

Governor's Broadband Development Council 2021 Report

Office of the Governor | Texas Economic Development & Tourism

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Executive Summary & Recommendations

The Governor's Broadband Development Council, in accordance with Texas Government Code Sec. 490.007, is mandated to submit an annual report no later than November 1 of each year, beginning in 2020. The second report serves to update findings and recommendations based on the Council's duties, outlined in Texas Government Code Sec. 490.006.

Texas is a recognized economic leader in the U.S. and the world. To maintain this leadership in the global economy, the state should continue efforts to provide affordable and reliable broadband access to all Texans. During the 87th regular session of the Texas Legislature, Governor Abbott and the Legislature adopted the Council's recommendations into House Bill 5. The bill established for the first time a State Broadband Office in the Comptroller of Public Accounts; requires the development of a statewide broadband plan within 12 months of bill signing; creates a new broadband program in the Comptroller's office, and perhaps most importantly, requires detail mapping of areas in Texas unserved by broadband access.

According to July 2021 estimates, approximately 96.78 percent of households in Texas have access to broadband speeds at 25/3 megabits per second (Mbps). However, at least 286,908 households remain unserved at the minimum speed considered broadband. Approximately 246,997 of those households are in rural Texas.

The Federal Communications Commission's current 25/3 Mbps threshold for broadband was established in 2015. More recently, states have begun advocating and planning for broadband speeds at higher tiers. Texas should also strive for broadband speeds greater than 25/3.

In terms of barriers, Texas faces two simultaneous challenges. First, there remains barriers to access which are particularly prevalent in rural areas. Second, even where broadband is available, there remains a substantial portion of Texans who have not adopted or subscribed to broadband in their homes.

Broadband infrastructure continues to be expanded throughout the United States, primarily by the private sector. Though the number of broadband subscribers continues to grow, rural and tribal communities continue to lag behind urban and suburban areas, both in terms of access and level of speeds offered.

Some policymakers assert that the federal government should play a more active role to address the "digital divide" in broadband access, particularly in light of the COVID-19 pandemic, which further revealed discrepancies in broadband availability and accessibility. These officials argue that disparities in broadband access could result in adverse economic and social consequences for those left behind.

Public-private partnerships (PPP) and the best practices from other states should be utilized when appropriate. PPPs are a proven means to combine essential government leadership and private-sector investment. As states continue to invest in and deploy broadband infrastructure, there are a number of initiatives that are best equipped to ensure efficient, equitable, and expansive access. These best practices were outlined based on research conducted by the Pew Charitable Trusts. They include state broadband offices, state and local broadband plans, broadband mapping, state grant programs, and state policy progression.

Broadband access has far reaching implications as underlined by the ongoing pandemic. Broadband access influences healthcare, education, entertainment, and commerce. The

expansion and adoption of broadband into unserved areas remains the most important aspect of broadband policy.

Recommendations

The Governor's Broadband Development Council has continued to meet and to study issues related to broadband access and makes 10 key recommendations.

- I. *Through the state broadband plan, Texas should plan for and invest in speeds greater than the Federal Communications Commission (FCC) minimum 25/3.*

Texans have never settled for the bare minimum on anything. Planning to attain ubiquitous broadband access at a speed largely considered inadequate is short-sighted.

- II. *Define what it means to be "underserved".*

While over 96 percent of Texans are considered served at 25/3 (the current FCC definition of broadband), many Texans can still be considered underserved. The state should award dollars to eligible unserved areas first. Dollars may need to be awarded to underserved areas in the future.

- III. *A study of broadband demand at community, regional, and statewide levels.*

In order to set appropriate state goals for deployment, speed, and adoption, it is important to understand the demand for broadband at community, regional, and statewide levels.

- IV. *Invest strategically in middle mile and last mile infrastructure.*

Strategic infrastructure investments can help lower costs, improve round-trip time of traffic, and reduce latency for end users of last mile infrastructure. Middle mile refers to the network connection between the last mile and the greater internet. Carrier-neutral internet exchange points are a particularly good example of a middle mile infrastructure investment that can benefit rural areas. Last mile infrastructure remains a challenge across the state, particularly in sparsely populated areas, highlighting the need for strategic investment.

- V. *Fund digital literacy training programs.*

Beyond just having a broadband subscription, users need to have a range of digital skills to be active and engaged participants in digital spaces.¹ Jobs across the United States increasingly require digital literacy skills. This is not limited to workers in the information technology field or those with college degrees; even entry-level workers in agriculture, healthcare, and hospitality are now required to effectively use technology to do their jobs.²

¹ Tomer, Adie, Lara Fshbane, Angela Siefer, and Bill Callahan. "[Digital Prosperity: How broadband can deliver health and equity to all communities](#)." *Brookings Institute*, 27 February 2020.

² Bergson-Shilcock, Amanda. "[The New Landscape of Digital Literacy](#)." *National Skills Coalition*, May 2020.

VI. *Fund cybersecurity awareness and internet safety awareness campaigns.*

Cybersecurity and internet safety continue to be of growing importance for businesses, government entities, and residents themselves. In July 2021, First Lady Cecilia Abbott participated in the launch of R.E.A.L. Friends Don't nationwide online safety campaign, a digital billboard campaign across the state with the goal of increasing awareness and educating parents and caregivers about online safety.³

VII. *Allocate a portion of the state's ARPA allotment, Coronavirus Capital Projects Fund dollars, and upcoming federal broadband infrastructure/digital equity dollars toward meaningful broadband projects, which include PPPs, middle mile and last mile investments, digital literacy training programs, and cybersecurity awareness.*

VIII. *A multi-sector statewide study on the costs associated with the lack of broadband.*

Studies of the economic impacts of broadband expansion into rural areas can be broadly categorized into local labor market effects, benefits accruing to consumers, benefits accruing to businesses and homeowners, benefits in healthcare including the support of Critical Access Hospitals and the accessibility of telemedicine, and benefits accruing to participants distance learning.⁴ However, there is limited information on the economic costs of not having broadband.

IX. *A study on the existence of any specific regulatory barriers general law cities may be facing when addressing the digital divide in their communities.*

Home rule cities and general law cities may be operating under a separate set of rules when it comes to public private partnership opportunities and other connectivity initiatives. Identifying and addressing these barriers, if they exist, may help our smaller communities become better connected.

X. *Partner with local communities, community anchor institutions, and the private sector to promote digital inclusion initiatives that help to advance broadband access, adoption, and use in Texas.*

The issue of the digital divide is not one that the government can tackle alone because it reverberates across communities, sectors and families - and has the capacity to impact economic development, education, workforce development, and the quality of life in Texas. Therefore, it is imperative that each stakeholder play an important role in bridging the digital divide. For example, anchor institutions such as libraries and critical access hospitals have played an important role in advancing adoption and working with local communities to eliminate barriers to adoption. Anchor institutions are critical because of their proximity to Texans and their ability to customize programs to fit specific communities and get things done efficiently and effectively. In addition to deploying infrastructure, broadband providers also provide affordable services for low-income communities and have funded digital inclusion programs via philanthropy that help to increase adoption and education.

³ ["Texas First Lady Cecilia Abbott Delivers Remarks At Internet Safety Billboard Campaign Launch In San Antonio."](#) Office of the Governor of Texas, 29 July 2021.

⁴ Marre, Alexander. ["Bringing Broadband to Rural America."](#) Federal Reserve Bank of Richmond, December 2020.

The state's partnership in promoting digital inclusion programs will help to bring awareness to these opportunities. Research shows that one of the reasons for the lagging numbers in broadband adoption include the lack of awareness of these programs. A recent study found that people did not adopt broadband or take advantage of digital inclusion initiatives simply because they were not aware of their existence, or they lacked clarity in the offerings and processes.⁵

The Governor's Broadband Development Council (GBDC) and the Comptroller's Board of Advisors (CBOA) are both important for state broadband development efforts. The Council believes that the GBDC and the CBOA are not duplicative and in fact, their activities and goals complement each other. Through open communication and collaboration, the GBDC and CBOA can help ensure that all Texans have access to high-speed internet.

1. Broadband Deployment

According to July 2021 estimates, approximately 96.78 percent of households in Texas have access to broadband speeds at 25/3 Mbps (see Table 1). However, at least 286,908 households remain unserved at the minimum speed considered broadband.⁶ This means an estimated 819,680 Texans do not have access to broadband at home.⁷ As a result, these Texans cannot telework, access virtual schooling for their children, or take advantage of telemedicine appointments.

Table 1

Texas Statewide Broadband Availability Estimates by Speed Tier			
Among Fixed Technologies: Cable, DSL, Fiber, Fixed Wireless			
Speeds	Unserved Households	Served Households	Percent of Households Served
10 Mbps Download x 1 Mbps Upload	94,833	8,828,100	98.94%
25 Mbps Download x 3 Mbps Upload	286,908	8,636,025	96.78%
50 Mbps Download x 5 Mbps Upload	508,871	8,414,062	94.30%
100 Mbps Download x 10 Mbps Upload	709,599	8,213,334	92.05%

The current FCC definition of broadband is a minimum speed of 25 Mbps download and 3 Mbps upload.

Help improve the maps: <https://connectednation.org/texas/feedback>

Source: *Connected Nation Texas*, July 2021.

⁵ Goodchild, Chris, Hannah Hill, Matt Kalmus, Jean Lee, and David Webb. "[Boosting Broadband Adoption and Remote K-12 Education in Low-Income Households](#)." *Boston Consulting Group*, 12 May 2021.

⁶ The current FCC definition of broadband are minimum speeds at 25 Mbps downloads and 3 Mbps uploads.

⁷ According to the 2019 U.S. Census Vintage estimates, the average persons per household in Texas is 2.85.

Looking specifically at broadband availability in rural Texas, approximately 246,997 households do not have access to speeds of 25/3 Mbps (see Table 2). This means an estimated 692,511 rural Texans cannot access broadband at home, compared to over 100,000 urban Texans who lack broadband access. Rural Texans therefore represent roughly 85 percent of all Texans who cannot access broadband.

Table 2

RURAL Texas Statewide Broadband Availability Estimates by Speed Tier			
Among Fixed Technologies: Cable, DSL, Fiber, Fixed Wireless			
Speeds	Unserved Rural Households	Served Rural Households	Percent of Rural Households Served
10 Mbps Download x 1 Mbps Upload	64,781	2,841,842	97.77%
25 Mbps Download x 3 Mbps Upload	246,997	2,659,626	91.50%
50 Mbps Download x 5 Mbps Upload	458,883	2,447,740	84.21%
100 Mbps Download x 10 Mbps Upload	613,188	2,293,435	78.90%

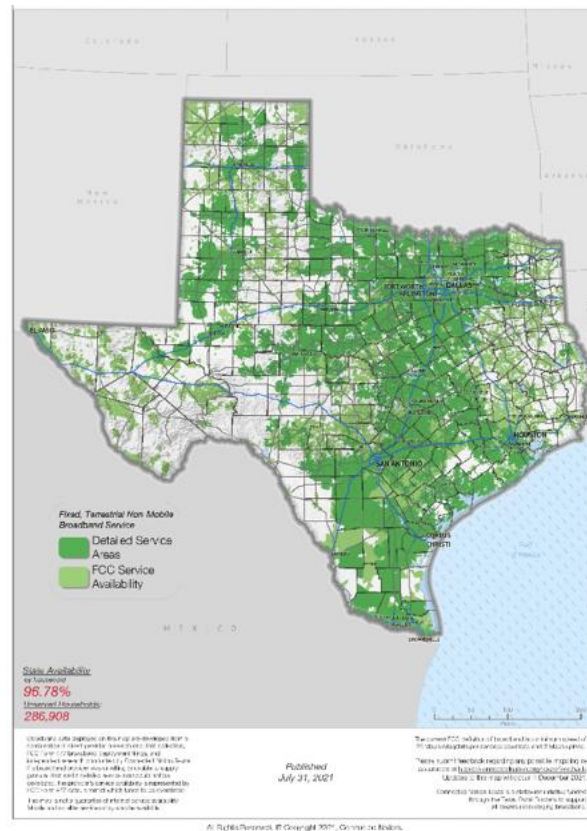
The current FCC definition of broadband is a minimum speed of 25 Mbps download and 3 Mbps upload.

Help improve the maps: <https://connectednation.org/texas/feedback>

Source: *Connected Nation Texas*, July 2021.

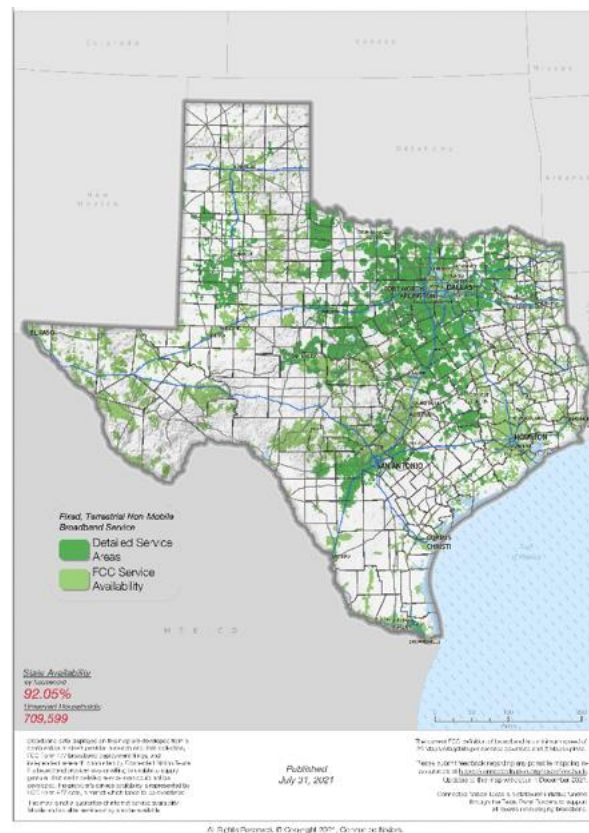
Examining the distribution of broadband geographically, Figure 1 plots the availability of broadband in Texas at the 25/3 Mbps speed level. Areas colored green are served by broadband and areas left gray are not. This visualization demonstrates that many rural areas of Texas, particularly in the western parts of the state, do not have broadband access.

Figure 1: Broadband Service with Speeds of at Least 25/3 Mbps



The geographic disparity of broadband access is even more evident when examining availability of service with speeds of at least 100/10 Mbps (see Figure 2). Again, areas colored green have access to those speeds while areas left gray do not. Accordingly, we see that many rural areas of Texas lack broadband service at the 100/10 Mbps tier, including most of West Texas, the Panhandle, the Rio Grande Valley, and parts of East Texas.

Figure 2: Broadband Service with Speeds of at Least 100/10 Mbps



2. Texas Should Strive for Speeds Greater Than 25/3

The Federal Communications Commission's (FCC) current 25/3 Mbps threshold for broadband was established in 2015. More recently, states have begun advocating and planning for broadband speeds at higher tiers. These measures are often set in statute and defined with specific goals and time targets, providing clarity to broadband providers and local communities as they make investments in broadband infrastructure. For example, broadband policy planners in Minnesota have established goals of statewide broadband access of 25/3 Mbps by 2022 and speeds of 100/20 Mbps by 2026.⁸

The following are target speeds the GBDC puts forth:

Year	Target speed
2021	25 Mbps/3 Mbps
2024	100 Mbps/20 Mbps
2026	100 Mbps/100 Mbps
2028	500 Mbps/100 Mbps

While these figures are the recommendation of the Council, one difficulty in setting such target speeds is that consumer and market demand for broader bandwidth coverage has not yet been substantiated. Therefore, it's important to continue to substantiate demand and ensure demand tracks the suggested target speeds and deadlines. Doing so ensures that these recommendations remain appropriate and are not just arbitrary, aspirational figures. Also, it's important to note that these speeds should not be a minimum requirement to receive state funding.

2.1 – Broadband Speeds for Small Businesses

The Council's recommendations for expanding broadband access are particularly relevant for small businesses. According to a report released by the Government Accountability Office, millions of small businesses lack access to broadband speeds that meet their needs.⁹ This is despite the fact that most small businesses have access to broadband. Two recent surveys provide additional data to underscore this problem. A Google-sponsored survey of businesses with fewer than 250 employees found that 8 percent of small businesses report "poor internet access" as a barrier to using digital tools for engaging with their customers.¹⁰ With roughly 32 million small businesses nationwide, this means that approximately two to three million small businesses lack sufficient broadband access. A second survey from the National Federation of

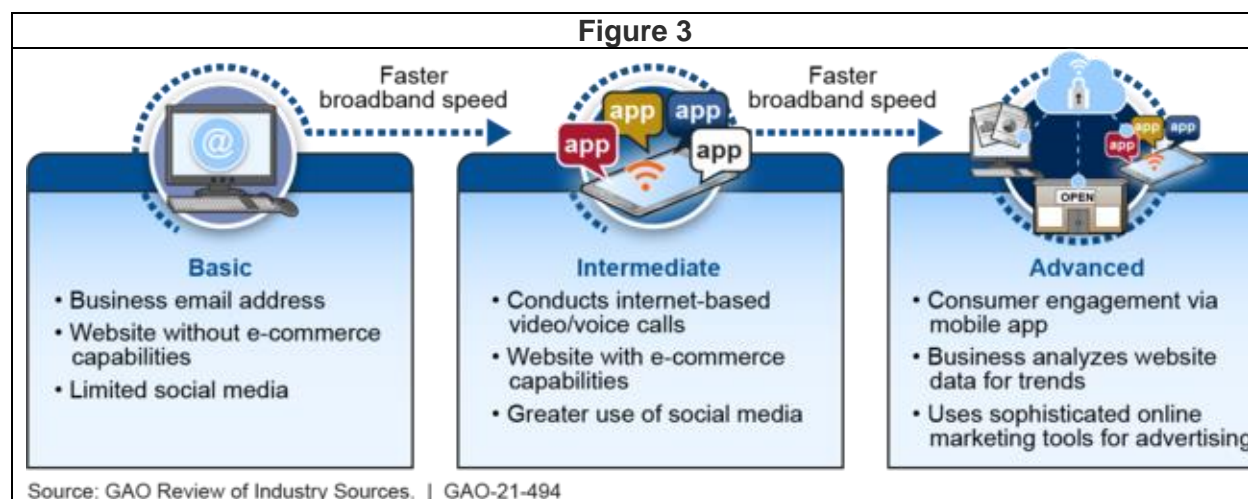
⁸ Read, Anna and Kathryn de Wit. "[How States Are Expanding Broadband Access.](#)" *The Pew Charitable Trusts*, 27 February 2020.

⁹ "[Broadband: FCC Should Analyze Small Business Speed Needs.](#)" *Government Accountability Office*, 08 Jul. 2021.

¹⁰ O'Mahony, John and Sara Ma. "[Connecting Small Businesses In the US.](#)" *Deloitte, Commissioned by Google*. 2018.

Independent Business found that, among its membership, 8.7 percent of respondents reported barriers to accessing broadband.¹¹

Small businesses will likely benefit from additional FCC and U.S Department of Agriculture (USDA) funding to expand broadband deployment. However, according to a 2021 U.S. Government Accountability Office (GAO) report, the FCC’s current benchmark for broadband, 25/3 Mbps, may not be sufficient to serve many small business needs¹². In 2017, BroadbandUSA published a report showing that small businesses required a minimum speed of 50 Mbps to conduct basic tasks such as managing inventory.¹³ A 2019 report from the USDA on rural broadband needs argued that as the volume of data utilized to manage agriculture production grows, speeds in excess of the FCC’s benchmark will be necessary.¹⁴ Figure 3, from the GAO, illustrates the broadband speeds that businesses require to perform various functions.



2.2 – It’s More Than Just Speed

Download and upload speeds are often the go-to metric in defining broadband access. However, additional metrics can and should be considered as part of broadband access. Latency – the amount of time it takes a signal to travel to its destination and back – is particularly relevant. Whenever a Texan tries to access something online, a signal is sent to the server requesting the information, which is then sent back to the user. Texans enjoying low latency have a better user experience online – whether it is using telemedicine, online learning, running a small business, or just catching up with a relative over Zoom.

¹¹ Wade, Holly and Andrew Heritage. “[Small Business Problems & Priorities](#).” Tenth Edition. *NFIB Research Center*, 2020.

¹² “[Broadband: FCC Should Analyze Small Business Speed Needs](#).” *Government Accountability Office*, 08 Jul. 2021.

¹³ “What Speed Do You Need.” *BroadbandUSA*, February 2017.

¹⁴ “[A Case for Rural Broadband: Insights on Rural Broadband Infrastructure and Next Generation Precision Agriculture Technologies](#).” *U.S. Department of Agriculture*, April 2019.

2.3 – Middle Mile Support of Last Mile Infrastructure

One component of expanding low-latency connectivity is the so-called “middle mile” of broadband infrastructure alongside critical last mile infrastructure. “Middle mile” infrastructure refers to the network connection between the “last mile” and the greater internet. The legislature signaled an importance in middle mile support of last mile infrastructure with the passage of both SB 632 and HB 3853 during the 87th legislative session. SB 632 amends “the Special District Local Laws Code to authorize the Lower Colorado River Authority (LCRA) to provide fiber capacity or facilities on reasonable and nondiscriminatory terms and conditions to facilitate broadband service connectivity.”¹⁵ HB 3853 amends “the Utilities Code to replace provisions providing for the deployment of broadband over power lines (BPL) systems to expand broadband service in Texas.”¹⁶

Strategic middle mile investments such as carrier-neutral internet exchange points can help lower costs, improve round-trip time of traffic, and reduce latency for end users. Rural areas, in particular, can benefit from nearby internet exchange points as it would decrease reliance on urban population centers for internet access. Additionally, a carrier-neutral internet exchange point can help attract economic investment to rural areas, as service providers and content development networks are constantly looking to grow and diversify where their networks interconnect.

3. Barriers

In order to expand broadband access to all Texans, the state faces two simultaneous challenges. First, there remains barriers to access which are particularly prevalent in rural areas. As of July 2021, roughly 85 percent of all Texans who lack broadband access live in rural areas (nearly 700,000 individuals). Furthermore, over 100,000 Texans in urban areas are similarly unable to access broadband from their homes. At the same time, even where broadband is available, there remains a substantial portion of Texans who have not adopted or subscribed to broadband in their homes. According to the 2019 American Community Survey from the United States Census Bureau, only 67.6 percent of Texas households subscribe to fixed broadband service at home. This places Texas below the national average of 70.8 percent of households, and at 34th in adoption behind California, New York, Florida, and 30 other states. Therefore, both access to *and* adoption of broadband remain substantial challenges in Texas.

3.1 – Access

The expansion of broadband in the United States will require large subsidies, particularly in rural regions.¹⁷ One of the biggest barriers to broadband access is cost, driven by the economics of density. Alternative technologies or providers may be necessary in areas where costs are prohibitive. If costs are too high for private sector providers to enter the market, public-private partnerships may be needed to invest in broadband infrastructure and encourage rapid

¹⁵ Texas Senate Bill 632. 87th Legislature, 2021.

¹⁶ Texas House Bill 3853. 87th Legislature, 2021.

¹⁷ Marre, Alexander. “[Bringing Broadband to Rural America](#).” *Federal Reserve Bank of Richmond*, December 2020.

expansion. Recent efforts by Federal agencies have aimed to make accomplishing such goals easier.

In June 2021, the USDA, the FCC, and the National Telecommunications and Information Administration (NTIA) announced an interagency agreement to coordinate broadband funding programs between agencies.¹⁸ As part of the agreement, each agency will share information about current or future projects that receive funding as part of that agency's broadband efforts. Each agency will also identify entities which provide broadband services within specific geographic areas. The data collected and provided from geographic areas will also include: the speed of broadband service; what technologies are utilized; the scope or extent of service; and what entities have received funding in that area. Finally, the agreement mandates that all agencies consider using standardized broadband coverage data when distributing funds.

The interagency agreement is a positive step forward toward coordinating federal programs, however, there is growing concern that it creates an almost impossible challenge for county judges and other local leaders. Specifically, the agreement places enormous demands on local officials when making decisions with newly allocated Federal broadband dollars. This challenge is exacerbated by the fact that many officials still lack a complete understanding of previous funds that were awarded to private companies that serve their communities.

Moreover, while the priority should be expanding broadband access in unserved areas, it is also important to consider underserved areas across the state when engaging in planning efforts. For example, the Infrastructure Investment and Jobs Act of 2021 passed by the U.S. Senate included narrative defining "underserved areas" as areas without access to broadband at the 100/20 Mbps speed.¹⁹ Currently, over 700,000 households in Texas lack broadband access even at the 100/10 Mbps level.²⁰

3.2 – Adoption

Though access to broadband remains a consistent challenge, *adoption* of available broadband connectivity remains similarly challenging. Indeed, a 2021 report commissioned by Schmidt Futures found that there are significantly more households who do not connect to *available* broadband service versus those households who cannot access broadband at all.²¹

Individuals forego broadband at home for a host of reasons. An NTIA survey, conducted prior to the COVID-19 pandemic, found that nearly 60 percent of those households that do not subscribe to broadband cited lack of need or interest.²² Seniors, in particular, often do not connect to broadband even when affordable access is available because they do not see or

¹⁸ "[USDA, FCC, and NTIA Announce Interagency Agreement to Coordinate Broadband Funding Deployment](#)." U.S. Department of Agriculture, 25 June 2021.

¹⁹

Infrastructure Investment and Jobs Act of 2021, H.R. 3684. 117th Congress, 2021

²⁰ "[Statewide Broadband Availability Estimates by Speed Tier](#)." Connected Nation Texas, 31 July 2021.

²¹ Wilkins, Jon. "[Seizing the Moment: Scaling Up State Broadband Strategies](#)." Quadra Partners, LLC, Commissioned by Schmidt Futures, July 2021.

²² "[Increasing Broadband Investment in Low-Income Communities: A Progress Report](#)." Federal Communications Commissions, 29 July 2020.

understand the value, or are intimidated by the perceived complexity of getting online.²³ Additionally, individuals and institutions (e.g., schools and teachers) may need additional training on connecting to broadband.²⁴

3.2(i) – Affordability

Affordability continues to be the leading barrier to broadband adoption - particularly for low-income Texans. Since broadband provides access to economic opportunities and an improved quality of life, the affordability barrier leads to missed opportunities for individuals and for the state as a whole. The solution to tackling this issue requires public and private participation. In light of the pandemic, several programs exist to help households meeting certain low-income requirements afford broadband internet. These are:

- Emergency Broadband Benefit (EBB) Program - The EBB Program offers discounts on broadband services and equipment for eligible individuals and families. The Infrastructure Investment and Jobs Act of 2021 that passed the U.S. Senate would make this subsidy permanent (see Section 4 section of report for more detail).
- Lifeline - Lifeline is a federal program that lowers the monthly cost of phone and internet. Eligible customers will get up to \$9.25 toward their bill.
- Provider Affordable Programs - Many broadband providers provide low-income and/or affordable broadband service plans to eligible customers that are designed to help overcome the affordability barrier.

While programs exist to make broadband access affordable, there is limited public awareness of them, creating a secondary challenge for adoption. This includes programs sponsored by governments, providers, community organizations, or partnerships among them.”²⁵

3.2(ii) – Digital Literacy

Participation in online activities requires more than access to broadband. Whether its employment, education, communication, or civil participation, online-based interaction requires a baseline of digital literacy and skills training. The absence or limitation of these skills has been one of the leading barriers to broadband adoption. Digital literacy and training are not only critical for advancing broadband adoption, but also provide Texans a foundation of skills to participate in the workforce of the technology age.

In the modern economy, an increasing number of workers require foundational digital skills to gain employment. In July 2021, a report from the National Digital Inclusion Alliance (NDIA) found that out of 9.8 million job openings, 6.9 million require some digital skills.²⁶ Fortunately, more states are implementing initiatives to meet this demand. The NDIA also launched its State

²³ Cornwell, Erin and John Horrigan. “[Aging Connected: Exposing the Hidden Connectivity Crisis for Older Adults](#).” AARP, January 2021.

²⁴ “[Increasing Broadband Investment in Low-Income Communities: A Progress Report](#).” *Federal Communications Commission*, 29 July 2020.

²⁵ *Ibid.*

²⁶ “[State Digital Equity Scorecard](#).” *National Digital Inclusion Alliance*, 22 July 2021.

Digital Equity Scorecard to evaluate digital inclusion efforts at the state level.²⁷ States were assessed using the following criteria:

- Data on digital skill needs
- Comprehensive plans to address digital skill gaps
- Online digital skills training
- Incumbent worker training funds
- Technology apprenticeships
- Digital equity in state broadband plans

Texas received an overall score of 3.5 out of 6 possible points.²⁸ Although Texas scored well on online skills trainings, worker training funds, and technology apprenticeships, it lacks a comprehensive plan to address skill gaps and state broadband plans.

Moreover, the NDIA's research found that as of July 2021, there were 938,842 unemployed individuals in Texas, of which at least 309,818 lack foundational digital skills.²⁹ These individuals may not even compete for the estimated 583,209 (or 76.0 percent) of job openings which require digital skills.

4. Opportunities

Broadband infrastructure continues to be expanded throughout the United States, primarily by the private sector. Though the number of broadband subscribers continues to grow, rural and tribal communities continue to lag behind urban and suburban areas, both in terms of access and level of speeds offered.

Some policymakers assert that the federal government should play a more active role to address the "digital divide" in broadband access, particularly in light of the COVID-19 pandemic, which further revealed discrepancies in broadband availability and accessibility.³⁰ These officials argue that disparities in broadband access could result in adverse economic and social consequences for those left behind.

4.1 – Coronavirus Capital Projects Fund

The Coronavirus Capital Projects Fund (CCPF) was established by the American Rescue Plan Act of 2021, "to provide funding to states, territories, and Tribal governments to carry out critical capital projects directly enabling work, education, and health monitoring, including remote options."³¹ The CCPF was created in response to the COVID-19 pandemic, with a goal of expanding needed broadband infrastructure in the wake of the public health crisis. The U.S.

²⁷ *Ibid.*

²⁸ *Ibid.*

²⁹ A 2020 report from the National Skills Coalition found that nearly one in three workers lacked foundational digital skills. The NDIA applied this proportion to the total unemployed in Texas to arrive at its figure.

³⁰ Rachfal, Colby Leigh. "[The Digital Divide: What Is It, Where Is It, and Federal Assistance Programs.](#)" *Congressional Research Service*, 9 March 2021.

³¹ American Rescue Plan Act of 2021, H.R. 1319, 117th Congress. 2021

Treasury, the organization overseeing distribution of the CCPF, has as of this writing not yet released guidance on how those funds should be spent by grant recipients.

4.2 – Infrastructure Investment and Jobs Act of 2021

On August 10, 2021, the U.S. Senate voted 69-30 to pass a \$1.2 trillion bipartisan infrastructure package after months of negotiation.³² The bill is currently awaiting approval from the House of Representatives.³³ The legislation passed by the Senate includes \$65 billion in funding for broadband efforts. Key elements of that funding include:

- \$42 billion for states to work with localities and service providers to improve broadband networks, administered by the National Telecommunications and Information Administration (NTIA) within the Department of Commerce. All states receive a minimum of \$100 million, and larger states (such as Texas) can expect to receive much more than that minimum amount
- \$1 billion for middle mile funding
- \$14.2 billion to make the Emergency Broadband Benefit program permanent, changing the program's name to the Affordable Connectivity Fund (up from \$3.2 billion that funded EBB during the pandemic). The permanent benefit will subsidize \$30 per month of an eligible household's broadband costs
- \$2.75 billion for Digital Equity Act competitive grant programs

The House is set to vote on the Senate-passed infrastructure bill by September 27, 2021.³⁴

5. Public Private Partnerships

Public-private partnerships are a proven means to combine essential government leadership and private-sector investment. The recent \$288 million NTIA grant fund underlines how important public-private partnerships remain for the deployment of broadband infrastructure. The NTIA program is a funding stream dedicated to "...partnerships between a state, or political subdivisions of a state, and providers of fixed broadband service."³⁵ In addition to access to funding, the Council advises public-private partnerships to avoid situations where key stakeholders ultimately have little to no say in an arrangement where the terms are largely decided on by the incumbent. The paramount goal of a public-private partnership is to create a coalition of government authorities, interested stakeholders, and private actors that is ready and able to apply for federal broadband deployment subsidies.³⁶

³² Infrastructure Investment and Jobs Act of 2021, H.R. 3684, 117th Congress. 2021

³³ Pramuk, Jacob. "[House Democrats clear path toward passing \\$3.5 trillion budget bill and infrastructure plan after breaking stalemate](#)." *CNBC*, 24 August 2021.

³⁴ *Ibid.*

³⁵ "[Commerce Department's NTIA Announces \\$288 Million in Funding Available to States to Build Broadband Infrastructure](#)." *National Telecommunications and Information Administration*, 19 May 2021.

³⁶ Marre, Alexander. "[Bringing Broadband to Rural America](#)." *Federal Reserve Bank of Richmond*, December 2020.

6. Best Practices for State Broadband Initiatives

As states continue to invest in and deploy broadband infrastructure, there are a number of initiatives that are best equipped to ensure efficient, equitable, and expansive access. Further, within these policy areas, there are recommended courses of action that increase the likelihood such efforts are successful. We outline a number of proposed practices, based on previous research conducted by the Pew Charitable Trusts.

6.1 – State Broadband Offices

Broadband offices form one component of effective state broadband initiatives.³⁷

As defined by the Pew Charitable Trusts, “a broadband office is a centralized entity within state government with a full-time focus on expanding high speed internet access.” Key functions of these office are to distribute funds for broadband efforts and provide planning support to communities seeking to implement or expand access. However, the mere existence of a broadband office is not sufficient. Instead states must ensure these offices can function effectively by providing, “adequate funding and dedicated, full-time staff who understand broadband issues, can manage grant administration, and can work with the wide range of affected stakeholders.”³⁸

State broadband offices perform crucial functions that assist efforts to expand access. These include³⁹:

- Capacity within state government to address deployment and adoption of high-speed internet.
- A clear point of contact for stakeholders interested in the state’s broadband plans.
- The structure, support, and authority to execute the planning, capacity building, and competitive grant programs that increase service availability.
- A venue for building strong relationships with multiple stakeholder groups and a trusted resource for broadband information.
- A neutral voice when educating policymakers and community leaders.
- Coordination and partnership building to advance broadband projects and policy.

Over the last ten years, an increasing number of states have created broadband-focused agencies. A recent article from Whitacre and Gallardo (2020) documents a number of policy outcomes from the creation of broadband-focused agencies at the state-level.⁴⁰ First, Whitacre and Gallardo document a substantial increase in the number of states that have created broadband offices. From 2012 to 2018, the authors find that the percentage of states with a dedicated broadband office rose from 10 percent to 50 percent. Over the same period, the percentage of states offering funding for broadband efforts rose from 8 percent to 36 percent.

³⁷ Read, Anna and Kathryn de Wit. “[3 Key Components Defined Effective State Broadband Programs.](#)” *The Pew Charitable Trusts*, 21 May 2021.

³⁸ *Ibid.*

³⁹ *Ibid.*

⁴⁰ Whitacre, Brian and Roberto Gallardo. “[State Broadband Policy: Impacts on Availability.](#)” *Telecommunications Policy*, July 2020.

However, the impact of these offices on other outcomes related to broadband access appear to be minimal. For example, even when focusing on states with more robust broadband offices – those staffed with full-time employees – Whitacre and Gallardo find positive impacts on only two out of six possible metrics.⁴¹ Specifically, those offices were associated with greater rates of fiber competition (1.6 percent higher), and higher rates of fiber availability in rural areas. Outside of these two variables, fully supported broadband offices had a limited impact on broadband access. Indeed, the existence of such offices did not appear to have any effect on the availability of broadband, statewide.⁴²

Though these findings appear to cast doubt on the importance of broadband agencies, the authors note that many of those agencies were created toward the end of their analysis period. More specifically, only 8 such offices existed in 2014 before increasing to 25 by 2018.⁴³ Other scholars, notably Stauffer et al. (2020), note that broadband initiatives such as stakeholder outreach, planning, and capacity building require time to develop.⁴⁴ Still, Stauffer et al. highlight promising policies in nine states, several of which are further evaluated by Whitacre and Gallardo (2020).

Regardless, the trajectory of state action has trended toward establishing such agencies. Indeed, most states now have some combination of task forces, councils, and offices that aim to develop strategies that further broadband deployment.⁴⁵ In many cases, these coalitions are also responsible for implementing expansionary initiatives such as grant programs, broadband mapping, and efforts toward digital equity. Further, such agencies are also tasked with stakeholder engagement and outreach that can evaluate community broadband needs, and ultimately, satisfy those needs. The goal of all these efforts is to ensure a statewide, unified approach to broadband policy.

6.2 – State Broadband Plans

States have also begun investing in strategic plans to coordinate broadband policies. As defined by Stauffer et al. (2020), state broadband plans should, “define goals and objectives, identify steps to achieve them, help guide state investments, provide a baseline against which to measure progress, and provide a framework for local planning efforts.”⁴⁶ The aim of such plans should be to ensure systematic approaches to broadband expansion efforts. Moreover, they should engage stakeholders to develop goals that can inform policy and planning decisions. In doing so, broadband plans perform a more important function than simply laying out a map; they encourage buy-in, develop relationships that are necessary to achieve broadband goals, and create consensus among stakeholders.

Though broadband plans tend to focus exclusively on access, planning can also take into account adoption or other relevant policy impacts and inputs. Statewide planning can also be

⁴¹ *Ibid.*

⁴² *Ibid.*

⁴³ *Ibid.*

⁴⁴ Stauffer, Anne, Kathryn de Wit, Anna Read, and Dan Kitson. “[How States Are Expanding Broadband Access](#).” *The Pew Charitable Trusts*, February 2020.

⁴⁵ Sherman, Ryland, Joanne Hovis, and Jacob Levin. “[Putting State Broadband Funds to Work: Best Practices in State Rural Broadband Grant Programs](#).” *Benton Institute for Broadband & Society*, June 2021.

⁴⁶ Stauffer, Anne, Kathryn de Wit, Anna Read, and Dan Kitson. “[How States Are Expanding Broadband Access](#).” *The Pew Charitable Trusts*, February 2020.

initiated by federal requirements.⁴⁷ The U.S. Department of Agriculture's ReConnect Loan and Grant Program is one such initiative that scores states more highly should they possess a broadband plan.⁴⁸ Other potential policy areas to consider include education, healthcare, agriculture, public safety, or economic development more broadly.

Broadband plans are one component of the NDIA's Digital Equity Scorecard.⁴⁹ As previously mentioned, Texas' score on this metric was negatively impacted by the absence of a state broadband plan. However, the recently legislated HB 5 bill includes authorization for a state broadband plan and one is expected to be completed by June 2022.

The Digital Equity Scorecard draws attention to a number of factors that broadband plans should seek to encompass.⁵⁰ This includes:

- Giving special attention to marginalized/most disadvantaged populations
- Outlining goals, objectives, or strategies for addressing market-rate affordability and low-income affordability
- Addressing increasing device accessibility or ownership for households
- Addressing increasing opportunities, funding, coordination, planning or support for digital literacy and skills
- Recognizing need for individual support in the form of digital navigators, tech support, helpdesks, or other forms of one-on-one support for individuals and households
- Outlining goals, objectives, or strategies for establishing a mechanism for providing that support
- Specifically recommend funding or technical assistance to local digital inclusion programs

6.3 – Local Broadband Plans

Broadband plans should also be drafted in consideration of local communities. Ideally, state broadband offices can support local efforts by providing funding or technical support to communities as they engage in planning activities.⁵¹ Broadly speaking, there are two forms of planning in relation to local broadband policy. First, there are strategic plans which identify specific goals, engage stakeholders, document existing assets, survey local demand, engage with private providers, and examine potential forms of infrastructure deployment (public versus private). Second, there are technical plans which seek to implement policies that will help communities achieve those goals outlined in their strategic plans. Activities undertaken as part of technical plans can include network design, business planning and, if applicable, applying for funding. Planning efforts, as far as possible, should be tied to available funding.

The aforementioned outline provides a skeletal structure for communities' planning efforts. However, the capacity for local governments to conduct all-encompassing and specific broadband plans varies significantly across jurisdictions, particularly in rural and underserved areas. Many communities will lack funding, staff, or expertise to be able to conduct planning

⁴⁷ *Ibid.*

⁴⁸ *Ibid.*

⁴⁹ "[State Digital Equity Scorecard](#)." *National Digital Inclusion Alliance*, 22 July 2021.

⁵⁰ *Ibid.*

⁵¹ Read, Anna and Kathryn de Wit. "[3 Key Components Defined Effective State Broadband Programs](#)." *The Pew Charitable Trusts*, 21 May 2021.

efforts. Where local planning infrastructure is severely limited, states should support or lead planning activities, build planning capacity, and provide resources for communities to be successful.⁵²

Capacity building and planning efforts contribute several benefits, including⁵³:

- Active voice for participation among community members, including opportunities to design local broadband networks and negotiate partnerships or agreements with private actors.
- Proof of a community's commitment to pay for expanded service to encourage private sector investment.
- Specific funding priorities and timelines for grant administrators.
- Detailed project outlines to connect entire communities to affordable broadband
- Definition of local priorities and goals with regards to digital equity and economic development.
- Formation of local partnerships to advance community goals.

6.4 – Broadband Mapping

Broadband planning at all levels requires accurate data inputs in order to be successful. Among the most important of these inputs are broadband maps. The need for accurate and available maps has resurfaced repeatedly over the past ten years among both federal and state policymakers. As a result, several states have sought to create accurate geographic data through federal funds made available from 2009 to 2014.⁵⁴ However, some states have found it difficult to continue this data collection effort without federal funding support.

More recently, new broadband mapping has been undertaken by the FCC via its “Digital Opportunity Data Collection” (DODC) nationwide broadband availability effort. However, states are arguably better positioned and more informed to undertake data collection of this magnitude if they have the funding support necessary to do so. New funding via the American Rescue Plan Act of 2021 will provide new financial resources for states to undertake broadband mapping.⁵⁵

With a consistent funding stream, states are best-positioned to perform accurate, regular broadband mapping. Effective mapping programs should consider a number of attributes. First, mapping should seek to capture the “location fabric” of end-users, including the precise number and location of all structures which require broadband.⁵⁶ Second, mapping should catalog the broadband networks currently available, how well those networks perform according to speed, latency, and other measures, and whether those networks can be dynamically updated over time.⁵⁷ Finally, mapping programs should collect comprehensive data on broadband usage, including socioeconomic and demographic data, along with rates of adoption.

⁵² *Ibid.*

⁵³ *Ibid.*

⁵⁴ Wilkins, Jon. “[Seizing the Moment: Scaling Up State Broadband Strategies.](#)” Quadra Partners, LLC, Commissioned by Schmidt Futures, July 2021.

⁵⁵ American Rescue Plan Act of 2021, H.R. 1319, 117th Congress. 2021

⁵⁶ “Stegeman, Jim. “Broadband Mapping Initiative: Proof of Concept.” CostQuest Associates, August 2019.

⁵⁷ Wilkins, Jon. “[Seizing the Moment: Scaling Up State Broadband Strategies.](#)” Quadra Partners, LLC, Commissioned by Schmidt Futures, July 2021.

6.5 – State Grant Programs

States perform an important role in the provision of financial grants and loans for broadband expansion. Financial support to stakeholders can assist in making local broadband projects economically viable. According to Pew Charitable Trusts, well-designed grant programs should seek to encompass the following characteristics, including:⁵⁸

- A set of evaluation criteria for proposed projects that includes items such as demonstrated community support or economic need in the service areas. These criteria help states make decisions based on factors other than just cost per household served.
- Matching funds from the applicant and eligible partners, such as localities, to cover a certain percentage of the project's cost, demonstrate commitment from the applicants, and help ensure efficient use of public funds.
- An emphasis on faster speeds, such as by requiring scalable technology and prioritizing projects that meet speed requirements, to help ensure that funded projects can meet future usage needs without additional state investment.
- Alignment between community plans and applicants' proposals to confirm that infrastructure projects meet local needs and help funders manage risk by ensuring that communities have assessed their options and gained resident and partner buy-in.
- Effective stewardship of public funds via clear accountability measures for grant recipients to help ensure that funded proposals achieve their intended purpose and help project leaders assess and communicate progress to policymakers and the public. Robust accountability provisions may include well-structured challenge processes to allow input from both incumbent and applicant providers; clear milestones for deployment, reporting, data collection, and field visits to monitor project progress; and post-grant requirements, such as abiding by the principles of net neutrality.
- Reduced costs of deployment in high-cost areas.
- Greater availability of broadband connections and progress toward secondary goals, such as use of networks to strengthen local economies.

Grant programs can specify a number of eligible recipients including private internet service providers (ISPs), public authorities such as governments, and non-profit cooperatives or internet utilities.⁵⁹ Multiple states define eligible recipients in legislation, along with other information on program requirements. Additionally, many states mandate data collection and reporting to ensure accountability from funded projects. This data is also useful for evaluating progress toward expressed state goals.⁶⁰

One area that many state programs are focused on is expanding access in unserved and underserved areas. The structure of these programs can vary from state-to-state. Principally, states differ in how they define what unserved areas are.⁶¹ In California, an unserved household is one where no facility-based broadband provider offers connections at speeds of at least 6/1 Mbps. In West Virginia, an unserved area is simply a community that lacks broadband access. With these definitions in place, states can prioritize infrastructure investment in areas with

⁵⁸ Read, Anna and Kathryn de Wit. [“3 Key Components Defined Effective State Broadband Programs.”](#) *The Pew Charitable Trusts*, 21 May 2021.

⁵⁹ Stauffer, Anne, Kathryn de Wit, Anna Read, and Dan Kitson. [“How States Are Expanding Broadband Access.”](#) *The Pew Charitable Trusts*, February 2020.

⁶⁰ *Ibid.*

⁶¹ *Ibid.*

limited broadband access.

States also differ in how their broadband grant programs are funded. Differences in these funding streams may indicate varying philosophies on how broadband expansion should be treated, relative to other policy priorities. A primary difference is whether grants have dedicated appropriations or are funded through repurposed funds from other sources. In many cases, repurposed funds come from money pools that have traditionally supported universal telephone service access.⁶²

The Benton Institute for Broadband & Society recently examined trends in broadband funding programs from both federal and state agencies.⁶³ Their 2021 report notes three major tendencies that characterize these programs. First, their report finds that state grants have increasingly focused on digital equity and economic development as a major consideration. Previously, states prioritized deployment costs as their primary concern when evaluating applicants. More recently, states are focusing on the digital inclusion of low-income communities, agricultural areas, small businesses, and teleworkers. A related consideration is making local applicants successful for federal grant opportunities such as those hosted by the Economic Development Administration. Here, federal authorities place significant emphasis on economic impacts of distributed dollars.

Second, Benton finds criteria on eligible organizations has been broadened in favor of a more inclusive criteria. Previously, states often restricted applicants to specific types of organizations. For example, California previously required that grant applicants possess a Certificate of Public Convenience and Necessity (CPCN) or a Wireless Identification Registration (WIR). This requirement effectively limited the pool of applicants to telephone companies while excluding newer broadband providers. In many cases, this restriction meant that grant funds tended to go toward middle mile providers while last mile infrastructure in unserved areas was neglected. By broadening the applicant criteria, states opened up their programs to a large range of entities including electric cooperatives, governments, private entities, and non-profits. In the case of California, this criteria expansion has significantly improved program performance.

Finally, state programs have tended to be more successful where they encourage collaboration between local governments, communities, private partners, and other stakeholders. In doing so, these collaborations benefit from local insights, making for a more efficient allocation of assets and resources. State-level experimentation over the previous decade has created a number of innovative coalitions between public and private actors. These dynamic organizational structures can evolve to better meet local needs. Moreover, their hybrid nature allows them to take advantage of a more diverse array of funding programs. Indeed, in some states, such as Virginia and Maryland, collaborations of this form are actually mandated under funding criteria.⁶⁴ Though collaborations of this sort are becoming increasingly popular, successful programs require research, planning, coordination, program design, execution, monitoring, and adjustment. State-level organizations that are capable of bridging across these interests may also be a necessary component.

⁶² *Ibid.*

⁶³ Sherman, Ryland, Joanne Hovis, and Jacob Levin. "[Putting State Broadband Funds to Work: Best Practices in State Rural Broadband Grant Programs](#)." *Benton Institute for Broadband & Society*, June 2021.

⁶⁴ *Ibid.*

6.6 – State Policy Progression

As many states formulate and adopt broadband policies, it is worth noting progress has not been linear or uniform. For example, Minnesota's grant program was developed for nearly a decade before the creation of a state-level strategic plan. Multiple iterations of a broadband taskforce were created from 2008 to 2013, when a formal entity was established. An initial infrastructure grant was not established by the state until 2015. Conversely, Illinois formulated a broadband plan and then created a grant program quickly and efficiently. Illinois' efficiency was, in part, thanks to lessons learned from Minnesota's execution. Illinois' \$420 million grants program was launched in 2019, following simultaneous development of the program and availability information-gathering, stakeholder outreach, and strategy development. Virginia also was able to go from planning to execution in a relatively reduced time-frame.⁶⁵

7. Benefits of Deployment/Adoption to Unserved Areas

The expansion and adoption of broadband into unserved areas remains the most important aspect of broadband policy. Indeed, in the 21st century, broadband can be considered an essential part of public infrastructure. As a result, considerations such as affordable and universal access and a digitally literate population are vital to the development of healthy communities.⁶⁶ According to research from the Brookings Institute, the implications of broadband access are now so far-reaching that they may directly and indirectly impact social determinants of health (SDOH).⁶⁷

The vital role played by broadband has been underlined by the ongoing COVID-19 pandemic. The crisis has resulted in nearly 50 million older Americans confined at home for extended periods. The inability of many of these individuals to access the internet, either due to lack of digital literacy or broadband access, has resulted in severe consequences. The absence of connectivity has restricted access to public health information and cut off access to social support, resulting in high rates of social isolation. Stated directly, there have been senior Americans who have died in the present crisis due to social isolation and disengagement.⁶⁸

Two other areas where broadband access has proven advantageous during the health crisis have been healthcare and education. The explosive growth of telemedicine and distance education have been one positive byproduct of the pandemic. Telemedicine delivers both cost savings and direct benefits for both hospitals and patients. Patients save on transportation expenses and gain service provisions while hospitals can decrease their operating costs. Likewise, distance education is capable of delivering learning services to students who were previously difficult to reach. In both cases, rural residents benefit disproportionately from these services that were previously difficult to attain, both due to distance and the number of area

⁶⁵ Sherman, Ryland, Joanne Hovis, and Jacob Levin. "[Putting State Broadband Funds to Work: Best Practices in State Rural Broadband Grant Programs](#)." *Benton Institute for Broadband & Society*, June 2021.

⁶⁶ Tomer, Adie, Lara Fshbane, Angela Siefer, and Bill Callahan. "[Digital Prosperity: How broadband can deliver health and equity to all communities](#)." *Brookings Institute*, 27 February 2020.

⁶⁷ SDOH are a range of social and economic variables that can impact health and well-being.

⁶⁸ Cornwell, Erin and John Horrigan. "[Aging Connected: Exposing the Hidden Connectivity Crisis for Older Adults](#)." *AARP*, January 2021.

providers. However, neither of these benefits can be utilized efficiently, at scale, without access to broadband.⁶⁹

Outside of the current health crisis, limited broadband access in rural areas has remained a well-documented problem. Though costs of expanding rural broadband infrastructure can be high, the economic case for doing so is unequivocal. Broadband access in rural areas is linked to higher rates of business formation, increased job and population growth, higher home values, and lower unemployment. Moreover, broadband access can lead to long-run gains in innovation and productivity.⁷⁰

Broadband access also brings considerable benefits to consumers. With access to wider internet, consumers can select and purchase goods and services from a wider array of suppliers. Doing so not only increases consumer choice, it decreases costs to households. A recent survey from the Federal Reserve Bank of Richmond estimates that gaining access to online markets can result in annual savings of \$1,850 per household.⁷¹

Small and local businesses also benefit from broadband in a myriad of ways. First, high-speed internet access improves the hiring process by making for more efficient matches between employer and employee. Second, broadband decreases business operating costs through easier access to information, suppliers, and other resources. Finally and most obviously, broadband expands the potential pool of customers for businesses.⁷²

8. Additional Benefits of Broadband

Research from the Federal Reserve Bank of Richmond noted a number of benefits from broadband deployment. Moreover, at least one previous study examined the impact of broadband with higher speeds:⁷³

“Lobo et al. (2020) find that higher speed broadband rates (>100 Mbps) in rural Tennessee are associated with lower unemployment rates. However, other studies have argued that it is broadband adoption that is more closely correlated with rural economic growth (instead of simple availability). Whitacre et al. (2014a) found that rural counties with high levels of broadband adoption during the 2000s saw higher levels of income growth and lower unemployment than otherwise similar communities with lower adoption. These relationships did not hold true for rural counties with higher levels of availability. Similarly, Whitacre et al. (2014b) documented that increases in broadband adoption were correlated with positive changes in jobs and income in rural counties (after controlling for other potentially influential factors), while increases in availability did not. More recently, Gallardo et al. (2020) show that broadband adoption has a stronger relationship with county-level productivity than alternative measures of simple availability.”

⁶⁹ *Ibid*

⁷⁰ Marre, Alexander. [“Bringing Broadband to Rural America.”](#) Federal Reserve Bank of Richmond, December 2020.

⁷¹ *Ibid*.

⁷² *Ibid*.

⁷³ Marre, Alexander. [“Bringing Broadband to Rural America.”](#) Federal Reserve Bank of Richmond, December 2020.