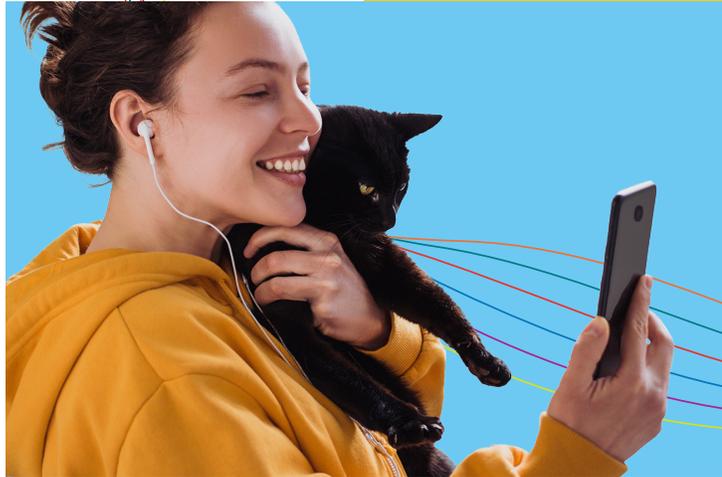
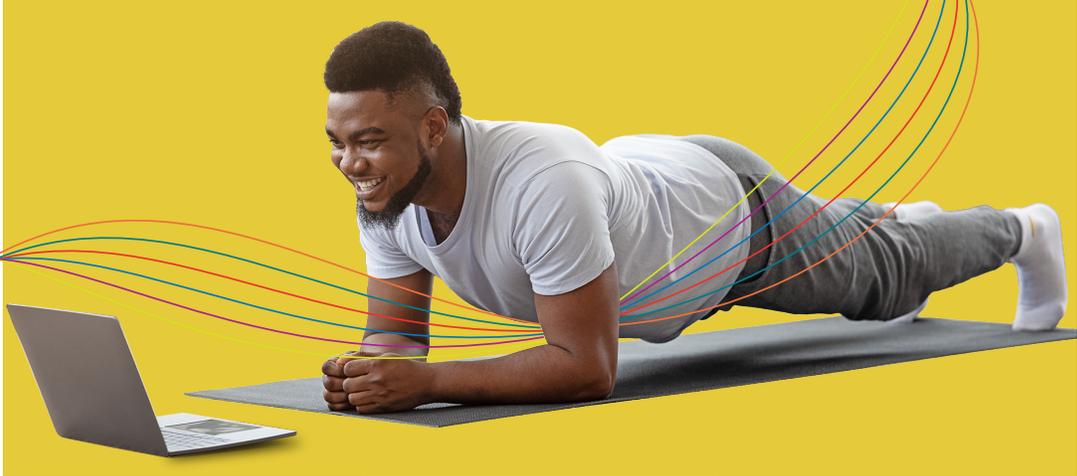




2020 **BROADBAND PRICING INDEX**

An Analysis of Decreasing Prices and Increasing Value for Broadband Service Over Time

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USTELECOM
THE BROADBAND ASSOCIATION

A MESSAGE FROM USTELECOM'S CEO



The current pandemic has shown that Americans need to have strong, reliable and resilient high-speed broadband connectivity in their homes. Urgency is gathering in Washington, D.C. to more fully address the infrastructure component of this modern mandate. It must be an immediate national priority to connect the more than 18 million Americans—mostly in rural communities—who need Congress to commit the resources necessary to extend broadband infrastructure to everyone, particularly the 30% of K-12 students that do not have access to high-speed internet and/or the devices needed to learn from home.¹

Equally, to fully close the digital divide, more work, understanding and concrete data is needed around the vital issue of affordability. There is no one silver bullet. Programs exist to bridge this gap. They deserve more attention and innovation.

But this report documents a remarkable area of progress. It is well-known in policy circles that broadband companies invest between \$70 billion and \$80 billion each year in faster and more reliable U.S. broadband infrastructure. This report is among the first to document the degree to which this investment has resulted in broadband services

that are not only increasingly fast, but also much less costly than even just five years ago. All this at a time when U.S. subscribers are now leading the world in internet traffic per user.

Even before adjusting for consumer price inflation, which has made today's money worth about 10% less than in 2015, this report indicates that broadband pricing has significantly declined. This trend is particularly notable because it occurred at a time when other essential services—from prescription drugs and rent, to college tuition and car insurance—have experienced double-digit inflation. At the same

time, gigabit-speed home broadband availability has skyrocketed from 6% to 86% in just over three years. Fierce competition amongst rival companies and technologies, fueled by sustained network investment and nurtured by common sense and bipartisan policies, have enabled this dynamic market.

USTelecom members are proud of the progress documented in this report—and ready to work with government and other stakeholders to finish the job of connecting every American home, business and anchor institution not just to essential technology, but the world of opportunity it makes possible for our economy, our families and our communities.

A handwritten signature in black ink that reads "Jonathan Spalter". The signature is fluid and cursive, with a long horizontal line extending from the end of the name.

Jonathan Spalter
CEO, USTelecom

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EXECUTIVE SUMMARY

This research, using FCC and other public data sources, assesses recent trends in residential fixed broadband pricing between 2015 and 2020 in the United States. The analysis reveals that during this period, there have been substantial reductions in price for both the most popular and highest-speed broadband internet services, and also significant improvements in broadband speeds. Simply put, Americans are paying less today for broadband services that are significantly more capable than they were five years ago.

Americans are paying less today for broadband services that are increasingly more capable than they were five years ago.

The Broadband Price Index (BPI) established here makes price comparisons over time on two fronts: The most popular speed tiers in 2015 and 2020 and the highest speed tiers in 2015 and 2020.

The key findings:

- The most popular tier of broadband service in 2015 (BPI-Consumer Choice) is now priced 20.2% lower and offers 15.7% faster speeds in 2020 on an average-subscriber-weighted basis.
- The highest speed offerings in 2015 (BPI-Speed) are now priced 37.7% lower and offer 27.7% faster speeds in 2020 on an averaged subscriber-weighted basis.
- Further, these price reductions run counter to inflation, which has increased consumer costs for overall goods and services by 9.3% over the same five-year period analyzed in this report. When inflation is considered, the real price of the most popular tier of broadband service has dropped by 28.1% since 2015; and the real price of the highest speed broadband service has dropped by 43.9%.
- This combination of declining prices and rising speeds delivers even greater value to consumers—as shown by a declining cost per megabit of connection speed (Mbps) of 37.9% for the most popular service and 56.1% for the highest speed service.

This data shows that broadband is becoming more affordable—thereby reducing, but certainly not eliminating, an obstacle to adoption. For instance, we know that 30% of K-12 students do not have access to high-speed internet and/or the devices needed to learn from home. More work, understanding, and concrete data is needed around the vital issue of affordability and this report seeks to contribute to that discourse.

FINDINGS

Broadband Prices Have Decreased While its Value Has Increased

Broadband connectivity is reshaping the delivery of 21st century education, health care, access to government services, entertainment, civic participation and commerce. The huge surge in broadband usage occasioned by the COVID-19 pandemic has demonstrated vividly our national dependence on broadband. Indeed, a broadband connection is a near indispensable part of modern life. But not all Americans have a broadband connection. For some, this is because connections are not available in their neighborhood. But for others, they may find a high-quality fixed broadband connection to be unaffordable. This research shows the good news that this latter barrier to broadband adoption is receding—as over the past five years fixed broadband prices have reduced substantially, even while the speed of connections has increased.

Remarkably, there have been few studies employing authoritative data that examine the affordability of broadband and that can inform appropriately both public policy and private sector leadership in solving for this barrier to universal connectivity. The present study employs FCC and other public data sources to assess trends in U.S. residential fixed broadband pricing between 2015 and 2020. The data used in this study are in contrast to those used in other studies, such as New America's Open Technology Institute's "The Cost of Connectivity,"² which sample only a tiny number of U.S. broadband plans, frequently in particularly hand-picked cities, without ensuring the collected data is a reasonably accurate statistical representation of the overall United States.

This report develops two metrics for examining broadband pricing by making use of the FCC's "Urban Rate Survey." This data set is collected from a required broadband reporting metric for all broadband service providers. It contains over 4,500 plan observations and is statistically constructed to represent an accurate profile of U.S. broadband prices throughout the entire country.³ While the full methodology is described below, analysis of the FCC data, when combined with other public data sources, allows us to establish two national indices for comparing broadband pricing from 2015 to 2020. The BPI-Consumer Choice Index compares the prices of the largest providers' most popular speed tier of broadband service in a given technology to its most comparable 2020 service.⁴ The BPI-Speed approach makes a similar comparison, but compares the prices of these providers' fastest speed tier option from 2015 to 2020. The results are striking: the U.S. weighted average price for the most popular speed tiers by subscription has decreased by 20.2% over the past five years—and the weighted average price for the fastest speed tiers has decreased by 37.7%. These

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results are displayed in Table 1. Further, when national price inflation is taken into account, Table 2 shows that the decreases in real prices for these services are 28.1% and 43.9%, respectively.⁵ Appendix A provides more information comparing the declining price trajectory for broadband service prices versus the price increases for most other household expenses.

**TABLE 1: NOMINAL U.S. BROADBAND PRICES
(subscriber-weighted average)**

INDEX	PRICE: 2015	PRICE: 2020	CHANGE
BPI-Consumer Choice	\$65.62	\$52.37	-20.2%
BPI-Speed	\$122.94	\$76.59	-37.7%

**TABLE 2: REAL U.S. BROADBAND PRICES
(subscriber-weighted average)**

INDEX	PRICE: 2015	PRICE: 2020	CHANGE
BPI-Consumer Choice	\$65.62	\$47.15	-28.1%
BPI-Speed	\$122.94	\$68.96	-43.9%

The average prices that U.S. subscribers pay for broadband services have been declining sharply over the past five years ...not only did U.S. broadband subscribers get a price decrease, they also got a speed increase.

These findings establish clearly that the average prices that U.S. subscribers pay for broadband services have been declining sharply over the past five years and have become more affordable to the large swath of lower-income American families who previously had not purchased home internet because of its cost. This, by itself, is great news. But the full news is even better as these same FCC data also show that the speeds of broadband associated with both the most popularly purchased services and the fastest services purchased by subscribers in 2020 were substantially higher than the speeds purchased in 2015. So not only did U.S. broadband subscribers get a price decrease, they also got a speed increase.

These results are shown in Table 3. Within the same purchase groups—BPI-Consumer Choice and BPI-Speed—the speeds offered in the most popular tier have increased by 15.7%, while speeds in the fastest-offered tiers have increased by 27.7%.

TABLE 3: SPEEDS OF MOST POPULAR AND FASTEST BROADBAND SERVICES (subscriber-weighted average)

INDEX	MBPS DOWNLOAD: 2015	MBPS DOWNLOAD: 2020	CHANGE
BPI-Consumer Choice	43	50	15.7%
BPI-Speed	141	180	27.7%

Further, the combination of decreased prices and increased speeds yields even more value for American broadband subscribers. Table 4 shows these dramatic results. Not only has the real price per Mbps for the most popular speed tiers dropped by nearly 38%, but the fact that the price per megabit for the fastest tiers has dropped by 56% is particularly meaningful. This is because U.S. subscribers continue to upgrade their services as American life shifts even more substantially to online experiences. In any case, Americans are getting more for their broadband buck than ever before.

...but the fact that the price per megabit for the fastest tiers has dropped by 56% is particularly meaningful.

TABLE 4: REAL PRICE PER MBPS (subscriber-weighted average)

INDEX	PRICE PER MBPS: 2015	PRICE PER MBPS: 2020	CHANGE
BPI-Consumer Choice	\$1.52	\$0.94	-37.9%
BPI-Speed	\$0.87	\$0.38	-56.1%

Undoubtedly, significant challenges remain to eliminate affordability as an impediment to broadband adoption, particularly for those who live at or below the poverty line. But the data presented here demonstrates the very real progress being made in reducing broadband prices and in increasing speeds.

METHODOLOGY

This research analyzes residential broadband prices across the three major wired technologies (cable, fiber to the home (FTTH) and DSL) from 2015 to 2020. Using the FCC's Urban Rate survey,⁶ the 14 largest U.S. wireline broadband providers were selected to benchmark comparable offerings over time. They include the top seven cable and top seven telecom companies by subscriber count:

- Cable: Charter, Altice,⁷ Comcast, Mediacom, WOW, Cable One and Cox
- Telecom: AT&T, Verizon, CenturyLink, Frontier, Windstream, Consolidated and TDS

The next step in constructing the Broadband Price Index (BPI) is to establish proper weights for each provider. These are calculated by applying the broadband subscriber market share in 2015 and 2020 for each provider in the given technology (cable, FTTH and DSL). These weights are averaged over the two periods⁸ then multiplied by the price for that specific offering in that year. The resulting sum becomes each company's contribution to the overall index from 2015 to 2020. These weights represent a carrier's aggregate market share and not market share at a particular service speed.

Information Sources

Publicly available current and past prices of broadband by technology are found in the FCC's annual survey of urban rates. The FCC's Urban Rate Survey Data and Resources ("the FCC rate survey") collects pricing information by provider for stand-alone residential broadband services as well as by download/upload speed and by technology. This FCC data is a reasonable proxy for nationwide broadband pricing because it is the benchmark utilized for fixed voice and broadband services for the federal universal service program.

The contribution of each company to the overall price of broadband was derived from two primary inputs: 1) the FCC's 2015 and 2020 rate surveys and 2) the average number of broadband subscribers by provider and technology for 2015 and 2020. Subscriber counts are largely sourced from the Leichtman Research Group. Adjustments have been made to 2015 subscribers using SEC, investor relations and FCC sources to reconcile for mergers, spin-offs and technology segmentation.

BROADBAND PRICE INDEX—CONSUMER CHOICE
(Compares the most popular speed offering in 2015 to its most similar 2020 service)

WEIGHTED AVERAGE PRICE (INFLATION-ADJUSTED)			DOWNLOAD SPEED (MBPS)			REAL PRICE PER MBPS (DOWNLOAD)		
2015	2020	CHANGE	2015	2020	CHANGE	2015	2020	CHANGE
\$65.62	\$52.37	-20.2%	43	50	+15.7%	\$1.52	\$0.94	-37.9%

The BPI-Consumer Choice compares each company's most popular tier of service for each technology in 2015 to its most comparable 2020 service. The result over the five-year period is a 20.2% drop in real consumer prices. Additional consumer value is derived from the fact that the most comparable services in 2020 offered faster download and upload speeds (see Appendix B). When priced on a real per Mbps basis, because broadband download speeds were 16% faster in 2020 than in 2015, total real consumer savings per Mbps were 38% in 2020.

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Methodology: BPI-Consumer Choice

The FCC's June 2015 Internet Access Report⁹ shows the distribution of residential fixed connections by download speed tier and technology. The "consumer choice" download speed for each technology is the speed interval that has the most connections. Cable and FTTH's most popular speeds were between 25 Mbps and 100 Mbps. Most DSL connections, a declining contributor to the technology mix by 2020, were between 3 Mbps and 10 Mbps.

BPI-Consumer Choice uses the 2020 service offering most comparable to each company's 2015 dominant speed offering.

For example, FCC data in 2015 indicates one company's most popular offering found in the 25 Mbps to 100 Mbps range was with 50 Mbps down/3 Mbps up at a price of \$118.00 per month. By 2020, the provider's next closest offering was 100 Mbps down/10 Mbps up at \$78.53 per month—a 33% price reduction in nominal terms and 40% decrease when adjusted for inflation. In this time period, the download speed doubled and the upload speed more than tripled for the comparable offering.

This exercise is repeated for each company, and the results are weighted by each provider's average market share for the two periods and then aggregated into the "overall weighted price."

BROADBAND PRICE INDEX—SPEED
(Compares the highest speed offering in 2015 to its most similar 2020 service)

WEIGHTED AVERAGE PRICE (INFLATION-ADJUSTED)			DOWNLOAD SPEED (MBPS)			REAL PRICE PER MBPS (DOWNLOAD)		
2015	2020	CHANGE	2015	2020	CHANGE	2015	2020	CHANGE
\$122.94	\$76.59	-37.7%	180	141	+27.7%	\$0.87	\$0.38	-56.1%

The BPI-Speed compares each company's fastest 2015 service to its most comparable 2020 service. The result over the five-year period is a nearly 38% real price savings. Additional consumer value is derived from the fact that even the most comparable service in 2020 offered far faster download and upload speeds (see Appendix B). When priced on a real (adjusted for inflation) per Mbps basis, consumer savings exceeded 56% in 2020, which in part is explained by download speed of service that was 27.7% faster than in 2015.

The BPI-Speed compares each company's fastest 2015 service to its most comparable 2020 service.

Methodology: BPI-Speed

Since broadband speeds vary by provider and improve over time, BPI-Speed uses the 2020 service offering most comparable to each company's 2015 highest speed service.

For example, one company's fastest service in 2015 was 107 Mbps down/5 Mbps up at a price of \$132.00 per month. In 2020, that provider offered much faster services. The closest benchmark to that service found in the FCC survey in 2020 is 200 Mbps down/20 Mbps up at a price of \$88.60. Download speeds nearly doubled and upload speeds increased four times. The consumer price tag drops in nominal terms by 32.9% and decreases by 39.6% when adjusted for inflation.

This exercise is repeated for each company by technology, and the results are weighted by the average of each provider's market share in both years and then aggregated into the "overall weighted price."

APPENDIX A

Broadband Affordability Bucks Overall Trend of Rising Consumer Prices for Other Essential Goods & Services

The substantial consumer savings documented in this report are especially noteworthy because they run in the opposite direction of other categories of essential consumer goods and services. While Americans have the opportunity to both save more and get more for their broadband dollar, the same cannot be said for food, shelter, education and health care. All BPI price-related calculations in this report are adjusted for inflation using the Consumer Price Index (CPI-U)—a barometer of overall urban U.S. inflation. Overall, the cost of consumer goods and services rose by nearly 10% from 2015 to 2020, according to the CPI-U. In many instances, this inflation is even higher with regard to essential goods and services.

COMPARISON OF CONSUMER PRICE INDEX FOR ESSENTIAL GOODS & SERVICES

	MARCH 2015	MARCH 2020	PRICE CHANGE
Overall CPI-U	236.12	258.12	9.3%
Health Insurance	\$122.34	\$176.80	44.5%
Car Insurance	\$455.37	\$579.46	27.2%
Rent	\$283.13	\$339.52	19.9%
College Tuition & Fees	\$775.43	\$874.62	12.8%
Food & Beverages	\$245.69	\$262.32	6.8%
BPI-Speed** (Nominal)	\$122.94	\$76.59	-37.7%
BPI-Consumer Choice** (Nominal)	\$65.62	\$52.37	-20.2%

Source: CPI-U March 2020 v. March 2015

**Reports detailed component price as produced by Bureau of Labor Statistics CPI-U index.

APPENDIX B

Speeds Accelerate for Comparable Services

In addition to nominal price reductions for both the most popular tier of service and higher speed offerings, consumers have gained additional value from the fact that even the most comparable services in 2020 are far faster than their 2015 counterparts. This holds true for both upload and download speeds and whether comparing by BPI-Consumer Choice or BPI-Speed approaches.

BPI-CONSUMER CHOICE

WEIGHTED MBPS DOWNLOAD SPEED			WEIGHTED MBPS UPLOAD SPEED		
2015	2020	GROWTH	2015	2020	GROWTH
43	50	15.7%	13	16	27.6%

BPI-SPEED

WEIGHTED MBPS DOWNLOAD SPEED			WEIGHTED MBPS UPLOAD SPEED		
2015	2020	GROWTH	2015	2020	GROWTH
141	180	27.7%	51	78	53.7%

About the Author

Arthur Menko, the founder of Telcodata and Business Planning, Inc., has been providing telecom and broadband research and consulting services since 1984. He has extensive industry background in the economic, regulatory, infrastructure, reliability and competitive market research areas. In recent years, he has concentrated in fixed broadband deployment and adoption analytics and policy research matters.

ENDNOTES

1 Common Sense and BCG, *Closing the K-12 Digital Divide in the Age of Distance Learning*, (June 29, 2020) https://8ce82b94a8c4fdc3ea6d-b1d233e3bc3cb10858bea65ff05e18f2.ssl.cf2.rackcdn.com/9c/0b/62d34d674c979876e9b13be353df/common-sense-media-report-final-6-26-7.38am_WEB.pdf (last visited Aug. 25, 2020).

2 Becky Chao & Claire Park, New America Open Technology Institute, *The Cost of Connectivity 2020* (2020) www.newamerica.org/oti/reports/cost-connectivity-2020/.

3 In contrast, New America's "The Cost of Connectivity" data consist of fewer than 300 U.S. plan observations from just a handful of states. See *id.* at Appendix B, available at <https://docs.google.com/spreadsheets/d/1SVQh7JedtDwogxyj1oYY7zBHB3VsyYw1XAHrQMGCe/edit#gid=808907937>.

4 These providers account for approximately 95% of all fixed broadband services sold in the U.S. See Leichtman Research Group, Press Release, 2.5 Million Added Broadband in 2019 (Mar. 5, 2020) <https://www.leichtmanresearch.com/2-5-million-added-broadband-in-2019/>.

5 National price inflation is measured by the BLS CPI-U, which increased from 236.12 in March 2015 to 258.12 in March 2020. This equates to a 9.3% rise.

6 FCC, Urban Rate Survey Data & Resources (2020) <https://www.fcc.gov/economics-analytics/industry-analysis-division/urban-rate-survey-data-resources>.

7 Altice has been split into its two pre-merger organizations, CSC (Cablevision) and Suddenlink, since the FCC rate survey identifies them separately.

8 The analysis used the Marshall-Edgeworth weighting methodology to construct the price index.

9 FCC, Internet Access Services, Status as of June 30, 2015 (Aug. 2016) <https://docs.fcc.gov/public/attachments/DOC-340664A1.pdf>.