iPAC
INFORMATION POLICY & ACCESS CENTER

PUBLIC LIBRARIES & BROADBAND

BROADBAND ACCESS

TECHNOLOGY ACCESS

Public libraries offer free access to computers, broadband Internet, and wireless Internet

AVAILABILITY

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

QUALITY ACCESS

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

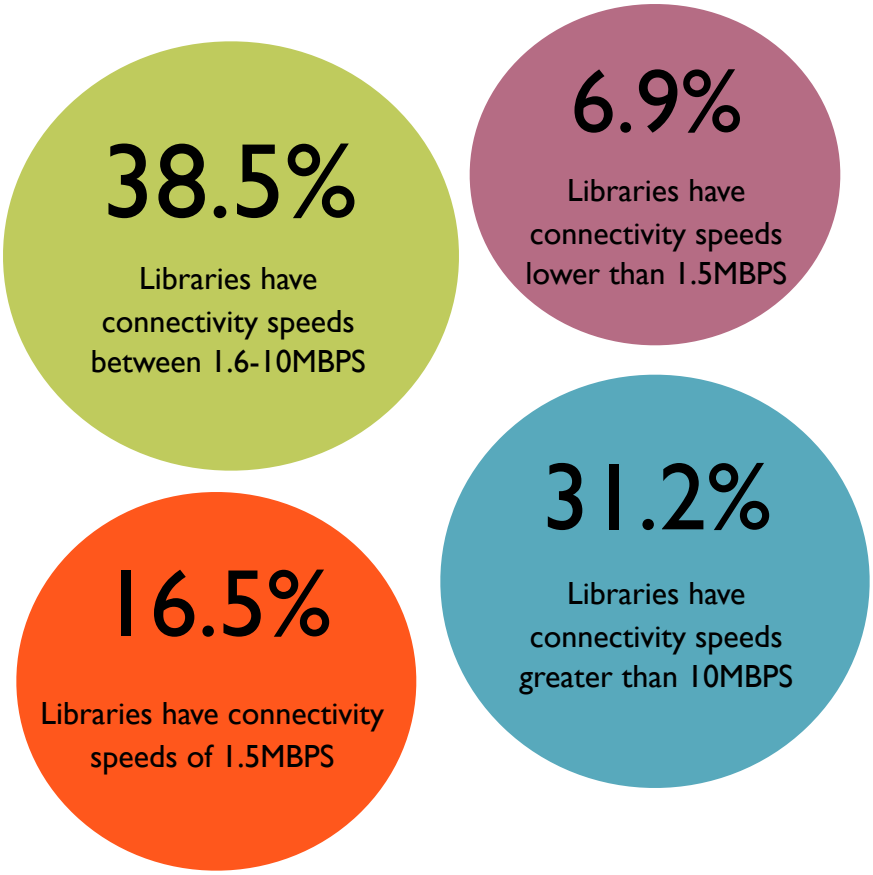
DIGITAL LITERACY

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

RESOURCES

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

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



Connection speeds have increased gradually for public libraries. But today's applications (e.g., social networking, streaming video) demand greater bandwidth and higher connection speeds. Almost half of public libraries continue to report that their bandwidth is not sufficient to meet demand.

Public Library Funding & Technology Access Study

The Public Library Funding & Technology Access Survey (www.ala.org/plinternetfunding) is managed by the Information Policy and Access Center (ipac.umd.edu) at the University of Maryland and funded by the American Library Association and the Bill & Melinda Gates Foundation. For more information about libraries & the Internet visit www.plinternetsurvey.org. 2011-2012 data presented.

PUBLIC LIBRARIES & BROADBAND

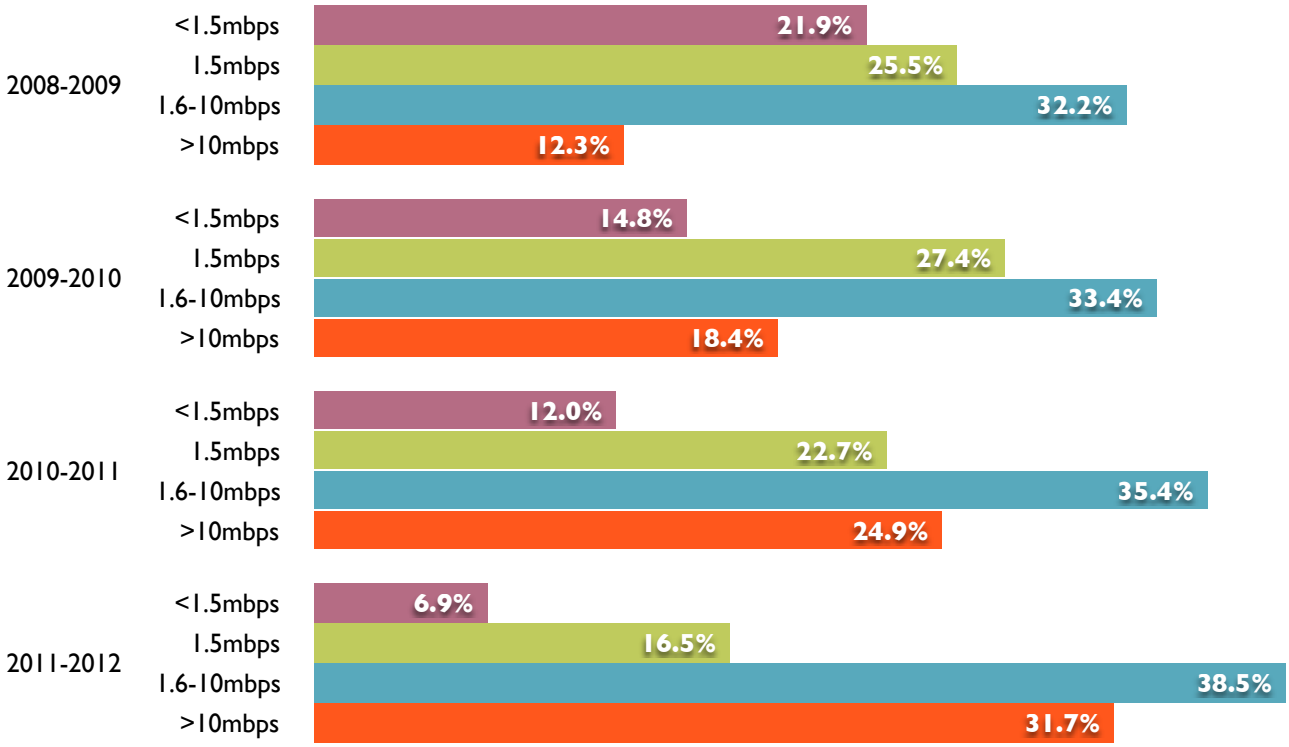


Figure 1. Public Library Internet Connectivity Speeds.

Services through Broadband

The public library service context is one in which multiple public access computers, staff computers, and user devices (i.e., laptops) connected via the library's Wi-Fi are in continuous use as they access broadband-intensive services and resources. Without high-quality broadband connectivity, public libraries are unable to offer essential public access services on which millions of people rely to support their employment, E-government, and education needs.

Broadband and Public Libraries

To successfully fulfill their critical role as important 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 and in the bandwidth requirements of the content – particularly the explosion of social media and user generated content – has only increased bandwidth challenges.

In a public library, multiple users working on a range of public access and wireless technologies simultaneously access Internet services via a single Internet connection – often with staff technologies using the same connection. As more people rely on public libraries for Internet access, and as more of these people use a greater range of high-bandwidth education, government, and entertainment content, the bandwidth capacity of libraries becomes an increasingly significant issue. The higher the number of devices and users, and the higher the content demand on bandwidth consumption, the larger the drain of the connection speed of the library. As a result, though the library may subscribe to a high-speed connection, the user experience can be one of slow connectivity and near dial-up speeds.

The maximum speed in most libraries is broadband, according to the Federal Communications Commission (FCC) definition of 200 kilobits per second (kbps) or .2 megabits per second (Mbps), in at least one direction.[1]

This definition, however, is lower than the threshold for broadband in most other technologically-advanced nations, with the U.S. definition ranking 19th in required capacity to meet the definition of broadband.[2] The FCC's National Broadband Plan, however, has set 4.0 Mbps as the standard for "broadband with sufficient capabilities."[3]

Almost all libraries have connection speeds that fulfill the FCC definition of broadband access. Currently, only 2.8% of libraries have a connection speed below 756kbps. The majority of libraries have connection speeds at 1.5Mbps (16.5%) or above 1.5Mbps (70.2%). The number of libraries with connection speeds above 1.5Mbps is notably greater than the 60.3% reported last year. The areas with the higher levels of capacity tend to be in urban (83.8%) and suburban areas (72.7%).

In slightly more than half (58.3%) of libraries, the connection meets patron needs. In the remainder of libraries, the connection speed is insufficient for some or all of the day to meet patron needs. Many libraries (90.5%) have implemented wireless (Wi-Fi) access to help meet access demands (see Figure 2). However, in 82.3% of libraries with wireless access, the workstations and the wireless access share the same bandwidth and connection. As a result, libraries have added connection capacity at the expense of connection quality.

Key Issues and Challenges

Despite increased connection speeds in many libraries, 41.4% of public libraries reported their connection speed was insufficient to meet patron demand some or all of the time in the past year. Libraries face a number of challenges regarding their broadband capacity:

- **Availability and Cost.** Of libraries that share their wireless and bandwidth connection (82.3%), just 25.2% use bandwidth management techniques. Although Wi-Fi alleviates some congestion in terms of workstation avaliability, Wi-Fi adds additional network traffic. Additionally, 77.9% of libraries cite cost as a barrier to adding additional public access workstations.
- **Capacity v. Quality.** The maximum connection speed and the availability of Wi-Fi are important measures of capacity. These capacity measures, however, can mask the quality of user experience, as actual connection speeds and capacity at the level of the individual user are often substantially

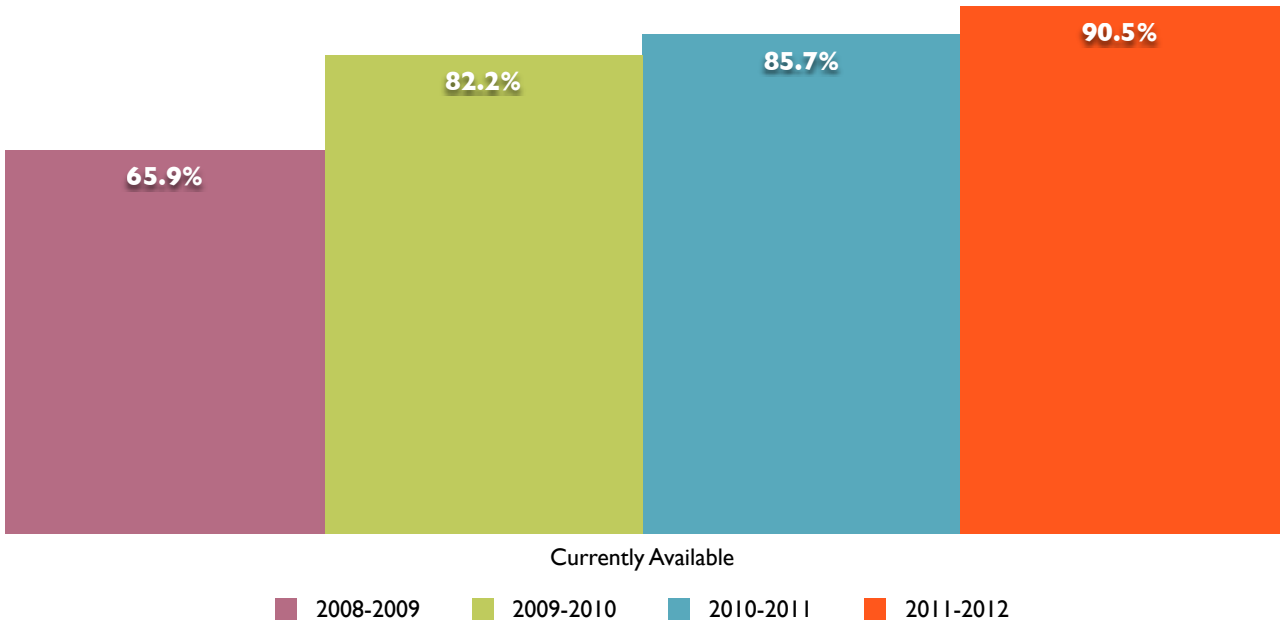


Figure 2. Public Library Availability of Wi-Fi.

diminished through the shared access that public libraries offer.

- **Broadband Management.** Many libraries simply subscribe to a connectivity service through an ISP, overlay their Internet-enabled services, and then fail to enact broadband and/or network management practices that would maximize the efficiency of their connectivity.[4]

The public access service context, combined with 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 numerous studies of broadband penetration have determined that community-based efforts are a key element for successful adoption.[5] In 64.5% of communities in the United States, public libraries are the only provider of free public access to computers and the Internet. 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."[6]

The Broadband Technology Opportunity Program (BTOP) and Broadband Initiatives Program (BIP) as part of the American Recovery and Reinvestment Act provided broadband connectivity and other support to public libraries and other community anchor institutions. The outcome of these initiatives are only beginning to be known,[7] but it is clear that public libraries continue to need greater connection speeds that will meet the needs of patrons using increasingly complex and bandwidth-intensive content.

References

[1] Federal Communications Commission. (2012). *Getting Broadband.* Available: http://www.fcc.gov/guides/getting-broadband.

[2] Organisation for Economic Co-operation and Development (OECD). (n.d). *OECD broadband portal*. Available: http://www.oecd.org/sti/ict/broadband.

[3] Federal Communications Commission (FCC). (n.d). *The National Broadband Plan*. Available: http://www.broadband.gov/plan/.

[4] Bertot, J.C., & McClure, C.R. (2007). Assessing sufficiency and quality of bandwidth for public libraries. *Information Technology and Libraries*, *26*(1): 14-22.

[5] Bouras, 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.

LaRose, R., Gregg, J. L., Strover, S., Straubhaar, J., & Carpenter, S. (2007). Closing the rural broadband gap: Promoting adoption of the Internet in rural America. *Telecommunications Policy, 31*(6/7), 359-373.

Prieger, J. E., & Hu, W-M. (2008). The broadband digital divide and the nexus of race, competition, and quality. *Information Economics and Policy, 20*(2), 150-167.

[6] Pastore, 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.imls.gov/assets/1/workflow_staging/News/632.PDF

[7] Grimes, J., Bertot, J.C., & Lincoln, R. (2012). Public Libraries and the National Broadband Map: Findings and Recommendations. College Park, MD: Information Policy & Access Center. Available: http://ipac.umd.edu/Files/CAI_NBM_final_15May2012.pdf.