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for everyone

Connected Nations 2018

Northern Ireland report

18 December 2018

Overview

People now rely on being connected more than ever, whether at home or on the move. So it is important that they have access to reliable, good quality broadband and mobile connections, whether this is for communicating with friends and family, shopping online, paying bills or streaming the latest must-see TV series.

This annual report tracks progress in the availability, performance and use of fixed and mobile services in Northern Ireland and summarises how Ofcom plans to improve their availability further.

Alongside this Northern Ireland report, we are also publishing a UK report, as well as reports for Scotland, Wales and England, and an interactive dashboard, giving readers the opportunity to drill into the data at the level and locations they are most interested in.

Furthermore, we are opening up access to our data on fixed broadband and mobile coverage availability through releasing two APIs (application protocol interfaces) to make it easier for anyone to use this information when developing apps and other online services.

In parallel we are also launching a campaign to help people identify the fixed broadband services that are available to them, as our data shows that consumers are often not on the fastest service that is available to them.

The campaign will highlight the better value people can get from their broadband service if they engage with their provider or switch to make sure they are on the best possible deal.

Key findings from the Northern Ireland Connected Nations report:

Fixed line broadband

- Superfast broadband (>=30Mbit/s), is now available to 89% of premises in Northern Ireland, three percentage points (pp) higher than last year. Superfast broadband is available to 67% of premises in rural areas, up from 57% last year.
- Across Northern Ireland, 95% of premises have access to services that can deliver decent broadband, a broadband connection which provides download speeds of 10Mbit/s or more and upload speed of 1Mbit/s or more. This leaves around 40,000 premises with connections unable to support these speeds, a reduction of around 15,000 premises compared to last year.
- The average download speed delivered to premises in Northern Ireland is 43Mbit/s. This has increased from 39Mbit/s in 2017 and reflects increasing availability of faster broadband services.

Mobile

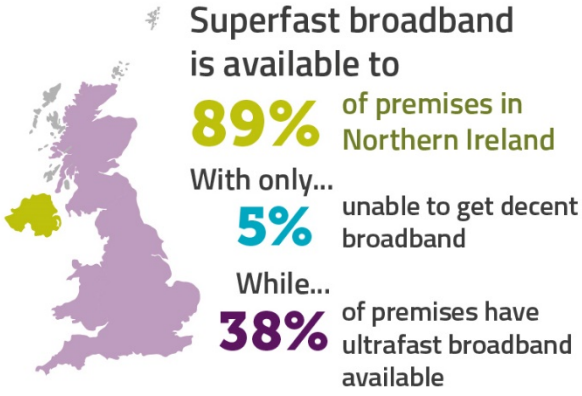
- Good 4G services from all four operators are available (outdoor) across 79% of the Northern Ireland landmass while voice services from all four operators are available (outdoor) to 88% of the Northern Ireland landmass.
- 57% of premises and 61% of major roads in Northern Ireland have good indoor / 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 78% of major roads (in-vehicle).

Fixed-line broadband availability

Despite the increased availability of superfast broadband and mobile services, challenges remain. Availability of these 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 few customers or where the costs of building infrastructure are higher.

A major challenge to the roll-out of fixed superfast broadband services is the longer line lengths in more rural parts of the UK - the distance between the premise and the nearest fibre enabled cabinet or exchange.



These distances cause serious deterioration of the physical properties of the broadband signal resulting in slower data speeds.

The effect is most keenly felt in Northern Ireland where the rural population is more evenly spread and where average line lengths are the longest in the UK.

Ofcom is supporting investment in ultrafast broadband, more reliable fibre networks but also taking action to ensure that even those who cannot currently get a decent connection are able to legally request one to be installed.

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

In order to address the increasing need for more data intensive online services, in July 2018 the Government also set out its ambition in the Future Telecoms Infrastructure Review (FTIR) for 15 million premises to be connected to full fibre services by 2025 and nationwide coverage by 2033.[1]

Alongside this, operators and government are involved in several Northern Ireland-specific projects that will improve the region's broadband infrastructure.

Following the 2017 General Election, funding was made available to improve broadband services across Northern Ireland through the Confidence and Supply Agreement between the Conservative Party and the DUP. The funding is for £75m per year for two years to "help provide ultra-fast broadband for Northern Ireland."

The intervention, called ***Project Stratum***, will seek to reduce the gap of 11% of premises currently unable to access a broadband service of at least 30Mbit/s.[2]

Through its ***Project Lightning*** programme, Virgin Media has significantly expanded its ultrafast broadband network in Northern Ireland since 2016, with further expansion planned.

Meanwhile, Belfast has been confirmed as the first city in Northern Ireland to join Openreach's Fibre First programme, with Openreach making gigabit capable full fibre services available to customers over its network in the city in 2019.[3]

Mobile coverage

Coverage of mobile services in Northern Ireland has improved in recent years. Over the last year alone, good 4G indoor coverage from all four networks has increased by 10pp to 57% while good 4G geographic coverage has improved to 79%, up from 64% in 2017. However, as with broadband, coverage is less extensive in rural areas.

Ofcom is working on a number of initiatives to help improve mobile capacity and coverage. This includes releasing more spectrum and setting coverage obligations for future spectrum auctions, with the aim of improving coverage in rural areas especially. More information is provided in the Mobile section of this report.

[1] https://www.gov.uk/government/publications/future-telecoms-infrastructure-review
[2] https://www.economy-ni.gov.uk/consultations/extending-broadband-across-northern-ireland-project-stratum
[3] https://news.openreach.co.uk/pressreleases/belfasts-digital-sector-to-receive-broadband-boost-2800031

Contents

Fixed broadband services in Northern Ireland

Fixed broadband scorecard - 2018

	Northern Ireland	UK
Coverage of broadband (% of premises):		
Superfast broadband (>=30Mbit/s)	89%	94%
Superfast broadband - urban	98%	97%
Superfast broadband - rural	67%	74%
Ultrafast broadband (>=300Mbit/s)	38%	50%
Full fibre	12%	6%
Percentage of premises that receive <10Mbit/s download & <1Mbit/s upload speed	5%	2%
Average download speed	43Mbit/s	49Mbit/s
Urban	49Mbit/s	51Mbit/s
Rural	29Mbit/s	32Mbit/s
Average monthly data usage	240GB	240GB

Source: Ofcom analysis of operator data

Introduction

The increasing availability of content-rich websites, online streaming services such as Netflix and "cloud" based applications means people and businesses increasingly expect reliable, resilient and stable broadband connections. To ensure no one is left behind in an increasingly digital society, government bodies are encouraging the deployment of full fibre networks across the UK. We have also published proposals for a package of measures to encourage investment in fibre.[4]

In July, the UK Government set a goal to deliver full fibre to 15m premises by 2025 and to all premises in the UK by 2033.[5] Both established and alternative providers have committed to rolling out full fibre networks across the country. In addition, and much earlier, the Government's Universal Service Obligation (USO) will allow people and businesses the legal right to request a decent broadband connection, delivering download speeds of at least 10Mbit/s and upload speeds of 1Mbit/s by 2020.[6]

The quality and reach of fixed broadband infrastructure in Northern Ireland has improved considerably in recent years. Planned an ongoing investment by industry and government will ensure this continues.

This report shows:

- Superfast broadband (>=30Mbit/s) is available to 89% of premises in Northern Ireland, up from 86% last year.
- Superfast broadband is available to 67% of premises in rural areas, up from 57% last year.
- Ultrafast broadband (>=300Mbit/s) is available to 38% of premises, up from 26% last year.
- Across Northern Ireland, 95% of premises can receive a service that can deliver decent broadband, that is a broadband connection which provide download speeds of at least 10Mbit/s and an upload speed of at least 1Mbit/s. This leaves around 40,000 premises with connections unable to support these speeds, a reduction of around 15,000 premises compared to last year.
- Average broadband download speeds in Northern Ireland have increased by 10% to 43Mbit/s, up from 39Mbit/s in 2017. Average download speeds are lower in rural areas but have increased to 29Mbit/s in 2018, compared to 24Mbit/s in 2017.
- Average monthly data use (upload and download) per broadband line in Northern Ireland is up 28% to 240GB

[4] https://www.ofcom.org.uk/about-ofcom/latest/media/media-releases/2018/investment-full-fibre-broadband
[5] https://www.gov.uk/government/news/forging-a-full-fibre-broadband-and-5g-future-for-all
[6] https://www.ofcom.org.uk/__data/assets/pdf_file/0013/115042/implementing-broadband-uso.pdf

Government investment

Following the General Election in 2017, funding was made available to improve broadband services across Northern Ireland through the Confidence and Supply Agreement between the Conservative Party and the DUP. The funding is for £75m per year for two years to "help provide ultrafast broadband for Northern Ireland."

The intervention, called **Project Stratum**, will seek to reduce the gap of 11% of premises currently unable to access a broadband service of at least 30Mbit/s, which directly aligns with the internet connectivity indicator in the Northern Ireland Executive's Programme for Government 2016-2021.

A State Aid public consultation started in December 2018 and will run through to January 2019. The consultation will encourage consumers unable to access a broadband service of at least 30Mbit/s to check their postcode to verify that it has been identified in the proposed intervention area.[7]

The tender process is expected to take place during Q1, 2019 with contract award sometime in Q3 2019.

Fixed broadband coverage

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

Superfast broadband services (>=30Mbit/s) are now available to 89% of premises in Northern Ireland, compared to 86% in 2017. However, this is lowest of the four UK nations and 5pp lower than the UK-wide figure.

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

Nation	2018
UK	94%
England	94%
Scotland	92%
Wales	93%
Northern Ireland	89%
Urban	98%
Rural	67%

Source: Ofcom analysis of operator data

Superfast broadband available to more than 60% 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 premises across Northern Ireland, these services are available to 67% of premises in rural areas. This figure has improved from 56% in 2017.

Four in ten premises can get ultrafast broadband services

Coverage of ultrafast broadband services has also increased. Ofcom defines ultrafast services as broadband connections that can deliver at least 300Mbit/s.

Through its **Project Lightning** programme, Virgin Media has increased coverage of its ultrafast broadband network in Northern Ireland significantly since 2016.[8] Prior to 2016, Virgin Media's network was largely focused in Greater Belfast and Derry / Londonderry. The network has now expanded to areas including Bangor, Newtownards, Comber, Ballyclare, Limavady, Strabane and Portadown. Virgin Media's network now passes 37% of premises, up from 30% in 2017.

[7] https://www.economy-ni.gov.uk/consultations/extending-broadband-across-northern-ireland-project-stratum

[8] https://www.virginmedia.com/corporate/media-centre/press-releases/virgin-media-in-multi-million-pound-ultrafast-broadband-boost-for-northern-ireland.html

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

Nation	% of premises
UK	50%
England	52%
Scotland	44%
Wales	29%
Northern Ireland	38%
Urban	50%
Rural	9%

Source: Ofcom analysis of operator data

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

Alongside the continuing roll-out of superfast services, a new range of broadband services are now increasingly available that offer download speeds of several hundred Mbit/s or higher. These services are provided by technologies such as Fibre to the Premises (FTTP) or upgrades to existing cable networks. Such services are capable of delivering very high speeds, well in excess of 300Mbit/s.

The number of premises in Northern Ireland that have access to full fibre services has increased significantly over the last two years on the back of operator and government investment.

Figure 3: % of premises served by full fibre

Nation	% of premises
UK	6%
England	6%
Scotland	4%
Wales	7%
Northern Ireland	12%
Urban	13%
Rural	8%

Source: Ofcom analysis of operator data

5% of premises can't get a decent broadband service

As well as measuring the availability of superfast services, the Connected Nations report charts the number of premises where slower or very slow speeds are delivered.

We estimate that around 40,000 premises in Northern Ireland (5%) do not have access to decent broadband services, with at least 10Mbit/s download and 1Mbit/s upload speeds. By comparison, we estimate 677,000 premises (2%) across the UK do not have access to decent broadband.

Customers in rural areas are more likely to be affected by this, with 17% of premises (38,000) unable to get a service that can deliver these download and upload speeds.

This 10Mbit/s measure is important because Ofcom's analysis shows that this speed that is sufficient to meet the current needs of a typical household.

Figure 4: Premises unable to get a decent broadband service

Nation	% of premises
UK	2%
England	2%
Scotland	4%
Wales	3%
Northern Ireland	5%
Urban	0%
Rural	17%

Source: Ofcom analysis of operator data

The broadband Universal Service Obligation, which will give consumers and businesses the right to request a broadband connection capable of delivering a download speed of at least 10Mbit/s and upload speed of at least 1Mbit/s will help those with the slowest connections.

We are currently looking at how Fixed Wireless Access services might provide an

alternative for decent broadband access in some remote areas. These services use a wireless link for the final connection to a user premise and could potentially reduce further the number of premises that need a decent broadband connection from the broadband USO.

Average download speeds in Northern Ireland have increased by 10%

The average download speed delivered to premises in Northern Ireland is 43Mbit/s. This has increased from 39Mbit/s last year and reflects increasing availability of faster broadband services.

Average download speeds are lower in rural areas (29Mbit/s) though this too has increased from 24Mbit/s in 2017.

Average monthly data usage in Northern Ireland has increased from 187GB to 240GB.

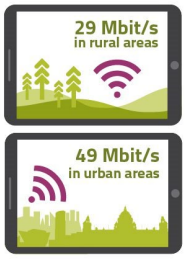
Figure 5: Average download / upload speeds and monthly data usage

	Average download speed (Mbit/s)	Average monthly data usage (GB)
Northern Ireland	43Mbit/s	240GB
Urban	49Mbit/s	255GB
Rural	29Mbit/s	203GB

Source: Ofcom analysis of operator data

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: 203GB (rural) v 255GB (urban)



Four in five SMEs have access to superfast broadband

Providing SMEs with access to fast broadband is vital to allow businesses to participate and utilise the benefits of a digital economy.

The availability of faster broadband services is lower for SMEs in Northern Ireland relative to the region as a whole. This reflects the lower availability of faster broadband in these areas overall. More generally, many SMEs are based in rural areas, where availability of faster broadband services is lower.

Figure 6: Broadband coverage for SMEs in NI

SMEs (<250 employees) with access to:	%
Superfast broadband (>=30Mbit/s)	80%
Ultrafast broadband (>=300Mbit/s)	30%

Source: Ofcom analysis of operator data

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.[9]

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.

As more investment goes into extending and upgrading existing networks, increasing numbers of connections are able to deliver superfast and ultrafast services.

In Belfast, there is near universal coverage of superfast broadband while more than nine in ten premises have access to services that can deliver >=300Mbit/s. Coverage of superfast broadband continues to increase though it is still lower in local authority areas that are more rural.

Fermanagh and Omagh District Council area, which has significant numbers of dispersed dwellings, has the lowest availability of superfast broadband at just 70%, though this has improved 7pp since last year. Similarly, superfast broadband coverage in Mid Ulster is now 78%, up from 69% in 2017.

Figure 7: Coverage of superfast and ultrafast broadband (% of premises)

Local authority	% of premises	
	>=30Mbit/s (Superfast)	>=300Mbit/s (Ultrafast)
Belfast	98%	92%
Ards and North Down	95%	63%
Lisburn and Castlereagh	93%	63%
Antrim and Newtownabbey	92%	52%
Derry City and Strabane	91%	19%
Mid and East Antrim	89%	8%
Armagh City, Banbridge and Craigavon	88%	5%
Causeway Coast and Glens	86%	13%
Newry, Mourne and Down	83%	4%
Mid Ulster	78%	7%
Fermanagh and Omagh	70%	3%
NI	89%	38%

Source: Ofcom analysis of operator data

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. This is a service that can deliver at least 10Mbit/s download and 1Mbit/s upload speeds. While this still affects a significant number of properties, the number has reduced over recent years.

Fermanagh and Omagh District Council area (19%) has the highest percentage of premises unable to get a decent broadband service. Mid Ulster (11%), Newry, Mourne and Down (8%), and Causeway Coast and Glens (7%) also

[9] https://www.ofcom.org.uk/research-and-data/multi-sector-research/infrastructure-research/connected-nations-2018/interactive-report

have significant numbers of premises that fall into this category.

Figure 8: Percentage of premises unable to get decent broadband (@10 Mbit/s upload, 1Mbit/s download)

Local authority	% of premises unable to get 10Mbit/s download, 1Mbit/s upload speed
Fermanagh and Omagh	19%
Mid Ulster	11%
Newry, Mourne and Down	8%
Causeway Coast and Glens	7%
Mid and East Antrim	5%
Armagh City, Banbridge and Craigavon	5%
Derry City and Strabane	5%
Antrim and Newtownabbey	4%
Lisburn and Castlereagh	3%
Ards and North Down	2%
Belfast	1%
NI	5%

Source: Ofcom analysis of operator data

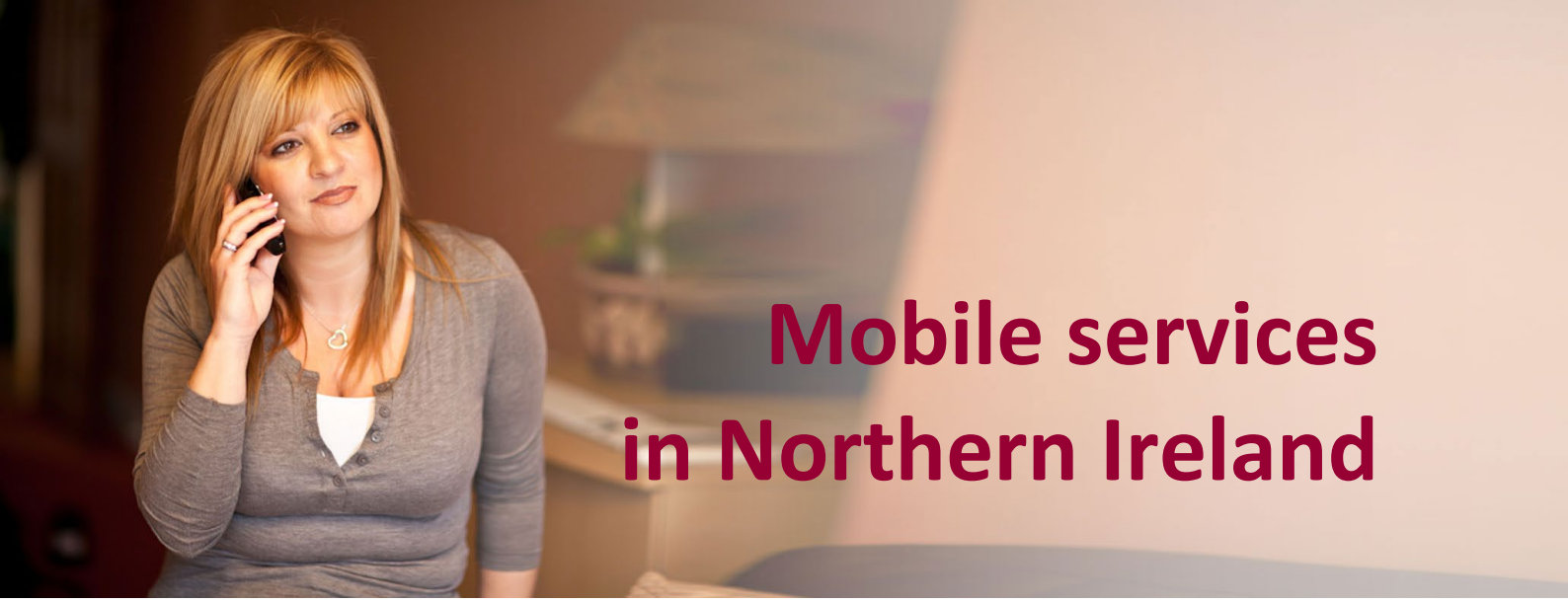
Broadband take-up

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 around half of all premises in Northern Ireland (45%) that have a broadband connection are receiving a service that is delivering superfast speeds (>=30Mbit/s) or above.

Figure 9: Take-up of superfast broadband services

Superfast broadband (>=30Mbit/s)	NI
Take-up, premises	45%
Take-up, premises - Urban	50%
Take-up, premises - Rural	34%

Source: Ofcom analysis of operator data



Mobile services in Northern Ireland

Introduction

Mobile services are an increasingly important part of people's lives and how business is conducted.

People increasingly expect to be able to access a decent mobile connection wherever they are. At the same time the devices we use to access mobile services have changed, with the greater take-up and use of smartphones, tablets and Internet of Things (IoT) devices, which often require stronger signals than older, simpler phones.

The UK Government's Future Telecoms Infrastructure Review (FTIR) sets out important and ambitious targets for making mobile coverage more widely available.[10] Ofcom continues to support this ambition and its focus on providing widespread good quality coverage across all parts of the UK.

The report shows:

- Good 4G services from all four operators are available (outdoor) across 79% of the Northern Ireland landmass.
- Voice services from all four operators are available (outdoor) to 88% of the Northern Ireland landmass.
- 57% 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.
- 61% of Northern Ireland's major roads have good in-vehicle 4G coverage.
- Voice services are available on three quarters of Northern Ireland's major roads (78%).

10 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/732496/Future_Telecoms_Infrastructure_Review.pdf

Coverage is provided using a combination of different mobile technologies

Several types of technology are used to deliver mobile services to people. Most modern mobile handsets support 2G, 3G, and 4G, whereas 5G devices will become available in 2019.

2G: this was the first digital mobile technology, launched in the UK in 1992. It is used to deliver: voice, text services and very low-speed data services.

3G: this is a later generation of digital mobile technology, launched in 2003. It can be used to deliver: voice, text and lower speed data services.

4G: this is the latest generation of mobile technology, launched in 2012. It can provide download speeds of over 10Mbit/s, and is used to deliver: voice, text and higher speed data services.

5G: will be the fifth generation of mobile technology. It is expected to deliver faster, lower latency mobile broadband, and to enable more revolutionary uses in sectors such as manufacturing, transport and healthcare.

Our approach to reporting on mobile coverage

The levels of mobile coverage included in this report relate to where a sufficiently strong mobile signal is available to deliver a good experience to smartphone users.[11] This is where:

> Nearly all 90-second telephone calls are very likely to complete without interruption;
> Nearly all 4G connections will deliver a connection speed of at least 2Mbit/s. This is fast enough to browse the internet and watch glitch-free mobile video.

How you measure coverage is important, but so is *where* you measure it. To reflect the places in which people are likely to use their mobile, we look at coverage in three main ways:

> *Outdoor:* The percentage of geographic area where someone can use their phone while outdoors. This measurement is useful for assessing the likelihood of successfully using a phone while out and about.
> *Indoor:* The percentage of premises in which someone can use their phone. This measurement is useful for assessing the likelihood of successfully using a phone while at home or at work. This is estimated using the average reduction buildings cause to mobile signal levels. In next year's report we intend to provide more details on how signals are reduced by different types of building and the materials used in their construction.
> *Roads:* The percentage of roads on which someone can use their phone while inside a vehicle. This measurement is useful for assessing the likelihood of successfully receiving coverage whilst on the road.

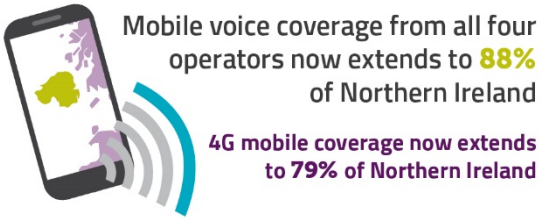
Finally, we report on whether coverage is available from all four operators. This reflects the level of choice of provider available to people. It is often much lower than the coverage available from a single operator.

Despite improvements outlined in this report, coverage remains poor in many rural areas.

[11] We have used crowdsourced data from consumer handsets and drive testing to identify the signal levels needed to meet these targets at least 95% of the time.

Additional steps will be needed to improve coverage in these areas, such as coverage obligations in the award of the 700MHz spectrum band and the use of technical innovation offered by 5G.

The factors affecting the availability of coverage in rural areas is explored in our Economic Geography report, published alongside this report.[12]



Outdoor geographic coverage

Eighty-eight per cent of Northern Ireland's geographic area is now covered by all four operators for telephone calls, up from 80% in June 2017.[13]

Outdoor access to good data services through 4G has also significantly increased from 64% to 79% over the same period. The area without good 4G data service from any operator has significantly reduced from 5% last year to 2% this year.

Figure 10: Geographic mobile coverage in Northern Ireland

	% of landmass covered by all operators	No coverage from any operator)
4G	79% (+15pp)	2% (-3pp)
Voice	88% (+8pp)	1% (-)

Source: Ofcom analysis of operator data

Indoor premise coverage

Eight in ten premises have indoor telephone coverage from all operators

Eighty per cent of Northern Ireland premises have indoor telephone call coverage from all four mobile networks, up from 76% in June 2017.[14] We welcome the improvement, but indoor coverage is very important for people so much more must be done to increase it.

Fifty-seven per cent of Northern Ireland homes and businesses are now covered by a good 4G signal from all operators, up from 47% in June 2017.

Figure 11: Indoor coverage, premises covered in Northern Ireland

	% of premises with indoor coverage from all operators	No coverage from any operator
4G	57% (+10pp)	2% (-1pp)
Voice	80% (+4pp)	1% (-)

Source: Ofcom analysis of operator data

Roads coverage

The need for connectivity to be available on all roads is continuing to increase, with requirements including vehicle occupant communications, navigation, infotainment and safety aids.

Some 78% of Motorway and A roads in Northern Ireland have voice coverage from all four operators, 10pp higher than in 2017. Sixty-one per cent of Motorways and A roads have good in-car 4G coverage from all operators.

[12] https://www.ofcom.org.uk/research-and-data/multi-sector-research/availability-of-communication-services/economic-geography-2018

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

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

Figure 12: Major roads mobile coverage in Norther Ireland

	% of major roads covered by all operators	No coverage from any operator
4G	61% (+20pp)	2% (-2%)
Voice	78% (+10pp)	1% (-1pp)

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 13: Mobile coverage by operator

	O2	Vodafone	EE	Three
Indoor premises - 4G	90%	93%	67%	87%
Indoor premises – voice	98%	98%	84%	93%
Geographic – 4G	86%	92%	89%	94%
Geographic – voice	97%	98%	90%	95%

Source: Ofcom analysis of operator data

Ensuring the accuracy of the mobile coverage data

The mobile coverage figures provided in this report rely on the accuracy of coverage prediction data supplied by the mobile operators.

In our last Connected Nations report update published in October 2018, we noted that we had identified operators' potential overprediction in EE's 3G and underprediction in Vodafone's 4G services. These operators have subsequently resubmitted data on their coverage. Taking into account these adjustments we have provided re-stated historic mobile coverage levels including in the interactive dashboard.

We take the accuracy of the data supplied to us seriously given its importance to policy making and the information provided to people on coverage. In light of these corrections we decided to formally investigate these matters further.[15] [16] We have been reviewing the evidence and plan to publish an update in the new year.

Initiatives to improve mobile communications

Coverage is improving, but expectations are also increasing and more must be done. We continue to work with Governments and companies to improve mobile communications in the UK. Ofcom's key initiatives to improve services include:

- Making more spectrum available for coverage, capacity and performance with both 4G and 5G;
- Proposals to enable shared access to spectrum for new innovative business

[15] https://www.ofcom.org.uk/about-ofcom/latest/bulletins/competition-bulletins/open-cases/cw_01232
[16] https://www.ofcom.org.uk/about-ofcom/latest/bulletins/competition-bulletins/open-cases/cw_01231

models and services, such as 5G applications and rural broadband solutions;

- Encouraging innovative new business models and services (such as 5G applications and rural broadband solutions); and
- Improving coverage in building and vehicles through legalising some types of mobile phone repeaters.

Taking steps to improve coverage in rural areas

We have supported steps to improve coverage in rural areas by addressing barriers and reducing costs. These include changes to the Electronic Communications Code to make it easier and cheaper to deploy mobile infrastructure.

Ofcom has provided advice to the UK Government following technical analysis of a variety of options to improve mobile coverage.[17] The advice focused on public subsidy, rural wholesale access (commonly known as rural roaming), infrastructure sharing and planning reform.

[17] https://www.ofcom.org.uk/phones-telecoms-and-internet/coverage/advice-government-improving-mobile-coverage