

Winter 5-2-2022

## Effects of Internet Exclusion on the City of Detroit

Alexander G. Haddad

Wayne State University, gn8420@wayne.edu

Follow this and additional works at: <https://digitalcommons.wayne.edu/honorsthesis>



Part of the [Digital Humanities Commons](#), and the [Management Information Systems Commons](#)

---

### Recommended Citation

Haddad, Alexander G., "Effects of Internet Exclusion on the City of Detroit" (2022). *Honors College Theses*. 77.

<https://digitalcommons.wayne.edu/honorsthesis/77>

This Open Access Honors Thesis is brought to you for free and open access by the Irvin D. Reid Honors College at DigitalCommons@WayneState. It has been accepted for inclusion in Honors College Theses by an authorized administrator of DigitalCommons@WayneState.

**Effects of Internet Exclusion on the City of Detroit**

Alexander Haddad

Irvin D. Reid Honors College

Wayne State University

Honors 4998 Thesis

Dr. Marc W. Kruman

May 3, 2022

## **Introduction**

The rise of Information Technology (IT) in the past 50 years has revolutionized many areas of human life and activity. Information Technology's most obvious areas of impact are often those where they add a great and obvious value to a particular industry, and it is extremely difficult to find some aspect of life that has not changed since its inception. Some examples include the digitization of stock trading, the automation of factories and life-saving operations, and the enhanced communication and collaboration across public education, enterprise activity, and international affairs. However, what is often overlooked and understudied are the secondary and tertiary effects I.T. has on a particular aspect of human life. These can include such things as subjective feelings of inclusion, belonging, and generally having a "voice." This research paper analyzes the effects of the rapid rise of I.T. in the city of Detroit, the disparity between I.T. in Detroit and its surrounding areas, as well as the effects this development has had on community engagement and citizenship.

This paper will attempt to establish the existence of a digital divide between Detroit and its surrounding areas, as well as highlight the severity of the divide itself by using examples of relevant geographical areas and their associated overall Internet health. Other topics to be explored in this paper will include the effects of this divide on the citizens of Detroit, such as effects on healthcare and education quality and access and its downstream effects. Correlation of key demographic markers will be discussed in an attempt to establish the reason behind this divide. Finally, remedial efforts by both local, state, and federal institutions will be explored in

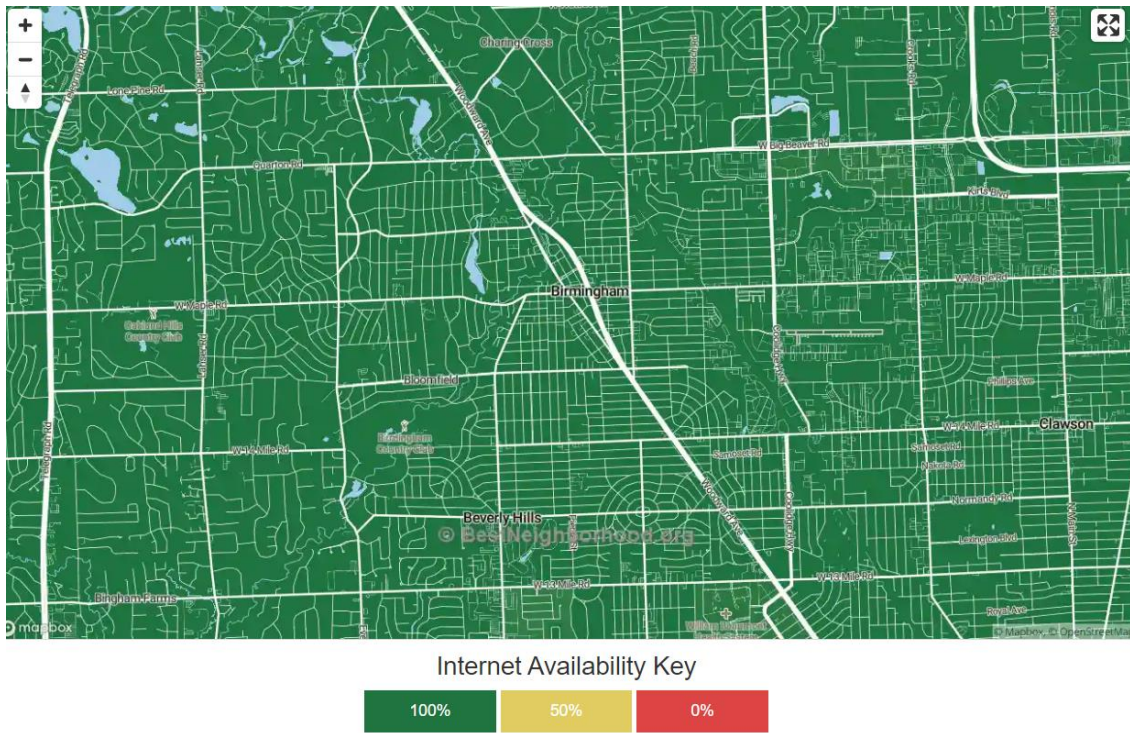
order to see and decipher if these efforts are sustainable, making actual change, and helping to address the problem of Internet access, quality, and availability of hardware.

## Chapter 1: Establishing the Divide

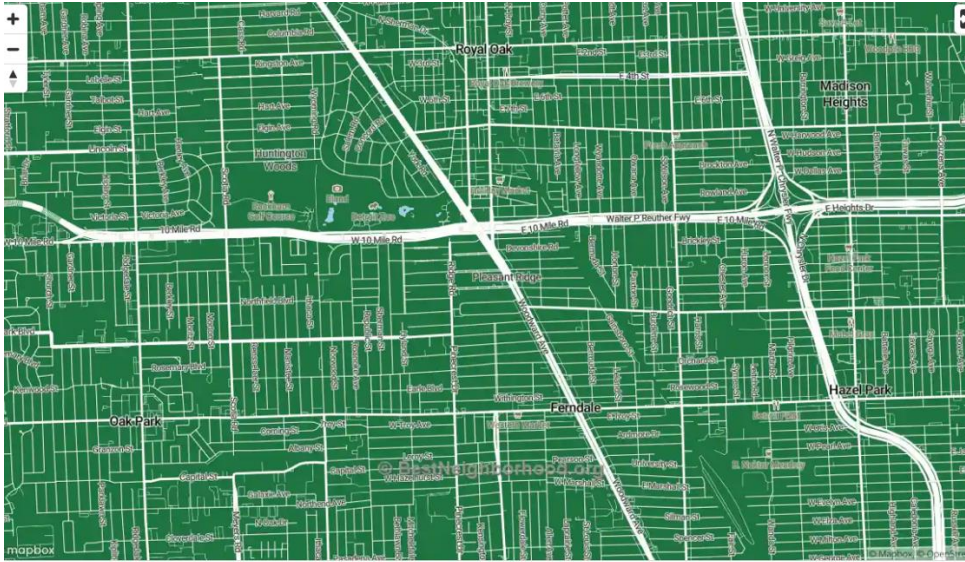
### Access to Internet

A stark technology divide exists between Detroit and its surrounding suburbs. This divide encompasses many aspects of Information Technology with broadband connection, Wi-Fi access, and quality of equipment all being prominent factors in this divide. Basic access to the Internet begins with the foundation of broadband networks built on infrastructure that are able to handle these digital requests. Conservative estimates place nearly 25% of Detroit residents not possessing access to any form of broadband connection (Afana, 2021). Other estimates include much higher rates of lack of Internet connection with 35% (Noble, 2021) and even 40% (Reisinger, 2016) being recent estimates. Even with this conservative estimate, this places Detroit as the 2<sup>nd</sup> worst city within the United States in terms of broadband coverage (Hill, 2015). In addition, nearly 57% of homes do not have any hardline forms of Internet connection (which often comprises the fastest speeds available for Internet) (Hudson, 2018). With Internet communication being essential to modern life in aspects such as healthcare, education, and communication, complications start to become clear, complications to be explored later. In contrast, Detroit's residential suburbs are largely free from this problem. For example, Grosse Pointe, a suburb very near to Detroit, places Internet broadband coverage at 100% (Patch, 2021). Ferndale, a similar suburb near Detroit boasts a coverage rate of 99.83% (Best Neighborhood, 2021). Another suburb that has large broadband coverage is Ferndale, with 99.91% (Best Neighborhood, 2021). In addition, Warren, a large metropolitan area near Detroit, has a coverage rate of 99.07% (Best Neighborhood, 2021). Lastly, St. Clair Shores, a suburb between Detroit and Grosse Pointe has a coverage rate of 99.94% (Best Neighborhood, 2021). As we can clearly

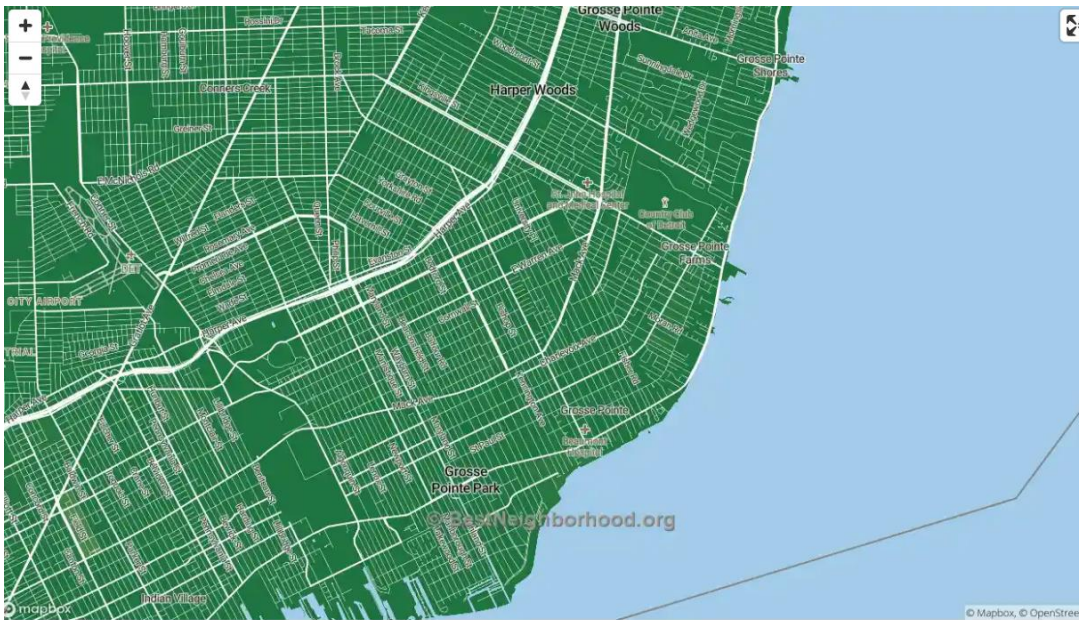
see, there is a prominent divide between Detroit and its surrounding suburbs with regards to Internet coverage. Another important aspect of Internet availability is the quality of that available Internet, to be explored next. Supplementary images to support this claim can be referenced below.



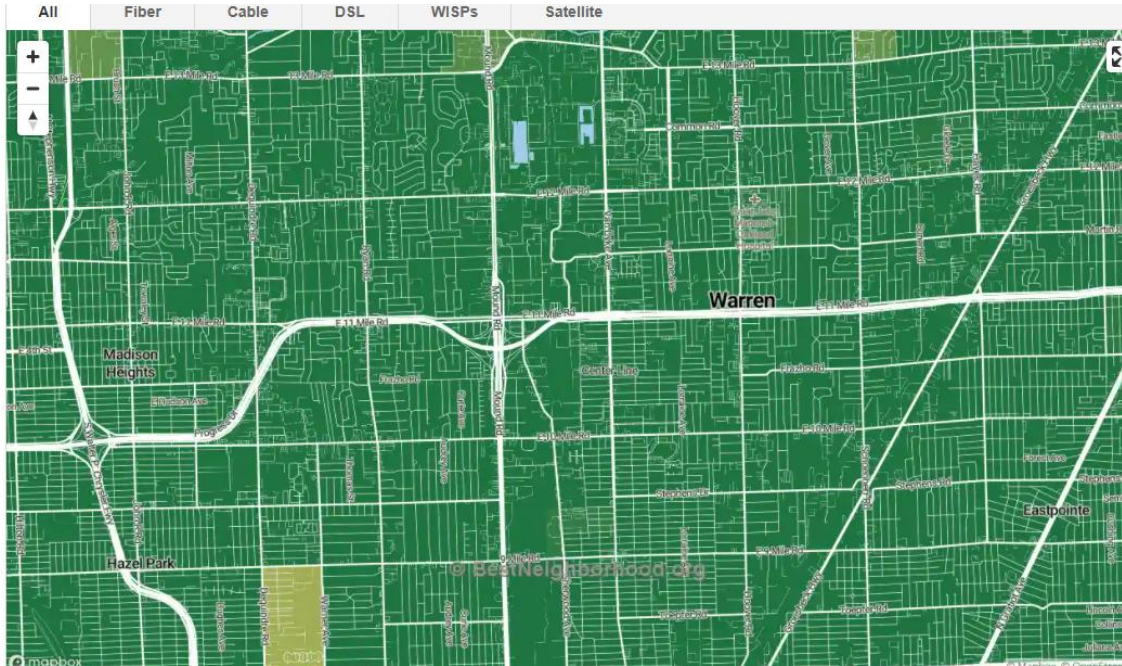
(Best Neighborhood, 2021a)



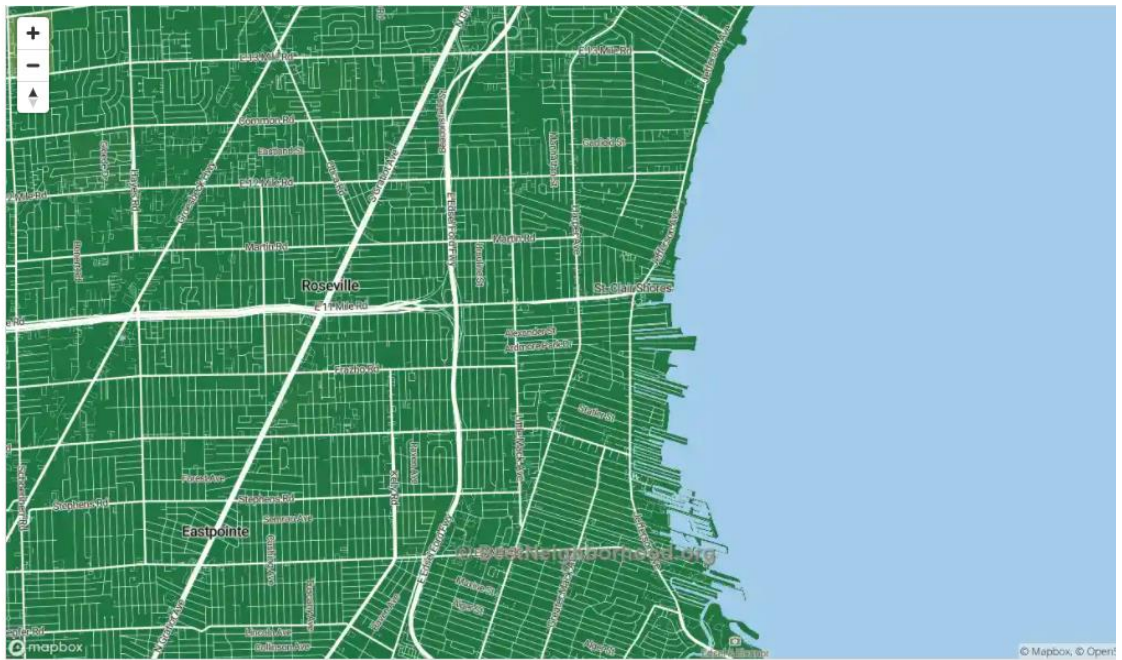
(Best Neighborhood, 2021b)



(Best Neighborhood, 2021c)

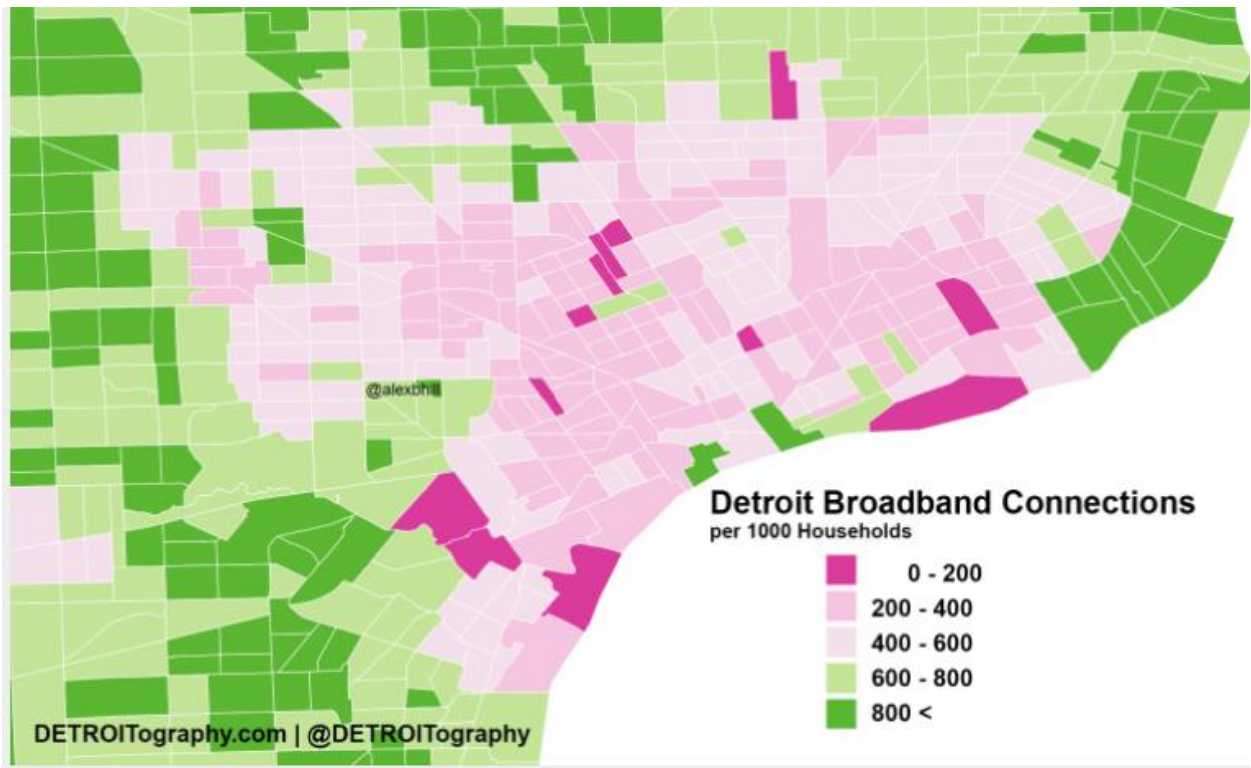


(Best Neighborhood, 2021e)



(Best Neighborhood, 2021e)





(DETROITography, 2016)

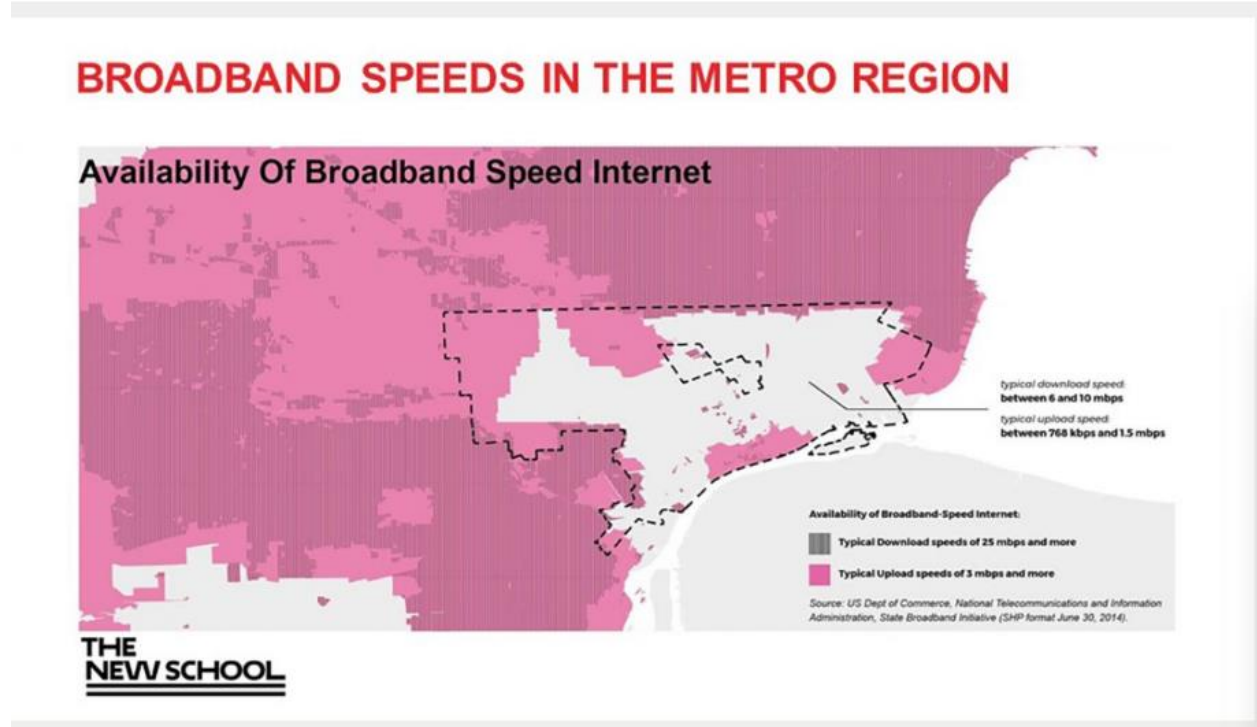
These maps depict a dreary situation for Detroit. The corresponding colors, green being a high amount of coverage, to dark pink being a low amount, shows the lack of broadband connectivity throughout Detroit. However, the surrounding suburbs rarely display any color but green. Not all of these suburbs are as wealthy as Grosse Pointe and Birmingham, which have a primary residency composed of business owners, upper-level managers, as well as those with post-bachelor degrees. A few such as Warren and Ferndale are mostly working-class communities. However, the overall coverage and quality remains nearly the same throughout these communities, with insignificant fluctuations. These maps show that broadband coverage in Detroit is not some linear equation that trickles downward in number of connections as the relative income per household of the area decreases, but rather shows a stark, prominent divide between Detroit and the various suburbs listed. The implications of this being numerous, as we

are a digitally connected society, with issues such as communication, participation in ones' community, and access to resources and information such as healthcare systems and educational opportunities starting to creep into the picture as the outcome of this, now apparent, digital divide.

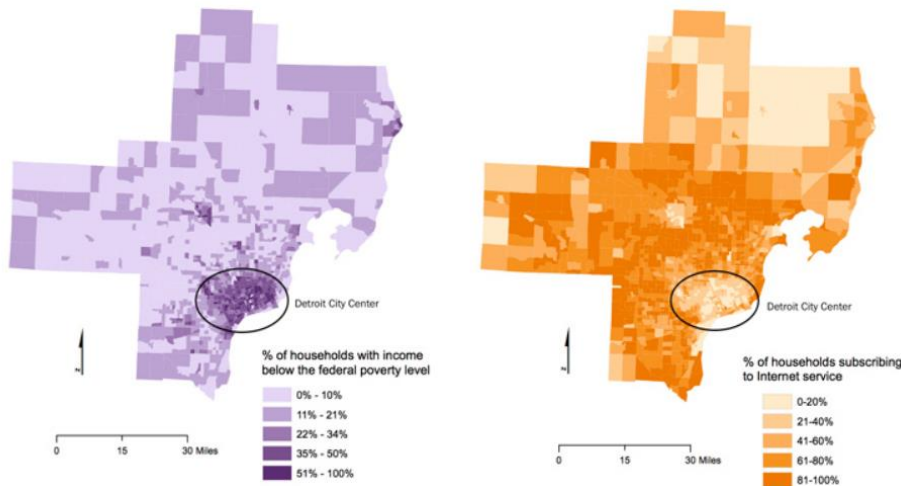
### **Quality of Internet**

Although Internet coverage is the building block upon which Internet can be accessed, Internet quality is just as important. With the development of more resource intensive and interactive tools and websites, requirements for Mbps have increased dramatically. For example, the average Zoom call uses at least 1.5 Mbps (Holslin, 2021), a crucial tool that emerged during the pandemic for virtual meetings. To stream a standard definition video, it requires a minimum of 3.0 Mbps speed (Nerdwallet, 2017). As more and more devices connect to a network, this bandwidth, or the overall speed and resources a home network is configured with, becomes strained with each subsequent device connected and active on the network. It is easy to see how quickly multiple devices can bog down a home network, thus demonstrating the need for a network with high quality performance. A high-quality home network in Detroit is another point of disparity however, with 6-10 Mbps being the average in Detroit for houses with a connection versus the national average of 25 Mbps (Pratt, 2017). The primary reason for the reduction of Internet speed around Detroit boils down to financial reasons. As Detroit is a known low-income area, this affects the ability of residents to purchase monthly plans that offer competitive speeds as it is financially stressful for many families. In addition, a sort of "redlining" exists within broadband carriers to invest in these areas, as they know that the main residents are unlikely to upgrade to higher speed plans, rendering a net loss for given projects (without government subsidies). AT&T, for example, has been accused of this digital redlining multiple times, with an

analysis finding that Detroit only had 41% of highspeed fiber Internet versus 81% of the remaining areas in Wayne County (Neidig, 2017). Some figures below illustrate this example of poor Internet quality and its connection with income levels.



(Bridge Michigan, 2016)



**Figure 2:** Poverty rates (left, Figure 2a) and Internet subscription rates (right, Figure 2b) in Detroit's metropolitan statistical area. Data: FCC Form 477 Subscription Reporting from Internet Service Providers, 2010; American Community Survey 2005–2009.

(First Monday, 2010)

These maps confirm the established divide, this time in terms of quality. The first map is an excellent indicator of just how stark this divide in relative speeds is. With Detroit at large being the only community in its near geographic vicinity to not meet a download speed of at least 25 Mbps and an upload speed of 5 Mbps, rather it shows Detroit as possessing a download speed of between 6 and 10 Mbps and an upload speed of between 768 Kbps and 1.5 Mbps. Detroit has at best, a 60% reduction of download speeds and a 70% reduction in upload speeds when compared to its surrounding suburbs. These percentages put into perspective just how poor the quality of Internet is in Detroit. The second graph ties in the availability of quality Internet in relation to the federal poverty line, which shows a strong correlation between those who fall under the poverty line and the lack of strong Internet in the area. Again, this section further ties in the digital divide with not only access to the Internet, but also the quality of Internet. The

implications for this are bleak as well. The Internet as a whole requires greater upload and download speeds as more advanced websites, programs, and applications are emerging at an extremely fast rate. These are only becoming more complex in nature and will require substantially more, not less, Mbps as they continue to advance. For many Detroiters, this could mean extremely long wait times to download and access relevant information needed for that resident. Files would take much longer to download, websites would become a hassle to access as you wait for all the information to load, program and application downloads could take hours on end, and teleconferencing might be impossible altogether. Here, we have established a divide not only in the area covered by Internet, but also by the quality of Internet.

### **Access to Computer Hardware**

A key issue driving Internet disparities in Detroit is access to modern computer equipment and other devices that allow for an Internet connection. There is little information or polls that map or quantify the number of Detroiters who had access to computer hardware pre COVID-19. This changed with the COVID-19 pandemic, as schools went virtual and showed the difficulty of trying to teach online to many families that do not have the resources to get online. A large survey of school staffers in Detroit found that 23.3% of their pupils lacked access to an adequate device for online learning (Chambers, 2020). This is closely tied to the poverty level in Detroit, which left many families stranded as they were unable to purchase computer hardware. In addition, many government-funded buildings that supplied Internet access via a computer, such as public libraries, were closed due to the pandemic. Another factor in this comes from the United States Census Bureau, in which 36.4% of African American households had no broadband or computer. Detroit, a city with a significant African American population, is no exception (Fisher, 2020).

However, a great deal of government assistance and a plethora of non-profits have stepped up to help bridge this hardware divide. On the side of non-profit assistance, Quicken Loans, DTE Energy, General Motors, and others have teamed up to provide over 50,000 laptops for low-income Detroiters (Wisely, 2020). In addition, a large E-waste recycling program is under way, dubbed “Empowering Digital Detroit,” in which I.T. professionals will attempt to refurbish over 500,000 pounds of unwanted electronic devices and put them in the hands of low-income Detroit residents (Rahal, 2021). On the government’s end to remedy the situation, Mayor Mike Duggan is suggesting using part of \$50 million from the American Rescue Plan Act to give laptops to families that need them most (Newman, 2021). As we can see, access to hardware is just as fundamental to the connectivity of Detroit as access to broadband. Without one, the other is useless. Significant efforts have begun to be made by both public and private sector entities to remedy this situation.

### **Comparison Among Different Communities in Detroit**

There are stark differences in Internet quality even within the city of Detroit itself. Figures such as those on pages 9 & 10 highlight this level of divide. It is clear from the maps that downtown Detroit, a highly urbanized area with great levels of infrastructure, possesses a high connectivity rate as well as a high Mbps download rate. The areas of Detroit that suffer the most are the areas of Detroit that lie directly outside of downtown, but not outside the city itself. The strongest correlation factor here is the poverty rate in these outlying communities, as seen on the figure in page 10, which shows a strong connection between poverty in individual communities’ poverty rates and their subsequent subscription to Internet services. Which is as an inverse linear relationship in which as the poverty rate increases, the level of subscription services per household decreases. The downtown area of Detroit receives a great deal of attention, not only

for its many attractions and community services to help its citizens and tourists, but because many corporations and businesses operate downtown. High speed and reliable Internet are a must for any business to stay competitive, and this urbanized downtown area could not exist without the supporting infrastructure to offer high speed and reliable Internet. Thus, it is important that we further categorize this divide as that of the neighborhoods in Detroit outside of the downtown area.

### **Comparison to Other Cities on a National Level**

Comparing Detroit's quality of Internet and broadband connections to that of the national average yields abysmal results. With the population of Detroit hovering around 670,000 people, let us compare some cities with a population comparable to Detroit's. Boston, MA with a population north of 700,000 boasts an Internet connectivity rate of 98% (Stucka, 2021), and their state boasts a whopping 73.6 Mbps average connection speed (Dubail, 2020), far above that of Detroit. Another prime example is that of Denver, CO which has a population of 750,000 and a broadband "score" (correlation to % of area covered) of 96% with a 54 Mbps download speed (BroadbandSearch, 2021). Furthering this argument of highly poor Internet in Detroit, Portland, OR has a population of 660,000 and a broadband coverage that allows up to 98% of individuals to connect to broadband (Oregonian, 2018) and an extremely fast download speed of 131.8 Mbps (broadbandnow.com, 2017). Nashville, TN, has a population of 680,000 and a broadband coverage rate of 99% and a 75 Mbps average download speed, yielding itself to be yet another example of a city that boasts "proper" Internet connectivity (InMyArea, 2021). Having covered multiple cities in various area of the United States that have close to the same population as Detroit, the identification of this problem is further solidified and undeniable. The U.S., with an average of 204 Mbps in 2021 (Supan, 2021), an increase from an of average 50.2 in 2019

(Mendoza, 2019), shows that Detroit is not an average, but an anomaly, a city that stands apart from the rest of the U.S. for its poor broadband coverage and quality of available Internet.

<b>City</b>	<b>Area of Coverage</b>	<b>Download Speed (Mbps)</b>
Detroit	60-75%	6-10
Boston	98%	73.6
Denver	96%	54
Portland	98%	131.8
Nashville	99%	75

## **Conclusion**

At this point in this paper, we have shown that a digital divide exists in Detroit along lines of quality of Internet, access to Internet, and computer hardware. We have analyzed the city's Internet and compared it to divisions in its own boundaries, surrounding suburbs, and other cities in the U.S. that display similar numbers of population. The results of this were conclusive, that the digital divide in Detroit is not only very real, but very stark in its disparity. Knowing that the Internet plays a leading role in many of our aspects of life, from everything to daily business, education, and healthcare, we will now move to how this divide affects the quality of life and the participation in the general community that Detroiters have. Having a "voice" is an important part to any community, in order for it to function as a collective, where all members of a community have a say in the decisions of that community and those around them. The Internet has replaced this physical interaction with a virtual one, where your "voice" is tied behind an IP address, your opinion on your city's local blog, and your vote on matters conducted on a website



with your proof of residence. To be deprived of Internet is to now be deprived of this “voice”.

We will look at the very real effects this has on residents, especially given the circumstances surrounding COVID-19.

## **Chapter 2: Why the Digital Divide Matters: The Effects of the Digital Divide on Detroit Residents' Lives**

The digital divide in Detroit has had a major impact on the lives of Detroit residents in terms of access to healthcare and a quality education. With these two essential services utilizing Information Technology on a more frequent basis, the logical conclusion is the slow growing exclusion of Detroit residents' ability to participate in these essential services. With the introduction and proverbial shock of the coronavirus, this slow growing exclusion has begun to accelerate at a rapid pace. This paper will shift focus to the digital divide and its effects on healthcare and education in the Detroit area and the effects of it has had on Detroiters' lives.

### **Healthcare Sector**

#### ***Role of Information Technology in Healthcare***

Detroit residents have poor access to quality healthcare services. There are many reasons for the disparity in healthcare that are beyond the scope of this paper. However, transportation, affordability, and increasingly, access to Information Technology are some of the main barriers preventing residents from obtaining life-sustaining services. Information Technology is highly utilized in the healthcare sector. Most clinics, hospitals, and other outpatient programs use a variety of Internet communication tools to confer and collaborate on scans, images, and test results. Many major providers of healthcare such as Henry Ford and Beaumont, strongly encourage patients to set up appointments, refill prescriptions, check medical records, and a variety of other functions through the use of MyChart (an online service). Healthcare is a technologically advanced system. Internal communications include computer collaboration between medical staff, tracking of medication dispensation online, advanced ERP systems for

equipment management, robust reporting processes and predictive analytics, collaboration with external entities to verify and confirm test results and diagnosis, and many more such processes that involve Information Technology. In short, the modern healthcare system would simply not exist today without these tools, instead it would merely buckle in on itself as proper communication and planning could not be had.

The significance of Information Technology in healthcare grew dramatically during the COVID-19 pandemic. With in-person contact being discouraged in general society during the lockdowns, this held especially true for the healthcare system. During the initial outbreak of the pandemic, video visits skyrocketed 154% (Koonin, 2020) and further increased as the pandemic deepened, as doctors preferred patients to remain in quarantine and to prescribe medications and recommend treatments virtually whenever possible. Much like the work-from-home movement, telemedicine is here to stay. Telemedicine has stabilized at levels of 38x the visits from pre-Covid (Bestsenny et al., 2020). The implications for individuals not able to access the Internet to use one of the most basic human services needed to sustain life is a troubling idea, but a reality for many Detroiters. As we can see, the highly technologically advanced healthcare system became even stronger in its use of digital devices to communicate not only internally, but externally to patients and to provide remote care. This trend does not seem to be waning due to various reasons such as reduced transportation costs, higher efficiency of doctor-patient relations, and increased communication among those who have devices and the capability to access these resources. We will now explore those who are less fortunate and largely left out of this rapidly shifted landscape, particularly in Detroit.

### ***Disparities in Healthcare in Detroit***

As highlighted earlier, technology is highly integrated into the healthcare sector. This was seen to an even greater extent due to the pandemic. A few questions should naturally arise when we take this in the context of Detroit. Such questions as how badly would this effect already technologically disadvantaged Detroit residents, to what extent would healthcare access be comprised, as well as how would this impact overall community health will be explored.

To establish a baseline, a look at the pre-pandemic access to healthcare in Detroit should be examined. A 2018 health assessment report found many already concerning measures regarding the overall health of Detroit residents versus those of Michigan as a whole. Measures such as lack of health insurance (12% versus 7%), less immunization access (60% versus 74%), higher maternal mortality rates (32% versus 12%), and higher rates of negative health habits (such as smoking, lack of physical activity, and obesity) (Detroit Health Department, 2018). Aside from measures tied directly to physical health, community health metrics were explored. Some of the most concerning statistics found in the context of this paper were lack of Internet access at 45% and only 42% of those sampled saying they “always have access” for someone to take them to the doctor when needed (Detroit Health Department, 2018). With an already at-risk and underfunded community, we will now explore how COVID-19 exacerbated an underlying problem in the community and the effect that Information Technology (and lack thereof) had to play.

As previously established, COVID-19 marked a great shift of medical care from primarily an in-person experience to a virtual one, and with a large correlation found between Detroit and poor Internet access, this trend can already be identified as troubling, but the actual effects of the pandemic cut much deeper than anything that can be surmised as “troubling”, but rather the effects of disparities reared its head and many residents have lost their lives in the

process. Without preemptive measures to access healthcare during the pandemic during the initial onset of symptoms, patients were often forced to wait until the last possible moment. This lack of proactive care quickly made Detroit a leading hotspot quite early in the initial pandemic stage. A lack of access to proactive telehealth medicine can be correlated to this early surge, with one meta-analysis finding correlations between lower household income and possessing no insurance or Medicaid as contributing factors to not being able to complete a telehealth visit (Darrat et al., 2021). While state and local governments acted to increase access to telemedicine, such as hotspots and emergency funding for Internet connectivity (to be explored later), COVID-19 solidified a very prominent Information Technology divide experienced by Detroit residents. As the pandemic raged on, like so many areas, Detroit area hospitals were quickly overrun, due in part to the non-proactive distribution of medicine for those who could not establish a connection with their provider. This ongoing lesson reveals a very real concern for the residents of Detroit and their access to Information Technology, which was noticed by legislators, albeit at a time when irreversible damage has been done to those in Detroit. Even the Public Health Advisory Council has made it an initiative to “modernize data and information capabilities” in the wake of the COVID-19 pandemic, which testifies to the great impacts the lack of proper technology had (Public Health Advisory Council, 2021). As previously established, impoverished areas are less likely to have the necessary resources to connect to the Internet and to have access to medical care. Detroit was a prime example of this. Detroit was primarily hit so hard due to the lack of resources in general, with poverty playing a primary role. While Information Technology is important for reaching out to a doctor, so are the basics of having a healthcare plan, the ability to socially isolate without relying on public services (which so many Detroit residents do, from buses to food banks), and having the ability to take sick time off work,

all things that many of Detroit residents don't have (Shah, 2020). Information Technology is becoming more and more of a valuable tool in the world by the day, and its importance has not gone unnoticed. However, basic inequalities play a leading role in the "why" of how Detroit is in the situation of lack of proper Internet coverage to begin with, and the foundations of a society must be laid with care and sustained before adding atop the more complex systems that add to quality of life.

### **Education Sector**

Education is one of the core building blocks on which a community can advance and find cooperation in areas in need of improvement. It is a vital lifeline for all families, whether public or private, and an area that is always a key component to the development of a community. The education sector of community life, especially K-12, is one that is fraught with many issues, especially in Detroit, and even the term "education" can be taken in many ways to different people, for the purposes of this paper, we will focus on the public education system for K-12 students in Detroit.

### ***Role of Information Technology in the Education Sector***

Information Technology is seen as a core operating component in the education sector. Through the use of computer aided learning, "smartboards," enhanced access to outside learning material, teacher-student connections assisted by technology, and a variety of other learning enhancement tools, technology has become integrated to a great extent in the education sector and the same level of learning could not possibly be achieved without its use and on-going development. This sector of community life largely unfolds like that seen in the healthcare sector, with technology not only aiding student's pre-pandemic life, but becoming the major

medium by which students were able to participate in learning environments. As COVID-19 became the catalyst for this shift, it was noted during early 2020 that nearly 93% of households with children reported some level of distance learning (McElrath, 2020).

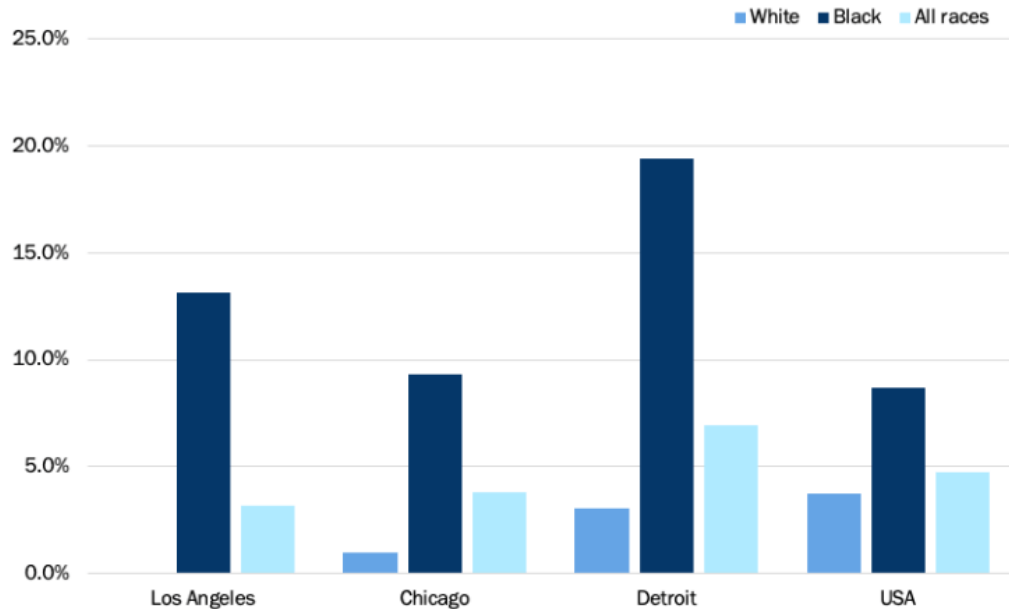
### ***Disparities in the Education Sector in Detroit***

The Detroit Public School System has long had problems with a variety of issues, including adequate transportation, safety, access to resources, and staffing. While the reasons and various problems are outside the scope of this paper, the Detroit Public School System has continually shown itself to perform and place below most metrics of other public-school sectors across America. It is only natural that a frail school system would have the most issues during a pandemic level event as seen with COVID, and, unfortunately, this was seen to a massive degree, especially in access to remote learning technologies.

With the shift to online learning, students had to “learn from home” virtually, with many of these homes having poor Internet access, quality, and access to information hardware necessary to provide a proper online learning environment. In the highest poverty areas of Detroit, nearly 90% of the 51,000 students did not have access to either the Internet services or the hardware necessary to facilitate online learning (Strauss, 2020). Another estimate found that while nearly 8% of African American families across the United States “rarely or never” have a

device available for learning, this number in Detroit hovers at 19%, as seen below (Vegas, 2020).

**Figure 3. Device is rarely or never available for learning, by race for three selected metro areas and US**



Source: US Census Bureau Household Pulse Survey

BROOKINGS

(US Census Bureau, 2020)

Detroit Superintendent Dr. Nikolai Vitti, in a letter to Governor Whitmer, noted that a switch requiring students to continue credit attainment from virtual learning would be “disastrous”, instead he noted it should be viewed as an enrichment opportunity. He goes on to highlight the digital divide by stating that “there remains a digital divide in over 50% of Michigan’s households” (WXYZ Detroit, 2020). An additional feature of Information Technology is proper communication of the use of that technology with clear instructions. When that core element is fractured by the lack of computer resources, the whole aspect of online learning suffers and becomes a disconnected experience where many are left to sink or swim. A research article by Wayne State University analyzing the effects of COVID-19 on distance



learning in Detroit Public Schools found that some of the reasons for not participating in distance learning “include: lack of clear information about how or whether to participate, lack of technology, and other interests or responsibilities taking priority over schoolwork,” and one student notes that the school district sent out “no computers for us to work on,” (Lenhoff et al., 2020). Computer resources, which are meant to enhance communication, naturally have the opposite effect when there is a lack of knowledge of how to operate hardware in those homes where students did obtain hardware. “Virtual school just lacks structure right now”, one Detroit resident notes, “Kids really don’t know what going to happen day to day” (Cunningham, 2022). This sentiment was predicted in the same letter by the Superintendent Vitti with his statement of making online school a requirement would “leave behind thousands of students who would not have the family support structure to navigate through the faceless and nameless bureaucracy of virtual education.” (WXYZ Detroit, 2020).

Vitti was extremely wary during the initial, uncertain, stages of the pandemic. Due to lack of general funding, he had to ensure resources were well spent on a mixture of food, staffing, and technology for their schools and at home students. In an interview during the initial stages of the pandemic, Vitti states “We are having very high level conversations with big businesses in Detroit and outside of Detroit, possibly funding laptops for all families starting at the 12th grade level and moving down. I can’t confirm that yet. But we’re having conversations and that might mitigate some of the realities of the digital divide.” (WXYZ Detroit, 2020a). Vitti was well aware of the repercussions and had to likewise “scramble” to allocate resources to an already poorly funded school system. This lack of preparedness turned many parents off to the public school system, with a spike in homeschooling seen during the transition, and African American families seeing a rise of 500%, in the same article, homeschooler Bernita Bradley

states that it makes her “happy to see that type of increase” as it “puts pressure on the public school system to admit and say they don’t always do things best” (WXYZ Detroit, 2021). The pressure this put on students was immense overall, with the same study by Wayne State finding that 28% of DPSS students not participating at online learning at all, with one student citing the lack of clarity of online learning in his statement;” I don’t know if they are [sending any work] because they didn’t send me nothing. They know my mom’s number, so I don’t know.” (Lenhoff et al., 2020).

The switch to online learning hit the Detroit Public School System incredibly hard. A school system that was already at risk became fragmented during the pandemic, with non-profits and legislators rushing to aid and put a band aid on a wound that has been festering for years before the pandemic. This is much like what was seen in the healthcare aspect of Detroit, and we will examine the nonprofits, legislators, and initiatives that helped to bridge this technology divide in both the short term and goals for long term prevention and improvement of Information Technology access.

### **Chapter 3: Remedial Efforts Taken by Different Levels of Community and Government**

#### **Remedial Efforts Taken by Detroit and Detroit-area Entities to Bridge the Divide**

The preexisting digital disparities in Detroit, confounded by the COVID-19 pandemic, opened the wound of the digital divide to the maximum extent that could be reached. However, residents have demonstrated their resilience. The COVID-19 pandemic was no exception. Many non-profits, corporations with stake in Detroit, and Detroit residents themselves quickly initiated efforts to ease the burden of the divide.

Efforts taken by non-profits paved the way for many Detroit residents, as they have a greater scope of reach and influence than any single community member and the resources to support humanitarian aid efforts. One notable non-profit is Connect-313, which has taken input from the residents and relayed these issues to the charitable foundations of large corporations. Connect 313 is a collaborative effort between the City of Detroit, Rocket Mortgage Classic, Microsoft, and other stakeholders in the city of Detroit with the stated goal of narrowing the digital divide. Not only do they focus on the distribution of hardware, as seen in their child company Human I.T., but they have also focused on the problem of access, by connecting Detroit residents to Internet by a variety of methods, mostly satellite (Hearn, 2020). Funding is raised through a variety of methods, including the charitable sectors of corporations, fundraisers such as golf tournaments, and working with larger ISPs to reduce the cost of broadband. Furthermore, Connect-313 is aiming to provide computer literacy classes to those who need them, including students, to ensure that distance learning if needed again can be less stressful and more streamlined (Fisher, 2020). Digital literacy classes are taught through an online medium

given the state of the pandemic but will also be available in person for basic computer literacy. Beyond the instruction of basic computer operation, Connect-313 has partnered with prominent institutions such as Amazon, Southwest Solutions, and GroundCircus to offer classes in advanced computing disciplines such as cybersecurity, coding languages, Cisco networking, AWS fundamentals, and COMPTIA certifications. This denotes that the organization does not just wish to teach Detroiters basic computer literacy, but to be a part of the technological age with offerings of classes in high-demand computing fields with great career outlooks. Connect-313 also has partnered with the City of Detroit, Comcast, and AT&T for highly reduced (and in some cases free) Internet coverage for qualifying households. For households that qualify based off financial and geographical metrics in Detroit, the process is hassle-free and requires no annual contract. The most prominent program is the Affordable Connectivity Program, in which certain residents in Detroit can receive \$100 off of a purchase of a laptop, a reduced monthly ISP bill, and grace periods of payments. Connect-313 has been one of the larger non-profits at work on the development of Detroit's Internet architecture, with a stated goal to have all Detroiters to have reasonable Internet access by 2024. They have received funding by local companies such as DTE, Rocket Mortgage, and GM. Beyond that, Microsoft and Comcast have also donated and provided insight to help them reach their goal of a connected Detroit with data-driven practices and solutions. With a committee comprised almost exclusively of community residents, Connect-313 has staff that can truly identify the specific areas in Detroit that are in the most need (Connect-313, n.d.). The competence and size of Connect-313 is the largest of the non-profits listed, with Mayor Mike Duggan being an advocate and close ally.

Human-I.T., a non-profit subsidiary of Connect-313, was meant to distribute over 1000 used laptops to low-income Detroiters that would have ended up in landfills, and upgraded core

components of these laptops (Rahman, 2021). Since its inception, Human-IT has donated over 15,000 used laptops to Detroit residents in need, providing a steady stream of recycled e-waste and manufacturing the parts to render usable laptops (Rahal, 2021). Human-I.T. plans to hire more Detroit residents to collect the nearly 500,000 pounds of usable discarded technology and refurbish it. At the initial launch event, Mayor Duggan issued a particularly illuminating statement: “Opportunity in Detroit is increasing by the day, whether employment, education, affordable housing or a range of critical assistance programs,” said Mayor Duggan. “However, in many cases, accessing those opportunities require a computer and Internet access and if you can’t access an opportunity, it may as well not exist.” (Mayor's Office: City of Detroit, 2021). Quotes such as these show that the city is not only aware of the problem, but through their actions, local entities are starting to address the problems themselves.

Beyond the non-profits, large corporations who call Detroit their home have stepped up with massive amounts of funding. In 2020, Superintendent Vitti and Mayor Mike Duggan announced a \$23 million plan to put LTE enabled laptops and tablets into the hands of students who need them most, with corporations such as DTE, Quicken Loans, the Skillman Foundation, and other entities providing a large source of the funding, an initiative they dubbed “Connected Futures” (Sarah Rahal, 2020). Connected Futures has provided more than 44,000 DPS children with at home tablets and Internet connections during the summer of 2020. In addition, 10 Resource Hubs, which specialize in instructing students and families in the usage of their tablets and devices have opened in strategic areas in Detroit. Over 12,000 families and children have visited these hubs and were serviced in everything from instruction to product repair (Detroit Public Schools Community District, 2021).

Perhaps the most impressive feat is the training of individual residents in Detroit to be “digital stewards,” by setting up and maintaining wireless access points to increase connectivity across the city, that leads to the creation of a city-wide intranet. Multiple, much smaller, organizations have teamed up with the Equitable Internet Initiative to install an intranet within Detroit. This intranet acts as its own network, without the use of government aid, monitoring, or support in any way. The process for training is highly informal and relies on Detroit’s technologically advanced residents to help maintain the network architecture. The creation of these networks relies on decentralized nodes, which can be set up to link to other nodes spanning throughout the city. There is no true ownership of this network, instead relying on the ability of certain individuals to link their nodes to receive and send incoming and outgoing Internet traffic to set up this rather “underground” process. Detroit residents have, quite literally, built their own Internet ecosystem within the City of Detroit, and maintain its access points, nodes, and critical infrastructure without the aid of any governmental regulation (Kalischer-Coggins, 2021).

Utilizing a point-to-point connection system, on behalf of locally based 123Net, end points are positioned throughout churches and community hubs in Detroit. These end points are then split further across the city allowing residents free connection. This is the pinnacle of community action in the wake of little government support and speaks volumes to the ingenuity and feelings of frustration that residents must have to even begin such a feat. Processes such as these contrast sharply to those derived from government funding, in the fact that community members take action into their own hands directly and do not rely on large entities. The actions taken by the community of Detroit in remediation of this problem are nothing short of incredible. With actions taken by individuals, a variety of non-profits, and the corporations who feel a sense of responsibility for their “home” in Detroit. The overall level of community engagement into

this issue paints the picture of a community used to hardships and relying on great creativity and self-sufficiency to overcome whatever obstacles are thrown in its path.

### **Remedial Efforts Taken by the State and Federal Government**

As is commonly known, the government tends to be sluggish in matters that are not life-threatening or extremely pressing. The digital divide in Detroit was no exception, which was commonly discussed among Michigan's legislative body. As COVID-19 made distance learning impossible without the use of technology, a new, "united front" emerged among Republicans and Democrats, as this issue switched from one that was once perceived to be a luxury, to that of a necessity. Michigan's Governor Whitmer launched an executive order in mid-2021, which establishes the Michigan High-Speed Internet Office. This new office will be tasked with making high speed Internet affordable and accessible throughout the state of Michigan, with Whitmer citing reasons such as increased health outcomes, education, and civic engagement in the wake of COVID-19 as main driving forces behind this directive (Vigna, 2021). Whitmer outlined her plan in her summary entitled "Michigan Broadband Roadmap." This roadmap outlines many features that will transform the status of Internet connection in Detroit and throughout Michigan. The establishment of the Michigan High-Speed Internet Office (MIHI) will develop a permanent state broadband leadership, host a clearinghouse of resources and content, and create a broadband single point of contact. The roadmap goes on to state one of the largest issues that Michigan, Detroit in particular, has had in its fight for equitable broadband, in that the MIHI will be able to identify opportunities and issues that may have fallen through the cracks over the years during the digital divide.

The newly established office has a clear mission stated: to expand the economic opportunity and prosperity lost to those who may not have broadband, which would help remedy

the cycle of poverty and Internet access by expanding broadband into more of a public utility available at a low cost. Furthermore, the office will use data-based and evidence-based promotion of opportunity, meaning they will directly target the areas in most need, such as Detroit. The directive outlines 4 major goals, which would not only catch Michigan “up to speed,” but be a transformative plan as time passes which will help keep Michigan from falling behind. The first goal is to ensure that high-speed Internet is available to every household, business, etc. in the state. There are multiple strategies they wish to pursue to ensure this goal can be reached. The first is to develop state-based broadband infrastructure funding programs, this strategy alone will help to classify broadband as more of a public utility, rather than sole reliance on private entities, which could ensure that broadband is going to the communities where it is needed the most and not based on which communities can pay the most. A second important strategy under this goal is to enhance Michigan’s backhaul capacity, simply referred to as “middle-mile” Internet access, which is infrastructure that carries traffic to and from servers across the state that are “carrier-neutral,” meaning that carriers do not own these networks, but rather connect to them. By investing in backhaul capacity, Michigan ISPs can afford to lower subscriber costs due to much of the infrastructure already being built, which would greatly help Michiganders who struggle financially.

The second goal primarily addresses the need to create a more digitally equitable Michigan. One large strategy in this second goal is to address the Internet affordability gap, which involves contacting and providing struggling households with both existing federal and state programs that subsidize and provide discounts to these families that they may not know they qualify for. Furthermore, the office itself will create a fund to help subsidize connections for low-income households without access to any existing federal or state program. Another



important strategy regarding goal 2 is to ensure Michigan residents have access to Internet-enabled devices. This will help bridge the gap between the physical hardware divide and consists of creating public awareness of recycling devices among the private sectors and auditing the public sectors equipment to route it to non-profits for refurbishment instead of a landfill.

Goal 3 includes improving Michigan's broadband ecosystem. Numerous strategies are seen here, all aimed at improving the existing broadband leadership through an enhanced system of Internet policy governance and its relationship with how state and federal policies are drawn, as well as to emphasize a greater reliance on use of data-driven approaches. This will enable the new office to provide a more granular map of broadband across the state and continually monitor areas that may be falling behind in the digital divide. By establishing formal Internet policy governance, the office can be in a greater position to give advice regarding state and federal policies, especially with data-driven conclusions as their evidence.

The 4<sup>th</sup> and final goal is to coordinate Michigan's broadband-related investments with other ongoing investments in education and social programs. Under this goal are two major strategies, one of which is to invest federal funds from coronavirus and infrastructure investment and jobs act to close the gap of the digital divide by coordinating with other agencies related to broadband access to ensure the large amount of funding stimulates the above goals in a transparent and efficient way. The second strategy is to explore non-traditional funding sources for broadband, which would entail reaching out to non-profits, other states, and investigating best-practice and case-study examples (Michigan Office of High-Speed Internet, 2021).

This executive directive encompasses most initiatives needed to address the current digital divide in a sustainable way that promotes future growth. This is the largest effort to date to remedy this crippling problem that Detroit and Michigan have faced for decades. The directive

itself is astonishingly comprehensive in both scope, identification of the underlying ailments, remedies, and initiatives to ensure Internet access, and represents a large effort on the part of the state government's response to end this divide.

At present, certain aspects of this large, overarching directive have already begun to show themselves at work. In late 2020, Lt. Governor Gilchrist announced a very large award of \$363 million granted by the FCC to fund rural connection in Michigan, this staggering amount was secured to fund over 250,000 locations throughout rural Michigan. The MIHI will coordinate and already has begun to identify and begin the contracting work needed to establish a baseline broadband connection in these regions (Achtenberg, 2020). In addition, the MIHI has secured 3 other rounds of awards, announced by Lt. Governor Gilchrist, who states that there will be more over time. As of July 2021, \$12.9 million of grant funds were secured by the MIHI and the office has begun to identify locations (over 18,000) that will benefit from these funds (Gilchrist, 2021). In February of 2022, Gilchrist announced the beginning of Broadband Infrastructure Audit and Validation, that will use funding from the CARES Act and is headed by the MIHI, to conduct a full-scale audit on the broadband capabilities of the entirety of Michigan, to see where funds are needed the most (Achtenberg, 2022). This intensive audit marks the real start of utilizing the funding provided from a multitude of sources to begin to truly enhance the entirety of the broadband connection throughout Michigan, zip code by zip code.

The federal government as well has not let the problem of digital inequality go unheard. While lack of broadband effectively silences the voices of those it affects in this digital age, the associated problems cannot be silenced without repercussions emerging as we have so far explored. During the initial stages of the pandemic, like other entities, the government was quick to intervene. The Federal Communication Commission, the most influential government

agency when it comes to scope and influence on federal decision regarding broadband and Internet infrastructure, launched a funding program that included libraries to enhance Internet connectivity and providing monthly subsidies to low-income families to help them pay Internet service bills (Edgerton & Cookson, 2020). The subsidies in particular greatly helped furloughed workers that were put on leave due to the pandemic. However, like many of the other initiatives we have seen that provide direct stimulus in the short term to address the pandemic, it became apparent that the focus of further funding must be leveraged to provide long term correction and stabilization to the digital divide. These short-term funding measures were quickly propped up to help alleviate, but not correct, a problem decades in the making. In most matters of government that do consist of emergency, the federal government is usually the last to address the problem due to its highly bureaucratic structure.

Federal action was not even discussed until early 2020, when the House of Representatives had its first-ever hearing on digital equity (Quaintance, 2020). Shortly after, with the help of President Joe Biden, a bi-partisan \$550 billion infrastructure package was passed, with \$2.75 billion allocated specifically for state improvement in their broadband infrastructure and access. In addition, the Commerce Department will disperse \$42 billion in funding from the package to ensure all Americans have access to high-speed Internet, which correlates roughly to \$100 million per state depending on severity of the divide. A subsection of this bill includes the Digital Equality Act, which will provide new grant programs headed by the National Telecommunications and Information Administration. Some of these grants include large expenditures for state implementation grants, state planning grants, and competitive grant programs that groups and communities can apply for (Kern, 2021). The funding provided and its use at the state level has already been described in detail in the previous section, with calls for a

decrease in Internet cost, an increase in accessibility, and programs for increasing hardware access and digital literacy classes comprising the main reasons for the passage of funding in Washington as well.

## Conclusion

In conclusion, we have established a great, systemic, divide in quality of Internet, access to Internet, as well as availability of hardware between Detroit and its surrounding metropolitan areas. This divide has been shown to be correlated, but not specifically caused by, markers such as poverty and racial disparities. This divide has been a bane of the residents of Detroit, with effects reaching into sectors such as healthcare and education. Healthcare and education in Detroit have suffered due to the issues surrounding Internet and has shown a large gap in accessibility to healthcare and student learning outcomes, all of which became prominent and undeniable in the face of the coronavirus pandemic. With Internet becoming a more standardized way of communication in a post-pandemic world, an area of interest to explore would be how this affects levels of civic engagement on a subjective, interpersonal level.

This paper also explored the robust remedial efforts taken at the city, state, and federal levels of government. The city level has shown that Detroit residents have not simply accepted defeat but have proven themselves to be a resilient community with their establishment of non-profits such as Connect-313, the establishment of a city-wide intranet, and corporation donations aimed at reducing the negative effect the Internet divide has had on educational outcomes. At the state level, we see a strong and sustainable plan to reinvigorate Internet access, quality, and access to hardware for all residents of Michigan with the creation and subsequent funding of the establishment of MIHI. The federal level has injected a large amount of funding through programs launched by the FCC and the infrastructure bill to help these efforts primarily coordinated at the state level. A great change in tone regarding Internet is taking place in Washington. Rather than viewing Internet as a luxury, which was once true, many are now

seeing Internet as a utility that should be made accessible to the public. The problems discussed in Chapter 1 highlight the need for Internet to be viewed as such. The path to enhance Internet infrastructure and regulation on a federal level has been greatly reinvigorated by the problems presented during COVID-19, and perhaps the massive amounts of funding are just the start to ensure a robust Internet infrastructure that is sustainable and accessible for every American.

## References

- Achtenberg, K. (2020, December 22). *Michigan secures \$363 million in federal funding to increase access to rural high-speed internet*. Michigan Economic Development Corporation (MEDC). <https://www.michiganbusiness.org/press-releases/2020/12/michigan-secures->
- Achtenberg, K. (2022, February 28). *Governor Whitmer & Lt. Governor Gilchrist Announce Planning Project to Connect Michiganders to High-Speed Internet | Michigan Business*. Michigan Economic Development Corporation (MEDC). <https://www.michiganbusiness.org/press-releases/2022/02/governor-whitmer-lt-governor-gilchrist-announce-planning-project-connect-michiganders-to-high-speed-internet/>
- Afana, D. (2021, October 4). *One-Quarter of Detroit Residents Don't Have Internet Access*. Governing. <https://www.governing.com/now/one-quarter-of-detroit-residents-dont-have-internet-access>
- Best Neighborhood. (2021a). *Where in Birmingham is Internet Available* [Map].
- Best Neighborhood. (2021b). *Where in Ferndale is Internet available?* [Map].
- Best Neighborhood. (2021c). *Where in Grosse Pointe is internet available?* [Map].
- Best Neighborhood. (2021a). *TV and Internet Providers in Birmingham, MI | bestneighborhood.org*. Bestneighborhood.org. <https://bestneighborhood.org/tv-and-internet-birmingham-mi/>
- Best Neighborhood. (2021b). *TV and Internet Providers in Ferndale, MI | bestneighborhood.org*. Bestneighborhood.org. <https://bestneighborhood.org/tv-and-internet-ferndale-mi/>
- Best Neighborhood. (2021c). *TV and Internet Providers in St. Clair Shores, MI | bestneighborhood.org*. Bestneighborhood.org. <https://bestneighborhood.org/tv-and-internet-st-clair-shores-mi/>

Best Neighborhood. (2021d). *TV and Internet Providers in Warren, MI* | [bestneighborhood.org](https://bestneighborhood.org).

Bestneighborhood.org. <https://bestneighborhood.org/tv-and-internet-warren-mi/>

Best Neighborhood. (2021e). *Where in St. Clair Shores Is Internet Available* [Map].

Best Neighborhood. (2021f). *Where in Warren Is Internet Available?* [Map].

Bestsennyy, O., Gilbert, G., Harris, A., & Rost, J. (2020, May 29). *Telehealth: a post-COVID-19 reality?* | *McKinsey*. [www.mckinsey.com](http://www.mckinsey.com).

<https://www.mckinsey.com/industries/healthcare-systems-and-services/our-insights/telehealth-a-quarter-trillion-dollar-post-covid-19-reality>

Bridge Michigan. (2016). *Broadband Speeds in the Metro Region* [Map].

[broadbandnow.com/Oregon](http://broadbandnow.com/Oregon). (2017). *Internet Access in Oregon: Stats & Figures*. Broadband Now. <https://broadbandnow.com/Oregon>

BroadbandSearch. (2021). *Internet Service in Colorado - Stats and Figures - BroadbandSearch*.

BroadbandSearch.net. <https://www.broadbandsearch.net/service/colorado>

Chambers, J. (2020, April 17). *Hundreds of thousands of Michigan students lack internet or computer*. The Detroit News.

<https://www.detroitnews.com/story/news/education/2020/04/17/hundreds-thousands-michigan-students-lack-internet-computer/5137377002/>

Connect-313. (n.d.). *CONNECT 313 - Closing the Digital Divide in Detroit*. Connect 313.

Retrieved March 20, 2022, from <https://connect313.org/>

Cunningham, D. (2022, January 5). *Detroit schools superintendent explains COVID-19 plans, remote learning*. WXYZ. [https://www.wxyz.com/news/coronavirus/detroit-schools-](https://www.wxyz.com/news/coronavirus/detroit-schools-superintendent-explains-covid-19-plans-remote-learning)

[superintendent-explains-covid-19-plans-remote-learning](https://www.wxyz.com/news/coronavirus/detroit-schools-superintendent-explains-covid-19-plans-remote-learning)

Darrat, I., Tam, S., & Boulis, M. (2021, January 14). *Socioeconomic Disparities in Patient Use*



- of Telehealth During the Coronavirus Disease 2019 Surge*. Jamanetwork.com.  
<https://jamanetwork.com/journals/jamaotolaryngology/fullarticle/2775067>
- Detroit Health Department. (2018). *2018 Detroit Community Health Assessment*.  
[https://detroitmi.gov/sites/detroitmi.localhost/files/2019-04/4pm\\_April11\\_DHD\\_report.pdf](https://detroitmi.gov/sites/detroitmi.localhost/files/2019-04/4pm_April11_DHD_report.pdf)
- Detroit Public Schools Community District. (2021, February 1). *Connected Futures / Connected Futures*. <https://www.detroitk12.org/connectedfutures>
- DETROITography. (2016). *Detroit Broadband Connections* [Map].
- Dubail, J. (2020, May 23). *Our Virtual Reality: How Fast Is The Internet In Massachusetts?* Boston, MA Patch. <https://patch.com/massachusetts/boston/our-virtual-reality-how-fast-internet-massachusetts>
- Edgerton, A., & Cookson, P. (2020, November 10). *Closing the Digital Divide: The Critical Role of the Federal Government*. Learning Policy Institute.  
<https://learningpolicyinstitute.org/blog/covid-closing-digital-divide-federal-government>
- First Monday. (2010). *Poverty Rates and Internet Subscription Rates* [Map].
- Fisher, E. (2020, November 3). *Connect 313 Works to Bridge the Digital Divide in Detroit*. Detroitisit. <https://detroitisit.com/connect-313-bridge-the-digital-divide-in-detroit/>
- Gilchrist, G. (2021). *Lt. Governor Gilchrist announces award to increase high-speed internet access across Michigan*. <https://www.munrotownship.com/pdf/Charter-1.pdf>
- Hearn, K. (2020). *Healing the Digital Divide With Community Equity, Not Corporate Extraction / Detroit Community Technology Project*. Detroitcommunitytech.org.  
<https://detroitcommunitytech.org/?q=content/healing-digital-divide-community-equity-not-corporate-extraction>

Hill, A. (2015, November 13). *Map: Detroit's Digital Divide*. DETROITography.

<https://detroitography.com/2015/11/13/map-detroits-digital-divide/>

Holslin, P. (2021, August 13). *This Is the Internet Speed You Need for Zoom*.

HighSpeedInternet.com. <https://www.highspeedinternet.com/resources/zoom-guide#:~:text=How%20much%20bandwidth%20does%20Zoom>

Hudson, M. (2018). *Detroit's Broadband Infrastructure, Connectivity and Adoption Issues*.

<https://transition.fcc.gov/c2h/10282015/marc-hudson-presentation-10282015.pdf>

InMyArea. (2021). *Tennessee Broadband Availability, Speed, Providers - In My Area*.

InMyArea.com. <https://www.inmyarea.com/internet/tennessee>

Kalischer-Coggins, A. (2021, May 28). *How Detroit residents are building their own internet*.

TheHill. <https://thehill.com/changing-america/video/555961-how-detroit-residents-are-building-their-own-internet>

Kern, R. (2021, November 9). *Fight to Close Digital Divide Gets Record \$2.75 Billion Bump (1)*.

Bloomberg Government. <https://about.bgov.com/news/fight-to-close-digital-divide-set-for-record-2-75-billion-bump/>  
<https://about.bgov.com/news/fight-to-close-digital-divide-set-for-record-2-75-billion-bump/>

Koonin, L. M. (2020). Trends in the use of telehealth during the emergence of the COVID-19

pandemic — united states, january–march 2020. *MMWR. Morbidity and Mortality Weekly Report*, 69(43). <https://doi.org/10.15585/mmwr.mm6943a3>

Lenhoff, S., Stokes, K., Khawaja, S., & Singer, J. (2020). *CHRONIC ABSENTEEISM AND*

*STUDENT ATTENDANCE DETROIT STUDENTS' DETROIT STUDENTS'*

*EXPERIENCES EXPERIENCES DURING THE NOVEL DURING THE NOVEL*

*CORONAVIRUS CORONAVIRUS PANDEMIC PANDEMIC.*

[https://education.wayne.edu/detroit\\_ed\\_research/derp\\_coronavirus\\_pandemic\\_final.pdf](https://education.wayne.edu/detroit_ed_research/derp_coronavirus_pandemic_final.pdf)

Mayor's Office: City of Detroit. (2021, June 21). *Mayor, human-IT launch new effort to help close Detroit's Digital Divide, reduce e-waste, create jobs*. City of Detroit.

<https://detroitmi.gov/news/mayor-human-it-launch-new-effort-help-close-detroits-digital-divide-reduce-e-waste-create-jobs>

McElrath, K. (2020, August 26). *Schooling during the COVID-19 pandemic*. The United States Census Bureau. <https://www.census.gov/library/stories/2020/08/schooling-during-the-covid-19-pandemic.html>

Mendoza, N. F. (2019, November 12). *US cities with the fastest and slowest internet speeds*. TechRepublic. <https://www.techrepublic.com/article/us-cities-with-the-fastest-and-slowest-internet-speeds/>

Michigan Office of High-Speed Internet. (2021). *2021 Update to the Michigan Broadband Roadmap*. In [https://www.michigan.gov/documents/leo/2021\\_Update\\_to\\_the\\_Michigan\\_Broadband\\_Roadmap\\_744541\\_7.pdf](https://www.michigan.gov/documents/leo/2021_Update_to_the_Michigan_Broadband_Roadmap_744541_7.pdf).  
[https://www.michigan.gov/documents/leo/2021\\_Update\\_to\\_the\\_Michigan\\_Broadband\\_Roadmap\\_744541\\_7.pdf](https://www.michigan.gov/documents/leo/2021_Update_to_the_Michigan_Broadband_Roadmap_744541_7.pdf)

Neidig, H. (2017, September 25). *AT&T hit with second complaint of discrimination against low-income neighborhoods*. TheHill. <https://thehill.com/policy/technology/352267-att-hit-with-second-complaint-of-discrimination-against-low-income>

Nerdwallet. (2017, January 11). *How to Decide What Internet Speed You Need*. NerdWallet. <https://www.nerdwallet.com/article/finance/how-to-decide-what-internet-speed-you-need>

Newman, E. (2021, June 21). *The Digital Divide in Detroit: How the City is Working to Bridge*

- the Gaps*. Wdet.org. <https://wdet.org/posts/2021/06/28/91094-the-digital-divide-in-detroit-how-the-city-is-working-to-bridge-the-gaps/>
- Noble, A. (2021). *Behind Detroit's Homegrown Campaign to Close the Digital Divide*. Route Fifty. <https://www.route-fifty.com/tech-data/2021/08/behind-detroits-homegrown-campaign-close-digital-divide/184999/>
- Optimizely. (2021, November 10). *What's the right digital transformation maturity model for your business?* Optimizely. <https://www.optimizely.com/insights/blog/whats-the-right-digital-transformation-maturity-model-for-your-business/>
- Oregonian/OregonLive, M. R. | T. (2018, December 12). *Internet speeds up in Oregon cities, but rural areas still lag*. Oregonlive. <https://www.oregonlive.com/silicon-forest/2018/12/oregon-broadband-reach-increases-but-speeds-remain-slow-in-many-rural-communities.html>
- Patch. (2021, May 18). *The Digital Divide: How Grosse Pointe Area Compares In Internet Usage*. Grosse Pointe, MI Patch. <https://patch.com/michigan/grossepointe/digital-divide-how-grosse-pointe-area-compares-internet-usage>
- Pratt, C. (2017, December 7). *Digital distress: Affordable Internet an equity issue in Michigan / Bridge Michigan*. Www.bridgemi.com. <https://www.bridgemi.com/urban-affairs/digital-distress-affordable-internet-equity-issue-michigan>
- Public Health Advisory Council. (2021). *CREATING A BLUEPRINT FOR THE FUTURE: LESSONS LEARNED FROM THE COVID-19 PANDEMIC IN MICHIGAN PREPARED BY: PUBLIC HEALTH ADVISORY COUNCIL*. [https://www.michigan.gov/documents/mdhhs/Public\\_Health\\_Advisory\\_Council\\_COVID-19\\_Mid\\_Action\\_Report\\_734596\\_7.pdf](https://www.michigan.gov/documents/mdhhs/Public_Health_Advisory_Council_COVID-19_Mid_Action_Report_734596_7.pdf)

Quaintance, Z. (2020, April 6). *Coronavirus Sparks New Interest in Bridging Digital Divides*.

GovTech. <https://www.govtech.com/network/coronavirus-sparks-new-interest-in-bridging-digital-divides.html>

Rahal, S. (2021, June 16). *Technology partnership aims to provide used computers to low-income Detroiters*. The Detroit News.

<https://www.detroitnews.com/story/news/local/detroit-city/2021/06/16/detroit-launches-campaign-solicit-used-computers-city-families/5295244001/>

Rahman, N. (2021, June 16). *Nonprofit looks to bridge Detroit's digital divide through donations from local businesses*. Detroit Free Press.

<https://www.freep.com/story/news/local/michigan/detroit/2021/06/17/nonprofit-bridge-detroit-digital-divide-through-donations/5294761001/>

Reisinger, D. (2016). *Four in Ten Detroit Residents Lack Broadband Internet Access*. Fortune.

<https://fortune.com/2016/05/23/detroit-broadband-access/>

Sarah Rahal, C. F. (2020, May 23). *\$23M initiative to give tablets, internet to Detroit students learning remotely*. The Detroit News.

<https://www.detroitnews.com/story/news/local/detroit-city/2020/04/23/dte-detroit-schools-announce-plan-bridge-digital-divide-students/3010642001/>

Shah, K. (2020, April 10). *How racism and poverty made Detroit a new coronavirus hot spot*.

Vox. <https://www.vox.com/identities/2020/4/10/21211920/detroit-coronavirus-racism-poverty-hot-spot>

Strauss, V. (2020, April 29). *Coronavirus pandemic shines light on deep digital divide in U.S. amid efforts to narrow it*. Washington Post.

<https://www.washingtonpost.com/education/2020/04/29/coronavirus-pandemic-shines->

light-deep-digital-divide-us-amid-efforts-narrow-it/

Stucka, L. K. and M. (2021). *In Massachusetts, many still lack broadband access*. The Herald News. <https://www.heraldnews.com/story/news/2021/07/07/gda-broadband-local-manner/47205505/>

Supan, J. (2021, October 26). *New Report States US Has World's 8th Fastest Internet*.

Allconnect. <https://www.allconnect.com/blog/us-internet-speeds-globally>

U.S. Census Bureau. (2019). *QuickFacts: Detroit city, Michigan*. Census Bureau QuickFacts; United States Census Bureau.

<https://www.census.gov/quickfacts/fact/table/detroitcitymichigan>

US Census Bureau. (2020). Devices available for learning by race and region. In *Brookings*.

Vegas, V. C. and E. (2020, June 22). *Unequally disconnected: Access to online learning in the US*. Brookings. <https://www.brookings.edu/blog/education-plus-development/2020/06/22/unequally-disconnected-access-to-online-learning-in-the-us/>

Vigna, J. (2021, June 2). *Gov. Whitmer signs Executive Directive to expand internet access for Michiganders*. <https://www.wilx.com>. <https://www.wilx.com/2021/06/02/gov-whitmer-it-gov-gilchrist-to-make-announcement-on-high-speed-internet-in-detroit/>

Wisely, J. (2020, April 23). *Detroit students to get 50,000 laptops and free internet service*.

Detroit Free Press. <https://www.freep.com/story/news/education/2020/04/23/detroit-schools-laptops-free-internet/3005834001/>

WXYZ Detroit. (2020a, March 19). *Detroit Public Schools Figure Out Food, Now Plan for Fallout From COVID-19» WDET 101.9FM*. WXYZ Detroit.

<https://wdet.org/2020/03/19/detroit-public-schools-figure-out-food-now-plan-for-fallout-from-covid-19/>

WXYZ Detroit. (2020b, March 23). *Detroit schools superintendent calls on state to close schools for the year*. WXYZ. <https://www.wxyz.com/news/coronavirus/detroit-schools-superintendent-calls-on-state-to-close-schools-for-the-year>

WXYZ Detroit. (2021, May 18). *Number of kids being homeschooled spiked last year, with major increase in Black families*. WXYZ. <https://www.wxyz.com/rebound/state-of-education/number-of-kids-being-homeschooled-spiked-last-year-with-major-increase-in-black-families>