

DIGITAL DIVIDE IN ROCHESTER: INITIAL DATA

Summary

FCC data indicate that all blocks in Rochester have necessary digital infrastructure for both residential broadband and wireless communication. According to the US Census, the majority of city residents (88%) have some type of computer, smartphone or wireless device and 80% have some type of internet subscription. However, 17% of residents rely solely on a cellular data plan. Smartphones have limited functionality for educational purposes. Therefore, 37% of residents have limited online functionality. There are geographic disparities in internet access with some neighborhoods having 20% - 40% of residents with internet access and others having 80+%. Most Rochester neighborhoods are in the 60% - 80% range. The pandemic has had significant impacts on education that are exacerbated by disparities in access to online learning. As of April 14, 90% students in Grades 9 – 12 had either an RCSD-distributed or personal computer and internet access; 38% of students in Grades 6 – 8 had picked up an RCSD-distributed device; a survey was underway of needs in Grades 3 – 5.



The Problem

As has been identified by the Rochester Black Agenda Group, the digital divide in Rochester has been exacerbated by the current pandemic:

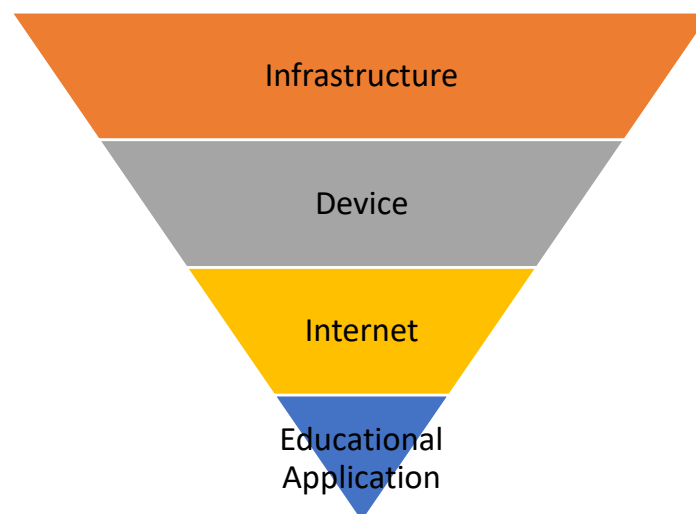
“The Rochester community has systematically failed to effectively respond to the needs of the Black community, which has exacerbated the negative effects of the digital divide in the face of the current Covid-19 pandemic. The implications are disproportionately experienced across multiple contexts including healthcare, education, social life, government, and the workforce—afflicting the entire lifespan. Key challenges include technology access for education, work, and play; human social connection; and access to vital government, health, and social services. National and state policies such as “New York on Pause” and social distancing promote feelings of loneliness, anxiety, depression. If necessary, progressive actions are not taken in haste, we (members of the Black Agenda Group) fear dire consequences such as self-harm, interpersonal conflict, and even deaths will increase.”

As the data in this report will demonstrate, the digital divide similarly has disproportionate impact on Rochester’s Hispanic/Latino communities. This report was written to inform immediate responses to mitigate the impact of the pandemic. The response should also accelerate long-term systemic changes to bridge the digital divide in a substantial and sustainable ways. The report describes:

- Digital infrastructure in Rochester
- Computer and mobile device ownership
- Internet subscriptions
- COVID impact on education
- Parent views on education during the pandemic
- Student views on education during the pandemic

Finally, some initial ideas for opportunities to bridge the digital divide are suggested.

Figure 1. Levels of Digital Access

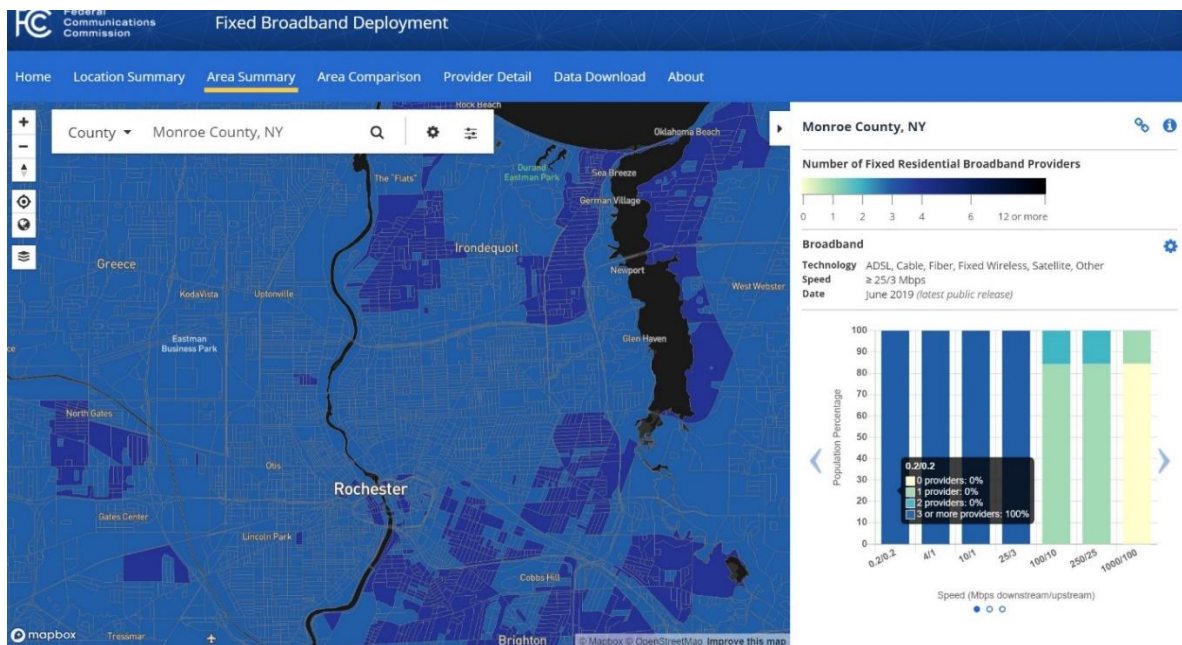


Digital Infrastructure

The first question is whether the infrastructure for digital communications is available to all residents of Rochester. **Data from the Federal Communications Commission indicates that all blocks in Rochester do have necessary digital infrastructure for both residential broadband and wireless communication.**

Map 1 shows how many residential broadband providers are providing service on each block. We see that all blocks in Rochester have at least 3 broadband providers. The presence of multiple providers creates the possibility of at least some price competition which should, in theory, lower prices for consumers.

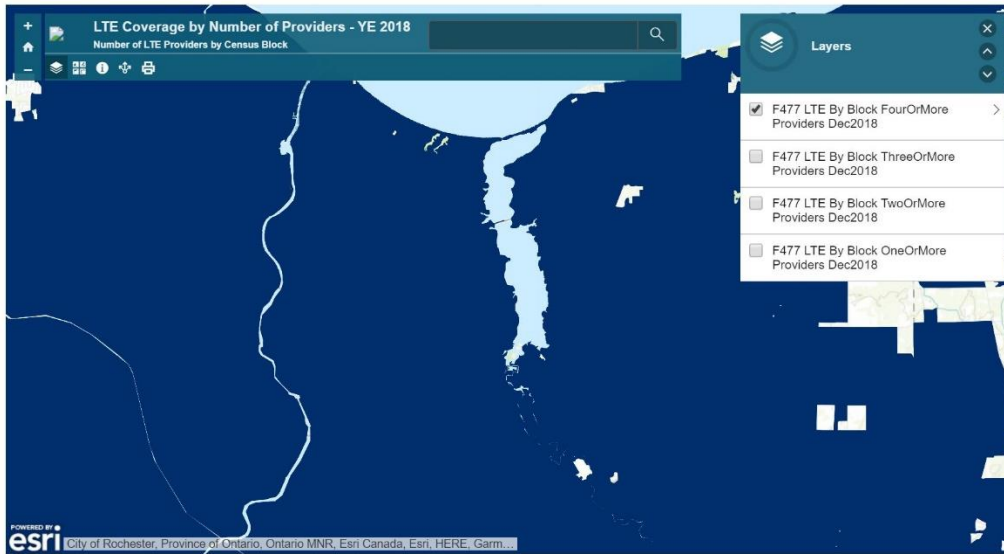
Map 1. Residential Broadband Providers



Map 2 shows the availability of 4G broadband for mobile devices. This indicates there are 4 or more providers covering the entire city of Rochester.

Map 2. 4G Wireless Communication Providers

LTE Coverage by Number of Providers - YE 2018



Computer & Mobile Device Ownership

The second question is whether residents can make use of the available infrastructure. That requires residents have a device that can access digital technology. Data from the US Census Bureau’s American Community Survey (2018) indicate that:

- **The vast majority of residents (88%) do have some type of computer, smartphone, or wireless device in their household**
- **The rate is even higher (96%) in households with children**
- **The most underserved group are adults 65+ years old (76%)**
- **There is a disparity in computer or smartphone ownership that disproportionately affects the Black/African American community in Rochester**
 - For those who identify with one race/ethnicity:
 - 11% (8,354) of Black/African American residents report having no computer or smartphone in their household
 - 8% (3,210) of Hispanic residents report having no computer or smartphone
 - 6% (4,117) of white, non-Hispanic residents report having no computer or smartphone
 - The impact of households that identify with other or multiple races is negligible. Although they have the highest rates of computer or smartphone ownership, they represent only 578 (less than 1%) of residents.

Table 1. Computer and Digital Device Ownership

	Smartphone	Smartphone with No Other Type of Computer	Desktop or Laptop	Tablet or Other Portable Wireless Device	No Computer or Smartphone
All of Rochester	80%	16%	63%	50%	12%
Age					
Under 18 years	--	--	--	--	4%
18 – 64 years	--	--	--	--	7%
65+ years	--	--	--	--	24%
Race/Ethnicity					
Black/African American	--	--	--	--	11%
Other Race	--	--	--	--	4%
2+ Races	--	--	--	--	1%
Hispanic	--	--	--	--	8%
White, not Hispanic	--	--	--	--	6%

-- = Data not yet found

These numbers may at first seem to indicate greater internet access than anticipated. However, it is important to note that the type of device ownership matters when it comes to educational access. While city-wide 88% of residents live in a household with some type of computer or digital device, **only 63% live in a household with a desktop or laptop**. Taken together, the data indicate that many households only have smartphone or tablet-type devices. Despite the increasing versatility of mobile apps, they still have limited functionality for educational purposes.

To illustrate this, consider the difficulty of performing the following tasks on a smartphone:

- Writing a paragraph or essay
- Analyzing data in spreadsheets
- Creating graphs, figures, and tables
- Writing mathematical equations and formulas
- Creating concept maps

The above tasks are all ones children must frequently do beginning at around third grade. In early childhood education (PK – Grade 2) there are additional fundamental skills that are difficult to do online at all, including:

- Drawing and illustrating
- Handwriting
- Developing fine motor skills
- Developing gross motor skills

Internet Subscriptions

The third question is whether residents have internet subscriptions and, if so, what type. Data from the US Census Bureau indicates that most residents (80%) have broadband access. However, there are two significant limitations to that access:

- 20% of residents have no internet of any type
- 17% of residents only have a cellular data plan with no other type of internet
- This means that **37% of residents do not have internet access that would allow them to fully engage with online education**

Lack of internet access has disparate disproportionately impacts groups in the community who are more likely to have no internet access of any type:

- Residents 65+ years of age (34%)
- Residents living in households with less than \$20,000 annual income (34%)
- Black/African American and Hispanic residents (20% and 18%, respectively)
- Although the majority (90%) of children live in households with some type of internet access, the earlier cautions about cellular data plans and smartphones must again be underscored as that type of access is not sufficient for e-learning in PK-12 or post-secondary education

Table 2. Internet Subscriptions

	Broadband of Any Type	Cellular Data Plan	Cellular Data Plan with No Other Type of Internet	No Internet of Any Type
All of Rochester	80%	70%	17%	20%
Household Income				
Less than \$20,000	61%	--	--	38%
\$20,000 - \$74,999	86%	--	--	14%
\$75,000 or more	92%	--	--	8%
Age				
Under 18 years	90%	--	--	10%
18 – 64 years	86%	--	--	14%
65+ years	66%	--	--	34%
Race/Ethnicity				
Black/African American	80%	--	--	20%
Other Race	89%	--	--	11%
2+ Races	88%	--	--	12%
Hispanic	82%	--	--	18%
White, not Hispanic	90%	--	--	10%

-- = Data not yet found

Given the economic and racial segregation in Rochester, it is not surprising that some census tracts have disproportionately fewer households with high speed internet access. To make effective use of video-based materials, a minimum of 10 Mbps is required. Map 3 indicates that:

- In most census tracts in the city, 40% - 60% of residents have access to 10Mbps or higher
- Census tracts with 60% - 80% of residences having high speed internet access include tracts in*:
 - Maplewood
 - Upper Mount Hope
 - Highland Park
 - Lower Monroe
 - Cobbs Hill
 - Park and East Avenue
 - Neighborhood of the Arts
- Census tracts with 80+% of residences having high speed internet access include tracts in*:
 - South Wedge
 - Monroe Village
- Census tracts with 20% - 40% of residences having high speed internet access include tracts in*:
 - El Camino
 - High Falls
- High speed internet access in most of Rochester is substantially less than suburban census tracts that have 60% or higher access

Map 3. Internet Access by Census Tract – 10Mbps



* Because the FCC map does not show census tract boundaries or numbers, the correspondence to neighborhood boundaries is estimated

Covid Impact on Education

When RCSD schools closed, students had completed 64% (115 days) of the state minimum requirement. Although it has not been announced, it increasingly appears likely that schools will not open this academic year. Therefore, we can anticipate that **students will end the year having experienced 1/3 less in-class instruction and educational supports** than they would normally have. There will be no NYS testing to track the impact of curricular reforms and the high school graduation rate will be impacted by lost learning time, interruption of social supports, self-directed learning, and temporarily altered graduation requirements.

The social-emotional impact of school closures is also expected to be substantial. There has been disruption of relationships with supportive adults and peers, high stress at home, interruption of therapeutic developmental interventions, and increased risk for unreported child neglect and abuse.

These educational and social-emotional impacts must be met with effective responses both in the immediate present and in the long-term. **There will be no return to “education as normal” in September.** Significant systemic responses are needed to address the impacts of the pandemic.

To enable online instruction, there has been a substantial push to distribute Chromebooks and mobile internet access (MiFi) to RCSD students. With funding provided by the 1 Million Project Foundation and Rochester Area Community Foundation, the distribution status as of April 14 was:

- Grades 9 – 12:
 - 83% of students had district-distributed devices
 - 7% of students declined because they had their own devices
 - 10% of students not yet picked up their devices
- Grades 6 – 8:
 - 38% of students had picked up district-distributed devices
- Grades 3 – 5:
 - Survey underway to assess device needs
- Grades PK – 2:
 - No distribution work

Table 3. Pandemic Response Timeline

	Need	Response
Immediate Response March 13 – April 5	Food Distribution	Coordinated response by city and county government, education, human services, and business 98,826 meals distributed (as of April 12) 29,081 food boxes distributed
	Offline Instruction	Central office created printed instructional packets for distribution at food sites with a focus on K – Grade 8; packets connected to learning standards but not to curriculum or instruction to date 16,000 packets printed per week (not budgeted) Packets picked up on a voluntary basis No assessment of student work Some teachers voluntarily delivering packets to students’ homes, making phone calls to families, and briefly connecting with students and families at homes while maintaining distance
	Online Instruction	PK suggested activities available on RCSD website; focused on daily routines and suggestions for learning through play Some online instruction for Grades 9 – 12 for students who accepted Chromebooks and internet access earlier in the school year Outreach to students who had earlier declined technology for home use No grading
	Students with Disabilities	Committee on Special Education meetings to review Individualized Education Plans cancelled until April 15
	State Actions	180-day requirement waived Grade level NYS assessments suspended Regents exams suspended and graduation requirements altered
Moving Online April 6 - 10	Food Distribution	Continued food distribution
	Offline Instruction	Continued educational packet distribution Some teachers continuing home delivery
	Online Instruction	Learning packets posted on RCSD website; available via computer or mobile device for Grades PK – 12 \$250k from RACF for internet access for Grades 3 – 5 Tech Survey for Grades 3 – 5

	State Actions	<p>Distribution of Chromebooks and internet access to Grades 6 – 12 Continuity of Instruction Plan under development</p> <p>Spring break suspended</p>
Moving Forward	Food Distribution	To continue
	Offline Instruction	<p>Unclear if RCSD can continue printing packets due to fiscal constraints</p> <p>No plan shared to date for accountability for completion or assessment of learning</p>
	Online Instruction	<p>Online</p> <p>Distribution of Chromebooks and internet access to Grades 6 – 12 continue until April 17</p> <p>Unknown rate of Chromebook and internet access distribution</p> <p>Unknown how online instruction is connected to earlier classroom instruction or curriculum</p> <p>No plan shared to date for accountability for completion or assessment of learning</p>
	Students with Disabilities	<p>Committee on Special Education meetings expected to resume via web/phone conference</p> <p>Unclear how academic accommodations and IEP-required services will be provided</p>

Parent Views on Education During the Pandemic

Anecdotally, ROC the Future and its partners are hearing a number of messages from parents. Although not systematically collected and assessed, the following perspectives are worth considering as we move forward with addressing the digital divide's impact on Rochester in the present and as we strategize for long-term, systemic changes.

Basic needs must be met first. In February the unemployment rate for Rochester was 4.5% (Bureau of Labor Statistics). However, the week of March 18 the NYS Department of Labor saw a 950% increase in unemployment claims statewide. Therefore, parents' first needs are to maintain housing and food security for their children. The coordinated response of Rochester – including county government, business, education, and human services – has helped to address these immediate needs through interventions such as food distribution and additional childcare support for essential workers who receive childcare subsidies. Spreading information about the availability of these supports has been challenging in light of the fact that families that are most likely to need the support are the least likely to have access to digital communications. In a time when in-person social networking is not possible, the digital divide further widens access to resources.

Pandemic schooling is not the same as home schooling. To suddenly ask parents, many of whom are working as essential employees or suddenly working from home, to provide the same kind of educational experience as their children would normally receive or an experience equivalent to home schooling under planned and normal circumstances is not feasible. Parents are doing the best they can, but even under the best circumstances they are stretched thin.

Resources are appreciated, but overwhelming. In the wake of schools closing, a slew of resources have been offered via public television, websites, social media, email, and personal networks. For those families who have digital access, the many and disparate resources, most of which are not directly tied to curricula, can be overwhelming. Again, those parents with the most digital access have the greatest access to educational materials while families that are the most economically vulnerable have the least access. Additionally, families whose children qualify for special education services have been left largely unserved.

A statewide survey conducted on behalf of The Education Trust – New York from March 25 – April 1 also provides insight into parents' concerns. Although not specific to Rochester, the experiences reflected in the survey can be useful:

- 89% of parents were concerned about their child not falling behind academically
- 79% were concerned about ensuring their child feels safe and emotionally at ease
- 78% were concerned with providing for their child financially

These concerns were shared by both low-income and high-income families, although low-income families were more concerned with their child falling behind academically.

Parents reported that most of the schools were providing instructional materials for math and reading/English, but far fewer in science, social studies, and other subjects. Parents are looking for specific additional supports:

- 95% would like more contact with their child's teachers

- 92% want more technical assistance to help families with distance learning
- 90% would like instruction that does not rely on the internet
- 90% would like access to school counselors

Most parents said their children’s schools were using or planning to use distance learning, but satisfaction with remote or distance learning varied. When asked how successful remote or distance learning has been for their child:

- 22% of lower income parents vs. 13% of higher income parents rated it as less successful (0 – 5 on a 10-point scale)
- 21% of Black parents vs. 16% of Latinx and 14% of white parents rated it as less successful

Dissatisfaction with remote or distance learning is connected to access to technology and the internet:

- 40% of parents said they don’t have a computer, tablet, or enough devices for their children to participate in remote or distance learning
- 38% said they do not have reliable high-speed internet access at home
- 28% said they do not know how to use the remote/distance learning software
- 15% reported that their children are too young to participate in remote/distance learning on their own while the parents work

Student Views on Education During the Pandemic

At this time we have no data available on students’ views except for one news article in the *New York Times* that compiled student comments submitted nationally. That article highlighted:

- Positive aspects of the experience including more time with parents, more flexibility with how time is spent, and less rigidity with following rules
- Difficulties including not having access to teachers and academic help, boredom, and distractions
- Workloads ranging from overwhelming with teachers assigning more work than usual to having very little work to do and little motivation to do it without it being graded
- The use of technology being fun, but students also reporting difficulties with submitting work, it all being on screen and typed so not able to physically write on documents, having to navigate too many different platforms and emails for different teachers, and the lack of hands-on learning
- Socially, children of all ages are missing their friends and have fears about what will happen; for older high school students those fears are exacerbated by not knowing about how the situation will impact their post-secondary education and employment

Opportunities to Close the Digital Divide

The data in this report can be used to inform immediate, short-term, and long-term strategies to close the digital divide in Rochester. Systems-level changes should:

- Decrease the cost of high speed internet subscriptions
- Provide targeted support to lower income households so they can subscribe to high speed internet service
- Increase the number of households with computers or laptops that are internet-connected, with particular attention paid to:
 - Lower-income households
 - Black and Hispanic households
 - Households with children

These goals can be accomplished through systems-level changes in RCSD, the City of Rochester, Monroe County, and through state legislation. It will be important to identify the specific opportunities for change in each of these systems, so each system is leveraged effectively. The table below begins to identify some opportunities. A more comprehensive articulation of opportunities that draws from the insights of multiple sectors is needed.

Table 4. Some Opportunities for Systems-Level Change

	System	Opportunities for Change
Coping	RCSD	<ul style="list-style-type: none"> • Provision of Chromebooks and internet access to students in Grades 3 – 12
	City	To be determined
	County	To be determined
	State Legislature	To be determined
Recovery	RCSD	<ul style="list-style-type: none"> • Provision of Chromebooks and internet access to students in Grades 3 – 12 • Training and mentoring for faculty on best practices in online learning
	City	To be determined
	County	To be determined
	State Legislature	To be determined
Reconstruction	RCSD	<ul style="list-style-type: none"> • District-wide use by all teachers of a common course management system

	City	<ul style="list-style-type: none"> Continued provision of Chromebooks and internet access to all students in Grades 3 – 12 Integration of in-class and online learning Streamline local permitting processes to remove barriers to newer, smaller internet providers Create and implement plan to increase access to high speed internet in vulnerable and middle neighborhoods (Rochester 2034)
	County	To be determined
	State Legislature	<ul style="list-style-type: none"> Build affordable options into all municipal broadband and franchise agreements Reduce rules and regulations against local internet providers that hinder competition and advantage large companies Make internet a public utility

Digital infrastructure, availability of digital devices, and internet subscriptions are necessary conditions for achieving income, health and education goals in Rochester. Conditions created by the pandemic have brought to the forefront the interconnections between disparities in digital access and disparities in outcomes. The strength and well-being of Rochester, and especially of lower income, Black, and Hispanic residents depends in part on closing the divide so everyone has full access to opportunities such as those identified by the Rochester Black Agenda Group:

- Jobs and entrepreneurship
- Learning and development
- Health and wellness
- Cultural innovation