

PUBLIC LIBRARIES & BROADBAND

BROADBAND ACCESS

TECHNOLOGY

Public libraries offer free access to computers, the Internet, and WiFi

AVAILABILITY

Public libraries offer free Internet access for people to meet their economic, learning, health information, and E-government needs

SPEED

Public libraries offer connectivity speeds that are often greater than what is available to individuals at work or in the home

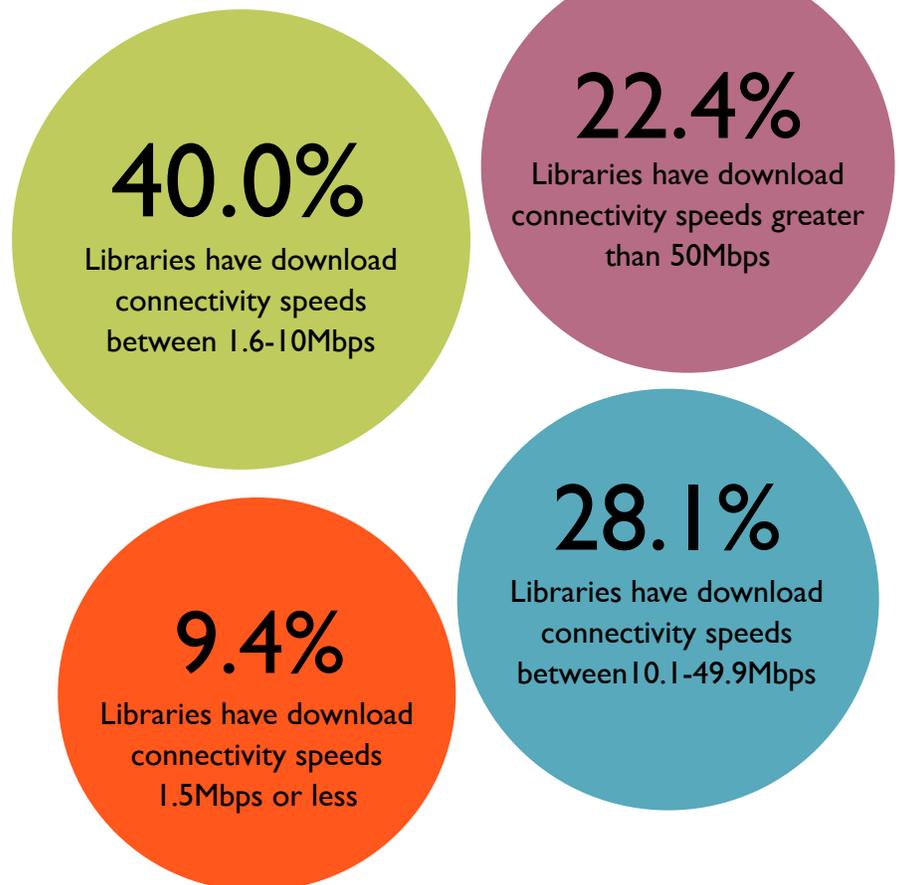
SKILLS

Public libraries offer a wide range of free computer and Internet use instruction that depend on broadband access

RESOURCES

Public libraries offer their communities learning, health, employment, and other Internet-enabled resources

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.



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.

PUBLIC LIBRARIES & BROADBAND

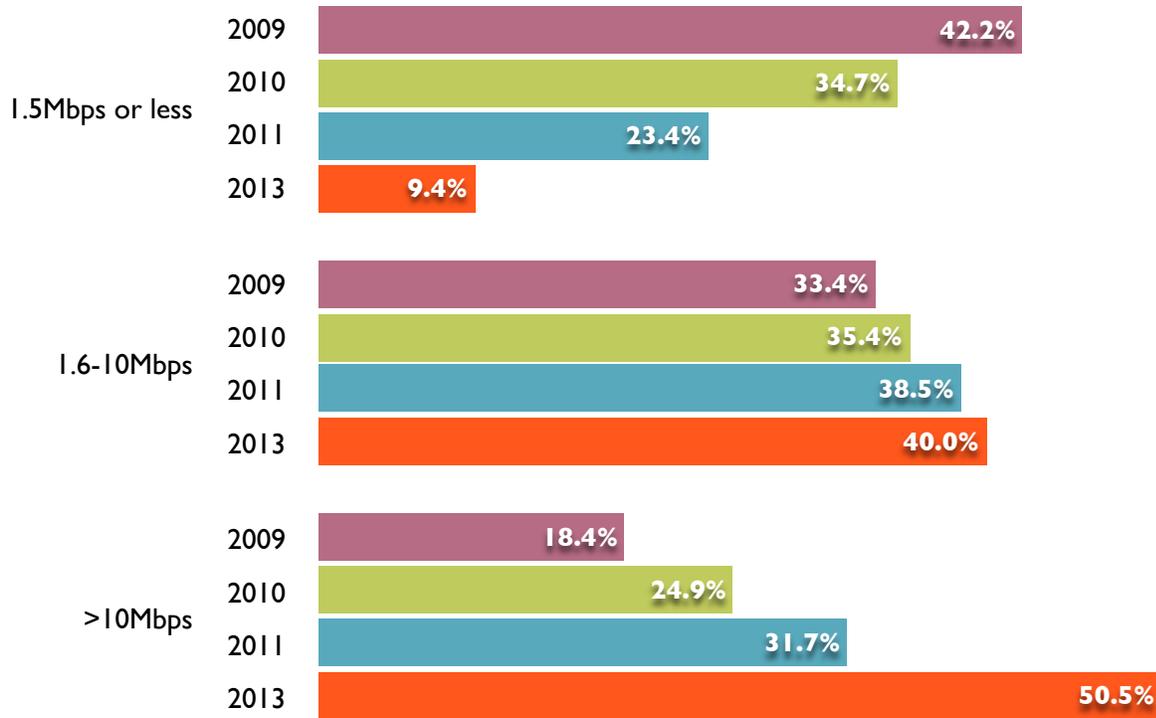


Figure 1. Public Library Subscribed Internet Connectivity Speeds.

Digital Equity, Inclusion, and Readiness

A key foundation to digital equity, inclusion, and participation is access to broadband technologies and services. But roughly 30% of the population does not have Internet access in the home in part due to cost, inadequate computing technologies, and lack of availability of broadband services.¹

Broadband adoption is a multi-dimensional challenge that involves three key components:² 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

The public library service context is one in which multiple public access computers, staff computers, and user devices (i.e., laptops, tablets, smartphones) connected via the library's

wireless Internet (WiFi) are in continuous use as they access broadband-intensive services and resources. And in today's context, one individual might have multiple connected 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 on which 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 combination of an increase in the number of users, devices, and in the bandwidth requirements of the content – particularly the explosion of social media and user-generated content – has only increased bandwidth challenges.

PUBLIC LIBRARIES & BROADBAND

Selected libraries benefitted from Broadband Technology Opportunity Program (BTOP) grant funding between 2009 and 2012. For example:

- Delaware was able to upgrade all its libraries to 100 megabits per second (Mbps) connections.
- Alaska's Online with Libraries (OWL) project was able to enhance Public Computer Centers at 97 libraries, provide faster internet connections to many mainly rural/remote libraries, and establish a public videoconferencing network for all of the libraries so that they can provide online training and other purposes.

Libraries in Arizona, Colorado, Idaho, Kentucky, Maine, Montana, New Mexico, New York, Oklahoma, Texas, Vermont, and more also benefitted from BTOP. BTOP funding, however, ended in 2013 and the need for broadband in public libraries remains great.

Broadband Capacity and Quality

The Federal Communications Commission (FCC) defines broadband as 4 megabits per second (Mbps) download and 200 kilobits per second (Kbps) or .2 megabits per second (Mbps) upload.³ The definition, however, is based on a

household with "broadband with sufficient capabilities"⁴ 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.⁵

Almost all libraries have connection speeds that fulfill the FCC definition of broadband access. Currently, only 9.3% of libraries have a connection speed below 1.5Mbps. Half (50.5%) of libraries have speeds of greater than 10Mbps, and 40.0% of libraries have speeds between 1.6Mbps and 10Mbps. City libraries report an average subscribed download speed of 108Mbps, while suburban libraries report an average subscribed download speed of 90Mbps, town libraries report an average subscribed download speed of 26Mbps, and rural libraries report an average subscribed download speed of 24Mbps.

Connection capacity, however, differs from connection quality and user experience. Many libraries (97.5%) 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, and not surprisingly, 66.1% of libraries expressed a desire to increase their broadband.

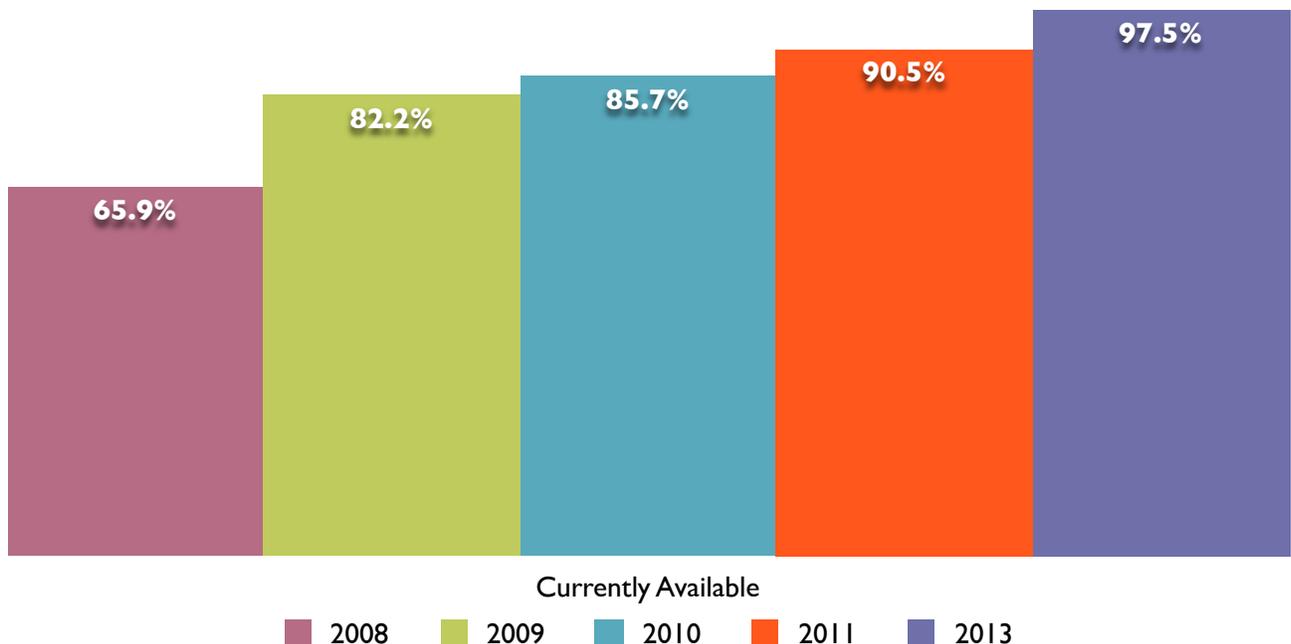


Figure 2. Public Library Availability of WiFi.

PUBLIC LIBRARIES & BROADBAND

Key Issues and Challenges

Libraries face a number of challenges regarding their broadband capacity:

- **Availability and Cost.** Nearly 60% of libraries cite cost as a barrier to increasing their broadband connection, and just over 30% indicated that their current speed is the maximum available to them.
- **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, but cannot meet the needs of all libraries with its current funding limitations.

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.⁶ In 64.5% of communities in the United States, public libraries are the only provider of free public access to computers and the Internet.⁷ 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.”⁸

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. But public libraries continue to need greater connection speeds that will meet the demands of the individuals and communities they serve who rely on access to increasingly complex and bandwidth-intensive content vital for success and opportunity in and increasingly digital society.

References

- ¹National Telecommunications and Information Agency. (2012). Exploring the Digital Nation: America's Emerging Online Experience. Washington, DC: NTIA. Available at: http://www.ntia.doc.gov/files/ntia/publications/exploring_the_digital_nation_-_americas_emerging_online_experience.pdf.
- ²Federal Communication Commission. (2010). The national broadband plan: Connecting America. Washington DC: Author. Available: <http://www.broadband.gov/>.
- ³Ibid.
- ⁴Ibid.
- ⁵Organisation for Economic Co-operation and Development (OECD). (2013). *OECD broadband portal*. Available: <http://www.oecd.org/sti/ict/broadband>.
- ⁶Bouras, C., Giannaka, E., & Tsiatsos, T. (2009). Identifying best practices for supporting broadband growth: Methodology and analysis. *Journal of Network and Computer Applications*, 32(4), 795-807.
- ⁷Bertot, J.C., et al. (2012). *Public Libraries and the Internet 2011-2012: Survey Results and Findings*. College Park, MD: Information Policy & Access Center. Available at <http://www.plinternetsurvey.org>.
- ⁸Pastore, E., & Henderson, E. (2009). *Data note: Libraries use broadband Internet service to serve high need communities*. Washington, D.C.: Institute of Museum and Library Services. Page 2. Available: http://www.ims.gov/assets/1/workflow_staging/News/632.PDF.