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PUBLIC LIBRARIES AND THE INTERNET 2008: STUDY RESULTS AND FINDINGS

John Carlo Bertot, Ph.D.
Professor and Director of the Center for Library Innovation, University of Maryland

Charles R. McClure, Ph.D.
Director and Francis Eppes Professor, Florida State University

Carla B. Wright, M.S.
ALA Survey Manager

Elise Jensen, M.S.
Research Associate

Susan Thomas, M.L.S.
ALA Project Manager

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142 Collegiate Loop, P.O. Box 3062100, Tallahassee, FL 32306-2100
Telephone 850.645.5683 Fax 850.644.4522

INTRODUCTION

This report to the American Library Association (ALA) presents national and state data from the *2007-2008 Public Library Funding and Technology Access* survey. The 2007-2008 survey (see Appendix A) also can be used to provide longitudinal data from the 2006-2007 survey, continuing the research of previous surveys conducted by John Carlo Bertot and Charles R. McClure, with others, since 1994.[1] The 2007-2008 survey also explored new areas of library network-based services, e-government roles of public libraries, and issues associated with maintaining, upgrading, and replacing a range of public access technologies.

The data collected by this annual survey provide national and state policymakers, library advocates, practitioners, researchers, government and private funding organizations, and a range of other stakeholders, with a better understanding of the issues and needs of libraries associated with providing Internet-based services and resources. The data can also assist public librarians to better plan for and deliver Internet-based services and resources to their users, and advocate for public library public access technology roles, needs, and services to the communities that they serve.

The 2007-2008 survey is part of a larger study funded by the American Library Association and the Bill & Melinda Gates Foundation to gain a better understanding of public library technology access and funding, which includes the national survey, case site visits to public libraries in selected states, and a survey of state librarians. The overall study's primary focus was to obtain comprehensive data related to these topics and explore the issues that public libraries encounter when planning for, implementing, and operating their public access technology components (e.g., workstations, bandwidth, services, and resources).

Objectives of Study

The main objectives for this survey were to provide data that would determine the extent to which public libraries:

- Provide and sustain public access Internet services and resources that meet community public access needs;
- Install, maintain, and upgrade the technology infrastructure required to provide public access Internet services and resources;
- Serve as a high quality public Internet access venue within the libraries' communities for content, resources, services, and technology infrastructure (e.g., workstations and bandwidth);
- Serve as technology and Internet-based resource/service training centers for the communities that the libraries serve;
- Identify issues that public libraries encounter in maintaining and enhancing their public access technology infrastructure and services;
- Serve as agents of e-government; and

[1] Information about the reports from the 1994-2006 studies is available at: http://www.ii.fsu.edu/plinternet.

- Fund their information technology investments.

The findings detailed in this report address these objectives as well as a range of related topics and issues.

METHODOLOGY

The 2007-2008 study employed a Web-based survey approach to gather data, with a mailed survey participation-invitation letter from the American Library Association sent to the directors of libraries in the sample. The letter introduced the study, provided information regarding the study sponsors and the research team, explained the study purpose and goals, provided instructions on how to access and complete the electronic survey, and provided contact information to answer any questions that participants might have.

The study obtained data that enabled analysis by the following categories:

- Metropolitan status[2] (e.g., urban, suburban, and rural);
- Poverty[3] (less than 20 percent [low], 20 percent-40 percent [medium], and greater than 40 percent [high]);
- State (the 50 states plus the District of Columbia); and
- National.

Given the quality of the data, findings are generalizeable to each of these four categories. Finally, the survey explored topics that pertained to both public library system (administrative) and outlet (branch) level data. Thus, the sample required for this study was complex.

The study team used the 2004 public library dataset available from the U.S. National Center for Education Statistics (NCES) as a sample frame, which was the most recent file at the time the geocoding process began. The study team employed the services of the GeoLib database (http://www.geolib.org/PLGDB.cfm) to geocode the NCES public library universe file in order to calculate the poverty rates for public library outlets. Given the timeframe of the study, GeoLib was able to geocode 16,457 library outlets.[4] From these totals, the researchers used SPSS

[2] 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 NCES, which allows for the mapping of public library outlets in the study.

[3] In previous studies, the authors have used the less than 20%, 20%-40%, and greater than 40% poverty breakdowns. Though previous studies by the authors have employed these percentages, the data from this study can be analyzed at different levels of granularity, if desired. 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:
Bertot, J. C., and McClure, C. R. (2000). *Public Libraries and the Internet 2000: Summary Findings and Data Tables*. Washington, DC: National Commission on Libraries and Information Science. Available at: http://www.nclis.gov/statsurv/2000plo.pdf; Bertot, J. C., and McClure, C. R. (1998). *Moving Toward More Effective Public Internet Access: The 1998 National Survey of Public Library Outlet Internet Connectivity*. Washington, DC: National Commission on Libraries and Information Science. Available at: http://www.nclis.gov/statsurv/1998plo.pdf

[4] Geocoding is the process by which all public library buildings are mapped to determine their physical location. Census data are then overlaid to determine the poverty of the population served by the library.

Complex Samples software to draw the sample for the study. The sample needed to provide the study team with the ability to analyze survey data at the state and national levels along the poverty and metropolitan status strata discussed above. The study team drew a sample with replacement of 6,984 outlets.

The study team developed the questions on the survey through an iterative and collaborative effort involving the researchers, representatives of the funding agencies, and members of the Public Access Technology & Funding Study Advisory Committee (see Appendix II). The study team pre-tested the initial surveys with the project's advisory committee, public librarians, and the state data coordinators of the state library agencies and revised the survey based on their comments and suggestions.

The survey asked respondents to answer questions about specific library branches and about the library system to which each respondent branch belonged. The *2007-2008 Public Library Funding and Technology Access* survey sampled 6,984 public libraries based on three library demographics—metropolitan status (roughly equating to their designation of urban, suburban, or rural libraries), poverty level of their service population (as derived through census data), and state in which they resided. Respondents answered the survey between September 2007 and December 2007. After a number of follow-up reminders and other strategies the survey received a total of 5,488 responses for a response rate of 78.6 percent. Figure 1 shows that the responses were representative of the population. Together, 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.

Outlet (Branch) versus Systems

The survey deployed a two-stage approach that included questions regarding sampled outlets (branches) and questions regarding an entire library system (administrative questions focusing on E-rate applications and operating and technology budgets). For roughly 85% of public libraries, there is no distinction between a branch and system, as these are single facility systems (e.g., one branch, one system). The remaining roughly 15 percent of public libraries, however, do have multiple branches. There was a need to separate branch and system-level questions, as some of the survey questions were point-of-service delivery questions (e.g., number of workstations, bandwidth, and training) whereas others were administrative in nature (e.g., e-rate applications, operating budgets, and technology budgets).

Questions 1 through 17 of the survey explored branch level issues (e.g., Internet connectivity, speed of connection, workstations, etc.). Questions 18 through 21 posed questions regarding the entire library system (e.g., E-rate applications, funding for information technology, patron and staff information technology training, etc.). Upon completion of questions 1 though 17 for all sampled branches, respondents were then taken to the system level questions. Given that the actual respondent for the system level data might be different than for the branch level data, users were permitted to leave and re-enter the Web-based survey for completion. See Appendix 1 for a print version of the survey. The analysis of system and branch level data required different approaches, considerations, and weighting schemes for national and state analysis.

Data Analysis

The survey uses weighted analysis to generate national and state data estimates at the national and state levels, respectively. As such, the analysis uses the actual responses from the 5,488 library outlets from which a completed survey was received to estimate to all geocoded outlets. For example, Anchor Point Public Library in Anchor Point, Alaska is coded as a rural library outlet with less than 20 percent poverty. Anchor Point Public Library's responses (and all others designated rural with less than 20 percent poverty) are weighted by 3.6 to generate an estimate for all rural outlets with less than 20 percent poverty.

The same process is used for analyzing and estimating state level data. The key difference is that the weighting process is limited to the poverty and metropolitan status library designations for the state. The data reported have a margin of error of three percent.

IMPORTANCE OF THE SURVEY

The survey provides descriptive data that describe public library public access technology services, issues, and sustainability that can be used longitudinally to track trends and issues. The findings inform the library, government, research, and other communities on the significance of the public library's contributions to the communities that they serve in providing open access to a range of computer and Internet technologies. The data uniquely identify not only the services and resources that public libraries offer their communities, but also issues in sustaining and enhancing the public access technologies as important community access points to networked services and resources. In short, the survey data provide a comprehensive view of public library involvement with and use of the Internet through their public access technology infrastructure.

The next section presents selected key findings from the national survey. These are not meant to be exhaustive, but rather, serve to highlight a range of findings that the survey identified.

KEY FINDINGS

The *Public Libraries and the Internet* 2007-2008 national survey identified a number of issues related to the current state of public access Internet and computing services provided by public libraries. The following presents the survey's key findings and their implications. The complete set of data tables, as well as findings from previous surveys, is available at http://www.ii.fsu.edu/plinternet.

Public Access Connectivity and Infrastructure

Public libraries face a number of issues and challenges as providers of no-charge public access Internet and computing services. As community-based public access venues, libraries employ a range of strategies to maintain, upgrade and make available public access resources and services. The findings indicate that, although public libraries provide substantial public access services and resources across a range of areas, their ability to do so successfully is not limitless and has reached a saturation point in key areas of their ability to maintain, enhance and grow public access technology services.

Libraries as Community Access Computing and Internet Access Points

Public libraries continue to provide important public access computing and Internet access in their communities:

- 98.9 percent of public library branches offer public Internet.
- 72.5 percent of library branches report that they are the only provider of free public computer and Internet access in their communities.
- Public library branches, overall, have an average of 12 public access workstations, up from 10.7 from 2006-2007.[5] Rural libraries offer an average of 7.5 public computers, suburban libraries an average of 13.9 computers, and urban libraries an average of 21. The greatest growth is seen in urban libraries, and those that serve populations of medium and high poverty.
- In 2007-2008, 100 percent of rural, high poverty outlets provide public Internet access, a significant increase from 85.7 percent last year.
- 65.2 percent of public library branches offer wireless Internet access, up from 54.2 percent in 2006-2007.

Infrastructure Challenges

The 2007-2008 survey asked a range of questions that assessed the ability of public libraries to maintain public access Internet and computing services. The questions were exploratory and provided initial views of library capacity and capabilities. Essentially, respondents reported that they face challenges that are best summarized as follows:

- **Buildings**: Respondents indicated that library buildings are increasingly out of space and unable to accommodate more workstations; they are insufficiently wired to support more

[5] *Libraries Connect Communities: Public Library Funding & Technology Access Study 2006-2007*. Chicago: American Library Association, 2007. Available: http://www.ala.org/ala/ors/plftas/0607report.cfm.

cable drops or handle the power requirements of desktop computers and patron-provided laptops.

- **Cost**: Respondents indicated that funding workstation replacements, upgrades, bandwidth enhancements and other services related to public Internet access and computing (e.g., online access to databases) was both difficult and increasingly problematic.
- **Staff:** Respondents indicated that limited staff skills and time were factors in their decisions not to upgrade their public access infrastructure. Lacking dedicated IT staff proved a particular challenge to many public libraries. In fact, 39.6 percent of libraries indicated that they derive technology support from a non-IT staff person, with 44.1 percent of rural and 40.1 percent of suburban libraries relying on this type of help, compared to 26 percent of urban libraries.

Together, these data further support a trend regarding the management of public access technology resources identified earlier in the 2006-2007 survey. Libraries identified staff and cost issues as two of the top three most significant challenges facing their ongoing provision of public access technology services.

The 2007-2008 survey indicated that libraries are accelerating their attempts to add *more* public access technology service. For example, the percentage of libraries that now provide wireless access increased to 65.2 percent from 54.2 percent last year. However, this service was simply added to the existing telecommunication connection; 74.9 percent of libraries indicated that the wireless connection shared the library's existing connection, up from 49.7 percent in 2006-2007. Overall, this finding indicates that the quality of the library's bandwidth at the individual workstation level is likely declining.

Quality of Public Access

The survey's findings demonstrate that public libraries provide substantial public access Internet and computing services. However, increased library network services are outpacing improvements in bandwidth for many libraries. Together, the survey's findings point to a technology infrastructure that is increasingly unable to keep up with the demands of the networked environment—an environment that requires more and more sophisticated computers, substantial bandwidth, and a range of resources and staffing that libraries indicate they are continually struggling to support—but are doing so to the greatest extent possible. Moreover, in order to accommodate more users, public libraries have imposed time limits on their public access workstations, and the management of this process consumes staff time and effort:

- 73 percent of public libraries report connection speeds greater than 769 kbps, up from 62.1 percent in 2006-2007. Of all libraries, 38.9 percent have a T1 (1.5 Mbps) connection, indicating that libraries are increasing their use of this connection speed. The disparity, however, is quite large between urban libraries, 51.6 percent of which have a T1 connection and their rural counterparts, 32.1 percent of which offer a T1 connection.
- Concurrently, 57.5 percent (up from nearly 52 percent in 2006-2007) of respondents report that their connectivity speed is insufficient some or all of the time.
- Some 82.5 percent of respondents report that they have insufficient availability of workstations some or all of the time, up from 77.5 last year.

- Nearly 75 percent of public libraries report that their wireless connections share the same bandwidth as their public desktop computers. This is up substantially from the nearly 50 percent of libraries that reported a shared connection in 2006-2007.
- Over 90 percent of libraries impose time limits on the use of their public access workstations. Of those libraries, 36.9 percent have time limits of up to 60 minutes, and nearly 30 percent limit use to 30-minute sessions.
- Of those libraries with time limits, 45.9 percent manage the user sessions manually, which imposes a substantial burden on staff.

Extensive Range of Library Services Provided

The data document a substantial—and growing—range of Internet-based services provided by public libraries. These are apparent in the types of Internet services that public libraries consider to be critical to their role. The value that public libraries is reflected in the variety of the digital services they offer, the technology training they provide, and in their expanding role as the primary provider of e-government services. For many communities, the public library is the *only* agency offering free access to these services.

Public libraries provide an impressive array of services that are critical to the communities they serve. Of most importance are the education resources and databases purchased for K-12 students (78.7 percent), services for job seekers (62.2 percent) and access to government information (55.6 percent).

Libraries broker and provide access to a wide range of digital services and resources, including:

- Licensed databases (87.7 percent, up 2 percent from 2006-07)
- Homework resources (83.4 percent, up 15 percent)
- Audio content, such as podcasts and audiobooks (71.2 percent, up 33 percent)
- Digital reference (62.5 percent, up almost 5 percent)
- Gaming (57.7 percent)
- E-books (51.8 percent, up 13.5 percent)

Public libraries continue to incorporate peripheral technologies into their public technology services, allowing users to access and store content on USB storage devices (e.g., flash drives, portable drives) or other devices (72 percent), make use of digital camera connection and manipulation (37.4 percent) and burn CDs/DVDs (34.7 percent).

It is important to note that libraries provide a range of technology training to their patrons. Indeed, a vast majority of libraries (73.4 percent) offer information technology training in some form. These trainings build information literacy skills (47.5 percent, up from 45.7 percent in 2006-2007), especially for those who would otherwise not have any technology skills (39.5 percent, the same as in 2006-2007); help students with their school assignments and school work (38.4 percent, up from 35.2 percent in 2006-2007); provide general technology skills (38.3 percent, up from 37.6 percent in 2006-2007); and help patrons complete job applications (22.9 percent, up from 21.5 percent in 2006-2007).

An emerging and increasingly significant service that public libraries provide involves e-government, which includes access to, use of and instruction related to federal, state and local government information, forms and services. A vast majority of public libraries (74 percent) indicate that their staff members provide as-needed assistance to patrons in understanding how to access and use government Web sites, programs and services. Another 51.9 percent of public libraries report that staff members provide assistance to patrons applying for or accessing e-government services, and 28.6 percent of libraries provide immigrants with assistance in locating information, Web sites and other immigration-related services and resources.

The challenge for public librarians is the degree to which they can maintain and/or expand upon these Internet services while ensuring the bandwidth, infrastructure and trained staff necessary to support these services for millions of library users across the nation.

Funding Technology and Public Access Services

The survey again asked libraries to identify their technology budget expenditures in a range of categories by fiscal year—staff salaries, hardware, software and telecommunications. Respondents once again found it difficult to provide answers to these questions; there was a roughly 50 percent drop-off in question completion on these items compared to the completion rate on other survey questions. Discussions with librarians completing the survey indicated a range of reasons for their reduced ability to answer these questions accurately. They include the following:

- **Inability to respond to the questions as asked**: Some respondents whose libraries do have technology budgets were unable to report the technology expenditures as requested due to their library's internal or city/county budgeting processes.
- **Lack of knowledge regarding technology expenditures**: Some respondents indicated that their libraries have a general technology budget, but that they do not formally track individual technology expenditures.
- **Lack of a technology budget**: A number of respondents, particularly those from smaller rural libraries, stated that their libraries have no separate technology budget and that all funds are expended from a general operating budget. In short, there is only ad hoc technology budgeting in these libraries.
- **Time**: Some were simply unwilling to take the time that would be needed to complete the budget questions.

With this limited knowledge of expenditures related to Internet services and infrastructure, public library planning in this area continues to be problematic. The lack of hard data also limits how well librarians can evaluate the purchase and use of such technology. Until public libraries gain a better understanding of their technology-related expenditures through better record keeping, they will be unable to improve their overall management (planning and evaluation) of technology as well as their ability to advocate for library technology support.

Moving Connectivity and Public Access Forward

Public libraries face a number of challenges as they struggle to prepare for the future of their public access Internet services, resources and infrastructure.

Augmenting Public Access Infrastructure

Public libraries plan to add, replace or upgrade workstations and make other enhancements to their public access computing and Internet access services in the coming year:

- 15.9 percent (down from 17.2 percent in 2006-2007) of public library outlets plan to add more workstations within the next year, while 26.1 percent of public library outlets (up from 21.7 percent in 2006-2007) are considering doing so.
- 52 percent (up from 50.1 percent in 2006-2007) of public library outlets plan to replace some workstations within the next year. Of those, 24 percent plan to replace a specific number of workstations, with an average replacement of 6.9 workstations.
- 11.6 percent plan to add wireless access within the next year. If they do so, by the end of 2008 over 77 percent of public libraries will offer wireless access.

These data demonstrate the continual cycle of upgrades and enhancements that connectivity and computers require. However, libraries are increasingly pursuing a strategy of replacement and expansion through wireless access that relies on user-owned devices (though some libraries do provide laptops for use within library buildings). This strategy, however, also results in some degradation of overall bandwidth as individual workstations, laptops and other devices are required to share the same Internet connectivity.

Significant Challenges Remain

Challenges remain as public libraries continue to improve their public access computing and Internet access services:

- 57.5 percent (up from 52.3 percent in 2006-2007) of public library outlets indicate that their connection speeds are inadequate to meet user demands some or all of the time. This is particularly significant as overall public access library bandwidth increased somewhat since 2006-2007.
- 17.1 percent of respondents reported that their current connection is the maximum speed that they can acquire, 21.2 percent cannot afford to increase their bandwidth, 19.7 percent indicated that they had no interest in increasing their bandwidth, and 17.1 percent indicated that they could increase their bandwidth but had no plans to do so. Thus, 75.1 percent of libraries indicate that they will not be increasing their bandwidth in the coming year.
- 56.1 percent of public library outlets have no plans to add workstations in the next year, largely due to space factors (77.7 percent), cost factors (75.9 percent), and the availability of electrical outlets, cabling, or other infrastructure (36.4 percent).
- 42.4 percent of public libraries do not have a schedule for replacing or adding computers;
- Rural public libraries, as compared to suburban and urban libraries, face a range of challenges in several key areas, including the number of hours open (38.5 hours per week, compared with 50.8 for suburban and 53.1 for urban libraries); ability to replace public computers (46.8 percent of rural libraries have plans to replace computers in the

coming year, compared with 61 percent of urban libraries); and bandwidth availability (34.6 percent of rural libraries have less than T1 speeds compared with 19.8 percent of suburban and 7.1 percent of urban libraries).

- Libraries that do not offer services or offer limited Internet services (e.g., databases, e-books) indicated that they cannot afford to purchase and/or support the services (63.6 percent), library computer hardware/software will not support the services (46.3 percent), or library policy restricts the provision of the services (42.8 percent).

In summary, public libraries indicate that they are increasingly unable to meet patron demands for services due to inadequate technology infrastructure, costs associated with operating and maintaining that infrastructure, and bandwidth quality/availability issues. Thus, while the number of people visiting public libraries and taking advantage of these Internet services continues to climb, libraries face challenges to providing high-quality—or, in some cases, even adequate—public access technology services and resources. If the trends described in the 2007-2008 survey continue while demands for Internet and Web-based services expand, public libraries may find themselves reducing the number of networked services, and having to work with a lower overall quality of bandwidth and technology infrastructure.