TUTELA

# Chile

## State of Mobile Experience


Analysts

Sneha Phatak

Montana Jennings


Annual Report

MARCH 2021

www.tutela.com

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# Introduction

As more people adapted to working from home and having to find new ways to keep in contact with loved ones throughout 2020, Chile saw a significant surge in demand for both mobile and fixed internet. The regulator's announcement of a surge in new mobile internet lines (about 1.3 million new connections) between September 2019 to Q3 2020[1] demonstrates the growing importance of reliable internet in today's connected world.

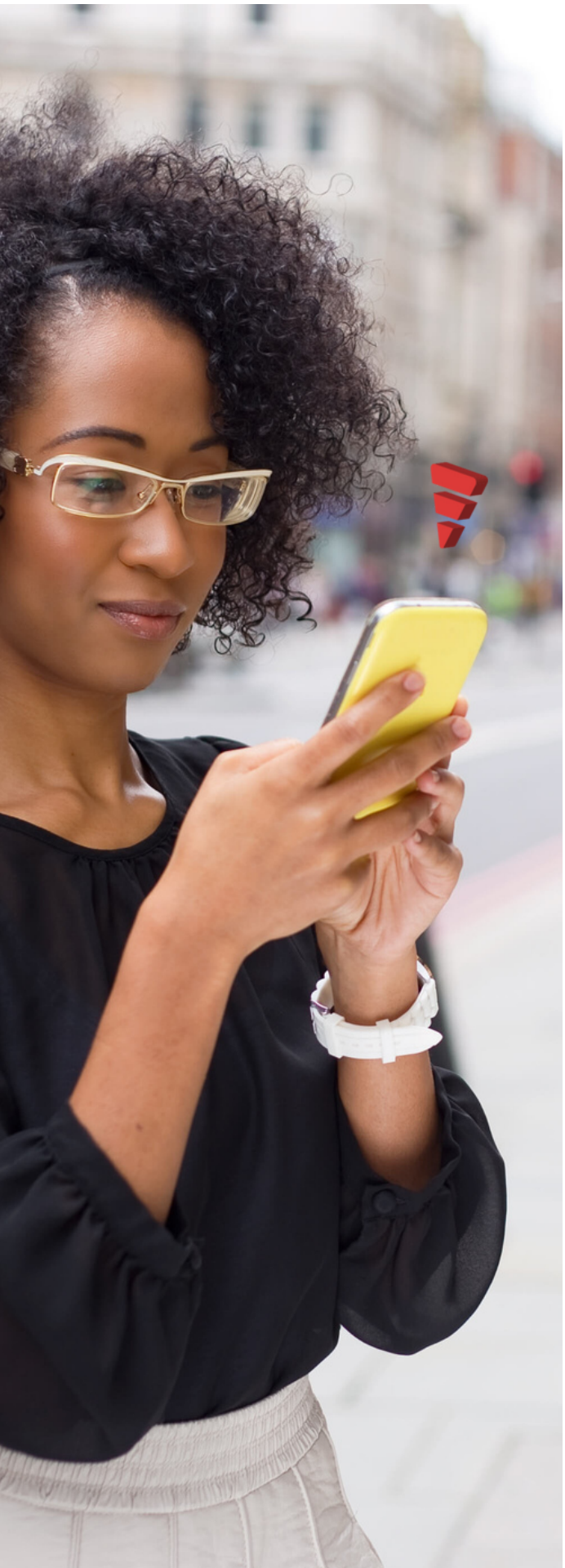
At the same time, Chile recently concluded its 5G spectrum auction, reportedly the first in Latin America[2]. In Tutela's 2020 Global Experience Report[3], Chile ranked 82nd in both the Excellent and Core Consistent Quality. On a continental level this ranking was fifth amongst South American countries for Excellent Consistent Quality, and seventh for Core Consistent Quality. With this in mind, a competitive lead for 5G could be a differentiator in both driving improved connectivity for the growing mobile user base in the country, as well as setting a path to regional leadership for telecoms – if operators can make the most of their new spectrum holdings.

For this analysis of mobile network experience across Chile, Tutela has analyzed over two million speed and latency tests taken from real-world smartphone users, collected between September 1, 2020 and February 28, 2021.

[1] Telecompaper, Chilean fixed broadband lines climb 10% on Covid effect in Q3
https://www.telecompaper.com/news/chilean-fixed-broadband-lines-climb-10-on-covid-effect-in-q3--1374832
Retrieved 18/03/21

[2] RCRwireless, Chile completes first 5G spectrum tender in Latin America
https://www.rcrwireless.com/20210218/5g/chile-completes-first-5g-spectrum-tender-latin-america
Retrieved 18/03/21

[3] Tutela, Global Mobile Experience
https://www.tutela.com/blog/global-mobile-experience-2020
Retrieved 18/03/21



# Key findings

- Claro won in two categories out of the six tested in this report. The operator had the highest Excellent Consistent Quality of 66.0% in Common Coverage Areas across the country. Claro also outperformed other operators for download speeds with a median speed of 15.2 Mbps.

- Entel topped the leaderboard in three categories with the highest Core Consistent Quality of 86.1%. It also outranked other operators with the fastest upload speed (10.1 Mbps) as well as the largest relative coverage.

- WOM had the best one-way latency among all operators with a median latency of 36.6 ms. There was a marginal difference in the latency between the rest of the operators indicating that subscribers had a similar experience connected to Entel, Movistar or Claro in terms of network responsiveness.

# Results overview

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## Mobile experience results

Chile, March 2021

| | Claro | entel | WOM | Movistar |
|---|---|---|---|---|
| Excellent Consistent Quality | ★ Winner | | | |
| Core Consistent Quality | | ★ Winner | | |
| Download throughput | ★ Winner | | | |
| Upload throughput | | ★ Winner | | |
| Latency | | | ★ Winner | |
| Coverage | | ★ Winner | | |

Results from over 2 million speed and latency tests taken from real-world smartphone users, collected between September 1, 2020 and February 28, 2021.

"Claro delivered the highest percentage of Excellent Consistent Quality in Tutela's tests"

TUTELA
Best Mobile Network Experience
MARCH 2021

Based on the highest Excellent Consistent Quality in Common Coverage Areas.

# Understanding this report

Tutela uses two key methodological components to best compare user experience across operators: Consistent Quality and Common Coverage Areas. Consistent Quality is a set of metrics that Tutela has developed to objectively evaluate when connections networks are (and are not) enabling users to do almost everything that they want to do on their smartphones.

To best serve Tutela's goal to accurately measure and represent the real-world, end-to-end experience of actual users, our methodology is subject to ongoing improvements, which allow us to update the methodology in line with changes in network technology, measurement capabilities, and the realities of how people use their smartphones. As of this report, the methodology includes an updated version of Consistent Quality that better accounts for reliability, an area-based Coverage Score, a more granular Common Coverage Areas definition, and the separation out of users on MVNO or flanker brands. As a result, changes in the numeric values in this report compared to the previous year are not necessarily representative of year-on-year changes in the end-to-end user experience.

The methodology is covered in detail at the end of this report and on our website, but simply put, there are two sets of thresholds, Excellent and Core. A connection that hits the Excellent threshold is sufficient for use-cases like 1080p video streaming or multiplayer gaming, while a Core connection will stream standard-definition video or handle things like web browsing or uploading photos to social media. The percentages you see in this report represent the percentage of tests on a given operator that were above the Excellent or Core thresholds.

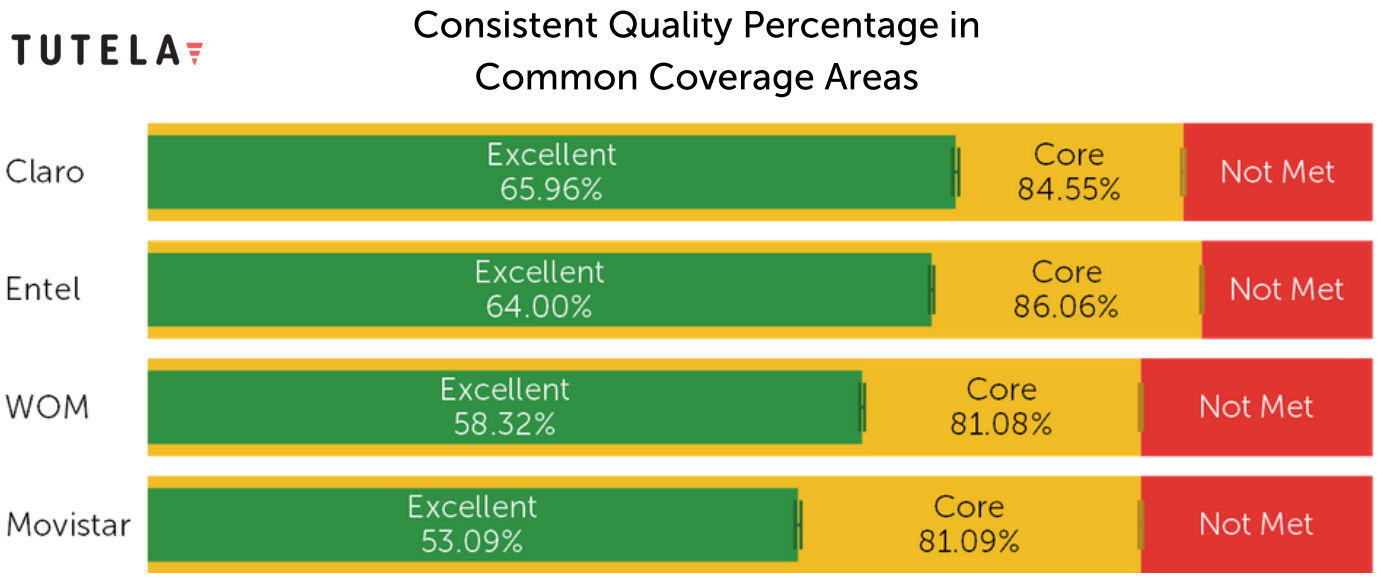
Common Coverage Areas are parts of the country where all national operators offer service, either on their own network or through a domestic roaming agreement. Comparing performance within common coverage areas ensures that user experience is being compared in places where networks are competing head-to-head, and ensures that operators with more diverse coverage are not being penalized. In this report, all performance metrics are taken from tests conducted in Common Coverage Areas only.

## Measurement locations

## Common Coverage Areas

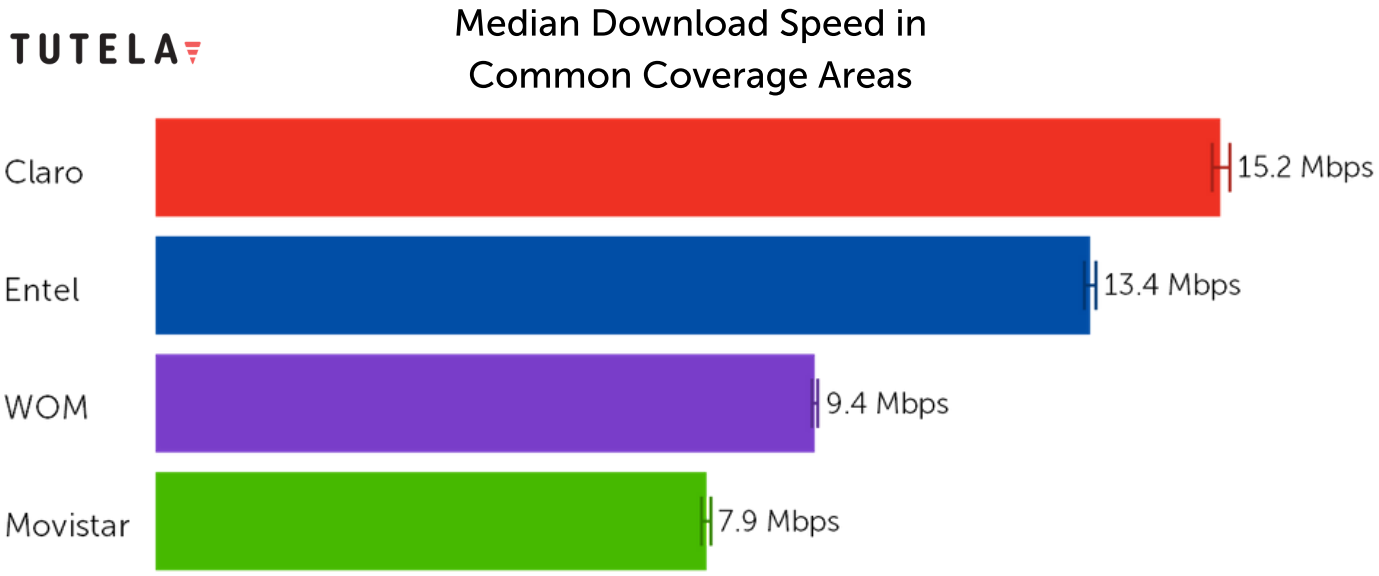
# Consistent Quality

Claro, with an Excellent Consistent Quality of 66.0% ranked first for Excellent Consistent Quality in Common Coverage Areas across Chile, followed closely by Entel at 64%. Excellent Consistent Quality is Tutela's metric for user experience against a range of common but high-intensity use cases such as 1080p video streaming, online gaming, and HD group video calls. WOM placed third with an Excellent Consistent Quality of 58.3%, about 7% less than first placed Claro, while Movistar came in last place at 53.1%. In terms of Core Consistent Quality, Tutela's metric for when a connection is good enough for web browsing, social media sharing and SD video streaming, Entel beat Claro by about 2% at 86.1%. Movistar and WOM were statistically tied for third place in this category at 81.1%. This indicates that both WOM and Movistar subscribers are getting a similar experience for less demanding everyday use cases.



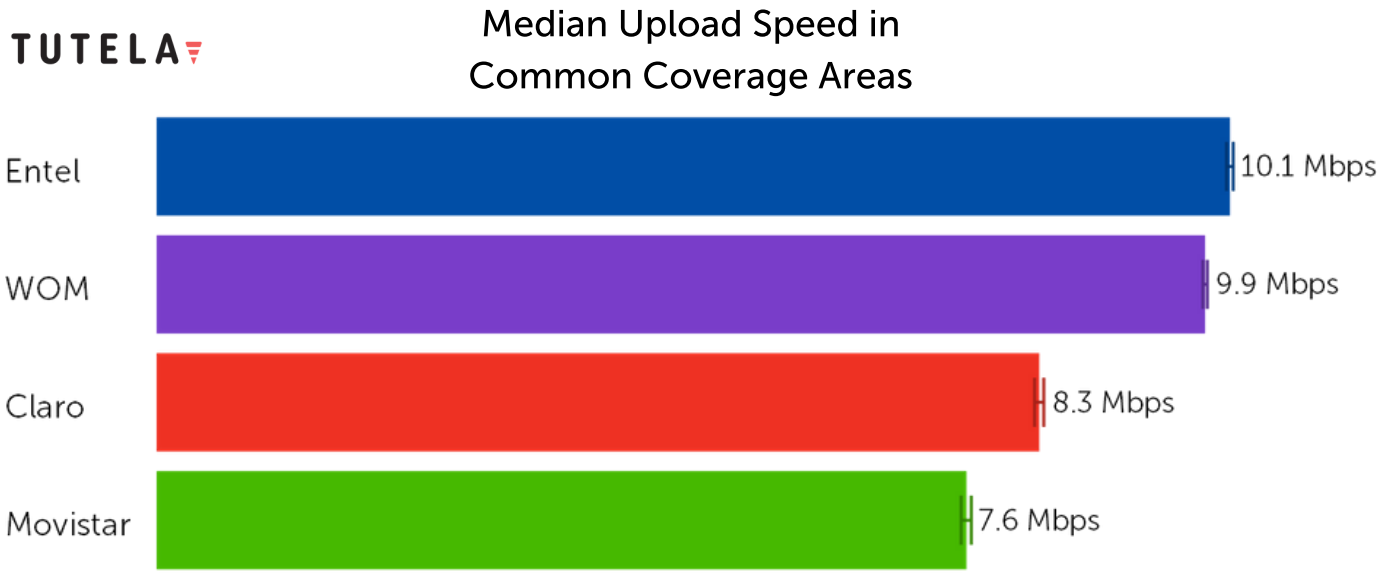
# Download throughput

For median download speed, Claro again ranked first with a speed of 15.2 Mbps, followed by Entel with a median speed of 13.4 Mbps. WOM was in third place with a median download throughput of 9.4 Mbps, 5.8 Mbps slower than Claro, while Movistar was in last place with a median speed of 7.9 Mbps, 7.3 Mbps slower than first place Claro.



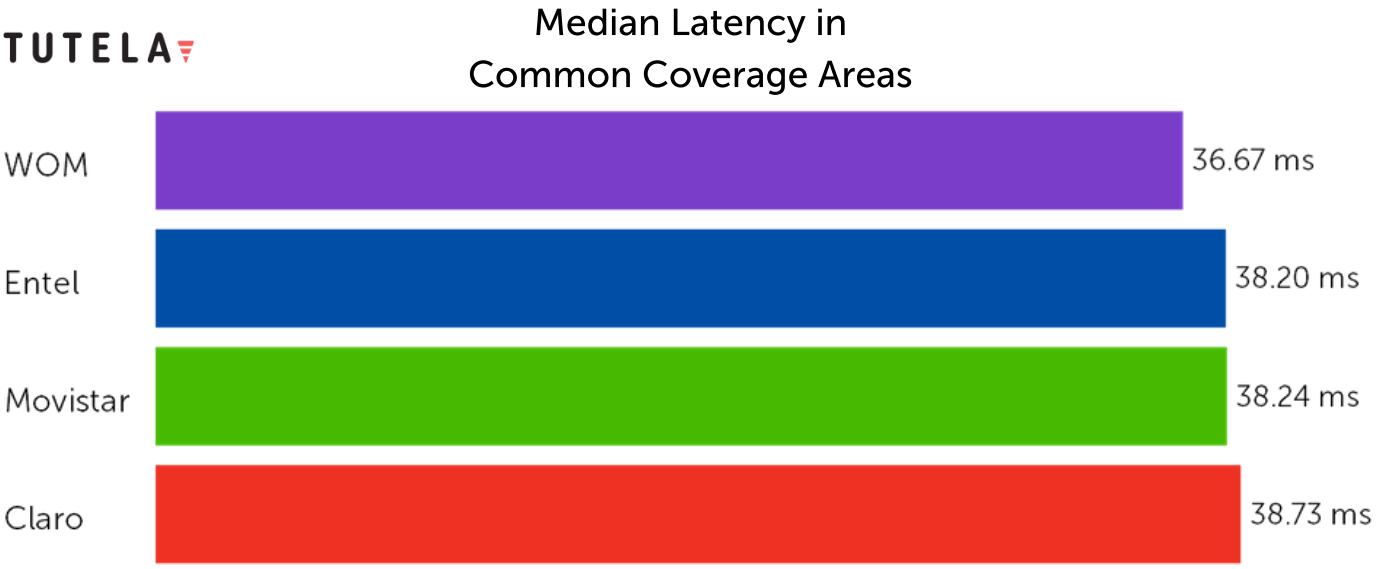
# Upload throughput

Entel outperformed other operators with an upload speed of 10.1 Mbps, closely followed by WOM at 9.9 Mbps. On the other hand, Claro, which ranked first in the Excellent Consistent Quality as well as download speed categories, was placed third in this category with a median upload speed of 8.3 Mbps. Movistar ranked last with a median upload speed of 7.6 Mbps, 2.5 Mbps slower than first placed Entel. The gap between operators in this category were smaller in comparison to download speeds.



# Latency

WOM exhibited the best median one-way latency of 36.7 ms in Common Coverage Areas across Chile, followed by Entel with a median latency of 38.2 ms. The difference between Entel and the remaining operators was marginal: Movistar was in third place with a median latency of 38.2 ms while Claro came last with a one-way latency of 38.7 ms.

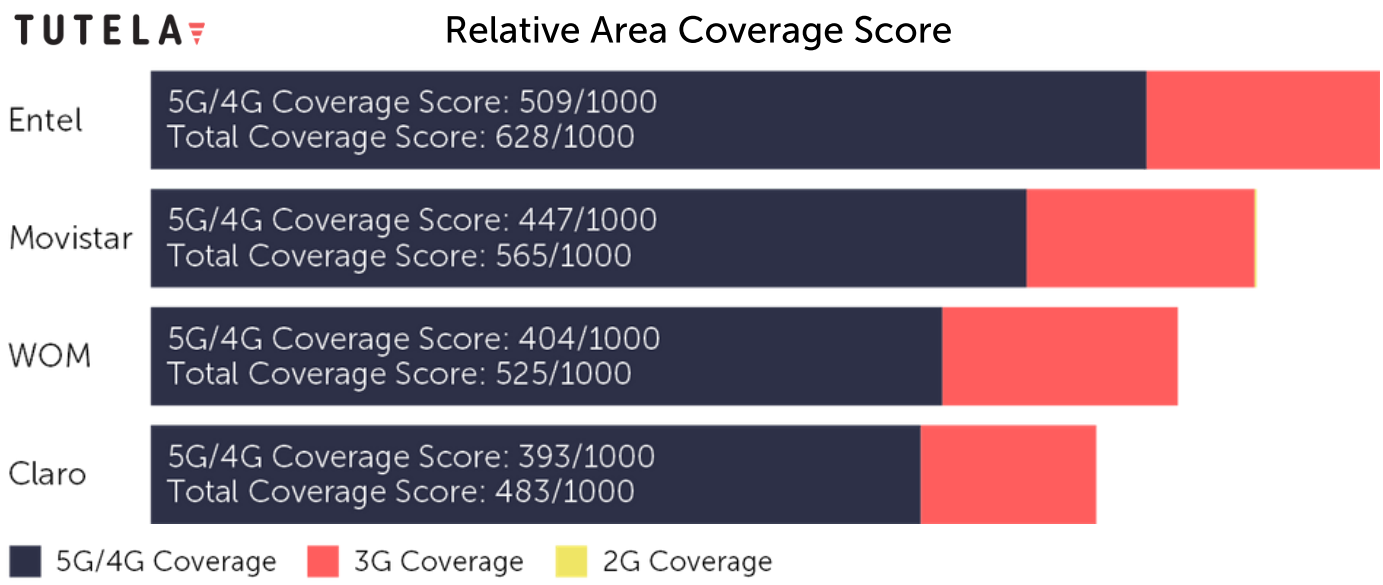


# Coverage

The gap between operators in this category as well was not substantial for both total coverage and 5G/4G coverage. Entel had the highest relative area coverage with a total coverage score of 628 as well as the greatest 4G/5G coverage score of 509 across the country. Movistar managed to secure second place in this category with a total coverage score of 565, 63 points below Entel, and a 4G/5G coverage score of 447.

WOM was about 40 points behind Movistar with a total coverage score of 525, while Claro had the lowest relative observed area covered, scoring 483 overall. However, the two were statistically tied in the 5G/4G coverage category – while the raw scores appear slightly separated, the difference is within the uncertainty of the coverage score (which is approximately 1%).

While all four operators have a higher proportion of coverage on 4G/5G technology, a substantial portion of coverage still comes from the older 3G technology. As Chilean operators gear up for 5G deployment, it will be critical for them to decide how to utilize their resources by focusing on the subscriber experience for customers who need the upgrade the most.




Tutela measures relative coverage between providers in a country by looking at the geographic area that an operator's subscribers have seen coverage, compared to the total area of the country where the subscribers of any operator can get a mobile connection. The geographic area covered by each operator, relative to the total covered area of the country, is presented as a score out of 1,000.

Tutela measures this coverage from the perspective of end users – that is to say, inclusive of times when coverage is provided as part of a domestic roaming agreement or shared infrastructure program. An equal number of representative samples are considered from each operator in a country to determine coverage. Coverage is assessed over the preceding 12 months to ensure any effects of seasonality are appropriately included.

# Methodology

Tutela is an independent crowdsourced data company with a global panel of over 300 million smartphone users. We gather information on mobile infrastructure and test wireless experience, helping organizations in the mobile industry to understand and improve the world's networks. Tutela is a member of the Comlinkdata family.

Tutela collects data and runs network tests via software embedded in a diverse range of consumer applications, which enable the measurement of real-world quality of experience for mobile users, 24/7. For this report, Tutela has collected over two million speed and latency tests between September 1, 2020 and February 28, 2021.

Tutela measures mobile experience based on the real-world performance of actual network subscribers for a given brand, inclusive of occasions when a network or tariff may be throttled or congested. Results in this report are based on a testing configuration designed to represent the typical (rather than maximum) performance that users experience. We use a 2 MB file to perform our download testing and a 1 MB file to perform our upload testing. Latency performance in this report reflects one-way UDP latency. Tests are conducted against the same content delivery networks that power many of the world's most popular consumer applications and websites, and as such reflect the end-to-end performance of the network.

# Consistent Quality

Download speed is most often used as a proxy for network quality, but while download throughput is important, it's just one of several crucial requirements for a "good" connection.

As operators have upgraded 3G networks through to the latest 5G technology, theoretical (and even real-world) peak throughput speeds have increased to where they vastly outstrip the maximum needed for any current use-case. Real-world speeds above 100 Mbps are now common in parts of the world, and with a 4K video stream — which itself is rarely something smartphone users need — using a fifth of that, average download speed has lost some of its relevance as the dominant statistic used to measure the quality of wireless networks.

At its most basic, a good connection is one that doesn't get in the way of users doing what they want to do. In the real world, smartphone users aren't running speed tests all day — they're browsing the web, using apps, voice calling their friends, streaming Netflix and YouTube, or making video calls. To more objectively evaluate when connections are (and are not) enabling users to do those things, Tutela has developed a standard called Consistent Quality.

Simply put, it's two sets of thresholds, called Excellent and Core. If a connection hits the Excellent standard, it's sufficient for the most demanding mobile use-cases, like HD group video calling or 1080p video streaming. A Core connection is good enough for SD video streaming, web browsing, emails, and VOIP calling, but users are more likely to experience delays or buffering when trying to use more demanding apps. Tutela also considers times when a Consistent Quality style test was attempted, but subsequently failed for distinguishable connectivity issues on the download or server response component, towards the total percentage of "failed" tests against both sets of thresholds. Tutela bases the threshold values on the minimum performance requirements published by popular apps. We most recently updated our Consistent Quality thresholds on September 1st, 2020. Tutela's consistent quality metric, as used in our reports, simply measures the percentage of time that users can hit the thresholds. The higher the number, the more often users have a Core or Excellent quality connection.

## Excellent Quality

| KPI | Download throughput | Upload throughput | Latency | Jitter | Packet loss | Time to first byte |
|---|---|---|---|---|---|---|
| Minimum acceptable value | 5 Mbps | 1.5 Mbps | 50 ms | 30 ms | 1% | 3.2 s |

## Core Quality

| KPI | Download throughput | Upload throughput | Latency | Jitter | Packet loss | Time to first byte |
|---|---|---|---|---|---|---|
| Minimum acceptable value | 1.5 Mbps | 500 Kbps | 100 ms | 50 ms | 5% | 10.67 s |

# Discover Tutela Explorer

Tutela Explorer is a powerful cloud-based solution for real-time analysis of crowdsourced data. Using the platform, mobile operators can:

- Create coverage and quality maps
- Benchmark network quality and coverage across all operators
- Drill down to any KPI at city, street or even building level
- Analyse spectrum utilisation, performance and more

Visit www.tutela.com/explorer to learn more

Learn more

# Appendix

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## Results Overview in Common Coverage Areas

| | Download Throughput | Upload Throughput | Latency | Excellent CQ | Core CQ |
|---|---|---|---|---|---|
| Claro | 15.2 Mbps ± 0.14 Mbps | 8.3 Mbps ± 0.04 Mbps | 38.7 ms ± 0.029 ms | 65.96% ± 0.26% | 84.55% ± 0.16% |
| Entel | 13.4 Mbps ± 0.08 Mbps | 10.1 Mbps ± 0.03 Mbps | 38.2 ms ± 0.027 ms | 64.00% ± 0.18% | 86.06% ± 0.10% |
| Movistar | 7.9 Mbps ± 0.07 Mbps | 7.6 Mbps ± 0.05 Mbps | 38.2 ms ± 0.036 ms | 53.09% ± 0.24% | 81.09% ± 0.16% |
| WOM | 9.4 Mbps ± 0.04 Mbps | 9.9 Mbps ± 0.02 Mbps | 36.7 ms ± 0.033 ms | 58.32% ± 0.20% | 81.08% ± 0.13% |

# About Tutela

Tutela Technologies, Ltd., is an independent crowdsourced data company with a global panel of over 300 million smartphone users. It gathers information on mobile infrastructure and tests wireless experience, helping organizations in the mobile industry to understand and improve the world's networks. Data and insights provided by Tutela are trusted by the engineering teams at mobile network operators and network equipment manufacturers around the world and used to compare operators as well as inform decisions in network and infrastructure planning and optimisation. The organization is headquartered in Victoria, British Columbia.

Tutela does not collect any sensitive personal data and is compliant with international privacy regulations including CCPA and GDPR.

For further information about the methodology, data and tools used to create this report, please contact analysis@tutela.com or visit www.tutela.com.

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