Audit Report.

5G Network Performance US, 04/2023

umlaut
Part of **Accenture**

Report facts

29.6 billion
Samples

**More than
1,300 apps**
Data collecting
applications

1.2 Million Users
5G capable users

**24 weeks,
October 24, 2022
to April, 9 2023**
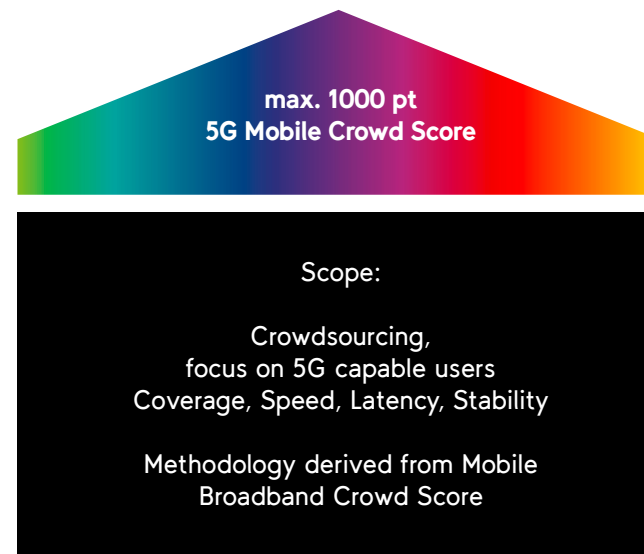Data collection
time period

Methodology

umlaut Score

Measuring performance means collecting a vast multitude of different perfor–mance indicators, so the important aspects can easily be overlooked.
The question is how to stay focused and communicate results smoothly?

The umlaut Score
- aggregates the complete set of KPIs into a single score figure, preserving the drilldown capability.
- features implicit weighting of environment, services and KPIs and comparability on national and international level.

For the 5G umlaut Score four main metrics are taken into account: Coverage, Speed, Latency and Stability. Within this range of metrics umlaut defined six categories, where certain Key Performance Indicators (KPIs) are measured using crowdsourced data. The measurement results are weighted accordingly in a weigthed score matrix following the framework of the umlaut benchmarking methodology.

max. 1000 pt
5G Mobile Crowd Score

Scope:

Crowdsourcing,
focus on 5G capable users
Coverage, Speed, Latency, Stability

Methodology derived from Mobile
Broadband Crowd Score

For the collection of crowd–data used for this audit report, we have integrated a background diagnosis processes into thousands of diverse Android apps. If one of these applications is installed on the end–user's phone, data collection takes place 24/7, 365 days a year.
We focus on the user experience. Our data collection is compliant with the GDPR, since we do not include any personal user data. This unique crowdsourcing techno–logy allows us to collect data about real–world experience wherever and whenever customers use their smartphones to consume data services or place phone calls.
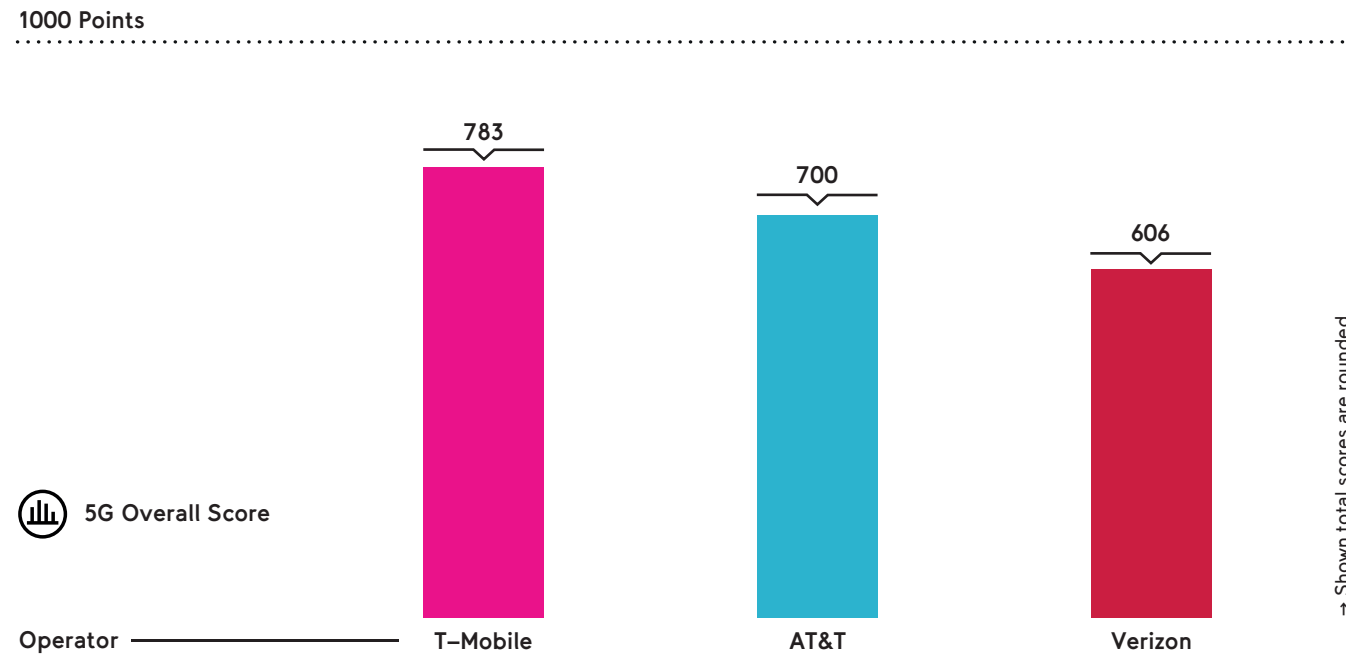
*KPIs relevant for 5G crowd score reliability scope

Category	Points
5G Coverage	max. 250
5G Coverage Reach	75
Time on 5G*	175
5G DL Speed Passive	max. 150
5G HD Video Class*	45
5G UHD Video Class	105
5G DL Speed Active	max. 150
5G Average Data Rate*	105
5G P90 Data Rate	45
5G UL Speed Active	max. 150
5G Average Data Rate*	105
5G P90 Data Rate	45
5G Latency	max. 150
5G OTT Voice Class*	45
5G Gaming Class	105
5G Stability*	max. 150
5G Transaction Success*	150
Total	1000

5G Score

Nationwide 5G Score overview

1000 Points

783

700

606

5G Overall Score

→ Shown total scores are rounded.

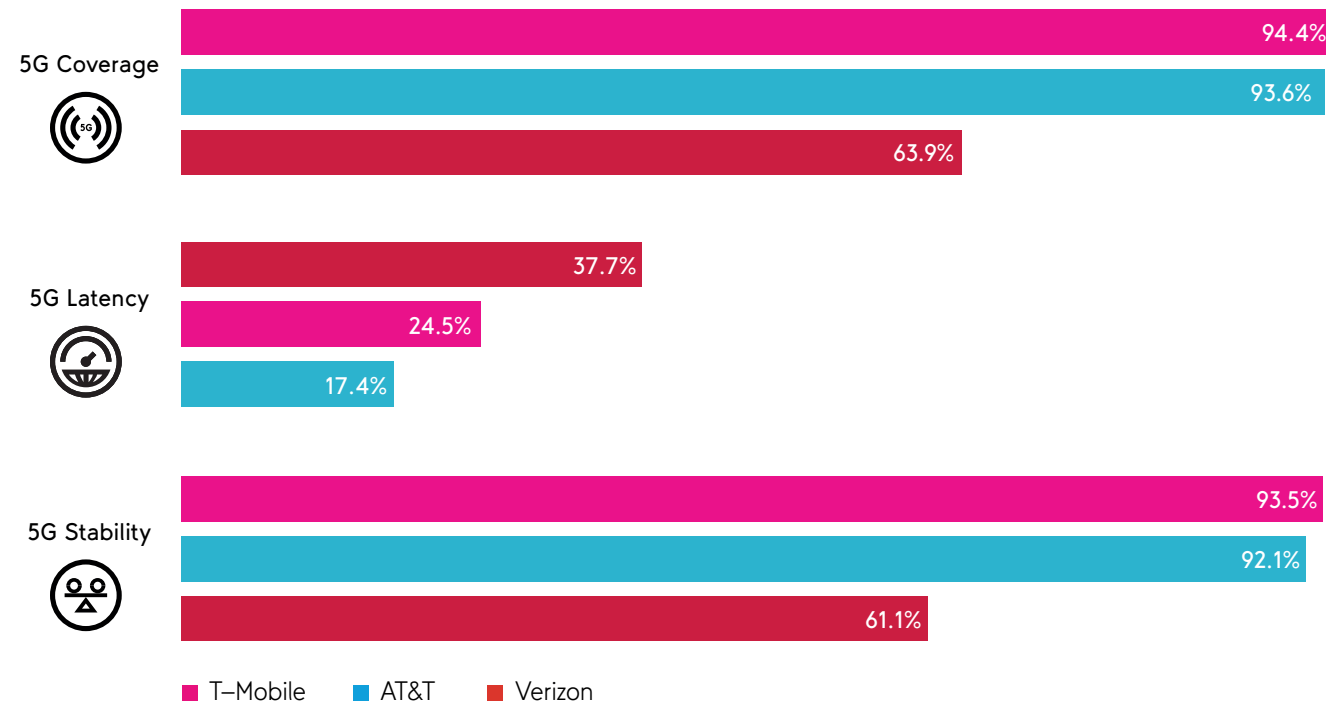| Operator | T—Mobile | AT&T | Verizon |

The ranking is according to the 5G umlaut score, based on nationwide Crowdsourcing measurements between October 24, 2022 and April 9, 2023. Max. achievable score = 1000

Coverage, Latency and Stability

5G Coverage, 5G Latency and 5G Stability category overview

Download and Upload Speed

5G Download Speed and 5G Upload Speed category overview

5G Coverage

T–Mobile	94.4%
AT&T	93.6%
Verizon	63.9%

5G Latency

Verizon	37.7%
T–Mobile	24.5%
AT&T	17.4%

5G Stability

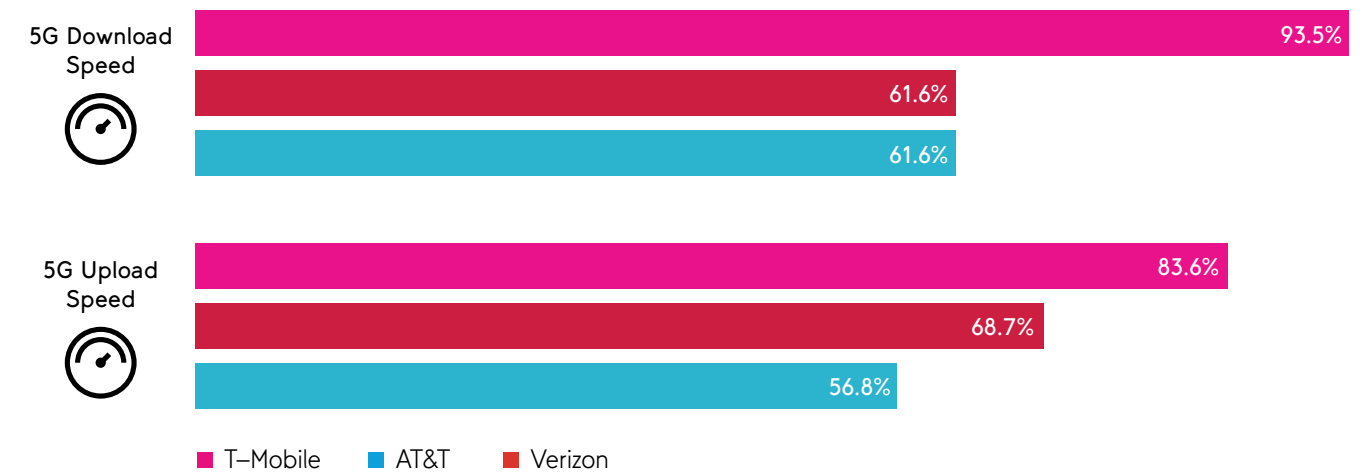|	
T–Mobile	93.5%
AT&T	92.1%
Verizon	61.1%

■ T–Mobile   ■ AT&T   ■ Verizon

The ranking is according to the 5G umlaut score, shown values are in percent of the maximum achievable 5G Coverage score = 250, max. achievable 5G Latency score = 150, max. achievable 5G Stability score = 150

5G Download Speed

T–Mobile	93.5%
Verizon	61.6%
AT&T	61.6%

5G Upload Speed

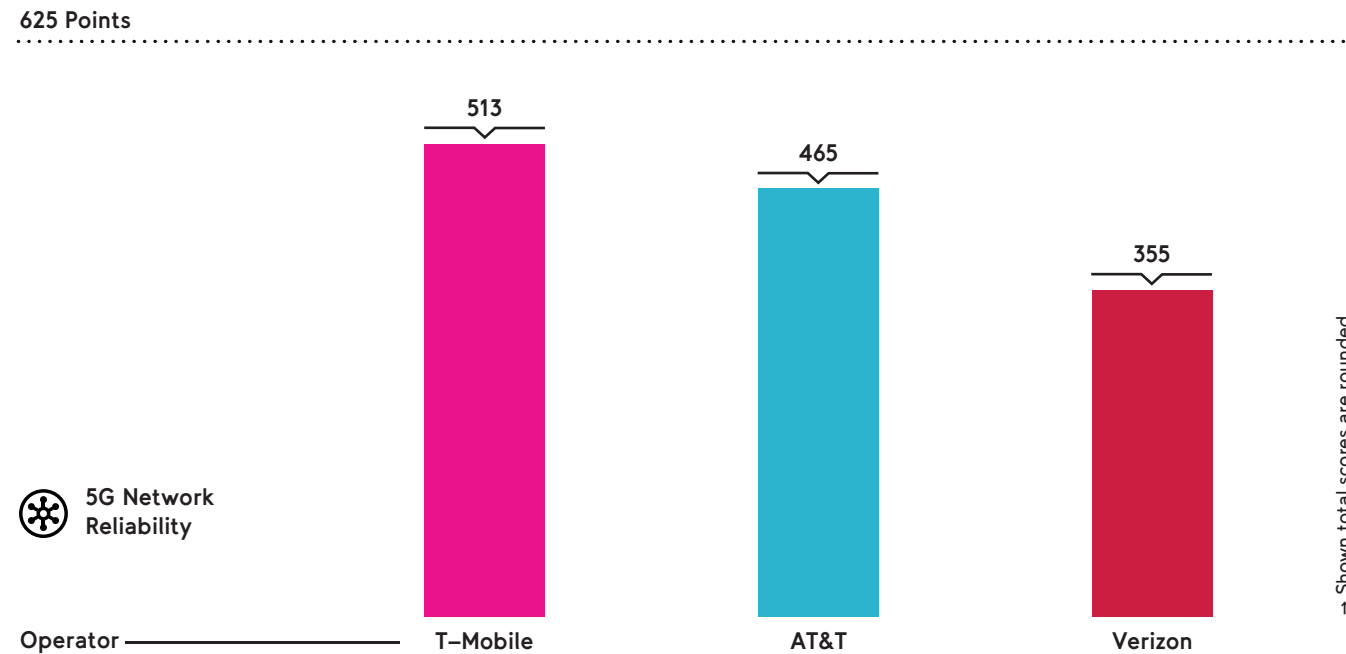|	
T–Mobile	83.6%
Verizon	68.7%
AT&T	56.8%

■ T–Mobile   ■ AT&T   ■ Verizon

The ranking is according to the 5G umlaut score, shown values are in percent of the maximum achievable 5G DL Speed score = 300, max. achievable 5G UL Speed score = 150

5G Relıabılıty

Nationwide 5G Reliability overview

625 Points

513

465

355

5G Network
Reliability

→ Shown total scores are rounded.

Operator ——————————— T–Mobile   AT&T   Verizon

The ranking is according to the 5G umlaut score, based on nationwide Crowdsourcing measurements between October 24, 2022 and April 9, 2023. Max. achievable score = 625

5G Relıabılıty

Scope split

5G Reliability Scope	Points
5G Coverage	
Time on 5G	175
5G DL Speed Passive	
5G HD Video Class	45
5G DL Speed Active	
5G Average Data Rate	105
5G UL Speed Active	
5G Average Data Rate	105
5G Latency	
5G OTT Voice Class	45
5G Stability	
5G Transaction Success	150
Total	625

This table shows the 5G crowd score reliability scope.

5G Reliability is measured using the KPIs shown in the table with a max. achievable score of 625 points. The shown KPIs are also part of the 5G Score.

Key Findings

T—Mobile achieves the highest 5G umlaut Score nationwide.

T—Mobile achieves highest 5G Coverage Score and 5G Stability followed by AT&T.

Verizon achieves highest 5G Latency Score.

T—Mobile leads in the download and upload speed category. AT&T and Verizon are following on par in the download speed category, Verizon is second in the upload speed category.

T—Mobile achieves the highest 5G Reliability Score.

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