

What Are the Effects of Changing the Definition of Broadband?

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In its latest SECTION 706 REPORT, the Federal Communications Commission (“FCC”) raised the speed threshold for what it considers to be broadband service from 25/3 Mbps to 100/20 Mbps, the first change in the threshold since 2015.¹ Naturally, by raising the speed threshold, the FCC has, in effect, told consumers that while they may have had access to “broadband” on Wednesday, they do not have it on Thursday (the change was adopted on a Thursday)—even though they continue to receive service.

I estimate the reduction in broadband availability resulting from the FCC’s redefinition of broadband. The changes in availability of broadband are quite small (no more than about 3%), though some modalities are materially affected (e.g., some satellite services); however, the reduction in the number of providers is larger, as many modalities cannot satisfy the new speed threshold.

How does the FCC’s decision to raise the speed threshold alter broadband availability statistics? Using data from the National Broadband Map (June 2023), in this PERSPECTIVE I estimate the reduction in broadband availability resulting from the FCC’s redefinition of broadband. The changes in availability of broadband are quite

small (no more than about 3%), though some modalities are materially affected (e.g., some satellite services); however, the reduction in the number of providers is larger, as many modalities cannot satisfy the new speed threshold. For fixed providers, the reduction in “broadband” providers falls from 1.63 to 1.45, an 11% drop.

Data

Data for this analysis are from the National Broadband Map in June-2023.² The map includes broadband availability across multiple modalities at the location level (based on the broadband fabric). While the newer broadband availability data are an improvement over prior years (which calculated availability at the census block level), there remain some problems with overstating broadband availability, especially by fixed wireless providers.³ Nonetheless, these data are the best available and what the Commission and other entities use for a host of purposes including subsidy allocation. These data include approximately 115.3 million locations.

Table 1. Modality Groups

Group	Description
B1	All modalities
B2	B1 less Satellite
B3	B2 less Unlicensed Fixed Wireless
B4	Fixed Broadband

Availability is calculated at the location level for each broadband modality. Services listed as

“other” modalities are excluded as their availability is trivially small. Licensed fixed wireless providers are combined into a single group. Four additional groupings of modalities are created as described in Table 1. First, I compute availability across all modalities (B1). Second, from B1 all satellite services (geosynchronous and non-geosynchronous) are excluded (B2). Third, I exclude from B2 unlicensed fixed wireless services (B3). Finally, a group of fixed broadband services (*i.e.*, copper, cable, and fiber) is created (B4). The number of providers is also calculated.

Competition does not change simply because a government agency alters its definition of what a product is. A 25/3 Mbps provider (or speeds between that level and 100/20 Mbps) certainly exercises some competitive restraint on providers with higher speeds (no less than before the threshold was changed), as slower speed connections are adequate for most households.

Results

Table 2 summarizes the results for mean availability; the results are largely as expected. Availability rates for cable and fiber services are nearly unchanged by the new threshold, as the speed capabilities are high. While copper-based services (*i.e.*, DSL) are sometimes capable of providing 25/3 Mbps service (21.6%), in very few cases can the service satisfy the higher threshold (4%). Licensed fixed wireless services likewise meet the higher threshold with much less frequency, falling from 54.7% to 32.0%, and unlicensed fixed wireless services fall from 25.1% to 14%, but these availability rates are arguably exaggerated. Geosynchronous satellite services (“GSO”) are incapable of meeting the higher

threshold. Availability of non-geosynchronous satellite services (“NGS”), however, are unchanged by the new threshold, though speed-test data suggests the service does not always meet advertised speeds and the monthly prices are relatively high.⁴

Table 2. Availability Rates

Tech.	25/3 Mbps	100/20 Mbps	Change	% Change
Cable	82.8%	82.4%	-0.0041	-0.5%
Fiber	44.6%	44.5%	-0.0005	-0.1%
Copper	21.6%	4.00%	-0.1759	-87.5%
LFW	54.7%	32.0%	-0.2266	-41.4%
UFW	25.1%	14.0%	-0.1108	-44.2%
GSO	100.0%	0.00%	-1.0000	-100.0%
NGS	99.6%	99.6%	0.0000	0.0%
B1	100.0%	100.0%	-0.0004	0.0%
B2	95.3%	92.3%	-0.0300	-3.1%
B3	93.8%	91.2%	-0.0263	-2.8%
B4	90.6%	89.2%	-0.0138	-1.5%

For modality group B1, which includes all modalities, 100% of locations have access to at least 25/3 Mbps, a consequence of the universal availability of satellite services. Excluding satellite services from the mix (group B2), availability falls from 95.3% to 92.3%, a relatively small change of 3.1%. Excluding satellite and fixed wireless services (group B3), availability falls from 93.8% to 91.2% (a 2.8% reduction). Limiting the analysis to fixed broadband services, availability falls from 90.6% to 89.2%, a small change of 1.5%. In all, the change to a new speed threshold has relatively small effects for availability from any type of modality.

The number of providers at any given location will be fewer at the higher threshold. The FCC no longer considers DSL services, geosynchronous satellite services, and much of the fixed wireless services to be legitimate “broadband,” so providers of these modalities are lost to the change.

Table 3. Provider Count

Tech.	25/3 Mbps	100/20 Mbps	Change	% Change
B1	7.34	3.38	-3.96	-54.0%
B2	2.74	2.00	-0.74	-27.0%
B3	2.38	1.84	-0.54	-22.7%
B4	1.63	1.45	-0.18	-11.0%

Table 2 summarizes the mean provider count by the modality groups. Across all modalities, the average household has 7.34 providers at the 25/3 Mbps level, but 3.38 providers at the 100/20 Mbps level. Excluding satellite providers reduces the count to 2.74 at the lower speed threshold and 2.00 at the new threshold, a 27% reduction in head count. Excluding satellite and unlicensed fixed wireless providers (B3), the provider count is 2.38 at 25/3 Mbps falling to 1.84 providers at the 100/20 Mbps threshold. Finally, for fixed broadband providers, the number of providers falls from 1.63 to 1.45, a relatively small change (11%).

Figure 1. Distribution of Provider Change

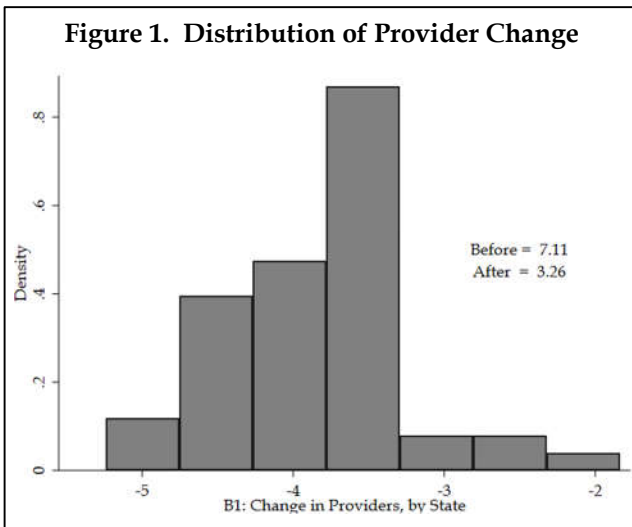
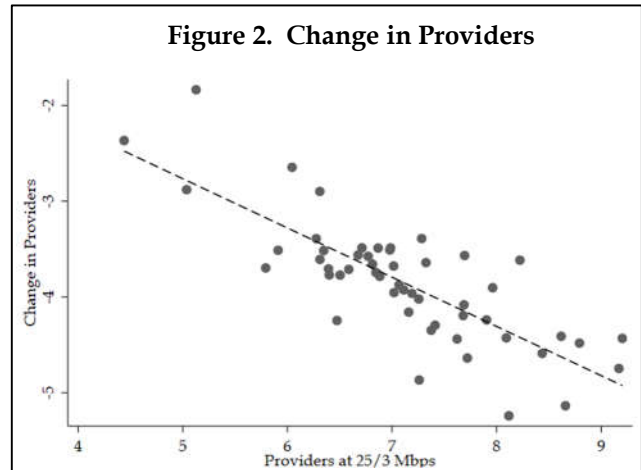


Figure 1 illustrates the histogram of the change in provider between the two speed thresholds for group B1. Plainly, some states are affected more than others. The range of the change is -1.83 to -5.24, with a mean of -3.85, a median of -3.77, and an interquartile range of -3.54 to -4.27.⁵ The states with the largest reductions in provider count include Wisconsin, Iowa, Maine, Puerto

Rico, Oregon, Arizona, Utah, Missouri, Nevada, and Illinois, while the least affected are New York, Connecticut, Pennsylvania, New Mexico, Kansas, Wyoming, Montana, South Dakota, Alaska, and North Dakota. No pattern is apparent. While one might think the rural areas would be affected more, they have fewer providers at the 25/3 Mbps threshold so less to lose.

Figure 2. Change in Providers



In Figure 2, a scatterplot of the change in providers on the number of providers in a state is illustrated (with a linear fit). Plainly, the reduction in the number of providers is strongly correlated with the number of providers before the threshold change (with a slope of -0.514, $t = -7.57$).

This reduction in the number of providers able to meet the new threshold may lead to claims about a reduction in the degree of broadband competition, but such claims are false. Such speed thresholds are arbitrary, even if necessary, and for definitional purposes alone; they do not reflect competitive dynamics. Competition does not change simply because a government agency alters its definition of what a product is. A 25/3 Mbps provider (or speeds between that level and 100/20 Mbps) certainly exercises some competitive restraint on providers with higher speeds (no less than before the threshold was changed), as slower speed connections are adequate for most households. In general, consumers do not purchase the highest speeds

available and are content trading speed for price, as long the service is adequate for their needs.⁶

Conclusion

When the speed threshold for what the FCC calls “broadband” rises, the available rate and the number of providers meeting that threshold shrinks. In this PERSPECTIVE, I use the National Broadband Map data from June-2023 to quantify

those changes. Availability rates are somewhat stable, as cable and fiber are widely deployed and easily meet the new 100/20 Mbps threshold in nearly all cases. Provider counts are affected more, as several modalities cannot satisfy the new speed threshold.

NOTES:

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¹ *In the Matter of Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion*, FCC 24-27, 2024 SECTION 706 REPORT, __ FCC Rcd. __ (rel. March 18, 2024) (available at: <https://docs.fcc.gov/public/attachments/FCC-24-27A1.pdf>).

² Data available at: <https://broadbandmap.fcc.gov/home>.

³ D. Nguyen, *Lawmakers Complain FCC's New Broadband Maps Are Still Inaccurate Post-Form 477*, BROADBANDNOW (January 26, 2023) (available at: <https://broadbandnow.com/news/lawmakers-call-fcc-broadband-maps-inaccurate>); D. Goovaerts, *FCC Broadband Map Challenges Top 350K as Deadline Looms*, FIERCE TELECOM (January 12, 2023) (available at: <https://www.fiercetelecom.com/broadband/fcc-broadband-map-challenges-near-350k-deadline-looms>); J. Engebretson, *T-Mobile, Verizon Reportedly Exaggerating FCC Broadband Map Data: We Dig Into the Details*, TELECOMPETITOR (February 13, 2023) (available at: <https://www.telecompetitor.com/t-mobile-verizon-reportedly-exaggerating-fcc-broadband-map-data-we-dig-into-the-details>).

⁴ C. Forrester, *Data: Starlink Wins Ookla Download Race*, ADVANCED TELEVISION (May 10, 2023) (available at: <https://advanced-television.com/2023/05/10/data-starlink-wins-ookla-download-race>).

⁵ The means are slightly different from Table 2 because the table presents the national average, while the figure presents the average of states (unweighted by population).

⁶ J.S. Domingo, *You (Probably) Don't Need Gigabit Internet*, WIRECUTTER (March 9, 2023) (available at: <https://www.nytimes.com/wirecutter/blog/what-is-gigabit-internet-do-you-need-it>).