

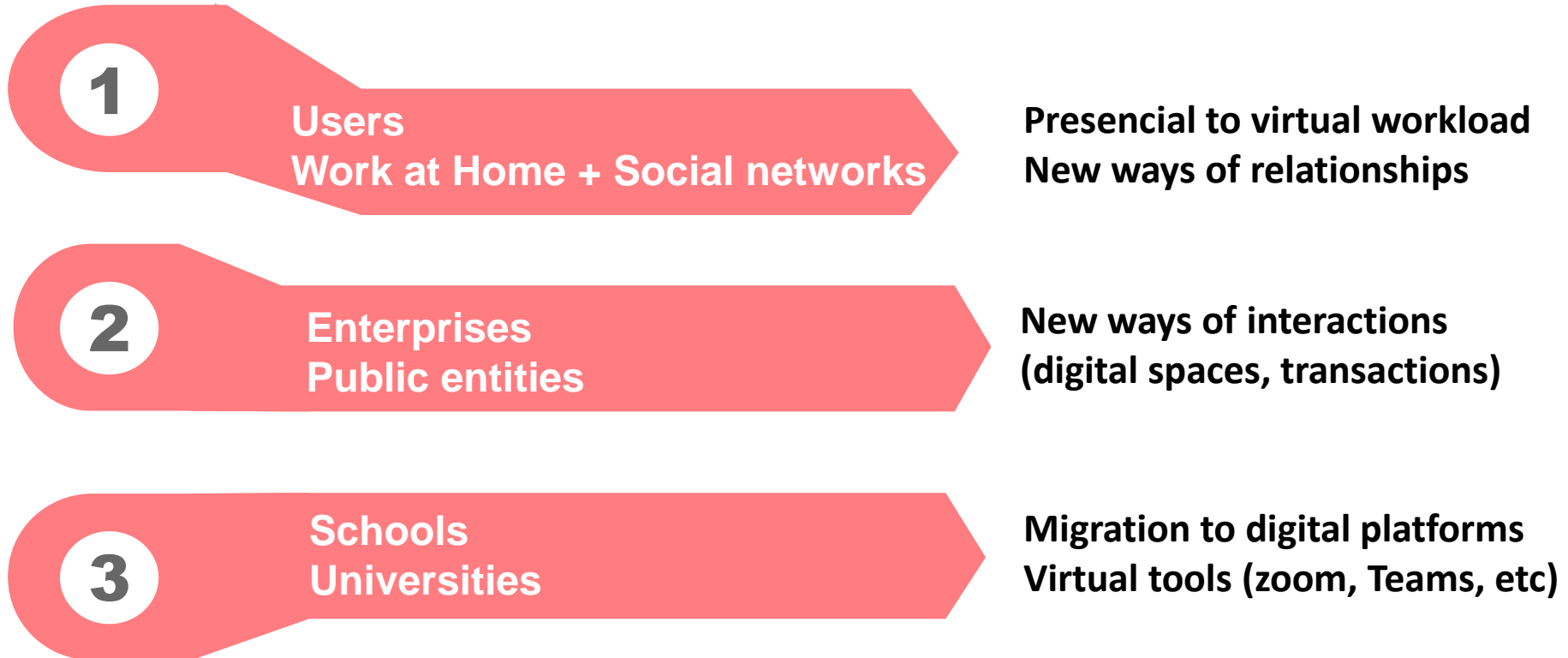


PERFORMANCE, QOS, QOE DURING COVID-19



**Internet Traffic during COVID-19 in
Colombia.**

SOURCES OF IMPACT ON NETWORKS DURING COVID-19

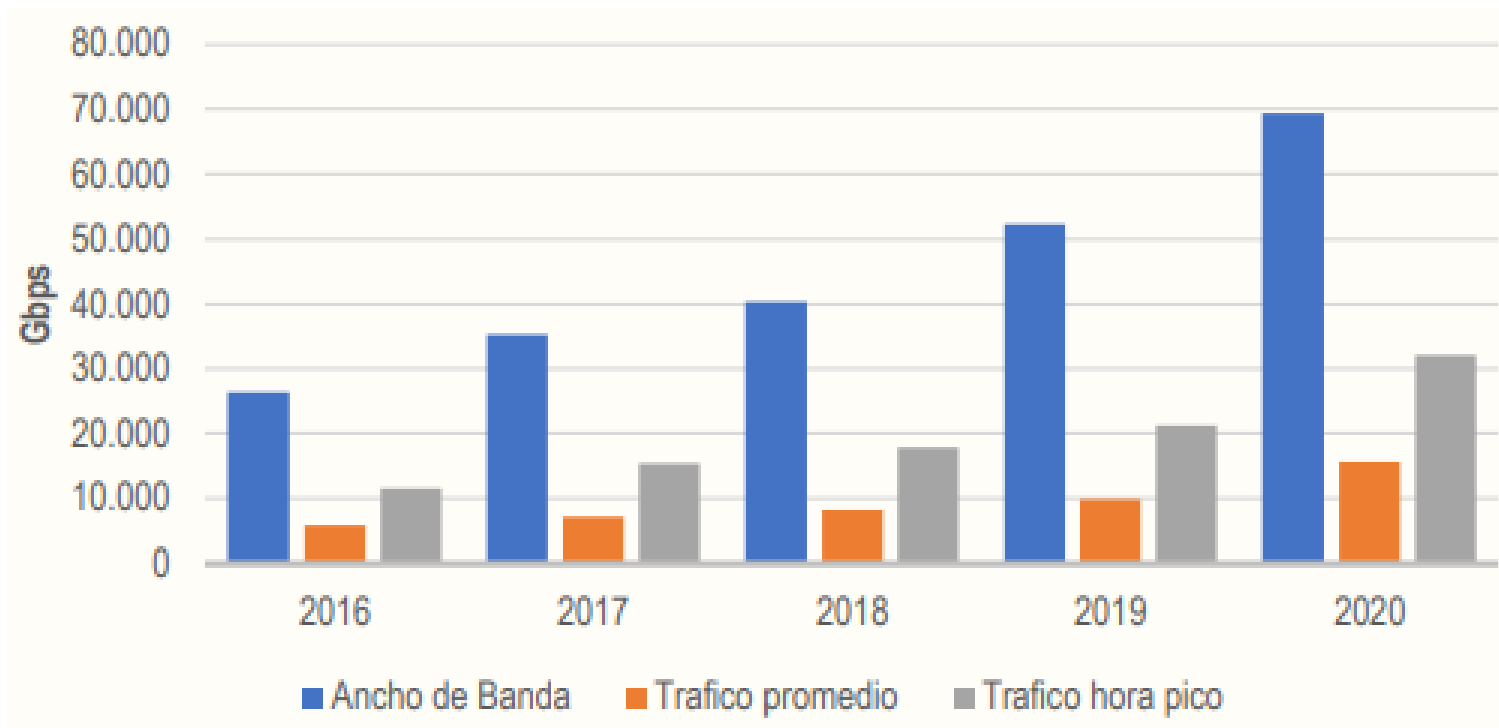


Networks have had to sustain more traffic and new services that previously did not exist or were not common

INTERNATIONAL SCENARIO



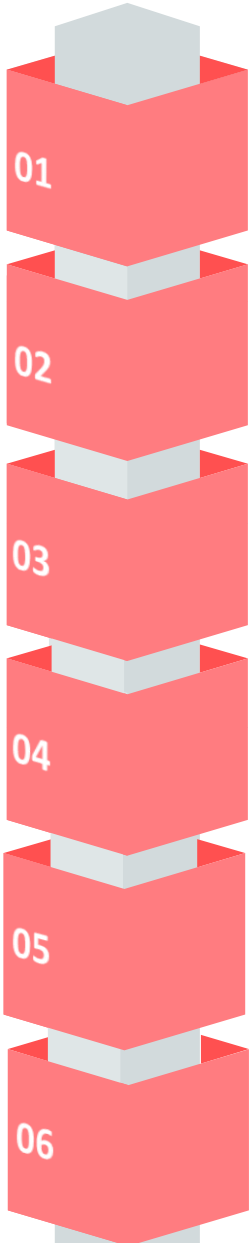
Latin America Internet Traffic 2016-2020



Latin America presented a growth of 59% in Internet traffic in 2020, and an increase in its Internet capacity of 32%

Telecommunications industry in the region has risen to the challenge of keeping people connected through a resilient network infrastructure (GSMA 2020)

INTERNATIONAL REGULATORY MEASURES IN TELECOMMUNICATION SECTOR IN RESPONSE TO COVID



01 Encouraging operators to increase bandwidth to customers to maintain QoS

02 Support initiatives for free Access to educational websites and free concession of data

03 Use of 4G/5G for FWA to rapidly increase coverage near hospitals

04 More flexible use of IMT spectrum (temporary or permanente licenses)

05 Voluntary and obligated measures to network management to mantain connectivity and QoS

06 Government subsidized broadband services for consumers who work and study from home
Measures to minimize regulatory and reporting obligations of licensed operators

Measures adopted in Colombia in the telecommunications sector



01

CRC is responsible for defining rules and events under which ISPs can adopt traffic prioritization measures that guarantee users access to content or applications related to:

- Health services
- Government web pages
- Laboral development activities
- Educational development activities
- Fundamental rights development activities

02

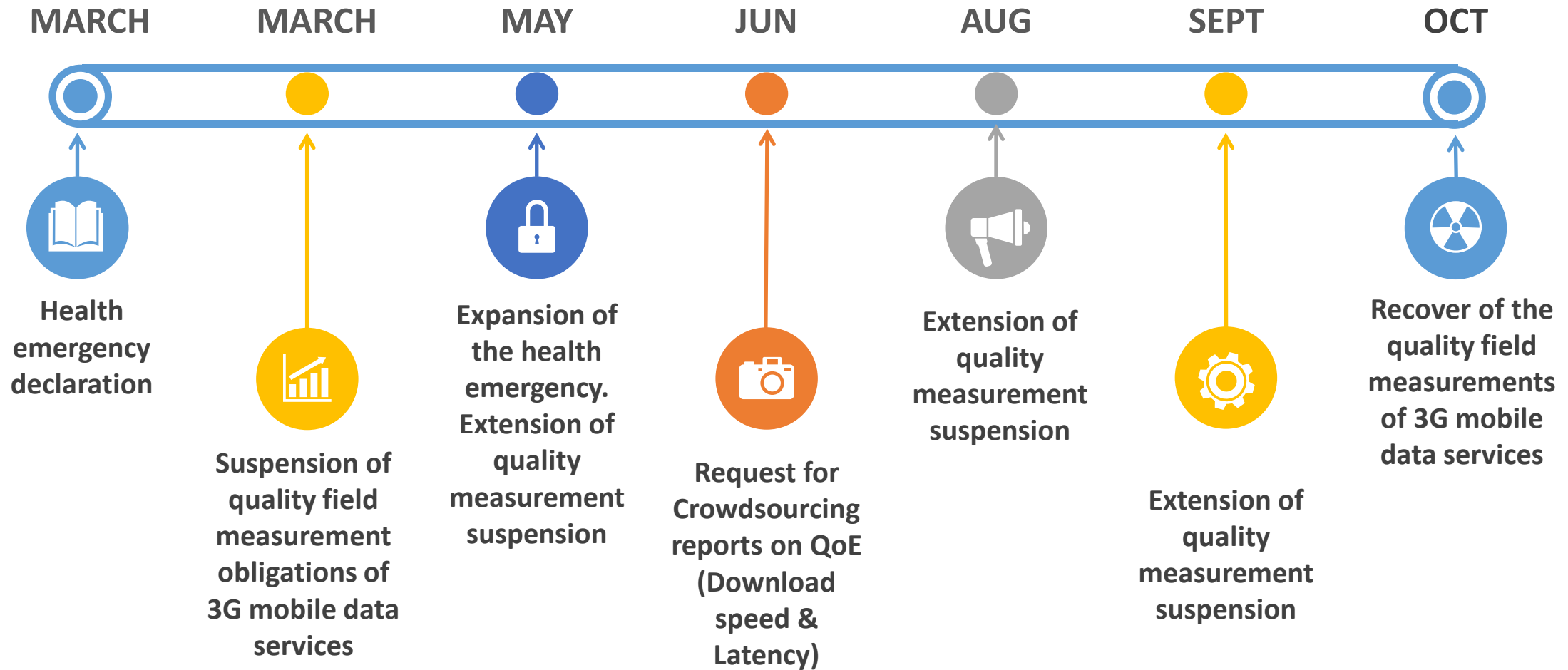
Telecommunications services, including radio broadcasting services, television and postal services, are essential public services

03

Two reports were established for the ISPs:

- Behavior of the traffic of their networks in order to determine the measures to be implemented to prioritize content or applications
- Evidences that justify the prioritization of the applications or contents listed above, 24 hours before starting said prioritization,

REGULATORY FLEXIBILIZATION ON QUALITY MEASURES



DASHBOARD FOR INFORMATION ON TRAFFIC DURING COVID-19



Internet traffic information dashboard reported by Internet service providers during COVID-19.

Created in may 4th.

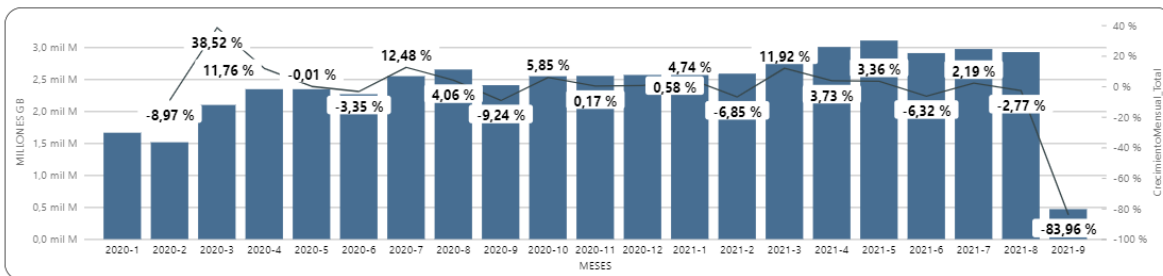
Information:

- Monthly traffic
- Daily traffic
- Peak hour traffic



LINK: [Tráfico de Internet - COVID-19 | Postdata](#)

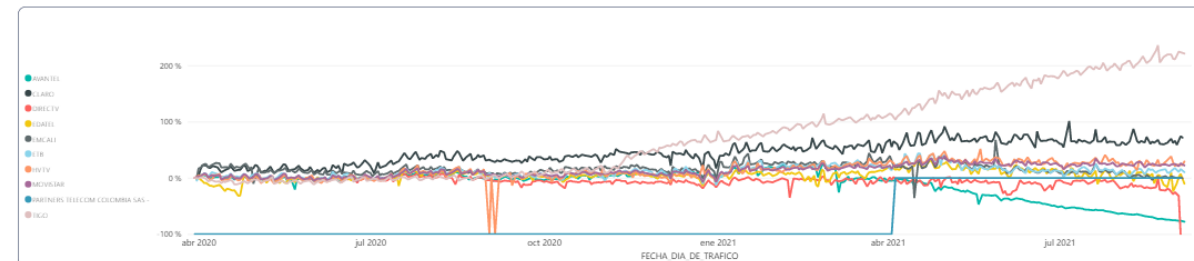
CRECIMIENTO MENSUAL DEL TRÁFICO TOTAL



La información cargada al sistema se encuentra hasta el día: 05/09/2021

Para la gráfica "CRECIMIENTO MENSUAL DEL TRÁFICO TOTAL", Se descuentan los totales mensuales de Edatel y Tigo, toda vez la información de UNE ya los incluye.

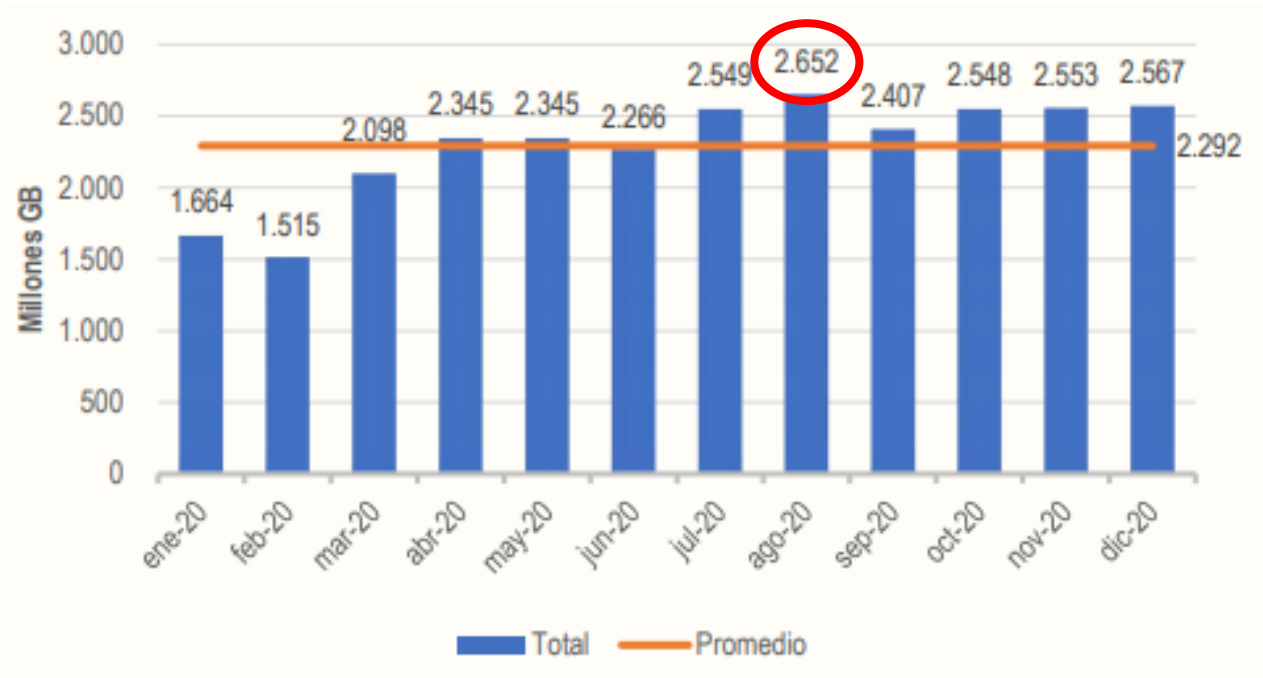
CRECIMIENTO DEL TRÁFICO DIARIO



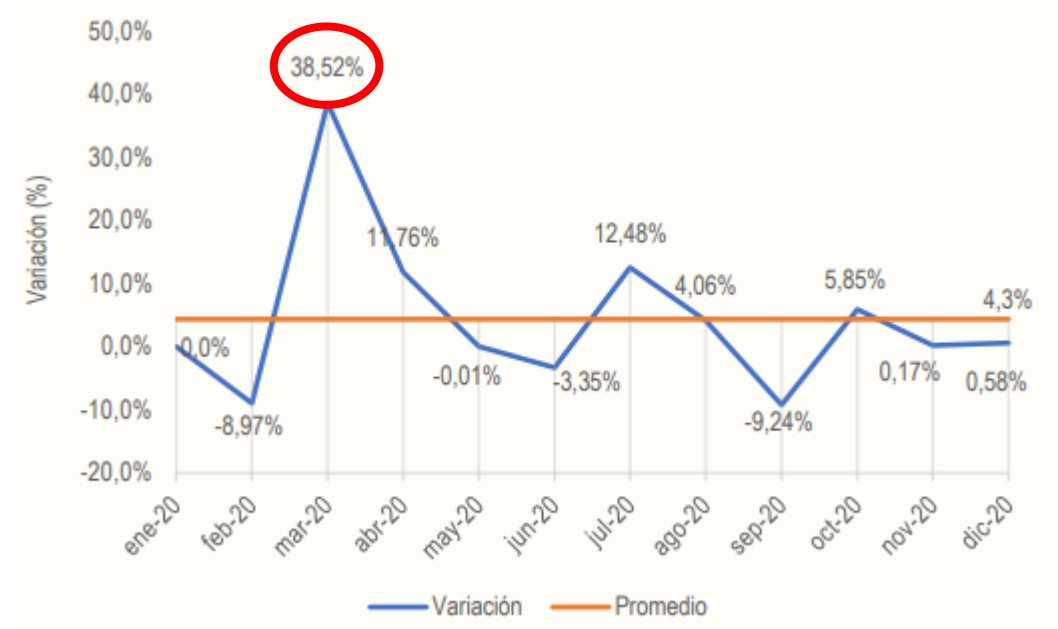
2020 TRAFFIC EVOLUTION



2020 Monthly Internet traffic



2020 Monthly Internet traffic Variation



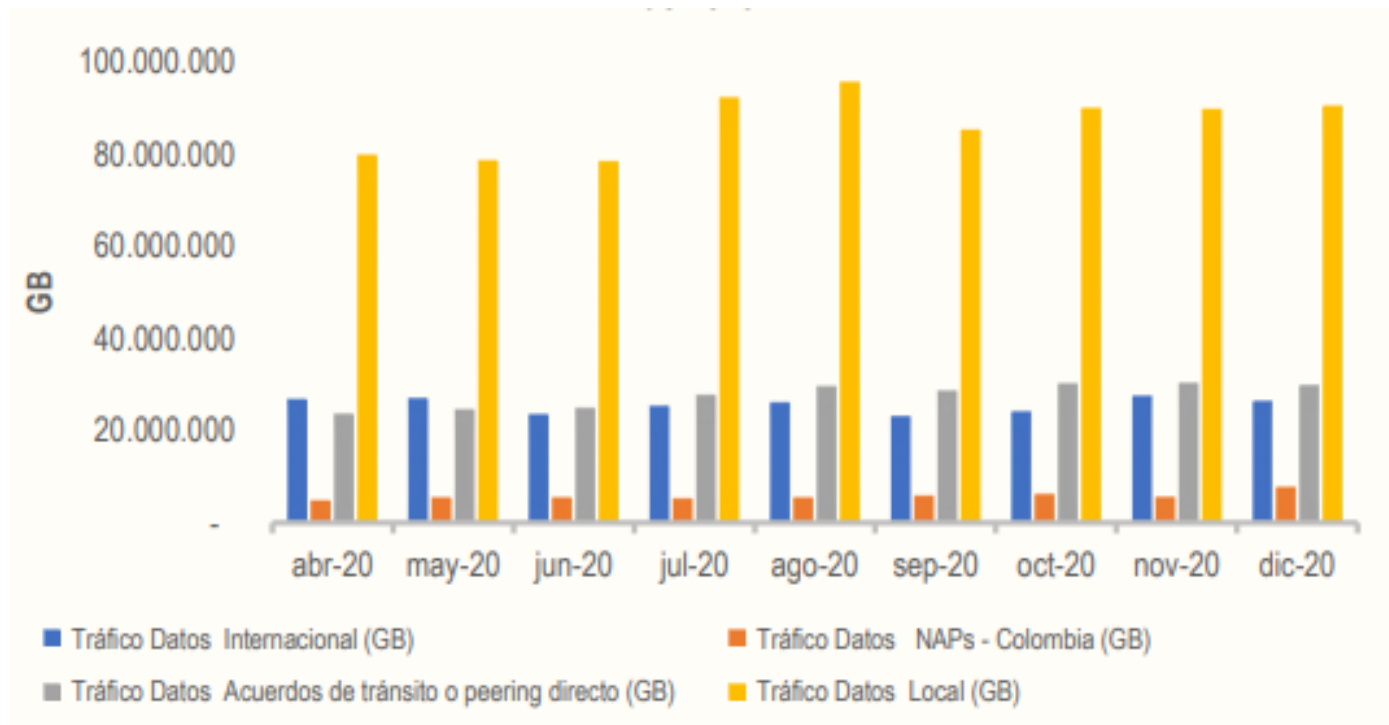
August highest traffic of the year: containment measures

March highest traffic variation: beginning of preventive isolation measures

2020 TRAFFIC EVOLUTION



Monthly Internet traffic by destination in peak hours

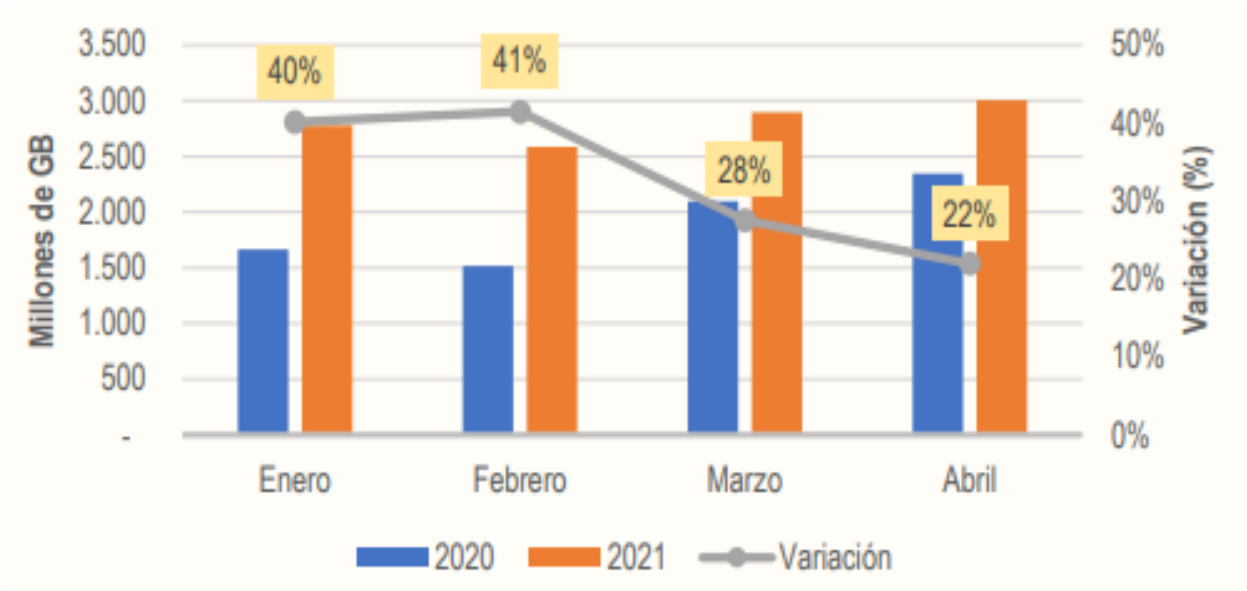


Peak hours: 60% CDNs FB, Google, Netflix - Entertainment
18% Transit or Peering - Streaming offerings
4% National IXP

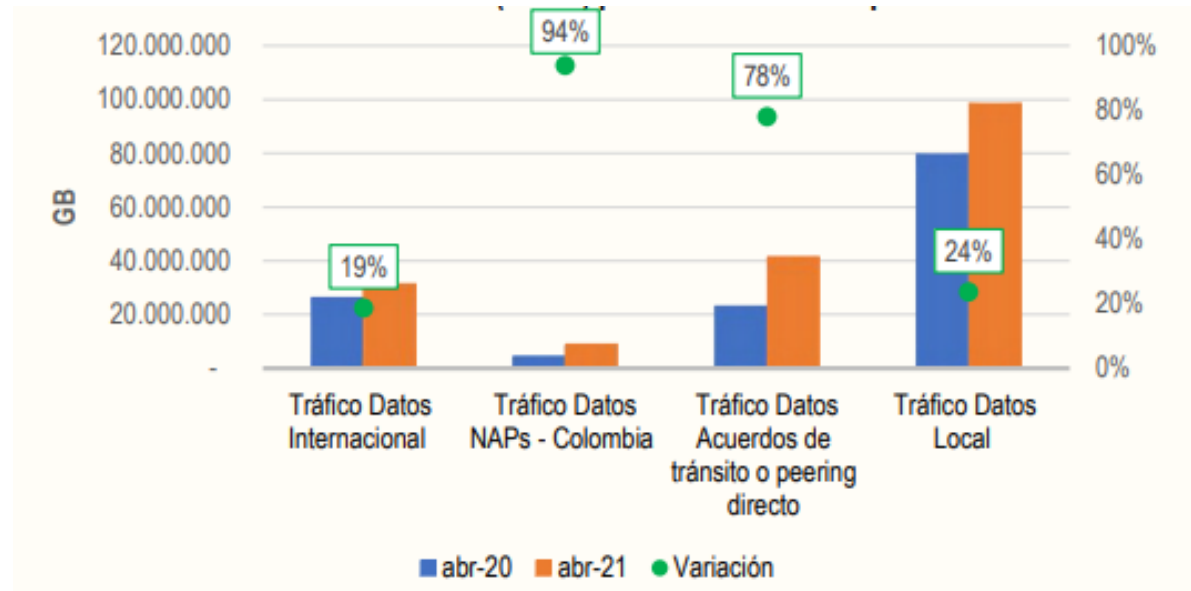
2021 vs 2022 TRAFFIC



Monthly Internet Traffic



Monthly Internet Traffic by destination

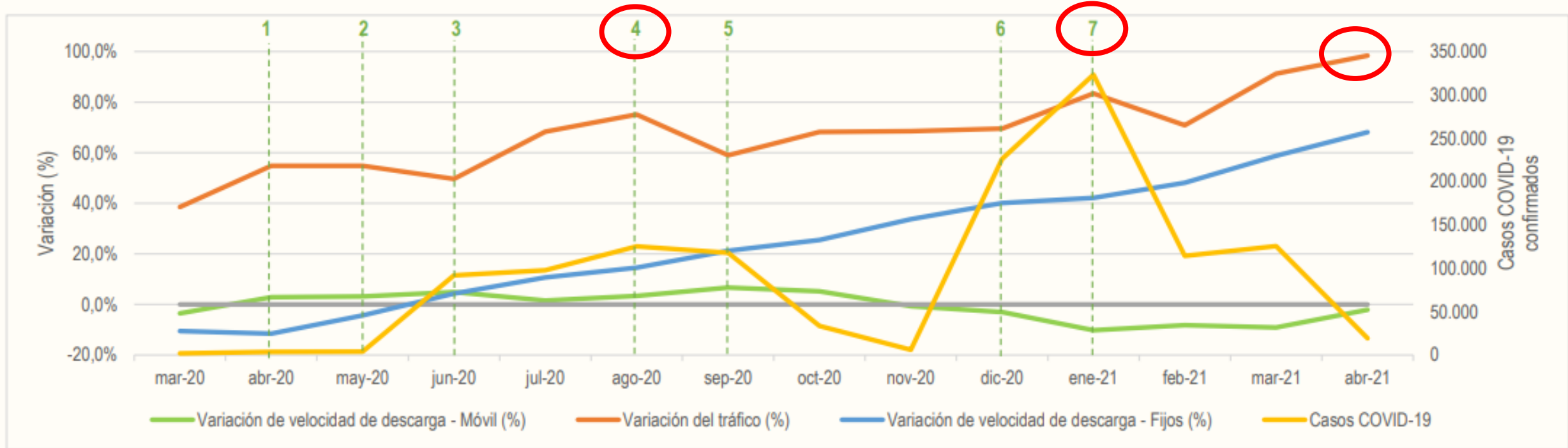


Significative increase to the same destinations

QoS vs. TRAFFIC



Monthly Internet Traffic, download speed and COVID-19 Cases



August 2020: 1st wave, stringent quarantine , internet shift to homes. Traffic increased 75% and speed in 14.5%

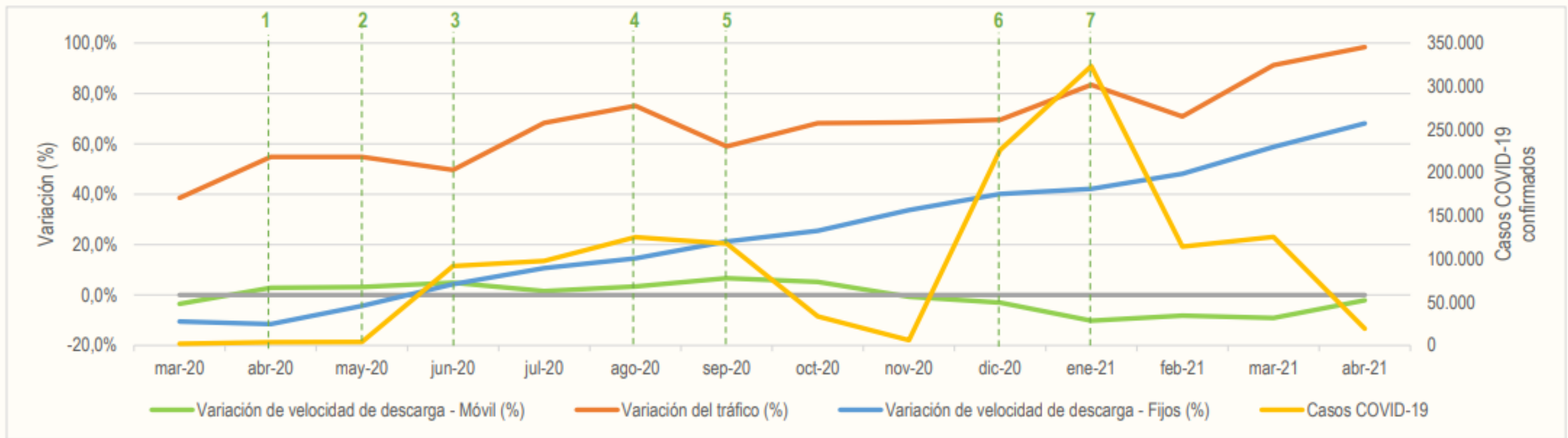
January 2021: 2nd wave. Gradual return to school. Traffic increased 83%, mobile download speed -10%, fixe +42%

April 2021: begining of 3rd wave. Traffic increased 98%. Average mobile download speed decreased 2%, fixed + 68%

QoS vs. TRAFFIC



Monthly Internet Traffic, download speed and COVID-19 Cases

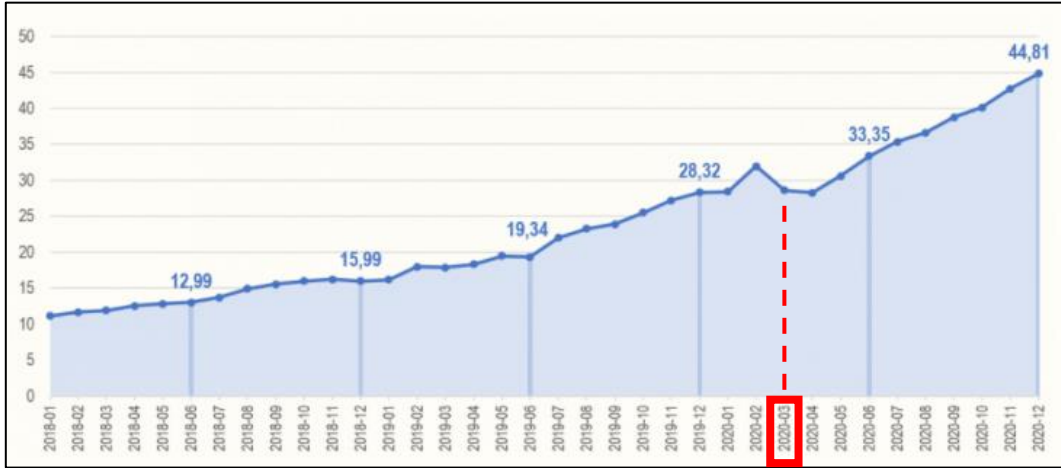


Despite variations in Internet traffic in the country, which initially peaked up to 38%, operators were able to respond to the high demand and continue to guarantee access to the service without trauma.

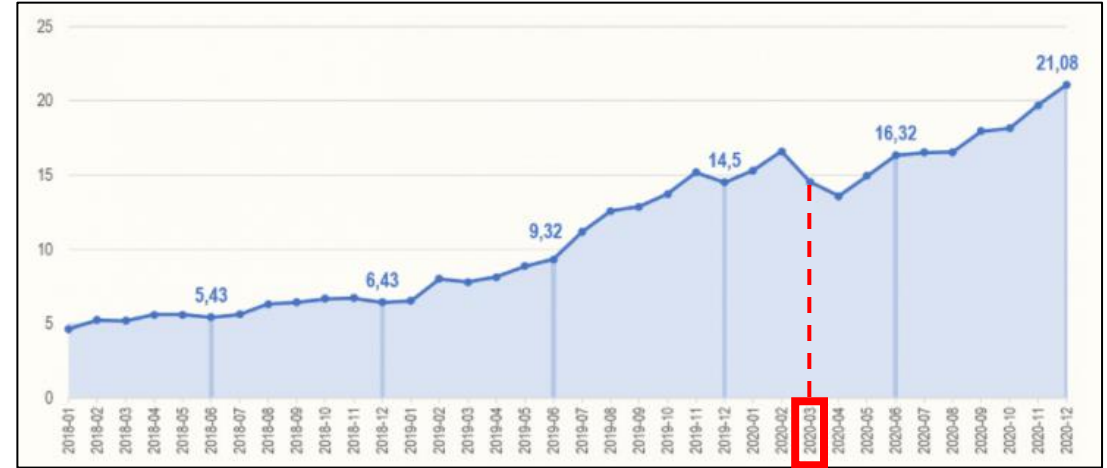
QoE Fixed Internet 2018 - 2020



Average download speed (Mbps)



Average upload speed (Mbps)



Average latency (ms)

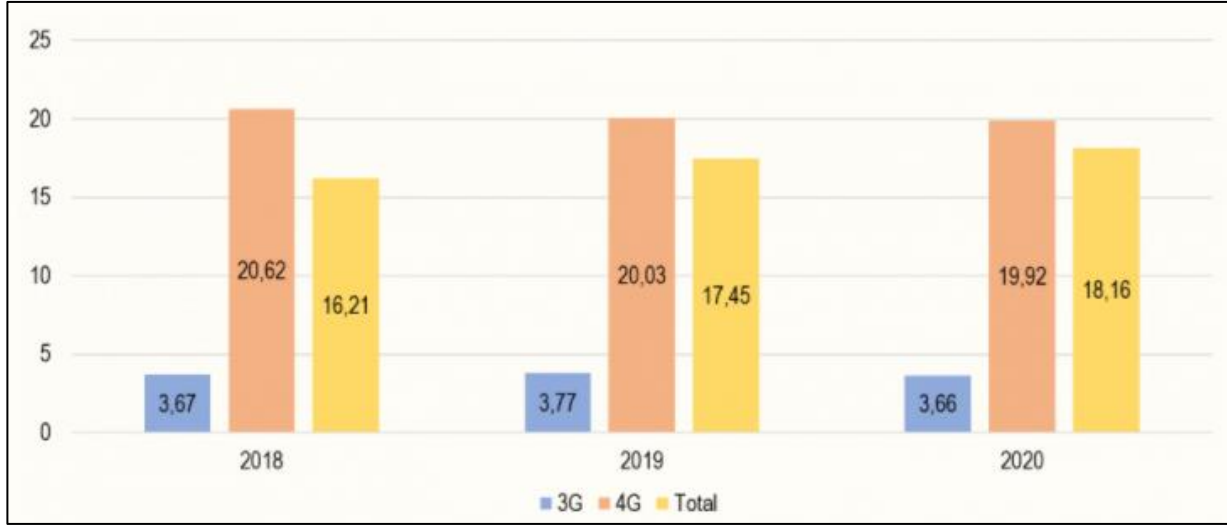


Beginning of preventive isolation measures

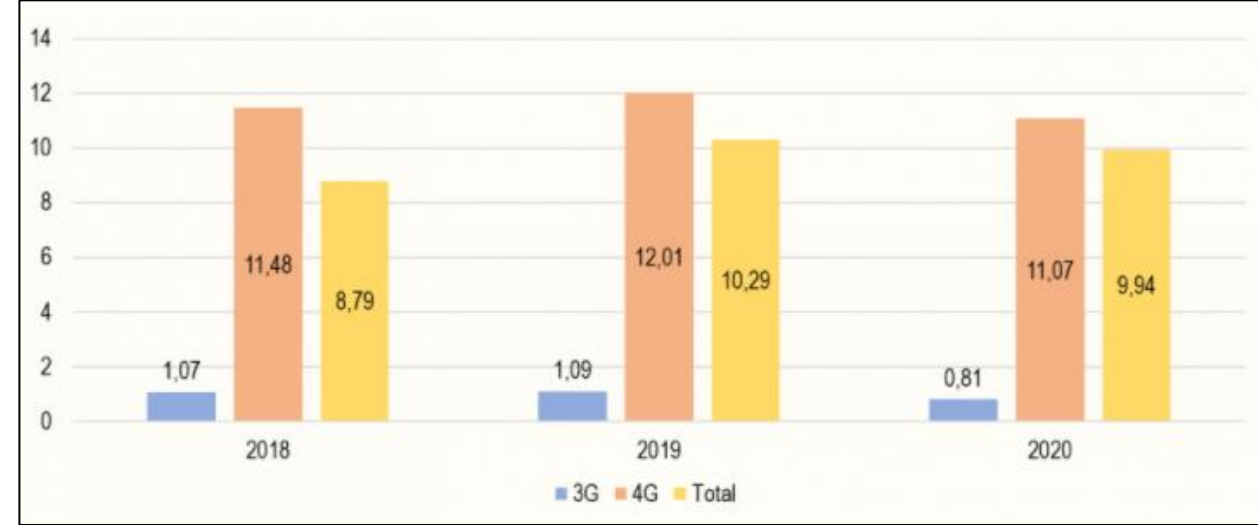
QoE Mobile Internet 2018 - 2020



Average download speed (Mbps)



Average upload speed (Mbps)



Average latency (ms)

