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COVID-19 IMPACT ON THE INTERNET



JARI ARKKO

Senior Expert for Ericsson Research*

Member of the IAB*

*) Not speaking for either

BACKGROUND



- › Big impact on people & society
- › Also an impact on networking
- › A lot of interesting work in the academic community, at the Internet Architecture Board, and the industry



IAB WORKSHOP ON COVID-19 IMPACTS

Position papers for the workshop available at

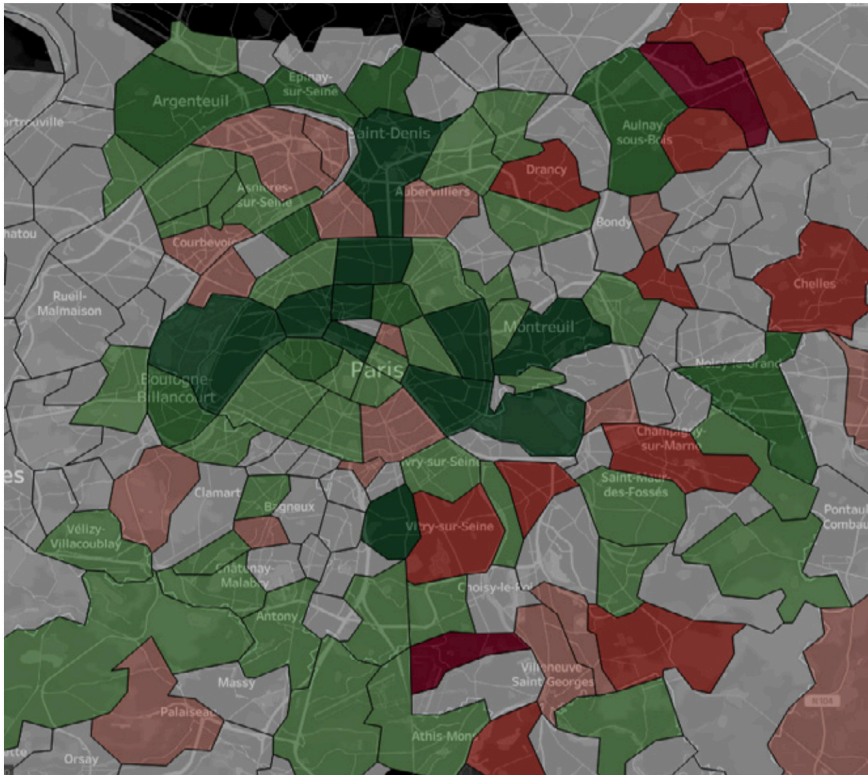
<https://www.iab.org/activities/workshops/covid-19-network-impacts-workshop-2020/>





COVID-19 & INTERNET

Highest traffic level increase Traffic levels similar Highest traffic level decrease



Picture credit: Ericsson Mobility Report June 2020

Immediate changes in March

- › Fixed networks Comcast +30%. NCTA +20%
- › Mobile networks Vodafone +15..30%
Ericsson -10..+20%
- › IXPs +10..30%
- › Impacts on traffic direction
- › ...

Some more predictable growth later

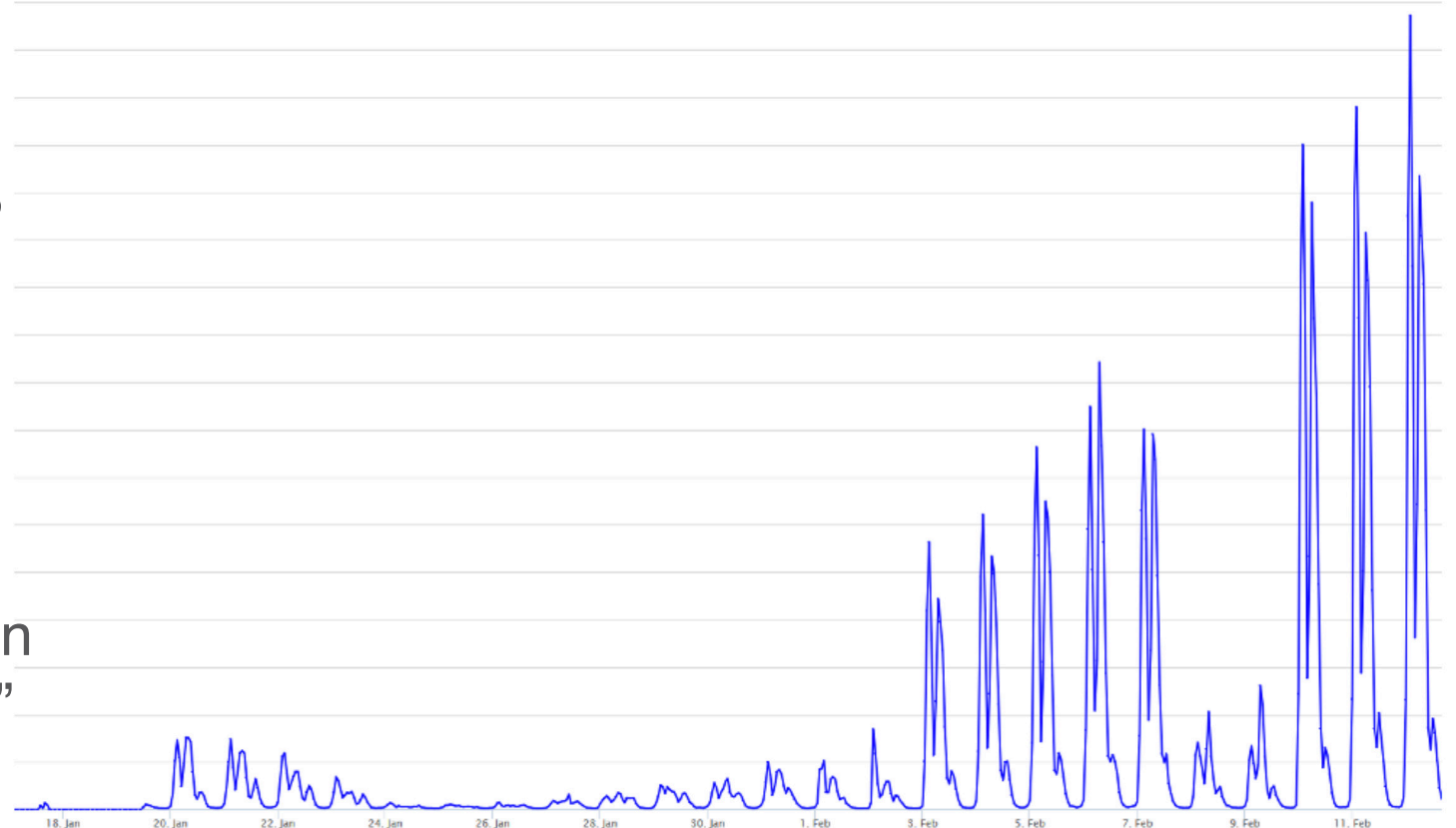
Numbers: Comcast, Vodafone, NCTA, Cisco

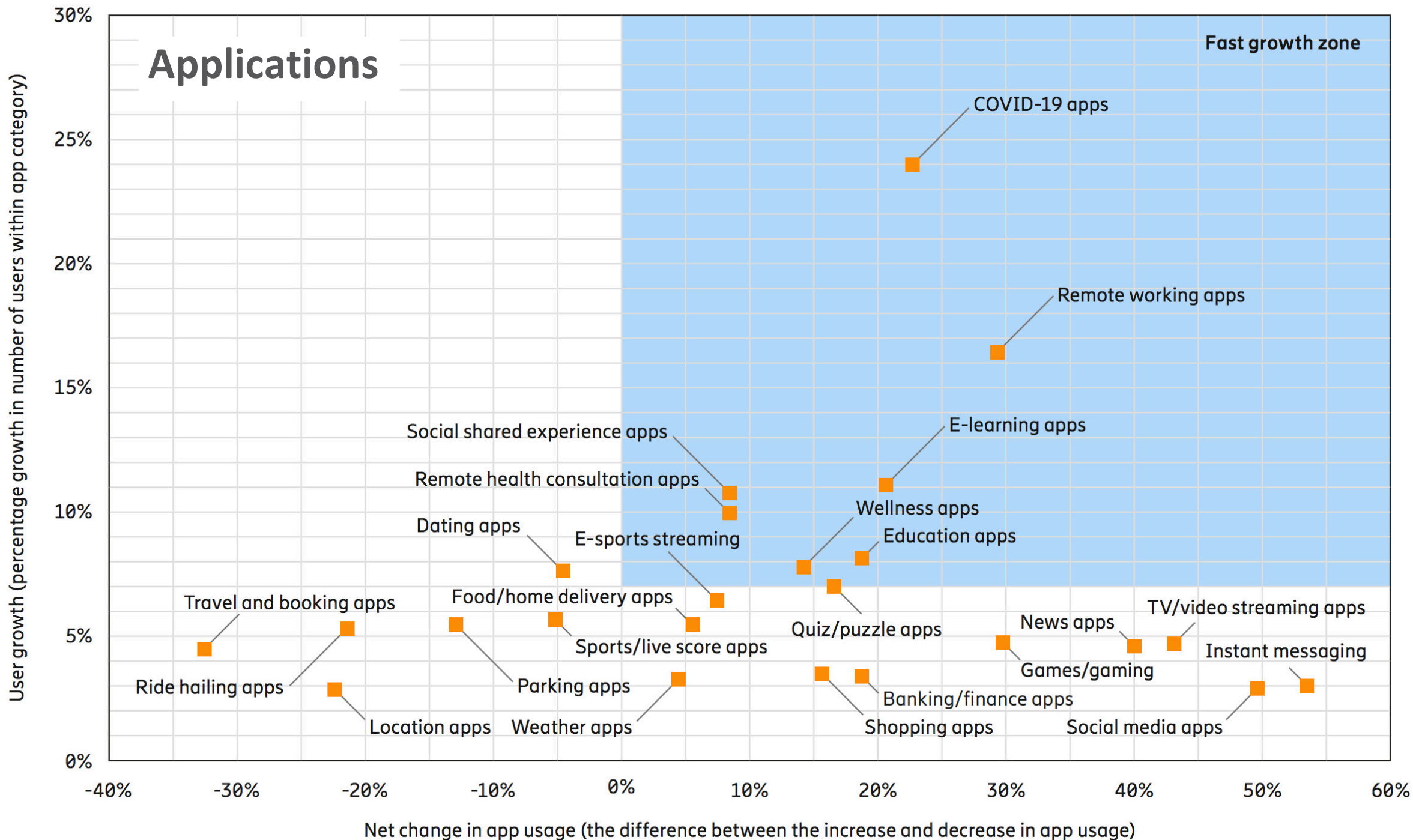


COVID-19 & INTERNET

Meeting services

- › Microsoft +200%
- › Cisco 2-24x
 - Meeting minutes 7 => 13
=> 22 billion Feb-April
 - "We are unaware of any other time on the internet where applications with billions of minutes per month of usage doubled in scale in roughly a month."



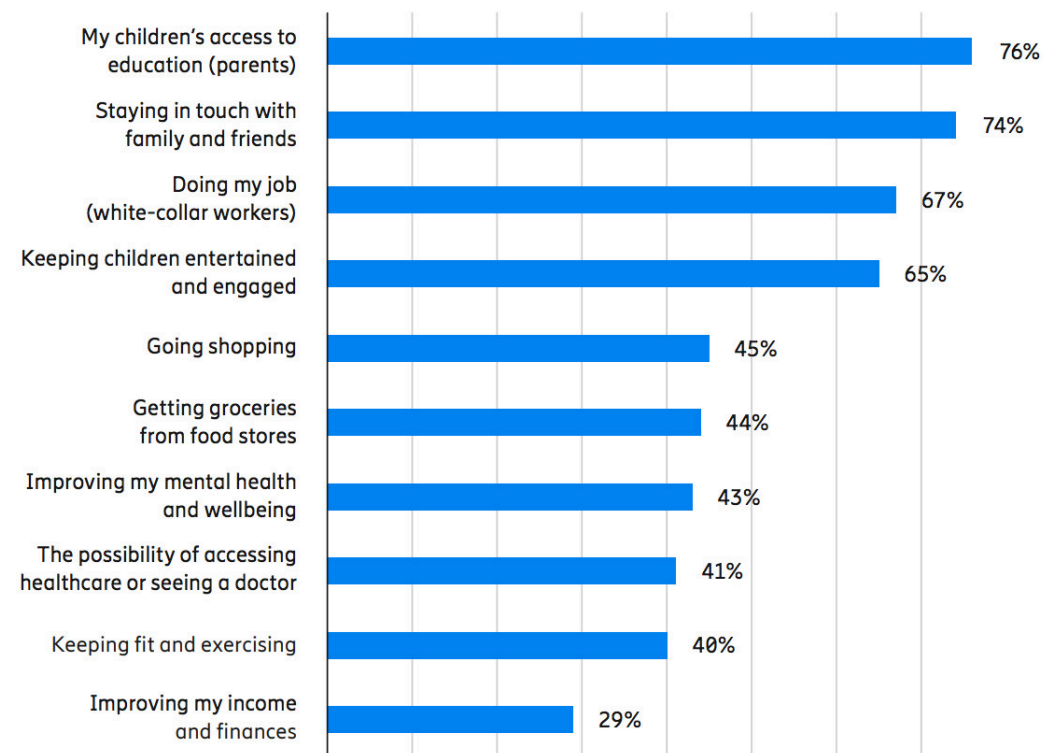


COVID-19 & INTERNET OBSERVATIONS



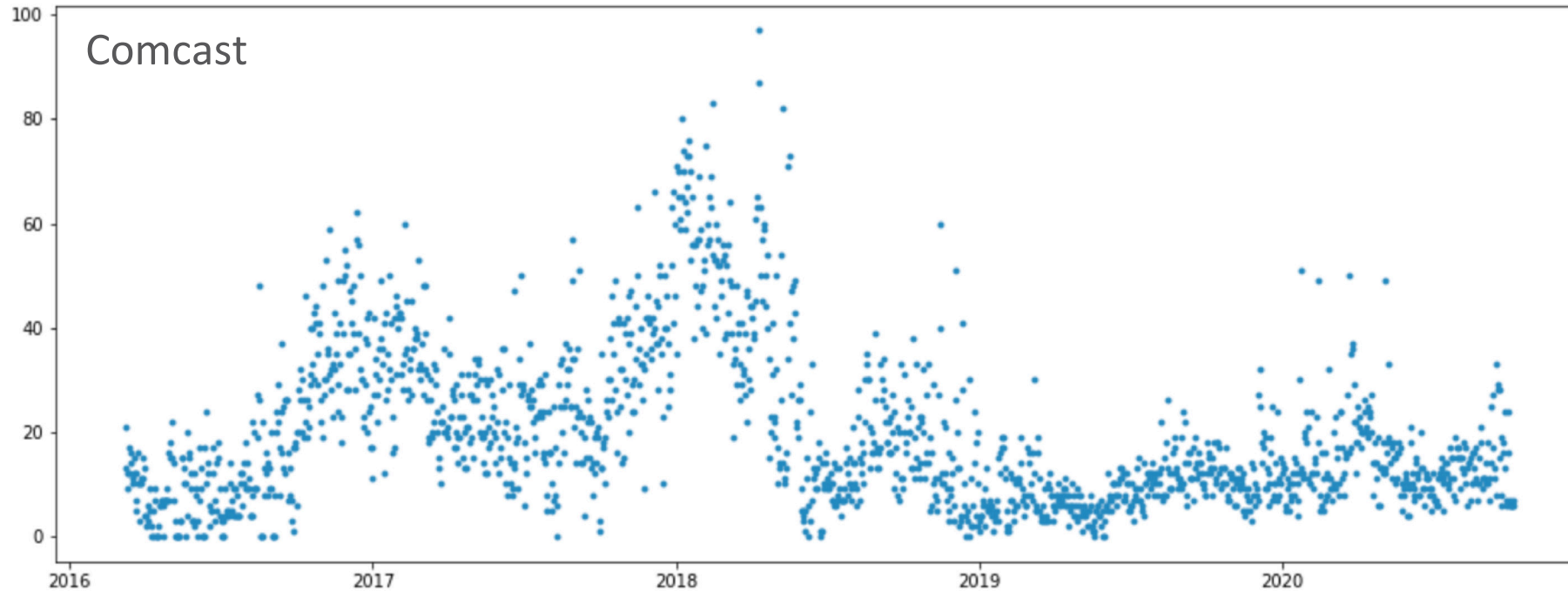
- › 9 in 10 increased Internet activities
- › Online hours increased
- › Likely long-term impacts
 - Further growth of video, new user groups & organizations & more familiarity with apps
 - Importance of resiliency

Figure 3: Share of smartphone users who consider ICT has helped them a lot with different tasks in their daily lives during the COVID-19 pandemic



Base: Smartphone users aged 15–69 who claim their daily life is highly impacted by the lockdown restrictions, in Brazil, China, France, Germany, India, Italy, South Korea, Spain, Sweden, the UK and the US

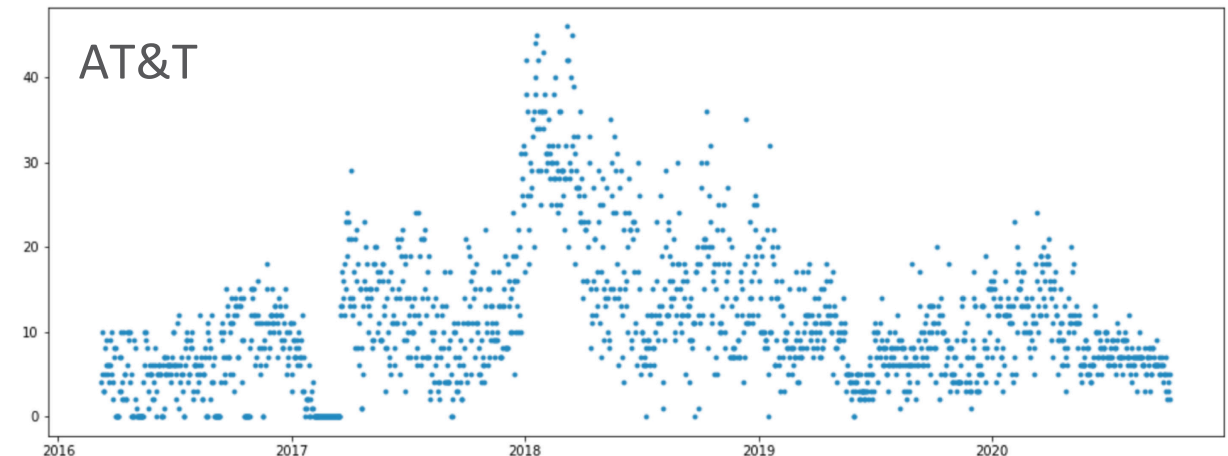
CONGESTION?



Long-term research has seen congestion, but nothing particular is visible in 2020

- › In more detailed level you can see some issues with specific peers etc.

Graphs: D. Clark, IAB workshop





COVID-19 & INTERNET OBSERVATIONS

- › Fairly big immediate shifts
- › Relatively smooth process (?)
 - Why? Capacity & other improvements in the background, but also cloud/cdn deployment models + Internet model

6 in 10 were very satisfied with fixed broadband

3 in 4 felt that mobile broadband was same or better as before the crisis

83%

Of the survey respondents, 83 percent claim that ICT helped them a lot, in one way or another, to cope with the lockdown.

SUMMARY



- › Covid-19 impact was bigger than any other recent event in Internet history
- › And the Internet is alive and kicking! 😊
 - Modularity, general nature, cloud technology + lots of hard background work
- › Speed of changes is increasing, not just for pandemics, but also for other, technical or business changes
 - Encryption, transport protocols, etc.
 - Internet is increasingly in the application layer and easy to change, plus learnings
 - Looking forward to the future evolution – many opportunities but also challenges
- › Don't always believe what it is said on the Internet, even about the Internet!