

21-1975

United States Court of Appeals
for the Second Circuit

NEW YORK STATE TELECOMMUNICATIONS ASSOCIATION, INC., CTIA - THE WIRELESS ASSOCIATION, ACA CONNECTS - AMERICA'S COMMUNICATIONS ASSOCIATION, USTELECOM - THE BROADBAND ASSOCIATION, NTCA - THE RURAL BROADBAND ASSOCIATION, SATELLITE BROADCASTING AND COMMUNICATIONS ASSOCIATION, on behalf of their respective members,

Plaintiffs - Appellees,

v.

LETITIA A. JAMES, in her official capacity as Attorney General of New York,

Defendant - Appellant.

On Appeal from United States District Court
for the Eastern District of New York

**BRIEF OF BENTON INSTITUTE FOR BROADBAND &
SOCIETY AND PUBLIC KNOWLEDGE AS AMICI CURIAE
IN SUPPORT OF DEFENDANT-APPELLANT**

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Dated: December 1, 2021

CORPORATE DISCLOSURE STATEMENTS

Pursuant to Federal Rule of Appellate Procedure 26.1, the Benton Institute for Broadband & Society and Public Knowledge hereby state as follows:

The Benton Institute for Broadband & Society has no parent corporation, it issues no stock, and no publicly held corporation owns a ten-percent or greater interest in it.

Public Knowledge has no parent corporation, it issues no stock, and no publicly held corporation owns a ten-percent or greater interest in it.

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Date: December 1, 2021

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Miscellaneous Authorities

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<https://doi.org/10.1038/s41386-021-00960-4> 9

Alison M. Darcy, Timothy Mariano, *Mental Health in America: A Growing Crisis*, (August 6, 2021),
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Brett M. Frischmann, *Infrastructure: The Social Value of Shared Resources* (2013) 3

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MCKINSEY, *Telehealth: A quarter-trillion-dollar post-COVID-19 reality?*,
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INTEREST OF THE AMICUS CURIAE¹

The Benton Institute for Broadband & Society is a 40-year-old, 501(c)(3) private operating foundation that conducts research and analyses, and engages in advocacy, to bring open, affordable, high-performance broadband to all people in the U.S. to ensure a thriving democracy. Making broadband more affordable and devising alternative mechanisms to ensure that all Americans have access to affordable broadband service, are among its highest priorities.

Public Knowledge is a nonprofit technology policy organization that promotes freedom of expression, an open Internet, and access to affordable communications tools and creative works. As part of that mission, Public Knowledge advocates on behalf of consumer interests for balanced and pro-competitive communications policies through grassroots efforts, educating policymakers in Washington, D.C. and around the country, participating in regulatory proceedings, and where appropriate, filing amicus curiae briefs in cases of significance. Communications law,

¹ No party's counsel authored this brief in whole or in part, and no person other than amici, their members, and their counsel contributed money intended to fund the preparation or submission of this brief. The parties have consented to its filing.

and particularly matters relating to broadband access and consumer rights such as those at issue in the current case, are subject areas in which Public Knowledge has both strong interests and substantial expertise.

INTRODUCTION

New York State’s Affordable Broadband Act (hereinafter, “ABA”) is both good policy and good law.² This brief presents a policy analysis of the benefits of the ABA as well as a legal analysis of the preemption question. The Amici conclude that the ABA presents significant policy benefits for New Yorkers and is not preempted by federal law.

From a policy perspective, the ABA is designed to promote broadband internet access by ensuring fairly priced, affordable broadband plans are offered to qualifying low-income consumers in New York. New York State’s decision to promote broadband through the ABA will have positive effects on the economy, public health, and education. The benefits of this increased access are not limited to the individuals that avail themselves of the reduced cost programs but will extend to everyone. Network effects—the phenomenon by which the value of a network is increased as its size increases—mean that every New Yorker, and every New York business, state and local government instrumentality, and non-governmental organization that uses the Internet will benefit from the ABA.

² The ABA is codified as NY General Business Law § 399-zzzzz.

Additionally, recent empirical research by Dr. John Horrigan supports the value of regulations like the ABA. His research demonstrates that the cost of service is, for many, the primary barrier to broadband access and that regulations that reduce costs, like the ABA, are effective at promoting uptake of broadband service.

From a legal perspective, the ABA is a targeted and state-specific regulatory response to the problem of the digital divide. Contrary to the arguments of the plaintiffs and the decision of the district court, the ABA is not preempted by federal law through any theory of preemption. Far from Congress attempting to preempt or preclude state action, the Communications Act clearly anticipates, and even encourages, states to join in the regulation of communications services. Meanwhile, the Federal Communications Commission (hereinafter, "FCC") has specifically relinquished its authority over broadband regulation, and the D.C. Circuit has held that the FCC lacks authority to preempt state law.

ARGUMENT

I. ENSURING AFFORDABLE BROADBAND ACCESS FOR NEW YORKERS IS AN IMPORTANT POLICY GOAL

Broadband internet access has quickly evolved from a luxury product to essential infrastructure.³ It is not just one entertainment or information service among many, but a “critical enabling technology.” As the FCC has observed, “Much like telephone service a generation ago, broadband has evolved into the essential communications medium of the digital economy continuing to transform the landscape of America even more rapidly and pervasively than earlier infrastructure networks.”⁴ Broadband is an essential component of modern life necessary for learning, working, and getting medical care. The recent global pandemic has made this clearer than ever; as schools to hold classes online, workers are required to telework, and people rely on the Internet for entertainment and to stay connected with their family and friends. In an

³ See Brett M. Frischmann, *Infrastructure: The Social Value of Shared Resources* 4, 317 (2013).

⁴ James Vollman & Anthony Carnevale, *National Broadband Plan Broadband Access for All Americans Facilitating an Efficient and Effective Labor Market* (2009), <https://cew.georgetown.edu/wp-content/uploads/2009/12/09-51-12-04-2009-Anthony-P.-Carnevale-7020351160.pdf>.

increasingly digital world, poor or inadequate internet access puts individuals “at a significant disadvantage compared with their peers.”⁵ The ABA was passed to protect low-income New Yorkers from these adverse consequences and to enhance the digital landscape for all New Yorkers. Expanding access to broadband is good for the economy, public health, education, and building a more equitable society.

A. The ABA Benefits All New Yorkers

Amici stress that New York’s Affordable Broadband Act benefits do not simply assist those directly receiving discounted service but provides significant benefits to all New Yorkers and all New York public and private institutions.

⁵ Lifeline and Link Up Reform and Modernization, WC Docket Nos. 11-42, 09-197, 10-90, *Third Report and Order, Further Report and Order, and Order on Reconsideration*, 31 FCC Rcd 3962, ¶ 12 (2016) (hereafter, *Lifeline Order*) (citing FCC, CONNECTING AMERICA: THE NATIONAL BROADBAND PLAN 3 [2010], <http://www.broadband.gov/plan>).

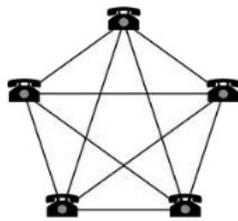
As more people gain access to broadband internet service and participate in the digital side of society, everyone benefits. Economists refer to the impacts of additional connections as “network effects.”⁶ The rule of thumb for connected networks is “Metcalfe’s Law”: the value of a network is proportional to the square of the number of users, as illustrated in the diagrams below:

Metcalfe’s Law:

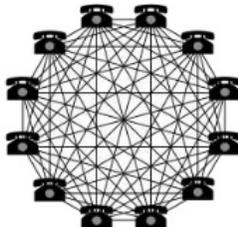
$$\text{Connections in a network} = n(n-1)/2$$



2 telephones = 1 connection



5 telephones = 10 connections



12 telephones = 66 connections

In simple terms, every newly connected household increases the value of the Internet for everyone.⁷ Thus, as the ABA facilitates adding new broadband users, everyone is better off.

⁶See, Rahul Tongia, Ernest J. Wilson III, *The Flip Side of Metcalfe’s Law: Multiple and Growing Costs of Network Exclusion*, 5 International Journal of Communication 665 (2011).

⁷ There is also an additional cost when potential network users are

B. Broadband Access is Good for the Economy

It is no exaggeration to say that the economy of the 21st century has been defined by the explosive growth of the Internet: community-driven online marketplaces like Craigslist, OfferUp, and Facebook Marketplace enlarge customer bases and allow more people and businesses to buy and sell goods nationally and in their local communities. Traditional banks and newer person-to-person money transfer services like Venmo and CashApp have created new lines of business, permitting existing users to engage in personal and commercial transactions, and to have greater information about and control over their finances. Greater internet access expands the pool of potential employees to the benefit of both employers and applicants. E-commerce vendors are now able to reach more customers, and previously unconnected consumers now have access to a greater variety of goods and to comparison shop. Increased connectivity increases the effectiveness, and decreases the cost, of delivering governmental services, thereby benefitting all taxpayers.

Additionally, the COVID-19 pandemic has forced many people and

excluded. *Id.*, at 665 (“[A]s a network grows in size and value, those outside the network face growing disparities.”)

workplaces to adapt to new digital methods of working. Remote desktop access, video conferencing, and access to cloud storage are all essential components of modern digital workspaces that rely on robust broadband internet adoption. The people and places that have ready access to broadband internet are the ones who will benefit from the ongoing innovation and growth of our digital economy.

C. Broadband Access is Good for Public Health

The global COVID-19 pandemic has cast light on how important an issue public health is and how access to information and broadband internet are critical components of our public health system. Access to up-to-date information about public health, direct access to otherwise-remote government information sources like the CDC, and online tools for arranging tests and vaccinations all played a role in combating COVID-19. Especially in New York, which suffered greatly as the original epicenter of the pandemic in the United States, ensuring robust access to these public health resources through broadband access is of critical importance.

The public health benefits of broadband access are not limited to public health emergencies like COVID-19. Telemedicine and digital tools

that allow people to connect with healthcare services are valuable for improving health outcomes even outside the context of the pandemic. Broadband connectivity enables home-bound and or remotely located patients to have otherwise unavailable access to medical services. “Strong continued uptake, favorable consumer perception, and tangible investment into this space are all contributing to the continued growth of telehealth in 2021.”⁸ While telemedicine may have been a necessity during the pandemic, it is likely here to stay, and enabling broad access to these services must play a key role in any forward-looking public health policy.

Mental health can also be bolstered by improving connections through broadband access. The United States is in the midst of a massive mental health crisis, so every additional tool that can be brought to bear is essential.⁹ Prior to the pandemic, only 1% of mental health and substance abuse appointments were done using telemedicine, yet now

⁸ McKinsey, *Telehealth: A quarter-trillion-dollar post-COVID-19 reality?*, (July 9, 2021), <https://www.mckinsey.com/industries/healthcare-systems-and-services/our-insights/telehealth-a-quarter-trillion-dollar-post-covid-19-reality>.

⁹ Alison M. Darcy, Timothy Mariano, *Mental Health in America: A Growing Crisis*, (August 6, 2021), <https://www.psychiatrytimes.com/view/mental-health-america-crisis>.

that number has increased to 41%.¹⁰ Ensuring access to telemedicine, but also to online therapy services, crisis hotlines, support groups, and even just ensuring family and friends can stay in touch, can all help combat the mental health crisis. Increasing broadband access is a direct avenue for connecting people with the emotional support and professional help needed to ensure a healthier society.

D. Broadband Access is Good for Education

Yet another aspect of the pandemic that drew into focus the essential nature of broadband access was the shift to remote classrooms for schools across the country. Stories of kids struggling to connect to their digital classrooms due to slow or overburdened home internet service or needing to sit in parking lots to hunt for WiFi to complete homework, have spurred a renewed desire to see the digital divide closed. While online tools for distance learning have been developing in the context of higher education for some time, it was seeing the potential of this technology to aid in education across all ages—and then the all-too-

¹⁰ Busch, A.B., Sugarman, D.E., Horvitz, L.E. *et al.*, *Telemedicine for treating mental health and substance use disorders: reflections since the pandemic*, *Neuropsychopharmacology*, 46, 1068–1070 (2021), <https://doi.org/10.1038/s41386-021-00960-4>.

common obstacles to access—that highlighted how much work is still needed to harness the benefits for everyone.

Even outside of the context of video conference classrooms or streamed lessons, simple internet access is essential to allow teachers can communicate with parents and students or enable students to complete online homework assignments or research projects. Students in higher education also benefit from improved affordable access to broadband; affordable broadband makes it easier for working people to connect with online classes and ensures that students always have options for quality internet service.

II. THE NECESSITY OF AFFORDABLE BROADBAND ACCESS IS SUPPORTED BY EMPIRICAL RESEARCH

The compelling need for, and societal value of, reducing the cost of broadband for and lower income users is demonstrated by two recent studies conducted by Dr. John B. Horrigan, a Benton Senior Fellow.

A. Philadelphia

In June-July 2021, Dr. Horrigan conducted a high-quality telephone survey of 2503 Philadelphia households, a copy of which is provided hereto as Appendix A. The study shows that affordability is the most important obstacle to connectivity in low-income households.

56% of non-broadband adopters said that the cost of access was a problem. Asked to identify the most important reason for not having high-speed service at home, 42% cited affordability. The report showed the particular burdens that low-income households face in obtaining access to broadband. 31% of low-income households reported a service interruption during the current pandemic, and 21% of K-12 households had service interrupted because the pandemic made paying the bill a challenge.

The Philadelphia study validates the effectiveness of discount programs in easing the financial burden of access as well as adding new users. It found that the rate of high-speed broadband connectivity had increased from 70% to 84% over the preceding two-year period, a remarkable increase over that short period. Significantly, fully half of the improvement is attributable to free or discounted programs; of the 14% increase in home broadband adoption from 2019 to 2021, free or discount offers account for 9% points. Moreover, about two-thirds of those who have signed up for free or discount offers say it would be difficult for them to have service without them.

Discount offers also have the highest incidence among target populations. Some 21% of households with kindergarten through 12th-grade students have signed up for one of these discount or free offers. For low-income Philadelphians (those whose incomes are below \$20,000 annually), 17% had taken advantage of one of these offers. 31% of low-income Philadelphia households lost internet connectivity during the pandemic due to difficulty paying.

It is of considerable relevance that two of the discount programs used in Philadelphia—the city’s own PHLConnectED program providing free connectivity to qualifying K-12 student households,¹¹ and Comcast’s Internet Essentials program—are unavailable to New Yorkers,¹² and a third subsidy has since been reduced. During the survey period, a federal subsidy of \$50/month available through a third program has since been reduced by 40%.¹³ New York’s Affordable Broadband Act will, at least in part, serve a similar function to those unavailable and reduced programs.

¹¹ See, <https://www.phila.gov/programs/phlconnected/>

¹² Comcast does serve a few thousand New York customers in Putnam County but is effectively absent in the state. See WIKIPEDIA, *List of communities served by Comcast*, [https://en.wikipedia.org/wiki/List_of_communities_served_by_Comcast#New_York_\(14\)_\[32\]](https://en.wikipedia.org/wiki/List_of_communities_served_by_Comcast#New_York_(14)_[32]).

¹³ During the survey period, the federal Emergency Broadband Benefit provided a subsidy of \$50/month. It has since been reduced to

B. National Survey

Dr. Horrigan has also completed a national survey of low and lower-middle income households,¹⁴ the results of which are similar to what was found in Philadelphia. The report likely will be published in final form before the end of December 2021. (Amici will provide a copy of this report upon publication.)

The most significant finding in the national survey is that there is a large segment of the population that can pay something, but not market rates, for broadband. Of those panelists with some internet connectivity, about 27% say they could pay up to about \$25/month, precisely what is made available by New York's Affordable Broadband Act. Those currently without broadband were asked to identify a price at which service would be too expensive for them. About 16% identified on average \$25 as the maximum price point. These groups together make up more than one fifth (22%) of all low and lower-income respondents.

\$30/month and renamed as the Affordable Connectivity Benefit by Section 60502 of the recently enacted Infrastructure Investment and Jobs Act, Public Law 117-58.

¹⁴ 2503 online responses from were supplemented by 383 telephone interviews. Each household had income of less than \$50,000.

The national survey also found that affordability is, by a considerable degree, the greatest obstacle to broadband access.¹⁵ Respondents were asked to select one or more from a list of eleven reasons not to subscribe, and then asked to pick the most important of those considerations. 55% of respondents listed cost as a factor,¹⁶ and 21% listed cost as the most important barrier for them.¹⁷

III. THE AFFORDABLE BROADBAND ACT IS NOT PREEMPTED BY FEDERAL LAW UNDER ANY THEORY OF PREEMPTION

The starting point for any preemption analysis is “the basic assumption that Congress did not intend to displace state law,” *Maryland v. Louisiana*, 451 U.S. 725, 746 (1981). When Congress does preempt states, “It may do so through express language in a statute... [or] through ‘field’ pre-emption or ‘conflict’ pre-emption.” *Oneok, Inc. v. Learjet, Inc.*, 135 S. Ct. 1591, 1595 (2015). Field preemption refers to the doctrine that states may be preempted from regulating in an area if

¹⁵ 18% of respondents report a service disruption during the pandemic arising from inability to pay.

¹⁶ Runners up were cost of a computer (47%), smartphones are adequate (38%), and internet access available outside the home (32%).

¹⁷ Other reasons most often listed as most important included, in descending order, smartphones are adequate (15%), cost of computer (11%), and internet access outside the home (5%).

Congress has “legislated so comprehensively in a particular field that it ‘left no room for supplementary state legislation[.]’” *Kansas v. Garcia*, 140 S. Ct. 791, 804 (2020) (quoting *J. Reynolds Tobacco Co. v. Durham County*, 479 U.S. 130, 140 [1986]). Conflict preemption addresses instances where there is “actual conflict” between a state and federal regulation. *See English v. General Elec. Co.*, 496 US 72, 90 (1990).

In this instance, the Communications Act and the regulations promulgated by the FCC represent the potential sources of federal preemption of the ABA. Examination of the statute and regulations demonstrates that neither Congress nor the FCC have acted to preempt a state from enacting a rate cap for customers within the state based on the state’s police powers.

The Communications Act contains provisions that explicitly outline areas in which states are preempted from regulating but also includes provisions that make it clear that Congress envisioned a role for states in regulating communications service providers.¹⁸ The FCC’s current framework for the regulation of broadband internet comes from the 2018

¹⁸ To be clear, the states do not require or derive authority to regulate from the Communications Act—they have authority to regulate under their own police powers—but various provisions of the Communications Act recognize and encourage states to exercise said powers.

“Restoring Internet Freedom Order” (hereinafter, “RIFO”). *In re Restoring Internet Freedom*, 33 FCC Rcd. 311, ¶ 2 (2018). The RIFO reclassified broadband service as an information service, outside of the Commission’s regulatory authority. Significantly, this reclassification decision ceded FCC authority for any form of rate regulation. Upon review by the D.C. Circuit, the court determined that FCC lacked authority to preempt the states in areas like rate regulation where the FCC had ceded its authority. See *Mozilla Corp. v. FCC*, 940 F.3d 1, (D.C. Cir. 2019).

The issue of the proper classification of broadband under the Communications Act by the FCC is not before the court. Amici would contend that the weight of facts supported the FCC’s 2015 classification of broadband internet service as a telecommunications service under Title II,¹⁹ and opposed the subsequent RIFO, which among other things removed the FCC's authority to regulate (and preempt state regulation of) broadband. As a policy matter, Amici believe that the FCC should restore its broadband regulatory authority, and that this need not entail

¹⁹ *In re Protecting & Promoting the Open Internet*, 30 FCC Rcd. 5601 (2015) (“2015 Order”), *aff’d sub nom. United States Telecom Ass’n v. FCC*, 825 F.3d 674 (D.C. Cir. 2016).

broad preemption of state broadband laws that have filled in the gap left by RIFO. Of course, as a matter of law, the RIFO—as interpreted by the court in *Mozilla*—controls this issue.

Under this framework—wherein the Communications Act envisions “dual federal-state authority and cooperation”²⁰ and the federal regulator has largely disclaimed its share of authority—the result is an open field, free from conflict, wherein New York has the opportunity—and even responsibility—to introduce its own rules to promote the public interest when it comes to broadband access through its own police powers.

A. Field Preemption Does Not Apply to the ABA

The district court erred in holding that the Communications Act preempts the entire field of regulation of providers of interstate communications services precluding any ability of States to regulate these entities. While the Communications Act does provide the FCC jurisdiction over interstate communications services, it is not exclusive jurisdiction, and the Communications Act embraces the role of states in a complete regulatory framework and outlines specific rules and

²⁰ *See Mozilla*, 940 F.3d at 81.

instances of preemption. These features of the Communications Act directly undermine the district court's holding that Congress intended the Communications Act to be so comprehensive that it leaves "no room for supplementary state legislation." See *J. Reynolds Tobacco Co.*, 479 U.S. at 140.

The Communications Act specifically contemplates areas where the FCC and states are intended to work together. For example, 47 U.S.C. § 1302(a) directs that "[t]he [Federal Communications] Commission and each State commission with regulatory jurisdiction over telecommunications services shall encourage the deployment on a reasonable and timely basis of advanced telecommunications capability to all Americans." Such a directive runs in direct opposition to the narrative that Congress intended to exclude states from participating in the regulation of communications services. Indeed, the same section specifies that "price cap regulation" is an explicitly permitted method for the execution of that directive. Such provisions indicate the intent to encourage, rather preempt, laws like the ABA which promote broader access to communications services.

Congress is also clear about areas in which states are preempted from regulating. Title II of the Communications Act explicitly prohibits “state or local” laws that prevent telecommunications service providers from providing service. 47 U.S.C. § 253(a). Title II also describes specific procedures for preemption of such violations, while also safeguarding state regulatory authority to “preserve and advance universal service.” 47 U.S.C. § 253(d), (b). While broadband internet service is not classified under Title II, the explicit approach to balanced state and federal regulation outlined in Title II further establishes that an expansive field preemption holding is inconsistent with the Communications Act.

Applied more widely, the idea that a grant of federal jurisdiction to an administrative agency over “interstate” matters necessarily excludes states from regulating those things would lead to incongruous results. For example, the Federal Trade Commission has broad jurisdiction over unfair and deceptive trade practices under the FTC Act and administers a number of federal consumer protection statutes.²¹ States also have laws mirrored on the FTC Act, which often rely on FTC Act precedent for

²¹ FEDERAL TRADE COMMISSION, *Statutes Enforced or Administered by the Commission*, <https://www.ftc.gov/enforcement/statutes>.

guidance. *FTC v. Neovi*, 604 F. 3d 1150, 1156 (9th Cir. 2010). The district court's logic could undo consumer protection in countless areas.

B. Conflict Preemption Does Not Apply to the ABA

The Supreme Court “has observed repeatedly that preemption is ordinarily not to be implied absent an ‘actual conflict.’” *English v. General Elec. Co.*, 496 US 72, 90 (1990). There is no “actual conflict” between the absence of an FCC rate regulation or rate cap regime and the presence of a state one because there is nothing for state law to conflict with. Indeed, there is no preemptive “federal scheme” at all, including one of non-regulation, because the FCC has declined to categorize broadband in a manner by which it could exercise such authority over such matters. *See Mozilla Corp. v. FCC*, 940 F.3d 1, 130-33 (D.C. Cir. 2019). It is the absence of federal regulation on this issue that creates room for the states.

The district court errs in its interpretation of the FCC’s actions in the RIFO; the FCC did not impose a regime of deregulation, rather it chose to relinquish almost all authority over broadband through reclassification. Declining authority is not the same as crafting a regime of deregulation designed to exclude other actors. This mistake is rooted

in the contention that the RIFO, in reclassifying broadband as an information service and ceding its Title II authority, was a decision that broadband “should not be subject to common-carrier regulation.”²² While policy goals undoubtedly informed the RIFO, the Commission clearly stated: “We find that applying our understanding of the statutory definitions to broadband Internet access service as it is offered today most soundly leads to the conclusion that it is an information service.”²³ Fundamentally, the RIFO is a reclassification decision, not the enactment of a policy of deregulation grounded in FCC authority.

If the FCC wanted to adopt a position of deregulation and preemption, it could have continued to classify broadband internet as a telecommunications service and then explicitly adopted a position of forbearance and preemption. As explained by the court in *Mozilla*,

“The Commission could choose to enact heavier or lighter regulation under Title II by exercising less or more of its Title II forbearance authority, with symmetrical “preemption implications,” [Dissenting Op.10]. It just cannot completely disavow Title II with one hand while still clinging to Title II forbearance authority with the other.”²⁴

²² Complaint at para. 6.

²³ RIFO at para. 28.

²⁴ *Mozilla* at 133.

Under the currently controlling framework, the FCC is not “forbearing” from rate cap regulations because it lacks the authority to engage in such regulation in the first place. To the extent that the FCC did try to preempt state actors in the RIFO, the D.C. Circuit has vacated the portion of the RIFO that attempts to expressly preempt states from regulating broadband, finding that the Commission lacked authority for its express preemption and that its voluntary abdication of broadband oversight did not constitute a “policy” that limits states from regulating in this area. *Mozilla* at 13. Thus, as the FCC has ceded its authority in this area, federal conflict with the states is impossible.

Furthermore, even if the FCC adjusted its classification of broadband back to Title II thereby reclaiming authority to potentially regulate prices, a specific subsequently adopted federal regulation would have to conflict with the ABA to represent an “actual conflict.” *See English v. General Elec. Co.* at 90. As it currently stands, there is simply no federal regulatory scheme for the ABA to conflict with.

CONCLUSION

For all of the foregoing reasons, the judgement of the district court should be reversed.

Respectfully submitted,

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Dated: December 1, 2021

CERTIFICATE OF COMPLIANCE

Pursuant to Rule 32(a) of the Federal Rules of Appellate Procedure, John Bergmayer hereby certifies that according to the word count feature of the word processing program used to prepare this brief, the brief contains 4,500 words and complies with the typeface requirements and length limits of Rule 32(a)(5)-(7) and Local Rule 32.1.

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Dated: December 1, 2021

APPENDIX A

CONNECTING PHILADELPHIA

2021 Household Internet Assessment Survey

A survey assessment on the positive impact of investments to promote digital advancement in the City of Philadelphia

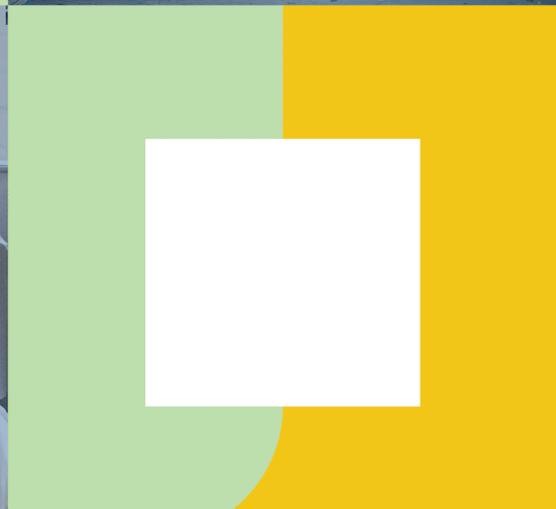
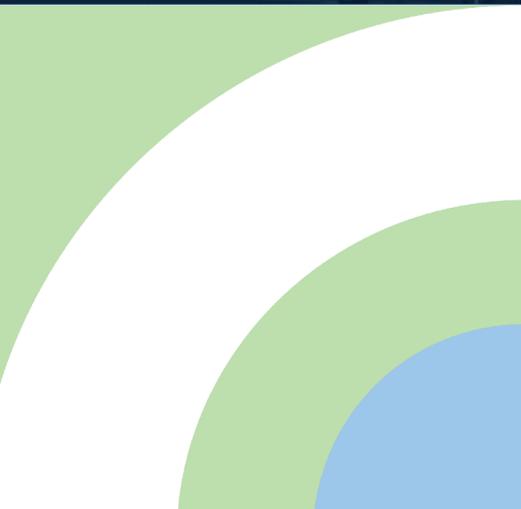


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October 20, 2021

City of Philadelphia
Office of Innovation and Technology
1234 Market Street, 18th Floor
Philadelphia, PA 19107

Dear City of Philadelphia,

For over a decade, the City has been committed to driving equity and inclusion through its technology-based services. Beginning in 2010 with the emergence of the cross-sector collaborations to provide city-wide digital literacy programs, to the subsequent establishment of digital impact alliances, or the more recent implementation of smart city road maps and the sharing of open data to create user-friendly public applications, Philadelphia has long been addressing the issue of digital inequality. However, it was the onset of the Covid-19 pandemic that most significantly magnified the persisting challenges of the digital divide, not only in Philadelphia, but in cities across the country.

On behalf of our expert team of partners, it has been a privilege for Wilco to continue our dedicated efforts to address the City's most critical technology divides by now assisting with the inaugural 2021 Philadelphia Household Internet Assessment Survey. We envision the City now being able to, 1) Use current data to strategically create more detailed roadmaps towards reaching digital equity, 2) Leverage K-12 broadband investments to extend benefits to the city as a whole, and 3) Ensure that internet connectivity is inclusive of communities that have historically lacked access to opportunities for better employment, healthcare, and education.

To that end, our team has created a new dataset that goes beyond the numbers and delves into the hidden dimensions of Philadelphia's divide. Our analysis used phone surveys to understand how the city's residents use the internet and why and how the lack of internet has impacted K-12 students, and what people perceive as barriers to internet access. This research demonstrates the progress of current programs to connect thousands to the internet and devices during the pandemic. It also underscores the disproportionate rates of adoption among lower income African American and Hispanic households and aging adults. The new data lastly points to the need for sustained and equitable efforts to ensure every Philadelphian has equal access to the internet and critical digital tools to empower their households and improve their lives.

Ultimately, this assessment is just the beginning. A moment within the movement. An investment of Philadelphia for Philadelphians. The city can now utilize this timely and relevant data that provides a new baseline to help position Philadelphia for a strong and sustainable future that bridges our communities, our workforce, and our economic development. This is the time. And we are proud to share our findings and explorations with the City and the Nation.

Sincerely and with Philadelphia Pride,

A handwritten signature in blue ink, appearing to read "Brigitte Daniel Corbin".

Brigitte Daniel Corbin
Chief Executive Officer, Wilco



Foreword

When Philadelphia pivoted to deliver services virtually at the onset of the pandemic, the shift from in-person to online services demanded immediate solutions for all Philadelphians to be able to get online at home. Encouragingly, The City of Philadelphia’s Household Internet Assessment Survey, which sought to measure the progress of broadband programs and to understand how residents navigated the economic impacts of the pandemic to get online, reveals that Philadelphia is narrowing the gap -- 84% of Philadelphia homes are now connected to high-speed internet.

As the following report makes clear, programs are working. And yet, there is both opportunity and urgency for more action to be taken. Today, 1 in 6 Philadelphians do not have broadband at home. And, of those that heard of any broadband discount program, only 14% successfully enrolled. Philadelphia can continue to make progress in key ways -- invest in awareness and community partnerships to promote broadband programs and services through trusted local networks, seed and sustain a local ecosystem for digital equity that builds on existing efforts to create a coordinated and data-informed platform for collaboration; and, with an unprecedented federal investment opportunity at the tip of Congress’s pen, it can position itself to leverage digital equity funds from all sectors to drive change on the ground.

Today, cities across the United States are focused on economic recovery from the Covid-19 pandemic. For Philadelphia, a city with the ninth largest urban economy in the world and fourth in the nation, ensuring a future that provides economic stability and growth is directly linked to building an inclusive, digitally-skilled and digitally-connected population. All Philadelphians stand to benefit from universal broadband adoption and further investment in digital advancement, an approach to economic equality that equips people with the tools and strategies to leverage the full spectrum of technology to improve their standard of living.



Marta Urquilla
President, Centri Tech Foundation





Acknowledgments

Wilco would like to thank The Mayor's Fund for Philadelphia on behalf of The City of Philadelphia, Office of Innovation and Technology, for its support of this work to benchmark progress by the city and its partners to close the digital divide. The OIT team, in particular Juliet Fink Yates, Ashley Pollard, Andrew Buss, Labonno Islam, and Sarah Hollister, provided critical guidance and input throughout the project.

We would like to thank our partners for their dedication, spirit of collaboration and shared learning that made the overall execution and quality of this project possible:

Thank you to SSRS, Inc., led by Chintan Turakhia and Jennifer Su, for their thought partnership, diligence, and expert approach to implementing the survey methodology with such rigor.

We are especially indebted to Dr. John B. Horrigan for the design and analysis of the survey. Dr. Horrigan is a researcher who leads with a commitment to capturing people's real experiences through data. His expertise and thoughtful insights are the foundation of this assessment.

We are grateful to Centri Tech and Centri Tech Foundation (CTF), and to Marta Urquilla, President of CTF, for her steadfast management of this project. We extend our gratitude to Centri team members Laura Frances Mueller-Soppart and Matthew Snider for their direct day-to-day support and contributions to the production of the final report, and to analysts, Joanie Weaver and Mahi Gurram, for production of the data visualizations and research support, respectively.

Report designed by Candice Steele.



PHILADELPHIA'S DIGITAL DIVIDE BY THE NUMBERS

A City-Wide Survey Shows that Programs to
Tackle the Digital Divide Have a Positive
Impact

John B. Horrigan, PhD
October 2021



Executive Summary

The City of Philadelphia’s Household Internet Assessment Survey finds that the city has made significant progress in helping more residents gain high-speed internet service at home. In 2019, the federal government reported that 70% of households in Philadelphia were connected at home with broadband subscriptions. By mid-2021, the Philadelphia Household Internet Assessment Survey finds that 84% of homes subscribe to high-speed service (either cable modem, fiber optic, or digital subscriber line service). More than half of the increase is due to free or discount connectivity programs, which have loomed large in the pandemic, including Comcast Internet Essentials, T-Mobile’s Project 10Million, the federal government’s Emergency Broadband Benefit, and PHLConnectED. Households with K-12 students have been the greatest beneficiaries of these programs.

At the same time, progress is tenuous. Fully 32% of Philadelphia households are “subscription vulnerable.” These are low-income households that suffered service interruption during the pandemic for economic reasons and would find it hard to maintain service without the assistance of discount programs. Subscription vulnerable households are more likely to be African American and have K-12 children.

Affordability of internet service is a key factor preventing households from subscribing to broadband or maintaining service. More than 90% of those with broadband subscriptions in Philadelphia say a monthly fee of over \$20 per month is too expensive for their budgets, and many of these households have to weigh household internet bills against other needs. Among households that do not subscribe to broadband service, the costs of internet service and computing devices are the chief reasons they forgo service.

However, affordability is not the only issue. Many Philadelphia residents – particularly households with students – need to procure a computer and acquire the digital skills to use the internet in a meaningful way. All of this leads to significant digital divides in particular demographic categories. Older adults are far less likely than their younger Philadelphia counterparts to have home broadband subscriptions or to use discount offers for service. The same is true for Spanish-speaking Hispanic households and households with incomes near or below the poverty line.

The Philadelphia Household Internet Assessment Survey offers guidelines on how the city can reimagine its social safety net, focusing on three important ingredients:

- **Persistence in outreach:** Many low-income households are unaware of programs that could help them afford service. Ongoing outreach and education can help reach potential beneficiaries.
- **Patience** in meeting people where they are: Households without broadband may not embrace programs to foster connectivity overnight. Anchor institutions that provide digital support to residents must plan for repeated interactions with households that need help to get and stay online.
- **Partnerships:** Government, philanthropy, and business must work together to provide discount offers and training resources to help people connect to and use the internet.

The City of Philadelphia can consider the following strategies to address the city’s digital divide.

Increase Public Awareness of Available Discount Internet Programs

The City of Philadelphia can invest in funds for outreach that would likely get more people online. The city could also partner with local digital inclusion organizations to facilitate community support for completing discount program applications. Of those city residents that heard of any discount program, only 14% successfully enrolled. According to a July 2021 Benton Institute report, New Orleans, Detroit, and Baltimore have higher overall EBB enrollment rates than Philadelphia; there is room for improvement.

Adopt a Targeted Approach to Meet the Adoption Needs of Philadelphians

The survey shows that home broadband subscription and computer adoption rates vary among different demographic groups. Spanish-speaking residents, low-income households, and older adults have particularly acute gaps in connectivity. This means that the city could tailor strategies to meet specific needs. Older adults may have special needs for digital skills training. Low-income residents may need assistance in finding programs for affordable internet plans and computing devices.

Promote and Support a City-wide Approach to Digital Equity

Digital divides in Philadelphia play out differently across neighborhoods and demographic groups. The approach of “[meeting people where they are](#)” is foundational to digital adoption programs, which means soliciting participation from city residents in designing initiatives to address gaps. To that end, the City of Philadelphia could direct investments to local community based organizations that are already trusted entities in promoting digital equity, and partner with anchor institutions to thoughtfully scale its [digital navigators](#) and [digital literacy](#) efforts.

Ultimately, digital equity work happens across sectors. During the pandemic, the city and other stakeholders came together to lead efforts to connect residents. To build on current momentum and progress across the city, more resources, capacity, and coordination are needed to bolster local digital equity efforts. The city would benefit from sustained investment to address ongoing efforts to close Philadelphia's digital divide.

The City of Philadelphia commissioned the Philadelphia Household Internet Assessment Survey in order to fill knowledge gaps about the city's digital divide that the pandemic brought to the surface. The telephone survey asked a representative sample of 2,503 Philadelphia households about the tools they use to go online and how they have coped with internet connectivity during the pandemic. The survey was conducted in June-July 2021.

Key Data Takeaways

Technology adoption

- 84% of Philadelphia households have home high-speed internet connections, a marked increase from the 70% reported in the 2019 American Community Survey (ACS).
- 75% of Philadelphia households have a working desktop or laptop computer, compared with 71% in 2019 (according to the ACS).

Impact of connectivity programs

- 9% of Philadelphia households have signed up for a discount internet program, such as Comcast Internet Essentials, T-Mobile's Project 10Million, the Emergency Broadband Benefit, or PHLConnectED.
- 17% of low-income households have service due to a discount offer.
- 21% of K-12 households have signed up for a discount offer.

Awareness of connectivity programs

- 31% of all Philadelphia respondents have heard of discount or free internet offers from Comcast Internet Essentials, T-Mobile's Project 10Million, or PHLConnectED.
- 13% of all respondents have heard of the Emergency Broadband Benefit.
- 8% of all respondents have heard of the PHLConnectED program.

Affordability

Non-broadband adopters cited one or more of the following reasons for forgoing service:

- 56% said the cost of monthly access fee was a problem
- 50% said they could not afford the cost of a computer
- 49% said the smartphone allowed them to accomplish all they need online
- 43% said they did not want or need service
- 31% said they were not comfortable using the internet or a computer

When asked to identify the most important reason they do not have high-speed service at home, a plurality (42%) cited affordability (e.g., monthly access fee or computer cost).

K-12 households

- 91% of K-12 households have high-speed internet home subscriptions, up from 70% in 2019 (ACS).
- 85% of K-12 households have a desktop or laptop computer, compared with 76% in 2019.
- Some 12,000 Philadelphia homes with K-12 students do not have a home broadband subscription, significantly lower than the 28,000 who lacked service in 2019.

Groups with the lowest home broadband subscription rates

- Older adults: 67% of those 65 or older subscribe to broadband at home.
- Spanish speakers: 67% of residents who took the survey in Spanish have broadband at home, a much lower rate than for Hispanic residents in the city who opted to take the survey in English (83%).
- Low Income: 71% of households whose annual incomes are \$20,000 or less subscribe to broadband.



Introduction

When the pandemic limited economic and social activity in early 2020, many policymakers, business, and community leaders were shocked to discover that sizable portions of U.S. households lacked the means to access the internet. This spurred action to promote digital connectivity, especially in schools, as virtual learning became the norm. Local governments, philanthropic organizations, non-profits, and businesses pitched in to address gaps in their communities.

At the national level, there is evidence that these efforts have paid off for students. [Census Pulse](#) data—which come from a Census Bureau survey initiative to understand how the pandemic has impacted people’s lives —show this. Households with students have seen reliable internet and computer availability increase from 61.4% to 75.6% (for computers) and 65.2% to 75.9% (for the internet).

As heartening as these trends are, they invite additional questions for communities about how they have responded to internet and computer access gaps in the past 18 months.

- Have specific initiatives to bolster connectivity, such as the federal government’s Emergency Broadband Benefit (EBB) and local programs such as PHLConnectED, had an impact and, if so, how much?
- What have been the changes in internet and computer connectivity for households with students between kindergarten and 12th grade (K-12)?
- Do changes in internet and computer connectivity vary by respondents’ race or ethnicity or along socio-economic lines?
- Have people experienced connectivity challenges, such as maintaining their internet subscriptions throughout the pandemic or difficulties in signing up for discount internet programs?
- Why do some households not have home high-speed internet service?

This report addresses these questions using data from a June-July 2021 telephone survey of a representative sample of 2,503 Philadelphia households. The sample size permits analysis of population groups, such as African American and Hispanic residents, low-income residents, and older adults, that are likely to be of interest to stakeholders in the city. The report will pay special attention to the adoption of digital tools for K-12 households in Philadelphia, that is, households with people between the ages of 5 and 18 (inclusive). In addition to English, the survey was offered in Spanish, Russian, Arabic, Vietnamese, and Mandarin.

I. Connectivity in Philadelphia

The most reliable data on internet and computer adoption for cities comes from the American Community Survey (ACS), a large-scale national survey that the Census Bureau conducts to understand household make-up and assets, which includes basic questions about digital tools households have at hand. The ACS asks whether they have wireline broadband at home, and specifically, whether a household subscribes to cable modem service, digital subscriber line (DSL) service, or fiber optic service. The ACS also asks whether a household has a smartphone, a desktop or laptop computer (as a single response option), or a tablet computer.

The Household Internet Assessment Survey for the City of Philadelphia asked similar questions about computer access and the following one about wireline broadband access at home: “Do you or any member of your household access the internet using a high-speed, broadband internet service such as Comcast XFINITY, Verizon FiOS, or DSL service installed in your household?”

Of particular focus for this report will be household wireline broadband adoption and computer ownership (either desktop or laptop), with some discussion of tablet computer adoption at home. These tools are useful for online tasks such as schoolwork and telehealth. [Research](#) has shown that reliance exclusively on smartphones in wireless service plans is associated with lower grades and rates of homework completion for students.

It is also worth noting that having broadband service at home is not always sufficient for ensuring that households can use the internet for school or work. Training on how to use digital tools is important for many, and research has shown that such [training significantly increases](#) the likelihood that people will use the internet for education and job search.

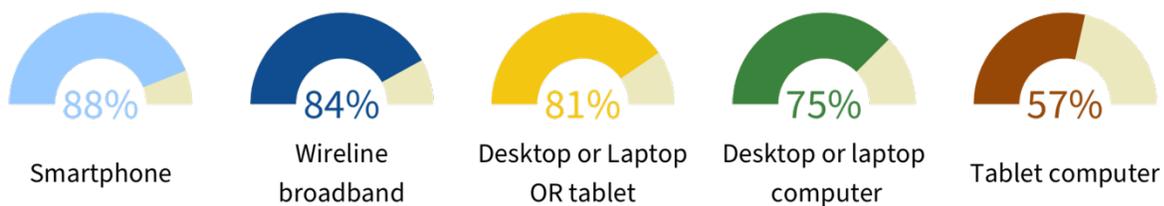
The following table shows results for the ACS 2019 survey for Philadelphia (the most recent survey with publicly available results) and the June-July 2021 Philadelphia Household Internet Assessment Survey.

Table 1: Digital tool adoption in Philadelphia in 2019 and 2021

	<u>2019</u>	<u>2021</u>
Smartphone	84%	88%
Wireline broadband	70%	84%
Desktop or Laptop computer	71%	75%
Tablet computer	58%	57%
Desktop or Laptop OR Tablet	79%	81%
* 2019 ACS data		
† 2021 Assessment Survey data		

The 14-percentage point difference between 2019 and 2021 for wireline broadband subscriptions at home is remarkable. 7 in 10 Philadelphia households had broadband in 2019, while more than 8 in 10 did by 2021. Some of the difference, of course, is due to the general pattern of broadband adoption at home growing over time. The Pew Research Center found that between 2019 and 2021, home broadband adoption increased from [73% to 77%](#) for the United States. Philadelphia’s much larger increase from 70% to 84%, however, invites further scrutiny. The city-wide survey of 2021 offers some explanations.

Digital Tool Adoption in Philadelphia



An additional note on metrics: the ACS includes a measure called “broadband of any type” which includes services such as satellite and cellular data as part of broadband adoption. For the city of Philadelphia, 84% of households in 2019 had broadband of any type – above the 70% figure for wireline broadband. That difference consists almost entirely of households who have a cellular data plan (e.g., a smartphone) but no wireline service. However, as noted, reliance on cellular data only is insufficient for online classes, telehealth, working from home, and other data intensive applications.

II. Programs to promote broadband made a positive difference for Philadelphia

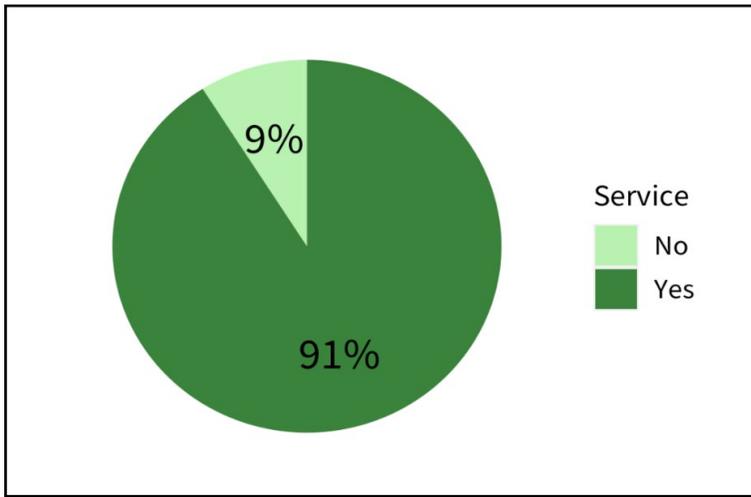
The survey asked respondents whether they had signed up for programs that typically take aim at particular sub-populations, such as low-income households or households with K-12 students. Some programs, such as Comcast Internet Essentials, predate the pandemic; others, such as the Emergency Broadband Benefit (EBB), came about because of the pandemic. The survey asked whether respondents signed up for Internet Essentials, T-Mobile’s Project 10Million, or PHLConnectED.

Overall, 9% of respondents said they had signed up for one of these special, low-cost home internet offers. In other words, without the discount offers, Philadelphia’s home broadband adoption rate would be 75%, not 84%. Beyond the aggregate impact are notable variations for different groups, with the largest impact in K-12 households.

Table 2: Broadband adoption rates in Philadelphia households with and without connectivity programs

	<u>All</u>	<u>K-12</u>	<u>Income <\$20K</u>	<u>Hispanic</u>	<u>Black, Non-Hispanic</u>	<u>Age 65 and older</u>
TOTAL	84%	91%	71%	77%	82%	67%
Adoption without programs	75%	70%	54%	62%	69%	62%
Increase attributable to programs	9%	21%	17%	15%	13%	5%

91% of K-12 households have high-speed internet at home



Beyond the aggregate 9-percentage point boost from connectivity programs, there are distinct variations for other population groups, most importantly for K-12 households. Among these households, one in five (21%) have home broadband connectivity from a discount internet offer. For low-income households (with annual incomes of \$20,000 or less), that figure is

17%. Both African American and Hispanic residents also reported above-average use of discount programs for home broadband service.

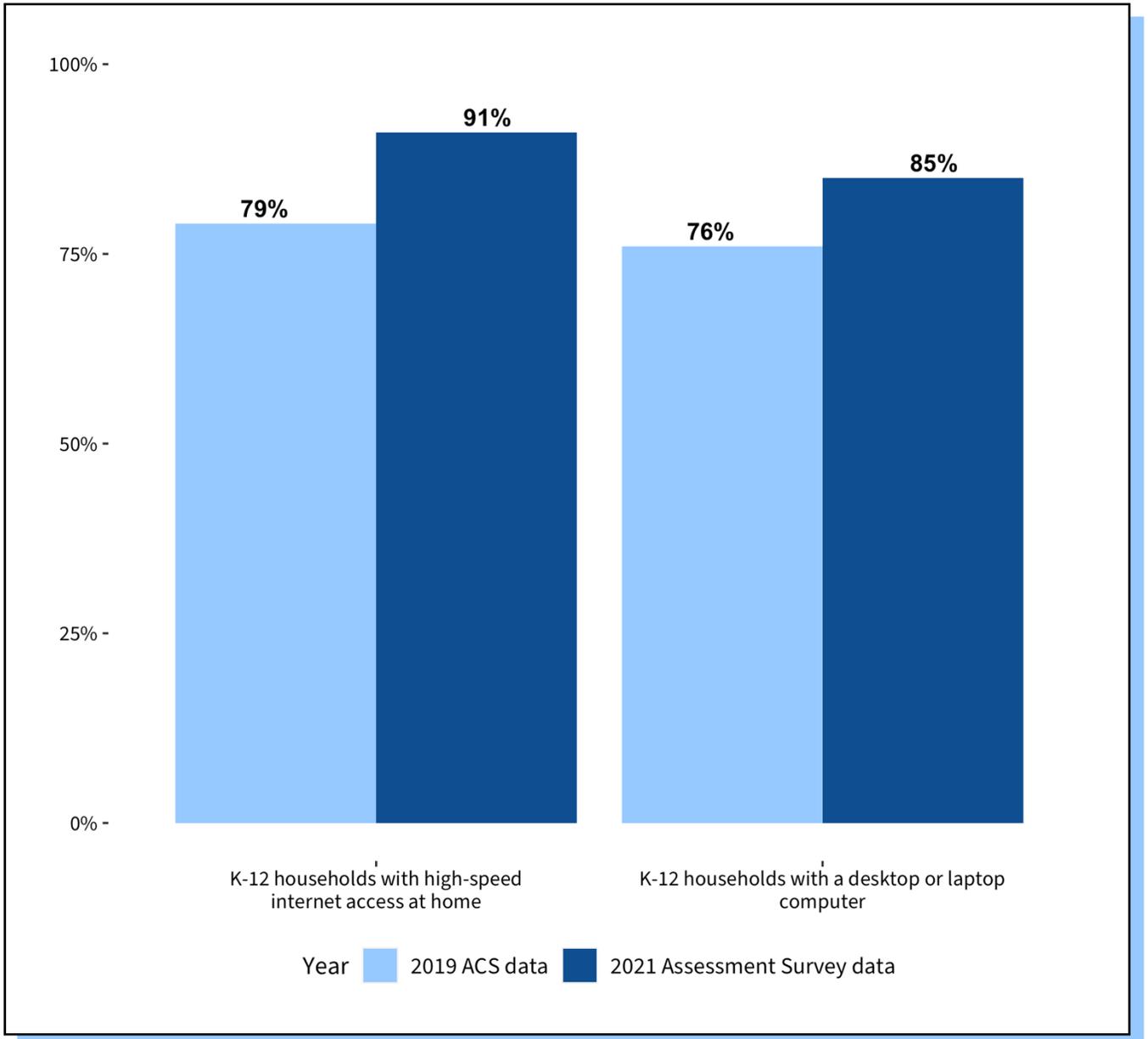
III. Schools have done a good job of getting computers into K-12 households, and programs that offer internet service discounts have had a big impact on K-12 household broadband adoption

The Philadelphia Household Internet Assessment Survey findings, in conjunction with 2019 ACS data, show significant digital progress for households with people between the ages of 5 and 18. (Note that the ACS specifies households with children between the ages of 6 and 17 to characterize homes with school-age children). The survey captures households in Philadelphia with K-12 students, which includes students enrolled in the School District of Philadelphia, charter schools, independent schools, and parochial schools.

Table 3: Digital tool adoption in K-12 households in 2019 and 2021

	<u>2019</u>	<u>2021</u>
Smartphone	94%	97%
Wireline broadband	79%	91%
Desktop or Laptop computer	76%	85%
Tablet computer	73%	73%
Desktop or Laptop OR Tablet	87%	92%
* 2019 ACS data		
† 2021 Assessment Survey data		

K-12 households in Philadelphia with high-speed internet access or computer access at home



There have been notable advances in home wireline broadband and computer adoption for Philadelphia K-12 households since 2019. Much of that has to do with K-12 households taking advantage of discount or free offers for home internet service. Four in ten (40%) K-12 households have heard of discount broadband programs, such as Comcast Internet Essentials or T-Mobile's Project 10Million. Among K-12 households that have heard of any programs to promote connectivity (not just offers such as Comcast Internet Essentials, but also PHLConnectED and the Emergency Broadband Benefit), 21% have successfully signed up for a discount offer.

Without the benefit of discount programs that offer K-12 households a break on monthly internet service fees, far fewer K-12 households (perhaps as little as 70%) would have high-speed internet service at home—not 91%.

The survey asked whether households had taken advantage of programs to provide computers for schoolwork or internet access at home for schoolwork since the pandemic began. By a sizable margin, households with school-age children were more likely to have received a computer from their child's school than internet access. Specifically:

- 57% of K-12 households said that since the onset of the pandemic, they had received a computer from their child's school for schoolwork. Another 2% got a computer from a program not affiliated with their child's school, and an additional 2% said they had received a computer from a program affiliated both with their child's school and another program.
- Just 15% of households with school-age children said they participated in a program from their child's school which resulted in them obtaining internet service at home for schoolwork. Another 3% found service via a program not associated with their child's school and 3% cited a program affiliated with the school and another program. (Note that affirmative responses to this question may overlap with those who said they signed up for programs such as Comcast Internet Essentials or EBB.)

The impact of programs to distribute computers to K-12 households is evident when comparing 2019 ACS data to results from this survey. Specifically:

- The ACS found that, for households with children between the ages of 6 and 17, 76% had a desktop or laptop computer in 2019.
- The Assessment Survey, which asked about households with people between the ages of 5 and 18, found that 85% had a desktop or laptop computer in 2021.

Even as computer and internet access gaps have narrowed in Philadelphia, some Philadelphia K-12 students still cannot go online from home. Data from the 2019 American Community Survey show that approximately 250,000 people between the ages of 5 and 18 live in the City of

Philadelphia (in roughly 133,000 households). The figures from the survey help build an estimate of the number of residents lacking a wireline broadband internet subscription at home, a desktop or laptop computer, or any computing device appropriate for schoolwork (i.e., a desktop, laptop, or tablet computer).

- **Broadband:** 12,000 households, or 23,000 K-12 students lack a wireline subscription at home.
- **Desktop or laptop computers:** 20,000 households, or 38,000 students, have neither a desktop, nor a laptop.
- **Any computing device** appropriate for school: 11,000 K-12 households, or roughly 20,000 students, lack a desktop, laptop, or tablet computer.

The number of K-12 households without broadband subscriptions in 2021 is significantly lower than in 2019, using data from the ACS as a point of comparison. In 2019, ACS showed that 79% of households with children between the ages of 6 and 17 had home broadband subscriptions (28,000 K-12 households in the city did not have broadband in 2019). In other words, the number of K-12 households without broadband subscriptions fell from 28,000 to 12,000 between 2019 and 2021.

Table 4: Digital tool adoption in K-12 households by race and ethnicity

	<u>White</u>	<u>Black</u>	<u>Hispanic</u>
A high-speed, broadband internet service installed in your household*	93%	90%	89%
A working desktop or laptop computer†	89%	88%	76%
A working tablet computer‡	79%	73%	60%
A Desktop or Laptop OR Tablet	95%	93%	86%
<i>Note:</i>			
*such as Comcast XFINITY, Verizon FiOS, or DSL service			
†including a Chromebook			
‡such as an iPad, Samsung Galaxy Tab, or Amazon Fire			

IV. The pandemic’s economic disruption caused many low-income Philadelphians to lose internet service and revealed that large numbers of Philadelphia households are “subscription vulnerable”

One purpose of the survey was to explore how households dealt with economic challenges and maintained home internet service during the pandemic. As the Pew Research Center has found, [25% of Americans](#) reported having trouble paying bills during the pandemic, a figure that rose to 46% for low-income households. A [recent Pew survey](#) shows that worries about paying for service have endured; 26% of a national sample say they worry “a lot” or “somewhat” about paying for their high-speed internet connection over the next few months. The Philadelphia survey finds that 15% of Philadelphia households experienced an interruption since the pandemic began because they had difficulty paying for service. This problem was acute for low-income and K-12 households. Specifically:

- 31% of low-income households (annual income of \$20,000 or less) experienced a pandemic-related interruption in home internet service.
- 21% of K-12 households had service interrupted because the pandemic made paying the bill a challenge.

These data underscore the importance of discount programs for many households. The survey explored this further by asking whether respondents could maintain home service without discount programs. Among those who had signed up for a free or discount program, a strong majority (63%) said it would be difficult to keep service without the program (24% said it would be “very difficult” and 39% said it would be “somewhat difficult”). Some 78% of K-12 households that have signed up for a program say they would find it either “very difficult” or “somewhat difficult” to keep service. And 32% of K-12 households said it would be “very difficult” to keep service, and 46% said it would be “somewhat difficult” to keep service.

These data help describe a segment of Philadelphia households that we term “subscription vulnerable.” This would include respondents who:

- Had a service interruption during the pandemic, or;
- Said it would “very” or “somewhat” difficult to keep service without a free or discounted internet plan, or;
- Are low-income (i.e., live in a household with annual income of \$20,000 or less).

Collectively, that vulnerability affects 32% of all households in Philadelphia that have a home broadband subscription. Of note is that 39% of K-12 households fall into the “subscription vulnerable” group. This is understandable since K-12 households are more likely than others to rely on free or discounted internet service plans.

Subscription Vulnerable



Had a service interruption during the pandemic



Said it would be difficult to keep service without a free or discount internet plan



Are a low-income household

V. Many Philadelphians are unaware of discount programs for access or haven't had time to apply

Even though programs to help foster digital connectivity have had an impact, the survey highlighted a few issues that may limit their impact. One issue is awareness. For discount offers such as Comcast Internet Essentials, EBB, or PHLConnectED, a minority of respondents had heard of them.

Table 5: Awareness of discount programs in Philadelphia

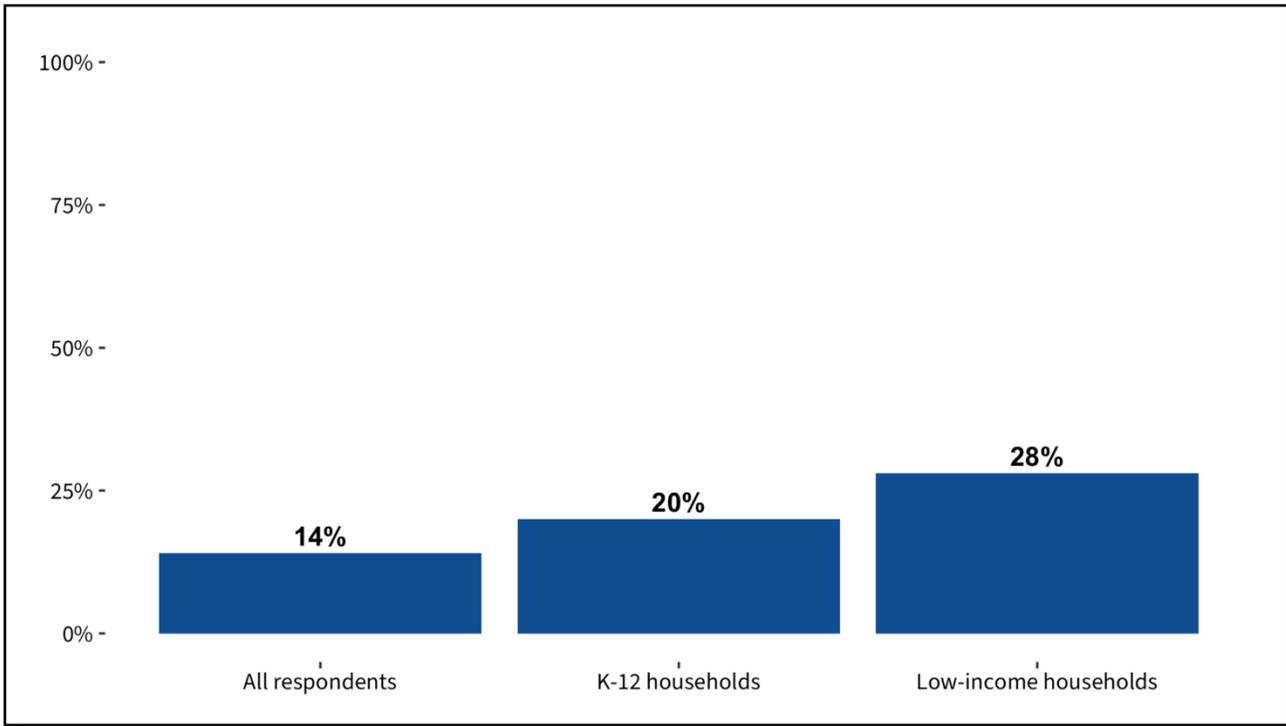
	<u>ALL</u>	<u>K-12</u>
Discount or free internet offerings*	31%	40%
The federal government's Emergency Broadband Benefit†	13%	13%
The PHLConnectED program	8%	9%
<i>Note:</i>		
*from a carrier such as Comcast Internet Essentials or T-Mobile's Project 10Million		
†EBB provides qualifying households a \$50 per month discount on their internet bill		

Overall, 38% of Philadelphia households have heard of one of these three initiatives. For those who do not have broadband at home, the numbers are very different. Just 24% of those without a broadband subscription at home have heard of any of these initiatives.

Households with K-12 students were more likely (40%) to have heard of offers such as Comcast Internet Essentials. African American households were also a bit more likely (35%) to be aware of discount or free offers.

Among those who had heard of any of these three initiatives, 14% successfully signed up for service. This figure includes 20% of K-12 households and 28% of low-income households.

Among those who had heard of an internet discount offer, how many successfully signed up?



Of equal interest is the fact that 85% of households did not sign up for any offers. Many who did not subscribe using these offers either did not need the discount or did not qualify for it. A plurality (36%) of all Philadelphia households said they did not qualify, 13% said they had not found the time to apply, and 38% cited some other reason.

The groups of most interest in this survey are K-12 households and low-income households. Many K-12 households did not apply because they said they did not qualify: 24%.

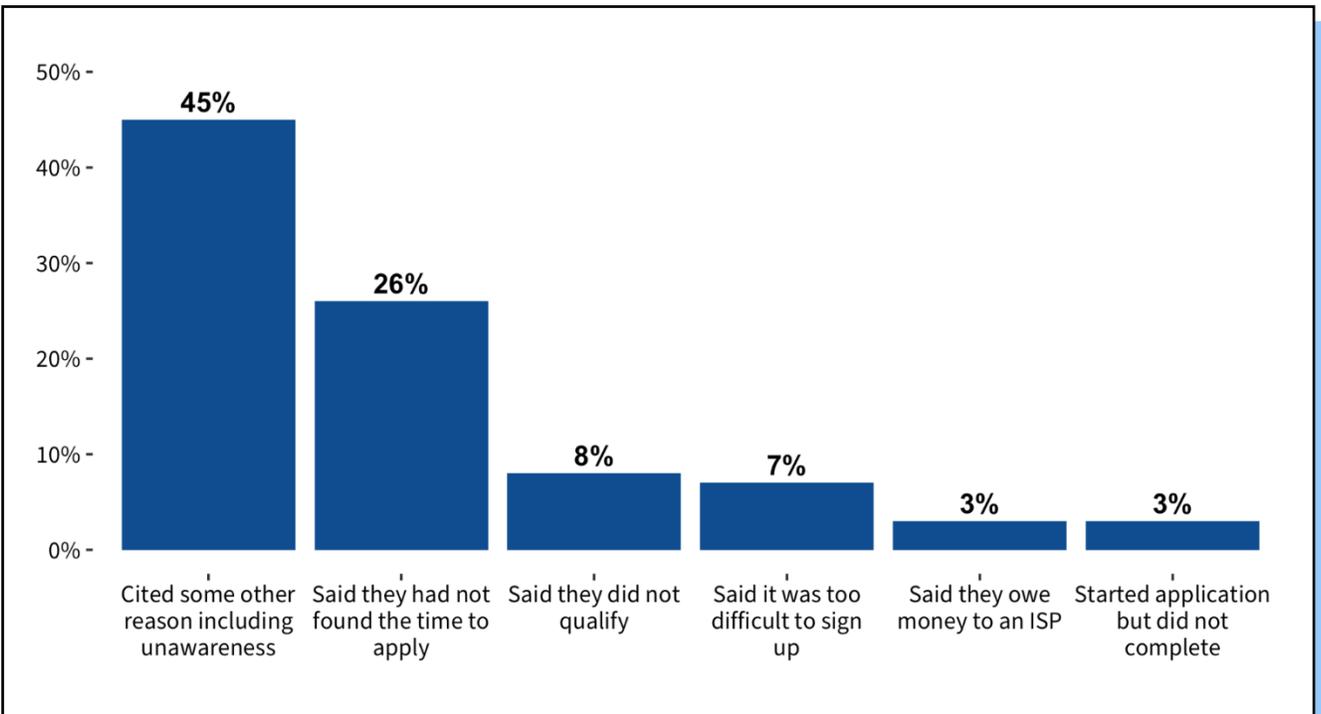
Table 6: Challenges in applying for discount broadband programs

	<u>ALL</u>	<u>K-12</u>	<u>Income <\$20K</u>
You started applying but did not complete the application	2%	2%	3%
Your household did not qualify	36%	24%	8%
It was too difficult to sign up	4%	3%	7%
You owe money to an internet service provider	2%	2%	3%
You have not had the time to apply	13%	19%	26%
Some other reason	38%	45%	45%
Don't know/refused	4%	6%	9%

For low-income households (all of which likely qualify for free or discount offers), the responses shed a bit more light on the workings of these programs. Some 26% say they did not have the time to apply. Although everyone’s time is scarce, time crunches can take on a special character for low-income households, as they often do not have the resources (e.g., transportation or internet access) that can save time.

Another 45% of respondents who did not apply for free or discounted service cited “some other reason.” The survey asked respondents to identify that other reason, and interviewers recorded what they said. Although many responses were not easy to classify, many (29%) said they did not know enough about the offers. And 22% said they did not really need the program. These results suggest that some respondents, even when offered the chance to choose “I didn’t qualify” or “it was too difficult to sign up,” may not want to state that, initially at least. Even if the “some other reason” results do not provide precise numbers, they indicate that significant numbers of those who did not sign up had difficulty determining whether they qualified.

70% of low-income households - nearly all of which would likely qualify for discount programs - have not applied to a discount internet program. When low-income respondents were asked why they have not signed up:



These results are curious. Low-income respondents said they had heard about discount programs, but either lacked time to sign up, had not learned enough about the offers' details to apply, or did not think they needed it. The application process was a barrier for just a few; only 10% either did not complete the application or said it was too difficult.

Why are low-income households in Philadelphia passing on low-cost internet offers, especially in the face of a pandemic? The data offer no clear answer, but the findings indicate that outreach from trusted institutions, such as [local public libraries](#), might help some households pursue discount internet offers.

Even with disruptions in service and new online burdens that come with taking classes online or working from home, 84% of Philadelphia residents were “very” or “somewhat” satisfied with the quality of their home internet connections during the pandemic. When asked to assess their levels of satisfaction with their home internet service for attending classes or doing their jobs online:

- 47% were “very satisfied” with their service
- 37% were “somewhat satisfied”
- 8% were “not too satisfied”
- 3% were “not at all satisfied”
- 4% had not used the internet for work or classes.

Low-income households were not as satisfied with their service, as 39% said they were “very satisfied” with their home internet connection and 37% were “somewhat satisfied.”

VI. Adoption gaps and reasons for forgoing high-speed internet service at home reveal unequal outcomes

Although 84% of Philadelphia households have broadband internet subscriptions at home, a number of demographic groups exhibit significant shortfalls from the city-wide norm. The groups whose broadband adoption figures are below average follow familiar patterns pertaining to [race and ethnicity](#), [income](#), and age. For questions on ethnicity, respondents were asked whether they were of Hispanic, Latino, or Spanish origin. For race, respondents were asked to select as many racial categories as apply from a list that has White or Caucasian, Black or African American, Asian or Asian American, Native American/American Indian/Alaska Native, or Pacific Islander/Native Hawaiian.

For race and ethnicity, the survey shows gaps between White and Black respondents and a larger gap when looking at Hispanic respondents. The gaps for Black and Hispanic adults would be somewhat larger without discount offers since, as noted above, both groups were more likely than other Philadelphians to take advantage of them. Gaps in computer ownership are greater, with Hispanic households showing the lowest rate of computer ownership.

Table 7: Digital tool adoption in Philadelphia by race and ethnicity

	<u>All</u>	<u>White</u>	<u>Black</u>	<u>Hispanic</u>
A high-speed, broadband internet service installed in your household*	84%	88%	82%	77%
A working desktop or laptop computer†	75%	82%	70%	63%
A working tablet computer‡	58%	59%	60%	43%
Desktop or Laptop OR Tablet	81%	86%	78%	71%

Notably, the Philadelphia survey gave respondents the option of taking the survey in a number of languages, including Spanish, Russian, Mandarin, Vietnamese, and Arabic. Overall, 110 interviews were conducted in Spanish and 35 were conducted in all the other languages. Given the number of Spanish interviews, it is possible to compare broadband and computer adoption for Hispanic residents who took the survey in Spanish and those who did so in English. That comparison shows large gaps between Hispanic Spanish speakers and others who identify as Hispanic in Philadelphia.

Table 8: Digital tool adoption for Hispanic Spanish speakers in Philadelphia

	<u>All Hispanic</u>	<u>Interview in Spanish</u>	<u>Hispanic, Interview in English</u>
A high-speed, broadband internet service installed in your household*	77%	67%	83%
A working desktop or laptop computer†	63%	45%	73%
A working tablet computer‡	43%	34%	48%
Desktop or Laptop OR Tablet	71%	58%	78%

Age is another important dividing line when it comes to technology adoption. Nearly half (47%) of those without broadband at home in the city are 65 and older. Those over the age of 65 in Philadelphia (about 18% of the population) are much less likely to have a wireline broadband connection at home or a computer.

The other striking issue for older adults is use of programs for discount internet offers. Only 5% of those over the age of 65 have signed up for programs such as Comcast Internet Essentials or PHLConnectED. That stands in stark contrast to K-12 households, where 21% have taken advantage of these initiatives. Just 27% of older adults have heard of any of the free or discount programs, compared with 40% of all other respondents.

Table 9: Digital tool adoption by age

	<u>18-24</u>	<u>25-34</u>	<u>35-44</u>	<u>45-54</u>	<u>55-64</u>	<u>65+</u>
A high-speed, broadband internet service installed in your household*	90%	91%	92%	86%	81%	67%
A working desktop or laptop computer†	87%	86%	86%	77%	70%	48%
A working tablet computer‡	58%	63%	72%	61%	53%	40%
Desktop or Laptop OR Tablet	89%	91%	91%	83%	75%	59%

Income is the other clear marker when looking at the adoption of broadband and other digital tools. For Philadelphia residents with the lowest incomes, whose annual incomes are \$20,000 or less, the gaps are most acute. This group, which makes up 23% of the survey’s sample, is less likely to have a broadband subscription at home by 12 percentage points. This group’s home broadband subscription rate of 71% would be 17 percentage points lower without free or discount offers.

Table 10: Digital tool adoption by annual household income

	<u><\$20K</u>	<u>\$20K - \$30K</u>	<u>\$30K - \$40K</u>	<u>\$40K - \$50K</u>	<u>\$50K - \$75K</u>	<u>\$75K - \$100K</u>	<u>>\$100K</u>
A high-speed, broadband internet service installed in your household*	71%	83%	85%	93%	91%	95%	98%
A working desktop or laptop computer†	53%	73%	78%	81%	89%	93%	96%
A working tablet computer‡	39%	56%	59%	54%	68%	78%	78%
Desktop or Laptop OR Tablet	63%	79%	83%	89%	92%	96%	98%

Low-income residents also have lower rates of computer ownership. Just more than half (53%) have a desktop or laptop computer and 4 in 10 have a tablet. More than one-third (37%) have neither a computer (desktop or laptop), nor a tablet device.

Respondents’ level of educational attainment is another important element in explaining different levels of adoption of computers and the internet. For those who said their education did not extend to obtaining a high school degree, home broadband adoption is lower than for those with at least a high school degree, and much lower than for those who graduated from

college. These respondents also are less likely to have computing devices at home. This group makes up 9% of the survey’s sample of Philadelphians, but they experience large digital deficits. For the larger group of Philadelphia residents with lower levels of educational attainment (the 46% of those with a high school degree or less) only 76% have broadband and 60% have a desktop or laptop computer.

Table 11: Digital tool adoption by levels of educational attainment

	<u>Less than high school degree</u>	<u>High school degree</u>	<u>Some college</u>	<u>College degree or more</u>
A high-speed, broadband internet service installed in your household*	64%	78%	87%	96%
A working desktop or laptop computer†	42%	64%	80%	94%
A working tablet computer‡	35%	51%	64%	70%
Desktop or Laptop OR Tablet	53%	73%	87%	96%

a. Reasons people do not subscribe to broadband

The other side of the “low connectivity” coin are households with no home broadband subscription. Respondents were asked to choose from a list of nine reasons they do not have high-speed broadband internet at home. A follow-up question then asked them to identify the main reason they did not have service.

Table 12: Reasons Philadelphians do not subscribe to broadband

	<u>List as a reason</u>	<u>Rank as most important reason</u>
The monthly cost of a home broadband subscription is too expensive	56%	27%
The cost of a computer is too expensive	50%	12%
Your smartphone lets you do everything online that you need to do	49%	22%
You do not want or need high-speed internet service at home.	43%	14%
You worry about the privacy and security of your personal data	41%	7%
You are not comfortable using a computer or the internet	31%	5%
You have other options for internet access outside of your home	28%	4%
You can't get broadband service installed at your residence	13%	1%
You have past-due bills to internet service providers	10%	3%
Some other reason I haven't already mentioned	14%	NA

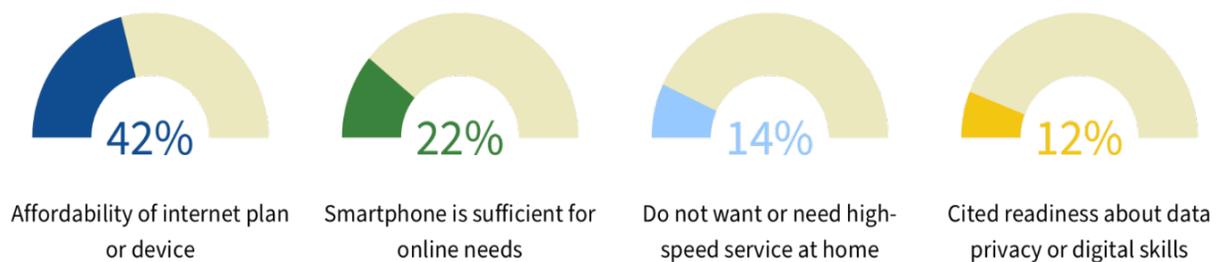
The table reveals that non-broadband users have multiple reasons for not having service. The typical respondent cites three reasons from the list of nine, with affordability, worries about online hazards, digital skills, and worries about whether they really need service figuring prominently.

When pressed to specify the most important reason for not having service, clear patterns emerge.

- **Affordability:** 42% cite something having to do with the cost of having service, such as the monthly service fee (27%), cost of a computer (12%), or past-due bills (3%).

- **Smartphones:** Some one in five (22%) say that the smartphone is sufficient for their online needs. This group of non-broadband subscribers are more likely than others to say they have options for internet access outside the home.
- **Not interested in service:** 14% who say they do not want or need high-speed service.
- **Digital readiness:** This category, totaling 12%, encompasses skills (5% who are not comfortable using a computer) and security (7% who worry about the privacy and security of their personal data).

When asked to identify the most important reason they do not have high-speed internet service at home



Among current non-broadband subscribers in Philadelphia, 30% had service at one time. For this group, affordability barriers are most acute, with 53% citing affordability as the main reason they do not have service (39% point to the monthly service fee, 10% to computer cost, and 4% have past due internet bills). For the 69% of non-subscribers who have *never* had service at home—and are presumably the most difficult to lure to having service—cost is the chief barrier, although not wanting or needing service plays a significant role. For this group, 36% cite cost as the main reason (22% say it’s the monthly fee, 14% say they cannot afford a computer, and 2% have past bills due). Some 20% of those who have never had service say they “do not want or need high-speed internet service at home” is the most important reason they do without. Age is a factor here; 42% of those who have never had service are age 65 or older, while 25% of those who have had service in the past are 65 or older.

Demographically, those without broadband service at home are older and have lower incomes than broadband subscribers. Some 70% of those without broadband service at home are age 55 or older (47% are 65 or older) and 55% have household incomes of \$30,000 or less. By contrast, 28% of broadband subscribers are age 55 or older and 30% have annual household incomes of \$30,000 or less. Educational attainment is another factor. Among non-broadband subscribers, 75% have a high school degree or less; the comparable figure for broadband subscribers in Philadelphia is 41%.

b. A close look at affordability thresholds

The survey also asked respondents their views on what level of monthly internet fee would fit their monthly budget. Some 5% of residents said \$0 to \$10 would be too expensive and another 4% said a monthly internet bill between \$11 and \$20 would be too expensive. The rest, as Table 13 shows, cited a figure above \$20 per month. This means that 90% of Philadelphia households consider a monthly internet bill above \$20 too expensive. Nearly three-quarters (73%) said a monthly bill over \$50 would be too expensive. Since most internet service plans for high-speed service start at about \$50, one way to interpret the results is to observe that many households wish that their internet service was less expensive, and some find the bill out of their financial comfort range.

90% of Philadelphia households consider a monthly internet bill above \$20 too expensive.

Table 13: Monthly price ranges that respondents say are too expensive

	<u>All</u>
\$0 to \$10	5%
\$11 to \$20	4%
\$21 to \$50	14%
\$51 to \$75	21%
Greater than \$75	52%
Don't know/refused	4%

A look at specific categories of respondents underscores how the \$20 threshold seems to be an inflection point. For those who have signed up for a free or discounted service plan (9% of respondents), one-quarter cite \$21-\$50 as too expensive, with low-income and K-12 households citing that figure to a somewhat smaller degree. For the toughest to reach non-subscribers (those who have never had high-speed service at home), 28% say a service plan under \$20 per month is too expensive. This is much greater than the figure for those who have

signed up for discount offers (13%) and three times what K-12 households say.

Table 14: Monthly price ranges that respondents say are too expensive (by group)

	<u>Signed up for discounts</u>	<u>Income < \$20K</u>	<u>K-12</u>	<u>Never have had broadband at home</u>
\$0 to \$10	6%	12%	4%	15%
\$11 to \$20	7%	9%	4%	13%
\$21 to \$50	25%	21%	18%	15%
\$51 to \$75	20%	19%	20%	10%
Greater than \$75	41%	35%	51%	31%
Don't know/refused	2%	3%	3%	15%

Perhaps the most important takeaway from this analysis is that affordability thresholds vary depending on the type of non-broadband subscriber. Most low-income households (almost 90%) could pay \$10 for service, but beyond that, affordability seems to be a problem. Putting it differently and focusing on low-income respondents, a program that asked subscribers to pay \$10 for service would be an issue for 12% of low-income households (and just 4% of K-12 households).

Another key point is that saying that service is too expensive for one's household budget does not necessarily mean service is out of reach. Many low-income households do not use discount programs for service but subscribe to broadband anyway. Yet, about 80% say a fee over \$20 per month is too expensive. An implication is that, for some of these households, affordability of service is not limited to the threshold that would mean they forgo service, but a threshold that requires them to weigh broadband service against other household expenses.

Appendix A: Survey Demographics

Demographics: Philadelphia survey

	<u>Do NOT have home broadband</u>	<u>At-home broadband users</u>
Gender		
Male	47%	46%
Female	53%	53%
Other	NA	1%
Age		
18-24	4%	11%
25-34	5%	27%
35-44	6%	18%
45-54	9%	15%
55-64	23%	14%
65+	47%	14%
Average	6%	1%
K-12 person(s) at home		
Yes	17%	33%
Education		
Less than high school	21%	7%
High school graduate	53%	34%
Some college (includes community college)	14%	24%
College degree or more	11%	34%

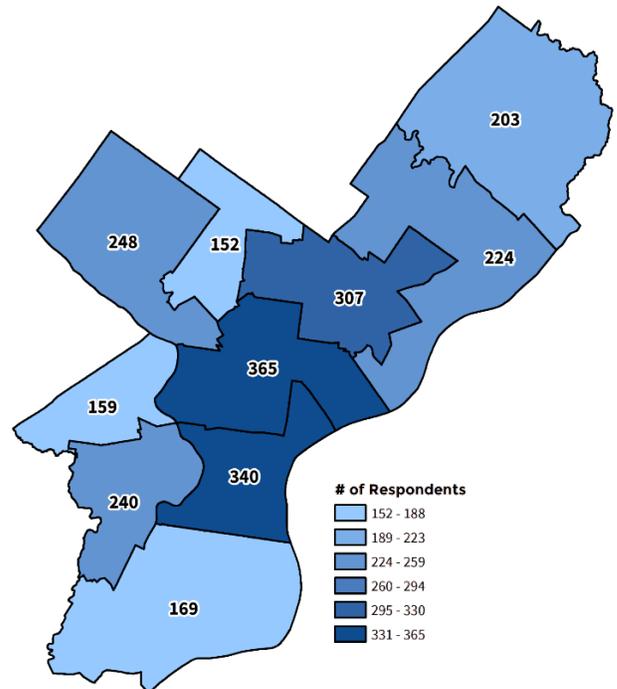
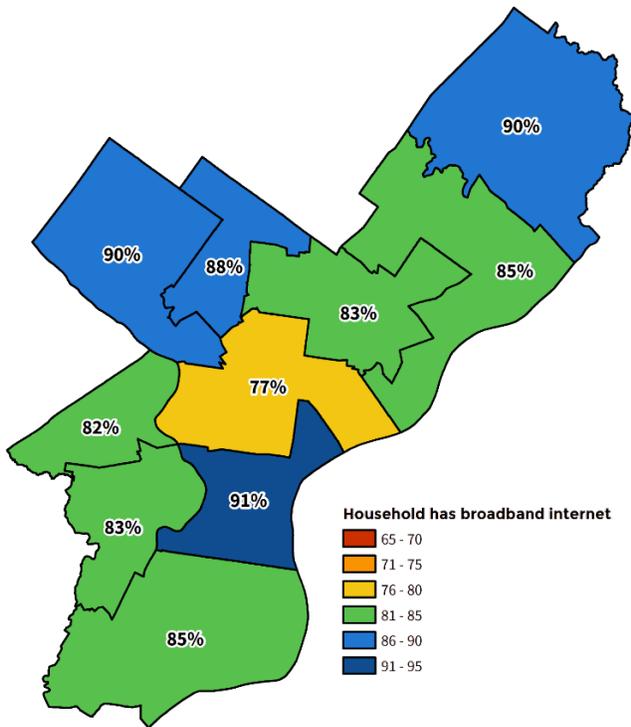
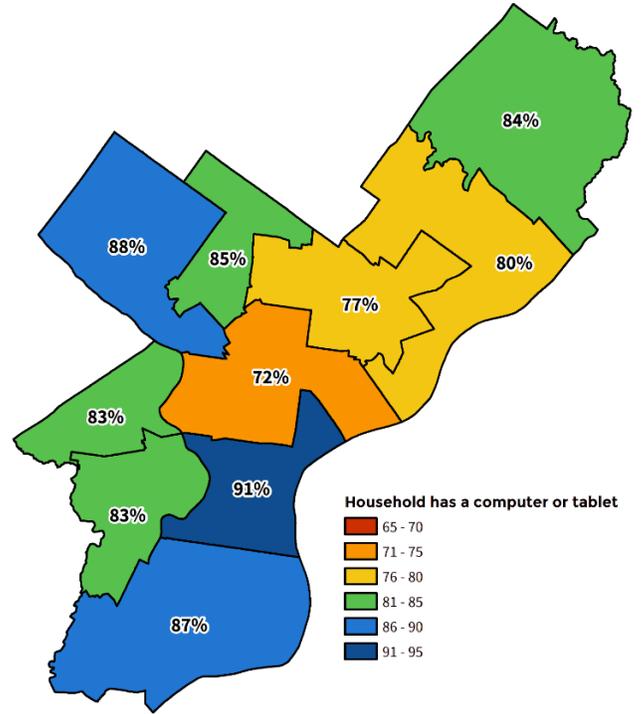
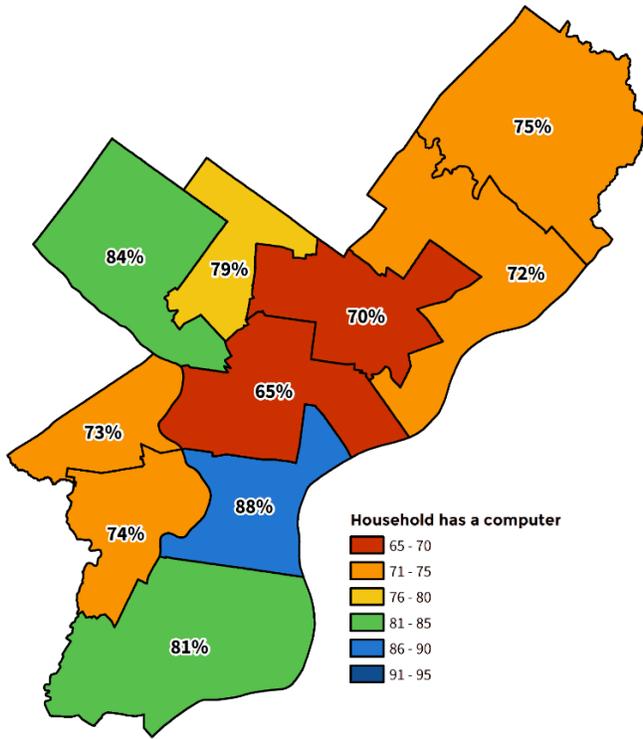
*Table continued on next page

	<u>Do NOT have home broadband</u>	<u>At-home broadband users</u>
Race/ethnicity		
White	29%	38%
Black	43%	37%
Hispanic	19%	12%
Asian	2%	3%
Other/Mixed Race	6%	8%
Income		
Less than \$10,000	21%	8%
10 to under \$20,000	21%	11%
20 to under \$30,000	13%	11%
30 to under \$40,000	9%	10%
40 to under \$50,000	3%	8%
50 to under \$75,000	6%	12%
75 to under \$100,000	3%	9%
100 or more - 1%	2%	10%
Don't know/Refused	23%	13%
Number of cases	373	2130

* 2019 ACS data

† 2021 Telephone Survey data

Digital tool adoption by Philadelphia neighborhoods



Appendix B: Survey Methodology

The 2021 Philadelphia Household Internet Assessment Survey was conducted on behalf of the City of Philadelphia and the Mayor's Fund for Philadelphia by SSRS, Inc. The purpose of this research was to gain an updated understanding of the number of households in Philadelphia that are currently without internet or are relying on unstable, low bandwidth options, as a way to benchmark progress by the City and its partners to close the digital divide. The primary contractor for this study was Wilco Electronic Systems, Inc. Wilco partnered with Centri Tech and Centri Tech Foundation and broadband expert Dr. John Horrigan to develop the survey instrument and provide analysis to inform policy, program, and budget decisions for the City's digital equity strategy. SSRS provided data collection services for the survey.

The June-July 2021 Philadelphia Household Internet Assessment Survey obtained telephone interviews with a representative sample of 2,503 adults, 18 or older, who reside in Philadelphia, Pennsylvania. Telephone interviews were conducted by landline (633) and cell phone (1,870). Interviews were conducted in English, Spanish, Arabic, Mandarin, Russian, and Vietnamese from June 15-July 15, 2021. Statistical results are weighted to correct known demographic discrepancies. The margin of sampling error for the complete set of weighted data is ± 2.4 percentage points.

Appendix C: Survey Questionnaire

Internet Connectivity in Philadelphia Final Questionnaire

Interviewing dates: June 15-July 15, 2021

Interview language(s): English, Spanish, Arabic, Mandarin, Russian, Vietnamese

(READ TO ALL)

INTRO. Hello, my name is ____ and I'm calling on behalf of the City of Philadelphia from SSRS. We're conducting an important survey, and we would like to include your household. (INSERT IF CELL PHONE SAMPLE: I know I am calling you on a cell phone. If you would like to be reimbursed for your cell phone minutes, we will pay eligible respondents \$X for participating in this survey.)

This call may be monitored or recorded for quality assurance.

(READ IF NECESSARY: We're not selling anything; We're just doing an opinion poll on interesting subjects for research purposes only.)

(READ IF NECESSARY: I am calling from SSRS, a national research firm, on behalf of the City of Philadelphia.)

(READ IF NECESSARY: You may have heard or read about this survey in the local news.)

VOICEMAIL MESSAGE:

Hello, I'm calling from SSRS on behalf of the City of Philadelphia. We're conducting an important survey. This is **not** a sales call. We will try to reach you again.

(ASK IF LANDLINE SAMPLE)

S1. To randomly select an adult in your household, may I please speak with the person, **age 18 or older**, who has the **next birthday** and is at home now?

(READ IF NECESSARY: Your phone number has been randomly selected to complete the survey. We are not selling anything.)

- 1 Continue with respondent already on phone
- 2 New respondent being brought to phone
- 3 No adult currently at home
- 9 (DO NOT READ) Refused

[PN: IF S1=1, CONTINUE]

[PN: IF S1=2, RE-READ INTRO AND THEN CONTINUE]

[PN: IF S1=3, GET NAME AND SET FOR CALLBACK]

[PN: IF S1=9, THANK AND TERMINATE]

[PN: S1 TERMINATION TEXT: Thank you very much for your time. Have a good rest of your day.]

(READ TO ALL:) First, just a few background questions...

(ASK IF CELL PHONE SAMPLE)

CPAGE. What is your age?

___ years [RANGE 0-97, 97=97 or older]

98 (DO NOT READ) Don't know

99 (DO NOT READ) Refused

(ASK IF CPAGE=98-99; IF DK/REFUSED AGE)

CPAGEREF. Keeping in mind that this is a completely confidential survey... Could you please tell us if you are: (READ LIST)

- 0 Under 18
- 1 18 to 24
- 2 25 to 34
- 3 35 to 44
- 4 45 to 54
- 5 55 to 64

6 Or 65 or older

8 (DO NOT READ) Don't know

9 (DO NOT READ) Refused

[PN: IF CPAGE=18-97 OR CPAGEREF=1-6, CONTINUE]

[PN: IF CPAGE=0-17 OR CPAGEREF=0,8,9, THANK & TERMINATE]

[PN: CPAGE/CPAGEREF TERMINATION TEXT: This survey is limited to adults age 18 and over.
Have a good rest of your day.]

(ASK IF CELL PHONE SAMPLE)

S4. Are you now driving a car or doing any activity requiring your full attention?

1 Yes, driving

2 No, not driving

9 (DO NOT READ) Don't know/Refused

[PN: IF S4=1, GET NAME AND SET FOR CALLBACK]

[PN: IF S4=2, CONTINUE]

[PN: IF S4=9, THANK AND TERMINATE]

[PN: S4 TERMINATION TEXT: Thank you for your time. Have a good rest of your day.]

(ASK ALL)

RSTATE. Just to confirm... What state do you currently live in?

(IF R SAYS "PENNSYLVANIA", ENTER CODE 1)

(IF R SAYS A STATE OTHER THAN PENNSYLVANIA, ENTER CODE 2)

1 Pennsylvania

2 Other state

8 (DO NOT READ) Don't know

9 (DO NOT READ) Refused

[PN: IF RSTATE=1, CONTINUE]

[PN: IF RSTATE=2-9, THANK & TERMINATE]

[PN: RSTATE TERMINATION TEXT: Thank you very much for your time. We are only talking to those who currently live in Pennsylvania. Have a good rest of your day.]

(ASK ALL)

RCOUNTY. And in what county do you live?

[IF DK/REFUSED OR IF NECESSARY, PROBE ONCE: "This question helps us to accurately determine what part of the state people who complete the survey live in and is used only for classification purposes. You cannot be contacted based on this information."]

(IF R SAYS "PHILADELPHIA", ENTER CODE 1)

(IF R SAYS A COUNTY OTHER THAN PHILADELPHIA, ENTER CODE 2)

- 1 Philadelphia
- 2 Other county
- 8 (DO NOT READ) Don't know
- 9 (DO NOT READ) Refused

[PN: IF RCOUNTY=1, CONTINUE]

[PN: IF RCOUNTY=2-9, THANK & TERMINATE]

[PN: RCOUNTY TERMINATION TEXT: Thank you very much for your time. We are only talking to those who currently live in Philadelphia. Have a good rest of your day.]

(ASK ALL)

SEX. [DO NOT ASK] RECORD RESPONDENT'S SEX

- 1 Male
- 2 Female

BROADBAND AT HOME AND DEVICES IN THE HOUSEHOLD

(ASK ALL)

(PN: ITEMS ASKED IN ORDER; DO NOT RANDOMIZE)

BBHOME. Do you or any member of your household have access to the internet using (INSERT ITEM)?

1 Yes

2 No

8 (DO NOT READ) Don't know

9 (DO NOT READ) Refused

a. A cellular data plan for a smartphone or other mobile device

b. A high-speed, broadband internet service such as Comcast XFINITY, Verizon FiOS, or DSL service installed in your household

c. A satellite Internet service installed in your household

NO ITEM D

e. A dial-up Internet service installed in your household

NO QUESTION 1

(ASK ALL)

(PN: ITEMS ASKED IN ORDER; DO NOT RANDOMIZE)

(PN: SHOW INTERVIEWER "READ IF NECESSARY" FOR ITEM B ONLY)

Q2. Please tell me if anyone in your household happens to have each of the following items, or not. Do you or any member of your household have (INSERT ITEM)?

(PN: SHOW FOR ITEM B ONLY:)

(READ IF NECESSARY: "This includes netbooks.")

1 Yes

2 No

8 (DO NOT READ) Don't know

9 (DO NOT READ) Refused

- a. A smartphone, such as an iPhone, Android, Blackberry, or Windows phone
- b. A working desktop or laptop computer, including a Chromebook
- c. A working tablet computer like an iPad, Samsung Galaxy Tab, or Amazon Fire

HOUSEHOLD MAKE-UP AND PRESENCE OF STUDENTS

NO QUESTION 3

(ASK ALL)

Q4. How many people, **age 18 or YOUNGER**, presently live in your household?

0 0/None

1 1

2 2

3 3

4 4

5 5

6 6

7 7

8 8

9 9

10 10 or more

98 (DO NOT READ) Don't know

99 (DO NOT READ) Refused

(ASK IF Q4=1-10 - Respondents whose household has people age 18 or younger)

Q5. Are any of these people between the ages of 5 and 18?

- 1 Yes
- 2 No
- 8 (DO NOT READ) Don't know
- 9 (DO NOT READ) Refused

NO QUESTION 6

(ASK IF Q4=1-10 - Respondents whose household has people age 18 or younger)

Q7. Since the pandemic began, has your household participated in any programs that provide your household with computers for schoolwork?

(IF YES, PROBE: "Was it through a program through your children's schools, through some other type of program, or both?)

(INTERVIEWER NOTE: IF R HAS MULTIPLE CHILDREN IN DIFFERENT SCHOOLS AND ANY OF THOSE SCHOOLS OFFERED THIS TYPE OF PROGRAM, CODE AS 1-YES FROM CHILD'S SCHOOL OR 3-YES BOTH, AFTER PROBING)

- 1 Yes, from my child's school
- 2 Yes, from a program not offered through my child's school
- 3 Yes, both from my child's school and from a program not offered through my child's school
- 4 No
- 5 (DO NOT READ) Program not offered
- 6 (DO NOT READ) Child/Children are homeschooled
- 8 (DO NOT READ) Don't know
- 9 (DO NOT READ) Refused

(ASK IF Q4=1-10 - Respondents whose household has people age 18 or younger)

Q8. Since the pandemic began, has your household participated in any programs that provide internet access at your home for schoolwork?

(IF YES, PROBE: "Was it through a program through your children's schools, through some other type of program, or both?)

(INTERVIEWER NOTE: IF R HAS MULTIPLE CHILDREN IN DIFFERENT SCHOOLS AND ANY OF THOSE SCHOOLS OFFERED THIS TYPE OF PROGRAM, CODE AS 1-YES FROM CHILD'S SCHOOL OR 3-YES BOTH, AFTER PROBING)

- 1 Yes, from my child's school
- 2 Yes, from a program not offered through my child's school
- 3 Yes, both from my child's school and from a program not offered through my child's school
- 4 No
- 5 (DO NOT READ) Program not offered
- 6 (DO NOT READ) Child/Children are homeschooled
- 8 (DO NOT READ) Don't know
- 9 (DO NOT READ) Refused

HOUSEHOLD INTERNET CONNECTIVITY SINCE THE PANDEMIC

(ASK IF BBHOMEb=1 or BBHOMEc=1 - Respondents who have internet access through home broadband or home satellite service)

Q9. Since the pandemic began, has your household experienced interruption in home internet service due to difficulties in paying for service?

- 1 Yes
- 2 No
- 8 (DO NOT READ) Don't know
- 9 (DO NOT READ) Refused

PROGRAMS TO HELP PEOPLE STAY ONLINE

(ASK ALL)

(PN: RANDOMIZE ITEMS; INCLUDE RANDOMIZATION IN DATA FILE)

Q10. Since the pandemic began, there have been a number of initiatives to make it easier for households to purchase or maintain their home internet service. Please tell me whether you have heard of any of the following.

(First,) have you heard about (INSERT ITEM)?

- 1 Yes
- 2 No
- 8 (DO NOT READ) Don't know
- 9 (DO NOT READ) Refused
 - a. The PHLConnectED program (PRONO: P-H-L Connected Program)
 - b. Discount or free internet offerings, such as those offered by carriers such as Comcast's Internet Essentials or T-Mobile's Project 10 Million
 - c. The federal government's Emergency Broadband Benefit, which provides qualifying households a \$50 per month discount on their internet bill

(ASK IF Q10A=1 or Q10B=1 or Q10C=1 - Respondents who have heard about PHLConnectED, Discount internet offerings, or the Emergency Broadband Benefit)

Q11. Has your household **successfully** signed up for a discount or free internet offer that is aimed at certain qualifying households, or not?

- 1 Yes
- 2 No
- 8 (DO NOT READ) Don't know
- 9 (DO NOT READ) Refused

(ASK IF Q11=1 - Respondents whose household signed up for a discount or free internet offer)

(PN: ROTATE RESPONSES 1-4/4-1; INCLUDE ROTATE IN DATA FILE)

Q12. How difficult, if at all, would it be for you to keep your internet service without the free or discounted internet service you signed up for?

(READ LIST)

- 1 Very difficult
- 2 Somewhat difficult
- 3 Not too difficult
- 4 Not at all difficult
- 8 (DO NOT READ) Don't know
- 9 (DO NOT READ) Refused

(ASK IF Q11=2 - Respondents whose household has not signed up for a discount or free internet offer) (PN: RANDOMIZE OPTIONS 1-5; ACCEPT ONE RESPONSE ONLY; INCLUDE RANDOMIZATION IN DATA FILE)

Q12A. Was that **mainly** because:

(READ LIST)

- 1 You started applying but did not complete the application.
- 2 Your household did not qualify.
- 3 It was too difficult to sign up.
- 4 You owe money to an internet service provider.
- 5 You have not had the time to apply.
- 97 (DO NOT READ) Some other reason (SPECIFY)
- 98 (DO NOT READ) Don't know
- 99 (DO NOT READ) Refused

HOME INTERNET EXPERIENCE

(ASK IF BBHOMEb=1 or BBHOMEc=1 - Respondents who have internet access through home broadband or home satellite service)

(PN: ROTATE RESPONSES 1-4/4-1; INCLUDE ROTATE IN DATA FILE)

Q13. Since the pandemic began, how satisfied, if at all, have you been with the quality of your home internet connection for doing important online activities such as attending classes or doing your job? (READ LIST)

- 1 Very satisfied
- 2 Somewhat satisfied
- 3 Not too satisfied
- 4 Not at all satisfied
- 5 (DO NOT READ) Have not used the internet to do this
- 8 (DO NOT READ) Don't know
- 9 (DO NOT READ) Refused

REASONS FOR NOT SUBSCRIBING TO BROADBAND

(ASK ALL EXCEPT BBHOMEb=1 - Respondents without wireline high-speed internet at home)

(PN: RANDOMIZE ITEMS; ITEM J ALWAYS LAST; INCLUDE RANDOMIZATION IN DATA FILE)

Q14. Please tell me whether any of the following are reasons why you do not have high-speed, broadband internet at home, such as cable, fiber optic, or DSL broadband internet at home.

First, (INSERT ITEM). Is this a reason why you do not have high-speed, broadband internet at home, or not?

Next, (INSERT NEXT ITEM) (READ IF NECESSARY: Is this a reason why you do not have high-speed, broadband internet at home, or not?)

- 1 Yes
- 2 No
- 8 (DO NOT READ) Don't know
- 9 (DO NOT READ) Refused

- a. The monthly cost of a home broadband subscription is too expensive.
- b. The cost of a computer is too expensive.
- c. Your smartphone lets you do everything online that you need to do.
- d. You have other options for internet access outside of your home.
- e. You can't get broadband service installed at your residence.
- f. You worry about the privacy and security of your personal data.

- g. You are not comfortable using a computer or the internet.
- h. You do not want or need high-speed internet service at home.
- i. You have past-due bills to internet service providers.
- j. Some other reason I haven't already mentioned

(ASK IF 2+ YES RESPONSES (1) GIVEN IN Q14A-I)

(PN: SHOW ONLY THE RESPONSES SELECTED IN Q14A-I; RANDOMIZE OPTIONS IN SAME ORDER AS Q14A-I; INCLUDE RANDOMIZATION IN DATA FILE)

Q15. Thinking of the reasons why you do not have high-speed, broadband service at home, which ONE of them is the MOST important? (READ LIST IF NECESSARY)

- 1 The monthly cost of a home broadband subscription is too expensive.
- 2 The cost of a computer is too expensive.
- 3 Your smartphone lets you do everything online that you need to do.
- 4 You have other options for internet access outside of your home.
- 5 You can't get broadband service installed at your residence.
- 6 You worry about the privacy and security of your personal data.
- 7 You are not comfortable using a computer or the internet.
- 8 You do not want or need high-speed internet service at home.
- 9 You have past-due bills to internet service providers.
- 98 (DO NOT READ) Don't know
- 99 (DO NOT READ) Refused

(ASK ALL EXCEPT BBHOMEb=1 - Respondents without wireline high-speed internet at home)

Q16. Have you subscribed to high-speed, broadband internet service, such as cable, DSL, or fiber optic service, at home in the past, or not?

- 1 Yes
- 2 No

8 (DO NOT READ) Don't know

9 (DO NOT READ) Refused

(ASK ALL)

Q17. What monthly internet fee would you consider **too expensive** for your monthly budget?
(READ LIST)

1 \$0 to \$10

2 \$11 to \$20

3 \$21 to \$50

4 \$51 to \$75

5 Greater than \$75

8 (DO NOT READ) Don't know

9 (DO NOT READ) Refused

(READ TO ALL:) A few last questions for statistical purposes only...

(ASK ALL)

RSEX. I'm required to ask this question. Do you describe yourself as a man, a woman, or in some other way?

1 Man

2 Woman

3 Some other way

8 (DO NOT READ) Don't know

9 (DO NOT READ) Refused

(ASK IF LANDLINE SAMPLE)

LLAGE. What is your age?

[INTERVIEWER NOTE: Enter '97' if respondent is 97 or older.]

___ years [RANGE 18-97, 97=97 or older]

98 (DO NOT READ) Don't know

99 (DO NOT READ) Refused

(ASK ALL)

HH1. How many adults, age 18 and over, currently live in your household, INCLUDING YOURSELF?

1 1

2 2

3 3

4 4

5 5

6 6 or more

8 (DO NOT READ) Don't know

9 (DO NOT READ) Refused

(ASK ALL)

EDUC2. What is the highest level of school you have completed or the highest degree you have received?

(DO NOT READ RESPONSE OPTIONS)

[INTERVIEWER NOTE: Enter code 3-HS graduate if R completed vocational, business, technical, or training courses after high school that did NOT count toward an associate degree from a college, community college or university (e.g., training for a certificate or an apprenticeship)]

1 Less than high school (Grades 1-8 or no formal schooling)

2 High school incomplete (Grades 9-11 or Grade 12 with NO diploma)

3 High school graduate (Grade 12 with diploma or GED certificate)

4 Some college, no degree (includes some community college)

5 Two-year associate degree from a college or university

- 6 Four-year college or university degree/Bachelor's degree (e.g., BS, BA, AB)
- 7 Some postgraduate or professional schooling, no postgraduate degree
- 8 Postgraduate or professional degree, including master's, doctorate, medical or law degree (e.g., MA, MS, PhD, MD, JD)
- 98 Don't know
- 99 Refused

(ASK ALL)

HISP. Are you of Hispanic, Latino, or Spanish origin, such as Mexican, Puerto Rican, or Cuban?

- 1 Yes
- 2 No
- 8 (DO NOT READ) Don't know
- 9 (DO NOT READ) Refused

(ASK ALL)

(PN: ALLOW MULTIPLE RESPONSES; CODES 8 AND 9 ARE EXCLUSIVE)

RACE. Which of the following describes your race? You can select as many as apply. Are you: White, Black or African American, Asian or Asian American, or some other race?

[IF R SAYS THEY ARE MIXED OR BIRACIAL, PROBE: "What race or races is that?"]

[IF R SAYS HISPANIC OR LATINO, PROBE: "Do you consider yourself a WHITE (Hispanic/Latino) or a BLACK (Hispanic/Latino)?" IF R DOES NOT SAY WHITE, BLACK, OR ONE OF THE RACE CATEGORIES LISTED, RECORD AS "SOME OTHER RACE" (CODE 7)]

- 1 White or Caucasian
- 2 Black or African-American
- 3 Asian or Asian-American
- 4 Native American/American Indian/Alaska Native
- 5 Pacific Islander/Native Hawaiian

NO CODE 6

- 7 Some other race (SPECIFY)
- 8 (DO NOT READ) Don't know
- 9 (DO NOT READ) Refused

(ASK IF HISP=1 - Hispanic respondents)

BIRTH_HISP. Were you born in the United States, on the island of Puerto Rico, or in another country?

- 1 U.S.
- 2 Puerto Rico
- 3 Another country
- 8 (DO NOT READ) Don't know
- 9 (DO NOT READ) Refused

(ASK ALL)

INCOME. Last year, that is in 2020, what was your total family income from all sources, before taxes? Just stop me when I get to the right category.(READ LIST)

- 1 Less than \$10,000
- 2 10 to under \$20,000
- 3 20 to under \$30,000
- 4 30 to under \$40,000
- 5 40 to under \$50,000
- 6 50 to under \$75,000
- 7 75 to under \$100,000
- 8 100 to under \$150,000
- 9 \$150,000 or more
- 98 (DO NOT READ) Don't know
- 99 (DO NOT READ) Refused

(ASK IF LANDLINE SAMPLE)

QL1. Now thinking about your telephone use... Do you have a working cell phone?

- 1 Yes
- 2 No
- 8 (DO NOT READ) Don't know
- 9 (DO NOT READ) Refused

(ASK IF LANDLINE SAMPLE WITH NO CELL PHONE/DK/REF (QL1=2-9))

QL1a. Does anyone else in your household have a working cell phone?

- 1 Yes
- 2 No
- 8 (DO NOT READ) Don't know
- 9 (DO NOT READ) Refused

(ASK IF CELL PHONE SAMPLE (BLANDCELL=1))

QC1. Now thinking about your telephone use... Is there at least one telephone INSIDE your home that is currently working and is not a cell phone?

- 1 Yes
- 2 No
- 8 (DO NOT READ) Don't know
- 9 (DO NOT READ) Refused

(ASK ALL)

RZICODE1. What is your zip code?

[IF DK/REFUSED OR IF NECESSARY, YOU MUST PROBE ONCE: This question helps us to accurately determine what part of the county people who complete the survey live in

and is used only for classification purposes. You cannot be contacted based on this information.
Can you please tell me your zip code?]

_____ [ENTER EXACT 5-DIGIT ZIP CODE]

99998 (DO NOT READ) Don't know

99999 (DO NOT READ) Refused

(ASK IF GAVE ZIPCODE (RZIPCODE1<>99998,99999))

RZIPCODE2. Just to confirm – your zip code is [INSERT RZIPCODE1]. Is that correct?

1 Yes, correct

2 No, not correct

[PN: IF RZIPCODE2=1, CONTINUE]

[PN: IF RZIPCODE2=2, GO BACK TO RZIPCODE1]

THANK AND END INTERVIEW:

THANK YOU again for sharing your thoughts and opinions! Have a nice rest of the day.

Appendix D: Community Engagement Meeting

In May 2021, the research team invited community advocates and practitioners focused on addressing digital equity issues on behalf of residents of the City of Philadelphia to attend one of two, 90-minute, virtual feedback sessions. Participants were engaged from across multiple city stakeholder networks, including the Digital Literacy Alliance, the Charter School network, the School District of Philadelphia, the Technology Learning Collaborative's Planning Group, the Philadelphia Digital Navigator Network, as well as City of Philadelphia employees involved in the Digital Equity Coordinating Committee. The primary goal of these meetings was to provide a forum for expert stakeholders to provide input on the survey instrument that would be deployed to assess household internet adoption. Participants shared high-level feedback and pressure-tested survey questions, and their collective input was used to iterate the draft survey.

Community Stakeholder Meetings Attendee List

<u>First Name</u>	<u>Last Name</u>	<u>Affiliation</u>
Adrienne	Ewing	Mayor's Office for People with Disabilities
Ami	Irvin	Freire Charter School and TECH Freire Charter School
Andrea	Brooks	City of Philadelphia Department of Behavioral Health and Intellectual disAbility Services
Ashley	Pollard	City of Philadelphia Office of Innovation and Technology
Caitlin	Pratt	Philadelphia FIGHT Community Health Centers
Carl	Cristella	Philadelphia Academy Charter School
Christine	Piven	City of Philadelphia Office of Children and Families Adult Education
Cooper	Richardson	SEAMAAC
David	Moore	Free Library of Philadelphia
David	Rosario	Russell Byers Charter School
David	Peterson	Independence Charter School West
Ellen	Somekawa	Folk Arts-Cultural Treasures Charter School
Jessica	Begley	SOWN Supporting Older Adults and their Families
Joanne	Ferroni	Drexel University Office of University and Community Partnerships
Jonathan	Latko	Temple University Computer Recycling Center
Kellye	DeSantis	Comcast
Kerry	Porter	Alliance for Progress Charter School
Meagan	Pharis	Philadelphia Department of Public Health
Mica	Root	Philadelphia Department of Public Health
Phaedra	Tinder	City of Philadelphia Office of Innovation and Technology CityGeo Team
Robert	Murken	Comcast
Stephanie	Orlando	City of Philadelphia Office of Innovation and Technology
Steven	Doncaster	Free Library of Philadelphia
Susan	McAllister	Independence Charter School West
Thayne	Dibble	String Theory Schools

Appendix E: Research Team

Wilco Electronic Systems, Inc.

For over four decades, Wilco has been recognized as a unique and modern technology operator sitting at the epicenter of real estate, community, technology and impact. As a Philadelphia based organization, Wilco is at the forefront of providing affordable cable television, technology services and broadband to low-income, underserved communities and multifamily housing developments throughout the Greater Philadelphia Region.

Over the years, we have helped create several substantial private/public partnerships that have positioned our organization as a digital and broadband leader, specifically working on behalf of underserved and disadvantaged communities. After an acquisition of our cable division by Comcast, we have shifted our focus to providing low voltage wiring and design, integration of electronic security and IoT (Internet of Things) services, as well as intelligent building solutions with impact, for the multifamily residential, commercial, industrial and affordable housing real estate sectors. For more information, please visit www.wilcoinc.com.

Centri Tech and Centri Tech Foundation

Centri Tech and Centri Tech Foundation (CTF), along with a network of community development partners, seek to connect low-income Americans to high-quality connectivity in the home and digital workforce opportunities in the community. We believe digital advancement is a civil right. To achieve a sustainable future, one where everyone can fulfill their aspirations and thrive, requires an inclusive digital economy. To that end, we provide integrated solutions for connectivity and leverage investments in technology access and adoption to advance the standard of living and improve lives for all. Visit www.centri-tech.com and www.centritechfdn.org for more information.

John B. Horrigan, PhD

John B. Horrigan is Senior Fellow at the Benton Institute for Broadband and Society, with a focus on technology adoption and digital inclusion. Dr. Horrigan has also been a senior advisor to the Urban Libraries Council and a senior fellow to the Technology Policy Institute. Additionally, he has served as an Associate Director for Research at the Pew Research Center, where he focused on libraries and their impact on communities, as well as technology adoption patterns and open government data. During the Obama Administration, Dr. Horrigan served on the leadership team at the Federal Communications Commission for the development of the National Broadband Plan. Views expressed in this report are his own.

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