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PUBLIC LIBRARIES & BROADBAND

BROADBAND ACCESS

TECHNOLOGY
Public libraries offer free access to technology, broadband Internet, and wireless Internet

AVAILABILITY
Public libraries offer free Internet access for people to meet their learning, health information, and other needs

SKILLS
Public libraries offer a wide range of free technology instruction, including courses on employment and health resources

E-GOVERNMENT
Public libraries help people complete immigration, citizenship, social service, emergency benefit, and other online forms

EMPLOYMENT
Public libraries help people create résumés, search for jobs, and apply for jobs online

Public libraries provide essential services to their communities through broadband technologies. Broadband enables millions of people with no or inadequate connectivity to have access to employment, learning, health, E-government, and other resources through public libraries.

34.2% Libraries have download connectivity speeds between 1.6-10Mbps

28.3% Libraries have download connectivity speeds greater than 50Mbps

8.2% Libraries have download connectivity speeds 1.5Mbps or less

29.3% Libraries have download connectivity speeds between 10.1-49.9Mbps

Connection speeds have increased over time for public libraries. But today's applications (e.g., high definition video, streaming content) demand greater bandwidth and higher connection speeds, and two-thirds of public libraries indicated a desire to increase their bandwidth to meet public demand.

DIGITAL INCLUSION SURVEY

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1.5Mbps or less
- 2009: 42.2%
- 2010: 34.7%
- 2011: 23.4%
- 2013: 9.4%
- 2014: 8.2%

1.6-10Mbps
- 2009: 33.4%
- 2010: 35.4%
- 2011: 38.5%
- 2013: 40.0%
- 2014: 34.1%

>10Mbps
- 2009: 18.4%
- 2010: 24.9%
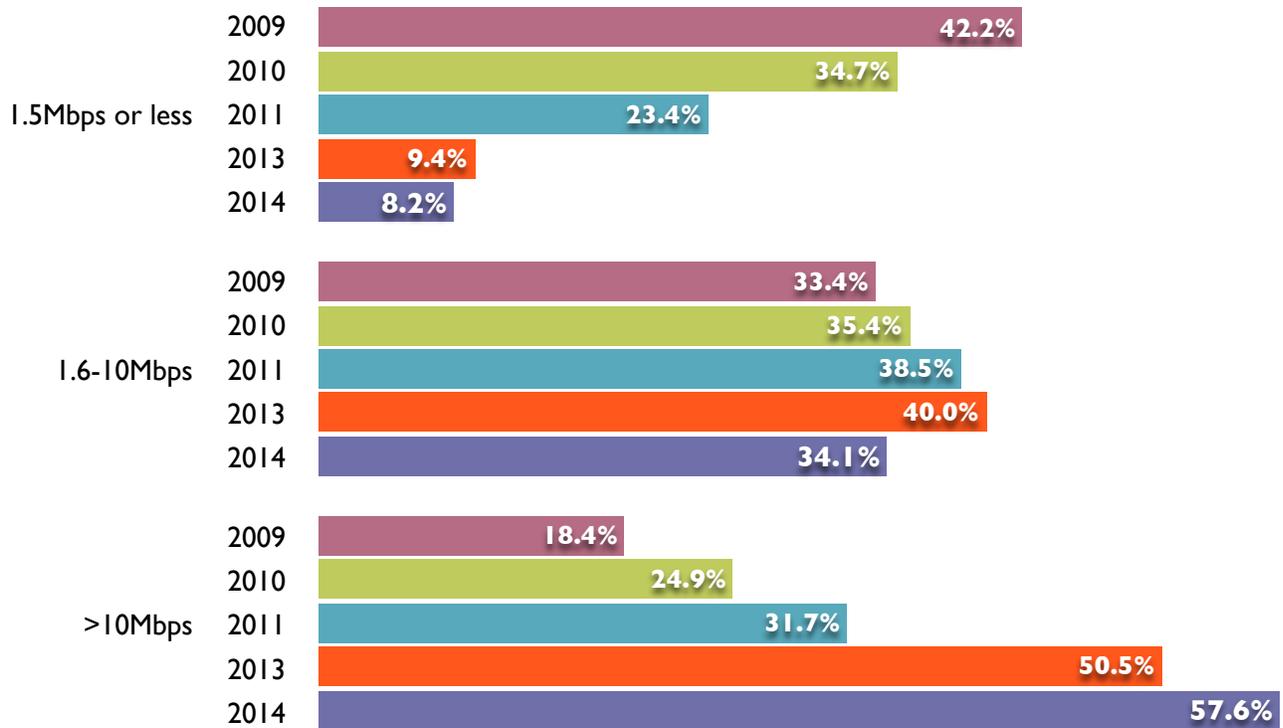- 2011: 31.7%
- 2013: 50.5%
- 2014: 57.6%

Figure 1. Public Library Subscribed Internet Connectivity Speeds.

Digital Equity, Inclusion, and Readiness

A key foundation to digital equity, inclusion, and readiness is access to broadband technologies and services. However, about a quarter of Americans do not have Internet access in the home.[1] Reasons include cost, inadequate computing technologies, and lack of availability of broadband services.[2]

Broadband adoption is a multi-dimensional challenge that involves three key components:[3] 1) Access to broadband technology and services; 2) Sustainability to ensure ongoing access to broadband technology and services; and 3) Adoption of broadband technologies by individuals and communities. Without access to broadband technologies through public libraries, many individuals are unable to seek economic, social, or other opportunities in an increasingly digital environment.

Services through Broadband

Public libraries often have multiple public access computers, staff computers, and user devices (i.e., laptops, tablets, smartphones) connected via the library's Internet and wireless connection (WiFi) – all of which are in continuous use while patrons access broadband-intensive services and resources. In today's context, patrons might have multiple devices connected to the library's WiFi such as a tablet, smartphone, and/or laptop. Without high-quality broadband connectivity, public libraries are unable to offer essential public access services that millions of people rely to support their learning, employment, E-government, health, and other information needs.

Broadband and Public Libraries

To successfully fulfill their critical role as Internet access providers in their communities, public libraries need funding and infrastructure to support high-speed broadband Internet connections. Though libraries have steadily increased their bandwidth capacity over the years (see Figure 1), the combined increase in the number of users, devices, and content bandwidth requirements – particularly the explosion of social media and user-generated content – has only increased bandwidth challenges.

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About 1 in 5 libraries across the nation and the District of Columbia benefitted from Broadband Technology Opportunity Program (BTOP) grant funding.[4] For example, Alaska's Online with Libraries (OWL) project was able to enhance Public Computer Centers at 97 libraries, provide faster internet connections to many rural/remote libraries, and establish a public videoconferencing network for all of the libraries in order to provide online training and other purposes. BTOP funding, however, ended in 2013 and the need for broadband in public libraries remains great.

In 2014, modernizations to the Universal Service Program for Schools and Libraries (E-rate) advocated by librarians were approved by the Federal Communications Commission (FCC).[5] Now E-rate further boosts funding available to libraries for sustainable broadband and wireless growth and enables better access to increased broadband network capacity.

Broadband Capacity and Quality

The FCC defines broadband as 25 megabits per second (Mbps) download and 3 megabits per second (Mbps) upload.[6] The definition, however, is based on a household with "broadband with sufficient capabilities,"[7] as opposed to a public access venue such as the public library. Also, this definition is lower than the threshold for broadband in most other technologically-advanced nations.[8]

About 40% of public libraries do not meet the FCC's broadband threshold for download speeds, though trends indicate that more libraries are adopting higher speeds. The percentage of libraries that have a connection speed below 1.5 Mbps as well as libraries with speeds between 1.6 Mbps and 10 Mbps have decreased from 9.4% to 8.2% and 40.0% to 34.1% respectively. Meanwhile, libraries that have speeds greater than 10 Mbps has increased from 50.5% to 57.6%.

The connection speeds in libraries vary greatly depending on how densely populated the library's community is. City libraries report an average subscribed download speed of 159 Mbps, while suburban libraries report an average subscribed download speed of 93 Mbps, town libraries report an average subscribed download speed of 39 Mbps, and rural libraries report an average subscribed download speed of 25 Mbps.
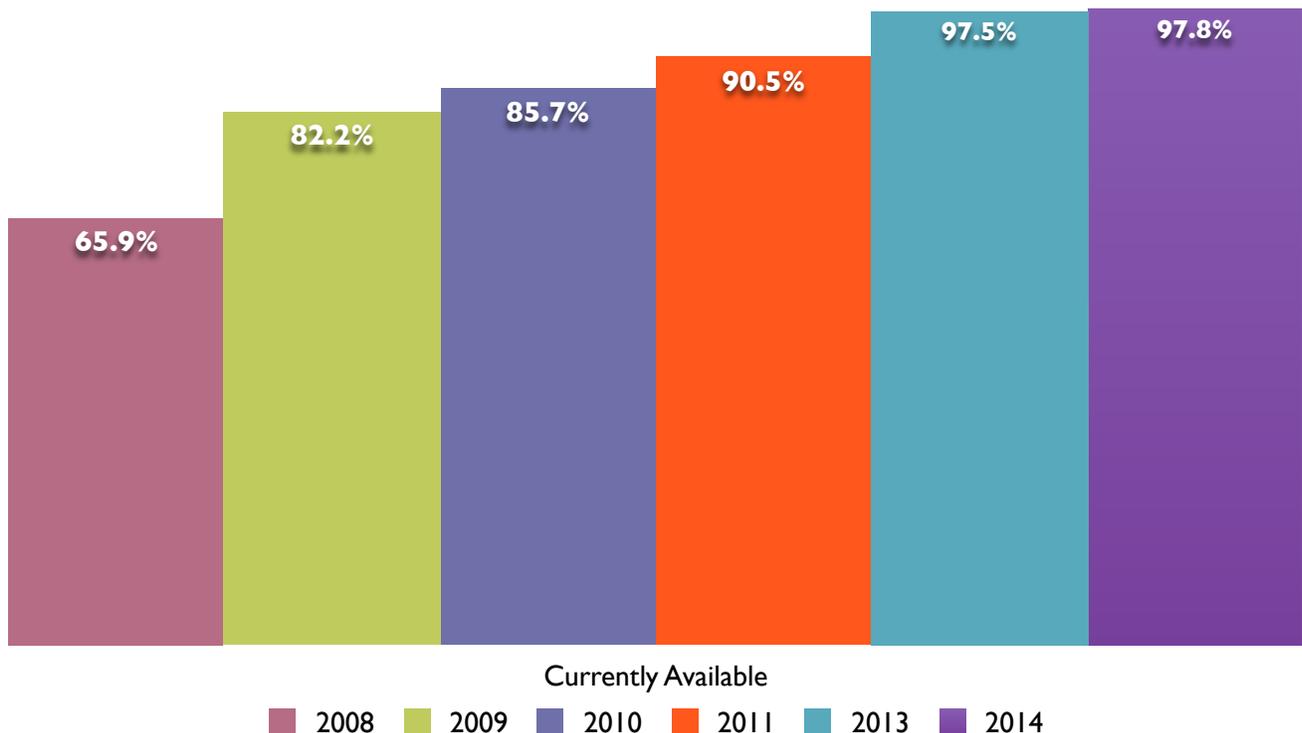

Currently Available

2008 2009 2010 2011 2013 2014

Figure 2. Public Library Availability of WiFi.

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Connection capacity, however, differs from connection quality and user experience. Many libraries (97.8%) have implemented WiFi access to help meet access demands. The combination of simultaneous use across public access computers and WiFi connected devices can lead to congestion. About a quarter of libraries (24.1%) report that Internet speed meets patron needs only some of the time and 7.1% libraries rarely do.

Key Issues and Challenges

Libraries face a number of challenges regarding their broadband capacity:

- **Availability and Cost.** The leading reason libraries give for not increasing Internet speed is cost (39.6%), followed by limited speed availability based on the location (33.7%). Libraries who had the necessary funding to make renovations show lower rates of connection speeds below 1.5 Mbps and greater rates with speeds above 1.5 Mbps when compared to libraries that have not been renovated (see Figure 3).

- **Rural Gap.** Rural libraries (41.3%) especially cite available speed limitations as a barrier to providing faster Internet connections, as opposed to 22.8% of city libraries and 28.7% of suburban libraries.
- **Capacity v. Quality.** The maximum connection speed and the availability of WiFi are important measures of capacity. These capacity measures, however, can mask the quality of user experience, as actual connection speeds and capacity at the device/individual level are often substantially diminished through the shared access that public libraries offer.
- **Sustainability.** Though many libraries benefitted from BTOP funding, that funding has ended and sustaining continued build out of broadband technology, continual increases, and ensuring high capacity broadband services in all public libraries to meet public demand remains a challenge. E-rate can help and is scheduled to help libraries that apply over a span of five years, however, it cannot meet the needs of all libraries with its current funding limitations.
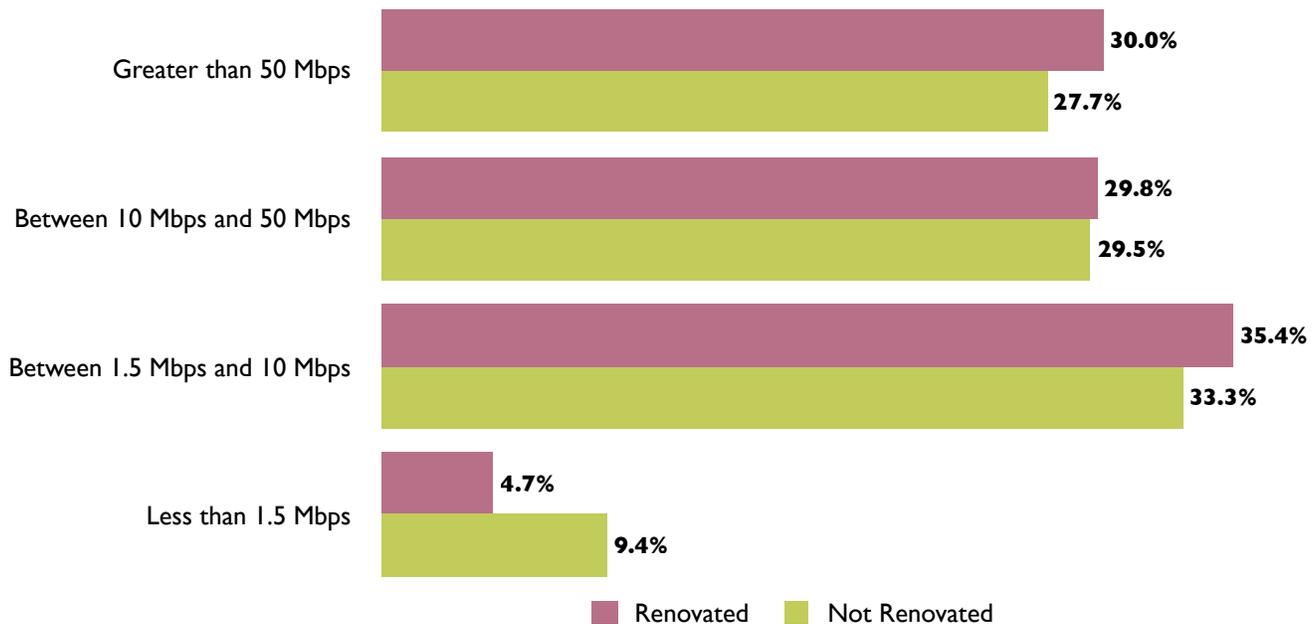

Greater than 50 Mbps — Renovated 30.0%, Not Renovated 27.7%
Between 10 Mbps and 50 Mbps — Renovated 29.8%, Not Renovated 29.5%
Between 1.5 Mbps and 10 Mbps — Renovated 35.4%, Not Renovated 33.3%
Less than 1.5 Mbps — Renovated 4.7%, Not Renovated 9.4%

Renovated   Not Renovated

Figure 3. Public Library Subscribed Download Speeds for Libraries Renovated and Not Renovated in the Last Five years.

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The public access service context, individuals with multiple devices, and the continually increasing bandwidth needs of new technologies, services, and resources, dictate the need for libraries to continually increase their connectivity speeds, modify their networks, and actively manage their connectivity. Not doing so will leave behind the millions of people in communities who rely on public access technologies and Internet connectivity provided through the public library.

Conclusion

Public libraries are vital community institutions, and studies of broadband penetration demonstrate that community-based efforts are a key element for successful adoption.[9] In 64.5% of communities in the United States, public libraries are the only provider of free public access to computers and the Internet.[10] As a result, the Institute of Museum and Library Services (IMLS) has observed that "public libraries are well positioned to play a greater role in providing access points to broadband services for people in both urban and rural areas and to families in need."[11]

BTOP sparked investment in broadband technologies and services from which some libraries benefitted greatly, and E-rate continues to be an essential program that enhances broadband in public libraries. Still, public libraries continue to need greater connection speeds that will meet the demands of the patrons and communities they serve who need access to increasingly complex and bandwidth-intensive content for success and opportunity in an increasingly digital society.

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