VISIONS OF DIGITAL EQUITY

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BENTON INSTITUTE
for BROADBAND
& SOCIETY

Broadband Delivers Opportunities
and Strengthens Communities

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Foreword

Digital equity—or, digital opportunity, if you prefer—is having a moment.

Our persistent digital divide is a barrier to our economic competitiveness and equitable distribution of essential public services, including health care and education. And the digital divide exacerbates existing wealth and income gaps, especially in communities of color, lower-income areas, and rural parts of the United States.

But the U.S. is making an unprecedented investment to ensure that individuals and communities have the capacity to fully participate in our society and economy.
This includes access to, and the use of, affordable information and communication technologies, such as wired and wireless broadband, internet-enabled devices, and applications and online content designed to enable and encourage self-sufficiency, participation, and collaboration.

This is a huge undertaking with momentous implications on the future of the Nation.

Each state has been asked to envision how life there can be transformed by achieving digital equity. As part of their digital equity plans, states have the opportunity to illustrate how ubiquitous, affordable connectivity to reliable, high-speed broadband will benefit communities through increased access to health care, education and job training, economic growth, and civic participation.

With this extraordinary opportunity before state policymakers and local communities in mind, the Benton Institute for Broadband & Society launched the Visions of Digital Equity project to aid both in ensuring that more community voices are heard in crafting visions that increase opportunity for all.

We learned that a well-crafted vision of digital equity has the potential to be very powerful. It can:

- **Offer a glimpse of a state transformed by universal connectivity,**

- **Provide a roadmap and resources for the digital inclusion efforts to come, and**

- **Act as a north star for goal setting, planning, and implementation efforts over the months and years to come.**

Through surveys, community meetings, interviews, conversations, and a collaborative writing process with community contributors, we have arrived at a set of principles to help guide both the process and the resulting visions of digital equity.

We hope these principles help the residents in each state evaluate their digital equity plans.

Let's make the most of this moment. The best visions of digital equity will be community centered and focused on creating change, specific and clearly articulated, and ambitious but attainable.

This report is a guide to dreaming big: 1) to envisioning a state transformed by ubiquitous, reliable, affordable, high-speed internet access and 2) to help states "lead with equity," intentionally identifying, amplifying, and centering the voices of people and disconnected communities most affected by the digital divide.

In short, we're asking states to articulate what success looks like when we achieve digital opportunity for all.

Adrianne B. Furniss
Executive Director
Benton Institute for Broadband & Society

Visions of Digital Equity Principles

All 50 states, the District of Columbia, and Puerto Rico are currently working on digital equity plans. One key component of the plans is the development of states' visions for digital equity. These efforts are the initial state-level planning and envisioning at this scale and scope.

This project focuses on the unique opportunity for states to craft **visions of digital equity** that are guided by the people who are most impacted by the digital divide, and improving the lives of all.

The National Telecommunications and Information Administration (NTIA), which will review all state digital equity plans, suggests that digital equity plans address at least these two questions:

1. **What will digital equity look like in the context of your state?**

2. **What are the broad goals that should be accomplished in executing this plan (e.g., improve rural health outcomes, increase underrepresented youth employment in technology-related fields)?**

NTIA has specifically advised states to "lead with equity," intentionally identifying, amplifying, and centering the voices of those most affected by the digital divide and disconnected communities.

With the extraordinary task and responsibility of state policymakers and local communities in mind, we undertook this project to aid both in ensuring that more community voices are heard in crafting visions that increase opportunity for all.

Digital equity work did not begin, nor will it end, with this time of historic federal funding. Digital equity advocates around the country have been working for many years to close the digital divide. This project draws on the expertise of national and local experts in this field.

Through surveys, community meetings, interviews, conversations, and a collaborative writing process with community contributors, we have arrived at **ten Principles for Digital Equity Visions**, organized around five themes, to help guide both the process and the resulting **visions of digital equity**.

I. Strive for Equity Beyond Just Digital

Congress defines digital equity as "the condition in which individuals and communities have the information technology capacity that is needed for full participation in the society and economy of the United States." The Infrastructure Investment and Jobs Act states that "achieving digital equity is a matter of social and economic justice and is worth pursuing." Without digital equity, it is increasingly difficult to ensure the economic, political, and social rights and opportunities everyone deserves.

Although Congress finds that the benefits of broadband should be broadly enjoyed by all, the digital divide disproportionately affects communities of color, lower-income areas, rural areas, people with disabilities and language barriers, seniors, and veterans, among others. These barriers are even more pronounced for people and communities who represent multiple such populations. A call for equity recognizes that due to historical actions, we do not all start from the same place or on a level playing field, and requires us to acknowledge and make adjustments to correct for these imbalances. The goal is a just and equitable society, where everyone is able to meet their basic needs, exercise their agency, and access a range of opportunities.

Digital equity efforts aim to address these imbalances by connecting everyone, especially those groups who have been disproportionately impacted by the digital divide, in order to facilitate equitable access to essential public services, including health care and education, and to make the United States more economically competitive.

With this in mind, we offer the following principles:

1. **Digital equity is equity and cannot stand outside the broader work of ensuring that everyone has opportunities based on their needs.** Without digital equity, communities will continue to face significant barriers in accessing opportunities and vital resources, thereby perpetuating existing inequalities and further widening the digital divide. Digital visions should articulate a commitment to remove barriers and empower the most vulnerable in our communities.

2. **Envision a state transformed by digital equity.** Successful digital equity efforts result in healthier, more robust communities and more opportunity for all. Digital equity visions should illustrate how ubiquitous, affordable connectivity to reliable, high-speed broadband will benefit communities through increased access to health care, education and job training, economic growth, and civic participation.

II. Empower Communities

Digital equity is the product of digital equity ecosystems—that is, the interactions between individuals, populations, communities, and their larger socio-technical environments that all play roles in shaping the digital inclusion work in local communities to promote more equitable access to technology and social and racial justice. Digital equity is not the responsibility of broadband providers or governments alone. All players must understand the local, cultural drivers and social barriers to broadband adoption while taking ownership of the solutions in addressing these barriers.

Communities themselves should be the ones identifying community needs. Government officials must devote time and resources to authentic outreach to the people and communities who are most profoundly impacted by inequity, paying attention to the needs they identify. In order to accomplish this and do so with the level of trust that will be required, government officials should engage (and compensate) community leaders in facilitating ongoing conversations and holistic, considerate, inclusive input gathering. The importance of this cannot be overstated. The people and communities who are intended to be served by digital equity programs must be engaged in setting goals and evaluating efforts.

With this in mind, we offer the following principles:

3. **Devising digital equity visions must be an inclusive, collaborative, and ongoing process led by those most impacted by the digital divide, especially communities that have historically suffered from unequal access to broadband.**
    A top-down approach to digital equity visioning, planning, and implementation will not succeed. Digital equity visions, strategies, and approaches, as well as the specific state digital equity plans, must be the result of collaborative exercises that directly engage communities in the planning process with government, broadband providers, philanthropies, and other organizations. These processes must value and center the perspectives of the people digital equity efforts are intended to serve. Without a seat at the table for community members, there can be no equity. This process is about building relationships and trust, authentically engaging the community and addressing any historical issues.

4. **Digital equity planning should include creating and sustaining healthy digital equity ecosystems.** Digital inclusion coalitions often include libraries, community-based organizations, local governments, housing authorities, and others in communities across the country. These coalitions organize to cooperatively address equitable access to and use of communication technologies and play a key role in promoting and supporting healthy digital equity ecosystems. Since many of the underconnected face an array of barriers to adoption, relying on ecosystems makes sense to deliver comprehensive, holistic, wraparound services to address complex needs.address complex needs.

III. Focus on Community Benefits

Digital equity visions extend beyond access to broadband and devices to focus on community benefits—programs and activities that respond to community needs as identified by individuals in those communities. A focus on community benefits should help increase understanding of the social impact of programs and policies on the intended communities; achieving community benefits in this way will help increase community indicators of health, financial security, education, and civic engagement.

Digital equity visions and plans must include delivering the programs and services necessary to ensure that all individuals in the United States have sustainable access to, and the ability to use, affordable information and communication technologies, including digital literacy training, quality technical support, and applications and online content designed to enable and encourage self-determination, collaboration, and participation in society.

Just as important as leveraging the positive potential of connectivity is the imperative to create secure online spaces, and to provide training and support for those seeking to safely engage in online and digital activity. These protections—critical for communities disproportionately experiencing harms including digital discrimination, data extraction, and fraud—are also critical to achieving digital equity.

With this in mind, we offer the following principles:

5. **Advance and ensure digital safety, privacy, and well-being.**
   Digital equity visions and efforts must center choice, privacy, safety, and digital health at their core, and must empower participants with the tools and skills needed to navigate risks and avoid harms associated with digital environments.

6. **Technology should open opportunities, not create or sustain barriers for people.** Digital equity efforts should reduce and remove a full range of barriers through universal design (including multilingual availability) and inclusive access for those with disabilities, which benefits all people and society broadly.

IV. Plan for Sustainability

"Achieving digital equity for all people of the United States requires additional and sustained investment and research efforts," Congress found in the Infrastructure Investment and Jobs Act. Without sustained investment in digital adoption and inclusion efforts at the community level, the huge new investments in broadband infrastructure and affordability cannot close the digital divide.

Digital equity visions, strategies, and plans must address the ability to respond to today's community needs while also looking ahead at how those needs will evolve and what will be required to meet them. These efforts must be long-term and sustainable to ensure that community needs continue to be assessed and addressed.

With this in mind, we offer the following principles:

7. **Digital equity efforts must bridge short-term impact and long-term, iterative, and sustainable efforts.** Closing the digital divide will not be a one-shot effort; it will be a long-term commitment that should adjust to and reflect changing technology, policy, and circumstances and community needs. Sustained digital equity efforts require short- and long-term key performance indicators as well as periodic assessments of progress.

8. **Network resilience is crucial for ensuring equitable and reliable digital access, enabling sustained digital equity.** Networks in all areas must be able to endure various threats to stability, including climate change, disasters, and similar future system stressors.

V. Stay Accountable to the Vision and the Community

Transparency and public accountability are critical to the success of publicly supported digital equity efforts. As noted previously, successful digital equity visioning and planning are inclusive processes that must engage and benefit the people and communities who are meant to be served. It is critical that communities are fully empowered to evaluate and hold accountable those who receive funding to implement solutions.

With this in mind, we offer the following principles:

9. **Achieving digital equity requires well-defined metrics for success along with sound measurements and evaluation.**

    Digital equity plans must include strategies for:

    a. Ethical data collection, interpretation, and use that is adaptive and transparent, and that employs continuous learning practices as well as best practices for informed consent and limits to overcollection and unnecessary retention of data.

    b. Shared power approaches such that historically and systemically marginalized groups can hold government and institutions accountable for equitable creation and implementation of the digital equity plans.

    c. Going beyond quantitative measures to consider qualitative data and local data collection illustrated through storytelling.

10. **Digital equity visioning and planning requires clear accountability mechanisms and transparent reporting that is widely disseminated.** Empowering community members in a transparent process will ensure that principles are adhered to and digital equity funds are spent wisely.

Applying These Principles

We envision two broad uses for these principles: **1**) for state offices to devise digital equity plans, ensuring that they meet this moment of ambition and investment; and **2**) for community advocates to draw on these principles as measures of the degree to which state officials are being accountable for the planning process and the outcomes of those plans.

1. State Offices

    a.   **Develop authentic relationships with community advocates and community-based organizations to engage in a reflective dialogue to understand community concerns and issues.**

    b.   **Review engagement activities and existing plans for areas of improvement and increased focus on issues raised by communities.**

    c.   **Consider additional activities as inspired by examples, case studies, and calls to action.**

    d.   **Meet with community groups to collectively review recommendations in these principles and prioritize actions that address the various concerns they raise.**

    e.   **Practice transparency in both planning and execution.**

2. Community Advocates

    a.   **Identify who from local community may currently be missing from organizing and coordinating activities**

    b.   **Present these principles to state-level and local offices and advocate that they utilize them in their planning process**

    c.   **Use this report as a resource to assist in making strong arguments and applications grounded in research and supported by work happening in the broader community.**

    d.   **Identify organizations in community that are best suited to create and/or help grow a digital equity coalition.**

    e.   **Draw inspiration from examples and case studies to encourage local application of larger lessons or local iterations of established models**

    f.   **Connect with national organizations and those from other communities to compare notes on activities, successes, struggles, and efforts to close the digital divide locally.**

A Checklist for Evaluating Digital Equity Visions

The National Telecommunications and Information Administration asks states to address two critical questions in their visions of digital equity:

- **What will digital equity look like in the context of your state?**

- **What are the broad goals that should be accomplished in executing this plan (e.g., improve rural health outcomes, increase underrepresented youth employment in technology-related fields)?**

As states and their communities evaluate draft visions of digital equity, please consider these additional questions:

1. **Does your digital equity vision address the broader work of ensuring that everyone has opportunities based on their needs? Does your digital equity vision articulate a commitment to remove barriers and empower the most vulnerable in your state?**

2. **Does your digital equity vision illustrate how ubiquitous, affordable connectivity to reliable, high-speed broadband will benefit all your communities through increased access to health care, education and job training, economic growth, and civic participation?**

3. **Is your digital equity vision the result of inclusive, collaborative exercises that directly engaged communities in the planning process with government, broadband providers, philanthropies, and other organizations? Have these efforts focused on the perspectives of the people digital equity efforts are intended to serve, including the "covered populations" identified in the Infrastructure Investment and Jobs Act?**

   a. **Did the state broadband office develop authentic relationships with community advocates and community-based organizations to understand community concerns and issues?**

   b. **Did the state broadband office meet with community advocates and community-based organizations to review the state's draft digital equity vision and plan and discuss concerns?**

4. **Does your digital equity vision include creating and sustaining digital inclusion coalitions of libraries, community-based organizations, local governments, and housing authorities?**

5. **Does your digital equity vision advance and ensure digital safety, privacy, and well-being, empowering people with the tools and skills they need to navigate risks and avoid harms associated with digital environments?**

6. **Does your digital equity vision plan on using technology to open opportunities and not create or sustain barriers for people?**

7. **Does your digital equity vision bridge short-term impact and long-term, iterative, and sustainable efforts?**

8. **Does your digital equity vision consider resilience, ensuring that networks in all communities are able to endure various threats to stability, including climate change, disasters, and similar future system stressors?**

9. **Does your digital equity vision include appropriate and measurements and evaluation frameworks?**

10. **Does your digital equity vision include accountability mechanisms and transparent reporting that is widely disseminated? Did the state broadband office practice transparency in creating and revising the draft digital equity vision and plan?**

Challenges to Achieving Digital Equity or "Why Covered Populations Are Covered"

In 2021, a Pew Research Center survey found that seven percent of U.S. adults did not use the internet at all.[1] Internet non-adoption is linked to a number of demographic variables, but it is strongly connected to age, educational attainment, and household income.[2]

In community-driven efforts to address digital inequities, there is no one-size-fits-all approach. For this reason it is important to disaggregate data so solutions can be identified, evaluated, and expanded to address the needs of those who are the most disconnected.

The Infrastructure Investment and Jobs Act's Digital Equity Act recognizes eight "covered populations" as disproportionately experiencing digital inequity. These groups are to be a focus of efforts supported through grants and planning processes:[3]

- **Individuals living in households with incomes at or below 150 percent of the poverty line.**

- **Individuals 60 years of age or older.**

- **Veterans.**

- **Individuals with disabilities.**

- **Individuals with barriers to the English language (including English language learners and those with low literacy).**

- **Members of racial and ethnic minority groups.**

- **Individuals residing in rural areas.**

- **Individuals incarcerated in non-federal correctional facilities.**

These groups experience difficulties accessing the internet for varied yet overlapping reasons. Below, we provide data that explains why these populations are being targeted for digital equity efforts.

Households With Low Incomes

In the United States, people living in poverty tend to be clustered in certain regions, counties, and neighborhoods rather than evenly spread across the nation.[4] Research has shown that living in areas where poverty is prevalent creates impediments beyond people's individual circumstances. Concentrated poverty contributes to poor housing and health conditions, higher crime and school dropout rates, and unemployment. As a result, economic conditions in very poor areas not only limit opportunities for poor residents but also replicate themselves.

An important dimension of poverty is its persistence over time. There are 341 persistently poor counties in the United States (comprising 10.9 percent of all U.S. counties).[5] The geography of persistent-poverty counties is strongly associated with historical patterns of rural settlement going back centuries.[6] Historically, the large majority (approximately 85 percent) of persistent-poverty counties are nonmetro, accounting for about 15 percent of all nonmetro counties.[7]

Poverty does not strike all demographics equally.

- In 2018, 10.6 percent of men and 12.9 percent of women lived in poverty in the United States. The poverty rate for married couples in 2018 was only 4.7 percent—but the poverty rate for single-parent families with no wife present was 12.7 percent, and for single-parent families with no husband present, it was 24.9 percent.

- In 2021, the poverty rate for people living with a disability was 24.9 percent.[8] That's about 4 million people living with a disability in poverty.[9]

- In 2021, the poverty rate for seniors was over ten percent.[10]

- According to 2021 U.S. Census data, the highest poverty rate by race is found among Native Americans (24.3 percent), with Blacks (19.5 percent) having the second-highest poverty rate, and Hispanics (of any race) having the third-highest poverty rate (17.1 percent). Whites had a poverty rate of 10 percent, while Asians had a poverty rate of 9.3 percent.[11]

- The USDA estimated that 10.2 percent of U.S. households were food insecure in 2021. This means that approximately 13.5 million households had difficulty with access at all times to enough food for an active, healthy life for all household members. Rates of food insecurity were substantially higher than the national average for households with incomes near or below the federal poverty line.[12]

Some 15 percent of home broadband users in the United States said they had trouble paying for their high-speed internet service during the coronavirus outbreak.[13] That includes 34 percent of those with household incomes of less than $30,000 a year.[14]

For adults with household incomes below $30,000 a year, roughly a quarter (24 percent) say they don't own a smartphone, and more than four in ten do not have home broadband services (43 percent) or a desktop or laptop computer (41 percent).[15] By comparison, each of these technologies is nearly ubiquitous among adults in households earning $100,000 or more a year.[16]

During the COVID-19 pandemic, a quarter of home broadband users with annual household incomes ranging from $30,000 to just under $50,000 said they had trouble paying for broadband service, as did 8 percent with household incomes ranging from $50,000 to $74,999.[17]

A 2021 national survey of low- and lower-middle-income households asked these households what they pay for service and to identify monthly service fees that would be too expensive for their budgets.[18] That survey found a range of perspectives on affordability:

- **40 percent of households whose incomes were below $50,000 annually said they could not afford any monthly fee;**

- **22 percent reported that $25 per month would be a comfortable figure for their household budgets; and**

- **38 percent said that figures that align roughly with lower-cost market rates (between $55 and $70 per month) would be affordable for them.**

Older Adults

Researchers at the Humana Foundation and AARP's Older Adults Technology Services (OATS) found that nearly half of older Americans live with technological barriers. And nearly 22 million American seniors do not have wireline broadband access at home. There are poignant correlations between digital disengagement and race, disability, health status, educational attainment, immigration status, rural residence, and, of course, income.[19]

- **Among older Americans, the two strongest predictors of lack of broadband were low educational attainment (less than a high school degree) and income below $25,000. Both groups of people were more than ten times as likely to be offline at home as the reference categories for people with higher education or higher incomes, respectively.**

- **Race was a significant factor as well. Black people were 2.6 times as likely to be offline, and Latinos were 3.4 times as likely to be offline, as White people.**

- **Living in areas of high concentrations of poverty was associated with a 6.7 times higher likelihood of lacking home broadband, while living in Census tracts with over 50 percent Black-Americans corresponded to a 3.7 times higher likelihood.**

- **Health status plays a role, with people reporting poor-to-middling health being over three times as likely to be offline, as well as people reporting functional impairment (twice as likely), frequent depressive symptoms (1.5 times as likely), and Medicaid enrollment (2.7 times as likely).**

- **Household composition and place of residence are important factors. Older adults who are single (2.7 times as likely) or live in rural areas (1.6 times as likely) have elevated odds of lacking home internet service.**

Researchers have found that insufficient practical training in technology use[20] and the attendant difficulty in using computers[21] both contribute to these disparities. Furthermore, ageism reduces self-efficacy for technology use, further reducing confidence in one's

ability to use technology;[22] physical and mental limitations can make technology harder to use; and people who did not grow up using technology may devalue the benefits and usefulness of these services, or see the barriers as greater than the benefits without intentional support and opportunities for benefit.[23]

Veterans

As of 2017, there were approximately 18.2 million veterans in the United States, constituting approximately 7.3 percent of the adult U.S. population.[24]

An analysis of 2016 American Community Survey data found that U.S. veterans lagged in internet access when compared with non-veterans.[25] More recently, the lack of access to the internet became more visible when the U.S. Department of Veterans Affairs (VA) tried to employ telemedicine and other technology-enabled approaches to serving veterans.[26]

In a 2019 report assessing broadband access and adoption, the Federal Communications Commission found that a significant number of veterans (2.2 million households) lacked access to fixed broadband, mobile broadband, or both.[27] Specifically, for 92.5 percent of veterans, at least one provider of 25 Mbps/3 Mbps fixed broadband services was available, but only 78.4 percent of veterans had 10 Mbps/3 Mbps mobile LTE broadband coverage. Among households with veterans, approximately 85 percent, or 14.4 million, reported that they had paid connections to the internet in their homes. (In comparison to non-veteran households, veteran households had at that time a slightly higher percentage subscription rate for fixed broadband.) However, households with veterans subscribed to mobile broadband services at lower rates than households without veterans. The FCC found that more veterans used a mobile device (62.2 percent) to connect to the internet in any location, compared with using a desktop (37.8 percent) or laptop (44.4 percent) computer.

For those veterans who lacked a broadband connection, the FCC reported that barriers to broadband adoption included insufficient digital literacy, perception of irrelevance, price, and lack of deployment where they live.

- **Two-thirds of veteran households without internet users indicated that the primary reason was lack of interest or necessity. The tendency of veterans to be older than the general population, coupled with digital literacy challenges for senior citizens, may make digital literacy an especially important challenge for veterans' broadband adoption.**

- **Veterans with the lowest incomes are most likely to go without broadband at home,[28] indicating that price is a significant barrier to adoption.**

- **Veterans were more likely than non-veterans to cite lack of a computer (or an inadequate computer) as the primary barrier to subscribing to an internet service.**

- **Veterans residing in rural areas are likely to have more limited access to fixed and mobile broadband services in the home.**

Differences between veterans' and non-veterans' broadband adoption, the FCC found,

reflected both the overall demographics of the populations and issues unique to veterans. For example, while veterans were more likely to live in a household without children and the mobile broadband subscription rate for these households lags behind the rate for non-veteran households without children, veteran households with children subscribed to mobile broadband at higher rates than non-veteran households with children. Income also played a role: veterans were less likely to be among those with the lowest incomes (in the lowest quintile), a group that tends to subscribe to fixed and mobile broadband at lower rates; veterans were more often in the middle of the income distribution (third and fourth quintiles) groups that adopt fixed broadband at higher rates.

Veteran households were more likely to be men living alone than non-veteran households. Male-only households at the time subscribed to fixed and mobile broadband at lower rates than average, and veteran male-only households subscribed to both fixed and mobile broadband at lower rates than non-veteran male-only households. Fixed and mobile broadband subscription rates were also lower for female-only households in general, but veteran female-only households were more likely to subscribe to fixed and mobile broadband than non-veteran female-only households.

Individuals With Disabilities

In 20218 more than 40 million people in the United States were living with a disability, according to the U.S. Census Bureau.[29] According to a 2021 Pew Research Center survey, even as majorities of these Americans report having certain technologies, the digital divide between those who have a disability and those who do not remains for some devices:[30]

- **Some 62 percent of adults with a disability say they own a desktop or laptop computer, compared with 81 percent of those without a disability.**

- **Just 72 percent of adults with a disability say they own a smartphone, compared with 88 percent of those without a disability.**

- **Seventy-two percent of adults with a disability report having high-speed internet at home, compared with 78 percent of adults without a disability.**

- **Roughly a quarter of Americans with disabilities (26 percent) say they have high-speed internet at home, a smartphone, a desktop or laptop computer, and a tablet, compared with 44 percent of those who report not having a disability.**

- **Americans with disabilities are three times as likely as those without a disability to say they never go online (15 percent versus 5 percent). And while three-quarters of Americans with disabilities report using the internet on a daily basis, this share rises to 87 percent among those who do not have a disability.**

- **Older Americans are more likely than younger adults to report having a disability. And these older age groups generally have lower levels of digital adoption than the nation as a whole.**

Additionally, people living with a disability can find it harder to find a job, limiting their income, access to technology, and opportunity to develop digital skills. In 2017 (the most recent year for which statistics are available), only 53.3 percent of deaf working-age adults were employed, compared with 75.8 percent of hearing people. Equally as important, 42.9 percent of deaf people have opted out of the labor force, more than double the rate of hearing people (20.8 percent).

Even for those with access who have adopted broadband, the internet still may not be a welcoming place. There have been many lawsuits over the years claiming that websites are not accessible to those with disabilities.[31]

Individuals With Language Barriers

English remains the dominant language on the internet, and those with limited English-language proficiency face additional barriers in using the internet.

In 2019, more than 44.9 million immigrants lived in the United States.[32] One-third (14.8 million) were low income, meaning that their family's income was below 200 percent of the federal poverty level.[33] These immigrants face challenges including language barriers and lack of access to information.[34] In 2019, approximately 46 percent of immigrants ages five and older (approximately 20 million people) were Limited English Proficient (LEP). Immigrants accounted for 81 percent of the country's 25.5 million LEP individuals. In 2019, 15 percent of low-income immigrants lived in an unbanked household—that is, one in which no household member had a checking or savings account—in which the process of paying for monthly service can be more difficult.

According to the Program for the International Assessment of Adult Competencies (PIAAC; also known as the Survey of Adult Skills), as of 2015, 36 percent of native-born, native-language adults reached higher levels of proficiency solving problems in digital environments or using digital tools compared to just 12 percent of U.S. residents who are foreign-born and speak a language other than English.[35] Immigrants who speak a language other than English in the home were also four times as likely as English speakers to have no experience with computers.

In 2016, the Sesame Workshop's Joan Ganz Cooney Center found that 10 percent of families headed by Hispanic immigrants had no access to the internet, compared with 7 percent of U.S.-born Latinos.

The National League of Cities identified a number of key factors that make it harder to bridge the digital divide:[36]

- **About 23 percent of immigrants are undocumented. Because of their legal status and a fear of deportation, this segment of the immigrant community has a strong desire for privacy. This can make it difficult to reach these people and connect them with services that could help bridge the digital divide. And many programs ask for personal information that members of this community may not be comfortable sharing.**

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ACKNOWLEDGEMENTS

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- Due to their immigration status and fears of deportation, many immigrants live "underground" and outside established support systems, eschewing programs that might benefit them, like digital equity efforts.

- Many governmental programs operate only in English. Language access, including in public information campaigns, advertisements, and program enrollment processes, is a driving force in keeping LEP residents from getting digitally connected.

Members of Racial and Ethnic Minority Groups

According to a 2021 Pew Research Center survey,[37] Black and Hispanic adults in the United States remain less likely than White adults to say they own a traditional computer or have high-speed internet at home. But there are no racial and ethnic differences when it comes to other devices, such as smartphones and tablets:

- Eighty percent of White adults report owning a desktop or laptop computer, compared with 69 percent of Black adults and 67 percent of Hispanic adults.

- Eighty percent of White adults also report having a broadband connection at home, while smaller shares of Black and Hispanic adults say the same—71 percent and 65 percent, respectively.

- When it comes to accessing the internet, mobile devices play a larger role for Hispanic adults compared with White adults. A quarter of Hispanics are "smartphone-only" internet users—meaning they own a smartphone but lack traditional home broadband services. By comparison, 12 percent of White adults and 17 percent of Black adults fall into this category.

In extensive research on the impact of racial discrimination on home-internet adoption, Free Press found, in 2016, that people in many communities of color lagged behind, even after accounting for income differences:[38]

- While 81 percent of Whites and 83 percent of Asians had home internet at that time, only 70 percent of Hispanics, 68 percent of Blacks, 72 percent of American Indian/Alaska Natives, and 68 percent of Native Hawaiian/Pacific Islanders were connected at home.

- The median household incomes of Whites ($62,950) and Asians ($77,166) were far higher than those of Hispanics ($45,148) and Blacks ($36,898). However, these differences in income across race and ethnicity did not explain the entirety of this digital divide.

- There was still a racial/ethnic digital divide even among people in the lowest income quintile. Among those with annual family incomes below $20,000, 58 percent of low-income Whites had home internet access, versus just 51 percent of Hispanics and 50 percent of Black people in the same income bracket.

- **This adoption gap existed between people of these races and ethnicities in all income strata, but the gap was largest among the poorest people in America.**

- **Low-income households and people of color were less likely to have home internet connections. But if they did connect at home, they were more likely to rely solely on mobile wireless. While 29 percent of low-income internet-connected households were mobile-only, just 15 percent of households earning more than $100,000 were mobile-only.**

Bias by internet service providers further exacerbates the impact of poverty: Internet providers prefer to serve areas that have higher incomes, so lower-income neighborhoods are often at a disadvantage in terms of accessing internet services even if individuals can afford them.[39] Research has even shown that communities of color are more likely to pay higher rates for the same level of internet access in the same city, often only blocks away from where lower rates are charged.[40]

A 2022 investigation by The Markup found that AT&T, Verizon, EarthLink, and CenturyLink disproportionately offered slow internet service to lower-income and least-White neighborhoods for the same price they offered speedier connections in other parts of town.[41]

Individuals in Rural Areas

According to the U.S. Department of Agriculture, the 46 million U.S. residents living in rural areas make up 14 percent of the U.S. population.[42] Historically, internet providers have underserved rural areas due to a myriad of factors, including smaller rural populations providing fewer customers, decreased rural adoption rates, and more difficult rural terrain in comparison to urban areas. Even when internet is available in rural areas, less competition among limited providers may result in higher prices and limited speed options for residents.[43]

According to a 2021 Pew Research Center survey, rural adults remain less likely than suburban adults to have home broadband and less likely than urban adults to own a smartphone, tablet computer, or traditional computer.[44] Roughly seven in ten rural Americans (72 percent) say they have a broadband internet connection at home. Rural residents go online less frequently than their urban counterparts: Eight in ten adults who live in rural communities say they use the internet on at least a daily basis, compared with roughly nine in ten of those in urban areas (88 percent). In addition, three in ten or more urban (37 percent) and suburban (30 percent) residents say they are online almost constantly, while about a quarter of rural residents (23 percent) say the same.

In a 2018 Pew survey, adults who lived in rural areas were more likely to say access to high-speed internet was a major problem in their local community: 24 percent said this, compared with 13 percent of urban adults and 9 percent of suburban adults.[45] Similar rates of concern about access to high-speed internet were shared by rural adults in both lower- and higher-income households, as well as by those with various levels of educational attainment.

These comparably lower levels of adoption among rural residents may be due to a unique feature of rural life. Even though rural areas are more wired today than in the past, current infrastructure does not support consistently dependable broadband access in many rural areas.[46]

As noted previously, there are 341 persistently poor counties in the United States. And approximately 85 percent of persistent-poverty counties are nonmetro, accounting for about 15 percent of all nonmetro counties.[47] Persistently poor counties are more racially and ethnically diverse than counties that are not persistently poor.[48] While minority groups make up a smaller share of the overall rural population compared with urban areas, the groups are often highly concentrated in persistent-poverty clusters.[49] Nonmetro Blacks/African Americans had the highest incidence of poverty in 2019 (30.7 percent), while nonmetro American Indians/Alaska Natives had the second-highest rate (29.6 percent). The poverty rate for nonmetro Whites in 2019 was less than half as much (13.3 percent) of both of those other groups. Nonmetro Hispanics had the third-highest poverty rate of any individual race or ethnicity—21.7 percent.

Incarcerated Individuals

Through a series of acquisitions and mergers over three decades, prison technology companies like JPay and Global Tel Link (GTL) have dominated the prison telecommunications space, effectively becoming virtual monopolies. Anticompetitive practices have allowed corporations to gouge families with high prices and ancillary fees for prison phone calls,[50] a practice that reportedly left one in three inmate families in debt.[51]

"Until recently, correctional institutions were surrounded by a digital moat, isolating the people inside. We're trying to build a bridge across that moat."
—Chris Grewe, CEO of American Prison Data Systems

Surrounded by a "digital moat,"[52] incarcerated people are disadvantaged by a lack of access to training opportunities in digital skills otherwise available to the general public. The result is a returning prison population ill prepared for the challenges of reentering free society.[53]

Although internet access is expanding in some corrections facilities,[54] it is often still limited or prohibited by law.[55] And even when internet access is available, the costs of internet use can be prohibitive.[56]

Researchers Paolo Arguelles and Isabelle Ortiz-Luis find that inmates have little opportunity to engage with technology while behind bars. Correctional facilities partner with JPay and GTL to provide inmates with corrections-grade tablets preloaded with a selection of games and music, educational content, mental health and legal resources, and secure messaging services. In most cases, tablets come with a restrictive operating system configured so that inmates are only able to access the facility's secure local area network (LAN). Inmates are unable to access the open internet.

Arguelles and Ortiz-Luis also found that the exploitative tactics of prison technology companies have spread to tablet programs. Although correctional facilities often receive

tablets from companies free of charge to prisons and American taxpayers, the companies negotiate exclusive contracting deals with facilities, charging exorbitant prices for inmates to use the devices and pricing ebooks, games, videos, music, and messaging services well above their normal fair-market price. Every email requires paid "postage," as does every attached image and additional page, with the price of a digital stamp raised around special days like Christmas and Mother's Day. If families wish to spend time with an incarcerated loved one over video chat, JPay charges $10 for thirty minutes and $1 for one thirty-second "videogram." By charging inmates and their families excessive fees to stay connected, companies exacerbate the issues their tablet program claims to help solve, disproportionately affecting lower-income families who may not be able to afford the costs of keeping in touch with loved ones.

On January 5, 2023, President Joe Biden signed the Martha Wright-Reed Just and Reasonable Communications Act to help ensure just and reasonable charges for telephone and advanced communications services in correctional and detention facilities across the country. Congress's goal in passing the Martha Wright-Reed Act was to help reduce financial burdens that prevent incarcerated people from being able to communicate with loved ones and friends. The Federal Communications Commission is currently considering rules to implement the new law.

Importantly, the Federal Communications Commission hasn't been the only venue in the fight for prison phone justice. Martha Wright decided to sue the Corrections Corporation of America and challenge the monopoly system that enabled telecommunications companies in the private prison system to charge high rates for inmate call services. In Martha Wright v. Corrections Corporation of America, the plaintiffs, represented by the Center for Constitutional Rights, alleged that these exclusive deals and high rates violate the constitutional rights of the incarcerated.

Conclusion

As part of their digital equity planning, states are tasked with identifying barriers to broadband adoption that their covered populations face.

States' plans need to establish measurable objectives for documenting and promoting, among each covered population, the achievement of digital equity in the minimum of five key barriers and needs:

1. **the availability of, and affordability of access to, fixed and wireless broadband technology;**

2. **the online accessibility and inclusivity of public resources and services;**

3. **digital literacy;**

4. **awareness of, and the use of, measures to secure the online privacy of, and cybersecurity with respect to, an individual; and**

5. **the availability and affordability of consumer devices and technical support for those devices.**

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As the discussion above illustrates, however, each single covered population may face multiple barriers and needs and many barriers and needs are experienced by multiple covered populations.

For a community focused on digital equity, broadband adoption is about understanding and responding to the connectivity needs of individuals. This entails surveying and engaging with community members, especially those that have traditionally underutilized broadband technology has been. Broadband adoption work is best done in coordination with other assistance programs with the aim of addressing people's needs holistically.

The role of broadband adoption programs goes beyond simply stating the benefits of broadband or assuming that people will want to get online. Successful adoption programs—such as trainings, discount sign-ups, or device distribution events—often meet people where they are, encourage them, and show them how they can safely use the internet to improve their lives.

Understanding Digital Equity Ecosystems

> Digital Equity Ecosystems are the interactions between individuals, populations, communities, and their larger sociotechnical environments that all play a role in shaping the digital inclusion work in local communities to promote more equitable access to technology and social and racial justice. —Rhinesmith and Kennedy

Dr. Colin Rhinesmith from the Digital Equity Research Center and Susan Kennedy from the Community Informatics Lab at Simmons University developed the concept of "digital equity ecosystems" as a way to more deeply understand the local, cultural drivers and social barriers to broadband adoption as a starting point for promoting digital equity, as well as to understand how community-based coalitions responded to the triple challenges of the COVID-19 pandemic, racial injustice, and digital inequality. Published by the Benton Institute for Broadband & Society, **Growing Healthy Digital Equity Ecosystems During COVID-19 and Beyond** provided one of the first national studies of digital inclusion coalitions in the United States.

This way of thinking about digital inequalities can assist researchers, practitioners, and policymakers in seeing the creative and innovative community-based solutions that have emerged in response to the COVID-19 pandemic, particularly in poor communities and communities of color that were disproportionately impacted by the coronavirus. State broadband offices are required to work with digital inclusion coalitions, and a digital equity ecosystems approach can offer a framework to develop and implement digital equity plans together.

Dr. Rhinesmith has also worked with Dr. Rafi Santo to develop **a measurement framework** to better understand the data and evaluation needs of community coalitions.

Measuring Digital Equity

Principles 9 and 10 highlight the critical need for accountability in digital equity work, and the role of metrics and evaluation in ensuring such accountability. Measurement is essential to documenting and understanding a community's path to digital equity. Sharing learnings within a community or between different communities requires not just quality data but also a measurement framework that approximates the complex problems and ultimate goal of digital equity.

Many researchers and practitioners have developed a variety of indices, scorecards, maps, and data visualization tools to measure and display different aspects of digital equity, using a range of publicly available datasets, most notably the American Community

Survey, the Federal Communications Commission's Form 477 Fixed Broadband Deployment Data, speed test data from Ookla and M-lab, and broadband usage data from Microsoft's Airband initiative. No one tool is applicable in all circumstances. Rather, the tools listed herein have specific purposes and aim to offer actionable insights.

Federal agencies have been directed by recent legislation to demonstrate the impact of the investment in broadband. To that end, the Census Bureau and the National Telecommunications and Information Administration have created the ACCESS BROADBAND dashboard, which connects the changes in broadband availability and adoption to economic development. Displaying indicators such as employment, small-business establishments, wages and income, poverty, home values, population change and migration, educational attainment, and gross domestic product (GDP), the interactive dashboard can offer an evolving picture of how broadband could impact local economies.

Tying technology indicators to not just socioeconomic indicators but also education and housing presents a multifaceted picture of the quality of life in a city and makes the case for interdependent strategies to direct investment. The Digital Advancement Municipal Index uses 16 key indicators across four categories to profile cities' prosperity in the digital economy.

Mapping tools, such as the 2021 Digital Divide Index (DDI), allow users to see how digital inequity intersects with other social inequities. Developed by Dr. Roberto Gallardo of Purdue University's Center for Regional Development, the DDI combines data on broadband infrastructure and adoption with socioeconomic indicators that are known to impact technology adoption to present a picture of the digital divide at a county or census-tract level.

The National Digital Inclusion Alliance's Digital Equity Scorecard employs another, narrower benchmarking approach that homes in on whether and how much states are investing in digital skills. Using data from the Department of Labor's Bureau of Labor Statistics, the scorecard compiles data on whether and to what extent states recognize the need for investment in digital skills and have put in place appropriate plans to address such gaps.

The Maryland Digital Equity Index allows for comparisons among different areas within the state to help diagnose where investment and attention is needed. Created in partnership between Dr. John Horrigan of the Benton Institute for Broadband & Society, Dr. Seema Iyer of the Baltimore Neighborhood Indicators Alliance—Jacob France Institute, and the Community Development Network of Maryland, the index combines internet subscription and device access data with demographic data at the zip code level. The index can demonstrate geographic disparities, for instance, showing that the majority of those without internet access in the state live in urban areas.

The New York State Digital Equity Portal is also focused on a particular state, but in addition to subscription data and demographic data, it also includes BroadbandNow's data on internet package prices and Ookla speed test data. Developed by the New York State Library, the John R. Oishei Foundation, Community Tech New York, and the Cornell University ILR School Buffalo Co-Lab, the portal allows for granular detail and multiple map layers, displaying results by zip code and congressional districts.

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Frameworks Focused on How Local Coalitions Promote Digital Equity

Beyond using large public datasets, the digital equity community is also developing new frameworks that focus on how local coalitions are working to promote digital inclusion, equity, and justice in and with other members of their communities. Two such approaches are the Digital Equity Ecosystems Measurement (DEEM) Framework and the Digital Opportunities Compass.

Digital Equity Ecosystems Measurement Framework

> A clearly articulated, rigorous, and accessible framework to measure the efforts led by local coalitions can further support initiatives to promote universal broadband, deliver new opportunities, and strengthen digital equity ecosystems.

The [Digital Equity Ecosystems Measurement (DEEM) Framework](), developed by Dr. Colin Rhinesmith and Dr. Rafi Santo, aims to better understand the data and evaluation needs of community coalitions. This participatory design research project convened 32 digital equity and digital justice coalition leaders and members.

Rhinesmith and Santo chose participatory design as a research methodology because it is an effective tool to engage coalitions in co-designing tools to evaluate and assess their community work. Participatory design helps empower people across a wide range of disciplines, including community informatics, a field of research and practice focused on advancing digital inclusion, equity, and justice.

The DEEM framework provides local coalitions a way to both understand and measure the health, strength, and impacts of their efforts alongside their communities. The framework includes indicators at each of the three measurement levels that local coalitions can use to gather data to inform planning, improvement, and argumentation.

The Digital Equity Ecosystems Measurement (DEEM) Framework

COALITION HEALTH	MEMBER STRENGTH	COMMUNITY IMPACT
Indicators related to the organization, structure, and relationships of a coalition as a whole.	Indicators related to the capacities and efforts of coalition members related to the valued impacts of the coalition.	Indicators related to positive changes to the lives of individuals and the broader community that a coalition is hoping to bring about through its efforts focused on advancing digital inclusion, equity, and justice.

The DEEM framework assumes that coalitions focused on digital inclusion, equity, and justice vary in the specifics of their goals and structure, as well as in how they define what success looks like. Some coalitions engage in advocacy-related work in order to enact policy change, leveraging collective voice, aligned commitments, and specialized roles within campaigns that result in shifts in local or state policies that directly impact community-level outcomes. Other coalitions engage in direct service provision themselves, as in the case of facilitating Digital Navigator programs.

> Digital navigators are individuals who address the whole digital inclusion process—home connectivity, devices, and digital skills—with community members through repeated interactions.

Still others aim to support members through capacity-building opportunities or through funds to develop and implement new community-based services addressing digital equity issues. The indicators offered by the DEEM framework are meant to serve as a menu of options—rather than a strict, hierarchical formula—for coalitions to draw from as they strategize how data can play a role in advancing their work.

Depending on the goals, structure, and stage of development of a given coalition, some indicators might be more useful than others. Rhinesmith and Santo highlight how specific purposes of data use might leverage distinct indicators across the DEEM framework in order to address particular needs. The specific lists of indicators in each of the three levels of the framework offer coalitions opportunities to discuss data gathering to meet their needs and goals both internally and externally with other stakeholder groups in their communities. We also provide concrete suggestions and examples to help coalitions see how to use the DEEM framework in practice.

DEEM Framework Example Indicators

- **Coalition Health**—member participation, clarity of opportunities, sense of belonging, internal alignment, collective efficacy, community representation, responsive governance

- **Member Strength**—member focus, capacity, geographic reach, demographic reach, equity orientation

- **Community Impact** (i.e., digital inclusion, equity, and justice indicators)—community-wide digital access and skills; community use of technology for civic, educational, health, and social connection; community ownership over technology and media.

The DEEM framework can help coalitions gather data to improve their planning and implementation. It can also be used for argumentation, to make the case in front of external stakeholders, such as policymakers and funders, who might want to better understand the community impact of coalition work on the ground.

Digital Opportunities Compass

In order to be best prepared for the investment made possible through the Broadband Equity, Access, and Deployment (BEAD) and Digital Equity Act programs established by Congress in the Infrastructure Investment and Jobs Act, digital equity researchers have also begun to collaborate on frameworks to understand the full impact of these programs in communities beyond access and affordability. The **Digital Opportunities Compass**, authored by Colin Rhinesmith, Pierrette Renée Dagg, Johannes M. Bauer, Greta Byrum, and Aaron Schill, presents a way for communities and states to develop a shared understanding of holistic digital equity, assess the current situation, and identify areas that require action.

The Digital Opportunities Compass offers a customizable approach to utilize a coherent set of indicators and metrics to create a baseline assessment of the state of digital equity, in order to monitor changes over time and evaluate the effectiveness of interventions to improve digital equity.

The Digital Opportunities Compass includes six components: Contexts, Governance, Connectivity, Skills, Application, and Outcomes. Each component includes indicators that have a bearing on the process and outcomes of digital equity initiatives on the ground. The indicators under each component allow stakeholders to do an assessment of their overall conditions in order to determine where additional areas of attention may be needed.

Six Components & Indicator Areas
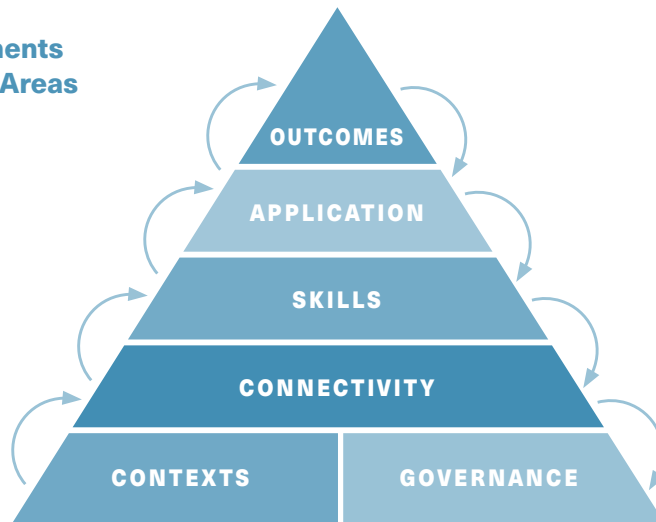
1. **CONTEXTS** – indicators related to sociodemographic, economic, and community level factors.
2. **GOVERNANCE** – indicators related to local, state, and federal policy, governance, and power.
3. **CONNECTIVITY** – indicators related to the existence of necessary network infrastructure, as well as the accessibility, affordability, and adoption of internet service and network-enabled devices.
4. **SKILLS** – indicators related to a broad range of activities centered around digital literacy (including secure online practices), training, and skills attainment.
5. **APPLICATION** – indicators related to the uses and application of digital connectivity and skills, while considering additional sociotechnical contexts.
6. **OUTCOMES** – indicators related to the broader effects of improved digital equity on individuals, communities, and states.

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The Digital Opportunities Compass can be used to:

- **Identify key groups of factors that influence digital equity efforts and outcomes**

- **Measure and assess digital equity efforts and outcomes over time**

- **Utilize a standardized core set of metrics that can be expanded and customized to meet state and community needs**

- **Build, as far as possible, on existing data and indices**

- **Augment existing data with new (qualitative and quantitative) data**

- **Innovatively design infrastructure to help automate data collection (e.g., quality measurement in routers)**

The Digital Opportunities Compass can be used as part of focus groups, in capacity-building programs for planners and decision-makers, or to facilitate the multi-stakeholder digital equity planning process. The researchers hope that the Digital Opportunities Compass encourages deeper discussion, debate, and reflection on how to measure digital equity.

Developing These Principles

This project began with the intention to help states write their visions of digital equity, visions that go beyond speed benchmarks like "all households connected to 25/3 by 2030." We want to encourage states to develop ambitious agendas and ensure that more community voices are heard in crafting a future with increased opportunity for all—opportunity enabled by affordable, reliable, high-speed internet service.

We adopted a collaborative process, wanting to build on the existing work done by allied organizations in the space, especially those working closely with people most affected by the digital divide. These principles were developed through surveys, community meetings, interviews, conversations, and a collective writing process. The process was led by Andrew Coy of Initial Velocity, LLC, who served as the Benton Institute's Community Coordinator.

We established a steering committee of practitioners and researchers with deep experience in the field to help us define the scope of the project. We also relied on them to spread the word, ensuring that we considered a range of digital inclusion work happening around the country.

The community-facing survey collected input on the work of organizations that are addressing the needs of what Congress calls "covered populations," in order to understand where we need more attention and capacity.

Most crucially, the principles emerged from a series of consultations with our community contributors. These six individuals brought diverse perspectives to the issues surrounding digital equity, from Alaska to Texas, covering rural, urban, and tribal challenges, highlighting issues of digital accessibility and digital justice. Through this process of community engagement, we arrived at the five themes and ten principles for Visions of Digital Equity. In the Community Contributor essays, you can learn about community-based approaches to closing the digital divide.

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> Dr. Danielle King, Community Equity Fellow, Lead for America, KY
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