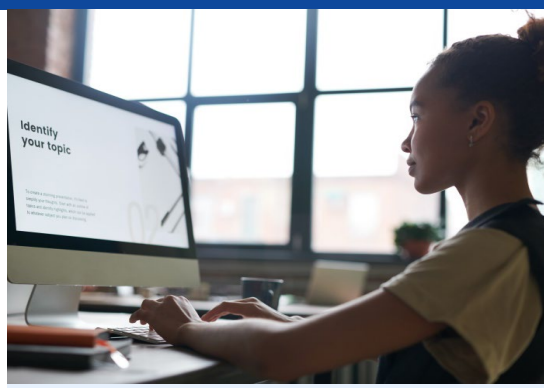
Digital Inequities and Disparities

Technology Access for Michigan Students



Access to and use of the Internet is a fundamental part of everyday life for Americans; however, not every family or community has the same level of access. Examples of digital disparities are evident in many places across the country and for different subgroups—with circumstances intensified in low-income urban and rural communities.[i] Past research has shown that the lowest-income households in the United States have the lowest Internet broadband subscription rates[ii] and access for Black and Hispanic households trails White households.[iii] These digital inequities have significant social, economic, and learning costs, both for families.

During the school year, millions of children depend on their schools to provide access to the Internet. The current public health crisis has brought renewed attention to the digital divide. Students in technology-deficient circumstances do not have the necessary tools or access to complete their coursework.[iv] This digital divide is a concern both in the short term, as schools respond to the immediate crisis, and in the long term, in terms of districts' plans to support learning at a distance during future disruptive events. Beginning in April 2020, Michigan school districts need to have detailed continuity-of-learning plans in place to be able to respond to the learning needs of their students. The needs include but are not limited only to technology.

Distance learning via online, virtual approaches has become the dominant model. In rare instances, school districts were able to seamlessly switch from in-person to online instruction. Many of those districts were implementing 1:1 technology and device allocation before the crisis. However, in most under-resourced school districts and communities across the country, access to devices as well as broadband service is insufficient to support widespread virtual education.

Unequal access represents another opportunity gap for students. A recent report from the Quello Center at Michigan State University found that a lack of broadband and an increasing dependence on cell phones for home Internet access was harming rural Michigan students even before the crisis.[v] The study raised an important consideration about the quality of access and the type of services students rely on to complete homework.

> *"In simple terms, digital equity means all students [should] have adequate access to information and communications technologies for learning and for preparing for the future—regardless of socioeconomic status, physical disability, language, race, gender, or any other characteristics that have been linked to unequal treatment"*
>
> *(Solomon, 2002)*

What does access in Michigan look like?

To better understand disparities and inequity in access to computers, Internet, and broadband, Public Policy Associates, Inc. (PPA) utilized existing data from the American Community Survey (ACS) provided by the U.S. Census Bureau. Using the most recent data available from 2018, this brief investigates differences in access statewide, for different subgroups, for metro vs. non-metro areas, for regions of the state, and to understand how Michigan compares nationally. Please refer to the technical appendix, which discusses definitions and research considerations.

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Public Policy Associates Incorporated

Nearly all (95 percent) of school-aged children in Michigan are in households that have some sort of Internet access, and 91 percent have a computer in the home; however, only three quarters (76 percent) have what can be classified as high-speed Internet access.

By all three measures Michigan ranks behind many other states: 28th in Internet access, 30th in computers, and 33rd in broadband.

If equal access to virtual learning is defined as living in a household with a computer and high-speed Internet access, then approximately 419,000 Michigan students lack access to online instructional technology. This is in keeping with the Michigan Department of Education's recent estimate that approximately one-third of all students in Michigan currently do not have the necessary tools for online learning at home.[vi]

Disparities Exist

Detailed data within Michigan suggests substantial disparities in technology access for various population groups.

In particular, Black students are statistically significantly less likely to have access to the Internet at all (88 percent vs. 96 percent for White students), computers (76 percent vs. 94 percent), and broadband (62 percent vs. 77 percent).

Hispanic students also face substantial barriers, with a lower proportion having access to computers (88 percent) and broadband (73 percent).

Children in Michigan living below the poverty line are also much less likely than their peers to have access to the Internet (88 percent vs. 97 percent), computers (75 percent vs. 94 percent), or broadband service (57 percent vs. 80 percent).

Geography Matters

As might be expected, access to technology is also connected to where a student lives. Although there are minor differences across parts of the state for Internet and computers, children living in the northern part of the state (excluding the Upper Peninsula) are much less likely to have broadband (63 percent) than other parts of the state.

The Upper Peninsula, East-Central, and Western portions of Michigan all have roughly the same access to broadband (72 to 73 percent), while Southeast Michigan enjoys the greatest use of broadband (80 percent). However, these regional variations conceal a much starker inequity.

In the state as a whole, 79 percent of children living in metropolitan areas have access to broadband, compared with just 59 percent of those in non-metro areas. It should also be noted that, while in most other respects Michigan's unequal access to broadband mirrors that of the nation as a whole, the urban-rural digital divide is much larger than one sees in other areas.

Michigan's 20-point gap between metro- and non-metro children, compares with only a 10-point difference nationally.

Implications

The COVID-19 crisis has emphasized the need to ensure that all students have access to the tools necessary to support connected, online learning. If not, inequities in education will be exacerbated. While distance learning can include other approaches, online resources have long been known to add to the learning experience. A mix of strategies is needed to increase access to online tools for learning for all students, and schools have a responsibility to provide quality instruction and the needed educational supports to all of their students..

PPA has identified the following questions and recommendations for policymakers to consider as they seek to address digital equity:

Key Questions to Consider

- In response to COVID-19, how are districts addressing digital access and equity in order to reach all of their students? How are school districts expanding access to the Internet (e.g., through mobile hot spots, community Wi-Fi, wireless buses)?
- How are districts reaching out to students and families who do not have Internet or broadband access? How are devices and equipment being distributed to students?

- How are districts ensuring that students without Internet access receive equal learning opportunities?
- What kind of supports are districts providing teachers, students, and parents to successfully migrate to distance learning? On what topics are teachers receiving professional support (e.g., digital equity, instructional best practices, social emotional learning)?
- In the long term, how can state government play a role in ensuring digital equity for all families and students?

Suggested Practices and Policies

Keep students and learning at the center. Distance-learning opportunities should have the same components as traditional in-person instruction—they should be developmentally appropriate and accessible to all students.

Targeted approach. Low-income communities, rural communities, and people of color in Michigan face many more obstacles accessing computers and high-speed Internet; policies must target those communities to improve equity in access.

Short-term and long-term planning. In the short term, school districts should be thinking creatively—including providing remote hot spots or sharing district-owned devices, —for ways to bridge the digital divide. In the event of future school-building closures, schools should be looking for ways to implement policies and procedures that take into account the specific technological needs of families and students who do not have the ability to access information, assignments, or remote-learning opportunities beyond the traditional school day. These non-technological instructional strategies must be comparable to those offered to students with greater access.

Expanding learning opportunities during the summer and minimizing loss of learning. Summer learning loss is a concern for students each year; however, the COVID-19 crisis has intensified the problem. Through a variety of summer programing and in partnership with community organizations, school districts can implement summer-enrichment programs that will support ongoing student learning. Where and when feasible, school districts can also choose to begin the 2020-21 school year before Labor Day (either in person or through distance learning), which may help to diminish potential learning losses incurred by stopping in-person insruction in 2019-20. Balancing the calendar is allowed for in the Governor Whitmer's Executive Order No. 2020-35 (EO-35).

References

Gwen Solomon, (2002). "Digital equity: It's not just about access anymore," *Technology & Learning* 22, no. 9 (2002): 18-20, 22-24.

[i] Rakeen Mabud and Marybeth Seitz-Brown, *Wired: Connecting Equity to a Universal Broadband Strategy* (New York: The Roosevelt Institute, 2018), accessed April 10, 2020, https://rooseveltinstitute.org/wired-connecting-equity-universal-broadband-strategy/.

[ii] "The Numbers behind the Broadband 'Homework Gap,'" John B. Horrigan, Pew Research Center, April 20, 2015, accessed April 10, 2020, https://www.pewresearch.org/fact-tank/2015/04/20/the-numbers-behind-the-broadband-homework-gap/.

[iii] Thom File and Camille Ryan, "Computer and Internet Use in the United States: 2013." U.S. Census Bureau, November 2014, accessed April 10, 2020, https://www.census.gov/history/pdf/acs-internet2013.pdf.

[iv] Raeal Moore, Dan Vitale, and Nycole Stawinoga, *The Digital Divide and Educational Equity: A Look at Students with Very Limited Access to Electronic Devices at Home* (Iowa City, IA: ACT, 2018), accessed https://www.act.org/content/dam/act/unsecured/documents/R1698-digital-divide-2018-08.pdf.

[v] Keith N. Hampton, Laleah Fernandez, Craig T. Robertson, and Johannes M. Bauer, *Broadband and Student Performance Gaps* (East Lansing, MI: James H. and Mary B. Quello Center, Michigan State University, 2020), https://doi.org/10.25335/BZGY-3V91.

[vi] Vanessa Keesler, Presentation to the State Board of Education, Lansing, Michigan, Michigan Department of Education, April 14, 2020.

Digital Inequities and Disparities: Technology Access for Michigan Students

Issue Brief Technical Appendix

Methods and Data

This technical appendix provides additional information about the methods, data, and analytical strategy that were used in PPA's Issue Brief, "Digital Inequities and Disparities: Technology Access for Michigan Students."

Access to different types of broadband technologies is correlated to income, geographic location, and urbanicity. The Federal Communications Commission (FCC) defines broadband as, ". . . high-speed Internet access that is always on and faster than traditional dial-up access."[1] Broadband can be transmitted using several different forms, including: digital subscriber line (DSL); cable modem; fiber optic; wireless; satellite; and broadband over power line (BPL). The National Broadband Plan stipulates download speeds of at least 100 Mbps and upload speeds of at least 50 Mbps are considered as high-quality broadband.[2] Broadband has significant effects on unemployment rates and faster job growth for skilled workers and for a college-educated workforce.[3]

To understand the access to Internet, broadband, and computers at home, the analysis for this issue brief uses data drawn from the American Community Survey (ACS) administered by the U.S. Census Bureau (2018). Since 2013, the ACS has collected data required under the 2008 Broadband Data Improvement Act. Data collected through the Current Population Survey (CPS) potentially include more detail through its longer questionnaire and longer time series. However, the ACS, with a larger sample, provides better estimates for small population groups and with more details related to geographic area.[4] Three relevant ACS questions (asked since 2016) were included in these data with those relying on cellphones coded as not having a computer.

Data were downloaded from the ipums.org website,[5] which maintains formatted ACS data. We used both household and individual-level variables. Respondents who resided in group quarters and did not have family income data were excluded. Because the focus of this brief is the availability of and access to technology for school-aged children, the sample was restricted to individuals who were between 5 and 17 years of age.

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[1] "Types of Broadband Connections," Federal Communications Commission (FCC) updated June 23, 2014, accessed April 10, 2020, https://www.fcc.gov/general/types-broadband-connections.

[2] Elizabeth Mack, "Businesses and the Need for Speed: The Impact of Broadband Speed on Business Presence," *Telematics and Informatics* 31, no. 4 (2014): 617-627.

[3] Bento J. Lobo, Md Rafayet Alam, and Brian Whitacre, "Broadband Speeds and Unemployment Rates: Data and Measurement Issues," *Telecommunications Policy* 44, no. 1 (2020).

[4] Camille Ryan, "Computer and Internet Use in the United States: 2016," U.S. Census Bureau, August 2018, accessed April 10, 2020, https://www.census.gov/content/dam/Census/library/publications/2018/acs/ACS-39.pdf.

[5] Steven Ruggles, Sarah Flood, Ronald Goeken, Josiah Grover, Erin Meyer, Jose Pacas and Matthew Sobek, IPUMS USA: Version 10.0 [dataset], Minneapolis, MN: IPUMS, 2020. https://doi.org/10.18128/D010.V10.0

ACS demographic and geographical data were used to identify inequalities in access to technology, including: race and ethnicity, poverty, and geography. Geography was analyzed separately by residence in a metropolitan area and in one of five geographic regions within Michigan: the Upper Peninsula (UP), Northern, East-Central, Western, and Southwestern areas of the Lower Peninsula. Estimates and standard errors were derived using standard techniques.

Research Notes

- Sample sizes were too small to identify statistically significant differences between counties or groups of counties. Although we considered using the five-year ACS sample, this possibility was rejected because: (a) there might be differential trends in technology access over time; and (b) the ACS question on Internet access was changed in 2016.
- Southeast Michigan has statistically significant greater broadband access than all regions except for the UP, although this is partly due to the smaller UP sample size and hence larger standard error.
- Race and ethnicity were re-coded as White, Black, Asian, Native American, Multiple Races/Other, and Hispanic. Hispanic was treated as an inclusive category (so that all other racial/ethnic categories are non-Hispanic).
- Family poverty status was determined using the ACS total family income variable. All children living in families with total income below the 2018 federal poverty guidelines were coded as in poverty.
- Metropolitan status was determined by collapsing all households in a federally defined metropolitan area (which includes suburbs) into a simple 1/0 dichotomy.
- In producing estimates for five different regions within Michigan grouped together according to the Michigan Department of Health and Human Services Business Service Center (BSC) classification, while separating the UP from the rest of the northern region, data from Public-Use Microdata Areas (PUMAs) in each BSC area were combined.
- Because PUMAs do not map neatly onto BSC areas, three counties were linked to a different region (Arenac and Gladwin to the northern region and St. Joseph to the western region).
- Estimates were weighted using individual-level weights, and standard errors produced through balanced replicate weights.

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Issue Brief Technical Appendix B

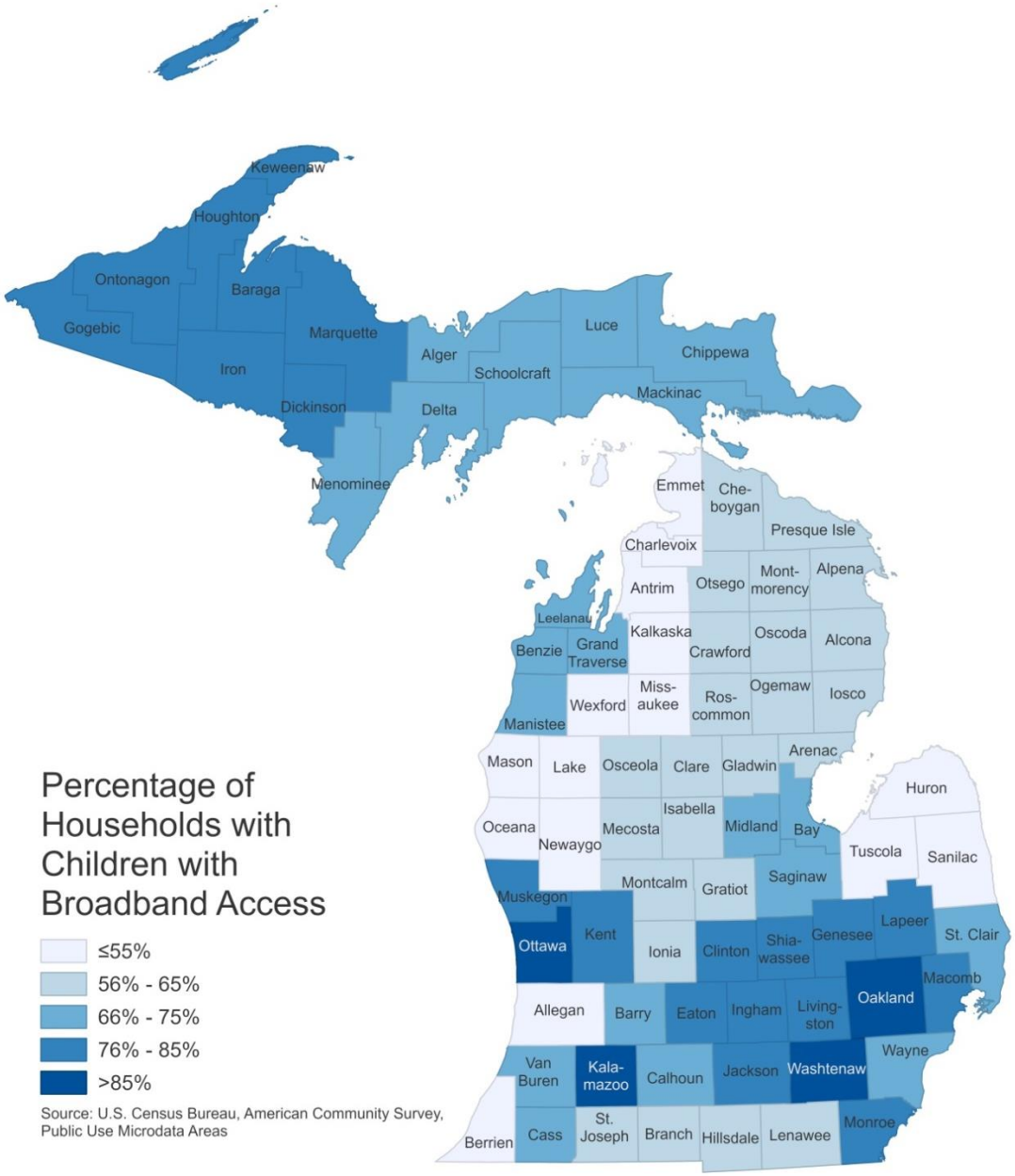

Figure 1: Broadband Access by Households with Children

The full brief is available here. For more information about PPA's work on education issues, please contact Daniel Quinn, Ph.D. at dquinn@publicpolicy.com or 313-303-8445.

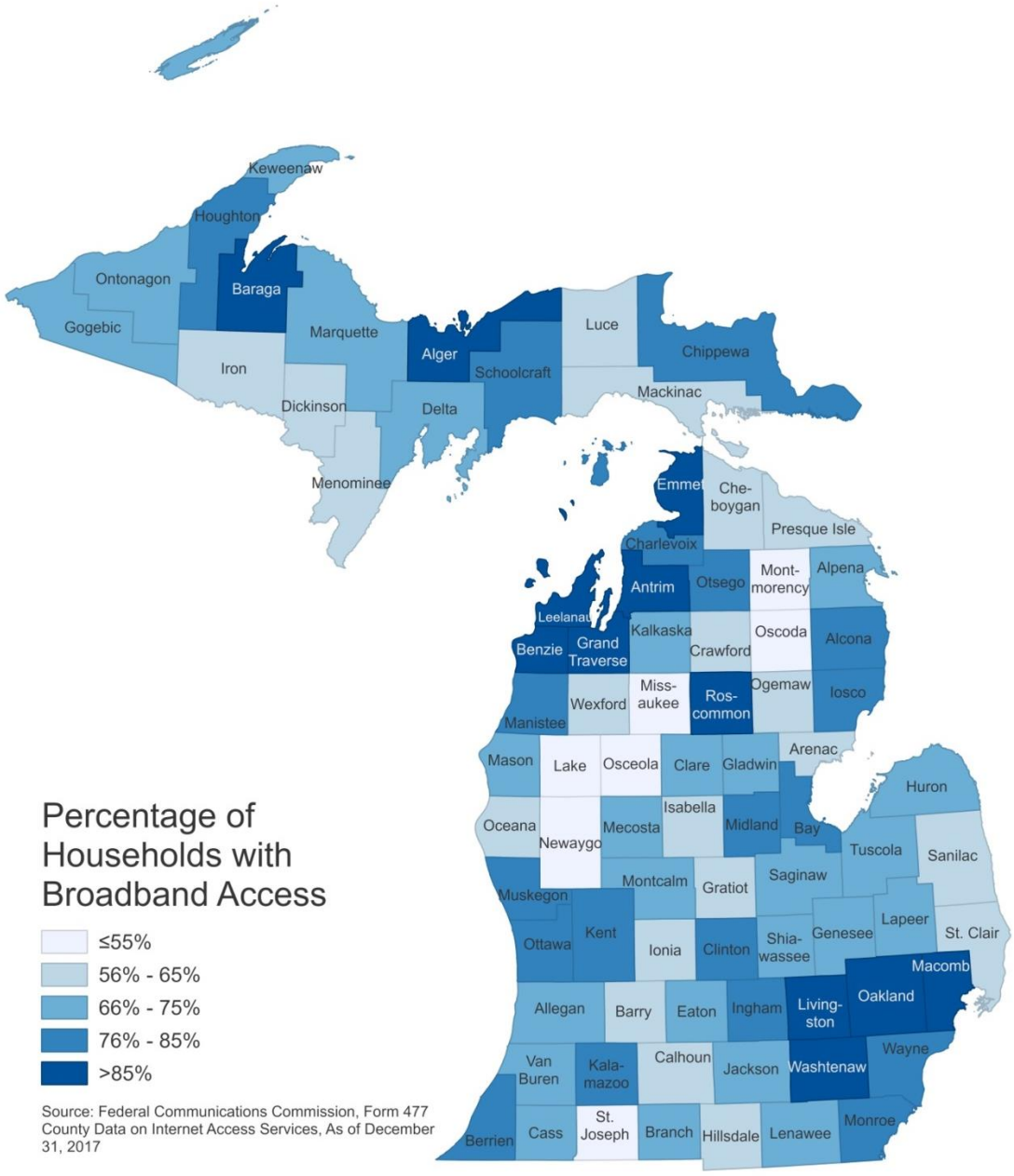

Figure 2: Household Access to Broadband[1]

[1] The data are compiled from mandatory reporting submitted by Internet Service Providers (ISPs) to the Federal Communications Commission (FCC). Compared to the U.S. Census Bureau American Community Survey Public Use Microdata Areas (PUMA) data reported in the issue brief, the FCC data show greater variation county-to-county. However, because the source is ISP self-reported data, there may be some degree of overestimation of the number of households served, along with other reporting errors.