

Your response

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Section 2: The quality of mobile connectivity we want to see What are your views on the use of the Map Your Mobile good performance metric and how should the measure evolve over time?	Confidential? – N We consider the proposed thresholds (download ≥ 5 Mbit/s, upload ≥ 1.5 Mbit/s and latency ≤ 50 ms) to be a reasonable baseline for assessing whether a mobile connection can support common everyday applications. However, throughput and latency alone do not fully reflect the user experience. Where available, the metric should be complemented with additional indicators such as packet loss, jitter and radio signal quality (e.g. RSRP, RSRQ and SNR), which can significantly affect the performance of real-time and interactive services. As mobile applications continue to evolve, the metric should also evolve to provide a more comprehensive measure of the quality of experience perceived by users. The value of the tool would also increase if it could distinguish between different categories of mobile services, such as video streaming, video calling, web browsing or online gaming. This would provide consumers with more meaningful information about whether network performance in a given area is suitable for the applications they use most. In addition, while publishing results aggregated at post-code level over a 12-month period is a useful starting point, greater spatial and temporal granularity would significantly improve the usefulness of the information. Postcode averages can mask important local variations, particularly in urban areas. Publishing results on smaller geographic grid cells, similar to existing coverage maps, together with more frequent updates (e.g. quarterly rolling statistics), would provide a more accurate and timely picture of users' real-world experience. Finally, the reliability of any crowdsourced performance metric depends on the quality and representativeness of the underlying dataset. It is therefore essential that the crowdsourced data provider delivers a sufficiently large volume of measurements with high location accuracy and good spatial and temporal distribution. Minimum

Question	Your response
What are your views on the usefulness of: - the 90% figure as a benchmark applicable across geographies and based on crowdsourced data?, and - Whether the 90% benchmark is realistic and sufficiently ambitious?	data quality requirements—covering sample volume, location accuracy, spatial and temporal coverage, and statistical confidence—should be established as mandatory criteria for any provider contributing data to the Map Your Mobile performance metric, ensuring that the published results are robust, representative and comparable across operators and geographic areas. While we consider the proposed 90% benchmark to be a reasonable and easily understandable reference point, its value ultimately depends on the statistical robustness of the underlying dataset. A single benchmark can only provide meaningful and comparable results if it is calculated from a sufficiently large, representative and well-distributed sample of measurements. For example, a postcode with 100,000 measurements, of which 89% meet the good performance threshold, provides a statistically robust indication of network performance. By contrast, a postcode with only 2 measurements, even if 100% of them meet the threshold, cannot be considered equally reliable. Such a small sample is far more susceptible to random variation and sampling bias, meaning that the reported result may not be representative of the actual user experience in that area. Consequently, the statistical confidence associated with the benchmark should be considered alongside the reported percentage. We therefore recommend to establish minimum data quality requirements for any crowdsourced data provider contributing to the metric. These should include minimum sample size thresholds per geographies, confidence intervals (or equivalent measures of statistical confidence), location accuracy, spatial and temporal coverage, and technology representativeness. Where statistical confidence is insufficient, results should either be suppressed or clearly flagged to avoid drawing misleading conclusions. Such safeguards are essential to ensure that comparisons between operators and geographic areas are robust, representative and statistically meaningful.

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Section 3: Market-led improvements in mobile network quality • What information do customers need about network quality to choose the best network for their needs, and where are the main gaps in current provision of that information? • How well does Map Your Mobile currently meet customer and stakeholder needs, and what specific improvements would make it more useful?	Confidential? – N From our perspective, the tool would be significantly more useful if it included additional, widely understood performance metrics such as download and upload throughput, latency, network availability, and technology-specific coverage (e.g. 4G and 5G), together with operator-specific information and greater spatial and temporal granularity. This would provide consumers with a more comprehensive and up-to-date view of mobile network performance, enabling them to make better-informed decisions based on their individual usage patterns and the locations that matter most to them.
Section 4: Connectivity in busy areas • What do you think are the biggest barriers to achieving better mobile performance in town and city centres and why? • What do you think should be Ofcom's main priorities for our future work in this area? • What information would stakeholders, especially local authorities / planning authorities find useful for Ofcom to provide further insights on and why?	Confidential? – N The main barriers are the increasing demand for mobile capacity, the complexity of deploying new infrastructure in dense urban environments, and planning and site acquisition constraints. In many city centres, network performance is primarily limited by capacity rather than coverage, requiring network densification through additional sites or small cells. However, lengthy planning processes, limited site availability, high deployment costs and access to suitable street furniture can significantly slow down network improvements. Ofcom should continue promoting greater transparency in mobile network performance through robust, independent and statistically representative datasets. Priorities should include improving the granularity and quality of performance information available to consumers, encouraging consistent methodologies for network performance assessment, and facilitating collaboration between operators and local authorities to reduce barriers to network deployment in high-demand areas. Local and planning authorities would benefit from more granular evidence on where network performance issues are driven by lack of coverage versus lack of capacity, together with trends in user demand and quality of experience over time. Performance maps based on high-quality crowdsourced data, combined with insights into the root causes of poor performance, would help authorities prioritise planning decisions and infrastructure investments

Question	Your response
	where they would deliver the greatest benefit to citizens and businesses. The reliability of these insights depends fundamentally on the quality of the underlying crowdsourced data. In dense urban areas, measurements should not only be abundant but also well distributed across different locations, times of day and days of the week to accurately capture traffic variability and peak demand conditions. Ofcom should therefore establish minimum quality requirements for crowdsourced datasets, including sample volume, location accuracy, spatial and temporal representativeness, and statistical confidence, ensuring that published results provide a robust and unbiased reflection of real user experience.
Section 5: Connectivity in indoor, shared public places • What do you think are the biggest barriers to achieving better mobile performance indoors and why? • What do you think should be Ofcom's main priorities for our future work in this area? • What information would you find useful for Ofcom to provide further insights on in relation to connectivity indoors and why?	Confidential? – N The main barriers to achieving better indoor mobile performance are the increasing attenuation caused by modern building materials, the higher propagation losses associated with mid- and high-band spectrum (particularly 5G), and the limited deployment of dedicated indoor solutions such as Distributed Antenna Systems (DAS), small cells or repeaters. In addition, the availability of suitable backhaul, commercial incentives to invest in indoor coverage, and the complexity of deploying infrastructure in privately owned buildings also present significant challenges. Since a large proportion of mobile usage occurs indoors, these factors can have a considerable impact on users' perceived quality of experience. Ofcom should continue improving the transparency and accuracy of information available to consumers by complementing coverage predictions with measured performance data wherever possible. In particular, future work should focus on developing robust, evidence-based metrics that better reflect users' actual indoor experience, while ensuring that any published results are based on statistically representative datasets. Encouraging greater use of crowdsourced measurements, improving the spatial granularity of published information, and promoting

Question	Your response
	consistent methodologies across operators would further enhance the value of the information provided to consumers and industry. As mentioned previously, it would be valuable for Ofcom to publish more detailed information on indoor mobile performance. In particular, providing insights into the technologies serving users indoors (e.g. 4G, 5G NSA and 5G SA), together with operator-specific performance where appropriate, would help consumers and stakeholders better understand the factors affecting indoor connectivity. Furthermore, publishing performance trends over time and distinguishing results by common service categories (such as video streaming, video calling and web browsing) would provide a more meaningful assessment of the user experience and help identify areas where targeted improvements are most needed. We would also like to comment on the statement in the discussion paper that "crowdsourced performance data reflects user experience in locations where a connection attempt can be made" and therefore "does not capture locations where no coverage is available." We believe this assumption does not necessarily reflect the capabilities of modern crowdsourcing methodologies. Current smartphone geolocation technologies have evolved significantly in recent years and no longer rely solely on GNSS/GPS signals. By combining multiple positioning sources and device sensors—such as Wi-Fi, Bluetooth, inertial sensors, cell identifiers and map matching—it is possible to obtain accurate indoor locations even where mobile coverage is extremely poor or unavailable. Consequently, the absence of a mobile connection does not necessarily prevent a measurement from being geolocated and reported. Whether these no-service or very poor coverage locations are captured depends primarily on the measurement methodology implemented by the crowdsourced data provider. This is a critical aspect, as indoor coverage loss and no-service conditions are among the most important contributors to users' real-world experience. Ofcom should therefore ensure that any crowdsourced

Question	Your response
	methodology is capable of recording and accurately geo-locating these events, rather than excluding them from the analysis. As previously mentioned, minimum requirements should be established to ensure sufficient sample volumes in indoor environments, including areas with very poor or no mobile coverage. Requiring high sample volumes, high-quality data, and good spatial and temporal distribution should be considered of particular importance. These requirements are essential to ensure that the resulting statistics are robust, representative and unbiased, particularly when assessing indoor connectivity, where measurements are inherently more challenging to obtain but are critical to accurately reflecting users' real-world experience. This would provide a more representative picture of the user experience and avoid systematically overestimating network performance by considering only successful connection attempts.
Section 6: Connectivity on trains • What do you think are the biggest barriers, technical and commercial, to achieving better mobile performance on trains? Which are most significant and why? • Do you agree with our proposal to work with government to support improvements in train connectivity? • What information would you find useful for Ofcom to provide further insights on in relation to connectivity on trains and why?	Confidential? – N The main technical barriers to delivering better mobile performance on trains are the challenging radio propagation environment, the high speeds at which users travel, frequent cell handovers, and the attenuation introduced by modern train carriages, which can significantly reduce signal penetration. Coverage gaps along rail corridors, particularly in rural areas, and the availability of sufficient backhaul capacity also remain important challenges. From a commercial perspective, deploying dedicated infrastructure along railway lines or installing onboard connectivity solutions requires significant investment and close coordination between mobile network operators, railway infrastructure managers and train operating companies. These coordination and investment challenges are often the most significant barriers to improving the passenger experience. We support Ofcom's proposal to work with government and other stakeholders to improve mobile connectivity on trains. Achieving meaningful improvements requires

Question	Your response
	coordinated action across multiple parties, including regulators, mobile operators, infrastructure owners and transport authorities. A collaborative approach can help address both infrastructure deployment challenges and access to railway assets, while encouraging the adoption of common measurement methodologies and transparent performance reporting. It would be valuable for Ofcom to publish route-based performance information rather than only national or operator-level summaries. Reporting performance by railway line or route, together with information on the serving operator, technology (4G, 5G NSA and 5G SA), and common service categories (such as video streaming, video calling and web browsing), would provide passengers with more meaningful insights into the connectivity they can expect during their journeys. Publishing trends over time would also help monitor the effectiveness of future investment and network improvements. Again, the reliability of any assessment of mobile performance on trains fundamentally depends on the methodology employed by the crowdsourced data provider. Vehicular mobility presents unique measurement challenges due to high speeds, rapidly changing radio conditions and frequent handovers. It is therefore of particular importance that Ofcom establishes minimum requirements for crowdsourced datasets, including sufficiently high sample volumes, high data quality, and good spatial and temporal distribution of measurements along railway routes. These requirements are essential to ensure that the published statistics are statistically robust, representative of actual passenger experience, and comparable across operators, routes and over time.
Section 7: Connectivity in rural areas What do you think are the biggest barriers to achieving better mobile performance in rural locations and why?	The main barriers to achieving better mobile performance in rural areas are the lower population density, challenging terrain, and the high cost of deploying and maintaining mobile infrastructure relative to the number of users served. In many cases, limited access to suitable

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• What do you think should be Ofcom's main priorities for our future work in rural locations and what outcomes should we aim to achieve? • What solutions (technical, commercial, policy or delivery) could improve rural mobile performance? • What information would you find useful for Ofcom to provide further insights on in relation to rural connectivity and why?	backhaul and power infrastructure further constrains network deployment. From a commercial perspective, the lower return on investment often reduces the incentive for operators to expand or upgrade networks in sparsely populated areas. As a result, rural users are more likely to experience coverage gaps, lower capacity and reduced service quality compared with urban areas. Ofcom's priority should be to ensure that rural users have access to a consistent and transparent assessment of both coverage availability and service performance. Future work should focus on improving the quality and granularity of performance information, enabling consumers to understand not only whether coverage is available, but also the quality of experience they can expect. Continued collaboration with operators and government to support targeted investment in underserved areas, together with robust and transparent performance monitoring, will help identify priority locations and measure the effectiveness of future initiatives. A combination of technical, commercial and regulatory measures will be required. These may include greater infrastructure sharing, improved access to public assets, streamlined planning processes, targeted public funding where commercial deployment is not viable, and continued use of lower-frequency spectrum to maximise coverage. From a measurement perspective, the use of high-quality crowdsourced data can provide valuable evidence of real-world user experience, helping to identify persistent coverage and performance issues and supporting more targeted investment decisions. To better support policy decisions and consumer choice, Ofcom could provide deeper insights into the specific challenges affecting rural connectivity. For example, identifying persistent coverage and performance hotspots, highlighting differences between population and geographic coverage, and tracking improvements over time would help stakeholders understand where investment is delivering results and where further intervention may be required. Complementing this with technology-

Question	Your response
	specific and operator-level analysis would provide a clearer picture of the factors influencing rural user experience. Given the inherent scarcity of measurements in many rural areas, particular attention should be paid to the quality and representativeness of the underlying crowdsourced dataset. The methodology adopted by the data provider should ensure sufficient measurement density, accurate geolocation, and broad spatial and temporal coverage to minimise bias and produce statistically reliable results. Establishing clear minimum quality requirements for crowdsourced data providers is therefore essential to ensure that rural performance assessments are robust, representative of real user experience, and suitable for meaningful comparisons across operators and locations.

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