



TUTELA 

Latin America

State of Mobile Experience

Analysts

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Annual Report

www.tutela.com

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Introduction

At the start of 2020, it seemed that the greatest changes to Latin American telecommunications were shaping up to be the impact of the sale of the majority of Telefonica's Latin American assets(1), along with the deployment of new 5G networks(2). However, 2020 has proved something of a curveball, with the global pandemic causing a renewed focus on ensuring a consistent level of reliable mobile connectivity to support remote working and online learning. Nowhere better exemplifies this focus than Argentina, where connectivity was labelled "essential public services"(3), with a price freeze for 2020 designed to ensure telecoms services remained accessible to all.

(1) Financial Times, Why Telefónica is slimming down in South America
<https://www.ft.com/content/3065e7ec-11d9-11ea-a7e6-62bf4f9e548a>

(2) BN Americas, Ericsson to launch LatAm 5G networks in 2020-21
<https://www.bnamericas.com/en/features/ericsson-to-launch-its-first-latam-5g-networks-in-2020-21>

(3) Inside Telecom, Argentina – price freeze of essential public services is extended until the end of 2020
<https://www.insidetelecom.com/argentina-price-freeze-of-essential-public-services-is-extended-until-the-end-of-2020/>



However, this has also contributed to 5G taking more of a back seat in 2020, with Chile delaying its 5G spectrum auction by a month(4), and many other countries across the region planning to hold these in 2021(5). This means that for many users, reliable LTE connections remain the bedrock of their day-to-day mobile experience, and are likely to remain so until well into 2021 before 5G delivers any meaningful improvements across a wide range of users.

Earlier this year, Tutela benchmarked mobile experience at a country level worldwide(6) – in that analysis, Uruguay proved the decisive winner in South America, placing top among South American countries for both Core and Excellent Consistent Quality – Tutela's metrics for benchmarking mobile experience against two tiers of mobile use cases. Uruguay placed joint 42nd internationally for

Excellent Consistent Quality, while the second highest-performing country in Latin American for this metric was Argentina at joint 52nd.

This new report examines operator-level performance within Latin America, focusing on the mobile experience delivered by the major national operators in each country. The report is based on over 84 million speed and latency tests, collected in Common Coverage Areas of sovereign nations in the Latin American region between May 1st, 2020 and October 31st, 2020. The countries included in this analysis are: Argentina, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Suriname, Uruguay, and Venezuela.

(4) Telecompaper, Chile delays 5G spectrum tender to November

<https://www.telecompaper.com/news/chile-delays-5g-spectrum-tender-to-november--1356149>

(5) BN Americas, Spotlight: LatAm spectrum tenders update

<https://www.bnamericas.com/en/features/spotlight-latam-spectrum-tenders-update>

(6) Tutela, Global mobile experience: country-level comparison

<https://www.tutela.com/blog/global-mobile-experience-2020>



Key findings

- Claro excelled across the LATAM region for Excellent Consistent Quality, and was the leading operator either individually or jointly in nine countries.
- Claro Paraguay provided its users with the best overall mobile experience, with an Excellent Consistent Quality of 76.4%. Claro Argentina was second and Claro Uruguay third at 75.4% and 72.2% respectively.
- For Core Consistent Quality, Movistar Uruguay and Antel Uruguay tied for first place at 89%, Claro Paraguay, who ranked third.
- Personal in Argentina had the fastest network in Tutela's testing, at 18.9 Mbps, followed by joint second-place Claro Brazil and Antel Uruguay.

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 2019 are not necessarily representative of year-on-year changes in the end-to-end user experience.

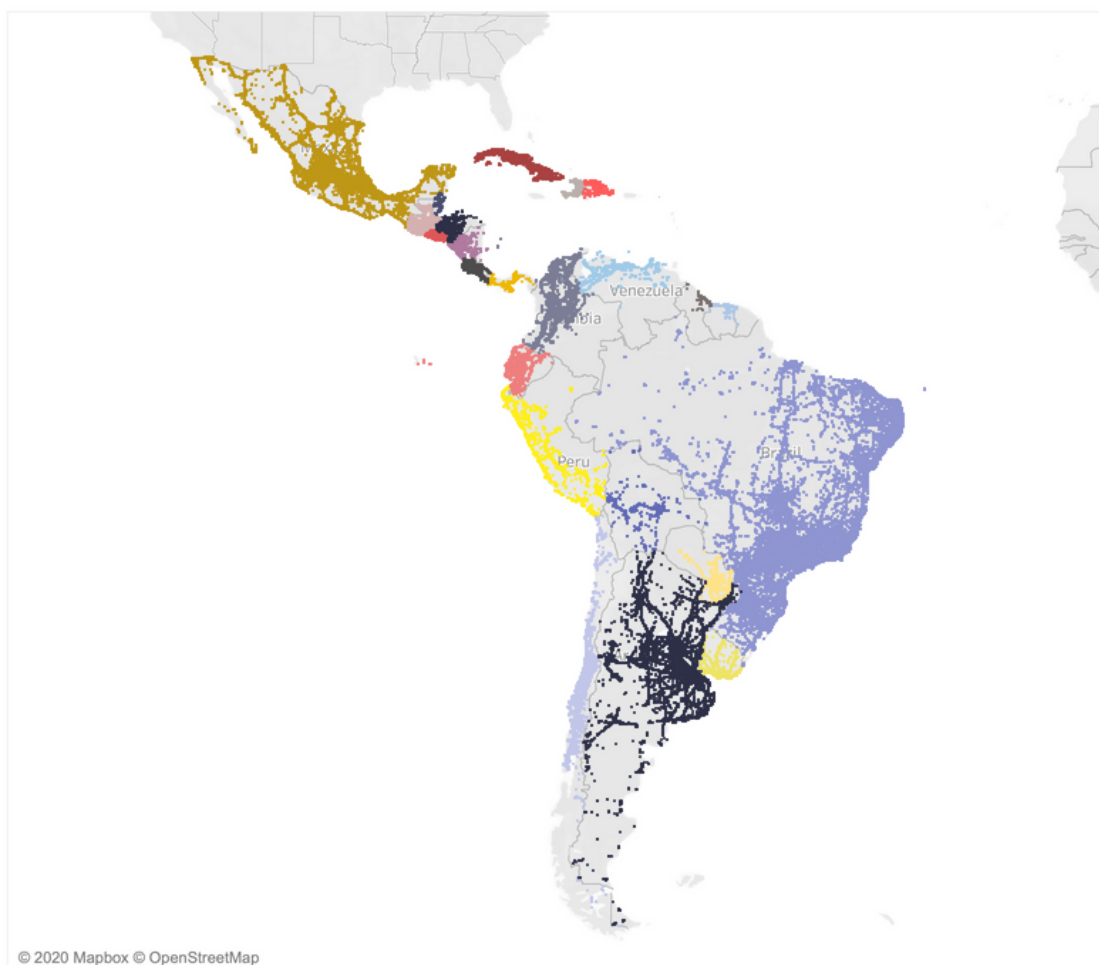


The methodology is covered in detail at the end of this report and [on our website](#), but simply put, there are two sets of thresholds, Excellent and Core. A connection that hits the Excellent threshold is sufficient for use-cases like 1080p video streaming or multiplayer gaming, while a Core connection 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.

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Common Coverage Areas across Latin America



Excellent Consistent Quality

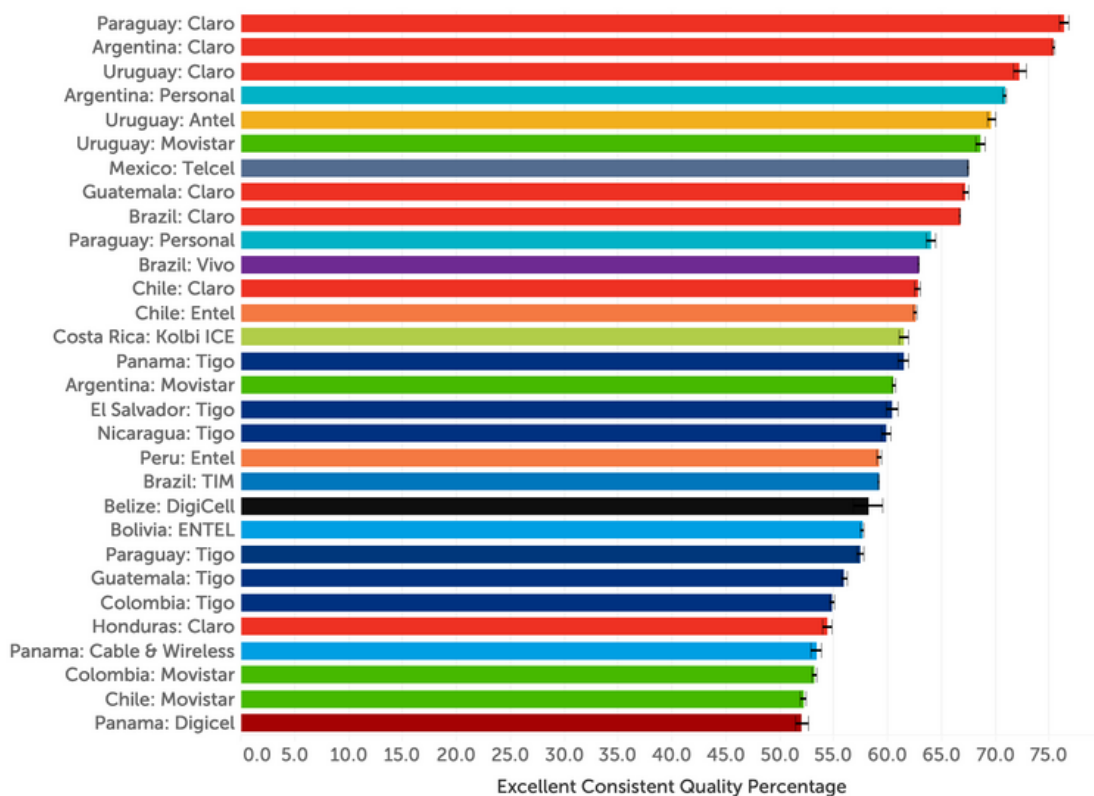
Claro users in Paraguay experienced the best mobile experience of any national operator in any country of the Latin American region. Tutela measures this using Excellent Consistent Quality, which represents the percentage of connections that are good enough for demanding applications like 1080p video streaming, HD group video calling and online mobile gaming. The results are from Common Coverage Areas in each country - the areas where all the operators considered in this analysis for that country provide service. Behind Claro Paraguay, several of Claro's business units

placed incredibly competitively. In second place was Claro Argentina, followed by Claro Uruguay in third, and six of the top 10 operators in the region were América Móvil owned operators (Claro or Telcel). Claro was also the leading operator for Excellent Consistent Quality in eight of the countries tested, as well as joint first in Chile with Entel. On a country level, Paraguay, Argentina and Uruguay all stand out. All three of Uruguay's national carriers placed among the top 10, while two Argentinian and two Paraguayan operators also placed in the top 10.

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Top 30 mobile network operators in Latin America

Excellent Consistent Quality in Common Coverage Areas



Excellent Consistent Quality

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Leading operator for Excellent
Consistent Quality by country



Core Consistent Quality

For Core Consistent Quality, Tutela's measure of user experience for day-to-day applications such as SD video streaming, web browsing and social media sharing, two Uruguayan providers tied for the top position - Movistar and Antel. This was followed by the two top-placed providers for Excellent Consistent Quality, Claro Paraguay and Claro Argentina, who placed third and fourth respectively. Claro Uruguay, who placed third for Excellent Consistent Quality in Latin American, placed sixth for Core Consistent Quality. Meanwhile, Tigo in Bolivia, who did not appear in the top

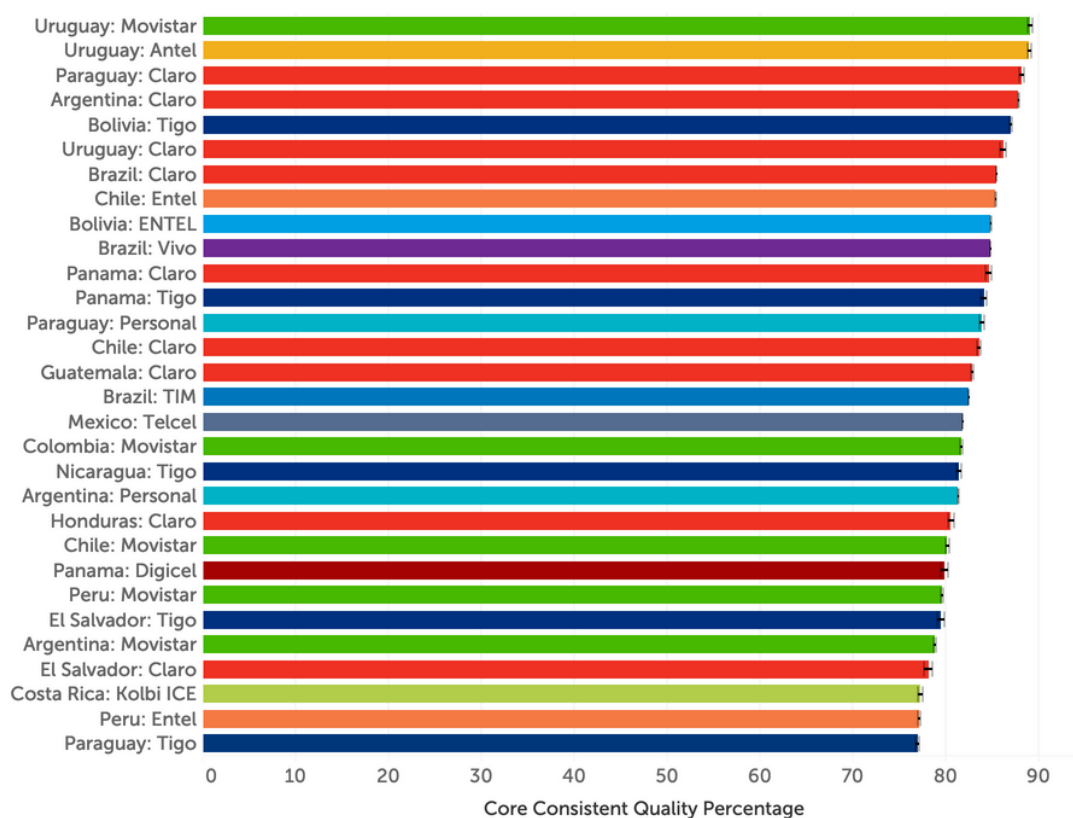
30 operators for Excellent Consistent Quality, rose to fifth overall for Core Consistent Quality. Entel Chile, who ranked joint 12th with Claro Chile for Excellent Consistent Quality, tied for seventh place with Claro Brazil.

Again we see Uruguay stand out with all three operators in the top 10. Meanwhile, Brazil and Bolivia also have two of their mobile network providers ranked among the top 10 across the region.

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Top 30 mobile network operators in Latin America

Core Consistent Quality in Common Coverage Areas



Download throughput

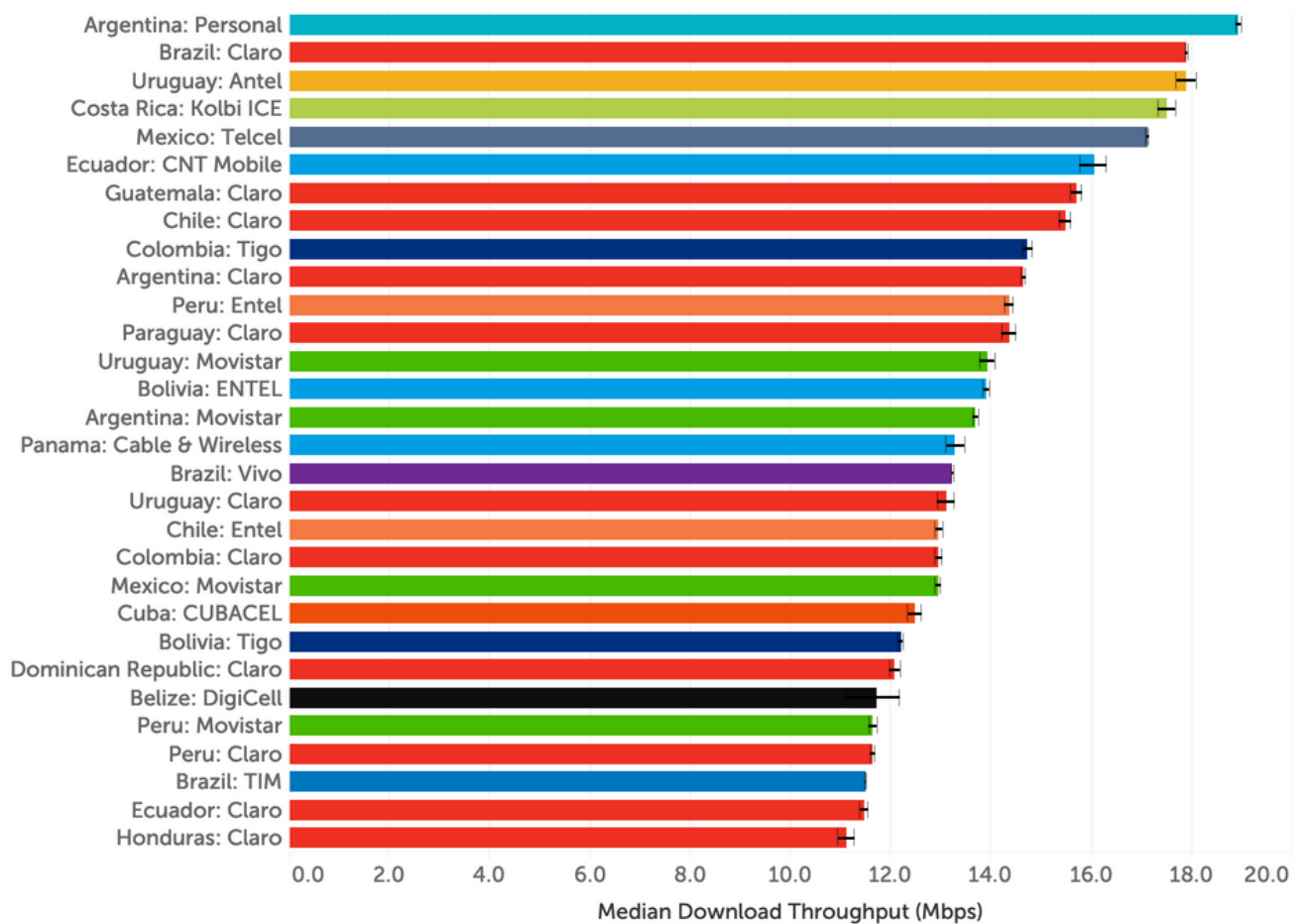
For median download speed, Personal in Argentina was the conclusive winner at 18.9 Mbps. Claro Brazil and Antel in Uruguay tie for second place at 17.9 Mbps, while Kolbi ICE ranked fourth, and Telcel Mexico fifth, at 17.5 Mbps and 17.1 Mbps respectively. Unlike in other categories where a select handful of

countries made up the majority of the top 10 slots, the results for download throughput were more variable with Argentina the only country to have two providers in the top 10. However, from an organizational perspective, América Móvil continues to do well, with five operations placing in the top 10 slots.

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Top 30 mobile network operators in Latin America

Median download throughput in Common Coverage Areas





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 84 million speed and latency tests, between May 1st, 2020 and October 31st, 2020.

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



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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