband, which allows people to confirm the eligibility of their premises and potentially benefit from the project. The procurement for the project, funded from the Confidence and Supply Agreement and additional assistance from the Department of Agriculture, Environment and Rural Affairs, was launched in July 2019 and contract award is anticipated in mid-2020.
- As part of the Autumn 2018 Budget, the Chancellor announced that £200m would be made available to pilot innovative approaches to the deployment of full fibre via the Rural Gigabit Connectivity Programme. The programme aims to deliver gigabit capable connections to key public and business buildings, including schools, as well as encouraging broadband providers to create additional connections to local homes.
- Building Digital UK (BDUK) has extended 24 Mbit/s coverage to 95% of the UK and estimates that by 2020 this coverage will be extended to at least a further 2% of UK homes and businesses.
- The Local Full Fibre Networks Programme ('LFFN') is allocating £200m to local projects to incentivise and accelerate commercial investment in full fibre broadband. As part of the LFFN programme, a £67m Gigabit Broadband Voucher Scheme was launched to help small businesses and the local communities around them to contribute to the installation cost of faster connections using gigabit-capable infrastructure.

Fixed broadband coverage

Superfast broadband is available to 89% of residential premises in Northern Ireland

Superfast broadband services (>=30 Mbit/s) are available to 89% of premises in Northern Ireland. However, this is lowest of the four UK nations.

Figure 1: Coverage of superfast broadband (>=30 Mbit/s)

Nation	% of premises (residential)
UK	95%
England	95%
Scotland	92%
Wales	93%
Northern Ireland	89%
Urban	98%
Rural	66%

Source: Ofcom analysis of operator data. Direct comparison with previous years' figures is not possible given the changes in address matching.

Superfast broadband available to less than 70% of premises in rural areas

Broadband speeds and superfast broadband availability are lower in rural areas. While services that deliver superfast speeds are available to 89% of residential premises across Northern Ireland, these services are available to 66% of premises in rural areas.

Nearly half of premises can get ultrafast broadband services

Coverage of ultrafast broadband services has increased significantly over the last year. Ofcom defines ultrafast services as broadband connections that can deliver at least 300 Mbit/s. Some 49% of premises now have access to these faster services, up from 38% in 2018.

Figure 2: Coverage of ultrafast broadband (>=300 Mbit/s)

Nation	% of premises (residential)
UK	53%
England	55%
Scotland	45%
Wales	31%
Northern Ireland	49%
Urban	65%
Rural	11%

Source: Ofcom analysis of operator data. Direct comparison with previous years' figures is not possible given the changes in address matching.

NI has the highest coverage of full fibre services in the UK

In a 'full fibre' or Fibre-to-the-Premises network, fibre optic cables are connected all the way from the local exchange to the home or small business, and can reliably deliver speeds of 1 Gbit/s or more.[4] This contrasts with technologies that are a combination of fibre and copper, like Fibre-to-the-Cabinet, where the quality and distance of the copper from the cabinet to the premises can impact on both the reliability and speed of the service.

The number of premises in Northern Ireland that have access to full fibre services has increased significantly over the last year to 31% of residential premises. This is the highest of the four UK nations.

Figure 3: Premises served by full fibre

Nation	% of premises (residential)
UK	10%
England	10%
Scotland	8%
Wales	12%
Northern Ireland	31%
Urban	39%
Rural	11%

Source: Ofcom analysis of operator data. Direct comparison with previous years' figures is not possible given the changes in address matching.

The number of premises unable to access decent broadband has fallen

While coverage continues to improve, there remain premises that do not have access to decent broadband.

In March 2018 the UK Government finalised the terms of a new Universal Service Obligation (USO) by issuing secondary legislation to introduce a USO for broadband connections and services. The Order states that affordable broadband connections and services must be provided throughout the UK with a download speed of at least 10 Mbit/s

[4] We define full fibre coverage as where the network has been rolled out to a "lead-in" that will serve the consumer end premise and where the customer would expect to pay a standard installation charge for that connection.

and other specified technical characteristics. The technical specification in the Order aims to ensure that consumers can use the digital communications they need today, but it may have to increase over time to meet rising consumer expectations and demands. The Digital Economy Act 2017 includes an automatic review of the USO to ensure it remains relevant.

The USO will apply to the whole of the UK and is intended to help fill the gap left by existing broadband rollout programmes. It will act as an important digital safety net for people who might otherwise get left behind by ensuring every household and business will have the right to request a decent broadband connection and service. The USO aims to improve broadband coverage to households and businesses in hard to reach areas and it is an important building block to improving access to broadband services across the whole of the UK.

Ofcom is responsible for implementing the Broadband Universal Service Obligation (USO). We have designated BT and KCOM as the broadband Universal Service Providers and from March 2020 consumers can start to request USO connections.

We will be working with the Universal Service Providers and public bodies to raise consumer awareness of the USO in time for consumers to start requesting connections in March.

Fifty thousand premises can't get a decent broadband service

Around 50,000 residential and business premises (6% of all premises) in Northern Ireland cannot get decent broadband from a fixed line connection[5]. This is a service with at least 10 Mbit/s download and 1 Mbit/s upload speeds. Of these, we estimate that around 20,000 premises could be potentially eligible for the broadband USO[6].

This is because the launch and substantial expansion of 4G fixed wireless services has meant that a decent broadband service can be delivered over a wireless connection. Ofcom will continue to analyse the coverage and performance of these providers to ensure that they are robust and likely to give homes and businesses the connections they need.

Average download speeds in Northern Ireland have increased by 28%

The average download speed delivered to premises in Northern Ireland is 55 Mbit/s. This has increased from 43 Mbit/s last year and reflects increasing availability of faster broadband services.

Average download speeds are lower in rural areas (35 Mbit/s) though this too has increased from 29 Mbit/s in 2018.

Average monthly data usage in Northern Ireland has increased from 240 GB to 322 GB.

Figure 4: Average download / upload speeds and monthly data usage

	Average download speed (Mbit/s)	Average monthly data usage (GB)
Northern Ireland	55Mbit/s	322GB
Urban	62Mbit/s	335GB
Rural	35Mbit/s	288GB

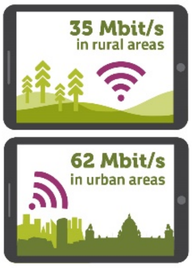
Source: Ofcom analysis of operator data

[5] Figure includes all premises (residential and business). The figure included in the first issue of his report in December 2019 included residential premises only

[6] Subject to eligibility criteria

In **Northern Ireland** the average download speeds in rural areas are just over half those in urban areas

Average monthly data usage is lower too:
288GB (rural) v 335GB (urban)



Local Authority coverage data

This section provides an overview of some of the data available at local authority level in Northern Ireland. More detailed information on this as well as Westminster constituency level data is available via the interactive portal on the Ofcom website.

Coverage of faster broadband is higher in urban areas

Broadband services and speeds vary across Northern Ireland between urban and rural areas. This is reflected in the availability of these services by local authority area, with faster services and speeds available in more urban, densely populated areas.

In Belfast, there is near universal coverage of superfast broadband while more than nine-in-ten premises have access to services that can deliver >=300 Mbit/s.

However, coverage of superfast broadband has remained largely unchanged across most local authority areas. This will improve as Project Stratum, which is aimed at those premises currently unable to get superfast speeds, gets underway. Work is expected to start in 2020.

Superfast coverage is lower in those local authorities which are more rural.

Fermanagh and Omagh District Council area has the lowest availability of superfast broadband at just 68%. Similarly, superfast broadband coverage in Mid Ulster is 76%.

Figure 5: Coverage of superfast and ultrafast broadband (% of premises)

Local authority	% of premises (residential)	
	>=30Mbit/s (Superfast)	>=300Mbit/s (Ultrafast)
Belfast	99%	92%
Ards and North Down	95%	64%
Lisburn and Castlereagh	93%	65%
Antrim and Newtownabbey	92%	57%
Derry City and Strabane	90%	70%
Mid and East Antrim	89%	36%
Armagh City, Banbridge and Craigavon	88%	38%
Causeway Coast and Glens	85%	16%
Newry, Mourne and Down	82%	7%
Mid Ulster	76%	12%
Fermanagh and Omagh	68%	14%
NI	89%	49%

Source: Ofcom analysis of operator data. Direct comparison with previous years' figures is not possible given the changes in address matching.

Rural areas have more premises without decent broadband

Local authorities that are more rural have a higher number of premises without access to decent broadband through a fixed line connection. This is a service that can deliver at least 10 Mbit/s download and 1 Mbit/s upload speeds.

Fermanagh and Omagh District Council area (21%) has the highest percentage of premises unable to get a decent broadband service. Mid Ulster (12%), Newry, Mourne and Down (9%), and Causeway Coast and Glens (8%) also have significant numbers of premises that fall into this category.

Figure 6: Percentage of premises unable to get decent broadband (10 Mbit/s download , 1 Mbit/s upload) through a fixed line connection

Local authority	% of premises unable to get 10 Mbit/s download, 1 Mbit/s upload speed (residential)
Fermanagh and Omagh	21%
Mid Ulster	12%
Newry, Mourne and Down	9%
Causeway Coast and Glens	8%
Mid and East Antrim	5%
Armagh City, Banbridge and Craigavon	6%
Derry City and Strabane	5%
Antrim and Newtownabbey	4%
Lisburn and Castlereagh	3%
Ards and North Down	2%
Belfast	<1%
NI	6%

Source: Ofcom analysis of operator data. Direct comparison with previous years' figures is not possible given the changes in address matching.

Broadband take-up

This report collects and reports on the performance of active lines and not the products that consumers are signed up to and, as such, is only indicative of take-up. However, our analysis suggests that 85% of premises in Northern Ireland had a broadband connection in September 2019 – 2pp higher than in 2018.

Figure 7: Fixed broadband take-up

Nation	2019
UK	83%
England	86%
Scotland	89%
Wales	81%
Northern Ireland	85%
Urban (NI)	87%
Rural (NI)	81%

Source: Ofcom analysis of operator data.

Around half of all premises in Northern Ireland (48%) that have a broadband connection are receiving a service that is delivering superfast speeds (>=30 Mbit/s) or above.

Mobile services in Northern Ireland

Introduction

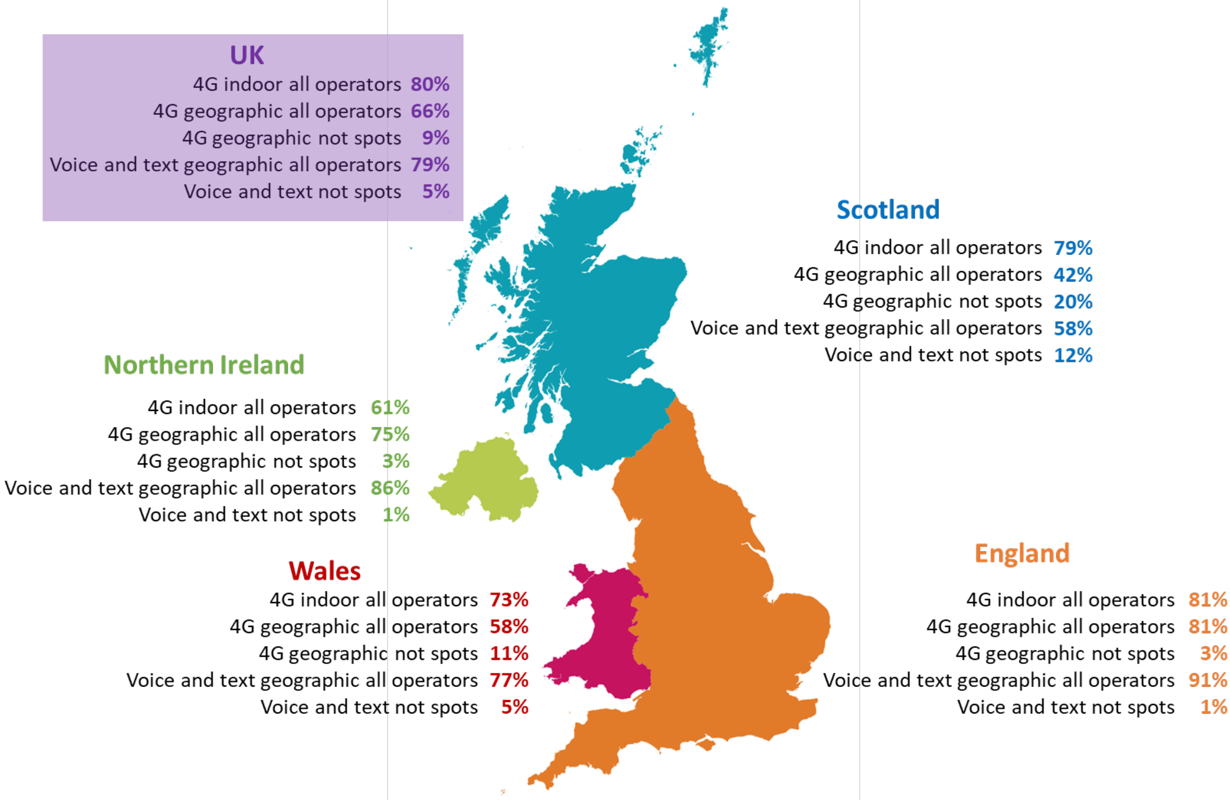
People expect to be able to make calls and get online where they live, work and travel.

In this chapter we provide an update on coverage both outside and inside premises, across Northern Ireland's landmass and on roads.

Key highlights:

- Good 4G services from all four operators are available (outdoor) across 75% of the Northern Ireland landmass.
- Voice services from all four operators are available (outdoor) to 86% of the Northern Ireland landmass.
- 61% of premises in Northern Ireland have good indoor 4G coverage from all four operators.
- Voice services (indoor) from all four operators are available in 80% of premises in Northern Ireland.
- 52% of Northern Ireland's major roads have good in-vehicle 4G coverage.
- Voice services are available on around three quarters of Northern Ireland's major roads (72%).
- However, coverage of the UK landmass remains patchy, especially in rural areas. The UK Government and network operators have announced that they have an in-principle agreement to invest in the creation of a Shared Rural Network to deliver new coverage in many rural areas.

Summary of mobile coverage across the UK and Nations



5G is here

This year marked the launch of 5G in the UK. The UK is a 5G leader in Europe, because it is one of the first countries where all the Mobile Network Operators (MNOs) have started 5G deployment.

These initial 5G networks target mobile broadband services, providing several enhancements over 4G networks, including higher speeds and the capability to deliver extra capacity where needed, such as in urban areas or sports stadiums. Future evolutions of these initial 5G networks will enable additional services that rely on a near instantaneous network response (a latency of the order of only a few milliseconds) and need high reliability, with applications in sectors such as manufacturing, logistics, agriculture, transport/automotive, energy, media & entertainment, and healthcare. Examples of applications include controlling vehicles at distance, e.g. in mines, or enabling robots in automated factories to communicate with each other.

All UK MNOs have launched 5G this year

EE, O2, Three and Vodafone are offering 5G in some form in more than 40 UK cities and towns in the UK, from Plymouth to Edinburgh and from Lisburn to Norwich. Rollout has so far focused on areas with higher populations, where capacity demands are likely to be greatest. In the near term, operators are likely to continue rollout in areas where 5G will deliver significant quality of service improvements needed to meet consumer demand.

5G will also benefit organisations and businesses

Public mobile networks, in addition to providing broadband services for consumers, could also be used to provide specialist services to organisations and businesses.

Organisations and businesses could also decide to access 5G services via a local private 5G network, either self-deployed or deployed by a third party. This option guarantees a high level of security and full control on data ownership. In February 2019 we outlined a range of technological approaches and business models to support organisations and businesses in developing their digital infrastructure. We expect the new spectrum sharing framework to provide support for organisations and businesses interested in deploying wireless services via private solutions using 4G or 5G. From December 2019, it has been possible to apply for a local licence.

Methodology

In this section we report on coverage both outside and inside premises, on geographic coverage and on coverage along roads. We report on the availability of voice services, via either 2G, 3G or 4G, and on the availability of 4G data connections. Our definition of 4G coverage reflects a level of service that supports nearly all 90-second telephone calls being completed without interruption and data connections that deliver a connection speed of at least 2 Mbit/s (fast enough to browse the internet and watch glitch-free mobile video).

The mobile coverage figures provided in this report rely on the accuracy of coverage prediction data supplied by the mobile operators. We note that operators continue to update and improve their prediction models, which is welcome. The data used in this report includes predictions provided to us by EE using a newly developed coverage prediction model, which has seen some changes in the coverage it predicts for landmass and premises. EE has provided us with information on the validation work it has undertaken to date.

We take the accuracy of the data supplied to us seriously given its importance to policy making and to ensuring people are well informed about available coverage. We will continue to monitor, through drive testing, the accuracy of all operators' coverage predictions.

Geographic coverage

Eighty-six per cent of Northern Ireland's geographic area is covered by all four operators for voice calls.[7]

Outdoor access to good data services through 4G covers 75% of the Northern Ireland landmass.

However, there are stark differences in the level of choice available to customers in urban and rural areas. Ninety per cent of urban areas can get 4G coverage from all four operators, compared to 74% of rural areas.

Figure 8: Geographic mobile coverage in Northern Ireland

	% of landmass covered by all operators	No coverage from any operator)
4G	75%	3%
Voice	86%	1%

Source: Ofcom analysis of operator data

[7] These figures include voice calls over 4G LTE services.

Indoor coverage

Eight in ten premises have indoor telephone coverage from all operators

The coverage people receive indoors depends on a range of factors including: the thickness of walls, building materials used in construction and where in the building you are. Due to these factors, in some premises there may be differences between our predicted indoor coverage data and the actual coverage available.

Our online coverage checker provides additional information on the likelihood of there being indoor coverage in buildings in different locations, which takes into account some of the factors that can affect a mobile signal.

Based on an average building loss model (i.e. the model we use to estimate the amount of signal loss from outside to inside the building), indoor mobile calls are predicted to be available from all operators in 80% of premises across Northern Ireland.[8]

Sixty-one per cent of Northern Ireland homes and businesses are now covered by a good 4G signal from all operators.

Figure 9: Indoor coverage, premises covered in Northern Ireland

	% of premises with indoor coverage from all operators	No coverage from any operator
4G	61%	2%
Voice	80%	1%

Source: Ofcom analysis of operator data

[8] We determine indoor coverage by applying an average building entry loss of 10dB across all buildings.

Roads coverage

Some 72% of motorway and A roads in Northern Ireland have voice coverage from all four operators. Fifty-two per cent of motorways and A roads have good in-car 4G coverage from all operators.

Figure 10: Major roads mobile coverage in Norther Ireland

	% of major roads covered by all operators	No coverage from any operator
4G	52%	2%
Voice	72%	1%

Source: Ofcom analysis of operator data

Mobile coverage in Northern Ireland by operator

Below, we compare coverage of voice and 4G services in Northern Ireland from the four main operators – O2, Vodafone, EE and Three. In recent years, there has been increased consolidation and sharing of masts between O2 and Vodafone, and between EE and Three, which has seen coverage between sharing network providers converge.

There are also more than 30 virtual network operators. These operators, such as Sky, Virgin Mobile, iD Mobile, Tesco Mobile, giffgaff and others, are each carried on one of the main networks and will have similar coverage to its host network.

Figure 11: Mobile coverage by operator

	O2	Vodafone	EE	Three
Indoor premises - 4G	91%	93%	72%	84%
Indoor premises – voice	98%	98%	83%	91%
Geographic – 4G	85%	92%	84%	92%
Geographic – voice	97%	98%	88%	94%

Source: Ofcom analysis of operator data

Initiatives to improve mobile communications

Following detailed discussions between the MNOs and the UK Government (supported by Ofcom), in October 2019 the UK Government announced in-principle support for the MNOs' proposed 'Shared Rural Network'. The Shared Rural Network would expand each operator's outdoor 4G coverage to 92% of the UK landmass by 2025, with specified increases in each of the UK nations. 4G outdoor coverage from at least one MNO is expected to increase to 95% by the same date. The Shared Rural Network proposal is subject to final agreement by the mobile operators and the UK Government. The UK Government's intention is to reach a formal agreement in early 2020.

Should final agreement be reached, these promised improvements will make a real difference to mobile customers across the UK, enabling consumers to get a continuous coverage experience in areas where there is at least one provider, but, as of today, not their provider of choice. Operators have committed to entering into legally binding licence variations which will allow Ofcom to hold them to these commitments. We will monitor and report on the MNOs' progress in achieving better coverage via our Connected Nations reports.

The key elements of the Shared Rural Network agreement

The proposal has three key elements:

- Existing masts would be shared by all four MNOs, at their own cost, in areas where some, but not all, MNOs have coverage.
- Mobile infrastructure built as part of the Government-owned Emergency Services Network in Great Britain would be made available to all four operators, delivering additional coverage, in some of the most remote, rural locations. Applies to England, Scotland and Wales only.
- New sites would be built in a number of areas where there is no coverage from any operator. These sites would host all MNOs and would be funded by Government.