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Connected Nations 2022

England report

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Section

Overview

Our objectives include delivering internet we can rely on through ensuring fast and reliable connections and services for everyone, everywhere. In this annual Connected Nations report for England, we measure progress on the availability of broadband and mobile services, including the rollout of gigabit-capable, full fibre and 5G networks.

This England report sits alongside our UK-wide report as well as separate reports on broadband and mobile availability in each of the UK's nations. Our interactive dashboard allows people to easily access data for different areas of the UK and specific services.

What we have found

- **Around 17.6m (71%) of homes in England now have access to a gigabit-capable broadband connection, an increase of 25 percentage points compared to last year.** This includes full fibre and upgraded cable networks that can deliver download speeds of 1 Gbit/s or higher.
- **Full-fibre broadband is available to 10.1m (41%) of homes.** This is 3.6 million more premises (14 percentage points) than a year ago.
- **There are still homes and businesses in England without access to 'decent'[1] broadband, but this number is decreasing.** Accounting for coverage from both fixed and fixed-wireless networks, we estimate that around 40,000 commercial and residential premises in England are still without a decent broadband connection.[2]
- **Public sector investment is helping some of those without a decent broadband connection to get connected**. There is also increased availability of low earth orbit satellite services, offering a possible alternative for customers in poorly served areas.
- **5G rollout has continued at pace**, with the level of coverage provided outside of premises by at least one Mobile Network Operator (MNO) in England rising from 51-63% in 2021 (across a range covering Very High and High Confidence) to 70-81% in 2022.
- **Near-ubiquitous 4G coverage continues to underpin consumer experience.** The four MNOs (EE, VMO2, Three and Vodafone) each estimate they provide 4G outdoor coverage to 99%+ of premises in England. Their coverage of English landmass ranges from around 92% to 94%.
- **The resilience of telecoms networks was tested by the storms last winter, with communication services severely disrupted in places, particularly in northern England.** This was primarily because of lengthy power outages, which caused communications services to become unavailable in impacted areas. It initially took providers longer than expected to recover from these impacts, which has highlighted the need for better co-ordination across the communications and energy sectors. Improvements are already being made in this area and we urge industry and others to continue this progress.

[1] The UK Government defines a decent broadband service as one that delivers at least 10 Mbit/s download speed and 1 Mbit/s upload speed. This is the level of connection currently deemed necessary for consumers to participate in a digital society.
[2] Unless otherwise specified, coverage figures for decent broadband count all UK premises (residential and commercial). Coverage for other speed tiers count residential premises only.

Fixed broadband and voice services

High-speed networks are rapidly expanding, bringing fast and reliable voice and broadband services to homes and businesses across the UK. In this section, we provide an update on the rollout of these networks over the last year, as well as the remaining numbers of premises that still do not have access to decent broadband. We update on the deployment and performance of fixed wireless and satellite networks, that are also delivering broadband connectivity. We also report on consumer take-up of faster broadband services.

Growing connectivity across England and the rest of the UK is taking place in the context of broader changes to the fixed telecoms sector, including the migration to digital voice and the retiring of the legacy public switched telephone network (PSTN). For more information on these developments, refer to our Connected Nations UK report**.**

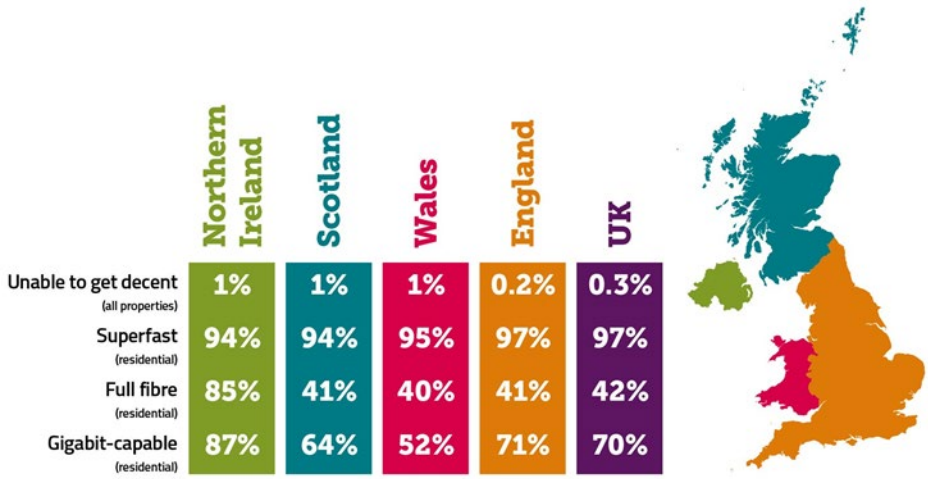
Fixed broadband is available at a variety of speeds and is delivered over different technologies, including copper (ADSL), fibre to the cabinet (FTTC), hybrid fibre coaxial cable (HFC) and full fibre, or 'fibre to the premises' (FTTP). A detailed explanation of these technologies and speeds can be found in our Connected Nations UK report.

Key highlights

- Gigabit-capable broadband is available to 71% of homes in England, a notable increase from 46% last year.
- Much of the increase in gigabit-capable services is due to investment in full fibre networks, which are now available to 41% of homes in England.
- The vast majority of homes in England can access at least superfast broadband. Coverage has marginally increased to 97%, although superfast coverage in rural areas in England is at 88%.
- Connectivity and coverage provided by traditional fixed telecoms services has been bolstered by the growing availability of fixed wireless access (FWA) and low earth orbit (LEO) satellite broadband services.
- When we include fixed wireless providers, we estimate that 40,000 homes and businesses in England remain unable to access a decent broadband service. Some of these premises may be eligible to be connected under the broadband universal service obligation (USO) – to date around 7,000 premises in England have had connections built under the USO.
- For those 97% of homes in England that have access to superfast broadband, around 73% of them do so. We estimate that the take-up of full fibre services, where fibre is available, is around 25%.

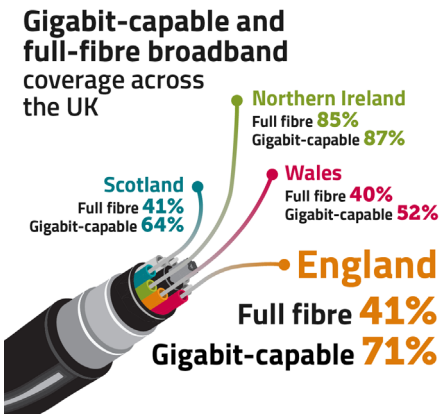
Fixed broadband coverage

Figure 2.1: Summary of fixed line broadband coverage across the UK and Nations



Source: Ofcom analysis of provider data (September 2022).

Coverage of gigabit-capable and full-fibre broadband in England continues to grow



Gigabit-capable coverage in England has increased and is now available to 17.6 million homes (71%) compared to 11.3 million (46%) in 2021, again showing a significant increase over the last year. Gigabit-capable includes full fibre services, as well as upgraded cable networks that can deliver download speeds of 1 Gbit/s or higher.

Gigabit-capable broadband is available to 76% of urban residential premises, compared to only 37% of rural premises. This urban-rural divide is mirrored across the UK and indicates that consumers in rural areas are still less likely to be able to access the fastest broadband speeds. The wide gulf in gigabit-capable connections is partly due to Virgin Media O2's upgrade of its existing coaxial cable network to gigabit-capable, as this cable network is mainly situated in urban areas.

10.1 million homes (41%) are now able to access a full fibre connection, which is an increase of 14 percentage points from last year, constituting the largest year-on-year increase in full fibre coverage to date. The urban-rural divide in full fibre coverage is less stark (42% of urban residential premises versus 34% of rural).

Table 2.2: Residential coverage of gigabit-capable and full-fibre broadband, urban/rural breakdown

	Gigabit-capable		Full fibre	
	2021	2022	2021	2022
England	**11.3m (46%)**	**17.6m (71%)**	**6.5m (27%)**	**10.1m (41%)**
Urban	10.5m (49%)	16.5m (76%)	5.7m (27%)	9m (42%)
Rural	0.8m (26%)	1.1m (37%)	0.8m (25%)	1.1m (34%)
United Kingdom	**13.7m (47%)**	**20.8m (70%)**	**8.2m (28%)**	**12.4m (42%)**
Urban	12.7m (50%)	19.3m (76%)	7.2m (28%)	11m (43%)
Rural	1m (25%)	1.5m (37%)	1m (24%)	1.4m (35%)

Source: Ofcom analysis of provider data (September 2022).

Both private and public sector investment is driving the rollout of faster networks

Data collected from the UK's largest providers suggest that UK telecoms providers invested £4.6bn in fixed telecoms network infrastructure in 2021, a £0.6bn (15%) increase in real terms compared to 2020.

The increase in gigabit-capable and full-fibre broadband is primarily driven by deployments from the larger fibre operators (Openreach, Virgin Media O2 and CityFibre), but a considerable number of smaller providers are also deploying full fibre and helping to play an increasingly important role in the roll-out of gigabit-capable broadband. For example, Wightfibre operates only in the Isle of Wight and has a stated objective to create the UK's first 'Gigabit Island'. The company completed the migration of legacy cable network customers to a new full fibre network in 2021 and switched off its Hybrid Fibre-Coaxial (HFC)[3] based cable network in August 2022.[4]

Local initiatives demonstrate the variety of business models that some providers are adopting to solve connectivity problems. For example, Broadband for the Rural North (B4RN) is a registered Community Benefits Society building fibre networks in isolated or socially deprived rural communities. The fibre network was initially deployed in the rural northwest of England and has gradually expanded from there. Any profits were reinvested, with 5% of profits being paid to members. BR4N was the fastest provider in Cumbria with a median download speed of 113.74 Mbps and 127.98 Mbps upload.[5]

Operator investment is being supplemented by publicly funded UK Government initiatives. The UK Government has set a target of at least 85% gigabit coverage across the whole UK by 2025, with the ambition to reach as close to 100% as possible by 2030. As part of its Project Gigabit programme,

[3] HFC combines fibre optic and coaxial cable-based transmission modes.
[4] ISP Review, WightFibre become first UK Operator to switch-off copper network, August 2022.
[5] Ookla, Fibre AltNets Have an Important Role to Play in the U.K.'s Gigabit Future, 3 October 2022.

this year the UK Government agreed contracts with providers to improve connectivity in rural areas in North Dorset, Teesdale, Northumberland and Cumbria.[6]

The UK Government also provides vouchers including through the Gigabit Broadband Voucher Scheme (GBVS) for individual eligible customers to contribute towards the installation of gigabit-capable infrastructure. In November 2022, the government announced that over 79,000 vouchers had been used to connect premises to gigabit-capable broadband under the scheme.[7] In July, it also announced an £82 million investment to help connect up to 3,000 schools in England to gigabit-capable broadband over the next three years.[8]

Almost all England residences have access to a superfast broadband connection

Superfast broadband can deliver a download speed of at least 30 Mbit/s. Superfast coverage has remained at a similar level in recent years and now totals 97% of residential properties across England and the UK in 2022. This constitutes a one percentage point increase compared to last year.

As providers focus increasingly on delivering gigabit-capable services, we expect any future increase in superfast coverage to be modest.

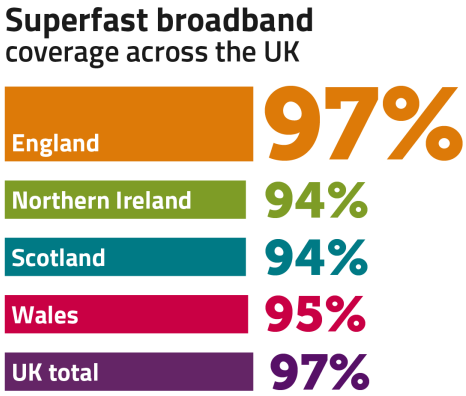


Table 2.3: Coverage of residential superfast broadband, urban/rural breakdown

	England	United Kingdom
Urban	98%	98%
Rural	88%	86%
Total	**97%**	**97%**

Source: Ofcom analysis of provider data (September 2022).

There are still a small number of local authorities that have considerably lower levels of superfast coverage. For example, the City of London has 80% superfast coverage; this reflects the relatively low number of residential properties and the prevalence of commercial leased lines in buildings, meaning there is little incentive for operators to deploy residential superfast broadband.

The next four local authorities with the lowest coverage are all concentrated in Devon: West Devon (81%), Mid Devon (82%), Torridge (83%), and South Hams (84%), all of which are particularly rural areas.

[6] UK Government, Project Gigabit contracts, 2 December 2022.
[7] UK Government, Project Gigabit Delivery Plan - autumn update 2022, 30 November 2022.
[8] UK Government, Thousands of rural primary schools to get huge broadband upgrade, 1 July 2022.

Broadband services provided by wireless networks are increasingly available across England

Some premises may be served by broadband provided over a wireless network (known as fixed wireless access, or FWA), using either the mobile network or a wireless internet service provider (WISP), usually dedicated to the provision of broadband services. This can be an effective alternative in areas where a decent broadband service provided via a fixed connection is not yet available, which we estimate affects approximately 350,000 premises in England.

Based on information from the MNOs about their coverage levels, we estimate that 96% of homes in England have access to an MNO FWA service. We also estimate that around 7% of homes have coverage from a WISP network. We therefore estimate a significant proportion of those premises that do not have access to a decent broadband service via a fixed connection could have access via an FWA network.

Low earth orbit satellite constellations are now also available offering residential and business broadband to customers in England. The technology for delivering satellite broadband has evolved significantly in recent years, and continues to do so, with an increasing number of satellite constellations now being launched.

Starlink is currently the only direct to consumer LEO satellite broadband service in the UK. These services are currently more expensive than traditional broadband services (Starlink's broadband is priced at £75 a month, plus a £460 one-off installation fee)[9] but may offer a good alternative option for customers in hard-to-reach areas who would otherwise face very high costs to install a traditional fixed broadband connection. The UK Government has recently announced a new trial, initially supported by Starlink, which aims to see the extent to which LEO satellites can deliver high-speed broadband connections to more than a dozen very hard-to-reach locations across the UK, including in North Yorkshire and the Lake District.[10]

More details about the availability of satellite broadband can be found in our UK report.

[9] Starlink.
[10] UK Government, Broadband beamed from space to isolated areas under plans to boost countryside internet connections, November 2022.

A small proportion of homes and businesses remain unable to access decent broadband

Our latest estimate is that around 40,000 residential and commercial premises in the England still do not have access to a decent broadband service via either a fixed or wireless network.

This figure has decreased from around 61,000 last year, and 119,000 in 2020. This reduction is likely due to a combination of factors, including sustained levels of private investment; the increased number of smaller fibre network and FWA providers from which we have gathered data; and the increasing roll-out of some publicly funded schemes.

Some of the 40,000 premises may be able to have a new connection built under the Broadband Universal Service Obligation (USO), which provides everybody with the right to request a broadband connection with a download speed of at least 10 Mbit/s and an upload speed of 1 Mbit/s (as well as a number of other specific technical characteristics).[11] Where an affordable service[12] with these characteristics is not available, or due to become available in the next 12 months under a publicly funded scheme, the customer is eligible for the USO if the costs of providing the connection are below £3,400 or, where the costs are above £3,400, the customer agrees to pay the excess.[13]

BT is the USP for the UK (excluding Hull), and KCOM for the Hull area. They are required to provide the USO and to report at six monthly intervals on delivery.[14] BT is responsible for delivering the USO in the UK (excluding Hull), and KCOM for the Hull Area. To date, BT has received approximately 1,850 orders, of which almost 1,500 are in England. Each order requires network build that can serve multiple premises, and therefore leads to full fibre connections being built that can serve over 7,000 homes in England that did not previously have access to decent broadband.[15]

Four of the five local authorities that have placed the largest number of USO orders are in England; they include Swindon (118), South Hams (103), Mid Devon (95), and Woking (70); the resulting build from these orders will enable 1,338 homes to access a full fibre connection.

Nevertheless, there are some premises that may not get connected under the USO. Data analysis by BT indicates that there are a number of premises where the costs to connect them are likely to exceed the £3,400 cost threshold in the USO. In these cases, customers will receive excess cost

[11] In particular these are: a contention ration of no more than 50:1; latency which is capable of allowing the end user to make and receive voice calls effectively; and the capability to allow data usage of at least 100GB a month.
[12] When the USO was launched (in March 2020), we specified in the USO conditions that an affordable service was one that costs £45 per month, rising annually by CPI. This has now risen to £48.90 per month in line with CPI.
[13] In calculating whether the costs are below or above £3,400, the universal service provider (USP) must take into account where costs could be shared by several USO eligible premises.
[14] BT Group, A Universal Service Obligation - Keeping the UK connected.

quotes that might be quite high in some cases. Those premises that are the most expensive to connect are likely to need alternative solutions.

Consumer take-up and usage of fixed broadband connections

Take-up of higher-speed packages continues to grow

For those 97% of homes in England that are able to take superfast broadband, around 73% of them do so. This is an increase from around 69% last year.

Table 2.4: Estimated superfast take-up as a percentage of premises where superfast services are available: 2021 and 2022

	2021	2022
UK	69%	73%
England	69%	73%

Source: Ofcom analysis of provider data (May 2022).

We estimate that the take-up of services using full fibre at any speed, where fibre is available, is around 25% in England. We note that this reporting may be lower than expected because, while networks are being deployed at pace, take-up is likely to lag behind coverage.

Table 2.5: Estimated full fibre take-up as a percentage of premises where full fibre services are available: 2021 and 2022

	2021	2022
UK	24%	25%
England	25%	25%

Source: Ofcom analysis of provider data (May 2022).

The migration of the UK's telephony network to digital is gradually progressing

The UK's traditional landline services are undergoing a substantial transition as network providers retire their legacy systems (referred to as the Public Switched Telephone Network, or 'PSTN') and replace them with modern systems.

BT and Openreach aim to retire BT's PSTN network and the Openreach wholesale services that deliver PSTN by the end of 2025, with Virgin Media working on a broadly similar timescale. To make sure landline services continue in the future, providers currently using legacy telephony networks will deliver landline calls over a digital technology called Voice over Broadband (VoBB), which uses Voice over Internet Protocol (VoIP) over a broadband connection.

For more detail on the progress of this transition across the UK, refer to Section 2 of our UK-wide report.

The UK's communications networks were severely impacted by the storms last winter

Towards the end of 2021 and in early 2022 the UK was hit by several severe storms that had a significant impact on communications services, particularly in Northern England. This was primarily because of lengthy power outages which caused communications services to become unavailable in impacted areas; for several days in some cases.

Storm Arwen caused complete power outages for almost 1 million customers - 40,000 customers were without supply for more than three days, and nearly 4,000 customers were off supply for over a week.[16] In northern England, 1,000 people experienced power outages beyond 6 December (upwards of 10 days in total).[17]

Storm Eunice caused a record power outage over a 24-hour period, with over 1.4m homes affected, largely in the southwest of England and south Wales where some households remained without power for several days.[18] London was placed under a red weather warning for the first time during this period. During Storm Dudley, thousands of people were left without power in northern England, Cumbria, North Yorkshire and Lancashire.[19]

These storms had a significant impact on communications services. This was primarily because of lengthy power outages which caused communication services to become unavailable in impacted areas, for several days in some cases. For example, during storm Arwen, thousands of mobile cell sites were disrupted by power outages, and this affected all four MNOs. On the fixed networks, the largest impact was due to customers losing power to equipment in their homes (e.g. broadband routers). In those areas where mobile cell sites and customers' fixed line services were affected simultaneously the impact was particularly severe, with some customers left without any means to communicate, including for calls to the emergency services.

The recovery process following the storms, particularly after storm Arwen, took longer than expected due to the volume and scale of the power outages. This highlighted the need for better co-ordination and information sharing between the communication and energy sectors. Improvements have already been made to these processes, which helped reduce recovery times during the later storms. We are continuing to work with industry and government to act on lessons learnt[20] during the storms and help ensure improved resilience of the networks in future.

Further information about our network resilience and security work, including new, strengthened security duties for public telecommunications operators under the new Telecommunications (Security) Act 2021 and network incidents reported to Ofcom during this year, can be found in the Connected Nations UK 2022 Report.

[16] Ofgem, Final report on the review into the networks' response to Storm Arwen, June 2022.
[17] EC-RRG, Post Incident Report – 2021/2022 Severe Storms, May 2022.
[18] BBC, Storm Franklin hits UK with flooding and high winds - BBC News, February 2022.
[19] iNews, Storm Dudley: Thousands suffer power cuts in northern England with Storm Eunice to bring snow and 100mph winds, February 2022.
[20] Electronic Communications Resilience and Response Group, 2021/22 Severe Storms Post-Incident Report, May 2022.

Mobile services

Introduction

Mobile services continue to play an ever more central role in people's lives, from on-the-go calls and internet access to wireless connectivity for smart meters. This chapter will look at the availability of mobile coverage, outside and inside premises across England; the extent of 5G rollout in the last year, and investment in and use of mobile services.

This year, for the first time, we are reporting on the 5G coverage of individual Mobile Network Operators (MNOs) across the UK, and in each of the UK nations. Our approach to reporting on 5G coverage is set out in more detail in our Connected Nations UK Report. For an explanation of how we calculate these coverage figures using data supplied to us by the MNOs, see the Methodology annex of our UK report.

Key highlights

- **5G rollout has continued at pace**, with the level of coverage provided outside of premises in England by at least one Mobile Network Operator (MNO) rising from 51-63% in 2021 (across a range covering Very High and High Confidence) to 70-81% in 2022.
- **The wide availability of 4G coverage continues to underpin consumer experience.** The four MNOs each estimate they provide 4G outdoor coverage to 99%+ of premises in England. Their coverage of English landmass ranges from around 92% to 94%.

Figure 3.1: Summary of mobile coverage across the UK and the UK Nations[21]

	Northern Ireland	Scotland	Wales	England	UK
5G outside premises (MNO range)	14-26%	29-51%	10-46%	42-61%	39-58%
4G outside premises (MNO range)	98-99%	97-99%	96-99%	99%+	99%+
4G geographic (MNO range)	88-92%	57-75%	73-85%	92-94%	80-87%
4G total not spots	3%	17%	10%	2%	8%
Voice & text total not spots	>1%	10%	4%	>1%	4%

[21] The MNO ranges in this figure refer to span between the MNO with the least coverage and that with the most coverage on a given measure. For 5G outside premises the MNO range is based on our 'High Confidence' measure, rather than the 'Very High Confidence' measure which we also use in this report.

Source: Ofcom analysis of operator data (September 2022).

Outdoor, indoor, and geographic mobile coverage

Coverage outside premises in England

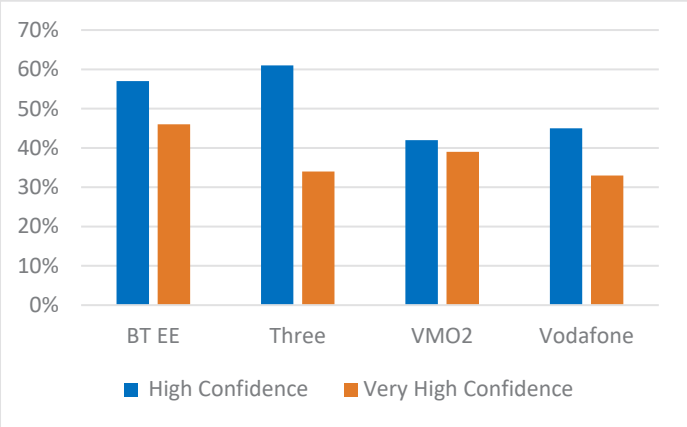
Outdoor premises coverage refers to the predicted availability of mobile coverage in the vicinity of premises. Outdoor 5G premises coverage in England is the highest of the four nations of the UK.

The mobile coverage data in this report is based on predictions provided to us by the MNOs. To evaluate the accuracy of the information provided to us, we undertake regular testing to ensure the predictions provided are suitable for national and regional reporting.

In England, we estimate that the percentage of premises that can now receive 5G outdoor coverage from at least one MNO ranges from 70% at the Very High Confidence level to 81% at the High Confidence level. This constitutes a 19 and 18 percentage point increase respectively, demonstrating the pace of rollout over the last year. These figures broadly mirror the UK-wide average (67% Very High Confidence, 78% High Confidence).

This coverage increase has been driven by additional 5G deployments, with over 12,000 5G deployments across the UK, up from the 6,500 reported in 2021.[22] Of these, 86% of 5G masts are located in England. Consequently, 5G coverage from individual MNOs is broadly in line with, or slightly above the UK coverage levels reported in our main report. The range of individual MNOs 5G coverage outside of premises - from the MNO with the least coverage to that with the most - is 42-61% for England (all based on our High Confidence level), with more detail shown in Figure 3.2.

Figure 3.2: 5G coverage outside of England premises by MNO, ranging from the High to Very High Confidence level



Source: Ofcom analysis of MNO predictions (September 2022)

[22] It should be noted that these deployments do not necessarily equate to a total of individual sites across all MNOs. For example, 2 MNOs may be offering coverage from the same site.

Nearly all premises in England are predicted to have outdoor 4G coverage from at least one provider, and 98% are predicted to receive service from all four operators. There continues to be a difference between rural and urban areas, as only 90% of rural areas in England were able to receive outdoor coverage from all four MNOs. This is a one percentage point increase over the last year.

Table 3.3: Outdoor 4G coverage from all four MNOs, urban/rural breakdown

	2021	2022
England	**98%**	**98%**
Urban	99%	99+%
Rural	89%	90%
United Kingdom	**98%**	**98%**
Urban	99%	99%
Rural	87%	88%

Source: Ofcom analysis of MNO predictions (September 2022).

As can be seen, even as 5G rollout advances at pace, very widespread outdoor 4G coverage continues to underpin consumer experience for the time being, though urban and rural disparities remain.

Indoor coverage

Indoor coverage refers to the predicted availability of mobile coverage inside a building. This assumes that there is a signal strength loss of around 10dB inside the building due to attenuation.

We continue to see a significant difference between rural and urban areas for indoor coverage, with one to two percentage point increases observed across all metrics in both rural and urban areas over the past year. The extent of indoor 4G coverage in rural areas of England now ranges between 71-82% by operator, compared to 96-98% of urban premises. 96% of rural premises can receive indoor 4G coverage from at least one MNO, although only 49% can receive it from all four. Indoor voice coverage tends to be higher, ranging from 79-99% across MNOs for rural premises (compared to 99% of urban premises). These figures also constitute one or two percentage point increases on the previous year.

Where indoor coverage is poor or unreliable, there are other solutions which can improve user experience. These include broadband-based calls on services such as WhatsApp, femtocells[23] and WiFi calling.[24] All MNOs offer WiFi calling to their customers - although not all mobile phones are configured to support this feature. It should also be highlighted that there are a small number of premises in England that do not have a decent broadband connection, fixed wireless access, or good

[23] A femtosmall is a small mobile phone base station that connects to the parent network via a fixed internet connection.
[24] WiFi calling is the ability to make and receive a call and text/SMS over a WiFi network.

indoor 4G coverage (of at least 2 Mbit/s). We estimate that this figure currently stands at 13,000 homes in England.

Geographic coverage

In this section, we focus on geographic coverage of the landmass of England where there is a sufficiently strong signal to provide a good 4G service (and in some cases 5G) outside.

Given the relatively early stages of 5G rollout across the geography of the UK, 5G geographic coverage is, at present, significantly below of the levels of 4G. We estimate coverage from at least one operator is available to 17-25% of the UK landmass (ranging from the Very High Confidence to High Confidence level). However, it is notable that 5G geographic coverage in England is comparatively more advanced, with landmass coverage from at least one operator reaching 26% at the Very High Confidence level and 37% at the High Confidence. This likely reflects the geographic composition of the UK, as 5G rollout has initially been concentrated in more densely populated areas.

Similarly, to outdoor premises coverage, 4G geographic coverage has remained broadly stable over the past year, although small increases can be observed on some measures. In part, this is because 4G coverage is now widely available across most of England, particularly in urban areas, although coverage levels are lower in more rural areas and minor increases have been observed here in the last year.

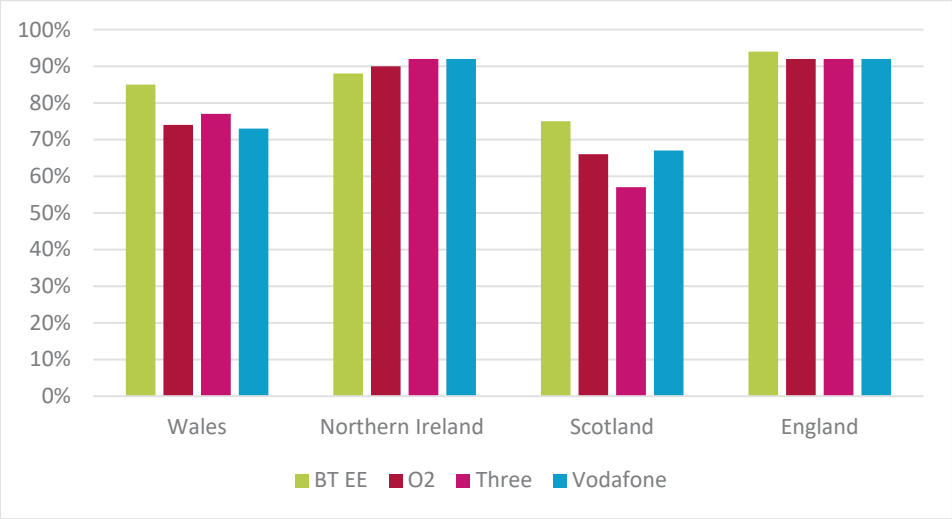
Table 3.4: Yearly increase in 4G geographic coverage, from at least one MNO and from all MNOs

	From at least one MNO		From all MNOs	
	2021	2022	2021	2022
England	**98%**	**98%**	**84%**	**85%**
Urban	99+%	99+%	98%	98%
Rural	97%	97%	82%	83%
United Kingdom	**92%**	**92%**	**69%**	**70%**
Urban	99%+	99+%+	97%	97%
Rural	91%	91%	66%	67%

Source: Ofcom analysis of operator data (September 2022).

England's geographic 4G coverage is higher compared to geographic 4G coverage in the other UK nations. As of September 2022, MNOs provided geographic coverage ranging from 92-94% in England, which is higher than in Northern Ireland (88-92%); Scotland (57-75%); and Wales (73-85%).

Figure 3.5: Differences in 4G geographic coverage in Wales, Northern Ireland, Scotland and England



Source: Ofcom analysis of MNO predictions (September 2022).

Coverage on roads

Good coverage along the road network is important to assist with vehicle communications, navigation, infotainment, and safety aids.

4G coverage in England is predicted to be present in vehicles from all MNOs across 74% of major roads (motorways and A roads), with individual MNO coverage ranging from 88-91% for this metric.

In-vehicle mobile voice services are predicted to be available from all MNOs for 89% of major roads in England. This falls to 84% when accounting for just A or B roads in England.

Public policy interventions, including the Shared Rural Network, continue to progress

The Shared Rural Network (SRN) was agreed between the UK Government and the MNOs in March 2020. Work has continued throughout 2022 on a range of fronts towards the delivery of the SRN, with operators' licence obligations to achieve good quality coverage across 88% of the landmass due in June 2024, and 90% of the landmass to be covered by January 2027.

The UK Government also expects that as a result of this activity there will be good 4G coverage available across 95% of the UK landmass by the end of 2025 (based on the 'At least one MNO' measure). Coverage in England is expected to rise to 98% coverage from at least one operator and 90% from all four operators.[25] More detail on the progress of the SRN across the UK in the last year can be found in our UK Connected Nations report.

Mobile traffic

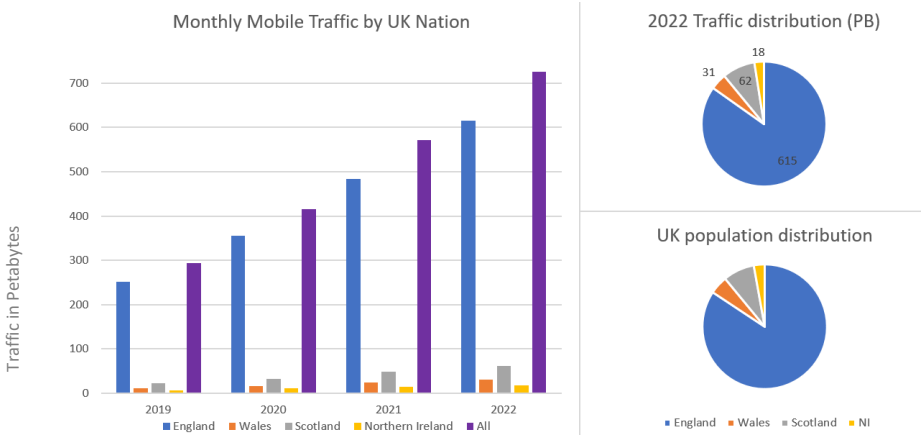
Mobile traffic continues to grow significantly year-on-year, with 5G making only a modest impact on the share carried by 4G.

Monthly data consumption in England has increased 27% year on year, in line with the UK-wide measure. 4G traffic continues to dominate, representing 87% of all traffic in England (also in line with UK trends). 5G traffic has increased substantially, up from 16 petabytes to 58 petabytes in England over the last year.[26] However, it continues to play a small role in absolute terms, with total data consumption in England across all technologies around 615 petabytes.

Data consumption remains higher in urban areas compared to rural areas. This largely reflects population distribution, as opposed to any significant difference in the data consumption of a typical user in rural areas.

Traffic in the UK continues to be distributed broadly in line with national populations.

Figure 3.6: Total monthly mobile data traffic by UK Nation (2019-2022)



Source: Ofcom analysis of operator data (May 2019, June 2020, May 2021, May 2022).

[25] DCMS, Shared Rural Network, March 2020.
[26] 1 PB is equivalent to 1,000,000 GB.