

2020 Network Performance

THE SHIFT TO HOME AND THE IMPACT TO THE NETWORKS

April 5, 2021



Public confusion at the beginning of the pandemic

32,597 views | Mar 25, 2020, 03:49pm EDT

COVID-19 Pushes Up Internet Use 70% And Streaming More Than 12%, First Figures Reveal

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Why didn't COVID-19 break the internet?

The short answer to why the internet has survived a huge surge in traffic during the global coronavirus pandemic is that the infrastructure that makes up its backbone was designed to survive just such an emergency.



NEWS WEATHER SPORTS COMMUTE FOOD CULTURE TRAVEL

Coronavirus Daily #s Mass. #s Town #s Deaths Map Charts Testing locations

Surging traffic is slowing down our internet

"This is totally unprecedented."



The New York Times

The Virus Changed the Way We Internet

By Ella Koeze and Nathaniel Popper April 7, 2020

Stuck at home during the coronavirus pandemic, with movie theaters closed and no restaurants to dine in, Americans are spending more of their lives online.

But a New York Times analysis of internet usage in the United States from SimilarWeb and Apptopia, two online data providers, reveals that our behaviors shifted, sometimes starkly, as the virus spread and pushed us to our devices for work, play and entertainment.

We are looking to connect and entertain ourselves but are turning away from our phones



Telecom

Report: U.S. networks outperform Europe's during COVID-19 pandemic

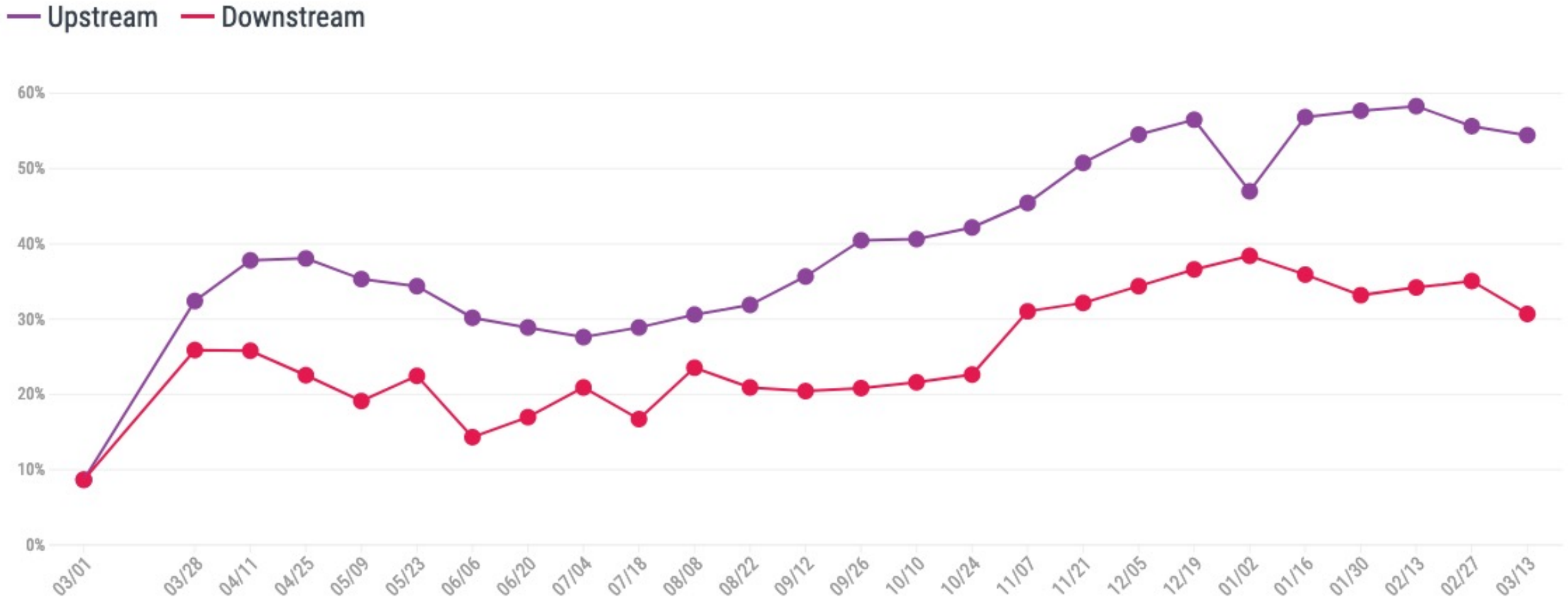
NCTA COVID-19 Dashboard

- NCTA members and other providers joined together to report key metrics during the pandemic for the NCTA COVID Dashboard
- Cable operators plan ahead to ensure that their networks have the capacity to withstand the significant spikes in usage



Our networks continued to operate normally

Cable Internet growth during COVID-19

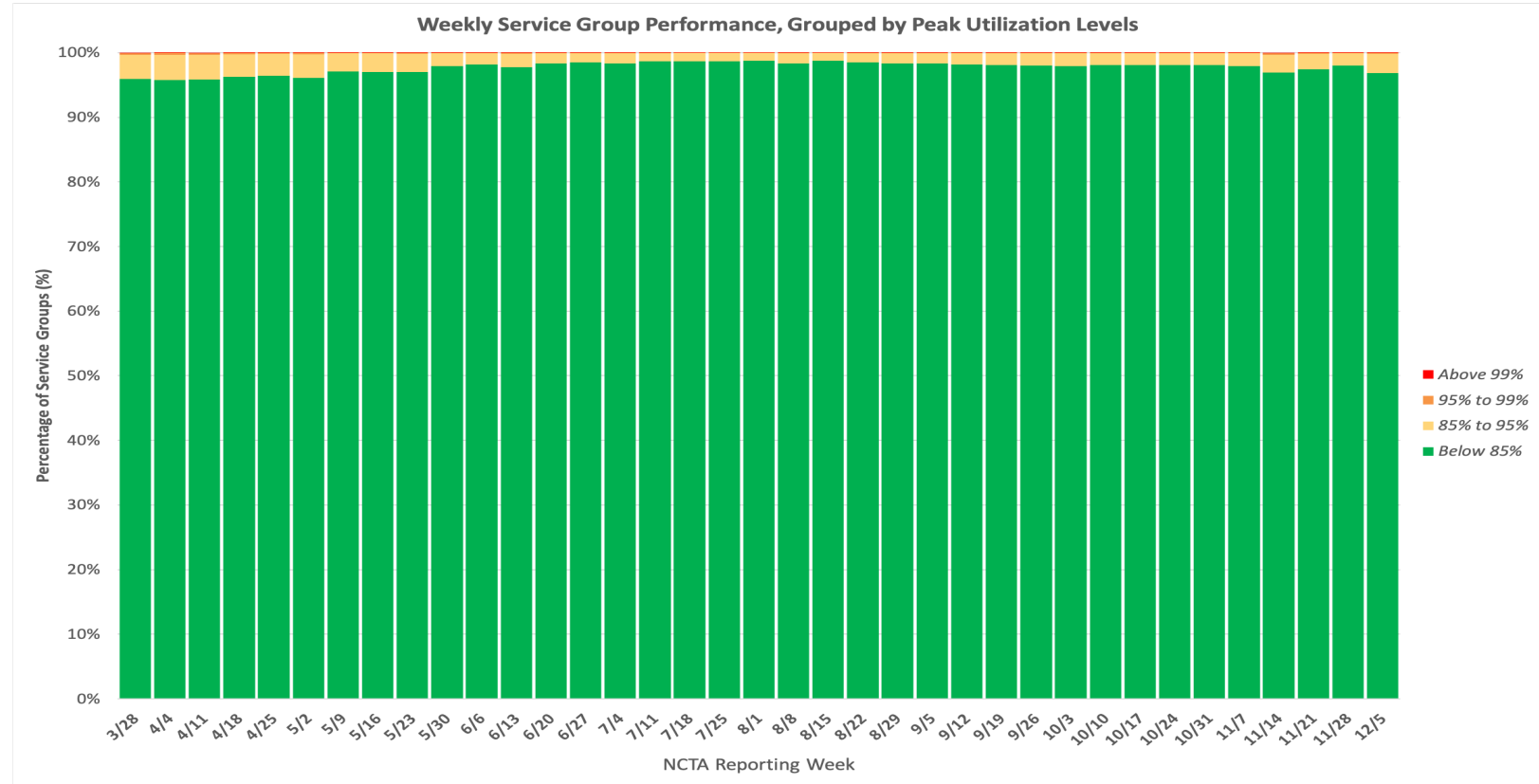


Source: <https://www.ncta.com/COVIDdashboard>

U.S. cable broadband networks thrived despite elevated demand

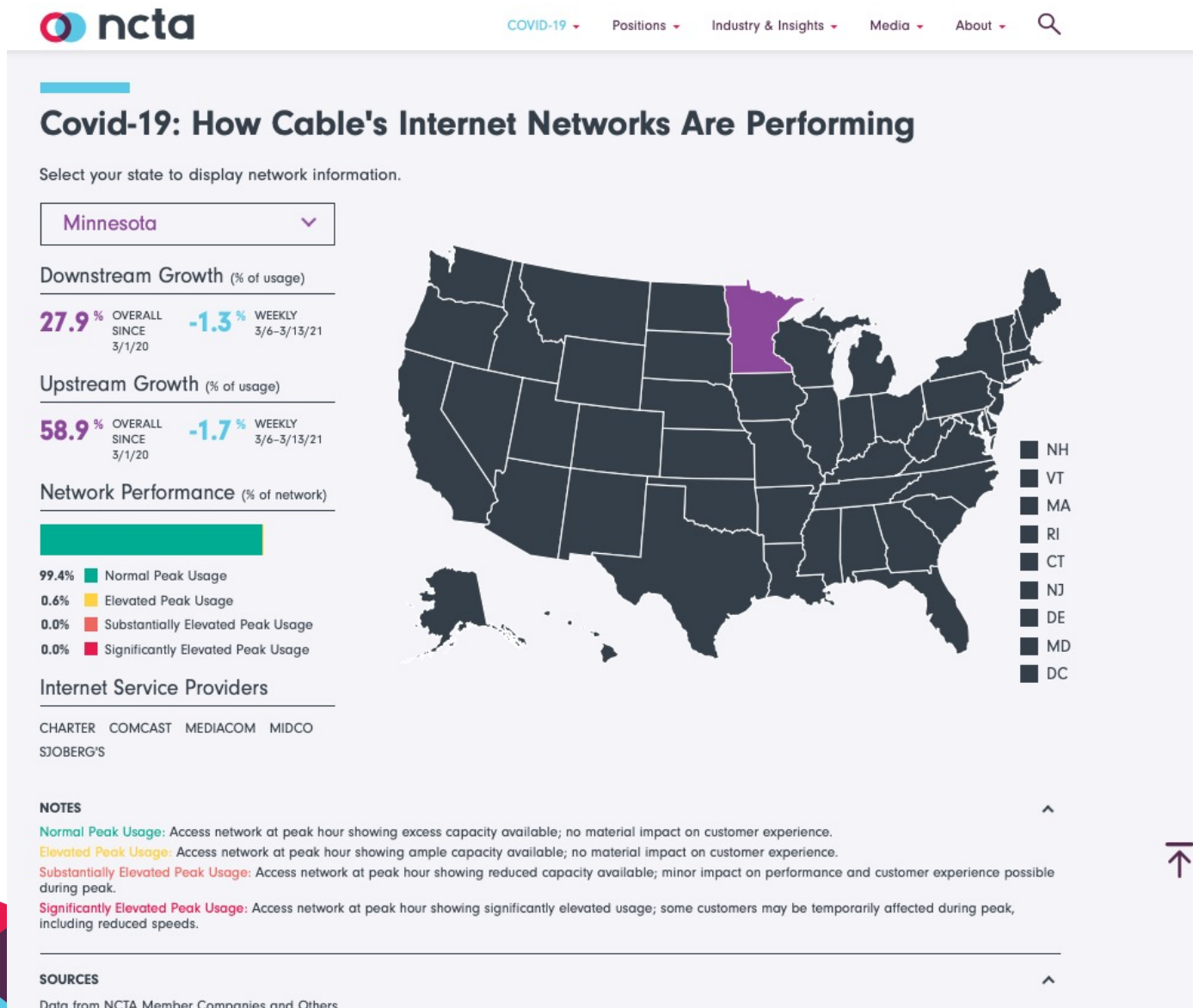
As of February 13, 2020:

- ✓ Overall average **downstream** peak growth is up about **29.8%** since March 1, 2020, with a peak of **34.7%**.
- ✓ Overall average **upstream** peak growth is up about **50.6%** since March 1, 2020, with a peak of **53.0%**.
- ✓ Overall downstream usage continues to **far outpace** upstream usage.



Network performance remains consistently robust

Network performance in Minnesota



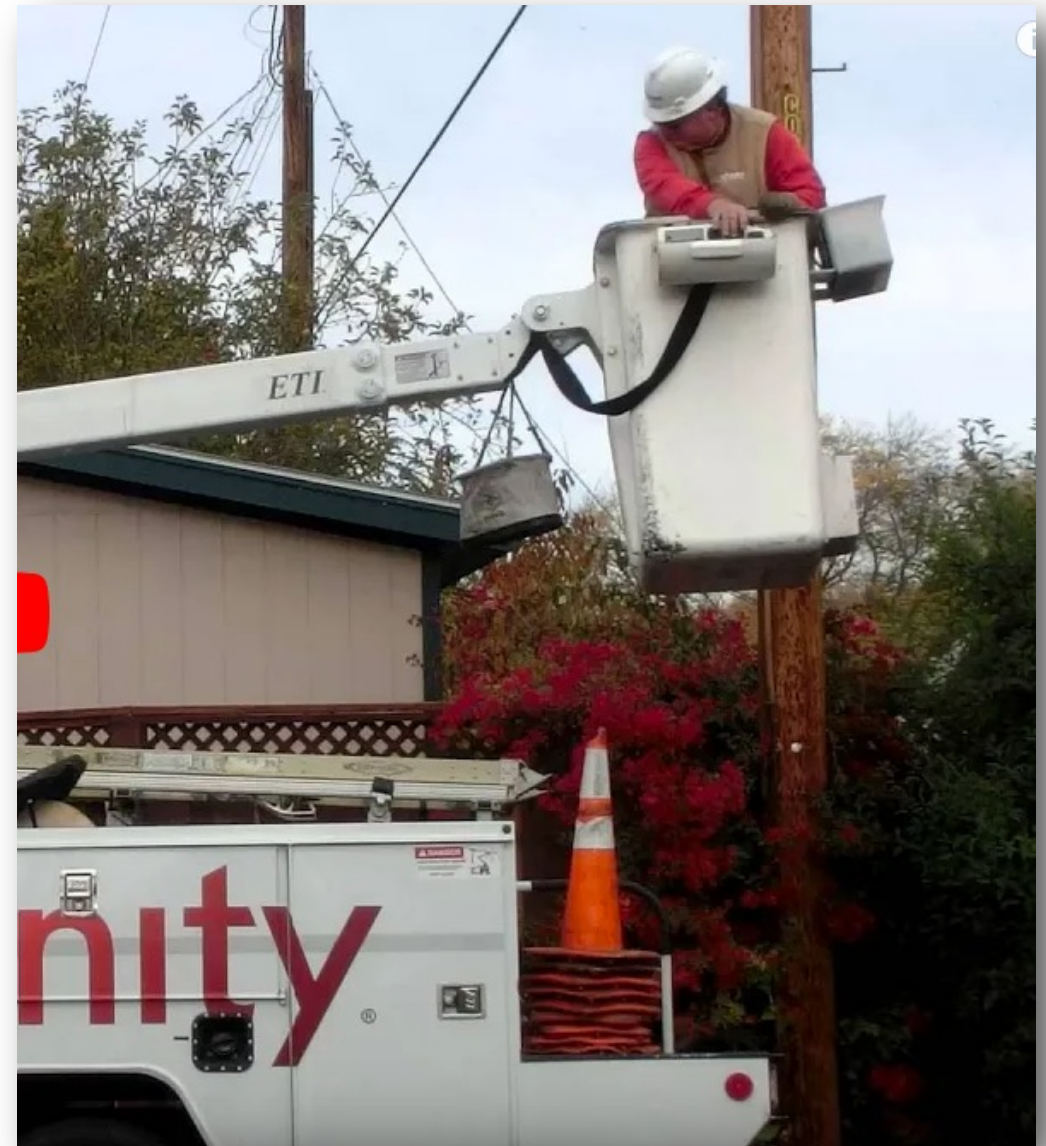
As of March 31, 2021....

- 99.4% of the network has no issues
- 0.6% of the network is running close to capacity, but still no issues
- 0.0% of the network is at or near capacity
- 0.0% of the network is running at capacity

Networks operating normally, no congestion

Cable's Commitment

- Advanced, highly redundant fiber optic core and a hybrid of fiber and coaxial cable (HFC)
- Provides tremendous flexibility, scalability, and reliability
- Technicians made field enhancements to ensure the network continue to perform
- Cable's continued investment and development

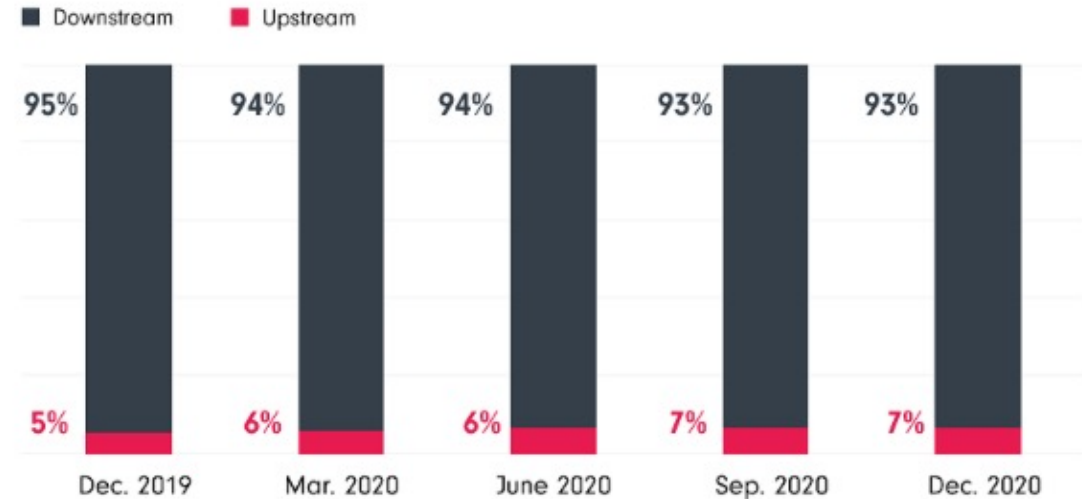


Cable constantly investing in our networks

Internet traffic is asymmetrical

- Even with the significant growth in video conferencing, traffic still remains highly asymmetrical
- In percent growth video conferencing outpaced video streaming, but in sheer volume video streaming outgrew video conferencing 9x²
- In 2020, video streaming was ~71% of downstream traffic¹
- In 2020, video streaming increased 70% over 2019 levels

Percent of Upstream and Downstream Traffic
December 2019–2020



Source: NCTA calculations based on company data.

Videoconferencing less than 5% of overall network traffic

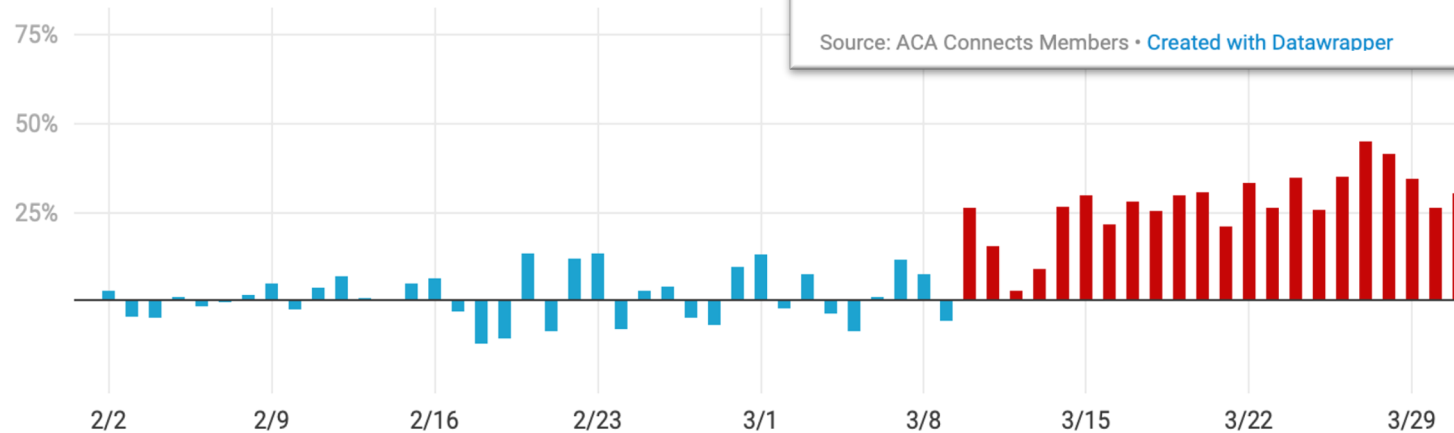
1. <https://corporate.comcast.com/press/releases/comcast-2020-network-performance-data>
2. <https://www.nctatechnicalpapers.com/Paper/2020/2020-tele-everything-and-its-impact-to-the-network>

Growth with smaller cable operators

Smaller cable operators had similar traffic growth

Daily percent difference in data usage relative to February 1st, before the COVID-19 impact and after the COVID 19 impact began on March 10.

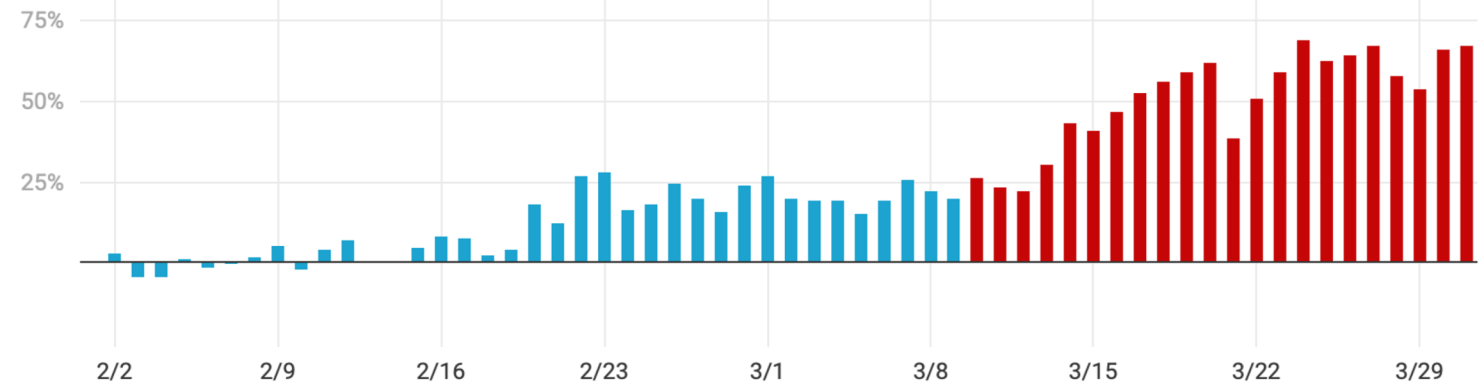
Download Consumption Upload Consumption



Source: ACA Connects Members • Created with Datawrapper

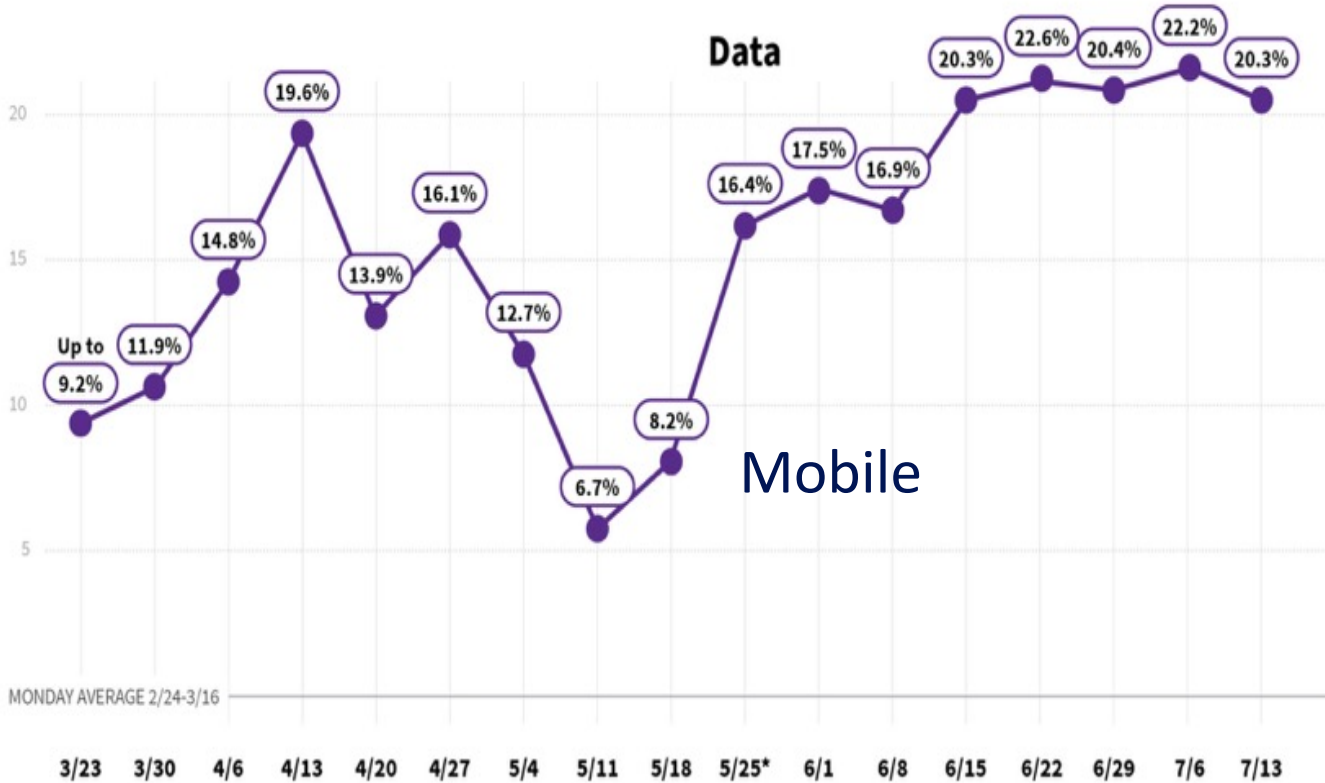
Daily percent difference in data usage relative to February 1st, before the COVID-19 impact and after the COVID 19 impact began on March 10.

Download Consumption Upload Consumption



Source: ACA Connects Members • Created with Datawrapper

Growth with mobile traffic

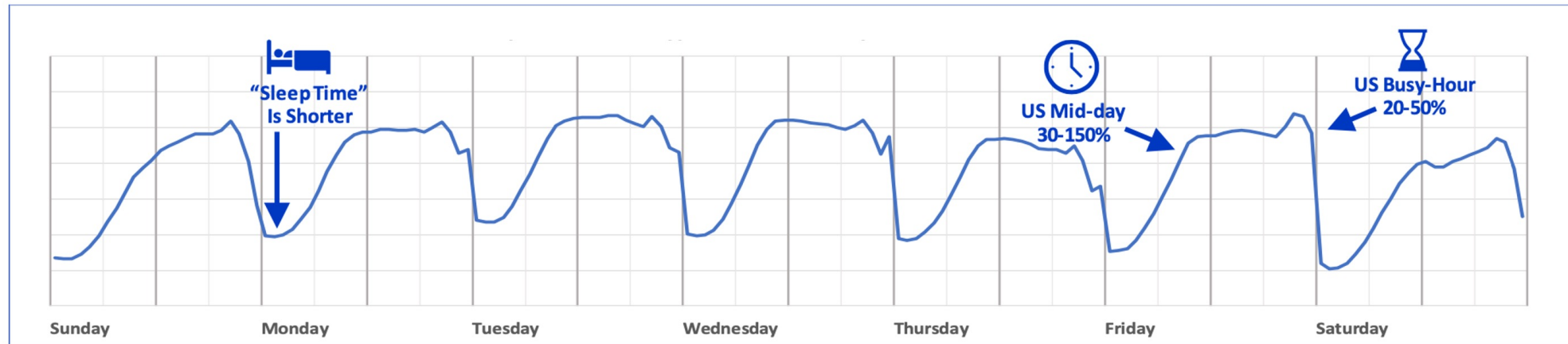
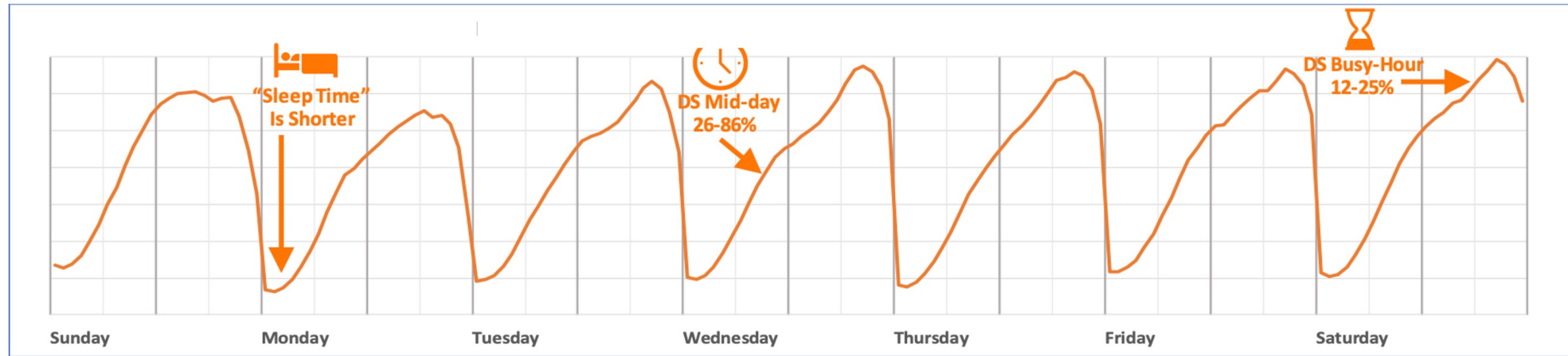


Source: CTIA

- Growth in mobile traffic lagged until shelter-in-place orders were lifted
- Fewer mobile handover
- More mobile traffic carried on Wi-Fi networks connected via cable

Shift in Customer Usage

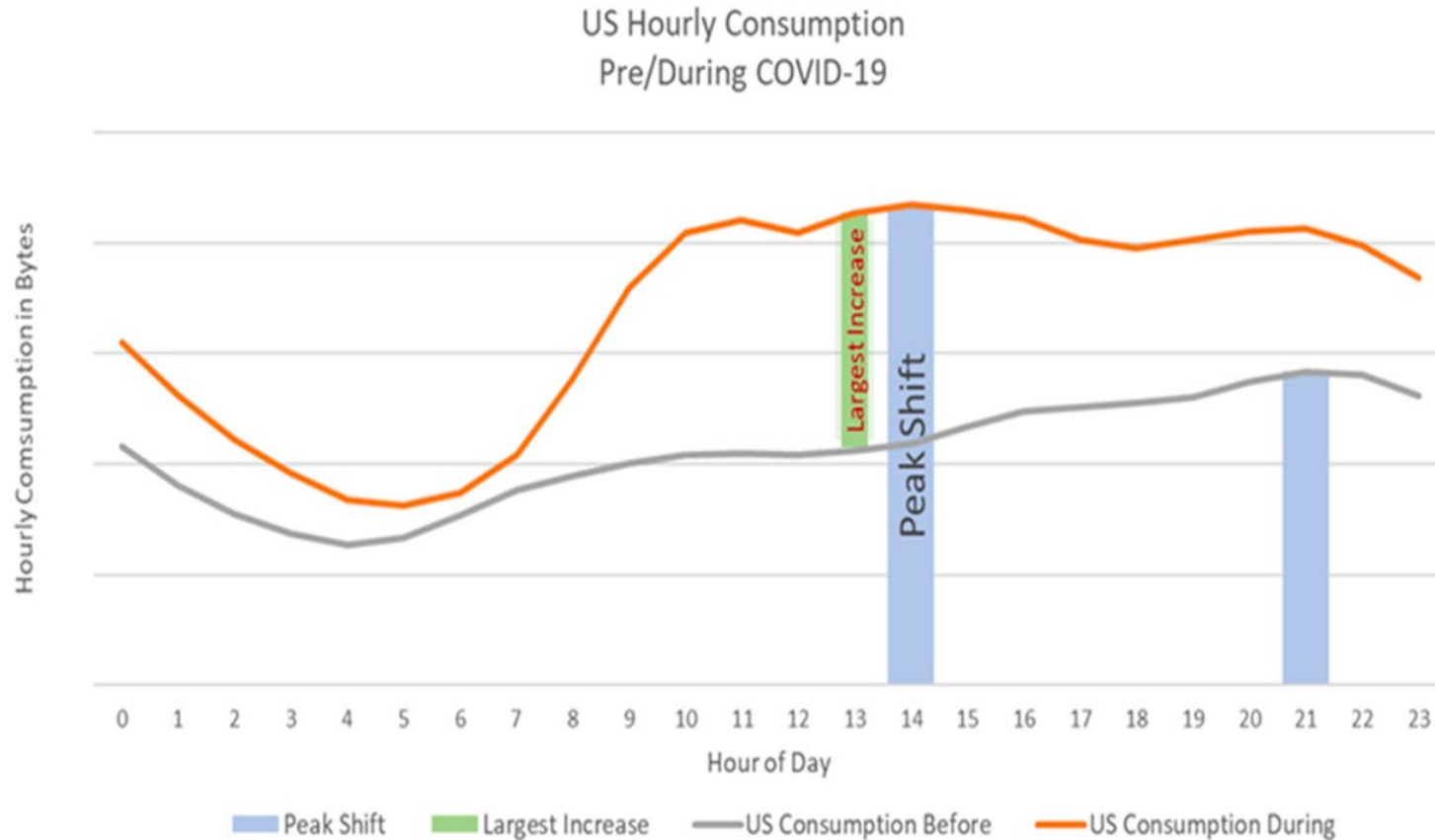
Downstream



Upstream

Source: CommScope, J. Ulm and T. Cloonan, "Managing the Coronavirus Bandwidth Surge: How to Cope with Spikes and Long-term Growth." SCTE-ISBE [Online]. Available: <https://www.nctatechnicalpapers.com/Paper/2020/2020-managing-the-coronavirus-bandwidth-surge>

Shift in Busy Hour on the Upstream

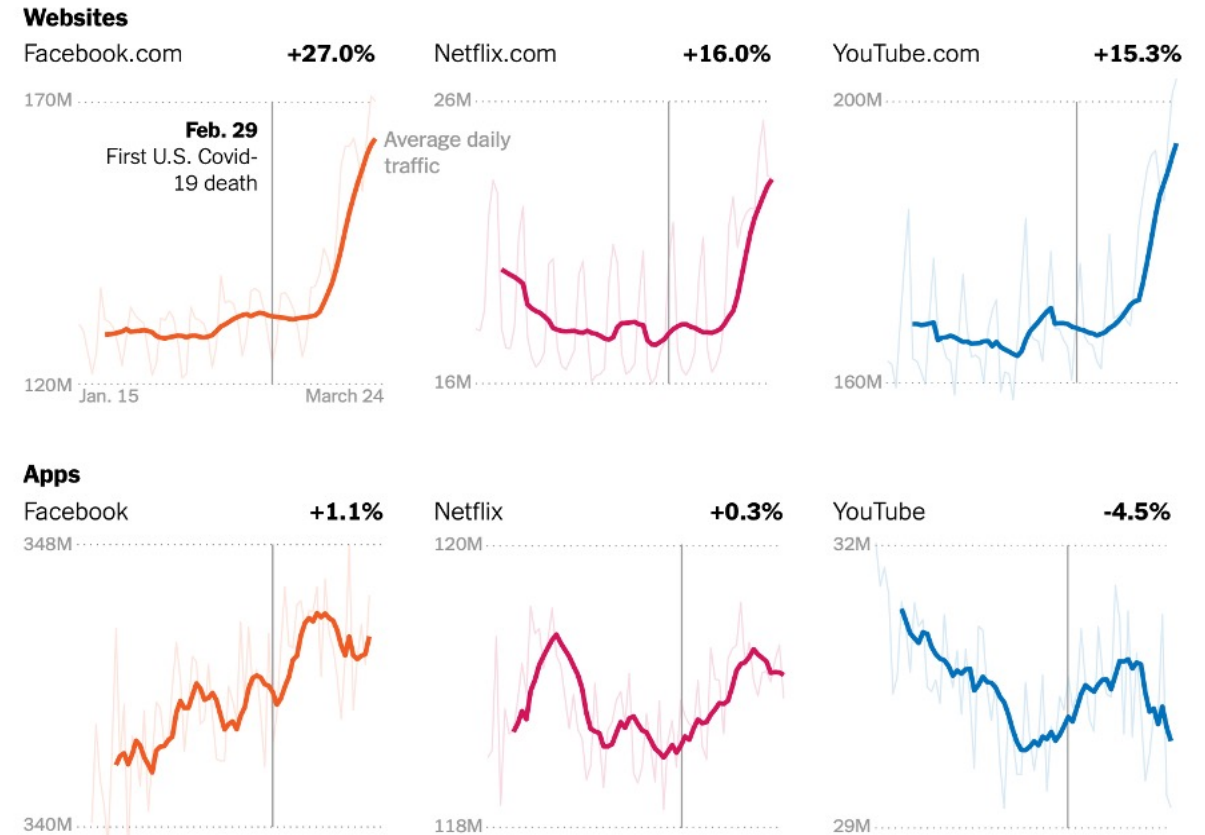


Upstream busy shifted
from 9pm to 2pm

Source: Comcast, B.Barker, "Access Capacity Planning: Staying Well Ahead of Customer Demand Helped Ensure Stability During COVID-19", SCTE ISBE, [Online], Available: <https://www.nctatechnicalpapers.com/Paper/2020/2020-access-capacity-planning>

Consumer shift to using larger screens

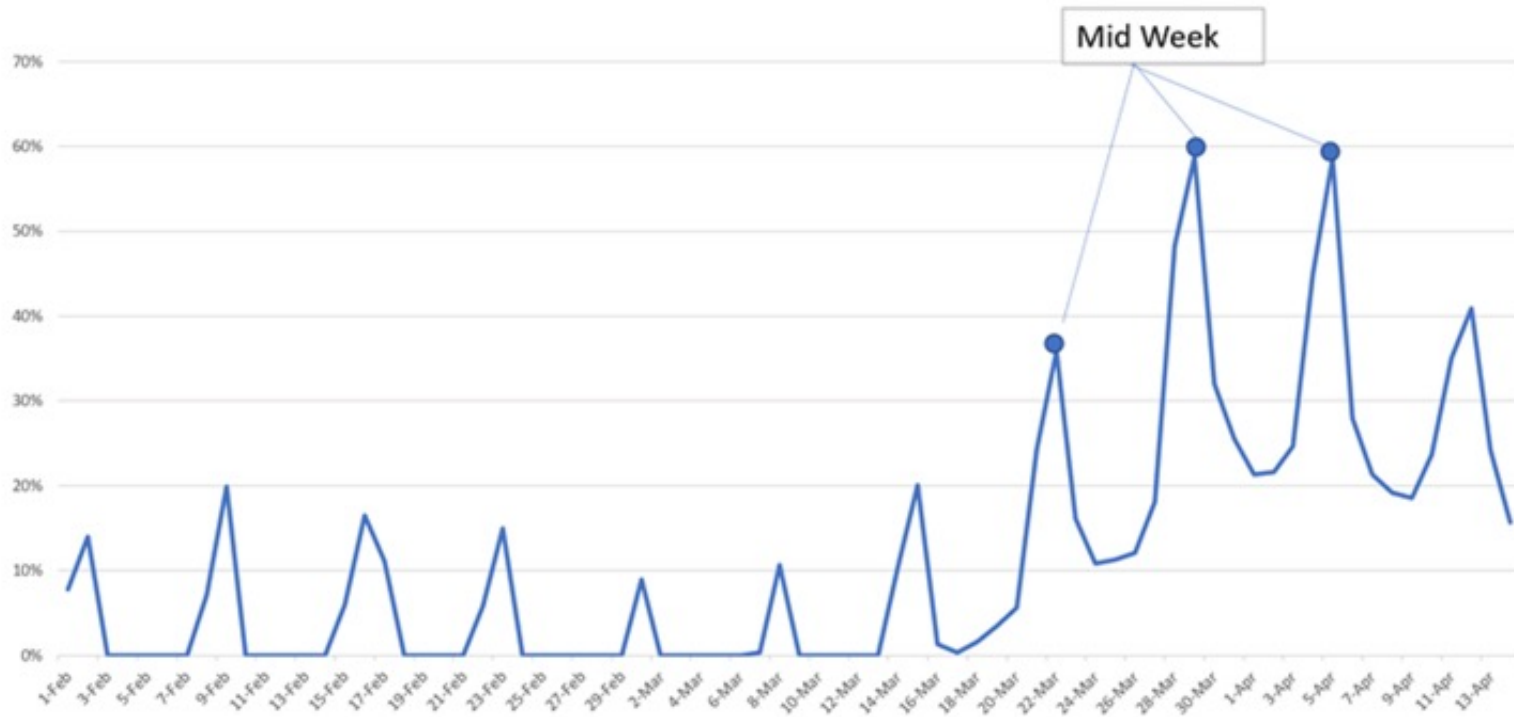
- As consumers shifted to home for work/study they also shifted from Apps and small screens to websites and large screens
- Bigger screens use more data



Note: Averages are calculated with traffic numbers from each date and the six days preceding it in order to smooth out weekly variations (recreational internet use, for example, often spikes on the weekends). Percent change is from the average on Jan. 21 to the average on March 24. Daily app traffic is measured in sessions — the number of times the app is opened — and one user can have multiple sessions in a day. • Sources: [SimilarWeb](#), [Apptopia](#)

Increase in video streaming

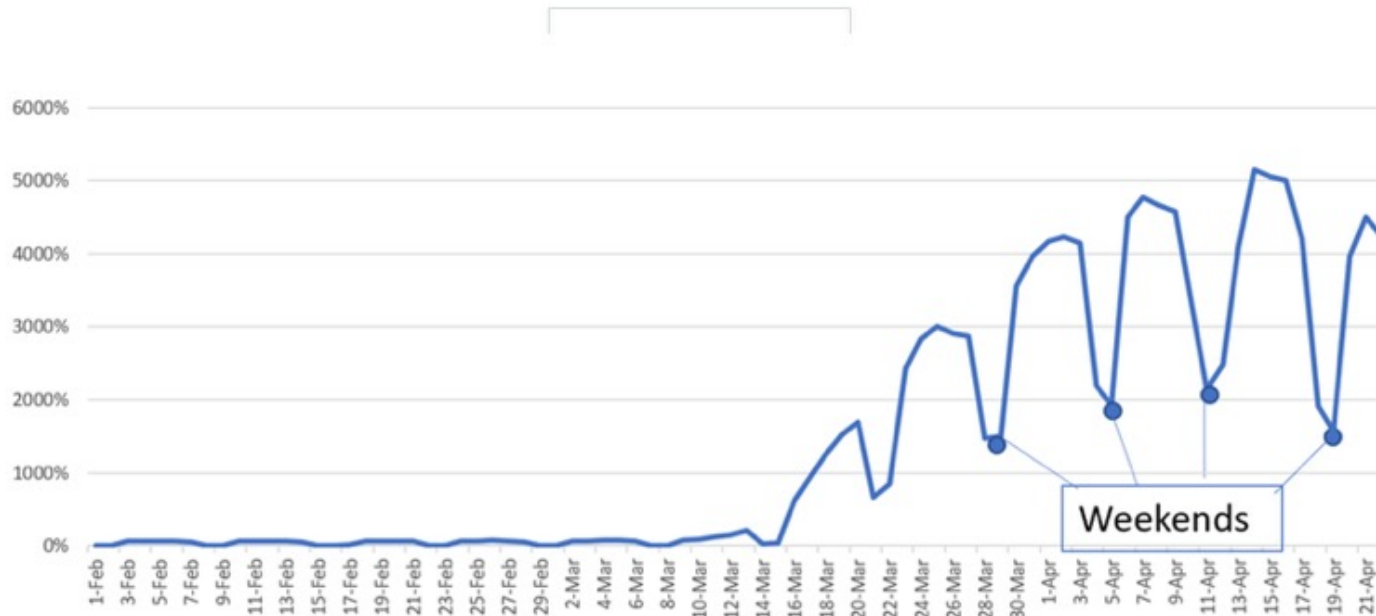
% Increase in Video Streaming Traffic (a US ISP)



Largest growth in video streaming traffic occurred on weekdays

Increased usage of video conferencing – but still small compared to overall traffic usage

% Increase in Video Conferencing Traffic (a US ISP)

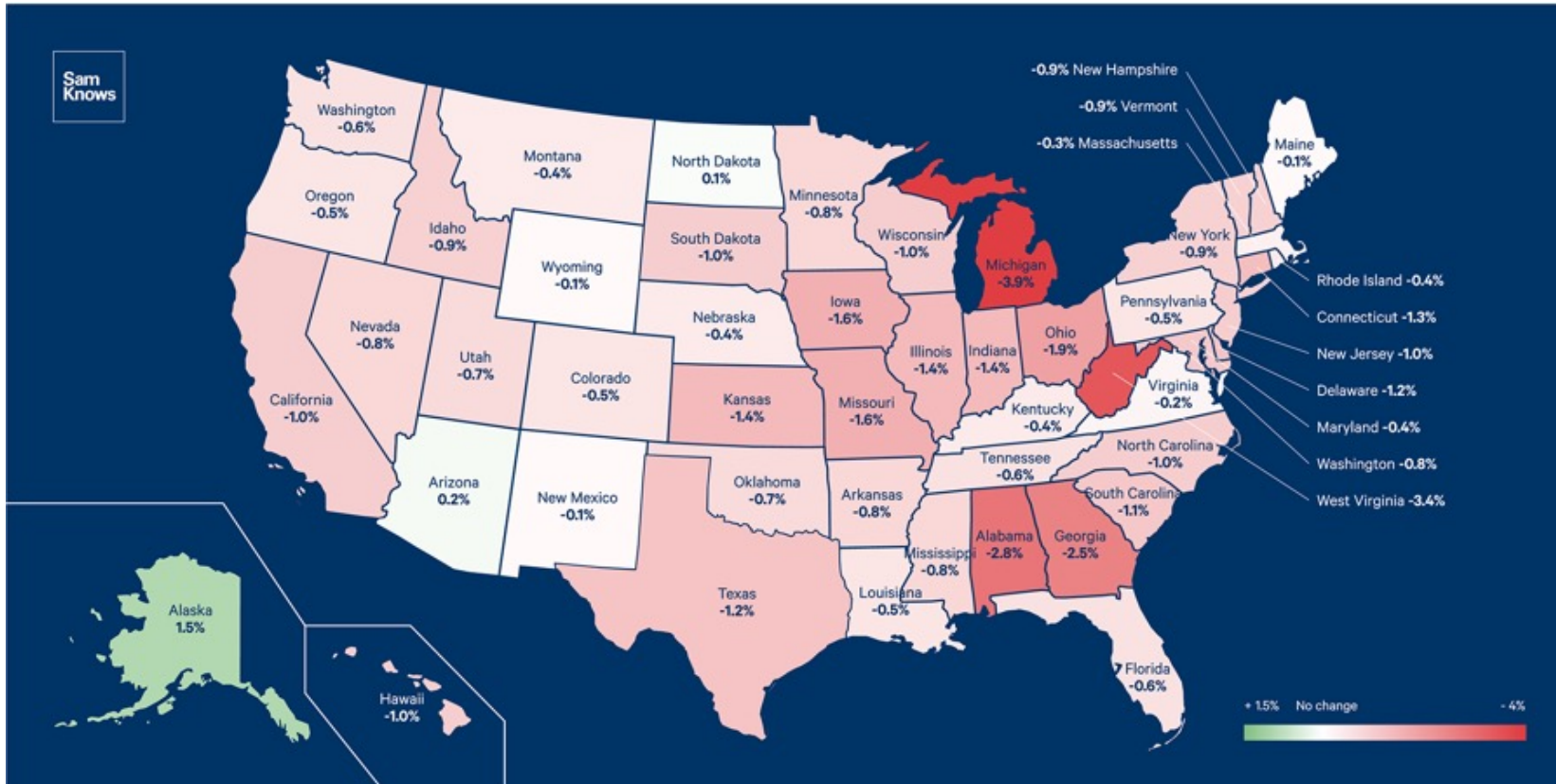


Streaming video still much larger usage than video conferencing

Internet performance during first week of pandemic

- Only 1% decline in measured download speed between March 12 and March 24

Speeds still remained above advertised speeds



Based upon a sample of more than 500k homes running automated download speed tests on a regular basis. Each speed test uses 16 concurrent TCP sessions and measures to a major US CDN. Measurements from 2020-03-12 were compared against measurements from 2020-03-24 to create this comparison.

Source: SamKnows, "SamKnows Critical Services Report: Fixed Speed (USA)," 14 April 2020. [Online]. Available: <https://samknows.com/blog/samknows-critical-services-report-fixed-speed-usa>. [Accessed 17 July 2020].

What we've learned over the past year...

- *Significant growth occurred on the network due to the pandemic*
- *Due to cable's continued investment, and continued network enhancements during COVID, the networks have continued to operate normally*
- *Even during the pandemic, network traffic has been asymmetrical*
- *Videoconferencing less than 5% of overall network traffic*

