National Telecommunications and Information Administration

Broadband Technology Opportunities Program Evaluation Study

Order Number D10PD18645

Case Study Report

Round 2

Smart Chicago

Sustainable Broadband Adoption

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Executive Summary

> *"I would say that we were trying to meet community goals… It was always more than technology for technology's sake. It was supposed to be technology as a tool. So the goal wasn't just to get people access. The goal was to help them get the access and do something with it."* – Project Manager, Department of Innovation and Technology, City of Chicago

On March 1, 2010, the National Telecommunications and Information Administration (NTIA) awarded the City of Chicago a Broadband Technology Opportunities Program (BTOP) grant for $7,074,369, known as the Smart Chicago Sustainable Broadband Adoption (SBA) grant. This grant funds deeper programming in five communities identified by the city as Smart Communities before the BTOP grant was awarded. The BTOP Smart Chicago grant is an extension of citywide broadband development efforts that began in 2001, when Mayor Richard M. Daley announced his vision for a citywide fiber optic network. Efforts since have included providing free Wi-Fi throughout the city's public library system; developing approaches to providing and promoting broadband use in urban areas; developing demonstration neighborhoods as test beds for services to close the digital divide; and launching a citywide Digital Excellence Initiative. Through these efforts, the city has gained experience in partnering and collaborating with other city governments, grant-making foundations, and community action organizations to plan, fund, and implement local projects.

BTOP funding provides the resources described below under the Smart Communities program:

- FamilyNet Centers provide computers and Internet connections, supplemented by the Everyday Digital curriculum, a hands-on technology training course. This ten-chapter curriculum includes five basic two-hour sessions and another five electives, covering everything from what a browser is to how social media works.
- Business Resource Networks (BRN) work to increase technology use by local businesses by offering assessments and training for businesses with fewer than 500 employees. BRNs incorporate technology into business support activities.
- Tech Organizers provide training through the Civic 2.0 curriculum to community leaders, including block club presidents and school parents, to develop digital leadership to enhance civic engagement.
- A multilingual broadband awareness and outreach campaign using printed materials and city buses supplemented local community organization outreach. The program also supports the creation of neighborhood-based community web portals for each neighborhood. The focus is on creating a digital "culture of use."
- The grant funded the provision of earned MacBooks, netbooks, and desktop computers to youth, residents, and small business owners who complete Smart Community programs and training courses.
- The Digital Youth Network (DYN), Digital Youth Summer Jobs (DYSJ), and YOUmedia programs (collectively referred to as Digital Youth Programs) provide digital learning opportunities for youth.

Services provided under the Smart Chicago grant reach five moderate- to low-income Smart Communities in Chicago: Auburn Gresham, Chicago Lawn, Englewood, Humboldt Park, and Pilsen. This service area includes more than 400,000 residents, about 15 percent of Chicago's total population. The population in the service area is 49 percent African American, 15 percentage points higher than in Chicago and far above Illinois and the nation. The Smart Communities also

have a higher percentage of Hispanics than the City of Chicago and almost three times the percentage of Hispanics in the state and nation.[1]

The case study presented here is one of fifteen case studies performed by ASR Analytics, LLC (ASR) on a sample of eight Public Computer Center (PCC) and seven SBA grants. It is a part of a larger mixed-methods evaluation of the social and economic impacts of the BTOP program.

The purpose of this case study is to:[2]

- Identify how the grantee maximized the impact of the BTOP investment.
- Identify successful techniques, tools, materials, and strategies used to implement the project.
- Identify any best practices, and gather evidence from third parties, such as consumers and anchor institutions, as to the impact of the project in the community.

This case study is primarily qualitative. ASR collected the information presented during two field visits to evaluate the social and economic impact of the Smart Communities grant. The evaluation study team originally met with representatives from the City of Chicago and its grant partners over a two-day period in August 2011. The team visited the flagship YOUmedia center in Harold Washington Library, the offices of the City of Chicago, and grant partners Local Initiatives Support Coalition of Chicago (LISC/Chicago) and DePaul University. ASR conducted a follow-up site visit with the grantee and project partners from February 6-8, 2013. During the second visit, the team met again with representatives from the city, LISC/Chicago, and DePaul. ASR also visited a grant-funded site at Harold Washington Library. Two focus groups, held on January 31, 2013 and February 28, 2013, provided additional information.

The evaluation study team performed a total of ten case study site visit interviews and focus groups. ASR transcribed the discussions and used this information, and other information and reports provided by the grantee, to supplement Quarterly Performance Progress Reports (PPR), Annual Performance Progress Reports (APR), and other publicly available information. Where possible, ASR performed statistical analysis based on these materials and data provided by the City of Chicago and LISC/Chicago.

This report further investigates the initial impacts uncovered during the first round of visits and identifies additional impacts that occurred in the time between the site visits. The results presented in this report reflect the evaluation study team's observations at the time of the second site visit. This report includes both qualitative and quantitative components. It will serve as a basis for *Interim Report 2*, which will analyze data from fifteen case studies.

The evaluation study team noted the following major impacts of the Smart Chicago SBA grant:

- FamilyNet Centers are community hubs for digital literacy training and Internet connectivity. FamilyNet Center sites are integrated with and anchored by Centers for Working Families (CWF). The grant funded new desktop computer workstations, accompanying furniture, higher broadband speeds, and a full-time FamilyNet Center manager at each CWF site in the Smart Communities. The centers offer public access during regular weekday and weekend hours to computers with Internet connectivity. Through their affiliation with CWF, the sites offer one-on-one employment and financial counseling programs. There have been waiting lists for training at FamilyNet Centers, and the Smart Communities express a strong demand for the curriculum provided and the services the grant delivers. As of December 2012, 3,746 individuals had participated in FamilyNet Center orientations.[3] FamilyNet Center staff use orientations to familiarize residents with the space and inform them about training services and open lab hours.
- Everyday Digital is a ten-module course offered at FamilyNet Centers that introduces users to the Internet. The course focuses on getting local residents online and building the skills necessary for them to be comfortable and regular Internet users. The Everyday Digital curriculum uses the Digital 2.0 course track that provides more focused course materials and productivity software training. Participants who complete the Everyday Digital training modules

are eligible to receive a netbook computer. The grant distributed a total of 1,280 netbooks, or about 256 per community.[4]

- Grant equipment and services have enhanced employment counseling and job-readiness training at existing CWFs in the Smart Communities. The grantee reported that CWFs with an integrated FamilyNet Center exhibit an average job placement rate of 37 percent compared to an average rate of 24 percent at CWFs without a FamilyNet Center. In 2011 and 2012, Smart Community CWFs reported placing 1,118 of their employment counseling enrollees in jobs.[5]

- Tech Organizers provide digital leadership training, demonstrating how residents can embrace technology and use it to enhance civic participation. Blue Ocean Logic, in partnership with community organizations, developed Civic 2.0 course curriculum designed for community leaders. The curriculum educates users on group online civic engagement and community organizing activities. Tech Organizers also promote the use of community web portals created for each of the five Smart Communities. These websites provide local news, event calendars, business directories, government website links, and other community content contributed by Smart Community residents, some content in both Spanish and English. Content varies based on community needs, but all portals use the same platform and structure. Launched in three stages in 2010, the Smart Community portals had hosted 236,944 unique visits as of December 2012.[6]

- BRNs support small to mid-size companies in the Smart Communities with free consulting services and technology training. BRNs' goals are to help business owners grow their businesses, increase productivity, and create more jobs. BRNs develop technology action plans to connect firms with the right broadband services and applications, software, hardware, databases, and other computer resources, workshops, and training opportunities for their needs. BRNs had completed technology assessments for 461 local businesses, resulting in 335 technology action plans as of December 2012.[7] In addition, BRNs delivered 637 instances of training and distributed 100 earned desktop computers to business owners who completed training.[8]

- The DYN and YOUmedia after-school programs connect youth with media, mentors, and institutions throughout Chicago in an effort to inspire collaboration and creativity. Workshop topics include digital storytelling, fashion design, animation, graphic design, music and audio production, storyboarding and writing a script, digital photography, and other media creation activities. The grant funded staff, equipment, and furniture for YOUmedia. As of December 2012, these programs had delivered 2,568 instances of training to Smart Community students, resulting in the creation of 5,484 digital media artifacts.[9] Plans are in progress to replicate the YOUmedia model at branch library locations across the country. An online self-guided version of the DYN curriculum is currently in development.

- The DYSJ program provided teens in Smart Communities with technology-based employment opportunities at local businesses and nonprofits. Twelve high school students, ages fourteen to seventeen, in each of the Smart Communities received a paid internship. The eight-week program was held during the summers of 2010 and 2011. Participants with perfect attendance earned a MacBook computer paid for by the grant and broadband connectivity via an AirCard donated by Sprint. In total, the program distributed 118 MacBooks and AirCards.[10]

These impacts would not have been achieved without the grant. While some technology-based activities existed before the grant, the individual Smart Community funding allocations allowed for a more extensive range of digital resources in the service area. Some sites, such as the FamilyNet Centers and YOUmedia branches, would not have been established without grant funding.

Section 1. Introduction

On March 1, 2010, the National Telecommunications and Information (NTIA) awarded the City of Chicago a Broadband Technology Opportunities Program (BTOP) Sustainable Broadband Adoption (SBA) grant for $7,074,369, known as the Smart Chicago SBA grant. The grant funded the Smart Communities program to promote broadband access and adoption in five neighborhoods that participated in the existing New Communities Program: Auburn Gresham, Chicago Lawn, Englewood, Humboldt Park, and Pilsen. The New Communities Program supports declining Chicago neighborhoods by designing and deploying quality of life programming based on residents' expressed needs. At the time the grant was awarded, 55 percent of individuals in these moderate-to low-income neighborhoods were broadband users, compared to a citywide average of 67 percent. The grant funded the creation of public computer labs, known as FamilyNet Centers, to offer digital literacy training courses and informal Internet access. Additionally, it established the Civic 2.0 program, which connects community leaders to digital resources; Business Resource Networks (BRN), which support small and medium-size local businesses; and youth programs, including a technology-focused internship program for teens and afterschool programs for younger students.

1.1 What the Interviewees Told Us

Figure 1, which shows words frequently used by interviewees during interviews and focus groups, clearly shows the community focus of the Smart Communities project. ASR facilitated interviews at the flagship YOUmedia center in Harold Washington Library, the offices of the City of Chicago, and grant partners Local Initiatives Support Coalition of Chicago (LISC/Chicago), DePaul University, and the YOUmedia site at Harold Washington Library. Two focus groups, held on January 31, 2013 and February 28, 2013, provided additional information.

Interviewees included program management and representatives for each component of the grant. The word cloud displays the 100 words used most frequently by the interviewees. The purpose of the word cloud is to provide a succinct visual summary of the conversations that occurred. Statements made by ASR Analytics, LLC (ASR) personnel during the interviews and focus groups were excluded from the analysis, as were common words, such as prepositions, articles, and conjunctions, which were identified using a standard "stop list."

The central word is "community," which was a focus of the grant from its inception. Smart Communities created specific plans that incorporated broadband as a community development tool. Program leaders sought residents' input in planning stages through community organizing meetings and surveys. Other frequently mentioned terms reflect the various components of the Smart Communities, including the BRNs, the Digital Youth Network (DYN) and YOUmedia focus on youth, and the provision of digital literacy training.

Figure 1. Words Interviewees Used Frequently

Section 2. Impacts

As an SBA grant, the overarching goal of the Smart Chicago SBA project was encouraging communities to adopt broadband. Between 2008 and 2011, research conducted by Mossberger et al. (2013) shows that Internet adoption rates in Smart Communities increased by an average of 15 percentage points more than other Chicago neighborhoods.[11] This includes Internet use in various locations or on smartphones. For broadband adoption at home, there are no significant differences between the Smart Communities and other community areas. The summer 2011 data, however, were collected before Internet Essentials was launched, and it was only mid-way through the Smart Chicago SBA grant period. Later citywide data from early 2013 will provide a more comprehensive look across the entire period of the SBA grant. These data are not available at this time.

Figure 2 depicts the levels of new household broadband subscribers in the Smart Communities.[12] The grantee provided the data referenced below. In some cases, they differ from data reported in Quarterly Performance Progress Reports (PPR). These data include only residents who have home broadband access and exclude those who have other types of Internet access at home or who access the Internet in a different setting. Additionally, they reflect individuals, not households. These data are not cumulative across quarters.

In all quarters except the second quarter of 2012, the grantee reported residential broadband subscription among Smart Communities program participants only. In the second quarter of 2012, the grantee changed their reporting method to include the sum of 283 new broadband subscribers and a statistical estimate of 31,850 new broadband users within Smart Communities between 2008 and 2011. Dr. Karen Mossberger and Dr. Caroline Tolbert developed this estimate of change in the Smart Communities using community-level survey data.

## Figure 2. New Residential Broadband Subscribers
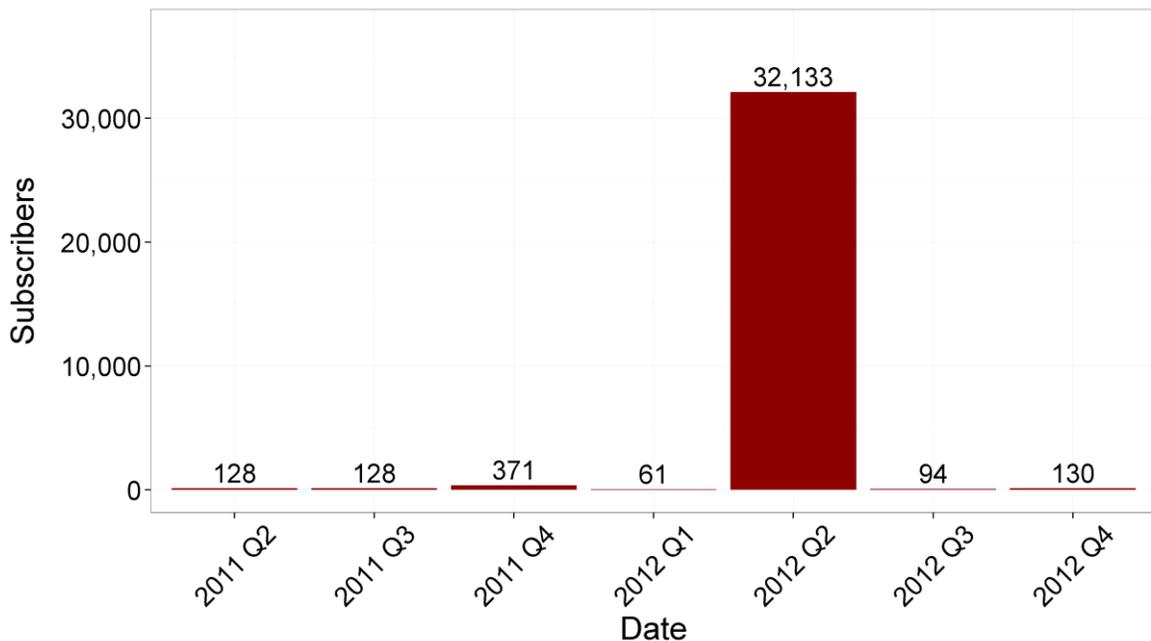
Grant activities in the Smart Communities have led to greater economic security for individuals and families through increased earnings, higher job placement rates, and greater utilization of public benefits. It has also helped citizens improve their interaction with the city government and civic organizations, their children's schools, and their friends and family.

Impacts occurred at the business level as well. Owners of existing businesses saw their enterprises grow through the services provided to them by the Smart Communities' BRNs. Some entrepreneurs were able to establish their businesses thanks to the support of BRNs and other grant-funded services.

Figure 3 shows the level of new business broadband subscribers by quarter.[13] The grantee provided the data referenced below. In some cases, they differ from data reported in PPRs. These data are not cumulative. Early in the grant period, broadband subscription growth among businesses was relatively slow. Many business owners in the Smart Communities did not have the knowledge, equipment, or funds to adopt broadband. The grant funded an earned desktop computer program for business owners in early 2012, leading to rapid growth in business broadband subscriptions in the first quarter of 2012.

Figure 3. New Business Broadband Subscribers
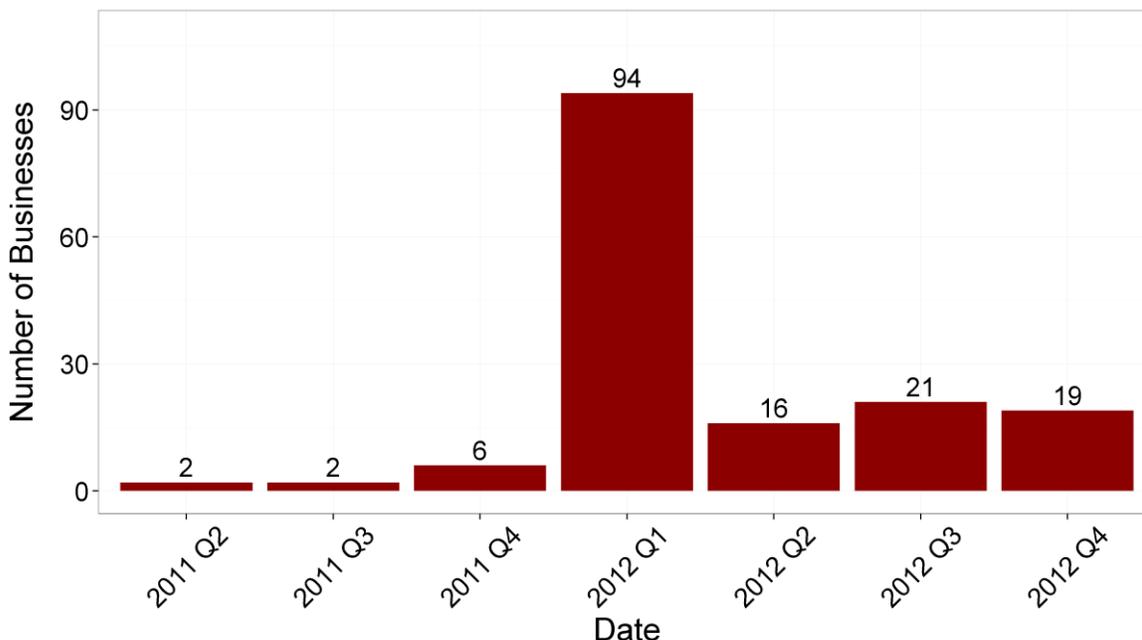
The Smart Chicago SBA grant has also had an indirect impact on communities' relationships with other organizations. The Greater Southwest Chamber of Commerce has leveraged the relationships between the Smart Communities and the city and state governments, schools, businesses, and community nonprofits to establish a free Wi-Fi network in Chicago's Greater Southwest Business District.

2.1 Focus Areas

This section describes the impacts of the Smart Chicago SBA project in terms of five focus areas. In order to analyze where impacts should expect to be found for this project, ASR tabulated the training hours reported in the 2012 Annual Performance Progress Report (APR) using the focus area categories described in *Interim Report 1*.[14]

Figure 4. Grantee Training Hours Categorized by Focus Area
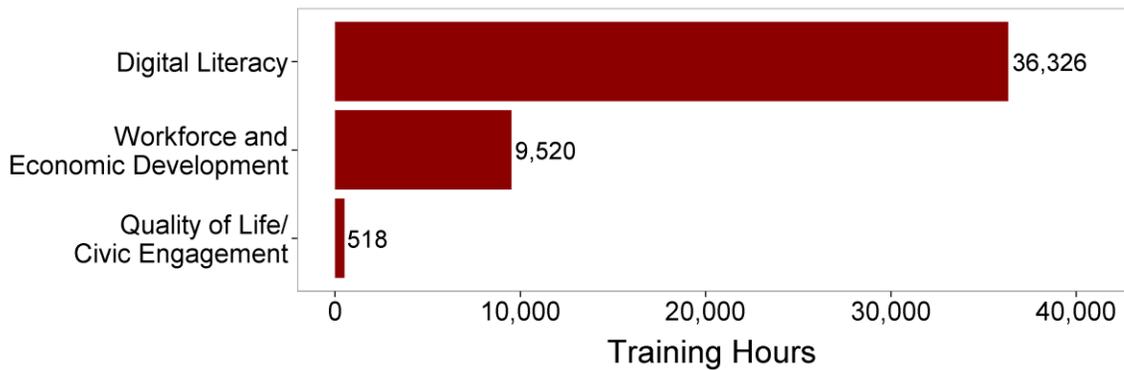
As shown in Figure 4, training hours reported in the grantee's 2012 APR focused on the Digital Literacy focus area.[15]

ASR also analyzed the statements the grantee made during the interviews and focus groups and categorized them based on focus area. Figure 5 shows the relative frequency with which each focus area was mentioned.

Figure 5. Focus Area Statements Made by Interviewees
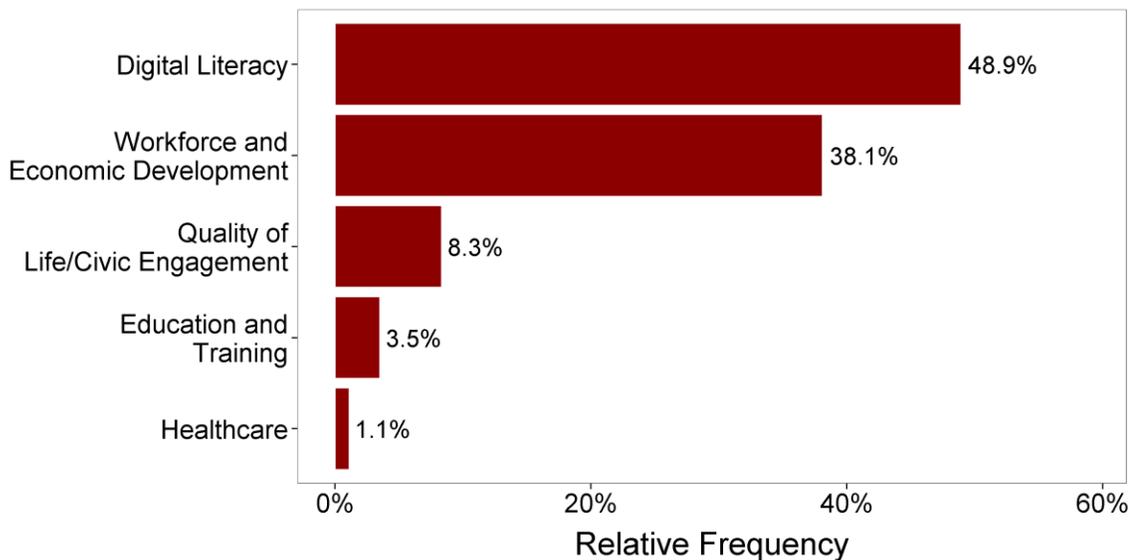
The Smart Chicago SBA grant sought to integrate the use of broadband into the daily lives of those who live and work in the Smart Communities. Many of the grant activities emphasized Digital Literacy and Workforce and Economic Development. As shown in Figure 5, Digital Literacy was the most frequently mentioned topic during interviews and focus groups. General Digital Literacy activities yielded impacts in all other focus areas, as basic technology skills are vital to the efficacy of all further programming.

2.2 Digital Literacy

> *"The head of this program's mantra is that people don't want financial counseling. They want a job. So they come to the Center for Working Families to get a job. She learned through this program that now there were a whole lot more people just wanting the digital literacy classes and not necessarily looking for a job, but they were coming because they'd heard this is where you could have access and classes, and we didn't factor that in." – Executive Director, LISC/Chicago*

This focus area is fundamental to all the others. Digital Literacy defines a set of skills and abilities that enable an individual to interact with the digital aspects of culture and to maintain a digital identity. In the National Broadband Plan, the Federal Communications Commission (FCC) defines digital literacy as "the skills needed to use information and communications technology to find, evaluate, create, and communicate information."[16]

Much of the grant's Digital Literacy activity takes place in two settings: FamilyNet Centers and Digital Youth Programs. The grantee and subgrantees report the following Digital Literacy impacts:

- Citywide survey data show that there is a higher rate of adoption of Internet use in the Smart Communities than in other community areas in Chicago. Between 2008 and 2011, Smart Communities' Internet use grew by an average of 15 percentage points more than other neighborhoods when controlling for demographic change.[17] Based on 2010 Census population data and point estimates for a 2011 citywide survey for Smart Communities, roughly 31,850 more individuals in Chicago's Smart Communities are Internet users compared to the 2008 survey and population data.[18]

- More than one thousand families earned netbooks after completing a minimum of six hours of digital literacy training. Many, however, took ten or more hours of training to obtain a certificate of digital literacy. The donation of AirCards for the netbooks by Sprint acted as short-term removal of the cost barrier to access, and was a simple way for families to renew their Internet subscription without having to pass a credit check. The majority of families who received netbooks returned to obtain additional training and support.

- Some FamilyNet Center users purchased computers for their homes after acquiring digital literacy skills. Often, these individuals would seek advice from the FamilyNet Center managers, who would aid them in comparing prices, selecting the best machine for their needs, and understanding added costs such as virus protection or Internet subscription.

- FamilyNet Center managers have witnessed their students adopt email, Skype, and social media to maintain more frequent contact with relatives and friends abroad. They have also observed parents become more involved in their children's lives through a greater understanding of social media sites and the use of PowerSchool, an online application used by Chicago Public Schools (CPS) to track students' attendance and progress.

- Some YOUmedia participants who have computer access at home have taken general digital literacy skills back to their families. One student, for instance, learned how to set up an email account for his mother.

FamilyNet Center operation is at the heart of the grant's digital literacy programming. There is one FamilyNet Center in every Smart Community. They are fully funded by the grant and integrated into existing Centers for Working Families (CWF). These computing centers, equipped with desktop computer workstations, offer digital literacy courses and open lab access with a FamilyNet Center Manager on site to support users. The following Digital Literacy activities have occurred at FamilyNet Centers:

- Everyday Digital courses teach basic computer skills to clients. The base course consists of six hours of general digital literacy material. Digital 2.0, the latter component of the course, allows

students to choose specialized elective courses in topics such as Microsoft applications or social media sites. Students who complete ten or more hours of coursework and pass all end-of-module tests receive a certificate of digital literacy.

- In addition to general digital literacy skills, Everyday Digital offers modules that have practical applications for students. One module teaches participants how to compare and select an Internet service provider for home access. Another provides information on online banking. The Common Sense Media module teaches families how to navigate the Common Sense Media website to assist families in determining what media are appropriate for their children to access.

- Many residents use the FamilyNet Centers to access PowerSchool, an online application that tracks CPS students' attendance, assignments, and grades.

- The large Spanish-speaking populations in Pilsen, Humboldt Park, and Chicago Lawn benefited from translated Everyday Digital course material. Many Spanish speakers also expressed a desire for training in email, social media, or Skype to stay in contact with family and friends abroad, so managers at those sites created specialized courses to meet those needs.

- The Englewood FamilyNet Center Manager developed a popular series of classes called Googlicious to introduce the free applications offered by Google, including Google Drive, Gmail, and YouTube.

- The FamilyNet Centers partner with Blue Ocean Logic to provide technical support for those families who received netbooks. Residents who experience difficulty with their machines primarily contact FamilyNet Center managers for support. Often the managers are able to resolve the problem, and if not, they refer the individual to Blue Ocean Logic.

- As of the previous site visit, the Chicago Lawn FamilyNet Center had donated the computers that were in its center before the new equipment arrived to two nearby senior citizen centers. Beginning in fall 2012, the manager at the Chicago Lawn site organized volunteers to lead general digital literacy training for residents of those centers.

YOUmedia and DYN are afterschool programs for middle and high school students to learn and apply technology skills. YOUmedia library sites allow students to participate in technology-based workshops such as video filming and editing, graphic design, digital photography, and audio production.

- Each YOUmedia session begins with open lab time, during which students engage in social media, check their email, browse YouTube, or play PlayStation. This time is particularly valuable for students who do not have a computer or broadband access at home.

- YOUmedia mentors create and conduct optional workshops. The branch mentors, each of whom specializes in a different digital medium, rotate daily among the sites to expose students to a variety of media. All YOUmedia sites also have a CyberNavigator who acts as an equipment manager and supports the mentor's activities.

Figure 6 summarizes YOUmedia participation.[19] ASR used grantee-provided data to supplement PPR data. Grant funding allowed for the opening of YOUmedia branch sites, which launched in the third quarter of 2011. Although initial participation was relatively slow, attendance nearly tripled from the first to second semester of the 2011-2012 school year. The spike in the third quarter of 2012 reflects YOUmedia summer programming. More recently, attendance has fallen back to early 2012 levels.

Figure 6. YOUmedia Participation
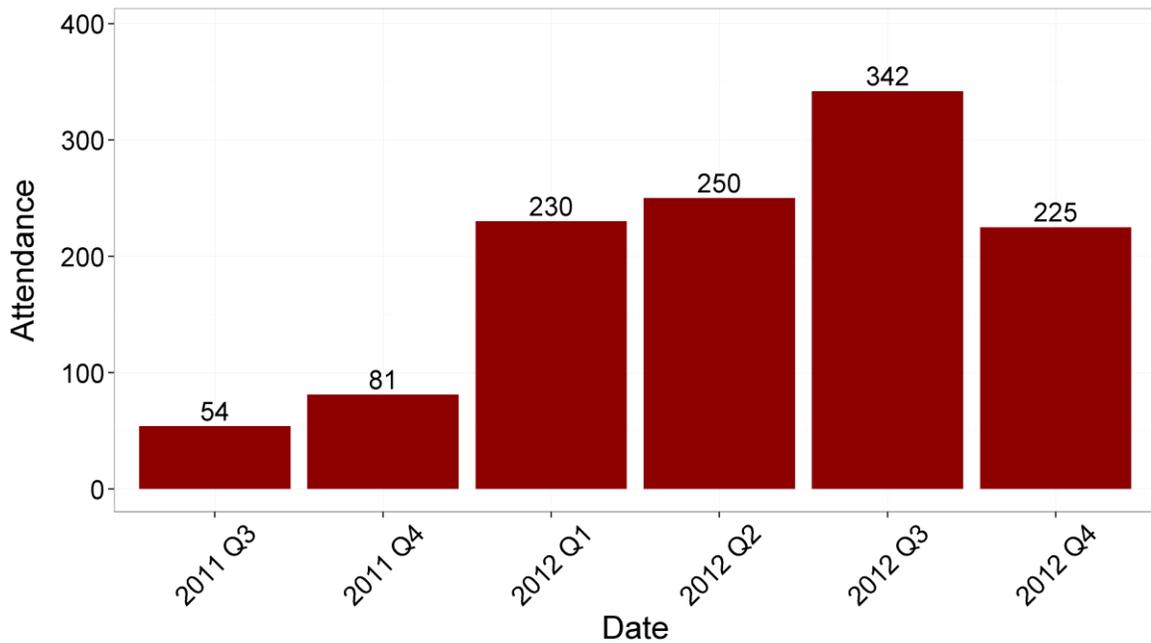
DYN programs took place in Smart Community middle schools. The DYN after-school program is more structured than YOUmedia. There is no open lab time at the beginning of DYN sessions, and all students are required to participate in workshops led by DYN mentors.

Figure 7 shows DYN after-school participation, which began in the fourth quarter of 2010.[20] Because DYN is held in the computer labs at participants' schools, there was little start-up time required compared to the YOUmedia branch sites, which were built entirely through grant funding. Grant funding allocated to DYN provided training materials and staffing.

The declining pattern in attendance during the program's first four quarters of operation may reflect the challenges DYN staff faced in schools that did not have the technical infrastructure in place to support programming. The upswing in the fourth quarter of 2011 is likely the result of the expansion of DYN to several additional schools and community anchor institutions in the 2011-2012 school year. The in-school program was terminated after two years because of funding cuts. A more sustainable online DYN curriculum is currently in development.

Figure 7. Digital Youth Network Participation
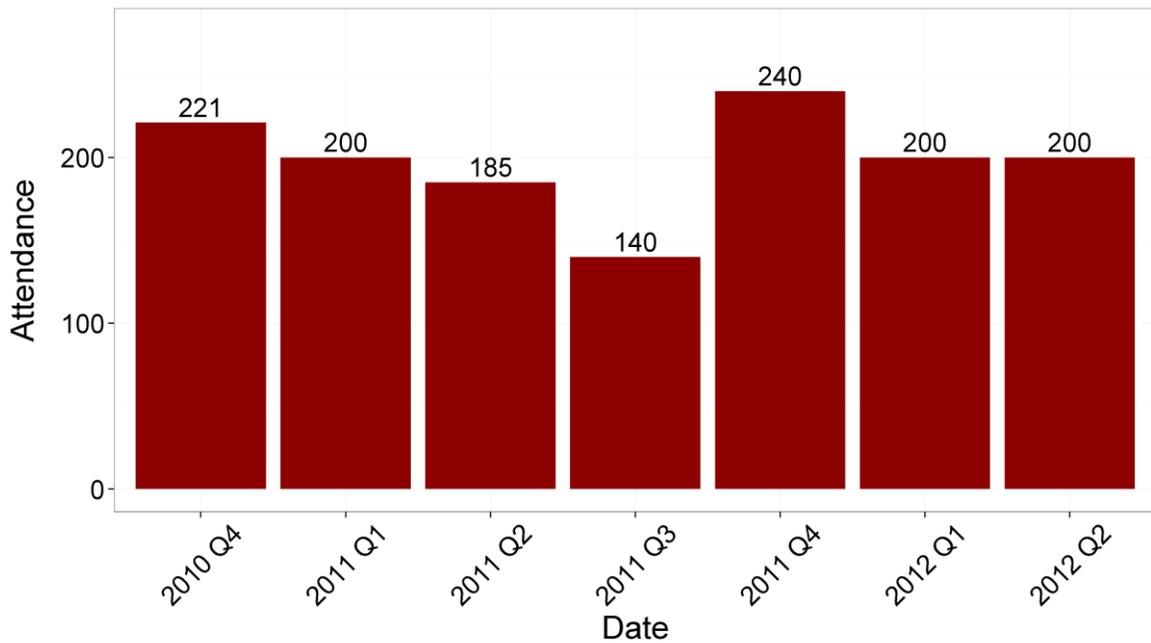
Students in both programs post the artifacts they create on iRemix, a closed social network where they can view and comment on one another's work. Mentors and CyberNavigators register students with an account and post feedback on their work. Students also post their work on the social media sites with which they are more familiar, such as Facebook or Tumblr. Community portals feature some artifacts.

Figure 8 presents the distribution of digital artifacts posted on iRemix by YOUmedia and DYN.[21] Photos are the most common type of artifact created, supporting mentors' statements that graphic design and digital photography were among the most accessible forms of digital media.

Figure 8. iRemix Artifact Posts
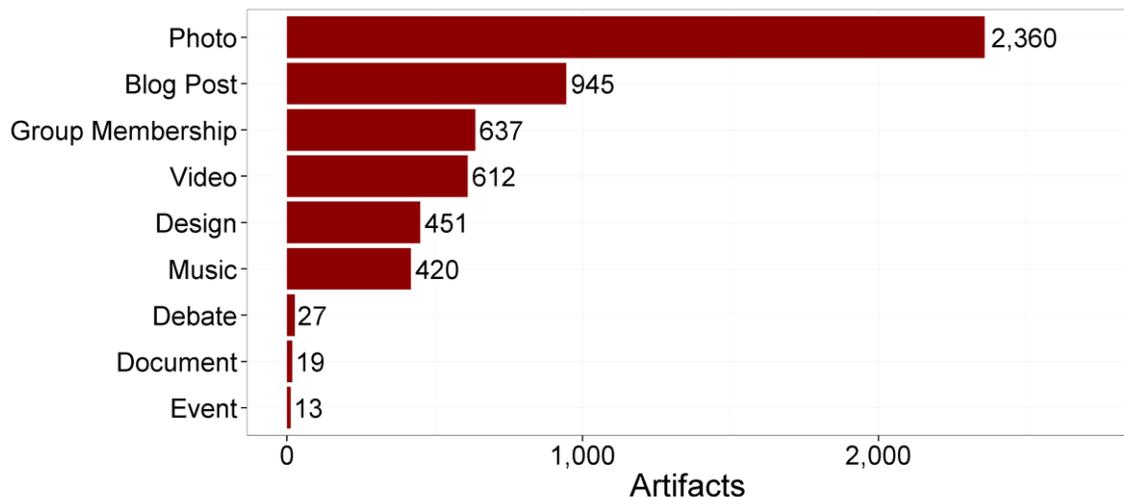
2.3 Workforce and Economic Development

"After the classes, they're more focused. They know what they're looking for and what they want to showcase in their résumé, and then where to narrow their search… It's focused searching." – FamilyNet Center Manager

This focus area includes activities intended to increase overall employment of the target population, or to assist employed members of that population in finding jobs that offer increased salaries, better benefits, or a more attractive career path, including self-employment. Workforce and Economic Development activities can be performed for one's own benefit, or they may be done on behalf of another person to assist with his or her employment situation. In order for project activities to be included in this category, it must be the intention of the grantee to assist members of the workforce in improving their employment outcomes, and project resources must be devoted to this purpose.

The grantee and subgrantees report the following Workforce and Economic Development impacts:

- The grant allowed for the direct creation of twelve full-time positions, including one Smart Community program officer, five tech organizers, and six Family Net managers. In addition, the grant created twenty-nine part-time positions: twenty DYN mentors, four BRN coordinators, and five Smart Community portal managers. The grant also funds 40 percent of the salary for a city-employed program manager.[22]

- Relationships pursued through BRN laid the foundation for a commercial district Wi-Fi network in the Greater Southwest area offered through the community's Special Service Area (SSA), a local tax district that appropriates revenue for the expansion of business districts. Business owners there can now obtain a free wireless Internet connection for their customers' use. For a small monthly fee, businesses can also connect to a secured network suitable for business use. Wireless Internet has enabled these businesses to grow and attract new customers through online marketing and the ability to accept credit card transactions.

- Several individuals were able to use their technology skills, acquired through Everyday Digital or BRN workshops, to enhance their existing businesses. Many of these individuals benefited from social media marketing, as well as implementation of mobile point-of-sale (POS) systems such as Square or LevelUp. Owners of mobile businesses were able to start or expand their businesses by implementing tools identified in their BRN technology action plans. Many of them use the Mobile Citizens 4G hotspot for a mobile Wi-Fi signal, coupled with Square and a smartphone or tablet to process credit transactions.

- CWF program staff estimated that enrollees who used the Everyday Digital courses offered at the adjacent grant-funded Family Net Center in conjunction with CWF services exhibited a job placement rate 13 percentage points higher than attending CWF alone. FamilyNet Center managers have observed an increase in both the volume and quality of applications and résumés distributed by their job seekers, and report that their students engage in more focused searching after completing their courses. In 2011 and 2012, CWFs in the Smart Communities placed 1,118 of their employment counseling enrollees in jobs.[23]

- Some Everyday Digital graduates who were not enrolled in employment-specific training were able to translate their general digital literacy skills into Workforce and Economic Development outcomes. Examples include pay raises or promotions with their current employer because of their increased technical skills and enrollment in general equivalency degree (GED) and associate degree programs at area community colleges.

- Tech organizers reported that Civic 2.0 activities have had some unintended positive impacts regarding Workforce and Economic Development. Several participants have leveraged the leadership and technology skills developed through Civic 2.0 training to secure employment, advance their career, or expand their business.

Much of the discussion of grant activities relating to Workforce and Economic Development focused on BRNs. BRNs support small and medium-size businesses in the Smart Communities. BRN staff worked with business owners to help them integrate the use of technology, broadband in particular, into their day-to-day operations. BRN consultants provided technology assessments for 461 community businesses in the service area, resulting in 335 technology action plans that encouraged business owners to streamline operations with the use of technologies such as QuickBooks or Square.[24] In addition, 100 business owners received desktop computers for participation in BRN training.[25]

Figure 9 shows the number of businesses that participated in BRN workshops and training activities each quarter.[26] These totals do not necessarily reflect unique participants, as many business owners attended multiple training activities.

Figure 9. BRN Training Participation
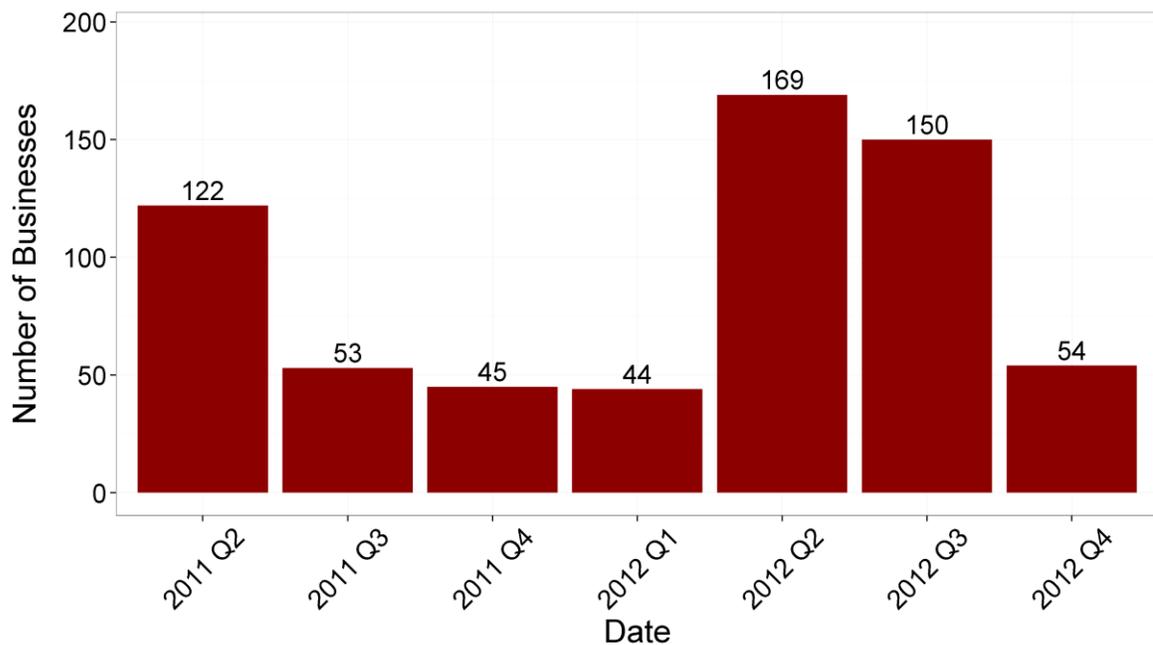
BRN training began in the second quarter of 2011. Whether because of dwindling interest or limited course offerings, training participation declined after the second quarter of 2011. Following the distribution of earned desktop computers in the first quarter of 2012, however, demand for training among desktop recipients increased, and the grantee expanded course offerings. As a result, participation peaked in the second quarter of 2012 and remained strong in the third quarter.

BRNs undertook the following additional activities:

- Business owners received training on how to market their businesses online using social networking sites, email marketing campaigns, and the Smart Community portals. Portal managers worked with business owners to develop coupons and advertising content to display on community portals.

- BRNs have connected businesses with the Mobile Citizen program, which offers low-cost mobile 4G hotspots. Businesses are permitted a thirty-day free trial period, after which they can determine whether to continue the service for a reduced fee.

- The Greater Southwest BRN has coordinated a purchasing pool to provide bulk services, including credit card processing, at a reduced cost to local businesses. This complements the

Mobile Citizen service, as BRN coordinators have remarked that several business owners were interested in installing the hotspots solely to process credit card transactions.

- The Pilsen BRN offers a resource room equipped with computers, printers, software such as QuickBooks and Adobe Dreamweaver, and access to software training. Business owners can use the space to build a website, create and print fliers, or complete self-guided software training.

- The grantee reported that 50 percent of job seekers find placement through other individuals. Therefore, BRN consultants lead training sessions on how to maintain a professional online presence and effectively market themselves and their business on LinkedIn and Facebook.

- The Pilsen BRN collaborated with St. Xavier University to offer a four-week course in business development. More than twenty business owners participated in the event, designed to help them develop a business plan.

FamilyNet Center integration in Smart Community CWFs has enhanced employment counseling and job-readiness training. As job seeking becomes an increasingly digital process, employment-based sites have noticed their job-readiness curricula to be most effective when integrating basic digital literacy training into their existing programming.

- Since all FamilyNet Centers are integrated into CWFs to some degree, those enrolled in employment counseling have access to grant-funded equipment. The grantee stated that all CWF enrollees used those computers in some way.

- The Englewood CWF has permanently incorporated portions of the Everyday Digital curriculum offered by the adjacent FamilyNet Center into its job readiness training. Participants learn how to perform simple functions, such as filling out online job applications and uploading their résumés, and the importance of email and social media etiquette.

- Open lab hours are available when classes are not in session, giving job seekers additional access to search for and apply to postings and complete weekly certifications for unemployment benefits.

Other grant activities that have supported Workforce and Economic Development include:

- Business owners who did not have the basic digital literacy skills to keep up with the pace of BRN training received referrals for Everyday Digital courses at the FamilyNet Centers. After acquiring these introductory skills, they were able to engage more fully in training.

- Some FamilyNet Center managers have created tailored training content to support entrepreneurial activities in their respective communities. For example, one manager developed a module that teaches individuals who sell cosmetics, such as Avon or Mary Kay, how to complete online order forms.

- FamilyNet Centers have started offering two types of training on Microsoft applications. Participants can either attend scheduled instructor-based courses or complete the training online at their own pace with an access code. Upon completion, students can gain certification by passing an exam at a Microsoft testing site.

- Tech organizers targeted unemployed and low-income individuals by offering an orientation through the Illinois Department of Employment Security (IDES) to explain the benefits of digital literacy skills and available training services.

- The Digital Youth Summer Jobs (DYSJ) program matched sixty teens (12 from each community) to technology-focused summer internships in the summers of 2010 and 2011. Interns with perfect attendance earned a MacBook with a pre-loaded Sprint AirCard.

2.4 Quality of Life/Civic Engagement

> *"It's a very simple example. It happened at Pilsen graduation. An older gentleman took the microphone out of our executive director's hand and said, 'I never used the Internet until I took these Civic 2.0 classes. I learned about city services that were available online. I had graffiti on my garage, and I contacted the city [online]. The next day the graffiti was gone.'" – Tech Organizer*

The Quality of Life/Civic Engagement category includes those activities that create stronger and more integrated communities, and those that promote interaction between citizens and their governments. Central to this focus area are the Smart Community portals. Maintained by grant-funded portal managers, these sites offer neighborhood-specific content such as event calendars, job postings, and local news posted by residents and neighborhood organizations. They also include directories that provide contact information and hours of operation of local businesses, government agencies, schools, and other civic institutions. Activities include:

- Tech organizers hold community portal trainings to familiarize residents with the content and structure of the portals.
- Portal managers encourage residents to share content to maintain a culture of "by the community, for the community" on the portals.
- FamilyNet Centers promote the portals by setting it as their web browser homepage, introducing it during trainings, and registering new users.

Figure 10 displays the number of unique visitors that accessed each Smart Community portal by quarter.[27] The figure includes both data reported in PPRs and data provided by the grantee. The Pilsen portal, launched in the second quarter of 2010, remains the most active community portal. The Humboldt Park portal was the second to launch, in the third quarter of 2010. It remains the second most active portal, with unique visits falling in the final quarter of 2012. In the fourth quarter of 2010, the grantee launched the last three portals: Auburn Gresham, Chicago Lawn, and Englewood.

Figure 10. Community Portal Unique Visits
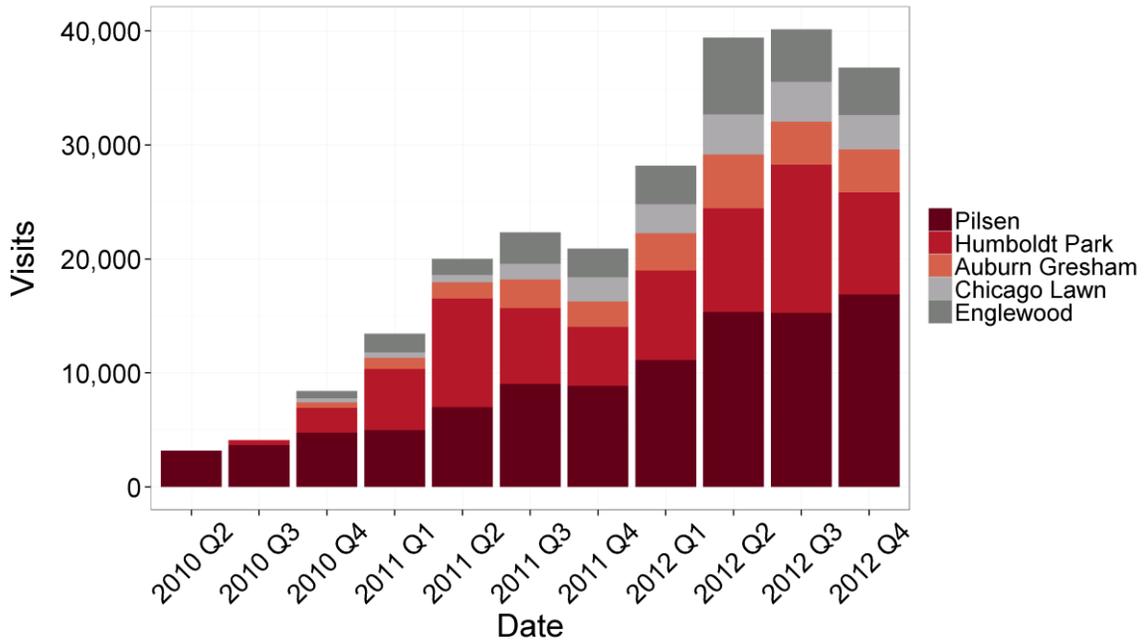
Figure 11 below presents individual contributions to each community portal.[28] The figure includes both data reported in PPRs and data provided by the grantee. The grantee did not begin collecting these data until the fourth quarter of 2011. The Humboldt Park portal has received the greatest number of individual contributions, far exceeding those of the other communities. The grantee credits Humboldt Park's "Put it on the Portal" campaign with boosting contributions.

Figure 11. Community Portal Contributions
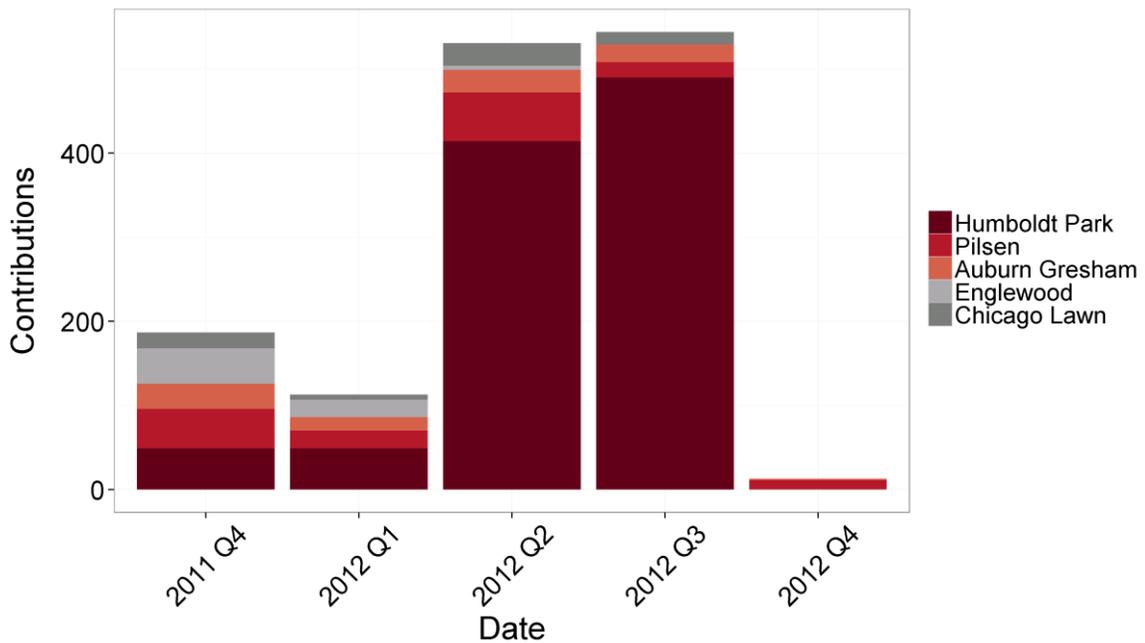
Civic 2.0 training is another key activity in the Quality of Life/Civic Engagement focus area. Led by tech organizers, these classes enhance the abilities of community leaders to organize and promote their cause, with emphasis on the use of digital tools. Some examples of Civic 2.0 activities include:

- In Auburn Gresham, Civic 2.0 participants collaborated with the Neighborhood Recovery Initiative (NRI) to lobby the Illinois General Assembly using digital tools. Participants engaged legislators by contacting them via online faxing, email, Facebook, and Twitter.

- In Englewood, a resident sought out the tech organizer and convened a class of Civic 2.0 for the parents at her children's school.

- The Block Club Federation of Greater Englewood, an organization composed of block club leaders, implemented its federation structure after learning about it in a Civic 2.0 class. In addition, they use Gmail and other Google applications, such as Drive and Calendars, to share and organize information. Some other block club presidents have also taken this approach within their own organizations, using Google tools to share meeting minutes, literature, and event dates with members and become more effective leaders.

FamilyNet Centers encourage local residents to improve their quality of life by integrating the use of computers into their everyday activities. The following activities occur at Smart Community FamilyNet Centers:

- Individuals who participate in the CWF and FamilyNet Centers' suite of services meet with an income support specialist who determines what, if any, public benefits they may be eligible to receive. In many cases, tapping into these benefits allows families to reallocate their budgets to purchase a broadband subscription at home. In addition, CWFs collaborate with FamilyNet Centers to administer personal finance training. Residents use the grant-funded labs to learn about and complete online banking transactions and to retrieve their credit scores.

- Everyday Digital trainers teach participants how to access city, state, and federal government information online. For example, one FamilyNet Center is also a Department of Housing and Urban Development (HUD)-certified counseling agency, which holds sessions with families to research their tax bills and assessments online, determine any exemptions that they might be missing, and explain how to appeal an assessment.

- Trainers at the Chicago Lawn FamilyNet Center have held group sessions for families to explain how to submit a request to the Illinois Hardest Hit program, a temporary mortgage assistance program with an online application process. They also developed a paper application in Spanish for their Spanish-speaking clients to complete before entering the numbered responses into the web-based application.

- FamilyNet Center managers provide schedules and information to families on summer activities held in local parks, YMCAs, and other neighborhood locations.

- The installation of the Chicago Transit Authority (CTA) Bus Tracker on kiosk computers helps citizens plan a safe and timely commute.

2.5 Education and Training

This focus area includes activities that lead to a certificate or diploma that would typically be awarded by an educational institution, or that indicates the recipient has received training that is recognized as valuable for career advancement. Education and Training was not a focus of the Smart Communities grant. However, some impacts include:

- Students of the Englewood job-readiness training center within Kennedy King College (KKC) have enrolled in GED and associate degree programs at the college after acquiring technology skills through the CWF and FamilyNet Center. The location of the FamilyNet Center within the college is helpful for nontraditional students who may need additional support in navigating online tools, like Blackboard, that have become ubiquitous in higher education.

- The majority of those who participated in the Spanish language Everyday Digital classes in Chicago Lawn went on to take free English for speakers of other languages (ESOL) classes at a nearby training facility. Several participants took part in paid on-the-job online training programs for Spanish speakers who were learning English.
- YOUmedia participants curated the digital artifacts they created into a portfolio that they used to apply for admission to arts-focused high schools. Several of these portfolios were products of a workshop facilitated by YOUmedia and the Museum of Contemporary Arts.

The following grant activities supported these impacts:

- FamilyNet Centers hold intensive courses on Microsoft applications to prepare individuals for certification through the Microsoft Information Technology (MSIT) group. In Englewood, these courses are a mandatory requirement of their CWF job-readiness training.
- One FamilyNet Center Manager holds a weekly HTML/CSS course at a local elementary school to expose students to advanced digital literacy skills like code writing.
- Students use the different digital media available to them at the YOUmedia sites to complete their school assignments. For example, one student created a map of her neighborhood using Photoshop, and another filmed and edited a video documentary in lieu of a written composition.
- Students of all ages use open lab hours at the FamilyNet Center to complete, upload, and print their homework.

2.6 Healthcare

Very few grant programs intended to support the Healthcare focus area. Humboldt Park, however, chose to center some of its programming on health issues. Overall, the following Healthcare-related activities occurred:

- While not technology focused, the Humboldt Park FamilyNet Center and the Chicago Department of Health launched a wellness campaign featuring diabetes awareness and management strategies.
- FamilyNet Centers offer a service to help residents obtain public health and nutrition benefits, such as Medicaid or Supplemental Nutrition Assistance Program (SNAP) benefits.
- Everyday Digital participants learn how to research health issues and illnesses in the search engine module of the course. Some individuals returned during open lab hours to search for more information on health conditions or medication for themselves or a loved one.
- FamilyNet Center trainers helped clients, particularly senior citizens, register their pharmaceutical prescriptions online so that a family member or friend could pick up their medication if they were unable to do so because of extreme weather conditions or illness.
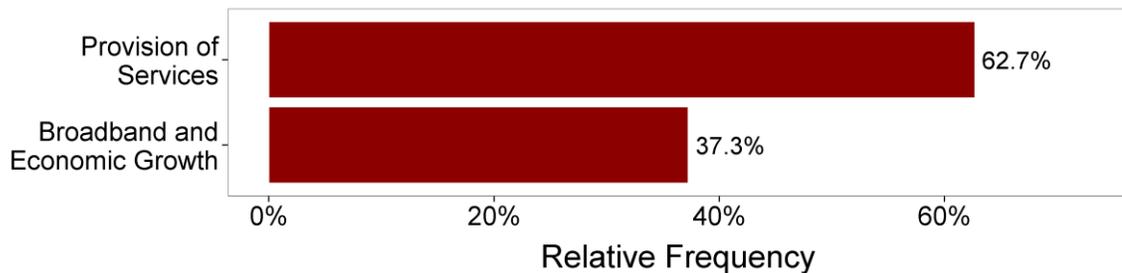
Section 3. Recovery Act Goals

This section describes the activities and outcomes associated with Recovery Act goals. Of the five Recovery Act goals for the BTOP program as a whole, two relate directly to PCC and SBA programs:

1. Provide broadband education, awareness, training, access, equipment, and support to
   a. schools, libraries, medical and healthcare providers, community colleges and other institutions of higher learning, and other community support organizations;
   b. organizations and agencies that provide outreach, access, equipment, and support services to facilitate greater use of broadband services by vulnerable populations (e.g., low-income, unemployed, seniors);
   c. job-creating strategic facilities located in state or federally designated economic development zones.
2. Stimulate the demand for broadband, economic growth, and job creation

This section of the document describes how the Smart Chicago SBA project contributed to the achievement of these goals.

Figure 12 displays the relative frequency of topics related to Recovery Act goals in statements made by participants in interviews and focus groups. This chart provides insight into the focus of the grantee in achieving the goals described above.

Figure 12. Frequency of Topics Related to Recovery Act Goals

The most frequently mentioned Recovery Act goal was the provision of access to equipment and support. This includes the provision of access through open lab hours and training, as well as the distribution of netbooks for home access. Broadband and Economic Growth, while less frequently mentioned, was supported by direct job creation attributable to the grant and the BRNs' work with local businesses. The following sections describe how the Smart Chicago SBA grant addressed Recovery Act provisions.

3.1 Provision of Service

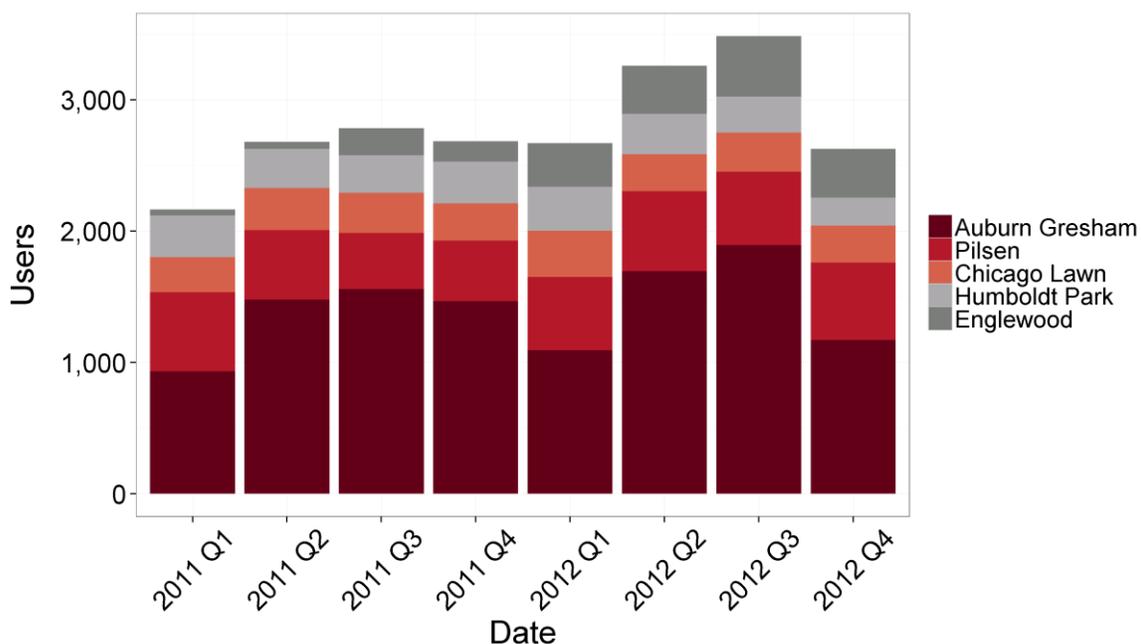### 3.1.1 FamilyNet Centers

The centerpiece of project programming in each Smart Community is the FamilyNet Center. Residents have free use of computers equipped with broadband access and the most up-to-date software during open lab hours and structured training. Without the grant, the FamilyNet Centers would not exist. Grant funding provided all equipment, including computers and accessories,

software, desks, and chairs. FamilyNet Centers also provided some families with a home access option through their earned netbook program. The centers distributed 1,280 netbooks furnished with pre-loaded AirCards donated by Sprint.[29] Many FamilyNet Center patrons subscribed to the Comcast Internet Essentials program, which offers a home broadband connection for $9.95 per month to those who qualify. Although Comcast has reported providing 11,000 Internet Essentials connections in the city, the number those within the Smart Communities is unknown.[30]

Figure 13 presents the number of residents who accessed CWF resources, including the FamilyNet Center labs.[31] According to the grantee, all enrollees of CWF programs used grant-funded equipment in some way. The Auburn Gresham FamilyNet Center exhibits the highest levels of usage, far exceeding those of the next most accessed facility, Pilsen. Humboldt Park, Chicago Lawn, and Englewood have experienced relatively lower levels of use.

Figure 13. Centers for Working Families / FamilyNet Center Users

While residents may have had access to similar technologies in libraries or other public computer centers (PCC), the FamilyNet Centers offer a superior experience through support staff, training, and software. The support provided by FamilyNet Center managers and trainers allows residents to make the most of the broadband service provided to them at the center. This practice aligns with the city's goal to not only get residents broadband access, but to show them how they can use broadband to enhance their lives.

3.1.2 Business Resource Networks

BRNs offer technology consulting services to support small and medium-size businesses in the Smart Communities. Consultants complete an initial technology assessment based on businesses' current operations and then develop technology action plans to show the owners how they can use technology to enhance their businesses. They also refer patrons to available digital resources, such as the Mobile Citizens service or the free Wi-Fi network in the Southwest Commercial district. Some BRNs also supplied their businesses with free software.

During the grant period, BRN coordinators distributed desktop computers to 100 local business owners. In order to receive a computer, business owners were subject to the following requirements:[32]

- Must be at least eighteen years of age.
- Must provide proof of business ownership (license, article of incorporation, or doing business as [DBA] statement) in one of the five Smart Communities.
- Must be in operation for at least one year.
- Must agree to list their business on the corresponding community portal.
- Must complete BRN intake and technology need assessment and technology action plan.
- Must participate in at least one BRN workshop or training activity.

3.1.3 Digital Youth Programs

YOUmedia provides Internet access in an after-school setting for students, as well as access to digital cameras, recording equipment, digital drawing tablets, video games, and editing software for audio, graphics, and videos. High school students use the flagship YOUmedia space in Harold Washington Library in Chicago's Loop area. Middle school students are served in branch libraries: Rudy Lozano Library in Pilsen, Thurgood Marshall Library in Auburn Gresham (also serves students from nearby Englewood), and Richard M. Daley Library in West Humboldt Park. Unlike YOUmedia, DYN does not provide access beyond that which is typically available to students because it is held in their schools and uses computer labs and equipment that are already in place.

DYSJ provided MacBook incentives for interns who had perfect attendance during the eight-week program. Of the 120 participants, 118 received MacBooks paid for by the grant. Donated Sprint AirCards provided broadband connectivity.[33]

3.1.4 Public Kiosks

Hewlett-Packard donated more than thirty TouchSmart kiosk computers to the Smart Communities.[34] The grantee installed these machines in public spaces such as businesses, schools, and FamilyNet Centers. They offer additional access to various online services, with the most popular application being the CTA Bus Tracker. Residents use the Bus Tracker to plan safe commutes, particularly in the very early and very late hours of the day.

3.2 Broadband and Economic Growth

As required by the Recovery Act, the City of Chicago reported the number of jobs created as a direct result of the project on quarterly basis. As shown in Figure 14, job growth was slow in the early part of the grant period, but rose and remained near twenty-three full-time-equivalent positions throughout most of 2011.[35] The number of reported jobs trended upward from late 2011, peaking at 38.06 in June 2012.

Figure 14. Direct Jobs Created by the City of Chicago
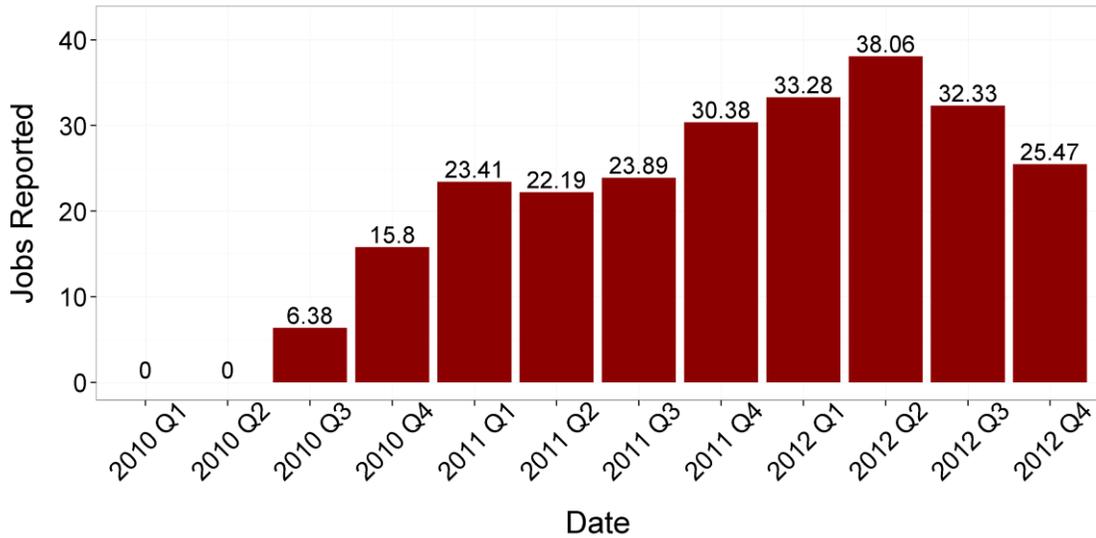
More specifically, the grant directly created twelve full-time jobs, including one Smart Community program officer, five tech organizers, and six FamilyNet Center managers. The grant funded twenty-nine part-time positions: twenty DYN mentors, four Business Resource Network coordinators, and five community portal managers. In addition, the grant funds 40 percent of the salary of a city-employed program manager.[36]

It is important to note that the figure above displays only direct jobs created, and does not include indirect or induced job creation. As noted in the section describing the Workforce and Economic Development focus area, the grantee conveyed additional success stories about local businesses that were able to expand and take on additional staff. It is clear that the grant indirectly created jobs in the Smart Communities, but it is unclear how many, as BRNs did not track this outcome.

Section 4. Grant Implementation

This section describes particular aspects of the implementation of the Smart Chicago SBA grant in order to understand the composition of activities and outcomes observed. The purpose of this categorization is twofold. First, defining a consistent set of categories for each of the grants in the study sample facilitates cross-case comparison and analysis. Second, presentation of the activities and outcomes for this case by category simplifies understanding of the focus of the grantee's work. This analysis is based on qualitative observations made during the site visit.

ASR is using a theory-based evaluation approach to examine the social and economic impacts of the BTOP program. This permits deeper understanding of grant features in terms of theory, which helps to explain how the grant activities produce impacts. For the PCC and SBA grants, ASR uses theories of technology adoption to examine factors that shape the demand-side of broadband services. The key theory ASR employs is the unified theory of the acceptance and use of technology (UTAUT), a technology adoption model proposed by Venkatesh et al. (2003).[37] The model is among the top three articles published in the information systems field and the preeminent article explaining the adoption of information systems. The UTAUT model traces its history from theoretical constructs found in literature that have a bearing on a user's intention of technology adoption and use. The UTAUT model is derived from the leading theories of technology adoption, including the theory of reasoned action, technology acceptance model, motivational model, theory of planned behavior, a combined theory of planned behavior/technology acceptance model, model of personal computer use, diffusion of innovations theory, and social cognitive theory.

UTAUT explains technology acceptance by looking at a user's intention to use an information system and the user's long-term use of that technology. The UTAUT model combines concepts found in earlier models of technology use to posit a unified theory of information technology adoption and use. UTAUT includes four dimensions determining user intention and technology use: Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions. Each of these dimensions is further classified into constructs constituting the dimension. The subsections below define and discuss each of these dimensions. Venkatesh empirically tested the model and reported that it was successful in explaining more variation in user adoption of technology than other adoption models tested.

Figure 15 presents the relative frequency of topics related to grant implementation as discussed during interviews and focus groups. These topics fall into four categories, corresponding to the four UTAUT categories listed above. Most of the implementation topics discussed relate to Facilitating Conditions (i.e., efforts supporting broadband use and adoption).

Figure 15. Distribution of Grant Implementation Topics by UTAUT Dimension
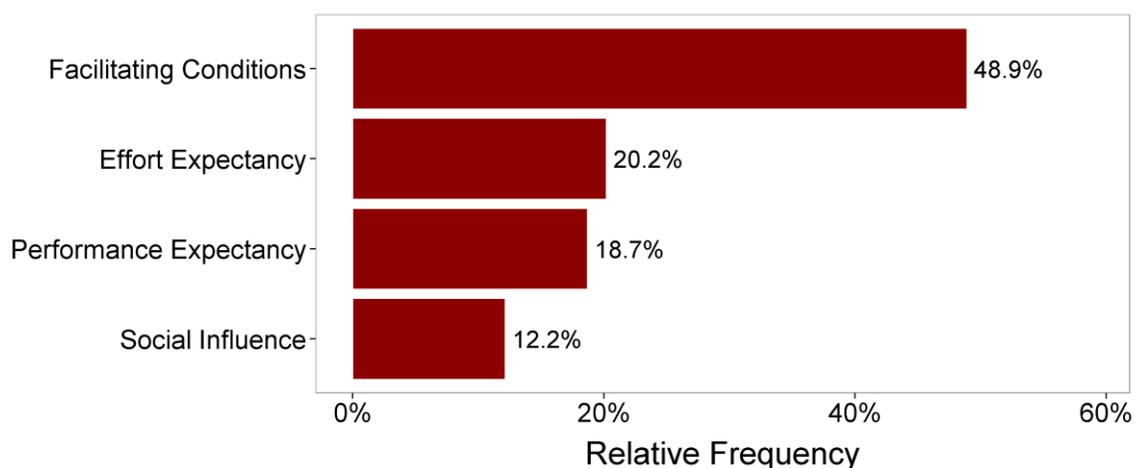
4.1 Facilitating Conditions

This category captures the degree to which the technical infrastructure available to the user supports potential broadband adoption, and the degree to which there are organizational supports to adoption. This includes access to broadband technology, the extent to which users can choose to use broadband, the compatibility of broadband with their lifestyle and activities, and the cost of using broadband. The broadband connection, computers, workspaces, safety, and cleanliness at FamilyNet Centers and YOUmedia sites function as Facilitating Conditions, as well as distributed equipment, such as the earned netbooks, MacBooks, AirCards, and desktop computers. Project programming in Chicago focused largely on Facilitating Conditions.

4.1.1 Access

- The grant funded all FamilyNet Center equipment, including furniture. FamilyNet Center managers oversee the selection, installation, and maintenance of equipment.

- FamilyNet Centers hold open lab hours on Saturdays and during the week when classes are not in session. Centers are accessible to the public and do not require identification for entry. The FamilyNet Center managers are always present to support patrons' use of the computers during open lab time. Examples of activities that occur during open lab time include checking personal email and social networking accounts, searching for and applying to job postings, completing certifications for unemployment benefits, performing tasks related to community organizing, posting information to community portals, and completing and printing homework.

- Earned computer incentives provided home or business access for qualifying program participants. FamilyNet Centers distributed netbooks to 1,280 individuals who completed a minimum of six hours of digital literacy training. Each netbook came with an AirCard donated by Sprint. BRNs distributed 100 desktop computers to business owners who completed BRN training. DYSJ distributed 120 MacBooks, also equipped with donated Sprint AirCards, to interns with perfect attendance.

- The donation of AirCards by Sprint lowered the barrier of cost and eliminated the barrier of credit to accessing broadband. Supplying users with the AirCard eliminates the up-front cost associated with purchasing the equipment. After the six-month trial period, users can purchase additional service without submitting to a credit check, which is typically required by most major Internet service providers.

- Each YOUmedia site is equipped with MacBooks, headphones, digital cameras, digital drawing tablets, printers, and a PlayStation 3. Computers have software for audio production, graphic

design, and photo editing. Mentors facilitate workshops that utilize the various media, and open lab time gives students freedom to explore those that appeal to them at their own pace. Students receive free personal flash drives to archive their work.

- BRN consultants linked businesses to available digital resources, such as the Mobile Citizens service or the free commercial Wi-Fi network in the Greater Southwest area.
- Hewlett-Packard donated more than thirty touch-screen kiosk computers for public use. These machines are located in public, high-traffic areas and offer access to the CTA Bus Tracker, Smart Community portals, and other local content.

4.1.2 Supporting Activities

The grantee carried out other activities to support Facilitating Conditions, including the following:

- Building relationships with residents is an important component of program implementation. The Smart Communities are typically neighborhoods where residents are subject to fraud schemes, and residents are hesitant to engage in Smart Communities services until the issue of trust is resolved. For example, BRN consultants had to gain the trust of business owners in order for them to disclose the financial and tax information necessary to qualify to receive a desktop computer.
- Trainers in neighborhoods with large Hispanic populations teach Spanish-speaking students in Spanish. These communities translated Everyday Digital and Civic 2.0 training materials into Spanish.
- The integration of FamilyNet Center services into CWF practices expands broadband access and training to CWF enrollees. Financial counselors work closely with enrollees to budget for a home computer and broadband connection if desired.
- Efforts to help Smart Communities residents sign up for discounted service through Internet Essentials attempt to improve affordability for eligible households, with children enrolled in free or reduced price school lunches.
- BRNs address Facilitating Conditions in a variety of ways. Technology assessments and action plans identify the potential for broadband integration. Provision of free or reduced services and equipment frees up money in businesses' operating budgets for the purchasing of digital tools identified in the technology action plan. Group and one-on-one training sessions familiarize business owners with the new technologies they have purchased and ensure that they are implementing them properly.
- Schools with modernized computer technology facilitated DYN programming. These schools typically had the existing infrastructure and culture of use to support the program's activities. Additionally, administrators at these locations would allow DYN instruction to begin slightly earlier than those at other schools, giving mentors more instructional time.
- Mentors and CyberNavigators have built relationships with participants in both programs. They encourage students to be "conscious consumers" of digital media, asking them to think critically about the messages of the media they access and the underlying themes of the artifacts they create themselves. Mentors help the students set and attain goals, and help them explore how the activities they enjoy at YOUmedia and DYN can translate into career opportunities.

4.2 Effort Expectancy

> *"In our case, the majority of the participants that were calling in to register for the classes had never had any type of computer experience whatsoever, didn't even know how to turn one on. Yet they had computers in their homes, some of them for their children, but didn't know how to use it." – FamilyNet Center Manager*

This category measures the expectations of the potential adopter regarding the difficulty of using broadband to achieve benefits in one or more of the focus areas described above. It includes preconceived ideas about the difficulty of using broadband technology and computers in general, and anxiety or concerns about the risks of broadband use. For the Smart Chicago SBA project, it indicates how the services provided made using broadband to access information and services on the Internet easier for residents. Examples include:

- Most adult trainees had little to no computer experience when they initially begin training. It was common for an individual to have a computer at home that he or she would not touch for fear of breaking it. Everyday Digital addressed effort expectations by revising training materials to begin at the most basic skill level. The curriculum now covers simple topics such as powering the computer on and off and using a mouse and keyboard. Some students in specialized courses, such as Civic 2.0 and BRN training, also have limited skills and receive referrals to Everyday Digital courses.

- Some recipients of earned netbooks had difficulty using them because they received training on desktop computers. Training sessions familiarize them with their machines. FamilyNet Center managers addressed any additional difficulties on a case-by-case basis. The project partner organization Blue Ocean Logic resolved technical problems.

- Effort Expectancy among business owners varies. Those who have already integrated the use of broadband and digital solutions into their operations are interested in accessing services that can help them expand their skill set and identify ways to implement new technologies. Some who have little to no knowledge of the digital tools available to them or how to use them require more assistance. These individuals benefit from attending basic digital literacy training before they begin BRN training. They also require multiple one-on-one sessions with their business consultants to master the use of broadband and digital tools for their business purposes.

- The majority of youth program participants have had previous exposure to computers and the Internet at home or school. Many have access to a home computer or smartphone. The initial extent of their computer knowledge is largely limited to social networking, email use, search engine use, and Windows-based products. Most are unfamiliar with the operating system used by the Apple products in YOUmedia sites. They also require training for the various software packages used in workshops and for equipment such as digital cameras and drawing tablets. Facilitation of workshops by program mentors and the support of CyberNavigators address effort expectations in the project's youth programs.

- Most DYSJ interns had previous computer experience but, similar to other youth program participants, they had limited skills. During their internships, they gained experience performing tasks with software programs commonly used in an office setting.

4.3 Performance Expectancy

> "It was after these classes that individuals were able to say, 'Oh, now I get what this broadband thing means. Why I need to use it at home. Why I need broadband to find a job. Why I need to understand Microsoft Word if I'm working as a receptionist and I need to input data in a database or use Access.' " – Program Officer, LISC/Chicago

Performance Expectancy measures the degree to which a potential adopter believes that using broadband is beneficial for use in his or her daily life. Aspects of Performance Expectancy include the perceived usefulness of the new technology, outcomes expectations, and the perceived relative advantage of the technology versus previously used technologies. Examples include:

- Trainers help users understand how they can use broadband to enhance their lives and identify ways in which they can integrate digital tools into their day-to-day activities. This includes online banking, shopping, tax preparation, job searching, government services access, and basic

search engine use. The overarching goal of the Smart Communities program is to stimulate productive use of broadband, as opposed to merely gaining access for residents.

- The first instance of search engine use in Everyday Digital often represents the moment when students fully comprehend the wealth of information available on the Internet and how simple it is for them to access that information. After initial exposure, residents understand how they can access search engines to retrieve information and solve problems.

- Some residents had a negative perception of Internet use before enrolling in digital literacy training. The most common fear was identity theft. Learning about online safety made residents more open minded about adopting broadband for their personal use.

- CWF staff members illustrate the use of digital tools for managing personal finances. Program participants gain an understanding of how they can use technology to create and maintain a budget, obtain credit scores, and access public benefits.

- The acquisition of basic digital literacy skills allowed residents to identify other opportunities to enhance their quality of life. Some enrolled in GED or associate degree programs at area community colleges, and others attended computer-based ESOL classes.

- Job seekers gain an understanding of the importance of digital literacy skills at employment-based centers. They learn the advantages of online job searching over traditional methods and use the centers to complete employment searches and web-based applications.

- In the Smart Communities, it is common for business owners to have limited or no knowledge of broadband and other digital tools available to them or how to incorporate them into their business. BRNs helped business owners understand the benefits of integrating those technologies into their everyday operations.

- One core goal of YOUmedia and DYN is to encourage students to see themselves as producers, not just consumers, of media. The hope is that students will develop a "digital identity" in the program and understand how the skills they acquire there can translate to real-world opportunities.

4.4 Social Influence

> *"One of my students⸺she was about 77 years old⸺had a grandson in the military abroad, and she hadn't heard from him, and she said, 'I'm not sleeping at night and I just want to hear from him. I've sent him letters [but he has not responded].' And so we set her up with email and he answered back immediately [and said he could not receive postal mail]. [S]he said that changed her life. She went out and bought a computer."*
> *– FamilyNet Center Manager*

This category measures the degree to which potential adopters perceive that others will view them favorably or interact with them in a positive way if they adopt broadband technology. This includes friends and family members who might already be using broadband technology. It also includes measures of whether the use of broadband is considered to be a social norm for the social group to which the potential adopter belongs. Components of Social Influence include subjective norms, social factors, and the image associated with broadband use. Examples include:

- Word of mouth has been the most successful outreach method for all Smart Chicago SBA programs. Program participants informally share their positive experiences with friends and family, which increases trust and the interest of residents. Often participants will offer to distribute fliers and other marketing materials in their neighborhoods.

- The promotion of Smart Communities services by the lead agencies is effective, as these organizations were already established in the communities. Program staff promoted their services at community events, schools, and libraries. YOUmedia and DYN held student showcases. Tech organizers engaged in a door-to-door marketing campaign.

- The Smart Communities marketing campaign launched, in September 2011 and running through June 2012, reached an estimated 250,000 individuals. It featured images and testimonies of actual residents of the Smart Communities in advertisements posted in public places such as bus shelters and on public transportation. In Chicago Lawn, Pilsen, and Humboldt Park, the advertisements also ran in Spanish.

- Residents and Smart Community program staff members post information about project programming on the community portals. This content ranges from class schedules to video testimonials to photo galleries of grant activities. Some communities have also set up Facebook pages to expand their outreach efforts.

- Many program participants are motivated to learn how to use broadband to communicate with friends and family abroad who are already Internet users via email, Skype, or social networking sites.

Section 5. Techniques, Tools, and Strategies

This section describes successful techniques, tools, and strategies identified by the grantee. The grantee made many statements related to the successful techniques, tools, and strategies. They also mentioned a number of challenges encountered when implementing the grant.

5.1 Techniques, Tools, and Strategies

5.1.1 Techniques

- FamilyNet Centers tailored curricula to the needs of their patrons. The most notable example is the translation of Everyday Digital, Digital 2.0, and Civic 2.0 course materials to Spanish. Some sites generated brand new content to meet training demands in their neighborhoods, such as Pilsen's Facebook training and Chicago Lawn's Avon and Mary Kay online ordering classes. The grantee cited tailoring curricula as one of the keys to building trust in the community.

- FamilyNet Center managers conduct quarterly follow-up correspondence with patrons, typically by email, to track progress.

- Six hours of training is required receive the earned netbooks distributed as quickly as possible, although most recipients completed ten or more hours.

- Trainers avoided the use of jargon when communicating the benefits of broadband to residents. Rather, they connected with communities by speaking about broadband as an important tool for completing tasks that an average person may encounter, from filling out web-based job applications to filing taxes online.

- BRN consultants develop technology action plans for businesses based on an initial technology assessment, the needs of the business, and their own knowledge of digital tools. Consultants spend one-on-one training time with business owners outside of group training classes to build trust.

- Trainers teaching specialized courses, such as BRN training or Civic 2.0, refer those who do not have basic digital literacy skills to Everyday Digital courses. With those foundational skills in place, individuals can spend less time trying to keep up with the pace of the class and more time expanding their skill set.

- FamilyNet Center managers, tech organizers, and BRN coordinators advertise for one another in their respective classes and refer individuals who may need a specific type of training to the appropriate courses.

- YOUmedia branches and DYN restrict service to grades six through eight. Serving middle school students only, rather than middle and high school populations, eliminates the challenges that arise when mixing different age groups and leaves more time for workshops.

- The daily presence of CyberNavigators in the YOUmedia branches, as opposed to the mentors' once-a-week schedules, has allowed them to develop relationships with students. YOUmedia staff members credit these relationships with building regular attendance.

- The Hanging Out, Messing Around, and Geeking Out (HOMAGO) model has been successful in YOUmedia branches. Because it is a drop-in program, students can choose when to attend and, once there, are not limited to certain activities. Open lab time at the beginning of YOUmedia sessions accommodates the varying schedules of students from different schools.

5.1.2 Tools

- The availability of Dr. Karen Mossberger's community-level survey data was key when targeting the communities where grant dollars would be invested and for establishing a baseline for comparison in the post-grant period. Grantees recommend that future projects budget for a similar assessment and evaluation of results.

- New patrons of the FamilyNet Center complete an SBA Assessment, a survey that gathers basic demographic information and questions about the individuals' exposure to and usage of the Internet. Trainers can use this information to adjust curricula to accommodate the baseline skills of their new students.

- FamilyNet Center computers have strong security settings that protect the patrons' digital identities and protect the machines from viruses. Trainers teach residents about general Internet safety and urge them to protect their own devices at home.

- Everyday Digital course students receive certificates for passing tests at the end of each module. Those who complete ten or more hours of training receive a certificate of digital literacy. FamilyNet Center trainers noted that the provision of certificates has been an effective tool for motivating students.

5.1.3 Strategies

- The grantee designed programming with community goals in mind. The grantee's vision was not merely to get residents access, but to get them access that they can use as a tool to enhance their lives. The grantee developed community-level action plans based on a combination of existing quality of life plans from the New Communities program and feedback gathered from residents at neighborhood meetings.

- LISC's role as a financial intermediary allowed the program to meet its six-month start-up time and eighteen-month deliverables by front-funding early program design without having to wait for the city to execute its contracts. Lead agencies were confident they would receive payment from LISC because they had a pre-existing relationship.

- Grantees worked closely with the city and the Chicago Community Trust to streamline processes relating to procurement policies where possible to minimize time spent on meeting financial requirements. Initially, the agreement between the grantee and subgrantees stipulated three bids for each item purchased. A revision clarified that this requirement is only for items over a certain cost threshold, simplifying the purchase of smaller items such as office supplies. Electronic tools helped subgrantees submit vouchers on a timely basis, and a disallowance policy kept vouchers moving forward through the process while subgrantees compiled necessary documentation.

- Pre-existing relationships among the grantee, partners, and lead agencies are valuable and facilitate the fulfillment of federal compliance requirements. Program and financial compliance management is essential throughout the life of the grant and requires training at both the administrative and program staff levels.

- Those working in the communities found that leveraging pre-existing relationships allowed them to build momentum quickly when the grant period started. Pairing with organizations that communities already know and trust is a powerful tool for connecting with residents.

- All programs require staff to participate in regular meetings on days designated for professional development activities. Staff members discuss challenges, offer one another solutions, or share positive experiences. Directors use this time to collect feedback and implement changes in response to staff experiences.

- The activities within FamilyNet Centers and CWFs reinforce those of one another. Residents gain an understanding of how broadband can enhance their lives, and financial planners help them budget for home access. Job seekers come to the CWF to attend employment-readiness workshops; digital literacy training gives them the skills necessary to advance their careers.

- Word of mouth among residents has proven to be the most effective means of outreach in the Smart Communities. FamilyNet Centers provide fliers for patrons who volunteer to distribute them throughout the neighborhoods, and some have created incentive programs for those who hand out the most fliers.
- Tech organizers undertook door-to-door campaigns in the Smart Communities among households and businesses. They distributed postcards, communicated the services that would be offered, and raised awareness about neighborhood planning meetings. These efforts built trust among community members.
- The Smart Communities marketing campaign depicted actual residents of the communities along with their personal testimonies. The Chicago Lawn, Pilsen, and Humboldt Park Smart Communities rendered these advertisements in Spanish. This facilitated self-identification with the advertisements on the part of community residents.

5.2 Challenges

The grantee expressed the following challenges faced in grant implementation and efficacy:

- Cost remains a barrier to broadband adoption for residents in the Smart Communities. Project programming in the Smart Communities did not directly address the issue of cost. Although reduced-cost options like Comcast's Internet Essentials are available, potential subscribers are subject to a credit check, which can function as an additional barrier to adoption.
- An initial lack of trust made it difficult to persuade residents to engage fully in project programming in the beginning. Business owners were wary of sharing in-depth financial information to qualify for an earned desktop computer. FamilyNet Center patrons opted out of survey participation.
- Compliance with federal reporting required hardcopy paperwork, rather than electronic documentation. Project programming in the Smart Communities served many more residents than was expected, resulting in copious amounts of paperwork for staff.
- Adoption levels are difficult to track. The grantee believes that use of broadband occurs in locations other than home or work, which are used as part of some current adoption definitions. Assessment questions also presume an understanding of broadband technology on the part of respondents. The grantee reported that some participants were unable to distinguish between types of Internet service and responded that they had broadband in their home when in fact they had dial-up.
- Capacity in FamilyNet Centers remains an issue, as trainings are still very popular and workstations are limited. This has led to waiting lists as long as three months, with waiting lists remaining closed to new participants until the grantee can address the backlog of requests.
- The SBA Assessment completed by FamilyNet Center patrons cannot include participants in youth programs. This severely limits the amount and kind of data that the grantee can gather on youth programs.
- FamilyNet Center managers are having difficulty removing some security settings installed by employees of a former partner agency that is no longer in operation. Filters block material on some websites that are included in the training, making it difficult for trainers to adhere to certain curricula.
- Participants received training on desktop computers before earning their laptops. FamilyNet Centers held training to familiarize recipients with their netbooks. However, some recipients did not return. Trust remained a factor in the early grant period, and some feared they would have to return their netbooks.
- While the community portals are effective tools for communicating with residents already engaged in the project programs, they do not appear to be effective tools for reaching new patrons. Independent marketing strategies, such as posting signage in individual neighborhoods, are more effective.

- The extension of the CPS school day has affected YOUmedia programming at the branch locations. On days that the branches close early, students' late arrival time leaves mentors with limited time for instruction. In these cases, students can enjoy open lab time. A CPS teachers' strike in early fall 2013 also affected programming because students missed some school time as a result.

- Ninth graders who have attended YOUmedia as middle school students at the branch libraries may have difficulty transitioning to the high school space at Harold Washington Library. Those who are not familiar with the downtown area find the location and transit system intimidating.

- YOUmedia and DYN students have stated that iRemix is not as interesting to them as the social networking sites they typically use. Because it is a closed network, only iRemix users can view each other's posts. Mentors have to encourage students to use iRemix rather than posting artifacts only to Facebook or Tumblr, where the artifacts receive more attention from peers.

- Some schools and community sites where DYN operated did not have the technical infrastructure to support the program's activities. Lack of bandwidth, outdated technology, or incompatible operating systems hindered DYN mentors' ability to facilitate workshops. Grant-funded salaries for DYN staff, but not equipment. As a result, DYN was unable to operate at some of these sites.

- Some business owners who would like to participate in BRN training are unable to do so because they lack the time.

- Many business owners were unable to meet the financial requirements necessary to earn a desktop computer after BRN training because they had disorganized accounting records or owed back taxes. Some that did qualify were wary about completing the required paperwork because they did not wish to disclose information about themselves and their businesses.

Section 6. Conclusions

The Chicago Smart Communities program used broadband as a tool for wider community development efforts. Each of the five Smart Communities created a customized plan based on community needs. The Smart Chicago grant provided an opportunity to implement plans that would not otherwise have been possible. Eleven additional communities have been identified that could follow the Smart Communities model.

The Smart Communities program had both social and economic impacts during the grant period. The economic impacts of the grant included both individual and business components. Individuals within the Smart Communities who took advantage of the training provided had a higher rate of success in finding employment versus similar individuals who did not take the training. Ninety-eight businesses received the training and equipment for use in developing their small businesses. Business owners received information on how to use online resources to develop business plans and to learn more about topics such as bookkeeping and marketing.

The social impacts of the grant occurred at the individual, household, and community levels. Individuals residing in the Smart Communities had a statistically significant increase in their Internet use during the time the program was in place. This reflected the training and outreach components of the program, as well as drop-in assistance at the FamilyNet Centers. One area in which this was closely linked to the program activities was in the deployment of public Internet kiosks, which were an unexpected success. Users of the kiosks performed everyday tasks, such as web searching and accessing community portals, as well as using the kiosks to track buses to make their commutes safer and more convenient.

A second area of significant social impact was the use of the Smart Communities program to create an avenue for admission of previously marginalized individuals and communities into online discourse. Quantifying the benefit of such a result is not possible. However, it is clear from conversations with participants that individuals and communities moved from being described by others in online discourse (which they most often could not access or respond to), to being creators of content that described themselves and their community in a way they thought appropriate. Tech organizers, who worked with community organizations in their training and outreach, stated that a significant benefit of an increased focus on broadband was a more balanced online presentation of their communities, which had earlier been portrayed only negatively. This occurred through the portals and the creation of websites, Facebook pages, and other online content by community groups and businesses. Individuals, especially youth in the DYN and YOUmedia programs, were encouraged to critique presentations of their community and to develop content that reflected their self-image. The grantee frequently posted this content to sites such as YouTube and Facebook.

The community-focused model of the Smart Communities grant also revealed how community-level problems can impede broadband use and adoption, and thereby reduce benefits to community members. In particular, the DYN program suffered setbacks because of problems endemic to the CPS system. Because DYN could not purchase equipment as part of the grant, it was reliant on school resources, which in some cases were outdated or unusable. The scheduling of DYN as an after-school program also left it at the mercy of school schedules. A teachers' strike and an extension of the school day reduced the amount of time available for DYN activities. Because of these events, DYN has concluded that fuller integration with the school system is necessary to achieve expected results. The grantee is recasting the program to meet this objective.

One area in which progress was not statistically evident so far is in household subscription rates. A statistical study of this outcome variable indicated that, over the grant period through 2011, residents of Smart Communities were no more likely than other Chicago residents to subscribe to

broadband. However, Internet use did exhibit a large and statistically significant increase in the Smart Communities during this time. It is unknown whether these results will change when the analysis of the 2013 citywide data is complete in summer 2013. The information ASR gathered during our case study site visit suggests several reasons for this gap, none of which would be addressed by broadband training. Potential users in the Smart Communities may face barriers such as insufficient income to afford a broadband connection, unpaid bills that disqualify them from reduced price service, or poor credit ratings resulting from job loss or other personal financial difficulties. In a survey conducted among Chicago residents by Mossberger et al. (2012), 27 percent of respondents reported that cost was a factor in their decision to not have Internet at home.[38] When asked what the most important reason was for not having a home Internet connection, 50 percent of respondents cited cost. The Smart Communities have partnered with other organizations, such as the Center for Working Families, which provide financial counseling as an integrated component of its digital literacy activities. Meanwhile, residents of the Smart Communities are taking advantage of computer centers, kiosks, and free computer equipment provided by the Smart Chicago grant and its partners.

Section 7. Quantitative Analysis

As the grant period comes to a close, eleven additional communities have been identified through the New Communities Program as potential sites for replication of Smart Communities programming. This section will explore the potential impact of expanding programming to these areas. Research shows that the Smart Communities Program had a significant effect on Internet use but not on home broadband subscriptions. This section will model the impact of program expansion on Internet use only.

Figure 16. Existing and Potential Smart Community Service Areas
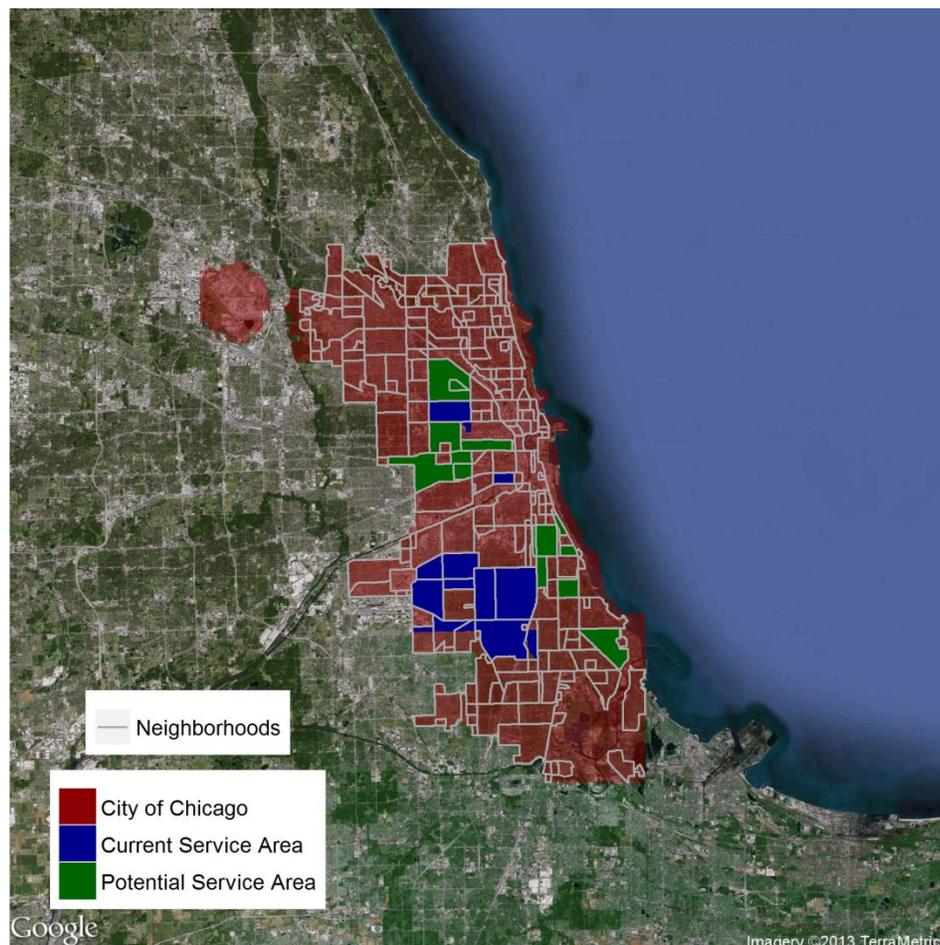
The map in Figure 16 shows the existing and potential geographic service areas of the Smart Communities Program. The existing Smart Communities discussed in this report are shaded in blue; the eleven potential New Communities are shaded in green. The shading in red highlights the entire city.

Table 1 lists the percentage of residents identifying as Internet users as of 2011 in each community.[39] While many of these communities exhibit relatively high rates of Internet use, three—Little Village, North Lawndale, and South Chicago—fall below the citywide average of 79 percent.

Table 1. New Communities' Rates of Internet Use, 2011

Community	Internet Use
Douglas	94%
East Garfield Park	88%
Grand Boulevard	86%
Little Village (South Lawndale)	64%
Logan Square	88%
North Lawndale	77%
North Kenwood-Oakland	95%
South Chicago	77%
Washington Park	91%
West Haven (Near West Side)	96%
Woodlawn	83%

7.1 Impact of Potential Program Expansion on Internet Use

To model the impact of the expansion of Smart Communities programming into New Communities neighborhoods, the analysis uses 2010 Census data aggregated at the community level by the City of Chicago.[40] While these population data are based on formal community area boundaries, the actual number of individuals affected by programming will depend on how it is implemented. These calculations serve as an approximation and may underestimate or overestimate the true impact program expansion could have in these communities.

Table 2 outlines the effect that replicating Smart Communities programming in these eleven communities could have on Internet use. Following the assumption that the program will increase Internet use by 15 percentage points over and above expected increases in adoption, projected rates of Internet use were calculated by adding 15 percentage points to those reported in 2011.[41]

For many of the communities, this increase resulted in projected rates that exceeded 100 percent. In those cases, projected Internet use was assumed to be 100 percent. The average projected rate of Internet use in all New Communities after program expansion is 94 percent.

The number of new Internet users was calculated by multiplying each community's population by their respective differences in projected Internet use and Internet use reported in 2011. For example, 94 percent of Douglas residents identified as Internet users in 2011. The projected rate of Internet use in Douglas if the Smart Communities Program were implemented is 100 percent, corresponding to a 6 percent increase in Internet use. Multiplying the Douglas population of 18,238 by 6 percent estimates that 1,094 residents will become Internet users.

Table 2. Predicted Impact of Smart Communities' Expansion on Internet Use

Community	Projected Internet Use	Additional New Internet Users
Douglas	100%	1,094
East Garfield Park	100%	3,085
Grand Boulevard	100%	3,070
Little Village (South Lawndale)	79%	11,893
Logan Square	100%	8,734
North Lawndale	92%	5,386
North Kenwood-Oakland	100%	1,187
South Chicago	92%	4,679
Washington Park	100%	1,054
West Haven (Near West Side)	100%	2,195
Woodlawn	99%	3,561
All New Communities	**94%**	**45,942**

This computation suggests that up to 46,000 additional individuals could adopt Internet use if Smart Communities programming expands to the New Communities.

Section 8. Next Steps for the BTOP Evaluation Study

In early 2014, ASR will deliver *Interim Report 2* to NTIA. This report will include a summary of the second round of case study visits to the fifteen PCC and SBA grants, allowing for an analysis of the impacts of the grants over time. *Interim Report 2* will also summarize the findings from case study visits to twelve Comprehensive Community Infrastructure (CCI) grants. These visits will take place in the fall of 2013 and result in a set of twelve case study reports delivered to NTIA over several months.

For the PCC and SBA projects, *Interim Report 2* will provide an update to and refinement of the analysis presented in *Interim Report 1*. For the CCI projects, *Interim Report 2* will summarize the activities underway by twelve CCI grantees and the impacts these projects intend to have on broadband availability and adoption for community anchor institutions, communities, and individuals.

The City of Chicago has taken steps to explore sustainability in the future:

- The city has released a request for information (RFI) that seeks to engage private companies, universities, and other organizations in enhancing broadband infrastructure, extending service to underserved areas, and providing free public Wi-Fi access in public spaces.
- LISC has stepped in with a one-year grant to maintain the cadre of tech organizers while additional funding is found to continue the work of the BTOP grant.
- There are plans to replicate Smart Community programs in the eleven remaining New Communities.
- The grantee will post training materials, such as Civic 2.0 and DYN, on the community portals. This allows for greater flexibility in response to changing community needs.
- Metropolitan Family Services, which supports the CWFs, will offer the services of its IT team to maintain FamilyNet Centers.
- FamilyNet Centers hope to provide more extensive Microsoft-based training, and some are working to become MSIT testing centers.
- Tech organizers hope to provide some consulting services to local schools. They plan on conducting an initial assessment of the schools' technology resources, followed by action plans to address areas of improvement.
- MacArthur has committed to allocate funding to sustain the YOUmedia program.

One key question in the sustainability of the Smart Communities is the availability of funding that is compatible with the status of the project. Funding is available for "prototype" broadband projects. However, the Smart Communities are ready to move beyond this phase into a rollout of these activities to the eleven identified communities in addition to the five that are currently included. It is not clear if broadband funding opportunities have advanced to the same level, and the limited scope of available grants could slow progress in the Smart Communities.

ASR will check in with the grantee in the second quarter of 2014 to learn more about the sustainability of the project.

Finally, in September 2014, ASR will deliver a *Final Report* that quantitatively and qualitatively measures the economic and social impact of BTOP grants (including CCI, PCC, and SBA). The centerpiece of the *Final Report* will be an assessment of how and to what extent BTOP grant

awards have achieved economic and social benefits in areas served by the grantees. To the extent that such information is available, results from studies performed by the grantees will round out the conclusions presented.

Glossary

Acronym	Definition
APR	Annual Performance Progress Report
ASR	ASR Analytics, LLC
BRN	Business Resource Network
BTOP	Broadband Technology Opportunities Program
CCI	Comprehensive Community Infrastructure
CPS	Chicago Public Schools
CTA	Chicago Transit Authority
CWF	Centers for Working Families
DBA	Doing business as
DYN	Digital Youth Network
DYSJ	Digital Youth Summer Jobs
ESOL	English for speakers of other languages
FCC	Federal Communications Commission
GED	General equivalency degree
HOMAGO	Hanging Out, Messing Around, Geeking Out Model
HUD	Department of Housing and Urban Development
IDES	Illinois Department of Employment Security
KKC	Kennedy King College
LISC/Chicago	Local Initiatives Support Coalition of Chicago
MSIT	Microsoft Information Technology
NRI	Neighborhood Recovery Initiative
NTIA	National Telecommunications and Information Administration
PCC	Public Computer Center
POS	Point of sale
PPR	Quarterly Performance Progress Report
RFI	Request for Information
SBA	Sustainable Broadband Adoption
SNAP	Supplemental Nutrition Assistance Program
SSA	Special Service Area

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