Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

IMPLEMENTING THE INFRASTRUCTURE INVESTMENT AND JOBS ACT: PREVENTION AND ELIMINATION OF DIGITAL DISCRIMINATION	))))	**Docket No. 22-69**

COMMENTS OF

NTCA–THE RURAL BROADBAND ASSOCIATION

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EXECUTIVE SUMMARY

NTCA and its member companies support and champion efforts to increase digital inclusion. Representing broadband service providers in some of the Nation's most rural and sparsely populated areas, NTCA is keenly aware of the benefits that broadband promises and the importance of ensuring the extension of those benefits to subscribers. NTCA members are obligated by numerous statutory and regulatory guidelines that ensure widespread deployment and availability of advanced communications. As NTCA members increase both locations served and the capabilities available at those locations, NTCA observes, as do numerous government and industry studies, that cost remains a key factor in broadband strategies. This aligns with the clear provisions of the Infrastructure Investment and Jobs Act, which recognizes technical and economic feasibility for providers and affordability for subscribers. Network construction and equipment costs inform deployment strategies for providers, while affordability remains a critical element in expanding adoption.

Accordingly, NTCA urges the Commission to comport implementation of regulations to the guiding language of the statute, and to recognize that discriminatory intent is not present where technical and economic infeasibility inform provider decisions. The Commission's Communications Equity and Diversity Council has identified factors that support this approach. Moreover, NTCA supports a safe harbor for providers that comply with the many regulatory and statutory provisions that prohibit discrimination and which require deployment metrics, and urges the Commission to extend that safe harbor to similarly situated companies.

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To the Commission:

I. INTRODUCTION.

NTCA–The Rural Broadband Association (NTCA) hereby submits comments in the above-captioned proceeding.[1] NTCA represents approximately 850 small, locally operated rural broadband providers. In addition to broadband internet access services, these facilities-based companies offer telephone, fixed and mobile wireless, and video communications services. NTCA recognizes and champions the critical role that broadband plays in an expanding suite of industry sectors, including, *inter alia,* agriculture, economic development, education, and healthcare. In rural areas, especially, ensuring access to broadband is a predicate to extending the follow-on benefits of broadband to subscribers. Accordingly, NTCA welcomes the Infrastructure Investment and Jobs Act (IIJA)[2] focus on ensuring access to broadband throughout the Nation. These goals are represented in several provisions of the IIJA, including the

[1] *Implementing the Infrastructure Investment and Jobs Act - Preventing and Elimination of Digital Discrimination: Notice of Proposed Rulemaking,* Docket No. 22-69, FCC 22-98 (2022) (*NPRM).* The instant NPRM was preceded by a *Notice of Inquiry,* Docket No. 22-69, FCC 22-21 (2022) (*Notice of Inquiry*).

[2] Infrastructure Investment and Jobs Act of 2021, Pub. L. No. 117-58, 135 Stat. 429 (2021) (IIJA).

Broadband Equity, Access, and Deployment (BEAD) program;[3] the Affordable Connectivity Program;[4] the Digital Equity Act;[5] and the instant inquiry to prevent digital discrimination of access.

NTCA has consistently recommended a measured and thoughtful approach in the implementation of rules pursuant to the various initiatives directed by the IIJA, including the BEAD program,[6] the ACP, and now measures to address digital discrimination.[7] With respect to the instant proceeding, it must be noted that pre-existing statutory and regulatory provisions (*i.e.,* outside of the IIJA) already prohibit discriminatory practices and moreover encourage, if not require, deployment in specific areas. NTCA members, bound to these obligations and relying on a coordinated system of programs administered by multiple Federal agencies, have extended broadband capabilities throughout significant portions of their deeply rural service areas. NTCA members, who provide service to some of the Nation's most remote and sparsely populated areas, are uniquely positioned to recognize conditions that challenge both the technical and economic feasibility of deploying and maintaining capital intensive networks in markets that would not sustain even a single network absent governmental support or subsidy. NTCA accordingly urges the Commission to address the instant issues with several foundational perspectives:

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[3] IIJA, Section 60102, *codified at* 47 U.S.C. § 1702 *et seq.*

[4] IIJA, Section 60502, *codified at* 47 U.S.C. § 1301 *et seq.*

[5] IIJA, Section 60301, *codified at* 47 U.S.C. § 1701, *et seq.*

[6] *See, Infrastructure Investment and Jobs Act Implementation: Comments of NTCA–The Rural Broadband Association,* National Telecommunications and Information Administration, Docket No. 220105-002, RIN 0660-ZA33 (Feb. 4, 2022).

[7] *Implementing the Infrastructure Investment and Jobs Act - Preventing and Elimination of Digital Discrimination: Comments of NTCA–The Rural Broadband Association,* Docket No. 22-69 (May 16, 2022).

1. Broadband is a capital-intensive industry. Decisions regarding technical and economic feasibility in rural areas may result in disparate deployments but do not indicate discriminatory intent aimed at disadvantaging protected classes of people on the basis of their inclusion in those classes.

2. Numerous statutory and regulatory provisions already provide a bulwark against discriminatory practices. Accordingly, a targeted reading of Section 60506 to address situations where other statutory mandates might not be invoked is a more effective approach than the promulgation of redundant or potentially conflicting obligations.

3. A safe harbor for broadband providers bound by existing regulations, as well as similarly situated firms, whose business decisions are informed by substantively similar economic and technical conditions in high-cost rural markets should be implemented to foster certainty and avoid discouraging investment.

II. NTCA AND ITS MEMBER COMPANIES CHAMPION AND ACHIEVE THE WIDESPREAD BROADBAND ACCESS ENVISIONED BY THE STATUTE.

A. EXISTING STATUTORY PROVISIONS PROSCRIBE DISCRIMINATORY PRACTICES.

Existing statutory provisions to which NTCA members and other providers are obligated proscribe discriminatory practices. Measures undertaken pursuant to the IIJA, in comparison, should be targeted to fill potential gaps left by existing statutory provisions. As the Commission notes in the *NPRM,*[8] and as NTCA explained in its comments on the *Notice of Inquiry,*[9] numerous statutory provisions and regulatory requirements address discrimination and foster extensive network deployments. Implementing the IIJA provisions as a supplement to those rules, *i.e.,* to fill gaps where those provisions might not reach, is a sound approach and avoids the establishment of duplicative and redundant requirements. For example, Section 202 of the Communications Act, as amended, prohibits "unjust or unreasonable discrimination in charges,

[8] NPRM at para. 4.

[9] *See,* note 7, *supra.*

practices, classifications, regulations, facilities, or services for or in connection with like communication service," as well as giving "any undue or unreasonable preference or advantage to any particular person, class of persons, or locality, or to subject any particular person, class of persons, or locality to any undue or unreasonable prejudice or disadvantage."[10] Aligning IIJA-directed regulations with this construct, where it applies to the deployment of networks and/or delivery of certain transmission and other telecommunications services, would avoid contradictory or confusing principles. Viewing the IIJA provisions as *supplementing,* rather than *supplanting,* pre-existing and successful standards will perpetuate the consistent continuation of conditions that have led to extensive broadband deployment throughout the Nation.

Other statutory provisions, as well, protect against discrimination. Recipients of Universal Service Fund (USF) support are bound, as a condition of their receipt of high-cost support funding, to specific broadband deployment and service level commitments.[11] Section 254 of the Communications Act expresses unequivocable support for promoting equal opportunity to access communication services, (i) providing that "quality services should be available at just, reasonable, and affordable rates"[12] (ii) "in all regions of the Nation[13] and (iii) specifying that "[c]onsumers in all regions of the Nation, including low-income consumers and those in rural, insular, and high cost areas, should have access to telecommunications and information services . . . that are reasonably comparable to those

[10] 47 U.S.C. § 202.

[11] 47 C.F.R. § 54.201(d) ("A common carrier designated as an eligible telecommunications carrier . . . shall throughout the service area for which the designation is received (1) Offer the services that supported by federal universal service support mechanisms . . . .").

[12] 47 U.S.C. § 254(b)(1).

[13] 47 U.S.C. § 254(b)(2).

services provided in urban areas and that are available at rates that are reasonably comparable to rates charged for similar services in urban areas."[14] Providers that receive USF high-cost support are also subject to annual Tribal engagement obligations in connection with their service to Tribal lands,[15] as well as advertising the availability of Lifeline services.[16]

Finally, Section 706 of the Telecommunications Act of 1996[17] admonishes the Commission to "encourage the deployment on a reasonable and timely basis of advanced telecommunications capability to all Americans (including, in particular, elementary and secondary schools and classrooms) by utilizing . . . measures that promote competition in the local telecommunications market, or other regulating methods that remove barriers to infrastructure investment."[18] These, along with other sections cited by the Commission in the *Notice of Proposed Rulemaking* (specifically, Sections 257, 309(j), and 541), evidence long-standing Congressional attention to the deployment of networks and the delivery of services to all geographic and demographic communities throughout the Nation. The record of increasing rates of broadband deployments evidences the sound impact of these standards.

[14] 47 U.S.C. § 254(b)(3).

[15] *See, generally, Connect America Fund, et. al.: Report and Order and Further Notice of Proposed Rulemaking,* Docket No. 10-90, *et. al.,* FCC 11-161 (2011), *aff'd sub nom, In re: FCC 11-161,* 753 F.3d 1015 (10th Cir. 2014). The requirements are set forth in 47 CFR § 54.313(a)(5), (j).

[16] 47 C.F.R. § 54.405(b).

[17] Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat. 56 (1996) (1996 Act). The 1996 Act amended the Communications Act of 1934 and is codified at 47 U.S.C. § 151 *et seq.*

[18] 47 U.S.C. § 1302(b).

B. NTCA AND ITS MEMBERS EVIDENCE COMMITMENT TO DIGITAL INCLUSION AND ROBUST BROADBAND BUILDOUT THROUGHOUT THEIR COMMUNITIES.

NTCA members confront substantial challenges deploying advanced, capital-intensive communications networks in rural areas. On average, the population density in most areas served by NTCA members is less than seven people per square mile. NTCA members must also overcome undeveloped terrain, topographical challenges, and long distances between customer locations. Despite these conditions, and by leveraging private capital with critical programs administered by the Commission, the U.S. Department of Agriculture (USDA), and other Federal agencies, NTCA members now report delivering downstream speeds greater than/equal to 100 Mbps to nearly 82% of their customers on average, representing substantial growth when compared to just over 75% in 2021.[19] Nearly 61% of customers served by NTCA members on average have access to Gigabit downstream speed, up from just over 55% in 2021. Additionally, more than three quarters (79.3%) of NTCA member customers on average are served by FTTH connections, up from 75% in 2021. As deployments increase in capability, adoption is growing, as well. More customers are subscribing to higher speeds as they become available. Nearly 49% of NTCA member customers subscribe to 100 Mbps broadband or better, up from just over 37% in the 2021. And in 2022, subscriptions among NTCA members for 100 Mbps and higher speed services are now more popular than services between 25 and 100 Mbps. The percentage of customers subscribing to service between 100 Mbps and 1 Gig is almost 37%, surpassing the 25–100 Mbps tier at just over 31%.[20]

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[19] *Broadband/Internet Availability Survey Report*, NTCA–The Rural Broadband Association, Arlington, VA, at 7 (Dec. 2022) (https://www.ntca.org/sites/default/files/documents/2022-12/2022%20Broadband%20Survey%20Report%20%28FINAL%2011-28-22%29.pdf) (visited Feb. 16, 2023) (NTCA Broadband Survey Report).

[20] *Id*.

As described above, deployments and adoption continue to increase throughout NTCA member service areas. This progress arises against a backdrop in which nearly one-quarter of rural residents are members of a racial minority (including American Indian, Black, Hispanic, and others), and racial diversity in rural spaces is generally increasing.[21] With an average of fewer than 5,000 fixed broadband accounts per service territory,[22] it would be against their own interest in sustaining a business model for NTCA members to engage in discriminatory practices that would demur to serve a protected class or members of protected class of users. The growing deployment and adoption numbers among NTCA members, including adoption of higher speed services, are not consistent with and in fact rebut would-be allegations of discriminatory conduct in the industry. Further, beyond statutory obligations arising out the Communications Act and the documented achievements of its members, NTCA has undertaken specific efforts to promote digital inclusion and broadband adoption in under-represented communities: Over a series of years, NTCA has published a comprehensive report on rural broadband inclusion and adoption;[23] hosted webinar programming to explore adoption and inclusion in Tribal and low-income

[21] *See,* DW Rowlands and Hanna Love, "Mapping Rural America's Diversity and Demographic Change," Brookings (Sep. 28, 2021) (https://www.brookings.edu/blog/the-avenue/2021/09/28/mapping-rural-americas-diversity-and-demographic-change/) (visited Feb. 9, 2022); *see, also,* "Racial and Ethnic Minorities Made Up About 22 Percent of the Rural Population in 2018, Compared to 43 Percent in Urban Areas," Economic Research Service, USDA (Oct. 13, 2020) (https://www.ers.usda.gov/data-products/chart-gallery/gallery/chart-detail/?chartId=99538#:~:text=Racial%20and%20ethnic%20minorities%20made,than%20the%20Nation's%20urban%20areas) (visited Feb. 9, 2022).

[22] NTCA Broadband Survey Report at 4.

[23] *See,* Joshua Seidemann and Roxanna Barboza, *Rural Imperatives in Broadband Adoption and Digital Inclusion,* Smart Rural Community, NTCA–The Rural Broadband Association (2021). This paper is attached to the instant filing (see Appendix, *infra*).

communities;[24] and created a multi-part Digital Inclusion toolkit to promote strategies and resources for rural broadband providers.[25]

C. AFFORDABILITY REMAINS THE HIGHEST BARRIER TO BROADBAND ADOPTION.

Despite current statutory prescriptions and progressive achievement, gaps in broadband adoption persist. But the prevailing factor in broadband adoption is affordability, rather than apparent or perceptible discriminatory action. Overall, adoption gaps are narrowing over time across categories defined by age, race, educational attainment, and household income. Data collected by Pew Research indicates that age-related adoption rates for home broadband are converging, as year-over-year data show growth for all age groups (18-29, 30-49, 50-65, and 65+).

Table 1: Broadband Adoption by Age

Age	2000	2010	2020
18-29	70%	92%	99%
30-49	61%	85%	98%
50-64	46%	74%	96%
65+	14%	43%	75%

Data Source: Pew Research[26]

Moreover, stronger adoption rates can be anticipated for the 65+ years old category in future years, as it is not anticipated that current 50-64 years old users, with current adoption rates at 96%, will stop using broadband at their 65th birthday. Home broadband adoption rates for Blacks and Hispanics trail rates for Whites by 11% and 17%, respectively. However, adoption rates

[24] NTCA Webinar, "Rural Imperatives in Broadband Adoption and Digital Inclusion," featuring Catherine Nicolaou, Sacred Wind Communications, Inc., and Kris Ward, Focus Broadband (Jan. 25, 2022).

[25] *See,* "Digital Inclusion," NTCA, https://www.ntca.org/member-services/digital-inclusion (visited May 16, 2022).

[26] *Internet/Broadband Fact Sheet, Internet & Technology*, Pew Research Center (Apr. 7, 2021) (https://www.pewresearch.org/internet/fact-sheet/internet-broadband/) (visited Feb. 16, 2023) (Pew Research).

across all groups are growing year-over-year, increasing 35% among Blacks, 34% among Hispanics, and 23% among Whites between 2010-2020. This is not to say that no work remains to be done, but rather to show that progress is being made and steps taken should account for and learn from that progress in lieu of disregarding it.

In contrast, it is perhaps more telling that income and educational attainment continue to present as dominant factors in broadband adoption:[27]

Table 2: Home Broadband Adoption by Household Income

Income	2000	2010	2020
Less than $30,000	0	51%	57%
$30,000-$49,999	0	64%	73%
$50,000-$74,999	1%	78%	87%
$75,000+	2%	88%	92%

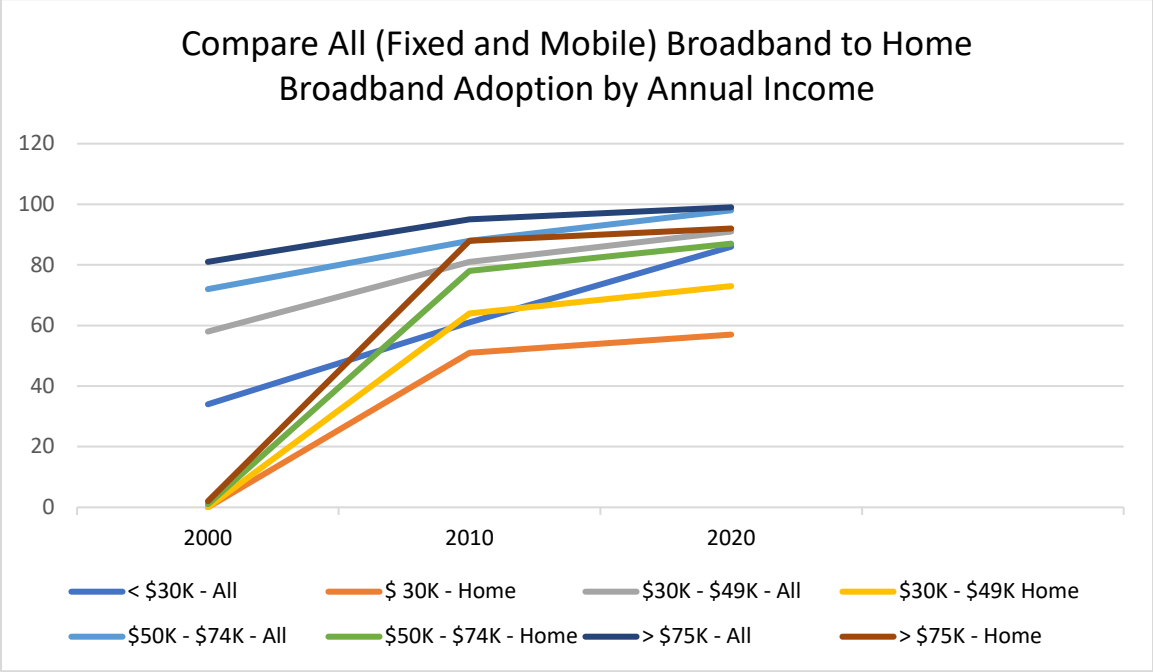
Table 3: Home Broadband Adoption by Educational Attainment

Education	2000	2010	2019
Less than high school	*Not available*	26%	46%
High school graduate	1%	41%	59%
Some college	0	73%	77%
College graduate	1%	82%	93%

Data Source: Pew Research Center

[27] It is not clear whether income and educational attainment affect broadband adoption independently or whether linkages between those two factors (specifically, higher educational attainment generally leading to higher income) combine to reflect similar trends in adoption. Generally, higher levels of educational attainment lead to higher income. Accordingly, the question of *why* educational attainment affects broadband adoption could be posed to ask (a) whether educational attainment affects broadband adoption because educational attainment affects income, or (b) whether users with higher educational attainment adopt at higher rates for non-income-based reasons. Stated differently, are adoption rates for college graduates earning $50,000-$74,000 annually higher than non-college graduates earning at similar levels, and if so, why? A recent report explains that prior studies incorrectly "conflat[ed] wealth and educational attainment." In contrast, alternative perspectives suggest that educational attainment may correlate to more favorable tendencies to adopt new technology, generally. *See, generally,* Bryan A. Mann, William C. Smith, and David P. Baker, *Schooling Attainment's Influence on Internet Adoption: Education's Role in the Cross-National Development of the Mass Media Knowledge Gap*, FIRE: FORUM FOR INTERNATIONAL RESEARCH IN EDUCATION, Vol. 3, No. 3, at 47 (2016).In that view, while higher education attainment can be demonstrated to lead, on average, to higher income, higher broadband adoption rates among more highly educated groups may relate to factors other than higher income. *Id.* at 51.

Figure 1: Broadband Adoption Rates by Income



Data Source: Pew Research

Congress recognized the primary role of affordability in broadband adoption by devoting substantial resources to tackling this problem and establishing the Emergency Broadband Benefit program (EBB),[28] which itself was succeeded by ACP. Although the EBB was promulgated specifically to address affordability shortfalls in the wake of the COVID-19 pandemic, its succession by the longer-service ACP indicates Congressional recognition that the standard Lifeline discount (which is based upon a long-standing voice subsidy) is insufficient to bridge the affordability gap when it comes to broadband. High enrollment rates for the ACP suggest

[28] Consolidated Appropriations Act of 2021, Pub. L. No. 116-260, 134 Stat. 1182, Section 904(i) (2020). The EBB was implemented by the Federal Communications Commission. *Emergency Broadband Benefit Program: Report and Order,* Federal Communications Commission, Docket No. 20-445, FCC 21-29 (2021).

further evidence that affordability remains a formidable barrier to broadband adoption. Nearly 80% of NTCA member companies participated in the ACP program as of last fall.[29]

These data demonstrate several baseline factors to inform the instant proceeding:

1. NTCA members that are subject to a full complement of measures requiring deployment and prohibiting discrimination are increasing both the number of locations served and the broadband capabilities at those locations year-over-year despite serving the most rural terrain in the country.

2. Broadband adoption rates for both "all broadband" (*i.e.,* fixed and mobile services) and "home broadband" are increasing year-over-year in categories defined by age, race, educational attainment, and household income.

3. The largest gaps in broadband adoption manifest in sub-categories of household income and educational attainment. Gaps in age-based and race-based categories, while yet existing, are closing year-over-year as adoption rates within all sub-categories in those groups are increasing.

III. DISPARATE LEVELS OF BROADBAND DEPLOYMENT REFLECT COSTS AND OTHER INPUTS THAT DRIVE LEGITIMATE AND RATIONAL BUSINESS DECISIONS.

A. THE IIJA RECOGNIZES LEGITIMATE BUSINESS DECISIONS AND APPLIES AN INTENT-BASED STANDARD.

The *NPRM* seeks comment on whether "digital discrimination of access" should "depend on whether, and what reason(s), the provider intended to discriminate on the basis of a protected characteristic."[30] The corollary of this analysis is whether the Commission would adopt a definition of digital discrimination "based on disparate impact (*i.e.,* discriminatory effect) disparate treatment (*i.e.,* discriminatory intent), or both."[31] NTCA submits that the standard should rest upon disparate treatment, *i.e.,* whether the provider *intended* to discriminate against a protected class on the basis of a protected characteristic. In plain parlance, "discrimination"

[29] NTCA Broadband Survey Report at 12.

[30] NPRM at para. 12.

[31] NPRM at para. 14.

refers to intentionally different treatment based on the subject's inclusion in a protected class. Stated differently, a causal connection must be established between the action and the protected class, *i.e.,* "that the decisionmaker . . . selected or affirmed a particular course of action at least in part *'because of,"* not merely *'in spite of,'* its adverse effects on an identifiable group."[32] In contrast, disparate levels of broadband deployment and services can emerge for reasons unrelated to inappropriate intent, reflecting costs, various legal requirements that direct operations in certain respects as compared to others, and other inputs that drive legitimate business decisions. This is evidenced by the statute which itself limits its application to circumstances in which "equal access" is "technically and economically feasible."[33] The law thus acknowledges and accepts instances in which disparate impacts arise out of technical or economic considerations.

As the Commission seeks comment on whether its definition of "digital discrimination of access" should focus on differential impact or differential intent,[34] it asks whether the definition should "exclude those actions or omissions that are justified by technical or economic feasibility."[35] The clear language of the statute begins with the clause, "insofar as technically and economically feasible."[36] Not only would it be superfluous for Commission rules to effectively restate black-letter law, the statute itself leaves no room for any interpretation of the law that would prohibit actions or omissions that are attributable to technical or economic infeasibility. In

[32] *Personal Administrator of Massachusetts v. Feeney,* 442 U.S. 256, 279 (1979).

[33] Section 60506(a)(1).

[34] NPRM at para. 7.

[35] NPRM at para. 8.

[36] Section 60506(a).

similar vein, the statute enumerates specific classes of protected persons including those defined by income level; race; ethnicity; color; religion; or other factors as may be determined by the Commission. The statute states clearly that its policy to "prohibit[] deployment discrimination *based on"* those enumerated classes.[37] That language indicates a prohibition to undertake actions *based on, i.e.,* to be intentionally tied to, informed by, guided by, or directed by the characteristics of the protected class with the intention of disadvantaging that class. The statute itself thus indicates an intent-based standard and any rules promulgated pursuant to the statute should follow that Congressional lead.

As noted by many comments on the *Notice of Inquiry* and as noticed by the Commission in the *NPRM,* the Supreme Court has addressed the issue of discriminatory impact vs. discriminatory intent. In *Texas Department of Housing and Community Affairs v. Inclusive Communities Project, Inc.,* the Supreme Court addressed the question of whether "disparate-impact claims are cognizable" under the Fair Housing Act (FHA).[38] The Court found that such claims can stand but established that a clear statutory mooring must exist for impact-based, as opposed to intent-based, claims. Specifically, the Court explained that disparate impact claims may be brought when the statute refers to the "*consequences of actions* and not just to the mindset of actors, and where that interpretation is consistent with the statutory purpose*."*[39] In *Inclusive Communities,* the Court focused on the relevant statute's list of enumerated prohibited actions that were supplemented by the phrase, "or otherwise make unavailable" and explained

[37] Section 60506(b)(1), 60506(c) (emphasis added).

[38] *Texas Department of Housing and Community Affairs v. Inclusive Communities Project, Inc.,* 576 U.S. 519 (2015) (*Inclusive Communities*).

[39] *Inclusive Communities,* 576 U.S. at 533 (emphasis added).

that clause to include "the consequences of an action rather than the actor's intent."[40] The Court cited other statutory provisions containing similar language, including the Age Discrimination in Employment Act.[41] Those examples include language that, like the "otherwise" clause in the FHA, provide for impact-based claims. In contrast, the IIJA does not contain similar language, thereby limiting its interpretation to include only intent based discrimination.

The Court emphasized that "showing of a statistical disparity" is not sufficient to establish a claim of discriminatory intent,[42] specifying, "policies are not contrary to the disparate-impact requirement unless they are 'artificial, arbitrary, and unnecessary barriers.'"[43] Many types of policies or legitimate business decisions can lead to disparate outcomes, but they are not "artificial, arbitrary, or unnecessary." Statistical variances do not *per se* reflect discriminatory intent. The Commission notes that under Supreme Court precedent, a "business necessity" is a defense to a discrimination claim.[44] Section 60506 includes this standard, stipulating that violations of the section may be found *only* where the provision of broadband is "technically and economically feasible"[45] and under an intent-based model, *only* where the discriminatory action was undertaken to effect an adverse impact against the protected class. The statute thus itself expressly creates an intent based, rather than an impact oriented, structure.

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[40] Specifically, that it is unlawful "[t]o refuse to sell or rent after the making of a *bona fide* offer, or to refuse to negotiate for the sale or rental of, or otherwise make unavailable or deny, a dwelling to any person because of race, color, religion, sex, familial status, or national origin." *Inclusive Communities* 576 U.S. at 533, *citing* 47 U.S.C. § 3604.

[41] *Inclusive Communities,* 576 U.S. at 532, *et seq.*

[42] *Inclusive Communities,* 576 U.S. at 540.

[43] *Inclusive Communities,* 576 U.S. at 543.

[44] NRPM at para. 21, *citing Inclusive Communities,* 576 U.S. at 531-533.

[45] Section 60506(a).

Straining the reading to incorporate an impact-based outcome would expand not only scope of liability for broadband providers but also trigger costly investigations and proceedings in which a company could be required to lay bare the underlying business strategies and motives that informed actions which ultimately led to disparate deployment. In fact, the record in this proceeding does not point to evidence that discriminatory intent based on any of the protected classes enumerated in Section 60506 has been found. Rather, the growing record as built by providers, engineers, researchers, and further illustrated by responsive Congressional action demonstrates that the overriding factor leading to disparate deployment is the cost of deploying networks as measured against the anticipated return on investment. As articulated by *Inclusive Communities,* a valid business decision may reflect "practical business choices and profit-related decisions."[46] These are the types of considerations that are envisioned explicitly as Section 60506 identifies economic and technical infeasibility as statutory limitations.

B. THE COST OF BUILDING BROADBAND NETWORKS INFORMS DEPLOYMENT DECISIONS.

The deployment of broadband networks is a capital-intensive undertaking. Numerous studies define and quantify the economic inputs of building broadband infrastructure in rural spaces.[47] A half-decade ago, economists estimated that it would cost $61 billion to deploy fiber to unserved rural locations.[48] Less than six months ago, 88.1% of NTCA members reported "cost

[46] *Inclusive Communities,* 576 U.S. at 533.

[47] *See, i.e.,* Steve Parsons and James Stegman, "Rural Broadband Economics: A Review of Rural Subsidies," CostQuest Associates (2018) (https://www.ntca.org/sites/default/files/documents/2018-07/CQA-RuralBroadbandEconomics-AReviewofRuralSubsidies_FinalV07112018.pdf) (visited Feb. 16, 2023) (CostQuest); "Future Proof: Economics of Rural Broadband," Vantage Point Solutions (May 2021) (https://www.ntca.org/sites/default/files/documents/2021-05/Future%20Proof%20--%20Economics%20of%20Rural%20Broadband%20FINAL_0.pdf;) (visited Feb. 16, 2023).

[48] Joan Engbretson, "Economists Put the Tab at $61 Billion to Bring Fiber Broadband to Rural U.S.," Benton Institute for Broadband & Society (Jul. 11, 2018), *citing* CostQuest (https://www.telecompetitor.com/economists-put-the-tab-at-61-billion-to-bring-fiber-broadband-to-rural-u-s/) (visited Feb. 20, 2023).

of deployment" as a significant barrier to widespread fiber deployment, while 55.9% reported "long loops" - which themselves are significant cost drivers - as another obstacle on the way to ubiquitous deployment;[49] these findings were consistent with survey reports conducted annually for more than a decade.[50] In a recent NTCA survey, respondents reported that the last 20% of customers are historically the hardest and most expensive to reach, and that the average initial construction cost to bring all customers up to the 100 Mbps (downstream) level of service is $30 million. Congress recognized such conditions by dedicating $42.5 billion to digital access in the Broadband, Equity, Access, and Deployment (BEAD) program of the IIJA, in addition to other funding programs housed both within this law and in various COVID relief bills.[51] It is instructive, therefore, that Section 60506 of the IIJA, which addresses digital discrimination, itself recognizes that disparate impacts may arise in the realm of broadband deployment due to technical or economic infeasibility. Commission rules should not waver from those clear Congressional exclusions.

The *NPRM* reports that many commenters concur with these observations, explaining that "broadband deployment driven by legitimate business reasons might lead to uneven deployment, and that digital discrimination should not be understood to include such conduct."[52] Factors such as economic and technical feasibility contemplate issues that are distinct from *intentional*

[49] NTCA Broadband Survey Report at 15.

[50] For access to reports from 2014-2022, please visit https://www.ntca.org/ruraliscool/survey-reports.

[51] The Coronavirus Aid, Relief and Economic Security Act (CARES Act) contained $200 million for telehealth, $100 million for a USDA Reconnect pilot program, and additional funding that states could use for broadband (Coronavirus Aid, Relief, and Economic Security Act, Pub. Law 116-136 (2020)). The Consolidated Appropriations Act of 2021 added $249.5 million for telehealth; $3.2 billion for the EBB; $1 billion for Tribal connectivity; and additional funding for other connectivity programs (Consolidated Appropriations Act of 2021, Pub. Law 116-260 (2021)). The American Rescue Plan Act featured $7.17 billion for the Emergency Connectivity Fund (American Rescue Plan Act of 2021, Pub. Law 117-2 (2021)).

[52] NPRM at para. 15 (internal citations omitted).

discriminatory policies that drive disparate impacts, and which may run afoul of antidiscrimination mandates. By way of broad analogy, in examining potential Title VI violations, the Federal Trade Commission (FTC) presents a three-prong test to determine whether a policy or practice constitutes prohibited discrimination.

1. Does the policy disproportionately affect members of a protected class?
2. Can a substantial legitimate justification for the policy be demonstrated?
3. Is there an alternative that would achieve the same objectives but with less of a discriminatory effect?[53]

NTCA submits that the "technically and economically feasible" standard set forth in Section 60506 is consistent with the second prong of the above-noted test.[54] The factors leading to (or deterring) broadband deployment, particularly those confronted by small providers serving sparsely populated rural spaces, are rooted in fundamental factors that inform rational business decisions: Is there sufficient capital to extend the network to a particular region at this time? Can a particular area be served with a particular technology platform? What sort of rights-of-way or other access must be navigated to deploy facilities? And there is the related and too-often-overlooked but essential question - can the firm operate the network successfully over time and offer services at rates that consumers can afford to adopt on an ongoing basis even after it is built? Predictable and sufficient high-cost support program are important elements in covering those costs and keeping rates affordable – but at the same time, those programs offer implicit affirmation of the capital-intensive nature of broadband deployments.

[53] "Title VI Legal Manual," Civil Rights Division, U.S. Department of Justice (https://www.justice.gov/crt/fcs/T6manual) (visited Feb. 16, 2023).

[54] NTCA clarifies that this three-prong approach is presented only as an analytical construct.

Indeed, the Commission also recognizes that factors well beyond the control of the provider may affect the ability of that firm to deploy and provide service, and seeks comment on whether digital discrimination of access "should include policies or practices by a broader range of entities than broadband providers."[55] In comments submitted recently to the Commission, NTCA cited delays arising out permitting and access to Federal lands, including environmental and historic preservation assessments that can take up to a year to complete.[56] Crossing or abutting lands administered by the Bureau of Land Management or the Forest Service can implicate delays, as well, as can access to railroad rights of way.[57] Affordable access to poles remains a critical input in the ability to deploy advanced broadband networks. These are examples of instances in which a broadband provider's ability to deploy services in a technically and economically feasible manner may be thwarted by conditions and parties beyond the control of the ISP. These illustrate the many various factors that combine to inform deployment strategies. In many instances it may be effectively impossible to deploy an integral network facility without overcoming access to Federal lands, railroad rights-of-way, or utility poles. And even in instances in which a *technical* barrier may be overcome, the alternative may be *economically* infeasible. In these instances, the disparate impacts in reaching subscribers is not rooted in discriminatory intent by the provider but rather are the result of conditions that are *wholly unrelated* to the protected class of subscribers and which inform legitimate businesses decisions.

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[55] NRPM at para. 30.

[56] *State of Competition in the Communications Marketplace: Comments of NTCA–The Rural Broadband Association,* Docket No. 22-203, at 4 (Jul. 1, 2022).

[57] *Accelerating Wireless Broadband Deployment by Removing Barriers to Infrastructure Investment; Accelerating Wireline Broadband Deployment by Removing Barriers to Infrastructure Investment: Ex Parte Presentation of NTCA–The Rural Broadband Association,* Docket Nos. 17-79, 17-84 (Oct. 2020).

Even where construction is not impeded by third-party impacts, the basic underlying expense of deployment in rural areas can be economically infeasible. As the afore-cited CostQuest report finds, the costs of delivering broadband in rural spaces can be divided into three general categories: common costs; direct maintenance and customer-related operations; and direct capital costs.[58] In rural areas, all these costs are higher, on a per-unit basis, than in more densely populated urban areas. For example, the capital investment for conduit and poles is approximately 5.6 times higher than in suburban areas, while the capital investment costs for fiber optic cable is approximately 4.2 times higher in rural than urban areas.[59] These data align with the viewpoint of Congress as articulated in the various sections of the IIJA, ranging from BEAD funding to support for low-income users through the ACP and through the "technically and economically infeasible" standard in Section 60506: Broadband deployment is expensive, access is often unaffordable, and economic and technical infeasibility are common factors affecting deployment.

C. THE REPORT OF THE WORKING GROUPS OF THE COMMISSION'S COMMUNICATIONS EQUITY AND DIVERSITY COUNCIL AFFIRMS THE ROLE OF AFFORDABILITY IN BROADBAND PARITY.

The report of the Working Groups of the Commission's Communications Equity and Diversity Council (CEDC) echo the findings presented in Section II.C., above, namely that affordability remains a critical element in broadband parity.[60] The report notes, "research also shows that income is correlated to the availability and adoption of the internet."[61] The report

[58] CostQuest at 20.

[59] CostQuest at 20.

[60] This report was published as Appendix B to the *NPRM.*

[61] NPRM at p.85 (internal citation omitted).

explains, "[s]ome studies indicate that disparities are exacerbated by the combination of neighborhood and income effects. For example, neighborhoods with high poverty rates are sometimes found to have slower broadband speeds."[62] And yet while the report presents allegations of "digital redlining," the report present neither any record of an adjudicated proceeding in which discriminatory practices aimed at protected classes were found nor evidence of disparate deployment strategies that reflect intent to harm a protected class.[63]

This underpins a critical aspect of the instant inquiry, namely, whether disparities in deployment and adoption align with "discrimination." The report explains discrimination as

> " . . . the treatment or consideration of, or making a distinction in favor of or against, a person or thing based on the group, class, or category to which that person or thing belongs rather than on individual merit. Discrimination can be the effect of some law or established practice that confers privileges on a certain class or denies privileges to a certain class because of race, age, sex, nationality, religion, or handicap."[64]

And yet disparities rooted in ISP intentions to *per se* harm protected classes are not evident. Indeed, where the report presents "Best Practices to Advance Digital Equity for State and Localities," all 13 recommendations focus on efforts to increase awareness and access among consumers and promotion of digital skills - but none propose measures that tie back to alleged *per se* discriminatory actions undertaken by providers.[65]

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[62] NPRM at p.86 (internal citations omitted).

[63] *See* NPRM at p.87 and fns.39 and 41.

[64] NPRM at p.91.

[65] NPRM at pp.99-105. The recommended best practices are: (1) Make low-cost broadband available to low-income households through government benefit programs, in combination with internet service providers' low income programs; (2) Build on the success of existing benefit programs that allow low-income households to apply a credit to internet service of their choice; (3) Raise awareness of connectivity programs for programs among eligible households; (4) Strengthen marketing and communications about available federal and state connectivity programs and other programs that target low-income and other unconnected members of a community; (5) Streamline the application process for government benefit programs referred to above; (6) Increase support and funding for organizations such as schools, nonprofits, and faith-based organizations to provide digital navigation assistance in communities they serve; (7) Fund, promote and leverage the use of digital navigators; (8) Stakeholders should

D. REGULATORY DIRECTIVES MUST NOT COMPEL ENOMICALLY OR TECHNICALLY INFEASIBLE ACTIONS.

The CEDC report explains that many factors inform business decisions of ISPs. The report enumerates the "steps to plan and design the network, construct the network, connect users, and to operate and maintain the network."[66] The CostQuest report explains, "any investment must produce a stream of benefits that are greater in present value than the stream of costs."[67] Yet certain of the inquires proposed in the *NPRM* tread alarming ground. Quoting one set of comments, the Commission asks whether it should "establish a bright line 'standard where a profit margin reduction between neighboring areas . . . does not constitute [economic] infeasibility."[68] And the Commission reconstitutes a question from the *Notice of Inquiry,* asking, "If underlying cost or geographic hurdles exist *in conjunction with demand* in an area that makes it unprofitable, how should the Commission address this situation?"[69] Both of these questions raise a concern as to whether government fiat will determine the level of returns that should justify investment by private firms.

By way of example, a beverage maker may have the technical ability to manufacture, package, and distribute its products to certain markets, but will likely undertake those efforts

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encourage Congress to create a digital public service and engagement program (*e.g.,* digital navigators), which could conduct trainings and outreach in non-adopting communities; (9) Increase device access and participation; (10) Use public-private partnerships to facilitate remote learning and close the homework gap; (11) Ensure that members of the community have safe spaces to access the internet; (12) Strengthen digital skilling efforts in underserved communities; (13) Encourage the creation of workforce development/training opportunities, focusing on historically unrepresented communities.

[66] NPRM at p.93.

[67] CostQuest at 6.

[68] NPRM at para. 36 (internal citation omitted).

[69] Notice of Inquiry at para. 24 (emphasis added).

only if the company projects sufficient demand that generates acceptable returns, thereby justifying the requisite investments. In similar vein, a broadband provider that is not bound to USF or carrier-of-last-resort obligations will assess, among other factors, the cost of providing service and the likelihood of subscription rates that will drive revenues that are sufficient to generate a sufficient return on investment. In fact, the provider's mere presence in the market would expose the firm to the costs of potential liabilities and unforeseen exogenous events. These, too, are factored into the analyses a firm will undertake before entering a market, and these are factors that arise independent of whether that segment serves members of a protected class. Accordingly, the standard should not be whether the provider can simply "break even" on its investment, or whether it is mathematically "unprofitable" on an X/Y basis.

Projected adoption rates can be tied to numerous variables. For example, the U.S. Government Accountability Office has observed "even where broadband service is available . . . an adoption gap may persist due to affordability of broadband and lack of digital skills."[70] These findings are corroborated by Congress's own actions in dedicating substantial funding to both *build* broadband networks and to *ensure affordability* through BEAD and ACP programming, respectively. As noted by the International Center for Law & Politics, ". . . the use of income as a heuristic to determine whether providers' deployment decisions are discriminatory is inherently fraught. Income level will influence consumer decisions to *adopt* broadband, which in turn affects providers' ability to *deploy* to a given area."[71] Policies such as BEAD and ACP (as well

[70] *Broadband: National Strategy Needed to Guide Federal Efforts to Reduce Digital Divide,* U.S. Government Accountability Office, GAO-22-104611 (May 31, 2022).

[71] Eric Fruits, Kristian Stout, "The Income Conundrum: Intent and Effects Analysis of Digital Discrimination," at 2, 3 ICLE Issue Brief 2022-11-14, International Center for Law & Economics (2022) (internal citation omitted) (ICLE) (emphasis in original). The report continues, "Therefore, while correlations between income and broadband adoption certainly can be found, research to date does not find evidence that – all else being equal – broadband providers *intentionally* discriminate against similarly situated groups on the basis of income, race, or other protected characteristic when it comes to broadband *access.*" ICLE at 3 (emphasis in original).

as USF programs that enable the continuing provision of reasonably comparable services) are primary players to bridge existing gaps in broadband deployment and adoption.[72] These, too, informs the Commission's inquiry as to how it might measure economic infeasibility.

Proposals that would order firms to execute beyond their normal and ordinary course of business should not be entertained. Quoting one party's filing, the Commission seeks comment on whether broadband providers should be required to "take whatever affirmative steps are necessary to make equal access economically and technically feasible."[73] NTCA submits that this suggestion runs far afield from the jurisdiction of the Commission as it seems to propose that broadband providers could be required to at least examine, if not take, steps beyond those that would be consistent with rational and everyday business decisions – and face subjective second-guessing in their efforts to do so. In fact, the mere investigation of certain opportunities, for example pursuing Federal grants or other mechanisms, implicates costs that could be ultimately borne by the company with no chance or expectation of return. This presents a classic example of an unfunded mandate – a government order to conduct business in a manner the firm would not undertake but for regulatory fiat. NTCA recognizes, as the Commission notes, that "facially neutral or even unintentional practices" can visit adverse impacts.[74] But the presence of differentiated impacts does not indicate intentionally discriminatory actions against protected

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[72] In fact, deployment, rather than adoption, is the focus of Section 60506. The statutory language aims to ensure "equal opportunity to subscribe" and prohibits "deployment discrimination," but contains no language directing actions to promote adoption. This is, indeed, a reasonable outcome. While Federal rules require such actions as advertising the availability of low-income Lifeline programs or the availability of ACP, the Commission does not instruct providers to solicit customers or establish benchmarks for subscription rates.

[73] NPRM at para. 13 (internal citation omitted).

[74] NPRM at para. 14.

classes and must not presage unfunded mandates that compel private firms to remedy problems that are not of their own creation.

Cost of deployment, as demonstrated above, remains the prevailing factor in guiding private enterprise deployment of advanced communications networks. Those costs are driven by factors beyond the control of the broadband provider, including population density; terrain; cost of materials and equipment; labor costs; and rights of way fees. Where those factors combine to not justify investment, it can hardly be placed upon the service provider to deploy without regard to whether there will be an adequate return on investment whose costs are driven by factors that the investor does not control. Rather than encourage investment, an "impact based" standard would discourage investment, as the potential liabilities created by not investing in *some* areas could repress provider incentives to upgrade and expand in *other* areas that are economically and technically feasible. This possibility, too, was recognized in *Inclusive Communities,* where the Court cautioned, "If the specter of disparate-impact litigation causes private developers to no longer construct or renovate housing units for low-income individuals, then the FHA would have undermined its own purposes as well as the free-market system."[75]

NTCA urges the Commission to not impose requirements that would intrude upon rational economic decisions – decisions that the Commission itself and other policymakers recognize as legitimate in devising mechanisms to help make the business case for investment and ongoing delivery of service where rational economics would otherwise advise against such efforts. Indeed, NTCA recognizes, as it explained earlier in these comments, that the receipt of USF or other Federal funding may trigger service obligations. But that is a wholly different circumstance than directing firms that do not take USF or other funding to undertake actions that

[75] *Inclusive Communities,* 576 U.S. at 544.

conflict with their technical and economic assessments of the relevant marketplace. The Commission seeks comment on whether "economic infeasibility should require a showing that providing service was unprofitable based on marginal cost, average cost, or some other basis?"[76] Regulatory standards that would override private investment strategies implicates a slippery slope. For example, would providers be required to justify declining opportunities to apply for grant funding or other bidding opportunities? While seemingly a far-fetched hypothetical, it in fact is surfaced in the *NPRM* as the Connecticut Office of Broadband recommended that economic feasibility should be informed by the availability of Federal funding.[77]

The prospect of the Commission inserting itself into the complex business decisions of firms is fraught with significant concerns. As described above, numerous factors, including actual costs, opportunity costs, projected returns, and alternative investment opportunities, drive decisions. The International Center for Law and Economics captures these considerations:

> There is broad consensus that "economic feasibility" here refers to profitability. More precisely, a project is economically feasible if it provides an adequate return on investment (ROI). Like all firms, broadband providers have limited resources with which to make their investments. While profitability is a necessary precondition for investment, not all profitable investments can be undertaken. Among the universe of potentially profitable projects, firms are likely to give priority to those that promise greater returns on investment relative to those with lower ROI. Thus, any evaluation of potential digital discrimination must examine not only whether a given deployment is likely to be profitable, but also *how* its expected returns compare to other investment opportunities.[78]

Infeasibility in these regards should be grounded in the determination of the provider as to whether the cost of deployment is worth the anticipated return on investment. The occurrence

[76] NPRM at para. 36.

[77] NPRM at para. 47.

[78] ICLE at 13.

of disparate deployment does not rise to discrimination if the reasons underlying the results reflect "genuine business needs;"[79] economic factors can justify uneven outcomes. In sum, and as broached by the statute in its expression of "technical and economic infeasibility," a finding of digital access discrimination *cannot be made* if the differences in deployment reflect *economic and technical* differences encountered when deploying service to the subject area.

E. AN INTENT-BASED STANDARD AND CAREFUL READING OF THE STATUTE INFORMS IMPORTANT GUIDELINES FOR IMPLEMENTATION

1. Technical Infeasibility

The Commission seeks comment on whether "technical infeasibility" should be defined as technically impossible, or "some lower bar."[80] Here, NTCA looks to the plain meaning of the word "infeasible," which conveys impracticability – but not impossibility. It may be technically *possible* to deploy facility across a wide lake or valley, but it may be *impracticable.* As with economic analyses, many factors combine to inform a provider's decision, and the sum of what is not *per se* impossible may be sufficiently far afield from normal and ordinary practices as to render it infeasible.

2. Listed Characteristics

The Commission seeks comment on whether it should expand the categories of protected classes that are enumerated in the statute. In the first part of Section 60506, the statute sets a policy to prevent digital discrimination on the bases of, "income level, race, ethnicity, color, religion, or national origin."[81] In the next sub-section, the statue enumerates income level, race,

[79] *See, Griggs v. Duke Power,* 401 U.S. 424, 432 (1971) (requiring high school diploma or meeting other criteria as conditions of employment or transfer to other plants is a legitimate business reasons if it has a connection to job and performance).

[80] NPRM at para. 36.

[81] Section 60506(3(b)(1).

and ethnicity.[82] Inasmuch as color, religion, and national origin can be subsumed into "ethnicity," the statute presents a self-contained set of protected classes. Recommendations to include such characteristics including familial status, domestic violence survivor status, homelessness and others proposed by the Commission should be declined, or at the most subject to further and more detailed data gathering and analysis before taking such steps.

3. Consumers vs. Subscribers

The Commission seeks comment on which consumers should be covered. As reflected in the *Notice of Inquiry* record, there is a range of discussion focusing on individuals; communities; subscribers; and non-subscribers. But, and herein lies the elemental answer, the statute states clearly in the opening policy statement that *"subscribers* should benefit from equal access."[83] This is distinctly different than, by way of example, language in the Communications Act addressing universal service which addresses a broader audience of "consumers."[84] The scope of the Commission's purview in this context is limited by the plain language of the statute which clearly states "subscribers," *i.e.,* those who purchase service from the provider.

4. Fees and Deposits

In addition to the legal arguments against an impact-based standard, significant policy and jurisdictional issues would be implicated, as well. The Commission cites commenters who "suggest that examples of such discriminatory effect" can be found in "unfair barriers such as credit checks, deposits, etc., when subscribing to or reestablishing service."[85] NTCA submits that

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[82] Section 60506 (c)(1), (c)(2).

[83] Section 60506(a)(1).

[84] 47 U.S.C. § 254(b)(3).

[85] NPRM at para. 63 (internal citation omitted).

these observations fail to account for strict state standards surrounding these practices. For example, many states have firm rules governing deposits for regulated telephone services, and broadband providers (and particularly when bundling broadband with voice services) often follow those same standards when undertaking credit checks or accepting deposits for service or equipment rental. State and local rules generally impose comprehensive oversight as to *when* deposits may be required, the *amount* of the deposit, and the *time* in which deposits must be refunded. These practices are employed for legitimate business reasons and are established to secure payment for services. They are not discriminatory and are based upon long-standing precedent in not only the communications industry but in public utility sectors, as well. These considerations, as well, reach questions raised by the Commission regarding whether specific practices should be considered, including, *inter alia,* those relating to infrastructure deployment, privacy and security practices, late fees, and renewal policies.[86] Here, too, the overarching consideration in an intent-based framework is whether actions were taken with the intent to discriminate against members of a protected class. Decisions relating to deployment, privacy, and other issues that are grounded in concerns for economic and technical feasibility are beyond any remedial measures that may be implicated by Section 60506.

5. Scope of Services

NTCA urges the Commission to resist recommendations to expand the statute beyond its four corners. The statute itself can only be read to address narrow instances in which long-standing and successful statutory mandates to encourage deployment and prohibit discrimination might not have reached. Accordingly, as the Commission suggests, reliance on the definition of "broadband internet access service" as provided in 47 C.F.R. 8(1)(b) is a sound and reasonable

[86] NPRM at paras. 31, 32.

approach.[87] Moreover, and again taking a clear and plain reading of the statute, Section 60506 limits itself to broadband service, only, and is cannot be read to include other services. In fact, the statute limits consideration to "broadband internet access service." At no point in Section 60506 is there any indication or mention of other types of "service."

IV. A SAFE HARBOR IS APPROPRIATE FOR PROVIDERS WHO ARE IN COMLIANCE WITH GENERAL NON-DISCRIMINATION STANDARDS; THESE PROTECTIONS SHOULD BE EXTENDED TO SIMILARLY-SITUATED PROVIDERS.

Section 60506 establishes a framework that focuses on intentional discrimination, *i.e.,* actions undertaken with specific intent to harm a protected class, as opposed to legitimate decisions that lead to disparate results. As NTCA explains above, Section 60506 should be implemented in a manner to address potential gaps not contemplated by other affirmative and preventative requirements. Accordingly, NTCA supports a safe harbor as proposed by several commenters in the *Notice of Inquiry* proceeding and which aligns with NTCA's comments there.[88] The Utah Rural Carriers define the safe harbor as a "presumption that [Eligible Telecommunications Carriers] receiving high-cost universal service support, and their ISP affiliates, provide equal access to supported services."[89] NTCA builds atop this definition by including any carrier that serves in an area with population and other characteristics substantially similar to those found in regions in which ETCs operate. As explained above, the very conditions that warrant receipt of high-cost support are the very conditions that would render providing service in that region *without* such support economically infeasible. The practical implications of

[87] *See,* NPRM at para. 27.

[88] NPRM at para. 34 (internal citations omitted).

[89] Comments of Utah Rural Carriers at 2, 3.

a safe harbor approach would in many instances relieve both providers and the Commission of costly, burdensome, and time-intensive investigations only to reveal that, in fact, economic conditions beyond the control of the provider informed decisions that led to disparate results. In fact, the Commission itself notes it often imposes requirements grounded in funding commitments, merger conditions, and USF support.[90] Providers operating pursuant to those standards should have reasonable reliance that their actions reflect economic and technical necessities.

V. CONCLUSION.

WHEREFORE and the reasons set forth above, NTCA and its member companies support and champion efforts to increase digital inclusion. Representing broadband service providers in some of the Nation's most rural and sparsely populated areas, NTCA is keenly aware of the benefits that broadband promises and the importance of ensuring the extension of those benefits to subscribers. NTCA members are obligated by numerous statutory and regulatory guidelines that ensure widespread deployment and availability of advanced communications. As NTCA members increase both locations served and the capabilities available at those locations, NTCA observes, as do numerous government and industry studies, that cost remains a key factor in broadband strategies. This aligns with the clear provisions of the Infrastructure Investment and Jobs Act, which recognizes technical and economic infeasibility. For providers, network construction and equipment costs inform deployment strategies, while affordability remains a critical element in expanding adoption. These factors can inform deployment and access outcomes.

[90] NPRM at para. 36.

The language of the statute indicates Congressional intent to employ an intent-based standard. The statute also exempts those instances in which outcomes are molded by technical and economic infeasibility. Additionally, NTCA urges the Commission to comport implementation of regulations to the guiding language of the statute, and to recognize that discriminatory intent is not present where technical and economic infeasibility guide provider decisions. Finally, NTCA supports a safe harbor for providers that comply with the many regulatory and statutory provisions that prohibit discrimination and which require deployment metrics and urges the Commission to extend that safe harbor to similarly situated companies.

Respectfully submitted,

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APPENDIX

"RURAL IMPERATIVES IN BROADBAND ADOPTION AND DIGITIAL INCLUSION"

RURAL IMPERATIVES IN BROADBAND ADOPTION AND DIGITAL INCLUSION

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ABSTRACT

Broadband is increasingly important for participation in a wide range of activities, including commerce, education, and healthcare. Data reveal varied rates of broadband adoption among different demographic groups including those defined by age, educational attainment, household income, and race. Efforts to encourage broadband adoption across demographic groups should facilitate increased participation in beneficial broadband-enabled activities. These efforts are especially important in rural areas where distance from larger metro areas and comparatively small populations can create barriers to access services that are more readily available in urban areas. Where economies of scale in rural places might not support separate, tailored adoption efforts to meet each of multiple demographics, rural providers can combine general adoption efforts with targeted outreach to specific sectors within their communities to distribute and enable more widely the benefits of broadband and digital inclusion.

I. INTRODUCTION AND SUMMARY

Broadband is recognized as a critical tool to enable participation in economic, educational, healthcare, and other opportunities.[1] This facilitation is particularly important in sparsely populated rural areas where internet connections enable users to obtain services that might otherwise be less readily available than in densely populated urban areas. The 2020 coronavirus pandemic underscored this imperative when millions of Americans were compelled suddenly to work, learn, and heal from home. As the crucial value of broadband was highlighted, critical disparities in access and adoption were illuminated. And, while "digital divide" is often defined to describe differences between rural and urban spaces, or the difference between certain rural and other rural spaces, divides exist across other lines, as well. This report will explore broadband adoption rates among various demographics; present benefits of broadband adoption within the context of various use sectors; suggest an analytical construct for promoting greater broadband adoption and digital inclusion in rural spaces. At the outset, the diversity among rural places must be noted: a popular maxim advises, "If you have seen one rural place, you have seen one rural place." Accordingly, strategies to increase rural adoption and improve digital inclusion may be best approached with the understanding that each community reflects the sum of a unique set of conditions and circumstances. These, in turn, can inform tailored strategies that while guided by general principles are adapted specifically for the region or community in which they are to be applied.

II. CURRENT OVERALL AND HOME BROADBAND ADOPTION TRENDS

A. OVERALL BROADBAND ADOPTION

1. Age

The proportion of American adults who use the internet increased from 52% in 2000 to 93% in 2020.[2] The break-out among age groups using the internet reveals that usage across all age groups has increased over the past two decades and appears to plateau at about 98% within various age groups. Adoption trends for users 65 years and older indicate consistent year-on-year growth, leaving open the expectation that adoption rates for that group will also plateau in the high-90% range.

[1] The authors thank Garry Clark, President, National Rural Economic Developers Association; Angie Dickison, Executive Director, Minnesota Office of Broadband Development; Anne Hazlett, Senior Director, Government Relations and Public Affairs, Purdue University; and Jenna Leventoff, Senior Policy Counsel, Public Knowledge, for their gracious and expert review of this paper. The conclusions herein are the authors' own and do not represent the respective opinions of the reviewers or their organizations.

[2] *Internet/Broadband Fact Sheet, Internet & Technology*, Pew Research Center (Apr. 7, 2021) (https://www.pewresearch.org/internet/fact-sheet/internet-broadband/) (visited Apr. 21, 2021) (Pew Research Center).

Table 1: Broadband Adoption by Age

Age	2000	2010	2020
18-29	70%	92%	99%
30-49	61%	85%	98%
50-64	46%	74%	96%
65+	14%	43%	75%

Data Source: Pew Research Center[3]

2. Educational Attainment

Adoption increases in direct correlation to higher levels of educational attainment. Educational attainment is measured across several categories: less than high school graduate; high school graduate; some college; college graduate. Certain of these trends may reflect correlations between education and income, *i.e.,* to the extent higher educational attainment leads to higher levels of income, prospective users with higher levels of education may face lower barriers of affordability. For purposes of the instant discussion, however, the influence of educational attainment on broadband adoption is accepted at face value without an analysis of the specific reasons underlying those impacts.

Table 2: Broadband Adoption by Educational Attainment

Education	2000	2010	2019
Less than high school graduate	19%	41%	71%
High school graduate	40%	68%	84%
Some college	67%	87%	95%
College graduate	78%	93%	98%

Data Source: Pew Research Center

3. Household Income

Whereas "wealth" refers to the cumulative assets of an individual, income refers to money received by a person from private or government sources in the form of wages, salary, or assistance. Income can be expected to correlate to affordability, which remains a barrier to

[3] *Id.,* fn. 2.

adoption for low-income prospective users.[4] Moreover, income correlates to educational attainment, with income generally increasing alongside educational attainment.[5]

Table 3: Broadband Adoption by Household Income

Income	2000	2010	2021
Less than $30,000	34%	61%	86%
$30,000-$49,999	58%	81%	91%
$50,000-$74,999	72%	88%	98%
$75,000+	81%	95%	99%

Data Source: Pew Research Center

4. Race

Identifying broadband adoption rates measured by race are important as efforts to promote digital inclusion endeavor to narrow gaps not only among adopters and non-adopters but also to equalize adoption rates across different communities. Notably, data indicate that disparities among measured groups has narrowed markedly over the past 20 years. Accordingly, whereas (i) the difference in the lowest and highest groups measured by educational attainment is 27 percentage points (see Table 2, above), and (ii) the difference between the highest and lowest points of measured income groups is 13 percentage points (see Table 3, above), (iii) differences between three race-based measures are 2 percentage points per division, for an overall 4

[4] Affordability has been cited as prevailing barrier to broadband adoption. A 2010 FCC report cited 36% of survey respondents identifying monthly cost as the reason for non-adoption. John P. Horrigan, *Broadband Adoption and Use in America: OBI Working Paper Series No. 1*, Federal Communications Commission, at 30 (2010) (https://transition.fcc.gov/national-broadband-plan/broadband-adoption-in-america-paper.pdf) (visited Aug. 5, 2021). A study conducted several years later revealed a corollary conclusion, reporting that approximately two-thirds of non-adopters cited non-price barriers to adoption. *See,* Octavian Carare, Chris McGovern, Raquel Noriega, and Jay Schwarz, *The Willingness to Pay for Broadband of Non-Adopters in the U.S.: Estimates from a Multi-State Survey*, Information Economics and Policy (2015) (https://www.sciencedirect.com/science/article/abs/pii/S0167624514000523) (visited Aug. 5, 2021). *See, also, Emergency Broadband Benefit Program: Report and Order,* Federal Communications Commission, Docket No. 20-445, FCC 21-29, at paras. 1-3 (2021) (citing affordability, generally, as a concern during the COVID-19 pandemic). The perceived impact of income on adoption reflects slightly uneven, yet notable, trends. While the $30,000-$49,999 income bracket shows some signs of tapering, dipping slightly from 93% in 2019 to 91% in 2020, the lowest measured income bracket of less than $30,000 has, with the exception of decline between 2007 and 2008, increased steadily year-over-year. This may reflect impacts of the initial period of the Great Recession (2007-2010), during which job declines affecting lower-wage sectors may have affected broadband affordability. During that period, employment losses were registered in several categories including sales and office occupations (-7.5%); natural resources, construction, and maintenance (-17%); and production, transportation, and material moving (-12%). *See,* "Great Recession, Great Recovery? Trends from the Current Population Survey," Monthly Labor Review, U.S. Bureau of Labor Statistics (Apr. 2018) (https://www.bls.gov/opub/mlr/2018/article/great-recession-great-recovery.htm) (visited Aug. 3, 2021). Usage in the higher income brackets increased an average of 2.66% during these periods.

[5] *See, e.g., Education and Lifetime Earnings,* Research, Statistics & Policy Analysis, Office of Retirement Policy, U.S. Social Security Administration (Nov. 2015) (https://www.ssa.gov/policy/docs/research-summaries/education-earnings.html) (visited Aug. 03, 2021).

percentage point difference between the highest and lowest group (see Table, 4, below). However, and as noted below, these gaps broaden when examining home broadband adoption (please see section II.B.4, below).

Table 4: Broadband Adoption by Race

Race	2000	2010	2021
Black	38%	68%	91%
Hispanic	*Not available*	71%	95%
White	53%	78%	93%

Data Source: Pew Research Center

Overall, adoption rates among surveyed races continues to increase. Adoption rates for Black Americans dipped from 87% to 85% from 2018 to 2019, but then recovered to 91% in 2021; similarly, adoption rates for Hispanic Americans declined from 88% in 2018 to 86% in 2019 but rebounded to 95% in 2021. Adoption rates for White Americans during that period increased at a modest rate, revealing a two-percentage point increase from 2018 to 2019 and a one percentage point increase from 2019 to 2021. Adoption gains for Hispanic Americans were highest over the past decade, increasing 24 percentage points; rates for Black Americans during the past decade effectively mirrored this trend, recording an increase of 23 percentage points.

B. HOME BROADBAND ADOPTION

Home broadband adoption rates are different across all categories (age, education, income, and race) than overall broadband adoption rates. These data are important because home broadband connections typically provide more robust and reliable connectivity than mobile wireless connections, thereby supporting more effectively such applications as distance education, telework, and telehealth. However, while the cumulative data of each demographic is different, most of the relative trends within respective demographics follow consistent paths. For example, where the total adoption rate for a particular income level may differ between "home" and "all broadband" adoption, higher income users in both categories will adopt at higher rates than lower income users.

1. Age

Table 5: Home Broadband Adoption by Age

Age	2000	2010	2020
18-29	1%	76%	74%
30-49	1%	71%	82%
50-64	0	59%	79%
65+	*Not available*	21%	62%

Data Source: Pew Research Center

2. Educational Attainment

Table 6: Home Broadband Adoption by Educational Attainment

Education	2000	2010	2019
Less than high school	*Not available*	26%	46%
High school graduate	1%	41%	59%
Some college	0	73%	77%
College graduate	1%	82%	93%

Data Source: Pew Research Center

3. Household Income

Table 7: Home Broadband Adoption by Household Income

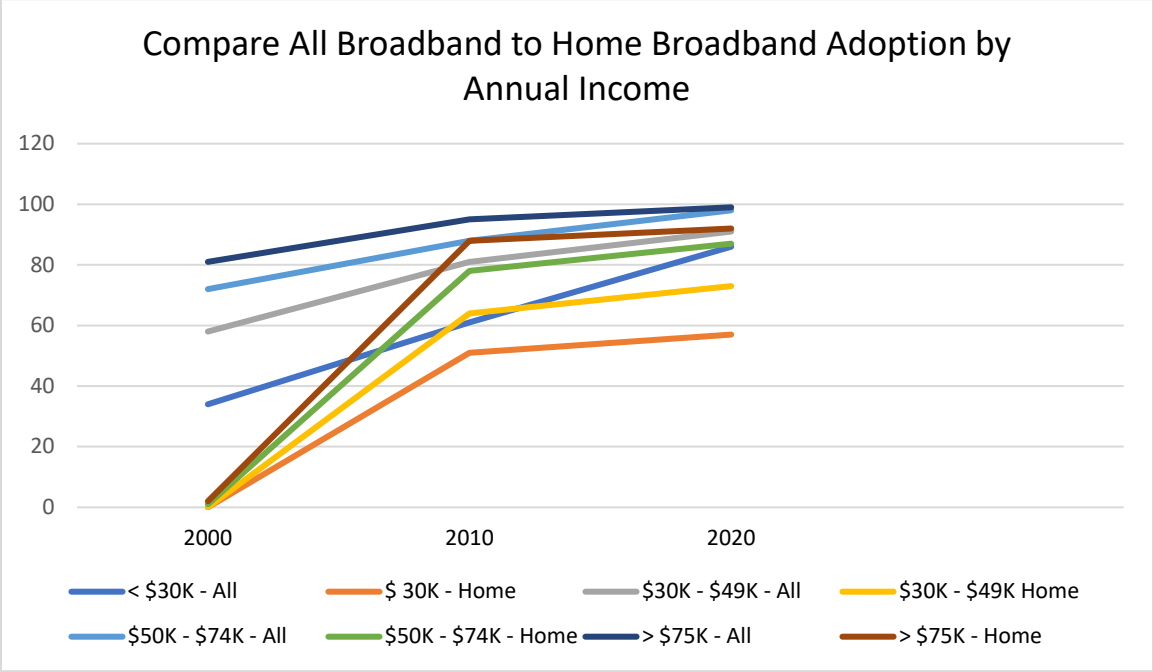
Income	2000	2010	2020
Less than $30,000	0	51%	57%
$30,000-$49,999	0	64%	73%
$50,000-$74,999	1%	78%	87%
$75,000+	2%	88%	92%

Data Source: Pew Research Center

Overall, home broadband adoption rates reveal large rates of growth from 2000 to 2010 but smaller rates of growth from 2010 to 2020. Between 2010-2020, home broadband adoption increased 9% for households earning $30,000-$75,000 annually, while home broadband adoption increased 6% in households earning less than $30,000 per year. During that same period, home broadband adoption increased 4% among households earning $75,000 or more annually. However, while the rate of growth is steeper among lower income groups, total home broadband adoption rates tend to correspond to income, *i.e.,* higher total adoption rates in higher income tiers. Overall, and as illustrated below, home broadband adoption trails all broadband adoption in each income tier. These may reflect several factors, including perceived value (subscribers who perceive that a mobile broadband connection is sufficient may rely solely on mobile subscriptions to the effective exclusion of home subscriptions) and affordability (where mobile wireless connections are less expensive than home broadband connectivity).[6]

[6] As noted above, while survey data over two decades indicate correlations between educational attainment and broadband adoption, the *cause* of those effects is less known. Various reasons have been proposed, including (a) higher income correlating to higher educational attainment or (b) suggestions that technology adoption rates are higher among groups with higher levels of educational attainment irrespective of income. It is notable, however, that the pace of adoption in groups with lower total rates of adoption is outpacing the pace of adoption in categories with higher home broadband adoption. This may reflect the perceived normalization of technology and the integration of broadband enabled applications into more aspects of daily life.

Figure 1: Compare All Broadband to Home Broadband Adoption by Income



Data Source: Pew Research Center

4. Race

Table 8. Home Broadband Adoption by Race

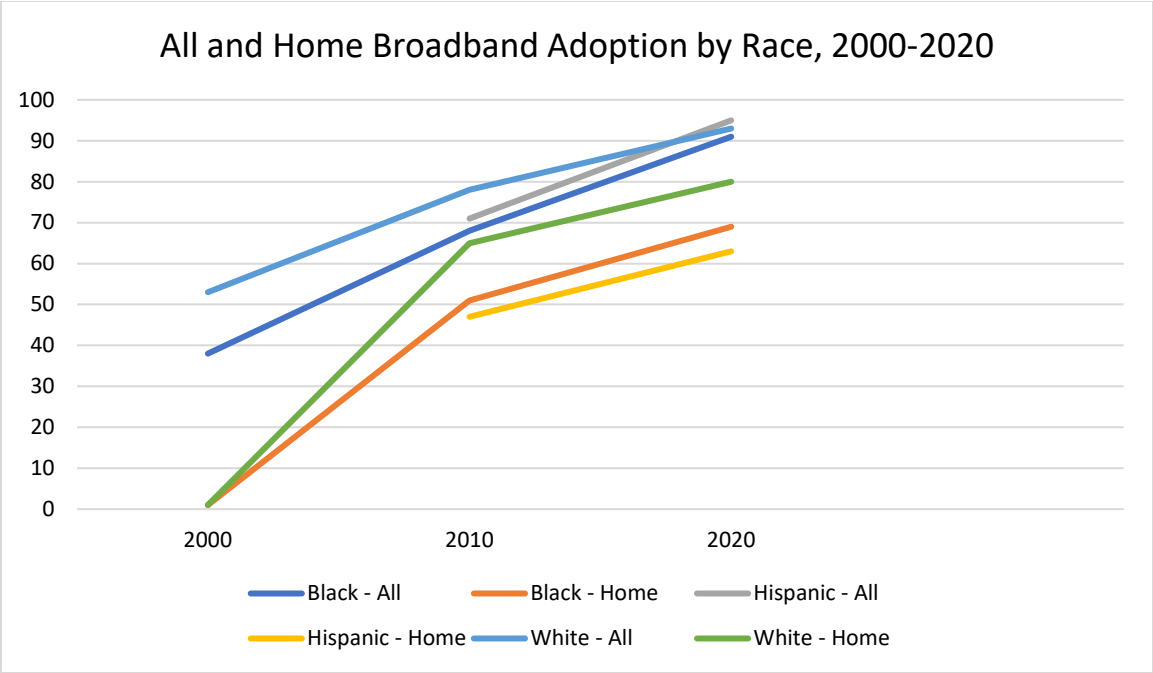
Race	2000	2010	2020
Black	1%	51%	69%
Hispanic	*Not available*	47%	63%
White	1%	65%	80%

Data Source: Pew Research Center

While adoption for the three measured race groups increased at different rates between 2010-2020, the rate of increase within each group was mostly consistent for both "all broadband" and "home broadband" adoption. Specifically, for Black Americans during this period, "all broadband" adoption increased 23% while "home broadband" adoption increased 18%; for Hispanic Americans, "all broadband adoption between 2010-2020 increased 24%, while "home broadband" adoption increased 26%; and, for White Americans, "all broadband" adoption and "home broadband" adoption increased 15% in both categories. Adoption rates measured among racial demographics demonstrate consistent increases across all groups with plateaus for "all" broadband converging at approximately the same point (above 90%). Home broadband adoption rates appear to be increasing at a consistent pace but with significant room for growth.

Household income and educational attainment have been found to found to exert positive impacts on broadband adoption rates across all race groups.[7]

Figure 2: Compare All Broadband to Home Broadband Adoption by Race



Data Source: Pew Research Center

C. SECTION CONCLUSIONS AND OBSERVATIONS

Age-related adoption rates appear to be converging as year-over-year data show growth for "all" broadband plateauing in the mid-90% range and above. Age-related adoption rates for home broadband are appearing to converge, as well, as year-over-year data show growth for all groups slowing to plateau at similar points, *i.e.,* mid-90% and above. Moreover, strong adoption rates can be anticipated for the 65+ years old category in future years, as it is not anticipated that current 50-64 years old users, who reflect adoption rates at 96%, will stop using broadband when they reach 65 years of age. In contrast, income and educational attainment continue to present as dominant factors in broadband adoption. It is not clear, however, whether income and educational attainment affect broadband adoption independently or whether, as noted above, ties between those two factors (specifically, higher educational attainment generally leading to higher income) combine to cause similarly occurring increased rates of adoption.[8]

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[7] *See,* Jon P Gant, Nicole E. Turner-Lee, Ying Li, and, Joseph S. Miller, *National Minority Broadband and Adoption: Comparative Trends in Adoption, Acceptance and Use,* Joint Center for Political and Economic Studies, at 42 (Feb. 2010) (http://www.broadbandillinois.org/uploads/cms/documents/mti_broadband_report_web.pdf) (visited Aug. 5, 2021).

[8] As noted above, a higher level of educational attainment generally leads to higher income. *See,* fn. 6, *supra.* Accordingly, the question of *why* educational attainment affects broadband adoption could be posed to ask (a) whether educational attainment affects broadband adoption because educational attainment affects income, or (b)

Overall, income remains an important factor in broadband adoption. Congress recognized this by establishing the Emergency Broadband Benefit program (EBB),[9] which is administered by the Federal Communications Commission (FCC) and directs participating internet service providers (ISPs) to provide a monthly discount of up to $50.00 per month (up to $75.00 on Tribal lands) for an internet service offering and associated equipment. The EBB also enables participating providers to receive a single reimbursement of up to $100.00 for certain eligible end-user equipment, including a laptop, desktop computer, or tablet.[10] Eligible households are permitted to combine EBB benefits with Lifeline Program benefits; the Federal Universal Service Fund (USF) Lifeline program provides discounts of up to $9.25 per month for eligible customers (up to $34.25 on Tribal lands). Although the EBB was promulgated specifically to address affordability shortfalls in the wake of the COVID-19 pandemic, it may indicate a Congressional view that the standard Lifeline discount (which is based upon a long-standing voice subsidy) is insufficient to bridge the affordability gap when it comes to broadband.[11] High enrollment rates for the EBB may be further evidence that affordability remains a formidable barrier to broadband adoption.[12] In August 2021, the U.S. Senate passed a major infrastructure bill that included a modified permanent form of the EBB, specifically, a $30.00 monthly low-income broadband benefit (up to $75.00 for Tribal areas).[13] While the bill also maintains the device subsidy (reflecting concerns that device affordability has been cited as a factor in broadband adoption),

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whether users with higher educational attainment adopt at higher rates for non-income-based reasons. Stated differently, are adoption rates for college graduates earning $50,000-$74,000 annually higher than non-college graduates earning at similar levels, and if so, why? A recent report explains that prior studies incorrectly "conflat[ed] wealth and educational attainment." In contrast, alternative perspectives suggest that educational attainment may correlate to more favorable tendencies to adopt new technology, generally. *See, generally,* Bryan A. Mann, William C. Smith, and David P. Baker, *Schooling Attainment's Influence on Internet Adoption: Education's Role in the Cross-National Development of the Mass Media Knowledge Gap*, FIRE: FORUM FOR INTERNATIONAL RESEARCH IN EDUCATION, Vol. 3, No. 3, at 47 (2016) (Mann, *et al*.). In that view, while higher education attainment can be demonstrated to lead, on average, to higher income, higher broadband adoption rates among more highly educated groups may relate to factors other than higher income. Mann, *et al.* at 51.

[9] Consolidated Appropriations Act, 2021, Pub. L. No. 116-260, 134 Stat. 1182 (2020), *available at* https://www.congress.gov/bill/116th-congress/house-bill/133/text (Consolidated Appropriations Act). The EBB was implemented by the Federal Communications Commission. *Emergency Broadband Benefit Program: Report and Order,* Federal Communications Commission, Docket No. 20-445, FCC 21-29 (2021).

[10] Consolidated Appropriations Act § 904 *et seq.*

[11] Combined with EBB benefits, participants can obtain a nearly $60.00 per month discount off broadband service, with users on Tribal lands eligible to receive nearly $110.00 in monthly discounts.

[12] The FCC announced in late June 2021 that more than 3 million households had been enrolled since mid-May. "FCC Announces Release of Regional Emergency Broadband Benefit Program Data," FCC News (Jun. 29, 2021) (https://docs.fcc.gov/public/attachments/DOC-373674A1.pdf) (visited Aug. 3, 2021). Areas served by small, locally operated ISPs were identified as leaders in enrolling eligible customers. *See,* Issie Lapowsky, *The FCC's Emergency Internet Discounts Are Leaving Millions Behind,* Protocol (Jul. 21, 2021) (https://www.protocol.com/policy/ebb-enrollment) (visited Aug. 3, 2021).

[13] Infrastructure Investment and Jobs Act, Title 5-Broadband Affordability, H.R. 3684, 117th Cong. (2021). As of the publication of this paper, the bill has not been voted by the House of Representatives.

recent surveys indicate that only 6% of non-home broadband adopters cite the cost of a computer as a primary reason for not adopting.[14]

III. EXPLORING THE BENEFITS OF BROADER DIGITAL INCLUSION

A. SOCIAL DETERMINANTS OF HEALTH

Notwithstanding increased broadband adoption in the various demographics presented above, the goal of a sustained digital inclusive community is a continuous pursuit. The imperative to surmount disparities in broadband adoption is underscored by the increasing reliance upon broadband for economic, educational, and health care opportunities. While greater broadband adoption should not be expected to resolve all disparities across those sectors, successful efforts to increase broadband adoption in rural areas and reduce categorical gaps should facilitate gains in economic, educational, healthcare, and other areas. Moreover, while those advantages are increasingly measurable through empirical data, broader analytical constructs offer a useful framework in which to consider the growing need for connectivity. Digital literacies and internet connectivity have been identified within the context of Social Determinants of Health, or SDOH. The U.S. Department of Health and Human Services (HHS) defines SDOH as "conditions in the places where people are born, live, learn, work, play, worship, and age that affect a wide range of health and quality-of life-risks and outcomes."[15] HHS groups SDOH into several broad categories, including Economic Stability; Education Access and Quality; Health Care Access and Quality; Neighborhood and Built Environment; and Social and Community Context.[16] While these categories overlap such sectors as economic activity, education, and healthcare, the novelty of SDOH is that it proposes a direct link between seemingly non-health sectors (*i.e.,* education or economic stability) and physical and mental health.

Overall, the shift to increased use of broadband (in both urban and rural spaces) to support remote interactions for work, school, and medical treatment during the COVID-19 pandemic is expected to result in a "new equilibrium" of higher broadband usage and reliance going forward. The COVID-19 pandemic was a catalyst for broadband engagement and offers instructive examples of how broadband is engaged actively and effectively when it is available. To illustrate the growing demand for broadband, in less than a decade since the FCC first reported these data in 2012, the average broadband speed increased 35% annually. In just the last two years (2017-2019), average broadband speeds increased 54% annually, with an average speed in 2019 of 146.1

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[14] *See,* Monica Anderson, *Mobile Technology and Home Broadband 2019,* Pew Research Center (Jun. 13, 2019) (https://www.pewresearch.org/internet/2019/06/13/mobile-technology-and-home-broadband-2019/) (visited Aug. 24, 2021). In 2015, 43% of non-home broadband adopters cited cost as the primary reason for not subscribing to home broadband service. In 2019, that percentage decreased to 27%, with 21% citing the monthly subscription rates and 6% citing the cost of a computer.

[15] *Healthy People 2030*, U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion (https://health.gov/healthypeople/objectives-and-data/social-determinants-health) (visited Jul. 28, 2021).

[16] *Id.*

Mbps.[17] CISCO predicts that in less than two years, 92% of the North American population will be online.[18] And, these increases are not limited to downstream usage: OpenVault reports that upstream data usage increased 63% between December 2019 and December 2020.[6] While certain of these gains may reflect increased demand during the COVID-19 pandemic, numerous reports indicate that post-COVID-19 demand for broadband will exceed pre-pandemic levels.

B. SECTOR-SPECIFIC USE CASES OF BROADBAND

1. Education

Several sectors can be explored to demonstrate the value of broadband in rural spaces. It must be noted that the following discussion is not intended to imply that these sectors exclusive to other activities; for example, the increasing incorporation of broadband in agriculture presents unique opportunities.[19] Rather, the following discussion focuses on services that are expected to be of interest to the largest proportion of rural users.

COVID-19-related school closures affected 55 million K-12 students across the United States. While the prevailing expectation and goal is to bring students back to in-person learning, it is anticipated that the COVID-19 experience has enlightened educators, parents, and students to opportunities in distance and remote education. Increased use of broadband capabilities for in-school and outside-school assignments is expected to continue.[20] Moreover, the benefits of broadband are not limited to supporting distance education during disruptive times. Rather, broadband access has been demonstrated as a factor in student success across a variety of settings.

A Michigan State University study explored the relationship between connectivity and middle and high school students' performance on standardized tests and school subject areas. Students with home internet access scored higher on the SAT and PSAT than students with only mobile cell phone access as well as those with no access. [21] Notably, these results controlled for demographic factors. The report explains:

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[17] *Tenth Measuring Broadband America: Fixed Broadband Report,* Office of Engineering and Technology, Federal Communications Commission (Jan. 4, 2021) (https://www.fcc.gov/reports- research/reports/measuring-broadband-america/measuring-fixed-broadband-tenth-report) (visited Jul. 12,2021)

[18] *Cisco Annual Internet Report (2018-2023)*, Cisco, at 8 (updated Mar. 9, 2020) (https://www.cisco.com/c/en/us/solutions/collateral/executive-perspectives/annual-internet-report/white- paper-c11-741490.pdf) (visited Jul. 12, 2021).

[19] *See,* Joshua Seidemann, *From Fiber to Field: The Role of Rural Broadband in Emerging Agricultural Technology*, Smart Rural Community, NTCA–The Rural Broadband Association (2021) (https://www.ntca.org/sites/default/files/documents/2021-07/06.14.21%20SRC%20Ag%20Tech%20Final.pdf) (visited Aug. 3, 2021).

[20] *The Evolution of Distance Education in 2020*, School of Education and Human Sciences, University of Kansas (Sep. 17, 2020) (https://educationonline.ku.edu/community/distance-education-evolution-in-2020) (visited Jul. 12, 2021).

[21] Keith N. Hampton, Laleah Fernandez, Craig T. Robertson, Johannes M. Bauer, *Broadband and Student Performance Gaps*, Quello Center, Michigan State University, at 35 (2020) (https://quello.msu.edu/wp-content/uploads/2020/03/Broadband_Gap_Quello_Report_MSU.pdf) (visited Jul. 6, 2021) (Quello). On average,

> The negative relationship between having to use a cell phone for home Internet access and SAT/PSAT performance was larger than the deficit in percentile rank experienced by students from low-income families relative to higher-income families or that experienced by racial and ethnic minorities relative to white students, both of which, independently, tend to rank 3-4 percentiles lower than their peers.[22]

Similar data were reported in regarding to grade point averages (GPA) for English, social sciences, mathematics, and science, with average GPA .19 point higher for students with home broadband access than for students with no home access or only mobile wireless access.[23] These data complement findings from prior studies reporting that youth who live in areas with broadband are found to have earned higher scores on college entrance exams such as the SAT or ACT.[24] Moreover, *lack of broadband* has been identified as compounding difficulties for students who have preexisting limited avenues to "elite academic institutions."[25]

Distance education is also engaged at the post-secondary level. U.S. Department of Education data show that in 2018, nearly seven million students were enrolled at degree-granting post-secondary schools in the United States. Of these students, more than one-third (35.3%) engaged distance education; 16.6% were engaged exclusively in distance education. Graduate course work was engaged more than twice as much as undergraduate work (30.7% vs. 14%).[26] These data, as well, demonstrate that where available, significant populations of students take advantage of broadband. The higher rates of distance education engagement for graduate students may reflect opportunities for students to take courses at times that fit personal or work schedules, thereby enabling students to simultaneously work and attend school.

2. Economic Activity and Telework

Broadband remains critical for economic advancement and stability. In the midst of the COVID-19 pandemic (December 2020), it was determined that more than half of middle-income and upper-income workers could work from home. More than 80% of those workers reported using video or online conferencing services to connect to co-workers, with nearly

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students with home internet access placed eight (8) percentile points higher than students with no home broadband or only mobile wireless broadband.

[22] Quello, at 36.

[23] Quello, at 33.

[24] Lisa J. Dettling, Sarena F. Goodman, Jonathan Smith, *Every Little Bit Counts: The Impact of High-Speed Internet on the Transition to College*, Finance and Economics Discussion Series, Divisions of Research & Statistics and Monetary Affairs, Federal Reserve Board, Washington, DC, at 27 (2015-108).

[25] *Id.*

[26] *Fast Facts: Distance Learning*, National Center for Education Statistics, U.S. Department of Education (2019) (https://nces.ed.gov/fastfacts/display.asp?id=80) (visited Jul. 29, 2021).

two-thirds finding those platforms to be good substitutes for in-person meetings.[27] The range of industries that provide telework opportunities is expansive and is fueling a new-found outlook of "work anywhere, from anywhere," a maxim that bodes well for rural spaces with robust broadband availability as workers consider new residential opportunities.[28] Telework is expected to experience evolutionary increases post-COVID-19 in both government and private sectors.[29] In addition to supporting the ability to work remotely, broadband is also an important component in job searches. Across all income and educational levels, people have utilized online resources when researching new employment opportunities.[30]

Table 9: Demographics of Online Job Seeking within Income and Educational Levels

	Looked online for job information	Applied for a job online
Less than $30,000	50%	43%
$30,000 -$74,000	57%	50%
$75,000 or more	62%	51%
Less than high school	32%	24%
High school grad	44%	38%
Some college	60%	51%
College +	65%	56%

Data source: Pew Research

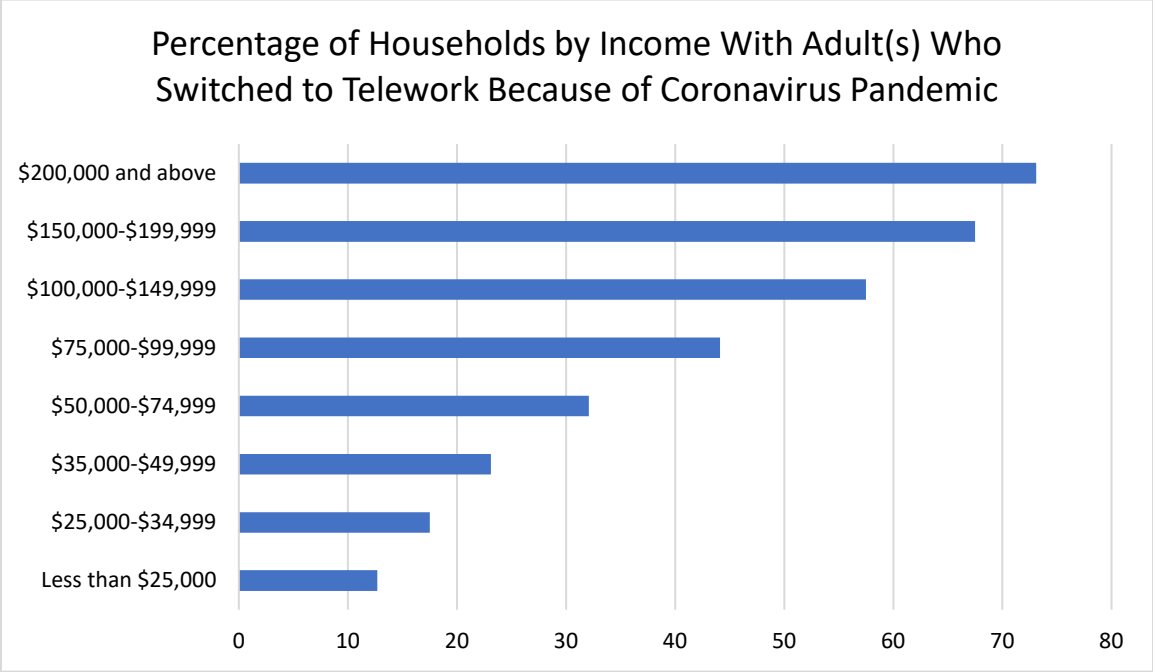
[27] Jim Parker, Julianna Menasce Horowitz, and Rachel Minkn, *How the Coronavirus Outbreak Has – and Hasn't – Changed the Way Americans Work*, Pew Research Center (Dec. 9, 2020) (https://www.pewresearch.org/social-trends/2020/12/09/how-the-coronavirus-outbreak-has-and-hasnt- changed-the-way-americans-work/) (visited Jul. 12, 2021).

[28] *See,* Chip Cutter and Catherine Dill, *Remote Work is the New Signing Bonus,* Wall Street Journal (Jun. 26, 2021) (https://www.wsj.com/articles/remote-work-is-the-new-signing-bonus-11624680029) (visited Jul. 8, 2021); Chip Cutter, *Many Companies Want Remote Workers – Except from Colorado*, Wall Street Journal (Jun. 17, 2021) (https://www.wsj.com/articles/many-companies-want-remote- workersexcept-from-colorado-11623937649) (visited Jul. 8, 2021); *Remote Work Has Two-Thirds of Americans Considering Moving from Cities to the Country*, NextGov.com (Oct. 27,2020) (https://www.nextgov.com/cio-briefing/2020/10/remote-work-has-two-thirds-americans-considering-moving-cities-country/169598/) (visited Jul. 8, 2021).

[29] *See, e.g.,* Natalie Alms, *OPM Official: No Going Back to Pre-COVID Status Quo*, Federal ComputerWeek (Mar. 24, 2021) (https://fcw.com/articles/2021/03/24/opm-post-covid-no-going-back.aspx) (visited Jul. 6, 2021); Susan Lund, Anu Madgavkar, James Manyika, Sven Smit, Kweilin Ellingrud, Mary Meaney, and Olivia Robinson, *The Future of Work After COVID-19*, McKinsey Global Institute (Feb. 18, 2021) (https://www.mckinsey.com/featured-insights/future-of-work/the-future-of-work-after-covid-19) (visited Jul. 6, 2021).

[30] Aaron Smith, *The Internet and Job Seeking*, Pew Research Center (Nov. 9, 2015) (https://www.pewresearch.org/internet/2015/11/19/1-the-internet-and-job-seeking/) (visited Aug. 6, 2021).

Figure 3: Shift to Telework During Pandemic by Income



Data Source: U.S. Census Bureau[31]

Opportunities afforded by telework in rural spaces is evident in the success of TeleworksUSA, a regional effort across 23 counties in Kentucky that has generated more than $76 million in new wage activity and connected participants to more than 3,400 jobs.[32] Employers include online retail services such as Amazon and Wayfair; hospitality industry positions including Hilton; and CX (consumer experience) specialist Concentrix.[33] More than 50% of teleworkers nationally work in management, business, science, and the arts, revealing an expansive field of telework opportunities in a variety of fields.[34] Overall, telework trends can be expected to increase. The U.S. Bureau of Labor Statistics (BLS) found that telework doubled in 2020.[35] BLS recently amended the Current Population Survey (CPS), which is undertaken jointly by BLS and the

[31] *Household Pulse Survey Data Tables*, U.S. Census Bureau (https://www.census.gov/programs-surveys/household-pulse-survey/data.html) (visited Aug. 6, 2021). Estimates produced using public use microdata files.

[32] *See,* TeleworksUSA website (https://www.teleworksusa.com/work/#employers) (visited Jul. 29, 2021).

[33] *Id.*

[34] Roberto Gallardo, *Who is Remote Working in the U.S.?*, Center for Regional Development, Purdue University (Mar. 16, 2020) (https://pcrd.purdue.edu/who-is-remote-working-in-the-u-s/) (visited Aug. 5, 2021).

[35] *Percent of Employed Persons Working at Home on Days Worked Nearly Doubled in 2020*, U.S. Bureau of Labor Statistics (Jul. 22, 2021) (www.bls.gov) (visited Jul. 27, 2020).

Census Bureau, to address the impact of COVID-19 and telework on the labor market.[36] And, as early as April 2020, the Brookings Institute predicted that telecommuting would increase post-COVID-19.[37] Harvard Business School examined this question several months later and reported, among other findings, that telework will remain more common at many companies after the pandemic ends.[38] And, Government Technology closed out the year advising employer strategies for successful telework solutions.[39] Collectively, these reports support the proposition that broadband availability supports employment opportunities across a range of professions and in a variety of places, and that where available, workers and employers have taken advantage of these capabilities to support employment options in rural areas.

3. Health Care

Health care has been identified as a sector in which positive returns arising out of broadband-enabled engagement can be measured comprehensively and across a wide range of users. The benefits of telehealth, and therefore the benefits of increasing underlying broadband adoption and digital literacy, are particularly promising and important in rural spaces. On average, rural residents are older and face higher rates of chronic and acute conditions than their urban counterparts. According to the Centers for Disease Control and Prevention (CDC), rural Americans are at a greater risk of death from heart disease, cancer, unintentional injury, chronic lower respiratory disease, and stroke than their urban counterparts.[40] When combined with distance from specialists and other socioeconomic factors, rural residents may be less able or less likely to obtain regular treatment for chronic conditions. By way of example, the CDC reports that COPD (chronic obstructive pulmonary disease) is more common in rural areas than urban areas.[41] Health disparities exist among minority populations, as well. Mortality rates attributable to coronary heart disease (CHD) are higher among black women and men 45-74 years old as compared to women and men in the same age bracket of other races.[42] Significant disparities are

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[36] *Supplemental Data Measuring the Effects of the Coronavirus (COVID-19) Pandemic on the Labor Market*, U.S. Bureau of Labor Statistics (Jul 14, 2021) (https://www.bls.gov/cps/effects-of-the-coronavirus-covid-19-pandemic.htm) (visited Jul. 27, 2021).

[37] Katherine Guyot and Isabel V. Sawhill, *Telecommuting Will Likely Continue Long After the Pandemic,* Brookings (Apr. 6, 2020) (https://www.brookings.edu/blog/up-front/2020/04/06/telecommuting-will-likely-continue-long-after-the-pandemic/) (visited Jul. 27, 2021).

[38] Christopher Stanton, Zoe Cullen, and Michael Luca, *How Much Will Remote Work Continue After the Pandemic?*, Working Knowledge, Harvard Business School (Aug. 24, 2020) (https://hbswk.hbs.edu/item/how-much-will-remote-work-continue-after-the-pandemic) (visited Jul. 27, 2020).

[39] Daniel Castro, *7 Ways to Make Remote Work Successful Beyond COVID-19*, Government Technology (Dec. 2020) (https://www.govtech.com/opinion/7-ways-to-make-remote-work-successful-beyond-covid-19.html) (visited Jul. 27, 2020).

[40] *See, About Rural Health*, Centers for Disease Control and Prevention (Aug. 2, 2017) (https://www.cdc.gov/ruralhealth/about.html) (visited Jul. 27, 2021).

[41] *Rural Health, COPD*, Centers for Disease Control and Prevention (https://www.cdc.gov/ruralhealth/copd/index.html) (visited Aug. 26, 2020).

[42] *Fact Sheet: CDC Health Disparities and Inequalities Report*, Centers for Disease Control, at 3 (2011) (https://www.cdc.gov/minorityhealth/chdir/2011/factsheets/CHDStroke.pdf) (visited Aug. 3, 2021). Among black

also seen among chronic conditions such as diabetes and hypertension/hypertension control.[43] While it is beyond the scope of this paper to investigate the root cause of these disparities, the combined rural and race-based data sets present a positive value proposition for increased health care intervention in rural places across the spectrum of demographic groups. For example, the CDC explains that higher rural COPD rates are due, in part, to "less access to smoking cessation programs" and the fact that "[r]ural residents are also likely to be uninsured and have higher poverty levels, which may lead to less access to early diagnosis and treatment."[44] Increased digital inclusion should enable greater opportunities for more users to engage telehealth for both acute and chronic conditions. Broadband access has also been cited as a tool in combatting substance abuse and the opioid crisis.[45] And the effectiveness of mental health services via telehealth warrants consideration for rural spaces that lack sufficient access to mental health professionals.[46]

The promise of positive returns for telehealth engagement is indicated by trends observed during the COVID-19 pandemic, which revealed that when available, patients and physicians engage telemedicine opportunities. In 1Q20, telehealth encounters increased 50% over the same period in 2019.[47] In addition to physician and patient receptiveness, regulations and health industry policies affect adoption. During the COVID-19 pandemic, several states waived licensure requirements and permitted out-of-state doctors to treat patients across state lines.[48] Federal

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women, the CHD mortality rate before age 75 is 37.9% while the rate for white women is 19.4%; among black men, the CHD mortality rate before age 75 is 61.5% as compared to 41.5% for white men.

[43] *Id.*

[44] *Urban-Rural Differences in COPD Burden*, Chronic Obstructive Pulmonary Disease (COPD), Centers for Disease Control and Prevention (https://www.cdc.gov/copd/features/copd-urban-rural-differences.html#:~:text=Rural%20populations%20may%20have%20more,living%20in%20more%20urban%20areas) (visited Sep. 14, 2020) *citing 2016 County Health Rankings: Key Findings Report*, Population Health Institute, University of Wisconsin (2016) (https://www.countyhealthrankings.org/sites/default/files/media/document/key_measures_report/2016CHR_KeyFindingsReport_0.pdf) (visited Sep. 14, 2020).

[45] *Rural Community Action Guide,* U.S. Office of National Drug Control Policy, U.S. Department of Agriculture at 30-34 (2019) (https://www.usda.gov/sites/default/files/documents/rural-community-action-guide.pdf) (visited Aug. 18, 2021).

[46] Current literature indicates that additional investigations will be necessary before the most effective protocols for mental health via telehealth are evaluated. Moreover, questions regarding appropriate training, licensure, and reimbursement must be addressed. Nevertheless, it is reasonable to anticipate that teletherapy will offer an additional avenue for patient treatment. For an overview of this issue, *see,* Michael L. Barnett, Haiden A. Huskamp, *Telemedicine for Mental Health: Making Progress, Still a Long Way to Go,"* Psychiatry Online (Dec. 18, 2019) (https://ps.psychiatryonline.org/doi/10.1176/appi.ps.201900555) (visited Aug. 24, 2021).

[47] Lisa M. Koonin,, *et al, Trends in the Use of Telehealth During the Emergence of the COVID-19 Pandemic – United States, January-March 2020,* Morbidity and Mortality Weekly Report, Centers for Disease Control (Oct. 30, 2020) (https://www.cdc.gov/mmwr/volumes/69/wr/mm6943a3.htm) (visited Jul. 13, 2021).

[48] *See, U.S. States and Territories Modifying Requirements for Telehealth in Response to COVID-19*, Federation of State Medical Boards (Jul. 9, 2021) (https://www.fsmb.org/siteassets/advocacy/pdf/states-waiving-licensure-requirements-for-telehealth-in-response-to-covid-19.pdf) (visited Jul. 13, 2021).

regulations also evolved to enable greater telehealth engagement: Medicare implemented changes to permit additional reimbursement opportunities for telehealth, adding 135 services to the eligible services list.[49]

Increased telehealth accessibility led to striking growth in telehealth usage: The Department of Health and Human Services reports that 43.5% of Medicare primary care visits in April 2020 were conducted via telehealth, a remarkable increase from the previous February in which only 0.1% of primary care visits were via telehealth. Of particular interest to the instant discussion, demand in rural areas surged: Increases in telehealth usage were documented in Iowa (33.5%), South Dakota (32.8%), and Oklahoma (34.7%). The most modest increase recorded was a yet stunning 22% (occurring in Nebraska).[50] And, data point not only to acceptance of telemedicine among younger Americans, but in older populations, as well.[22] Even as patients and physicians are returning to office visits, it is expected that demand for telehealth will enjoy higher-than-pre-pandemic rates.[23] Home telehealth can also play an important role in managing chronic disease through patient monitoring, including patient compliance with medication and dietary instructions. Wearable medical devices can track heart rate, glucose levels, and blood pressure. Attentive management of chronic diseases can reduce instances of acute medical episodes that require costly interventions.[51]

In addition to improved healthcare outcomes,[52] economic benefits of rural telehealth have been quantified. Telehealth enables users to avoid lost wages and travel expenses while increasing local medical facility revenues. A 2017 report projected substantial economic benefits from rural telehealth deployment, including, on an annual basis: travel expense savings of $5,718 per medical facility; lost wages savings of $3,431 per medical facility; hospital cost savings of $20,841 per medical facility; increased local revenues for lab work ranging from $9,204 to $39,882 per type of procedure, per medical facility; and increased local pharmacy revenues ranging from $2,319 to $6,239 per medical facility, depending on the specific drug prescribed.[53]

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[49] Seema Verma, *Early Impact of CMS Expansion of Medicare Telehealth During COVID-19*, HealthAffairs, (Jul. 15, 2020) (https://www.healthaffairs.org/do/10.1377/hblog20200715.454789/full/) (visited Jul. 13, 2021).

[50] *Medicare Beneficiary Use of Telehealth Visits: Early Data from the Start of the COVID-19 Pandemic*, Assistant Secretary for Planning and Evaluation, U.S. Department of Health and Human Services, at 22 (Jul. 28, 2020) (https://aspe.hhs.gov/system/files/pdf/263866/hp-issue-brief-medicare-telehealth.pdf) (visited Jul. 16, 2020).

[51] *See,* Julie Wagner, *Chronic Disease Management: Improving Outcomes, Reducing Costs,* ADVOCATES FORUM, School of Social Service and Administration, University of Chicago, at 52-60 (2012); *see, also,* S. Michael Ross, *How Chronic Disease Management Saves Money and Lives,* Cureatr (Jun. 20, 2019) (https://blog.cureatr.com/how-chronic-disease-management-saves-money-and-lives) (visited Aug. 24, 2021).

[52] *See, i.e., Telehealth in Rural Communities*, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention (Aug. 18, 2020) (https://www.cdc.gov/chronicdisease/resources/publications/factsheets/telehealth-in-rural-communities.htm) (visited Jul. 27, 2021).

[53] *See,* Rick Schadelbauer, *Anticipating Economic Returns of Rural Telehealth*, Smart Rural Community, NTCA–The Rural Broadband Association (2017) (https://www.ntca.org/sites/default/files/documents/2017-12/SRC_whitepaper_anticipatingeconomicreturns.pdf) visited Aug. 26, 2020).

The combination of patient acceptance, physician engagement, and anticipated economic and medical benefits support goals to increase rural telehealth use. Inasmuch as broadband rests at the foundation of telehealth, it follows that broadband deployment *and adoption* are precursors to realizing these gains in rural areas, and that strategies to increase usage both in the aggregate and among discrete populations are appropriate. Moreover, increased telehealth usage may generate additional benefits when users within high-risk populations or other groups with higher incidences of chronic or acute illnesses access treatment via telehealth that they would not have engaged in a so-called "brick and mortar" setting.[54]

IV. RURAL DEMOGRAPHICS AS FACTORS IN BROADBAND ADOPTION

As the digital revolution continues and intensifies, community partnerships will be critical to bridge gaps in broadband adoption and digital literacy. Additionally, an active broadband champion can be critical to community success. Whereas broadband adoption efforts should strive to close the gap between adopters and non-adopters, digital inclusion may be defined as striving toward equivalent adoption rates across demographic lines. Stated differently, "adoption" may suggest a goal of achieving overall broadband adoption rates of +90%, while

[54] In addition to positive outcomes from telemedicine engagement, broadband connectivity may also exert a positive impact on nutritional wellbeing. However, it is important to note at the outset of this discussion that this issue is a still a topic of investigation and study. Emerging inquires have explored the role of internet connectivity in resolving the adverse impacts of "food deserts," namely, areas in which there is low availability of healthy foods. These investigations explore whether connectivity can facilitate access to healthy food information and services. In these instances, internet connectivity may enable users to identify retail sources of healthful foods more easily, or to even order those foods online. Approximately 2.3 million people live in low-income, rural areas that are more than 10 miles from a supermarket. *Access to Affordable and Nutritious Food: Measuring and Understanding Food Deserts and Their Consequences*, Economic Research Service, USDA, at 28 (Table 27) (Jun. 2009) (https://www.ers.usda.gov/webdocs/publications/42711/12716_ap036_1_.pdf) (visited Aug. 5, 2021). The potential efficacy of online food purchases for rural areas remains unknown. A study exploring online food purchasing in an urban food desert found the largest proportion of pre-tax online food spending was for meat, fish, poultry, eggs and dairy, whereas dessert, candies and sweets were represented in the smallest proportional category of online food purchases.[54] BM Appelhans, EB Lynch, MA Martin, LM Nackers LM, V Cail, and N Woodrick, *Feasibility and Acceptability of Internet Grocery Service in an Urban Food Desert, Chicago, 2011-2012,* Preventing Chronic Disease, Centers for Disease Control and Prevention (May 2, 2013). A potential challenge for rural areas may be identifying participating retailers who can support online ordering for perishable foods, *e.g.,* those represented in the largest category of purchased products, above (meat, fish, poultry, eggs, and dairy). A 2019 USDA pilot program covering 48 states and the District of Columbia permits online purchases with Supplemental Nutrition Assistance Program (SNAP). (*See, FNS Launches the Online Purchasing Pilot*, Food and Nutrition Service, USDA (May 29, 2021) (https://www.fns.usda.gov/snap/online-purchasing-pilot) (visited Jul. 28, 2021). This initiative was created in response to the 2014 Farm Bill, which required a pilot to "test the feasibility and implications" of allowing online SNAP transactions. (*See,* Agricultural Act of 2014, § 4011(b), 128 Stat. 649, Pub. Law 113-79 (2014)). Implemented in May 2019, conclusive results of the initiative have not been assessed. However, as of February 2021, only 11 of the 46 participating states feature a grocer in addition to Aldi, Amazon, and Walmart; stated differently, there is yet a dearth of participating grocers. Moreover, online purchasing does not necessarily equate to delivery; many users must still travel to the grocer. Finally, both prospective and current participants have identified staffing, payment, and other difficulties in launching and sustaining the pilot programs. Overall, conclusive results to support the proposition that broadband connectivity can alleviate adverse impacts of living in a food desert have not yet been demonstrated. Catherine Douglas Moran, *SNAP Online Availability is About to Explode, But Grocers Say They Still Face Too Many Hurdles*, Grocery Drive (Feb. 16, 2021) (https://www.grocerydive.com/news/snap-online-availability-is-about-to-explode-but-grocers-say-they-still-fa/594664/) (visited Jul. 28, 2021).

"inclusion" would suggest a goal of achieving broadband adoption rates of +90% within each defined demographic stack.

While there are existing data sets to compare rural to non-rural adoption, it is not clear that surveys comparing rural to non-rural adoption rates among defined categories of age, educational attainment, income, or race have been reported widely.[55] As described in Section II, above, data reveal that in addition to differences in rural/urban adoption, rates also vary among demographic groups including those defined by age, educational attainment, income, and race. Certain of these data may reflect overlapping influences. For example, data indicate lower adoption rates among the elderly and lower income households. To the extent that rural residents are generally older than their urban counterparts and on average have lower household incomes than urban cohorts,[56] one may ask whether lower average adoption rates in rural areas reflect age and income levels of their respective residents, or whether other factors, such as availability, are in play. In similar vein, adoption trends pertaining to educational attainment and income may reflect both intersecting and independent influences, as educational attainment bears upon household income and, by extension, affordability.

In the absence of widely reported data, this report will not endeavor to address differences between, for example, rates of adoption by household income in rural vs. urban places. Instead, this report explores characteristics of rural regions that relate to the categories discussed above, and in turn suggest the usefulness of examining, in each rural locality, the effectiveness of strategies to promote digital inclusion among those various categories. This inquiry (and the ultimate goal of increasing broadband adoption) is necessary in order to more fully realize the benefits of the "digital age" which accrue as more users utilize connectivity. The benefits of broader adoption are best expressed as Metcalfe's Law, which posits what is colloquially referred to as "network effects" – namely, the proposition that the value of a network increases proportionally to the number of users who are connected to that network.

In regard to broadband, a challenging irony emerges: While the internet "provides greater access to knowledge that those who are less educated may need, [] it is the higher educated who are likely to use it first."[57] And alongside the benefits of adoption, the opportunity costs of *non-adoption* must be considered, as well. An evolving view of this problem has been described as an

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[55] *See,* Hee Yun Lee, Eun Young Choi, Kim Youngsun, Jessica Neese, and Yan Luo, *Rural and Non-Rural Digital Divided Persists in Older Adults: Internet Access, Use, and Perception,* Innovation in Aging, Vol. 4, No. S1 (2020) (https://academic.oup.com/innovateage/article/4/Supplement_1/412/6036618) (visited Aug. 5, 2021) ("Compared to older adults living in urban areas, those residing in rural areas had 29% lower odds of internet access.") At the same time, access cannot be predicted to translate to adoption, as many survey respondents cited lack of digital literacy as a barrier to adoption.

[56] Amy Symens Smith and Edward Trevelyan, *In Some States, More Than Half of Older Residents Live in Rural Areas*, Population, U.S. Census Bureau (Sep. 24, 2020) (https://www.census.gov/library/stories/2019/10/older-population-in-rural-america.html) (visited Aug. 3, 2021); Gloria Guzman, Kirby G. Posey, Alemayehu Bishaw, and Craig Benson, *Poverty Rates Higher, Median Income Lower in Rural Counties Than in Urban Areas*, Income and Poverty, U.S. Census Bureau (Dec. 6, 2018) (https://www.census.gov/library/stories/2018/12/differences-in-income-growth-across-united-states-counties.html) (visited Aug. 3, 2021).

[57] Mann, *et al.,* at 48.

> understanding [that] has advanced from a focus on whether or not populations do or do not have access to digital technology (the so-called digital divide) to a more complex understanding of differences in digital skills and Internet use as well as differences in social, political, and economic outcomes deriving from access to, and use of, digital information and communications tools.[58]

Overall, national broadband adoptions rates are 86.6% for some type of broadband, and 76.8% for a home broadband connection.[59] Split into rural and non-rural areas, the U.S. Census Bureau reports adoption rates are 86% for urban households and 81% for rural households;[60] Pew Research reports a 12% gap between rural and urban household connections during the same period (63% rural vs. 75% urban).[61] Without assessing the competing accuracy of either data source, even the more optimistic perspective of the Census Bureau reveals a significant gap between the average rural household adoption rate (81%) and the adoption plateaus of approximately 95% conveyed in Section II, above. Moreover, the data present an overall image of rural spaces, and do not indicate differences between (a) rural areas where robust broadband is available and (b) rural areas where broadband has not been sufficiently deployed. Accordingly, this report approaches the complementary issues of adoption and inclusion from the perspective of areas that have conquered the challenge of broadband deployment.

To illustrate, nearly 70% of locations served by members of NTCA–The Rural Broadband Association[62] (NTCA) are served by fiber to the premise, and nearly 70% of NTCA member locations (residential and business) are capable of securing broadband speeds of 100 Mbps or

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[58] Roberto Gallardo, *Bringing Communities Into the Digital Age*, STATE AND LOCAL GOVERNMENT REVIEW, I-9, at 1 (2020).

[59] *New Census Data Shows Broadband Adoption Rates Up, Mobile Connectivity Growing in Importance*, Connected Nation, *citing* U.S. Census Bureau 2019 American Community Survey (Sep. 24, 2020) (https://connectednation.org/blog/2020/09/24/new-census-data-shows-broadband-adoption-rates-inching-up-mobile-connectivity-growing-in-importance/#:~:text=By%202019%2C%2086.6%20percent%20of,levels%20than%20the%20national%20average.) (visited Jul 26, 2021).

[60] Michael Martin, *Computer and Internet Use in the United States, 2018,* American Community Survey Reports, U.S. Census Bureau (Apr. 2021) (https://www.census.gov/content/dam/Census/library/publications/2021/acs/acs-49.pdf) (visited Aug .17, 2021).

[61] Andrew Perrin, *Digital Gap Between Rural and Non-Rural America Persists*, Pew Research Center (May 31, 2019) (https://www.pewresearch.org/fact-tank/2019/05/31/digital-gap-between-rural-and-nonrural-america-persists/) (visited Jul. 26, 2021).

[62] NTCA–The Rural Broadband Association represents approximately 850 locally-operated, facilities-based broadband service providers throughout rural areas of the United States. All NTCA members are fixed voice and broadband providers; many also provide mobile, video, and other advanced communications services to their customers. NTCA members and small rural providers like them operate in over one-third of the U.S. landmass while serving approximately 5% of the U.S. population; the average population density of an NTCA member service area is seven people per square mile, equal to roughly the density of Montana.

higher.[63] Moreover, as of July 2021, 197 NTCA member companies were certified as "Gig Capable," specifically, of being able to provide gigabit broadband service (1,000 Mbps) to customers without the need to trench or string new aerial fiber. Where broadband is deployed, data reveal year-over-year increases in the proportion of subscribers purchasing higher-speed services: In the nearly 850 rural areas served by members of NTCA, the percentage of customers subscribing to fixed broadband service greater than or equal to 1 Gig more than doubled from 2019 to 2020, and more than 20% of subscribers purchase speeds greater than or equal to 100 Mbps but less than 1 Gig.[64]

Rural areas reflect demographic strata as do urban areas, albeit in different proportions. For example, median household income is generally lower in rural areas than in urban areas by a margin of about 25%.[65] And, in the vein of efforts aimed at narrowing gaps that reflect educational attainment, 34% of young adults in urban areas ages 25-34 held a college degree or higher in 2018, while 20% of similarly aged adults in rural areas held such degrees.[66] Finally, efforts to narrow adoption gaps within discrete race categories may present different considerations in rural areas than in urban area: in metro U.S. areas, racial and ethnic minorities (defined by the USDA as American Indian, Black, Hispanic, or Other) constitute 42% of the population, compared to 22% of the population in non-metro areas.[67] However, while the *proportions* of relevant demographic to the general population may appear to support tailored per-demographic adoption strategies, the smaller real number of prospective subscribers in rural areas likely implicates considerations as to whether a *general* effort to increase adoption, rather than a *suite* of adoption efforts on a per demographic basis, is more feasible. By way of explanation, NTCA reported broadband "take rates" of 72% in member service areas in 2016.[68] With an average of approximately 4,500 fixed broadband connections,[69] those figures suggest a reasonable estimate of about 1,750 total prospective non-adopters per community. Already

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[63] *NTCA 2020 Broadband Survey Report* at 2, 6 (2020) (https://www.ntca.org/sites/default/files/documents/2020-12/2020%20Broadband%20Survey%20Report.pdf) (visited Jul. 29, 2021).

[64] *Id.* at 8.

[65] *Rural America at a Glance, 2017 Edition*, Economic Research Service, USDA (2017) (https://www.ers.usda.gov/webdocs/publications/85740/eib182_brochure%20format.pdf?v=217) (visited Jul. 29, 2021).

[66] *Rural Education*, Economic Research Service, USDA (https://www.ers.usda.gov/topics/rural-economy-population/employment-education/rural-education/#:~:text=Between%202000%20and%202018%2C%20the,15%20percent%20to%2020%20percent.) (visited Apr. 22, 2021).

[67] *Rural America at a Glance: 2018 Edition*, Economic Research Service, USDA at 3 (2018) (https://www.ers.usda.gov/webdocs/publications/90556/eib-200.pdf) (visited Apr. 22, 2021).

[68] *NTCA Broadband/Internet Availability Survey Report*, NTCA–The Rural Broadband Association, at 8 (Jul. 2017) (https://www.ntca.org/sites/default/files/documents/2018-01/2016ntcabroadbandsurveyreport.pdf) (visited Aug. 17, 2021).

[69] *NTCA 2020 Broadband Survey Report*, at 8. The average across respondents was 4,434 fixed broadband connections.

slender rural economies of scale, generally, as well as limited staff in a small company could be further diffused by the relatively small size of each demographic group. This does not mean, however, that efforts that would have the potential, if not ultimate, effect of reaching discrete demographics should not be pursued.

As noted above, strategies to increase rural broadband adoption and digital inclusion benefit from recognizing the diversity of rural spaces, often expressed in the colloquialism, "If you have seen one rural place, you have seen one rural place." As an overarching consideration, overlaps among demographic categories can support a general adoption strategy. For example, inasmuch as income correlates positively to educational attainment,[70] efforts targeted to increase adoption among low-income users could capture subscribers among categories of corresponding educational attainment. Likewise, age, household income, and educational attainment influence broadband adoption rates within minority communities much the way they influence adoption rates, generally.[71] Accordingly, targeted efforts to reach elderly or low-income users could simultaneously attract prospective subscribers regardless of racial affiliation. And even as affordability barriers are addressed, it is also important to address perceived relevance and to consider the value of promoting the benefits digital literacy; as noted above, two-thirds of non-adopters cited reasons unrelated to price as reasons for not taking internet service.[72] Accordingly, as small rural providers may consider broad, general adoption campaigns, those efforts may be deployed more effectively through focused outreach efforts with community organizations to reach specific demographic communities. These may include, but are not limited to, coordinated work with social service organizations to reach low-income populations; digital literacy efforts with senior citizen and other organizations; outreach to fraternal, faith-based, or other cultural associations to promote digital inclusion; and materials for non-English speakers. Above all, strategies to increase rural adoption and improve digital inclusion should reflect the sum of each community's unique conditions and circumstances. These can inform strategies that while guided by general principles are adapted specifically for the region or community in which they are to be applied.

A variety of tailored inclusion efforts is evidenced by efforts of small, locally operated communications companies. In Shallotte, North Carolina, Atlantic Telephone Membership Corporation (ATMC) partnered with local county public libraries to create a digital inclusion

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[70] *See,* Elka Torpey, *Measuring the Value of Education*, Career Outlook, Bureau of Labor Statistics (Apr. 2018) (https://www.bls.gov/careeroutlook/2018/data-on-display/education-pays.htm#:~:text=Median%20weekly%20earnings%20in%202017,weekly%20earnings%20for%20all%20workers) (visited Apr. 22, 2021). Notably, average weekly earnings for workers with a professional degree are slightly higher than earnings for workers with a doctoral degree. With that exception, median weekly earnings increase as higher levels of education are attained.

[71] Jon P. Gant, Nicole E. Turner-Lee, Yung Li, and, Joseph S. Miller, *National Minority Broadband and Adoption: Comparative Trends in Adoption, Acceptance and Use,* Joint Center for Political and Economic Studies, at 3 (Feb. 2010) (http://www.broadbandillinois.org/uploads/cms/documents/mti_broadband_report_web.pdf) (visited Aug. 5, 2021) (Gant, *et al.*)

[72] *See,* fn. 4, *supra, citing* Octavian Carare, Chris McGovern, Raquel Noriega, and Jay Schwarz, *The Willingness to Pay for Broadband of Non-Adopters in the U.S.: Estimates from a Multi-State Survey*, Information Economics and Policy (2015) (https://www.sciencedirect.com/science/article/abs/pii/S0167624514000523) (visited Aug. 5, 2021).

plan. Measures include surveying residents about their internet usage, service tiers used, and provider information. ATMC also supported virtual fitness classes for seniors in the county during the COVID-19 pandemic. In Moncks Corner, South Carolina, Home Telephone Co., Inc. partnered with the public school district to provide free internet to households with school-age children in lower-performing schools. Home Telecom has invested in infrastructure updates to support this initiative. Sacred Wind Communications, which serves Navajo Nation lands in Yatahey, New Mexico, partnered with a career academy to provide internet access for students during the coronavirus emergency. These efforts illustrate the unique role of locally operated broadband providers, specifically, their presence in and knowledge of each community's needs and their ability to work effectively with local partners.

A studied examination of a community's characteristics can also lead to tailored outreach success. Horry Telephone Cooperative, Inc. (HTC) (Conway, South Carolina) worked extensively to determine the scope of various demographic communities within its service areas. HTC staff, assisted by a college intern who served as a project lead, conducted targeted outreach within specific demographic segments, including the elderly and families with children. Working with community organizations, HTC identified respective issues of predominant interest within the various communities and, alongside local leaders, selected venues and approaches that would be attractive for outreach efforts. These efforts culminated in a tailored educational curriculum that addressed different use scenarios for broadband, including telehealth, financial management, and education. HTC personnel partnered with community leaders to design outreach sessions focused on "introductions to broadband" and digital literacy programs. By working hand-in-hand and appearing with community leadership, HTC conveyed the hallmark of locally operated communications providers, namely, their commitment to serving their community. These grassroots outreach efforts reflected simultaneously the general strategy of promoting broadband adoption alongside targeted efforts to increase digital inclusion within specific demographic segments.

V. CONCLUSION

Data indicate that gaps in broadband adoption are closing at various rates among different demographic groups. Gaps between different tiers of household income and educational attainment present the widest discrepancies in broadband adoption rates. Age-related gaps are narrowing and can be expected to effectively close over time. Varying adoption rates among different racial demographics are narrowing, as well; while home broadband adoption rates reveal room for growth, all groups are exhibiting upward-trending rates of adoption. In rural areas, efforts to narrow adoption gaps are important because broadband-enabled applications can mitigate particularly rural conditions surrounding economic development, education, healthcare, and other services. Taking into account the limited economies of scale in rural spaces and the small size of discrete demographic groups, small rural broadband providers may consider combining all-encompassing broadband adoption campaigns with targeted outreach efforts to a range of community organizations and associations. These strategies can build upon locally operated providers' connections to their communities to promote increased adoption and digital literacy within different demographic groups.

About NTCA–The Rural Broadband Association:
NTCA–The Rural Broadband Association represents approximately 850 independent, community-based telecommunications companies that lead innovation in rural America. NTCA advocates on behalf of its members; provides training and development; produces publications and industry events; and offers an array of employee benefit programs. In an era of exploding technology, deregulation, and marketplace competition, NTCA's members are leading the IP evolution for rural consumers, delivering technologies that make rural communities vibrant places in which to live and do business. Because of their efforts, rural America is fertile ground for innovation in agriculture, economic development, education, health care, public safety, and other services. Visit us at www.ntca.org.

About Smart Rural Community:
Smart Rural Community℠ is an initiative of NTCA–The Rural Broadband Association, promoting rural broadband networks and applications to foster innovative agricultural, economic development, education, health care, other vital services. Smart Rural Community administers award, best practices, and educational programming. For more information, please visit www.smartruralcommunity.org.

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