CREATING HEALTHY DIGITAL EQUITY ECOSYSTEMS IN NYC:

Maximizing the Benefits of the Internet Master Plan

SIPA Capstone Report

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EXECUTIVE SUMMARY

As the world becomes increasingly dependent on the internet, ensuring equitable connectivity is more important than ever. However, 1.5 million New York City residents - 18 percent of the city's population - currently do not have access to a broadband connection either at home or on a mobile device. New Yorkers are disproportionately affected by the digital divide depending on the neighborhood they live in, and numerous areas of the city face a widespread lack of affordable or quality internet, impeding full economic and social inclusion and participation. In January 2020, the New York City Mayor's Office of the Chief Technology Officer (MOCTO) published the Internet Master Plan (IMP), which aims to make the internet affordable and inclusive for all New York City residents and presents a vision for universal connectivity across the five boroughs.

As future phases of the IMP are implemented, the City must tackle the challenge of leveraging expanded broadband connectivity to create meaningful digital equity. In support of this mission, our report lays out a framework for identifying important digital equity stakeholders in communities across the city. These stakeholders, identified through our framework and criteria, will be a resource for both MOCTO and its partners who seek to collaborate with community groups and other organizations in accordance with the IMP to maximize the benefits of expanded broadband infrastructure.

The key components of this report are:

1. A **literature review** that explores the existing research on digital equity and provides an overview of the policies and philosophies guiding the current landscape.
2. **Interview insights** from New York-based organizations who work to address the digital divide and broader structural inequities, especially those in our focus area of Hunts Point and Longwood in the Bronx.
3. A **framework for identifying critical digital equity stakeholders** that make up a healthy digital equity ecosystem, composed of four criteria areas:
    a. Broadband infrastructure
    b. Access to devices
    c. Diverse digital skills training & ongoing support
    d. Community justice
4. A **Digital Equity Ecosystem Map** (DEEM) - a dataset and accompanying map of digital equity stakeholders that are important for creating digital equity in Hunts Point and Longwood, as well as recommendations for how to best expand upon and use this dataset to ensure that all New Yorkers benefit from expanded broadband infrastructure and access.
5. Broader **recommendations for the City of New York** to achieve digital equity in NYC.

In this report, we find that access to broadband alone is not enough to achieve meaningful digital equity. Digital Equity Ecosystems, made up of a broad range of digital equity stakeholders who all play a role in shaping the digital equity work in local communities, are important to achieving the goal of digital equity. In creating a healthy Digital Equity Ecosystem, the key to effective and sustainable outreach and engagement is to utilize and support trusted community anchors, even those not explicitly focused on digital inclusion, for communications, empowerment, and training.

Building on these findings, this report makes a number of recommendations to ensure that the implementation of the Internet Master Plan, a bold and commendable move toward ending the digital divide in NYC, includes efforts to ensure that all individuals and communities have the information technology capacity and support needed for full participation in our society, democracy, and economy.

These recommendations, explained in more detail within the report, include:

1. Conceptualize digital equity in a broader context of community justice
2. Expand the Digital Equity Ecosystem Map to utilize in conjunction with the implementation of Phase 4 of the Internet Master Plan
3. Involve the community perspective throughout the process, providing a regular platform for MOCTO to listen to and incorporate community input and needs
4. Facilitate funding for organizations that will be carrying out digital equity work
5. Encourage cross-sector partnerships
6. Improve public service delivery

Ultimately, though the expansion of infrastructure is critical, MOCTO and its partners must also prioritize broader actions that advance meaningful digital equity, many of which are outlined in this report.

INTRODUCTION

Digital Equity in the New York City Context

In January 2020, The New York City Mayor's Office of the Chief Technology Officer (MOCTO) published the Internet Master Plan (IMP), a bold plan to achieve universal broadband and connectivity, founded on five principles of **equity**, **performance**, **affordability**, **privacy**, and **choice**.[1] The primary challenge the plan addresses is a lack of comprehensive connectivity: 40 percent of New York City households lack either home or mobile broadband, and 18 percent - or 1.5 million people - lack both kinds of connectivity.[2] Unsurprisingly, New Yorkers most affected by the problem are low-income residents: 46 percent of NYC households living in poverty do not have broadband at home.[3] MOCTO has identified disparities in service and gaps in infrastructure as some of the key culprits for inadequate broadband access. Fiber optic infrastructure is limited in many areas outside of Manhattan, with limited accessible conduit or utility poles impeding new services. This infrastructure gap is related to service disparities; low-income New Yorkers lack access to competitive broadband markets and affordable services.

However, as this report will explore, a plan that seeks to ensure every New Yorker can access and use the internet to its full potential must go beyond creating infrastructure and access to broadband. The plan's foundational five principles (equity, performance, affordability, privacy, and choice) demonstrate that the City envisions broader efforts to ensure the benefits of expanded infrastructure are maximized. While broadband infrastructure and service may be the IMP's primary focus, its ambitions to facilitate meaningful adoption and "set a course for eliminating the digital divide in New York City" connotes the broader goal of digital equity.

1 *New York City Internet Master Plan,* 2020.
2 *New York City Internet Master Plan,* 2020.
3 *New York City Internet Master Plan,* 2020.

To be successful and achieve digital equity, the IMP must also tackle a range of other complex challenges that can prevent New Yorkers from meaningful adoption, defined as daily access to the internet at speeds, quality, and capacity necessary to accomplish common tasks, with the digital skills necessary to participate online, and on a personal device with a secure, convenient network.[4]

Digital equity is a complex goal centered on ensuring individuals can equitably access digital spaces and use digital connectivity to its fullest extent. Digital equity is defined by the National Digital Inclusion Alliance (NDIA) - incorporating the perspectives of practitioners, advocates, academics, internet service providers, and policymakers - as a condition in which all individuals and communities have the information technology capacity needed for full participation in our society, democracy, and economy.[5] Relatedly, digital inclusion is the set of activities and conditions that must be achieved in order to achieve true digital equity. Digital inclusion efforts are perhaps most succinctly defined by three areas, "access, technology literacy, and relevant content and services."[6] Thus, digital inclusion activities, as this report will emphasize consistently, entail many activities beyond merely providing access to connectivity. The NDIA also recognizes that digital inclusion must consistently adapt in response to changing technology and circumstances. The expansion of broadband infrastructure is a critical first step in achieving digital equity and is one aspect of digital inclusion (affordable, robust broadband internet service).

While expanded broadband infrastructure is the focus of the Internet Master Plan, there are four key phases identified in the plan to achieve universal connectivity. The phases are as follows:

Phase 1: Introduce New Role for City Government, in which the City will invite proposals for the coordinated use of City assets to mobilize investment in new infrastructure.

Phase 2: Establish Partnerships for New Broadband Infrastructure and Service, in which the City will review proposals, award public-private partnership agreements, and coordinate across participating agencies to provide oversight and data management for the launch of new services.

4 Rhinesmith, 2016.
5 *Definitions*, 2020.
6 Rhinesmith, 2016.

Phase 3: Expand Service to More New Yorkers, in which the city expands its ability to influence private broadband investment, gradually facilitating and developing new bundles of City assets, infrastructure, and capital investments.

Phase 4: Ensure All New Yorkers Benefit from Connectivity, in which the City will consider measures to ensure that no one is left out of improvements to and equitable use of broadband by all New Yorkers.

As is evident from these phases, the Internet Master Plan has embraced a multidimensional approach to increasing digital equity that emphasizes the importance of support and skills that go far beyond access and has embedded it in their strategy for universal access. The report acknowledges that "access to devices, diverse digital skills training, and supportive community spaces for tech exploration are needed on an ongoing basis, even beyond the achievement of ubiquitous, affordable service. The protection of New Yorkers' digital rights is essential for universal broadband."

There are two phases to the IMP rollout that are especially pertinent to our report, which is focused on the critical resources and support beyond access that must be considered to ensure that expanded infrastructure leads to digital equity. These pertinent phases are Phase 2: Establish Partnerships for New Broadband Infrastructure and Service, and Phase 4: Ensure All New Yorkers Benefit from Connectivity, with the latter being the most relevant. Furthermore, MOCTO identified five key opportunities in Phase 4 of the IMP to improving awareness, accessibility, coordination, and quality across digital inclusion and digital rights resources and programs:

1. Promote awareness of available digital inclusion services and increase their accessibility.
2. Strengthen coordination among digital inclusion service providers.
3. Continually improve the quality of digital inclusion services to meet the needs of New Yorkers.
4. Reach the hardest to reach.
5. Protect New Yorkers' digital rights.

Succeeding in Phases 2 and 4 of the IMP and fully taking advantage of

these five opportunities outlined above means that MOCTO and the City must be aware of the range of digital equity stakeholders in neighborhoods across NYC, including an array of trusted community anchors which will be essential to promoting awareness, increasing accessibility, improving digital inclusion services, reaching the hardest to reach, and protecting digital rights.

As of April 2021, MOCTO is currently in Phase 2 of the Internet Master Plan and has released a Request for Proposals (RFP) in partnership with the New York City Economic Development Corporation and the New York City Department of Small Business Services. The RFP seeks proposals from internet service providers, broadband infrastructure developers, contractors, manufacturers, asset managers, and other internet connectivity companies to develop and manage new broadband infrastructure. With three important phases to follow the RFP, MOCTO faces the challenge, among many others, of maneuvering through these complex phases as a change in mayoral administration looms. Given that challenge, it is essential that digital inclusion efforts beyond expanded infrastructure (and those that are related to digital inclusion but may not be explicitly "digital" in nature) do not fall by the wayside.

To that end, this report outlines a process and principles for identifying important digital equity stakeholders that will support digital inclusion efforts as the City rolls out the Internet Master Plan to maximize its benefits.

METHODOLOGY

In order to support the advancement of digital equity in the implementation of the Internet Master Plan, our goal is to develop and create a Digital Equity Ecosystem Map (DEEM) for the City as they progress through the next phases of the IMP; in other words, a dataset and accompanying map of organizations and entities that are important for creating digital equity in our focus areas. The DEEM seeks to encapsulate all relevant digital equity stakeholders whose work supports digital equity efforts and provide a comprehensive, bird's-eye view of the current Digital Equity Ecosystem in our focus areas.

The approach used on this project involved a wide range of research methodologies to investigate key needs, gaps, and existing digital equity stakeholders in New York City. Following traditional research methods, we investigated demographic data using the NYC Open Data portal. [7] Our strategy employed human-centered design methodologies, including interviews with community stakeholders, non-profit organizations, and Connected Community Partners. These interviews helped us understand the specific community needs and contexts.

While the Internet Master Plan will eventually affect New Yorkers across the whole city, for the purpose of this report, we chose to focus on two low-income areas in the Bronx, Hunts Point and Longwood, to conduct a deep-dive analysis of community needs, resources, and stakeholders in order to develop a full understanding of these neighborhoods' Digital Equity Ecosystems. Further research may replicate our deep-dive approach to expand an understanding of Digital Equity Ecosystems to other areas throughout the city.

The process began with the New York City Task Force on Racial Inclusion and Equity, which identifies the city's hardest-hit communities that have been most impacted by institutional

7 *NYC Open Data,* (n.d.).

disparities.[8]   There were numerous reasons behind our decision to focus on two neighborhoods in the city. Our deep-dive approach allowed us to complete meaningful, qualitative research within the timeline of the project. At the same time, it allowed us to capture and assess the characteristics of the neighborhood appropriately from the community level and avoid missing any significant findings, including but not limited to available digital equity resources. In addition, we argue that the method we adopted for a deep-dive analysis creates a "prototype" of a dataset for identifying important digital equity stakeholders, and this process and dataset is potentially replicable for identifying key stakeholders and resources at the entire city level.

Hunts Point and Longwood have been identified by the Mayor's Taskforce on Racial Inclusion and Equity as priority neighborhoods based on a range of factors related to structural inequities, poverty, and related disparities.[9] In Bronx Community District 2, which covers Hunts Points and Longwood, there are 52,200 people, of which 66.8% are Latinx, 29.3% are Black, two percent are White, and 0.7% are Asian. Over 33% self-identify as having limited English proficiency and 10.7% have earned a bachelor's degree or higher.[10] The Hunts Point and Longwood neighborhoods have on average a higher rate of poverty and elderly poverty and rely more on public assistance from TANF and SNAP than the New York City average.[11] Thirty-one percent of residents live below the NYC poverty line and over half of residents of the neighborhood receive federal food stamps, which is more than double the city average of 22.4%. Meanwhile, the communities also receive less city funding in most public services than other NYC neighborhoods. This underinvestment expands to funding for programs and services related to digital equity. While the average annual budget for libraries, which offer important digital resources, by district is $3,544,021, the budget for the Hunts Point and Longwood area is significantly lower at $717,266.[12] Lastly, personal access to the internet and technology is also lower for Hunts Point and Longwood residents than for residents of other neighborhoods: only 66.7% of households have broadband internet and 79.9% have computer access while the citywide averages are 78.8% and 87%, respectively.[13]

8 *Mayor De Blasio and Taskforce on Racial Inclusion and Equity Announce New Initiatives to Expand Access*, 2020.
9 *Vaccine for All: Mayor De Blasio, Taskforce Expand Equity Effort,* 2021.
10 *NYC Community District Profiles: Bronx Community District 2,* (n.d.).
11 *American Community Survey, table 2014-2018*, 2019.
12 *District Resource Statement*, 2020.
13 *American Community Survey 2014-2018*, 2019.

> **" This underinvestment expands to funding for programs and services related to digital equity. "**

DISTRICT 2: HUNTS POINT & LONGWOOD DATA

$717,266
LIBRARY
BUDGET

66.7%
ACCESS TO
BROADBAND
INTERNET

38.1%
HOUSEHOLDS
WITH INCOME
BELOW
POVERTY LINE

$24,849
MEDIAN
HOUSEHOLD
INCOME

NYC AVERAGE DATA

$3,544,021
LIBRARY
BUDGET

78.8%
ACCESS TO
BROADBAND
INTERNET

19.7%
HOUSEHOLDS
WITH INCOME
BELOW
POVERTY LINE

$63,611
MEDIAN
HOUSEHOLD
INCOME

In developing our research question and approach, we wanted to start with a strong theoretical framework around digital equity, and therefore conducted a thorough literature review on connectivity, digital equity, and digital inclusion. We also wanted to get a good understanding of the New York City context and efforts to date, which included desk research and interviewing City agencies and partners. For our deep dive into our focus areas in the Bronx, we sought to get a full picture of the neighborhood context, efforts and programs related to digital equity, the landscape of digital equity stakeholders, and existing partnerships. With these considerations in mind and based on the understanding from our research that digital inclusion efforts go far beyond those explicitly and self-defined as "digital equity" or "digital inclusion," the following research question and approach was developed:

Research Question
What are the criteria to identify digital equity stakeholders that advance digital equity and can ensure that the City's Internet Master Plan catalyzes meaningful digital equity for communities that are newly connected by expanded broadband infrastructure and those who are identified for broadband infrastructure investment?

Research Approach
In order to provide a meaningful Digital Equity Ecosystem Map, our team will first produce criteria for identifying important digital equity stakeholders through desk research and insights from those on the ground working toward digital equity. These criteria will inform our Digital Equity Ecosystem Map – a dataset and accompanying map containing digital equity stakeholders and their services that meet the criteria.

We attempted to reach as wide a variety of organizations as possible. MOCTO connected us to Connected Community Partners and we also utilized both desk research and a snowball approach, in which we asked for recommendations, to locate more organizations. Concurrently, we began discussing how to utilize these interview insights and incorporate them into our criteria and framework to create a valuable product that could be expanded on beyond our capstone project.

The process for conducting our interviews began with the creation of the interview scripts. The templates relied heavily on conversational open-ended questions in order to elicit comprehensive information from the stakeholder interviews. We created two different templates that would be used to interview Connected Community Partners and community organizations and nonprofits. The templates sought to capture information regarding three areas: how the organization or agency's work relates to digital equity; information about the community they serve and their digital access; and what kind of information or resources relating to broadband connectivity would make new access to the internet meaningful. Following the interviews, we found themes within the three areas previously mentioned and extracted interview insights to share in this report.

Additionally, we used the interview insights to build our criteria and factual data from the interviews was incorporated into the dataset. This data included services they provided, such as device loaning, as well as information about the physical location of the organization such as address and wheelchair accessibility. For all quotes used in this report, we received permission from the interviewee.

CHALLENGES & LIMITATIONS

This process was subject to a few challenges and limitations. First, since certain phases of the IMP had not yet been implemented, we were unable to interview NYC residents slated to be newly connected to broadband in these phases. Therefore we were unable to gain user insights from resident interviews about how newfound connectivity has impacted their lives. An additional major obstacle was the challenge posed by the ongoing COVID-19 pandemic, which altered the means by which we could gather information and conduct our interviews. COVID-19 meant that we were unable to interview people in person or talk to individuals by knocking on doors or being on-premises and, given that news and crucial information is often relayed by word of mouth in local communities, we might not have reached all the individuals, groups or organizations we would have liked to. We therefore relied on our own research, introductions to community organizations and agencies already in partnership with MOCTO, and referrals from people we interviewed. These were vital connections but it is worth noting, in a report about digital equity, our own limitations, and biases as it relates to the way we conduct research and interviews. How we as a team conduct research, who is in our own networks, and who we are being connected to may be subjected to our own limitations and biases and may affect the contents of this report. Finally, working with a short time frame greatly limited the breadth and scope of our research.

LITERATURE REVIEW

How Do We Achieve Digital Equity?

Background: Transforming Concepts of Digital Equity and the Complexities Beyond Access

Digital equity is a multifaceted issue that goes beyond providing internet access alone and has become increasingly relevant and urgent. Since the 1990s, scholars have spoken of digital access as a complex issue that intertwines with socioeconomic factors such race, age, gender, and income. However, it was not until the mid 2000s in which the government and private corporations started to acknowledge the need to address the other dimensions of access. Professor Sharon Strover observed the change in the policy response to access from mere convergence to "meaningful adoption" which gives, "attention on broader contextual arrangements that condition how we interact with the Internet and everything that it means and does."[14]

The literature and research on digital equity in the 21st century has increasingly recognized the critical "social function" of the internet, which has shifted drastically as it becomes more central to our lives.[15] The systems we interact with every day to participate in society, from schools and employers to government agencies, have progressively shifted their services and platforms online, leaving behind segments of the population that lack internet access or the skills and support needed to leverage that access, with growing detriment to these communities. The research has also increasingly recognized the complex scope of the problem. "Communities with a large percentage of non-adopters face multiple, overlapping challenges to broadband use, from skill and language barriers, to problems with providers, to overburdened community intermediaries and overstretched public

14 Strover, 2012.
15 Dailey et al., 2010.

Internet access points," a Social Science Research Council report commissioned by the FCC explains.[16]

In 2020, the COVID-19 pandemic brought urgency to the problem of digital inequities. As Bianca Reisdorf and Colin Rhinesmith argue, the pandemic has shown just how important meaningful adoption is as a component of overall social inclusion.[17] Indeed, the pandemic laid bare existing inequities across the board, and it showed how critical a holistic network of digital inclusion support is, not only to get people online, but to connect people to essential services like education and healthcare and participate fully in society.

The research shows that digital equity is not an issue which can be addressed with a narrow or one-size-fits-all approach, and there are many components (some of which go beyond what we typically associate with digital access) that must be considered to create meaningful digital equity. In a review of the literature, Reisdorf and Rhinesmith argue that while digital inclusion is necessary for social inclusion, "digital inclusion does not necessarily directly translate into social inclusion. Gradations in what internet users can do with their access vary with regards to their socio-demographic background and offline resources, what kinds of devices they can afford and maintain, where they can access the internet…and other factors, such as digital skills or attitudes toward technologies in general."[18] Thus, the research has shown, and the effects of the pandemic have proven, that access is an important digital inclusion effort, but many others are required to provide wraparound support and make this access meaningful.

Creating Environments to "Welcome New Users into Broadband Worlds"

The literature on digital inclusion and equity has established that because the digital divide is such a complex problem, digital inclusion efforts must be "aligned with broader social issues and public policy goals" to go beyond access to broadband alone.[19] The question then becomes, what should digital inclusion efforts entail, and what

16 Dailey et al., 2010.
17 Reisdorf & Rhinesmith, 2020.
18 Reisdorf & Rhinesmith, 2020.
19 Rhinesmith, 2016.

environments are best to create digital equity? Previous research suggests that a supportive ecosystem of partners is needed to facilitate the broad range of necessary digital inclusion efforts.

Colin Rhinesmith and Susan Kennedy introduced the concept of Digital Equity Ecosystems in 2020 as "a way to more deeply understand and build upon these local, cultural drivers and social barriers to broadband adoption" and defined these ecosystems as "the interactions between individuals, populations, communities, and their larger sociotechnical environments that all play a role in shaping the digital inclusion work in local communities to promote more equitable access to technology and social and racial justice."[20] Prior to this work, in 2012, Seeta Pena Gangadharan and Greta Byrum argued that the definition of meaningful broadband adoption implied "an ecology of support - institutions, organizations, and even informal groups that serve to welcome new users into broadband worlds; share social norms, practices, and processes related to using these technologies."[21] A Digital Equity Ecosystem is necessary because broadband adoption is interrelated to so many areas of society, and

Figure 1: The Digital Equity Ecosystem

20 Rhinesmith & Kennedy, 2020.
21 Gangadharan & Byrum, 2012.

also because of the way community-level social factors shape broadband adoption, such as the structural effects of persistent poverty, which can include poor health outcomes or failing schools. Acknowledging the pervasive role of these structural problems in achieving digital equity also means understanding the important role of all kinds of trusted community anchors which tackle these problems and aligning digital inclusion efforts with broader public policy goals.

Our work will build on this concept of Digital Equity Ecosystems and the need for a broad array of stakeholders to be consulted and partnered with in achieving digital equity. Community members that have a stake in the prosperity of the neighborhood and its residents, whether in the non-profit, private, or government sectors, should be included as a part of this supportive ecosystem to create meaningful digital equity.

Historically, the focus of digital inclusion in an academic context has been on inequity and what is missing, but in recent years there have been calls for approaches that "focus on the assets that are available within a community, that can help alleviate digital inequities."[22] In this spirit, our report will explore what existing resources provided by digital equity stakeholders in communities, with appropriate support, can best leverage and maximize the benefits of expanded broadband infrastructure.

Background: U.S. Federal Policy

The U.S. federal government has adopted a "three-legged stool" approach to digital equity. The U.S. Department of Housing and Urban Development names access to high-quality internet, availability of devices to use the internet, and digital literacy training as the pillars to access. The main vehicle for the distribution of telecommunications assistance in the U.S. is the Universal Service Fund (USF), administered by the Universal Service Administrative Company (USAC) with rules set by the FCC.[23] USAC collects money from telecommunications companies and funds universal service programs, the premise of which is based on the principle that all Americans should have access to some baseline level of telecommunications services.[24] The explicit goals of the Communications Act of 1934,

22 Reisdorf & Rhinesmith, 2020.
23 *Universal Service*, 2021.
24 *Universal Service*, 2021.

which established universal service in legislation as well as the Federal Communications Commission (FCC), include:

- Promoting the availability of quality services at just, reasonable, and affordable rates.
- Increasing access to advanced telecommunications services throughout the nation.
- Advancing the availability of such services to all consumers, including those with a low income and those who live in rural, insular, and high cost areas, at rates that are reasonably comparable to those charged in urban areas.
- Increasing access to telecommunications and advanced services in schools, libraries, and rural health care facilities.
- Providing equitable and nondiscriminatory contributions from all providers of telecommunications services to fund supporting universal service programs.[25]

As part of the American Reinvestment and Recovery Act of 2009, the Obama Administration dedicated 8 billion dollars to various broadband programs, including programs for rural areas, developing public computer centers and technology training programs for the public, and meaningful adoption programs. The administration continued to advocate to increase digital access through initiatives such as ConnectEd, to increase internet connectivity and technology in public schools, and ConnectALL, to reform the Lifeline program to include paying for broadband bills. Such programs reflect a shift in scholarship and policy to recognize that broadband infrastructure and service represent only "one side of the connectivity coin" and "the flip side is broadband utilization," which includes digital literacy, adoption, and inclusion.[26]

While these programs provided much needed funding and infrastructure, there were larger policy issues and challenges that also needed addressing. The important work that the universal service programs did to subsidize network deployments in rural areas, schools, libraries, and health care facilities, and assist low-income Americans in purchasing basic communications services is currently facing a "death spiral" in terms of a shrinking taxable base.[27] Further, the repeal of net neutrality by Congress in 2017 weakened the FCC's

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25 *Universal Service,* 2021.
26 *Connect Illinois Broadband Strategic Plan,* 2020.
27 Levin, 2021.

legal authority for the Lifeline program, which was the primary tool addressing affordability for low-income Americans, and undercut its ability to support broadband services.[28]

The COVID-19 pandemic affirmed the importance of digital access and the need to address the digital divide in the U.S. The Biden Administration has made broadband access and infrastructure a priority, providing critical services for millions of underserved and unserved households. On March 11, 2021, President Biden signed the American Rescue Plan Act (ARPA) into law, which provides $1.9 trillion funding to mitigate the continuing effects of the pandemic, which includes programs that will allow anchor institutions to extend services into their communities and improve the ability for rural residents to access essential services, such as health care via telehealth.[29]

Case Studies: Kansas City and Dallas

The literature points to a need for healthy Digital Equity Ecosystems, which rely on the work and partnership of a broad array of digital equity stakeholders in communities with new broadband users. Beyond the theory, there are numerous examples of these ecosystems in cities and communities across the country. We will briefly review two examples, in Kansas City and Dallas, which exemplify an ecosystem approach to digital equity with the formation of digital equity coalitions. These coalitions and communities demonstrate the range of digital equity stakeholders who can and should be involved in digital inclusion efforts to maximize the potential of broadband access. We find it pertinent to include these examples as models that New York City could learn from, and we will reference these cases in our recommendations.

Kansas City

For Kansas City, a lack of access to internet at home for children has been a major impetus for change and coalition action. Seventy percent of children in the Kansas City School District do not have Internet access in the home and 17% of Kansas City residents don't use the internet at all.[30] To address the problem, an informal group of organizations working to address the digital divide and led by the KC Public Library's Cheptoo Kositany-Buckner gathered weekly in Kansas City for years, hosting their first Digital Inclusion Summit in 2014.

28 *OTI Petitions FCC to Restore Net Neutrality, Strengthen Lifeline*, 2021.
29 Mills, 2021.
30 *About the Problem*, 2019.

Their coalition was formalized in 2015 and today the KC Coalition for Digital Inclusion has over 200 members representing community organizations and nonprofits, community members, neighborhood associations, government agencies, and private businesses. Some members include the KC Public Library, KC Digital Drive, the City of Kansas, Hispanic Economic Chamber of Commerce, Google Fiber, Healing House, Inc., Literacy KC, Heartland Black Chamber of Commerce, Housing Authority of Kansas City, Missouri, PCs for People Kansas City, KC Sudbury School, Idealect, and the University of Missouri. While the coalition has recognized that its priorities are varied because of the wide array of stakeholders involved, it has also highlighted the power of collective action to provide a bigger platform for the issue, identify collaborative opportunities and gaps, and offer a strong and unified vision.[31]

Image Credit: Colin Rhinesmith, "Digital Inclusion & Meaningful Broadband Adoption," Benton Foundation

The coalition has come together to produce a Community Learning Center Map and accompanying report on the current state of public access to the internet.[32] It also has hosted digital inclusion summits and resource fairs and created a KC Digital Inclusion Fund. Kansas City's coalition and movement shows the value of a collaborative approach to solving digital equity challenges and including any group "concerned with the technology gaps between the haves and the have-

31 *KC Coalition for Digital Inclusion,* 2021.
32 *Resources for Practitioners,* 2019.

nots" which understands that "digital tools are increasingly required to be a full participant in our society."[33] Monthly coalition meetings ensure stakeholders members are up to do date on key issues, policy changes, resources, and funding. For example, at their March 2021 coalition meeting, leaders covered two key topics: taxes and the digital divide (featuring a University of Missouri guest explaining a virtual tax assistance program), as well as an update on federal funding programs for digital inclusion.[34] "When we address...these topics, it's not just us talking at you and giving you information. We're looking for this group as a coalition to be able to speak up and say where and how you'd like to be involved...and that we can benefit from all of the different perspectives that we're all bringing," said Tom Esselman of PCs for the People at that March meeting.[35]

Dallas

In 2019, 42.3 percent of Dallas households lacked fixed internet access, one of the worst connection rates among the 10 largest cities in the U.S.[36] Households without access to broadband face significant barriers and challenges to economic opportunity, which is why the Federal Reserve Bank of Dallas has been studying the digital divide in Texas since 2013.[37] In order to hear from local leaders, the Fed gathered over 100 civic leaders for a Dallas Digital Inclusion Summit in 2019 and continue to partner with the city and community groups to find solutions to connect disconnected communities.[38]

The Federal Reserve Bank of Dallas is also a member of a local digital equity coalition called Internet For All, which began meeting in May 2020 to identify short to long-term strategies to make sure that students have access to the internet. Internet For All has more than 40 community leaders, including nine Chief Technology Officers from Dallas County school districts, the Commit Partnership, State Senators, the City of Dallas, the Dallas Innovation Alliance, and Texas 2036.[39] The coalition recently launched a campaign called Get Connected to provide access to public school families at no cost in order to ensure every family had the necessary connectivity.[40] The goal of the Get Connected campaign was to reach every single

33 *KC Coalition for Digital Inclusion*, 2021.
34 *KC Coalition March Meeting Agenda*, 2019.
35 *Happy March from the Kansas Coalition for Digital Inclusion!*, 2021.
36 Gunter & Foster, 2019.
37 Gunter & Foster, 2019.
38 Gunter & Foster, 2019.
39 *Dallas County's Internet for All Coalition Launches Campaign to Connect Public School Families With Free Internet Access,* 2020.
40 *Dallas County's Internet for All Coalition Launches Campaign to Connect Public School Families With Free Internet Access,* 2020.

household lacking reliable, broadband internet access through an Internet For All hotline and airtime on local radio stations and television channels.[41] The most common solution was to deploy mobile hotspots.[42]

In December 2020, a broad coalition of 36 organizations launched a statewide effort to increase digital connectivity called Digital Texas.[43] Members of the coalition include advocates, employers, and nonprofit groups such as the Greater Houston Partnership, Texas Rural Funders, the Texas Association of Community Schools, United Ways of Texas, Methodist Healthcare Ministries of South Texas, Inc., Texas e-Health Alliance, as well as Texas 2036.[44] Digital Texas will engage with legislators, the private sector, nonprofit organizations, and state agencies to help push state policy.[45]

Both of these efforts exemplify an ecosystem approach to tackling the digital divide, with diverse stakeholders and partners from the public and private sectors, as well as civil society joining together to maximize the potential for improvement and change.

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41 *Dallas County's Internet for All Coalition Launches Campaign to Connect Public School Families With Free Internet Access*, 2020.
42 *Dallas County's Internet for All Coalition Launches Campaign to Connect Public School Families With Free Internet Access*, 2020.
43 *Digital Texas*, 2020.
44 *Coalition Launches Statewide Effort to Close Digital Divide*, 2019.
45 *Coalition Launches Statewide Effort to Close Digital Divide*, 2019.

INTERVIEW INSIGHTS & THEMES

"Part of the struggle is people feeling overwhelmed and intimidated by the internet if there isn't an effort to put things into context."

-Ken Small, Development Director of Bronxworks

Cities like Kansas City and Dallas have, in their own way, exemplified successful Digital Equity Ecosystems. But every environment is unique, and New York City, and especially Hunts Point and Longwood, face unique challenges and enjoy unique community assets, resources, and potential for collaboration. We have conducted a series of interviews to understand what a healthy Digital Equity Ecosystem looks like in low-income and underserved communities in New York City like Hunts Point and Longwood. Our interviews shed light on the diverse needs of the community and the array of stakeholders who can and should respond to them.

The organizations and entities interviewed for this research include:

Community Based Organizations	Private Companies	Public Agencies & MOCTO Connected Communities Partners
■ The Point CDC	■ Silicon Harlem	■ New York Public Library
■ Casita Maria	■ Starry	■ Hunts Point NYPL Branch
■ Bronxworks	■ Neture	■ NYC Parks
■ DreamYard		■ Hunts Point Recreation Center & Media Lab
■ The Bronx Community Foundation		■ Brooklyn Public Library
■ Women's Housing and Economic Development Corporation (WHEDCo)		■ Queens Public Library
■ Urban Health Plan		■ Older Adults Technology Services
■ Hunts Point Alliance for Children		■ NYC Housing Authority
■ Community Tech NY		■ NYC Digital Safety and Security

The following pages summarize the themes and efforts commonly raised as important to create healthy Digital Equity Ecosystems in our interviews. For a more detailed description of interview insights, see the appendix.

Interview Insight #1

De-mystify and allay fears around the internet and technology.

Building Confidence:
"It's hard to get a lot of them in because they don't think they can do it…You just have to take baby steps…(and) let them know…nobody knows until they know. It's okay if you don't know, you're going to know. I just make them feel at ease." – *Lynda Myers, Media Education Associate at the NYC Parks Hunts Point Media Lab*

Overcoming Intimidation:
"Part of the struggle is people feeling overwhelmed and intimidated by the internet if there isn't an effort to put things into context." – *Ken Small, Development Director at Bronxworks*

Breaking Down Stereotypes:
"Ageism is a societal problem that cannot be fixed by throwing technology towards a senior." – *Alexander Glazebrook, Director of Operations at Older Adults Technology Services*

Shifting Power Dynamics:
"I believe in STEM literacy…you should know how the internet works so it's not this mystified, abstract thing that you're paying $80 for because you have no choice…The more people know about the infrastructure, the better and the more excited…and the more innovative the infrastructure becomes." – *Sharon De La Cruz, Director of Sustainability at The Point CDC*

Introducing New Technologies as They Develop:
Communities should be introduced to new technologies and Internet-based services, such as cryptocurrency. If they are not presented with the information as technologies advance, then these communities will be further left behind. – *Neture*

Interview Insight #2

Empowering users to use the internet and technology for purposes beyond its own sake, such as to create art, solve neighborhood problems, and participate in civic programs or gain access to essential services.

The Why Behind Technology:
"NYC Parks media labs help users become producers of media instead of consumers, and to "find [their] own voice." "We figure out the why behind all of our technology. Because everything has value to people for different reasons." *– Marlaina Headley, Director of Media Education at NYC Parks*

Using Tech for Healthcare Services:
"We have encountered quite a bit of difficulty with many of our patients being able to access video for telehealth." *– Paloma Hernandez, CEO of Urban Health Plan*

Using Tech to Connect with City Agencies:
"With civic services becoming more technical, we're leaving people behind. When everyone has broadband, we have much more opportunity to move forward just by having access to the agencies." *– Clayton Banks, CEO of Silicon Harlem*

Interview Insight #3

Culturally responsive and multilingual information, communication, and programming based in community trust and delivered through trusted community messengers.

Multilingual and Multicultural Programming:

"If you don't know the language, it can be a scary experience, so we want to create that safe space and cultivate experiences that put that hesitation at ease." – *Pam Cora, Branch Manager at the Hunts Point NYPL*

Clear, Accessible Language:

For those who aren't familiar with technical language or context, it can be difficult to express any underlying concerns, but once they have that vocabulary and information is communicated in an accessible manner, people realize their underlying concerns and can voice them. – *Jeffrey Lambert, Assistant Director of Digital Inclusion and Workforce Readiness, QPL*

Patience and One-On-One Training/Support:

"He wanted to be a part of this, he didn't have a laptop, and he didn't know about zoom. So we had one of our stewards help him through that process, which was tedious…and thankfully (he) was such a good sport, and together they were able to get (him) up and active on zoom and get him excited about the network." – *Sharon De La Cruz, Director of Sustainability, The Point CDC*

Community Partners to Promote Rollouts & Communicate:

"It's important that community partners become involved in promoting and assisting with the rollout…because of our involvement, we're going to help you get more people enrolled properly and learn how to use this, as opposed to this is available…but I don't even know how to use it." – *Paloma Hernandez, CEO of Urban Health Plan*

Hand Holding:

"We have to help families and hold hands…for some platforms. They think it's user-friendly, but for who?" – *Neture*

Old-Fashioned and Word-of-Mouth Communication:

Since the pandemic, Brooklyn Public Library has consistently reached out to over 500 homebound seniors in Brooklyn over the phone who have become increasingly isolated during the pandemic to check in about their needs. – *Nick Higgins, Chief Librarian at BPL*

Interview Insight #4

Cheap, fast, and reliable internet and consistent, ample devices to use it.

Speed:
The minimum standard for broadband from the FCC is not fast enough to support meaningful use, especially in multi-person homes. – *Selvon Smith, CIO of BPL*

Internet as a Basic Right:
"We believe the internet is a utility -- it should be free." – *Derrick Lewis Bronx Community Foundation Co-Founder*

"It's no longer an option, it's no longer something that's merely convenient...it's a necessity." – *Pamela Cora, Branch Manager at the Hunts Point NYPL*

Ample Devices:
In many instances the largest barrier is not having a device or only having a phone. (*Ken Small, Development Director of Bronxworks*); Many families in the area have more than three kids and sharing devices is a challenge, especially during the pandemic. – *Desireé Caro, Deputy Director of Casita Maria*

Affordability:
There is a tension between cell phone and broadband service because it's expensive to have both. If you're paying $100 for a cell plan, it's hard to also pay for home broadband. – *Hillary Kolos, Director of Digital Learning at DreamYard*

The application process for low or no-cost internet is typically onerous with tedious eligibility criteria that exclude households and providers do not always provide what they promise. – *Neture*

Interview Insight #5

Community organizing, ownership, and self-determination for marginalized communities.

Digital Justice & Community Ownership:

"If there's anything we learned in 2020 it's how fragile the system is and how much it's not serving people. We have the unique opportunity that happens every 100 years to crack it open and say, hey, this is not serving me, let's rethink how we're doing this...The plan for wifi and our community-shared solar program is literally building infrastructure that is owned by the community." – *Sharon De La Cruz, Director of Sustainability, The Point CDC*

Self-Determination:

"Let the community serve their own problems." – *Clayton Banks, CEO of Silicon Harlem*

Community Organizing & Collaboration:

"We looked at the entirety of the Bronx, and we believe that there are solutions that are being created in Mott Haven that could be beneficial to the community of Riverdale, and solutions in Riverdale that could be beneficial to the community of Hunts Point...and so we as a community foundation want to play a role of creating collaboration across these institutions." – *Derrick Lewis, Bronx Community Foundation Co-Founder*

THE FRAMEWORK

Both our literature review and our interview insights show that digital inclusion has become increasingly essential to social inclusion and that a range of activities and a broad network of support is required for a healthy Digital Equity Ecosystem that will allow new users to effectively make use of expanded broadband infrastructure and access. Indeed, this network of support must often contend with issues that go beyond technology, such as a lack of offline resources and racial and economic injustices.

Based on this understanding, we have created a framework with four key areas for identifying digital equity stakeholders that make up a healthy Digital Equity Ecosystem. The four areas of a healthy Digital Equity Ecosystem based on our findings are 1) broadband infrastructure, 2) access to devices, 3) diverse digital skills training and ongoing support, and 4) community justice. To be included in our Digital Equity Ecosystem Map, a dataset and accompanying map, entities must fall into at least one of these four criteria areas.

The following figure relates the key principles for meaningful digital equity from our interview insights with our criteria areas for identifying digital equity stakeholders for NYC's digital equity efforts.
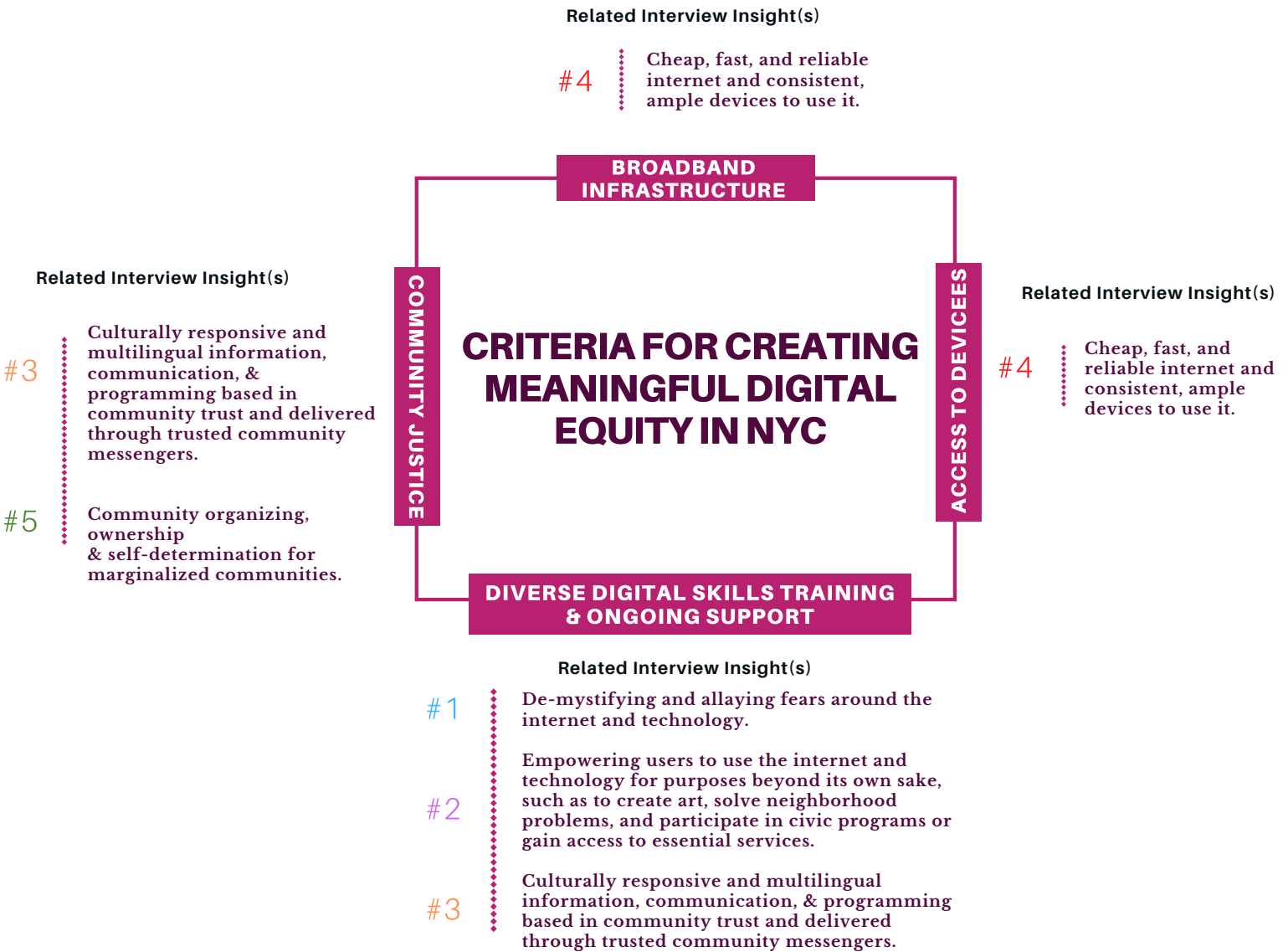

Related Interview Insight(s)

#4 — Cheap, fast, and reliable internet and consistent, ample devices to use it.

Related Interview Insight(s)

#3 — Culturally responsive and multilingual information, communication, & programming based in community trust and delivered through trusted community messengers.

#5 — Community organizing, ownership & self-determination for marginalized communities.

BROADBAND INFRASTRUCTURE

COMMUNITY JUSTICE

CRITERIA FOR CREATING MEANINGFUL DIGITAL EQUITY IN NYC

ACCESS TO DEVICEES

Related Interview Insight(s)

#4 — Cheap, fast, and reliable internet and consistent, ample devices to use it.

DIVERSE DIGITAL SKILLS TRAINING & ONGOING SUPPORT

Related Interview Insight(s)

#1 — De-mystifying and allaying fears around the internet and technology.

#2 — Empowering users to use the internet and technology for purposes beyond its own sake, such as to create art, solve neighborhood problems, and participate in civic programs or gain access to essential services.

#3 — Culturally responsive and multilingual information, communication, & programming based in community trust and delivered through trusted community messengers.
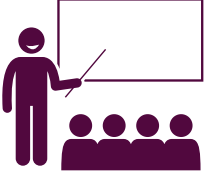
Figure 2: The Criteria and Related Interview Insights for Inclusion into the Digital Equity Ecosystem Dataset

The following is a more in-depth exploration of our criteria areas, how we define them, and how we see community assets fitting into them:

Criteria Area	What This Means
Broadband Infrastructure	Organizations, companies, institutions, or agencies that provide broadband infrastructure at an affordable (or no) cost
Access to Devices	Organizations, companies, institutions, or agencies that make technology or devices to access the Internet accessible by: • Loaning digital devices • Giving away digital devices • Providing public access computing • Providing off-site wifi (hotspots, etc.)
Diverse Digital Skills Training & Ongoing Support	Organizations, companies, institutions, or agencies that provide a diverse range of efforts to familiarize traditionally excluded users with the Internet and use of technology, including but not limited to: • Demystifying the internet and helping people become more confident using devices • Teaching people basic software • Internet safety, privacy, and literacy • Informal one-on-one skills training • Targeted skills training for specific populations (elderly, youth, formerly incarcerated, etc.) • Computer support and repair
Community Justice	Organizations, companies, institutions, or agencies whose main focus is not technology but whose services that address broader societal issues and structural racism are crucial to creating a holistic ecosystem of support when paired with digital access.

DIGITAL EQUITY ECOSYSTEM MAP

Using the aforementioned criteria areas, we created a Digital Equity Ecosystem Map (DEEM) - a visualizable dataset and accompanying map containing digital equity stakeholders in our focus area of Hunts Point and Longwood that meet at least one of four criteria for identifying relevant digital equity stakeholders. In this section, we will summarize the structure of our DEEM, analyze trends between stakeholders we found and the existing efforts by the City for internet connectivity, and lastly provide guidance on how to utilize and further expand on this work.

The completed dataset was delivered to MOCTO in the form of a comma-separated values (CSV) spreadsheet. To create this dataset, the capstone team used AirTable, a cloud database service, to collaboratively add information from interviews and desk research for each organization. There is additional information from the dataset that goes beyond what is revealed in this report, such as self-reported funding and partnerships. We leave the future publication of the dataset up to MOCTO as they explore the best routes for completion and expansion of a broader ecosystem map.

The dataset includes stakeholders that our team interviewed as well as stakeholders recognized by experts within the field of digital equity as essential to include. We also included stakeholders that we were not able to interview but that work in areas related to digital inclusion and have been identified to fit into one or more criteria for equity. The columns within the dataset provide basic information about the stakeholder along with more in-depth information regarding what services they provide and their existing connections with the New York City government. Stakeholders that our team interviewed have a more complete profile within our dataset given that many of the questions require additional outreach to obtain answers to. Also, since the focus of our Digital Equity Ecosystem Map is Hunts Point and Longwood, it could be interpreted as a prototype. In order to create a citywide Digital Equity Ecosystem Map, further efforts are required, which we will touch on later in our report.

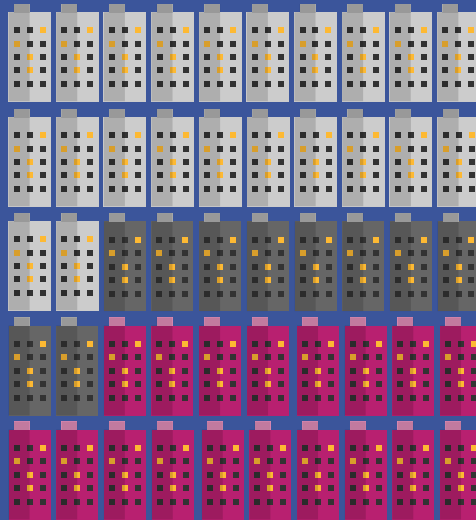# MAP OF NYC ORGANIZATIONS IN DATASET

Figure 3: Map of New York City Organizations in the Digital Equity Ecosystem Dataset

See Appendix for more map figures

DIGITAL EQUITY ECOSYSTEM DATASET SUMMARY

50

Organizations & agencies included in dataset

22 Unresponsive to Interview Request

10 Not connected or Declined Interview

18 Interviews used for the dataset

25 Stakeholders & Field Experts Interviewed

12 Organizations interviewed within The Bronx

6 Broadband & Infrastructure Organizations

18 Community Justice Organizations

18 Diverse Digital Skills Training & Ongoing Support Organizations

18 Access to Devices & WiFi Organizations

TRENDS

The dataset consists of 50 stakeholders and covers four New York City boroughs. Though the majority of the stakeholders are in our focus areas in the Bronx, we have added a few important stakeholders with citywide reach, as they also serve residents in our focus areas in the Bronx. These stakeholders serve populations across the city but may have physical headquarters that might not reflect the scope of their reach. OATS, for example, is headquartered in Brooklyn but hosts workshops and has facilities throughout the city. Furthermore, there are stakeholders within the dataset that do not have a physical presence but work as a coalition on various projects together and have important citywide impact. Examples of such stakeholders are Community Tech and the Bronx Digital Equity Coalition.

In our interviews, we noticed that stakeholders tend to offer diversity in programming and services. The majority of stakeholders offer their services in languages besides English, with Spanish being the most common. All stakeholders that have a physical location are wheelchair accessible. Most stakeholders provide wifi access and half provide device loaning or distribution services. Unless the stakeholder is a public service or a private company, stakeholders are small in numbers of employees and some rely predominantly on volunteers. Nonprofits interviewed work primarily on the ground level with local communities. Lastly, the majority of the stakeholders have a working partnership in place with the City government, but only four mentioned MOCTO as a partner.

Dataset Column Descriptions

Column Name	Description
Stakeholder Name	The name of the stakeholder.
Interviewed	A categorical variable in which "Yes" means we have interviewed the stakeholder, "No" means we did not connect with the stakeholder, and "Requested" means we have contacted the stakeholder for an interview.
Type of Criteria Met	The criteria areas that the stakeholder met. This was determined by interviews or team members' past working experiences with the stakeholder. • Categories: • Access to Devices and Wifi • Diverse Digital Skills Training and Ongoing Support • Broadband Infrastructure • Community Justice
Neighborhood	The name(s) of the neighborhood(s) the stakeholder serves.
NTA Code	The corresponding Neighborhood Tabulation Area(s) of the neighborhood(s) the stakeholder serves.
Address	The physical address of the main location of the stakeholder.
Borough	The New York City borough in which the stakeholder resides.
State	The U.S. state in which the stakeholder resides.
Coordinates	The longitude and latitude of the physical location of the stakeholder.
Languages Offered	The languages in which the stakeholder provides their services

Device Loaning	A binary column in which 'Yes' means the stakeholder provides device loaning services and 'No' if they do not.
WiFi Offered	A binary column in which 'Yes' means the stakeholder offers WiFi and 'No' means that they do not.
Wheelchair Accessible	A binary column in which 'Yes' means the stakeholder is wheelchair accessible and 'No' means they are not.
# of employees	The self-reported number of employees that work for the stakeholder.
Funding Sources	The self-reported funding sources that the stakeholder receives. Categories: • **Municipal** • **Federal** • **State** • **Foundation Grants** • **Individuals** • **Corporate Donations** • **Business Revenue**
Predominant Community Served	The demographic of the community the stakeholder serves.
URL	The website address for the stakeholder.
Phone Number	The phone number for the stakeholder.
Point of Contact	The point of contact our capstone team interacted with.
Existing City Partnerships (known)	A list of self-reported city partnerships. A partnership includes collaboration on programs, events, and other resources. Such partnerships may or may not involve monetary support/
Type of Stakeholder	The type of stakeholder categorized by: • **Connected Community Partner** • **Public Computing Center** • **Non-Profit** • **For-Profit** • **Private** • **Organization**
Mission Statement	The stakeholder's mission as stated on their website.

The Digital Equity Ecosystem Map (DEEM) can be used for various purposes. Among them, MOCTO can use it to move toward Phase 3 (Expansion of Service) and, especially, Phase 4 (Meaningful Impact) of the IMP. By expanding and referring to the DEEM, the City can identify the Digital Equity Ecosystem in each community. Since the DEEM contains stakeholders that meet our criteria for being essential to creating a healthy Digital Equity Ecosystem in New York City, working together with and supporting these stakeholders is indispensable to achieve the final goal of the IMP. The City can encourage relevant city partners to reach out to the community and promote collaboration with these listed stakeholders. At the same time, by making it publicly available, residents can find the available resources in their neighborhood. Further guidance to best utilize the DEEM is laid out below:

- **Encouraging City departments and agencies and their partners to address internet connectivity through a holistic approach**
  - The DEEM could be utilized to encourage City partners to improve connectivity in a meaningful way. As aforementioned in the literature review and in the interview insights, providing access is not enough to achieve meaningful digital equity. Thus, support from the stakeholders that meet the outlined criteria is significant. For instance, by establishing partnerships with the listed stakeholders, the City's partners can assess the needs of the communities. Each neighborhood faces unique needs, varying depending on multiple factors, such as demographics, socio-economic factors, and historical backgrounds. Creating partnerships with stakeholders doing holistic digital equity work allows public officials to think about the community's pressing needs and to address digital inequality in a way that best serves the particular community.
  - As we included "Community Justice" into the criteria, it is significant to note that the issues of connectivity arise not only from the lack of broadband itself but also from social injustice and inequality more broadly. Accordingly, the listed stakeholders are not limited to the ones that explicitly focus on connectivity but also encompass the stakeholders that address social injustice.

- **Supporting residents to find the available resource in the neighborhood**
    - The DEEM could be used as a "phonebook" for residents to find available resources in their neighborhood. By referring to the list, residents could find suitable services responding to their particular needs since the DEEM contains relevant information such as wheelchair accessibility and language availability.
    - At the same time, it is important to recognize that many of those who would benefit the most from services provided by stakeholders in the DEEM may not have access to the DEEM if it is provided online, given that they may lack access to the internet. The Brooklyn Public Library argued that old-fashioned communication could be an effective way to reach out to the community. Taking this into account, providing information through various media, such as brochures, could make this information more accessible and meaningful.

- **Expanding the Digital Equity Ecosystem Map**
    - We developed the DEEM by focusing on the neighborhoods of Hunts Points and Longwood in the Bronx. While the DEEM is the prototype, the City can expand it to the citywide level, using the criteria we have established. As outlined above, we started creating the DEEM by conducting interviews with the Connected Community Partners. In order to cover the community-based organizations and other stakeholders, we conducted desk research, including referring to the Community District website, and found the relevant stakeholders. We also adopted the "snowball method", which begins with interviewing a few community-based organizations and asking them about the other meaningful stakeholders we should consider. Although this snowball method is time-consuming, we found it is a valuable method since the community-based organizations are familiar with the landscape of other important organizations and anchor institutions.
    - It is also critical to consider another method to expand and update the DEEM. One of the solutions could be appointing an organization or point person that will be in charge of updating the DEEM. In addition, crowdsourcing the expansion of the DEEM is another potential method. Using a self-report form that allows stakeholders to submit their own information would be a practical option to keep the DEEM updated as well as to expand it.

RECOMMENDATIONS FOR THE CITY OF NEW YORK

New York City's Internet Master Plan, founded on five principles of equity, performance, affordability, privacy, and choice is a bold and commendable move towards ending the digital divide in the city.[46] As noted, though the expansion of infrastructure is critical, MOCTO must also prioritize broader actions that will enable the City to achieve meaningful digital equity. In the Internet Master Plan, the principle of equity is outlined as "No one will face a barrier based on who they are or where they live."[47] Though this is important, we urge the City to take a broader view of digital equity, as outlined previously in this report, centered on ensuring that individuals can equitably access spaces and use digital connectivity to its fullest extent, and as a condition in which all individuals and communities have the information technology capacity needed for full participation in our society, democracy, and economy.[48]

Phase 4 of the Internet Master Plan - Ensure All New Yorkers Benefit from Connectivity - lays out some highly valuable opportunities that would advance this broader view of digital equity, and we urge the City to work to begin implementing Phase 4 immediately and to continue to prioritize it during and after broadband access is expanded. We would like to offer an accompanying set of recommendations for MOCTO centering on digital equity to ensure that connection becomes truly meaningful for New Yorkers.

46 *The New York City Internet Master Plan*, 2020.
47 *The New York City Internet Master Plan*, 2020
48 *Definitions,* 2020.

Recommendations Summary

We urge the City to work to implement and prioritize Phase 4 of the IMP now, as well as the accompanying set of recommendations:

01	Conceptualize digital equity in a broader context of community justice

02	Expand the Digital Equity Ecosystem Map to use in conjunction with the implementation of Phase 4 of the Internet Master Plan

03	Involve the community perspective throughout the process, providing a regular platform for MOCTO to listen to and incorporate community input and needs

04	Facilitate funding for organizations that will be carrying out digital equity work

05	Encourage cross-sector partnerships

06	Improve public service delivery

Recommendation 1: Conceptualize digital equity in a broader context of community justice

As noted earlier in this report, meaningful digital equity pays attention to the "broader contextual arrangements that condition how we interact with the Internet and everything that it means and does." Since the digital divide is such a complex problem, digital inclusion efforts must be "aligned with broader social issues and public policy goals" to create a supportive ecosystem where broadband use becomes situated within a larger array of resources, communication networks, and institutions.[49]

Therefore the City should conceptualize its process of achieving digital equity amid an ecosystem of organizations working on broader community justice and should make efforts to include organizations that work on affordable housing development, environmental resilience and justice, economic and racial justice advocacy, education, youth, and arts programs, and healthcare, among other issues. Our Digital Equity Ecosystem Map has included such stakeholders - which may not directly work directly with technology in the community but whose services address broader societal issues and structural racism that are crucial to eliminating the digital divide and are critical to this larger supportive ecosystem. If the City expands this database, it should note that these are precisely the kinds of organizations that should be brought into the fold in the implementation of the Internet Master Plan.

Recommendation 2: Expand the Digital Equity Ecosystem Map to utilize in conjunction with the implementation of Phase 4 of the Internet Master Plan

There are a number of opportunities in Phase 4 - including Opportunity 1: Promote awareness of available digital inclusion services and increase their accessibility and Opportunity 4: Reach the hardest to reach - which dovetail nicely with the Digital Equity Ecosystem Map. If MOCTO were to expand the DEEM to encompass city-wide digital equity stakeholders (as per the previous section in this report), the dataset could be used in conjunction with the implementation of these opportunities to most effectively achieve these opportunity points.

49 Rhinesmith, 2016.

For example, Opportunity 1 suggests that MOCTO will "conduct targeted outreach in high-need areas and to particular populations, working with existing partners and established community engagement efforts." We suggest that MOCTO widen its partnerships beyond existing partners, and forge partnerships with digital equity stakeholders included in an expanded DEEM in high-need areas, inclusive of organizations doing broader community justice work, as they are best placed to promote awareness among their communities. Similarly, Opportunity 4 highlights that MOCTO will "conduct targeted outreach to disconnected and hard-to-reach populations, working through City agencies and community-based organizations that already connect with these residents." In providing a thorough Digital Equity Ecosystem Map of existing digital equity stakeholders in Hunts Point and Longwood, we are demonstrating the array of important potential partners that could conduct precisely this kind of targeted outreach to hard-to-reach populations, and we recommend that MOCTO expand the DEEM and partner with such stakeholders in high-need and hard-to-reach areas during the implementation of Opportunity 4 of the Internet Master Plan.

Recommendation 3: Involve the community perspective throughout the process, providing a regular platform for MOCTO to listen to, and incorporate community input and needs

The New York City Mayor has taken steps to imbue human-centered design in the provision of public services, including creating a Service Design Studio to work across City agencies on using human-centered design in their work.[50] A key principle of human-centered design is the involvement of the human and community perspective in all stages of policy planning and implementation, rather than as an afterthought. In order to achieve this kind of meaningful and continuous involvement throughout the process, we offer two recommendations. The first is to conduct user interviews and focus groups with intended and actual beneficiaries of the Internet Master Plan throughout the process. MOCTO has already demonstrated its capability in doing this in the evaluation of the Queensbridge Connected program, in which Queensbridge residents who had benefited from the program were interviewed. This kind of user interviewing is critical, and we recommend that MOCTO continues to do this with subsequent waves of newly connected residents, to understand how gaining access to digital life impacts previously disenfranchised New Yorkers and to understand the needs of these communities so that the City can best deploy connectivity in

50 *The Service Design Studio at the Mayor's Office for Economic Opportunity*, 2021.

conjunction with other needed services (as part of Recommendation 7). If MOCTO does not have the in-house capacity to do this, it could partner with universities and academic institutions to conduct this kind of user interviews and research.

In addition to interviewing beneficiaries of the Internet Master Plan throughout, digital equity stakeholders should be called upon to provide input at all stages in the process. To do this, MOCTO should act as a regular convener of community organizations and individuals working on digital equity and community justice to listen to and incorporate their feedback and needs into the implementation of the Internet Master Plan. Looking to Dallas as an example, the Federal Reserve Bank of Dallas gathered over 100 civic leaders for a Dallas Digital Inclusion Summit in 2019 and continues to partner with the city and community groups to find solutions to connect disconnected communities. This kind of process could also lend itself to setting up an evaluation mechanism of progress towards the Internet Master Plan, in conjunction with digital equity stakeholders.

The City of New York could demonstrate its commitment to listening to the needs of such stakeholders by hosting an annual summit to outline priorities for the year, along with quarterly follow-up meetings to ensure that community participation is present throughout. As noted earlier in this report, as an example, Kansas City's monthly digital coalition meetings ensure stakeholders members are up to do date on key issues, policy changes, resources, and funding. If the City acts as a regular convener, it will demonstrate commitment to incorporating community input and needs and will help build important trust and goodwill between the City and the digital equity stakeholders that will be crucial partners in carrying out Phase 4 of the Internet Master Plan.

Recommendation 4: Facilitate funding for stakeholders that will be carrying out digital equity work

It is important that MOCTO begin the work of implementing Phase 4 immediately, instead of waiting till Phases 1-3 are complete, as the digital equity work outlined in Phase 4 is crucial for the entire process. In order to achieve all the opportunities laid out in Phase 4 of the Internet Master Plan, MOCTO will need to work with stakeholders doing valuable work on digital inclusion and equity. MOCTO cannot meaningfully carry out Phase 4 alone, and will need the support of digital equity stakeholders, and they, in turn, will need the support of MOCTO. Many of these organizations are often under-resourced and under-funded but their work is critical to ending the digital divide. MOCTO should help facilitate funding for these stakeholders as crucial partners in the rollout of the Internet Master Plan. This could include looking to federal funding sources, such as the Emergency Connectivity Fund in the American Rescue Plan, and additional comprehensive funding if the Accessible, Affordable Internet for All Act passes.[51] This federal funding is a valuable opportunity to fund organizations carrying out digital equity work, and as the funding is made available, it will be important to allocate the funds quickly and effectively, so as to prevent bottlenecks. Therefore, having digital equity stakeholders identified and ready to receive the funding will be extremely helpful.

New York City could also look to Boston as a further example. In 2017, the City of Boston established a Digital Equity Fund to provide funding for and support community organizations and nonprofits that work to close the digital equity gap. Resources for this Fund were generated from license agreements between telecommunications companies (such as Verizon) and the City.[52] Now - Phase 1 and 2 in the Internet Master Plan - is an important opportunity to act on this, as such an agreement could be incorporated as a stipulation in the RFP for Internet Service Providers.

51 Taglang, 2021.
52 Shueh, 2018.

Recommendation 5: Encourage cross-sector partnerships

MOCTO should use its unique position to facilitate fruitful collaboration across sectors, including community organizations, city agencies, and internet service providers. In our interviews, we noted that most coordination was done within sectors than across sectors, in other words, the government agencies and Connected Community partners coordinated more with each other, and nonprofit organizations and community groups coordinated more with each other, and less was done across sectors. MOCTO is uniquely situated to encourage cross-sector collaboration, which speaks to Opportunity 2 of Phase 4 of the Internet Master Plan that notes "numerous community-based organizations providing digital inclusion support services today that can be integrated into the City's efforts." MOCTO should therefore encourage partnerships, referrals, and cross-sector collaboration, thereby strengthening coordinated implementation of the Internet Master Plan. MOCTO could rely on its strong partnerships in acting as a convener of actors operating in this space. For example, for the convenings suggested in recommendation 3, MOCTO could partner with the Department of Education or other City agencies, as well as Connected Communities partners like public libraries. Agencies like the Department of Education might have the resources to support such a convening and public libraries can help to spread the word citywide.

Recommendation 6: Improve public service delivery

Expanded broadband affords the City of New York the significant opportunity to provide increased and enhanced access to critical public services. The Internet Master Plan notes that "having all New Yorkers online will improve municipal service delivery," however, this will not inherently happen without further action; it will only be the case if the City makes concerted efforts to direct newly connected New Yorkers to relevant public services.

The Internet Master Plan further notes "the full benefits of universal broadband come by pairing infrastructure and economic improvements – the focus of this Master Plan – with programs that support New Yorkers to acquire the resources and skills to live, learn, and access opportunity in a digital age." This speaks to the need for extensive digital literacy training - including basic skills, literacy, media, privacy, safety and targeted skills training - that must be available to all New Yorkers so that they can actually make use of what the new infrastructure enables.

We recommend that the City of New York improve public service delivery by a) making clear the services that are currently available, b) enhancing services made possible by new technology and broadened access, and c) working with digital equity stakeholders in using broadened access to improve delivery of their services.

MOCTO could require or encourage Internet Service Providers to include a catalog of digital services and broader City services when residents become newly connected. This could be done through both a physical brochure, as well as a landing page in multiple languages that is immediately visible to newly connected residents. These services should include the crucial digital literacy programs available throughout the city (some of which may be offered by the City, and some of which may be offered by digital equity stakeholders listed in the expanded DEEM), as well as targeted broader City services and public programs. Furthermore, MOCTO should not only take advantage of increased broadband access to connect New Yorkers to existing public services, it should look to ways in which it can expand on and enhance City services, and can look to other cities as examples, including Tel Aviv and Barcelona.[53]

At the heart of this is knowing what services New Yorkers need. In its Smart City initiative, the City of Tel Aviv acknowledged that their "residents need better access to services, in order to make their daily life in the city and exercising their rights much easier" and that "once that was taken care of, we went on to personalize our interaction with residents – we know our residents, and offer services proactively when they need them, in real time."[54] For New York to do this, the user interviews and the input of broad digital equity stakeholders in Recommendations 1 and 3 will be helpful. MOCTO can then continuously tailor programs to meet New Yorkers' needs.

53 For example, as part of its Smart City initiative, the City of Tel Aviv has created special online municipal programs for its residents, including "Smart Classrooms" in which all elementary schools in the city work with the Online Learning Program, an urban education portal that gives each school personalized access based on its particular needs, "Online and Networked Libraries," in which all residents can access all the municipal libraries and their services online; and "Online Registration for Schools and Kindergartens," in which parents can use the system to register for most elementary schools and kindergartens in the city, pay fees and see school calendars and schedules, as well as sign up for school transportation and extracurricular activities, all online. (*Smart City - Education*) And this is simply what's been done in the field of education. The City of Barcelona has also created innovative programs, such as Decidim. Barcelona, the digital participation and democratic platform that gives citizens a voice in a participatory process where they can debate, respond to, and gather proposals on the future of their City (*Decidim Barcelona* 2019). This type of initiative corresponds to Principle 5 of the Declaration of Cities Coalition for Digital Rights, of which New York City is a part, "Participatory Democracy, diversity and inclusion: Everyone should have full representation on the internet, and the ability collectively to engage with the city through open, participatory and transparent digital processes. Everyone should have the opportunities to participate in shaping local digital infrastructures and services and, more generally, city policy-making for the common good." (Declaration of Cities Coalition for Digital Rights 2018.)
54 *Smart City - Education,* (n.d.).

GLOSSARY

Term	Definition
IMP	Internet Master Plan, a plan by the NYC Mayor's Office of the Chief Technology Officer to achieve universal broadband and connectivity within the 5 boroughs.
Broadband	According to the current Federal Communications Commission (FCC) definition, the standard for "broadband" is an internet service with a download speed of at least 25 megabits per second (Mbps) and an upload speed of at least 3 Mbps. There has been a push in recent years to raise the minimum level of upload and download speeds to at least 100 Mbps.[55]
MOCTO	NYC Mayor's Office of the Chief Technology Officer, whose mission is to ensure that technology is inclusive, accessible, human-centered, and works for all New Yorkers.
Fiber Optic	Fiber optic cables are made of bundled strands of glass. Each glass strand acts as a conduit for light signals that relay digital code from one end to the other at the speed of, well, light. Fiber optic cables allow for internet speeds far beyond what you get from DSL or cable because each fiber-optic line can carry multiple signals at top speeds simultaneously.
Meaningful Adoption	Daily access to the Internet at speeds, quality, and capacity necessary to accomplish common tasks, with the digital skills necessary to participate online, and on a personal device and secure, convenient network.
Digital Equity	A condition in which all individuals and communities have the information technology capacity needed for full participation in our society, democracy, and economy.
Digital Equity Stakeholders	All stakeholders that make up a Digital Equity Ecosystem, including government agencies, non-profit organizations, community groups, and private companies whose work relates to the goal of digital equity.
Digital Inclusion	The set of activities and conditions that must be achieved in order to get to true digital equity. Digital inclusion incorporates a range of activities that bring us closer to digital equity. Succinctly defined by the three areas of access, technology literacy, and relevant content and services.

55 *Connect America Fund et al.,* 2020.

Term	Definition
Request for Proposals (RFP)	A document that an organization provides to announce a new project opportunity to interested parties through a bidding process.
Connected Community Partners	The NYC Connected Communities program offers an array of new resources, centering on digital literacy and employment support, by expanding the availability of public computer centers and classes in libraries, public housing facilities, senior centers, and community centers in the City's highest poverty neighborhoods. Connected Communities Partners include NYCHA Community Computer Centers, DFTA senior centers and the Senior Planet Exploration Center, Parks and Recreation Centers, and public libraries. [56]
Non-Adopters	Persons who have not signed up for internet broadband services.
Social Inclusion	The process of improving the terms of participation in society, particularly for people who are disadvantaged, through enhancing opportunities, access to resources, voice and respect for rights. [57]
Digital Divide	The gap in opportunities that exists between individuals both in regards to access to the internet and digital technology and their use of this technology for a wide array of activities.
Digital Equity Ecosystem (DEE)	The interactions between individuals, populations, and their larger socio-technical environments that all play a role in shaping the digital inclusion work in local communities to promote more equitable access to technology and social and racial justice. [58]
Assets	The resources that can and must be utilized in order to achieve positive and sustainable change (and in this context related to digital equity). [59]
"Three-Legged Stool" Approach	The model of which 3 legs provides the strongest foundation for success. In terms of digital equity the 3 legs are (1) access to high-quality internet, (2) available devices to use the internet, and (3) digital literacy training to successfully navigate the Internet.
American Rescue Plan Act	An act passed by President Biden to provide equitable economic relief to Americans.
Civic Connections	Connections between city agencies and services and the people who use or need them.

56 *NYC Connected Communities*, (n.d.).
57 *Leaving No One Behind: The Imperative of Inclusive Development,* 2016.
58 Rhinesmith & Kennedy, 2020.
59 Pinkett, 2000.

REFERENCES

Ajuntament de Barcelona. (2019, June 6). *Decidim Barcelona.* Barcelona Digital City. https://ajuntament.barcelona.cat/digital/en/digital-empowerment/democracy-and-digital-rights/decidim-barcelona

Cities Coalition for Digital Rights. (2018, November). *Declaration of Cities Coalition for Digital Rights.* Cities for Digital Rights. https://citiesfordigitalrights.org/assets/Declaration_Cities_for_Digital_Rights.pdf

City of New York. (2020, August 14). *Mayor de Blasio and Taskforce on Racial Inclusion and Equity Announce New Initiatives to Expand Acce.* The official website of the City of New York. https://www1.nyc.gov/office-of-the-mayor/news/592-20/mayor-de-blasio-taskforce-racial-inclusion-equity-new-initiatives-expand

City of New York. (n.d.). *NYC Connected Communities.* Broadband Access - DoITT. https://www1.nyc.gov/site/doitt/initiatives/broadband-access.page#nyc-connected-communities

City of New York. (n.d.). NYC Open Data. https://opendata.cityofnewyork.us/

City of New York. (n.d.). (rep.). *Statements of Community District Needs and Community Board Budget Requests: Bronx Community District 2, Fiscal Year 2022.* https://www1.nyc.gov/assets/omb/downloads/pdf/cbrboro4-20.pdf

City of New York. (2021, January 31). *Vaccine for All: Mayor de Blasio, Taskforce Expand Equity Effort.* The official website of the City of New York. https://www1.nyc.gov/office-of-the-mayor/news/067-21/vaccine-all-mayor-de-blasio-taskforce-expand-equity-effort

Department of Sanitation. (n.d.). District Resource Statement. The City of New York. http://www.data2go.nyc/sources/drs_sanitation.pdf

Digital Texas. (2020, December 17). *Coalition Launches Statewide Effort to Close Digital Divide.* The Light and Champion. (2020, December 17). https://www.lightandchampion.com/news/coalition-launches-statewide-effort-close-digital-divide

Connect America Fund et al., Report and Order and Further Notice of Proposed Rulemaking, WC Docket No. 10-90 et al., FCC 20-5 (rel. Feb. 7, 2020)

Dailey, D., Bryne, A., Powell, A., Karaganis, J., & Chung, J. (2010). (rep.). *Broadband Adoption in Low-Income Communities.* Social Science Research Council. https://www.ssrc.org/publications/view/broadband-adoption-in-low-income-communities/

Commit Partnership. (2020, August 27). *Dallas County's Internet For All Coalition Launches Campaign To Connect Public School Families With Free Internet Access.* Commit. Our Blog. https://commitpartnership.org/blog/dallas-countys-internet-for-all-coalition-launches-campaign-to-connect-public-school-families-with-free-internet-access.

Digital Texas. (2020). https://www.digitaltexas.org/

Gangadharan, S. P., & Byrum, G. (2012). Broadband Adoption Introduction: Defining and Measuring. *International Journal of Communications*, 6, 2601–2608

Gunter, J., & Foster, P. (2019, December 20). *Dallas Faces a Gaping Digital Divide When It Comes to Economic Inclusion.* Federal Reserve Bank of Dallas. https://www.dallasfed.org/cd/communities/2019/1904

Hunts Point | NYC. (n.d.). *Hunts Point Free Wifi - Hunts: Point: NYC.* https://www.huntspoint.nyc/hunts-point-free-wifi/

Kansas City Coalition for Digital Inclusion. (2019). *About the Problem.* https://digitalinclusionkc.org/the-problem

Kansas City Coalition for Digital Inclusion. (2019). *KC Coalition March Meeting Agenda.* https://digitalinclusionkc.org/news/kc-coalition-march-meeting-agenda

Kansas City Coalition for Digital Inclusion. (2019). *Resources for Practitioners.* https://digitalinclusionkc.org/for-practitioners

KC Coalition for Digital Inclusion. (2021). KC Digital Drive. https://www.kcdigitaldrive.org/project/kccdi-2/

Kansas City Coalition for Digital Inclusion, (2021, March 5). Happy March from the Kansas Coalition for Digital Inclusion! https://us18.campaign-archive.com/?e=__test_email__&u=02676a46f25558c3728470954&id=6d47b7bfc4

Levin, B. (2021, February 2). *Trump's FCC failed on broadband access. Now, Biden's FCC has to clean up the mess.* Brookings. https://www.brookings.edu/blog/the-avenue/2021/02/02/trumps-fcc-failed-on-broadband-access-now-bidens-fcc-has-to-clean-up-the-mess/

Mills, H. (2021, March 12). *American Rescue Plan Commits Billions to Broadband.* CTC Technology & Energy. https://www.ctcnet.us/blog/american-rescue-plan-commits-billions-to-broadband/

National Digital Inclusion Alliance. (2020, September 24). *Definitions.* https://www.digitalinclusion.org/definitions/

NYC Mayor's Office for Economic Opportunity. (2021). *The Service Design Studio at the Mayor's Office for Economic Opportunity.* https://www1.nyc.gov/site/opportunity/portfolio/service-design-studio.page

NYC Mayor's Office of the Chief Technology Officer. (2020). (rep.). *The New York City Internet Master Plan.* https://www1.nyc.gov/assets/cto/downloads/internet-master-plan/NYC_IMP_1.7.20_FINAL-2.pdf

Office of Broadband Department of Commerce and Economic Opportunity. (2020). (rep.). *Connect Illinois: Broadband Strategic Plan.* Governor J.B. Pritzker. https://www2.illinois.gov/dceo/ConnectIllinois/Documents/Broadband%20Strategic%20Plan%202.5.20.pdf

Office of the New York City Comptroller. (2019, July 23). *Census and The City: Overcoming NYC's Digital Divide in the 2020 Census.* Reports. https://comptroller.nyc.gov/reports/census-and-the-city/

New America. (2021, February 9). *OTI Petitions FCC to Restore Net Neutrality, Strengthen Lifeline.* Open Technology Institute. https://www.newamerica.org/oti/press-releases/oti-petitions-fcc-to-restore-net-neutrality-strengthen-lifeline/

NYC Planning. (n.d.). *NYC Community District Profiles: Bronx Community District 2.* https://communityprofiles.planning.nyc.gov/bronx/2

Pinkett, R. (2000). Bridging the Digital Divide: Sociocultural Constructionism and an Asset-Based Approach to Community Technology and Community Building. *81st Annual Meeting of the American Educational Research Association (AERA).*

Reisdorf, B., & Rhinesmith, C. (2020). Digital Inclusion as a Core Component of Social Inclusion. Social Inclusion, 8(2), 132–137. https://doi.org/10.17645/si.v8i2.3184

Rhinesmith, C. (2016). (rep.). *Digital Inclusion and Meaningful Broadband Adoption Initiatives.* Benton Foundation. https://www.benton.org/sites/default/files/broadbandinclusion.pdf

Rhinesmith, C., & Kennedy, S. (2020). (rep.). *Growing Healthy Digital Equity Ecosystems During COVID-19 and Beyond.* https://www.benton.org/digital-equity-ecosystems-report

Rhinesmith, C., & Kennedy, S. (2020, November 18). *The Impacts of COVID-19 on Digital Equity Ecosystems.* Benton Institute for Broadband & Society. https://www.benton.org/blog/impacts-covid-19-digital-equity-ecosystems

Shueh, J. (2018, July 29). *Digital Equity Fund offers nonprofits a chance to close the digital divide in Boston.* StateScoop. https://statescoop.com/digital-equity-fund-offers-nonprofits-a-chance-to-close-the-digital-divide-in-boston/

Tel Aviv-Yafo Municipality. (n.d.). *Smart City - Education.* About the City https://www.tel-aviv.gov.il/en/abouttheCity/Pages/SmartEducation.aspx

Strover, S. (2012, May 16). *The bumpy path of technological transformation: digital inclusion.* Presented in Seoul, Korea. https://moody.utexas.edu/sites/default/files/strover_5.pdf

Taglang, K. (2021, March 12). *American Rescue Plan: Broadband and the Social Safety Net.* Benton Institute for Broadband & Society. https://www.benton.org/blog/american-rescue-plan-broadband-and-social-safety-net

The United States Census Bureau. (2019, December 20). *American Community Survey 2014-2018 5-Year Estimates Now Available.* https://www.census.gov/newsroom/press-releases/2019/acs-5-year.html

United Nations. (2016). (rep.). *Leaving no one behind: the imperative of inclusive development.* https://www.un.org/esa/socdev/rwss/2016/chapter1.pdf

Universal Service Administrative Company. (2021, February 14). *Universal Service.* About USAC. https://www.usac.org/about/universal-service/

APPENDIX

<u>Extended Interview Insights</u>

1. De-mystifying and allaying fears around the Internet and technology.

Multiple interviewees identified the mystery of the internet and technology to those who are less familiar with it as a major barrier to equitable access and use, especially for more isolated residents like seniors. This problem, as our interviewees explained, can scare new or unfamiliar users of the internet and technology away completely without ever attempting to engage with it. Lynda Myers, Media Education Associate at the Hunts Point Media Lab (a NYC Parks program), explained how important her lab's media literacy classes are to bring those who have little to no experience with computers into the digital world. Meyers described adults who are "already afraid" and "scared" of the computer. "You just have to take baby steps... (and) let them know...nobody knows until they know. It's okay if you don't know, you're going to know. I just make them feel at ease."

If adults are too intimidated to ever enter a space where they can gain the skills to navigate the internet, supportive community spaces and trusted messengers like Lynda Meyers are essential, and in the unique position of helping users overcome a barrier that could get in the way of many other efforts. Another interviewee also flagged this issue as an initial roadblock. "Part of the struggle is people feeling overwhelmed and intimidated by the internet if there isn't an effort to put things into context," explained Ken Small, Development Director of Bronxworks.

As is expected, the problem of intimidation can be a big one for seniors. Alexander Glazebrook, Director of Operations at Older Adults Technology Services (OATS), when asked what else New Yorkers would need beyond access to broadband to make that access meaningful, responded, with the word "respect," and went on to call for a shift in the dialogue and stereotypes around seniors and technology. "Ageism is a societal problem that cannot be fixed by throwing technology towards a senior." This sentiment calls for acknowledgment of the complexity of the problem. For certain populations who are unfamiliar and inexperienced users, the use of technology is tied up in all kinds of other societal issues or stereotypes that make meaningfully engaging or even taking action to learn about how to engage, difficult. In this way, meaningful adoption is not the same for every user, and encouraging it often means taking a one-on-one approach to alleviating intimidation or even disinterest.

One interviewee brought up demystifying technology as essential not only for meaningful use of technology but also to shift the power dynamics within communities and empower residents. Sharon De La Cruz, Director of Sustainability at The Point CDC explained: "I believe in STEM literacy...we will need...STEM literacy that goes beyond just job readiness. STEM literacy that allows people to express themselves, STEM literacy that is...like writing literacy. You should know how to build a circuit, not because you're going to be an engineer...but you should know how the internet works so it's not this mystified, abstract thing that you're paying $80 for because you have no choice...The more people know about the infrastructure, the better and the more excited...and the more innovative the infrastructure becomes." De La Cruz is advocating for communities to gain access to an understanding of how internet infrastructure and technology works in order to enable more creative thinking and radical solutions.

One service provider, Neture, also argued that communities should be introduced to new technologies and Internet-based services, such as cryptocurrency. If they are not presented with the information as technologies advance, then these communities will be further left behind.

The Internet Master Plan's expansion of broadband infrastructure and access will not create digital equity in NYC unless non-adopters are strategically encouraged to use this new access. In order to use expanded access to its full potential, the wall of intimidation and mystery surrounding technology must fall. Luckily, there are trusted community anchors already familiar with how to ease the unconnected into the world of the Internet and technology.

2. Empowering users to use the internet and technology for purposes beyond its own sake, such as to create art, solve neighborhood problems, and participate in civic programs or gain access to essential services.

As is implied in the definition of digital equity, the goal of digital inclusion efforts goes far beyond the technology itself, and numerous interviewees emphasized using technology as a tool for something greater and transformative. The NYC Parks Department had particularly unique insights on this issue, highlighting the importance of self-expression and allowing New Yorkers to gain tech skills while also finding their voice. The Director of Media Education at NYC Parks, Marlaina Headley, said that a large part of the way they have decided to bridge the digital divide, given the fact that they have many arts teachers, is by helping users become producers of media instead of consumers, and to "find [their] own voice." The Deputy Director at NYC Parks agreed and said that the parks media labs intend to move beyond a passive resource where people can simply come to get connected, to a place where users are actively developing skills, experimenting, gaining fluency, and expressing themselves.

This humanistic approach is powerful and recognizes that technological fluency is necessary for all New Yorkers to fully engage in society, in their passions, and in life. As Marlaina Headley pointed out later in the interview, there are a multitude of reasons people need to interact with and meaningfully use technology, and it is not for its own sake. "We figure out the why behind all of our technology. Because everything has value to people for different reasons," Headley said. This kind of approach carries lessons for how we can best teach tech skills. Rather than focusing solely on teaching the basics of certain programs, users may do better with project-based learning -- creating something and using their voice, all the while getting comfortable with new technology.

Clayton Banks, CEO of the company Silicon Harlem, pointed to the importance of technology for creating civic connections, something that has become very clear during the pandemic. Banks argued that internet services should have civic connections baked into them. "With civic services becoming more technical, we're leaving people behind. When everyone has broadband, we have much more opportunity to move forward just by having access to the agencies," Banks said.

The importance of empowering communities to receive essential social services is also evident in the health sector. Healthcare has increasingly moved online, but this change was accelerated during the pandemic as telehealth became the norm to minimize in-person appointments. Paloma Hernandez, President and CEO of Urban Health Plan, a network of community health centers in the South Bronx, Central Harlem, and Northwestern Queens, explained the pivot to telehealth and the equity challenges it has posed. "We have encountered quite a bit of difficulty with many of our patients being able to access video for telehealth. We've had to resort to audio...which is problematic." Hernandez says Urban Health Plan cannot get reimbursed in the same way for an audio and video telehealth visit, because of requirements for Medicaid and Medicare, something the group is fighting at the state and federal levels. Hernandez attributes the difficulties with telehealth appointments to a range of issues, including connectivity, lack of devices, and being unfamiliar with navigating smartphones or programs used for the telehealth appointments. On top of the appointments themselves, Hernandez discussed a number of other initial barriers, including opening new patient records remotely, which her offices can do, but poses challenges to patients who are not computer literate because they need to send documents through applications like DocuSign. Hernandez describes helping these patients, who are often older, by using a one-on-one approach to walk them through the process, which takes additional resources and time. And of course, nothing has shown the roadblocks that technology can pose to essential health services like the vaccine rollout, which has been difficult for New Yorkers to navigate.

From city agencies to health care centers, New Yorkers on the ground know that the stakes are high when it comes to digital literacy and skills. It will not be enough that New Yorkers can connect to the Internet thanks to the rollout of the Internet Master Plan. What can New Yorkers do with this new connectivity? What is its greater purpose or potential? Telling a story with photography or videography, accessing important city services and information, and scheduling telehealth or vaccine appointments are just some of the potential opportunities, but capitalizing on these opportunities will require supporting those who know these areas, residents, and areas of opportunity best.

3. Culturally responsive and multilingual information, communication, and programming based in community trust and delivered through trusted community messengers.

When asked about Urban Health Plan's role in efforts like MOCTO's Internet Master Plan, CEO Paloma Hernandez spoke about the importance of working with community partners to communicate and make the most of expanded access. Hernadez described Urban Health Plan's efforts to treat patients holistically, with the knowledge that all aspects of social wellbeing are related to health, including connectivity and access. For example, Urban Health Plan partnered with the NYC Department of Education when Mayor de Blasio delivered universal pre-k, bringing DOE employees into Urban Health Plan waiting rooms to get people enrolled, while Urban Health Plan tracked the number of kids enrolled in their health records, aware that early enrollment correlated with better health outcome throughout life. Even for something like expanded internet access, which may not seem as directly related to health, Hernandez says "it's important that community partners become involved in promoting and assisting with the rollout. And I think sometimes people look at it like, why are we investing money in supporting a health center to help with this when it's not IT related? Well it's not, but because of our involvement, we're going to help you get more people enrolled properly and learn how to use this, as opposed to this is available…but I don't even know how to use it." Paloma's experience of making Urban Health Plan, a trusted partner and communicator in the community, a part of city initiatives outside of the health sphere serves as an example of the power and potential role for community-based organizations in working toward digital equity.

Shamekia Gordon, Director of Strategic Community Initiatives at the Hunts Point Alliance for Children, also discussed how difficult it can be for the families they work with to use technology and navigate certain digital platforms. "We have to help families and hold hands...for some platforms. They think it's user-friendly, but for who?" Gordon reminded us many of these families don't speak English and require translation, or are older and unfamiliar with the platforms, and said a lot of extra work and resources are necessary to make essential technology usable for these populations.

Pam Cora, Branch Manager at the Hunts Point NYPL, also spoke about the importance of multilingual communication and programming to welcome community members into new experiences or environments. "If you don't know the language, it can be a scary experience, so we want to create that safe space and cultivate experiences that put that hesitation at ease." In Hunts Point, a majority of residents are Latinx, and 44 percent of residents speak Spanish according to census data. Cora said her Hunts Point library branch offers multilingual classes, including a crochet class that is taught in both English and Spanish, as well as book discussions held in both languages. For those who are unfamiliar with the Internet and technology, Cora said, having a trusted source or partner to learn from is one of the most essential resources for New Yorkers who are gaining access to broadband.

Jeffrey Lambert, Assistant Director of Digital Inclusion and Workforce Readiness at the Queens Public Library also spoke about the great need he sees for clear, accessible language for users who aren't familiar with technical language or the context. For those who lack vocabulary related to digital privacy, it can be difficult to express underlying concerns. But once they have that vocabulary, or information is communicated in an accessible manner, people realize their concerns and can voice them. Understanding privacy issues like how data is stored and collected is important for potential subscribers, and they deserve to have this information communicated in a clear manner that does not assume contextual knowledge.

In terms of the best way to communicate with and educate residents and community members, various organizations emphasized the importance of old school, word of mouth communication, as well as the importance of patience and one-on-one training. The Point CDC's Sharon De La Cruz discussed one resident in particular, who has been in Hunts Point for a long time, and recently learned how to get on zoom because of a winter mesh workshop to teach community members about the internet and The Point's mesh network infrastructure. "He wanted to be a part of this, he didn't have a laptop, and he didn't know about zoom. So we had one of our stewards help him through that process, which was tedious...and thankfully (he) was such a good sport, and together they were able to get (him) up and active on zoom and get him excited about the network." De La Cruz went on to say that when people ask how we can engage older residents with something like this, she answers that it is possible. "We can engage them...it...takes time and tender love and care...But it is possible...it's engaging people with patience."

Nick Higgins, Chief Librarian at the Brooklyn Public Library (BPL) also spoke about the importance for BPL of what he called the "old-fashioned service model" of communication. Since the pandemic, BPL has consistently reached out to over 500 homebound seniors in Brooklyn who have become increasingly isolated during the pandemic. While the library has been unable to offer regular services during this time with many branches closed for safety reasons, they continue to call these seniors every week to ask how they are doing and understand their needs. These kinds of trusted relationships with residents are of great value and importance to rolling out any important changes or services.

Desireé Caro, Deputy Director of Casita Maria, an arts and education community-based organization in Hunts Point, also spoke about the prevalence of direct conversations with people, like parents who come in to pick up their children from after-school programs. "A lot of how we make our decisions about the needs of the community is really from conversations that we're directly having with people...The tech and language barriers are very, very big challenges in really getting to understand what the needs of the community are," Caro explained. Indeed, the lack of connectivity and digital literacy in areas like Hunts Point and Longwood poses a challenge to gaining a deep understanding of the greatest community needs. Caro also spoke about city programs failing to reach the neediest community members like those whom her organization serves. She pointed to language and cultural barriers. "We need to help those families and handhold them through the process," she explained. Shamekia Gordon, Director of Strategic Community Initiatives at the Hunts Point Alliance for Children (HPAC), echoed this sentiment, emphasizing the role of HPAC in interpreting and responding to unique community needs. "We've just tried to...be a listening ear to families and then help them with the different resources...(our ambassadors) will walk them through...if you're having an issue with a DOE device, let's go on their website, figure out whom we can contact, what it is that we need to do in order to get you into a better space, and then they would follow up with those families each week."

Neture and another Internet provider in New York City both emphasized the importance of maintaining dignity. For instance, low-cost service options are not marketed as "low income" options, simply as alternatives. Low-income households do not need reminding that they are low income and might be put off by the phrasing. Further, if households can afford to pay for services, they would prefer to pay a lower amount and feel as if they are contributing rather than receiving the option for free. There are two reasons for this:

1. Households may not trust a free service to protect user security and data, and
2. There may be a resistance to accepting charity.

Community anchors and non-profits like HPAC, Casita Maria, Bronxworks, The Point CDC, the local Hunts Point library branch, and Urban Health Plan have the community trust and connections to gain a deep level of understanding about residents' everyday experiences and challenges, and also spend their time and resources addressing these challenges in personal ways. Capitalizing on this trust and these groups' proven methods of communication to disseminate key information and deal with the questions and needs that will inevitably come with expanded infrastructure is essential.

4. Cheap, fast, and reliable internet and consistent, ample devices to use it.

As we know, connectivity is fundamental to digital equity; numerous interviewees flagged the importance of connectivity being both free or low cost, fast, and reliable. Ayosike Akingbade of the Hunts Point Alliance for Children said that speed was the fundamental issue to resolve in the Bronx, and lamented the fact that there are only two companies to choose from in the area, optimum and spectrum. Akingbade identified speed and consistent wifi as more important to address than a lack of devices because devices are easier to provide once and be done with it, while affordable, reliable, and fast Internet is a consistent struggle to provide. Selvon Smith, CIO of the Brooklyn Public Library, also flagged speedy internet as one of the main concerns and said that the minimum standard for broadband from the FCC is not fast enough to support meaningful use, especially in multi-person homes.

On top of speed, quite a few of our interviewees spoke about the Internet as a basic right. "We believe the Internet is a utility -- it should be free," said Derrick Lewis of the Bronx Community Foundation. Pamela Cora, Branch Manager at the Hunts Point NYPL also spoke about the Internet and technology as a basic need, "It's no longer an option, it's no longer something that's merely convenient...it's a necessity," she said.

Unfortunately, we heard that many Bronx residents are struggling to afford any kind of Internet service at home. Hillary Kolos of Dreamyard noted that there is a tension between cell phone and broadband service, and it's incredibly expensive and difficult to have both, which forces many Bronx residents to choose between them (or forego both, in some cases). Moreover, even when families are able and willing to pay for Internet service at home, the process to qualify and apply for low-cost plans is extensive and structured to exclude those who need assistance. According to one Internet provider, the application process for no- or low-cost options not only is onerous but does not always result in fast and reliable Internet. There are many tedious eligibility criteria and rules that exclude households from receiving the access that they need, such as needing to be first-time customers. Providers also do not always provide what they promise, and communities end up underserved or not served at all.

Additionally, a lack of devices was consistently identified as a serious issue and top priority. Ken Small, Development Director of Bronxworks, which helps families improve their economic well-being across the borough, told us that not having a device or only having a phone is often the largest barrier for the residents they serve. Especially during the pandemic, Small said, it took weeks for young people to get working devices, which led to major learning loss. Quite a few other interviewees made similar comments, noting the primary challenge a lack of devices poses to the community, including Casita Maria's Desireé Caro, who said that many families have upwards of three kids and have struggled to share limited devices, especially when schooling went online during the pandemic.

Importantly, the Internet Master Plan will ideally address the challenges of affordability, speed, and reliability of broadband in areas like Hunts Point and Longwood. To maximize the benefits of this improved access, ample devices will also be an important part of achieving digital equity.

5. Community organizing, ownership & self-determination for marginalized communities.

One consistent theme that came up in our interviews was how communities are already working independently to create momentum, agency, and power in under-resourced areas like Hunts Point and Longwood, and how this momentum and self-determination can best be supported as the City works to expand broadband access. One example of community-owned infrastructure and digital empowerment is a project led by The Point CDC in partnership with New America's Resilient Communities program to create a Free Hunts Point Community WiFi mesh network. In addition to the infrastructure and access, the project also enlists Digital Stewards to inform and teach local residents about the technical skills to set up and maintain the network and create digital content. This project allows for a range of Hunts Point residents and stakeholders to get involved with addressing the digital divide in their own community. Residents can host a node and share the internet connection with neighbors, attend workshops to be informed about the network, and share information with their peers. Local nonprofits and businesses can also get involved by offering space for workshops, leading relevant campaigns and advocacy, offering spaces for wifi access, and hosting backbone infrastructure for the network or space for rooftop nodes.[62]

Sharon De La Cruz of The Point CDC explained how the organization is working to expand the impact of the mesh network and their work around what she called "digital justice." "What can the internet look like if it was actually designed for equitable purposes?" De La Cruz asked. She went on to explain the importance of this moment amid the pandemic -- an opportunity to question the status quo. "If there's anything we learned in 2020 it's how fragile the system is and how much it's not serving people. We have the unique opportunity that happens every 100 years to crack it open and say, hey, this is not serving me, let's rethink how we're doing this."

62 *Hunts Point Free Wifi - Hunts: Point: NYC.*

In response to this moment, her organization is increasingly thinking about the importance of community ownership. "The plan for wifi and our community-shared solar program is literally building infrastructure that is owned by the community," De La Cruz said.

Hillary Kolos, Director of Digital Learning at DreamYard, an arts and social justice organization in the Bronx, also spoke to us about the importance of community collaboration and empowerment and projects like the Hunts Point Community Wifi. She described the mesh network as "a great way for people to understand how the Internet works, have control over it and gain digital literacy."

Beyond Hunts Point and the example of The Point CDC's mesh network, Silicon Harlem CEO Clayton Banks also weighed in on the importance of providing access so that communities can lead the action in their neighborhoods. Banks described a community event he attended years ago in which the NYC Mayor asked the community about their top problems, which included things like noise, crime, and sanitation. Banks argued that these problems continue to plague many residents, but with full access to broadband, open data, and civic agencies, the solutions to these problems become within the community's reach. "Let the community serve their own problems," Banks said.

Communities in the Bronx have already made great strides to organize and collaborate across a diverse range of organizations and maximize the benefits of the resources and programs already available in the area. The Bronx Community Foundation is a primary example of this; Co-founder Derrick Lewis explained that the catalyst for BCF's formation was the fact that the Bronx continues to be the most under-resourced borough despite having the greatest need. Lewis also said the Bronx has one of the largest networks of non-profit organizations, and BCF saw an opportunity to galvanize the resources that exist to foster collaboration and avoid being duplicative. "We looked at the entirety of the Bronx, and we believe that there are solutions that are being created in Mott Haven that could be beneficial to the community of Riverdale, and solutions in Riverdale that could be beneficial to the community of Hunts Point...and so we as a community foundation want to play a role of creating collaboration across these institutions," Lewis said. BCF launched a community relief effort when COVID-19 hit, knowing the Bronx would be disproportionately impacted because of disparities. The foundation has since focused some resources, in partnership with other organizations, to address digital inequity, at first by distributing thousands of devices and wifi hotspots into the hands of residents. As the foundation came to realize how far beyond access the problem was, they began to bring together more and more Bronx institutions that focus on, as Lewis explained, a "piece of the digital divide."

BCF's approach shows the value of an asset-based approach to creating digital equity. The stakeholders and organizations in Hunts Point and Longwood are eager to tackle the digital divide, and they bring the experience with residents and community trust necessary to make change and affect the hardest to reach. As MOCTO expands broadband infrastructure in marginalized communities, supporting those communities' vision and efforts to become digitally empowered, rather than imposing an outside vision, is essential to digital equity.
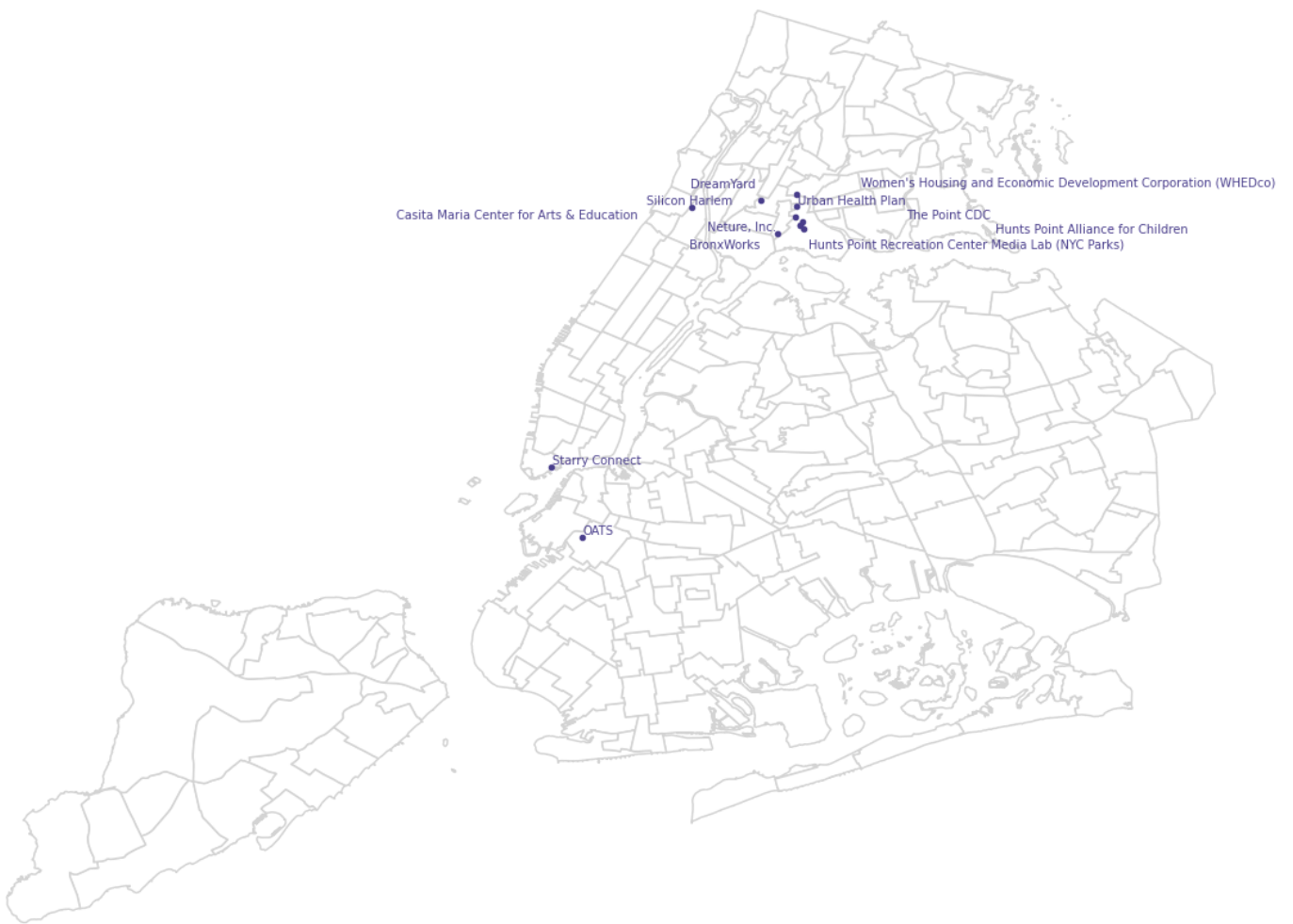
NYC Organizations Interviewed in Dataset

Figure 4: Map of New York City Organizations in the Dataset whom were Interviewed

Organizations Interviewed in the Bronx Categorized as Diverse Digital Skills Training

Figure 5: Map of Organizations in the Dataset that Met the
Criteria for Diverse Digital Skills Training

Organizations Interviewed in the Bronx Categorized as Community Justice

Figure 6: Map of Organizations in the Dataset that Met the
Criteria for Community Justice

Figure 7: Map of Organizations in the Dataset that Met the
Criteria for Access to Devices and WiFi

Organizations Interviewed in the Bronx Categorized as Broadband Infrastructure

Figure 8: Map of Organizations in the Dataset that Met the
Criteria for Broadband Infrastructure

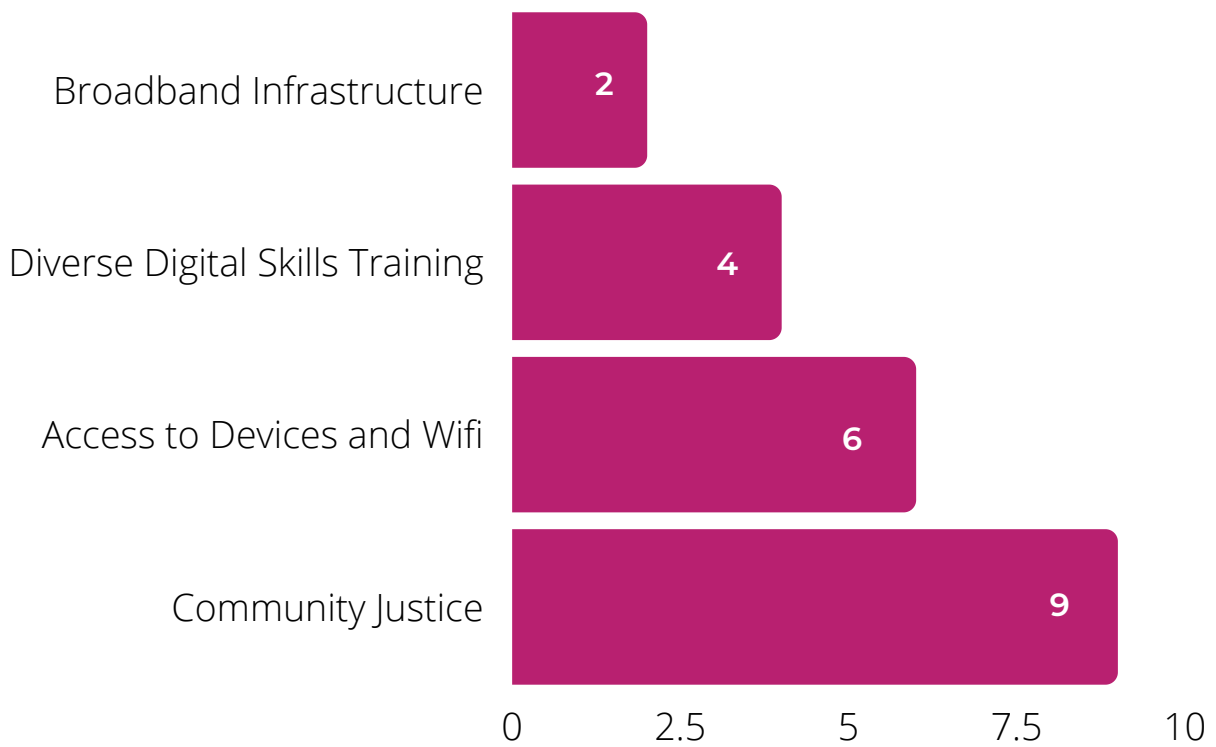## Number of Bronx Located Organizations by Criteria Category

Figure 9: Number of Bronx Located Organizations by Criteria Category

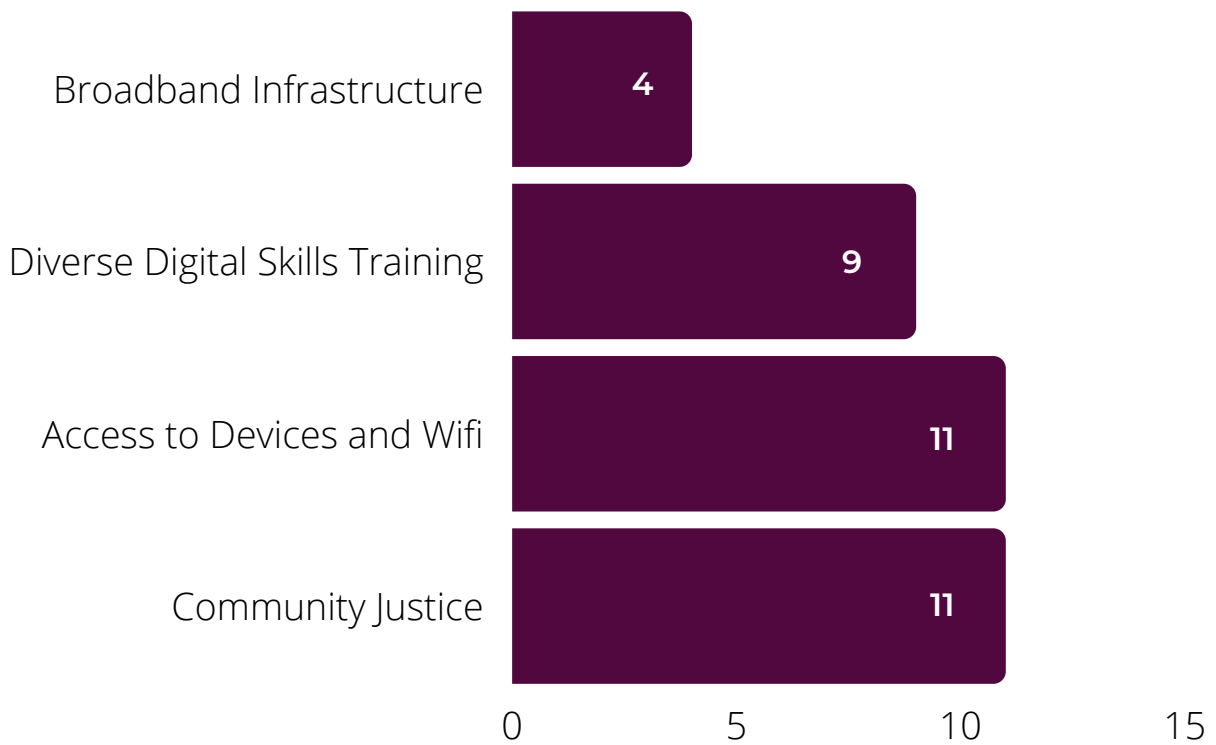## Number of NYC Located Organizations by Criteria Category

Figure 10: Number of Bronx Located Organizations by Criteria Category