



# CENTER FOR LIBRARY AND INFORMATION INNOVATION

## PUBLIC LIBRARIES & BROADBAND

### BROADBAND ACCESS

#### TECHNOLOGY ACCESS

Public libraries offer free access to workstations, broadband, and Wi-Fi

#### AVAILABILITY

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

#### QUALITY ACCESS

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

Public libraries provide essential services to their communities through broadband Internet technologies. Broadband through public libraries enables millions of people to have access to E-government, employment, education, and other Internet-enabled services and resources.

33.4%

Libraries have connectivity speeds between 1.6-10MBPS

14.8%

Libraries have connectivity speeds lower than 1.5MBPS

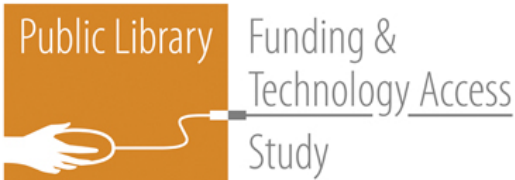
18.4%

Libraries have connectivity speeds greater than 10MBPS

27.4%

Libraries have connectivity speeds of 1.5MBPS

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. More than half of public libraries continue to report that their bandwidth is not sufficient to meet demand.



The Public Library Funding & Technology Access Study ([www.ala.org/plinternetfunding](http://www.ala.org/plinternetfunding)) survey is managed by the Center for Library & Information Innovation ([cli.umd.edu](http://cli.umd.edu)) at the University of Maryland and funded by the American Library Association and the Bill & Melinda Gates Foundation. More information about libraries & the Internet is available at [www.plinternetsurvey.org](http://www.plinternetsurvey.org). 2009-2010 data presented.

# PUBLIC LIBRARIES & BROADBAND

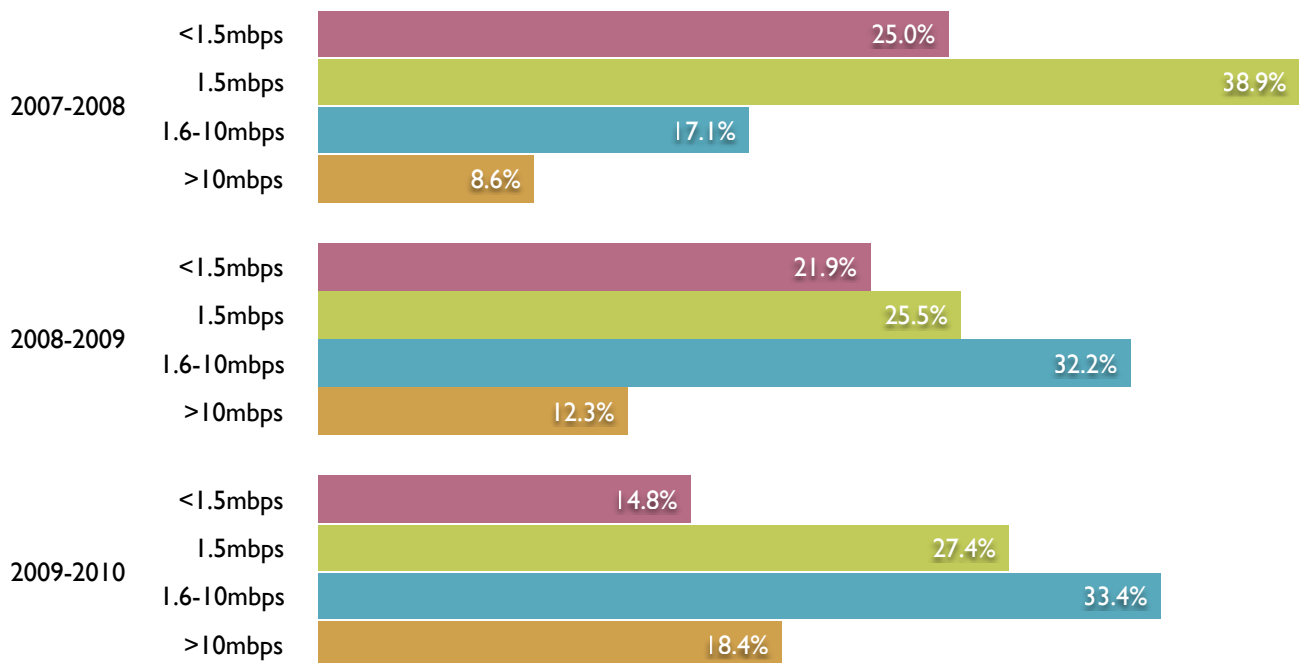


Figure 1. Public Library Internet Connectivity Speeds.

## 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 critically 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.

In 2009-2010, 40.8% of public libraries used a leased line for their Internet access, while 25.4% used DSL, 22.9% used cable, and 13.9% used wireless. Less than one-third of libraries (30.7%) have a fiber optic Internet connection. The majority of libraries (61.2%) received their access through an Internet Service Provider, and the rest received access primarily through a



# PUBLIC LIBRARIES & BROADBAND

state (26.2%), municipal (9.6%), or regional library consortia network (9.1%).

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.<sup>1</sup> This definition, however, is lower than the threshold for broadband in most other technologically-advanced nations, with U.S. definition ranking 19<sup>th</sup> in required capacity to meet the definition of broadband.<sup>2</sup>

Almost all libraries have connection speeds that fulfill the FCC definition of broadband access. Currently, only 2.3% of libraries have a connection speed below 256kbps. The majority of libraries have connection speeds at 1.5 Mbps (27.4%) or above 1.5Mbps (51.8%). The number of libraries with connection speeds above 1.5 Mbps is notably greater than the 44.5% reported last year. The areas with the higher levels of capacity tend to be in urban (77.2%) and suburban areas (55.4%).

In slightly more than half (54.4%) 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 (82.2%) have implemented wireless access to help meet access demands (see Figure 2). However, in 79.3% 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 increasing demands on connection speeds in many libraries, only 23.2% of public libraries have increased their connection speed in the past year. Libraries face a number of challenges regarding their broadband capacity:

- **Availability and Cost.** Two main reasons for not increasing the connection speed are an inability to afford increased capacity (29.5%) and a lack of availability of increased connectivity speeds (20.7%).
- **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

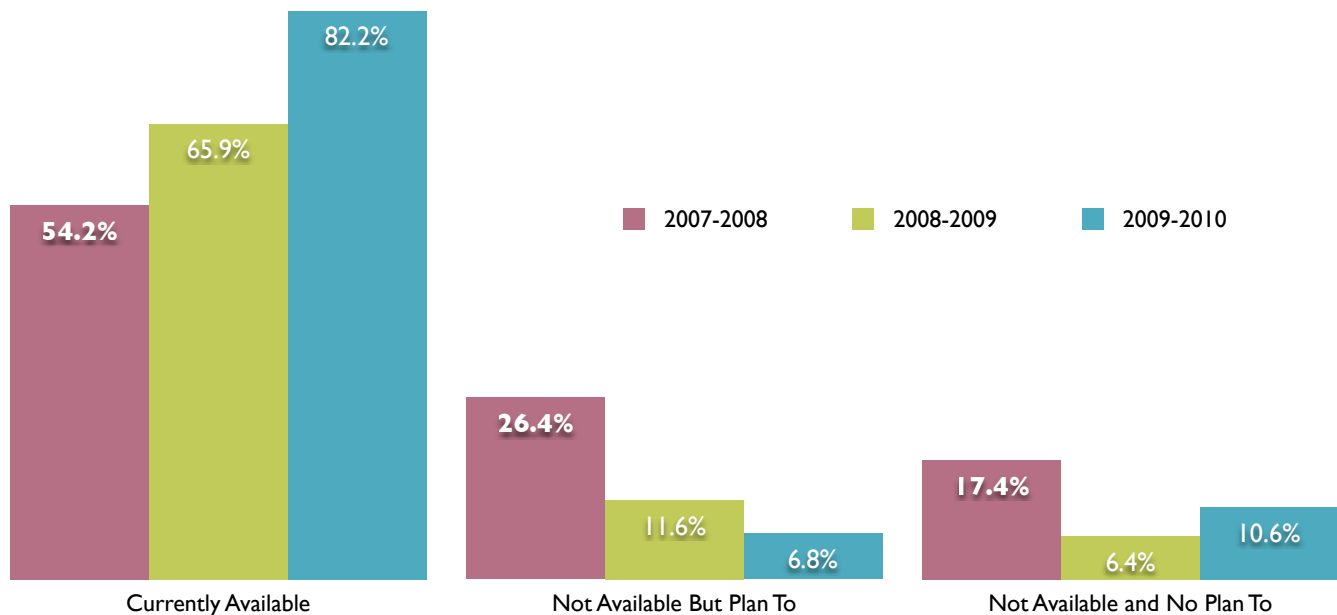


Figure 2. Public Library Availability of Wi-Fi.



# PUBLIC LIBRARIES & BROADBAND

quality of user experience, as actual connection speeds and capacity at the level of the individual user are often substantially 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.<sup>3</sup>

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.<sup>4</sup> In 66.6% 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.”<sup>5</sup>

This position of community access point for Internet access – particularly broadband access – has not yet translated into sustained economic and policy support for public libraries as providers of this access.<sup>6</sup> Without greater support for public libraries to help them provide the connection speeds that will meet the needs of patrons using increasingly complex and bandwidth-intensive content, many public

libraries will continue to struggle to maintain access capacity that meets patron needs.

## References

- <sup>1</sup> Federal Communications Commission. (2010). *What is broadband?* Available: <http://www.fcc.gov/cgb/broadband.html>.
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- <sup>3</sup> Bertot, J.C., & McClure, C.R. (2007). Assessing sufficiency and quality of bandwidth for public libraries. *Information Technology and Libraries*, 26(1): 14-22.
- <sup>4</sup> 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
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- <sup>6</sup> Mandel, L. H., Bishop, B. W., McClure, C. R., Bertot, J. C., & Jaeger, P. T. (2010). Broadband for public libraries: Importance, issues, and research needs. *Government Information Quarterly*, 27(3): 280-291.

