DOCUMENT RESUME

ED 371 768 IR 055 102

AUTHOR	McClure, Charles R.; And Others
TITLE	Public Libraries and the Internet: Study Results, Policy Issues, and Recommendations. Final Report.
INSTITUTION	National Commission on Libraries and Information Science, Washington, D. C.
PUB DATE	Jun 94
NOTE	72p.
PUB TYPE	Reports - Research/Technical (143) -- Tests/Evaluation Instruments (160)
EDRS PRICE	MF01/PC03 Plus Postage.
DESCRIPTORS	Access to Information; *Computer Networks; Costs; Futures (of Society); Information Dissemination; *Information Networks; Information Technology; Library Research; Library Services; Library Statistics; Library Surveys; *Public Libraries; *Telecommunications
IDENTIFIERS	*Internet; Library Policy; *National Information Infrastructure

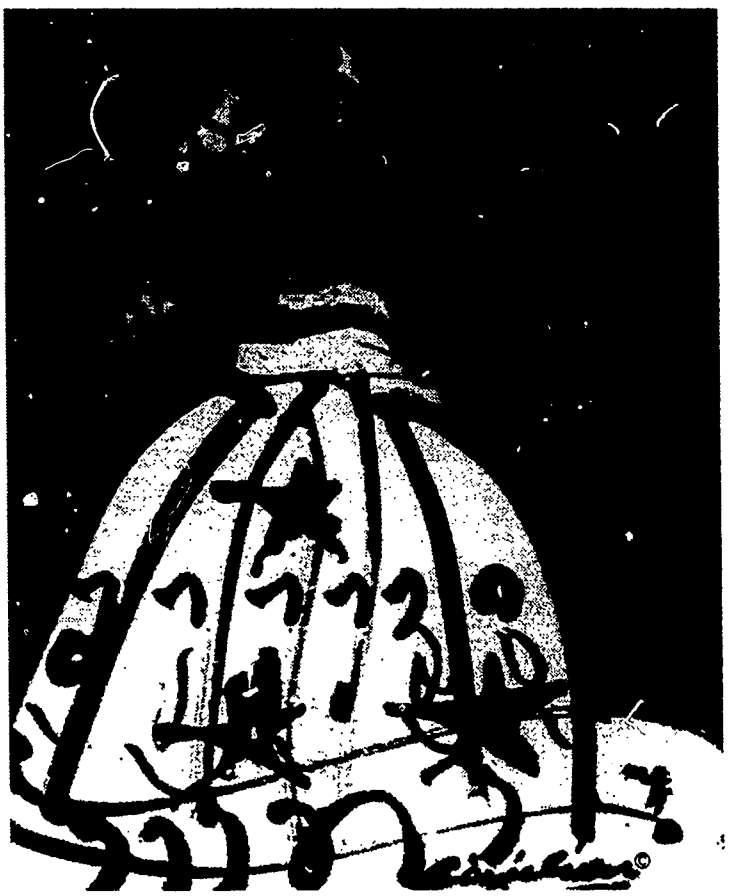
ABSTRACT

This document is the final report of the NCLIS (National Commission on Libraries and Information Science) study on public libraries and the Internet. The purpose of this study was to determine the nature, extent, and form of public library involvement with the Internet. Data were obtained from a survey of a national sample of public libraries between January and March 1994. Questionnaires were sent to 1,495 public libraries, and a total of 1,148 surveys were returned for a response rate of 76.8%. The study gathered data on a variety of Internet-related topics, including the degree to which public libraries have operational connections to the Internet; type of provider that the public library uses to obtain connectivity; Internet services and resources that public librarians use; public library programs or services that have been developed to incorporate Internet use; factors affecting public library use of the Internet; and estimated expenditures and costs public libraries incur for connectivity to and using the Internet. The report is divided into four parts: an introduction to the study; the study results including methodology; the policy debate; and the key issues and recommendations of the study. The survey instrument is appended. (Contains 32 references.) (JLB)

National Commission on
Libraries and Information Science

Public Libraries and the Internet

Study Results, Policy Issues, and Recommendations



Final Report

June 1994

Charles R. McClure • John Carlo Bertot • Douglas L. Zweizig

Artwork by
Agnes Ainilian
Ainilian Gallery
Capitol Hill
Washington, DC 20003

Acknowledgments

The authors would like to thank all the public librarians who made this study a success by responding to the survey questions. Their interest, demonstrated by the high response rate, illustrates the importance of this topic to the public library community. Indeed, had public librarians not participated with such enthusiasm, the study would not have been possible.

The authors would also like to express their gratitude to the many individuals who provided valuable assistance in this study. In particular, the authors would like to thank the members of the Advisory Board, who supported this study with their insights and assistance in the organization and execution of the survey pre-test.

Members of the Advisory Board included: Craig Buthod, Associate Director, Seattle Public Library; Beverly Choltco-Devlin, Morrisville Public Library; Carol DiPrete, Dean for Academic Services, Roger Williams University, and National Commission on Libraries and Information Science (NCLIS) Commissioner; Laura Isenstein, Coordinator for Resource Delivery, Baltimore County Public Library; Keith Curry Lance, Director of Library Research Services, Colorado State Library; Mary Jo Lynch, Director for Office for Research, American Library Association; and Donna D. Mancini, Director, DeKalb County Public Library.

Furthermore, the authors would like to thank the National Center for Education Statistics for selecting the sample. In particular, we would like to express our appreciation to Carrol Kindel, Chief of Library Statistics Branch, and Paul Planchon, Associate Commissioner for ESED. We are also very grateful to Steven Kaufman for his assistance to the study team in explaining the sampling process.

Completion of the study would not have been possible without NCLIS support. In addition, the authors acknowledge the foresight and follow-through of Peter R. Young, the Executive Director of the National Commission on Libraries and Information Science, and the Commission staff. Their efforts and NCLIS support are greatly appreciated.

Sondra Cuban, Research Associate at the School of Library and Information Studies at the University of Wisconsin-Madison, and Deborah Perotti of the Syracuse University AskEric project provided additional research assistance. We also acknowledge the assistance of Jean Armour Polly of NYSERNet, Inc., who reviewed an early draft of the final report.

The authors are also grateful to the many state library agencies that supported this study. They assisted the project by identifying and targeting non-responding libraries. Without the assistance of the state library agencies, the study would not have had as high a response rate.

In addition, the authors would like to express their gratitude to Beth N. Mahoney for her superb effort in the production of this report and to Bruce Frausto for his copyediting. We greatly appreciate their efforts in producing the final report.

Charles R. McClure
John Carlo Bertot
Douglas L. Zweizig

June 1994

Table of Contents

List of Figures

Public Libraries and the Internet: Study Results, Policy Issues, and Recommendations

Final Report

INTRODUCTION

During a July 1993 policy discussion meeting, Vice President Gore asked to what degree public libraries could serve as a "safety net" for providing access to Internet-based information and services. More recently, during his State of the Union address, President Clinton stated, "We must work with the private sector to connect every classroom, every clinic, every library, and every hospital in America to a national information superhighway by the year 2000" (Clinton, 1994, p. 4).

During the 1991 White House Conference on Library and Information Services (WHCLIS), conference participants adopted a priority recommendation to "Share Information Via a National 'Superhighway'" where the "network should be available in all libraries and other information repositories at every level" (National Commission on Libraries and Information Science, 1992, p. 45). Such questions and statements indicate that public libraries have a vital role to play in the development of the National Information Infrastructure (NII). Public libraries are, in fact, poised to become the critical institutions in American society that provide access for all citizens to the Internet and the Internet's information resources.

Without baseline data concerning public library involvement with the Internet, however, policymakers cannot begin to assess the potential roles for public libraries in the electronic networked environment. Recognizing this need, the National Commission on Libraries and Information Science (NCLIS) commissioned this study. To be sure, this report is but a starting point. In particular, the report should serve to inform the current debate concerning the development and construction of the Internet and the NII, assisting policymakers, information professionals, and public librarians in identifying the possible functions that public libraries can serve in the NII.

The timing of this report is fortuitous. The federal government, in announcing the NII initiative, is developing techniques to ensure national network connectivity and use for all Americans. The findings of this study will help the administration and Congress form a national networking plan that defines and guarantees public access to networked information resources and services.

This nation requires a carefully developed plan and policy initiative to offer a vision for the role of librar-

ies in the NII. The plan and policy initiative should clarify policy goals that articulate that vision and describe specific program initiatives to translate those goals into action. To this end, one purpose of this report is to help the administration and Congress, the library community, information providers in the private sector, and others better understand the current state of public library interaction with the Internet. With such knowledge in hand, policymakers can make informed decisions concerning policies and programs related to public library participation in the emerging networked information infrastructure.

This report is divided into four main sections. It begins with an introduction to the role and importance of public libraries in an electronic networked environment, followed by a presentation of survey results, a discussion of study findings, and a presentation of key issues and recommendations for policymakers to clarify a role for public libraries in the Internet and in the development of the NII.

Background

The current national electronic networked environment entails three distinct networking initiatives: the Internet, the National Research and Education Network (NREN), and the National Information Infrastructure (NII). The Defense Advanced Research Projects Agency (DARPA, now the Advanced Research Projects Agency) created the Internet (Lynch and Preston, 1990), a network of computer networks, "to allow geographically dispersed researchers to share scientific data and computing resources by providing them with access to otherwise incompatible networks" (McClure et al., 1991, p. 9). The National Science Foundation (NSF) took over the coordination of the Internet in 1985. The transfer of management of the Internet from DARPA to NSF signaled a shift in focus concerning Internet use from defense research purposes to civilian research purposes. The Internet primarily has served the research and academic communities.

In its current configuration, the Internet is an interconnected network of computer networks. It is the interconnectedness and interoperability of the network that provides the basis for the Internet's information resources and services. The Internet has experienced exponential growth in recent years. For example, as of January 1994, the Internet had 2,217,000 hosts (Internet machine cites), up from 213 in August 1981 (<nic.merit.edu>, 1994). Indeed, there is every indication that the growth rate of Internet connections and hosts will continue to increase in the future.

As the Internet and computing capabilities grew in use and function, so too did the notion of a formal NII. The High Speed Performance Computing Act of 1991 (HPCA) (P.L. 102-94) legislated the beginning of an NII by creating the National Research and Education Network. The NREN was a response to scientific "grand challenges," defined as "fundamental problems in science and engineering, with broad economic and scientific impact, whose solution could be advanced by applying high performance computing techniques and resources" (Committee on Physical, Mathematical, and Engineering Sciences, 1993, p. 67). The HPCA, which launched the High Performance Computing and Communication (HPCC) program, created the NREN in part to (McClure et al., 1991, p. 12):

- Provide an advanced information infrastructure linking the federal government, academia, and the private sector;
- Enhance the economic competitiveness of the United States by facilitating communication among scientists, engineers, and educators, improving scientific and research productivity, and hastening the rate of technology transfer between the research and manufacturing sectors;
- Serve as a test bed for research and development on high-speed networks and high-performance computing.

Lawmakers viewed the NREN as a high-speed network to promote technology transfer initiatives as well as to facilitate the collaborative research efforts between the research, university, government, library, and manufacturing communities. The NREN should not be confused with the Internet, as they are not the same. The NREN is, in essence, a federal program plan for using high-speed networks.

The administration and Congress modified their vision and conceptualization of a national electronic networked environment during the last year. Indeed, the administration and the Congress are working toward the creation of an NII which takes advantage of computing and telecommunications technology advances and the convergence of such technologies. These advances and convergence sparked a two-fold legislative and policy initiative to (1) provide guidelines for the development of the NII and (2) modernize outdated telecommunications policies and legislation that impede private-sector investment in developing the NII.

The *National Information Infrastructure: Agenda for Action* (1993) describes the administration's framework for a high-speed computing initiative to create "a seamless web of communications networks, computers, databases, and consumer electronics that will put vast amounts of information at users' fingertips" (Information Infrastructure Task Force, 1993, Executive Summary). Moreover, the administration considers the NII to be the sum total of the following (Information Infrastructure Task Force, 1993, Section II):

- The information carried over the NII
- The applications and software that permit the access and use of the NII
- The network standards and transmission codes that facilitate interoperation and interconnectivity
- The people, predominantly in the private-sector, who create the NII information resources and services.

Furthermore, the Clinton administration articulated the principles upon which the private sector should construct the NII (Office of the Vice President, 1994; Irving, 1994). The foundations of the NII initiative include (Office of the White House, 1994, Section I):

- Encouraging private investment in the NII
- Promoting and protecting competition
- Providing open access to the NII for consumers and service providers
- Preserving and advancing universal service to avoid creating a society of information "haves" and "have nots"
- Ensuring flexibility so that the newly adopted regulatory framework can keep pace with the rapid technological and market changes that pervade the telecommunications and information industries.

The NII initiative, therefore, is a bold policy undertaking that stresses both an open electronic network and an electronic network to which all citizens have access. As such, the NII development process cuts across various communities, such as the information industry, information seekers and users, and telecommunications carriers.

Congress echoes this philosophy: "The Federal Government should ensure that the applications achieved through research and development efforts such as the High-Performance Computing Program directly benefit all Americans" (H.R. 1757, p. 3). The proposals emanating from Congress and the administration imply that any and all citizens will have access to the NII through some means. Neither Congress nor the administration articulates the mechanism(s) through which this "universal access" will be provided. It is unclear, however, that current policy initiatives offer a significant role for public libraries in the NII as "universal service" and "open access" providers.

Importance of Public Libraries in the NII

Public libraries are vital to a democratic society. They ensure public access to information from a variety of sources, including federal, state, and local governments. Public libraries serve as societal equalizers, providing information resources and services to all patrons regardless of socioeconomic status, disability, or location. As such, public libraries represent educational opportunity and unobstructed access to information for all segments of society.

In general, information resources and services provided via the Internet are similar to those traditionally furnished by libraries. Public libraries, however, face many challenges due to the electronic "information revolution." Computing and telecommunications technologies work together to challenge the existence of public libraries and, on the other hand, offer the potential to substantially increase the number of information services public libraries can provide their communities. As such, the Internet is both a threat to and an opportunity for the public library system and its users.

Public librarians and patrons are concerned about the transition into the electronic age. They are concerned about how this transition will affect the way public libraries disseminate and acquire information. Some public librarians are unsure of the future of public libraries and librarianship as a profession; others view the approach of the "electronic highway" as a challenge and opportunity to expand services to the user. "Public access terminals to the network in the public library...protect...those with less resources and become...a 'safety net' where people could [go to] tap into the Internet" (McClure et al., 1993, p. 24). Wetherbee and Snow (1993) note that "libraries should

be a significant part of the Internet world — no other group or profession has so much interest in the issues of equity, open access, and freedom of information" (pp. 4-5).

Public libraries serve many functions in American society: they are learning centers, knowledge centers, information service providers (Fisher, 1992), liaisons between citizens and the government (Rose, 1992), and, increasingly, information safety nets for the disadvantaged (Hansen, 1992). These roles will certainly continue in the immediate future. But as information providers generate and distribute more information, books, serials, and other publications in digital formats, public libraries will have to significantly change their services.

The discussion about how to accomplish these changes and the development of the Internet continues among key stakeholders. Ultimately, public libraries must join the debate and participate in the NII formulation. Doing so will afford public libraries a choice regarding their role in this new information age. Moreover, the federal government must address the opportunity to include public libraries in the NII initiative. Together with other NII participants, public libraries and the federal government can work to create an NII that both serves the public interest and promotes private-sector NII development.

To date, however, public libraries have been only minimally involved in the NII development process. Public libraries have the potential to generate some of the most innovative educational uses of the evolving national electronic networked environment for meeting the needs of the widest range of individuals. Yet national electronic network planners have inadequately considered possible roles for public libraries.

Public libraries face the electronic networked environment without adequate equipment, staff, or policy and financial support. Indeed, some public libraries today confront two choices: scale back current services and operating hours, or eliminate services. Under such a constrained fiscal environment, public libraries need both a vision and financial support to take advantage of the increased potential for access to knowledge made available by technological advances in general and the Internet in particular. Public libraries have the potential to make a significant difference in the provision of networked information to their communities.

Given the electronic network context and the new vision, roles, and operational challenges this environment presents public libraries, is it possible for public libraries to successfully participate in the Internet and its subsequent incarnations? McClure et al. reply (1993, p. 15):

> Respondents [from library surveys] suggested that for the libraries to survive, they will have to find the right niche for the kind of information they provide. They will also have to move into new areas and drop certain areas of traditional service.

Martin (1983) concurs, stating that "the library that will survive and flourish is the library that will not only acquire but will disseminate information" (p. 22). Similarly, Shearer (1993) writes "If public librarians will stress lifelong learning more...both the public sense of institutional relevance and public...support should increase" (p. 193). No longer will "municipal authorities...[sanction] maintenance of a free bookstore" (Martin, 1983, p. 20). D'Elia notes that it is the educational role of the library that is in greatest demand by the library's clientele (1993).

The lack of public library involvement in the NII initiative poses significant public information access issues. The public library is a place where anyone can go for literature and information of all types. Such open access to information may not be possible as content shifts from print-based to digital media. As such, the NII may actually present barriers to current public information access mechanisms. Indeed, without public library participation in the Internet, the public stands to lose more than just an institution. "Unless librarians and others support and actively work toward direct library involvement in the electronic communication infrastructure, we risk the possibility of losing some or all public access to the new evolving network" (Kranich, 1993, p. 36).

Study Background

To date, there has been no national study of public library use of the Internet. Rather than spelling the demise of the public library institution, the electronic network environment holds new public library community-service opportunities. To determine the public library's role in the networked environment, the library and information science communities and policymakers need a comprehensive assessment of

public libraries' current use of electronic networked resources. At present, policymakers and researchers alike do not know the current state of public library interaction with the Internet: How many public libraries are connected to the Internet? What is the impact of Internet use on library budgets, organization, and personnel? What new library service opportunities does the Internet permit?

NCLIS, with additional research assistance provided by the National Center for Education Statistics (NCES)[1], commissioned this national study. The goal of the study was to determine the nature, extent, and form of public library involvement with the Internet. The study gathered data on a variety of Internet-related topics, such as the:

- Degree to which public libraries have operational connections to the Internet
- Type of provider that the public library uses to obtain connectivity
- Internet services and resources that public librarians use
- Public library programs or services that have been developed to incorporate Internet use
- Factors affecting public library use of the Internet
- Estimated expenditures and costs public libraries incur for connecting to and using the Internet
- Special arrangements by which public libraries connect to the Internet (e.g., state network users, federal grant recipients, and subsidized Internet access rates)
- Potential for Internet access in the near future for public libraries that are not presently connected.

Data provided by public libraries on these topics inform the policy process with regard to the role of public libraries in the NII. Indeed, without baseline information concerning Internet activity within public libraries, policymakers will not be able to determine the extent to which public libraries can serve as societal safety nets, can promote universal access, or can be active participants in the NII development process.

Current administration and Congressional initiatives indicate that the development of the NII will proceed rapidly, with heavy-private sector cooperation (Information Infrastructure Task Force, 1993). To facilitate investment in the NII, both Congress and the administration propose major changes to current telecommunications regulations and policies that promote government and private-sector collaboration. What remains uncertain, however, is the role of the public library in the NII and how this role is to be realized.

Creating a New Vision

The administration's and Congress' vision of the NII initiative is one in which the NII positively pervades our society by creating new business opportunities, additional jobs, a more productive society, and a more highly educated population (Information Infrastructure Task Force, 1993). This is an exciting time, when America will enter into a new information age — one in which information freely flows and is instantaneously available, and to which all Americans have access.

In order, however, to build the "foundations for living in the information age and for making these technological advances useful" (Information Infrastructure Task Force, 1993, Section II), the federal government needs to encourage public libraries to play a key role in the development of the NII. No other public institution is so pervasive in American society, with 9,050 public libraries and 15,482 stationary outlets,[2] or so well suited to the role of liaison between sources and consumers of information.

As the data in the next section demonstrate, public libraries need support to participate in the electronic networked environment. Without public library inclusion and appropriate resource allocations in the NII development process, public libraries, particularly those in rural areas, will have great difficulty gaining access to the Internet. The failure of public libraries to make this transition can adversely affect the NII initiative in general, and the administration's strongly supported "universal service" goals in particular. As shown in the remainder of the report, the public library community is poised to move into this networked environment — but it will require both clear federal policies and new resources to do so successfully.

STUDY RESULTS

The study gathered data from a national sample of public libraries concerning current public library involvement with the Internet. The data collection occurred between January and March 1994. The purpose of this study was to (1) provide policymakers and library professionals and researchers with baseline data about public library Internet involvement, and (2) inform the policy-making process regarding the role of public libraries in the development of the NII.

Methodology

This study deployed a multistep methodology to ensure the quality of the resulting data. The following paragraphs detail the procedures used in this study to derive the findings.

Survey Instrument Development and Quality of Data

The study team developed an initial outline of the survey instrument with the participation of NCLIS members and staff. In addition, the Advisory Board for this study provided suggestions for topics to address concerning public library involvement with the Internet. In November 1993, the Advisory Board reviewed a first draft of the survey instrument. Board members who offered additional areas of study for the survey were required to suggest questions for removal from the draft survey. The study team used the comments from the board and NCLIS staff to produce a second version of the survey instrument.

Board members each pretested the second draft of the survey instrument with at least four librarians of the type who would receive the final questionnaire — two who are now connected to the Internet and two who are not. By December 20, 1993, the study team received over 30 completed pretest instruments along with comments from the board members. The study team finalized the survey instrument on December 30, 1993, and mailed out the final survey to participating public libraries during the first week of 1994 with a request for response by January 31, 1994 (see Appendix A for a copy of the final survey instrument).

An analysis of respondents indicated no nonresponse bias. The survey results are representative of national demographics — indicating excellent representation of the broader public library population (see Figure 1).

Survey Procedures

This study deployed a number of devices to increase the likelihood of prompt response from libraries:

- Sending a postcard via first-class mail to sampled libraries in late December 1993 to alert the library director that the survey would be coming. The postcard explained the importance of prompt response and asked the library director to notify the survey office if a survey was not received as of January 15, 1994 (see Appendix B for a copy of the postcard). A number of postcards were returned as undeliverable by the post office, allowing survey staff to locate correct addresses for the survey forms. In addition, the alert postcard resulted in at least 20 requests for those who did not receive surveys.

- Sending a cover letter on NCLIS stationary and signed by Jeanne Hurley Simon, the newly appointed chair of the Commission, along with the survey. The letter explained the purpose of the survey and stressed the importance of prompt response (see Appendix C for a copy of the letter).

- Providing notices in pertinent library literature to announce the conduct of the survey. An announcement in *Library Hotline* in the November 1, 1993, issue gave early notice of the survey and its purpose, promising a report in the spring of 1994. A note in the November/December issue of *Public Libraries* also alerted librarians to the survey and increased the legitimacy of the survey with the public library community.

- Mailing surveys via first-class mail with a first-class stamp affixed to the return envelope.

- Sending a letter, through NCLIS, to each state library agency in early January 1994 with a list of those public libraries in the state that were included in the sample. This letter asked for any cooperation the state library agency could provide in ensuring a high response rate.

- Performing a second mailing of the survey in February 1994 to nonresponding libraries indicating that the survey staff had not yet received a response and asking for a reply by February 14, 1994.

Figure 1. Check on Study Sample and Response Quality.

	% in Population	% in Sample	% of Respondents
1 Million +	0.2%	0.2%	0.3%
500,000 - 999,999	0.6%	0.6%	0.6%
250,000 - 499,999	1.0%	1.0%	1.2%
100,000 - 249,999	3.2%	3.2%	3.9%
50,000 - 99,999	5.3%	5.7%	6.4%
25,000 - 49,999	9.1%	9.7%	10.3%
10,000 - 24,999	18.4%	18.3%	18.4%
5,000 - 9,999	16.3%	17.1%	17.4%
Less than 5,000	46.0%	44.1%	43.6%
Overall	100.0%	100.0%	100.0%

- Faxing each state library agency with nonresponding libraries a list that included the names and telephone numbers of nonresponding libraries in early March 1994. The fax asked for assistance in increasing the response rate.

- Faxing copies of the survey forms to sampled libraries and state library agencies on request. Also, completed survey forms were received by fax. The survey staff did not originally plan to incorporate fax capabilities into the methodology of this study. The use of fax technology did, however, increase the study response rate.

Clearly, the cooperation of the state library agencies was instrumental in the researchers' being able to obtain a high response rate in a matter of a few months.

Sampling and Data Analysis Procedures

The sample was selected from the Federal-State Cooperative System for Public Library Data 1991 Universe File of public libraries maintained by the National Center for Education Statistics (NCES) in November 1993. The list, composed of 9,050 public libraries, was stratified by library legal service area class[3] and, within legal service area class, by four Census Regions.[4] The sample was selected using a systematic probability proportional to size sampling procedure as developed by NCES. The measure of size was the square root of library legal service area.[5] Based on the above technique, a sample was drawn of 1,495 public libraries. A total of 1,148 surveys were returned, for a response rate of 76.8%.

This sampling method assigns each sampled library a weight to reflect its contribution to the estimates for the population. The sample included all larger libraries (those servings populations above 100,000), and thus they received a weight of one. Libraries serving smaller communities received larger weights to the degree that the proportion of their stratum sampled was smaller. Furthermore, after determining the final response rate, adjustments were made to the weights within sampling strata to allow national estimates that compensated for nonresponding libraries.

In order to produce a national estimate, the weights for the libraries that furnished a value were summed. This provided an estimated count of the libraries nationally with that value. For example, to estimate the number of libraries with an Internet connection, for each responding library, the weights of all libraries that indicated they had an Internet connection were summed. Percentages were then calculated in the conventional way.

Any estimates to be derived in the future from this data set will need to follow these same procedures. Direct calculations from the sample data will not produce correct estimates.[6]

Some Public Library Demographics

Public library expenditures and number of employees vary by both region and population of legal service area. As library population of legal service area increases, so does the number of full-time equivalents (FTEs) and material and operating expenditures. The

national average of FTEs is 4.1, with the average public library having operating expenditures last fiscal year of $484,067.88 and material expenditures of $73,929.58 (see Figure 2). These figures closely match those found by NCES (1993), providing additional verification of the quality of the data.

Figure 2 clearly shows that, as library population of legal service area increases, so too do the average number of library FTEs and the average operating and material expenditures. Figure 3 indicates, however, that the distribution of public library material and operating expenditures, as well as the number of FTE staff, is not even across the nation. Rather, material and operating expenditures for the last fiscal year and FTEs were greatest in the West, followed by the South.

Accessing the Internet

This portion of the results section presents findings concerning factors and motivations affecting public library involvement with the Internet.

Factors Affecting Public Library Involvement with the Internet

Several factors affect public library involvement with the Internet. Indeed, as Figure 4 demonstrates, public libraries indicate that all identified factors are important in determining library Internet involvement, with importance ratings ranging from 1.95 to 2.60 (1 = very important, 5 = very unimportant). In particular, the key factors are the cost of an Internet connection, closely followed by adequate time for library staff to develop expertise in using the Internet. As the data in Figure 4 demonstrate, public libraries serving populations of legal service areas between 10,000 and 49,999 and again between 100,000 and 999,999 indicate that adequate time for library staff to develop expertise in using the Internet is a major factor affecting library involvement with the Internet. At the same time, public libraries that service legal population areas under 10,000 consider costs of Internet connections the most important factor in determining Internet interaction. Interestingly, public libraries that have populations of legal service areas of greater than one million consider the degree of interest that their governing bodies exhibit in the Internet as the most important factor affecting their current interaction with the Internet. Moreover, public libraries that operate within legal service population areas of between 50,000 and 99,999 responded that the necessary staff skills to navigate the Internet affects those libraries' current involvement with the Internet.

In regard to the factors affecting current public library involvement with the Internet by geographic region, the data show that public libraries in the Midwest and West consider connection costs to be the most important factor affecting Internet involvement (see Figure 5). In contrast, libraries in the Northeast and South indicate that staff time to develop expertise in using the Internet is the most important factor affecting Internet use.

Figure 2. Public Library Average FTEs, Material Expenditures, and Operating Expenditures by Population of Legal Service Area.

	Average FTEs	Average Operating Expenditures	Average Material Expenditures
1 Million +	185.8	$30,551,227.10	$3,517,661.06
500,000 - 999,999	92.8	$14,338,159.94	$2,326,303.55
250,000 - 499,999	33.8	$5,329,118.03	$779,109.88
100,000 - 249,999	15.6	$2,287,403.04	$355,837.47
50,000 - 99,999	8.3	$1,111,280.41	$162,449.16
25,000 - 49,999	7.7	$627,939.21	$94,149.85
10,000 - 24,999	2.8	$282,987.38	$47,204.71
5,000 - 9,999	1.3	$101,300.09	$20,269.72
Less than 5,000	0.9	$25,928.18	$5,811.00
Overall	4.1	$484,067.88	$73,929.58

Figure 3. Public Library Average FTEs, Material Expenditures, and Operating Expenditures by Region.

	Average FTEs	Average Operating Expenditures	Average Material Expenditures
Midwest	3.6	$363,013.86	$60,847.52
Northeast	3.5	$390,634.74	$56,388.60
South	4.5	$576,612.25	$96,445.40
West	6.9	$997,898.51	$127,530.70
Overall	4.1	$484,067.88	$73,929.58

A slightly different library Internet involvement picture develops when the data are analyzed by urban (public libraries with populations of legal service areas of 250,000 or greater) and rural (public libraries with population of legal service areas of 25,000 or less) public libraries (see Figure 6). While cost of connection is the dominant factor affecting library involvement, urban libraries consider the availability of staff time to develop expertise in use of the Internet to be the primary factor affecting involvement with the Internet, followed by staff skills to navigate the Internet and the availability of training on the uses of the Internet. Rural libraries, on the other hand, consider the costs of Internet connections to be the primary factor in current library Internet involvement, followed by staff time to develop expertise in use of the Internet and the availability of training on the uses of the Internet.

Public Library Motivation in the Internet

As Figure 7 shows, 33.1% of public libraries consider statewide initiatives to be the primary motivation for public library interest in the Internet. Furthermore, 26.5% of libraries indicate that the primary motivation for Internet interest comes from the library administration, with another 17.8% indicating primary motivation through library strategic planning. Figure 7 also demonstrates a clear Internet impetus breakdown: Library strategic planning supplies library Internet interest in the largest libraries, library administration provides library Internet interest in medium-sized to large libraries, and statewide initiatives supply Internet interest in small libraries.

Motives for interest in the Internet vary little by region. Public libraries in the Midwest, Northeast, and West consider statewide initiatives to be the primary catalyst for interest in the Internet, with 33.3%, 36.1%, and 33.8% respectively (see Figure 8). Public libraries in the South, meanwhile, indicate that library administration provides the library's primary interest in the Internet, with 39.8%.

The data show similar findings for interest in the Internet by public library material and operating ex-

Figure 4. Factors Affecting Public Library Involvement with the Internet by Population of Legal Service Area.

1=Very Important 5=Very Unimportant	Costs of connection	Staff time to develop expertise	Availability of training	Staff skills to navigate the Internet	Costs of software	Costs of hardware	In-house technical expertise	Staff awareness of the Internet	Level of community interest	Degree of interest by governing body
1 Million +	2.36	1.87	1.94	1.95	2.48	2.08	2.15	2.26	2.56	1.05
500,000 - 999,999	2.58	1.93	2.19	2.07	2.64	2.64	2.46	2.32	2.41	2.72
250,000 - 499,999	2.35	1.93	2.11	2.08	3.12	2.75	2.39	2.39	2.84	3.07
100,000 - 249,999	2.17	1.78	2.06	1.88	2.68	2.52	2.38	2.41	2.66	2.76
50,000 - 99,999	1.90	1.77	1.90	1.75	2.49	2.35	2.27	2.23	2.62	2.67
25,000 - 49,999	1.66	1.41	1.51	1.50	2.05	1.98	1.94	2.02	2.06	2.12
10,000 - 24,999	1.96	1.77	1.90	1.90	2.32	2.31	2.25	2.50	2.54	2.66
5,000 - 9,999	2.01	2.02	2.14	2.09	2.37	2.40	2.31	2.49	2.77	2.77
Less than 5,000	1.83	2.04	2.05	2.14	2.04	2.10	2 18	2.31	2.48	2.39
Overall	1.95	1.96	2.05	2.06	2.28	2.29	2.29	2.43	2.60	2.60

Figure 5. Factors Affecting Public Library Involvement with the Internet by Region.

1=Very Important 5=Very Unimportant	Costs of connection	Staff time to develop expertise	Availability of training	Staff skills to navigate the Internet	Costs of software	Costs of hardware	In-house technical expertise	Staff awareness of the Internet	Level of community interest	Degree of interest by governing body
Midwest	1.78	1.95	2.04	2.10	2.16	2.17	2.28	2.35	2.55	2.61
Northeast	2.01	1.92	1.98	1.99	2.33	2.36	2.22	2.47	2.63	2.63
South	2.15	1.98	2.13	2.07	2.33	2.36	2.37	2.43	2.69	2.61
West	1.98	2.12	2.14	2.14	2.42	2.34	2.32	2.59	2.50	2.468
Overall	1.95	1.96	2.05	2.06	2.28	2.29	2.29	2.43	2.60	2.60

Figure 6. Urban and Rural Public Library Factors Affecting Library Involvement with the Internet.

1=Very Important 5=Very Unimportant	Costs of connection	Staff time to develop expertise	Availability of training	Staff skills to navigate the Internet	Costs of software	Costs of hardware	Level of community interest	Degree of interest by governing body	In-house technical expertise	Staff awareness of the Internet
Urban Libraries	2.36	1.92	2.07	2.02	2.80	2.60	2.59	2.81	2.38	2.35
Rural Libraries	1.32	1.49	1.52	1.55	1.61	1.66	1.74	1.74	1.76	1.90
Overall	1.34	1.50	1.53	1.56	1.63	1.68	1.76	1.76	1.77	1.91

Urban Libraries = Population of Legal Service Area of 250,000 or greater;
Rural Libraries = Population of Legal Service Area of 25,000 or less.

Figure 7. Primary Motivation for Interest in the Internet by Population of Legal Service Area.

	Statewide initiatives	Library administration	Library strategic planning	Other	Internal staff expertise	Community strategic planning
1 Million +	0.0%	19.6%	57.2%	5.6%	17.6%	0.0%
500,000 - 999,999	13.5%	14.2%	57.6%	4.9%	9.8%	0.0%
250,000 - 499,999	22.8%	30.2%	31.0%	0.0%	14.7%	1.3%
100,000 - 249,999	16.4%	33.5%	28.3%	8.1%	9.8%	3.9%
50,000 - 99,999	23.2%	30.0%	20.6%	9.0%	14.8%	2.4%
25,000 - 49,999	28.1%	33.5%	20.4%	10.1%	6.4%	2.2%
10,000 - 24,999	29.3%	31.6%	19.3%	8.7%	8.8%	2.4%
5,000 - 9,999	32.8%	28.5%	20.9%	9.3%	6.1%	2.5%
Less than 5,000	41.0%	20.3%	12.2%	16.2%	5.9%	4.4%
Overall	33.1%	26.5%	17.8%	11.7%	7.4%	3.2%

Figure 8. Primary Motivation for Interest in the Internet by Region.

	Statewide initiatives	Library administration	Library strategic planning	Other	Internal staff expertise	Community strategic planning
Midwest	33.3%	23.6%	15.1%	15.2%	7.9%	4.9%
Northeast	36.1%	21.4%	20.3%	11.0%	9.1%	2.1%
South	28.8%	39.8%	15.1%	9.5%	4.5%	2.4%
West	33.8%	25.7%	26.4%	5.6%	6.8%	1.8%
Overall	33.1%	26.5%	17.8%	11.7%	7.4%	3.2%

penditures for last fiscal year (see Figures 9 and 10). For public libraries with material expenditures of over $500,000, library strategic plans are the catalyst for library interest in the Internet. In addition, libraries with between $50,000 and $499,999 in annual material expenditures indicate that the library administration provides the library's primary interest in the Internet, while libraries expending less than $50,000 on materials consider statewide initiatives to be the catalysts for Internet involvement. Similarly, public libraries with operating expenditures exceeding $5,000,000 claim library strategic planning to be the primary reason for Internet involvement. At the same time, libraries with operating expenditures of between $500,000 and $4,999,999 indicate that the library administration furnishes primary involvement in the Internet. Libraries with less than $100,000 of operating expenses consider statewide initiatives the primary motivation for Internet involvement.

As Figure 11 shows, urban and rural public library motivations for interest in the Internet differ. Of urban libraries, 42.3% indicate that library strategic planning is the primary impetus for library interest in the Internet, followed by library administration and statewide initiatives. In contrast, 35.1% of rural libraries consider statewide initiatives the driving force behind interest in the Internet, followed by library administration and library strategic planning.

Public Library and Federal Government Roles in the Internet

Roles that public librarians described as important for public libraries in the electronic networked environment are described in this section, along with possible roles the federal government can play in helping public libraries gain access to the Internet.

Figure 9. Primary Motivation for Interest in the Internet by Material Expenditures for the Last Fiscal Year.

	Statewide initiatives	Library administration	Library strategic planning	Other	Internal staff expertise	Community strategic planning
$1 Million +	11.9%	22.1%	48.1%	2.4%	13.3%	2.3%
$500,000 - $999,999	13.2%	28.5%	33.9%	6.5%	16.9%	1.0%
$100,000 - $499,999	19.6%	31.5%	27.4%	8.5%	10.4%	2.6%
$50,000 - $99,999	29.4%	31.5%	18.6%	9.5%	9.6%	1.4%
Less than $50,000	38.0%	24.1%	16.2%	11.3%	6.0%	4.4%
Overall	33.6%	26.1%	18.9%	10.5%	7.4%	3.7%

Figure 10. Primary Motivation for Interest in the Internet by Operating Expenditures for the Last Fiscal Year.

	Statewide initiatives	Library administration	Library strategic planning	Other	Internal staff expertise	Community strategic planning
$5 Million +	11.4%	26.6%	42.8%	2.8%	15.4%	1.0%
$1 Million - 4.999 Million	16.2%	33.9%	25.8%	9.4%	12.4%	2.3%
$500,000 - $999,999	18.8%	34.9%	21.1%	10.1%	12.9%	2.2%
$100,000 - $499,999	32.5%	28.8%	23.3%	6.0%	7.6%	1.8%
Less than $100,000	39.9%	22.1%	13.2%	14.0%	5.7%	5.2%
Overall	33.1%	26.3%	18.6%	10.6%	7.7%	3.6%

Public Library Roles

Public librarians agree that the public library can serve a variety of functions in the electronic networked environment (see Figure 12). Survey respondents agree that public libraries should provide Internet-based services to library patrons. Respondents agree that public libraries should serve as safety nets for public access to the Internet, that libraries should not charge patrons for Internet-based services, and that for successful development of the Internet, public libraries require monetary support. Figure 12 also shows that libraries serving legal communities of less than 5,000 agree most strongly that public libraries need monetary support, while libraries that serve legal communities of greater than 250,000 agree most strongly that public libraries should provide Internet-based services to patrons. The data show, however, that public libraries serving legal communities of between 50,000 and 249,999 most strongly agree that public libraries should serve as an Internet public access safety net. As such, larger libraries tend to agree with the provision of patron-based network services, while medium-sized libraries agree with the safety net function, and smaller libraries agree with the need for public library support.

As Figure 13 indicates, public librarians' agreement with public library roles and functions varies by geographic region. Libraries in the Midwest and Northeast, for example, most agree with the statement that public libraries should provide Internet services without charge to library patrons. Libraries in the South, however, most strongly agree that public libraries should provide Internet-based services to library patrons, while libraries in the West most agree that libraries should serve as a safety net for public access to the Internet.

Figure 11. Urban and Rural Library Motivation for Interest in the Internet.

	Statewide initiatives	Library administration	Library strategic planning	Other	Internal staff expertise	Community strategic planning
Urban Libraries	17.3%	24.0%	42.3%	2.2%	13.5%	0.7%
Rural Libraries	35.1%	26.1%	16.6%	12.3%	6.6%	3.3%
Overall	34.7%	26.0%	17.2%	12.1%	6.8%	3.2%

Urban Libraries = Population of Legal Service Area of 250,000 or greater;
Rural Libraries = Population of Legal Service Area of 25,000 or less.

Figure 12. Public Librarians Agreement/Disagreement with Public Library Roles in the Internet by Population of Legal Service Area.

1=Strongly Agree 5=Strongly Disagree	Public libraries should provide Internet-based services to library patrons	Public libraries should serve as a safety net for public access to the Internet	Internet services provided through public libraries should be without charge to the patron	Future monetary support for public libraries is integrally linked to the development of the Internet
1 Million +	1.19	1.38	1.88	1.96
500,000 - 999,999	1.52	1.56	2.12	2.13
250,000 - 499,999	1.62	1.62	1.98	2.26
100,000 - 249,999	1.76	1.71	2.01	2.10
50,000 - 99,999	1.91	1.80	2.29	2.42
25,000 - 49,999	1.68	1.75	2.01	2.31
10,000 - 24,999	1.99	1.94	1.89	2.32
5,000 - 9,999	1.74	1.82	1.91	1.94
Less than 5,000	1.54	1.62	1.49	1.43
Overall	1.70	1.74	1.76	1.86

Figure 14 shows urban and rural public library agreement with these roles. The data indicate that both rural and urban public libraries most agree that public libraries should provide Internet-based library services. They diverge, however, in agreement with other library roles and functions in the Internet. After Internet-based service provision, urban libraries most agree that public libraries should serve as a safety net for public access to the Internet, that libraries should provide Internet services to patrons without charge, and that future support for libraries is linked to the development of the Internet. Rural libraries, after Internet-based services, agree that libraries should provide Internet services to patrons free of charge, that libraries should serve as a safety net for public access to the Internet, and that future support for libraries is linked to the development of the Internet.

Federal Government Roles

The federal government can help public libraries migrate to the Internet in many ways (see Figure 15). Most importantly, public librarians indicate that the federal government should help public libraries to connect to the Internet. After network connection assistance, public librarians rank, in descending order, possible federal government roles as supporting the purchase of necessary Internet access equipment, supporting network-based research and development (R&D) efforts, and providing Internet-based training assistance. It is interesting to note that libraries with populations of legal service area above 25,000 rank federal support for R&D efforts second, followed by support for the purchase of equipment and training assistance. Libraries with populations of legal service areas under 5,000, however, rank federal government support in the purchase of necessary Internet access equipment highest. This may indicate that the smallest public libraries do not posses the most basic requirement needed to join the electronic networked environment: the necessary equipment (minimally a computer with a modem and communications software). As Figure 16 shows, there is little variance in public librarian ranking of possible federal government roles for the electronic networked environment by geographic region.

Urban libraries differ from rural libraries in their ranking of potential federal government roles in support of public library use of the Internet (see Figure 17). Overall, connecting public libraries to the Internet, support for R&D efforts, and support for the purchase of equipment, and training assistance are all highly ranked as important federal roles.

Figure 13. Public Librarians' Agreement/Disagreement with Public Library Roles in the Internet by Region.

1=Strongly Agree 5=Strongly Disagree	Public libraries should provide Internet-based services to library patrons	Public libraries should serve as a safety net for public access to the Internet	Internet services provided through public libraries should be without charge to the patron	Future monetary support for public libraries is integrally linked to the development of the Internet
Midwest	1.74	1.81	1.72	1.75
Northeast	1.72	1.70	1.59	1.90
South	1.54	1.62	1.91	1.86
West	1.85	1.77	2.10	2.11
Overall	1.70	1.74	1.76	1.86

Figures 18 and 19 show public librarians' rankings of federal government roles in supporting public library Internet use by material and operating expenditures, respectively. Of particular interest in these figures are the libraries with material expenditures of under $50,000 and operating expenditures of under $100,000. These libraries, with relatively low operating and material expenditures, rank federal support for the purchase of equipment highest, followed by help with connecting public libraries to the Internet. As previously noted, this indicates that the smaller libraries, generally those with small operating and material expenditures, do not posses the necessary equipment to make the transition to the electronic networked environment.

The Current State of Public Library Internet Connections

The following paragraphs detail the state of public library Internet connections, including the number of public libraries connected to the Internet, the average number of Internet addresses per library, the type of Internet connection libraries have, the type of network connection provider libraries use, and the estimated cost of library Internet connections.

Percentage of Public Libraries Connected to the Internet and Average Individual Internet Addresses

Of all public libraries, 20.9% currently possess an Internet connection (see Figure 20). In general, as the

Figure 14. Urban and Rural Public Librarians' Agreement/Disagreement with Public Library Roles in the Internet.

1=Strongly Agree 5=Strongly Disagree	Public libraries should provide Internet-based services to library patrons	Internet services provided through public libraries should be without charge to the patron	Public libraries should serve as a safety net for public access to the Internet	Future monetary support for public libraries is integrally linked to the development of the Internet
Urban Libraries	1.54	2.01	1.57	2.19
Rural Libraries	1.69	1.71	1.74	1.81
Overall	1.69	1.72	1.73	1.81

Urban Libraries = Population of Legal Service Area of 250,000 or greater;
Rural Libraries = Population of Legal Service Area of 25,000 or less.

Figure 15. Public Libraries' Ranking of Federal Government Roles in Supporting Internet Access through Public Libraries by Population of Legal Service Area.

1=Most Important 4=Least Important	Connecting libraries to the Internet	Support for purchase of equipment	Support for R&D efforts	Training assistance
1 Million +	1.74	2.82	2.67	2.94
500,000 - 999,999	1.87	2.68	2.30	3.31
250,000 - 499,999	1.83	3.09	2.42	3.33
100,000 - 249,999	1.72	2.51	2.39	2.94
50,000 - 99,999	1.57	2.57	2.47	2.81
25,000 - 49,999	1.65	2.51	2.35	2.72
10,000 - 24,999	1.69	2.07	2.46	2.65
5,000 - 9,999	1.65	1.88	2.28	2.25
Less than 5,000	1.59	1.30	1.99	1.76
Overall	1.63	1.80	2.21	2.23

Figure 16. Public Libraries' Ranking of Federal Government Roles in Supporting Internet Access through Public Libraries by Region.

1=Most Important 4=Least Important	Connecting libraries to the Internet	Support for purchase of equipment	Support for R&D efforts	Training assistance
Midwest	1.67	1.73	2.23	2.11
Northeast	1.68	1.87	2.17	2.23
South	1.52	1.76	2.16	2.37
West	1.54	1.92	2.34	2.34
Overall	1.63	1.80	2.21	2.23

Figure 17. Urban and Rural Public Libraries' Ranking of Federal Government Roles in Supporting Internet Access through Public Libraries.

1=Most Important 4=Least Important	Connecting libraries to the Internet	Support for purchase of equipment	Training assistance	Support for R&D efforts
Urban Libraries	1.83	2.93	3.28	2.41
Rural Libraries	1.63	1.70	2.14	2.18
Overall	1.63	1.73	2.16	2.19

Urban Libraries = Population of Legal Service Area of 250,000 or greater;
Rural Libraries = Population of Legal Service Area of 25,000 or less.

Figure 18. Public Librarian's Ranking of Federal Government Roles for Public Libraries in the Internet by Material Expenditures for the Last Fiscal Year.

1=Most Important 4=Least Important	Connecting libraries to the Internet	Support for purchase of equipment	Support for R&D efforts	Training assistance
$1 Million +	1.88	2.88	2.33	3.14
$500,000 - $999,999	1.75	2.74	2.25	3.02
$100,000 - $499,999	1.67	2.56	2.28	2.80
$50,000 - $99,999	1.74	2.77	2.55	2.76
Less than $50,000	1.78	1.61	2.34	2.21
Overall	1.76	1.90	2.35	2.37

public library population of legal service area increases, so does the percentage of libraries possessing an Internet connection, thus 77.0% of public libraries with populations of legal service areas above one million are connected to the Internet, while 13.3% of public libraries with populations of legal service area below 5,000 connected to the Internet. As Figure 21 shows, the percentage of libraries connected to the Internet varies by geographic region. Public libraries in the West show the greatest percentage of Internet connections (28.2%), while libraries in the Midwest show the smallest percentage of Internet connections (15.4%).

On average, each connected library has 4.14 individual Internet accounts, with libraries that have populations of legal service areas of under 5,000 possessing an average of 1.63 Internet accounts per library, and libraries that have populations of legal service areas of greater than one million possessing an average of 44.48 Internet accounts (see Figure 22). Figure 23 shows little average Internet account variation by geographic region. The figures do indicate, though, that public libraries in the West have the highest number of average Internet accounts with 5.28, followed by public libraries in the South with 4.68, public libraries in the Midwest with 3.76, and public libraries in the Northeast with 3.74.

Urban libraries have a considerably higher percentage of Internet connections, 78.9%, than do rural libraries with 16.8% (see Figure 24). Moreover, urban libraries possess a higher average number of Internet addresses, with 20.84, than do rural libraries, with 1.90 (see Figure 25). As Figure 26 shows, the percentage of Internet connections increases as average library material expenditures increase, with 83.5% of public libraries incurring material expenditures in excess of one million dollars connected to the Internet and 13.5% of public libraries incurring material expenditures of less than $50,000 connected to the Internet. Similarly, as Figure 27 indicates, the percentage of Internet connec-

Figure 19. Public Librarians' Ranking of Federal Government Roles for Public Libraries in the Internet by Operating Expenditures for the Last Fiscal Year.

1=Most Important 4=Least Important	Connecting libraries to the Internet	Support for purchase of equipment	Support for R&D efforts	Training assistance
$1 Million +	1.85	2.85	2.41	3.22
$500,000 - $999,999	1.68	2.74	2.38	2.92
$100,000 - $499,999	1.60	2.80	2.32	2.74
$50,000 - $99,999	1.74	2.27	2.54	2.70
Less than $50,000	1.80	1.41	2.24	2.02
Overall	1.76	1.90	2.34	2.36

Figure 20. Public Libraries Connected to the Internet by Population of Legal Service Area.

1 Million +	77.0%
500,000 - 999,999	64.0%
250,000 - 499,999	76.0%
100,000 - 249,999	54.4%
50,000 - 99,999	43.7%
25,000 - 49,999	27.6%
10,000 - 24,999	23.2%
5,000 - 9,999	12.9%
Less than 5,000	13.3%
Total Libraries Connected	20.9%

tions increases with increases in average library operating expenses. Indeed, 83.4% of public libraries that have operating expenditures in excess of five million dollars have Internet connections, while only 11.5% of libraries with operating expenditures of less than $100,000 have Internet connections.

Type of Network Connection and Connection Provider

The most common type of public library Internet connection is VT-100 terminal access (47.1% of library connections), followed by e-mail gateway (13.9%), and dial-up Serial Line Internet Protocol (SLIPP)/Point-to-Point Protocol (PPP) connection (11.8%) (see Figure 28). As such, most public libraries that connect to the Internet do so with the most basic of available connection types. It is interesting to note that 11.2% of library respondents with Internet connections do not know the type of Internet connection their library possesses, with the percentage of those not knowing the library's type of Internet connection increasing as library population of legal service area decreases. In general, larger libraries possess Internet connections that allow full Internet services access through the use of direct connect and SLIP/PPP connections. Figure 29 identifies the type of library Internet connection by library geographic region. Of particular interest are western libraries, as they possess higher instances of direct connect and SLIP/PPP Internet connections, with 12.7% and 16.8% respectively.

Percentages of connection type for urban and rural libraries vary only by the percentage of direct connect and SLIP/PPP connections (see Figure 30). Urban libraries have considerably greater percentages of direct and SLIP/PPP Internet connections than do rural libraries, with 17.9% and 23.0% respectively.

As Figure 31 shows, a majority of public libraries, 31.2%, access the Internet through a state library network, with 18.8% using "other" network providers, 14.4% using commercial providers, and 14.0% using local educational organizations. Within the "other" category, public libraries indicate that they gain network connectivity predominantly through CLASS providers and regional library consortiums. In general,

Figure 21. Public Libraries Connected to the Internet by Region.

Midwest	15.4%
Northeast	25.9%
South	18.6%
West	28.2%
Total Libraries Connected	20.9%

Figure 22. Average Number of Public Library Internet Addresses by Population of Legal Service Area.

1 Million +	44.48
500,000 - 999,999	25.37
250,000 - 499,999	13.32
100,000 - 249,999	8.67
50,000 - 99,999	4.48
25,000 - 49,999	3.63
10,000 - 24,999	1.62
5,000 - 9,999	1.16
Less than 5,000	1.63
Total Average Addresses	4.14

Figure 23. Average Number of Public Library Internet Addresses by Region.

Midwest	3.76
Northeast	3.74
South	4.68
West	5.28
Total Average Addresses	4.14

Figure 24. Urban and Rural Public Libraries Connected to the Internet.

Urban Libraries	78.9%
Rural Libraries	16.8%
Overall	18.1%

Urban Libraries = Population of Legal Service Area of 250,000 or greater;
Rural Libraries = Population of Legal Service Area of 25,000 or less.

Figure 25. Urban and Rural Public Library Average Number of Library Internet Addresses.

Urban Libraries	20.84
Rural Libraries	1.90
Overall	3.59

Urban Libraries = Population of Legal Service Area of 250,000 or greater;
Rural Libraries = Population of Legal Service Area of 25,000 or less.

Figure 26. Public Libraries Connected to the Internet by Material Expenditures for the Last Fiscal Year.

$1 Million +	83.5%
$500,000 - $999,999	70.7%
$100,000 - $499,999	46.4%
$50,000 - $99,999	24.9%
Less than $50,000	13.4%
Overall	20.9%

Figure 27. Public Libraries Connected to the Internet by Operating Expenditures for the Last Fiscal Year.

$5 Million +	83.4%
$1 Million - 4.999 Million	59.8%
$500,000 - $999,999	31.7%
$100,000 - $499,999	21.4%
Less than $100,000	11.5%
Overall	20.9%

Figure 28. Public Library Type of Internet Connection by Population of Legal Service Area.

	VT-100 Terminal Access	E-mail gateway	Dial-up SLIP/PPP	Other	Direct Connect	Don't Know Type of Connection
1 Million +	40.5%	12.3%	17.7%	0.0%	28.4%	0.0%
500,000 - 999,999	35.9%	9.3%	27.7%	8.3%	18.8%	0.0%
250,000 - 499,999	48.7%	11.1%	21.2%	4.0%	15.1%	0.0%
100,000 - 249,999	52.9%	13.1%	7.8%	8.5%	17.0%	0.6%
50,000 - 99,999	51.7%	18.7%	15.0%	6.1%	5.0%	3.6%
25,000 - 49,999	54.3%	16.8%	19.5%	7.3%	2.1%	0.0%
10,000 - 24,999	47.4%	13.6%	15.2%	7.1%	10.0%	6.7%
5,000 - 9,999	45.7%	26.9%	11.2%	8.0%	2.0%	6.1%
Less than 5,000	43.9%	8.1%	2.4%	17.2%	2.3%	34.3%
Overall	47.1%	13.9%	11.8%	9.4%	6.6%	11.2%

Figure 29. Public Library Type of Internet Connection by Region.

	VT-100 Terminal Access	E-mail gateway	Dial-up SLIP/PPP	Other	Direct Connect	Don't Know Type of Connection
Midwest	41.6%	13.2%	13.8%	9.9%	4.8%	16.6%
Northeast	50.8%	16.9%	7.1%	10.6%	3.9%	10.8%
South	46.8%	13.5%	14.6%	11.8%	9.8%	3.4%
West	46.9%	8.3%	16.8%	2.8%	12.7%	12.6%
Overall	47.1%	13.9%	11.8%	9.4%	6. 6%	11.2%

as library population of legal service area increases, so too does public library reliance on commercial and local educational institutions for Internet connections, with public libraries serving populations of under 5,000 using commercial providers for Internet connection 5.9%, public libraries serving populations of over one million using commercial providers 21.9%, public libraries serving populations of under 5,000 using local educational organizations 9.3%, and public libraries serving populations of over one million using local educational organizations 24.0%. As library population of legal service area decreases, however, public library reliance on statewide library networks for Internet connection increases, with public libraries serving populations of over one million using statewide library networks 16.6%, and public libraries serving populations under 5,000 using statewide networks 41.1%. Figure 32 demonstrates that, in general, network connection provider does not deviate significantly by geographic region. A notable exception is public libraries located in the South. The data show that southern public libraries utilize local educational organizations and OCLC regional library networks in greater proportion than libraries located in other geographic regions.

In looking at network connection providers by urban and rural library categories, the data show that urban libraries primarily use commercial providers for Internet connectivity with 25.3%, followed by local educational organizations with 22.3% and statewide library networks with 15.7% (see Figure 33). Rural libraries, on the other hand, predominantly use statewide library networks for Internet connectivity with 35.6%, followed by other with 17.8% (generally library consortiums or CLASS providers) and commercial providers with 12.8%.

Average Cost of Internet Connection and Future Library Connection Resource Allocation

The cost of maintaining an Internet connection ranges from an annual average of $108.36 for public libraries with population of legal service areas of 5,000 to 9,999 to $14,697.87 for public libraries with population of legal service areas of over one million, with a

Figure 30. Urban and Rural Public Library Type of Internet Connection.

	VT-100 Terminal Access	E-mail Gateway	Dial-Up SLIP/PPP	Other	Direct Connect	Don't Know Type of Connection
Urban Libraries	43.5%	10.6%	23.0%	5.0%	17.9%	0.0%
Rural Libraries	45.7%	13.5%	10.4%	10.7%	4.4%	15.2%
Overall	45.5%	13.2%	11.7%	10.2%	5.8%	13.7%

Urban Libraries = Population of Legal Service Area of 250,000 or greater;
Rural Libraries = Population of Legal Service Area of 25,000 or less.

Figure 31. Public Library Type of Network Connection Provider by Population of Legal Service Area.

	State library network	Other	Commercial provider	Local educational organization	OCLC regional library network	Free-net/ Community network	Local government organization	Don't know provider
1 Million +	16.6%	21.1%	21.9%	24.0%	11.0%	0.0%	5.4%	0.0%
500,000 - 999,999	17.0%	10.7%	22.2%	15.9%	6.4%	17.7%	2.1%	0.0%
250,000 - 499,999	14.0%	10.2%	27.7%	25.5%	13.5%	2.4%	3.6%	2.4%
100,000 - 249,999	20.7%	22.0%	22.3%	16.4%	8.8%	4.4%	4.0%	1.4%
50,000 - 99,999	24.0%	18.2%	11.3%	22.1%	14.9%	5.2%	1.5%	2.4%
25,000 - 49,999	33.7%	16.7%	19.3%	15.6%	6.1%	1.2%	4.3%	3.6%
10,000 - 24,999	30.2%	19.0%	14.1%	13.7%	7.3%	5.7%	3.0%	6.9%
5,000 - 9,999	33.2%	17.3%	20.3%	7.8%	14.8%	0.0%	0.0%	6.6%
Less than 5,000	41.1%	18.1%	5.9%	9.3%	8.7%	10.2%	2.6%	4.0%
Overall	31.2%	18.1%	14.4%	14.0%	9.7%	5.7%	2.6%	4.2%

national annual average of $1,591.31 (see Figure 34). It is significant to note, though, that 39.0% of responding libraries do not know the annual cost of their Internet connections, with the greater instance of unknown connection costs, 43.8%, in libraries with populations of legal service areas of less than 5,000. Figure 35 shows that the average estimated cost of an Internet connection is greater for libraries in the West and South than libraries in the Midwest and Northeast, with western libraries incurring the highest costs ($3,080.04) and northeastern libraries incurring the lowest costs ($829.30). Of particular interest is the high instance of unknown connection costs in the Northeast and South, with 52.5% and 38.7% respectively. Urban libraries also incur greater average annual Internet connection costs than rural libraries, $10,461.18 and $414.46 respectively (see Figure 36). It should be noted, however, that 29.1% of urban libraries and 40.1% of rural libraries do not know their average annual Internet connection costs.

There is much variance as to public libraries' expectation regarding their level of Internet resource allocation for the next fiscal year (see Figure 37). Larger public libraries indicate, however, that their next year's Internet resource allocation will increase from one to five percent. Medium-sized libraries expect their current level of Internet funding to continue for the next fiscal year. Smaller libraries state that their present Internet resource allocation will decline in the next fiscal year. From Figure 38, it is evident that anticipated Internet funding allocations will remain the same for the next fiscal year for libraries in various geographic regions. Libraries in the South do, though, indicate that there may be some increases in Internet resource allocation. Urban libraries anticipate a one to five percent increase in Internet resource allocation for the next fiscal year, whereas rural libraries estimate that their Internet resource allocation for the next fiscal year will remain about the same (see Figure 39).

Figure 32. Public Library Type of Network Connection Provider by Region.

	State library network	Other	Commercial provider	Local educational organization	OCLC regional library network	Free-net/ Community network	Local government organization	Don't know provider
Midwest	25.7%	20.0%	19.5%	5.7%	13.0%	8.8%	2.6%	4.5%
Northeast	33.8%	22.2%	11.9%	13.4%	6.4%	4.1%	3.1%	4.9%
South	39.7%	11.2%	3.0%	22.1%	15.0%	3.2%	1.8%	4.0%
West	25.0%	12.5%	24.4%	21.5%	5.5%	6.7%	2.3%	2.2%
Overall	31.2%	18.1%	14.4%	14.0%	9.7%	5.7%	2.6%	4.2%

Figure 33. Urban and Rural Public Library Type of Network Connection Provider.

	State library network	Other	Commercial provider	Local educational organization	OCLC regional library network	Free-net/ Community network	Local government organization	Don't know provider
Urban Libraries	15.7%	14.2%	25.3%	22.3%	11.0%	6.8%	3.3%	1.4%
Rural Libraries	35.6%	17.8%	12.8%	11.4%	8.9%	5.8%	2.6%	5.2%
Overall	33.6%	17.4%	14.0%	12.5%	9.1%	5.9%	2.7%	4.8%

Urban Libraries = Population of Legal Service Area of 250,000 or greater;
Rural Libraries = Population of Legal Service Area of 25,000 or less.

Figure 34. Public Libraries' Average Estimated Cost of Connecting to the Internet by Population of Legal Service Area.

	Average Estimated Cost	Don't Know Cost
1 Million +	$14,697.87	36.7%
500,000 - 999,999	$13,000.80	27.3%
250,000 - 499,999	$8,064.83	28.6%
100,000 - 249,999	$2,879.52	37.7%
50,000 - 99,999	$2,519.65	39.3%
25,000 - 49,999	$1,220.57	40.6%
10,000 - 24,999	$268.21	39.1%
5,000 - 9,999	$108.36	31.6%
Less than 5,000	$274.37	43.8%
Total Estimated Average Cost	$1,591.31	39.0%

Figure 35. Public Libraries' Average Estimated Cost of Connecting to the Internet by Region.

	Average Estimated Cost	Don't Know Cost
Midwest	$1,486.54	28.1%
Northeast	$829.30	52.5%
South	$2,152.99	38.7%
West	$3,080.04	25.1%
Total Estimated Average Cost	$1,591.31	39.0%

Figure 36. Urban and Rural Public Library Estimated Cost of Connecting to the Internet Last Fiscal Year.

	Average Cost	Don't Know Cost
Urban Libraries	$10,461.18	29.1%
Rural Libraries	$414.46	40.1%
Overall	$1,311.76	39.1%

Urban Libraries = Population of Legal Service Area of 250,000 or greater;
Rural Libraries = Population of Legal Service Area of 25,000 or less.

Figure 37. Public Libraries' Estimated Internet Resource Allocation for the Next Fiscal Year by Population of Legal Service Area.

1=Decline; 2=Remain the Same; 3=Increase 1-5%; 4=Increase more than 5%	
1 Million +	2.83
500,000 - 999,999	3.12
250,000 - 499,999	3.06
100,000 - 249,999	2.67
50,000 - 99,999	1.95
25,000 - 49,999	1.81
10,000 - 24,999	1.11
5,000 - 9,999	2.10
Less than 5,000	0.83
Total Estimated Resource Allocation	2.32

Figure 38. Public Libraries' Estimated Internet Resource Allocation for the Next Fiscal Year by Region.

1=Decline; 2=Remain the Same; 3=Increase 1-5%; 4=Increase more than 5%	
Midwest	2.43
Northeast	2.12
South	2.61
West	2.29
Total Estimated Resource Allocation	2.32

Figure 39. Urban and Rural Public Library Estimated Internet Resource Allocation for the Next Fiscal Year.

1=Decline; 2=Remain the same; 3=Increase 1-5%; 4=Increase more than 5%	
Urban Libraries	3.06
Rural Libraries	2.13
Overall	2.21

Urban Libraries = Population of Legal Service Area of 250,000 or greater;
Rural Libraries = Population of Legal Service Area of 25,000 or less.

Internet Public Library Uses and Information Services

This section provides details on the types of Internet-based resources public libraries are using for library purposes, patron service provision, and communitywide information services. Library-related uses of the Internet include Telnet/remote login services, file retrieval, and electronic correspondence. Patron-related services include the above, but may apply to specific tasks such as federal government document retrieval and interlibrary loan. Furthermore, this section presents data on the percentage of public libraries that furnish public access terminals for patron access to the Internet.

Weekly Public Library Uses of the Internet

Figures 40 through 45 show the predominant weekly public library uses of the Internet for library purposes. The most frequently performed Internet activity is use of electronic mail, with a total weekly use of 82.7% (Figure 40), followed by use of resource location services such as Mosaic and Gopher at 68.5% (Figure 41), Telnet/remote login services use of 63.4% (Figure 42), bibliographic utilities use of 60.2% (Figure 43), listservs and electronic discussion lists use of 56.7% (Figure 44), and file transfer use of 38.4% (Figure 45).

Figures 46 through 51 indicate that overall, urban library and rural library weekly use of Internet services match that of public libraries in general. In all areas of Internet service, urban libraries make more use of Internet services than do rural libraries. This is particularly the case in library use of listservs/electronic discussion lists and file transfer protocol (FTP) services (see Figures 50 and 51).

Weekly Library Internet-Based Patron Services

Figures 52 through 58 describe several Internet-based services that public libraries provide library patrons per week. The most frequently performed Internet-based service for library patrons is acquiring federal government documents, with a total weekly use of 43.2% (Figure 52), followed by accessing electronic indexes at 42.2% (Figure 53), procuring answers to patron reference questions at 40.8% (Figure 54), providing interlibrary loan services at 37.9% (Figure 55), accessing electronic journals at 22.7% (Figure 56), providing Internet training programs at 17.0% (Figure 57), and downloading software at 7.4% (Figure 58).

As Figures 59 through 65 show, urban library and rural library provision of Internet-based patron services matches generally that of all public libraries in the study. In most cases, urban library provision of

Figure 40. Overall Public Library Use of E-Mail Per Week.

Never	17.3%
Less than 5 Times	42.3%
5-15 Times	28.6%
More than 15 Times	11.7%
Total E-Mail Use	82.7%

Figure 41. Overall Public Library Use of Resource Location Services (e.g., Mosaic, Gopher) Per Week.

Never	31.5%
Less than 5 Times	43.1%
5-15 Times	16.5%
More than 15 Times	8.9%
Total Resource Location Services Use	68.5%

Figure 42. Overall Public Library Use of Telnet/Remote Login Per Week.

Never	36.6%
Less than 5 Times	37.2%
5-15 Times	18.1%
More than 15 Times	8.1%
Total Telnet/Remote Login Use	63.4%

Figure 43. Overall Public Library Use of Bibliographic Utilities Per Week.

Never	39.8%
Less than 5 Times	39.2%
5-15 Times	14.7%
More than 15 Times	6.2%
Total Bibliographic Utility Use	60.2%

Figure 44. Overall Public Library Use of Listservs/Electronic Discussion Lists Per Week.

Never	43.3%
Less than 5 Times	26.3%
5-15 Times	20.4%
More than 15 Times	9.9%
Total Listserv/Electronic Discussion List Use	56.7%

Figure 45. Overall Public Library Use of File Transfer Protocol (FTP) Per Week.

Never	61.6%
Less than 5 Times	33.4%
5-15 Times	4.2%
More than 15 Times	0.7%
Total FTP Use	38.4%

Figure 46. Urban and Rural Public Library Use of E-mail Per Week.

	Never	Less than 5 Times	5-15 Times	More than 15 Times	Total Use
Urban Libraries	1.8%	17.6%	37.8%	42.7%	98.2%
Rural Libraries	20.7%	46.0%	26.8%	6.5%	79.3%
Overall Use	18.9%	43.3%	27.9%	10.0%	81.1%

Urban Libraries = Population of Legal Service Area of 250,000 or greater;
Rural Libraries = Population of Legal Service Area of 25,000 or less.

Figure 47. Urban and Rural Public Library Use of Resource Location Services (e.g., Mosaic) Per Week.

	Never	Less than 5 Times	5-15 Times	More than 15 Times	Total Use
Urban Libraries	3.8%	35.4%	38.9%	21.8%	96.2%
Rural Libraries	38.2%	43.7%	12.4%	5.7%	61.8%
Overall Use	34.6%	42.8%	15.2%	7.4%	65.4%

Urban Libraries = Population of Legal Service Area of 250,000 or greater;
Rural Libraries = Population of Legal Service Area of 25,000 or less.

Figure 48. Urban and Rural Public Library Use of Bibliographic Utilities Per Week.

	Never	Less than 5 Times	5-15 Times	More than 15 Times	Total Use
Urban Libraries	39.4%	28.7%	22.2%	9.7%	60.6%
Rural Libraries	40.4%	39.7%	14.6%	5.3%	59.6%
Overall Use	40.3%	38.7%	15.3%	5.7%	59.7%

Urban Libraries = Population of Legal Service Area of 250,000 or greater;
Rural Libraries = Population of Legal Service Area of 25,000 or less.

Figure 49. Urban and Rural Public Library Use of Telnet/Remote Login Per Week.

	Never	Less than 5 Times	5-15 Times	More than 15 Times	Total Use
Urban Libraries	6.8%	30.3%	31.0%	31.9%	93.2%
Rural Libraries	44.9%	35.9%	14.1%	5.1%	55.1%
Overall Use	41.0%	35.4%	15.8%	7.8%	59.0%

Urban Libraries = Population of Legal Service Area of 250,000 or greater;
Rural Libraries = Population of Legal Service Area of 25,000 or less.

Figure 50. Urban and Rural Public Library Use of Listservs/Electronic Discussion Lists Per Week.

	Never	Less than 5 Times	5-15 Times	More than 15 Times	Total Use
Urban Libraries	5.2%	23.6%	32.9%	38.4%	94.8%
Rural Libraries	54.0%	24.8%	15.6%	5.6%	46.0%
Overall Use	49.0%	24.7%	17.4%	8.9%	51.0%

Urban Libraries = Population of Legal Service Area of 250,000 or greater;
Rural Libraries = Population of Legal Service Area of 25,000 or less.

Figure 51. Urban and Rural Public Library Use of File Transfer Protocol (FTP) Per Week.

	Never	Less than 5 Times	5-15 Times	More than 15 Times	Total Use
Urban Libraries	21.7%	58.2%	16.9%	3.3%	78.3%
Rural Libraries	72.5%	24.6%	3.0%	0.0%	27.5%
Overall Use	67.3%	28.0%	4.4%	0.3%	32.7%

Urban Libraries = Population of Legal Service Area of 250,000 or greater;
Rural Libraries = Population of Legal Service Area of 25,000 or less.

Figure 52. Overall Public Library Use of the Internet to Provide Federal Government Documents for Patrons Per Week.

Never	56.8%
Less than 5 Times	39.1%
5-15 Times	3.0%
More than 15 Times	1.1%
Total Federal Government Document Use	43.2%

Figure 53. Overall Public Library Use of the Internet to Access Electronic Indexes for Patrons Per Week.

Never	57.8%
Less than 5 Times	30.1%
5-15 Times	7.9%
More than 15 Times	4.1%
Total Electronic Index Use	42.2%

Figure 54. Overall Public Library Use of the Internet to Obtain Answers for Patrons Per Week.

Never	59.2%
Less than 5 Times	31.0%
5-15 Times	7.1%
More than 15 Times	2.7%
Total Answer Use	40.8%

Figure 55. Overall Public Library Provision of Internet Interlibrary Loan Services for Patrons Per Week.

Never	62.1%
Less than 5 Times	21.1%
5-15 Times	8.0%
More than 15 Times	8.8%
Total Interlibrary Loan Use	37.9%

Figure 56. Overall Public Library Use of the Internet to Provide Access to Electronic Journals for Patrons Per Week.

Never	77.3%
Less than 5 Times	20.2%
5-15 Times	2.0%
More than 15 Times	0.5%
Total Electronic Journal Use	22.7%

Figure 57. Overall Public Library Provision of Internet Training Programs for Patrons Per Week.

Never	83.0%
Less than 5 Times	15.9%
5-15 Times	0.8%
More than 15 Times	0.4%
Total Training Program Provision	17.0%

Figure 58. Overall Public Library Use of the Internet to Download Software for Patrons Per Week.

Never	92.6%
Less than 5 Times	6.1%
5-15 Times	0.4%
More than 15 Times	0.8%
Total Software Downloading Use	7.4%

Internet-based patron services exceeds that of rural libraries, in particular the provision of federal government documents (Figure 59). When it comes to interlibrary loan services, however, rural library use of the Internet surpasses that of urban libraries (see Figure 61).

Public Library Provision of Internet Public Access Terminals

Of the public libraries that maintain Internet connections, only 12.7% provide public access terminals for patron use (see Figure 66). Of these libraries, 8.4% furnish between one and five terminals for patron use. It is interesting to note that, overall, the distribution of libraries that do provide public access terminals remains fairly even across libraries by population of legal service area. Some smaller libraries, however, do exceed larger libraries in their overall provision of public access terminals. In general, larger libraries provide more terminals for patron use. Figure 67 shows the provision of public access terminals by geographic region. The data clearly demonstrate that terminal provision is uneven across the country. Public libraries in the West and South furnish patrons with Internet access terminals in substantially greater percentages, 20.0% and 19.7% respectively, than libraries in the Midwest and Northeast, 8.8% and 9.6% respectively.

From Figure 68, it is clear to see that the percentages of urban and rural libraries not providing public assess terminals are the same. The data do suggest, however, that urban libraries provide a larger number of public access terminals for patron use. It is interesting to note that libraries that have greater material and operating expenses do not necessarily provide a greater percentage of public access terminals (see Figures 69 and 70). Indeed, the highest percentage of public access terminal provision occurs in libraries with less than $50,000 of material expenditures and less than $100,000 of operating expenditures, with 15.3% and 19.2% respectively. Lower operating and material expenditures do translate, however, into fewer public access terminals for patron use.

Printing Internet-Retrieved Material

On the whole, public libraries do not provide hard-copy print versions to patrons of materials accessed via the Internet (see Figure 71). Moreover, library provision of hard-copy printouts of Internet material to patrons generally decreases as legal service area decreases. A fair percentage of libraries, 43.2%, however,

Figure 59. Urban and Rural Public Library Use of the Internet to Provide Federal Government Documents for Patrons Per Week.

	Never	Less than 5 Times	5-15 Times	More than 15 Times	Total Use
Urban Libraries	34.4%	45.5%	14.9%	5.2%	65.6%
Rural Libraries	62.0%	36.2%	1.1%	0.6%	38.0%
Overall	59.5%	37.1%	2.4%	1.0%	40.5%

Urban Libraries = Population of Legal Service Area of 250,000 or greater;
Rural Libraries = Population of Legal Service Area of 25,000 or less.

Figure 60. Urban and Rural Public Library Use of the Internet to Access Electronic Indexes for Patrons Per Week.

	Never	Less than 5 Times	5-15 Times	More than 15 Times	Total Use
Urban Libraries	50.0%	30.2%	11.2%	8.6%	50.0%
Rural Libraries	60.6%	29.3%	7.4%	2.7%	39.4%
Overall	59.7%	29.4%	7.7%	3.3%	40.3%

Urban Libraries = Population of Legal Service Area of 250,000 or greater;
Rural Libraries = Population of Legal Service Area of 25,000 or less.

Figure 61. Urban and Rural Public Library Provision of Internet Interlibrary Loan Services for Patrons Per Week.

	Never	Less than 5 Times	5-15 Times	More than 15 Times	Total Use
Urban Libraries	69.1%	14.0%	11.3%	5.6%	30.9%
Rural Libraries	60.5%	21.6%	7.6%	10.2%	39.5%
Overall	61.3%	20.9%	8.0%	9.8%	38.7%

Urban Libraries = Population of Legal Service Area of 250,000 or greater;
Rural Libraries = Population of Legal Service Area of 25,000 or less.

Figure 62. Urban and Rural Public Library Use of the Internet to Obtain Answers for Patrons Per Week.

	Never	Less than 5 Times	5-15 Times	More than 15 Times	Total Use
Urban Libraries	31.6%	45.5%	15.6%	7.4%	69.4%
Rural Libraries	65.7%	25.7%	5.8%	2.8%	34.3%
Overall	62.6%	27.4%	6.7%	3.2%	37.4%

Urban Libraries = Population of Legal Service Area of 250,000 or greater;
Rural Libraries = Population of Legal Service Area of 25,000 or less.

Figure 63. Urban and Rural Public Library Use of the Internet to Provide Access to Electronic Journals for Patrons Per Week.

	Never	Less than 5 Times	5-15 Times	More than 15 Times	Total Use
Urban Libraries	64.7%	30.9%	3.3%	1.1%	35.3%
Rural Libraries	79.0%	18.2%	2.2%	0.6%	21.0%
Overall	77.7%	19.4%	2.3%	0.6%	22.3%

Urban Libraries = Population of Legal Service Area of 250,000 or greater;
Rural Libraries = Population of Legal Service Area of 25,000 or less.

Figure 64. Urban and Rural Public Library Provision of Internet Training Programs for Patrons Per Week.

	Never	Less than 5 Times	5-15 Times	More than 15 Times	Total Use
Urban Libraries	76.6%	21.3%	1.1%	1.0%	23.4%
Rural Libraries	84.4%	15.0%	0.6%	0.0%	15.6%
Overall	83.7%	15.5%	0.7%	0.1%	16.3%

Urban Libraries = Population of Legal Service Area of 250,000 or greater;
Rural Libraries = Population of Legal Service Area of 25,000 or less.

Figure 65. Urban and Rural Public Library Use of the Internet to Download Software for Patrons Per Week.

	Never	Less than 5 Times	5-15 Times	More than 15 Times	Total Use
Urban Libraries	93.3%	5.7%	1.0%	0.0%	6.7%
Rural Libraries	92.4%	6.4%	0.3%	0.8%	7.6%
Overall	92.5%	6.3%	0.4%	0.8%	7.5%

Urban Libraries = Population of Legal Service Area of 250,000 or greater;
Rural Libraries = Population of Legal Service Area of 25,000 or less.

Figure 66. Public Libraries that have Access to the Internet and Provide Public Access Terminals by Population of Legal Service Area.

	Do Not Provide Public Access Terminals	No Terminals	1 - 5 Terminals	6 - 10 Terminals	11 or More Terminals	Total Yes
1 Million +	92.0%	92.0%	0.0%	0.0%	8.0%	8.0%
500,000 - 999,999	75.0%	75.7%	15.9%	0.0%	8.4%	25.0%
250,000 - 499,999	91.7%	96.8%	1.6%	0.0%	1.6%	8.3%
100,000 - 249,999	85.2%	86.5%	6.1%	0.0%	7.3%	14.8%
50,000 - 99,999	93.3%	93.5%	3.4%	1.5%	1.6%	6.7%
25,000 - 49,999	90.7%	91.8%	5.3%	2.9%	0.0%	9.3%
10,000 - 24,999	89.2%	92.7%	7.3%	0.0%	0.0%	10.8%
5,000 - 9,999	88.2%	88.8%	11.2%	0.0%	0.0%	11.8%
Less than 5,000	82.6%	87.1%	12.9%	0.0%	0.0%	17.4%
Overall	87.3%	89.9%	8.4%	0.5%	1.2%	12.7%

Figure 67. Public Libraries that Have Access to the Internet and Provide Public Access Terminals by Region.

	Do Not Provide Public Access Terminals	No Terminals	1 - 5 Terminals	6 - 10 Terminals	11 or More Terminals	Total Yes
Midwest	91.2%	95.5%	3.0%	0.0%	1.4%	8.8%
Northeast	90.4%	92.5%	6.6%	0.9%	0.0%	9.6%
South	80.3%	81.7%	16.0%	1.0%	1.4%	19.7%
West	80.0%	82.1%	14.5%	0.0%	3.4%	20.0%
Overall	87.3%	89.9%	8.4%	0.5%	1.2%	12.7%

Figure 68. Urban and Rural Public Libraries that Have Access to the Internet and Provide Public Access Terminals.

	Do Not Provide Public Access Terminal	No Terminals	1 - 5 Terminals	6 - 10 Terminals	11 or More Terminals	Total Yes
Urban Libraries	83.4%	89.5%	6.0%	0.0%	4.5%	16.6%
Rural Libraries	83.2%	89.9%	9.6%	0.5%	0.0%	16.8%
Other	83.2%	89.9%	9.3%	0.5%	0.4%	16.8%

Urban Libraries = Population of Legal Service Area of 250,000 or greater;
Rural Libraries = Population of Legal Service Area of 25,000 or less.

Figure 69. Public Libraries that Have Access to the Internet and Provide Public Access Terminals by Material Expenditures for the Last Fiscal Year.

	Do Not Provide Public Access Terminals	No Terminals	1 - 5 Terminals	6 - 10 Terminals	11 or More Terminals	Total Yes
$1 Million +	85.5%	87.9%	6.5%	0.0%	5.5%	14.5%
$500,000 - $999,999	88.6%	89.0%	2.8%	0.0%	8.3%	11.4%
$100,000 - $499,999	89.0%	89.7%	6.0%	2.2%	2.1%	11.0%
$50,000 - $99,999	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Less than $50,000	84.7%	87.1%	12.9%	0.0%	0.0%	15.3%
Overall	88.4%	89.8%	8.2%	0.6%	1.3%	11.6%

Figure 70. Public Libraries that Have Access to the Internet and Provide Public Access Terminals by Operating Expenditures for the Last Fiscal Year.

	Do Not Provide Public Access Terminals	No Terminals	1 - 5 Terminals	6 - 10 Terminals	11 or More Terminals	Total Yes
$5 Million +	88.0%	90.0%	4.7%	0.0%	5.3%	12.0%
$1 Million - 4.999 Million	85.8%	87.1%	7.3%	1.7%	3.9%	14.2%
$500,000 - $999,999	98.2%	98.2%	1.8%	0.0%	0.0%	1.8%
$100,000 - $499,999	95.9%	96.2%	3.8%	0.0%	0.0%	4.1%
Less than $100,000	80.8%	84.5%	15.5%	0.0%	0.0%	19.2%
Overall	88.9%	90.4%	7.9%	0.4%	1.3%	11.1%

Figure 71. Public Libraries that Have Access to the Internet and Provide Hard-Copy Print of Materials Obtained through the Internet by Population of Legal Service Area.

	Do Not Provide Hard-Copy Print Materials	Provide Hard-Copy Print Materials for Free	Provide Hard-Copy Print Materials for a Fee	Total Hard-Copy Provision
1 Million +	37.8%	54.2%	8.0%	62.2%
500,000 - 999,999	45.1%	42.7%	12.2%	54.9%
250,000 - 499,999	55.7%	35.7%	8.7%	44.3%
100,000 - 249,999	60.4%	30.2%	9.4%	39.6%
50,000 - 99,999	48.6%	41.4%	10.1%	51.4%
25,000 - 49,999	55.9%	29.6%	14.5%	44.1%
10,000 - 24,999	54.9%	24.4%	20.7%	45.1%
5,000 - 9,999	70.3%	23.5%	6.1%	29.7%
Less than 5,000	57.7%	29.7%	12.6%	42.3%
Overall	56.8%	30.2%	13.0%	43.2%

Figure 72. Public Libraries that Have Access to the Internet and Provide Hard-Copy Print of Materials Obtained through the Internet by Region.

	Do Not Provide Hard-Copy Print Materials	Provide Hard-Copy Print Materials for Free	Provide Hard-Copy Print Materials for a Fee	Total Hard-Copy Provision
Midwest	52.8%	29.4%	17.8%	30.6%
Northeast	71.5%	23.9%	4.6%	25.5%
South	40.7%	39.4%	19.8%	24.9%
West	46.0%	36.9%	17.1%	19.0%
Overall	56.8%	30.2%	13.0%	43.2%

Figure 73. Percentage of Public Libraries that Provide Information Services to a Local Community Network or Free-Net by Region.

Midwest	14.7%
Northeast	10.6%
South	9.2%
West	17.9%
Total Percentage Providing Information Services	12.8%

Figure 74. Percentage of Public Libraries that Provide Information Services to a Local Community Network or Free-Net by Population of Legal Service Area.

1 Million +	13.1%
500,000 - 999,999	31.6%
250,000 - 499,999	9.5%
100,000 - 249,999	13.6%
50,000 - 99,999	12.2%
25,000 - 49,999	12.8%
10,000 - 24,999	10.0%
5,000 - 9,999	13.8%
Less than 5,000	13.3%
Total Percentage Providing Information Services	12.8%

Figure 75. Public Library Number of Computers and Computers with External Communication Capabilities.

	Number Computers Owned					Number with External Communication Capability				
	None	1 - 10	11 - 25	26 - 50	51+	None	1 - 10	11 - 25	26 - 50	51+
Apple/Macintosh	11.6%	15.4%	0.2%	0.1%	0.0%	17.5%	5.7%	0.1%	0.0%	0.0%
IBM PC/Clone	6.8%	35.3%	3.5%	0.8%	0.5%	13.4%	40.2%	0.9%	0.2%	0.2%
Unix Workstation	15.8%	1.6%	0.3%	0.1%	0.1%	11.4%	1.7%	0.1%	0.0%	0.0%
Other	2.5%	4.7%	0.3%	0.2%	0.3%	3.4%	4.8%	0.1%	0.1%	0.2%
Total	36.7%	57.0%	4.3%	1.2%	0.9%	45.7%	52.4%	1.2%	0.3%	0.4%

do provide patrons with hard copies of Internet-acquired material, with 30.2% providing such material for free and 13.0% providing such material for a fee. In general, the provision of hard-copy material without any patron-incurred fees diminishes as library legal service area decreases. The data show no clear trend for fee-for-copy services. From Figure 72, it is clear that libraries in the Midwest, 30.6%, provide the greatest percentage of hard-copy printouts of Internet-accessed material, followed by 25.5% in the Northeast, 24.9% in the South, and 19.0% in the West. Free-copy provision is highest in southern and western libraries, with 39.4% and 36.9% respectively. It is interesting to note that, of all northeastern libraries providing hard-copy services, only 4.6% charge a fee, compared with 19.8% of southern libraries, 17.8% of midwestern libraries, and 17.1% of western libraries.

Communitywide Information Services

Figure 73 shows that, of all public libraries surveyed, 12.8% provide information services to a local community-based network or free-net. In particular, western public libraries provide the greatest percentage of community-based information services with 17.9%, followed by 14.7% of midwestern libraries. The percentage of public libraries providing information services to local community networks and/or free-nets drops significantly in the Northeast and the South, with 10.6% and 9.2% respectively. As Figure 74 demonstrates, provision of information services to a local community network varies little by population of legal service area. A notable exception, however, is the library population of legal service area of 500,000 to 999,999, where 31.6% provide information services to a local community network.

Figure 76. Number of Phone Lines Coming into Public Libraries by Population of Legal Service Area.

	1-5 Lines	6-10 Lines	More than 11 Lines
1 Million +	0.0%	6.8%	93.2%
500,000 - 999,999	0.0%	3.1%	96.9%
250,000 - 499,999	9.7%	13.6%	76.7%
100,000 - 249,999	13.9%	16.1%	70.0%
50,000 - 99,999	30.9%	39.8%	48.6%
25,000 - 49,999	39.1%	36.2%	24.7%
10,000 - 24,999	64.6%	30.4%	5.0%
5,000 - 9,999	94.3%	5.7%	0.0%
Less than 5,000	100.0%	0.0%	0.0%
Overall	62.7%	15.7%	21.7%

Figure 77. Number of Phone Lines Coming into Public Libraries by Region.

	1-5 Lines	6-10 Lines	More than 11 Lines
Midwest	62.3%	17.2%	20.5%
Northeast	74.1%	15.2%	10.6%
South	53.6%	20.5%	32.5%
West	43.5%	15.8%	40.7%
Overall	62.7%	15.7%	21.7%

Public Library Technology Infrastructure

This section presents study findings pertaining to the current state of the public library information technology infrastructure, defined here as the number of computer terminals, computer terminals with external communication capabilities, and incoming library phone lines.

The notion of public libraries serving as public access safety nets for Internet-based resources and services requires that public libraries have, minimally, appropriate computer equipment with dial-out capabilities and an adequate number of incoming phone lines. As Figure 75 shows, 36.7% of public libraries possess no computers, while 63.4% own at least one computer. There are fewer installed library computers with external communication capabilities, 54.3%, than there are computers. Moreover, Figure 76 indicates that 62.7% libraries have between one and five incoming phone lines, while 21.7% have more than 11 incoming phone lines, and 15.7% have between six and ten incoming phone lines. Figure 76 also demonstrates that as library legal service area increases so does the number of incoming library phone lines.

From Figure 77, libraries in the South and West appear to have more phone lines than libraries in the Midwest and Northeast. Furthermore, as Figure 78 indicates, urban libraries have significantly more phone lines than do rural libraries. Together, Figures 75 through 78 indicate that significant numbers of public libraries do not meet the minimum equipment requirements for moving to an electronic networked environment: computers, external communications capabilities, and an adequate number of incoming phone lines.

Successes and Frustrations with Using the Internet

The survey asked public librarians to identify both successful and frustrating encounters with the Internet. The request to describe both positive and negative interactions with the Internet generated a large number of responses. Most, however, can be categorized under three broad themes — overall Internet use, Internet organization, and gaining access to the Internet.

Internet Use

Internet use encompasses library access to Internet-based information resources and the subsequent integration of those resources into library operations and services. For example, public librarians are able to access remote databases searching for information on specific topics, send e-mail to various users and/or

Figure 78. Number of Phone Lines Coming into Urban and Rural Public Libraries.

	1-5 Lines	6-10 Lines	More than 11 Lines
Urban Libraries	5.5%	9.5%	85.0%
Rural Libraries	78.9%	15.4%	5.7%
Overall	72.5%	14.9%	12.6%

Urban Libraries = Population of Legal Service Area of 250,000 or greater;
Rural Libraries = Population of Legal Service Area of 25,000 or less.

connecting institutions, participate in electronic discussion groups, and retrieve electronic documents.

Such Internet activities can lead to the integration of dispersed library information resources. As one public librarian stated:

> Now, with Telnet capabilities, we are able to tap into their database, referring patrons to materials, checking library hours and school activities, and more, quickly and easily. Finally, we can communicate with the library "just around the corner."

Another librarian said:

> [The] Internet often lifts us out of our sense of "alone in the community" as [an] information source. Patrons look over our shoulder at the screen and are amazed.

Furthermore, access to the Internet allows libraries to search and retrieve a variety of documents for patrons. This is particularly the case with government information:

> [We found] that the SEC [Securities Exchange Commission] filings are made available on the Internet. Our library does not carry all annual reports, 10Ks or other SEC filings, so it is great to be able to download them immediately.

Another librarian stated:

> Our library used to receive the Federal Job Opportunity list from the government, but they no longer mail it out to libraries. We found the listing on the FedWorld system and now are able to download it for patron viewing.

And:

> We were able to download and provide a copy of the President's State of the Union message the day after he spoke. We couldn't have filled the request without the Internet.

Access to the Internet can help public libraries provide better patron information services. These enhanced services, however, come at a cost:

> We are afraid [that] small, rural libraries will be forsaken. Large libraries already have more access to databases. Cost is prohibitive for our library at the present time although our patrons are beginning to demand it.

Other librarians concur:

> Our phone line bill is out of control. Long distance on a second line plus database charges would be financial suicide. Access to a federal network should be free, just as federal highways are free to the automobile. At present phone bills for our one-line voice-only service exceed utility bills at times. We cannot plan on future income levels.

As these statements show, the Internet, with its rich information resources, can help public libraries both improve traditional services and generate new services. This is particularly the case with the retrieval of documents in general and government reports in particular. There is a catch — new resources will be required to support public libraries' use of the Internet.

Internet Organization

The Internet works due to agreed-upon network standards, in particular the Transmission Control Protocol/Internet Protocol (TCP/IP). Adherence to such standards permits users to take advantage of such network-based services as Telnet and File Transfer Protocol (FTP). While there are mechanisms in place that allow remote access to Internet-based information providers and file transfer, there is little organization of Internet-based information resources. Furthermore, the number of network information resource location and retrieval tools, such as Archie, Gopher, Wide Area Information Service (WAIS), and World Wide Webb (WWW) continues to increase. This lack of information organization results in a large learning curve for new Internet users.

Librarians attested to these conditions as follows:

> We are beginning users on the Internet, and our greatest frustration is learning what's out there and how to access it. So often, even if we find the address for something, we can't get on because the combination of "anonymous," "guest" and our e-mail address does not work for the request for login or password.

And:

> I attempted to view a huge file I had put in my local directory through FTP, not knowing that I

should have transferred it to my local system due to inexperience; I also did not know how to back out, and ended up hanging up, hoping the charges would not be excessive before the system logged me out for inactivity.

Also:

Finding out how to subscribe to or join listservs, newsgroups, discussions, etc. — still frustrated!! Finding out what is offered by or available from each institution requires going in and searching their menus, and there are so many!

Such navigation issues and the tools with which librarians and others can navigate the Internet are, in large part, beyond the control of public librarians. These responses do indicate, however, that public librarians require a range of training on the fundamental operations and tools available to move around the Internet.

Gaining Access to the Internet

For public libraries to gain access to the Internet, they must, minimally, obtain computing and telecommunications equipment as well as appropriate software, find a network connection provider, and acquire appropriate connectivity. Not all public libraries, especially rural libraries, can handle the demands of connectivity.

Some librarians commented:

Since I've never tried to get on the Internet before, I didn't realize how many steps would have to be completed before I would "be on" - but now I know!

Furthermore:

We have access to the Internet through a local network but have been unsuccessful in connecting with [the] local network. The setup instructions don't work with our high-speed modems.

Also:

We find that connecting to other networks is a very convoluted process, especially when we are ultimately unsuccessful in making the connection.

Such comments indicate that librarians have difficulty in (1) establishing an Internet connection where none currently exists, and (2) creating an operational library Internet connection once library Internet connectivity exists.

The responses to the open-ended questions serve to confirm and expand upon the study findings. It is fair to say that based on the above comments, public librarians are interested, indeed anxious, to be connected to the Internet, to learn about resources and navigation tools, and to supply Internet-based services to their patrons and community. But they require assistance in gaining Internet connectivity, understanding the connectivity process, and becoming proficient in the use of the Internet.

Internet connectivity in public libraries continues to increase. These are, however, the most accurate national baseline data available to date from which to generate policy recommendations on (1) the role of public libraries in the Internet, and (2) the role of federal, state, and local governments in helping make the public libraries' transition to the electronic networked environment. The following section of this report integrates the above findings and draws conclusions concerning the current state of public library involvement with the Internet.

EXPANDING THE POLICY DEBATE

An important conclusion from the findings presented in the previous section is that there are a number of key differences and disparities among the various public libraries in terms of access, use, needs, and other factors regarding their involvement in the Internet. One implication to be drawn from these differences is the importance of defining *specific* federal and public library roles and policy positions in enhancing public library involvement in the Internet. Another implication from these findings is the importance of developing a *flexible* federal policy position that can help public libraries in different situations solve different types of problems.

The purpose of this section is to compare and contrast selected findings in a broader policy context. The section does not provide an in-depth assessment of all the findings. It does, however, highlight those findings seen to be most important for additional debate and discussion. Conclusions are linked to key policy

topics related to the Internet and the development of the NII as they are currently being debated. Such an assessment suggests strategies for public libraries to utilize the networked environment better, and policies that will require special attention by policymakers.

Disparities Between Urban/Rural Public Libraries

Different types of public libraries are moving differently into the Internet environment. Public libraries in the Northeast and the West are more likely to be connected to the Internet than those in the South and the Midwest. Moreover, rural libraries, and those with smaller budgets and fewer resources (whether total operations or materials) are much less likely to be connected and have much fewer Internet addresses than those in urban areas or those with large budgets. This is an important disparity among public libraries.

A similar pattern exists in terms of the type of equipment and connectivity available to those public libraries connected to the Internet. Although most connected libraries use "low-end" connectivity and VT-100 terminals, rural public libraries tend to have less equipment and fewer phone lines. This disparity is likely to contribute to the limited types of Internet-based services and uses employed by rural libraries (see the following section). Indeed, the disparity between 79% of the urban libraries being connected to the Internet and only 17% of the rural libraries being connected is significant.

Important differences between urban and rural libraries' assessment of factors affecting their involvement in the Internet are also evident from Figure 6. Rural libraries see any factor related to cost as much more important than their urban counterparts. One has the sense that the urban response is "these factors are important, but we will go ahead with Internet involvement as best we can," whereas the rural library response is "these factors are critical, and without external support, we will not be able to move ahead with much Internet involvement."

Disparities in terms of connectivity to the Internet may be exacerbated in the future due to the libraries' estimated Internet resource allocations for following years. Figures 37-39 all indicate that larger, more urban libraries anticipate "increased spending" in the next fiscal year on Internet resources whereas rural libraries expect spending to "remain the same." It is important to remember that the "increased spending" will occur on an initially larger base amount than the amount likely to be budgeted by rural public libraries. Thus, the gulf between Internet connectivity of larger, more urban libraries and that of smaller, more rural libraries appears likely to widen.

If the administration and Congress are to advance the concept of universal access, these conclusions suggest that a rethinking of existing policy may be necessary. While the Internet is only a part of the evolving NII, it is currently a key mechanism for providing access to a range of electronic information. This study suggests that access to such empowering technology, at least via America's public libraries, is very uneven, and that rural libraries may continue to fall further behind other types of libraries in providing such access over the shortterm.

Library Uses of Internet Connectivity

The findings suggest that public libraries that are connected to the Internet are not yet sophisticated users. Figures 40-45 suggest that e-mail is perhaps the most frequently used application. While uses of applications such as Gopher, Telnet, accessing bibliographic utilities, discussion lists, and FTP are occurring, they occur much less often than e-mail uses. One might also argue that as applications increase in difficulty and knowledge, their use decreases proportionally.

The disparities in uses of particular applications become especially apparent when comparing urban and rural libraries (Figures 46-51). Of those rural libraries that are connected, the data suggest that, compared to their urban counterparts, they are making limited use of the connection.

Internet-based library services and resources (Figures 52-58) such as accessing electronic indexes for patrons, answering reference questions, accessing electronic journals, providing public training in the use of the Internet, and downloading software for patrons are being provided, but such provision is only just beginning to occur. Such data suggest that policymakers will need to consider how best to promote Internet-based programs and services *in addition to* facilitating connectivity. Moreover, providing connectivity does not, in and of itself ensure Internet-based applications and the development of user services.

These conclusions also suggest the importance of and need for national programs of education and training related to the use of the Internet. Figures 16 and

17 indicate that respondents assessed training, as a federal role, to be less important than the other possible roles listed. Thus, one interpretation of Figures 16 and 17, out of context of other findings, might be that respondents believe that a federal role in education and training is relatively unimportant.

But it is well to remember that training issues are more likely to arise after connectivity and equipment are in place. Thus, a more accurate interpretation might be, first, the library needs to be connected to the Internet and have basic equipment; second, *relative* to other possible federal roles, training is seen as less important. But from other responses on the survey, i.e., the limited current uses and applications of the Internet, as well as responses to the open-ended questions, the data clearly indicate a need for more and better Internet training.

Promoting Access to Government Information

In a number of policy instruments, including *Creating a Government that Works Better and Costs Less* (Gore, 1993) and the *National Information Infrastructure: Agenda for Action* (1993), the Clinton administration has stated the following objectives (pp. 11-12):

- Improve the accessibility of government information
- Upgrade the infrastructure for the delivery of government information
- Enhance citizen access to government information.

Federal policymakers have a unique opportunity to accomplish these goals by working with the library community in general and the Government Printing Office Depository Library Program.

The study finds, however, that 43% of those public libraries connected do provide federal government documents to patrons via the Internet (Figure 52). Given the fact that only 13% provide public access Internet terminals, one must conclude that a number of specific policy initiatives will be needed for public libraries to help the administration better accomplish the policy goals in this area.

In addition, the public library community may wish to consider the appropriateness of this role. Unfortunately, the survey did not query respondents about the appropriateness of "promoting access to government information" as a possible role for libraries in the networked environment (Figure 12). One can conclude, however, that the administration sees this policy goal as important, that public libraries should be supported to accomplish this goal, and that assuming responsibility for accomplishing this goal is appropriate for the public library community.

Library Expenditures for Internet Services

Question 10 asked, "Please estimate the total costs to the library for providing Internet-related services for staff and patrons for the last completed fiscal year (to include telecommunication costs, subscription fees, software, training, staff time, etc.)." Answers to this question are provided in Figures 34-36. An analysis of these estimated costs shows libraries in populations of legal service areas of one million or more spending $14,697, with the figure declining to $108.36 during the last fiscal year for libraries serving communities between 5,000 and 9,999.

An analysis of the responses to question 10 by geographic region shows greatest expenditures in the West, with an average of $3,080.04, versus a low of $829.30 in the Northeast. Comparing the responses of urban and rural libraries reveals a significant disparity between the two: urban libraries spent more than $10,000, while rural libraries spent just $400. As suggested in the findings section, these data should be used with caution since (1) they are estimates, and (2) 39% of the respondents checked the response "did not know," thus providing no input to the computed averages.

But for the sake of argument, by using the average expenditure of $1,591 per year (see Figures 34 and 35) and by using the total number of libraries (central or main libraries) as 9,050 (from recent FSCS data) one can extrapolate an estimated total expenditure of $14,398,550 by public libraries on Internet-related services for the last completed fiscal year. Such a number is a ballpark estimate at best, but relatively speaking, the nation's public libraries are spending very little to support Internet-based services. Moreover, this amount represents expenditures from all sources of income — of which the income from federal sources is likely to be a small percentage.

Thus, one might want to consider this key question: Is an estimated total annual expenditure of $14,398,550 an appropriate amount for public librar-

ies to spend on Internet-related services? Given the Clinton administration's policy goals for (1) connecting "all libraries" by the year 2000, (2) promoting universal access to the evolving networked environment for all citizens, and (3) enhancing the public's access to electronic government information, the current estimated expenditure of $14,398,550 is insufficient and is incompatible with the vision expressed by these goals. Policymakers will need greater public debate on the degree to which federal funding should be provided to public libraries to contribute toward accomplishing these policy goals.

Community Networking and Public Libraries

Community networks, civic networks, and free-nets are all a type of electronic network that "improves access to information of all kinds to the general public, or to targeted members of the local community who are traditionally underserved. Civic network programming can provide access to Internet, job rosters, community listings, educational resources, health information, and governmental databases" (Moltz, 1994, p. 7). One could argue that this goal embodies one of the most traditional purposes of the public library.

Figure 31 shows that only 5.7% of public libraries have network connections provided by a local freenet or community net. Figure 69 finds that 12.8% of public libraries provide information services (of any type) to a local community network. Thus, formal cooperation and coordination between public libraries and community networks is just beginning to develop.

The Clinton administration offered a vision to promote the development of civic networking in its *Agenda for Action* by stressing the importance of civic networking technology for the public interest (1993, p. 15). This policy initiative and the initiative promoting the role of libraries in the networked environment have a range of similar objectives. To date, however, these initiatives within these two areas have yet to be coordinated. In fact, findings from this survey indicate minimal coordination between public libraries and community networks.

In an assessment of the development of civic networks, Moltz found that "libraries provide or will provide full support service to as many as half of the queried networks" (1994, p. 22). While survey findings reported above show few instances of cooperation and coordination between the community nets and public libraries, an important policy question is the degree to which both types of initiatives should be supported and how best these two types of organizations can collaborate to serve the public interest.

Roles for Public Libraries and the Federal Government

The survey asked respondents to assess the importance of the federal role in connecting libraries to the Internet, supporting equipment purchases, supporting R&D efforts related to libraries and the Internet, and providing training assistance (Figures 15-19). While there was wide overall agreement on the importance of these roles, respondents assessed the federal role for connecting public libraries to the Internet and supporting equipment purchase as more important than support for training and R&D.

The role of assisting libraries in connecting to the Internet is an infrastructure issue. That is, libraries — like other organizations — need a telecommunications system that, minimally, meets these criteria: can be easily accessed, technically reliable, affordable, and provides adequate bandwidth. In this area a number of state initiatives have been successful. Figures 9-11 indicate the importance of "statewide initiatives" in motivating public library interest in the Internet — especially among rural public libraries. Such statewide initiatives, e.g., those of Iowa, Maryland, and North Carolina to name a few, suggest the importance of federal-state partnerships in connecting libraries to the Internet.

In reviewing the responses on these figures, however, it is interesting to note that "connecting libraries to the Internet" was ranked most important by respondents regardless of geographic area or size of community served. Rural librarians ranked support for equipment purchase and training much higher than their urban counterparts. Urban respondents ranked the importance of the federal role in training as 3.3 [1=most important, 4=least important]. Again, it is clear that different federal roles may be required for different libraries in different situations.

The findings from this study indicate clearly that public librarians support their own involvement in the following two key roles (Figures 12-14):

- Public libraries should provide Internet-based services to patrons;

- Public libraries should serve as a safety net for public access to the Internet.

There is wide support for these two roles regardless of the geographic location of the library or the degree to which it is rural or urban. Respondents also agreed, regardless of location, that Internet services should be provided through public libraries without charge to the patron.

This role of a safety net for public access to the Internet is closely related to the administration's policy goal of universal access. While definitions for these terms are still being debated, the notion of a public access safety net implies that the public library (1) has the equipment and connectivity for a public access terminal that links the user to the Internet and perhaps other electronic sources, (2) can provide basic training to the public in how to use this connection, and (3) provides the public with some minimum level of access and use without charge.

There is much common ground between the administration's policy goal for universal access and the public library's role in serving as a safety net for public access to the networked environment. The traditional role of the public library as the "people's university" can be extended into that of a safety net for the electronic society. Public debate about how best the public library can promote universal access should be an agenda item both for the administration and the library community.

The federal government might assume a range of roles in support of such a national plan to help public libraries make the transition into the networked environment. But regardless of the possible roles, one might ask what laws and regulations are in place to assist the federal government in assuming these roles, to what degree these existing laws and regulations are effective — or likely to be effective in the networked environment, and to what degree these laws and regulations are currently being funded?

A detailed analysis of existing federal policy related to libraries in the networked environment is beyond the scope of this report. But in a working paper developed as part of this study, the authors concluded that the existing policy guidance for helping libraries move into the networked environment was inadequate. Further, major revamping and updating of such traditional funding mechanisms as the Library Services and Construction Act will be needed if the administration's efforts to develop a national plan are to be implemented.

Seeking Solutions

Overall, the findings suggest that there is an important federal role in promoting the development of public libraries in the Internet and the evolving NII. That role includes developing policy that promotes basic connectivity for public libraries to link to the Internet, helps libraries obtain needed equipment, and supports Internet training and education for librarians. But within this context it is equally clear that the needs of rural libraries are, in some instances, quite different than those of urban libraries. In addition, some public libraries are already quite well connected and using sophisticated Internet services, while others are not.

A range of interested stakeholders, including policymakers, librarians, state and local government officials, developers of community nets, educators, private-sector providers, and citizens — to name a few— must work together to develop a national plan and policy for public libraries. The plan should take into consideration the various findings and conclusions identified in this report, and:

- Clearly define policy goals related to the role of public libraries and the Internet
- Identify specific strategies by which these goals can be accomplished
- Obtain and allocate resources for the plan to be accomplished.

All stakeholders interested in accomplishing key public-sector policy goals outlined by the Clinton administration in its various NII policy statements will need to rethink both federal roles and public library roles carefully as the country evolves into a networked society. This report offers some beginning benchmark data and a number of findings, conclusions, and recommendations to begin that rethinking process.

A recent Clinton administration policy document discussed the importance and role of libraries in the NII and concluded (Information Infrastructure Task Force Committee on Applications and Technology, 1994b, p. 95):

If libraries are to continue to perform the services currently provided, and at the same time, adopt technology that will make their participation in the NII a possibility, then a national plan to coordinate and supplement the required efforts and funding is essential.

Leadership from both the administration and the library community is needed to develop such a national plan. NCLIS can serve an important role in (1) offering advice to both Congress and the administration regarding this topic, (2) bringing key stakeholders together to debate and discuss key issues, and (3) promoting the development of a national plan as suggested by the administration.

ISSUES AND RECOMMENDATIONS

The results of this survey have provided a wealth of information on the uses, impacts of networked resources, and the degree to which public libraries are beginning to integrate them into the mainstream of library activities. This section identifies key issues resulting from the survey and the literature review. This section also offers a number of recommendations that would help public libraries to better serve as a societal safety net and provide a range of value-added information services in the evolving networked society.

Key Issues

Issues evolve from social problems when different groups of stakeholders (i.e., individuals who may be affected by the resolution of the issue) recognize that government policies may be developed to contend with the problem. Typically, stakeholders have conflicting value systems and wish to achieve differing objectives in resolving an issue. The findings from the survey, described in the previous section of this report, have identified a number of key issues that should be considered by federal policymakers, public librarians, network services providers, and others.

Figure 79 represents a summary of the key issues raised by the findings. This list is not intended to be comprehensive. Rather, it identifies an initial set of key issues needing additional debate and resolution. A review of these issues suggests a broad range of topics and areas for such debate.

Recommendations

Various stakeholder groups can take specific actions to enhance the role of public libraries in the Internet. Indeed, action will be required from all the stakeholder groups if significant changes are to occur and public libraries are to play a key role in accomplishing the policy goals that the Clinton administration has identified regarding the development of the Internet. The recommendations draw upon findings of this survey that follows as well as findings of other research recently completed by the investigators (McClure et al., 1994a; McClure et al., 1994b). These efforts identify a clear and common set of recommendations for both policymakers and librarians.

For Policymakers

The findings from the study suggest that public libraries increasingly are connected to the Internet and have the potential to make a significant difference in the provision of networked information to their communities. There is, however, a need for clearer public policy — especially at the federal level — to support this effort. Policymakers can:

- *Define a Federal Role to Support Public Libraries in a Networked Society.* In recent policy statements from the Clinton administration as well as proposed congressional legislation, there is clear mention of the importance of connecting libraries to the Internet. There is no clear picture, however, of the role public libraries might serve in this networked environment or of the responsibility the federal government has in helping public libraries move into the networked environment.

  For example, public libraries can serve as a safety net to society and promote universal access to the Internet. The presence of public access terminals to the Internet in the nation's public libraries, would improve the likelihood of universal access to the Internet. Or perhaps the public libraries could assume responsibility for promoting "network literacy" much as they have done for traditional literacy. Regardless of the particular role, federal policymakers and the public library community must do a better job of clarifying possible

Figure 79. Issues Concerning Public Library Participation in the Internet and the National Information Infrastructure Initiative

Issues	Concerns
Building the National Information Infrastructure	Deciding who the key stakeholders are and ensuring their participation in the NII initiative is crucial to the NII development process. As the data indicate, public libraries look toward the federal government to facilitate public library participation in the NII construction to ensure public-interest representation. At present, there is a noticeable lack of public library representation on existing NII planning committees (e.g.., the Advisory Committee to the Information Infrastructure Task Force).
Developing Cooperative Ventures with NII Participants	The NII initiative requires multiple cooperative ventures between government and the private and nonprofit sectors. The public library, as the community information provider, can contribute greatly to the NII initiative. To the extent possible, the federal government should encourage public library participation in the NII coalition building process.
Providing a Societal Safety Net	The advanced technology skills and requirements of the Internet can potentially exclude, without proper preventive measures, large segments of the American population from the vital information resources and services provided via the information superhighway. Public libraries, as intermediaries between the Internet content and the public, can facilitate public access to the information resources and services provided via the Internet.
Becoming Network Literate	The physical and logical processes through which information is sought on the Internet are considerably different from current information-seeking processes (e.g., through print indexes, CD-ROMs, and online catalogs). Users of the Internet, including librarians, require a new set of information skills to navigate the Internet successfully. Moreover, the general public needs a community-based public institution through which Internet navigation assistance and training are available. The public library institution, with its 9,050 libraries and over 15,482 stationary outlets, could become that community-based network literacy center. Public libraries cannot initiate large-scale Internet training programs for either librarians or the general public without support from federal, state, and local governments. There is a great disparity between library involvement with the Internet. Most libraries, rural libraries in particular, require basic Internet functionality—connections and equipment—before training can be addressed. Moreover, due to the disparity in public library network needs, training needs are not uniform for all libraries.
Connecting to the Information Highway	Connecting to the Internet requires technological expertise. Entities seeking Internet connections must know who the network access providers are, the types of connection services available, and be able to determine appropriate organization services needs. Many public libraries possess network-savvy staff few able to assist in these operations and lack adequate means for Internet connection. The federal government can help public libraries connect to the Internet, both with funding and technological assistance.

Figure 79. Issues Concerning Public Library Participation in the Internet and the National Information Infrastructure Initiative (continued)

Issues	Concerns
Developing Network Applications	Over time, NII participants will develop information and service applications for the Internet. To ensure maximum public benefit from these applications, policymakers need to establish procedures through which public interest institutions such as the public library can participate in Internet application development.
Providing Electronic Government Services	Electronic government services will increase. The public library can serve as the focal point within local communities for citizens seeking both specific program information (e.g., health care) and general government information (e.g., census data).
Evaluating Network Services	Government-provided electronic network services must incorporate feedback mechanisms that measure user satisfaction. Without such measures, government entities will not know whether their services meet user needs. Public libraries, as liaisons between Internet content and the public, can help the federal government collect service usability and utility information.
Preserving Copyright/ Intellectual Property Rights	Current copyright laws do not adequately protect intellectual property distributed via a public electronic network. Until network environment copyright issues are resolved, a question remains as to the degree electronic public information access points such as public libraries can redistribute copyrighted material acquired via the Internet.
Discrepancies in Access to Telecommunications Services	Telecommunications services and costs vary widely by geographic location. Rural communities in particular incur substantial Internet connection charges, since they usually must dial long-distance to the nearest point-of-presence (POP) of a telephone connection by an Internet service provider. Federal, state, and local governments must ensure that geographic location is not a barrier to public library Internet connection and use.
Pricing Networked Services	The initial and recurring costs of connecting and using the Internet can be significant. In a time of constrained operating budgets, public libraries must make a crucial choice - either to not participate in the Internet or to reallocate funding to access the Internet at the expense of other library services. If libraries join the networked society, they must decide whether Internet costs should be passed on to patrons. Such fees can exclude the economically disadvantaged and create a society of "haves" and "have nots."
Allocating Adequate Resources for Public Library NII Participation	Connecting to the Internet and providing network-based library information services can be significant costs to public libraries. If public libraries are to serve as safety nets, serve as network literacy centers, and provide the new services enabled by the NII, they will require additional and continued federal, state, and local government support.
Privacy/Confidentiality of Patron Information Requests	At present, what library users borrow and what information they request are private and protected documents, and thus not available for public review. Laws that protect users confidentiality under current systems, however, do not extend to Internet-based user information requests. As Internet-based library services increase, patron record privacy laws will need to be amended to accommodate the electronic networked environment.

public library roles in the NII and determining how the government can support the libraries' assumption of these roles.

- *Promote Network Literacy.* A traditional role of the federal government has been to promote literacy. And, public libraries have supported literacy programs within local communities. The public library will need to promote network literacy in addition to traditional types of literacy. Network literacy is the ability of an individual to use computer and telecommunications equipment to identify, access, and obtain information that is available through the Internet (McClure, 1993a). Increasingly, individuals who are network illiterate will find themselves at a significant disadvantage. Public libraries can assume responsibility for educating citizens about how to access and use networked information and services — but policy support from the federal government is needed to update traditional literacy programs to accommodate the networked environment.

- *Promote Statewide Networks.* Individual states can develop initiatives that establish networks, connect public libraries to the networks, and develop and share electronic services. Maryland, North Carolina, Iowa, and others states offer excellent models of how policy at the state level can be developed to support and enhance the role of libraries in the networked environment. State policymakers can learn from these initiatives and similar initiatives in other states to promote public library involvement with the Internet.

- *Use Public Libraries to Deliver Government Information and Services.* The Clinton administration and Congress have produced a number of reports that recommend government services and information be developed and delivered in an electronic, networked medium (Office of Technology Assessment, 1993). For example, individuals will soon be able to check on their social security accounts, obtain direct information about crop predictions, or obtain current census data over a national network. Not only government information but also government services would be made available via the network. Indeed, many agencies already are engaged in electronic services delivery.

  The nation's pubiic libraries can provide an excellent delivery mechanism to ensure public access to electronic information. As Senator Edward Kennedy recently stated (1994, p. 3):

  > Public libraries are a vital information link between the government and the public..., libraries must continue to play a critical role in providing broad access to the public. Libraries can guide citizens of all ages through the world of computer networks. As more government information and access are available on-line, libraries will make the government less remote and more responsive to the needs of individual citizens.

  Public access Internet workstations in every public library would provide all members of the public the opportunity to take advantage of electronic government services. Policy should be developed to support the public library's role in this area and to help public libraries serve as a safety net that ensures public access to electronic government information and services.

- *Provide Local Dial-Up Access.* Until rural areas can access national and international networks such as the Internet with a local telephone call, they will be at a serious disadvantage compared with urban areas, where such local dial-up access is the norm. Local access is unlikely to develop strictly by market forces. Thus, a very important policy initiative that federal and state governments could undertake would be to implement policies that make local dial-up access a reality. The private sector, especially the telephone and telecommunications industries, must also assume responsibility in this area. Currently, despite the best intentions of the public library community, long-distance telecommunication charges may make connection to and use of the Internet impossible.

- *Provide Direct Support for the Purchase of Equipment.* For many small to medium sized public libraries, initial capital expenses for the purchase of a computer, modem, software, and related items are significant barriers. The federal government, perhaps in cooperation with local and state governments, should provide both incentives and direct support to help the library community "get connected" and operate in the networked environment. Establishment of a universal access pool that is supported by a small tariff on telecommunications companies and selected information providers might be one approach to support such a program.

- *Promote the Development of a National Training Effort.* At present, the process by which public librarians learn about and are trained to use the Internet is uneven at best and nonexistent at worst. If public librarians are to become knowledgeable about the Internet, including how to connect to it and how to use it as part of their library's normal services, a national training effort is needed. Language proposed in the National Information Infrastructure Act of 1993 (H.R. 1757) states that resources should be made available to (p. 10):

  > Train teachers, students, librarians, and state and local government personnel in the use of computer networks and the Internet. Training programs for librarians shall be designed to provide skills and training materials needed by librarians to instruct the public in the use of hardware and software for accessing and using computer networks and the Internet.

  Where these resources will come from, what kind of training would be done and by whom, how the resources would be distributed, and who would administer and evaluate the process are not explained.

Public librarians, professional library associations, Internet service providers, state library agencies, the U.S. Department of Education and other federal agencies, and educational institutions must develop a coherent plan to accomplish the objectives outlined in H.R. 1757 and now incorporated into S.4. For public libraries to make this transition, however, they will need a range of support — the most essential being training.

For Public Librarians

It would be a mistake, however, to believe that responsibilities for networked information services rely entirely with the government. Thus, there are a number of actions that the public library should initiate immediately:

- *Increase Knowledge and Training Related to the Internet.* The library community must continue to increase its knowledge and understanding of the Internet. This knowledge will better enable them to debate the policy issues listed in Figure 79. In addition they must continue their training in how to use and apply the new networking technologies now available.

- *Obtain Basic Networking Equipment and Connectivity.* Public librarians must develop strategies for obtaining resources to purchase the necessary equipment, pay connectivity fees, obtain training, and otherwise support their Internet connections. The position that public libraries cannot afford to connect to the Internet is erroneous; public libraries cannot afford to be unconnected to the Internet. For $2,000 - $3,000 a library can obtain excellent-quality equipment and software that would allow an Internet connection. Some of this support should come from the federal and state governments (see above). For many libraries, however, equipment is on hand; they simply need to obtain a connection from a local service provider.

- *Obtain Local Community Support.* For public librarians to move successfully to the networked environment, they must also educate their communities, users, and governing boards. Such a move requires first that the public librarians themselves be knowledgeable about the Internet and its applications. Next, however, they must constantly look for opportunities to increase their community's awareness of the Internet, educate it regarding the net's possible uses and applications, and demonstrate impacts of, uses for, and benefits from connectivity to the Internet.

  Public librarians should also explore opportunities to become directly involved in the development of community networks. As discussed earlier in this report, organizers of community networks and librarians have very similar objectives related to universal access to a range of electronic information. Librarians can take a leadership role in developing such networks and ensuring that community networks include the public library.

- *Offer Innovative Networked Information Services.* Public librarians can provide a broad range of new, innovative, and exciting services in a networked setting. These networked services include international keypals between local and foreign children, community discussion lists, development of a user's own customized electronic library from sources around the world, collaborating with local schools and connecting them to parents and students, and electronic booktalks,

to name but a few. Public librarians are beginning to think about the possibilities of electronic services to their communities in this networked environment. Clearly, more attention needs to be given to developing networked information services. More experimentation and innovative ideas are needed in this area.

- *Collaborate with Other Local Organizations.* Many local communities have a host of organizations that are potential partners for the public library in providing Internet services to the community: schools, community colleges, other higher education institutions, agriculture extension agencies, medical facilities, private firms, government agencies, social groups, and others. The public library can serve as an important link among these various groups by taking the lead to organize access to the Internet and by developing strategies for how such access can benefit other community organizations.

Underlying all of these recommendations is the need for the library community to innovate, educate itself, and experiment with new uses and applications of the Internet.

For the National Commission on Libraries and Information Science

This study can be seen as a beginning point for NCLIS to expand the debate about the role of libraries in general and public libraries in particular in the developing NII. More specifically, NCLIS could:

- *Promote Additional Research.* The survey findings reported here represent the first national effort to obtain descriptive data about public libraries and the Internet. As such, the survey provides benchmark data to which future survey results can be compared. Longitudinal data will be needed to determine the degree to which public libraries have changed relative to the topics covered in the survey. Thus this or a very similar survey should be repeated regularly to aid policymakers in the decision-making process.

  In addition, national surveys on academic, school, or special libraries and the Internet should be conducted. National descriptive data in each of these areas will also be needed if policymakers are to gauge libraries' developments with the Internet and determine the degree to which existing policies are appropriate or need to be redesigned.

  A more specific topic requiring research attention is the impacts and benefits that result from Internet connectivity. To some extent, policymakers have taken at face value statements about how connectivity increases productivity, improves the quality of life, or otherwise provides important benefits to society. Research is needed to identify and measure specific impacts that result from access to and use of networked information. NCLIS can promote research that assesses the impacts of the Internet on libraries and how those impacts affect information services to the public.

- *Sponsor Follow-up Conferences.* One theme of this report is the need for additional public debate on its findings, issues, and recommendations. Such a debate could be promoted via conferences, hearings, or other mechanisms. NCLIS has statutory responsibility, should it decide to do so, to orchestrate such conferences. Minimally, NCLIS could sponsor meetings to (1) review the findings, issues, and recommendations offered in the report, and (2) develop policy recommendations for resolving the issues outlined in the report.

Given the Information Infrastructure Task Force's recommendation for the development of a national plan for libraries as they move to the electronic environment, NCLIS could also sponsor conferences or meetings to help achieve the realization of such a plan. There is an important window of opportunity to provide such input to the administration and develop recommendations for such a plan. NCLIS should take the lead in this area.

Rethinking Federal Support for Libraries

The Clinton administration has provided strong support for expanding the role of libraries in the networked environment. The Information Infrastructure Task Force (IITF) Committee on Applications and Technology stated in a January 25, 1994, policy document that libraries are one of seven major application areas for initial study (1994b, p. 3). The report went on to say:

> Providing equitable access is important for many of the applications areas considered. This issue includes access to other individuals and

citizen groups via the NII as well as access to information.... For education and for libraries, all teachers and students in K-12 schools and all public libraries — whether in urban, suburban, or rural areas; whether in rich or in poor neighborhoods — need access to the educational and library services carried on the NII. All commercial establishments and all workers must have equal access to the opportunities for electronic commerce and telecommuting provided by the NII. Finally, all citizens must have equal access to government services provided over the NII.

Policymakers, librarians, and others need to debate the federal role in how the electronic, networked public library evolves, and how the private sector and public libraries can work together to realize the vision of the Clinton administration.

A central federal policy plank supporting library programs is the Library Services and Construction Act (LSCA). Over the years, this act has contributed greatly to the development of the existing national library infrastructure. But its provisions need to be updated and kept abreast with current library needs. Federal policymakers and the library community should work together to reshape federal programs in support of libraries. One strategy would be to change the Library Services and Construction Act to the *Library Services and Communications Act*.

Such a change would recognize the importance of communications and libraries being connected to the evolving NII. In addition to some of the existing policy goals of LSCA, a revised LSCA might include policy goals that:

- Provide direct support to public libraries to obtain basic computing and telecommunications equipment.
- Provide support for public librarians and information professionals to obtain education and training related to the use of the Internet/NII and the development of networked-based programs and services.
- Help public libraries obtain electronic government information and provide the public with access to this information.
- Support a national network literacy program in which public librarians assume the responsibility of preparing the public to be productive and empowered in the networked society.
- Establish public libraries as community-based network access centers that ensure and protect every person's access to networked information resources.

While other key policy goals also can be suggested, these appear to be significant components of a new and revitalized *Library Services and Communications Act.*

LSCA, however, is but one component of the national policy supporting the library infrastructure. A comprehensive review of other federal policy instruments affecting libraries should be conducted to identify ambiguities, gaps, problems, or conflicts. To develop a national plan for libraries, policymakers must first know what the existing policy context is for libraries. This is another area in which NCLIS can help to inform policymakers and offer recommendations for coordinating such policy instruments and working toward the development of a national plan.

The nation cannot afford to leave some of the population behind as it realizes the NII vision; it cannot afford to have only those services and resources identified as "profitable" be provided via the NII; and it cannot afford to have the NII become a divisive process that further disenfranchises some segments of society and inhibits these segments from being productive in both their personal and professional lives. The public library community can provide an important public access door to the Internet and eventually into the NII.

Federal policy initiatives, as well as more extensive public debate, must occur to clarify public purposes of the Internet and the NII. The success and importance of the NII will depend on the societal values and goals (such as those offered above) the Internet is intended to promote. These goals must be extended beyond economics, commercial applications, and technical development of the NII. Clearly, those goals related to universal access, network literacy, and training are key factors that reflect public-sector principles related to the evolving networked environment. A new national plan for libraries and an updated and coordinated policy system as the basis for national library development are essential.

The networked public library is a future toward which policymakers and public librarians must move. This future is one that offers the public library great opportunities to be an electronic community spokesperson and central hub that links various community activities both with each other and with the outside world. Indeed, linkages are what the network does best. Although public librarians and policymakers are only now beginning to explore how best to exploit the potential of electronic networking, the time is now to re-think the existing federal policy framework that supports libraries and move into this networked environment successfully!

NOTES

1. The National Center for Education Statistics (NCES) provided research assistance in selecting the sample and questionnaire construction. NCES, however, did not participate in the analysis of the data or the development of any material in this report.

2. The Federal State Cooperative System (FSCS) defines a public library as (National Center for Education Statistics, 1993, p. 5):

   > An entity that provides all of the following: a) an organized collection of printed or other library materials, or a combination thereof; b) a staff to provide and interpret such materials as required to meet the informational, cultural, recreational, and educational needs of a clientele; c) an established schedule in which services of the staff are available to clientele; and d) the facilities necessary to support such a collection, staff, and schedule. A public library is established under state enabling laws or regulations to serve the residents of a community, district, or region.

   Based on the FSCS data, there are 9,050 public libraries throughout the country. In addition to the number of public libraries, there are 15,482 stationary outlets, which are composed of central libraries and branch libraries. FSCS defines central libraries as (National Center for Education Statistics, 1993, p. 118):

   > the single unit library or the unit where the principle collections are kept and handled; also called the "main library."

   Branch libraries are (National Center for Education Statistics, 1993, p. 118):

   > auxiliary units which have all of the following: (1) separate quarters; (2) a permanent basic collection of books; (3) a permanent paid staff; and (4) a regular schedule for opening to the public. There are, however, administered from a central unit. Regional or divisional centers are counted as branches.

3. The legal service population area groupings are as follows:

   1 Million +
   500,000 - 999,999
   250,000 - 499,999
   100,000 - 249,999
   50,000 - 99,999
   25,000 - 49,999
   10,000 - 24,999
   5,000 - 9,999
   Under 5,000

4. The region groupings are as follows:

   Midwest:

   Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin

   Northeast:

   Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont

   South:

   Alabama, Arkansas, Delaware, DC, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, West Virginia

   West:

   Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming

5. For more detailed information on the sampling technique used in this study and the drawing of the sample from the NCES Public Library Universe

File, contact Steven Kaufman at NCES or Douglas L. Zweizig at the University of Wisconsin.

6. Although estimates of the standard error are possible with this sampling approach, they were not calculated for this quick response survey because their calculation is more complicated and time consuming than that needed to produce the national estimates and would require specialized software packages. Therefore, significance tests have not been performed. The quality of the estimates can be inferred from the sample quality achieved as shown in Figure 1 and from the close match between estimates of expenditures from this sample and population data reported by NCES (1993).

REFERENCES

Clinton, W. J. (1994, January 25). State of the union address. Available: Gopher: iitf.doc.gov; DIRECTORY: /Speeches, Documents and Papers; FILE: State of the Union Address 1/25/94.

Commission on Physical, Mathematical, and Engineering Sciences, Federal Coordinating Council for Science, Engineering and Technology (1993). *Grand challenges 1993: High performance computing and communications.* Washington, DC: GPO.

Congress. House (1993, April 21). *National Information Infrastructure Act of 1993.* (H.R. 1757). Washington, DC: GPO.

D'Elia, G. (1993). *The role of the public library in society: The results of a national survey.* Evanston, IL: Urban Libraries Council.

Fisher, R. (1992). In: Congress. House. Committee on House Administration and Joint Committee on the Library. (September 21). *Field hearing on libraries and library services.* Washington, DC: GPO.

Gore, A. (1993). *Creating a government that works better and costs less: Report of the National Performance Review.* Washington, DC: GPO.

Hansen, J. (1992). In: Congress. House. Committee on House Administration and Joint Committee on the Library. (September 21). *Field hearing on libraries and library services.* Washington, DC: GPO.

Information Infrastructure Task Force. (1993). *The National information infrastructure: Agenda for action.* Available: Gopher: iitf.doc.gov; DIRECTORY: /IITF Committee Reports and Minutes; FILE: NII: Agenda for Action.

Information Infrastructure Task Force, Committee on Applications and Technology. (1994a). *What it takes to make it happen: Key issues for applications of the national information infrastructure.* Available: Gopher: iitf.doc.gov; DIRECTORY: /Speeches, Documents and Papers; FILE: What It Takes to Make it Happen: Key Issues for Applications of the NII.

Information Infrastructure Task Force, Committee on Applications and Technology. (1994b). *Putting the information infrastructure to work* (NIST Special Publication 857). Washington, DC: U.S. Department of Commerce, National Institute of Standards and Technology.

Irving, L. (1994, January 27). Testimony of Larry Irving, Assistant Secretary for Communications and Information, U.S. Department of Commerce, on Telecommunications Reform Legislation before the Subcommittee on Telecommunications and Finance, Committee on Energy and Commerce, U.S. House of Representatives. Available: Gopher: iitf.doc.gov; DIRECTORY: /Speeches, Documents and Papers; FILE: Irving Testimony to House Energy 1/27/94.

Kennedy, E. M. (January 28, 1994). PUBLIB Interview: Senator Kennedy. Liverpool, NY: NYSERNet, Inc. Posted on PUBLIB and PUBLIB-Net, January 29, 1994.

Kranich, N. C. (1993). The selling of cyberspace: Can libraries protect public access? *Library Journal,* pp. 34-37.

Lynch, C.A., and Preston, C.M. (1990). Internet access to information resources. In Martha E. Williams (Ed.), *Annual review of information science and technology.* Vol. 25 (pp. 263-312). NY: Elsevier Science Publishers.

Martin, L. A. (1983). The public library: Middle-age crisis or old age? *Library Journal, 108,* 17-22.

McClure, C. R. (1993a). Network literacy in an electronic society: An educational disconnect? *The knowledge economy: The nature of information in the 21st century, annual review of the Institute for Information Studies* (pp. 137-178). Queenstown, MD: The Aspen Institute.

McClure, C. R. (1993b). Updating planning and role setting for public libraries: A manual of options and procedures. *Public Libraries*, 32(4), 198-199.

McClure, C. R., Babcock, W. C., Nelson, K. A., Polly, J. A., and Kankus, S. R. (1994a). *Connecting rural public libraries to the Internet: Project GAIN — Global Access Information Network*, 1-71. Liverpool, NY: NYSERNet, Inc.

McClure, C. R., Bishop A. P., Doty, P., Rosenbaum, H. (1991). *The National Research and Education Network (NREN): Research and policy perspectives*. Noorwood, NJ: Ablex Publishing Corporation.

McClure, C. R., Moen, W. E., and Ryan, J. (1994b). *Libraries and the Internet/NREN: Issues, perspectives, and opportunities*. Westport, CT: Meckler Publishing.

McClure, C. R., Ryan, J., and Moen, W. E. (1993). The role of public libraries in the use of Internet/NREN information services. *Library and Information Science Research*, 15, 7-34.

McClure, C. R., Owen, A., Zweizig, D. L., Lynch, M. J., and Van House, N. A. (1987). *Planning and role setting for public libraries: A manual of operations and procedures*. Chicago: American Library Association.

Moltz, K., Faculty Advisor. (1994). *Civic networks in the United States*. New York: Columbia University, Graduate Program in Public Policy and Administration (mimeograph).

National Commission on Libraries and Information Science. (1992). *Open forum on recommendations of the White House conference on library and information services*. Washington, DC: GPO.

National Center for Education Statistics. (1993). *Public libraries in the United States: 1991* [NCES 92-297]. Washington, DC: U.S. Department of Education, Office of Educational Research and Improvement.

<NIC.MERIT.EDU>. (1994, February 3). History of hosts Available: FTP: <nic.merit.edu> ; DIRECTORY: /nsfnet/statistics; FILE: history.hosts.

Office of Technology Assessment. (1993). *Making government work: Electronic delivery of federal services*. Washington, DC: GPO.

Office of the Vice President. (1994, January 11). Vice President proposes national telecommunications reform. Available: Gopher: iitf.doc.gov; DIRECTORY: /Press Releases; FILE: VP Proposes National Telecommunications Reform.

Office of the White House. (1994, January 25). Administration white paper on communications act reforms. Available: Gopher: iitf.doc.gov; DIRECTORY: /Speeches, Documents and Papers; FILE: Administration White Paper on Communications Act Reforms 1/27/94.

Rose, C. (1992). In: Congress. House. Committee on House Administration and Joint Committee on the Library. (September 21). *Field hearing on libraries and library services*. Washington, DC: GPO.

Shearer, K. (1993). Confusing what is most wanted with what is most used: A crisis in public library priorities today. *Public Libraries*, 32(4), 193-197.

Wetherbee, L.V. and Snow, L. E. (1993). *Issues and strategies in the development of Internet access for community college, public and special libraries: A Report to C.L.A.S.S.* Dallas, TX: Library Management Consultant.

Appendix A

Survey Instrument

Survey of Public Library Internet Use

Instructions: We are interested in finding out about your library's level of involvement with or use of the Internet. Please take the time to answer the questions below by marking the appropriate selection or filling in answers as necessary. Your responses will assist us to gain an understanding of public library uses of the Internet. Thank you for your participation! **PLEASE RETURN YOUR QUESTIONNAIRE BY JANUARY 31, 1994.**

If your library is not now using Internet, please fill out questions 1 to 9 and then 21 to 23 and return.

PART A:
To be filled out by the library director

1. Name of person responding: _____ Title: _____

2. Total number of librarians (include ALA/MLS and others with the title) in FTE: _____

3. Please tell us your operating expenditures for the latest completed fiscal year. $_____

4. What were your materials expenditures for the latest reported fiscal year? $_____

5. Please assess the degree to which the following possible factors affect your library's current level of involvement in the Internet:

PLEASE CIRCLE ONE NUMBER FOR EACH QUESTION.

	Very Important				Very Unimportant	Don't Know
a) Costs of getting connected to the Internet	1	2	3	4	5	❑
b) Costs of hardware	1	2	3	4	5	❑
c) Costs of software	1	2	3	4	5	❑
d) Availability of in-house computer technical expertise	1	2	3	4	5	❑
e) Staff awareness of the Internet	1	2	3	4	5	❑
f) Availability of staff time to develop expertise on the Internet	1	2	3	4	5	❑
g) Availability of training on the Internet and its uses	1	2	3	4	5	❑
h) Staff skills to "navigate" the Internet	1	2	3	4	5	❑
i) Level of community interest	1	2	3	4	5	❑
j) Degree of interest by governing body	1	2	3	4	5	❑
k) Other (Please specify): _____	1	2	3	4	5	❑

6. Interest in the Internet at this library is motivated primarily by:

CHECK [X] ONE ONLY

- ❑ Library strategic planning
- ❑ State-wide initiatives
- ❑ Interest of the library administration
- ❑ Community strategic planning
- ❑ Internal staff expertise
- ❑ Other (please specify): _____

7. To what extent do you agree/disagree with the following statements:

PLEASE CIRCLE ONE NUMBER FOR EACH QUESTION.

	Strongly Agree				Strongly Disagree	Don't Know
a) Public libraries should provide Internet-based services to library patrons	1	2	3	4	5	❑
b) Future monetary support for public libraries is integrally linked to the development of the Internet.	1	2	3	4	5	❑
c) Public libraries should serve as a safety net (i.e., societal back-up for those without individual access) for public access to the Internet.	1	2	3	4	5	❑
d) Internet services provided through public libraries should be without charge to the patron.	1	2	3	4	5	❑

8. What role do you think the federal government should have in supporting Internet access through public libraries? Please rank the following five items in terms of the importance of the federal role.

RANK [1 = most important; 5 = least important]

_____ i) support for purchase of equipment
_____ ii) training assistance
_____ iii) support research and development efforts
_____ iv) connecting libraries to the Internet
_____ v) other (please specify): _____

❑ The federal government should have no role in supporting Internet access through public libraries.

9. Is your library connected to the Internet in any way?

❑ YES → **(Please complete questions 10 through 25.)**
❑ NO → **(Please skip to Question 21.)**

10. Please estimate the total costs to the library for providing Internet-related services for staff and patrons for the last completed fiscal year (to include telecommunication costs, subscription fees, software, training, staff time, etc.):

Total Cost: $ _____ ❑ Don't know costs

11. Do you expect this amount of the library's budget currently committed to Internet-based services and resources for the next fiscal year to:

❑ Decline ❑ Remain the same ❑ Increase 1-5% ❑ Increase more than 5%

12. Please estimate the percentage of support for Internet-related services that come from the following sources:

SOURCE	PERCENTAGE OF SUPPORT FOR INTERNET
Local	_____%
State	_____%
Federal	_____%
Grant/foundation	_____%
Other (please specify)	_____%
TOTAL	100%

PART B:
To be filled out by library director or library employee with most knowledge of the library's use of the Internet

13. Name of person responding: _____ Title: _____

14. What type of connection to the Internet does your library have? **CHECK ALL THAT APPLY**

- ❑ Internet email–only gateway of some kind, (e.g., America Online, Compuserve, Fidonet, etc.)
- ❑ VT 100 terminal access to a host on the Internet (e.g., through library's OPAC, Delphi, CLASS, etc.)
- ❑ Dial–up SLIP, or PPP TCP/IP on a desktop machine
- ❑ Direct, dedicated leased line connection (any speed)
- ❑ Other (Please specify): _____
- ❑ Don't know type of connection

15. What type of network connection provider does your library use? **CHECK ALL THAT APPLY**

- ❑ Local government organization
- ❑ Local educational organization
- ❑ State library network
- ❑ OCLC regional library network (e.g., AMIGOS, NELINET, etc.)
- ❑ Commercial provider
- ❑ Free–net
- ❑ Other (please specify): _____
- ❑ Don't know

16. How many individual e–mail Internet addresses does your library have? _____

17. Please estimate the number of uses in your library of the following Internet activities by staff in a typical week:

PLEASE CHECK ONE FOR EACH QUESTION.

	Never	Less than 5 times/wk	5–15 times/wk	More than 15 times/wk
a) Electronic Mail	❑	❑	❑	❑
b) Listservs/Discussion Groups	❑	❑	❑	❑
c) File Transfer (FTP)	❑	❑	❑	❑
d) Telnet/Remote Login	❑	❑	❑	❑
e) Bibliographic Utilities	❑	❑	❑	❑
f) Resource Location Services (Gopher, WAIS, Veronica, MOSAIC, Archie)	❑	❑	❑	❑
g) Other (Please specify): _____	❑	❑	❑	❑

18. Please estimate the number of occasions your library staff provides the following services for patrons through the Internet connection in a typical week:

PLEASE CHECK ONE FOR EACH QUESTION.

	Never	Less than 5 times/wk	5–15 times/wk	More than 15 times/wk
a) Using Internet to obtain answers (e.g., using Lists to post reference questions for patrons)	❑	❑	❑	❑
b) Accessing electronic indexes for patrons (e.g., Uncover, ASAP, IAC Magazine Index)	❑	❑	❑	❑
c) Providing access to federal government documents (e.g., Clinton HealthPlan, NAFTA, legislation)	❑	❑	❑	❑
d) Downloading of software for patrons	❑	❑	❑	❑
e) Providing access to electronic journals (e.g., *ALA Washington Office Online*)	❑	❑	❑	❑
f) Training programs	❑	❑	❑	❑
g) Interlibrary loan	❑	❑	❑	❑
h) Other (Please specify): _____	❑	❑	❑	❑

19. Does your library provide public access computers for patron access to the Internet?

❑ NO ❑ YES→If YES, how many computers? ❑ none ❑ 1 - 5 ❑ 6 - 10 ❑ 11 or more

20. Does your library provide hard-copy print of materials obtained through the Internet?

❑ NO ❑ YES, for free ❑ YES, for a fee

21. Does your library provide information services to a local community network or free-net?

❑ NO ❑ YES

22. How many telephone lines (include both voice and data) come into your library?

Number of Lines: → ❑ none ❑ 1 - 5 ❑ 6 - 10 ❑ 11 or more

23. Please tell us about your library's computers—the number owned and the number with external communication capability: PLEASE CHECK [X] ONE BOX IN EACH SECTION.

Computer Equipment	Number Owned					Number with External Communication Capability				
	None	1 - 10	11 - 25	26 - 50	51+	None	1 - 10	11 - 25	26 - 50	51+
Apple/Macintosh	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
IBM PC or Clones	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
UNIX Workstation	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Other (Please specify): _____	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑

24. Please tell us your favorite Internet success story—the time that Internet provided the key piece of information or other assistance that solved a problem in your library:

25. Please tell us your favorite Internet frustration story—the time that Internet failed to meet your need; wasted time; drove you to distraction:

Please return the questionnaire by January 31, 1994 to:

Douglas Zweizig
Public Library Use of the Internet Survey
School of Library and Information Studies
University of Wisconsin—Madison
600 N. Park Street
Madison, WI 53706

Phone: (608) 263-2941
Fax: (608) 263-4849
e-mail: ZWEIZIG@MACC.WISC.EDU

THANK YOU FOR YOUR COOPERATION!

NCLIS Survey on Public Library Use of the Internet, page 4

Appendix B

Postcard Alert

SURVEY OF PUBLIC LIBRARY INTERNET USE
UNIVERSITY OF WISCONSIN—MADISON
SCHOOL OF LIBRARY & INFORMATION STUDIES
Helen C. White Hall
600 North Park Street
Madison, Wisconsin 53706

First Class Mail

NOTICE:
SURVEY
ALERT
FOR THE
LIBRARY
DIRECTOR

Dear Library Director: December 1993

The **National Commission on Libraries and Information Science** is conducting a national fast-response survey of the **involvement of public libraries in the Internet.**

The results from the study will be used **this spring** to advise the U.S. Congress and Administration on policies for the coming electronic environment for public library services.

Your library has been selected to be in the sample drawn for the study by the National Center for Education Statistics. The survey will be mailed in early January and will ask for a response by the end of the month.

It is important that your library respond, whether or not it is presently using the Internet. If you have questions or have not received your survey by **January 15**, please contact:

Douglas Zweizig
SURVEY OF PUBLIC LIBRARY INTERNET USE
School of Library and Information Studies
University of Wisconsin—Madison
600 N. Park Street
Madison, Wisconsin 53706

Phone: (608) 263-2941
Fax: (608) 263-4849
e-mail:
zweizig@macc.wisc.edu

Thank you for your help.

Postcard sent in advance of the Survey of Public Library Internet Use

Appendix C

Survey Cover Letter

United States
National Commission on
Libraries and Information Science

10 January 1994

Dear Public Library Director:

The U.S. National Commission on Libraries and Information Science (NCLIS), as a permanent, independent Federal agency, is charged by law (P.L. 91-345) to advise the President and Congress on the implementation of library and information services policies for the Nation. In fulfillment of this charge, the Commission is conducting a study to assess public library use of the Internet and to explore the impact of electronic networking on public libraries and the communities they serve. Dr. Charles R. McClure, professor at the School of Information Studies at Syracuse University, and Dr. Douglas L. Zweizig, professor at the School of Library and Information Studies at the University of Wisconsin - Madison are co-principal investigators for this study.

Your institution has been selected from a National Center for Education Statistics public library universe file to participate in this study. A response from your library is important to the validity of this study whether you are currently using the Internet or not. Your library's response to the questionnaire accompanying this letter will be treated in confidence; no individual libraries will be identified in the NCLIS report resulting from this study.

The Internet currently is a network of computer networks that enables individuals and institutions to communicate electronically and to access a host of information resources. The U.S. Congress and Administration officials are currently considering policy proposals and initiatives that relate directly to the development of digital library resources and that will determine the role of libraries in a networked environment. These initiatives require current National data about public libraries and the Internet to inform decision makers about the appropriate government role relating to public libraries in the emerging National Information Infrastructure. Your library's participation in this study will assist the National Commission in advising policy makers about the roles of public libraries in the National network infrastructure.

A quick response survey questionnaire is attached to this letter. The survey asks about your library's plans for and/or present use of the Internet. If you have a member of your staff who is responsible for your library's Internet connection, please forward this survey to that person for completion, after you have responded to the Library Director questions.

If you have questions regarding this survey please contact Dr. Douglas L. Zweizig, School of Library and Information Studies, University of Wisconsin - Madison, Helen C.White Hall, 600 North Park Street, Madison, Wisconsin 53706. Phone (608) 263-2941 - voice. Fax (608) 263-4849. Or Internet address: zweizig@macc.wisc.edu

Thank you for taking the time to **return the completed survey questionnaire by 31 January 1994** by using the enclosed postage paid envelope. In appreciation for your cooperation, we will be pleased to provide you with a copy of the final project report.

Sincerely,

Jeanne Hurley Simon

Jeanne Hurley Simon
NCLIS Chairperson

Enclosure: Survey of Public Library Internet Use

1110 Vermont Avenue, N.W., Suite 820
Washington, D.C. 20005-3522
(202) 606-9200
FAX (202) 606-9203

About the Authors

Charles R. McClure <cmcclure@suvm.syr.edu> is Distinguished Professor at the School of Information Studies, Syracuse University, where he teaches courses in U.S. government information management and policies, information resources management, library/information center management, and planning and evaluation of information services. He completed his doctorate in library and information services at Rutgers University. He has authored some twenty-five monographs and over 150 articles, reports, and chapters on topics related to library and information center planning, evaluation, management, information resources management, networking, and government information. McClure's research activities have won a number of national awards from the American Library Association, the Association of Library and Information Science Education, and the American Society for Information Science. McClure is the associate editor *Government Information Quarterly* and is also the editor of the journal *Internet Research: Electronic Networking Applications and Policy*. His latest book is *Libraries and the Internet/NREN: Perspectives, Issues, and Challenges*.

John Carlo Bertot <jcbertot@mailbox.syr.edu> is a doctoral student and research associate at the School of Information Studies, Syracuse University. In collaboration with Charles R. McClure and Patricia T. Fletcher, he has published articles and reports on federal and county government information policy and the use of information technology to deliver government information and services. His research interests also include strategic management in the public sector and information resources management. He teaches courses on information organization and information resources management. Prior to beginning doctoral studies, Bertot spent four years managing the Office Automation Training and Support Division for the New York State Assembly, Office Automation and Data Processing Department. He received his MA in Communication from the University at Albany, State University of New York.

Douglas L. Zweizig <zweizig@macc.wisc.edu> is a professor at the School of Library and Information Studies at the University of Wisconsin-Madison. He is the project director for the Public Library Data Service, has conducted national studies of literacy activities in libraries and financial practices in public libraries, and has published in the literature of planning and evaluation for libraries. He has been actively involved in the American Library Association and is a frequent speaker at many professional meetings and conferences. Since 1993 he has been co-principal investigator for the U.S. Department of Education funded project, "Evaluating Library Programs and Services" and lead author of *Evaluating Library Programs & Services: TELL IT!* Madison: SLIS University of Wisconsin—Madison, 1993. He is co-author, with McClure, of the publications *Planning and Role Setting for Public Libraries* and *Output Measures for Public Libraries*, 2nd ed. (American Library Association).