

The Struggle to Reduce the Digital Divide in the United States

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by

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On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

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We live in the “Information Age,” but the term can be misleading. More information does not necessarily mean a more informed public. Scheufele and Krause (2019) observe that information does not “reach all segments of the population equally well.” As Internet usage proliferated in the United States, it did not do so equally. In the aggregate, minorities, low-income people, and residents of rural communities did not enjoy the same access to computers and the Internet that white, wealthy, and urban citizens did; in 2002, probably less than 25 percent of African-American and Latino households had Internet access, compared to almost 50 percent of white households (Phillips, 2002). Similar discrepancies have characterized cellular service and, more recently, wireless Internet (DeNardis, 2017). In 2015, 20 percent of U.S. households were “offline entirely, lacking a single member who used the Internet from any location” (Lewis, 2016). Deficient access exacerbates longstanding disadvantages as economies grow increasingly digital (Greene, 2011). This digital divide occurs when the technological infrastructure required for Internet access does not exist in an area, or when service is available but unaffordable. Many factors influence the digital divide, so efforts to address it vary in approach and scale.

How have advocates of digital access strived to improve it? The federal government directs funds towards the development of broadband infrastructure in underserved areas, often giving money to private telecommunications companies; where these entities have not yet enabled affordable Internet access, community organizations work to bridge the gap.

Review of Research

Researchers have investigated how governments have worked to advance universal service. According to Loube (2003) the Federal Communications Commission (FCC) promoted

universal telephone access through the Lifeline program, which offered low-income consumers direct federal subsidies and incentivized similar subsidies from the states. Loubé also noted that the FCC created separate programs to support large telecommunications companies and small, rural carriers operating in high-cost areas. Jain et al. (2007) examined how the city of Philadelphia developed a municipal wireless network to serve districts with deficient Internet access through private services. Jain explained that the local government acted as a catalyst and facilitator, allowing a private company to use its telephone poles and other property in order to build and operate this municipal network. This enabled the city to both improve access for its residents and profit off of existing assets without needing to invest anything. Bach et al. (2013) argued that in addition to ensuring Internet access, policymakers must also promote widespread digital literacy in their communities. They proposed a Digital Human Capital framework, based on human capital theory, which views digital access initiatives as an investment that will lead to increased productivity and civic engagement.

Researchers have also examined the role of local communities in providing broadband access. Dailey et al. (2010) found that individuals who lack Internet access at home look to “third spaces” such as libraries and community centers as means of connecting online. Sites which integrate digital access with other social services, such as job training and literacy programs, are particularly successful. *The Journal of Blacks in Higher Education* (2005) found that public schools played a significant role in closing the digital divide for black children, often providing them access to computers and the Internet before they had such access in their homes. However, schools with large minority populations still tended to lag behind predominantly white schools in adopting the latest technology.

The Role of the Federal Government

The FCC is the federal agency that regulates the telecommunications industry, consistent with the Communications Act of 1934 and the Telecommunications Act of 1996. FCC claims to favor high-speed Internet “for all consumers at just, reasonable, and affordable rates” (FCC, n.d.-c). Towards this end, it has established the Universal Service Fund (USF), to which telecommunications companies must contribute a share of their revenue. The fund is administered by an independent, not-for-profit corporation designated by the FCC, called the Universal Service Administrative Company (USAC). USAC says that it delivers funding “with the guidance of policy created by the FCC” (USAC, n.d.).

The FCC has developed several programs to allocate funding received through the USF. One of these programs is the Schools and Libraries Program, also called E-rate. FCC says that, through this program, “eligible schools and libraries may receive discounts on telecommunications, telecommunications services, and Internet access,” and that “discounts range from 20 to 90 percent,” based on the poverty level of the recipient and whether the recipients live in urban or rural areas. (FCC, 2020-a). The USF also sponsors the Connect America Fund, which serves citizens in rural areas that “lack access to infrastructure” for broadband (FCC, n.d.-a), and the Rural Digital Opportunity Fund (RDOF), which is an expansion of the Connect America Fund (FCC, 2020-b). The USF supports the FCC’s Lifeline program, which subsidizes phone and broadband services “for qualifying low-income consumers” to “ensure that all Americans have the opportunities and security” they offer (FCC, n.d.-b). FCC says that it has “set out minimum service standards for Lifeline-supported services to ensure maximum value for the universal service dollar” (FCC, n.d.-b).

Through the USF, the FCC subsidizes telecommunications services through auctions. When a school or library requests goods or services through the E-Rate program, “USAC posts these requests on its website for vendors to bid on.” The requestor then “selects the most cost-effective” bid, subject to USAC approval (FCC, 2020-a). The RDOF recently held its Phase 1 reverse auction, which allocated \$9.2 billion to service providers over the next 10 years (FCC, 2020-c). In the auction format, companies submit bids and are assigned funding and locations in which to build high-speed broadband infrastructure. The FCC says that the auctions result in “robust price competition” and “more locations being awarded at less cost” (FCC, 2020-c).

Trade Associations Compete for Funding

Telecommunications companies and the trade associations representing them are striving to bridge the digital divide by means consistent with their business interests. NTCA, the Rural Broadband Association, claims its member companies “are leading innovation in rural and small-town America” in order to “build a better broadband future” (NTCA, n.d.). Primarily a lobby for telecom companies, NTCA characterizes its efforts as “advocacy, education, communications, and outreach” to improve rural broadband access. The Wireless Internet Service Providers Association (WISPA) is a trade association representing “thousands of small businesses that provide fixed wireless broadband services ... in rural and remote areas that would otherwise be unserved” (WISPA, n.d.). Many of those member companies “have built their networks with private, at-risk capital without using federal subsidies.” To help its members compete with large Internet service providers, WISPA lobbies on their behalf. The Competitive Carriers Association (CCA) is a trade association for rural wireless carriers. CCA says it strives to “streamline the review and permitting process for wireless network deployments” (CCA, n.d.).

To promote rural broadband access, FCC funds some of the telecommunications infrastructure that rural communities require, and some CCA members depend on this funding.

These organizations operate in the same industry and compete for federal funding. Their members' techniques to connect rural areas to the Internet vary. WISPA members utilize fixed wireless access technology, and many of these companies won funding in the RDOF Phase 1 auction. As part of their bids, they pledged to deliver gigabit speeds using this technology. After the auction, the NTCA submitted a filing to the FCC which requested a study in order to determine whether this technology can meet the promised performance benchmarks (NTCA, 2021-a). WISPA responded that this request constituted "unwarranted criticism leveled at certain winners of the RDOF Phase 1 auction, and the RDOF process as a whole" (WISPA, 2021-b). WISPA also claimed that this request would delay "decisions on who should receive support ... and the deployment of critical broadband facilities to unserved communities" (WISPA, 2021-b).

These organizations lobby Congress and advocate for policies that align with their business interests. WISPA recently published a "Path to Gigabit" proposal, which outlines policy recommendations for Congress (WISPA, 2021-a). The theme of the proposal is enabling small innovators to compete with larger, incumbent providers. In it, WISPA claims that small companies, including its members, "are the reason why the digital divide is smaller today than it was 10 years ago," and that updated policies will allow Congress to "harness the power of these companies to quickly deliver gigabit connectivity throughout the United States." CCA was a strong supporter of the Secure and Trusted Communications Networks Act, which was passed by Congress in 2020. This act established both "a mechanism to prevent communications equipment or services that pose a national security risk from entering U.S. networks, and a program to remove any such equipment or services currently used in U.S. networks" (Secure and Trusted

Communications Networks Act, 2019). CCA President and CEO Steven K. Berry stated that “CCA members care deeply about network security, and this legislation provides much-needed guidance to all carriers, and importantly, resources to replace covered network elements” (qtd. in CCA, 2020).

Starlink Enters the Industry

Innovation has expanded broadband access. SpaceX’s new Starlink service uses low-Earth orbit (LEO) satellites “to provide high-speed, low-latency broadband connectivity across the globe, including to locations where internet has traditionally been too expensive, unreliable, or entirely unavailable” (SpaceX, 2020). To provide it, SpaceX must maintain “space traffic safety” and preserve “a natural night sky,” which requires minimizing satellite brightness (SpaceX, 2020).

Members of large trade associations are not the only entities competing for FCC funding. Starlink won almost \$900 million of the \$9.2 billion in subsidies awarded to rural broadband providers in the recent RDOF Phase 1 auction. After the auction, the NTCA filed a technical assessment with the FCC, claiming to aid the FCC’s analysis of LEO satellite-based broadband. This assessment estimated that “Starlink would face a capacity shortfall by 2028 and that more than 56% of Starlink’s RDOF subscribers would not be fully served” (NTCA, 2021-b). Starlink has not yet responded to this claim.

Community-based Outreach

Libraries are means of Internet access in many underserved communities. The American Library Association (ALA) reports that it “provides internet access ... for those who lack home

broadband,” and works to “spur home adoption by increasing awareness of and confidence in using online resources and services” (ALA, 2020-a). According to a study, people who rely on libraries to access the Internet mainly do so for educational, employment-related, and health-related purposes (Becker et al., 2010).

During the COVID-19 pandemic, local libraries have continued to serve their communities. According to a survey conducted by the Public Library Association (PLA), a division of the ALA, 93 percent of public libraries have offered Internet access for free in their parking lots even when the building is closed (PLA, 2020). The Kansas City Public Library partnered with a local public school district and an organization called Connecting For Good to donate and distribute over 500 computers and many Wi-Fi hotspots to local residents who lacked these essentials (Evans, 2020). The Williamsburg Regional Library in Williamsburg, Virginia, has repurposed its bookmobiles, which previously brought library materials to residents of remote areas, and used them as Wi-Fi hotspots. The bookmobiles are parked in various locations around the local community and are moved each day to accommodate different neighborhoods (IMLS, 2020). The library’s assistant director, Sandy Tower, said that the local school district “estimates that 10 to 15 percent of their students do not have reliable internet access at home” (qtd. in Avila, 2020). This innovative practice is not unique to Williamsburg. The Topeka and Shawnee County Public Library in Topeka, Kansas, is also using its bookmobiles as Wi-Fi hotspots. Library CEO Gina Milsap stated that “having internet access is as important as electricity and other utilities and with so many students and parents working from home, the library is making this need a priority” (qtd. in Childers, 2020).

To Congress and the FCC, the ALA is an advocate for greater broadband access. The ALA has publicly supported the introduction of the Build America’s Libraries Act. This act

“would provide \$5 billion to support long-term improvements to library facilities” (ALA, 2021). ALA President Julius C. Jefferson, Jr says that “libraries work on the front lines of digital inclusion, but many of them are doing so with twentieth-century facilities. To solve twenty-first century problems, libraries need twenty-first-century infrastructure.” (qtd. in ALA, 2021). As part of the \$2 trillion Coronavirus Aid, Relief, and Economic Security (CARES) Act, the Institute of Museum and Library Services received \$50 million in order to “safeguard the services” that libraries offer, “as well as library facilities and workers across the nation” (ALA, 2020-b).

Other advocacies operate in the private sector to find informal means of improving access among low-income people. Silicon Harlem is an organization working to promote affordable access to high-speed Internet in the underserved community of Harlem. It wants to establish a “Community as a Platform,” where local citizens are involved in planning and deployment. The organization strives to set an “affordable, fast, resilient, and smart” example for other communities (Silicon Harlem, n.d.-a). It strives to improve local digital literacy and to foster technological innovation. Silicon Harlem Advanced Programs in Education (SHAPE) include instruction in robotics, drone piloting, and web development. SHAPE also trains “digital stewards,” who “learn how to build and maintain community wireless networks and to serve as ambassadors to the local business community” (Silicon Harlem, n.d.-b). Silicon Harlem set up the first high-end data center in Upper Manhattan (Silicon Harlem, n.d.-c). As part of its efforts to reduce the digital divide, it has also partnered with Columbia University, Fordham University, the University of Arizona, and the University of Virginia to perform research on advanced and emerging computing technologies (Silicon Harlem, n.d.-c).

Mobile Beacon is another organization which supports schools, libraries, and nonprofits by providing affordable Internet access. It describes itself as an Educational Broadband Service, and says that its mission is “to power education through broadband” (Mobile Beacon, n.d.-c). Mobile Beacon claims that “more than 40 percent of nonprofits lack the technology they need to do their jobs well,” that “more than 80 percent of E-rate funded schools say their internet fails to meet their needs,” and that “close to 50 percent of libraries lack sufficient internet access to meet their patrons’ needs.” (Mobile Beacon, n.d.-b). Through a partnership with PCs for People called “Bridging the Gap,” Mobile Beacon has helped “distribute donated laptops, hotspots, and internet service to families in need” (Mobile Beacon, n.d.-a).

Beyond Access: Skills and Education

While access to the Internet is important, it alone is not sufficient; to truly eliminate the digital divide, all Americans need the literacy and skills to use the Internet effectively. The Coalition on Adult Basic Education (COABE) is an organization which represents 65,000 adult educators and says its goal is to “inspire educators so adults succeed and communities thrive” (COABE, n.d.). They say that “declining state and federal funds” have prevented many of the “44 million adults with low basic skills” from accessing education programs. COABE is working to bridge this gap. Their services are wide-ranging, and include training in leadership and communication. Google runs a program called Applied Digital Skills, which is a platform to “teach and learn practical digital skills needed for the jobs of today and tomorrow” (Google, n.d.). This service includes material for learners of all ages. Recently, COABE and Google teamed up to offer adult educators new resources, training, and guidance (Google, 2019). Under this partnership, Google provides “in-person professional development sessions for educators,”

builds “new support guides and training materials,” and holds webinars about “best practices in digital skills training.” Lastly, Google provides “new, free Applied Digital Skills lessons ... that adult educators can use in their classrooms.” Google states that as a result of this partnership, “educators will now be better positioned to help adult learners prepare for and find jobs,” and “build their businesses” (Google, 2019).

Several large technology companies perform digital skills training and outreach. In addition to Google and its Applied Digital Skills program, Amazon and Microsoft are among those working to promote technology and computer science education. Amazon’s AWS re/Start program is “a full-time, classroom-based skills development and training program” focused on cloud computing (AWS, n.d.). It “is focused on unemployed or underemployed individuals, including military veterans, their families, and young people.” Amazon “works with different local collaborating organizations to deliver the program around the world,” including in the United States. It says that these organizations share Amazon’s mission of “building a diverse global pipeline of entry-level trained talent.” Microsoft’s Technology Education and Literacy in Schools (TEALS) initiative is “a Microsoft Philanthropies program that builds sustainable CS programs in high schools” (Microsoft, n.d.). It focuses “on serving students excluded from learning CS because of race, gender, and geography.” According to Microsoft, “TEALS serves 10,00 students in 455 high schools in the United States and British Columbia, Canada.”

Conclusion

The digital divide is a complex challenge that affects millions of Americans, and has been exacerbated by the COVID-19 pandemic. Many organizations are working to address this issue in a variety of ways. Those organizations often compete with each other to influence responses to

the digital divide. Telecommunications companies, working together through trade associations, lobby Congress to pass laws which enable their work. As corporations, the government funding they receive allows them to build infrastructure in high-cost areas while still earning a profit. The federal government attempts to administer that funding efficiently and effectively. It also offers subsidies to individuals who live in areas with Internet access but cannot afford it. Despite these efforts, many Americans still lack access at home. They turn to community centers and libraries. Some innovative minds in the private sector view Internet access as a means to revitalize their communities, spur entrepreneurship, and increase engagement and productivity. Under this view, addressing the digital divide is an investment which can yield immense societal gains.

Definitions of the digital divide vary, and much of the focus is rightly on physical access to the Internet. While clearly important, addressing this problem is not sufficient to truly eliminate the digital divide. Access to technology and information is much more beneficial when those resources can be utilized effectively. Thus, organizations are also working to improve digital literacy and competency. In an increasingly digital economy and world, these skills are becoming more and more essential. As technology improves and broadband becomes even more widely available, it will be critical that this aspect of the digital divide is not overlooked.

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