Digital Inclusion and Meaningful Broadband Adoption Initiatives

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Executive Summary

This report presents findings from a national study of digital inclusion organizations that help low-income individuals and families adopt high-speed Internet service. The study looked at eight digital inclusion organizations across the United States that are working at the important intersection between making high-speed Internet available and strengthening digital skills—two essential and interrelated components of digital inclusion, which is focused on increasing digital access, skills, and relevant content.

The four digital inclusion activities highlighted in this report were reported as being necessary for helping low-income individuals and families adopt broadband in ways that were most appropriate to their personal needs and contexts:

1   **Providing low-cost broadband:** Cost continues to be a major barrier to broadband adoption. Successful interventions will need to address "ability to pay" rather than "willingness to pay." While all low-income individuals and families who participated in this study understood the value of broadband connectivity, most explained that cost remained the most significant barrier to adoption. Successful digital inclusion efforts should recognize the role that persistent poverty plays in shaping people's abilities to access and use computers and the Internet. The findings suggest that more research is needed to understand budgeting issues and other concerns related to people's experiences living in poverty.

2   **Connecting digital literacy training with relevant content and services:** Many digital inclusion organizations have developed innovative digital literacy training strategies to assist those who do not feel the Internet is relevant to them as well as those who already understand the importance of the Internet to their everyday lives. Many organizations also provide mobile digital literacy training in which they go outside their physical walls to reach people in places that are convenient to them.

3   **Making low-cost computers available:** Low-cost or free computers are often just as important as having access to low-cost or free Internet options, particularly for people in low-income communities. Digital inclusion organizations have embraced this reality by refurbishing older computers and making them available to low-income people for free or at a reduced cost. Some digital inclusion organizations also provide ongoing technical support to residents who need the social and technical assistance to keep their computers up and running—and connected online—over time.

4   **Operating public access computing centers:** Many digital inclusion organizations also maintain public access computing facilities that allow residents to access technology in places in which they feel comfortable and supported. These spaces also complement the digital literacy classes that are often offered in the same location. Low-income individuals and families value public access computing centers because they are often in convenient locations and have helpful staff that provide them with one-on-one support with computers and broadband Internet access.

The goal of this report is to help policymakers at the local, state, and federal levels, as well as researchers, practitioners, and other key stakeholders, gain a deeper understanding of how digital inclusion organizations and their community partners can be successful in their efforts to promote meaningful broadband adoption. In addition to the activites highlighted above, this research also notes:

- **The importance of citywide and regional initiatives:** All of the organizations identified the importance of citywide and regional digital inclusion initiatives and indicated the strength in coming together with other community partners and collaborators to support digital inclusion activities and share best practices. However, funding remains an issue to support these broader digital inclusion coalitions.

- **Concerns about program sustainability:** No one or mix of commercial providers delivers the full suite of access, computing, and training that non-adopters need to take advantage of the content and services broadband has to offer. Moreover, most organizations that participated in this study expressed a concern that funding for organizations is limited. More funding and support are needed for all organizations in this study that are connecting low-income residents to low-cost Internet, digital literacy training, low-cost computers, and public access computing.

- **The need for outcomes-based evaluation:** Most of the digital inclusion organizations that participated in this study did not have outcomes-based evaluation frameworks. However, all recognized the importance of having them. One of the surprising findings from the study was the need for outcomes-based evaluation frameworks at both the organizational and citywide/regional levels. This remains a need in many of the organizations studied.

- **Digital inclusion and broader policy goals:** This report also joins other researchers who have argued that digital inclusion needs to be connected to broader policy issues in order to show the impacts of digital inclusion and meaningful broadband adoption initiatives.

Introduction

High-speed Internet access is widely recognized as a necessity for full participation in today's society. Employers, educators, businesses, healthcare providers, and civic institutions expect people to have access to computers and broadband connectivity. However, accessible, reliable, and affordable broadband service continues to be out of reach for millions of Americans, many of whom live in low-income households. This gap in access to high-speed Internet and the lack of skills needed to use broadband-enabled tools continue to be significant problems that policymakers, researchers, and practitioners have all focused their attention on for the past twenty years.

Digital inclusion is a national priority in the United States. As President Barack Obama explained in a recent memorandum, "Affordable, reliable access to high-speed broadband is critical to U.S. economic growth and competitiveness. High-speed broadband enables Americans to use the Internet in new ways, expands access to health services and education, increases the productivity of businesses, and drives innovation throughout the digital ecosystem."[1] The President said that more than 50 million Americans are still disconnected from high-speed broadband Internet service, and he argued that a broad and coordinated effort is needed to address this national challenge.

Today, digital inclusion organizations in low-income communities across the United States are working to address this gap. Many of these inclusion organizations have been working for the past twenty years to help low-income people connect to the Internet and use the content and services found there to make their lives better. More recently, citywide and regional digital inclusion initiatives have emerged to connect local efforts to broader policy initiatives at the local, state, and federal levels. Many organizations continue to face struggles due to a lack of capacity to support their digital inclusion activities and the funding needed to help low-income individuals and families gain the full benefits of high-speed Internet access.

This report focuses on the work of these digital inclusion organizations and their community partners and on the low-income residents they serve as the lens for understanding and measuring what this report refers to as meaningful broadband adoption. It highlights how digital inclusion organizations view their role within a broader ecology of social and technical support to help individuals and families adopt broadband regardless of location.

The findings of this research can help to refine outcomes-based evaluation frameworks that can be implemented by digital inclusion organizations to measure the success of their digital inclusion and meaningful broadband adoption initiatives.

Defining Digital Inclusion

In the United States, the term digital inclusion has been used since the early 2000s to articulate the policy, research, and practical efforts to look beyond issues of access to computers and the Internet and toward a more robust understanding of the skills, content, and services needed to support individuals, families, and communities in their abilities to truly adopt computers and the Internet.[2]

The definition of digital inclusion for this report draws from local efforts around the country.

The Seattle Community Technology Program's definition of digital inclusion encompasses the following three areas: "Access, technology literacy, and relevant content and services" and recognizes that digital inclusion efforts include working with "small businesses and community-based (non-profit) organizations."[3] As an example of digital inclusion in practice, the Free Library of Philadelphia embedded librarians within local trusted community institutions, such as churches and local cultural centers, where low-income residents could feel comfortable as a precursor to their technology access and use. In this context, comfort included "support, trust, safety, and respect," and comfort was considered to be a key social layer that supported meaningful broadband adoption in low-income neighborhoods in Philadelphia, particularly in areas where residents did not have access to a library branch.[4]

The Free Library of Philadelphia and other digital inclusion organizations have been successful in this approach to meaningful broadband adoption because they begin by recognizing the realities that people living in poverty face as a starting point for their digital inclusion activities. They also look to support people's access to broadband regardless of their location, while also recognizing that many low-income people prefer to use broadband Internet at home if it is accessible, affordable, and reliable for them.

Defining Meaningful Broadband Adoption

Broadband adoption has traditionally been defined as residential subscribership to high-speed Internet access.[5] But for those in the field working to increase the digital capacity of communities, broadband adoption is daily access to the Internet:

- at speeds, quality and capacity necessary to accomplish common tasks,[6]
- with the digital skills necessary to participate online, and
- on a personal device and secure convenient network.[7]

Ability to Pay vs. Willingness to Pay

Much of the research on broadband adoption has focused on understanding the factors that influence whether an individual is likely to pay for high-speed Internet services. These factors have been used to predict rates of broadband adoption. As part of this thinking, the phrase "willingness to pay" has become widely accepted within broadband adoption literature. This phrase focuses on what an individual is willing to pay for high-speed Internet access, while also paying attention to demographic characteristics of the individuals studied.

In this study, several of the digital inclusion organizations and the low-income residents who benefited from their services reported that cost is certainly an issue in determining people's adoption of broadband Internet

service. Low-income people, in particular, suggested that the term "ability to pay" is more relevant to their lives than the term "willingness to pay" in conversations about cost of broadband access. The low-income adults who participated in this study explained that paying for broadband is not as much of a choice that involves what they are willing to pay for different Internet speeds, but rather a choice between broadband service and the ability to pay for food.

By looking outside the home and into the community, digital inclusion researchers and policy-makers can gain a deeper understanding of the important role that community-based and social service organizations, as trusted community assets, play in helping people gain access to technology in meaningful ways that reflect their everyday experiences with poverty.

The research in this report also supports findings from previous studies that have shown that successful digital inclusion efforts depend on a recognition of how persistent poverty shapes people's ability to access and use computers and the Internet in ways that are meaningful to their lives.[8] For example, as John Horrigan found in his studies [9] of Comcast's Internet Essentials program.

This research indicates how problems with broadband adoption in low-income communities are intimately bound up in other problems that are markers of poverty, such as low high school graduation rates and health outcomes. Efforts to increase broadband adoption in these communities must understand the structural problems of poverty.

Poverty is intimately connected to the challenges facing low-income people in adopting broadband Internet at home. By looking outside the home and into the community, digital inclusion researchers and policymakers can gain a deeper understanding of the important role that community-based and social service organizations, as trusted community assets, play in helping people gain access to technology in meaningful ways that reflect their everyday experiences with poverty.[10]

In a previous study of broadband adoption in low-income communities, Dharma Dailey et al. found that price was just one factor that impacts people's ability to adopt broadband. In addition to the cost of Internet service, "hardware costs, hidden fees for services, billing transparency, quality of service, and availability of service," particularly in low-income areas, are major issues that policymakers, researchers, and practitioners need to consider when assisting individuals and families in adopting broadband in low-income communities.[11]

Rather than focusing solely on the human-to-computer interactions, meaningful broadband adoption emphasizes the human-to-human interactions that are most helpful to individuals and families.

Seeta Peña Gangadharan and Greta Byrum built upon this research to recognize the important role that public libraries and other community-based organizations play in providing not only the technical, but also the social supports needed to promote what they have defined as "meaningful broadband adoption." The authors explained that in defining meaningful broadband adoption, they "imply 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."[12] In other words, rather than focusing solely on the human-to-computer interactions, meaningful broadband adoption emphasizes the human-to-human interactions that are most helpful to individuals and families.

This concept of meaningful broadband adoption – as an outcome of digital inclusion activities – was used in this report as both a theoretical and a practical framework for understanding, in a more holistic way, the social supports that low-income individuals and families need to use computers and broadband Internet.

Putting Meaningful Broadband Adoption into the Larger Policy Context

Lifeline Modernization

The Federal Communications Commission's (FCC) efforts to modernize its Lifeline program influenced the motivation for this study. Traditionally, Lifeline, supported by the Universal Service Fund, has made wireline or wireless phone service affordable to eligible consumers in low-income communities. Lifeline provides discounts of $9.25 per month and may be more in some states.[13] During the past few years, there has been a push to modernize the Lifeline program to provide discounts on broadband service for low-income households. As the Benton Foundation has explained,

> These modernization goals got a new jolt in November 2014. FCC Commissioner Mignon Clyburn spoke at the American Enterprise Institute saying Lifeline should be expanded to cover broadband Internet access and reformed in other ways so that it helps everyone connect in the 21st century. She offered five principles to guide Lifeline reform:
>
> 1. Getting the most bang for the universal service buck by establishing minimum service standards—that include both voice and broadband—for any provider that receives the $9.25 Lifeline subsidy.
>
> 2. Providers should no longer be responsible for determining customer eligibility: "Lifeline is the only federal benefits program that I am aware of where the provider determines the consumer's eligibility. Removing this responsibility from the provider will shore up the integrity of the program by further eliminating incentives for waste, fraud and abuse. The consumer would benefit through the reduction of privacy concerns." For the provider, this would mean a substantial reduction in the administrative burdens.
>
> 3. Encourage broader participation through a streamlined approval process.
>
> 4. Leverage efficiencies from existing programs and institute a coordinated enrollment.
>
> 5. Public–private partnerships and coordinated outreach efforts.

After the FCC collected public comment on a proposal to expand Lifeline's benefits to broadband service, the commission is expected to vote on the issue in early 2016.

Broadband Opportunity Council

This study was also motivated by President Obama's recent call to look at how the executive branch can improve U.S. broadband investment, as well as to increase broadband adoption, particularly in low-income communities still struggling to find affordable and reliable broadband Internet options.

On March 23, 2015, President Barack Obama published a memorandum titled "Expanding Broadband Deployment and Adoption by Addressing Regulatory Barriers and Encouraging Investment and Training." In the memo, the President described the ongoing barriers to high-speed Internet access:

> Today, more than 50 million Americans cannot purchase a wired broadband connection at speeds the Federal Communications Commission has defined as the minimum for adequate broadband service, and only 29 percent of Americans can choose from more than one service provider at that speed. As a result, the costs, benefits, and availability of high-speed broadband Internet are not evenly distributed—with considerable variation among States and between urban and rural areas.

In the same memo, the President called for the creation of the Broadband Opportunity Council (BOC), which includes all of the agencies in the executive branch. The goal is for these agencies to come together to, among other things, "pay particular attention to increasing broadband access for under-served communities, including in rural areas, and to [explore] opportunities to reduce costs for potential low-income users." On September 21, 2015, the White House released a report with findings from the BOC's efforts.[14]

In its report, the BOC—chaired by Secretary of Commerce Penny Pritzker and Secretary of Agriculture Tom Vilsack—provided the following four overarching recommendations:

1. Modernize federal programs to expand program support for broadband investments.
2. Empower communities with tools and resources to attract broadband investment and promote meaningful use.
3. Promote increased broadband deployment and competition through expanded access to federal assets.
4. Improve data collection, analysis, and research on broadband.

The Benton Foundation broke down the BOC's action plan in the weeks following its publication.[15] BOC recommended more research on broadband adoption and digital literacy, including the need for more "granular data about broadband connectivity including data on digital literacy and confidence and a metric on effective use."[16]

The findings in this report should be useful to the BOC in assessing the difference between using "consumer guides"[17] to target low-income people's ability to pay versus their willingness to pay for broadband Internet service.

The BOC recommendations provide an important road map for future initiatives and funding opportunities that could benefit digital inclusion organizations working in low-income communities across the United States. This study attempts to respond to the President's directive and the BOC recommendations by providing an additional analysis of digital inclusion organizations, their community partners, and the communities they serve.

Research Overview

This report highlights a four-part strategy—low-cost broadband, digital literacy training, low-cost computers, and public access computing—that digital inclusion organizations, their partners, and the individuals and families who benefited from these services all identified as being essential to supporting meaningful broadband adoption in their communities.

The organizations that participated in this study[18] are affiliated with the National Digital Inclusion Alliance, which is focused on "gathering specific best practices to support Lifeline Reform, defining specific steps federal departments can take to increase support of broadband adoption and working with the FCC to both modernize Lifeline and develop corporate and philanthropic partners."[19] The organizations were selected based on their work in assisting low-income individuals and families in gaining access to, and support with, computers and broadband Internet service.

The following organizations agreed to participate in the study: PCs for People (St. Paul, Minnesota), Axiom

Education and Training Center (Machias, Maine), Ashbury Senior Computer Community Center (Cleveland, Ohio), Connecting for Good (Kansas City, Kansas), Free Geek (Portland, Oregon), Youth Policy Institute (Los Angeles, California), Austin Free-Net (Austin, Texas), and Multnomah County Library (Portland, Oregon).[20]

Table 1 provides a list of the digital inclusion organizations that participated in this study and their activities. The activities were determined based on analysis of qualitative data, which was collected from interviews with the administrators and staff at the organizations and their community partners; focus groups with individuals and families in low-income communities who have benefited from their services; and a review of documents, including promotional flyers and outreach materials that described the organizations' digital inclusion activities.

Table 1. Digital Inclusion Organizations and Their Activities

DIGITAL INCLUSION ACTIVITIES

Digital Inclusion Organizations	Low-Cost Broadband	Digital Literacy Training	Low-Cost Computers	Public Access Computing
Ashbury Senior Computer Community Center	●	●		●
Austin Free-Net		●		●
Axiom Education and Training Center	●	●		●
Connecting for Good	●	●	●	●
Free Geek	●	●	●	●
Multnomah County Library	●	●		●
PCs for People	●		●	
Youth Policy Institute	●	●	●	●

Based on the data that were collected and analyzed from the eight research sites, the study found that it is almost impossible to understand the value of these digital inclusion activities without first understanding how a culture of poverty shapes people's experiences with technology. Low-cost or free computers and public access computing, in addition to low-cost or free Internet and digital literacy training, were important to individuals and families as they worked with digital inclusion organizations to adopt broadband Internet in ways that were meaningful and relevant to their everyday experiences.

The FCC's recent staff report[21] evaluating a pilot program that allowed experimentation with the Lifeline program to make broadband service more affordable and John Horrigan's recent evaluations of Internet Essentials[22] served as important starting points for research in this report, particularly in considering what else might be needed beyond low-cost Internet and digital literacy training in low-income communities. Additional research was undertaken to provide a deeper understanding of the digital inclusion services provided by organizations across the country as they work to promote meaningful broadband adoption. The study also assumed that additional research was needed to help guide the development of outcomes-based measures and goals for digital inclusion and broadband adoption initiatives.

It is almost impossible to understand the value of these digital inclusion activities without first understanding how a culture of poverty shapes people's experiences with technology.

The goal of this report is to help policymakers at the local, state, and federal levels, as well as researchers, practitioners, and other key stakeholders, gain a deeper understanding of how digital inclusion organizations and their community partners can be successful in their efforts to promote meaningful broadband adoption. This report also shows how individual organizations are working within broader citywide and regional efforts to assist low-income communities in gaining access to the Internet at home and outside the home.

Chapter 1: A Four-Part Strategy to Promote Meaningful Broadband Adoption

This chapter presents the four-part strategy that was identified by the digital inclusion organizations, their community partners, and the low-income individuals and families who participated in this study as being essential to promoting meaningful broadband adoption. This four-part strategy includes the following digital inclusion activities:

1 **Providing Low-cost broadband:** Cost continues to be a major barrier to broadband adoption. Successful interventions will need to address "ability to pay" rather than "willingness to pay." While all low-income individuals and families who participated in this study understood the value of broadband connectivity, most explained that cost remained the most significant barrier to adoption. Successful digital inclusion efforts should recognize the role that persistent poverty plays in shaping people's abilities to access and use computers and the Internet. The findings suggest that more research is needed to understand budgeting issues and other concerns related to people's experiences living in poverty.

2 **Connecting digital literacy training with relevant content and services:** Many digital inclusion organizations have developed innovative digital literacy training strategies to assist those who do not feel the Internet is relevant to them as well as those who already understand the importance of the Internet to their everyday lives. Many organizations also provide mobile digital literacy training in which they go outside their physical walls to reach people in places that are convenient to them.

3 **Making low-cost computers available:** Low-cost or free computers are often just as important as having access to low-cost or free Internet options, particularly for people in low-income communities. Digital inclusion organizations have embraced this reality by refurbishing older computers and making them available to low-income people for free or at a reduced cost. Some digital inclusion organizations also provide ongoing technical support to residents who need the social and technical assistance to keep their computers up and running—and connected online—over time.

4 **Operating public access computing centers:** Many digital inclusion organizations also maintain public access computing facilities that allow residents to access technology in places in which they feel comfortable and supported. These spaces also complement the digital literacy classes that are often offered in the same location. Low-income individuals and families value public access computing centers because they are often in convenient locations and have helpful staff that provide them with one-on-one support with computers and broadband Internet access.

While the four activities listed here were identified by all of the organizations as being critical to their digital inclusion efforts, low-cost Internet was often a foundation upon which the other three activities relied in many of the low-income communities studied.

The digital inclusion organizations profiled in this report also provide additional services beyond this four-part strategy, including such activities as job readiness & training,[23] English language classes,[24] computer recycling,[25] and IT consulting for non-profit organizations to name a few.[26] There are also many other types of digital inclusion organizations, which are not mentioned in this report, that are doing innovative work.[27] This report focuses on the four activities listed previously because they were identified across all of the digital inclusion organizations that participated in this study[28] as being critical to their digital inclusion

and broadband adoption efforts. However, further research may be needed to understand the strategies that community media and social movement organizations are using to promote meaningful broadband adoption in the communities they serve.

Providing Low-Cost Broadband

All of the low-income individuals and families who participated in the study understood the value of broadband Internet service. But the ability to pay for this service can be difficult. For many low-income people, broadband at home is often a choice between having Internet service and having food. Cost continues to be a major barrier to broadband adoption. Having the ability to purchase Internet service for the home at a reduced price supports low-income people in other aspects of their lives: It makes it easier for them to apply for jobs, improves their computer skills for the workplace, helps their children complete homework assignments, and allows them to participate more fully in society. Successful interventions will need to address "ability to pay" rather than "willingness to pay."

Successful interventions need to address "ability to pay" rather than "willingness to pay."

Two projects researched here illustrate the importance of low-cost broadband service.

Axiom Technologies

In rural Maine, access to the Internet continues to be a problem for several reasons, including the lack of broadband availability due to the geography and expense for Internet service providers (ISPs). Axiom Technologies, located in Machias, Maine, is a for-profit ISP that provides fixed wireless broadband services to residents in Washington County. Axiom also operates the nonprofit Axiom Education and Training Center because the company realized several years ago that residents in Washington County need access to low-cost Internet and digital literacy training.

While the training is offered free of charge to local residents, the cost of Internet access continues to be an issue for some of the rural residents in Washington County. As one focus group participant at Axiom Education and Training Center explained,

> "It's hard because we're in Washington County. Internet's expensive—and we're on our own doing this. I have a boyfriend, but he busted his leg. So you know, it's just a one income type deal. It's either rent, food, or Internet. They need to do something for low-income people to get Internet. I mean, I'm not asking for like a hand-out, but something to make it easier for low-income people to get a cheaper deal."

PCs for People

In the Twin Cities in Minnesota, PCs for People also assists residents in gaining access to low-cost broadband service because the cost of broadband can be prohibitive, particularly for many individuals and families in low-income communities. The organization set up a payment plan for clients and offered them a $10 per month service. Individuals could buy three months, six months, or one year of broadband service. This also allowed them to come in to PCs for People, which is located in their neighborhood, and get a $60 modem. As one community member who paid for broadband service through PCs for People explained,

"The $10 is definitely easier. I mean, some months it might help to pay more. It is a little bit more if you pay by month. I think it is like $15 or $13 or something, and sometimes it is what you got to do. You know, it is that or groceries, but it is nice if you do have the money you can pay ahead and that has been really helpful."

The program is part of a partnership that PCs for People had with Mobile Citizen[29] and Mobile Beacon[30] in late 2014 and in early to mid-2015. These organizations work with nonprofits, such as PCs for People, to help low-income individuals and families gain access to low-cost broadband access. Qualifying low-income customers could sign up for Internet service and get three months for free to offset the cost of the modem. As Casey Sorensen, PCs for People's Executive Director, explained, "We found the three months for free is a critical component . . . they need to be able to have that three month period or even longer, if possible, to save up for the next time they need to pay for their Internet."

To help offset the cost of the broadband, many digital inclusion organizations, like PCs for People, serve as low-cost resellers. Six out of the eight organizations that participated in this study either directly offered low-cost broadband service through programs like Mobile Beacon and Mobile Citizen or worked to find and raise awareness about low-cost broadband options in their communities through EveryoneOn,[31] a nonprofit organization that helps connect low-income people with reduced-price broadband options.

Some of the organizations that participated in this study had been working closely with nonprofit organizations through the ISP CLEAR. Through the Mobile Beacon and Mobile Citizen programs, low-income people were able to receive broadband at home for about $10 per month. When asked in interviews about this price, many community members stated that even increasing the cost to $20 per month would be difficult within their budgets.

PCs for People's Sorensen explained the importance of low-cost broadband for the communities they serve in the Twin Cities.

"We knew when we started that we wanted to do a prepaid plan. We knew we wanted to do larger chunks at a time because most of the clients we are working with can come up with a certain amount of money, but they have a small pool to work with. They have a lot of competition for their dollars, be it school supplies for their kids or the bare essentials …, so once they have a small pool of money, many of the ones we work with they do whatever their family needs with that so Internet is a critical component. Once we have been able to get it in a family's home, we have got feedback that they see the value of it. They see the education and job value where they can prioritize that bill, and we can give them six months for $60. We can give them six months of Internet, and they don't have to worry about that bill for another six months. It increases the chance of success."

Unfortunately, during the time in which this study was conducted, these low-cost Internet programs were put on hold because CLEAR recently merged with Sprint. The transition from CLEAR to Sprint caused many digital inclusion organizations—particularly those working as resellers[32]—to interrupt their work helping people connect to this low-cost broadband service. Sorensen estimated that the transition would have a huge impact on the lives of low-income families in the Twin Cities and other digital inclusion organizations were also concerned about the program's future.[33] As Sorensen explained, "With CLEAR towers turning off on November 6th, the work we have done to get thousands of families online goes away overnight, and 24,000 kids could lose their Internet." Some of the organizations that worked with Mobile Citizen and Mobile Beacon were hopeful that the program would soon be continued through Sprint. In November 2015, a judge in Massachusetts ruled that Sprint would have to keep the network running after several non-profit

organizations sued the company.[34]

Findings from this study show that low-cost Internet programs, such as the offers from Mobile Citizen and Mobile Beacon, can be unstable. More research is needed to understand budgeting issues and concerns related to people's experiences living in poverty. The FCC and other broadband policymakers should partner with practitioners and researchers in the sociology, community health and psychology, urban studies, and health and human services fields to gain a deeper understanding of how people's everyday experiences living in poverty impact their ability to pay for broadband Internet access.

Connecting Digital Literacy Training with Relevant Content and Services

All of the organizations studied here recognize that digital literacy is key to meaningful broadband adoption, but they took different approaches to ensuring clients have the skills needed to make use of broadband.

Digital literacy is "the ability to use information and communication technologies to find, evaluate, create, and communicate information, requiring both cognitive and technical skills."[35]

Some of the organizations, such as Austin Free-Net and the Multnomah County Library,[36] have been providing digital literacy training to residents in their communities for over twenty years. Digital literacy training was offered by all of the organizations in this study except for PCs for People; that organization recognized there were many other places in the Twin Cities, especially local public libraries, where people could go to gain access to digital literacy training.

Each organization that participated in this study had a unique approach to offering digital literacy training. Some of the organizations held classes, whereas others recognized the benefits of one-to-one, personalized training. The classes included basic computer use, how to use Microsoft Office products, how to use e-mail, and so forth. Figure 1 shows a flyer for a computer skills training offered by Connecting for Good for the deaf, hard of hearing and deaf-blind.
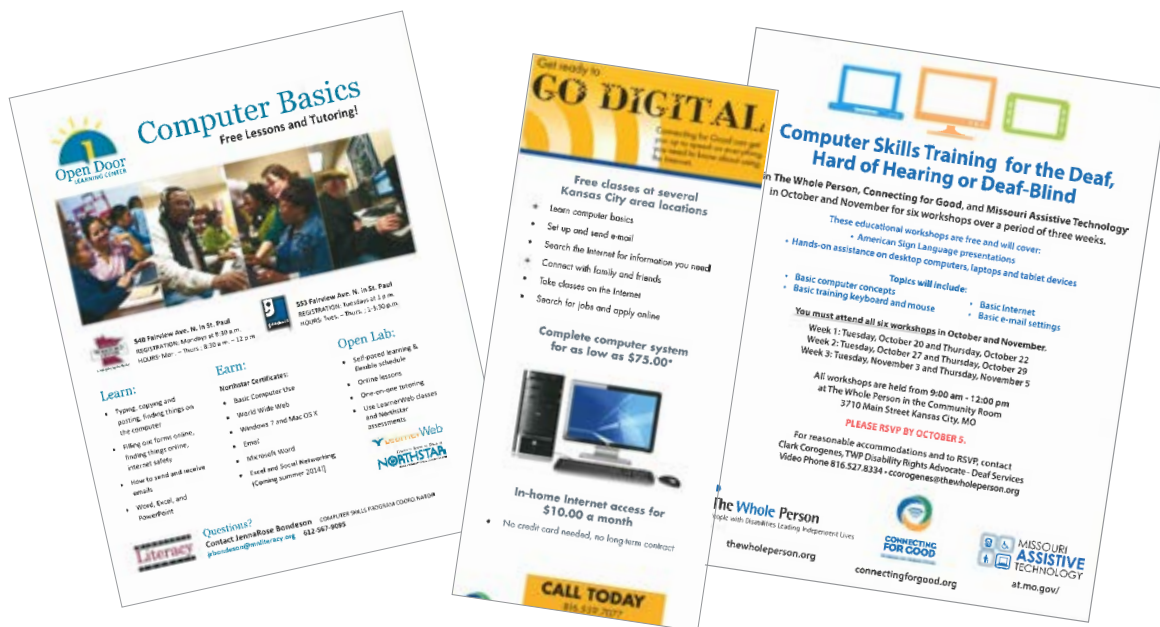

Figure 1. Digital Literacy Training Brochures

One of the surprising findings from this study was that a few of the digital inclusion organizations had completely thrown out structured classes as a digital literacy approach. Computer classes have traditionally been a popular way to provide digital literacy training. More recently, digital inclusion organizations have embraced one-on-one, personalized training approaches for community members in order to be relevant to each person's everyday life experiences, as shown in Figure 2.
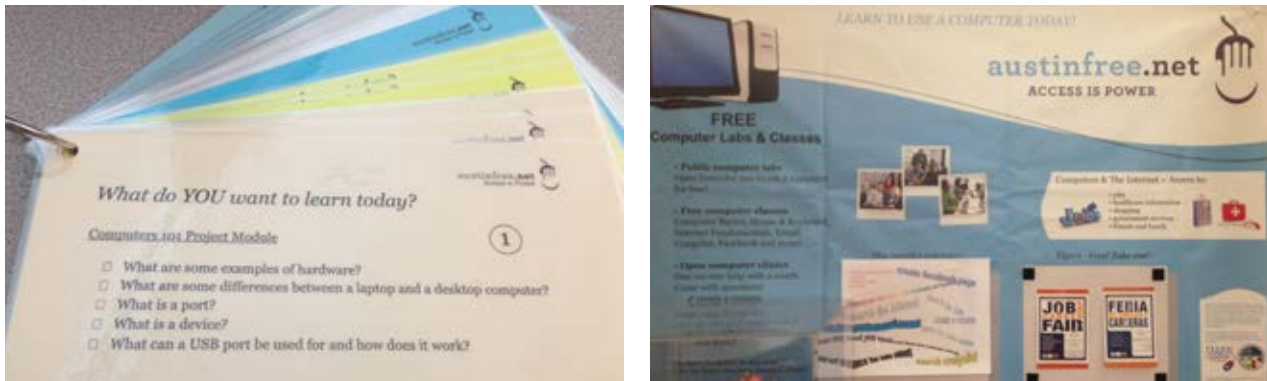

Figure 2. Austin Free-Net's Digital Literacy Materials

Austin Free-Net (AFN) is one organization that has thrown out the classroom approach and embraced one-on-one digital literacy training. As Juanita Budd, Executive Director of AFN, explained,

> "We have trained professionals who can help with training at sites. We partner with roughly 20+ organizations in the community. That includes the city of Austin health and human services neighborhood centers. We have some relationships or partnerships with senior sites. We have partnerships with homeless shelters, and then the very unique thing about us is how we deploy our training.

> "What we found out from our clients is they don't want to sit in a classroom. Most of the people we serve didn't like school then and don't like school now. And so, we're taking a relevancy approach to them. I walk up to a person and say 'Colin, hi, how can I help you today?' You're like, 'I know how to use a computer. I just want to learn how to [put an attachment in] an e-mail.' Then your goal is to learn how to use e-mail. There are steps that we can check off that attach those skills to those steps, and Colin has been successful in our lab. Colin may or may not come back ever again, but we offer the opportunity and what we find out is Colin will probably come back, because he needs something else. Then we can facilitate him into a more structured classroom."

This individualized approach supports findings from the ASR Analytics report on the National Telecommunications and Information Administration's Broadband Technology Opportunities Program, which found that "patrons receiving training, especially training in digital literacy, responded best to tailored courses that addressed specific tasks and goals, rather than general curricula about broadband technology." The report goes on to explain, "Teaching students how to perform specific tasks, such as signing up for a broadband connection or searching for a job online, resulted in greater student motivation and achievement. Curricula should be tailored, as needed, to meet the expectations of the community it serves." [37]

Many digital inclusion organizations provide this individualized training and support. Other organizations,

such as **Axiom Education and Training Center** in rural Maine, have embraced a mobile model of digital literacy training that literally meets students where they are in the community. As Axiom's Director of Education, Jane Blackwood, explained, her organization partners with public libraries and other community-based organizations that provide open hours to the public and also have an broadband connection. That's all that's required.

> "It's the grassroots approach to digital literacy—we bring the classes to the people. Our numbers are high, unusually high for a rural area. If we had held the classes here, we would not have seen the numbers. So take a rural area and what impacts education attainment? It's time, distance, and travel. And when you strip that away, and there's an Excel class going on in your downtown, at your library or town office versus an hour away, you're likely going to take that class. So I think that's what makes us very unique."

Digital literacy is needed and requested by all, regardless of income.

Many community members, when asked about their motivation for coming into the digital inclusion organization, mentioned unemployment. As the marketplace has increased its demand on employees to have digital literacy skills, more people have come to digital inclusion organizations in need of digital literacy training. Community members who participated in this study understood the value of the free training offered by many of the digital inclusion organizations. As one focus group participant at Axiom explained,

> "Well, for me, I think, anybody out there needs to be learning how to use computers and to get a high school degree or get a career going. And you know, the place to come is to Axiom because they really help you and you know, in many, many ways so you can get where you need to go. I mean, you know, computers, go to college, or go to get your high school degree. They help you get to what you need to do so you can get a job. They help with all that."

Most of the digital inclusion organizations that participated in this study serve a significant population of 50- to 64-year-olds through their broadband adoption programs. This is a group that is not yet ready to retire and is in need of additional training and support to adopt broadband. Although home broadband access is increasing for people aged 50 to 64,[38] a significant segment of this population does not have the skills needed to fully participate in our economy. As one focus group participant at **Connecting for Good (CFG)**, a digital inclusion organization in Kansas City, explained,

> "I was also computer illiterate. When I needed a resume for applications, you know, for a job, my children would do it for me. 'Til one day I decided that I needed to learn this for myself. I've taken several computer classes, but when you don't have a computer to work on, you know you lose what you learn. This program has helped me a lot."

Some organizations saw their digital literacy activities as being central to many of their other digital inclusion services. As Michael Liimatta, Cofounder and President of Connecting for Good, explained, "The fact that we sell computers and refurbished computers and the fact that we do provide Wi-Fi and other connectivity options, it's really only so that what people learn from us they can put to work."

It's also important to note that all of the digital inclusion organizations that participated in the study provided digital literacy training to people of all socioeconomic backgrounds. Having a low income is not a requirement for participating in many of the digital literacy training programs that digital inclusion organizations provide. As Susan Corbett of Axiom Technologies explained,

> "Digital literacy is needed and requested by all, regardless of income. I think this is important

as technology has evolved around us and we are all in the same place—the need to learn. This is the message we have tried very hard to convey to communities, business leaders, and the adult learners that we work with. It's okay to admit that you need help; we are all in this together."

Making Low-Cost Computers Available

For many low-income individuals and families, low-cost computers are just as important as having access to low-cost broadband. Half of the organizations that participated in this study recognized that providing low-cost or free computers was a key part of their broader digital inclusion efforts. As part of this work, digital inclusion organizations refurbish computers and resell them at affordable prices for low-income people who often are not able to afford new computers. Recycling old computers is not only good for the environment, but it's also a practical way to assist low-income people to participate more fully in society. For many low-income people, having a computer at home allows them to connect to the Internet, search for and apply to jobs, improve their computer skills, and help their children excel at school and in their daily lives.

Having a computer at home helped individuals and families to practice what they learned in their classes, which also inspired them to take classes to learn more about technology.

As Casey Sorensen, Executive Director of **PCs for People** explained,

> "Our average client is a family of three, usually a single parent and two kids, and they make about $12,000 a year. So they don't have a lot of discretionary money that they can spend on services or products, but they do have some ability to pay. We found that if they provide a little bit of funds for a computer, they will treat it a little bit better. They will spend more time with it if they can make an investment in it, and most of the families that we are working with do want to make investments. They understand that getting a computer is a once-in-every-three-years purchase that they have never been able to do before, and our challenge is how do we make that at a price point that they can afford?"

These computer refurbishing activities can often led to partnerships with schools, city departments, and other community-based organizations, which are described in greater detail in Chapter 2. In introducing low-cost computer programs, Colleen Dixon, Director of Public Services at **Free Geek** in Portland, Oregon, explained,

> "We have two programs: our [computer] adoption program and our [computer] build program. We are primarily giving computers to volunteers in exchange for community service. So volunteers in our adoption program are volunteering twenty-four hours of time with us and then they are getting a computer to take home. And our build program volunteers are building five computers for the community and then the sixth computer they take home for themselves. We also have one additional program that is through the city of Portland. We get their material which they want to go back to residents within the city and particularly youth. In order to do that, we have a program called Plug Into Portland where students, K–12 students in the city of Portland, can get a computer for volunteering twenty-four hours of community service anywhere in the community. They log their service hours and then they fill out an application, send it to us, and we set them up with a computer."

Free Geek and the other low-cost or free computer providers included in this report recognized that providing computers supported their low-cost broadband and digital literacy training activities. The organizations have

seen that having a computer in the home provides more educational opportunities to low-income residents. Community members echoed this in their interviews. They commented on how having a computer at home helped individuals and families to practice what they learned in their classes, which also inspired them to take classes to learn more about technology.

Many community members also mentioned that they were able to access the Internet on their phones, but applying for jobs on a small phone screen can be nearly impossible. Traveling to public computing centers or libraries to use the computers can be frustrating because of the time limits on using the computers. The computer in the home provides them with the necessary tools to be able to address their needs on their own time, while also improving their computer skills for the workplace and personal use. As one low-income single mother at PCs for People explained,

> "It is a big, huge deal to have a computer at home . . . because I was trying to find a job. If I would have had to drive to the library, pay the gas to get there, and spend the time on their computer and get bumped off, it would have changed things for sure."

Some digital inclusion organizations also offer free computer support and repair. This is a vital service for the community members, particularly for those individuals or families that receive a computer for the first time. Although having the necessary computer equipment at home is an essential step toward meaningful broadband adoption, these devices can become unusable if they break or get a virus. These challenges can continue to put low-income people on the wrong side of the digital divide. Digital inclusion organizations explained wanting to do all they can to ensure that low-income people are successful with their devices, including providing computer support and repair.

Many digital inclusion organizations also host public events to give away large numbers of computers to qualifying low-income residents. Diana Rodriguez, Director of Digital Learning and Technology at the **Youth Policy Institute (YPI)** in Los Angeles, describes one such event:

> "It went really well. Actually, I wanna say those were our most successful events where we were able to actually give [a computer and an broadband-enabled device] to somebody, like when people came, they came without computers, came without Internet. They were complete non-adopters. I remember even when I was working that desk how excited some of the people were and just knowing that they were gonna go home and take these computers and Internet devices home to their kids. Some of them said to me, 'I'm so excited. We have never had Internet before. My child is gonna be so excited.'

> "So you know, it was really a wonderful experience. And our first event that we had, it was in Hollywood and East Hollywood, which is one of our target areas. It's a very dense population, low income—I think upwards of 90 percent through that whole area. And I wanna say that we had upwards of 80 people sign up and actually go through the whole process, receive a computer and Internet in just one day."

One of the focus group participants at the Youth Policy Institute described what she saw as the community benefits of low-cost computer distribution programs:

> "Earlier this year, the program offered computers that we could have. And I regret not taking advantage of that situation. But I hope next time if they sell the computers, I will be able to buy one. They come with everything. I wish I had bought one. It was just like it had all the apps. It was totally set up. You didn't have to pay extra for this or that. I regret not having taken advantage of that. So that's another opportunity the program gives to the people also."

Operating Public Access Computing Centers

Public access computing centers, which are often operated by digital inclusion organizations such as public libraries, provide individuals and families with one-on-one, as-needed training. These public computing centers also provide low-income residents with a "sense of comfort" (i.e., safety, trust, support, and respect)[39] that can help them to successfully apply for jobs, check their e-mail, create resumes, and accomplish everyday computer-related tasks. As one of the students at the **Axiom Training and Education Center** explained,

> "Because you need the Internet, like most applications are online. I need to send, you know, a resume through e-mail. I mean, most people don't want to talk to you unless you have either e-mailed them an application and a resume. So people like, you know, low-income people and people that come here [to the public computing center], they need to have access because that's the only way they're gonna make a living."

Many community members who have not yet been able to purchase a computer or broadband service need a space where they can feel comfortable accessing the Internet and can ask questions about technology.

All of the digital inclusion organizations that participated in this study recognize the importance of public access centers. Seven provided their own public access computing facilities.[40] Digital inclusion organizations have found that providing a space in the community where people can come to use computers and broadband—in a place where they feel comfortable and supported—is an important first step toward gaining the confidence needed to take classes or to purchase low-cost broadband service or low-cost computers for their homes. Many community members who have not yet been able to purchase a computer or broadband service need a space where they can feel comfortable accessing the Internet and can ask questions about technology.

Digital inclusion organizations also understand how local community dynamics can influence the types of things that happen in their public computing centers. As John Carmichael, Educational Technology Center Manager at Youth Policy Institute, explained, "Each location has different circumstances and then that dictates how they're focused. . . . Nineteen out of twenty people that walk in are just looking for either a class or just to be able to use the computers." Therefore, digital inclusion programs that focus on providing one-on-one personalized training and support would work well in these types of spaces.

In their study of digital inclusion initiatives in low-income communities, Dailey et al. found that public computing centers are "places where new users can gain experience and confidence using computers without imposing on a family member or otherwise paying in money, time, or favors. They are also places where non-adopters develop the skills for eventual home use." [41] Some of the low-income individuals and families who participated in this study explained that without the public access computing facilities, they would not be able to participate fully in society because they had no other way to access the Internet.

Public libraries serve essential needs in many low-income communities. Libraries are often the only place in a community where people can gain access to computers and the Internet, and many people have described these services as being "very important" to them.[42] Many people who participated in this study reported that they often had to wait in long lines to use a computer at their local public libraries. This is because libraries play an important role in filling "the gap between low home adoption and high demand." [43] It can also be difficult to reserve a time at the library that fits within people's schedules. As one focus group participant at the Youth Policy Institute in Los Angeles explained,

> "At the library it is limited. Like the one here has eight or six computers and when signing in,

there is a long line. But here [YPI] you're looking at twenty to twenty-five computers. At the library, at the most, when I go, is like ten computers. And lots of times, when I sign on I reserve two hours right on the spot because certain times sometimes people come in and you can't get on at all."

Without public access computing facilities, many low-income people would not be able to participate fully in society because they have no other way to access the Internet.

Many low-income people work long hours into the evening and cannot make it to the library or to other public computing centers during regular hours. Other people feel that the limited time on the computer at the library doesn't allow them to complete their desired tasks. Previous studies have shown that "proximity, size, convenience, operating hours, price, comfort, trust, waiting times, usage limits, privacy, and the availability of help all shape perceptions of these spaces and dictate patterns of use." [44] While these are challenges for many under-resourced and overburdened public libraries, the public library continues to be one of the only places in a community where people can gain access to public access computing.

Chapter 2: Networked Model of Meaningful Broadband Adoption

The four-part digital inclusion strategy that has been discussed thus far was identified by all of the organizations as being essential to their efforts to promote what has been described in previous studies as "meaningful broadband adoption." [45] This concept assumes that digital inclusion activities are offered to low-income residents within a broader ecology of support. This support includes connections with other local institutions, such as schools, healthcare providers, libraries, local government departments and agencies, as well as other community-based organizations and ISPs. In this chapter, examples of partnerships and collaborations are showcased to elaborate on how the services provided by digital inclusion organizations are often aligned with broader social issues and public policy goals.

This ecological perspective assumes that the goal of digital inclusion efforts—or what is described in this report as meaningful broadband adoption—situates home broadband use "within the larger array of communication networks and resources in people's lives and in relation to the different competencies required to use them effectively." [46] Therefore, insights and perspectives from the digital inclusion organizations' partners and collaborators are provided to present a more robust picture of how the digital inclusion activities described in Chapter 1 promote meaningful broadband adoption. This is also important for understanding how to approach measurement of the outcomes and impacts of these digital inclusion initiatives.

To highlight this ecological perspective, this chapter underscores two aspects of this approach: (1) the role of community partners in digital inclusion initiatives, and (2) the role of digital inclusion organizations within broader citywide and regional digital inclusion initiatives. The first aspect includes other institutions, organizations, and individuals often critical to the success of providing low-cost broadband service, digital literacy training, low-cost computers, and public access computing initiatives. The second focuses more specifically on how these disparate community assets come together in citywide and regional digital inclusion initiatives that can help promote meaningful broadband adoption.
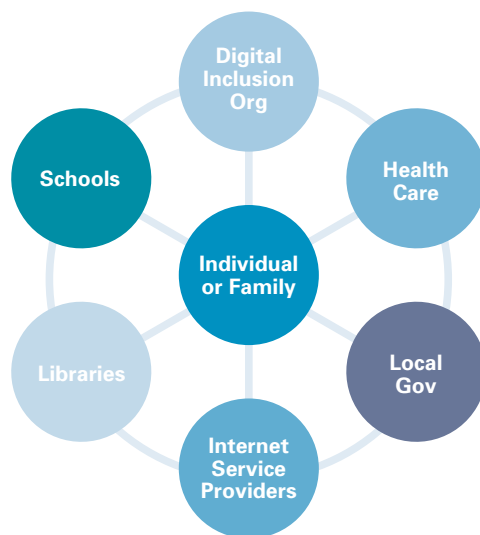
Figure 3 shows how the meaningful broadband adoption model places an individual or family at the center of digital inclusion efforts. The individual or family, through their connection to the digital inclusion organization, is then supported by other community partners that in some cases also provide digital inclusion services. As the figure shows, digital inclusion organizations often rely on schools, healthcare providers, public libraries, local governments, social service agencies, other community-based organizations, and ISPs as part of this networked model of adoption.

Figure 3. Networked Model of Meaningful Broadband Adoption

This model is presented as context for the following stories that were provided by the digital inclusion organizations in this study about the important roles that their community partners and collaborators play in increasing meaningful broadband adoption in their communities.

The Role of Community Partners

Partnering with Schools to Improve Educational Outcomes

Many of the digital inclusion organizations that participated in this study reported having strong relationships with individual schools and local school systems because they see schools as logical partners in addressing the digital divide. For example, in Los Angeles, the **Youth Policy Institute** has had strong relationships with local schools, parents, and teachers for many years. YPI's Diana Rodriguez describes the "School to Home" program:

> "Students have the [broadband] devices with them throughout the school day. They also are able to take them home with them and use them at home and they're meant to be a family device. And so basically what we do is that we work with the school to implement this program and the main components are, of course, the devices and the management of the devices. Each parent is required to go through at least six hours of training with us before the child can even take the device home. So it's kind of like a big force right at the beginning of the school year so that we can get these devices into kids' hands and they can take them home, and teachers can be sure to be able to incorporate technology into their lesson plans.

> "We also work with teachers and provide them professional development in a big group setting as well as a one-to-one more intensive coaching so that they're able to not only take in information about what's possible but also kind of turn it into something that they could actually do . . . like actionable things that they can do to change their lesson plans or tools they can use to implement in their classroom."

Partnering with Healthcare Providers to Improve Community Health Outcomes

Health and human services are evidence of the technical and social supports that digital inclusion organizations provide to help people gain comfort and feel supported in their lives. Access to health information and health-related programs has also been a focus for public libraries and community technology centers interested in bridging the digital divide. More recently, as medical records are going online, people in low-income communities need accessible, affordable, and reliable high-speed Internet service to access their health information. Many of the digital inclusion organizations that participated in this study see the important role they play in providing not only low-cost computers and broadband, but also public access computing. Organizations are helping low-income people receive support in accessing their medical records online, as well as in gaining the digital literacy skills needed to successfully search, retrieve, and store health information in a safe and secure fashion.

In Cleveland, the **Ashbury Senior Computer Community Center** (ASC3) is playing an important role as a digital inclusion organization that assists low-income residents in gaining access to health records online. The ASC3 won a grant from the CareSource Foundation to work with Connect Your Community 2.0 and the Center for Health Research and Policy (CHRP) on a new initiative to help low-income health consumers become effective users of the MyChart patient health application. The pilot project involves up

to fifty low-income health consumers in several Cleveland neighborhoods in the first half of 2015. ASC3 has also received $20,000 from the Cleveland Foundation/Time Warner Fund to continue computer training classes.[47]

Partnering with Social Service Agencies to Fight Homelessness

Austin Free-Net in Texas has had a long-standing partnership with a local homeless shelter to provide basic access to computers and digital literacy training to assist homeless individuals with finding employment and places to live. Juanita Budd, Executive Director of Austin Free-Net, explains how their partnership with a social service agency allows Austin Free-Net's digital literacy instructors to take training directly to those most in need:

> "They are in a building called the Arch on Seventh Street…They house a lot of services that support the homeless. So we're just one of the partner agencies in that, but the great thing about that relationship is, you know, we include each other in grant opportunities, because they realize that the Internet is the new utility. You know, it used to be electricity, it used to be water, now it's Internet. So they see that value, and we have two labs in that space because it's so critical. We also work with Trinity [Center]. We provide computers there and when we don't have a staff person at a particular location, our responsibility is to ensure that those devices are up and running that they . . . if they have a problem they contact us and we go out there and provide those services so we're still monitoring roughly 200 computers out in the community through our one tech guy and some interns, when we are fortunate to have them."

Partnering with Public Libraries to Create More Informed Communities

Only one of the eight organizations that participated in this study was a public library—the **Multnomah County Library** in Portland, Oregon. All of the other organizations that participated in this study understood the value of public libraries as trusted community institutions where people can gain access to computers and the Internet. Therefore, most organizations reported either having informal or formal relationships with their local libraries. This includes, at the very least, having promotional information about the libraries' digital inclusion programs to inform residents that the local library might offer services that the organization does not provide, such as public access computing or digital literacy training. Figure 4 is a flyer provided by PCs for People that points people to the Borrow the Internet program at the St. Paul Public Library, among other low-cost Internet options.
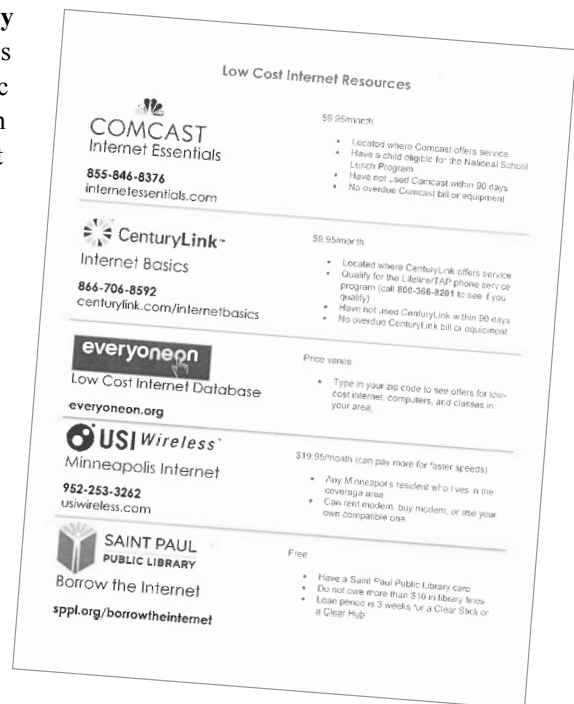

Figure 4. PCs for People's Internet Resources Flyer

In other cases, public libraries were a key partner with other non-library organizations in carrying out digital inclusion activities. For example, the **Axiom Education and Training Center** described its partnership with the Maine State Library Association on a Broadband Technology Opportunities Program (BTOP) grant. The Axiom Education and Training Center continues to have strong partnerships with local libraries in Washington County as part of its mobile digital literacy training activities to promote meaningful broadband adoption.

Jane Blackwood, Axiom's Educational Director, describes the importance of libraries in Washington County to their digital inclusion activities in rural Maine:

> "So they're community-minded, obviously. They're education focused. They have—all have— at least a 10 mbps Internet connection that has Wi-Fi that is available to the public. They are constantly adding to their programs. The programs that are coming out of libraries and are drawing people in are increasing traffic into the libraries. So offering classes there was exciting to them because it brought more people in. One of the librarians sat in on all the classes, so perhaps they could help their patrons that came in at other times. So it just married really well and was very supported by the state librarian…

> "They have a Technology Petting Zoo that they bring from Augusta to tour around the county. We can bring the zoo to our local libraries so that people know that it's not just going in and taking out a book anymore. It's a community center."

These examples support previous studies that have shown that public libraries, along with the other types of digital inclusion organizations included in this study, "fill the gap between low home adoption and high community demand." [48]

Partnering with Local Governments and City Agencies to Increase Broadband Adoption

Many of the digital inclusion organizations that participated in this study reported having positive working relationships with a number of local government officials and agencies. Each organization reported having varying levels of engagement with, and support from, their local governments. However, most organizations explained that their local officials and agencies understood that their organizations were playing a vital role in the community, whether or not that understanding was expressed in the form of financial support.

In Kansas City, Michael Liimatta for **Connecting for Good** reported having a strong relationship with the Kansas City, Kansas, housing authority director, Thomas M. Scott:

> "Connecting for Good was able to come in and do some installation of some equipment that was funded and provided to about 200 residents in the oldest public housing unit in the state of Kansas. And probably serving a community that has less than $10,000 a year per household income. Following that beginning of that relationship, we had the opportunity to purchase a building…that was a menace to the community because it was being used as a motorcycle club after hours. We were able to find funds to purchase that and, as a product of the relationship with Connecting for Good, [the housing authority] came into that building and opened up a training center and a refurbishing lab that is open to the entire—we wanted this open—to the entire community.

> "I absolutely believe it's an excellent relationship. We're both service-oriented. We're here to serve the community. We're not looking at the dollars and cents involved with the program.

Course we're both trying to meet our budget to stay functional, but it's not about dollars and cents. It's about service. It's about providing the necessary service that should be available for everyone just like a normal utility."

The partnership with the housing authority provided Connecting for Good with many benefits, including facilitating the buildings where Connecting for Good now provides its digital inclusion services in neighborhoods most impacted by poverty. As a result, Connecting for Good has been able to develop relationships with families and staff working in the public housing developments, including Juniper Gardens, Wyandotte Towers, and Welborn Villa.[49]

Austin Free-Net has had a unique relationship with the City of Austin since its inception. Austin Free-Net is financially supported by the city to provide training solutions for government agencies, and it is also located in one of the city's local buildings. In addition, the City of Austin sees Austin Free-Net as a key partner in the city's digital inclusion efforts, which are described in greater detail in the next section. In fact, Austin Free-Net was one of the founding initiatives of the City of Austin in the early days after the city launched its website, as John Speirs, Program Coordinator for the City of Austin "Grant for Technology Opportunities Program," [50] explained:

> "I work in our city's Digital Inclusion Initiative, which is located within the Telecommunications and Regulatory Affairs Office. The genesis of our program and our initiative really started with the cable franchises the city used to be able to negotiate with the cable providers in Austin. Basically the start of digital inclusion was an effort in the mid-90s . . . when we negotiated the ability to conduct residential technology surveys based on who had cable service, who did not, and potential barriers for access. So that was interesting for us to include within our cable franchise agreements. With the launch of the city's website in 1995 came a need to equip residents with the technological know-how to utilize such a medium. So that is where the seed funding for the Austin Free-Net nonprofit came from was from the website. That is where this has all spawned from within our office."

Partnering with Local Governments and Recycling Companies to Protect the Environment

All of the digital inclusion organizations that provided low-cost or free computers were part of broader computer recycling and environmental sustainability networks to help make sure that the computers and other digital devices were ethically processed. The low-cost or free computer activities exposed very broad, complex, and often international networks of partners to assist the local digital inclusion organizations in contributing positively to the health of the environment. Often, local and state government officials looked upon these activities in a positive way.

Diana Rodriguez, Youth Policy Institute's Director of Digital Learning and Technology talked about her organization's relationship with the mayor's office, which was in support of YPI's computer recycling program. She explained that Mayor Eric Garcetti is passionate about furthering technology and closing the digital divide in L.A.

During my conversation at **Free Geek**, Colleen Dixon described their local partnerships to promote environmental sustainability, which includes the City of Portland and a number of companies:

> "Our preference is to get things from those folks for a higher reuse rate. When we get hardware from individuals, we have around a 25 percent reuse rate on average; when we get things from government and business we have around a 75 percent reuse rate."

Partnering with Companies to Provide Low-Cost Broadband Options

As is indicated in the digital inclusion activities matrix above in Table 1, more than half of all digital inclusion organizations that participated in this study either worked as low-cost Internet resellers or focused a part of their efforts on helping low-income residents gain access to low-cost or free Internet solutions. Most digital inclusion organizations recognized the need to engage with ISPs in order to have needed information about low-cost Internet options to share with residents who benefited from their other service offerings (i.e., digital literacy training, low-cost computers, and public access computing). As **Youth Policy Institute's** Diana Rodriguez explained

> "I think that we took some of the more conventional routes when we first got going on [broadband] adoption initiatives. So what that, to me, meant was that we were going and approaching Internet service providers on a pretty consistent basis, trying to engage them so that they can help us out with our outcomes and we, in turn, could then get them some subscribers."

Digital inclusion organizations mentioned their interactions with AT&T, Comcast, Google Fiber, Mobile Beacon, Mobilize Citizen, Sprint, and Time Warner in their digital inclusion efforts. And, again, although many of the digital inclusion organizations did not focus on providing Internet access as a community broadband provider, they did recognize that engaging with ISPs on some level is essential to their broader digital inclusion efforts. In other words, low-cost Internet access was often at the core of all of their other digital inclusion activities. Although partnership may not always be the most appropriate term in describing the relationships between digital inclusion organizations and ISPs, however, most digital inclusion organizations recognized that connecting with ISPs on some level – whether that includes obtaining flyers about low-cost broadband options to share with low-income residents or reselling broadband service through Mobile Citizen or Mobile Beacon – was an important part of their work whenever possible.

Citywide and Regional Initiatives

One of the ancillary findings from the study was the number of citywide and regional digital inclusion initiatives that were found in larger cities, such as Kansas City,[51] Austin,[52] Portland,[53] and Minneapolis.[54] Many of the organizations that participated in this study described their work as part of these broader citywide and regional digital inclusion initiatives. For example, Figure 5 [55] shows how and where Connecting for Good is situated within the Kansas City Coalition for Digital Inclusion. Connecting for Good is seen in this image as one of several organizations that are part of a broader network of digital inclusion organizations, which includes many different public and private partners.
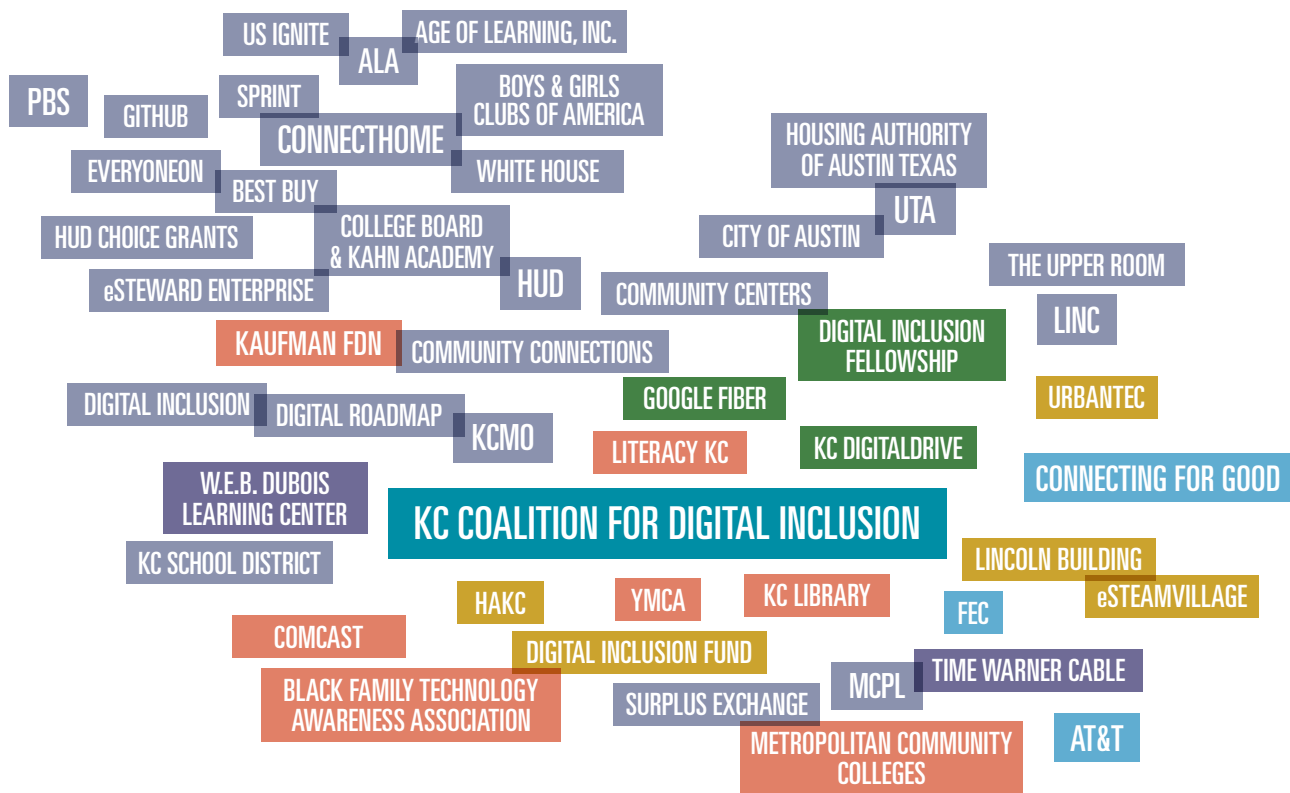
Figure 5. Connecting for Good in the KC Digital Inclusion Ecosystem

Some of the citywide and regional initiatives that were discovered in this study emerged as a result of the National Telecommunications and Information Adminstration's BTOP.[56] Two regional coalitions in Kansas City and Portland emerged more recently in response to Google Fiber. Yet others, such as in Seattle, have been ongoing since the mid-1990s, with public libraries, city departments, and community technology centers all at the forefront of these efforts. Cindy Gibbon, Senior Library Manager/Access and IT Services at **Multnomah County Library**, explained their leadership role in recent digital inclusion activities in Portland:

> "I personally think that this fits very much into the role that libraries can and should take in their communities going forward. This library has long understood the need to be at the table, whether it is at the table around early childhood education and promoting early literacy or being at the table around digital inclusion. We have understood for a long time that the library needed to be at the table to help set the agenda in the community for how we provide the services that people need. So I think that is only going to increase in the future, you know, having the library working outside of its walls is really important. One of the challenges, though, I would have to say, is that I don't think a lot of people necessarily know about all that this library does outside of the walls of our buildings, and I think that is also the case for many other libraries, as well. There is a lot more going on than I think we necessarily always do a good job of making the whole community aware of."

Some of the organizations that were involved in BTOP explained that their networks grew as a result of their participation. Simultaneously, these same organizations have faced a challenge to sustain the funding

needed to support their digital inclusion efforts, particularly because the BTOP financial assistance is not there anymore. In some cases, the number of partners participating in regional digital inclusion initiatives continued to grow after the BTOP, even though funding for the activities did not continue at the same level.

All of the organizations in this study recognized the importance of broader efforts and indicated the strength in coming together with other community partners and collaborators to support digital inclusion activities and share best practices.

The citywide and regional digital inclusion initiatives were certainly not the focus of this study. However, many of the organizations that participated in the study did share their experiences participating in these initiatives. All of the organizations recognized the importance of these broader efforts and indicated the strength in coming together with other community partners and collaborators to support digital inclusion activities and share best practices. One of the surprising findings from the study was the need for outcomes-based evaluation frameworks at both the organizational and citywide/regional levels. This remains a need in many of the organizations studied.

Sustainability

As the previous findings show, digital inclusion organizations are highly valued by individuals and families both within and outside low-income communities, as indicated in previous studies and supported by the examples discussed herein. Unfortunately, most organizations that participated in this study expressed a concern that funding for their efforts is limited. While BTOP was an incredible opportunity for organizations to grow, many were forced to shut down their public computing centers and other digital inclusion activities after BTOP ended. The ASR Analytics final evaluation reported that there was a lack of funding sources to continue operations after the grant period.[57]

Whether it's providing health information access and literacy services or serving as community-based broadband service providers, digital inclusion organizations are thinking innovatively about how they can continue to fulfill their vital roles in supporting digital inclusion and meaningful broadband adoption, while beginning to connect their work to broader social issues and shared community concerns. However, many digital inclusion organizations have more work to do in order to show how their efforts support broader policy goals.

Chapter 3: Evaluating Digital Inclusion and Meaningful Broadband Adoption

This study found that most of the digital inclusion organizations that participated did not have an outcomes-based evaluation framework. However, all recognized the importance of having one. Some of the administrators highlighted challenges in putting together a generalized evaluation framework, particularly when funders often determined the different directions of their digital inclusion programs and activities. Other organizations and community partners identified the lack of time, resources, and expertise needed to develop an outcomes-based evaluation framework.

Some organizations were further along than other organizations in evaluating their digital inclusion programs. These organizations either were larger, with internal researchers on staff who could focus on program evaluation, or they received support to specifically focus on outcomes-based evaluation. The organizations with smaller budgets and resources were more often the ones without such evaluation frameworks. All organizations recognized the need for more examples of digital inclusion evaluation frameworks that would be beneficial not only for the organizations themselves, but also to articulate the value and impact that the suite of digital inclusion services provided citywide or regionally.

What is Outcomes-Based Evaluation?

Outcomes-based evaluation often includes a logic model, as an evaluation and communication tool, to help organizations show funders the theory of change underlying their work. Logic models are not only useful for communicating the goals of their programs to funders, they also provide organizations with a method for evaluating and adjusting their work to make sure their efforts are achieving their intended goals.

As the Figure 6 shows, logic models include the following elements: inputs, activities, outputs, outcomes, and impacts. There are many different ways to design logic models. The ultimate goal of the logic model is to provide a linear visualization to help funders and key stakeholders understand the program flow.

INPUTS → ACTIVITIES → OUTPUTS → OUTCOMES → IMPACTS

Figure 6. Logic Model

Many organizations have pushed back against the use of logic models because they fail to embrace the holistic nature of programs that are not easily articulated through linear, step-by-step models.[58] Even in light of these shortcomings, researchers and policymakers have recognized the value of these tools, and this report assumes that logic models can be useful for digital inclusion organizations.

Focused on Outputs

Tracking low-cost broadband

Most of the digital inclusion organizations that participated in this study reported that it was easier for them to count outputs than to show how their activities lead to certain outcomes. Surveys were the most common method used by digital inclusion organizations to gather data on low-cost broadband. For example, Wanda Davis, **Ashbury Senior Community Computer Center's** Executive Director in Cleveland, Ohio, explained that her organization uses surveys to measure home broadband access.

> "Whenever anyone comes in we always do a pre-survey and the only [people] we can measure are pretty much our own clients that also go through [digital literacy] training. We do a pre-survey to see where they are, if they have home Internet. Then after they go through an 8-week training, when we ask the question to those that don't have service, that is where we will intervene and ask them if they are interested in having service. Then we help them to get low-cost [broadband] service."

Wanda also explained that the organization uses PayPal, which allows community members to renew their low-cost broadband subscriptions online. This tool provides Wanda's organization with another method to keep track of people who renew their service online and to gain a deeper understanding of home broadband adoption rates over time.

When asked about evaluation, Casey Sorenson, the Executive Director of **PCs for People** in Minnesota, shared stories about the positive impacts of low-cost broadband on the lives of people in the Twin Cities. PCs for People knows it is making a difference because of the evaluation tools it is using. Sorensen explained that his organization puts a homepage on every computer it distributes, which allows PCs for People to understand how people are using their low-cost broadband and low-cost computers. The homepages do not track what people do with their computers and broadband access at home. Rather, there is a survey on the homepage that asks users to provide their own feedback on how the low-cost broadband and low-cost computers have made a difference in their lives.

> "There are surveys that show us that 90% of the families get and keep high-speed Internet; that 70% were unemployed when they came to our program…[The homepage] is currently used by 14,000 people so we know. It is only put on the computers we refurbish. So we know these computers are being used. They are online. They are getting used daily in homes. It is not something that is sitting as a paperweight. Through different surveys we know those usage statistics. We know the impact that it has had on finding jobs and education."

Although PCs for People has data to support stories about the organization's impact on the community, Sorensen explained that PCs for People had not yet developed an outcomes-based evaluation framework. He and other staff members at PCs for People recognized the importance of such evaluation frameworks and hope to develop the frameworks in the future.

Tracking digital literacy training

Connecting for Good is evaluating the effectiveness of its digital literacy programs using the Northstar Digital Literacy Project software, which is a performance-based evaluation system. The system gives individuals the ability to learn digital literacy skills at their own pace and to receive certificates of completion after finishing online tutorials, such as Basic Computer Use, Internet, Windows Operating System, Mac OS, Email, Microsoft Word, Social Media, Microsoft Excel, and Microsoft PowerPoint.[59] While the system is helpful for individuals interested in learning new skills and documenting their achievements, the evaluation system focuses more on data that can show program outputs.

Michael Liimatta of Connecting for Good explained how his organization's focus on program outputs might be appropriate, because the organization is focused on bridging the digital divide.

> "So those [certificates] are concrete performance-based evaluations. But that maybe [refers to] those who stick around and go deeper .…I don't know if it's a good evaluation method. Because it's really just outputs rather than outcomes. And that is: everybody we get online for the first time is how we evaluate. And, if we can get more people online for the first time than last year, then we had astounding success. And, I personally don't feel like I have to go any deeper than that. To say, 'We had 2,106 people attend 244 classes at 10 inner-city neighborhoods'…their lives have changed, just because of that."

In rural Maine, the **Axiom Training and Education Center** has instructors who teach digital literacy classes and offer local residents with one-on-one support at their public access computing center in downtown Machias. Jane Blackwood is Axiom's Director of Educational Services. She explained that their approach to digital literacy evaluation is a work in progress.

> "At present we use a survey, in paper form and on Survey Monkey, to help assess a student's needs. We also continually evaluate during instruction through questioning and activities. We keep a record of who moves from beginner/basic levels to intermediate or advanced levels. Since we keep class sizes small, many conversations and interactions occur between students and instructors."

Susan Corbett, Axiom's Executive Director, explained that its digital literacy training initiatives are often focused on economic development outcomes, which often requires years of data to effectively measure the impact.

> "What we're doing is we're educating a work force. Education of work force happens in many ways. If you're taking a Facebook class, for instance, that might be the carrot that got you to a class to learn about a computer. Now that you're more familiar and savvy, how does that affect your work performance? And, so, those are the things that we can't measure, but I think eventually could be measured. So we have the outcomes, I can see how many classes and all of those different things and all the nice things everybody says. But if you look at even yourself and some of your skill sets as you've learned new things, you start climbing the ladder right? And, so, those are the things that, I think, are very hard to measure. Important, but hard to measure."

Tracking low-cost computers

Many digital inclusion organizations that distribute low-cost and free computers put stickers on the computers before they go out to new users. These stickers include barcodes, which allow the organizations

to track the lifecycle of the computers and they are useful for the technicians when the computers come back in for service. This tracking system provides an effective method to measure outputs, but it provides less information about how the computers contribute to broader outcomes, such as educational attainment and workforce development, for those who receive low-cost and free computers.

When asked about outcomes-based evaluation, Colleen Dixon, **Free Geek's** Director of Public Services, described how her organization keeps track of its low-cost computer distributions. It collects data by tracking IDs of the computers it receives, sells, and gives away. Dixon made it clear that counting is one of the best measures of evaluation for the organization.

> "In order to [provide grant-funded services] we need to be collecting data on who we serve, but it's not what we're good at. We collect a lot of data on what went in, what went out, what we gave away. I do think that's a good measure. I think one of the best measures of evaluation is what came in and what came back."

Although Dixon recognized the usefulness of tracking such data, she also noted that these data do not always show the true outcomes as direct results of the organization's activities. Dixon also noted that Free Geek is hoping to develop an outcomes-based evaluation framework to build upon its other internal and external assessment frameworks already in use.

Tracking public access computing

For many years, **Austin Free-Net** has measured public access to computers at its computing centers. The instructors at Austin Free-Net have been the primary people responsible for inputting the data -- such as numbers of computer users and digital literacy trainings -- into an Excel spreadsheet. As Austin Free-Net's Executive Director, Juanita Budd explained

> "Everybody was plugging into this document, not our partner agencies, but the staff was responsible for getting that information in there. We were measuring access and it is public access. People walking into the lab, how many people were using our computers, and how many times did this mouse move...Then we were measuring digital literacy training: the number of classes we had; the number of students; what types of classes were our clients providing; and was it a computer basis, and employment, adult education…"

This description offers a window into the types of metrics that digital inclusion organizations use in operating and evaluating their public access computing facilities. Budd also explained that Austin Free-Net has recently begun to move away from Excel spreadsheets to track outputs and toward a more sophisticated online evaluation system to connect their program outputs to outcomes.

Heading Toward Outcomes

As the evaluation portrait above begins to reveal, most digital inclusion organizations that participated in this study only had the tools and methods to measure outputs. However, most organizations recognized that more work and support within their organizations were needed to successfully move to an outcomes-based evaluation strategy. In this section, some of the more developed outcomes-based evaluation approaches are highlighted, not to discredit other approaches already mentioned, but rather to offer examples of where evaluation directions in the field might be heading.

Emergent Approaches

The **Multnomah County Library** is currently using an evaluation card, which it gives to their community members to help the library evaluate the effectiveness of their programs. The evaluation card (see Figure 7) asks questions, such as, "At this program I/we: had fun, met new people, felt connected to the community, learned something new, was/were inspired to learn more." The card can be used as a pre- and post-survey tool for outcomes-based evaluation. As Amy Honisett, Multnomah County Library's Public Training Librarian, described

> "We do have this evaluation card…we are able to see the impact that we are having and also anecdotal evidence. You know, a lot of people do fill this out. That is one of the ways…We are always looking at reworking this card, asking some more focused questions, but I can say it really is helpful and it does really show impact."
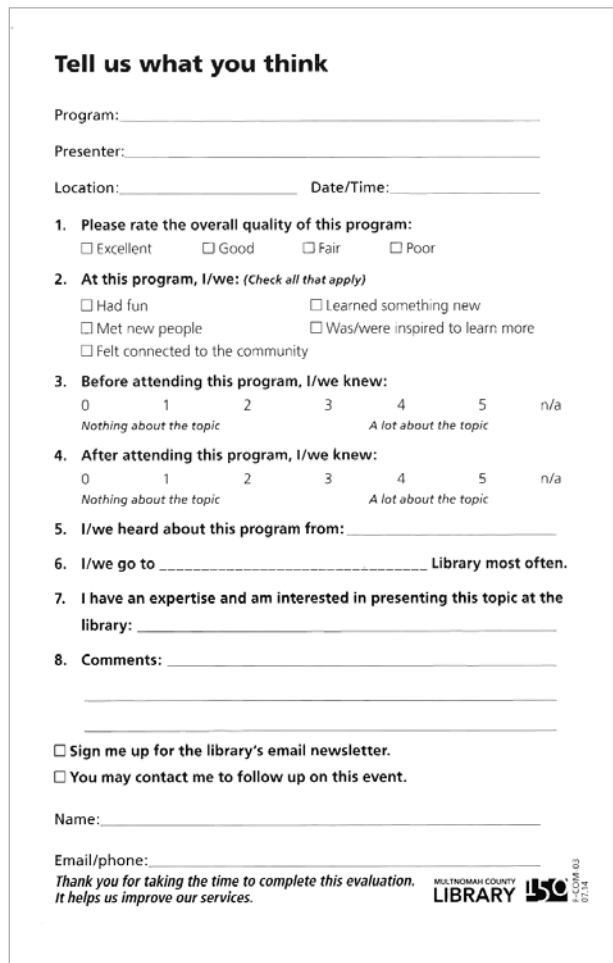
The Multnomah County Library has an internal data analyst who is helping the library to develop additional outcomes-based surveys. Cindy Gibbon, the Library's Access and Information Services Director, explains

> "We have been involved in project outcomes. Steve Casburn, who is our data analyst, is on a committee that has been working on that for a while now developing these kinds of measures. Amy [Honisett] has been testing some of the project outcome surveys, and we are definitely looking to do more work around outcome measurement."

The Multnomah County Library is also thinking deeply about how to evaluate digital inclusion initiatives on citywide and regional levels, which can be a challenge for evaluating efforts across multiple and diverse community-based organizations. Gibbon described how the library is working closely with the city and county to implement and evaluate a digital inclusion strategic plan:

Figure 7. Multnomah County Library Evaluation Card

> "I think it is pretty early days for the digital inclusion network at this point. We are in the process of developing the strategic plan. We are about to go into a series of three meetings with stakeholders around the county…As we develop that strategic plan, one of the obvious things that has to be a part of this work is the evaluation piece: what are we trained to accomplish and how are we going to know if we got there."

In Austin, Texas, **Austin Free-Net** has implemented an outcomes management system to connect their activities and outputs to broader outcomes and impacts. Juanita Budd explained that her organization is

using Apricot, which is an outcomes management software platform.[60] Austin Free-Net has 32 partner sites that were previously plugging information from their public access computing centers separately into an Excel document, which actually made the document ineffective for recording relevant numbers for the organization.

Austin Free-Net then began to develop the Apricot program. The program was self-configured by the staff of Austin Free-Net. It took about a year for them to develop the platform, which has delayed them a year in getting to do outcome-based evaluation. Austin Free-Net has the tools to begin to do outcome-based evaluation, but did not have a readily available outcomes-based evaluation framework. It is hoping that Apricot will help the organization to develop a logic model and their data will then tell the true story of what it has been doing for many years.

Developed Frameworks

The **Youth Policy Institute** was the only digital inclusion organization in this study that was able to provide an outcomes-based evaluation framework. For example, Figure 6 shows the theory of change behind its broadband adoption activities. The logic model clearly shows how the resources (e.g., "public computing centers" and "grant funding") and the program activities (e.g., "offer computer classes" and "distribute free/low-cost refurbished computers") lead to the primary outputs (i.e., "residents adopt Internet at home") and secondary outputs (e.g., "residents are aware of low-cost Internet in their area"). The logic model also shows who the participants are and what the short-, mid- and long-term outcomes are expected to be.

Figure 8. Youth Policy Institute Home Internet Adoption Logic Model

Diana Rodriguez, Youth Policy Institute's Director of Digital Learning and Technology, explained that her organization utilizes pre- and post-surveys to collect data on whether or not the parents, who c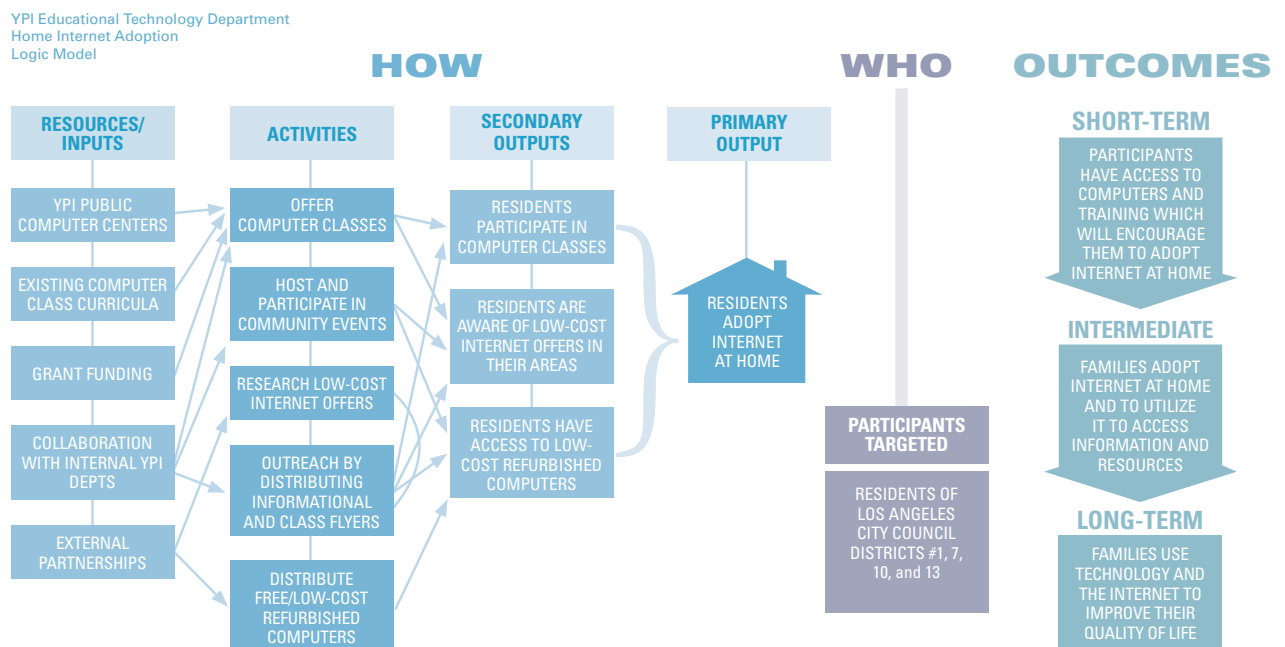ome in for low-cost computers and digital literacy training, have access to the Internet at home and how often they use their computers at home. These surveys help the Youth Policy Institute to understand the impacts of its activities on rates of home broadband adoption.

> "In the first couple of years what we saw was around a 70 percent adoption rate at the beginning of the school year and, by the end of the school year, we were seeing more like an 80, 87 to 90 percent adoption rate….So that's what I felt was pretty significant and that was just basically because we were providing the advice."

Although the Youth Policy Institute does have an outcomes-based evaluation framework and the tools to measure the effectiveness of their programs, Rodriguez also noted that she still finds it challenging to connect outputs to broader social and economic outcomes.

> "This is one of the reasons that I really wanted to join this study, to contribute to the study, and reap the benefits of reading the results of your study. I think that the most difficult part about the digital inclusion work is trying to tie it to some sort of like real tangible outcome. Right? That's the most difficult part of this work."

There are several outcomes-based evaluation frameworks that have been in use and proposed over the years that may be helpful to digital inclusion organizations and their partners for measuring the impact of their work and to align their efforts with broader policy goals. For example, the Open Technology Institute (OTI)[61] at New America released its evaluation tools for measuring meaningful broadband adoption.[62] EveryoneOn, a nonprofit that works to connect people to low-cost Internet options,[63] worked with OTI to develop an evaluation framework for their program:

> "We have tailored this rubric to emphasize outcomes-oriented indicators related to "meaningful broadband adoption," a framework developed by OTI that takes into account contextual and historical social factors impacting digital choices. Metrics designed to understand meaningful broadband adoption thus measure not only progress towards achieving broader subscription rates among traditionally underserved and demographically likely non-adopters, but also a more holistic picture of comfort with digital tools and the availability, effectiveness, and impact of support and training resources."

The guide is expansive in that, in addition to the metrics and evaluation tools, it provides "guidelines for best practices with regard to ethical data collection, management, and protection as well as user-informed consent to participation in evaluation and research."
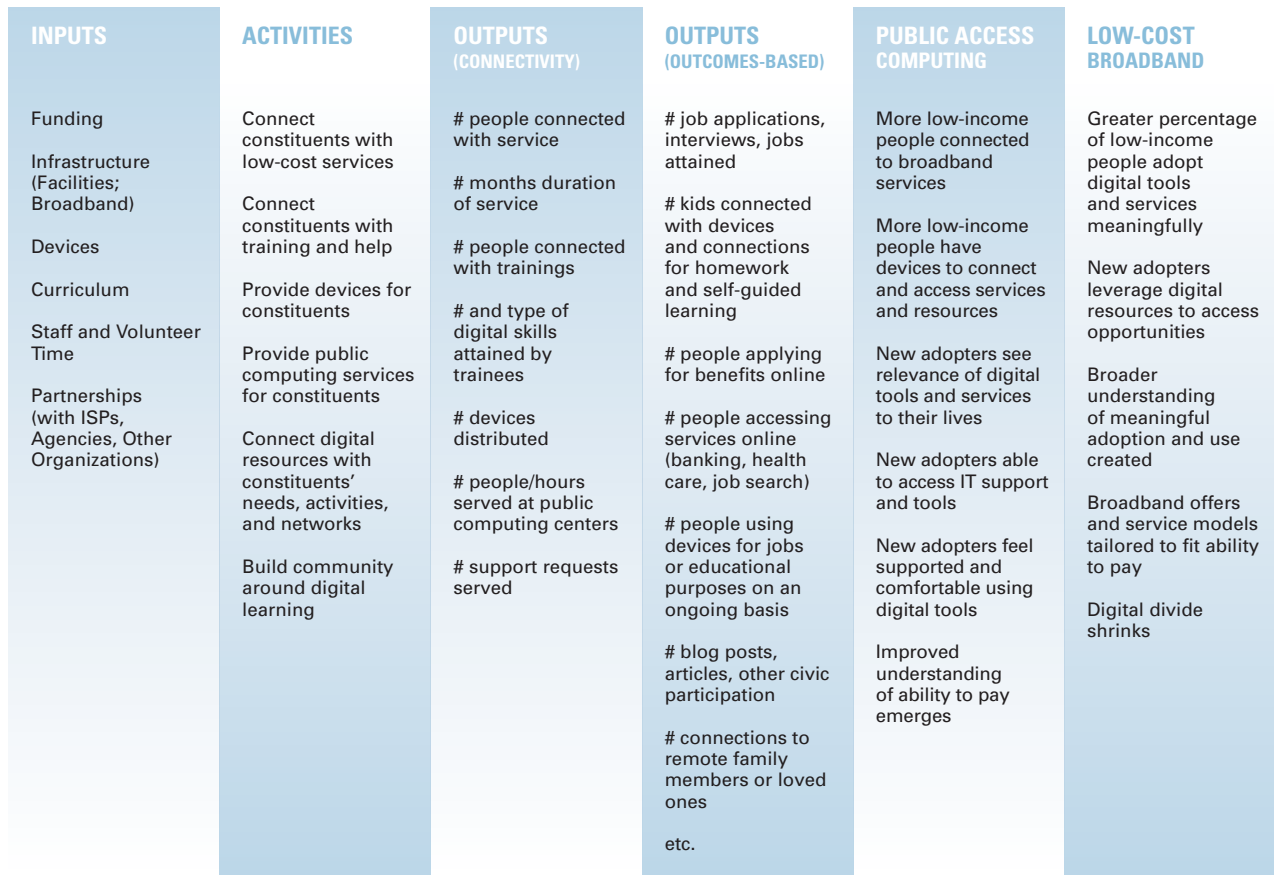
INPUTS	ACTIVITIES	OUTPUTS (CONNECTIVITY)	OUTPUTS (OUTCOMES-BASED)	PUBLIC ACCESS COMPUTING	LOW-COST BROADBAND
Funding	Connect constituents with low-cost services	# people connected with service	# job applications, interviews, jobs attained	More low-income people connected to broadband services	Greater percentage of low-income people adopt digital tools and services meaningfully
Infrastructure (Facilities; Broadband)	Connect constituents with training and help	# months duration of service	# kids connected with devices and connections for homework and self-guided learning	More low-income people have devices to connect and access services and resources	New adopters leverage digital resources to access opportunities
Devices	Provide devices for constituents	# people connected with trainings	# people applying for benefits online	New adopters see relevance of digital tools and services to their lives	Broader understanding of meaningful adoption and use created
Curriculum	Provide public computing services for constituents	# and type of digital skills attained by trainees	# people accessing services online (banking, health care, job search)	New adopters able to access IT support and tools	Broadband offers and service models tailored to fit ability to pay
Staff and Volunteer Time	Connect digital resources with constituents' needs, activities, and networks	# devices distributed	# people using devices for jobs or educational purposes on an ongoing basis	New adopters feel supported and comfortable using digital tools	Digital divide shrinks
Partnerships (with ISPs, Agencies, Other Organizations)	Build community around digital learning	# people/hours served at public computing centers	# blog posts, articles, other civic participation	Improved understanding of ability to pay emerges	
		# support requests served	# connections to remote family members or loved ones		
			etc.		

Figure 9. Open Technology Institute's Meaningful Broadband Adoption Logic Model

OTI explains that this meaningful adoption approach challenges the binary metric of broadband success (whether or not a household has a home subscription) and instead embraces a spectrum of adoption including comfort with digital tools and services, support and training resources, and interaction with communities across the categories shown. Thus, metrics designed to understand meaningful broadband adoption measure not only progress toward achieving broader subscription rates among traditionally underserved and demographically likely non-adopters, but also provide a more holistic picture of comfort with digital tools and the availability, effectiveness, and impact of support and training resources.

Metrics can also be leveraged to understand the role of broader social support networks and the bearing that these factors have on adoption outcomes. These metrics should not measure only the uptake of digital tools among individuals, but also gauge outcomes and goals. Ideally, meaningful metrics are developed qualitatively and cooperatively through engagement with communities and are adapted to reflect goals and conditions articulated by those communities themselves.

A set of sample focus group scripts and surveys to gather qualitative and quantitative data, which were developed for the digital inclusion organization EveryoneOn and its partners by the Open Technology Institute at New America, is available at: https://www.newamerica.org/oti/oti-and-everyoneon-release-adoption-metrics-rubric-and-instruments.

Evaluation Challenges

All of the digital inclusion organizations that participated in this study described the challenges they faced in trying to create an outcomes-based evaluation framework, which they could use to connect their digital inclusion activities to broader outcomes and impacts. The two biggest challenges facing digital inclusion organizations in developing outcomes-based evaluation frameworks are time and money.

Michael Liimatta of **Connecting for Good** described how he wished he had the capability to do outcome-based evaluation. Liimatta explained that his organization is too busy doing its work to address the significant need that exists in the community. As he explained

> "I wish we had the resources to actually do more concrete follow-up. I mean, we're so busy doing the work that we don't really have – I mean, it'd be wonderful if there was some way to get a grant to actually go through our 3,000 records and say, 'Hey, how're you doing? And what are you doing now?'"

When asked what he thinks his organization needs to get up and running with this type of evaluation in place, Liimatta responded by saying, "I think there's two ways – I mean, I think we'd provide any academic or even grad student a tremendous opportunity to do original research. Just haven't found that group yet."

The two biggest challenges facing digital inclusion organizations in developing outcomes-based evaluation frameworks are time and money.

When asked about outcomes-based evaluation, Wanda Davis, **Ashbury Senior Community Computer Center's** Executive Director referred to Bill Callahan, a long-time community partner who has worked in Cleveland, Ohio, to record and track data for the county where Ashbury is located. Davis explained that Ashbury has been using an evaluation that involves a survey with questions, such as how being involved with Ashbury improved their quality of life, how it helped them get a job, etc. Although Ashbury is using tools that could be used as part of a broader outcomes-based evaluation framework, it does not have an outcomes-based framework that was readily available. Bill Callahan, Director of Connect Your Community 2.0, explains some of the barriers:

> "I would say the reason why these things don't exist is, one, because developing those things requires spending a lot of money that nobody has. Secondly, we spent $85,000 federal dollars to do a county poll. No way before or since could we come up with that kind of money for that, or anything like that kind of a project, right?"

Next Steps

Digital inclusion organizations have traditionally focused on counting things, such as numbers of computers distributed or numbers of people taking classes. The idea of developing a theory of change that connects an organization's activities to broader social and economic outcomes and impacts was recognized as important, but such frameworks were not readily available in a visual format. Not only are these frameworks sorely needed among digital inclusion organizations, but they have also been strongly recommended by federal government agencies, particularly in evaluating broadband adoption efforts.[64]

As this report has shown, most organizations already see themselves and their digital inclusion activities as being aligned with the goals of other community-based and social service organizations. Whether it is education, health care, workforce development, or social inclusion, digital inclusion organizations should

embrace their "social layer" and move toward articulating their missions not as digital literacy or computer refurbishing organizations, but rather as social service–oriented organizations whose visions include promoting broader policy goals focused on social and economic development. This perspective also helps to keep the organizations focused on community impact rather than the technical goals that most organizations already understand as their strengths.

This policy-oriented perspective also allows digital inclusion organizations to align their services with these community development goals, rather than simply toward technical solutions. This approach could potentially open up new sources of funding and opportunities to make broader impacts beyond simple measures, such as numbers of computers distributed or numbers of students in digital literacy classes. While these outputs are key to the organizations' work, a broader policy-oriented approach, as previous researchers have suggested,[65] could help digital inclusion organizations connect their work to larger societal goals and initiatives.

Conclusion: The Road Ahead

This research was undertaken to provide a deeper understanding of the digital inclusion services provided by organizations across the country as they work to promote meaningful broadband adoption. Rather than focusing solely on the human-to-computer interactions, meaningful broadband adoption emphasizes the human-to-human interactions that are most helpful to individuals and families.

A four-part digital inclusion strategy was identified by all of the organizations as being essential to their efforts to promote meaningful broadband adoption: (1) providing low-cost broadband; (2) connecting digital literacy training with relevant content and services; (3) making low-cost computers available; and (4) operating public access computing centers. Low-cost broadband was often a foundation upon which the other three activities relied in many of the low-income communities studied.

Poverty is intimately connected to the challenges facing low-income people in adopting broadband Internet at home. By looking outside the home and into the community, digital inclusion researchers and policymakers can gain a deeper understanding of the important role that community-based and social service organizations, as trusted community assets, play in helping people gain access to technology in meaningful ways that reflect their everyday experiences with poverty.

All of the low-income individuals and families who participated in the study understood the value of broadband Internet service, indicating a need to address low-income people's ability to pay versus their willingness to pay for broadband Internet service.

All of the organizations studied here recognize that digital literacy is key to meaningful broadband adoption, but they took different approaches to ensuring clients have the skills needed to make use of broadband. Computer classes have traditionally been a popular way to provide digital literacy training. More recently, digital inclusion organizations have embraced one-on-one, personalized training approaches for community members in order to be relevant to each person's everyday life experiences. In addition, several organizations noted that digital literacy is needed and requested by all, regardless of income.

For many low-income individuals and families, low-cost computers are just as important as having access to low-cost broadband. Having a computer at home helped individuals and families to practice what they learned in their classes, which also inspired them to take classes to learn more about technology. The computer in the home provides them with the necessary tools to be able to address their needs on their own time, while also improving their computer skills for the workplace and personal use.

Many community members who have not yet been able to purchase a computer or broadband service need a space where they can feel comfortable accessing the Internet and can ask questions about technology. Without the public access computing facilities, they would not be able to participate fully in society because they have no other way to access the Internet. The public library continues to be one of the only places in a community where people can gain access to public access computing. As previous research has revealed, these public access centers are filling the gap between low home adoption and high demand.

This report also describes a networked model of meaningful broadband adoption, which includes the important role that community partners play in working together with digital inclusion organizations. These partners include schools, healthcare providers, public libraries, local governments and city agencies, as well as organizations that work with ISPs to provide low-cost Internet options to low-income individuals and families.

All of the organizations recognized the importance of these broader efforts and indicated the strength in coming together with other community partners and collaborators to support digital inclusion activities and share best practices. One of the surprising findings from the study was the need for outcomes-based evaluation frameworks at both the organizational and citywide/regional levels. This remains a need in many of the organizations studied. The two biggest challenges in developing outcomes-based evaluation frameworks are time and money.

Endnotes

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18   See "Recruitment" section in Appendix I for more information on how the organizations were recruited to participate in the study.

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20   For more on the research methodology, including details on the recruitment, methods, and analysis used in this study, please see Appendix I: Research Design.

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22   John B. Horrigan, "The Essentials of Connectivity: Comcast's Internet Essentials Program and a Playbook for Expanding Broadband Adoption and Use in America," Comcast Technology Research & Development, March 2014, http://corporate.comcast.com/images/Final_IE_Research_Full_Paper.pdf. John B. Horrigan, "Deepening Ties: Comcast Internet Essentials Customers Show Broader and Deeper Ties to the Internet Over Time—Especially Among Those Who Had Digital Literacy Skills Training," January 2015, http://corporate.comcast.com/images/comcast-ie-report-2-horrigan.pdf

23   "Keeping Austin Employed," accessed October 30, 2015, http://austinfree.net/keeping-austin-employed/

24   "Learn English," accessed October 30, 2015, https://multcolib.org/learn-english

25   "What We Take," accessed November 14, 2015, http://www.freegeek.org/donate/what-we-take/

26   "Technology Assistance for Nonprofits," accessed October 30, 2015, http://www.connectingforgood.org/nonprofits/

27   Many organizations are leading community media and technology training as well as local grassroots organizing efforts as part of their work to promote broadband adoption. For example, see the Detroit Community Technology Project (https://www.alliedmedia.org/dctp), Media Mobilizing Project (http://mediamobilizing.org/trainings-centers/computer-center-locations), and Portland Community Media (http://www.pcmtv.org/digital-inclusion), among other innovative community media and technology projects.

28   The organizations that participated in this study were recruited on the National Digital Inclusion Alliance (http://www.digitalinclusionalliance.org) listserv using a recruitment script that was approved by the Institutional Review Board at the University of Oklahoma.

29   Mobile Citizen, accessed October 19, 2015, http://mobilecitizen.org/

30   Mobile Beacon, accessed October 19, 2015, http://www.mobilebeacon.org/

31   Everyone On, accessed October 19, 2015, http://everyoneon.org/

32   For example, see PCs for People, accessed October 19, 2015, http://www.pcsforpeople.com/recipients/low-cost-internet and Connecting for Good, accessed October 19, 2015, http://www.connectingforgood.org/internet-access-low-income-families/

33   Julio Ojeda-Zapata, "Disadvantaged Twin Cities Households Face Loss of Internet," 2015, http://www.twincities.com/technology/ci_28935274/disadvantaged-twin-cities-households-face-loss-internet

34   Colin Lecher, "Judge orders Sprint to keep WiMax network up after nonprofits sue," 2015 http://www.theverge.com/2015/11/5/9676970/judge-sprint-wimax-shutdown-stopped

35   American Library Association Office of Information Technology Policy, "Digital Literacy, Libraries, and Public Policy, January 2013, http://www.districtdispatch.org/wp-content/uploads/2013/01/2012_OITP_digilitreport_1_22_13.pdf

36   "Computer Classes," accessed October 19, 2015, https://multcolib.org/events/computer-labs

37   National Telecommunications and Information Administration, Final Report: Social and Economic Impacts of the Broadband Technology Opportunities Program (Potomac: ASR Analytics, 2015), 51, http://www.ntia.doc.gov/files/ntia/publications/asr_final_report.pdf

38   Andrew Perrin and Mave Duggan, "Americans' Internet Access: 2000-2015," Pew Research Center, June 26, 2015, http://www.pewinternet.org/2015/06/26/americans-internet-access-2000-2015/

39   Rhinesmith, "Free Library Hot Spots."

40 PCs for People did not provide public access computing facilities because they recognized, as they did with digital literacy training, that other organizations were serving this role in the Twin Cities.

41 Dailey et al., "Broadband Adoption in Low-Income Communities," 40.

42 Pew Research Center, "How Americans Value Public Libraries in Their Communities," December 11, 2013, http://libraries.pewinternet.org/files/legacy-pdf/PIP_Libraries%20in%20communities.pdf

43 Dailey et al., "Broadband Adoption in Low-Income Communities," 37–48.

44 Ibid., 42.

45 Gangadharan and Byrum, "Broadband Adoption Introduction."

46 Dailey et al., "Broadband Adoption in Low-Income Communities," 11.

47 "ASC3 and Partners Get Grants, Pilot MyChart Training," last modified May 20, 2015, http://www.asc3.org/asc3-news/asc3-and-partners-get-grants-pilot-mychart-training

48 Dailey et al., "Broadband Adoption in Low-Income Communities," 3.

49 "KCK Housing Authority Welcome," accessed October 19, 2015, http://www.kckha.org/welcome.htm

50 See https://www.austintexas.gov/department/grant-technology-opportunities

51 See http://digitalinclusionkc.org

52 See http://www.austintexas.gov/digitalinclusion

53 See https://www.portlandoregon.gov/revenue/66146

54 See http://www.ci.minneapolis.mn.us/it/inclusion/index.htm

55 Figure 5 was sent to me by Connecting for Good's President Michael Liimatta to show how Connecting for Good is part of a much broader digital inclusion ecosystem in Kansas City.

56 See http://www2.ntia.doc.gov/about

57 See Section 7.1.5 on "Challenges" in ASR Analytics, "Final Report: Social and Economic Impacts of the Broadband Technology Opportunities Program" (2014), p. 53.

58 Charles M. Naumer, "The Situated Logic Model: A Method for Measuring Impact," in Digital Inclusion: Measuring the Impact of Information and Community Technology, ed. Michael Crandall and Karen E. Fisher (Medford, NJ: Information Today, 2009), 114.

59 "Northstar," accessed November 14, 2015, https://www.digitalliteracyassessment.org/

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Appendix I: Research Design

Research Questions

After reviewing the literature on digital inclusion and broadband adoption, I developed the following set of research questions:

What are the key characteristics of a low-cost Internet and digital literacy training program for vulnerable populations that includes outcomes-based measures and goals?

What are the indicators that broadband adoption programs use to measure success of their programs?

To answer these questions, I developed a study using observation, interviews, focus groups, and document review at sites located in low-income communities across the country. The Institutional Review Board at the University of Oklahoma approved the research on July 20, 2015.

Recruitment

I sent an e-mail to the National Digital Inclusion Alliance listserv asking members if they would be interested in participating in the study. After receiving positive responses from representatives of several digital inclusion organizations across the United States, I followed up with them and explained the details of the research using language from the approved recruitment script (Appendix II). I also mentioned that I was interested in spending time at each of the digital inclusion organizations to conduct interviews and focus groups and observe digital inclusion activities.

I was particularly interested in speaking with organizations that focused their efforts on providing access, or connecting residents, to low-cost Internet options and digital literacy training, since this was the focus of previous studies of low-cost Internet programs. I wanted to understand how digital inclusion organizations saw these activities as part of their work in low-income communities.

The final list of organizations that agreed to participate in the study include the following: Ashbury Senior Computer Community Center (Cleveland, Ohio), Austin Free-Net (Austin, Texas), Axiom Education and Training Center (Machias, Maine), Connecting for Good (Kansas City, Kansas), Free Geek (Portland, Oregon), Multnomah County Library (Portland, Oregon), PCs for People (St. Paul, Minnesota), and Youth Policy Institute (Los Angeles, California).

Appendix Table 1 provides the list of organizations and their services based on what I learned after visiting and speaking with the administrators and staff at the organizations, their community partners, and the people in low-income communities who have benefited from their services.

DIGITAL INCLUSION ACTIVITIES

Digital Inclusion Organizations	Low-Cost Broadband	Digital Literacy Training	Low-Cost Computers	Public Access Computing
Ashbury Senior Computer Community Center	●	●		●
Austin Free-Net		●		●
Axiom Education and Training Center	●	●		●
Connecting for Good	●	●	●	●
Free Geek	●	●	●	●
Multnomah County Library	●	●		●
PCs for People	●		●	
Youth Policy Institute	●	●	●	●

Appendix Table 1. Digital Inclusion Organizations and Their Activities

Research Methods

The following research methods were used to gather data (i.e., interviews, focus groups, observations, and documents) on site at six of the eight organizations that I visited in person during the months of July through September 2015. The other two organizations I conducted interviews over Skype and over the phone because I was not able to visit them in person.

Twenty-seven interviews were conducted with program participants, staff, and other digital inclusion stakeholders.

Seven focus groups were conducted with program participants.

Eighty hours of observations were conducted at each location to investigate a variety of broadband adoption approaches, including both the technical (hardware, software, etc.) and social (instructors, managers, etc.) aspects of the programs.

Forty documents were reviewed to gain a deeper understanding of the low-cost Internet, digital literacy training, low-cost computers, and public access computing activities that were described by the digital inclusion organizations, their partners, and the individuals and families who benefited from these services.

Appendix Table 2 highlights the number of digital inclusion organizations, community members and community partners who participated in this study.

DIGITAL INCLUSION ORGANIZATIONS	COMMUNITY MEMBERS	COMMUNITY PARTNERS
Administrators and staff members Total number = **27**	Individual adults in low-income communities who benefited from the organization's services Total number = **41**	Individuals representing other nonprofits or city agencies that have worked with the digital inclusion organization Total number = **7**

Total Number of Participants = 75

Appendix Table 2. Research Participants: An Ecological Model

Analysis

For the data collection and analysis, I used an ecological approach similar to the Dailey et al. study that looked at the experiences of "users, librarians, technical staff, employers, and social service providers" [66] in order to triangulate these perspectives and to arrive at conclusions based on the themes that emerged across each of the participant groups.

The following four themes emerged from the data based on the observations, interviews, focus groups, and document reviews: (1) low-cost Internet; (2) digital literacy training; (3) low-cost computers; and (4) public access computing. These four themes emerged from the interview questions with administrators and staff, as well as from answers to interview and focus group questions with low-income residents who described the benefits of the digital inclusion services. I then compared these themes with organization documents, which included promotional and other outreach materials related to the organizations' activities.

These themes were then compared to the literature on the topic, and they were shared with the community partners and reviewers for their verification and additional feedback, which was also considered in the final report. I used triangulation to establish patterns in the data and to help me validate my findings and interpretations.[67] After the first draft of this report was completed, I asked experts from the field of digital inclusion and broadband adoption to review the draft and provide their feedback. These insights were incorporated along with the comments from the digital inclusion organizations that participated in the study.

Appendix II: Recruitment Script

Interview Recruitment Script for "Multiple Case Study Analysis of U.S. Broadband Adoption Initiatives"

A research study performed by the School of Library and Information Studies (SLIS) at the University of Oklahoma (OU)

Overseen by Dr. Colin Rhinesmith of the School of Library and Information Studies

405-395-3921 □ crhinesmith@ou.edu □ Bizzell Library, Room 120, 401 West Brooks, Norman, OK 73019-6032

Dear _____,

My name is Dr. Colin Rhinesmith. I am an Assistant Professor at the University of Oklahoma School of Library and Information Studies. I am writing to request your participation in an interview to investigate the Youth Policy Institute's educational technology programs as part of a nationwide study of broadband adoption initiatives.

You have been selected as a participant in this study because of your experience working with the Youth Policy Institute's programs. I am interested in speaking with you to gain your feedback about what is working and what could be improved about the Youth Policy Institute's digital inclusion programs. The interview will last about 60 minutes. I will work with you to schedule a time and place for you to be able to participate, either over the phone or in a public place that is convenient for you.

This interview is part of a larger study that I am conducting with a research team. The purpose of the research is to investigate how organizations are working to help people access and use broadband Internet service at home in a sustainable way. I am interested in understanding any barriers that may hinder this process as well as how individuals and organizations are developing the resources and capacities to promote broadband adoption. The goal of this study is to develop a model that communities can use to help more people adopt broadband at home.

If you express an interest in participating in this study, you will have the opportunity to talk about your experience in the broadband adoption initiative during the interview. The interview will be audio recorded. The recordings will be used for transcription purposes only, and your name will be changed to a pseudonym in place of your real name, unless you indicate otherwise. Everyone who participates in the research will be asked to sign a consent form. I, or another member of my research team, will record the interview using the pseudonym or confidential ID according to a master log kept by me in my office.

You are not required to interact with staff from the University of Oklahoma in order to participate at the Youth Policy Institute and there are no penalties for choosing to not participate in this research. If you do not wish to participate in the activities described above, please contact Dr. Colin Rhinesmith at the University

of Oklahoma School of Library and Information Studies. You can call him at 1-617-633-0501 (cell phone), email him at crhinesmith@ou.edu, or write him a letter at Bizzell Library, Room 120, 401 West Brooks, Norman, OK 73019-6032.

If you have any questions about your rights in this study, please contact the Norman Campus Institutional Review Board (OU-NC IRB) at 405-325-8110 or send email to irb@ou.edu.

Thank you.

Dr. Colin Rhinesmith Bizzell Library, Room 120 401 West Brooks Norman, OK 73019-6032 Phone: 405-395-3921 crhinesmith@ou.edu	

Appendix III: Interview Questions for Administrators and Staff

The interview schedule should be used in conversations with administrators and staff members either over the phone or on site at the institution that is partnering with the University of Oklahoma on this project. The interview schedule below will address the following questions of each respondent:

MAIN QUESTIONS	FOLLOW-UP QUESTIONS
1. How is your organization engaging in innovative approaches to broadband adoption, including the provision of both public and home broadband access as well as local training and support?	a. How did this initiative get started? b. Who are the key stakeholders?
2. What is your organization's strategy for increasing home broadband adoption in your region?	a. How do your public access and/or digital literacy training programs support your general broadband adoption strategy? b. Where does the funding to support your broadband adoption initiatives come from?
3. Who do you have relationships or partnerships with to increase home broadband adoption in your region?	a. How did you establish these relationships?
4. Is your local government being supportive of your broadband adoption work?	a. If YES: How is your local government being supportive? b. If NO: Do you see opportunities for collaboration with your local or state government in the future?
5. Do you have a relationship with an Internet service provider (ISP)?	a. If YES: How did the relationship begin, and what is the nature of the relationship? b. Have you considered starting relationships with other ISPs?
6. How are you evaluating your broadband adoption initiative?	a. What does success look like? b. How are you measuring it?
7. How is your organization thinking about the sustainability of your broadband adoption initiative?	a. What other assistance does your organization need to more effectively promote broadband adoption in your region?
8. What have you learned from participating in your broadband adoption initiative?	a. If you could do it all over again, what would you do differently? b. What else would you tell people interested in starting their own broadband adoption initiative?
9. Is there anything else that you would like to tell us for this research?	

Appendix IV: Focus Group Questions for Community Members

The focus group should be conducted with participants in the broadband adoption initiative on site at the institution that is partnering with the University of Oklahoma on this project. The interview schedule below will address the following questions of the group:

MAIN QUESTIONS	FOLLOW-UP QUESTIONS
1. What brought you to the [name of the research site] for the first time?	a. When did you start using it? b. What skills did you hope to gain? c. How often do you (or did you) use the facility? d. Do other people in your community know about the [name of the research site]?
2. How has the [name of the research site] helped you?	a. What have you learned about computers and the Internet? b. What spurred your interest in using the Internet? c. Do you use the Internet for any of the following: (1) healthcare information, (2) civic information, (3) education, or (4) other social programs?
3. Has the [name of the research site] helped you to gain Internet service at home, either through a wired or wireless service provider?	a. If YES: What kind of Internet service do you currently have (wired or wireless)? b. If YES: Are you able to do everything that you need to do through this Internet connection? If NO: Why not? What would help you to be able to do more with your Internet connection?
4. If you do not currently have Internet service at home, what is the major barrier for not having the Internet at home?	a. (1) Cost, (2) relevance, or (3) digital literacy? b. Are there other reasons why you don't have an Internet connection (either wired or wireless) at home?
5. How many of you have had Internet service at home in the past, but have lost your service at some point?	a. If YES: What kind of an Internet connection did you have (wired or wireless)? b. What was the main reason why you lost your connection: Cost? Not relevant? Digital literacy training? Other?
6. If you do not have Internet access at home, are you interested in getting it?	a. If YES: Would you be interested in paying for Internet service at a reduced cost? b. If YES: Would you be more willing to pay for low-cost Internet access for your smartphone or for another device, such as a laptop or iPad? c. If YES: How much would you be willing to pay a month to download music, videos, and movies, among other things: $10.00, $20.00, $30.00?
7. If you have a smartphone to access the Internet, do you also have another device at home to access the Internet?	a. If NO: How likely are you to purchase a technology device: computer, laptop, smartphone, tablet, etc.?
8. What impact has the broadband adoption initiative had, or will this initiative have, on you?	a. Do you believe that what you learned in this program has the potential to help you in your life? b. What next steps will you pursue in using or increasing your new computer and Internet skills? c. Do you see yourself able to pursue new job opportunities as a result of completing this training, or do you have new job opportunities coming up?
9. Is there anything else that you would like to tell us about your participation in the [name of the research site]'s program?	