

TOWARD DIGITAL EQUITY

New York State's Recent Progress on, and Remaining Barriers to, Universal Broadband Internet Access

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What is Digital Equity?

According to the National Digital Inclusion Alliance (NDIA), **digital equity** is “a condition in which all individuals and communities have the information technology capacity needed for full participation in our society, democracy, and economy.”¹ Achieving that condition requires a commitment to **digital inclusion activities** that are specifically designed to “ensure that all individuals and communities, including the most disadvantaged, have access to and use of Information and Communication Technologies (ICTs).”² As the New York State Library’s *Achieving Digital Equity in New York State: An Outline for Collaborative Change* report notes, such activities require five elements:

1. Affordable, robust broadband Internet service;
2. Internet-enabled devices that meet the needs of the user;
3. Access to digital fluency training;
4. Quality technical support; and
5. Applications and online content designed to enable and encourage self-sufficiency, participation, and collaboration.³

This brief explainer and fact sheet explores New York State’s progress on, and outstanding challenges with respect to, digital inclusion commitment #1: providing affordable, robust broadband Internet service to all residents and households across the state.

Where Can One Find Data on Broadband Internet Access in New York State (NYS)?

The most popular source of data on who does and does not have access to broadband Internet in their homes is the U.S. Census Bureau’s American Community Survey (ACS). For large, highly populated areas like New York State (NYS), ACS data are available in annual snapshots. The NYS Comptroller’s 2021 report on the state’s broadband challenges, for example, cites the (then-current) 2019 ACS estimate that more than one million NYS households did not have a broadband subscription in their homes.⁴ For smaller and less populated geographies such as

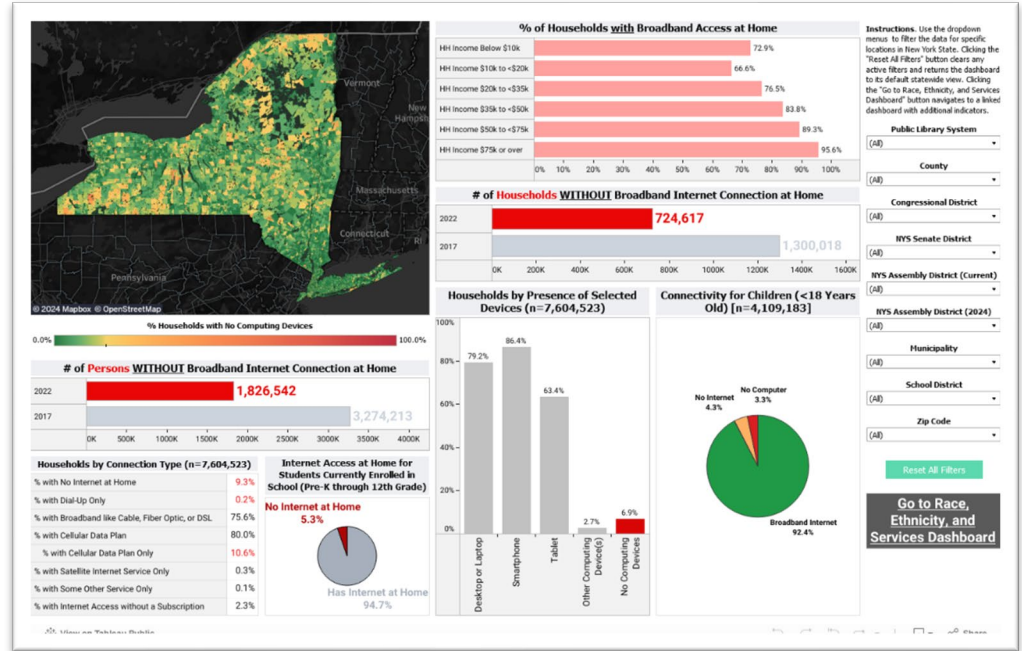


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rural counties, small cities, towns, villages, or zip codes, ACS data are collected over and reported for five-year periods. This step is taken to ensure that sample sizes from such areas are large enough to provide reliable estimates.

For most, especially upstate, locations in NYS, single year ACS estimates are not available. As such, and in the interest of consistency, five-year ASC estimates tend to be the most widely used sources of data on broadband access at the household level.⁵ Included among the digital equity-related data points collected and published in the five-year ACS are: the number of households that have computing devices at home and the types of devices; the presence and type of Internet subscription in a household, if any; and breakouts of households that do or do not have Internet subscriptions by sociodemographic variables such as age, race-ethnicity (of the head of household), and household income.



Screenshot of the NYS Digital Equity Portal as Updated in April 2024. Available at: <http://blogs.cornell.edu/nysdigitalequity>

Insofar as navigating Census Bureau data products such as the ACS can pose challenges to new and inexperienced users, in 2021 the NYS Library, Cornell University ILR School, Community Technology of New York (CTNY), and John R. Oishei Foundation teamed up to launch a statewide, interactive Digital Equity Portal that allows users to quickly collect and summarize ACS and related data on the computing and broadband experiences of NYS households.⁶ The portal builds on and contributes to a much wider, collaborative digital equity effort in NYS that involves numerous state agencies, legislative initiatives, and scores of community-based organizations and subject matter experts.⁷ In April 2024, the Digital Equity Portal was fully updated to feature current (2018-22) ACS data.

As part of the April 2024 updates, ACS data were disaggregated to the census block level of analysis to ensure that all information in the portal can easily be summarized for even the smallest towns, villages, and zip codes, which are aggregations of census blocks. The remainder

of this document draws on the NYS Digital Equity Portal to highlight key facts related to broadband access, and remaining inequities in broadband access, across NYS.

Fact #1: Nearly 725,000 NYS Households Lack Broadband Internet Subscriptions, But the Situation is Improving

When the NYS Digital Equity Portal launched in 2021, then-current ACS data for 2015-19 showed that just over 1 million households across New York did not have broadband Internet subscriptions in their homes. According to the current (2018-22) ACS, this number is down to 724,617 households, or just under 10% of all households in NYS. Such households are estimated to contain around 1.83 million people, or 9.4% of the NYS population.

That being said, comparing 2015-19 ACS data to current data for 2018-22 poses some difficulties, largely because the two datasets overlap by two years (i.e., survey respondents who were interviewed in 2018 or 2019 are represented in both datasets). For that reason, a more effective way to evaluate whether broadband take up rates in NYS are moving in a positive direction is to compare current (2018-22) figures to estimates from an ACS period that does not overlap with the current period. The five-year ACS immediately preceding the current period is the vintage that ended in 2017 (i.e., the 2013-17 ACS). At that time, roughly 1.3 million households in NYS, containing about 3.25 million people, lacked a broadband Internet subscription. Thus, over the course of roughly the past decade, the number of households across New York without a broadband subscription fell by nearly 44%, from 1.3 million to just under 725,000. Meanwhile, the number of persons living in households without broadband Internet access dropped by about the same magnitude, from 3.25 million to 1.83 million New Yorkers. At face value, these changes suggest that recent NYS investments into digital inclusion activities, especially those actions that began as urgent responses to the COVID-19 pandemic, might be helping to move NYS closer to the goal of digital equity.⁸

Fact #2: Cellular Data Plans, Not In-Home Broadband Subscriptions, Are the Biggest Reason for Improvement

Although a 44% reduction in the number of NYS households without a high-speed Internet connection at home (over the past decade) appears to be significant progress toward statewide digital equity, it is necessary to approach this finding with some caution. Above all else, the apparent surge in at-home Internet connectivity seems to owe much to the increased availability of smartphones and cellular data plans – while owing much less to previously unconnected

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households gaining access to dedicated broadband subscriptions through cable, fiber optic, DSL, or related connections.

Specifically, according to the Census ACS, approximately 5.24 million NYS households had cable-, fiber optic-, or DSL-based broadband subscriptions in the period from 2013-2017. For the current period (2018-2022), ACS data indicate that about 5.75 million households have such subscriptions – a 9.6% increase between the two periods, or a net growth of about 505,000 households. By comparison, there were 383,975 households between 2013 and 2017 whose *only* high-speed Internet access was through their cellular data plans. That number now (for 2018-22) sits at 809,726 households – a massive 110.9% increase (net gain of 425,752 households) between the two periods.

To the extent that the number of households with *no high-speed Internet access* at all fell by about 564,000 (from 1.3 million to around 725,000; see Fact #1) between the 2017 and 2022 five-year ACS periods, it stands to reason that mobile data plans were the driving force behind that change. If one were to define “underconnected” households as households with no high-speed Internet connection at home *plus* households whose only high-speed Internet connection comes via a cellular data plan, then the progress highlighted in Fact #1 becomes much less substantial. Namely, during the period 2013-17, 1.67 million households in NYS either had no high-speed Internet connection at home *or* could only access the Internet through their cellular data plans. The current period (2018-22) features 1.53 million such households – a change of just -8.3%, or a net decrease of just -138,236 households.

	Current ACS Period (2018-22)	Previous ACS Period (2013-17)	Net Change	% Change
Households with No Access to High-Speed Internet⁹	724,617	1,288,605	-563,988	-43.8%
Households whose Only Internet Connection is a Cellular Data Plan	809,726	383,974	+425,752	+110.9%
Total “Underconnected” Households	1,534,343	1,672,579	-138,236	-8.3%

The increased reliance on cellular data plans – and *only* cellular data plans – to access the Internet at home is noteworthy for proponents of digital equity in NYS. Recall that the path to digital equity runs through *digital inclusion activities*, including the provision of Internet-enabled devices that meet a user’s needs. Whereas cell phone-only Internet access might be the right choice for some households, and such an arrangement might fully meet the needs of those



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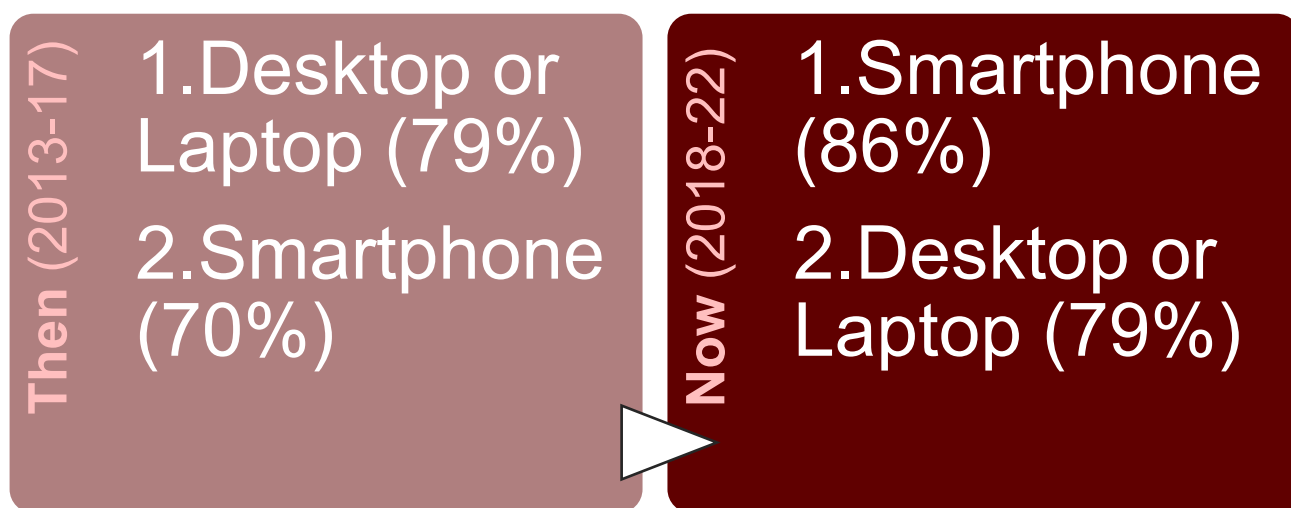
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households, it is reasonable to assume that other “underconnected” households have Internet needs that cannot be met by a smartphone and cellular data plan alone. Thus, moving toward digital equity presumably requires increasing access not just to broadband subscriptions, but to a diversity of computing devices as well.

Fact #3: Roughly 21% of NYS Households Do Not Have a Desktop or Laptop Computer in Their Homes

Consistent with the growth in cellular data plan-only Internet access highlighted in Fact #2, the most common computing device in New Yorkers’ homes is now a smartphone: smartphones are present in 86.4% of the state’s households, while only 79.2% of households contain a desktop or laptop computer. This phenomenon is a new one. Going back a half-decade to the 2013-17 ACS shows that, as was the case in all prior ACS periods, desktop and laptop computers were the prevailing Internet-ready technology: 79.0% of households contained one or more of these devices between 2013-17, while only 70.0% of households contained a smartphone.

Although this shift in technology is a function of many complex factors, including personal preferences and affordability, the observation that there has been virtually no growth in home access to desktop and laptop computers over the past decade ought to be of concern to digital equity proponents across NYS. If smartphones are not capable of meeting all the needs of Internet users (e.g., many websites or web-based applications are still not mobile-friendly), then the data suggest that digital inclusion activities aimed at expanding access to diverse types of computing devices remain critical to the advancement of digital equity in NYS.

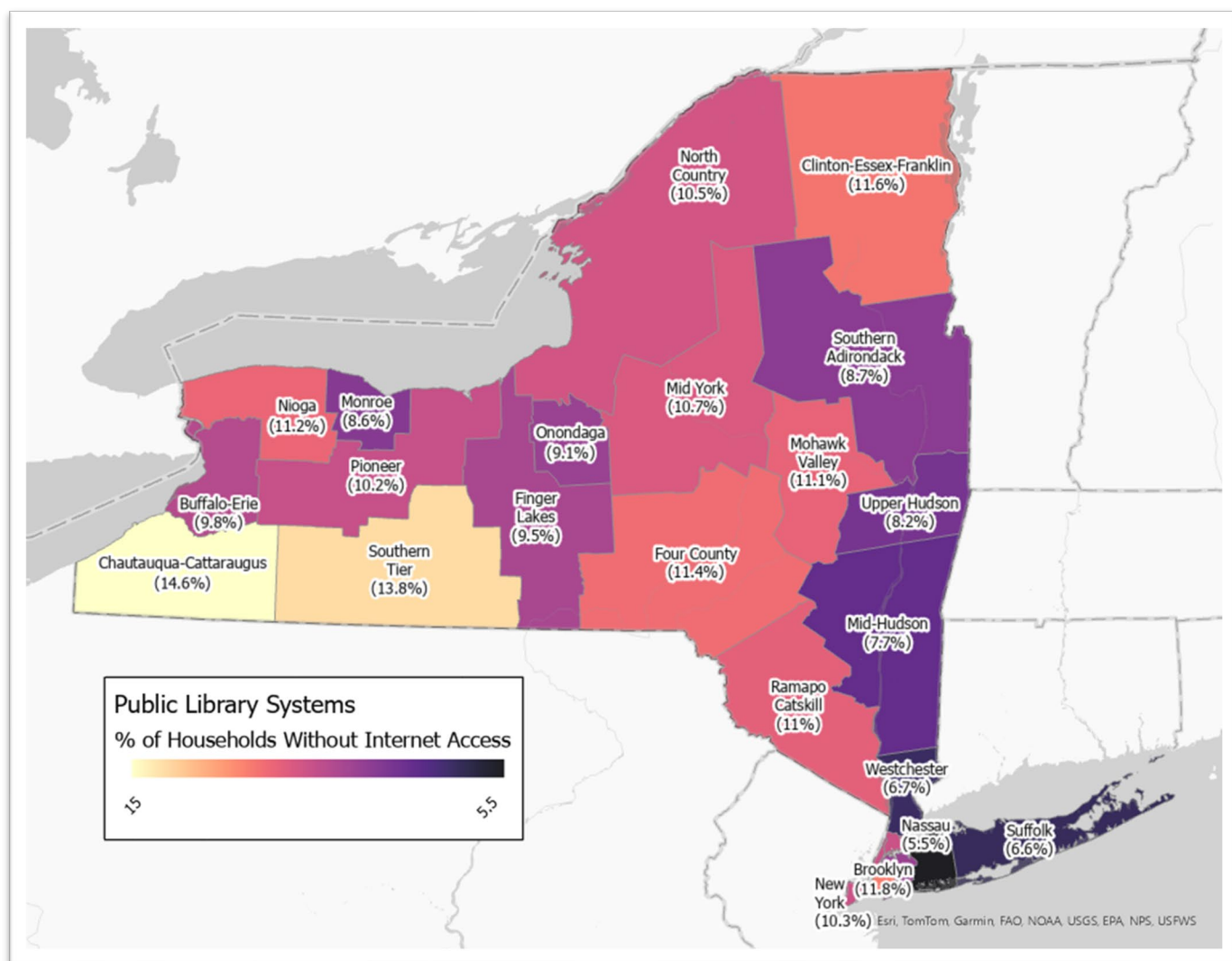


Top two most common computing devices present in NYS Households, 2013-17 to 2018-22



Fact #4: Lack of Broadband Access Cuts Across the Rural-Urban Spectrum in NYS

The NYS Digital Equity Portal allows users to summarize broadband-related data by various geographic units, including public library system boundaries, counties, federal and state legislative districts, municipalities, school districts, and zip codes. Consequently, it is possible to generate fine-resolution pictures of broadband-related challenges across the state. The map below draws on data at the public library system level of analysis to show the current (2018-22 ACS) percentage of households without a broadband Internet connection at home.



Percentage of households without a broadband Internet connection at home, by Public Library System

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As the map suggests, lack of broadband Internet at home is a cross-cutting issue in NYS. Although predominantly rural areas in Western and Southern NYS (i.e., Chautauqua and Cattaraugus Counties, the Southern Tier) have the two largest shares of households without broadband subscriptions (14.6% and 13.8% of households, respectively), the densely populated Brooklyn Public Library System service area in New York City (NYC) has the third highest share of unconnected households (11.8%) in the state. Thus, broadband inaccessibility at home – regardless of whether that inaccessibility is more related to the absence of infrastructure or the unaffordability of subscriptions for local populations – is neither a rural nor an urban problem: it is a statewide problem that requires statewide investments.

Fact #5: Racial Disparities in Broadband Take Up Rates Persist, And Some Gaps Are Widening

Among the four largest identifiable racial-ethnic groups in NYS tracked by the Census Bureau¹⁰ – white (not Hispanic or Latinx) persons, Black or African American persons, Hispanic or Latinx persons, and Asian persons – households headed by Black or African American New Yorkers are the least likely to have broadband Internet subscriptions. Just 88.2% of such households have a broadband Internet subscription, slightly behind the statewide average of 90.5%. Households headed by Hispanic or Latinx New Yorkers are likewise behind the statewide average: 89.8% have a broadband subscription. White-headed households subscribe to broadband Internet (90.7%) at roughly the statewide average rate (90.5%), while Asian-headed households are the most likely group to have a broadband package at home (94.0%).

Head of Household Race-Ethnicity	Current ACS Period (2018-22)	Current Broadband Take Up Gap Relative to Statewide Average	Prior ACS Period (2013-17)	Prior Broadband Take Up Gap Relative to Statewide Average
Asian	94.0%	+3.5	88.9%	+10.8
Black or African American	88.2%	-2.3	77.4%	-0.7
Hispanic or Latinx	89.8%	-0.7	79.1%	+1.0
White	90.7%	+0.2	85.0%	+6.9
NYS Average	90.5%	--	78.1%	--

As shown in the table above, broadband take up rates increased for households headed by members of each of the four largest identifiable racial-ethnic groups tracked by the U.S. Census Bureau relative to the previous half-decade. Despite these increases, however, the two groups with “below-average” rates of broadband subscription – Black or African American- and Hispanic or Latinx- headed households – are more “below average” now than they were during the period from 2013 to 2017. Stated more explicitly:



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- Between 2013 and 2017, Black or African American-headed households had the lowest broadband take up rates, at 77.4%. During that interval, the NYS average broadband take up rate was 78.1%. Thus, in the previous half-decade, the broadband take up rate for Black or African American-headed households was 0.7 percentage points behind the NYS average. For comparison, in the current half-decade period (2018-22), Black or African American-headed households again have the lowest broadband take up rate, at 88.2%. That figure is a marked, 10.8-percentage-point improvement over the group's 2013-17 take up rate. However, over the same interval, the NYS average take up rate increased by a meaningfully larger 12.4 percentage points. As a result, Black or African American-headed households have broadband take up rates that are now more “below average” – namely, 2.3 percentage points below average – than they were in the previous half-decade. Broadband access at home has improved for Black or African American New Yorkers; but the magnitude of that improvement lagged behind the improvements happening at the statewide level.
- The same situation holds for Hispanic or Latinx-headed households. For the period from 2013-17, such households had a slightly above average broadband take up rate (79.1%, compared to the NYS average of 78.1%). Whereas the group's take up rate increased significantly between that period and the current one (2018-22), the magnitude of that increase (10.7 percentage points) was smaller than the corresponding statewide increase (12.4 percentage points).

The takeaway is that recent gains in at-home broadband subscriptions have been uneven, suggesting that advancing digital equity in NYS will require new digital inclusion activities that are intentionally designed to ensure that affordable, accessible broadband is universally available to all households across the state.

Fact #6: Almost 30% of Households with Annual Income Below \$35,000 Do Not Have Broadband Internet at Home

Income, and the ability to pay for a home-based broadband Internet subscription, appears to be one of the biggest barriers to digital equity in NYS. According to the current (2018-22) ACS, nearly all households with annual incomes over \$75,000 have a broadband Internet connection in their homes (95.6%). For households with annual incomes below \$35,000, the corresponding take up rate is just 72.4%. Within that group, only 66.6% of households whose annual incomes fall between \$10,000 and <\$20,000 have a broadband Internet subscription.

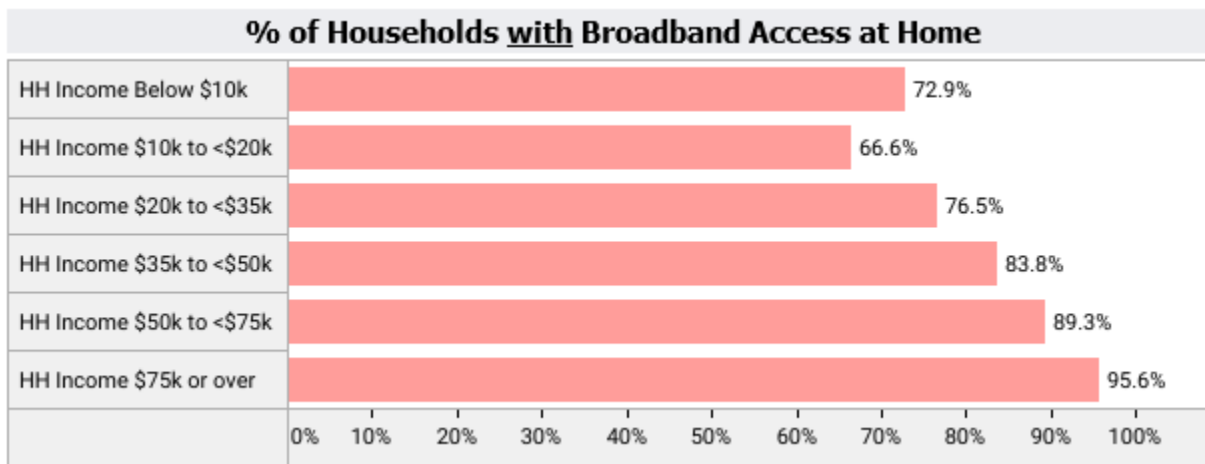
Based on fine-resolution pricing data collected and published by Broadband Now,¹¹ the minimum average price for a broadband package with a speed of at least 25Mbps across NYS is \$49.95 per month. For a household earning \$20,000 per year, that price tag amounts to 3% of the



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household's gross (i.e., pre-tax) income – a burden six times the average rate (0.5% of gross income) reported at the NYS Digital Equity Portal.¹²



Screenshot of Broadband Take Up Rates by Income, via the NYS Digital Equity Portal

What Do These Facts Mean for Digital Equity Work in NYS, and What is the Affordable Broadband Act?

The yearslong, ongoing, collaborative digital equity and digital inclusion work being done by public, charitable, and community-based organizations throughout NYS – with the NYS Library serving as a critical hub in that ecosystem¹³ – has helped the state reach historic levels of access to high-speed Internet: more than nine out of every ten households in NYS now have at least some way to access high-speed Internet in their homes, up from just 78% of households in the period from 2013-17. Nevertheless, barriers to achieving true, universal access and full digital equity remain:

1. Nearly a quarter-million households still lack any type of high-speed Internet connection.
2. An additional ~810,000 households can only access the Internet through cellular data plans, bringing the total number of potentially “underconnected” households to more than 1.5 million.
3. There is reason to believe that insufficient affordable access to multiple and diverse types of computing devices is keeping many households “underconnected” to broadband Internet.
4. Lack of at-home broadband subscriptions is a problem with multiple dimensions – including but not limited to lack of infrastructure, too few providers, and unaffordable prices for local populations – that cut across the rural-urban gradient.



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5. Households headed by Black or African American and Hispanic or Latinx New Yorkers continue to have the lowest rates of broadband take up, and the groups' take up rates are falling farther behind statewide averages.
6. And income still appears to be the ultimate arbiter of whether a household can access a broadband Internet subscription.

Based on these facts, two immediate targets for digital inclusion activities in NYS are arguably to (1) design and fund programs that make it easier for households to acquire Internet-enabled devices that meet their computing needs, and (2) design and fund programs that deliver broadband subscriptions to households at no or almost no cost.

Concerning the latter of these targets, a recent (April 2024) decision by the 2nd U.S. Circuit Court of Appeals in NYS promises to make major strides in bringing affordable broadband to New York's lowest-income households. Specifically, a 2021 NYS bill passed by the Legislature and signed into law by then-Governor Cuomo, known as the "Affordable Broadband Act" (ABA), would have compelled any Internet service provider operating in NYS to cap the monthly price of a 25Mbps broadband subscription at \$15 for households that qualify for public benefits (i.e., free or reduced-price school lunches, SNAP, Medicaid, disability rent exemptions, or affordability benefits from utility companies).¹⁴

In response to that law, Internet providers, their trade associations, and their industry lobbyists mounted a legal challenge, arguing that any state law to restrict the prices that an Internet provider can charge is preempted by federal law. Just months after the ABA passed, the district court that heard their case ultimately sided with the Internet providers, and the law was shelved (pending an appeal by NYS).¹⁵

The appeal, which was taken up by the 2nd U.S. Circuit Court, came to a head in late April 2024, when the judicial majority reversed the district court opinion and vacated the permanent injunction that the district court placed on the ABA. That ruling means that – perhaps as soon as 60 days subsequent to the ruling¹⁶ – low-income households can obtain \$15 monthly broadband subscriptions from large Internet service providers in NYS. (Importantly, the law also requires providers to offer a higher-speed, 200Mbps package to qualifying households for \$20.) Whereas a typical (i.e., \$49.95) broadband package previously required a household earning \$20,000 per year to commit 3% of their pre-tax income to broadband – a commitment that, as the data suggest, is not possible for a sizeable fraction of such households (see Fact #6) – under the ABA a broadband package will require less than 1% of that household's income.

Crucially, in light of the facts presented in this document, the ABA cannot bring about digital equity by itself. Additional, ongoing, and adaptive digital inclusion activities will continue to be needed to bring about universal access to the computing devices and Internet services that will facilitate, for all New Yorkers, "full participation in our society, democracy, and economy."¹⁷ Nonetheless, the ABA represents a significant, first-of-its-kind¹⁸ law that will open up broadband



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access to low-income families in ways that have often been unimaginable in the competitive, profit-driven capitalist market economy in which Internet service providers operate. Continuing to innovate in these legal and regulatory spaces, and continuing to move toward a reconceptualization of broadband as public good¹⁹ that should be universally accessible, will arguably be critical next phases of the charge toward digital equity in NYS and across the globe.

Notes

¹ National Digital Inclusion Alliance (NDIA). "Definitions." <https://www.digitalinclusion.org/definitions/>

² *Id.*

³ Community Technology of New York (CTNY) et al. (2021). *The New York State Digital Equity Portal – Final Report*. New York State Library System. https://www.nysl.nysed.gov/libdev/NYS-Digital-Equity-Portal-Report_FINAL.pdf; also see: Moore, Lauren. (2021). *Achieving Digital Equity in New York: An Outline For Collaborative Change*. <https://www.nysl.nysed.gov/libdev/DigitalEquityNY.pdf>

⁴ New York State (NYS) Comptroller's Office. (2021). *Availability, Access and Affordability: Understanding Broadband Challenges in New York State*. <https://www.osc.ny.gov/reports/availability-access-and-affordability-understanding-broadband-challenges-new-york-state#footnote-051>

⁵ See, for example: Martin, Michael J.R. (2018). "For the First Time, Census Bureau Data Show Impact of Geography, Income on Broadband Internet Access." U.S. Census Bureau. <https://www.census.gov/library/stories/2018/12/rural-and-lower-income-counties-lag-nation-internet-subscription.html>

⁶ New York State Digital Equity Portal. <https://blogs.cornell.edu/nysdigitalequity/>

⁷ CTNY et al. (2021); Moore (2021).

⁸ *Id.*

⁹ Includes households with dial-up Internet services only.

¹⁰ Other Census Bureau-tracked groups include persons who identify with "two or more races", persons who identify with "some other race alone", persons with Indigenous identities, and persons who identify as Native Hawaiian or Pacific Islander. The NYS Digital Equity Portal provides current data for each of these groups; however, they are excluded here due to – in the latter two cases – relatively small population sizes, and – in the former two cases – the Census Bureau's grouping conventions which combine diverse identities into undifferentiated categories.

¹¹ See: <https://github.com/BroadbandNow/Open-Data>

¹² New York State Digital Equity Portal. <https://blogs.cornell.edu/nysdigitalequity/>

¹³ CTNY et al. (2021); Moore (2021).

¹⁴ Consolidated Laws of New York. "Broadband service for low-income consumers." Chapter 20. Section 399-ZZZZ. <https://www.nysenate.gov/legislation/laws/GBS/399-ZZZZ>

¹⁵ Villeneuve, Marina. "\$15-a-month internet law on hold in New York, judge rules." *The Associated Press*. (11 June 2021). <https://apnews.com/article/government-and-politics-new-york-technology-laws-business-4243edac6e369f5240d25ac08fd1b41d>

¹⁶ Consolidated Laws of New York. "Broadband service for low-income consumers."

¹⁷ NDIA "Definitions".

¹⁸ New York State Division of Budget. "Governor Andrew Cuomo Announces Highlights of The FY 2022 State Budget to Reimagine, Rebuild and Renew New York." <https://www.budget.ny.gov/pubs/press/2021/fy22-enacted-budget-highlights.html>

¹⁹ See: <https://rooatmsu.org/2017/08/23/broadband-as-a-public-good/>