

A stylized map of Puerto Rico is centered on the page. The map is rendered in a dark blue color and has a torn paper effect, with irregular, jagged edges. The text "SECTION IV" is printed in white, uppercase letters across the center of the map. The background of the entire page is a light blue color, with several large, dark blue geometric shapes (triangles and polygons) scattered across it, creating a modern, abstract design.

SECTION IV

BROADBAND
ADOPTION ACROSS
PUERTO RICO



The 2012 Puerto Rico Broadband Strategic Plan set the strategic goal that “[a]ll Puerto Ricans, regardless of income, race, gender, age, or location should have access and the willingness to partake and benefit from the online opportunities available through broadband.”⁴⁰ While expanded access and enhanced investment in broadband infrastructure is encouraging, without corresponding broadband adoption among Puerto Rico consumers and businesses, further build-out could be deterred. It is in the interest of both private and public leaders to work together to bridge the remaining broadband adoption gaps and ensure that all Puerto Ricans are able to participate and compete in the twenty-first century interconnected, global economy.

This chapter examines the broadband adoption rates and gaps across Puerto Rico in its current state and over the past four years, providing trend data since 2010. The chapter also focuses particular attention on various demographics and corresponding

“The success of the digital age does not rest in more or better broadband ‘pipes’ and should not be measured in terms of access bits, but rather in terms of number of adopters and scope and quality of usage of the technology.”

-2012 Puerto Rico Broadband
Strategic Plan

barriers to broadband adoption. This segment includes information from two key data sources – the Connect Puerto Rico Residential Broadband Surveys in 2010, 2012, and 2014⁴¹ and the 2014 Digital and Mobile Behavior Study conducted by Estudios Técnicos. It then presents examples of existing programs, both in Puerto Rico and beyond, that have addressed broadband adoption gaps, and assesses the successes and shortfalls in these approaches. Building upon

this information, the section closes with a series of strategic policy recommendations to ensure that broadband adoption in Puerto Rico aligns with the goal of becoming a Gigabit Island.

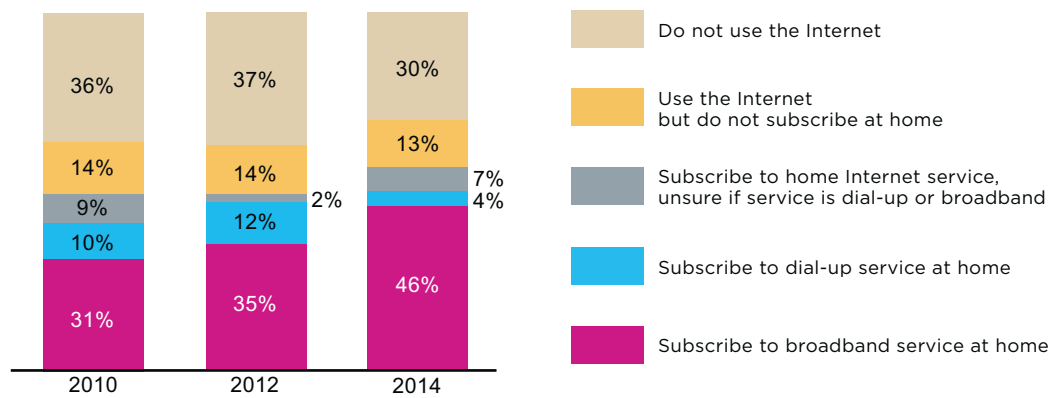


BROADBAND ADOPTION IN PUERTO RICO - 2010-2014

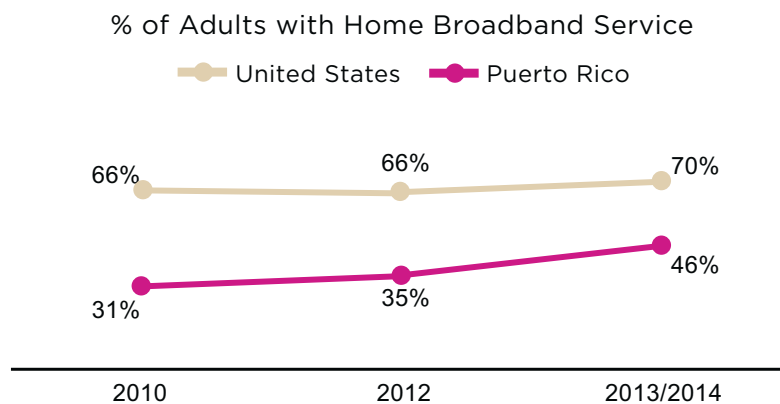
The 2012 Plan set goals that, by 2013, residential broadband adoption across Puerto Rico should be at least 50% and at least 70% by 2015. This section analyzes the progress toward meeting these goals and the remaining gap in fixed broadband adoption among Puerto Rico residents.

FIXED BROADBAND ADOPTION TRENDS

The residential broadband market in Puerto Rico has witnessed significant growth in the last four years. In 2014, 46% of Puerto Rico households subscribe to broadband service, up from 31% in 2010. This represents an increase of approximately 377,000 adults who now have at-home broadband service.



By comparison, home broadband adoption across the United States grew by just 4 percentage points between 2010 and 2013.⁴²

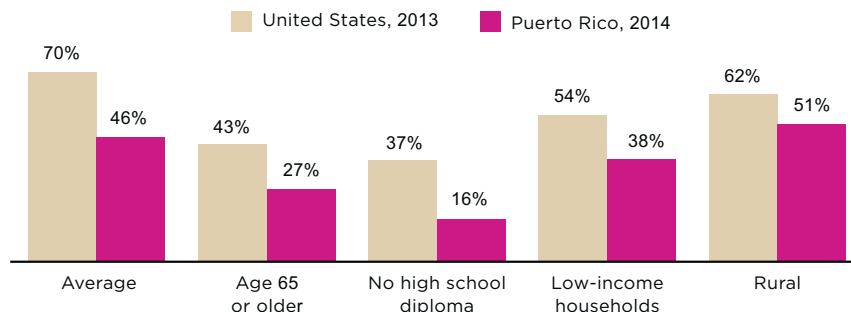


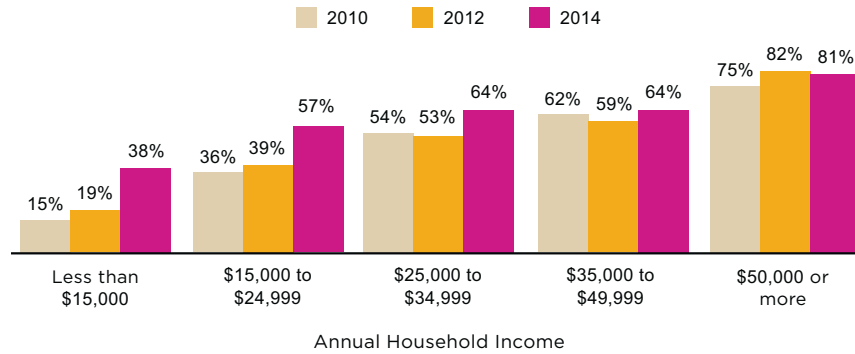


When Connect Puerto Rico began conducting its surveys in 2010, broadband adoption on the U.S. mainland was already more than double that of Puerto Rico, a substantial hurdle to overcome. As represented on the previous page, Connect Puerto Rico's 2010 residential technology assessment indicated that only 31% of Puerto Ricans had a broadband connection at home,⁴³ significantly below the U.S. mainland adoption rate at that time of 66%.⁴⁴ Notwithstanding Puerto Rico's rapid market growth over the past four years, broadband adoption on the Island still lags behind other U.S. jurisdictions. While broadband adoption growth is expected to continue, it is unlikely that this growth would be sufficient to reach the benchmark from the 2012 Strategic Plan of 70% of residents with an at-home subscription by 2015, or to bring the Puerto Rico broadband market in line with similar U.S. economies within the immediate future.

Home Broadband Adoption Rates in Puerto Rico			
	2010	2012	2014
Island-Wide	31%	35%	46%
Age 65 or older	5%	13%	27%
No high school diploma	7%	8%	16%
Low-income households	15%	19%	38%
Adults with disabilities	21%	18%	37%
Rural	34%	31%	51%

Broadband adoption figures across Puerto Rico also reveal a persistent gap among certain demographic groups. Broadband non-adopters in Puerto Rico are generally low-income, senior citizens, people with disabilities, and/or individuals with less education, which mirrors demographic trends on the U.S. mainland and elsewhere.⁴⁵ Similar to Puerto Rico's overall broadband adoption rate, these populations continue to have lower broadband subscription rates than their peers on the U.S. mainland.⁴⁶ However, unlike in the rest of the United States, rural residents in Puerto Rico tend to keep pace (or in some years, even surpass) the Island-wide average.⁴⁷





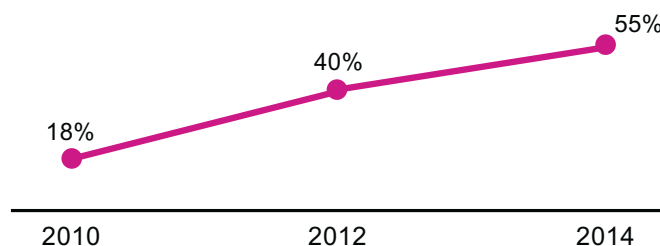
The broadband adoption gap remains particularly acute among low-income Puerto Ricans. Among Puerto Rico households earning less than \$15,000 annually, 62% of households do not have broadband in the home. Studies from Estudios Técnicos and the Puerto Rico chapter of the Internet Society also show that, while Internet usage is increasing among Puerto Ricans with annual household incomes below \$15,000, they are still using the Internet at a rate lower than those with higher annual household incomes.⁴⁸ A study by Estudios Técnicos also showed a slight downward trend in Internet usage – a decrease of 1.2 percentage points – between 2013 and 2014 among this group. This could reflect a contraction of the market among low-income households; however, it is too soon to know whether this is a one-year effect or whether the trend will continue.

Overall, studies from both Connect Puerto Rico and Estudios Técnicos indicate that income remains a critical factor in the growth of the broadband market in Puerto Rico.

MOBILE BROADBAND ADOPTION TRENDS

Advances in mobile technology continue to make Internet connectivity more accessible and affordable than ever before. As expressed in the broadband infrastructure chapter, 99.9% of Puerto Rican households had access to mobile broadband speeds of at least 3 Mbps/768 Kbps by June 30, 2014. Similar to fixed broadband adoption, mobile adoption in Puerto Rico has increased substantially - by 2014, 55% of Puerto Rico residents used mobile broadband. This percentage mirrors usage rates on the U.S. mainland.

% of Adults who Use Mobile Broadband Service in Puerto Rico





According to the Pew Internet Research Center, 90% of Americans own cell phones and 63% of adult cell phone owners use their cell phones to go online.⁴⁹ This amounts to 57% of American adults going online via cell phones, which is similar to the share of Puerto Rican adults who use a cellular network to connect to the Internet.⁵⁰

Computer Ownership in Puerto Rico			
	2010	2012	2014
Computer ownership	55%	60%	61%
Desktop computer ownership	34%	17%	22%
Laptop computer ownership	37%	34%	47%
Tablet computer ownership	n/a	2%	16%

This increased focus on mobility can be seen in computer ownership patterns between 2010 and 2014. Overall, computer ownership has only grown by 6 percentage points in Puerto Rico during this time. Further examination shows that a shrinking number of Puerto Ricans own desktop computers. Rather, laptop and tablet computer ownership has been on the rise, particularly since 2012. This may be boosting mobile Internet usage across the Island – the ability to use a tablet at Wi-Fi hotspots would allow an individual to stay connected to the Internet without the monthly cost of a home broadband subscription.

PRICES AND SPEEDS REPORTED BY HOME BROADBAND SUBSCRIBERS

Broadband costs and availability are instrumental to a household's ability to subscribe to service. As a result, these two factors must be explored as Puerto Rico aims to become the Gigabit Island.

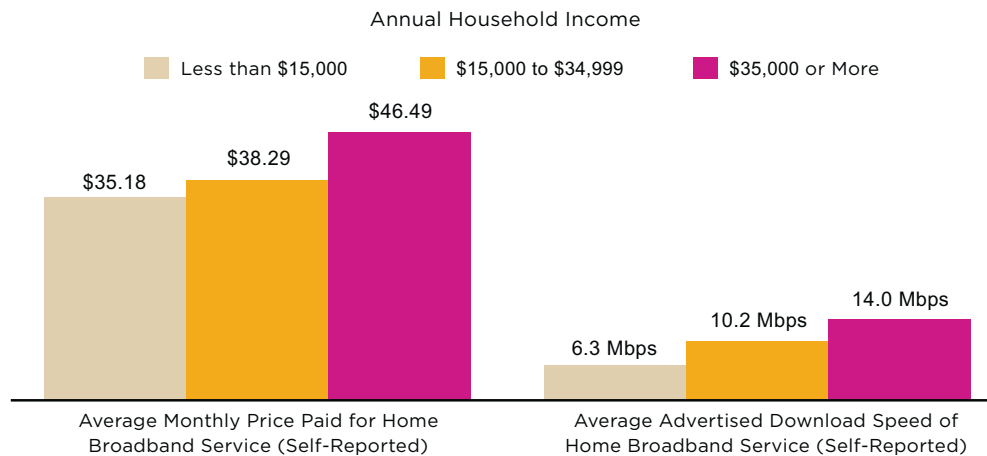
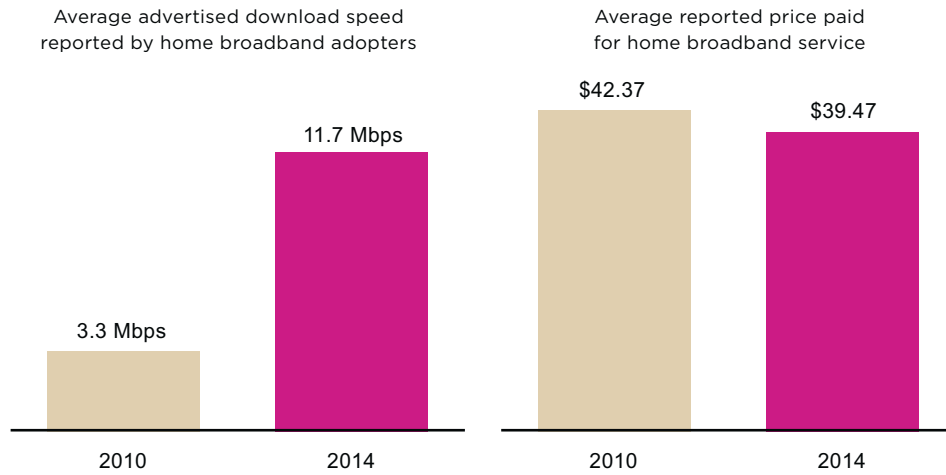
Across Puerto Rico, home broadband subscribers report that they pay \$39.47 per month on average for their home broadband service. This is down slightly from 2010 when broadband subscribers reported paying an average of \$42.37 for their monthly broadband service.⁵¹

Home broadband subscribers who know their current advertised download speed report it to be 11.7 Mbps, compared to 3.3 Mbps in 2010.⁵²

This self-reported information suggests that households in Puerto Rico are embracing increasingly faster broadband speeds, while paying less on average. This increase in speeds can be attributed to several factors, such as improved infrastructure making faster broadband available to more households and increased demand for content that requires higher bandwidth (such as streaming video).



As with home broadband adoption rates, income affects the speed and quality of broadband service to which Puerto Rican households subscribe. While broadband subscribers with annual household incomes below \$15,000 pay less than wealthier households on average, they report that their advertised broadband speeds are much lower.





BARRIERS TO ADOPTION

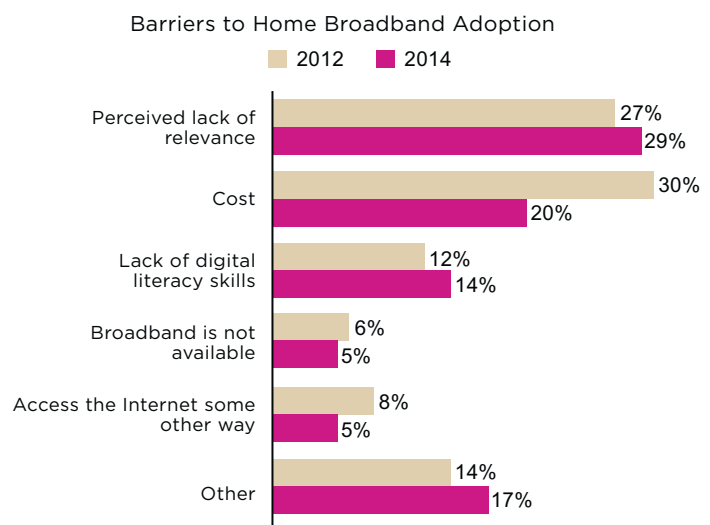
The barriers to at-home broadband adoption are consistently delineated into three main categories:

1. affordability of service and/or the device;
2. relevancy of online resources; and
3. digital skills to use the device and connectivity.

However, research demonstrates that the factors leading to non-adoption are not entirely independent and should not be considered in isolation. For example, while ensuring that broadband and related technologies are affordable is instrumental in bridging the digital divide, cost alone is insufficient to explain and/or address gaps in home broadband subscriptions. And, as

expressed in a recent report by McKinsey, “[d]espite the increasing utility of the Internet in providing access to information, opportunities, and resources to improve quality of life, there remain large segments of the offline population that lack a compelling reason to go online.”⁵³ Overall, “meaningfully addressing these barriers and boosting Internet penetration will require coordination across Internet ecosystem participants.”⁵⁴

Across Puerto Rico, over one-half of adults (54%) do not subscribe to home broadband service. Among the non-adopters, the primary reason for not subscribing is a perceived lack of relevance, or a belief that subscribing to home broadband service does not present enough of a benefit to be worthwhile - 29% (434,000 adults) cite this as the main reason they do not subscribe to home broadband service.

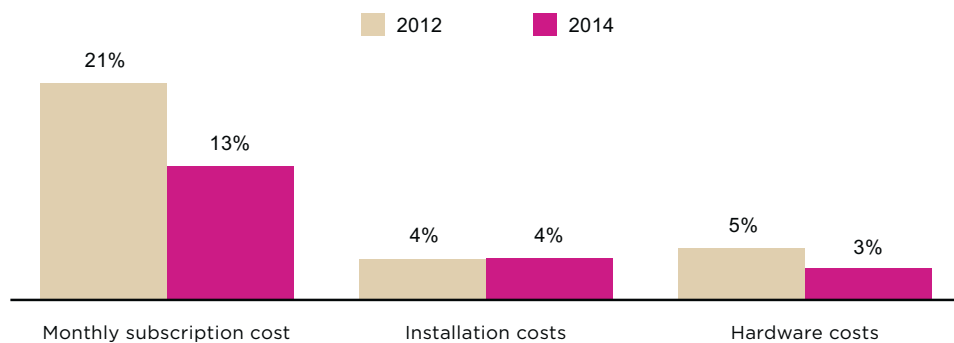




Cost, which represents both the monthly cost of home broadband service as well as the cost of the necessary equipment and installation, is the second most-cited barrier. Approximately one in seven non-adopters in Puerto Rico says that they lack the digital literacy skills to use a computer or access the Internet. Approximately 73,000 adults in Puerto Rico (5% of non-adopters) say that they cannot get broadband where they live or the available broadband service is unreliable. An additional 5% say they rely on other means to access the Internet, such as public computing centers, friends' or family members' homes, or their cell phones.

Although cost is the second-most-cited barrier to home broadband adoption, this issue has demonstrated the largest decrease since 2010 when 30% of non-adopters said that cost was their main barrier. In particular, the monthly cost of home broadband service has become less of a barrier for Puerto Ricans - while there were slight shifts in the share of non-adopters who cited the cost of a computer or installation costs, the biggest drop was among non-adopters who said that the monthly cost of service was their main barrier to home broadband adoption.

% of Non-Adopters Who Cite the Following Costs as
Their Main Barrier to Home Broadband Adoption



As Puerto Rico charts its course toward becoming a Gigabit Island, the recommendations of the 2012 Plan to promote broadband adoption and Internet use remain viable. It is essential to tackle the persisting adoption gaps, especially among the particular demographic groups outlined earlier.



BROADBAND ADOPTION INITIATIVES FOR A SUSTAINABLE GIGABIT ISLAND

There is no silver bullet to addressing the digital inclusion challenges that vulnerable populations face in Puerto Rico and elsewhere. Successful models of digital inclusion include an assortment of strategies described in the 2012 Puerto Rico Broadband Strategic Plan, such as expanding public computing centers that offer free online access to vulnerable populations, enhancing digital literacy training resources to address the need for digital skills, and encouraging the relevance of online resources for those that remain disconnected. According to the NTIA Broadband Adoption Toolkit, effective broadband adoption programs generally follow a 4-step development process: (1) needs assessment, (2) stakeholder engagement, (3) program implementation planning, and (4) continuous improvement.⁵⁵

“No two broadband adoption programs can be exactly the same because no two communities are the same. Each has its own characteristics, needs, opportunities, and challenges.”

-NTIA Broadband Adoption Toolkit

There are many examples of initiatives in Puerto Rico and the U.S. mainland that are working to close the digital divide. In this section we highlight such examples and outline the effective strategies they use to promote digital inclusion, as well as the ongoing challenges they encounter. Many of these case studies center on public-private partnerships working at the state and local levels to expand public computing centers and training resources to help address key barriers to broadband adoption among vulnerable populations.

CENTROS TECNOLÓGICOS COMUNITARIOS (CTC) - COMUNIDADES ESPECIALES

The Centros Tecnológicos Comunitarios (CTC), or Community Technology Centers, were established in 2001 via funding under law for the development of the Comunidades Especiales (Special Communities) of Puerto Rico. The objective for each CTC is to provide public computing access and training to all residents of disadvantaged communities, as defined by factors including high unemployment rate, high percentage of the population below the poverty line, and high percentage of school dropouts. Over time, administration of the CTCs was transferred to municipalities, the Department of Education, public-private partnerships, or other entities to continue serving as a community resource.

As discussed above, a key challenge to encourage investment and ensure a sustainable Gigabit Island is expanding the demand and use of broadband infrastructure and related services across the entire population. The 2012 Plan encouraged public-private collaboration at the national and local level to expand existing public computing centers, such as the Centros Tecnológicos Comunitarios, and increase the training resources offered through these centers to catalyze such demand. Yet, the developments in public computing since 2012 have not been positive; since that time, there has been a reduction



in the overall number of CTCs and their offerings. Due to budget cuts, the CTCs have had to curtail services and even close facilities. For the active CTCs, resources and training for the community leaders serving as facilitators have been inconsistent and/or inadequate to fully leverage the CTC for economic and social change in the community.

A public-private initiative would be beneficial to understanding the gaps in public computing services across the Island, and working to address those gaps. Key steps should include: i) a comprehensive assessment and real-time database of the current state of CTCs' public computing centers addressing their presence and capacity, as well as the training resources offered to and through these centers; ii) determination of vulnerable communities lacking such infrastructure; iii) a proposal for a phased plan to expand and/or upgrade CTCs or other public computing centers in target communities; and iv) an assessment of potential expansion of services rendered through CTCs and possible interrelationships with other organizations and programs.

Connected - An Example of Community Engagement to Close the Broadband Adoption Gap

Michigan has emerged as a leader in broadband adoption projects through its success in the Connected Community Engagement Program ("Connected"). Based on national best practices, the Connected program engages and assists local communities to assess their broadband and technology status, develop a localized technology action plan, and catalyze community members to address the local broadband needs.

Connected community engagement teams convene leaders across multiple sectors including schools, libraries, local and county government, economic development, chambers of commerce, emergency services, healthcare, broadband providers, and others. These multi-dimensional groups are often the first gatherings of their kind and lead to natural collaborative models of broadband and technology expansion. From telework support centers, business website and social media classes, and digital literacy campaigns to expanding infrastructure, zoning ordinance review, and 1:1 educational device programs, Michigan's Connected communities are working to continually boost the state's standing in the digital economy.

Since the Connected program launch in fall 2011, Michigan has experienced a 10 percentage point increase in households adopting broadband, from 61% to 71%. The Connected program has directly impacted 26 communities, 1.1 million Michiganders, and 1,300 cross-sectorial community stakeholders and broadband providers statewide. Seven of these communities have achieved certified Connected community status; a designation verifying the community as a technology- and investment-friendly location to attract local entrepreneurs and outside companies to locate or expand their businesses in the area.



CENTROS DE INTERNET - A TELECOMMUNICATIONS REGULATORY BOARD INITIATIVE

Puerto Rico Law 101, enacted July 28, 2010, mandated the Puerto Rico Telecommunications Regulatory Board to establish a Free Internet Access Center (FIAC) in each of the 78 municipalities in coordination with central government agencies, the municipalities themselves, and other private, educational, and community entities as deemed necessary.

Connect Puerto Rico's 2010 Residential Technology Assessment confirmed the value of these Internet Access Centers. Community centers were identified as the 5th most popular place to access hot spots. Most of the thirty-two centers offer connectivity at speeds of 3 Mbps download and have 10 computer stations. These Internet Access Centers serve as public computer centers, making broadband access available to all citizens, specifically those who may not have access to the Internet through home, mobile, or other locations. As Puerto Rico sets its path toward becoming the Gigabit Island, the existence of these centers alone is insufficient to catalyze demand for broadband. Stakeholders must ensure that the Free Internet Access Centers offer a positive user experience to encourage, instead of further deter, broadband adoption.

In 2014, the Regulatory Board expanded digital literacy services offered at these centers through a program called "TecnoAbuelos." The initiative is part of the agency's Planning, Adoption and Access and Incentives for Broadband Services program, known in Spanish as "PAIS Banda Ancha."⁵⁶ The free workshops provided senior citizens with basic skills to access online resources through smartphones, tablets or computer equipment.⁵⁷

In the U.S. mainland, libraries help fill the void when broadband access or adoption is not prevalent in the home. Increasingly, these public libraries are taking a new role as a technology hub for their local community. However, such a widespread public library system does not exist in Puerto Rico; instead, the Centros Tecnológicos Comunitarios and the Centros de Internet must stand in their place. The progressive defunding of CTCs across Puerto Rico works directly against the stated goals for the Island and should be addressed by both private and public stakeholders.



Every Citizen Online (ECO)

Connect Ohio launched the Every Citizen Online (ECO) program in late 2010 to address the need for enhanced digital literacy skills and broadband adoption in Ohio. Every Citizen Online collaborated with community anchor institutions throughout the state to offer in-person and online basic computer and Internet instruction.

Initially, Connect Ohio had presumed that individuals would utilize the self-paced training over the in-person classes at a ratio of nearly two-to-one. However, many participants lacked the digital literacy skills to turn on a computer, let alone open a web browser, making self-paced instruction impossible. By the close of the program, more than 43,000 Ohioans had participated in Every Citizen Online training at over 400 community anchor institutions throughout Ohio, over 200 of which were libraries.

Research at ECO's launch demonstrated that only 38% of library patrons subscribed to home broadband and 27% of daily visitors to library computing centers did not have computer or broadband access at home.¹⁰⁰ Surveys at the close of the program showed that more than half of the ECO respondents intended to subscribe to at-home broadband service as a result of the training (58%) and 19% had already ordered a subscription.

FCC LIFELINE BROADBAND ADOPTION PILOTS IN PUERTO RICO

The FCC established the Lifeline broadband pilot program in 2012 as a competitive selection program designed to test how best to increase high-speed Internet adoption among low-income Americans. The \$14 million pilot program officially launched in May 2013 with 14 diverse provider projects offering discounted broadband service to targeted low-income households.⁵⁸

Because these pilot programs could help close the acute adoption gap in Puerto Rico, the Broadband Taskforce, supported by the CIO's office and the Telecommunications Regulatory Board, led a campaign to inform Puerto Rico broadband providers of the opportunity.

These efforts paid off; of the 14 provider projects throughout the nation, Puerto Rico was host to 3 projects with nearly \$3.7 million in total funding, as described below:

- **Open Mobile:** The Open Mobile project offered a flat subsidy of \$25 off of five different wireless broadband plans. Each plan came with the same end-user charge



and usage limits, but with access to different equipment (e.g., USB modem, hotspot modem (mi-fi), tablet, laptop, or desktop) that the subscriber would pay for at a discounted amount. The study collected data on the effect(s) of a subsidy on connectivity and how the type of equipment impacts data usage and adoption. The total funding limit for this project was \$661,613.

- **Puerto Rico Telephone Company (PRT):** PRT tested consumers' preferences for wireless or wireline broadband, speeds for wireline broadband, and usage limits for wireless broadband by offering subscribers the option to choose among four plans with differing end-user prices. PRT offered consumers the option of a \$5 subsidy off of the bundled wireless plan, or \$18.50 off of the stand-alone broadband plans. The funding limit for this project was \$2,500,000.
- **T-Mobile:** T-Mobile, in partnership with Sistema Universitario Ana G Mendez and Centro Para Puerto Rico, tested various advertising and outreach methods to determine what type of communication most effectively increased broadband adoption. T-Mobile also offered a flat-rate subsidy of \$20 off of broadband plans with varying usage limits. The funding limit for this project was \$505,400.

Results from these and the other Lifeline pilot projects are still being examined by the FCC. It is unclear at this point what the results of these pilot programs will be across Puerto Rico. Beyond the direct impact of the pilot programs, it will be important to assess how the three competitive, low-cost broadband offerings have impacted the market. In particular, to what extent has targeting one of the key disconnected demographics (low-income) helped spur broadband growth and contributed to the increase in broadband adoption in Puerto Rico over the last two years.

CAMPAIGNS TO PROMOTE DIGITAL LITERACY - EVERYONEON

In November 2013, the Puerto Rico Broadband Taskforce announced the launch of EveryoneOn in Puerto Rico,⁵⁹ a national public service campaign aimed at promoting the importance of digital literacy skills in the twenty-first century digital economy and increasing access to free computer and Internet training classes.

Through the collaboration, three public service announcements (PSAs) were distributed by the Ad Council in English and Spanish to help raise awareness and reach non-adopting populations in Puerto Rico. Callers who responded to the PSAs were provided information regarding free digital literacy training in their area.⁶⁰ The Puerto Rico Broadband Taskforce collaborated with government, community leaders, and nonprofit organizations to identify digital literacy classes for inclusion in the EveryoneOn database.

Many private sector organizations and local media members also recognized the importance in driving this program. Liberty, Choice, Claro, and Puerto Rico TV (WIPR) donated media time to the campaign to air the Spanish advertisements; Dish Networks ran the advertisements in English. In addition, Banco Popular aired the advertisements within its branches. Critical Hub Networks and Puerto Rico Bridge Initiative donated the local Interactive Voice Response (IVR) phone system to field responses from the ads.



Strategies to Promote Broadband Adoption in Puerto Rico

Summary Recommendations

As expressed throughout this section and showcased by the above examples, Puerto Rico has experienced important growth and multiple successes in recent years; however, broadband adoption remains a challenge. Ongoing broadband adoption among Puerto Rico consumers and businesses is vital to ensuring further broadband infrastructure build-out and investment on the Island.

Key Recommendations:

- Continue to expand public digital literacy, and workforce development programs by leveraging existing community resources, support from national non-profit organizations, and public institutions such as the University of Puerto Rico campuses.
- Leverage existing online digital literacy curricula in order to sustain resources, both personnel and monetary.
- Maintain targeted awareness campaigns promoting the benefits of online resources across vulnerable populations, and supplement this communication with in-person, on-the-ground outreach from familiar and trusted community organizations.
- Encourage the private sector, in partnership with public agencies including the Public Housing Authority, the Special Communities Administration, the Department of Labor, Economic Development, and the Department of Family Affairs to establish programs that offer basic broadband service at discounted prices to the most vulnerable citizens in Puerto Rico.



40. Puerto Rico Broadband Strategic Plan, May 2012, http://www.connectednation.org/sites/default/files/bb_pp/pr_bb_plan_final.pdf.
41. Connect Puerto Rico's Residential Broadband Assessment is a consumer survey implemented in 2010, 2012, and 2014 to understand demand-side trends and barriers in the Puerto Rico broadband market. These surveys were conducted by Connect Puerto Rico on behalf of the Office of the Chief Information Officer as part of the State Broadband Initiative federal grant program, funded through the American Recovery and Reinvestment Act. Data were collected by Estudios Técnicos in Puerto Rico and weighting and research consultation were provided by Lucidity Research, LLC.
42. US data source: 2010, 2012, and 2013 United States from Pew Internet and American Life Project <http://www.pewinternet.org/2013/08/26/home-broadband-2013/>. Puerto Rico data source: Connect Puerto Rico 2010, 2012, and 2014 Residential Technology Assessments.
43. 2010 Connect Puerto Rico Residential Technology Assessment www.connectpr.org.
44. Pew Internet & American Life Project, Home Broadband Adoption 2010, August 2010. Alternatively, in 2011, a report released by the U.S. Department of Commerce titled, Exploring the Digital Nation, reported that 68% of Americans subscribed to home broadband service in 2010.
45. A recent report from McKinsey & Company confirmed that those who remain offline are disproportionately rural, low income, elderly, illiterate, and female. http://www.mckinsey.com/Insights/High_Tech_Telecoms_Internet/Offline_and_falling_behind_Barriers_to_Internet_adoption?cid=other-eml-alt-mip-mck-oth-1410.
46. US data source: 2010, 2012, and 2013 United States from Pew Internet and American Life Project <http://www.pewinternet.org/2013/08/26/home-broadband-2013/>. Puerto Rico data source: Connect Puerto Rico 2010, 2012, and 2014 Residential Technology Assessments. "Low-income households" defined as those with annual incomes below \$15,000 in Puerto Rico and below \$25,000 in the United States.
47. Source: Connect Puerto Rico's 2010, 2012, and 2014 Residential Technology Assessments. "Low-income households" defined as those with annual incomes below \$15,000.
48. Internet Access and Economic Development, presented at the Encuentro de Centros Tecnológicos Comunitarios (CTCs) by Anitza Cox of the Internet Society of Puerto Rico. This study measured Internet usage among Puerto Ricans age 12 and older.
49. Pew Internet Research Project www.pewinternet.org/fact-sheets/mobile-technology-fact-sheet/.
50. Ibid.
51. Connect Puerto Rico 2010 and 2014 Residential Technology Assessments. Prices are self-reported among respondents who knew how much they pay per month for home broadband service.
52. Connect Puerto Rico 2010 and 2014 Residential Technology Assessments. Advertised broadband speeds are self-reported by respondents who stated that they knew their bandwidth.
53. McKinsey & Company, Offline and Falling Behind: Barriers to Internet Adoption, September 2014, http://www.mckinsey.com/Insights/High_Tech_Telecoms_Internet/Offline_and_falling_behind_Barriers_to_Internet_adoption?cid=other-eml-alt-mip-mck-oth-1410.
54. Ibid.
55. National Telecommunications and Information Administration, U.S. Department of Commerce, NTIA Broadband Adoption Toolkit, May 2013, http://www2.ntia.doc.gov/files/toolkit_042913.pdf.
55. See <http://www.wifi.irtpr.pr.gov/blog/apoyo-a-fundamental-proyecto-enfocado-en-la-economia-del-futuro-ley-de-acceso-a-banda-ancha/>.



57. See <http://www.wifi.irtpr.pr.gov/blog/tecnoabuelos/> and <http://tecnoabuelos.com/wp/>.

58. For more information on the FCC's Lifeline pilot programs see <http://www.fcc.gov/encyclopedia/low-income-broadband-pilot-program> and <http://www.usac.org/li/about/broadband-pilot/default.aspx>.

59. See www.everyoneon.org.

60. See www.everyoneon.org and <http://everyoneon.org/?lang=es>.