Broadband Access and the Digital Divides

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Education in the 21st century increasingly relies on strong, reliable access to the internet at school and at home. However, millions of students throughout the United States are unable to connect to the internet outside of school to complete coursework and actively participate in a modern education. This issue exists throughout educational settings, including K-12 schools and higher education institutions; and the lack of access disproportionately affects Native American, Black and Hispanic students, students in families with low incomes, and students in rural areas. When schools move into remote learning environments — in response to a pandemic, natural disaster or other unforeseen circumstance — the importance of internet access and the disproportionate impacts of a lack of access are exacerbated and thrust into the spotlight.

Even in normal circumstances, remote learning is an increasingly common option for students of all ages. For instance, public full-time K-12 virtual schools enrolled nearly 300,000 students across 35 states in 2017-18. This is also true for higher education students: In the fall of 2018, there were almost 7 million students enrolled in distance learning courses at the higher education level. Although most national survey data available on the digital divides are limited to the K-12 age range, lack of access affects the education experience of students of all ages including higher education students. Regardless of education level, students who do not have access to a strong, reliable internet connection cannot consistently participate in virtual school options or activities for which an internet connection is necessary.

Additional Resources in Light of COVID-19

Even outside of extraordinary circumstances, millions of students are unable to access the internet at home for educational purposes. These existing digital divides can then be exacerbated — not created — by events such as pandemics or natural disasters. In 2020, responses to the COVID-19 pandemic forced many K-12 schools and higher education institutions to switch to a remote learning format, deepening digital divides for many students and greatly increasing the necessity of strong, adequate internet connections for education. View additional Education Commission of the States resources relevant to responses to the COVID-19 pandemic.

According to a [Pew Research Center analysis](#) of 2018 survey data, 17% of teenagers, ages 13-17, say they are "often or sometimes unable to complete homework assignments because they do not have reliable access to a computer or internet connection." One study [from the Quello Center](#) at Michigan State University used student data to explore the impact a lack of access can have on education beyond the homework gap. This study found that, in addition to completing homework at lower rates, students who lacked internet access had lower GPAs, lower PSAT and SAT scores and less interest in attaining a higher education degree.

National estimates on the number of higher education students who lack access to the internet are not available, but the access problem also exists for many in higher education. For instance, [The Education Trust-West](#) analyzed information on higher education institutions in the state of California. They estimate that "more than 102,000 college students from lower income households and 145,000 students of color" may lack access to the internet, and "more than 109,000 students from lower income households and almost 134,000 students of color" may lack access to an adequate device for remote learning.

Education policymakers and stakeholders throughout the country are eager to expand internet access for students, and many states have developed innovative and noteworthy methods to pursue broadband expansion and increase access to the internet. A variety of overlapping and interconnected barriers can result in a lack of internet access for students. This Policy Brief will introduce three unique digital divides that may prompt different policy solutions: divides caused by an absence of availability of local broadband infrastructure, the lack of affordability of an adequate internet subscription and unequal access to devices that can adequately connect to the internet. The brief also provides an overview of the impact on students when they are not able to access the internet, a summary of the scope of these digital divides and policy solutions worth consideration for each of the three digital divides.
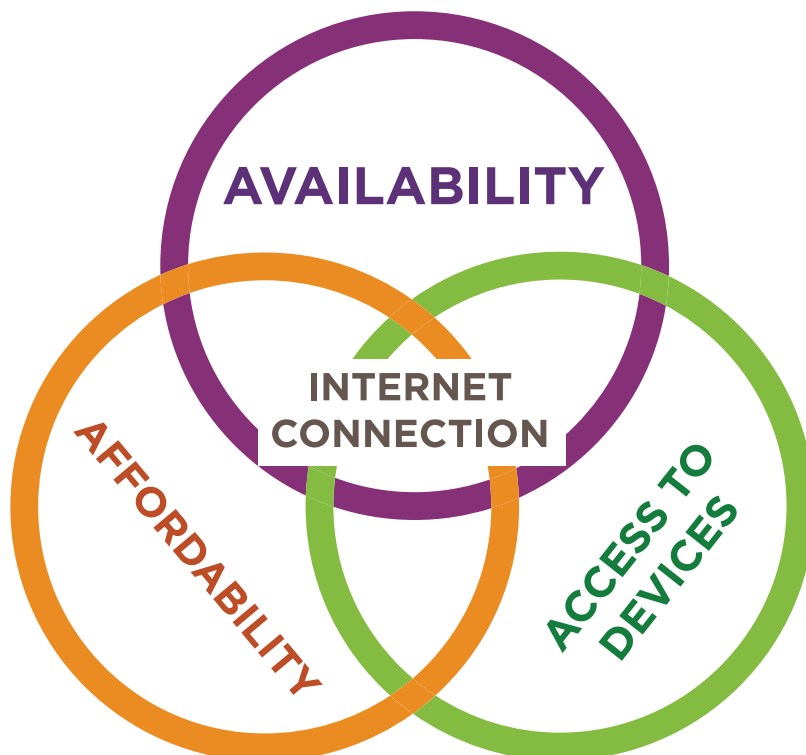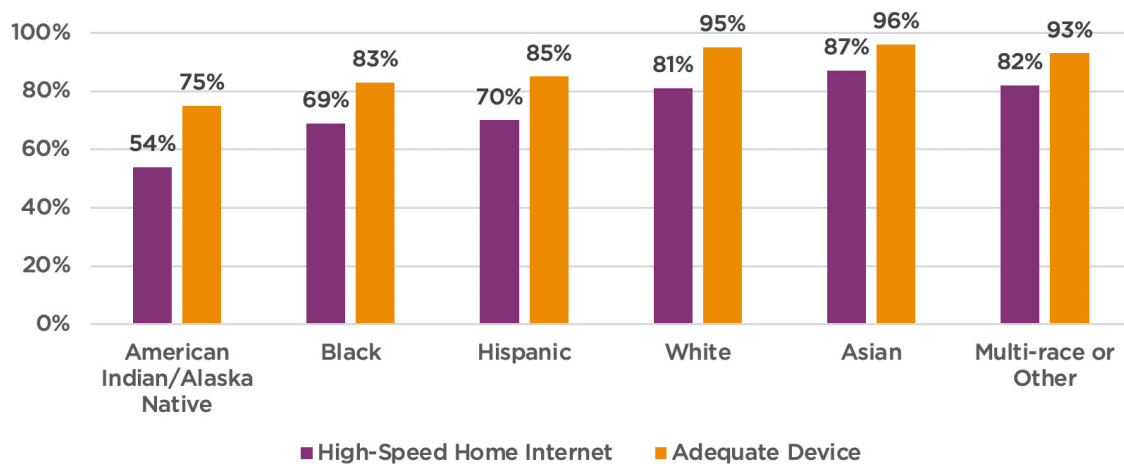

Policymakers may want to consider three crucial elements that support students with connecting to the internet for educational purposes: the availability of local broadband infrastructure, the affordability of an internet subscription and access to devices that adequately connect to the internet.

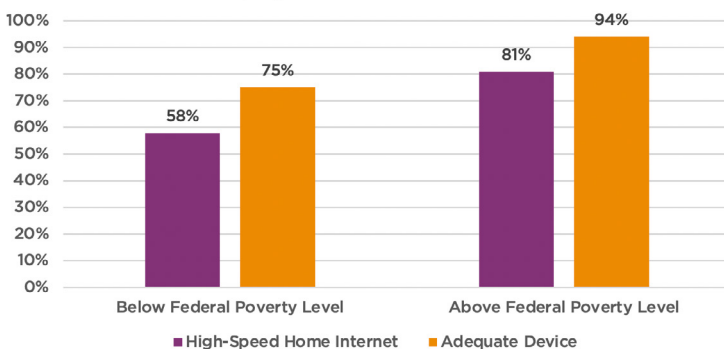# Digital Divides Disproportionately Affect Certain Student Groups

The digital divides have a disproportionate impact on Native American, Black and Hispanic students; students from lower-income households; and students who live in rural areas. According to an analysis of 2018 American Community Survey data, approximately 13.5 million K-12 public school students — or about 25% of all K-12 public school students — did not have access to an internet connection or an adequate device for distance learning at home. Their analysis finds that, nationally, Native American,

Black and Hispanic students; students from households that are below the federal poverty threshold; and students living in nonmetropolitan areas are least likely to have access to high-speed internet or devices. Given these national disparities, policymakers may consider disaggregating state data by race/ethnicity, family income and locality, as some communities may need additional or different supports to achieve equal access to the internet and remote learning experiences.
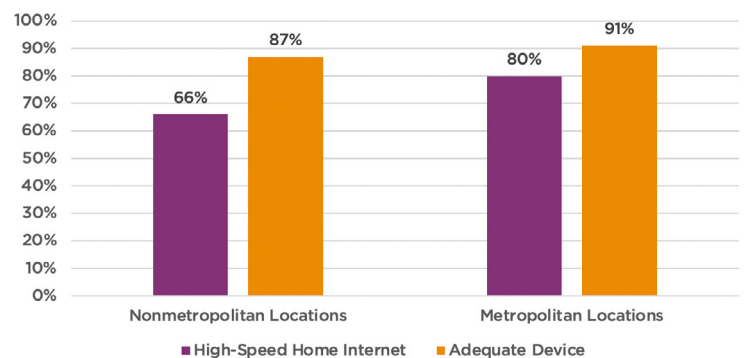
K-12 Students With Access to Internet or Devices, by Race/Ethnicity

	High-Speed Home Internet	Adequate Device
American Indian/Alaska Native	54%	75%
Black	69%	83%
Hispanic	70%	85%
White	81%	95%
Asian	87%	96%
Multi-race or Other	82%	93%

K-12 Students With Access to Internet or Devices, by Household Income Level

	High-Speed Home Internet	Adequate Device
Below Federal Poverty Level	58%	75%
Above Federal Poverty Level	81%	94%

K-12 Students With Access to Internet or Devices, by Community Setting

	High-Speed Home Internet	Adequate Device
Nonmetropolitan Locations	66%	87%
Metropolitan Locations	80%	91%

Source: Public Policy Associates.

Addressing the Three Digital Divides

As policymakers and stakeholders consider efforts to expand internet access, it can be useful to first assess which of three digital divides a student is experiencing — absence of availability, lack of affordability and/or unequal access to devices. While these barriers often overlap, each prompt distinct policy solutions. Each section that follows highlights state and local policy solutions designed to address the three digital divides.

Digital Divide No. 1: Absence of Availability

Especially in rural areas, many students and households lack internet connections because their communities lack local broadband infrastructure. This physical infrastructure problem results in certain communities not having the ability, regardless of their desire or financial resources, to access broadband at industry standard speeds. According to the National Center for Education Statistics, in 2018, 12% of 3- to 18-year-olds did not have access to the internet at home through a computer or tablet. Of those, 4% reported that they lacked access because internet was not available in the area.

According to the Federal Communications Commission's 2019 Broadband Deployment Report, 21.3 million Americans lack access to a connection that enables a download rate of at least 25 megabits per second and an upload rate of 3 Mbps; speeds that are considered to be the industry standard. This includes students of all levels, including both K-12 students and higher education students. Some experts argue that the official figures underestimate the lack of broadband

availability in the United States, as alternative mapping projects offer bleaker assessments.

STATE POLICY EXAMPLES: BRIDGING THE AVAILABILITY DIVIDE

Some states have taken action to expand broadband infrastructure, including attempting to fully understand where divides exist, identifying funding to expand broadband access and funding feasibility studies to ensure that investments produce positive results. The three following examples address internet access and infrastructure generally; resulting increases in connectivity would benefit K-12 students as well as higher education students.

A first step to expanding broadband access may be obtaining a comprehensive understanding of where and to what extent a lack of access is problematic for students. **Georgia**, for example, enacted the Achieving Connectivity Everywhere Act in 2018, which included provisions to create a detailed "map showing the unserved areas in the state" to inform future internet access expansion efforts. On June 30, 2020, that map was made available online. One feature of note is how the map differs from the Federal Communications Commission's internet service map: According to the Georgia Department of Community Affairs' 2020 Broadband Report, the map identified "12,316 unserved census blocks that were previously deemed 'served' by the FCC." The Georgia Broadband Availability Map gives a new view of the difference between access to high-speed internet in metropolitan and rural areas. Of the more than 507,000 homes and businesses lacking access to reliable, high-speed broadband service, nearly 70% of these locations are in rural parts of Georgia.

States and other public entities may also seek out partnerships and coordination with private companies to incentivize the expansion of internet access. For instance, the **Virginia** [Telecommunication Initiative](#) was established in 2016 and provides grants to localities to expand broadband, specifically by supplementing private sector broadband service providers' construction costs if they extend service to areas that are unserved. Applications must come from government units that are in partnership with a private-sector provider. Through this process, the initiative [seeks to](#) prepare communities to "build, utilize, and capitalize on telecommunications infrastructure" and is seen as "the [primary vehicle](#) by which the commonwealth incentivizes broadband infrastructure deployment." This program is one of many efforts in Virginia to expand broadband availability. The state's [Commonwealth Connect](#) website includes annual reports on expansion efforts as well as a [compilation](#) of relevant state legislation dating back to 2008. The 2020 annual report records that the state connected 32,000 homes and businesses in 2019 and 52,277 in 2020; and anticipates that 74,510 will be connected in 2021 and 72,380 in 2022.

Policymakers interested in broadband expansion efforts may also consider taking steps to direct investment to the projects most likely to be cost-effective to ensure that proposed expansion actions will be likely to succeed. In 2019, the **Vermont** [Legislature](#) created the [Broadband Innovation Grant Program](#) to help communities fund feasibility studies and business plans for broadband expansion in rural, unserved and underserved areas of the state. The program awards up to $60,000 to grantees, and if the feasibility study determines that a project would be [cash-flow positive](#) within three years, the

department of public service will request an actionable business plan from the grantee for consideration.

Expanding broadband infrastructure may be ambitious and costly, but a local broadband infrastructure is often a necessary precondition to policies that make broadband more affordable or increase access to devices.

Digital Divide No. 2: Lack of Affordability

Even if local broadband infrastructure is available, students or households will not be able to access the internet at home if they cannot afford it. According to [National Center for Education Statistics](#), roughly one third of households with children aged 3-18 that did not have access to the internet reported the main reason for their lack of connection was that an internet connection was "too expensive." Roughly one quarter of all households that did not have access to the internet overall — a figure that inevitably includes many higher education students — similarly cite the cost as the primary cause of their lack of access. According to New America's The [Cost of Connectivity 2020](#) report, the average cost of a monthly internet subscription in the United States is $68.38, with a median cost of $50. And remote learning applications such as video chat streaming programs require [strong internet connections](#), especially if multiple individuals in a household are doing such work simultaneously. These costs can be a significant portion of a family's income, and [NCES data](#) shows that families are much more likely to cite expense as their primary reason for not having internet at lower household income levels. Approximately half of all

households with children aged 3-18 who do not have access to the internet and make less than $20,000 a year cite expense as their primary reason for lacking connection; this percentage incrementally decreases for households in higher income brackets.

STATE AND LOCAL POLICY EXAMPLES: BRIDGING THE AFFORDABILITY DIVIDE

Policy solutions to bridge the affordability divide often build on or complement a foundation established by broadband infrastructure availability expansions. The potential overlap of availability and affordability issues is well-illustrated in a state policy example from **Tennessee**. In 2017, the state enacted the Tennessee Broadband Accessibility Act, with a primary function of funding grants to "acquire and install infrastructure that supports broadband services." Yet according to a Pew study, a state intergovernmental report found low rates of internet subscription even in areas that had broadband infrastructure. This prompted the grant program to incorporate adoption efforts within the grant scoring process. Applicants will increase their likelihood of winning funds if they combine infrastructure expansion with programs designed to increase subscription rates, such as low-income assistance and digital literacy programs. According to Pew, "these efforts maximize the effectiveness of infrastructure investments, as they are essential to ensuring that the infrastructure projects [funded by the program] have the take rates they need to be successful."

Policymakers may seek to leverage prior infrastructure investments and consider public-private partnership opportunities to bridge the affordability divide. For instance, in July 2020, the city of **Chattanooga,**

Tennessee, announced EdConnect, a partnership between the city, the county school district, the municipally owned energy and internet provider, and community partners and foundations. This program seeks to provide free high-speed internet subscriptions and routers to all households with students who receive free or reduced-price lunch. This program would not have been possible if the city had not already invested in making very high-speed fiber-optic cable accessible to all area homes and businesses through its municipal power company. With this city-owned infrastructure already in place, the decision to activate free subscriptions for students was much less difficult. This service is expected to provide internet access to 28,500 students and run over the next decade if anticipated funding levels are maintained.

> ## For More
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> Education Commission of the States has written previously about potential benefits, drawbacks and barriers to creating municipal broadband networks.

Policymakers interested in bridging the affordability divide have often sought to maximize federal investments or unexpected influxes of funds. This has especially been the case following the 2020 federal stimulus package in response to the COVID-19 pandemic. In March 2020, the federal government passed the Coronavirus Aid, Relief, and Economic Security Act to help stimulate the economy and support state and local governments. The Act includes $3 billion in the Governor's Emergency Education Relief

Fund for governors' discretionary educational use. **Alabama** is one example of a state that has used federal funds to tackle connectivity issues by funding internet subscriptions for those in need. Gov. Kay Ivey announced on July 31, 2020, that $100 million of federal CARES Act funding would be allocated to fund Alabama Broadband Connectivity for Students. Through Dec. 31, 2020, this program provides home internet access vouchers for equipment and service costs for families of students currently eligible for free and reduced-price lunch or meeting other income criteria.

Digital Divide No. 3: Unequal Access to Devices

Many students and households are unable to access the internet because they do not have an adequate device to connect to the internet. According to an analysis of 2018 American Community Survey data, approximately 3.6 million households, including 7.3 million children in the United States, do not have a laptop, desktop or tablet with which to connect to the internet. Additionally, this survey collects data on whether a device is present in the household but does not gather information on device quality or whether there are enough devices for every household member to use. This has led some analysts to assume the number of students without access to their own device "is likely substantially worse than these reports estimate."

In September 2020, a Household Pulse Survey from the U.S. Census Bureau reported 4.4 million households with children did not have consistent access to computers or other digital devices for online learning. Although the divide in access to devices has existed for years, the move of K-12 schools and higher education institutions to remote learning

environments resulting from the COVID-19 pandemic created an expanded need for adequate internet connected devices. This need, combined with an influx of money for states from the federal CARES Act, prompted much of the recent policy that has taken place in device expansion efforts.

STATE AND LOCAL POLICY EXAMPLES: BRIDGING THE ACCESS TO DEVICES DIVIDE

In the **Illinois** application for federal GEER funds, the state highlighted technology gaps for Illinois' students from low-income and rural higher education backgrounds and those students' "lack of access to digital devices" as key concerns raised by the COVID-19 pandemic. According to the document, "a primary purpose of the allocation the state will make to public [institutes of higher education] will be to support technological capacity" for students of color, students from low-income backgrounds and students from rural areas. The state received $108 million from the federal GEER fund. It directed nearly half of these funds, or $49 million, to the Illinois Board of Higher Education and the Illinois Community College Board. According to the office of Gov. JB Pritzker, this higher education funding was committed to "overcome barriers facing students" and could be used to fund laptops to address the needs of higher education students.

Efforts to acquire large numbers of devices can be logistically unwieldy. To that end, some states have sought to engage intermediate actors or require school district/state cooperation for expanding devices for students. In **Michigan**, a 2020 appropriations bill (SB 690) allocated $25 million to the Michigan Association of Intermediate School Administrators for a device purchasing program and distance learning. Funds must

be used for "coordinating and incentivizing strategic purchasing of devices" and to "address immediate access and connectivity issues for students, families, and community members who do not have internet access." A statewide device purchase program will offer financial incentives for the purchase of devices by school districts, with larger incentives directed to districts with lower levels of devices in student homes and with greater rates of students living in poverty.

The state of **Mississippi** used federal CARES Act funds in 2020 to greatly expand home device access for students. Through a combination of the [Equity in Distance Learning Act](#) and the Mississippi [Pandemic Response Broadband Availability](#) Act, the Mississippi Legislature allocated $200 million to the Mississippi [Connects](#) program to "provide every public-school student in Mississippi with the technology to learn at school and at home." If districts pay at least 20% of the cost of laptops, tablets or other devices, the Mississippi Connects program will cover up to 80% of the device cost. Recognizing that the grant is being funded by "one-time federal funds," the state is also requiring the development of responsible use and technology sustainability plans to ensure the devices are long-lasting. According to a [report](#) from the state, 148 of the 150 Mississippi school districts submitted applications and ordered [nearly 390,000 devices](#) — a mix of Chromebooks, Windows Laptops, Apple MacBooks and iPads — as of Oct. 1, 2020.

Providing internet-capable devices to students may often be a more straightforward task than expanding broadband infrastructure, but logistics and deployment decisions are key considerations for policymakers. Those implementing such expansions may wish to prioritize distributing devices to students in greatest need. The **New York City** Department of Education, for example, executed a [multiphase rollout](#) of its iPad distribution as part of its remote learning response to the COVID-19 pandemic. Priority was given to students who reside in shelters, temporary housing and foster care, students with disabilities, multilingual learners, students in public housing, and students who qualify for free and reduced-price lunch. After these students' needs were met, later distribution phases addressed device needs in the rest of the student population.

Final Thoughts

Internet access has become an increasingly important element of a modern education, but it continues to be absent for millions of K-12 and higher education students throughout the United States. Additionally, digital divides disproportionately affect certain student populations: Native American, Black and Hispanic students; members of low-income households; and students living in rural areas are less likely to have the internet access they need to participate fully in the education process. Unexpected circumstances, such as pandemics or natural disasters, can push schools that generally use in-person instruction to use remote learning systems, deepening the gaps in opportunities to learn for those without internet access.

Many policymakers, state leadership and other stakeholders are seeking to bridge the three unique digital divides presented in this brief: the availability of local broadband infrastructure, the affordability of internet subscriptions and access to devices that connect to the internet. Those seeking to expand internet access may wish to reflect on which particular divide they are seeking to bridge when considering potential policy solutions, including devising policies that seek to address more than one barrier — as many students are simultaneously affected by more than one of the digital divides. Although no one-size-fits all solution exists for these complicated issues, these problems are not new, and lessons from previous policy actions may offer guidance to policymakers seeking to provide high-quality learning opportunities to all students.

Additional Resources

- COVID-19 Series: Remote Learning, Education Commission of the States

- Broadband Access and Implications for Efforts to Address Equity Gaps in Postsecondary Attainment, Education Commission of the States

- Inhibiting Connection: State policy impacting expansion of municipal broadband networks, Education Commission of the States

- State Education Policy Tracking (Technology: Broadband Access), Education Commission of the States

- Community Broadband Bits Podcast, Institute for Local Self-Reliance

- Digital Equity for Students and Educators, Public Policy Associates, Incorporated and National Education Association

- How States Are Expanding Broadband Access: New research identifies tactics for connecting unserved communities, Pew Charitable Trusts

- State Broadband Initiatives: Selected State and Local Approaches as Potential Models for Federal Initiatives to Address the Digital Divide, Congressional Research Service

9

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