
Connected Nations Update

Spring 2019

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1. Overview

This is an interim update to our last Connected Nations report (December 2018), based on coverage and service availability information received from communications providers as of January 2019. Reporting on these metrics is a key part of Ofcom's role in ensuring that UK consumers and businesses have access to decent internet services and can make use of their mobile phones wherever they need to. This update tracks communications providers' progress in increasing the availability of communications services, and how the UK's networks are responding to the changing needs of people and businesses.

Key results from this update

- While more properties can now access superfast broadband (as defined as download speeds of 30Mbit/s and above), the proportion of the UK with access to superfast connections remains broadly stable, rising by one percentage point (300k premises) to 95% of UK premises.
- Ultrafast broadband (>300Mbit/s)¹ is now available to just over half of UK properties, with the percentage of properties covered having increased from 49% to 53%.
- Over 300,000 more premises can access full-fibre broadband in the four months since the annual Connected Nations report increasing availability by one percentage point to 7%.
- 4G coverage across all nations (both by premises and geography) has increased by a percentage point or two.
- The number of properties that we expect to be eligible for broadband USO has also decreased but remains at just over 2% of all premises.
- The next Connected Nations Update will be published in late summer 2019 and will be based on coverage data captured in May 2019.

Ofcom's Connected Nations reports are part of our work to monitor how well investment in broadband and mobile networks is meeting the increasing communications demands of society and the economy. We track progress in the availability of decent, superfast and ultrafast fixed broadband services, as well as 4G mobile services.

While the availability of broadband and mobile services continues to grow, some areas are still not getting the connections they need. Delivering *Better Broadband and Mobile – Wherever You Are* is a strategic priority for Ofcom and this report highlights some of our work on this vital issue.

¹ Ultrafast can be delivered through a variety of technologies such as G.Fast, DOCSIS (Cable) and Full fibre.

For example, we are implementing the new broadband Universal Service Obligation (USO)², which will improve broadband availability by giving homes and businesses the legal right to request a decent and affordable broadband connection³. As the designated providers of the USO are likely to use more advanced technologies to meet demands for faster services, we expect USO connections to be able to deliver superfast and ultrafast services. We are also building on our existing measures to support further investment in faster, more reliable “full fibre” networks⁴. This includes plans to extend our rules on allowing competing providers to access Openreach’s duct and poles, so they can build their own networks more cheaply and easily.

In mobile, we are preparing to auction more airwaves next year, which will bring improved coverage for rural areas and help pave the way for 5G. We are working to enable more efficient use of spectrum and encouraging use of innovative technology solutions. These measures, alongside vital work from Government and industry, will have a key role in improving coverage in the UK and its nations.

The data from this update has also been used to refresh our coverage checker site and app <https://checker.ofcom.org.uk/broadband-coverage>. This enables people to check service availability and coverage where they live, work and travel. The dates in the figures and tables in this report refer to when data was captured.

² See <https://www.ofcom.org.uk/about-ofcom/latest/features-and-news/ofcom-proposes-broadband-universal-service-providers>

³ Subject to eligibility criteria set by Government in the USO legislation.

⁴ Consultation: Promoting competition and investment in fibre <https://www.ofcom.org.uk/consultations-and-statements/category-1/promoting-investment-competition-fibre-networks-approach-remedies>

2. Main Findings

Fixed Broadband

Full-fibre broadband coverage in the UK has risen since the December 2018 Connected Nations report to around 7% of premises, an increase of over 300,000 premises (1 percentage point). This increase mainly reflects the commercial roll-out of FTTP by BT, Virgin Media and KCOM and a range of other providers including Hyperoptic, CityFibre and Gigaclear. In some areas, BT and Gigaclear are also using residual BDUK⁵ scheme funding from “clawback”⁶ arrangements which make use of previous excess subsidies⁶.

In July 2018 the Future Telecoms Infrastructure Review (FTIR) set out the UK Government’s ambition for 15 million premises to be connected to full-fibre services by 2025 and nationwide coverage by 2033. We are proposing to take a range of regulatory and policy actions which will help support this ambition:

- Allowing competing companies to use Openreach’s ducts and poles to build networks for both residential and business connections. Currently, duct and pole access is restricted to networks focusing primarily on the residential market, but we are proposing that the restriction now be removed to allow it to also be used for business customers.
- A flexible approach to regulation by deregulating in areas where there are competing fibre providers.
- Increasing the periods between major reviews of the telecoms market from 3 to 5 years.

We are also supporting the UK and devolved governments’ work to overcome barriers to network deployment.

We expect availability of full fibre to continue to grow over the coming years, as these measures come into force and companies build on their deployments so far.

Ultrafast broadband is now available to the majority of UK properties for the first time. Ultrafast broadband in the UK has increased from 49% to 53%, a reflection of both continued deployment of cable broadband as well as the increasing pace of full fibre deployments across the UK by a number of providers, as noted above.

The number of premises that cannot get decent broadband continues to fall, and is currently around 619,000 premises, not including the impact of Fixed Wireless Access.⁷ Decent broadband is

⁵ Broadband Delivery UK - see <https://www.gov.uk/guidance/broadband-delivery-uk>

⁶ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/378713/State_aid_-_Guidance_-_Clawback.pdf

⁷ In the December 2018 Connected Nations report, we included an estimate of coverage from FWA providers using licence exempt or light licensed spectrum. We estimated that, based on the coverage data provided by the 12 providers who responded to our request, that 903,500 unique homes and businesses have a medium or high chance of being able to receive a decent broadband service from an alternate FWA provider. Of these, 41,500 premises (0.15% of premises)

defined as a download speed of at least 10Mbit/s and an upload speed of at least 1Mbit/s. People who do not have access to a decent service will be able to request one under the USO. In December 2018 we proposed that BT and KCOM should be designated as the Universal Service Providers.⁸ This consultation closed in February and we plan to publish our decision in early summer.

The number of UK premises able to receive superfast broadband has increased by over 300,000 premises, (around one percentage point), bringing the total to around 95%⁹. Superfast broadband availability has increased significantly over the last few years. But as the original BDUK-funded intervention schemes end, increases in rural areas yet to get access to superfast are likely to continue slow down. However, new public sector interventions, such as the Scottish Government's R100¹⁰ project, are expected to reverse this trend once underway.

These public sector interventions are expected across the UK. In its 2018 budget, the UK Government allocated £200m to pilot innovative approaches to deploying fibre in rural areas. As well as the Scottish Government's R100 programme, the Welsh Government has announced a further £13m to connect 16,000 premises in North Wales, South West Wales and the Valleys, with the majority served by full fibre connections¹¹. In Northern Ireland, £150m has been earmarked for Project Stratum, to reduce the number of premises unable to access superfast broadband.

currently have no other means of accessing a decent fixed broadband service. The coverage from these networks is not included in the coverage data presented in this chapter but we will continue to review the impact of FWA services from all relevant suppliers on USO eligibility.

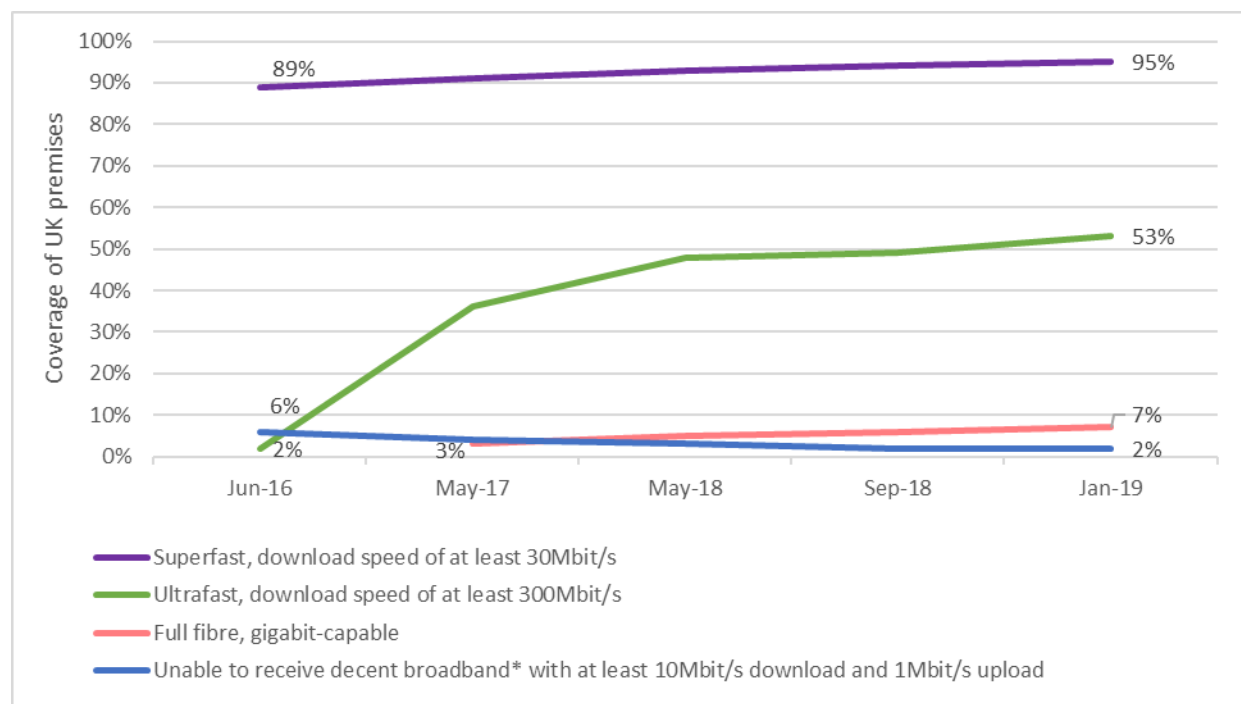
⁸ <https://www.ofcom.org.uk/consultations-and-statements/category-1/delivering-broadband-universal-service>

⁹ The figure presented here should not be confused with the UK Government's March 2018 target of 95% coverage of premises for 24Mbit/s broadband.

¹¹ <https://www.gov.scot/publications/digital-scotland-reaching-100-programme/>

¹¹ <https://www.gov.scot/publications/digital-scotland-reaching-100-programme/>

Figure 1: Coverage of fixed broadband services in the UK since June 2016



Source: Ofcom analysis of operator data, June 2016 – Jan 2019

Mobile services

We use measures to define mobile coverage that reflect the actual experience of mobile users. We define mobile coverage in a way that is likely to deliver a decent experience to smartphone users¹²:

- **Telephone calls:** Nearly all 90-second telephone calls should be completed without interruption.
- **4G services:** Enhanced voice and data services where nearly all connections should deliver a speed of at least 2Mbit/s and a reliable voice connection. This is fast enough to browse the internet and watch glitch-free mobile video.

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 time¹³. We continue to carry out our own detailed testing to check mobile operators are providing the signal levels they predicted.

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 ways:

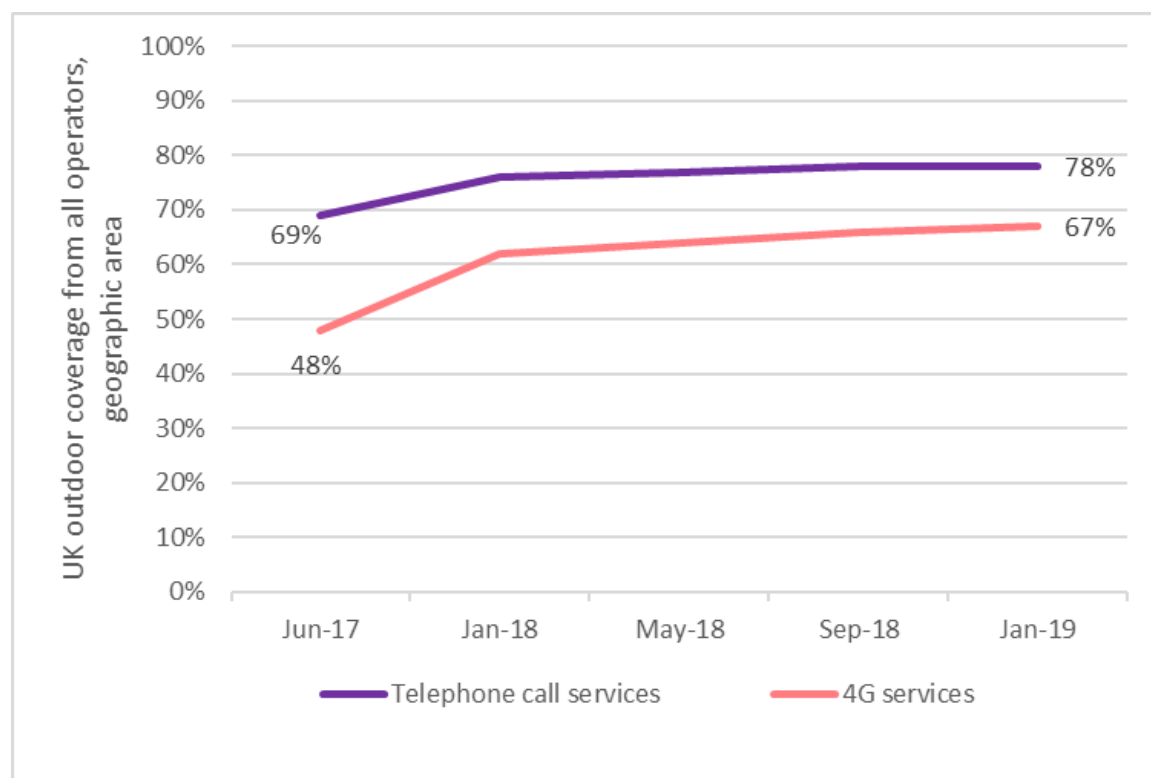
¹² We also report on the availability of lower speed earlier generation 3G data services. These are reported in combination with lower speed 4G data services (based on a lower target signal threshold) where they are likely to provide a connection speed of at least 200kb/s for nearly all connections. These connections are likely to be sufficient to support lower speed data services such as web browsing as opposed to higher resolution video.

¹³ Crowdsourcing is the use of data from a large number of people and, in this particular case, their mobile phones. This data is automatically collected and made available for analysis.

- **Outdoor:** The proportion 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 proportion 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.
- **Roads:** The proportion of the network of A and B roads on which someone can use their phone while inside a vehicle.

Seventy-eight per cent of the UK’s geographic area is now covered by all four operators for calls, up eight percentage points from June 2017¹⁴. Conversely, 5% of the UK’s geographic area is served by no operators (not-spot). Outdoor access to decent quality data services through 4G has also increased from 48% to 67% over the same period¹⁵. However, coverage varies between operators. Not-spots in total have decreased to 8% of the UK from 21% in June 2017.

Figure 2: Outdoor area coverage of mobile services in the UK from all operators since June 2017



Source: Ofcom analysis of operator data, June 2017 – Jan 2019 (restated at September 2018)

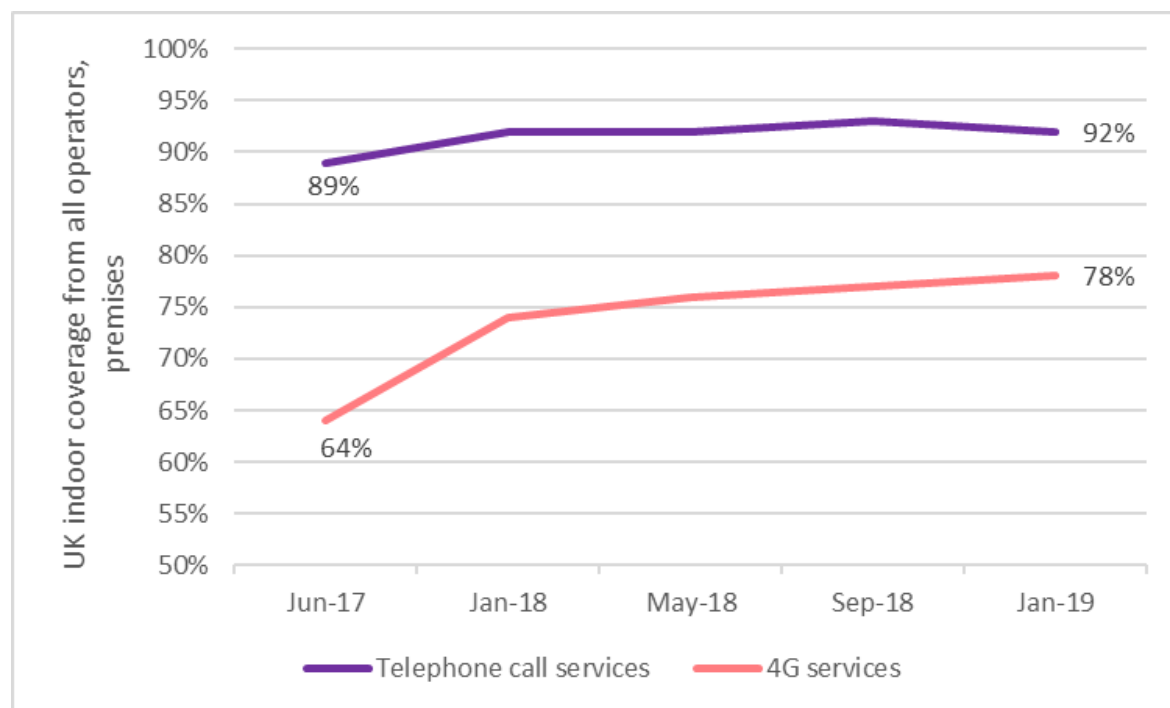
Indoor coverage at UK premises for calls passes 90%. 92% of UK premises have indoor mobile call coverage from all four networks. This figure is relatively flat over the past year (within 1 percentage points) but up from 89% in June 2017. It should be noted that operators are currently transitioning

¹⁴ These figures include voice calls over 4G LTE services.

¹⁵ Outdoor access to data services through 3G and 4G (where nearly all connections have access to a connection speed of at least 200kbit/s) has similarly increased. 84% of the UK’s geographic area now has a mobile data service from all four operators, up from 69% in June 2017.

from 3G to 4G, and “re-using” radio spectrum frequencies for the newer technology. This can cause relatively marginal changes in overall service coverage, because 4G networks are particularly optimised for data rather than calls. These changes coupled with our normal practice of rounding of figures to the nearest percentage point can result in reductions of reported coverage in some areas for some four month periods.

Figure 3: Indoor premises coverage of mobile services in the UK from all operators since June 2017



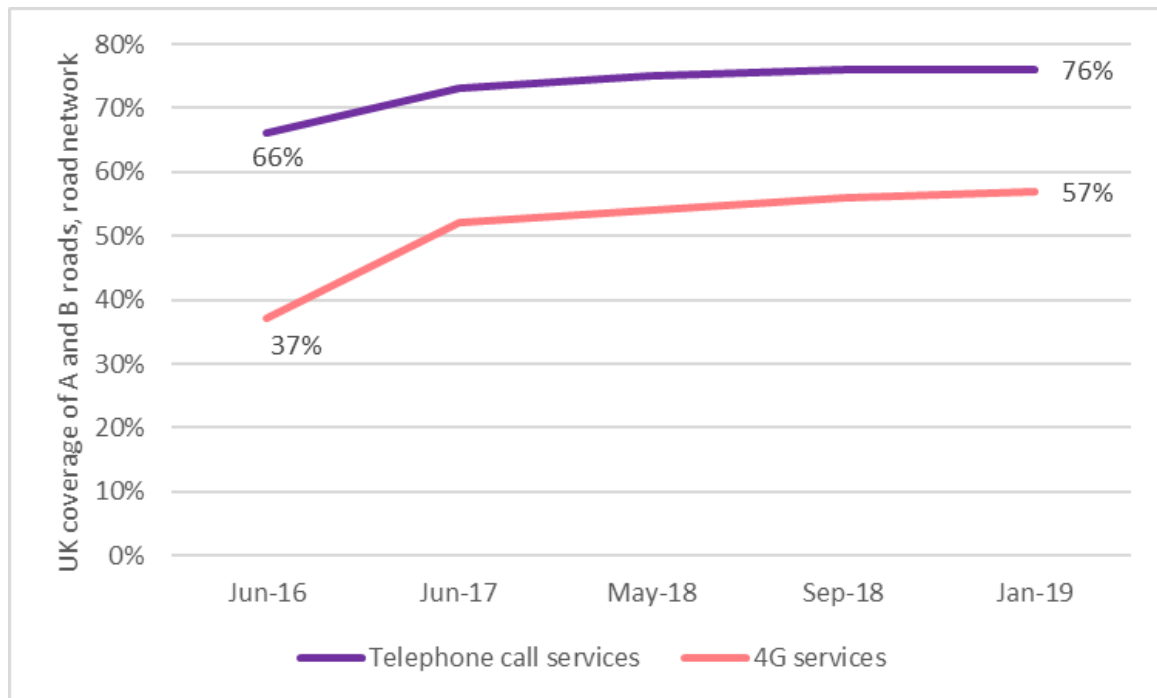
Source: Ofcom analysis of operator data, June 2017 – Jan 2019 (restated at September 2018)

Seventy-eight per cent of UK premises can now receive a decent 4G signal from all operators, up 14 percentage points from June 2017¹⁶. This varies significantly by nation – in Wales indoor premise coverage from all four operators went up by 4 pp over four months to 73% in January, in contrast to only 59% of premises Northern Ireland. England and Scotland stand at 80% and 76%.

Three quarters of UK roads have telephone call coverage from all operators. Seventy-six per cent of the UK’s A and B roads are now covered by all operators for telephone calls, an increase of 10 percentage points from June 2017. On the remaining 24% of roads, the ability to make or receive a call will depend on which networks are available in different locations. In the event of a road accident or incident, emergency calls can be made on any available mobile network due to network sharing agreements. Around 2% of the UK’s A and B roads have no coverage for calls from any operator, down from 5% in June 2017.

¹⁶ Indoor access to data services through 3G and 4G (where nearly all connections have access to a connection speed of at least 200kbit/s) from all operators has similarly increased, 98% of UK premises now have a mobile data service from all operators, up from 94% in June 2017.

Figure 4: A and B road coverage of mobile services in the UK from all operators since June 2017



Source: Ofcom analysis of operator data, June 2017 – Jan2019 (restated at September 2018)

The picture varies across operators and across the nations. Coverage in individual nations can differ from the UK as a whole, particularly those with larger rural areas that have sparse populations, which can affect where companies roll-out coverage to.

3. Dashboards

In this section, figures incorporate all factors and corrections described earlier in this report. Figures in parentheses are those reported in previous Connected Nations reports and updates.

Fixed broadband and mobile coverage - UK

| Fixed broadband services | UK premises coverage as of: | | |
|---|-----------------------------|-----------|----------|
| | Jan 2019 | Sept 2018 | May 2018 |
| Access to a download speed of 10Mbit/s or higher | 98% | 98% | 97% |
| Access to a download speed of 30Mbit/s or higher (superfast) | 95% | 94% | 93% |
| Access to a download speed of 300Mbit/s or higher (ultrafast) | 53% | 49% | 48% |
| Access to full fibre services ¹⁷ | 7% | 6% | 5% |
| Unable to access a download speed of 10Mbit/s and an upload speed of 1Mbit/s (Universal Service Obligation minimum) ¹⁸ | 2% | 2% | 3% |

¹⁷ We currently consider a property covered by full fibre services only if they can be connected within 14 days.

¹⁸ This may exclude broadband services available from some smaller providers.

| Mobile services | UK coverage as of: | | |
|---|--------------------|-----------|----------|
| | Jan 2019 | Sept 2018 | May 2018 |
| 4G services¹⁹ | | | |
| Premises (indoor) covered by all operators ²⁰ | 78% | 77% | 76% |
| Geographic area covered by all operators | 67% | 66% | 64% |
| Geographic area <i>not</i> covered by any operator | 8% | 9% | 11% |
| Coverage of A and B roads by all operators | 57% | 56% | 54% |
| A and B roads <i>not</i> covered by any operator | 4% | 5% | 6% |
| Telephone call services (2G, 3G and 4G)²¹ | | | |
| Premises (indoor) covered by all operators | 92% | 93% | 92% |
| Geographic area covered by all operators | 78% | 78% | 77% |
| Geographic area <i>not</i> covered by any operator | 5% | 5% | 6% |
| Coverage of A and B roads by all operators | 76% | 76% | 75% |
| A and B roads <i>not</i> covered by any operator | 2% | 2% | 3% |

¹⁹ Thresholds for 4G services: 4G (-105 dBm). This relates to nearly all connections being capable of delivering a connection speed of at least 2Mbit/s and reliable voice calls.

²⁰ The indoor coverage figures in this report take into account the effects of walls, doors, roofs etc. which will reduce or block mobile signals as they pass through. We have assumed that all buildings block mobile signals in the same way (by reducing signal strength by 10dB). In reality, some buildings will block signals more than others and we will reflect this in subsequent updates.

²¹ Thresholds for voice and text are: 2G (-81 dBm), 3G (-100 dBm), 4G (-105 dBm).

Fixed broadband and mobile coverage - England

| Fixed broadband services | England premises coverage as of: | | |
|---|----------------------------------|-----------|----------|
| | Jan 2019 | Sept 2018 | May 2018 |
| Access to a download speed of 10Mbit/s or higher | 99% | 98% | 98% |
| Access to a download speed of 30Mbit/s or higher (superfast) | 95% | 94% | 94% |
| Access to a download speed of 300Mbit/s or higher (ultrafast) | 56% | 52% | 50% |
| Access to full fibre services ²² | 7% | 6% | 5% |
| Unable to access a download speed of 10Mbit/s and an upload speed of 1Mbit/s (Universal Service Obligation minimum) ²³ | 2% | 2% | 3% |

²² We currently consider a property covered by full fibre services only if they can be connected within 14 days.

²³ This may exclude broadband services available from some smaller providers.

| Mobile services | England coverage as of: | | |
|---|-------------------------|-----------|----------|
| | Jan 2019 | Sept 2018 | May 2018 |
| 4G services²⁴ | | | |
| Premises (indoor) covered by all operators ²⁵ | 80% | 78% | 77% |
| Geographic area covered by all operators | 83% | 82% | 81% |
| Geographic area <i>not</i> covered by any operator | 2% | 2% | 3% |
| Coverage of A and B roads by all operators | 64% | 63% | 61% |
| A and B roads <i>not</i> covered by any operator | 2% | 2% | 3% |
| Telephone call services (2G, 3G and 4G)²⁶ | | | |
| Premises (indoor) covered by all operators | 93% | 93% | 93% |
| Geographic area covered by all operators | 91% | 91% | 91% |
| Geographic area <i>not</i> covered by any operator | 1% | 1% | 1% |
| Coverage of A and B roads by all operators | 83% | 83% | 82% |
| A and B roads <i>not</i> covered by any operator | 1% | 1% | 1% |

²⁴ Thresholds for 4G services: 4G (-105 dBm). This relates to nearly all connections being capable of delivering a connection speed of at least 2Mbit/s.

²⁵ The indoor coverage figures in this report take into account the effects of walls, doors, roofs etc. which will reduce or block mobile signals as they pass through. We have assumed that all buildings block mobile signals in the same way (by reducing signal strength by 10dB). In reality, some buildings will block signals more than others and we will reflect this in subsequent updates.

²⁶ Thresholds for voice and text are: 2G (-81 dBm), 3G (-100 dBm), 4G (-105 dBm).

Fixed broadband and mobile coverage – Northern Ireland

| Fixed broadband services | NI premises coverage as of | | |
|---|----------------------------|-----------|----------|
| | Jan 2019 | Sept 2018 | May 2018 |
| Access to a download speed of 10Mbit/s or higher | 95% | 95% | 94% |
| Access to a download speed of 30Mbit/s or higher (superfast) | 90% | 89% | 88% |
| Access to a download speed of 300Mbit/s or higher (ultrafast) | 45% | 38% | 38% |
| Access to full fibre services | 16% | 12% | 8% |
| Unable to access a download speed of 10Mbit/s and an upload speed of 1Mbit/s (Universal Service Obligation minimum) ²⁷ | 5% | 5% | 6% |

²⁷ This may exclude broadband services available from some smaller providers.

| Mobile services | NI coverage as of: | | |
|---|--------------------|-----------|----------|
| | Jan 2019 | Sept 2018 | May 2018 |
| 4G services²⁸ | | | |
| Premises (indoor) covered by all operators | 59% | 57% | 56% |
| Geographic area covered by all operators | 79% | 79% | 76% |
| Geographic area <i>not</i> covered by any operator | 2% | 2% | 3% |
| Coverage of A and B roads by all operators | 49% | 48% | 47% |
| A and B roads <i>not</i> covered by any operator | 4% | 6% | 6% |
| Telephone call services (2G, 3G and 4G)²⁹ | | | |
| Premises (indoor) covered by all operators | 79% | 80% | 80% |
| Geographic area covered by all operators | 87% | 88% | 87% |
| Geographic area <i>not</i> covered by any operator | 1% | 1% | 1% |
| Coverage of A and B roads by all operators | 66% | 67% | 67% |
| A and B roads <i>not</i> covered by any operator | 3% | 3% | 3% |

²⁸ Thresholds for 4G services: 4G (-105 dBm). This relates to nearly all connections being capable of delivering a connection speed of at least 2Mbit/s.

²⁹ Thresholds for voice and text are: 2G (-81 dBm), 3G (-100 dBm), 4G (-105 dBm).

Fixed broadband and mobile coverage - Scotland

| Fixed broadband services | Scotland premises coverage as of: | | |
|---|-----------------------------------|-----------|----------|
| | Jan 2019 | Sept 2018 | May 2018 |
| Access to a download speed of 10Mbit/s or higher | 97% | 96% | 95% |
| Access to a download speed of 30Mbit/s or higher (superfast) | 93% | 92% | 91% |
| Access to a download speed of 300Mbit/s or higher (ultrafast) | 45% | 44% | 43% |
| Access to full fibre services | 5% | 4% | 3% |
| Unable to access a download speed of 10Mbit/s and an upload speed of 1Mbit/s (Universal Service Obligation minimum) ³⁰ | 4% | 4% | 5% |

³⁰ This may exclude broadband services available from some smaller providers.

| Mobile services | Scotland coverage as of: | | |
|---|--------------------------|-----------|----------|
| | Jan 2019 | Sept 2018 | May 2018 |
| 4G services³¹ | | | |
| Premises (indoor) covered by all operators | 76% | 75% | 74% |
| Geographic area covered by all operators | 41% | 39% | 36% |
| Geographic area <i>not</i> covered by any operator | 18% | 22% | 25% |
| Coverage of A and B roads by all operators | 43% | 41% | 39% |
| A and B roads <i>not</i> covered by any operator | 9% | 11% | 15% |
| Telephone call services (2G, 3G and 4G)³² | | | |
| Premises (indoor) covered by all operators | 91% | 91% | 91% |
| Geographic area covered by all operators | 56% | 54% | 52% |
| Geographic area <i>not</i> covered by any operator | 13% | 13% | 16% |
| Coverage of A and B roads by all operators | 61% | 60% | 57% |
| A and B roads <i>not</i> covered by any operator | 5% | 6% | 8% |

³¹ Thresholds for 4G services: 4G (-105 dBm). This relates to nearly all connections being capable of delivering a connection speed of at least 2Mbit/s.

³² Thresholds for voice and text are: 2G (-81 dBm), 3G (-100 dBm), 4G (-105 dBm).

Fixed broadband and mobile coverage - Wales

| Fixed broadband services | Wales premises coverage as of: | | |
|---|--------------------------------|-----------|----------|
| | Jan 2019 | Sept 2018 | May 2018 |
| Access to a download speed of 10Mbit/s or higher | 97% | 97% | 96% |
| Access to a download speed of 30Mbit/s or higher (superfast) | 93% | 93% | 92% |
| Access to a download speed of 300Mbit/s or higher (ultrafast) | 30% | 29% | 27% |
| Access to full fibre services | 7% | 7% | 5% |
| Unable to access a download speed of 10Mbit/s and an upload speed of 1Mbit/s (Universal Service Obligation minimum) ³³ | 3% | 3% | 4% |

³³ This may exclude broadband services available from some smaller providers.

| Mobile services | Wales coverage as of: | | |
|--|-----------------------|-----------|----------|
| | Jan 2019 | Sept 2018 | May 2018 |
| 4G services | | | |
| Premises (indoor) covered by all operators | 73% | 69% | 67% |
| Geographic area covered by all operators | 60% | 57% | 56% |
| Geographic area <i>not</i> covered by any operator | 8% | 10% | 11% |
| Coverage of A and B roads by all operators | 47% | 44% | 43% |
| A and B roads <i>not</i> covered by any operator | 8% | 9% | 10% |
| Telephone call services (2G, 3G and 4G) ³⁴ | | | |
| Premises (indoor) covered by all operators | 88% | 88% | 87% |
| Geographic area covered by all operators | 76% | 75% | 75% |
| Geographic area <i>not</i> covered by any operator | 5% | 5% | 5% |
| Coverage of A and B roads by all operators | 69% | 69% | 68% |
| A and B roads <i>not</i> covered by any operator | 5% | 5% | 6% |

³⁴ Thresholds for voice and text are: 2G (-81 dBm), 3G (-100 dBm), 4G (-105 dBm).

4. Earlier generation 3G data services – dashboards

The data that allows historical comparison with previous Connected Nations reports can now be found in the associated Connected Nations dashboard rather than tabulated here.