



TECHNOLOGY & BROADBAND ACCESS

Summary

Just two decades in, the twenty-first century has been a time of remarkable technological advancements that impact nearly every aspect of life. The ways in which people use technology to engage in real-time for work, socialization, civic action, or completing day-to-day tasks like shopping, entertainment, or banking were previously a matter of convenience in many cases. In Central Ohio, there has been a growing interest across sectors in the ways that technology could enhance the region, with local leaders exploring ideas around building Smart Cities through things like digital infrastructure and connected vehicles.¹ Furthermore, leaders are setting agendas for building data capacity and partnerships to improve data-informed decision-making, and especially to support more equitable outcomes in planning and policy decisions.²

Virtual life went from convenience to necessity when the pandemic shutdowns began in March 2020. Some people, businesses, and institutions were ready for the abrupt change to a predominantly remote world, but still others were less prepared.

Key Issues

A symptom of a long-developing **digital divide**, many Central Ohioans experienced a rocky transition to virtual life due to lack of access to affordable high-speed internet or adequate devices to support intensive technology use for things like remote work and school.

Even with measures to arm residents with technology tools, many in the region still fell behind due to low or limited **digital literacy** and a lack of services and resources to support residents who were less confident navigating virtual resources independently.

Many institutions were underprepared to make the leap from in-person to virtual operations and service delivery. The public and social sectors, small businesses and the arts had challenges and successes in the rapid **transition to virtual institutions**.

The reduction of physical community and civic engagement spurred the use of real-time technological interaction as a growing mode for **building community connectivity**.

DIGITAL DIVIDE

For decades, the "digital divide", or the gap in access to digital resources, has been a growing topic of research and policy concern driven by three elemental components—devices, broadband access and adoption, and digital literacy. It is necessary to address all three together to close the digital divide.

Broadband access is a challenge for households throughout Central Ohio for several reasons. Rural areas still face significant infrastructure gaps, and in urban and suburban communities where broadband infrastructure is nearly ubiquitous, affordability and adoption hurdles exist for some residents. In 2019 in some of the region's most rural counties, nearly one in five households lacked home internet. In Franklin County, one in ten had no home internet. Among households that have home internet, there are disparities in connection speed and in access to appropriate devices. An analysis of Columbus broadband challenges produced by AECOM suggests that there are geographical disparities in internet speed, which can be a limiting factor in how effectively home internet can be used for things like remote school, telework, or telehealth (Figure 1).³

The quality or appropriateness of devices also makes a difference in how effectively a person can use technology for school, work, or healthcare. According to the Franklin County Digital Equity Framework, "low-income residents are much more likely to rely upon a mobile phone as their only computing device.⁴ While mobile devices offer convenience and are useful for intermittent internet access, they generally do not meet the needs of remote work or school, and relying on them as the sole source of access can significantly limit a person's ability to engage with digital resources."⁵

More than 206,000 households (25%) in the Columbus MSA lack a cable, fiber, or DSL internet account. Of those, 84,000 have internet only through a cellular data plan, and another 79,000 have no home internet subscription of any kind. Lack of broadband disproportionately impacts low-income households. Households with an annual income less than \$35,000 make up 24% of households in the MSA, but account for 64% of those without broadband (Figure 2). Lack of home internet is also prevalent in older adult households (51,000, or more than one-third, lack a computer or home broadband). Digital equity disparities also exist among households of color - Black or African American and Hispanic or Latinx residents



Figure 1. Households with No Internet Access Central Ohio Counties, 2019

make up 20% of the population but represent 30% of residents without a computer or home broadband (Figure 3).^{6,7,8}

Whether the issue is lack of infrastructure or affordability, limited options and lack of competition too often result in poor performance and high costs for consumers. Many areas are served by a single Internet Service Provider (ISP). In some cases, apartment tenants are restricted to a single ISP as property owners sign exclusivity options with one company. Standard broadband internet service has an estimated cost between \$45 and \$100 per month, not including costs for equipment, taxes, and other fees.

The pandemic led to a widespread shift to remote learning and work-initially, nearly all K-12 and college students were engaged in remote learning, and many employers required staff to work from home. By April 2021, all Central Ohio public school districts were either open five days a week, or in a hybrid model. However, many students and families were still opting for remote options. Statewide, estimates from the Census Household Pulse Survey suggest that 800,000 (41%) K-12 students in Ohio were still engaged in remote learning at least 3 days a week even in March 2021.9 The pandemic made clear the importance of digital connectivity for students to access key educational resources and excel outside of the classroom, even after in-school classes have fully resumed. In addition to the surge in students learning remotely, the same survey suggests that 3.3 million (37%) Ohio households had at least one adult engaged in telework as a result of the pandemic.¹⁰

SOURCE : U.S. Census Bureau American Community Survey



With a broadband Internet subscription

Without an Internet subscription

SOURCE : U.S. Census Bureau American Community Survey



The need for devices and home internet access became imperative, especially for districts that were not already providing devices to students on loan. With libraries also closed for a period, then later reopened with limited capacity, the alternatives for students without home internet or adequate devices were limited at best. Throughout 2020, school districts, local governments, and other organizations worked to secure funds from the Coronavirus Aid, Relief, and Economic Security (CARES) Act to improve access to technology and internet as part of their remote learning plans. Some districts purchased computers for students to use on loan from the districts or refurbished computers to give to families indefinitely. Many ISPs offered temporarily free or reduced-cost internet service to qualifying families, opened community hot spots as a free Wi-Fi access option, or provided Wi-Fi hotspots for families to use in their homes.¹¹

With each subsequent federal relief funding package, there has been an abundance of funding to address the digital divide. CARES Act funds were not specifically earmarked for digital equity, but many state and local governments used funds for these purposes. The Consolidated Appropriations Act funds in late 2020 included a provision for direct subsidies for residents through the Emergency Broadband Benefits, as well as funds designed to fill gaps in broadband infrastructure. The American Rescue Plan (ARP)Act includes multiple broadband-specific programs, targeting investments in libraries, school districts, states, and others. The funding is abundant, but complicated, and presents both an opportunity and an added burden, on already taxed organizations, to spend those dollars in a coordinated way, collaborating to make strides toward digital equity as efficiently and effectively as possible.

The pandemic has cast a light on the already-present disparities in access to suitable internet and technology for highefficacy engagement in virtual environments. Some of the shifts to virtual school, work, institutions, and even community life that were accelerated by the pandemic will be permanent. Because of the digital divide that persists in Central Ohio. access to these virtual pathways and opportunities remains exclusive.

Local leaders rallied around digital equity challenges with greater energy beginning in 2020, as the issue was magnified by the COVID-19 pandemic. In 2020, a new group formed that developed into the Franklin County Digital Equity Coalition, consisting of more than 30 local organizations working collaboratively to address digital equity needs for Franklin County. The group published a framework report in March 2021 that outlines these issues in greater detail.

DIGITAL LITERACY

Alongside broadband access and devices, the third pillar of the digital divide is digital literacy. Low digital literacy is, in and of itself, a deterrent to broadband adoption. The skills needed to work effectively in virtual environments are not universally understood, let alone the skills to troubleshoot confidently when there are problems with equipment or the resources a person is trying to use.

A 2015 Pew Research Center survey found that more than half of adult Americans lacked what they call "digital readiness" (Figure 4), a set of skills that would allow them to use internet and technology for more complex tasks like online learning. Americans who possessed digital readiness were more highly educated, younger, and had higher incomes than those who lacked this skillset. These people were not only more comfortable using and troubleshooting the technology itself, they were also more confident in their ability to discern and seek trustworthy information.¹² That same study suggests that only 17% of adults are "highly prepared" to use technology for online learning. A 2019 Pew Research Center survey found that many American adults were unsure about or incorrectly identified important internet security and privacy topics, like how to make sure a website they are using is secure and identifying phishing scams.¹³

In Central Ohio, numerous organizations provide digital literacy and technical support services, but it is a disjointed and patchwork system, with many organizations serving certain clientele or meeting specific needs. There is not a universal and easily navigable resource to direct those in need to the appropriate digital literacy supports. The digital literacy and skill-building resources that do exist in Central Ohio seem to be disproportionately targeted toward training people for technology-based careers, and thus require users to begin from a higher base level. These resources are important workforce development tools, but there remains a critical gap in basic skills training resources that would support residents starting from a lower level.

As a catalyst for widespread transition to virtual learning, work, institutions, and communities, the pandemic made it immediately clear that internet and devices alone were insufficient to address the digital divide. With national research suggesting that as few as one in five adults are highly proficient technology users, it is unsurprising that this became such a pronounced issue for Central Ohio households. As a legal requirement that districts and households must fulfill, K-12 remote education presents a clear case study for the critical importance of digital literacy in overcoming the digital divide.

In remote K-12 education, even with efforts to get families connected and keep them engaged in remote learning during the transition, many students remained difficult to reach. Statewide, chronic absenteeism increased 16% for elementary students, and 11% each for middle and high school students. The extent to which digital literacy contributed to this increase in the 2020 – 2021 school year is uncertain, but it is a likely factor for many households. The increase was greatest in urban districts compared to rural districts and was far greater among Black students than other races and ethnicities.¹⁴

Digital literacy uniquely impacts some groups of the population. Layering onto the complexities of navigating technology for advanced tasks like remote learning, some students like pre-readers, young children, students with limited English proficiency, students with learning differences, and students with disabilities were all engaged in remote learning.

National research reports that while 36% of the native English-speaking population had 'high proficiency' navigating internet and technology problem solving, only 12% of non-native English speakers had the same proficiency level.¹⁶ The Columbus City School District alone served around 7,800 students who qualified for supports due to limited English proficiency, and around 8,000 required special education due to cognitive or physical disabilities.¹⁵ In these households, students' success was largely dependent on the presence of caregivers in



the home able to dedicate time to navigate remote learning with their students, and with the digital literacy skills and confidence to provide that support.

Disparities in work opportunities are another clear example of the impact of the digital divide. Many Central Ohioans lost work or were unable to work in the pandemic due to health concerns or family care responsibilities. Limited digital literacy was a prohibitive factor in finding remote work options for many, and even finding work that does not require high digital literacy was more difficult in the pandemic, as many job search tools and applications are conducted completely online. Access to human services and programs, civic engagement, community engagement, and basic needs (e.g. groceries and banking) were also shifted near-exclusively online in many instances.

In many cases, the pandemic amplified a troubling paradox. The people who most needed support (e.g. housing assistance, supports for students, and job help) were also the most likely to struggle with effectively interacting with those resources online.

The National Digital Inclusion Alliance offers a proposed model for addressing this paradox. The pandemic shunted many resources, civic engagement, and supports online, while also closing or limiting capacity of anchor institutions like libraries. Libraries have filled an important role in community access to computers and internet, and special supports for K-12 students and job seekers. However, these were already inconvenient options for some. NDIA suggests the pandemic could open a door to more stable, convenient options for residents. The "digital navigator model" pairs individuals with trained navigators to connect them to digital literacy training, devices, internet, and support navigating online resources while they are in the process of building skills and confidence.¹⁷ Funding available through the federal ARP presents an opportunity to consider novel approaches to making meaningful and lasting strides in bolstering digital literacy as a means to narrow the digital divide.



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TRANSITION TO VIRTUAL INSTITUTIONS

Despite the incredible social transformation spurred by the internet and technology in recent decades, some sectors have been slower than others to create virtual analogs for in-person experiences or processes. The public and social sectors, small businesses and the arts have generally lagged private sector companies in developing strong, user-friendly virtual tools and engagement with customers and constituents. In part, these sectors are limited by the populations they serve—equitable delivery of services and resources is less attainable so long as there is a digital divide. They are also limited by the types of services they deliver, many of which have historically centered around face-to-face interaction. These sectors can also be stunted in their technological acceleration by things like bureaucratic red tape, low investment in operational enhancements, limited connectivity of data across departments or organizations, and limited resources and skillsets for investment in user-centered design of websites and applications.

In the early weeks of the pandemic, a survey of local governments conducted by the Mid-Ohio Regional Planning Commission showed that the immediate operational changes spurred technology solutions in some instances. In the first week of April 2020, most local government survey respondents had closed to the public and limited staff access. Following brief pauses, most quickly pivoted to hosting public meetings remotely, and providing online, drop-box, or mail options for resident services (Figure 5).¹⁸ For many local governments, a lag in technological advancements meant this was a sudden and jarring shift to remote operations. In some cases, adoption of virtual alternatives worked well, while in other cases there were persistent concerns.

On the one hand, the COVID-19 pandemic dissolved some of the previous barriers to technological acceleration. The need to create safe, contactless processes for service delivery led to some enhancements. Interviews with local government staff indicated that services like remote property and buildinginspections were adopted as a result of the pandemic, as was the removal of some steps in building and zoning processes like in-person hand-off of building plans. According to interviewees, process changes like this would have been slowed down by bureaucratic approval requirements in a pre-pandemic world.

Figure 5. Local Government Changes to Operations



SOURCE : MORPC Survey of Local Governments

Other enhancements were noted by interviewees. While many residents have fallen further behind in the digital divide, others have become more comfortable operating in virtual environments. Public meetings, some of which were previously conducted in person as a statutory requirement, were permitted to be conducted online as a result of the pandemic.¹⁹ Virtual community engagement and public meetings have been well adopted by some community members. For those with access, the online version of these modes of civic engagement could encourage more public participation as time and logistical barriers are removed when people can log on from anywhere.

Beyond government-led public meetings, interviewees suggested that other less formal engagement in civic- and serviceoriented organizations (e.g., My Brothers Keeper, New American Leadership Academy) was bolstered by the convenience of remote meetings or the ability to engage after the fact by watching pre-recorded content on their own schedule. While interviewees were supportive of permanent virtual civic engagement pathways like continued remote public meetings, they also suggested a need for enhancements to ensure effective meetings such as two-way communication with participants, and cited the need to be aware of limitations around trust-building in these settings. In fact, several interviewees mentioned building empathy and connection with community members as a prerequisite to technologybased engagement, both within public and human services.

The social sector was also challenged by the abrupt shift to contactless and, in some cases, technology-enhanced service delivery. Surveys of Central Ohio nonprofits suggested a persistent need for support with technology within the sector, whether for remote work, coordination of services and resources, or tools for resource discovery among those they serve (see more about the impacts on nonprofits in the Social Sector brief). As the pandemic accelerates technology innovation in both the public and social sectors, the need to build connectivity of data and information behind the scenes, and to develop intuitive, user-friendly tools to access resources, services and information becomes greater.

Can't Stop Columbus is a group of civic technology volunteers that emerged as an important resource to support the growing technology needs of the public and social sectors, small businesses, and the arts. While the volunteer organization could not fill every technological need for delivering public and human services, they made significant contributions to things like acquiring and delivering Personal Protective Equipment, collecting food donations and getting meals to residents, and bolstering small businesses. This emerging volunteer civic technology community could serve as a long-term opportunity to partner those with technical skills to the sectors that have limitations in technology solution development.²⁰

Can't Stop Columbus also provided support to the small business community (see more in the Employment and Small Business Brief), as well as technology-based supports for local artists. The Columbus Arts Hub was developed as a resource to support local artists with establishing an online presence through virtual concerts, online art classes, and online artist profiles.²¹ There were some efforts to have online events and marathons of artists, many driven and led by artists rather than arts organizations, and artists grew in their use of technology to create art not just to share art. An interviewee from The Greater Columbus Arts Council acknowledged that this was a scramble, initially, as many artists independently found technology and venues to create an online presence before shared technology investments were established.



BUILDING COMMUNITY CONNECTIVITY

Nationwide, there was an increase of 11 million (3.7%) internet users and 10 million (4.3%) active social media users from January 2020 to January 2021, many of whom were new adopters - the population overall grew by only 1.9 million or 0.6% during the same period (Figure 6).²²

This increase in internet and social media users is indicative of the pandemic's disruption of many facets of life, from work, to school, to business. It also points to a fundamental disruption of community life. Social gatherings, neighborhood block parties, and community events were largely arrested by the safety concerns around COVID-19. With many aspects of life shifting to a virtual environment, so too did community engagement and informal political and civic action.

One prime example of civic action through volunteerism is the Can't Stop Columbus initiative. Can't Stop Columbus developed rapidly in Central Ohio at the onset of the pandemic, leveraging existing technology-focused groups (e.g., Smart Columbus, Tech Life Columbus, and Give Back Hack). The overwhelming volunteerism germinated in response to the growing needs in the region's communities, and the limitations on the public and social sectors in filling those needs or connecting residents to resources. The organization grew to over 1,700 volunteers, operating almost exclusively online, with the mission statement, "Can't Stop Columbus is a community-wide movement that addresses problems that have arisen due to the COVID-19 crisis. Activating our city's talents and passions, we're putting bold ideas into action to deliver real solutions that unite our community."²⁰

Informal civic engagement increased on social media during the pandemic, some national research suggests. Some of the increase was observed among young people, especially centered around national political issues, like the presidential election, and the swelling racial justice movement.²³ While political organizing and activism still happened face-to-face, whether through canvassing to "get out the vote", or Black Lives Matter protests in downtown Columbus, the organizing and coordination of these efforts took place largely online. Arguably, access to real-time virtual interaction supported the extra layers of planning and communication needed to ensure these in-person activities could be conducted safely, during the still-raging pandemic.

Other research highlights the value of "online neighborhood social networks" in sharing resources, trading goods and services, and supporting local businesses and artists during the pandemic.²⁴ These virtual communities burgeoned in the pandemic as tools for swapping information among virtual (or sometimes literal) neighbors about help available for housing, food, unemployment, or information about COVID-19 testing and vaccinations. These platforms also became peer networks for people dealing with similar types of challenges during the pandemic, like parents of remote learners. Whether volunteerism, political organizing and activism, sharing information about the ever-changing landscape of resources and supports, or simply navigating uncharted territory during COVID-19, the level of engagement that occurred would not have been possible without the technology to support real-time virtual interaction.

While the acceleration of virtual communities presents great opportunities for continued civic and community engagement, there are concerns about inclusive access to these virtual civic spaces and the risk of social isolation for those not connected given the still-wide digital divide. Furthermore, the spread of misinformation will remain a persistent concern in virtual civic and political dialogue and in the exchange of information about community resources.



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