

Around March 2020, when the severity of the Covid-19 pandemic had hit home for most of the world, there were significant concerns that the internet might struggle under the pressure of increased use. Mobile networks had to deal with more consumers using devices for online calls, conferencing and education, not to mention watching streaming services to pass the

time while at home. How did the networks hold up? And what are the implications if the pandemic drives a permanent shift in working and online consumption patterns, especially for operators and policymakers? Having explored such topics in previous research, we are now able to draw on more data and longer-term trends in network quality.

Analysis

The impact of Covid-19 on mobile usage

Following the outbreak of Covid-19 and the subsequent mitigation measures put in place by governments, there was unprecedented demand on mobile networks. Global mobile data traffic per user in 2020 increased more than ever before, reaching over 6 GB per month – double the amount of usage for 2018.¹ Remote working, online schooling and stay-at-home measures meant consumers engaged in a wider variety of online activities, more frequently. Examples include the following:

- The number of consumers using their mobile for video calls increased by 15% in 2020 versus 2019, equivalent to 440 million more users worldwide.
- Subscribers ordering or purchasing goods and services online increased by 15% versus 2019, equivalent to 300 million users.
- The number watching free video content increased by 9% versus 2019, equivalent to 270 million more users.²

Lockdowns had a temporary impact on mobile speeds

Almost every country imposed some form of lockdown restriction, whether it be the closure of schools, businesses and workplaces, or individuals being required to stay at home. Data from the Oxford Covid-19 Government Response Tracker shows that more than 90% of countries first imposed these restrictions in March or April 2020.

Analysis of data provided by Ookla® for more than 170 countries shows that the period just before official lockdown measures were imposed – when many individuals were already starting to lock down voluntarily – saw a drop in global average download and upload speeds, as network congestion soared and consumers used their devices more indoors. This was particularly the case in low- and middle-income countries with limited fixed networks, as consumers could not rely on fixed broadband in their homes.

For download speeds, the reduction proved to be temporary in most countries – even those with low fixed broadband penetration; speeds quickly picked up to continue their pre-pandemic upward trend. By the end of the year, average download speeds were

4 Mbps or 20% higher than the year before. More recent Ookla [analysis](#) shows this upward trend continued into 2021.

Upload speeds took longer to recover, only just exceeding pre-pandemic levels by the end of the year. This was likely due to the pressure from video calling on upload capacity and the fact that enterprise traffic is less asymmetric than consumer traffic.

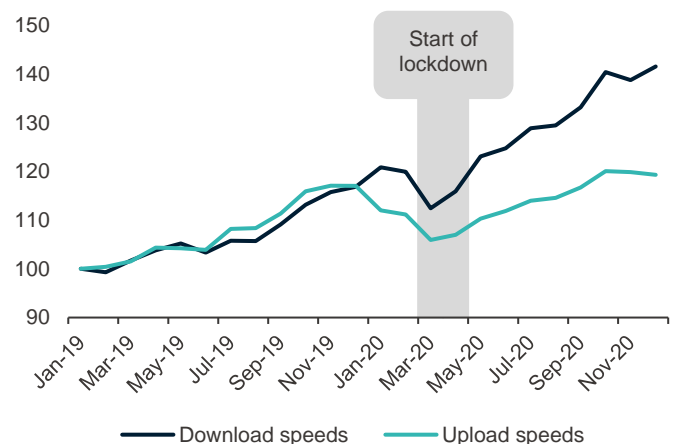
Network management and upgrades allowed operators to increase capacity

In many countries, networks had enough headroom to meet the surge in traffic, but operators also took steps to meet demand and increase capacity. As work switched from business to residential areas and evening peak hours shifted to earlier in the day, operators redistributed and optimised data traffic flow. Many also expanded and deployed new mobile sites to densify networks and increase capacity. Of particular note was the upgrading of networks, with 101 5G networks launched in 49 countries. 4G networks upgrades also continued apace, reaching 87% of the world’s population. As a result, there were 475 million and 225 million more 4G and 5G connections respectively by the end of 2020, with 4G/5G accounting for 60% of all mobile connections worldwide (versus 52% in 2019).

Source: GSMA Intelligence analysis, based on Speedtest® Intelligence data provided by Ookla® and Oxford Covid-19 Government Response Tracker (Blavatnik School of Government, University of Oxford)

Global average upload and download speeds

Indexed speeds (January 2019=100)



¹ GSMA Intelligence analysis of data sourced from Ericsson Mobility Report, 2021
² 2021 Mobile Industry Impact Report: Sustainable Development Goals, GSMA, 2021

Implications

Operators

- **Traffic shifts as important as traffic growth** – While the impact of the pandemic on network quality was temporary, its effect on data usage is likely to be permanent. Once traffic reaches new levels, it is unlikely to revert as many people continue to work from home and enjoy the online content that occupied them through lockdowns. Just as important, however, is the shape of traffic patterns, as working hours will continue to account for a larger proportion of traffic flow. If this shift becomes permanent, along with consumers requiring more upload capacity, the strategies operators employed during the pandemic will need to be made sustainable over the longer term.
- **Upgrading networks to 5G will drive capacity as well as usage** – Deploying 5G is an obvious way to increase capacity and meet demand, but the performance offered by 5G will itself drive higher usage. At the end of 2020, in the countries that had achieved 5G adoption of at least 2%, average 5G download speeds were up to 10 times faster than on 4G. As a result, 5G users are currently consuming around twice as much mobile data as 4G users. In many countries, lockdowns drove larger increases in fixed network usage than mobile, as consumers relied more on Wi-Fi and fibre broadband at home. However, the 5G experience could mean that, going forward, consumers rely more on mobile, particularly for homes with FWA broadband.

Regulators and policymakers

- **Learning lessons for the future** – Many governments provided vital support for operators to help them manage the surge in traffic. A common response was to assign operators additional temporary spectrum (as happened in South Africa, Ghana, the US and Oman, for example) and/or make all spectrum technology neutral (e.g. in Tunisia). In some markets, such as the Philippines and Colombia, regulatory fees were also suspended to alleviate some of the constraints on operators. These measures offer lessons on how regulators and policymakers can support operators to continue expanding 4G and 5G networks. This will ensure they are prepared for future emergencies but will also bring more of the unconnected online and help close the digital divide, driving a range of social and economic benefits.
- **Spectrum refarming can alleviate capacity constraints** – The importance of assigning sufficient, timely and affordable spectrum for mobile services is [well-established](#). For 5G, governments and regulators will need to make 2 GHz of mid-band spectrum available over the 2025–2030 timeframe to guarantee the IMT-2020 requirements, as well as sufficient spectrum in the sub-1 GHz and mmWave bands. In the meantime, while operators in many countries wait for this, they are increasingly refarming existing spectrum to support 5G, particularly in the 2100 and 2600 MHz bands. Governments should therefore implement full technology neutrality as soon as possible in countries where it is still not allowed. This enables operators to optimise network operations and migrate their 2G/3G users to 4G and 5G. Importantly, it applies to both capacity and lower frequency coverage bands, as the latter allow operators to improve in-building coverage and speeds.

Related reading

[State of Mobile Internet Connectivity Report 2021](#)

[2021 Mobile Industry Impact Report: Sustainable Development Goals](#)

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