

# Public Libraries and the Internet

## *An Evolutionary Perspective*

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### **Abstract**

*Since 1994, the Public Libraries and the Internet and Public Library Funding and Technology Access national surveys have charted the involvement with and use of the Internet by US public libraries. During that time, thirteen national studies have provided longitudinal data that track trends in the public-access computing and Internet access provided by public libraries to the communities that they serve. This chapter of The Transforming Public Library Technology Infrastructure provides an overview and review of selected data from these national studies; identifies key trends and changes in Internet-enabled services and resources provided by public libraries to their communities over the course of the seventeen years of conducting the national surveys; examines key issues that emerge from the data regarding public library Internet use and involvement; and considers selected future issues regarding public library Internet-enabled services, particularly as the public access that libraries provide their communities takes on increasing importance in supporting a range of services such as e-government, jobs and employment, health information, and education.*

### **Background**

Public libraries were early adopters of Internet-based technologies, and the *Public Library Funding and Technology Access* national surveys began in 1994<sup>1</sup> with the purpose of tracking the growth of public library Internet connectivity and uses as a basis for (1) proposing and promoting public library Internet policies at the federal level; (2) maintaining selected longitudinal data as to the connectivity, services, and deployment of the

Internet in public libraries; and (3) providing national estimates regarding public library Internet connectivity. Through 2004, the surveys were conducted roughly every two years. Beginning in 2006, the surveys switched to an annual data collection cycle.

Though the survey remains true to its primary goals, it evolved over time and experienced three clear shifts in data collection, methodology, and approach:

- Prior to 1998, the surveys collected data at the system level (i.e., total number of workstations across all library branches, if applicable).<sup>2</sup>
- Between 1998 and 2004, the surveys collected data at the building or outlet level (i.e., number of workstations in a particular branch, speed of connectivity at the branch), as well as system-level data (i.e., E-Rate applications).
- Beginning in 2004, the surveys expanded to collect data at the state and national levels and include both building or outlet level and system-level data.
- Beginning in 2002, the survey offered participants a fully online version of the survey as well as a printed version of the survey to complete. Each year, more surveys were completed online, and in 2009, the survey became an online-only survey.

Throughout these shifts, the survey has maintained core longitudinal questions (e.g., numbers of public-access workstations, bandwidth) but consistently explored a range of emerging topics (e.g., jobs assistance, e-government, emergency roles).

Due to the survey's longevity, longitudinal data, and unique data, data from the surveys have appeared over the years in Congressional testimony, filings with the Federal Communications Commission (FCC),

filings with the National Telecommunications and Information Administration (particularly regarding the recent Broadband Technology Opportunity Program grant program), the Children’s Internet Protection Act US Supreme Court decision, US Senate hearings on the E-Government Act, and many other critical policy venues. State librarians have also used the data in state legislative testimony and in a range of state policy documents and initiatives. In short, the data from the surveys are used by a number of stakeholders in a wide range of ways.

This article seeks to provide an evolutionary perspective on public library Internet connectivity. A full list of all the Public Libraries and the Internet and Public Library Funding and Technology Access studies and their findings is included in Appendix A. Unless otherwise noted, all data discussed in the article are from these studies. All of the reports are also available in electronic format at <http://plinternetsurvey.org>.

## Methodology in Brief

The survey’s methodology has evolved over time to meet changing survey data goals. As of this writing, the survey provides both national and state estimates to

- provide branch-level national data regarding public library Internet connectivity and use;
- provide state branch-level data (including the District of Columbia) regarding public library Internet connectivity and use;
- provide system (administrative)-level data (including the District of Columbia) regarding E-Rate use and library operating and technology funding and expenditures; and
- include assessment questions for selected public libraries that are recipients of certain Bill & Melinda Gates Foundation (Foundation) grants.

The last objective is beyond the scope of this article.

The survey has additional objectives of obtaining data to conduct analysis using metropolitan status (e.g., urban, suburban, and rural)<sup>3</sup> and poverty (less than 20% [low], 20% to 40% [medium], and greater than 40% [high])<sup>4</sup> variables. Over the years, the poverty variable has not demonstrated any statistical significance in terms of the survey’s findings, and thus the poverty variable was removed beginning with the 2009–2010 survey.

The survey uses a stratified “proportionate to size sample” to ensure a proportionate national sample. The sampling approach taken ensured high-quality and generalizable data within the states analyzed, nationally, and across and within the various strata. The study team uses the Institute of Museum and Library Services (IMLS) public library dataset (formerly

maintained by the US National Center for Education Statistics) to draw its sample. Foundation grant recipient data are overlaid on the national library dataset. The survey asks respondents to answer questions about specific library branches and about the library system to which each respondent branch belongs.

Respondents typically answer the survey between September and November of each survey year. Changes in technology have fueled not only the evolution of the Internet in libraries, but the evolution of the survey as well. The development of Web-based surveys and more powerful data analysis tools have facilitated the growth of the survey in terms of reach to libraries, ease of completion, complexity of questions, and depth of statistical analysis.<sup>5</sup>

In each year of the survey except for the 2006–2007 survey, the survey response rate is between 70.0 percent and 86.5 percent, and provides between 5,500 and 8,400 survey responses. The data are weighted for both national- and state-level analysis and have a margin of error or  $\pm$  2 or 3.5 percent, depending on survey year. The high survey response rate and representativeness of responses demonstrate the high quality of the survey data and the ability to generalize to the public library population.

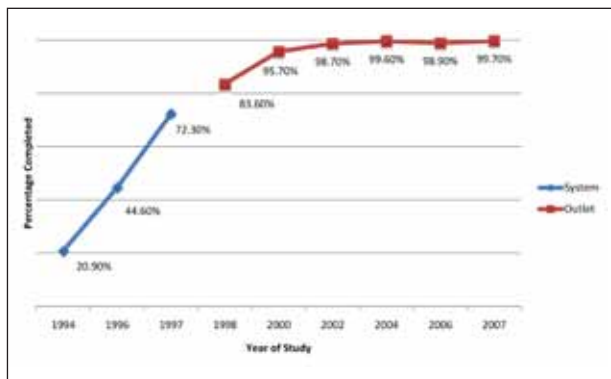
## Selected Longitudinal and Key Findings

This section provides an overview of selected longitudinal data across the survey years. It is important to note, however, that key survey questions, such as broadband connectivity speeds, have changed substantially over the years to reflect the evolving nature of Internet connectivity. For example, the first surveys asked about dial-up connections and their speeds, versus today’s questions that explore fiber-optic and other types of Internet connectivity and corresponding higher speeds. Thus some longitudinal comparisons would not make sense. Finally, the section provides selected findings regarding newer services, particularly as they have an impact on future public library Internet-enabled services.

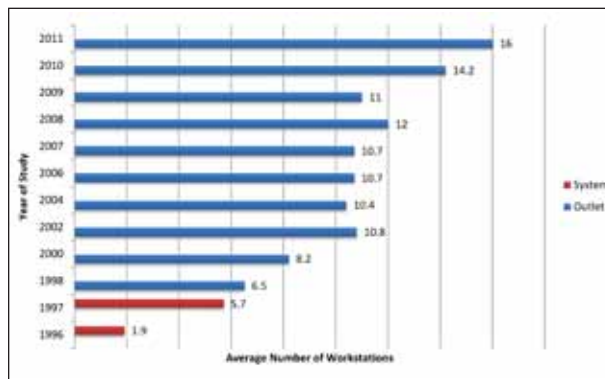
### Infrastructure

The survey asks a number of questions about a public library’s public access infrastructure—for example, public access to the Internet, numbers of workstations, wireless (Wi-Fi) access, and connectivity speed. Connectivity is a prerequisite to providing the range of Internet-enabled services and resources to the communities that libraries serve.

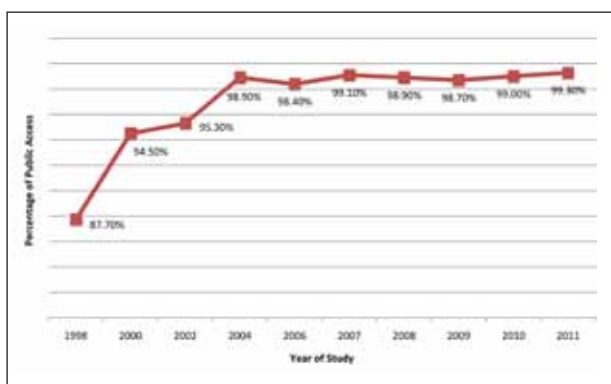
As figure 2.1 shows, nearly 100 percent of public libraries are connected to the Internet. Libraries achieved this growth in connectivity quite quickly,



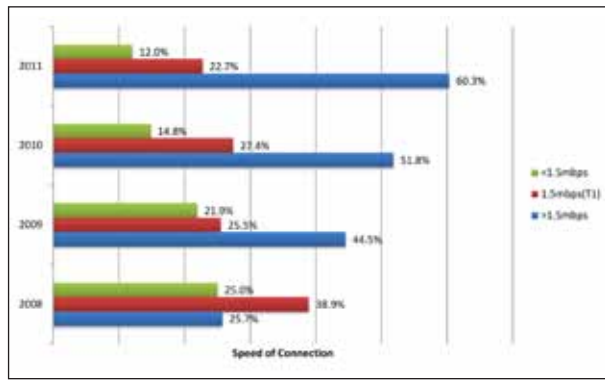
**Figure 2.1**  
Public library Internet connectivity 1994–2007



**Figure 2.3**  
Average number of public-access workstations 1996–2011



**Figure 2.2**  
Public access to public library Internet connectivity 1998–2011

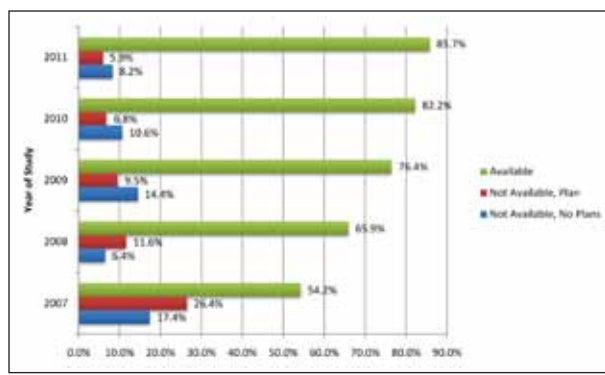


**Figure 2.4**  
Public library outlet maximum speed of public access Internet 2008–2011

from 20.9 percent of public library systems connected to the Internet in 1994 to nearly 100 percent by 2002. Indeed, so prevalent is Internet connectivity in public libraries that the survey discontinued asking this question in 2008. And, as figure 2.2 shows, nearly all connected public libraries provide public access to the Internet. Interestingly, nearly all libraries that reported an Internet connection indicated the provision of public access to the Internet—even in 1998, with 87.7 percent of connected libraries providing public access to the Internet.

Along with Internet connectivity, public libraries also rapidly increased the average number of workstations that they provided for public use. Between 1996 and 2011, the average number of workstations grew from 1.9 to 16.0 (see figure 2.3). Of note is that the average number of workstations hovered between 10.0 and 12.0 for seven years before jumping to 14.2 in 2010 and further increasing to 16.0 in 2011. Libraries reported cost, staff, and space issues were impediments to adding more workstations.

Public library adoption of broadband continued to increase over time (see figure 2.4). Libraries



**Figure 2.5**  
Wireless Internet connectivity availability 2007–2011

continue to enhance their connection speeds annually. Indeed, from 2008 to 2011, public libraries consistently reported increases in connectivity speed, with 60.3 percent of libraries reporting connection speeds of greater than 1.5 Mbps in 2011 as opposed to 25.7 percent in 2008. Libraries reported a corresponding decline in speeds of 1.5 Mbps or less in 2011 as compared to 2008.

	Overall		
	Does Not Offer Service	Offers Service in Library	Offers Service from outside the Library (i.e., via the Web)
<b>Resources</b>			
Digital reference/virtual reference	33.1% (n = 4,766)	48.0% (n = 6,916)	55.1% (n = 7,939)
Licensed databases	0.2% (n = 28)	98.1% (n = 14,480)	98.6% (n = 14,540)
E-books	32.8% (n = 4,747)	45.7% (n = 6,618)	60.9% (n = 8,815)
Web/business conferencing (e.g., Skype, WebEx)	89.6% (n = 12,438)	8.9% (n = 1,238)	2.9% (n = 374)
Online instructional courses/tutorials	41.9% (n = 5,987)	48.4% (n = 6,925)	40.7% (n = 5,819)
Homework help	13.0% (n = 1,894)	74.0% (n = 10,779)	66.2% (n = 9,646)
Audio content (e.g., music, audiobooks, other)	17.2% (n = 2,508)	65.6% (n = 9,557)	59.5% (n = 8,672)
Video content (e.g., streaming video, video clips, other)	38.7% (n = 5,557)	52.4% (n = 7,515)	36.8% (n = 5,278)
Digitized special collections (e.g., letters, postcards, documents, other)	53.9% (n = 7,698)	37.9% (n = 5,411)	35.8% (n = 5,119)
Library social networking (e.g., blogs, Flixster, Goodreads)	39.9% (n = 5,749)	48.2% (n = 6,936)	43.7% (n = 6,292)
Online book clubs	69.4% (n = 9,716)	23.1% (n = 3,230)	25.3% (n = 3,540)
<b>Services</b>			
Allows patrons to access and store content on USB or other portable devices/drives (e.g., iPods, MP3 players, flash drives, other)	6.5% (n = 950)	93.4% (n = 13,736)	—
Allows patrons to connect digital cameras and manipulate content	33.1% (n = 4,807)	66.6% (n = 9,664)	—
Allows patrons to burn compact discs/DVDs	44.6% (n = 6,462)	55.1% (n = 7,980)	—
Provides access to recreational gaming consoles, software, or Web sites	30.6% (n = 4,425)	68.7% (n = 9,926)	—
Provides access to mobile devices (e.g., e-readers, netbooks)	72.2% (n = 8,283)	27.8% (n = 3,189)	—

Will not total 100%, as categories are not mutually exclusive

**Table 2.1**  
Services that public library outlets make available to users

Libraries report a substantial increase in the availability of wireless (Wi-Fi) services for public use (see figure 2.5). In 2011, 85.7 percent of public libraries provide public wireless access, as compared to 54.2 percent in 2007. And if libraries that indicate they are planning to provide wireless access within the year do so, the figure will approach just over 90.0 percent. The adoption of Wi-Fi in public libraries has been quite rapid and is likely to become almost as ubiquitous as Internet connectivity in libraries.

**Services**

Public libraries use their Internet connectivity and

public-access computers to provide databases, e-books, digital reference, training, and a number of Internet-enabled services to their users—both from inside and outside of the library’s walls. More specifically, as reported in 2011, public libraries

- offer licensed databases (99.8 percent), homework resources (87.0 percent), audio content such as audiobooks (82.8 percent), and digital reference (66.9 percent) (see table 2.1)
- Offer a substantial amount of information technology training (see table 2.2) on a wide range of topics, including general Internet use (93.5 percent), general computer use (92.9 percent), online

Technology Training Classes	Metropolitan Status			
	Urban	Suburban	Rural	Overall
General computer skills (e.g., how to use mouse, keyboard, printing)	93.7% (n = 1,176)	92.9% (n = 1,990)	92.3% (n = 1,527)	92.9% (n = 4,693)
General software use (e.g., word processing, spreadsheets, presentation)	82.8% (n = 1,039)	80.9% (n = 1,734)	75.2% (n = 1,245)	79.5% (n = 4,018)
General Internet use (e.g., set up e-mail, Web browsing)	92.8% (n = 1,164)	94.7% (n = 2,030)	92.4% (n = 1,529)	93.5% (n = 4,723)
General online/Web searching (e.g., using Google, Yahoo, others)	81.8% (n = 1,026)	82.8% (n = 1,775)	80.9% (n = 1,339)	81.9% (n = 4,140)
Using library's Online Public Access Catalog (OPAC)	49.8% (n = 626)	52.9% (n = 1,134)	51.7% (n = 856)	51.8% (n = 2,615)
Using online databases (e.g., commercial databases to search and find content)	56.2% (n = 705)	59.7% (n = 1,281)	46.4% (n = 768)	54.5% (n = 2,753)
Safe online practices (e.g., not divulging personal information)	29.2% (n = 367)	38.0% (n = 815)	37.5% (n = 620)	35.6% (n = 1,802)
Accessing online government information (e.g., Medicare, taxes, how to complete forms)	28.6% (n = 359)	30.5% (n = 654)	31.6% (n = 522)	30.4% (n = 1,535)
Accessing online job-seeking and career-related information	51.4% (n = 644)	52.9% (n = 1,136)	39.4% (n = 652)	48.1% (n = 2,432)
Accessing online medical information (e.g., health literacy)	22.4% (n = 282)	26.6% (n = 571)	25.0% (n = 414)	25.1% (n = 1,267)
Accessing online investment information	16.4% (n = 206)	17.4% (n = 372)	9.3% (n = 153)	14.5% (n = 732)
Accessing genealogy information	31.8% (n = 399)	42.5% (n = 912)	45.6% (n = 754)	40.8% (n = 2,065)
Accessing consumer information (e.g., product value, safety, reliability, warranty information)	18.7% (n = 234)	24.5% (n = 526)	19.0% (n = 314)	21.2% (n = 1,074)
Digital photography, software, and online applications (e.g., Photoshop, Flickr)	22.6% (n = 283)	34.0% (n = 730)	31.8% (n = 526)	30.4% (n = 1,540)
Social networking (e.g., blogging, RSS)	31.5% (n = 395)	37.4% (n = 308)	35.5% (n = 587)	35.3% (n = 1,785)
Other technology-based training classes	6.8% (n = 85)	5.6% (n = 120)	5.9% (n = 98)	6.0% (n = 303)

Will not total 100%, as categories are not mutually exclusive

**Table 2.2**

Formal technology training classes offered by public library outlets, by metropolitan status

searching (81.9 percent), and general software use (79.5 percent).

- Provide innovative support services to meet community needs in such areas as e-government by helping users understand and use government Web resources (89.7 percent), apply for government services (80.7 percent), and complete government forms (67.8 percent) (see table 2.3).

There are other services provided by public libraries, but these demonstrate the depth and breadth of public library Internet-enabled services.

If one looks at the survey data over the years, there is a sense that public libraries quickly incorporated public-access technologies into their libraries, made public access a critical service provided to their communities, offered training and instructional programs to facilitate the ability of users to interact with Internet technologies, and responded to community

needs such as e-government. Libraries do not provide these services without challenge, however.

## Challenges in Public Access Services and Technologies

Increasingly, the public library Internet surveys show conflicting results. This section focuses on these somewhat contradictory results, by way of findings reported in the latest (2010–2011) survey. On the one hand, public libraries continue to offer enhanced public-access computing and Internet access to their communities. As presented above, public libraries

- offer wireless (Wi-Fi) access to the Internet;
- have faster public-access broadband speeds;
- offer technology and Internet training; and
- offer a range of other services such as databases,

E-Government Roles and Services	Metropolitan Status			
	Urban	Suburban	Rural	Overall
Staff provides assistance to patrons applying for or accessing e-government services.	77.5% (n = 1,761)	81.2% (n = 3,991)	81.4% (n = 5,610)	80.7% (n = 11,363)
Staff provides as-needed assistance to patrons in understanding how to access and use e-government websites.	92.2% (n = 2,094)	92.1% (n = 4,525)	87.2% (n = 6,011)	89.7% (n = 12,630)
Staff provides assistance to patrons in understanding government programs and services.	54.7% (n = 1,242)	54.1% (n = 2,661)	45.9% (n = 3,164)	50.2% (n = 7,067)
Staff provides assistance to patrons in completing government forms.	71.7% (n = 1,631)	66.0% (n = 3,246)	67.8% (n = 4,672)	67.8% (n = 9,549)
The library developed guides, tip sheets, or other tools to help patrons use e-government websites and services.	23.9% (n = 542)	20.5% (n = 1,010)	14.2% (n = 978)	18.0% (n = 2,530)
The library offers training classes regarding using government websites, understanding government programs, and completing electronic forms.	20.1% (n = 457)	8.3% (n = 410)	4.6% (n = 320)	8.4% (n = 1,187)
The library offered translation services for forms and services in other languages.	11.7% (n = 266)	10.6% (n = 521)	3.5% (n = 243)	7.3% (n = 1,031)
The library is partnering with government agencies, nonprofit organizations, and others to provide e-government services.	33.4% (n = 760)	25.8% (n = 1,266)	21.2% (n = 1,459)	24.7% (n = 3,485)
The library is working with government agencies (local, state, or federal) to help agencies improve their websites and/or e-government services.	11.7% (n = 253)	8.9% (n = 422)	5.7% (n = 377)	7.8% (n = 1,052)
The library has at least one staff member with significant knowledge and skills in provision of e- government services.	29.4% (n = 669)	19.1% (n = 937)	16.0% (n = 1,105)	19.3% (n = 2,711)
Other	2.8% (n = 64)	2.4% (n = 120)	3.0% (n = 208)	2.8% (n = 392)

Will not total 100%, as categories are not mutually exclusive

**Table 2.3**  
E-government roles and services of the public library outlets, by metropolitan status

digital reference, e-books, and e-government.

And, as libraries report, almost 65 percent are the only free public-access computing and Internet centers in their communities (see figure 2.6). Thus, public libraries provide critical public-access computing and Internet services that support their communities in a wide range of areas.

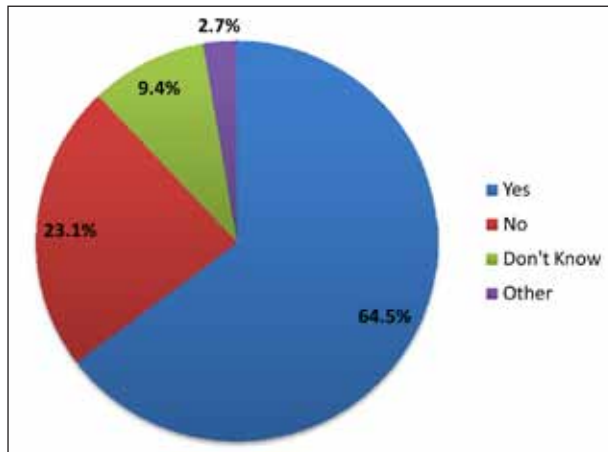
On the other hand, however, public libraries indicate that:

- *Their broadband speeds are inadequate.* 44.9 percent of respondents reported that their connectivity speed is insufficient some or all of the time (see figure 2.7).
- *Their numbers of public-access computers are inadequate.* 76.2 percent of libraries reported that they have insufficient availability of workstations some or all of the time (see figure 2.8).
- *Costs, space, and buildings are real barriers to the public-access environment public libraries can offer.* 78.7 percent of libraries reported that cost factors, 77.2 percent reported space limitations, and 54.4 percent reported that the building infrastructure

(e.g., cabling, wiring, electrical outlets) were important factors in their decisions to add, or not add, public-access workstations or laptops (see table 2.4).

- *They rely on nonprofessional IT staff for technology support.* Libraries report that they rely on non-IT public service staff (39.0 percent), library directors (31.7 percent), and sometimes even volunteers (6.7 percent) for support for their technology. The percentage of library directors providing IT support climbs to 47.6 percent for rural libraries and drops to 4.2 percent for urban libraries. 48.1 percent of libraries support their IT with system-level IT staff, but only 32.2 percent of rural libraries have access to such support as compared to 75.5 percent of urban libraries (see table 2.5).

The real significance of these findings is that some libraries continue to face the same challenges *in spite of upgrades to their technology infrastructure*. And, more significantly, libraries continue to offer a significant number of services to the communities that they serve—licensed databases, technology training, e-government, and more—while often being the only free



**Figure 2.6**  
Public libraries as only provider of free public Internet access

public-access point within their communities.

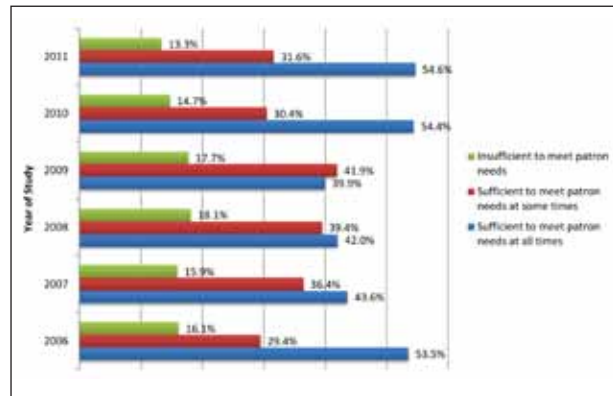
Thus, public libraries increasingly report that they are unable to meet patron demands for services due to inadequate technology infrastructure, costs associated with operating and maintaining that infrastructure, and bandwidth quality or availability issues—but not for lack of trying to enhance their services. What is unclear is how libraries will maintain their levels of public-access computer and Internet access services, much less extend and augment them, in the current economic downturn. It is in this mixed and paradoxical context that public libraries provide their public-access services.

## Future Issues and Considerations

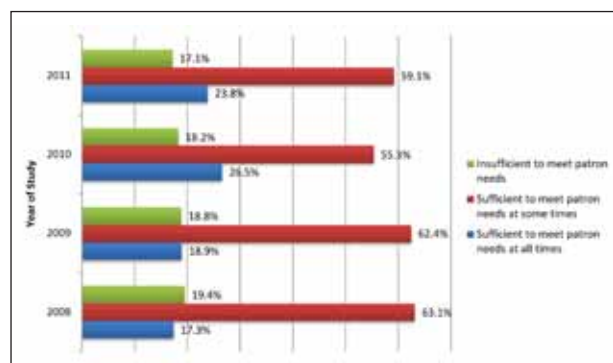
The surveys have demonstrated the enthusiastic embrace and incorporation of the Internet and public-access technologies by public libraries—not just from an infrastructure perspective, but also from a service and resource perspective. On average, public libraries increased the number of public-access workstations by several hundred percent in a period of eight years; substantially increased their Internet speeds; expanded service to include Wi-Fi public access; offer a large range of Internet-enabled services and resources such as databases, digital reference, and e-books or audiobooks; and provide technology and Internet resource training services. But the data also show that libraries are stretched, and increasingly challenged to maintain or enhance their levels of services.

This strain has been ongoing for several years and continues to become more pronounced for several reasons:

- As demonstrated as early as the 2006 survey, many libraries began struggling with an “infrastructure plateau” a number of years ago as they



**Figure 2.7**  
Internet connection adequacy



**Figure 2.8**  
Public workstation adequacy

no longer had space, connectivity, and other supports to expand the number or capacity of computers available to patrons<sup>6</sup>

- Public libraries are increasingly the only access point in communities for free Internet and assistance using the Internet.<sup>7</sup>
- The Internet both has served to augment existing library services and to establish new social roles, with e-government and emergency response being two of the most prominent new roles.<sup>8</sup>
- Many other types of outlets for information that the public was able to previously rely on—such as government agencies, academic libraries, and law libraries—have moved their information exclusively online or become more exclusive in their service populations, driving people without other access to the public library to get information previously available elsewhere.<sup>9</sup>
- The sustained economic downturn has exacerbated this demand on libraries.

The last point is critical, and likely will have lasting effects on the public library service environment. As the study shows ongoing reductions to public

Factors	Overall						Average
	Least Important	Un-important	Neutral	Important	Most Important	Not Applicable	
Availability of space	6.0% (n = 903)	4.1% (n = 665)	11.1% (n = 1,670)	21.2% (n = 3,198)	56.0% (n = 8,454)	1.3% (n = 198)	4.2 (n = 14,889)
Cost factors	3.1% (n = 462)	4.1% (n = 625)	12.9% (n = 1,951)	19.3% (n = 2,912)	59.4% (n = 8,946)	1.1% (n = 171)	4.3 (n = 14,896)
Maintenance, upgrade, and general upkeep	13.7% (n = 2,003)	16.0% (n = 2,343)	28.5% (n = 4,177)	24.0% (n = 3,519)	15.4% (n = 2,262)	2.3% (n = 341)	3.1 (n = 14,304)
Availability of public service staff to manage the use of the public-access computers and users	16.4% (n = 2,406)	17.6% (n = 2,582)	29.3% (n = 4,290)	21.7% (n = 3,168)	12.0% (n = 1,759)	2.9% (n = 429)	3.0 (n = 14,205)
Availability of technical staff to install, maintain, and update the public-access computers	16.3% (n = 2,407)	18.1% (n = 2,681)	24.0% (n = 3,540)	23.3% (n = 3,438)	15.4% (n = 2,278)	2.9% (n = 429)	3.0 (n = 14,344)
Availability of bandwidth to support additional workstations	19.5% (n = 2,888)	15.9% (n = 2,350)	19.8% (n = 2,932)	18.6% (n = 2,749)	22.2% (n = 3,288)	3.9% (n = 583)	3.1 (n = 14,207)
Availability of electrical outlets, cabling, or other infrastructure	13.3% (n = 1,970)	11.6% (n = 1,716)	18.5% (n = 2,742)	23.3% (n = 3,458)	31.1% (n = 4,623)	2.3% (n = 354)	3.5 (n = 14,509)
Other	8.9% (n = 109)	1.3% (n = 16)	8.0% (n = 98)	2.6% (n = 32)	11.5% (n = 141)	67.7% (n = 832)	3.2 (n = 397)

1 = Least Important; 5 = Most Important

**Table 2.4**  
Factors affecting adding workstations or laptops

library budgets and funding, the economic conditions have caused more people need to rely on the library computers out of necessity for looking for assistance and seeking employment, as well as entertainment and communication, as many people can no longer afford their own access, all while most libraries were suffering significant budget cuts.<sup>10</sup> Public libraries have served as “America’s first responders to the economic crisis.”<sup>11</sup> However, as the usage rates of libraries and the demands on their computers have increased dramatically—in some cases as much as 500 percent in a period of three years—the library staff, computers, and even the most basic infrastructure like carpets have struggled to hold up under the usage and needs.<sup>12</sup>

In light of the ever-increasing demands being placed on the computers, connectivity, and staff of public libraries, public libraries, policy makers, and others need to consider several key issues as public libraries continue to fulfill their role as community-based providers of cost-free public access to the Internet and computing:

- *How much is enough? It’s never enough.* A question that the surveys have never been able to adequately address is “How much access (workstations, broadband) is enough?” In fact, as the bar gets higher in terms of service provision, so too does the assessment of how much is needed. Libraries—even the smallest in the most rural

areas—are rapidly approaching the need for fiber-optic connections. Nearly half of all libraries report a T1 (1.5 Mbps) connection—something that only a few short years ago was considered robust bandwidth. And yet, a vast majority of libraries report that this increase in bandwidth is inadequate.

- *Better understanding of the relationship between infrastructure and services.* The initial *Public Libraries and the Internet* surveys showed that libraries viewed Internet connectivity as an experimental service—one that had substantial potential, but it was unclear at the time (the Mosaic browser was introduced in 1993, the same year that the first survey went into the field) just how revolutionary the Internet would be to public library service. As Internet-enabled services are a mainstay of the public library, there is a substantial need to better understand which services require what amount of bandwidth. Increasingly, for example, streaming video content is in high-definition format, which consumes substantially more bandwidth than Web browsing.
- *The need for comprehensive capacity planning.* Public-access services and resources require libraries to look across their Internet-enabled services and resources comprehensively. Public-access workstations, broadband, and Wi-Fi are part of a collective public-access technology environment that directly impact the ability of libraries



Source of IT Support	Metropolitan Status			
	Urban	Suburban	Rural	Overall
Public service staff	40.7% (n = 1,024)	42.4% (n = 2,263)	36.0% (n = 2,725)	39.0% (n = 6,013)
Library director	4.2% (n = 106)	22.1% (n = 1,177)	47.6% (n = 3,598)	31.7% (n = 4,881)
Building-based IT staff (IT specialist)	13.4% (n = 336)	16.8% (n = 898)	10.5% (n = 791)	13.1% (n = 2,025)
System-level IT staff	75.5% (n = 1,901)	56.4% (n = 3,008)	32.2% (n = 2,513)	48.1% (n = 7,422)
Library consortia or other library organization	5.6% (n = 140)	17.3% (n = 925)	13.2% (n = 997)	13.4% (n = 2,062)
County/city IT staff	30.5% (n = 767)	20.2% (n = 1,130)	11.0% (n = 830)	17.7% (n = 2,727)
State telecommunications network staff	1.7% (n = 42)	4.0% (n = 213)	3.8% (n = 287)	3.5% (n = 541)
State library IT staff	2.3% (n = 57)	3.7% (n = 197)	8.7% (n = 660)	5.9% (n = 913)
Outside vendor/contractor	16.2% (n = 408)	21.4% (n = 1,140)	37.7% (n = 2,854)	28.5% (n = 4,402)
Volunteer(s)	*	3.4% (n = 182)	11.0% (n = 834)	6.7% (n = 1,031)
Other source	4.0% (n = 100)	6.0% (n = 323)	6.2% (n = 469)	5.8% (n = 892)

\*Insufficient data to report

**Table 2.5**  
Sources of IT support provided to public library outlets, by metropolitan status

to offer patrons high-quality Internet services and resources—and moreover, high-quality user experiences. A library that has seven public-access workstations and offers Wi-Fi but has a DSL connection ultimately provides a dial-up experience to its users. Capacity planning needs to include not just the last mile, but also internal library infrastructure, including routers, switches, and up-to-date workstations, at the least, to provide quality public-access services.

- *Continual upgrades to technology and staff.* As the surveys demonstrate, public-access computing and Internet infrastructure and services are not a one-time investment. There is a continual need to upgrade computing technology, Internet connectivity, and buildings. Also, the surveys show that, given the demands placed on libraries for training, e-government, education, employment, and other critical service areas, there is a need to continually train library staff on a range of technologies as well as services (such as how to help with applying for government benefits, seeking employment, taking certification exams, and more).
- *Setting service quality benchmarks.* Given increasing demands, and libraries that report the inability to keep up with demand, libraries may need to consider setting levels-of-service-quality benchmarks. Libraries will need to decide whether they

will offer as many services at the highest level of quality as possible, or set levels of service quality, realizing that a library may not be able to meet all requests and demands. In some cases, service quality levels may be dictated by, for example, the broadband that is available to a library due to cost and geography. These levels of service may place libraries at odds with their user communities, which may request or desire more services at levels of quality that the library is unable to afford or provide.

- *Public-access technology versus other services.* Internet-enabled services have clearly become essential public library services. It is important to also note that libraries continue to offer and provide significant services such as programs and access to printed materials. Public libraries reside, and have for some time, in both print and electronic environments and this requires libraries to strike a balance between these two contexts, particularly in light of resource constraints.
- *Library physical capacity limitations.* Libraries have consistently identified the limitations of their buildings through the surveys since 2006. Indeed, public library space will remain a critical factor as libraries balance the use of their physical space to house materials, provide public-access technologies, and facilitate public use. The IMLS

public library data show that 25 percent of public libraries are 2,400 square feet or less, with 50 percent of public libraries having 5,700 square feet or less<sup>13</sup>—and one should note that the usable space for collections and services is different from overall space. And though offering wireless access increases public-access technology capacity, the need for differing workspaces to accommodate mobile devices and the power needs of such devices presents an issue for libraries.

- *The library divide.* One factor across all the surveys conducted in the last ten years remains: rural libraries in general have fewer resources, less connectivity, fewer workstations, less access to technology support, and other factors. This does not mean that urban libraries are infinitely better off—in fact, urban libraries often report similar issues in terms of keeping up with demand. But the survey data are clear: rural libraries face substantial challenges in supporting their public-access technology environment, and there is no indication of abatement in this circumstance. Additionally, long-term funding decisions have created notable divides in overall workstations and connectivity between regions of the country.<sup>14</sup>

The above are a selection of issues that will need consideration and resolution if public libraries are to continue their role as critical providers of community public Internet and computing access.

Future *Public Libraries and the Internet* surveys will need to continue exploring the evolving service context of public-access Internet and computing services within public libraries. Public libraries have clearly moved beyond issues of “getting connected” and into critical services provision via the Internet. Indeed, one cannot imagine a public library that is not connected to the Internet, not providing public-access computers, or not offering users a number of online resources such as licensed databases, assistance with using technology or the Internet, or, increasingly, Wi-Fi access. One can no longer separate the public library from public Internet access. The issue is not one of measuring connectivity, but rather of better understanding the nature and roles of public libraries as providers of community-based public access.

## Resources

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## Notes

1. The studies were the Public Libraries and the Internet Survey series, with various funding sources, until 2006, at which time they became part of the Public Library Funding and Technology Access study ([www.ala.org/plinternetfunding](http://www.ala.org/plinternetfunding)), funded by the American Library Association and the Bill & Melinda Gates Foundation.
2. By system we mean the central authority for the library—that is, the entity that makes budget decisions, applies for E-Rate, and makes other management decisions. The survey does not use the term *system* to mean regional cooperatives or other forms of federated libraries.
3. Metropolitan status was determined using the official designations employed by the Census Bureau, the Office of Management and Budget, and other government agencies. These designations are used in the study because they are the official definition employed by the Institute of Museum and Library Services (IMLS), which allows for the mapping of public library outlets in the study.
4. In previous studies, the authors have used the less than 20%, 20%–40%, and greater than 40% poverty breakdowns. The poverty of the population a library outlet serves is calculated using a combination of geocoded library facilities and census data. More information on this technique is available through the authors as well as by reviewing the 1998 and 2000 public library Internet studies (John Carlo Bertot and Charles R. McClure, *The 1998 National Survey of US Public Library Outlet Internet Connectivity: Final Report* [Washington, DC: National Commission on Libraries and Information Science, 1998]; John Carlo Bertot, and Charles R. McClure, *Public Libraries and the Internet 2000: Summary Findings and Tables* [Washington, DC: National Commission on Libraries and Information Science, 2000]; both available at <http://plinternetsurvey.org>).
5. John Carlo Bertot, “Web-Based Surveys: Not Your Basic Survey Anymore,” *Library Quarterly* 79, no. 1 (2009): 119–124; Paul T. Jaeger, Kim M. Thompson, and Jonathan L. Lazar, “The Internet and the Evolution of Library Research: The Perspective of One Longitudinal Study,” *Library Quarterly* (forthcoming).
6. Charles R. McClure, Paul T. Jaeger, and John Carlo Bertot, “The Looming Infrastructure Plateau? Space, Funding, Connection Speed, and the Ability of Public Libraries to Meet the Demand for Free Internet Access,” *First Monday* 12, no. 12 (Dec. 2007), [www.uic.edu/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/2017/1907](http://www.uic.edu/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/2017/1907).
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8. Paul T. Jaeger, “Building e-government into the library and information science curriculum: The future of government information and services,” *Journal of Education for Library and Information Science* 49, (2008): 167–179; Paul T. Jaeger and John Carlo Bertot, “E-government education in public libraries: New service roles and expanding social responsibilities,” *Journal of Education for Library and Information Science* 50, (2009): 40–50.
9. Bertot and Jaeger, “Implementing and Managing Public Library Networks”; Kathryn I. Sigler, Paul T. Jaeger, John Carlo Bertot, Elizabeth J. DeCoster, Abigail J. McDermott, and Lesley A. Langa, “Public Libraries, the Internet, and Economic Uncertainty,” in *Advances in Librarianship*, vol. 34: Librarianship in Times of Crisis, edited by A. Woodsworth (Bradford, West Yorkshire, UK: Emerald Publishing, forthcoming).
10. Jim Rettig, “Once in a Lifetime,” *American Libraries* website, July 23, 2009, <http://americanlibrariesmagazine.org/columns/junejuly-2009/once-lifetime>.
11. Nanci Milone Hill, “Three Views,” *Perspectives, Public Libraries* 48, no. 4 (July/Aug. 2009): 8–11; Sigler et al., “Public Libraries, the Internet, and Economic Uncertainty.”
12. Institute of Museum and Library Services, “Fiscal Year 2008 Public Library (Public Use) Data File” (puout08a, last accessed May 30, 2011), 2010, <http://harvester.census.gov/imls/data/pls/index.asp#fy2008BridgeStudy>.
13. Paul T. Jaeger, John Carlo Bertot, Charles R. McClure, and Miranda Rodriguez, “Public Libraries and Internet Access across the United States: A Comparison by State from 2004 to 2006,” *Information Technology and Libraries* 26, no. 2 (June 2007): 4–14.

## Appendix A: Public Libraries and the Internet and Public Library Funding and Technology Access Surveys

Year	Title	Authors	Published by
2011	<i>2010–2011 Public Library Funding and Technology Access Survey: Survey Findings and Report</i>	Bertot, Sigler, DeCoster, McDermott, Langa, Grimes, & Katz	Information Policy & Access Center, University of Maryland College Park
2010	<i>2009–2010 Public Library Funding and Technology Access Survey: Survey Findings and Report</i>	Bertot, Langa, Grimes, Sigler, & Simmons	Center for Library & Information Innovation, University of Maryland College Park
2009	<i>2008–2009 Public Library Funding and Technology Access Survey: Survey Findings and Report</i>	Bertot, McClure, Wright, Jensen, & Thomas	Information Institute, Florida State University
2008	<i>2007–2008 Public Library Funding and Technology Access Survey: Survey Findings and Report</i>	Bertot, McClure, Wright, Jensen, & Thomas	Information Institute, Florida State University
2007	<i>2006–2007 Public Library Funding and Technology Access Survey: Survey Findings and Report</i>	Bertot, McClure, Thomas, Barton, & McGilvray	Information Institute, Florida State University
2006	<i>2006 Public Libraries and the Internet: Survey and Results</i>	Bertot, McClure, Jaeger, & Ryan	Information Institute, Florida State University
2004	<i>2004 Public Libraries and the Internet: Survey and Results</i>	Bertot, McClure, & Jaeger	Information Institute, Florida State University
2002	<i>2002 Public Libraries and the Internet: Survey and Results</i>	Bertot, McClure, & Thompson	Information Institute, Florida State University
2000	<i>2000 Public Libraries and the Internet: Survey and Results</i>	Bertot & McClure	Information Institute, Florida State University
1998	<i>Moving Toward More Effective Public Internet Access: The 1998 National Survey of Public Library Outlet Connectivity</i>	Bertot & McClure	US National Commission on Libraries & Information Science
1997	<i>The 1997 National Survey of US Public Libraries and the Internet: Final Report</i>	Bertot & McClure	US National Commission on Libraries & Information Science and the American Library Association Office for Information Technology & Policy
1996	<i>The 1996 National Survey of Public Libraries and the Internet: Progress and Issues</i>	Bertot, McClure, & Zweizig	US National Commission on Libraries & Information Science
1994	<i>Public Libraries and the Internet: Study Results, Policy Issues, and Recommendations</i>	McClure, Bertot, & Zweizig	US National Commission on Libraries & Information Science

All survey reports are available at [www.plinternetsurvey.org](http://www.plinternetsurvey.org)